

# INSTRUMENT PANEL SYSTEMS

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## DESCRIPTION AND OPERATION

### INSTRUMENT PANEL SYSTEM

#### DESCRIPTION

The instrument panel serves as the command center of the vehicle, which necessarily makes it 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. The instrument panel is also designed so that all of the various controls can be safely reached and the monitors can be easily viewed by the vehicle operator when driving, while still allowing relative ease of access to each of these items for service. See the owner's manual in the vehicle glove box for more information on the features, use and operation of all of the instrument panel components and systems.

This group is responsible for covering service information for the vehicle instrument panel systems. However, complete service information coverage for all of the systems and components housed in the instrument panel in a single section of the service manual would not be practical. Therefore, the service information for any component will be found in the group designated to cover the vehicle system that the component belongs to, even though the component is

mounted on or in the instrument panel. If you cannot locate a listing for the component or system you are servicing in the table of contents for this group, or if you are uncertain as to which vehicle system a component belongs to, it is suggested that you refer to the alphabetical **Component and System Index** found at the back of this service manual.

**NOTE:** This group covers both Left-Hand Drive (LHD) and Right-Hand Drive (RHD) versions of this model. Whenever required and feasible, the RHD versions of affected vehicle components have been constructed as mirror-image of the LHD versions. While most of the illustrations used in this group represent only the LHD version, the diagnostic and service procedures outlined can generally be applied to either version. Exceptions to this rule have been clearly identified as LHD or RHD, if a special illustration or procedure is required.

### INSTRUMENT PANEL

#### DESCRIPTION

This instrument panel uses a full-width structural plastic foundation as its primary support. When the two primary molded plastic components of this structure are vibration welded together they provide superior instrument panel stiffness and integrity to help

## DESCRIPTION AND OPERATION (Continued)

reduce buzzes, squeaks, and rattles even on the bumpiest roads.

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

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

Removal of the steering column opening cover and knee blocker provides access to the steering column mounts, the steering column wiring, the headlamp switch, the electronic combination flasher, and much of the instrument panel wiring. Removal of the glove box provides access to the heating and air conditioning electrical and vacuum harnesses, the blower motor relay, the radio antenna coaxial cable, the lower passenger side airbag mounts, and additional instrument panel wiring.

Removal of the instrument panel center bezel allows access to the radio, the heating and air conditioning controls, the accessory switches, the cigar lighter, and the accessory power outlet. Removal of the instrument cluster bezel allows access to the instrument cluster. Removal of the cluster assembly allows access to the cluster illumination and indicator lamp bulbs, and more of the instrument panel wiring.

Removal of the instrument panel top cover allows access to the upper passenger side airbag mounts. Instrument panel removal is required for service of most internal components of the heating and air conditioning system housing.

## INSTRUMENT CLUSTER

### DESCRIPTION

Two basic instrument clusters are offered on this model: low-line, or high-line. Both clusters are electromechanical units that utilize integrated circuitry and information carried on the Chrysler Collision Detection (CCD) data bus network for control of all gauges and many of the indicator lamps. These clusters also incorporate a digital Vacuum Fluorescent Display (VFD) for the odometer/trip odometer display functions. Some variations of each cluster exist due to optional equipment and regulatory requirements.

The low-line cluster includes the following analog gauges:

- Fuel gauge
- Speedometer.

This cluster also includes provisions for the following indicator lamps:

- Airbag indicator lamp
- Anti-lock brake system lamp
- Brake warning lamp
- Coolant temperature warning lamp
- Cruise-on indicator lamp
- Four-wheel drive (Part Time and/or Full Time) indicator lamps
- Headlamp high beam indicator lamp
- Low oil pressure warning lamp
- Low washer fluid warning lamp
- Malfunction Indicator Lamp (MIL)
- Seat belt reminder lamp
- Sentry Key Immobilizer System (SKIS) indicator lamp
- Turn signal indicator lamps
- Upshift indicator lamp (manual transmission)
- Voltage warning lamp.

The high-line cluster replaces some of the indicator lamps found in the low-line cluster with analog gauges. The high-line cluster includes the following analog gauges:

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

The high-line cluster also adds a check gauges lamp and a low fuel warning lamp to the remaining indicator lamps found in the low-line cluster.

Both instrument clusters feature circuitry that 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, refer to **Instrument Cluster** in the Diagnosis and Testing section of this group.

The instrument cluster circuitry also integrates a chime tone generator and a timer circuit. These items replace the chime or buzzer module, and the separate timer circuit for the rear window defogger system. Refer to **Chime Warning System** in the Description and Operation section of Group 8U - Chime/Buzzer Warning Systems for more information on the chime functions of the instrument cluster. Refer to **Rear Window Defogger System** in the Description and Operation section of Group 8N -

## DESCRIPTION AND OPERATION (Continued)

Electrically Heated Systems for more information on the timer function of the instrument cluster.

The instrument clusters for this model are serviced only as complete units. If a cluster gauge or the cluster circuit board are faulty, the entire cluster must be replaced. The cluster lens, the cluster hood and mask, the rear cluster housing cover, the odometer reset knob boot and the incandescent lamp bulbs and holders are available for service replacement.

**OPERATION****GAUGE**

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

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

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

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

**INDICATOR LAMP**

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

The anti-lock brake system lamp, brake warning lamp, four-wheel drive indicator lamps, headlamp high beam indicator lamp, low washer fluid warning lamp and turn signal indicator lamps are hard wired.

The seat belt reminder lamp is controlled by the instrument cluster programming. The Malfunction Indicator Lamp (MIL) is normally controlled by CCD data bus messages from the Powertrain Control Module (PCM); however, if the instrument cluster detects a loss of CCD data bus communication, the cluster will automatically turn the MIL on and display the message "NO BUS" in the odometer VFD until CCD data bus communication is restored. The instrument cluster circuitry uses CCD data bus messages from the Powertrain Control Module (PCM), Airbag Control Module (ACM), and the Sentry Key Immobilizer Module (SKIM) to control all of the remaining indicator lamps.

Each of the indicator lamps in the instrument cluster uses incandescent bulbs and holders, which are available for service replacement.

**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, counterclockwise to brighten). The instrument cluster illumination lamps receive battery feed from the panel dimmer rheostat in the headlamp switch through a fuse in the fuseblock module.

The instrument cluster electronic circuitry also monitors the cluster illumination lamp dimming level whenever the park or head lamps are turned on. The instrument cluster electronic circuitry responds by adjusting the dimming level of the odometer Vacuum Fluorescent Display (VFD), and sending dimming level messages over the Chrysler Collision Detection (CCD) data bus network. When the park lamps or headlamps are turned off, the VFD is illuminated at full brightness for improved daylight visibility.

Each of the cluster illumination lamps is located on the instrument cluster circuit board. Each cluster illumination lamp has a replaceable bulb and bulb holder.

**INSTRUMENT PANEL CIGAR LIGHTER****DESCRIPTION**

A cigar lighter is standard equipment on this model. The cigar lighter is installed in the instrument panel accessory switch bezel, which is located near the bottom of the instrument panel center bezel area, below the heater and air conditioner controls. The cigar lighter base is secured by a snap fit within the accessory switch bezel.

The cigar lighter receptacle is serviced only as a part of the accessory switch bezel unit. If the cigar lighter base is faulty or damaged, the accessory

## DESCRIPTION AND OPERATION (Continued)

switch bezel unit must be replaced. The cigar lighter knob and heating element unit is available for service. This component cannot be repaired and, if faulty or damaged, it must be replaced.

**OPERATION**

The cigar lighter consists of two major components: a knob and heating element unit, and the cigar lighter base or receptacle shell. The receptacle shell is connected to ground, and an insulated contact in the bottom of the shell is connected to battery current. The cigar lighter receives battery voltage from a fuse in the junction block through the cigar lighter relay only when the ignition switch is in the Accessory or On positions. Refer to **Cigar Lighter Relay** in the Description and Operation section of this group for more information on this component.

The cigar lighter 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.

**CIGAR LIGHTER RELAY****DESCRIPTION**

The cigar lighter relay is an electromechanical device that switches fused battery current to the cigar lighter when the ignition switch is turned to the Accessory or On positions. The cigar lighter relay is located in the junction block, on the right cowl side

panel below the instrument panel in the passenger compartment.

The cigar lighter relay is a International Standards Organization (ISO) relay. Relays conforming to the ISO specifications have common physical dimensions, current capacities, terminal patterns, and terminal functions.

The cigar lighter relay cannot be repaired or adjusted and, if faulty or damaged, it must be replaced.

**OPERATION**

The ISO relay consists of an electromagnetic coil, a resistor or diode, and three (two fixed and one movable) electrical contacts. The movable (common feed) relay contact is held against one of the fixed contacts (normally closed) by spring pressure. When the electromagnetic coil is energized, it draws the movable contact away from the normally closed fixed contact, and holds it against the other (normally open) fixed contact.

When the electromagnetic coil is de-energized, spring pressure returns the movable contact to the normally closed position. The resistor or diode is connected in parallel with the electromagnetic coil in the relay, and helps to dissipate voltage spikes that are produced when the coil is de-energized.

**INSTRUMENT PANEL POWER OUTLET****DESCRIPTION**

An accessory power outlet is standard equipment on this model. The power outlet is installed in the instrument panel accessory switch bezel, which is located near the bottom of the instrument panel center bezel area, below the heater and air conditioner controls. The power outlet base is secured by a snap fit within the accessory switch bezel. A plastic protective cap snaps into the power outlet base when the power outlet is not being used, and hangs from the power outlet base mount by an integral bail strap while the power outlet is in use.

The power outlet receptacle unit and the accessory power outlet protective cap are serviced only as a part of the accessory switch bezel unit. If the power outlet base is faulty or damaged, the entire accessory switch bezel unit must be replaced.

**OPERATION**

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 junction block at all times.

While the power outlet is very similar to a cigar lighter base unit, it does not include the two small

## DESCRIPTION AND OPERATION (Continued)

spring-clip retainers inside the bottom of the receptacle shell that are used to secure the cigar lighter heating element to the insulated contact.

## 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 Actuator Test. If an individual hard wired indicator lamp is inoperative, refer to **Instrument Cluster - Hard Wired Lamp Diagnosis** in the Diagnosis and Testing section of this group for the procedures to diagnosis that lamp. For complete circuit diagrams, refer to **Instrument Cluster** in the Contents of 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.**

## 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 fused B(+) fuse in the Power Distribution Center (PDC). 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 fused B(+) fuse in the PDC. If OK, go to Step 4. If not OK, repair the open fused B(+) circuit to the battery 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 A. If OK, refer to **Instrument Cluster - Actuator Test** in the Diagnosis and Testing section of this group. If not OK, repair the open fused B(+) circuit to the fuse in the PDC 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 fused ignition switch output (run/start) circuit to the ignition switch as required.

(7) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Install the instrument cluster. Connect the battery negative cable. Turn the ignition switch to the On position. Set the park 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 in the headlamp switch to the full bright position. The cluster illumination lamps should light. If OK, refer to **Instrument Cluster - Actuator Test** in the Diagnosis and Testing section of this group. If not OK, go to Step 10.

(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 A. If OK, refer to **Instrument Cluster - Actuator Test** in the Diagnosis and Testing section of this group. If not OK, repair the open fused ignition switch output (run/start) circuit to the fuse in the junction block as required.

(10) Disconnect and isolate the battery negative cable. Remove the instrument cluster. Check for continuity between the ground circuit cavity of the instrument cluster wire harness connector A and a good ground. There should be continuity. If OK, refer to **Instrument Cluster - Actuator Test** in the Diagnosis and Testing section of this group. If not OK, repair the open ground circuit to ground as required.

## ACTUATOR TEST

The instrument cluster actuator 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. During the actuator test the instrument cluster circuitry will position each of the gauge needles at various specified calibration points, and turn all of the CCD data bus message-controlled lamps on and off at specified time intervals (Fig. 1) or (Fig. 2).

