

# AUDIO SYSTEMS

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## GENERAL INFORMATION

### INTRODUCTION

For operation of the factory installed standard and optional radios with cassette or compact disc player, refer to the Sound Systems Operating Instructions in the Owners Manual supplied with the vehicle.

The vehicles are shipped with fuse 5 removed from the Junction Block. The fuse replaces the ignition-off draw (IOD) connector. Fuse 5 is a ten amp fuse. When removed it prevents the battery from discharging during storage. For specific wiring and location, refer to Group 8W, Wiring Diagrams.

## DESCRIPTION AND OPERATION

### INTERFERENCE ELIMINATION

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

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

Ground straps provide noise suppression by conducting very small high frequency electrical signals to ground. A ground strap is mounted from the engine to shock tower, and another is mounted from the rear of the muffler mounting bracket. 2.5L engines are also equipped with a ground strap mounted from the engine to the transmission. These ground straps should be securely tightened to assure good metal to metal contact. The radio grounds to the cross car beam through pinch brackets that grounds

automatically as the radio is installed into the instrument panel.

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

### POWER ANTENNA

The power operated radio antenna is a telescoping type antenna, extended and retracted by a reversible electric motor.

The Automatic Power Antenna is controlled by a combination of an internal relay and limit switches which, are built into the antenna motor housing. This antenna is actuated when the radio is switched ON and the ignition switch in ON or ACCESSORY position. When the ignition switch or the radio is turned OFF the antenna mast should retract fully.

Many antenna problems may be avoided by frequent cleaning of the antenna mast telescoping sections. Clean the antenna mast sections with a clean soft cloth.

Before an antenna is removed, the antenna performance should be tested to decide if it is a reception problem or an operational problem.

Whenever an operational malfunction occurs, first verify that the radio antenna wire harness is properly connected. Check all connectors before starting normal diagnosis and repair procedures.

### REMOTE AMPLIFIER

The amplifier is located under the right front seat. When the radio system is ON, and all or some speakers are not operating or have a noise distortion

## DESCRIPTION AND OPERATION (Continued)

refer to the diagnostic tests. Refer to Group 8W, Wiring Diagrams for Pin numbers and location.

**REMOTE CD CHANGER**

The remote CD changer is located in the center console and is capable of holding up to six discs in a magazine. The magazine can be ejected at anytime that the ignition switch is in the ON position. After the ignition switch is turned OFF, the magazine can only be ejected within one minute. After that period, the magazine will be locked in the CD changer.

**DIAGNOSIS AND TESTING****AUDIO DIAGNOSTIC TEST PROCEDURES**

**CAUTION:** The CD player will only operate between approximate temperatures of  $-23^{\circ}\text{C}$  and  $+65^{\circ}\text{C}$  ( $-10^{\circ}\text{F}$  and  $+145^{\circ}\text{F}$ ).

Whenever a radio malfunction occurs;

- (1) First check FUSES in the Fuse Block:
  - (a) Fuse 5, Memory feed and the Power Antenna (if equipped)
  - (b) Fuse 7, Illumination
  - (c) Fuse 8, Power Amplifier
  - (d) Fuse 14, Ignition feed

**NOTE:** The vehicles are shipped with the INTERIOR LAMP fuse disconnected.

(2) Verify, the radio wire harness is properly connected before starting normal diagnosis and repair procedures. Refer to Audio Diagnostic Charts and/or Group 8W, Wiring Diagrams.

**DIAGNOSTIC CONDITIONS****NOISE DISTORTION IN ALL SPEAKERS**

Does the distortion occur through all operations:

- AM and FM stations
- Cassette tape
- Compact disc

If not, check for radio interference, damaged tape or disc that may be causing the distortion. Refer to Sound Systems Operating Instructions in the Owners Manual for cleaning procedures of the cassette tape player.

- Check battery voltage, for 11 Volts or more
- Check amplifier connectors, and wires for proper connection
  - If OK, check radio, refer to Radio Diagnosis
  - If OK, replace amplifier

**ELECTRICAL NOISE DISTORTION ONE SPEAKER**

- Remove output signal connector from amplifier and check for short to ground on the speaker with the distortion. Refer to Group 8W, Wiring Diagrams for the appropriate pin numbers.
- If shorted to ground, disconnect speaker connector and recheck from the amplifier for short to ground.
  - If still shorted to ground, repair wires. Not shorted to ground, replace speaker.
  - Not shorted to ground, check speaker resistance at amplifier connector for three to eight ohms.
  - If resistance is OK, refer to Radio Diagnosis. If radio checks OK, replace amplifier.
  - If resistance is less than three ohms, replace speaker. If resistance is OK, repair wires

**MECHANICAL NOISE DISTORTION**

- Check trim for loose parts, and speaker attachments for buzzes
- Remove speaker that is still connected and listen for distortion. If distortion remains, replace speaker.

**ONE SPEAKER NON-OPERATIVE**

- Remove output signal connector from amplifier and check for three to eight ohms resistance to the non-operative speaker. Refer to Group 8W, Wiring Diagrams for the appropriate pin numbers.
  - If resistance is less than three ohms, speaker is OK.
  - If OK, repair wire. If not OK, replace speaker.

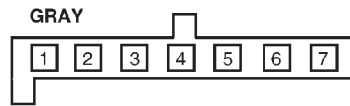
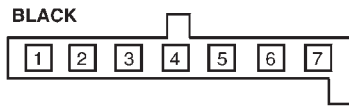
**ALL SPEAKERS NON-OPERATIVE**

- Check radio for being ON, are the display lights on
  - Radio not ON, refer to Radio Diagnosis
  - Check fuses, amplifier connectors and wires for proper connection
    - Check for good ground
    - Check amplifier, for battery voltage and ON/OFF voltage
      - (1) Battery voltage OK and NO voltage at the ON/OFF terminal, check for short or open in the ON/OFF circuit.
      - (2) ON/OFF voltage OK, and NO battery voltage, check for short or open in battery circuit.
      - (3) Prior to replacing amplifier check fuse to the cigar lighter and horn. If not OK, replace fuse. If fuse blows again disconnect amplifier B+ wire connector. Refer to Group 8W, Wiring Diagrams for the proper connector.
      - (4) If fuse still blows the problem is not the amplifier. If fuse does not blow replace the amplifier.
      - (5) If shorted or open circuit repair as necessary.

DIAGNOSIS AND TESTING (Continued)

**RADIO CONNECTORS**

*BASE 6 SPEAKER SYSTEM*

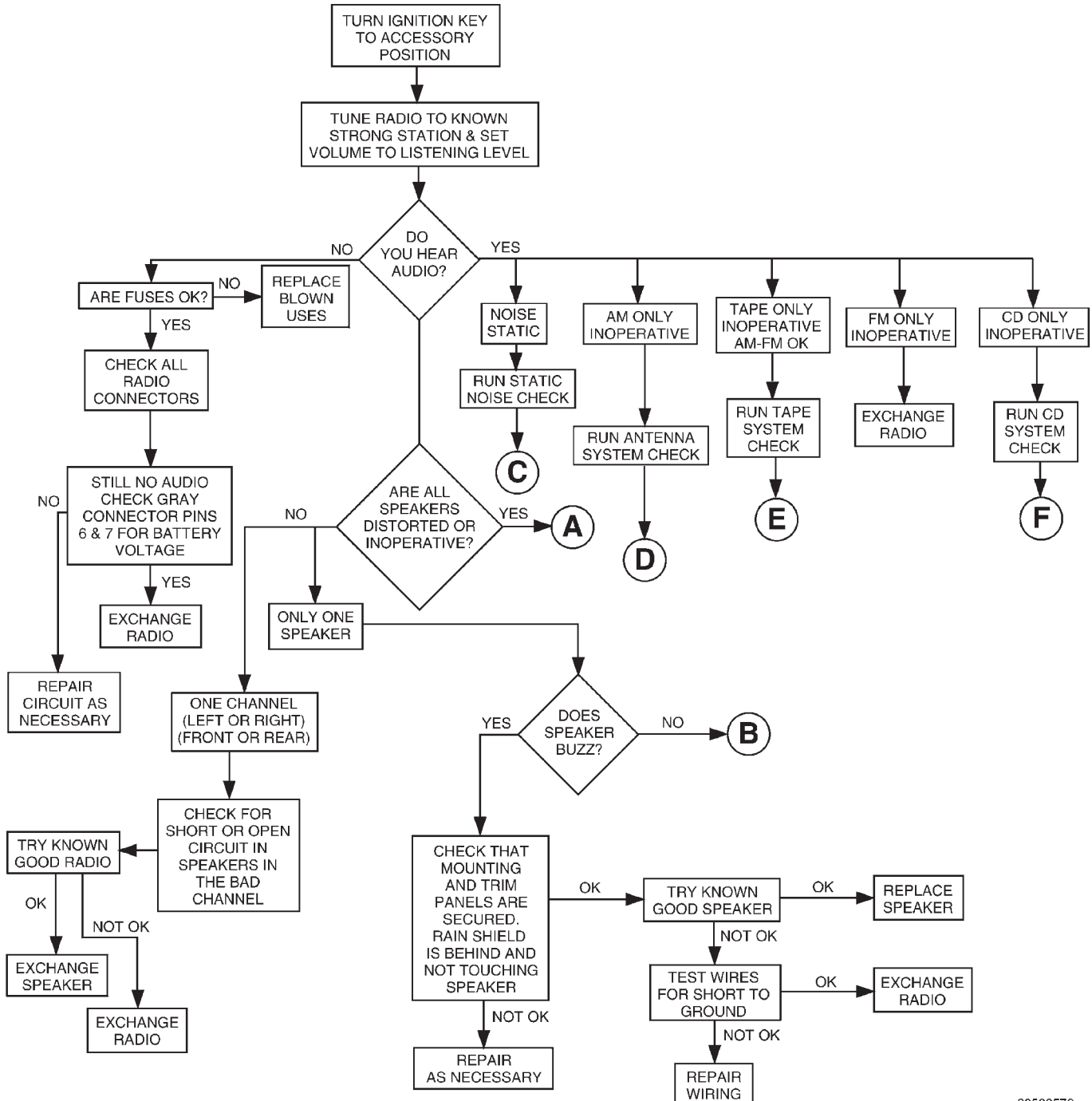


VIEW FROM WIRE END

LEGEND:

