CHAPTER 16

LOUDSPEAKER-CONTROL UNIT, LS-671/VRC MAINTENANCE INSTRUCTIONS

Section I. Principles OF OPERATION

16-1. INTRODUCTION.

The Loudspeaker-Control Unit, LS-671/VRC (loudspeaker) is used in conjunction with vehicular mounted radio systems. Its basic function is to permit remote transmit and receive operation of the RT thru the loudspeaker. Other functions included are remote power ON/OFF control of the mounting adapter or power supply adapter, volume control of the loudspeaker, and a provision for connecting a handset.

The loudspeaker-control unit, LS-671/VRC has three main sections which are:

a. Rear Cover Assembly (15A1)

b. Speaker Case/Flexible Cable Assembly (15A2 and 15A3)

c. Loudspeaker

They are described in the following paragraphs:

16-2. REAR COVER ASSEMBLY (15A1).

The rear cover assembly is mounted on the rear of the LS-671/VRC. It provides three basic functions:

a. It provides an environmental seal for the LS-671/VRC.

b. It contains the LS-671/VRC CCA (15A1A1) that controls the operation of the LS-671/VRC.

c. It contains the amplifier module assembly (15A1A2) that comprises a voltage regulator, loudspeaker amplifier, handset amplifier, and buffering amplifier.

The input power must be 22 to 32 V dc. The current required depends on the output loads. Normally, 150 to 500 mA of input current is required. A schematic diagram of the LS-671/VRC is included in figure FO-30.

16-3. SPEAKER CASE/FLEXIBLE CABLE ASSEMBLY (15A2 and 15A3).

The speaker case/flexible cable assembly provides the physical structure which holds the loudspeaker, VOL control RI, power indicator lamp DS1, ON/OFF switch CB1, and connectors J1 and J2. The speaker case/flexible cable assembly also contains the interconnection wiring for these external components. The loudspeaker and external components are described in the following paragraphs and illustrated in figure 16-1.

16-4. LOUDSPEAKER.

The loudspeaker provides the function of converting the amplified RT audio signals into sound for monitoring voice communications in vehicular installations.

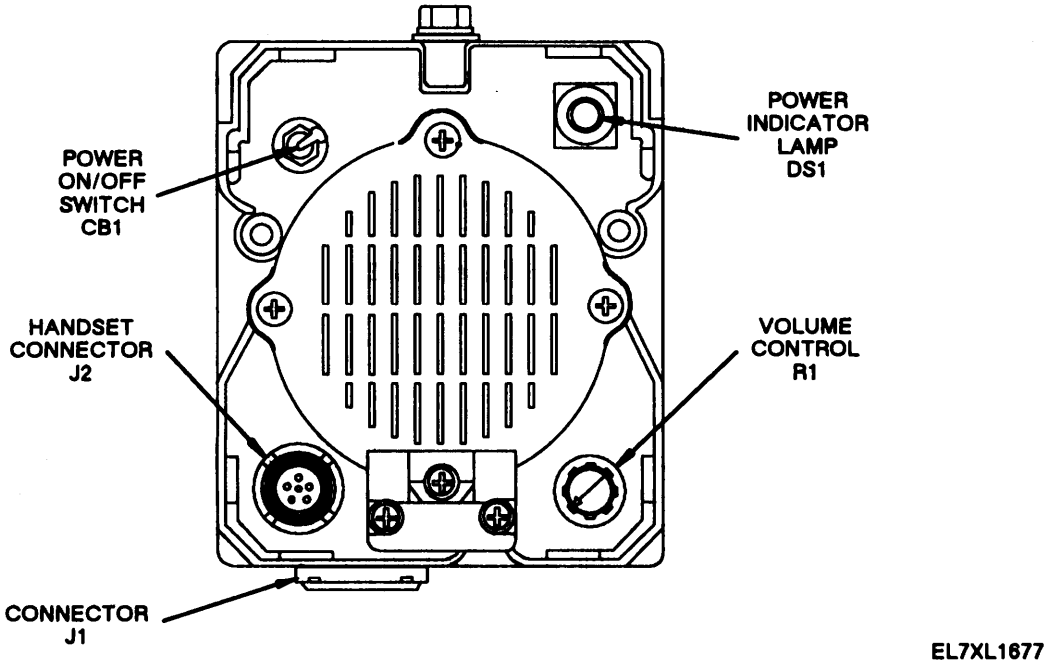


Figure 16-1. Loudspeaker and External Components.

a. **Power ON/OFF switch CB1.** Used to turn the loudspeaker on and off. May also be used to turn power on and off to the mounting adapter or power supply adapter, if the mounting adapter or power supply adapter power switch CB1 is set to ON.

b. **Power indicator lamp DS1.** Lights when power ON/OFF switch CB1 is set to ON.

c. **Volume control R1.** Adjusts volume level for loudspeaker or handset (if connected). To adjust volume level for handset, turn VOL control clockwise to increase volume; turn it counterclockwise to decrease volume. To adjust volume level for loudspeaker, pull and turn VOL control clockwise to increase volume; pull and turn it counterclockwise to decrease volume.

d. **Handset connecter J2.** Used to connect handset.

e. **Connecter J1.** Connects to mounting base or single radio mount connector J3 or J4 using loudspeaker cable CX-13292/VRC.

Section II. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

16-5. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

16-6. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

For the TMDE and support equipment required for DS, see the maintenance allocation chart. It is Appendix B in TM 11-5820-890-20-1.

16-7. REPAIR PARTS.

Repair parts are listed and illustrated in the repair parts and special tools list (TM 11-5820-890-30P-1) covering direct support maintenance for this equipment.

Section III. TROUBLESHOOTING PROCEDURES

16-8. GENERAL.

This section provides the troubleshooting procedures used to isolate a defective module within the LS-671/VRC. The troubleshooting information is presented in the form of flowcharts. They systematically get from a symptom to the bad module or component.

16-9. OPERATIONAL CHECK.

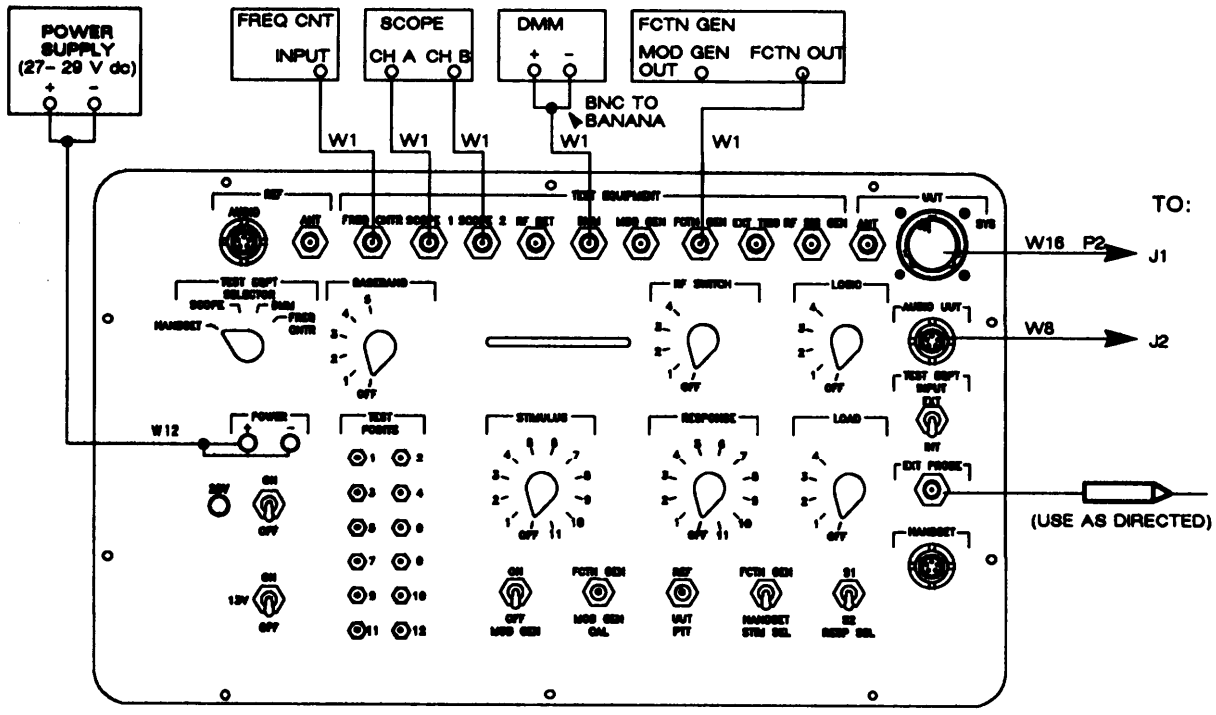
The operational check provides a step-by-step procedure for evaluating an LS-671/VRC. If the operational check is passed, the LS-671/VRC can be returned to service. If it does not pass the test, the bad module or the troubleshooting chart to be used will be identified. The troubleshooting procedures are in paragraph 16-10.

The operational check is divided into steps. Each step verifies a particular function. Follow the instruction in the “Action” column. Check the response. If the response is correct, proceed with the next lettered step. When a Step has been completed, proceed with the next Step. A "No response" in the "Response" column means that any response is not of interest.

The switch settings for the test equipment are given in the “EQUIPMENT PRESETS” section of the test setup figure. Set the test equipment switches to the indicated presets and then verify the settings. If a test response is incorrect, check the equipment settings and the test adapter cabling before going to a troubleshooting chart or replacing a bad module or component.

Connect equipment as shown in figure 16-2 to perform the operational check of the LS-671/VRC.

16-9. OPERATIONAL CHECK. Continued



EQUIPMENT PRESETS

TEST ADAPTER:

20 V:	OFF
13 V:	OFF
STIMULUS:	5
RESPONSE :	1
LOAD:	OFF
RF SWITCH:	OFF
MOD GEN:	OFF
LOGIC:	OFF
TEST EQPT SELECTOR:	DMM
TEST EQPT INPUT:	INT
BASEBAND:	OFF
CAL:	OFF
PTT:	OFF
STIM SEL:	HANDSET
RESP SEL:	S2

LS-671/VRC:

POWER (DS1):	FULLY CCW
ON/OFF (CB1):	OFF
SPKR-PULL (VOL) :	MID-RANGE AND PULL OUT

Figure 16-2. LS-671/VRC Test Setup.

16-9. OPERATIONAL CHECK. Continued

Step 1. INPUT POWER CHECK.

Action	Response
a. Connect equipment as shown in figure 16-2.	a. No response.
b. Set 28 V: ON. Read DMM.	b. DMM reads -1 to 1 V dc. If not, the ON/OFF switch (CB1) is bad.
c. Jumper test adapter TEST POINT 4 and TEST POINT 5. Set LS-671/VRC ON/OFF switch CB1 : ON. Read DMM.	c. DS1 lamp lights. If not, go to chart 1. CB1 switch does not trip. If it does, go to chart 2. DMM reads 26 to 29 V dc. If not, go to chart 3.

Step 2. VOLUME CONTROL CHECK.

