NAVSHIPS 94543 *(Non-Registered)*

TECHNICAL MANUAL

for

RADIO RECEIVING SET AN/WRR-3

THE MAGNAVOX COMPANY
FORT WAYNE, INDIANA

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS

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PAGE NUMBERS	CHANGE IN EFFECT	PAGE NUMBERS	CHANGE IN EFFECT
Title Page	Original	5-0 to 5-15	Original
ii to viii	Original	6-0 to 6-55	Original
1-1 to 1-5	Original	7-0 to 7-54	Original
2-0 to 2-6	Original		
3-1 to 3-4	Original		
4-1 to 4-13	Original		

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Subj: Technical Manual for Radio Receiving Set AN/WRR-3, NAVSHIPS 94543

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TABLE OF CONTENTS

SECTION 1 - GENERAL INFORMATION

SECTION 2 - INSTALLATION

SECTION 3 - OPERATOR'S SECTION

SECTION 4 - PRINCIPLES OF OPERATION

SECTION 5 - TROUBLE-SHOOTING

SECTION 6 - REPAIR

TABLE OF CONTENTS (Continued)

SECTION 6 - REPAIR (Continued)

SECTION 7 - PARTS LIST

LIST OF ILLUSTRATIONS

SECTION 1 - GENERAL INFORMATION

SECTION 2 - INSTALLATION

SECTION 3 - OPERATOR'S SECTION

SECTION 4 - PRINCIPLES OF OPERATION

SECTION 4 - PRINCIPLES OF OPERATION (Continued)

SECTION 5 - TROUBLE-SHOOTING

LIST OF ILLUSTRATIONS (Continued)

SECTION 5 - TROUBLE-SHOOTING (Continued)

SECTION 6 - REPAIR

SECTION 6 - REPAIR (Continued)

LIST OF TABLES

SECTION 1 - GENERAL INFORMATION

SECTION 3 - OPERATOR'S SECTION

SECTION 5 - TROUBLE-SHOOTING

SECTION 5 - TROUBLE-SHOOTING (Continued)

SECTION 6 - REPAIR

SECTION 7 - PARTS LIST

SECTION 1

GENERAL INFORMATION

1-1. FUNCTIONAL DESCRIPTION.

Radio Receiving Set AN/WRR-3 (see figure 1-1) is a dual conversion superheterodyne receiver for surface craft and submarine installation. It receives A1 (CW), A2 (MCW) and F1 (FSK) signals. The receiver has a frequency range of 14 to 600 KC in five bands.

The receiver consists of two stages of RF amplification, a mixer, a local oscillator, a single stage of IF amplification (which is, essentially, a second converter used on Bands I and IV only), three stages of IF ampli-

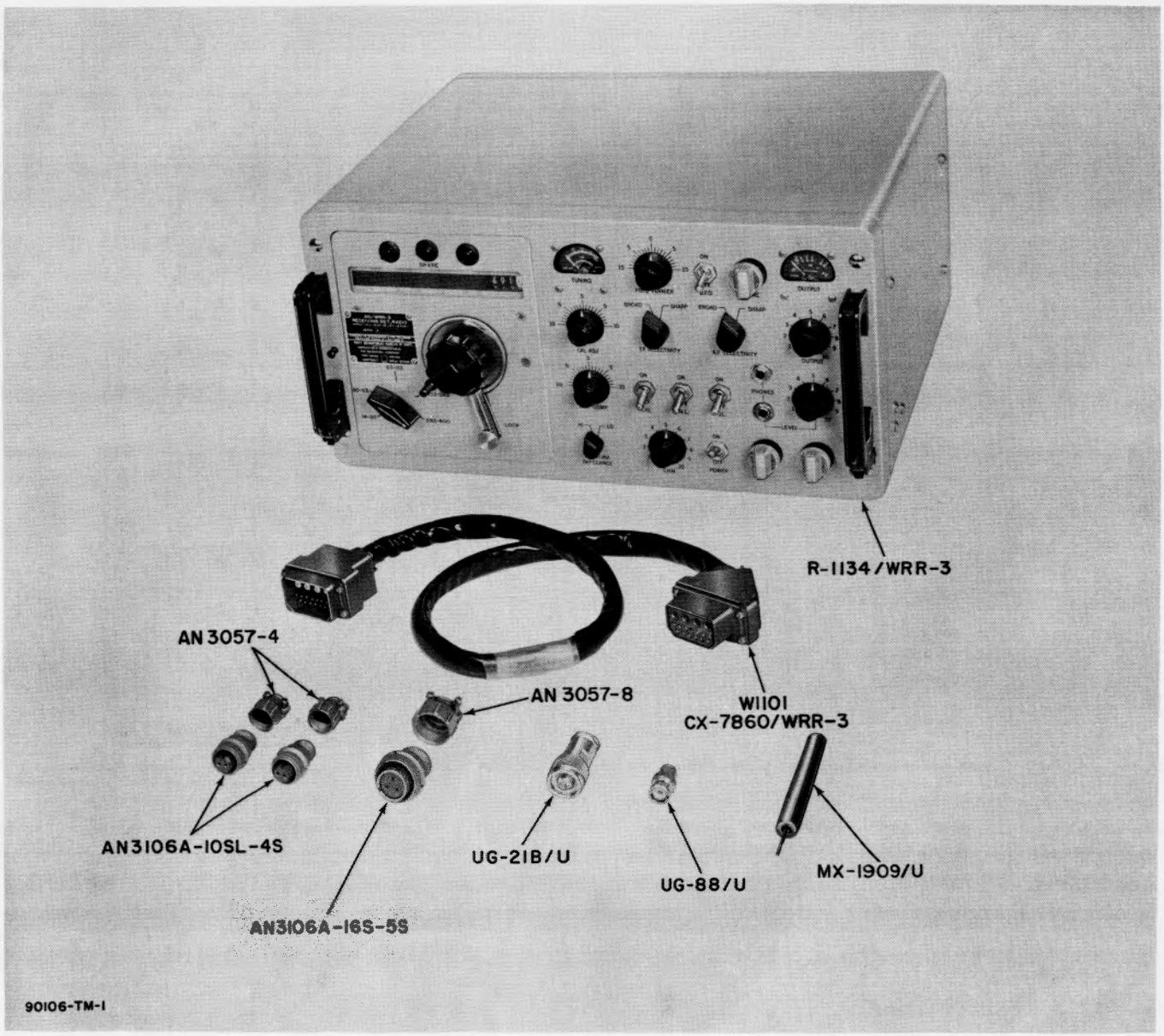


Figure 1-1. Radio Receiving Set AN/WRR-3

fication, a cathode follower stage, a beat frequency oscillator stage, a BFO mixer, an audio detector, a noise limiter, an output limiter and three stages of audio amplification. A crystal calibrator consisting of a 50 KC crystal oscillator and a 10 KC multivibrator is provided as a reference for setting and calibrating the tuning dial.

Audio outputs are provided at two jacks on the front panel (for headphone use) and at two receptacles at the rear of the equipment (for connection to balanced audio distribution lines). The outputs on the front panel are independent of the outputs on the rear of the equipment. The power supply of the AN/WRR-3 may be connected to operate from 105, 115 or 125 VAC, 50 to 60 CPS or 400 CPS.

The receiver chassis is mounted on slides in a metal case and can be either completely removed from the case or partially removed and tilted for servicing. Once the receiver is withdrawn, however, all electrical connections made at the rear of the case are broken. Thus, when servicing the equipment, the jumper cable provided with the equipment must be used.

Many components are mounted on printed circuit boards which fit into assemblies. Figures 1-2 and 1-3 show assemblies that are accessible from the top and bottom of the main chassis. Each assembly is physically independent of the other. A faulty assembly can be quickly replaced with a spare one. Electrical connections between each assembly and the remaining circuits are made through coaxial and multi-pin connectors. Thus, when an assembly is removed from the chassis, all electrical connections to and from that assembly are broken.

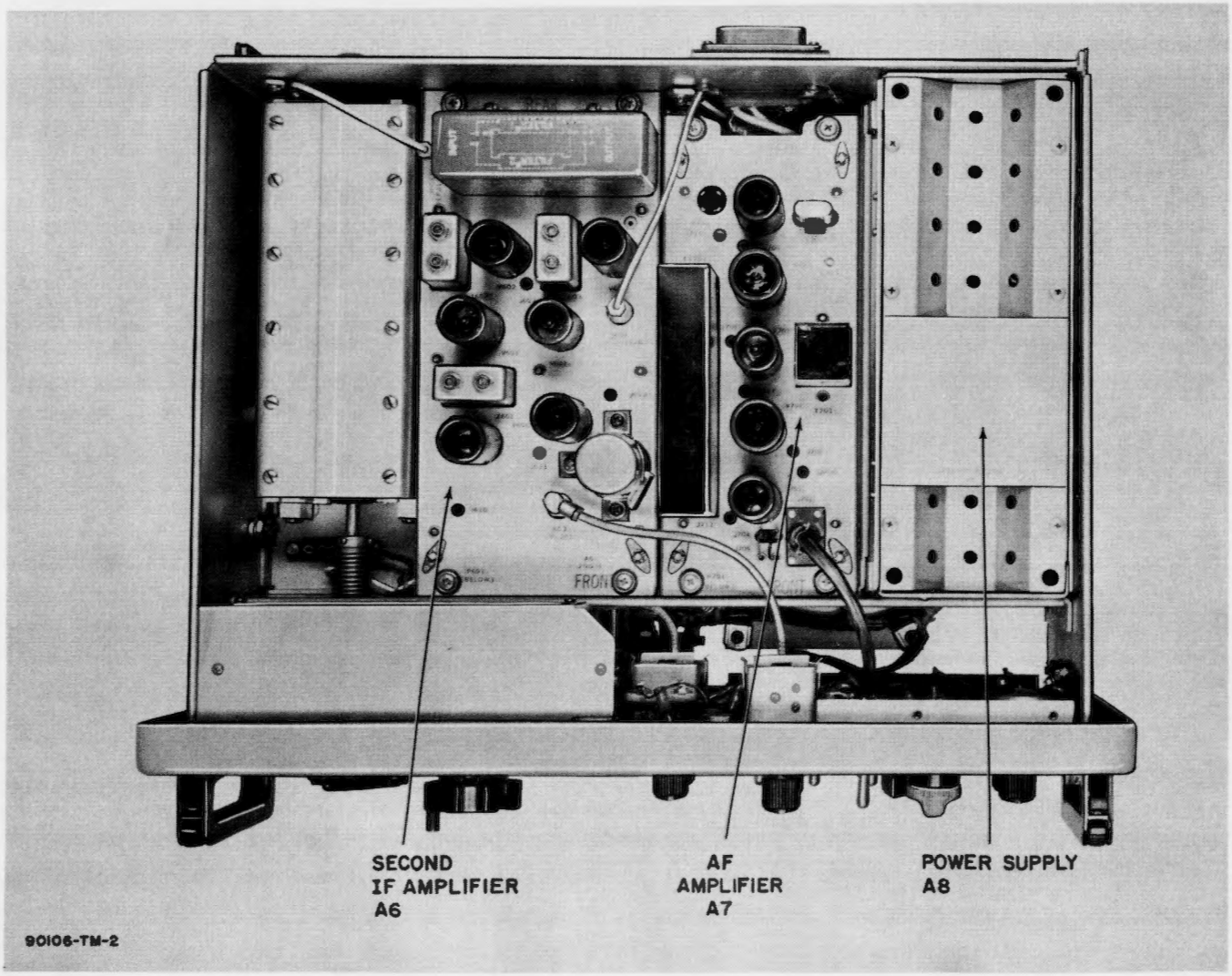


Figure 1-2. Assemblies Accessible from Top of Chassis

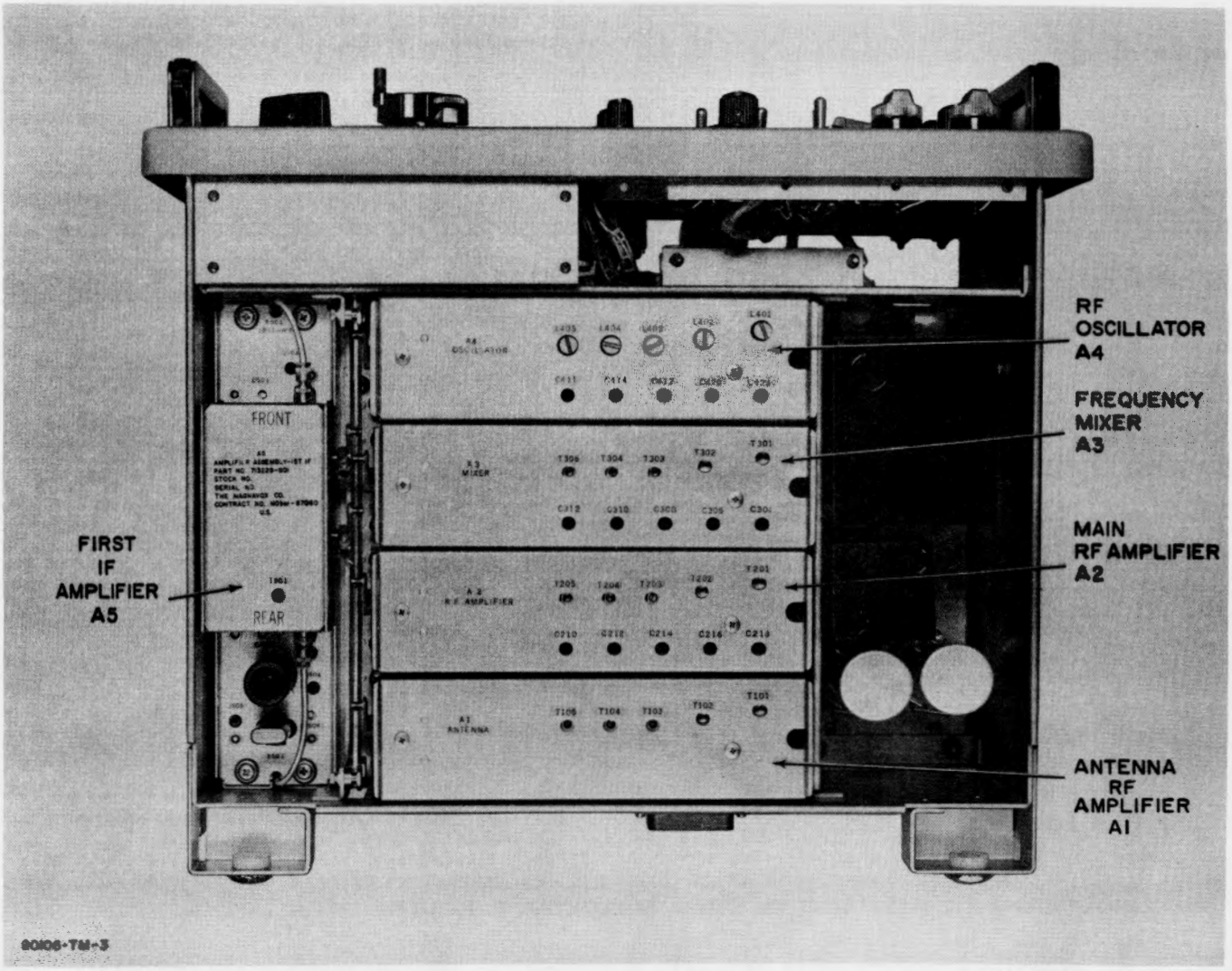


Figure 1-3. Assemblies Accessible from Bottom of Chassis

1-2. FACTORY OR FIELD CHANGES.

No factory or field changes have been made.

1-3. QUICK REFERENCE DATA.

a. FREQUENCY BAND RANGES:

(1) Band I: 14 to 30 KC.

(2) Band II: 30 to 63 KC.

(3) Band III: 63 to 133 KC.

(4) Band IV: 133 to 283 KC.

(5) Band V: 283 to 600 KC.

b. RECEIVER TYPE. - Dual conversion superheterodyne on Bands I and IV and single conversion superheterodyne on Bands II, III and V.

c. INTERMEDIATE FREQUENCIES.

(1) On Bands II, III, and V: 200 KC.

(2) On Bands I and IV the first IF is 60 KC and the second IF is 200 KC.

d. OSCILLATOR FREQUENCIES.

(1) The first conversion oscillator operates above the received signal frequency on all bands.

(2) The second conversion oscillator (Bands I and IV only) operates at 140 KC, controlled by a type CR-18/U crystal.

(3) The calibrator oscillator operates at 200 KC, controlled by a type CR-18/U crystal.

e. RECEPTION. - A1 (CW), A2 (MCW), and F1 (FSK).

f. RECEIVER OUTPUTS. - Two rear mounted receptacles for 600 ohm balanced audio line connections and two front panel mounted headphone connections and a rear mounted coaxial connector for a 200 KC IF output.

g. RECEIVER INPUTS.

(1) Low impedance: 50 ohm nominal impedance.

(2) High impedance: 200 UUF nominal capacitance.

h. POWER REQUIREMENTS.

(1) Voltage: 105, 115 or 125 volts, single phase alternating current.

(2) Frequency: 50 to 60 CPS or 400 CPS.

(3) Current: 0.58 ampere (115 VAC input).

(4) Power factor: 0.96.

(5) Power: 60 watts (115 volts, 60 cycle AC).

i. SENSITIVITY. - The receiver sensitivity for 0 DB output (6 MW into 600 ohms) is given in table 1-1.

TABLE 1-1. RECEIVER SENSITIVITY - MICROVOLTS

Frequency Range Kilocycles	Mode of Reception							
	A1 Sharp		A1 Broad		A2		F1	
	Hi Z Ant	Lo Z Ant	Hi Z Ant	Lo Z Ant	Hi Z Ant	Lo Z Ant	Hi Z Ant	Lo Z Ant
14-30	4.0	0.5	5.0	1.0			5.0	0.5
30-150	3.0	0.5	4.0	1.0			3.0	0.5
150-600	2.0	0.5	3.0	1.0	*3.0	*1.5	2.0	0.5
	$\frac{\text{Signal + Noise}}{\text{Noise}}$ = 20 DB				$\frac{\text{Signal + Noise}}{\text{Noise}}$ = 10 DB		$\frac{\text{Signal + Noise}}{\text{Noise}}$ = 20 DB	

*These sensitivities apply only to the frequency range from 250 to 600 KC.

1-4. EQUIPMENT LISTS.

a. EQUIPMENT SUPPLIED. - Table 1-2 lists the equipment and publications supplied.

b. EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED. - Table 1-3 lists the equipment and publications required, but not supplied, for operating the receiver.

TABLE 1-2. EQUIPMENT SUPPLIED

Quant. per Equip.	Nomenclature		Overall Dimensions			Volume	Weight
	Name	Designation	Height inches	Width inches	Depth inches	cu ft	lbs
1	Radio Receiver: Tubes semi-conductors, and crystals in place.	R-1134/WRR-3	8.75	17.25	16.75	1.5	69.5
1	Connector	AN3106A-16S-5S					
2	Connectors	AN3106A-10SL-4S					
1	Connectors	UG-88/U					
1	Connectors	UG-21B/U					
2	Clamps	AN3057-4					
1	Clamp	AN3057-8					
1	Test cable assembly	CX-7860/WRR-3					
1	Test prod	MX-1909/U					
2	Technical manuals	NAVSHIPS 94543					
1	Maintenance standard book	NAVSHIPS 94543.42					

TABLE 1-3. EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED

Qty per Equipment	Nomenclature		Required Use	Required Characteristics
	Name	Designation		
1 or 2 as required	Headset	49507 or equivalent	Operator monitoring	600 ohm impedance or greater
1 or 2 as required	AF Amplifier	[AM-215/U or equivalent]	Optional for remote use	600 ohm input impedance per device
1	FSK Converter	AN/URA-17 or equivalent	Teletype for frequency shift	
1	Antenna system	AN/SRA-17, AT-317/BRR or equivalent		50 ohm or high impedance

c. SHIPPING DATA. - All equipment and publications are in one shipping container 32-5/8 in. long, 19-5/8 in. wide and 11-1/4 in. deep (4.168 cu ft). The weight of the container and contents is 123.0 pounds.

d. ELECTRON TUBE AND SEMICONDUCTOR COMPLEMENT. - Table 1-4 lists the electron tubes and semiconductors used in the receiver.

TABLE 1-4. ELECTRON TUBE AND SEMICONDUCTOR COMPLEMENT

Unit	Number of Tubes and Semiconductors of Type Indicated											
	6AN5WA	6AU6WA	6C4WA	12AT7WA	5725/6AS6W	5749/6BA6W	5751	1N458	1N459	1N547	1N3004B	1N2042-2
Antenna RF Amplifier						1						
Main RF Amplifier						1						
Frequency Mixer					1							
RF Oscillator			1									
1st IF Amplifier					1							
2nd IF Amplifier		1	1		1	3			2			
AF Amplifier	1		2	1			1	2				
Power Supply										2	1	2
Total number of each Type	1	1	4	1	3	5	1	2	2	2	1	2

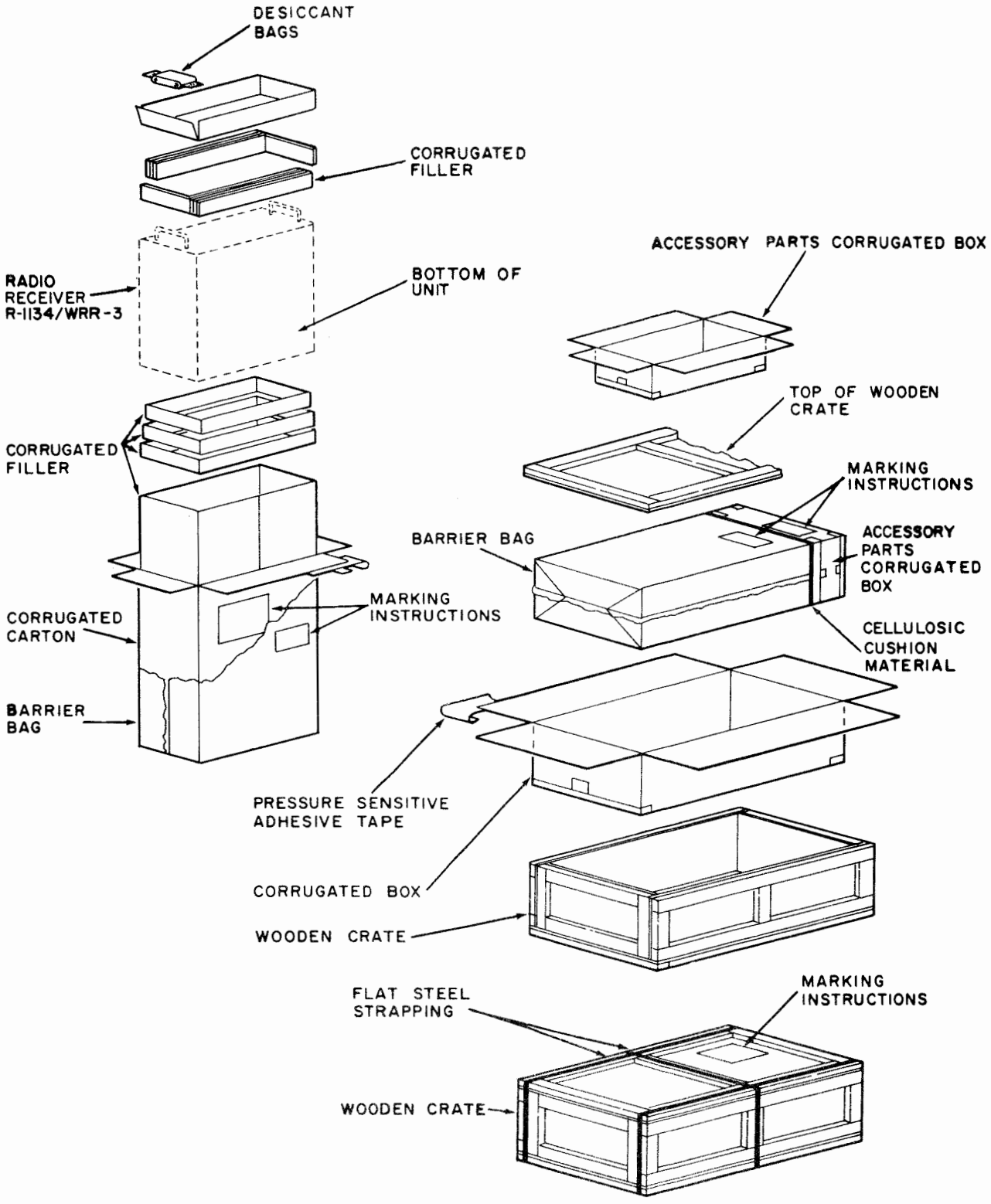


Figure 2-1. Packaging Diagram

SECTION 2

INSTALLATION

2-1. UNPACKING AND HANDLING.

Radio Receiving Set AN/WRR-3 is shipped with the chassis mounted in its cabinet and all electron tubes and semiconductors in place. To unpack the receiver, refer to figure 2-1. Check all items in the shipping container against table 1-2. Inspect each item and report any damage.

2-2. SITE LOCATION.

When selecting a site for the receiver, the following considerations should be made:

a. Enough space must be left at the rear of the chassis for cable connections.

b. All front panel controls and indicators must be easily accessible to the operator.

c. Enough clearance must be provided to the front for ease of maintenance when the chassis is extended and tilted.

2-3. POWER REQUIREMENTS AND DISTRIBUTION.

The receiver requires an AC power source supplying one of three voltages: 105, 115, or 125 volts, at a frequency of 50 to 60 CPS or 400 CPS. Determine the voltage and the frequency of the AC power source available at the receiver installation. Then connect the primary power to the receiver as set forth in paragraph 2-5a.

2-4. INSTALLATION REQUIREMENTS.

The receiver is intended for shipboard operation and is designed for table top installation without the use of shock mounts. The following paragraphs describe the procedures used to install the receiver in position and connect all signal and power cables. Procedures for cable fabrication are also included.

NOTE

The Receiving Set must be mounted so that the flange of the front panel will not scrape the mounting surface when chassis is removed from or inserted into cabinet. Allow a slight overhang of the front edge or use spacers at the bolting points to raise the set slightly above the table top. If a spacer is used it should extend the full width of the cabinet in order to provide a large bearing surface and prevent deforming of the cabinet bottom.

a. INSTALLATION PROCEDURES. - Install the receiver as follows:

(1) Remove the receiver from its cabinet (see figure 2-2) as follows: press down the lock bar release on each handle and pull down the lock bars into the horizontal position. Pull the receiver chassis straight out to the first lock position, supporting the receiver chassis while pulling it from the cabinet. Press in the chassis release button on each track and pull the receiver chassis past the second lock position; continue to pull out the receiver chassis until it is free of the tracks extended from the cabinet.

(2) Drill four 7/16 inch holes through the mounting surface according to figure 2-5. Allow at least three inches behind the cabinet for cable clearance.

(3) Secure the receiver cabinet to the mounting surface with bolts, lockwashers and flatwashers as shown in figure 2-5.

(4) Connect a grounding braid to one of the mounting bolts as directed by the particular installation plan.

NOTE

If the receiver is to be mounted with the back of the receiver cabinet close to a bulkhead, connect all cables to the receptacles on the rear of the cabinet before securing it to the mounting surface. Leave a minimum clearance of two inches around the receiver for ventilation.

(5) Return the receiver chassis to its cabinet.

b. CABLING. - Route the cables to their respective receptacles at the rear of the receiver to complete the installation (see figures 2-3 and 2-5). The required connectors and clamps are provided in a paper container packed with the receiver.

(1) ANTENNA CABLE. - The antenna cable requires a UG-21B/U plug and a length of RG-12/U coaxial cable, or equivalent (see figure 2-3).

(2) POWER CABLE. - The power cable requires an AN3106A-16S-5S plug, an AN3057-8 clamp and a length of MC0S-2 cable, or equivalent (see figure 2-3). Connect the power line to pins A and C. (Pin B is grounded inside the receiver and is normally not used.)

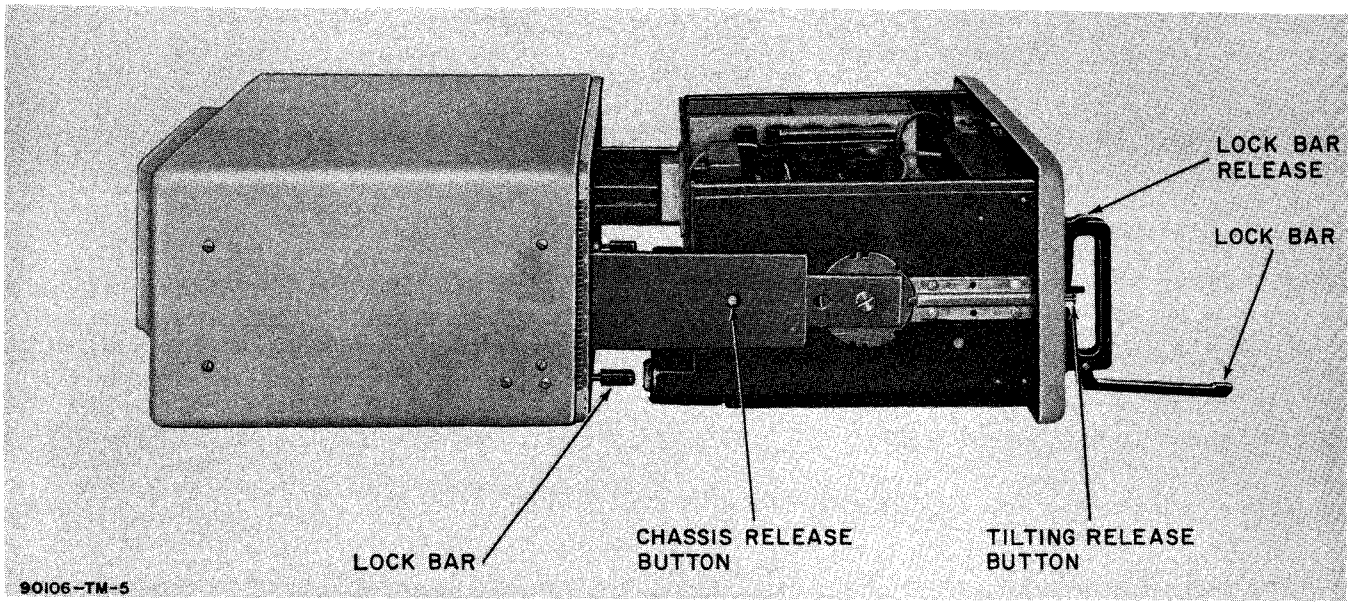


Figure 2-2. Removing Chassis from Cabinet

(3) AUDIO CABLE. - Each audio cable for the balanced audio output requires an AN3106A-10SL-4S plug, an AN3057-4 clamp and a length of RG-22B/U cable, or equivalent.

c. TEST PROD. - Test prod MX-1009/U is provided to allow access to test points where clearance is a problem. A special test lead may be fabricated from the test prod using any connectors desired. See figure 2-4 for fabrication procedure.

2-5. INSPECTION AND ADJUSTMENTS.

To inspect or perform adjustments on the receiver, pull the receiver chassis from its cabinet into the servicing position until it reaches the safety stops. Pull the latch buttons on the front panel and tilt the chassis up or down, 45 or 90 degrees.

CAUTION

The positioning mechanism must lock in place before releasing the handles.

a. POWER TRANSFORMER PRIMARY TAP SETTINGS. - The receiver is shipped with the power transformer primary connected for operation from a 115 VAC, 50-60 CPS source. If the voltage used in the installation differs from 115 VAC by more than five volts, the connections to the primary circuit of the power transformer must be changed to a position corresponding to the input voltage closest to that available at the installation (see figures 5-5 and 6-15). If the receiver is to be operated from a 400 CPS supply, unsolder and remove the lead connected to terminal 1 of T801 and connect it to terminal 6.

b. COMMON ANTENNA CONNECTION. - Radio Receiver AN/WRR-3 may be operated in combination with other receivers from a common antenna. However, the performance while so connected will be degraded.

c. OPERATING TEST IN SERVICE POSITION. - With the receiver chassis in servicing position, connect test cable assembly CX-7860/WRR-3 between receptacle at the back of the receiver chassis and receptacle on the inside back wall of the receiver cabinet. With the test cable connected as described, all circuits are connected and the receiver can be operated in this position for servicing.

WARNING

Connect the test cable to the chassis receptacle first, before connecting it to the cabinet receptacle.

d. PERFORMANCE CHECK. - After the installation is completed, check the performance of the receiver to insure the correctness of the installation and to determine that the receiver is in proper operating condition. Perform the operating procedures described in Section 3. Note any discrepancies in performance and report them to the proper authorities.

2-6. INTERFERENCE REDUCTION.

Filters have been incorporated within the receiver to keep inter-equipment interference at a minimum. At VLF and LF, power line wiring can induce appreciable noise into antenna cables. Make sure that antenna cables are installed as far as possible from any power cables. Mechanical vibration can produce

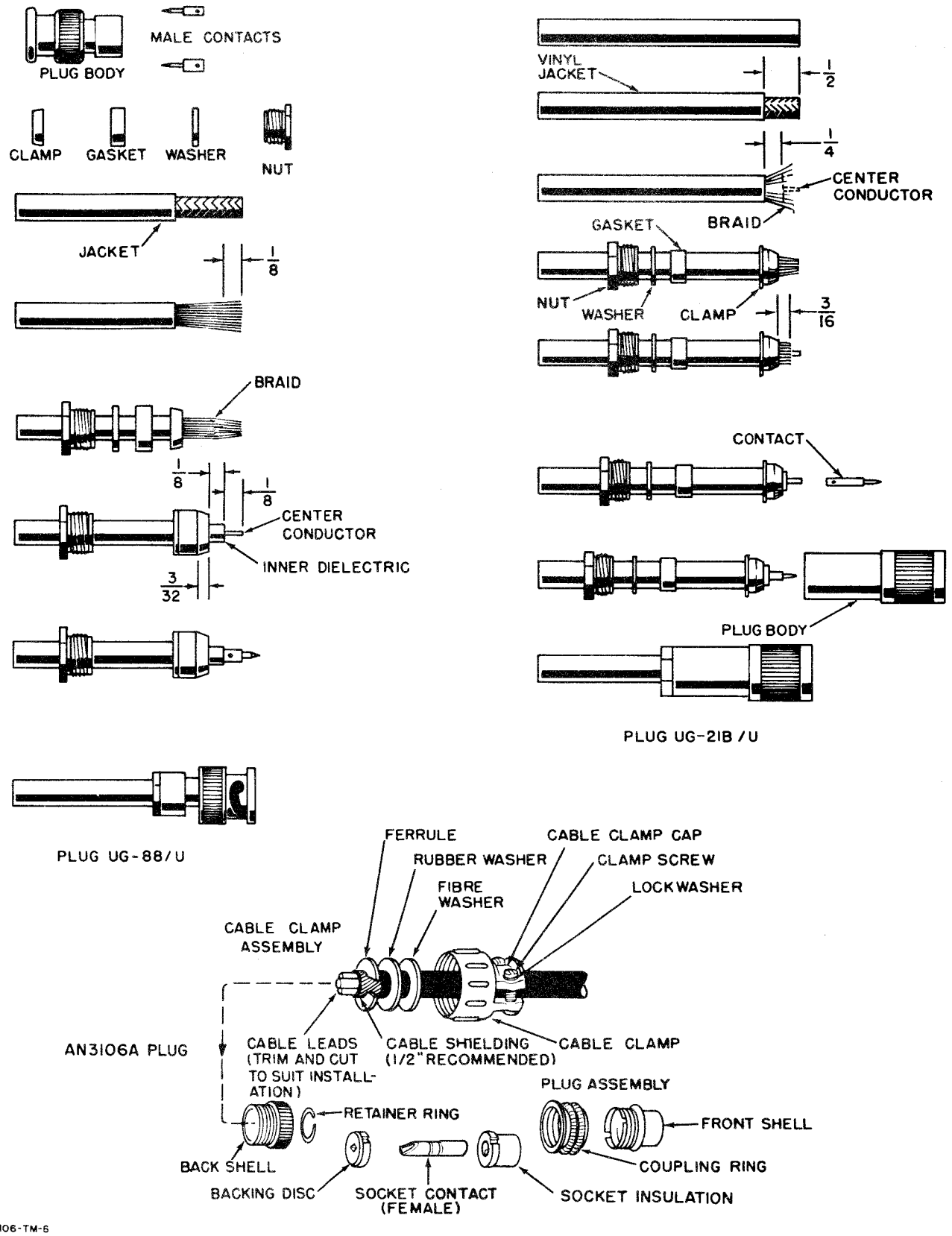


Figure 2-3. Cable Fabrication

electrical interference. All bolts, screws and other fasteners used in the installation of the receiver must be provided with lockwashers and fasteners must be tightly secured. Electrical interference can be caused by signals generated by electrical equipment such as radio or radar transmitters in close proximity to the receiver or its antenna. All ground connections between the receiver, antenna and other equipment must be clean and tight. Coaxial cable fittings must be carefully checked for proper grounding of coaxial cable shields.

2-7. PREPARATION FOR RESHIPMENT.

To prepare the receiver for reshipment, proceed as follows:

a. Place POWER switch to "OFF."

b. Remove all cables from the rear of the receiver.

c. Remove the receiver chassis from its cabinet (see figure 2-2).

d. Remove the nuts, bolts, washers and grounding braid securing the cabinet to the mounting surface.

e. Remove the cabinet and place it on a bench.

f. Fully extend the two tracks on the inside walls of the cabinet.

g. Hold the cabinet firmly on the bench and insert the receiver chassis into position so that the rails at the sides of the chassis engage the tracks extended from the cabinet.

h. Push the receiver chassis into the cabinet until the chassis release lever clicks into position. Continue to push the chassis all the way into the cabinet. Two lock positions must be passed.

i. Check that the hooks on the lower ends of the handles are engaged in the fork assemblies. Then raise the lock bars to secure the receiver in the cabinet. Push the lock bars against the handles until they snap into the locked position.

j. Place all items listed in table 1-2 in a corrugated carton (see figure 2-1). Use paper filler as necessary.

k. Seal and pack the corrugated carton in the reverse order shown in figure 2-1.