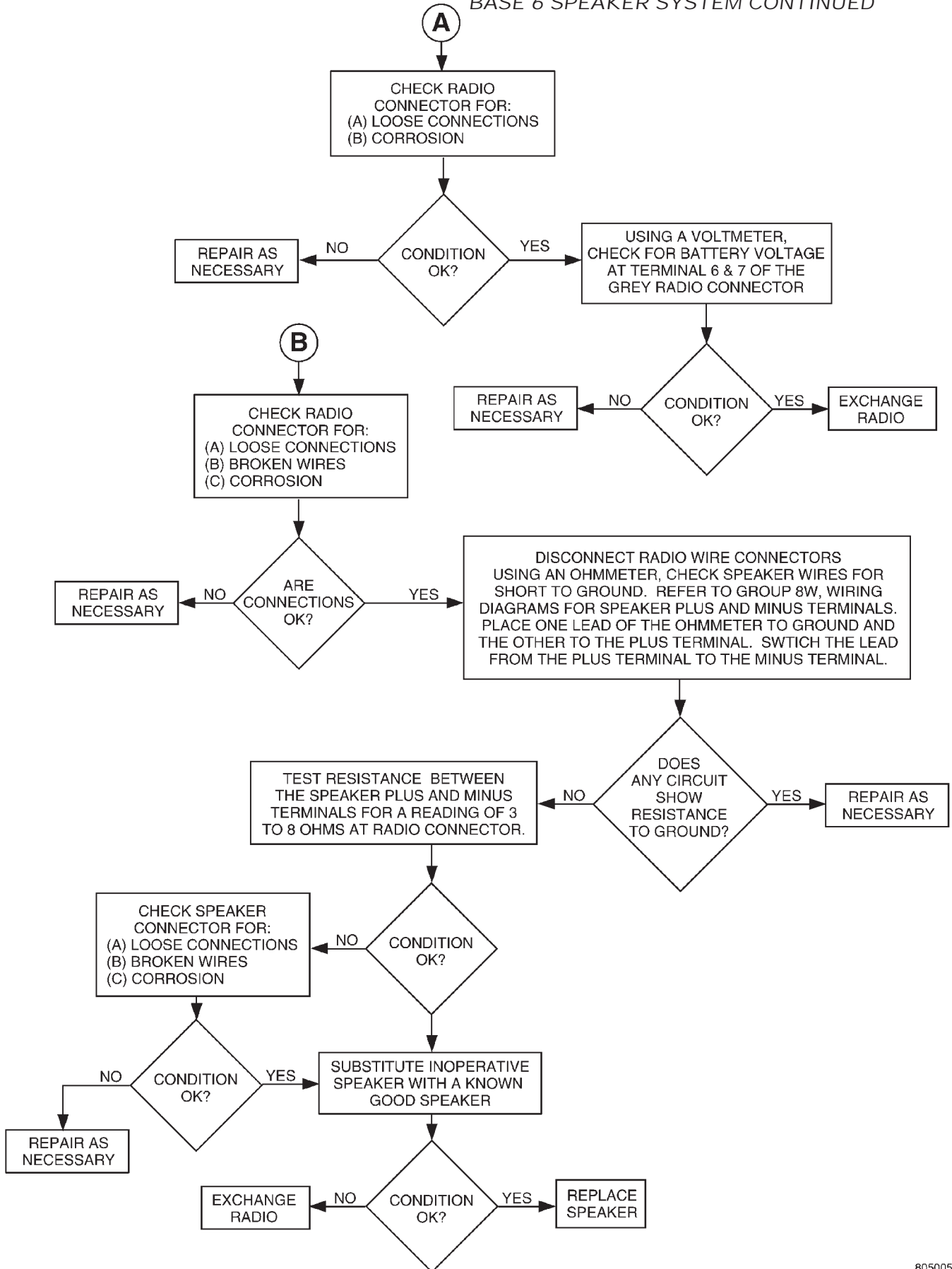
- 1 - AMP ON-OFF SIGNAL/ANT UP SIGNAL
- 2 - LEFT REAR SPEAKER FEED (+)
- 3 - RIGHT REAR SPEAKER FEED (+)
- 4 - LEFT FRONT SPEAKER FEED (+)
- 5 - RIGHT FRONT SPEAKER FEED (+)
- 6 - LEFT REAR SPEAKER RETURN (-)
- 7 - RIGHT REAR SPEAKER RETURN (-)

- 1 - RADIO MUTE
- 2 - LEFT FRONT SPEAKER RETURN (-)
- 3 - RIGHT FRONT SPEAKER RETURN (-)
- 4 - MARKER -- (HEAD/PARK LAMPS)
- 5 - DIMMER -- (PANEL, LAMPS, VARIABLE)
- 6 - ACCESSORY -- (SWITCHED B+)
- 7 - BATTERY -- (MEMORY)



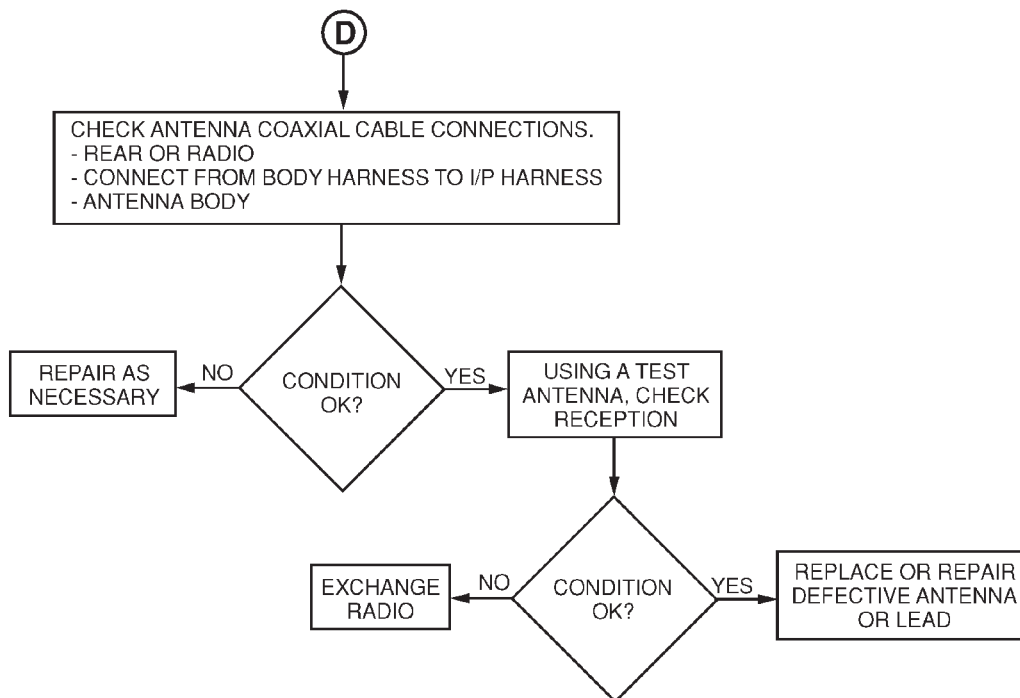
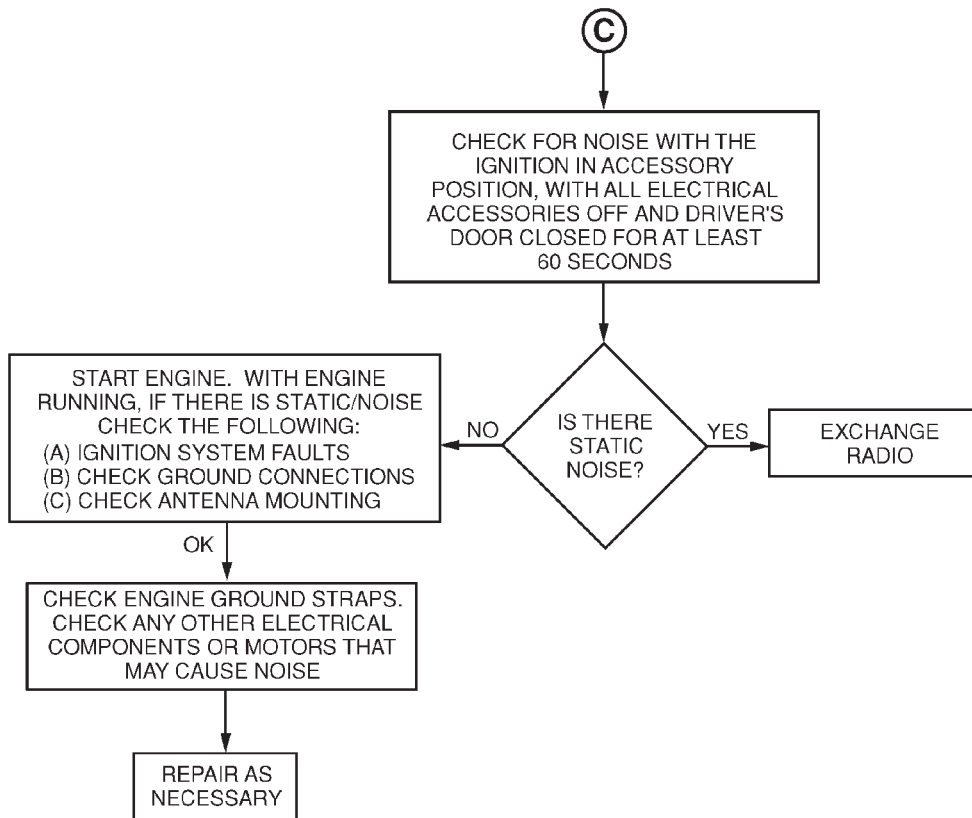
DIAGNOSIS AND TESTING (Continued)

