

AUDIO SYSTEMS

CONTENTS

	page		page
GENERAL INFORMATION	1	XJ SERVICE PROCEDURES	4
RADIO ANTENNA	8	YJ SERVICE PROCEDURES	6

GENERAL INFORMATION

DESCRIPTION

Each radio receives ignition feed from an ignition switch controlled fuse. There is an additional in-line fuse in the back of the radio chassis. The in-line fuse will blow in the event an internal short occurs.

The electronically tuned radio (ETR)/cassette models protect the vehicle from a radio failure with an in-line fuse located in the rear of the radio chassis (Fig. 1).

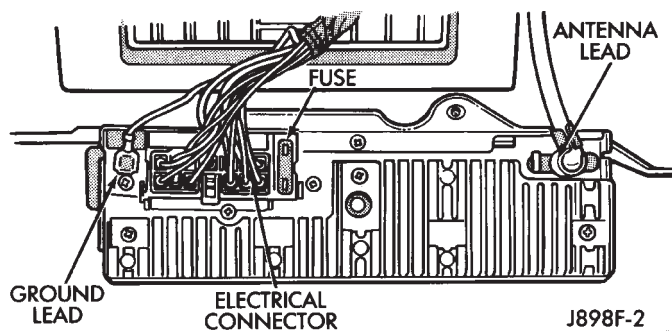


Fig. 1 In-Line Fuse Location

XJ/YJ vehicles are equipped with an Ignition-Off Draw (IOD) fuse that is removed when the vehicles are shipped from the factory. This fuse is in the Power Distribution Center to prevent battery discharge during storage. For specific location refer to Group 8W - Wiring Diagrams.

The IOD fuse is in the radio memory circuitry and should be checked if the memory (time or radio station programming) is inoperative.

All radios are connected to the radio illumination relay. When the ignition switch is in ON or ACCESSORY and the radio illumination relay remains de-energized, the radio receives battery voltage via the relay from the:

- (20 amp #7 fuse YJ)
- (15 amp #2 fuse XJ).

The radio illumination relay is energized when the headlamp switch is used to turn on the parklamps or headlamps. Battery voltage is switched to the dim

display input of the radio through the relay contacts. The radio panel illumination is dimmed for night driving.

The ETR models require an additional battery feed connection to the (10 amp #F16 fuse-YJ), (10 amp #9 fuse-XJ) to retain the radio's memory when the ignition switch is turned OFF.

ETR models are self-compensating. A radio trimmer adjustment is not required.

DIAGNOSIS

RADIO INOPERATIVE

Turn ignition switch to ON

- Inspect the (#7-YJ), (#2-XJ) fuse and replace if necessary.
- Measure voltage at battery side of the fuse. There should be 12 volts. If not, repair open from ignition switch.
- Inspect in-line fuse at rear of radio and replace if necessary.

Turn ignition switch to OFF.

- Disconnect radio connector. Measure resistance from radio ground pin to a clean chassis ground. There should be zero ohms. If not, repair open between radio connector and ground.

NO AUDIO OUTPUT ON ONE OR MORE SPEAKERS

Refer to Radio Connector Pins.

FRONT SPEAKERS

- Radio OFF, radio connector disconnected. Measure resistance between radio left front feed and return connector pins. Measure between right front feed and return connector pins. The meter should read 5 to 8 ohms. If the meter reading is correct, remove radio for service. If not, repair wiring or replace speakers as required.

REAR SPEAKERS

- Radio OFF, radio connector disconnected. Measure resistance between radio left rear feed and return connector pins. Measure between right rear feed and return connector pins. The meter should read 5 to 8 ohms. If meter reading is correct remove radio for service. If not, repair wiring or replace speakers as required.

DISTORTED AUDIO OUTPUT ON ONE OR MORE SPEAKERS

- With the radio ON, substitute known good speaker or speakers. If the sound is still distorted, remove radio for service.

WEAK OR NO RECEPTION; NO AUDIO OUTPUT; BACKGROUND NOISE PRESENT**Ignition switch in ON, radio ON.**

- Inspect antenna cable and connector at radio and tighten or repair as necessary.
- Unplug coax cable and connectors from radio. Measure resistance from center conductor to coaxial shield. The meter should read infinite resistance (open). If it does not, replace antenna assembly.
- Measure resistance of antenna mast to tip of center conductor at radio end of cable. The meter should read 0 to 0.5 ohms. If it does not, replace lead-in cable or antenna assembly.
- Measure resistance from coaxial shield to chassis ground (vehicle body). The meter should read zero ohms. If it does not, ground antenna base to vehicle body, or replace antenna assembly as required

For all problems with no or low audio output not resolved by these tests, remove radio for service.