Action	Response
a. Set CAL: FCTN GEN. FREQ: 1000 Hz (900 to 1100 Hz) LEVEL: 3.4 V p-p (3.2 to 3.6 V p-p). Set FCTN: SINE. Set CAL: OFF. Set STIM SEL: FCTN GEN.	a. A 1-kHz tone is heard over speaker. If not, go to chart 4.
b. Adjust speaker VOL control setting.	b. Volume varies. If not, the speaker case/flexible cable assembly is bad.
c. Set RESP SEL: S1. Set LOAD: 1. Set TEST EQPT SELECTOR: SCOPE. Read scope.	c. Scope CH1 displays a 1-kHz sine wave. If not, go to chart 5. Adjust speaker VOL control setting until scope displays an 800 mV p-p, 1 kHz sine wave. NOTE Do not change VOL control setting again until after step 2 h.
d. Set CAL: FCTN GEN. FREQ: 400 Hz (360 to 440 Hz) LEVEL: 3.4 V p-p (3.2 to 3.6 V p-p). Set FCTN: SINE. Set CAL: OFF. Read scope.	d. A 400-Hz tone is heard over speaker. If not, go to chart 6. Scope CH1 displays a 400-Hz sine wave at same amplitude as in step c. If not, the rear cover assembly is bad.

16-9. OPERATIONAL CHECK. Continued

Step 2. VOLUME CONTROL CHECK. Continued

Action	Response
e. Set CAL: FCTN GEN. FREQ: 3 kHz (2700 to 3300 Hz) LEVEL: 3.4 V p-p (3.2 to 3.6 V p-p). Set FCTN: SINE. Set CAL: OFF. Read scope.	e. A 3-kHz tone is heard over speaker. If not, go to chart 7. Scope CH1 displays a 3-kHz sine wave at same amplitude as in step c. If not, the rear cover assembly is bad.
f. Set PTT: UUT.	f. A 3-kHz tone is NOT heard over speaker. If it is, go to chart 8.
g. Set PTT: OFF.	g. No response.
h. Push speaker VOL control in.	h. A 3-kHz tone is NOT heard over speaker. If it is, go to chart 9.
i. Set CAL: FCTN GEN. FREQ: 1000 Hz (900 to 1100 Hz) LEVEL: 4 mV p-p (3 to 5 mV p-p). Set FCTN: SINE. Set CAL: OFF, Set LOAD: OFF. Set STIMULUS: 1. Set RESPONSE: 3. Set RESP SEL: S2. Read scope.	i. Scope CH 1 displays a 200 to 800 mV p-p, 1-kHz sine wave. If not, go to chart 10.
j. Set CAL: FCTN GEN. FREQ: 400 Hz (360 to 440 Hz) LEVEL: 4 mV p-p (3 to 5 mV p-p). Set FCTN: SINE. Set CAL: OFF. Read scope.	j. Scope CH 1 displays a 200 to 800 mV p-p, 400-Hz sine wave. If not, the rear cover assembly is bad.
k. Set CAL: FCTN GEN. FREQ: 3 kHz (2700 to 3300 Hz) LEVEL: 4 mV p-p (3 to 5 mV p-p). Set FCTN: SINE. Set CAL: OFF. Read scope.	k. Scope CH 1 displays a 200 to 800 mV p-p, 3-kHz sine wave. If not, the rear cover assembly is bad.
l. Operational Check is complete.	

16-10. TROUBLESHOOTING.

Troubleshooting is done on a faulty LS-671/VRC. The steps to determine if a LS-671/VRC is faulty and how to troubleshoot it are as follows:

a. **When an LS-671/VRC is received from unit maintenance, inspect it for damage.** Repair any damage before proceeding with testing. See section IV if repairs are necessary.

b. **Verify the symptom.** Perform the operational check found in paragraph 16-9. This will direct you to the correct troubleshooting flowchart or identify the fault.

c. **Troubleshoot the LS-671/VRC using the flowchart.** It will identify the defective module or component.

d. **Replace the defective module or component.** Follow the procedures in section IV.

e. **Verify the repair.** Repeat the operational check in paragraph 16-9 that failed. If it passes, then continue with the rest of the operational check. When the operational check is passed, the LS-671/VRC can be returned for use.

The flowcharts provide views of speaker CCA test points. These test points are used to fault isolate to a defective component. See figure 16-3 for the overall layout of the speaker CCA and test points.

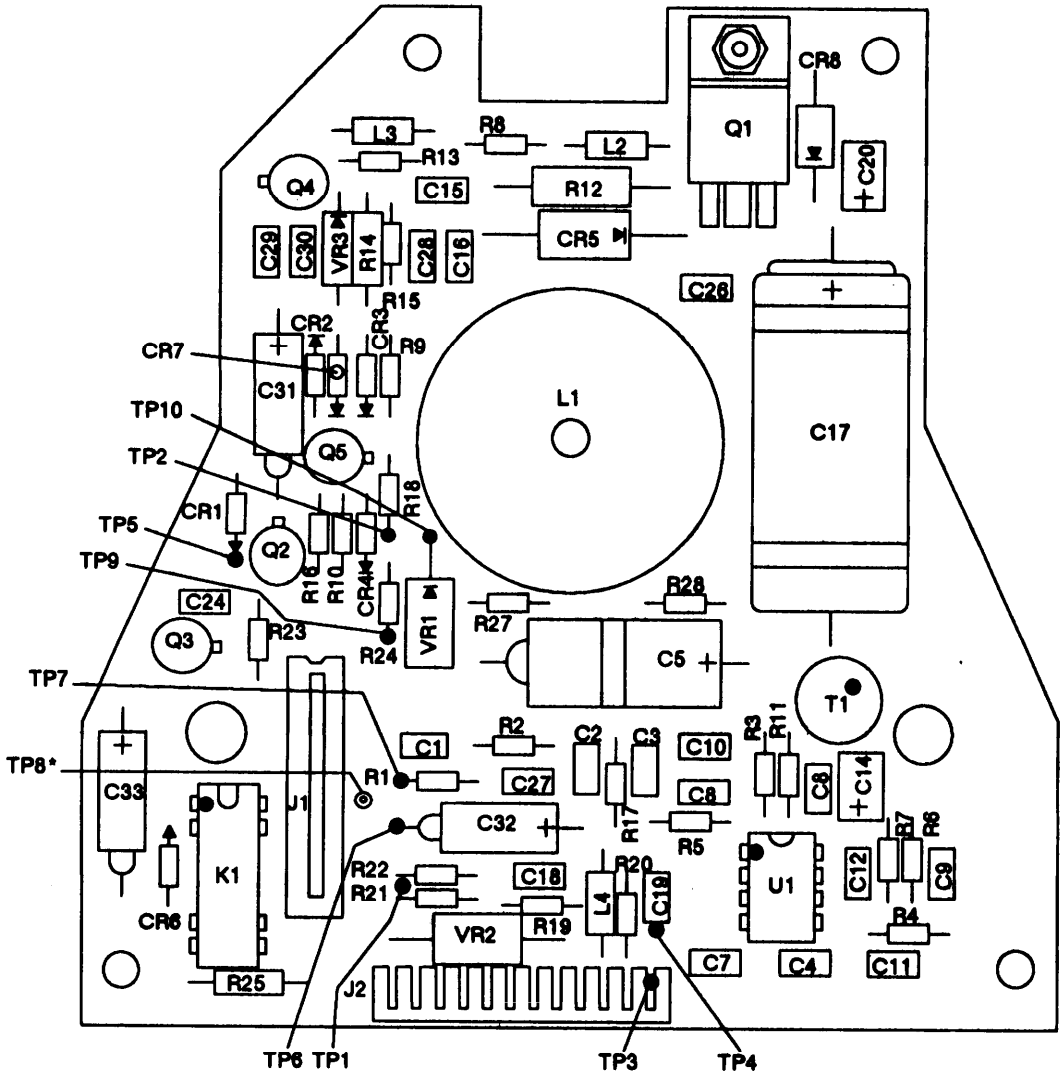
16-11. TEST PRECAUTIONS AND NOTES.

WARNING

Set the test power supply to OFF before connecting or disconnecting a test setup. Current capacities are large enough to cause personal injury. Equipment can also be damaged if care is not taken.

NOTE

The Principles of Operation section, functional block diagrams, and schematic diagram figure FO-30 can be used to help fault isolate any unusual problems that might not be covered in the troubleshooting procedures.



*TP8 IS A THRU HOLE OF THE PC BOARD, NOT A COMPONENT.

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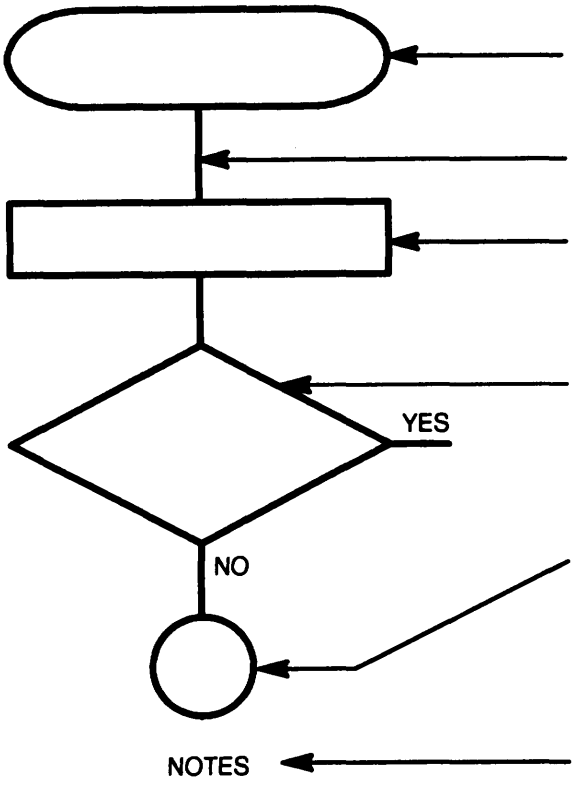
Figure 16-3. Speakor CCA Test Points

16-12. EXPLANATION OF SYMBOLS AND NOTES.

SYMBOL



EXPLANATION

Test Procedure Start: (Rectangle with rounded sides) Indicates start of the test procedure and contains a brief description of the symptom of trouble.

Test Procedure Flow Line: (Heavy line) Indicates direction of the procedure flow.

Test Procedure Instruction: (Rectangle) Provides test setup or instructions for doing a specific test.

Decision: (Diamond) Indicates that a decision must be made (YES or NO) in answer to question about the previous test. Path taken depends on the answer (YES or NO).

Connector: (Circle) Directs user to an entry point of another chart. Contains an entry number that is the same as entry number of other chart and a sheet number (Sh. No.) that indicates the number of follow-on pages.

Notes Column: Presents additional information, such as: more specific instructions about how to do a test, cautions and warnings that must be observed when doing a test, and additional information about what to do after doing a test. Also provides reference to appropriate circuit diagrams.