BASE 6 SPEAKER SYSTEM CONTINUED



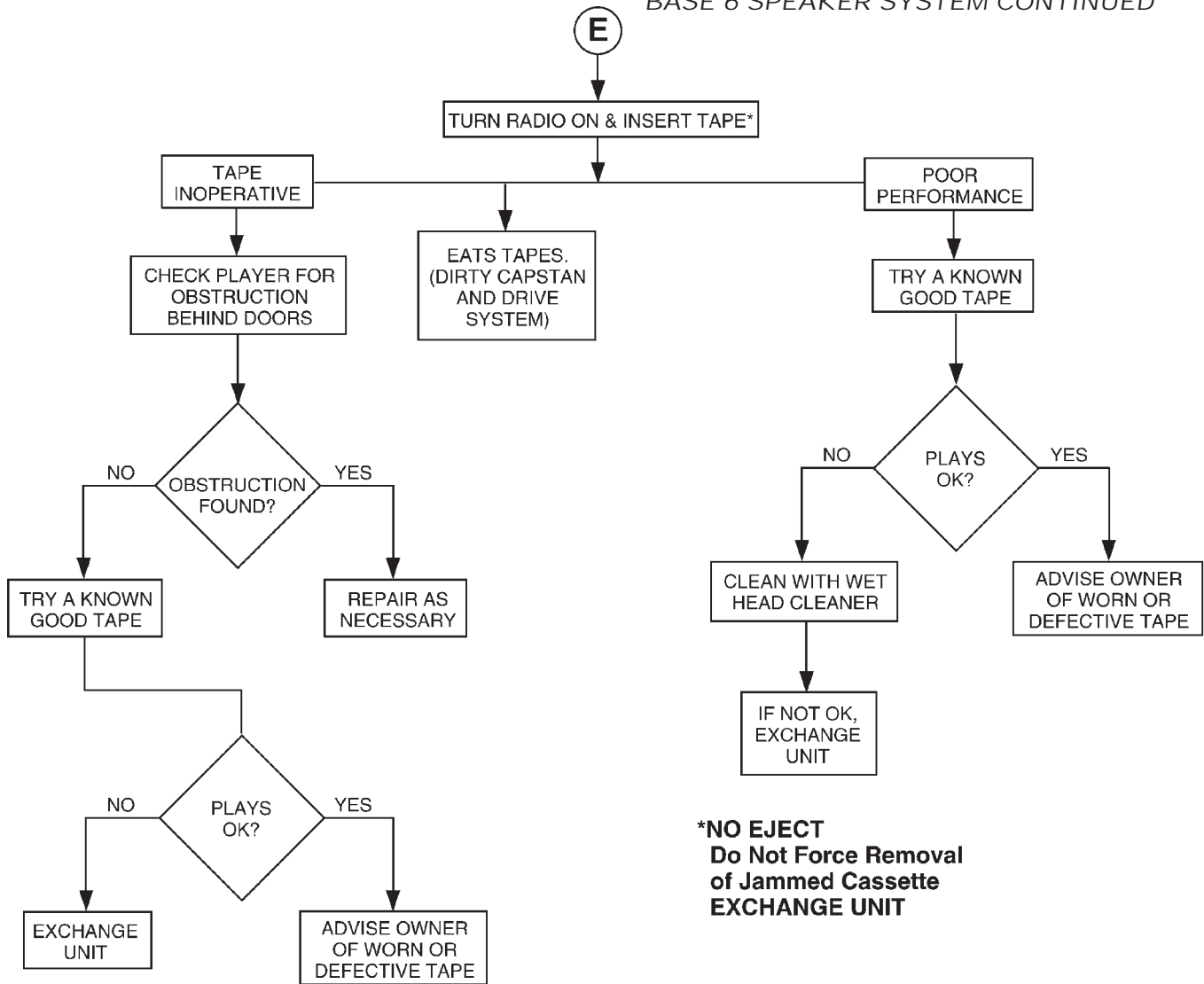
DIAGNOSIS AND TESTING (Continued)

BASE 6 SPEAKER SYSTEM CONTINUED



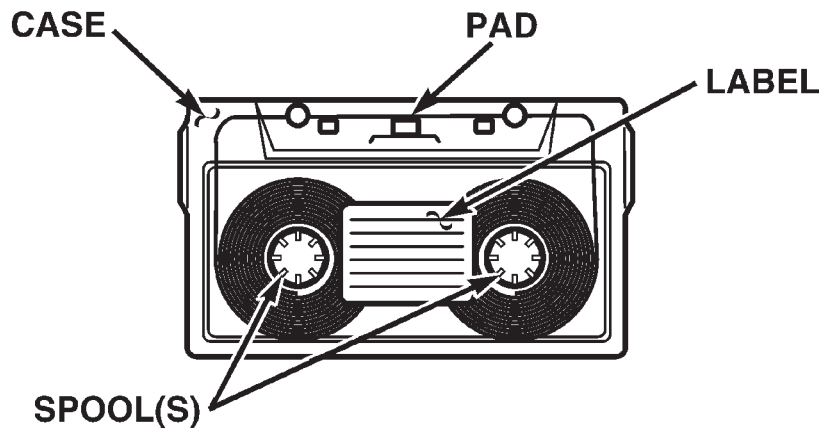
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BASE 6 SPEAKER SYSTEM CONTINUED



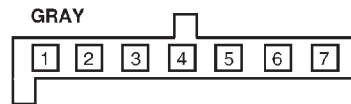
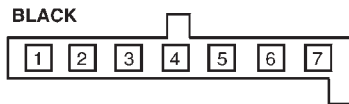
**CHECK TAPES FOR:**

- **CRACKED OR WARPED CASE**
- **LOOSE LABEL ON CASE**
- **TAPE PAD MISSING**
- **TAPE SPOOL(S) JAMMING**



DIAGNOSIS AND TESTING (Continued)  
AMPLIFIED

**RADIO CONNECTORS**

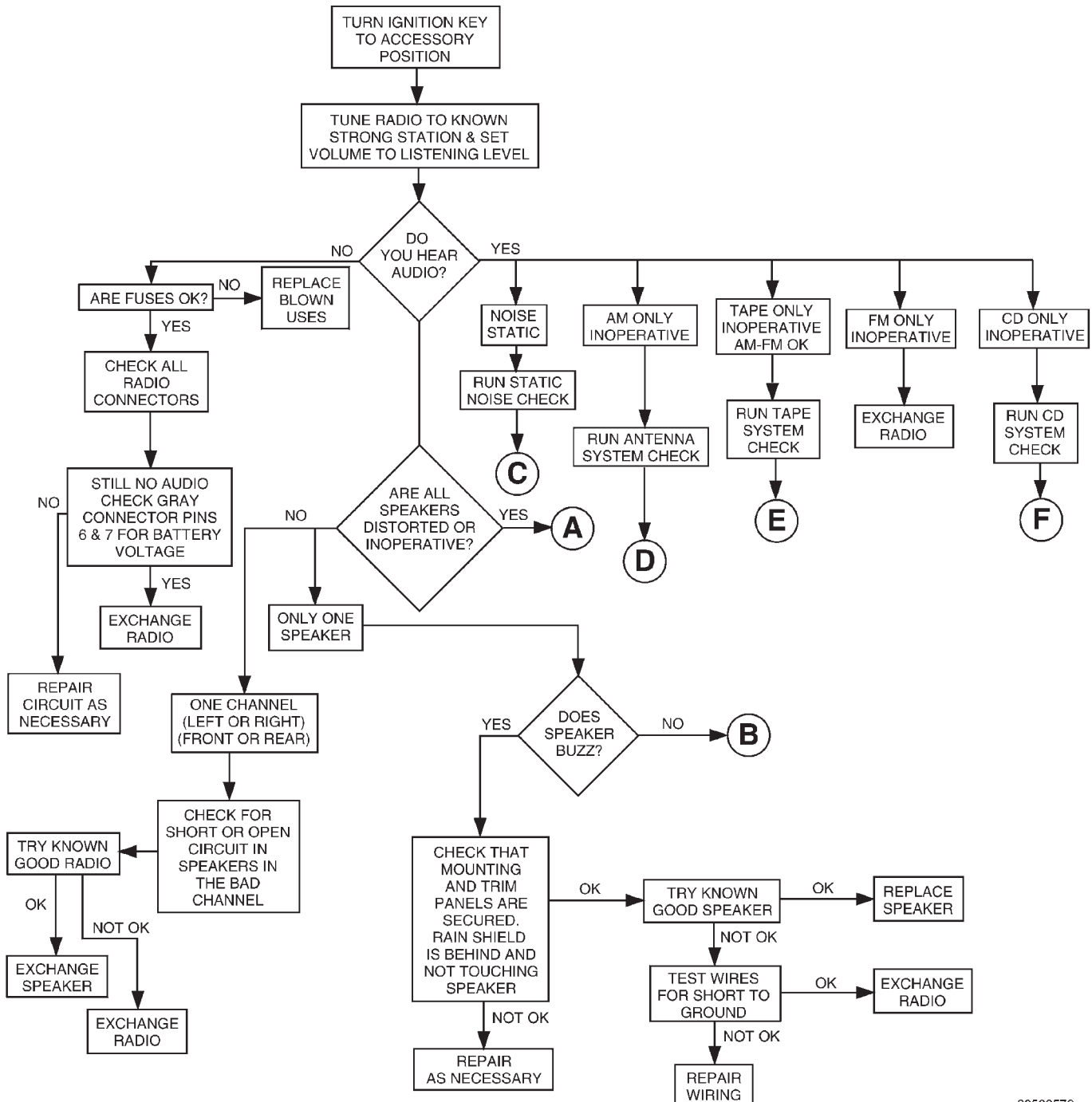


VIEW FROM WIRE END

LEGEND:

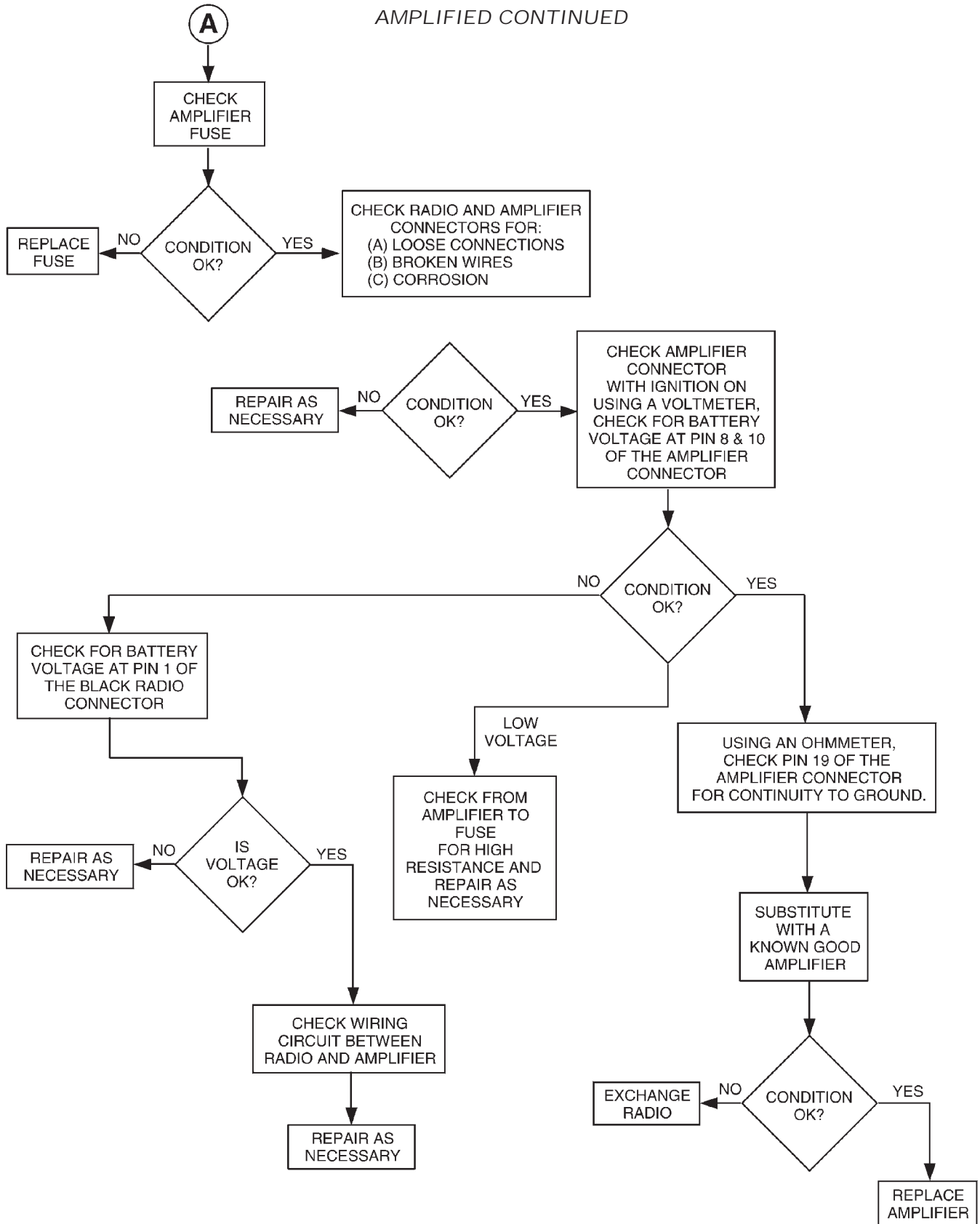
- 1 - AMP ON-OFF SIGNAL/ANT UP SIGNAL
- 2 - LEFT REAR SPEAKER FEED (+)
- 3 - RIGHT REAR SPEAKER FEED (+)
- 4 - LEFT FRONT SPEAKER FEED (+)
- 5 - RIGHT FRONT SPEAKER FEED (+)
- 6 - LEFT REAR SPEAKER RETURN (-)
- 7 - RIGHT REAR SPEAKER RETURN (-)

- 1 - RADIO MUTE
- 2 - LEFT FRONT SPEAKER RETURN (-)
- 3 - RIGHT FRONT SPEAKER RETURN (-)
- 4 - MARKER -- (HEAD/PARK LAMPS)
- 5 - DIMMER -- (PANEL, LAMPS, VARIABLE)
- 6 - ACCESSORY -- (SWITCHED B+)
- 7 - BATTERY -- (MEMORY)



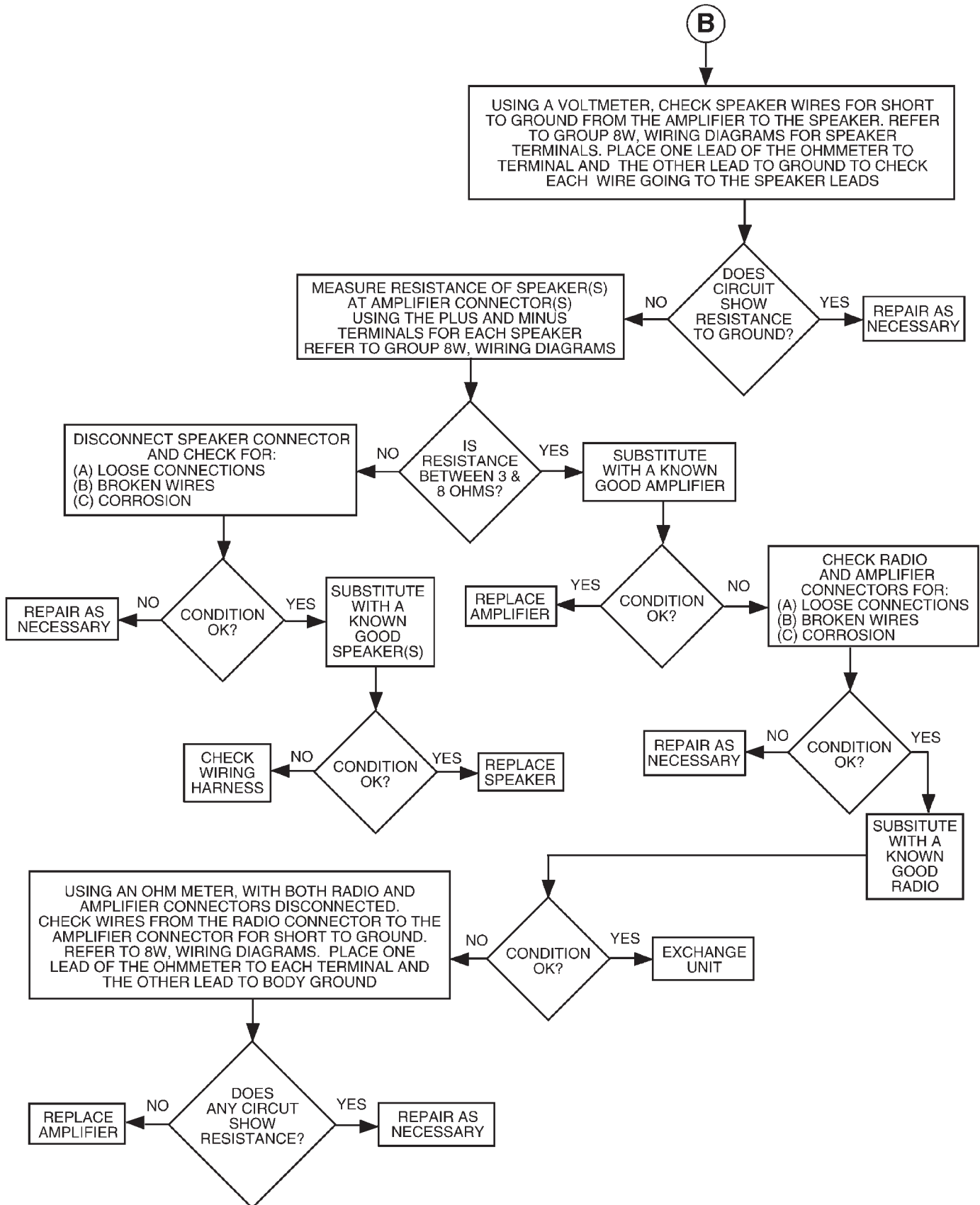
DIAGNOSIS AND TESTING (Continued)