## DIAGNOSIS AND TESTING (Continued)

Successful completion of the actuator test will confirm that the instrument cluster is operational. However, there may still be a problem with the CCD data bus, the Powertrain Control Module (PCM), the Airbag Control Module (ACM), the Sentry Key Immobilizer Module (SKIM) 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.

If an individual gauge does not respond properly, or does not respond at all during the actuator test, the instrument cluster should be removed. However, check that the gauge mounting screws on the instrument cluster electronic circuit board for proper tightness before considering instrument cluster replacement. If the gauge mounting screws check OK, replace the faulty cluster.

If an individual indicator lamp does not illuminate during the actuator 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 electronic circuit board before considering instrument cluster replacement. If the bulb and bulb holder check OK, replace the faulty instrument cluster.

(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) Release the trip odometer reset button.

(5) Compare the operation of the suspect gauge(s) and/or indicator lamp(s) with the Instrument Cluster Actuator Test chart (Fig. 1) or (Fig. 2).

(6) 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.

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

### HARD WIRED LAMP DIAGNOSIS

Each of the lamps found in this section depends upon a hard wired circuit input to the instrument cluster for proper operation. The following procedures will help to diagnose conditions that may cause an inoperative hard wired lamp circuit condition.

**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.**

### 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 **Antilock Brakes** in the Diagnosis and Testing section of Group 5 - Brakes for diagnosis. If no ABS problem is found, the following procedure will help locate a short or open in the ABS lamp circuit. For complete circuit descriptions, refer to **Instrument Cluster** in the Contents of Group 8W - Wiring Diagrams.

(1) Check the fused ignition switch output (run/start) 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.

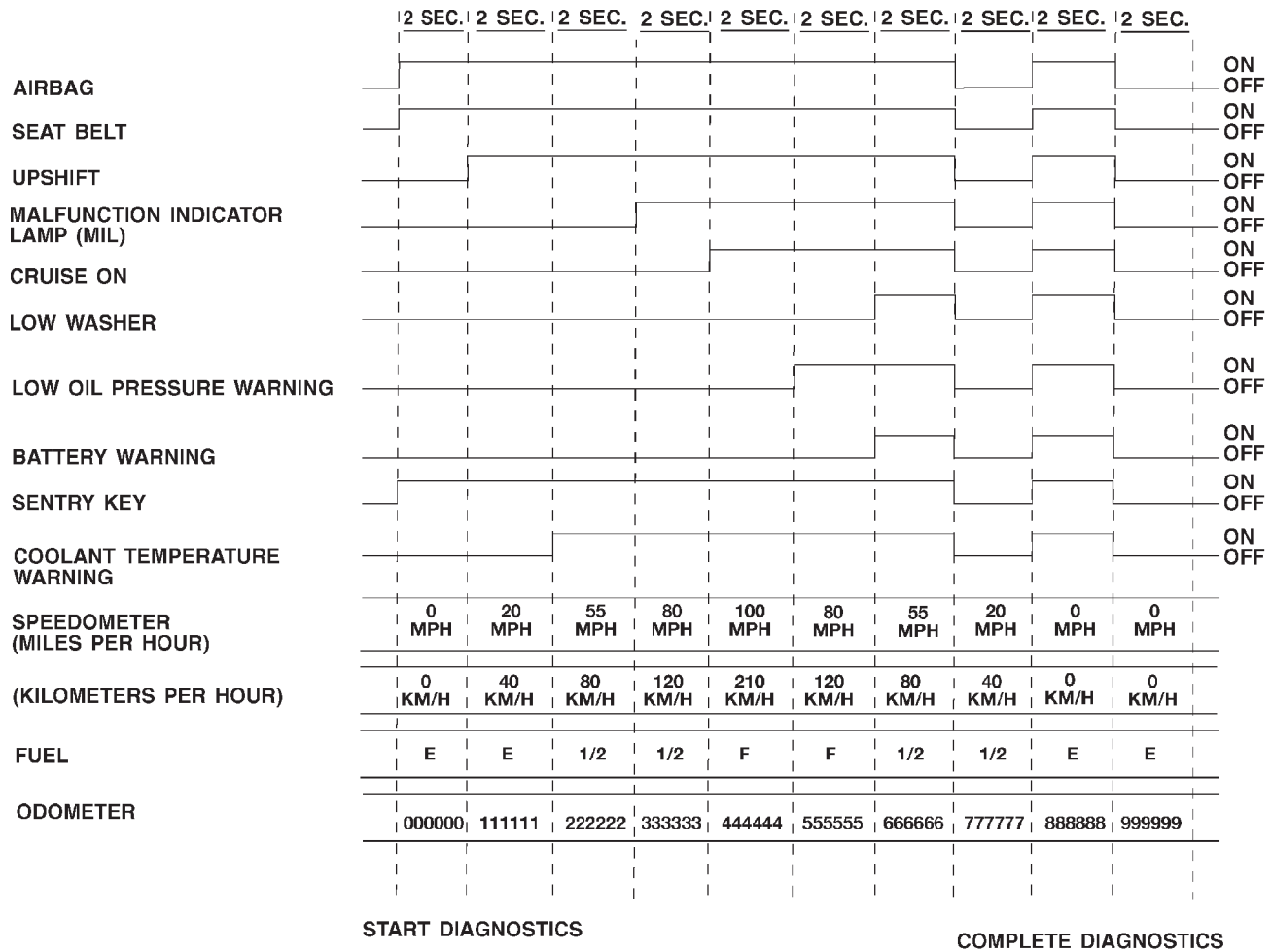
(2) Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (run/start) fuse in the junction block. If OK, go to Step 3. If not OK, repair the open fused ignition switch output (run/start) circuit to the ignition switch as required.

(3) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the instrument cluster. Connect the battery negative cable. Turn the ignition switch to the On position and within five seconds check for continuity between the ABS warning indicator driver circuit cavity of the instrument cluster wire harness connector A and a good ground. There should be continuity for five seconds after ignition On, and then an open circuit. If OK, replace the faulty bulb. If not OK, go to Step 4.

(4) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Disconnect the Controller Anti-lock Brake (CAB) wire harness connector. Check for continuity between the ABS warning indicator driver circuit cavity of the instrument cluster wire harness connector A and a good ground. There should be no continuity. If OK, go to Step 5. If not OK, repair the shorted ABS warning indicator driver circuit as required.

(5) Check for continuity between the ABS warning indicator driver circuit cavities of the instrument cluster wire harness connector A and the CAB wire harness connector. There should be continuity. If OK, refer to **Antilock Brakes** in the Diagnosis and Testing section of Group 5 - Brakes for diagnosis of the CAB. If not OK, repair the open ABS warning indicator driver circuit as required.

DIAGNOSIS AND TESTING (Continued)



80bdb91

**Fig. 1 Low-Line Instrument Cluster Actuator Test**

DIAGNOSIS AND TESTING (Continued)

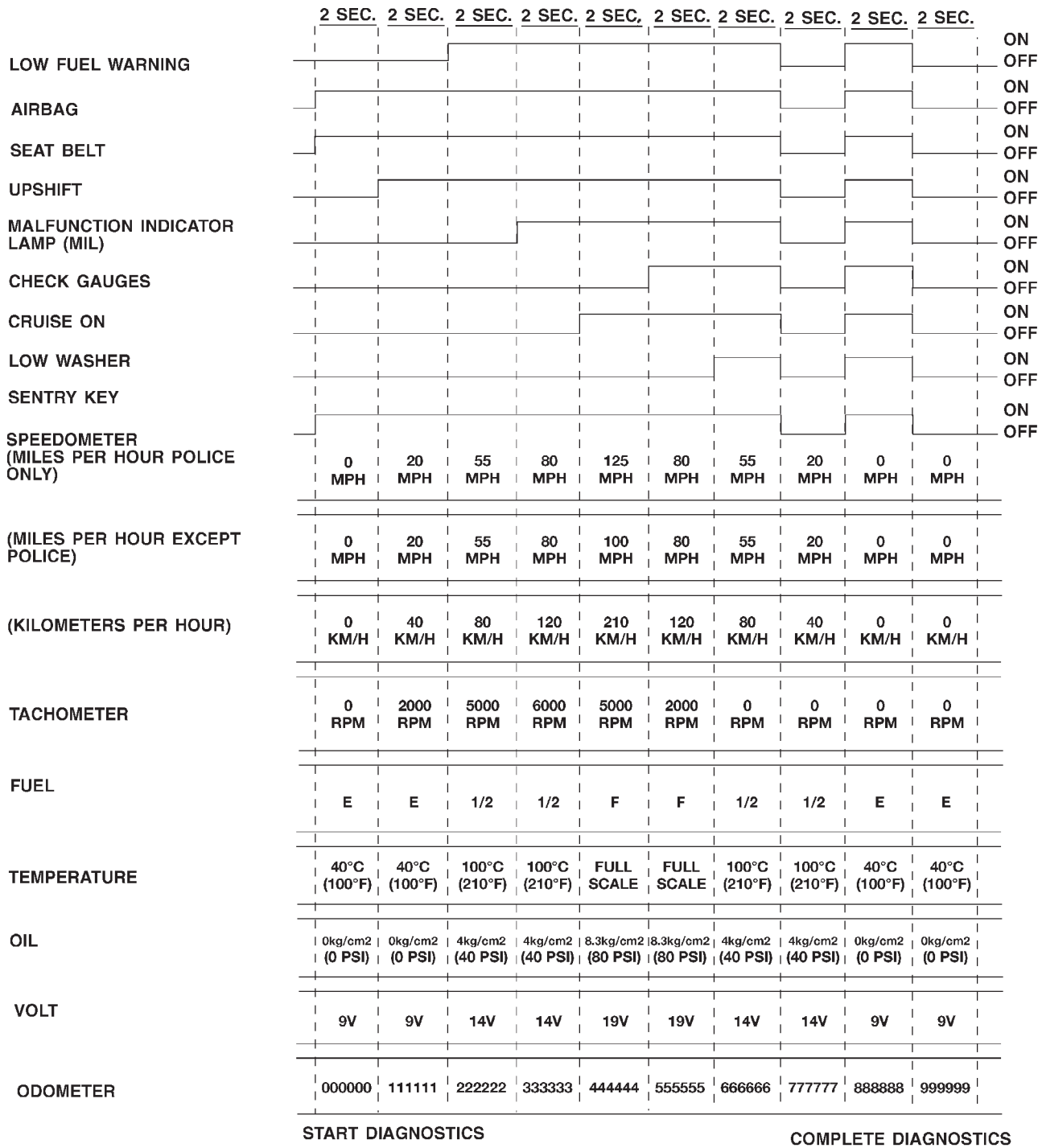


Fig. 2 High-Line Instrument Cluster Actuator Test



## DIAGNOSIS AND TESTING (Continued)

## 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 park brake released, or comes on while driving, refer **Base Brake System** for vehicles not equipped with the four wheel anti-lock brake system, or refer to **Antilock Brakes** for vehicles equipped with the four wheel anti-lock brake system in the Diagnosis and Testing section of Group 5 - Brakes for further diagnosis. If no brake system problem is found, the following procedure will help locate a short or open circuit, or a faulty switch. For complete circuit diagrams, refer to **Instrument Cluster** in the Contents of Group 8W - Wiring Diagrams.

(1) Check the fused ignition switch output (run/start) 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 fused ignition switch output (run/start) fuse in the junction block. If OK, go to Step 3. If not OK, repair the open fused ignition switch output (run/start) circuit to the ignition switch as required.

(3) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Disconnect 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) Disconnect the wire harness connector at the brake warning switch. Check for continuity between the two terminals of the brake warning switch. There should be continuity. If OK, go to Step 5. If not OK, replace the faulty brake warning switch.