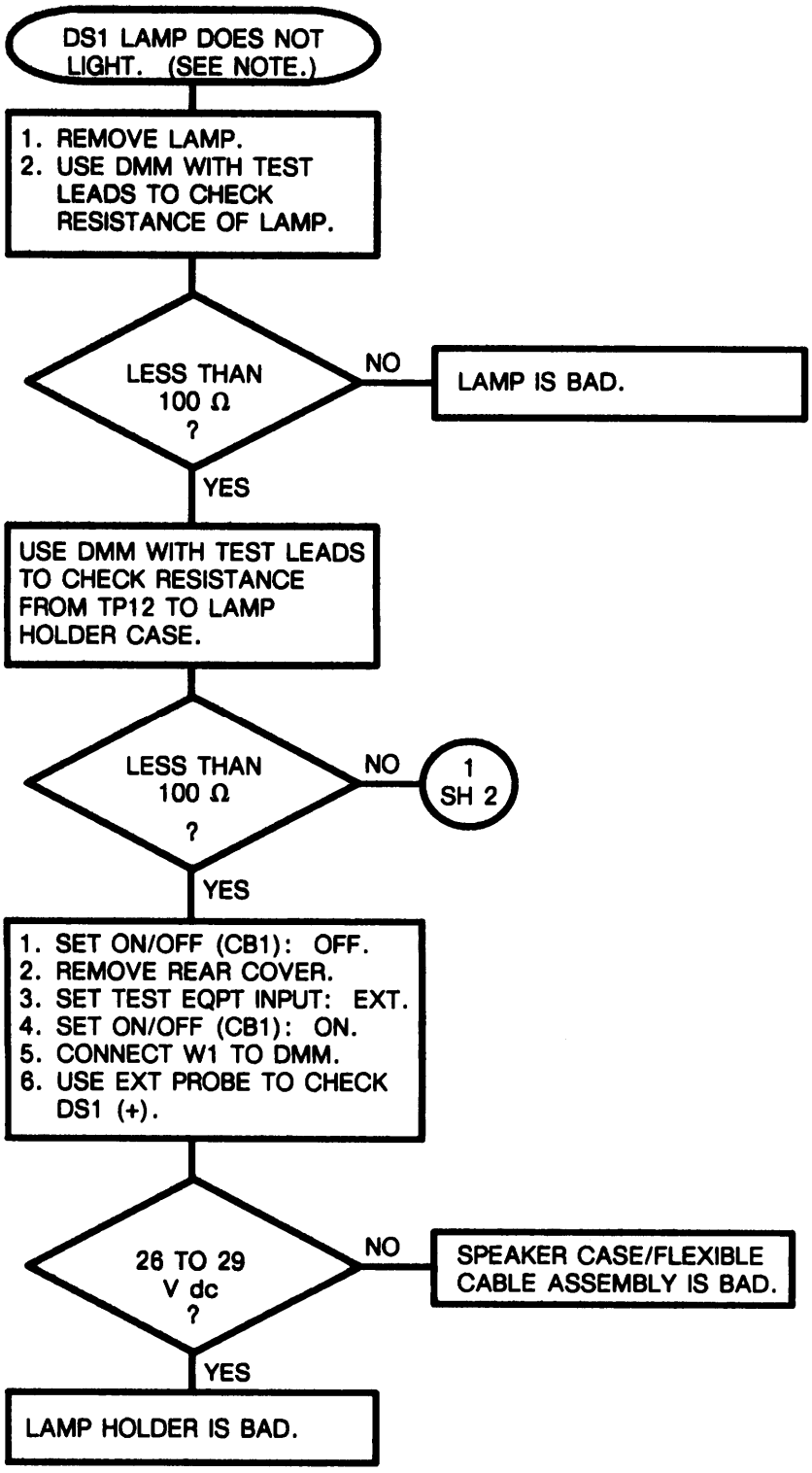
16-13. TROUBLESHOOTING FLOWCHARTS.

The following charts are included:

Chart	Symptom
1	DS1 lamp does not light.
2	ON/OFF switch (CB1) trips.
3	DMM does not read 26 to 29 V dc.
4	No tone is heard over speaker.
5	No RCV audio is at handset connector.
6	400-Hz tone is not heard.
7	3-kHz tone is not heard.
8	Tone is heard over speaker with PTT applied.
9	Tone is heard over speaker with VOL control pushed in.
10	No MIC audio.

16-13. TROUBLESHOOTING FLOWCHARTS. Continued

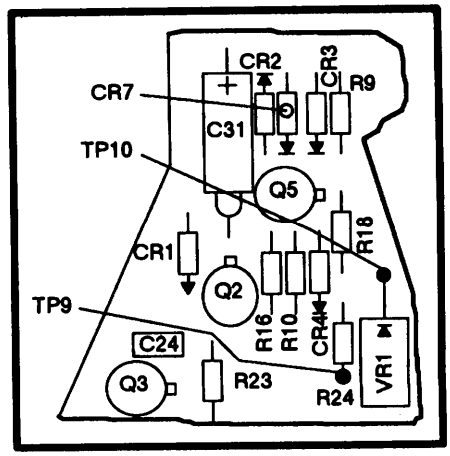
Chart 1
Troubleshooting DS1 POWER Indicator Lamp Circuit
(Sheet 1 of 3)



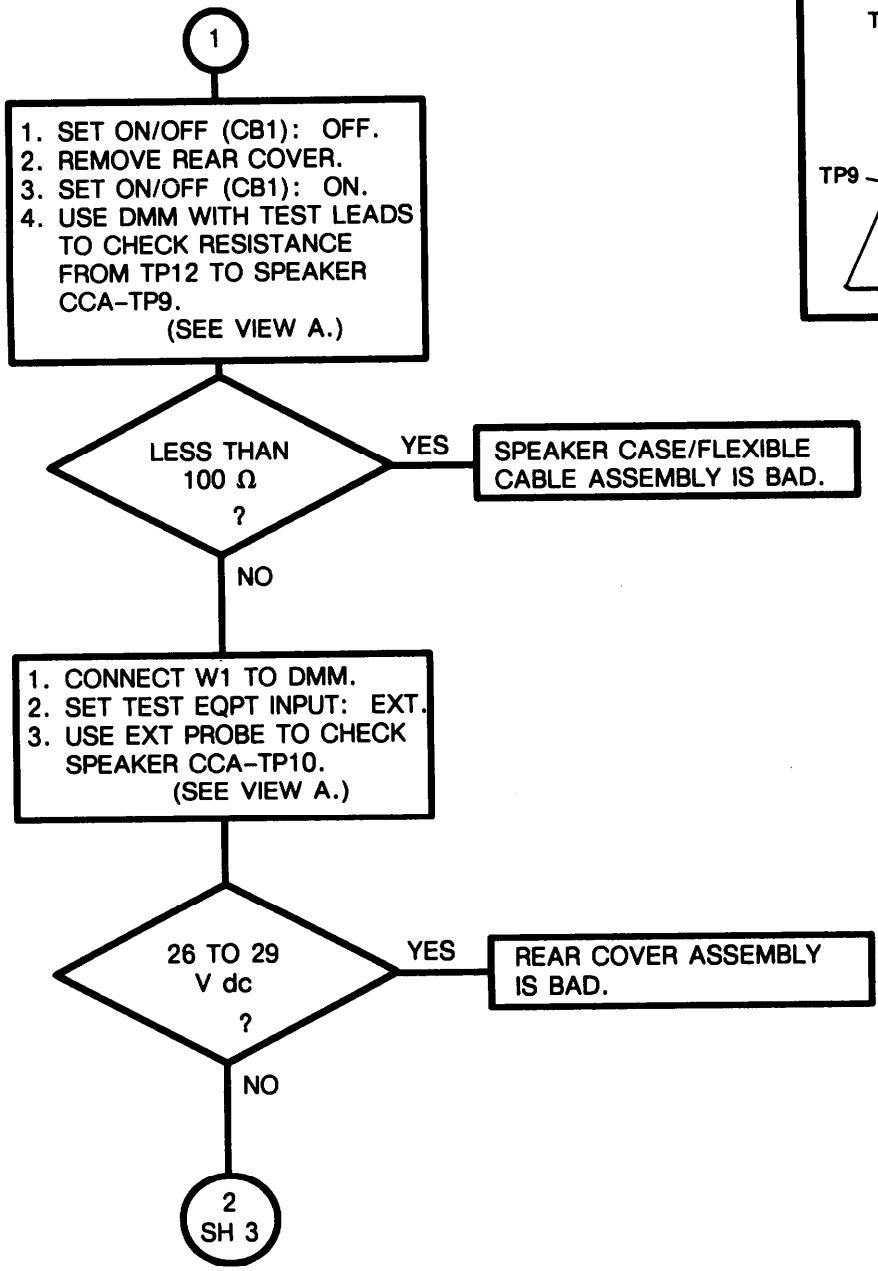
NOTE:
Refer to figure FO-30 for diagram of these circuits.

16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 1
Troubleshooting DS1 POWER Indicator Lamp Circuit
(Sheet 2 of 3)

