AUDIO SYSTEMS

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DESCRIPTION AND OPERATION

AUDIO SYSTEM

DESCRIPTION

An audio system is standard factory-installed equipment on this model. The standard equipment audio system includes an AM/FM/cassette (RAS sales code) radio receiver, and speakers in six locations. Several combinations of radio receivers and speaker systems are offered as optional equipment on this model. The audio system uses an ignition switched source of battery current so that the system will only operate when the ignition switch is in the On or Accessory positions.

A Compact Disc (CD) changer with a ten disc magazine, remote radio switches with six functions mounted to the backs of the steering wheel spokes, and a memory system that automatically stores and recalls up to twenty radio station presets (ten AM and ten FM) and the last station listened to for two drivers are optional factory-installed equipment on this model. Refer to **Memory System** in the Memory System section of Group 8R - Power Seat Systems for more information on the memory system.

The audio system includes the following components:

- Antenna
- Compact disc changer (available with RBN sales code radio receivers only)
- Power amplifier (with premium speaker system only)
- Radio noise suppression components
- Radio receiver
- Remote radio switches
- Speakers

Certain functions and features of the audio system rely upon resources shared with other electronic modules in the vehicle over the Programmable Communications Interface (PCI) data bus network. The PCI 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. For diagnosis of these electronic modules or of the PCI data bus network, the use of a DRB scan tool and the proper Diagnostic Procedures manual are recommended.

The other electronic modules that may affect audio system operation are as follows:

- **Body Control Module (BCM)** - Refer to **Body Control Module** in the Description and Operation section of Group 8E - Instrument Panel Systems for more information.
- **Driver Door Module (DDM)** - Refer to **Door Module** in the Power Lock System section of Group 8P - Power Lock Systems for more information.
- **Passenger Door Module (PDM)** - Refer to **Door Module** in the Power Lock System section of

DESCRIPTION AND OPERATION (Continued)

Group 8P - Power Lock Systems for more information.

Refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams for complete circuit diagrams. Following are general descriptions of the remaining major components in the standard and optional factory-installed audio systems.

OPERATION

On vehicles that are equipped with the optional remote radio switches, the BCM receives hard wired resistor multiplexed inputs from the remote radio switches. The programming in the BCM allows it to process those inputs and send the proper messages to the radio receiver over the PCI data bus to control the radio volume up or down, station seek up or down, preset station advance, and mode advance functions.

On vehicles equipped with the optional memory system, when the DDM receives a Driver 1 or Driver 2 memory recall input from the memory switch on the driver side front door trim panel or a memory recall message from the Remote Keyless Entry (RKE) receiver in the PDM, the DDM sends a memory recall message back to the radio receiver over the PCI data bus to recall the radio station presets and last station listened to information.

See the owner's manual in the vehicle glove box for more information on the features, use and operation of each of the available audio systems.

RADIO RECEIVER

DESCRIPTION

Available factory-installed radio receivers for this model include an AM/FM/cassette (RAS sales code), an AM/FM/cassette/3-band graphic equalizer with CD changer control feature (RBN sales code), or an AM/FM/CD/cassette/3-band graphic equalizer (RAZ sales code). All factory-installed radio receivers, except the RAS sales code, can communicate on the Programmable Communications Interface (PCI) data bus network through a separate wire harness connector. All factory-installed receivers are stereo Electronically Tuned Radios (ETR) and include an electronic digital clock function.

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

IGNITION-OFF DRAW FUSE

All vehicles are equipped with an Ignition-Off Draw (IOD) fuse that is removed when the vehicle is shipped from the factory. This fuse feeds various accessories that require battery current when the ignition switch is in the Off position, including the clock. The IOD fuse is removed to prevent battery discharge during vehicle storage.

When removing or installing the IOD fuse, it is important that the ignition switch be in the Off position. Failure to place the ignition switch in the Off position can cause the radio display to become scrambled when the IOD fuse is removed and replaced. Removing and replacing the IOD fuse again, with the ignition switch in the Off position, will correct the scrambled display condition.

The IOD fuse should be checked if the radio or clock displays are inoperative. The IOD fuse is located in the Power Distribution Center (PDC). Refer to the fuse layout label on the underside of the PDC cover for IOD fuse identification and location.

OPERATION

The radio receiver operates on ignition switched battery current that is available only when the ignition switch is in the On or Accessory positions. The electronic digital clock function of the radio operates on fused battery current supplied through the IOD fuse, regardless of the ignition switch position.

For more information on the features, setting procedures, and control functions for each of the available factory-installed radio receivers, see the owner's manual in the vehicle glove box. For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

COMPACT DISC CHANGER

DESCRIPTION

A factory-installed Compact Disc (CD) changer featuring a ten-CD magazine is an available option on this model when it is also equipped with the premium speaker package and a radio receiver including the CD controls feature. The CD changer is mounted in the cargo area of the passenger compartment on the right rear quarter panel. It is concealed behind a molded plastic bin with an integral hinged and latching lid that matches the interior trim of the vehicle.

The CD changer is connected to a take out from the right body wire harness and receives both ground and radio-switched battery current through the radio receiver. The controls on the radio receiver operate the CD changer through messages sent over the Programmable Communications Interface (PCI) data bus network. The two-channel audio outputs of the CD changer are hard wired back to the radio receiver, which then outputs the signal through four channels to the power amplifier. For diagnosis of the messaging functions of the radio receiver and the CD changer, or of the PCI data bus, a DRB scan tool and

DESCRIPTION AND OPERATION (Continued)

the proper Diagnostic Procedures manual are required.

The CD changer can only be serviced by an authorized radio repair station. See the latest Warranty Policies and Procedures manual for a current listing of authorized radio repair stations. For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

OPERATION

The CD changer will only operate when the ignition switch is in the On or Accessory positions, and the radio is turned on. For more information on the features, loading procedures and radio control functions for the operation of the CD changer, see the owner's manual in the vehicle glove box.

REMOTE RADIO SWITCH

DESCRIPTION

Remote radio control switches are included on models equipped with the optional leather-wrapped steering wheel. The two rocker-type switch units (Fig. 1) are mounted in the upper spoke covers of the rear (instrument panel side) steering wheel trim cover. The switch unit on the left side is the seek switch and has seek up, seek down, and preset station advance switch functions. The switch unit on the right side is the volume control switch and has volume up, volume down, and mode advance switch functions.

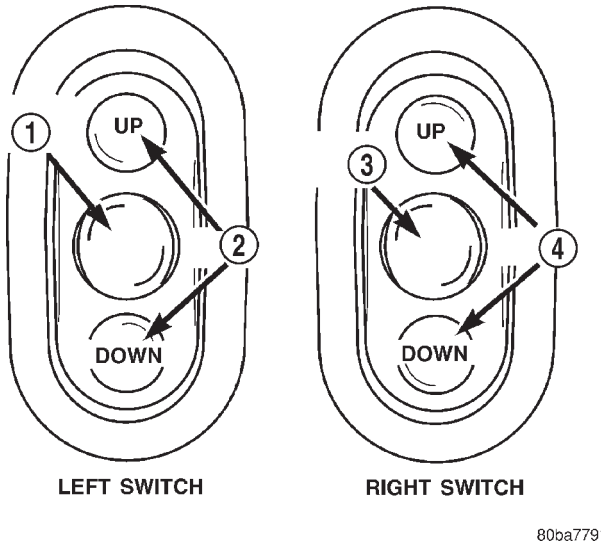


Fig. 1 Remote Radio Switches

1 – PRESET ADVANCE
2 – SEEK
3 – MODE ADVANCE
4 – VOLUME

The two remote radio switch units are each retained in a mounting hole located on opposite sides of the rear steering wheel trim cover by four integral snap features. A plastic bracket on the back of each switch unit provides additional support for the unit by extending towards the center of the steering wheel where it is clamped between the steering wheel armature and the steering wheel rear trim cover mounting boss by the trim cover mounting screw.

The two remote radio switch units share a common steering wheel wire harness with the vehicle speed control switches. The steering wheel wire harness is connected to the instrument panel wire harness through the clockspring. Refer to **Clockspring** in the Description and Operation section of Group 8M - Passive Restraint Systems for more information on this component.

For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

OPERATION

The six switches in the two remote radio switch units are normally open, resistor multiplexed momentary switches that are hard wired to the Body Control Module (BCM) through the clockspring. The BCM sends a five volt reference signal to both switch units on one circuit, and senses the status of all of the switches by reading the voltage drop on a second circuit.

When the BCM senses an input (voltage drop) from any one of the remote radio switches, it sends the proper switch status messages on the Programmable Communication Interface (PCI) data bus network to the radio receiver. The electronic circuitry within the radio receiver is programmed to respond to these remote radio switch status messages by adjusting the radio settings as requested. For diagnosis of the BCM or the PCI data bus, the use of a DRB scan tool and the proper Diagnostic Procedures manual are recommended.