AMPLIFIED CONTINUED



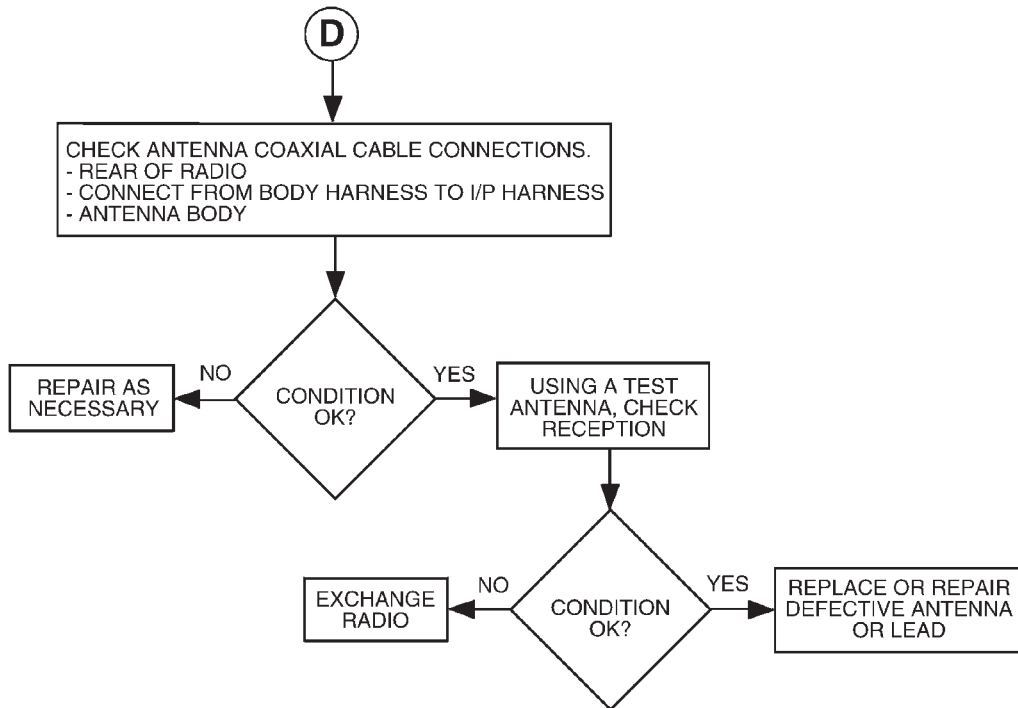
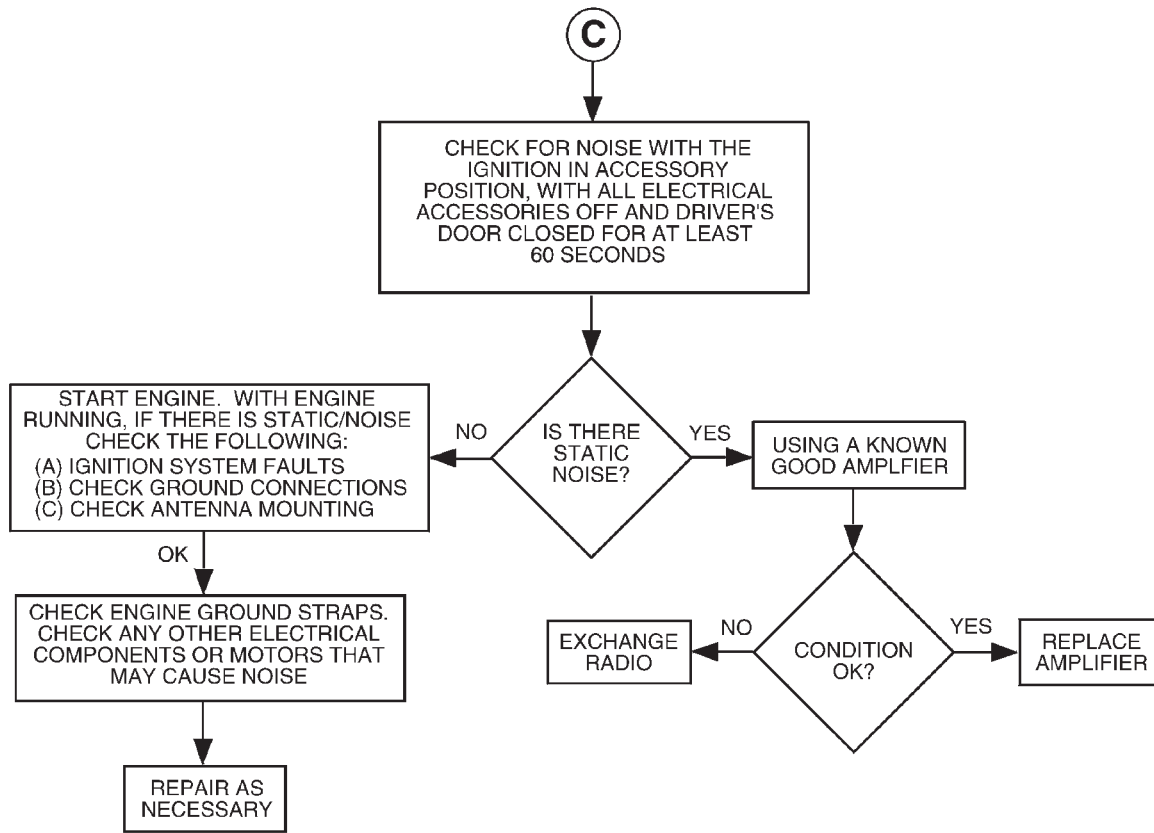
DIAGNOSIS AND TESTING (Continued)

AMPLIFIED CONTINUED



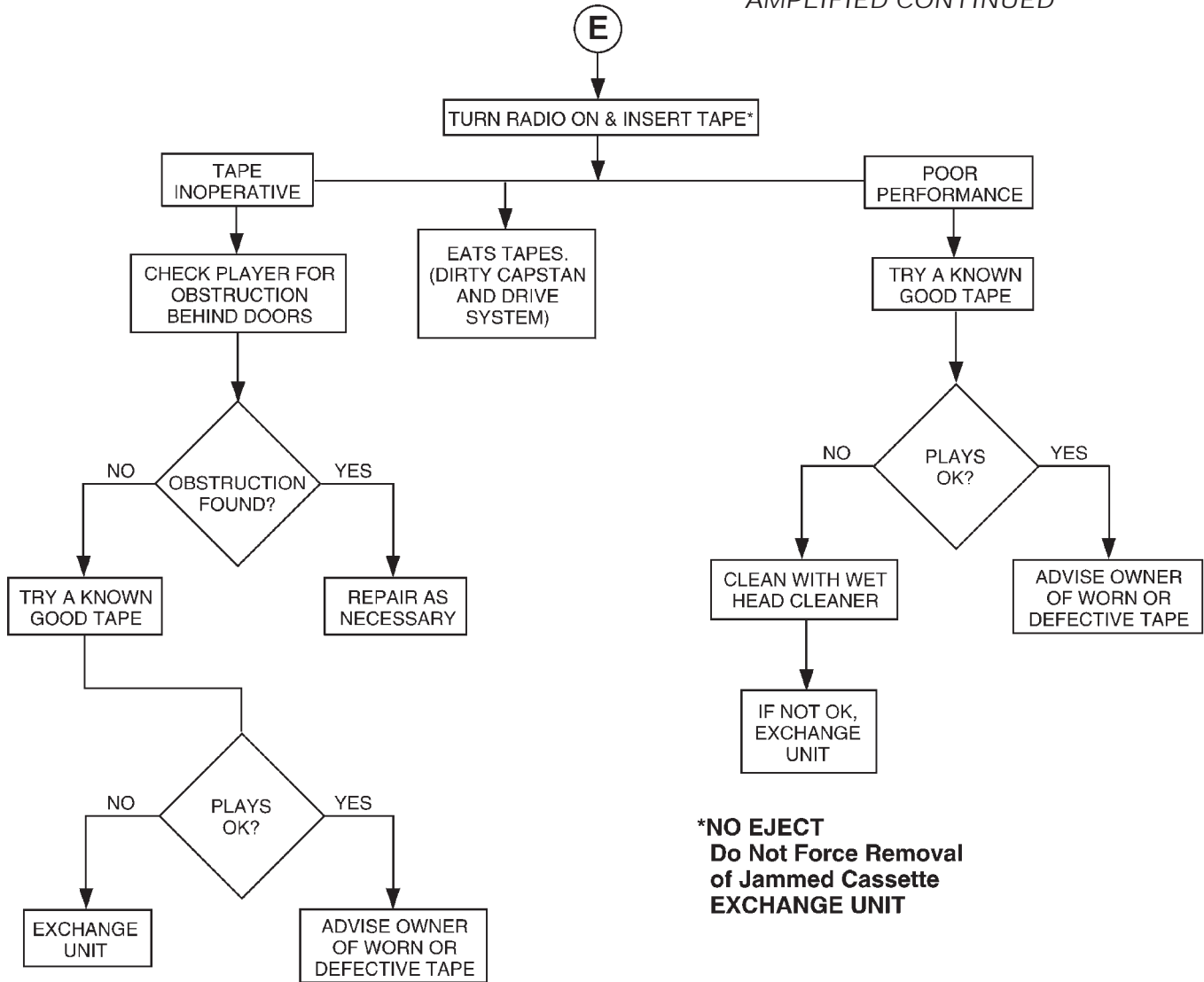
DIAGNOSIS AND TESTING (Continued)