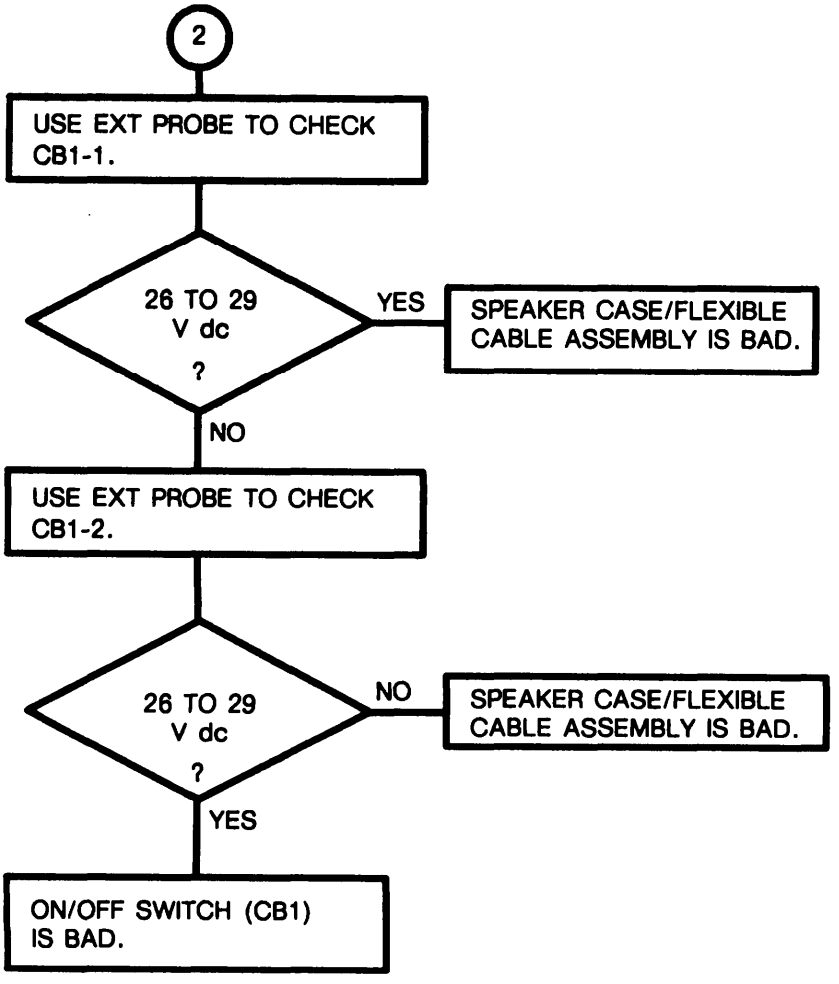


VIEW A



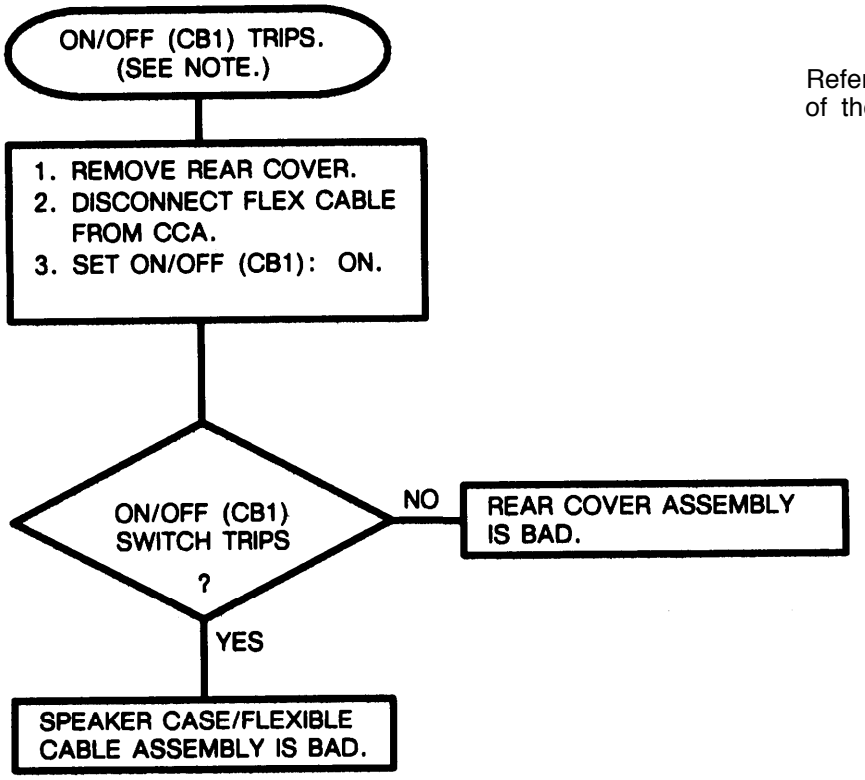
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 1
Troubleshooting DS1 POWER Indicator Lamp Circuit
(Sheet 3 of 3)



16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 2
Troubleshooting ON/OFF Switch (CB1)
(Sheet 1 of 1)

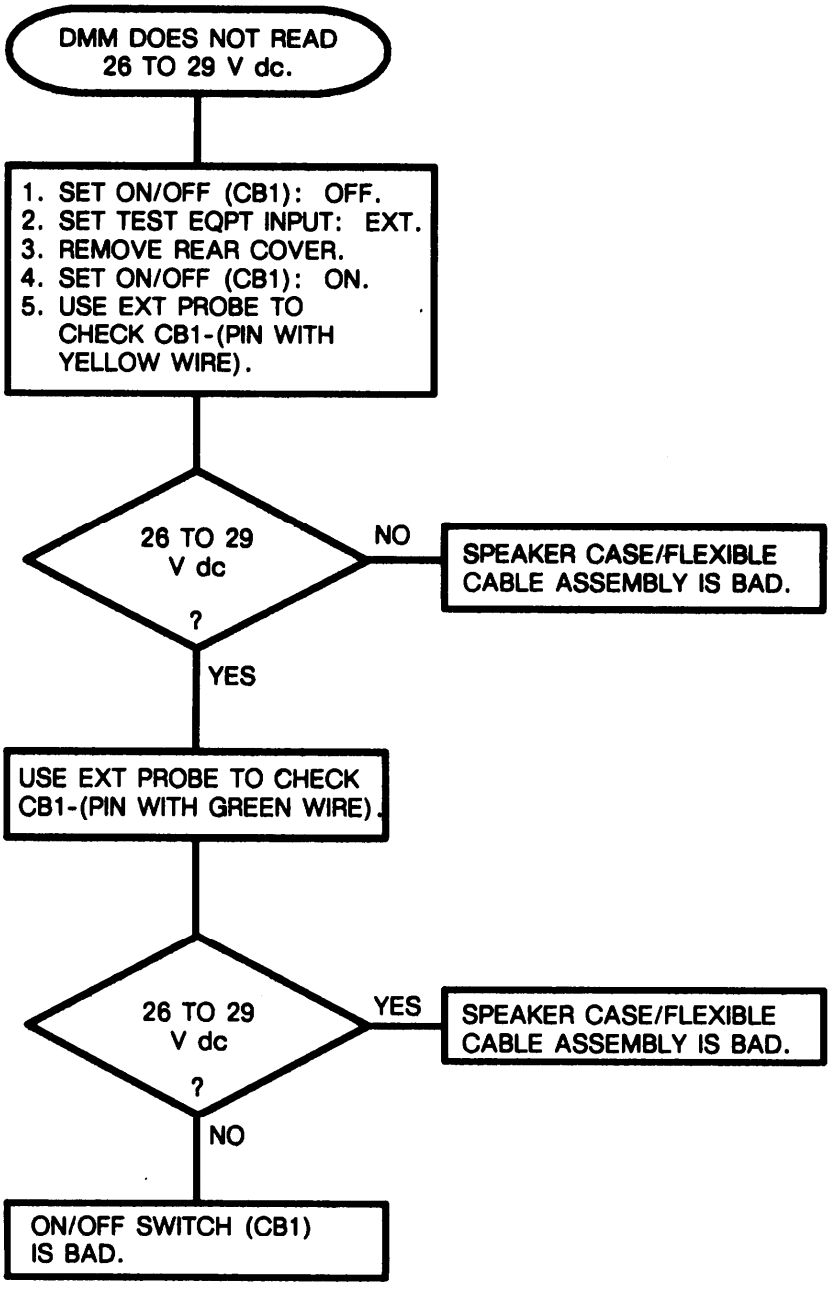


NOTE:

Refer to figure FO-30 for diagram of these circuits.

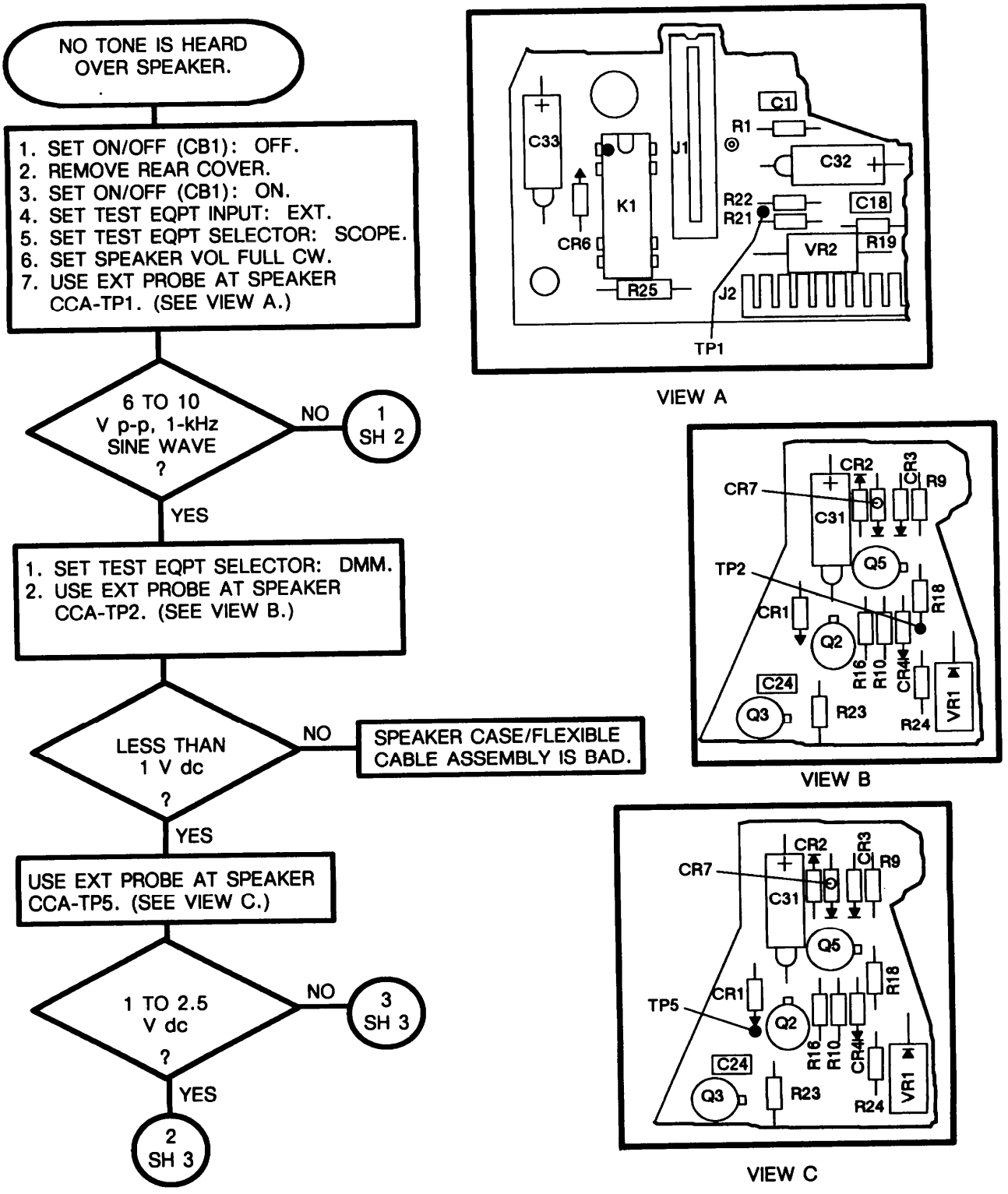
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 3
Troubleshooting SW +27.5 V dc Power Circuit
(Sheet 1 of 1)