MEMORY DOES NOT OPERATE

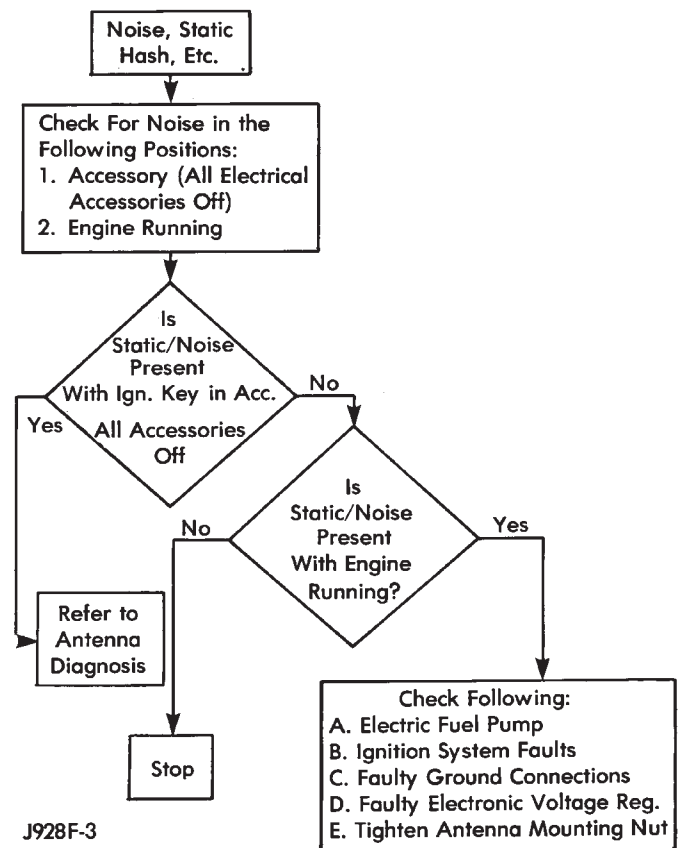
- Inspect (F16 in Power Distribution Center-YJ), (#9 in Fuse Panel-XJ) fuse and replace if necessary.
- Measure voltage at battery side of previously referenced fuse. There should be 12 volts at battery side of fuse. If not, check the Maxi fuse.

Refer to Group 8W - Wiring Diagrams.

- Measure voltage at radio connector pin 4. There should be 12 volts. If meter reading is correct, remove radio for service. If not, repair open from fuse.

RADIO DISPLAY ILLUMINATION (PARKLAMPS AND HEADLAMPS OPERATING NORMALLY)**Headlamp switch OFF, radio ON.**

- Measure voltage at radio connector pin 10. There should be 12 volts. If not, go to next step. If OK, remove radio for repair by authorized outlet.
- Measure voltage at illumination relay pin 3. There should be 12 volts. If 12 volts present, replace illumination relay. If not, repair open in circuit.

RADIO NOISE DIAGNOSIS**RADIO DISPLAY ILLUMINATION DIMMING CIRCUIT**

Turn headlamp switch to PARKLAMPS for voltage tests; turn headlamp switch to OFF for resistance tests.

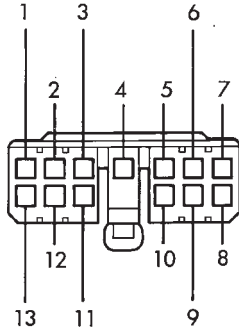
- Separate relay connector from radio illumination relay. Measure resistance from relay connector pin 2 to a clean chassis ground. The meter should read zero ohms. If not, repair open between relay connector and ground.
- Measure voltage at radio illumination relay pin 5. There should be battery voltage. If not repair open from headlamp switch.
- Measure voltage at radio illumination relay pin 4. Voltage should vary with dimmer switch. If OK, go to next step. If not, repair open circuit between pin 4 and interior lamp rheostat.
- Measure voltage at radio illumination relay pin 10. Voltage should vary with dimmer switch. If OK, remove radio for repair by authorized outlet. If not, replace radio illumination relay.

NOISE INTERFERENCE CHANGES WITH ENGINE SPEED

- Inspect connections at: generator, ignition module, antenna coaxial ground, radio ground, body to engine block ground (braided ground strap). Repair as required.

- Inspect secondary ignition system components: wire routing and condition, distributor cap and rotor, ignition coil, spark plugs. Reroute or replace as required.

RADIO CONNECTOR PINS



- | | |
|----------------------|-------------------------|
| 1 — RIGHT REAR FEED | 8 — LEFT REAR RETURN |
| 2 — RIGHT FRONT FEED | 9 — LEFT FRONT RETURN |
| 3 — ACC./IGN | 10 — DISPLAY DIMMING |
| 4 — BATTERY | 11 — PANEL DIMMING |
| 5 — BLANK | 12 — RIGHT FRONT RETURN |
| 6 — LEFT REAR FEED | 13 — RIGHT REAR RETURN |
| 7 — LEFT FRONT FEED | |

NOTE: FOR WIRE COLORS REFER TO GROUP 8W—WIRING DIAGRAMS

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RADIO ILLUMINATION RELAY

XJ

The radio illumination relay is in the relay center. The relay center is located on the lower instrument panel trim cover, right of the steering column (Fig. 2).

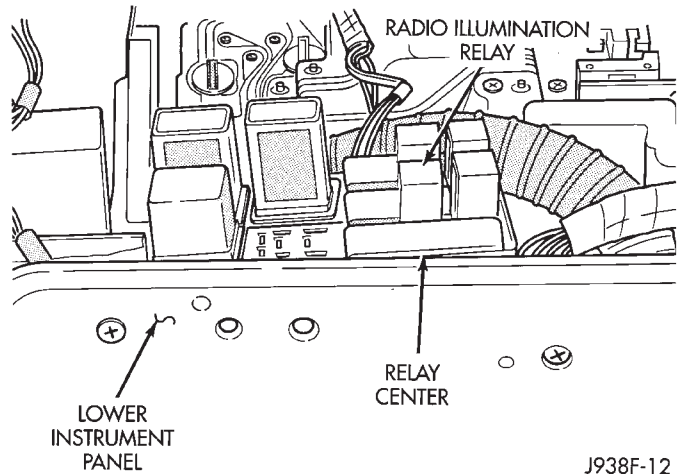


Fig. 2 Radio Illumination Relay

YJ

The radio illumination relay is taped to the harness above the radio.

