

OVERHEAD CONSOLE SYSTEMS

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GENERAL INFORMATION

INTRODUCTION

Two overhead consoles featuring a mini trip computer, an electronic compass, and a thermometer are available factory-installed options on this model. A long version of the overhead console is used on models without a power sunroof option. A short version of the overhead console is used on models with a power sunroof option.

The long overhead console includes two front-mounted and two rear-mounted reading/courtesy lamps, a garage door opener storage bin, and a sunglasses storage bin. The short overhead console includes two reading courtesy lamps and houses the power sunroof switch.

Following are general descriptions of the major components used in the overhead console. Refer to 8W-49 Overhead Console in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

DESCRIPTION AND OPERATION

TRIP COMPUTER

A mini trip computer is available on this model to provide several electrical functions and features. The trip computer contains a central processing unit and interfaces with other modules in the vehicle on the Chrysler Collision Detection (CCD) data bus network.

The CCD data bus network allows the sharing of sensor information. This helps to reduce wiring harness complexity, reduce internal controller hardware, and reduce component sensor current loads. At the

same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities.

Some of the functions and features that the trip computer supports and/or controls, include the following displays:

- Compass/temperature
- Trip odometer (ODO)
- Average miles per gallon (AVG ECO)
- Instant miles per gallon (ECO)
- Distance to empty (DTE)
- Elapsed time (ET)
- Blank display.

Momentarily depressing and releasing the Step button when the ignition switch is in the On position will cause the overhead console display to step sequentially through the listed display options. Momentarily depressing and releasing the U.S/Metric button toggles the display between U.S. and Metric measurements. For more information on the trip computer features refer to the owner's manual in the vehicle glove box.

The push button module is hard-wired to the trip computer. The compass flux-gate unit is integral to the trip computer, compass, thermometer, display module unit. Data input for all other trip computer functions is received through CCD data bus network messages. The trip computer uses its internal programming and all of these inputs to calculate and display the requested data. If the data displayed is incorrect, perform the self-diagnostic tests as described in this group. If these tests prove inconclusive, the use of a DRB scan tool and the proper Body Diagnostic Procedures Manual is recommended for

DESCRIPTION AND OPERATION (Continued)

further testing of the trip computer and the CCD data bus.

The trip computer, compass, thermometer, and display module cannot be repaired, and are only available for service as a unit. If faulty, the complete assembly must be replaced. The push button switch (Step and U.S./Metric) module is serviced separately.

COMPASS

The compass will display the direction in which the vehicle is pointed using the eight major compass headings (Examples: north is N, northeast is NE). It does not display the headings in actual degrees.

The self-calibrating compass unit requires no adjusting in normal use. The only calibration that may prove necessary is to drive the vehicle in three complete circles, on level ground, in not less than 48 seconds. This will reorient the compass unit to its vehicle.

The compass unit also will compensate for magnetism the body of the vehicle may acquire during normal use. However, avoid placing anything magnetic directly on the roof of the vehicle. Magnetic mounts for an antenna, a repair order hat, or a funeral procession flag can exceed the compensating ability of the compass unit if placed on the roof panel. Magnetic bit drivers used on the fasteners that hold the assembly to the roof header can also affect compass operation. If the vehicle roof should become magnetized, the demagnetizing and calibration procedures found in this group may be required to restore proper compass operation.

The compass, trip computer, thermometer, and display module cannot be repaired, and are only available for service as a unit. If faulty, the complete assembly must be replaced. The push button switches (Step and U.S./Metric) are serviced separately.

THERMOMETER

The thermometer displays the outside ambient temperature. The temperature display can be changed from Fahrenheit to Celsius using the US/Metric button, located just rearward of the display module. The displayed temperature is not an instant reading of conditions, but an average temperature. It may take the thermometer display several minutes to respond to a major temperature change, such as driving out of a heated garage into winter temperatures.

