AUDIO SYSTEMS

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GENERAL INFORMATION

INTRODUCTION

Operating instructions for the factory installed audio systems can be found in the Owner's Manual provided with the vehicle.

NS vehicles are equipped with an Ignition Off Draw (IOD) fuse in the power distribution center located in the engine compartment. After the IOD fuse or battery has been disconnected, the radio station sets and clock will require resetting.

DESCRIPTION AND OPERATION

ANTENNA

All models use a fixed-length stainless steel rod-type antenna mast, installed at the right front fender of the vehicle. The antenna mast is connected to the center wire of the coaxial antenna cable, and is not grounded to any part of the vehicle.

To eliminate static, the antenna base must have a good ground. The coaxial antenna cable shield (the outer wire mesh of the cable) is grounded to the antenna base and the radio chassis.

The antenna coaxial cable has an additional disconnect, located near the right end of the instrument panel. This additional disconnect allows the instrument panel assembly to be removed and installed without removing the radio.

The factory-installed Electronically Tuned Radios (ETRs) automatically compensate for radio antenna trim. Therefore, no antenna trimmer adjustment is required or possible when replacing the receiver or the antenna.

INTERFERENCE ELIMINATION

Some components used on the vehicles are equipped with a capacitor to suppress radio frequency interference/static.

Capacitors are mounted in various locations internal to the generator, instrument cluster and windshield wiper motor.

To eliminate radio interference, ground straps are used in different areas of the vehicle. These ground circuits should be securely tightened to assure good metal to metal contact. The ground straps conduct very small high frequency electrical signals to ground and require clean surface contact area. The radio ground is supplied from the instrument panel harness and is attached to the rear of the radio. Some engines have other ground straps to eliminate further radio interference:

- Radio chassis to instrument panel structure
- Engine to dash panel
- Engine to chassis
- A/C h valve to dash panel

Radio resistance type spark plug cables in the high tension circuit of the ignition system complete the interference suppression. Faulty or deteriorated spark plug wires should be replaced.

RADIOS

Available factory-installed radio receivers for this model include an AM/FM/cassette (RAS sales code), an AM/FM/cassette/5-band graphic equalizer with CD changer control feature (RBN sales code), an AM/FM/

DESCRIPTION AND OPERATION (Continued)

CD/3-band graphic equalizer (RBR sales code), or an AM/FM/CD/cassette/3-band graphic equalizer (RAZ sales code).

All factory-installed radio receivers are stereo Electronically Tuned Radios (ETR) and include an electronic digital clock function.

All factory-installed radio receivers, except the RAS model, communicate on the Chrysler Collision Detection (CCD) data bus network through a separate two-way wire harness connector. The CCD data bus network allows the sharing of sensor information. This helps to reduce wire harness complexity, internal controller hardware, and component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities.

In addition, radios connected to the CCD data bus have several audio system functions that can be diagnosed using a DRB scan tool. Refer to the proper Diagnostic Procedures manual for more information on DRB testing of the audio systems.

The radio can only be serviced by an authorized radio repair station. Refer to the latest Warranty Policies and Procedures manual for a current listing of authorized radio repair stations.

For more information on radio features, setting procedures, and control functions refer to the owner's manual in the vehicle glove box.

RADIO IGNITION INTERFERENCE

If receiving ignition/engine interference noise on the radio stations, check and clean all engine and body ground connections. Tighten properly after cleaning. Example (Fig. 1), (Fig. 2), (Fig. 3) and (Fig. 4).

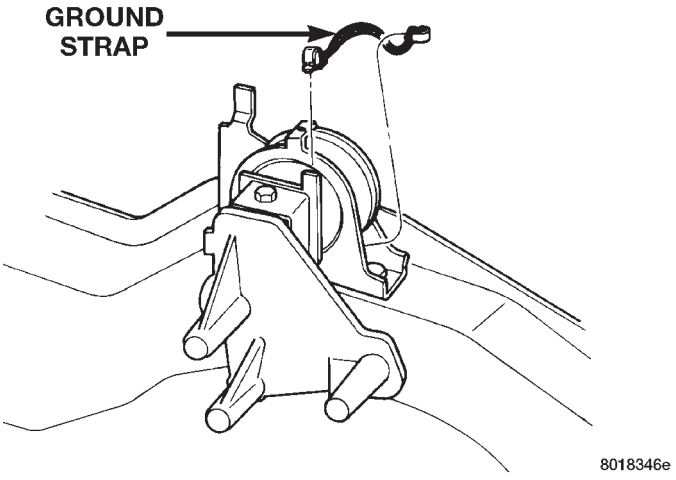

Fig. 1 Motor Mount to Frame Rail Ground

Ensure all ground connections are without corrosion.

