OVERHEAD CONSOLE

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DESCRIPTION AND OPERATION

COMPASS/TEMPERATURE MINI TRIP COMPUTER SELF-DIAGNOSTIC TEST

The CMTC is capable of performing a diagnostic self check on many of its internal functions. CMTC diagnostics may be performed using a scan tool (DRB) and the proper Body Diagnostic Procedures manual or by the following procedure.

(1) With the ignition switch in the OFF position, press both the US/M and STEP button.

(2) Turn ignition switch to the ON position.

The CMTC will perform internal checks while lighting all segments of the vacuum florescent display. Upon completion of the internal check, the CMTC will display.

- PASS
- FAIL
- CCd

If any segment of the CMTC fails to light replace the module.

If FAIL is displayed, replace the module.

If CCd is displayed, check the CCD and Body Control Module (BCM) for proper operation, refer to the appropriate diagnostic test procedures manual If the CCD and the BCM are OK, replace the CMTC module.

For additional diagnostic information on the CMTC and for identifying CMTC problems, refer to the proper Body Diagnostic Procedures manual.

COMPASS MINI-TRIP COMPUTER (CMTC)

The Compass Mini-Trip Computer (CMTC) system is located in the overhead console. CMTC consists of a electronic control module with a vacuum fluorescent display (VFD) and function switches. The CMTC consists of a electronic module that displays compass, trip computer, and temperature features. Actuating the STEP switch will cause the CMTC to change mode of operation when ignition is ON. Example:

- Compass/Temperature
- Trip odometer (ODO)
- Average miles per gallon (ECO)
- Instant miles per gallon (ECO)
- Distance to empty (DTE)
- Elapsed time (ET)
- Off

The CMTC module in the overhead console has three buttons used to select various functions. The CMTC selector buttons will not operate until the ignition is in the RUN position (Fig. 1).

When the ignition switch is first turned to the RUN position the CMTC display;

- Blanks momentarily
- All segments of the VFD will light for one second
- Blanks momentarily
- Returns to the last mode setting selected before the ignition was last switched OFF.

DESCRIPTION AND OPERATION (Continued)

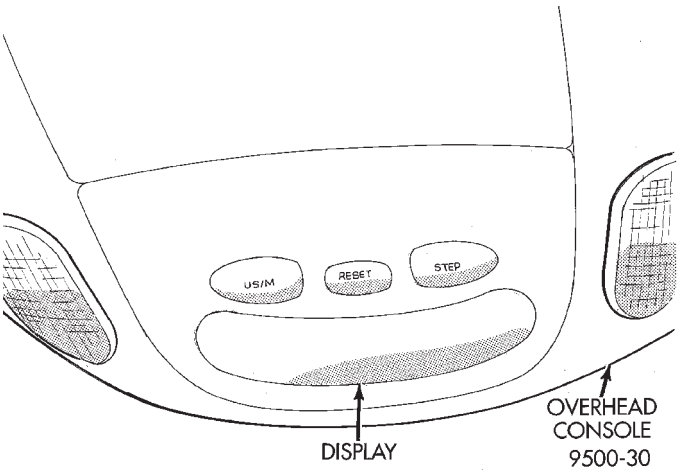


Fig. 1 Compass Mini-Trip Computer (CMTC) Switches and Display

THERMOMETER AND COMPASS

THERMOMETER

Engine temperature can increase the displayed temperature. The CMTC is designed to dampen temperature readings when the vehicle is moving at a rate slower than 18 miles per hour.

The outside temperature is measured from a sensor mounted in the front of the vehicle. If the temperature is more than 55°C (131°F) or the temperature sending line is shorted to ground, the temperature display should read SC. If the temperature is less than -40°C (-40°F), or the sending line is an open circuit, the display should read OC.

The CMTC will not allow the temperature reading to increase when the vehicle is not moving.

COMPASS

The CMTC is self calibrating and usually requires no adjustment. The compass will continuously perform a slow calibration to compensate for small magnetic variations common to any automobile. Uncommon magnetic shifts may be caused by items such as magnetic base antennas, which can permanently alter the magnetic field of the vehicle roof panel. If excessive magnetic field continues for 5 minutes, the compass heading will go blank and only the CAL symbol will illuminate. When this occurs, the vehicle roof panel may require demagnetizing. Refer to the demagnetizing procedure in this section.

Moderate magnetic shifts may, on very rare occasions, cause the compass heading to display only one or two of the eight possible headings. Although the compass will eventually compensate for this shift, it could take several ignition cycles. The compensation process can be expedited by manually activating the fast calibration routine. Refer to the fast calibrating procedure in this section. This procedure may be performed anytime that the compass appears to be inaccurate.