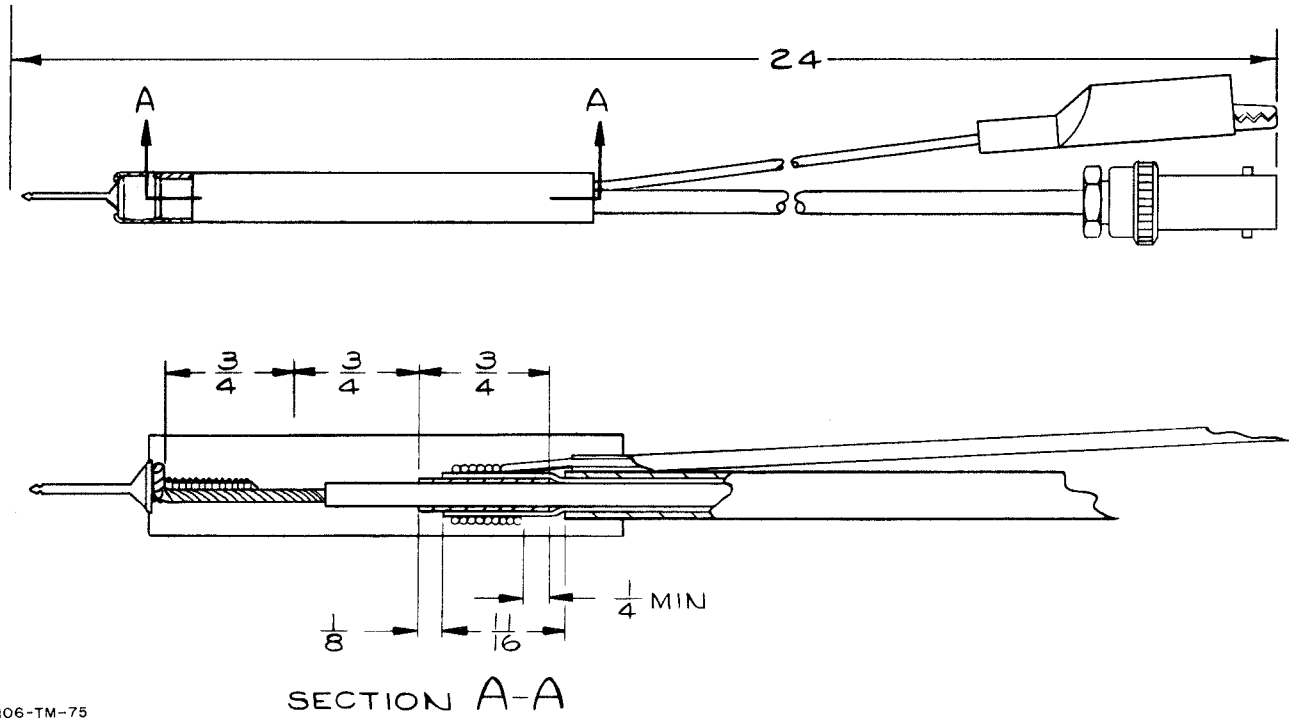
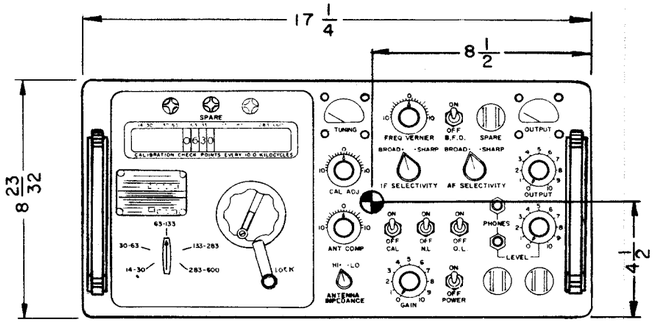
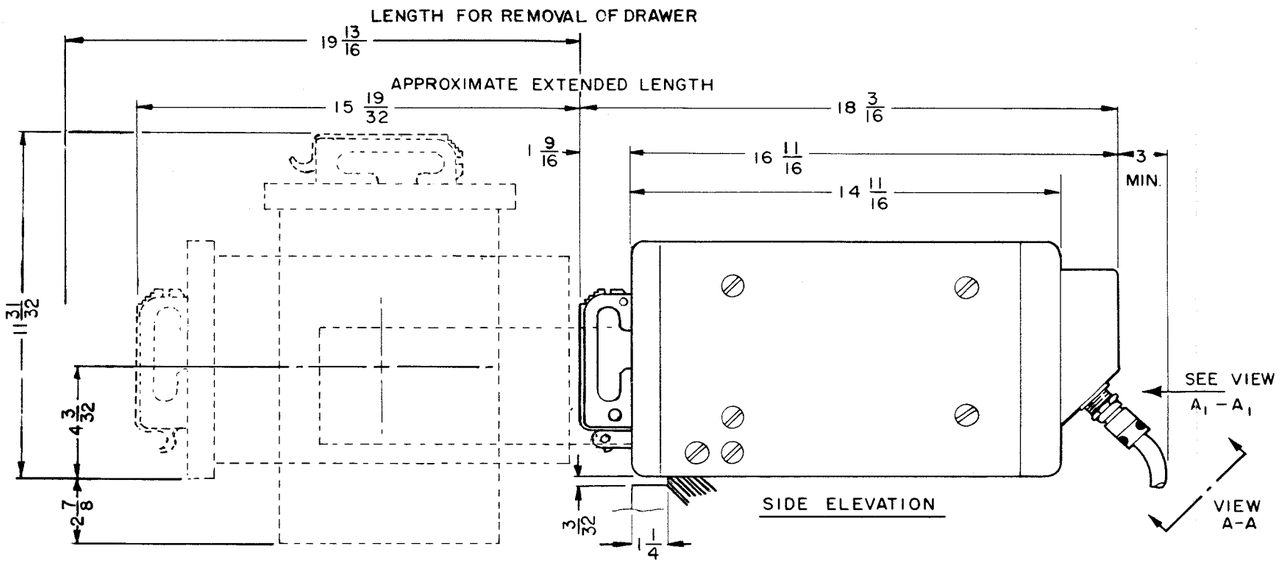


Figure 2-4. Special Test Lead Fabrication

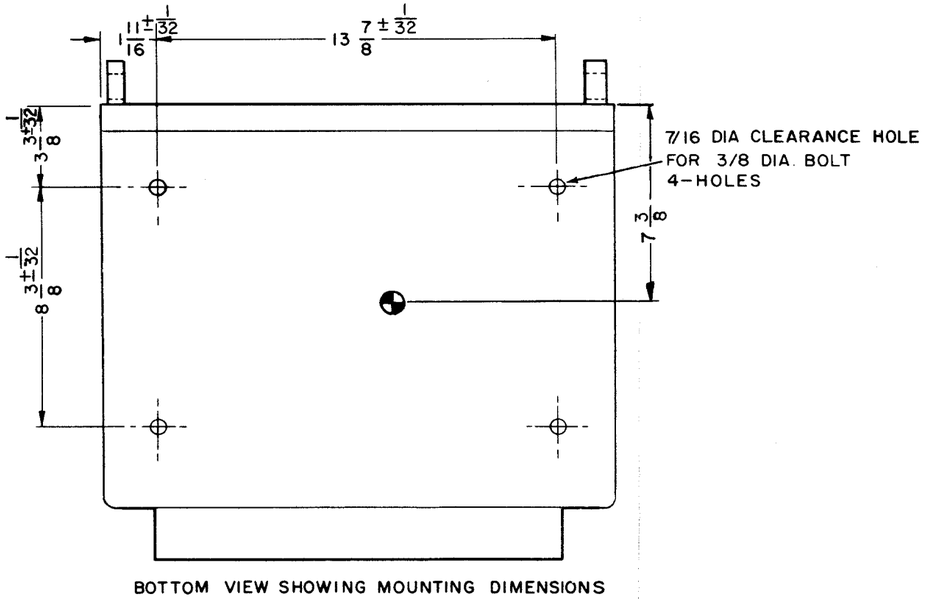


FRONT ELEVATION



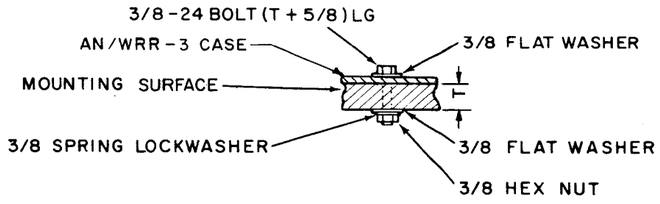
SIDE ELEVATION

RACK OR BASE MOUNTING ASSEMBLY



BOTTOM VIEW SHOWING MOUNTING DIMENSIONS

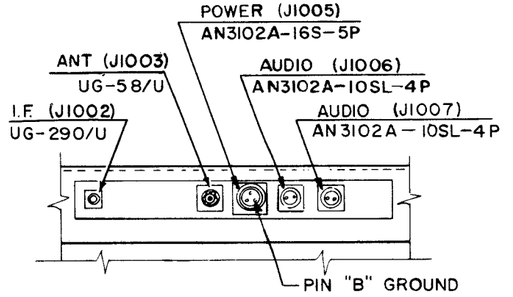
90106-TM-7



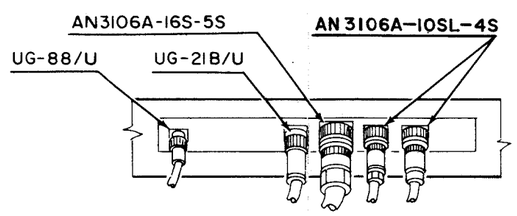
TYPICAL MOUNTING SECTION

NOTE.

Add spacer between cabinet and mounting surface, if necessary. See note in paragraph 2-4.



VIEW A-A (WITH MATING CONNECTORS REMOVED)



VIEW $A_1 - A_1$

Figure 2-5. Radio Receiver R1134/WRR-3, Outline Drawing

SECTION 3

OPERATOR'S SECTION

3-1. FUNCTIONAL OPERATION.

Radio Receiving Set AN/WRR-3 receives three types of signals, A1 (CW), A2 (MCW) and F1 (FSK) in the frequency range of 14 KC to 600 KC. The overall frequency range of the receiver is divided into five bands. Each band has its own set of digital drum type dials. The band in use is indicated directly by the exposed set of dials. The audio output may be monitored by headphones at the receiver installation or by a remote speaker.

The AN/WRR-3 operates as a dual conversion superheterodyne receiver on Bands I and IV and as a single conversion superheterodyne receiver on Bands II, III and V. For optimum sensitivity, selectivity and image rejection, two RF amplifiers are used. On Bands I and IV signals from the RF amplifiers pass through a frequency converter, the first IF filter, a second frequency converter, and three IF amplifier stages before being demodulated. On Bands II, III and V, signals from the RF amplifiers bypass the first IF filter and second frequency converter stage used in Bands I and IV. During A1 reception, CW signals are heterodyned with the output from a beat frequency oscillator (B.F.O.) to produce the audio output. During A2 reception, the signals are demodulated by an audio detector to produce the audio output. Interference from signals near the desired signal frequencies is minimized by the use of an intermediate frequency filter and an audio frequency filter. Noise is reduced by a noise peak limiter for improved intelligibility of received signals. A crystal-controlled calibration circuit provides accurate calibration at each 10 KC point throughout the tuning range.

3-2. OPERATING PROCEDURES.

a. DESCRIPTION OF CONTROLS. - All operating controls, meters and indicators necessary for the operation of the receiver are on the front panel (see figure 3-1). The controls, meters and indicators are listed in their functions in table 3-1.

b. SEQUENCE OF OPERATION. - The sequence of operation of the receiver is as follows: Preset the controls, calibrate at nearest 10 KC calibration point; select A1, A2, or F1 operation; regulate the output; and return all controls to their preset positions when radio communication is terminated.

(1) CONTROL PRESET POSITIONS. - Before operating the receiver, preset the controls as follows:

(a) CAL TO "OFF."

(b) N.L. to "OFF."

(c) O.L. to "ON."

(d) CAL ADJ to "0."

(e) ANT. COMP to "0."

(f) FREQ VERNIER to "6."

(g) I.F. SELECTIVITY to "BROAD."

(h) A.F. SELECTIVITY to "BROAD."

(i) GAIN to "6."

(j) ANTENNA IMPEDANCE to "HI" or "LO," depending on the type of antenna in use.

(k) OUTPUT to "10."

(l) LEVEL to "10."

(m) B.F.O. to "OFF."

(2) CALIBRATION. - Calibrate the receiver as follows:

(a) Place the POWER switch to "ON," and allow a 15 minute warmup period.

(b) Plug headphones similar to Navy type 49507 into one of the PHONES jacks.

(c) Select the frequency band containing the desired receiver operating frequency with the Band Selector switch.

(d) Tune the receiver to the 10 KC calibration point nearest the desired frequency as indicated on the counter dial.

(e) Place the CAL switch to "ON."

(f) Adjust the CAL ADJ control for a zero beat in the headset and for a zero beat indication on the OUTPUT meter.

(g) Place the CAL switch to "OFF" and set the Tuning Control to the desired frequency.

(3) A2 (MCW) OPERATION. - Operate the receiver for A2 reception as follows:

(a) Perform the calibration procedures given in subparagraph (2) above.

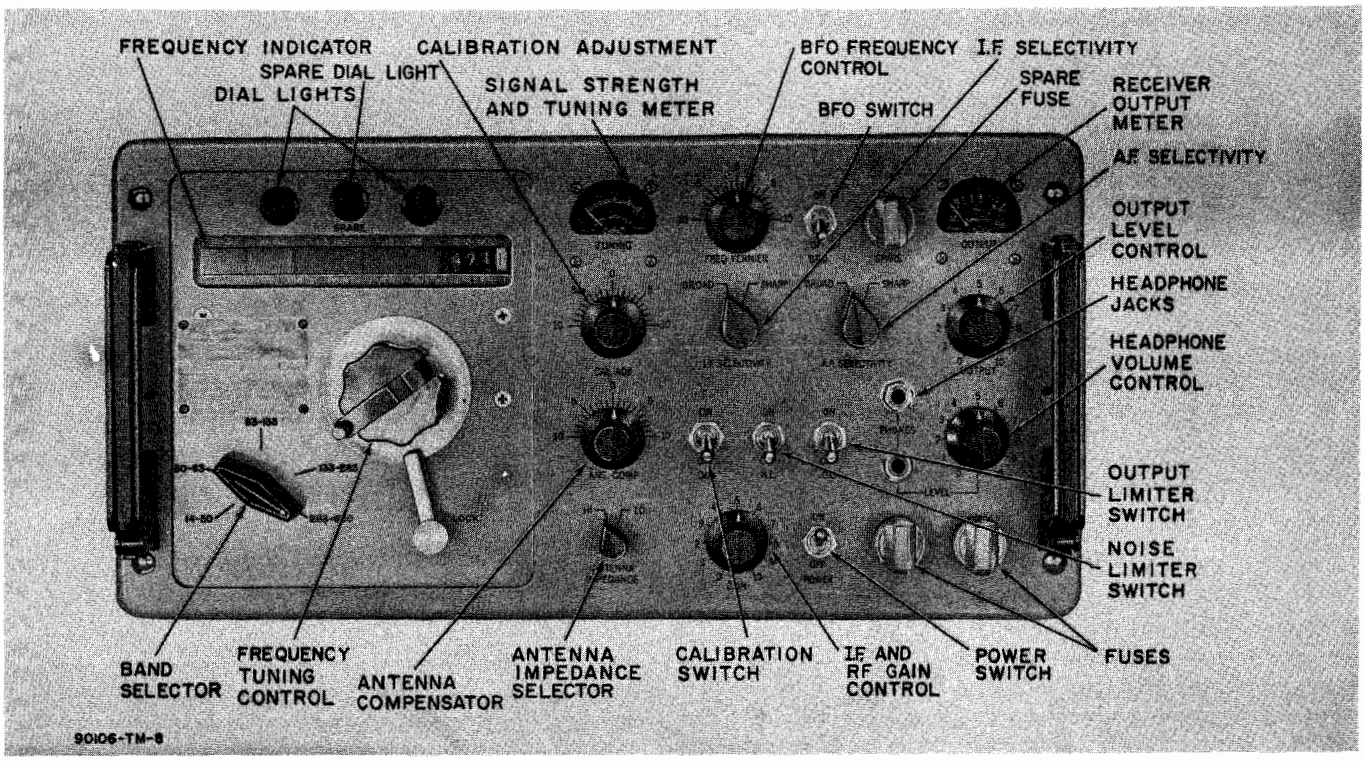


Figure 3-1. Operating Controls and Indicators

(b) Adjust the Tuning Control and ANT. COMP control for a maximum indication on the TUNING meter.

(c) Adjust the GAIN control for a barely perceptible indication (approximately one division) on the TUNING meter.

(d) Adjust the OUTPUT control for approximately a +8 DB indication on the OUTPUT meter.

(e) Adjust the LEVEL control for a comfortable volume in the headset.

(4) A1 (CW) OPERATION. - Operate the receiver for A1 reception as follows:

(a) Perform the calibration procedures given in subparagraph (2) above.

(b) Place the B.F.O. switch to "ON."

(c) Adjust the Tuning Control and ANT. COMP control for a maximum indication on the TUNING meter.

(d) Adjust the GAIN control for a barely perceptible indication (approximately one division) on the TUNING meter.

(e) Set A.F. SELECTIVITY switch to "SHARP."

(f) Adjust the FREQ VERNIER control for the most distinct tone in the headset, then return the A.F. SELECTIVITY switch to "BROAD."

(g) Adjust the OUTPUT control for a +8 DB indication on the OUTPUT meter.

(h) Adjust the LEVEL control for a comfortable volume in the headset.

(5) F1 (FSK) OPERATION. - Operate the receiver for F1 reception as follows:

(a) Perform the calibration procedures given in subparagraph (2) above.

(b) Adjust the ANT. COMP control for a maximum indication on the TUNING meter.

(c) When Frequency Shift Converter CV-89A/URA-8A (or similar audio input type) is used with the AN/WRR-3, set the B.F.O. switch to "ON" and adjust the FREQ VERNIER and OUTPUT controls as required.

(d) When Facsimile Frequency Shift Converter CV-172/U (or similar audio input type) is used with the AN/WRR-3, set the B.F.O. switch to "ON" and adjust the FREQ VERNIER and OUTPUT controls as required.

(6) SEVERE RECEIVING CONDITIONS. - Under severe receiving conditions, use the additional procedures below:

(a) If an adjacent signal interferes during A2 reception, place the A.F. SELECTIVITY switch to "SHARP" and adjust the Tuning Control for the most distinct tone in the headset.

(b) If an adjacent signal interferes during A1 reception, place the I.F. SELECTIVITY switch to "SHARP" and adjust the Tuning Control for the most

TABLE 3-1. RADIO RECEIVING SET AN/WRR-3, OPERATING CONTROLS AND INDICATORS

Control or Indicator	Ref. Des.	Function
Band Selector	S101, S201, S501, S502, S401, S301	Selects one of five tuning bands of the receiver through mechanical linkage and changes the receiver to single or double conversion operation as required.
Tuning Control	C1103	Tunes receiver to desired frequency within a selected band.
CAL ADJ	C1102	Adjusts frequency of local oscillator to correct the dial frequency at each 10 KC calibration point.
ANT. COMP	C103	Fine tunes antenna circuit.
ANTENNA IMPEDANCE	S1103	Selects either high impedance or low impedance for the antenna in use.
FREQ VERNIER	C1101	Adjusts output frequency of beat frequency oscillator to produce a tone for A1 signal reception.
I.F. SELECTIVITY	S601	"BROAD" position: normal setting for reception of A1 and A2 signals.
		"SHARP" position: narrows IF bandwidth of receiver for use in A1 and F1 signal reception.
B.F.O.	S1102	In "ON" position provides for reception of A1 signals. (Inoperative when CAL switch is in the "ON" position.)
A.F. SELECTIVITY	S1106	"BROAD" position: normal for reception of A1 and A2 signals.
		"SHARP" position: reduces audio response of receiver to emphasize a 1000 CPS tone at the receiver output to reduce the effects of interference.
CAL	S1104	In the "ON" position provides frequency check points at each 10 KC interval throughout the tuning range of the receiver.
N.L. (noise limiter)	S1105	In the "ON" position adds noise limiter to reduce static noise interference. (Inoperative when BPO switch is in the "ON" position.)
O.L. (output limiter)	S1107	In "ON" position adds output limiter to limit receiver audio output.
GAIN	R1101	Controls gain of RF and IF amplifiers.
POWER	S1108	In "ON" position, primary power is applied to receiver.
OUTPUT	R1102	Acts as a conventional volume control when the O.L. switch is in the "OFF" position. Adjusts the limiting levels of an audio limiter when the O.L. switch is in the "ON" position.
LEVEL	R1105	Controls volume in headphones.
TUNING meter	M1101	Indicates signal strength and is used to indicate exact tuning of receiver.
OUTPUT meter	M1102	Indicates output level of receiver with 0 DB reference level of 1 milliwatt.

distinct tone in the headset. If the signal continues to interfere, place the A.F. SELECTIVITY switch to "SHARP" and adjust the FREQ VERNIER control for the most distinct tone.

(c) If there is considerable static noise during A2 reception, place the N.L. switch to "ON" and set the GAIN control and the OUTPUT control for the best intelligibility.

(d) If the signal fluctuates greatly in strength, place the O.L. switch to "ON" and adjust the GAIN control for a maximum reading of full scale on the TUNING meter, then adjust the OUTPUT control for a +8 DB indication on the OUTPUT meter.

(7) SECURING THE RECEIVER. - After use, secure the receiver by returning the POWER switch to "OFF."

NOTE

In an emergency, the receiver can be immediately turned off by placing the POWER switch to "OFF."

3-3. SUMMARY OF OPERATING PROCEDURES.

The operating procedures of the receiver are summarized as follows:

a. Place POWER switch to "ON."

b. Calibrate the receiver at the 10 KC calibration point nearest the frequency at which the receiver is to be operated (refer to paragraph 3-2b(2)).

c. For A1 or F1 reception, place the B.F.O. switch to "ON," and for A2 reception, place the B.F.O. switch to "OFF."

d. Maintain an output level of + 8 DB as indicated on the OUTPUT meter, using the OUTPUT control.

3-4. EMERGENCY OPERATION.

a. JAMMING. - Should jamming occur, immediately begin the procedures given in paragraph 3-2b(6).

b. CIRCUIT FAILURE. - Should reception fail while operating on Band I or IV, switch to Band II, III, or V and check if signals can be received on these bands. If so, locate a frequency that is free for use and try to establish communications on this frequency. If the receiver will not operate on any band, secure the receiver and report its condition and symptoms to the supervisor.

3-5. OPERATOR'S MAINTENANCE.

a. ROUTINE CHECK. - Table 3-2 lists the routine checks to be performed by the operator to reduce the down time of the receiver. Perform these checks each time the receiver is placed in operation. If the receiver is in continuous use, perform these checks daily. If trouble or substandard performance is revealed by the routine check procedures, the receiver requires maintenance by an authorized technician. Report the condition immediately to the supervisor.

b. EMERGENCY MAINTENANCE. - Emergency maintenance procedures consist of replacing defective fuses. Although these procedures are normally performed by a technician, an operator may replace these parts during an emergency condition. Table 3-2 lists some of the visual checks that can be made to determine whether any of the parts are defective. The following paragraph outlines the procedure for replacing a defective fuse.

(1) FUSE REPLACEMENT. - To replace a defective fuse, press in fuse cap and twist it a quarter turn counterclockwise and pull out. Replace the defective fuse with the SPARE fuse located on the front panel (see figure 3-1).

CAUTION

Never replace a fuse with one of a higher rating unless continual operation of the equipment is more important than probable damage. If a fuse burns out immediately after replacement, do not insert a second fuse until the fault has been corrected.

TABLE 3-2. ROUTINE CHECK CHART

What to Check	How to Check	Remarks
Fuses	Apply power to receiver. Fuse cap lights if fuse is blown. NOTE: If both fuses are blown, neither cap will light.	If fuse cap lights, replace with spare fuse. If fuse caps do not light and equipment is inoperative, check both fuses and primary power.
Dial-lamp assemblies	Dial lamps should light when power is applied.	If dial lamp assembly does not light, replace with spare dial lamp assembly.
Receiver Operation	Plug headphones into either PHONES jack. Tune receiver to a signal on Band I. An indication should be seen on the OUTPUT and TUNING meters and a received signal should be heard in the headphones; repeat for Bands II, III, IV and V.	If there is no meter indications and/or a signal is not heard in the headphones, report condition to supervisor.
Frequency Calibration	Set Band Selector to Band IV (133-283). Set CAL switch to "ON." Rotate Tuning Control through Band IV. A beat note is heard at each 10 KC point and a zero beat is obtained at any 10 KC point by adjusting CAL ADJ control.	If either zero beat or beat note cannot be obtained report condition to supervisor.

SECTION 4

PRINCIPLES OF OPERATION

4-1. GENERAL.

This section is divided into two main parts: an overall functional description that essentially shows block diagram relationship of the assemblies and a circuit description that treats circuitry within each of the assemblies. In the overall description the signal is traced from antenna input to audio output. At points where signal path depends on switch positions or other conditions, first one path is described and then the rest. Discussion of the calibration condition and power requirements is reserved until last. Make frequent use of figure 4-1 in connection with the overall description. In the detail circuit description, the text is supplemented by simplified schematics as well as the overall schematic diagram.

The AN/WRR-3 is a dual conversion superheterodyne receiver on Bands I and IV and a single conversion superheterodyne receiver on Bands II, III and V. On Bands I and IV, signals pass through two RF amplifiers, a frequency converter, the first IF amplifier, a second frequency converter, and three IF amplifier stages before being demodulated. On Bands II, III and V, signals from the mixer bypass the first IF filter and second frequency converter stage. During A1 reception, CW signals are heterodyned with the output from a B.F.O. to produce the audio output. During A2 reception, the signals are demodulated by an audio detector to produce the audio output. Interference from signals near the desired frequency is minimized by using an intermediate-frequency filter and an audio-frequency filter. Noise is reduced by a noise peak limiter, and a crystal-controlled calibration circuit provides accurate calibration at each 10 KC point throughout the tuning range.

4-2. OVERALL FUNCTIONAL DESCRIPTION.

Relay K1001 switches between two taps on the antenna input transformer to provide a means to approximate an impedance match to various types of receiving antennas. When the ANTENNA IMPEDANCE switch is in the "HI" position, the coil circuit of K1001 closes to energize the relay. When energized, K1001 connects the antenna to V101 through a high-impedance tap on the antenna input transformer and opens the low impedance circuit. When the ANTENNA IMPEDANCE switch is in the "LO" position, the signal passes through lowpass filter FL1001, thermal circuit breaker CB1001, and is connected to V101 through a low-impedance tap on the antenna input transformer. Signals from the antenna are amplified by two RF amplifiers, V101 and V201 (connected in cascade), before being heterodyned in V301 to produce the intermediate frequency. On Bands I (14-30 KC) and IV (133-283 KC), S501 (mechanically ganged to the Band Selector) connects the output from V301 to bandpass filter FL501. On Bands II (30-63 KC), III (63-133 KC) and V (283-600 KC), local oscillator V401 operates 200 KC above the signal frequency and the output from V301 is connected directly to bandpass filter FL601 through S501, S502 and T501.

On Bands I and IV, local oscillator V401 operates at 60 KC above the signal frequency. Bandpass filter FL501 passes only the 60 KC difference frequency from V301. The 60 KC output from FL501 is applied to converter V501, a combination mixer and oscillator tube. The oscillator section of V501 is a crystal controlled oscillator operating at 140 KC. Switches S502 and S501 connect B voltage to the plate and screen grid of V501 on Bands I and IV. The output from V501 is connected to IF SELECTIVITY filter FL601 through S502, T501, and S601.

With IF SELECTIVITY switch in the "SHARP" position, the output from V301 or V501 is connected to V601 through the narrow response section of FL601 having a one KC bandwidth centered about 200 KC. With the IF SELECTIVITY switch in the "BROAD" position, the output from V301 or V501 is connected to V601 through the wide response section of FL601 having a three KC bandwidth centered about 200 KC. The 200 KC output from FL601 is then amplified by the three IF amplifiers, V601, V602 and V603. Further skirt selectivity is provided by tuned interstage networks Z601, Z602, and Z603. The output from V602 is connected to IF cathode follower V605. The output of V603 is connected to B.F.O. mixer V604 and MCW detector CR601.

During the reception of A2 signals, the output from B.F.O. mixer V604 is disconnected and beat frequency oscillator V606 is disabled. When N.L. (noise limiter) switch S1105 is in the "ON" position, the noise limiter diode CR602 is connected across the output from CR601. When N.L. switch S1105 is in the "OFF" position, the output from CR601 is connected to first audio amplifier V701. The output from CR601 is amplified by V701 before being applied to audio bandpass filter FL701. When AF SELECTIVITY switch S1106 is in the "SHARP" position, the audio output from V701 passes through audio bandpass filter FL701, which passes only those frequencies between 825 CPS and 1175 CPS. When the AF SELECTIVITY switch is in the "BROAD" position, the output from V701 is connected directly to the second audio amplifier V702A. With O.L. (output limiter) switch S1107 in the "ON" position, a bias voltage is applied to

output limiter diodes CR702 and CR703 which in turn limit the positive and negative peak amplitude of the output from V702A. In this case the output of the receiver is controlled by the action of CR702 and CR703. When O.L. (output limiter) switch S1107 is in the "OFF" position, the bias voltage on CR702 and CR703 is changed so that the diodes have no effect upon the output from V702A. The output from CR702 and CR703 is applied to V702B to drive the output amplifier V703. Output transformer T701 couples the output from V703 to the two PHONES jacks on the front of the receiver and through lowpass filter FL1004 to the balanced audio lines at the rear of the receiver.

During the reception of A1 and F1 signals, B.F.O. switch S1102 is in the "ON" position. B is connected to the plate and screen grid of beat frequency oscillator V606 through S1102A and the output from B.F.O. mixer V604 is connected directly to first audio amplifier V701. The output from AM detector CR601 is now disconnected from V701 by S1102B.

During the calibration of the receiver, CAL switch S1104 is in the "ON" position. B is connected to crystal oscillator V704 and multivibrator V705 through cathode S1104A, and removed from first RF amplifier V101 and beat frequency oscillator V606. Crystal oscillator V704 synchronizes multivibrator V705 at a stable fundamental frequency output of 10 KC. The output from V705 is applied to V201 which amplifies the harmonic frequency contained in the output from V705 that corresponds to the frequency at which the receiver is tuned. Local oscillator V401, mixer V301 and converter V501 function the same as during normal reception. The fourth harmonic from V704 (200 KC) is heterodyned with the 200 KC output from V601. To produce a zero beat, which indicates the exact tuning of the receiver to a 10 KC calibration point, the frequency of operation of V401 is varied with CAL ADJ control. The audio beat frequency is detected and amplified as during reception of signals.

The power supply provides a regulated filament of 5.6 VAC and a regulated plate voltage of 91 VDC to V401. To all other tubes it supplies 6.3 VAC for the filaments and 140 VDC for the plates and screen grids.

4-3. CIRCUIT DESCRIPTION.

The circuits in Radio Receiving Set AN/WRR-3 are described for operation on Band V. The operation of the receiver on Bands I through IV is similar except where specified otherwise.

a. ANTENNA AMPLIFIER CIRCUIT (see figure 4-2). - The antenna input is coupled to first RF amplifier V101 by K1001 to facilitate matching either a low or high impedance type of antenna. With ANTENNA IMPEDANCE switch S1103 in the "HI" position, relay K1001 is energized; thus connecting the antenna, through capacitor C102 and resistor R107, to the tap on the secondary winding of T105. The secondary winding of T105 then acts as an autotransformer to couple the input to the control grid of V101.

With ANTENNA IMPEDANCE switch S1103 in the "LO" position, relay K1001 is de-energized; putting the antenna in series with lowpass filter FL1001 and thermal circuit breaker CB1001 before connecting to the primary of T105. FL1001 attenuates signals above 800 KC and CB1001 opens when RF currents over approximately one ampere are induced by nearby transmitters. Relay K1001 now also puts C1002 in series with C102 and R107 to the tap of T105. C1002 thus provides a circuit capacitance to T105 that is roughly equivalent to the circuit capacitance presented by the high impedance condition. With circuit capacitance approximately equal for either high impedance or low impedance conditions, switching from one to the other will not appreciably affect circuit tuning.

The secondary winding of T105 is tuned to the desired signal frequency by trimmer capacitor C103 and tuning capacitor C1103D. When high-level input signals produce an RMS voltage of approximately 65 volts at V101 grid, the neon tube VR101 will conduct and prevent excessive signal voltages from damaging tube V101. The gain of preamplifier V101 is controlled by cathode bias resistors R108 and GAIN control R1101A. The GAIN control R1101A varies the bias voltage; however, a minimum protective bias is provided by R108.

Capacitor C105 and R109 decouple the RF output of V101 from the 140 V line. RF transformer T205 couples the output from V101 to RF amplifier V201. Capacitor C204 and the primary winding of T205 form a tuned circuit which is resonant at a frequency below the lower limit of the tuning band. This increases the plate load impedance for V101 at the low frequency end of the tuning band in order to provide more uniform gain across the band. Plate and screen grid voltage for V101 is supplied through contacts on the CAL switch so that this stage is disabled when the crystal calibrator is in use.

b. RF AMPLIFIER CIRCUIT (see figure 4-3). - The secondary winding of T205 is tuned to the incoming signal frequency by trimmer capacitor C210, temperature compensating capacitor C209 and tuning capacitor C1103C. Capacitor C203 completes the resonant circuit to ground. R206 is an isolating resistor to return the grid to the biasing voltage divider. A positive control grid voltage is taken from the junction of R204 and R205. Cathode bias voltage is taken from the junction of R202 and R204. Resistors R204, R202, R205 and GAIN control R1101A form a DC voltage divider network connected between the 140 V line and ground. The gain of V201 is controlled by varying the cathode bias voltage and the control grid voltage with GAIN control R1101A. This arrangement provides a linear relationship between the position of the GAIN control and the gain of V201. Capacitor C201 and R203 decouple the RF output of V201 from the 140 V line. RF transformer T305 couples the output from V201 to mixer V301. The distributed capacitance of the primary winding of T305 forms a parallel tuned circuit resonant at a frequency above the upper limit of the tuning band. Therefore the plate

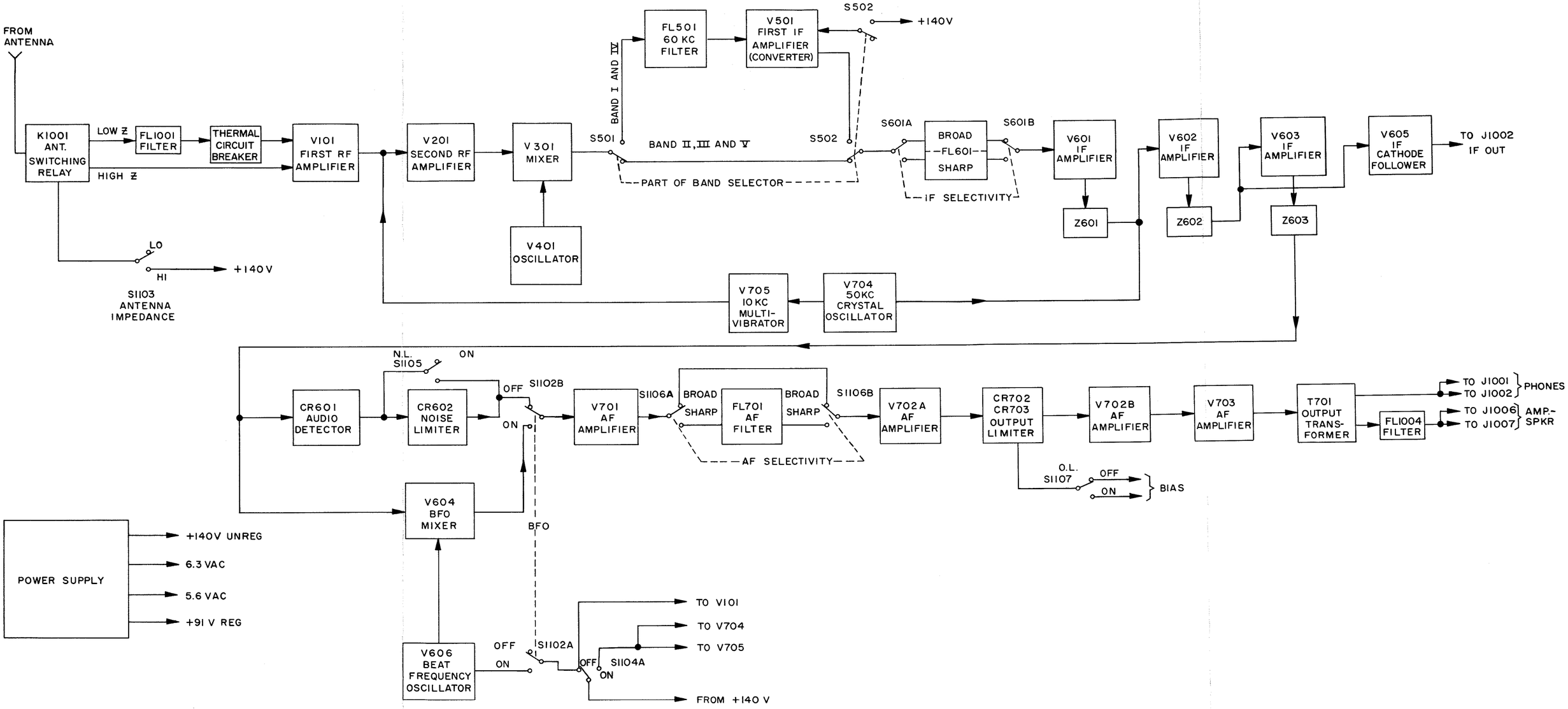


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Figure 4-1. Radio Receiver R-1134/WRR-3, Functional Block Diagram

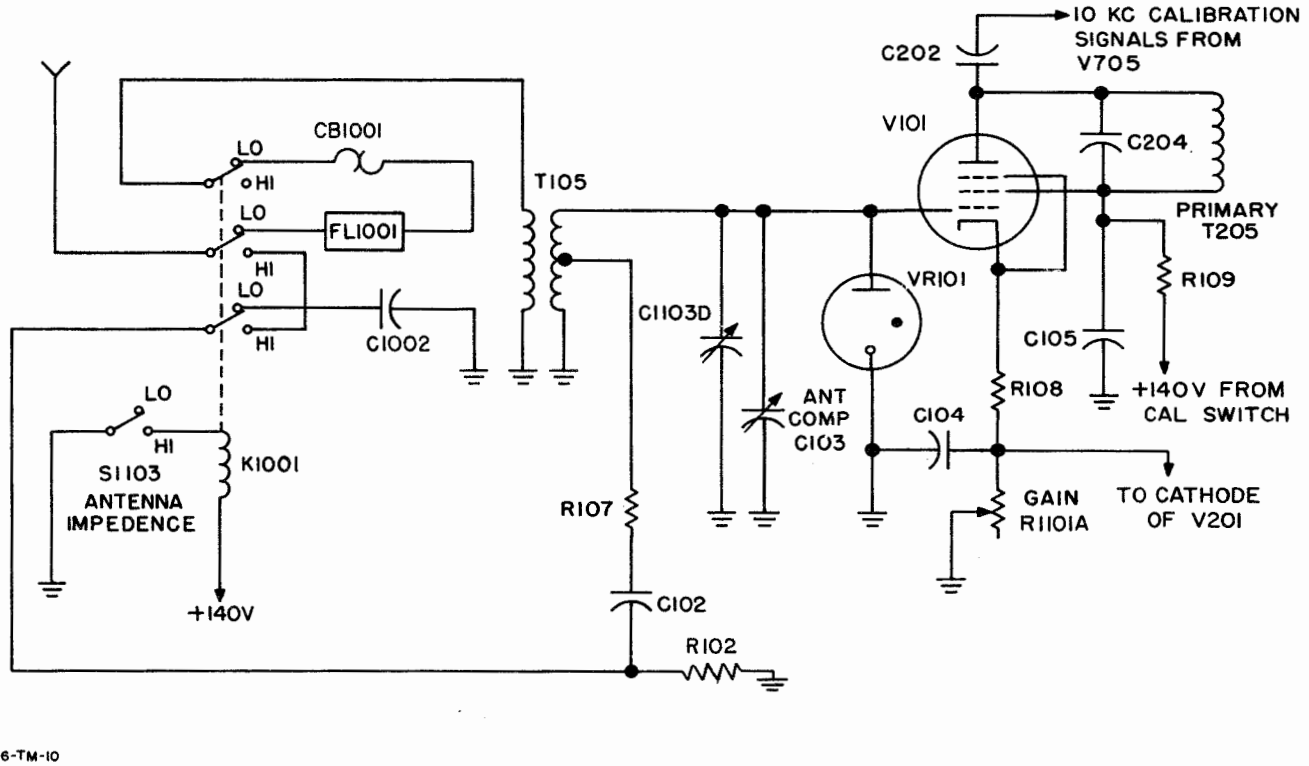


Figure 4-2. Antenna Amplifier Circuit, Simplified Schematic Diagram

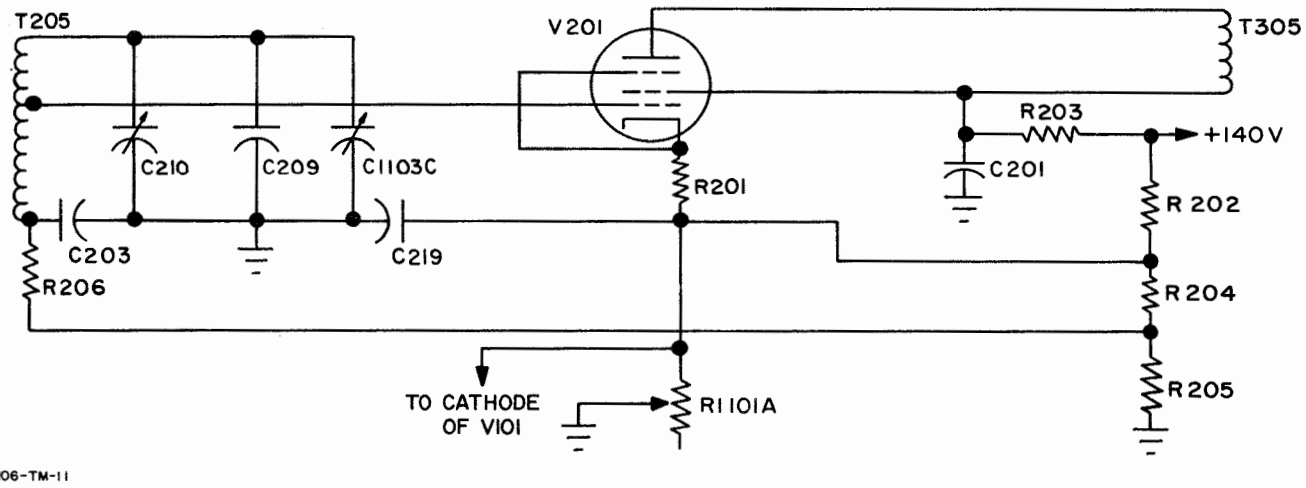


Figure 4-3. RF Amplifier Circuit, Simplified Schematic Diagram

load impedance and gain of V201 increases the frequency. Thus the overall gain of V101 and V201 together is nearly constant throughout the tuning band.

c. MIXER AND OSCILLATOR CIRCUIT (see figure 4-4). - The secondary winding of T305 is tuned to the output frequency of V201 by trimmer capacitor C312, temperature compensating capacitor C311 and tuning capacitor C1103B. Part of the RF voltage across the secondary winding of T305 is tapped directly to the control grid of V301. Cathode bias is provided by R301 and R302. Capacitor C302 and R303 decouple the RF voltage on the screen grid of V301 from the 140 V line. Resistor R301 provides a DC return path from the suppressor grid and is part of the output load for oscillator V401.

