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Capt USAF

**HANDBOOK  
MAINTENANCE INSTRUCTIONS**



**RADIO SETS  
SCR-522-A AND SCR-542-A**

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XAL P.63

AN 16-40SCR522-3

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**SAFETY NOTICE**

*This equipment employs high voltages which are dangerous and may be fatal if contacted by operating personnel. Extreme caution should be exercised when working with the equipment.*

## *Destruction of Abandoned Materiel in the Combat Zone*

In case it should become necessary to prevent the capture of this equipment and when ordered to do so, DESTROY IT SO THAT NO PART OF IT CAN BE SALVAGED, RECOGNIZED, OR USED BY THE ENEMY. BURN ALL PAPERS AND BOOKS.

*Means:—*

1. Explosives, when provided.
2. Hammers, axes, sledges, machetes, or whatever heavy object is readily available.
3. Burning by means of incendiaries such as gasoline, oil, paper, or wood.
4. Grenades and shots from available arms.
5. Burying all debris or disposing of it in streams or other bodies of water, where possible and when time permits.

*Procedure:—*

1. Obliterate all identifying marks. Destroy nameplates and circuit labels.
2. Demolish all panels, castings, switch- and instrument-boards.
3. Destroy all controls, switches, relays, connections, and meters.
4. Rip out all wiring and cut interconnections of electrical equipment. Smash gas, oil, and water-cooling systems in gas-engine generators, etc.
5. Smash every electrical or mechanical part, whether rotating, moving, or fixed.
6. Break up all operating instruments such as keys, phones, microphones, etc.
7. Destroy all classes of carrying cases, straps, containers, etc.
8. Bury or scatter all debris.

DESTROY EVERYTHING!



## *Unsatisfactory Report*

*For U. S. Army Air Force Personnel:*

In the event of malfunctioning, unsatisfactory design, or unsatisfactory installation of any of the component units of this equipment, or if the material contained in this book is considered inadequate or erroneous, an Unsatisfactory Report, AAF Form No. 54, or a report in similar form, shall be submitted in accordance with the provisions of Army Air Force Regulation No. 15-54, listing:

1. Station and organization.
2. Nameplate data (type number or complete nomenclature if nameplate is not attached to the equipment).
3. Date and nature of failure.
4. Radio model and serial number.
5. Remedy used or proposed to prevent recurrence.
6. Handbook errors or inadequacies, if applicable.

*For U. S. Navy Personnel:*

Report of failure of any part of this equipment during its guaranteed life shall be made on Form N. Aer. 4112, "Report of Unsatisfactory or Defective Material," or a report in similar form, and forwarded in accordance with the latest instructions of the Bureau of Aeronautics. In addition to other distribution required, one copy shall be furnished to the inspector of Naval Materiel (location to be specified) and the Bureau of Ships. Such reports of failure shall include:

1. Reporting activity.
2. Nameplate data.
3. Date placed in service.
4. Part which failed.
5. Nature and cause of failure.
6. Replacement needed (yes—no).
7. Remedy used or proposed to prevent recurrence.

*For British Personnel:*

Form 1022 procedure shall be used when reporting failure of radio equipment.

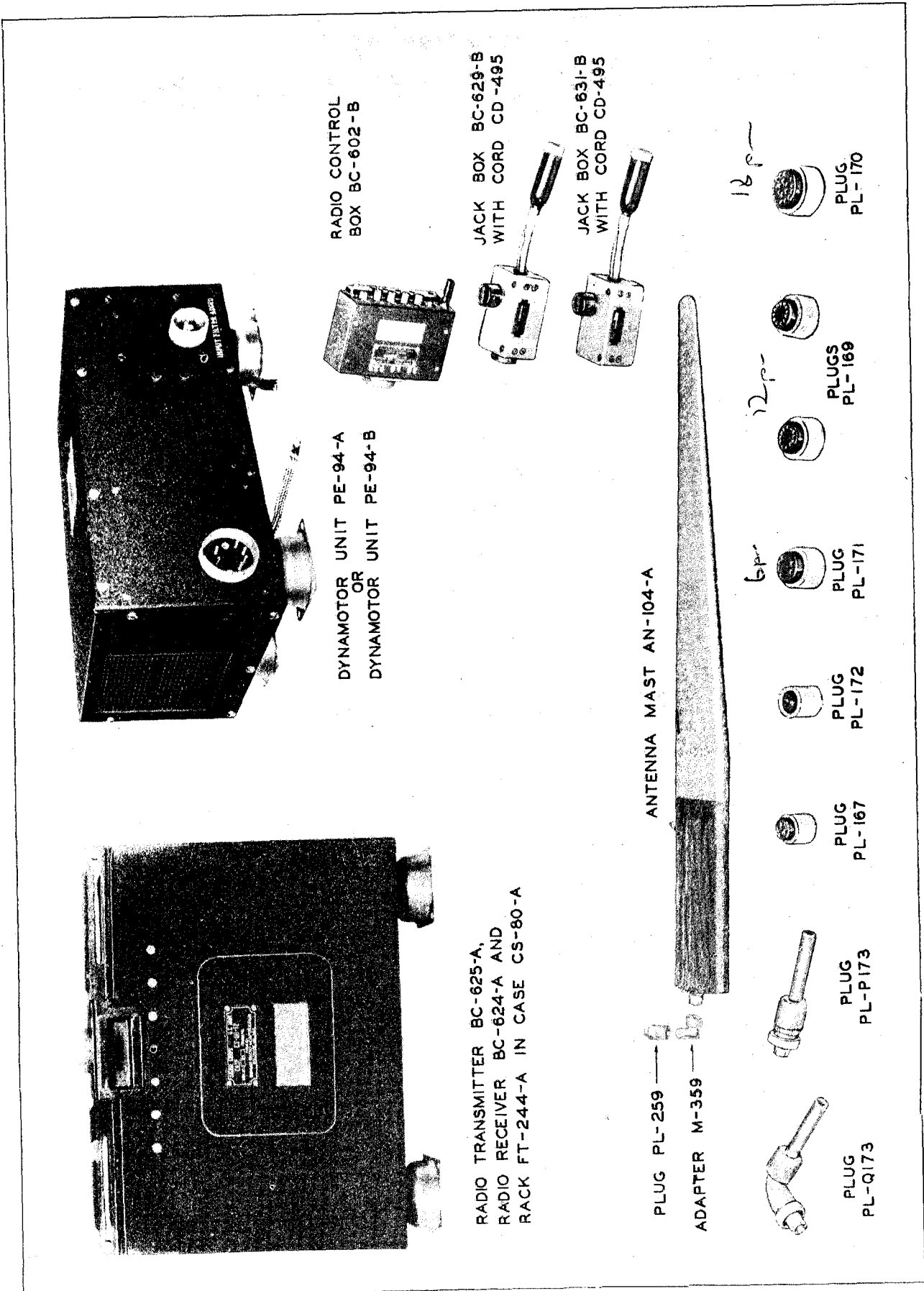


Figure 1-1. Radio Set SCR-522-A—Major Assemblies

## SECTION I GENERAL DESCRIPTION

**SPECIAL NOTICE**

*Radio Set SCR-522-A differs from Radio Set SCR-542-A only in the primary source of power and the dynamotor used. This handbook is written in terms of Radio Set SCR-522-A, but the information applies equally to all models unless otherwise specified in the text.*

### 1. GENERAL.

(See figure 1-1.)

a. Radio Set SCR-522-A is an airborne radio receiver-transmitter designed to provide two-way radio-telephone communication between aircraft in flight and between aircraft and ground stations.

b. The radio set operates on any one of four crystal-controlled channels lying within the frequency range of 100-156 megacycles. Selection of frequency is by remote control only.

c. Automatic continuous tone transmission on any channel is provided by the action of Contactor Unit BC-608-A for Radio Transmitter BC-625-AM, while continuous tone transmission on channel "D" only is provided by the action of the contactor unit for Radio Transmitter BC-625-A.

d. Radio Set SCR-522-A operates on 28 volts direct current at a total input current of 11.5 amperes for transmission and 11.1 amperes for reception. Radio Set SCR-542-A operates on 14 volts direct current at a total input

current of 23 amperes for transmission and 22.2 amperes for reception. The equipment will operate from an ungrounded power supply, but a grounded system is preferable.

**Note**

Contactor units are unsuited for operation from ungrounded power sources.

e. The transmitting ranges of Radio Set SCR-522-A, under typical conditions of communication between aircraft and ground station over level country, are as follows:

Altitude of Plane Above Terrain (feet)	Approximate Range (miles)
1,000	30
3,000	70
5,000	80
10,000	120
15,000	150
20,000	180

### 2. EQUIPMENT SUPPLIED.

The following equipment is supplied with Radio Set SCR-522-A.

Quantity	U. S. Signal Corps Description	British Air Ministry Description	British Ref. No.	Overall Dimensions (inches)	Weight (pounds)	Numerical Series of Reference Symbols
1	†Case CS-80-A or CS-80-C, containing: Radio Transmitter BC-625-A or BC-625-AM	†Case, Type TR. 5034, including: 1 Radio Transmitter Unit, Type T. 5017	†110D/145 110D/146	16 <sup>5</sup> / <sub>32</sub> x 12 <sup>0</sup> / <sub>16</sub> x 10 <sup>11</sup> / <sub>16</sub>	43 to 49*	100
	Radio Receiver BC-624-A or BC-624-AM or BC-624-C	1 Radio Receiver Unit, Type R. 5019	110D/147			200
	Rack FT-244-A	1 Rack, Type 5009	110D/148			400
	Set of vacuum tubes for the radio transmitter consisting of the following types:					

\*Lower weight due to use of aluminum in certain parts of some equipment.

## Section I

## Paragraph 2

AN 08-40SCR522-3

Quantity	U. S. Signal Corps Description	British Air Ministry Description	British Ref. No.	Overall Dimensions (inches)	Weight (pounds)	Numerical Series of Reference Symbols
	2 Tube JAN-832 3 Tube JAN-12A6 1 Tube JAN-6G6G ‡2 Tube JAN-6SS7 1 Set of vacuum tubes for radio receiver consisting of the following types: §1 Tube JAN-12J5GT 1 Tube JAN-12C8 1 Tube JAN-9002 3 Tube JAN-9003    2 Tube JAN-12AH7GT 3 Tube JAN-12SG7 ¶1 Tube JAN-12H6 **1 Tube JAN-12A6					
1	Mounting FT-488 (used with Case CS-80-C)			19 <sup>7</sup> / <sub>16</sub> x 12 <sup>1</sup> / <sub>16</sub> x 1/2	1.37	
1	Dynamotor Unit PE-94-A or PE-94-B or PE-94-C	Dynamotor Unit, Type 5016 Dynamotor Unit, Type 5016A Dynamotor Unit, Type 5016A	110K/248 110K/914 110K/1180	12 <sup>25</sup> / <sub>32</sub> x 8 <sup>27</sup> / <sub>32</sub> x 6 <sup>15</sup> / <sub>64</sub> 12 <sup>5</sup> / <sub>16</sub> x 8 <sup>27</sup> / <sub>32</sub> x 6 <sup>7</sup> / <sub>16</sub>	31.2 to 37.0*	300
1	Mounting FT-498 (used with Dynamotor Unit PE-94-C)			8 <sup>1</sup> / <sub>4</sub> x 12 <sup>25</sup> / <sub>32</sub> x 1/2	0.94	
1	Dynamotor Unit PE-98-A or PE-98-E or PE-98-F	Dynamotor Unit, Type 5015	110K/247	12 <sup>25</sup> / <sub>32</sub> x 8 <sup>27</sup> / <sub>32</sub> x 6 <sup>15</sup> / <sub>64</sub>	31.2 to 37.0	
1	Jack Box BC-629-AM or BC-629-B	Jack Box	110A/241	4 <sup>27</sup> / <sub>64</sub> x 2 <sup>29</sup> / <sub>64</sub> x 1 <sup>61</sup> / <sub>64</sub>	0.60	
1	Jack Box BC-631-A or BC-631-B	Jack Box	110A/243	4 <sup>3</sup> / <sub>16</sub> x 2 <sup>29</sup> / <sub>64</sub> x 1 <sup>61</sup> / <sub>64</sub>		
1	Plug PL-P167 or Plug PL-Q167 (may be used on Jack Box BC-629-B; not used on Jack Box BC-631-B) or Plug PL-167	Socket, Type W149 Socket, Type W150	10H/403 10H/404	2 <sup>5</sup> / <sub>8</sub> x 1 <sup>19</sup> / <sub>64</sub> dia. 2 <sup>1</sup> / <sub>64</sub> x 2 <sup>49</sup> / <sub>64</sub> x 1 <sup>19</sup> / <sub>64</sub> dia.	0.25 0.27	
1	Plug PL-P169 or Plug PL-Q169 or Plug PL-169	Socket, Type W161 Socket, Type W162	10H/415 10H/416	2 <sup>1</sup> / <sub>4</sub> x 1 <sup>21</sup> / <sub>32</sub> dia. 2 <sup>1</sup> / <sub>64</sub> x 2 <sup>15</sup> / <sub>16</sub> x 1 <sup>21</sup> / <sub>32</sub> dia. 1 <sup>21</sup> / <sub>32</sub> x 1 <sup>3</sup> / <sub>16</sub> dia.	0.13 0.29 0.31 0.19	
1	Plug PL-P170 or Plug PL-Q170 or Plug PL-170	Socket, Type W163 Socket, Type W164	10H/417 10H/418	2 <sup>1</sup> / <sub>4</sub> x 1 <sup>59</sup> / <sub>64</sub> dia. 2 <sup>5</sup> / <sub>32</sub> x 3 <sup>1</sup> / <sub>64</sub> x 1 <sup>59</sup> / <sub>64</sub> dia. 1 <sup>59</sup> / <sub>64</sub> x 1 <sup>23</sup> / <sub>64</sub> dia.	0.34 0.56 0.24	
1	Plug PL-P171 or Plug PL-Q171 or Plug PL-171	Socket, Type W159 Socket, Type W160	10H/413 10H/414	2 <sup>1</sup> / <sub>4</sub> x 1 <sup>21</sup> / <sub>32</sub> dia. 2 <sup>1</sup> / <sub>64</sub> x 2 <sup>15</sup> / <sub>16</sub> x 1 <sup>21</sup> / <sub>32</sub> dia. 1 <sup>21</sup> / <sub>32</sub> x 1 <sup>31</sup> / <sub>64</sub> dia.	0.30 0.29 0.19	
1	Plug PL-P172 or Plug PL-Q172 or Plug PL-172	Socket, Type W165	110H/459 10H/419	2 <sup>35</sup> / <sub>64</sub> x 1 <sup>19</sup> / <sub>64</sub> dia. 2 <sup>3</sup> / <sub>64</sub> x 2 <sup>19</sup> / <sub>32</sub> x 1 <sup>19</sup> / <sub>64</sub> dia. 1 <sup>30</sup> / <sub>64</sub> x 1 <sup>19</sup> / <sub>64</sub> dia.	0.28 0.29 0.17	
1	Plug PL-P173 or Plug PL-Q173	Plug, Type 156 Plug, Type 150	110H/584 110H/507	2 <sup>29</sup> / <sub>64</sub> x 1 <sup>1</sup> / <sub>4</sub> dia. 2 <sup>51</sup> / <sub>64</sub> x 2 <sup>7</sup> / <sub>8</sub> x 1 <sup>1</sup> / <sub>4</sub> dia.	0.21 0.35	
††1	Plug PL-259 or Plug PL-259-A		110H/1257	1 <sup>1</sup> / <sub>2</sub> x 3 <sup>3</sup> / <sub>4</sub> dia.	.05	
1	Radio Control Box BC-602-A, BC-602-B, or BC-602-D	Controller, Type 5003	110J/71	5 <sup>7</sup> / <sub>8</sub> x 5 <sup>9</sup> / <sub>16</sub> x 2 <sup>1</sup> / <sub>2</sub>	2.41	600

\* Lower weight due to use of aluminum in certain parts of some equipments.

† The nomenclature, Case CS-80-A, or Case CS-80-C does not include the radio receiver, radio transmitter and rack. However, Case CS-80-A, or CS-80-C houses the radio transmitter, radio receiver, and rack and is referred to throughout this book as "transmitter-receiver assembly". The British Air Ministry case, "British Type TR. 5043" (Reference Number 110D/145), includes the complete transmitter-receiver assembly.

‡ One only supplied on later models of Radio Transmitter BC-625-A and all models of Radio Transmitter BC-625-AM.

§ Not included in Radio Receiver BC-624-C.

¶ Only one of these tubes employed in Radio Receiver BC-624-A and BC-624-AM.

\* This tube used in Radio Receiver BC-624-AM and BC-624-C.

\*\* Used only in Radio Receiver BC-624-C.

†† Use Adapter M-359 when right-angled approach to antenna base is desired.



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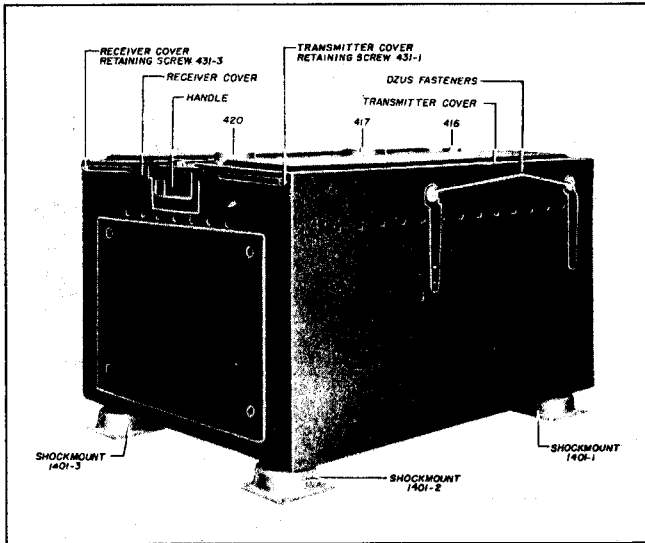


Figure 1-2. Transmitter-Receiver Assembly in Case CS-80-A

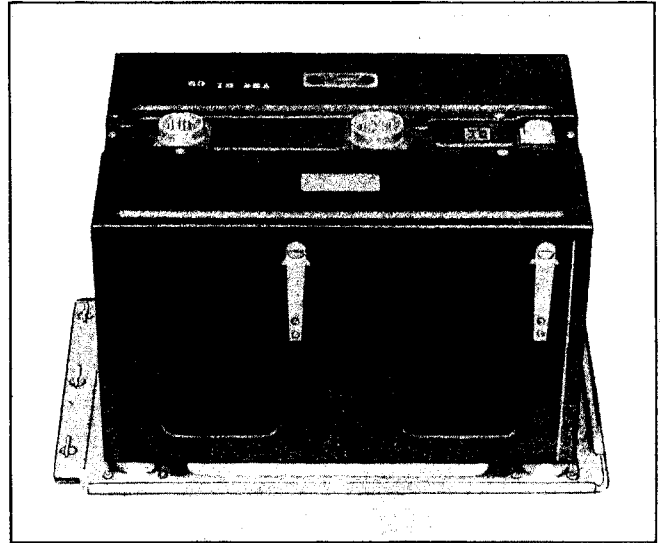


Figure 1-4. Transmitter-Receiver Assembly in Case CS-80-C with Mounting FT-488

### 3. EQUIPMENT REQUIRED BUT NOT SUPPLIED FOR INSTALLATION.

The following equipment is required but not supplied for the installation of Radio Set SCR-522-A.

Quantity per Equipment	Name of Unit	Required Characteristics
1	Antenna Mast AN-104-A or AN-104-B	
8	Crystal Unit DC-11-(*) or Crystal Unit DC-16 or Crystal Unit DC-26 or Crystal Unit CR-1(*)/AR	
1	Microphone Adapter M-299†	
As reqd.	Adapter M-359	
1	Headset HS-33 or Headset HS-38	600 ohms 600 ohms
1	Microphone T-17, T-17-B, T-17-D‡ or Microphone T-30-(*)‡ or	

Quantity per Equipment	Name of Unit	Required Characteristics
1	Microphone T-34-A or Microphone T-44 or Microphone ANB-M-C1	
1	Cord CD-495§	
1	Headset, Type 32 (Ref. 10A/13466) or Headset, Type B (Ref. 110A/8542)	150 ohms 24,000 ohms
1	Microphone, Type 21 (Ref. 10A/11994) or Microphone, Type 26 (Ref. 10A/12571)	250 ohms 250 ohms

\* Any issue letter is applicable.

† Required when carbon microphones are used.

‡ Requires Microphone Adapter M-299.

§ Required by British electromagnetic microphone and British head sets. Used only in British installations.

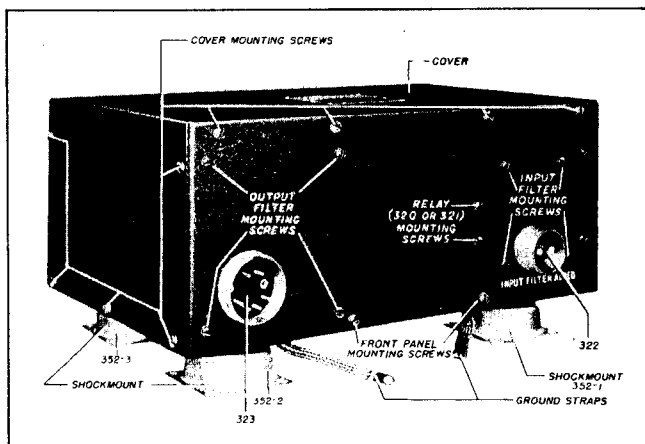


Figure 1-3. Dynamotor Unit PE-94-A or PE-94-B

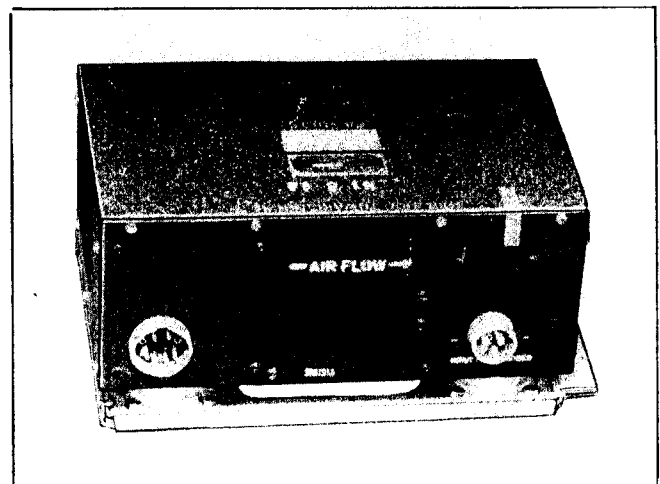


Figure 1-5. Dynamotor Unit PE-94-C with Mounting FT-498

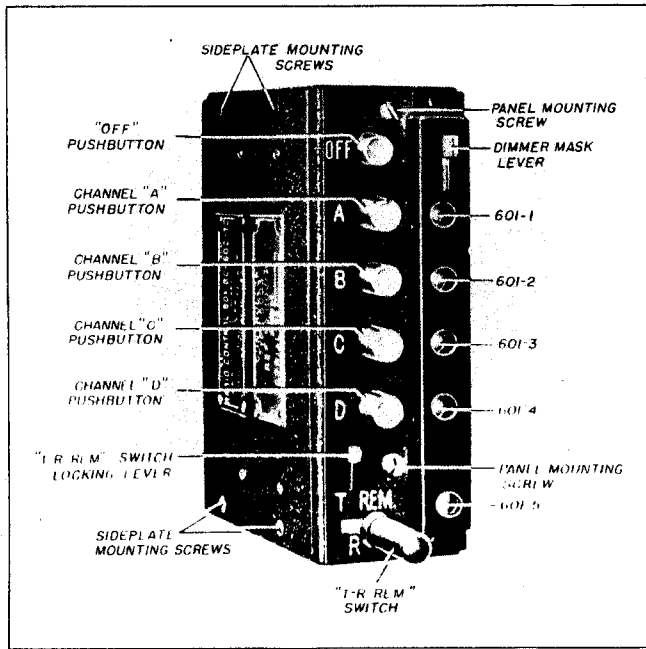


Figure 1-6. Radio Control Box BC-602-A or BC-602-B—Front View

**4. EQUIPMENT REQUIRED BUT NOT SUPPLIED FOR TESTING AND ALIGNING.**

The following test equipment is required but not supplied for testing and aligning Radio Set SCR-522-A.

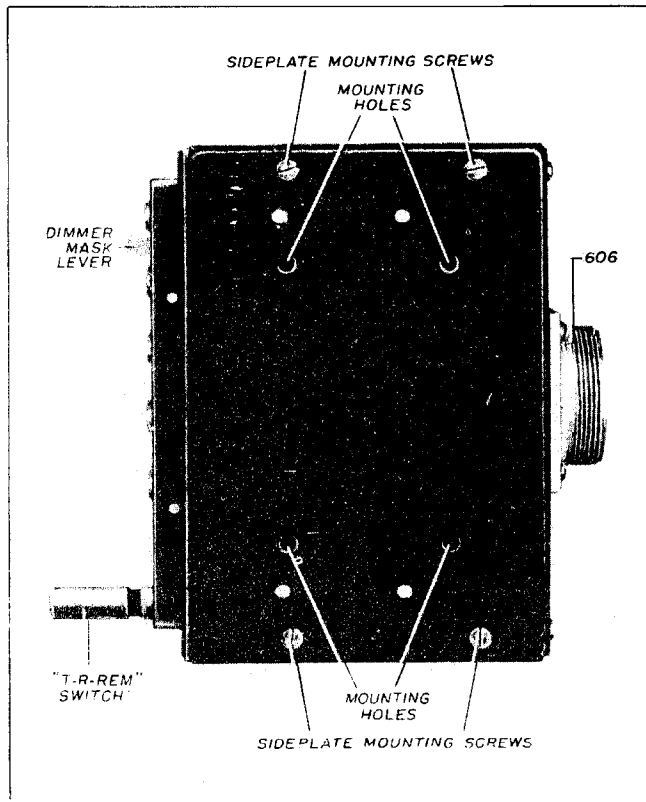


Figure 1-7. Radio Control Box BC-602-B—Side View

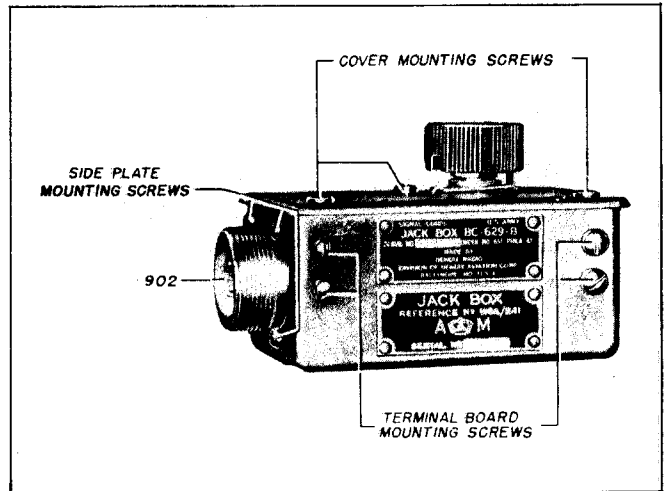


Figure 1-8. Jack Box BC-629-B

Quantity	Name of Unit
1	Test Equipment IE-36
1	Test Equipment IE-12-A
1	Test Equipment IE-19-(*)
1	Test Set I-56-(*)

**5. DESCRIPTION OF MAJOR ASSEMBLIES.**

*a.* TRANSMITTER-RECEIVER ASSEMBLY.

(1) CASE CS-80-A AND CASE CS-80-C.

(See figs. 1-2 and 1-4.)

(a) The case is the metal housing provided for the assembly of Rack FT-244-A, Radio Receiver BC-624-A, BC-624-AM, or BC-624-C and Radio Transmitter BC-625-A or BC-625-AM.

(b) Case CS-80-A is equipped with four shock-mounts and a ground strap.

\* Any issue letter is applicable.

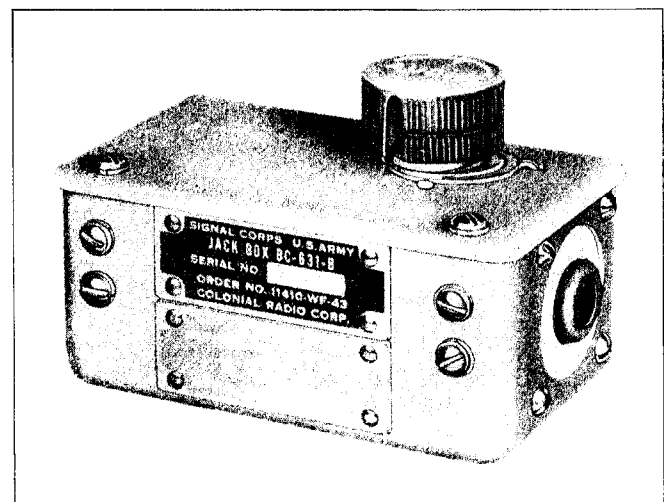


Figure 1-9. Jack Box BC-631-B

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(c) Case CS-80-C is equipped with a metal plate bolted to the shockmounts to provide for installation on Mounting FT-488.

(2) RACK FT-244-A. (See figure 8-1.)

(a) The rack is a shallow tray which contains interconnecting wires for the receiver and transmitter, plug sockets for the attachment of cables from other components of the equipment, the antenna-changeover relay, and the channel control motor and associated mechanisms.

(b) The receiver and transmitter are attached to the rack and held in place by eight long-shank red screws.

(c) Recessed handles are provided at each end of the center channel to facilitate removal of the rack from the case.

(d) The rack is provided with metal covers which are attached by Dzus fasteners. These covers can be unfastened, pushed back from the receiver and transmitter controls, and allowed to rest along the front and rear sides of the case.

(3) RADIO TRANSMITTER BC-625-A  
OR BC-625-AM.

(a) The radio transmitter occupies one-half of Case CS-80-A or CS-80-C.

(b) The top of the transmitter contains four tuning control knobs, a socket for the d-c meter cord, the antenna coupling thumbscrew, the "GAIN"\* control, and four sockets for the transmitter crystals. (See figs. 5-10 and 8-1.)

(4) RADIO RECEIVER BC-624-A, BC-624-AM  
OR BC-624-C.

(a) The radio receiver occupies one-half of Case CS-80-A or CS-80-C.

(b) The top of the receiver contains the "AUDIO" control, the "RELAY"† control, two receiver tuning controls, the oscillator plate coil tuning screws, and sockets for the four receiver crystals. (See figs. 5-11 and 8-1.)

\* The "GAIN" control has been replaced by a fixed attenuator network in later models of Radio Transmitter BC-625-AM.

† The "RELAY" control has been replaced by the "SQUELCH" control on Radio Receiver BC-624-C.

b. DYNAMOTOR UNITS.

(1) DYNAMOTOR UNIT PE-94-A, PE-94-B,  
PE-98-A, PE-98-D, AND PE-98-E.

(a) The dynamotor units listed above are housed in ventilated, metal cases. The cases are provided with four shockmounts and the housings are bonded by two or four ground straps. The covers are removable. (See fig. 1-3.)

(b) The input filters, output filters, and starting relays are mounted on the front panel.

(2) DYNAMOTOR UNIT PE-94-C AND PE-98-F.—The physical description of Dynamotor Unit PE-94-C and PE-98-F is the same as the description of Dynamotor Unit PE-94-A, PE-94-B, PE-98-A, PE-98-D, and PE-98-E except that Dynamotor Unit PE-94-C and PE-98-F are mounted on metal plates bolted to the shockmounts. The plates are fastened to Mounting FT-498 by fasteners that can be manipulated with the fingers. (See fig. 1-5.)

c. RADIO CONTROL BOX BC-602-A AND  
BC-602-B (See figure 1-6.)

(1) The radio control is housed in a metal case and contains four red channel selector pushbuttons, an "OFF" push button, and a "T-R-REM" switch on the front panel.

(2) Indicator lamps are located behind four green jewels to indicate the channel in operation, and a lamp is located behind the white jewel opposite the "T-R-REM" switch to indicate when the equipment is in the receive condition. An adjustable dimmer-mask is provided to reduce the lamp glare.

(3) A 12-contact socket, 606, and a 5-contact socket, 607, are mounted on the rear of Radio Control Box BC-602-A. The 5-contact socket, 607, has been removed from Radio Control Box BC-602-B. (See fig. 1-7.)

d. JACK BOX BC-629-AM, BC-629-B, AND  
JACK BOX BC-631-A AND BC-631-B.

(1) The jack boxes shown in figures 1-8 and 1-9 provide for the connections for the microphones and head-sets. Terminal lugs and wiring information are provided inside the removable covers.

(2) The jack boxes are housed in metal cases with volume controls mounted on the top. A socket is mounted on the side-plate of Jack Box BC-629-AM and BC-629-B while a rubber grommet is provided on the side-plate of Jack Box BC-631-A and BC-631-B.

## SECTION II

### INSTALLATION AND ADJUSTMENT

#### SPECIAL NOTICE

The radio set is normally shipped from the factory with all vacuum tubes installed.

#### 1. MAKING OF CABLES.

##### a. DISASSEMBLY OF PLUGS.

###### (1) PLUG PL-P172 OR PL-Q172.

(a) Insert Plug PL-P172 or PL-Q172 into the corresponding socket located on the dynamotor unit, or hold the plug body (metal shell containing the insulated insert) with a pair of pliers.

(b) Turn the plug end-ring counterclockwise, using a spanner wrench if necessary to free the ferrule, coupling nut, cable fitting, end ring and locking ring. Remove from the plug body.

(c) Carefully draw the plug body out of the socket. Remove the two screws from the plug-assembly insulation, and the two large female contacts from the plug washers.

###### (2) PLUG PL-P173 OR PL-Q173.

(See figures 8-2 and 8-3.)

(a) Remove the two screws from the clamp assembly of Plug PL-P173 or PL-Q173.

(b) Remove the smaller section of the clamp.

(c) Turn the larger clamp section counterclockwise to disassemble the plug.

###### (3) BAKELITE WIRE-GUIDE TYPE PLUGS.

(a) Insert the plug into a corresponding socket for support.

(b) With a wrench, loosen the locking ring. Remove the plug from the socket.

(c) Remove the locking ring and the bakelite wire guide.

###### (4) REMAINING PLUGS.

(a) Disassemble the remaining plugs for wiring by inserting them in their corresponding sockets or by holding the plug bodies with a pair of pliers and turning their rings counterclockwise until the ferrules, coupling nuts, cable fittings, end rings, and locking rings can be removed.

(b) Draw the plug bodies out of their sockets for wiring.

#### IMPORTANT

Do not remove pins from bakelite insert.

##### b. WIRING AND REASSEMBLY OF PLUGS.

###### (1) PLUG PL-P172 OR PL-Q172.

(a) Cut the required lengths of #10 wire.

(b) Lace the wires together.

(c) Strip off about 1/2 inch of wire insulation at the end to be soldered and twist the strands of wire to insure good contact.

(d) Place about 3/4 inch of phenoflex tubing over each wire leaving the ends bare until the wire is soldered.

(e) Solder each wire to one of the large female contacts of Plug PL-P172 or PL-Q172, using sufficient solder to fill the cup.

#### Note

Connect the wire leading to the #2 plug contact to the positive terminal of the battery in the final installation.

(f) Slip the phenoflex tubing down over each soldered joint.

(g) Insert the plug-assembly insulation in the plug body.

(h) Pass the female contacts through the center hole in the plug washer. Make certain that the contacts are seated in their grooves beside the center hole.

(i) Reinsert the plug washer with the female contacts in the plug body. The pin numbers on the plug washer must correspond to those on the face of the plug.

(j) Reinsert and tighten the two screws in the plug-assembly insulation.

(k) Reassemble the plug, reversing the procedure described in paragraph 1a(1), this section.

###### (2) PLUG PL-P173 OR PL-Q173.

(See figures 8-2 and 8-3.)

(a) Cut coaxial cable to the proper lengths. Strip off the vinylite covering and shield.

(b) Cut the shield and roll it back over the sleeve. Remove the insulation.

(c) Push the rubber guard and the clamp over the cable. Push sleeve over the shield until it is flush with the underneath sleeve.

(d) Slip the coupling nut over the metal contact pin. Insert the wire through the center opening, screw the contact pin into the clamp, and pull the wire taut. Solder and cut off the excess wire.

(3) PLUG PL-259.—Connect Plug PL-259 to one end of the required length of antenna cable (see fig. 8-10) according to the instructions given in figure 8-2.

**(4) BAKELITE WIRE GUIDE TYPE PLUGS.**

(a) Thread the wires through the proper holes in the bakelite wire guide.

(b) Strip off about 1/2 inch of insulation at the ends of the wires to be soldered.

(c) Slip 3/8 inch of phenoflex tubing over each wire.

(d) Solder the wires to the appropriate terminals.

(e) Place the plug in a corresponding socket.

(f) Push the bakelite wire guide onto the plug so that it engages the wire guide key.

(g) With a wrench, screw the locking ring tightly on the plug.

(5) REMAINING PLUGS.—Connect the remaining plugs to the required lengths of cable according to the instructions for Plug PL-P172 or PL-Q172 (depending on the type plug) but remove only 1/4 inch of wire insulation.

**2. PRELIMINARY TESTS.****WARNING**

A dangerous potential exists on both the transmitter and receiver whenever the equipment is in the transmit or receive position. Do not change the tubes or make adjustment inside the equipment with any but the "OFF" button on the control box depressed.

Before installing the transmitter-receiver assembly in an aircraft, check the operation of the transmitter-receiver with either Test Equipment IE-19-(\*) or IE-36.

**a. USING TEST EQUIPMENT IE-19-(\*).**

(1) Place the transmitter-receiver assembly on the test bench.

(2) Loosen the Dzus fasteners on the rack covers, raise the covers and slide them away from the center.

(3) Connect the dynamotor unit to the 12-contact socket on Rack FT-244-A. Connect the radio control box and a jack box to the 18-contact socket on the rack.

(4) Connect the dynamotor unit to a 28-volt [or 14-volt for Dynamotor Unit PE-98-(\*)] d-c source of supply.

(5) Depress channel selector pushbutton "A" on the radio control box. The top channel slides on both transmitter and receiver frequency shifter assemblies will be actuated.

(6) If the shifter mechanism does not operate when channel "A" is selected, press the channel release button 426 in Rack FT-244-A because the motor may be stopped on an open contact position.

(7) Depress channel selector pushbuttons "B," "C," and "D" and note the action of the shifter mechanism.

(8) Connect Antenna Mast AN-104-A to Socket SO-153 on the rack by means of a suitably prepared length of coaxial cable.

(9) Insert the proper crystals for the pre-tuned channels in the transmitter. (Refer to sec. V, par. 9b(2) (b).) Depress channel selector pushbutton "A."

(10) Set up Field Strength Meter I-95-(\*) and extend the antenna on the meter to the desired length, depending on the strength of the signal. Turn the "ON-OFF" switch on the meter to "ON." Adjust the "ZERO ADJ." control so that the "RELATIVE FIELD STRENGTH" meter on the field strength meter reads zero. Set the "TUNING" dial on the field strength meter to the frequency of the transmitter and adjust the dial for a maximum reading on the "RELATIVE FIELD STRENGTH" meter.

(11) Plug Microphone T-34 or T-44 into Jack JK-49 through the jack box. Speak into the microphone. There should be a slight increase in the reading of the indicating meter on Field Strength Meter I-95-(\*) indicating modulation.

(12) Do not disturb the transmitter "GAIN" control if it is locked with glyptal or with a locking nut. If the control is not locked, advance if necessary to secure modulation.

**Note**

Later models of Radio Transmitter BC-625-AM have no "GAIN" control and no adjustment is necessary.

(13) Leave the "T-R-REM" switch in the "T" position and repeat step (11) above on channels "B," "C," and "D". If proper operation of any channel is not obtained or if the channel frequencies have to be changed, retune in accordance with the instructions in section V, paragraphs 9b or 9c.

(14) Place crystals of the proper operating frequency in the channels to be used in the receiver. (Refer to sec. V, par. 10c(3).)

(15) Depress channel selector pushbutton "A."

(16) Set the "T-R-REM." switch on the radio control box to "R." Connect a headset to Jack JK-49 through the jack box.

(17) Set the receiver "AUDIO" control 236 and the "RELAY"† control 237 to their maximum clockwise position.

(18) With no signal applied, turn the "RELAY"† control 237 counterclockwise until there is a sharp cut off of the signal. Final setting of the "RELAY" and "AUDIO" controls should be made in the airplane. (Refer to sec. V, paragraphs 10c(12) and (13) or 10d(4) and (5).)

(19) Return the "RELAY"† control 237 to the maximum clockwise position. Apply a small signal of proper frequency from Signal Generator I-130-A through

\* The "RELAY" control has been replaced by the "SQUELCH" control in Radio Receiver BC-624-C.

\* Any issue letter is applicable.

## Section II

### Paragraphs 2-3

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Cord CD-477 to Socket SO-153 on Rack FT-244-A. The signal should be heard in the headset. Repeat this step on channels "B," "C," and "D."

(20) If proper operation of any channel is not obtained or if the frequencies are to be changed, retune according to the instructions in section V, paragraph 10c or 10d.

#### b. USING TEST EQUIPMENT IE-36.

(See figures 6-1 and 6-2.)

(1) Place the transmitter-receiver assembly on the test bench.

(2) Loosen the Dzus fasteners on Rack FT-244-A, raise the covers slightly and slide them away from the center.

(3) Connect the dynamotor unit to the 12-contact socket on the rack. Plug Control Unit BC-1303, part of Test Equipment IE-36, into the 18-contact socket on the rack.

(4) Connect the dynamotor unit to a 28-volt d-c source of supply.

(5) Turn the "OFF—A-B-C-D" switch on the control unit to "A". The top channel slides on both transmitter and receiver frequency shifter assemblies will be actuated.

(6) If the shifter mechanism does not operate when channel "A" is selected, press channel release button 426 in the rack because the motor may be stopped on an open contact position.

(7) Make a similar check for channels "B", "C", and "D".

(8) Plug Phantom Antenna A-29 into Socket SO-153 on the rack.

(9) Insert the proper crystals for the pre-tuned channels in the transmitter. (Refer to sec. V, par. 9b(2) (b).)

(10) Turn the "OFF—A-B-C-D" switch on the control unit to position "A".

(11) Throw the toggle switch on the control unit to "T". The lamp in the phantom antenna should light.

(12) Plug Microphone T-34 or T-44 into Cord CD-1169. Plug Cord CD-1169 into the control unit. If Microphone T-17 is used, plug it directly into the control unit. Speak into the microphone. The lamp in the phantom antenna should increase in brilliance, indicating modulation.

(13) Do not disturb the transmitter "GAIN" control if it is locked with glyptal or with a locking nut. If it is not locked, advance if necessary to secure modulation.

#### Note

Some models of Radio Transmitter BC-625-AM have no gain control and no adjustment is necessary.

(14) Repeat step (12) on channels "B," "C," and "D." If proper operation on any channel is not obtained, retune in accordance with the instructions in section V, paragraph 9b or 9c.

(15) Place crystals of the proper operating frequency in the channels to be used in the receiver. (Refer to sec. V, par. 10c(3).)

(16) Insert the probe end of Cord CD-1170 in the "ANT." jack on the control unit and clip the alligator clip on the other end of the cord to the center pin of socket 416 on the rack.

(17) Place the "OFF—A-B-C-D" switch on the control unit in position "A".

(18) Throw the toggle switch on Control Unit BC-1303 to the "R" position. Plug a suitable headset into the jack marked "TEL." on the control unit.

(19) Set the receiver "AUDIO" control 236 and the "RELAY"\* control 237 to their maximum clockwise positions.

(20) With no signal applied, turn the "RELAY"\* control 237 counterclockwise until there is a sharp cut-off of signal. Final setting of the "RELAY"\* and "AUDIO" controls should be made in the airplane. (Refer to sec. V, par. 10c(12) and (13), or 10d(4) and (5).)

(21) Return the "RELAY"\* control 237 to the maximum clockwise position. Turn the "SIG GEN" switch on Control Unit BC-1303 to the "ON" position. A tone should be heard in the headset. Repeat this step for channels "B," "C," and "D."

(22) If proper operation of any channel is not obtained or if the frequencies are to be changed, retune the equipment according to the instructions given in section V, paragraphs 10c or 10d.

### 3. BONDING OF SHIELDS.

a. If shielded wires are used in the cables, bond the individual wire shields to the ground pin in the pin plug.

b. Before lacing the wires together, push back the shield, cut off a portion of the inner conductor, and pull the shield down about one inch over the end of the wire.

c. With a sharp tool, make an opening in the shield about one inch from the end. Push the end of the wire through this opening. Then push the shield back until the wire extends through about one inch.

d. Solder a short length of hook-up wire to the end of the shield outside the plug. Solder the other end to the ground pin in the plug in addition to the regular cable wire on this pin.

#### CAUTION

Do not allow excessive solder to run into the small sockets. Do not insert the wire beyond its stripped length and do not burn the plug washer.

e. If more than one shielded wire is used, ground the shields as described above and bond the individual shields with solder.

\* The "RELAY" control has been replaced by the "SQUELCH" control in Radio Receiver BC-624-C.

**4. INSTALLATION.****Note**

Install the radio set in accordance with specific installation data pertaining to the airplane in which the equipment is to be installed. Installation instructions for Radio Receiver BC-624-A, BC-624-AM, and BC-624-C are the same and the receivers are interchangeable. The same is true of Radio Transmitter BC-625-A and BC-625-AM.

**a. TRANSMITTER-RECEIVER ASSEMBLY.**—Install the transmitter-receiver assembly to allow sufficient clearance on all sides of the transmitter-receiver assembly (see fig. 8-4) for free action of the shockmounts, for rack and plug removal, and for access to the tuning and adjustment controls on the transmitter-receiver panel.

**IMPORTANT**

Each ground strap (the case has one and the dynamotor unit has two or four) should be attached to a shockmount-mounting hole by means of a mounting screw inserted in the lug in the free end of the ground strap.\* This must be a good ground connection.

**b. DYNAMOTOR UNIT.** — Install the dynamotor unit so that there is at least one inch clearance on the intake and a two-inch clearance on the exhaust end. (See fig. 8-5.)

**CAUTION**

Be sure that the airflow of the dynamotor unit is not in opposition to the forced ventilation in the airplane. Note that the direction of air flow through Dynamotor Unit PE-94-B and PE-94-C is opposite from the direction of air flow through Dynamotor Unit PE-94-A. The air flow through Dynamotor Unit PE-94-A is from the input socket toward the output socket.

**c. JACK BOXES.**—The jack boxes provide terminals for the microphone input and audio output circuits. To prepare the jack boxes for installation proceed as follows:

(1) Remove the three screws from the covers of the jack boxes and take off the covers. (See figs. 1-8 and 1-9.)

(2) Drill mounting holes in the bottom of the jack boxes. Do not damage the wires of the soldering lugs.

(3) Remove all metallic chips to insure against short circuits.

(4) To move the socket to the opposite end of the jack boxes if desired, follow the directions given below.

(a) Remove the four screws from each end plate.

(b) Remove the end plate opposite the socket. Note the position of the grounding lug on the socket and plate.

\* On Dynamotor Unit PE-94-C and PE-98-F the ground strap is already fastened to the shockmount-mounting screw.

(c) Transfer the complete socket-and-end plate assembly to the desired side. Be sure to replace the grounding lug.

(d) Fasten the grommet and plate to the side on which the socket was formerly located.

(5) Mount the jack boxes so that the volume control is accessible to the operator. (See figs. 1-8, 1-9 and 8-6.)

**d. RADIO CONTROL BOX.**—Prepare the radio control box for installation in the following manner:

(1) Loosen the four screws in the side plate containing the four countersunk mounting holes and remove the plate. (See fig. 1-7.)

(2) Fasten a suitable mounting bracket to the side plate. (Use flathead screws and mount them flush with the inside surface of the plate to prevent possible short circuits.)

(3) Replace the side plate.

(4) Mount the radio control box with the control panel accessible and visible to the pilot. (See figs. 1-6 and 8-8.)

**Note**

The side plates of the radio control box are interchangeable.

**e. ANTENNA MAST.** (See figure 8-9 or 8-9A.)

(1) Mount this antenna mast vertically on a part of the aircraft nearest the radio equipment where there are no projections that might interfere with the radiation pattern of the antenna to obtain a uniform circular pattern in a horizontal plane.

(2) Secure the antenna to the aircraft by means of a bracket mounted on the aircraft structure.

(3) Fasten one end of a solid copper ground strap, at least 1/2 inch wide and no more than 2 inches long, (or a flexible copper sheath) to the ground bus screw on the antenna and fasten the other end to the skin of the airplane near the point where the bracket secures the antenna to the airplane.

**Note**

Leave a small amount of slack in the ground strap to allow for vibration.

(4) Prepare the coaxial transmission line as shown in figure 8-9B, and then connect one end of the line to Socket SO-239 on the base of the antenna mast and the other end to the receptacle on the front panel of the transmitter. (See fig. 8-10.)

**f. MICROPHONES.**

(1) **ELECTRO-MAGNETIC TYPE.**—Connect the electromagnetic-type microphone directly to the jack box.

(2) **CARBON TYPE.**—Connect the carbon type microphone through Microphone Adapter M-299 to the jack box. (See fig. 8-7.)

**5. CABLE CONNECTIONS.**

Connect the components of Radio Set SCR-522-A according to the instructions given in the wiring diagrams, figures 8-10, 8-11. The following specific instructions

may be helpful when making connections to Jack Box BC-629-B or BC-631-B.

a. Remove the terminal lugs and turn for soldering, if necessary, by loosening the appropriate screws on the terminal strip inside the jack box with an offset screw driver. (If this tool is not available, remove the terminal strip mounting screws and take off the terminal strip.)

b. After connecting the necessary cables and wires to the jack box or jack boxes, fasten the lacing on the cables and wires to the anchor loop on the bottom of the jack boxes to take up slack and relieve the electrical connections of mechanical strain.

**6. CIRCUIT PROTECTION DEVICES.**

a. No fuses are used in any component unit of the radio set.

b. If it is desired to protect the aircraft primary power-supply line to the set, a standard 20-ampere circuit breaker is recommended for the 28-volt power supply and a 40-ampere circuit breaker for the 14-volt power supply.

**7. AFTER-INSTALLATION TESTS.**

a. After the installation of the radio set in the aircraft, make transmitting and receiving checks to insure that the installation is correct and that the equipment is operating properly.

b. Make arrangements with either the control tower or with another aircraft to send and receive test signals. (Refer to sec. III for operating instructions.)

c. In order to conserve the aircraft's battery, conduct the tests using an auxiliary power supply. If such a supply is not available, make the tests as brief as possible.

d. At the conclusion of the tests using an auxiliary power supply, connect the set to the power supply of the aircraft and turn it on to make certain that the dynamotor is correct.

e. Turn the set off at the conclusion of all tests by pushing the button marked "OFF."

**SECTION III  
OPERATION**

**WARNING**

Operation of this equipment involves the use of high voltages which are dangerous to life. Personnel must observe all safety regulations at all times.

**1. STARTING AND STOPPING THE EQUIPMENT.**

**Note**

To insure that the storage battery of the airplane will not be excessively drained, operate the radio set for the shortest possible time on the ground prior to take off. Allow a two minute warm-up period if the equipment has been standing idle under humid conditions for a long period of time.

a. To start the equipment, depress any one of the channel selector pushbuttons on the radio control box. (See fig. 3-1.) The lamp opposite the depressed pushbutton will light indicating the channel in operation. If the transmitter and receiver fail to operate when a channel pushbutton is pressed, press another channel pushbutton and then press the pushbutton for the desired channel.

**Note**

Not more than one pushbutton can be in the depressed position at any one time.

b. To stop the equipment, press the "OFF" pushbutton.

**2. NORMAL OPERATION.**

**Note**

Line-of-sight communication is normally necessary for satisfactory operation of the radio set.

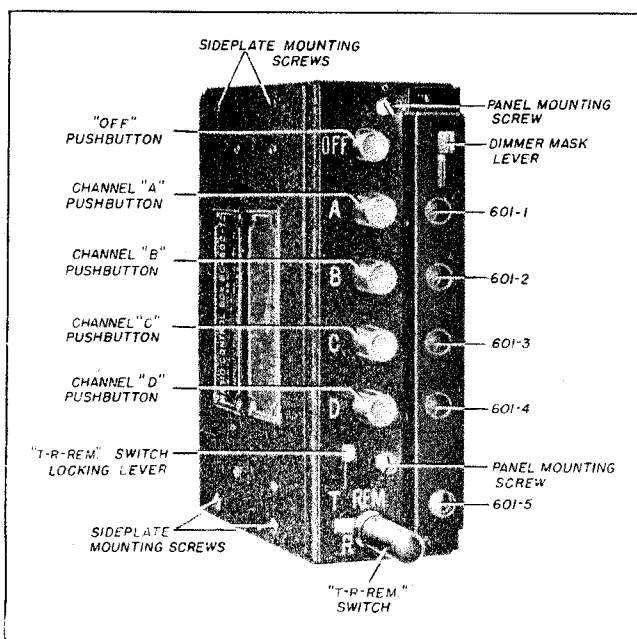


Figure 3-1. Radio Control Box BC-602-A or BC-602-B



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When aircraft are flying in formation, do not allow any metal object such as a belly tank or propeller to come between the transmitting and receiving antennas, because communication may become difficult or impossible due to low signal strength or garbled reception.

*a.* TRANSMISSION.

(1) Depress channel selector pushbutton "A," "B," "C," or "D" on the radio control box, depending on which channel is to be used. (All the green jewelled lamps are lighted during channel selection.)

(2) Allow approximately one minute for the receiver tubes to warm up.

(3) Place the "T-R-REM." Switch on the radio control box (see fig. 3-1) at "T." (This places the transmitter in continuous operation.)

(4) Speak into the microphone. With the airplane in normal flight, check the operation of the transmitter by having a station or another airplane report on transmission.

(5) If the cockpit noise level is too high, turn the "GAIN" control slightly counterclockwise and have the pilot speak more loudly during transmission.

*b.* RECEPTION.

**Note**

The action of all pilot-operated controls of Radio Receiver BC-624-A is identical with the action of the controls of Radio Receiver BC-624-AM and BC-624-C.

(1) Press channel selector pushbutton "A," "B," "C," or "D" on the radio control box, depending on the channel to be used.

(2) Place the "T-R-REM." switch at "R." (The white jewelled lamp will light as the receiver is put in continuous operation.)

(3) Adjust the volume control on the jack box for satisfactory headset volume.

*c.* PRESS-TO-TRANSMIT (PRESS-TO-TALK) OPERATION.

(1) Press channel selector pushbutton "A," "B,"

"C," or "D" on the radio control box, depending on which channel is to be used.

(2) Place the "T-R-REM." switch at "REM." The receiver is now in operation.

**Note**

When the lever tab located directly above the "T-R-REM." is raised, the "T-R-REM." switch can be placed in any one of its three positions. When the lever tab is lowered, it blocks the switch from the "REM." position and spring-loads the switch lever so that unless the switch lever is held at "T" it will return to "R."

(3) To transmit, depress the press-to-transmit switch and speak into the microphone.

(4) To receive again, release the press-to-transmit switch.

**3. DEFENSE AGAINST RADIO JAMMING.**

*a.* GENERAL.—Jamming is the intentional generation of radio signals by the enemy to make friendly signals unreadable and to surprise and confuse the radio operators. The various types of jamming are described in section VI, paragraph 2.

*b.* PROCEDURE. — If interference is received and jamming is suspected, proceed as follows:

(1) Report jamming immediately to the commanding officer.

(2) Turn the receiver gain up as high as it will go. To make this less hard on the ears put a handkerchief between the ears and headphones or turn the headphones around so they are facing away from the ears.

(3) Change to an alternate frequency and call sign if the primary frequency is badly jammed.

(4) Beware of fake messages slipped into the jamming by the enemy. In case of doubt, authenticate. Don't allow the enemy to distract attention with conversation.

(5) Do not stop operation for that is the purpose of enemy jamming. Shutting-down informs the enemy that his jamming is effective.

Practice, concentration, and persistence will enable the operator to work through jamming many times stronger than the desired signal.

**SECTION IV**

**THEORY OF OPERATION**

**1. GENERAL.**

(See figure 4-1.)

*a.* Radio Set SCR-522-A provides transmission or reception of amplitude-modulated r-f energy on any one of four crystal-controlled frequencies within the range

100-156 megacycles. Only voice communication facilities are available, but continuous audio-tone modulation is provided.

*b.* The average power output of the transmitter is 8 to 9 watts. The average sensitivity of the receiver is 3 to 4

## Section IV

### Paragraphs 1-2

AN 08-40SCR522-3

microvolts for a 10 to 1 signal-to-noise power-ratio with an output of 10 milliwatts.

## 2. RADIO TRANSMITTER.

### a. GENERAL.

(1) The radio transmitter operates on any one of four crystal controlled channels within the frequency range 100 to 156 megacycles. Channels are selected by remote control only.

(2) The transmitter employs a crystal-controlled oscillator circuit whose plate circuit is tuned to the second harmonic of the crystal. Two frequency-tripler stages follow the oscillator, thus making the final output-frequency 18 times the crystal's fundamental frequency. This radio-frequency energy is plate circuit modulated by a push-pull modulator stage of two tubes JAN-12A6 (VT-134) driven by a tube JAN-6SS7 (VT-199) speech amplifier.

(3) Pushing a channel selector pushbutton on the control box closes the primary power circuit and power is supplied to the transmitter tube elements. The channel control ratchet motor 406 located on Rack FT-244-A is also energized and actuates a frequency-shifter slide which automatically selects the correct channel crystal as the shifter slides close the appropriate section "A," "B," "C," or "D" of crystal switch 156.

(4) The transmitter circuits are tuned to the desired frequency by means of variable capacitors attached to cams and shafts which are adjusted by the frequency-shifter slides.

### b. OSCILLATOR.

(1) The oscillator tube JAN-6G6G (VT-198-A) is connected in a modified Pierce circuit. Oscillations are sustained by the impedance in the cathode circuit consisting of inductor 128-2 and by-pass capacitor 103, and occur at the crystal's fundamental frequency regardless of the frequency to which the oscillator plate circuit is tuned. (See fig. 8-42.)

(2) The screen grid, control grid, and cathode of tube JAN-6G6G (VT-198-A) act as the oscillatory circuit and energy is transferred to the plate circuit within the tube. The plate circuit of tube JAN-6G6G (VT-198-A) is tuned by inductor 118 and variable capacitor 114 to the crystal's second harmonic. (See figs. 8-12, 8-13 and 8-42.)

(3) Grid-leak bias is supplied by resistor 151-1. The screen is coupled to the cathode by capacitor 102-1. The control-grid-to-screen capacitance is supplemented by capacitor 101.

### c. FIRST HARMONIC AMPLIFIER.

(1) The output of the oscillator is coupled to the first harmonic-amplifier tube JAN-12A6 (VT-134) by

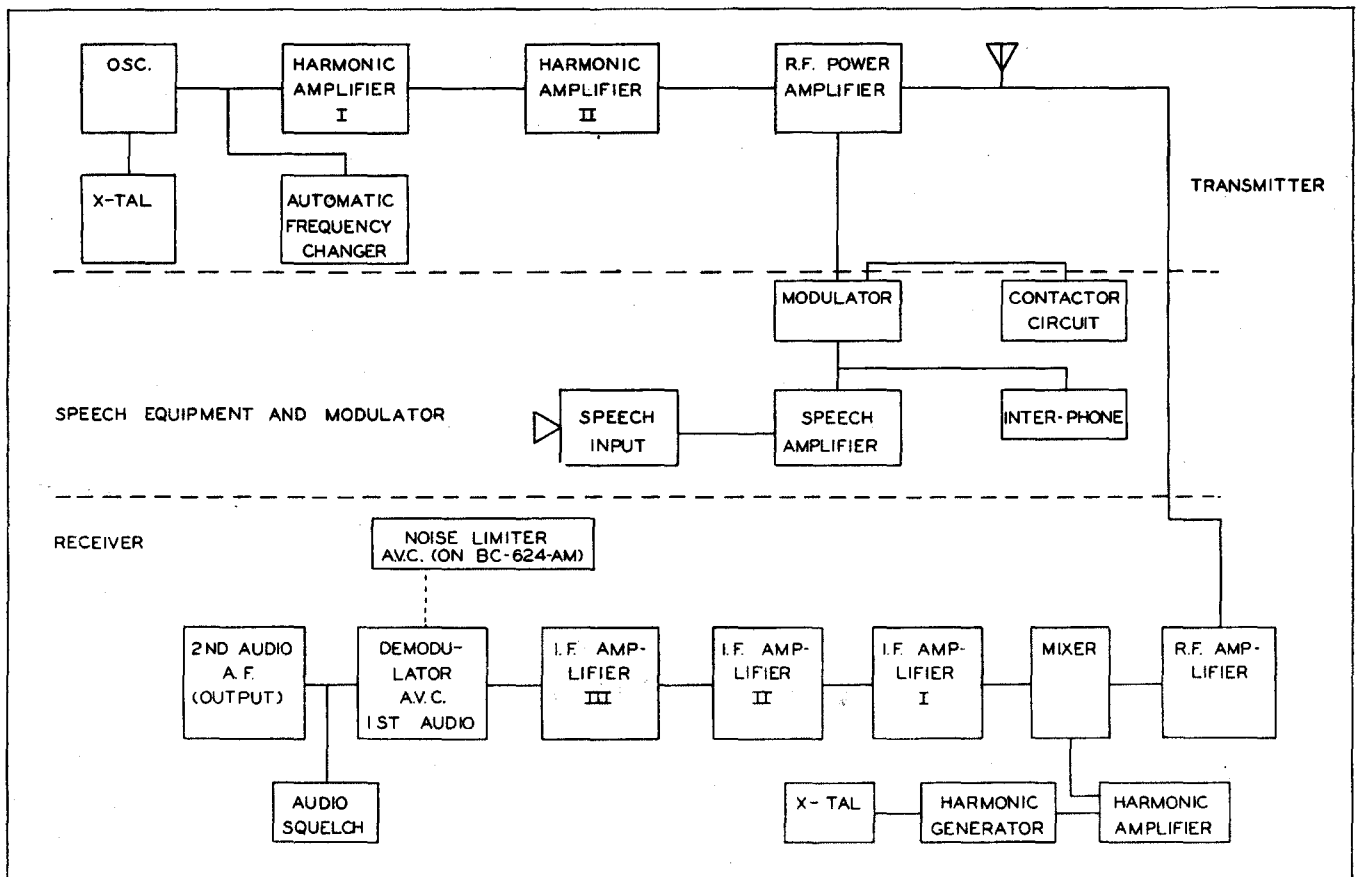


Figure 4-1. Radio Set SCR-522-A—Block Diagram

coupling capacitor 104. Resistor 150 serves to suppress the parasitic oscillations. (See fig. 8-12.)

(2) Inductor 119 and variable capacitor 115 tune the plate circuit to the third multiple of the oscillator's output. The tapped inductor 119 feeds the push-pull grids of the second harmonic amplifier. Tube JAN-12A6 (VT-134) operates with fixed and cathode bias, the latter provided by resistor 153-1 bypassed by capacitor 102-6.

*d.* SECOND HARMONIC AMPLIFIER.

(1) The output of the first harmonic amplifier is coupled to the grids of the second harmonic amplifier, tube JAN-832 (VT-118), through capacitors 109-3 and 109-4. (See fig. 8-13.) The grid is biased by the grid current flowing through resistors 132-1 and 132-2 and a portion of the -150-volt supply. R-f chokes 127-1 and 127-2 isolate the grids of the second harmonic amplifier from ground. Radio-frequency energy is bypassed to ground through capacitors 102-8 and 102-9.

(2) Inductor 120 and capacitor 116 tune the plate circuit of tube JAN-832 (VT-118) to the third multiple of the output of the first harmonic amplifier, or the eighteenth multiple of the crystal's frequency.

*e.* POWER AMPLIFIER.

(1) The output of the second harmonic-amplifier is coupled to the grids of the power amplifier, tube JAN-832 (VT-118), through capacitors 109-1 and 109-2.

(2) The input circuit of the power amplifier is similar to that of the second harmonic amplifier except for the absence of the grid bias resistors which allow the power amplifier to operate with a more nearly fixed grid bias.

(3) The plate circuit of tube JAN-832 (VT-118) is tuned by capacitor 117 and inductor 121 to the same frequency as the second harmonic amplifier, the eighteenth harmonic of the fundamental of the crystal.

(4) Radio-frequency energy is transferred to the antenna through the coupling between inductors 121 and 122. The degree of coupling is adjustable by means of the antenna coupling control. (See figs. 8-15 and 8-16.)

*f.* SPEECH AMPLIFIER.

(1) The audio input originates from the microphone terminals of the jack box, passes through the connector panel, and enters the transmitter through terminals 1 and 2 of plug 123-1. (See fig. 8-12.)

(2) The a-f input is then fed to terminals 1 and 3 of transformer 158. The secondary of this transformer furnishes the a-f energy to the grid of the speech amplifier, tube JAN-6SS7 (VT-199), through bridge circuit and gain control.

(3) The bridge circuit is designed to allow inter-phone communication between pilot and crew without modulating the transmitter. Refer to paragraph 2i this section, for a complete discussion of the bridge circuit. (See fig. 4-2.)

*g.* MODULATOR.

(1) The amplified a-f energy is fed to the grids of the push-pull modulators, tubes JAN-12A6 (VT-134) through transformer 159. Tone compensation is provided by capacitor 109-5 shunted across the secondary of the inter-stage transformer 159.

(2) The a-f voltage output developed across the secondary of transformer 160 plate modulates the radio frequency power amplifier, tube JAN-832 (VT-118).

*b.* CONTACTOR CIRCUIT.

(1) RADIO TRANSMITTER BC-625-A.

(a) When the contactor switch is closed, the coil of relay 131 is energized and the ground return for the coil of antenna relay 412 is opened (see fig. 4-5) thus placing the transmitter in operation (or locking it in transmit, if it is already in that condition).

(b) The ground return for the coil of relay 130 is opened with the result that after a delay of less than half a second (relay 130 has a slow-release characteristic) the ground return for the channel selector switches 611A, B, C and D is opened, and the ground is transferred directly to one contact of motor-positioning switch 427. Figure 4-5 shows channel "D" already selected and, in this case, the channel-shifting mechanism would not operate. However, if any other channel were in use prior to closing the contactor switch, the shifting mechanism would be energized, relay 411-1 would transfer the antenna relay 412 to receive, and these conditions would be maintained until channel "D" was selected, thus stopping ratchet motor 406 (see fig. 8-1) and returning relay 412 to the transmit condition. Continuous tone transmission on channel "D" frequency would continue until the contactor-switch contacts were opened.

(c) The grid of the speech-amplifier, tube JAN-6SS7 (VT-199), is transferred from the microphone input circuit to a source of audio feedback voltage from the modulator tubes, causing the transmitter to be 100 percent modulated by a steady tone of approximately 1000 cycles per second.

(d) Since the transfer to channel "D" occurs a fraction of a second after the contactor switch is closed, there is a momentary burst of tone-modulated carrier on the channel which is in use before the equipment switches to channel "D."

(2) RADIO TRANSMITTER BC-625-AM.—Operation of the contactor circuit in Radio Transmitter BC-625-AM is similar to the operation in BC-625-A, differing only in the following items.

(a) There is no slow release relay 130 in Radio Transmitter BC-625-AM, and when the contactor switch is closed, the 1000-cycle tone is transmitted on the channel in use at the time instead of on channel "D." (See fig. 8-43.)

(b) The ground return for the channel selector switch is made permanently to ground rather than through the contacts of relay 130.

Section IV

Paragraph 2

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i. INTERPHONE AND SIDETONE.

(1) Interphone communication is provided between the pilot and crew stations. However only the pilot station can modulate the transmitter due to the special input circuit to the audio sections of the transmitter and receiver. The headsets of the pilot and crew receive audible sidetone of the modulation of the transmitter. (See fig. 4-2.) An electromagnetic (pilot) microphone (not supplied with the equipment) is connected to the primary winding of transformer 158, the secondary of which is connected across potentiometer 125. Audio voltage developed across the secondary of transformer 158 appears across the "GAIN" control potentiometer 125. Using potentiometer 125 it is possible to regulate the amplitude of the audio voltage impressed on the grid of the transmitter speech-amplifier, tube JAN-6SS7 (VT-199). The speech-amplifier output is coupled to the modulator tubes of the transmitter.

(2) Since the bridge resistors 141-1, 141-2, 141-3, and 141-4 are equal, half of the audio voltage developed across the secondary winding of transformer 158 appears at the junction points of 141-1 and 141-4, and 141-2, and 141-3 with respect to the grounded end of the secondary winding. (See fig. 4-2.) The voltages at these two junction points are equal and in phase. Resistor 262-2 is connected between terminals 6 and 7 of transformer 295, and the voltages at terminals 5 and 7 are also equal and in phase. Therefore, half the audio voltage developed across the secondary winding of transformer 158 is impressed on the grid of the audio amplifier, tube JAN-

12C8 (VT-169). Thus it is possible to modulate the transmitter by means of the microphone (pilot) connected in the jack box. It is also possible to produce audible sidetone in the headsets connected at the pilot and crew positions with the transmitter carrier either on or off.

(3) One or more electromagnetic (crew) microphones (not supplied with the equipment) are connected to primary terminals 3 and 4 of transformer 295. (See fig. 4-2.) Approximately half of the a-f voltage induced in the secondary (terminals 5 and 6) by either of the two primaries appears at the grid of the first audio amplifier, tube JAN-12C8 (VT-169), and the result is an audible signal in the headphones. However, the voltage appearing at the junction point of resistors 141-1 and 141-4 is equal in amplitude but opposite in phase to the voltage appearing at the junction point of resistors 141-2 and 141-3. Since these four resistors are all equal, the two out-of-phase voltages cancel each other and there is no resultant voltage across potentiometer 125.

Note

The crew microphone facility is not used in U. S. installations since separate interphone equipment is provided.

(4) Receiver-detector voltages impressed on primary terminals 1 and 2 of transformer 295 also cancel out in the same manner and have no effect on the speech-amplifier grid. This arrangement makes interphone communication possible by means of the microphones con-

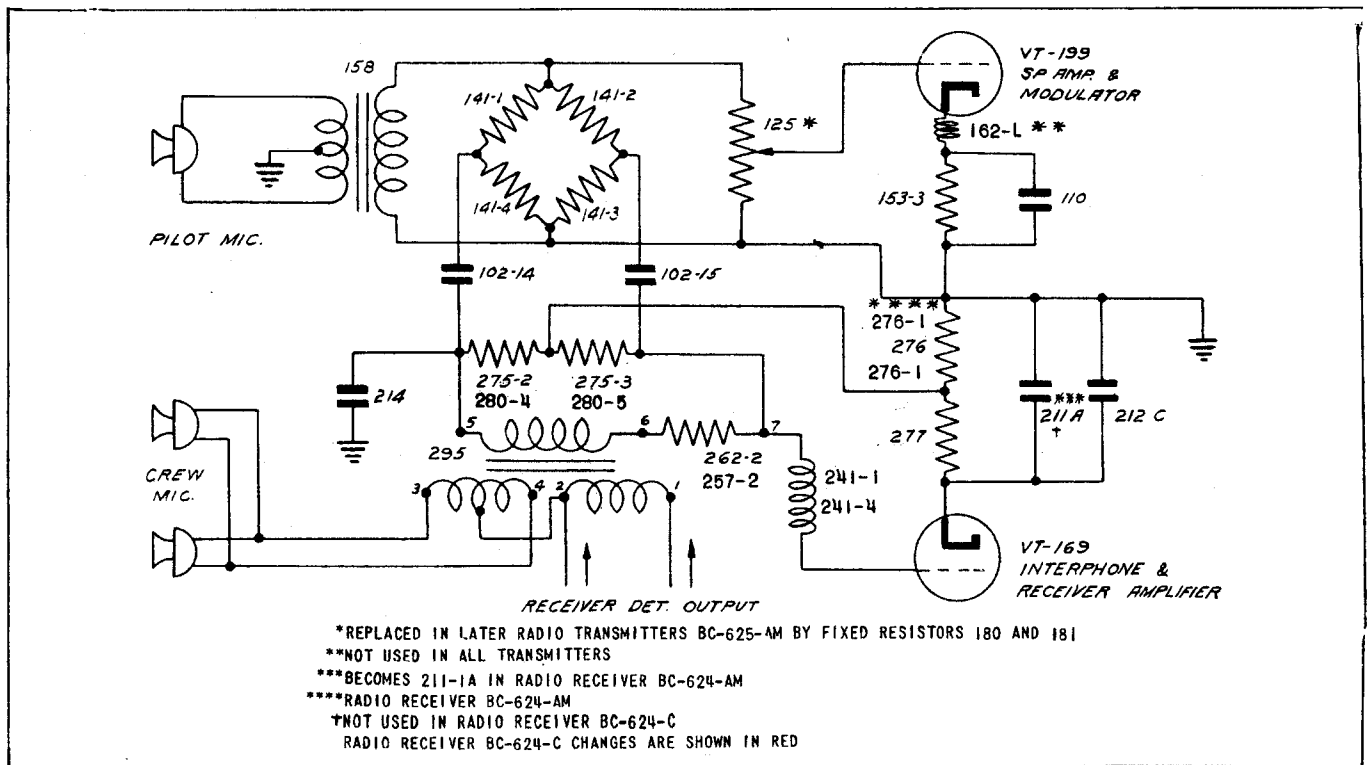


Figure 4-2. Microphone Mixing Circuit, Transmitter-Receiver—Simplified Diagram

nected at the crew positions, while preventing modulation of the transmitter by a-f voltages from these sources.

#### Note

Interphone communication is always possible from the crew stations, but the transmitter can be modulated only from the pilot station.

(5) Resistors 275-2 and 275-3 are grid resistors for tube JAN-12C8 (VT-169), and the manner in which they are connected (see fig. 8-42, schematic diagram) is necessary to prevent the bridge circuit from becoming unbalanced. The midpoint of these resistors is connected to the junction of resistors 276 and 277. Audio bias voltage is developed across resistor 277, and AVC delay voltage is developed across resistors 276 and 277.

(6) The cathode of tube JAN-12C8 (VT-169) is bypassed by capacitors 211A and 212C. Blocking capacitors 102-14 and 102-15 protect the AVC delay circuit by preventing d-c grid voltages from returning to ground through the bridge circuit. Capacitor 214 prevents the grid input capacitance of tube JAN-12C8 (VT-169) and wiring capacitances from unbalancing the bridge circuit.

(7) The audio-level compensating resistor 262-2 reduces the audio output from the crew microphones (see fig. 4-2) so that approximately equal voltages are impressed on the inter-phone-amplifier grid by the crew or pilot microphones.

*j.* METER SHUNT CIRCUITS.—The meter switch (157) is connected to a network of shunts: 134 for first harmonic-amplifier screen and plate current; 135-1 for second harmonic-amplifier plate current; 148 for power amplifier grid current; and 135-2 for power amplifier screen and plate current plus second harmonic-amplifier screen current. (See figs. 8-42 and 8-43.)

#### Note

Meter switch position "6" is not connected. Switch position "4" is connected in some equipments, but the meter reading for that position is not significant.

### 3. RADIO RECEIVER.

#### *a.* GENERAL.

(1) Radio Receivers BC-624-A, BC-624-AM, or BC-624-C are superheterodyne receivers which operate in the frequency range 100-156 megacycles on any of four pre-set, crystal-controlled channels (selected by remote control only). The intermediate frequency is 12 megacycles. (See figs. 8-42, 8-44, and 8-45.)

(2) Pushing a channel-selector push button applies filament voltage to the vacuum tubes and actuates a frequency shifter mechanism, which automatically tunes the receiver to the desired frequency by closing the circuit to the proper crystal and adjusting the variable capacitors which are fastened in a cam and shaft mechanism.

#### *b.* RADIO FREQUENCY AMPLIFIER.

(1) The radio signal picked up by the antenna is coupled to the grid of the r-f amplifier, tube JAN-9003

(VT-203), by inductors 221 and 222. (See fig. 8-19.) The grid circuit is tuned to the frequency of the received carrier by inductor 222 and capacitors 216A and 218-1.

(2) The grid of tube JAN-9003 (VT-203) is returned to AVC in a shunt feed arrangement and capacitor 201 prevents the AVC from grounding through inductor 222.

#### *c.* CRYSTAL OSCILLATOR.

(1) The crystal oscillator operates in the frequency range 8—8.72 megacycles and utilizes one section of tube JAN-12AH7GT (VT-207).

(2) In channel selection, the crystal switch 286 simultaneously closes the circuit of the desired crystal and the corresponding plate tank inductor 227-1, 227-2, 227-3 or 227-4. (See figs. 8-17 and 8-18.) Capacitors 204 and 205, together with the inductor chosen, provide the tuned plate circuit constants.

#### *d.* HARMONIC GENERATOR.

(1) The radio-frequency output of the oscillator is fed to the grid of the harmonic generator, tube JAN-9002 (VT-202), and because of the high grid-driving voltage, the harmonic generator is supplied with a rich harmonic source.

(2) The tuned plate circuit of the harmonic generator, inductor 226 and capacitors 217B and 218-5, is adjusted to resonate at a frequency which, when heterodyned with the incoming signal, will produce the intermediate frequency of 12 megacycles. Thus, for reception of 100-megacycle signals with an 8-megacycle crystal, the harmonic generator would be tuned to the eleventh harmonic of the crystal to produce a local oscillator-frequency of 88 megacycles.

*e.* HARMONIC AMPLIFIER.—The output of the harmonic generator is fed into the harmonic amplifier, tube JAN-9003 (VT-203), and amplified at the frequency of the harmonic generator.

*f.* MIXER.—The amplified oscillator voltage is fed to the mixer, tube JAN-9003 (VT-203), through inductor 225. This oscillator voltage together with the signal voltage in inductor 224 is fed to the grid of the mixer and the frequency difference of the two appears in the primary of the first i-f transformer 291. (See fig. 8-20.)

#### *g.* FIRST, SECOND, AND THIRD INTER-MEDIATE FREQUENCY AMPLIFIERS.

##### (1) RADIO RECEIVER BC-624-A.

(*a*) The fixed-frequency radio-frequency energy is coupled to the grid of the first i-f amplifier, tube JAN-12SG7 (VT-209), through inductor 291, a permeability tuned transformer.

(*b*) The second and third i-f stages are similar to the first, with the exceptions that the last stage grid is returned to ground rather than to AVC, and the third stage i-f screen is supplied from a dropping resistor rather than from a voltage divider.

(2) RADIO RECEIVER BC-624-AM.—The operation of the i-f amplifiers in Radio Receiver BC-624-AM is essentially the same as in Radio Receiver BC-624-A. The principal differences are in the grid returns. The grid of the third tube, tube JAN-12SG7 (VT-209), is returned directly to ground. (See fig. 8-44.) An additional capacitor 211-2C has been added to the grid return of the second i-f tube JAN-12SG7 (VT-209). These improvements serve to reduce the cross modulation that is due to grid currents on high noise voltage peaks.

b. DETECTOR AND AVC (RADIO RECEIVER BC-624-A).

(1) The r-f voltage induced in the tuned secondary circuit of the transformer 294, variable inductor 228-8, and capacitors 208-8 and 207-8, is applied to one of the diode plates of the detector, tube JAN-12C8 (VT-169). This r-f current is rectified in tube JAN-12C8 and the audio component appears across resistor 281 and potentiometer 236. Condenser 203-3 couples a portion of the r-f voltage to the other diode plate of tube JAN-12C8. (See fig. 8-42.)

(2) Because of the voltage drop through resistors 277 and 276 the cathode of tube JAN-12C8 is 8.5 volts above ground. Since the AVC diode plate is returned to

ground, no rectified voltage will flow in the AVC circuit until the potential developed by the signal on the AVC diode plate exceeds this cathode bias. As soon as the r-f signal exceeds the cathode bias, the delay voltage is said to be overcome, the AVC diode rectifies the r-f signal and the voltage drop through resistor 275-1 places a negative voltage at the junction of 266-2 and 275-1. This negative voltage, varying with the average signal voltage because of the smoothing action of capacitor 211-C, is shunt fed to the grid of the r-f amplifier, tube JAN-9003, and series fed to the grids of the first and second i-f amplifiers, tubes JAN-12SG7.

(3) Resistors 251, 252, 267-1, and 267-4 are isolation resistors and also serve to provide high resistance grid leaks to ground. Capacitor 202-2 bypasses the r-f energy to ground.

i. DETECTOR, NOISE LIMITER, AVC DELAY (RADIO RECEIVER BC-624-AM).

(1) In Radio Receiver BC-624-AM, the tuned circuit of the secondary of the last i-f transformer 294 feeds the r-f signal to the audio diode of the detector, tube JAN-12C8. The signal is rectified in tube JAN-12C8 and appears as a-f voltage across resistors 264-2 and 276-2. The average rectified carrier voltage appears between the

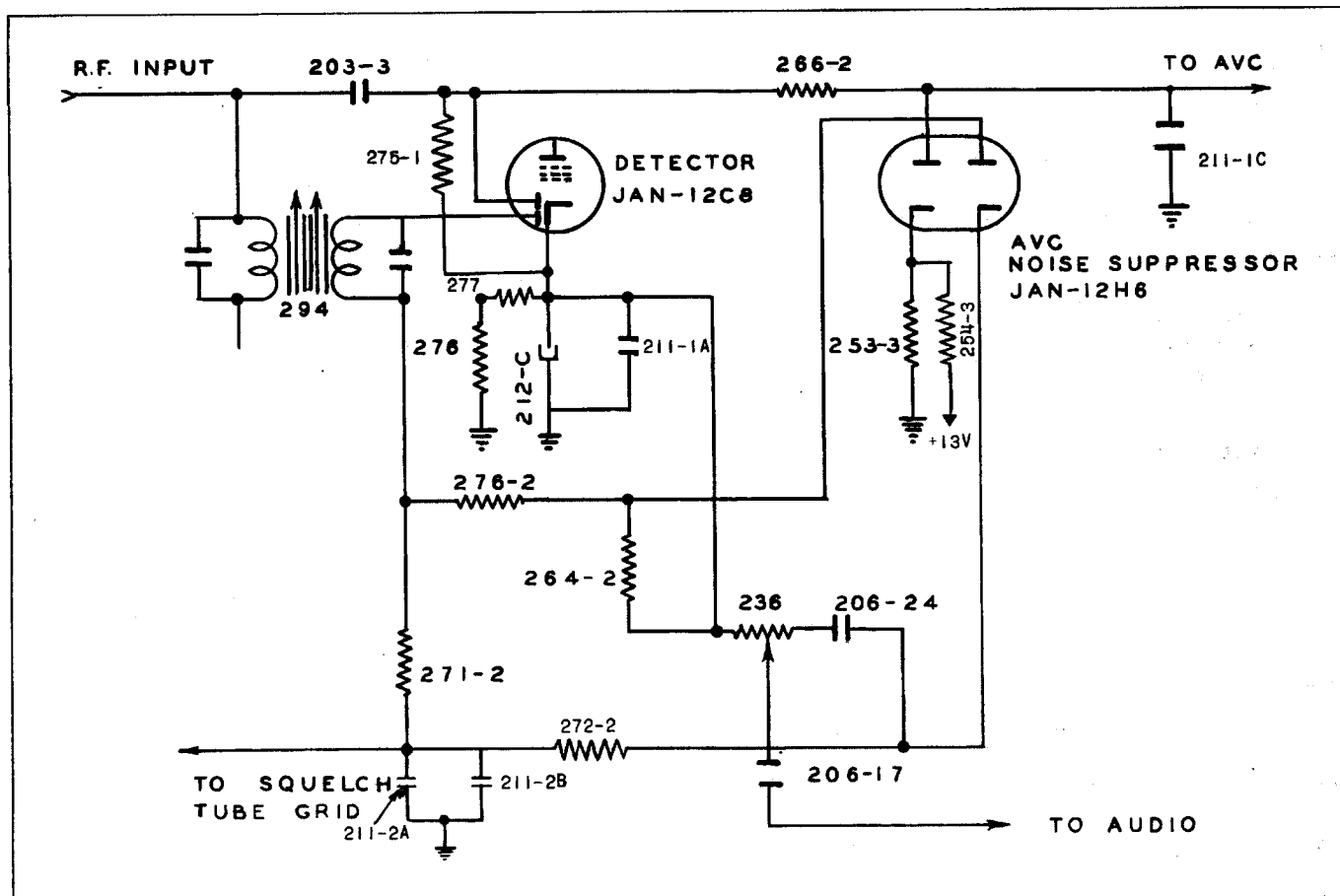


Figure 4-3. Radio Receiver BC-624-AM—Simplified Schematic, Noise Suppressor and AVC

junction of resistors 271-2 and 272-2 and the cathode of tube JAN-12C8 because of the filtering action of capacitor 211-2A and 211-2B in combination with resistor 271-2. (See fig. 4-3.)

(2) The noise limiter diode section of tube JAN-12H6 (VT-214) operates on the average voltage applied to it which is of proper polarity for plate current to flow. However, noise peaks appear at the plate of the noise limiter diode as a sharp change in voltage in a negative direction. Since the time constant of the resistor 271-2 and capacitor 211-2A and 211-2B combination which provides the average bias on the cathode of the noise limiter diode, tube JAN-12H6 (VT-214), is long with respect to the highest audio frequency modulation of the incoming signal, this bias remains essentially constant with audio modulation. If a noise peak appears across the diode load resistors 276-2 and 264-2, the noise limiter diode plate is driven negative with respect to the bias on its cathode. This causes the diode to cease conducting and therefore no voltage appears across its load resistor 272-2. Hence no signal appears on the grid of the first audio amplifier, tube JAN-12C8. Since this action is momentary, no deadening of the set is apparent to the operator. The total effect is to produce a noticeable reduction in the amplitude of the intermittent noise bursts such as ignition interference.

(3) The second plate of the diode, tube JAN-12H6, (VT-214) and its cathode are utilized for delay AVC. The plate of this diode is coupled to the primary of the last i-f transformer 294 through the coupling capacitor 203-3. The selection of the r-f voltage from the primary rather than the secondary of the i-f transformer results in a higher AVC voltage and serves to reduce the shunting effect of the AVC on the i-f secondary and to reduce the modulation rise in the a-f amplifier at the point when the signal voltage is just overcoming the AVC delay bias. The potential difference between the AVC diode plate and ground, 8.5 volts, is established by the delay diode tube JAN-12H6 (VT-214) by which potential the application of the AVC is delayed.

*j.* FIRST AUDIO FREQUENCY AMPLIFIER.—The pentode section of tube JAN-12C8 (VT-169) provides the first stage of audio-frequency amplification and also provides interphone communication. The a-f voltage is fed to the amplifier grid through audio gain potentiometer 236 and transformer 295.

*k.* SECOND AUDIO-FREQUENCY AMPLIFIER.—The amplified a-f signal is resistance coupled to the amplifier tube JAN-12J5GT (VT-135), the output of which is coupled to the load through transformer 296. The transformer is tapped for impedance matching at terminal 7, 4000 ohms; terminal 6, 300 ohms; and terminal 5, 50 ohms.

#### *l.* AUDIO SQUELCH.

(1) The purpose of the squelch-circuit is to keep objectionable noises out of the receiver headsets when no carrier is being received.

(2) One triode section of tube JAN-12AH7GT (VT-207) is used to operate the audio squelch relay 246. A portion of the d-c component of the audio voltage developed at the audio diode of the second detector tube JAN-12C8 (VT-169) when an r-f carrier is being received, is coupled to the grid of tube JAN-12AH7GT (VT-207). The audio voltage variations are smoothed out by capacitor 206-16 leaving only the average value of the rectified voltage to be applied to the grid of the audio squelch tube.

(3) The cathode of this triode section of tube JAN-12AH7GT (VT-207) is connected to a bleeder-resistor network consisting of resistors 279-1, 279-2, 282 and potentiometer (relay control) 237. This network, connected between +300 volts and ground, puts a positive voltage on the cathode, the potential of which may be controlled by potentiometer 237.

(4) Additional grid bias is determined by the magnitude of the d-c component of the diode current flowing through resistor 279-3 and, therefore, varies with the strength of the signal carrier.

(5) The audio-squelch tube is biased nearly to cut-off, and on received signals the additional bias cuts off current through tube JAN-12AH7GT and relay 246 is released. With no signal the bias is removed, current again flows in the tube and relay 246 closes. With the relay contacts closed the audio voltage from the diode of tube JAN-12C8 (VT-169) is shorted to ground. The opening of this relay contact restores the receiver output to normal. (See fig. 4-4.)

(6) The bias on the squelch tube JAN-12AH7GT (VT-207) may be regulated by potentiometer 237, thus the sensitivity of the squelch circuit may be adjusted.

### 4. RADIO RECEIVER BC-624-C.

#### *a.* GENERAL.

(1) Radio Receiver BC-624-C is a modification of Radio Receiver BC-624-AM with major changes in the AVC, squelch, and audio amplifier circuits. (See fig. 8-45.)

(2) Minor changes have been made in certain resistances previously used in order to increase the overall gain and thus improve the AVC characteristics.

(3) In addition, resistors which were found to be overheating in the former receiver were replaced in Radio Receiver BC-624-C by two resistors in parallel. A paper capacitor was substituted for capacitor 212. Circuits changed in the later type receiver are described in the following paragraphs.

#### *b.* DETECTOR AND AVC.

(1) Signal voltage developed in the secondary circuit of the last i-f transformer 294 is applied to one diode section of tube JAN-12H6 (VT-214) mounted underneath the chassis of the receiver.

(2) Audio voltage is developed across resistors 290 and 276-2. The average rectified voltage of this diode is

NOTE: MANY OF THESE RECEIVERS HAVE BEEN MODIFIED BY THE INSTALLATION OF A NOISE SUPPRESSOR KIT. FOR RESULTING CHANGES TO THE SQUELCH CIRCUIT, SEE RADIO RECEIVER BC-624-AM SCHEMATIC DIAGRAM (FIG. 8-44).

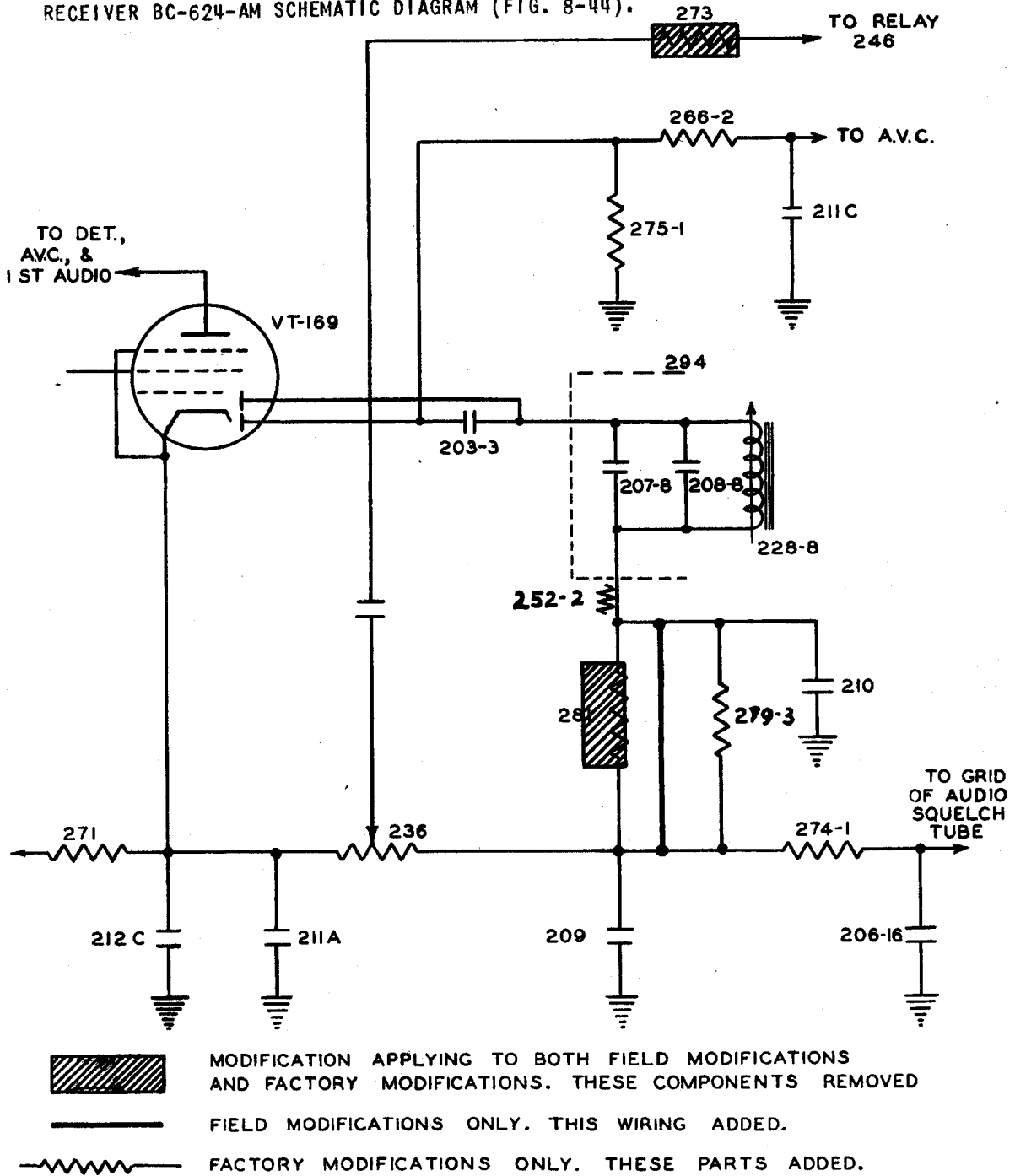


Figure 4-4. Radio Receiver BC-624-A—Rewiring of Squelch Circuit



utilized as AVC voltage effectively in series with the voltage developed by the paralleled diodes in vacuum tube, tube JAN-12C8 (VT-169). The radio-frequency voltage rectified by this latter tube is derived from the primary circuit of the last i-f transformer to secure an additional gain in voltage.

(3) Normally the negative AVC voltage applied to the grids of the r-f and i-f stages increases with an increase in signal strength. The application of increasing amounts of negative AVC voltage serves to increase the grid bias and thus reduces the sensitivity of the receiver.

(4) Without any system to delay this function, the weak signals plus the added noise components would furnish enough AVC voltage to reduce the sensitivity of the receiver to the point where the signal would be inaudible. In order to avoid this reduction of sensitivity to weak signals in the presence of noise components, the AVC is held at a constant potential until the signal level reaches a sufficiently high, predetermined value. After this level is reached the AVC operates normally.

(5) The AVC delay tube JAN-12AH7GT (VT-207), when no signal is present, receives a positive voltage on its plate from the cathode circuit of the AVC and second audio tube JAN-12C8 (VT-169). (See figs. 8-22 and 8-23.) As long as this voltage equals, or is greater than, the cathode bias on the delay section of tube JAN-12AH7GT (VT-207), the tube conducts; and the voltage drop across resistor 258-2 maintains the AVC bus at a slightly positive potential. This positive AVC voltage serves to increase the r-f and i-f sensitivity. The AVC delay section of tube JAN-12AH7GT (VT-207), in addition, protects the r-f and i-f tubes by limiting the maximum positive potential that can be applied to their grids.

#### c. NOISE LIMITER.

(1) One half of vacuum tube JAN-12H6 (VT-214) (see figs. 8-22 and 8-23), is used as a series limiter. The audio signal can get to the audio amplifier grid only by passing through this noise limiter tube. This diode will pass the audio signal only when conducting. Moreover, conduction takes place only when the plate is positive with respect to its cathode. During the reception of signals the average rectified voltage appearing at terminal 2 of the i-f transformer 294 is negative.