If the calibration data stored in the body control module is not received, the compass will read only NE North-East. The CMTC is self calibrating and requires no adjusting. The word CAL is displayed to show that the compass is in calibration mode. CAL will turn off after the vehicle has gone through three complete circles without stopping, in an area free of magnetic disturbance. If module displays temperature while the compass is blank, turn off ignition and run self diagnostics then demagnetize the vehicle. After demagnetizing, check compass calibration number, refer to Self Diagnostic Test. If greater than 15, demagnetize again until reading is less than 15. If compass still goes blank after demagnetizing then check internal diagnostics and demagnetize.

UNIVERSAL TRANSMITTER

The Universal Transmitter, replaces the hand held remote controls that open the garage door, motorized gates, or home lighting in/outside the home. This device memorizes the activator codes for up to three remote controlled devices. It triggers those devices at the push of a button, located in a unit permanently mounted in your overhead console (if equipped).

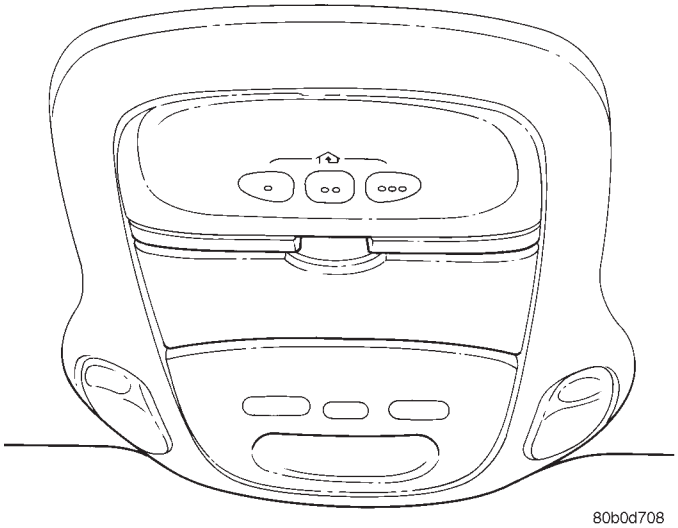


Fig. 2 Universal Transmitter Location

The transmitter operates off your vehicle's battery and charging system; no batteries are needed.

The Universal Transmitter incorporates a Rolling Code technology (random digital code signals from the remote transmitter) within the transmitter module. This is done so, as an added security measure.

Features of the Universal Transmitter are:

- Can be used with most other Radio Frequency (RF) activated devices.
- Individual channels can be trained.

DESCRIPTION AND OPERATION (Continued)