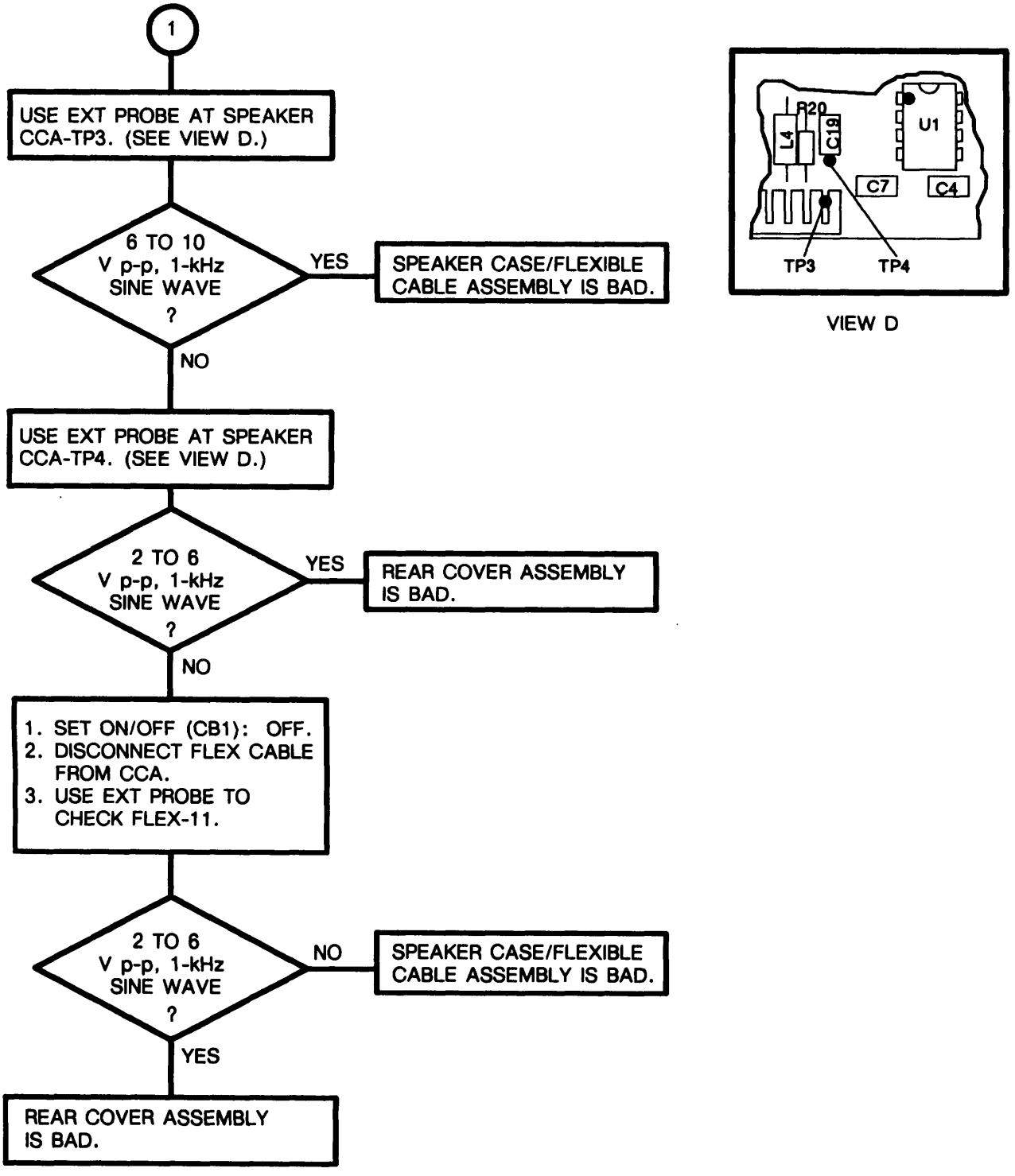
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 4
Troubleshooting Speaker Circuit
(Sheet 1 of 3)



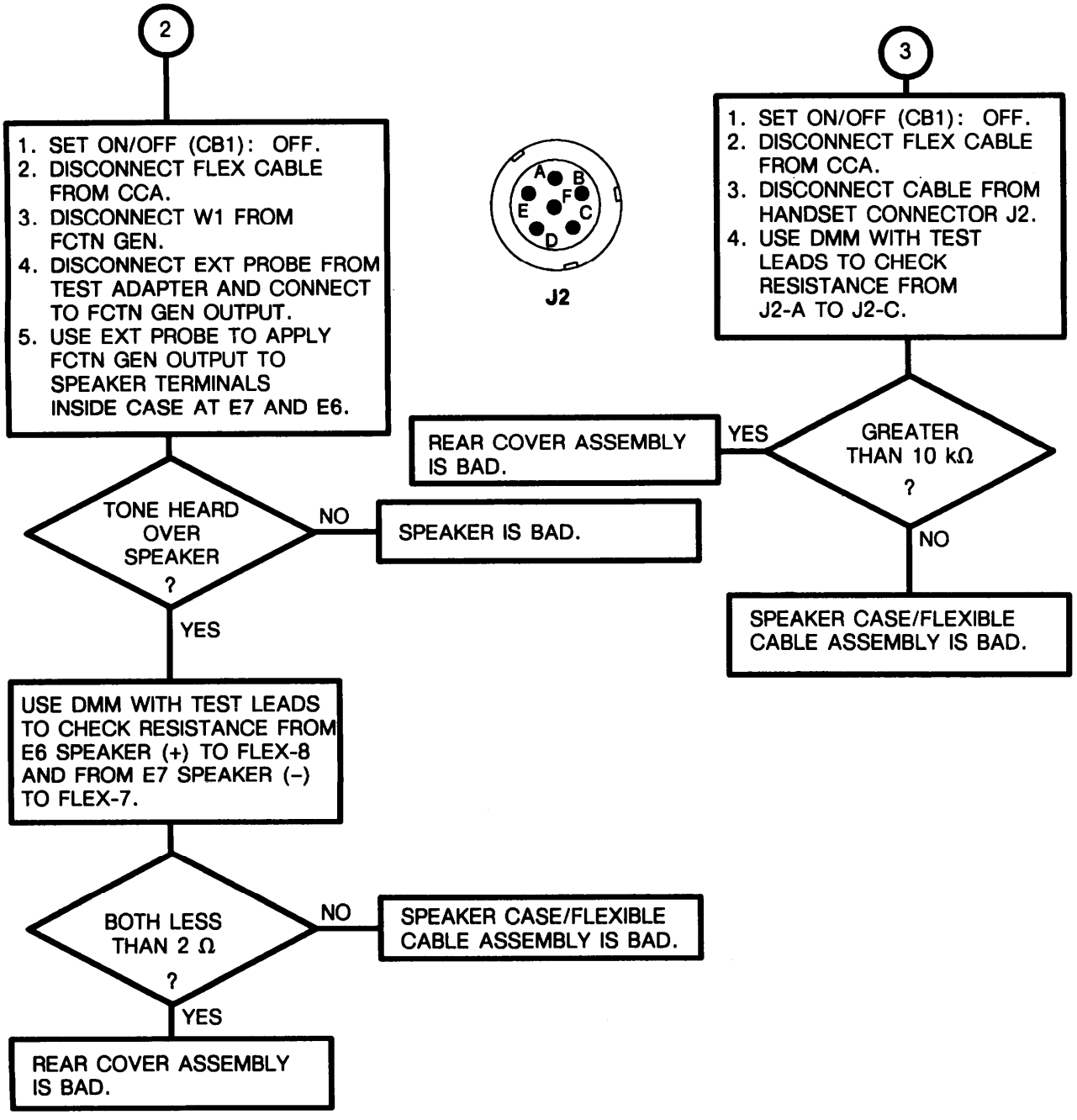
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 4
Troubleshooting Speaker Circuit
(Sheet 2 of 3)



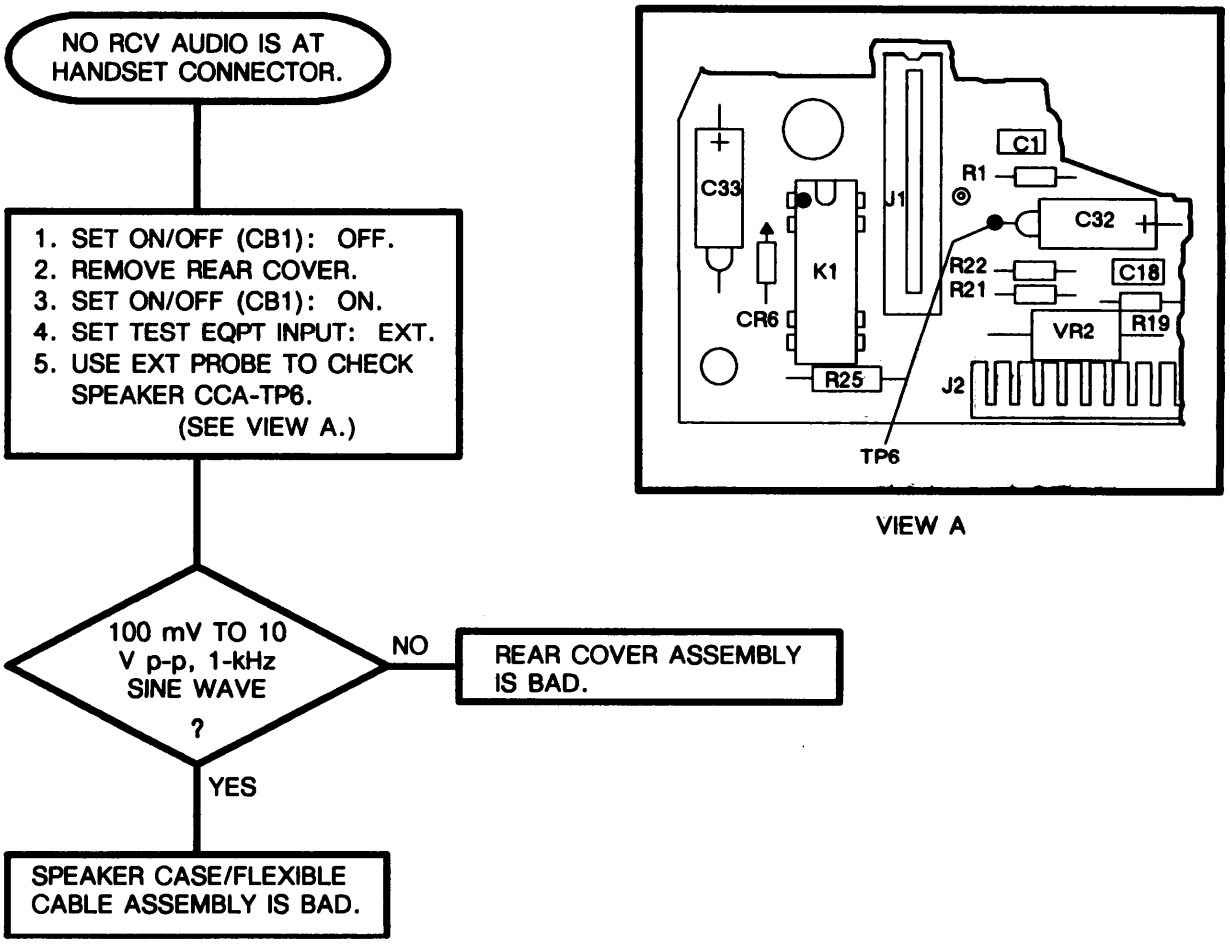
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 4
Troubleshooting Speaker Circuit
(Sheet 3 of 3)