AMPLIFIED CONTINUED



DIAGNOSIS AND TESTING (Continued)

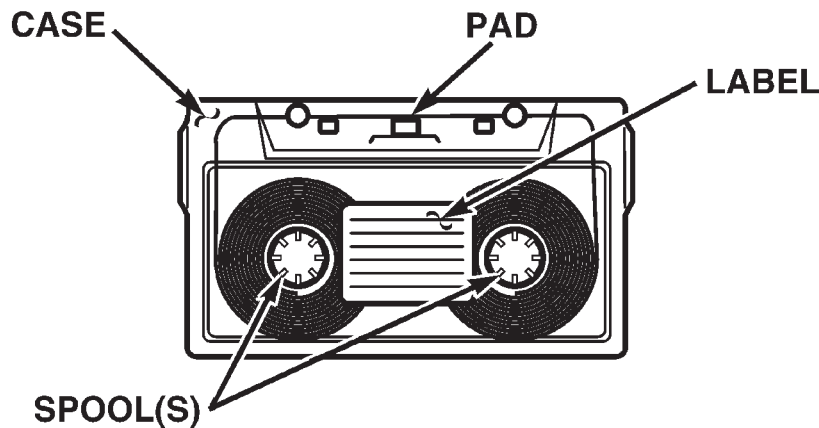
AMPLIFIED CONTINUED



**\*NO EJECT  
Do Not Force Removal  
of Jammed Cassette  
EXCHANGE UNIT**

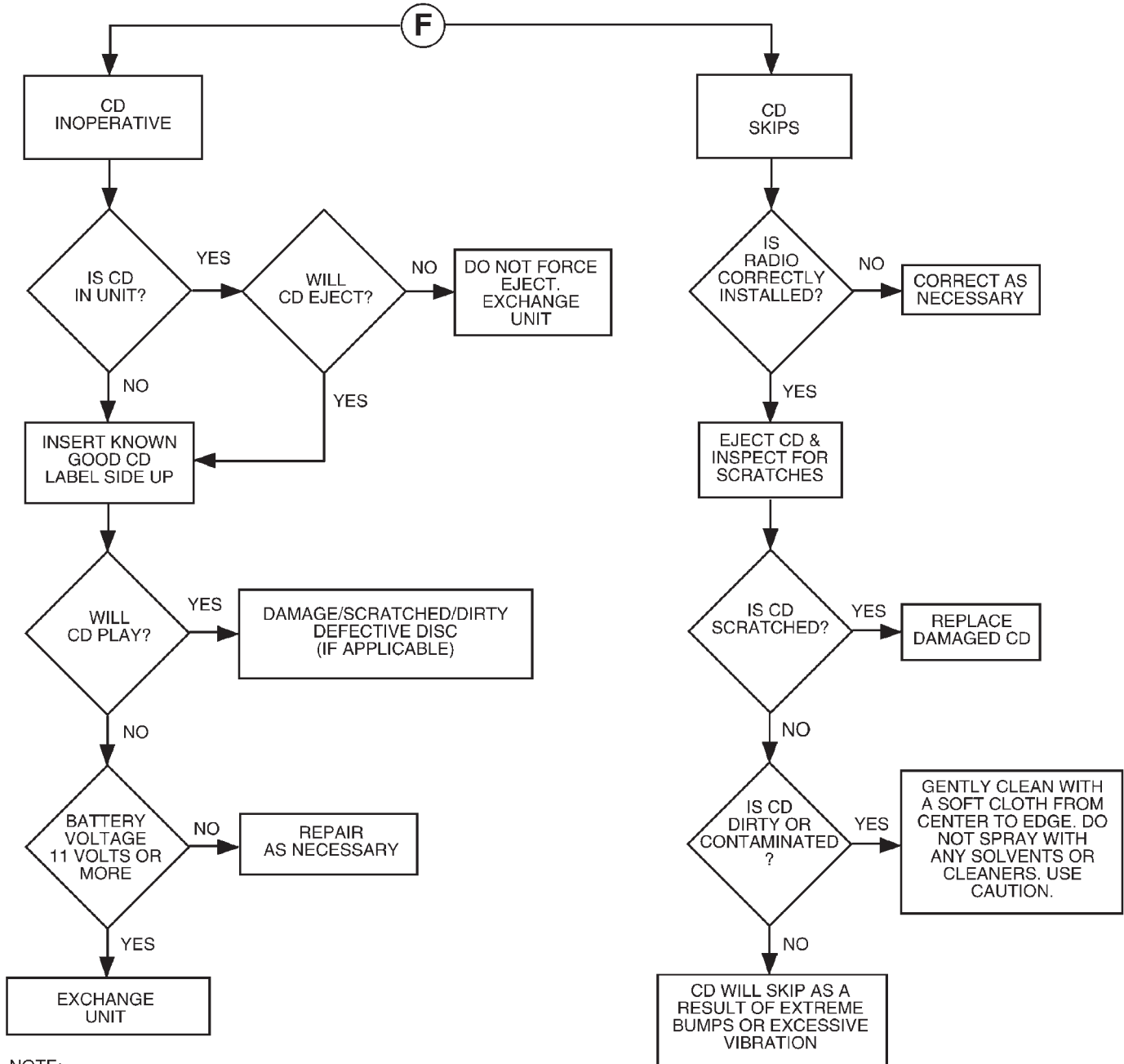
**CHECK TAPES FOR:**

- **CRACKED OR WARPED CASE**
- **LOOSE LABEL ON CASE**
- **TAPE PAD MISSING**
- **TAPE SPOOL(S) JAMMING**



DIAGNOSIS AND TESTING (Continued)

AMPLIFIED CONTINUED



NOTE:  
 THE CD PLAYER WILL ONLY OPERATE BETWEEN APPROXIMATE TEMPERATURES OF -23°C AND +65°C (-10°F AND +145°F)

DIAGNOSIS AND TESTING (Continued)

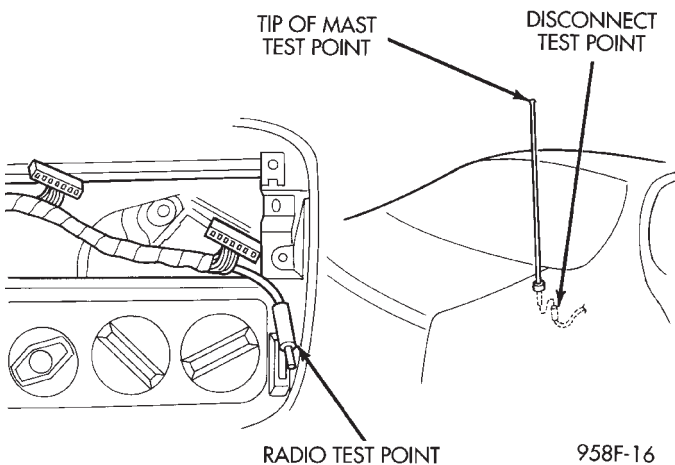
**NO BASS FREQUENCIES, HIGH AND MID FREQUENCIES OK**

- Check radio for being ON, are the display lights on
  - Radio not ON, refer to Radio Diagnosis
  - Check fuses, amplifier connectors and wires for proper connection
    - Check for good ground
    - Check amplifier for battery voltage, and ON/OFF voltage
- (1) Battery voltage OK and NO voltage at the ON/OFF terminal, check for short or open in the ON/OFF circuit.
  - (2) ON/OFF voltage OK, and NO battery voltage, check for short or open in battery circuit.
  - (3) Prior to replacing amplifier, check fuse to the cigar lighter and horn. If not OK, replace fuse. If fuse blows again, disconnect amplifier B+ wire connector. Refer to Group 8W, Wiring Diagrams for the proper connector.
  - (4) If fuse still blows, the problem is not the amplifier. If fuse does not blow, replace the amplifier.
  - (5) If shorted or open circuit, repair as necessary.

**MANUAL ANTENNA**

Check for short or open circuits with an ohmmeter or continuity light once the antenna cable is disconnected from the radio. The radio coax cable has a connector that connects behind the between passenger seat and console.