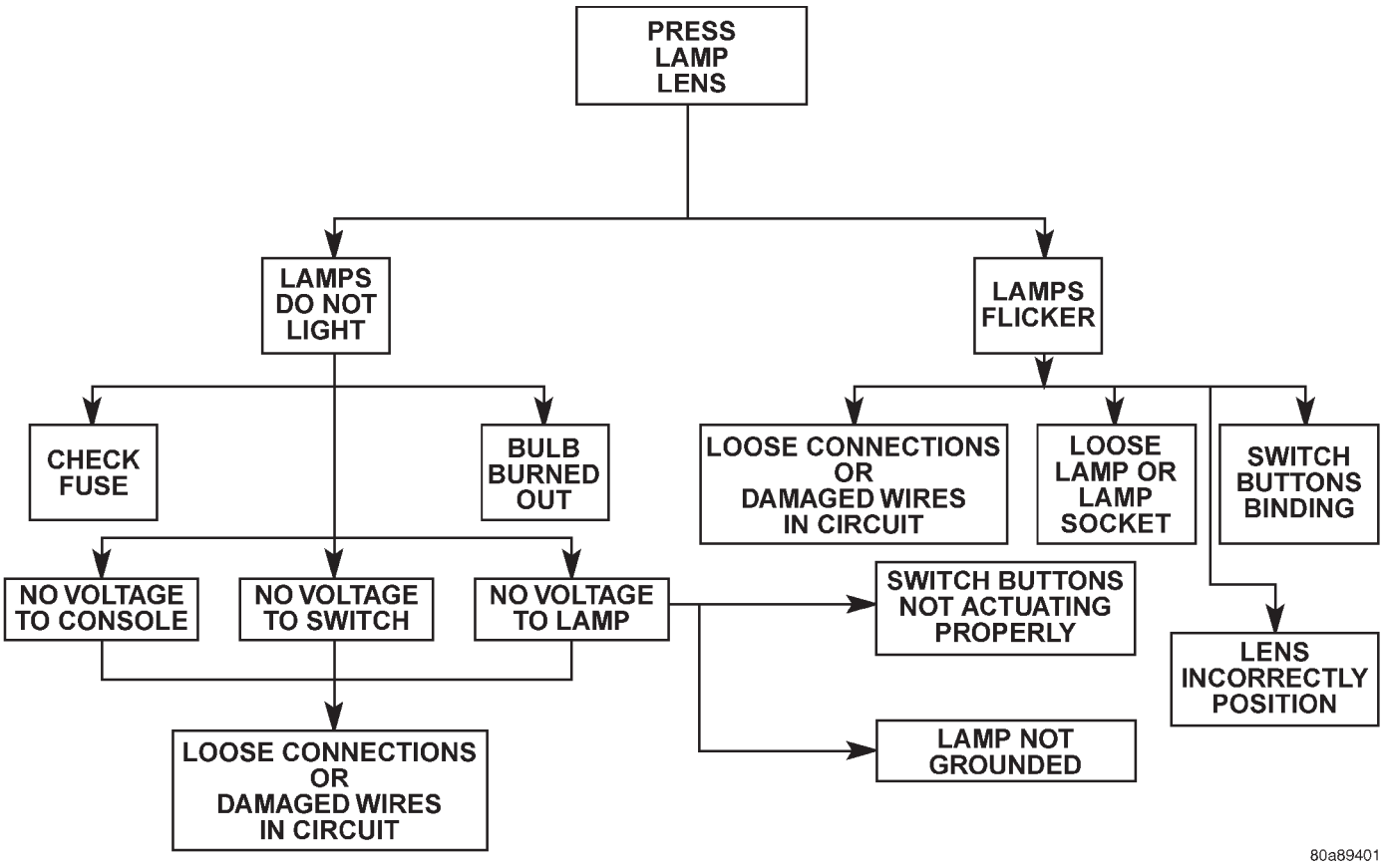


Fig. 3 Reading/Dome Lamp Diagnosis

- Stores transmitter data in permanent memory - retraining is not required even if the battery dies or is disconnected.

To operate, simply press the appropriate button on the Universal Transmitter. The red LED will light up while the signal is being transmitted.

NOTE: For security reasons, you are able to erase the trained frequencies.

DIAGNOSIS AND TESTING

READING/DOME LAMP DIAGNOSIS

The dome lamps operate in conjunction with the Remote Keyless Entry system. Refer to the Wiring Diagrams group of this manual for component locations and circuit information. For additional diagnostic information on lamp operation controlled by Body Control Module (BCM) refer to the Body Diagnostic Procedures Manual. For diagnosis of the reading lamps and switches refer to (Fig. 3).

TRAVELER MESSAGES

Traveler data is obtained from the Body Control Module (BCM) on the CCD bus wires. The CMTC will not display information for any of the screens for which it did not receive the bus messages. The label corresponding to the missing information will be lit. If no traveler data is displayed, check the CCD communications and the BCM. If the brightness level is improper check the CCD bus. One general method for checking the CCD bus communications between CMTC and the BCM is refer to the following procedure.

(1) STEP the CMTC to the Elapsed Time (ET).

(2) Press and release the reset button to reset the module.

(3) If the elapsed time clock does not reset, or fails to update, check the CCD wires and the BCM. The DRB is recommended for checking the CCD and the BCM.

(4) Perform the CMTC self diagnosis before replacing the module.

UNIVERSAL TRANSMITTER

Before proceeding in diagnosis, check the transmitter for battery voltage and a good ground at the transmitter harness connector.

- The unit may not have been trained correctly, try retraining the transmitter.
- The batteries in the hand-held transmitter may be dead.

DIAGNOSIS AND TESTING (Continued)