(2) Because of the voltage drop across resistor 276-2, the potential at the plate of the noise limiter section of tube JAN-12H6 (VT-214) is positive with respect to its cathode. On noise bursts, the plate of the tube is driven negative while the cathode is held at the original potential by the charge on the filter capacitors 211-3B and 202-28, and the tube ceases to conduct. Conduction is resumed when the noise impulse has passed and the plate again becomes positive with respect to the cathode. The filter condensers 211-3B and 202-28 will resume their quiescent charge and the tube will operate normally. If the noise should continue, the filter condensers will charge sufficiently to again place the cathode

potential lower than the plate and the tube will operate normally, now transmitting both the desired signal and the sustained noise.

(3) The audio signal passed by the series limiter is developed across resistor 281-3 and is then passed by the coupling capacitor 206-17 to volume control 236.

#### Note

For convenience in tuning the receiver with a buzzer or similar source of radio frequency energy, the noise limiter circuit may be disabled by rotating the squelch control 238A to its maximum clockwise position, thus, mechanically opening switch 238B. (See figs. 8-22 and 8-23.)

#### d. SQUELCH.

(1) A squelch circuit is incorporated in order to silence the receiver when no signal is being received or when the signal is so below the noise level as to be unusable.

(2) The d-c voltage developed by the rectification of the r-f signal in the detector circuit is utilized by the audio-squelch tube to determine whether the bias on the first audio amplifier will allow that tube to respond to the audio signals on its grid.

(3) When a signal is being received, its average d-c rectified value from the detectors is applied through resistor 274-1 to the grid of the audio-squelch tube, one section of tube JAN-12AH7GT (VT-207) (also used as the oscillator). The voltage at the grid of the squelch tube with no signal being received is positive by the amount of the delay bias which reaches it through resistors 276-2, 290, 280-2, and 271-3 from the high end of the cathode bias resistor 277-2. The squelch bias potentiometer 238A in operation is positioned so that current through the squelch tube is not cut off until a signal of sufficient strength to develop the necessary negative bias is received. This latter adjustment is manual and may be varied to silence the receiver output at any signal below 2 to 10 microvolts.

(4) When the negative bias applied to the squelch tube is sufficiently high to cut off plate current through this tube, the flow of current through resistor 275-4 becomes zero, and the potential on the grid of the first audio tube becomes substantially the same voltage as that appearing at the junction of resistors 285 and 273-3. Under this condition, normal operation of the first audio stage takes place, whereas with a current flowing in resistor 275-4, the grid of the first audio tube is negative with respect to the cathode and the tube becomes inoperative.

(5) The first audio stage operates as a cathode follower with a gain of less than one (resistor 285 is used for cathode load and bias). Although this mode of operation inherently limits distortion, some will occur at the point where the squelch circuit cuts off. The plate voltage for the squelch tube and the first and second audio amplifiers is filtered by the resistance capacitance combination,

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resistor 264-3 and capacitor 212A. This permits deletion of the choke 269B used in Radio Receiver BC-624-AM.

#### e. SECOND AND THIRD AUDIO STAGES.

(1) Audio voltage supplied from the first audio stage through capacitor 206-25 and resistor 272-1 is applied to transformer 295.

(2) The output of the secondary winding is then applied to the grid of tube JAN-12C8 (VT-169) through resistor 257-2 and radio-frequency choke 241-4. Cathode bias for this tube is provided by resistor 277-2; screen circuit bypassing.

(3) The audio voltage applied to the last stage is developed across the plate load resistor 266-4 and is coupled by capacitor 206-26 to the grid of tube JAN-12A6 (VT-134). Resistor 258-3 is a grid leak. Cathode bias is provided by resistors 235-1 and 235-2, paralleled to increase the total wattage dissipation capabilities. Capacitor 212D is an audio bypass around the cathode bias circuit.

(4) To improve the output regulation of the third audio stage, some negative feedback is introduced through resistor 240. The output circuit is matched to the final audio stage by means of transformer 200.

(5) Two impedance levels are available for the connection of both high and low impedance headsets. Tap No. 4 matches from one to twelve pairs of 600 ohm headsets connected in parallel; tap No. 5 similarly matches one to twelve paralleled 8000 ohm headsets.

## 5. RACK FT-244-A.

#### a. GENERAL.

(1) Rack FT-244-A fits over the transmitter and receiver and the complete assembly is mechanically held together by eight mounting screws.

(2) All input and output connections to the transmitter and receiver are made through the rack. (See figs. 8-1 and 8-30.)

#### b. SOCKET AND PLUG CONNECTIONS.

(1) The filtered output of the dynamotor unit is applied to the transmitter and receiver through socket 420.

(2) Press-to-talk and marker-beacon-receiver connections are also made through socket 420.

(3) The radio control box, the jack boxes, and the contactor are connected through the junction box to socket 417.

(4) The transmitter r-f output or receiver signal input connection is made through socket 416.

(5) Receiver plug 231 engages rack socket 419.

(6) Transmitter plugs 123-1 and 123-2 engage rack sockets 418-1 and 418-2, respectively.

#### c. RATCHET MOTOR AND SHIFTER MECHANISM.

(1) The channel-control ratchet motor 406 makes it possible to actuate the frequency-shifter mechanism. (See figs. 5-9 and 8-1.)

(2) The ratchet-wheel of the channel-control motor 406 is equipped with four arms spaced 90° apart. The motor is so positioned that a ratchet-wheel arm will release a frequency-shifter actuating slide when the ratchet wheel is displaced one tooth past the point where the opposite arm first opens a pair of positioning-switch contacts 427A, B, C, or D. In this condition of the motor assembly, the contacts should remain open.

(3) When a channel-selector pushbutton is pressed on the radio control box, the dynamotor-starter relay is energized, the dynamotor is placed in operation, and the solenoid of motor 406 receives operating power through terminal 4 of socket 420.

(4) The motor solenoid and the interrupter switch cause the armature to oscillate; and the pawl, which is part of the armature assembly, rotates the ratchet wheel. As this wheel rotates, the arms attached to it displace the frequency-shifter actuating slides in the order A, B, C, D and open the contacts of the positioning switch 427 in the same order.

(5) When the positioning switch contacts A, B, C, or D which correspond to the channel selected on the radio control box are opened, the motor circuit is broken and the process of channel-selection ceases. When this happens, the ratchet-wheel arms will have displaced the actuating slide, consequently, the receiver and transmitter shifter slides for the desired channel to the position where the proper crystals are chosen and the circuits tuned.

(6) If the channel-release pushbutton 426 is depressed while the channel-selector pushbutton on the control box is still in the depressed position, the motor solenoid will be energized and will attract the armature. When the armature is released, the pawl attached to it will displace the ratchet wheel one tooth which is just sufficient to cause the complete release of the channel slides. There will be no contact whatever between the actuating slides and the channel slides. This is the only condition of the frequency-shifter mechanism which permits removal of the transmitter or receiver from the rack without damaging the equipment.

(7) If channel release pushbutton 426 is pressed a second time, the ratchet-wheel is again displaced one tooth and the ratchet-wheel arm will be completely disengaged from the positioning-switch contacts for the channel in use. This closes the motor circuit again, and channels will be selected in the order A, B, C, D until the channel previously selected on the control box is reached. Therefore, the channel release pushbutton 426 makes it possible to release the frequency-shifter mechanism and to select a channel again without touching any controls on the control box.

#### d. LOCKING AND ANTENNA CHANGEVER RELAYS.

(1) Locking relay 411-1 is connected across the motor-voltage supply and is energized whenever the motor is energized. (See fig. 8-1.)

(2) When the contacts of locking relay 411-1 are closed, the antenna-changeover relay 412 is energized and switches the antenna to receive. This prevents transmission while channel-selection takes place.

(3) With the antenna-changeover relay in the unenergized condition, the transmitter-receiver assembly is connected for transmission. This relay may be actuated either from the control box, the contactor, or the press-to-transmit (press-to-talk) switch. Refer to paragraph 8, this section, for a detailed description of the control circuits and the B+ circuit switching effected by means of the antenna-changeover relay 412. The interphone system functions under all operating conditions.

### 6. DYNAMOTOR UNITS.

#### a. DYNAMOTOR UNIT PE-94-A.

(1) Dynamotor Unit PE-94-A is designed to provide all necessary voltages for the transmitter, receiver, and control circuits. (See figs. 8-31, 8-32, 8-36, 8-37, 8-38 and 8-39.)

(2) The dynamotor is connected to a 28-volt battery through socket 322. (See fig. 1-3.) When a channel-selector pushbutton is pressed on the radio control box, the coil of starter relay 321 is energized through contacts 5 and 6 of the output filter. This closes the relay contacts and permits the dynamotor to draw primary d-c power through the filters.

(3) The dynamotor is provided with three field windings: a series field to insure rapid starting at low temperatures, a long shunt field mounted on the same pair of poles, and a regulator field for changing the speed of rotation. The regulator field is mounted on a separate pair of poles.

(4) The armature is provided with four windings: 14.5-volt, 4.9-ampere low-voltage winding for filament supply and control circuits; a —150-volt, 10-milliampere medium-voltage winding for grid bias; a 300-volt, 260-milliampere high-voltage winding for plate supply; and a 28-volt motor winding. (See fig. 8-42.) The shunt and series fields act on all four armature windings, but the regulator field acts only on the motor winding and is constructed so that its flux induces a voltage in the motor winding which is in direct opposition to the counter emf.

(5) A voltage regulator 314 operates in conjunction with the dynamotor-regulator field to hold the output voltages constant over a wide range of input voltages. The voltage regulator consists of a carbon-pile resistor (connected between the stationary contact of relay 321 and the dynamotor regulator field), and a solenoid which is connected between ground and the +13 volts output through the variable resistor 316. The ballast resistor 317 drops the voltage of the low-voltage output winding from 14.5 to 13 volts.

(6) Both the carbon-pile resistor and the solenoid act against a common spring. When the solenoid is not energized, the spring applies maximum pressure on the carbon pile. The spring assembly consists of a six-finger, three-leaf spring, containing in one end the lower contact of the carbon pile. The other end is connected to a steel disc which is part of the magnetic circuit. The fingers of the spring rest on a bi-metal washer which thermostatically compensates for variations in ambient temperature.

(7) The carbon-pile is contained in a ceramic tube which extends vertically from the spring assembly into the top casting. The initial pile pressure is adjusted by means of a large adjustment screw located on top of the regulator (see fig. 8-32), and the air gap of the magnetic circuit is adjusted by means of a larger screw on the bottom. These adjustments have been properly made in the factory and should not be tampered with under normal circumstances.

(8) If the low-voltage output exceeds 13 volts, the solenoid applies less pressure on the carbon pile through the common spring. This increases the resistance of the carbon pile which reduces the current in the regulator field winding, retards the speed of rotation, and restores the dynamotor low-voltage output to 13 volts. If the low-voltage output is less than 13 volts, the solenoid applies additional pressure on the carbon pile, lowering its resistance, increasing the current in the regulator field, increasing the speed of the dynamotor, and restoring the output to 13 volts. This process may go through several cycles before final equilibrium is obtained, but at no time does the dynamotor low voltage output exceed the limits 12.35 to 13.52 volts. Note that the regulatory action affects every output voltage since the outputs depend on the dynamotor speed.

(9) The current through the regulator solenoid may be varied by means of the adjustable resistor 316 (figs. 8-31 and 8-32). Each of the dynamotor outputs is bypassed for radio frequency and filtered by separate filter networks contained in the output filter.

#### b. DYNAMOTOR UNIT PE-94-B, PE-94-C.

(1) Dynamotor Unit PE-94-B or PE-94-C employs a different type dynamotor from Dynamotor Unit PE-94-A, although these two dynamotors are physically and electrically interchangeable. (See figures 8-31, 8-32, 8-33, 8-34, 8-35, and 8-36.)

(2) The type DA-3A dynamotor (part of Dynamotor Unit PE-94-B, or PE-94-C) is provided with four field windings, namely, a series field for providing rapid starting at low temperatures, a long shunt field mounted on the same pair of poles, a regulator field for changing the flux density, and a demagnetizer field for aiding regulation of output. The regulator field is mounted on a pair of poles, on one of which the demagnetizer field is also mounted. (See fig. 8-33 and 8-34.)

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(3) The type DA-3A dynamotor armature has four windings, the motor winding being controlled by the shunt and series fields only. The three output windings being acted upon by all the fields, is a major difference between the dynamotor machine in Dynamotor Unit PE-94-A and the dynamotor machine in Dynamotor Unit PE-94-B and PE-94-C.

(4) The regulator field keeps the output constant by changing the intensity of the magnetic flux acting on the output windings, this process being aided by the demagnetizer field which is in series with, and tends to oppose the action of, the shunt field.

(5) A drop in dynamotor input results in lower output, thus increasing the pressure on the carbon pile, which reduces its resistance. A larger current then flows in the regulator field, increasing the flux and the output voltages. An increase in dynamotor input voltage causes a reversal of this process.

(6) The type DA-3A dynamotor does not exhibit the tendency toward instability which was inherent in the earlier dynamotor, and there is no difference between the adjustment procedures for the voltage regulators.

#### c. DYNAMOTOR UNIT PE-98-A, PE-98-E AND PE-98-F.

(1) The dynamotor machine in Dynamotor Unit PE-98-E and PE-98-F are designed with the same general characteristics as the type DA-3A dynamotor.

(2) Dynamotor Unit PE-98-A is electrically and mechanically similar to Dynamotor Unit PE-94-A differing only in the following items:

A 14-volt primary-power source is used. A 14-volt starter relay 320 is employed in place of the 28-volt relay 321. A 14-volt dynamotor 306 is used in place of the 28-volt dynamotor 307. Resistor 317 is not employed. (See fig. 8-39.) (The low-voltage output of dynamotor 306 is 13.0 volts instead of 14.5 volts, therefore the dropping resistor 317 is not needed.)

d. ADDITION OF IMPROVED FILTERS TO DYNAMOTOR UNITS.—Improved filters, mechanically interchangeable with the present filters, have been designed for the dynamotor units. (See fig. 8-37.) Units equipped with the improved input filter and original output filter are marked "WIDE RANGE FILTER," and units equipped with the improved input and output filters are marked "COMPLETELY FILTERED."

#### 7. RADIO CONTROL BOX BC-602-A AND BC-602-B.

a. All electrical connections to Radio Control Box BC-602-A are made through the 12-contact socket 606 and the 5-contact socket 607.\* (See fig. 8-41.)

b. With the "OFF" pushbutton depressed, contacts 611E are open and the dynamotor starting relay 321 is unenergized.

\* Socket 607 has been removed from Radio Control Box BC-602-B.

c. When any channel-selector pushbutton "A," "B," "C," or "D" is pressed, the "OFF" pushbutton is automatically released and the contacts 611E are closed, thus starting the dynamotor unit and supplying power to the transmitter, receiver, and control circuits. For example, if channel "A" pushbutton has been pressed, closing contacts 611A, the channel-control motor 406 will be energized through one pair of contacts of 611A and the motor will operate until channel "A" is selected. At this time, the motor-positioning switch 427A opens, de-energizing the motor. However, since the contacts of 611A remain closed, voltage is supplied to indicator lamp 601-1 and this lamp will continue to glow until another channel-selector pushbutton is pressed or the equipment turned off.

d. The other pair of contacts of switch 611A energize the motor of the variable-length antenna if one is connected to the control box through plug socket 607. The remaining channel-selector pushbuttons function in the same manner.

e. With the "T-R-REM." switch 612 in the "R" position, voltage is applied to the coil of antenna relay 412 (in the rack) and this relay is switched to the receive position. Indicator lamp 601-5 is lighted.

f. In "T" position, one pair of contacts of switch 612 is opened, breaking the circuit to the coil of antenna relay 412, causing the armature to fall away from the coil, and switching the equipment to transmit. Simultaneously, lamp 601-5 goes out.

g. In "REM." position, control of the antenna relay 412 is effected by a press-to-transmit button (usually located on the throttle in U. S. installations of Radio Set SCR-522-A). When pressed, this button energizes the coil of the press-to-transmit relay 161 in Radio Transmitter BC-625-A. Operation of relay 161 opens a pair of contacts which break the circuit to the coil of antenna relay 412, switching the antenna and high-voltage supply to the transmitter. Indicator lamp 601-5 goes out.

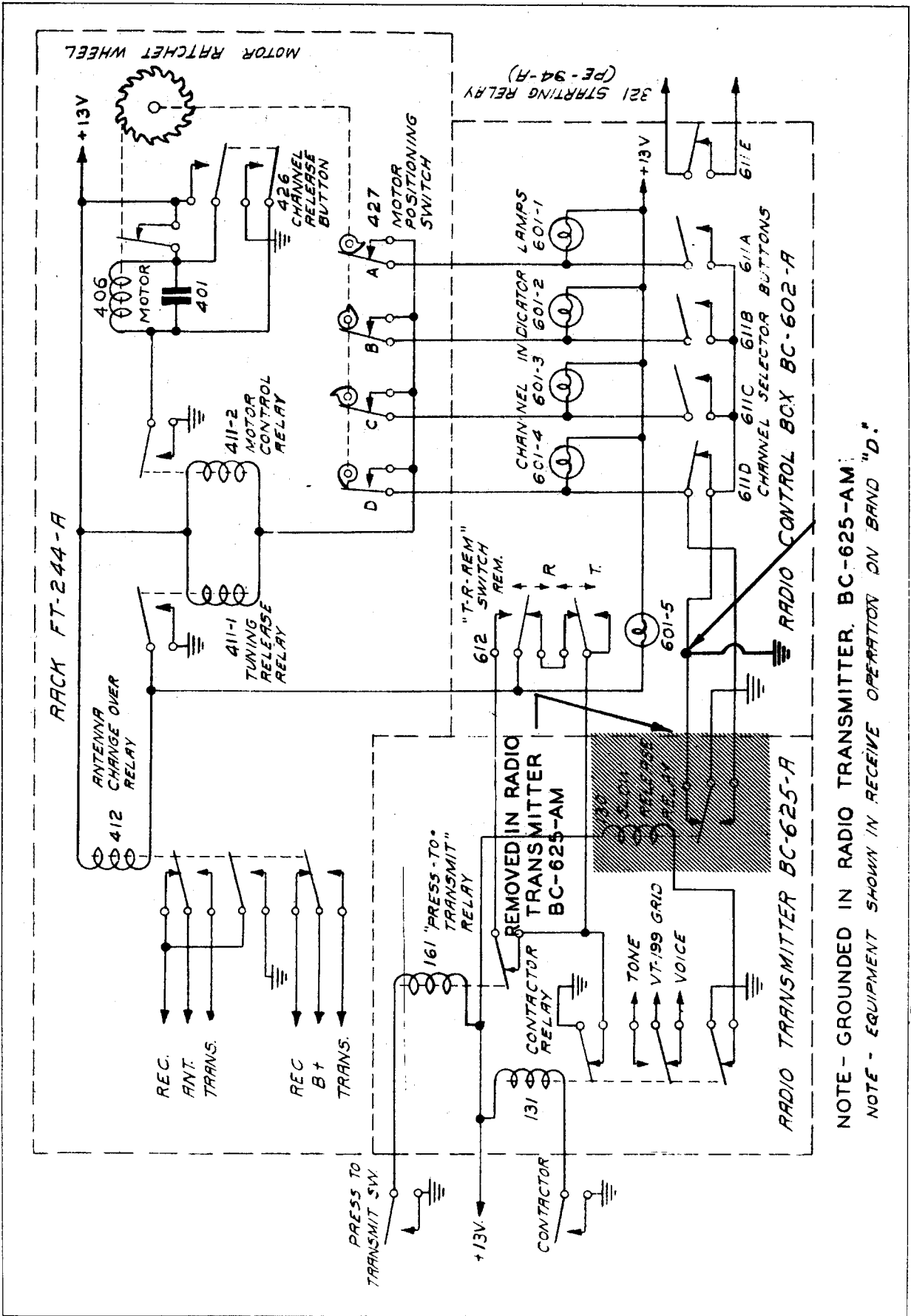
b. The release of the press-to-transmit (press-to-talk) button reverses the process, restoring the equipment to receive, and lighting lamp 601-5.

#### 8. CONTROL CIRCUITS.

##### a. FREQUENCY CHANGING OPERATION.

(1) The positions of all relays and switches when Radio Set SCR-522-A is operating normally as a receiver on channel "D" are shown in figure 4-5. It is assumed that each transmitter and receiver channel has been pre-tuned to one of the four desired frequencies.

(2) If channel selector pushbutton "A" is pressed, the contacts of switch 611D are opened mechanically and contacts 611A are closed, permitting a flow of current from the +13-volt supply through the coils of relays 411-1 and 411-2, the contacts of motor-positioning switch 427A, switch 611A, and the contacts of relay 130 to ground (—13 volts). Relays 411-1 and 411-2 immediately operate.



NOTE - GROUNDED IN RADIO TRANSMITTER, BC-625-AM;  
 NOTE - EQUIPMENT SHOWN IN RECEIVE OPERATION ON BAND "D".

Figure 4-5. Radio Set SCR-522-A—Simplified Schematic Diagram of Control Circuits

(3) When the contacts of relay 411-2 close, a potential of 13 volts is applied to ratchet motor 406, causing it to rotate until positioning switch 427A opens, at which time the transmitter and receiver channel "A" slides will be completely engaged.

(4) The opening of contacts 427A breaks the circuit through relays 411-1 and 411-2, stopping the motor instantly.

(5) Indicator lamp 601-1 is lighted by current flowing from the +13 volt supply through contacts 611A and relay 130 contacts to ground.

(6) The operation of relay 411-1 may be disregarded when the "T-R-REM." switch is in "R" position, since relay 412 is already energized by current flowing from the +13-volt supply through the "T-R-REM." switch contacts and one pair of contactor relay 131 contacts to ground. However, if channel shifting were to start while transmission was going on (antenna relay 412 de-energized), current would flow from the +13-volt supply through the coil of relay 412 and through relay 411-1 to ground, thus transferring the antenna relay 412 to the receive position until channel shifting was completed.

#### b. TRANSMIT, RECEIVE, AND REMOTE OPERATION.

(1) When any channel selector pushbutton except 611E is depressed, contacts 611E close, energizing the dynamotor-starting relay 321. The dynamotor then furnishes the radio set with all necessary operating voltages, namely, +13 volts, -150 volts, and +300 volts direct current.

(2) With the "T-R-REM." switch in "R" position, the antenna relay 412 is operated by the current from the +13-volt supply through its coil, contacts of the "T-R-REM." switch, and one pair of contacts on relay 131 to ground. In operating position, relay 412 connects the antenna to the radio receiver and connects +300 volts to the r-f circuits of the receiver. Indicator lamp 601-5 is lighted by the current flow from the +13-volt source through the same combination of contacts to ground.

(3) With the "T-R-REM." switch in "T" position, the return circuit through its contacts to ground (through the contacts of relay 131) is broken, extinguishing lamp 601-5 and de-energizing the coil of antenna relay 412.

(4) With the antenna relay in this condition, the antenna is connected to the r-f output terminal of the radio transmitter and a potential of +300 volts is transferred to the plate circuits of the transmitter oscillator tube JAN-6G6G (VT-198-A) and second harmonic amplifier tube JAN-832 (VT-118).

(5) Placing the "T-R-REM." switch in "REM." position results in normal receiver operation (since the ground return for the coil of relay 412 is then made through the contacts of relays 161 and 131) unless the press-to-transmit (throttle) switch is pressed, resulting in operation of relay 161.

(6) When the contacts of relay 161 open, the ground return circuit of relay 412 is broken, and the relay returns to the transmit position. The ground return for lamp 601-5 is also broken and the lamp goes out.

(7) Releasing the press-to-transmit switch restores the equipment to the receive condition.

## SECTION V MAINTENANCE

### WARNING

*A dangerous potential exists on the transmitter and receiver whenever the equipment is in either the transmit or receive position. Do not change tubes or make adjustments inside the equipment unless the "OFF" button on the control box is depressed.*

### CAUTION

Use an external power supply when making extensive tests if the aircraft's engine or engines are not running. Otherwise make the tests of as short a duration as possible.

## 1. PREFLIGHT INSPECTION.

### a. VISUAL.—Visually inspect:

(1) The antenna mast for security and cleanliness at the base.

(2) The components of the radio set for secure mounting.

(3) All plug and socket connections.

### b. OPERATIONAL.

(1) Depress the channel selector pushbuttons "A," "B," "C," and "D" (on the control box) in sequence to check the operation of the ratchet motor and the shifter mechanism.

(2) Check with the ground station or another airplane to check the modulation of the transmitter.

(3) If the transmitter output is unsatisfactory, make the adjustment described in paragraph 9b(10) or 9c(8), this section.

(4) Check for the presence of extraneous receiver noises with the engines running.

(5) If the receiver output is unsatisfactory, make the adjustment described in paragraphs 10c(12) and (13), or 10d(4) and (5).

## 2. DAILY INSPECTION.

### IMPORTANT

Periodic inspections prescribed herein represent minimum requirements. If because of local conditions, peculiarities of equipment, or abnormal usage they are found insufficient to assure satisfactory operation of the equipment, local authorities should not hesitate to increase their scope or frequency.

a. Repeat the inspection procedure described in paragraph 1, this section.

b. Check for intermittent contacts by placing the receiver in operation and subjecting the major components and associated plugs and cordage to jarring.

c. Inspect the dynamotor brushes. Some of the brushes are to be replaced every 15 hours, while others need not be replaced in less than 50 hours. Refer to paragraph 6e(2) and (3), this section.

## 3. 25-HOUR INSPECTION.

a. Repeat the inspection procedure described in preceding paragraphs 1 and 2.

b. Loosen the Dzus fasteners and slide the transmitter and receiver covers away from the top of the case.

c. Plug Test Set I-139-A into the transmitter meter socket.

d. Depress any one of the channel selector pushbuttons. Place "T-R-REM" switch in "T" position.

e. Turn the "METER SWITCH" to position "5" and record the reading on the test milliammeter.

f. Check the reading on the milliammeter with the "METER SWITCH" in position "5" for the remaining channels. On each channel the reading should be more than half scale.

g. Turn the "METER SWITCH" to position "3," depress each channel-selector pushbutton and note the meter reading. If the highest reading obtained varies more than  $\pm 0.02$  from 0.63, readjust the antenna coupling until this value is obtained. The meter reading on the other channels should now be less than 0.63.

b. Record the reading on the milliammeter with the "METER SWITCH" in position "3" for all the channels.

i. If the highest reading obtainable on the heaviest loaded channel by adjusting the antenna coupling control is less than .55, inspect the r-f power amplifier, tube JAN-832 (VT-118), and its associated circuits. In no case adjust the antenna coupling to give a reading greater than 0.63 on any channel.

## 4. 100-HOUR INSPECTION.

a. ANTENNA MAST AN-104-A.—Check the antenna installation for the following:

(1) Security of mounting and cracking at the base.

(2) Waterseal protection.

(3) Positive ground connection. Connect an ohmmeter (using the low-range scale) between the skin of the aircraft and the shield of the coaxial cable. The reading on the meter should be zero.

(4) Damage or wear of antenna transmission line cable and loose plugs.

b. RADIO CONTROL BOX BC-602-A or BC-602-B. Inspect the control box as follows:

(1) Loosen the plug-locking rings on the back of the control box and remove the plug. Remove the side plate.

(2) Remove all dust or dirt. (Be careful not to damage contacts.)

(3) With the "T-R-REM." switch in the "T" position, press the successive channel buttons checking the operation of the signal lamps. The lamp adjacent to the channel-selector button depressed, should glow. The lamp adjacent to the "T-R-REM." switch should be off.

(4) Place the "T-R-REM." switch in the "R" position. The lamp adjacent to the "T-R-REM." switch should glow regardless of which channel is selected. If a

## Section V

### Paragraph 4

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lamp fails to function properly, replace as directed in paragraph 8a, this section.

(5) Check the channel selector switch 611 for loose contacts.

(6) Check the cams at the rear of switch 611 for a thin film of lubrication. If lubrication is necessary refer to paragraph 7b, this section.

(7) Check the dimmer assembly for freedom of action.

(8) Inspect the wiring for fraying or wear.

(9) Replace the side plate and plug and hand-tighten the locking ring.

(10) Press the "OFF" button.

c. DYNAMOTOR UNIT PE-94-A, PE-94-B, PE-94-C, PE-98-A, PE-98-E, or PE-98-F.—Inspect the dynamotor unit as follows:

(1) Loosen the plug-locking ring and remove the connecting plugs. Remove the dynamotor unit from the aircraft.

(2) Remove the eighteen screws holding the dynamotor unit cover in place and remove the cover.

(3) Disconnect the connecting leads and loosen the dynamotor retaining strap as directed in paragraph 6e(3)(d), this section. Remove the dynamotor machine.

(4) Remove the brush or dust covers from the dynamotor machine.

(5) With dry compressed air, blow the carbon and copper dust from all four commutators and from the armature near the commutators. If the commutators show signs of excessive wear, exchange the dynamotor.

(6) Inspect the brush-holder mounting slots of Dynamotor Unit PE-94-A and PE-98-A, for cracks or fractures.

(7) Inspect for restricted or sticking brushes, making certain that the brush springs are in the proper place and exerting the proper pressure. (Refer to par. 6e(2)(e), this section.)

(8) Replace brushes worn to  $\frac{3}{8}$  inch. (Refer to par. 6e(2) or (3), this section.)

(9) Look for loose connections.

(10) Replace the dynamotor machine in the dynamotor case and tighten the retaining strap.

(11) Replace the dynamotor unit cover making certain that the cover is installed so ventilating portions of the ends of the cover are adjacent to the dynamotor proper and not to the associated filter sections.

### IMPORTANT

Correct installation of cover was not designated on early models of the dynamotor units so care must be taken to replace the cover correctly. Later models have red stripes that must coincide if the cover is properly installed.

(12) Replace the dynamotor unit in the aircraft, replace the plugs, and tighten the locking rings.

d. RACK FT-244-A.

### (1) REMOVAL OF TRANSMITTER-RECEIVER ASSEMBLY FROM AIRCRAFT.

(a) Depress the "OFF" button on the radio control box.

(b) Loosen the Dzus fasteners on the receiver and transmitter covers and slide the covers away from the top of the assembly.

(c) Turn the equipment on by pushing channel selector pushbutton "A." Press each channel button to insure shifting from one channel to the other.

(d) Press the channel release button 426 once and release it. This releases all slides.

(e) Push the "OFF" button.

(f) Close the transmitter and receiver covers and fasten the Dzus fasteners.

(g) Loosen the plug locking rings and remove the plugs from receptacles 420, 417, and 416.

(h) Loosen the shockmount retaining nuts or mounting wing nuts, if mounting FT-488 is used, and remove the transmitter-receiver assembly in Case CS-80(\*) from the aircraft.

(i) Loosen the Dzus fasteners on the receiver and transmitter covers, and slide the covers away from the top of the transmitter-receiver assembly.

(j) Unfasten the two large Dzus fasteners (see figs. 1-2 and 1-4) located on each side of Case CS-80-A or Case CS-80-C. By use of the handles in each end of the rack, lift the rack together with the receiver and transmitter out of the case.

(k) Make certain the rack slides are disengaged by rotating a tuning control knob. (If the rack slides are disengaged, the tuning control knob will rotate freely.)

(l) Remove the eight red mounting screws and lift the rack from the transmitter-receiver assembly.

### (2) RACK INSPECTION.

(a) Remove the six screws, which are not recessed, on the rack center cover. Remove the center cover.

(b) Blow the dust and dirt out with dry compressed air. Avoid subjecting the delicate parts to direct blasts; particularly the antenna changeover relay.

(c) Inspect the mounting screws and electrical connections on the antenna receptacle 416. (See fig. 8-1.)

(d) Inspect the mounting and electrical connections on antenna relay 412. Clean and burnish or polish the relay contact points as directed in paragraph 7a.

(e) Inspect the condition of the pins of receptacles 420 and 417. (See fig. 8-1.)

(f) Inspect relays 411-1 and 411-2 (see fig. 8-1) by pressing the armature lightly until it stops. Then

\* Any issue letter is applicable.



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check the contact points of the relay. Clean the contact points as directed in paragraph 7a.

(g) Inspect the cable wiring for wear where it goes through the center channel of the rack. At the same time inspect the cable where it passes under the receptacle and over the shifter mechanism shield.

(3) **RACK SHIFTER MECHANISM AND RATCHET MOTOR.**—Stand the rack on its end with the ratchet motor down and inspect the following for dirt, corrosion, and need of lubrication: (Location of parts shown in fig. 5-9.)

(a) The receiver shifter actuating slides and their respective tracks and spacers. (If relubrication is necessary, refer to par. 7b, this section.)

(b) The transmitter shifter actuating slides and their respective tracks, spacers, and slide heads. (Refer to par. 7b, this section, if lubrication is needed.)

(c) The motor arms. (Refer to par. 7b, this section, if lubrication is needed.)

(d) Each pair of cross arms at each end and at the pivoting point.

(e) The ratchet wheel of the motor. (To clean the ratchet wheel, rotate the wheel by pressing and repressing the pawl spring perch. Make sure the ratchet wheel is left in a position where all the shifter actuating slides are disengaged.)

(f) The pawl and pawl stop of the motor.

(g) The hinge assembly on the motor.

(b) Inspect the shifter slides for broken or damaged cams and springs.

(4) **MOTOR POSITIONING SWITCH.**

(a) Check the four arms of the positioning switch for alignment.

(b) Depress the motor armature step by step until a motor arm engages one of the bakelite fingers of the positioning switch and opens the contacts. Check to see that the channel slide for the channel being selected is in the fully engaged position. Depress the motor armature again and check to see that the slide of the shifter assembly is released and that the contacts remain open. Depress the motor armature once more and note that the contacts of the positioning switch close.

(c) Check the motor positioning switch on each channel.

(5) **MOTOR INTERRUPTER CONTACTS.**—Inspect the motor interrupter contacts. If the contacts need repair other than cleaning, replace the rack assembly. (Location of parts shown in fig. 5-9.)

e. **RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C.**

(1) **VACUUM TUBES.**

**Note**

Remove the vacuum tubes from their sockets by pulling nearly straight up. Install the tubes by

pushing nearly straight down. Use a slight rocking motion, if necessary, with extreme care.

(a) Inspect the vacuum tubes for signs of oxidation and the tube sockets for cracks.

(b) If the tubes require replacement, refer to paragraph 8c, this section.

**Note**

All tubes of a given type supplied with the equipment shall be consumed prior to employment of tubes from general stock.

(2) **MECHANICAL.**—Place the receiver on a test bench with the slides and tuning controls up and rotate the two tuning controls making certain each turns easily and does not bind (see figs. 5-11 and 5-12). Inspect the following:

(a) The four shifter mounting screws for security.

(b) The four positioning clips, clip springs, and the four cam assemblies on each stack assembly by pushing each shifter in with a finger until it seats firmly. Release quickly. The slide will return to the released position and the tuning controls will rotate to their respective settings as each slide is depressed unless a cam or positioning clip or clip spring is defective.

(c) The bearing surfaces of the shifter slides. If cleaning or relubrication is necessary, refer to paragraphs 7a and 7b, this section.

(d) The mounting screws of all plugs and receptacles.

(e) The mounting nuts on the "AUDIO" and "RELAY"\* controls. If loose, tighten and seal with glyptal.

(f) The mounting of the r-f and oscillator assembly for security. (Be careful not to disturb the settings of the coils and trimmer capacitors.)

(g) The three mounting screws on the end of the chassis holding the r-f and oscillator assembly for security. (See fig. 8-19.)

(b) The mounting nuts on the crystal board.

(i) The various parts mounted on the chassis for security.

(j) The mounting screws and nuts of each component part accessible from the bottom of the chassis for security.

(3) **ELECTRICAL.**—Inspect for the following:

(a) Evidence of wearing of cables in the chassis.

(b) Loose solder joints and terminal board connections.

(c) Frayed leads or broken strands of wire.

(d) Nearly shorted connections.

f. **RADIO TRANSMITTER BC-625-A OR BC-625-AM.**

\* "RELAY" control replaced by "SQUELCH" control in Radio Receiver BC-624-C.

**Section V**

**Paragraphs 4-5**

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**(1) VACUUM TUBES.**

(a) Place the transmitter on a test bench with the tuning controls up.

(b) Loosen the four Dzus fasteners on the power amplifier shield, located on the end of the chassis, and remove the shield. (See fig. 8-15.)

(c) Inspect the vacuum tubes for tightness in the sockets and tight-fitting plate caps, if employed. Check all tubes except tube JAN-832 (VT-118) in a tube checker. (Instructions for testing tube JAN-832 appear later in this section.) If tubes require replacement, refer to paragraph 8*b*, this section.

**Note**

All tubes of a given type supplied with the equipment shall be consumed prior to employment of tubes from general stock.

**(2) POWER AMPLIFIER SECTION.**

(a) Check for security of parts and wiring in the power amplifier section, paying particular attention to the mechanical condition of the antenna coupling inductor 122 and flexible plate leads to tube JAN-832 (VT-118).

(b) Replace the power amplifier shield making certain that the Mycalex strip 163 rests securely between the plate pins on vacuum tube JAN-832 and is exerting a downward pressure.

**(3) MECHANICAL.**

(a) Inspect for security of the four frequency shifter mounting screws.

(b) Inspect the four positioning clips, the clip springs, and the four cam assemblies by pushing each shifter slide in with the fingers until it seats firmly. Release quickly. The slide will return to the released position, and the tuning controls will rotate to their respective settings as each slide is depressed unless a cam, positioning clip, or clip spring is defective.

(c) Inspect the bearing surface of the shifter slides. If cleaning or lubrication is necessary, refer to paragraph 7*a* and 7*b*, this section.

(d) Rotate each of four tuning controls making certain that each turns easily.

(e) Inspect the mounting nut on the "GAIN"\*

\* The "GAIN" control has been deleted from later models of Radio Transmitter BC-625-AM.

control 125. (See fig. 5-10.) If loose, tighten and seal with glyptal.

(f) Rotate the knob of the "METER SWITCH" 165 (see fig. 5-10) from position 1 to 6 and check for normal rotation and locking.

(g) Place the transmitter on one side, then on the other side, and finally up on one end; in each position inspect for security of accessible component parts.

**(4) ELECTRICAL.—Check for the following:**

(a) Evidence of wearing of cables.

(b) Loose soldered joints and terminal board connections.

(c) Frayed leads or broken strands of wire.

(d) Nearly shorted connections.

(5) REASSEMBLY. — Reassemble the receiver, transmitter, and rack. Make certain, before tightening the mounting screws of the receiver and transmitter, that their respective actuating slides are approximately  $\frac{1}{32}$  inch from the slide assemblies when in the released position. Reassemble in Case CS-80-A or Case CS-80-C.

**g. TRANSMITTER AND RECEIVER TUNING.**

(1) Install crystals corresponding to the assigned channel frequencies in the transmitter crystal sockets. (See fig. 5-10.) Tune the transmitter according to the directions given in paragraphs 9*b* or 9*c*, this section.

(2) Install crystals (see figs. 5-11 and 5-12) corresponding to the assigned frequencies in the crystal sockets of the receiver. Tune the receiver according to the directions given in paragraphs 10*c* or 10*d*, this section.

**5. TROUBLE SHOOTING FOR INSTALLED EQUIPMENT.**

**a. GENERAL.**

Before removing any component from Radio Set SCR-522-A installed in an aircraft, determine, if possible, the cause of failure and isolate the faulty circuit or component. Look for the simple causes of trouble first, such as faulty tubes, defective fuses, burned out parts, and broken leads.

**b. TROUBLE CHART.**

The following list of troubles and probable causes will assist in locating and remedying some of the more common faults in the radio set.

**TROUBLE LOCATION AND REMEDY CHART**

<i>Symptom</i>	<i>Cause</i>	<i>Remedy</i>
Dynamotor does not run.	Open fuse or wiring in 28 volt input. Defective dynamotor unit.	Replace fuse. Replace dynamotor unit.
Receiver operates properly but no transmitter output on any channel.	No crystal in socket. Defective tubes.	Insert proper crystal in socket. Replace tubes. Replace transmitter.

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**TROUBLE LOCATION AND REMEDY CHART (Continued)**

<i>Symptom</i>	<i>Cause</i>	<i>Remedy</i>
Transmitter operates properly but receiver dead or only dynamotor ripple audible in headset.	No crystal in socket. Defective tubes.	Insert proper crystal in socket. Replace receiver.
Audible howl in headset; also modulation present on transmitter carrier.	Water or dirt between terminals or contacts of microphone-headset jack.	Clean the terminals or contacts of microphone-headset jack.
Set dead and no microphone sidetone audible in phones.	Defective tube JAN-12C8(VT-169) or tube JAN-12J5GT(VT-135).	Replace tube.
Set dead but sidetone is audible in headphones.	Defective tubes JAN-12SG7(VT-209).	Replace tubes.
Set operates only on extremely strong signals.	Defective tubes JAN-9002(VT-202) or JAN-9003(VT-203) or JAN-12AH7GT(VT-207).	Replace tubes.
Transmitter and receiver both properly tuned but communication poor or impossible.	Defective connection between antenna socket, Socket SO-153, and antenna mast.	Inspect antenna connection. Replace antenna.
Shifter slides and ratchet motor fail to operate properly.	Defective switches or wiring on the radio control box or the rack.	Replace control box. Replace rack.
Transmitter stays on although the "T-R-REM" switch is in either the "R" or "REM" position.	Contacts of "T-R-REM" switch either dirty or bent.	Replace control box.

**6. TROUBLE SHOOTING AT REPAIR STATION.**

Before carrying out the procedures outlined below, make the more simple checks indicated in par. 5b above.

**a. PRELIMINARY CHECK.**

<i>Trouble</i>	<i>Probable Cause</i>
Set does not operate (no primary voltage).	Open fuse in 28-volt input circuit. Open wiring.
Set does not operate although primary voltage correct.	Starting relay 321 defective. Defective dynamotor unit; commutator brushes pitted or defective. Defective or dirty connector socket 420, 417, 606, 801-1, 805, or 806. Water collected on Rack FT-244-A. Defective radio control box. Aircraft located in dead spot.
Dynamotor noisy.	Springs on brush holders not applying proper pressure on the brushes. Sticking brushes. Brushes worn beyond usefulness. Dirty commutator.
No output voltage.	Brush holder springs not applying proper pressure on brushes. Worn brushes or broken brush pig tails. Foreign substance on brush or inside brush holder that prevents free movement of brushes.
Transmitter does not operate on any channel.	Defective connector plug 123-1. Wet or defective Rack FT-244-A. Slow release relay 130 or press-to-transmit relay 160 defective. No crystal in socket. Ground on pin 17 in 18-pin socket 41 on Rack FT-224-A, or associated wiring connected to that pin. Defective transmitter.
Transmitter does not operate properly on all channels.	Removed or defective crystal. Radio control box switch 611 defective.
Contact or tone oscillator does not operate.	Defective channel selector switch 156. Contact or relay 131 defective.
Transmitter puts out weak or intermittent signal.	Defective antenna relay 412. Defective antenna coupling between Socket SO-153 and antenna mast. Transmitter not properly tuned. Objects between transmitter and another aircraft receiver block signal. Weak or defective vacuum tubes. Defective components.
Receiver does not operate properly. Signals weak, distorted, intermittent, or noisy.	No crystal in socket. Defective tubes. Receiver not properly aligned or tuned. Interference from objects between receiver and other aircraft transmitter. Defective wiring in audio output circuit (pin 3 in 18-pin socket 417 on rack). Defective microphone-headset jack or plug.

a. PRELIMINARY CHECK (Continued)

<i>Trouble</i>	<i>Probable Cause</i>
Interphone operates but receiver does not pick up transmitter signals.	Defective tube JAN-12SG7 (VT-209). I-F misalignment. Receiver improperly tuned. Defective receiver tube. Defective tuning motor or relays 411-1, 406, 427. Defective wiring or components.
Receiver does not operate on any channel; no carrier hum present.	"T-R-REM." switch 612 defective. Connector plug 231 on socket 419 loose or defective. Vacuum tubes defective.
Receiver does not operate on any channel; dynamotor hum present.	Crystals out of sockets or crystal switch 286 defective. Receiver improperly tuned; antenna coupling condenser, 216A, improperly set. Component failure.
Receiver does not operate on all channels.	Frequency selector switch 611 defective. Crystal out of socket. Crystal switch 286 defective.
Squelch circuit does not operate.	Potentiometer 237 improperly adjusted. Relay 246 defective. Defective tube JAN-12AH7GT(VT-207).
Noise limiter does not operate.	Defective tube JAN-12H6(VT-214). Component failure.

b. DETAILED CHECK OF RACK.

(1) DISASSEMBLY.

(a) Loosen the Dzus fasteners pinning the transmitter and receiver covers to the rack center cover. Lift the covers slightly and slide them away from the top of transmitter and receiver.

(b) If the equipment is connected to a power source, depress any channel selector pushbutton to turn on the equipment.

(c) Press the channel release button 426 in Rack FT-244-A to release the frequency shifter slides. Depress the "OFF" button.

(d) If the equipment is not connected to a power source, disengage the shifter slides by operating the armature of the ratchet motor by hand. (See fig. 8-1.)

**CAUTION**

Damage to the equipment will result if all channel slides are not released prior to removing the transmitter from the rack.

(e) Return the covers to the top of the transmitter-receiver assembly and fasten the Dzus fasteners which pin them to the rack center cover.

(f) Loosen the four large Dzus fasteners located on the sides of the case.

**WARNING**

Disconnect the radio set from the power source before removing the transmitter-receiver assembly from the case.

(g) Grasp the rack by the recessed handles and lift the rack, together with the transmitter and receiver, out of the case. Set the assembly, control panels uppermost, on a flat surface. Be careful not to set the equipment on a screw driver, pliers or other tools.

(b) Remove the eight red mounting screws fastening the transmitter and receiver to the rack.

(i) Lift the transmitter side of the rack slightly while pressing the top of the transmitter down with the thumbs. The transmitter will come free.

(j) Lift the receiver side of the rack slightly while pressing the top of the receiver down with the thumbs. The receiver will come free.

(2) CONTINUITY AND RESISTANCE MEASUREMENTS.

(a) In addition to the tests shown below, all connections, other than "ground" wires shown, should indicate infinite resistance to ground (the rack frame). All Jones plug connections should indicate infinite resistance to adjacent connections on the same plug.

(b) In all cases, the terminology "inside" and "outside" refers to the center of the rack, or the outer edges of the rack, relative to the connections made to any part of the particular component under test.

(c) In the following test data, the contact springs of relay 412 have been numbered from the outside contact toward the relay coil. Since eight springs are used, number 8 is therefore the spring adjacent to the coil.

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TABLE 5-1. RACK CONTINUITY AND RESISTANCE MEASUREMENTS.

Test No.	From	To	Control Positions if Not Normal	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
1	417, Term. 1	Ground		Direct	0	Broken connection or wiring
2	417, Term. 2	420, Term. 4		Direct	0	Same as 1
3	417, Term. 2	418-2, Term. 2		Direct	0	Same as 1
4	417, Term. 2	419, Term. 8		Direct	0	Same as 1
5	417, Term. 2	412, Inside coil connection		Direct	0	Same as 1
6	417, Term. 2	411-1, Outside coil connection		Direct	0	Same as 1
7	417, Term. 2	406, Breaker point		Direct	0	Same as 1
8	417, Term. 2	426, Outside connection next to 411-1		Direct	0	Same as 1
9	417, Term. 3	419, Term. 4		Direct	0	Same as 1
10	417, Term. 4	427, Moving arm, section A		Direct	0	Same as 1
11	417, Term. 5	427, Moving arm, section B		Direct	0	Same as 1
12	417, Term. 6	418-1, Term. 1		Direct	0	Same as 1
13	417, Term. 7	418-1, Term. 2		Direct	0	Same as 1
14	417, Term. 8	427, Moving arm, section C		Direct	0	Same as 1
15	417, Term. 9	418-1, Term. 5		Direct	0	Same as 1
16	417, Term. 9	427, Moving arm, section D		Direct	0	Same as 1
17	417, Term. 10	419, Term. 12		Direct	0	Same as 1
18	417, Term. 11	419, Term. 10		Direct	0	Same as 1
19	417, Term. 12	418-1, Term. 6		Direct	0	Same as 1
20	417, Term. 13	420, Term. 5		Direct	0	Same as 1
21	417, Term. 14	420, Term. 6		Direct	0	Same as 1
22	417, Term. 15	418-2, Term. 7		Direct	0	Same as 1
23	417, Term. 16	418-1, Term. 4		Direct	0	Same as 1
24	417, Term. 17	412, Outside coil connection		Direct	0	Same as 1
25	417, Term. 17	411-1, Outside contact		Direct	0	Same as 1
26	417, Term. 18	418-1, Term. 3		Direct	0	Same as 1
27	420, Term. 2	420, Term. 10		Direct	0	Same as 1
28	420, Term. 2	402, Inside connection		Direct	0	Same as 1
29	420, Term. 2	418-2, Term. 3		Direct	0	Same as 1
30	420, Term. 2	412, Armature 7		Direct	0	Same as 1
31	420, Term. 2	419, Term. 5		Direct	0	Same as 1
32	420, Term. 1	418-2, Term. 1		Direct	0	Same as 1
33	420, Term. 3	Ground		Direct	0	Same as 1
34	420, Term. 7	Ground		Direct	0	Same as 1
35	420, Term. 12	Ground		Direct	0	Same as 1
36	420, Term. 8	419, Term. 6		Direct	0	Same as 1
37	418-2, Term. 4	412, Contact No. 8		Direct	0	Same as 1
38	418-2, Term. 4	412, Contact No. 7	Relay 412 closed	Direct	0	Misadjustment of relay 412 or burned contacts

## Section V

## Paragraph 6

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TABLE 5-1. RACK CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)

Test No.	From	To	Control Positions if Not Normal	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
39	418-2, Term. 5	419, Term. 9		Direct	0	Same as 1
40	418-2, Term. 6	419, Term. 11		Direct	0	Same as 1
41	418-2, Term. 8	Ground		Direct	0	Same as 1
42	419, Term. 3	412, Contact No. 7		Direct	0	Same as 38
43	419, Term. 7	Ground		Direct	0	Same as 1
44	Receiver antenna jack, inside pin	Ground		Direct	0	Broken or loose plug
45	Receiver antenna jack, outside pin	412, Contact No. 2	Armature closed	Direct	0	Broken connection or relay 412 misadjusted
46	Transmitter antenna jack, inside pin	Ground		Direct	0	Broken or loose plug
47	Transmitter antenna jack, outside pin	412, Contact No. 2		Direct	0	Broken connection or relay 412 misadjusted; burned contacts
48	416, Center connector	412, Contact No. 3		Direct	0	Same as 47
49	412, Contact 1, 4, 5	Ground		Direct	0	Misadjusted relay 412 or burned contacts
50	417, Term. 17	417, Term. 2		Direct	200	Shorted low-voltage bus
51	406, Inside interrupter contact	406, Top terminal		Direct	0	Broken connection or open wiring
52	406, Outside interrupter contact	426, Outside contact near 411-1		Direct	0	Misadjusted or defective ratchet-motor interrupter contacts
53	406, Outside interrupter contact	401, Outside contact		Direct	0	Same as 52
54	406, Inside interrupter contact	401, Outside contact		Direct	0	Same as 51
55	411-1, Inside coil contact	411-2, Bottom outside contact		Direct	0	Broken connection or wiring
56	401, Inside connection	426, Inside connection near "AUDIO" nameplate		Direct	0	Defective switch 426
57	406, Bottom coil terminal	401, Inside connection		Direct	0	Broken connection or open wiring
58	426, Inside connector near "AUDIO" nameplate	411-2, Outside upper contact		Direct	0	Broken connection
59	411-2, Armature	Ground		Direct	0	Broken armature ground jumper
60	411-2, Upper outside contact	406, Lower coil connection		Direct	0	Broken connection or open wiring
61	411-1, Bottom outside contact	426, Outside contact near 411-1		Direct	0	Same as 60
62	411-2, Upper outside contact	406, Top coil terminal		Direct	0	Same as 58
63	420, Term. 2	Ground (30 seconds)		Direct	Open	Shorted capacitor 402
64	406, Top coil term.	406, Bottom coil term.		Direct	7	Shorted capacitor 401; open coil of motor 406
65	417, Term. 2	417, Term. 5	427B closed	Direct	40	Open or shorted coils of relays 411-1, 411-2

### (3) REMOVAL OF RATCHET MOTOR FROM RACK.

#### IMPORTANT

Do not tamper with the ratchet motor unless absolutely necessary.

(a) Remove the small screw next to the positioning spring, which connects the ratchet motor to the L-shaped bracket on top of the actuating slides.

(b) Remove the four motor-mounting screws on the bottom of the rack.

(c) Unsolder all the wires attached to the motor and detach the motor from the rack.

### (4) ADJUSTMENT OF RATCHET MOTOR.

(a) If the trouble in the ratchet motor is purely of an electrical nature, refer to paragraph 6b(2) and make continuity tests of the circuit in question.

(b) If the motor has been disassembled for repairs or adjustments, assemble the armature hinge and the associated adjustment screw but do not tighten them securely.

#### Note

In all cases where the assembly of screws does not involve the use of lockwashers, cement the threads with purple glyptal. Avoid excess glyptal.

(c) Locate and securely tighten the solenoid assembly with the distance .765-inch from the center of the open end to the hinge. (See fig. 5-9.)

(d) Before assembling the armature, lubricate the armature hinge and the pole faces with oil AN-0-6a. (Refer to par. 7b, this section.)

(e) Be sure that the stop screw and the locknut are in place. Drop the upper core into the open end of the solenoid and work the armature in place by starting the armature in slightly sideways in order to clear the armature stop screw.

(f) At the same time the armature is being assembled in place, guide the threaded stud of the upper core into the hole in the center of the armature. Place the locknut on the stud and tighten securely after threads have been glyptaled. The slot in the stud will allow it to be held while the nut is tightened.

(g) Assemble the armature springs and temporarily tighten the screws.

(h) Adjust the height of the hinge, by means of the hinge adjusting screw, until the armature is parallel with the edges of the sides of the motor frame, and so that the cores rest squarely together in the energized position. Permanently secure the armature hinge and adjusting screws.

(i) Adjust the armature stop screw to provide .058 to .060 movement of the armature as gauged at this point with a thickness gauge. Secure the nut tightly after application of glyptal to the threads of the screw.

(j) Adjust the armature spring tensions to provide a load of  $6\frac{3}{4}$  pounds measured in line with the pawl spring. Measure this tension with a push spring scale pressed against the pawl spring perch on the armature. The tension read should be that required to just start the armature moving.

#### Note

In the absence of a push scale, the adjustment can be approximated by setting the spring tensions to just allow the armature to pull in with 1.1 amperes at 12 volts d-c passed through the solenoid coil. Divide the spring load approximately even between the two springs.

(k) Assemble in place but do not tighten the pawl stop block and ratchet-wheel positioning-spring assembly.

(l) Assemble the ratchet wheel and arm assembly and shaft. Lubricate with AN-0-6a oil. (Refer to par. 7b, this section.)

(m) Permanently set the positioning spring assembly to engage the fourth or fifth tooth behind the pawl and bear against it with approximately 2 to 4 ounces pressure. Check the pressure with a calibrated spring gauge. To insure the most satisfactory operation, make the lengthwise adjustment so that the overtravel of the pawl and the end play at the positioning spring are approximately equal.

(n) Set the pawl stop block up to within a few thousandths of the back of the pawl in the unenergized position. This setting should be about as close as the eccentricity of the ratchet wheel will allow. This may be judged by stepping the wheel around and determining that at no point is the back movement of the armature limited by the pawl stop block instead of the stop screw. This stop block is used primarily to limit overshooting. With the armature in the unenergized position, it should not be possible to rotate the ratchet wheel and arm assembly more than a quarter of a tooth.

(o) Mount the interrupter switch assembly and securely tighten the screws after the assembly has been aligned with the interrupter adjusting screw. Set this screw to cause the interrupter contacts to open approximately .006 with the armature in the fully energized position. The exact adjustment of these contacts can be made only with the motor operating under a normal load and is reserved until the final check in the rack. The contact spring tension measured with a calibrated spring gauge at the contacts should be from 3 to 6 ounces.

(p) Check the running of the motor. Connect a 2-microfarad capacitor across the solenoid coil and connect the interrupter contacts in series with the coil and 12 volts from a storage battery. The motor should operate smoothly if the adjustments are correct. The adjustment of the interrupter contacts will be found to have the most noticeable effect on running. Set these contacts at this time to give the smoothest running performance at approximately 30 revolutions per minute.

## Section V

### Paragraph 6

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(q) Install and adjust the positioning switch assembly. Mark a reference line at the radial face of the tooth parallel to the straight side of the upper motor arm (which falls between marks A and B on the side of the ratchet wheel). Count off ten additional faces in a clockwise direction and make a second reference mark at the tenth face. Step the ratchet wheel around until the straight side of the pawl tooth aligns with the second mark. Adjust the positioning-switch assembly to allow a clearance of approximately .010 to .015 inch between the bakelite fingers and the arms as they are cleared.

(r) Step the ratchet-wheel assembly around 22 teeth and adjust the lateral positioning of the switch assembly to allow a bakelite finger to just rest against the next motor arm to be engaged. One step further should open this switch and it should remain open for one additional step. One step beyond this should again close this switch, and the clearance between the motor arm and the bakelite finger should not exceed .015 inch.

(s) If the motor arms are spaced exactly 90 degrees and the ends of the bakelite fingers are properly aligned, all four motor arms should open the positioning switches for two positions only and should clear the fingers of the switches by not more than .015 when again released. Determine this by trial and adjust the positioning switch accordingly.

#### (5) ASSEMBLY OF RATCHET MOTOR IN RACK FT-244-A.

(a) Install the motor in the rack with the mounting screws sufficiently loose to allow proper positioning. On later production rack assemblies, the large clearance hole for the ratchet gear shaft has been omitted, and in its place is a hole just large enough to receive the projection of the gear shaft. This hole is placed accurately with respect to the transmitter mounting holes in the rack. This automatically maintains the ratchet gear center in a position to provide  $2\frac{1}{32}$  inch movement of the frequency-shifter slides. (See fig. 5-9.)

(b) Pivot the motor about this point until a slide operated by a motor arm is just released. The clearance between the slide head and the motor arm at the time of release should be sufficient to allow no interference between the slide head and the motor arm when the slide is cocked sideways.

(c) Use a .002 or .003 gauge to check this clearance between the closest pair of arms and slides.

(d) When it is determined that the closest combination of arms and slides just clear when the slide is cocked sideways, secure the mounting screws with the motor in that position.

#### Note

The closest pair of arms and slides must clear by at least .001 inch and the clearance between the pair of arms and slides having the greatest clearance must be less than .030.

#### (6) ADJUSTMENT OF RATCHET MOTOR ON EARLIER PRODUCTION RACK ASSEMBLIES.

(a) Actuate the motor armature until a slide has just been released to assure that all the slides are released.

(b) Place the rack assembly on a transmitter unit and check for a clearance of  $\frac{1}{32}$  inch between the actuating slides and the slides of the shifter unit. If the clearance is greater or less than  $\frac{1}{32}$  inch, loosen the transmitter holding screws and move the transmitter until the proper clearance is obtained. For a similar check see that a shifter slide is moved in for a distance of  $2\frac{1}{32}$  inch when the motor is operated to a point where a positioning switch first opens.

(c) Check the operation of the slides on the receiver side of the rack. The shifter actuating ends of these slides should measure 8.750 from a line running through the transmitter and receiver grounded antenna banana plugs. (See fig. 5-9.) If adjustment is required, adjust the eccentric screw which pivots the crossarms on the receiver side of the rack.

(d) Check the adjustment of these slides by placing the receiver in the rack and checking to see that the clearance between the actuating slides and the shifter slides is approximately  $\frac{1}{32}$  inch in the released position. If the clearance is greater or less than  $\frac{1}{32}$  inch, loosen the receiver holding screws and move the receiver until the proper clearance is obtained. For a similar check, ascertain that the shifter slides are operated at a distance of  $2\frac{1}{32}$  inch when positioned by the motor.

(e) By visual inspection and manual operation, check to see that when any motor arm maintains a positioning switch in its second open position, the opposite arm has just released the slide held in the first open position. It should clear the slide head by from .005 to .015 inch, preferably by as small an amount as will still allow unfailling release of the slides in the four desired positions.

(f) Rotate the motor-arm assembly and check all four positions. Note the arm which comes closest to the associated slide head.

(g) Use a .002 or .003 shim stock to see that when the opposite end of this slide is cocked sideways to cause the slide head to be nearest the motor arm, the clearance is just sufficient to allow release.

(h) Check to see that the positioning of the motor is such that a radius line from the ratchet-wheel assembly shaft center passing through the radial face of an arm is parallel to a slide in the released position.

(i) See that all bearing surfaces of the rack frequency shifter mechanism are lubricated with grease AN-G-3a. (Refer to par. 7b, this section.)

(7) ADJUSTMENT OF RELAYS 411-1, 411-2 AND 412.—The relays employed in Rack FT-244-A are adjusted at the factory and should require no further adjustment. For maintenance of the relays refer to paragraph 7a, this section.



(8) REASSEMBLY OF RACK FT-244-A.

**CAUTION**

If the actuating slides are in the engaged position, operate the armature of the ratchet motor to release them.

(a) Place the receiver on a flat surface and fit the rack lightly on the receiver. The guide pins on plug 231 should fit into the holes provided in socket 419. There should be adequate clearance between the actuating slides and shifter slides.

(b) Press the rack firmly on the receiver.

(c) Place the transmitter on a flat surface. Place the rack, fastened to the receiver, lightly on the transmitter. See that the guide pins in plugs 123-1 and 123-2 fit into their proper holes and that there is adequate clearance between the actuating slides and the shifter slides.

(d) Press the rack firmly on the transmitter and install the eight red mounting screws which fasten the receiver and the transmitter to the rack.

(9) ADJUSTMENT OF FREQUENCY SHIFTER MECHANISM.

(a) If the shifter slides are bent, straighten them if this can be done without further injuring the shifter assembly. Otherwise, replace the complete shifter assembly.

(b) Check the torque\* of each cam shaft when the shifter is mounted on the transmitter or receiver and disengaged by rotating each tuning dial, seeing that each rotates freely and does not bind. Make certain that the clip will re-position the shaft when the clip has just been unseated.

(c) If the frequency shifter mechanism has been disassembled, adjust the eccentric screw and bushing pivoting the upper cross arm group. Keep the arrow on the head of the screw and on the bushing pointing in the same direction and adjust the screw and bushing so that the shifter slide travels  $2\frac{1}{32}$  inch when operated. (The gap between the receiver shifter actuating slides and the receiver shifter slides will be approximately  $\frac{1}{32}$  inch in the released position.)

(10) ADJUSTMENT OF MOTOR INTERRUPTER CONTACTS.

(a) With the rack connected to the transmitter and receiver, connect the equipment so that normal operation may be obtained.

(b) Note that the ratchet motor operates satisfactorily while the heavy interrupter contact spring is flexed in and out over a certain range. Set this heavy contact spring outward to just within the point which causes a noticeable change in motor performance. This adjustment allows the spring to be flexed inward more than outward before erratic performance results and allows a more nearly optimum setting for extremely low temperatures.

\* Torque may be measured with a torque gauge if one is available (maximum torque to be 2 inch-ounces)

**Note**

The speed of the motor under normal load at room temperature should be at least 28 revolutions per minute at 12 volts, measured at the motor coil.

(c) Lubricate the ratchet gear teeth and pawl bearing surfaces in accordance with the instructions in paragraph 7b, this section.

(d) Operate the ratchet motor for a period of from 15 to 20 minutes after assembling the rack to the receiver and transmitter. At the end of the run carefully inspect the ratchet motor and rack for loose parts and check the adjustments of the ratchet motor.

c. DETAILED CHECK OF TRANSMITTER.

(1) DISASSEMBLY.

(a) Remove the transmitter - receiver assembly from the case as directed in paragraphs 6b(1)(a) through (g), this section.

(b) Remove the four red receiver-mounting screws.

(c) Lift the receiver side of the rack while pressing the top of the receiver down with the thumbs. Lift the rack with the transmitter, away from the receiver.

(2) TUBE SOCKET VOLTAGE MEASUREMENTS FOR RADIO TRANSMITTER BC-625-A AND BC-625-AM.

(a) Place the assembly on its side on a test bench so that the transmitter vacuum tube sockets are accessible.

(b) Connect the proper plugs to the sockets on the rack and to a 28-volt source of supply. Connect Antenna Mast AN-104-A to the antenna socket on the rack with a suitably prepared length of coaxial cable.

(c) Turn the equipment on by pressing any channel button on the radio control box.

(d) Using Test Set I-56-(\*) or equivalent (meter sensitivity of 1000 ohms per volt), make the tube socket voltage measurements listed in the chart below.

(e) Make all measurements to chassis ground and on the 500-volt scale unless otherwise specified. Follow the additional suggestions in the voltage diagram, figure 5-1.

(f) If the voltages vary appreciably (more than 15 percent from the values given in the chart below), make a further examination of the components associated with the circuit.

**Note**

The following readings are taken with dynamotor unit outputs of exactly +300 volts, -150 volts, and +13 volts. The outputs of Dynamotor Unit PE-94-A are slightly higher so the voltage readings for the plates and screens may be slightly higher.

\* Any issue letter is applicable.





TABLE 5-2. TUBE SOCKET VOLTAGES FOR RADIO TRANSMITTER BC-625-A AND BC-625-AM

Tube	Function	V O L T S							
		Plate	Screen	Grid		Cathode	Heater	Heater	Suppressor
				GIU1	GIU2				
JAN-832* (VT-118)	2nd harmonic amplifier	300	150	-57	-80	0	12.5	6.4	—
JAN-832 (VT-118)	Power amplifier	285	160	-52	-52	0	12.5	6.4	—
JAN-6G6G (VT-198-A)	Oscillator	300	157	-29		—	12.5	6.5	0.75
JAN-12A6 (VT-134)	1st harmonic amplifier	300	280	-40		40	12.5	0	—
JAN-6SS7 (VT-199)	Speech amplifier	288	40	Varies		2.2	6.5	0	2.2
JAN-12A6 (VT-134)	Modulator	290	265	-13.5		0	12.5	0	—
JAN-12A6 (VT-134)	Modulator	290	265	-13.5		0	12.5	0	—
JAN-6SS7** (VT-199)	R-F indicator diode	-2.4	-2.4	-2.4		0	6.5	0	-2.4

\* Tubes VT-118 are push-pull amplifiers. The voltage on the first grid of the second harmonic amplifier varies from about -40 to -87 volts and the second grid varies from about -40 to -105 volts.

\*\* Deleted from later models of the transmitter. (Later models identified by painted bar next to "METER SWITCH" position "4".)

(3) TRANSMITTER CONTINUITY AND RESISTANCE MEASUREMENTS.

**Note**

The following measurements are for Radio Transmitter BC-625-A.

(a) After making the transmitter tube socket voltage measurements, turn the equipment off by pressing the "OFF" button on the radio control box.

(b) Disconnect the equipment from the supply source.

(c) Rotate the transmitter "GAIN" control to its extreme clockwise position.

(d) Leave all the vacuum tubes in their sockets unless otherwise specified.

(e) Use Test Set I-56-(\*) or equivalent to make the resistance measurements listed in the following chart.

**Note**

Deviations in resistance greater than  $\pm 10\%$  should be investigated.

TABLE 5-3. TRANSMITTER CONTINUITY AND RESISTANCE MEASUREMENTS.

Test No.	From	To	Control Positions if Not Normal	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
1	123-1, Term. 4	Ground		R x 1000	Open	Dirty or shorted contacts on relay 130
2	123-1, Term. 5	Ground	Relay 130 closed	R x 1000	Open	Same as 1
3	123-2, Term. 3	Ground		R x 1000	Open	Shorted capacitor 102-5, 102-7, 102-11, 106, 107-1, 108-2, 111 or 113
4	123-2, Term. 4	Ground		R x 1000	Open	Shorted capacitor 102-1, 102-2, or 105-4
5	123-2, Term. 5	Ground		R x 1000	Open	Shorted capacitor 102-15
6	123-2, Term. 6	Ground		R x 1000	Open	Shorted capacitor 102-14
7	123-2, Term. 7	Ground	Relay 131 closed	R x 1000	Open	Dirty or shorted contacts on relay 131

TABLE 5-3. TRANSMITTER CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)

Test No.	From	To	Control Positions if Not Normal	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
8	169-1, Pin 1 (jct. pt. 104 and 150)	Ground		R x 1000	50,000	Defective capacitor 102-3, 104, 102-12 or 102-13, 109-1, 109-2
9	Same as 8	T. B. 9, Term. 2		R x 1000	60,000	Same as 8
10	169-1, Pin 4	Ground		R x 1000	Open	Same as 4; shorted capacitor 101
11	169-1, Pin 5	Ground		R x 1000	50,000	Defective crystal switch 156 or reactor 128-1; wrong value on resistor 151-1
12	169-2, Pin 4	Ground		R x 1000	Open	Same as 3
13	170-1, Pin 3	Ground		R x 1000	Open	Same as 3
14	170-2, Pin 3	Ground		R x 1000	Open	Same as 3
15	169-5, Term. 6	Ground		R x 1000	Open	Same as 3
16	169-5, Term. 8	Ground		R x 1000	Open	Same as 3
17	169-3, (outside modulator), Pin 3	Ground		R x 1000	Open	Same as 3
18	169-3, Pin 4	Ground		R x 1000	Open	Same as 3
19	169-4 (inside modulator), Pin 3	Ground		R x 1000	Open	Same as 3
20	169-4, Pin 3	T. B. 7, Terms. 10, 11		R x 1000	265,000	Wrong value or open on resistor 140-2 or 140-3
21	T. B. 8, Term. 9	Ground		R x 1000	Open	Same as 4
22	T. B. 8, Term. 10	Ground		R x 1000	Open	Same as 3
23	123-1, Term. 3	123-2, Term 7	Relay 161 contacts open	R x 1000	Open	Dirty or shorted contacts on relay 161
24	123-2, Term. 1	Ground		R x 1000	26,000	Defective resistor 146, 147, 152-3, 109-5 or 145; shorted capacitor 102-12 or 102-13, 102-3
25	169-2, Pin 4	T. B. 1, Term. 1		R x 1000	5,000	Defective resistor 154-1
26	170-1, Pin 2	Ground		R x 1000	31,000	Open in reactor 127-1 or 127-2; shorted capacitor 102-8 or 102-9; open resistor, 132-1, 2, or 146
27	Same as 26	T. B. 8, Term. 11		R x 1000	26,000	Defective resistor 148
28	170-1, Pin 3	160, Term. 5		R x 1000	54,000	Defective resistor 152-2
29	170-1, Pin 6	Ground		R x 1000	31,000	Same as 26
30	170-1, Pin 6	T. B. 8, Term. 11		R x 1000	26,000	Same as 27
31	170-2, Pin 2	Ground		R x 1000	6,000	Defective reactor 127-3 or 127-4; open resistor 148 or 146; shorted capacitor 102-3, 102-12 or 102-13
32	170-2, Pin 3	160, Term. 5		R x 1000	21,000	Defective resistor, 133-1 or 133-2
33	170-2, Pin 6	Ground		R x 1000	6,000	Same as 31
34	169-6, Pin 3	Ground		R x 1000	7,000	Shorted capacitor 105-2; defective resistor 154-3 or 153-2
35	169-6, Pin 3	T. B. 8, Term. 12		R x 1000	5,000	Same as 34
36	169-5, Pin 4	158, Term. 5	Relay closed	R x 1000	12,000	Defective resistor 153-4; dirty contacts on relay 131

TABLE 5-3. TRANSMITTER CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)

Test No.	From	To	Control Positions if Not Normal	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
37	169-5, Pin 4	Ground	Relay 131 closed	R x 1000	6,500	Defective resistor 153-4 or 142
38	169-3, Pin 4	T. B. 7, Term. 4		R x 1000	5,000	Defective resistor 154-2
39	169-3, Pin 5	Ground		R x 1000	15,000	Defective resistor 145
40	169-4, Pin 5	Ground		R x 1000	15,000	Same as 39
41	123-1, Term. 6	123-2, Term. 2		R x 10	*150 or 200	Open or shorted relay 131
42	123-2, Term. 2	Ground		R x 10	200	Open coil on relay 130; open or dirty contacts on relay 131
43	169-1, Pin 1	169-2, Pin 5		R x 10	50	Defective resistor 150
44	169-2, Pin 8	Ground		R x 10	2,000	Defective resistor 153-1 or capacitor 102-6
45	169-5, Pin 3	Ground		R x 10	2,000	Open reactor 162; defective resistor 153-3 or capacitor 110
46	169-5, Pin 4	131 (2nd contact from inside)		R x 10	2,000	Defective resistor 153-4
47	T. B. 8, Term. 10	160, Term. 5	R x 10	180	Short ground or open on secondary of transformer 160	
48	T. B. 8, Term. 10	121	R x 10	210	Same as 47; defective reactor 128-3	
49	123-1, Term. 1	158, Term. 1	Direct	0	No continuity	
50	123-1, Term. 1	123-1, Term. 2	Direct	5	Open or short in primary of transformer 158	
51	123-1, Term. 1	Ground	Direct	2.5	Same as 50; no ground on center tap of transformer 158	
52	123-1, Term. 2	Ground	Direct	2.5	Same as 51	
53	123-1, Term. 2	158, Term. 3	Direct	0	No continuity	
54	123-1, Term. 3	Ground	Direct	0	Open or dirty contacts on relay 131 or 161	
55	123-1, Term. 3	123-2 Term. 7	Direct	0	Open or dirty contacts on relay 161	
56	123-1, Term. 3	161 (outside contact)	Direct	0	Same as 55	
57	123-1, Term. 4	130 (outside contact)	Direct	0	No continuity; defective relay 130	
58	123-1, Term. 4	Ground	Relay 130 energized	Direct	0	No continuity; defective relay 130
59	123-1, Term. 5	Ground		Direct	0	No continuity; defective relay 130
60	123-1, Term. 5	130 (inside contact)	Direct	0	No continuity	
61	123-1, Term. 6	131 (outside lug)	Remove modulator tubes	Direct	0	No continuity
62	123-2, Term. 1	T. B. 5, Term. 2		Direct	0	No continuity
63	123-1, Term. 1	T. B. 9, Term. 1		Direct	0	No continuity
64	123-2, Term. 2	170-2, Pin 7		Direct	0	No continuity
65	123-2, Term. 2	170-1, Pin 7		Direct	0	No continuity
66	123-2, Term. 2	169-2, Pin 2		Direct	0	No continuity
67	123-2, Term. 2	169-1, Pin 7		Direct	0	No continuity
68	123-2, Term. 2	169-3, Pin 2		Direct	0	No continuity

\* Equipment may be provided with either a 150-ohm or 200-ohm relay 131.

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TABLE 5-3. TRANSMITTER CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)

Test No.	From	To	Control Positions if Not Normal	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
69	123-2, Term. 2	169-4, Pin 2		Direct	0	No continuity
70	123-2, Term. 2	130 Coil (inside lug)		Direct	0	No continuity
71	123-2, Term. 2	131 Coil (inside lug)	Modulator tubes removed	Direct	0	No continuity
72	123-2, Term. 2	Ground		Direct	200	Open or short in coil of relay 130; relay 131 contacts dirty or open
73	123-2, Term. 3	160, Term. 2		Direct	0	No continuity
74	123-2, Term. 3	126, Term. 1		Direct	0	No continuity
75	123-2, Term. 3	T. B. 7, Terms, 4, 5, 6		Direct	0	No continuity
76	123-2, Term. 3	T. B. 8, Terms. 2, 4		Direct	0	No continuity
77	123-2, Term. 4	T. B. 8, Term. 3		Direct	0	No continuity
78	123-2, Term. 4	118		Direct	0	No continuity
79	123-2, Term. 4	114 (rotor)		Direct	0	No continuity
80	123-2, Term. 4	T. B. 1, Term. 5		Direct	0	No continuity
81	123-2, Term. 5	T. B. 4, Term. 5		Direct	0	No continuity
82	123-2, Term. 6	T. B. 4, Term. 4		Direct	0	No continuity
83	123-2, Term. 7	161 (inside contact)		Direct	0	No continuity
84	123-2, Terms. 7, 8	Ground		Direct	0	No continuity; open or dirty contacts on relay 131
85	169-1, Pin 2	Ground		Direct	3	Same as 72
86	169-1, Pin 2	169-6, Pin 7		Direct	0	No continuity
87	169-1, Pin 3	114 (stator)		Direct	0	No continuity
88	169-1, Pin 3	118 (inside lug)		Direct	0	No continuity
89	169-1, Pin 4	T. B. 1, Term. 6		Direct	0	No continuity
90	169-1, Pin 5	172, Term. 16	Operate A frequency shifter	Direct	0	No continuity
91	172, Term. 16	Ground	Operate A frequency shifter	Direct	Open	Shorted switch 156
92	169-1, Pin 5	172, Term. 12	Operate B frequency shifter	Direct	0	No continuity
93	172, Term. 12	Ground	Operate B frequency shifter	Direct	Open	Short in switch 156
94	169-1, Pin 5	172, Term. 9	Operate C frequency shifter	Direct	0	No continuity
95	172, Term. 9	Ground	Operate C frequency shifter	Direct	Open	Short in switch 156
96	169-1, Pin 5	172, Term. 5	Operate D frequency shifter	Direct	0	No continuity
97	172, Term. 5	Ground	Operate D frequency shifter	Direct	0	Short in switch 156
98	169-1, Pin 8	Ground		Direct	40	Open or shorted reactor 128-2; shorted capacitor 103
99	169-1, Pin 8	T. B. 1, Term. 7		Direct	0	No continuity
100	170-1, Pin 1	Ground		Direct	0	Same as 72
101	170-1, Pin 4	Ground		Direct	0	No continuity
102	169-2, Pin 1	Ground		Direct	0	No continuity
103	169-2, Pin 3	115 (stator)		Direct	0	No continuity

**TABLE 5-3. TRANSMITTER CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)**

<i>Test No.</i>	<i>From</i>	<i>To</i>	<i>Control Positions if Not Normal</i>	<i>Ohmmeter Scale Used</i>	<i>Resistance (ohms)</i>	<i>Probable Cause of Incorrect Reading</i>
104	169-2, Pin 4	T. B. 1, Term. 2		Direct	0	No continuity
105	169-2, Pin 7	Ground		Direct	0	No continuity
106	170-2, Pin 1	Ground		Direct	0	No continuity
107	170-2, Pin 4	Ground		Direct	0	No continuity
108	170-2, Pin 2	T. B. 8, Term. 5		Direct	0	Open reactor 127-3
109	170-2, Pin 6	T. B. 8, Term. 5		Direct	0	Open reactor 127-4
110	169-6, Pin 1	Ground		Direct	0	No continuity
111	169-6, Pin 2	Ground		Direct	0	No continuity
112	169-6, Pin 5	Ground		Direct	0	No continuity
113	169-6, Pin 3	169-6, Pins 4, 6, 8		Direct	0	No continuity
114	169-5, Pin 1	Ground		Direct	0	No continuity
115	169-5, Pin 2	Ground		Direct	0	No continuity
116	169-5, Pin 3	110		Direct	0	Open reactor 162
117	169-5, Pin 3	169-5, Pin 5		Direct	0	No continuity
118	169-5, Pin 6	T. B. 7, Term. 14		Direct	0	No continuity
119	169-5, Pin 7	123-2, Term. 2	Tube VT-199 speech amplifier removed	Direct	41	Defective resistor 143-1 or 143-2
120	169-5, Pin 7	Ground	Tube JAN-6SS7 (VT-199) speech amplifier, in socket	Direct	7	Defective Tube JAN-6SS7 (VT-199); wrong socket connections
121	169-5, Pin 8	126, Term. 2		Direct	0	No continuity
122	169-3, Pin 1	Ground		Direct	0	No socket connection
123	169-3, Pin 3	160, Term. 3		Direct	0	No continuity
124	169-3, Pin 4	169-4, Pin 4		Direct	0	No continuity
125	169-3, Pin 4	111		Direct	0	No continuity
126	169-3, Pin 5	159, Term. 3		Direct	0	No continuity
127	169-3, Pin 7	Ground		Direct	0	No continuity
128	169-3, Pin 8	Ground		Direct	0	No continuity
129	169-4, Pin 1	Ground		Direct	0	No continuity
130	169-4, Pin 3	160, Term.		Direct	0	No continuity
131	169-4, Pin 3	T. B. 7, Term. 3		Direct	0	No continuity
132	169-4, Pin 5	159, Term. 5		Direct	0	No continuity
133	169-4, Pin 7	Ground		Direct	0	No continuity
134	169-4, Pin 8	Ground		Direct	0	No continuity
135	T. B. 8, Term. 10	160, Term. 4		Direct	0	No continuity
136	T. B. 8, Term. 10	120		Direct	0	No continuity
137	T. B. 8, Terms. 7, 8	119		Direct	0	No continuity
138	T. B. 8, Term. 8	171, Outside contact	Meter switch position 1	Direct	0	No connection
139	T. B. 8, Term. 2	171, Inside contact	Meter switch position 1	Direct	0	No connection
140	T. B. 8, Term. 9	171, Outside contact	Meter switch position 2	Direct	0	No connection
141	T. B. 8, Term. 3	171, Inside contact	Meter switch position 2	Direct	0	No connection
142	T. B. 8, Term. 10	171, Outside contact	Meter switch position 3	Direct	0	No connection



TABLE 5-3. TRANSMITTER CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)

Test No.	From	To	Control Positions if Not Normal	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
143	T. B. 8, Term. 4	171, Inside contact	Meter switch position 3	Direct	0	No connection
144	T. B. 8, Term. 12	171, Outside contact	Meter switch position 4	Direct	0	No connection
145	T. B. 8, Term. 6	171, Inside contact	Meter switch position 4	Direct	0	No connection
146	T. B. 8, Term. 5	171, Outside contact	Meter switch position 5	Direct	0	No connection
147	T. B. 8, Term. 11	171, Inside contact	Meter switch position 5	Direct	0	No connection
148	157, Outside contact	171, Inside contact	Position 1	Direct	1.5	Resistor 134 defective or disconnected
			Position 2	Direct	0.75	Resistor 135-1 defective or disconnected
			Position 3	Direct	0.75	Resistor 135-2 defective or disconnected
			Position 4	R x 10	2,000	Resistor 153-2 defective or disconnected
			Position 5	Direct	75	Resistor 148 defective or disconnected
149	126, Term. 1	126, Term. 2		R x 1000	5,000	Reactor 126 open or shorted

(4) ADJUSTMENT OF RELAYS 161, 130, 131. The relays employed in the transmitter are adjusted in the factory and should require no further adjustment. For maintenance of relays, refer to paragraph 7a, this section.

(5) REASSEMBLY.—Assemble the transmitter-receiver assembly as directed in paragraphs 6b(8)(a) through (d), this section.

d. DETAILED CHECK OF RECEIVER.

(1) DISASSEMBLY.

(a) Remove the transmitter-receiver assembly from the case as directed in paragraphs 6b(1)(a) through (g), this section.

(b) Remove the four red transmitter-mounting screws.

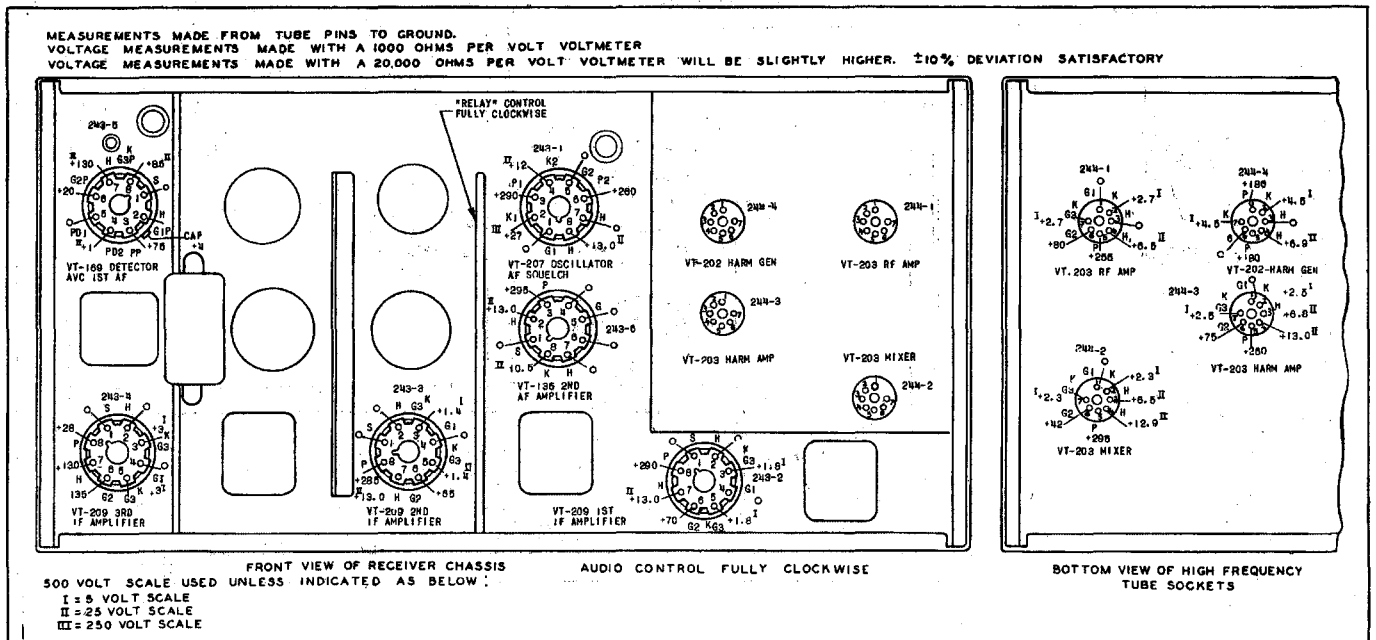


Figure 5-3. Tube Socket Layout and Voltage Measurements for Radio Receiver BC-624-A

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(c) Lift the transmitter side of the rack while pressing the top of the transmitter down with the thumbs. Lift the rack with the receiver, away from the transmitter.

(2) TUBE SOCKET VOLTAGE MEASUREMENTS (RADIO RECEIVER BC-624-A).

(a) Block the blocking relay 411-1 in the energized position.

(b) Connect a jumper from terminal 4 of socket 418-1 to any convenient ground point on the rack chassis.

(c) Rotate the receiver "AUDIO" and "RELAY" controls to their extreme clockwise positions.

(d) Insert the proper plugs in the sockets on the rack and connect the equipment to an appropriate source of power.

(e) Press any one of the channel selector push buttons on the control box.

(f) Using Test Set I-56(\*) or equivalent (sen-

\* Any issue letter is applicable.

sitivity of 1000 ohms per volt) make the tube socket voltage measurements listed in the chart below.

Note

Voltage measurements made with a 20,000 ohms per volt voltmeter will be slightly higher than those listed for the 1000 ohms per volt voltmeter.

(g) Use the 500-volt scale and make the measurements to chassis ground unless otherwise specified. Follow the additional directions given in the voltage diagram, figure 5-3.

(b) If the voltages vary appreciably (more than ±15 percent) from the values given in the chart below, make a further examination of the components of the associated circuit.

Note

If the meter used has different scales from those suggested, use the scales most nearly approximating those shown.

TABLE 5-4. TUBE SOCKET VOLTAGES FOR RADIO RECEIVER BC-624-A

Tube	Function	VOLTS						
		Plate	Suppressor	Screen	Grid	Cathode	Heater	Heater
JAN-9003 (VT-203)	R-F amplifier	255	2.7	80	0	2.7	6.5	0
JAN-9003 (VT-203)	Mixer	295	2.3	42	0	2.3	12.9	6.5

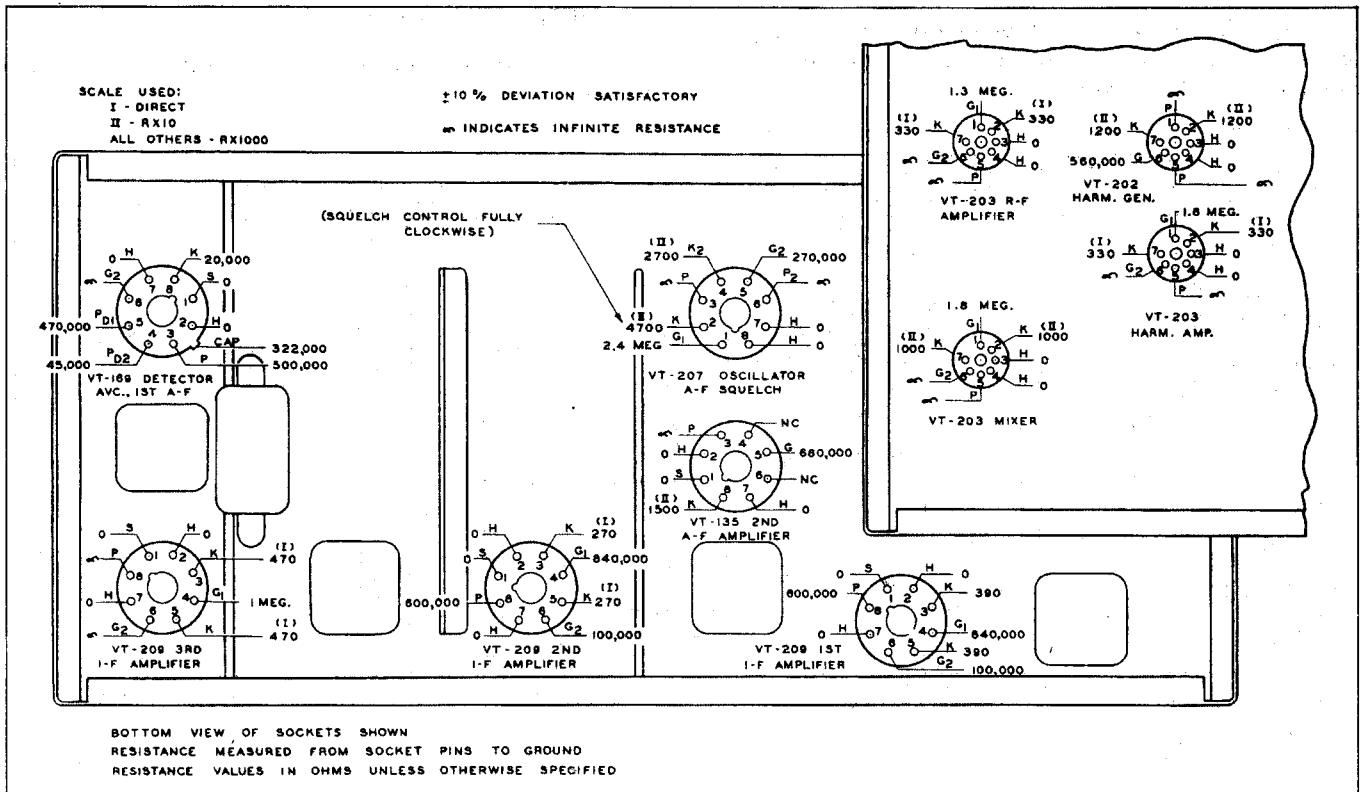


Figure 5-4. Tube Socket Layout and Resistance Measurements for Radio Receiver BC-624-A

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TABLE 5-4. TUBE SOCKET VOLTAGES FOR RADIO RECEIVER BC-624-A (Continued)

Tube	Function	VOLTS						
		Plate	Suppressor	Screen	Grid	Cathode	Heater	Heater
JAN-9003 (VT-203)	Harmonic amplifier	260	2.5	75	0	2.5	13.0	6.8
JAN-9002 (VT-202)	Harmonic generator	180	—	—	0	4.5	6.9	0
JAN-12SG7 (VT-209)	1st I.F.	290	1.8	70	0	1.8	13.0	0
JAN-12SG7 (VT-209)	2nd I.F.	285	1.4	65	0	1.4	13.0	0
JAN-12SG7 (VT-209)	3rd I.F.	280	3	135	0	3	13.0	0
JAN-12C8 (VT-169)	Detector	75	8.5	20	4	8.5	13.0	0
JAN-12J5GT (VT-135)	2nd a-f amplifier	295	—	—	0	10.5	13.0	0
JAN-12AH7GT (VT-207)	Oscillator squelch	260 290	— —	— —	0 0	12.0 27	13.0	0

(3) TUBE SOCKET VOLTAGE MEASUREMENTS FOR RADIO RECEIVER BC-624-AM.—The voltage measurements listed below were made with Voltmeter I-176, part of Test Equipment I-56-K (1000 ohms-per-volt).

- (a) Use the 500-volt meter scale unless otherwise specified.
- (b) Make all measurements from tube sockets to chassis.

(c) Place the "AUDIO" and "RELAY" controls in the extreme clockwise position.

(d) Select any channel with no signal being received.

**Note**

Readings will be slightly higher when a 20,000 ohms-per-volt voltmeter is used.

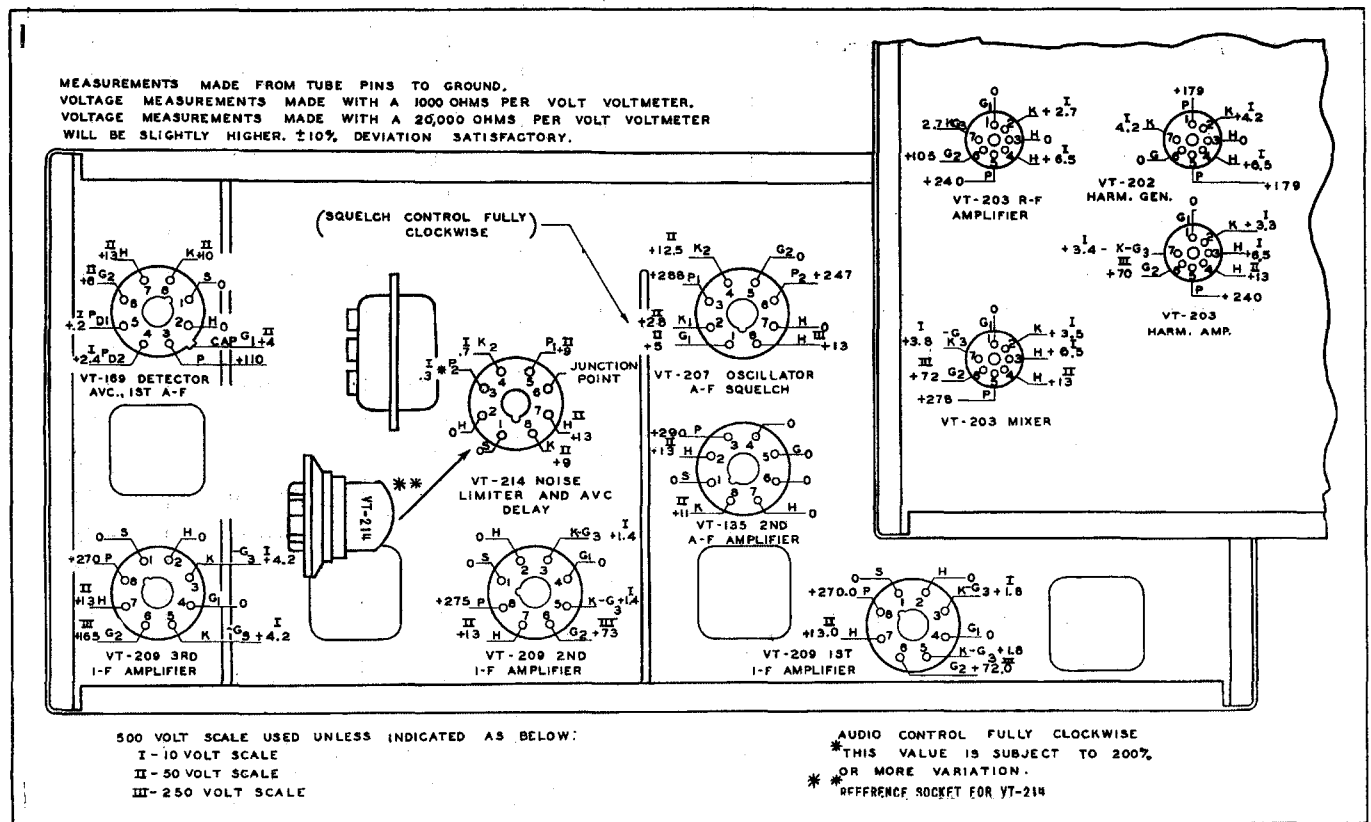


Figure 5-5. Tube Socket Layout and Voltage Measurements for Radio Receiver BC-624-AM

TABLE 5-5. TUBE SOCKET VOLTAGES FOR RADIO RECEIVER BC-624-AM

<i>Tube</i>	<i>Function</i>	<i>Pin No.</i>	<i>Element</i>	<i>Meter Scale</i>	<i>Volts</i>
JAN-9003 (VT-203)	R-F amplifier	1	G <sub>1</sub>		0
		2	K	10-volt	+2.7
		3	H		0
		4	H	10-volt	+6.5
		5	P		+240.
		6	G <sub>2</sub>		+105.
		7	K-G <sub>3</sub>		+2.7
JAN-9003 (VT-203)	Mixer	1	G <sub>1</sub>		0
		2	K	10-volt	+3.5
		3	H	10-volt	+6.5
		4	H	50-volt	+13.
		5	P		+278.
		6	G <sub>2</sub>	250-volt	+72.
		7	K-G <sub>3</sub>	10-volt	+3.8
JAN-9003 (VT-203)	Harmonic amplifier	1	G <sub>1</sub>		0
		2	K	10-volt	+3.3
		3	H	50-volt	+6.5
		4	H	50-volt	+13.
		5	P		+240.
		6	G <sub>2</sub>	350-volt	+70.
		7	K-G <sub>3</sub>	10-volt	+3.4
JAN-9002 (VT-202)	Harmonic generator	1	P		+179.
		2	K	10-volt	+4.2
		3	H		0
		4	H	10-volt	+6.5
		5	P		+179.
		6	G		0
		7	K	10-volt	+4.2
JAN-12SG7 (VT-209)	First i-f amplifier	1	S		0
		2	H		0
		3	K-G <sub>3</sub>	10-volt	+1.8
		4	G <sub>1</sub>		0
		5	K-G <sub>3</sub>		+1.8
		6	G <sub>2</sub>	250-volt	+72.
		7	H	50-volt	+13.
		8	P		+270.
JAN-12SG7 (VT-209)	Second i-f amplifier	1	S		0
		2	H		0
		3	K-G <sub>3</sub>	10-volt	+1.4
		4	G <sub>1</sub>		0
		5	K-G <sub>3</sub>	10-volt	+1.4
		6	G <sub>2</sub>	250-volt	+73.
		7	H	50-volt	+13.
		8	P		+275.

