

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 13 removed from the junction block. The fuse replaces the ignition-off draw (IOD) connector. Fuse 13 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.

A ground strap is mounted from the engine to shock tower. On four cylinder engines, there is a ground strap from the rear of the muffler to the muffler mounting bracket. These ground circuits should be securely tightened to assure good metal to metal contact. Ground straps conduct very small high frequency electrical signals to ground and require clean large surface area 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 a operational malfunction occurs, first verify that the radio antenna wire harness is properly connected. Check all connectors before starting normal diagnosis and repair procedures.

REAR WINDOW ANTENNA

The integrated rear window antenna incorporates the rear window defogger and a electronic module to receive radio signals. The module is located right C-pillar behind the trim panel.

DESCRIPTION AND OPERATION (Continued)

The FM signal is received via the heated portion of the rear window defogger grid. The AM signal is received via two isolated unheated lines along the top of the rear window.

NOTE: If an accessory cellular phone glass mount antenna is installed, it should only be along the center of the window, not touching any conductive lines in the area indicated.

REMOTE AMPLIFIER

The amplifier is located in the trunk on the left side wall of the trunk and behind the liner.

When the radio system is ON, and all or some speakers are not operating or have a noise distortion refer to the diagnostic tests. Refer to Group 8W, Wiring Diagrams for Pin numbers and location.

DIAGNOSIS AND TESTING

AUDIO DIAGNOSTIC TEST PROCEDURES

CAUTION: The CD player will only operate between approximate temperatures of -23°C and +65°C (-10°F and +145°F).

Whenever a radio malfunction occurs;

(1) First check FUSES and circuit breaker in the Junction Block:

- (a) Fuse 2, Ignition feed and Rear Window Antenna (if equipped)
- (b) Fuse 8, Power Amplifier
- (c) Fuse 9, Illumination
- (d) Fuse 13, Memory feed
- (e) Circuit breaker 23, Power Antenna (if equipped)

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

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

NOTE: If aftermarket accessories:

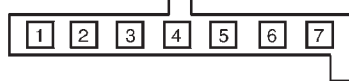
- Radar detector
- Cellular Telephone
- Other electrical devices

are present, ensure that the devices or the installation of these devices have not negatively effected the vehicle's operation.

DIAGNOSIS AND TESTING (Continued)

RADIO CONNECTORS

BLACK



GRAY

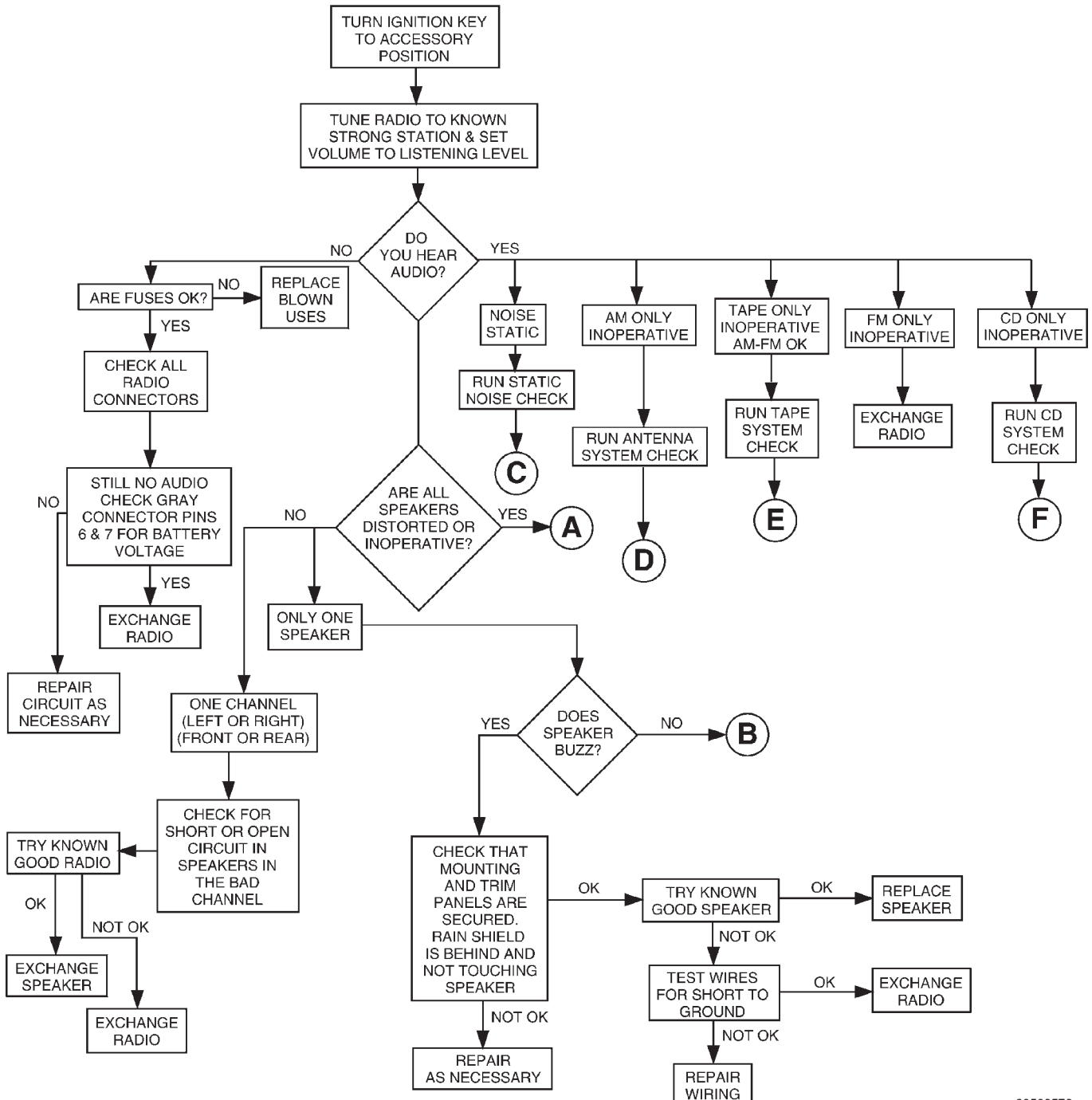


VIEW FROM
WIRE END

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 (-)

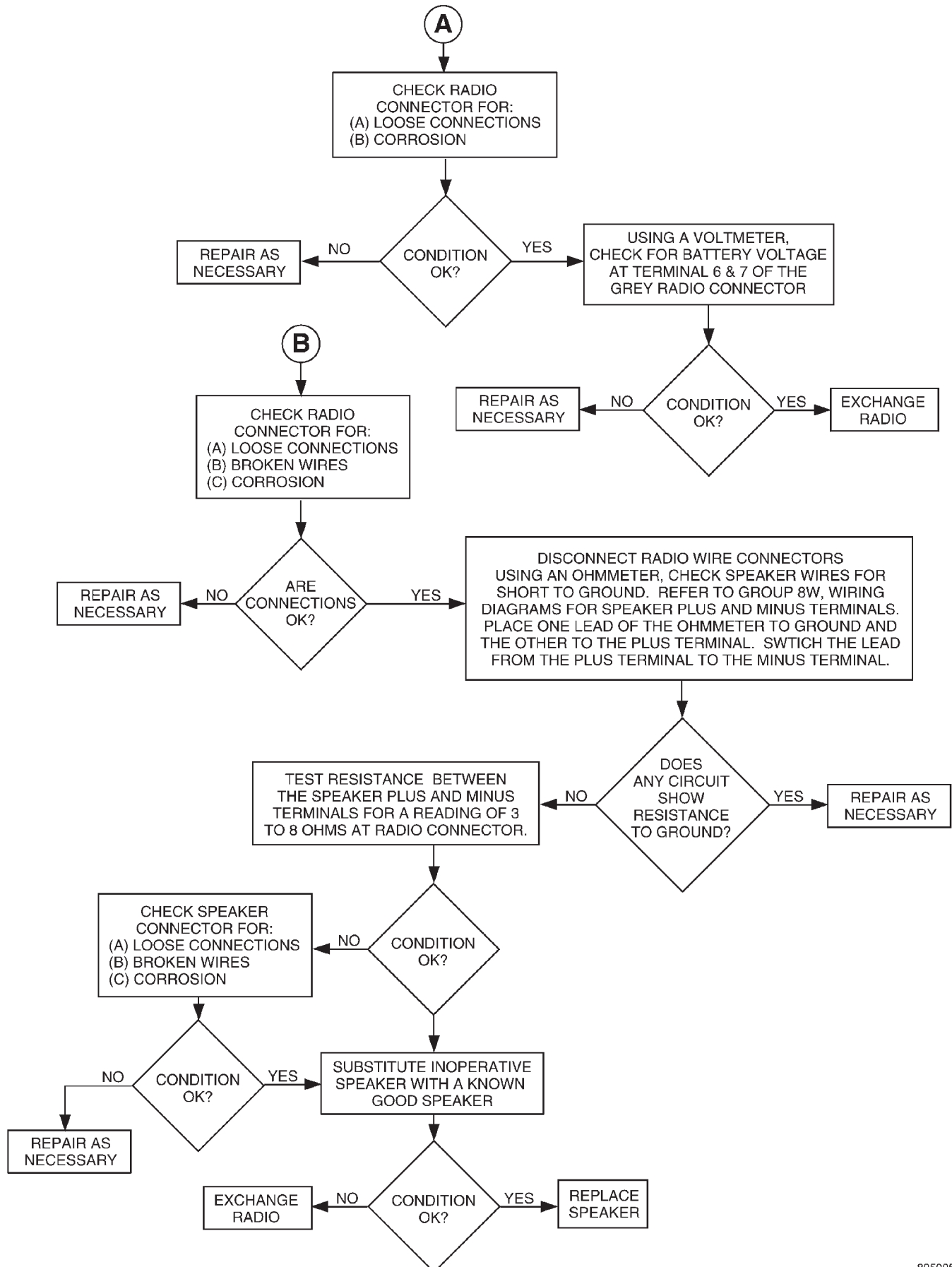
- 1 - RADIO MUTE
- 2 - LEFT FRONT SPEAKER RETURN (-)
- 3 - RIGHT FRONT SPEAKER RETURN (-)
- 4 - MARKER -- (HEAD/PARK LAMPS)
- 5 - DIMMER -- (PANEL, LAMPS, VARIABLE)
- 6 - ACCESSORY -- (SWITCHED B+)
- 7 - BATTERY -- (MEMORY)