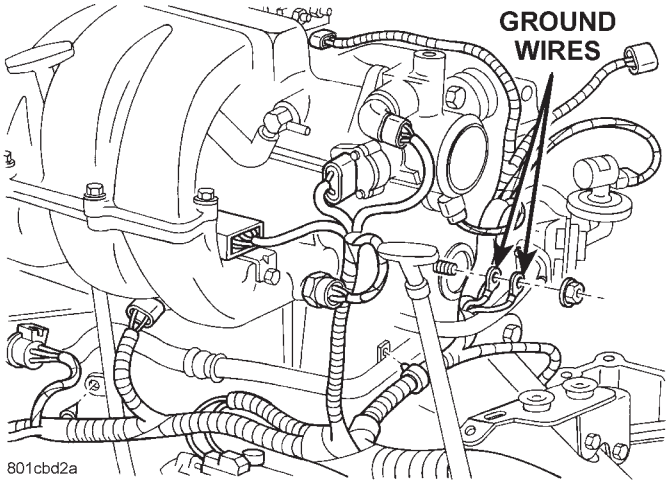

Fig. 2 2.4L Engine Block Ground

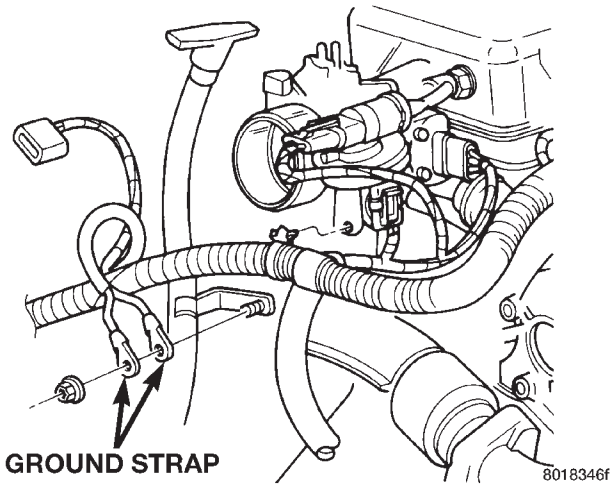

Fig. 3 3.0L Engine Block Ground

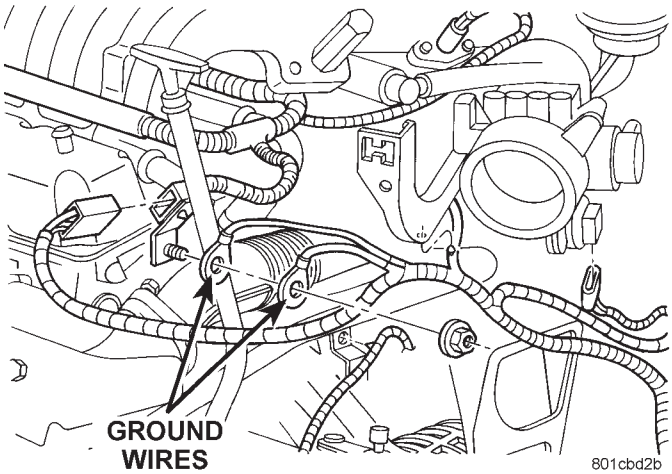

Fig. 4 3.3/3.8L Engine Block Ground

CHOKE—INFINITY SPEAKERS

If the audio system is lacking bass response, check for continuity across the choke connector. If no continuity Replace choke. The choke is located on the

DESCRIPTION AND OPERATION (Continued)

bracket behind the junction block/body control module (Fig. 5).

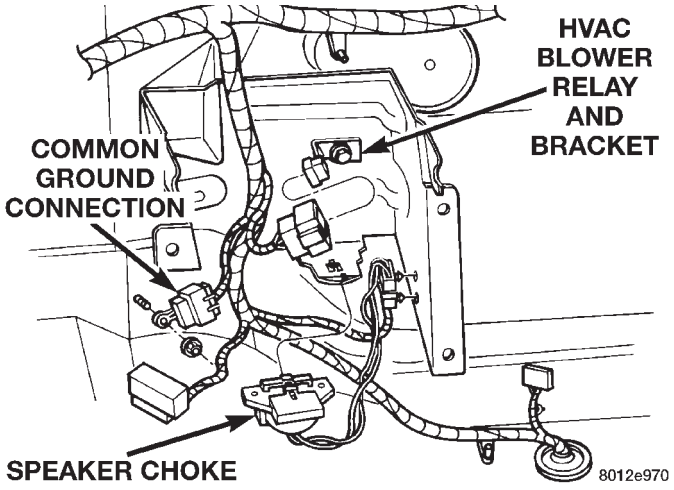

Fig. 5 Choke Location

REMOTE RADIO SWITCHES

A remote radio control switch option is available on LXI models sold in North America with the AM/FM/cassette/5-band graphic equalizer with CD changer control feature (RBN sales code), or the AM/FM/CD/cassette/3-band graphic equalizer (RAZ sales code) radio receivers. Two rocker-type switches are mounted on the back (instrument panel side) of the steering wheel spokes. The switch on the left spoke is the seek switch and has seek up, seek down, and preset station advance functions. The switch on the right spoke is the volume control switch and has volume up, and volume down functions (Fig. 6).

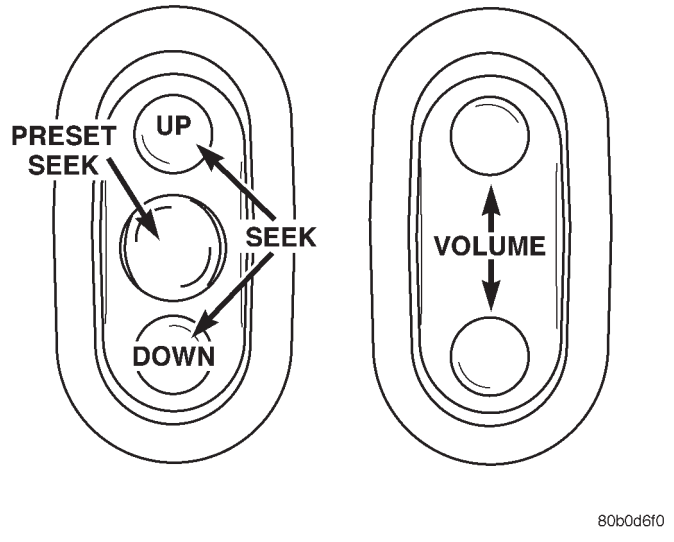

Fig. 6 Remote Radio Switch Operational View

These switches are resistor multiplexed units that are hard-wired to the Body Control Module (BCM) through the clockspring. The BCM sends the proper messages on the Chrysler Collision Detection (CCD) data bus network to the radio receiver. For diagnosis of the BCM or the CCD data bus, the use of a DRB scan tool and the proper Diagnostic Procedures manual are recommended. For more information on the operation of the remote radio switch controls, refer to the owner's manual in the vehicle glove box.