When the ignition switch is turned to the Off position, the last displayed temperature reading stays in the thermometer unit memory. When the ignition switch is turned to the On position again, the thermometer will display the memory temperature for

one minute; then update the display to the current average temperature reading within five minutes.

When the outside temperature is below 3°C (37°F), the thermometer will provide an ice indicator function to alert the driver of possible icy road conditions. The ice indicator function will cause the word "ICE" to be flashed on the overhead console display for approximately two minutes, only one time during any ignition switch cycle. The ice indicator function will not occur if the display is in the elapsed time mode, due to the character limitations of the display.

The thermometer function is supported by an ambient temperature sensor. The sensor is mounted outside the passenger compartment near the front and center of the vehicle and is hard-wired to the Body Control Module (BCM). The BCM sends a temperature status message to the overhead console over the CCD data bus network. The ambient temperature sensor is available as a separate service item.

The thermometer, compass, trip computer, and display module cannot be repaired, and are only available for service as a unit. If the module is faulty, the complete assembly must be replaced. The push button switches (Step and U.S./Metric) are serviced separately.

READING/COURTESY LAMPS

All reading and courtesy lamps located in the overhead console are activated by the door ajar switches. When the doors are closed, the lamps can be individually activated by depressing the corresponding lens. When a door is open, depressing the lamp lens switches will not turn the lamps off. Refer to Group 8L - Lamps, for diagnosis and service of the reading and courtesy lamps.

GARAGE DOOR OPENER STORAGE BIN

A compartment in the long-type overhead console is designed to hold most garage door opener remote control transmitters. The transmitter is mounted within the compartment with an adhesive-backed hook and loop fastener patch. Then one, two, or no adapter pegs are selected and mounted on a post on the inside of the storage compartment door. The peg(s) selected or the post must be long enough to depress the button of the transmitter, when the garage door opener storage compartment door is depressed. The pegs may be stacked, if necessary.

SUNGLASSES STORAGE BIN

A sunglasses storage bin is included in the long-type overhead console. The interior of the bin is covered with a flocking material to protect the sunglasses from being scratched. This bin features a push/push-type latching mechanism, and a viscous dampening system for a fluid opening action.

DIAGNOSIS AND TESTING

TRIP COMPUTER/COMPASS/DISPLAY MODULE

If the problem with the trip computer/compass/display module is an inaccurate or scrambled display, use the Self-Diagnostics procedures. If the problem is a no-display condition, use the following procedures. For circuit descriptions and diagrams, refer to 8W-49 - Overhead Console in Group 8W - Wiring Diagrams.

(1) Check the fuses in the junction block. If OK, go to Step 2. If not OK, replace the faulty fuse(s).

(2) Remove the overhead console as described in this group. Check for continuity between the ground circuit cavity of the overhead console connector and a good ground. There should be continuity. If OK, go to Step 3. If not OK, repair the circuit to ground as required.

(3) Check for battery voltage at the fused B(+) circuit cavity of the overhead console connector. If OK, go to Step 4. If not OK, repair the open circuit to the junction block as required.

(4) Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output cavity of the overhead console connector. If OK, go to Step 5. If not OK, repair the open circuit to the junction block as required.

(5) Check for continuity between the courtesy lamp relay output circuit cavities of the overhead console connector and the junction block receptacle for the courtesy lamp relay. There should be continuity. If OK, proceed to the self-diagnostic tests in this group for further diagnosis of the module and the CCD data bus. If not OK, repair the open circuit to the courtesy lamp relay as required.

SELF-DIAGNOSTICS

A self-diagnostic test is used to determine that the trip computer, compass, and all of the display module segments are operating properly electrically. Initiate the self-diagnostic test as follows:

(1) With the ignition switch in the Off position, simultaneously press and hold the Step button and the U.S./Metric button.

(2) Turn the ignition switch to the On position.

(3) Continue to hold both buttons, until the display module performs a display segment test. In this test, all of the vacuum fluorescent display segments are lighted. This test will:

- Verify that all display segments are functional
- Check the internal circuitry of the module
- Check that all of the CCD data bus messages needed are being received.