\* Note that this tube is a duplex diode-pentode. For diode voltages refer to figure 5-3.

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TABLE 5-5. TUBE SOCKET VOLTAGES FOR RADIO RECEIVER BC-624-AM (Continued)

<i>Tube</i>	<i>Function</i>	<i>Pin No.</i>	<i>Element</i>	<i>Meter Scale</i>	<i>Volts</i>
JAN-12SG7 (VT-209)	Third i-f amplifier	1	S		0
		2	H		0
		3	K-G <sub>3</sub>	10-volt	+4.2
		4	G <sub>1</sub>		0
		5	K-G <sub>3</sub>	10-volt	+4.2
		6	G <sub>2</sub>	250-volt	+165.
		7	H	50-volt	+13.
		8	P		+270.
JAN-12C8 (VT-169)	Detector, AVC, and first audio	1	S		0
		2	H		0
		3	P		+110.
		4	PD <sub>2</sub>	10-volt	+2.4
		5	PD <sub>1</sub>	10-volt	+ .2
		6	G <sub>2</sub>	50-volt	+6.
		7	H	50-volt	+13.
		8	K	50-volt	+10.
JAN-12J5GT (VT-135)	Second audio	Cap	G <sub>1</sub>	50-volt	+4.
		1	S		0
		2	H	50-volt	+13.
		3	P		+290.
		4	—		0
		5	G		0
		6	—		0
		7	H		0
JAN-12AH7GT (VT-207)	Oscillator and audio squelch	8	K	50-volt	+11.
		1	G <sub>1</sub>	50-volt	+5.
		2	K <sub>1</sub>	50-volt	+28.
		3	P <sub>1</sub>		+288.
		4	K <sub>2</sub>	50-volt	+12.5
		5	G <sub>2</sub>		0
		6	P <sub>2</sub>		+247.
		7	H		0
JAN-12H6 (VT-214)	Noise limiter and AVC delay	8	H	50-volt	+13.
		1	S		0
		2	H		0
		3	P <sub>2</sub>	10-volt	+3*
		4	K <sub>2</sub>	10-volt	+7.
		5	P <sub>1</sub>	50-volt	+9.
		6	—		—
		7	H	50-volt	+13.
8	K <sub>1</sub>	50-volt	+9.		

\* This value is subject to 200% or more variation.

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(4) TUBE SOCKET VOLTAGE MEASUREMENTS FOR RADIO RECEIVER BC-624-C. — The voltage measurements listed below were made with Voltmeter I-176, part of Test Equipment I-56-K (1000 ohms-per-volt).

(a) Use the 500-volt scale unless otherwise specified.

(b) Make all measurements from tube sockets to chassis.

(c) Place the "AUDIO" and "SQUELCH" controls in the fully clockwise position.

(d) Select any channel with no signal being received.

**Note**

Readings taken when using a 20,000 ohms-per-volt voltmeter will be slightly higher.

**TABLE 5-6. TUBE SOCKET VOLTAGES FOR RADIO RECEIVER BC-624-C.**

<i>Tube</i>	<i>Function</i>	<i>Pin No.</i>	<i>Element</i>	<i>Scale Used</i>	<i>Volts</i>
JAN-9003 (VT-203)	R-F amplifier	1	G <sub>1</sub>		0
		2	K	10-volt	+3.
		3	H		0
		4	H	10-volt	+6.5
		5	P		+255.
		6	G <sub>2</sub>		+90.
		7	K-G <sub>3</sub>	10-volt	+3.
JAN-9003 (VT-203)	Mixer	1	G <sub>1</sub>		0
		2	K	10-volt	+3.
		3	H	10-volt	+6.5
		4	H	50-volt	+13.
		5	P		+285.
		6	G <sub>2</sub>	250-volt	+50.
		7	K-G <sub>3</sub>	10-volt	+3.
JAN-9003 (VT-203)	Harmonic amplifier	1	G <sub>1</sub>		0
		2	K	10-volt	+2.5
		3	H	10-volt	+6.5
		4	H	50-volt	+13.
		5	P		+250.
		6	G <sub>2</sub>	250-volt	+85.
		7	K-G <sub>3</sub>	10-volt	+2.5
JAN-9002 (VT-202)	Harmonic generator	1	P		+185.
		2	K	10-volt	+4.5
		3	H		0
		4	H	10-volt	+6.5
		5	P		+185.
		6	G		0
		7	K	10-volt	+4.5
JAN-12SG7 (VT-209)	First i-f amplifier	1	S		0
		2	H		0
		3	K-G <sub>3</sub>	10-volt	+1.8
		4	G <sub>1</sub>	10-volt	+0.02
		5	K-G <sub>3</sub>	10-volt	+1.8
		6	G <sub>2</sub>	250-volt	+65.
		7	H	50-volt	+13.
		8	P		+275.

TABLE 5-6. TUBE SOCKET VOLTAGES FOR RADIO RECEIVER BC-624-C (Continued)

<i>Tube</i>	<i>Function</i>	<i>Pin No.</i>	<i>Element</i>	<i>Scale Used</i>	<i>Volts</i>
JAN-12SG7 (VT-209)	Second i-f amplifier	1	S		0
		2	H		0
		3	K-G <sub>3</sub>	10-volt	+1.3
		4	G <sub>1</sub>	10-volt	+0.2
		5	K-G <sub>3</sub>	10-volt	+1.3
		6	G <sub>2</sub>	250-volt	+60.
		7	H	50-volt	+13.
		8	P		+275.
JAN-12SG7 (VT-209)	Third i-f amplifier	1	S		0
		2	H		0
		3	K-G <sub>3</sub>	10-volt	+2.6
		4	G <sub>1</sub>		0
		5	K-G <sub>3</sub>	10-volt	+2.6
		6	G <sub>2</sub>	250-volt	+155.
		7	H	50-volt	+13.
		8	P		+265.
JAN-12AH7GT (VT-207)	AVC delay and first audio	1	G <sub>1</sub>	10-volt	+0.2
		2	K <sub>1</sub>	10-volt	+0.7
		3	P <sub>1</sub>	10-volt	+0.2
		4	K <sub>2</sub>	50-volt	+32.
		5	G <sub>2</sub>	10-volt	+0.2
		6	P <sub>2</sub>	50-volt	+43.
		7	H		0
		8	H	50-volt	+13.
JAN-12C8 (VT-169)	AVC and second audio	1	S		0
		2	H		0
		3	P		+45.
		4	PD <sub>2</sub>	50-volt	+7.
		5	PD <sub>1</sub>	50-volt	+7.
		6	G <sub>2</sub>	250-volt	+30.
		7	H	50-volt	+13.
		8	K	50-volt	+16.
JAN-12A6 (VT-134)	Third audio	Cap	G <sub>1</sub>		0
		1	S		0
		2	H	50-volt	+13.
		3	P		+290.
		4	G <sub>2</sub>		+290.
		5	G <sub>1</sub>		0
		6	No connection		No connection
		7	H		0
8	K	50-volt	+16.		

TABLE 5-6. TUBE SOCKET VOLTAGES FOR RADIO RECEIVER BC-624-C (Continued)

Tube	Function	Pin No.	Element	Scale Used	Volts
JAN-12AH7GT (VT-207)	Oscillator and audio squelch	1	G <sub>1</sub>		0
		2	K <sub>1</sub>	50-volt	+17.
		3	P <sub>1</sub>	10-volt	+1.0
		4	K <sub>2</sub>	50-volt	+12.
		5	G <sub>2</sub>		0
		6	P <sub>2</sub>		+240.
		7	H		0
		8	H		+13.
JAN-12H6 (VT-214)	Detector and noise limiter	1	S		0
		2	H	50-volt	+13
		3	P <sub>2</sub>	10-volt	+0.3
		4	K <sub>2</sub>	10-volt	+0.4
		5	P <sub>1</sub>	10-volt	+0.3
		6	No connection		
		7	H		0
		8	K <sub>1</sub>	10-volt	+0.3

(5) TUBE SOCKET RESISTANCE MEASUREMENTS FOR RADIO RECEIVER BC-624-AM.—The following resistance measurements were made using Voltmeter I-176, part of Test Equipment I-56-K (1000 ohms-per-volt).

- (a) Depress the "OFF" button to be sure the equipment is not operating.
- (b) Disconnect the equipment from the power source.
- (c) Remove the four red receiver-mounting screws.

(d) Lift the receiver side of the rack while pressing the top of the receiver down with the thumbs. Lift the rack away from the receiver.

- (e) Make all resistance measurements from tube socket pins to the chassis.
- (f) Place the "AUDIO" and "RELAY" controls in the fully clockwise position.

**IMPORTANT**

Variation in readings is possible when measuring resistance in circuits associated with the electrolytic capacitors in the 212 series. Observe proper polarity of the ohmmeter leads.

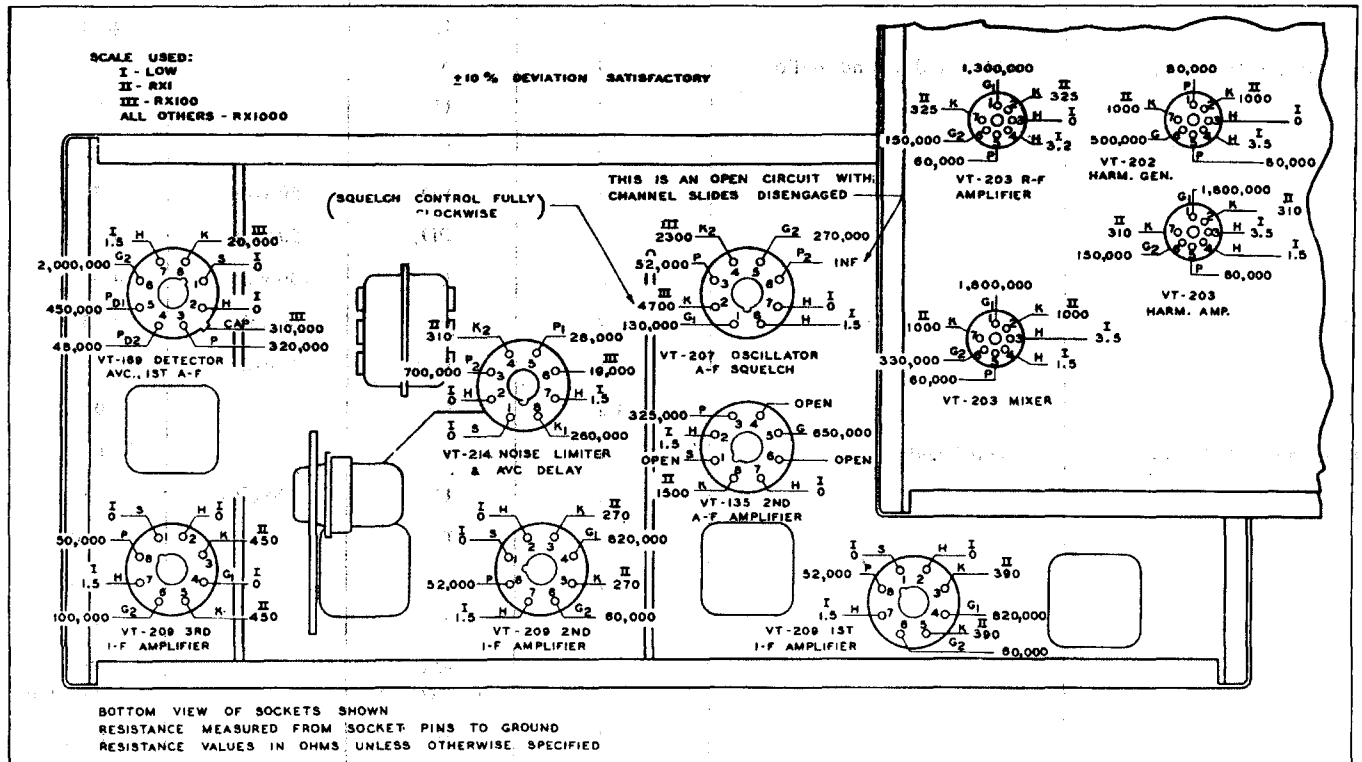


Figure 5-6. Tube Socket Layout and Resistance Measurements for Radio Receiver BC-624-AM



TABLE 5-7. TUBE SOCKET RESISTANCE MEASUREMENTS FOR RADIO RECEIVER BC-624-AM

<i>Tube</i>	<i>Function</i>	<i>Pin No.</i>	<i>Element</i>	<i>Meter Scale</i>	<i>Ohms</i>
JAN-9003 (VT-203)	R <sub>3</sub> F amplifier	1	G <sub>1</sub>	R x 1000	1,300,000
		2	K	R x 1	325
		3	H	Low	0
		4	H	Low	3.2
		5	P	R x 1000	60,000
		6	G <sub>2</sub>	R x 1000	150,000
		7	K-G <sub>3</sub>	R x 1	325
JAN-9003 (VT-203)	Mixer	1	G <sub>1</sub>	R x 1000	1,800,000
		2	K	R x 1	1,000
		3	H	Low	3.5
		4	H	Low	1.5
		5	P	R x 1000	60,000
		6	G <sub>2</sub>	R x 1000	330,000
		7	K-G <sub>3</sub>	R x 1	1,000
JAN-9003 (VT-203)	Harmonic amplifier	1	G <sub>1</sub>	R x 1000	1,800,000
		2	K	R x 1	310
		3	H	Low	3.5
		4	H	Low	1.5
		5	P	R x 1000	80,000
		6	G <sub>2</sub>	R x 1000	150,000
		7	K-G <sub>3</sub>	R x 1	310
JAN-9002 (VT-202)	Harmonic generator	1	P	R x 1000	80,000
		2	K	R x 1	1,000
		3	H	Low	0
		4	H	Low	3.5
		5	P	R x 1000	80,000
		6	G	R x 1000	500,000
		7	K	R x 1	1,000
JAN-12SG7 (VT-209)	First i-f amplifier	1	S	Low	0
		2	H	Low	0
		3	K-G <sub>3</sub>	R x 1	390
		4	G <sub>1</sub>	R x 1000	820,000
		5	K-G <sub>3</sub>	R x 1	390
		6	G <sub>2</sub>	R x 1000	60,000
		7	H	Low	1.5
		8	P	R x 1000	52,000
JAN-12SG7 (VT-209)	Second i-f amplifier	1	S	Low	0
		2	H	Low	0
		3	K-G <sub>3</sub>	R x 1	270
		4	G <sub>1</sub>	R x 1000	820,000
		5	K-G <sub>3</sub>	R x 1	270
		6	G <sub>2</sub>	R x 1000	60,000
		7	H	Low	1.5
		8	P	R x 1000	52,000

**TABLE 5-7. TUBE SOCKET RESISTANCE MEASUREMENTS  
FOR RADIO RECEIVER BC-624-AM (Continued)**

<i>Tube</i>	<i>Function</i>	<i>Pin No.</i>	<i>Element</i>	<i>Meter Scale</i>	<i>Ohms</i>
JAN-12SG7 (VT-209)	Third i-f amplifier	1	S	Low	0
		2	H	Low	0
		3	K-G <sub>3</sub>	R x 1	450
		4	G <sub>1</sub>	Low	0
		5	K-G <sub>3</sub>	R x 1	450
		6	G <sub>2</sub>	R x 1000	100,000
		7	H	Low	1.5
		8	P	R x 1000	50,000
JAN-12C8 (VT-169)	Detector, AVC, first audio	1	S	Low	0
		2	H	Low	0
		3	P	R x 1000	320,000
		4	PD <sub>2</sub>	R x 1000	48,000
		5	PD <sub>1</sub>	R x 1000	450,000
		6	G <sub>2</sub>	R x 1000	2,000,000
		7	H	Low	1.5
		8	K	R x 100	20,000
JAN-12J5GT (VT-135)	Second audio	Cap	G <sub>1</sub>	R x 100	310,000
		1	S		Open
		2	H	Low	1.5
		3	P	R x 1000	325,000
		4	—		Open
		5	G	R x 1000	650,000
		6	—		Open
		7	H	Low	0
JAN-12AH7GT (VT-207)	Oscillator and audio squelch	8	K	R x 1	1,500
		1	G <sub>1</sub>	R x 1000	130,000
		2	K <sub>1</sub>	R x 100	4,700
		3	P <sub>1</sub>	R x 1000	52,000
		4	K <sub>2</sub>	R x 100	2,300
		5	G <sub>2</sub>	R x 1000	270,000
		6	P <sub>2</sub>	See note	Infinite
		7	H	Low	0
JAN-12H6 (VT-214)	Noise limiter and AVC delay	8	H	Low	1.5
		1	S	Low	0
		2	H	Low	0
		3	P <sub>2</sub>	R x 1000	700,000
		4	K <sub>2</sub>	R x 1	310
		5	P <sub>1</sub>	R x 1000	28,000
		6	—	R x 100	19,000
		7	H	Low	1.5
8	K <sub>1</sub>	R x 1000	260,000		

NOTE: This is an open circuit with channel slides disengaged.

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(6) TUBE SOCKET RESISTANCE MEASUREMENTS FOR RADIO RECEIVER BC-624-C.—The following resistance measurements were made with Voltmeter I-176, part of Test Equipment I-56-K (1000 ohms-per-volt).

**IMPORTANT**

Prepare the equipment as directed in paragraphs 6c(5)(a) through (f), this section. Substitute "SQUELCH" control for "RELAY" control in paragraph (f).

**TABLE 5-8. TUBE SOCKET RESISTANCE MEASUREMENTS FOR RADIO RECEIVER BC-624-C**

<i>Tube</i>	<i>Function</i>	<i>Pin No.</i>	<i>Element</i>	<i>Meter Scale</i>	<i>Ohms</i>
JAN-9003 (VT-203)	R-F amplifier	1	G <sub>1</sub>	R x 1000	2,000,000
		2	K	R x 1	330
		3	H	Low	0
		4	H	Low	3.2
		5	P	R x 1000	100,000
		6	G <sub>2</sub>	R x 1000	200,000
		7	K-G <sub>3</sub>	R x 1	330
JAN-9003 (VT-203)	Mixer	1	G <sub>1</sub>	R x 1000	2,000,000
		2	K	R x 1	1,000
		3	H	Low	3.2
		4	H	Low	1.5
		5	P	R x 1000	100,000
		6	G <sub>2</sub>	R x 1000	360,000
		7	K-G <sub>3</sub>	R x 1	1,000
JAN-9003 (VT-203)	Harmonic amplifier	1	G <sub>1</sub>	R x 1000	2,000,000
		2	K	R x 1	330
		3	H	Low	3.2
		4	H	Low	1.5
		5	P	R x 100	100,000
		6	G <sub>2</sub>	R x 100	200,000
		7	K-G <sub>3</sub>	R x 1	330
JAN-9002 (VT-202)	Harmonic generator	1	P	R x 1000	125,000
		2	K	R x 1	1,000
		3	H	Low	0
		4	H	Low	3.2
		5	P	R x 1000	125,000
		6	G	R x 1000	500,000
		7	K	R x 1	1,200
JAN-12SG7 (VT-209)	First i-f amplifier	1	S	Low	0
		2	H	Low	0
		3	K-G <sub>3</sub>	R x 1	300
		4	G <sub>1</sub>	R x 1000	2,000,000
		5	K-G <sub>3</sub>	R x 1	300
		6	G <sub>2</sub>	R x 1000	75,000
		7	H	Low	1.5
		8	P	R x 1000	100,000

**TABLE 5-8. TUBE SOCKET RESISTANCE MEASUREMENTS FOR  
RADIO RECEIVER BC-624-C (Continued)**

<i>Tube</i>	<i>Function</i>	<i>Pin No.</i>	<i>Element</i>	<i>Meter Scale</i>	<i>Ohms</i>
JAN-12SG7 (VT-209)	Second i-f amplifier	1	S	Low	0
		2	H	Low	0
		3	K-G <sub>3</sub>	R x 1	180
		4	G <sub>1</sub>	R x 1000	2,000,000
		5	K-G <sub>3</sub>	R x 1	180
		6	G <sub>2</sub>	R x 1000	75,000
		7	H	Low	1.5
		8	P	R x 1000	100,000
JAN-12SG7 (VT-209)	Third i-f amplifier	1	S	Low	0
		2	H	Low	0
		3	K-G <sub>3</sub>	R x 1	270
		4	G <sub>1</sub>	Low	0
		5	K-G <sub>3</sub>	R x 1	270
		6	G <sub>2</sub>	R x 1000	150,000
		7	H	Low	1.5
		8	P	R x 1000	100,000
JAN-12AH7GT (VT-207)	AVC delay and first audio	1	G <sub>1</sub>	R x 1000	1,800,000
		2	K <sub>1</sub>	R x 1	600
		3	P <sub>1</sub>	R x 1000	1,800,000
		4	K <sub>2</sub>	R x 100	30,000
		5	G <sub>2</sub>	R x 1000	2,300,000
		6	P <sub>2</sub>	R x 100	20,000
		7	H	Low	0
		8	H	Low	1.5
JAN-12C8 (VT-169)	AVC and second audio	1	S	Low	0
		2	H	Low	0
		3	P	R x 1000	325,000
		4	PD <sub>2</sub>	R x 1000	110,000
		5	PD <sub>1</sub>	R x 1000	110,000
		6	G <sub>2</sub>	R x 1000	1,000,000
		7	H	Low	1.5
		8	K	R x 100	20,000
JAN-12A6 (VT-134)	Third audio	Cap	G <sub>1</sub>	R x 1000	600,000
		1	S	Low	0
		2	H	Low	1.5
		3	P	R x 1000	110,000
		4	G <sub>2</sub>	R x 1000	110,000
		5	G <sub>1</sub>	R x 1000	700,000
		6	—	No connection	
		7	H	Low	0
8	K	R x 1	500		

TABLE 5-8. TUBE SOCKET RESISTANCE MEASUREMENTS FOR  
RADIO RECEIVER BC-624-C (Continued)

Tube	Function	Pin No.	Element	Meter Scale	Obms
JAN-12AH7GT (VT-207)	Oscillator and audio squelch	1	G <sub>1</sub>	R x 1000	3,000,000
		2	K <sub>1</sub>	R x 100	6,500
		3	P <sub>1</sub>	R x 1000	475,000
		4	K <sub>2</sub>	R x 100	2,500
		5	G <sub>2</sub>	R x 1000	275,000
		6	P <sub>2</sub>	This is an open circuit with channels disengaged.	
		7	H	Low	0
JAN-12H6 (VT-214)	Detector and noise limiter	8	H	Low	1.5
		1	S	Low	0
		2	H	Low	1.5
		3	P <sub>2</sub>	R x 1000	1,000,000
		4	K <sub>2</sub>	R x 1000	1,000,000
		5	P <sub>1</sub>	R x 1000	3,000,000
		6	No connection		
		7	H	Low	0
8	K <sub>1</sub>	R x 1000	1,600,000		

(7) RECEIVER CONTINUITY AND RESISTANCE MEASUREMENTS. (See figs. 5-7 and 5-8.)

(a) Prepare the equipment as directed in paragraphs 6c(5)(a) through (d), this section.

(b) Leave all the vacuum tubes in their sockets unless otherwise specified.

(c) Rotate the "AUDIO" and "RELAY" controls fully clockwise unless otherwise specified.

(d) Using Test Set I-56-(\*) or equivalent, make the resistance measurements listed in the following chart.

**Note**

Variations greater than  $\pm 10$  percent from the values listed in the chart indicate defective circuits.

TABLE 5-9. CONTINUITY AND RESISTANCE MEASUREMENTS FOR RADIO  
RECEIVERS BC-624-A AND BC-624-AM

Test No.	From	To	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
1	231, Pin 3**	T.B. 4, Term. 1	Direct	0.25	Defective B+ r-f reactor 241-2
2	231, Pin 3	T.B. 5, Term. 8	Direct	0.25	Defective B+ r-f reactor 241-2, or open on B+ bus
3	231, Pin 3	T.B. 5, Term. 1	Direct	0.25	Same as 2
4	231, Pin 3	T.B. 5, Term. 9	Direct	0.25	Same as 2
5	231, Pin 3	T.B. 5, Term. 15	Direct	0.25	Same as 2
6	231, Pin 3	T.B. 5, Term. 17	Direct	0.25	Same as 2
7	231, Pin 3	T.B. 5, Term. 23	Direct	0.25	Same as 2
8	231, Pin 3	T.B. 9, Term. 11	Direct	0.25	Same as 2
9	231, Pin 3	T.B. 8, Term. 17	Direct	0.25	Same as 2
10	231, Pin 3	T.B. 7, Term. 2	Direct	0.25	Same as 2
11	231, Pin 3	T.B. 1, Term. 1	Direct	0.25	Same as 2
12	231, Pin 3	T.B. 1, Term. 5	Direct	0.25	Same as 2

\* Any issue letter is applicable.

\*\* A defective capacitor 206-15 or 202-16 may be responsible for many incorrect readings involving plug 231, pin 3.

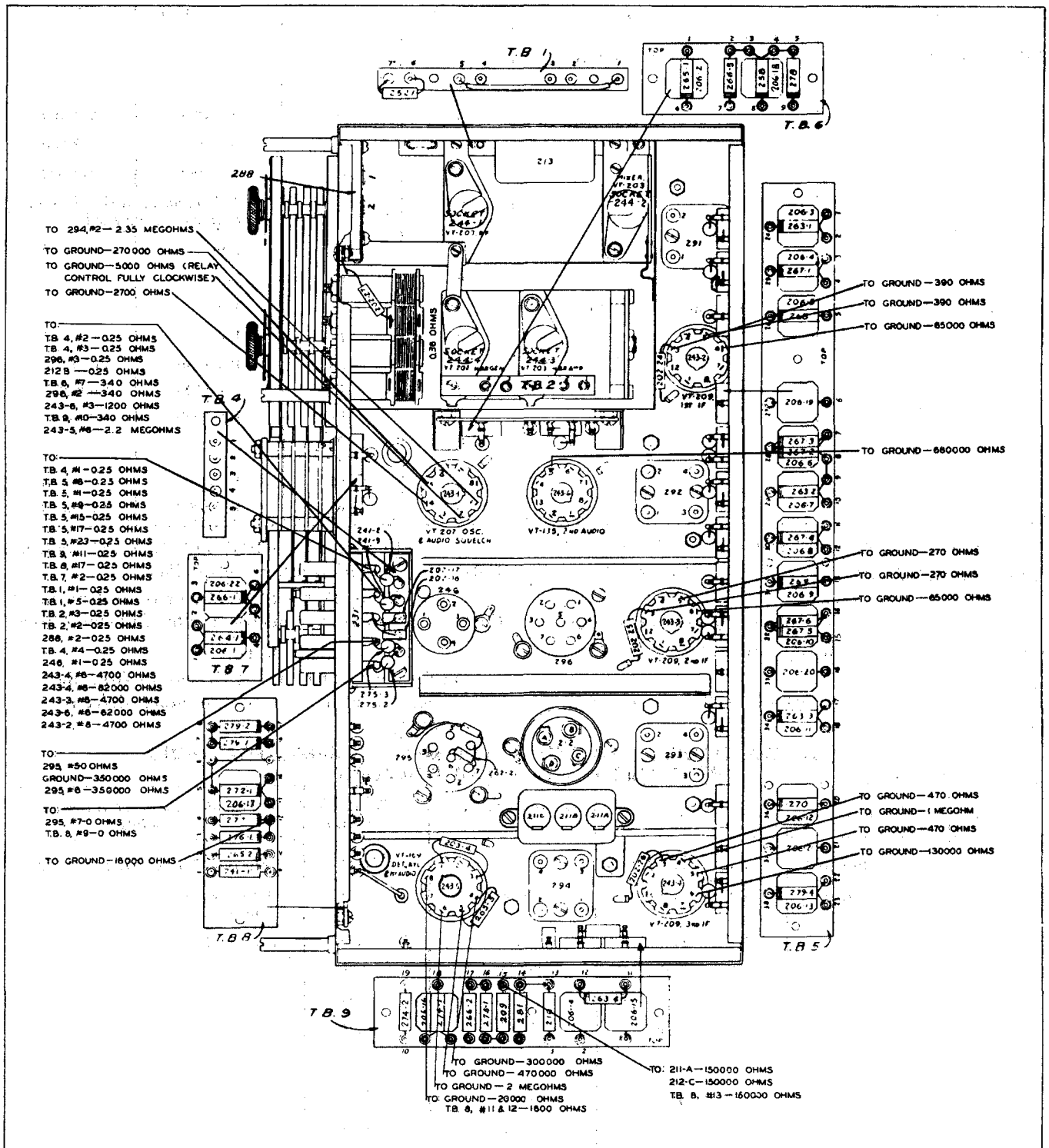


Figure 5-7. Radio Receiver BC-624-A—Continuity and Resistance Chart



(8) DISASSEMBLY OF R-F AND  
OSCILLATOR SECTION.

**Note**

The r-f and oscillator sections of the receiver may be removed as a complete unit, or the oscillator section may be removed separately.

(a) To remove both the r-f and oscillator sections, unsolder the black, white-blue, red, and brown leads from the oscillator section terminal board.

(b) Unsolder the black-white-green, red-white, two red leads, and two brown leads from the r-f section terminal board.

(c) Unsolder the blue lead from terminal No. 2 of the first i-f transformer 291.

(d) Unsolder the grounding lug.

(e) Remove the r-f oscillator grounding strap. This strap provides a good ground and ties both the r-f and oscillator sections to a shield in the receiver. The r-f and oscillator section cannot be removed unless this ground strap is completely free of the shield.

(f) Loosen the receiver tuning-control locknuts (see fig. 5-11) and set both receiver tuning controls at the alignment mark (high frequency) above the 156-megacycle division on the calibration plate.

(g) After softening the glyptal with glyptal thinner, acetone, or heat, insert a set-screw wrench in the holes provided in the rear of the receiver and loosen one set screw in each of the two variable capacitor couplings. Set-screw wrenches are provided in the special tool set (part of Test Equipment IE-19-A or IE-12-A).

(h) Set both receiver tuning controls at the alignment mark (low frequency) below the 100-megacycle division on the calibration plate and repeat step (g) above.

(i) Remove the two mounting screws (one near the channel "D" crystal-identification plate and one next to the "286" stencil mark) of the crystal-selector switch 286 and draw the switch away from the frequency-shifter mechanism thus disengaging the switch arms from the shifter slides.

**CAUTION**

Do not remove the nuts on top of switch 286 (see fig. 5-11) as this may cause the switch to come apart.

(j) Remove the four frequency-shifter mounting screws (see fig. 5-11) and remove the frequency-shifter mechanism.

(k) Remove the six screws (three on the right and three on the left side of the r-f and oscillator assembly) which secure the assembly to the receiver chassis.

(l) Lift the r-f and oscillator assembly out of the receiver.

(9) DISASSEMBLY OF OSCILLATOR  
SECTION ONLY.

(a) To remove the oscillator section only, follow the procedure of paragraphs 8a(2)(a), (e), (f), (g), and (b) this section, except in (g) loosen only the screws in the coupling for the variable capacitor 217A and B.

(b) Remove the oscillator section mounting screw and the two mounting nuts.

(c) Pull the oscillator section away from the tuning control and lift it out of the receiver.

(10) ADJUSTMENT AND REASSEMBLY  
OF R-F AND OSCILLATOR SECTIONS.

(a) Reassemble and reinstall the r-f and oscillator assemblies, reversing the procedure given in paragraph 8a(2), this section.

**IMPORTANT**

See that the crystal switch arms engage the pins of the frequency shifter slides.

(b) Set the receiver tuning controls at the dial mark below the 100-megacycle division. With the receiver tuning controls in this position, the rotors of the r-f and oscillator capacitors 216A, B, and C, and 217A and B, respectively, should be fully meshed with their respective stators.

(c) If this is not the case, loosen the lock nuts and turn the tuning controls to the alignment mark (high frequency) above the 156-megacycle calibration. Insert a set-screw wrench in the holes provided in the rear of the receiver chassis and loosen one set-screw in each capacitor coupling shaft (set screw wrenches are provided in Test Set IE-19-A and IE-12-A).

(d) Turn the tuning controls to the alignment mark (low frequency) below the 100-megacycle calibration division. Loosen the other set-screw in each capacitor coupling shaft. With the tuning controls accurately set on the low frequency alignment mark, completely mesh the capacitor plates, apply glyptal to the set-screw threads of and tighten one set-screw in each coupling shaft.

(e) Turn the tuning controls to the high-frequency end of the band, apply glyptal to and tighten the remaining set screws.

(11) ADJUSTMENT OF SQUELCH RELAY.

(a) If proper operation of the squelch relay cannot be obtained, check the spacing between the flat contact and the armature. This spacing should be between .0015" and .003".

(b) Adjust the spring tension at the point at which the relay closes when a current of approximately 4 milliamperes flows through the coil. When properly adjusted, the squelch relay should open and close with a coil-current differential of not more than 0.2 milliamperes (e.g., close at 4 milliamperes, open at 3.8 milliamperes).



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(c) Make certain that the armature spring does not rub against any portion of the relay frame. Erratic, undependable operation will result if there is excessive play in the armature pivot bearings.

(12) REASSEMBLY. — Assemble the receiver-transmitter assembly as directed in paragraph 6b(8) (a) through (d), this section.

TABLE 5-9. RECEIVER CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)

Test No.	From	To	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
13	231, Pin 3	T.B. 2, Term. 3	Direct	0.25	Same as 2
14	231, Pin 3	T.B. 2, Term. 2	Direct	0.25	Same as 2
15	231, Pin 3	288, Term. 2	Direct	0.25	Same as 2
16	231, Pin 3	T.B. 4, Term. 4	Direct	0.25	Same as 2
17	231, Pin 3	246, Term. 1	Direct	0.25	Same as 2
18	231, Pin 4	296, Term. 7	Direct	0	Open audio-output wiring
19	231, Pin 5	T.B. 4, Term. 2	Direct	0.25	Defective B+ reactor 241-3
20	231, Pin 5	T.B. 4, Term. 3	Direct	0.25	Same as 19 or broken jumper on T.B. 4
21	231, Pin 5	296, Term. 3	Direct	0.25	Defective reactor 241-3 or open B+ wiring
22	231, Pin 5	212B (red)	Direct	0.25	Same as 21
*23 †23a	231, Pin 6 231, Pin 6	211C 211-1C	Direct	0	Broken connection
*24 †24a	231, Pin 6 231, Pin 6	T.B. 9, Term. 7 T.B. 10, Term. 1	Direct	0	Broken connection or open AVC bus
25	231, Pin 6	T.B. 5, Term. 11	Direct	0	Same as 24
26	231, Pin 6	T.B. 5, Term. 3	Direct	0	Same as 24
*27 †27a	231, Pin 6 231, Pin 6	T.B. 1, Term. 5 T.B. 1, Term. 7	Direct	0	Same as 24
28	231, Pin 7	Ground	Direct	0	Broken connection
29	231, Pin 8	213	Direct	0	Broken connection or open heater wiring
30	231, Pin 8	T.B. 1, Term. 2	Direct	0	Same as 29
31	231, Pin 8	T.B. 2, Term. 1	Direct	0	Same as 29
32	231, Pin 8	243-2, Pin 7	Direct	0	Same as 29
33	231, Pin 8	243-3, Pin 7	Direct	0	Same as 29
34	231, Pin 8	243-4, Pin 7	Direct	0	Same as 29
35	231, Pin 8	243-5, Pin 7	Direct	0	Same as 29
36	231, Pin 8	243-1, Pin 8	Direct	0	Broken connection or open heater wiring
37	231, Pin 8	243-6, Pin 2	Direct	0	Same as 36
38	231, Pin 8	Ground	Direct	1.5	Same as 36; defective tube
39	231, Pin 9	295, Term. 7	Direct	0	Broken connection
40	231, Pin 9	T.B. 8, Term. 9	Direct	0	Same as 39
41	231, Pin 10	295, Term. 3	Direct	0	Same as 39
42	231, Pin 10	Ground	Direct	3.5	Broken connection or defective transformer 295
43	231, Pin 11	295, Term. 5	Direct	0	Broken connection
44	231, Pin 12	295, Term. 4	Direct	0	Broken connection
45	231, Pin 12	Ground	Direct	3.5	Broken connection or defective transformer 295

\* Radio Receiver BC-624-A only.  
† Radio Receiver BC-624-AM only.

TABLE 5-9. RECEIVER CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)

Test No.	From	To	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
46	243-2, Pin 1	Ground	Direct	0	Broken lug or open ground bus
47	243-2, Pin 2	Ground	Direct	0	Same as 46
48	243-3, Pin 1	Ground	Direct	0	Same as 46
49	243-3, Pin 2	Ground	Direct	0	Same as 46
50	243-4, Pin 1	Ground	Direct	0	Same as 46
51	243-4, Pin 2	Ground	Direct	0	Same as 46
52	243-5, Pin 1	Ground	Direct	0	Same as 46
53	243-5, Pin 2	Ground	Direct	0	Same as 46
†54	243-5, Pin 6	211B	Direct	0	Broken connection
††54a	243-5, Pin 6	211-1B	Direct	0	Broken connection
55	243-5, Pin 8	T.B. 8, Term. 4	Direct	0	Same as 54
56	243-6, Pin 1	Ground	R x 1000	Open	Defective 2nd Audio Tube JAN-12J5GT (VT-135)
57	243-6, Pin 7	Ground	Direct	0	Broken lug or open ground bus
58	243-1, Pin 7	Ground	Direct	0	Same as 57
*59	243-1, Pin 5	Crystal-holders A, B, C, D	Direct	0	Broken connection or defective crystal switch 286
*60	243-1, Pin 6	Plate inductors 227-1, -2, -3, -4	Direct	0	Same as 59
†61	231, Pin 4	296, Term. 6	R x 10	350	Defective transformer 296
††61a	231, Pin 4	296, Term. 7	R x 10	375	Same as 61
†62	231, Pin 4	296, Term. 5	Direct	10	Same as 61
††62a	231, Pin 4	296, Term. 5	Direct	400	Same as 61
†63	231, Pin 4	Ground	R x 10	45	Same as 61
††63a	231, Pin 4	Ground	Direct	340	Open reactor 241-3; defective transformer 296
64	231, Pin 5	212A (Blue)	R x 10	340	Same as 64
65	231, Pin 5	296, Term. 2	R x 10	340	Same as 64
66	231, Pin 5	T.B. 6, Term. 7	R x 10	340	Same as 64
67	231, Pin 5	243-6, Pin 3	R x 100	1,200	Same as 64
68	231, Pin 5	T.B. 9, Term. 10	R x 10	340	Same as 64
69	243-2, Pin 5	Ground	R x 10	390	Shorted capacitor 202-24, 206-5; open resistor 268
70	243-2, Pin 3	Ground	R x 10	390	Same as 69
71	243-3, Pin 3	Ground	R x 10	270	Shorted capacitor 202-25, 206-9; open resistor 269
72	243-3, Pin 5	Ground	R x 10	270	Same as 71
73	243-4, Pin 3	Ground	R x 10	470	Shorted capacitor 202-26, 206-12; open resistor 270
74	243-4, Pin 5	Ground	R x 10	470	Same as 73
75	243-5, Pin 8	T.B. 8, Terms. 11, 12	R x 100	1,800	Defective resistor 277
76	243-1, Pin 4	Ground	R x 100	2,700	Defective Tube VT-207, capacitor 206-2, resistor 265
77	231, Term. 3	243-4, Pin 8	R x 100	4,700	Defective transformer 294, capacitor 206-14, resistor 263-4, reactor 241-2
*78	231, Term. 3	243-4, Pin 6	R x 1000	82,000	Defective resistor 271, reactor 241-2, capacitor 206-13

\* Operate corresponding channel slides.

† Radio Receiver BC-624-A only.

†† Radio Receiver BC-624-AM only.

TABLE 5-9. RECEIVER CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)

Test No.	From	To	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
†78a	231, Term. 3	243-4, Pin 6	R x 1000	47,000	Defective resistor 279-4, reactor 241-2, capacitor 206-11
79	231, Term. 3	243-3, Pin 8	R x 100	4,700	Defective transformer 293, resistor 263-3, reactor 241-2, capacitor 206-11
80	231, Term. 3	243-3, Pin 6	R x 1000	62,000	Defective resistor 267-5, reactor 241-2, capacitor 206-10
81	231, Term. 3	243-2, Pin 8	R x 100	4,700	Defective transformer 292, resistor 263-2, reactor 241-2, capacitor 206-7
82	231, Term. 3	243-2, Pin 6	R x 1000	62,000	Defective resistor 267-2, reactor 241-2, capacitor 206-6
83	231, Term. 3	243-1, Pin 3	R x 1000	5,000	Open coil of relay 246; defective reactor 241-2
‡84	231, Term. 3	243-1, Pin 6	R x 1000	10,000	Open inductors 227-1, -2, -3, -4; defective switch 286; open resistor 264 or reactor 241-2; defective capacitors 206-1, 202-27 and 205
85	231, Term. 3	243-1, Pin 2	R x 1000	50,000	Defective potentiometer 237, resistors 279-1, 279-2; open reactor 241-2, resistor 282
86	231, Term. 3	Ground	R x 1000	50,000	Short on B+ bus to ground; defective resistor 279-1, 279-2, potentiometer 237, resistor 282, 267-5, 267-6, 267-2, 267-3
87	243-5, Pin 8	Ground	R x 1000	20,000	Shorted capacitor 211A, 212C; defective resistor 276, 277
88	T.B. 8, Terms. 11, 12	Ground	R x 1000	18,000	Same as 87
*89	243-1, Pin 2	Ground	R x 1000	5,000	Defective potentiometer 237, resistor 282
**89a	243-1, Pin 2	Ground	R x 1000	4,700	Defective potentiometer 237, resistor 265-2
90	231, Term. 5	243-5, Pin 3	R x 1000	270,000	Defective transformer 296; open reactor 241-3 or defective resistor 266-3
91	231, Term. 5	243-5, Pin 6		2.2 megohms	Defective transformer 296, reactor 241-3, resistor 274-2
92	231, Term. 5	Ground (30 seconds)	R x 1000	80,000	Shorted capacitor 202-17, 211B, 203-4, 206-18, 212A, 212B; defective Tube JAN-12C8 (VT-169) or Tube JAN-12J5GT (VT-135)
93	231, Term. 6	Ground	R x 1000	740,000	Shorted capacitor 211C, 206-8, 206-4, 202-2 short on AVC bus
94	231, Term. 6	243-3, Pin 4	R x 1000	100,000	Defective transformer 292 or resistor 267-4
95	231, Term. 6	243-2, Pin 4	R x 1000	100,000	Defective transformer 291 or resistor 267-1
96	231, Term. 9	Ground	R x 1000	350,000	Defective Tube JAN-12C8 (VT-169) or open resistor 275-2, 275-3, 262-2, 276; open secondary of transformer 295; shorted capacitor 214

† Radio Receiver BC-624-AM only.

‡ Operate corresponding channel slides.

\* 3,000 with "RELAY" control fully clockwise. (Radio Receiver BC-624-A only.)

\*\* 3,000 with "RELAY" control fully clockwise. (Radio Receiver BC-624-AM only.)

TABLE 5-9. RECEIVER CONTINUITY AND RESISTANCE MEASUREMENTS (Continued)

Test No.	From	To	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
97	231, Term. 9	295, Term. 6	R x 1000	350,000	Open resistor 262-2; same as 96
98	231, Term. 11	Ground	R x 1000	350,000	Defective transformer 295; shorted capacitor 214
99	243-2, Pin 6	Ground	R x 1000	65,000	Defective resistor 267-3; shorted capacitor 206-6
100	243-3, Pin 6	Ground	R x 1000	65,000	Defective resistor 267-6; shorted capacitor 206-10
*101	243-4, Pin 4	Ground	R x 1000	1 megohm	Defective transformer 293 or resistor 280; shorted capacitor 206-23
**101a	243-4, Pin 4	Ground	R x 1000	0	Defective transformer 293
*102	243-4, Pin 6	Ground	R x 1000	130,000	Shorted capacitor 206-13
**102a	243-4, Pin 6	Ground	R x 1000	100,000	
*103	243-5, Pin 4	Ground	R x 1000	300,000	Defective transformer 294; ground in detector circuit wiring
**103a	243-5, Pin 4	Ground	R x 1000	48,000	
104	243-5, Pin 5	Ground	R x 1000	470,000	Ground in AVC wiring
*105	243-5, Pin 6	Ground		2 megohms	Shorted capacitor 211B, 212A or 212B
**105a	243-5, Pin 6	Ground	R x 1000	2 megohms	Shorted capacitor 211-1B, 212A, 212B
106	243-6, Pin 5	Ground	R x 1000	680,000	Defective resistor 258
*107	243-1, Pin 1	294, Term. 2		2.35 megohms	Defective Tube JAN-12AH7GT (VT-207); open resistor 274-1, 281; shorted capacitors 206-16, 209, 210
**107a	243-1, Pin 1	294, Term. 2	R x 1000	82,000	Defective Tube JAN-12AH7GT, open resistor 271-2, shorted capacitor 210
108	243-1, Pin 5	Ground	R x 1000	270,000	Defective switch 286 or open resistor 266-1
109	295, Term. 1	246, Term. 4	R x 1000	130,000	Readjustments required on relay 246 contacts; defective resistor 272 or 273
*110	T.B. 9, Terms. 4, 15	211A	R x 1000	150,000	Defective "AUDIO" control potentiometer 236
**110a	T.B. 10, Term. 2	211-1A	R x 1000	150,000	
*111	T.B. 9, Terms. 4, 15	212C	R x 1000	150,000	Same as 110
**111a	T.B. 10, Term. 2	212C	R x 1000	150,000	
***112	T.B. 9, Terms. 4, 15	T.B. 8, Term. 13	R x 1000	150,000	Same as 110
§112a	T.B. 10, Term. 2	T.B. 8, Term. 13	R x 1000	150,000	
*113	211-2A, 211-2B	294, Term. 2	R x 1000	82,000	Open bus, broken connection, defective resistor 271-2
**114	211-2A, 211-2B	243-7, Pin 8	R x 1000	120,000	Open bus, broken connection, defective resistor 272-2
**115	243-7, Pin 8	Ground	R x 1000	250,000	Shorted capacitor 219, broken connection, defective resistor 272-2, 271-2, 276-2, 264-2, 277, 276-1
**116	243-7, Pin 4	Ground	Direct	330	Defective tube 243-7, defective resistor 253-3
**117	243-4, Pin 8	243-5, Pin 5	R x 1000	550,000	Shorted capacitor 203

\* Radio Receiver BC-624-A only.

\*\* Radio Receiver BC-624-AM only.

\*\*\* Resistance varies with setting of "AUDIO" control. (Radio Receiver BC-624-A only.)

§ Resistance varies with setting of "AUDIO" control. (Radio Receiver BC-624-AM only.)

e. DETAILED CHECK OF DYNAMOTOR UNIT.

(c) Use Test Set I-56-(\*).

(1) DYNAMOTOR UNIT CONTINUITY AND RESISTANCE MEASUREMENTS.

(d) If resistance measurements vary more than  $\pm 10$  percent from the values given in the table below, investigate the circuit components in question.

(a) Disconnect the dynamotor unit from the rest of Radio Set SCR-522-A.

(b) Remove the eighteen cover screws and take off the cover of the dynamotor unit.

Note

These tests apply to Dynamotor Unit PE-94-A but may readily be adapted for a 14-volt dynamotor unit, if one is being used.

\* Any issue letter is applicable.

TABLE 5-10. DYNAMOTOR UNIT CONTINUITY AND RESISTANCE MEASUREMENTS

Test No	From	To	Test Conditions if Not Normal	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
1	323, Term. 1	354, (-MV)		Direct	0	Open choke 310-1, defective output filter
2	323, Term. 1	Ground	(-MV) Lead disconnected	R x 1000	Open	Defective capacitor 301-1 or 302-1; defective output filter
3	323, Term. 2	354 (+HV)		Direct	0	Open choke 310-2, defective output filter
4	323, Term. 2	Ground	(+HV) Lead disconnected	R x 1000	Open	Defective capacitor 301-2, 302-2, defective output filter
5	323, Term. 3	Ground		Direct	0	Defective ground wiring; defective socket 323, defective output filter
6	323, Term. 4	354 (+LV)		Direct	0	Open choke 310-3, defective output filter
7	323, Term. 4	Ground		Direct	1.2 11*	Open choke 310-3; defective resistor 317 or 316; defective regulator 314 or 14.5 volt generator, defective output filter
8	323, Term. 4	Ground	(+LV) Lead disconnected	R x 1000	Open	Defective capacitor 301-3 or 302-3, defective output filter
9	323, Term. 5	354 (+SW)		Direct	0	Open choke 310-4, defective output filter
10	323, Term. 5	Ground		R x 1000	Open	Shorted or defective capacitor 301-4 or 301-7, defective output filter
11	323, Term. 5	322, Term. 2		R x 10	200	Open choke 310-4; open coil of starter relay; open choke 312, defective input or output filter
12	323, Term. 5	Ground	(+SW) Lead disconnected	R x 1000	Open	Defective capacitor 301-4, 303-B, defective output filter
13	354, (+SW)	355 (+)		Direct	200	Open in coil of starter relay
14	323, Term. 6	354 (-SW)		Direct	0	Open choke 310-5, defective output filter
15	323, Term. 6	Ground	(-SW) Lead disconnected	R x 1000	Open	Defective capacitor 301-5, defective output filter
16	322, Term. 1	355 (-)		Direct	0	Open choke 311, defective input filter
17	322, Term. 1	Ground	(-) Lead disconnected	R x 1000	Open	Defective capacitor 301-6, defective input filter
18	322, Term. 2	355 (+)		Direct	0	Open choke 312, defective input filter

\* Readings for Dynamotor Unit PE-94-B and PE-94-C.

**TABLE 5-10. DYNAMOTOR UNIT CONTINUITY AND RESISTANCE MEASUREMENTS (Cont.)**

Test No.	From	To	Test Conditions if Not Normal	Ohmmeter Scale Used	Resistance (ohms)	Probable Cause of Incorrect Reading
19	322, Term. 2	Ground	(+) Lead disconnected	R x 1000	Open	Defective capacitor 301-7, defective input filter
20	Blue dynamotor lead	Green dynamotor lead	All four dynamotor leads disconnected	Direct	7 11*	Loose motor brushes; defective armatures; open or defective regulator field
21	Thin yellow dynamotor lead	Blue dynamotor lead	All four dynamotor leads disconnected	Direct	16	Loose motor brushes; defective armature; open or defective regulator field; open or defective shunt field
22	Thick yellow dynamotor lead	Blue dynamotor lead		Direct	0 12*	Loose motor brushes; defective armature; open or defective regulator field; open or defective series field
23	354, (-SW)	Ground		R x 1000	Open	Shorted capacitor 303A, 301-5, 301-6, defective output filter

\* Readings are for Dynamotor Unit PE-94-B and PE-94-C.

(2) REPLACEMENT OF DYNAMOTOR BRUSHES (DYNAMOTOR UNIT PE-94-A, PE-98-A).—The brushes originally supplied with Dynamotor Unit PE-94-A and PE-98-A are not satisfactory for high altitude flying and should be replaced after 15 hours flying time without regard to the condition or length of the brush. These brushes are marked "CM3H" on the input and 14.5-volt output and "6782" on the 150- and 300-volt output. Brushes especially designed for Dynamotor Unit PE-94-A for long life at high altitude (not requiring replacement for at least 50 hours) and marked "AJT" for the 28-volt input and 14.5-volt output and "AJS" for the 150- and 300-volt output are now available.

**Note**

Brushes may be replaced without first disassembling the dynamotor.

(a) Remove the eighteen screws holding the dynamotor cover and remove cover.

**Note**

In some models of Dynamotor Unit PE-94-A it may be necessary to remove the dust cover from the fan end of the machine in order to gain access to brushes.

(b) Remove the screw fastening the flexible lead to the brush holder.

(c) Move the brush spring away from the brush.

(d) Remove the old brush and replace it with a new one. Be sure to fasten the flexible lead to the brush screw after replacing the brush.

(e) Check the spring tension on the brushes. To measure the spring tension, lift the brush spring with a weighing spring and note the pressure indicated on the scale of the weighing spring at the point at which the brush spring just leaves the brush. The tension on the "LV" input brush should be 9 to 11 ounces, on the "LV"

output brush 7 to 9 ounces, and on the "MV" and "HV" output brushes 2 to 2½ ounces. Adjust the brush spring if these values are not obtained.

(f) After 10 hours of operation if the dynamotor is reported noisy, connect the dynamotor unit to the radio set and listen to the output of the radio set in the headphones.

(g) Apply slight pressure to each brush with an insulated rod or pencil.

(b) If the pressure causes a marked decrease in the noise level, bend the spring slightly to maintain the proper pressure. (Refer to par. 6e(2)(e), this section.) Do not increase the pressure so much that overheating of the commutator occurs.

(i) Operate the dynamotor for several hours and examine the commutator for evidence of throwing of solder or rainbow color effect of the segments.

**Note**

When replacing the cover of the dynamotor case, make certain that it is replaced with the air inlet and outlet screens placed in the air-stream of the dynamotor machine.

(j) Replace the dynamotor unit cover and fasten in place with the eighteen screws.

(3) REPLACEMENT OF DYNAMOTOR BRUSHES (DYNAMOTOR UNIT PE-94-B, PE-94-C, PE-98-E, PE-98-F).—There are two satisfactory types of brushes for Dynamotor Unit PE-94-B, PE-94-C, PE-98-E and PE-98-F and they need not be serviced or replaced in less than 50 hours unless worn to less than ¼ inch. Brushes marked "W9" for the 28-volt input and 14.5 output and brushes marked "LW8" for the 150- and 300-volt output are treated for higher altitude operation and will give longer service when operated under high altitude conditions than brushes marked "CM5H," "CM3," and "6782."

**CAUTION**

When pressing bearings on the shaft, apply an even pressure to the inner race only. Pressure on the outer race will damage the bearing.

- (a) Remove dynamotor unit cover.
- (b) Disconnect the blue and the green leads from the input filter terminal block. Disconnect the yellow lead from the starting relay.
- (c) Disconnect the orange, the red, and the brown leads from the dynamotor output terminal strip.
- (d) Loosen the captive screw holding the dynamotor machine retaining strap and lift the machine out of the dynamotor unit case.
- (e) Remove the screws holding the end bells and remove the end bells.
- (f) Remove the brush retaining cap.
- (g) Remove the brush and spring assembly and replace it with a new assembly.
- (h) Tighten the brush retaining cap but do not use pliers.
- (i) Replace the end bells and fasten the screws.
- (j) Replace the dynamotor machine in the dynamotor unit case and fasten the retaining strap by means of the captive screw.
- (k) Connect all interconnecting leads to the proper terminals.
- (l) Replace the dynamotor unit cover.

**(4) REPLACEMENT OF BEARINGS  
(DYNAMOTOR UNIT PE-94-A).**

- (a) Remove the dynamotor unit cover.
- (b) Disconnect the dynamotor leads as directed in paragraphs 6e(3)(b) and 6e(3)(c), this section.
- (c) Loosen the captive screw which holds the dynamotor machine retaining strap and lift the machine out of the dynamotor unit case.
- (d) Remove the dust cover from the fan end of the machine.
- (e) Remove all leads to brush units. Remove brushes.
- (f) Remove the fillister head screws which secure the input and output brackets to the dynamotor frame.
- (g) Remove the input and output end brackets.
- (h) Remove the screws holding the input and output bearing covers. Remove the bearing covers from the input and output end brackets.
- (i) Remove the old bearings carefully to prevent damage to the armature shaft.

**CAUTION**

Bearings are usually damaged during removal and should not be used more than once.

- (j) Inspect the new bearings to be sure they are free of grit and dirt. If the bearings require cleaning, refer to paragraph 7a, this section.
- (k) Press the new bearings on the shaft.

- (l) Lubricate the bearings in accordance with the instructions in paragraph 7b, this section.

(m) Reassemble the dynamotor machine.

(n) Replace the machine in the dynamotor unit case, fasten the retaining strap, and connect all interconnecting leads.

(o) Replace the dynamotor unit cover.

**(5) REPLACEMENT OF BEARINGS  
(DYNAMOTOR UNIT PE-94-B,  
PE-94-C, PE-98-E, AND PE-98-F).**

(a) Follow the instructions given in paragraphs 6e(4)(a) through (c), this section.

(b) Remove the screws holding the end bells. Remove the end bells.

(c) Remove brush holder leads and brushes.

(d) Remove the nuts and washers from the tie bolts and remove the tie bolts.

(e) Insert a screw driver in the slot between the dynamotor machine frame and the end brackets and by twisting the screw driver, loosen the end brackets. Remove the end brackets.

(f) Remove the screws holding the bearing shields. Remove the shields.

(g) Follow the instructions given in paragraphs 6e(4)(i) through (o), this section.

**(6) REPLACEMENT OF DYNAMOTOR ARMATURE  
(DYNAMOTOR UNIT PE-94-A).**

(a) Remove dynamotor unit cover.

(b) Disconnect dynamotor unit leads as directed in paragraphs 6e(3)(b) and 6e(3)(c), this section.

**Note**

On some models of Dynamotor Unit PE-94-A, a green lead as well as a yellow lead goes to the starting relay and will need to be disconnected.

(c) Loosen the captive screw which holds the dynamotor machine retaining strap and lift the machine out of the dynamotor unit case.

(d) Remove the dust cover from the fan end of the dynamotor machine.

(e) Remove all leads to brush units. Remove brushes.

(f) Remove the fillister head screws which secure the input end bracket to the dynamotor frame.

(g) Remove the end bracket together with the armature.

(h) Remove the output end bracket in the same manner.

## Section V

### Paragraph 6

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(i) Remove the fan from the armature and draw the armature out of the input end bracket.

(j) Replace the defective armature and reassemble the dynamotor machine.

(k) Return the dynamotor machine to the dynamotor unit case and fasten the retaining strap by means of the captive screws.

(l) Connect all interconnecting leads to the proper terminals.

(m) Replace the dynamotor unit cover.

#### (7) REPLACEMENT OF DYNAMOTOR ARMATURE (DYNAMOTOR UNIT PE-94-B, PE-94-C, PE-98-E, PE-98-F).

(a) Remove dynamotor unit cover.

(b) Disconnect the interconnecting leads as described in paragraphs 6e(3)(b) and 6e(3)(c), this section.

(c) Loosen the dynamotor machine retaining strap and lift the dynamotor machine out of the case.

(d) Remove the screws holding the end bells and remove the end bells.

(e) Remove brush holder leads and brushes.

(f) Remove the nuts and washers from the tie bolts and remove the tie bolts.

(g) Insert a screw driver in the slot between the dynamotor machine frame and the end bracket and by twisting the screw driver, loosen the end bracket. Remove the end bracket.

(h) Remove set screws in fan shaft and remove fan.

(i) Remove the defective armature and insert new armature.

(j) Reassemble dynamotor and reinstall in case.

(k) Replace dynamotor case cover.

#### (8) REPLACEMENT OF INPUT FILTER.

(a) Remove the dynamotor unit cover.

(b) Disconnect all interconnecting leads from the front panel.

(c) Remove the screws holding the front panel and draw the front panel away from the dynamotor unit case.

(d) Remove all the interconnecting leads from the input filter terminal strip.

(e) Remove the four binder-head screws which fasten the input filter to the front panel.

(f) Remove and replace the input filter.

(g) Fasten the input filter to the front panel and reconnect all leads.

(h) Replace dynamotor unit cover.

#### (9) REPLACEMENT OF OUTPUT FILTER.

(a) Remove the dynamotor unit cover.

(b) Disconnect all interconnecting leads from the front panel.

(c) Remove the screws holding the front panel and draw the front panel away from the dynamotor unit case.

(d) Remove all the interconnecting leads from the output filter terminal strip.

(e) Remove the four binder-head screws which fasten the output filter to the front panel.

(f) Remove and replace the output filter.

(g) Fasten the output filter to the front panel and reconnect all leads.

(h) Replace dynamotor unit cover.

#### (10) REMOVAL OF VOLTAGE REGULATOR.

(a) Remove the dynamotor unit cover.

(b) Remove the two wires from the "SW+" and "SW-" terminals of the output filters.

(c) Loosen the three captive screws on the voltage regulator cover. Remove the cover. The front panel does not necessarily have to be removed.

(d) Remove the three flathead regulator-mounting screws on the bottom of the dynamotor unit, disconnect all wires going to the voltage regulator, and remove the regulator.

(e) Replace the defective regulator with a good one.

(f) Replace the dynamotor unit cover.

(11) ADJUSTMENT OF DYNAMOTOR UNIT OUTPUT VOLTAGES.—If it is found that the output voltages are unreasonably high or low or if a new voltage regulator or dynamotor has been installed in the dynamotor unit, set the output voltages according to the following procedure.

#### CAUTION

Do not attempt to adjust the output voltages or tamper with the interior of the dynamotor unit unless it has been definitely determined that adjustments are necessary.

(a) Remove the dynamotor unit cover.

(b) Remove the dynamotor unit front panel.

(c) Connect the dynamotor unit to the rest of the equipment and a 30-volt bank of storage batteries. Turn the equipment on by pressing any one of the four channel-selector pushbuttons located on the radio control box. Place the "T-R-REM." switch in "R" position.

#### WARNING

Avoid contact with the fan on Dynamotor Unit PE-94-A.

(d) After allowing the equipment to warm up for several minutes, measure the low-voltage output by connecting an accurate voltmeter between the chassis and the terminal marked "L.V." located on top of the output-



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filter box. With the battery cable tapped across enough battery cells to give a dynamotor input voltage of 26 to 28 volts, as measured at the terminals of the input filter, the low-voltage reading should be between 13.0 and 13.2 volts.

(e) If the reading does not fall within this range, adjust the tap on the regulator-coil series resistor 316 until it does. Be sure to tighten the screw on the tap sufficiently to prevent movement in service.

(f) Replace front panel and cover of dynamotor unit case.

(12) ADJUSTMENT OF CARBON PILE VOLTAGE REGULATOR.—Three adjustments are associated with the carbon-pile voltage regulator. A variable resistor in series with the regulator coil adjusts the coil current, a screw on top of the regulator unit under the cover varies the initial compression of the carbon pile, and a large screw on the bottom of the assembly adjusts the length of the air gap. Any adjustment is a compromise between regulation and stability.

(a) To test the dynamotor unit, connect it to and operate it with Radio Set SCR-522-A, as described in paragraph 6e(9)(d), this section, but connect a resistance in series with the leads (from the dynamotor unit to the battery) to simulate the resistance of aircraft wiring. This resistance should be 0.15 ohm, divided in any convenient manner between the two leads. If a suitable resistor is not available, 150 feet of No. 10 wire, for example, could be used.

(b) To test for regulation, vary the input voltage, as measured at the terminals of the input-filter can, over the range of approximately 21.8 to 29 volts by tapping the dynamotor unit input leads across portions of the battery. The low-voltage output should remain within the limits of 12.35 to 13.52 volts.

(c) To insure that the dynamotor unit will be stable in actual operation, start it several times using 15 cells of the storage battery. Repeat, using 14, 13 and 12 cells. In each case, the dynamotor unit should start without making more than two complete cycles of speed fluctuation.

(d) If the dynamotor unit exhibits tendencies of instability, adjust the compression screw on top of the regulator under the cover as follows:

1. Loosen the three captive screws on top of the regulator and remove the cover.

2. Loosen the small flathead screw which clamps the adjustment screw.

3. Rotate the compression adjustment screw clockwise to increase the stability and decrease the ability to regulate. Rotate the adjustment screw counterclock-

wise to decrease the stability and increase the ability to regulate.

4. Adjust this screw in increases of not more than 10 degrees until the performance of the unit satisfies the requirements of both stability and regulation.

5. After each adjustment and before the unit is tested, tighten the locking screw. If these adjustments have changed the value of the output voltage, readjust the variable resistor 316.

(e) If the regulator does not tend to work, remove the "+LV" brush from the holder on the dynamotor and the 6-contact plug from the output filter socket. Make the following check:

1. Connect an ohmmeter between the chassis and the low-voltage terminal 4 on the output socket 323.

2. Adjust the tap on the regulator-coil series resistor 316 until the ohmmeter indicates 13.1 ohms. Replace the 6-contact plug and +LV brush.

3. Replace the ohmmeter with an accurate voltmeter capable of reading up to 15 volts d-c. Connect a d-c voltmeter across the input leads at the input-filter terminals of terminal strip 355.

4. Turn the equipment on and check the low-voltage output with an input voltage of 26 to 28 volts.

(f) If the voltmeter on the output does not read between 13.0 and 13.2 volts, an adjustment of the air gap is necessary. The air-gap adjustment screw is accessible through the hole in the bottom of the dynamotor unit chassis. Make the adjustment as follows:

1. Loosen the two small locking screws and turn the large adjustment screw until a minimum output voltage is obtained. Then turn the screw in a counterclockwise direction until a voltage of between 13.0 and 13.2 volts is obtained.

2. If, when turning the air-gap adjustment screw in a counterclockwise direction, the voltage jumps higher than 13 volts or sustained instability occurs, turn the voltage-regulator compression adjustment screw in a clockwise direction about 10 degrees and then repeat the air-gap adjustment.

3. Continue to adjust the compression screw and the air-gap screw until the requirements of stability and regulation are satisfied.

(g) If a satisfactory adjustment is not found by carefully following this procedure, repeat, using a lower resistance setting than described in step 6e(12)(e)2, this section. However, do not lower the resistance, as indicated by the ohmmeter, to less than 12 ohms.

**7. SPECIAL MAINTENANCE PROCEDURES.**

a. The following chart lists the cleaning procedures for Radio Set SCR-522-A.

**TABLE 5-11. CLEANING CHART**

Major Assembly	Part	Cleaning Instructions for Specified Period	Cleaning Instructions for Disassembled Equipment
Dynamotor Unit PE-94-A	Commutator	Clean every 50 hours with crocus cloth or fine sandpaper.	Same as for 50-hour period.
Dynamotor Unit PE-94-B, PE-94-C	Bearings		Clean bearings with P-S-661a solvent or carbon tetrachloride only if dynamotor has been disassembled and bearings are to be removed, cleaned, lubricated and replaced.
Transmitter-Receiver	Bearing surfaces of shifter slides	Dust with a cloth or brush every 50 hours.	Clean with P-S-661a solvent or carbon tetrachloride.
Radio Receiver	Squelch relay	Clean every 50 hours as directed for the telephone type relays.	Same as for 50-hour period.
Rack	Telephone type relays	Clean every 50 hours with a flat toothpick dipped in carbon tetrachloride or contact burnishers consisting of a thin, flexible metal strip slightly roughened by sand blasting or etching (or made of soft metal such as nickel silver milled like the edge of a coin).	Same as for 50-hour period.
	Positioning switch	Clean every 50 hours as directed for the telephone type relays.	Same as for 50-hour period.
	Motor interrupter contacts	Clean every 50 hours with a thin single-faced contact or magneto point file with one side ground to a thickness of .010 to .015 inch. Clean only if the build-up of silver on the tungsten contact is excessive. Dress with fine sandpaper.	Same as for 50-hour period.
	Motor arms of ratchet motor. Ratchet wheel of ratchet motor	Dust with a cloth or brush every 50 hours.	Clean with P-S-661a solvent or carbon tetrachloride.
	Ratchet motor pawl and pawl stop		
	Ratchet motor hinge assembly		
	Shifter actuating slides		

b. The following chart lists the lubricating procedures for Radio Set SCR-522-A. (See fig. 5-9.)

**TABLE 5-12. LUBRICATION CHART**

Major Assembly	Part	Type of Lubrication	Lubrication Period	Procedure
Dynamotor Unit PE-94-A	Bearings			Dynamotor Unit PE-94-A employs sealed bearings and should not require attention for the life of the equipment.
Dynamotor Unit PE-94-B and PE-94-C	Bearings	AN-G-5 grease*	1000 hours	<ol style="list-style-type: none"> <li>1. Loosen setscrews securing fan to armature shaft.</li> <li>2. Remove fan assembly and both bearing shields.</li> <li>3. Lubricate, but do not pack the bearings.</li> </ol>
Rack frequency shifter mechanism	Cross arm pivot bearings. Cross arm slots and large bushings for transmitter and receiver actuating slides. Cams and spacers. Bearing surfaces of shifter slides	AN-G-3a grease	50 hours	Remove transmitter-receiver from case and rack to gain access to the frequency shifter mechanism.

\* Use AN-G-3a grease in Arctic climates.



TABLE 5-12. LUBRICATION CHART (Continued)

Major Assembly	Part	Type of Lubrication	Lubrication Period	Procedure
Transmitter and receiver frequency shifter mechanism	Shifter slides. Cams and bearing surfaces	AN-O-6a oil	100 hours	Remove transmitter-receiver from case and rack to gain access to the frequency shifter mechanism.
Rack FT-244-A ratchet motor	Teeth of ratchet wheel	AN-G-3a grease	100 hours	Remove the rack from the transmitter-receiver to gain access to the ratchet motor.
	Ratchet wheel armature assembly and shaft	AN-O-6a oil	50 hours	
Radio control box	Armature hinge			Remove side plates to gain access to the channel selector switch.
	If pawl spring is attached to the armature by a hinge and spring, lubricate at the hinge and point of contact.			
Radio control box	Cams at rear of channel selector switch	AN-O-6a oil	100 hours	

**8. REPLACEMENT OF LAMPS AND VACUUM TUBES.**

**Note**

All tubes of a given type supplied with the equipment shall be consumed prior to employment of tubes from general stock.

**a. REPLACEMENT OF RADIO CONTROL BOX LAMPS.**

(1) Remove the two panel-mounting screws from the panel of the radio control box.

(2) Turn the handle of the "T-R-REM." switch counterclockwise until the handle can be removed. Remove the panel of the control box.

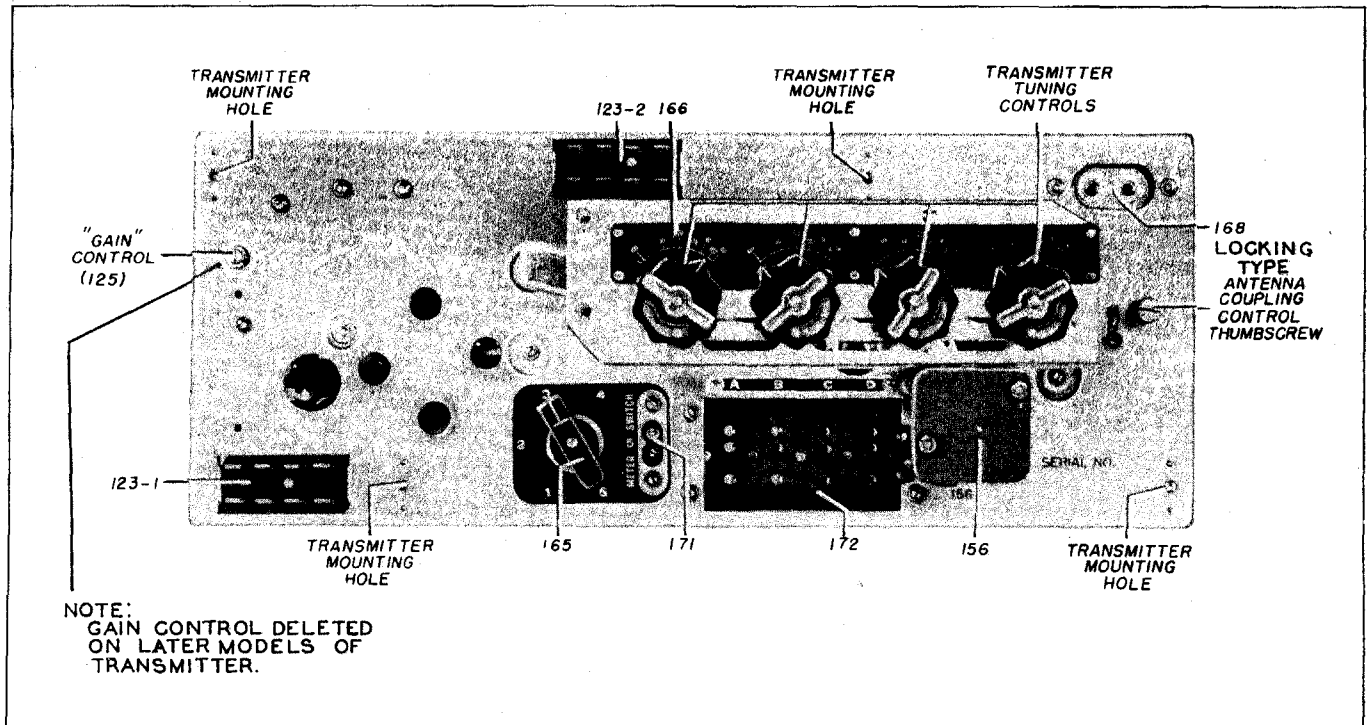


Figure 5-10. Radio Transmitter BC-625-A—Top View

(3) Remove the lamp cap. (A lamp-cap remover is supplied with Test Equipment IE-19-A.)

(4) Remove the lamp with the special extracting tool. No turning is required.

(5) Use the extracting tool also to replace the lamps.

(6) If no special tools are available, remove the right-side mounting plate and remove the lamps with a small screw driver.

#### b. REPLACEMENT OF TRANSMITTER VACUUM TUBES.

##### CAUTION

Use extreme care when removing or replacing tube JAN-832 as the tube is easily damaged.

(1) Test vacuum tube JAN-832 (second harmonic amplifier) as follows:

(a) Plug Test Set I-139-A into meter socket 171 of a properly tuned transmitter and turn the "METER SWITCH" knob (see fig. 5-10) to position "2."

(b) Depress channel selector push button "A" and allow a two minute warm-up period.

(c) Record the reading on Test Set I-139-A.

(d) Push the "OFF" button on the control box and remove the chassis from the rack.

(e) Loosen the knurled thumbscrew on clamp 163 for the second harmonic amplifier tube JAN-832 (VT-118) in the bottom of the transmitter and turn the clamp aside to make the tube socket accessible.

(f) Remove the tube by raising it directly upward. Do not rock the tube when removing it.

(g) Being careful to push straight down, install a vacuum tube JAN-832 known to be in good condition in the second harmonic amplifier socket.

(h) Replace the assembly in the case, depress channel selector pushbutton "A" and after a two minute warm-up, retune the third and fourth tuning controls. Record reading of Test Set I-139-A.

(i) If the current recorded with the known good tube in the socket exceeds appreciably the original current, replace the old tube, being careful not to damage the new tube when inserting it.

##### Note

Instances may be encountered where an old tube, or a new tube for that matter, reads twenty or more milliamperes above an average reading. If this is encountered, try several tubes. Occasionally a tube is gassy and this causes excessive plate current readings. Never use gassy tubes.

(j) After inserting the tube in its socket, place the clamp over the tube and tighten the thumbscrew.

(k) Connect the two output circuit plate clamps to the plate terminals on top of the tube.

##### CAUTION

Do not cross the output circuit leads.

(2) Test vacuum tube JAN-832 (power amplifier) as follows:

(a) Plug Test Set I-139-A into meter socket 171 on a properly tuned transmitter and turn the "METER SWITCH" knob to position "3" (see fig. 5-10).

(b) Depress channel selector push button "A" and allow a two minute warm-up period.

(c) Record the reading on Test Set I-139-A.

(d) Push the "OFF" button on the control box and remove the chassis from the case.

(e) Loosen the four Dzus fasteners from the end plate located on the right side of the transmitter chassis (see fig. 8-15) and remove the plate.

##### CAUTION

Use extreme care when removing or replacing tube JAN-832.

(f) Remove tube JAN-832 by pulling straight up. Do not rock the tube. Be sure to remove the plate terminal leads and reconnect them when the tube is replaced.

##### CAUTION

Do not cross the tank circuit leads.

(g) Being careful to push straight down on the tube, install a tube JAN-832 known to be in good condition in the power amplifier socket.

(h) Replace the assembly in the case, press channel selector push button "A" and after a two minute warm-up, retune the third and fourth tuning controls. Record the reading on Test Set I-139-A.

(i) If the current recorded with the known good tube in the socket exceeds appreciably the original current, replace the old tube.

##### Note

Instances may be encountered where an old tube or even a new tube, reads twenty or more milliamperes above an average reading. If this is encountered, try several tubes. Occasionally a tube is gassy and this causes excessive plate current readings. Never use gassy tubes.

(j) Replace the end plate, making certain that the mycalex clamp on its inside surface holds tube JAN-832 firmly in its socket.

(3) Remove the remaining tubes one at a time and test in a tube checker. Replace all defective tubes.

#### c. REPLACEMENT OF RECEIVER VACUUM TUBES.

(1) Remove the four red mounting screws holding the receiver to the rack.

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(2) Lift the receiver side of the rack while pressing the top of the receiver down with the thumbs. Lift the rack away from the receiver.

(3) Remove one tube at a time, test in a tube checker, and replace the defective tubes. Replace immediately any tube showing signs of oxidation.

#### Note

Remove the tube-securing clamps when replacing tube JAN-9002 and JAN-9003. Fasten these clamps securely after the tubes are replaced.

### 9. ALIGNMENT OF THE RADIO TRANSMITTER.

Before aligning, make a simple operating test of the transmitter.

a. TRANSMITTER TEST (USING TEST EQUIPMENT IE-36).—The following components of Test Equipment IE-36 are required for transmitter testing: Control Unit BC-1303, Phantom Antenna A-29, and an adapter cord, Cord CD-1169. A microphone of either carbon or dynamic type and Test Set I-139-A are also necessary.

(1) Remove the transmitter and receiver covers by loosening the Dzus fasteners which pin them to the center cover. Raise the covers slightly and slide them away from the tuning controls.

(2) Remove the cable connection from socket 417 of the rack and insert the 18-contact plug on the bottom of Control Unit BC-1303 into this socket.

#### CAUTION

Be sure the "SIG GEN" toggle switch and the "CONT" toggle switch on each end of the control unit are off and that the "OFF—A-B-C-D" switch on the front panel of the control unit is in the "OFF" position.

(3) Plug Phantom Antenna A-29 into Socket SO-153 of Rack FT-244-A for test purposes. (For transmitter channel tuning use the airplane antenna of Radio Set SCR-522-A.)

(4) Turn the "OFF—A-B-C-D" switch to "A." The dynamotor unit will start, and the frequency-shifter mechanism will operate; shifting the equipment to channel "A." Turn the switch to channels "B," "C," and "D," and observe the action of the shifter mechanism.

(5) After allowing about one minute for the tubes to warm up, throw the "T-R-REM." switch on the control unit to the "T" position. The pilot lamp on Phantom Antenna A-29 will light on all channels, if the channels are tuned. If on one or more channels the lamp is dim or does not light, tuning is required. (Refer to pars. 9b or 9c, this section.)

(6) Insert the microphone plug in "CAR" or "MAG MIC" jack, depending upon the type of microphone being used. If a combination helmet headset and throat microphone is used, make connection through Cord CD-1169. Plug the headset and microphone into Jack JK-49 and insert Plug PL-55 (attached to cord marked "MIC") in the "MAG MIC" jack. Any combi-

nation of microphones and telephone found in the plane may be tested when using Cord CD-1169 directly connected to Control Unit BC-1303.

(7) Whistle a sustained note into the microphone. If the carrier wave is being modulated, there will be an increase in the brilliance of the pilot lamp on Phantom Antenna A-29.

(8) To test the operation of the contactor circuit, throw the "CONT" toggle switch on the right hand end of Control Unit BC-1303, to the "ON" position. The frequency-shifter mechanism will shift the equipment to channel "D" in Radio Transmitter BC-625-A, and the pilot lamp on the dummy antenna will light and show that transmission is occurring. In Radio Transmitter BC-625-AM, the equipment will remain on the same channel on which transmission is taking place.

#### Note

Under these conditions a tone will be heard in the earphones. When the "CONT" switch is returned to the "OFF" position, the equipment will shift back to the position at which it was operating before the switch was turned on and the tone in the headset will no longer be heard. The equipment will transmit on the channel in use in Radio Transmitter BC-625-AM.

(9) Test the operation of the contactor circuit with the "T-R-REM." switch in each position, using a different channel each time. In every case when the "CONT" switch is turned off, the mechanism will return to its original position in Radio Transmitter BC-625-A, but in Radio Transmitter BC-625-AM the tone is transmitted on the channel in use at the time the contactor becomes operative. To be certain that tone modulated (MCW) transmission is taking place, first observe the pilot lamp on Phantom Antenna A-29 with the "OFF—A-B-C-D" switch on "D" position, the "T-R-REM." switch on "T" position, and the "CONT" switch at "OFF." Now throw the "CONT" switch to "ON." An increase in brilliance of the pilot lamp in the phantom antenna shows that the carrier wave is being modulated and that the contactor signal will be transmitted.

(10) Turn the "OFF—A-B-C-D" switch to the "OFF" position.

#### b. TRANSMITTER TUNING (USING TEST EQUIPMENT IE-19(\*)).

#### IMPORTANT

Do not remove the transmitter or the receiver from Rack FT-244-A for tuning.

(1) EQUIPMENT REQUIRED.—The following test equipment is required when tuning the transmitter.

(a) Field Strength Meter I-95-(\*). (Part of Test Equipment IE-19-(\*).)

(b) Test Set I-139-A (Part of Test Equipment IE-19-(\*).)

(c) Medium sized screw driver.

\* Any issue letter is applicable.

(2) INITIAL PROCEDURE.

**Note**

During the transmitter tuning procedure, Radio Set SCR-522-A must be inside Case CS-80-A or CS-80-C and installed in the airplane, and the antenna must be connected.

(a) If the receiver and transmitter covers are closed, loosen the Dzus fasteners pinning them to the outer cover. Raise the covers slightly and slide them away from the tuning controls.

(b) Install crystals of the desired frequencies in the crystal sockets. (Refer to sec. VI, table 6-1.) The crystal chosen for any transmitter channel should have a rated fundamental frequency one-eighteenth of the desired final output frequency. (Fundamental frequencies appear on the crystal holders.)

(c) Plug the cord of Test Set I-139-A into test-meter socket 171 on the transmitter. (See fig. 5-10.)

(d) Depress a channel selector pushbutton on the radio control box. Depressing a channel selector pushbutton will cause the dynamotor to start and the frequency shifter mechanism to operate and shift the equipment to the channel selected. The switching mechanism will select and release channels in the sequence A, B, C, D until the desired channel is selected.

**Note**

If the transmitter fails to operate when a channel selector pushbutton is pressed on the radio control box, press another channel pushbutton. Then press the button for the desired channel.

(e) Release the frequency shifter mechanism by pressing channel release button 426 or by pressing the armature of motor 406 once.

(f) Loosen slightly the four transmitter tuning control locknuts by turning them counterclockwise. (See fig. 5-10.)

**Note**

Avoid tuning to an undesired harmonic by making certain that all four tuning controls when adjusted, indicate approximately the desired output frequency on the calibration plate.

(3) TUNING OF FIRST CHANNEL.

(a) Press the channel release button on the rack. This will re-select the channel previously selected.

(b) Allow about one minute for the tubes to warm up. To determine when tubes are sufficiently warm place the transmitter "METER SWITCH" in position "3" and note a rise of current in Test Set I-139-A.

(c) Throw the control box "T-R-REM." switch to "T."

(d) Place the transmitter "METER SWITCH" in position "1" and adjust the oscillator plate tuning control (first tuning control at left as shown in figure 5-10) for maximum reading on Test Set I-139-A.

(e) Repeat, using "METER SWITCH" position "2" and the second control.

(f) With the "METER SWITCH" in position "3," adjust the third tuning control for a maximum reading and quickly adjust the fourth tuning control for a minimum reading on the test set. Record the readings.

(4) TUNING OF REMAINING CHANNELS.

**IMPORTANT**

Before depressing the next channel pushbutton hold the channel controls with the fingers and tighten the locknuts just enough to exert a slight pressure on the cam pile-up. While doing this make certain that the test set reading does not change.

(a) Depress the channel selector pushbutton on the radio control box, which follows the channel just tuned.

(b) Loosen all tuning control locknuts.

(c) Follow the same tuning procedure outlined in paragraph 9b(3), this section.

(d) Tune the two remaining channels in like manner.

(e) Record the meter reading obtained on all four channels with the "METER SWITCH" in position "3."

(f) Depress the channel selector pushbutton for the channel which had the highest meter reading with the "METER SWITCH" in position "3." If the meter reading is less than 0.60 or greater than 0.63, change the antenna coupling control as described in paragraphs (5) and (6) below.

(5) ADJUSTMENT OF THE LOCKING TYPE ANTENNA COUPLING CONTROLS.

(See figure 8-15.)

(a) If the reading is less than 0.6, increase the coupling by loosening the antenna coupling control thumbscrew (see figs. 8-1 and 8-15) and pushing it slightly toward the tuning controls.

(b) Tighten the thumbscrew and adjust the fourth tuning control for a minimum reading on the test set.

(c) If the reading is more than 0.63, decrease the coupling by loosening the antenna coupling control thumb screw and moving it slightly away from the tuning controls.

(d) Tighten the thumbscrew and adjust the fourth tuning control for a minimum reading on the test set.

(e) Repeat this procedure, alternately adjusting the thumbscrew and the fourth tuning control, until the correct meter reading is obtained.

(f) Do not consider a reading of more than 0.63 acceptable since such an adjustment will result in early tube failure.

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(g) Record the final meter reading for later reference.

(6) ADJUSTMENT OF THE NON-LOCKING TYPE ANTENNA COUPLING CONTROL. (See fig. 8-16.)—The non-locking type antenna coupling control is a feature of the later models of Radio Transmitter BC-625-A. Adjust the control as follows:

(a) If the reading on Test Set I-139-A is less than 0.6, increase the coupling by rotating the control knob counterclockwise toward "MAX."

#### CAUTION

Do not attempt to tighten the control knob for the knob serves only as an indicator of the relative position of the coupling coil. Do not turn the adjusting knob beyond "MAX" or "MIN" as damage to the equipment will result.

(b) Adjust the fourth tuning control for a minimum reading on the test set.

(c) If the reading is more than 0.63 decrease the coupling by turning the control knob clockwise toward "MIN."

(d) Adjust the fourth tuning control for a minimum reading on the test set.

(e) Repeat this procedure alternately adjusting the control knob and the fourth control until a reading of 0.63 is obtained on the test set.

#### (7) FINAL TUNING.

(a) Retune the three remaining channels following the sequence in which the channels were originally tuned. (Refer to par. 9b(3), this section, for tuning procedure.) Do not disturb the setting of the antenna coupling control. A reading of 0.50 on some channels is satisfactory.

(b) With all the channels tuned, press the channel release button. Carefully tighten the tuning-control locknuts with the fingers. If necessary, tighten with a tool but avoid exerting excessive force.

#### IMPORTANT

These locknuts must be properly tightened or the tuning adjustments will not hold and the entire tuning procedure will have to be repeated.

(c) Make sure that all adjustments are securely locked by switching to each channel several times, checking the meter readings on "METER SWITCH" position "3" against those recorded while making the tuning adjustments.

#### Note

On some equipments position "4" of the "METER SWITCH" is not used, because of the elimination of the r-f indicator diode.

#### (8) TUNING CHECKS.

(a) With the tuning-control locknuts tightened and with the transmitter "METER SWITCH" in posi-

tion "5," the meter reading for all channels should normally be full scale or more. Any reading greater than half-scale is satisfactory.

#### WARNING

Do not use excessive pressure against the positioning detent.

(b) With the "METER SWITCH" in position "3" and with the channel selector engaged, rotate slightly tuning control 4 against the positioning detent. Repeat this check on each channel. If properly tuned, rotation in either direction will cause an increase in the meter reading.

#### Note

In general, meter readings greater than three quarters full-scale with the "METER SWITCH" in any one of its positions indicates a defect in the equipment or improper adjustment. An exception occurs with the "METER SWITCH" in position "5," when some of the vacuum tubes may desirably cause a full-scale or even off-scale reading.

(c) After tuning has been completed, tune in the unmodulated carrier on Field Strength Meter I-95-(\*). Whistle a sustained note into the microphone. An increase in the reading on the milliammeter of Field Strength Meter I-95-(\* ) should occur, indicating modulation of the carrier.

#### Note

Position "6" is an off or open switch position.

(9) TUNING OF A SINGLE CHANNEL OUT OF ADJUSTMENT.—If one channel is known to be out of adjustment, it may be tuned without disturbing the other channels as follows:

(a) Press the channel-selector pushbutton on the control box preceding the desired channel in the sequence "A," "B," "C," "D." For example, if retuning channel "A," press pushbutton "D," if retuning channel "B," press pushbutton "A," etc.

(b) Press the channel-release pushbutton on the rack.

(c) Loosen all transmitter tuning-control locknuts, keeping slight pressure on the cam pile-up.

(d) Press the selector pushbutton corresponding to the desired channel and completely loosen all tuning control locknuts.

(e) Tune the desired channel. (Refer to par. 9b(3), this section.)

(f) Press the channel-release pushbutton.

(g) Tighten all transmitter tuning control locknuts with the fingers. If a tool is used, do not tighten locknuts excessively.

\* Any issue letter is applicable.



(b) Press the channel-release pushbutton to reselect the channel just tuned.

(i) Check the meter reading for the highest loaded channel. If the reading is approximately 0.63, no adjustment of the antenna coupling is necessary. If it is less than 0.60 or more than 0.63, readjust the coupling on this channel according to the instructions given in paragraph 9b(5) or (6), this section.

### IMPORTANT

If the antenna-coupling control is readjusted, re-tune the third and fourth tuning controls for the proper meter reading on "METER SWITCH" position "3," all channels.

(10) "GAIN" CONTROL ADJUSTMENT.—With any channel switched on, all channels tuned, and the airplane engines running, adjust the "GAIN" control (see fig. 5-10) with a screw driver for normal voice level under conditions of normal operation. A setting of between 30° and 60° from the maximum clockwise position is usually satisfactory. Once made, this adjustment is good for all channels. (The "GAIN" control has been replaced by a fixed attenuator network in later models of Radio Transmitter BC-625-AM.)

### IMPORTANT

Never shut off the equipment with the shifter slides disengaged for this will result in failure to turn on the transmitter and receiver if a channel pushbutton is pressed on the radio control box.

#### c. TRANSMITTER TUNING (USING TEST EQUIPMENT IE-36).

(1) EQUIPMENT REQUIRED.—Test Equipment IE-36, Test Set I-139-A, and a microphone, either carbon (Microphone T-17) or magnetic (Microphone T-44), are needed for transmitter tuning.

#### (2) INITIAL PROCEDURE.

(a) When being tuned, Radio Transmitter BC-625-A or BC-625-AM must be inside Case CS-80-A or Case CS-80-C with Receiver BC-624-A, BC-624-AM, or BC-624-C connected.

#### Note

If the transmitter is tuned while out of the case, the additional capacitance introduced by replacing the transmitter in the case will tend to upset the tuning adjustments.

(b) If the receiver and transmitter covers are closed, loosen the Dzus fasteners pinning them to the center cover. Raise the covers slightly and slide them away from the tuning controls as shown in figure 8-1.

(c) Select a crystal having a rated fundamental frequency one-eighteenth of the desired final output frequency. (Fundamental frequencies appear on the crystal holders.)

(d) Connect the airplane antenna to Socket SO-153 on Rack FT-244-A using a suitably prepared coaxial cable. Install the crystals in their sockets.

(e) Connect Control Unit BC-1303 to Rack FT-244-A by inserting the 18-contact plug on the button on the control unit in the 18-contact socket of the rack. Insert Test Set I-139-A in the transmitter meter socket.

#### (3) TUNING CHANNEL "A."

(a) Turn the control unit "OFF — A-B-C-D" switch to "D."

(b) Press channel release pushbutton 426.

(c) Loosen the transmitter control locknuts 1, 2, 3, and 4 until they exert only a light pressure on the cam.

(d) Turn the "OFF—A-B-C-D" switch on the control unit to "A." (See fig. 6-2.)

(e) Loosen the tuning control locknuts completely.

(f) Turn the transmitter "METER SWITCH" 165 to position "3" and check Test Set I-139-A for a reading of from 0.4 to 0.63 milliamperes.

(g) Throw the "T-R-REM." switch on control unit to "T" position.

(h) Avoid tuning to an undesired harmonic by making certain that all four tuning controls, 1, 2, 3, and 4, when adjusted, indicate approximately the desired output frequency on the calibration plate. Check to see if the proper crystals are installed.

(i) Turn the transmitter "METER SWITCH" 165 to position "1." Adjust the transmitter tuning control 1 for a maximum reading on Test Set I-139-A tuning the black plate under the locknut either to the left or right.

(j) Turn transmitter "METER SWITCH" 165 to position "2" and adjust tuning control 2 for a maximum meter reading.

(k) Turn the transmitter "METER SWITCH" 165 to position "3" and adjust the third tuning control for a maximum meter reading and immediately adjust the fourth tuning control for a minimum meter reading.

#### Note

Having tuned the airplane antenna to the radio transmitter using transmitter tuning control 4 and "METER SWITCH" 165, position "3," do not retune to Phantom Antenna A-29 because the capacitance and resistance differ.

(l) If the meter readings in steps (j) and (k) above are more than 0.63, adjust the antenna coupling control as directed in paragraph 9b(5) or (6), this section. Retune controls 1, 2, 3, and 4 and adjust the antenna coupling control for a reading of 0.63 as directed in paragraph 9b(5) or (6), this section.

#### (4) ADJUSTMENT OF REMAINING CHANNELS.

(a) To tune channel "B," turn the "OFF—A-B-C-D" switch on Control Unit BC-1303 to "B" and follow the same tuning procedure outlined for channel "A" in paragraph 9c(3) above. However, do not change the

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antenna coupling adjustment unless the meter reading is more than 0.63. Tune channels "C" and "D" in like manner.

(b) Press the channel release control button 426 and tighten locknuts on tuning adjustments 1, 2, 3, and 4.