NAME BRAND SPEAKER RELAY

Relay is located in the junction block. To test relay refer to the Audio Diagnostic Test Procedures or use a known good relay.

DIAGNOSIS AND TESTING

ANTENNA

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

The following four tests are used to diagnose the antenna with an ohmmeter:

- **Test 1** - Mast to ground test
- **Test 2** - Tip-of-mast to tip-of-conductor test
- **Test 3** - Body ground to battery ground test
- **Test 4** - Body ground to coaxial shield test.

The ohmmeter test lead connections for each test are shown in Antenna Tests (Fig. 7).

NOTE: This model has a two-piece antenna coaxial cable. Tests 2 and 4 must be conducted in two steps to isolate a coaxial cable problem; from the coaxial cable connection under the right end of the instrument panel near the right cowl side panel to the antenna base, and then from the coaxial cable connection to the radio chassis connection.

TEST 1

Test 1 determines if the antenna mast is insulated from the base. Proceed as follows:

(1) Unplug the antenna coaxial cable connector from the radio chassis and isolate.

(2) Connect one ohmmeter test lead to the tip of the antenna mast. Connect the other test lead to the antenna base. Check for continuity.

(3) There should be no continuity. If continuity is found, replace the faulty or damaged antenna base and cable assembly.

DIAGNOSIS AND TESTING (Continued)

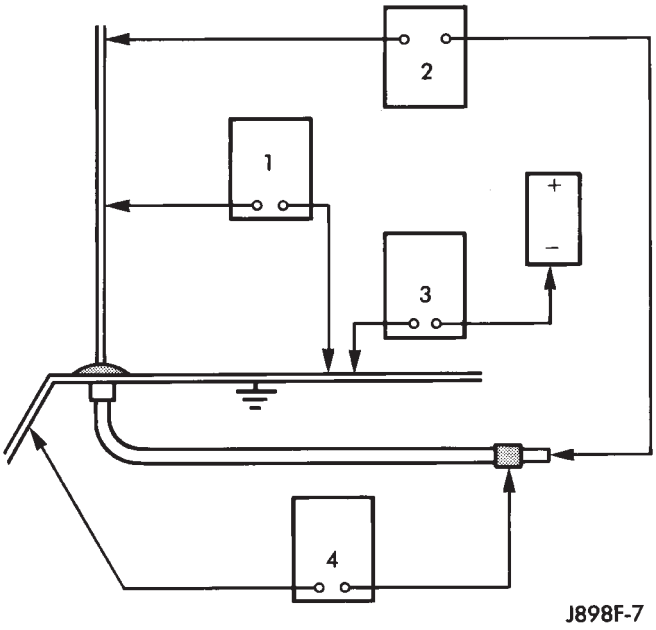

Fig. 7 Antenna Tests

TEST 2

Test 2 checks the antenna for an open circuit as follows:

(1) Unplug the antenna coaxial cable connector from the radio chassis.

(2) Connect one ohmmeter test lead to the tip of the antenna mast. Connect the other test lead to the center pin of the antenna coaxial cable connector.

(3) Continuity should exist (the ohmmeter should only register a fraction of an ohm). High or infinite resistance indicates damage to the base and cable assembly. Replace the faulty base and cable, if required.

TEST 3

Test 3 checks the condition of the vehicle body ground connection. This test should be performed with the battery positive cable removed from the battery. Disconnect both battery cables, the negative cable first. Reconnect the battery negative cable and perform the test as follows:

(1) Connect one ohmmeter test lead to the vehicle fender. Connect the other test lead to the battery negative post.

(2) The resistance should be less than (1) ohm.

(3) If the resistance is more than (1) ohm, check the braided ground strap connected to the engine and the vehicle body for being loose, corroded, or damaged. Repair the ground strap connection, if required.

TEST 4

Test 4 checks the condition of the ground between the antenna base and the vehicle body as follows:

(1) Connect one ohmmeter test lead to the vehicle fender. Connect the other test lead to the outer crimp on the antenna coaxial cable connector.

(2) The resistance should be less then (1) ohm.

(3) If the resistance is more then (1) ohm, clean and/or tighten the antenna base to fender mounting hardware.

AUDIO SYSTEM

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.

RADIO

If the vehicle is equipped with remote radio switches located on the backs of the steering wheel spokes, and the problem being diagnosed is related to one of the symptoms listed below, be certain to check the remote radio switches and circuits as described in this group, prior to attempting radio diagnosis or repair.

- Stations changing with no remote radio switch input
- Radio memory presets not working properly
- Volume changes with no remote radio switch input
- Remote radio switch buttons taking on other functions
- CD player skipping tracks
- Remote radio switch inoperative.

For circuit descriptions and diagrams, refer to Group 8W - Wiring Diagrams.

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CAUTION: The speaker output of the radio is a "floating ground" system. Do not allow any speaker lead to short to ground, as damage to the radio may result.

