

OVERHEAD CONSOLE SYSTEMS

CONTENTS

	page	page
GENERAL INFORMATION		
INTRODUCTION	1	
OVERHEAD CONSOLE	1	
DESCRIPTION AND OPERATION		
COMPASS	1	
READING AND COURTESY LAMP	2	
THERMOMETER	1	
DIAGNOSIS AND TESTING		
COMPASS AND THERMOMETER DISPLAY		
MODULE	2	
THERMOMETER	4	
SERVICE PROCEDURES		
COMPASS CALIBRATION	5	
COMPASS DEMAGNETIZING		5
COMPASS VARIATION ADJUSTMENT		4
REMOVAL AND INSTALLATION		
AMBIENT TEMPERATURE SENSOR		8
COMPASS AND THERMOMETER DISPLAY		
MODULE		7
OVERHEAD CONSOLE		6
READING AND COURTESY LAMP BULB		7
SPECIAL TOOLS		
COMPASS		8

GENERAL INFORMATION

INTRODUCTION

An overhead console featuring an electronic compass and an outside ambient temperature thermometer is an available factory-installed option on this model. Refer to 8W-49 - Overhead Console in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

OVERHEAD CONSOLE

The overhead console for this model includes an electronic compass and an outside ambient temperature thermometer. The overhead console also houses two reading and courtesy lamps.

Following are general descriptions of the major components used in the overhead console. Refer to the owner's manual in the vehicle glove box for more information on the use and operation of the various overhead console features.

DESCRIPTION AND OPERATION

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 overhead console 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 and thermometer display module cannot be repaired, and are only available for service as a unit. If faulty or damaged, the complete module must be replaced.

THERMOMETER

The thermometer displays the outside ambient temperature. The temperature display can be changed from Fahrenheit to Celsius using the U.S./Metric button, located just to the right of the display. 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

DESCRIPTION AND OPERATION (Continued)

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.

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 module. The ambient temperature sensor is available as a separate service item.

The thermometer and compass display module cannot be repaired, and is only available for service as a unit. If faulty or damaged, the complete module must be replaced.

READING AND COURTESY LAMP

All reading and courtesy lamps located in the overhead console are activated by the door jamb 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 of the reading and courtesy lamps.

The reading and courtesy lamp lenses and bulbs are available for service replacement. The reading and courtesy lamp housing, switches, bulb holders and wiring are only available as part of the overhead console wire harness. If any of these components are faulty or damaged, the entire overhead console wire harness assembly must be replaced.

DIAGNOSIS AND TESTING**COMPASS AND THERMOMETER DISPLAY MODULE**

If the problem with the compass and thermometer display module is an inaccurate or scrambled display, see Self-Diagnostic Test in the Diagnosis and Testing section of this group. 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, repair the shorted circuit or component as required and replace the faulty fuse(s).

(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 circuit to the Power Distribution Center (PDC) as required.

(3) 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 4. If not OK, repair the open circuit to the ignition switch as required.

(4) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable.

Remove the overhead console from the headliner. Check for continuity between the ground circuit cavities of the overhead console wire harness connector and a good ground. There should be continuity. If OK, go to Step 5. If not OK, repair the open circuit to ground as required.

(5) Connect the battery negative cable. Check for battery voltage at each of the two fused B(+) circuit cavities of the overhead console wire harness connector. If OK, go to Step 6. If not OK, repair the open circuit(s) to the junction block as required.

(6) Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (run/start) circuit cavity of the overhead console wire harness connector. If OK, go to Step 7. If not OK, repair the open circuit to the junction block as required.

(7) Check for battery voltage at the park lamp switch output circuit cavity of the overhead console wire harness connector. There should be zero volts with the headlamp switch in the Off position, and battery voltage with the park or head lamps turned on. If OK, go to Step 8. If not OK, repair the open circuit to the headlamp switch as required.

(8) Check for voltage at the fused panel lamps dimmer switch signal circuit cavity of the overhead console wire harness connector. There should be zero volts with the headlamp switch in the Off position. When the park or head lamps are turned on, the voltage should vary as the dimmer switch is rotated. If OK, see Self-Diagnostic Test in the Diagnosis and Testing section of this group for further diagnosis of the module. If not OK, repair the open circuit to the junction block as required.