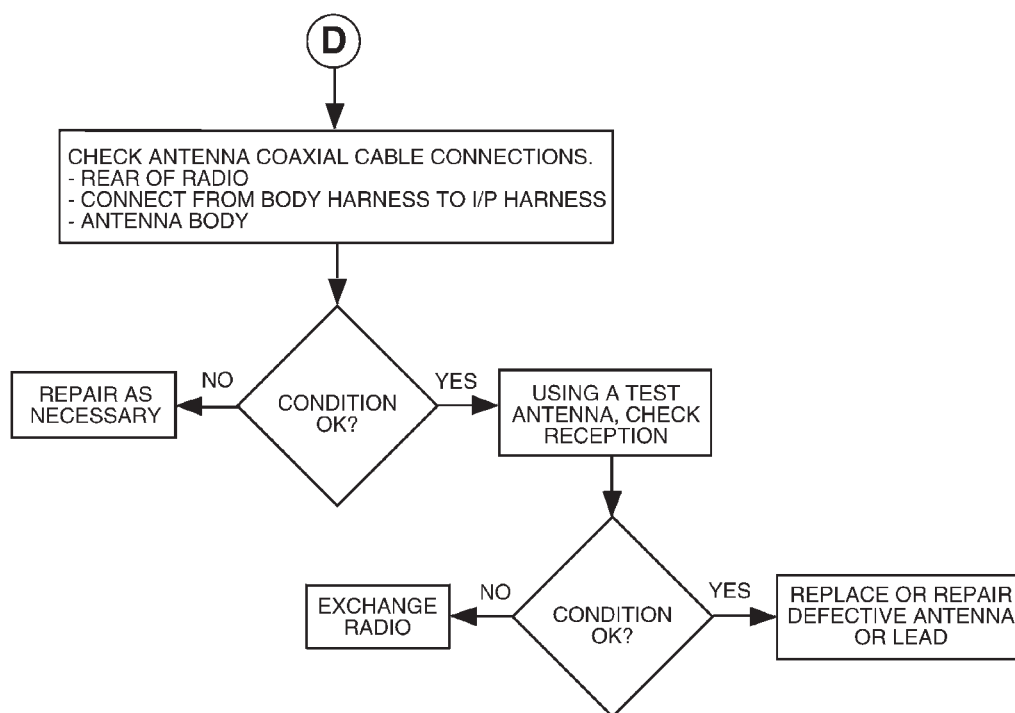
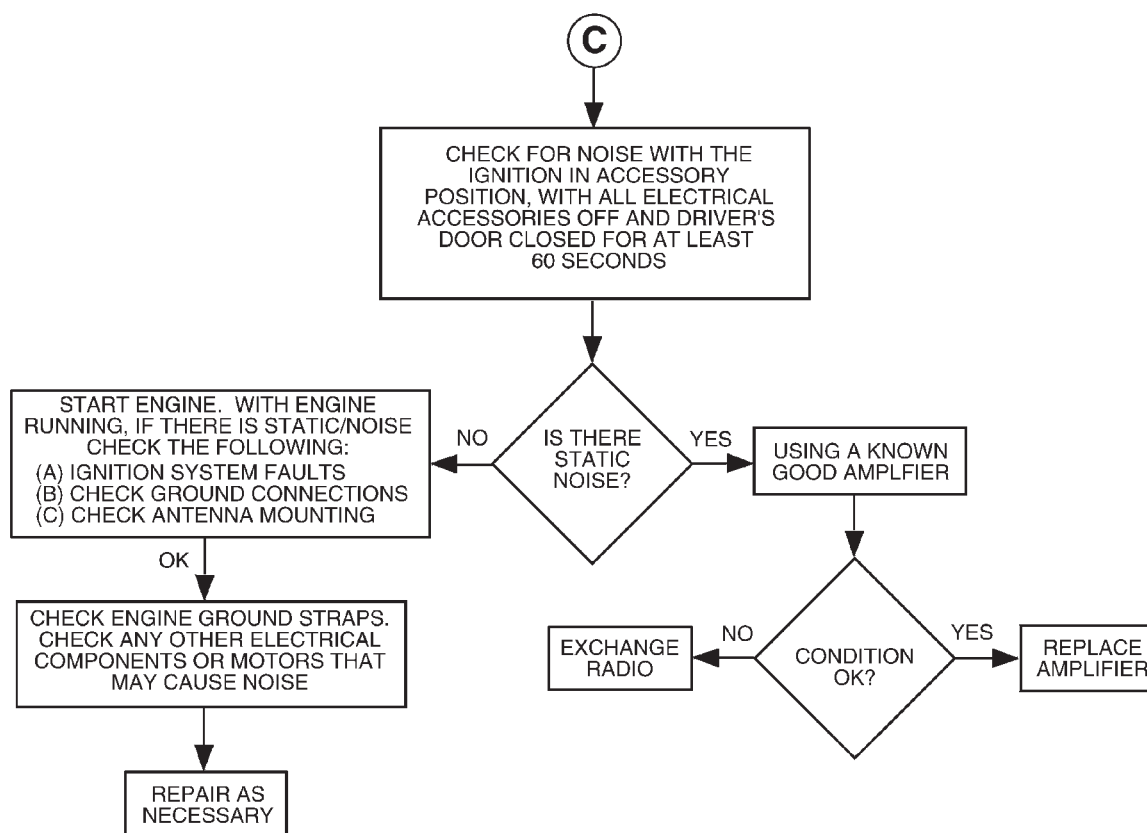
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BASE 6 SPEAKER SYSTEM

DIAGNOSIS AND TESTING (Continued)