(5) Check for continuity between each of the two brake warning switch terminals and a good ground. In each case, there should be no continuity. If OK, go to Step 6. If not OK, replace the faulty brake warning switch.

(6) With both the park brake switch and the brake warning switch wire harness connectors still disconnected, check for continuity between the red brake warning indicator driver circuit cavity of the park brake switch wire harness connector and a good ground. There should be no continuity. If OK, go to Step 7. If not OK, repair the shorted red brake warning indicator driver circuit as required.

(7) With the ignition switch held in the Start position, check for continuity between the red brake warning indicator driver circuit cavity of the park brake switch wire harness connector and a good

ground. There should be continuity. If OK, go to Step 8. If not OK, repair the open red brake warning indicator driver circuit to the ignition switch as required.

(8) Turn the ignition switch to the Off position. Remove the instrument cluster. Check for continuity between the red brake warning indicator driver circuit cavity of the instrument cluster wire harness connector A and a good ground. There should be no continuity. If OK, go to Step 9. If not OK, repair the shorted red brake warning indicator driver circuit as required.

(9) Check for continuity between the red brake warning indicator driver circuit cavities of the instrument cluster wire harness connector A and the brake warning switch wire harness connector. There should be continuity. If OK, replace the faulty bulb. If not OK, repair the open red brake warning indicator driver circuit as required.

## FOUR-WHEEL DRIVE INDICATOR LAMP - FULL TIME

The diagnosis found here addresses an inoperative four-wheel drive indicator lamp condition. If the problem being diagnosed is related to lamp accuracy, be certain to confirm that the problem is with the lamp or switch and not with a damaged or inoperative transfer case or transfer case linkage. Refer to **NV242 Diagnosis** in the Diagnosis and Testing section of Group 21 - Transmission for more information. If no transfer case problem is found, the following procedure will help locate a short or open in the indicator lamp circuit. For complete circuit diagrams, refer to **Instrument Cluster** in the Contents of Group 8W - Wiring Diagrams.

(1) Check the fused ignition switch output (run/start) 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 fused ignition switch output (run/start) fuse in the junction block. If OK, go to Step 3. If not OK, repair the open fused ignition switch output (run/start) circuit to the ignition switch as required.

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

(4) Connect the battery negative cable. Turn the ignition switch to the On position. Install a jumper wire between the full time four wheel drive indicator lamp driver circuit cavity of the transfer case switch wire harness connector and a good ground. The full

## DIAGNOSIS AND TESTING (Continued)

time four-wheel drive indicator lamp should light. If OK, replace the faulty transfer case switch. If not OK, go to Step 5.

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

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

**FOUR-WHEEL DRIVE INDICATOR LAMP - PART TIME**

The diagnosis found here addresses an inoperative four-wheel drive indicator lamp condition. If the problem being diagnosed is related to lamp accuracy, be certain to confirm that the problem is with the lamp or switch and not with a damaged or inoperative transfer case or transfer case linkage. Refer to **NV231 Diagnosis** or **NV242 Diagnosis** in the Diagnosis and Testing section of Group 21 - Transmission for more information. If no transfer case problem is found, the following procedure will help locate a short or open in the indicator lamp circuit. For complete circuit diagrams, refer to **Instrument Cluster** in the Contents of Group 8W - Wiring Diagrams.

(1) Check the fused ignition switch output (run/start) 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 fused ignition switch output (run/start) fuse in the junction block. If OK, go to Step 3. If not OK, repair the open fused ignition switch output (run/start) circuit to the ignition switch as required.

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

(4) Connect the battery negative cable. Turn the ignition switch to the On position. Install a jumper wire between the part time four wheel drive indicator

lamp driver circuit cavity of the transfer case switch wire harness connector and a good ground. The part time four-wheel drive indicator lamp should light. If OK, replace the faulty transfer case switch. If not OK, go to Step 5.

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

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

**HEADLAMP HIGH BEAM INDICATOR LAMP**

The diagnosis found here addresses an inoperative headlamp high beam indicator lamp condition. If the problem being diagnosed is related to inoperative headlamp high beams, refer to **Headlamp Diagnosis** in the Diagnosis and Testing section of 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 complete circuit diagrams, refer to **Instrument Cluster** in the Contents of Group 8W - Wiring Diagrams.

(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 A. If OK, replace the faulty bulb. If not OK, repair the open high beam indicator driver circuit to the headlamp dimmer (multi-function) switch as required.

**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

## DIAGNOSIS AND TESTING (Continued)

proceed with lamp diagnosis. Refer to **Washer System** in the Diagnosis and Testing section of Group 8K - Wiper and Washer Systems for more information. For complete circuit diagrams, refer to **Instrument Cluster** in the Contents of Group 8W - Wiring Diagrams.

(1) Check the fused ignition switch output (run/start) 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 fused ignition switch output (run/start) fuse in the junction block. If OK, go to Step 3. If not OK, repair the open fused ignition switch output (run/start) circuit to the ignition switch as required.

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

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

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

(6) Check for continuity between the low washer fluid level sense circuit cavities of the instrument cluster wire harness 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 low washer fluid level sense circuit as required.

## TURN SIGNAL INDICATOR LAMP

The diagnosis found here addresses an inoperative turn signal indicator lamp condition. For any other turn signal problem, refer to **Turn Signal and Hazard Warning Systems** in the Diagnosis and Testing section of Group 8J - Turn Signal and Hazard Warn-

ing Systems for further 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 complete circuit diagrams, refer to **Instrument Cluster** in the Contents of Group 8W - Wiring Diagrams.

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

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

## INSTRUMENT PANEL CIGAR LIGHTER

For complete circuit diagrams, refer to **Horn/Cigar Lighter** in the Contents of 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) Remove the cigar lighter knob and element from the cigar lighter receptacle shell. Check for continuity between the inside circumference of the cigar lighter receptacle shell and a good ground. There should be continuity. If OK, go to Step 2. If not OK, go to Step 3.

(2) 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 shell. If OK, replace the faulty cigar lighter knob and element. If not OK, go to Step 3.

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

(4) Connect the battery negative cable. Turn the ignition switch to the Accessory or On positions. Check for battery voltage at the cigar lighter relay

## DIAGNOSIS AND TESTING (Continued)

output circuit cavity of the cigar lighter wire harness connector. If OK, replace the faulty cigar lighter receptacle (instrument panel accessory switch bezel unit). If not OK, refer to **Cigar Lighter Relay** in the Diagnosis and Testing section of this group for further diagnosis.

**CIGAR LIGHTER RELAY**

The cigar lighter relay (Fig. 3) is located in the junction block, on the right cowl side inner panel below the instrument panel in the passenger compartment. For complete circuit diagrams, refer to **Horn/Cigar Lighter** in the Contents of 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) Remove the cigar lighter relay from the junction block. Refer to **Cigar Lighter Relay** in the Removal and Installation section of this group for the procedures.

(2) A relay in the de-energized position should have continuity between terminals 87A and 30, and no continuity between terminals 87 and 30. If OK, go to Step 3. If not OK, replace the faulty relay.

(3) Resistance between terminals 85 and 86 (electromagnet) should be  $75 \pm 5$  ohms. If OK, go to Step 4. If not OK, replace the faulty relay.

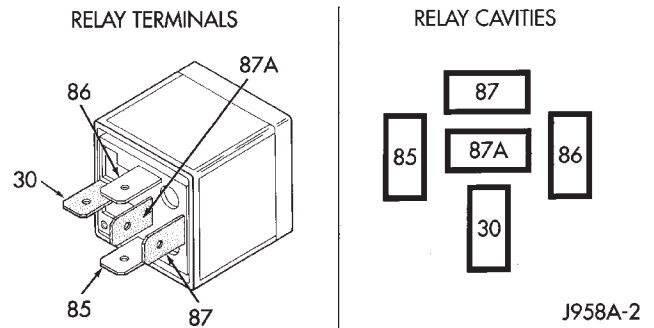
(4) Connect a battery to terminals 85 and 86. There should now be continuity between terminals 30 and 87, and no continuity between terminals 87A and 30. If OK, perform the Relay Circuit Test that follows. If not OK, replace the faulty relay.

**RELAY CIRCUIT TEST**

(1) The relay common feed terminal cavity (30) of the junction block is connected to battery voltage and should be hot at all times. Check for battery voltage at the fused B(+) circuit cavity of the accessory relay wire harness connector. If OK, go to Step 2. If not OK, repair the fused B(+) circuit to the fuse in the junction block as required.

(2) The relay normally closed terminal (87A) is connected to terminal 30 in the de-energized position, but is not used for this application. Go to Step 3.

(3) The relay normally open terminal (87) is connected to the common feed terminal (30) in the energized position. This terminal supplies battery voltage to the cigar lighter when the relay is energized by



TERMINAL LEGEND	
NUMBER	IDENTIFICATION
30	COMMON FEED
85	COIL GROUND
86	COIL BATTERY
87	NORMALLY OPEN
87A	NORMALLY CLOSED

**Fig. 3 Cigar Lighter Relay**

the ignition switch. There should be continuity between the junction block cavity for relay terminal 87 and the cigar lighter relay output circuit cavity of the cigar lighter wire harness connector at all times. If OK, go to Step 4. If not OK, repair the open cigar lighter relay output circuit to the cigar lighter wire harness connector as required.

(4) The coil battery terminal (86) is connected to the electromagnet in the relay. It receives battery feed to energize the cigar lighter relay when the ignition switch is in the Accessory or On positions. Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (acc/run) circuit cavity for relay terminal 86 in the junction block. If OK, go to Step 5. If not OK, repair the open fused ignition switch output (acc/run) circuit to the ignition switch as required.

(5) The coil ground terminal (85) is connected to the electromagnet in the relay. The junction block cavity for this terminal should have continuity to ground at all times. If not OK, repair the open ground circuit to ground as required.

**INSTRUMENT PANEL POWER OUTLET**

For complete circuit diagrams, refer to **Horn/Cigar Lighter** in the Contents of 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 fused B(+) 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) Check for battery voltage at the fused B(+) fuse in the junction block. If OK, go to Step 3. If not OK, repair the open fused B(+) circuit to the Power Distribution Center (PDC) as required.

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

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

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

## REMOVAL AND INSTALLATION

## STEERING COLUMN OPENING COVER

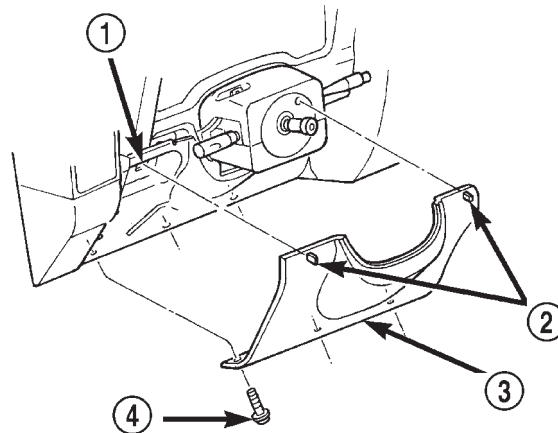
**WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL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

## REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) If the vehicle is so equipped, move the tilt steering column to the fully raised position.

(3) Remove the three screws that secure the lower edge of the steering column opening cover to the lower instrument panel reinforcement (Fig. 4).



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**Fig. 4 Steering Column Opening Cover Remove/Install**

- 1 - INSTRUMENT PANEL
- 2 - SNAP CLIPS
- 3 - STEERING COLUMN OPENING COVER
- 4 - SCREW

(4) Using a trim stick or another suitable wide flat-bladed tool, gently pry the upper edge of the steering column opening cover just below the cluster bezel on each side of the steering column away from the instrument panel far enough to disengage the two snap clip retainers from the receptacles in the instrument panel.

(5) Remove the steering column opening cover from the instrument panel.