DIAGNOSIS AND TESTING (Continued)

AUDIO SYSTEM DIAGNOSIS

CONDITION	POSSIBLE CAUSE	CORRECTION
NO AUDIO.	1. FUSE FAULTY. 2. RADIO CONNECTOR FAULTY. 3. WIRING FAULTY. 4. GROUND FAULTY. 5. RADIO FAULTY. 6. SPEAKERS FAULTY.	1. CHECK RADIO FUSES IN FUSEBLOCK MODULE. REPLACE FUSES, IF REQUIRED. 2. CHECK FOR LOOSE OR CORRODED RADIO CONNECTOR. REPAIR, IF REQUIRED. 3. CHECK FOR BATTERY VOLTAGE AT RADIO CONNECTOR. REPAIR WIRING, IF REQUIRED. 4. CHECK FOR CONTINUITY BETWEEN RADIO CHASSIS AND A KNOWN GOOD GROUND. THERE SHOULD BE CONTINUITY. REPAIR GROUND, IF REQUIRED. 5. EXCHANGE OR REPLACE RADIO, IF REQUIRED. 6. SEE SPEAKER DIAGNOSIS, IN THIS GROUP.
NO DISPLAY.	1. FUSE FAULTY. 2. RADIO CONNECTOR FAULTY. 3. WIRING FAULTY. 4. GROUND FAULTY. 5. RADIO FAULTY.	1. CHECK RADIO FUSES IN FUSEBLOCK MODULE. REPLACE FUSES, IF REQUIRED. 2. CHECK FOR LOOSE OR CORRODED RADIO CONNECTOR. REPAIR, IF REQUIRED. 3. CHECK FOR BATTERY VOLTAGE AT RADIO CONNECTOR. REPAIR WIRING, IF REQUIRED. 4. CHECK FOR CONTINUITY BETWEEN RADIO CHASSIS AND A KNOWN GOOD GROUND. THERE SHOULD BE CONTINUITY. REPAIR GROUND, IF REQUIRED. 5. EXCHANGE OR REPLACE RADIO, IF REQUIRED.
NO MEMORY.	1. FUSE FAULTY. 2. RADIO CONNECTOR FAULTY. 3. WIRING FAULTY. 4. GROUND FAULTY. 5. RADIO FAULTY.	1. CHECK IGNITION-OFF DRAW FUSE. REPLACE FUSE, IF REQUIRED. 2. CHECK FOR LOOSE OR CORRODED RADIO CONNECTOR. REPAIR, IF REQUIRED. 3. CHECK FOR BATTERY VOLTAGE AT RADIO CONNECTOR. REPAIR WIRING, IF REQUIRED. 4. CHECK FOR CONTINUITY BETWEEN RADIO CHASSIS AND A KNOWN GOOD GROUND. THERE SHOULD BE CONTINUITY. REPAIR GROUND, IF REQUIRED. 5. EXCHANGE OR REPLACE RADIO, IF REQUIRED.
POOR RADIO RECEPTION.	1. ANTENNA FAULTY. 2. GROUND FAULTY. 3. RADIO FAULTY.	1. SEE ANTENNA DIAGNOSIS, IN THIS GROUP. REPAIR OR REPLACE ANTENNA, IF REQUIRED. 2. CHECK FOR CONTINUITY BETWEEN RADIO CHASSIS AND A KNOWN GOOD GROUND. THERE SHOULD BE CONTINUITY. REPAIR GROUND, IF REQUIRED.. 3. EXCHANGE OR REPLACE RADIO, IF REQUIRED.
NO/POOR TAPE OPERATION.	1. FAULTY TAPE. 2. FOREIGN OBJECTS BEHIND TAPE DOOR. 3. DIRTY CASSETTE TAPE HEAD. 4. FAULTY TAPE DECK.	1. INSERT KNOWN GOOD TAPE AND TEST OPERATION. 2. REMOVE FOREIGN OBJECTS AND TEST OPERATION. 3. CLEAN HEAD WITH MOPAR CASSETTE HEAD CLEANER. 4. EXCHANGE OR REPLACE RADIO, IF REQUIRED.
NO COMPACT DISC OPERATION	1. FAULTY CD. 2. FOREIGN MATERIAL ON CD. 3. CONDENSATION ON CD OR OPTICS. 4. FAULTY CD PLAYER.	1. INSERT KNOWN GOOD CD AND TEST OPERATION. 2. CLEAN CD AND TEST OPERATION. 3. ALLOW TEMPERATURE OF VEHICLE INTERIOR TO STABILIZE AND TEST OPERATION. 4. EXCHANGE OR REPLACE RADIO, IF REQUIRED.

DIAGNOSIS AND TESTING (Continued)

(1) Check the fuse(s) in the junction block and the Power Distribution Center (PDC). If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse(s).

(2) Check for battery voltage at the fuse in the PDC. If OK, go to Step 3. If not OK, repair the open circuit to the battery as required.

(3) Turn the ignition switch to the ON position. Check for battery voltage at the 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 instrument cluster center bezel. Remove the radio, but do not unplug the wire harness connectors. Check for continuity between the radio chassis and a good ground. There should be continuity. If OK, go to Step 5. If not OK, repair the open radio chassis ground circuit as required.

(5) Connect the battery negative cable. Turn the ignition switch to the ON position. Check for battery voltage at the fused ignition switch output circuit cavity of the left (gray) radio wire harness connector. If OK, go to Step 6. If not OK, repair the open circuit as required.