#### (5) METER CHECK.

(a) With the tuning control locknuts tightened and the transmitter "METER SWITCH" in position "5," the meter reading for all channels should normally be full-scale (0-1) or more. Any reading greater than half scale (0.5 or more) is satisfactory. If this condition is not achieved for any channel, readjust tuning control 3 for a maximum meter reading ("METER SWITCH" 165, position "5"), retuning that particular channel in accordance with the procedure in paragraph 9c(3), this section.

(b) With the tuning control locknuts tightened, there is a positioning detent which makes it possible to turn the tuning controls slightly, in either direction, against spring pressure. In some cases a large amount of torque is necessary to rotate the controls. Tuning controls 1, 2, and 3 can be checked by rotating them in both directions against the positioning detent and by noting that maximum meter reading occurs in the resting position of the control. If the meter reading is not maximum in the resting position, retune that particular control according to paragraph 9c(3), this section.

#### CAUTION

Do not exert excessive pressure against the detent.

#### (6) FINAL MODULATION CHECK.

##### Note

Do not retune during this check.

(a) Install Phantom Antenna A-29 in antenna Socket SO-153.

(b) Plug in the microphone. (Refer to par. 9a(6), this section.)

(c) Whistle a sustained note into the microphone and note the action of the pilot lamp on Phantom Antenna A-29. If the carrier wave is being modulated properly, the lamp on the phantom antenna will increase in brilliance.

(d) Reconnect Antenna AN-104-A to the antenna socket, Socket SO-153 by means of Plug PL-P173 or PL-Q173 installed on the end of the coaxial cable.

##### Note

Never shut off Radio Set SCR-522-A with the shifter slides disengaged, for this will result in failure to turn on the transmitter and receiver if one particular channel pushbutton is pressed on the control box.

(7) PROCEDURE FOR TUNING ONE CHANNEL ONLY.—If it is known that one channel is out of adjustment it may be tuned without disturbing the other channels. (Refer to par. 9b(3), this section.) The following steps summarize the procedure.

(a) Turn the "OFF—A-B-C-D" switch to the channel preceding the desired channel in the sequence "A," "B," "C," "D," etc.

(b) Press the channel-release pushbutton 426 on Rack FT-244-A.

(c) Loosen all transmitter tuning-control locknuts.

(d) Turn the "OFF—A-B-C-D" switch to the desired channel.

(e) Tune the desired channel. (See par. 9b(3), this section.)

(f) Press the channel-release pushbutton 426.

(g) Tighten all transmitter tuning-control locknuts 1, 2, 3, 4.

(h) Press the channel-release pushbutton 426.

(i) Check the meter reading on the lowest frequency channel. If this reading is approximately 0.63, do not adjust the antenna coupling control. If it is less than 0.60 or more than 0.63, adjust the coupling on this channel according to the instructions given in paragraph 9b(5) or (6), this section.

(8) ADJUSTMENT OF TRANSMITTER "GAIN" CONTROL.—With any channel switched on, all channels tuned, and the airplane engines running, adjust the "GAIN" control 125 for normal voice level under conditions of normal operation. A setting of from 30° to 60° from the maximum clockwise position is usually satisfactory.

##### Note

In all cases, the point of proper adjustment of the "GAIN" control 125 is that which gives maximum volume without excessive distortion in a second receiver. One adjustment is good for all channels. In some models of the transmitter, this gain control has been locked with glyptal at the point of proper operation, and in later models of Radio Transmitter BC-625-AM the "GAIN" control has been replaced by a fixed attenuator network.

#### (9) SIGNIFICANCE OF METER READINGS.

(a) In general, a meter reading on Test Set I-139-A greater than 0.65 with the transmitter "METER SWITCH" 165 in position "1," "2," or "3" indicates a defect in the equipment or improper adjustment.

(b) The following table lists the meter switch positions and the current read in each position.

Position	Current	Normal Meter Reading	Trouble
1	First harmonic amplifier plate	.4	Greater than .65
2	Second harmonic amplifier plate	.5	Greater than .65
3	Power amplifier plate (Average for channels A, B, C, D)	.63	Greater than .65
*4	R-F diode	.3 —.5	
5	Power amplifier grid	Full scale	Less than .5
6		Off	

\* In some sets r-f diode current is measured with the "METER SWITCH" 165 in position "4". This switch position is seldom used. The reading obtained is purely relative, without quantitative significance, and is equivalent to a neon-bulb indication of r-f voltage across the final amplifier tank inductor.

(c) The reading of Test Set I-139-A, obtained with the "METER SWITCH" 165 in position "5," is another variable quantity. Transmitting-tube data sheets describe the grid "drive" or grid current as "approximate, subject to wide variations depending on the impedance of the load circuit." It is desirable that this current be as large as possible (even off-scale), but not possible with some of the tubes being used. The real test of satisfactory adjustment is whether or not "upward modulation" of the carrier results. It is reasonable to assume that half-scale or higher meter readings, with the "METER SWITCH" 165 in position "5," are satisfactory.

(d) It should be noted that there is an "idle" or standing plate current resulting in a meter reading of approximately 0.4 when the "METER SWITCH" is in position "3" and Radio Set SCR-522-A is in the receive condition. This is normal and correct, and indicates the existence of a load on the modulator at all times. If this current is abnormally high, an open or short circuit is indicated in the —150-volt bias supply from the dynamotor unit.

(e) With the "METER SWITCH" in position "4" it should be noted that there is a small emission current in the r-f diode in the "standby" condition. (Position "4" will be an open switch position on sets in which the r-f indicator diode has been omitted.)

(f) Position "6" of Meter Switch 165 is also an "OFF" or open switch position.

## 10. ALIGNMENT OF THE RADIO RECEIVER.

Before aligning, make a simple operating test of the receiver.

### a. RECEIVER TEST, USING TEST EQUIPMENT IE-36.

The following components of Test Equipment IE-36 are required for receiver testing: Control Unit BC-

1303, Cord CD-1169, and Cord CD-1170. A headset is also necessary.

### Note

Radio Receiver BC-624-A, BC-624-AM, or BC-624-C\*, must be in Case CS-80-A or CS-80-C.

(1) Connect Control Unit BC-1303 to Rack FT-244-A by plugging it into the 18-contact socket on top of the rack.

(2) Plug Cord CD-1170 into the control unit by inserting the pin probe of the cord in the "ANT" pin jack and clip the alligator clip end of the cord to the center pin of Socket SO-153 of the rack. Insert the plug from the headset in Jack JK-49 of the adapter cord, Cord CD-1169, and insert Plug PL-55 (attached to cord marked "TEL") in the "TEL" Jack of Control Unit BC-1303.

(3) Turn the "OFF—A-B-C-D" switch on the control unit to "A." The dynamotor will start and the frequency-shifter mechanism will shift the equipment to channel "A." If the mechanism does not shift, turn the "OFF—A-B-C-D" switch to another channel and then switch back to "A." Now, try channels "B," "C," and "D" and observe action of the mechanism.

(4) After allowing about one minute for the tubes to warm up, throw the "T-R-REM." switch on the control unit to the "R" position.

(5) Turn the "SIG GEN" switch located on the left hand end of the control unit to "ON." Assuming that the receiver channels have been tuned, the signal will be heard in the phones.

### Note

The buzzer tone can be adjusted by a screw driver through the hole in the front of Control Unit BC-1303 marked "BUZZ TONE ADJ."

(6) Turn the "OFF—A-B-C-D" switch to "B," "C," and "D" noting the signal in the phones. If the signal is relatively weak or absent on one or more channels, retune the receiver. (Refer to pars. 10c or 10d, this section.) If the signal is too loud, make tests with the alligator clip on Cord CD-1170 removed from the center pin of Socket SO-153 of the rack, and the antenna cord left hanging from the control unit.

### Note

Only relative output of the receiver can be judged by the intensity of the signal. However, by using a similar Control Unit BC-1303, a comparison can be made between a set known to be in good working order and the set under test.

(7) Turn the channel selector switch to the "OFF" position.

\* When tuning Radio Receiver BC-624-C, rotate the "SQUELCH" control to the maximum clockwise position, actuating the switch which will render the noise limiter inoperative.

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b. I-F TRANSFORMER ALIGNMENT.

(1) Do not attempt i-f alignment before checking tubes and making certain that the receiver sensitivity in microvolts on all channels, with all channels properly tuned, is less than the minimum values given in paragraph 11c(2)(f), this section.

(2) If a Ferris 18C signal generator is not available for performance tests, compare the sensitivity of the receiver under test with a receiver known to be in good condition using Signal Generator I-96-A or I-130-A. Note whether or not the minimum attenuator setting for audible receiver output is considerably higher for the receiver under test than for the good receiver. Proceed only if this test indicates that i-f alignment is necessary.

(3) Any signal generator capable of producing an output of approximately 1 volt at a frequency of exactly 12 megacycles, and having a terminated transmission line output, is suitable for use in receiver i-f alignment. Modulate the r-f voltage approximately 30 percent at 400 to 1000 cycles.

Note

These instructions are written on the assumption that Signal Generator I-96-A (part of Test Equipment IE-12-A) is employed, but if an-

other type of generator is being used, simply make adjustments which are equivalent to those specified here for Signal Generator I-96-A.

(4) Remove the transmitter-receiver assembly from Case CS-80-A or CS-80-C.

(5) With Signal Generator I-96-A set up within 5 feet of the radio receiver to be tuned, plug one end of the signal-generator d-c meter cord into the receiver control panel (see fig. 5-11) and plug the other end into the "D.C. METER" socket located on the signal-generator meter panel. Plug the i-f test cord into the signal-generator "I.F. OUTPUT" socket marked "HIGH." Connect the "OUTPUT" terminal of the i-f test cord to the mixer-tube grid lead on the right side of the receiver and connect the "GND" terminal to the variable capacitor frame as shown in figure 8-19. Keep these leads as short as possible and in no case let them exceed 1½ inches. Otherwise the i-f amplifier may feed back and oscillate or be difficult to tune properly.

CAUTION

Do not allow the output lead to touch the plate terminal 7 of the mixer socket, as this may burn out the resistor in the cable terminal box.

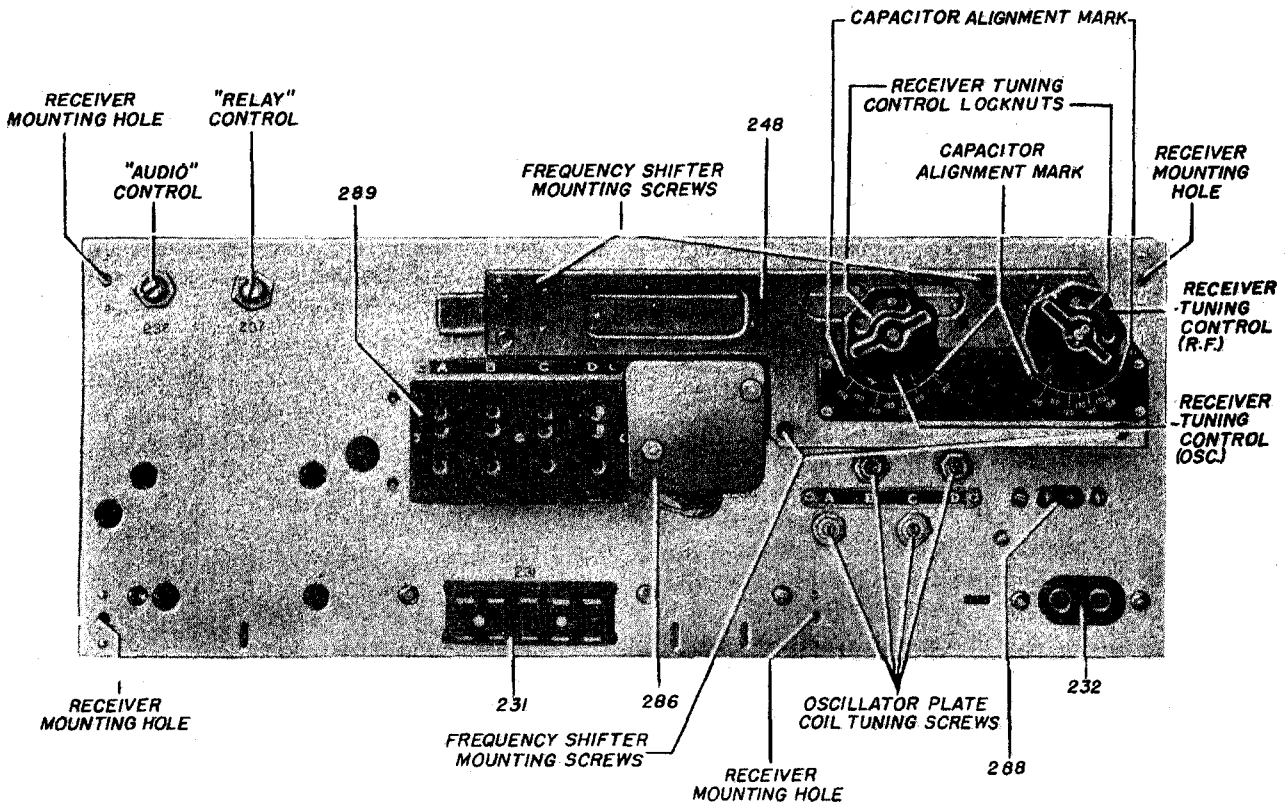


Figure 5-11. Radio Receiver BC-624-A or BC-624-AM—Top View

(6) Connect an output-power meter or an a-c voltmeter (if available) across the audio output of the connector panel terminals. Across the same terminals, connect a low impedance headset if the yellow wire going to the audio output transformer 296 is connected to terminal number 6, or a high impedance headset if the lead goes to terminal number 7 on the transformer.

#### Note

The 80-ohm tap is number 4, and the 800-ohm tap is number 5, on transformer 200 for Radio Receiver BC-624-C.

(7) Adjust the load presented by the output-power meter, or the a-c voltmeter to appropriate impedance, depending on which terminal is connected on the output transformer. This arrangement provides a more satisfactory tuning indication than can be obtained by using the signal-generator "D.C. METER."

(8) If no output meter is available, use the signal-generator "D.C. METER" as a tuning indicator or adjust the transformers, as outlined below, for peak output in the headphones with the signal-generator attenuator adjusted for comfortable headphone volume, readjusting, if necessary as alignment progresses, to maintain that volume.

(9) If a 110 to 115 volt, 50 to 60 cycle power-supply source is available, plug the a-c line cord into the power source and into the a-c socket on the upper right side of the "A.C. POWER SUPPLY" panel of Signal Generator I-96-A. Throw the signal-generator "A.C. ON-OFF" switch to "ON," the "D.C. ON-OFF" switch to "OFF," the "A.C.-D.C." switch to "A.C.," and the "I.F.-R.F." switch to "I.F."

(10) If no external a-c power source is available, throw the "A.C. ON-OFF" switch to "OFF," the "D.C. ON-OFF" switch to "ON," the "A.C.-D.C." switch to "D.C.," and the "I.F.-R.F." switch to "I.F."

(11) It is not necessary to use receiver crystals for i-f alignment. With the transmitter, receiver and rack set up for operation by means of Radio Control Box BC-602-A or BC-602-B, press any channel-selector pushbutton "A," "B," "C," or "D" on the radio control box. Place the control box "T-R-REM." switch in "R" position. Allow about one minute for the receiver vacuum tubes to warm up. Set the receiver "AUDIO" and "RE-LAY" or "SQUELCH" controls in their maximum clockwise rotation positions.

(12) If an output meter or a-c voltmeter is used, adjust the signal-generator "ATTENUATOR" to the position which results in an audio output of approximately 50 milliwatts (or 15 volts rms across 4000 ohms load, or 4 volts rms across 300-ohm load). If using another type of generator, set the output frequency at exactly 12 megacycles and adjust the attenuator for an output meter reading of 50 milliwatts, just as for Signal Generator I-96-A. As tuning progresses, it may be necessary continually to readjust the "ATTENUATOR" or even to transfer the i-f test cord to the "LOW" output

socket to retain a receiver audio output of approximately 50 milliwatts. In some cases, it may be necessary to readjust the receiver "AUDIO" control if considerably more than 50 milliwatts output is obtained with the "ATTENUATOR" set at "MIN."

(13) If the signal generator "D.C. METER" is used as a tuning indicator, place the meter switch in "TRANS-REC. TUNING" position and initially set the "ATTENUATOR" at the point which results in a slight dip in the meter reading. As tuning progresses, reduce the signal-generator output by means of the "ATTENUATOR" to retain a meter reading of approximately the same value as that initially obtained, transferring the i-f test cord to the "LOW" output socket, if necessary.

(14) Using the alignment tool or a small screw driver, adjust the iron core tuning screws on top of transformer 294 (see fig. 8-20) for maximum audio output (or minimum "D.C. METER" reading). Repeat for transformer 293, 292 and 291, in that order, reducing the signal-generator output, if necessary, as explained in paragraph 10b(12), this section.

(15) Repeat the procedure given in paragraph 10b(14) to see if any further improvement in i-f alignment is possible.

(16) Press the "OFF" button of the radio control box. Remove the leads from the mixer tube and the variable-capacitor frame and replace the rack, receiver and transmitter in Case CS-80-(\*). However, if no output-power meter is available and if the i-f stages were out of adjustment to such an extent that it was impossible to obtain a "D.C. METER" indication, proceed with the following steps.

(17) Remove the transmitter from the rack.

#### CAUTION

Be sure to release frequency-shifter mechanism before attempting to remove transmitter or receiver from rack.

(18) Using a short length of wire, ground the terminal 4 of socket 418-1 to the rack chassis to permit channel selection by the radio control box. Insert a wedge between the armature and the backstop of the locking relay 411-1 located on the left side of the rack, thus locking it in its energized position. (This must be done to keep antenna relay 412 in the energized position so that plate and screen voltage is applied to the receiver r-f and i-f circuits.)

(19) Plug the i-f test cord into the signal-generator "I.F. OUTPUT" socket marked "HIGH" and connect the "OUTPUT" terminal of the i-f test cord to the grid of the third i-f tube JAN-12SG7. (See fig. 8-17.) Connect the i-f test cord "GND" terminal to the nearest point on the receiver chassis.

(20) With the control-box "T-R-REM." switch set at "R," press any channel-selector pushbutton. Allow

\* Any issue letter is applicable.

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about one minute for the receiver vacuum tubes to warm up. Set the receiver "AUDIO" and "RELAY" controls in their maximum clockwise rotation positions.

(21) Place the signal-generator meter switch in "TRANS.-REC. TUNING" position and initially set the "ATTENUATOR" at the point which results in a slight dip in the "D.C. METER" reading. As tuning progresses, reduce the signal-generator output by the "ATTENUATOR," as explained in paragraph 10*b*(12), this section.

(22) Using the alignment tool or a small screw driver, adjust the iron core tuning screws of transformer 294 (see fig. 8-20) for minimum "D.C. METER" reading.

(23) Connect the "OUTPUT" terminal of the i-f test cord to the grid of the second i-f, first i-f, and mixer tubes, respectively. (See fig. 8-17.) Adjust the iron core tuning screws of transformers 293, 292 and 291 (see fig. 8-20) for minimum "D.C. METER" reading.

(24) With the "OUTPUT" terminal of the i-f test cord connected to the grid of the mixer tube and the "GND" terminal connected to the variable capacitor frame, readjust all the iron core tuning screws to see if better i-f alignment can be obtained.

**c. RECEIVER RADIO FREQUENCY AND OSCILLATOR TUNING (USING TEST EQUIPMENT IE-19-(\*)).**

**(1) EQUIPMENT REQUIRED.**

- (a) Test Equipment IE-19-(\*).
- (b) Headset.
- (c) Medium sized screw driver.

(2) INITIAL PROCEDURE.—If the receiver cover is shut, loosen the Dzus fasteners pinning it to the center cover, lift the receiver cover slightly and slide it away from the control panel.

**(3) CRYSTAL SELECTION.**

(a) A receiver crystal is identified by the fundamental frequency in kilocycles which appears on the crystal holder.

(b) Finding the correct receiver crystal for a particular receiver channel is therefore the same as finding the correct fundamental frequency (kilocycles) of the crystal to be used. The fundamental crystal frequency may be determined from the formula.

$$f = \frac{f_r}{H} - 12 \times 1000$$

$f_r$  is the frequency in megacycles to which the receiver is to be tuned and  $H$  is the receiver crystal harmonic used (see the following table). The receiver crystal harmonic ( $H$ ) used depends only on the frequency ( $f_r$ ) to be tuned in, and is given in the following table.

Frequency ( $f_r$ ) (megacycles)	Receiver Crystal Harmonic ( $H$ )
100 - 108	11
108 - 116	12
116 - 124	13
124 - 132	14
132 - 140	15
140 - 148	16
148 - 156	17
156	18

**(4) ADJUSTMENT OF SIGNAL GENERATOR I-130-A (Using Crystal).**

(a) Insert a transmitter crystal having a fundamental frequency one-eighteenth of the receiver frequency to be tuned in the "CRYSTAL" socket of Signal Generator I-130-A. If no transmitter crystal is available, refer to paragraph 10*c*(5).

(b) Connect Cord CD-477 to the signal generator "R.F. OUTPUT" socket and to the antenna socket, Socket SO-153 located on Rack FT-244-A. Connect Test Set I-139-A to the signal-generator "METER" socket.

(c) Plug the cable of Battery Box BX-33-A into the signal generator four-pin socket located to the left of the "METER" socket. Throw the signal generator "POWER ON-OFF" switch to "ON."

(d) Set the signal-generator "M.O.—CRYSTAL" switch at "CRYSTAL."

(e) Place the "OUTPUT CONTROL" on "MAX." (extreme clockwise position) and place the "OUTPUT STEPS" control on step 5.

(f) After allowing about one minute for the tubes to warm up, adjust the "CRYSTAL TUNING" control to the frequency to be tuned. If this adjustment is correct, a small dip will be observed in Test Set I-139-A.

(g) Adjust the "MEGACYCLES" dial control on the signal generator for an additional dip (approximately at the same dial setting as the receiver channel frequency being tuned.)

(h) Starting from the extreme clockwise position, slowly turn the channel A oscillator plate-coil tuning screw counterclockwise so that about three to five threads of the screw protrude from the coil-mounting insert. The higher the crystal frequency, the further the plate-coil screw must be backed out of the coil-mounting insert to obtain the necessary inductance to permit the oscillator to start. When the oscillator starts, a signal should be heard.

(i) If there is no audible signal, simultaneously adjust the receiver r-f tuning control and oscillator tuning control slightly, and if necessary, turn the channel "A" oscillator plate-coil tuning screw still further clockwise until the signal is heard.

\* Any issue letter is applicable.

(5) ADJUSTMENT OF SIGNAL GENERATOR I-130-A, USING MASTER OSCILLATOR.—Use the same procedure for employing the signal-generator master oscillator as the procedure for employing the crystal oscillator except for the following:

(a) Do not touch the "CRYSTAL TUNING" control.

(b) Set the "M.O.—CRYSTAL" switch at "M. O."

(c) Tune the signal-generator by means of the "MEGACYCLES" dial control only.

(d) Allow about one minute for the tubes to warm up.

(6) TUNING OF CHANNEL "A," USING CRYSTAL IN SIGNAL GENERATOR.

(a) Install the proper crystal in the socket for receiver channel "A."

(b) Press channel selector pushbutton "D" on the radio control box.

**Note**

If the receiver fails to operate when a channel pushbutton is pressed on the radio control box, press another channel pushbutton, then again press the pushbutton for the desired channel. Reception should now be possible.

(c) Press the channel-release pushbutton 426 located on the rack.

(d) Loosen the two receiver tuning-control locknuts by turning them counterclockwise. Tighten the two locknuts just enough to exert a slight pressure on the cam pile-up. Otherwise vibration may change the position of the cam, introducing considerable set-up error.

(e) Press channel selector pushbutton "A" on the radio control box and completely loosen all tuning control locknuts. After allowing about one minute for the receiver vacuum tubes to warm up, throw the radio control box "T-R-REM." switch to "R."

(f) Turn the receiver r-f and oscillator tuning controls to the desired frequency on the calibration plate.

(g) Connect a suitable headset across the audio output terminals on the jack box. Rotate the receiver "AUDIO" and "RELAY" or "SQUELCH" (see fig. 5-12) controls to their maximum clockwise rotation positions.

(b) Use either an output power meter or an a-c voltmeter of suitable range, if one is available, for making final tuning adjustments.

1. Connect the output power meter in place of, or in parallel with, the headset.

2. Plug the test set meter plug into receiver socket 288 and follow the same tuning procedure as before except that instead of tuning for maximum audio output, tune for a dip or minimum reading of the test set.

3. Reduce the signal generator output to the lowest level possible to obtain an indication of change of current while adjusting the receiving tuning controls.

(i) Starting from the extreme clockwise position, slowly turn the channel "A" oscillator plate-coil tuning screw counterclockwise until about three to five threads of the screw protrude from the coil-mounting insert. The higher the crystal frequency, the further the crystal-plate coil screw must be backed out of the coil-mounting insert to obtain the necessary inductance permitting the oscillator to start. When the oscillator starts, a signal should be heard.

(j) If there is no audible signal, simultaneously adjust the receiver r-f tuning control and oscillator tuning control slightly, and if necessary, turn the channel "A" oscillator plate coil tuning screw still further counterclockwise until the signal is heard.

(k) When the signal is heard, rotate the oscillator plate-coil tuning screw clockwise until the signal suddenly ceases, then rotate the screw counterclockwise at least three-quarters of a turn past the point at which the signal again becomes audible (i.e., the position at which the oscillator starts). The additional three-quarters of a turn is required for a stable adjustment of the crystal oscillator. If the output is decreased appreciably by this extra rotation, continue turning the screw counterclockwise until a second peak is reached. If this second peak signal is greater than the signal heard at the three-quarters counterclockwise turn, leave the tuning screw in this position. If the signal is less, return the tuning screw to the three-quarters position. Check this adjustment after completing steps (l) and (m) below.

(l) Turn the signal generator "OUTPUT CONTROL" to "MIN." Place the "OUTPUT STEPS" control in position 1 or 2. Turn the "OUTPUT CONTROL" clockwise until the signal is just audible.

(m) Adjust the receiver tuning controls and the signal generator "CRYSTAL TUNING" control for maximum audio output. Rotate the "OUTPUT CONTROL" counterclockwise, if necessary, to keep the peaked output at low level in the headset. This may require repeated readjustments.

(7) TUNING OF CHANNEL "A," USING GENERATOR MASTER OSCILLATOR.

(a) Press channel selector pushbutton "D" of Radio Control Box BC-602-B.

**Note**

If channel "A" has already been selected, channels "B" and "C" will be switched on and off before channel "D" is reached.

(b) Press channel release pushbutton 426.

(c) Loosen the two receiver tuning-control locknuts by turning them counterclockwise. Tighten the locknuts just enough to exert a slight pressure on the cam pile-up.

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(d) Press channel selector pushbutton "A" of the radio control box and completely loosen all tuning control locknuts. After allowing about one minute for the receiver vacuum tubes to warm up, throw the radio control box "T-R-REM." switch to "R."

(e) Turn the receiver r-f and oscillator tuning controls to the desired frequency on the calibration plate.

(f) Using the alignment tool or a small screw driver, turn the crystal oscillator plate-coil tuning screw for channel "A" until about 3 to 5 threads protrude from the coil-mounting insert. The higher the crystal frequency, the further the plate-coil screw must be backed out of the coil-mounting insert to obtain the necessary inductance permitting the oscillator to start.

(g) With a headset connected to the audio-output terminals in the jack box, place the signal-generator "OUTPUT STEPS" control on step 5 and set the "OUTPUT CONTROL" at "MAX." (extreme clockwise position).

(h) Set the signal-generator "MEGACYCLES" dial control at the frequency being tuned and then adjust the receiver tuning controls until the modulated signal is heard in the headphones. This may require several readjustments.

(i) Turn the oscillator plate-coil tuning screw for channel "A" clockwise until the modulated signal suddenly ceases.

(j) Turn the crystal-oscillator plate-coil tuning screw counterclockwise until the signal is again heard. An additional three-quarters of a full turn in a counterclockwise direction is necessary for a stable adjustment of the crystal oscillator. If this results in reduced output, continue turning the screw counterclockwise until a second peak is reached. If this second peak signal is greater than the signal heard at the three-quarter counterclockwise turn, leave the tuning screw in this position. If the signal is less, return the tuning screw to the three-quarter position. Check after completing steps (k) and (l) below.

(k) Turn the signal-generator "OUTPUT CONTROL" to "MIN." Place the "OUTPUT STEPS" control in position 1 or 2. Turn the "OUTPUT CONTROL" clockwise until the signal is just audible.

(l) Adjust the receiver tuning controls and the signal-generator "MEGACYCLES" dial control for maximum audio output. Rotate the "OUTPUT CONTROL" counterclockwise, if necessary, to keep the peaked output at a low level in the headset. The final setting of the receiver tuning controls should be near the calibrated settings for the desired frequency.

#### (8) TUNING OF REMAINING CHANNELS, USING CRYSTAL IN SIGNAL GENERATOR.

##### **IMPORTANT**

Before depressing pushbutton "B," hold the tuning controls with the fingers and tighten the locknuts just enough to exert a slight pres-

sure on the cam pile-up, making certain that the audio output level remains constant.

(a) Press channel selector pushbutton "B" on the radio control box and completely loosen all tuning control locknuts.

(b) Follow the same tuning procedure outlined for channel "A" in paragraph 11f(6).

##### **Note**

The tuning instructions for channel "A" will hold good for channel "B" only if the letter "B" is substituted for "A" wherever the crystal, the channel, and the oscillator plate-coil tuning screw are mentioned. This note likewise applies when tuning channels "C" and "D."

(c) Tune channels "C" and "D" in like manner.

(d) Press the channel-release pushbutton and tighten the two receiver tuning-control locknuts by turning them tightly clockwise with the fingers. If using a tool do not tighten locknuts excessively.

(e) Check all channels for satisfactory receiver output.

#### (9) TUNING OF REMAINING CHANNELS, USING SIGNAL GENERATOR MASTER OSCILLATOR.

##### **IMPORTANT**

Before depressing pushbutton "B," hold the tuning controls with the fingers and tighten the locknuts just enough to exert a slight pressure on the cam pile-up. While doing this, make sure that the audio output level does not change.

(a) Press channel "B" pushbutton on Radio Control Box BC-602-B and completely loosen all tuning control locknuts.

(b) Follow the same tuning procedure outlined for channel "A" in paragraph 10c(7).

##### **Note**

The tuning instructions for channel "A" will hold good for channel "B" only if the letter "B" is substituted for "A" wherever the crystal, the channel, and the oscillator plate-coil tuning screw are mentioned. This note likewise applies when tuning channels "C" and "D."

(c) Tune channels "C" and "D" in like manner.

(d) Press the channel-release pushbutton and tighten the two receiver tuning-control locknuts (see fig. 5-11) by turning them tightly clockwise with the fingers. If using a tool do not tighten the locknuts excessively.

(e) Check all channels for satisfactory receiver output.

(10) TUNING OF SINGLE CHANNEL OUT OF ADJUSTMENT.—If the channel is known to be out of adjustment, it may be tuned as follows without disturbing the other channels.

(a) Press the channel selector pushbutton on the radio control box corresponding to the channel preced-



ing the desired channel in the sequence "A," "B," "C," "D." For example, if retuning channel "B," press pushbutton "A"; if retuning channel "A," press pushbutton "D," etc.

(b) Press the channel-release pushbutton 426.

(c) Loosen the receiver tuning-control locknuts, keeping a slight pressure on the cam pile-up.

(d) Press the channel-selector pushbutton for the desired channel and completely loosen all tuning control locknuts.

(e) Tune the desired channel. [Refer to pars. 10c (6) and (7), depending on whether or not a crystal is used in the signal generator.] Ignore reference to channel "A" and substitute the applicable letter.

(f) Press the channel-release pushbutton 426.

(g) Tighten the receiver tuning-control locknuts with the fingers. If using a tool, do not tighten locknuts excessively.

(h) Press the channel-release pushbutton to reselect the channel just tuned.

(i) Recheck all channels for satisfactory receiver output.

(11) TUNING CHECKS.

(a) Be sure that the tuning control locknuts are tightened.

(b) Tune in a signal from a source such as Test Equipment IE-36 or Test Equipment IE-19-(\*).

\* Any issue letter is applicable.

(c) Rotate either tuning control clockwise and then counterclockwise. If there is a decrease in signal as the control is rotated in either direction, the receiver is tuned correctly.

(d) If the signal increases as the tuning control is rotated in either direction, retune the receiver as directed in paragraphs 10c(6), (7), and (8), this section.

**IMPORTANT**

Never shut off the equipment with the shifter slides disengaged, since this will result in failure to turn on the transmitter and receiver if one particular channel pushbutton is pressed on Radio Control Box BC-602-B.

(12) RECEIVER "AUDIO" CONTROL ADJUSTMENT.—The receiver output transformer 296 is provided with three impedance taps: terminal 5, 50 ohms; terminal 6, 300 ohms; and terminal 7, 4000 ohms. In some equipments the output lead is connected to terminal 6 and in others to terminal 7. In Radio Receiver BC-624-C the 80-ohm tap is terminal 4 and the 800-ohm tap is terminal 3 on transformer 200.

(a) The exact setting of the "AUDIO" volume control depends on the headphones being used and the volume desired by the pilot. However, when using Radio Receiver BC-624-A or BC-624-C setting the "AUDIO" control on the receiver three quarters to seven eighths of its maximum rotation is usually satisfactory. When using Radio Receiver BC-624-AM, set the "AUDIO" control in the extreme clockwise position.

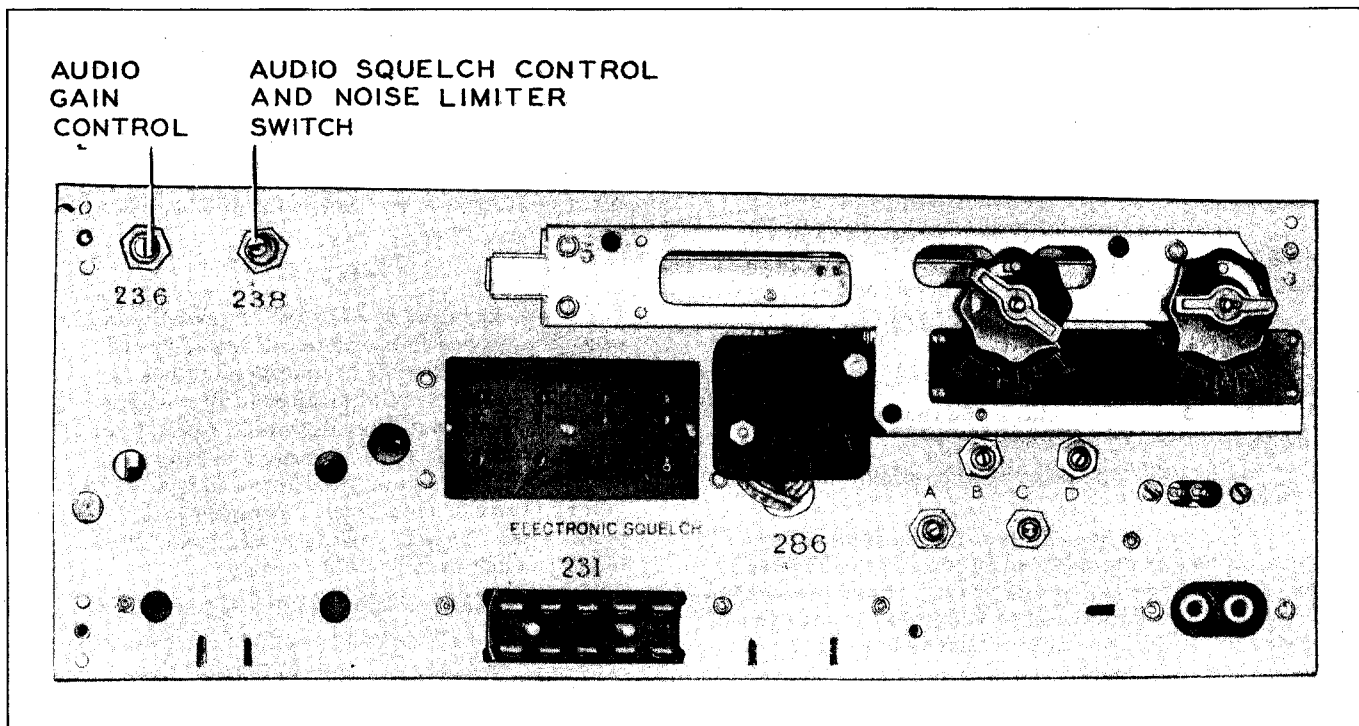


Figure 5-12. Radio Receiver BC-624-C—Top View

(b) After adjusting the "AUDIO" control on the receiver, according to the directions given in subparagraph (a) above, increase or decrease the volume, as desired, by the "AUDIO" control on Jack Box BC-629-B or BC-631-B.

(c) If the pilot desires more volume and the audio output is connected to terminal 6 of transformer 296, transfer the output connection to terminal 7.

**Note**

This is not applicable to all installations. Comply with existing instructions for specific installations.

(13) "RELAY" OR "SQUELCH" CONTROL ADJUSTMENT. (See figure 5-12.)

(a) The "RELAY" or "SQUELCH" control adjustment is the last adjustment to be made on the receiver. Make the adjustment with the antenna connected, the equipment operating on any tuned channel and no signal being received.

(b) Rotate the "RELAY" or "SQUELCH" control to the extreme clockwise position. Turn it slowly counterclockwise until there is a noticeable drop in noise and continue the counterclockwise rotation for a very small fraction of a turn.

(c) Make this adjustment under normal conditions, *without* the engines running. However, if the adjustment has been checked and the pilot still complains of excessive noise in the phones at all times, adjust the "RELAY" or "SQUELCH" control while the engines are running and omit the small fraction of a turn mentioned in subparagraph (b) above.

d. RECEIVER RADIO FREQUENCY AND OSCILLATOR TUNING (USING TEST EQUIPMENT IE-36) AND A SUITABLE HEADSET.

(1) TUNING CHANNEL "A."

(a) Loosen the Dzus fasteners pinning the receiver cover to the center cover, lift the receiver cover slightly, and slide it away from the control panel.

(b) If crystals have not been previously inserted, install the proper crystal in the crystal socket for receiver channel "A." (Refer to par. 10c(3), this section.)

(c) Set up Test Equipment IE-36 as described in Section V, paragraph 10a.

(d) Turn the "OFF—A-B-C-D" switch on Control Unit BC-1303 to "D." This is the channel preceding the channel to be tuned (channel "A").

(e) Press the channel-release pushbutton 426 on Rack FT-244-A.

(f) Loosen the two receiver tuning-control locknuts 5 and 6 by turning them counterclockwise. Tighten the two locknuts just enough to exert a slight pressure on the cam pile-up, otherwise vibration may change the position of the cam, introducing considerable set-up error.

(g) Turn the "OFF—A-B-C-D" switch to "A" and completely loosen the tuning control nuts 5 and 6. After allowing about one minute for the receiver vacuum tubes to warm up, throw the control unit "T-R-REM."

switch to the "R" position. Engage the noise limiter control switch\* (part of the "SQUELCH" control) on Radio Receiver BC-624-C. This switch is engaged at the end of clockwise rotation of "SQUELCH" control.

**IMPORTANT**

Avoid tuning to an undesired harmonic by making certain that the receiver r-f tuning control and oscillator tuning control are turned to the desired frequency on the calibration plate. An error of more than 3 megacycles may mean that the receiver is operating approximately 8 megacycles removed from the operating frequency.

(b) Turn on the "SIG. GEN." switch on the left end of the control unit, and rotate the "AUDIO" and "RELAY" controls to maximum clockwise positions.

(i) Starting from the extreme clockwise position, slowly turn the channel "A" oscillator plate-coil tuning screw adjustment counterclockwise, so that about three to five threads of the screw protrude from the coil-mounting insert. The higher the crystal frequency the further the plate-coil screw must be backed out of the coil-mounting insert to obtain the necessary inductance permitting the oscillator to start. When the oscillator starts, a signal should be heard in the phones.

(j) If there is no audible signal, simultaneously adjust the receiver r-f and oscillator tuning controls, and if necessary, turn the channel "A" oscillator plate-coil tuning screw still farther counterclockwise until the signal is heard. When the signal is heard, rotate the oscillator plate-coil tuning screw counterclockwise at least three quarters of a turn past the point at which the oscillator starts. The additional three-quarters of a turn is required for a stable adjustment of the crystal oscillator. If the output is decreased appreciably by this extra rotation, continue turning the screw counterclockwise until a second peak is reached. If this second peak signal is greater than the signal heard at the three-quarters counterclockwise turn, leave the tuning screw in this position. If the signal is less, return the tuning screw to the three-quarters position. (Final adjustment should be made on a weaker signal by removing the alligator clip on Cord CD-1170 from the center pin of Socket SO-153 of the rack.)

**Note**

For Radio Receiver BC-624-AM modified for suppression of impulse noise, the signal heard in the headphones will be considerably less in volume than before modification. Most accurate tuning is obtained if controls 5 and 6 are peaked using only circuit noise or hiss, and with the "SIG. GEN." switch on the control unit in the "OFF" position. This "fine" adjustment is to be made after "rough" tuning with the "SIG. GEN." switch in the "ON" position.

(2) TUNING OF REMAINING CHANNELS.

(a) Turn the "OFF—A-B-C-D" switch on Control Unit BC-1303 to "B" and completely loosen all tuning-control locknuts.

\*This switch is used only on Radio Receiver BC-624-C. It *must* be returned to normal operating position when tuning is complete.

**IMPORTANT**

Before turning the switch to "B," hold the tuning controls with the fingers and tighten the locknuts 5 and 6 just enough to exert a slight pressure on the cam pile-up. While doing this, make certain that the audio output level remains constant by readjusting the receiver tuning controls.

(b) Follow the same tuning procedure outlined for channel "A" in paragraph 10d(1), this section.

**Note**

The tuning instructions for channel "A" will apply to channel "B" only if the letter "B" is substituted for "A" wherever the crystal, the channel, and the oscillator plate-coil tuning screw are mentioned. This note likewise applies when tuning channels "C" and "D."

(c) Tune channels "C" and "D" in a like manner; then press the channel-release pushbutton 426 and tighten the two receiver tuning-control lock nuts 5 and 6 by turning them tightly clockwise with the fingers. If using a tool, do not tighten locknuts excessively. Recheck all channels for satisfactory receiver output. With slight movement of the receiver tuning controls against the detent, maximum signal should be obtained in the rest position. This completes the tuning of the receiver.

(3) **PROCEDURE FOR TUNING ONE CHANNEL ONLY.**—If one channel is out of adjustment, it may be tuned as follows without disturbing the other channels.

(a) Turn the "OFF—A-B-C-D" switch on the control unit to the channel preceding the channel to be tuned, in the sequence, "A," "B," "C," "D." For example, if retuning channel "B," turn the switch to "A," if retuning "A," turn switch to "D," etc.

(b) Press the channel-release pushbutton 426.

(c) Loosen the two receiver tuning-control locknuts.

(d) Turn the "OFF—A-B-C-D" switch to the desired channel.

(e) Tune the desired channel as described in paragraph 10d(1), this section ignoring reference to channel "A" and substituting the applicable letter.

(f) Press the channel-release pushbutton.

(g) Tighten the receiver tuning-control locknuts.

(b) Press the channel release pushbutton to reselect the channel just tuned.

**IMPORTANT**

Never shut off Radio Set SCR-522-A with the shifter slides disengaged, since this will result in failure to turn on the transmitter and receiver if one particular channel pushbutton is pressed on Radio Control Box BC-602-A or BC-602-B or on the "OFF—A-B-C-D" switch on Control Unit BC-1303.

(4) **RECEIVER "AUDIO" CONTROL ADJUSTMENT.**—The exact setting of the "AUDIO" volume control depends on the headphones being used and the volume desired by the pilot. However, when using Radio Receiver BC-624-A or BC-624-C, setting the "AUDIO" volume control on the receiver three quarters to seven-eighths of its maximum rotation is usually satisfactory. When using Radio Receiver BC-624-AM set the "AUDIO" control in the extreme clockwise position. After setting the receiver "AUDIO" control, increase or decrease the volume, as desired, by the jack box "AUDIO" control.

(5) **RECEIVER "RELAY" OR "SQUELCH" CONTROL ADJUSTMENT.**

(a) Make this last adjustment on the receiver with the airplane antenna connected, the equipment operating on any tuned channel and no signal being received.

(b) Rotate "RELAY" or "SQUELCH" control (237) to the extreme clockwise position and then turn it slowly counterclockwise until the noise ceases. Continue the counterclockwise rotation for a very small fraction of a turn. Normally make this adjustment without the engines running.

(c) If the adjustment has been checked and the pilot still complains of excessive noise in the phones at all times, adjust "RELAY" or "SQUELCH" control 237 while the engines are running and omit the small fraction of a turn mentioned in paragraph (b) above.

**11. TESTING REMOTE (PRESS-TO-TALK) OPERATION (USING TEST EQUIPMENT IE-36).**

a. With Control Unit BC-1303 plugged into socket 417 of the rack and Phantom Antenna A-29 in Socket SO-153, throw "T-R-REM." switch 107 on the control unit to "REM."

b. With the switch in this position, test the receiver with headphones and buzzer to make certain that it is operating.

c. In position "REM." depressing the "push-to-talk" button or switch should actuate the transmitter as indicated by a lighted lamp in the phantom antenna.

**12. OVERALL PERFORMANCE TESTS FOR RADIO RECEIVER BC-624-A AND RADIO TRANSMITTER BC-625-A.**

a. **GENERAL.**—If the operation of the equipment is questionable, or if major repairs or adjustments have been made, check the performance of the equipment in accordance with the following procedure. The figures obtained as a result of these tests should agree approxi-

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mately with the normal performance characteristics given in the following tables but in no case should they be below the minimum performance characteristics.

#### b. STANDARD TEST CONDITIONS.

Unless otherwise specified, maintain the following standard test conditions for all performance tests of Radio Receiver BC-624-A, BC-624-AM, and BC-624-C and Radio Transmitter BC-625-A and BC-625-AM.

(1) INTERCONNECTING CORDS. — Connect the transmitter-receiver assembly for operation by means of the radio control box.

(2) TEMPERATURE.—Prevailing ambient, 20°C to 40°C (60°F to 104°F).

(3) HUMIDITY.—25 percent to 90 percent.

(4) ATMOSPHERIC PRESSURE.—Normal.

(5) VIBRATION.—None.

(6) WARM-UP PERIOD.—Not exceeding 5 minutes.

(7) PHANTOM (DUMMY) ANTENNA.—For receiver, a 50-ohm non-inductive resistor (including signal-generator output circuit) in series with Cord CD-477 (5 feet long). For transmitter, a 50-ohm non-inductive power resistor in series with a thermomilliammeter must be connected to the end of Cord CD-477 (5 feet long).

(8) PRIMARY POWER SUPPLY.—See that the line voltage is 28 volts (measured across the input terminals of the dynamotor unit).

(9) SQUELCH CIRCUIT AND AUDIO LEVEL CONTROLS.—Set the squelch circuit "RELAY" control in the extreme clockwise position, rendering the squelch circuit inoperative. Set the "AUDIO" level control in the extreme clockwise position for maximum output.

(10) OUTPUT LOAD (RECEIVER AUDIO).—Non-reactive load of 300 ohms (General Radio output meter) if yellow lead is connected to terminal 6 of audio transformer 296, or 4000 ohms (General Radio output meter) if yellow lead is connected to terminal 7 of audio transformer. If there is no General Radio available, use Test Set I-56-(\*) and a 300-ohm non-reactive resistance in parallel if the yellow lead is connected to terminal 6 of the audio transformer, or a 4000-ohm resistance in parallel if the lead is connected to terminal 7 of the audio transformer.

(11) POWER AMPLIFIER LOADING.—Unless otherwise specified, resonate and load the power amplifier so that with the transmitter "METER SWITCH" in position 3, the 0-1 milliamperes d-c test-milliammeter reading is 0.63.

#### Note

The 0.63 reading is the *maximum* loading point for the heaviest loading channel.

(12) STANDARD MODULATED SIGNAL.—30 percent at 400 cycles.

(13) STANDARD OUTPUT.—10 milliwatts, combined signal and noise.

(14) ADJUSTMENT OF RECEIVER OUTPUT.—Because of the high frequencies involved, special care must be taken with the various cables associated with the test set-up. Before any measurements are made on a new set-up, dress the cables so that with the signal-generator attenuator set at zero, the receiver output (except for noise) is actually zero.

(15) CRYSTAL SELECTION.—For test purposes, space the four channels equally over the 100 to 156-megacycle range. (Refer to par. 10c(3) and succeeding paragraphs for instructions on choosing receiver crystals for desired frequencies and for instructions on receiver channel alignment.) Make all measurements with a Ferris 18C signal generator (or equivalent). It is not possible to use Signal Generator I-96-A for this purpose.

c. METHODS OF MEASUREMENT.—To make performance tests, proceed as follows and record the results on forms similar to the tables in the following paragraphs.

#### (1) SELECTIVITY.

(a) Remove the receiver, transmitter, and rack from the case and using the shortest leads possible, connect the output of a Ferris 18C signal generator (or equivalent) to the control grid of the receiver mixer tube JAN-9003 and to the frame of the r-f unit. Keep these leads as short as possible and in no case let them exceed 1½ inches, otherwise the i-f amplifier may feed back and be difficult to tune properly.

#### CAUTION

Do not allow the output lead to touch the plate terminal 7 of the mixer socket for this may burn out the resistor in the cable terminal box. Take care to see that the clip to the grid of tube JAN-9003 does not short the high voltage.

(b) Place the control-box "T-R-REM." switch in "R" position.

(c) Set the signal generator for a 12-megacycle signal, 30 microvolts output. With a General Radio (or equivalent) output meter connected to the audio-output terminals of the connector panel, adjust the signal-generator tuning control for maximum receiver output and then adjust the receiver "AUDIO" control for a 10-milliwatt output.

(d) Increase the signal generator output to 60 microvolts and adjust its frequency control above and below resonance (12 megacycles) to find the frequencies required to give 10 milliwatts receiver output. Do not change the receiver tuning-control settings. The total bandwidth is the difference in kilocycles between the signal generator settings above and below resonance.

(e) Repeat for 10, 100, 1000 and 10,000 times 30 microvolts output and record the total bandwidths.

\* Any issue letter is applicable.

## SELECTIVITY

Test Frequency	Input in Microvolts	Bandwidth (kilocycles)		
		Normal	Minimum	Maximum
12 Megacycles	30			
Above (kilo-cycles)	Below (kilo-cycles)			
50	60	x2	110	60
87	96	x10	181	200
129	136	x100	265	290
179	176	x1000	355	390
222	238	x10,000	460	490

## (2) NORMAL SENSITIVITY.

(a) Place the transmitter receiver and rack inside the case and connect the standard signal generator (Ferris 18C) through the phantom (dummy) antenna and Cord CD-477 to the antenna input socket 416 located on the rack.

(b) Connect the receiver audio output to the output-power meter as described in paragraph 11c(1)(c). Set the meter impedance at 300 ohms. For a 300-ohm receiver output impedance, connect the yellow wire to terminal 6 of the receiver audio-output transformer 296 for Radio Receiver BC-624-A or BC-624-AM. For Radio Receiver BC-624-C connect to terminal 4 of transformer 200 for the 80-ohm tap. (Terminal 5 is the 800-ohm tap.)

(c) Set the signal-generator to the desired test frequency. Set the output at approximately 5 microvolts. Set the receiver "AUDIO" control in the extreme clockwise position.

(d) Tune the signal generator for maximum receiver audio output. Turn the modulation off\* and adjust the receiver "AUDIO" control for 1 milliwatt noise output.

(e) Turn the modulation on again and adjust the signal generator output for 10 milliwatts audio output (signal plus noise).

(f) Record the signal-generator output setting. This is the sensitivity expressed in microvolts.

## RECEIVER NORMAL SENSITIVITY

Test Frequency (megacycles)	Sensitivity (microvolts)	
	Normal	Minimum
100	3.4	6
124	2.6	6
140	3.1	6
156	3.4	6

\* With the modulation turned off, it is necessary to retune the Ferris 18C signal generator for maximum receiver audio output since this generator shifts frequency slightly when the modulation is turned on or off, particularly at frequencies above 125 megacycles.

## (3) IMAGE-FREQUENCY REJECTION.

(a) Operate the receiver in accordance with the instructions given in paragraph 11b, this section. For a given test frequency, follow the same instructions given in paragraph 11c(2), this section for measuring normal sensitivity. Record the signal-generator output.

(b) Adjust the signal-generator frequency to the image frequency (signal frequency minus twice the intermediate frequency, or 24 megacycles).

(c) Increase the signal-generator output until 10 milliwatts audio output is obtained from the receiver. Record the signal-generator output.

(d) Record the image rejection ratio as the microvolts obtained in subparagraph (c) above, divided by the microvolts obtained in subparagraph (a) above. Repeat for each test frequency.

## IMAGE FREQUENCY REJECTION

Test Frequency (megacycles)	Image-Rejection Ratio	
	Normal	Minimum
156	5,000	1,000
148	14,000	3,000
140	24,100	10,000

## (4) AUTOMATIC GAIN CHARACTERISTIC.

(a) Operate the receiver in accordance with the instructions given in paragraph 11b this section. Channel frequency, 100 megacycles.

(b) Set the signal-generator output at 20 microvolts, 30 percent modulated. Adjust the signal-generator tuning dial for maximum receiver output.

(c) Increase the signal-generator output to 100 microvolts and adjust the "AUDIO" control for 100-milliwatt receiver output.

(d) Reset the signal generator for 20-microvolt output in milliwatts. Repeat for each receiver input listed in the table below.

(e) Calculate the output in decibels, referring to the output for 20-microvolt input as zero level.

## AUTOMATIC GAIN CONTROL CHARACTERISTIC

Input (microvolts)	Output (decibels)	
	Normal	Maximum
20	0	0
50	+1.7	
100	+1.8	+6
1,000	+3.9	
10,000	+5.4	+12
100,000	+5.8	

## (5) AUDIO-FREQUENCY POWER OUTPUT.

(a) Operate the receiver in accordance with the instructions given in par. 11b, this section. Use a channel

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frequency of 100 megacycles and set the receiver "AUDIO" control at maximum (extreme clockwise position).

(b) Record the microvolts input necessary for 75-milliwatt and 300-milliwatt receiver output.

**RECEIVER A-F OUTPUT POWER**

Test Frequency (megacycles)	Receiver Output (milliwatts)	Receiver Input (microvolts)	
		Normal	Maximum
100	75	3.7	7.5
100	300	7.7	15

**(6) RADIO TRANSMITTER BC-625-A OR BC-625-AM POWER OUTPUT.**

(a) Operate the equipment as in par. 11b. Connect Cord CD-477 (5 feet long) to the "PHANTOM ANT." socket on the meter panel of Signal Generator I-96-A and to antenna socket 416 on the rack. Connect the d-c meter cord to the signal generator "D.C. METER" socket and transmitter socket 171.

(b) If Signal Generator I-96-A is not being used, employ Cord CD-477 terminated by a phantom antenna and a 0-500 milliamperere r-f milliammeter.

(c) Tune the transmitter on the channel frequencies listed in the table below. Antenna current may be read on the 0-500 milliamperere r-f milliammeter.

(d) Record the milliammeter readings. Calculate the power output by applying the formula:

$$W = \frac{I^2R}{10^6}$$

where W is the power output in watts, I is the milliammeter reading, and R is the phantom-antenna resistance in ohms.

**TRANSMITTER POWER OUTPUT**

Test Frequency (megacycles)	Power Output (watts)	
	Normal	Minimum
100	7.7	6
110	8.9	6
120	9.7	6
130	9.9	6
140	8.8	6
150	8.1	6
156	7.4	6

**(7) UNDER VOLTAGE AND OVER VOLTAGE TEST.**—Tune the transmitter on four channels and vary the input voltage to the dynamotor from 22 to 32 volts. The transmitter power output should not fall below six watts at any dynamotor input voltage within the 22 to 32-volt range.

**13. OVERALL PERFORMANCE TESTS FOR RADIO RECEIVER BC-624-AM OR BC-624-C.**

a. METHODS OF MEASUREMENT.—Methods of measurement are identical with the methods of measurement for Radio Receiver BC-624-A.

b. SELECTIVITY.

Test Frequency (megacycles)	Input (microvolts)	Bandwidth (kilocycles)		
		Normal	Minimum	Maximum
12	30			
Above	Below			
	x2	120	90	150
	x10	195		230
	x100	280		335
	x1000	385		440
	x10,000			565

c. RECEIVER AUDIO FREQUENCY OUTPUT POWER.

Test Frequency (megacycles)	Receiver Output (milliwatts)	Receiver Input (microvolts)	
		Normal	Maximum
100	100	3.7	7.5
156	500	7.7	15

d. NOISE SUPPRESSOR.—Make a test to determine if there is an appreciable suppression of noise by tuning the receiver to a relatively small signal and then turning on some sort of noise generator such as the ignition system of a motor or an electric drill. With terminals 5 and 8 of JAN-12H6 tube socket shorted together in Radio Receiver BC-624-AM of Radio Receiver BC-624-C, the noise limiter is not operating and considerable interference should be encountered. When this short is removed, the interference should become relatively low.

**Note**

If Signal Generator I-196-A, part of Test Equipment IE-46(\*) is available, it may be used to provide a source of pulse noise in the extreme high-frequency end of the band of the receiver.

e. INPUTS FOR STANDARD OUTPUT.

Input To	Measurement Point	Input Voltage (microvolts)
3rd I. F.	Control grid	130,000
2nd I. F.	Control grid	4,500
1st I. F.	Control grid	150
Mixer	Control grid	30

\* Any issue letter is applicable.

## SECTION VI

### SUPPLEMENTARY DATA

#### 1. CHARACTERISTICS OF RADIO SET SCR-522-A.

- a.* FREQUENCY RANGE.—100 to 156 megacycles.
- b.* POWER SUPPLY. — Input to dynamotor: 28 volts. (14 volts for Radio Set SCR-542-A.)
- Output: Positive 300 volts, negative 150 volts, positive 13 volts.
- c.* TYPICAL INPUT CURRENT REQUIREMENTS.—Radio Set SCR-522-A: Transmission: 11.5 to 12.5 amperes, 28 volts. Reception: 11.1 amperes, 28 volts.
- Radio Set SCR-542-A: Transmission: 23.0 amperes, 14 volts. Reception: 22.2 amperes, 14 volts.
- d.* TYPE OF MODULATION.—Amplitude.
- e.* METHOD OF MODULATION.—Plate.
- f.* BEAT FREQUENCY OSCILLATOR.—None.
- g.* CRYSTAL FILTER.—None.
- b.* SQUELCH CIRCUIT CHARACTERISTICS.—Sensitivity 0-20, 20-250 microvolts (Radio Receiver BC-624-A). 0-8, 8-20 (Radio Receiver BC-624-AM or BC-624-C).

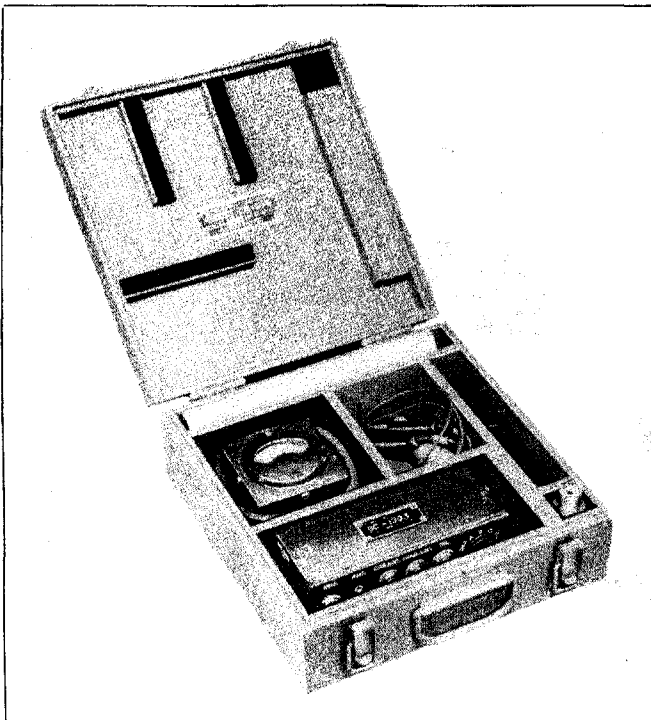


Figure 6-1. Test Equipment IE-36

#### 2. TYPES OF RADIO JAMMING.

Types of jamming likely to be employed by the enemy are:

- a.* "Spark" jamming, the familiar type of noise obtained from small electric motors, razors, ignition systems, etc.
- b.* "Sweep-through" jamming, the result of sweeping a carrier back and forth across a frequency band at a relatively rapid rate (100 to 600 cycles per second). The resulting noise is much like that of an airplane engine.
- c.* "Stepped tone" jamming, a monotonous repetition of three to five audio tones which resembles the Scotch bagpipe. The Germans use this regularly.
- d.* "Noise" jamming, sounding the same as noise which is heard when the gain is turned up on a radio receiver not tuned to a signal. It may easily be mistaken for receiver noise.
- e.* Combinations of any of the above types of jamming.

#### 3. TUBE COMPLEMENT.

Quantity	Army-Navy Type	Equivalent VT Numbers	Function
1	Tube JAN-832	VT-118	2nd harmonic amplifier
1	Tube JAN-832	VT-118	R-F power amplifier
1	Tube JAN-12A6	VT-134	Harmonic amplifier
2	Tube JAN-12A6	VT-134	Modulator
1*	Tube JAN-12J5GT	VT-135	A-F amplifier
1	Tube JAN-12C8	VT-169	2nd detector, AVC, a-f amplifier
1†	Tube JAN-12A6	VT-134	Audio output
1	Tube JAN-6G6G	VT-198-A	Transmitter oscillator
1‡	Tube JAN-6SS7	VT-199	R-F indicator
1	Tube JAN-6SS7	VT-199	Speech amplifier
1	Tube JAN-9002	VT-202	Harmonic generator
1	Tube JAN-9003	VT-203	R-F amplifier
1	Tube JAN-9003	VT-203	Mixer
1	Tube JAN-9003	VT-203	Harmonic amplifier
1	Tube JAN-12AH7GT	VT-207	Oscillator and audio squelch

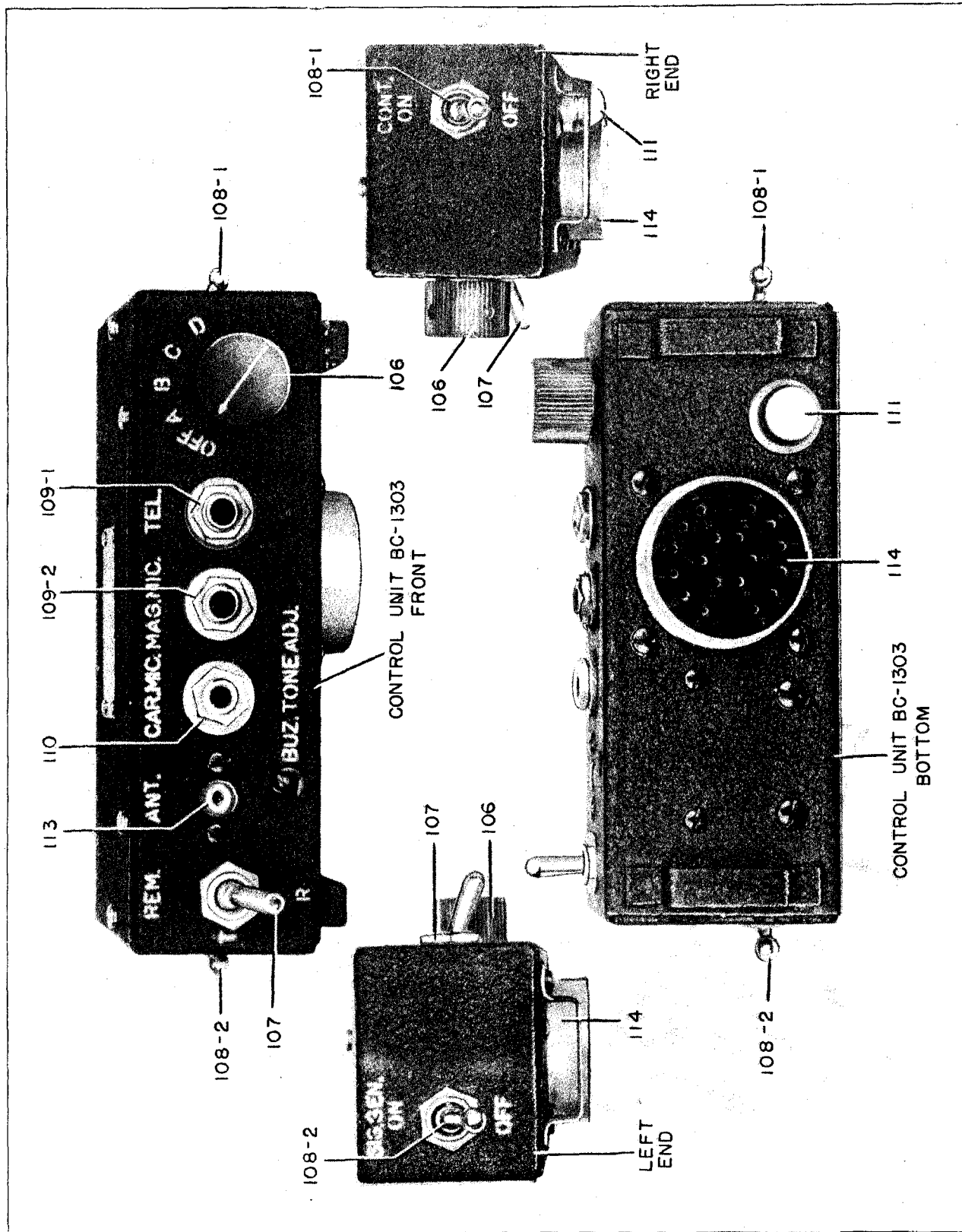


Figure 6-2. Control Unit BC-1303—Part of Test Equipment IE-36



Quantity	Army-Navy Type	Equivalent VT Numbers	Function
1§	Tube JAN-12AH7GT	VT-207	AVC delay, 1st audio
3	Tube JAN-12SG7	VT-209	I-F amplifier
1	Tube JAN-12H6	VT-214	AVC delay diode, noise limiter diode

\* Not included in Radio Receiver BC-624-C.

† Included in Radio Receiver BC-624-C only.

‡ Deleted from later models of Radio Transmitter BC-625-A and all models of Radio Transmitter BC-625-AM.

§ Included in Radio Receiver BC-624-C only.

|| Included in Radio Receiver BC-624-AM, and BC-624-C. This tube is detector diode and noise limiter diode in Radio Receiver BC-624-C.

**TABLE 6-1. CRYSTAL FREQUENCY CHART**

Carrier f	Crystals	
	Receive	Trans.
100.08	8007.27	5560.0
100.26	8023.64	5570.0
100.44	8040.00	5580.0
100.62	8056.36	5590.0
100.80	8072.73	5600.0
100.98	8089.09	5610.0
101.16	8105.45	5620.0
101.34	8121.82	5630.0
101.52	8138.18	5640.0
101.70	8154.55	5650.0
101.88	8170.91	5660.0
102.06	8187.27	5670.0
102.24	8203.64	5680.0
102.42	8220.00	5690.0
102.60	8236.36	5700.0
102.78	8252.73	5710.0
102.96	8269.09	5720.0
103.14	8285.45	5730.0
103.32	8301.82	5740.0
103.50	8318.18	5750.0
103.68	8334.55	5760.0
103.86	8350.91	5770.0
104.04	8367.27	5780.0
104.22	8383.64	5790.0
104.40	8400.00	5800.0
104.58	8416.36	5810.0
104.76	8432.73	5820.0
104.94	8449.09	5830.0
105.12	8465.45	5840.0
105.30	8481.82	5850.0
105.48	8498.18	5860.0
105.66	8514.55	5870.0

Carrier f	Crystals	
	Receive	Trans.
105.84	8530.91	5880.0
106.02	8547.27	5890.0
106.20	8563.64	5900.0
106.38	8580.00	5910.0
106.56	8596.36	5920.0
106.74	8612.73	5930.0
106.92	8629.09	5940.0
107.10	8645.45	5950.0
107.28	8661.82	5960.0
107.46	8678.18	5970.0
107.64	8694.55	5980.0
107.82	8710.91	5990.0
108.00	8000.00	6000.0
108.18	8015.00	6010.0
108.36	8030.00	6020.0
108.54	8045.00	6030.0
108.72	8060.00	6040.0
108.90	8075.00	6050.0
109.08	8090.00	6060.0
109.26	8105.00	6070.0
109.44	8120.00	6080.0
109.62	8135.00	6090.0
109.80	8150.00	6100.0
109.98	8165.00	6110.0
110.16	8180.00	6120.0
110.34	8195.00	6130.0
110.52	8210.00	6140.0
110.70	8225.00	6150.0
110.88	8240.00	6160.0
111.06	8255.00	6170.0
111.24	8270.00	6180.0
111.42	8285.00	6190.0
111.60	8300.00	6200.0
111.78	8315.00	6210.0
111.96	8330.00	6220.0
112.14	8345.00	6230.0
112.32	8360.00	6240.0
112.50	8375.00	6250.0
112.68	8390.00	6260.0
112.86	8405.00	6270.0
113.04	8420.00	6280.0
113.22	8435.00	6290.0
113.40	8450.00	6300.0
113.58	8465.00	6310.0
113.76	8480.00	6320.0

TABLE 6-1. CRYSTAL FREQUENCY CHART (Continued)

Carrier <i>f</i>	Crystals		Carrier <i>f</i>	Crystals	
	Receive	Trans.		Receive	Trans.
113.94	8495.00	6330.0	121.86	8450.77	6770.0
114.12	8510.00	6340.0	122.04	8464.62	6780.0
114.30	8525.00	6350.0	122.22	8478.46	6790.0
114.48	8540.00	6360.0	122.40	8492.31	6800.0
114.66	8555.00	6370.0	122.58	8506.15	6810.0
114.84	8570.00	6380.0	122.76	8520.00	6820.0
115.02	8585.00	6390.0	122.94	8533.85	6830.0
115.20	8600.00	6400.0	123.12	8547.69	6840.0
115.38	8615.00	6410.0	123.30	8561.54	6850.0
115.56	8630.00	6420.0	123.48	8575.38	6860.0
115.74	8645.00	6430.0	123.66	8589.23	6870.0
115.92	8660.00	6440.0	123.84	8603.08	6880.0
116.10	8007.69	6450.0	124.02	8001.43	6890.0
116.28	8021.54	6460.0	124.20	8014.29	6900.0
116.46	8035.38	6470.0	124.38	8027.14	6910.0
116.64	8049.23	6480.0	124.56	8040.00	6920.0
116.82	8063.08	6490.0	124.74	8052.86	6930.0
117.00	8076.92	6500.0	124.92	8065.71	6940.0
117.18	8090.77	6510.0	125.10	8078.57	6950.0
117.36	8104.62	6520.0	125.28	8091.43	6960.0
117.54	8118.46	6530.0	125.46	8104.29	6970.0
117.72	8132.31	6540.0	125.64	8117.14	6980.0
117.90	8146.15	6550.0	125.82	8130.00	6990.0
118.08	8160.00	6560.0	126.00	8142.86	7000.0
118.26	8173.85	6570.0	126.18	8155.71	7010.0
118.44	8187.69	6580.0	126.36	8168.57	7020.0
118.62	8201.54	6590.0	126.54	8181.43	7030.0
118.80	8215.38	6600.0	126.72	8194.29	7040.0
118.98	8229.23	6610.0	126.90	8207.14	7050.0
119.16	8243.08	6620.0	127.08	8220.00	7060.0
119.34	8256.92	6630.0	127.26	8232.86	7070.0
119.52	8270.77	6640.0	127.44	8245.71	7080.0
119.70	8284.62	6650.0	127.62	8258.57	7090.0
119.88	8298.46	6660.0	127.80	8271.43	7100.0
120.06	8312.31	6670.0	127.98	8284.29	7110.0
120.24	8326.15	6680.0	128.16	8297.14	7120.0
120.42	8340.00	6690.0	128.34	8310.00	7130.0
120.60	8353.85	6700.0	128.52	8322.86	7140.0
120.78	8367.69	6710.0	128.70	8335.71	7150.0
120.96	8381.54	6720.0	128.88	8348.57	7160.0
121.14	8395.38	6730.0	129.06	8361.43	7170.0
121.32	8409.23	6740.0	129.24	8374.29	7180.0
121.50	8423.08	6750.0	129.42	8387.14	7190.0
121.68	8436.92	6760.0	129.60	8400.00	7200.0

TABLE 6-1. CRYSTAL FREQUENCY CHART (Continued)

Carrier <i>f</i>	Crystals		Carrier <i>f</i>	Crystals	
	Receive	Trans.		Receive	Trans.
129.78	8412.86	7210.0	137.70	8380.00	7650.0
129.96	8425.71	7220.0	137.88	8392.00	7660.0
130.14	8438.57	7230.0	138.06	8404.00	7670.0
130.32	8451.43	7240.0	138.24	8416.00	7680.0
130.50	8464.29	7250.0	138.42	8428.00	7690.0
130.68	8477.14	7260.0	138.60	8440.00	7700.0
130.86	8490.00	7270.0	138.78	8452.00	7710.0
131.04	8502.86	7280.0	138.96	8464.00	7720.0
131.22	8515.71	7290.0	139.14	8476.00	7730.0
131.40	8528.57	7300.0	139.32	8488.00	7740.0
131.58	8541.43	7310.0	139.50	8500.00	7750.0
131.76	8554.29	7320.0	139.68	8512.00	7760.0
131.94	8567.14	7330.0	139.86	8524.00	7770.0
132.12	8008.00	7340.0	140.04	8002.50	7780.0
132.30	8020.00	7350.0	140.22	8013.75	7790.0
132.48	8032.00	7360.0	140.40	8025.00	7800.0
132.66	8044.00	7370.0	140.58	8036.25	7810.0
132.84	8056.00	7380.0	140.76	8047.50	7820.0
133.02	8068.00	7390.0	140.94	8058.75	7830.0
133.20	8080.00	7400.0	141.12	8070.00	7840.0
133.38	8092.00	7410.0	141.30	8081.25	7850.0
133.56	8104.00	7420.0	141.48	8092.50	7860.0
133.74	8116.00	7430.0	141.66	8103.75	7870.0
133.92	8128.00	7440.0	141.84	8115.00	7880.0
134.10	8140.00	7450.0	142.02	8126.25	7890.0
134.28	8152.00	7460.0	142.20	8137.50	7900.0
134.46	8164.00	7470.0	142.38	8148.75	7910.0
134.64	8176.00	7480.0	142.56	8160.00	7920.0
134.82	8188.00	7490.0	142.74	8171.25	7930.0
135.00	8200.00	7500.0	142.92	8182.50	7940.0
135.18	8212.00	7510.0	143.10	8193.75	7950.0
135.36	8224.00	7520.0	143.28	8205.00	7960.0
135.54	8236.00	7530.0	143.46	8216.25	7970.0
135.72	8248.00	7540.0	143.64	8227.50	7980.0
135.90	8260.00	7550.0	143.82	8238.75	7990.0
136.08	8272.00	7560.0	144.00	8250.00	8000.0
136.26	8284.00	7570.0	144.18	8261.25	8010.0
136.44	8296.00	7580.0	144.36	8272.50	8020.0
136.62	8308.00	7590.0	144.54	8283.75	8030.0
136.80	8320.00	7600.0	144.72	8295.00	8040.0
136.98	8332.00	7610.0	144.90	8306.25	8050.0
137.16	8344.00	7620.0	145.08	8317.50	8060.0
137.34	8356.00	7630.0	145.26	8328.75	8070.0
137.52	8368.00	7640.0	145.44	8340.00	8080.0

$$R_x = \frac{f-12}{16}$$

$$T_x = f/18$$

TABLE 6-1. CRYSTAL FREQUENCY CHART (Continued)

Carrier f	Crystals		Carrier f	Crystals	
	Receive	Trans.		Receive	Trans.
145.62	8351.25	8090.0	150.84	8167.06	8380.0
145.80	8362.50	8100.0	151.02	8177.65	8390.0
145.98	8373.75	8110.0	151.20	8188.24	8400.0
146.16	8385.00	8120.0	151.38	8198.82	8410.0
146.34	8396.25	8130.0	151.56	8209.41	8420.0
146.52	8407.50	8140.0	151.74	8220.00	8430.0
146.70	8418.75	8150.0	151.92	8230.59	8440.0
146.88	8430.00	8160.0	152.10	8241.18	8450.0
147.06	8441.25	8170.0	152.28	8251.76	8460.0
147.24	8452.50	8180.0	152.46	8262.35	8470.0
147.42	8463.75	8190.0	152.64	8272.94	8480.0
147.60	8475.00	8200.0	152.82	8283.53	8490.0
147.78	8486.25	8210.0	153.00	8294.12	8500.0
147.96	8497.50	8220.0	153.18	8304.71	8510.0
148.14	8008.24	8230.0	153.36	8315.29	8520.0
148.32	8018.82	8240.0	153.54	8325.88	8530.0
148.50	8029.41	8250.0	153.72	8336.47	8540.0
148.68	8040.00	8260.0	153.90	8347.06	8550.0
148.86	8050.59	8270.0	154.08	8357.65	8560.0
149.04	8061.18	8280.0	154.26	8368.24	8570.0
149.22	8071.76	8290.0	154.44	8378.82	8580.0
149.40	8082.35	8300.0	154.62	8389.41	8590.0
149.58	8092.94	8310.0	154.80	8400.00	8600.0
149.76	8103.53	8320.0	154.98	8410.59	8610.0
149.94	8114.12	8330.0	155.16	8421.18	8620.0
150.12	8124.71	8340.0	155.34	8431.76	8630.0
150.30	8135.29	8350.0	155.52	8442.35	8640.0
150.48	8145.88	8360.0	155.70	8452.94	8650.0
150.66	8156.47	8370.0	155.88	8463.53	8660.0

TABLE 6-2. MODIFICATIONS OF MAJOR ASSEMBLIES OF RADIO SET SCR-522-A

Previous Model Number	Latest Model Number	Modification
Radio Transmitter BC-625-A	Radio Transmitter BC-625-A (modified)	1. R.F. indicator diode removed; filament circuits rewired.
Radio Transmitter BC-625-A	Radio Transmitter BC-625-AM	1. Slow release relay, 130, removed.
Radio Receiver BC-624-A	Radio Receiver BC-624-AM	1. Field modified to include tube JAN-12H6, noise suppressor and AVC delay. 2. Factory modified to include tube JAN-12H6, noise suppressor and AVC delay.
	BC-624-C	1. Tube JAN-12AH7GT added as first audio and AVC delay. 2. Squelch audio tube JAN-12AH7GT now furnishes squelch bias to the grid of the first audio tube JAN-12AH7GT instead of operating the squelch relay. 3. Third audio tube JAN-12A6 added. 4. Tube JAN-12C8 changed to AVC and second audio circuit. 5. New output transformer added. 6. JAN-12H6 is noise limiter and second detector. 7. An oil-filled paper capacitor replaces the electrolytic filter (Ref. 212).

**TABLE 6-2. MODIFICATIONS OF MAJOR ASSEMBLIES OF RADIO SET SCR-522-A (Continued)**

<i>Previous Model Number</i>	<i>Latest Model Number</i>	<i>Modification</i>
Rack FT-244-A	Unchanged	1. Mounting FT-488 added.
Case CS-80-A	Case CS-80-C	
Radio Control Box BC-602-A	Radio Control Box BC-602-B	1. Socket 607 and associated wiring removed.
Jack Box BC-629-A	Jack Box BC-629-AM	1. Field modified to include audio volume control by T. O. #08-10-105.
	Jack Box BC-629-B	1. Factory modified to include audio volume control.
Jack Box BC-630-A	Unchanged	1. Audio volume control and limiting resistor added.
Jack Box BC-631-A	Jack Box BC-631-B	
Junction Box JB-29-A	Unchanged	(No longer used in installations.)
Dynamotor Unit PE-94-A, Dynamotor Unit PE-94-B	Dynamotor Unit PE-94-C	1. Addition of Mounting FT-298. 2. Addition of improved input, and output filters.

**TABLE 6-3. COMPONENT DIFFERENCES BETWEEN RADIO RECEIVER BC-624-A AND BC-624-AM**

Most of the material provided in Radio Receiver BC-624-AM is also used elsewhere in Radio Set SCR-522-A. The material now in the depots may be used to service

both Radio Receiver BC-624-A and BC-624-AM. The following table shows the differences between Radio Receiver BC-624-A and BC-624-AM.

<i>Reference Number</i>		<i>Description</i>	<i>Function</i>
<i>BC-624-A</i>	<i>BC-624-AM</i>		
206-23		Capacitor: 6800 micromicrofarads.	3rd i-f grid bypass
209		Capacitor: 100 micromicrofarads.	Audio diode bypass
211A		Capacitor: 100,000 micromicrofarads.	1st audio cathode bypass
211B		Capacitor: 100,000 micromicrofarads.	1st audio screen bypass
211C		Capacitor: 100,000 micromicrofarads.	AVC filter
	211-1A	Capacitor: 100,000 micromicrofarads.	1st audio cathode bypass
	211-1B	Capacitor: 100,000 micromicrofarads.	1st audio screen bypass
	211-1C	Capacitor: 100,000 micromicrofarads.	AVC filter
	211-2A	Capacitor: 100,000 micromicrofarads.	Limiter filter
	211-2B	Capacitor: 100,000 micromicrofarads.	Limiter filter
	211-2C	Capacitor: 100,000 micromicrofarads.	2nd i-f grid bypass
	219	Capacitor: 1000 micromicrofarads.	Limiter cathode bypass
	243-7	Tube socket.	Limiter and AVC delay
252-2		Resistor: 100,000 ohms.	Audio diode load
	253-3	Resistor: 330 ohms.	AVC delay
	254-3	Resistor: 6800 ohms.	AVG delay
264		Resistor: 10,000 ohms.	Oscillator plate filter
	264-1	Resistor: 10,000 ohms.	Oscillator plate filter
	264-2	Resistor: 10,000 ohms.	Audio diode load
271		Resistor: 82,000 ohms.	3rd i-f screen dropping
	271-2	Resistor: 82,000 ohms.	Limiter filter
272		Resistor: 120,000 ohms.	Audio squelch compensating
	272-1	Resistor: 120,000 ohms.	Audio squelch compensating
	272-2	Resistor: 120,000 ohms.	Limiter load
276		Resistor: 18,000 ohms.	AVC delay
	276-1	Resistor: 18,000 ohms.	AVC delay
	276-2	Resistor: 18,000 ohms.	Audio diode load
279-3		Resistor: 47,000 ohms.	Audio diode load
	279-4	Resistor: 47,000 ohms.	3rd i-f screen dropping
280		Resistor: 1.0 megohms.	3rd i-f grid leak
	JAN-12H6	Tube	Noise limiter and AVC delay



## **SECTION VII**

### **PARTS CATALOGUE**

#### *Introduction*

##### *Table of Parts*

The parts listed in this table do not constitute a complete electrical and mechanical breakdown of the equipment. The table lists all electrical parts together with such operative mechanical parts as are subject to loss or failure, with the exception of structural and minor parts such as standard bolts, screws, nuts, and the like. In some instances individual detail parts of a sub-assembly may not be listed as separate items, since replacement of such items is impractical.

##### *Ordering of Spare Parts*

Each Service using this list has established certain depots and service groups for the storage and issue of spare parts to its organizations requiring them. The regulations of each Service should be studied to determine the method and source for requisitioning spare parts. The information in this list, as to manufacturer's or contractor's name, type, model, or drawing number, is not to be interpreted as authorization to field agencies to attempt to purchase identical or comparable spare parts directly from the manufacturer or a wholesale or retail store except under emergency conditions as covered by existing regulations of the Service concerned.

*U. S. Army Personnel:* This table is for information *only* and is not to be used as a basis for requisitioning parts. Authorities for obtaining maintenance items are as follows: 1. For using organizations: applicable Service publications of the 00-30 series of AAF Technical Orders. 2. For higher maintenance and supply echelons: applicable Service publications of the 08-55 series of AAF Technical Orders.

TABLE 7-1. RMA COLOR CODE

CAPACITORS (MMFD)			
COLOR	NUMERAL	VOLTS	MULTIPLIER TOLERANCE
BLACK	0		1
BROWN	1	100	10
RED	2	200	100
ORANGE	3	300	1,000
YELLOW	4	400	10,000
GREEN	5	500	100,000
BLUE	6	600	1,000,000
VIOLET	7	700	10,000,000
GRAY	8	800	100,000,000
WHITE	9	900	1,000,000,000
GOLD		1000	0.1
SILVER		2000	0.01
NO COLOR		500	20%

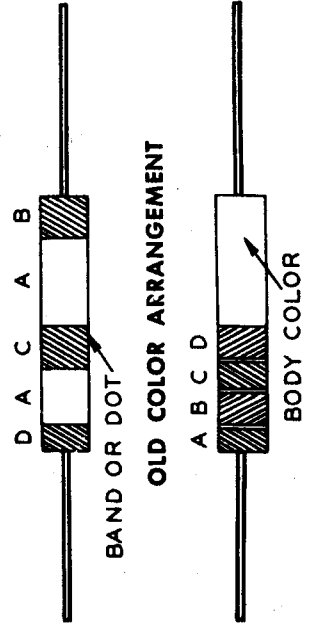
RESISTORS (OHMS)			
COLOR	A 1st DIGIT	B 2nd DIGIT	C MULTIPLIER
SILVER			0.01
GOLD			0.1
BLACK		0	1.0
BROWN	1	1	10
RED	2	2	100
ORANGE	3	3	1,000
YELLOW	4	4	10,000
GREEN	5	5	100,000
BLUE	6	6	1,000,000
PURPLE	7	7	10,000,000
GRAY	8	8	100,000,000
WHITE	9	9	

RESISTORS

COLOR	A 1st DIGIT	B 2nd DIGIT	C MULTIPLIER
SILVER			0.01
GOLD			0.1
BLACK		0	1.0
BROWN	1	1	10
RED	2	2	100
ORANGE	3	3	1,000
YELLOW	4	4	10,000
GREEN	5	5	100,000
BLUE	6	6	1,000,000
PURPLE	7	7	10,000,000
GRAY	8	8	100,000,000
WHITE	9	9	

D — TOLERANCE CODE:

GOLD = 5% SILVER = 10% NO COLOR = 20%



OLD COLOR ARRANGEMENT

NEW COLOR ARRANGEMENT

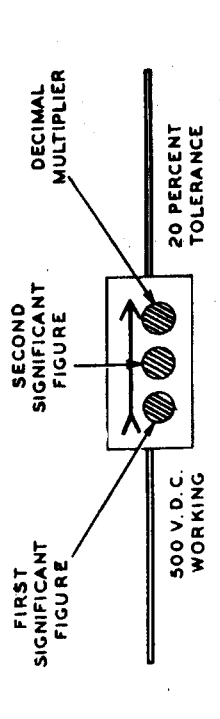
BODY COLOR (NEW COLOR ARRANGEMENT ONLY) INDICATES TYPE OF RESISTOR, AS FOLLOWS:—

BLACK — COMPOSITION, NON-INSULATED

TAN, OLIVE OR WHITE — COMPOSITION, INSULATED

DARK BROWN — WIRE-WOUND, INSULATED

CAPACITORS (MMFD)



COLOR	NUMERAL	VOLTS	MULTIPLIER TOLERANCE
BLACK	0		1
BROWN	1	100	10
RED	2	200	100
ORANGE	3	300	1,000
YELLOW	4	400	10,000
GREEN	5	500	100,000
BLUE	6	600	1,000,000
VIOLET	7	700	10,000,000
GRAY	8	800	100,000,000
WHITE	9	900	1,000,000,000
GOLD		1000	0.1
SILVER		2000	0.01
NO COLOR		500	20%

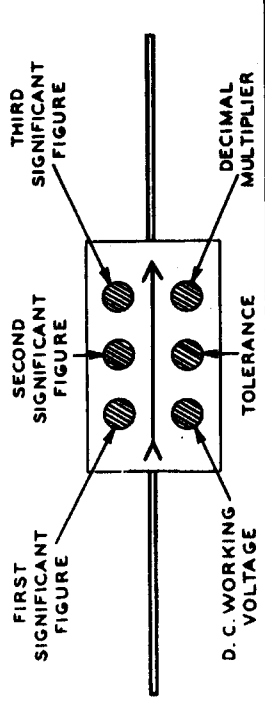
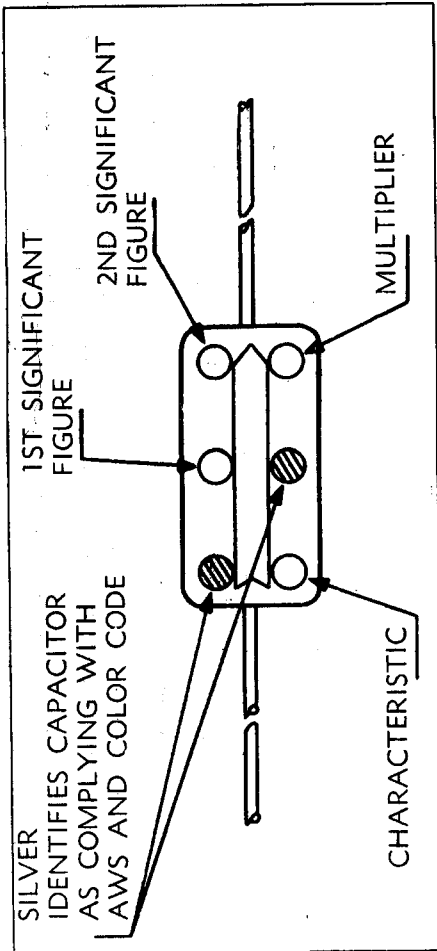




TABLE 7-2. AWS COLOR CODE FOR FIXED MOLDED PAPER DIELECTRIC CAPACITORS



NOTE: Capacitance in micromicrofarads.

**AWS TYPE DESIGNATION**

The type designation of fixed molded paper-dielectric capacitors is in the following form:

CN 10 A 300

CN—Component designation, fixed paper-dielectric.

10—Case designation; identifies type and physical dimensions.

A—Characteristic.

300—Capacitance in micromicrofarads.

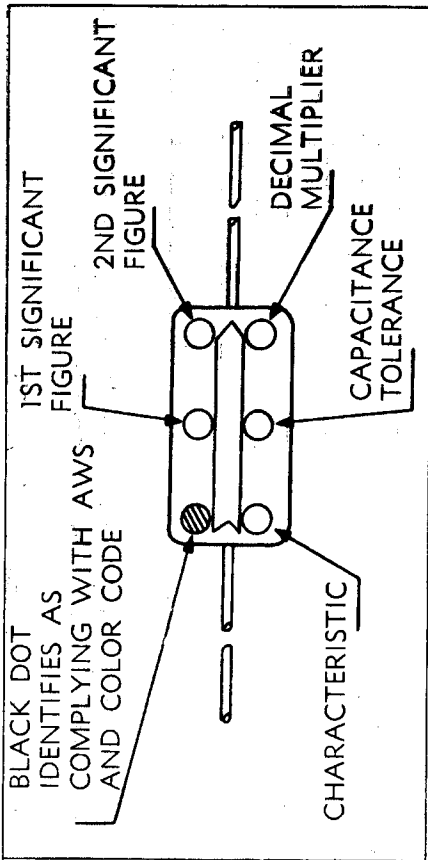
**CHARACTERISTICS**

Color	Significant Figure	Multiplier	Letter Reference	Operating Temperature Range		Maximum Capacitance Reduction +20°C to -40°C	Tolerance in %
				Centigrade	Fahrenheit		
Black	0	1	A	-55 to +85	-67 to +185	10%	+60, -20
Brown	1	10	B	-55 to +75	-67 to +167	10%	+60, -20
Red	2	100					
Orange	3	1000					
Yellow	4						
Green	5						
Blue	6						
Violet	7						
Gray	8						
White	9						

EXAMPLE: Upper left dot, silver; upper center dot, orange; upper right dot, black; lower left dot, black; lower center dot, silver; lower right dot, brown.

AWS type designation: CN 10 A 300.  
Capacitance: 300 micromicrofarads.

TABLE 7-3. AWS COLOR CODE FOR FIXED MICA DIELECTRIC CAPACITORS



NOTE: Capacitance in micromicrofarads.

Color	Significant Figure	Decimal Multiplier	Tolerance		Characteristic
			%	Letter Reference	
Black	0	1			A
Brown	1	10			B
Red	2	100	2%	G	C
Orange	3	1000			D
Yellow	4				E
Green	5				F
Blue	6				G
Violet	7				
Gray	8				
White	9				
Gold		0.1	5%	J	
Silver		0.01	10%	K	
Black			20%	M	

EXAMPLE: Upper left dot, black; upper center dot, green; upper\*right dot, black; lower left dot, black; lower center dot, black; upper right dot, black.

AWS Type: CM 20 A 050 M.  
Capacitance: 50 micromicrofarads.

AWS color code.  
Fixed Mica-dielectric capacitors.

CHARACTERISTIC

Letter designation	Figure of merit	Temp. K parts/million/degree C	Maximum capacitance drift
A	Not specified	Not specified	Not specified
B	-200 to +200		0.5%
C	See table II		0.2%
D	0 to +100		0.05%
E	0 to +50		0.025%
F	0 to -50		0.025%
G			

TABLE I. CHARACTERISTICS

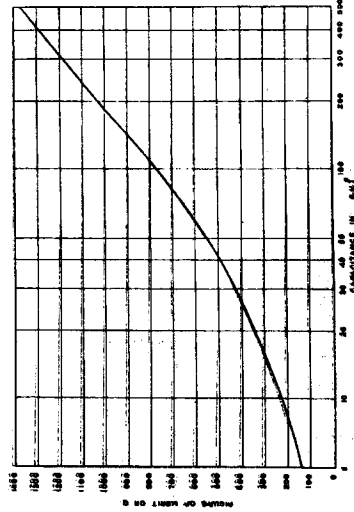


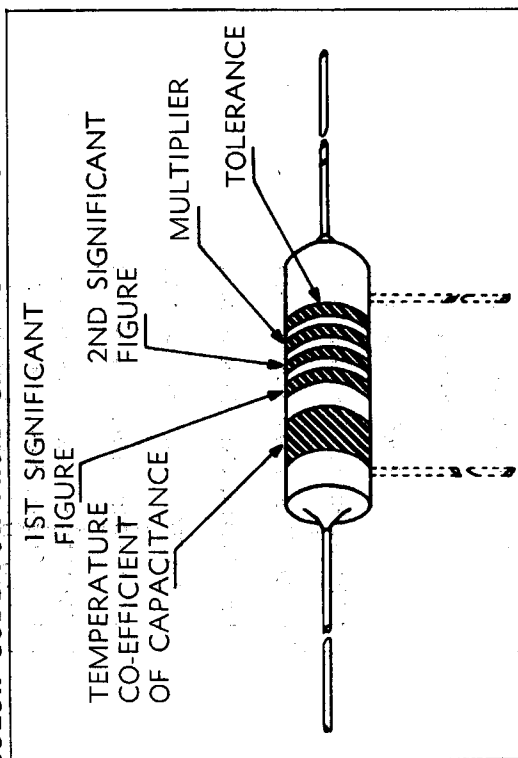
TABLE II. FIGURE OF MERIT

Figure of merit of Q for capacitors of characteristics other than A and for which current ratings are not listed, when measured at 1 megacycle shall be not less than the value given in this table. For capacitances larger than 500 micromicrofarads, the value of Q shall be larger than 1500.

TYPE DESIGNATION: AWS mica dielectric capacitors are numbered by the following system:— CM 20 A 050 M

CM—Component designation, fixed mica dielectric.  
20 — Case designation, identifies particular type and class.  
A — Characteristic.  
050 — Capacitance in micromicrofarads.  
M — Capacitance tolerance.