For more information on the features and control functions for each of the remote radio switches, see the owner's manual in the vehicle glove box.

SPEAKER SYSTEM

DESCRIPTION

STANDARD

The standard equipment speaker system includes speakers in six locations. One 6.4 centimeter (2.50 inch) diameter tweeter is installed on each end of the instrument panel top pad. One 15.2 by 22.9 centimeter (6 by 9 inch) full-range speaker is located in each front door. There is also one full-range 16.5 centime-

DESCRIPTION AND OPERATION (Continued)

ter (6.5 inch) diameter full-range speaker located in each rear door.

PREMIUM

The optional premium speaker system features six Infinity model speakers in six locations. Each of the standard speakers is replaced with Infinity model speakers. One 6.4 centimeter (2.50 inch) diameter Infinity tweeter is installed on each end of the instrument panel top pad. One 15.2 by 22.9 centimeter (6 by 9 inch) Infinity woofer is located in each front door. There is also one full-range 16.5 centimeter (6.5 inch) diameter Infinity full-range speaker located in each rear door. The premium speaker system also includes an additional Infinity power amplifier. The total available power of the premium speaker system is about 180 watts.

OPERATION

STANDARD

Each of the two tweeters and four full-range speakers used in the standard speaker system is driven by the amplifier that is integral to the factory-installed radio receiver. For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

PREMIUM

The six Infinity speakers used in the premium speaker system are all driven by the radio receiver through an Infinity power amplifier. For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

POWER AMPLIFIER

DESCRIPTION

Models equipped with the Infinity premium speaker package have a separate power amplifier unit. This power amplifier is rated at 180 watts output. The power amplifier unit is mounted to the rear floor panel under the passenger side rear seat cushion. The power amplifier unit can be accessed for service by unlatching and tilting the passenger side rear seat cushion forward.

The power amplifier unit should be checked if there is no sound output noted from the speakers. For diagnosis of the power amplifier, refer to **Speaker** in the Diagnosis and Testing section of this group. The power amplifier cannot be repaired or adjusted and, if faulty or damaged, the unit must be replaced.

OPERATION

The power amplifier is energized by a fused 12 volt output from the radio receiver whenever the radio is turned on. The power amplifier receives the sound signal inputs for four speaker channels from the radio receiver, then sends the amplified speaker outputs for each of those channels to the six Infinity speakers. For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

ANTENNA

DESCRIPTION

All models use a fixed-length stainless steel rod-type antenna mast, installed on the right front fender of the vehicle. The antenna mast has a spiral groove cut down its length to reduce wind noise. 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 receiver chassis.

The antenna coaxial cable has an additional disconnect, located near the passenger side cowl side inner panel behind the lower instrument panel reinforcement. This additional disconnect allows the instrument panel assembly to be removed and installed without removing the radio receiver.

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

RADIO NOISE SUPPRESSION

DESCRIPTION

Radio Frequency Interference (RFI) and Electro-Magnetic Interference (EMI) noise suppression is accomplished primarily through circuitry internal to the radio receivers. These internal suppression devices are only serviced as part of the radio receiver.

External suppression devices that are used on this vehicle to control RFI or EMI noise include the following:

- Radio antenna base ground
- Radio receiver chassis ground wire or strap
- Engine-to-body ground strap(s)
- Exhaust system-to-body and transmission ground strap (4.7L engines only)
- Resistor-type spark plugs
- Radio suppression-type secondary ignition wiring.

DESCRIPTION AND OPERATION (Continued)

For more information on the spark plugs and secondary ignition components, refer to **Ignition System** in the Description and Operation section of Group 8D - Ignition System.

DIAGNOSIS AND TESTING

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.

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. 7. Amplifier faulty (if equipped).	1. Check radio fuses in junction block. Replace faulty fuses, if required. 2. Check for loose or corroded radio connections. 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. Refer to Radio in the Diagnosis and Testing section of this group. 6. Refer to Speaker in the Diagnosis and Testing section of this group. 7. Refer to Speaker in the Diagnosis and Testing section of 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 junction block. Replace faulty fuses, if required. 2. Check for loose or corroded radio connections. 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. Refer to Radio in the Diagnosis and Testing section of this group.

DIAGNOSIS AND TESTING (Continued)

AUDIO SYSTEM DIAGNOSIS		
CONDITION	POSSIBLE CAUSE	CORRECTION
CLOCK WILL NOT KEEP SET TIME	1. Fuse faulty. 2. Radio connector faulty. 3. Wiring faulty. 4. Ground faulty. 5. Radio faulty.	1. Check ignition-off draw fuse. Replace faulty fuse, if required. 2. Check for loose or corroded radio connections. 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. Refer to Radio in the Diagnosis and Testing section of this group.
POOR RADIO RECEPTION	1. Antenna faulty. 2. Ground faulty. 3. Radio faulty. 4. Faulty EMI or RFI noise suppression.	1. Refer to Antenna in the Diagnosis and Testing section of this group. 2. Check for continuity between radio chassis and a known good ground. There should be continuity. Repair ground, if required. 3. Refer to Radio in the Diagnosis and Testing section of this group. 4. Refer to Radio Frequency Interference in the Diagnosis and Testing section of this group.
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.
NO COMPACT DISC CHANGER OPERATION	1. Faulty CD. 2. Foreign material on CD. 3. Condensation on CD or optics. 4. CD changer connector faulty. 5. Wiring faulty. 6. PCI data bus faulty. 7. CD changer faulty.	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. Check for loose or corroded CD changer connections. Repair, if required. 5. Refer to Compact Disc Changer in the Diagnosis and Testing section of this group. 6. Use DRB scan tool and the Diagnostic Procedures manual to test PCI data bus. Repair, if required. 7. Refer to Compact Disc Changer in the Diagnosis and Testing section of this group.

RADIO RECEIVER

If the vehicle is equipped with the optional remote radio switches located on the steering wheel and the problem being diagnosed is related to one of the symptoms listed below, be certain to check the remote radio switches and circuits. Refer to **Remote Radio Switch** in the Diagnosis and Testing section of 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

DIAGNOSIS AND TESTING (Continued)

- Remote radio switch buttons taking on other functions
- CD player skipping tracks
- Mode (AM, FM, CD, CD changer) changes with no remote radio switch input
- Remote radio switch inoperative.

For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

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

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

(1) Check the fused B(+) fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Check for battery voltage at the fused B(+) fuse in the junction block. If OK, go to Step 3. If not OK, repair the open fused B(+) circuit to the Power Distribution Center (PDC) fuse as required.

(3) Check the fused ignition switch output (acc/run) fuse in the junction block. If OK, go to Step 4. If not OK, repair the shorted circuit or component as required and replace the faulty fuse(s).

(4) Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (acc/run) fuse in the junction block. If OK, go to Step 5. If not OK, repair the open fused ignition switch output (acc/run) circuit to the ignition switch as required.

(5) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the radio receiver from the instrument panel, but do not disconnect the wire harness connectors. Check for continuity between the radio receiver chassis and a good ground. There should be continuity. If OK, go to Step 6. If not OK, repair the open ground circuit to ground as required.

(6) Test the radio receiver antenna. Refer to **Antenna** in the Diagnosis and Testing section of this group. If OK, go to Step 7. If not OK, replace the faulty antenna or coaxial cable as required.

(7) Connect the battery negative cable. Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (acc/run) circuit cavity of the left (gray) radio wire harness connector. If OK, go to Step 8. If not OK, repair the open fused ignition switch output (acc/run) circuit to the junction block fuse as required.

(8) 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 receiver. If not OK, repair the open fused B(+) circuit to the junction block fuse as required.

COMPACT DISC CHANGER

Following are tests that will help to diagnose the hard wired components and circuits of the Compact Disc (CD) changer unit. However, these tests may not prove conclusive in the diagnosis of this unit. In order to obtain conclusive testing of the CD changer unit, the Programmable Communications Interface (PCI) data bus network, the CD changer unit, the radio receiver unit and any other electronic modules that provide inputs to, or receive outputs from the audio system must be checked.

The most reliable, efficient, and accurate means to diagnose the CD changer messaging functions requires the use of a DRB scan tool and the proper Diagnostic Procedures manual. The DRB scan tool can provide confirmation that the PCI data bus is functional, that all of the electronic modules in the vehicle are sending and receiving the proper messages on the PCI data bus, and that the CD changer and the radio receiver are receiving the proper PCI messages to perform their audio system functions.

For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

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

COMPACT DISC CHANGER INOPERATIVE

(1) Turn the ignition switch to the On position. Turn the radio receiver on and check its operation. If OK, go to Step 2. If not OK, refer to **Radio Receiver** in the Diagnosis and Testing section of this group.

(2) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Disconnect the right body wire harness connector from the CD changer connector receptacle. Check for continuity between the power ground (Z17) circuit of the right

DIAGNOSIS AND TESTING (Continued)

body wire harness connector for the CD changer and a good ground. There should be continuity. If OK, go to Step 3. If not OK, repair the open power ground circuit to the radio receiver as required.