(6) Turn the ignition switch to the OFF position. Check for battery voltage at the fused B(+) circuit cavity of the left (gray) radio wire harness connector. If OK, replace the faulty radio. If not OK, repair the open circuit to the Ignition-Off Draw (IOD) fuse as required.

REMOTE RADIO SWITCHES

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

(1) Disconnect and isolate the battery negative cable. Wait two minutes for the airbag system capacitor to discharge before further service.

(2) Remove the remote radio switch(es) from the steering wheel.

(3) Use an ohmmeter to check the switch resistance as shown in the Remote Radio Switch Test table (Fig. 8).

NOTE: The right remote radio switch back is white in color. The left switch back is black in color. The right/left remote radio switch orientation is with the steering wheel installed, and driver in drivers seat.

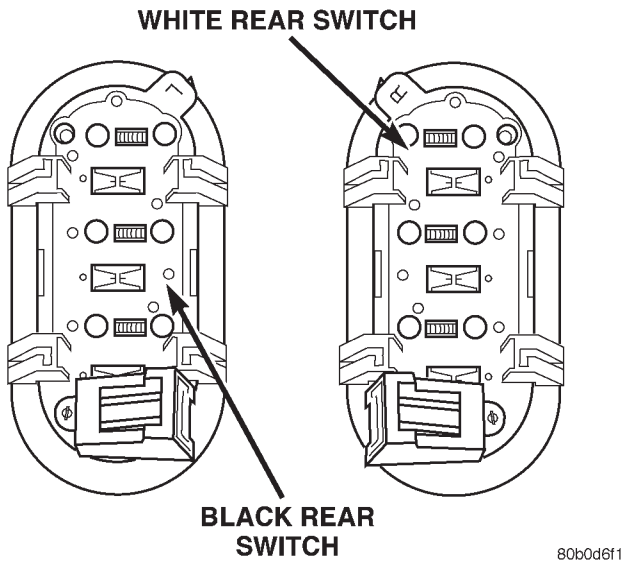

Fig. 8 Remote Radio Switches

REMOTE RADIO SWITCH TEST

SWITCH POSITION	RESISTANCE
VOLUME UP	7320 OHMS
VOLUME DOWN	1210 OHMS
SEEK UP	4530 OHMS
SEEK DOWN	2050 OHMS
PRE-SET STATION ADVANCE	10 OHMS

(4) If the switch resistance checks OK, go to Step 5. If not OK, replace the faulty switch.

(5) Check for continuity between the ground circuit cavity of the switch wire harness connector and a good ground. There should be continuity. If OK, go to Step 6. If not OK, repair the open circuit as required.

(6) Unplug the 24-way white wire harness connector from the Body Control Module (BCM). Check for continuity between the radio control circuit cavity of the remote radio switch wire harness connector and a good ground. There should be no continuity. If OK, go to Step 7. If not OK, repair the short circuit as required.

(7) Check for continuity between the radio control circuit cavities of the remote radio switch wire harness connector and the BCM wire harness connector. There should be continuity. If OK, refer to the proper Diagnostic Procedures manual to test the BCM and the CCD data bus. If not OK, repair the open circuit as required.

REMOVAL AND INSTALLATION

ANTENNA MAST AND CABLE LEAD

REMOVAL

(1) Remove glove box from instrument panel, refer to Group 8E, Instrument Panel and Systems for proper procedures.

(2) Disconnect antenna cable connector from extension cable (Fig. 9).

(3) Remove right kick trim panel.

(4) Disengage rubber grommet insulator from door hinge pillar.

(5) Pull antenna cable through hinge pillar into open between door hinges.

(6) Hoist and support vehicle on safety stands.

(7) Remove front wheel, refer to Group 22, Wheel and Tries for proper procedures and tightening references.

(8) Remove front wheelhouse splash shield, refer to Group 23, Body for proper procedures.

(9) Slide the plastic sleeve up on antenna mast for access to mast. Remove antenna mast from antenna base (Fig. 10).

(10) Remove plastic cap from the cap nut. Using cap nut tool, remove cap nut holding antenna base to front fender (Fig. 11).

(11) Remove antenna base from under front fender.

INSTALLATION

For installation, reverse the above procedure.

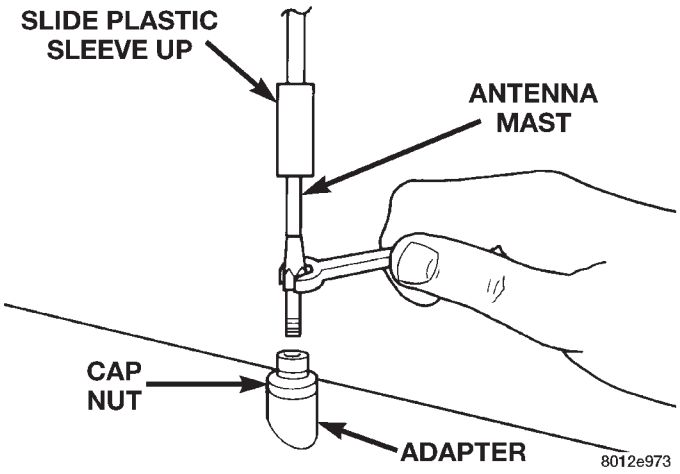

Fig. 10 Antenna Mast

ANTENNA EXTENSION CABLE

REMOVAL

(1) Remove glove box.

(2) Disconnect extension cable end from antenna cable end (Fig. 9).

(3) Disconnect cable hanger clip from HVAC unit.