TABLE 7-4. AWS COLOR CODE FOR FIXED CERAMIC DIELECTRIC CAPACITORS



**AWS TYPE DESIGNATION**  
 Type designation of fixed ceramic-dielectric capacitors is in the following form:  
 CC 25 SL 100 G  
 CC—Component designation, fixed ceramic-dielectric capacitors.  
 25—Style; identifies size and shape.  
 SL—First letter, temp. coefficient; second letter, tolerance of temp. coefficient.  
 100—Capacitance value in micro-microfarads.  
 G—Capacitance tolerance.

**NOTE:** 1. Leads may be coaxial or terminal.  
 2. Inner electrode at broad band end.  
 3. Capacitance in micro-microfarads.  
 4. Broad band and four narrow bands identifies as complying with AWS color code.

Color	Significant Figure	Multiplier	± Tolerance of Capacitance		Temp. co-eff. of capacitance Parts/million degrees C		
			Capacitors greater than 10				
			Tolerance in %	Letter Symbol		Tolerance in %	Letter Symbol
Black	0	1	20	(M)	2.0	(G)	0
Brown	1	10	1	(F)			-30
Red	2	100	2	(G)			-80
Orange	3	1000					-150
Yellow	4						-220
Green	5		5	(J)			-330
Blue	6						-470
Violet	7						-750
Gray	8	0.01			0.25	(C)	+30
White	9	0.1	10	(K)	1.0	(F)	-300 +500

**EXAMPLE:** Broad band, green; 1st narrow band, brown; 2nd narrow band, black; 3rd narrow band, brown; 4th narrow band, red.

AWS Type: CC 25 SL 100 G.

Capacitance: 100 micro-microfarads.

## TABLE OF REPLACEABLE PARTS

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
200	2Z9632-341	TRANSFORMER, AF: Output, pri. 440 ohms; sec. 73 ohms; pri. impedance 7500 ohms; sec. impedance 3-5 667 ohms; sec. 3-4 50 ohms 2-9/16" lg x 1-7/16" high x 1-7/8" wide.	Output Transformer	Bendix No. A117038	A117038
201	3K2010024	CAPACITOR, Fixed: Mica, 10 mmf, $\pm 20\%$ , 500 v.d.c., 11/16" x 13/64" x 7/16"; 1-1/4" No. 20 AWG lead alloy coated pigtailed, molded low loss bakelite case.	R.F. Grid Coupling	Aerovox Type 1468SK or 1468LST Cornell-Dubilier Type 5WST or 5WLSL Solar Type MOFW Erie Type N750	C58469-100 (Pref. 1)
202-1	3K2010014	CAPACITOR, Fixed: Mica, 680 mmf $\pm 20\%$ , 300 volt v.d.c.w., 11/16" x 13/64" x 7/16"; 1-1/4" No. 20 leads, bakelite case, to be wax impregnated or otherwise suitably protected against entrance of moisture.	R.F. Cathode Bypass	Aerovox Type 1468K or 1468LST Cornell-Dubilier type 5WST or 5WLSL Solar Type MOFW	C60329-100 (Alt. Pref. 2) C58469-681
202-2	3D9680-7	CAPACITOR, Fixed: Same as 202-1.	R-F AVC Filter		
202-3	3D9680-8	CAPACITOR, Fixed: Same as 202-1.	R-F Screen Bypass		
202-4		CAPACITOR, Fixed: Same as 202-1.	R-F Plate Bypass to Cathode		
202-5		CAPACITOR, Fixed: Same as 202-1.	R-F Plate Bypass to Ground		
202-6		CAPACITOR, Fixed: Same as 202-1.	Mixer Cathode Bypass		
202-7		CAPACITOR, Fixed: Same as 202-1.	Mixer Screen Bypass		
202-8		CAPACITOR, Fixed: Same as 202-1.	Harm. Amp. B+ Filter		
202-9		CAPACITOR, Fixed: Same as 202-1.	Harm. Amp. Plate Bypass to Cathode		
202-10		CAPACITOR, Fixed: Same as 202-1.	Harm. Amp. Plate Bypass to Ground		
202-11		CAPACITOR, Fixed: Same as 202-1.	Harm. Amp. Cathode Bypass		
202-12		CAPACITOR, Fixed: Same as 202-1.	Harm. Amp. Screen Bypass		
202-13		CAPACITOR, Fixed: Same as 202-1.	Harm. Generator Plate Bypass		
202-14		CAPACITOR, Fixed: Same as 202-1.	Harm. Generator Plate Bypass		
202-15		CAPACITOR, Fixed: Same as 202-1.	Harm. Generator Cathode Bypass		
202-16		CAPACITOR, Fixed: Same as 202-1.	R-F B+ Filter		
202-17		CAPACITOR, Fixed: Same as 202-1.	Audio B+ Filter		
202-18		CAPACITOR, Fixed: Same as 202-1.	R-F Heater Bypass		

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202-19	CAPACITOR, Fixed: Same as 202-1.	Mixer Heater Bypass		
202-20	CAPACITOR, Fixed: Same as 202-1.	Mixer Heater Bypass		
202-21	CAPACITOR, Fixed: Same as 202-1.	Harm. Amp. Heater Bypass		
202-22	CAPACITOR, Fixed: Same as 202-1.	Harm. Amp. Heater Bypass		
202-23	CAPACITOR, Fixed: Same as 202-1.	Harm. Generator Heater Bypass		
202-24	CAPACITOR, Fixed: Same as 202-1.	1st I-F Suppressor Bypass		
202-25	CAPACITOR, Fixed: Same as 202-1.	2nd I-F Suppressor Bypass		
202-26	CAPACITOR, Fixed: Same as 202-1.	3rd I-F Suppressor Bypass		
202-27	CAPACITOR, Fixed: Same as 202-1.	Oscillator Plate Coil Bypass		
202-28	CAPACITOR, Fixed: Same as 202-1.	Limited Cathode Bypass		
202-29	CAPACITOR, Fixed: Same as 202-1.	Audio Compensating		
202-30	CAPACITOR, Fixed: Same as 202-1.	Diode R-F Bypass		
203-1	CAPACITOR, Fixed: 47 mmf, $\pm 20\%$ , 500 v.d.c.w., mica, bakelite case; each unit shall be aged and wax impregnated; or otherwise suitably protected against entrance of moisture; 11/16" lg x 7/16" high x 13/64" wide; leads to be No. 20 AWG, tinned copper wire 1-1/4"	Mixer Grid Coupling	Aerovox Type 1468ST or 1468LST Cornell-Dubilier Type 5ST or 5WST Solar MOFW or MDCW Erie Type N750	C58469-470 (Pref. 1)  C60329-470 (Alt. Pref. 2)
203-2	CAPACITOR, Fixed: Same as 203-1	Harm. Amp. Grid Coupling		
203-3	CAPACITOR, Fixed: Same as 203-1	AVC Diode Coupling		
203-4	CAPACITOR, Fixed: Same as 203-1	1st Audio Plate R-F Bypass		
203-3	CAPACITOR, Fixed: Mica, dielectric capacitors molded; 47 mmf $\pm 20\%$ 500v d.c.w. 51/64" x 15/32" x 7/32"; leads 1-1/8" x 0.032"	AVC Diode Coupling	Bendix No. CM20A470M	CM20A470M (Pref. 1)
203-4	CAPACITOR, Fixed: Same as 203-3	Second Audio R-F Bypass	Aerovox Type 1468ST or 1468LST Cornell-Dubilier Type 5WST or 5WLST Solar Type MOFW Erie Type N750	C58469-470 (Alt. Pref. 2)  C60329-470 (Alt. Pref. 3)

**TABLE OF REPLACEABLE PARTS—Cont**  
**MODEL: RADIO SET SCR-522-A**                      **MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
204	3K2015024	CAPACITOR, Fixed: Mica, 15 mmf, $\pm 20\%$ , 500v, 11/16" x 13/64" x 7/16", 1-1/4" No. 20 AWG lead alloy coated pigtailed, molded low loss bakelite case	Osc. Plate Resonator	Aerovox Type 1468ST or 1468LST Cornell-Dubilier Type 5WST or 5WLST  Solar Type MOFW or MDCW  Erie  Aerovox Type 1468ST or 1468LST Cornell-Dubilier 5WST or 5WLST Solar Type MOFW or MDCW	C58469-15C (Pref. 1)  C60329-150 (Alt. Pref. 2) C58469-221
205	1468ST 5 WST 3K2015014	CAPACITOR, Fixed: Mica, 220 mmf, $\pm 20\%$ , 500v d.c., bakelite case, 11/16" x 13/64" x 7/16"; 1-1/4" leads; to be No. 20 A.W.G. tinned copper wire	Harm. Generator Grid	Aerovox Type 1468ST or 1468LST Cornell-Dubilier 5WST or 5WLST Solar Type MOFW or MDCW	C60255-682 (Pref. 1)  CM35A682M (Alt. Pref. 2) A102967-8 (Alt. Pref. 3) C60290-682 (Alt. Pref. 4)
206-1	3K2022114 1468ST 5WST 3K3568214	CAPACITOR, Fixed: Paper, .0068 mfd., 400v, $\pm 20\%$ , No. 20 A.W.G. wire 53/64" lg. x 53/64" wide x 17/64" thick, leads 1-1/8" (not used on BC-624-A)	Osc. Plate Bypass	Micamold Radio Corp.  Bendix No. CM35A682M Aerovox Micamold Cornell-Dubilier Aerovox Micamold Cornell-Dubilier	C60255-682 (Pref. 1)  CM35A682M (Alt. Pref. 2) A102967-8 (Alt. Pref. 3) C60290-682 (Alt. Pref. 4)
206-2	3K3568214	CAPACITOR, Fixed: Same as 206-1	Oscillator Cathode Bypass	Micamold Radio Corp.	C60255-682 (Pref. 1)
206-3	3K3568224	CAPACITOR, Fixed: Same as 206-1	Mixer Plate Bypass	Micamold Radio Corp.	C60255-682 (Pref. 1)
260-4	3K3568224	CAPACITOR, Fixed: Same as 206-1	1st I-F AVC Filter	Micamold Radio Corp.	C60255-682 (Pref. 1)
206-5	3K3568224	CAPACITOR, Fixed: Same as 206-1	1st I-F Cathode Bypass	Micamold Radio Corp.	C60255-682 (Pref. 1)
206-6		CAPACITOR, Fixed: Same as 206-1	1st I-F Screen Bypass	Micamold Radio Corp.	C60255-682 (Pref. 1)
206-7		CAPACITOR, Fixed: Same as 206-1	1st I-F Plate Bypass	Micamold Radio Corp.	C60255-682 (Pref. 1)
206-8		CAPACITOR, Fixed: Same as 206-1	2nd Bypass I-F AVC Filter	Micamold Radio Corp.	C60255-682 (Pref. 1)
206-9		CAPACITOR, Fixed: Same as 206-1	2nd I-F Cathode Bypass	Micamold Radio Corp.	C60255-682 (Pref. 1)
206-10		CAPACITOR, Fixed: Same as 206-1	2nd I-F Screen Bypass	Micamold Radio Corp.	C60255-682 (Pref. 1)
206-11		CAPACITOR, Fixed: Same as 206-1	2nd I-F Plate Bypass	Micamold Radio Corp.	C60255-682 (Pref. 1)

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206-12	CAPACITOR, Fixed: Same as 206-1	3rd I-F Cathode Bypass		
206-13	CAPACITOR, Fixed: Same as 206-1	3rd I-F Screen Bypass		
206-14	CAPACITOR, Fixed: Same as 206-1	3rd I-F Plate Bypass		
206-15	CAPACITOR, Fixed: Same as 206-1	B+ Bypass		
206-16	CAPACITOR, Fixed: Same as 206-1	Audio Squelch Grid Bypass		
206-19	CAPACITOR, Fixed: Same as 206-1	1st I-F Heater Bypass		
206-20	CAPACITOR, Fixed: Same as 206-1	2nd I-F Heater Bypass		
206-21	CAPACITOR, Fixed: Same as 206-1	3rd I-F Heater Bypass		
206-22	CAPACITOR, Fixed: Same as 206-1 (not used on BC-624-A)	Osc. & Audio Squelch Heater Bypass		
206-24	CAPACITOR, Fixed: Same as 206-1	3rd Audio Grid Coupling		
206-25	CAPACITOR, Fixed: Same as 206-1	1st Audio Cathode Coupling		
206-26	CAPACITOR, Fixed: Same as 206-1	3rd Audio Grid Coupling		
206-27	CAPACITOR, Fixed: Same as 206-1	Detector Cathode R-F Bypass		
206-2	CAPACITOR, Fixed: Mica, dielectric molded, $53/64'' \times 11/32''$ , No. 18 wire, leads 1-1/8", 6,800 mmf., 500 v, $\pm 20\%$	Osc. Cathode Bypass	Bendix No. CM35A682M	CM35A682M (Pref. 1)
206-3	CAPACITOR, Fixed: Same as 206-2	Mixer Plate Bypass	Aerovox Micamold Cornell-Dubilier	A102967-8 (Alt. Pref. 2)
206-4	CAPACITOR, Fixed: Same as 206-2	1st I-F AVC Filter	Aerovox Micamold Cornell-Dubilier	C60290-682 (Alt. Pref. 3)
206-5	CAPACITOR, Fixed: Same as 206-2	1st I-F Cathode Bypass		
206-6	CAPACITOR, Fixed: Same as 206-2	1st I-F Screen Bypass		
206-7	CAPACITOR, Fixed: Same as 206-2	1st I-F Plate Bypass		
206-8	CAPACITOR, Fixed: Same as 206-2	2nd I-F AVC Filter		
206-9	CAPACITOR, Fixed: Same as 206-2	2nd I-F Cathode Bypass		
206-10	CAPACITOR, Fixed: Same as 206-2	2nd I-F Screen Bypass		
206-11	CAPACITOR, Fixed: Same as 206-2	2nd I-F Plate Bypass		
206-12	CAPACITOR, Fixed: Same as 206-2	3rd I-F Cathode Bypass		
206-13	CAPACITOR, Fixed: Same as 206-2	3rd I-F Screen Bypass		
206-14	CAPACITOR, Fixed: Same as 206-2	3rd I-F Bypass		
206-15	CAPACITOR, Fixed: Same as 206-2	B+ Bypass		

**TABLE OF REPLACEABLE PARTS—Cont**  
**MODEL: RADIO SET SCR-522-A MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
206-16		CAPACITOR, Fixed: Same as 206-2	Audio Squelch Grid Bypass		
206-18		CAPACITOR, Fixed: Same as 206-2	2nd Audio Grid Coupling		
206-19		CAPACITOR, Fixed: Same as 206-2	1st I-F Heater Bypass		
206-20		CAPACITOR, Fixed: Same as 206-2	2nd I-F Heater Bypass		
206-21		CAPACITOR, Fixed: Same as 206-2	3rd I-F Heater Bypass		
206-23		CAPACITOR, Fixed: Same as 206-2	3rd I-F Grid Bypass		
206-24		CAPACITOR, Fixed: Same as 206-2	1st Audio Grid Coupling		
207-1	3D9060-1	CAPACITOR, Fixed: Mica, 60 mmf, $\pm 2\%$ 500v, d.c.w., 11/16" lg., x 7/16" wide x 3/16" thick; No. 20 tinned copper wire; leads 1-1/4", molded bakelite case, completed capacitor shall be aged and waxed	Mixer Plate Resonator	Aerovox Type 1469 Cornell-Dubilier Type 5R	C58495-600 (Pref. 1)
207-2	3D9060-14	CAPACITOR, Fixed: Same as 207-1	1st I-F Grid Resonator	Micamold Radio Corp.	C62877-600 (Alt. Pref. 2)
207-3		CAPACITOR, Fixed: Same as 207-1	1st I-F Plate Resonator		
207-4		CAPACITOR, Fixed: Same as 207-1	2nd I-F Grid Resonator		
207-5		CAPACITOR, Fixed: Same as 207-1	2nd I-F Plate Resonator		
207-6		CAPACITOR, Fixed: Same as 207-1	3rd I-F Grid Resonator		
207-7		CAPACITOR, Fixed: Same as 207-1	3rd I-F Plate Resonator		
207-8		CAPACITOR, Fixed: Same as 207-1	Detector-diode Resonator		
208-1	3D9015-6 3D9015-52	CAPACITOR, Fixed: Ceramic; 15 mmf, $\pm 10\%$ , 500v d.c.w. No. 20 wire, -3 styles: style K—7/16" lg. x 7/32" wide, leads 1-1/2"; Style L—11/16" lg. x 7/32" wide, leads 1-1/2"; Style M—1-9/16" lg. x 5/16" wide, leads 1-1/2"; to be aged and waxed. Case may be ceramic or molded phenolic	Mixer Plate Resonator	Erie Type N750K & N750L	A25715-22
208-2		CAPACITOR, Fixed: Same as 208-1	1st I-F Grid Resonator		
208-3		CAPACITOR, Fixed: Same as 208-1	1st I-F Plate Resonator		
208-4		CAPACITOR, Fixed: Same as 208-1	2nd I-F Grid Resonator		



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208-5		CAPACITOR, Fixed: Same as 208-1	2nd I-F Plate Resonator		
208-6		CAPACITOR, Fixed: Same as 208-1	3rd I-F Grid Resonator		
208-7		CAPACITOR, Fixed: Same as 208-1	3rd I-F Plate Resonator		
208-8		CAPACITOR, Fixed: Same as 208-1	Detector-diode Resonator		
209	3K2010114	CAPACITOR, Fixed: Mica-dielectric 100 mmf $\pm 10\%$ 500v. 51/64" lg. x 15/32" wide x 7/32" thick. No. 20 wire leads 1-1/8" lg.	Diode R-F Bypass Squelch	Bendix No. CM20A101M (Pref. 1)	CM20A101M (Pref. 1)
	3K2010124 5WLST OROXM			Aerovox Corp Type 1468ST or 1468LST Cornell-Dubilier Type 5WST or 5WLST Micamold Type OROXM Supplier Sangamo Electric Co. Type K Solar Mfg Corp Type MOFW or MDCW	C58469-101 (Pref. 2)
210	3K2033114	CAPACITOR, Fixed: Mica-dielectric molded, 330 mmf, 500v. $\pm 20\%$ , 51/64" x 7/32" x 15/32"	Audio Diode Bypass	Erie Type L Bendix No. CM20A331M	C60329-101 (Pref. 3) CM20A331M (Pref. 1)
	3K203324 5WLST			Aerovox Type 1468ST or 1468LST Cornell-Dubilier Type 5WST Solar Type MOFW or MDCW	C58469-331 (Alt. Pref. 2)
211-1A, B, C	#	CAPACITOR, Fixed: Oil filled paper; 400v DCW 3 sections, .1 mfd per section $+20\%$ $-12\%$ ; 3 insulated side terminals; case common. 2-1/2" lg., 1" wide, 1-3/8" high	1st Audio Cathode Bypass, AVC Filter 2nd Audio Screen Bypass	Solar P. R. Mallory Elec. Utilities Cornell-Dubilier Aerovox	A115253-1
211-2A, B, C	#	CAPACITOR, Fixed: Oil filled paper; 400v DCW 3 sections; .1 mfd per section $+20\%$ $-12\%$ ; 3 insulated side terminals; case common. 2-1/2" lg., 1" wide, 1-3/8" high	Limiter Filter & 2nd I-F Grid Bypass	Solar P. R. Mallory Elec. Utilities Cornell-Dubilier Aerovox	A115253-2
211-3A, B, C	#	CAPACITOR, Fixed: Oil filled paper; 400v, DCW 3 sections, .1 mfd per section, $+20\%$ $-12\%$ ; 3 insulated side terminals; case common. 2-1/2" lg., 1" wide, 1-3/8" high	Audio Diode Cathode Bypass AVC Filter, 2nd Audio Screen Bypass	Solar P. R. Mallory Cornell-Dubilier Aerovox	A116136-1
211-4A, B, C	#	CAPACITOR, Fixed: Oil filled paper; 400v, DCW, 3 sections; .1 mfd per section $+20\%$ $-12\%$ , 3 insulated side terminals; case common. 2-1/2" lg., 1" wide, 1-3/8" high.	1st Audio Bypass, Noise Limiter Filter 2nd I-F AVC Filter	Solar P. R. Mallory Cornell-Dubilier	A116136-2

# Not available as spare parts; listed for reference purposes only.

**TABLE OF REPLACEABLE PARTS—Cont**  
**MODEL: RADIO SET SCR-522-A**      **MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
212A, B, C, D	3DB6-22	CAPACITOR, Fixed: Paper; 4 section $\pm 10\%$ $+100\%$ ; 1 mfd 400v dc, 4 mfd 400v dc, 1 mfd 50v dc, 2 mfd, 50v dc. Case fabricated from mill tinned brass sheet. 3-1/2" max. less terminals; 2-5/16" lg; 2-5/8" wide; 4 terminals with 5/8" center line	Audio B+ Filter Audio B+ Filter; 2nd Audio Cathode Bypass 3rd Audio Cathode Bypass	Aerovox Solar	L75638
212A, B, C, D	3DB20-31	CAPACITOR, Fixed: Electrolytic, 4 section $\pm 10\%$ , 20 mfd 350v dcw 10 mfd, 350v dc 5 mfd, 150v dc, 5 mfd, 150v dc, metal case 4-1/4" high x 1-3/8" dia. Two 3/8" with mtg ft 1-13/16" centers, 4 solder lug term. on bottom with holes, for No. 6 mtg. screw	Audio B+ Filter Audio B+ Filter Audio Cathode Bypass, 2nd Audio Cathode Bypass	Aerovox Mallory Solar	L73073
213	3DB1-484	CAPACITOR, Fixed: Oil paper; 1 mfd $\pm 10\%$ 100v dcw; 2 insulated terminals 3-1/2" lg, 1" high less terminals 2 mtg. holes 3/16" dia. 2-1/8" center	RF & Mixer Heater Bypass	Aerovox	A104484
214	3K2082021	CAPACITOR, Fixed: Mica 82 mmf $\pm 10\%$ , 500v dc, 51/64" lg. x 7/32" wide x 15/32" high; No. 20 wire; leads 1-1/8" impregnated with Supertla wax, leads to be lead alloy coated	Bridge Balancing	Sangamo Type K Cornell-Dubilier Type 5WL Aerovox Type 1468 Aerovox Type 1469	C56315-820 (pref. 1) 56309-820 (Alt. Pref. 2) L72799-1 or AN91408-1
216A, B, C	#	CAPACITOR, Fixed: Variable 3 section, effective capacitance per section 36.0 mmf min. capacitance 6 mmf; 4-23/32" lg., less mtg. shaft; 2" wide, 3-7/16" high	R-F Grid Tuning, R-F Plate Tuning, Mixer Grid Tuning	Bendix No. L72799-1	L72799-1 or AN91408-1
217A, 217B	3D9036V-1	CAPACITOR, Fixed: Variable, 2 sections; Rear section, eff. cap 36 mmf, cap 6 mmf, variable; Front section, eff. cap 39.6 mmf, mica cap. 6.5 mmf 3-7/16" approx. x 1-3/4"	Harm. Amp. Plate Tuning, Harm. Gen. Plate Tuning	Bendix No. L72798-1	L72798-1 or AN91414-1
218-1, -2, -3		CAPACITOR, Fixed: Variable trimmer, 10 mmf, part of 3 gang R-F and mixer tuning assy. (These trimmers not separately replaceable)	R-F Grid & Plate Trimmer and Mixer Grid	Bendix No. L72799-1	Part of L72799-1
218-4, -5		CAPACITOR, Fixed: Variable, trimmer, 10 mmf, part of 2 gang harm. amp. tuning assy. (These trimmers not separately replaceable)	Harm. Amp. Plate and Harm. Gen. Plate Trimmer	Bendix No. L72798-1	Part of L72798-1
219	3DA1-82	CAPACITOR, Fixed: Mica, 1000 mmf $\pm 10\%$ , 300v, 51/64" lg. x 7/32" thick x 15/32" wide, No. 20 wire, leads 1-1/8", leads lead alloy coated, impregnated with Supertla wax	Limiter Cathode Bypass	Sangamo Elec Type K Cornell-Dubilier Type 5WL Aerovox Type 1468	C56315-102
221	3C302C	COIL, Radio, R-F; Antenna, 5/8" high 1-1/2" lg., material A194-14, No. 14 AWG (.064") soft drawn tinned copper wire, 1 turn	Antenna Coupling	Bendix No. A104312	A104312
222	3C1074-13	COIL, Radio, R-F; Grid, 2 turns No. 14 AWG, soft drawn tinned copper wire; 23/32" lg. x 23/64" ID x 1/2" OD 3/32" pitch	R-F Grid Resonator	Bendix No. A104309	A104309

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223	3C1074-14	COIL, Radio, RF: Inductor; RF plate; 2 turns No. 14 tinned copper wire, 1/2" O.D. x 3/8" I.D. x 1/4" lg.	R-F Plate Resonator	Bendix No. A104308	A104308
224	3C1074-15	COIL, Radio, RF: Mixer grid; No. 14 AWG, 0.064" soft drawn tinned copper wire, 1/2" O.D. x 3/8" I.D. x 1/4" lg., 3/32" pitch; approx. 2 turns; leads, continuation of coil, approx. 3/8" & 7/8" long; approx. at right angles to coil axis	Mixer Grid Resonator	Bendix No. A104313	A104313
225	3C1074-10	COIL, Radio, RF: Inductor; 1 turn No. 12 B & S soft drawn tinned copper wire; 5/8" I.D. 2-35/64" lg, x 25/32" wide	Harmonic Amp. Plate	Bendix No. A104311	A104311
226	3C1074-17	COIL, Radio, RF: Inductor, harmonic generator plate, No. 14 AWG .064" soft drawn tinned copper wire; 17/32" O.D. x 13/32" I.D. x 5/16" lg. 1/8" pitch 2 turns; leads continuation of coil, 17/32" long, parallel to axis	Harmonic Gen. Plate Resonator	Bendix No. A104310	A104310
227-1	3C1074-18	COIL ASSEMBLY, Radio: RF Inductor; osc. plate, 23 turns, No. 26 enameled wire. Torque limit 1-1/2 to 15" oz. Includes iron core	Osc. Plate Resonator, Channel A	Bendix No. AA104225-1	AA104225-1
227-2		Same as 227-1			
227-3		Same as 227-1			
227-4		Same as 227-1			
223-( )	#	COIL ASSEMBLY, Radio: R-F 10 turns No. 22 enameled wire, permeability tuned, threaded form; includes 1-coil form assembly and 18 1/2" wire	Osc. Plate Resonator, Channel B Osc. Plate Resonator, Channel C Osc. Plate Resonator, Channel D	Bendix No. AA104206-1	AA104206-1
223-( )	#	COIL, ASSEMBLY, Radio: R-F 10 turns No. 22 enameled wire, permeability tuned, threaded form; includes 1 coil form assembly, 23" wire 1 capacitor. Part of Ref. 291	I. F. Secondary Resonator	Bendix No. AA104206-1	AA104206-2
230-1	3RC20BE123K	RESISTOR, Fixed: 12,000 ohms $\pm 10\%$ , 1/4 watt, 3/8" x 9/64", No. 20 wire, leads 1-1/2, bakelite insulated	R-F Plate Filter	Allen Bradley Type No. EB Speer Type S1-1/2	A32298-123 (Pref. 1) A32299-123 (Alt. Pref. 2)
230-2		Same as 230-1			A113230-123 (Alt. Pref. 3)
230-3		Same as 230-1			
230-4		Same as 230-1			
231	2Z7228.1	CONNECTOR, Ten Contact: Male; 2-5/16" x 1-9/16" x 1", 2 holes No. 6-32, 3/8" deep, 1-3/32" centers, molded phenolic insulator, hot tin dipped, or water dip lacquer	R-F Plate Filter Harmonic Amplifier Plate Filter	International Resistance Co. BTS	A102813
232	2Z7253.2	CONNECTOR, Male Contact: Plug assy antenna; 7/8" lg. x 2-1/8" wide x 1/4" thick; consists of: board, 2 jacks, 1 ground strap, 1 antenna lug	Harmonic Amplifier Plate Filter Receiver Connector	Howard B. Jones	AA104203-1
233-1	3RC30BE184K	RESISTOR, Fixed: 180,000 ohms $\pm 10\%$ , 1/2 watt, 9/16" x 7/32", No. 18 wire leads 1-1/2", bakelite insulated	Receiver Input Plug	Bendix No. AA104203-1	AA104203-1
	3RC31AE184K		1st I-F Screen Bleeder	Allen Bradley Type No. GB Erie Type 505	A112933-184 (Pref. 1) A18150-184 (Alt. Pref. 2)

# Not available as spare parts; listed for reference purposes only.

**TABLE OF REPLACEABLE PARTS—Cont**  
**MODEL: RADIO SET SCR-522-A**      **MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
233-2	3RC31AE184K	Same as 233-1	1st I-F Screen Bleeder	Speer Type S1-1	A112926-184 (Alt. Pref. 3)
233-3	#	Same as 233-	2nd I-F Screen Bleeder		
233-4	#	Same as 233-1	2nd I-F Screen Bleeder		
234-1	3RC30BE164J	RESISTOR, Fixed: 160,000 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1-1/2", bakelite insulated	Audio Squelch Bleeder	Allen-Bradley Type No. GB Erie Type No. 505	A32016-164 (Pref. 1) A18004-102 (Alt. Pref. 2)
234-2	3Z6716-4	Same as 234-1	Audio Squelched Bleeder	Speer Type S1-1	A112924-164 (Alt. Pref. 3)
235-1	3KC30BE102J	RESISTOR, Fixed: 1000 ohms, 1/2w $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1-1/2" bakelite insulated	3rd Audio Cathode Bias	Allen-Bradley Type GB Erie Type No. 505	A32016-102 (Pref. 1) A18004-102 (Alt. Pref. 2)
235-2	3RC31AE102J	Same as 235-1	3rd Audio Cathode Bias	Speer Type S1-1	A112924-102 (Alt. Pref. 3)
236	2Z7296-150M	RESISTOR, Variable: 150,000 ohms, type CS; curve "C" bushing to have 4 slots 1/32" wide equally spaced terminal lugs to be tinned, shaft to be aluminum alloy or brass. All metal parts except aluminum to be heavy cadmium or nickel plated to withstand 200 hour salt spray test. 1-7/16" long x 1-1/4" high. Shaft slotted 1/32" wide x 1/16" deep.	Audio Volume Control	International Resistance Co.	A102991 (Pref. 1)
237	2Z7271-72	RESISTOR, Variable: 2000 ohms, type CS, curve "A." Shaft to be aluminum alloy or brass. 1 1/4" O.D. slotted shaft, three terminals; 3/8"-32 threaded bushing. Furnished with tapered lock nut	Audio Squelch Relay Sens. Control	Chicago Telephone Supply Co. International Resistance Co.	A113191 (Alt. Pref. 2) A102992 (Pref. 1)
238A, B	2Z7268-36 2Z7269-182	RESISTOR, Variable: 5000 ohms, $\pm 20\%$ has SPST switch, shaft to be aluminum alloy or brass, all metal parts except aluminum to be cadmium or nickel plated, 2 5/32" lg. less lugs x 1 1/8" high; terminal lugs to be tinned; shaft slotted 1/32" wide x 1/16" deep. Bushing to have 4 slots 1/32" wide	Squelch Sens. Control, Noise Limiter Switch	Chicago Telephone Supply Co. Chicago Telephone Supply Co.	A113190 (Alt. Pref. 2) A116109 (Pref. 1)

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239	2Z7269-182 3RC30BE681K 3RC21BE681K 3RC31AE681K 3RC30BE335K 3RC31AE335K 3RC21AE335K 3RC21BE335K	RESISTOR, Fixed: 680 ohms, 1/2 watt, $\pm 10\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2"; bakelite insulated  RESISTOR, Fixed: 3.3 meg; 1/2 w, $\pm 10\%$ ; 9/16" x 7/32", No. 18 wire, leads 1 1/2"; bakelite insulated	AVC Delay Cathode Bias  3rd Audio Inverse Feedback	International Resistance Co. Allen-Bradley Type No. GB International Resistance Type BT-1/2 Erie Type No. 505 Allen-Bradley Type GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Type BT-1/2 Bendix No. AA104301-1	A1116108 (Alt. Pref. 2) A112933-681 (Pref. 1) A113249-681 (Alt. Pref. 2) A18150-681 (Alt. Pref. 3) A112933-335 (Pref. 1) A18150-335 (Alt. Pref. 2) A112934-335 (Alt. Pref. 3) A113249-335 (Alt. Pref. 4) AA104301-1
240	3C336-21	COIL ASSEMBLY, Radio: R-F Choke; 38 turns, No. 28 enameled wire, wound on a 1 meg. 1/2 w resistor; bakelite varnish Same as 241-1 Same as 241-1 Same as 241-1 Same as 241-1	1st Audio Grid Choke  B + RF Choke B + RF Choke 2nd Audio Grid Choke 3rd I-F B + Isolation Choke		
241-1	2Z8654-7	SOCKET, Tube: Octal mica filled bakelite 8 contacts 1/2" thick, 1 1/4" flange; 1.158" chassis ball contacts to be beryllium copper or phosphor bronze, silver plated numbers to be clockwise Same as 243-1 Same as 243-1 Same as 243-1 Same as 243-1 Same as 243-1 Same as 243-1 Same as 243-1 Same as 243-1 Same as 243-1 Same as 243-1 Same as 243-1 Same as 243-1	1st I-F 2nd I-F 3rd I-F 1st Audio, AVC and Detector 2nd Audio Detector and Noise Limiter AVC and 2nd Audio  AVC Delay and 1st Audio 3rd Audio R-F Amp.	American Phenolic Corp. Type S-8TM	A104087-1
243-2					
243-3					
243-4					
243-5					
243-6					
243-7					
243-8					
243-9					
243-10	2Z8657-3	SOCKET, Tube: 7 contact, molded, bakelite, mica filled, XM15832, contacts to be beryllium copper and phosphor bronze. Retainer ring type 2-9; tempered spring steel cadmium plated or electro tinned; .157" I.D. dia sleeve, .703" O.D.; 12 contacts 11/16"		American Phenolic Corp.	A102980
244-1					

# Not available as spare parts; listed for reference purposes only.



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253-1	3RC20BE331J 3RC20AE331J 3RC20BE331J	RESISTOR, Fixed: 330 ohms, $\pm 5\%$ , 1/4 w, 3/8" x 9/64", No. 20 wire, leads 1 1/2", bakelite insulated	R-F Stage Cathode Bias	International Resistance Co. Type BTS Allen-Bradley Type No. EB Speer Type No. S1-1/2	A113230-104 (Pref. 4) A32014-331 (Pref. 1) A32013-331 (Alt. Pref. 2) A113229-331 (Alt. Pref. 3)
253-2		Same as 253-1	Harmonic Amp. Cathode Bias AVC Delay Resistor	Allen-Bradley Type No. EB Speer Type S1-1/2	A32298-331 (Pref. 1) A32298-331 (Alt. Pref. 2) A113230-331 (Alt. Pref. 3)
253-3	#	RESISTOR, Fixed: 330 ohms, 1/4 w, $\pm 10\%$ , 3/8" x 9/64", No. 20 wire, leads 1 1/2", bakelite insulated		International Resistance Co. Type BTS Allen-Bradley Type No. EB Speer Type No. S1-1/2	A112927-682 (Pref. 1) A112930-682 (Alt. Pref. 2) A113318-682 (Alt. Pref. 3)
254-1	#	RESISTOR, Fixed: 6,800 ohms, $\pm 20\%$ , 1/4 w, 3/8" x 9/64", No. 20 wire, 1 1/2" leads, bakelite insulator	R-F Stage Plated Filter	International Resistance Co. Type BTS Allen-Bradley Type No. EB Speer Type No. S1-1/2	A112927-682 (Pref. 1) A112930-682 (Alt. Pref. 2) A113318-682 (Alt. Pref. 3)
254-2		Same as 254-1	Harm. Amp. Plate Filter AVC Delay Resistor	International Resistance Co. Type BTS Allen-Bradley Type No. EB Speer Type S1-1/2	A32298-682 (Pref. 1) A32299-682 (Alt. Pref. 2)
254-3	3RC20BE682K 3RC20AE682K	RESISTOR, Fixed: 6800 ohms: 1/4 w, $\pm 10\%$ , 3/8" x 9/64", No. 20 wire, leads 1 1/2", bakelite insulated		IRC Type BTS Allen-Bradley Type No. EB Speer Type S1-1/2	A113230-682 (Alt. Pref. 3) A112927-185 (Pref. 1) A112930-185 (Alt. Pref. 2) A113318-185 (Alt. Pref. 3)
255-1	3RC20BE682K 3Z6801A8-7 3Z6801A8-9 3Z6801A8-7	RESISTOR, Fixed: 1.8 meg. $\pm 20\%$ , 1/4 w, 3/8" x 9/64", No. 20 wire, lead 1 1/2", bakelite insulated	Mixer Grid Leak	International Resistance Co. Type BTS Allen-Bradley Type No. EB Speer Resistor Type No. S1-1/2 International Resistance Co. Type BTS	A32014-102 (Pref. 1) A32013-102 (Alt. Pref. 2) A113229-102 (Alt. Pref. 3)
255-2		Same as 255-1	Harm. Amp. Grid Leak Mixer, Cathode Bias	Allen-Bradley Type No. EB Speer Resistor Type No. S1-1/2 International Resistance Co. Type BTS	A32014-102 (Pref. 1) A32013-102 (Alt. Pref. 2) A113229-102 (Alt. Pref. 3)
256	3RC20BE102J 3RC20AE102J 3RC20BE102J	RESISTOR, Fixed: 1/4 w, $\pm 5\%$ , 1000 ohms, 3/8" x 9/64", No. 20 wire, leads 1 1/2", bakelite insulated		Allen-Bradley Type No. EB Speer Resistor Type No. S1-1/2 International Resistance Co. Type BTS	A32014-102 (Pref. 1) A32013-102 (Alt. Pref. 2) A113229-102 (Alt. Pref. 3)

# Not available as spare parts; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C

MODEL: RADIO SET SCR-522-A

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
257-1	3RC20BE334K 3RC20AE334K 3RC20BE334K	RESISTOR, Fixed: 330,000 ohms, $\pm 10\%$ , 1/4 w, bakelite insulated, 3/8 x 9/64", No. 20 wire, leads 1 1/2" lg	Mixer Screen Dropping	Allen-Bradley Type No. EB Speer Type S1-1/2	A32298-334 (Pref. 1) A32299-334 (Alt. Pref. 2) A113230-334 (Alt. Pref. 3)
257-2		Same as 257-1	2nd Audio Compensating	International Resistance Co. Type BTS	
258	#	RESISTOR, Fixed: 680,000 ohms, 1/2 w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	2nd Audio Grid Leak	Allen-Bradley Type No. GB Erie Type No. 505	A32016-684 (Pref. 1) A18004-684 (Alt. Pref. 2) A32015-684 (Alt. Pref. 3) A113248-684 (Alt. Pref. 4)
258-2	#	RESISTOR, Fixed: 680,000 ohms, 1/2w, $\pm 20\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	AVC Filter	International Resistance Co. Type No. BT-1/2 Allen-Bradley Type No. GB Erie Type No. 505	A112931-684 (Pref. 1) A18006-684 (Alt. Pref. 2) A112932-684 (Alt. Pref. 3) A113319-684 (Alt. Pref. 4)
258-3	3RC30BE684K 3RC31AE684K 3RC21AE684K 3RC21BE684K	RESISTOR, Fixed: 680,000 ohms; 1/2w, $\pm 10\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	3rd Audio Grid Leak	Speer Type SCI-1/2 International Resistance Co. Type 1/2 Allen-Bradley Type No. GB Erie Type No. 505	A112933-684 (Pref. 1) A18150-684 (Alt. Pref. 2) A112934-684 (Alt. Pref. 3) A113249-684 (Alt. Pref. 4)
259	3Z5997-26 3Z5997-25	RESISTOR, Fixed: 7 1/2 ohms, $\pm 10\%$ , 3/8" lg x 5/32" wide, leads 1 1/2" lg, 0.028" wide, leads to be hot tinned dipped	Receiver Meter Shunt	Speer Type SCI-1/2 International Resistance Co. Type BT-1/2 Speer Resistance Corp.	A32128 (Pref. 1) A32127 (Alt. Pref. 2)
260	3Z6627-14	RESISTOR, Fixed: 27,000 ohms, $\pm 20\%$ , 1/4w, 3/8" x 9/64", No. 20 wire, leads 1 1/2", bakelite insulated	Harm. Gen. Plate Filter	International Resistance Co. Type BW-1/2 Allen-Bradley Type EB	A112927-273 (Pref. 1)



3Z6627-25				Speer Type S1-1/2	A112930-273 (Alt. Pref. 2)
3Z6627-14				International Resistance Co. Type BTS	A113318-273 (Alt. Pref. 3)
3RC20BE122J		RESISTOR, Fixed: 1200 ohms, $\pm 5\%$ , 1/4w, 3/8" x 9/64", No. 20 wire, leads 1 1/2", bakelite insulated	Harm. Gen. Cathode Bias	Allen-Bradley Type No. EB	A32014-122 (Pref. 1)
3RC20AE122J				Speer Type S1-1/2	A32012-122 (Alt. Pref. 2)
3RC20BE122J				International Resistance Co. Type BTS	A113229-122 (Alt. Pref. 3)
#		RESISTOR, Fixed: 560,000 ohms, $\pm 10\%$ , 1/4w, 3/8" x 9/64", No. 20 wire, leads 1 1/2", bakelite insulated	Harm. Gen. Grid Leak	Allen-Bradley Type No. EB	A32298-564 (Pref. 1)
262-1				Speer Type S-1/2	A32299-564 (Alt. Pref. 2)
3RC20BE564J		RESISTOR, Fixed: bakelite insulated, 560,000 ohms, $\pm 5\%$ , 1/4w, 3/8" lg. x 9/64" O.D., No. 20 wire leads 1 1/2" lg	1st Audio Compensating	International Resistance Co. Type BTS	A113230-564 (Alt. Pref. 3)
3RC20AE564J				Allen-Bradley Type No. EB	A32014-564 (Pref. 1)
3RC20AE564J				Erie Type 504	A18001-564 (Alt. Pref. 2)
3RC20BE564J				Speer Type No. S1-1/2	A32013-564 (Alt. Pref. 3)
#		RESISTOR, Fixed: 4700 ohms, $\pm 20\%$ , 1/2w, ceramic bakelite insulated 9/16" x 7/32", No. 18 wire leads 1 1/2"	Mixer Plate Filter	International Resistance Co. Type BTS	A113229-564 (Alt. Pref. 4)
263-1				Allen-Bradley Type GB	A112931-472 (Pref. 1)
263-2		Same as 263-1		Erie Type No. 505	A18006-472 (Alt. Pref. 2)
263-3		Same as 263-1		Speer Type No. SC1-1/2	A112932-472 (Alt. Pref. 3)
263-4		Same as 263-1	1st I-F Plate Filter 2nd I-F Plate Filter 3rd I-F Plate Filter 3rd I-F Plate Filter	International Resistance Co. Type BT-1/2	A113319-472 (Alt. Pref. 4)
263-4		RESISTOR, Fixed: 4700 ohms, $\pm 20\%$ , 1/2w, ceramic, bakelite insulated, 9/16" x 7/32", No. 18 wire, leads 1 1/2"		Allen-Bradley Type No. GB	A112931-472 (Pref. 1)
3RC30BE472M				Erie Type No. 505	A18006-472 (Alt. Pref. 2)
3RC31AE472M				Speer Type S1-1	A112928-472 (Alt. Pref. 3)
3RC31AE472M				Allen-Bradley Type GB	A112931-1031 (Pref. 1)
#		RESISTOR, Fixed: 10,000 ohms, 1/2w, $\pm 20\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Osc. Plate Filter		
264-1					

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
264-3	3RC30BE103K 3RC31AE103K 3RC21AE103K 3RC21BE103K	RESISTOR, Fixed: 10,000 ohms, $\pm 10\%$ , 1/2w, 9/16" lg x 7/32", No. 18 (.040") wire, leads 1 1/2", bakelite insulated	Audio and Squelch Filter	Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. BT-1/2 Allen-Bradley Type GB Erie Type No. 505 Speer Type No. SCI-1/2 International Resistance Co. Type BT-1/2	A18006-103 (Alt. Pref. 2) A112932-103 (Alt. Pref. 3) A113319-103 (Alt. Pref. 4) A112933-103 (Pref. 1) A18150-103 (Alt. Pref. 2) A112934-103 (Alt. Pref. 3) A113249-103 (Alt. Pref. 4)
265-1	3RC30BE272J 3RC31AE103K 3RC21AE103K 3RC21BE103K	RESISTOR, Fixed: 2700 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Osc. Cathode Bias	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A32016-272 (Pref. 1) A18004-272 (Alt. Pref. 2) A32015-272 (Alt. Pref. 3) A113248-272 (Alt. Pref. 4)
265-2	3RC30BE272K 3RC31AE272K 3RC21AE272K 3RC21BE272K	RESISTOR, Fixed: 2700 ohms, 1/2w, $\pm 10\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Audio Squelch Cathode Bias	International Resistance Co. Type BT-1/2 Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112933-272 (Pref. 1) A18150-272 (Alt. Pref. 2) A112934-272 (Alt. Pref. 3) A113249-272 (Alt. Pref. 4)
266-2	3Z6727-33 3Z6727-27 3Z6727-24 3Z6727-24	RESISTOR, Fixed: 270,000 ohms, 1/2w, $\pm 20\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	AVC Filter	Allen-Bradley Type GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112931-274 (Pref. 1) A18006-274 (Alt. Pref. 2) A112932-247 (Alt. Pref. 3) A113319-274 (Alt. Pref. 4)

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266-3	3RC30BE274J 3RC31AE274J 3RC31AE274J 3RC21BE274J	RESISTOR, Fixed: 270,000 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	1st Audio Plate Load	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A32016-274 (Pref. 1) A18004-274 (Alt. Pref. 2) A32015-274 (Alt. Pref. 3) A113248-274 (Alt. Pref. 4)
266-4	3RC30BE274K 3RC31AE274K 3RC21AE274K 3RC21BE274K	RESISTOR, Fixed: 270,000 ohms, 1/2w, $\pm 10\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	2nd Audio Plate Lead	Allen-Bradley Type GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112933-274 (Pref. 1) A18150-274 (Alt. Pref. 2) A112934-274 (Alt. Pref. 3) A113249-274 (Alt. Pref. 4)
267-1	3RC30BE104M 3RC31AE104M 3RC21AE104M 3RC21BE104M	RESISTOR, Fixed: 100,000 ohms, $\pm 20\%$ , 1/2w, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	1st I-F AVC Filter	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112931-104 (Pref. 1) A18006-104 (Alt. Pref. 2) A112932-104 (Alt. Pref. 3) A113319-104 (Alt. Pref. 4)
267-2	3RC30BE104K 3RC31AE104K 3RC21AE104K 3RC21BE104K	RESISTOR, Fixed: Bakelite, 100,000 ohms, $\pm 10\%$ , 1/2w, 9/16" lg, 7/32" wide, No. 18 .040" wire, leads 1 1/2 lg	1st I-F Screen Voltage Divider	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112933-1046 (Pref. 1) A18150-104 (Alt. Pref. 2) A112934-104 (Alt. Pref. 3) A113249-104 (Alt. Pref. 4)
267-3		Same as 267-2	1st I-F Screen Bleeder	Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	
267-4		Same as 267-1	2nd I-F AVC Filter	Allen-Bradley Type No. GB Erie Type No. 505	
267-5		Same as 267-2	2nd I-F Screen Voltage Divider	Speer Type SC1-1/2	
267-6		Same as 267-2	2nd I-F Screen Bleeder	International Resistance Co. Type BT-1/2	
267-7		Same as 267-2	Harm. Amp. Screen Dropping		
267-8		Same as 267-2	R-F Screen Dropping		
267-9		Same as 267-2	3rd I-F Screen Dropping		

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
267-10		Same as 267-2	3rd I-F Screen Dropping		
268	3RC30BE391J 3RC31AE391J 3RC21AE391J 3RC21BE391J	RESISTOR, Fixed: 390 ohms, $\pm 5\%$ , 1/2w, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	1st I-F Cathode Bias	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC-1/2 International Resistance Co. Type BT-1/2	A32016-391 (Pref. 1) A18004-391 (Alt. Pref. 2) A32015-391 (Alt. Pref. 3) A113248-391 (Alt. Pref. 4)
269	3RC30BE271J 3RC31AE271J 3RC20AE271J 3RC21BE271J	RESISTOR, Fixed: 270 ohms, $\pm 5\%$ , 1/2w, 9/16" x 7/32", No. 18 wire, leads 1 1/2" lg, bakelite insulated	2nd I-F Cathode Bias	Allen-Bradley Type GB Erie Type No. 505 Speer Type SC-1/2 International Resistance Co. Type BT-1/2	A32016-271 (Pref. 1) A18004-271 (Alt. Pref. 2) A32015-271 (Alt. Pref. 3) A113248-271 (Alt. Pref. 4)
269-2		Same as 269	1st I-F Cathode Bias		
269-3		Same as 269-2	3rd I-F Cathode Bias		
270	3RC30BE471J 3RC31AE471J 3RC20AE471J 3RC21BE471K	RESISTOR, Fixed: 470 ohms, $\pm 5\%$ , 1/2w, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	3rd I-F Cathode Bias	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC-1/2 International Resistance Co. Type BT-1/2	A32016-471 (Pref. 1) A18004-471 (Alt. Pref. 2) A32015-471 (Alt. Pref. 3) A113248-471 (Alt. Pref. 4)
271-2	3Z6682-17 3Z6682-19 3Z6682-14 3Z6682-14	RESISTOR, Fixed: 82,000 ohms, 1/2w, $\pm 20\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	3rd I-F Screen Dropping	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112931-823 (Pref. 1) A18006-823 (Alt. Pref. 2) A112932-823 (Alt. Pref. 3) A113319-823 (Alt. Pref. 4)

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271-3	3RC30BE823K 3RC31AE823K 3RC21AE823K 3RC21BE823K	RESISTOR, Fixed: 82,000 ohms, 1/2w, ±10%, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	AVC Diode Load	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. BT-1/2	A112933-823 (Pref. 1) A18150-823 (Alt. Pref. 2) A112934-823 (Alt. Pref. 3) A113249-823 (Alt. Pref. 4)
272-1	#	RESISTOR, Fixed: 120,000 ohms, 1/2w, ±20%, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Audio Squelch Compensating	Allen-Bradley Type GB Erie Type No. 504 Speer Type SC-1/2 International Resistance Co. Type BT-1/2	A112931-124 (Pref. 1) A18006-124 (Alt. Pref. 2) A112932-124 (Alt. Pref. 3) A113319-124 (Alt. Pref. 4)
272-1	3RC30BE124K 3RC31AE124K 3RC21AE124K 3RC21BE124K	RESISTOR, Fixed: 120,000 ohms, 1/2w, ±10%, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Audio Squelch Compensating	Allen-Bradley Type GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112933-124 (Pref. 1) A18150-124 (Alt. Pref. 2) A112934-124 (Alt. Pref. 3) A113249-124 (Alt. Pref. 4)
272-2		Same as 272-1	AVC Delay Cathode Bias	Allen-Bradley Type GB International Resistance Co. Type BT-1/2	A112933-562 (Pref. 1) A113249-562 (Alt. Pref. 2)
273-2	3RC30BE562K 3RC21BE562K	RESISTOR, Fixed: 5600 ohms, 1/2w, ±10%, 9/16" x 7/32" No. 18 wire, leads 1 1/2", bakelite insulated	AVC Delay Cathode Bias	Allen-Bradley Type GB International Resistance Co. Type BT-1/2	A18150-562 (Alt. Pref. 3) A32016-562 (Pref. 1) A18004-562 (Alt. Pref. 2)
273-3	3RC31AE562K 3RC30BE562J 3RC31AE562J 3RC21AE562J 3RC21BE562J	RESISTOR, Fixed: 5600 ohms, ±5%, 1/2w, 9/16" x 7/32", No. 18 wire, leads 1 1/2, bakelite insulated	Audio Squelch Bleeder	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112931-225 (Pref. 1) A18006-225 (Alt. Pref. 2)
274-1	#	RESISTOR, Fixed: 2.2 meg, 1/2w, ±20%, 9/16" x 7/32", No. 18 wire, bakelite-insulated, leads 1 1/2"	Audio Squelch Coupling	Allen-Bradley Type GB Erie Type No. 505	

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
274-2	3RC30BE225K 3RC31AE225K 3RC21AE225K 3RC21AE225K	RESISTOR, Fixed: 2.2 meg, 1/2w, ±10%, No. 18 wire, 9/16" x 7/32", leads 1 1/2", bakelite insulated	1st Audio Screen Dropping	Speer Type SC1-1/2 International Resistance Co. Type BT-1/2 Allen-Bradley Erie Type No. 505	A112932-225 (Alt. Pref. 3) A113319-225 (Alt. Pref. 4) A112933-225 (Pref. 1) A18150-225 (Alt. Pref. 2) A112934-225 (Alt. Pref. 3) A113249-225 (Alt. Pref. 4)
274-3		Same as 274-1	Audio Squelch Filter	International Resistance Co. Type BT-1/2	A112931-474 (Pref. 1) A18006-474 (Alt. Pref. 2) A112932-474 (Alt. Pref. 3) A113319-474 (Alt. Pref. 4)
275-1	3RC30BE474M 3RC31AE474M 3RC21AE474M 3RC21BE474M	RESISTOR, Fixed: 470,000 ohms, 1/2w, ±20%, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	AVC Diode Load	Allen-Bradley Type GB Erie Type No. 505	A112933-474 (Pref. 1) A18006-474 (Alt. Pref. 2) A112932-474 (Alt. Pref. 3) A113319-474 (Alt. Pref. 4)
275-2	3RC30BE474K 3RC31AE474K 3RC21AE474K 3RC21BE474K	RESISTOR, Fixed: 470,000 ohms, 1/2w, ±10%, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	1st Audio Grid	International Resistance Co. Type BT-1/2 Allen-Bradley Type No. GB Erie Type No. 505	A112933-474 (Pref. 1) A18150-474 (Alt. Pref. 2) A112934-474 (Alt. Pref. 3) A113249-474 (Alt. Pref. 4)
275-3		Same as 275-2	1st Audio Grid	Speer Type SC1-1/2	
275-4		Same as 275-2	Audio Squelch Plate Load	International Resistance Co. Type BT-1/2	
276	#	RESISTOR, Fixed: 18,000 ohms, 1/2w, ±5%, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	AVC Delay	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2	A32016-183 (Pref. 1) A18004-183 (Alt. Pref. 2) A32015-183 (Alt. Pref. 3)

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276-1	3RC30BE183J 3RC21BE183J 3RC31AE183J	RESISTOR, Fixed: 18,000 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	AVC Delay	International Resistance Co. Type BT-1/2 Allen-Bradley Type No. GB International Resistance Co. Type BT-1/2 Erie Type No. 505	A113248-183 (Alt. Pref. 4) A32016-183 (Pref. 1) A113248-183 (Alt. Pref. 2) A18004-183 (Alt. Pref. 3)
276-2	#	RESISTOR, Fixed: 18,000 ohms, 1/2w, $\pm 10\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Audio Diode Load	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2	A112933-183 (Pref. 1) A18150-183 (Alt. Pref. 2) A112934-183 (Alt. Pref. 3)
277	3RC30BE182J 3RC31AE182J 3RC21AE182J 3RC21BE182J	RESISTOR, Fixed: 1800 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	1st Audio Cathode Bias	International Resistance Co. Type BT-1/2 Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2	A113249-183 (Alt. Pref. 4) A32016-182 (Pref. 1) A18004-182 (Alt. Pref. 2) A32015-182 (Alt. Pref. 3) A113248-182 (Alt. Pref. 4)
277-2	#	RESISTOR, Fixed: 1800 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	2nd Audio Cathode Bias	International Resistance Co. BT-1/2 Allen-Bradley International Resistance Co. Type BT-1/2 Erie Type No. 505	A32016-182 (Pref. 1) A113248-182 (Alt. Pref. 2) A18004-182 (Alt. Pref. 3) A32016-152 (Pref. 1) A18004-152 (Alt. Pref. 2) A32015-152 (Alt. Pref. 3)
278	#	RESISTOR, Fixed: 1500 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	2nd Audio Cathode Bias	Allen-Bradley Erie Type No. 505 Speer Type SC1-1/2	A113248-152 (Alt. Pref. 4)
278-1	3RC30BE152J 3RC31AE152J	RESISTOR, Fixed: 1500 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Audio Squelch Cathode Bias	International Resistance Co. Type BT-1/2 Allen-Bradley Type No. GB Erie Type No. 505	A113248-152 (Alt. Pref. 4) A32016-152 (Pref. 1) A18004-152 (Alt. Pref. 2)

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
279-1	3RC21AE152J 3RC21BE152J 3RC30BE473K 3RC31AE473K 3RC21AE473K 3RC21BE473K	RESISTOR, Fixed: 47,000 ohms, $\pm 10\%$ , 1/2w, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Squelch Cathode Bleeder	Speer Type SC1-1/2 International Resistance Co. Type BT-1/2 Allen-Bradley Type GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A32015-152 (Alt. Pref. 3) A113248-152 (Alt. Pref. 4) A112933-473 (Pref. 1) A18150-473 (Alt. Pref. 2) A112934-473 (Alt. Pref. 3) A113249-473 (Alt. Pref. 4)
279-2	Same as 279-1	Same as 279-1	Squelch Cathode Bleeder		
279-4	Same as 279-1	Same as 279-1	3rd I-F Screen Dropping		
280	3RC30BE105K 3RC31AE105K 3RC21AE105K 3RC21BE105K	RESISTOR, Fixed: 1 meg, 1/2w, $\pm 10\%$ , 9/16" lg x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	3rd I-F Grid Leak	Allen-Bradley Type GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112933-105 (Pref. 1) A18150-105 (Alt. Pref. 2) A112934-105 (Alt. Pref. 3) A113249-105 (Alt. Pref. 4)
280-2	3RC30BE105M 3RC31AE105M 3RC21AE105M 3RC21BE105M	RESISTOR, Fixed: 1 meg, 1/2w, $\pm 20\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	AVC Coupling	Allen-Bradley Type No. GB Erie Type No. 505 Speer Type SC1-1/2 International Resistance Co. Type BT-1/2	A112931-105 (Pref. 1) A18006-105 (Alt. Pref. 2) A112932-105 (Alt. Pref. 3) A113319-105 (Alt. Pref. 4)
280-3	Same as 280	Same as 280	2nd Audio Screen Dropping		
280-4	Same as 280	Same as 280	2nd Audio Grid		
280-5	Same as 280	Same as 280	2nd Audio Grid		
281-2	3RC30BE154K	RESISTOR, Fixed: 150,000 ohms, 1/2w, $\pm 10\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Noise Limiter Filter	Allen-Bradley Type GB	A112933-154 (Pref. 1)



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281-3	3RC31AE154K	Same as 281-2	Noise Limiter Load	Erie Type No. 505	A18150-154 (Alt. Pref. 2)
281-4	3RC21AE154K	Same as 281-2	Crystal Osc. Grid Resistor	Speer Type SC1-1/2	A112934-154 (Alt. Pref. 3)
283	3RC21BE154K	RESISTOR, Fixed: 180,000 ohms, $\pm 5\%$ , 1/2w, 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	I-F Cathode Bias	International Resistance Co. Type BT-1/2	A113249-154 (Alt. Pref. 4)
284	3RC30BE184J	RESISTOR, Fixed: 8200 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	Audio Squelch Bleeder	Allen-Bradley Type No. GB	A32016-181 (Pref. 1)
	3RC31AE184J			Erie Type No. 505	A18004-181 (Alt. Pref. 2)
	3RC21AE184J			Speer Type SC1-1/2	A32015-181 (Alt. Pref. 3)
	3RC21BE184J			International Resistance Co. Type BT-1/2	A113248-181 (Alt. Pref. 4)
285	3RC30BE822J	RESISTOR, Fixed: 8200 ohms, 1/2w, $\pm 5\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated		Allen-Bradley Type No. GB	A32016-822 (Pref. 1)
	3RC31AE822J			Erie Type No. 505	A18004-822 (Alt. Pref. 2)
	3RC21AE822J			Speer Type SC1-1/2	A32015-822 (Alt. Pref. 3)
	3RC21BE822J			International Resistance Co. Type BT-1/2	A113248-822 (Alt. Pref. 4)
286	3RC30BE153K	RESISTOR, Fixed: 15,000 ohms, 1/2w, $\pm 10\%$ , 9/16" x 7/32", No. 18 wire, leads 1 1/2", bakelite insulated	1st Audio Cathode Load	Allen-Bradley Type No. GB	A112933-153 (Pref. 1)
	3RC31AE153K			Erie Type No. 505	A18150-153 (Alt. Pref. 2)
	3RC21AE153K			Speer Type SC1-1/2	A112934-153 (Alt. Pref. 3)
	3RC21BE153K			International Resistance Co. Type BT-1/2	A113249-153 (Alt. Pref. 4)
287	3Z9827.26	SWITCH, Rotary: Selector; bakelite wafer; includes: 1 plate, 2 mtg. studs, switch section assy., insulator, 8 spacers and misc. hardware. Maximum torque 3 oz. inches in counter-clockwise direction	Channel A thru D Crystal and Plate Coil Selector	Oak Mfg. Co. Yaxley Mfg. Company Centralab Div. of Globe Union Inc.	AA102802-1
	#	RESISTOR, Fixed: 7.5 ohms, $\pm 10\%$ , 3/8" lg. x 5/32" wide, leads 1-1/2" lg., 0.028" wide, leads to be hot tinned dipped	Test Meter Shunt	Speer Resistor Corp	A32128 (Pref. 1)
				International Resistance Co.	A32127 (Alt. Pref. 2)

# Not available as a spare part; listed for reference purposes only.

**TABLE OF REPLACEABLE PARTS—Cont**  
**MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C**

**MODEL: RADIO SET SCR-522-A**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
288	2Z7253.1	CONNECTOR, Female Contact: Delco No. 7246877; consists of two 1/4" dia. x 5/8" lg. spacers; post tapped on 1 end No. 6-32; other end riveted to bakelite strip 3/32" thick x 1-5/8" lg., on 1-1/8" centers; 2 brass; silver flashed; split cont pins 1/8" dia. x 1/2" lg. on same side as post; riveted to 2 solder lugs on opposite side on 5/16" centers; stamped No. 1 and No. 2.	Receiver Test Milliammeter Socket	Bendix No. AA102954-1	AA102954-1
289	2C4424A/S2	BOARD, Terminal: Crystal plug socket; crystal board; 12 cont. plug board assy for 4 plug-in crystal four. 1-1/8" leads, No. 22BK Lenz. Lenzac wire on side, four 1-3/4" leads of No. 22 Rockbestos Co. type ACA wire from solder lugs on end; 1-3/4" x 4-1/8" x 3/16"	Crystal sockets	Bendix No. AC58428-1	AC58428-1
290	3RC20BE103K 3RC20AE103K 3RC20AF103K 3RC20BE103K	RESISTOR, Fixed: 10,000 ohms, $\pm 10\%$ , 1/4w, 3/8" x 9/64", No. 20 wire, leads 1-1/2", bakelite insulated	Audio Diode Load	Allen-Bradley Type No. EB Erie Type No. 504 Speer Type S1-1/2 International Resistance Co. Type BTS Bendix No. AL73026-1	A32298-103 (Pref. 1) A18151-103 (Alt. Pref. 2) A32299-103 (Alt. Pref. 3) A113230-103 (Alt. Pref. 4) AL73026-1
291	2Z10001	TRANSFORMER, IF: 1st I.F., 12 mc (permeability tuned 2 adjustments; one for the pri., one for the sec.); mtd. in an aluminum can 1-1/2" x 2" x 3-11/16" which mts. by 2 threaded studs on the bottom of the case on 1-7/8" centers, 4 solder lug term on the bottom of unit; transf. designed for optimum coupling with single peak response at 12 mc.	Mixer to 1st I-F Coupling	Bendix No. AL73026-2	AL73026-2
292	#	TRANSFORMER, IF: (Permeability tuned 2 adjustments; one for the pri. and one of the sec.) Mtd. in an alum. can 1-1/2" x 2" x 3-11/16" which mts. by 2 threaded studs on the bottom of the case on 1-7/8" centers; 4 solder lug term. on the bottom of unit; transf. designed for optimum coupling with single peak response at 12 mc	1st i-f to 2nd i-f coupling	Bendix No. AL73026-3	AL73026-3
293	#	TRANSFORMER, IF: Permeability tuned 2 adjustments; one for the pri. and one for the sec.; mtd. in an alum. can 1-1/2" x 2" x 3-11/16" which mts. by 2 threaded studs on the bottom of the case on 1-7/8" centers; 4 solder lug term on the bottom of unit; transf. designed for optimum coupling with single peak response at 12 mc	2nd i-f to 3rd i-f coupling	Bendix No. AL73028-1	AL73028-1
294	2Z10001.8	TRANSFORMER, IF: 4th I.F., freq. 12 mc; (permeability tuned, 2 adjustments, 1 for pri. and 1 for sec., mtd. in an aluminum 1-1/2" x 2" x 3-11/16" which is mtd. upright, mtg. centers 1-7/8", 4 solder lug term on the bottom of unit; transf. designed for peak response at 12 mc with in-	3rd I-F to Diode Coupling	Bendix No. AL73028-1	AL73028-1

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295	2Z1000-22	terminal connections to the coil windings, so arranged to give a reversal of the polarity between the pri. and the sec., altering the resonant curve TRANSFORMER, AF; Input; pri. No. 1-920 ohms; pri. No. 2-6.9 ohms; sec. 2450 ohms; pri. No. 1 impedance 250,000 ohms; pri. No. 2 impedance 750 ohms; sec. impedance 1 meg.; pri. No. 1 to sec. 1.2; pri. No. 2 to sec. 1; 36.4 pri. 870 ohms; sec. 390 ohms pri. impedance 15,000 ohms; sec. impedance term 4-7; 4000 ohms term 4-6, 300 ohm term 4-5, 50 ohm 2-15/16" lg x 1-7/16" high x 1-7/8" wide	Audio input transformer	Bendix No. A103022	A103022
296-A,B	2Z10000-24	TRANSFORMER, AF; Output; pri. 870 ohm; sec. 390 ohms; pri. impedance 15,000 ohms; sec. impedance term 4-7; 4000 ohms; term 4-6, 300 ohms; term 4-5, 50 ohms. 3-3/4" lg. x 1-7/16" high x 1-7/8" wide. Includes: 6 henry reactor, 340 ohms D.C. resistance. (This item not replaceable separately.)	Audio output and B+ filter pack	Bendix No. A103024	A103024
297	2ZK11150-10	R-F OSCILLATOR ASSEMBLY: Includes: coupling assembly, angle and grounding strap assembly, board ass'y, mtg. plate, tube socket, socket plates, coupling shaft, resistors, misc. hardware, capacitor 216, 217; coils 224, 223, 222, 226, 225	Capacitor Assy	Bendix No. AN90966-1	AN90966-1
297	#	R-F & OSCILLATOR ASSEMBLY: Includes: supling ass'y, angle and grounding strap ass'y, board ass'y, mtg. plate, tube socket, socket plate, coupling shaft, resistors, misc. hardware, capacitors 216, 217; coils 224, 223, 222, 226, 225	Capacitor Assy	Bendix No. AN90866-2	AN90966-2
299	2ZK3290-4	COUPLING ASSEMBLY: Includes hub and arm, coupling plate and rivets; 1-1/2" OD	Coupling for Tuning Capacitors, R-F & Harm. Amp.	Bendix No. AA103976-1	AA103976-1
	#	MECHANICAL PARTS	Crystal Board 1st Assy	Bendix No. AC58236-1	AC58236-1
	#	BOARD, Terminal: Includes: 38 term. lugs, phenolic, three No. 29 mtg. holes. 13-13/16" x 1-3/8" x 1/16". (Ref. TB-5)	Resistor & Capacitor Board Assy	Bendix No. AC58285-1	AC58285-1
	#	BOARD, Terminal: 13-13/16" x 1-3/8" x 1/16"; 36 terminal lugs; phenolic, 3 No. 29 mounting holes. (Ref. TB-5)	Resistor & Capacitor Board Assy	Bendix No. AC58285-2	AC58285-2
	#	BOARD, Terminal: Resistor and capacitor; Includes: 1 riveting board ass'y; 1 capacitor; 6 resistors; 1 choke coil ass'y; (Ref. no's 206-17, 241-1, 265-1, 265-2, 272, 276, 277.) TB-8	Resistor, Capacitor & Choke Assy Board	Bendix No. AC58409-1	AC58409-1
	#	BOARD, Terminal: Resistor and capacitor; includes 5 capacitors, 7 resistors, 1 riveting board ass'y (Ref. nos. 206-14, 15, 16; 209, 210, 266-2, 274-1, 2, 275-1, 279-3 (Ref. TB-9)	Resistor & Capacitor Board Assy	Bendix No. AC58466-1	AC58466-1
	#	BOARD, Terminal: Resistor and capacitor; includes: 3 capacitors, 2 resistors, 1 riveting board ass'y. (Ref. nos. 206-14, 15, 16, 209, 210; 266-2; 274-1, 2; 275-1, 279-3. (Ref. TB-9)	Resistor & Capacitor Board Assy	Bendix No. AC58466-2	AC58466-2

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
#	#	BOARD, Terminal: Resistor and capacitor; includes: 19 terminal lugs, 4 capacitors, 8 resistors; (Ref. nos. 202-30, 203-3, 206-14, 15; 239; 263-4; 271-3; 275-2; 276-1; 277-2; 280-2, 3.) 5-3/8" lg. x 1-3/8" wide x 1/16" thick, 3 No. 29 mtg. holes (.136") 2-11/16" and 5" centers phenolic impregnated with superla wax	Resistor & Capacitor Board Assy	Bendix No. AC63182-1	AC63182-1
#	#	BOARD, Terminal: Resistor and capacitor; includes: 16 terminal lugs, 2 capacitors, 9 resistors, (Ref. nos. 206-2, -26; 234-1, -2; 235-1; 240; 258-3; 265-1; 266-4; 273-3) 3-7/8" lg. x 1-3/8" wide x 1/16" thick; 2 holes, No. 29 drill, (.136") 3-1/2" centers phenolic, impregnated with superla wax	Resistor & Capacitor Board	Bendix No. AC63183-1	AC63183-1
#	#	BOARD, Terminal: Resistor and capacitor; includes: 16 terminal lugs, 1 choke coil ass'y., 2 capacitors, 6 resistors, (Ref. nos. 206-24, 25; 241-4, 272-1, 274-3, 275-4, 278-1, 284, 285) 4-3/16" lg. x 1-3/8" wide x 1/16" thick, 2 mtg. holes No. 29 drill (.136") 3-13/16" centers, phenolic, impregnated with Superla wax	Resistor & Capacitor Board	Bendix No. AC63184-1	AC63184-1
#	#	BOARD, Terminal: Includes ref. nos. 206-3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 21, 23; 263-1, 2, 3; 267-1, 2, 3, 4, 5, 6; 268; 269; 270; 280 resistor and cap. 13-13/16" lg. x 1-3/8" wide x 1/16" thick; 3 No. 29 mtg. holes	Resistor & Capacitor Board Assy (Ref.)	Bendix No. AL73041-1	AL73041-1
#	#	BOARD, Terminal: Includes ref. nos. 206-3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 21, 23; 263-1, 2, 3; 267-1, 2, 3, 4, 5, 6; 268; 269; 270; 280. (Resistors and cap.) 13-13/16" lg. x 1-3/8" wide x 1/16" thick; 3 No. 29 mtg. holes	Resistor & Capacitor Board Assy	Bendix No. AL73041-2	AL73041-2
#	#	BOARD Terminal: (Ref. nos. 203-3; 206-24; 219; 253-3; 254-3; 264-2; 266-2; 271-2; 272-2; 275-1; 276-2) includes: 1 terminal board ass'y. 2 brackets and insert ass'y, 1 tube socket, 1 retainer ring, 3 capacitors, 8 resistors, and misc. hardware	Resistor & Capacitor Board	Bendix No. AL75539-1	AL75539-1
#	#	BOARD, Terminal: Includes: (Ref. nos. 206-3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 21; 233-1, 2, 3, 4; 241-5; 263-1, 2, 3; 267-1, 2, 4, 5, 9, 10; 269-2, 3. (Resistors and capacitors and RF choke) 13-14/64" x 1-3/8" wide x 1/16" thick, 3 No. 29 mtg. holes	Resistor & capacitor Board Assy	Bendix No. AL75813-1	AL75813-1
#	#	BOARD, Terminal: (Ref. nos. 206-16, 17, 27, 28; 258-2; 274-1; 276-2; 281-2, 3; 290.) Includes: 12 terminal lugs, 4 capacitors, 6 resistors, 2 bracket and insert ass'y. 1 tube socket, 1 container ring and misc. hardware. 3-5/16" lg. 1-3/8" wide x 1/16" thick, 2 holes No. 29 drill (.136") 2-15/16" centers, phenolic, impregnated with superla wax	Resistor & Capacitor Board	Bendix No. AL-75823-1	AL75823-1
#	#	BOARD, Terminal: Includes soldering lugs, mtg. spacers and 2 contact pins; 1-5/8" lg. x 1/2" wide x 3/32" thick (See ref. No. 288).	Bias Resistor Board, 2nd IF	Bendix No. AA102954-1	AA102954-1

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#	BOARD, Terminal: Includes: 6 terminal lugs, 2 mtg. holes No. 29 (.136") 1.937 center, 2-5/16" lg. x 1-3/8" wide x 1/16" thick, phenolic, vacuum impregnate with superla wax. (TB-7). (Used on AA104048-1)	Resistor & Capacitor Mtg. Board	Bendix No. AA103989-1	AA103989-1
#	BOARD, Terminal: Includes: 9 terminal lugs, 2 mtg. holes, No. 29 (.136") 2.937" center, 3-5/16" lg. 1-3/8" wide x 1/16" thick; phenolic vacuum impregnate with superla wax. TB-6; used on (AA104059-1)	Resistor & Capacitor Mtg. Board	Bendix No. AA104016-1	AA104016-1
#	BOARD, Terminal: Includes: 19 terminal lugs, 3 No. 29 mtg. holes, 2.687" and 5,000 centers, 5-3/8" lg. x 1-3/8" wide x 1/16" thick, phenolic, vacuum impregnate with superla wax. (Used on AC58466-1) (TB-9)	Resistor & Capacitor Mtg. Board	Bendix No. AA104017-1	AA104017-1
#	BOARD, Terminal: Includes: 17 terminal lugs, 4-3/16" lg. x 1-3/8" wide x 1/16" thick, 2 mtg. holes No. 29 (.136") 11/16" centers vacuum impregnate with superla wax. (TB-9) (Used on AC58409-1)	Mtg. Board for 6 Resistors, 1 Cap, 1 Choke	Bendix No. AA104018-1	AA104018-1
#	BOARD, Terminal: Resistor and capacitor. Includes: 1 riveting board ass'y., 2 capacitors and 2 resistors. (Ref. nos. 206-1, -2; 264; 281-4) (TB-7)	Resistor & Capacitor Board Assy	Bendix No. AA104048-1	AA104048-1
#	BOARD, Terminal: Resistor and capacitor. Includes: 1 riveting board ass'y., 2 capacitors, 4 resistors. (Ref. nos. 206-2, 18; 258; 266-3; 265-1; 278. (TB-6)	Resistor & Capacitor Board Assy	Bendix No. AA104059-1	AA104059-1
#	BOARD, Terminal: Includes: 1 terminal board, 5 large lugs, 2-3/4" wire No. 22, 3/4" tubing, phenolic, impregnated with superla wax. (Used on AN92085-1)	Wire Terminal Board (TB-4)	Bendix No. AA104241-1	AA104241-1
#	BOARD, Terminal: Includes: 1 terminal board and 7 terminal lugs 4-19/32" lg. x 3/8" wide x 1/8" thick, 2 mtg. slots, 1/4" x .125" phenolic, impregnated with superla wax. (Used on AA104407-1)	Wiring Assy Board (TB-1)	Bendix No. AA104243-1	AA104243-1
#	BOARD, Terminal: Includes: 1 terminal board, 4 terminal lugs, 2-13/16" lg. x 3/8" wide x 1/8" thick, 1 slot 1/4" x .125", phenolic, impregnated with superla wax. (Used on AA104406-1)	Wiring Board Assy (TB-2)	Bendix No. AA104246-1	AA104246-1
#	BOARD, Terminal: Includes: 1 board terminal ass'y, wire and tubing, first assembly of TB-2	Resistor & Capacitor Board	Bendix No. AA104406-1	AA104406-1
#	BOARD, Terminal: Includes: 1 terminal board ass'y. wire, 1 resistor (Ref. No. 252-1). Used on AN-90966-1 (TB-1)	R-F & Oscillator Assy	Bendix No. AA104407-1	AA104407-1
#	BOARD, Terminal: Includes: 1 terminal board ass'y, wire, 1 resistor (Ref. No. 252-1). Used on AN-90966-2 (TB-1)	R-F & Oscillator Assy	Bendix No. AA104407-2	AA104407-2
#	BOARD, Terminal: Includes: 11 terminal lugs; 3-5/16" lg. x 1-3/8" wide x 1/16" thick, 2 No. 29 mtg. holes (.136"). 2.937 center. phenolic; impregnated with superla wax. (Used on AL75539-1)	Resistor & Capacitor Board	Bendix No. AA115182-1	AA115182-1
#	BOARD, Terminal: Includes: 1 board, 2 large lugs, 6 small lugs, 5-3/8" lg. x 1-3/8" wide x 1/16" thick; phenolic; impregnated with Superla wax. (Used on AC-58466-2)	Resistor & Capacitor Board Assy	Bendix No. AA115175-1	AA115175-1
#	BRACKET, Plug: 1-7/8" lg. x 1-7/16" high x 11/32" wide; 2 holes 1-15/16" centers; drill 7/32" dia. and counterbore 5/16" dia., from underside leaving .040" material	Plug Brace	Bendix No. A103944	A103944

# Not available as a spare part; listed for reference purposes only.

**TABLE OF REPLACEABLE PARTS—Cont**  
**MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C**

**MODEL: RADIO SET SCR-522-A**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
#		BRACKET, Capacitor: Cold rolled steel, cadmium plate, 2-1/2" x 1-11/16" x 7/8"; 2 mtg. holes with 2-1/8" centers; material .0598"	Mtg. Bracket for Capacitors 211-1 and -2	Bendix No. A115164	A115164
#		BRACKET, Terminal Board: 1-1/4" lg. x 3/4" high x 1/2" wide; diagonal cutout 1/4" x 1/4", No. 13 hole (.185"); material—cold rolled steel. (Used on AL75539-1)	Mtg. Bracket for Terminal Board & Socket Ass'y	Bendix No. A115165	A115165
#		BRACKET, Tube Socket: 1-3/4" high x 2-17/32" lg., 2 holes, No. 13 drill (.185"), 1-15/32" centers; all bending radii 1/32"	Tube Socket Bracket for JAN-12H6	Bendix No. A115174	A115174
#		CLAMP, Cable: 7/16" lg., x 5/16" wide; material .020" brass, No. 18 D.R. (.1695")	Cable Clamp on R-F & Oscillator Ass'y	Bendix No. A109767	A109767
#		CLIP, Tube Contact: .279" approx. dia. .250" high, 2 clamps 60° centers, .020 low carbon steel; inside dia. to allow clip to fit std. tube cap.	Grid Clip for 12C8 Tube	Zierick Mfg.	A25590
#		COLLAR, Spacing: Thrust; 1/2" dia., stainless steel type No. 303; chamfer .016" x 45°. No. 8-32 threads	Frequency Shifter Ass'y.	Bendix No. A102556	A102556
#		COLLAR, Spacing: Switch, 1/4" O.D. 172 thk, .1285" I.D., cadmium plated	For Crystal Switch	Bendix No. A102764	A102764
#		CONNECTOR, Male Contact: Contact brass, silver flash, .660" lg., 7/32" O.D., 119" I.D.; 1 No. 42 hole, .0935" x 7/64" deep, chamfer 1/64" x 45°; .025" slot; .125" before flash not to exceed .126" after flash	Contact Pin Meter Plug Board	Bendix No. A102132	A102132
#		CONNECTOR, Male Contact: Brass 1/2" hard, silver plate, 23/64" lg. x 3/8" chamfer .010" x 45°, 1 hole No. 19 drill .166" and countersunk 82° @ .250" dia.	Tip Jack Antenna Board	Bendix No. A104490	A104490
#		CONTACT, Socket: 9/16" lg. x 9/32" wide, .015" thick, 1 hole No. 42 drill, .0935" dia., 1 hole No. 52 drill; for use with 1/8" dia. pin	Socket Contact Crystal Board	Cinch Mfg. Co. Type 38S	A102969
#		COUPLING, Plate: 1" I.D.; 4 holes .125" dia., material .046" brass or cold rolled steel; nickel plate, cadmium plate or zinc plate	For Coupling	Bendix No. A103947	A103947
3H1290.3		COUPLING, Rigid Drive: Includes: hub and arm, coupling arm, coupling plate, spacers, and rivets; 1-1/2" O.D.	Coupling for RF Tuning Capacitor Ass'y	Bendix No. AA112886-1	AA112886-1
#		HUB, Coupling: Indicator, .370" outside dia., 9/32" high .01885" sq. center hole; .010" x 45° chamfer; .005 max. radius; stainless steel No. 303; passivate BM-86	Hub for Indicator Knob	Bendix No. A102757	A102757
#		HUB, Coupling: 5/8" high x 19/64" wide .368 I.D.; 015" x 45° chamfer; stainless steel No. 303; passivate BM-86	Condenser Shaft	Bendix No. A102760	A102760
#		INSULATOR, Switch: 1-29/32" O.D., 3/32" thick, 2 holes No. 30 drill (.1285"); 1.562" center hole; bakelite varnish BM-17	Crystal Switch Insulator	Bendix No. A102803	A102803

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#	MOUNTING, Switch: Crystal switch mtg., 1-13/16" wide, x 1-3/8" wide x .0329" thick; 2 No. 30 drill holes .1285" dia., 1-1/2" centers; 2 holes .185" dia. .1916" centers	For Mtg. Switch	Bendix No. A102766	A102766
#	MOUNTING, Tube Socket mtg., 2-13/32" lg. x 7/8" wide, 3 holes No. 30 drill (.1285"); 2 holes No. 40 drill (.098"); 2 holes No. 22 drill (.157") material; .047" cold rolled steel, cadmium plated	Tube Socket Mtg.	Bendix No. 103920	A103920
#	MOUNTING, Tube Socket: 2-3/32" lg. x 7/8" max. width x 3/8" high; material .047" cold rolled steel, shaped plate, 2 holes No. 30 drill, cadmium plate, stenciled	Plate for Tube Socket Mtg.	Bendix No. A104858-1	A104858-1
#	MOUNTING, Tube Socket: 2-3/32" lg. x 7/8" max. width x 3/8" high; material .047" cold rolled steel shaped plate, 2 holes No. 30 drill cadmium plate stenciled	Plate for Tube Socket	Bendix No. A104858-2	A104858-2
#	MOUNTING SOCKET: 2-13/32" lg. x 7/8" max. width, material .037" cold rolled steel, 3 holes No. 30 drill, cadmium plate, stenciled	Plate for Socket	Bendix No. A104864	A104864
#	MOUNTING, Capacitor: Condenser, mounting; 4-7/8" lg. x 4-27/32" x 5/8" thick; 66 No. 6-32 extrude holes, 1 No. 1-1/4" dia. holes, 3 No. 1-1/2" dia. holes, 6 slots notched, cadmium plated	Plate for Condenser Mtg.	Bendix No. A104865	A104865
#	PLATE, Indicator: 1-11/32" wide x 1-9/16" high; .0359" thick with 7/16" dia., depression; .050" deep; cold rolled steel; indicator must be flat and free from burrs and sharp edges	Tuning Indicator Knob	Bendix No. A102563	A102563
#	POST, Supporting: Tube holder, 1-11/32" long x 1/2" No. 4-40 threads .015" x 45° chamfer; cadmium plate, half hard 5/16" deep	Tube Holder Post R-F & Oscillator Assy	Bendix No. A103921	A103921
#	SHAFT, Capacitor: Cond. drive, 1-63/64" lg., stainless steel type No. 303, .2490 dia., No. 8-32 threads; .015" x 45° cham.; threaded dia. to be concentric with sq. portion of shaft within .003"	Tuning Condenser Drive Shaft	Bendix No. A102555	A102555
#	SHAFT, Switch: Crystal switch; 3/16" x 1-1/16" x .020; 1/32" R, cadmium plate, or silver plate	Crystal Switch Arm	Bendix No. A102804 Oak Mfg. Co. A114780	A102804 or A114780
#	SLEEVE, Coupling: Plastic, .251 O.D. mold to .300" and machined to .280"; material polystyrene tubing; tubing must be true formed within dimensions and tolerances specified thru-out entire length; both ends must be clean and free of burr and irregularities. Inside surface of tube must be smooth and free of excessive tool marks	Sleeve for Trimmer Slug	Universal Plastic Co.	A107910
#	STUD, Mounting: 1-33/64" lg. x 1" high; .005" x 45° chamfer; No. 4-40 thread, No. 24 drill (.152") 3/32" deep; steel; cadmium plate or zinc plate	Mtg. Stud for Crystal Switch Assy	Bendix No. A102765	A102765
#	WIRE, Bare: Ground; brass silver plated, 13/16" lg. x 1-7/32" lg. x 1/4" wide; 1 hole drill No. H.266" 7/16" radius; 1 hole, drill No. 22 .1570" 7/32" radius; 1 hole drill No. 42 0935", 3/32" radius	Ground Strap Antenna Board	Bendix No. A102763	A102763

# Not available as a spare part; listed for reference purposes only.

**TABLE OF REPLACEABLE PARTS—Cont**

**MODEL: RADIO SET SCR-522-A**

**MAJOR ASSEMBLY: RADIO RECEIVER BC-624-A, BC-624-AM, OR BC-624-C**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
	#	WIRE, Bare: Grounding; 1-1/4" lg. x 1/4" wide material .007" thick, 2 holes No. 40 drill (.098") Beryllium copper 1 No. 1/4" hd. Air Corps Spec. No. 11070A, heat treat after forming. Hold at 575 ±10°F. for three hours, quench in water. Cadmium plate	Ground Strap for R-F & Oscillator or Assy	Bendix No. A104097	A104097
	#	WIRE, Bare: Grounding; 1-5/16" lg. x 1/4" wide x .026" cadmium plate; material pref; (1) .020" cold rolled steel Rockwell 35-89; (2) .015" cold rolled steel Rockwell 35-89; (3) .020" brass 1/4", 1/2" or full hard; (4) .015" brass 1/4", 1/2" or full hard	Ground Strap R-F & Oscillator Assy	Bendix No. A104307	A104307

**MODEL: RADIO SET SCR-522-A**

**MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM**

100	#	CAPACITOR, Fixed: Ceramic or molded phenolic 15 mmf., ±1 mmf., 500v, DCW 11/16" lg. 7/32" dia. No. 20 wire end leads 1-1/2" lg min. (Not used in some equipments.)	Balancing, 1st Harm. Amp. Plate	Erie-Type NPOL	A18182-17
101-1	3D9010-15	CAPACITOR, Fixed: Ceramic or molded phenolic 10 mmf., ±.5 mmf., 500v DCW. 7/16" lg. 7/32" dia. No. 20 wire end leads 1-1/2" lg. min. (This item may be used to replace ref. No. 100)	Osc. Feedback	Erie-Type NPOK	A18182-13
101-2		Same as 101-1	R-F Bypass		
102-1	3K3568214	CAPACITOR, Fixed: Mica dielectric molded. 6800 mmf. ±20% 300v DCW, 53/64" lg., 53/64" wide; 11/32" thick. No. 18 wire end leads 1-1/8" lg. Spec. JAN-C-5	Osc. Screen Coupling	JAN-C-5	CM35A682M (Pref. 1)
102-2	3K3568224		Osc. Plate Bypass	Aerovox Micamold	A102967-7 (Alt. Pref. 2)
102-3		Same as 102-1	1st Harm. Amp Grid Bypass	Cornell-Dubilier Solar	
102-4		Same as 102-1	1st Harm. Amp. Filament Bypass		
102-5		Same as 102-1	1st Harm. Amp. Screen Bypass		
102-6		Same as 102-1	1st Harm. Amp. Cathode Bypass		
102-7		Same as 102-1	1st Harm. Amp. Plate Bypass		



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102-8	Same as 102-1	2nd Harm. Amp. Grid Bypass			
102-9	Same as 102-1	2nd Harm. Amp. Grid Bypass			
102-10	Same as 102-1	2nd Harm. Amp. Filament Bypass			
102-11	Same as 102-1	Meter Shunt Bypass			
102-12	Same as 102-1	Power-Amp. Grid Bypass			
102-13	Same as 102-1	Power-Amp. Grid Bypass			
102-14	Same as 102-1	Bridge Blocking			
102-15	Same as 102-1	Bridge Blocking			
103	3DK9050-90	Osc. Cathode Bypass	Electro Motive Type 503	A18253-1 (Pref. 1)	
	3D9050-40		F.W. Sickles Co. Type 2R		
	3D9050-40		Erie Resistor Corp. Type J		
	3D9050-90		Sangamo Electric Co. Type K	C56315-500 (Alt. Pref. 2)	
			Cornell-Dubilier Type 5WL		
			Aerovox Corp. Type 1468		
			Electro Motive		
104	3D9100-51	1st Harm. Amp. Grid Coupling	Erie Type NPOD	A104485-1	
105-1	3DA1-82	Power Amp. Filament Bypass	Sangamo Elector Co. Type K	C56315-102	
			Cornell Dubilier Type 5WL		
			Electro Motive Type 1468		
105-3	Same as 105-1	Speech-Amp. Grid Bypass			
105-4	Same as 105-1 (Some equipments use this item)	Meter Shunt Bypass			
106	3DA2-63	Power-Amp. B+ Bypass	Cornell-Dubilier Type 1WPLS	A18255-1	
107-1	3DA100-8	Speech-Amp. Screen Bypass	Micamold Solar	A18015-104	

#Not available as a spare part; listed for reference purposes only.