(4) In the display segment test (a), if any segment should fail to light the unit is faulty and must be replaced. If test (b) is failed, the module will display "FAIL". If "FAIL" is displayed, the unit is faulty and

must be replaced. If test (c) is failed, the module will display "CCD". If "CCD" is displayed, the use of a DRB scan tool and the proper Body Diagnostic Procedures Manual are required for further diagnosis. If all tests are passed, the module will automatically return to normal operation.

(5) Momentarily depress and release either button one time to exit the self-diagnostic mode and return the trip computer, compass, and display module to normal operation.

NOTE: If the compass functions, but accuracy is suspect, it may be necessary to perform a variation adjustment. This procedure allows the compass unit to accommodate variations in the earth's magnetic field strength, based on geographic location. See the Compass Variation Adjustment procedures, in this group.

NOTE: If the compass reading has blanked out, and only "CAL" appears in the display module, demagnetizing may be necessary to remove excessive residual magnetic fields from the vehicle. See the Compass Demagnetizing procedure, in this group.

THERMOMETER

The thermometer function is supported by a temperature sensor, a wiring circuit, the Body Control Module (BCM), the CCD data bus, and a portion of the overhead console trip/computer/compass/display module display. The sensor is mounted outside the passenger compartment near the front and center of the vehicle.

If any portion of the temperature sensor circuit fails, the thermometer display will self-diagnose the circuit. An "SC" (short circuit) will appear on the display module in place of the temperature when the sensor is exposed to temperatures above 55°C (131°F), or if the sensor circuit is shorted. An "OC" (open circuit) will appear in place of the temperature when the sensor is exposed to temperatures below -40°C (-40°F), or if the sensor circuit is open.

The temperature sensor circuit can also be diagnosed using the following Sensor Test, and Sensor Circuit Test. If the temperature sensor and circuit are confirmed to be OK, but the temperature display is inoperative or incorrect, see the Trip Computer/Compass/Display Module diagnosis in this group. For circuit descriptions and diagrams, refer to 8W-45 - Body Control Module and 8W-49 - Overhead Console in Group 8W - Wiring Diagrams.

SENSOR TEST

(1) Turn the ignition switch to the Off position. Unplug the temperature sensor connector.

DIAGNOSIS AND TESTING (Continued)

(2) Measure the resistance of the temperature sensor. At -40°C (-40°F), the sensor resistance is 336 kilohms. At 55°C (140°F), the sensor resistance is 2.488 kilohms. The sensor resistance should read between these two values. If OK, go to the Sensor Circuit Test. If not OK, replace the faulty sensor.

SENSOR CIRCUIT TEST

(1) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Unplug the temperature sensor connector and the black 24-way BCM connector.

(2) Connect a jumper wire between the two terminals in the body half of the sensor connector.

(3) Check for continuity between the sensor return circuit and the ambient temperature sensor signal circuit cavities of the BCM connector. There should be continuity. If OK, go to Step 4. If not OK, repair the open circuit as required.

(4) Remove the jumper wire from the temperature sensor connector. Check for continuity between the sensor return circuit cavity of the BCM connector and a good ground. There should be no continuity. If OK, go to Step 5. If not OK, repair the short circuit as required.

(5) Check for continuity between the ambient temperature sensor signal circuit cavity of the BCM connector and a good ground. There should be no continuity. If OK, see the Trip Computer/Compass/Display Module diagnosis in this group. If not OK, repair the short circuit as required.

SERVICE PROCEDURES

COMPASS VARIATION ADJUSTMENT

Variance is the difference between magnetic north and geographic north. In some areas, the difference between magnetic and geographic north is great enough to cause the compass to give false readings. If this problem occurs, the compass variance must be set.

To set the compass variance:

(1) Using the Variance Settings map, find your geographic location and note the zone number (Fig. 1).

(2) Turn the ignition switch to the On position. If the compass/temperature option is not being displayed, momentarily depress and release the Step button to step through the display options until you have reached the compass/temperature display.