XJ SERVICE PROCEDURES

RADIO REPLACEMENT

- (1) Disconnect negative cable from battery.
- (2) Remove instrument panel bezel attaching screws (Fig. 1) and remove the bezel.

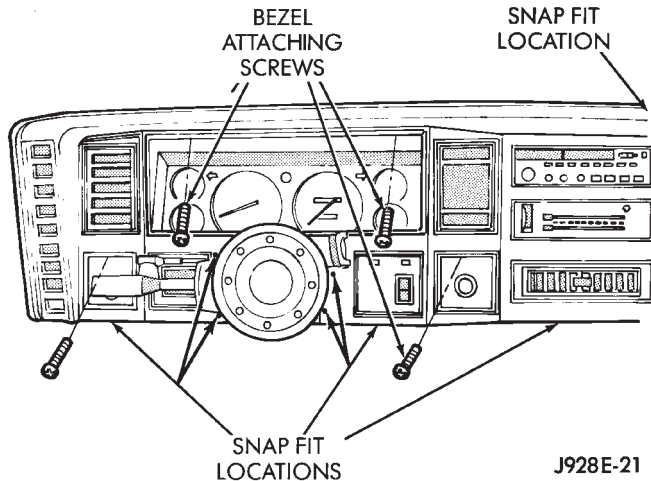


Fig. 1 Instrument Bezel Removal/Installation

- (3) Remove radio attaching screws (Fig. 2).

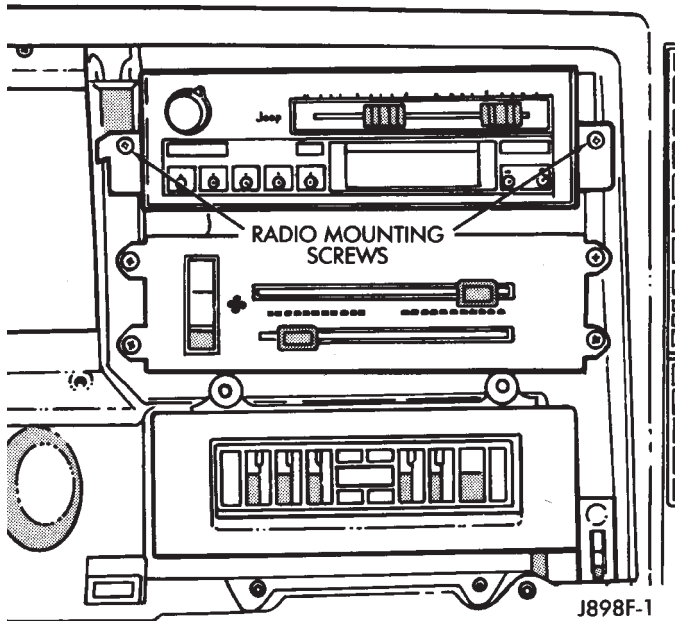


Fig. 2 Remove/Install Radio Mounting Screws

- (4) Disconnect radio electrical connector, ground lead and antenna lead (Fig. 3).
- (5) To install radio, route harness above and to the right of the radio cavity. Install the radio making sure that clip on top of radio (Fig. 4) is installed in mating slot of dash.
- (6) Reverse removal procedures to finish installing the radio.

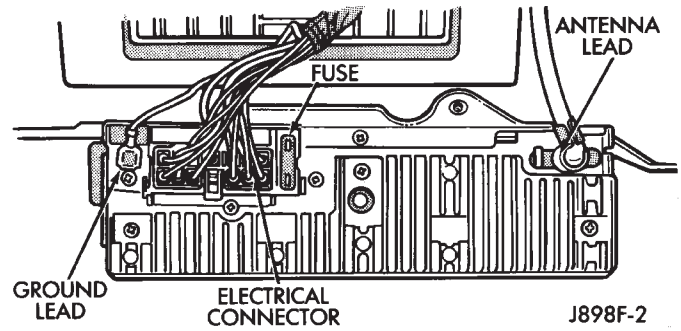


Fig. 3 Disconnect/Connect Radio Wiring Harnesses

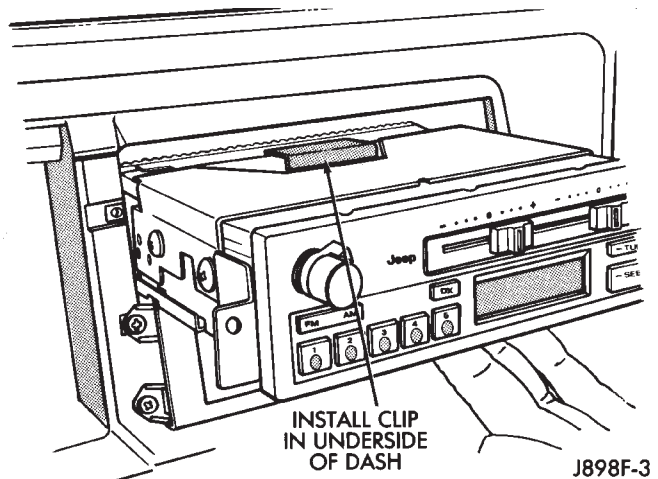


Fig. 4 Install Clip In Underside of Dash RADIO SPEAKERS

INSTRUMENT PANEL MOUNTED SPEAKERS

- (1) Remove park brake retaining screw from lower instrument panel (Fig. 5).