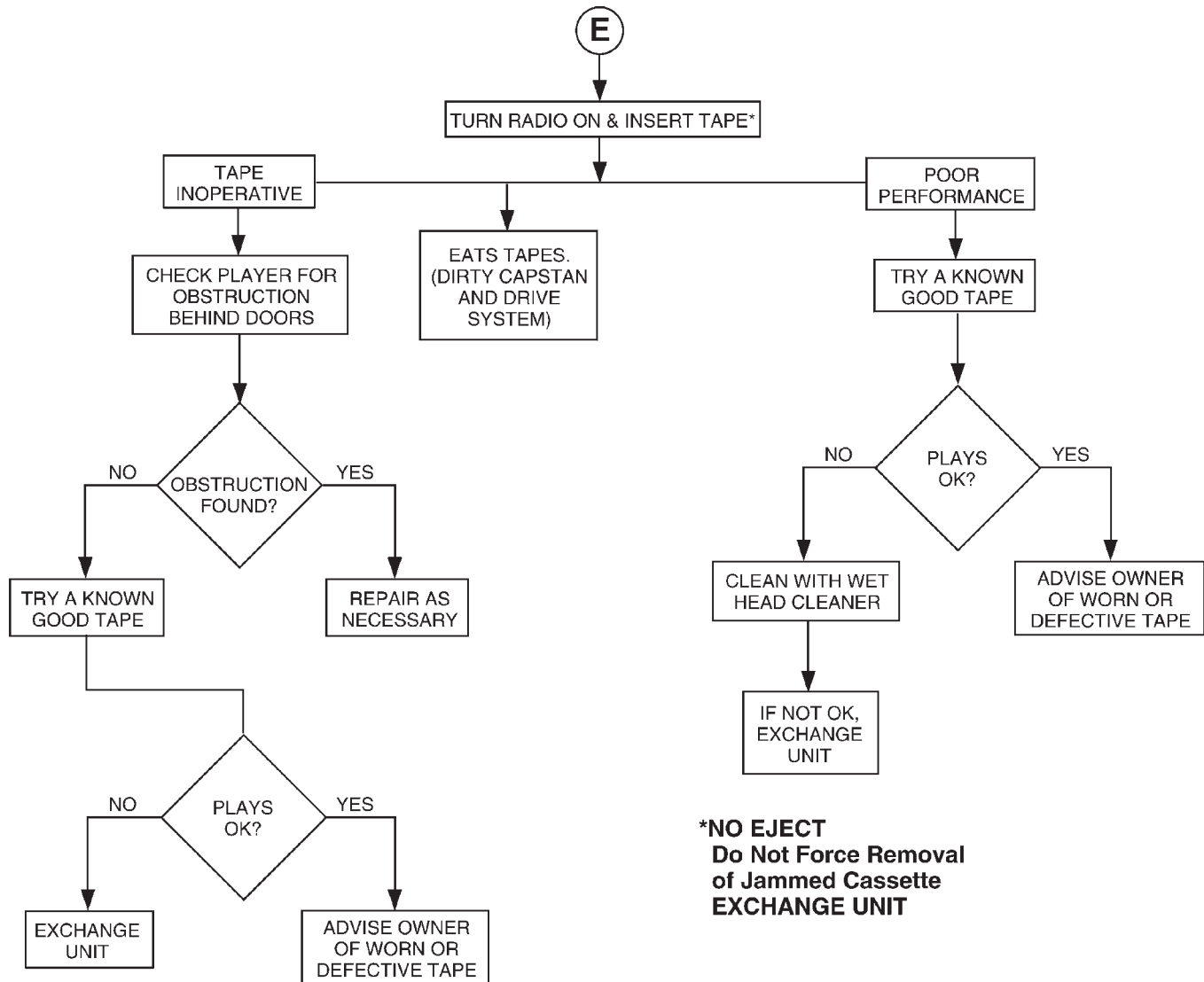


DIAGNOSIS AND TESTING (Continued)

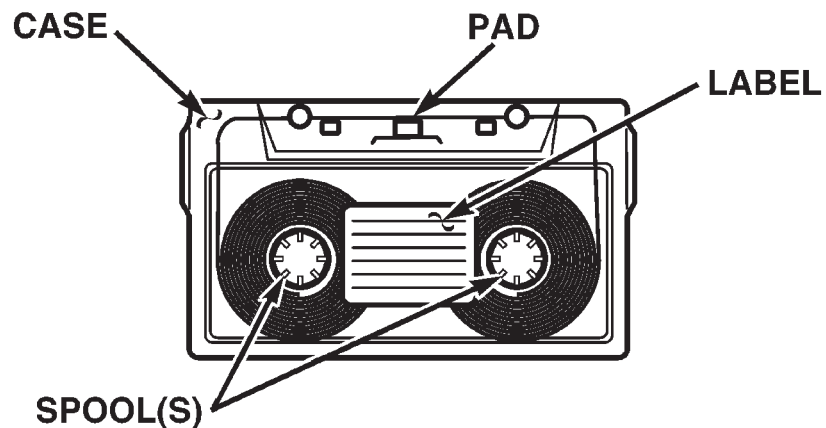


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DIAGNOSIS AND TESTING (Continued)

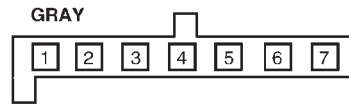
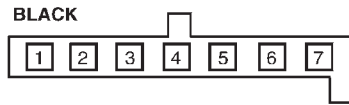
**CHECK TAPES FOR:**

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



DIAGNOSIS AND TESTING (Continued)

RADIO CONNECTORS

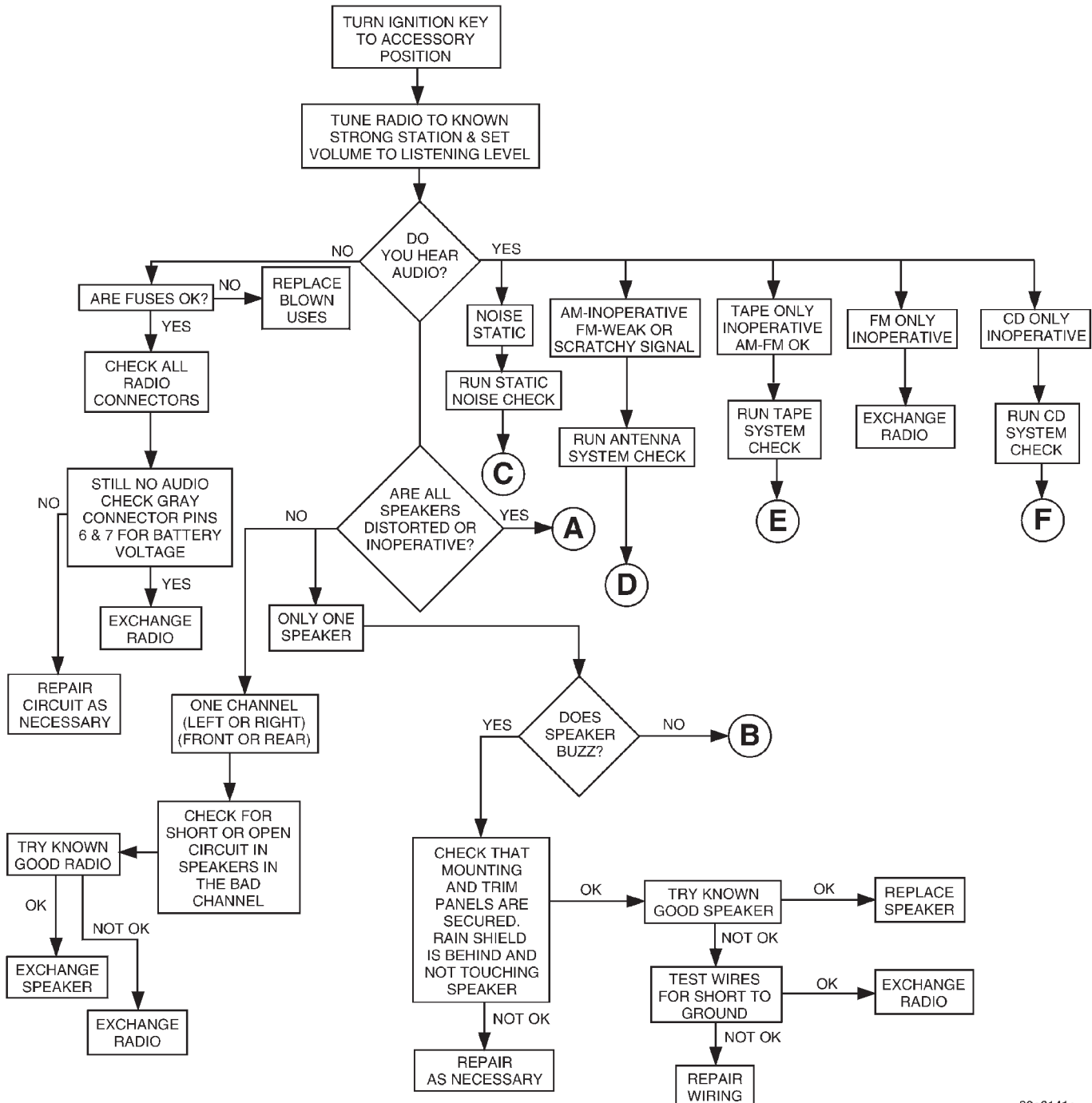


VIEW FROM
WIRE END

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 (-)