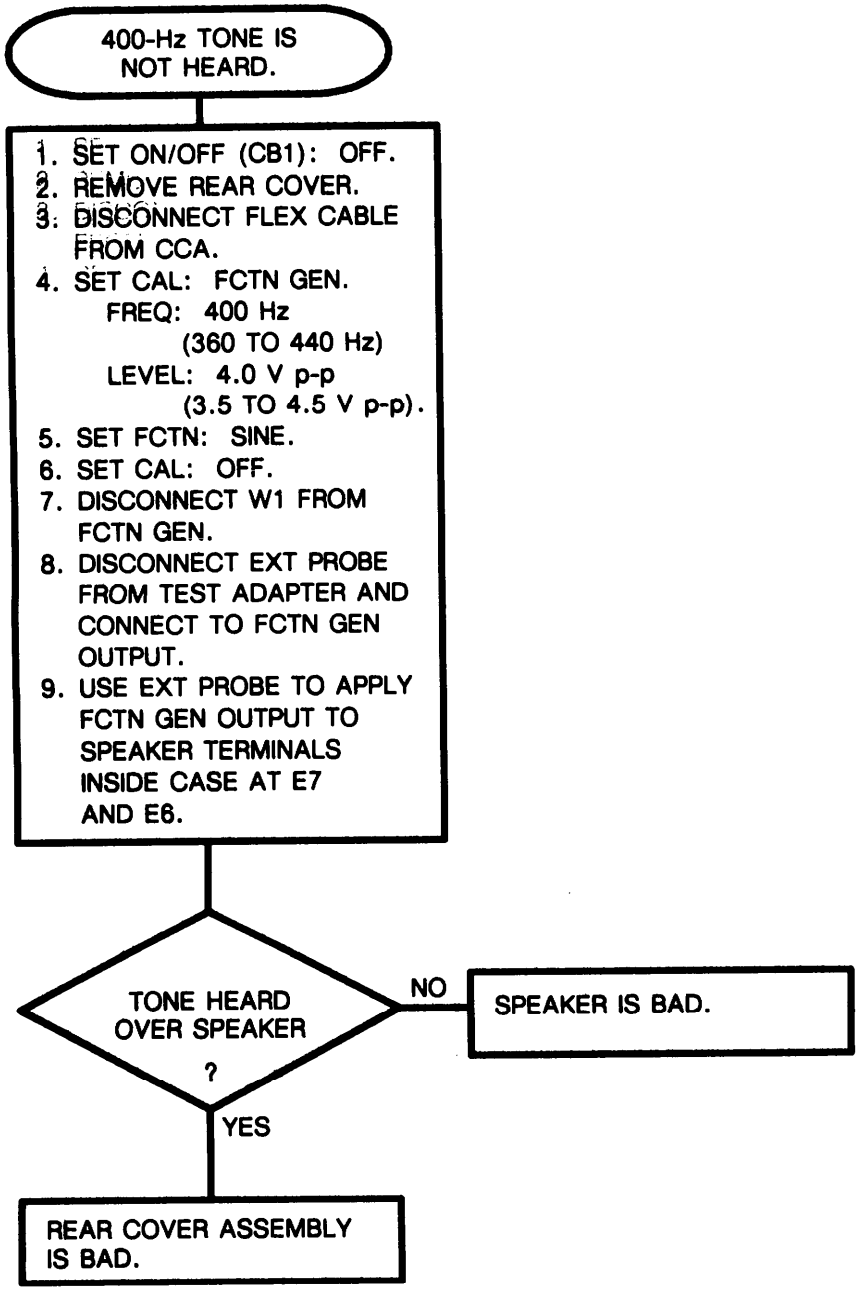
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 5
Troubleshooting Handset Circuitry
(Sheet 1 of 1)



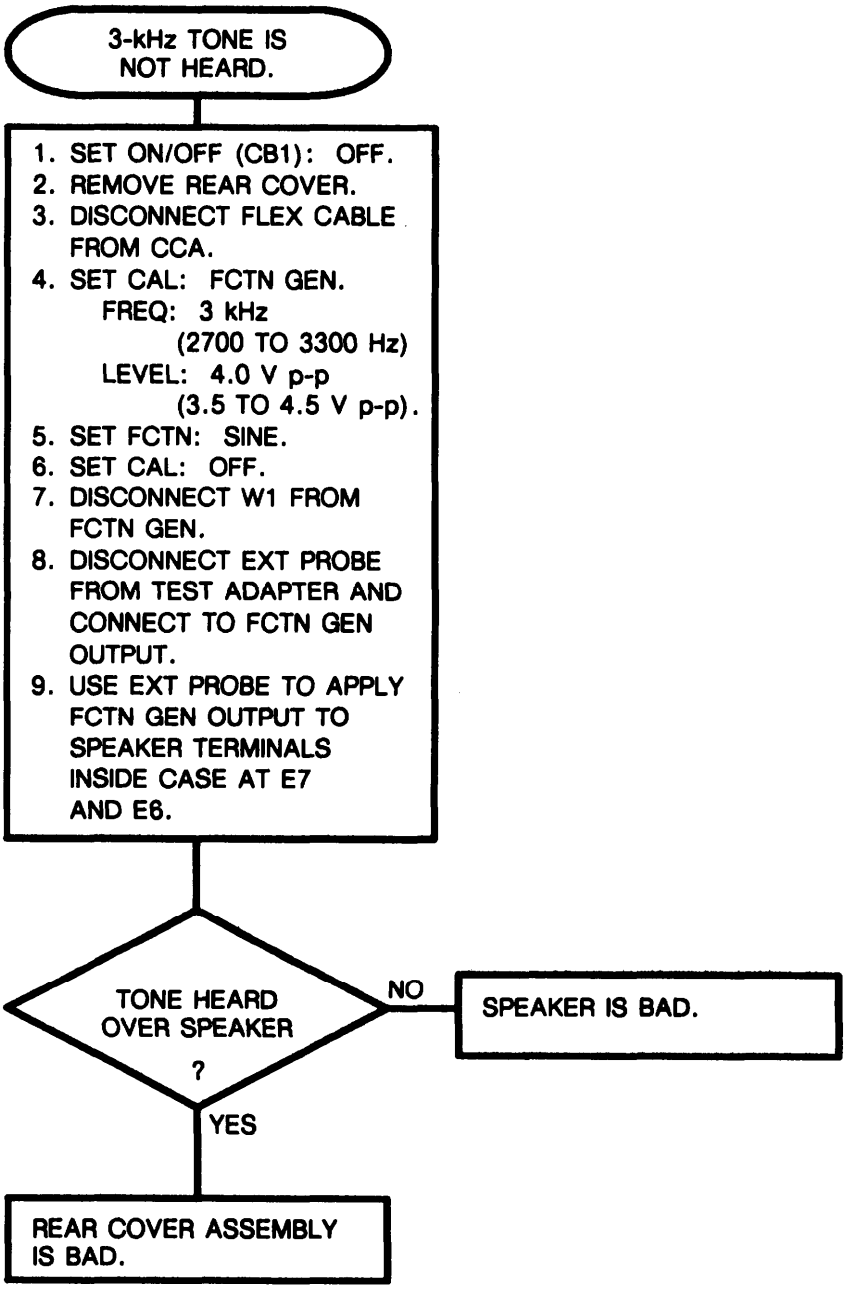
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 6
Troubleshooting Speaker
(Sheet 1 of 1)



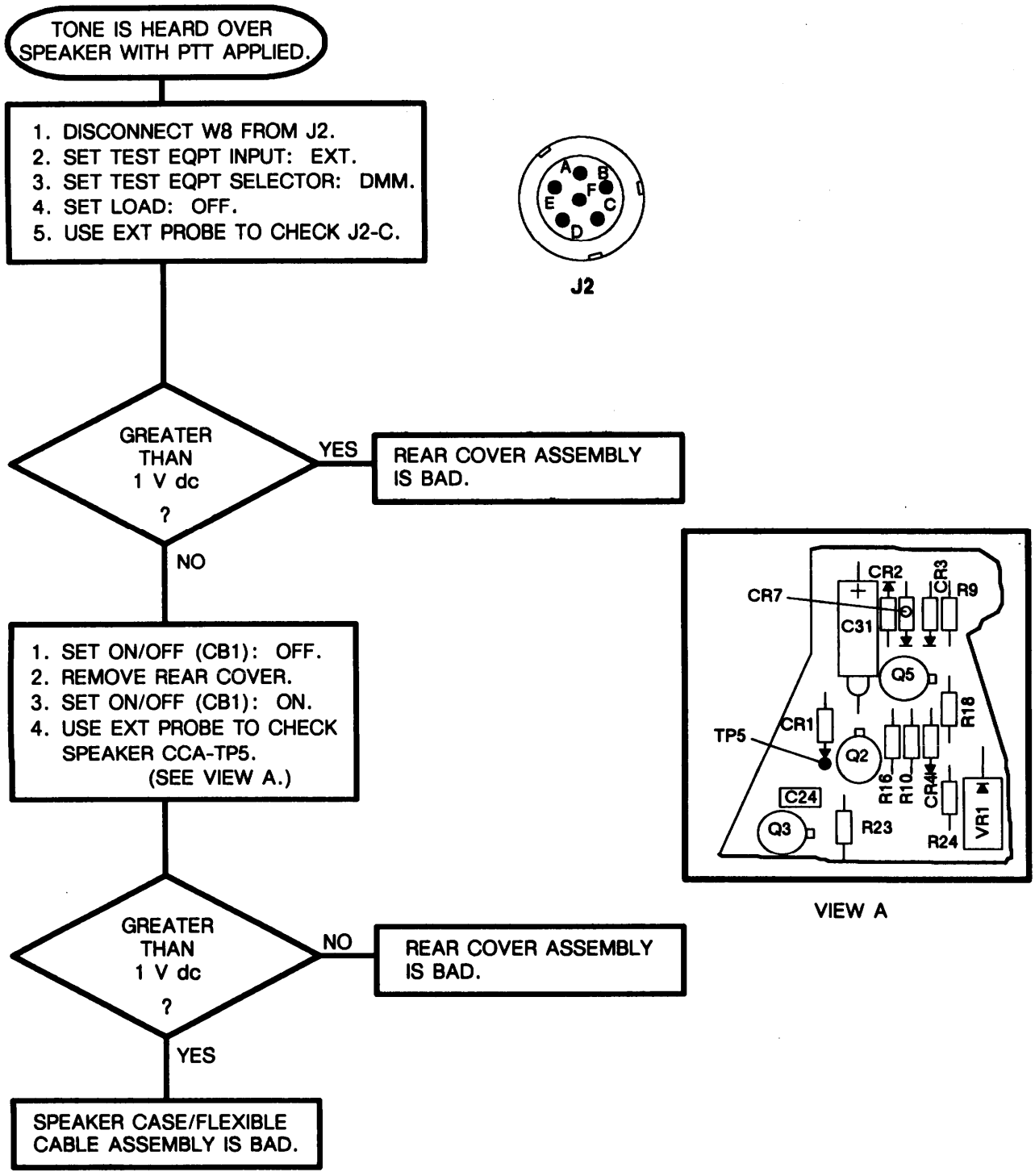
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 7
Troubleshooting Speaker
(Sheet 1 of 1)