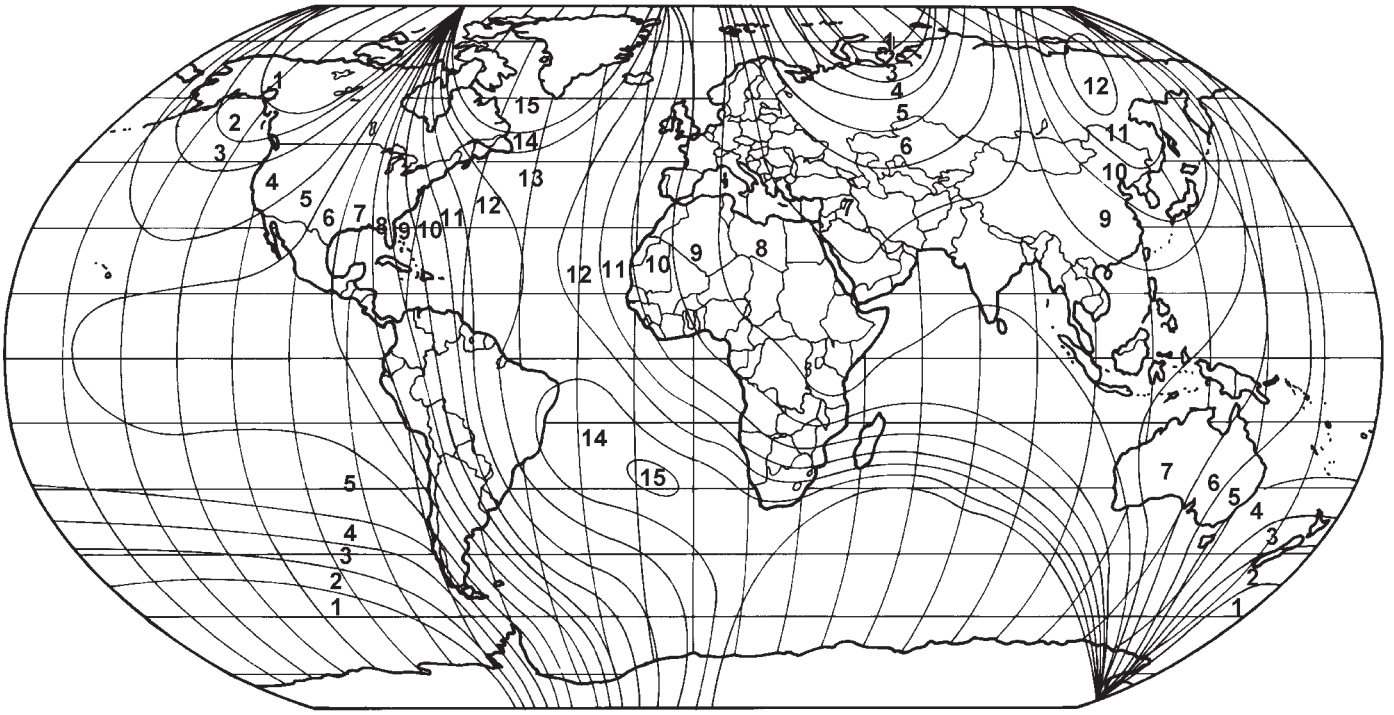


Fig. 4 Variance Settings

- Rotate your hand-held transmitter end-over-end and train again. For best results, place the end opposite from the battery compartment against the universal transmitter while training.
- The frequency of the hand-held transmitter may not be in the desired frequencies between 286MHz and 399MHz set by FCC.

SERVICE PROCEDURES

COMPASS CALIBRATION PROCEDURE

Variance is the difference between magnetic North and geographic North (Fig. 4). To adjust the compass variance set the CMTC to Compass/Temperature mode and press RESET buttons for 5 seconds. The symbol VAR and the current variance zone number will be displayed. Press the STEP button to select the proper variance zone as shown in (Fig. 4). Press the US/Metric button to save the new variance zone and normal CMTC operation. If both buttons are held for 10 seconds instead 5 seconds the CMTC will set variance to 8 and enter the fast calibration mode.

COMPASS CALIBRATION PROCEDURE (FAST METHOD)

When the compass is subjected to excessive magnetic fields, the CMTC automatically enters a fast calibration mode where is tries to compensate for the large magnetic shifts.

If the compass is inaccurate, appears to be inaccurate and the CAL is not illuminated the fast calibration mode may be manually entered by using the following procedure.

(1) Set the CMTC to Compass/Temperature mode and press the reset button for 10 continuous seconds. Manual activation of the fast calibration is generally not required.

(2) Compass variance sets to the default of 8 after the fast calibration is manually activated.

(3) Complete the compass variance setting procedure by referring to the Compass Variance Procedure in this section

(4) Drive the vehicle in three 360° turns in an area free from large metal objects. If the CAL symbol remains lit after completing this step, the roof panel may need demagnetizing

DEMAGNETIZING PROCEDURE

A magnetic field can adversely affect the compass. Magnetic interference can magnetize the roof panel. Magnetizing can be caused by placing a permanent magnet in contact with the roof panel. Example:

- Magnetic Base Antenna
- Magnetic screwdriver
- Audio speakers
- Refrigerator magnets.
- Pizza Signs
- Bubble gum flasher lights

SERVICE PROCEDURES (Continued)

Removing magnetic interfering objects will usually restore normal compass operation. If the compass display remains blank while the CAL label is illuminated, then the roof panel requires demagnetizing. To demagnetize use Special Tool 6029 for demagnetizing the roof panel. The demagnetizing procedure will demagnetize the roof and mounting screws in the overhead console. It is important that you follow the instructions below exactly. The mounting screws and the mounting brackets around the compass area are steel, and therefore aid in the demagnetizing of the roof panel.

(1) Be sure the ignition switch is in the OFF position before you begin the demagnetize procedure.

(2) Plug the demagnetizing tool into a standard 110/115 volt AC outlet, keeping the demagnetizing tool at least 12 inches away from the compass area when plugging it in.

(3) Slowly approach and contact the console mounting screw with the plastic coated tip of the tool for at least two seconds.

(4) With the demagnetizing tool still energized, slowly back it away from the screw until the tip is at least 12 inches from the screw head.