SELF-DIAGNOSTIC TEST

A self-diagnostic test is used to determine that the compass, thermometer 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 Comp/Temp button and the U.S./Metric button.

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

(3) Continue to hold both buttons until the module display performs a walking segment test. In this test, all of the compass points are displayed, along with various number combinations. These combinations verify that all of the display segments are functional. If any segment should fail to light during the test, the compass and thermometer display module is faulty and must be replaced. To repeat the test, momentarily depress and release the Comp/Temp button one time.

(4) Momentarily depress and release the U.S./Metric button one time. All of the display segments will light simultaneously for about two seconds. If any

DIAGNOSIS AND TESTING (Continued)

Compass and Thermometer Display Module Diagnosis		
CONDITION	POSSIBLE CAUSE	CORRECTION
DISPLAY COMPLETELY DARK	<ol style="list-style-type: none"> 1. Display has been switched off. 2. Faulty fuse. 3. Faulty wire harness or connectors. 4. Faulty compass and thermometer display module. 	<ol style="list-style-type: none"> 1. Depress the Comp/Temp button to switch the module to the compass or thermometer display option. 2. Check the fuses in the junction block and replace, if required. 3. Refer to Group 8W - Wiring Diagrams. Test and repair the wiring or connections, if required. 4. Replace the faulty compass and thermometer display module, if required.
DISPLAY SEGMENTS MISSING	<ol style="list-style-type: none"> 1. Faulty compass and thermometer display module. 	<ol style="list-style-type: none"> 1. See Self-Diagnostic Test in the Diagnosis and Testing section of this group. Replace the faulty compass and thermometer display module, if required.
ERRATIC COMPASS OPERATION	<ol style="list-style-type: none"> 1. Magnet or strong magnetic field near the module. 2. Variance setting incorrect. 3. Calibration incorrect. 4. Faulty compass and thermometer display module. 	<ol style="list-style-type: none"> 1. Remove magnet and/or demagnetize the vehicle. See Compass Demagnetizing in the Service Procedures section of this group. 2. See Compass Variation Adjustment in the Service Procedures section of this group. 3. See Compass Calibration in the Service Procedures section of this group. 4. See Self-Diagnostic Test in the Diagnosis and Testing section of this group. Replace the faulty compass and thermometer display module, if required.
ERRATIC THERMOMETER OPERATION	<ol style="list-style-type: none"> 1. Faulty ambient temperature sensor wire harness or connectors. 2. Faulty ambient temperature sensor. 3. Faulty compass and thermometer display module. 	<ol style="list-style-type: none"> 1. See Thermometer in the Diagnosis and Testing section of this group. Repair the ambient temperature sensor wiring or connections, if required. 2. See Thermometer in the Diagnosis and Testing section of this group. Replace the faulty ambient temperature sensor, if required. 3. See Self-Diagnostic Test in the Diagnosis and Testing section of this group. Replace the faulty compass and thermometer display module, if required.

segment should fail to light during the test, the compass and thermometer display module is faulty and must be replaced. To repeat the test, momentarily depress and release the Comp/Temp button one time.

(5) Momentarily depress and release the U.S./Metric button one time, or turn the ignition switch to the Off position to exit the self-diagnostic test mode and

DIAGNOSIS AND TESTING (Continued)

return the compass and thermometer 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 Compass Variation Adjustment in the Service Procedures section of this group.

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

THERMOMETER

The thermometer function is supported by a ambient temperature sensor, a wiring circuit, and a portion of the overhead console compass and thermometer display module display. The sensor is mounted outside the passenger compartment near the front and center of the vehicle.

If any portion of the ambient temperature sensor circuit fails, the thermometer display will self-diagnose the circuit. An "SC" (short circuit) will appear in the display 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 the display in place of the temperature, when the sensor is exposed too temperatures below -40° C (-40° F), or if the sensor circuit is open.

The ambient 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 Compass and Thermometer Display Module in the Diagnosis and Testing section of this group. For circuit descriptions and diagrams, refer to 8W-49 - Overhead Console in Group 8W - Wiring Diagrams.