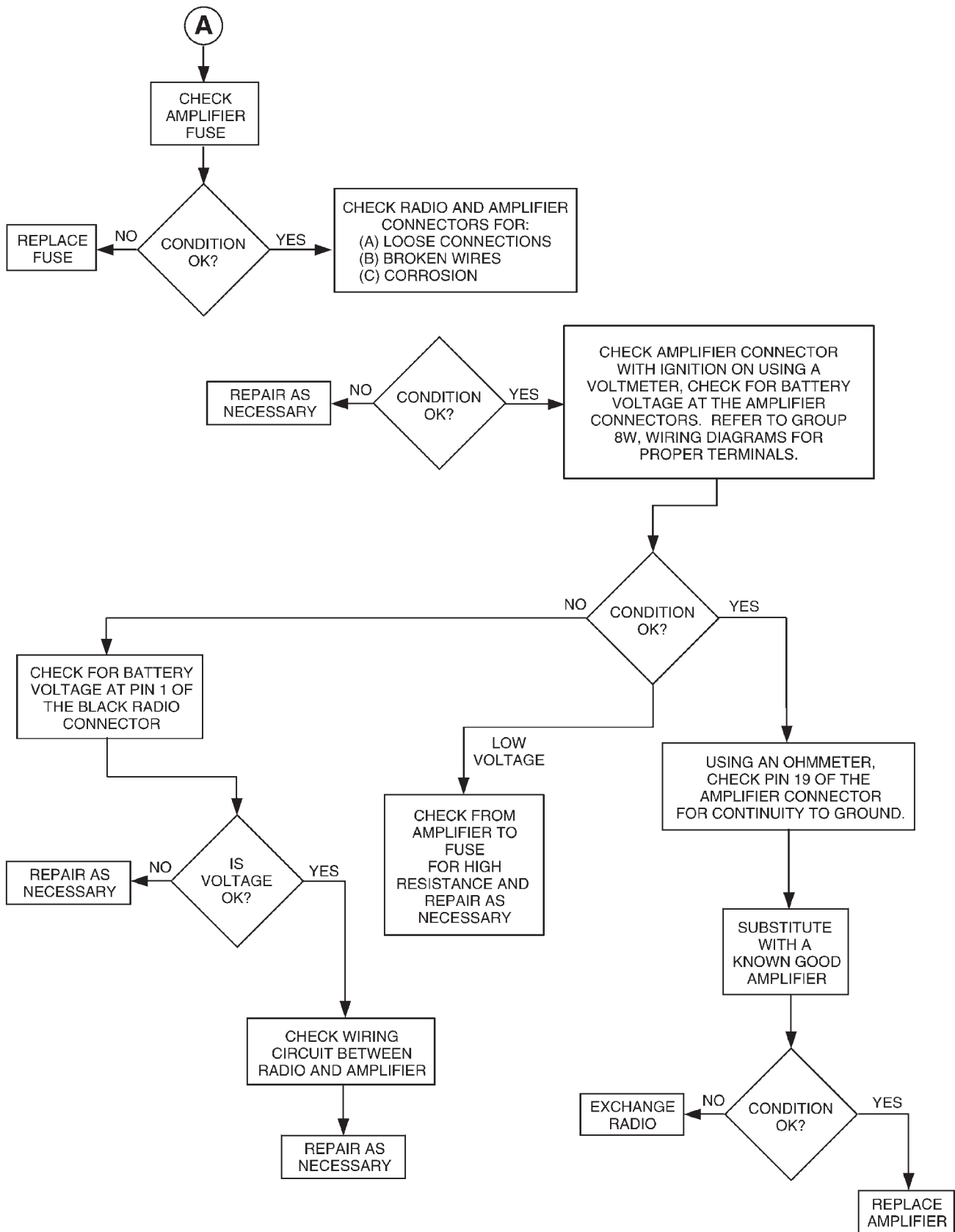
- 1 - RADIO MUTE
- 2 - LEFT FRONT SPEAKER RETURN (-)
- 3 - RIGHT FRONT SPEAKER RETURN (-)
- 4 - MARKER -- (HEAD/PARK LAMPS)
- 5 - DIMMER -- (PANEL, LAMPS, VARIABLE)
- 6 - ACCESSORY -- (SWITCHED B+)
- 7 - BATTERY -- (MEMORY)



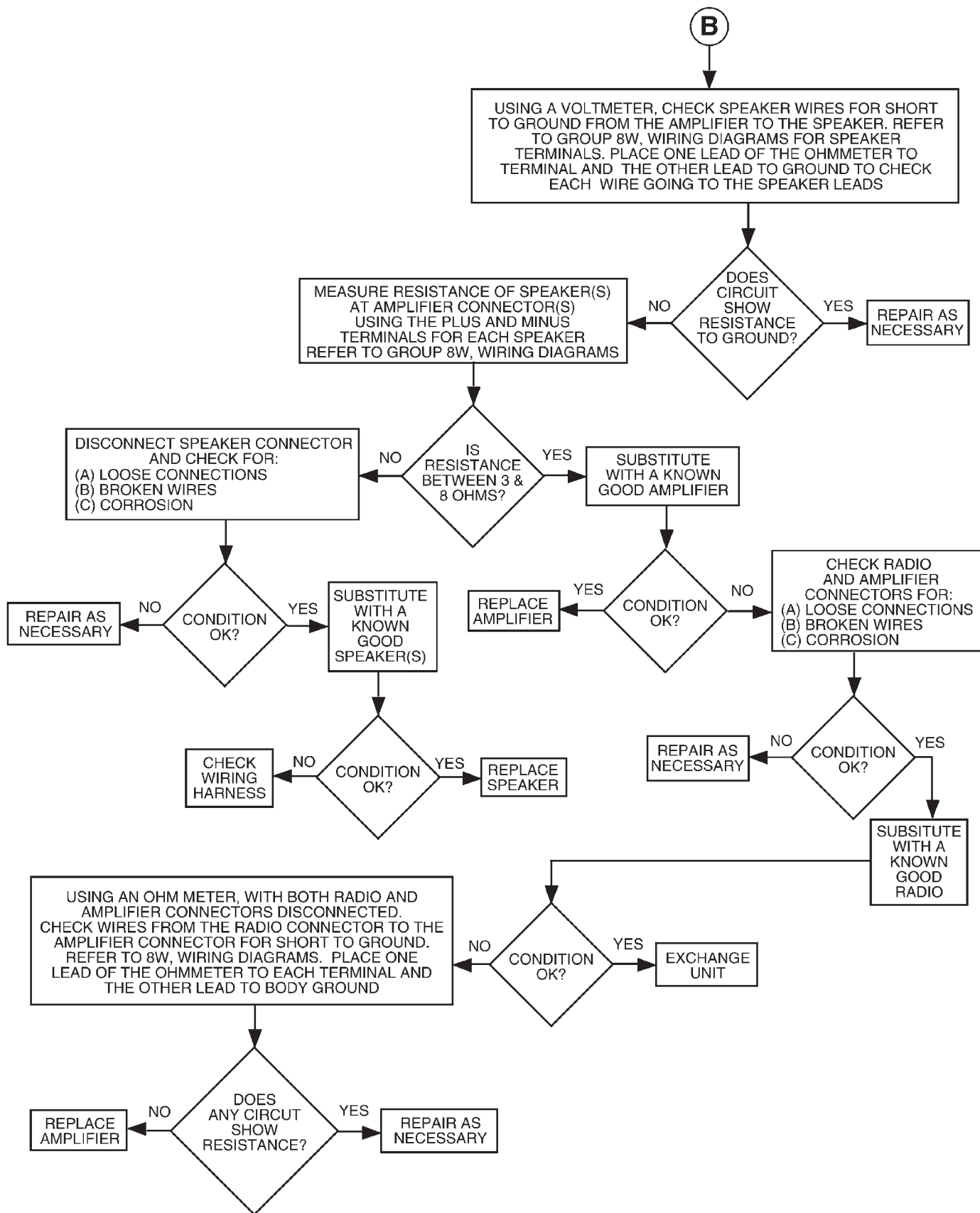
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AMPLIFIED