- (1) Continuity should be present between the antenna mast and radio end pin of antenna cable plug (Fig. 1).
- (2) No continuity should be observed or a very high resistance of several megohms between the ground shell of the connector and radio end pin.
- (3) Continuity should be observed between the ground shell of the connector and the mounting hardware in the trunk right rear quarter panel



**Fig. 1 Antenna Test Points**

**POWER ANTENNA**

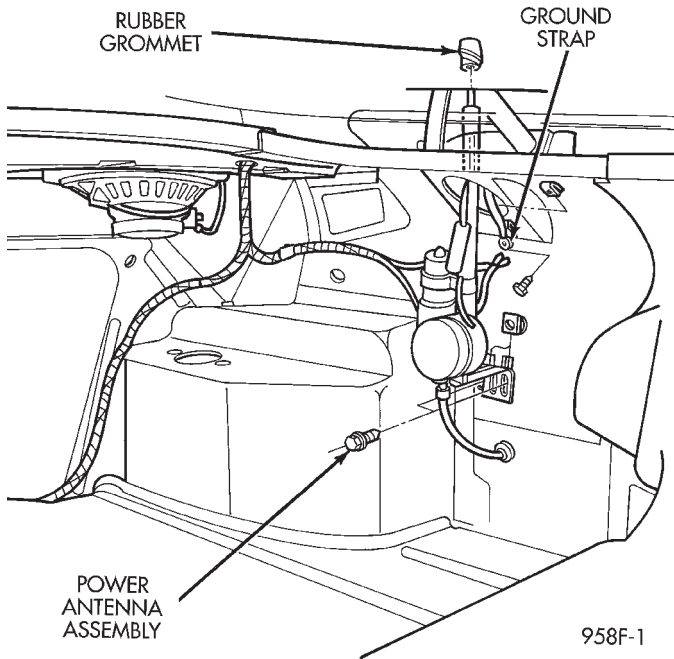
- (1) To extend antenna, using jumper wires, attach one end to a battery positive source and the other to the red and green wire terminals for up direction. Connect the second lead to a good ground or to the antenna mounting bracket (Fig. 2).
- (2) To retract antenna attach the battery positive source to the red wire terminal for the down direction. Connect the second lead to a good ground or to the antenna mounting bracket.
- (3) If the motor will not operate, replace the antenna assembly.
- (4) If the motor runs freely and the antenna does not extend or retract, the mast or drive assembly is at fault. Remove the mast and verify that all the drive teeth are intact. If not replace mast.
- (5) If the mast jumps or travel rate is slow during operation or the motor labors.
  - (a) Check for bent mast. If bent replace mast.
  - (b) Check for dirty mast and clean it as necessary. If corroded, replace mast. Do not grease or lubricate antenna mast.
  - (c) If cleaning the antenna sections does not solve the problem, the antenna mast should be replaced.
- (6) If mast fails to extend or retract completely, or motor continued to operate after full extension or retraction of mast. Check for broken teeth on the mast drive rod or bent mast.
- (7) If the mast checks good, the antenna assembly should be replaced.
- (8) Upon establishing that the fault is in the antenna assembly, it may be traced to one or more of the following conditions:
  - (a) Broken lead-in wire or shielding.
  - (b) Grounded lead-in wire or mast.
  - (c) Moisture in support tube or lead-in assembly.
  - (d) Poor connection at antenna lead-in assembly or shielding ground.

**REMOTE CD CHANGER TEST**

CD changer inoperative.

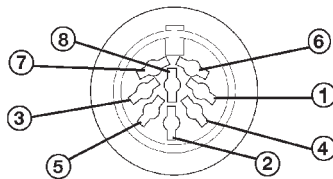
- (1) The CD changer receives its power and ground through the radio via the DIN cable. Verify that the radio powers up and functions before proceeding.
- (2) With the radio turned ON, check the radio display when pushing the MODE/EJECT button to select the CD mode.
  - (a) If the display shows - - - -, then insert a CD magazine in the changer.
  - (b) If the display shows nocd, then insert a CD into the magazine.
  - (c) If the display shows Err xxxx, then check the Error Message table below.
  - (d) If the radio only switches between AM and FM turning modes, then perform the following:

DIAGNOSIS AND TESTING (Continued)



**Fig. 2 Power Antenna Assembly**

- (I) Check the connection of the DIN cable to the CD changer and radio.
- (II) If OK, then check the DIN cable at the CD changer side.
- (III) Make sure the DIN cable is connected to the radio and radio is turned ON and operating properly. Check for battery voltage at Pins 6 and 7 using Pin 8 for ground.
- (IV) If OK, then replace CD changer.
- (V) If not OK, then remove DIN cable from radio and changer. Check DIN cable for continuity from connector to connector, using a ohmmeter on each Pin.
- (VI) If the DIN cable OK, then replace the radio.



**DIN Cable Connector**

**REMOVAL AND INSTALLATION**

**DOOR MOUNTED SPEAKER**

**CAUTION:** Do not operate the radio with speaker leads detached. Damage to the output devices may result.

**DIN CABLE PIN-OUTS**

PIN 1	DATA BUS (-)	PIN 5	AUDIO IN (L)
PIN 2	AUDIO GRD	PIN 6	BATTERY
PIN 3	DATA BUS (+)	PIN 7	IGNITION
PIN 4	AUDIO IN (R)	PIN 8	GROUND

**ERROR MESSAGES**

DISPLAY	EXPLANATION	WHAT TO DO
nocd	No disc or discs in magazine	Load discs in magazine
- - - -	No magazine in player	Load magazine in player
Err HOT	Player overheating	Allow to cool down
Err EE EE	Communication problem	Turn ignition OFF to reset, check cable connection. If OK, replace changer.
Err E-01	Deadlock problem	Replace changer.
Err E-02	Disc eject problem	Replace changer.
Err E-06	Elevator problem	Replace Changer.
Err E-07	Magazine eject problem	Check that the magazine is OK. If OK, replace changer.
Err PLAY	Discs cannot play	Check disc loading, or try another disc. If OK, replace changer.

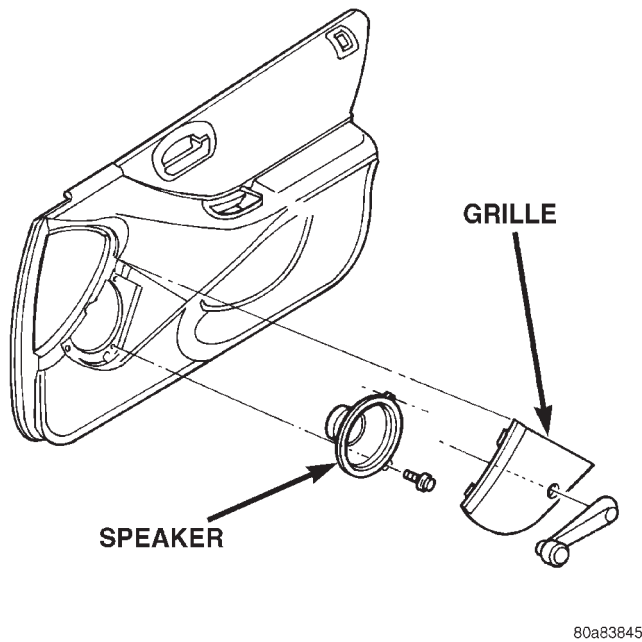
**REMOVAL**

- (1) Remove window crank handle if equipped. Carefully, pry speaker grille away from door trim panel (Fig. 3).
- (2) Remove three speaker retaining screws.
- (3) Pull speaker away from door and disconnect wiring.

**INSTALLATION**

For installation, reverse the above procedures. Ensure speaker is in the proper position

REMOVAL AND INSTALLATION (Continued)



**Fig. 3 Door Mounted Speaker**

**INSTRUMENT PANEL SPEAKER**

**CAUTION:** Do not operate the radio with speaker leads detached. Damage to the output devices may result.

**REMOVAL**

- (1) Remove instrument panel top cover:
  - (a) Remove screw from right side of the top cover.
  - (b) Carefully, pry up each end of top cover to disengage clips (Fig. 4).
  - (c) Lift rear edge of top cover using a trim stick along rear edge.
  - (d) While lifting rear edge slide top cover rearward to disengage front clips and remove the top cover.
- (2) To remove right or left speaker remove two retaining screws. Lift up speaker and disconnect wire connector (Fig. 5).

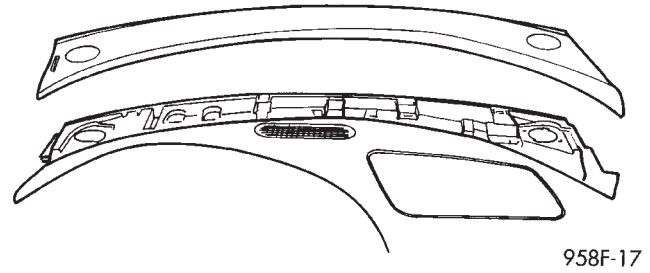
**INSTALLATION**

For installation, reverse the above procedures.

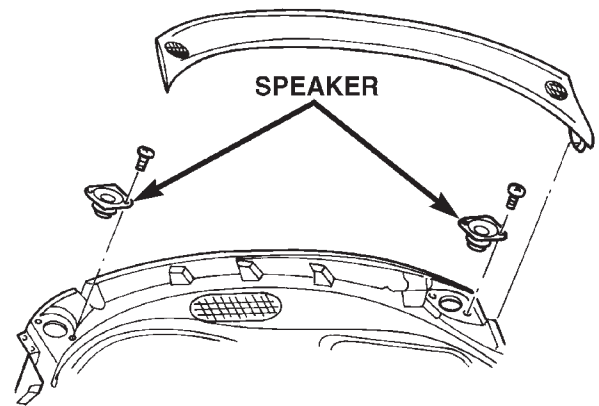
**MANUAL ANTENNA AND MAST**

**REMOVAL**

- (1) Inside trunk, pull the right side trunk liner aside.
- (2) Unplug antenna lead from base of antenna body.



**Fig. 4 Instrument Panel Top Cover**

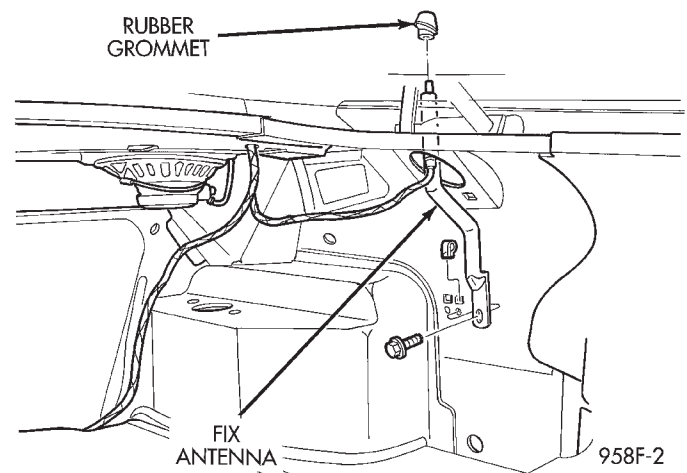


**Fig. 5 Instrument Panel Speakers**

- (3) Remove antenna mast by unscrewing mast from antenna body.
- (4) Remove screw from mounting bracket (Fig. 6).
- (5) Pull antenna body down through the rubber grommet.