**TABLE OF REPLACEABLE PARTS—Cont**  
**MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM**

**MODEL: RADIO SET SCR-522-A**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
108-2	3K3010222	CAPACITOR, Fixed: Mica, molded bakelite. .001 mfd. $\pm 5\%$ 500v DCW 13/16" lg., 5/16" wide. No. 18 wire end leads 1 1/4" lg.	Tone Feedback	Aerovox Micamold Cornell-Dubilier Solar	A102967-2 (Pref. 1)
109-1	3D9020-19	CAPACITOR, Fixed: Ceramicon or molded phenolic. 20 mmf., $\pm 1$ mmf. 500v, DCW 11/16" lg., 7/32" dia. No. 20 wire end leads 1 1/2" lg. min.	Power-Amp. Grid Coupling	Electro-Motive Cor- nell-Dubilier Type 1WL Aerovox Corp. Type 1467	C56312-102 (Alt. Pref. 2)
109-2		Same as 109-1	Power-Amp. Grid Coupling	Erie—Type NPOL	A18182-16
109-3		Same as 109-1	2nd Harm. Amp. Grid Coupling		
109-4		Same as 109-1	2nd Harm. Amp. Grid Coupling		
109-5		Same as 109-1	H-F Bypass		
110	3DB1.092	CAPACITOR, Fixed: Oil filled paper, 1.0 mfd. $+20\%$ , $-15\%$ , 100v DCW. 1 13/16" lg. less mtg. holes, 1" wide, 3/4" high. Metal case. Two mtg. ears with 3/16" dia. holes 2 1/8" mtg. centers, two solder lugs 7/8" centers	Speech-Amp. Cathode Bypass	Cornell-Dubilier	A104092-2
111	3DA500-40	CAPACITOR, Fixed: Oil filled paper, 5 mfd., $+20\%$ , $-15\%$ , 400v DCW. 1 13/16" lg. less mtg. holes, 1" wide, 3/4" high. Metal case. Two mtg. ears with 3/16" dia. holes 2 1/8" mtg. centers, two solder lugs 7/8" center	Mod. Screen Bypass	Cornell-Dubilier	A104092-1
113	3K2030122	CAPACITOR, Fixed: Mica, 300 mfd. $\pm 5\%$ 500v DCW, low-loss bakelite case. 11/16" lg., 7/16" wide, 3/16" thick. No. 20 wire end leads 1 1/4" min. lg.	Speech-Amp. Plate Blocking	Cornell-Dubilier Type 5WL Aerovox Type 1468	C56314-301
114	#	CAPACITOR, Variable: Air dielectric; 11 to 65.5 mfd., 880v RMS 60 cycle test. 2 sect. in parallel; 8 stator and 5 rotor plates; ceramic mtg. plates, 1 5/8" sq., 1 23/32" wide; shaft .156" dia. x 21/32"; three No. 4-40 mtg. studs 120° apart	Osc. Plate Tuning	General Instrument Corp. Radio Condenser Co.	L72950 or AL74116-1
115	#	CAPACITOR, Variable: Air dielectric; 3.5 mfd. to 27 mfd., 880v RMS 60 cycle test; 12 stator and 7 rotor plates, ceramic mtg. plates. 1 5/8" sq., 1 23/32" wide; shaft .156" dia. x 21/32"; three No. 4-40 mtg. studs 120° apart	1st Harm. Amp. Plate Tuning	General Instrument Corp. Radio Condenser Co.	L72951 or AL74117-1
116	#	CAPACITOR, Variable: Air dielectric; 3.0 mfd. to 16.5 mfd., 880v RMS test; 2 3/8" lg., 1 5/8" wide, 1 5/8" high, shaft 1 15/16" lg. .156" dia., 13 plates (8 stators and 5 rotors) ceramic; three No. 4-40 mtg. studs 120° apart	2nd Harm. Amp. Plate Tuning	General Instrument Radio Condenser Co.	L72949 or AL74115-1

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#	#	Description	Power-Amp. Plate Tuning	General Instrument Corp. Radio Condenser Co.	L72948 or AL74114-1
117		CAPACITOR, Variable: Air dielectric; 2.8 mfd. to 11 mfd., 880v RMS 60 cycle test; 6 stator and 3 rotor plates; ceramic mtg. holes, 1 5/8" sq., 1 23/32" wide; shaft .156" dia. x 21/32", three No. 4-40 mtg. studs 120° apart	Power-Amp. Plate Tuning	General Instrument Corp. Radio Condenser Co.	L72948 or AL74114-1
118	2C6525A/J6	COIL, Radio, RF: Plate Assy Osc. phenolic, bakelite varnish, 9 1/2" turns No. 24 enameled copper wire, grooved form. 1" lg., 3/8" dia. One hole No. 36 x 5/8" deep tap No. 6-32 x 5/16" min. depth full thread. Two No. 4-40 holes x 1/4" deep. .825" root dia. of thread. Includes: coil form and misc. hardware	Osc. Plate Tuning	Bendix No. AC57998-1	AC57998-1
119	2C6525A/J7	COIL, Radio, RF: Plate Assy, molded phenolic or Durez No. 11863, vacuum wax impregnate. 15 turns No. 10 silver plated SD copper wire, tapped at 7 turns, self supporting. 1 13/16" lg., 1/2" OD, .455" bot. dia. Slot 3/8" lg. 3/64" wide at end. Hex. hole 5/16" wide entire length. Includes: coil form, coil plate and wire	1st Harm. Amp. Plate Tuning	Bendix No. AC57999-1	AC57999-1
120	2C6525A/J8	COIL, Radio, RF: Rods, plate assy, No. 10 silver plated copper wire; distributed inductance line. 5" lg., 1 5/16" high, 1 1/16" wide	2nd Harm. Amp. Plate Tuning	Bendix No. AC58149-1	AC58149-1
121	3C1074-24	COIL, Radio, RF: Plate assy, 2 turns-gap-2 turns, self supporting, No. 10SD silver-plated copper wire; 1 7/32" lg., 37/64" ID. One No. 58 hole .042" dia. (optional). Includes: wire, coil strap and coil plate	Power Amp. Plate Tuning	Bendix No. AC58150-1	AC58150-1
122	2C6525A/J10	COIL, Radio, RF: Antenna coupling assembly, 2 1/8" wide, 2 11/16" high, 3/16" thick. Rectangular cut out 1 1/32" x 1 3/4". Bakelite base. Two No. 22 mtg. holes 1 11/16" centers. Two .267" dia. holes, 9/16" center. One .314" dia. hole, one .188" dia. hole, one .438" dia. hole. Includes: antenna board assy., coil and block assy., and misc. hardware	Antenna Coupling Coil Assembly	Bendix No. AC63163-1	AC63163-1
123-1	2Z7228-1	CONNECTOR, Male Contact: 8 contact, molded phenolic, hot tin dipped or water dip lacquer. 1 7/8" lg., 1 9/16" high, 1" thick. Two holes No. 6-32 tap 3/8" deep	Trans. Control Circuits	Amalgamated Radio and Television Howard B. Jones Type P-408	A102811
123-2		Same as 123-1	Power Input from Rack		
125	2Z7298-2	RESISTOR, Variable: 1,000,000 ohms ±20% curve C. 15/16" lg., 1 1/4" dia. Saw slot 1/32" wide 3/64" deep. 3/8" -32 threads 1/4" lg. (Not used in AM equipment)	Audio Gain Control	International Resistance Co., Type C	A104470-2
126	3C336-19	COIL, Radio, AF: Choke; aluminum. 2 9/16" lg., 1 7/8" wide, 1 7/16" thick. Four 6-32 mtg. holes 1/4" deep 1 3/8" centers. 430 henries, .001 amp. DC, 5000 ohms resistance at 20°C, 1500v RMS 60 cycles	Speech-Amp. Plate Choke	Bendix No. A103034	A103034
127-1	3C336-11	COIL, Radio, RF: Choke, plate. 1000 ma; 2 1/2" meters; wire wound; steatite case 1 3/4" lg. x 9/32" dia., radial leads	2nd Harm. Amp. Grid Choke	Presto Electric Co. Ohmite Mfg. Co. Scientific Industries	A104090 (Pref. 1)
127-2	3C336-21	Same as 127-1	2nd Harm. Amp. Grid Choke	Bendix No. A104301	A104301 (Alt. Pref. 2)

# Not available as a spare part; listed for reference purposes only.

**TABLE OF REPLACEABLE PARTS—Cont**  
**MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM**

MODEL: RADIO SET SCR-522-A

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
127-3		Same as 127-1	Power-Amp. Grid Choke		
127-4		Same as 127-1	Power-Amp. Grid Choke		
128-1	3C326-100	COIL, Radio, RF: 2.5 mb; 50 ohms; 125 ma; distributed capacity 1 mmf., continuous winding in 4 sections, isolantite mtg., 1" lg. 1/2" dia.	Osc. Grid Choke	James Millen Co. National Co., Inc. Type R-100 James Millen Co. Type 34103	A10556 (Pref. 1) A113332 (Alt. Pref. 2)
128-2		Same as 128-1	Osc. Cathode Choke		
128-3		Same as 128-1	Power-Amp. Plate Choke		
131	2Z7650-B6106	RELAY, General Purpose: DPDT and SPST, 150 ohm coil, 12v DC normally unenergized, 2-9/32" max. high, 2-1/2" lg., 1 1/4" max. wide. Two mtg. holes No. 8-32 tapped. Contacts to be platinum-iridium or platinum-ruthenium. Metal parts to be plated.	Contacting Relay	Clare Type B-6106	A18259
132-1	3Z6625-6	RESISTOR, Fixed: Ceramic insulated, 25,000 ohms, $\pm 5\%$ , 1/2 watt, 11/16" lg., 7/32" dia. No. 20 wire end leads 1 1/2" lg.	2nd Harm. Amp. Grid Bias	Erie Type 505	A18004-253 (Pref. 1) A113248-253 (Alt. Pref. 2) A112924-253 (Alt. Pref. 3) A32016-253 (Alt. Pref. 4) A18150-253 (Alt. Pref. 5) A113249-253 (Alt. Pref. 6)
132-2		Same as 132-1	2nd Harm. Amp. Grid Bias	International Resistance Co. Type BT-1/2 Speer Type S1-1	A112926-253 (Alt. Pref. 7) A112933-253 (Alt. Pref. 8)
133-1	3Z6640-13	RESISTOR, Fixed: Ceramic or molded phenolic, 40,000 ohms $\pm 5\%$ , 1w. 3/4" lg., 9/32" wide, 1-1/2" wire end leads. Impregnate with Superla wax	Power-Amp. Screen Dropping	Allen-Bradley Type GB Erie Resistor Corp.	A18008-403 (Pref. 1)

3Z6640-52	Same as 133-1	Power-Amp. Screen Dropping	International Resistance Co. Type BT-1	A113320-403 (Alt. Pref. 2)
3Z6640-31	Same as 133-1	Voltage divider, 2nd Harm. Amp.	Erie Type 518	A18009-403 (Alt. Pref. 3)
3Z6640-2	Same as 133-1	Voltage Divider, 2nd Harm. Amp.	International Resistance Co. Type BT-1	A113321-403 (Alt. Pref. 4)
3Z5991-5	RESISTOR, Fixed: Wire wound, ceramic form 1.53 ohms $\pm 1\%$ , 1/2w. 3/4" lg., 3/8" dia. Tinned copper leads 13/16" lg. Hole for No. 6 mtg. screw	1st Harm. Amp. Plate Meter Shunt	Shallcross Mfg. Co. Type 181	A18254-2
3Z5976	RESISTOR, Fixed: Wire wound, ceramic form. 0.76 ohms, $\pm 1\%$ , 1/2w. 3/4" lg., 3/8" dia. Tinned copper leads 13/16" lg. Hole for No. 6 mtg. screw	2nd Harm. Amp. Plate Meter Shunt	Shallcross Mfg. Co. Type 181	A18254-1
3Z6400-67	Same as 135-1	Power-Amp. Plate Meter Shunt	Erie Type 518	A18158-402 (Pref. 1)
3Z6400-28	RESISTOR, Fixed: Ceramic or molded phenolic, 4000 ohms, $\pm 5\%$ , 1w, 3/4" lg., 9/32" dia. No. 20 wire end leads 1 1/2" lg.	Cathode Bias Resistor, 1st Harm. Amp.	International Resistance Co. Type BT-1	A113320-402 (Alt. Pref. 2)
3Z6400-45		Speech-Amp. Screen Dropping	Erie Resistance Corp.	A31907-402 (Alt. Pref. 3)
3Z6400-5			Allen-Bradley Co.	A113321-402 (Alt. Pref. 4)
3RC31AE105J	Same as 136-1		International Resistance Co. Type BT-1/2	A18004-105 (Pref. 1)
3RC21ME105J	RESISTOR, Fixed: Ceramic insulated. 1 megohm $\pm 5\%$ , 1/2w. 11/16" lg., 7/32" dia. No. 20 wire end leads 1 1/2" lg.		Speer Type S1-1	A113248-105 (Alt. Pref. 2)
3RC31AE105J			Allen-Bradley Type GB	A112924-105 (Alt. Pref. 3)
3RC30BE105J			Erie Type 505	A32016-105 (Alt. Pref. 4)
3RC31AE105K			International Resistance Co. Type BT-1/2	A18150-105 (Alt. Pref. 5)
3RC21BE105K			International Resistance Co. Type BT-1/2	A113249-105 (Alt. Pref. 6)
3RC31AE105K			Speer Type S1-1	A112926-105 (Alt. Pref. 7)

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
140-2	3Z6750-25 3Z6750-4 3Z6750-70 3Z6750-79 3Z6750-30 3Z4533 3Z4533 3Z6750-52	RESISTOR, Fixed: Ceramic insulated. 500,000 ohms $\pm 5\%$ 1/2w, 11/16" lg., 7/32" dia. No. 20 wire end leads 1 1/2" long	Tone Modulation Voltage Divider	Erie Type 505 International Resistance Co. Type BT-1/2 Speer Type S1-1 Allen-Bradley Type GB Erie Type 505 International Resistance Co. Type BT-1/2 Speer Type S1-1 Allen-Bradley Type GB	A18004-504 (Pref. 1) A113248-504 (Alt. Pref. 2) A112924-504 (Alt. Pref. 3) A32016-504 (Alt. Pref. 4) A18150-504 (Alt. Pref. 5) A113249-504 (Alt. Pref. 6) A112926-504 (Alt. Pref. 7) A112933-504 (Alt. Pref. 8)
140-3		Same as 140-2	Tone Modulation Voltage Divider	Erie Type 504	A18001-105 (Pref. 1)
140-4		Same as 140-2	Tone Feedback Coupling	International Resistance Co. Type BTS	A113229-105 (Alt. Pref. 2)
141-1	3RC20AE105J 3RC20BE105J	RESISTOR, Fixed: Ceramic or molded phenolic. 1 megohm, $\pm 5\%$ , 1/4w, 7/16" lg., 7/32" dia. No. 20 wire end leads 1 1/2" lg.	Input Bridge	International Resistance Co. Type BTS Speer Type S1-1/2 Allen-Bradley Type EB	A32013-105 (Alt. Pref. 3) A32014-105 (Alt. Pref. 4)
141-2		Same as 141-1	Input Bridge	Erie Type 505	A18004-502 (Pref. 1)
141-3		Same as 141-1	Input Bridge	International Resistance Co. Type BT-1/2	A113248-502 (Alt. Pref. 2)
141-4		Same as 141-1	Speech-Amp. Grid Leak		
142	3Z6500-61 3Z6500-10	RESISTOR, Fixed: Ceramic insulated. 5,000 ohms $\pm 5\%$ , 1/2w, 11/16" lg., 7/32" dia. No. 20 wire end leads 1 1/2" long			

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3Z6500-61	<p>RESISTOR, Fixed: Ceramic or moulded phenolic. 250,000 ohms, <math>\pm 5\%</math>, 1/4w. 7/16" lg. 7/32" dia. No. 20 wire end leads 1 1/2" lg.</p>	<p>Speech-Amp. Plate Load</p>	Speer Type S1-1	A112924-502 (Alt. Pref. 3)
3Z6500-220			Allen-Bradley Type GB	A32016-502 (Alt. Pref. 4)
3Z6500-113			Erie Type 505	A18150-502 (Alt. Pref. 5)
3Z4528			International Resistance Co. Type BT-1/2	A113249-502 (Alt. Pref. 6)
3Z6500-92			Speer Type S1-1	A112926-502 (Alt. Pref. 7)
3Z6500-146			Allen-Bradley Type GB	A112933-502 (Alt. Pref. 8)
3Z6725-1			Erie Type 504	A18001-254 (Pref. 1)
3Z6725-56			International Resistance Co. Type BTS	A113229-254 (Alt. Pref. 2)
3Z6725-16			Speer Type S1-1/2	A32013-254 (Alt. Pref. 3)
3Z6725-55			Allen-Bradley Type EB	A32014-254 (Alt. Pref. 4)
3Z6725-38			Erie Type 504	A18151-254 (Alt. Pref. 5)
3Z6725-21			International Resistance Co. Type BTS	A113230-254 (Alt. Pref. 6)
3Z6725-38			Speer Type S1-1/2	A32299-254 (Alt. Pref. 7)
3Z6725-21			Allen-Bradley Type EB	A32298-254 (Alt. Pref. 8)
3RC31AE153J	<p>RESISTOR, Fixed: Ceramic or moulded phenolic. 15,000 ohms, <math>\pm 5\%</math>, 1 w. 3/4" lg., 9/32" wide. 1 1/2" wire end leads. Impregnate with superla wax</p>	<p>Mod. Bias Bleeder</p>	Erie Resistor Corp.	A18008-153 (Pref. 1)
3RC31BE153J			International Resistance Co. Type BT-1	A113320-153 (Alt. Pref. 2)
3RC31AE153K			Erie Type 518	A18009-153 (Alt. Pref. 3)
3RC31BE153K			International Resistance Co. Type BT-1	A113321-153 (Alt. Pref. 4)
3Z6560-8	<p>RESISTOR, Fixed: Ceramic or moulded phenolic. 6,000 ohms, <math>\pm 5\%</math>, 1 w. 3/4" lg., 9/32" wide, 1 1/2" wire end leads. Impregnate with superla wax</p>	<p>RF Bias Bleeder</p>	Erie Resistor Corp.	A18008-602 (Pref. 1)
3ZK6560-14			International Resistance Co. Type BT-1	A113320-602 (Alt. Pref. 2)
3Z6560-30			Erie Type 518	A18009-602 (Alt. Pref. 3)

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**TABLE OF REPLACEABLE PARTS—Cont**  
**MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM**

**MODEL: RADIO SET SCR-522-A**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
147	3Z6560-42 3RC31AE183J 3RC31BE183J 3RC31AE183K 3RC31BE183K	RESISTOR, Fixed: Ceramic or moulded phenolic. 18,000 ohms, $\pm 5\%$ , 1 w., 3/4" lg., 9/32" wide. 1 1/2" wire end leads. Impregnate with superla wax	RF Bias Divider	International Resistance Co. Type BT-1 Erie Resistor Corp.	A113321-602 (Alt. Pref. 4) A18008-183 (Pref. 1) A113320-183 (Alt. Pref. 2) A18009-183 (Alt. Pref. 3) A113321-183 (Alt. Pref. 4)
148	3RC31AE750J	RESISTOR, Fixed: Ceramic or moulded phenolic. 75 ohms $\pm 5\%$ , 1 w. 3/4" lg., 9/32" wide. 1 1/2" wire end leads. Impregnate with superla wax	Power-Amp. Grid Meter Shunt	International Resistance Co. Type BT-1 Erie Resistor Corp.	A18008-750 (Pref. 1)
150	3Z6005-6 3Z6005-37 3Z6005-6 3Z6005-148 3Z6005-6 3Z6005-37	RESISTOR, Fixed: Ceramic insulated. 50 ohms, $\pm 5\%$ , 1/2 w. 1 1/16" lg., 7/32" dia. No. 20 wire end leads 1 1/2" lg.	1st Harm. Amp. Grid Suppressor	Erie Type 518 Erie Type 505 International Resistance Co. Type BT-1/2 Speer Type S1-1 Allen-Bradley Type GB Erie Type 505 International Resistance Co. Type BT-1/2 Speer Type S1-1	A18009-750 (Alt. Pref. 2) A18004-500 (Pref. 1) A113248-500 (Alt. Pref. 2) A112924-500 (Alt. Pref. 3) A32016-500 (Alt. Pref. 4) A18150-500 (Alt. Pref. 5) A113249-500 (Alt. Pref. 6) A112926-500 (Alt. Pref. 7) A112933-500 (Alt. Pref. 8) A18004-502 (Pref. 1)
151-1	3Z6650-38 3Z6650-10	RESISTOR, Fixed: Ceramic insulated. 50,000 ohms $\pm 5\%$ , 1/2 w. 11/16" lg., 7/32" dia. No. 20 wire end leads 1 1/2" long	Osc. Grid Bias	Allen-Bradley Type GB Erie Type 505 International Resistance Co. Type BT-1/2	A113248-503 (Alt. Pref. 2)



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3Z6650-175				Speer Type S1-1	A112924-503 (Alt. Pref. 3)
3Z6650-38				Allen-Bradley Type GB	A32016-503 (Alt. Pref. 4)
3Z6650-30				Erie Type 505	A18150-503 (Alt. Pref. 5)
3Z4531				International Resistance Co. Type BT-1/2	A113249-503 (Alt. Pref. 6)
3Z6650-51				Speer Type S1-1	A112926-503 (Alt. Pref. 7)
3Z6650-116				Allen-Bradley Type GB	A112933-503 (Alt. Pref. 8)
151-2		Same as 151-1	1st Harm. Amp. Grid Bias	Erie Resistor Corp.	A18008-503 (Pref. 1)
152-1		RESISTOR, Fixed: Ceramic or moulded phenolic, 50,000 ohms, $\pm 5\%$ , 1 w, 3/4" lg., 9/32" wide, 1 1/2" wire end leads, impregnate with superia wax	Osc. Screen Dropping	International Resistance Co. Type BT-1	A113320-503 (Alt. Pref. 2)
152-2		Same as 152-1	2nd Harm. Amp. Screen Dropping	Erie Type 518	A18009-503 (Alt. Pref. 3)
152-3		Same as 152-1	Mod. Bias Divider	International Resistance Co. Type BT-1	A113321-503 (Alt. Pref. 4)
152-4		Same as 152-1	Mod. Bias Divider	Erie Resistor Corp.	A18008-202 (Pref. 1)
153-3	3RC31AE202J	RESISTOR, Fixed: Ceramic or moulded phenolic, 2,000 ohms, $\pm 5\%$ , 1 w, 3/4" lg., 9/32" wide, 1 1/2" wire end leads, impregnate with superia wax	Speech-Amp. Cathode Bias	International Resistance Co. Type BI-1	A18009-202 (Alt. Pref. 3)
	3RC31BE202J			Erie Type 518	A113321-202 (Alt. Pref. 4)
153-4	3Z6200-72	Same as 153-3	Speech-Amp. Grid Suppressor	International Resistance Co. Type BT-1	A18008-502 (Pref. 1)
154-1	3Z6200-62	RESISTOR, Fixed: Ceramic or moulded phenolic, 5,000 ohms, $\pm 5\%$ , 1 w, 3/4" lg., 9/32" wide, 1 1/2" wire end leads, impregnate with superia wax	1st Harm. Amp. Screen Dropping	Erie Resistor Corp.	A113320-502 (Alt. Pref. 2)
	3Z6500-66			International Resistance Co. Type BT-1	A18008-502 (Pref. 1)

**TABLE OF REPLACEABLE PARTS—Cont**  
**MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM**

**MODEL: RADIO SET SCR-522-A**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
154-2	3Z6500-113 3Z6500-8 3Z6500-113	Same as 154-1	Mod. Screen Dropping	Erie Type 518 International Resistance Co. Type BT-1 Erie Resistor Corp.	A18009-502 (Alt. Pref. 3) A11321-502 (Alt. Pref. 4) C56362-502 (Alt. Pref. 5)
156-A, B, C, D	3Z9827.27	SWITCH, Assembly, Rotary: Crystal selector; rotary, phenolic base. Four section, 2 position, 1 pole. 3 contacts, one rotor. 1 3/8" lg., 1 13/16" wide, 1 17/32" high. Two No. 30 mtg. holes 1 1/2" centers. Two .185" dia. holes 1 9/16" centers	Crystal Selector for Channels A, B, C, and D	Oak Mfg. Co. Yaxley Mfg. Div. of P. R. Mallory & Co. Centralab	AC56334-1
157	3Z9825-38	SWITCH, Rotary: Phenolic base. Two deck, 6 position, one pole. Rotor contact non-shorting type. 1 9/16" mtg. center 4-40 tapped hole 1/4" deep in front of shaft. Metal parts cadmium plated	Meter Switch	Oak Mfg. Co. Type No. 10206-B2 Centralab Type No. 6737-H Bendix No. A103014	C56333 (Pref. 1) C61510 (Alt. Pref. 2) A103014
158	2Z10000-14	TRANSFORMER, AF: Microphone; aluminum. 2 15/16" lg., 1 7/8" wide, 1 7/16" thick. Four mtg. holes 6-32 thread, 1/4" deep, 1 3/8" centers. Resistance pri. 5.2 ohms center tap, sec. 4000 ohms at 20°C; turns ratio 1:45.7 pri. imp. 200 ohms, sec. imp. 420,000 ohms; 1000v. RMS. 60 cycle test; —40DB level, response ±2DB 300-3000 cycles. Three solder lug terminals	Input Microphone Transformer	Bendix No. A103016	A103016
159	2Z10000-16	TRANSFORMER, Interstage: Aluminum. 2 15/16" lg., 1 7/8" wire, 1 7/16" thick. Four mtg. holes 6-32 thread. 1/4" deep, 1 3/8" centers. Three solder lug terminals. Resistance pri. 1050 ohms, sec. 2750 ohms, center tap at 20°C, turns ratio 1:2; pri. imp. 125,000 ohms, sec. 500,000 ohms; 1500v RMS, 60-cycle test; ODB level, response ±2DB 400-3000 cycles	Interstage Transformer	Bendix No. A103018	A103018
160	2Z10000-18	TRANSFORMER, AF: Modulation; aluminum. 2 15/16" lg., 2" wide, 2" thick. Four mtg. holes 6-32 thread, 1/4" deep, 1 1/2" centers. Two solder lug terminals. Resistance pri. 690 ohms, center tap; sec. 170 ohms at 20°C; turns ratio 2:1; pri. imp. 22,000 ohms, sec. 5500 ohms; 2000v, RMS 60 cycle test; 8 w level, response ±1DB 300-3000 cycles	Modulation Transformer	Bendix No. A103018	A103018
161	2Z7650-G.7	RELAY, General Purpose: SPST, closed non-energized position, 200 ohm coil, 12v DC, 1 7/8" max. high, 2 1-2" lg., 1 1/4" max. wide. Two mtg. holes No. 8-32 tapped. Contacts platinum-iridium or platinum-ruthenium. Metal parts plated	Press-to-Transmit Control	Clare Type G, Catalog No. A10480	A107141

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#	#	Description	Part Name	Part No.	Part No.
162-1		COIL ASSEMBLY, Radio, RF; Choke; brown bakelite. Single layer 38 turns No. 28 enameled wire, 11/16" lg., .250" dia., 1 1/2" leads	Speech-Amp. Heater Cathode RF Choke	Bendix No. AA104301-1	AA104301-1
162-2		Same as 162-1	Speech-Amp. Heater RF Choke		
163	2C6525A/T2	CLAMP ASSEMBLY, Tube Socket; Mycalex strip with spring clamp and misc. hardware, 2 3/8" lg., 1/2" wide, 1/8" thick. One No. 22 mtg hole	Tube Clamp Assy for 2nd Harm. Amp.	Bendix No. AA102860-1	AA102860-1
164-1	2C6525A/T2/1	BOARD, Mounting; Clamp, mycalex or stearite, 2 3/8" lg., 1/2" wide, 1/8" thick, one No. 22 hole, .157" dia.	For Tube Clamp Assy 2nd	Bendix No. A102452	A102452
164-2		Same as 164-1	Power-Amp. Clamp Knob for Meter Switch	Weston Elec. Instrument Co. Type J-10829	A11357
165	2Z5799	KNOB, Bar; White enamel line, 1/8" dia., shaft 1 1/2" lg., 3/4" wide, 5/8" high; black bakelite	Channel Selection	Bendix No. AC57991-1	AC57991-1
166	2C6525A/F1	CONTROL, Frequency Shifter Assy; Includes: riveting assy, slide assy, shaft and hub assy, positioning plate, indicator assy, lower cover plate, knob, slide return spring, positioning clip, positioning spring, pin and misc. hardware			
167	2Z7098-12	SHIELD, Assembly, PA; Cold rolled steel 5 3/4" lg., 5" wide, .031" thick. Three No. 40 mtg. holes, 1/4" center, eight 3/16" dia. holes 5.167" center. Includes: three tub. rivets, four Dzus fasteners, clamp spring, shield assy, clamp board, and misc. hardware	P.A. Shield Assembly	Bendix No. AC58188-1	AC58188-1
168	2C6525A/S2	BOARD ASSEMBLY, Antenna; Antenna plug, phenolic, bakelite varnish, 2 1/8" lg., 7/8" wide, 3/16" thick. Two No. 22 holes .157" dia. 1 11/16" center, two .266" dia. holes 9/16" center. Includes one ground lug, one antenna lug, one board-antenna plug 1st assy, one ground strap, misc. hardware	Transmitter Output Connection	Bendix No. AA102951-1	AA102951-1
169-1	#	SOCKET, Tube; Mica filled bakelite. 8 contacts. 1/2" thick, 1 1/4" flange; 1.159" chassis hole. Contacts to be beryllium copper or phosphor bronze, silver plated. Numbers to be clockwise	Tube Socket Oscillator	American Phenolic Corp. Type S-8TM	A104087-1
169-2		Same as 169-1	Tube Socket, 1st Harm. Amp.		
169-3		Same as 169-1	Tube Socket, Modulator		
169-4		Same as 169-1	Tube Socket, Modulator		
169-5		Same as 169-1	Tube Socket, Sp. Amp.		
169-6		Same as 169-1 (No longer used in this equipment)	Tube Socket, RF Ind.		
170-1	2Z8663-1	SOCKET, Tube; 7 contact, stearite, cadmium plated or silver plated, 2 5/8" sq. 1/2" deep. Four mtg. holes to clear No. 8 screw, 1 7/8" centers	Tube Socket for Type 832 2nd Harm. Amp.	Bendix No. A31778	A31778
170-2		Same as 170-1	Tube Socket for Power Amp.		

# Not available as a spare part; listed for reference purposes only.

**TABLE OF REPLACEABLE PARTS—Cont**  
**MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM**

**MODEL: RADIO SET SCR-522-A**

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
171	#	CONNECTOR ASSEMBLY, Male Contact: Socket; 2 contact. Consists of two 1/4" dia. x 5/8" lg. spacers; post tapped on one end No. 6-32; other end riveted to bakelite strip 3/32" thick x 1 5/8" lg. on 1 1/8" centers; two brass; silver flashed; split contact pins 1/8" dia. x 1/2" lg. on same side as post; riveted to two solder lugs on opposite side on 5/16" centers; stamped No. 1 and No. 2	DC Meter Socket	Bendix No. AA102954-2	AA102954-2
172	#	BOARD, Terminal: Crystal phenolic sheet 4" lg, 1 11/16" wide, 3/16" thick. Twelve No. 26 holes .147" dia; four No. 22 mtg. holes 3 1/2" centers, three No. 40 holes counterbored 3/16" dia., two terminal lugs 3/16" drill, five No. 31 holes .120" dia. Includes: Choke (128-1), resistor (151-1)	Crystal Board Assembly	Bendix No. AC58213-1	AC58213-1
173-1	#	SCREW, Machine: Mounting. Machine; cold drawn steel cadmium or zinc plated. No. 8-32 x 3/8" thread, 1 3/4" lg, 5/16" OD, 1/32" x 45° chamfer. Red enameled, special	Screw to Mount Transmitter Onto Chassis	Bendix No. A102735	A102735
173-2		Same as 173-1	Screw to Mount Transmitter Onto Chassis		
173-3		Same as 173-1	Screw to Mount Transmitter Onto Chassis		
173-4		Same as 173-1	Screw to Mount Transmitter Onto Chassis		
174	6LK5033-2	SCREW, Thumb: Round head, brass, nickel plated. Diamond knurl 21 pitch, No. 8-32 x 9/16" threads; 1/64" x 45° chamfer; 1/2" wide, 1" lg. 3/8" dr. x 3/16" deep in head	Thumbscrew for 2nd Harm. Amp. Tube Clamp	Bendix No. A102469	A102469
175-1	2S522A/C2	COLLAR, Coupling: Phenolic, bakelite varnish 1 1/64" lg., 3/32" thick. 17/64" R on one end and 7/32" R on other end with .531" center. One reamed hole .266" dia. and one .187" dia. Includes: Coupling arm, coupling collar, coupling stud and misc. hardware	Capacitor Side of Osc. Tuning Control	Bendix No. AA106124-1	AA106124-1
175-2		Same as 175-1	Capacitor Side of 1st Harm. Amp. Tuning Control		
175-3		Same as 175-1	Capacitor Side of Power-Amp. Tuning Control		
176-1	2S522A/C3	COLLAR, Coupling: Brass, nickel plated. 3/4" dia., .404" wide. Two No. 6-32 tapped holes. Chamfered on both ends approx. .015" x 45°. Includes: arm, collar and spring coupling and No. 6-32 screw	Shifter Side of Osc. Tuning Control	Bendix No. AA106125-1	AA106125-1

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176-2	Same as 176-1	Shifter Side of 1st Harm. Amp. Tuning Control	Bendix No. AC58647-1	AC58648-1
176-3	Same as 176-1	Shifter Side of Power-Amp. Tuning Control	Bendix No. AC58647-1	AC58648-1
177	COUPLING, Rigid Drive: Phenolic. 3 3/4" lg., .245" dia., approx. .032" x 45° chamfer. Includes: two coupling assemblies, setscrews, taper pins and shaft	2nd Harm. Amp. Tuning	Bendix No. AC58647-1	AC58648-1
180	RESISTOR, Fixed: Composition insulated. 470,000 ohms ±10% 1/2w. .468" lg., .249" dia., No. 21 wire end leads 1 1/2" lg. AWS spec. C75.7 - 1943	Speech-Amp. Voltage Divider	RC20AE474-K	RC20AE474-K
181	RESISTOR, Fixed: Composition insulated. 560,000 ohms ±10% 1/2w. .468" lg., .249" dia., No. 21 wire end leads 1 1/2" lg. AWS spec. C75.7 - 1943	Speech-Amp. Voltage Divider	RC20AE564-K	RC20AE564-K
187	WASHER, C: Thumbscrew; stainless steel, passivated. "C" shaped. .250" OD, .125" ID, .032" thick.	Used on Thumbscrew Assy Tripler Tube Clamp	Bendix No. A102179	A102179
	MECHANICAL PARTS			
#	ARM: Coupling: brass. .938" diam. .125" thick. Two .089" diam. holes .750" centers.	Part of Coupling and Shaft Assy	Bendix No. A102467	A102467
#	ARM: Coupling; phenolic, bakelite varnish. 1-1/64" lg, 3/32" thick 17/64" R. on one end and 7/32" R. on other end with .531" center. One reamed hole .266" dia. and one .187" dia.	Used on Capacitor and Board Assy	Bendix No. A106089	A106089
#	ARM: Coupling; brass nickel plated. 1" high, .126" thick; .468" ID	Coupling for Tuning Shaft, Shifter Unit	Bendix No. A106092	A106092
#	BOARD, Antenna: Bakelite; 2-1/8" lg. 2-11/16" wide, 3/16" thick; two No. 22 holes .157" dia. 1-11/16" center; two .267" dia. holes 9/16" center; one .314" dia. hole; one .188" dia. hole; one .438" dia. hole; includes: ground strap, coil adjusting knob, coil drive gear, connector straps, antenna board-rivet assy, and misc. hardware	Antenna Board Assembly	Bendix No. AC63162-1	AC63162-1
#	BOARD, Antenna: Bakelite; 2-1/8" lg. 2-11/16" wide, 3/16" thick; two No. 22 holes; .157" dia. 1-11/16" center; two .267" dia. holes 9/16" center; one .314" dia. hole; one .188" dia. hole; one .438" dia. hole; includes: jack knob bearing, stop stud, coil mig. stud, antenna plug board, and hardware	Antenna Board Rivet Assembly	Bendix No. AC63167-1	AC63167-1
#	BOARD, Crystal: Upper Crystal Mounting: Phenolic 4" lg; 1 11/16" wide; 3/32" thick; twelve No. 26 holes (.147"); four No. 22 holes; (.157" dia.) 3-1/2" center; three No. 40 holes (.098" dia.) and CT-Bore 3/16" dia; two holes 3/16" dr; five No. 31 holes (.120" dia.). Includes four terminals one upper board	Upper Crystal Mounting Board Assy	Bendix No. AA102948-1	AA102948-1
#	BOARD, Crystal: Lower Crystal Mounting, Phenolic 4" lg; 1-11/16" wide; 3/32" thick; twelve holes 13/64" dia.; four No. 22 holes (.157" dia.); three No. 40 holes (.098" dia.); two No. 31 holes (.120" dia.); five No. 5 holes. Includes two terminal lugs and lower board.	Lower Crystal Mounting Board Assy	Bendix No. AA102949-1	AA102949-1

# Not available as a spare part, listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
#		BOARD, Mounting: Tank coil; phenolic bakelite varnish; 1-3/16" lg; 9/16" wide; 1/16" thick; two No. 30 mtg. holes; 7/8" center; one No. 22 hole and one No. 40 hole.	Tank Coil Mounting Board	Bendix No. A102451	A102451
#		BOARD, Terminal: Capacitor; phenolic; 5-1/2 lg; 1-3/4" wide; 1/8" thick. Six No. 22 holes; .157" dia. Two No. 13 holes; .185" dia. 1.250" centers. Six No. 28 holes; .140" dia. 120° centers. Two 3/4" dia. holes 1.750 centers.	Mounting for Variable Capacitors (Osc. & Harmonic Amp.)	Bendix No. C58189	C58189
#		BOARD, Terminal: Phenolic; 5-1/2" lg; 1-3/4" wide; 1/8" thick; six No. 22 holes .157" dia. Two No. 13 holes; .185" dia. 1.250" centers. Six No. 28 holes; .140" dia. 120° centers. Two 3/4" dia. holes 1.750" centers. Includes: Capacitor board, four spacers and two terminal lugs.	Capacitor Board Assembly	Bendix No. AC58190-1	AC58190-1
2Z9406.190		BOARD, Terminal: Crystal; phenolic sheet, 1" lg; 1-11/16" wide; 3/16" thick; twelve No. 26 holes; .147" dia., four No. 22 mtg. holes; 3-1/2" centers; three No. 40 holes counterbored 3/16" dia., two terminal lugs 3/16" drill; five No. 31 holes; .120" dia. Includes: upper and lower board assys; socket contact, and misc. hardware.	Crystal Board Assembly	Bendix No. AC58209-1	AC58209-1
#		BOARD, Terminal: Panel, Resistor Shunt; phenolic sheet; 3-15/16" lg; 1-5/8" wide; 1/16" thick; twelve No. 31 terminal holes; 1-1/4" centers; two No. 22 mtg. holes; 3-1/8" centers; includes: four resistors (135-1, -2, 134, 148); one capacitor (102-11); and panel, resistor-shunt assy.	Panel Resistor Shunt Terminal Board Assy	Bendix No. AG59223-1	AC59223-1
#		BOARD, Terminal: Phenolic; 5-1/2" lg; 1-3/4" thick; six No. 28 holes; 120° ±15° centers; two No. 13 holes; 1.250" centers; two 3/4" dia. holes; 1.750" centers; six No. 22 holes; .157" dia. Includes: three capacitors (102-2, 114, 115) coupling collar ass'y; coil plate ass'ys (118, 119); capacitor board ass'y; and misc. hardware.	Capacitor Terminal Board Assy	Bendix No. AL72974-1	AL72974-1
#		BOARD, Terminal: Upper crystal mounting; phenolic; 4" lg; 1-11/16" wide, 3/32" thick. Twelve No. 26 holes (.147") dia. Four No. 22 holes (.157") dia. 3-1/2" centers. Three No. 40 holes (.098") dia. and counterbored 3/16" dia. Two holes 3/16" dr. Five No. 31 holes (.120") dia.	Crystal Mounting Upper	Bendix No. A102094	A102094
#		BOARD, Terminal: Plug; phenolic; bakelite varnish; 1-5/8" lg; 1/2" wide; 3/32" thick; Four No. 30 holes .128" dia.	Board for Plug Board Assy (AA102954-1)	Bendix No. A102131	A102131
#		BOARD, Terminal: Panel Resistor Audio; phenolic; 1-1/2" lg; 1-11/16" high; 1/16" thick; eight No. 31 holes; .120" dia., 1/1/16" center; two .221" dia. holes 15/16 center. Includes: two inserts; eight terminal lugs; panel resistor-audio.	Panel Audio Resistor Terminal Board Assy	Bendix No. AA102840-1	AA102840-1
#		BOARD, Terminal: Panel Resistor Audio; phenolic; 1-1/2" lg; 1-11/16" high; 1/16" thick; eight No. 31 holes; .120" dia., 1-1/16" centers; two .221" dia. holes 15/16" center.	Audio Resistor Mtg. Board	Bendix No. A102841	A102841

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#	BOARD, Terminal: Phenolic; 4-3/8" lg; 1-7/16" wide; 1/16" thick; 12 No. 31 dr. holes; (.120" dia.); three .221" dia. holes; 1-1/2" centers. Includes: 12 terminal lugs, 3 inserts and panel, resistor-audio.	Panel Audio Resistor Terminal Board Assy	Bendix No. AA102846-2	AA102846-2
#	BOARD, Terminal: Panel Resistor; phenolic; 3-1/2" lg; 1" wide; 1/16" thick. Eight No. 31 holes .120" dia. Two .221" dia. holes; 2" centers. Rectangular cut out 2" lg x 9/32". Includes: two inserts, eight terminal lugs, and panel, resistor.	Panel Resistor Terminal Board Assembly	Bendix No. AA102850-1	AA102850-1
#	BOARD, Terminal: Resistor Bias; phenolic; 2-5/8" lg; 7/8" wide; 1/16" thick. Two .221" dia. holes; 2-1/8" centers; three No. 31 holes; .120" dia., 1-1/8" centers. Includes: two inserts; three terminal lugs; resistor-bias board.	Resistor (Bias) Terminal Board Assy	Bendix No. AA102887-1	AA102887-1
#	BOARD, Terminal: Resistor-bias; phenolic; 2-5/8" lg; 7/8" wide; 1/16" thick. Includes: two inserts .221" dia. 2-1/8" centers; three No. 31 terminal lugs, 1-1/8" centers and two resistors.	Resistor-Bias Terminal Board	Bendix No. AA102899-1	AA102899-1
#	BOARD, Terminal: Capacitor; phenolic bakelite varnish; 2-1/2" lg; 1-13/16" wide; 1/8" thick. Two No. 31 holes; .120" dia. 1-5/16" center. Four No. 22 holes; .157" dia., 2" center. Three No. 28 holes; .140" dia., 120° center. One 3/4" dia. hole. Includes: two terminal lugs, four spacers and capacitor board.	Capacitor Board Terminal Assembly	Bendix No. AA102901-1	AA102901-1
#	BOARD, Terminal: Panel resistor; phenolic; 3-1/2" lg; 1" wide; 1/16" thick. Includes: eight No. 31 terminal lugs, two inserts; .221" dia., 2" centers, two resistors, three capacitors and choke. Rectangular cut out 2" x 1/4".	Panel Resistor Terminal Board Assy	Bendix No. AA102927-1	AA102927-1
#	BOARD, Terminal: Resistor-Screen; phenolic; 1-1/2" lg; 3/4" wide; 1/16" thick; two No. 31 holes; .120" dia., 1-1/8" center, one hole .221" dia. Includes: one insert, two terminal lugs, resistor board.	Resistor-Screen Terminal Board Assy	Bendix No. AA104066-1	AA104066-1
#	BOARD, Terminal: Phenolic, bakelite varnish, 3-3/8" lg; 7/16" wide; 1/16" thick; three No. 40 holes; .098" dia., 1" centers. Two No. 31 holes; .120" dia, 1-1/2" centers. Includes: two terminals and terminal board.	Terminal Board Assy	Bendix No. AA104069-1	AA104069-1
#	BOARD, Terminal: Phenolic; bakelite varnish; 1-5/16" lg; 11/16" wide; 1/16" thick. Four No. 31 holes .120" dia., 5/16" centers. Includes: 4 terminal lugs and terminal board.	Terminal Board Assy	Bendix No. AA104071-1	AA104071-1
#	BOARD, Terminal: Resistor; phenolic; bakelite varnish; 1 7/8" lg; 3/4" wide; 1/16" thick. Three No. 40 holes .098" diam. 3/8" center. One No. 31 hole .120" diam. One 3/16" hole .187" diam. Includes: Terminal, resistor board, and terminal lug.	Second Harmonic Amplifier	Bendix No. AA104072-1	AA104072-1
#	BOARD, Terminal: Resistor, phenolic. 2 9/16" lg; 3/4" wide; 1/16" thick. Four No. 31 holes .120" diam. Four No. 40 holes .098" diam. Includes: four terminals and resistor board.	Resistor Board Terminal Assy	Bendix No. AA104073-1	AA104073-1
#	BOARD, Terminal: Panel Resistor Audio; phenolic. 1 11/16" lg; 1 1/2" wide; 1/16" thick. Includes: eight No. 31 terminal lugs 1 1/16" centers, two inserts .221" diam. 15/16" centers. (four resistors and two capacitors).	Panel Resistor Audio Terminal Board Assy	Bendix No. AA104082-1	AA104082-1

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
#		BOARD, Terminal: Phenolic; 1 1/2" lg; 3/4" wide; 1/16" thick. Includes: two No. 31 terminal lugs 1 1/8" centers, one insert .221" diam. and two resistors.	Resistor Terminal Board Assy	Bendix No. AA104098-1	AA104098-1
#		BOARD, Terminal Assembly: Panel Resistor Shunt; phenolic. 3 15/16" lg; 1 5/8" wide; 1/16" thick. Twelve No. 31 holes .120" diam. 1 1/4" centers. Two No. 22 holes .157" diam. 3 1/8" centers. Includes: ten terminal lugs, panel resistor shunt.	Panel Resistor Shunt Terminal Board Assy	Bendix No. AA107172-1	AA107172-1
#		BOARD, Terminal: Resistor bias; phenolic. 3 1/8" lg; 1 5/8" wide; 1/16" thick. Four No. 31 holes .120" diam., two No. 22 holes .157" diam. 2 1/2" centers. Diagonal cut outs 5/8" x 1/4". Includes: 4 terminal lugs and resistor-bias board.	Resistor Bias Terminal Board Assy	Bendix No. AA107175-1	AA107175-1
#		BOARD, Terminal: Resistor bias, phenolic. 3 1/8" lg; 1 5/8" wide; 1/16" thick. Includes: four No. 31 terminal lugs, two No. 22 mtg. holes 2 1/2" centers and three resistors. Diagonal cut out 5/8" x 1/4".	Resistor Bias Terminal Board Assy	Bendix No. AA107176-1	AA107176-1
#		BOARD, Terminal: Panel Resistor Audio; phenolic. 4 3/8" lg; 1 7/16" wide; 1/16" thick. Includes: twelve No. 31 terminal lugs 1 1/16" centers, three inserts .221" diam. 1 1/2" centers; three capacitors, six resistors.	Panel Resistor Audio Terminal Board Assy	Bendix No. AA107461-1	AA107461-1
#		BOARD, Terminal: Phenolic; 1 1/2" lg; 3/4" wide; 1/16" thick. Includes: Resistors (180 & 181); one No. 6 solder lug .221" diam. two No. 31 terminal lugs, 1 1/8" centers.	Resistor Terminal Board Assembly	Bendix No. AA118039-1	AA118039-1
#		BRACKET, Amplifier: Mounting; brass, silver plate; 5" lg; 1 5/16" high; 1 3/8" wide; four No. 40 holes .098" diam. and counterbore 7/32" diam. x .032" deep. One No. 56 hole .046" diam. Two No. 17 holes .173" diam. 1.875" centers. Three No. 40 holes .098" diam. 3/8" centers.	Second Harmonic Amplifier Mtg.	Bendix No. C58414	C58414
#		BRACKET, Terminal Board: Mounting; brass, silver plate; 5" lg; 1 5/16" high; 1 3/8" wide. Four No. 40 holes .098" diam. and counterbore; 7/32" diam. x .032" deep. One No. 56 hole .046" diam. Two No. 17 holes; .173" diam. 1.875" centers. Three No. 40 holes .098" diam. 3/8" centers. Includes: seven rivets, two resistor board assys; and mounting bracket.	Mounting Bracket Assembly	Bendix No. AC58415-1	AC58415-1
#		CAPACITOR, Variable: Phenolic; 2 1/2" lg; 1 13/16" wide; 1/8" thick. Two No. 31 holes 1 5/16" centers. Four No. 22 mtg. holes 2" centers. Three No. 28 holes 120° ±15° centers. One 3/4" diam. hole. Includes: choke (128-3) coil; plate Assy (121); capacitor (117); capacitor board Assy; coupling collar Assy; tube clip Assy; and misc. hardware.	Variable Capacitor Assy Power Amp.	Bendix No. AL73035-1	AL73035-1



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#	CLAMP, Cable; Brass; nickel plated; 1/4" wide; 15/32" lg; one mtg. hole .144" diam.	Cable Clamp, PA. Section	Bendix No. A18362-8	A18362-8
#	CLAMP, Retaining Ring; Tempered steel, cadmium plated; 1 1/32" ID; .085" wide; 1/8" thick; 3/16" overlap after forming; 3 sections formed up and 3 down. Spring type for 3/32" panel.	Retainer Rings for Tube Sockets	American Phenolic Corp.	A107657
3Z1087-13	CLIP, Tube Contact; For 832 tube; consists of flat tube clips soldered to 1" piece of braided copper wire.	2nd Harm. Amp. Plate Clip Leads	Bendix No. AA103909-1	AA103909-1
#	CLIP, Tube Contact; Beryllium copper; silver plate; 3/8" wide; 1/2" high; .040" MIN.; .050" MAX. thick; One No. 52 hole 3/32" radius.	Tube Contact Clip	Bendix No. A107715	A107715
3Z1087-13.1	CLIP, Tube Contact; For 832 tube; consists of flat tube clips soldered to 1 5/8" piece of braided copper wire.	PA. Tube Plate Clip Leads	Bendix No. AA107716-1	AA107716-1
2Z3269-40	TRANSFORMER, RF; silver plated; 1 1/2" lg; 1 1/8" wide; 1 1/8" deep; 5/8" wide; slot; two .108" diam holes; No. 10 soft drawn copper wire 3 turns .395" lg; with 3/8" ID; includes antenna coupling coil, coil mtg block, taper bearing, and misc hardware.	Coil and Block Assembly	Bendix No. AC63164-1	AC63164-1
#	COIL, Radio, RF; Plate; 15 turns; No. 10 silver-plated SD. copper wire tapped at 7 turns self supporting 1 3/4" lg; .435" diam. one No. 66 hole .033" diam. x 1/32" deep (Optional).	Plate Coil 2nd Harm. Amp.	Bendix No. C58185	C58185
#	COIL, Radio, RF; Plate; 2 turns-gap-2 turns; self supporting; No. 10 SD. silver-plated copper wire; 1 7/32" lg; 37/64" ID; one No. 58 hole .042" diam. (Optional).	Power-Amplifier Coil	Bendix No. C58186	C58186
#	COLLAR, Spacer; Phenolic; bakelite varnish; 1/4" diam. 3/4" lg; 1/4" countersunk at both ends, 6-32 threads;	Spacer for Soldering Lug Resistor Ref. 153	Bendix No. A18024-37	A18024-37
#	COLLAR, Coupling; Brass; .530" lg; 7/16" diam. approx. .032" x 45° chamfer both ends, one No. 6-32 tapped hole, three one side only; one No. 26 hole .147" diam. with .008" x 45° chamfer.	Used on Coupling Shaft Assembly	Bendix No. A105230	A105230
#	COLLAR, Coupling; Brass, nickel plate; .387" lg; 7/16" diam. .015" x 45° chamfer on top; .010" x 45° chamfer on end; No. 35 pitch straight knurl .274" diam. over knurl; 1/32" wide x .010" max. depth relief one hole .218" diam. x 3/32" deep, one No. 6-32 tapped hole through the side only.	Capacitor Coupling Tuning Chart	Bendix No. A106090	A106090
#	COLLAR, Coupling; Brass, nickel plated; 3/4" OD; .404" wide; two No. 6-32 tapped holes; chamfered on both ends approx. .015" x 45°.	Coupling for Capacitor Tuning Unit	Bendix No. A106093	A106093
#	COLLAR, Coupling; Brass; .655" lg; 3/8" diam. 1/32" x 45° chamfer both ends, two No. 53 holes; .059" diam. three one side only; one No. 26 hole .147" diam. with approx. .008" x 45° chamfer.	Coupling for Tuning Unit	Bendix No. A107056	A107056
#	COLLAR, Coupling; Brass; .780" lg; 3/8" diam. 1/32" x 45° chamfer both ends; two No. 53 holes .059" diam. thru one side only; one No. 26 hole .147" diam. with .008" x 45° chamfer (approx.).	Used on Coupling Shaft Assembly	Bendix No. A102444	A102444
#	COLLAR, Coupling; Brass; .406" lg; 1/2" high; 11/16" thick; one No. 26 hole .147" diam. with approx. .008" x 45° chamfer; one No. 6-32 tapped hole thru one side only.	Coupling for Tuning Capacitor	Bendix No. A107057	A107057

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
#		COLLAR, Coupling: Nickel plated; includes: coupling collar and coupling arm. Used with second harmonic amplifier tuning shaft.	Coupling Collar Assembly	Bendix No. AA102952-1	AA102952-1
#		COLLAR, Coupling: Nickel plated; includes: coupling arm, coupling collar. (Second harmonic amplifier tuning shaft).	Coupling Collar Assembly	Bendix No. AA102951-3	AA102953-1
#		COLLAR, Coupling: Nickel plated; includes: coupling collar and coupling arm. Used on second harmonic amplifier tuning shaft.	Coupling Collar Assembly	Bendix No. AA107058-1	AA107058-1
#		COLLAR, Coupling: Nickel plated; includes: coupling collar and coupling arm. Used on second harmonic amplifier tuning shaft.	Coupling Collar Assembly	Bendix No. AA107059-1	AA107059-1
#		CONNECTOR, Male Contact: Brass, silver flash; .660" lg; 7/32" OD; .119" ID; one No. 42 hole .0935" x 7/64" deep. Chamfer 1/64" x 45° .020" slot.	Contact Pins for Plug Board Assembly	Bendix No. A102132	A102132
#		CONTACT, Crystal: Socket; alloy brass; cinch solder coating; 9/16" lg; 9/32" wide; .015" thick; one No. 42 hole .0935" diam. one No. 52 hole .0635" diam.	Contacts for Crystal Board	Cinch Mfg. Corp. Type 38-S	A102969
#		COUPLING, Rigid Drive: Includes: four tubular rivets; coupling link; two coupling collar assys; and hardware.	Coupling Assy 2nd Harm. Amp.	Bendix No. AA102956-1	AA102956-1
#		COUPLING, Rigid Drive: Includes: four tubular rivets; coupling link; two coupling collar assys; and hardware.	Coupling Assy 2nd Harm. Amp.	Bendix No. AA107060-1	AA107060-1
#		GEAR, Miter: Coil drive; brass; 1 13/32" lg; 375" PD. 48DP. 18 teeth 14 1/2° involute; .154" ID; 1/64" x 45° chamfer on end.	Coil Drive Gear	Bendix No. A115710	A115710
#		INDUCTOR: Rods; plate; soft drawn copper wire; 5" lg; 1 5/16" high, 1 1/16" wide.	Plate Rods for Second Harmonic Amplifier	Bendix No. C58182	C58182
#		JUMPER: Connector; brass; silver plate; 1 1/8" lg; 22/32" high; 13/32" wide; one 9/32" diam. hole 1/16" R. contact spring.	Connecting Strap Antenna Board	Bendix No. A115711	A115711
#		JUMPER: Connector; brass; silver plate; 1 3/8" lg; 25/32" wide; 17/32" thick; "J" shaped; one 9/32" diam. hole; 1/16" R. contact spring.	Connecting Strap Antenna Board	Bendix No. A115714	A115714
2Z5753.47		KNOB, Round: Coil adjusting; brass nickel plate; 11/16" lg; 3/8" OD, .156" ID., two No. 35 holes .110" diam. 120° center No. 6-32 tap. Medium diamond knurl on surface; 1/32" x 45° chamfer on end. Engrave arrow 1/4" lg; .010" or .015" deep with black paint.	Coil-Adjusting Knob, Antenna Board	Bendix No. A115704	A115704
#		LINK, Coupling: Phosphor bronze; beryllium copper or nickel silver or nickel plated; .938" diam. .008" thick; four .098" diam. holes .750" centers. Shaped.	Coupling Link, Flexible Coupling	Bendix No. A102468	A102468

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#			Bracket Support Assy PA. Socket	Bendix No. AA104078-1	AA104078-1
#		MOUNTING, Tube Socket: Bracket; brass; silver plate; 2 9/16" lg; 15/16" wide; 1 1/4" thick; three No. 40 holes .198" diam. and counterbore 7/32" diam. x .032" deep; 1" center. Two No. 8-32 topped holes 1 7/8" center; includes: three tubular rivets; terminal board assy; bracket support. PIN, Locating: 1/2" lg; .0625" diam. stainless steel; passive; chamfered on both ends.	Locating Pin for Knob on Meter Switch	Bendix No. A11327-14	A11327-14
6LK8015		SCREW, Machine: Hex. head; special; brass; silver flash; 15/34" lg; over-all; 1/4 hex; .138" shaft; 32 threads per inch; class 2; 1/8" pin in head; .093" diam.	Used on Shunt Resistor Board Assy	Bendix No. A104776-6	A104776-6
6LK8015-1		SCREW, Machine: Hex. head; special; brass; silver flash; 17/32" lg; 1/4" hex; .138" shaft; 32 threads per inch; class 2; 1/8" pin in head; .093" diam.	Used on Bias Resistor Board	Bendix No. A104776-8	A104776-8
6LK8015-2		SCREW, Machine: Hex. head; special; brass; silver flash; 19/32" lg; 1/4" hex; .138" shaft; 32 threads per inch; class 2; 1/8" pin in head; .093" diam.	Used on Capacitor Terminal Board Assy	Bendix No. A104776-10	A104776-10
6L20806-10.81M		SCREW, Machine: Hex. head; special; brass; silver flash; 21/32" lg; 1/4" hex; .138" shaft; 32 threads per inch; class 2; 1/8" pin in head; .093" diam.	Used on Crystal Board Assy	Bendix No. A104776-12	A104776-12
6L31209-20M		SCREW, Machine: Hex. head; special; brass; silver flash; 11/16" lg; 1/4" hex; .138" ID; 32 threads per inch; class 2; approx.; 1/65" x 45° chamfer both ends.	Used on Shifter Assy	Bendix No. A104838	A104838
#		SHAFT, Coupling: Phenolic; 3 3/4" lg; .245" OD.; approx.; 0.32" x 45° chamfer.	Coupling Shaft for Capacitors	Bendix No. A102478	A102478
#		SHIELD, Lead: Brass; nickel plate; 6 1/4" lg; with 45° bend; 2" wide; 1/4" OD; x 0.254" wall. Includes: shield clamp; shield plug.	Lead Shield Pipe Assy	Bendix No. AL73088-1	AL73088-1
#		SOCKET, Tube: Glazed steatite; 2 5/8" wide; 2 5/8" lg; 1/2" thick; four mounting holes 1 7/8" centers to clear No. 8 screw; includes: seven resistors (132-1, -2, 136-1, -2, 152-2, 133-3, -4); eight capacitors (102-3 to 102-10); tube socket; terminal board assy; bracket support; choke (127-1, -2); mtg. bracket assy; and misc. hardware.	Tube Socket Assy Second Harmonic Amplifier	Bendix No. AL72983-1	AL72983-1
#		SOCKET, Tube: Glazed steatite; 2 5/8" wide; 2 5/8" lg; 1/2" thick; four mounting holes 1 7/8" centers to clear No. 8 screw. Includes: three capacitors (105-1, 102-12, -13); choke (127-3, -4); tube socket; bracket support assy; mtg. stud and misc. hardware.	Tube Socket Assy Power Amplifier	Bendix No. AL72984-1	AL72984-1
#		SPRING, Clamp: Beryllium copper, nickel flash; 27/32" lg; 11/16" high; 9/16" thick; three No. 40 holes .098" diam. 1/4" centers. One No. 22 hole .157" diam.	Used on PA. Shield Assy	Bendix No. A102454	A102454
#		SPRING, Clamp: Beryllium copper nickel flash; 25/32" lg; 1 1/2" high; 5/8" wide; one No. 22 hole; (.157") diam. One slot 5/16" x .173".	Part of Tube Clamp Assy; Second Harmonic Amp.	Bendix No. A102453	A102453
#		SPRING, Clamp: Couplings; phosphor bronze spring wire; nickel flash; .705" OD.; .625" ID; 1 1/32" high shaped .134" thick.	Used on Capacitor Coupling Assy	Bendix No. A106094	A106094
#		STUD, Mounting: Brass; 9/16" lg; 1/4" thick; 1/4" wide; 19/32" head No. 32 thread per inch; 1/16" .020" groove 1/16" from end.	Mtg. Stud Plate Rod Assy	Bendix No. A102799	A102799

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO TRANSMITTER BC-625-A, OR BC-625-AM

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
	#	STRAP, Coil: Soft copper; 9/32" lg; 5/32" wide; 3/32" thick; one No. 52 hole; .063" diam. both sides.	Coil Strap—Center Tap Contact	Bendix No. A102889	A102889
	#	STUD, Mounting: Brass, 1 13/32" lg; 1/4" diam; No. 8-32 top; 3/8" lg; at one end; No. 8-32 threads 7/16" lg at other end.	PA. Socket Mtg. Stud	Bendix No. A104091-1	A104091-1
	#	STUD, Mounting: Brass; 2 1/32" lg; 1/4" diam. No. 8-32 top; 3/8" lg at one end; No. 8-32 threads; 7/16" lg at other end.	2nd Harmonic Amp. Socket Mtg. Stud	Bendix No. A104091-2	A104091-2
	#	STUD, Retainer: Coupling; stainless steel; passivate 29/64" lg; 5/16" OD.; one No. 23 hole; .154" diam. x 3/32" deep; .010" x 45° chamfer at both ends.	Coupling Stud Capacitor Board Assy	Bendix No. A106091	A106091
	#	SUPPORT, Bracket: Brass, silver plate; 2 9/16" lg; 1.281" wide; .0641" thick; four No. 8-32 tapped holes 1.875" centers.	Second Harmonic Amplifier Support	Bendix No. A104077	A104077
	#	SUPPORT, Bracket: Brass, silver plate; 2 9/16 lg; 15/16" wide; 1 1/4" thick; three No. 40 holes; .198" diam. and counterbore 7/32" diam. x .032" deep; 1" center; two No. 8-32 tapped holes; 1 7/8" center.	Bracket Support PA. Assy	Bendix No. A104079	A104079
	#	WASHER, Flat: Spring; steel; cadmium plate; 3/8" OD.; .187" ID.; 5/64" thick.	Used on Antenna Board Assy	Bendix No. A115712	A115712
	#	WASHER, Lock: Retaining; cold rolled steel; cadmium plated; .213" lg; 1/4" wide; .031" thick: "U" shaped.	Used on Antenna Coupling Coil Assy	Bendix No. A115889	A115889
	#	WIRE, Ground: Soft copper; silver flash; 1 1/32" lg; 7/16" wide; .015" thick; one 17/64" hole .265" diam. 1/4" slot; .157" wide.	Grounding Strap Antenna Plug	Bendix No. A104837	A104837
<b>MAJOR ASSEMBLY: DYNAMOTOR UNIT PE-94-B OR PE-94-C</b>					
301-1	#	ELECTRICAL PARTS CAPACITOR, Fixed: Paper, .0068 mfd. ±20%, 400v, dcw 53/64" x 53/64" x 17/64" max., No. 20 wire end leads 1 1/8" min. (No longer used on this equipment)	Hash Filter M-V Output	Micamold Radio Corp. Micamold Radio Corp. Solar Mfg. Corp. Aerovox Micamold Cornell-Dubilier Solar Mfg. Co. Aerovox Cornell-Dubilier Micamold Solar	060255-682 (Pref. 1) A18015-682 (Alt. Pref. 2) A102967-8 (Alt. Pref. 3) C60290-682 (Alt. Pref. 4)

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301-2		Same as 301-1	Hash Filter, HV + Output		
301-3		Same as 301-1	Hash Filter, LV + Output		
301-4		Same as 301-1	Hash Filter, SW +		
301-5		Same as 301-1	Hash Filter, SW—		
301-6		Same as 301-1	Hash Filter, — Input		
301-7		Same as 301-1	Hash Filter, + Input		
302-1	#	CAPACITOR, Fixed: Mica, aged, 680 mmfd, $\pm 20\%$ , 11/16" x 13/64" x 7/16", leads 1 1/4, No. 20 AWG, bakelite case. (No longer used on this equipment)	Hash Filter, MV— Output	Aerovox Type No. 1468ST or 1468LST Cornell-Dubilier, No. 5WST or 5WLSST Solar Type No. MOFW or MDCW	C58469-681
302-2		Same as 302-1	Hash Filter, H-V + Output		
302-3		Same as 302-1	Hash Filter, LV + Output Input Filter	Aerovox Solar Electric Utilities	A109505
303A, B					
304		CAPACITOR, Fixed: Oil paper, 2 1/2" lg. x 1" wide x 1 3/4" high; 2 mounting holes 3/16" diam., 2 1/8" center; 3 insulated terminals, 1/2" center; 2 section .5 mfd. $\pm 15\%$ each. (No longer used on this equipment)			L74032
304		CAPACITOR, Fixed: Electrolytic; 5 mfd. —0, $\pm 30\%$ , 200v, 2 1/16" lg. x 5/8" diam., non-polarized, aluminum case. (No longer used on this equipment)	A-F Filter, M-V Output	Cornell-Dubilier	
307	3HK1894B.1	DYNAMOTOR: Input 28v dc, output 150v, 300v and 14 1/2v. Similar to Wincharger No. C6889 and D6891. Bendix type No. DA-3A.	Dynamotor for PE94 Power Supply	Bendix No. AN91444-1	AN91444-1
310-1	#	COIL ASSEMBLY: 1 15/16" lg., .158 OD., chamfer both ends .010 x 45°, 24 1-2 turns equally spaced; No. 20 GA (.032"); phenolic. (No longer used on this equipment)	Hash Filter MV — Output	Bendix No. AA102971-1	AA102971-1
310-2		Same as 310-1	Hash Filter HV + Output		
310-3		Same as 310-1	Hash Filter LV + Output		
310-4		Same as 310-1	Hash Filter SW +		
310-5		Same as 310-1	Hash Filter SW—		
311	#	COIL ASSEMBLY: 3.186" lg., 500 OD., 10 3/4 turns equally spaced, No. 10 AWG (.1019") soft drawn copper wire. (No longer used on this equipment)	Hash Filter + Output	Bendix No. AA102784-2	AA102784-2
312	#	COIL ASSEMBLY: 3.186" lg., 500 OD., 10 3/4 turns equally spaced, No. 10 AWG (.1019") soft drawn copper wire. (No longer used on this equipment)	Hash Filter — Input	Bendix No. AA102784-1	AA102784-1
314	2Z7571.1	REGULATOR, Voltage: Variable resistance; automatic operation; 2 13/16" dia. x 4 7/16" lg., 4 leads, white, blue, red and black. Consists of stack of carbon pile washers, solenoid and plunger	Control of Output Voltage	Eclipse Aviation Corp.	C58131

## TABLE OF REPLACEABLE PARTS—Cont

## MODEL: RADIO SET SCR-522-A MAJOR ASSEMBLY: DYNAMOTOR UNIT PE-94-B OR PE-94-C

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
316	3Z4815.2	RESISTOR, Variable: Wire wound; 15 ohms, $\pm 10\%$ , 35w, 1 1/8" lg. x 9/16" O.D. x 3/8" ID; 2 solder type lugs; (type 4 1/8 "T15 Vitrohm" with bare side for adjustment.)	Regulator Coil Control	Ward Leonard Electric Co.	A104005
317	3Z4800A3.1	RESISTOR, Fixed: Wire wound; 0.3 ohms, $\pm 10\%$ , 20w, 3" lg., 1 3/4" wide, x 1/2" thick; 2 slots 3/16" x 5/16", vitreous enameled. Zero temp. coeff. wire	Voltage Dropping	Ward Leonard Electric Co.	A103999
321	2Z7656-5	RELAY, Starting: 2 13/16" x 2 13/16" x 1 19/32"; 2 contact terminals and 2 coil terminals. 28v coil. Contacts to be 3/8" dia. and silver. 2 mounting holes No. 8-32, .875 center, SPST	Starting Relay	Price Bros.	A102837-2
322	#	CONNECTOR, Male Contact: Input, 2 contact, 4 holes countersunk for No. 6 flat head screws. (No longer used on this equipment)	Input Connector	Bendix No. A102876	A102876
323	#	CONNECTOR, Male Contact: Output, 6 contact, 4 holes, countersunk for No. 6 flat head screws. (No longer used on this equipment.)	Output Connector	Bendix No. A102974	A102974
352-1	2Z28401-5PH10	MOUNT, Vibration: Square 10 lb. load rating, 2 3/8"; 4 holes 1 15/16" centers, 4 sizes or series, metal frame, cadmium plated	Shockproof Mtg.	Lord Mfg. Co., Type 150 PB10	C56354-9 (Pref. 1)
352-2		Same as 352-1	Shockproof Mtg.	U. S. Rubber Co. Type 5150-C	C62023 (Alt. Pref. 2)
352-3		Same as 352-1	Shockproof Mtg.		
352-4		Same as 352-1	Shockproof Mtg.		
353-1	6L4904-1.3	SCREW, Machine: Hex., 1/4" x 1 3/32" less head, 1/4-26 thread; pitch dia., .2254, passivate, stainless steel, type No. 33	Shockmount to Dyn. Mtg.	Bendix No. A102900-1	A102900-1
353-2		Same as 353-1	Shockmount to Dyn. Mtg.		
353-3		Same as 353-1	Shockmount to Dyn. Mtg.		
353-4		Same as 353-1	Shockmount to Dyn. Mtg.		
353-5		Same as 353-1	Shockmount to Dyn. Mtg.		
356	3GK117-48.1	GROMMET, Phenolic: 3/4" O.D. x 13/32" I.D. x 3/16" thick, phenolic, impregnate in superla wax	Cable Insulation	Bendix No. A108469	A108469
357	#	COVER, Filter: 3.875" x 4.000", 4 holes 3.562" center, No. 20 drill (.161"), brass or steel, cad. plate. (No longer used on this equipment)	Output Filter Unit	Bendix No. A102774	A102774
358	#	COVER, Filter: 1.31/32" lg. x 3.453" wide x .031" thick, 4 holes No. 28 drill (.1405") 1.625" and 3.125" centers, brass or steel, S.A.E. 1010, cadmium plate. (No longer used on this equipment)	Input Filter Unit	Bendix No. C58121	C58121

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Part No.	Description	Dynamotor Strap	Bendix No.	Part No.
359	6LK8015-3	SCREW, Machine: 1 5/32" lg., less hd., x .145" thick, No. 10-32 thds., head 5/16" x 1/8", slot 3/64" wide x 1/16" deep, cold drawn steel, S.A.E. 1112 cadmium plate	A102771	A102771
361	3HK513-20	BRUSH ASSEMBLY, Electrical Contact: Input L.V. includes: brush, spring, and pigtail cap. Similar to Wincharger No. A6826-1. Used in DA-3A Dynamotor Assy	Bendix No. AA109693-1	AA109693-1
362	3HK513-21	BRUSH ASSEMBLY, Electrical Contact: Input L.V. includes: brush, spring, and pigtail cap. Similar to Wincharger No. A6826. Used in DA-3A Dynamotor Assy	Bendix No. AA109693-2	AA109693-2
363	3AK513-18	BRUSH ASSEMBLY, Electrical Contact: Output L.V. includes: brush, spring and pigtail cap. Similar to Wincharger No. A6844-1. Used in DA-3A Dynamotor Assy	Bendix No. AA109692-1	AA109692-1
364	3HK513-19	BRUSH ASSEMBLY, Electrical Contact: Output L.V. includes: brush, spring and pigtail cap. Similar to Wincharger No. A6844. Used in DA-3A Dynamotor Assy	Bendix No. AA109692-2	AA109692-2
365	3HK513-22	BRUSH ASSEMBLY, Electrical Contact: M.V. and H.V. includes: brush, spring and pigtail cap. Similar to Wincharger No. A5742-1. Used in DA-3A Dynamotor Assy	Bendix No. AA109683-1	AA109683-1
366	3HK513-23	BRUSH ASSEMBLY, Electrical Contact: M.V. and H.V. Includes: brush, spring, and pigtail cap. Similar to Wincharger No. A5742. Used in DA-3A Dynamotor Assy	Bendix No. AA109683-2	AA109683-2
368	3Z1894-18.1	FILTER, Element: Output; 3 61/64" max. lg. x 4 3/8" max. high x 1.933 wide, 4 holes No. 6-32 tap x 5/16" min., 3.562 and 3.687 center; 5 No. 4-40 Binder Head screws and split type lockwasher. Includes three inductors, seven capacitors, and one six-contact connector (male)	P. R. Mallory, Inc. Type NFI-7	L76163
369	3Z1894-14.1	FILTER, Element: Input; 4 15/32" lg. x 2 23/32" high x 2 1/4" wide; 4 mtg. holes No. 6-32 tap, 3/8" min. depth 2.500 centers, includes 4 capacitors and 2 chokes	Dillingham-Lewis Type No. B-23 Mallory Type NFI-6	L75091 or L74595
	#	MECHANICAL PARTS ARMATURE, Dynamotor: Approx. 11 3/4" lg. x 2 7/8" O.D. over-all; shaft dia. .5908". Includes: 150v winding. Similar to Wincharger type B-6881. Used in Type DA-3A Dynamotor Assy	Bendix No. AL74171-1	AL74171-1
	#	BAG & BRUSH ASSY: Includes: 1 bag 6 7/8" lg. x 3 1/4" high; pockets 2" high; black cotton cloth; 8 brush assemblies	Bendix No. AC60919-1	AC60919-1
	#	BASE, Dynamotor: Upper 13 3/32" lg. x 7 31/32" wide; .057" or .064" aluminum; 4 holes 3/4" dia., 4 holes 5/16" dia., 1" center; 16 holes No. 9 drill (.196") 2 holes, .261", 4 3/8" centers	Bendix No. AC62288-1	AC62288-1
	3H307-8	BEARING, Ball: 1.370" O.D., .5906" bore, .480" thick. Similar to Wincharger No. 6211. Used in DA-3A Dynamotor Assy	New Departure. Type 8502 Federal. Type 7015 x 5	A109859
	#	BLOWER, Impeller Type: Ventilating fan; 8 blades; 4 3/16" O.D. Includes: mtg. hub drilled for setscrew. Cold rolled steel, cadmium, zinc, or tin plated. Similar to Wincharger No. A6869. Used in type DA-3A Dynamotor Assy	Bendix No. AA109766-1	AA109766-1
	#	BRACKET, Fuse: 1 5/8" lg. x 1 7/16" high x .067" thick; 1 hole No. 26 drill (.147") cold rolled steel, cadmium plate	Bendix No. A119624	A119624

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: DYNAMOTOR UNIT PE-94-B OR PE-94-C

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
	3H683-22	CAP, Dynamotor: Moulded black bakelite, 9/16" O.D., 11/32" thick. Knurled, tapped; optional screw driver slot. Similar to Wincharger No. A5125. Used in DA-3A Dynamotor Assy	Cap Assy for H.V. & M.V. PE-94 Power Supply	Bendix No. AA109633-1	AA109633-1
	3H683-24	CAP, Dynamotor: L.V. Output. Moulded black bakelite. 7/8" O.D., 11/32" thick. Knurled, tapped. Optional screw driver slot. Similar to Wincharger No. A5635. Used in DA-3A Dynamotor Assy	Cap Assy for L.V. Output, PE-94 Power Supply	Bendix No. AA109665-1	AA109665-1
	3H683-21	CAP, Dynamotor: L.V. Input. Moulded black bakelite. 1" O.D., 11/32" thick. Knurled, tapped. Optional screw driver slot. Similar to Wincharger No. A5527. Used in DA-3A Dynamotor Assy	Cap Assy L.V. Input, PE-94 Power Supply	Bendix No. AA109817-1	AA109817-1
#		CAP, Fuse: Includes: 1 fuse cover, 2 fuse clip, 2 3/16" O.D. x .064" thick. 2 holes No. 30 drill (.1285") 3/4" center; 2 holes No. 20 drill and counterbore 1/32" dia., 1 25/32" center; 1/4" hard alum., black wrinkle	Fuse Cover	Bendix No. AA119626-1	AA119626-1
#		CLIP, Fuse: 5/16" lg. x 29/64" high x 5/16" wide x .022" thick; phosphor bronze; nickel plate	Slit Fuse Retainer	Littelfuse	A5324-1
#		COVER, Power Supply: End; cold rolled steel, cadmium, zinc or tin plated, black wrinkle paint. 4.945 O.D., 2.820 lg., .023" thick. 48 air vents; 2 mtg. holes 3/16" dia. 1.875" centers; shaped. Similar to Wincharger No. B6808. Used in type DA-3A Dynamotor Assy	End Cover, PE-94 Power Supply	Bendix No. C60120	C60120
#		COVER, Fan: End; cold rolled steel, cadmium, zinc or tin plated, black wrinkle paint. 4.945" O.D., 3.500" lg., .023" thick. 37 air vents; four No. 20 mtg. holes 90° centers, shaped. Similar to Wincharger No. B6809. Used in type DA-3A Dynamotor Assy	End Cover Fan Side, PE-94 Power Supply	Bendix No. C60121	C60121
3Z2595.6		FUSE, Cartridge: 1/2 amp., 250v, 8 A.G. glass enclosed; 1" lg., x 1/4" dia. Instrument fuse; high speed for Marine Radio Service Model	Dynamotor H.V. and Spare	Littelfuse Inc.	A114609-2
2Z4866.247		GASKET, Fairprene: Fuse cover 2 3/16" O.D. x 1 1/2" I.D. x .025" 2 holes No. 20 drill (.161") 1 25/32" center; fairprene No. 5007 or equivalent	Fuse Cover Gasket	Bendix No. A119627	A119627
#		GASKET, Felt: Felt, white; 7/8" O.D., 1/2" I.D.; .085" thick; similar to Wincharger No. A6818. Used on DA-3A Dynamotor Assy	Felt Gasket for Fan End, PE-94 Power Supply	Bendix No. A109657	A109657
#		HOLDER, Brush: Brass, tin or nickel plate. 31/32" lg., .373" O.D. Threaded 3/8" x 27". Similar to Wincharger No. A6833. Used in DA-3A Dynamotor Assy	Brush Holder for H.V. and M.V. Negative PE-94 Power Supply	Bendix No. A109634	A109634
#		HOLDER, Brush: Brass, tin or nickel plate. 1 1/8" lg., .623" O.D. Threaded 5/8" x 27". Similar to Wincharger No. A6832. Used in DA-3A Dynamotor Assy	L.V. Output Brush Negative, PE-94 Power Supply	Bendix No. A109635	A109635



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#	HOLDER, Brush: Input; .873" O.D. Consists of: brush holder, insulating tube and lug. Similar to Wincharger No. A6913. Used in DA-3A Dynamotor Assy	Input Brush Holder and Insulator, PE-94 Power Supply	Bendix No. AA109673-1	AA109673-1
#	HOLDER, Brush: Output H.V. and M.V., brass, tin or nickel plate. 1" lg., 7/8" O.D. less lug. Includes: holder, washer, bushing and lug. Threaded. Similar to Wincharger No. A6594. Used in DA-3A Dynamotor Assy	Brush Holder and Insulator H.V. and M.V. Positive, PE-94 Power Supply	Bendix No. AA109677-1	AA109677-1
#	HOLDER, Brush: Output L.V., brass, tin or nickel plate. 1 1/8" lg., .748" O.D. less lug. Includes: holder Assy, and insulator tube. Threaded. Similar to Wincharger No. A6847. Used in DA-3A Dynamotor Assy	Brush Holder and Insulator L.V. Output Positive, PE-94 Power Supply	Bendix No. AA109700-1	AA109700-1
3Z3285-6	HOLDER, Fuse: 2 13/32" lg. x 11/16" wide, 1/2-24 thd., 90° center hole; supply with 3/32" thick hex. nut and 3/64" thick rubber washer	HJM Fuse Holder for SAG Fuse	Bussman Type HJM	A119623-1
#	MOUNTING, Dynamotor: Includes: 2 rods, 2 rivets, 14 7/8" lg. x 15/16" wide x .0149" thick; 2 holes, 1/8" drill, cold rolled steel.	Dynamotor Mounting	Bendix No. AA102773-1	AA102773-1
#	NUT, Lock: Elastic stop; 1/4" x 26" thread; 1 9/32" lg. x 1/2" wide x 9/32" thick; 2 holes .098" dia. 1" center. Pitch diameter .2254" + .0024" - .0000; cadmium plate or zinc plate. S.A.E. No. 1112 steel	Anchor Nut for Base Assy	Elastic Stop Nut Corp.	A18270-7
#	NUT, Lock: Elastic stop, No. 6-32, 5/16" lg., 15/64" high, brass; plain finish	Clinch Nut for Cover Assy	Elastic Stop Nut Corp.	A18272-7
#	PIN, Crossarm: Fastener cross; .443" lg. x .098" O.D. x .090" I.D. 3 serrations equally spaced; .020" radius at corners; cad. plate or zinc plate. Catalog No. 98-5-CP	Fastener Cross Pin for Dzus Release	Shakeproof, Inc.	A113235-2
#	ROD: 15/16" lg. x 7/16" high .375" I.D. No. 10-32 tap and countersunk both sides 7/32" dia., x 90°; brass 1/2" hard cadmium plated	Dynamotor Clamping Assy	Bendix No. A102770	A102770
#	SHIM, Bearing: Cold rolled steel, zinc or tin plated or hard brass. 1.375" O.D. 1 1/16" I.D., .005" thick. Similar to Wincharger A6532. Used in DA-3A Dynamotor Assy	Bearing Shim, PE-94 Power Supply	Bendix No. A109679-1	A109679-1
#	SHIM, Bearing: Cold rolled steel, zinc or tin plated or hard brass. 1.375" O.D., 1 1/16" I.D., .0179" thick. Similar to Wincharger A6532. Used in DA-3A Dynamotor Assy	Bearing Shim, PE-94 Power Supply	Bendix No. A109679-2	A109679-2
#	SHIM, Bearing: Cold rolled steel, zinc or tin plated or hard brass. 1.375" O.D., 1 1/16" lg., .0359" thick. Similar to Wincharger A6532. Used in DA-3A Dynamotor Assy	Bearing Shim, PE-94 Power Supply	Bendix No. A109679-3	A109679-3
#	SHIM, Bearing: Cold rolled steel, zinc or tin plated or hard brass. 1.375" O.D., 1 1/16" lg., .003" thick. Similar to Wincharger A6532. Used in DA-3A Dynamotor Assy	Bearing Shim, PE-94 Power Supply	Bendix No. A109679-4	A109679-4
#	STUD, Fastener: 1" lg. x 1 1/32" wide, x 5/8" thick; kidney shaped, 1 hole .096" dia., pin 1/4" dia., .562" lg.; cad. plate or zinc plate	Fastener Stud Type 5 Wing Nut	Shakeproof Inc.	C62261-13
#	WIRE, Bare: Ground; includes: braid and 2 lugs	Ground Strap	Bendix No. AA104006-1	AA104006-1
#	WIRE, Bare: Ground; includes: 1 ground strap lug 1" lg., x 3/8" wide x .020" thick; 1 hole .281", 3/16" R., 1 hole No. 9 drill (.196"); 3 3/4" braid; 1 ground lug 1 17/32" lg. x 3/8" wide x .020" thick, 1 hole .281" (K drill) 1 hole .196" (No. 9 drill); 1 1/8" centers. Brass, hot tinned plate	Ground Strap Between Base and Shockmount	Bendix No. AA106191-1	AA106191-1

#Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RADIO CONTROL BOX BC-602-A OR BC-602-B

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
601-1, -2, -3, -4, -5	2Z5889-1	ELECTRICAL PARTS LAMP, Incandescent: Switchboard; 12v, 0.105—0.120 amps; carbon filament, T-2 clear bulb, No. 902 slide base. 1 11/16" lg. x 1/4" wide	Channel Indicator	General Electric Cat. No. 12A Hygrade Sylvania Corp. Cat. No. 12A	A104012
606	#	CONNECTOR, Male Contact: 12-contacts; 1.560" max. 1.555" min. O.D. 1.480" I.D. threads .420" depth, .1940" sq, .800" deep. Four .152" mtg. holes, 1.500" centers. Includes: eyelets, pins, pin insulation, pin washer and pin socket	Cable Connector to Junction Box (SO-147)	Western Electric Co. Cat. No. 2F American Phenolic Corp. Connector Corp.	AA102437-1
611A, B, C, D, E	3Z9824-263	SWITCH, Pushbutton: Push; 5 buttons, 2 positions each, spring return, shorting type contacts, 4 1/4" lg. 3 29/32" high, 31/32" wide	Channel Selector	Oak Mfg. Co. Part No. 22506-80	C58192
612	3Z8313-3	SWITCH, Lever: 3-position, switchboard type, 6 contacts, 4" lg., 1 5/32" wide (approx.) threaded lever handle. Includes: frame, lock pin lever, plate and spring, spacers, operating lever, lever shaft, spring, pin ball bearing retainer, contacts, contact plate, pin ball and hardware	Trans.-Rec. Remote Switch	Bendix No. AL72966-1	AL72966-1
616-1, -2, -3, -4, -5	2Z5961.1	HOLDER, Lamp: Socket, miniature bayonet; sub-chassis mtg., over-all dims. 3 1/8" lg. x 1/2" dia., two holes No. 2-56 tap for mtg., 0-875" centers; hot tinned solder lug terminals	Lamp Socket	Cook Elec. Co. Type 609 Oak Mfg. Co. Type No. 4925	A103987
621	2S522A/K1	KNOB, Lever: Moulded black phenolic, 3/8" dia., 1 1/4" lg., No. 10-32 x 3/4" tap, 5/16" dia., groove 1/8" lg. 7/32" from head. 7/16" radius end	Trans.-Rec. Remote Switch	Bendix No. A102706	A102706
	#	MECHANICAL PARTS DIMMER ASSEMBLY: Bronze, nickel plate. 5 7/16" lg., 1.842" wide, 7/16" thick. Five 13/32" dia. holes, 750" centers. Five 5/16" dia. holes. Two No. 30 holes. .1285" dia. 4.125" centers. Two No. 51 holes .067" dia. 2.250" centers. Includes: remote cover, support assy, slide assy, and four rivets.	Dimmer Assy	Bendix No. AA102865-1	AA102865-1
	4C2502L	LENS, Indicator Light: (Green); spring type. 15/32" lg., 13/32" O.D., 23/64" I.D.	Lamp Cap	Western Elec. Co. Cat. No. 2-L	A103969-1
	4C2502AY	LENS, Indicator Light: (White), spring type. 15/32" lg., 13/32" O.D., 23/64" I.D.	Lamp Cap	Western Elec. Co. Cat. No. 2 AY	A103969-2

# Not available as a spare part; listed for reference purposes only.

**MAJOR ASSEMBLY: JACK BOX BC-631-B**

**MODEL: RADIO SET SCR-522-A**

1100-1 thru 3	6Z4918-1	ELECTRICAL PARTS GROMMET, Rubber: Black rubber 11/16" O.D., 3/8" hole, 1/4" thick, 1/16" slot BOARD, Terminal: Phenolic, 3-3/8" lg, 1-1/8" wide, 1/2" high. Has twelve No. 6 lugs and twelve No. 6-32 screws. Terminal No. 1 through 6. Insulating barriers between each terminal. Similar to H.B. Jones type No. 6-141 RESISTOR, Fixed: Insulated 1,000 ohms $\pm 10\%$ , 1/2 w. 3/8" lg., 9/64" O.D., No. 20 wire end leads	Grommet Jack Box	American Radio Hardware Co. Bendix No. AC58144-1	A18131-22 AC58144-1
1101	2C2229A/T1		RESISTOR, Variable: 10,000 ohms, $\pm 20\%$ . Linear taper, 1-1/16" O.D. less terminals, 9/16" body, 3/8"-32 thread, 3/8" shaft, 1/4" shaft dia., three terminal lugs. One locating pin	Terminal Strip on Jack Box	Allen-Bradley Co. Speer Resistor Corp.
1102	3RC20BE102K	MECHANICAL PARTS COVER, Jack Box: Includes: knob Assy, potentiometer (903), lock and hardware INSULATOR, Bushing: Potentiometer; cad. plated steel. 5/8" O.D., .380" I.D., 1/16" thick, flanged. Used in Jack Box -BC631 NUT, Lock: Potentiometer; 1 13/16" lg, 15/16" wide over all. .0269" thick, cadmium plated, shaped	Audio Limiting Resistor-Jack Box	Chicago Telephone Supply Co. Bendix No. AA109741-1	A110281 (Alt. Pref. 2) AA109741-1
1103	3RC20AE102K		Audio Knob, Jack Box	Volume Control, Jack Box	Bendix No. AA109742-1 Bendix No. A109744
1104	2Z1409-19	#	Potentiometer Bushing	Potentiometer Lock-Jack Box	Bendix No. A109743

**MAJOR ASSEMBLY: RACK FT-244-A**

**MODEL: RADIO SET SCR-522-A**

401	3DB2.816	ELECTRICAL PARTS CAPACITOR, Fixed: Two mfd $\pm .5$ -0 mfd. 25v 60 cycles, oil paper. Both tub type, 2-1/2" deep, 2" wide, less mounting ears, 1" high, 2-3/8" mounting centers. Two insulated side solder lugs CAPACITOR, Fixed: Oil filled paper, both tub type, .5 mfd. $\pm 20\%$ , -15%, 400v dcw. metal cased. 2-1/8" centers, 1" deep less lugs, 3/4" high, two insulated side solder lugs, two mounting ears, 3/16" mounting holes. MOTOR ASSEMBLY, DC: Ratchet type for band changing. 12v dc. Includes ratchet wheel and arm positioning switch. Armature pawl interrupter switch shaft, armature frame, hinge and spring and hardware	Motor Solenoid Bypass	Bendix No. A102816-1	A102816-1
402	#		High Voltage Bypass	Cornell-Dubilier (or equivalent)	A104092-1
406	3H3112		Band Change Motor	General Instrument Corp. Delco Radio Corp. Colonial Radio Corp.	AC57992-1

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

MODEL: RADIO SET SCR-522-A

MAJOR ASSEMBLY: RACK FT-244-A

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
407	#	ARMATURE PAWL ASSEMBLY: Includes: armature, pawl, spring, interrupter screw, and hardware. 2-1/2" lg., 1-5/8" high, (approx.). Part of ratchet motor	Armature Pawl Ratchet Motor FT-244	Bendix No. AA102508-1	AA102508-1
408	3C1109-1	COIL ASSEMBLY, Solenoid: Ratchet motor. Solenoid. 975 turns No. 24 enamel wire, 15 layers. D.C. resistance, 5.75 ohms at 20°C. For twelve volt operation; 1-5/8" lg., 1-15/64" O.D.	Solenoid Assy for Ratchet Motor FT-244	Bendix No. AA102536-1	AA102536-1
409	#	RATCHET WHEEL AND ARM ASSEMBLY: Includes ratchet wheel, arms, and hardware. 1 5/8" O.D. (approx.) 1.240" lg. over-all. Four arms mounted on shaft. Part of ratchet motor ref. No. 406 Same as AC59278-1 Same as AC59278-1	Ratchet Wheel and Arm for Tuning Motor FT-244	Bendix No. AC59278-1	AC59278-1 (Pref. 1)
411-1	2Z7642AR	RELAY, General Purpose: Locking. Normal operating voltage 13 1/2v dc, 1 5/8" lg., 1 1/4" high, 13/16" wide, two solder lugs. Similar to Allied Control Relay Type AR Same as 411-1	Locking Relay for FT-244	Bendix No. A102817	AC59900-1 (Pref. 2) AC59900-2 (Pref. 3) A102817
411-2			Motor Control Relay		
412	2Z7650-A7374	RELAY, General Purpose: Antenna transfer. Eight terminals. Platinum iridium or ruthenium contacts, coil resistance 150 ohms. 12v dc minimum operating. Minimum spring tension on contact 25 grams. 2 1/2" lg., 1 9/32" high, two No. 832 tapped holes	Antenna Transfer Relay	C. P. Clare & Co. G. M. Laboratory Cook Electric Co. Allied Control Co., Inc. Automatic Electric Co. R. B. M. Mfg. Co. American Phenolic Connector Corp.	C58180
416	2Z8799-153	CONNECTOR, Female Contact: SO-153; one contact, coaxial cable connector. Includes: socket, contact, bushing, washers, spring clip and hex. nut. Square mtg. base	Antenna Connector		AC58136-1
417	2Z8799-151	CONNECTOR, Male Contact: Eighteen pin, male. Includes: pins, washer, insulator and socket. 2.120" sq. Four .152" dia. mounting holes 1.680" centers. Connector bushing .420" lg., 1.820" O.D. Twenty T.P.I. Over-all depth .80"	Junction Box Socket for FT-244 (SO-151)	American Phenolic Corp. Type 46-R4- 159 Connector Corp.	AA102399-1
418-1	2Z8639-3	CONNECTOR, Female Contact: Eight contact socket, female. Similar to type S-408. Molded phenolic body 1.875" lg., 1 3/16" wide, 1 9/32" thick, including lugs. Two No. 6-32 tapped holes 3/8" deep. Contacts numbered 1-8. Polarized Same as 418-1	Transmitter Control Connector	Howard B. Jones	A102812
418-2			Power Input to Trans- mitter Rack		

AN 08-40SCR522-3

419	2Z8639-4	CONNECTOR, Female Contact: Ten contact socket, female. Similar to type S-410. Molded phenolic body. 2.312" lg., 1 3/16" wide, 1 8/32" thick including lug. Two No. 6-32 tapped holes 3/8" deep. Contacts numbered 1-12. Polarized pins, washer, insulator and socket 1.940" sq. Four .152" dia. mounting holes, 1.50" centers, connector bushing .420" lg. 1.545" min. O.D. 20 T.P.I. Over-all depth 80"	Receiver Cable Connector for FT-244	Howard B. Jones	A102814
420	2Z8799-147	CONNECTOR, Male Contact: Twelve pins male. Includes: pins, washer, insulator and socket 1.940" sq. Four .152" dia. mounting holes, 1.50" centers, connector bushing .420" lg. 1.545" min. O.D. 20 T.P.I. Over-all depth 80"	Power Supply Socket for FT-244 (SO-147)	American Phenolic Corp. Type 46-R3-158 Connector Corp.	AA102437-1
421	2Z7252	CONNECTOR, Male Contact: Banana type, male, 1 5/16" lg., No. 6-32 thd. 1/2" lg. Beryllium copper springs 9/16" lg., hex. head. Similar to General Radio 274-P. Silver plated	Part of Antenna Board for FT-244	Bendix No. 102875-2	A102875-2
422	2Z7380-244A/P1	CONNECTOR, Male Contact: Phenolic 2 3/16" lg., 1 5/8" wide, 1/8" thick. Includes: four mtg spacers, two threaded inserts, two banana plugs, two solder lugs and misc. hardware	Antenna Plug, FT-244	Bendix No. AA102718-1	AA102718-1
426	2Z9509-1	SWITCH, Push: D.P.S.T. 1 7/16" lg. 1 9/16" high, 5/8" thick. Threaded 19/32", with 1532" x 32 threads, four solder terminals. All metal parts except contacts, nickel plated. Phenolic parts varnish impregnated. Normally open. Similar to H & H type 3594-D	Release Button for Rack FT-244A	Arrow-Hart & Haggeman. Type 3594-D Modified	A29843-1
427A, B, C, D	3Z8313-2	SWITCH ASSEMBLY, Toggle: Positioning. Includes: mounting block, four switches and hardware, 2 3/32" lg., 1 1/4" wide, 1/2" high. (approx.). Has 4 hard brass switches marked A, B, C, & D	Positioning Switch Ratchet Motor (Ref. 406)	Bendix No. AA102537-1	AA102537-1
431-1	2Z7380-244A/S1	SCREW, Machine: Cover; cold drawn steel, cadmium or zinc plated, 7/16" lg., 5/16" dia. head, 1/32" slot; threaded 1/4", No. 6-32 threads. Black painted. Special Same as 431-1	Transmitter Cover Retaining	Bendix No. A102441	A102741
431-2		Same as 431-1	Transmitter Cover Retaining		
431-3		Same as 431-1	Receiver Cover Retaining		
431-4		Same as 431-1	Receiver Cover Retaining		
432	6LK3950	PIN, Eccentric: Stainless steel, passivated 1 9/16" lg., No. 4 x 40 thd., 1/4" lg. on one end, 3/8" dia. head, slotted 1/64" wide. .124" dia. shaft. Marked with arrow on head. Special	Adjustment Pin Upper Slide FT-244	Bendix No. A104877	A104877
#		MECHANICAL PARTS	Spring Adjusting Nut, Ratchet Motor FT-244	Bendix No. A102538	A102538
#			Hinge Adjusting Screw, Ratchet Motor FT-244	Bendix No. A102541	A102541
6L6632-5.24			Interrupter Screw, Ratchet Motor FT-244	Bendix No. A104794	A104794
#			Shaft for Ratchet Motor FT-244	Bendix No. A102515	A102515

# Not available as a spare part; listed for reference purposes only.

## TABLE OF REPLACEABLE PARTS—Cont

## MODEL: RADIO SET SCR-522-A

## MAJOR ASSEMBLY: RACK FT-244-A

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
	#	SPRING, Positioning: Includes: springs, block, and hardware. 1 5/16" lg., 1 1/4" wide (approx.) Part of ratchet motor	Positioning Spring Ratchet Motor FT-244	Bendix No. AA102511-1	AA102511-1
	#	SPRING, Hold Down: Armature; nickelled music wire or stainless steel. 1 1/32" lg. over-all, 3/16" O.D. Hooked at both ends	Armature Spring Ratchet Motor FT-244	Bendix No. A102539	A102539
	#	SPRING, Return: Nickelled music wire or stainless steel wire. 1 1/8" lg. 3/16" O.D., hooked at both ends, solenoid type	Return Spring for FT-244 Rack	Bendix No. A102731	A102731
	#	SWITCH, Interpreter: Nickel plated brass, 2 1/8" lg., 5/16" wide, 3/8" high (approx.). Solder lug on one end. Break-down voltage. 500v, 60 cycles between blades. Contacts insulated with amber mica	Interrupter Switch, Ratchet Motor	Bendix No. C58941	C58941

## MODEL: RADIO SET SCR-522-A

## MAJOR ASSEMBLY: CASE CS-80-A OR CS-80-C

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
1401-1 thru 4	Z8401-3PH12	ELECTRICAL PARTS MOUNT, Vibration: Square base, twelve pound-load ratings, 2 3/8" square, 1 15/16" mounting centers, 1 1/16" high over-all, rubber cushion, 1 1/2" dia. x 5/8" thick, plate mounting, 4 mounting holes .196" dia. (Note: To be supplied with C.P. washer, Bendix No. 17005-55 as per BM-605)	Shock Mount for Case CS80	Lord Mfg. Co. Type No. 150PH12	C56354-10 (Pref. 1)
1402-1 thru 4	#	SCREW, Machine: Cap, stainless or cadmium plated steel. 1 3/32" shaft, 3/16" thick head, 7/16" hex. threaded 1/2", 1/4" x 26 thds. Total length 1 9/32". Special	Shock Mount Screws (CS80)	U. S. Rubber Co. Type No. 5150-C Bendix No. A102900-1	C62023 (Alt. Pref. 2) A102900-1
1403-1 thru 4	6L4904-15	SCREW, Machine: Cap, stainless or cadmium plated steel. 15/32" shaft threaded full length 1/4" x 26 thds. 3/16" thick head, 7/16" hex. Total length 21/32". Special	Mounting Screws (CS-80)	Bendix No. A102900-2	A102900-2

## MODEL: RADIO SET SCR-522-A

## MAJOR ASSEMBLY: MOUNTING FT-488 AND FT-498

Reference Symbol	Army Stock Number Navy Type Number British Ref. Number	Name of Part and Description	Function	Mfr. and Designation	Drawing or Spec. No.
FT-488	#	BASE, Transmitter, Receiver Rack: Lower. Includes: lower base, springs fastener main springs and hardware. Aluminum 19 7/64" lg., 12 11/16" wide, 5/8" high. Six .193" dia. mtg. holes	Lower Base Assy	Bendix No. AL75224-1	AL75224-1
FT-498	#	BASE, Dynamotor: Lower. Includes: lower base, springs, fastener main springs and hardware. Aluminum 13 19/64" lg., 8 1/4" wide, 5/8" high. Six .193" dia. mtg. holes	Lower Base Assy	Bendix No. AC62287-1	AC62287-1