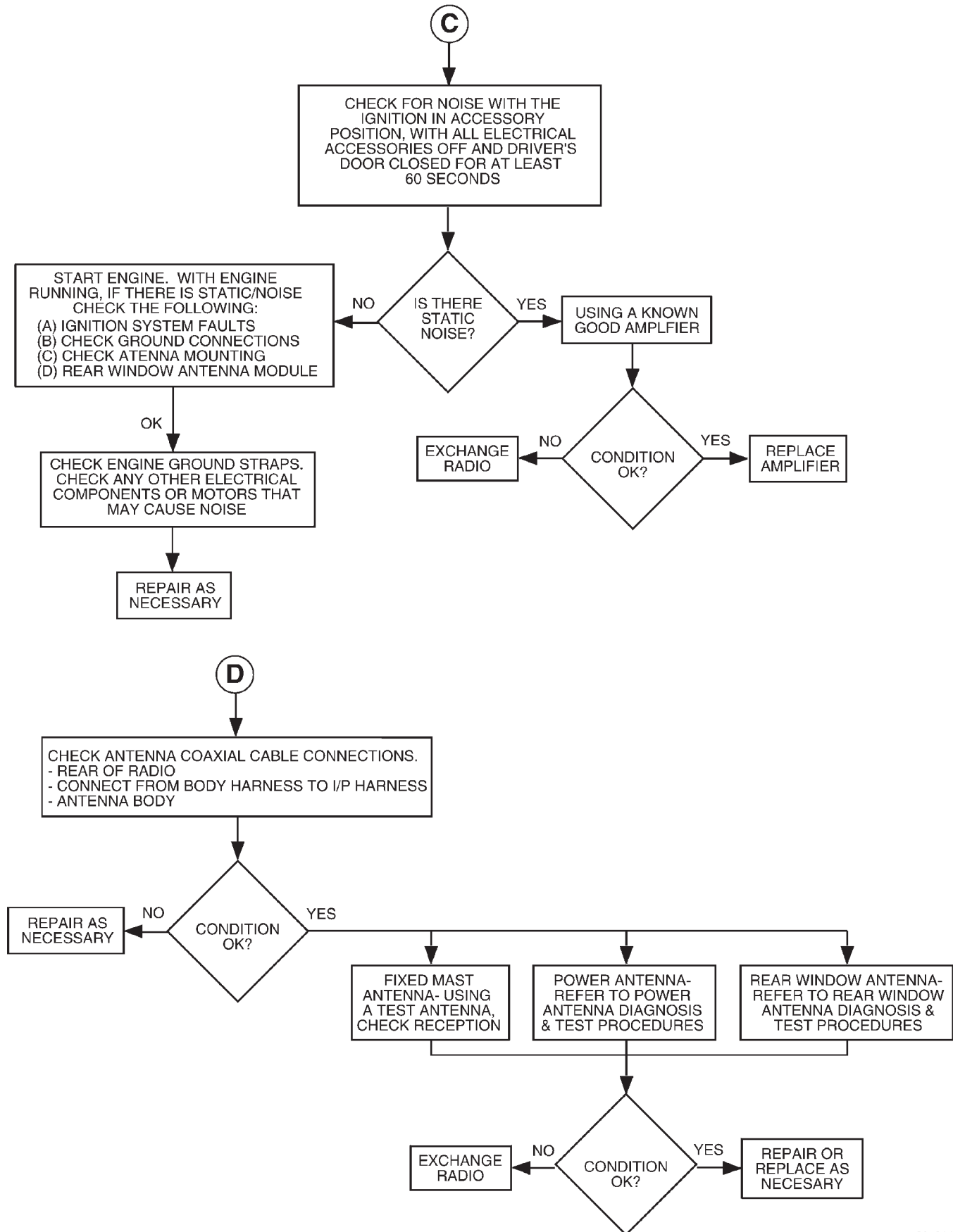
DIAGNOSIS AND TESTING (Continued)



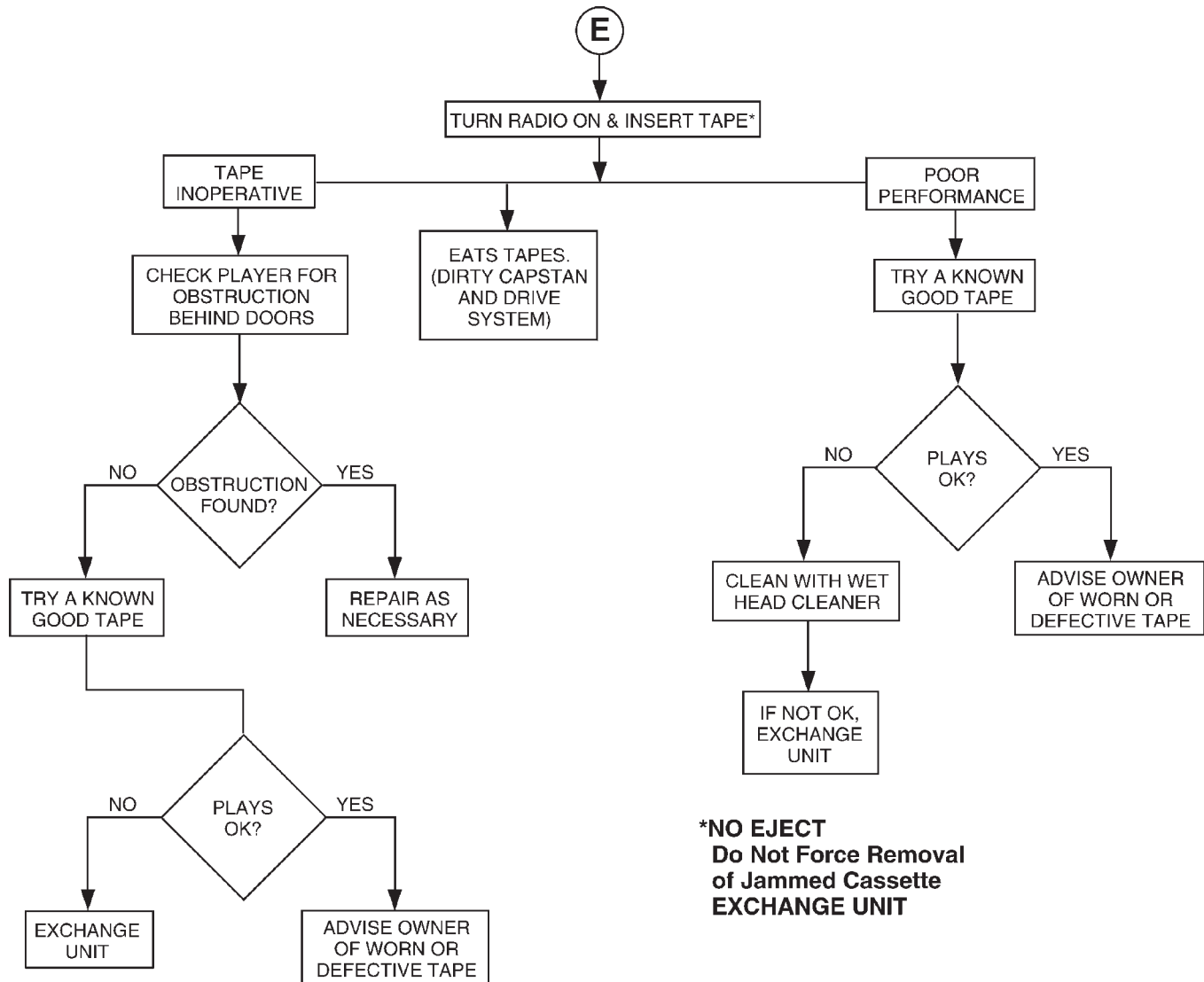
DIAGNOSIS AND TESTING (Continued)



DIAGNOSIS AND TESTING (Continued)

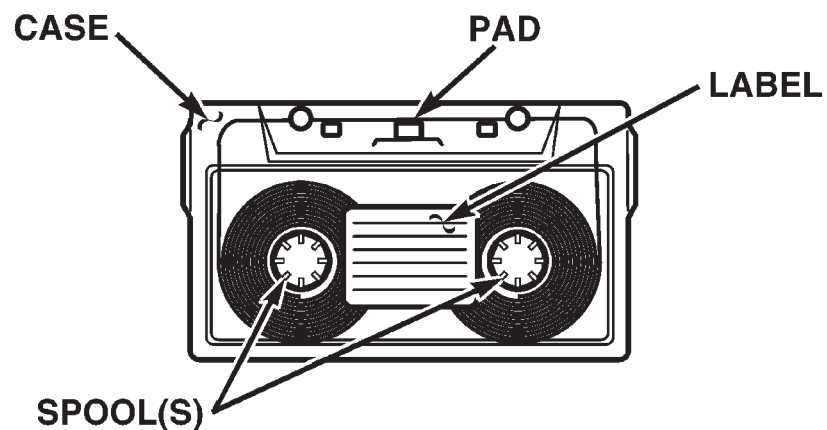


DIAGNOSIS AND TESTING (Continued)