(3) Depress both the U.S./Metric, and the Step buttons. Hold the buttons down until "VAR" appears in the display module. This takes about five seconds.

(4) Release both of the buttons. The zone number will appear in the display module.

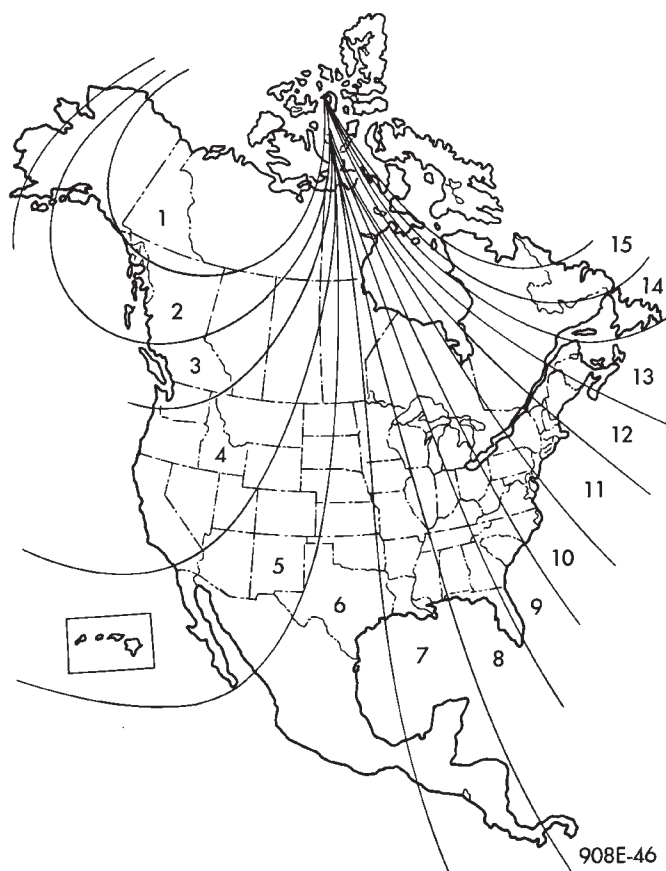


Fig. 1 Variance Settings

(5) Press and release the U.S./Metric button to step through the zone numbers, until the zone number for your area appears in the display.

(6) Press the Step button to enter this zone number into the compass unit memory.

(7) Confirm that the correct directions are now indicated.

COMPASS CALIBRATION

CAUTION: Do not place any external magnets, such as magnetic roof mount antennas, in the vicinity of the compass. Do not use magnetic tools when servicing the overhead console.

The electronic compass unit features a self-calibrating design, which simplifies the calibration procedure. This feature automatically updates the compass calibration while the vehicle is being driven. This allows the compass unit to compensate for small changes in the residual magnetism that the vehicle may acquire during normal use. Do not attempt to calibrate the compass near large metal objects such as other vehicles, large buildings, or bridges.

SERVICE PROCEDURES (Continued)

NOTE: Whenever the compass is calibrated manually, the variation number must also be reset. See the Compass Variation Adjustment procedure, in this group.

Calibrate the compass manually as follows:

(1) Start the engine. If the compass/temperature option is not being displayed, momentarily depress and release the Step button through the display options until you have reached the compass/temperature display.

(2) Depress both the U.S./Metric and Step buttons. Hold down both buttons until "CAL" appears in the display module. This takes about ten seconds, and appears about five seconds after "VAR" is displayed.

(3) Release both buttons.

(4) Drive the vehicle on a level surface, away from large metal objects, through three or more complete circles in not less than 48 seconds. The "CAL" message will disappear from the display to indicate that the compass is now calibrated.

NOTE: If the "CAL" message remains in the display, either there is excessive magnetism near the compass, or the unit is faulty. Repeat the demagnetizing and calibration procedures at least one more time.