Oscillator V401 is a modified Hartley circuit, operating 60 KC above the incoming signal frequency on Bands I and IV and 200 KC above the incoming

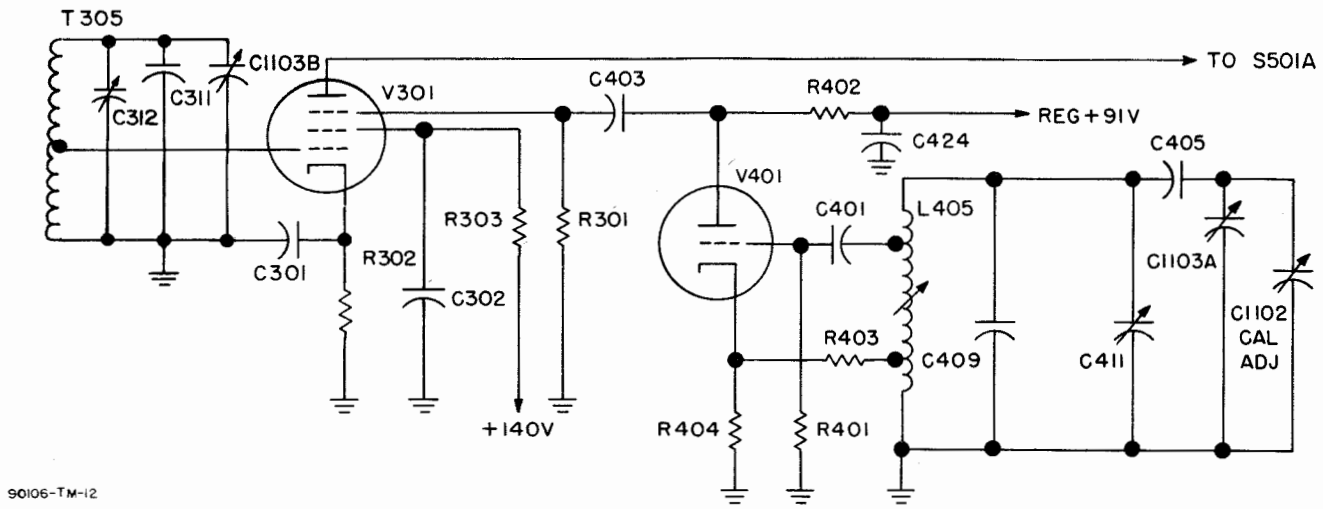


Figure 4-4. Mixer and Oscillator Circuit, Simplified Schematic Diagram

frequency on Bands II, III and V. Grid bias is provided by grid leak resistor R401. V401 is a Hartley oscillator circuit in which oscillations are supported by positive feedback through the plate load R402 and capacitor C424 to the cathode through R404. The tuned circuit consists of L405, C409, C411, and padder capacitor C405 in series with the combination of tuning capacitor C1103A and CAL ADJ capacitor C1102. During receiver calibration, CAL ADJ trimmer capacitor C1102 is adjusted to tune the oscillator to an exact 60 KC or 200 KC difference frequency above a calibration frequency injected into V201 from the calibration circuit. Capacitor C409 provides temperature compensation and fixed circuit capacitance. Trimmer capacitor C411 is adjusted for exact alignment. Resistor R403 stabilizes the operation of V401. Capacitor C403 couples the RF voltage from V401 to the suppressor grid of V301. Capacitor C405 acts to track the oscillator circuit with the RF circuits throughout the tuned frequency range.

d. FIRST IF AMPLIFIER (CONVERTER) CIRCUIT (see figure 4-5). - Converter V501 is the first IF stage on Bands I and IV. Switches S501 and S502, ganged with the Band Selector, disable V501 on Bands II, III and V. On Bands II, III and V the DC path from the plate of V301 to the 140 V supply is through S501A, S502A, the primary winding of T501, and R506. Resistor R506 and C511 decouple RF voltage from the 140 V line. RF transformer T501 couples the output from V301 to I.F. SELECTIVITY switch S601A. Capacitor C510, the distributed capacitance of the coaxial cable connecting V301 to T501, and the inductance of T501 form a tuned circuit which is resonant at 200 KC.

During operation on Bands I and IV, 140 volts is connected to the plate of V301 through R501, FL501, and S501A. The output from V301 is connected to FL501 through S501. Capacitor C502 and R501 decouple RF voltage from the 140 V line. The plate and screen grid of V501 are connected to the 140 V line through S502. Filter FL501 passes only the 60 KC component of the output from V301 to the suppressor grid of V501. Capacitors C501 and C503 are adjusted for the optimum input and output capacitance of FL501 respectively. The screen grid, control grid and cathode of V501 are connected as a triode Pierce oscillator in which the screen grid acts as the oscillator anode. Crystal Y501 maintains the oscillator frequency at 140 KC. Capacitors C504 and C506 maintain the proper phase relationship between the anode, grid and cathode of V501 to sustain oscillation. Grid bias for the oscillator is provided by R503 and C504. Cathode bias is provided by R504. Capacitor C506 and R505 decouple the RF voltage at the screen grid (oscillator plate) from the 140 V line. Capacitor C511 and R506 decouple the RF output at the plate load of V501 from the 140 V line. The 60 KC output from FL501 heterodynes with the 140 KC output of the oscillator section of V501 to produce the sum frequency of 200 KC. The output from V501 is connected to T501 through S502. Capacitor C509, trimmer capacitor C508, capacitor C510, and the inductance of T501 form a tuned circuit which is resonant at 200 KC.

e. IF AMPLIFIER CIRCUIT (see figures 4-6 and 4-7). - I.F. SELECTIVITY switch S601A connects the output from T501 to IF filter FL601 and S601B connects the output from FL601 to IF amplifier V601 (see figure 4-6). Filter FL601 is a two-section,

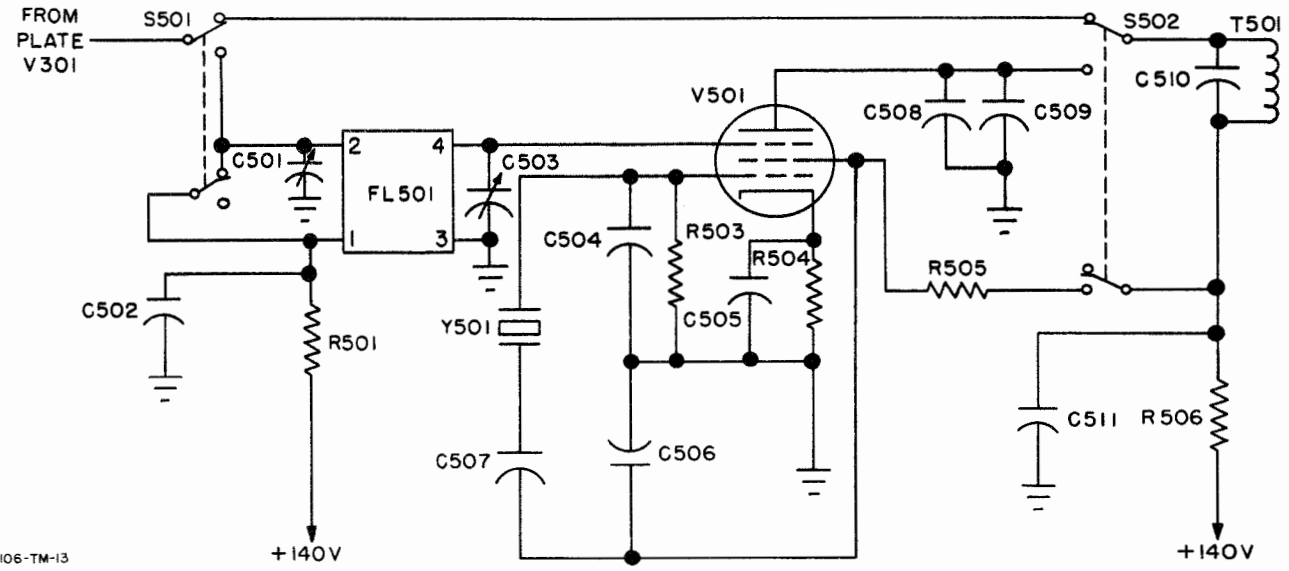


Figure 4-5. First IF Amplifier (Converter), Simplified Schematic Diagram

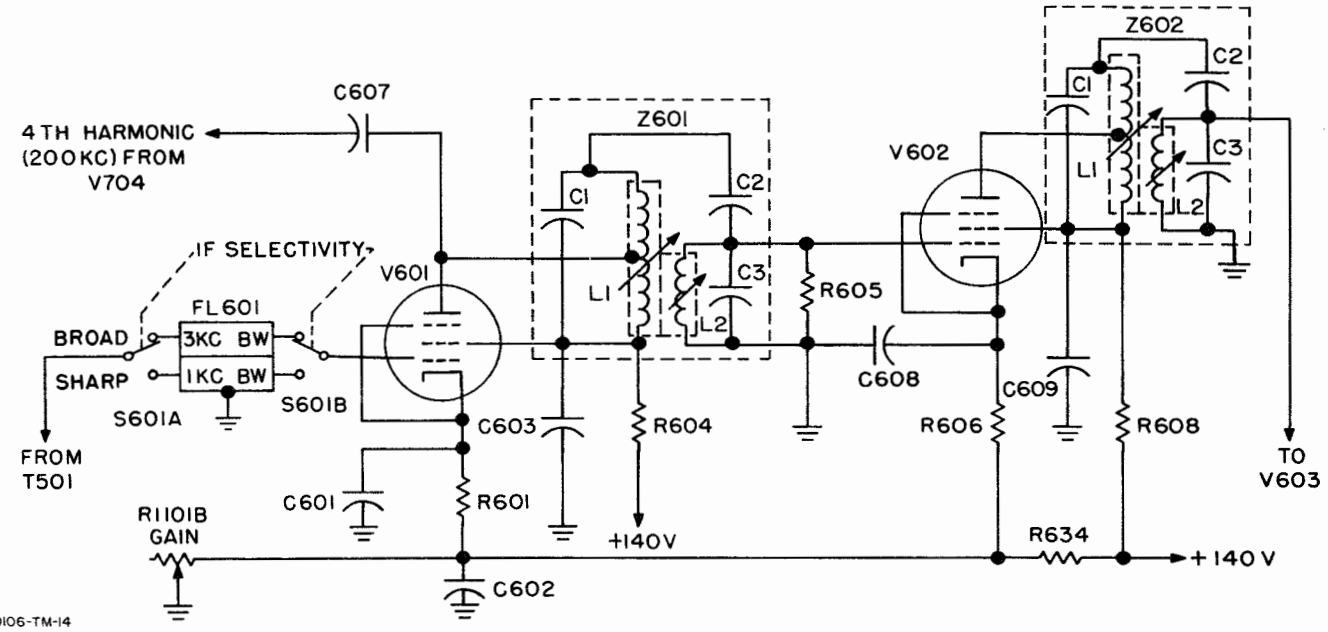


Figure 4-6. First and Second IF Amplifier Circuit, Simplified Schematic Diagram

mechanical filter which passes only the 200 KC component from T501. One section of the filter has a bandwidth of three KC and the other section has a bandwidth of one KC.

GAIN control R1101B controls the gain of V601 and V602 by varying the cathode bias on the tubes. GAIN control R1101B and resistor R634 form a DC voltage divider connected between the 140 V line and ground. Capacitor C602 and R634 decouple RF voltage from the bias line while capacitor C603 and R604 decouple IF voltage from the 140 V line. Cathode resistor R601 provides a minimum bias for V601. The output from V601 is capacitively coupled by Z601 to V602. Z601L1 and Z601L2 are separated by magnetic shielding; thus, there is no inductive coupling between them. Capacitive coupling is used in order to provide a flat IF response. Both Z601L1 and Z601L2 are tuned to 200 KC by Z601C1 and Z601C3 respectively while resistor R605 provides a shunt impedance

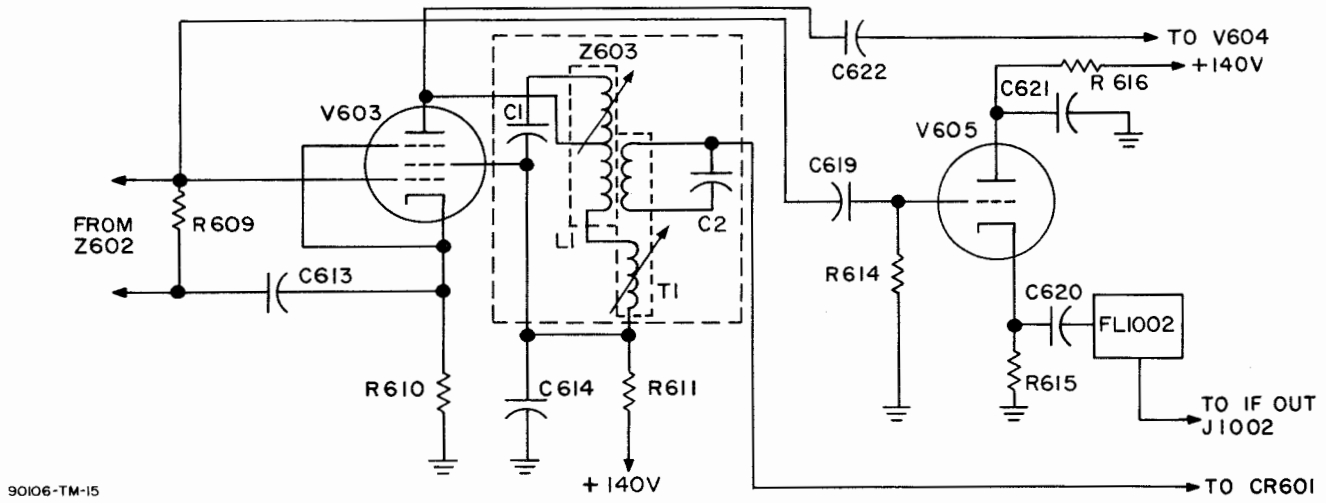


Figure 4-7. Third IF Amplifier and IF Cathode Follower Circuit, Simplified Schematic Diagram

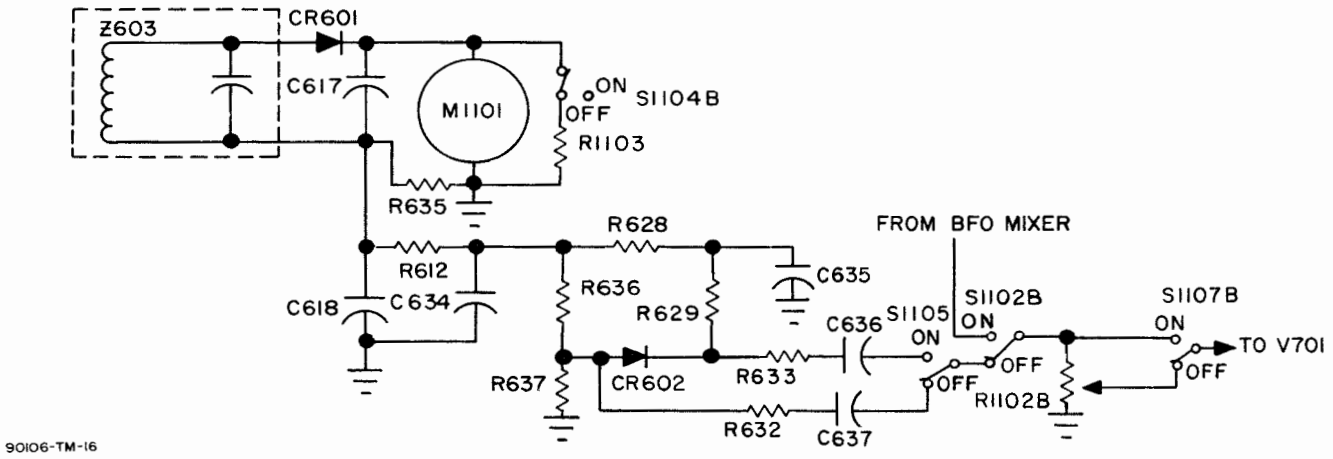


Figure 4-8. Audio Detector and Noise Limiter Circuit, Simplified Schematic Diagram

across Z601L2. IF amplifier V602 is similar in operation to V601. Coil Z602L2 is identical in operation to Z601L2 and Z602L1 is identical to Z601L1.

IF amplifier V603 has two outputs. One output capacitively couples the signal at the plate of V603 to B.F.O. mixer V604 (see figure 4-7). The second output transformer couples the signal at the plate of V603 by means of Z603 to audio detector CR601. The signal present at the grid of V603 is also capacitively coupled by C619 to the grid of cathode follower V605. Cathode resistor R610 provides cathode bias for V603. Capacitor C614 and R611 decouple the IF voltage at the output of V603 and the 140 V line.

IF cathode follower V605 provides a low impedance IF output for use during the maintenance of the receiver or when an IF signal is required at the receiver installation. Capacitor C619 couples the output from Z602 to the control grid of V605. The IF signal at the plate is grounded by C621. Capacitor C620 couples the output from the cathode of V605 to IF filter FL1002. The output of FL1002 is connected to J1102 on the rear of the receiver.

f. AUDIO DETECTOR AND NOISE LIMITER CIRCUIT (see figure 4-8). - Intermediate frequency signal from Z603 is applied to diode CR601 in series with capacitor C617. This intermediate frequency signal is rectified by diode CR601, producing a

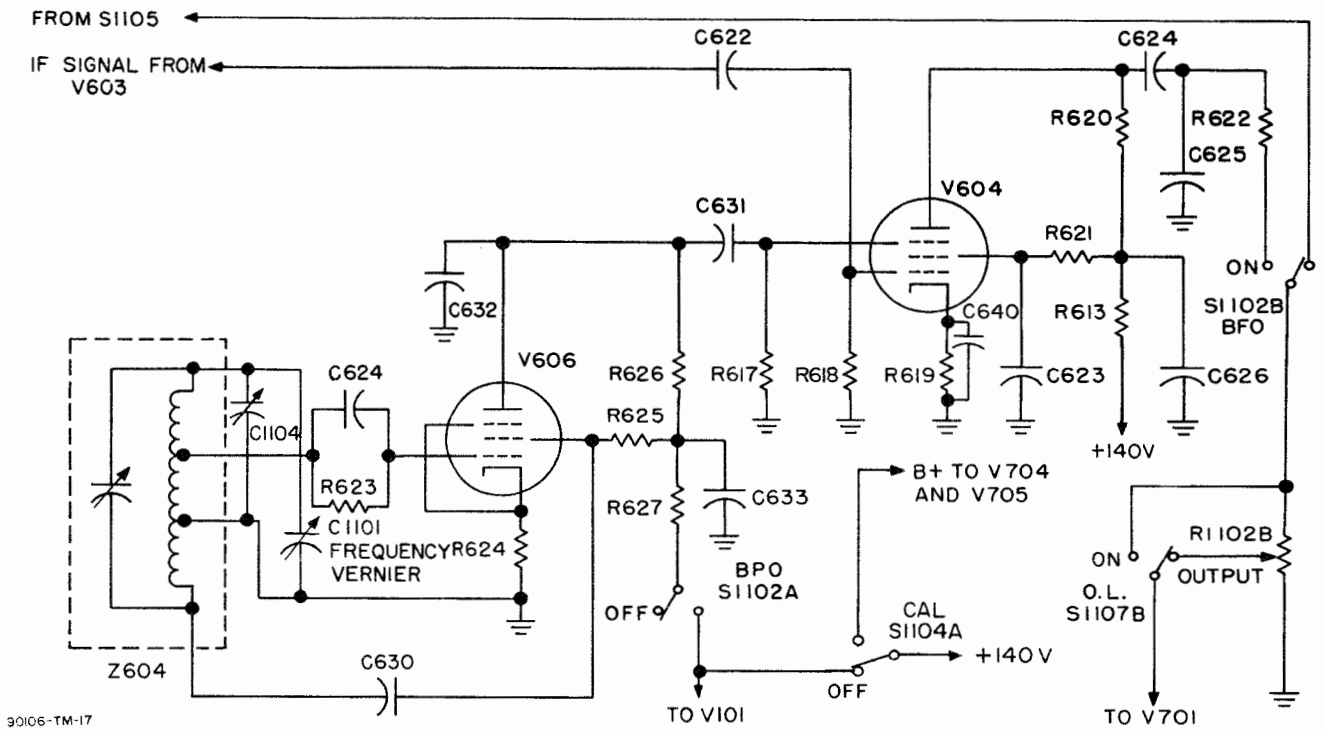


Figure 4-9. Beat Frequency Oscillator and B.F.O. Mixer Circuit, Simplified Schematic Diagram

direct current which varies at the modulation rate, if the signal is modulated. The direct current path is through meter M1101, the diode load resistance and the output winding of Z603. The diode load resistance consists of resistor R635 in parallel with the series combination of R612, R636, and R637. Meter M1101 therefore indicates the relative amplitude of the intermediate frequency signal applied to the detector circuit. Meter shunt resistor R1103 is removed from the circuit by the calibrate switch S1104B to provide a greater meter deflection during the calibration process.

Resistor R612 and capacitors C618 and C634 form a lowpass filter which passes the direct current and its audio frequency component, and filters the intermediate frequency signals out of the audio frequency circuits.

Resistors R636 and R637 form a voltage divider which provides operating bias voltage for diode CR602. The voltage across the diode load resistance is negative with respect to ground, because of the rectified current flowing through the resistance, and is proportional to the amplitude of signal applied to the detector circuit. Since the anode of diode CR602 is connected to the junction of R636 and R637, and the cathode is connected through R629 and R628 to the junction of R636 and R628, the cathode of CR602 will be negative with respect to its anode by the amount of voltage drop across resistor R636. This voltage will be proportional to the amplitude of signal being received, and permits audio frequency signals of lesser voltage to pass through diode CR602. The resistance values of resistors R636 and R637 have been chosen to make this operating voltage approximately equivalent to 60 percent modulation of the intermediate frequency signal. Resistor R628 with capacitor C635 provides a long time constant so that the voltage on the cathode of CR602 cannot change at an audio frequency rate. Resistor R629 is provided to prevent capacitor C635 from shorting the audio frequency signals to ground. Any audio frequency voltage greater than that corresponding to approximately 60 percent modulation (such as pulse type interference) will bias CR602 to cutoff and will not be applied to the audio frequency amplifier.

Audio frequency signal from the junction of CR602 and R629 is connected through R633, C636, S1105 and S1102 to the audio frequency amplifier.

When the noise limiter switch S1105 is in the "OFF" position, audio frequency signal from the junction of R636 and R637 is connected through R632, C637, S1105 and S1102 to the audio frequency amplifier.

Switch S1102B connects the output level control R1102B to the detector, noise limiter circuit when the B.F.O. is turned "OFF." It connects the output level control to the output of the B.F.O. mixer circuit when the B.F.O. is turned "ON."

Switch S1107B connects the input of the audio frequency amplifier to output level control R1102B, to act as a conventional volume control, when the

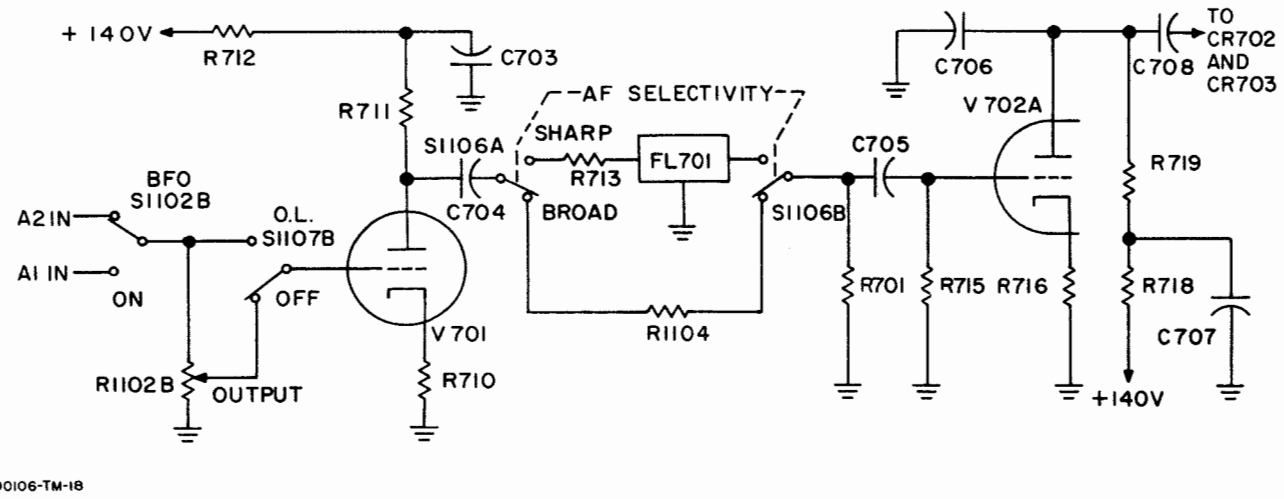


Figure 4-10. First and Second Audio Amplifier Circuit, Simplified Schematic Diagram

output limiter is turned "OFF." It connects the full audio frequency level to the audio frequency amplifier, without a volume control, when the output limiter is turned "ON."

g. BEAT FREQUENCY OSCILLATOR AND B.F.O. MIXER CIRCUIT (figure 4-9). - Beat frequency oscillator V606 is an electron coupled Hartley oscillator. It functions only when B.F.O. switch S1102 is in the "ON" position and CAL switch S1104 in the "OFF" position. In the "ON" position, B.F.O. switch S1102A connects 140 V to the plate and screen grid of V606. CAL switch S1104 is in series with S1102A and must be in the "OFF" position to continue the DC circuit from the plate and screen grid of V606 to the 140 V supply. This is to avoid the possibility of mistaking a B.F.O. zero beat for a calibration zero beat. The oscillator tuned circuit consists of Z604, trimmer capacitor C1104 and FREQ VERNIER capacitor C1101. Grid bias is obtained from C629 and R623 and additional bias is provided by cathode resistor R624. Positive feedback is coupled from the screen grid (oscillator plate) by capacitor C630 and oscillator coil assembly Z604 to the control grid of V606. Harmonics of the oscillator frequency are bypassed to ground at the plate of V606 by C632, and RF voltage is decoupled from the 140 V line by C633 and R627. The output frequency of V606 is 200 KC when FREQ VERNIER capacitor C1101 is in its "0" position.

The output from V606 is coupled by C631 to the suppressor grid of B.F.O. mixer V604. Resistor R617 provides a DC return path from the suppressor grid of V604 to ground and is the output load from B.F.O. V606. The 200 KC IF output from V603 is coupled to the control grid by C622. Resistor R618 provides a DC return path from the control grid of V604 to ground and forms part of the output load for IF amplifier V603. The outputs from V603 and V606 are heterodyned in V604 to produce an audio beat frequency. Resistor R619 provides cathode bias and R620 is the plate load for V604. Screen current is limited by R621 and C623 maintains the screen grid at RF ground potential. Capacitor C624 and series resistor R622 couple the audio output from V604 to B.F.O. switch S1102B. Capacitor C625 shunts to ground the very high audio frequencies and RF frequencies in the output from V604. The RF voltage at the output of V604 is decoupled from the 140 V line by C626 and R613. With B.F.O. switch S1102V in the "ON" position, the audio output from V604 is connected to the first audio amplifier V701, through S1107B.

h. AUDIO AMPLIFIER CIRCUIT (see figures 4-10 and 4-11). - The input to the audio amplifiers is selected by B.F.O. switch S1102B. When the O.L. switch is in the "ON" position, O.L. (output limiter) switch S1107B connects the entire audio input voltage directly to the control grid of first audio amplifier V701 (see figure 4-10). With the O.L. switch in the "OFF" position, the input level of V701 is controlled by OUTPUT control R1102B. Audio voltage from V701 is decoupled from the 140 V line by R712 and C703. Capacitor C704 couples the output from V701 to A.F. SELECTIVITY switch S1106. When the A.F. SELECTIVITY switch is in the "SHARP" position, the output from V701 is connected to audio bandpass filter FL701 which passes only the frequencies between 825 and 1150 CPS. Series resistor R713 increases the input impedance of FL701 as seen by V701, thereby establishing the proper load impedance for V701. When the A.F. SELECTIVITY switch is in the "BROAD" position, the audio output path from V701 is through S1106, series resistor R1104, and S1106 to the control grid circuit of V702A. The purpose of R1104 is to compensate for the loss of gain in FL701 so that the overall gain is approximately equal in both "SHARP" and "BROAD" positions. Resistor R701 provides the terminating impedance of FL701.

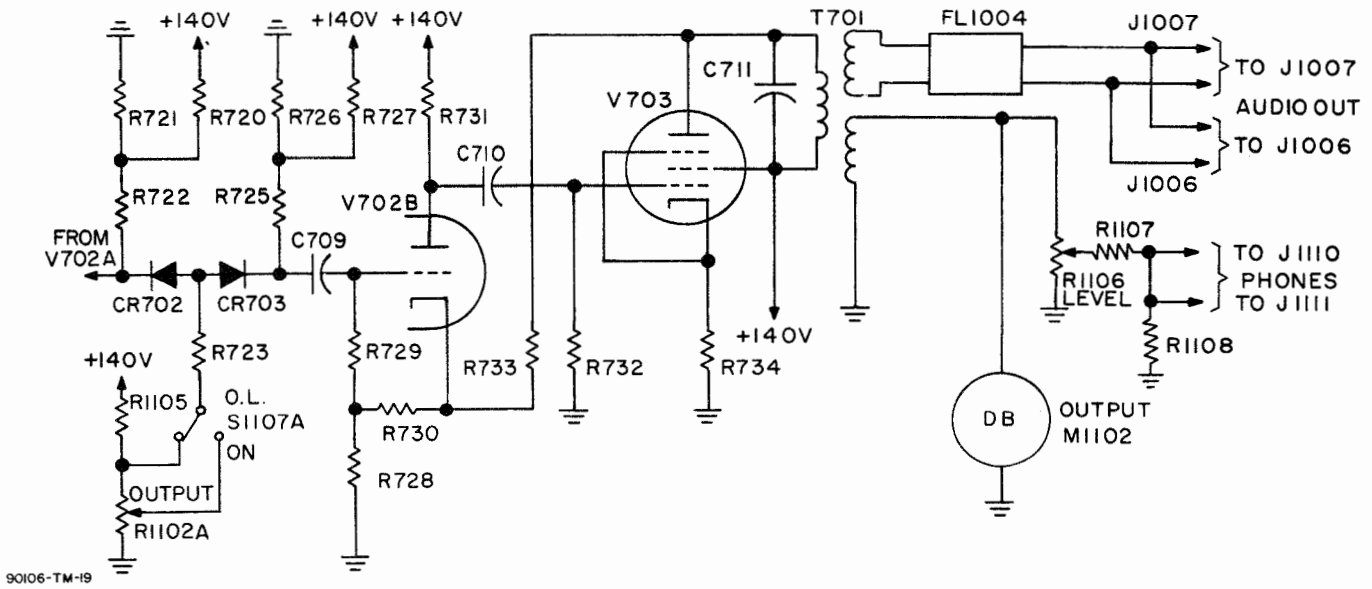


Figure 4-11. Output Limiter, Third Audio Amplifier and Output Amplifier Circuit, Simplified Schematic

The output from FL701, or directly from V701, is coupled by C705 to the control grid of V702A. The audio input voltage to V702A is developed across grid return resistor R715. Cathode bias is provided by R716, and R719 is the plate load for V702A. Capacitor C706 attenuates the high frequency response of V702A. Capacitor C707 and R718 decouple the audio output of V702A from the 140 V line. The output from V702A is coupled by C708 to output limiter diodes CR702 and CR703. When O.L. switch S1107A is in the "ON" position, the OUTPUT control R1102A determines the maximum output level of the receiver.

i. OUTPUT LIMITER. - A voltage divider consisting of resistors R720, R721 provides a positive voltage to the cathode of CR702. An identical voltage divider consisting of resistors R727, R726 provides the same positive voltage to the cathode of CR703. The anode voltage for both diodes is provided from a voltage divider consisting of resistors R1105, R1102A. When the output limiter (O.L.) switch is "OFF," the anode voltage is supplied from the junction of resistors R1105, R1102A, making the anodes positive with respect to the cathodes, and both diodes conduct, offering a low impedance path for the audio signals, without limiting. When the O.L. switch is "ON," the anode voltage can be varied by means of R1102A. The value of the anode voltage with respect to its cathode voltage determines the maximum amplitude of audio peak voltages that will be passed by CR702 and CR703, one diode clipping on the positive half cycle and the other clipping on the negative half cycle. Resistors R722 and R725 are cathode isolating resistors and R723 is the anode load resistor to isolate the audio signals from the DC control

The output from the output limiter is coupled by C709 to the control grid of third AF amplifier V702B. Cathode bias is obtained from R730 in series with R728. Control grid bias voltage is obtained from the junction of R728 and R730. The output from V702B is coupled to the control grid of output amplifier V703 by C710. Cathode bias for V703 is provided by R734. Capacitor C711 attenuates high frequencies across the primary winding of output transformer T701. Negative feedback is applied from the plate of V703 through R733 to the cathode of V702B. Resistors R733, R730, R728 form a voltage divider to apply part of the output from V703 as negative feedback to the cathode of V702B. The purpose of the negative feedback is to reduce the distortion and to increase the stability of the audio amplifiers under varying loads connected to the output of T701.