**INSTALLATION**

For installation, reverse the above procedures. Check that the grommet locating tab is in-line with the slot in the body before installing antenna. Ensure the ball of the antenna body is inside grommet.



**Fig. 6 Antenna Mounting Removal**

## REMOVAL AND INSTALLATION (Continued)

## POWER ANTENNA

## REMOVAL

- (1) Disconnect battery negative cable.
- (2) Inside trunk, pull trunk liner aside.
- (3) Unplug antenna lead from pigtail connector, disconnect wire connector, remove drain tube from grommet (Fig. 2).
- (4) Remove screws attaching ground strap and antenna brace.
- (5) Pull antenna body down through the rubber grommet.

## INSTALLATION

For installation, reverse the above procedures. Check that the grommet locating tab is in-line with the slot in the body before installing antenna. Ensure the ball of antenna body is inside grommet. Tighten antenna bracket ground strap screws to 4 N·m (40 in. lbs.) torque.

## POWER ANTENNA MAST

## REMOVAL

- (1) Remove cap nut.
- (2) Turn ignition key to ACCESSORY position and turn on radio.
- (3) While the mast is moving up pull upward to remove mast, contact spring and drive rod from the mast tube.

## INSTALLATION

- (1) Insert new drive rod into mast tube with drive teeth toward antenna motor (Fig. 7).
- (2) Turn off radio and guide mast into tube. The mast may not be fully lowered when first installed.
- (3) Replace the cap nut and tighten to 1.5 N·m (15 in. lbs.) torque.
- (4) Turn radio on and off to extend and retract antenna. Mast should be fully lowered after recycling.

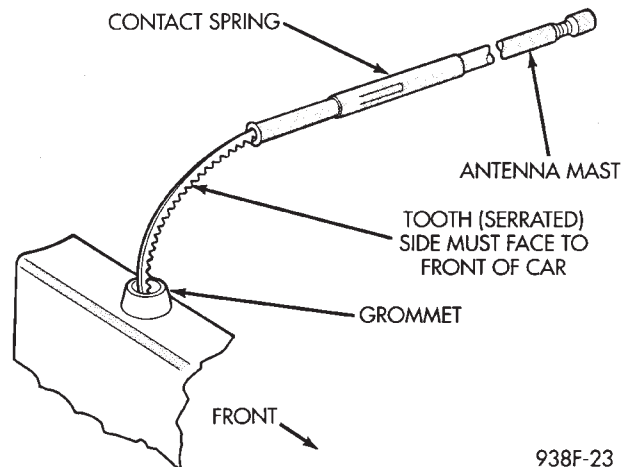
## RADIO

## REMOVAL

- (1) Remove center bezel by pulling straight back (Fig. 8).
- (2) Remove two radio mounting screws (Fig. 9).
- (3) Turn OFF radio and ignition switch. DO NOT disconnect the radio with ignition switch ON.
- (4) Pull radio from panel and disconnect wire connectors and antenna lead from radio.
- (5) Remove radio.

## INSTALLATION

For installation, reverse the above procedure.



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Fig. 7 Power Mast Replacement

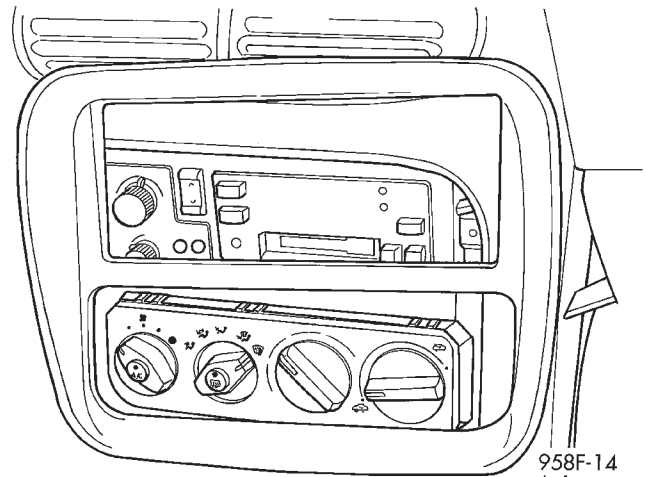


Fig. 8 Center Bezel Removal

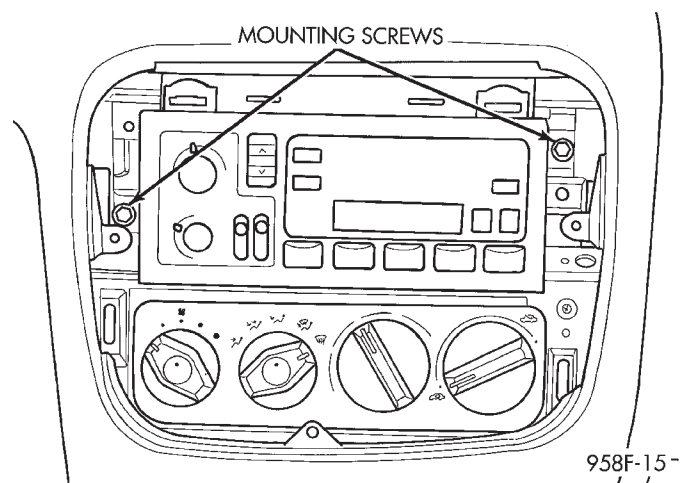


Fig. 9 Radio Assembly

REMOVAL AND INSTALLATION (Continued)

**REAR SPEAKER**

**CAUTION:** Do not operate the radio with speaker leads detached. Damage to the output devices may result.

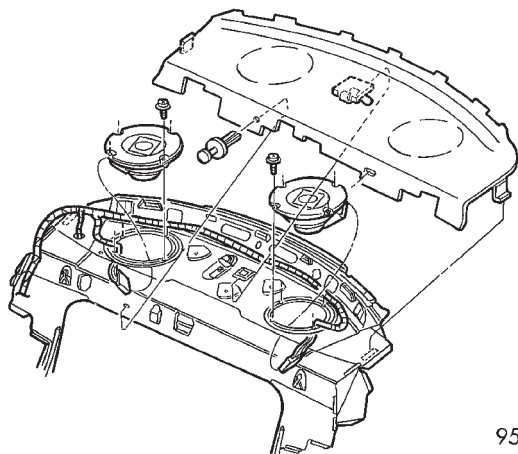
The wire connectors can be accessed through the trunk.

**REMOVAL**

- (1) Remove parcel shelf panel, refer to Group 23, Body.
- (2) Remove four retaining screws (Fig. 10).
- (3) Disconnect wire connector and remove speaker.

**INSTALLATION**

For installation, reverse the above procedures. Be sure that the wire connectors are facing outward in vehicle.



958F-20

*Fig. 10 Rear Speakers*

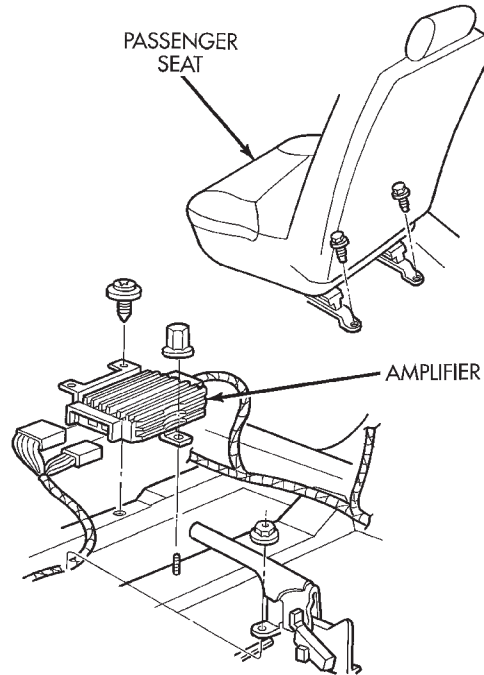
**REMOTE AMPLIFIER**

**REMOVAL**

- (1) Remove the right front seat.
- (2) Remove the two screws and one nut attaching the amplifier (Fig. 11).
- (3) Disconnect the electrical connectors and remove.

**INSTALLATION**

For installation, reverse the above procedures. Tighten fasteners to 4 N·m (40 in. lbs.) torque.



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*Fig. 11 Amplifier Location*

**REMOTE CD CHANGER**

**REMOVAL**

- (1) Turn ignition switch to the OFF position.
- (2) Remove the instrument cluster hood. Refer to Group 8E, Instrument Panel and Systems for removal procedures.
- (3) Remove the two CD changer attaching screws located under the HVAC control.
- (4) Slide the CD changer/power outlet assembly rearward in the vehicle.
- (5) Disconnect CD DIN cable, power outlet, and the light socket assembly wire connectors.
- (6) Remove the CD changer.
- (7) Remove mounting bracket and power outlet from cd changer. Transfer to new unit if replacing changer.

**INSTALLATION**

For installation, reverse the above procedure. Be sure to index rear tab on changer mounting bracket into slot in vehicle mounting bracket.