SENSOR TEST

(1) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Unplug the temperature sensor wire harness connector.

(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, see Sensor Circuit

Test in the Diagnosis and Testing section of this group. 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 ambient temperature sensor wire harness connector and the overhead console wire harness connector.

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

(3) Check for continuity between the sensor return circuit and the ambient temperature sensor signal circuit cavities of the overhead console wire harness 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 ambient temperature sensor wire harness connector. Check for continuity between the sensor return circuit cavity of the overhead console wire harness connector and a good ground. There should be no continuity. If OK, go to Step 5. If not OK, repair the short circuit as required.

(5) Check for continuity between the ambient temperature sensor signal circuit cavity of the overhead console wire harness connector and a good ground. There should be no continuity. If OK, see Compass and Thermometer Display Module in the Diagnosis and Testing section of 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 geographic locations, 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).

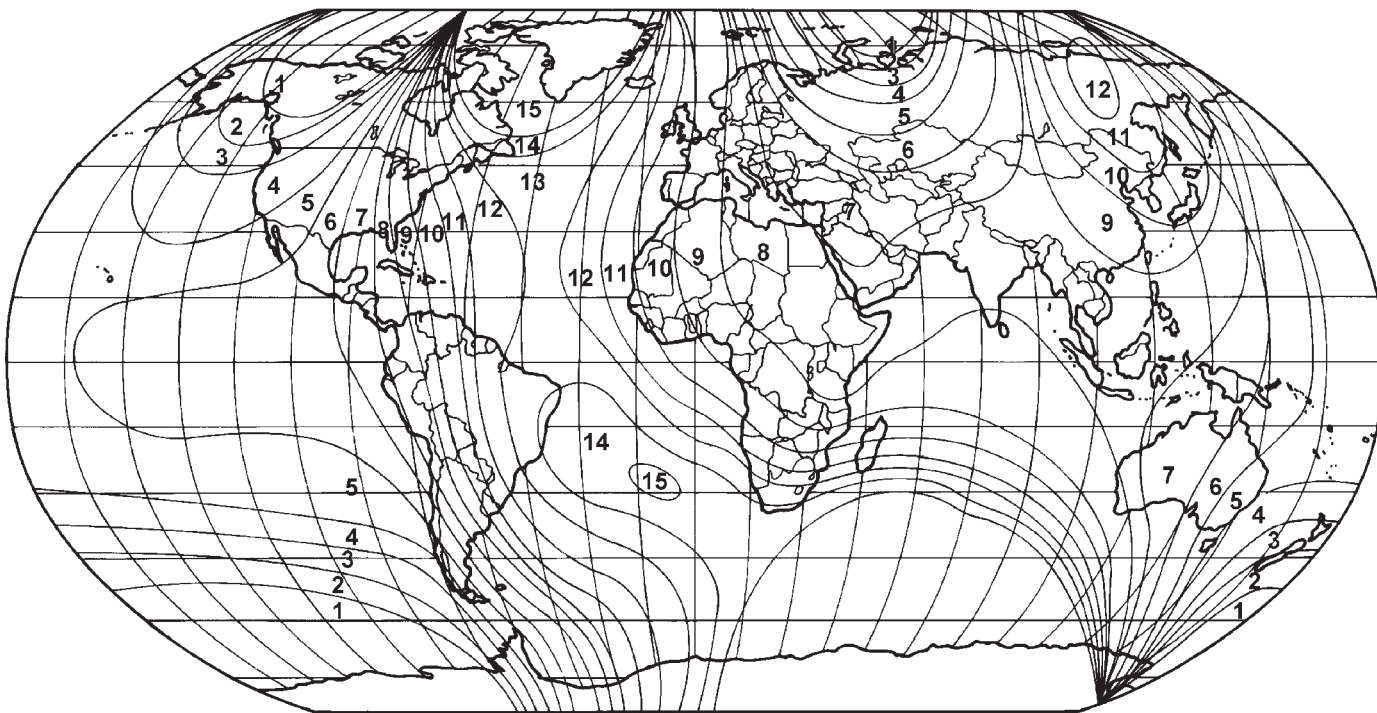
(2) Turn the ignition switch to the On position.