(4) Remove radio as necessary to gain access to extension cable.

(5) Disconnect extension cable from back of radio.

(6) Remove extension cable from vehicle.

INSTALLATION

For installation, reverse the above procedure.

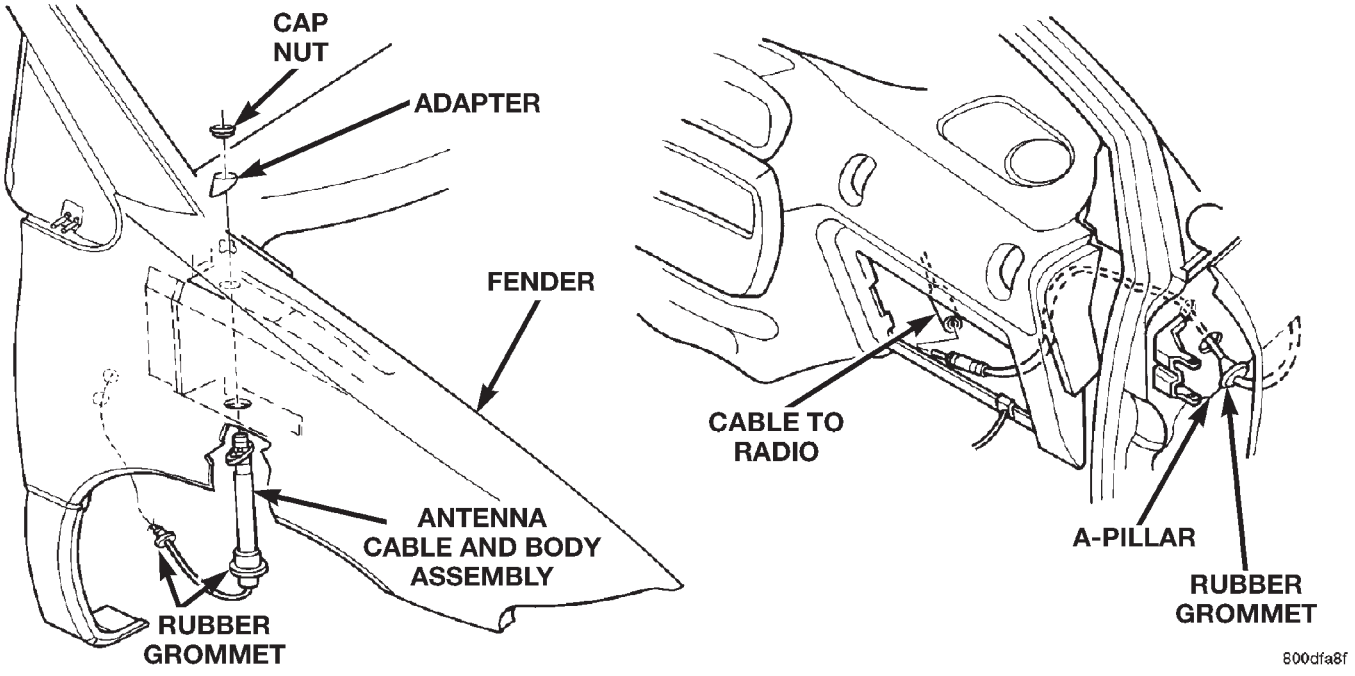

Fig. 9 Antenna Cable

REMOVAL AND INSTALLATION (Continued)

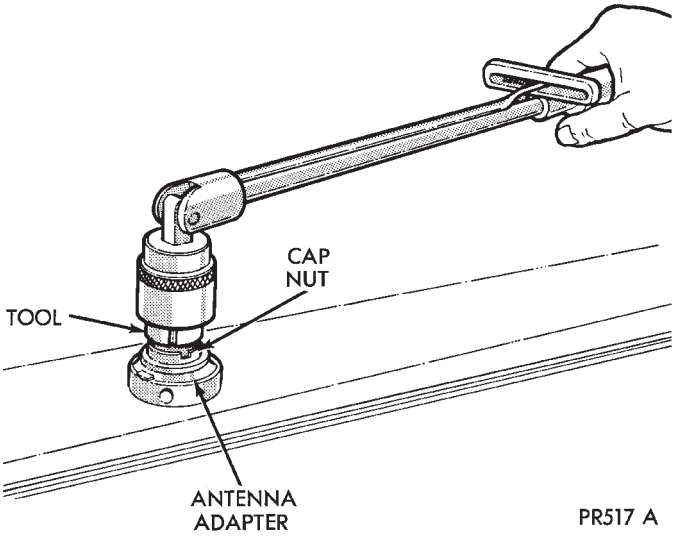

Fig. 11 Antenna Cap Nut

RADIO/TAPE/CD PLAYER

REMOVAL

(1) Remove HVAC switch bezel, refer to Group 8E, Instrument Panel and Systems for proper procedure.

(2) Remove screws holding radio to instrument panel (Fig. 12).

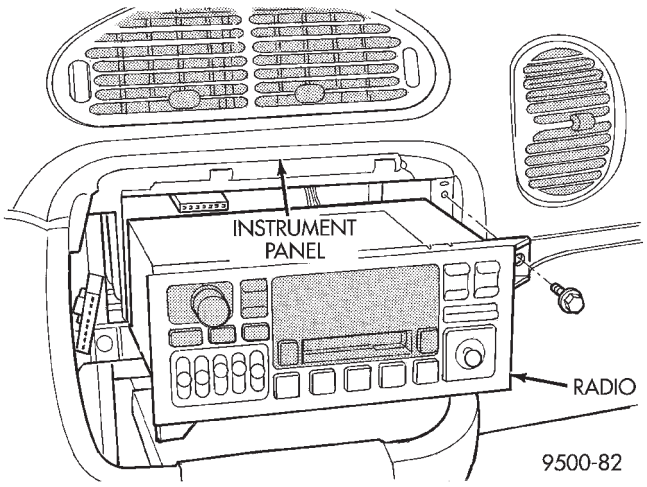

Fig. 12 Radio

(3) Pull radio rearward to gain access to back of radio (Fig. 13).