Transformer T701 couples the output from V703 to the remote audio line connected at the rear of the receiver and to the two PHONES jacks on the front panel of the receiver. Filter FL1004, in series with the remote audio lines, reduces signal and noise frequencies outside the desired audio frequency range. Two parallel balanced audio lines are connected to the output of FL1004. The PHONES output is taken from LEVEL control potentiometer R1106 at the voltage divider junction of R1107 and R1108.

j. CALIBRATOR CIRCUIT (see figure 4-12). - Pierce oscillator V704, operating at 50 KC, synchronizes multivibrator V705 to an accurate 10 KC fundamental output. Crystal V701 is connected as a high Q resonator in a Colpitts circuit. Capacitors C713 and C717 maintain the proper phase relationship between the plate, cathode and grid to sustain

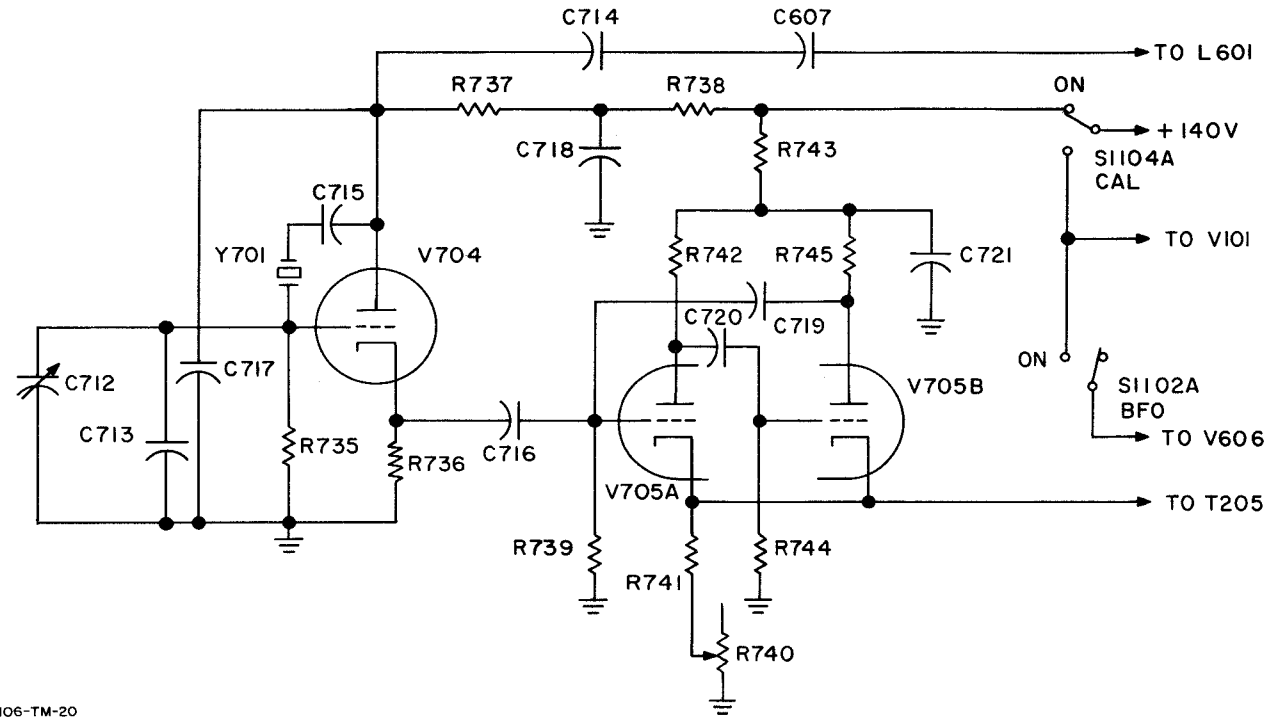


Figure 4-12. Calibrator Circuit, Simplified Schematic Diagram

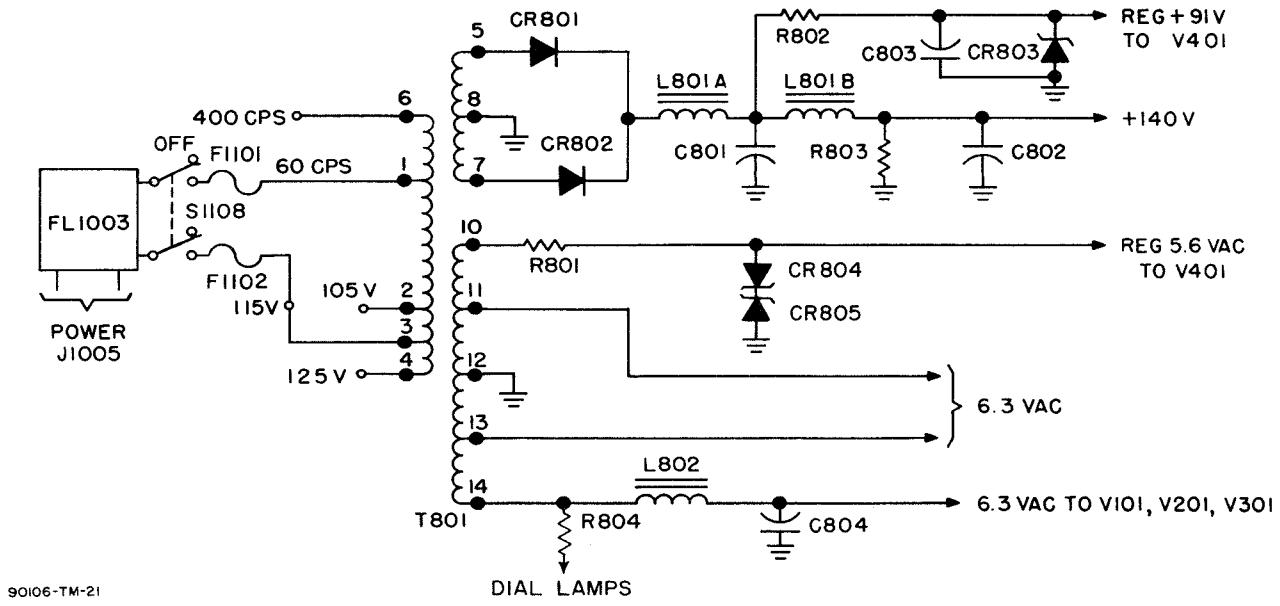


Figure 4-13. Power Supply, Simplified Schematic Diagram

oscillation. Grid leak bias is provided by C712, C713 and R735. Capacitor C712 is adjusted for a frequency of exactly 50 KC. The output voltage at the plate is developed across R737. Resistor R738 and C718 decouple the RF output of V704 from the 140 V line. Capacitor C714, in series with C607, couples the plate output from V704 to IF coil Z601L1. The fourth harmonic of the output from V704 heterodynes with the signal present at V601 plate produced by V705 (discussed in the following paragraph) and a zero beat frequency is obtained for the calibration of the receiver. Capacitor C716 couples the cathode output from V704 to the control grid of V705A to synchronize the fundamental output frequency of V705 at 10 KC.

Multivibrator V705 produces a square wave output, rich in harmonics, at the fundamental frequency of 10 KC. The approximate output frequency is determined by the time constant of C720 and R744 and the time constant of C719 and R739. Stabilization is provided by resistor R740. Capacitor C721 and R743 decouple the 10 KC output and its harmonics from the 140 V line. Resistors R742 and R745 are the plate loads for V705A and V705B respectively. Resistor R741, in series with R740 provides cathode bias for both sections of V705 and together with R740 is the cathode load. Resistor R740 is adjusted for proper synchronization with the 50 KC oscillator. The cathode output from V705B is coupled to the primary winding of RF coupling transformer T205 by C202 (see figure 4-2). Because the multivibrator output is rich in harmonics, calibration check points are produced at 10 KC intervals throughout the tuning range of the receiver.

The calibrator circuit is energized when CAL switch S1104 is in the "ON" position. Switch S1104A connects 140 V to both V704 and V705 and opens the 140 V line to first RF amplifier V101 and to beat frequency oscillator V606 to disable the two stages. Thus it is impossible for incoming signals or the beat frequency oscillator to interfere during receiver calibration.

k. POWER SUPPLY CIRCUIT (figure 4-13). - AC power is connected through line filter FL1003, POWER switch S1108 and fuses F1101 and F1102. For 60 cycle operation, one AC line is connected to terminal 1 of power transformer T801, and for 400 cycle operation, it is connected to terminal 6 of T801. The full wave rectifier, CR801 and CR802, provides all the plate and screen grid voltage for the receiver. Bleeder resistor R803 discharges filter capacitors C801 and C802 when the receiver is turned off, provides stabilization of the output voltage when the receiver is operating, and limits surge voltages during receiver warmup. Resistor R802 is a voltage dropping resistor which, in conjunction with diode CR803 regulates the output voltage to 91 volts for the plate of the first oscillator V401. Diode CR803 has a Zener breakdown voltage of 91 volts. Whenever the applied voltage exceeds this value, CR803 will conduct, drawing sufficient current through resistor R802 to drop the voltage to 91 volts. The voltage drop across CR803 remains at 91 volts, regardless of the amount of current it passes, when operated in the Zener mode. Capacitor C803 provides additional filtering of the regulated 91 VDC line.

The filament winding of T801 has five terminals, connected as three pairs, to which the tube filaments are connected. Terminals 11 and 13 provide 6.3 VAC with a grounded center tap to the electron tubes in the IF and AF amplifiers. Terminals 12 and 14 provide 6.3 VAC with one side grounded for the RF amplifier tubes and dial lamps. Choke L802 and capacitor C804 form an RF filter to keep RF interference from being coupled between the power supply and the RF amplifiers. Terminals 10 and 12 provide 14 VAC which is dropped to 5.6 VAC due to current through R801. Diodes CR804 and CR805 are connected to operate in the Zener mode. The Zener breakdown voltage is 5.8 volts. When conducting in the forward direction as a normal diode, the voltage drop is negligible. Thus the two diodes in series with opposite polarities will provide full wave regulation of the AC by drawing sufficient current to maintain the 5.6 volts for the heater of the first oscillator V401. The purpose of regulating the oscillator filament voltage is to stabilize the operating frequency of the receiver against fluctuations of power input voltage and to prolong the life of the tube.

SECTION 5

TROUBLE-SHOOTING

5-1. GENERAL.

This section contains complete trouble-shooting procedures which will aid in isolating a trouble to a particular assembly or component. Three types of tables are employed. The first type is a preliminary trouble-shooting chart using front panel indicators (table 5-2). This table is used to isolate a trouble to a particular assembly or component by using front panel indications. The second type is the system trouble-shooting chart (table 5-3). This table is used to isolate a trouble to a particular assembly by using signal injection and voltage measurements. The third type is the functional trouble-shooting charts (tables 5-4 through 5-10). These tables are used to isolate a trouble to a particular component within an assembly by using signal injection and performing voltage and resistance measurements.

The front panel indicators and the crystal calibrator provide a convenient means of isolating trouble to a particular assembly or part. For example, the tuning meter indicates diode detector current and can be used to determine if the signal is getting through the IF amplifier. The calibration oscillator injects a 200 KC signal into the first stage of the IF amplifier. It is only necessary to turn the CAL switch to "ON" and observe the tuning meter to determine if the IF assembly is functioning. Refer to table 5-2 to perform this type of fault analysis.

Each trouble-shooting chart refers to test points which identify the signal injection points and the voltage and resistance measurement points. Major test points are used to determine the assembly of the receiver containing the trouble. They are identified by a star enclosed Arabic number and are referenced in the text as ★1. Secondary test points are used to determine the stage or subassembly within an assembly containing the trouble. They are identified by an encircled capital letter and are referenced in the text as ●A. Minor test points are used to determine the defective part within a stage or subassembly. They are identified by an encircled capital letter with a subscript Arabic number and are referenced in the text as ●A1.

When a failure of any type occurs in the receiver, perform the preliminary inspection as given in paragraph 5-3a before using the trouble-shooting tables. The preliminary inspection may pinpoint the trouble immediately. If the preliminary inspection fails to reveal the trouble, use the system trouble-shooting chart to determine the defective assembly. Then use the referenced functional chart to determine the defective component within the assembly.

The trouble-shooting charts are based on the following assumptions:

a. All external equipment is in good operating order.

b. All fuses and lamps are good (refer to paragraph 3-5).

TABLE 5-1. TEST EQUIPMENT REQUIRED FOR TROUBLE-SHOOTING

NAME	NOMENCLATURE	ALTERNATE
Electronic Multimeter	AN/USM-116	ME-25/U
Electronic Multimeter	ME-6E/U	ME-74/U
RF Signal Generator Set	AN/URM-25 Series	
Electron Tube Test Set	TV-7D/U	
Audio Oscillator	TS-382/U Series	
Test Adapter Set	AN/USM-119	MX-1258/U
Frequency Meter Set	AN/USM-26 Series	

5-2. TEST EQUIPMENT AND SPECIAL TOOLS.

Table 5-1 lists the test equipment required to trouble-shoot the receiver. The special tools required are a seven pin miniature tube socket adapter, a nine pin miniature tube socket adapter, test cable CX-7860/WRR-3 and the special test lead. The tube socket adapters are included in the AN/USM-119. Test cable CX-7860/WRR-3 is provided with each AN/WRR-3 equipment. The special test lead is made from test prod MX-1909/U which is supplied with each AN/WRR-3 equipment (see paragraph 2-4c).

5-3. OVERALL TROUBLE-SHOOTING.

a. PRELIMINARY CHECK. - Perform the following preliminary checks on the receiver before actual trouble-shooting:

(1) Turn POWER switch to "ON" and observe all front panel indications (refer to table 5-2).

(2) Withdraw the chassis from the cabinet as shown in figure 2-5 and inspect the receiver for any visible signs of damage or corrosion.

(3) Check all switches for positive action. Check that the controls do not scrape or bind and are attached firmly to their shafts.

(4) Connect test cable adapter CX-7860/WRR-3 between receptacle at the back of the receiver chassis and receptacle on the inside back wall of the receiver cabinet. With the test cable connected as described, all circuits are connected and the receiver can be operated in this position for servicing.

WARNING

Connect the test cable to the chassis receptacle first, before connecting it to the cabinet receptacle.

b. CONTROL SETTINGS. - Preset the controls as indicated below and set POWER switch S1108 to "ON." After the completion of each step, return the controls to their preset position. Throughout the procedures controls are assumed to be in their preset position at the start of each step.

NOTE

All controls are located on the front panel.

CONTROL	SETTING
CAL (S1104)	OFF
N.L. (S1105)	OFF
O.L. (S1107)	ON
CAL ADJ (C1102)	0
B.F.O. (S1102)	ON
ANT. COMP (C103)	0
FREQ VERNIER (C1101)	6
I.F. SELECTIVITY (S601)	BROAD
A.F. SELECTIVITY (S1106)	BROAD
GAIN (R1101)	6
ANTENNA IMPEDANCE (S1103)	LO
OUTPUT (R1102)	10
LEVEL (R1106)	10

c. SYSTEM TROUBLE-SHOOTING CHART (see table 5-3). - Use the system trouble-shooting chart to determine the defective assembly. The voltage outputs of the power supply are measured first and then signal injections are made at the major test points. Work back from the audio amplifier assembly to the antenna amplifier assembly. When a defective subassembly is located refer to the applicable functional trouble-shooting chart (tables 5-4 to 5-10). In using the system trouble-shooting chart, refer to the functional block diagram (figure 4-1) and the schematic diagram (figure 6-38). Figures 5-1, 5-2 and 5-3 show the physical location of test points. In addition, see figure 5-5 for primary power distribution.

5-4. FUNCTIONAL TROUBLE-SHOOTING.

a. PRELIMINARY CHECK. - The preliminary checks to be performed before trouble-shooting the receiver are the same as those listed in paragraph 5-3a.

b. CONTROL SETTINGS. - Preset the controls according to paragraph 5-3b except where specified otherwise in the functional trouble-shooting charts. At the completion of each step return the controls to their preset positions.

c. FUNCTIONAL TROUBLE-SHOOTING CHARTS. - Use the functional trouble-shooting charts, tables 5-4 through 5-10, to isolate a fault to a particular part within an assembly. The procedures to be followed are listed in sequence in each chart. The initial approach is to use signal injection at the secondary test points, working back from the output stage to the input stage in each assembly to isolate the defective stage. When the defective stage is located, check the tube. If the tube is good, insert it with a tube socket adapter, back into the socket. Take voltage and resistance measurements according to the associated voltage and resistance diagrams to isolate the defective part within the stage. The voltage and resistance diagrams show the relative locations of the tube sockets in each assembly as viewed from the top (tube side). The overall schematic diagram, figure 6-38, gives the electrical location of the test points and serves as an aid to identifying the defective part. Figure references in the "Test Point" column of the charts give the physical locations of the test points.

NOTE

All signal injection, voltage and resistance measurements are made without removing the assemblies from the receiver by using the seven and nine pin miniature tube socket adapters. The antenna and main RF amplifiers, frequency mixer, RF oscillator, and power supply have covers which must be removed to perform voltage and resistance checks (see figures 5-1 and 5-2).

5-5 LOCATION OF PARTS.

Figures 6-14 through 6-37 show the physical location of all component parts in each assembly and on the main receiver chassis. If a reference designation of a part is known, the part can be located by referring to the "LOCATING FUNCTION" column of the Maintenance Parts List, table 7-2.

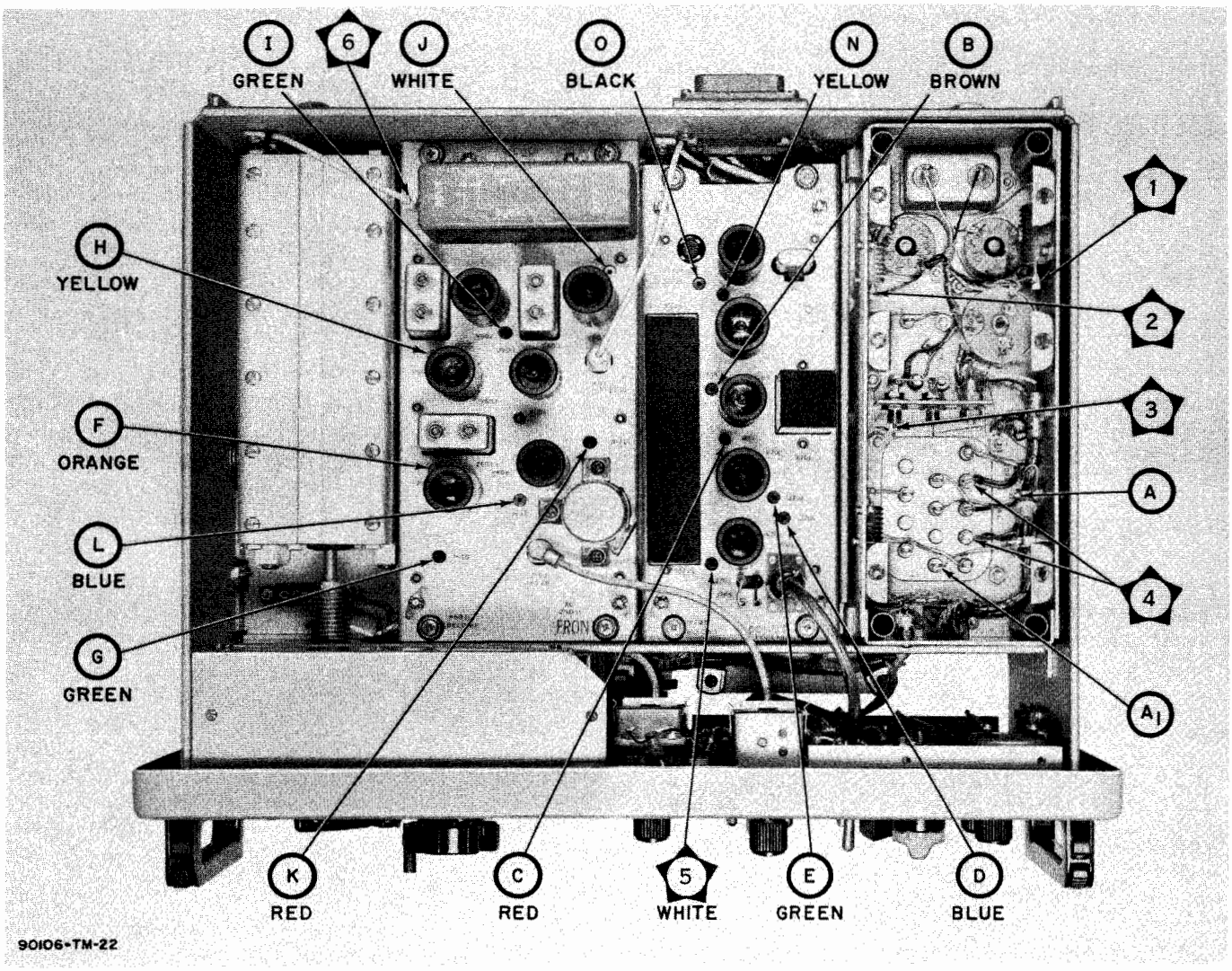


Figure 5-1. Top View, Test Point Location

TABLE 5-2. PRELIMINARY TROUBLE-SHOOTING USING FRONT PANEL INDICATORS

Step	Front Panel Indication	Probable Trouble
1	Dial lamp does not light.	Indicates that power supply is not providing power. Check the fuses and ascertain that the power line is connected and energized. Refer to table 5-4 to check power supply.
2	TUNING meter indicates, but OUTPUT meter does not indicate and no signal is audible in headphones inserted in the PHONES jack.	AF amplifier defective. Refer to table 5-5.
3	With A.F. SELECTIVITY switch in "BROAD" position, the set operates properly, but with A.F. SELECTIVITY switch in "SHARP" position, the set does not operate.	Filter FL701 or A.F. SELECTIVITY switch S1106 defective.

TABLE 5-2. PRELIMINARY TROUBLE-SHOOTING USING FRONT PANEL INDICATORS (Continued)

Step	Front Panel Indication	Probable Trouble
4	TUNING meter does not indicate. With CAL switch "ON," TUNING meter still does not indicate.	Second IF amplifier defective. Refer to table 5-6.
5	With I.F. SELECTIVITY switch in one position, the set operates properly. With I.F. SELECTIVITY switch in the other position, the set does not operate.	Filter FL601 or switch S601 defective.
6	TUNING meter does not indicate. With CAL switch "ON," TUNING meter provides a steady indication which does not change as the Tuning Control is rotated through several calibration check points.	RF oscillator, frequency mixer, or main RF amplifier defective. Refer to table 5-3.
7	Set operates properly on Bands II, III, and V. Set does not operate on Bands I and IV.	First I.F. amplifier defective. Refer to table 5-7.
8	TUNING meter does not indicate. With CAL switch "ON," TUNING meter indicates and calibration beat notes are audible in headphones and indicated on tuning meter.	Antenna or antenna RF amplifier defective. Refer to table 5-3.
9	Set does not operate on one band. Operation is satisfactory on all other bands.	RF oscillator, frequency mixer, main RF amplifier, or antenna RF amplifier, band switch or coil associated with inoperative band is defective. Refer to table 5-3.

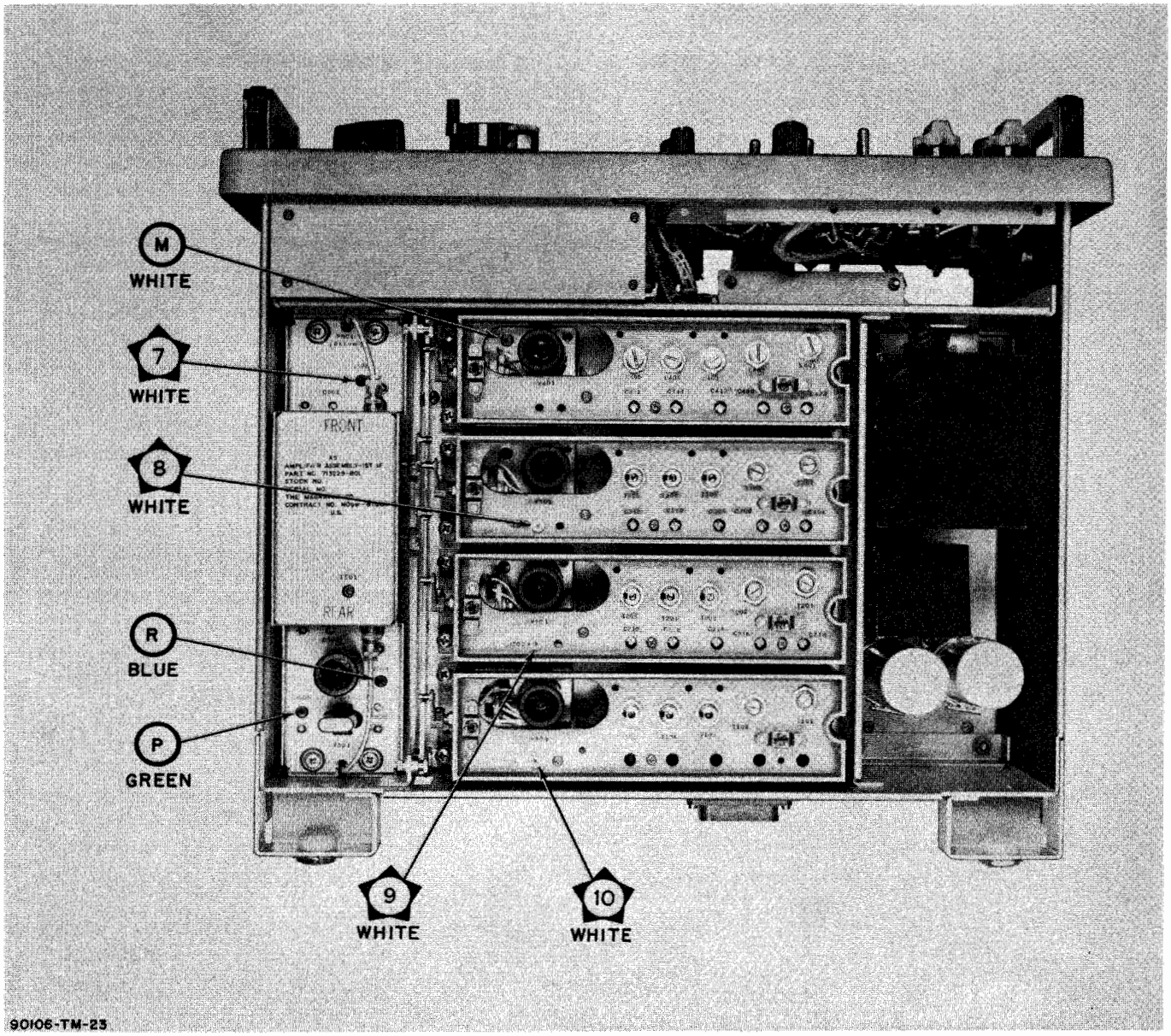


Figure 5-2. Bottom View, Test Point Location

TABLE 5-3. SYSTEM TROUBLE-SHOOTING CHART

STEP	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	Check output voltages of power supply at test points ★ 1, ★ 2, ★ 3, and ★ 4 (see figure 5-1) with electronic multimeter (AN/USM-116).	+91 (± 4.6) VDC at ★ 1 +140 (±14) VDC at ★ 2 5.6 (±0.3) VAC at ★ 3 6.3 (±0.63) VAC at ★ 4	If voltages are normal, proceed to step 2. If not, proceed to step 1 of table 5-4.
2	Set the output of the audio oscillator to 1000 CPS at 0.008 VRMS.		

TABLE 5-3. SYSTEM TROUBLE-SHOOTING CHART (Continued)

STEP	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
	a. Apply the audio oscillator output to test point ★ 5 (see figure 5-1).	a. Tone is heard in headphones and OUTPUT meter M1102 indicates a minimum of + 8 DB.	a. If indications are normal proceed to b. If not, proceed to step 1 of table 5-5.
	b. Set A.F. SELECTIVITY switch S1106 to "SHARP".	b. Little or no change in OUTPUT meter M1102 indication.	b. If indications are normal proceed to step 3. If not, check S1106 and audio bandpass filter FL701.
3	Set the B.F.O. switch to "OFF." Adjust the signal generator for a 200 KC output at 1600 MV, modulated 30 percent with 1000 CPS. Apply the signal generator output to test point J and connect the electronic multimeter (AN/USM-116) to test point ● G (see figure 5-1).	Tone heard in headphones. OUTPUT meter M1102 indicates a minimum of + 8 DB and the electronic multimeter indicates a minimum of -1.0 volts.	If indications are normal, proceed to step 4. If not, proceed to step 1 of table 5-6.
4	Set the B.F.O. switch to "OFF." Adjust the signal generator for a 60 KC output at 27 millivolts, modulated 30 percent with 1000 CPS and apply the signal generator output to test point ★ 7 (see figure 5-2).		
	a. Set the Band Selector switch to Band I (14-30).	a. Tone heard in headphones and OUTPUT meter M1102 indicates a minimum of +8 DB.	a. If indications are normal, proceed to b. If not, check V501, S501 and S502 then refer to step 1 of table 5-7.
	b. Set the Band Selector switch to Band IV (133-283).	b. Same as a.	b. If indications are normal, proceed to step 5. If not, check V501, S501 and S502, then refer to step 1 of table 5-7.
5	Connect electronic multimeter (AN/USM-116) to test point ● M (see figure 5-2).	-2.5 VDC to -6.0 VDC.	If indication is normal proceed to step 6. If not, refer to step 2 of table 5-8.
6	Set the B.F.O. switch to "ON."		
	a. Set the Band Selector switch to Band I (14-30) and tune the receiver to any frequency within the band. Set the signal generator to the receiver frequency and adjust the signal generator output for a 220 MV, unmodulated signal. Apply the signal generator output to test point ★ 8 and adjust the FREQ VERNIER control for a maximum indication on OUTPUT meter M1102.	a. Tone heard in headphones. OUTPUT meter M1102 indicates a minimum of +8 DB and TUNING meter M1101 indicates a minimum of 5.	a. If indications are normal, proceed to b. If not, refer to step 1 of table 5-8.
	b. Repeat a with the Band Selector switch in each of the following positions: Band II (30-63), Band III (63-133), Band IV (133-283), and Band V (283-600).	b. Same as a.	b. If indications are normal, proceed to step 7, if not, refer to step 1 of table 5-8.

TABLE 5-3. SYSTEM TROUBLE-SHOOTING CHART (Continued)

STEP	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
7	Adjust the signal generator output level to 70 MV. Apply the signal generator output to test point (see figure 5-2) and repeat the procedure in step 6.	Tone heard in headphones, OUTPUT meter M1102 indicates a minimum of + 8 DB and TUNING meter M1101 indicates a minimum of 5.	If indications are normal, proceed to step 8, if not, refer to step 1 of table 5-9.
8	Adjust signal generator output level to 18 MV. Apply the signal generator output to test point ★ 10 (see figure 5-2) and repeat the procedure in step 6.	Tone heard in headphones. OUTPUT meter M1102 indicates a minimum of+ 8 DB and TUNING meter M1101 indicates a minimum of 5.	If indications are normal, proceed to step 9. If not, refer to step 1 of table 5-10.
9	a. Adjust the signal generator output level to 1.0 MV. Apply the signal generator output to test point ★11 (see figure 5-3) and repeat the procedure in step 6 for one band only.	a. Tone heard in headphones. OUTPUT meter M1102 indicates a minimum of +8 DB and TUNING meter M1101 indicates a minimum of 5.	a. If indications are normal, proceed to b. If not, check FL1001 and all connections between connector J1003 and test point ★ 10.
	b. Set the ANTENNA IMPEDANCE switch S1103 to "HI" and adjust the signal generator output level to 3 MV. Apply the signal generator output through a high impedance dummy antenna (see figure 5-4) to test point ★11 (see figure 5-3) and repeat the procedure in step 6 for one band only.	b. Same as a.	b. If indications are not normal check relay K1001 and switch S1103.

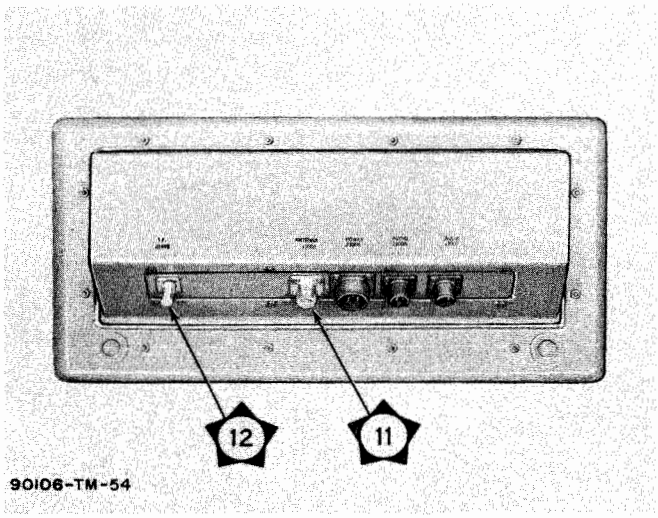


Figure 5-3. Rear View, Test Point Location

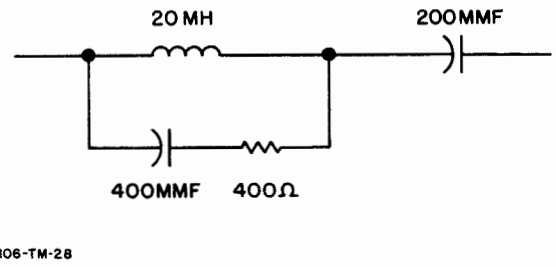


Figure 5-4. Dummy Antenna

TABLE 5-4. POWER SUPPLY, TROUBLE-SHOOTING CHART

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	T801 Terminals 1 and 3	Measure AC voltage.	113 VAC	If indication is not normal, check primary power source, FL1003, fuse holders, and S1108. If indication is normal proceed to step 2.
2	(A) Figure 5-1	Connect electronic multimeter (AN/USM-116) between test point and ground.	+180 VDC	If indication is normal, check L801A, C801, C802 and R803. If not, proceed to step 3.
3	(A1) Figure 5-1	Same as step 2.	195 VAC	If indication is normal, check CR801 and CR802. If not, check T801 and primary power circuit (see figure 5-5).

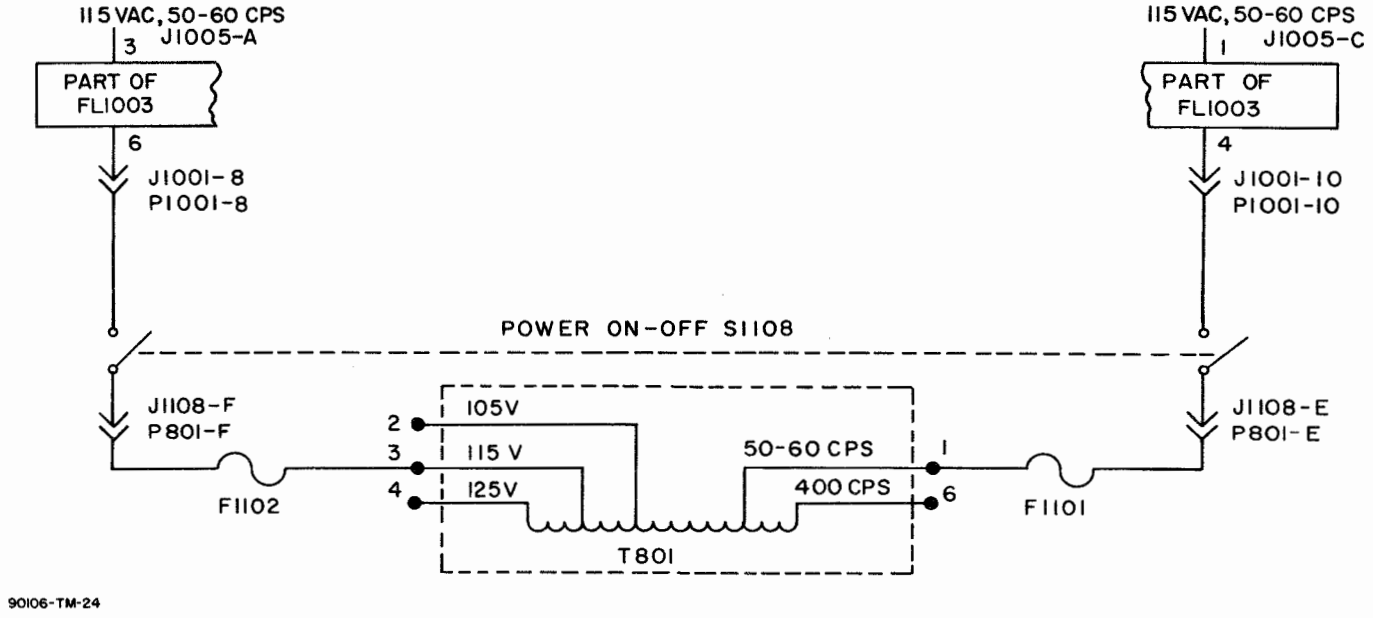


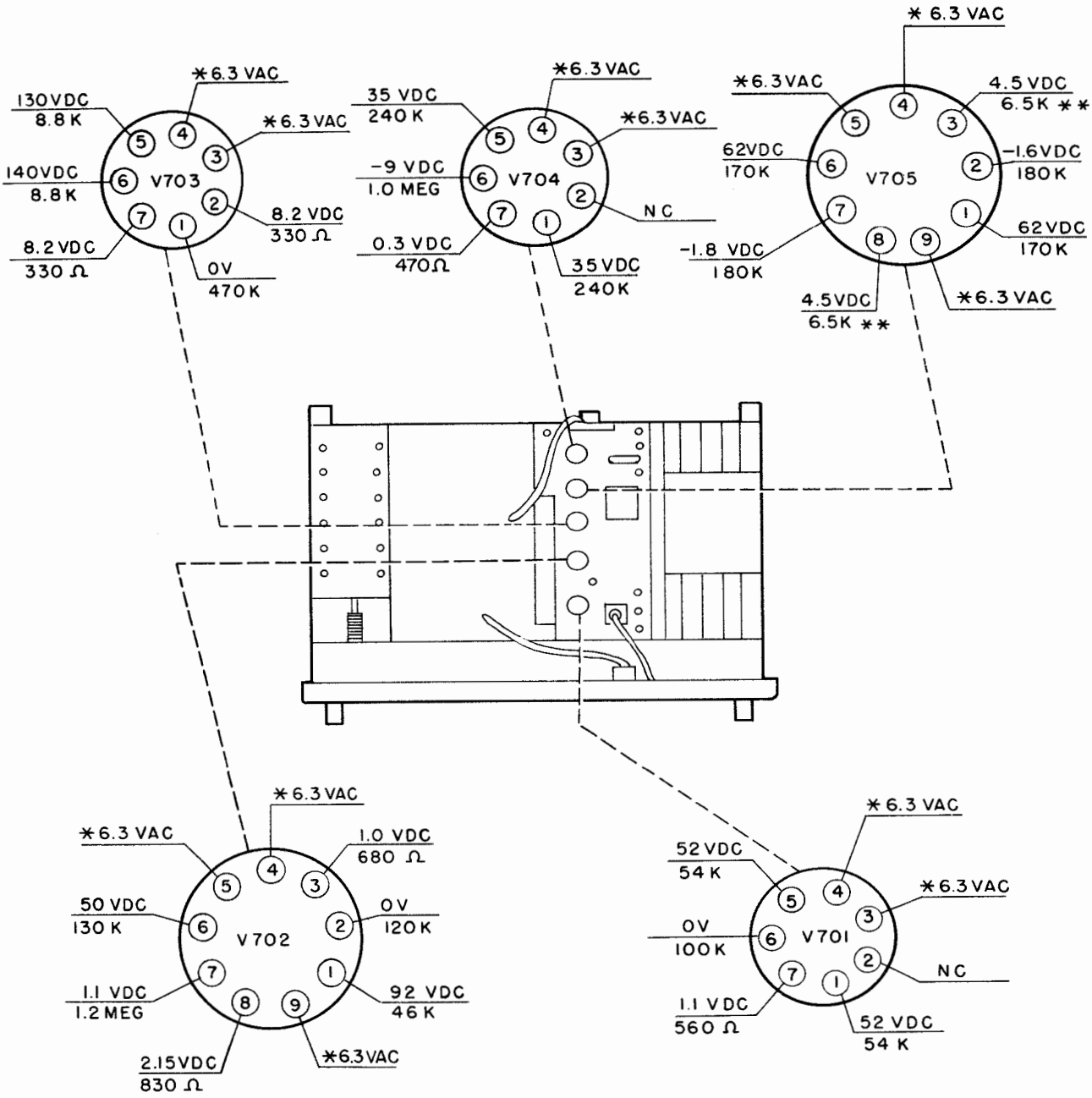
Figure 5-5. Primary Power Distribution Diagram

TABLE 5-5. AF AMPLIFIER, TROUBLE-SHOOTING CHART

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	(B) Figure 5-1	Tune the audio oscillator to 1000 CPS at 2.0 VRMS and inject the audio oscillator output between test point and ground.	Tone heard in headphones. OUTPUT meter M1102 indicates a minimum of +8 DB.	If indications are normal, proceed to step 2. If not, perform the voltage and resistance measurements for V703 (see figure 5-6).