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

(4) Release both of the buttons. "VAR" will remain in the display.

(5) Press and release the U.S./Metric button. The number "1" will appear just to the right of "VAR" in the display. This number represents the variance zone number. Press and release the U.S./Metric button to step through the zone numbers, until the zone

SERVICE PROCEDURES (Continued)



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Fig. 1 Variance Settings

number for your geographic location appears in the display.

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

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

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.

NOTE: Whenever the compass is calibrated manually, the variation number must also be reset. See **Compass Variation Adjustment** in the **Service Procedures** section of this group.

Calibrate the compass manually as follows:

(1) Start the engine.

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

(3) Release both of the 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.

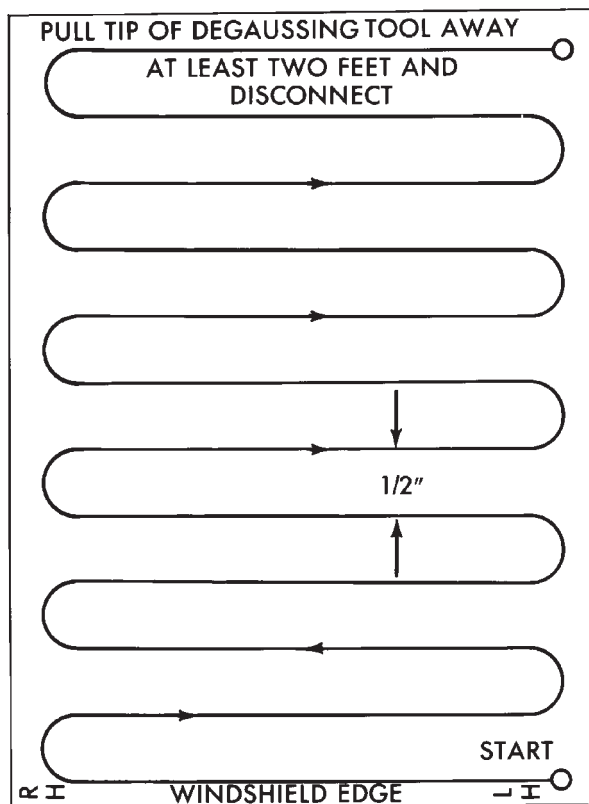
COMPASS DEMAGNETIZING

A degaussing tool (Special Tool 6029) is used to demagnetize, or degauss, the roof panel. Equivalent units must be rated as continuous duty for 110/115 volts and 60 Hz. They must also have a field strength of over 350 gauss at 7 millimeters (0.25 inch) beyond the tip of the probe.

SERVICE PROCEDURES (Continued)

To demagnetize the roof panel, proceed as follows:

- (1) Be certain the ignition switch is in the Off position, before you begin the demagnetizing procedure.
- (2) Place a piece of paper approximately 22 by 28 centimeters (8.5 by 11 inches), 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

(3) Plug in the degaussing tool, while keeping the tool at least 61 centimeters (2 feet) away from the compass unit.

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

(5) Contact the roof panel with the plastic coated tip of the degaussing tool. Be sure that the template is in place to avoid scratching the roof panel. Using a slow, back-and-forth sweeping motion, and allowing 13 millimeters (0.50 inch) between passes, move the tool at least 11 centimeters (4 inches) to each side of the roof center line, and 28 centimeters (11 inches) back from the windshield header.

(6) With the degaussing tool still energized, slowly back it away from the roof panel. When the tip of the

tool is at least 61 centimeters (2 feet) from the roof panel, unplug the tool.