(4) Remove bolt holding ground strap to back of radio.

(5) Disconnect antenna cable from back of radio.

(6) Disconnect the wire connectors from back of radio.

(7) Remove radio from vehicle.

INSTALLATION

For installation, reverse the above procedure.

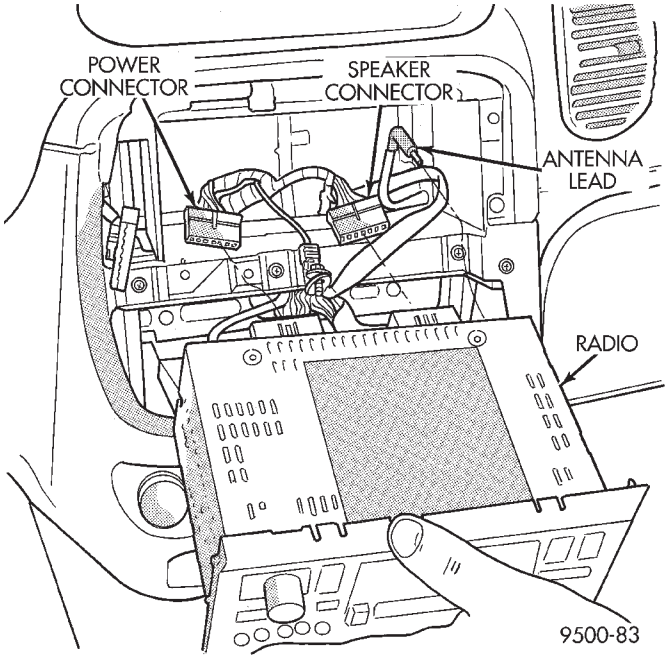

Fig. 13 Radio Connectors

INSTRUMENT PANEL SPEAKER

INSTALLATION

(1) Remove instrument panel top cover.

(2) Remove screws holding speaker to instrument panel and remove speaker (Fig. 14) or (Fig. 15).

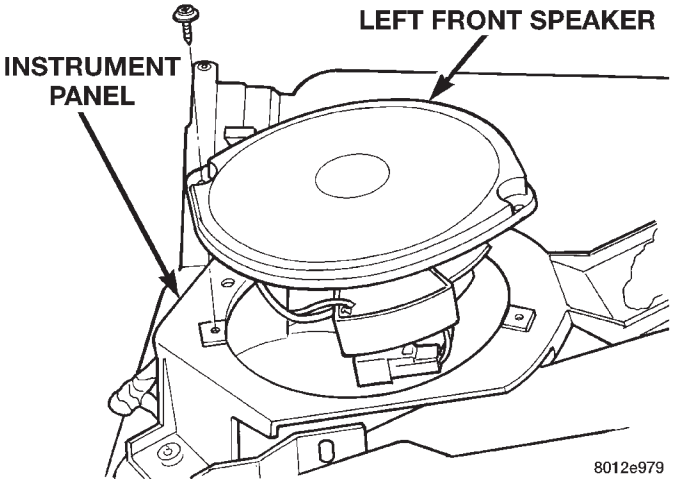

Fig. 14 Left Instrument Panel Speaker

(3) Remove anti rocking finger screw.

(4) Disconnect wire connector from speaker.

(5) Remove speaker.

INSTALLATION

For installation, reverse the above procedure.

REMOVAL AND INSTALLATION (Continued)

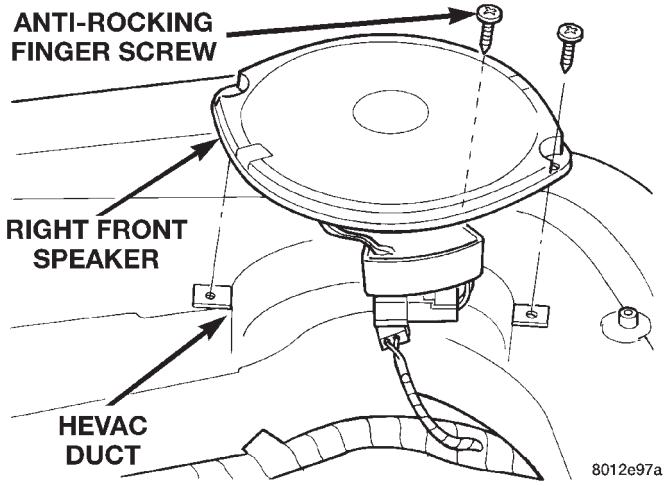

Fig. 15 Right Instrument Panel Speaker

FRONT DOOR SPEAKER

REMOVAL

(1) Remove front door trim panel as necessary to gain access to door speaker. Refer to Group 23, Body for proper procedures.

(2) Remove screws holding speaker to bracket (Fig. 16).