(5) Repeat the last step with all the console mounting screws.

(6) After you have pulled at least 12 inches from the last screw, remove the demagnetizing tool from inside vehicle and disconnect it from the electrical outlet.

(7) Place an 8 1/2 X 11 inch piece of paper lengthwise on the roof of vehicle directly above compass. The purpose of the paper is to protect the roof panel from scratches and define the area to be demagnetized.

(8) Plug in the demagnetizing tool, keeping it at least two feet away from the compass unit.

(9) Slowly approach the center of the roof panel at the windshield with the demagnetizing tool plugged in.

(10) Contact the roof panel with the tip of the tool. Using slow sweeping motions of 1/2 inch between sweeps. Move the tool approximately four inches either side of the center line and at least 11 inches back from the windshield.

(11) With the demagnetizing tool still energized, slowly back away from the roof panel until the tip is at least two feet from the roof before unplugging the tool.

(12) Recalibrate compass, refer to the compass calibration procedure in this section.

UNIVERSAL TRANSMITTER

TRAINING

(1) Turn off the engine.

(2) Erase the factory test codes by pressing the two outside buttons. Release the buttons when the red light begins to flash (about 20 seconds).

(3) Choose one of the three buttons to train. Place the hand-held transmitter within one inch of the universal transmitter and push the buttons on both transmitters. The red light on the universal transmitter will begin to flash slowly.

(4) When the red light on the universal transmitter begins to flash rapidly (this may take as long as 60 seconds), release both buttons. Your universal transmitter is now “trained”. To train the other buttons, repeat Step 3 and Step 4. Be sure to keep your hand-held transmitter in case you need to retrain the universal transmitter.

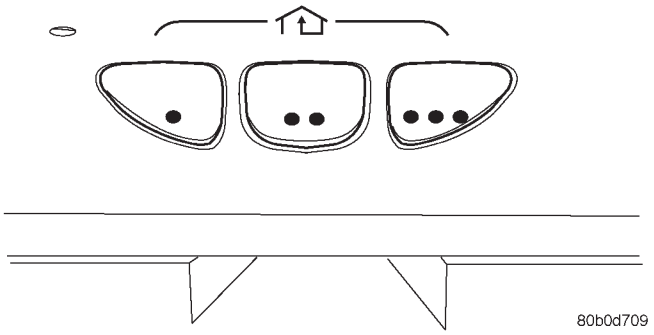


Fig. 5 Universal Transmitter

ERASING

To erase the universal transmitter codes, simply hold down the two outside buttons until the red LED begins to flash.

NOTE: Individual channels cannot be erased. Erasing the transmitter codes will erase ALL programmed codes.

REMOVAL AND INSTALLATION

AMBIENT TEMPERATURE SENSOR

REMOVAL

(1) Raise and support vehicle on safety stands.

(2) From behind front bumper fascia, remove screw holding sensor to radiator closure panel.

(3) Remove sensor from vehicle.

INSTALLATION

For installation, reverse the above procedures.

REMOVAL AND INSTALLATION (Continued)

COMPASS MINI-TRIP COMPUTER (CMTC) MODULE

REMOVAL

(1) Disconnect battery negative cable.
(2) Remove overhead console.
(3) Remove the six screws holding CMTC module to overhead console (Fig. 6).

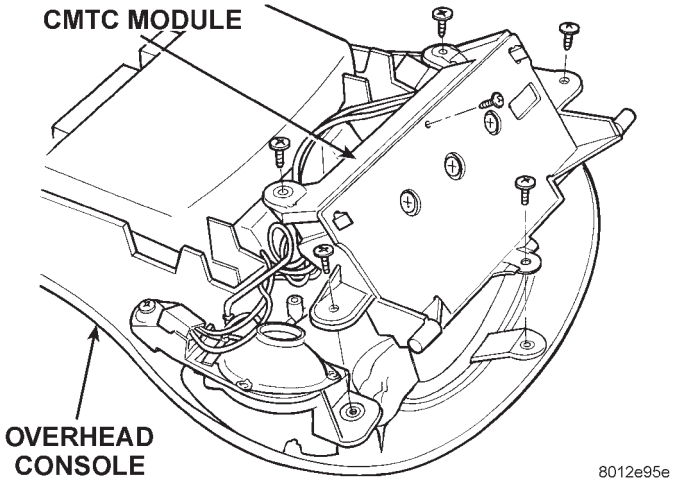


Fig. 6 Compass Mini-Trip Computer

(4) Remove CMTC module from console.

INSTALLATION

For installation, reverse the above procedures.

COMPASS MINI-TRIP COMPUTER (CMTC) LAMP BULBS

REMOVAL

(1) Remove overhead console.
(2) Rotate bulb socket counterclockwise one quarter turn (Fig. 7).