## INSTALLATION

(1) Position the steering column opening cover to the instrument panel.

(2) Align the snap clip retainers on the steering column opening cover with the receptacles in the instrument panel.

(3) Press firmly on the steering column opening cover over the snap clip locations until each of the snap clips is fully engaged in its receptacle.

(4) Install and tighten the three screws that secure the lower edge of the steering column opening cover to the lower instrument panel reinforcement. Tighten the screws to 2.2 N·m (20 in. lbs.).

(5) Reconnect the battery negative cable.

## REMOVAL AND INSTALLATION (Continued)

## KNEE BLOCKER

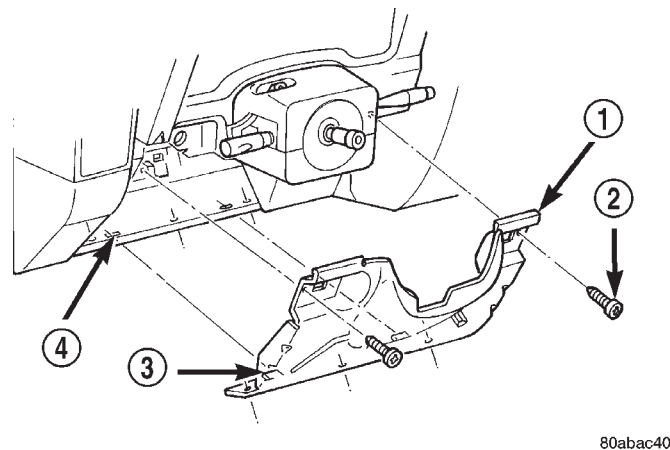
**WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL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

## REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Remove the steering column opening cover from the instrument panel. Refer to **Steering Column Opening Cover** in the Removal and Installation section of this group for the procedures.

(3) Remove the two screws that secure the knee blocker to the instrument panel (Fig. 5).



**Fig. 5 Knee Blocker Remove/Install**

- 1 - KNEE BLOCKER
- 2 - SCREW
- 3 - TAB
- 4 - SLOT

(4) Pull the upper edge of the knee blocker away from the instrument panel far enough to disengage the two lower mounting tabs from the mounting slots in the lower instrument panel reinforcement.

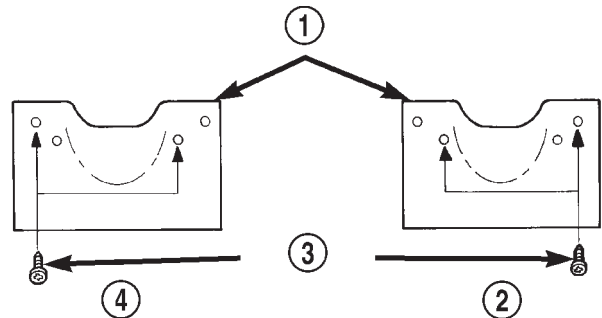
(5) Remove the knee blocker from the instrument panel.

## INSTALLATION

(1) Position the knee blocker to the instrument panel.

(2) Install and tighten the four screws that secure the knee blocker to the instrument panel. Tighten the screws to 2.2 N·m (20 in. lbs.). Be certain that

the mounting screws are located in the screw hole on each side of the steering column that is closest to the driver side front door of the vehicle (Fig. 6).



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**Fig. 6 Knee Blocker Mounting Screw Location**

- 1 - KNEE BLOCKER
- 2 - RIGHT-HAND DRIVE
- 3 - SCREWS
- 4 - LEFT-HAND DRIVE

(3) Install the steering column opening cover onto the instrument panel. Refer to **Steering Column Opening Cover** in the Removal and Installation section of this group for the procedures.

(4) Reconnect the battery negative cable.

## INSTRUMENT PANEL CENTER 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.**

## REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Using a trim stick or another suitable wide flat-bladed tool, gently pry the instrument panel center bezel away from the instrument panel far enough to disengage the six snap clip retainers that secure it from the receptacles in the instrument panel (Fig. 7).

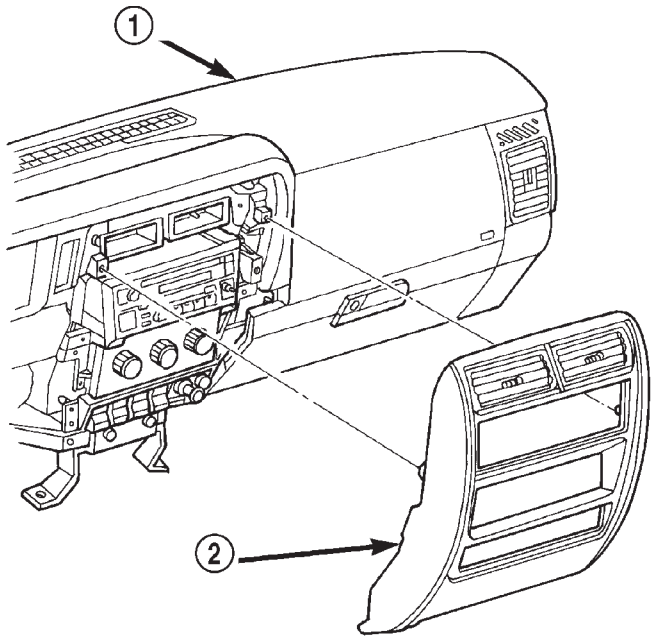
(3) Remove the center bezel from the instrument panel.

## INSTALLATION

(1) Position the center bezel to the instrument panel.

(2) Align the snap clips on the center bezel with the receptacles in the instrument panel.

## REMOVAL AND INSTALLATION (Continued)



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**Fig. 7 Instrument Panel Center Bezel Remove/Install**

- 1 - INSTRUMENT PANEL  
2 - CENTER BEZEL

(3) Press firmly on the center bezel over each of the snap clip locations until each of the six snap clips is fully engaged in its receptacle on the instrument panel.

(4) Reconnect the battery negative cable.

## INSTRUMENT PANEL ACCESSORY SWITCH BEZEL

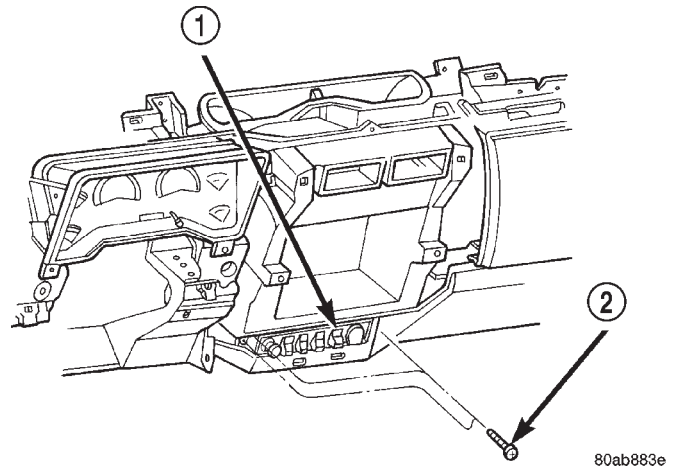
**WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL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

### REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Remove the center bezel from the instrument panel. Refer to **Instrument Panel Center Bezel** in the Removal and Installation section of this group for the procedures.

(3) Remove the three screws that secure the accessory switch bezel to the instrument panel (Fig. 8).



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**Fig. 8 Instrument Panel Accessory Switch Bezel Remove/Install**

- 1 - ACCESSORY SWITCH BEZEL  
2 - SCREW

(4) Pull the accessory switch bezel away from the instrument panel far enough to access the instrument panel wire harness connectors.

(5) Disconnect the instrument panel wire harness connectors from the connector receptacles, the accessory switches, the cigar lighter and the accessory power outlet on the back of the accessory switch bezel.

(6) Remove the accessory switch bezel from the instrument panel.

### INSTALLATION

(1) Position the accessory switch bezel to the instrument panel.

(2) Reconnect the instrument panel wire harness connectors to the connector receptacles, the accessory switches, the cigar lighter and the accessory power outlet on the back of the accessory switch bezel.

(3) Position the accessory switch bezel onto the instrument panel.

(4) Install and tighten the three screws that secure the accessory switch bezel to the instrument panel. Tighten the screws to 2.2 N·m (20 in. lbs.).

(5) Install the center bezel onto the instrument panel. Refer to **Instrument Panel Center Bezel** in the Removal and Installation section of this group for the procedures.

(6) Reconnect the battery negative cable.

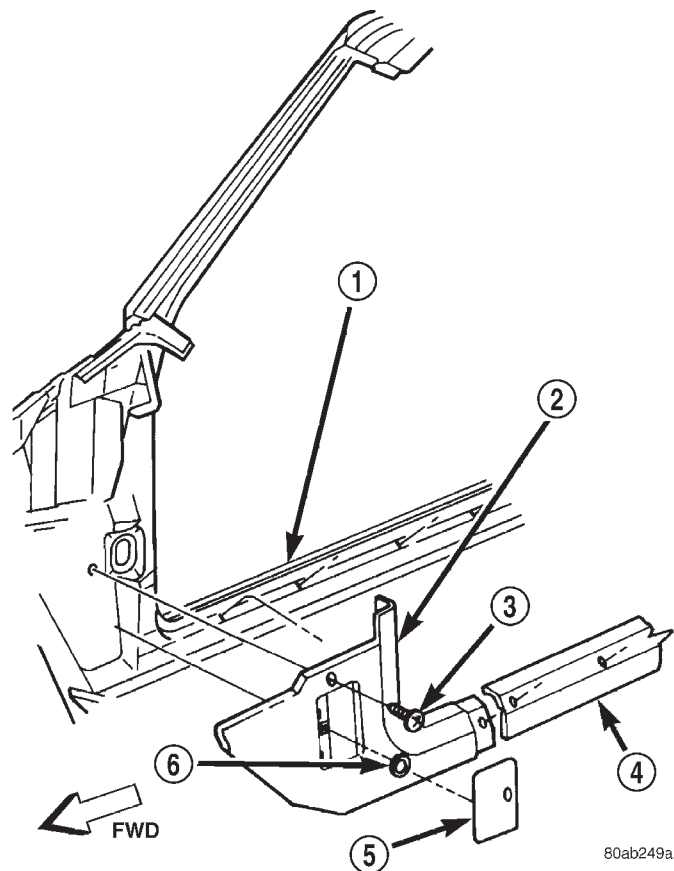
## REMOVAL AND INSTALLATION (Continued)

## CIGAR LIGHTER RELAY

**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.**

## REMOVAL

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the fuse access panel by unsnapping it from the right cowl side trim panel.
- (3) Remove the stamped nut that secures the right cowl side trim to the junction block stud (Fig. 9).



**Fig. 9 Right Cowl Side Trim Remove/Install**

- 1 - RIGHT FRONT DOOR SILL
- 2 - COWL SIDE TRIM PANEL
- 3 - SCREW
- 4 - SILL TRIM
- 5 - FUSE ACCESS PANEL
- 6 - PUSH-NUT

(4) Remove the screw located above the fuse access opening that secures the right cowl side trim to the right cowl side inner panel.

(5) Remove the screw that secures the right door sill trim and the right cowl side trim to the right door opening sill.

(6) Remove the right cowl side trim panel from the vehicle.

(7) Refer to **Junction Block** in the Contents of Group 8W - Wiring Diagrams for cigar lighter relay identification and location.

(8) Remove the cigar lighter relay from the receptacle in the junction block.

## INSTALLATION

(1) Refer to **Junction Block** in the Contents of Group 8W - Wiring Diagrams for the proper cigar lighter relay location.

(2) Position the cigar lighter relay to the receptacle in the junction block.

(3) Align the terminals of the cigar lighter relay with the cavities in the junction block receptacle.

(4) Push on the cigar lighter relay case firmly and evenly until all of the relay terminals are fully seated within the cavities of the junction block receptacle.