# Not available as a spare part; listed for reference purposes only.

**SECTION VIII**  
**DRAWINGS**

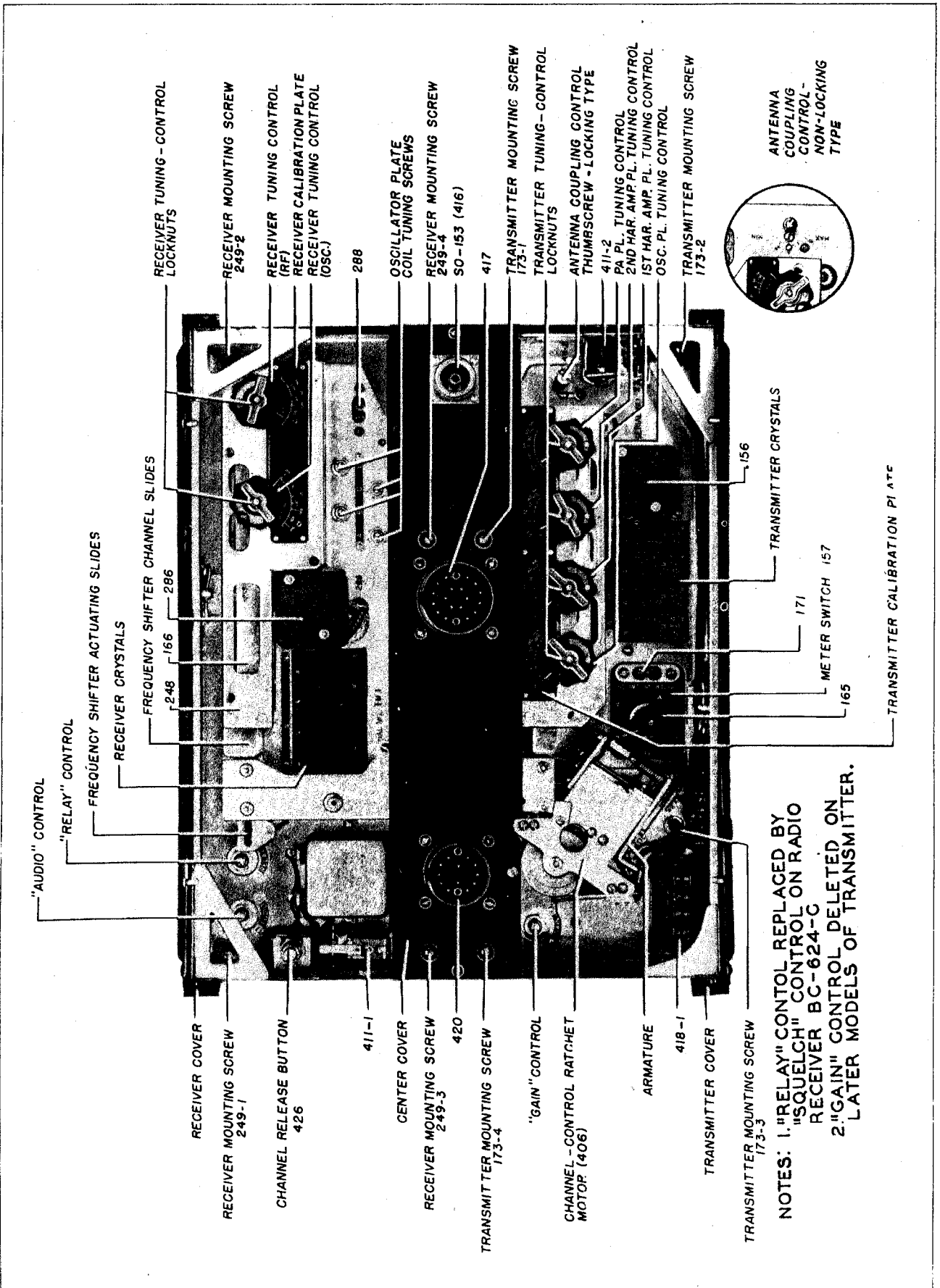


Figure 8-1. Transmitter-Receiver Assembly of Radio Set SCR-522-A in Rack FT-244-A



AN 08-40SCR522-3

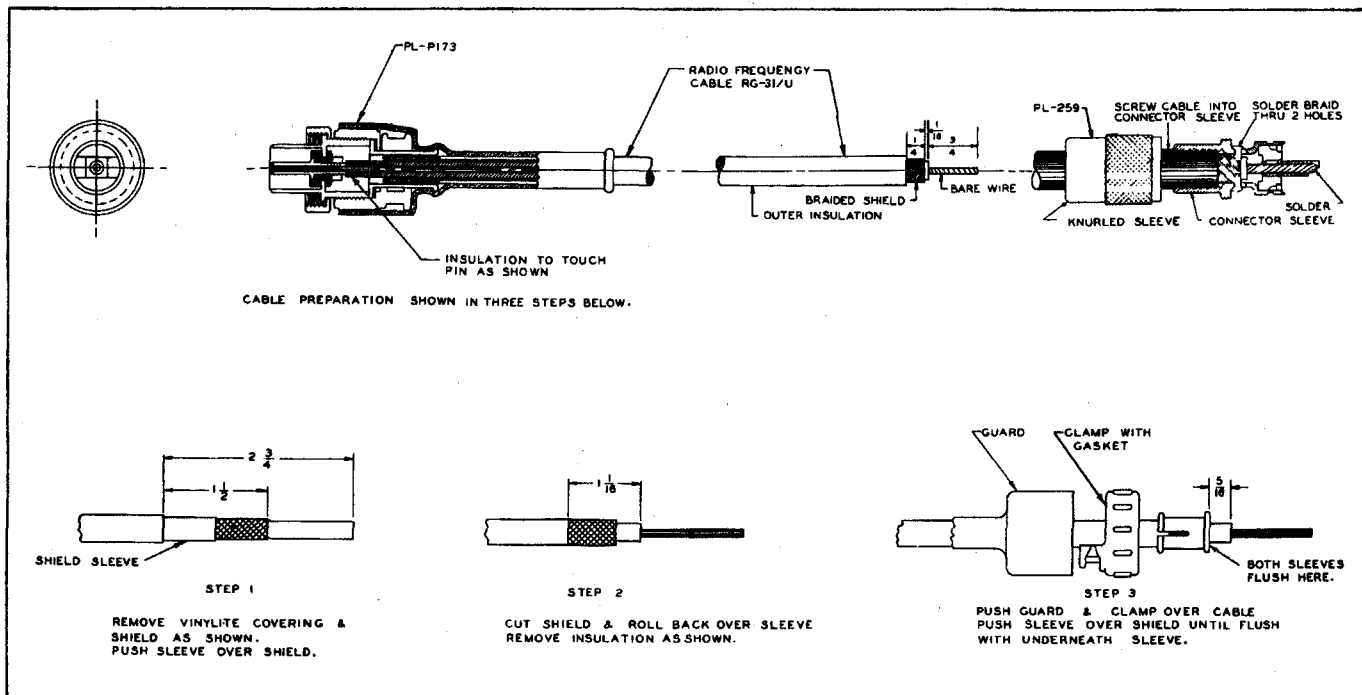


Figure 8-2. Cable Assembly with Plug PL-P173 and PL-259

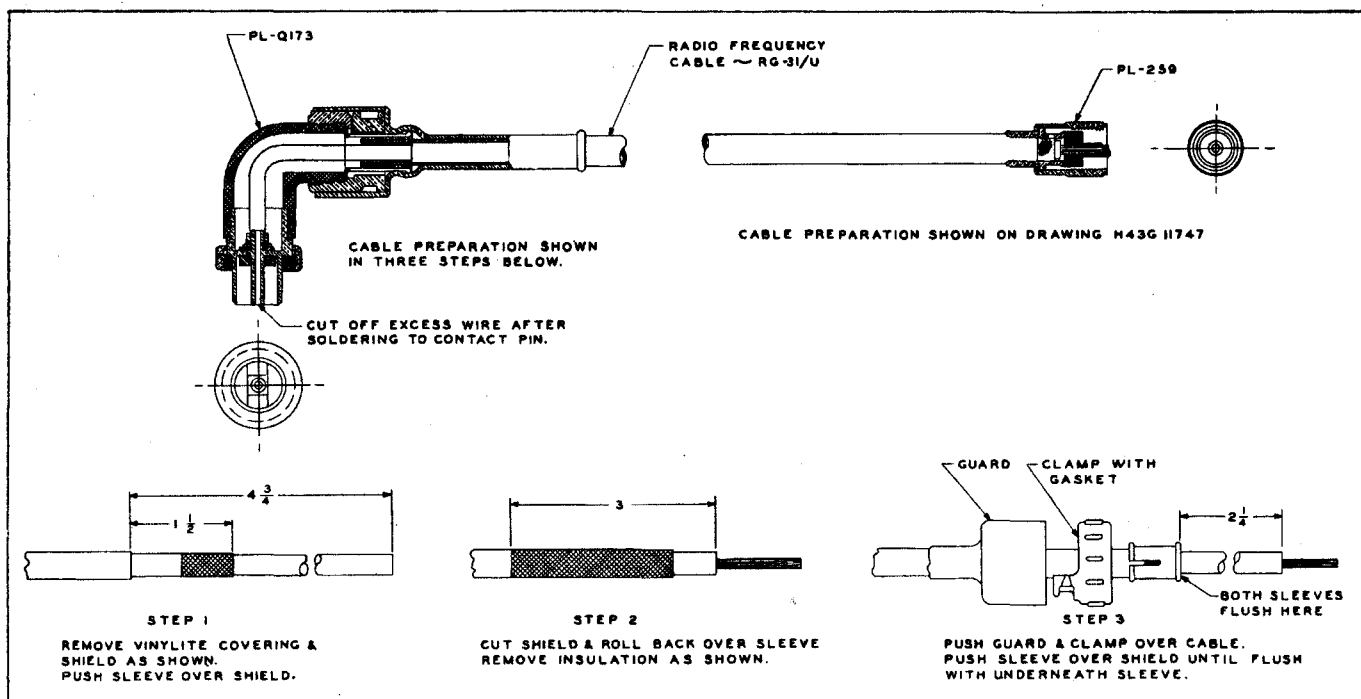


Figure 8-3. Cable Assembly with Plug PL-Q173

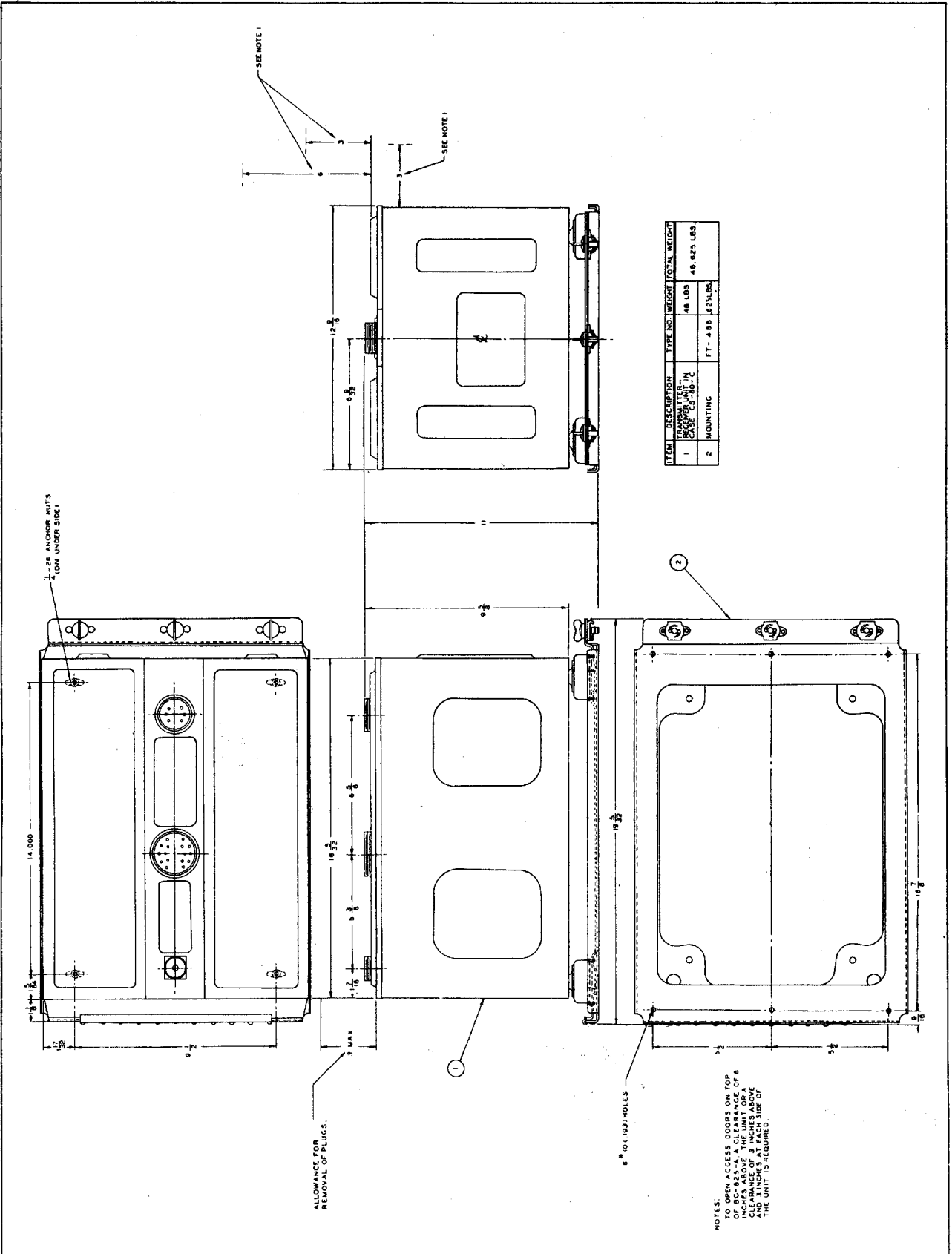


Figure 8-4. Transmitter-Receiver Assembly in Case CS-80-C—Outline Dimensions

AN 08-40SCR522-3

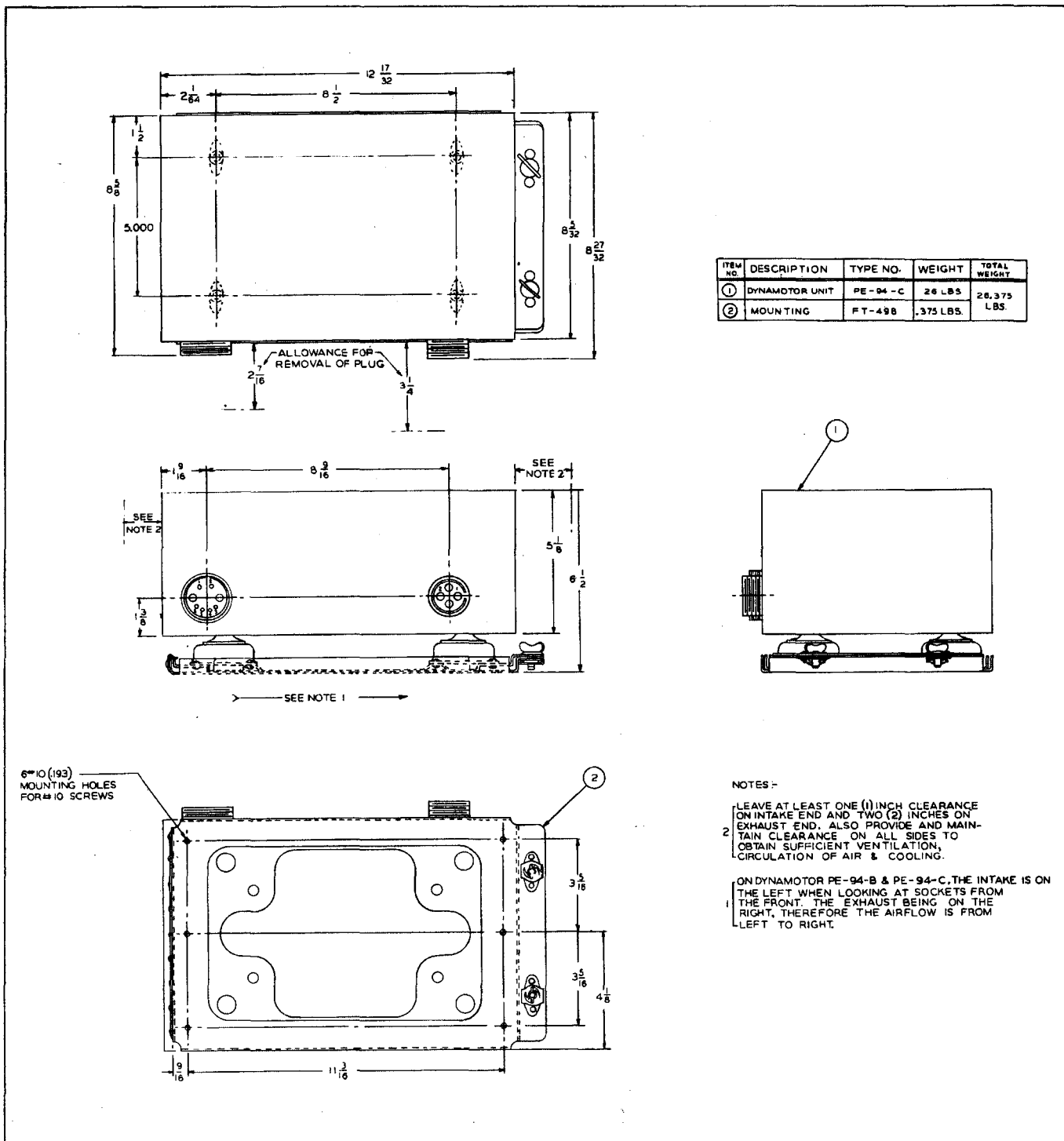


Figure 8-5. Dynamotor Unit PE-94-C—Outline Dimensions

AN 08-40SCR522-3

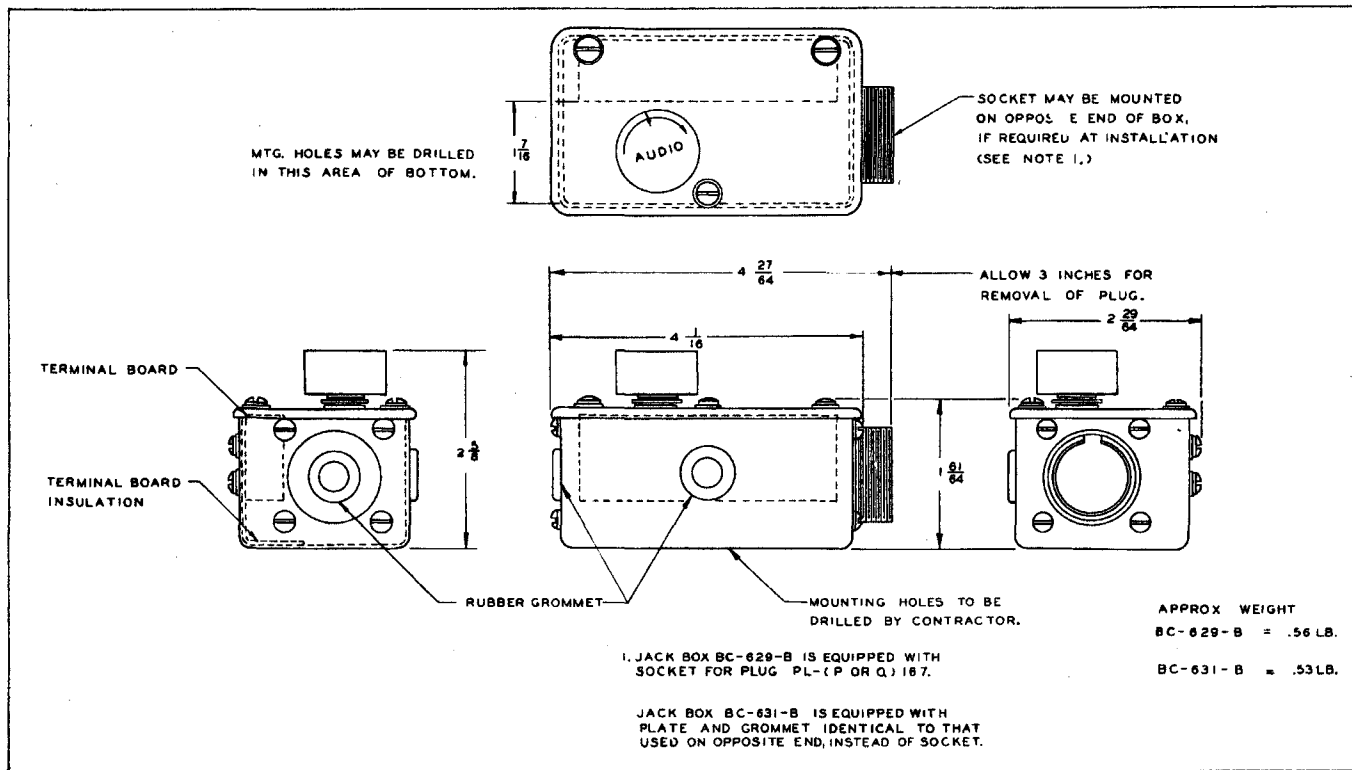


Figure 8-6. Jack Box BC-629-B or BC-631-B—Outline Dimensions

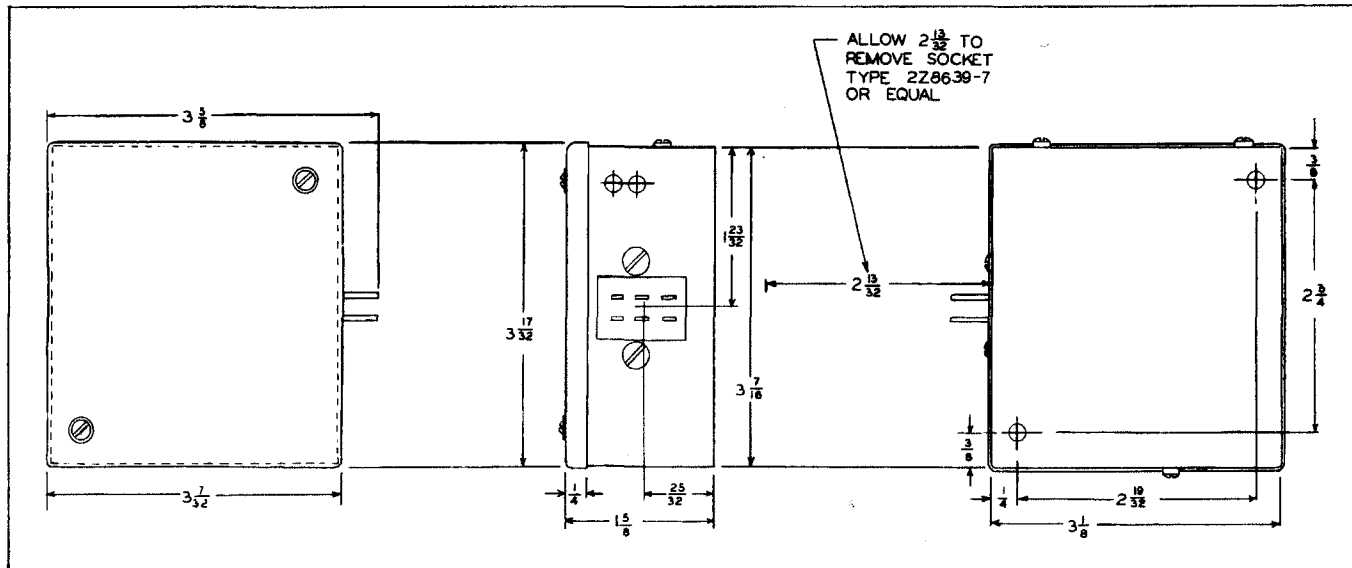


Figure 8-7. Microphone Adapter M-299—Outline Dimensions

AN 08-40SCR522-3

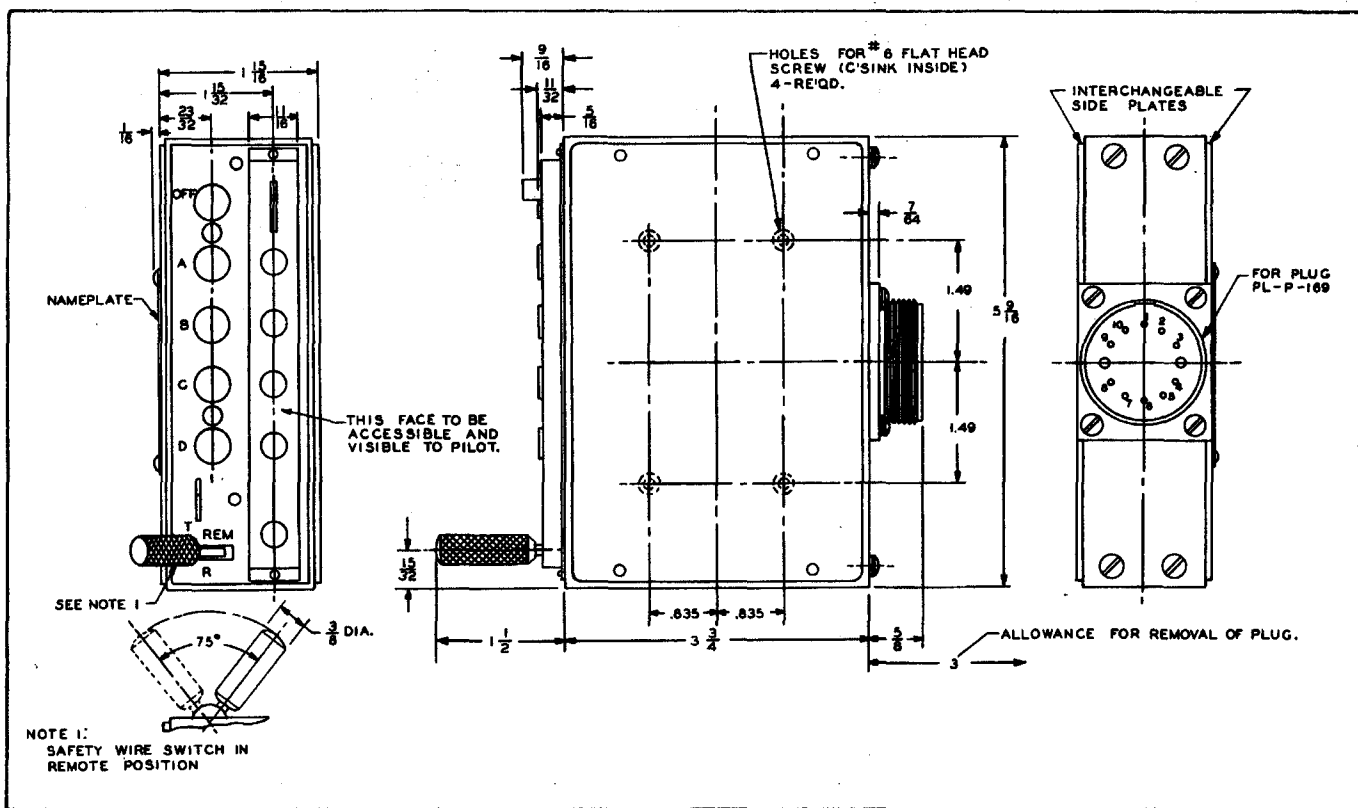


Figure 8-8. Radio Control Box BC-602-B—Outline Dimensions

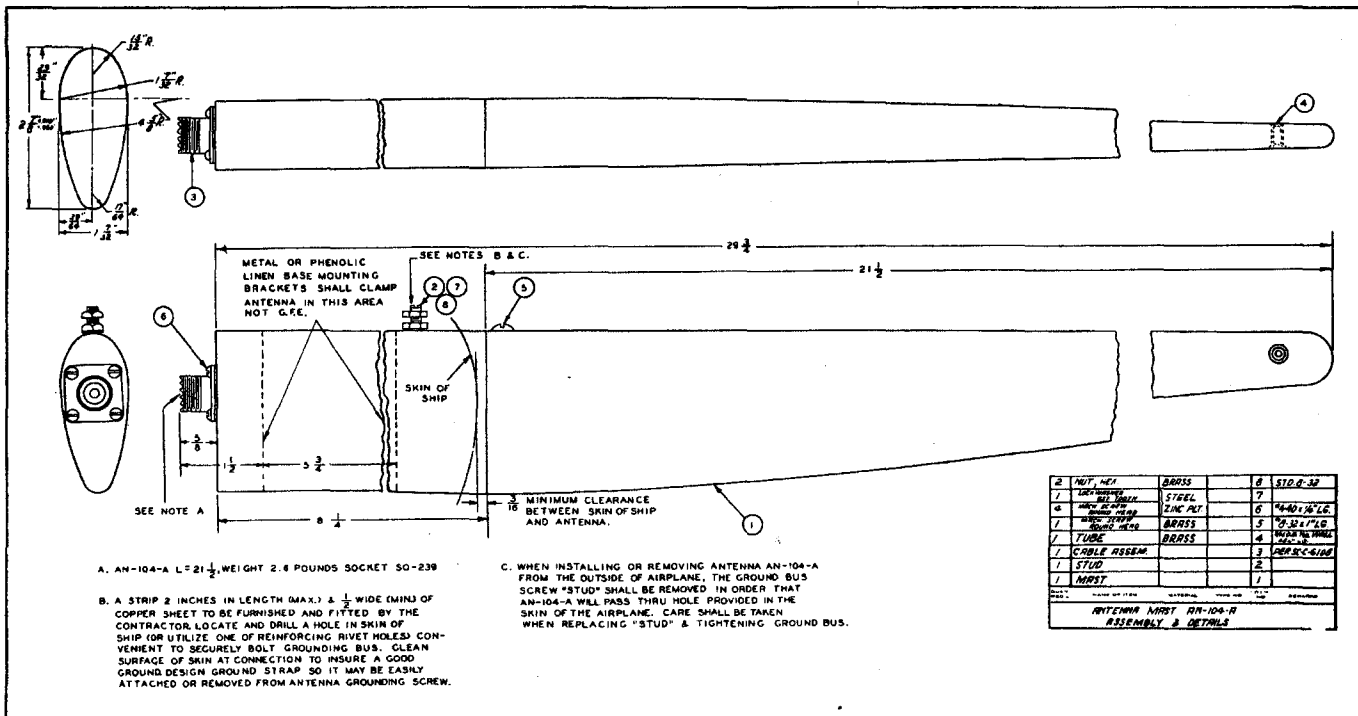
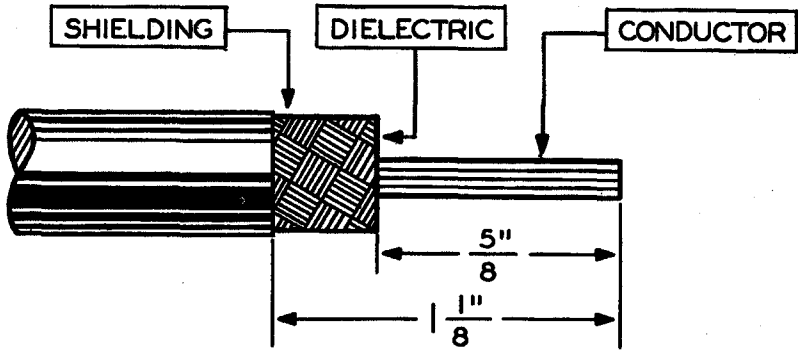
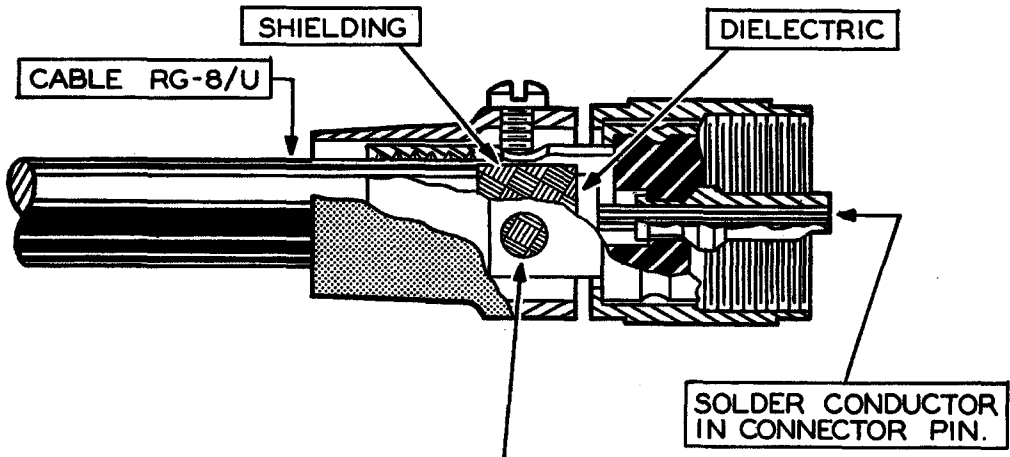


Figure 8-9. Antenna Mast AN-104-A—Outline Dimensions





PREPARATION OF RADIO FREQUENCY CABLE RG-8/U



TO PREVENT DAMAGE TO DIELECTRIC WHEN ATTACHING SHIELDING TO PLUG SHELL, SOLDER WITH A HOT IRON AS QUICKLY AS POSSIBLE.

ASSEMBLY OF CABLE RG-8/U TO PLUG PL-259-A

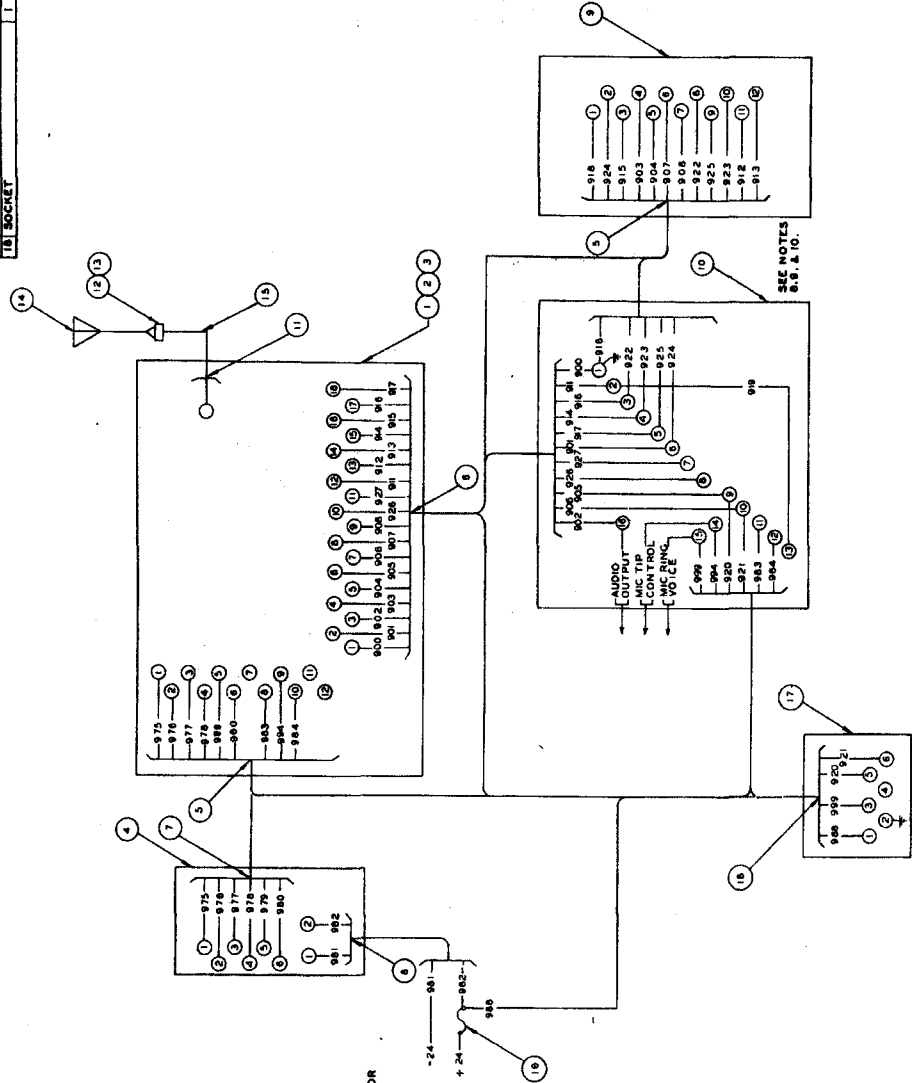


- MINIMUM BENDING RADIUS OF FLEXIBLE TRANSMISSION LINE TO BE NOT LESS THAN 5 INCHES.

Figure 8-9B. Preparation of Antenna Lead-in

ITEM	DESCRIPTION	REF. SYMBOL	NO. SPEC.	QWG. NO.
1	RADIO RECEIVER	BC-824-A	1	M4203115
2	RADIO TRANSMITTER	BC-823-A	1	M4203115
3	RACK	FT-244-A	1	M4203116
4	DYNAMOTOR UNIT	PE-94-A	2	M4462170
5	PLUG	PL-168	2	M4462170
6	PLUG	PL-170	1	M4462170
7	PLUG	PL-172	1	M4462170
8	RADIO CONTROL BOX	BC-802-A	1	M4462170
9	CONNECTOR PANEL	W-259	1	M4462170
10	CONNECTOR PANEL	W-259	1	M4462170
11	ANGLE BRACKET (SEE NOTE 8)	AN-104-A	1	M4462170
12	PLUG (SEE NOTE 6)	PL-168	1	M4462170
13	PLUG (SEE NOTE 6)	PL-170	1	M4462170
14	ANTENNA MAST (SEE NOTE 6)	AN-104-A	1	M4462170
15	ANTENNA CABLE	WC-548-C	1	M4462170
16	CIRCUIT BREAKER 20 AMP	OR-31/UJ AN-07	1	M4462170
17	MICROPHONE ADAPTER	M-288	1	M4462170
18	SOCKET	ZZ-839-7	1	M4462170

\* \* \* \* \*



SEE NOTES 8, 9, & 10.

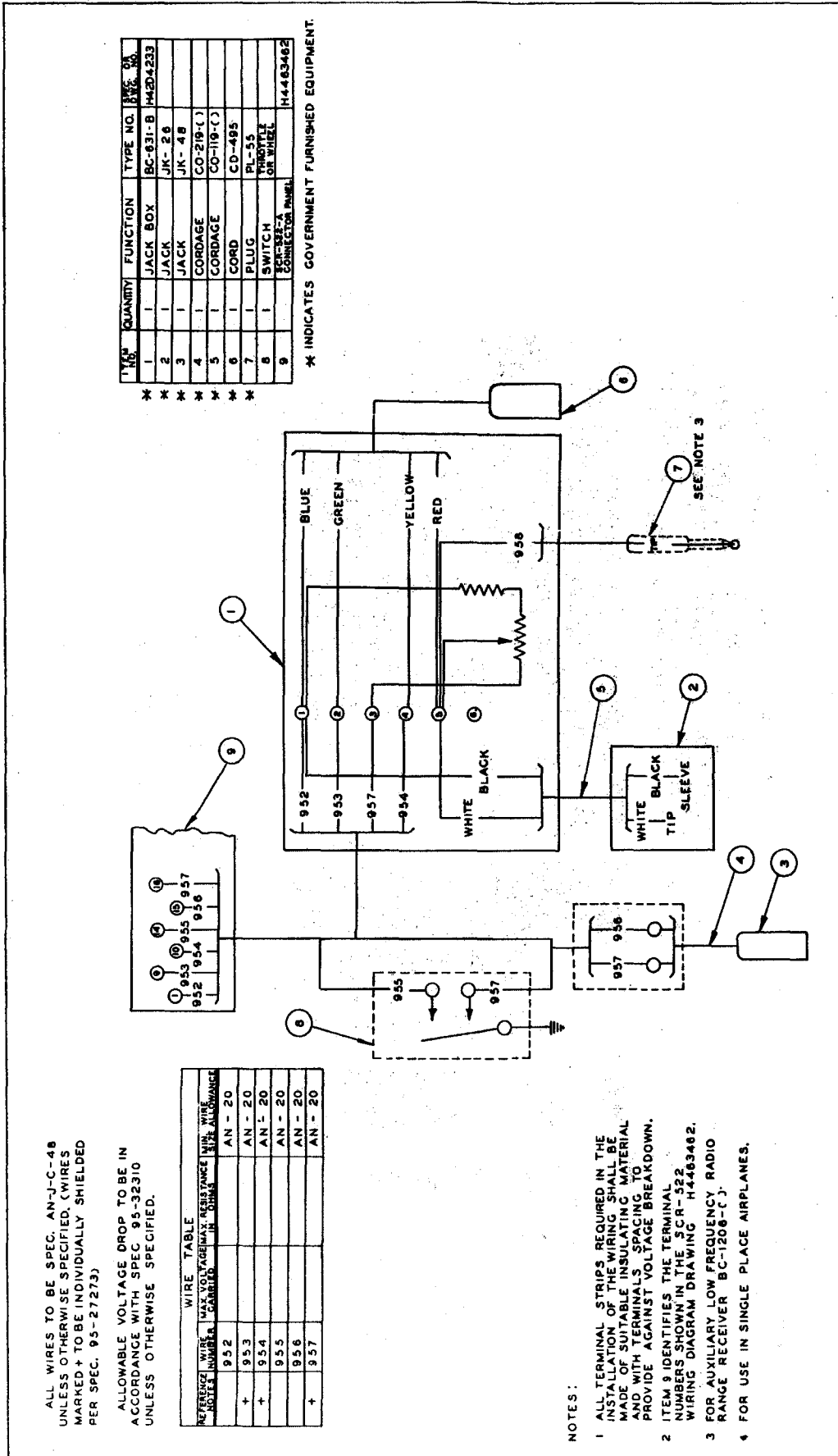
WIRE TABLE	
900	20
901	20
902	20
903	20
904	20
905	20
906	20
907	20
908	20
909	20
910	20
911	20
912	20
913	20
914	20
915	20
916	20
917	20
918	20
919	20
920	20
921	20
922	20
923	20
924	20
925	20
926	20
927	20
928	20
929	20
930	20

- 11 FOR SINGLE PLACE AIRPLANES. USE DRAWING NUMBER M4403852 IN ADDITION TO THIS DRAWING
- 10 WHEN CONTACTOR UNIT BC-808-(1) IS INSTALLED IT SHALL BE CONNECTED TO TERMINALS (1) & (2) OF ITEM (9)
- 9 WHEN V.K.F. BEAM APPROACH (BRITISH A-1210) EQUIPMENT IS INSTALLED, IT SHALL BE WIRED TO TERMINALS (1) TO (5) INCL. OF ITEM (9) & WIRE 918 WILL NOT BE USED.
- 8 CONNECTOR PANEL ITEM (9) TO BE NAS.18C18 AS MADE BY EQUITHANK INDUSTRIAL CHEMICAL CO. BOSTON, MASS. OR EQUIVALENT SHALL BE FURNISHED BY THE AIRPLANE CONTRACTOR
- 7 SHIELDING SHALL BE CONNECTED TO GROUND
- 6 TERMINAL (1) IN CONNECTOR PANEL (9) & TERMINAL (1) IN PLUG, PL-170.
- 5 AN-104-A MASTS ARE EQUIPPED WITH SOCKET SO-239 FOR USE OF PLUG PL-259 (ITEM (6)) OR RIGHT ANGLE FEATURE BY USE OF ADAPTER W-259 (ITEM (2)) AND PLUG PL-259 (ITEM (6)).
- 4 ALL WIRES TO BE PER SPEC. AN-J-C-48 UNLESS OTHERWISE SPECIFIED.
- 3 TRIANGLE INDICATES WIRES, SHIELDED TWISTED PAIR NUMBERS INSERTED IN TRIANGLES INDICATES WIRES TO BE SHIELDED WITH WIRE (908).
- 2 + INDICATES WIRES SEPARATELY SHIELDED.
- 1 \* DESIGNATES GOVERNMENT FURNISHED EQUIPMENT.

Figure 8-10. Radio Set SCR-522-A—Cabling Diagram



AN 08-405CR522-3



ITEM NO.	QUANTITY	FUNCTION	TYPE NO.	REV. OR PART NO.
1	1	JACK BOX	BC-631-B	H4204233
2	1	JACK	JK-26	
3	1	JACK	JK-48	
4	1	CORDAGE	CO-219(-)	
5	1	CORDAGE	CO-119(-)	
6	1	CORD	CD-485	
7	1	PLUG	PL-55	
8	1	SWITCH FOR SET-A CONNECTOR PANEL		
9				H4463462

\* INDICATES GOVERNMENT FURNISHED EQUIPMENT.

WIRE TABLE

REFERENCE NUMBER	WIRE NO.	MAX. VOLTAGE	MAX. RESISTANCE IN OHMS	WIRE SIZE ALLOWANCE
+	953			AN-20
+	954			AN-20
+	955			AN-20
+	956			AN-20
+	957			AN-20

ALL WIRES TO BE SPEC. AN-J-C-48 UNLESS OTHERWISE SPECIFIED. (WIRES MARKED + TO BE INDIVIDUALLY SHIELDED PER SPEC. 95-27273.)

ALLOWABLE VOLTAGE DROP TO BE IN ACCORDANCE WITH SPEC 95-32310 UNLESS OTHERWISE SPECIFIED.

- NOTES:
- 1 ALL TERMINAL STRIPS REQUIRED IN THE INSTALLATION OF THE WIRING SHALL BE MADE OF SUITABLE INSULATING MATERIAL AND WITH TERMINALS SPACING TO PROVIDE AGAINST VOLTAGE BREAKDOWN.
  - 2 ITEM 9 IDENTIFIES THE TERMINAL NUMBERS SHOWN IN THE SCR-522 WIRING DIAGRAM DRAWING H4463462.
  - 3 FOR AUXILIARY LOW FREQUENCY RANGE RECEIVER BC-1206-C.J.
  - 4 FOR USE IN SINGLE PLACE AIRPLANES.

Figure 8-11. Jack Box BC-631-B—Cabling Diagram



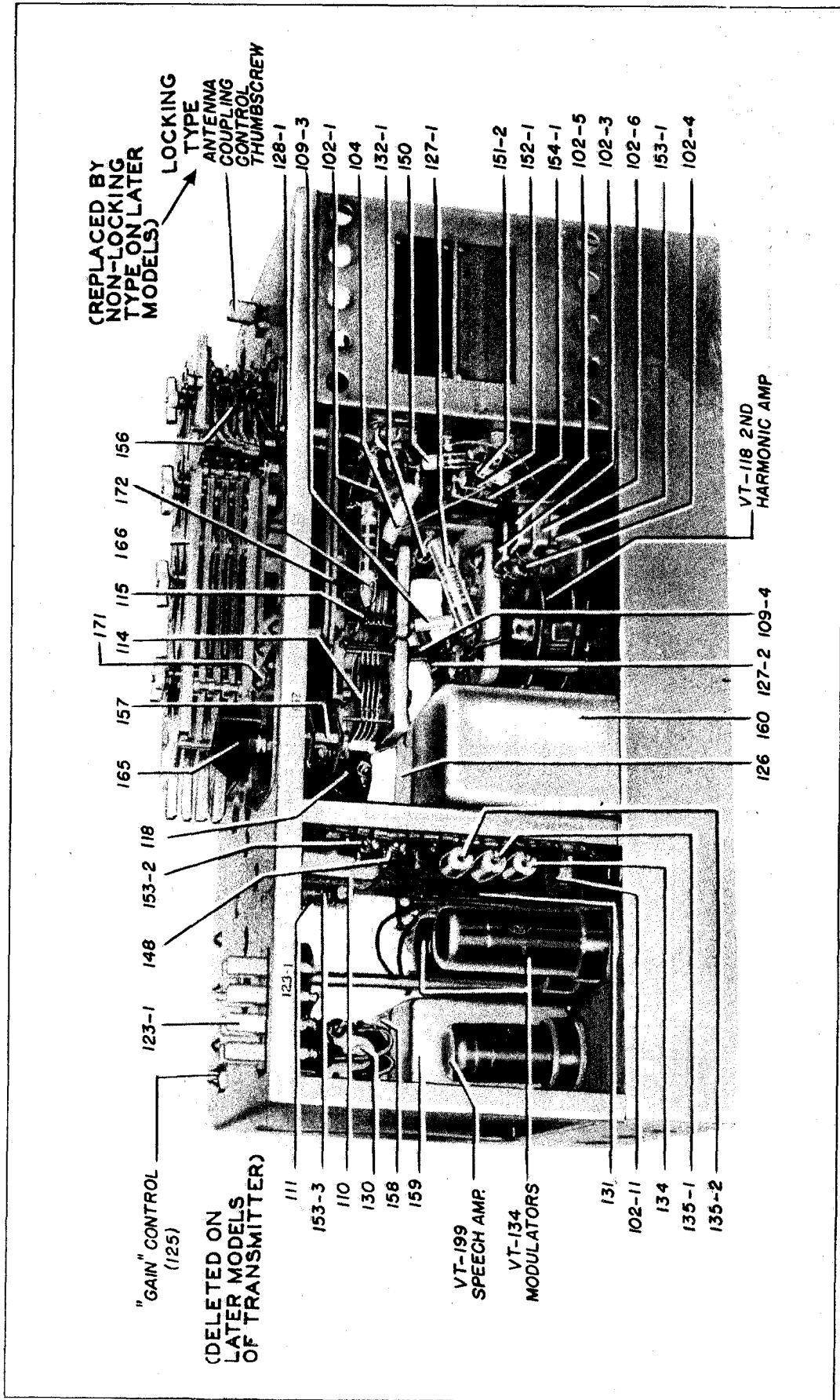


Figure 8-12. Radio Transmitter BC-625-A—Front View

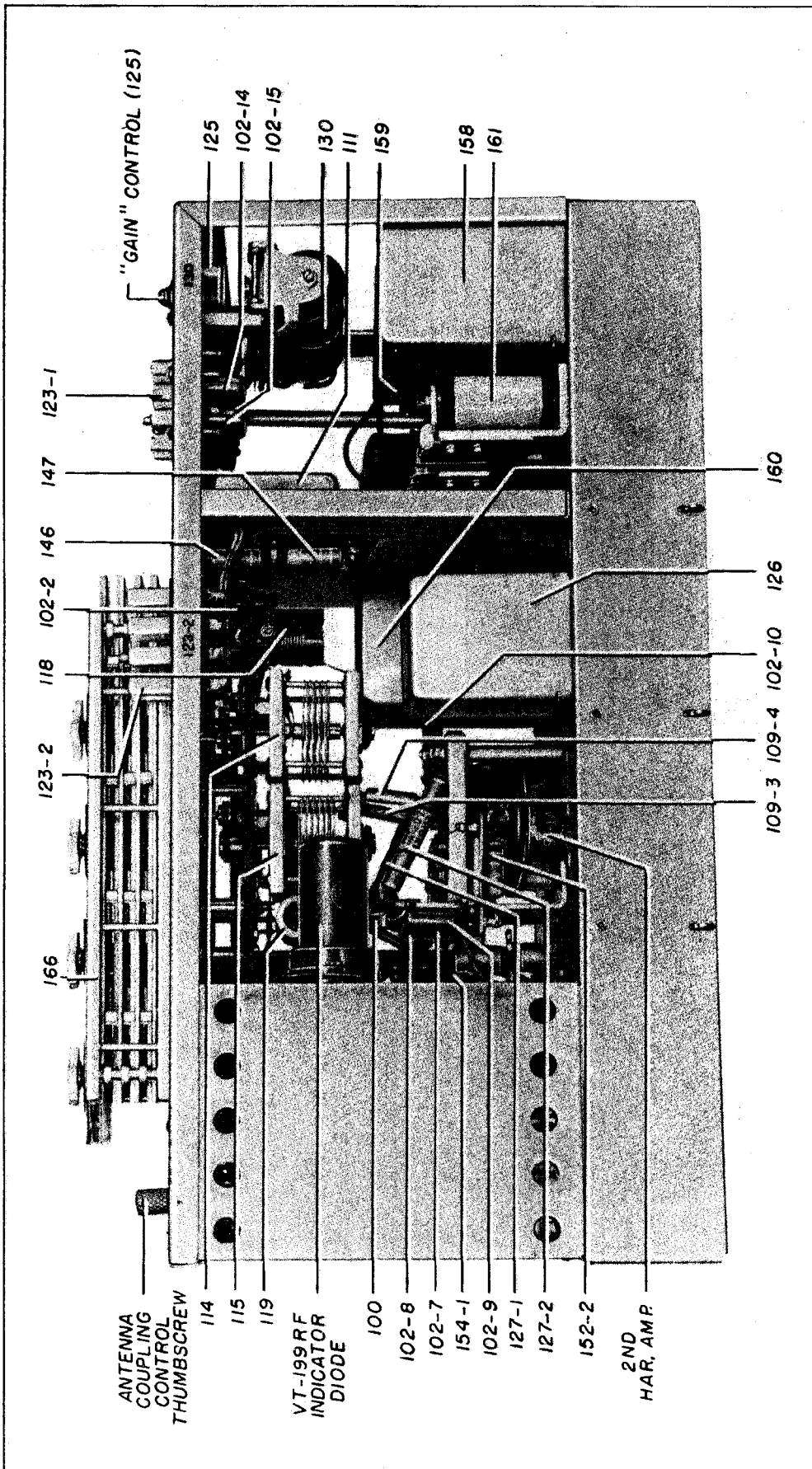


Figure 8-13. Radio Transmitter BC-625-A—Rear View

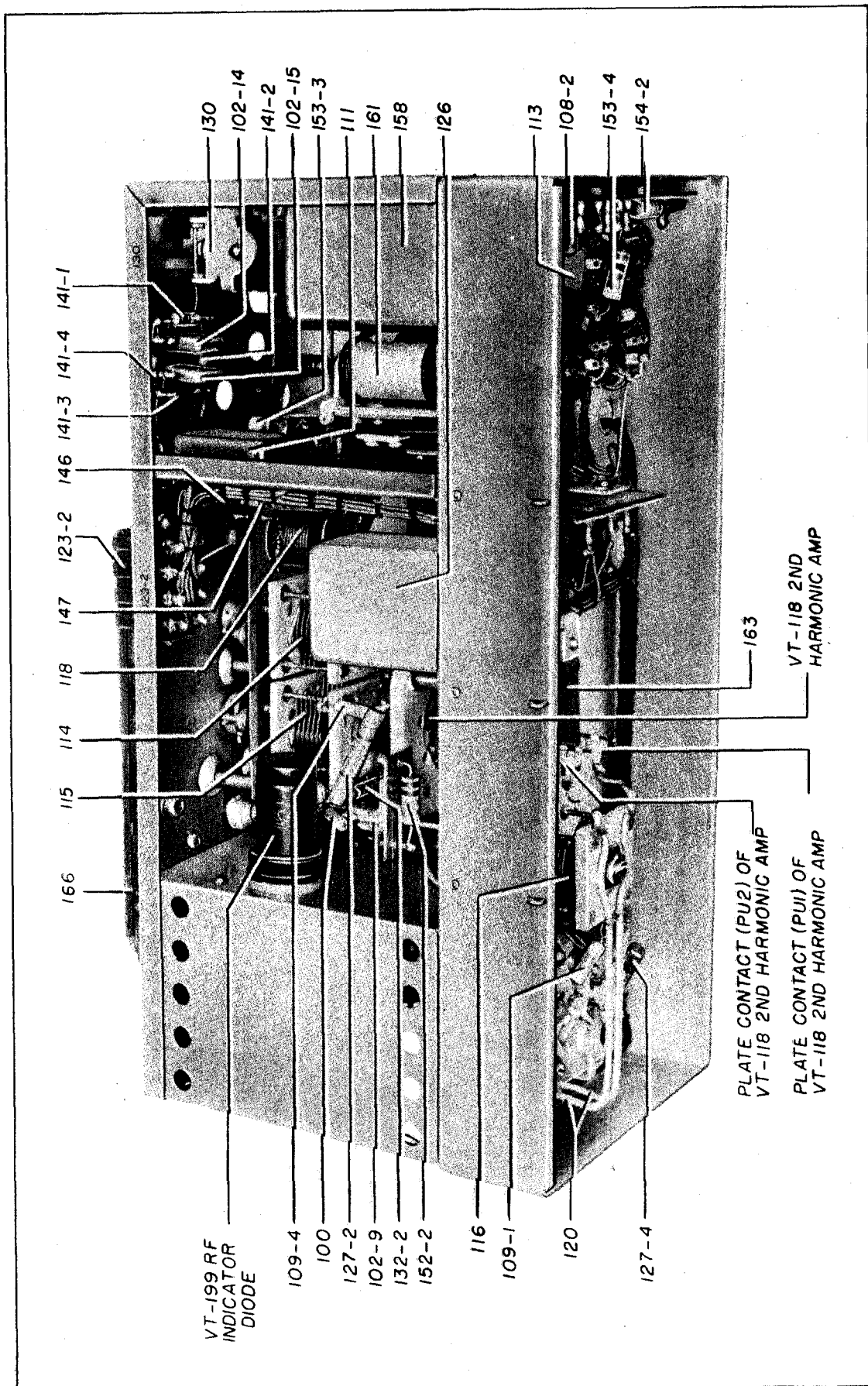


Figure 8-14. Radio Transmitter BC-625-A—Bottom Oblique View

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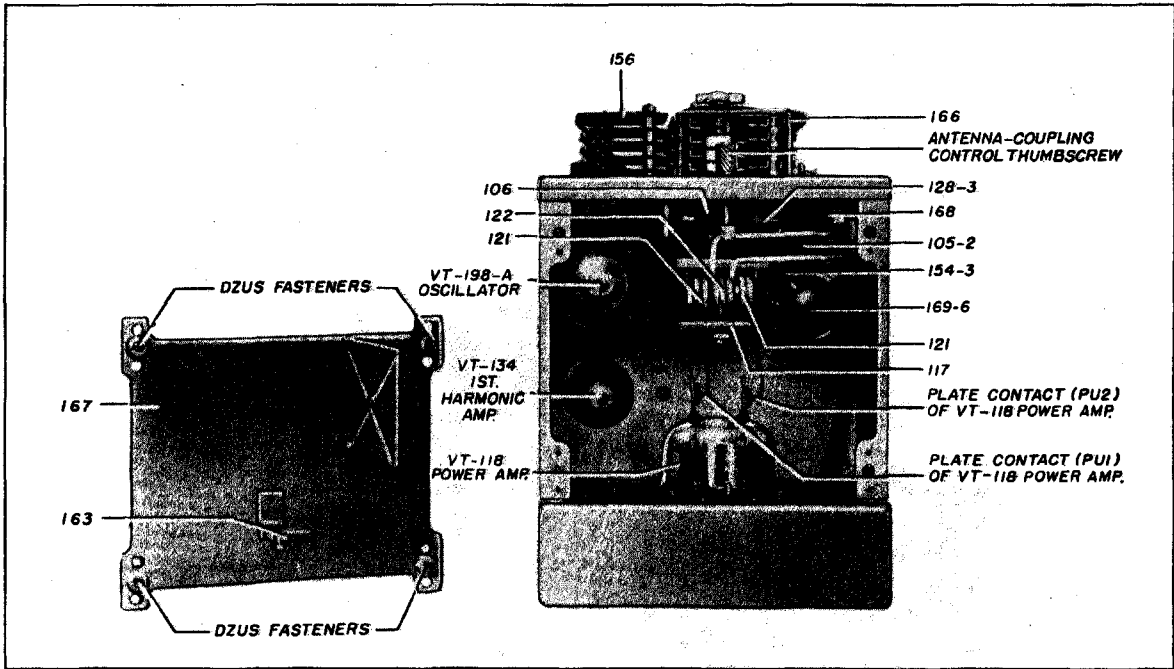


Figure 8-15. Radio Transmitter BC-625-A—End View Showing Old Type Antenna Coupling Control

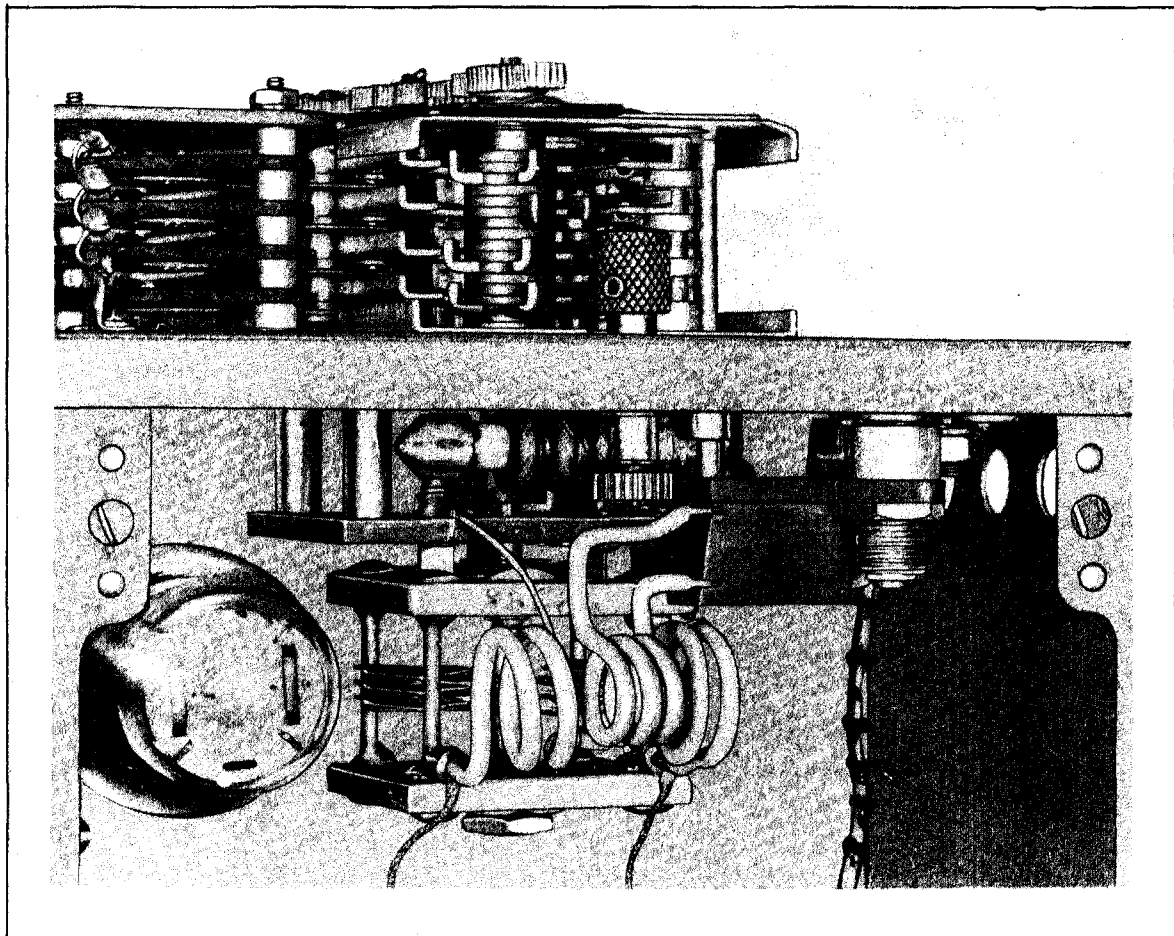


Figure 8-16. Radio Transmitter BC-625-A—End View Showing New Type Antenna Coupling Control

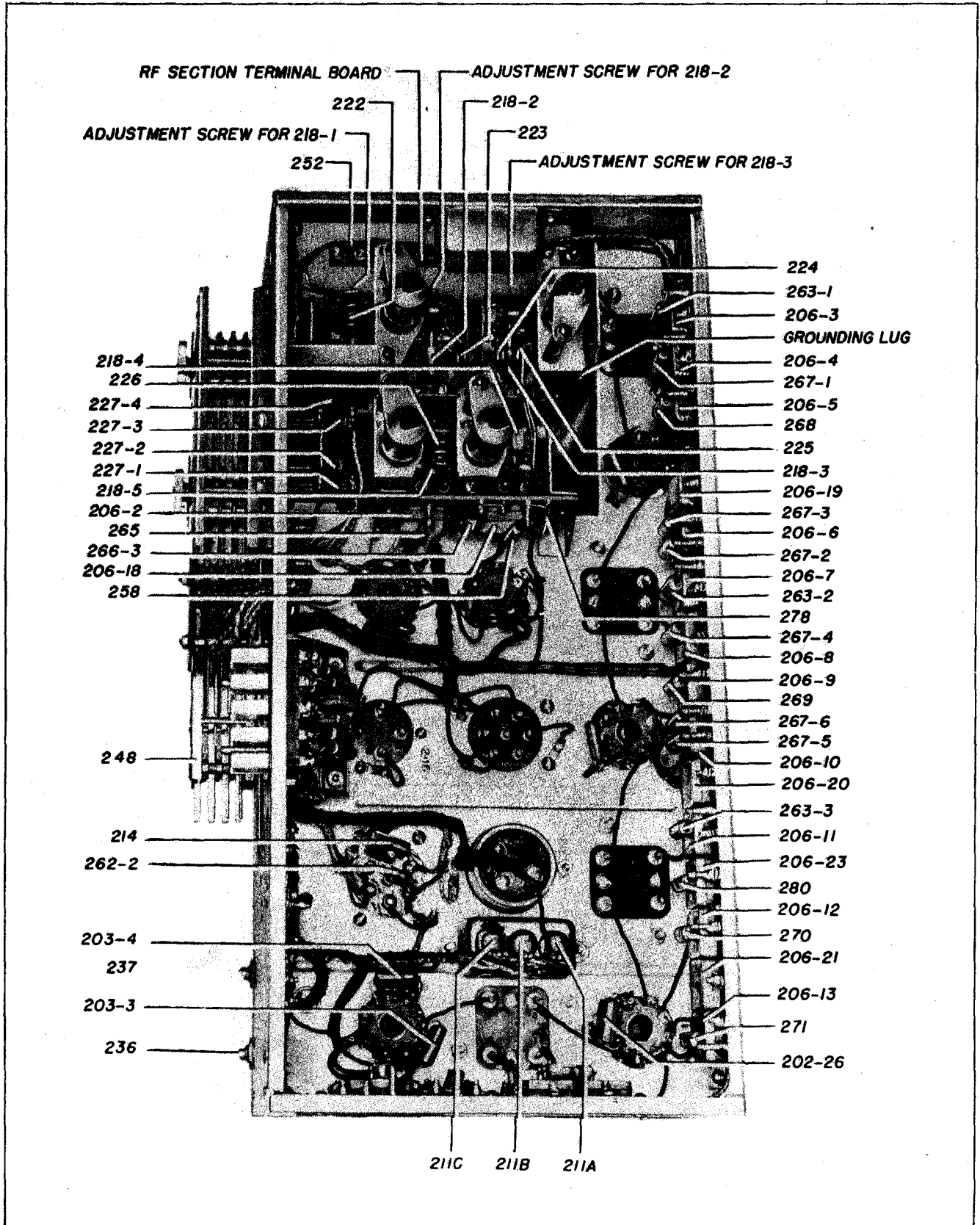


Figure 8-17. Radio Receiver BC-624-A—Front View



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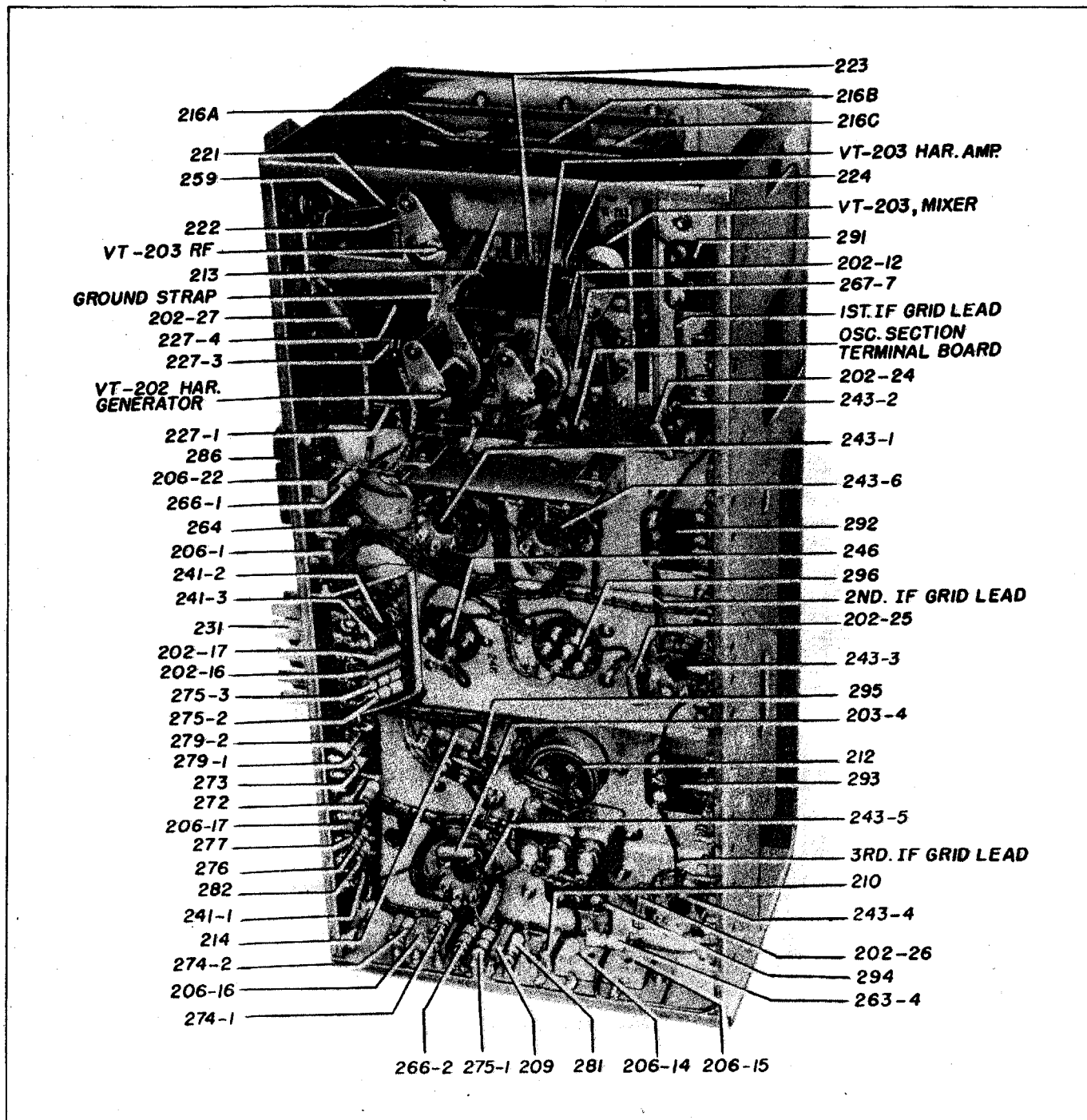


Figure 8-18. Radio Receiver BC-624-A—Front Oblique View

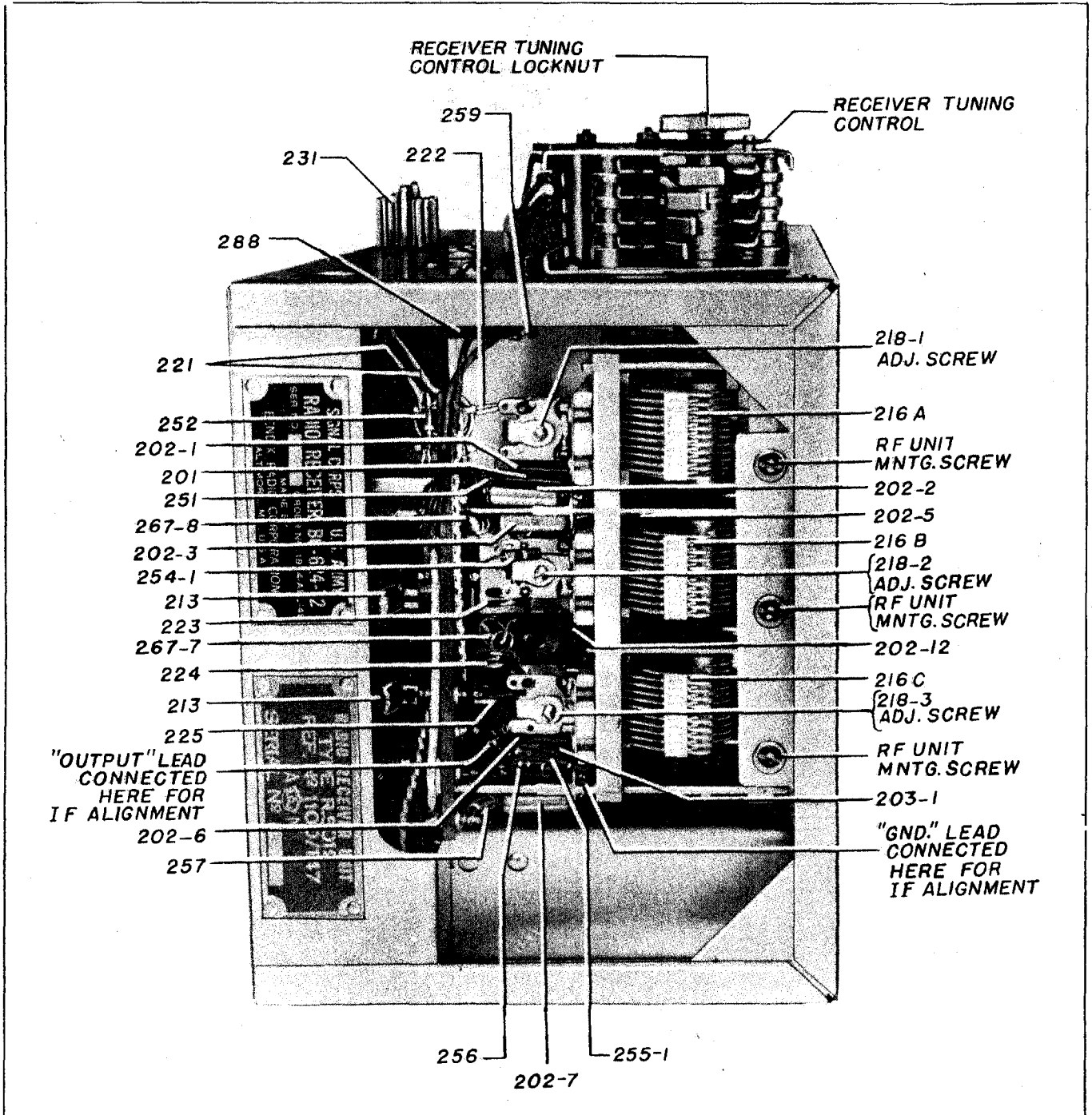


Figure 8-19. Radio Receiver BC-624-A—Right Side View



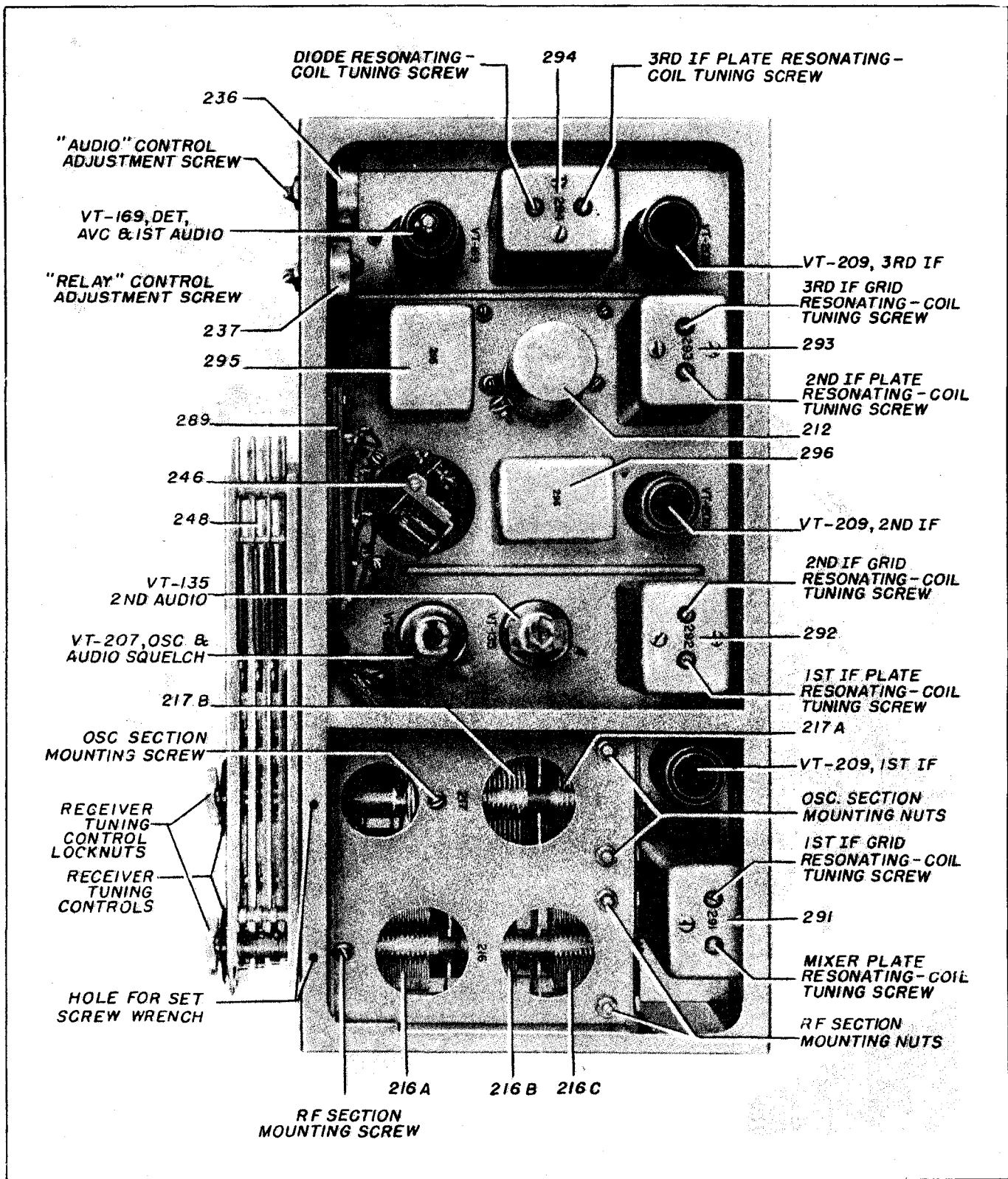


Figure 8-20. Radio Receiver BC-624-A—Rear View

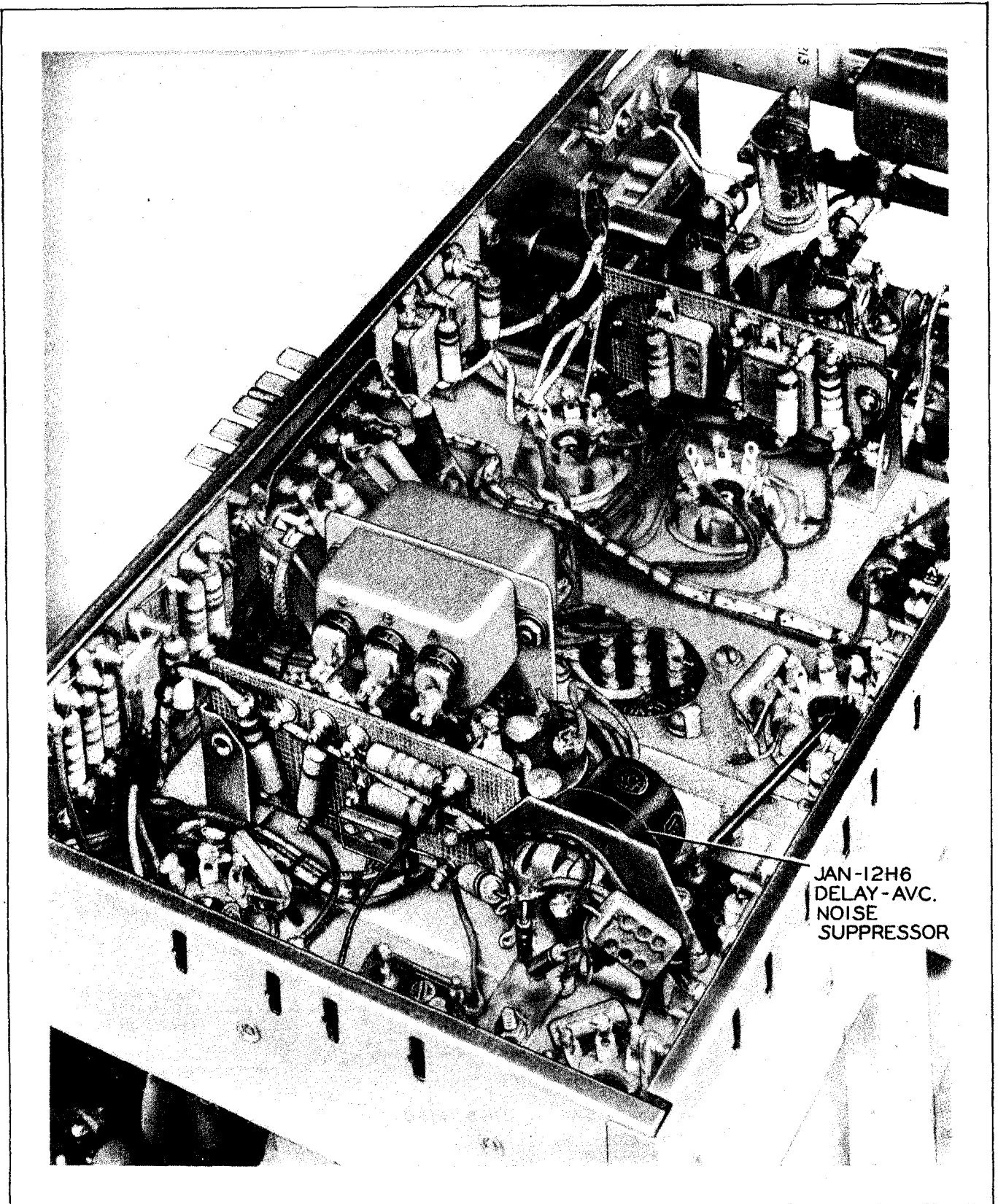


Figure 8-21. Radio Receiver BC-624-AM—Bottom View of Chassis Showing Noise Limiter Tube (Tube JAN-12H6) From Base

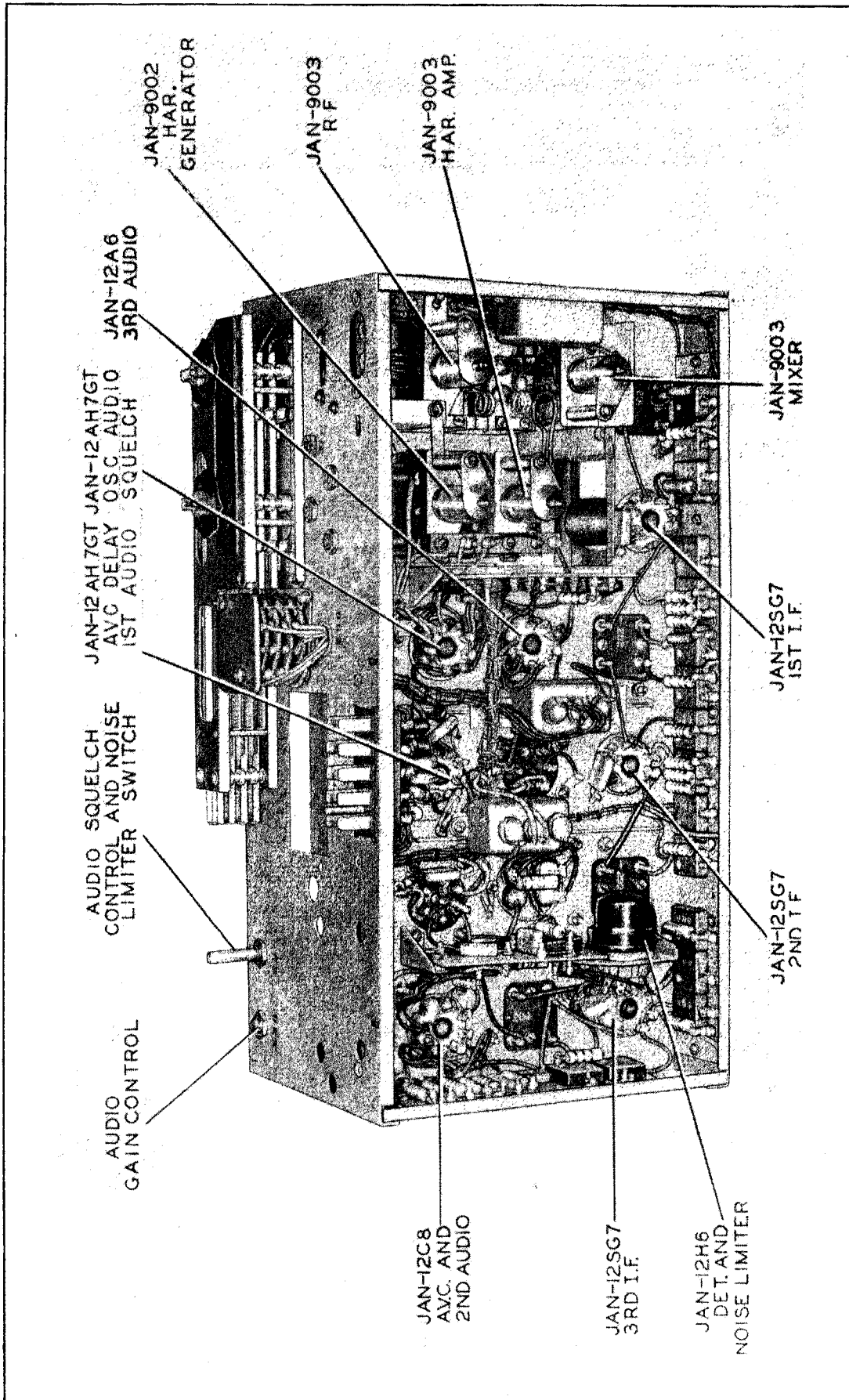


Figure 8-22. Radio Receiver BC-624-C—Chassis Viewed from Wiring Side

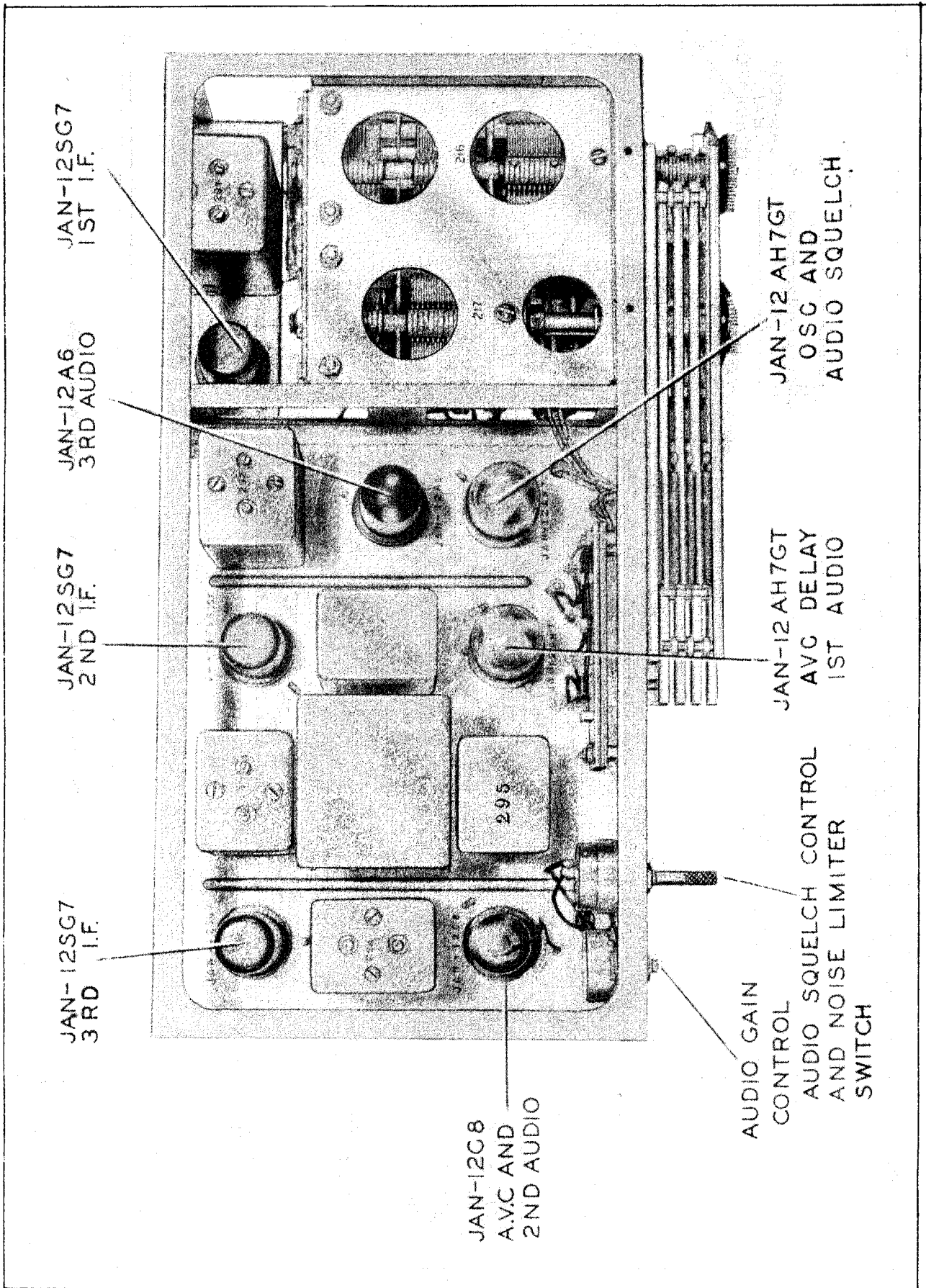


Figure 8-23. Radio Receiver BC-624-C—Chassis Viewed from Rear

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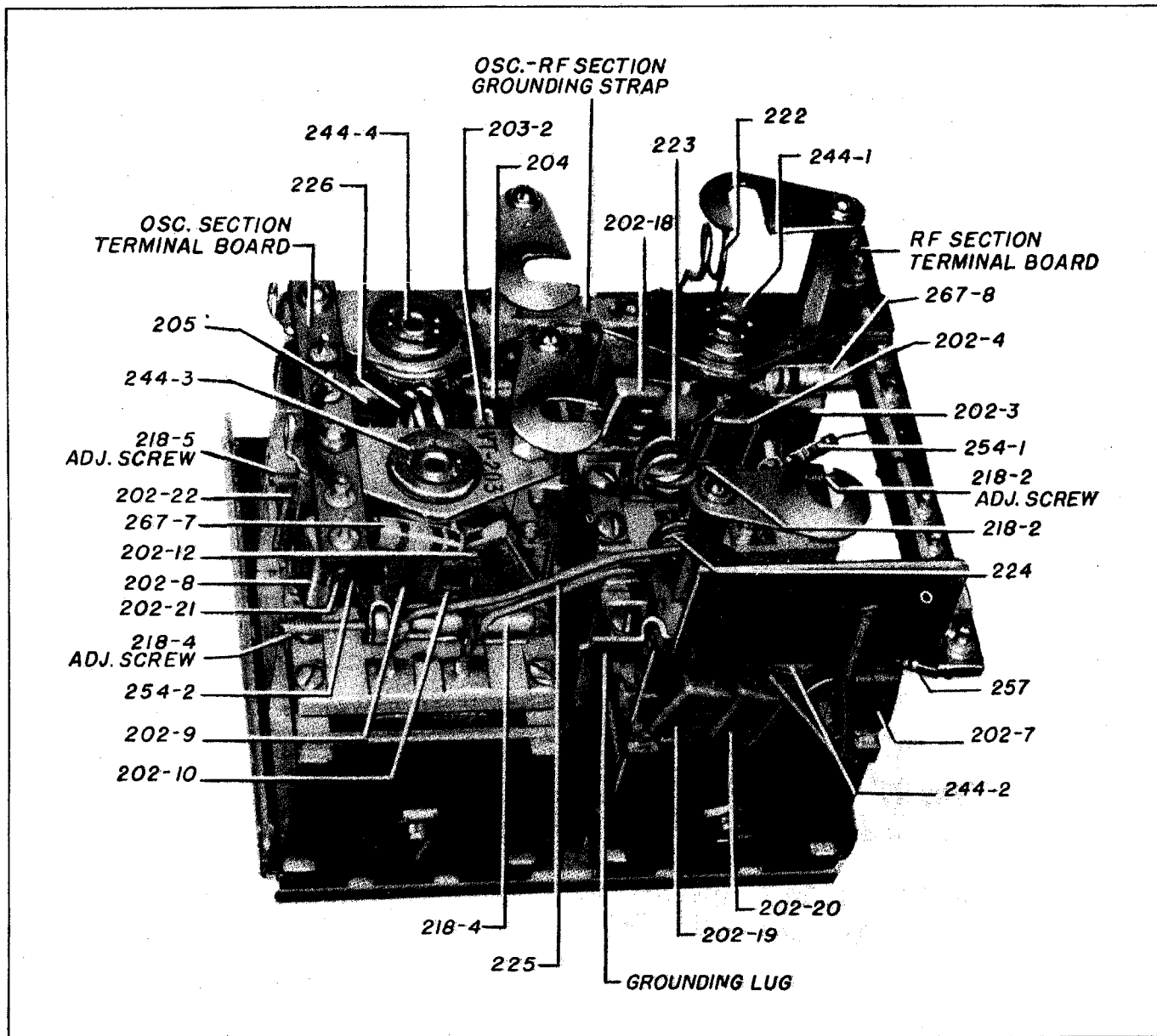