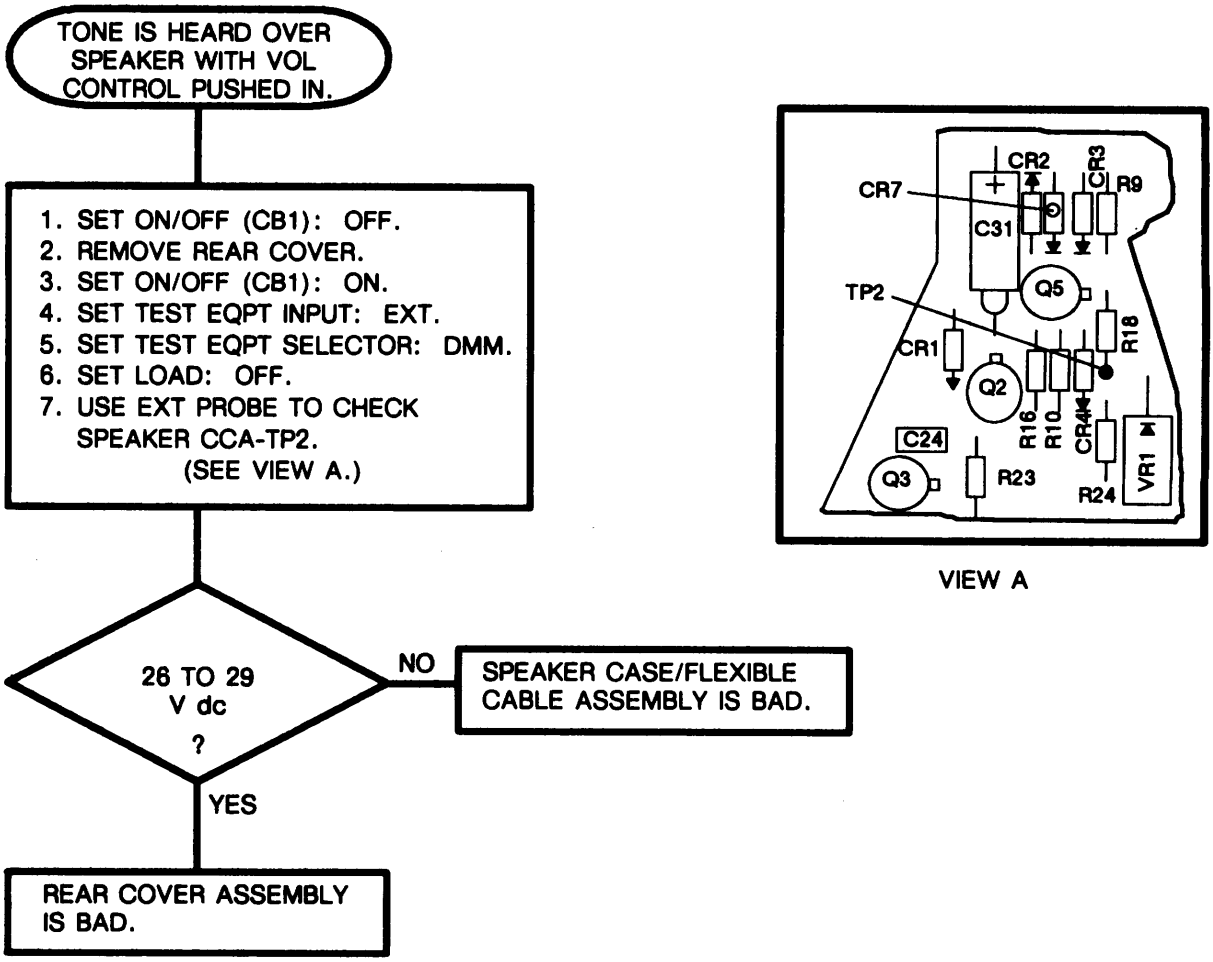
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 8
Troubleshooting PTT Circuit
(Sheet 1 of 1)



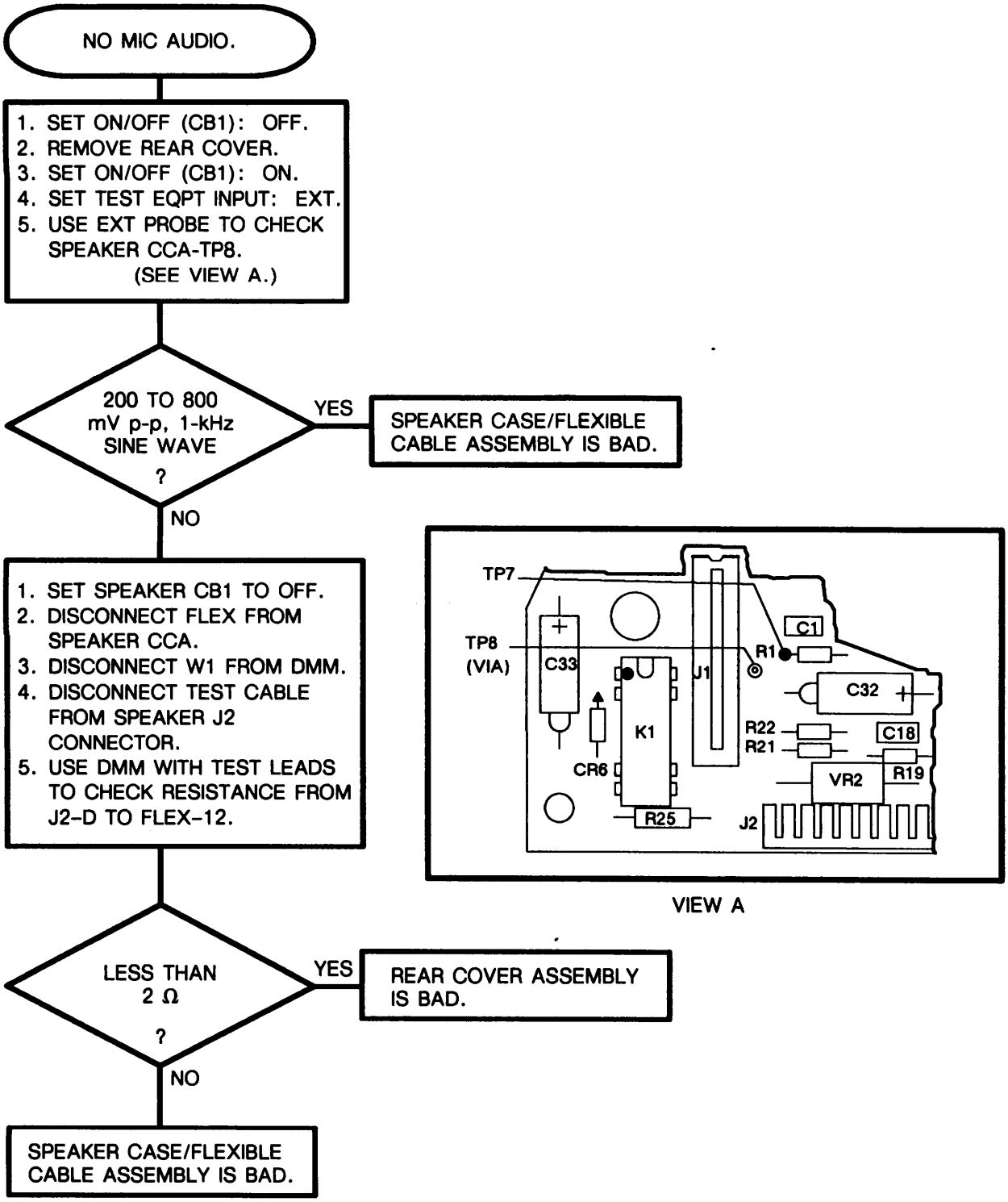
16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 9
Troubleshooting Mute Circuit
(Sheet 1 of 1)



16-13. TROUBLESHOOTING FLOWCHARTS. Continued

Chart 10
Troubleshooting MIC Audio Circuit
(Sheet 1 of 1)



Section IV. MAINTENANCE PROCEDURES

16-14. GENERAL.

This section includes the operational check and the repair procedures. The operational check is used to verify the operation of a repaired LS-671/VRC. It is also used to verify the symptom of a faulty LS-671/VRC. It will identify the troubleshooting chart to be used. When a bad module is identified, replace it using the procedure in this section.

16-15. OPERATIONAL CHECK.

Perform the operational check found in paragraph 16-9 to verify proper operation of the LS-671/VRC.

16-16. REPAIR INSTRUCTIONS.

The following instructions apply to all repair tasks unless otherwise noted in the procedure.

a. Begin procedure with the LS-671/VRC ON/OFF switch (CB1) set to OFF.

b. Disconnect any external cables connected to the LS-671/VRC.

c. Inspect the LS-671/VRC. Replace the LS-671/VRC case/flexible cable assembly, if the LS-671/VRC is physically damaged, such as with a broken connector.

CAUTION

Steps marked with **HCP** must be performed exactly as written. They are critical in maintaining the nuclear hardness of the LS-671/VRC. Seals must not be damaged. All screws must be torqued to the limits specified in the replacement procedures.

d. The LS-671/VRC must be tested after replacement of a module or component.

16-17. REPLACEMENT OF REAR COVER ASSEMBLY (15A1).

Tools:

Cross tip screwdriver Torque screwdriver

ITEM	ACTION	REMARKS
REMOVAL		
a. LS-671/VRC	Set upside down on work surface with bottom connector (J1) toward you.	See figure 16-4.
b. Eight screws and flat washers (2)	Using cross tip screwdriver, remove and retain eight screws and flat washers securing rear cover assembly (1) to case (3).	
c. Flexible cable (4)	Turn rear cover assembly over. Lift up on outside of flexible cable connector mounted on LS-671/VRC CCA and remove flexible cable (4) (shown in the cutout area of front view) from LS-671/VRC CCA connector.	
d. Rear cover assembly (1)	Remove and discard defective rear cover assembly.	

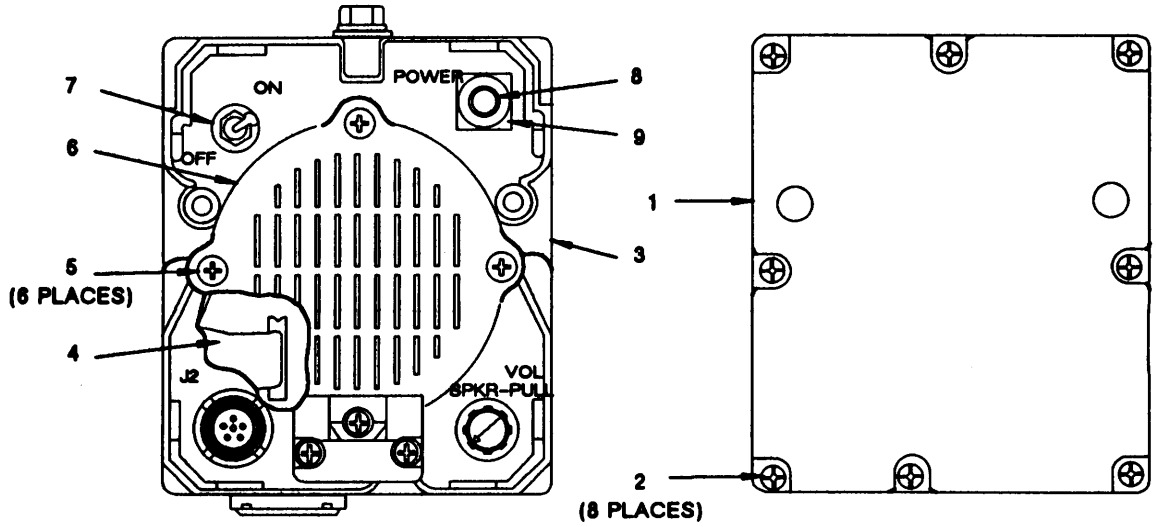


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Figure 16-4. Loudspeaker-Control Unit LS-671/VRC (Front and Rear Views).