(3) Reconnect the battery negative cable. Check for battery voltage at the B(+) circuit cavity of the right body wire harness connector for the CD changer. If OK, go to Step 4. If not OK, go to Step 5.

(4) Turn the ignition switch to the On position. Check for battery voltage at the ignition switch output circuit cavity of the right body wire harness connector for the CD changer. If OK, use a DRB scan tool and the proper Diagnostic Procedures manual for further diagnosis. If not OK, go to Step 6.

(5) Disconnect and isolate the battery negative cable. Remove the radio receiver from the instrument panel. Disconnect the DIN cable connector (C4) from the radio receiver, but do not disconnect the other wire harness connectors. Reconnect the battery negative cable. Check for battery voltage at the B(+) circuit cavity of the DIN connector receptacle on the radio receiver. If OK, repair the open B(+) circuit to the CD changer as required. If not OK, check for a shorted B(+) circuit to the CD changer and repair as required, then replace the faulty radio receiver.

(6) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the radio receiver from the instrument panel. Disconnect the DIN cable connector (C4) from the radio receiver, but do not disconnect the other wire harness connectors. Reconnect the battery negative cable. Turn the ignition switch to the On position. Check for battery voltage at the ignition switch output circuit cavity of the DIN connector receptacle on the radio receiver. If OK, repair the open ignition switch output circuit to the CD changer as required. If not OK, check for a shorted ignition switch output circuit to the CD changer and repair as required, then replace the faulty radio receiver.

NO SOUND OR ONLY ONE CHANNEL SOUND FROM CD

(1) Turn the ignition switch to the On position. Turn the radio receiver on and check its audio output operation. If OK, go to Step 2. If not OK, refer to **Speaker** in the Diagnosis and Testing section of this group.

(2) Disconnect and isolate the battery negative cable. Disconnect the right body wire harness connector from the CD changer connector receptacle. Remove the radio receiver from the instrument panel. Disconnect the DIN cable connector (C4) from the radio receiver. Check for continuity between the audio ground (Z4) circuit cavity of the right body wire harness connector for the CD changer and a good ground. There should be no continuity. If OK, go to Step 3. If not OK, repair the shorted audio ground (Z4) circuit as required.

(3) Check for continuity between the audio ground (Z4) circuit cavity of the right body wire harness connector for the CD changer and the audio ground (Z4) circuit pin of the DIN cable connector for the radio receiver. There should be continuity. If OK, go to Step 4. If not OK, repair the open audio ground (Z4) circuit as required.

(4) Check for continuity between the audio out right circuit cavity of the right body wire harness connector for the CD changer and a good ground. There should be no continuity. If OK, go to Step 5. If not OK, repair the shorted audio out right circuit as required.

(5) Check for continuity between the audio out right circuit cavity of the right body wire harness connector for the CD changer and the audio out right circuit pin of the DIN cable connector for the radio receiver. There should be continuity. If OK, go to Step 6. If not OK, repair the open audio out right circuit as required.

(6) Check for continuity between the audio out left circuit cavity of the right body wire harness connector for the CD changer and a good ground. There should be no continuity. If OK, go to Step 7. If not OK, repair the shorted audio out left circuit as required.

(7) Check for continuity between the audio out left circuit cavity of the right body wire harness connector for the CD changer and the audio out left circuit pin of the DIN cable connector for the radio receiver. There should be continuity. If OK, replace the faulty CD change. If not OK, repair the open audio out left circuit as required.

REMOTE RADIO SWITCH

For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

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

(1) Disconnect and isolate the battery negative cable. Remove the remote radio switch(es) (Fig. 2) from the steering wheel.

(2) Use an ohmmeter to check the switch resistances as shown in the Remote Radio Switch Test chart. If the remote radio switch resistances check OK, go to Step 3. If not OK, replace the faulty switch.

DIAGNOSIS AND TESTING (Continued)

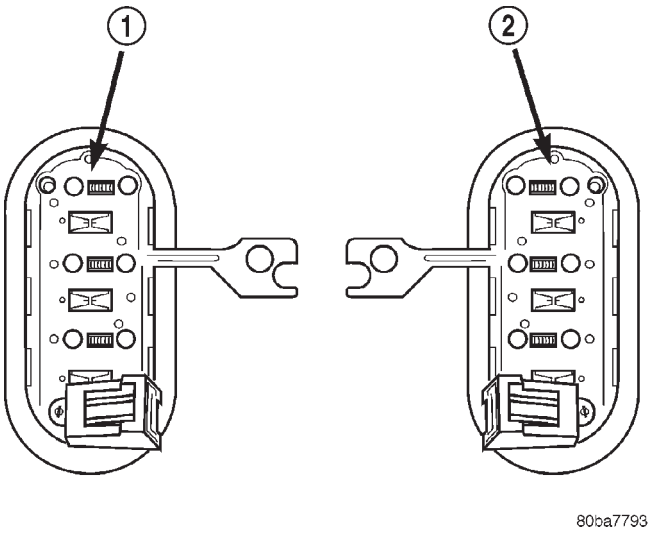


Fig. 2 Remote Radio Switches

1 – BLACK (LEFT) SWITCH
2 – WHITE (RIGHT) SWITCH

Remote Radio Switch Test		
Switch	Switch Position	Resistance
Right (White)	Volume Up	1.210 Kilohms
Right (White)	Volume Down	3.010 Kilohms
Right (White)	Mode Advance	0.0511 Kilohms
Left (Black)	Seek Up	0.261 Kilohms
Left (Black)	Seek Down	0.681 Kilohms
Left (Black)	Pre-Set Station Advance	0.162 Kilohms

(3) Reconnect the battery negative cable. Turn the ignition switch to the On position. Check for 5 volts at the radio control mux circuit cavities of the steering wheel wire harness connectors for both remote radio switches. If OK, go to Step 4. If not OK, repair the open or shorted radio control mux circuit to the Body Control Module (BCM) as required.

(4) Disconnect and isolate the battery negative cable. Disconnect the 22-way instrument panel wire harness connector from the BCM. Check for continuity between the remote radio switch ground circuit cavities of the steering wheel wire harness connectors for both remote radio switches and a good ground. There should be no continuity. If OK, go to Step 5. If not OK, repair the shorted remote radio switch ground circuit to the BCM as required.

(5) Check for continuity between the remote radio switch ground circuit cavities of the steering wheel wire harness connectors for both remote radio switches and the 22-way instrument panel wire harness connector for the BCM. There should be continuity. If OK, refer to the proper Diagnostic Procedures manual to test the BCM and the PCI data bus. If not OK, repair the open remote radio switch ground circuit as required.

SPEAKER

For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

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

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.

(1) Turn the ignition switch to the On position. Turn the radio receiver on. Adjust the balance and fader controls to check the performance of each individual speaker. Note the speaker locations that are not performing correctly. Go to Step 2.

(2) Turn the radio receiver off. Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the radio receiver from the instrument panel. If the vehicle is equipped with the Infinity speaker package, also disconnect the wire harness connectors at the power amplifier. Check both the speaker feed (+) circuit and return (–) circuit cavities for the inoperative speaker location(s) at the radio receiver wire harness connectors for continuity to ground. In each case, there should be no continuity. If OK, go to Step 3. If not OK, repair the shorted speaker feed (+) and/or return (–) circuit(s) to the speaker as required.

(3) If the vehicle is equipped with the Infinity speaker package, go to Step 6. If the vehicle is equipped with the standard speaker system, check the resistance between the speaker feed (+) circuit and return (–) circuit cavities of the radio receiver wire harness connectors for the inoperative speaker location(s). The meter should read between 2 and 12 ohms (speaker resistance). If OK, go to Step 4. If not OK, go to Step 5.

DIAGNOSIS AND TESTING (Continued)

(4) Install a known good radio receiver. Connect the battery negative cable. Turn the ignition switch to the On position. Turn on the radio receiver and test the speaker operation. If OK, replace the faulty radio receiver. If not OK, turn the radio receiver off, turn the ignition switch to the Off position, disconnect and isolate the battery negative cable, remove the test radio receiver, and go to Step 5.

(5) Disconnect the wire harness connector at the inoperative speaker. Check for continuity between the speaker feed (+) circuit cavities of the radio receiver wire harness connector and the speaker wire harness connector. Repeat the check between the speaker return (–) circuit cavities of the radio receiver wire harness connector and the speaker wire harness connector. In each case, there should be continuity. If OK, replace the faulty speaker. If not OK, repair the open speaker feed (+) and/or return (–) circuit(s) as required.

(6) For each inoperative speaker location, check for continuity between the speaker feed (+) circuit cavities of the radio receiver wire harness connectors and the power amplifier wire harness connectors. Repeat the check for each inoperative speaker location between the speaker return (–) circuit cavities of the radio receiver wire harness connectors and the power amplifier wire harness connectors. In each case, there should be continuity. If OK, go to Step 7. If not OK, repair the open speaker feed (+) and/or return (–) circuit(s) as required.