(5) Position the right cowl side trim to the right door sill trim.

(6) Install and tighten the screw that secures the right cowl side trim to the right door sill trim. Tighten the screw to 2.2 N·m (20 in. lbs.).

(7) Position the right cowl side trim to the right cowl side inner panel.

(8) Install and tighten the screw that secures the right cowl side trim to the right cowl side inner panel. Tighten the screw to 2.2 N·m (20 in. lbs.).

(9) Install the stamped nut that secures the right cowl side trim to the junction block stud.

(10) Install the fuse access panel by snapping it onto the right cowl side trim panel.

(11) Reconnect the battery negative cable.

## CLUSTER BEZEL

**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.**

## REMOVAL

(1) Disconnect and isolate the battery negative cable.



## REMOVAL AND INSTALLATION (Continued)

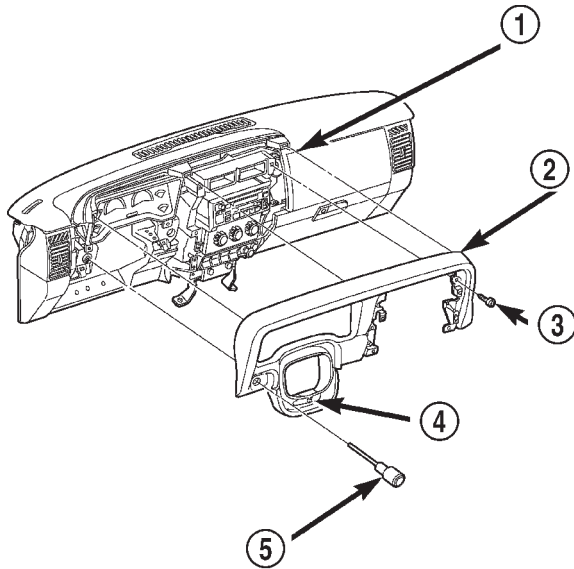
(2) Remove the knee blocker from the instrument panel. Refer to **Knee Blocker** in the Removal and Installation section of this group for the procedures.

(3) Remove the center bezel from the instrument panel. Refer to **Instrument Panel Center Bezel** in the Removal and Installation section of this group for the procedures.

(4) Remove the four screws exposed by the center bezel removal that secure the cluster bezel to the instrument panel.

(5) Remove the headlamp switch knob and shaft from the headlamp switch. Refer to **Headlamp Switch** in the Removal and Installation section of this group for the procedures.

(6) Disengage the two ends of the steering column sight shield from each other at the connector located below the lower steering column shroud (Fig. 10).



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**Fig. 10 Cluster Bezel Remove/Install**

- 1 - INSTRUMENT PANEL
- 2 - CLUSTER BEZEL
- 3 - SCREW
- 4 - STEERING COLUMN SIGHT SHIELD CONNECTOR
- 5 - HEADLAMP SWITCH KNOB AND SHAFT

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

(8) Using a trim stick or another suitable wide flat-bladed tool, gently pry around the perimeter of the cluster bezel to disengage the five snap clips from their receptacles in the instrument panel.

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

## INSTALLATION

(1) Position the cluster bezel to the instrument panel.

(2) Align the snap clips on the cluster bezel with the receptacles in the instrument panel.

(3) Press firmly on the cluster bezel over each of the snap clip locations until each of the snap clips is fully engaged in its receptacle.

(4) Engage the two ends of the steering column sight shield with each other at the connector located below the lower steering column shroud.

(5) Install the headlamp switch knob and shaft onto the headlamp switch. Refer to **Headlamp Switch** in the Removal and Installation section of this group for the procedures.

(6) Install and tighten the four screws that secure the cluster bezel to the instrument panel beneath the instrument panel center bezel. Tighten the screws to 2.2 N·m (20 in. lbs.).

(7) Install the center bezel onto the instrument panel. Refer to **Instrument Panel Center Bezel** in the Removal and Installation section of this group for the procedures.

(8) Install the knee blocker onto the instrument panel. Refer to **Knee Blocker** in the Removal and Installation section of this group for the procedures. Be certain that the two ends of the steering column sight shield connector are engaged with each other before installing the knee blocker.

(9) Reconnect the battery negative cable.

## HEADLAMP SWITCH

**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.**

**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.**

## REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Remove the knee blocker from the instrument panel. Refer to **Knee Blocker** in the Removal and Installation section of this group for the procedures.

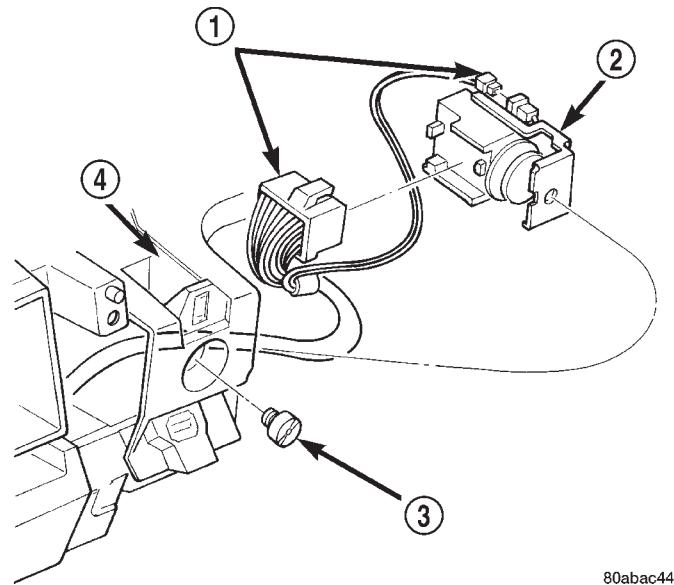
(3) Pull the headlamp switch control knob out to the On position stop.

## REMOVAL AND INSTALLATION (Continued)

(4) Reach up under the instrument panel through the outboard side of the steering column opening to access and depress the headlamp switch control knob and shaft release button on the inboard side of the switch body.

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

(6) Remove the spanner nut that secures the headlamp switch to the instrument panel (Fig. 11).



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**Fig. 11 Headlamp Switch Remove/Install**

- 1 - WIRE HARNESS CONNECTORS
- 2 - HEADLAMP SWITCH
- 3 - NUT
- 4 - INSTRUMENT PANEL

(7) Pull the headlamp switch into the steering column opening area of the instrument panel far enough to access the instrument panel wire harness connectors.

(8) Disconnect the two instrument panel wire harness connectors from the headlamp switch.

(9) Remove the headlamp switch from the instrument panel.

## INSTALLATION

(1) Position the headlamp switch to the instrument panel steering column opening.

(2) Reconnect the two instrument panel wire harness connectors to the headlamp switch.

(3) Position the headlamp switch behind its mounting hole on the instrument panel.

(4) Install and tighten the spanner nut that secures the headlamp switch to the instrument panel. Tighten the nut to 2.7 N-m (24 in. lbs.).

(5) Insert the shaft of the headlamp switch control knob and shaft unit through the opening in the spanner nut and into the headlamp switch.

(6) Push the headlamp switch control knob and shaft unit all the way into the headlamp switch body.

(7) Install the knee blocker onto the instrument panel. Refer to **Knee Blocker** in the Removal and Installation section of this group for the procedures.

(8) Reconnect the battery negative cable.

## INSTRUMENT CLUSTER

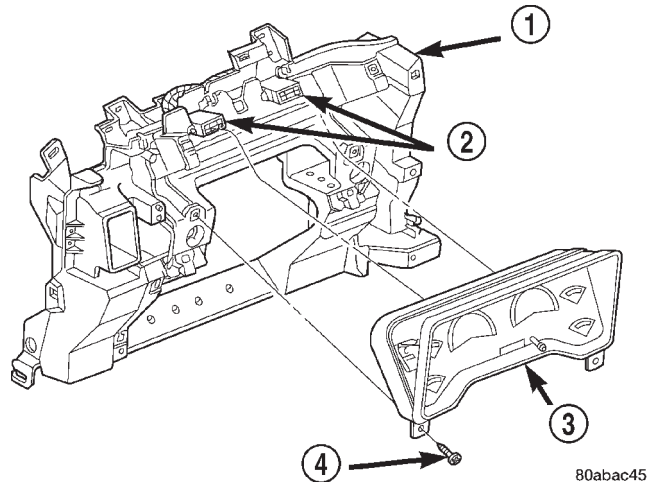
**WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL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

## REMOVAL

(1) Disconnect and isolate the battery negative cable.

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

(3) Remove the four screws that secure the instrument cluster to the instrument panel (Fig. 12).



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**Fig. 12 Instrument Cluster Remove/Install**

- 1 - INSTRUMENT PANEL
- 2 - SELF-DOCKING WIRE HARNESS CONNECTORS
- 3 - INSTRUMENT CLUSTER
- 4 - SCREW

(4) Pull the instrument cluster rearward far enough to disengage the two self-docking instrument panel wire harness connectors from the connector

## REMOVAL AND INSTALLATION (Continued)

receptacles on the back of the cluster housing. **Do not pull on the instrument cluster by the lens or mask sections, or the cluster components may become separated.**

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

## INSTALLATION

(1) Position the instrument cluster to the instrument panel.

(2) Align the instrument cluster with the cluster opening in the instrument panel and push the cluster firmly and evenly into place. The instrument panel has two self-docking wire harness connectors that will be automatically aligned with, and connected to the cluster connector receptacles when the cluster is installed in the instrument panel.

(3) Install and tighten the four screws that secure the instrument cluster to the instrument panel. Tighten the screws to 2.2 N-m (20 in. lbs.).

(4) Install the cluster bezel onto the instrument panel. Refer to **Cluster Bezel** in the Removal and Installation section of this group for the procedures.

(5) Reconnect the battery negative cable.

## INSTRUMENT CLUSTER COMPONENTS

Some of the components for the instrument cluster used in this vehicle are serviced individually. The serviced components include: the incandescent instrument cluster indicator lamp and illumination lamp bulbs (including the integral bulb holders), the odometer reset knob boot, the cluster lens, the cluster hood and mask unit, and the instrument cluster housing rear cover. Following are the service procedures for the instrument cluster components.

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## REMOVAL

## CLUSTER BULB

This procedure applies to each of the incandescent cluster illumination lamp or indicator lamp bulb and bulb holder units. However, the illumination lamps and the indicator lamps use different bulb and bulb holder unit sizes. They must never be interchanged. Be certain that any bulb and bulb holder unit removed from the cluster electronic circuit board is

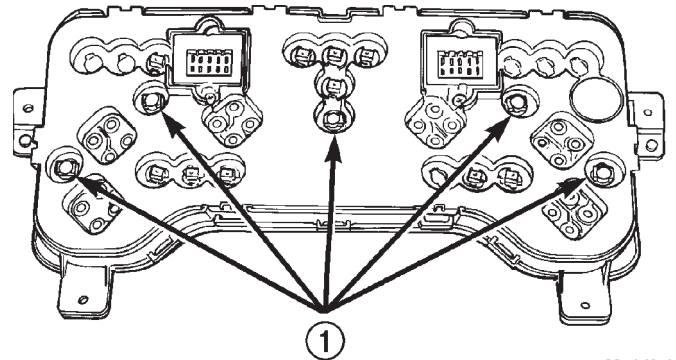
reinstalled in the correct position. Always use the correct bulb size and type for replacement. An incorrect bulb size or type may overheat and cause damage to the instrument cluster, the electronic circuit board and/or the gauges.

(1) Disconnect and isolate the battery negative cable.

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

(3) Turn the bulb holder counterclockwise about sixty degrees on the cluster electronic circuit board.

(4) Pull the bulb and bulb holder unit straight back to remove it from the bulb mounting hole in the cluster electronic circuit board (Fig. 13).