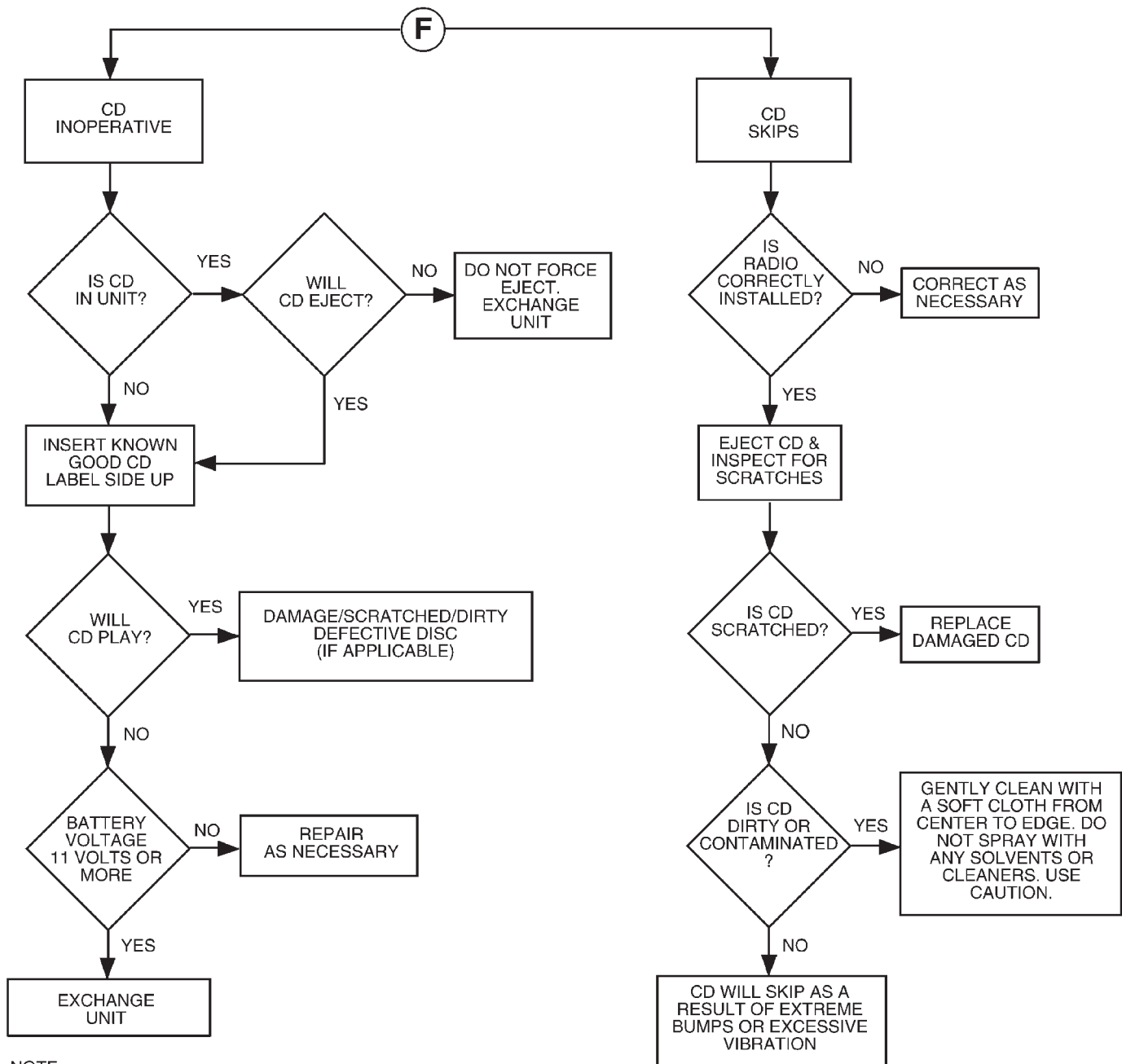


CHECK TAPES FOR:

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



DIAGNOSIS AND TESTING (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)**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 two to five ohms.
- If resistance is OK, refer to Radio Diagnosis. If radio checks OK, replace amplifier.
- If resistance is less than two 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 two to five ohms resistance to the non-operative speaker. Refer to Group 8W, Wiring Diagrams for the appropriate pin numbers.
- If resistance is less than two ohms, test speaker for resistance.
- 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.

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. 1).

(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.

(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.

DIAGNOSIS AND TESTING (Continued)

(d) Poor connection at antenna lead-in assembly or shielding ground.

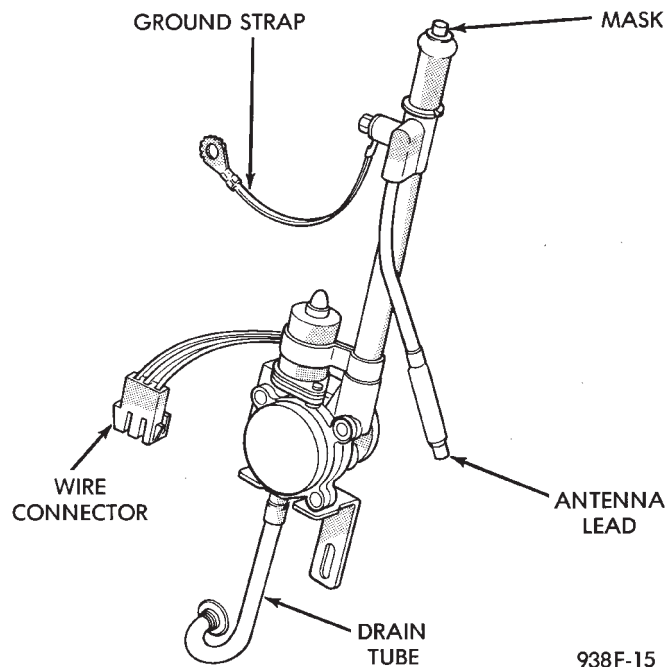


Fig. 1 Power Antenna Assembly

REAR WINDOW ANTENNA

NOTE: Due to a capacitor integral with the coaxial cable, the coax cable can not be tested. The continuity test between the center pin of the coax to the antenna does not apply. An ohm meter check to the center pin of the coaxial cable will falsely indicate an open circuit. The coaxial shield to ground test can be performed. Verify coaxial cable performance by using a known good cable.

Before performing any antenna service procedures, verify that Rear Window Defogger is operating properly (Fig. 2) and (Fig. 3). If not repair as necessary, refer to Group 8N, Heated Glass. Any repairs to either the AM or FM grid should be preformed as in Group 8N, Heated Glass, Grid Line and Terminal Repair.

(1) Check that the rear window adhesive does not come in contact with any portion of the grid lines or buss bars. There should be a minimum of 2 mm gap between adhesive and the grid lines or buss bars. If not OK, repair as necessary. If OK, go to Step 2.

(2) Check for proper radio coax cable connections at the radio and rear window antenna module. If not OK, repair as necessary. If OK, go to Step 3.

(3) Loss of reception on only one band (AM or FM) may indicate a continuity problem on the rear window grids. Test the grid lines with an ohmmeter. If not OK, repair grid lines as necessary. If OK, go to Step 4.