(7) Check for continuity between the two ground circuit cavities of the power amplifier wire harness connector and a good ground. There should be continuity. If OK, go to Step 8. If not OK, repair the open ground circuit(s) to ground as required.

(8) Check the fused B(+) fuse for the power amplifier in the junction block. If OK, go to Step 9. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(9) Install the radio receiver. Connect the battery negative cable. Check for battery voltage at the fused B(+) fuse for the power amplifier in the junction block. If OK, go to Step 10. If not OK, repair the open fused B(+) circuit to the Power Distribution Center (PDC) fuse as required.

(10) Check for battery voltage at the two fused B(+) circuit cavities of the power amplifier wire harness connector. If OK, go to Step 11. If not OK, repair the open fused B(+) circuit(s) to the power amplifier fuse in the junction block as required.

(11) Turn the ignition switch to the On position. Turn the radio receiver on. Check for battery voltage at the enable signal to amplifier circuit cavity of the power amplifier wire harness connector. If OK, go to Step 12. If not OK, repair the open enable signal to amplifier circuit to the radio receiver as required.

(12) Turn the radio receiver off. Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. For each inoperative speaker location, check both the amplified feed (+) circuit and the amplified return (–) circuit cavities of the power amplifier wire harness connectors for continuity to ground. In each case there should be no continuity. If OK, go to Step 13. If not OK, repair the shorted amplified feed (+) and/or amplified return (–) circuit(s) to the speaker as required.

(13) For each inoperative speaker location, check the resistance between the amplified feed (+) circuit and the amplified return (–) circuit cavities of the power amplifier wire harness connectors. The meter should read between 2 and 12 ohms (speaker resistance). If OK, replace the faulty power amplifier. If not OK, go to Step 14.

(14) Disconnect the speaker wire harness connector at the inoperative speaker. Check for continuity between the amplified feed (+) circuit cavities of the speaker wire harness connector and the power amplifier wire harness connector. Repeat the check between the amplified return (–) circuit cavities of the speaker wire harness connector and the power amplifier wire harness connector. In each case there should be continuity. If OK, replace the faulty speaker. If not OK, repair the open amplified feed (+) and/or amplified return (–) circuit(s) as required.

POWER AMPLIFIER

The power amplifier unit should be checked if there is no sound output noted from the speakers. For diagnosis of the power amplifier, refer to **Speaker** in the Diagnosis and Testing section of this group. For complete circuit diagrams, refer to **Audio System** in the Contents of Group 8W - Wiring Diagrams.

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.

DIAGNOSIS AND TESTING (Continued)

The ohmmeter test lead connections for each test are shown in Antenna Tests (Fig. 3).

NOTE: This model has a special coating on the antenna mast which is not electrically conductive. Remove the antenna mast from the antenna base before attempting to perform Tests 1 and 2.

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 inboard side of the glove box opening to the antenna base, and then from the coaxial cable connection to the radio chassis connection.

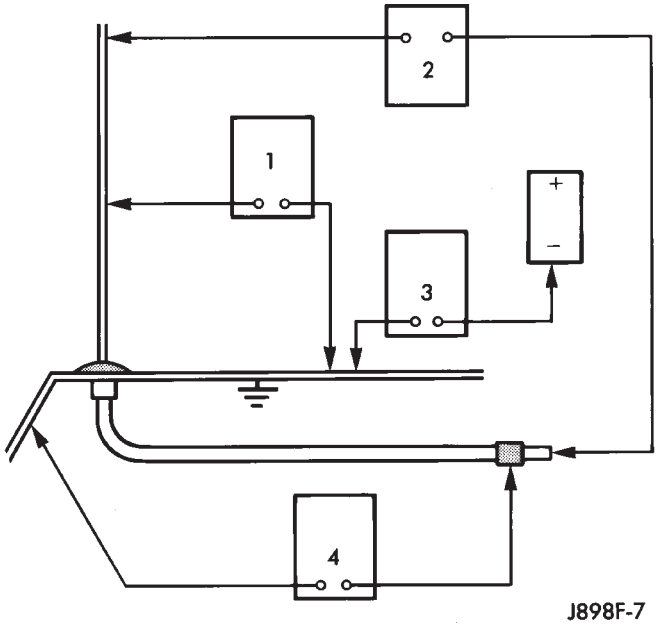


Fig. 3 Antenna Tests

TEST 1

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

(1) Disconnect the antenna coaxial cable connector from the radio receiver chassis and isolate. Remove the antenna mast from the antenna base.

(2) Insert one ohmmeter test lead into the socket for the antenna mast in the center of the antenna base. Connect the other test lead to the perimeter of 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.

TEST 2

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

(1) Disconnect the antenna coaxial cable connector from the radio receiver chassis. Remove the antenna mast from the antenna base.

(2) Insert one ohmmeter test lead into the socket for the antenna mast in the center of the antenna base. 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 terminal post.

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

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

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

RADIO FREQUENCY INTERFERENCE

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.

For complete circuit diagrams, see Group 8W - Wiring Diagrams. Inspect the ground paths and connections at the following locations:

- Blower motor

DIAGNOSIS AND TESTING (Continued)

- Electric fuel pump
- Engine-to-body ground strap(s)
- Generator
- Ignition module
- Radio antenna base ground
- Radio receiver chassis ground wire or strap
- Wiper motor.

If the source of RFI or EMI noise is identified as a component on the vehicle (i.e., generator, blower motor, etc.), the ground path for that component should be checked. If excessive resistance is found in any ground circuit, clean, tighten, or repair the ground circuits or connections to ground as required before considering any component replacement.

For service and inspection of secondary ignition components, refer to the Diagnosis and Testing section of Group 8D - Ignition Systems. Inspect the following secondary ignition system components:

- Distributor cap and rotor
- Ignition coil
- Spark plugs
- Spark plug wire routing and condition.

Reroute the spark plug wires or replace the faulty components as required.

If the source of the RFI or EMI noise is identified as two-way mobile radio or telephone equipment, check the equipment installation for the following:

- Power connections should be made directly to the battery, and fused as closely to the battery as possible.
- The antenna should be mounted on the roof or toward the rear of the vehicle. Remember that magnetic antenna mounts on the roof panel can adversely affect the operation of an overhead console compass, if the vehicle is so equipped.
- The antenna cable should be fully shielded coaxial cable, should be as short as is practical, and should be routed away from the factory-installed vehicle wire harnesses whenever possible.
- The antenna and cable must be carefully matched to ensure a low Standing Wave Ratio (SWR).

Fleet vehicles are available with an extra-cost RFI-suppressed Powertrain Control Module (PCM). This unit reduces interference generated by the PCM on some radio frequencies used in two-way radio communications. However, this unit will not resolve complaints of RFI in the commercial AM or FM radio frequency ranges.

REMOVAL AND INSTALLATION

RADIO RECEIVER

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REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Remove the center upper bezel from the instrument panel. Refer to **Instrument Panel Center Upper Bezel** in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(3) Remove the four screws that secure the radio receiver to the instrument panel (Fig. 4).

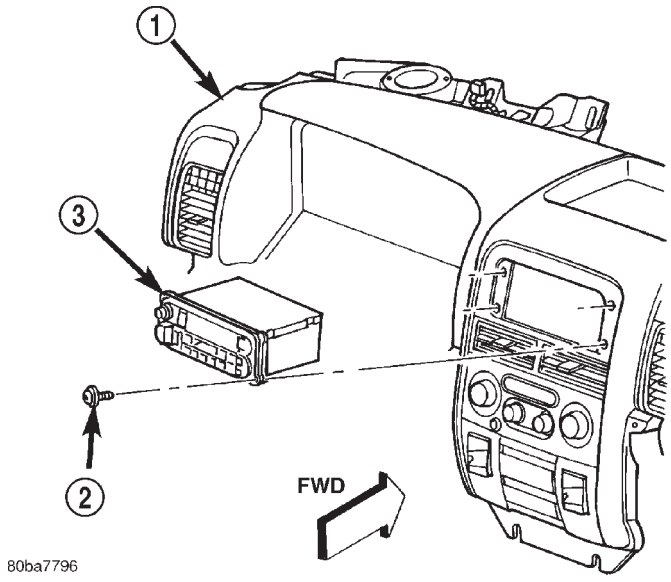


Fig. 4 Radio Remove/Install

1 – INSTRUMENT PANEL
2 – SCREW (4)
3 – RADIO RECEIVER

REMOVAL AND INSTALLATION (Continued)

(4) Pull the radio receiver out from the instrument panel far enough to access the instrument panel wire harness connectors and the antenna coaxial cable connector.

(5) Disconnect the instrument panel wire harness connectors and the antenna coaxial cable connector from the receptacles on the rear of the radio receiver.

(6) Remove the radio receiver from the instrument panel.