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**Fig. 13 Cluster Bulb Locations**

1 - CLUSTER ILLUMINATION BULBS

## CLUSTER LENS

(1) Disconnect and isolate the battery negative cable.

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

(3) Work around the perimeter of the cluster housing to disengage each of the latches that secure the cluster lens to the cluster housing (Fig. 14).

(4) Gently pull the cluster lens away from the cluster housing.

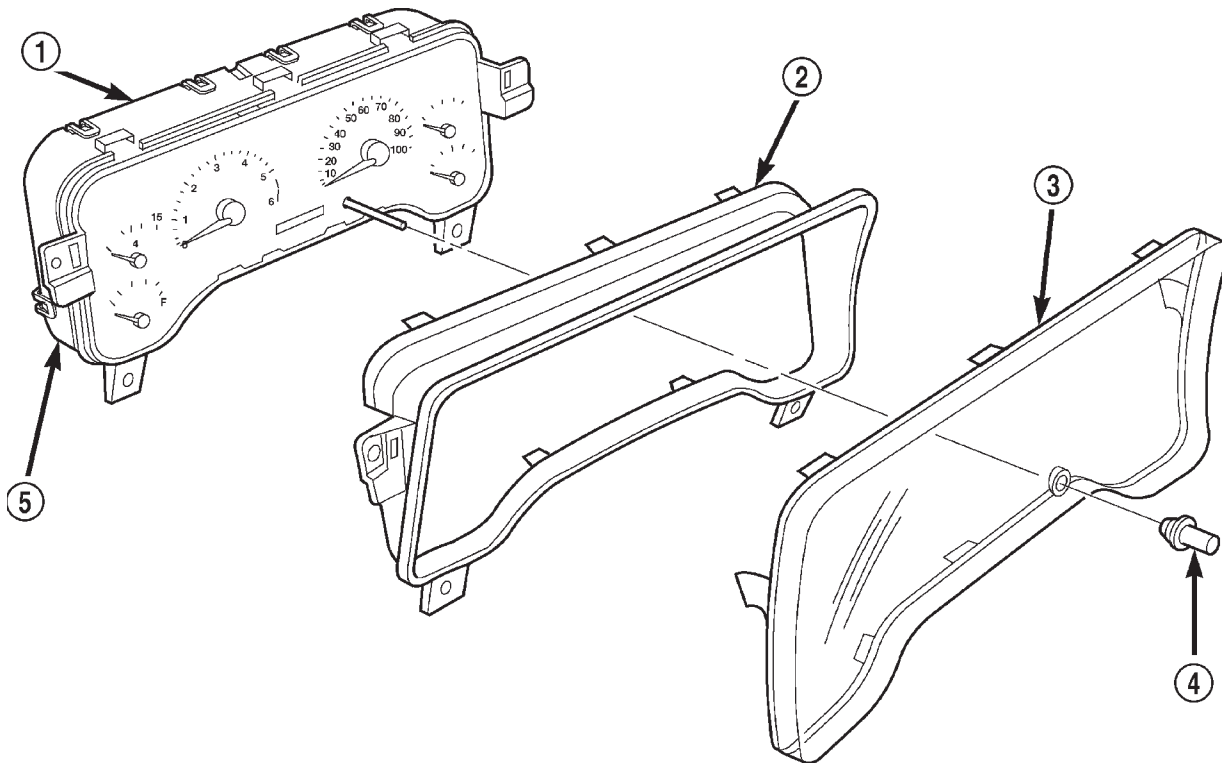
## ODOMETER RESET KNOB BOOT

(1) Disconnect and isolate the battery negative cable.

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

(3) Remove the cluster lens from the cluster housing. Refer to **Instrument Cluster Components - Cluster Lens** in the Removal and Installation section of this group for the procedures.

## REMOVAL AND INSTALLATION (Continued)



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**Fig. 14 Instrument Cluster Components**

- 1 - CLUSTER REAR COVER
- 2 - CLUSTER HOOD AND MASK
- 3 - CLUSTER LENS

- 4 - ODOMETER RESET KNOB BOOT
- 5 - INSTRUMENT CLUSTER HOUSING

(4) Remove the odometer reset knob boot by pulling it out of the cluster lens.

**CLUSTER HOOD AND MASK**

(1) Disconnect and isolate the battery negative cable.

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

(3) Remove the cluster lens from the cluster housing. Refer to **Instrument Cluster Components - Cluster Lens** in the Removal and Installation section of this group for the procedures.

(4) Work around the perimeter of the cluster housing to disengage each of the latches that secure the cluster hood and mask unit to the cluster housing (Fig. 14).

(5) Gently pull the cluster hood and mask unit away from the cluster housing.

**CLUSTER HOUSING REAR COVER**

(1) Disconnect and isolate the battery negative cable.

(2) Remove the instrument cluster from the instrument panel. Refer to **Instrument Cluster** in the

Removal and Installation section of this group for the procedures.

(3) Work around the perimeter of the cluster housing to disengage each of the latches that secure the rear cover to the cluster housing (Fig. 14).

(4) Gently pull the rear cover away from the back of the cluster housing.

**INSTALLATION****CLUSTER BULB**

This procedure applies to each of the incandescent cluster illumination lamp or indicator lamp bulb and bulb holder units. However, the illumination lamps and the indicator lamps use different bulb and bulb holder unit sizes. They must never be interchanged. Be certain that any bulb and bulb holder unit removed from the cluster electronic circuit board is reinstalled in the correct position.

**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, the electronic circuit board and/or the gauges.

## REMOVAL AND INSTALLATION (Continued)

(1) Insert the bulb and bulb holder unit straight into the correct bulb mounting hole in the cluster electronic circuit board.

(2) With the bulb holder fully seated against the cluster electronic circuit board, turn the bulb holder clockwise about sixty degrees to lock it into place.

(3) Install the instrument cluster onto the instrument panel. Refer to **Instrument Cluster** in the Removal and Installation section of this group for the procedures.

(4) Reconnect the battery negative cable.

## CLUSTER LENS

(1) Align the cluster lens with the cluster hood and mask unit.

(2) Press firmly and evenly on the cluster lens to install it onto the cluster housing.

(3) Work around the perimeter of the cluster housing to be certain that each of the latches that secure the cluster lens to the cluster housing is fully engaged.

(4) Install the instrument cluster onto the instrument panel. Refer to **Instrument Cluster** in the Removal and Installation section of this group for the procedures.

(5) Reconnect the battery negative cable.

## ODOMETER RESET KNOB BOOT

(1) Position the odometer reset knob to the mounting hole from the back of the cluster lens.

(2) Pull the odometer reset knob into the mounting hole from the face of the cluster lens.

(3) Install the cluster lens onto the cluster housing. Refer to **Instrument Cluster Components - Cluster Lens** in the Removal and Installation section of this group for the procedures.

(4) Install the instrument cluster onto the instrument panel. Refer to **Instrument Cluster** in the Removal and Installation section of this group for the procedures.

(5) Reconnect the battery negative cable.

## CLUSTER HOOD AND MASK

(1) Align the hood and mask unit with the cluster housing.

(2) Press firmly and evenly on the hood and mask unit to install it onto the cluster housing.

(3) Work around the perimeter of the cluster housing to be certain that each of the latches that secure the hood and mask unit to the cluster housing is fully engaged.

(4) Install the cluster lens onto the cluster housing. Refer to **Instrument Cluster Components - Cluster Lens** in the Removal and Installation section of this group for the procedures.

(5) Install the instrument cluster onto the instrument panel. Refer to **Instrument Cluster** in the

Removal and Installation section of this group for the procedures.

(6) Reconnect the battery negative cable.

## CLUSTER HOUSING REAR COVER

(1) Position the rear cover to the back of the cluster housing.

(2) Press firmly and evenly on the rear cover until each of the latches that secure the rear cover to the cluster housing is fully engaged.

(3) Install the instrument cluster onto the instrument panel. Refer to **Instrument Cluster** in the Removal and Installation section of this group for the procedures.

(4) Reconnect the battery negative cable.

## INSTRUMENT PANEL TOP COVER

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

## REMOVAL

(1) Disconnect and isolate the battery negative cable.

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

(3) Using a trim stick or another suitable wide flat-bladed tool, gently pry the rear edge (farthest from the windshield) of the instrument panel top cover up and away from the instrument panel far enough to disengage the seven snap clip retainers from their receptacles in the instrument panel (Fig. 15).

(4) Pull the top cover sharply rearwards (away from the windshield) to disengage the four snap clip retainers that secure the forward edge of the top cover from their receptacles in the instrument panel near the base of the windshield.

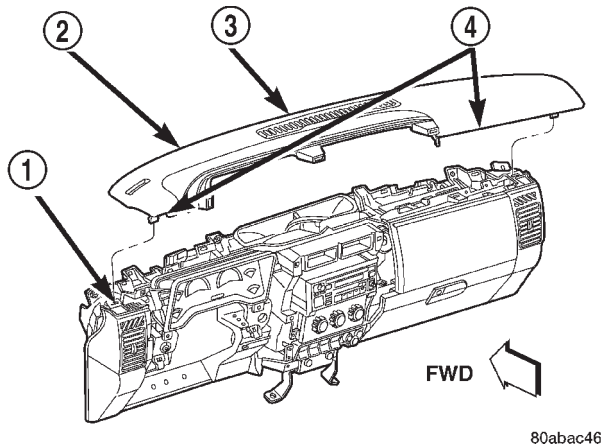
(5) Remove the top cover from the instrument panel.

## INSTALLATION

(1) Position the top cover onto the instrument panel.

(2) Align the four snap clips on the forward edge (nearest the windshield) of the top cover with the snap clip receptacles in the instrument panel.

## REMOVAL AND INSTALLATION (Continued)



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**Fig. 15 Instrument Panel Top Cover Remove/Install**

- 1 - INSTRUMENT PANEL
- 2 - TOP COVER
- 3 - FRONT EDGE
- 4 - REAR EDGE

(3) Press firmly downward on the top cover over each of the four forward snap clip locations until each of the snap clips is fully seated in their receptacles in the instrument panel.

(4) Align the seven snap clips on the rear edge (farthest from the windshield) of the top cover with the snap clip receptacles in the instrument panel.

(5) Press firmly downward on the top cover over each of the seven rearward snap clip locations until each of the snap clips is fully seated in their receptacles in the instrument panel.

(6) Install the cluster bezel onto the instrument panel. Refer to **Cluster Bezel** in the Removal and Installation section of this group for the procedures.

(7) Reconnect the battery negative cable.

**GLOVE BOX**

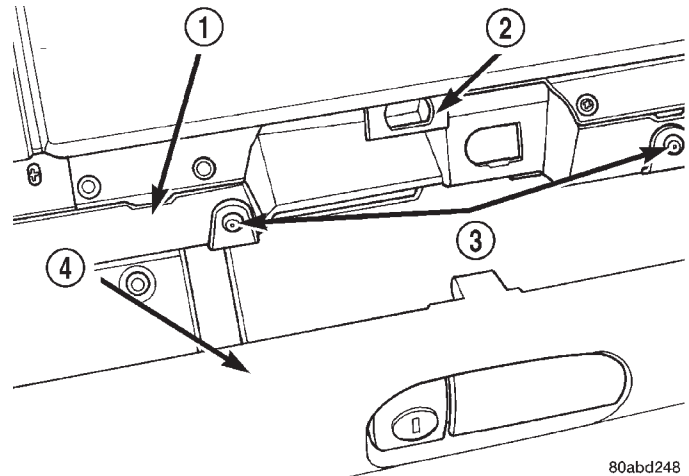
**WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL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

**ROLL DOWN**

(1) Disconnect and isolate the battery negative cable.

(2) Open the glove box.

(3) Locate the two rubber stop bumpers on the upper edge of the instrument panel glove box opening (Fig. 16).