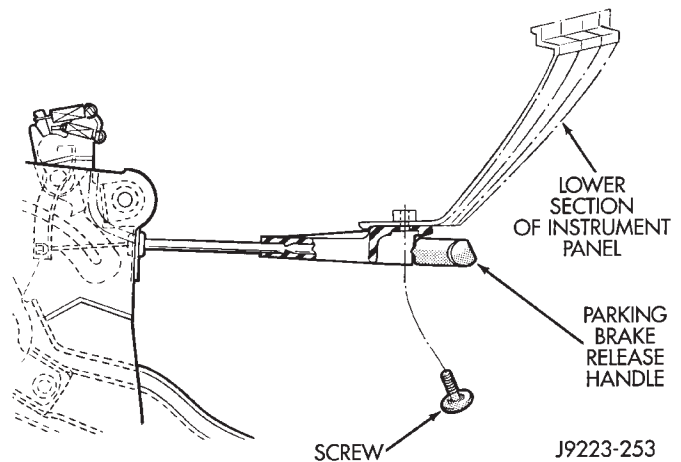


Fig. 5 Park Brake Release Handle

- (2) Remove retaining screws and the lower instrument panel (Fig. 6).
- (3) Unplug wire harness connector.

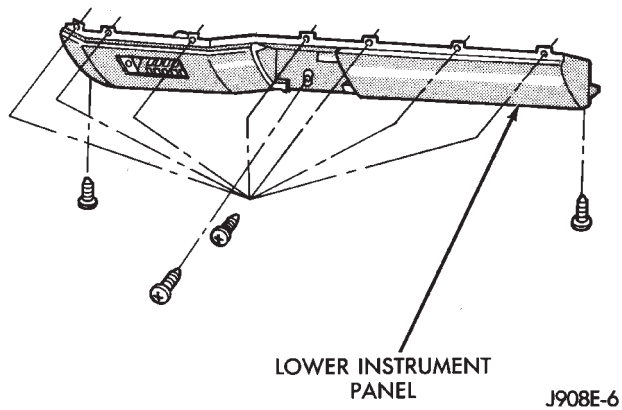


Fig. 6 Lower Instrument Panel Removal/Installation

(4) Remove speaker screws and speaker from lower instrument panel (Fig. 7).

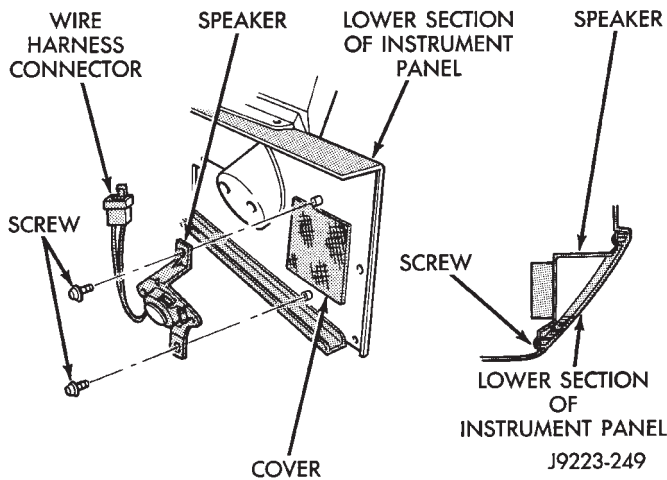


Fig. 7 Tweeter Speaker Removal/Installation

(5) To install speaker, reverse the removal procedures.

FRONT DOOR-MOUNTED RADIO SPEAKERS

(1) Remove interior door latch release assembly and control panel retaining screws (Fig. 8).

(2) Disconnect control linkage and wire harness connector.

(3) Remove latch release and control panel assembly.

(4) Remove armrest lower retaining screws.

(5) Swing armrest downward to a vertical position. This is necessary to disconnect armrest from upper retainer clip (Fig. 9).

(6) Pull armrest straight out from trim panel.

(7) Remove trim panel with a wide flat blade tool (Fig. 10).

To aid in removal of trim panel, start at the bottom of the panel.

(8) Remove speaker attaching screws and disconnect speaker at wire harness.

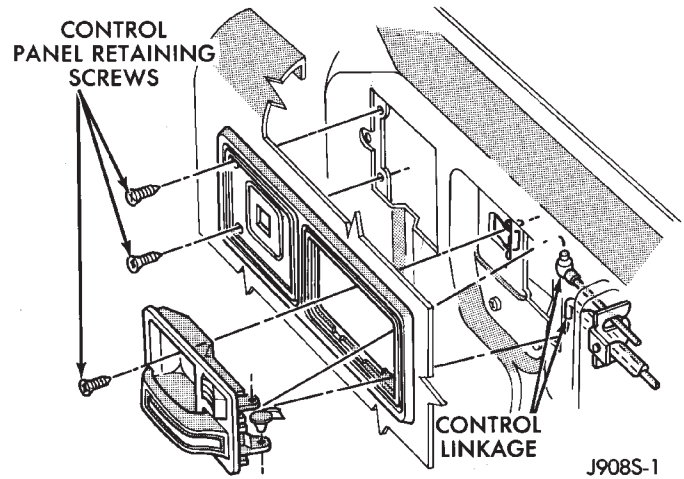


Fig. 8 Power Window Control Panel Removal/Installation

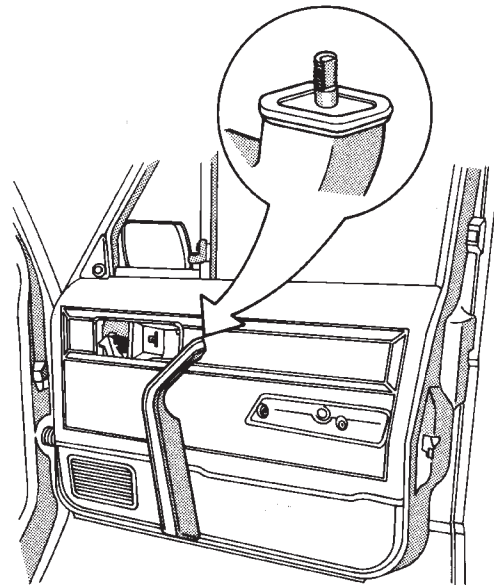


Fig. 9 Armrest Retainer Clip

(9) To install a speaker, connect the speaker wire harness and reverse the removal procedure.