INSTALLATION

(1) Position the radio receiver to the instrument panel.

(2) Reconnect the instrument panel wire harness connectors and the antenna coaxial cable connector to the receptacles on the rear of the radio receiver.

(3) Position the radio receiver into the mounting hole in the instrument panel.

(4) Install and tighten the four screws that secure the radio receiver to the instrument panel. Tighten the screws to 2.2 N·m (20 in. lbs.).

(5) Install the center upper bezel onto the instrument panel. Refer to **Instrument Panel Center Upper Bezel** in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(6) Reconnect the battery negative cable.

COMPACT DISC CHANGER

REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Release the latch and open the lid of the compact disc changer storage bin on the right side quarter trim panel (Fig. 5).

(3) Remove the two screws that secure the top of compact disc changer storage bin to the right side quarter trim panel.

(4) Grasp the bottom of the compact disc changer storage bin firmly with both hands and lift it upwards to disengage the four hook formations that secure the bin from the right side quarter trim panel.

(5) Remove the compact disc changer storage bin from the right side quarter trim panel.

(6) Disconnect the right body wire harness connector from the connector receptacle on the forward end of the compact disc changer (Fig. 6).

(7) Remove the four nuts that secure the compact disc changer to the four studs on the right side quarter inner panel.

(8) Remove the compact disc changer from the right side quarter inner panel.

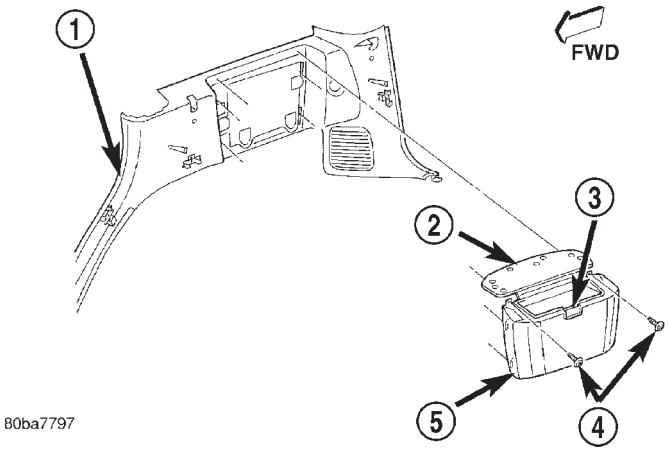


Fig. 5 Compact Disc Changer Storage Bin Remove/Install

1 – RIGHT SIDE QUARTER TRIM PANEL
2 – LID
3 – LATCH
4 – SCREW (2)
5 – CD CHANGER STORAGE BIN

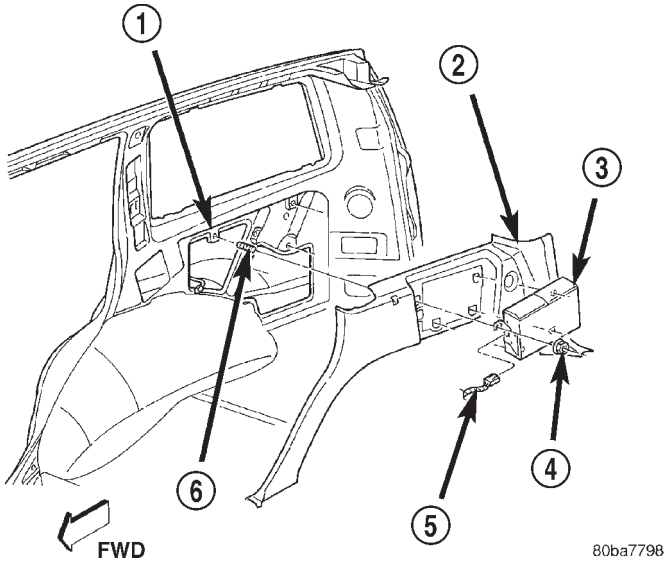


Fig. 6 Compact Disc Changer Remove/Install

1 – RIGHT SIDE QUARTER INNER PANEL
2 – RIGHT SIDE QUARTER TRIM PANEL
3 – COMPACT DISC CHANGER
4 – NUT (4)
5 – RIGHT BODY WIRE HARNESS
6 – STUD (4)

INSTALLATION

(1) Position the compact disc changer onto the four studs on the right side quarter inner panel.

(2) Install and tighten the four nuts that secure the compact disc changer to the four studs on the right side quarter inner panel. Tighten the nuts to 6.8 N·m (60 in. lbs.).

REMOVAL AND INSTALLATION (Continued)

(3) Reconnect the right body wire harness connector to the connector receptacle on the forward end of the compact disc changer.

(4) Position the compact disc changer storage bin onto the right side quarter trim panel.

(5) Align the four hook formations on the compact disc changer storage bin with the slots in the right side quarter trim panel.

(6) Using both hands push the compact disc changer storage bin firmly and evenly toward the right side quarter trim panel far enough to engage the hooks on the bin with the slots in the panel.

(7) Using both hands push the compact disc changer storage bin firmly and evenly downward far enough to align the screw holes in the bin with the mounting holes in the right side quarter trim panel.

(8) Install and tighten the two screws that secure the top of the compact disc changer storage bin to the right side quarter trim panel. Tighten the screws to 1.7 N·m (15 in. lbs.).

(9) Close the lid of the compact disc changer storage bin.

(10) Reconnect the battery negative cable.

REMOTE RADIO SWITCH

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

REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Remove the driver side airbag module from the steering wheel. Refer to **Driver Side Airbag Module** in the Removal and Installation section of Group 8M - Passive Restraint Systems for the procedures.

(3) Remove the speed control switch located on the same side of the steering wheel as the remote radio switch that is being serviced. Refer to **Speed Control Switches** in the Removal and Installation section of Group 8H - Speed Control System for the procedures.

(4) Disconnect the steering wheel wire harness connector from the connector receptacle of the remote radio switch (Fig. 7).

(5) From the inside of the steering wheel rear trim cover, press firmly and evenly outward on the back of the switch to disengage the four snap features that secure the switch to the inside of the mounting hole.

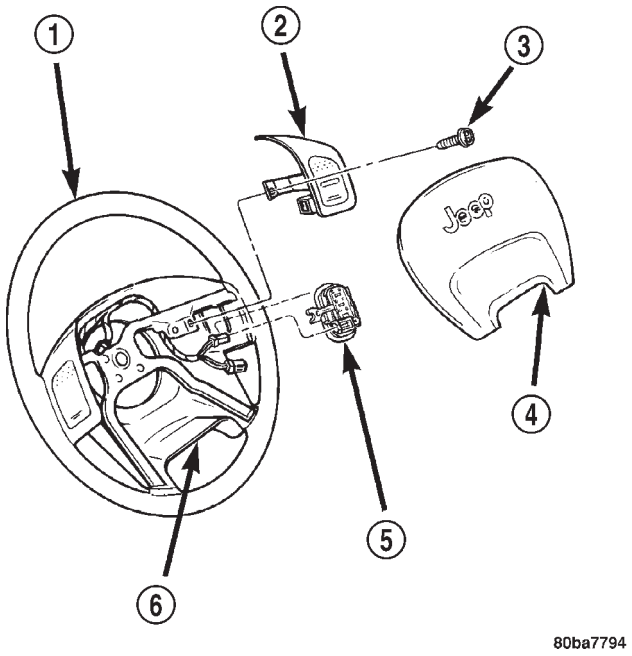


Fig. 7 Remote Radio Switches Remove/Install

1 – STEERING WHEEL
2 – SPEED CONTROL SWITCH
3 – SCREW
4 – DRIVER SIDE AIRBAG MODULE
5 – REMOTE RADIO SWITCH
6 – REAR TRIM COVER

(6) From the outside of the steering wheel rear trim cover, remove the remote radio switch from the trim cover mounting hole.

INSTALLATION

(1) Position the remote radio switch to the mounting hole on the outside of the steering wheel rear trim cover. Be certain that the connector receptacle is oriented toward the bottom of the switch and pointed toward the center of the steering wheel.

(2) Press firmly and evenly on the remote radio switch until each of the switch snap features is fully engaged in the mounting hole of the steering wheel rear trim cover.

(3) Reconnect the steering wheel wire harness connector to the connector receptacle of the remote radio switch.

(4) Install the speed control switch onto the steering wheel. Refer to **Speed Control Switches** in the Removal and Installation section of Group 8H - Speed Control System for the procedures.

(5) Install the driver side airbag module onto the steering wheel. Refer to **Driver Side Airbag Module** in the Removal and Installation section of Group 8M - Passive Restraint Systems for the procedures.

(6) Reconnect the battery negative cable.

REMOVAL AND INSTALLATION (Continued)

SPEAKER

REMOVAL

INSTRUMENT PANEL SPEAKER

(1) Disconnect and isolate the battery negative cable.