16-17. REPLACEMENT OF REAR COVER ASSEMBLY (15A1). Continued

ITEM	ACTION	REMARKS
INSTALLATION		
e. Rear cover assembly (1)	Obtain replacement rear cover assembly.	
f. Flexible cable (4)	Align and install flexible cable in LS-671/VRC CCA connector and push down on outside of connector to secure flexible cable. Turn rear cover assembly over and aline on case (3).	
g. HCP Eight screws and flat washers (2)	Using cross tip screwdriver, install and hand tighten eight retained screws and flat washers securing rear cover assembly (1) to case (3). Using torque screwdriver, torque screws to 15 in-lb.	

16-18. REPLACEMENT OF CASE/FLEXIBLE CABLE ASSEMBLY.

Tools:

Cross tip screwdriver	Soldering kit	1/16-inch allen wrench
Torque screwdriver		

Expendable Supplies:

Solder	Cotton swabs	Alcohol

References:

Paragraph 16-17 for removal and installation of the rear cover assembly (15A1).

ITEM	ACTION	REMARKS
REMOVAL		
a. Rear cover assembly (1)	Remove and retain rear cover assembly.	Refer to paragraph 16-17 for rear cover assembly removal instructions.
b. Six screws, flat washers (5), and speaker cover (6)	Using cross tip screwdriver, remove and retain six screws and flat washers securing speaker cover (6) to case (3). Remove and retain speaker cover.	See figure 16-4.

16-18. REPLACEMENT OF CASE/FLEXIBLE CABLE ASSEMBLY. Continued

ITEM	ACTION	REMARKS
REMOVAL Continued		
c. Two speaker terminals	Tag wire locations on case (3) speaker terminals. Using soldering kit, desolder tagged wires from speaker terminals.	See figure 16-4.
d. Case/flexible cable assembly (3 and 4)	Remove and discard defective case/flexible cable assembly.	
e. Set screw	Using 1/16 allen wrench, loosen set screw securing knob to VOL switch.	
f. VOL knob	Remove and retain VOL knob.	
g. Lens and lamp	Remove and retain lens and lamp from lampholder.	
INSTALLATION		
h. Case/flexible cable assembly (3 and 4)	Obtain replacement case/flexible cable assembly.	
i. VOL knob	Position VOL knob on VOL switch, aligning knob set screw with flat surface.	NOTE VOL control knob shaft must be pressed in before installing knob.
j. Set screw	Using 1/16 allen wrench, tighten set screw securing knob to VOL switch.	
k. Lens and lamp	Install retained lens and lamp in lampholder.	
l. Two speaker terminals	Using soldering Kit, attach and solder tagged wires to correct speaker terminal, and remove tags.	Before and after soldering, clean wires and speaker terminals with alcohol and cotton swabs.
m. Loudspeaker and speaker cover (6)	Install retained loudspeaker and speaker cover (6) in replacement case.	
n. Six screws and flat washers (5)	Using cross tip screwdriver, install and tighten six retained screws and flat washers securing loudspeaker and speaker cover (6) in replacement case (3).	
o. **HCP** Rear cover assembly (1)	Install retained rear cover assembly.	Refer to paragraph 16-17 for rear cover assembly installation instructions.

16-19. REPLACEMENT OF LOUDSPEAKER.

Tools:

Cross tip screwdriver
Soldering kit

Expendable Supplies:

Solder
Cotton swabs
Alcohol

ITEM	ACTION	REMARKS
REMOVAL		
a. LS-671/VRC	Set on work surface with bottom connector (J1) toward you.	See figure 16-4.
b. Six screws, flat washers (5), and speaker cover (6)	Using cross tip screwdriver, remove and retain six screws and flat washers securing speaker cover (6) to case (3).	
c. Speaker cover (6)	Remove and retain speaker cover.	
d. Loudspeaker	Lift the loudspeaker (6) out of case, and turn over.	
e. Two speaker terminals	Tag wire locations on speaker terminals. Using soldering kit, desolder tagged wires from speaker terminals.	
f. Loudspeaker	Remove and discard defective loudspeaker.	
INSTALLATION		
g. Loudspeaker	Obtain replacement loudspeaker.	
h. Two speaker terminals	Using soldering kit, attach and solder tagged wires to correct speaker terminals, and remove tags.	Before and after soldering, clean wires and speaker terminals with alcohol and cotton swabs.
i. Loudspeaker	Install the replacement loudspeaker in retained case (3).	
j. Speaker cover (6)	Install retained speaker cover on retained case (3).	
k. Six screws and flat washers (5)	Using cross tip screwdriver, install and tighten six retained screws and flat washers securing loudspeaker and speaker cover (6) to case (3).	

16-20. REPLACEMENT OF ON/OFF SWITCH (CB1).

Tools:

Cross tip screwdriver	1/2-inch combination wrench	Torque wrench
Torque screwdriver	Soldering kit	1/2-inch socket
Needle nose pliers		

Expendable Supplies:

Solder	Cotton swabs	Alcohol

References:

Paragraph 16-17 for removal and installation of the rear cover assembly (15A1).

ITEM	ACTION	REMARKS
REMOVAL		
a. Rear cover assembly (1)	Remove and retain rear cover assembly.	Refer to paragraph 16-17 for rear cover assembly removal instructions. See figure 16-4.
b. ON/OFF switch (CB1) (7) terminals	Tag the wire locations on CB1 terminals. Using soldering kit, desolder tagged wires from CB1 terminals.	
c. ON/OFF switch (CB1) (7), hex nut, switch plate, and lock ring	Using 1/2-inch combination wrench, remove and discard hex nut, switch plate, and lock ring securing CB1 to case (3).	Replacement nut, plate, and lock ring are supplied with replacement CB1.
d. ON/OFF switch (CB1) (7)	Remove and discard defective ON/OFF switch (CB1) (7).	
INSTALLATION		
e. ON/OFF switch (CB1) (7)	Obtain replacement ON/OFF switch (CB1).	
f. HCP ON/OFF switch (CB1) (7), hex nut, switch plate, and lock ring	Using 1/2-inch combination wrench, install and hand tighten replacement hex nut, switch plate, and lock ring securing CB1 to case (3). Using torque wrench and 1/2-inch socket, torque nut to 10 in-lb.	
g. ON/OFF switch (CB1) (7) terminals	Using soldering equipment and needle nose pliers, attach and solder tagged wires to correct CB1 terminals, and remove wire tags.	Before and after soldering, clean wires and switch terminals with alcohol and cotton swabs.
h. HCP Rear cover assembly (1)	Install retained rear cover assembly.	Refer to paragraph 16-17 for rear cover assembly installation instructions.

16-21. REPLACEMENT OF POWER LAMP HOLDER (DS1).

Tools:

Cross tip screwdriver	9/16-inch wrench	Torque wrench
Torque screwdriver	Soldering kit	9/16-inch socket

Expendable Supplies:

Solder	Cotton swabs	Alcohol

References:

Paragraph 16-17 for removal and installation of the rear cover assembly (15A1).

ITEM	ACTION	REMARKS
REMOVAL		
a. Rear cover assembly (1)	Remove and retain rear cover assembly.	Refer to paragraph 16-17 for rear cover assembly removal instructions. See figure 16-4.
b. Light lens and lamp (8)	Remove and inspect light lens and lamp for damage. If damaged, obtain replacement.	
c. POWER lamp holder (DS1) (9) leads	Tag wire locations on lamp holder leads. Using soldering kit, desolder tagged wires from lamp holder leads.	
d. POWER lamp holder (9), hex nut, and lockwasher	Using 9/16-inch wrench, remove and discard hex nut and lockwasher securing lamp holder to case (3).	Replacement nut and lockwasher are supplied with replacement lamp holder.
e. POWER lamp holder (9)	Remove and discard defective lamp holder.	
INSTALLATION		
f. POWER lamp holder (9)	Obtain replacement lamp holder.	
g. HCP POWER lamp holder (9), hex nut, and lockwasher	Using 9/16-inch wrench, install and hand tighten hex nut and lockwasher securing lamp holder to case (3). Using torque wrench and 9/16-inch socket, torque nut to 15 in-lb.	
h. POWER lamp holder (9) leads	Using soldering kit, attach and solder tagged wires to correct lamp holder leads, and remove wire tags.	Before and after soldering, clean wires and lamp holder leads with alcohol and cotton swabs.
i. Light lens and lamp (8)	install and tighten retained light lens and lamp in lamp holder.	
j. HCP Rear cover assembly (1)	install retained rear cover assembly.	Refer to paragraph 18-17 for rear cover assembly installation instructions.

Section V. PREPARATION FOR STORAGE OR SHIPMENT

16-22. GENERAL INFORMATION.

Pack the LS-671/VRC and any removed modules in approved shipping containers.

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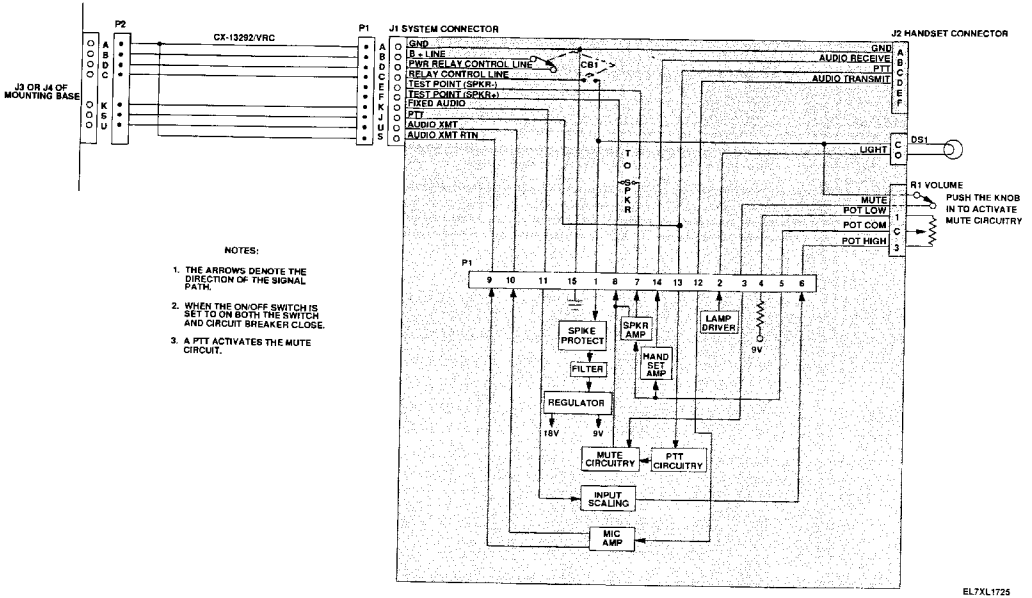

NOTES:

1. THE ARROWS DENOTE THE DIRECTION OF THE SIGNAL PATH.
2. WHEN THE ON/OFF SWITCH IS SET TO ON BOTH THE SWITCH AND CIRCUIT BREAKER CLOSE.
3. A PTT ACTIVATES THE MUTE CIRCUIT.

Figure FO-30. Loudspeaker-Control Unit LS-671/VRC Schematic Diagram FP-61/(FP-62 Blank)