REAR LIFTGATE-MOUNTED RADIO SPEAKER

REMOVAL

(1) Remove 2 screws at top outside edges of liftgate trim panel.

(2) Remove trim panel with a wide flat blade tool (Fig. 11).

To aid in removal of trim panel, start at the bottom of the panel.

(3) Remove speaker attaching screws (Fig. 12).

(4) Disconnect speaker at wiring harness and remove speaker.

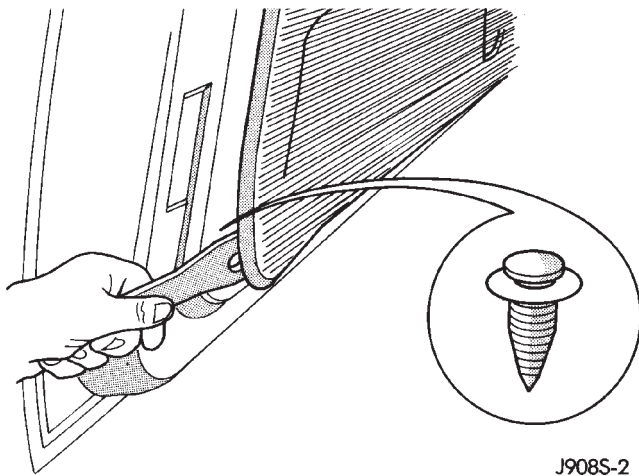


Fig. 10 Trim Panel Removal

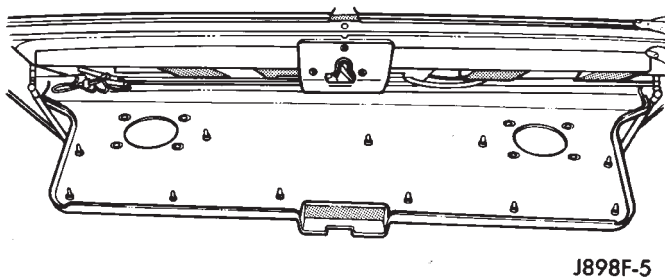


Fig. 11 Liftgate Trim Panel Removal

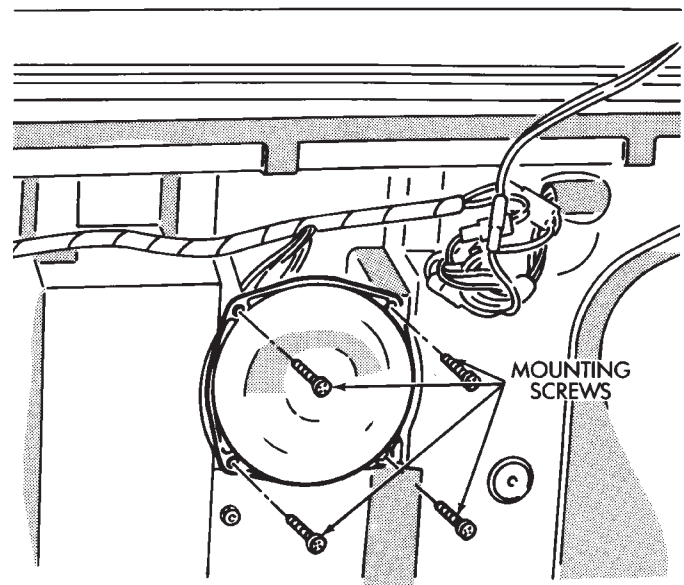


Fig. 12 Liftgate Speaker

INSTALLATION

- (1) Connect speaker at wiring harness.
- (2) Install speaker.
- (3) Install trim panel by pushing in the plastic trees.
- (4) Install door panel screws.

YJ SERVICE PROCEDURES

RADIO REPLACEMENT

- (1) Disconnect negative cable from battery.
- (2) Remove gauge cluster panel bezel attaching screws (Fig. 1).

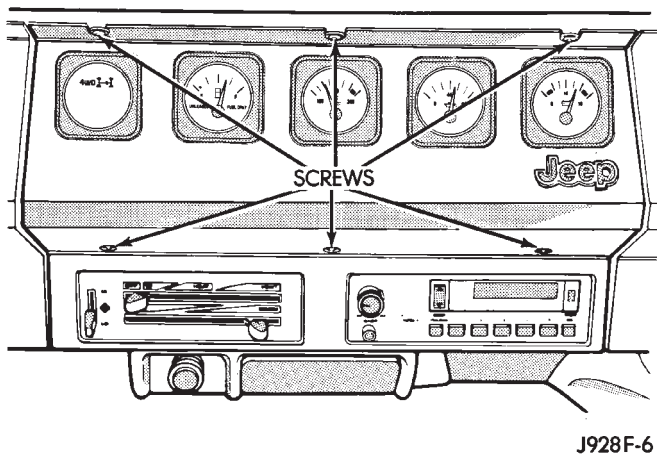


Fig. 1 Gauge Cluster Bezel Removal/Installation

- (3) Remove radio bezel.
- (4) Remove radio attaching screws.
- (5) Disconnect radio antenna cable.
- (6) Disconnect radio wire harness.
- (7) Remove radio.