(2) Remove the top cover from the instrument panel. Refer to **Instrument Panel Top Cover** in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(3) Disconnect the instrument panel wire harness connector from the speaker wire harness connector (Fig. 8).

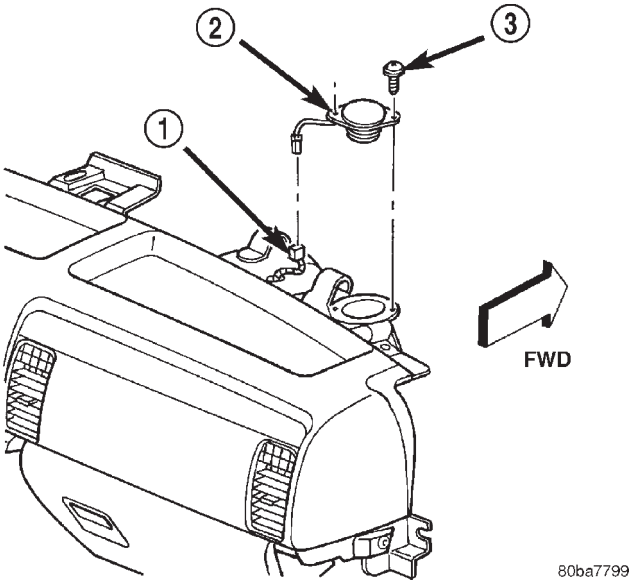


Fig. 8 Instrument Panel Speaker Remove/Install

1 – INSTRUMENT PANEL WIRE HARNESS
2 – INSTRUMENT PANEL SPEAKER
3 – SCREW (2)

(4) Remove the two screws that secure the speaker to the top of the instrument panel.

(5) Remove the speaker from the top of instrument panel.

FRONT DOOR SPEAKER

(1) Disconnect and isolate the battery negative cable.

(2) Remove the trim panel from the front door. Refer to **Front Door Trim Panel** in the Removal and Installation section of Group 23 - Body for the procedures.

(3) Remove the four screws that secure the speaker to the front door inner panel (Fig. 9).

(4) Pull the speaker away from the front door inner door panel far enough to access the front door wire harness connector.

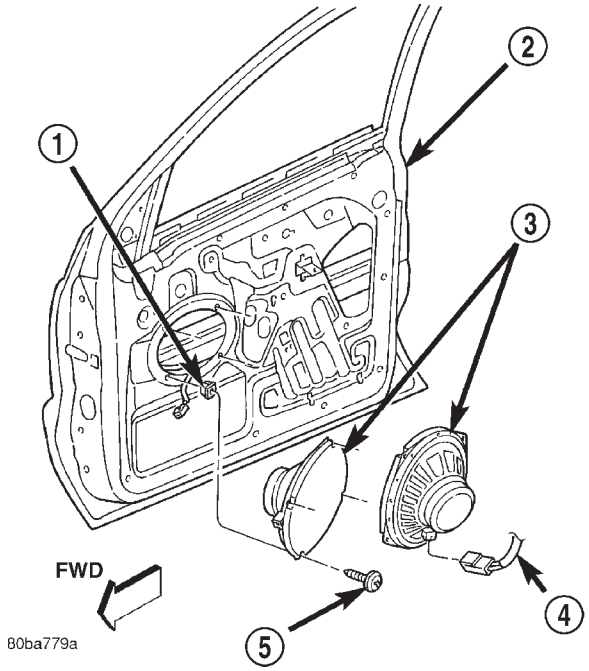


Fig. 9 Front Door Speaker Remove/Install

1 – PLASTIC NUT (4)
2 – FRONT DOOR
3 – FRONT DOOR SPEAKER
4 – FRONT DOOR WIRE HARNESS
5 – SCREW (4)

(5) Disconnect the front door wire harness connector from the speaker connector receptacle.

(6) Remove the speaker from the front door inner panel.

REAR DOOR SPEAKER

(1) Disconnect and isolate the battery negative cable.

(2) Remove the trim panel from the rear door. Refer to **Rear Door Trim Panel** in the Removal and Installation section of Group 23 - Body for the procedures.

(3) Remove the three screws that secure the speaker to the rear door inner panel (Fig. 10).

(4) Pull the speaker away from the rear door inner panel far enough to access the rear door wire harness connector.

(5) Disconnect the rear door wire harness connector from the speaker connector receptacle.

(6) Remove the speaker from the rear door inner panel.

INSTALLATION

INSTRUMENT PANEL SPEAKER

(1) Position the speaker onto the top of the instrument panel.

REMOVAL AND INSTALLATION (Continued)

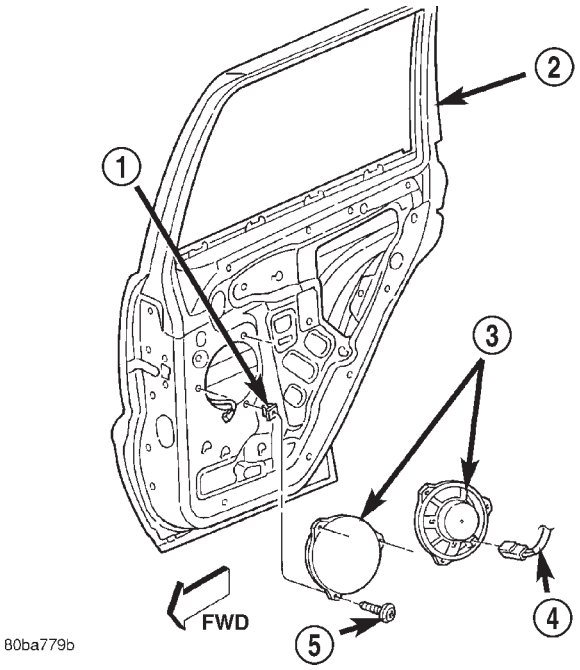


Fig. 10 Rear Door Speaker Remove/Install

1 – PLASTIC NUT (3)
2 – REAR DOOR
3 – REAR DOOR SPEAKER
4 – REAR DOOR WIRE HARNESS
5 – SCREW (3)

(2) Install and tighten the two screws that secure the speaker to the top of the instrument panel. Tighten the screws to 2.2 N·m (20 in. lbs.).

(3) Reconnect the instrument panel wire harness connector to the speaker wire harness connector.

(4) Install the top cover onto the instrument panel. Refer to **Instrument Panel Top Cover** in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(5) Reconnect the battery negative cable.

FRONT DOOR SPEAKER

(1) Position the speaker to the front door inner panel.

(2) Reconnect the front door wire harness connector to the speaker connector receptacle.

(3) Position the speaker onto the front door inner door panel.

(4) Install and tighten the four screws that secure the speaker to the front door inner panel. Tighten the screws to 2.2 N·m (20 in. lbs.).

(5) Install the trim panel onto the front door. Refer to **Front Door Trim Panel** in the Removal and Installation section of Group 23 - Body for the procedures.

(6) Reconnect the battery negative cable.

REAR DOOR SPEAKER

(1) Position the speaker to the rear door inner panel.

(2) Reconnect the rear door wire harness connector to the speaker connector receptacle.

(3) Position the speaker onto the rear door inner panel.

(4) Install and tighten the three screws that secure the speaker to the rear door inner panel. Tighten the screws to 2.2 N·m (20 in. lbs.).

(5) Install the trim panel onto the rear door. Refer to **Rear Door Trim Panel** in the Removal and Installation section of Group 23 - Body for the procedures.

(6) Reconnect the battery negative cable.

POWER AMPLIFIER

REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Unlatch and lift the right rear seat cushion to the upright position.

(3) Disconnect the two right body wire harness connectors from the connector receptacles on the right end of the power amplifier (Fig. 11).

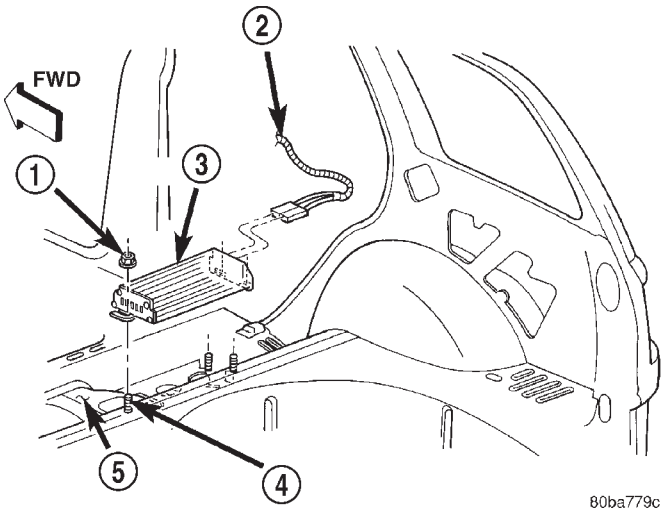


Fig. 11 Power Amplifier Remove/Install

1 – NUT (3)
2 – RIGHT BODY WIRE HARNESS
3 – AMPLIFIER
4 – STUD (3)
5 – RIGHT REAR FLOOR PANEL

(4) Remove the three nuts that secure the power amplifier to the three studs on the floor panel.