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**Fig. 16 Glove Box Stop Bumpers Remove/Install**

- 1 - GLOVE BOX OPENING UPPER REINFORCEMENT
- 2 - GLOVE BOX LATCH STRIKER
- 3 - STOP BUMPERS
- 4 - GLOVE BOX DOOR

(4) Remove the two glove box stop bumpers by sliding them downward and out of the slots in the instrument panel upper glove box opening reinforcement.

(5) Roll the glove box downward so that the stops molded into the glove box bin pass through the stop bumper slots in the instrument panel upper glove box opening reinforcement.

(6) Reverse the roll down procedure to roll the glove box back up into the instrument panel.

**REMOVAL**

(1) Disconnect and isolate the battery negative cable.

(2) Remove the three screws that secure the glove box hinge to the instrument panel lower glove box opening reinforcement (Fig. 17).

(3) Release the glove box latch.

(4) Remove the glove box from the instrument panel.

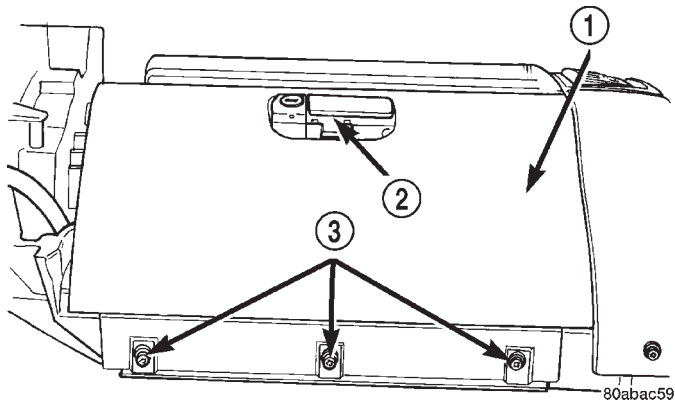
**INSTALLATION**

(1) Position the glove box to the instrument panel with the bin inserted in the glove box opening far enough so that the stops on each side of the glove box bin are located behind the rubber stop bumpers located on the instrument panel upper glove box opening reinforcement.

(2) Align the screw holes in the glove box hinge with the mounting holes in the instrument panel lower glove box opening reinforcement.

(3) Install and tighten the three screws that secure the glove box hinge to the instrument panel lower glove box opening reinforcement. Tighten the screws to 2.2 N·m (20 in. lbs.).

## REMOVAL AND INSTALLATION (Continued)



**Fig. 17 Glove Box Remove/Install**

- 1 - GLOVE BOX
- 2 - LATCH
- 3 - SCREWS

(4) Reconnect the battery negative cable.

## GLOVE BOX COMPONENTS

The glove box hinge, bin, inner door and latch are serviced only as a complete unit. The glove box outer door and lock cylinder are serviced separately.

**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.**

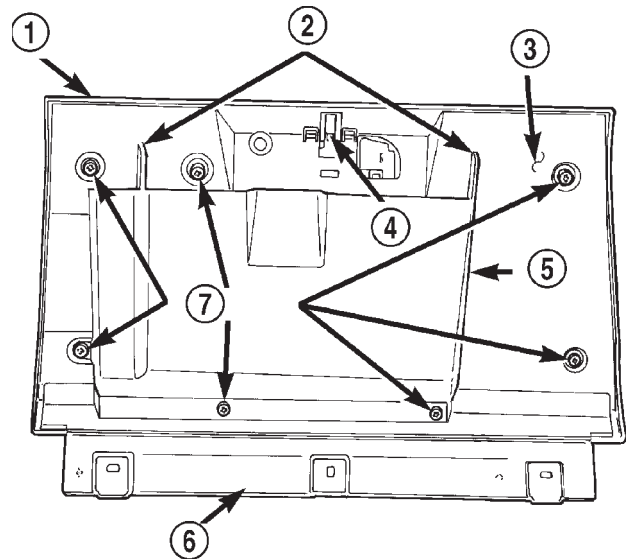
## REMOVAL

### GLOVE BOX HINGE, BIN, INNER DOOR AND LATCH

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the glove box from the instrument panel. Refer to **Glove Box - Removal** in the Removal and Installation section of this group for the procedures.
- (3) Remove the seven screws that secure the inner glove box door to the outer glove box door (Fig. 18).
- (4) Remove the inner glove box door unit from the outer glove box door.

### GLOVE BOX OUTER DOOR

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the glove box from the instrument panel. Refer to **Glove Box - Removal** in the



**Fig. 18 Glove Box Components Remove/Install**

- 1 - OUTER DOOR
- 2 - STOPS
- 3 - INNER DOOR
- 4 - LATCH
- 5 - BIN
- 6 - HINGE
- 7 - SCREWS

Removal and Installation section of this group for the procedures.

- (3) Remove the seven screws that secure the inner glove box door to the outer glove box door (Fig. 18).
- (4) Remove the outer glove box door from the inner glove box door unit.

## GLOVE BOX LOCK CYLINDER

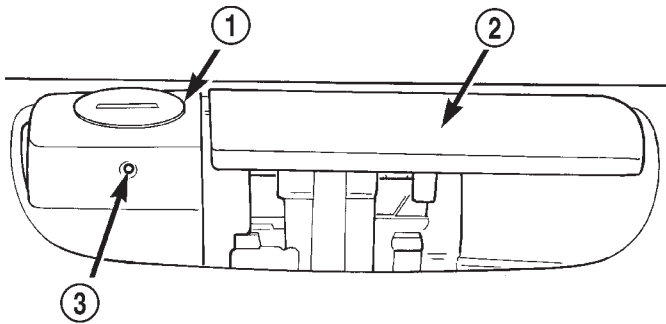
- (1) Insert the key into the glove box lock cylinder and turn the lock cylinder to the unlocked position.
- (2) Open the glove box.
- (3) With the key still in the lock cylinder, insert a small pin punch or a stiff wire into the lock cylinder release hole (Fig. 19) and depress the lock cylinder retaining tumbler.
- (4) While holding the retaining tumbler depressed, rotate the key in the lock cylinder clockwise and press outward on the back of the lock cylinder from the inside of the glove box door until the lock cylinder comes out of the glove box latch lock cylinder bore.

## INSTALLATION

### GLOVE BOX HINGE, BIN, INNER DOOR AND LATCH

- (1) Position the inner glove box door unit onto the outer glove box door.

## REMOVAL AND INSTALLATION (Continued)



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**Fig. 19 Glove Box Lock Cylinder Remove/Install**

- 1 - LOCK CYLINDER
- 2 - LATCH HANDLE
- 3 - RELEASE HOLE

(2) Install and tighten the seven screws that secure the inner glove box door to the outer glove box door. Tighten the screws to 2.2 N·m (20 in. lbs.).

(3) Install the glove box onto the instrument panel. Refer to **Glove Box - Installation** in the Removal and Installation section of this group for the procedures.

(4) Reconnect the battery negative cable.

**GLOVE BOX OUTER DOOR**

(1) Position the outer glove box door onto the inner glove box door unit.

(2) Install and tighten the seven screws that secure the inner glove box door to the outer glove box door. Tighten the screws to 2.2 N·m (20 in. lbs.).

(3) Install the glove box onto the instrument panel. Refer to **Glove Box - Installation** in the Removal and Installation section of this group for the procedures.

(4) Reconnect the battery negative cable.

**GLOVE BOX LOCK CYLINDER**

(1) To install the lock cylinder, insert the key into the cylinder and align the lock cylinder tumblers with the ramp in the glove box latch lock cylinder bore. The ramp is located at about the 7 o'clock position.

(2) Push the glove box lock cylinder firmly into the lock cylinder bore while rotating the key and cylinder counterclockwise to the 6 o'clock position, where the lock cylinder retaining tumbler will snap back into place.

**GLOVE BOX LATCH STRIKER**

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

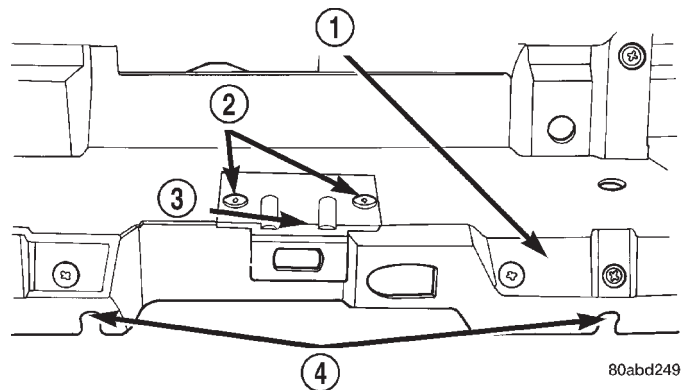
**REMOVAL**

(1) Disconnect and isolate the battery negative cable.

(2) Open the glove box.

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

(4) Remove the two screws that secure the latch striker to the instrument panel glove box opening upper reinforcement (Fig. 20).



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**Fig. 20 Glove Box Latch Striker Remove/Install**

- 1 - GLOVE BOX OPENING UPPER REINFORCEMENT
- 2 - SCREWS
- 3 - LATCH STRIKER
- 4 - STOP BUMPER SLOTS

(5) Remove the latch striker from the instrument panel glove box opening upper reinforcement.

**INSTALLATION**

(1) Position the latch striker onto the instrument panel glove box opening upper reinforcement.

(2) Install and tighten the two screws that secure the latch striker to the instrument panel glove box opening upper reinforcement. Tighten the screws to 2.2 N·m (20 in. lbs.).

(3) Install the passenger side airbag module onto the instrument panel. Refer to **Passenger Side Airbag Module** in the Removal and Installation section of Group 8M - Passive Restraint Systems for the procedures.

(4) Close the glove box.

(5) Reconnect the battery negative cable.



## REMOVAL AND INSTALLATION (Continued)

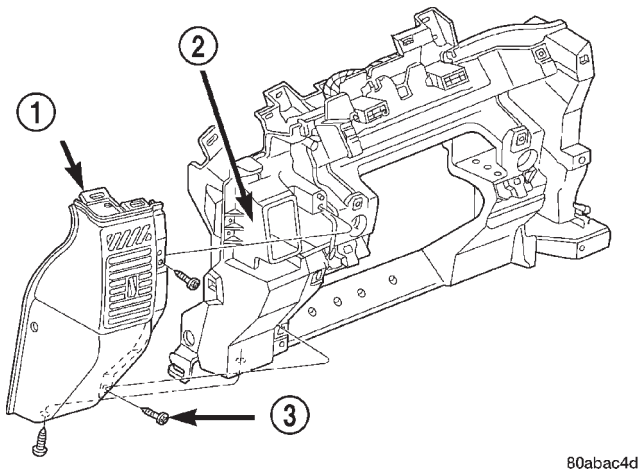
## INSTRUMENT PANEL END CAP

**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.**

## REMOVAL

## DRIVER SIDE

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the knee blocker from the instrument panel. Refer to **Knee Blocker** in the Removal and Installation section of this group for the procedures.
- (3) Remove the top cover from the instrument panel. Refer to **Instrument Panel Top Cover** in the Removal and Installation section of this group for the procedures.
- (4) Remove the five screws that secure the end cap to the instrument panel (Fig. 21).



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**Fig. 21 Instrument Panel End Cap Remove/Install**

- 1 - END CAP  
2 - INSTRUMENT PANEL  
3 - SCREW

- (5) Remove the end cap from the instrument panel.

## PASSENGER SIDE

- (1) Disconnect and isolate the battery negative cable.
- (2) Roll down the glove box from the instrument panel. Refer to **Glove Box - Roll Down** in the

Removal and Installation section of this group for the procedures.

- (3) Remove the top cover from the instrument panel. Refer to **Instrument Panel Top Cover** 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 **Passenger Side Airbag Module** in the Removal and Installation section of Group 8M - Passive Restraint Systems for the procedures.

- (5) Remove the six screws that secure the end cap to the instrument panel (Fig. 21).