- (8) To install radio, reverse the removal procedures.

RADIO SPEAKERS

PASSENGER SIDE

The speaker is located behind grille panel at right end of the instrument panel.

- (1) Reach up behind instrument panel and remove 4 stamped nuts holding the speaker in place.
- (2) Disconnect speaker electrical connector and remove speaker.

DRIVERS SIDE

The speaker is located behind grille panel at left end of the dash panel.

- (1) Remove nuts that attach the parking brake pedal assembly mounting studs to the dash panel. The nuts are accessible from the engine compartment (Fig. 2).

CAUTION: If vehicle is equipped with a rear window wiper, there is a ground wire attached to top of bolt that attaches the pedal assembly to the instrument panel.

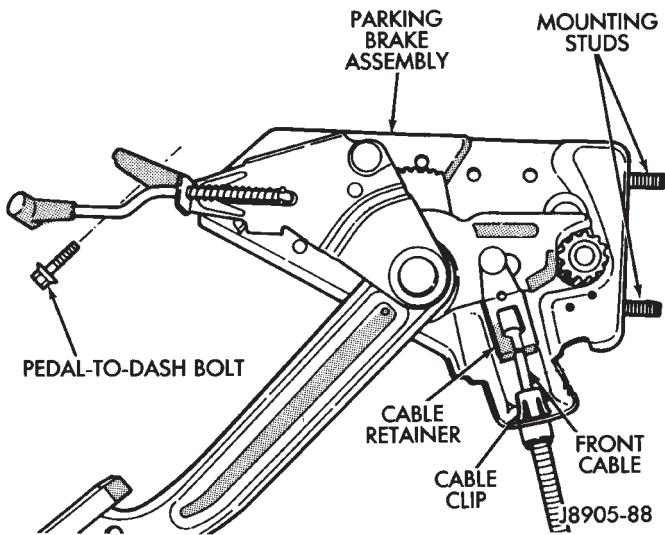


Fig. 2 Parking Brake Assembly

(2) Remove bolt that attaches the pedal assembly to the instrument panel and allow pedal assembly to fall out of the way.

(3) Reach up behind instrument panel and remove 4 stamped nuts holding speaker in place.

(4) Disconnect speaker electrical connector and remove speaker.

SOUND BAR—SPEAKER REMOVAL

(1) Pull sound bar padding away from bar on the passenger side (Fig. 3).

(2) Disconnect speaker harness connector located on the passenger side at the sound bar.

(3) Remove screws holding speaker grille and speaker to bar.

(4) Disconnect wires from speaker and remove speaker.

(5) To install speaker, reverse the removal procedures.

SOUND BAR REPLACEMENT

(1) Disconnect speaker harness connector located on the passenger side at the sound bar (Fig. 3)

(2) Remove bolts attaching the sound bar side flanges to the right and left side bars.

(3) Open zipper on sport bar cover.

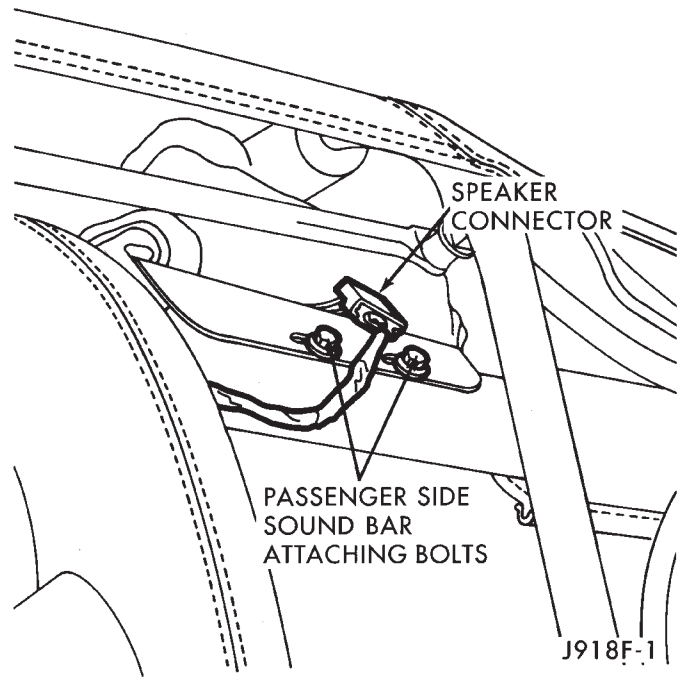


Fig. 3 Sound Bar Speaker Connector

(4) Remove bolts attaching the sound bar brackets to the sport bar (located on the rear of the sport bar) (Fig. 4). Slip brackets through the sport bar cover.

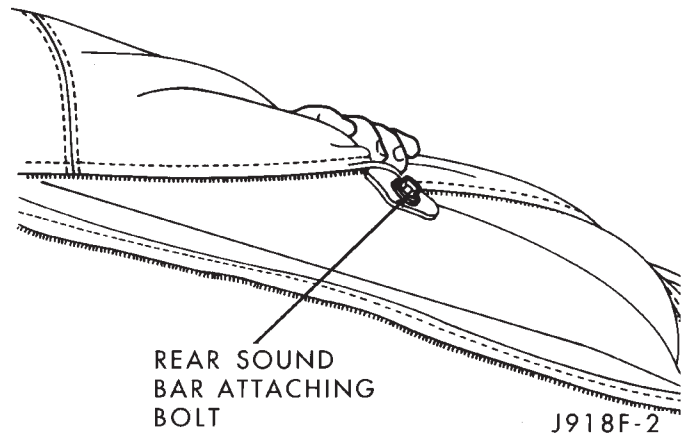


Fig. 4 Rear Sound Bar Attaching Bolt

(5) To install the sound bar, reverse the removal procedures.