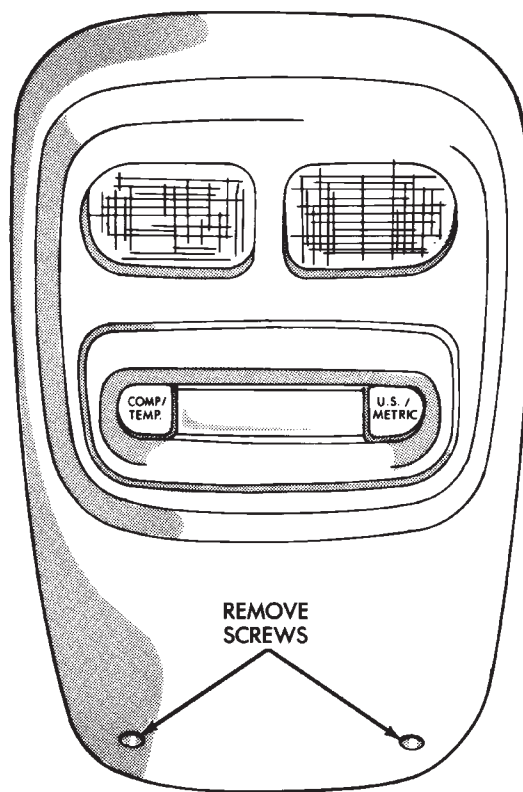
(7) Calibrate the compass and adjust the compass variance as described in the Service Procedures section of this group.

REMOVAL AND INSTALLATION

OVERHEAD CONSOLE

(1) Disconnect and isolate the battery negative cable.

(2) Remove the two screws that secure the front of the overhead console to the windshield header (Fig. 3).



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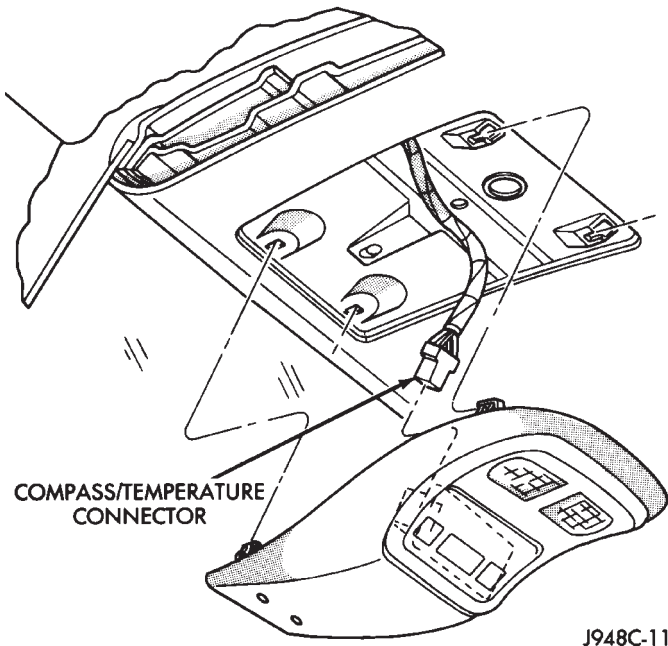
Fig. 3 Overhead Console Mounting Screws

(3) Pull the front of the console down slightly, then slide the console rearward to disengage the two mounting clips that secure the rear of the overhead console to the inner roof panel reinforcement (Fig. 4).

(4) Lower the overhead console from the headliner far enough to access and unplug the wire harness connector from the compass and thermometer display module.

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

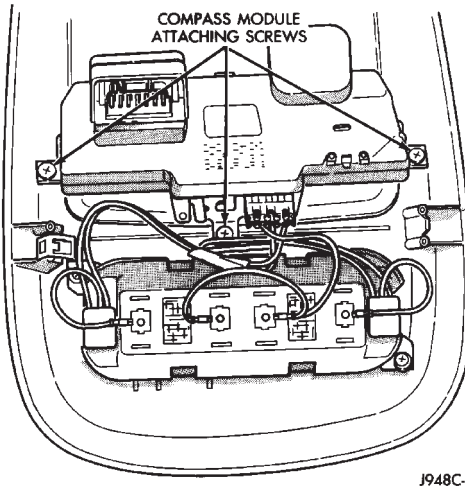
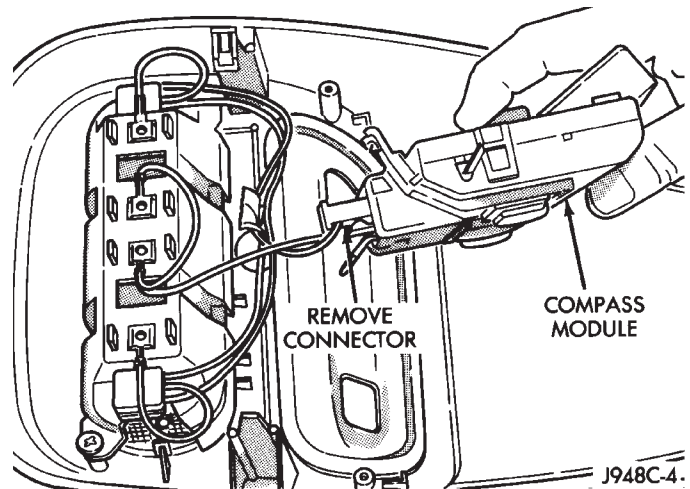
REMOVAL AND INSTALLATION (Continued)