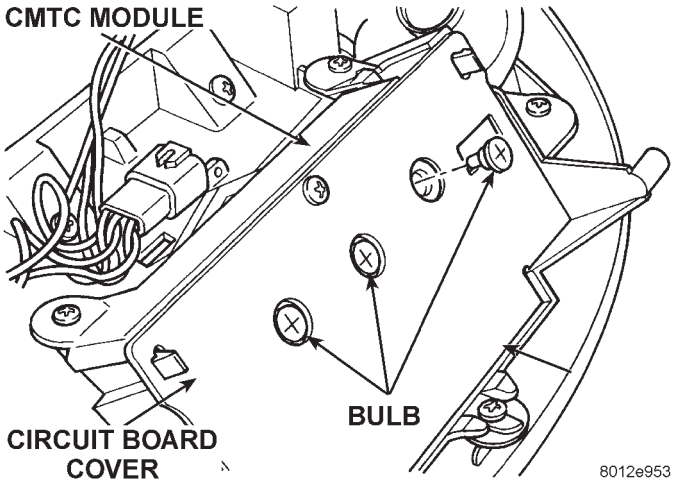


Fig. 7 CMTC Lamp Bulbs

(3) Pull bulb socket from CMTC module.

INSTALLATION

For installation, reverse the above procedures.

FRONT HEADER READING/COURTESY LAMP

REMOVAL

(1) Place a small flat tool in the slot at the forward edge of the lamp lens and twist (Fig. 8).
(2) Remove lens.
(3) Insert the tip of the tool under the inside, rear edge of the reflector/light shield. Carefully pry reflector/light shield out.
(4) Remove the lamp by pressing forward the brass terminal and rotating the lamp clockwise to remove.

INSTALLATION

For installation, reverse the above procedures. When installing the lamp lens, first guide the switch contact tab on the lens between the lamp switch plunger and the lamp bezel. Then snap lens onto the two lens pivots on the bezel.

OVERHEAD CONSOLE

REMOVAL

(1) Open the transmitter bin door (Fig. 9).
(2) Remove screw holding the overhead console to the headliner. With the screw removed the console is retained by one engagement tab located inside the eyeglass storage bin.
(3) Open the eyeglass bin door.
(4) Press the retaining tab which is located directly above the door latch.
(5) Lower rear of console away from headliner.
(6) Pull console rearward to disengage clips holding front of console to roof armature and lower console.
(7) Disconnect wire connectors from back of CMTC and reading lamps. Ensure the connectors lock tabs are fully depressed before disconnecting.
(8) Remove overhead console.

INSTALLATION

For installation, reverse the above procedures.

READING/COURTESY LAMP

Removal

(1) Using a trim stick, lightly pry outward the forward end of reading lamp lens (Fig. 10).
(2) Rotate reading/courtesy lamp socket one quarter turn counterclockwise.
(3) Pull socket out of lamp (Fig. 11).
(4) Pull lamp from socket.

REMOVAL AND INSTALLATION (Continued)