RADIO ANTENNA

INDEX

	page		page
Antenna Tests	9	Replacement	8
General Information	8		

GENERAL INFORMATION

AM/FM radio model antennas must have a good ground to eliminate static. The antenna mast is connected to the inner wire of the coaxial cable and is not grounded to any part of the vehicle. The coaxial shield (the wire mesh) surrounding the center conductor wire of the antenna lead-in cable is grounded to the radio and the antenna base.

REPLACEMENT

XJ

(1) Remove the fender inner splash panel mounting nuts (Fig. 1) and move the panel aside to gain access to the antenna base and cable.

The splash panel screws may be covered with undercoating.

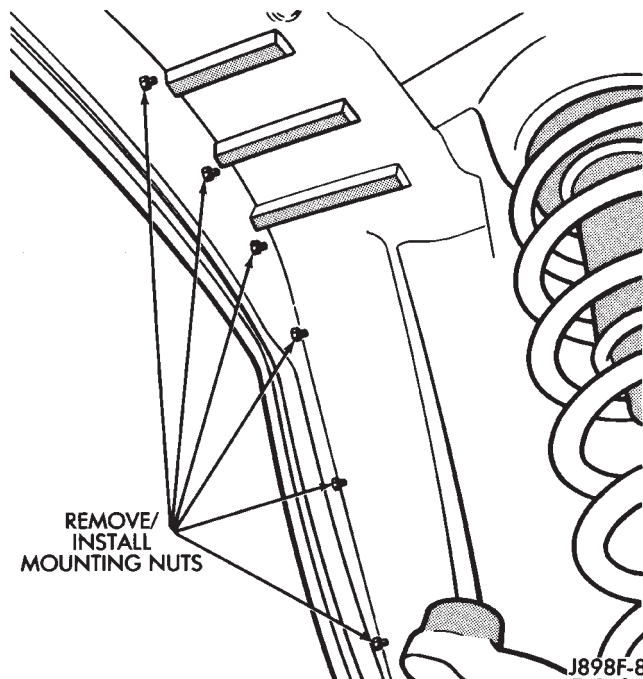


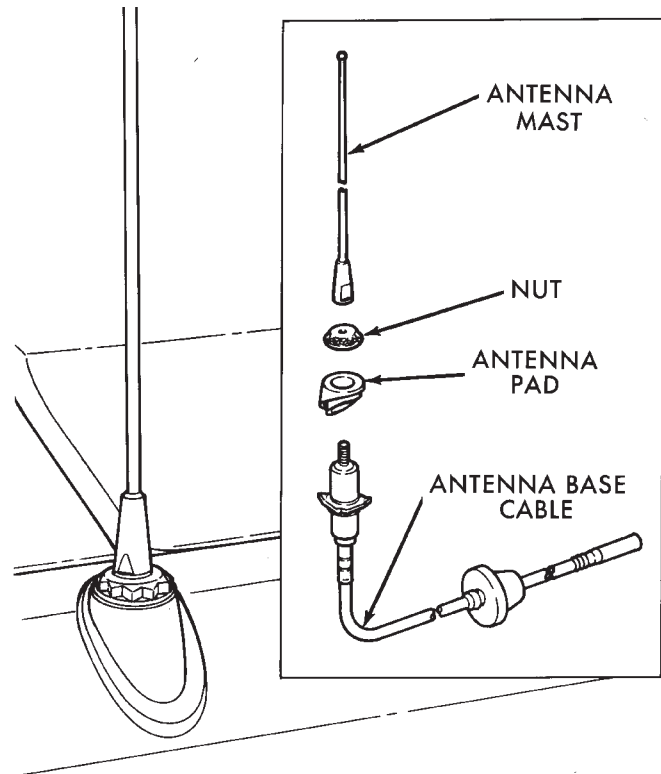
Fig. 1 Remove/Install Fender Inner Splash Panel

(2) Remove the antenna mast, nut and antenna pad from the top of the fender (Fig. 2).

(3) Remove the passenger side kick panel.

(4) Disconnect the antenna lead (Fig. 3) by pulling apart while twisting the metal connectors. **DO NOT PULL ON THE COAXIAL CABLE.**

(5) Pull the rubber grommet out of the kick panel.



J898F-13

Fig. 2 Remove/Install Nut and Antenna Pad

(6) Remove the antenna assembly from inside the wheel well.

(7) To install the antenna, reverse the removal procedure.

(8) Verify antenna and radio operation.

(9) Apply 3M Rubberized Undercoating, or equivalent to the splash panel screws.

YJ

(1) Remove the radio as described in Radio Replacement.