(5) Remove the power amplifier from the three floor panel studs.

REMOVAL AND INSTALLATION (Continued)

INSTALLATION

(1) Position the power amplifier onto the three floor panel studs.

(2) Install and tighten the three nuts that secure the power amplifier to the three studs on the floor panel. Tighten the nuts to 11.8 N·m (105 in. lbs.).

(3) Reconnect the two right body wire harness connectors to the connector receptacles on the right end of the power amplifier.

(4) Lower the right rear seat cushion to the floor panel.

(5) Reconnect the battery negative cable.

ANTENNA

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REMOVAL

ANTENNA BASE AND LEAD

(1) Disconnect and isolate the battery negative cable.

(2) Remove the scuff plate from the right front door sill. Refer to **Front Door Scuff Plate** in the Removal and Installation section of Group 23 - Body for the procedures.

(3) Remove the trim panel from the right inner cowl side. Refer to **Front Door Scuff Plate** in the Removal and Installation section of Group 23 - Body for the procedures.

(4) Reach under the passenger side of the instrument panel near the right cowl side inner panel to disconnect the antenna coaxial cable connector by pulling it apart while twisting the metal connector halves (Fig. 12). Do not pull on the cable.

(5) Remove the lower rear half of the inner liner from the right front fender wheel house. Refer to **Front Fender** in the Removal and Installation section of Group 23 - Body for the procedures.

(6) Reach through the rear of the right front fender wheel house opening to access and unseat the antenna lead grommet from the hole in the right cowl side outer panel.

(7) Pull the antenna lead coaxial cable and connector out of the passenger compartment and into the right front fender wheel house through the hole in the right cowl side outer panel.

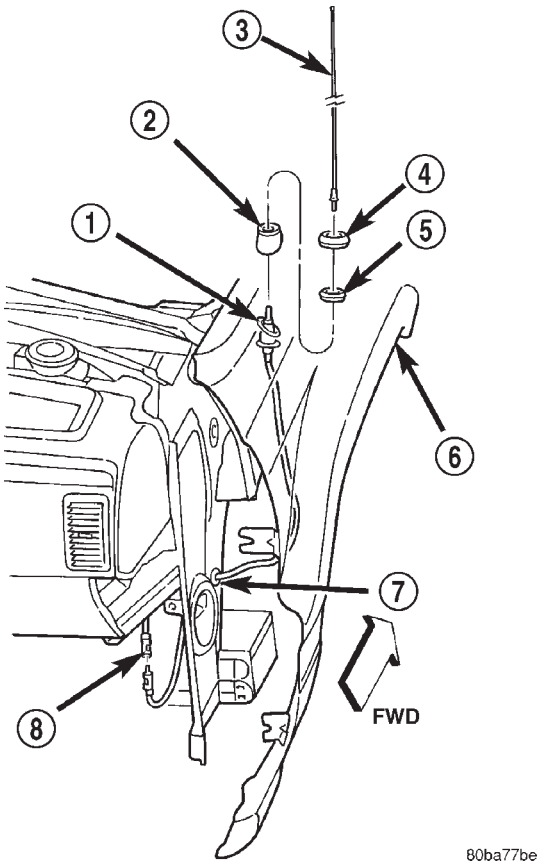


Fig. 12 Antenna Base and Lead Remove/Install

1 – BASE AND LEAD
2 – ESCUTCHEON
3 – MAST
4 – SHROUD
5 – CAP NUT
6 – RIGHT FRONT FENDER
7 – GROMMET
8 – CONNECTOR

(8) Unscrew the antenna mast from the antenna base (Fig. 13).

(9) Remove the plastic shroud from the antenna base cap nut.

(10) Remove the antenna base cap nut using an antenna nut wrench (Special Tool C-4816) (Fig. 14).

(11) Remove the antenna escutcheon from the antenna base on the top of the right front fender.

(12) Lower the antenna base from the mounting hole in the top of the right front fender.

(13) Remove the antenna base and lead from the rear of the right front fender wheel house opening.

INSTRUMENT PANEL ANTENNA CABLE

(1) Disconnect and isolate the battery negative cable.

(2) Remove the scuff plate from the right front door sill. Refer to **Front Door Scuff Plate** in the

REMOVAL AND INSTALLATION (Continued)

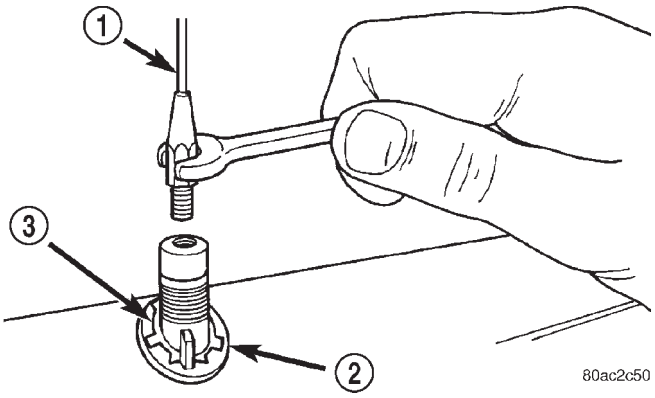


Fig. 13 Antenna Mast Remove/Install - Typical

1 – ANTENNA MAST
2 – ADAPTER
3 – CAP NUT

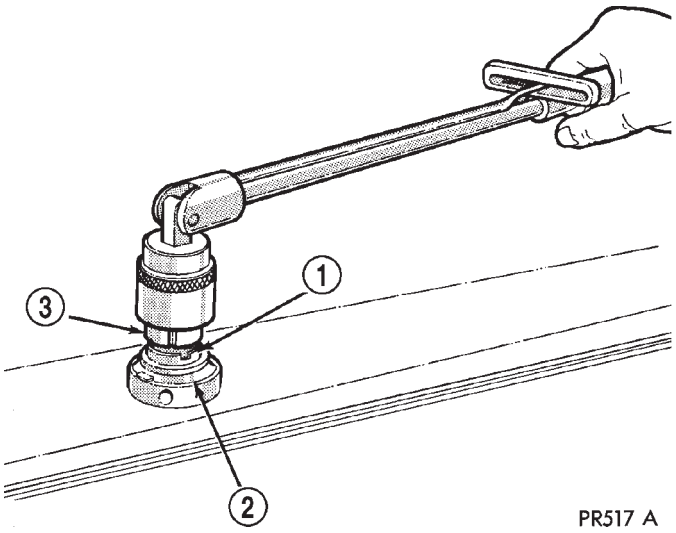


Fig. 14 Antenna Base Cap Nut Remove/Install - Typical

1 – CAP NUT
2 – ANTENNA ADAPTER
3 – TOOL

Removal and Installation section of Group 23 - Body for the procedures.

(3) Remove the trim panel from the right inner cowl side. Refer to **Front Door Scuff Plate** in the Removal and Installation section of Group 23 - Body for the procedures.

(4) Reach under the passenger side of the instrument panel near the right cowl side inner panel to disconnect the antenna coaxial cable connector by pulling it apart while twisting the metal connector halves. Do not pull on the cable.

(5) Disengage the antenna cable retainer from the mounting hole in the wire harness mounting tab under the passenger side end of the instrument panel.

(6) Remove the radio receiver from the instrument panel. Refer to **Radio Receiver** in the Removal and Installation section of this group for the procedures.

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

(8) Disengage the antenna cable retainer from the mounting hole in the top of the radio mount on the instrument panel structural duct (Fig. 15).

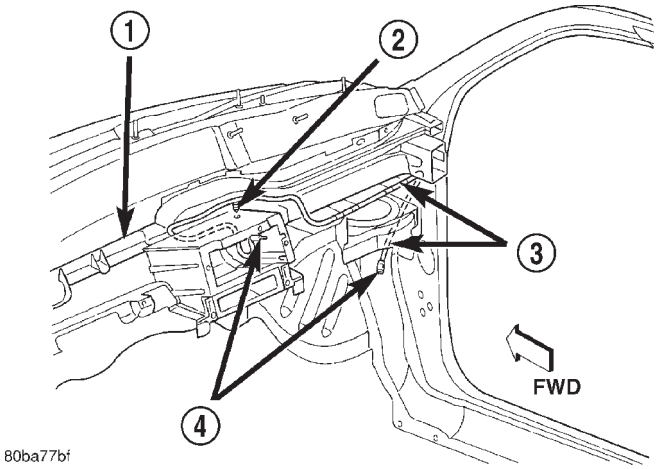


Fig. 15 Instrument Panel Antenna Cable Routing

1 – INSTRUMENT PANEL STRUCTURAL DUCT
2 – RETAINER
3 – COAXIAL CABLE
4 – COAXIAL CABLE CONNECTORS

(9) Disengage the antenna cable from the locator tabs on the top of the instrument panel structural duct above the glove box opening.