NOTE: If the wrong direction is still indicated in the compass display, the area selected for calibration may be too close to a strong magnetic field. Repeat the calibration procedure in another location.

COMPASS DEMAGNETIZING

A degaussing tool (Special Tool 6029) is used to demagnetize, or degauss, the overhead console front mounting screw and the roof panel. Equivalent units must be rated as continuous duty for 110/115 volts and 60Hz. They must also have a field strength of over 350 gauss at 1/4-inch beyond the tip of the probe.

To demagnetize the roof panel and the console forward mounting screw, proceed as follows:

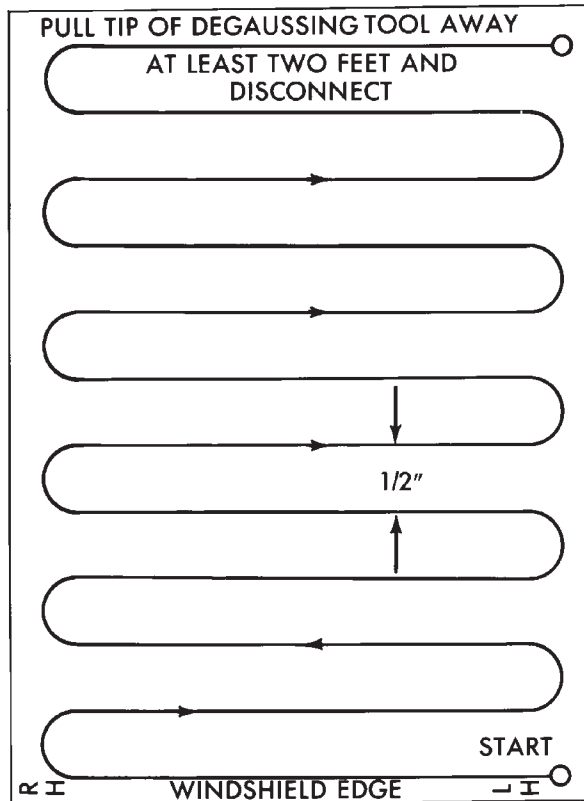
(1) Be certain the ignition switch is in the Off position, before you begin the demagnetizing procedure.

(2) Plug in the degaussing tool, while keeping the tool at least two feet away from the compass unit.

(3) Slowly approach the head of the overhead console front mounting screw with the plastic coated tip of the degaussing tool. Contact the head of the screw with the tip of the tool for about two seconds.

(4) With the degaussing tool still energized, slowly back it away from the screw. When the tool is at least two feet from the screw head, unplug the tool.

(5) Place an 8-1/2 X 11-inch piece of paper, oriented on the vehicle lengthwise from front to rear, on the center line of the roof at the windshield header (Fig. 2). The purpose of the paper is to protect the roof panel from scratches, and to define the area to be demagnetized.



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Fig. 2 Roof Demagnetizing Pattern

(6) Plug in the degaussing tool, while keeping the tool at least two feet away from the compass unit.

(7) Slowly approach the center line of the roof panel at the windshield header, with the degaussing tool plugged in.

(8) Contact the roof panel with the tip of the tool. Be sure the template is in place to avoid scratching the roof panel. Using a slow, back-and-forth sweeping motion, and allowing 1/2-inch between passes, move the tool at least four inches to each side of the roof center line, and eleven inches back from the windshield header.

(9) With the degaussing tool still energized, slowly back it away from the roof panel. When the tip of the tool is at least two feet from the roof panel, unplug the tool.

(10) Calibrate the compass and adjust the compass variance as described in this group.

REMOVAL AND INSTALLATION

OVERHEAD CONSOLE

LONG-TYPE

(1) Disconnect and isolate the battery negative cable.

(2) Remove the mounting screw, forward of the display unit (Fig. 3).