- (6) Remove the end cap from the instrument panel.

## INSTALLATION

## DRIVER SIDE

- (1) Position the end cap to the instrument panel.
- (2) Install and tighten the five screws that secure the end cap to the instrument panel. Tighten the screws to 2.2 N-m (20 in. lbs.).
- (3) Install the top cover onto the instrument panel. Refer to **Instrument Panel Top Cover** in the Removal and Installation section of this group for the procedures.
- (4) Install the knee blocker onto the instrument panel. Refer to **Knee Blocker** in the Removal and Installation section of this group for the procedures.
- (5) Reconnect the battery negative cable.

## PASSENGER SIDE

- (1) Position the end cap to the instrument panel.
- (2) Install and tighten the six screws that secure the end cap to the instrument panel. Tighten the screws to 2.2 N-m (20 in. lbs.).
- (3) Install the passenger side airbag module onto the instrument panel. Refer to **Passenger Side Airbag Module** in the Removal and Installation section of Group 8M - Passive Restraint Systems for the procedures.

- (4) Install the top cover onto the instrument panel. Refer to **Instrument Panel Top Cover** in the Removal and Installation section of this group for the procedures.

- (5) Roll up the glove box into the instrument panel. Refer to **Glove Box - Roll Down** in the Removal and Installation section of this group for the procedures.

- (6) Reconnect the battery negative cable.

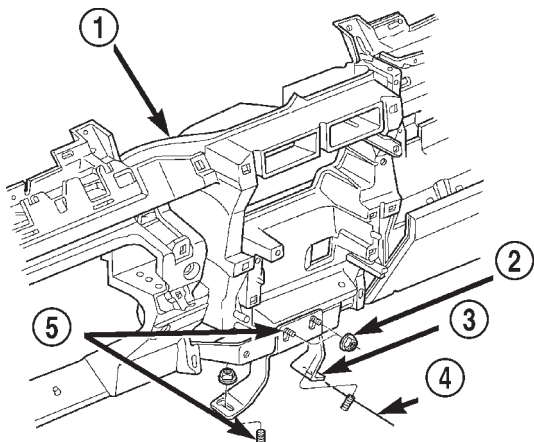
## REMOVAL AND INSTALLATION (Continued)

## INSTRUMENT PANEL CENTER SUPPORT BRACKET

**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

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the center bezel from the instrument panel. Refer to **Instrument Panel Center Bezel** in the Removal and Installation section of this group for the procedures.
- (3) Remove the floor console from the floor panel transmission tunnel. Refer to **Floor Console** in the Removal and Installation section of Group 23 - Body for the procedures.
- (4) Pull the floor carpet back from the front of the floor panel transmission tunnel far enough to access the instrument panel center support bracket mounting nuts.
- (5) Remove the two nuts that secure the center support bracket to the studs on the instrument panel (Fig. 22).



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**Fig. 22 Instrument Panel Center Support Bracket  
Remove/Install**

- 1 - INSTRUMENT PANEL
- 2 - NUT
- 3 - BRACKET
- 4 - FLOOR PAN TRANSMISSION TUNNEL
- 5 - STUDS

(6) Remove the two nuts that secure the instrument panel center support bracket to the studs on the floor panel transmission tunnel.

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

## INSTALLATION

- (1) Position the center support bracket to the instrument panel.
- (2) Install and tighten the two nuts that secure the instrument panel center support bracket to the studs on the floor panel transmission tunnel. Tighten the nuts to 28 N·m (250 in. lbs.).
- (3) Install and tighten the two nuts that secure the center support bracket to the studs on the instrument panel. Tighten the nuts to 28 N·m (250 in. lbs.).
- (4) Position the floor carpet back onto the front of the floor panel transmission tunnel.
- (5) Install the floor console onto the floor panel transmission tunnel. Refer to **Floor Console** in the Removal and Installation section of Group 23 - Body for the procedures.
- (6) Install the center bezel onto the instrument panel. Refer to **Instrument Panel Center Bezel** in the Removal and Installation section of this group for the procedures.
- (7) Reconnect the battery negative cable.

## INSTRUMENT PANEL ASSEMBLY

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## REMOVAL

**NOTE: Before starting this procedure, be certain to turn the steering wheel until the front wheels are in the straight-ahead position.**

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the trim from the left and right cowl side inner panels. Refer to **Lower A-Pillar Cowl Trim** in the Removal and Installation section of Group 23 - Body for the procedures.
- (3) Remove the knee blocker from the instrument panel. Refer to **Knee Blocker** in the Removal and Installation section of this group for the procedures.

## REMOVAL AND INSTALLATION (Continued)

(4) Remove the top cover from the instrument panel. Refer to **Instrument Panel Top Cover** in the Removal and Installation section of this group for the procedures.

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

(6) Remove the steering column from the vehicle. Refer to **Steering Column** in the Removal and Installation section of Group 19 - Steering for the procedures.

(7) Remove the screws from the centers of the instrument panel-to-body and the instrument panel-to-headlamp and dash wire harness connectors near the left cowl side inner panel and disconnect both connectors.

(8) Remove the screw from the center of the instrument panel-to-floor wire harness connector near the floor panel transmission tunnel under the instrument panel and disconnect the connector.

(9) Disconnect the two wire harness connectors located near the instrument panel-to-floor wire har-

ness connector at the floor panel transmission tunnel under the instrument panel.

(10) Roll down the glove box from the instrument panel. Refer to **Glove Box - Roll Down** in the Removal and Installation section of this group for the procedures.

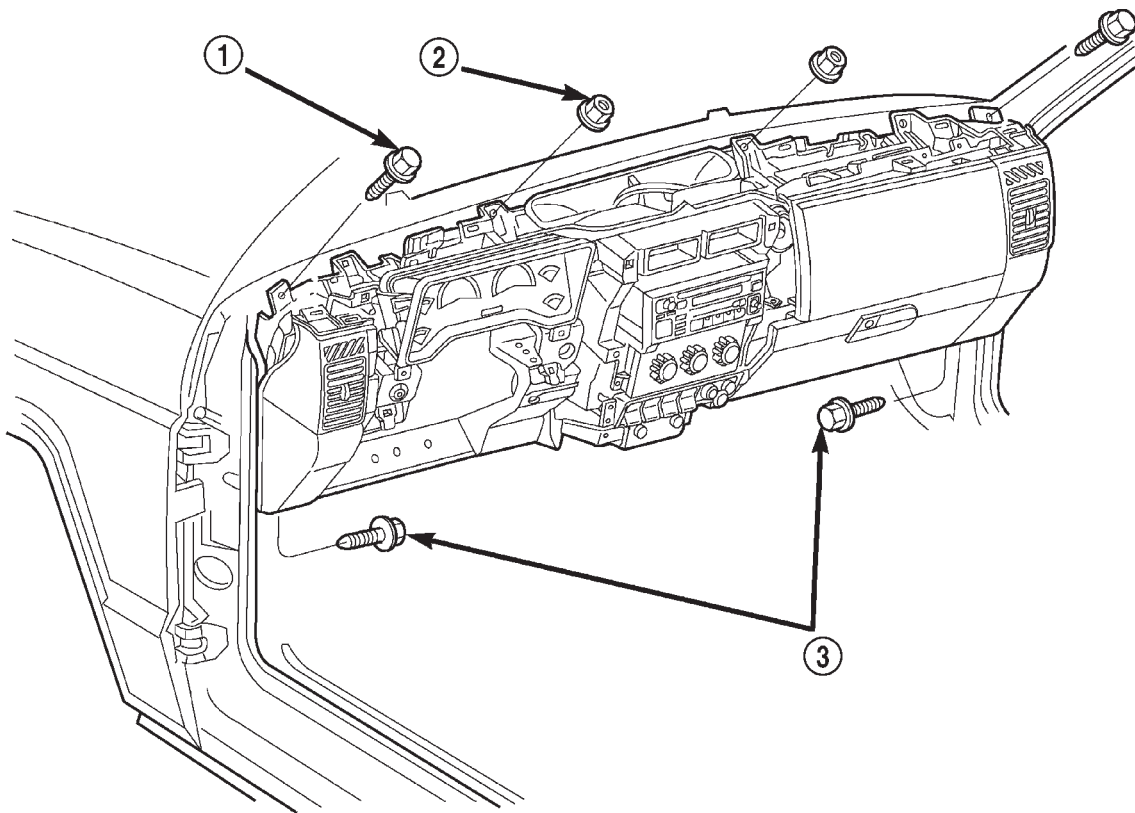
(11) Reach through the inboard side of the instrument panel glove box opening to disconnect the two halves of the heater-A/C system vacuum harness connector.

(12) Reach under the right end of the instrument panel to access and disconnect the two halves of the radio antenna coaxial cable connector. On Left-Hand Drive models only, also disengage the retainer on the radio half of the coaxial cable from the heater-A/C housing kick cover.

(13) Loosen the right and left instrument panel cowl side roll down screws about 6 mm (0.25 inch) (Fig. 23).

(14) Remove the four screws and two nuts that secure the top of the instrument panel to the top of the dash panel near the base of the windshield.

(15) With the aid of an assistant, lift the top of the instrument panel assembly off of the two dash panel



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**Fig. 23 Instrument Panel Assembly Remove/Install**

1 - SCREW  
2 - NUT

3 - INSTRUMENT PANEL COWL SIDE ROLL DOWN SCREWS

## REMOVAL AND INSTALLATION (Continued)

studs. Then pull the lower instrument panel rearward to clear the cowl side roll down screws.

(16) Remove the instrument panel assembly from the vehicle.

**INSTALLATION**

(1) With the aid of an assistant, position the instrument panel assembly onto the cowl side roll down screws and the dash panel studs in the vehicle.

(2) Install and tighten the four screws and two nuts that secure the top of the instrument panel to the top of the dash panel near the base of the windshield. Tighten the screws and nuts to 7 N·m (60 in. lbs.).

(3) Tighten the right and left instrument panel cowl side roll down screws. Tighten the screws to 28 N·m (250 in. lbs.).

(4) Reach under the right end of the instrument panel to access and reconnect the two halves of the radio antenna coaxial cable connector. On Left-Hand Drive models only, also engage the retainer on the radio half of the coaxial cable onto the heater-A/C housing kick cover.

(5) Reach through the inboard side of the instrument panel glove box opening to reconnect the two halves of the heater-A/C system vacuum harness connector.

(6) Roll up the glove box into the instrument panel. Refer to **Glove Box - Roll Down** in the Removal and Installation section of this group for the procedures.

(7) Reconnect the two wire harness connectors located near the instrument panel-to-floor wire har-

ness connector at the floor panel transmission tunnel under the instrument panel.

(8) Reconnect the instrument panel-to-floor wire harness connector near the floor panel transmission tunnel under the instrument panel and tighten the connector screw. Tighten the screw to 4 N·m (35 in. lbs.).

(9) Reconnect the instrument panel-to-body and the instrument panel-to-headlamp and dash wire harness connectors near the left cowl side inner panel and tighten the connector screws. Tighten the screws to 4 N·m (35 in. lbs.).

(10) Install the steering column into the vehicle. Refer to **Steering Column** in the Removal and Installation section of Group 19 - Steering for the procedures.

(11) Install the center support bracket onto the instrument panel. Refer to **Instrument Panel Center Support Bracket** in the Removal and Installation section of this group for the procedures.

(12) Install the top cover onto the instrument panel. Refer to **Instrument Panel Top Cover** in the Removal and Installation section of this group for the procedures.

(13) Install the knee blocker onto the instrument panel. Refer to **Knee Blocker** in the Removal and Installation section of this group for the procedures.

(14) Install the trim onto the left and right cowl side inner panels. Refer to **Lower A-Pillar Cowl Trim** in the Removal and Installation section of Group 23 - Body for the procedures.

(15) Reconnect the battery negative cable.