TABLE 5-5. AF AMPLIFIER, TROUBLE-SHOOTING CHART (Continued)

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
2	(C) Figure 5-1	Tune the audio oscillator to 1000 CPS at 0.26 VRMS and inject the audio oscillator output between test point and ground.	Tone heard in headphones. OUTPUT meter M1102 indicates a minimum of +8 DB.	If indications are normal, proceed to step 3. If not, perform the voltage and resistance measurements for V702 (see figure 5-6).
3	(D) Figure 5-1	Tune the audio oscillator to 1000 CPS at 0.28 VRMS and inject the audio oscillator output between test point and ground.	Tone heard in headphones. OUTPUT meter M1102 indicates +8 DB, minimum.	If indications are normal, proceed to step 4. If not, check S1107, CR702 and CR703, R723, R1102 and R1105.
4	(E) Figure 5-1	Tune the audio oscillator to 1000 CPS at 0.023 VRMS and inject the audio oscillator output between test point and ground.	Tone heard in headphones. OUTPUT meter M1102 indicates a minimum of +8 DB.	If indication is normal, proceed to step 5. If not, perform the voltage and resistance measurements for V702 (see figure 5-6).
5	(5) Figure 5-1	a. Tune the audio oscillator to 1000 CPS at 0.008 VRMS and inject the audio oscillator output between test point and ground. Set A.F. SELECTIVITY switch S1106 to "SHARP."	a. Tone heard in headphones. OUTPUT meter M1102 indication does not change more than one DB from indication obtained in "BROAD" selectivity position.	a. If indications are normal, proceed to b. If not, check FL701, S1106 and associated wiring.
		b. Vary the audio oscillator frequency from 500 CPS to 1500 CPS.	b. A sharp decrease in output below 800 CPS and above 1200 CPS.	b. If indications are normal, proceed to step 6. If not, check FL701, S1106 and associated wiring.
6	(5) Figure 5-1	Tune the audio oscillator to 1000 CPS at 0.008 VRMS and inject the audio oscillator output between test point and ground. Set O. L. switch S1107 to "ON" and set OUTPUT control R1102 to 6. Note OUTPUT meter M1102 indication. Increase the audio oscillator output level by 10 times and note the OUTPUT meter M1102 indication.	OUTPUT meter M1102 indication does not increase more than two DB.	If indications are normal, proceed to step 7. If not, check S1107, R720, R721, R722, R723, R1105, R1102, R725, R726, R727 and output limiter diodes CR702 and CR703.
7	(N) Figure 5-1	Connect electronic multimeter between test point and ground and set CAL switch S1104 to "ON."	-9.5 VDC	If indication is normal, proceed to step 8. If not, perform the voltage and resistance measurements for V704 (see figure 5-6) and check S1104.
8	(O) Figure 5-1	Same as step 7.	+4.25 VDC 6500 ohms	If indication is not normal, perform the voltage and resistance measurements for V705 (see figure 5-6).



NOTES:

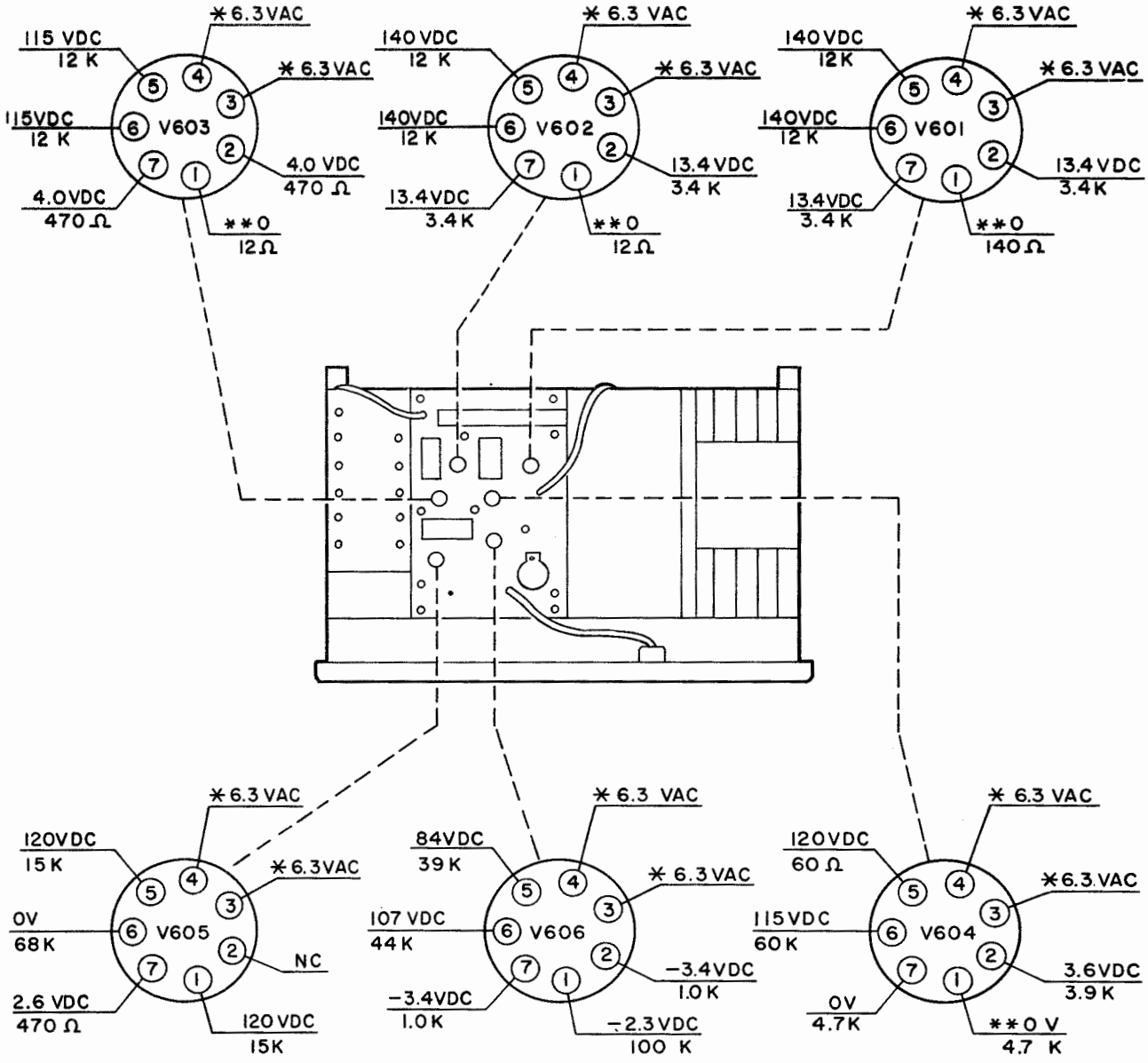
Measure between pins marked *. Measure voltage and resistance of V704 and V705 with CAL switch in "ON" position.
** Resistance will vary with setting of R740. Unless otherwise specified all voltage and resistance measurements are made to ground.
Voltage and resistance measurements are made with electronic multimeter (AN/USM-116).

90106-TM-25

Figure 5-6. AF Amplifier, Typical Voltage and Resistance Measurements

TABLE 5-6. SECOND IF AMPLIFIER, TROUBLE-SHOOTING CHART

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	(G) Figure 5-1	Set the B.F.O. switch to "OFF."	Electronic multimeter indicates -1.0 volts for A2 operation and -3.0 volts of A1 operation.	If indications are normal, proceed to step 2. If not, perform the voltage and resistance measurement for V603 (see figure 5-7) and check Z603.
2	(H) Figure 5-1	Adjust the signal generator for a 200 KC output at 70 millivolts, modulated 30 percent at 1000 CPS. Apply the signal generator output between test point and ground.	Tone heard in headphones. Electronic multimeter indicates 1.0 volts and OUTPUT meter M1102 indicates +8 DB minimum.	If indications are normal, proceed to step 3. If not, perform the voltage and resistance measurements for V603 (see figure 5-7) and check Z603.
3	(I) Figure 5-1	Same as step 1 except set the signal generator output level to 11 millivolts.	Same as step 1.	If indication is normal, proceed to step 4. If not, perform the voltage and resistance measurements for V602 (see figure 5-7) and check Z602.
4	(J) Figure 5-1	a. Same as step 1 except set the signal generator output level to 0.85 millivolts.	a. Same as step 1.	a. If indication is normal, proceed to b. If not, perform the voltage and resistance measurements of V601 (see figure 5-7) and check Z601.
		b. Increase the signal generator output for a -3.0 volt indication on the electronic multimeter. Adjust OUTPUT control R1102 for a +8 DB indication on OUTPUT meter M1102. Set N.L. switch S1105 to "ON."	b. OUTPUT meter M1102 indication does not change, or decreases less than one DB.	b. If indication is normal, proceed to c. If not, check CR 602 and S1105.
		c. Remove modulation from signal generator output and set BFO switch S1102 to "ON." Adjust the FREQ VERNIER control for a maximum indication on OUTPUT meter M1102.	c. Tone heard in headphones. Electronic multimeter indicates -3.0 volts and output meter M1102 indicates a minimum of +8 DB.	c. If indications are normal, proceed to d. If not, proceed to step 5.
		d. Set A.F. SELECTIVITY switch S1106 to "SHARP" and adjust the FREQ VERNIER control for a maximum indication on OUTPUT meter M1102.	d. Tone heard in headphones. OUTPUT meter M1102 indicates a minimum of +8 DB.	d. If indications are not normal, beat frequency oscillator V606 needs alignment. (Refer to paragraph 6-2g.)
5	(K) Figure 5-1	Set the B.F.O. switch S1102 to "ON" and connect the electronic multimeter (AN/USM-116) between test point and ground.	-1.20 VDC minimum.	If indications are normal, proceed to step 6. If not, perform the voltage and resistance measurements for V606 (see figure 507) and check S1102A.
6	(L) Figure 5-1	Tune the audio oscillator to 1000 CPS at 0.32 VRMS and inject the audio oscillator output between test point and ground.	Tone heard in headphones. OUTPUT meter M1102 indicates minimum of +8 DB.	If indications are normal, perform the voltage and resistance measurements for V604 (see figure 5-7). If not, check S1102B and continuity to P705.



NOTES:

* measure between pins. ** do not measure. Measure all voltage and resistance with GAIN control at 6. Voltage and resistance measurements on V606 are made with B.F.O. switch in "ON" position. Unless otherwise specified all voltage and resistance measurements are made to ground. Voltage and resistance measurements are made with electronic multimeter (AN/USM-116).

90106-TM-26

Figure 5-7. Second IF Amplifier, Typical Voltage and Resistance Measurements

TABLE 5-7. FIRST IF AMPLIFIER, TROUBLE-SHOOTING CHART

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	(P) Figure 5-2	Connect electronic multimeter (AN/USM-116) between test point and ground. Rotate Band Selector switch from Band I through Band V.	-8 VDC minimum on Bands I and IV.	If indication is normal, proceed to step 2. If not, perform the voltage and resistance measurements for V501 (see figure 5-8).
2	(R) Figure 5-2	Adjust the signal generator for a 60 KC output at 1000 MV, modulated 30 percent at 1000 CPS and apply the signal generator output between test point and ground. Set Band Selector switch at Bands I and IV only.	Tone heard in headphones. OUTPUT meter M1102 indicates + 8 DB minimum and the TUNING meter M1101 indicates 5.	If indication is normal, check FL-501. If not, perform the voltage and resistance measurements for V501 (see figure 5-8).

TABLE 5-8. FREQUENCY MIXER AND RF OSCILLATOR, TROUBLE-SHOOTING CHART

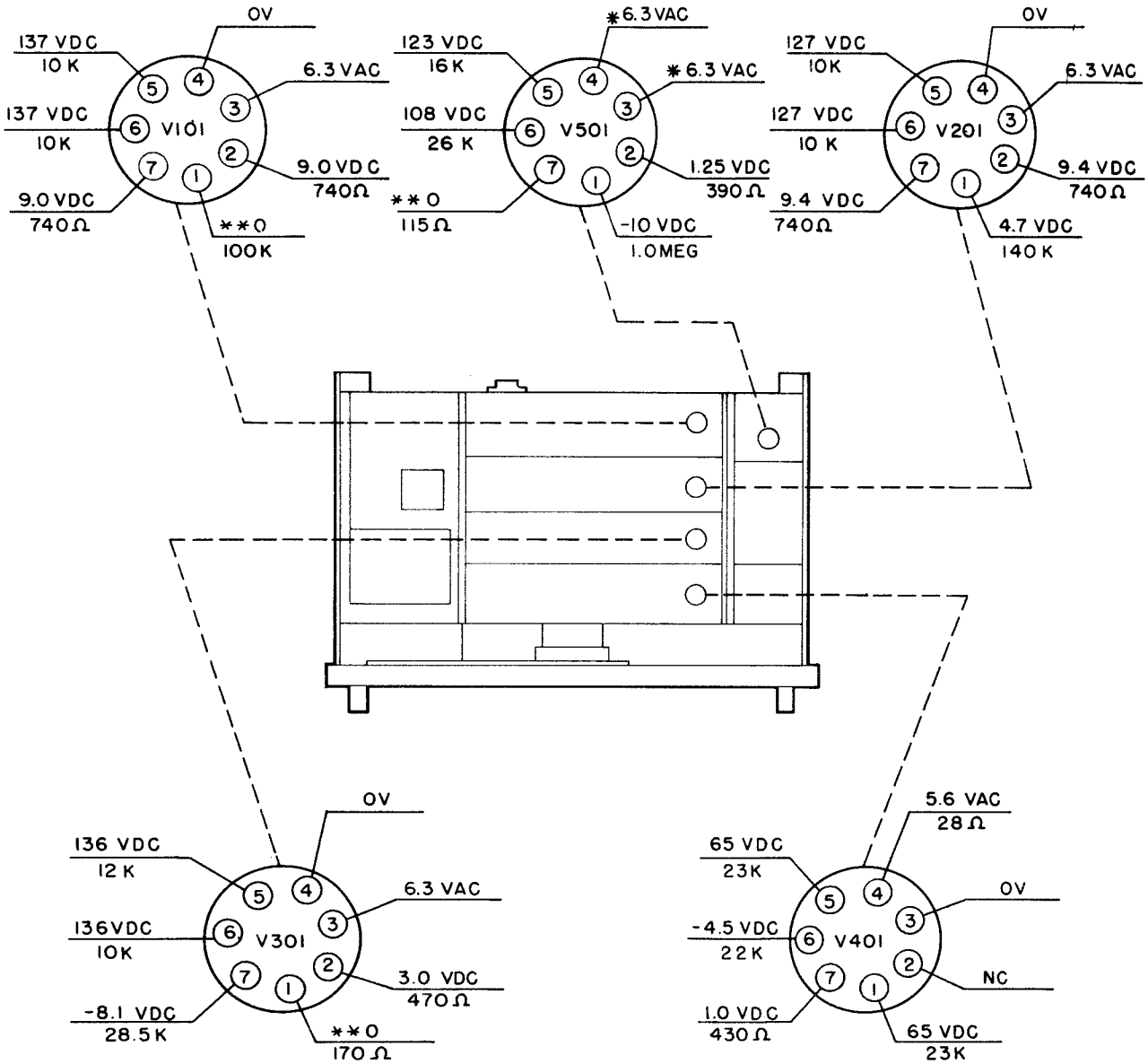
STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	(8) Figure 5-2	Connect the signal generator output between test point and ground.		
		a. Adjust the signal generator for a 60 KC output at 90 MV, unmodulated. Rotate Band Selector switch to Band I (14-30). Adjust the FREQ VERNIER control for a maximum indication on OUTPUT meter M1102.	a. Tone heard in headphones. OUTPUT meter M1102 indicates + 8 DB and TUNING meter M1101 indicates 3.	a. If indication is normal, proceed to b. If not, perform the voltage and resistance measurements for V301 (see figure 5-8). Check S301, T301 and associated capacitors.
		b. Repeat a. except rotate Band Selector switch to Band IV (133-283).	b. Same as a.	b. If indications are normal proceed to c. If not, check S301, T304 and associated capacitors.
		c. Repeat a. except adjust the signal generator for a 200 KC output at 200 MV and rotate the Band selector switch to Band II (30-63).	c. Same as a.	c. If indications are normal, proceed to d. If not, check S301, T302 and associated capacitors.
		d. Repeat a. except adjust the signal generator for a 200 KC output at 200 MV and rotate the Band Selector switch to Band III (63-133).	d. Same as a.	d. If indications are normal, proceed to e. If not, check S301, T303 and associated capacitors.
		e. Repeat a. except adjust the signal generator for a 200 KC output at 200 MV and rotate the Band Selector switch to Band V (283-600).	e. Same as a.	e. If indications are not normal check S301, T305 and associated capacitors.

TABLE 5-8. FREQUENCY MIXER AND RF OSCILLATOR, TROUBLE-SHOOTING CHART (Continued)

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
2	Ⓜ Figure 5-2	Connect electronic multimeter (AN/USM-116) between test point and ground.	-2.5 VDC minimum.	If indication is not normal, perform the voltage and resistance measurements for V401 (see figure 5-8).

TABLE 5-9. MAIN RF AMPLIFIER, TROUBLE-SHOOTING CHART

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	⑨ Figure 5-2	a. Set the Band Selector switch to Band I (14-30) and tune the receiver to 30 KC. Set the signal generator to the receiver frequency and adjust the signal generator output for a 45 MV, unmodulated signal. Apply the signal generator output between test point and ground. Adjust the FREQ VERNIER control for a maximum indication on OUTPUT meter M1102.	a. Tone heard in headphones. OUTPUT meter M1102 indicates +8 DB minimum and TUNING meter M1101 indicates 5.	a. If indications are normal, proceed to b. If not, perform the voltage and resistance measurements for V201 (see figure 5-8). Check S201, T201 and associated capacitors.
		b. Repeat a. except rotate Band Selector switch to Band II (63 KC). Adjust signal generator output to 100 MV.	b. Same as a.	b. If indications are normal, proceed to c. If not, check S201, T202 and associated capacitors.
		c. Repeat a. except rotate Band Selector switch to Band III (133 KC). Adjust signal generator output to 110 MV.	c. Same as a.	c. If indications are normal proceed to d. If not, check S201, T203 and associated capacitors.
		d. Repeat a. except rotate Band Selector switch to Band IV (283 KC). Adjust signal generator output to 60 MV.	d. Same as a.	d. If indications are normal, proceed to e. If not, check S201, T204 and associated capacitors.
		e. Repeat a. except rotate Band Selector switch to Band V (600 KC). Adjust signal generator output to 160 MV.	e. Same as a.	e. If indication is not normal, check S201, T205 and associated capacitors.



NOTES:

* measured between pins. ** do not measure. Measure all voltage and resistance with GAIN control at 6 and Band Selector switch to Band I (14-30). Unless otherwise specified all voltage and resistance measurements are made to ground. Voltage and resistance measurements made with electronic multimeter (AN/USM-116).

90106-TM-27

Figure 5-8. First IF Amplifier, Oscillator, Frequency Mixer, Main RF Amplifier and Antenna RF Amplifier, Typical Voltage and Resistance Measurements

TABLE 5-10. ANTENNA RF AMPLIFIER TROUBLE-SHOOTING CHART

STEP	TEST POINT	PRELIMINARY ACTION	NORMAL INDICATION	NEXT STEP
1	(10) Figure 5-2	a. Set the Band Selector switch to Band I (14-30) and tune the receiver to 30 KC. Set the signal generator to the receiver frequency and adjust the signal generator for a 12 MV, unmodulated signal. Apply the signal generator output between test point and ground and adjust the FREQ VERNIER control for a maximum indication on OUTPUT meter M1102.	a. Tone heard in headphones. OUTPUT meter M1102 indicates +8 DB minimum and TUNING meter M1101 indicates 5.	a. If indications are normal, proceed to b. If not, perform the voltage and resistance measurements for V101 (see figure 5-8). Check S101, T101 and associated capacitors.
		b. Repeat a. except set Band Selector switch to Band II (63 KC). Adjust signal generator for 14 MV.	b. Same as a.	b. If indications are normal, proceed to c. If not, check S101, T102 and associated capacitors.
		c. Repeat a. except set Band Selector switch to Band III (133 KC). Adjust signal generator for 22 MV.	c. Same as a.	c. If indications are normal, proceed to d. If not, check S101, T103 and associated capacitors.
		d. Repeat a. except set Band Selector switch to Band IV (283 KC). Adjust signal generator for 10 MV.	d. Same as a.	d. If indications are normal, proceed to e. If not, check S101, T104 and associated capacitors.
		e. Repeat a. except set Band Selector switch to Band V (600 KC). Adjust signal generator for 50 MV.	e. Same as a.	e. If indications are not normal, check S101, T105 and associated capacitors.

SECTION 6

REPAIR

6-1. FAILURE, AND PERFORMANCE AND OPERATION REPORTS.

NOTE

The Bureau of Ships no longer requires the submission of failure reports for all equipment. Reports are to be accomplished for designated equipments to the extent required by existing directives. All failures shall be reported for those equipments requiring Failure Reports.

6-2. ALIGNMENT AND ADJUSTMENT.

a. TEST EQUIPMENT AND SPECIAL TOOLS. - The test equipment required to align and adjust the receiver are listed below. The special tools required are test cable CX-7860/WRR-3 and the special test lead. Test cable CX-7860/WRR-3 is provided with each AN/WRR-3 equipment. The special test lead is made from test prod MX-1909/U which is provided with each AN/WRR-3 equipment (see paragraph 2-4c).

(1) Electronic Multimeter AN/USM-116.

(2) Electronic Multimeter ME-6E/U.

(3) RF Signal Generator AN/URM-25 series.

(4) Frequency Meter Set AN/USM-26 series.

(5) A 680 UUF Capacitor.

(6) 600 ohm non-inductive resistor.

b. CONTROL SETTINGS. - Before starting an alignment procedure, front panel controls are to be in the preset positions indicated below. POWER switch S1108 is in the "ON" position. Any change in control setting from the preset position will be indicated in the alignment procedure.

CONTROL	SETTING
CAL (S1104)	OFF
N.L. (S1105)	OFF
O.L. (S1107)	ON
CAL ADJ (C1102)	0
B.F.O. (S1102)	ON
ANT. COMP (C103)	0
FREQ VERNIER (C1101)	6
I.F. SELECTIVITY (S601)	BROAD
A.F. SELECTIVITY (S1106)	BROAD
GAIN (R1101)	6
ANTENNA IMPEDANCE (S1103)	LO
OUTPUT (R1102)	10
LEVEL (R1106)	10

c. TEST SET-UP. - The signal injection points and signal generator settings are given in each step. Additional receiver control settings are given where necessary with each step. The location of each alignment control on the receiver is shown in figures 6-1 and 6-2. The location of signal injection points are shown in figures 5-1, 5-2 and 5-3.

d. CONNECTIONS. - Connect electronic multimeter AN/USM-116 to test point ● G where it is to remain throughout the alignment procedure. The remainder of the connections are given in the particular alignment procedure being performed.

NOTE

Do not exceed a -1.5 volt indication on the electronic multimeter at any time during alignment. Reduce the signal generator output level accordingly as the alignment procedures progress.

e. SECOND IF AMPLIFIER ALIGNMENT. - To align the second IF amplifier proceed as follows:

(1) Connect the 680 UUF capacitor between test point ● F (see figure 5-1) and ground.

(2) Tune the signal generator for a 200 KC, unmodulated signal and connect the signal generator output to test point ● H (see figure 5-1).

(3) Adjust the signal generator output level to produce a -1.0 volt indication on the electronic multimeter.

(4) Adjust Z603L1 (see figure 6-1) for a maximum indication on the electronic multimeter.

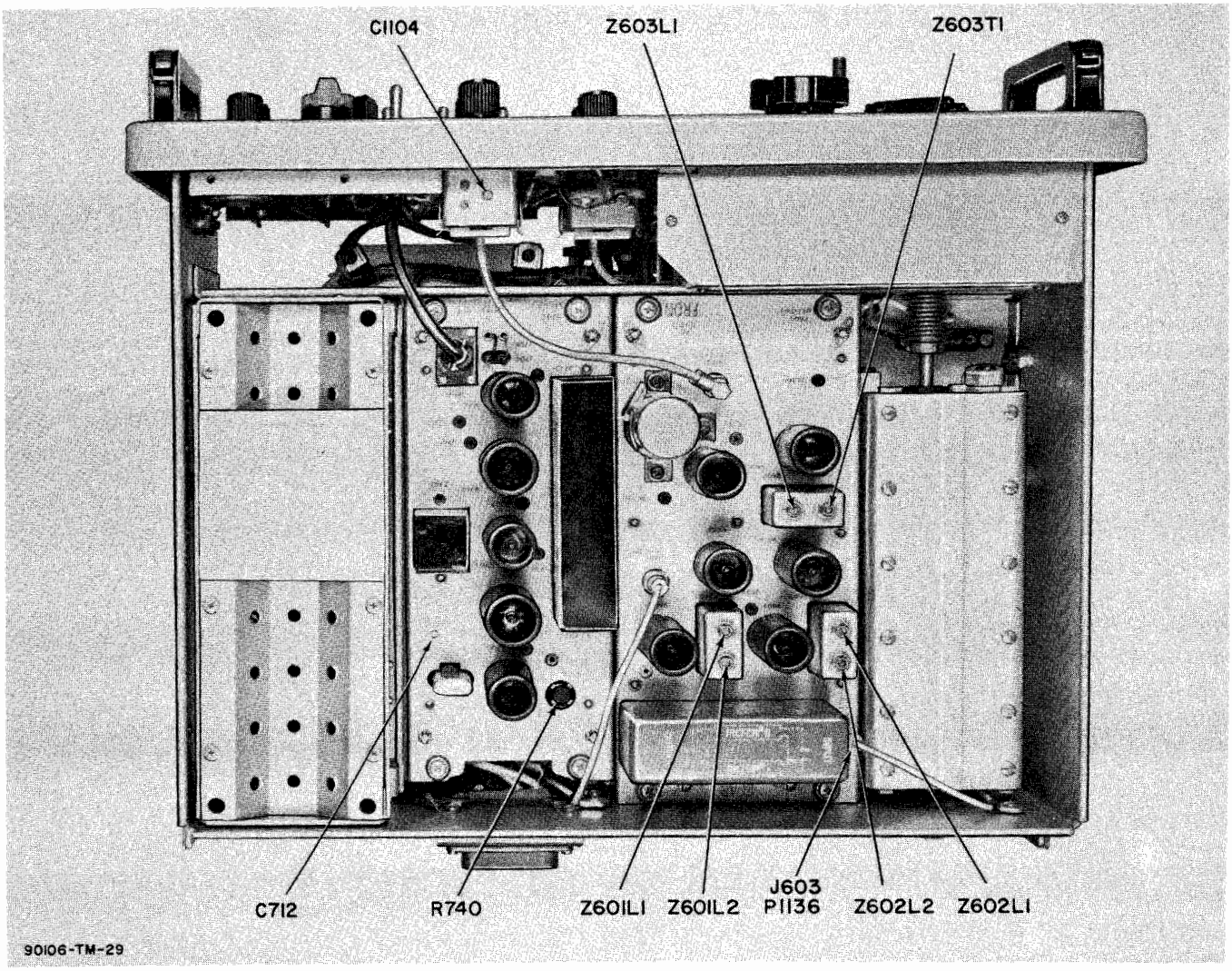


Figure 6-1. Alignment Controls, Top View

(5) Remove the 680 UUF capacitor and adjust Z603T1 (see figure 6-1) for a maximum indication on the electronic multimeter.

(6) Connect the signal generator output to test point ● I (see figure 5-1) and connect the 680 UUF capacitor between test point ● H and ground (see figure 5-1).

(7) Adjust Z602L2 (see figure 6-1) for a maximum indication on the electronic multimeter.

(8) Remove the 680 UUF capacitor and adjust Z602L1 for a maximum indication on the electronic multimeter.

(9) Connect the signal generator output to test point ● J (see figure 5-1) and connect the 680 UUF capacitor between test point ● I and ground (see figure 5-1).

(10) Adjust Z601L2 (see figure 6-1) for a maximum indication on the electronic multimeter.

(11) Remove the 680 UUF capacitor and adjust Z601L1 (see figure 6-1) for a maximum indication on the electronic multimeter.

f. FIRST IF AMPLIFIER ALIGNMENT. - To align the first IF amplifier proceed as follows:

(1) Connect the frequency meter set to the signal generator.

(2) Tune the signal generator to 200 KC, unmodulated, as read on the frequency meter set.

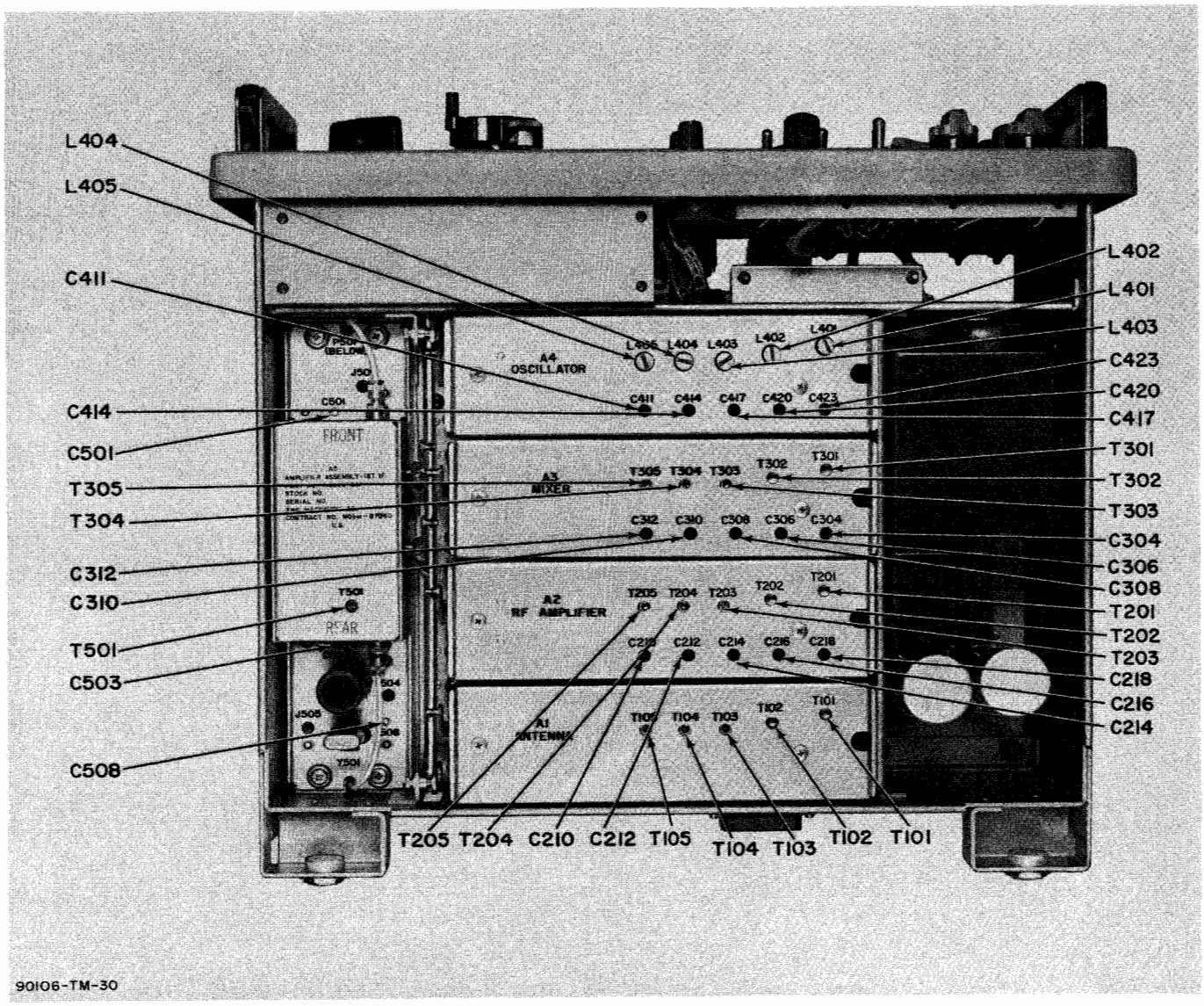


Figure 6-2. Alignment Controls, Bottom View

(3) Set the Band Selector switch to Band V (283-600) and connect the signal generator to test point ★8 (see figure 5-2).

(4) Adjust T501 (see figure 6-2) for a maximum indication on the electronic multimeter.

(5) Connect the signal generator output to the frequency meter set.

(6) Tune the signal generator to 60 KC, unmodulated, as read on the frequency meter set.

(7) Set the Band Selector switch to Band IV (133-283) and connect the signal generator output to test point ★8 (see figure 5-2).

(8) Adjust C508 (see figure 6-2) for maximum indication on the electronic multimeter.

(9) Adjust C501 and C503 (see figure 6-2) for a

maximum indication on the electronic multimeter.

NOTE

Do not readjust T501 while Band Selector switch is on Band IV.

g. BFO ALIGNMENT. - To align the beat frequency oscillator proceed as follows:

(1) Connect the signal generator output to the frequency meter set.

(2) Tune the signal generator to 60 KC, unmodulated, as read on the frequency meter.

(3) Set the controls on the receiver as follows: Band Selector to Band I (14-30); FREQ VERNIER to 0.

(4) Connect the output of the signal generator to test point ★8 (see figure 5-2).

(5) Connect a set of headphones to one of the PHONES jacks on the front panel of the receiver.

(6) Adjust C1104 for a zero beat (see figure 6-1).

h. CALIBRATOR ADJUSTMENT. - To adjust the crystal-controlled calibrator proceed as follows:

(1) Connect the frequency meter to test point ★12 (see figure 5-3).

(2) Disconnect P1136 from J603 (see figure 6-1).

(3) Set CAL switch to ON.

(4) Adjust C712 (see figure 6-1) for a 200.000 KC indication on the frequency meter set.

(5) Connect the frequency meter set to test point ●O (see figure 5-1).

(6) Adjust R740 (see figure 6-1) for a 20.000 KC indication on the frequency meter set.

(7) Readjust R740 until the frequency meter indicates a change in frequency. Note the position of the slot on R740.

(8) Readjust R740 in the opposite direction from step (7) until the frequency meter set indicates a change in frequency from 20 KC. Note the position of the slot on R740.

(9) Set R740 midway between the positions noted in steps (7) and (8).

i. RF SECTION ALIGNMENT. - To completely align the RF section, the antenna RF amplifier, main RF amplifier, frequency mixer and RF oscillator must be aligned individually on each band. In addition. each band should be aligned at the upper and lower ends of the band.

Table 6-1 lists the steps necessary to align the RF section, the control or reference symbol of the part to be adjusted, the assembly where the adjustment is located and the position of the Band Selector switch.

The complete alignment procedure for Band I is given below. To align the RF section on the remaining bands, repeat the procedures using the frequencies and adjusting the parts listed in table 6-1.

NOTE

The oscillator alignment on Band I is completed and checked before aligning the oscillator on Band II, or before aligning the other stages of Band I.

(1) Preset the controls according to paragraph 6-2b.

(2) Connect a set of headphones in one of the receiver PHONES jack.

(3) Connect the electronic multimeter to test point ● G (see figure 5-1).

(4) Connect the signal generator output to test point ★ 8 (see figure 5-2) and the HIGH RF OUTPUT of the signal generator to the frequency meter set.

(5) Set the Band Selector to Band I and tune the receiver to 14.30 KC.

NOTE

In setting the tuning control to the alignment frequency, always approach the frequency from the low end.

(6) Tune the signal generator to 14.300 KC as read on the frequency meter.

(7) Connect the frequency meter to IF OUTPUT jack, J1002 (test point ★12, figure 5-3) on the rear of the receiver cabinet.

(8) Adjust L401 (see figure 6-2) for a 200,00 KC output frequency as read on the frequency meter set.

(9) Tune the receiver to 28.9 KC.

(10) Tune signal generator for a 200.000 KC output as read on the frequency meter.

(11) Again connect the frequency meter to the HI RF OUTPUT of the signal generator and note the frequency.

(12) If the signal generator frequency differs greatly from the correct value of 28.9 KC, set the signal generator to the opposite side of 28.9 KC by 2.5 times the frequency error.

Example: The 200.000 KC output occurs at the generator setting of 28.1 KC, 28.9 KC - 28.1 KC = 0.8 KC; 2.5 times 0.8 KC = 2.0 KC. Therefore, set the signal generator to 30.9 KC.

The multiplication factor on the remaining bands is as follows: Band II, 3.0 times the alignment error;

Band III, 1.5 times the alignment error; Bands IV and V, 0.5 times the alignment error.

(13) Again connect the frequency meter to the receiver IF OUTPUT jack.

(14) Adjust C423 (see figure 6-2) for a 200,00 KC output as read on the frequency meter.

(15) Repeat items (4) through (14) until alignment error is less than 20 CPS on Band I. The allowable error on the remaining bands is as follows: Band II, less than 30 CPS; Band III, less than 40 CPS; Band IV, less than 50 CPS; Band V, less than 75 CPS.

(16) Repeat items (4) through (15) for the remaining bands using the frequencies and adjusting the parts listed in steps 2 through 5 of table 6-1 (see figure 6-2).

(17) Connect the signal generator output to test point ★11 (see figure 5-3).

(18) With the receiver dial set at 14.30 KC and the signal generator tuned to 14.300 KC, adjust T301, T201 and T101 (see figure 6-2) in that order, for a maximum indication on the electronic multimeter.

(19) Connect the HIGH RF OUTPUT of the signal generator to the frequency meter and tune the signal generator to 28.900 KC as read on the frequency meter.

(20) Tune the receiver to 28.90 KC.

(21) Adjust C304, C218 (see figure 6-2) and ANT. COMP, (see figure 3-1) in that order, for a maximum indication on the electronic multimeter.

(22) Repeat items (18) through (21) until there is no further change in the electronic multimeter indication.