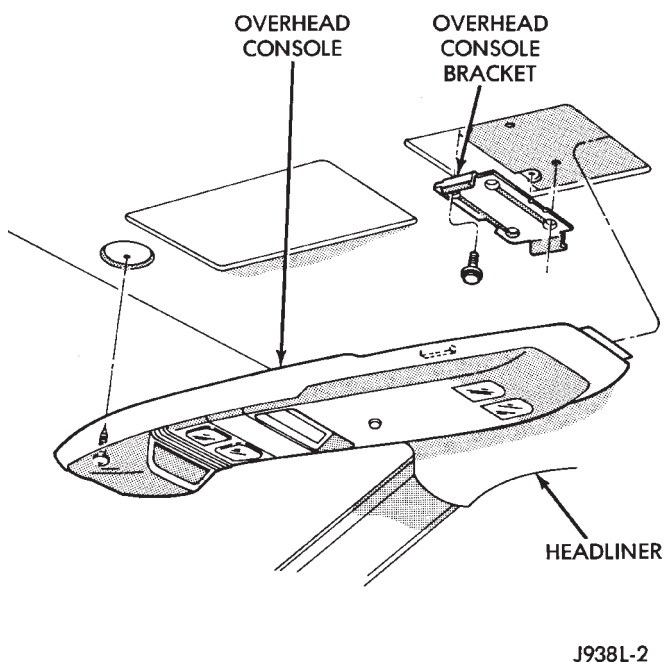


Fig. 3 Overhead Console Remove/Install - Long-Type

(3) Slide the console forward until the rear of the console separates from the rear mounting bracket.

(4) Unplug the wire harness connector from the trip computer/compass/thermometer module.

(5) Remove the overhead console from the vehicle.

(6) Reverse the removal procedures to install.

SHORT-TYPE

(1) Disconnect and isolate the battery negative cable.

(2) Remove the mounting screw, forward of the display unit (Fig. 4).

(3) Using a trim stick or other suitable wide flat-bladed tool, pry gently downwards at the rear edge of the console housing to release the two snap clips.

(4) Unplug the wire harness connectors from the trip computer/compass/thermometer module and the power sunroof switch.

(5) Reverse the removal procedures to install.

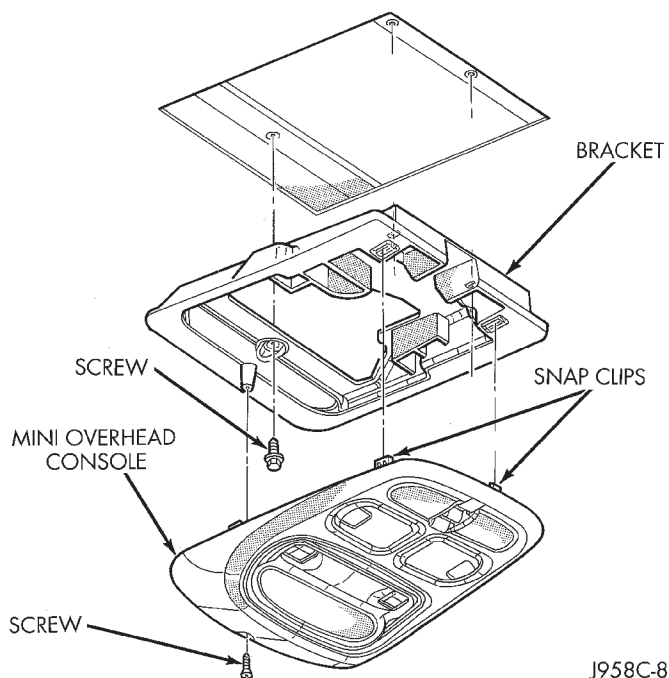


Fig. 4 Overhead Console Remove/Install - Short-Type

TRIP COMPUTER, COMPASS, THERMOMETER, DISPLAY MODULE

(1) Remove the overhead console as described in this group.

(2) Remove the screws securing the compass/thermometer/display module to the overhead console housing (Fig. 5).