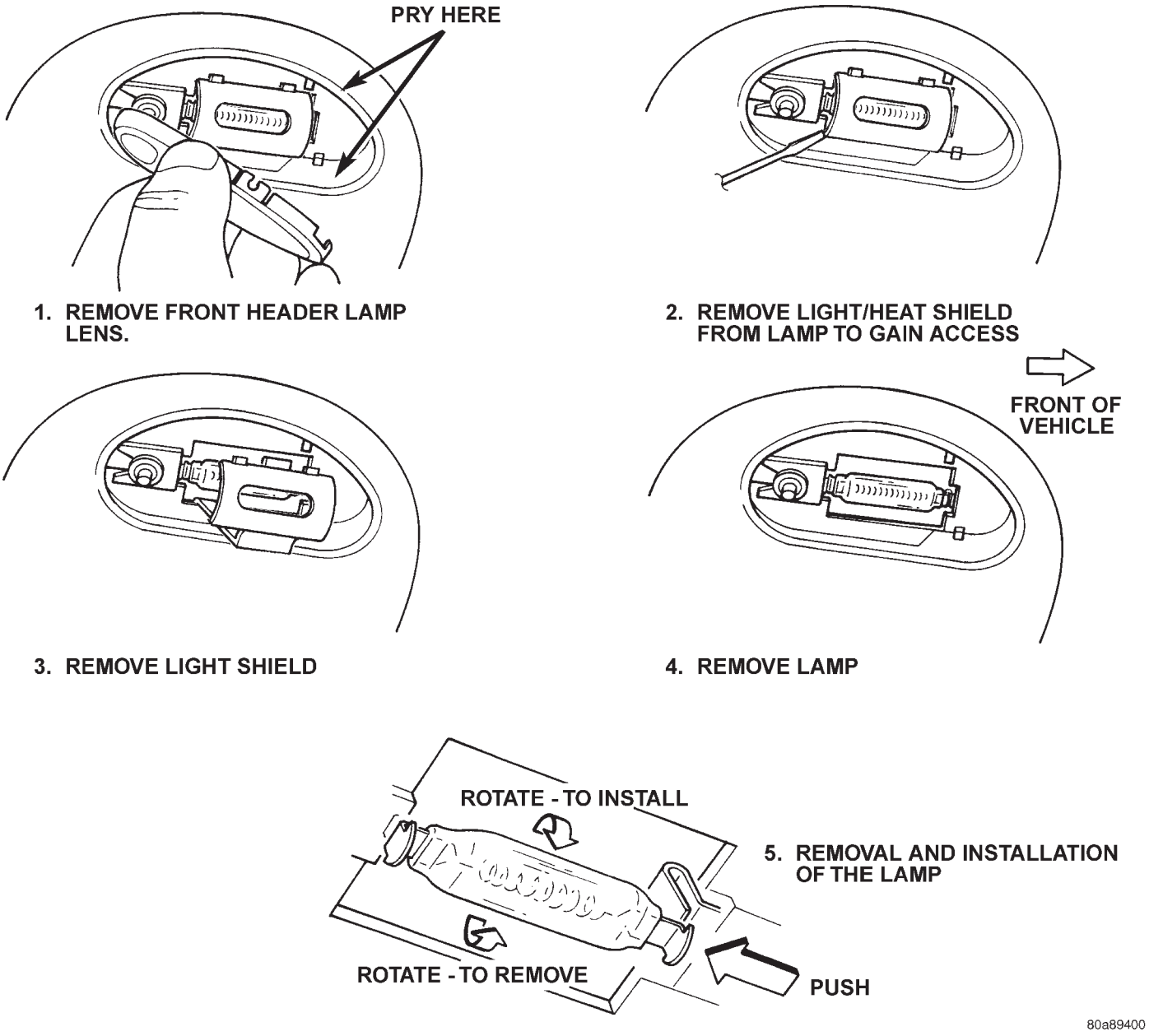


Fig. 8 Lamp and Lens Removal

Installation

For installation, reverse the above procedures. When installing the lamp lens, first guide the switch contact tab on the lens between the lamp switch plunger and the lamp bezel. Then snap lens onto the two lens pivots on the bezel.

READING/COURTESY LAMP ASSEMBLY

Removal

(1) Disconnect the battery negative cable.

(2) Remove the overhead console.

(3) Remove the screws holding the reading lamp to the overhead console (Fig. 12).

(4) Remove the lamp from the overhead console.

(5) Disconnect the wire connectors from the back of the reading lamp (Fig. 13).

(6) Disconnect the reading lamp switch from the keyhole slot in the reading lamp.

(7) Remove the reading lamp from the overhead console.

Installation

For installation, reverse the above procedures.

UNIVERSAL TRANSMITTER

REMOVAL

The Universal Transmitter is serviced with the transmitter bin door, in the overhead console.

REMOVAL AND INSTALLATION (Continued)