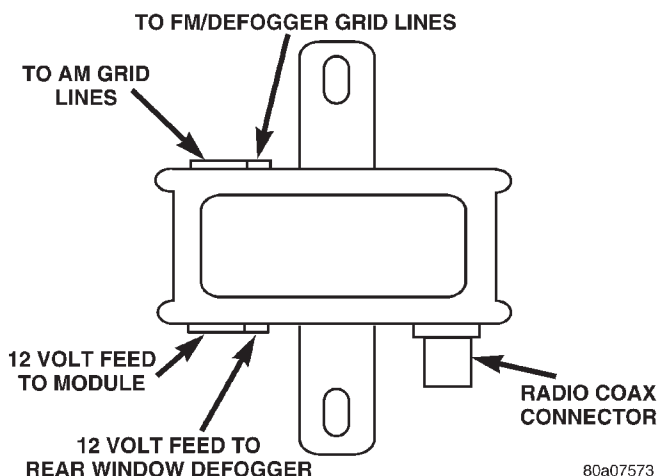


Fig. 2 Rear Window Antenna Module

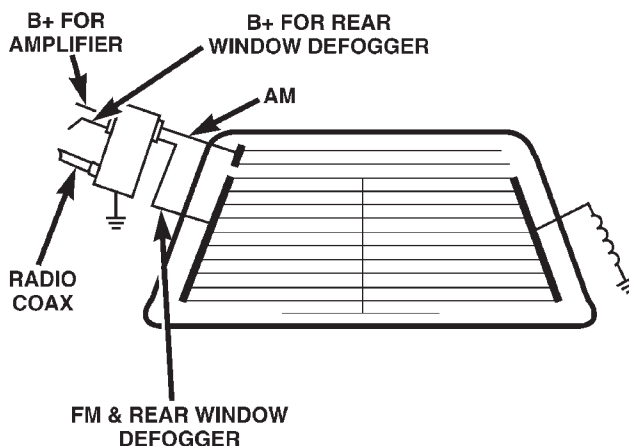


Fig. 3 Rear Window Grid Lines and Module

(4) Turn the radio and rear window defroger ON position. Using a voltmeter, test for battery voltage at the X60 and C15 circuit terminals of the rear window antenna module wire harness connector (Fig. 2). If not OK, check fuses, if fuses are OK, repair wire harness as necessary. Refer to Group 8W, Wiring Diagrams for circuit information.

(5) Ensure that the rear window defogger ground wire with integral coil in the C-pillar has a good ground.

(6) If not OK, repair as necessary. If OK, go to Step 7.

CAUTION: Rear Window Defroger must be in the OFF position

(7) Quick check of the module:

- Place the ignition switch in the ACC position with the radio in the ON position on a appropriate station (AM/FM).
- Tune to a AM station

DIAGNOSIS AND TESTING (Continued)

- Using a grounded jumper wire, momentarily short the AM lead to the grid lines (Fig. 3).
- There should be an audible CRACKLE through the speakers indicating circuit continuity.
- Tune to a FM station
- Using a grounded jumper wire, momentarily short the FM lead to the grid lines (Fig. 3).
- There should be an audible CRACKLE through the speakers indicating circuit continuity.

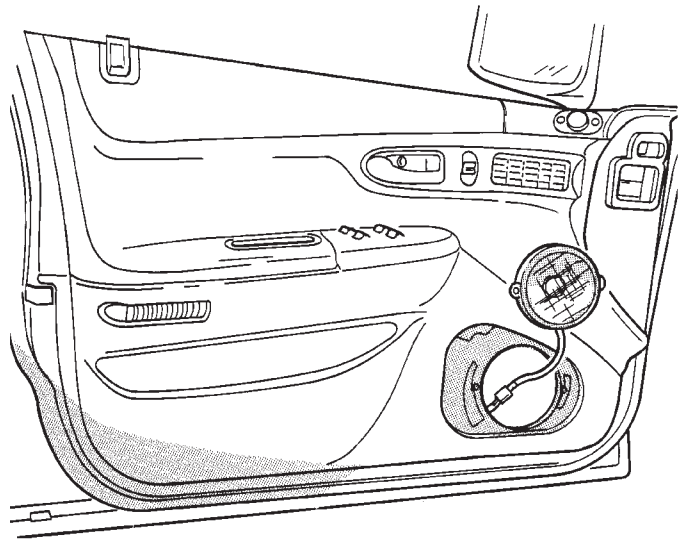
If not OK, go to Step 8. If OK, go to Step 9.

(8) Using a ohmmeter, check continuity between the module wire connector and:

- AM grid lines
- FM/rear window antenna grid lines

If not OK, repair necessary. Refer to Group 8N, Heated Glass and Group 8W, Wiring Diagrams. If OK, go to Step 9.

(9) If neither AM or FM can be received, use a known good radio and verify. If not OK, use a known good antenna module and verify. If OK, either exchange radio or replace antenna module.



938F-20

Fig. 4 Door Mounted Speaker

REMOVAL AND INSTALLATION

DOOR MOUNTED SPEAKER

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

REMOVAL

- (1) Carefully, pry speaker grille away from door trim panel (Fig. 4). Remove window crank handle if equipped.
- (2) Remove two speaker retaining screws.
- (3) Pull speaker away from door and disconnect wiring.

INSTALLATION

For installation reverse the above procedures.

FIXED MAST ANTENNA

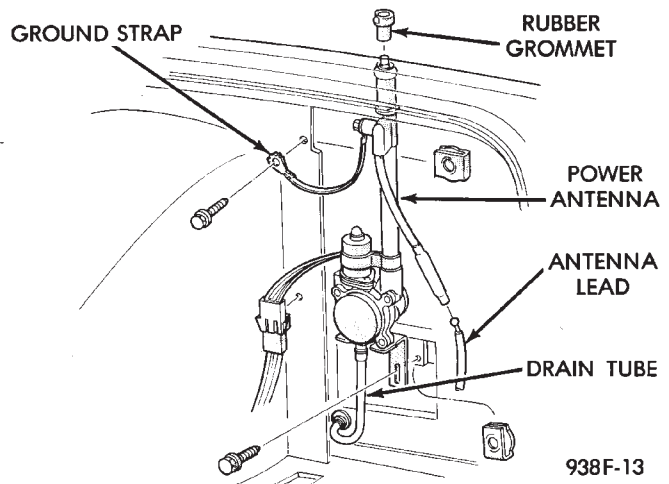
REMOVE

The rubber bezel grommets are not interchangeable between vehicle models.

- (1) Inside trunk, pull trunk liner aside.
- (2) Unplug antenna lead from base of antenna mast.
- (3) Remove antenna mast by unscrewing mast from antenna body.
- (4) Remove screw from mounting bracket (Fig. 5).
- (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.



938F-13

Fig. 5 Antenna Mounting Removal

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) Carefully, pry up each end of top cover to disengage clips (Fig. 6).

REMOVAL AND INSTALLATION (Continued)

(b) Lift rear edge of top cover using an trim stick along rear edge.

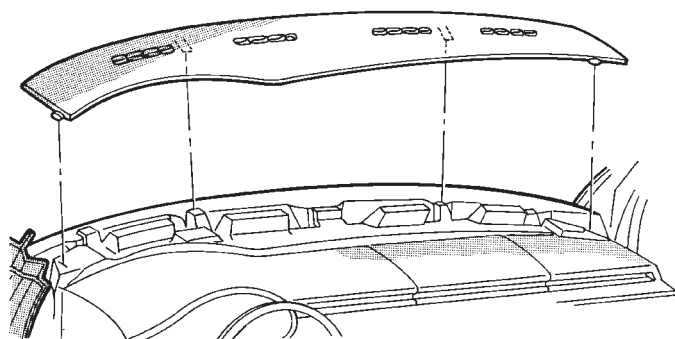
(c) While lifting rear edge slide top cover rearward to disengage front clips and remove the top cover.

(2) To remove right or left speaker remove two retaining screws. Lift up speaker and disconnect wire connector (Fig. 7). To remove center speaker, remove plastic retainer and disconnect wire.

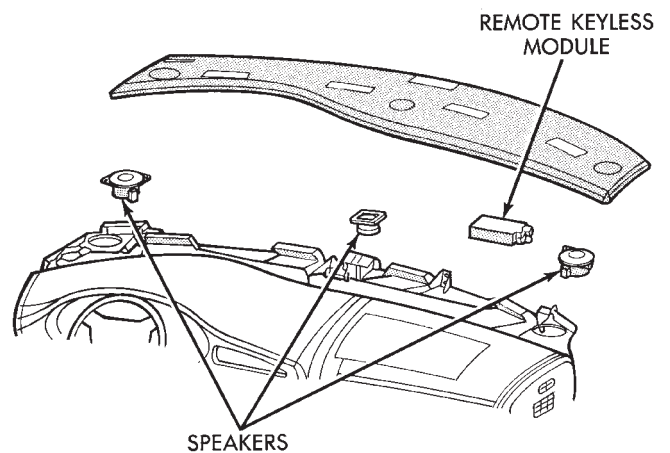
(3) Remove speaker.

INSTALLATION

For installation reverse the above procedures.



938M-5

Fig. 6 Instrument Panel Top Cover

938F-19

Fig. 7 Instrument Panel Speakers**POWER ANTENNA****REMOVAL**

The rubber bezel grommets are not interchangeable between vehicle models. There are three types of grommets in use, check with parts catalog for proper grommet. If there is a water leak check for proper grommet.