Figure 8-24. R-F and Oscillator Assembly

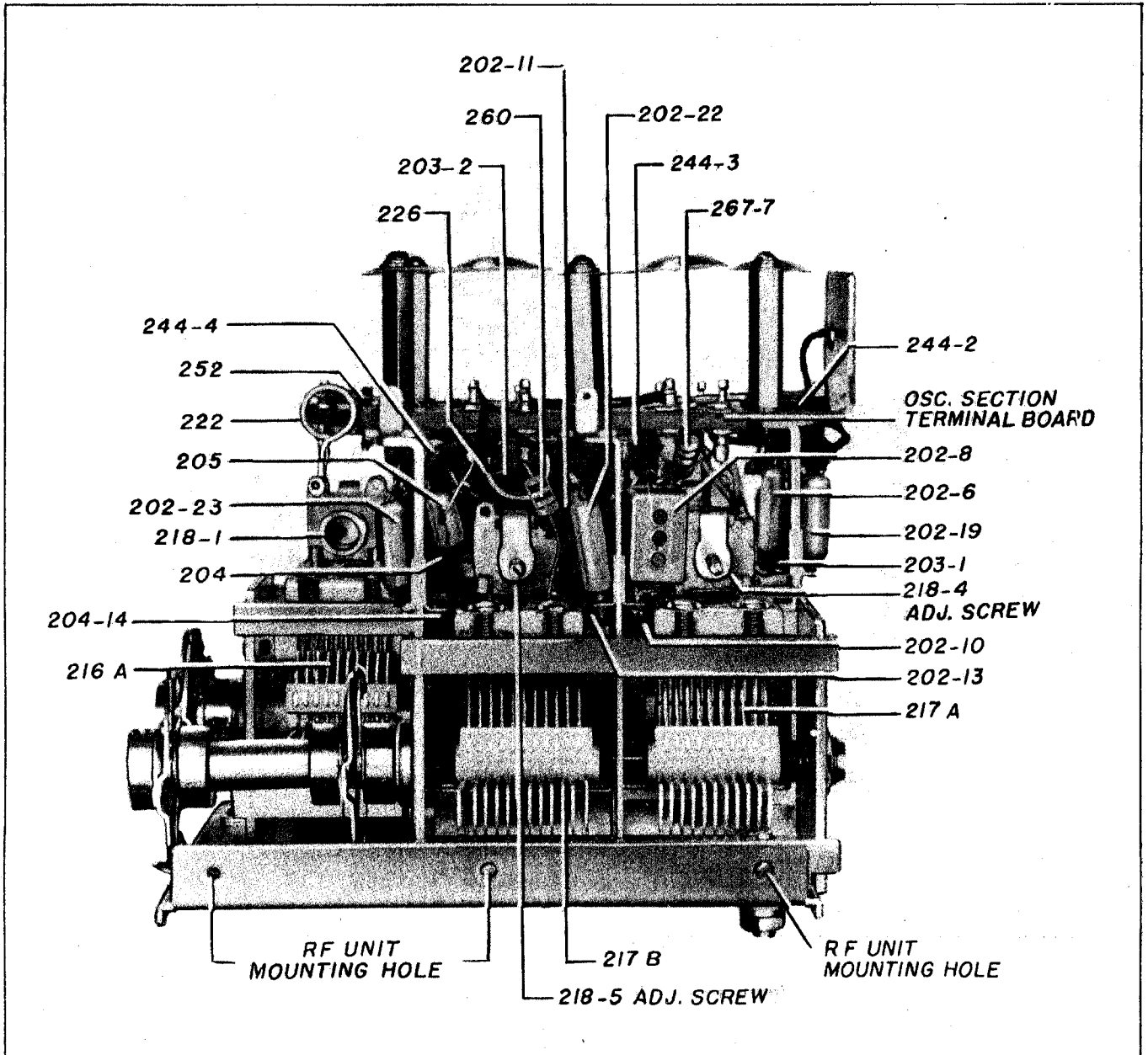


Figure 8-25. R-F and Oscillator Assembly



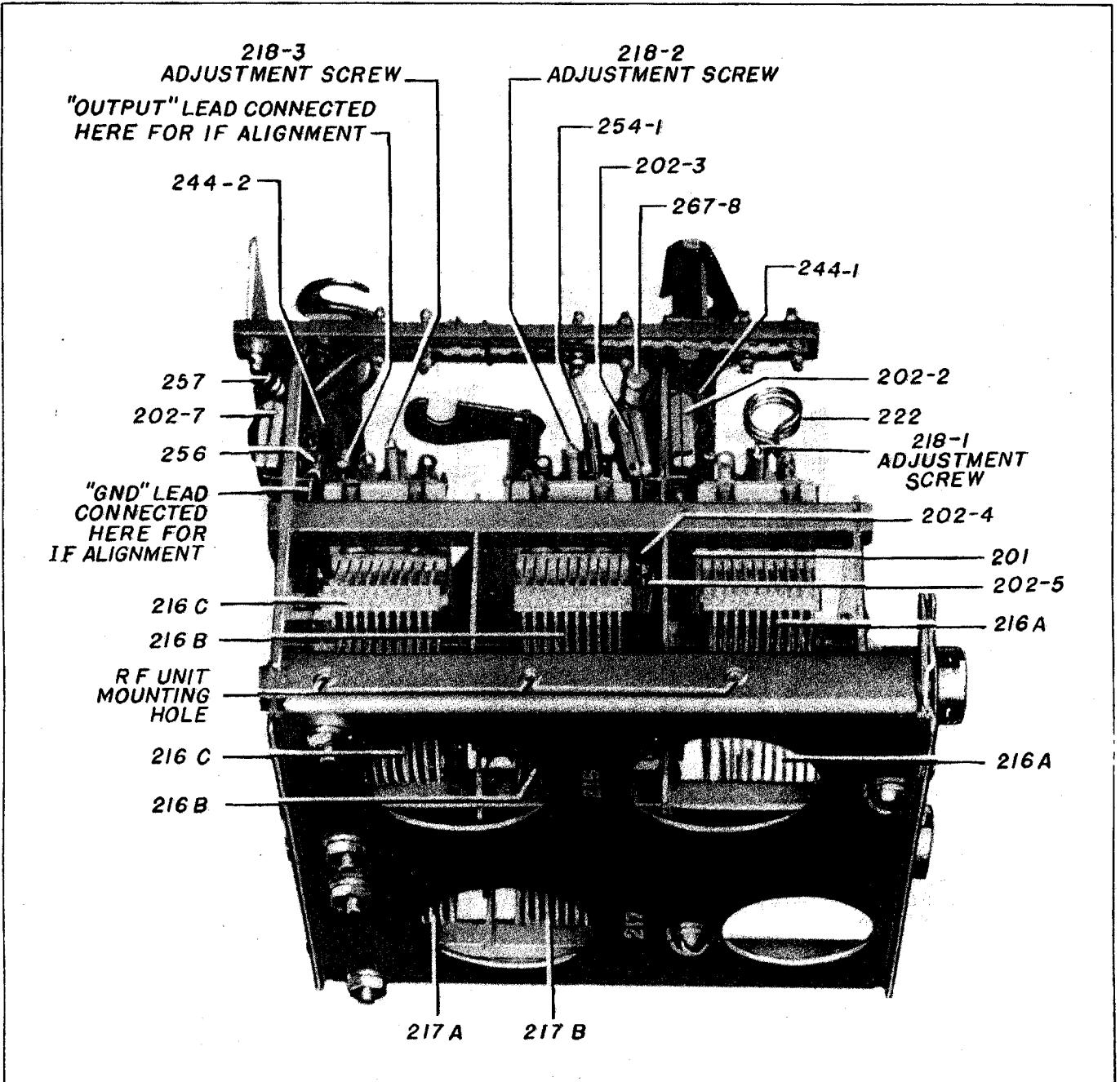


Figure 8-26. R-F and Oscillator Assembly





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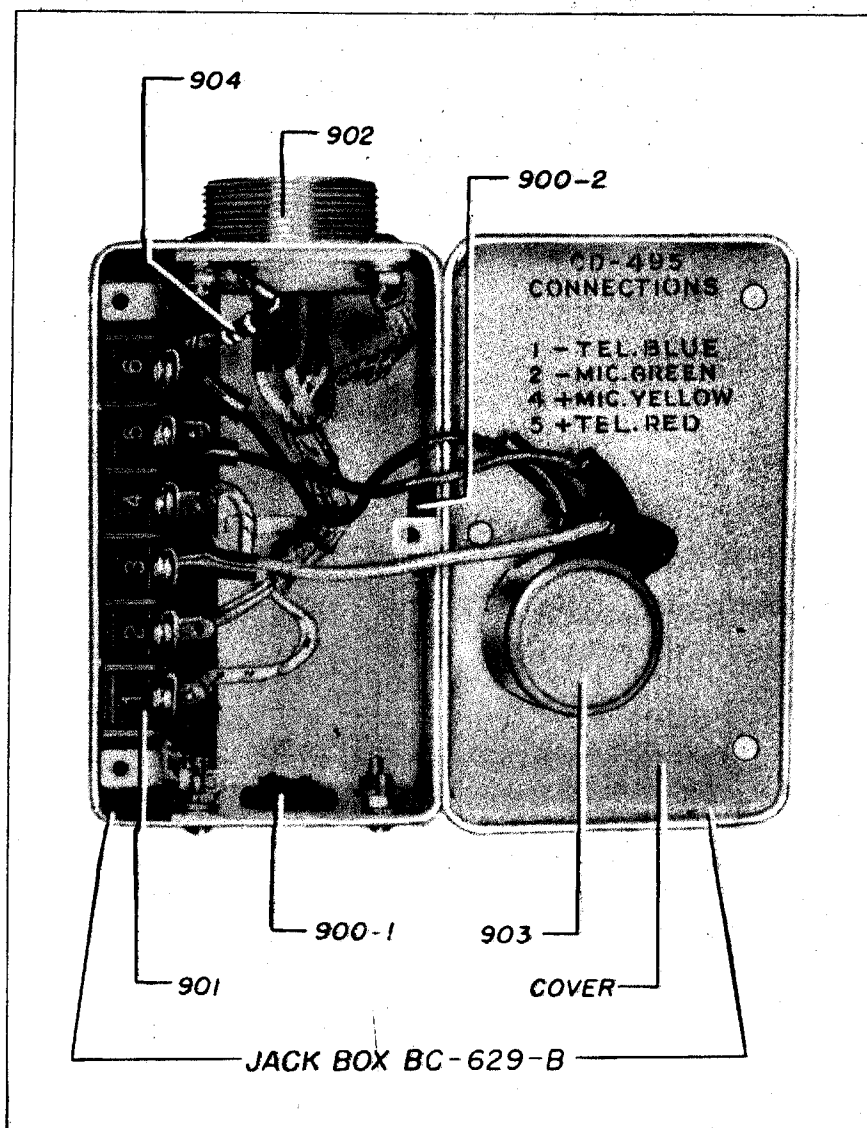


Figure 8-28. Jack Box BC-629-B—Interior View

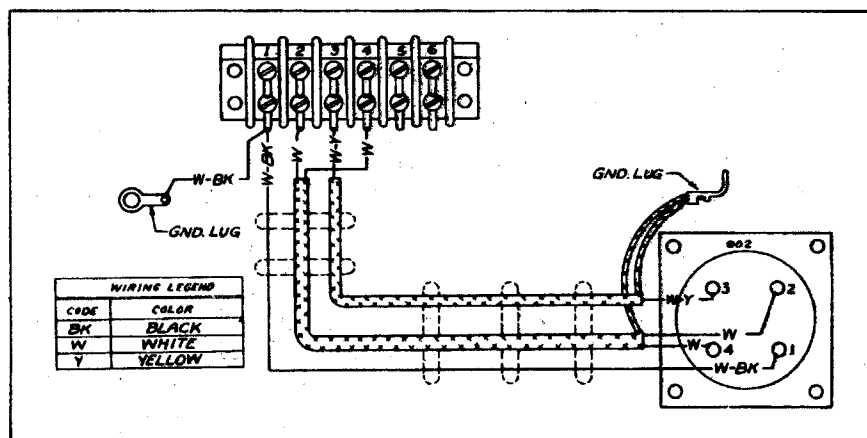


Figure 8-29. Jack Box BC-629-A—Wiring Diagram

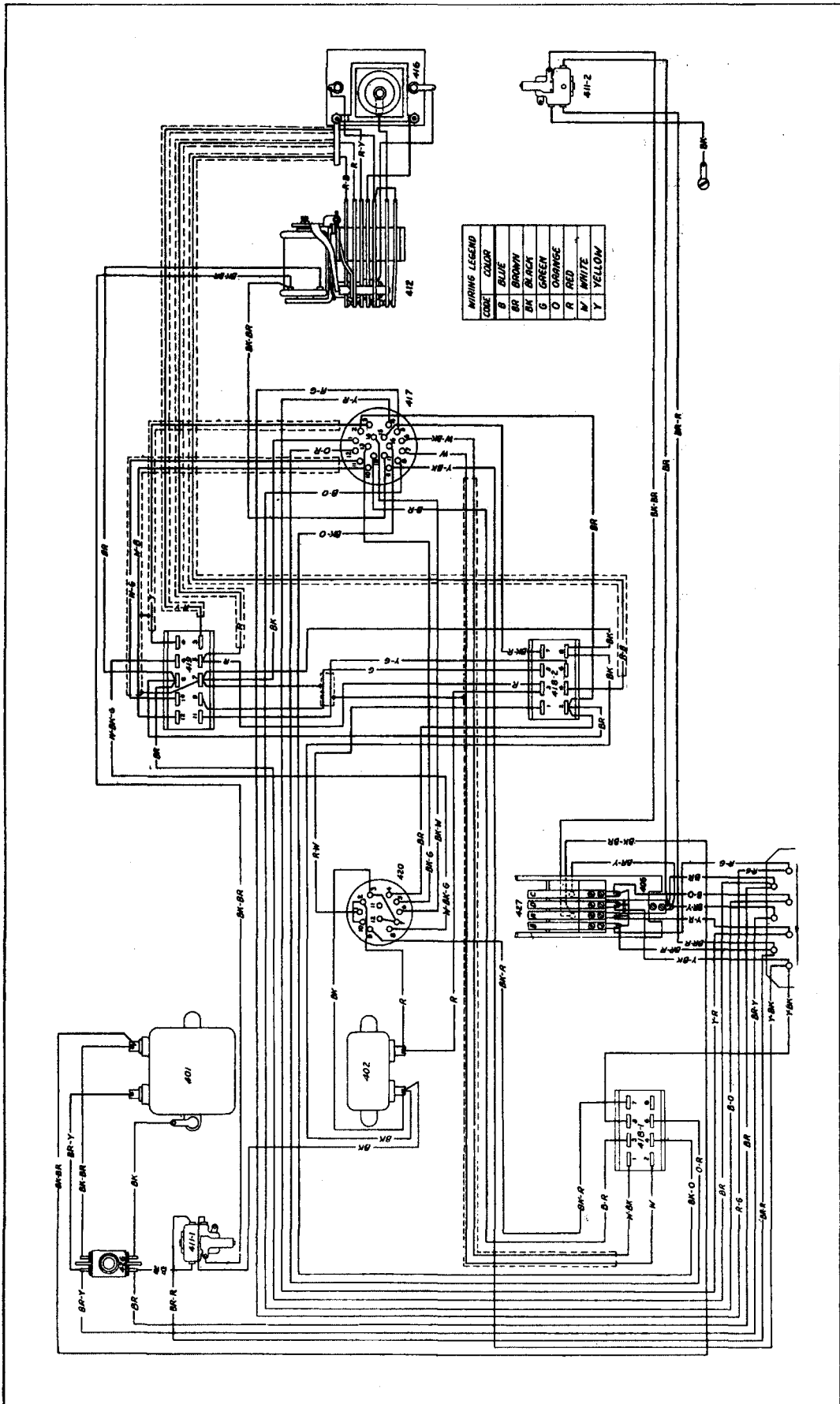


Figure 8-30. Rack FT-244-A—Wiring Diagram

AN 08-40SCR522-3

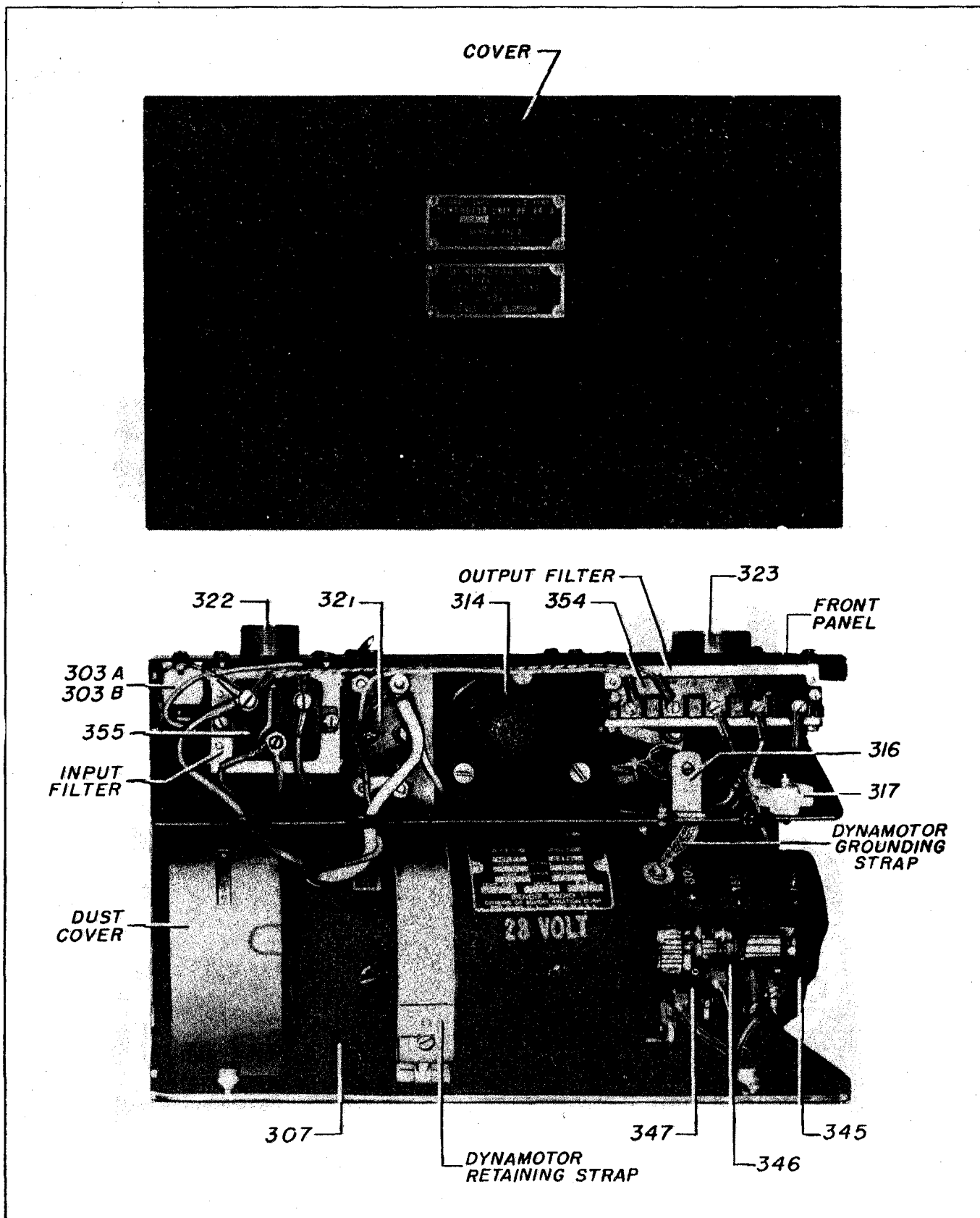


Figure 8-31. Dynamotor Unit PE-94-A—Cover Removed

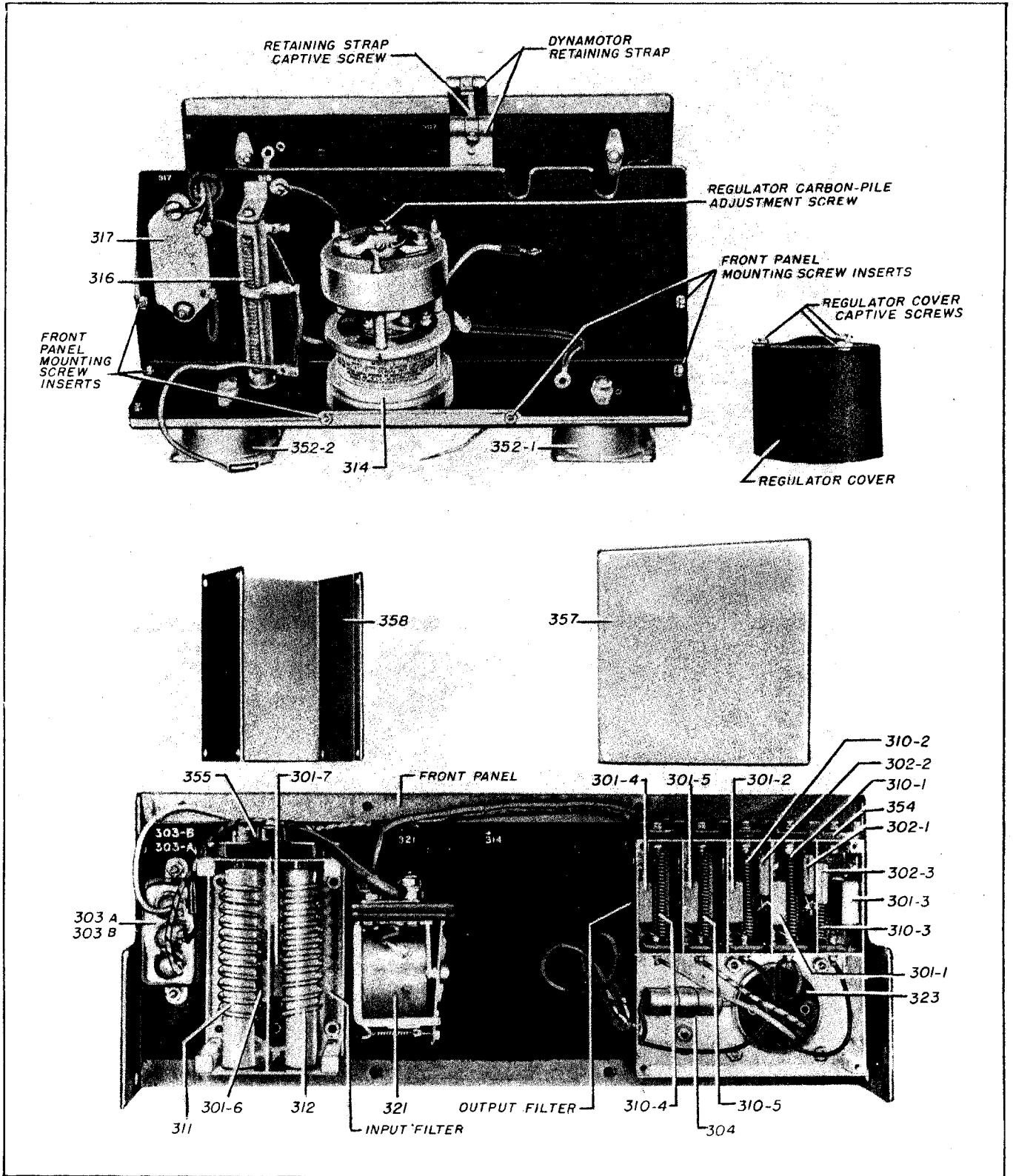


Figure 8-32. Dynamotor Unit PE-94-A, PE-94-B, or PE-94-C—Disassembled (Original Filters)

AN 08-40SCR522-3

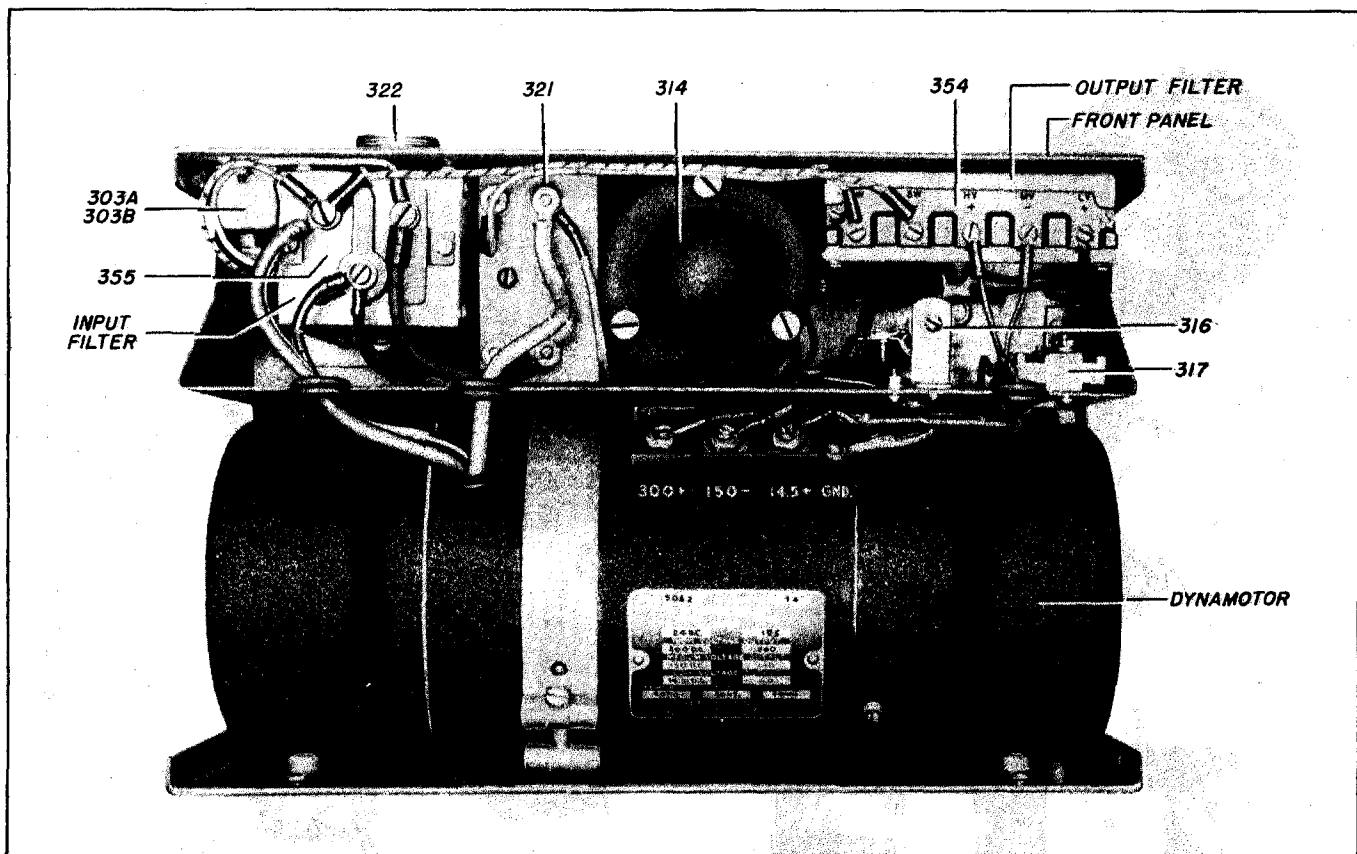


Figure 8-33. Dynamotor Unit PE-94-B—Cover Removed

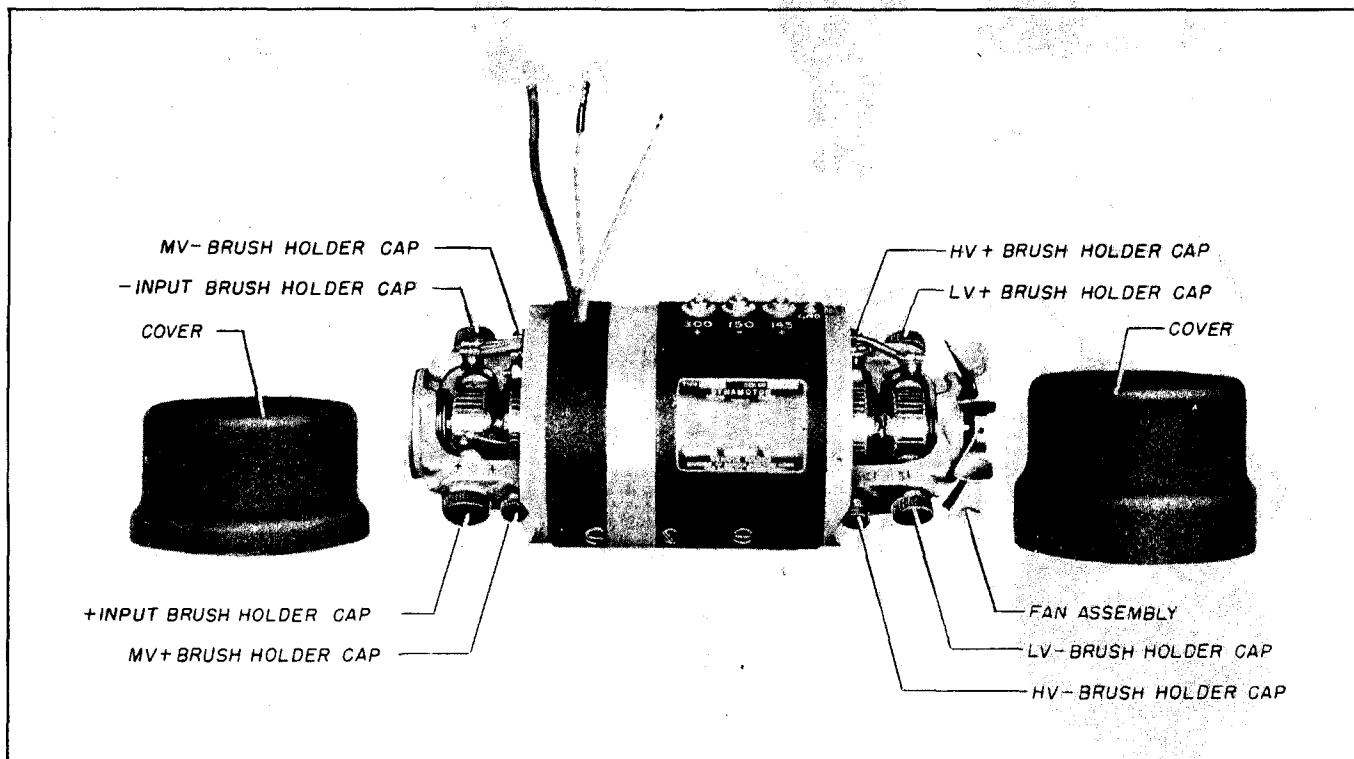


Figure 8-34. DA-3A Machine—Part of Dynamotor Unit PE-94-B, PE-94-C, End Bells Removed

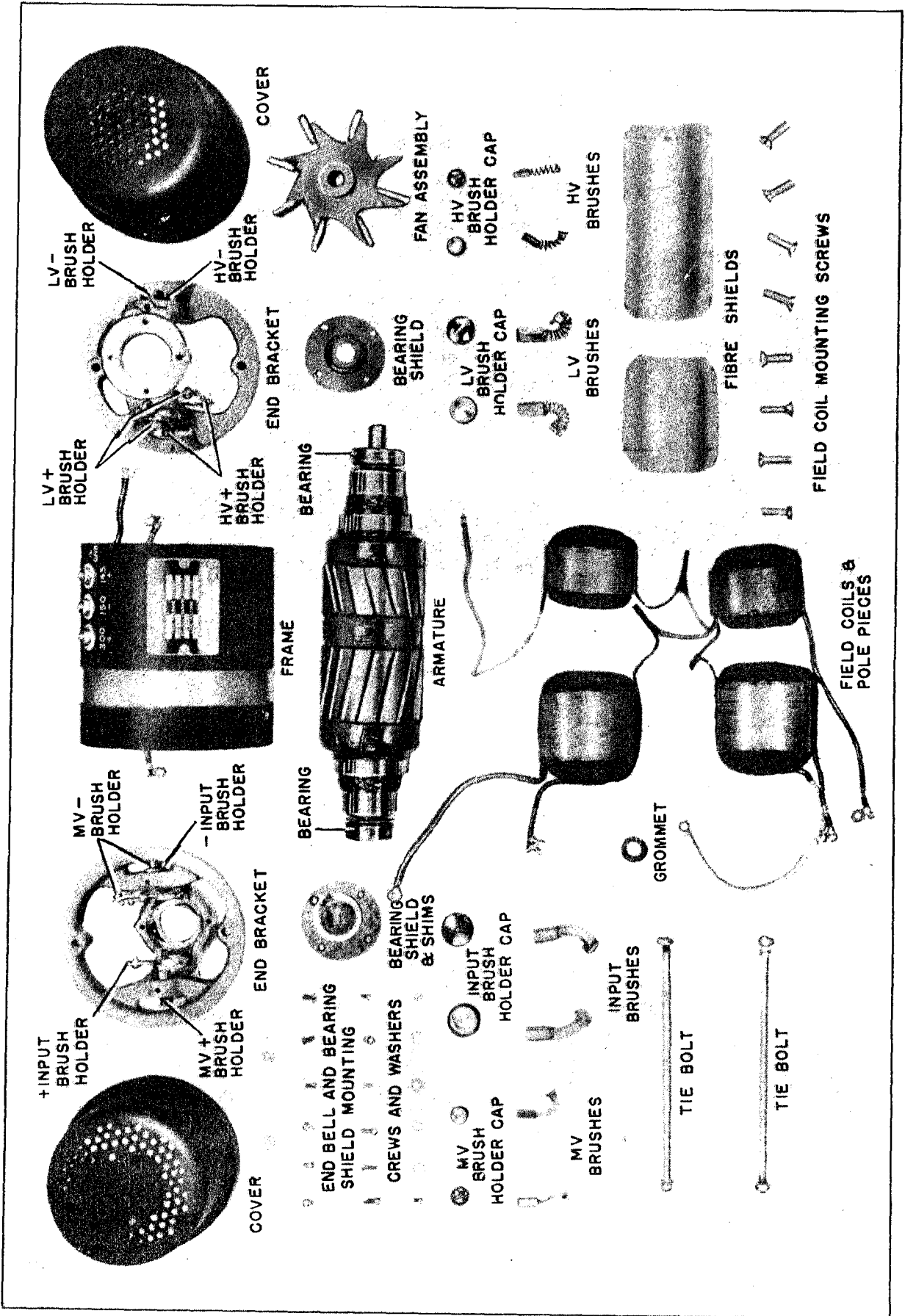


Figure 8-35. DA-3A Machine—Part of Dynamotor Unit PE-94-B, PE-94-C, Disassembled

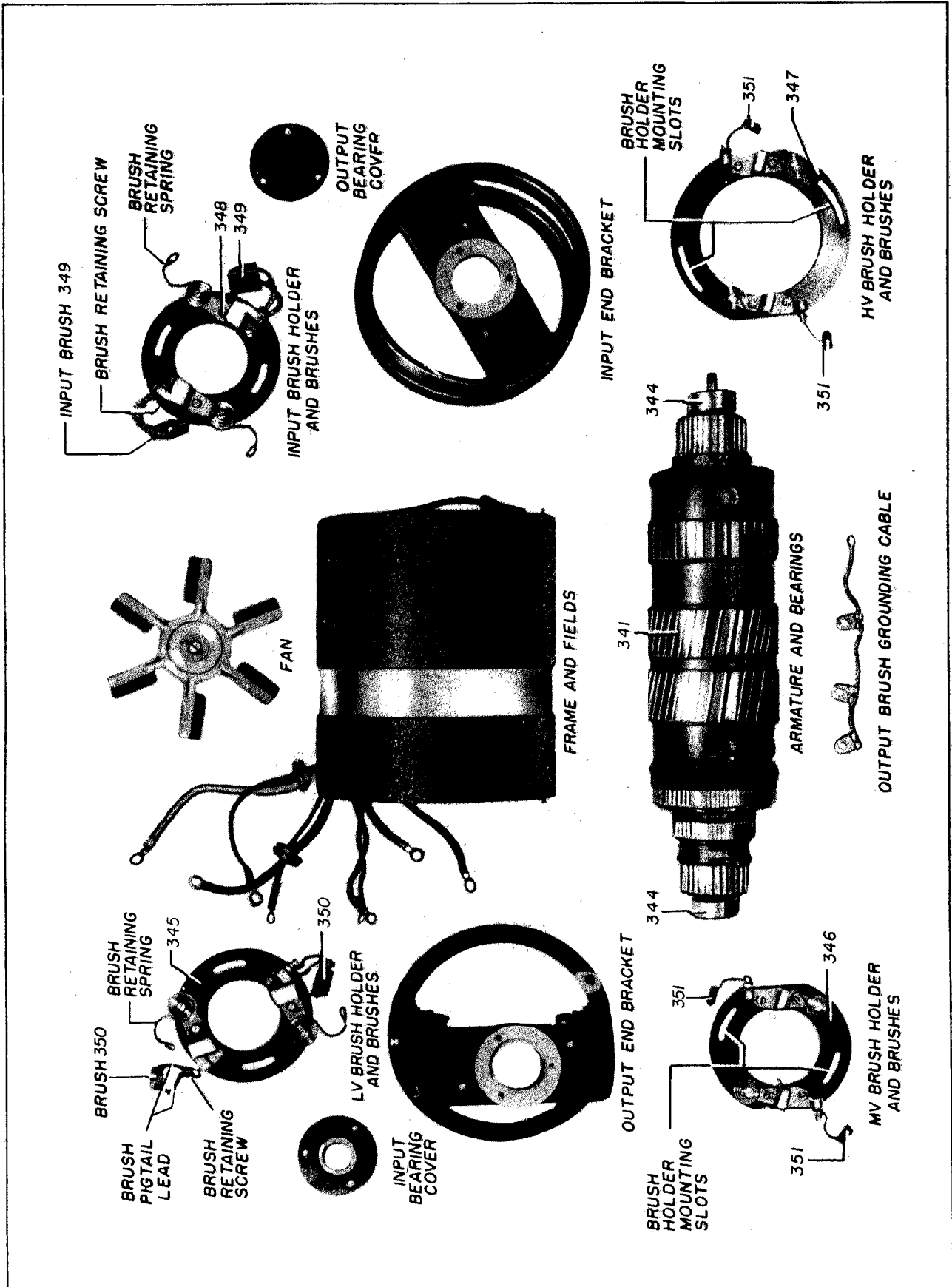


Figure 8-36. MG-1A Machine—Part of Dynamotor Unit PE-94-A, Disassembled

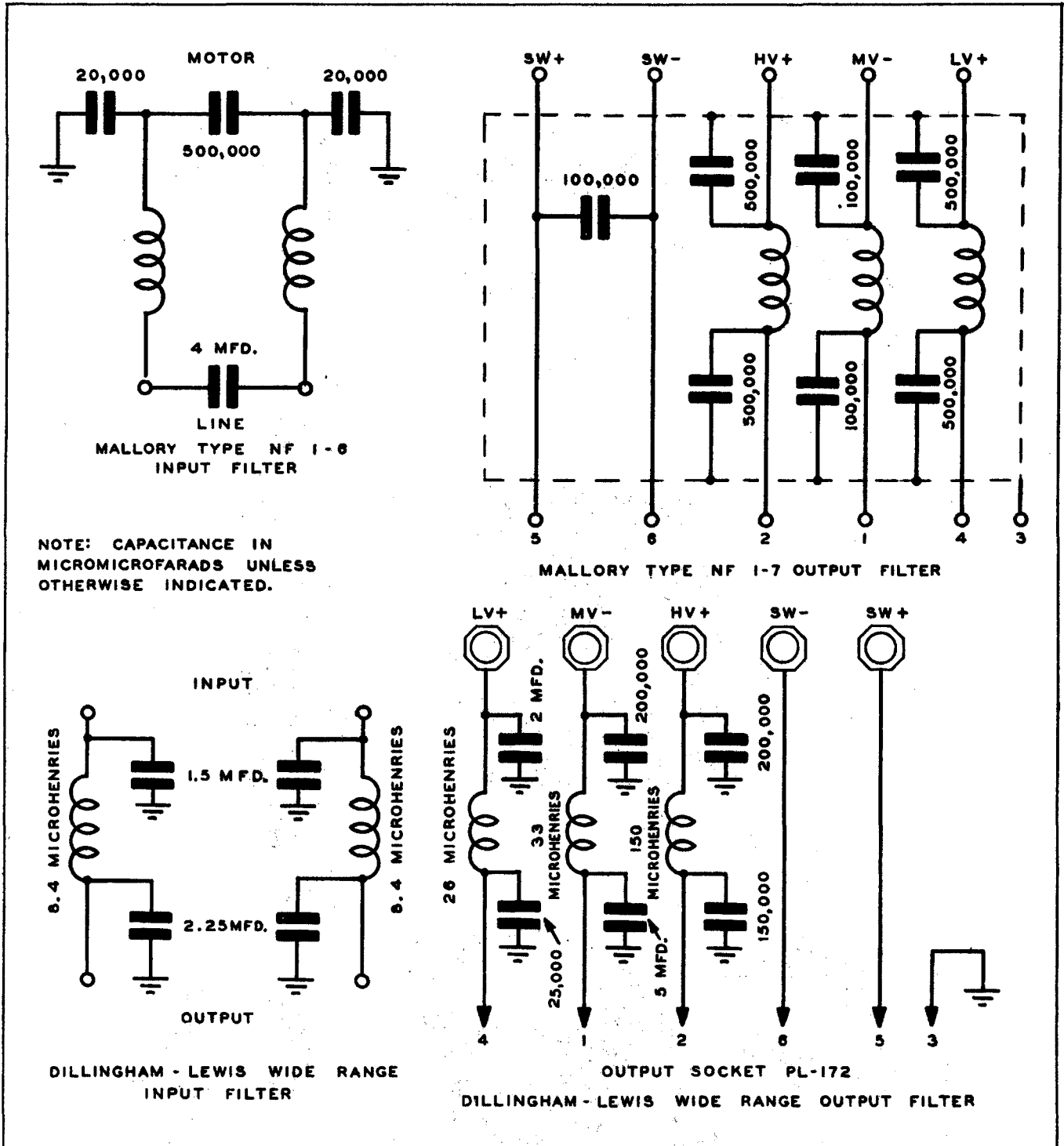


Figure 8-37. Dynamotor Unit PE-94-B, PE-94-C, Mally Input and Output Filters (Top)  
 Dynamotor Unit PE-94-B, PE-94-C, Dillingham-Lewis Input and Output Filters (Bottom)





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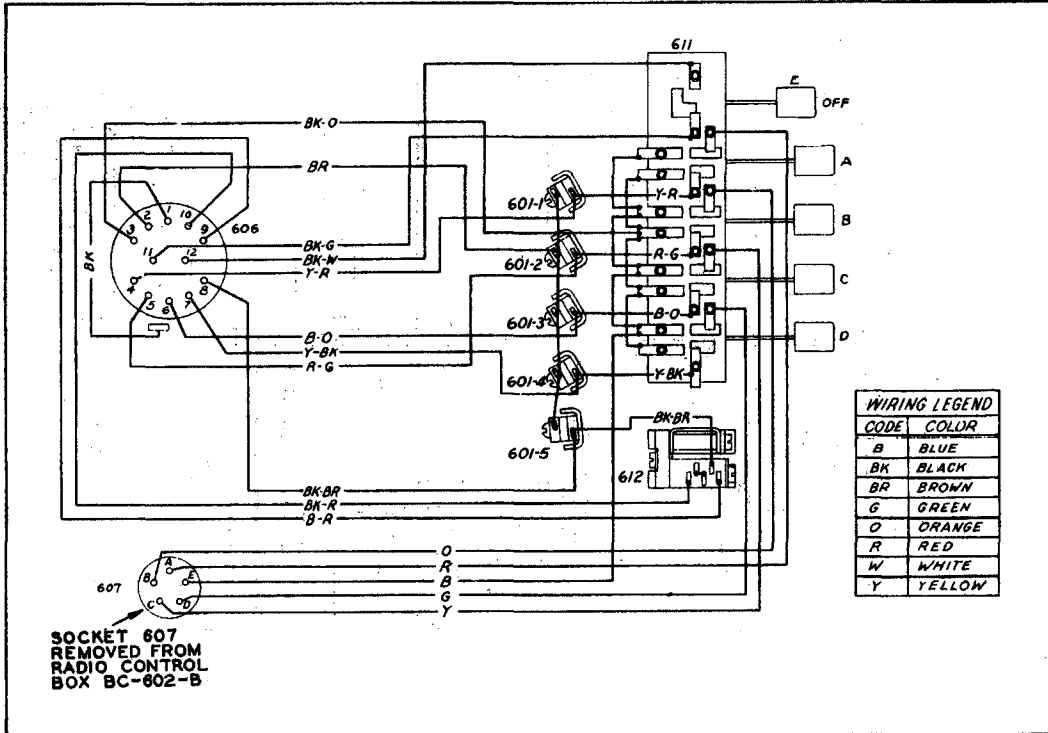


Figure 8-40. Radio Control Box BC-602-A—Wiring Diagram

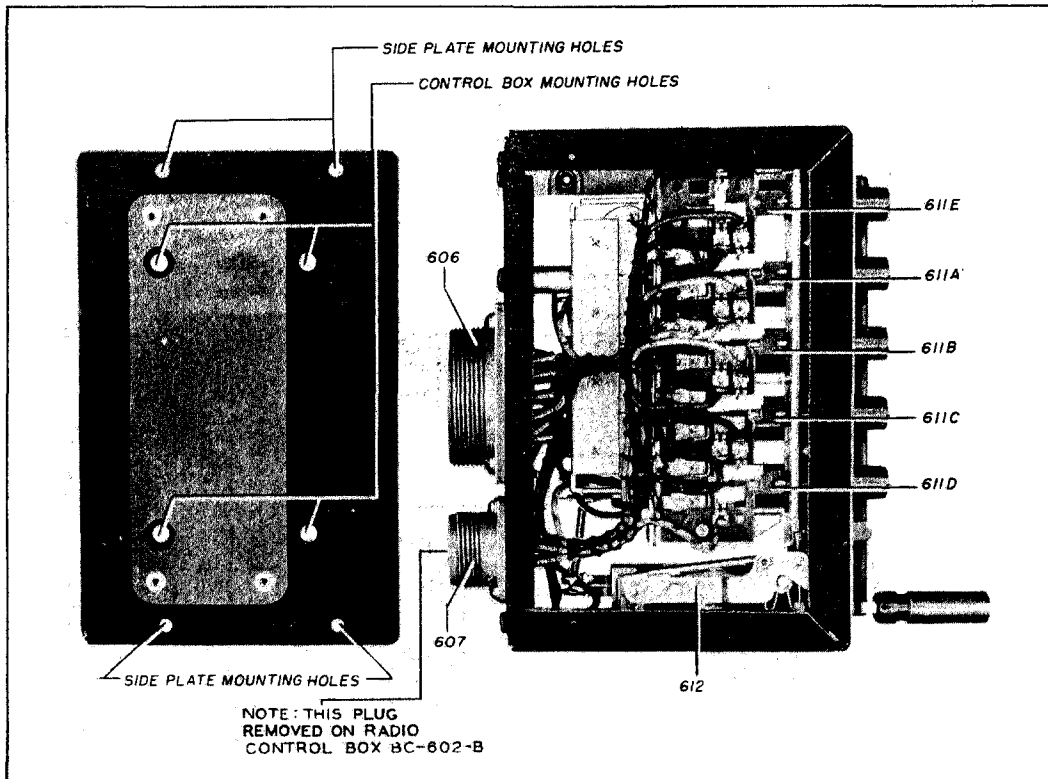


Figure 8-41. Radio Control Box BC-602-A—Interior View

## MODIFICATION CHART FOR RADIO SET SCR-522-A

Reference Number	Modification	Modified Sets Identified By
1a	Removal of r-f indicator diode.	Painted black stripe by "METER SWITCH" position "4."
1b	Rewiring of oscillator Tube JAN-6G6G (VT-198-A) and speech amplifier Tube JAN-6SS7 (VT-199) filament circuits.	
2	Rewiring of squelch circuit.	Painted orange spot on relay 246.
3	Discontinuance of use of Junction Box JB-29-A.	Replaced by connector panel.
4	Modification of Jack Box BC-631-A and BC-630-A. (Addition of audio control potentiometer.)	Stenciled "M" after Model BC-631-A and BC-630-A.
5a	Addition of Tube JAN-12H6 noise suppressor and AVC delay circuit (field modification).	Name plates stenciled with "M" after BC-624-A.
5b	Modification of i-f amplifier stages and addition of noise suppressor and AVC delay (factory modification).	Nameplate stamped BC-624-AM.
6	Modification of antenna coupling control.	Coupling control on meshed gears instead of adjustable in slot.
7	Modification of Radio Control Box BC-602-A to remove socket 607. (Variable length antenna no longer used.)	Modified control box marked Radio Control Box BC-602-B.
8	Removal of slow release relay 130 from transmitter; modification of contactor circuit.	Modified sets marked Radio Transmitter BC-625-AM.
9	Production of Radio Receiver BC-624-C. (Modified receiver circuit.)	Modified sets marked Radio Receiver BC-624-C.
10	Dynamotor input and output filter modification.	Modified units marked Dynamotor Unit PE-94-C.
11	Transmitter "GAIN" control 125 replace by fixed attenuator network resistors 180 and 181.	Absence of transmitter "GAIN" control 125 on modified units.
12	<p><b>THIS PORTION OF THE CIRCUIT REMOVED IN MOST INSTALLATIONS OF RADIO SET SCR-522-A. CONTACTOR CIRCUIT CONNECTED TO "D/F HOMING" SWITCH.</b></p>	

T. O. No. 01-1-224







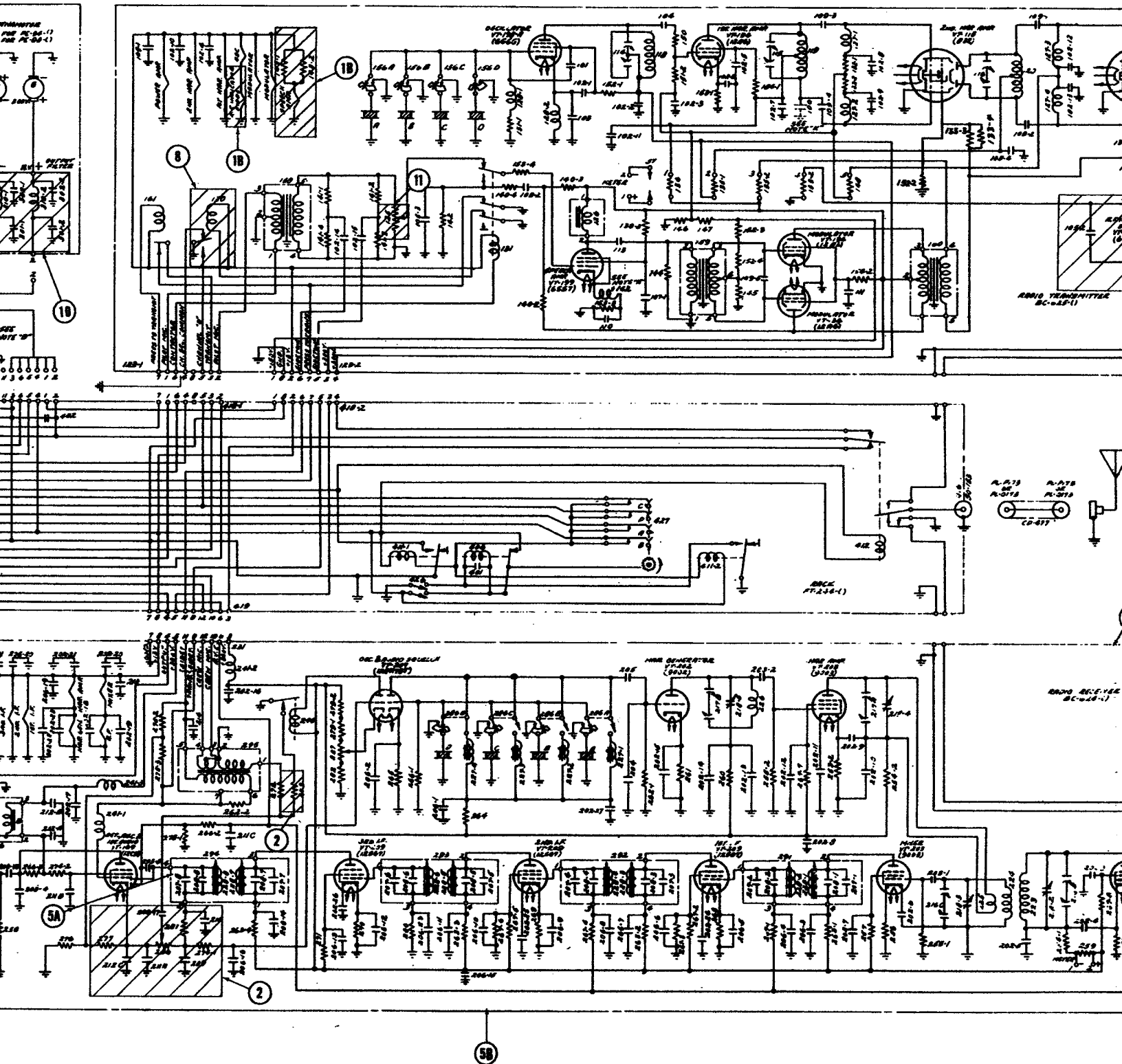
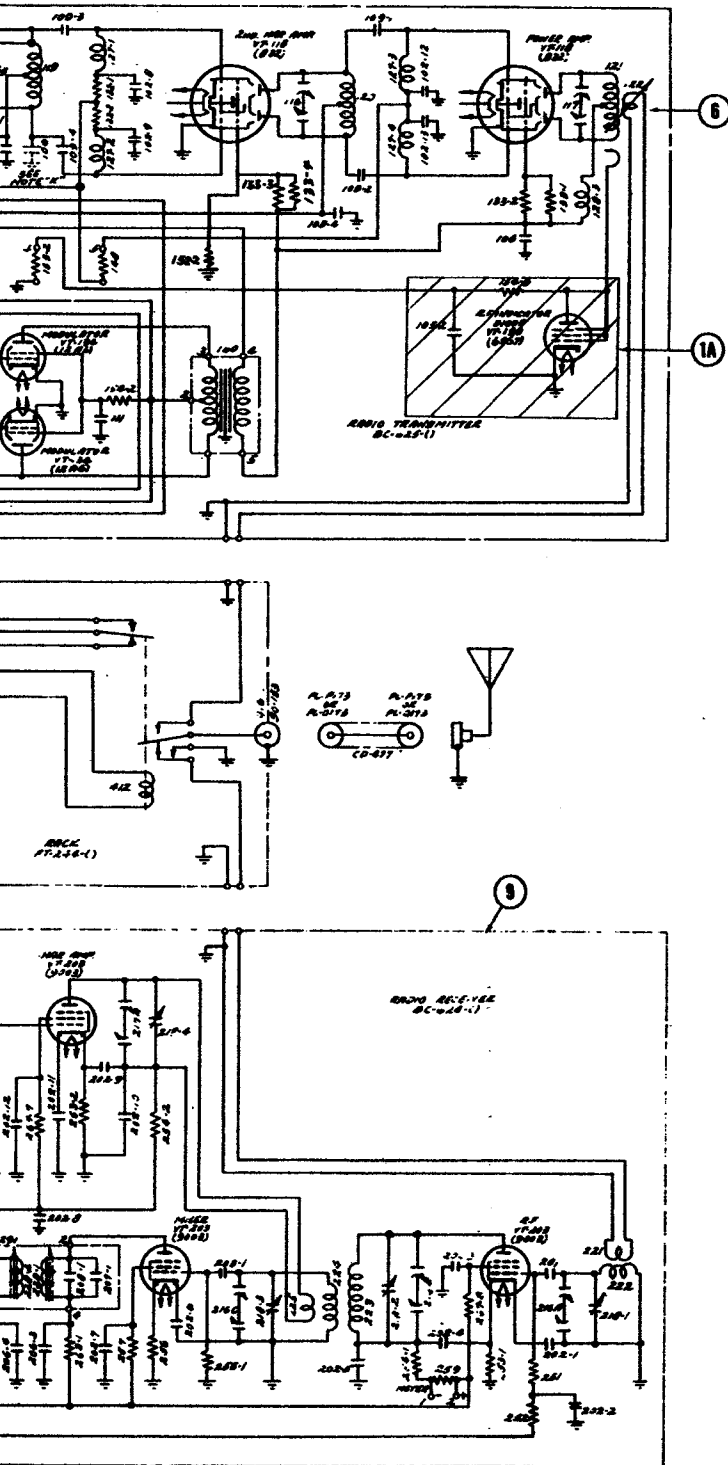


Figure 8-42

Revised 7 January 1952





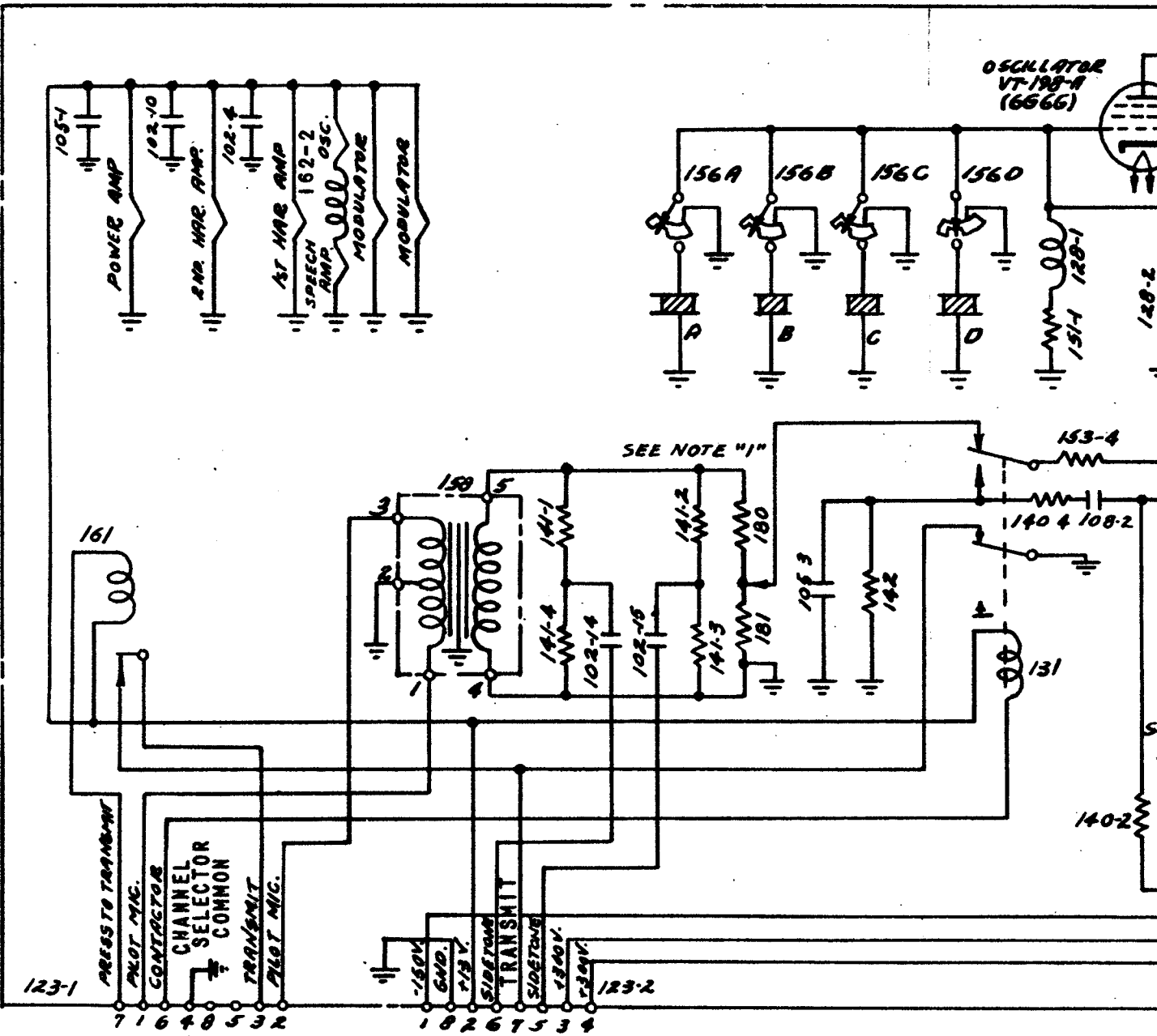


NOTES:—

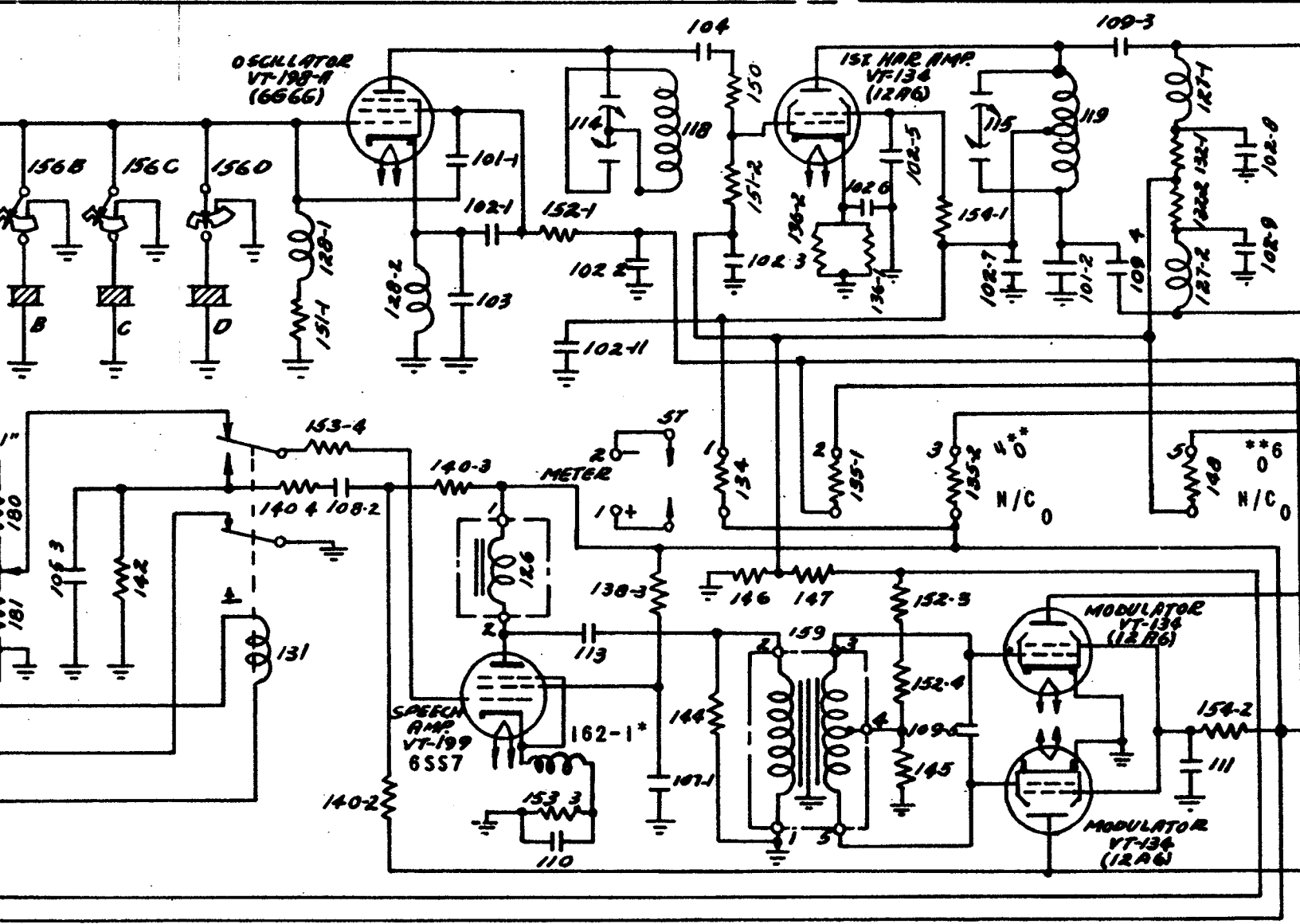
- "A"—IN INSTALLATIONS WHICH INCLUDE THE BRITISH MARKER BEACON RECEIVER, THE CABLE SHOWN CONNECTS SOCKET NO. 420 AND TERMINAL BOX. ALSO THE CABLE FROM TERMINAL BOX TO BRITISH MARKER BEACON IS USED.
- "B"—THIS LEAD IS USED IN U.S. INSTALLATIONS ONLY, AND GOES DIRECTLY TO THE PRESS-TO-TRANSMIT (PRESS-TO-TALK) SWITCH ON THE THROTTLE.
- "C"—THESE LEADS MAY BE INTERCHANGED IN SOME EQUIPMENTS AND THIS IS UNIMPORTANT AS THESE LEADS ARE FOR BALANCED MICROPHONE CIRCUIT.
- "D"—FOR 14-VOLT OPERATION REMOVE LEAD FROM PIN NO. 1 OF PLUG PL-108 AND CONNECT IT TO PIN NO. 4 AS SHOWN BY DOTTED LINE.
- "E"—ON DYNAMOTOR UNIT PE-98-A ITEM 317 IS OMITTED AND CONNECTION IS MADE AS SHOWN BY DOTTED LINE.
- "F"—EQUIPMENT SHOWN IN THE RECEIVE POSITION ON BAND "D" WITH SUFFICIENT INPUT TO THE RECEIVER TO OPEN THE SQUELCH RELAY 246.
- "G"—VACUUM TUBE NOS. IN PARENTHESES, SUCH AS (832), ARE U.S.A. COMMERCIAL TYPE NOS.
- "H"—A FEW EQUIPMENTS DO NOT HAVE ITEM 162.
- "J"—CONTACTOR UNIT SUITABLE FOR USE ONLY WITH PRIMARY POWER SYSTEMS HAVING A GROUNDED NEGATIVE.
- "K"—ITEM 100 WAS DELETED BY DESIGN CHANGE IN EARLY PRODUCTION; HOWEVER, A SMALL QUANTITY OF EQUIPMENTS WAS DELIVERED WITH THIS ITEM INSTALLED. REMOVAL OF CAPACITOR AND REALIGNMENT OF TRANSMITTER IS RECOMMENDED.
- "L"—14.5 L.V. OUTPUT FOR DYNAMOTOR 307. 13 L.V. OUTPUT FOR DYNAMOTOR 306.
- "M"—IN INSTALLATIONS WHICH DO NOT INCLUDE THE BRITISH MARKER BEACON RECEIVER NO. 2 LEAD FROM CONTACTOR UNIT BC-608-A IS WIRED DIRECTLY TO TERMINAL NO. 12 IN THE TERMINAL BOX. WHEN INSTALLATION INCLUDES THE BRITISH MARKER BEACON, NO. 2 LEAD FROM CONTACTOR UNIT BC-608-A IS WIRED TO TERMINAL NO. 8 OF THE BRITISH MARKER BEACON PLUG, AND TERMINAL NO. 14 OF THE BRITISH MARKER BEACON PLUG IS WIRED TO TERMINAL NO. 12 IN THE TERMINAL BOX.
- "N"—CREW MICROPHONE FOR INTERPHONE TO BE USED WHEN-EVER NECESSARY.

Figure 8-42. Radio Set SCR-522-A—Complete Schematic Diagram



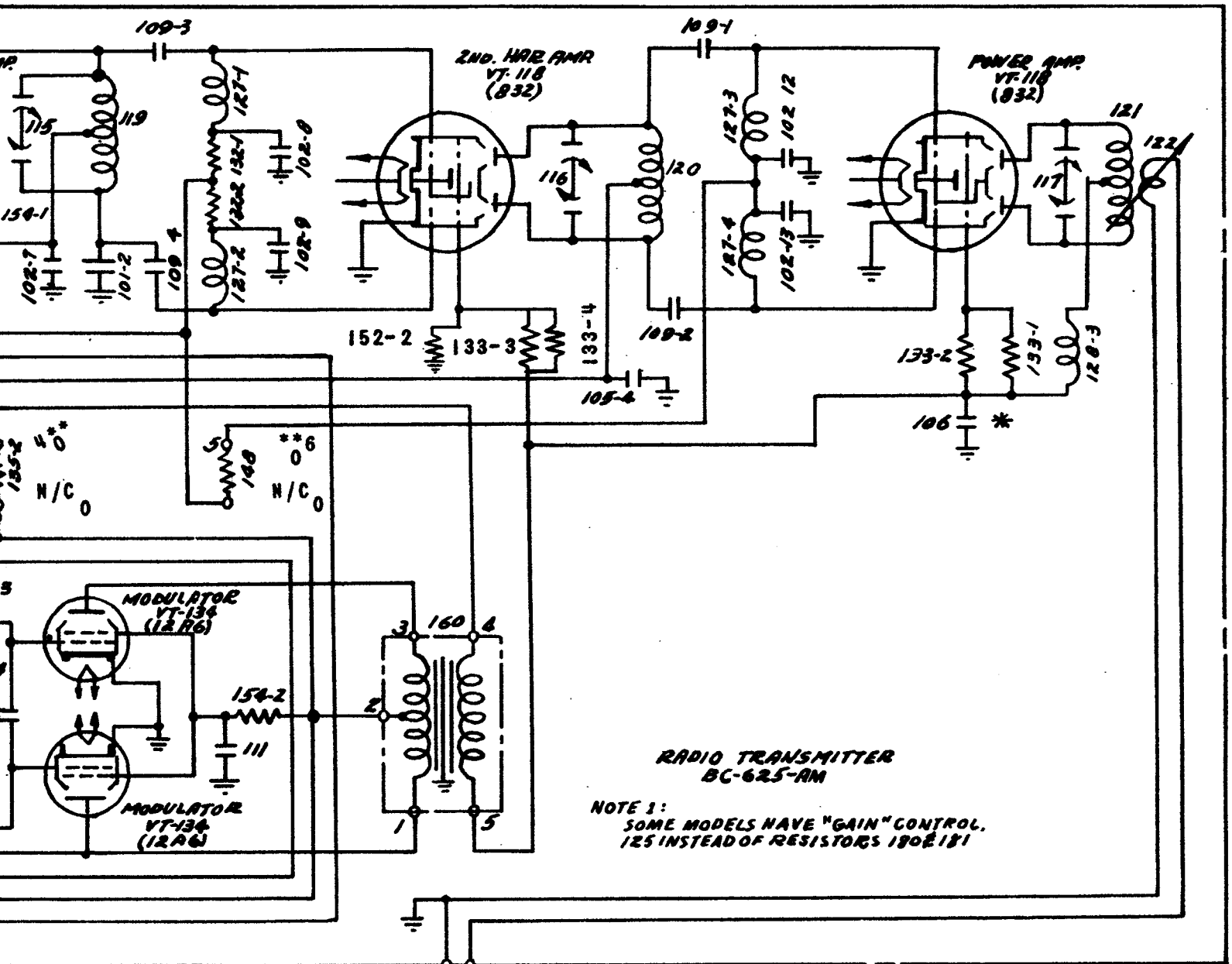






\* A FEW EQUI  
 \*\* METER SWITC





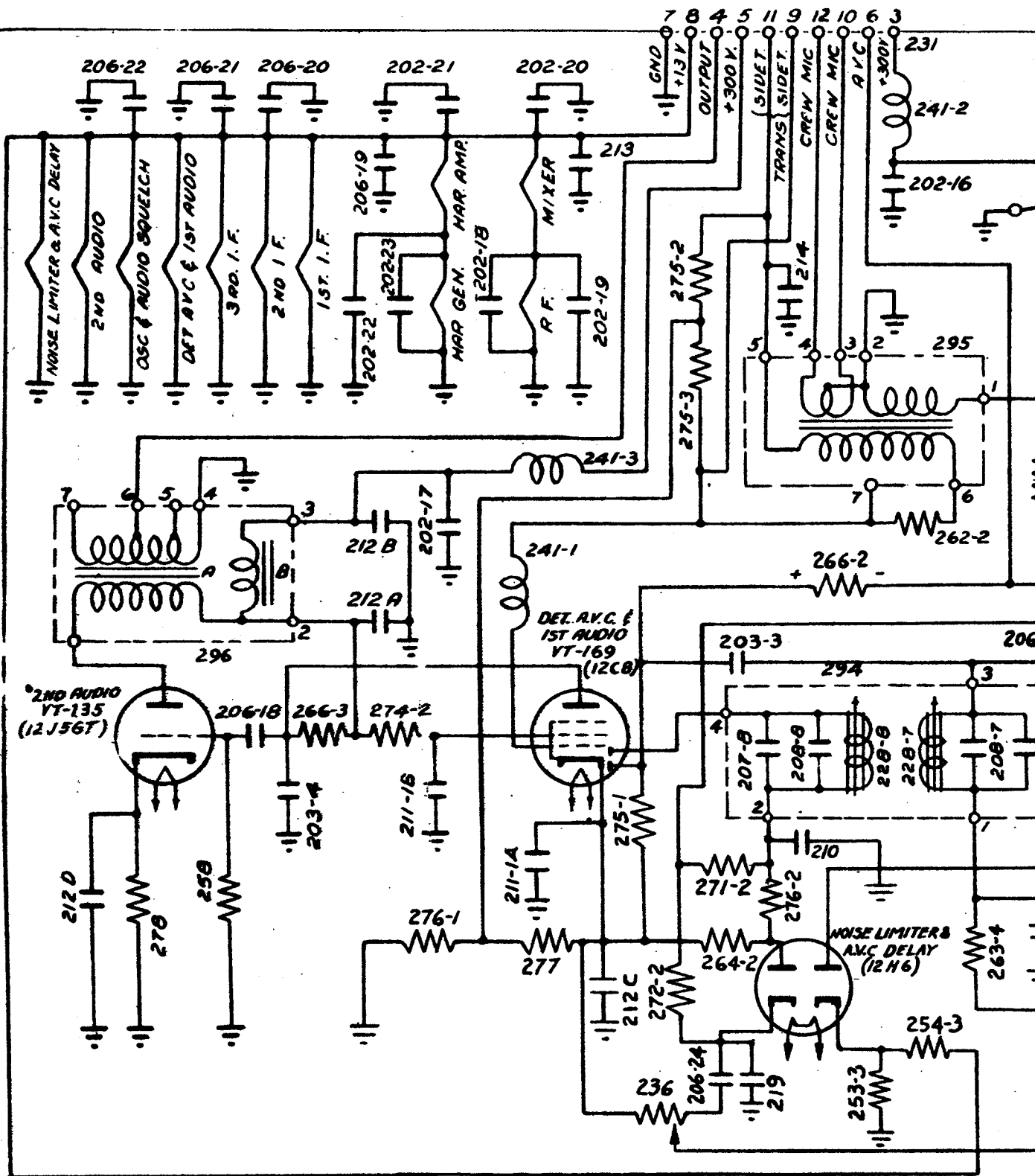
\* A FEW EQUIPMENTS DO NOT HAVE 101-2, 106, 162-1, AND 162-2.

\*\* METER SWITCH POSITIONS 4 AND 6 ARE UNUSED.

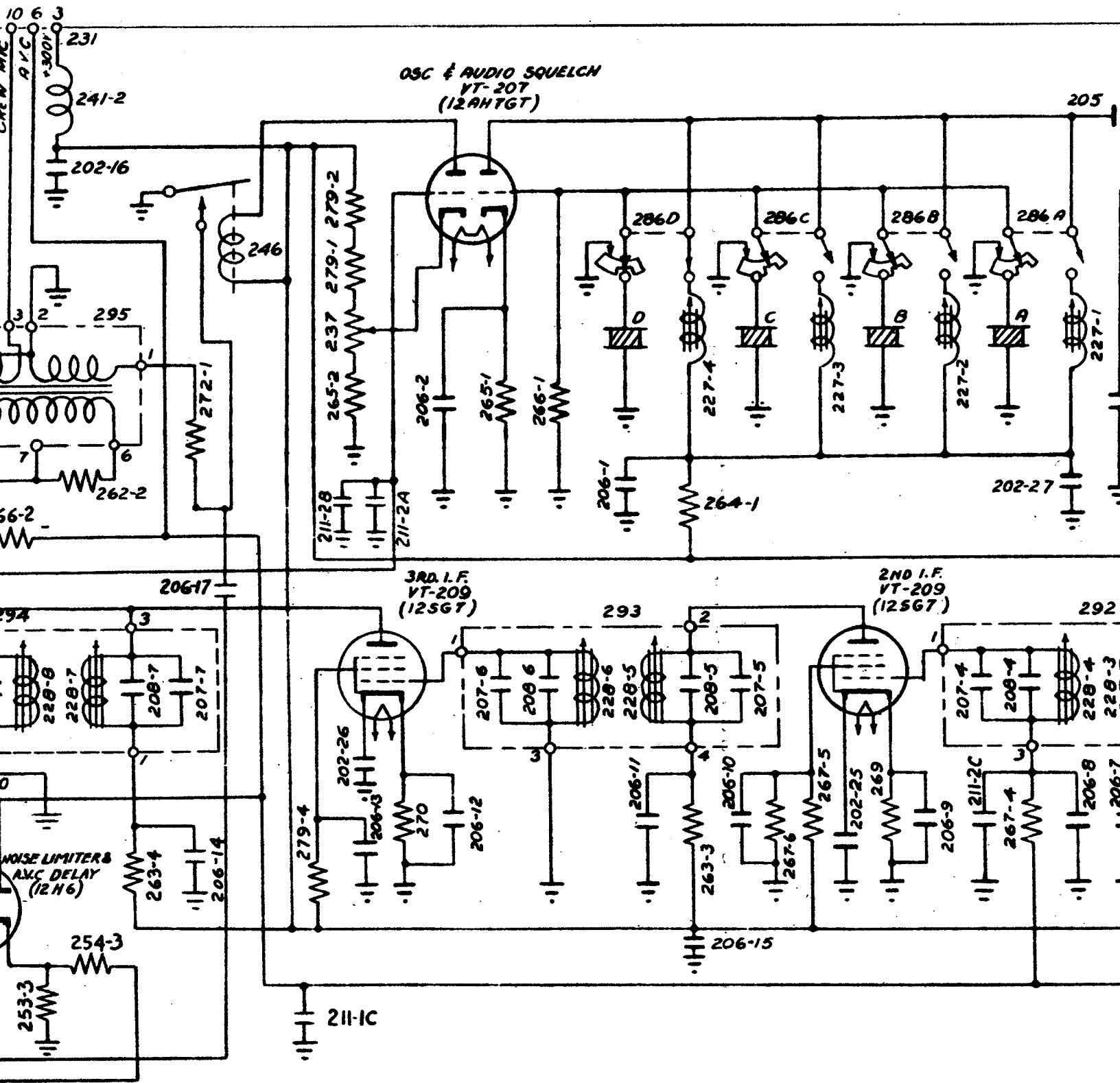
Figure 8-43. Radio Transmitter BC-625-AM—Schematic Diagram

















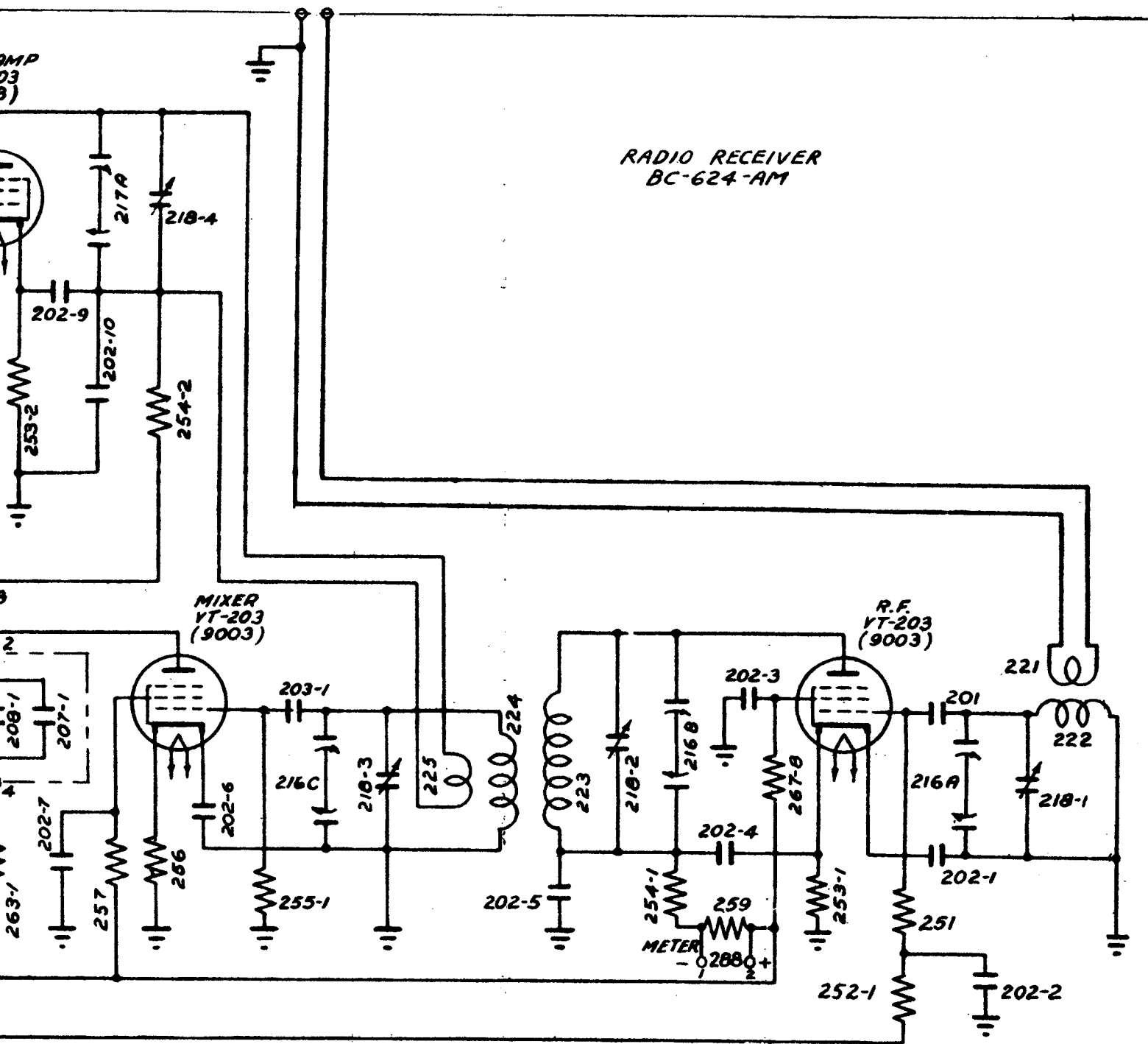


Figure 8-44. Radio Receiver BC-624-AM—Schematic Diagram









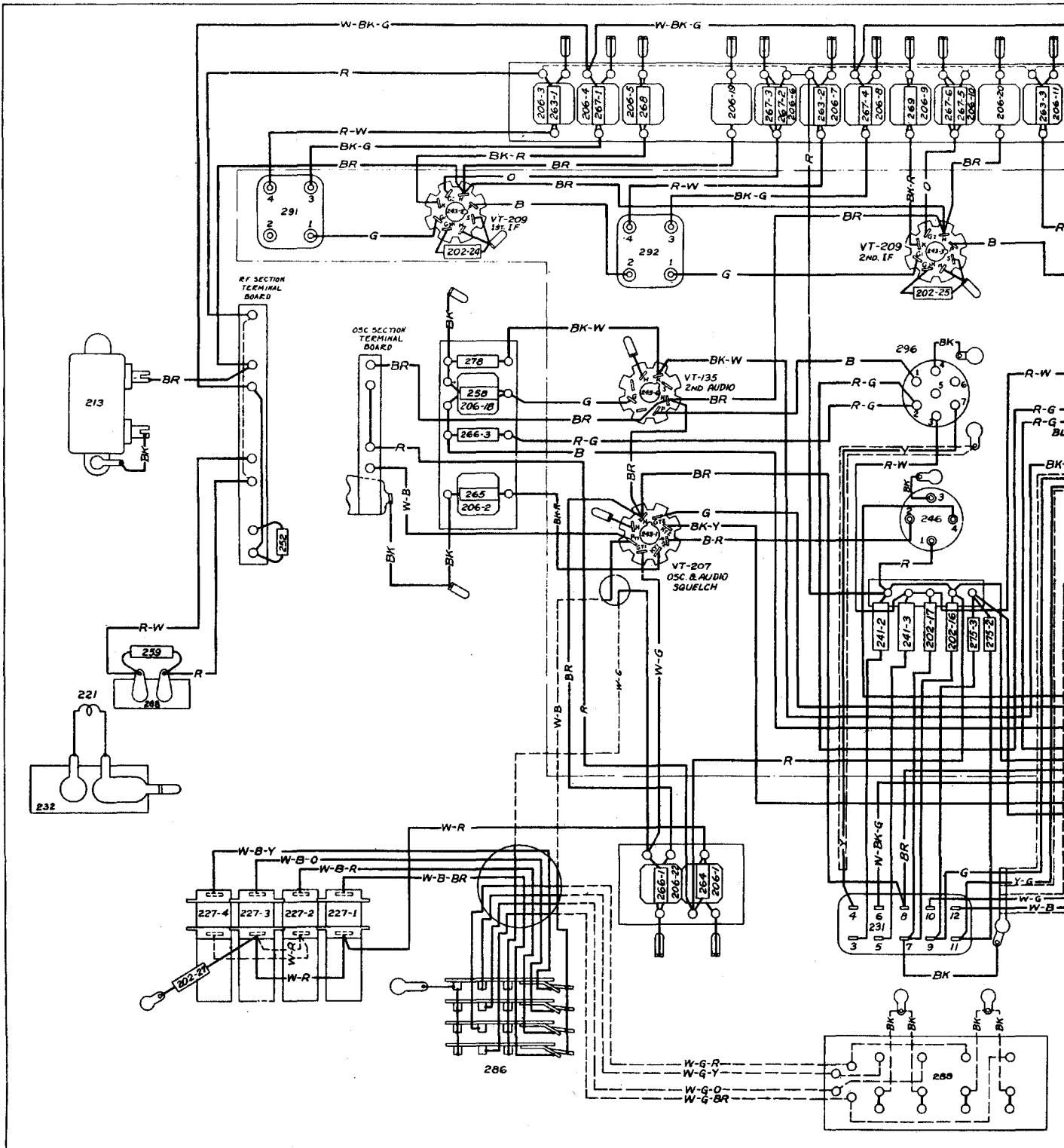








AN 08-40SCR522-3







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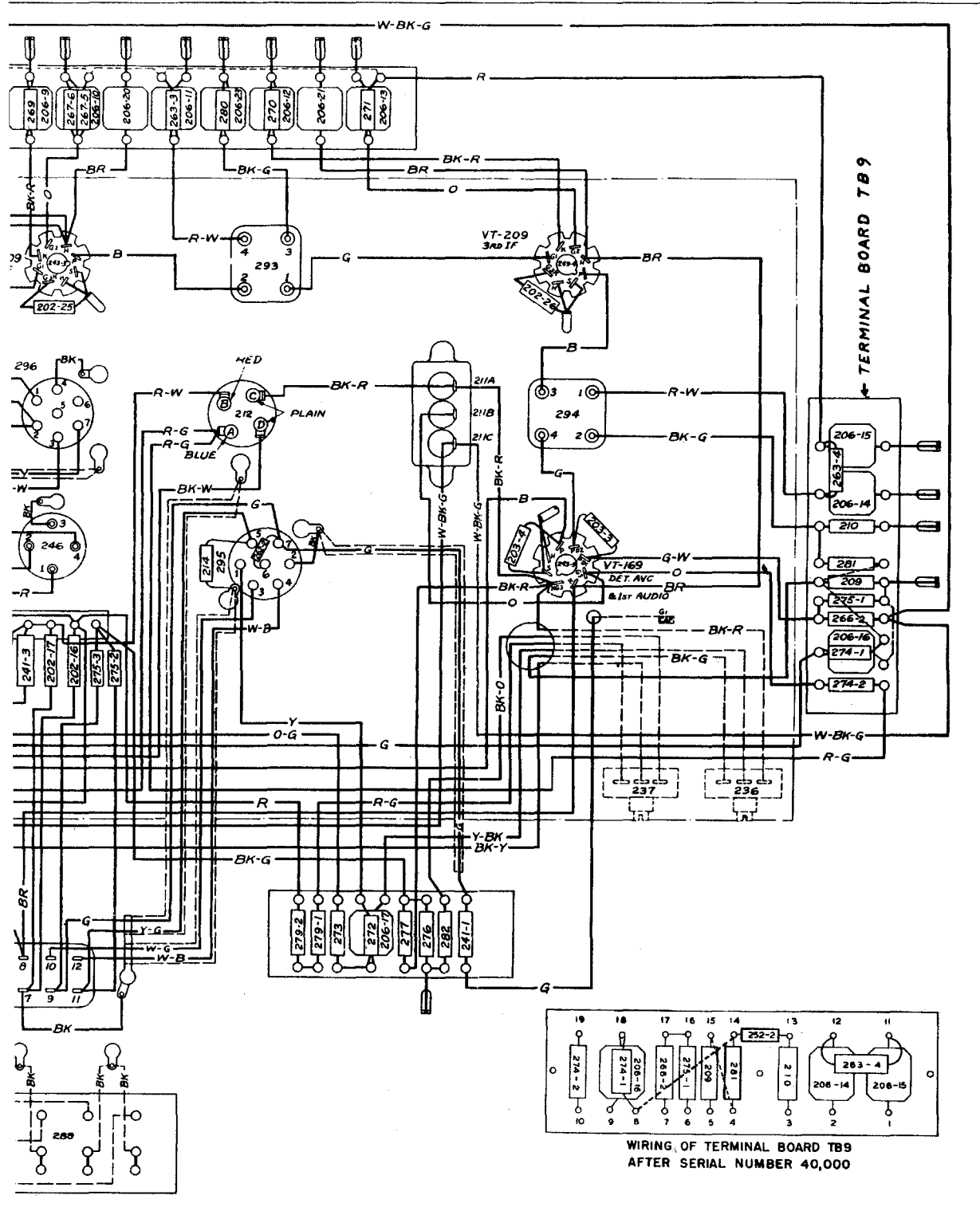
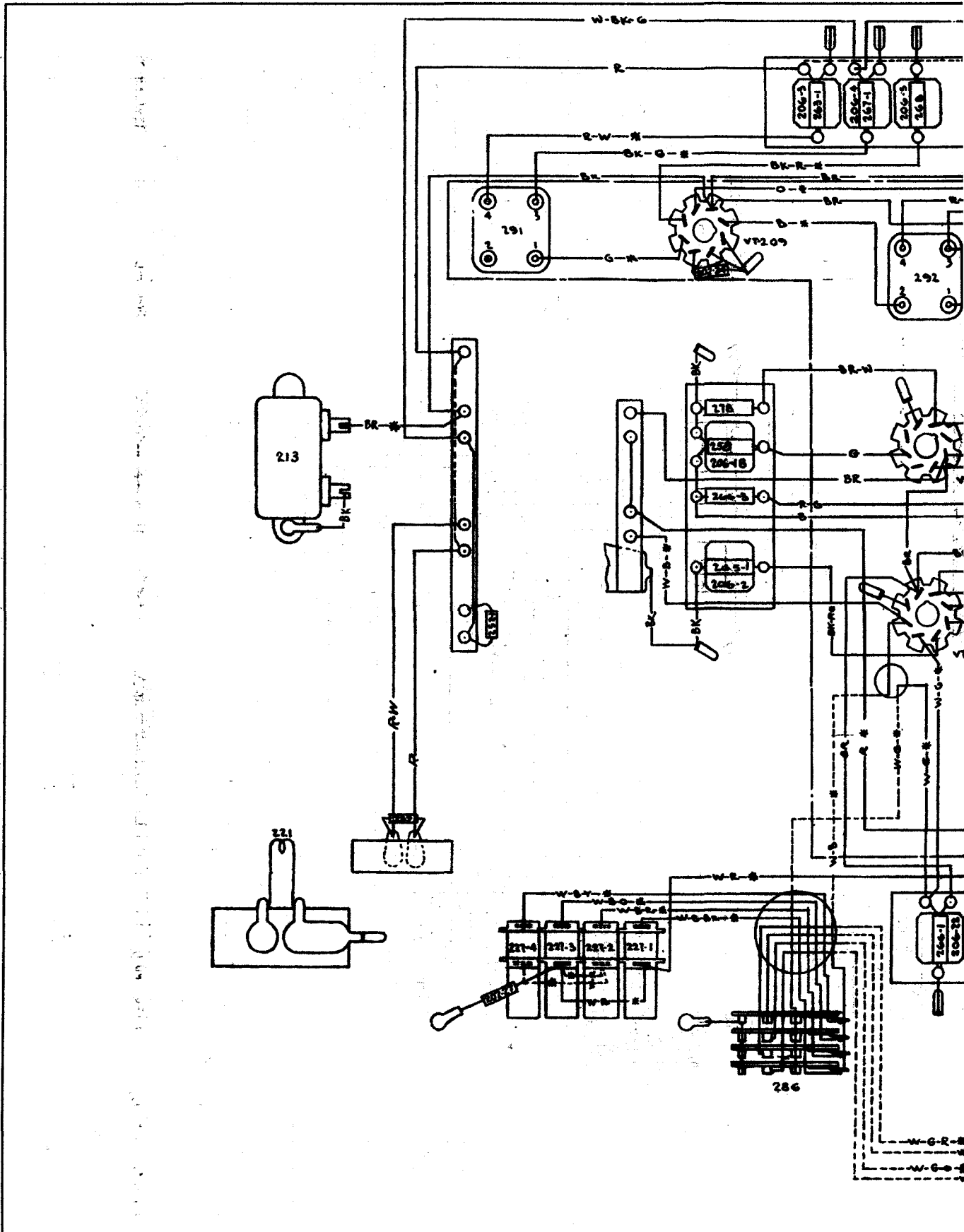


Figure 8-47. Radio Receiver BC-624-A—Wiring Diagram



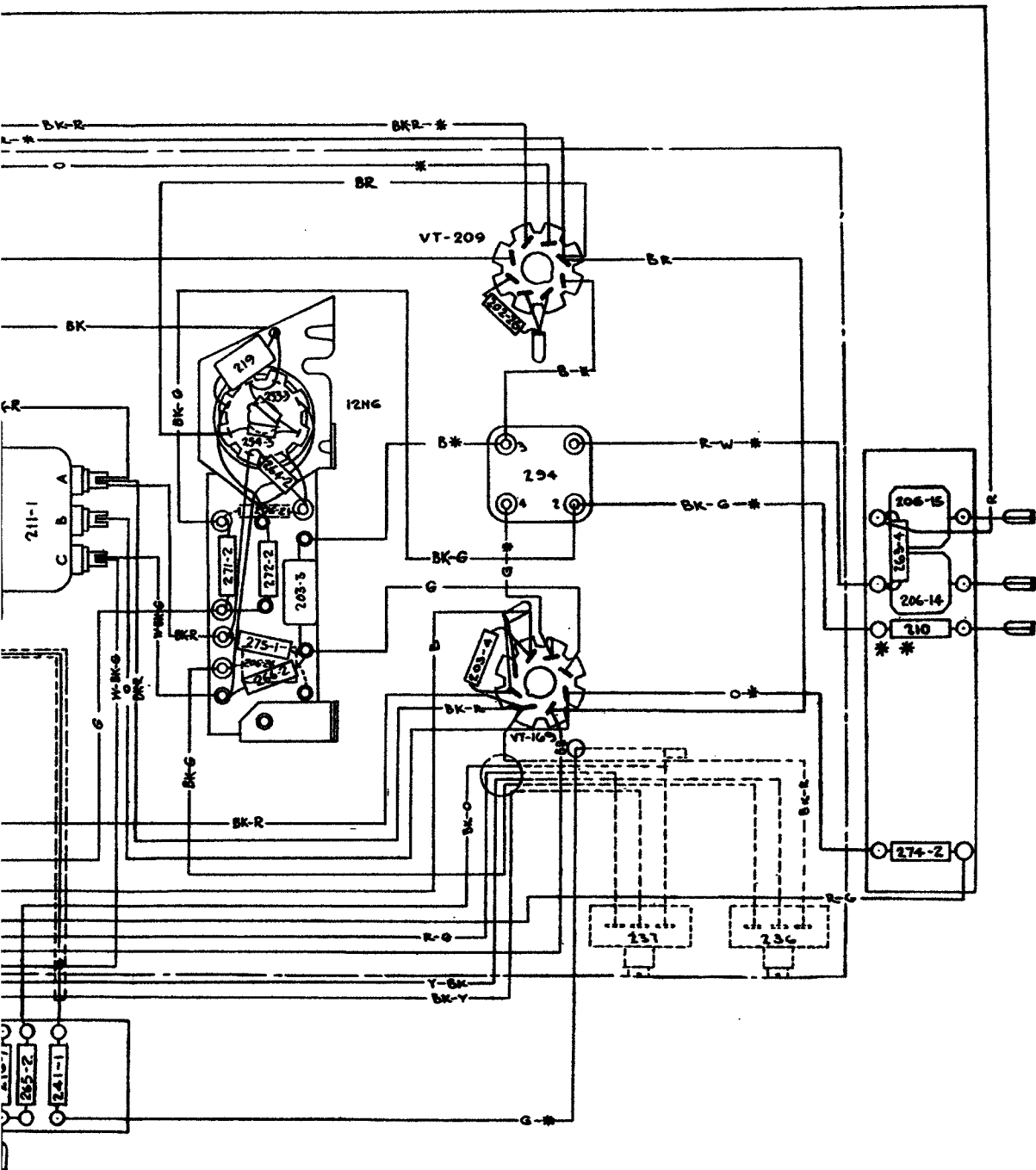
RESTRICTED  
AN 08-40SCR522-3











**NOTE:**

\*THESE LEADS TO BE AS SHORT AS POSSIBLE, BUT NOT STRETCHED TIGHTLY.

\*\*SOME RADIO RECEIVERS BC-624-AM WERE CONVERTED IN THE FIELD (BY INSTALLATION OF A NOISE SUPPRESSOR KIT IN RADIO RECEIVER BC-624-A) AND HAVE COMPONENTS ON THIS TERMINAL BOARD WHICH HAVE NO FUNCTION. THEY WERE LEFT ON TO SIMPLIFY CONVERSION.

Figure 8-48. Radio Receiver BC-624-AM—Wiring Diagram