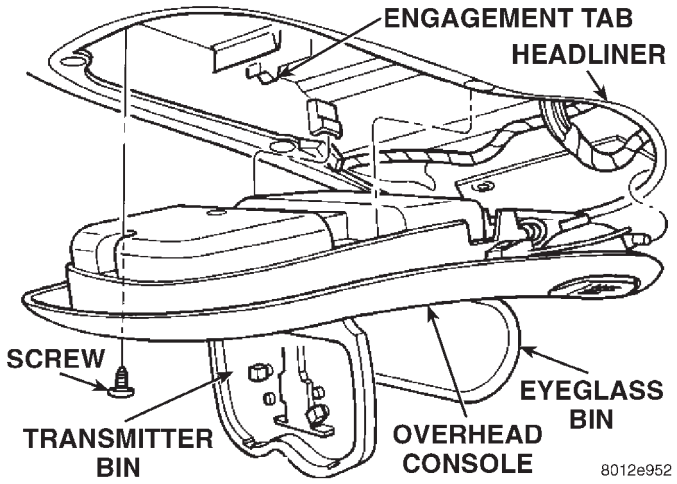


Fig. 9 Overhead Console

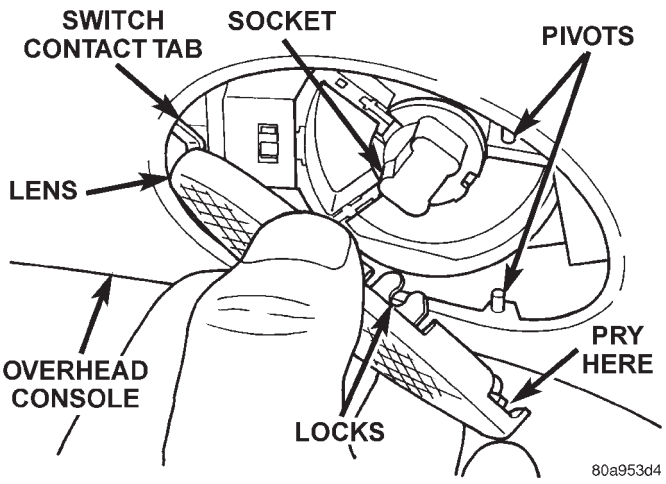


Fig. 10 Reading/Courtesy lamp lens

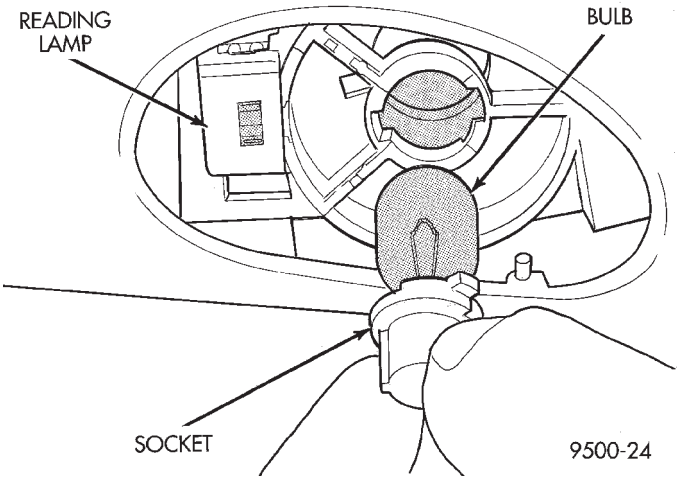


Fig. 11 Socket and Lamp

(1) Disconnect and isolate negative battery cable.

(2) Open transmitter bin door in rear of overhead console.

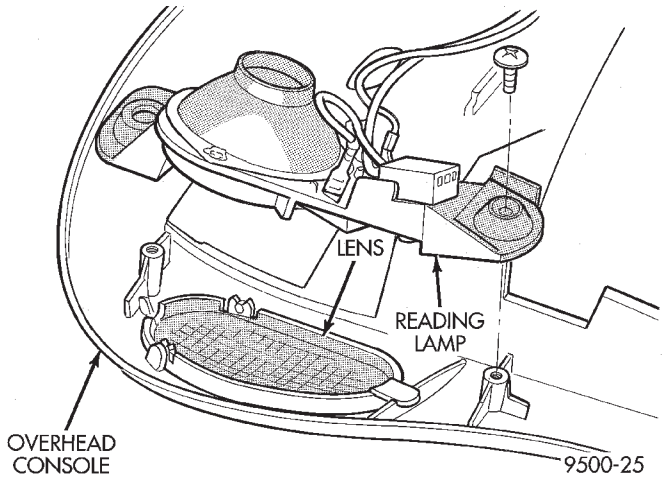


Fig. 12 Reading/Courtesy Lamp

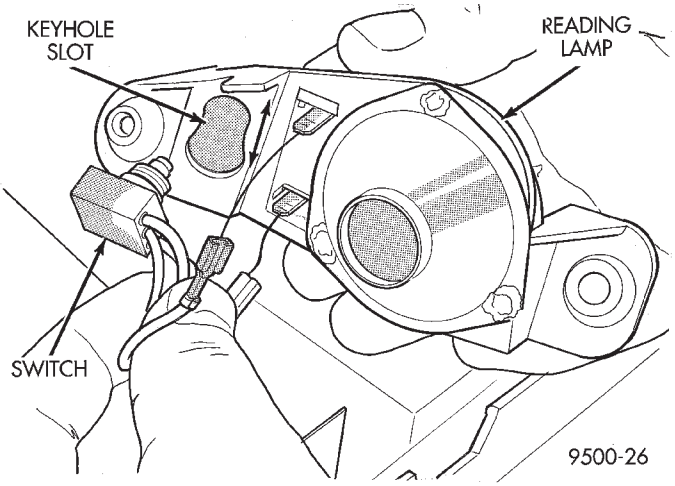


Fig. 13 Connector and Switch

(3) Gently pull towards rear of vehicle, releasing transmitter bin door.

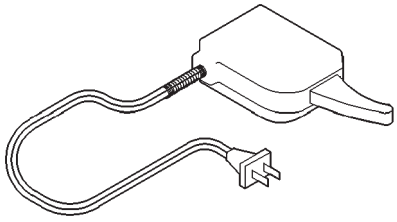
(4) Disconnect harness connector from Universal Transmitter and remove bin door from vehicle.

INSTALLATION

For installation, reverse the above procedures. The Universal Transmitter will need to be retrained. Refer to SERVICE PROCEDURES in this section.

SPECIAL TOOLS

SPECIAL TOOL



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