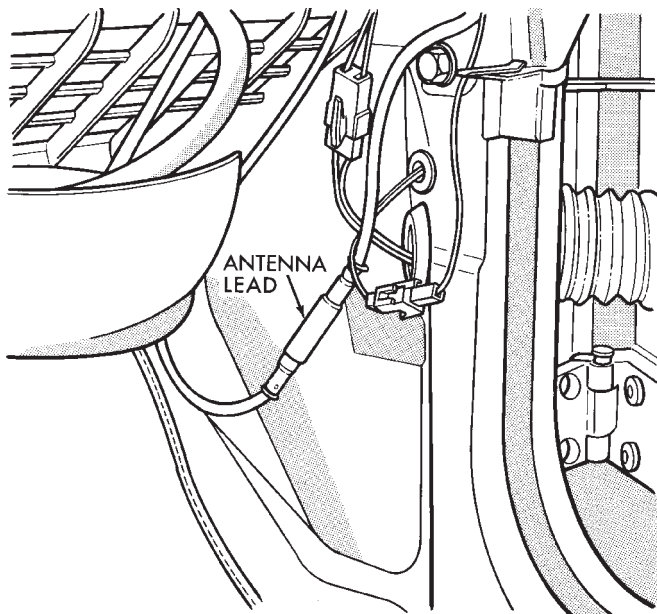
(2) Remove three screws holding the antenna base and pad to the body (Fig. 4).

(3) Pull the antenna and cable out of the vehicle.

(4) To install the antenna, make sure the antenna pad is placed over the cable and guide the cable under the instrument panel.

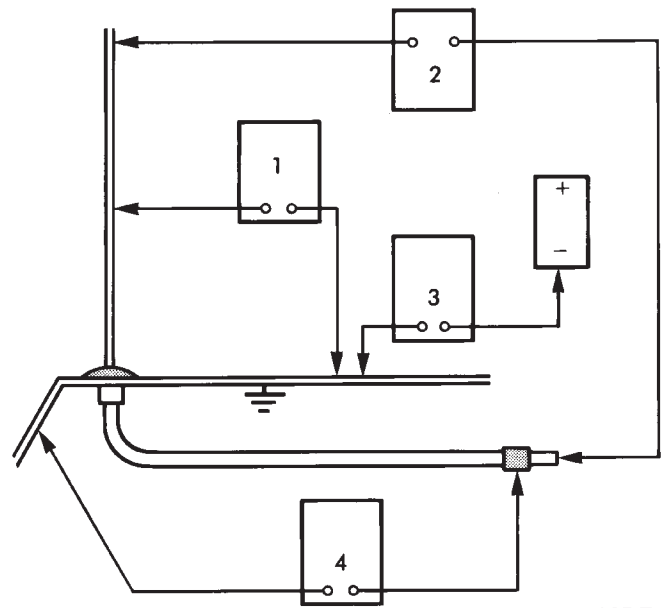
(5) Secure the antenna base and pad with three screws.

(6) Install the antenna into the radio and install the radio.



J898F-14

Fig. 3 Disconnect Antenna Lead



J898F-7

Fig. 5 Antenna Tests

- Connect one ohmmeter lead to tip of antenna mast and the other lead to the antenna base.
- With the antenna disconnected from the radio, there should not be continuity.

TIP OF MAST-TO-TIP OF CONDUCTOR TEST 2.

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

- Disconnect the antenna cable from the radio.
- Connect one ohmmeter test lead to tip of mast. Connect remaining lead to tip of antenna cable lead-in (the part inserted into the radio).
- Continuity should exist (ohmmeter should only register a fraction of an ohm). High or infinite resistance suggests damage to the base and cable assembly that should be replaced.

BODY GROUND-TO-BATTERY GROUND TEST 3.

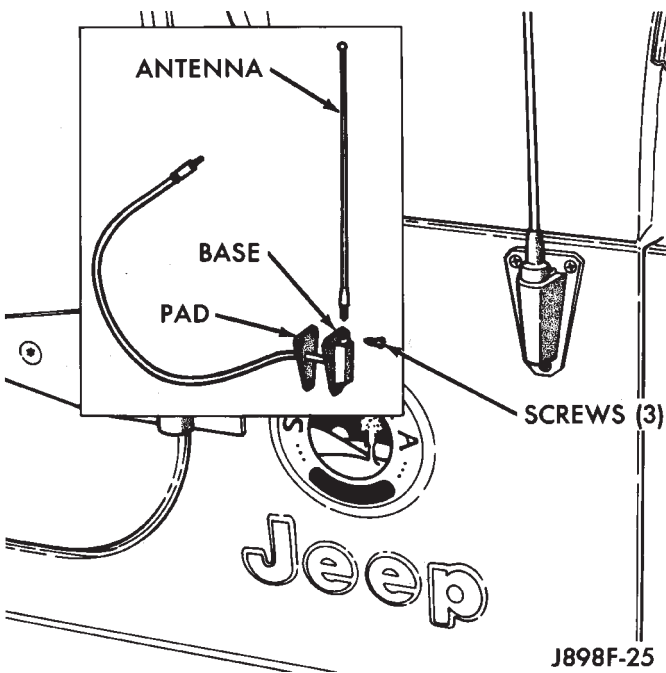
Test 3 checks condition of the vehicle body ground connection as follows:

- Connect one ohmmeter test lead to the vehicle fender and the other lead to the battery negative post.
- Resistance should be less than one ohm.
- If resistance is more than one ohm, check the braided ground strap connected to the engine and vehicle body for being loose, corroded, or damaged. Repair as necessary.

BODY GROUND-TO-COAXIAL SHIELD TEST 4.

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

- Connect one ohmmeter test lead to the fender and the other lead to the crimp on the coaxial shield.
- Resistance should be less than one ohm.
- If resistance is more than one ohm, replace the antenna base attaching screws with new cadmium plated screws.



J898F-25

Fig. 4 Antenna Removal/Install - YJ

ANTENNA TESTS

Antenna ground continuity is checked with an ohmmeter. The following four tests are required (Fig. 5):

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

Ohmmeter test lead connections are shown in the following schematic.

MAST-TO-GROUND TEST 1.

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