**Fig. 4 Overhead Console Remove/Install****COMPASS AND THERMOMETER DISPLAY MODULE**

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the overhead console from the headliner. See Overhead Console in the Removal and Installation section of group for the procedures.
- (3) Remove the three screws that secure the compass and thermometer display module to the overhead console housing (Fig. 5).
- (4) Unplug the lighting wire harness connector from the compass and thermometer display module (Fig. 6).
- (5) Remove the compass and thermometer display module from the overhead console housing.
- (6) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

READING AND COURTESY LAMP BULB

- (1) Disconnect and isolate the battery negative cable.
- (2) Insert a long, narrow, flat-bladed tool in the notch on the curved edge of the reading and courtesy lamp lens.
- (3) Gently pry the lens downward from the overhead console housing and pivot the lens down. It may

**Fig. 5 Compass and Thermometer Display Module Remove/Install****Fig. 6 Lighting Wire Harness Connector**

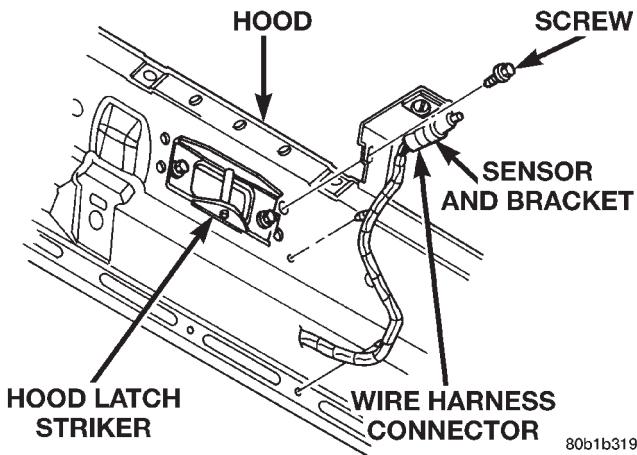
be necessary to move the tool along the edge of the lens to free the lens from the console housing.

- (4) Remove the bulb by pulling it straight down from the bulb holders.
- (5) Install a new bulb by aligning its ends with the bulb holders, and pushing it firmly into place.
- (6) Pivot the lens back up into position and press upward firmly until it snaps back into place.
- (7) Connect the battery negative cable.
- (8) Test the lamp by depressing the lens to check for proper lamp switching and lighting.

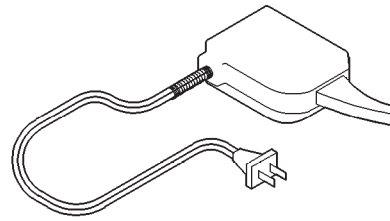
REMOVAL AND INSTALLATION (Continued)

AMBIENT TEMPERATURE SENSOR

- (1) Disconnect and isolate the battery negative cable.
- (2) Locate the ambient temperature sensor, on the underside of the hood near the hood latch striker (Fig. 7).

**Fig. 7 Ambient Temperature Sensor Remove/Install**

- (3) Unplug the wire harness connector from the ambient temperature sensor.
- (4) Remove the screw that secures the ambient temperature sensor to the inner hood reinforcement.
- (5) Remove the ambient temperature sensor from under the hood.
- (6) Reverse the removal procedures to install. Tighten the ambient temperature sensor mounting screw to 5.6 N·m (50 in. lbs.).

SPECIAL TOOLS**COMPASS****Degaussing Tool 6029**