(10) Remove the antenna cable from the instrument panel.

INSTALLATION

ANTENNA BASE AND LEAD

(1) Position the antenna base and lead into the rear of the right front fender wheel house opening.

(2) Insert the antenna base into the mounting hole in the top of the right front fender.

(3) Install the antenna escutcheon onto the antenna base on the top of the right front fender.

(4) Install and tighten the antenna base cap nut using an antenna nut wrench (Special Tool C-4816). Tighten the cap nut to 6.8 N·m (60 in. lbs.).

(5) Install the plastic shroud onto the antenna base cap nut.

(6) Install and tighten the antenna mast onto the antenna base. Tighten the antenna mast to 3.3 N·m (30 in. lbs.).

REMOVAL AND INSTALLATION (Continued)

(7) Reach through the rear of the right front fender wheel house opening to access and insert the antenna lead coaxial cable and connector into the passenger compartment through the hole in the right cowl side outer panel.

(8) From the right front fender wheel house, seat the antenna lead grommet into the hole in the right cowl side outer panel.

(9) Install the lower rear half of the inner liner into the right front fender wheel house. Refer to **Front Fender** in the Removal and Installation section of Group 23 - Body for the procedures.

(10) Reach under the passenger side of the instrument panel near the right cowl side inner panel to reconnect the antenna coaxial cable connector halves.

(11) Install the trim panel onto the right inner cowl side. Refer to **Front Door Scuff Plate** in the Removal and Installation section of Group 23 - Body for the procedures.

(12) Install the scuff plate onto the right front door sill. Refer to **Front Door Scuff Plate** in the Removal and Installation section of Group 23 - Body for the procedures.

(13) Reconnect the battery negative cable.

INSTRUMENT PANEL ANTENNA CABLE

(1) Position the antenna cable onto the instrument panel.

(2) Engage the antenna cable with the locator tabs on the top of the instrument panel structural duct above the glove box opening.

(3) Engage the antenna cable retainer into the mounting hole in the top of the radio mount on the instrument panel structural duct.

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

(5) Install the radio receiver onto the instrument panel. Refer to **Radio Receiver** in the Removal and Installation section of this group for the procedures.

(6) Engage the antenna cable retainer into the mounting hole in the wire harness mounting tab under the passenger side end of the instrument panel.

(7) Reach under the passenger side of the instrument panel near the right cowl side inner panel to reconnect the antenna coaxial cable connector halves.

(8) Install the trim panel onto the right inner cowl side. Refer to **Front Door Scuff Plate** in the Removal and Installation section of Group 23 - Body for the procedures.

(9) Install the scuff plate onto the right front door sill. Refer to **Front Door Scuff Plate** in the Removal and Installation section of Group 23 - Body for the procedures.

(10) Reconnect the battery negative cable.

RADIO NOISE SUPPRESSION COMPONENTS

REMOVAL

ENGINE-TO-BODY GROUND STRAP

(1) Remove the screw that secures the engine-to-body ground strap eyelet to the lower plenum panel (Fig. 16) or (Fig. 17).

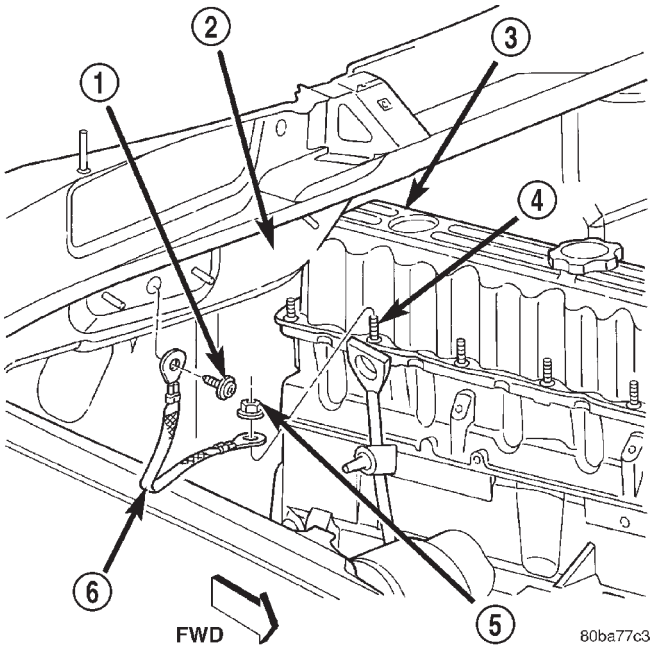


Fig. 16 Engine-To-Body Ground Strap Remove/ Install - 4.0L Engine

1 – SCREW
2 – LOWER PLENUM PANEL
3 – ENGINE
4 – STUD
5 – NUT
6 – GROUND STRAP

(2) On models with a 4.0L engine, remove the nut that secures the engine-to-body ground strap eyelet to the stud on the right rear side of the engine cylinder head.

(3) On models with a 4.7L engine, remove the two nuts that secure the engine-to-body ground strap eyelets to the studs on the right and left rear sides of the engine intake manifold.

(4) Remove the engine-to-body ground strap eyelet(s) from the stud(s) on the engine.

(5) Remove the engine-to-body ground strap from the engine compartment.

REMOVAL AND INSTALLATION (Continued)

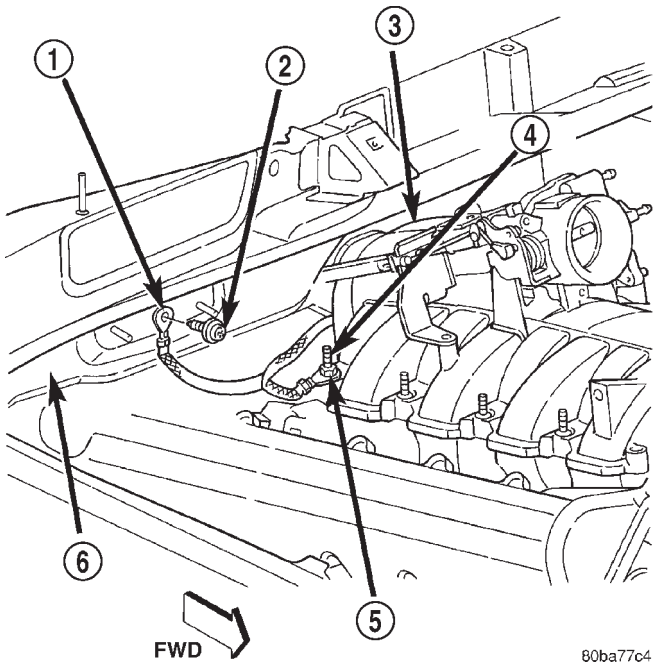


Fig. 17 Engine-To-Body Ground Strap Remove/ Install - 4.7L Engine

1 – GROUND STRAP
2 – SCREW
3 – ENGINE
4 – STUD (2)
5 – NUT (2)
6 – LOWER PLENUM PANEL

EXHAUST SYSTEM-TO-BODY AND TRANSMISSION GROUND STRAP - 4.7L ENGINE ONLY

A ground strap for radio noise suppression is installed between the exhaust pipe, the vehicle body and the transmission or transfer case on this model when it is equipped with a 4.7L engine. At the time this service manual was published, graphics and technical information to support the service of this ground strap was not available. This information will be published in a Technical Service Bulletin when it becomes available.

INSTALLATION

ENGINE-TO-BODY GROUND STRAP

(1) Position the engine-to-body ground strap into the engine compartment.

(2) Install the engine-to-body ground strap eyelet(s) onto the stud(s) on the engine.

(3) On models with a 4.0L engine, install and tighten the nut that secures the engine-to-body ground strap eyelet to the stud on the right rear side of the engine cylinder head. Tighten the nut to 5.6 N·m (50 in. lbs.).

(4) On models with a 4.7L engine, install and tighten the two nuts that secure the engine-to-body ground strap eyelets to the studs on the right and left rear sides of the engine intake manifold. Tighten the nuts to 11.3 N·m (100 in. lbs.).

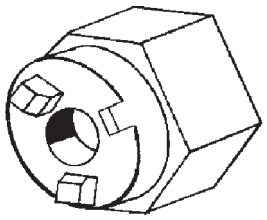
(5) Install and tighten the screw that secures the engine-to-body ground strap eyelet to the lower plenum panel. Tighten the screw to 4.5 N·m (40 in. lbs.).

EXHAUST SYSTEM-TO-BODY AND TRANSMISSION GROUND STRAP - 4.7L ENGINE ONLY

A ground strap for radio noise suppression is installed between the exhaust pipe, the vehicle body and the transmission or transfer case on this model when it is equipped with a 4.7L engine. At the time this service manual was published, graphics and technical information to support the service of this ground strap was not available. This information will be published in a Technical Service Bulletin when it becomes available.

SPECIAL TOOLS

AUDIO SYSTEMS



Antenna Nut Wrench C-4816