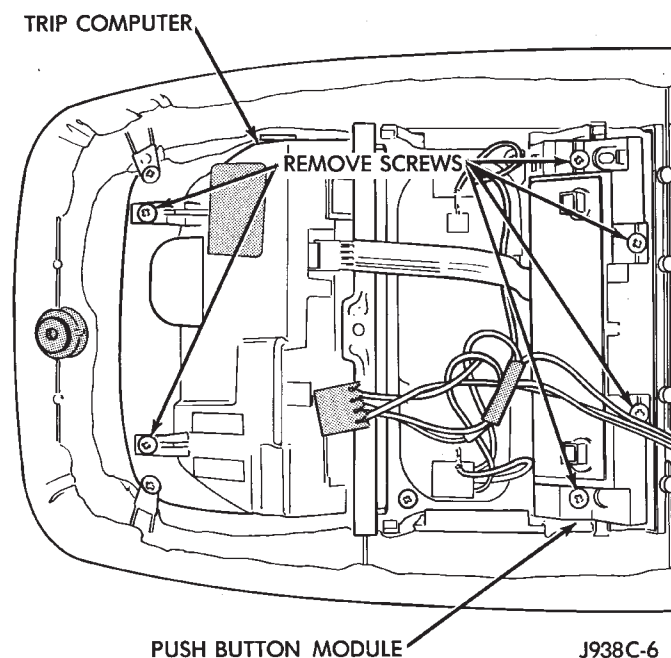


Fig. 5 Trip Computer Remove/Install - Typical

REMOVAL AND INSTALLATION (Continued)

(3) Unplug the lighting and push-button wire harness connectors from the trip computer/compass/thermometer/display module.

(4) Remove the module from the overhead console housing.

(5) Reverse the removal procedures to install.

PUSH-BUTTON MODULE

(1) Remove the overhead console as described in this group.

(2) Unplug the wire harness connectors from the push-button module.

(3) Remove the four screws (long-type console) or two screws (short-type console) securing the push-button module to the console housing.

(4) Remove the module from the console.

(5) Reverse the removal procedures to install.

AMBIENT TEMPERATURE SENSOR

(1) Disconnect and isolate the battery negative cable.

(2) Remove the radiator grille unit. Refer to Group 23 - Body Components for the procedure.

(3) Locate the temperature sensor, on the radiator support behind the grille (Fig. 6).

(4) Unplug the temperature sensor wiring connector.

(5) Remove the temperature sensor mounting bolt and remove the sensor.

(6) Reverse the removal procedures to install.

READING/COURTESY LAMP BULBS

(1) Insert the tip of a wide flat-bladed tool in the notch on the curved edge of the courtesy lamp lens.

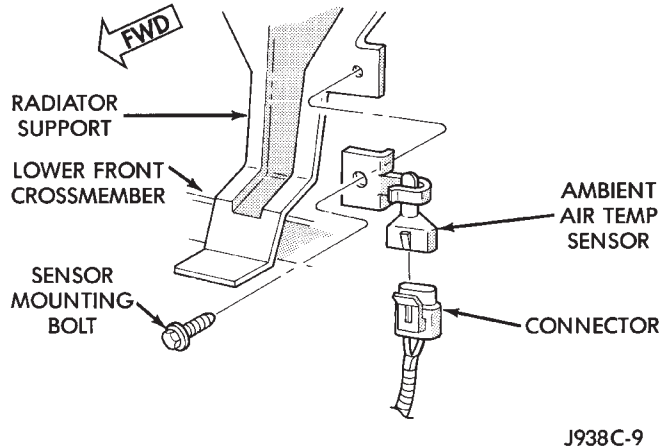


Fig. 6 Temperature Sensor Remove/Install

(2) Gently pry the lens from the housing and pivot it downwards.

(3) Remove the bulb by pulling it straight out from the socket.

(4) Install the new bulb by aligning its base with the socket, and pushing the bulb firmly into place.

(5) Pivot the lens back up into position and press upward firmly until it snaps into place.

(6) Test the operation of the lamp and bulb by depressing the lens.