TABLE 6-1. RF SECTION ALIGNMENT PROCEDURE

STEP	SIGNAL GENERATOR AND RECEIVER FREQUENCY (KC)	ADJUST	STAGE	BAND SELECTOR SWITCH POSITION
1	14.3	L401	RF Oscillator	14-30
	28.9	C423	RF Oscillator	
2	30.7	L402	RF Oscillator	30-63
	60.8	C420	RF Oscillator	
3	64.5	L403	RF Oscillator	63-133
	128.3	C417	RF Oscillator	
4	136.3	L404	RF Oscillator	133-283
	272.9	C414	RF Oscillator	
5	290.0	L405	RF Oscillator	283-600
	579.0	C411	RF Oscillator	
6	14.3	T301	Frequency Mixer	14-30
		T201	Main RF Amplifier	
		T101	Antenna RF Amplifier	
7	28.9	C304	Frequency Mixer	14-30
		C204	Main RF Amplifier	
		ANT COMP	Antenna RF Assembly	
8	30.7	T302	Frequency Mixer	30-63
		T202	Main RF Amplifier	
		T102	Antenna RF Assembly	
9	60.8	C306	Frequency Mixer	30-63
		C216	Main RF Amplifier	
		ANT COMP	Antenna RF Assembly	
10	64.5	T303	Frequency Mixer	63-133
		T203	Main RF Amplifier	
		T103	Antenna RF Amplifier	
11	128.3	C308	Frequency Mixer	63-133
		C214	Main RF Amplifier	
		ANT COMP	Antenna RF Amplifier	
12	136.3	T304	Frequency Mixer	133-283
		T204	Main RF Amplifier	
		T104	Antenna RF Amplifier	
13	272.9	C310	Frequency Mixer	133-283
		C212	Main RF Amplifier	
		ANT COMP	Antenna RF Amplifier	
14	290.0	T305	Frequency Mixer	283-600
		T205	Main RF Amplifier	
		T105	Antenna RF Amplifier	
15	579.0	C312	Frequency Mixer	283-600
		C210	Main RF Amplifier	
		ANT COMP	Antenna RF Amplifier	

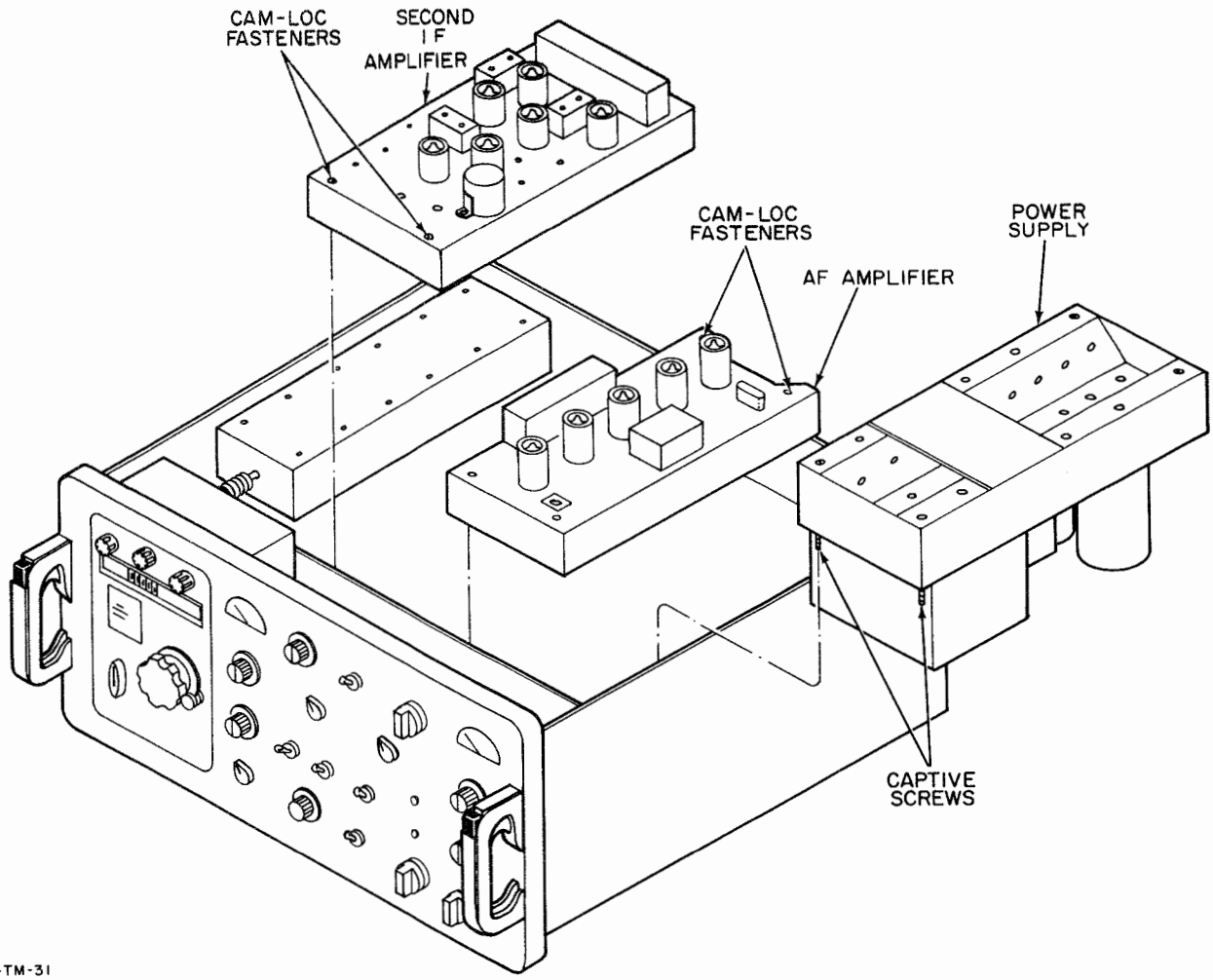


Figure 6-3. Removal of Assemblies from Top of Chassis

(23) Repeat items (18) through (22) for the remaining bands, using the frequencies and adjusting the parts listed in steps 8 through 15 of table 6-1 (see figures 3-1 and 6-2).

j. FINAL CHECK. - After the alignment of the receiver is completed, check the receiver A1 sensitivity against the values in table 1-1, using the procedures below. If the receiver sensitivity is not satisfactory on any one band, realign the receiver on that band, then check again. If the receiver sensitivity is not satisfactory on any band, check the tubes in the RF section.

(1) Connect the attenuator pad (CN-36/URM-25) to Antenna Input jack J1003.

(2) Connect a 600 ohm, non-inductive resistor across audio output connector, J1006 or J1007. Then connect an electronic multimeter (ME-6E/U) across the resistor.

(3) Preset the receiver controls according to paragraph 6-2(b) and set the POWER switch to "ON."

(4) Tune the receiver to any frequency within Band I.

(5) Short the input of the attenuator pad and adjust the receiver GAIN control for 0.19 volt indication on the electronic multimeter.

(6) Remove the short from the attenuator pad. Tune the signal generator (unmodulated) to the receiver frequency and connect the signal generator output to the attenuator pad.

(7) Adjust the signal generator output level for a 1.9 volt indication on the electronic multimeter.

(8) Repeat steps (4) through (7) for each receiver band. Divide the signal generator output levels obtained in step (7) by 10. Compare these readings with the sensitivity values given in table 1-1 (A1 BROAD, LOW Z). The signal generator output levels obtained in step (7) are the receiver sensitivities with the receiver set for standard gain and producing the standard output of 6.0 milliwatts (into 600 ohms).

6-3. REMOVAL AND REASSEMBLY OF PARTS AND SUBASSEMBLIES.

The following paragraphs describe the procedure used to remove, replace and reassemble (where necessary) parts of the receiver. Only a part whose removal and replacement are not obvious is covered. Parts such as resistors, capacitors and transformers are not covered. Figures 6-3 through 6-13 illustrate some of the removal procedures covered in the following paragraphs. Figures 6-14 through 6-37 show the location of parts on the subassemblies and the chassis. Connection and wiring diagrams are shown in figures 6-38 through 6-41.

a. REMOVAL OF MAJOR ELECTRICAL ASSEMBLIES (see figure 6-3 and 6-4). - To remove all major electrical assemblies except the power supply, twist the Camloc fasteners which secure the assembly to the main chassis one-quarter turn counterclockwise. Then carefully lift the assembly from the chassis. To remove the power supply unscrew the four captive screws which secure the power supply to the main chassis. Then lift the power supply from the chassis.

b. DISASSEMBLY OF THE POWER SUPPLY. - To disassemble the power supply twist the six Camloc fasteners located on the cover of the power supply one-quarter turn counterclockwise and lift the cover from the power supply.

c. DISASSEMBLY OF AF, FIRST IF AND SECOND IF AMPLIFIERS. - To disassemble the AF, first IF and second IF amplifiers, proceed as follows:

(1) Twist the Camloc fasteners, located on the cover of the assembly, one-quarter turn counterclockwise.

(2) Lift off the cover of the assembly.

(3) Unplug P704 and P705 on the AF amplifier. Disconnect wires from S601 to J604 and J605 on the second IF assembly. Release clamp securing Z604 to the second IF amplifier.

(4) Unscrew the red Phillips-head screws on the printed circuit board. The remaining Phillips-head screws (uncolored) attach the heavy components to the printed circuit board itself.

(5) Carefully remove the printed cirucuit board assembly from the chassis.

d. DISASSEMBLY OF ANTENNA RF AMPLIFIER, MAIN RF AMPLIFIER, FREQUENCY MIXER AND RF OSCILLATOR.- To disassemble the antenna RF amplifier, main RF amplifier, frequency mixer and RF oscillator, proceed as follows:

(1) Twist the two Camloc fasteners located on the cover one-quarter turn counterclockwise.

(2) Lift the cover from the subassembly.

(3) Unscrew the two Phillips-head screws, located at each corner toward the tube side of the printed circuit board, and the two Phillips-head screws located on each side of the connector.

(4) Swing the printed circuit board out and unsolder the connections between the connector, assembly chassis and the printed circuit board.

CAUTION

Care must be taken when unsoldering the three heavy wires from the RF oscillator printed circuit board. Rough handling may result in damage to the switch terminals which are soldered to the other end of the wires.

e. REASSEMBLY OF POWER SUPPLY, AF FIRST IF, SECOND IF, ANTENNA RF, MAIN RF AMPLIFIERS, FREQUENCY MIXER AND RF OSCILLATOR. - To reassemble the power supply, audio, first IF, second IF, antenna RF, main RF amplifier, frequency mixer and RF oscillator, follow the reverse procedure given for disassembly.

CAUTION

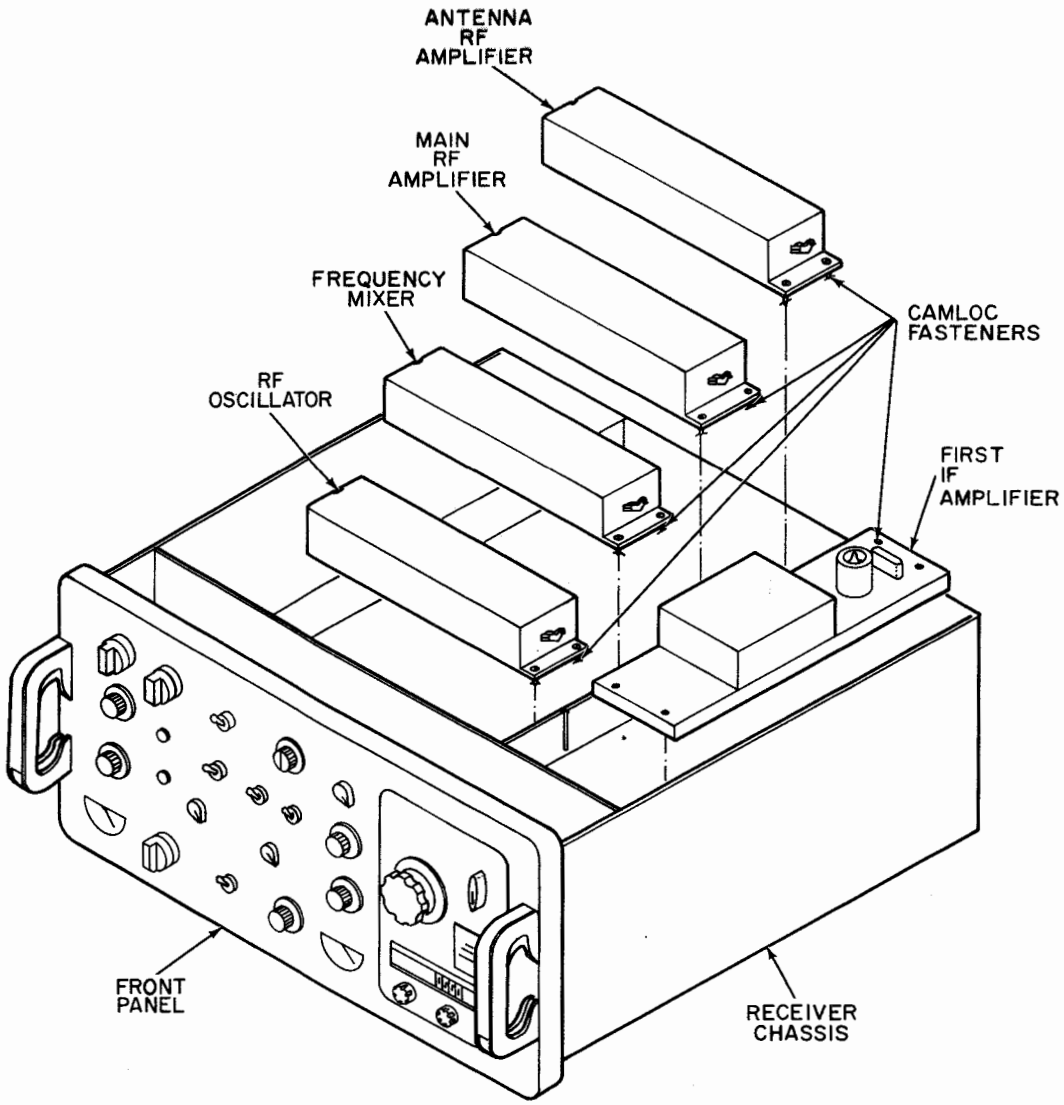
When replacing any subassembly, make certain, by careful inspection, that all mechanical connections between the subassembly and the main chassis are aligned. Do not try to force an assembly into place as damage to the equipment may result.

f. REMOVAL OF TUNING DRIVE ASSEMBLY (see figure 6-5). - To remove the tuning drive assembly from the main chassis, proceed as follows:

NOTE

The tuning drive assembly is a delicate and precision instrument and should not be removed unless absolutely necessary.

(1) Loosen the two Allen-head screws which connect the dial shaft bellows coupling to the main tuning capacitor shaft.



90106-TM-32

Figure 6-4. Removal of Assemblies from Bottom of Chassis

(2) Unplug the two dial lamp plugs, P1112 and P1113.

(3) Unscrew the four Allen-head screws which secure the dial assembly to the front panel.

(4) Remove the front rack screw and loosen the rear rack screw.

(5) Carefully remove the dial assembly from the front panel.

g. DISASSEMBLY OF TUNING DRIVE ASSEMBLY (see figure 6-6).- To disassemble the tuning drive assembly, proceed as follows:

(1) Remove the tuning drive assembly from the main receiver chassis (see paragraph 6-3f).

(2) Remove screws (1), lockwashers (2) and nameplate (3).

(3) Loosen setscrews (4) and remove hex nut (5), washer (6), lockwasher (7), dial knob lock (8) and tuning control knob (9).

NOTE

The setscrews (4, 10) removed in steps (3) and (4) are staked with glypstal. This must be removed with a solvent prior to removal of the setscrews.

(4) Loosen setscrews (10) and remove Band Selector knob (11).

(5) Remove wires and grommet (12) from recess in tuning drive subassembly (13).

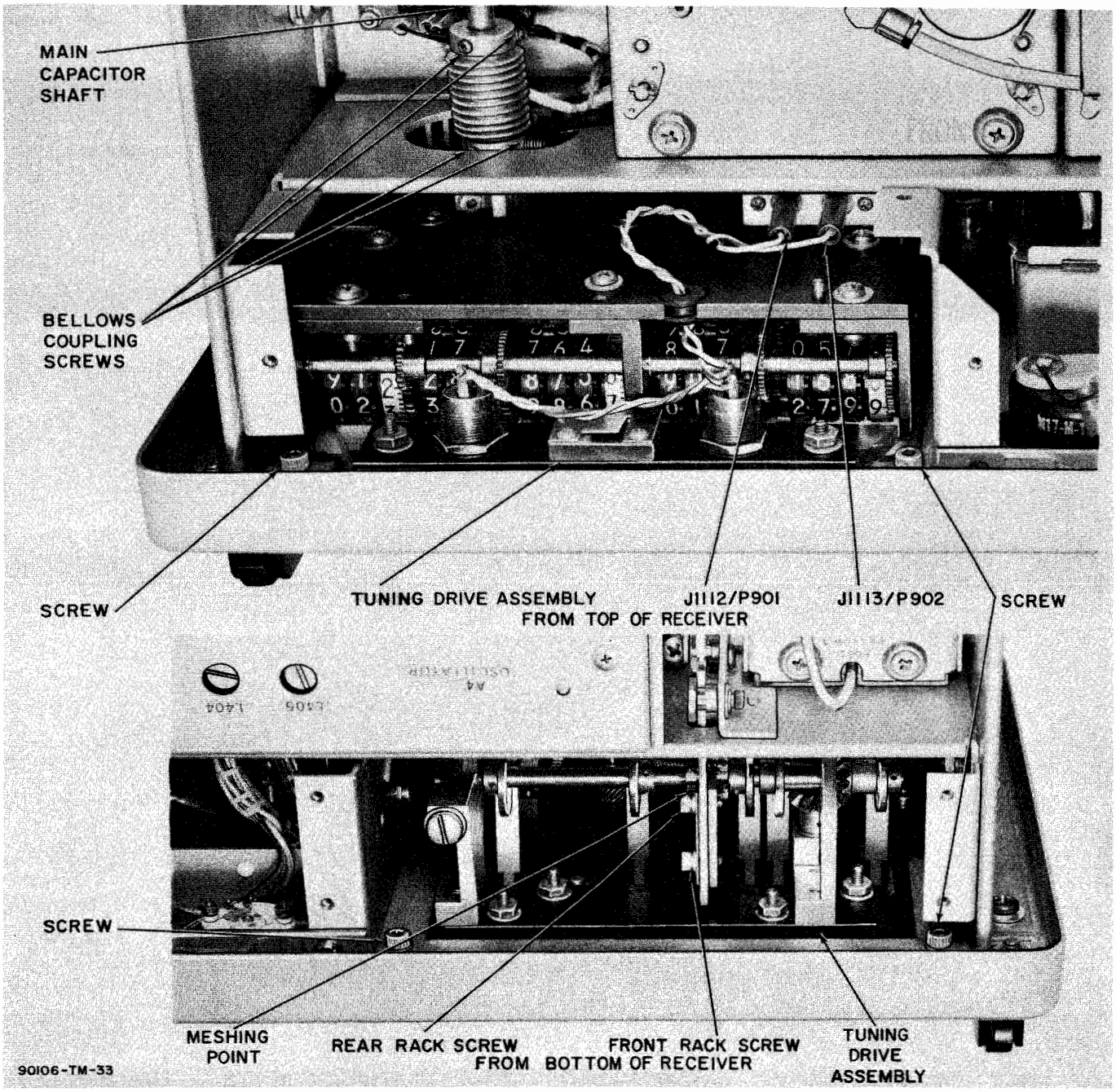


Figure 6-5. Removal of Tuning Drive Assembly

(6) Remove screws (14), spacers (15) and carefully remove the tuning drive subassembly. (See paragraph 6-3i for disassembly of the tuning drive subassembly.)

CAUTION

Avoid contact between the control dials of the tuning drive subassembly and any hard or abrasive object because the control dials are easily damaged.

(7) Remove lamp and lens assemblies (44) from front of panel. Unsolder wires from lamp holders (16) and remove hex nuts (17), washers (43) and indicator lights.

(8) Remove hex nuts (18), washers (19), clamp-assembly plate (20) and light distributor (23).

(9) Remove screws (21) while holding mask retainer (22) in place, and remove front panel (46) from tuning drive assembly.

(10) Remove mask retainer (22) carefully, as dial masks (24, 25, 26) are spring loaded and tend to jump out.

(11) Remove dial window clip (28), dial window (45), dial masks (24, 25, 26) and coil springs (27).

(12) Remove screws (29), lockwashers (30), dial light reflector (31) and spacers (32).

(13) Remove hex nuts (33) and washers (34).

(14) Remove setscrew (35), retaining ring (36), shaft (37), and cam lift arms (47).

(15) Remove screw (38), lockwasher (39), spring (40), ball bearing (41) and band selector switch assembly (42).

h. REASSEMBLY OF TUNING DRIVE ASSEMBLY. - To reassemble the tuning drive assembly follow the reverse procedure for disassembly.

NOTE

The setscrews (4, 10) must be staked with glyptal when replaced.

i. DISASSEMBLY OF TUNING DRIVE SUBASSEMBLY (see figure 6-7). - The following is a step-by-step procedure for the disassembly of the tuning drive subassembly. Refer to steps (1) through (8) for the removal of Bands IV and V control dials, steps (9) through (15) for the removal of Bands I, II and III control dials and steps (16) through (25) for the disassembly of the low speed drive assembly.

(1) Remove the tuning drive subassembly using procedures of paragraph 6-3g., steps (1) through (6).

NOTE

Before proceeding with disassembly, align control dials as in figure 6-8.

(2) Remove pins (1), screws (2) and washers (3) while holding bracket (4) in place.

(3) Hold the gear and shaft assemblies (5, 6, 7) and the dial and gear assembly No. 5 (8) toward the center of the assembly and carefully remove bracket (4) from the assembly.

(4) Hold the dial and gear assembly No. 5 (8) and the gear and shaft assemblies (6, 7) in place and remove gear and shaft assembly (5).

(5) Hold the gear and shaft assemblies (6, 7) and the dial and gear assembly No. 4 (15) in place and remove dial and gear assembly No. 5 (8), spacers (9) and control dials (11, 12, 13) and three gear indexes (19).

(6) Hold gear and shaft assembly (7) in place and slide gear and shaft assembly (6) and shaft (14) away from bracket (10) sufficiently to allow shaft (14) to clear bracket (10). Then remove shaft (14) together with dial and gear assembly No. 4 (15), spacers (9), control dials (16, 17, 18) and three gear indexes (19).

NOTE

Band I, II and III shall be in position as in figure 6-8.

(7) Remove gear and shaft assemblies (6, 7).

(8) Remove ball bearings (20) from brackets (4, 10).

NOTE

At this point the following items may be removed and replaced: gear and shaft assemblies (5, 6, 7); dial and gear assemblies (8, 15); control dials (11, 12, 13, 16, 17, 18); shaft (14) (refer to paragraph 6-3j, steps 29 through 54 for reassembly).

(9) Remove pins (21).

CAUTION

Before proceeding with the disassembly, cover spur gear (22) of ground shaft assembly (59) in some manner so as to protect the control dial from damage during handling.

(10) Remove screws (23) and washers (24) while holding bracket (25) in place.

(11) Hold the gear and shaft assemblies (6, 26) and the control dial (27) toward the center of the assembly and carefully remove bracket (25) and spacer (28).

(12) Hold gear and shaft assembly (26) in place and carefully remove control dials (27, 29), spacers (9), dial and gear assembly No. 1 (30) and two gear indexes (19).

(13) Hold control dial (34) in place and carefully remove control dials (31, 32), spacers (9), dial and gear assembly No. 2 (33), gear and shaft assembly (26) and two gear indexes (19).

(14) Remove control dials (34, 35, 36), dial and gear assembly No. 3 (37), spacers (9), shaft (38) and three gear indexes (19).

(15) Remove ball bearings (20) from brackets (10, 25) and remove spacers (28).

NOTE

At this point the following items may be removed and replaced: gear and shaft assembly (26); control dials (27, 29, 31, 32, 34, 35, 36); dial and gear assemblies (30, 33, 37); shaft (38) (refer to paragraph 6-3j, steps 14 through 28, for reassembly).

(16) Remove pins (39).

(17) Remove screws (40), washers (41), finger stop

(42), spacer (43) and spring (44).

(18) Remove Allen-head screw (45), lockwasher (46), cam (47), spacer (48), retaining ring (79) and spacers (80, 81).

NOTE

If gear and shaft assembly (61) is to be replaced, remove pin (49), stop dog (50) and spacer (51).

(19) Remove retaining ring (52), spacer (53), retaining ring (54) and spacer (55).

(20) Remove screws (56), lockwashers (57) and washers (58).

(21) Hold gear and shaft assemblies (59, 60, 61) in place and carefully remove rear plate (62), ball bearings (63, 65) and bearing (64).

(22) Remove gear and shaft assemblies (59, 60, 61), ball bearing (66) and spacers (67, 68).

(23) Remove screws (69) and washers (70). Remove bearing (71) freeing subassembly panel (76).

(24) Remove pins (72), screws(73) and spacers (74) from front plate (75).

NOTE

Rear plate (62), spacers (74) and front plate (75) are machined after assembly and must be maintained as a matched set. Subassembly panel (76) and brackets (4, 10, 25) are also a matched set.

(25) Remove setscrew (77) and shaft (78).

j. REASSEMBLY OF TUNING DRIVE SUBASSEMBLY (see figure 6-7). - The following is a step-by-step procedure for the reassembly of the tuning drive subassembly. Refer to steps 1 through 13 for the reassembly of the low speed drive assembly; steps 14 through 28 for the reassembly of Bands I, II and III control dials; and steps 29 through 54 for the reassembly of Bands IV and V control dials.

(1) Install spacers (74) on front plate (75) using pins (72) and screws (73).

(2) Align front plate (75) and subassembly panel (76), then press bearing (71) in place. Secure the assembly using screws (69) and washers (70).

(3) Place spacers (67, 68) on gear and shaft assembly (60), and install in proper location on subassembly panel (76). Secure the gear and shaft assembly (60) using spacers (80, 81) and retaining ring (79).

(4) Install gear and shaft assemblies (59, 61) in proper location on subassembly panel (76).

(5) Install bearings (63, 64, 65) in place on rear plate (62) and position rear plate on assembly.

(6) Load anti-backlash gear of gear and shaft assembly (60) and secure rear plate (62) to assembly using screws (56), lockwashers (57) and washers (58).

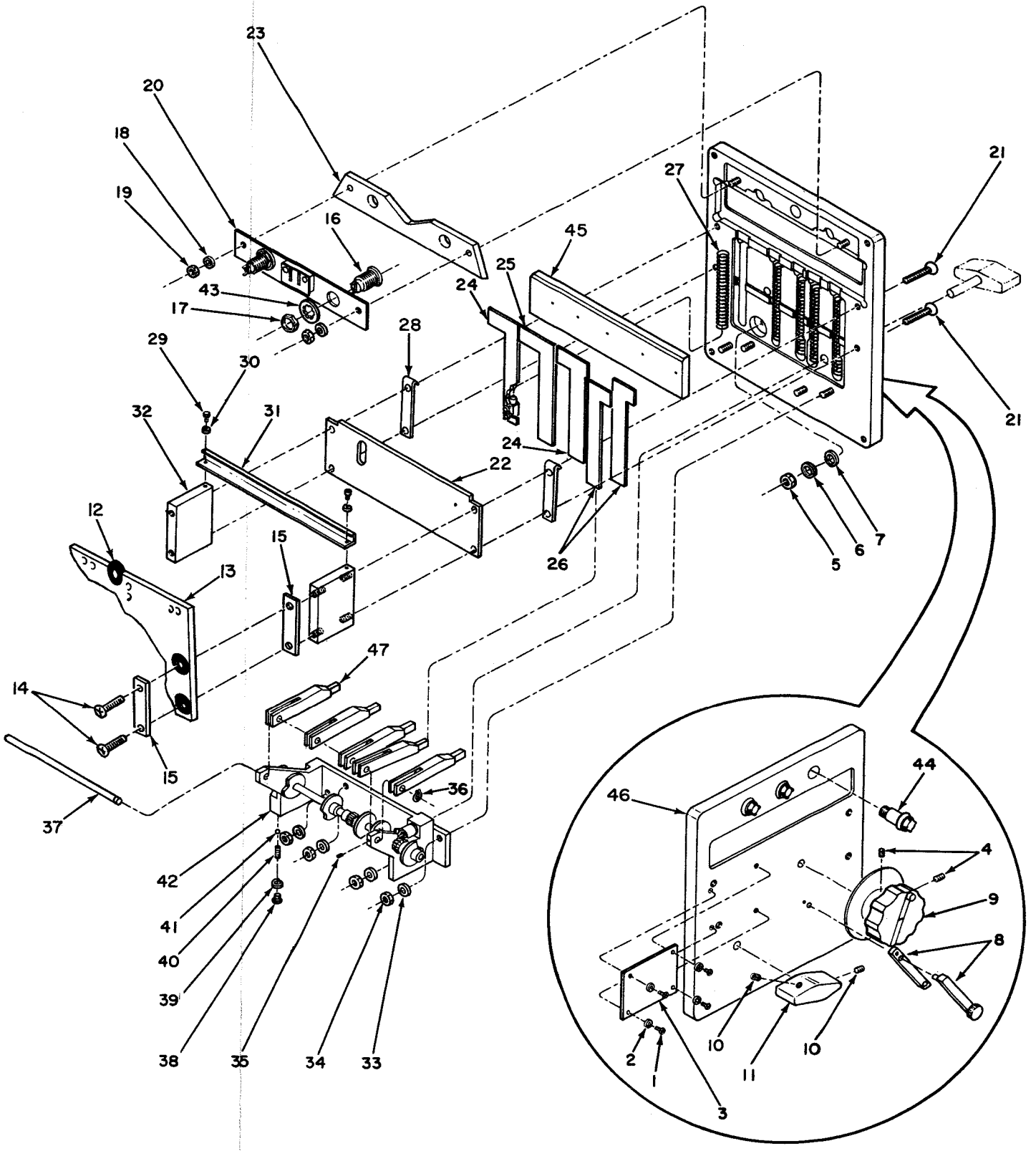
(7) Install spacers (53) and retaining ring (52) on gear and shaft assembly (59).

(8) Install spacer (48) and cam (47) using Allen-head screw (45) and lockwasher (46).

NOTE

Endplay of gear and shaft assembly (59) should not exceed 0.005 in.

1 Screw
2 Lockwasher
3 Nameplate
4 Setscrew
5 Hex Nut
6 Washer
7 Lockwasher
8 Dial Knob Lock
9 Tuning Control Knob
10 Setscrew
11 Band Selector Knob
12 Grommet
13 Tuning Drive Subassembly
14 Screw
15 Spacer
16 Lampholder
17 Hex Nut
18 Hex Nut
19 Washer
20 Clamp - Assembly Plate
21 Screw
22 Mask Retainer
23 Light Distributor
24 Dial Mask
25 Dial Mask
26 Dial Mask
27 Coil Springs
28 Window Clip
29 Screw
30 Lockwasher
31 Dial Light Reflector
32 Spacer
33 Hex Nut
34 Washer
35 Setscrew
36 Retaining Ring
37 Shaft
38 Screw
39 Lockwasher
40 Spring
41 Ball Bearing
42 Band Selector Switch Assembly
43 Washers
44 Lamp and Lens Assembly
45 Dial Window
46 Front Panel
47 Cam Lift Arms



90106-TM-34

Figure 6-6. Tuning Drive Assembly, Exploded View

(9) Load anti-backlash gear of gear and shaft assembly (59) and mesh with pinion gear of gear and shaft assembly (60).

(10) Install ball bearing (66), spacers (51, 55) and retaining ring (54).

(11) Install stop dog (50) using a 4-40 setscrew if removed per note following paragraph 6-3i(18).

NOTE

Endplay of gear and shaft assembly (61) should not exceed 0.005 in.

(12) Install spring (44), spacer (43) and finger stop (42) using screw (40) and washer (41).

(13) Loosen screws (69). Turn lower gear assembly away from high speed gear section and secure screws (69).

(14) Select the control dials (27, 29) and the dial and gear assembly No. 1 (30). Stack the three dials and measure their combined height. Add a sufficient quantity of spacers (9) to increase the combined height to 0.870 (± 0.005 in.).

(15) Repeat step (14) using the control dials (31, 32) and the dial and gear assembly No. 2 (33) measuring for a combined height of 0.945 (± 0.005).

(16) Repeat step (14) using the control dials (34, 35, 36) and the dial and gear assembly No. 3 (37), measuring for a combined height of 1.120 (±0.005) in.

(17) Install two of bearings (20) in bracket (10) and place one of spacer (28) on shaft (38). Install shaft (38) in bracket (10).

(18) Install shaft (78) using setscrew (77) and place a small amount of special lubricant on shafts (78, 38).

(19) Slide dial and gear assembly No. 3 (37) in position as in figure 6-8 and place approximately one-fourth of the spacers (9), acquired in step (14), on shaft (38).

(20) Slide one of gear indexes (19) on shaft (78) with the short teeth away from bracket (10) and position indexing gear so that short tooth slides under smooth black ring of dial and gear assembly No. 3 (37).

(21) Place a small amount of special lubricant on shaft (38) and position control dial (36) on shaft (38) as shown in figure 6-8. Mesh control dial (36) with gear index.

(22) Place approximately one-fourth of the spacers (9), acquired in step (14), on shaft (38) and place a small amount of lubricant on shaft (78). Slide one of gear indexes (19) into position on shaft (78) so that short tooth is against smooth ring of control dial (36).

(23) Repeat step (21) through (22) using control dial (35).

(24) Repeat step (20) using control dial (34) and place the remainder of the spacers (9), required in step (14), on shaft (38).

(25) Repeat steps (19) through (22) using the control dials (31, 32) and the dial and gear assembly No. 2 (33). Spacers (9), acquired in step (15), shall be divided into three groups and placed between the control dials (31, 32) and between the control dial (32) and the dial and gear assembly No. 2 (33). The remainder of the spacers shall be placed in front of control dial (31).

(26) Repeat steps (19) through (22) using the control dials (7, 29) and the dial and gear assembly No. 1 (30). Spacers (9), acquired in step (14), shall be divided into two groups, and placed between control dials (27, 29) and between the control dial (29) and the dial and gear assembly No. 1 (30).

NOTE

Before proceeding make certain that the control dials are aligned as in figure 6-8.

(27) Place gear and shaft assembly (26) into position in bracket (10).

(28) Place spacer (28) on shaft (38). Install bearing (20) in bracket (25) and, while supporting shafts (26, 38), carefully slide bracket (25) into position. Secure bracket (25) using screws (23) and washers (24).

(29) Repeat step (14) using the control dials (16, 17, 18) and the dial and gear assembly No. 4 (15), measuring for a combined height of 1.200 (±0.005) in.

(30) Repeat step (14) using the control dials (11, 12, 13) and the dial and gear assembly No. 5 (8), measuring for a combined height of 1.120 (± 0.005 in).

(31) Place spacer (28) on shaft (14) and install shaft (14) into position in bracket (10).

(32) Place a small amount of special lubricant on shaft (14) and slide control dial (18) in position as shown in figure 6-8. Place approximately one-third of the spacers (9), acquired in step (29), on shaft (14).

(33) Place a small amount of special lubricant on shaft (78). Slide one of indexing gears (19) on shaft (14) with the short teeth away from bracket (10) and engage teeth of control dial (18).

(34) With control dial (18) in position as in figure 6-8, the short tooth of indexing gear must face shaft (14). If it does not, disengage indexing gear, turn indexing gear one-eighth (one tooth) and re-engage.

(35) Repeat step (32) and (34) using control dial (17) and control dial (16).

(36) Place gear and shaft assembly (5) in bracket (10) and place gear and shaft assembly (6) in bracket (25).

(37) Place approximately one-fourth of the spacers (9), acquired in step (30), on shaft (14) and slide control dial (13) in position as shown in figure 6-8.

(38) Repeat steps (33) and (34) using control dial (13).

(39) Slide control dial (12) in position as shown in figure 6-8 and place approximately one-fourth of the spacers (9), acquired in step (30), on shaft (14).

(40) Repeat steps (33) and (34) using control dial (12).

(41) Slide control dial (12) in position as shown in figure 6-8 and place approximately one-fourth of the spacers (9), acquired in step (30), on shaft (14).

(42) Repeat steps (33) and (34) using control dial (12).

(43) Lubricate shaft (14) with a small amount of special lubricant and place the dial and gear assembly No. 5 (8) on shaft (14).

(44) Install gear and shaft assembly (5) in position on bracket (10).

(45) Place bearings (20) in bracket (4) and place spacer (28) on shaft (14). While holding gear and shaft assemblies (5, 6, 7) and shaft (14) in position, carefully slide bracket (4) into position. Secure bracket (4) using screws (2) and washers (3).

NOTE

At this point all control dials must be aligned as in figure 6-8.

(46) Loosen screws (2, 23), replace pins (1, 21) and secure screws (2, 23).

(47) Check gear and shaft assemblies (5, 6, 7, 26) and shafts (14, 38) for endplay.

NOTE

Endplay shall not exceed 0.007 in. (0.004 in. on gear and shaft assembly (7). If endplay does exceed limits, place spacers (28) on end of shaft(s) which exceed limit.

(48) Loosen screws (69) and move lower gear assembly toward gear and shaft assembly (7) until helical gears completely engage. Secure screws (69).

(49) Gently rotate gear and shaft assembly (7) and check for backlash of helical gears.

NOTE

If noticeable backlash or binding is present, repeat step (48).

(50) Rotate gear and shaft assembly (61) counterclockwise until 276.56 appears on Band V control dials.

(51) Adjust cam (47) and stop dog (50) in position as shown in figure 6-9. Tighten Allen-head screw (45) and setscrew.

(52) Rotate gear and shaft assembly (61) approximately 1-1/2 turn clockwise and counterclockwise, noting stop action of stop finger (42).

NOTE

If stop finger (42) does not fall at proper time, readjust cam (47) until stop action is corrected.

(53) Rotate gear and shaft assembly (61) to the extreme counterclockwise position. If 276.56 KC is indicated on Band V control dials, drill and pin stop dog (50).