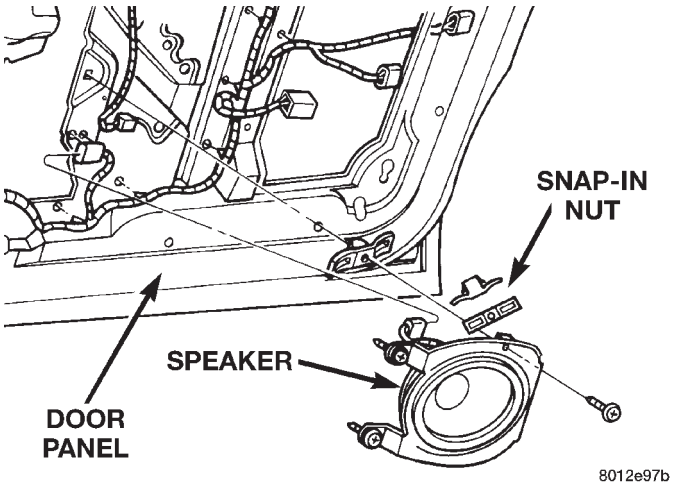

Fig. 16 Front Door Speaker

(3) Remove speaker from bracket.

(4) Disconnect wire connector from speaker.

(5) Remove speaker.

INSTALLATION

For installation, reverse the above procedure.

REMOTE RADIO SWITCHES

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REMOVAL

(1) Disconnect and isolate the battery negative cable. Wait two minutes for the airbag system capacitor to discharge before further service.

(2) From the underside of the steering wheel, remove the (3) bolts that secure the driver side airbag module to the steering wheel.

(3) Pull the airbag module away from the steering wheel far enough to access the wire harness connectors on the back of the airbag module.

(4) Unplug the airbag module and horn switch wire harness connectors from the back of the airbag module.

(5) Remove the driver side airbag module from the vehicle.

(6) Remove the steering wheel from the steering column. Refer to Group 19–Steering, for service procedure.

(7) Unplug the wire harness connector from the remote radio switch (s).

(8) Remove three screws securing steering wheel rear cover. Refer to Group 19, Steering for serivce procedure.

(9) Remove the remote radio switch from the steering wheel by depressing tabs on each side of switch..

NOTE: The right remote radio switch back is white in color. The left switch back is black in color. The right/left remote radio switch orientation is with the steering wheel installed, and driver in drivers seat.

INSTALLATION

For installation, reverse the above procedure. The switches can only be installed one way. Be careful to index them correctly before pressing them into place.

Tighten the airbag module mounting screws to 10.2 N·m (90 in. lbs.).

REMOVAL AND INSTALLATION (Continued)

QUARTER PANEL SPEAKER

REMOVAL

(1) Remove quarter trim bolster from quarter trim panel.

(2) Remove screws holding speaker to inner quarter panel (Fig. 17).

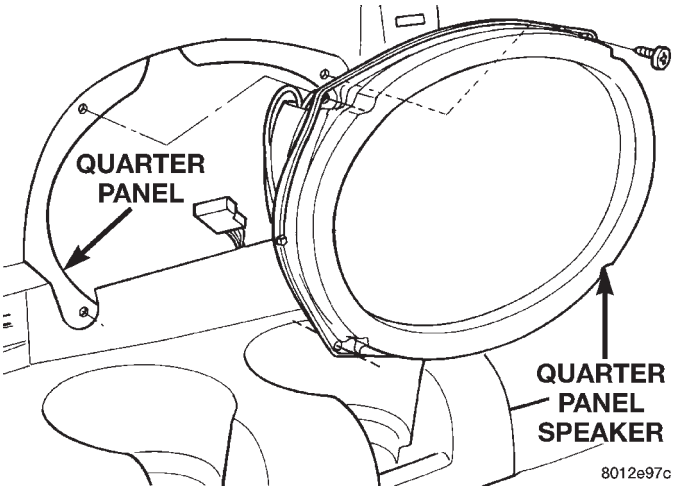

Fig. 17 Quarter Panel Speaker

(3) Separate speaker from quarter panel.

(4) Disconnect wire connector from speaker.

(5) Remove speaker.

INSTALLATION

For installation, reverse the above procedure.

D–PILLAR SPEAKER

REMOVAL

(1) Remove D-pillar trim panel as necessary to gain access to door speaker. Refer to Group 23, Body for proper procedures.

(2) Disconnect wire connector from speaker.

(3) Remove by sliding speaker out of bracket by pushing on magnet. The capacitor is wrapped with foam tape (Fig. 18).

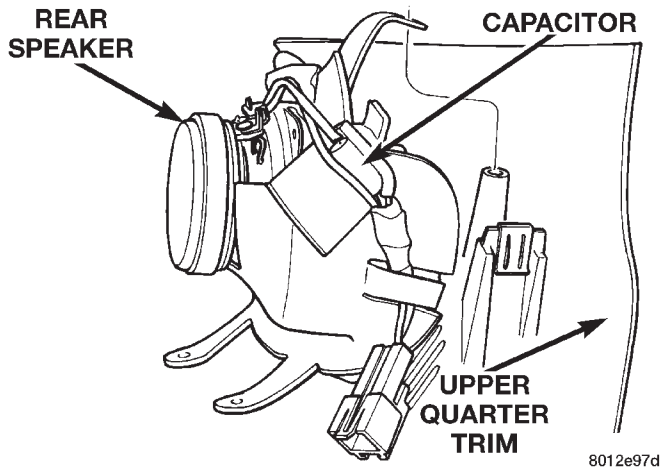

Fig. 18 D–Pillar Speaker

(4) Remove speaker.

INSTALLATION

For installation, reverse the above procedure.