(1) Disconnect battery negative cable.

(2) Inside trunk, pull trunk liner aside.

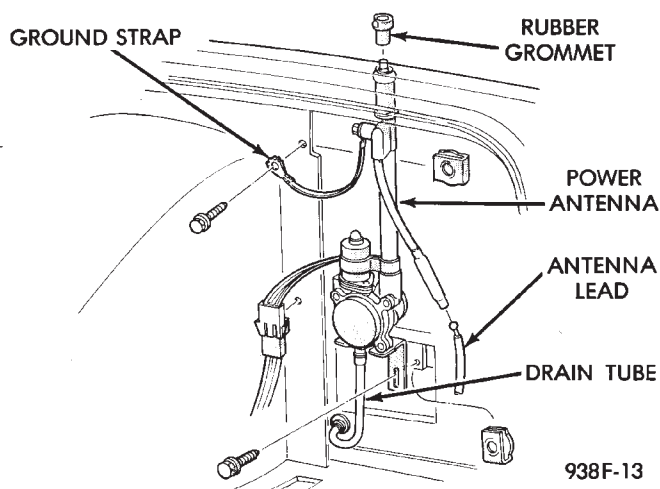
(3) Unplug antenna lead from pigtail connector, disconnect wire connector, remove drain tube from grommet (Fig. 8).

(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. Tighten antenna bracket ground strap screws to 4 N·m (40 in. lbs.) torque.



938F-13

Fig. 8 Power Antenna**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

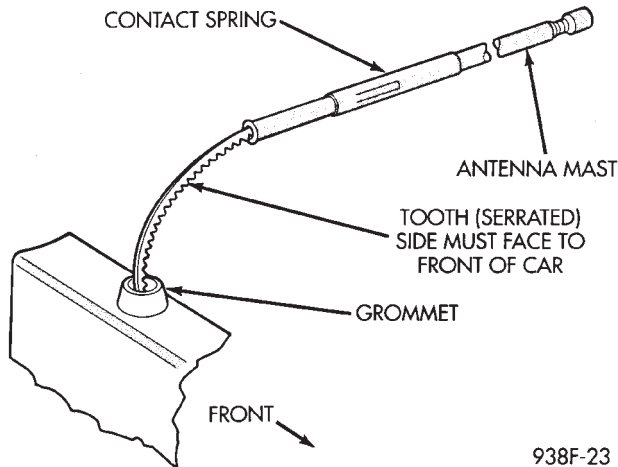
(1) Insert new drive rod into mast tube with drive teeth toward antenna motor (Fig. 9).

(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.

REMOVAL AND INSTALLATION (Continued)



938F-23

Fig. 9 Power Mast Replacement

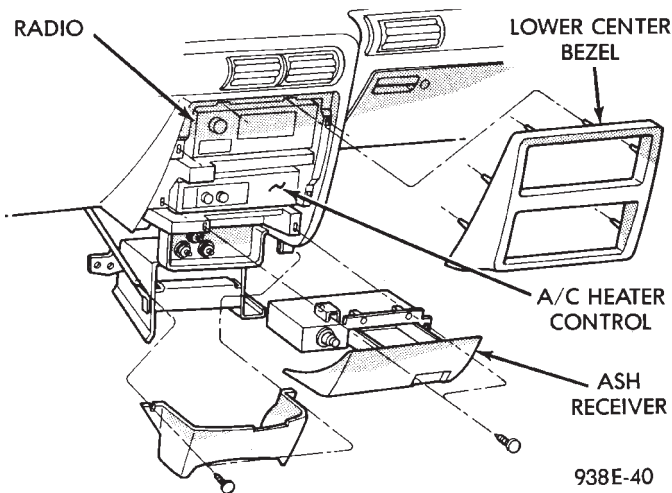
RADIO TAPE/CD PLAYER

REMOVAL

- (1) Remove center bezel by pulling straight back (Fig. 10).
- (2) Remove two radio mounting screws (Fig. 11).
- (3) Pull radio from panel and disconnect wiring, ground strap or wires and antenna lead from radio.
- (4) Remove radio.

INSTALLATION

For installation reverse the above procedures.

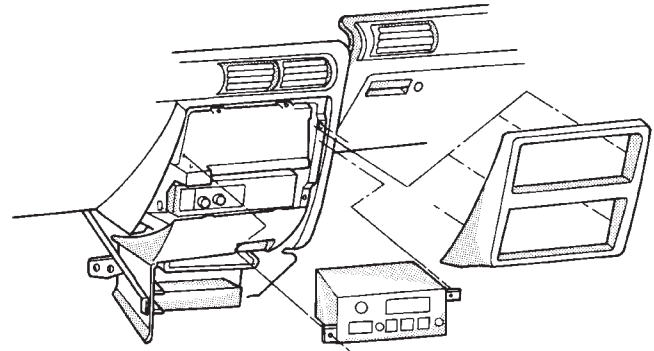


938E-40

Fig. 10 Center Bezel Removal

REAR SPEAKER

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



938F-16

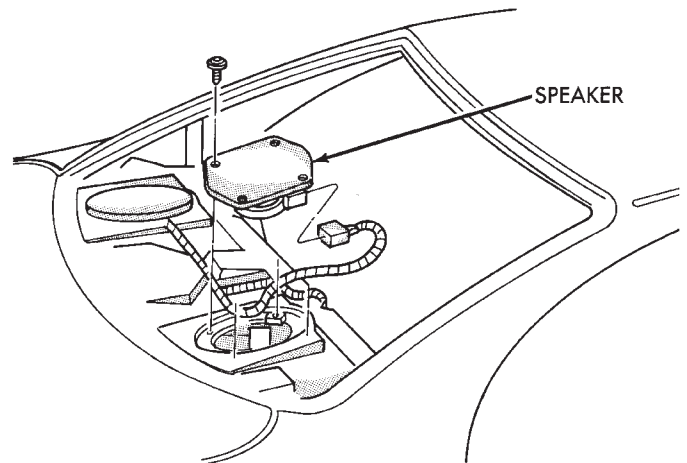
Fig. 11 Radio Assembly

REMOVAL

- (1) Remove parcel shelf panel, refer to Group 23, Body. Vehicles with grilles, pry up on grilles to remove.
 - (2) Remove four retaining screws (Fig. 12).
 - (3) Disconnect wire connector and remove speaker.
- The wire connectors can be accessed through the trunk.

INSTALLATION

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



938F-22

Fig. 12 Rear Speakers

REAR WINDOW ANTENNA

To replace the rear window antenna the rear window has to be replaced. Refer to Group 23, Body for proper procedures.

REMOVAL AND INSTALLATION (Continued)

REAR WINDOW ANTENNA MODULE*REMOVAL*

- (1) Remove right upper quarter trim. Refer to Group 23, Body.
- (2) Remove attaching screws from module (Fig. 2).
- (3) Disconnect wire connectors and radio coax cable.
- (4) Remove module.

INSTALLATION

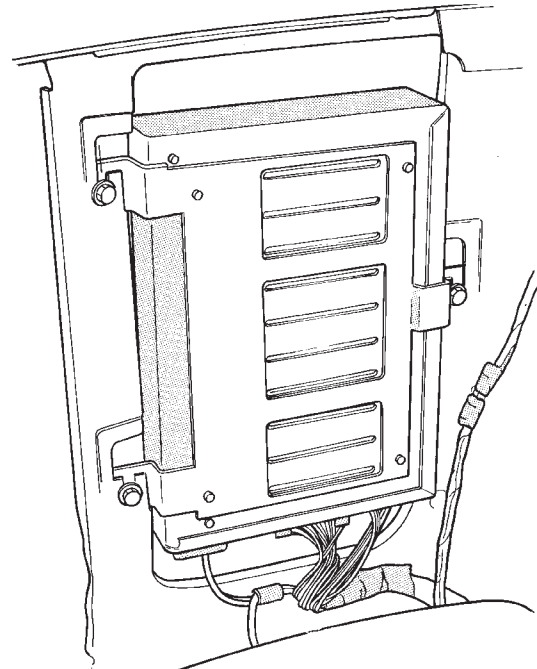
For installation, reverse the above procedures.

REMOTE AMPLIFIER*REMOVAL*

- (1) Pull aside left side trunk liner.
- (2) Loosen the three amplifier attaching bolts (Fig. 13).
- (3) Raise up amplifier to remove and disconnect the wire harness connectors.

INSTALLATION

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



938F-21

Fig. 13 Amplifier Location