1	Pin	29	Control Dial	57	Lockwasher
2	Screw	30	Dial and Gear Assembly No. 1	58	Washer
3	Washer	31	Control Dial	59	Gear and Shaft Assembly
4	Bracket	32	Control Dial	60	Gear and Shaft Assembly
5	Gear and Shaft Assembly	33	Dial and Gear Assembly No. 2	61	Gear and Shaft Assembly
6	Gear and Shaft Assembly	34	Control Dial	62	Rear Plate
7	Gear and Shaft Assembly	35	Control Dial	63	Ball Bearing
8	Dial and Gear Assembly No. 5	36	Control Dial	64	Bearing
9	Spacer	37	Dial and Gear Assembly No. 3	65	Ball Bearing
10	Bracket	38	Shaft	66	Ball Bearing
11	Control Dial	39	Pin	67	Spacer
12	Control Dial	40	Screw	68	Spacer
13	Control Dial	41	Washer	69	Screw
14	Shaft	42	Finger Stop	70	Washer
15	Dial and Gear Assembly No. 4	43	Spacer	71	Bearing
16	Control Dial	44	Spring	72	Pin
17	Control Dial	45	Allen-head Screw	73	Screw
18	Control Dial	46	Lockwasher	74	Spacer
19	Gear Indexes	47	Cam	75	Front Plate
20	Ball Bearings	48	Spacer	76	Subassembly Panel
21	Pin	49	Pin	77	Setscrew
22	Spur Gear	50	Stop Dog	78	Shaft
23	Screw	51	Spacer	79	Retaining Ring
24	Washer	52	Retaining Ring	80	Spacer
25	Bracket	53	Spacer	81	Spacer
26	Gear and Shaft Assembly	54	Retaining Ring		
27	Control Dial	55	Spacer		
28	Spacer	56	Screw		

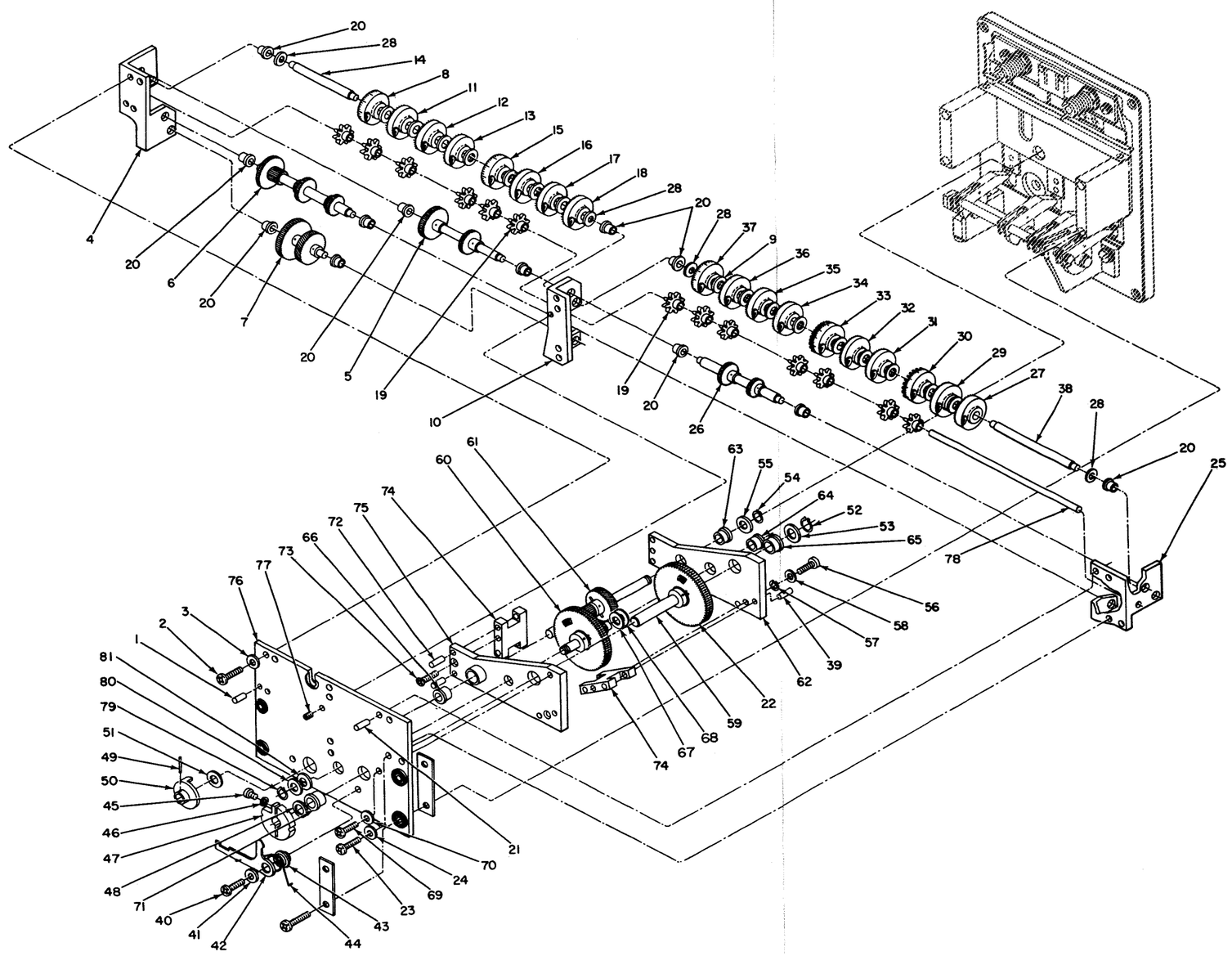


Figure 6-7. Tuning Drive Subassembly, Exploded View

90106-TM-35

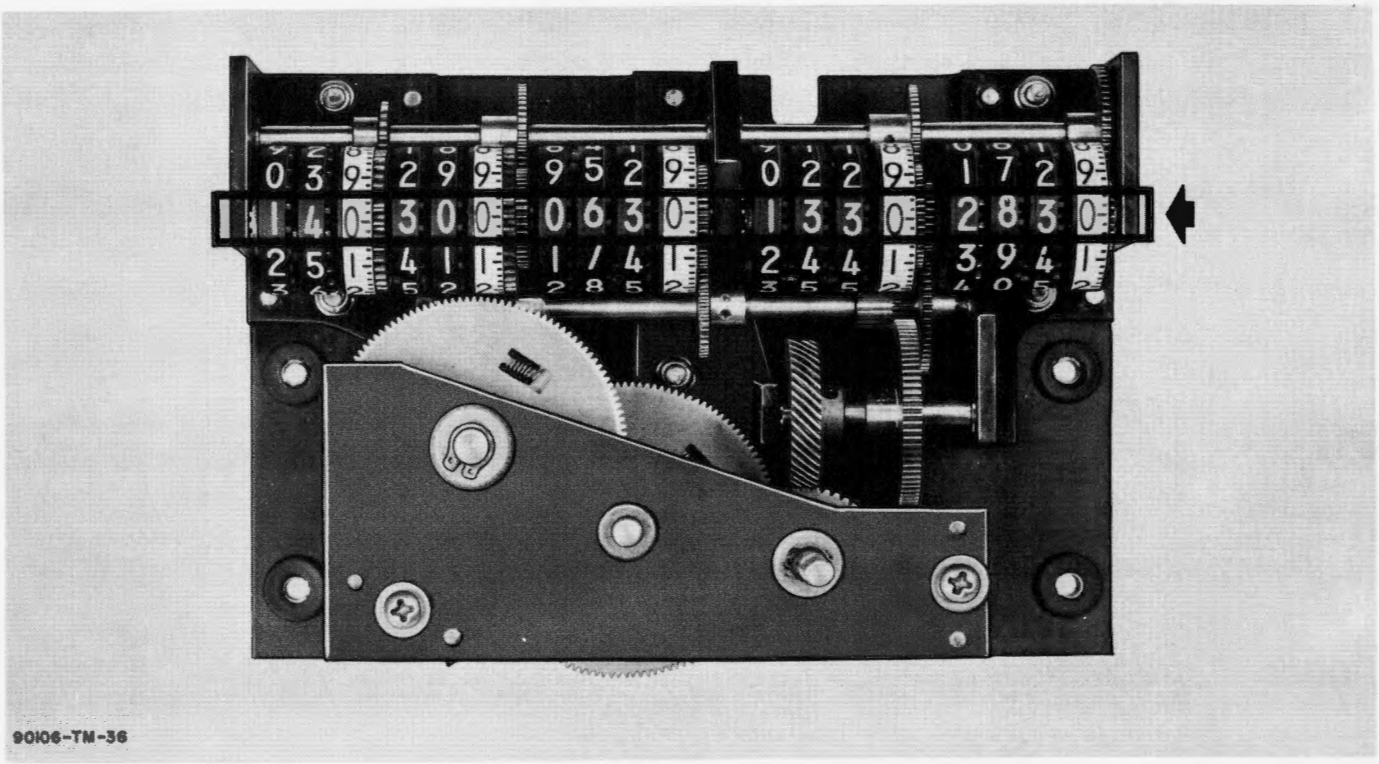


Figure 6-8. Tuning Drive Subassembly, Control Dial Alignment

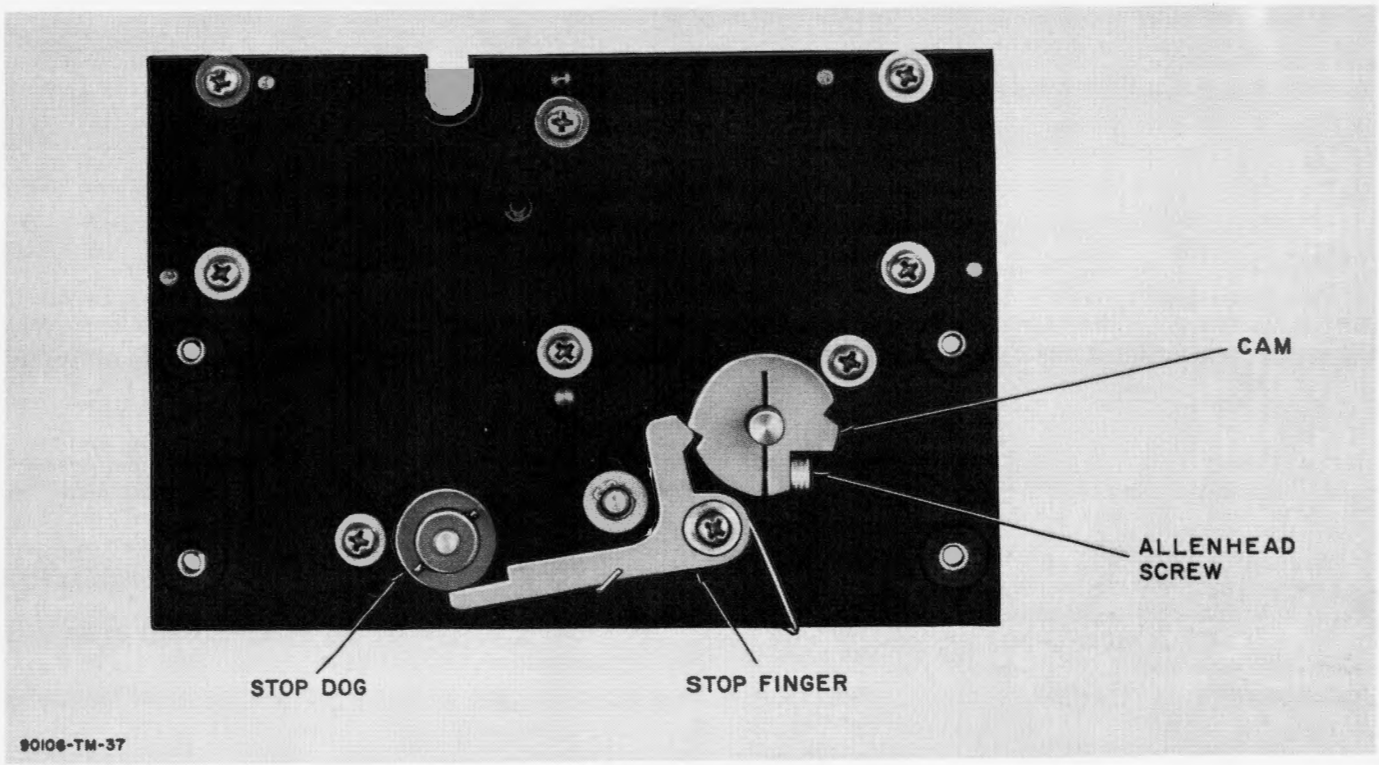


Figure 6-9. Tuning Drive Subassembly, Cam and Stop Dog Alignment

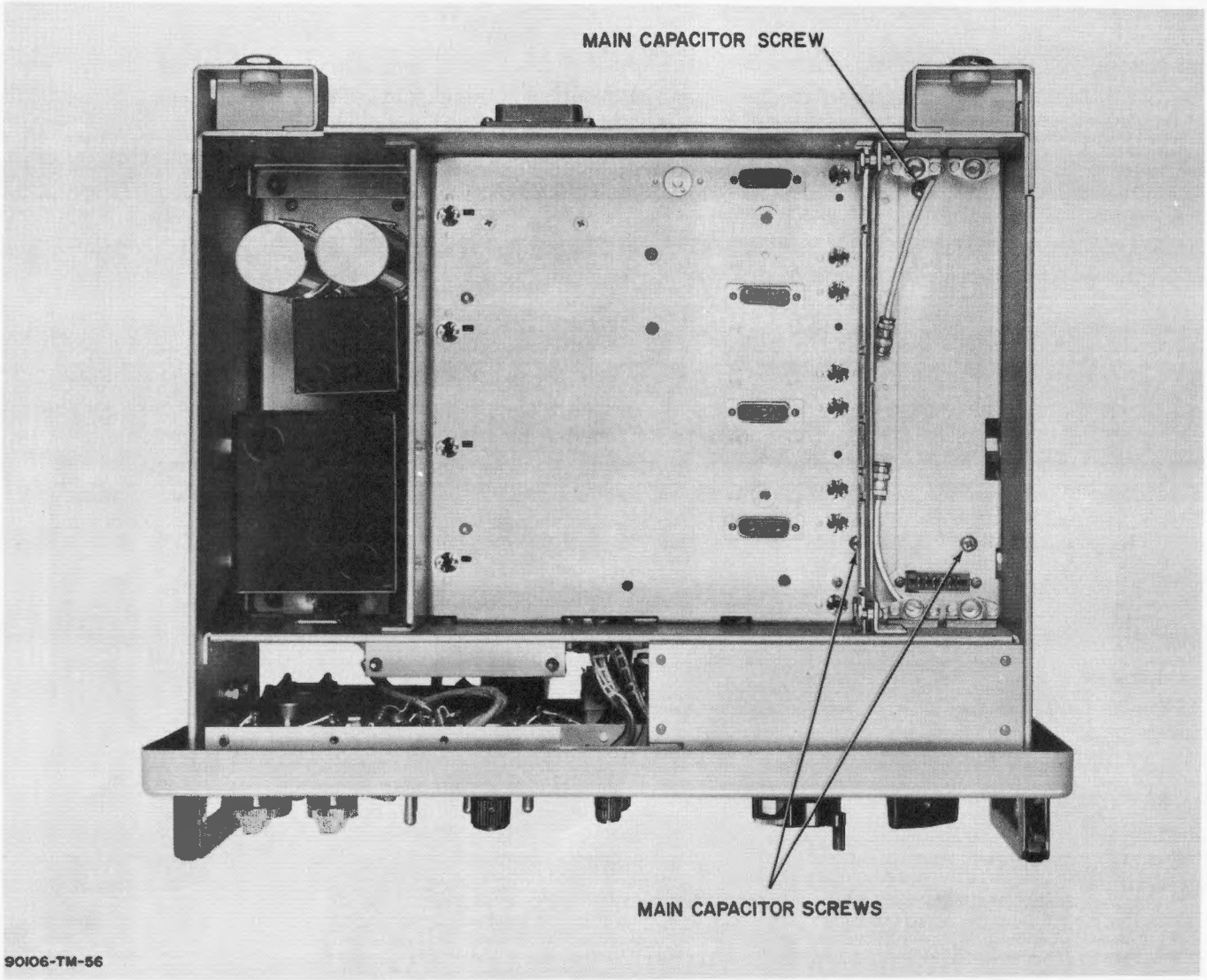


Figure 6-10. Removal of Main Tuning Capacitor

(54) Lubricate gears, sparingly, using MIL-G-3278.

k. REMOVAL OF MAIN TUNING CAPACITOR (see figure 6-10). - To remove the main tuning capacitor proceed as follows:

NOTE

Do not remove the main tuning capacitor unless absolutely necessary.

(1) Remove the antenna, RF and main RF amplifier mixer, RF oscillator and the first IF amplifier frequency (See paragraph 6-3a.).

(2) Remove the cover from the wiring trough.

(3) Remove the coaxial inserts from J1101-A1, J1102-A1, J1103-A1 and J1104-A1 by pushing the hollow end of the tool (CA-58037) firmly over the inserts, then push down gently on the plunger until the insert is released from the connector.

NOTE

To remove the coaxial inserts, use Cannon coaxial connector insert removing tool, CA-58037 (not included with the equipment).

(4) Loosen the two Allen-head setscrews securing the bellows coupling to the main tuning capacitor shaft.

(5) Slide the bellows coupling clear of the drive tuning assembly shaft.

(6) Remove the three screws that secure the tuning capacitor to the main chassis.

(7) Carefully lift the tuning capacitor from the main chassis.

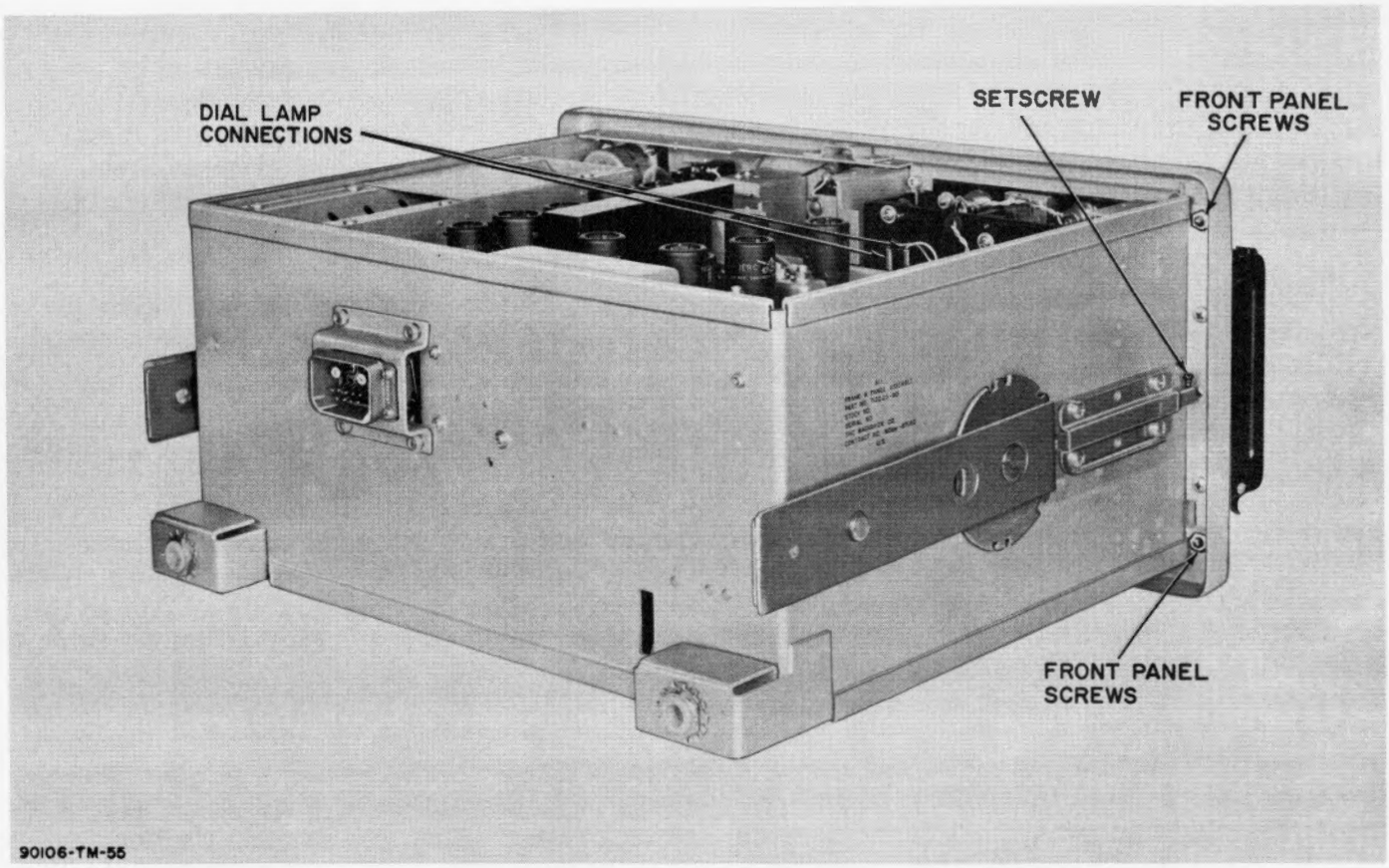


Figure 6-11. Removal of Front Panel

l. REPLACEMENT AND ALIGNMENT OF MAIN TUNING CAPACITOR (see figure 6-10). - To replace and align the main tuning capacitor, proceed as follows:

(1) Install the tuning capacitor in the receiver chassis.

(2) Mechanically align the capacitor shaft and the tuning assembly shaft using shims between mounting feet of capacitor and main chassis as needed.

(3) Rotate the tuning capacitor shaft completely counterclockwise.

(4) Set the Band Selector switch to Band V and rotate Tuning Control completely counterclockwise.

(5) Release the finger stop, located on the rear of the drive tuning assembly, and slowly rotate the Tuning Control counterclockwise to a frequency of 272.88.

CAUTION

Do not rotate the Tuning Control beyond 272.88.

(6) Align bellows coupling between capacitor shaft and the dial assembly shaft and tighten the four Allen-head screws located on the bellows coupling. Be sure the tuning capacitor shaft is against its stop (completely counterclockwise) before screws are tightened.

(7) Rotate the Tuning Control clockwise until the finger stop is back in its original position.

(8) Replace the coaxial inserts in J1101-A1, J1102-A1, J1103-A1 and J1104-A1.

(9) Replace the wiring trough cover and the assemblies.

(10) Align the receiver (see paragraph 6-2). RF section may be the only section requiring alignment.

m. REMOVAL OF FRONT PANEL (see figure 6-11). - Unless extensive damage has been done to the front panel itself, it does not need to be removed. All components mounted on the front panel may be removed and replaced without removing the front panel. To remove the front panel, proceed as follows:

(1) Remove the receiver from its cabinet.

(2) Remove the tuning drive assembly (refer to paragraph 6-3f).

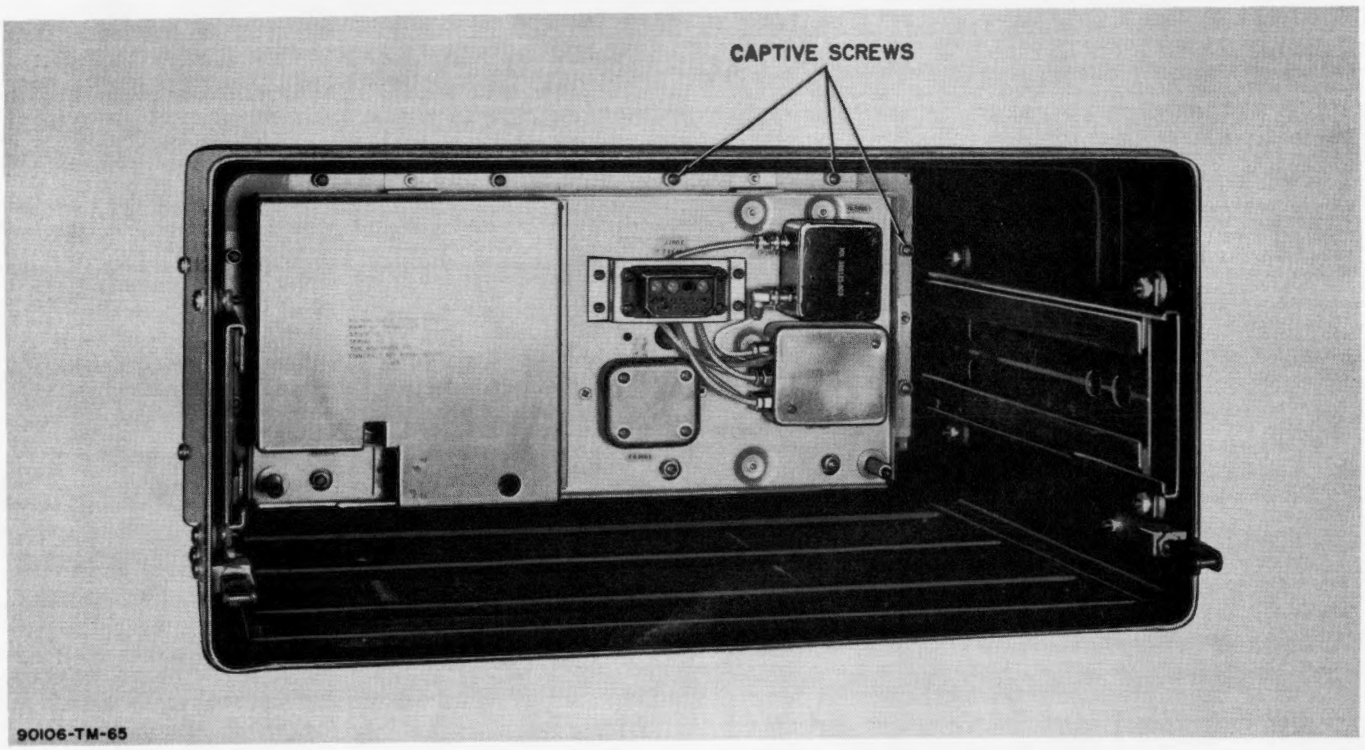


Figure 6-12. Removal of Radio Interference Filter

(3) Disconnect P1117 from J701 and P1116 from J601.

(4) Loosen the Allen-head setscrews which connect the pull wire to S601.

(5) Loosen the Allen-head setscrews which connect the ANT COMP control shaft to the miter gear.

(6) Unscrew the Phillips-head screws which secure the handles to the front panel.

(7) Unscrew six screws, washers and nuts which secure front panel to main chassis.

(8) Remove tilt mechanism handles.

(9) Swing the front panel out at about 45 degrees.

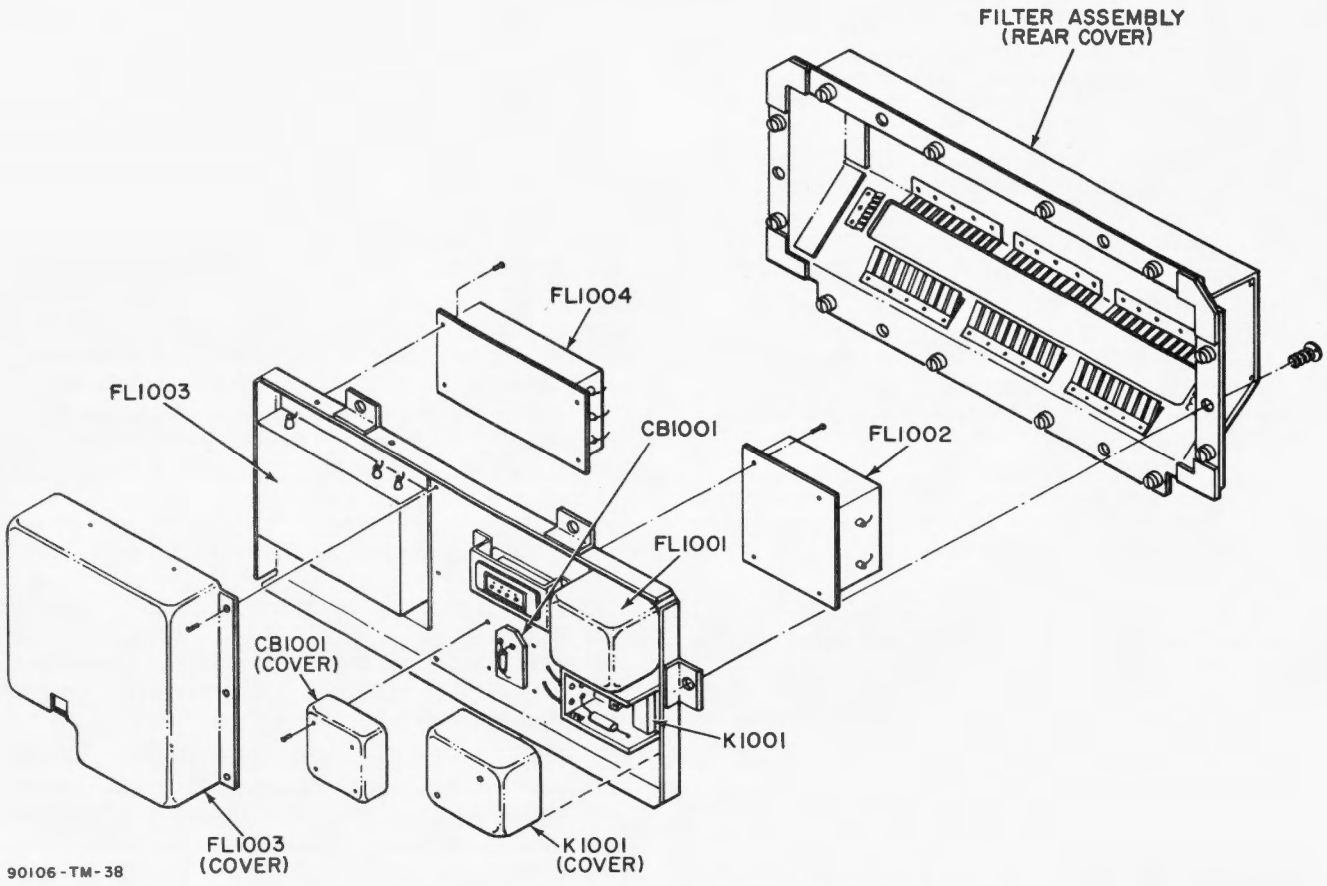


Figure 6-13. Radio Interference Filter, Exploded View

n. REMOVAL OF RADIO INTERFERENCE FILTER (see figure 6-12). - To remove the radio interference filter proceed as follows:

(1) Remove the receiver from its cabinet.

(2) Disconnect the cables at the rear of the receiver cabinet.

(3) Loosen the 12 captive screws, located on the inside of the cabinet, which secure the filter assembly to the receiver cabinet.

o. REMOVAL OF REAR PANEL COMPONENTS.

(1) THERMAL CIRCUIT BREAKER CB1001 (see figure 6-13). - To remove thermal circuit breaker CB1001, proceed as follows:

(a) Remove the receiver from its cabinet.

(b) Remove, from inside the receiver cabinet, the two screws which secure the thermal circuit breaker cover to the rear filter assembly and lift off the cover.

(c) Remove the two screws which secure the thermal circuit breaker to the mounting and carefully pull the thermal circuit breaker from its socket.

(2) RELAY K1001 (see figure 6-13). - To remove relay K1001, proceed as follows:

(a) Remove the receiver from its cabinet.

(b) Remove the radio interference filter (see paragraph 6-3n).

(c) Unsolder the leads from the relay, noting their exact position.

(d) Carefully pull the relay from its holder.

(3) FILTER FL1003 (see figure 6-13). - To remove filter FL1003, proceed as follows:

(a) Remove the receiver from its cabinet.

(b) Remove the radio interference filter (see paragraph 6-3n).

(c) Remove the four Phillips-head screws securing the filter cover to the filter assembly.

(d) Unsolder the wires leading to FL1003.

(e) Unscrew the six screws which secure the filter FL1003 to the filter assembly.

(4) FILTER FL1001, FL1002 OR FL1004 (see figure 6-13). - To remove filter FL1001, FL1002 or FL1004, proceed as follows:

(a) Remove the receiver from its cabinet.

(b) Remove the radio interference filter assembly (see paragraph 6-3n).

(c) Remove the eight Phillips-head screws around the outer edge of the rear panel which secure the filter assembly rear cover to the filter assembly.

(d) Remove the eight Phillips-head screws which secure the filter assembly rear cover to the connector mounting panel.

(e) Unsolder the wires leading to FL1002 or FL1004.

NOTE

On FL1001 disconnect the two plugs leading to FL1001.

(f) Remove the four Phillips-head screws which secure the filter to the panel.

NOTE

The screws which secure FL1001 to the filter assembly are located on the rear of the filter assembly.

6-4. REPAIR.

To repair first IF, audio, and second IF printed circuit boards containing a defective component, remove them completely from the assembly. The small printed circuit boards on the frequency mixer, RF oscillator, main RF amplifier and antenna RF amplifier (TB101, TB201, TB301, and TB401) may be swung free by removing the four mounting screws. All other printed circuit boards must be repaired in place. To remove a defective part from a printed circuit board, apply a small soldering iron (about 35 watts) to the underside of the printed circuit board while applying tension on the defective part. As soon as the solder connection is released, remove the soldering iron from the connection to prevent burning the board. If more than one solder connection must be removed before a part is free, cut the part from the printed circuit board. Then, remove each solder connection individually.

To replace a part on a printed circuit, bend the leads to fit into the holes provided for the part. Cut the leads of the part so that they extend about one-sixteenth inch below the printed circuit board. Bend the ends of the leads sufficiently to hold the part in place while soldering. To solder, apply the solder and soldering iron to the underside of the printed circuit board. Take care not to have solder flow onto the phenolic base of the printed circuit board.

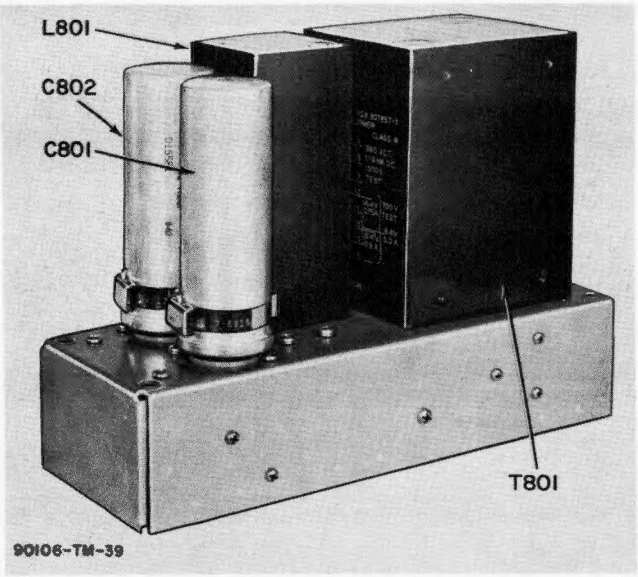


Figure 6-14. Power Supply, Side View

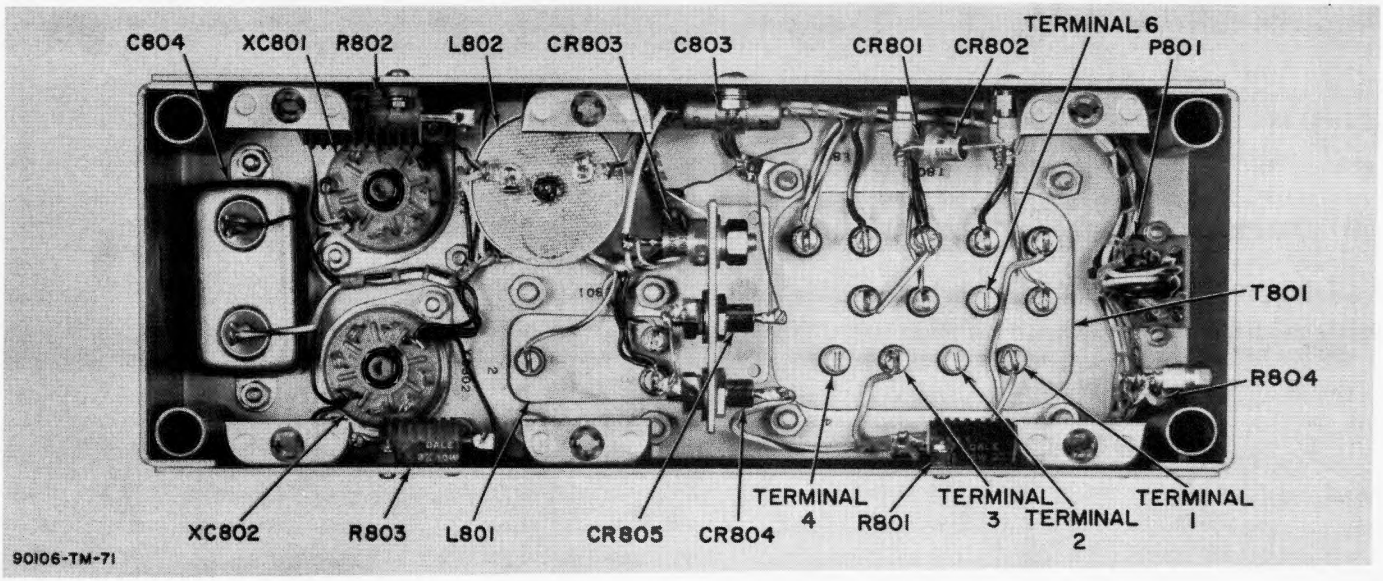


Figure 6-15. Power Supply, Bottom View with Cover Removed

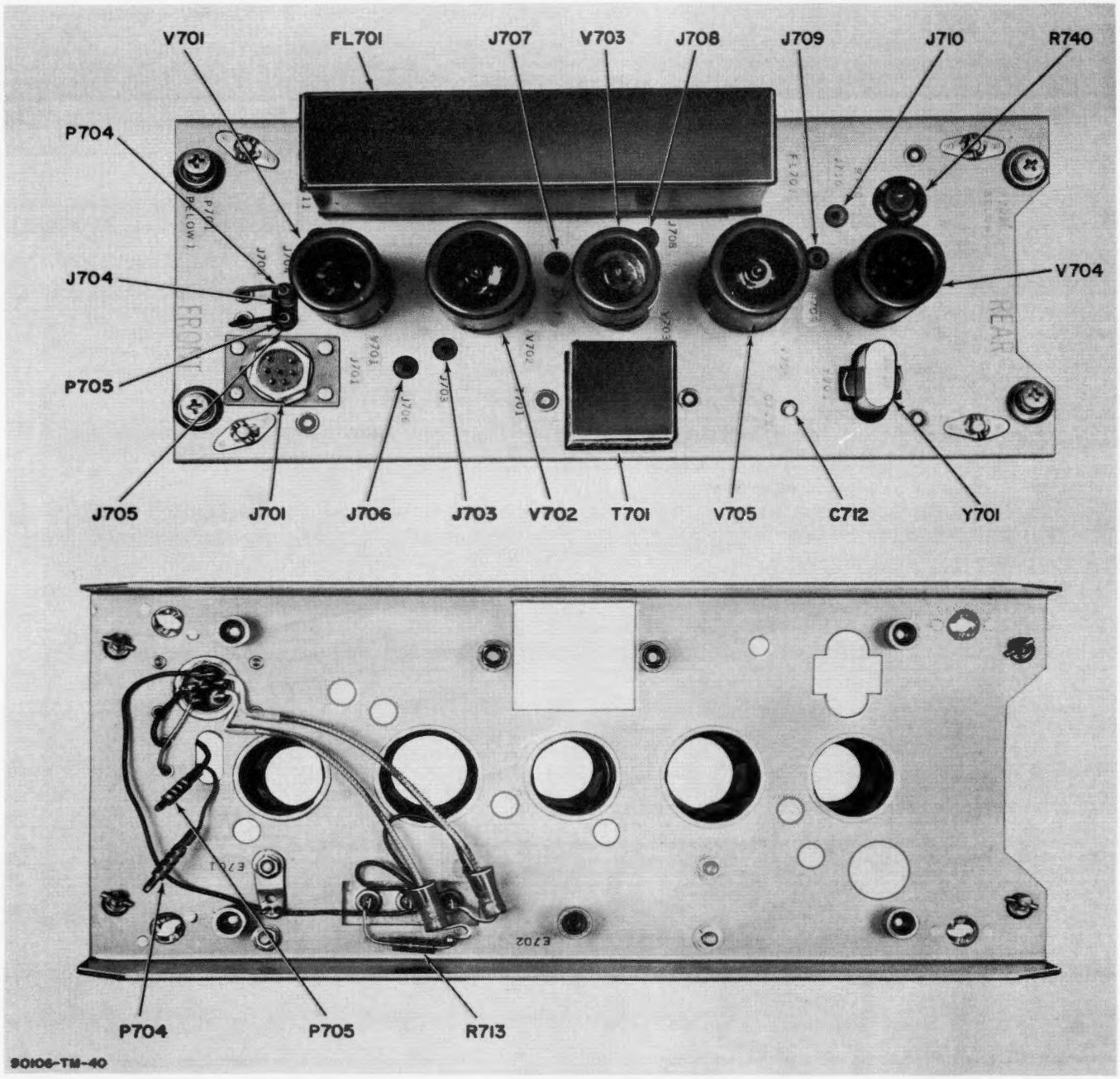


Figure 6-16. AF Amplifier, Top View and Bottom View with TB 701 Removed

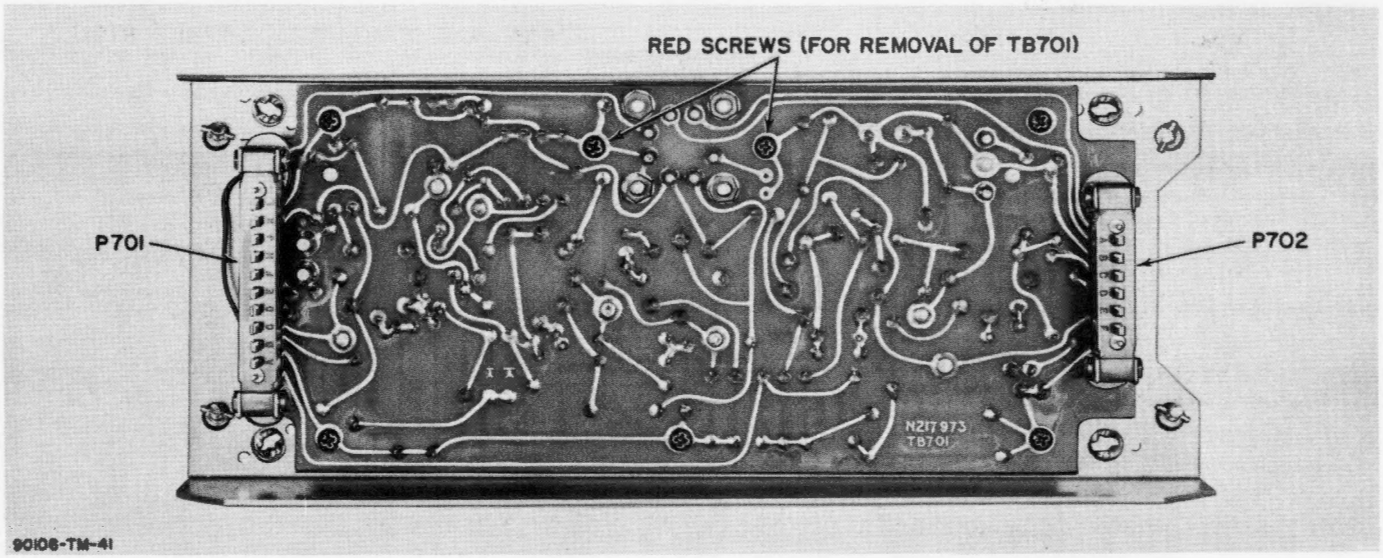


Figure 6-17. AF Amplifier, Bottom View with Cover Removed

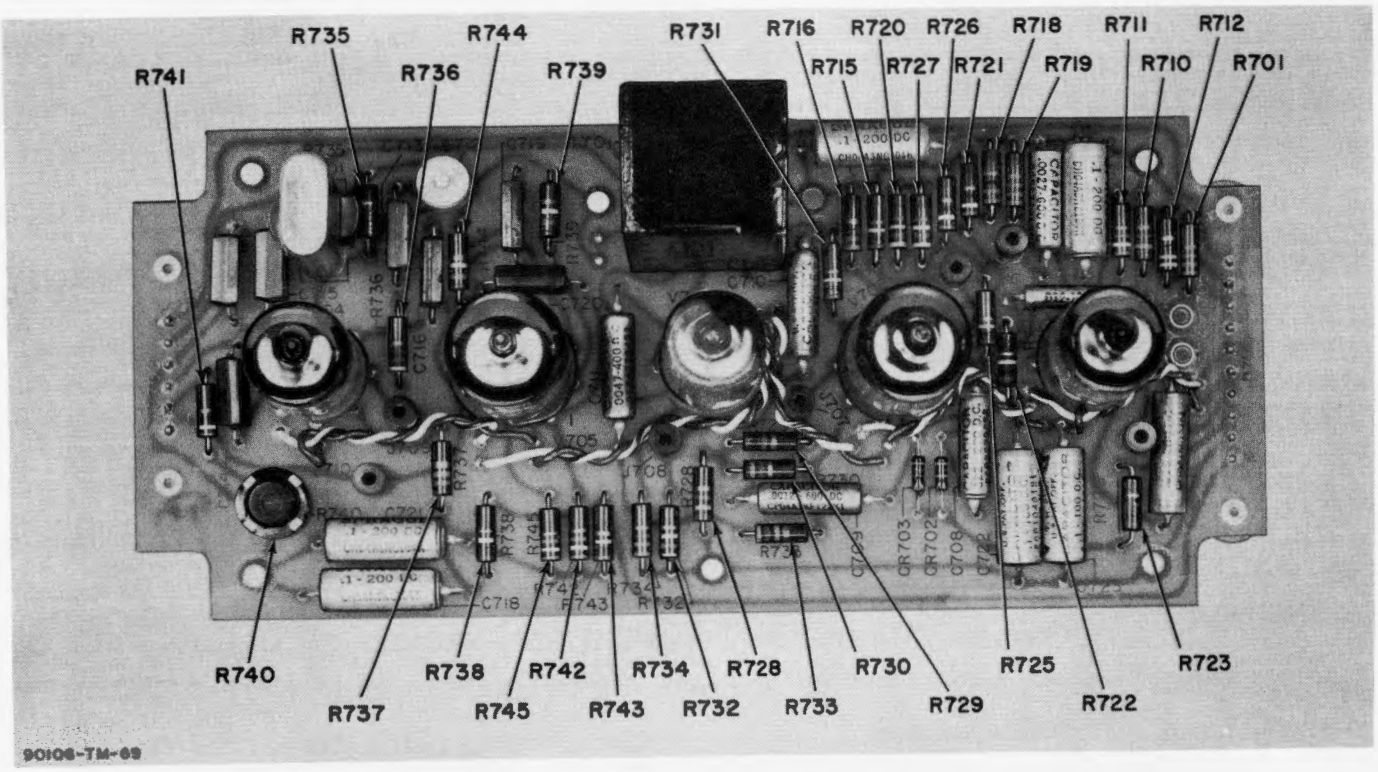


Figure 6-18. AF Amplifier, Resistor Location on TB 701

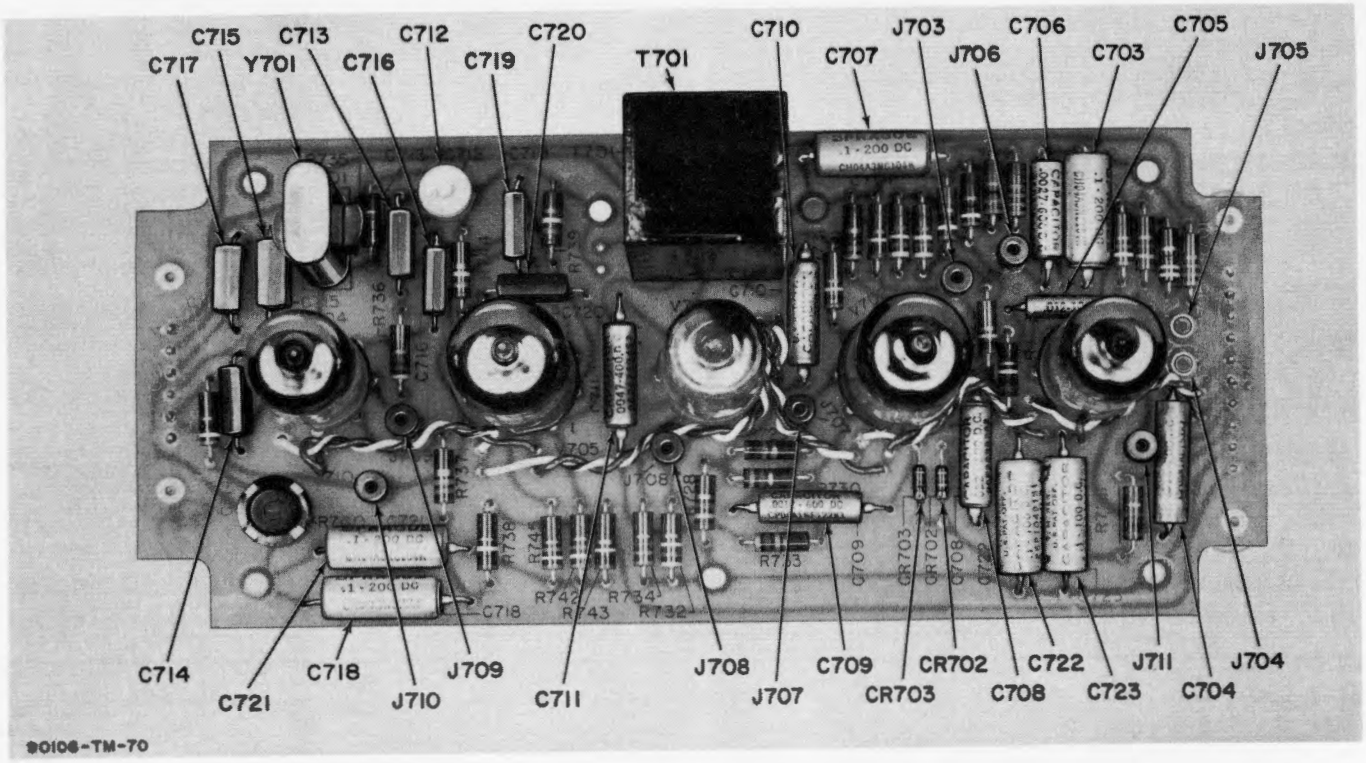


Figure 6-19. AF Amplifier, Component Location except Resistors on TB 701

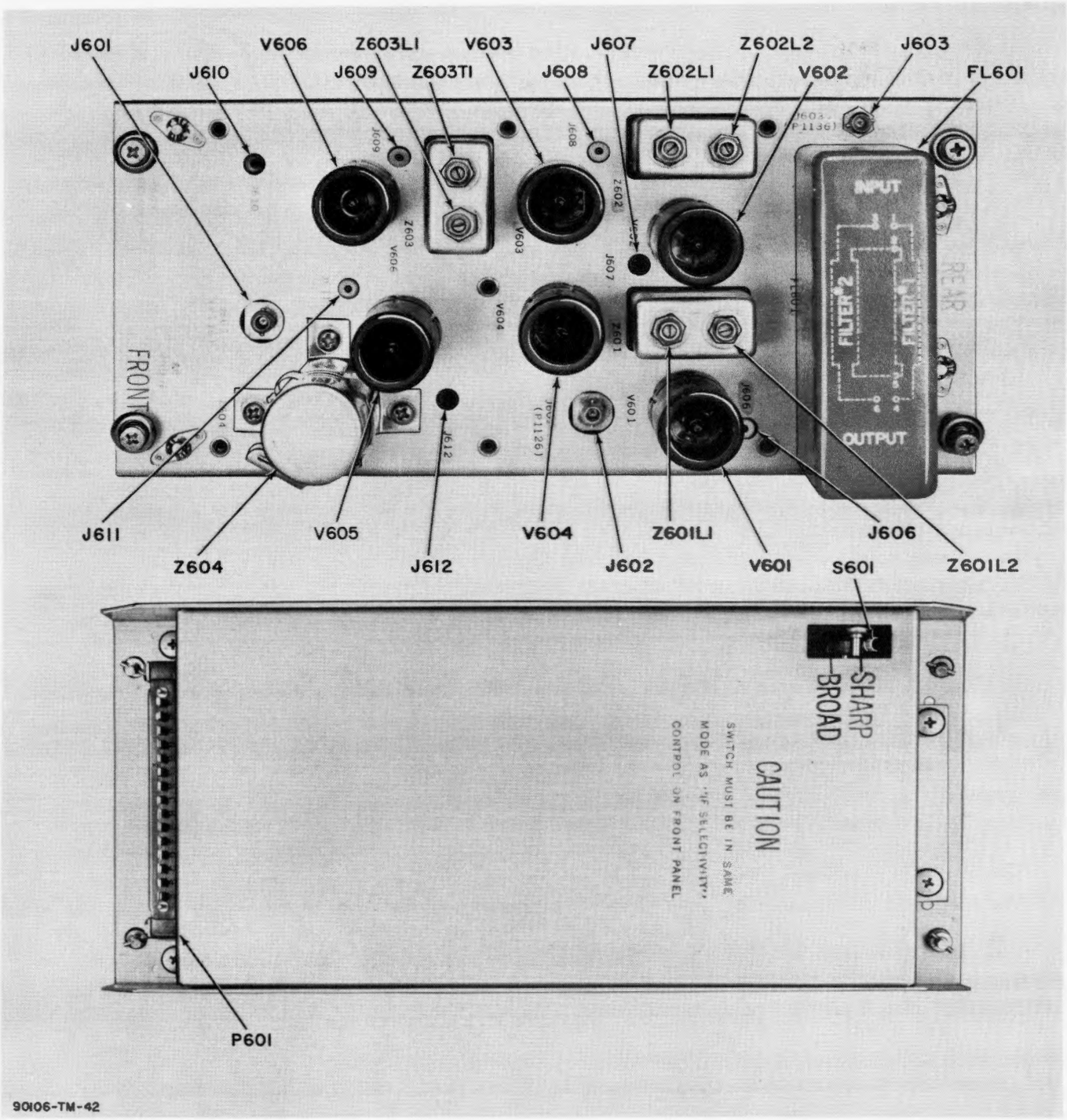


Figure 6-20. Second IF Amplifier, Top and Bottom View

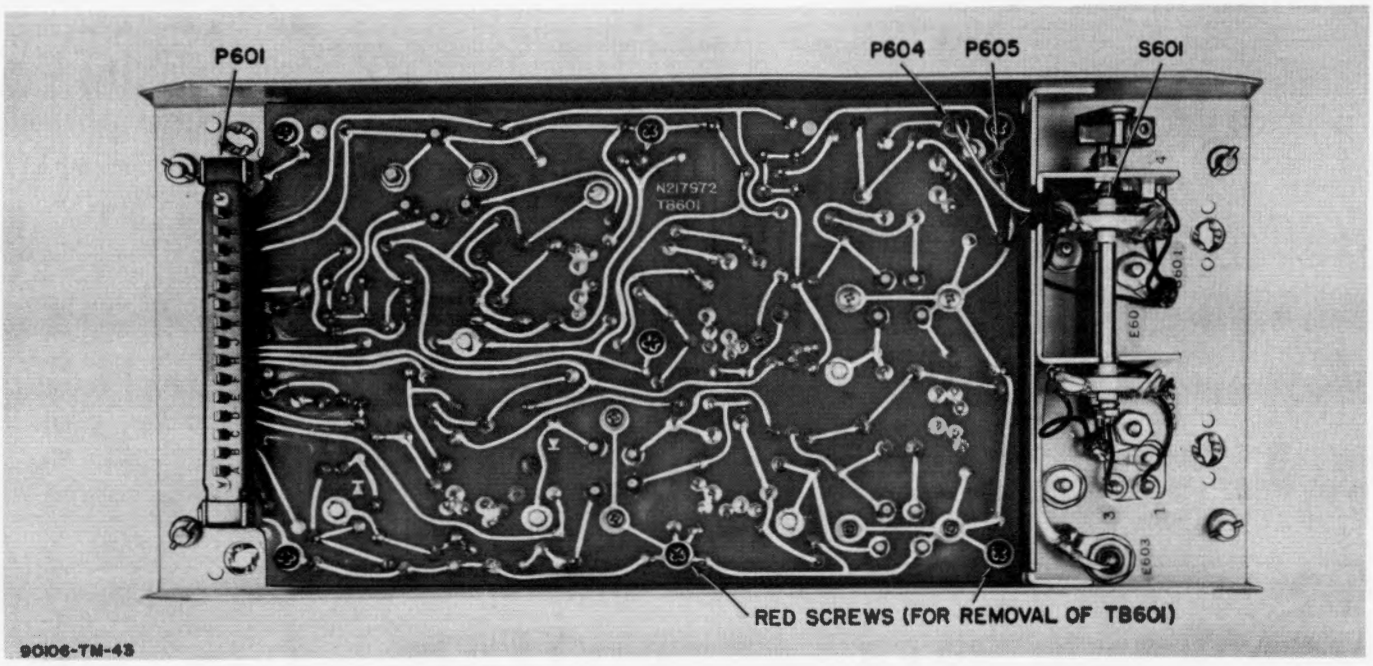


Figure 6-21. Second IF Amplifier, Bottom View, Cover Removed

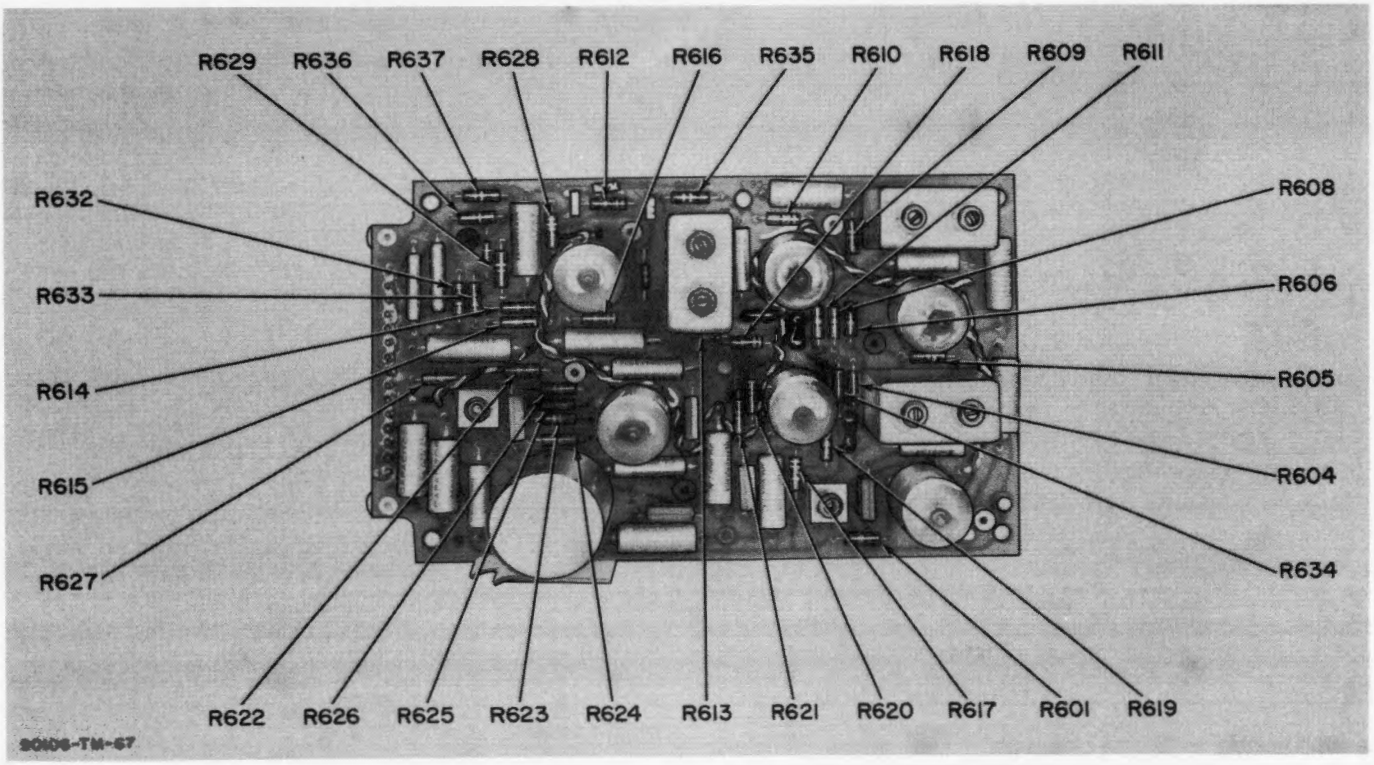


Figure 6-22. Second IF Amplifier, Resistor Location on TB 601

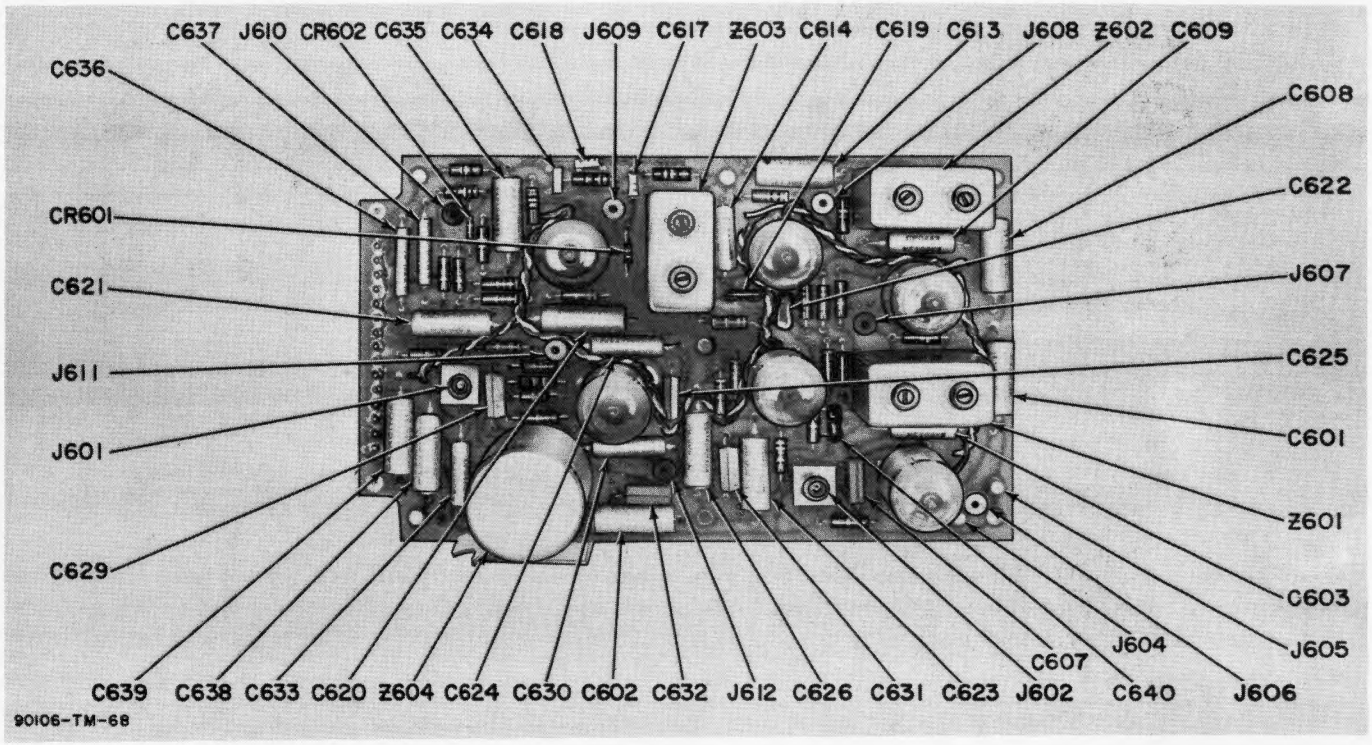


Figure 6-23. Second IF Amplifier, Component Location Except Resistors on TB 601

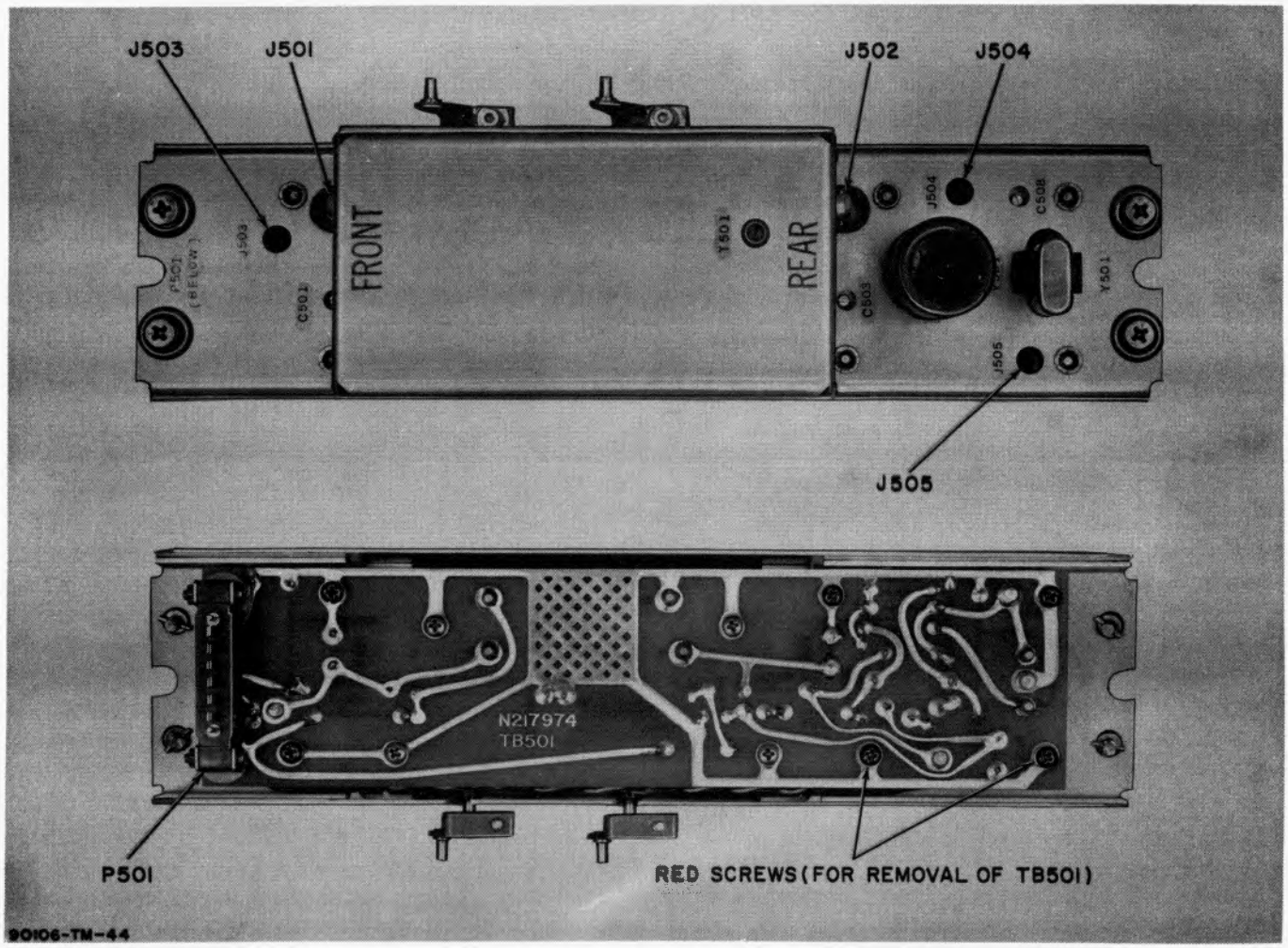


Figure 6-24. First IF Amplifier, Top and Bottom Views

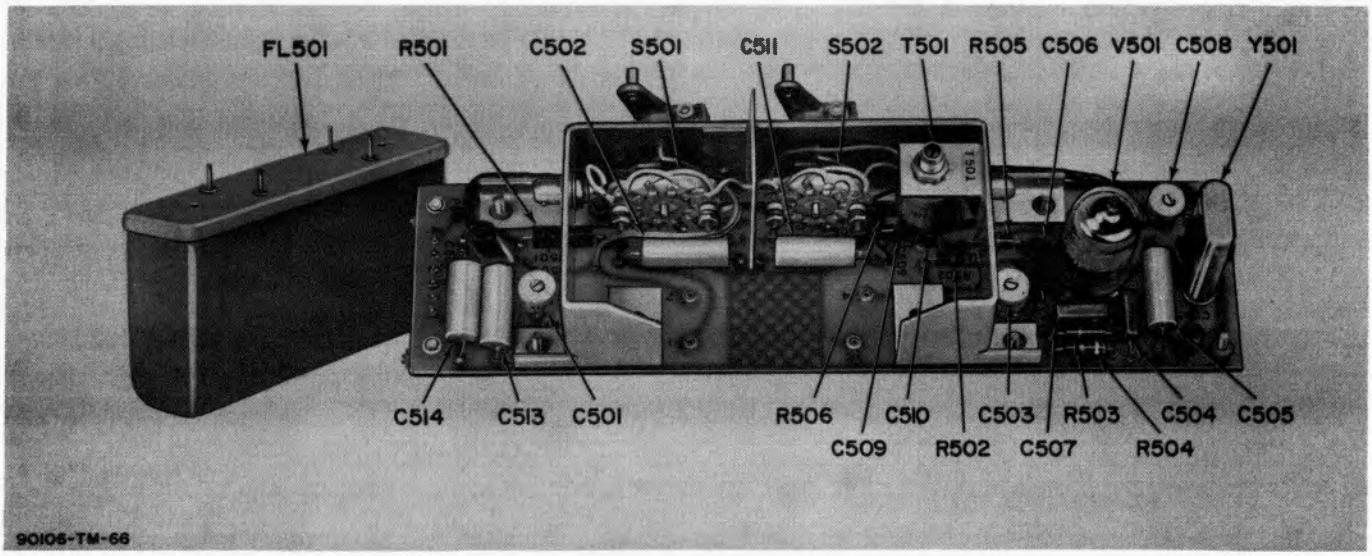


Figure 6-25. First IF Amplifier, Cover Removed

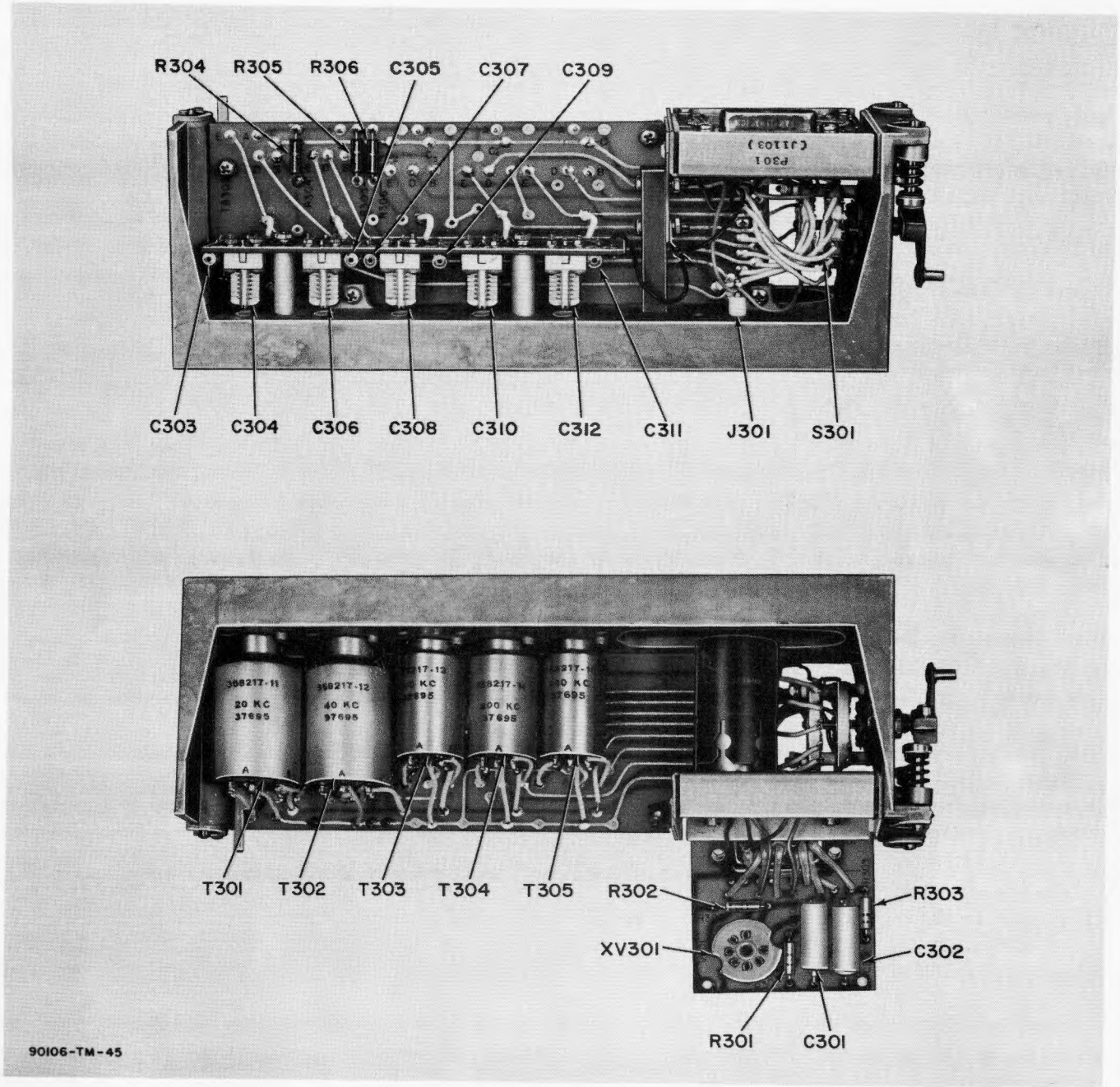


Figure 6-26. Frequency Mixer, Side Views

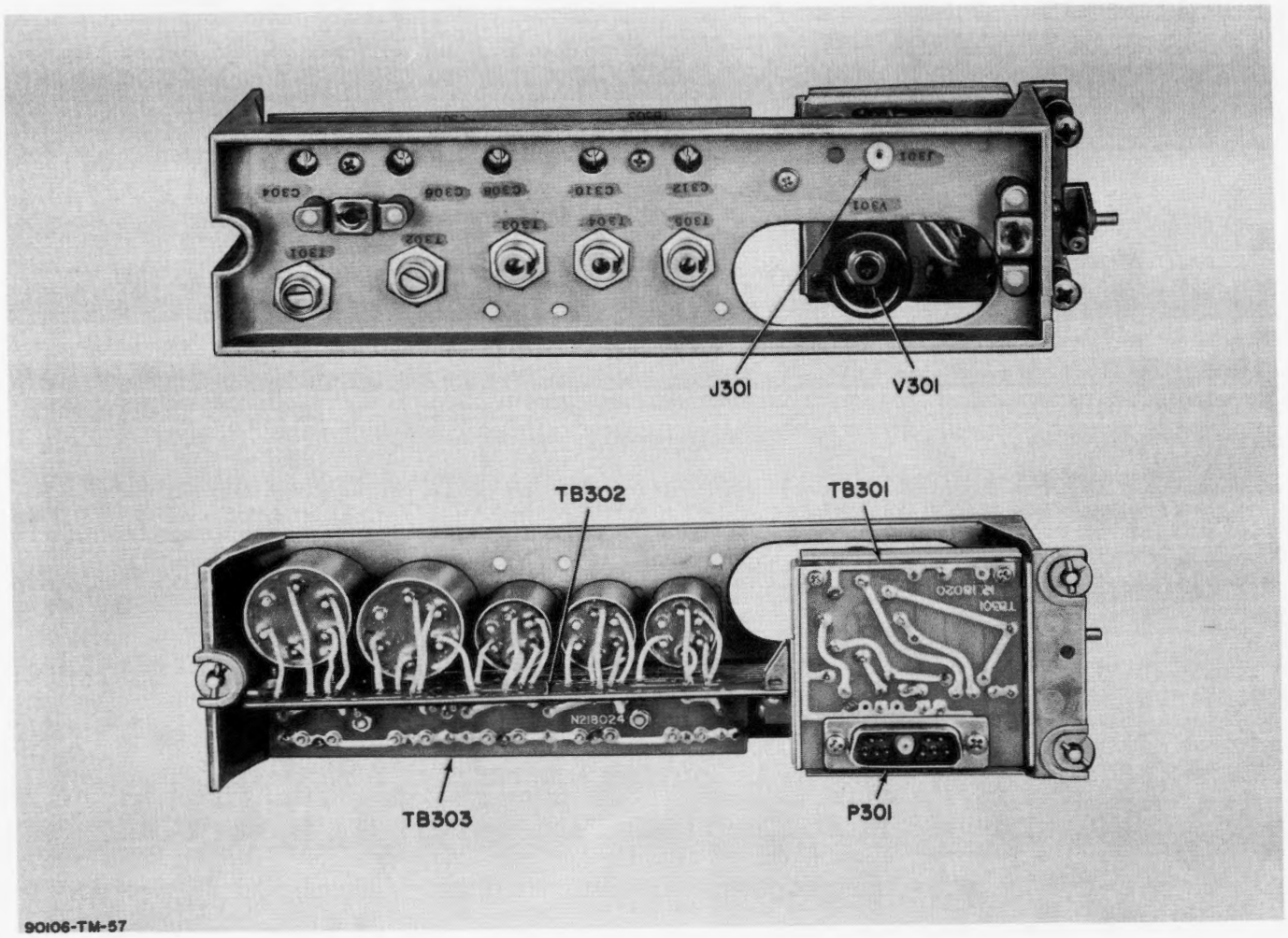


Figure 6-27. Frequency Mixer, Top and Bottom Views

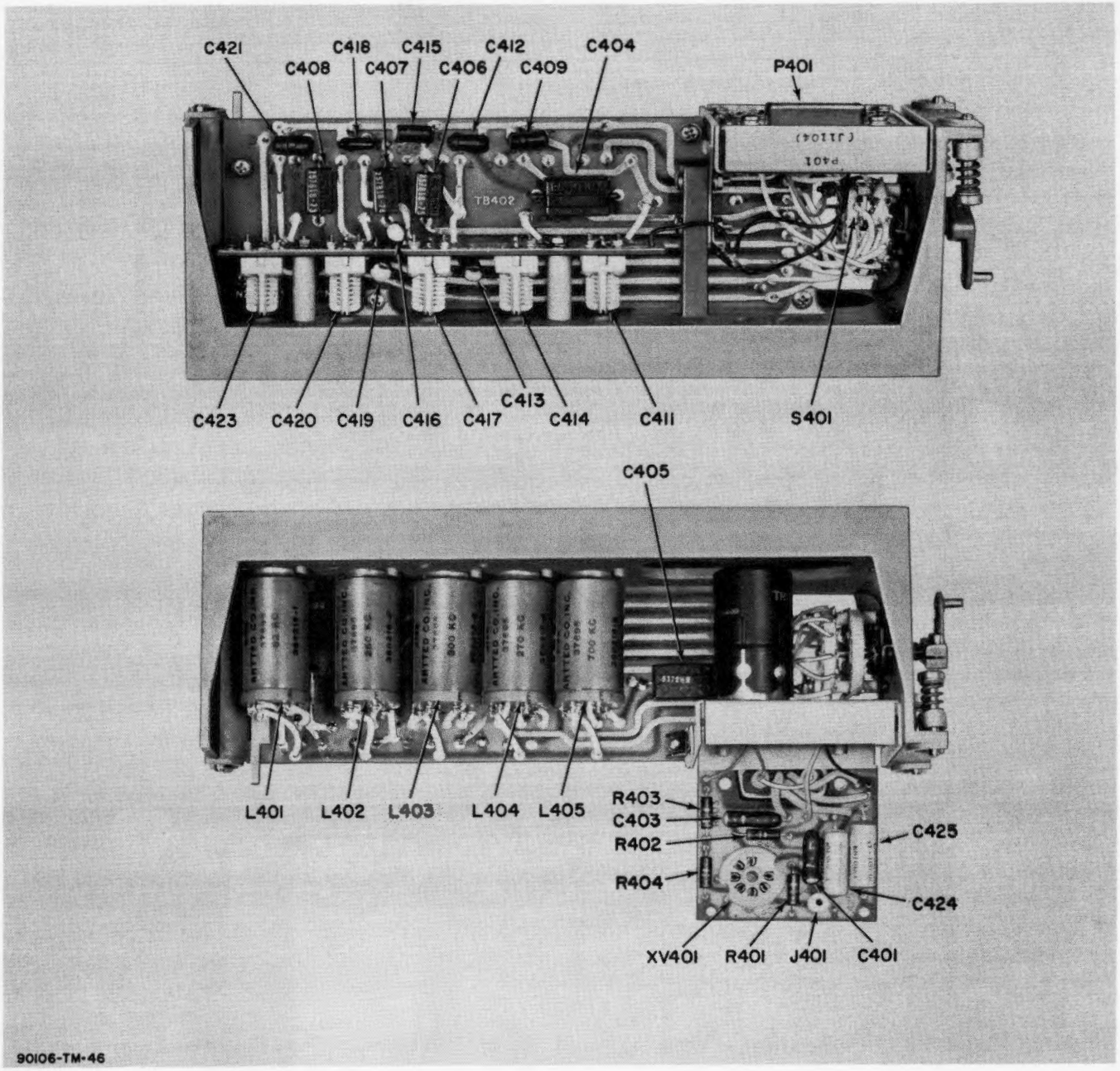


Figure 6-28. RF Oscillator, Side Views

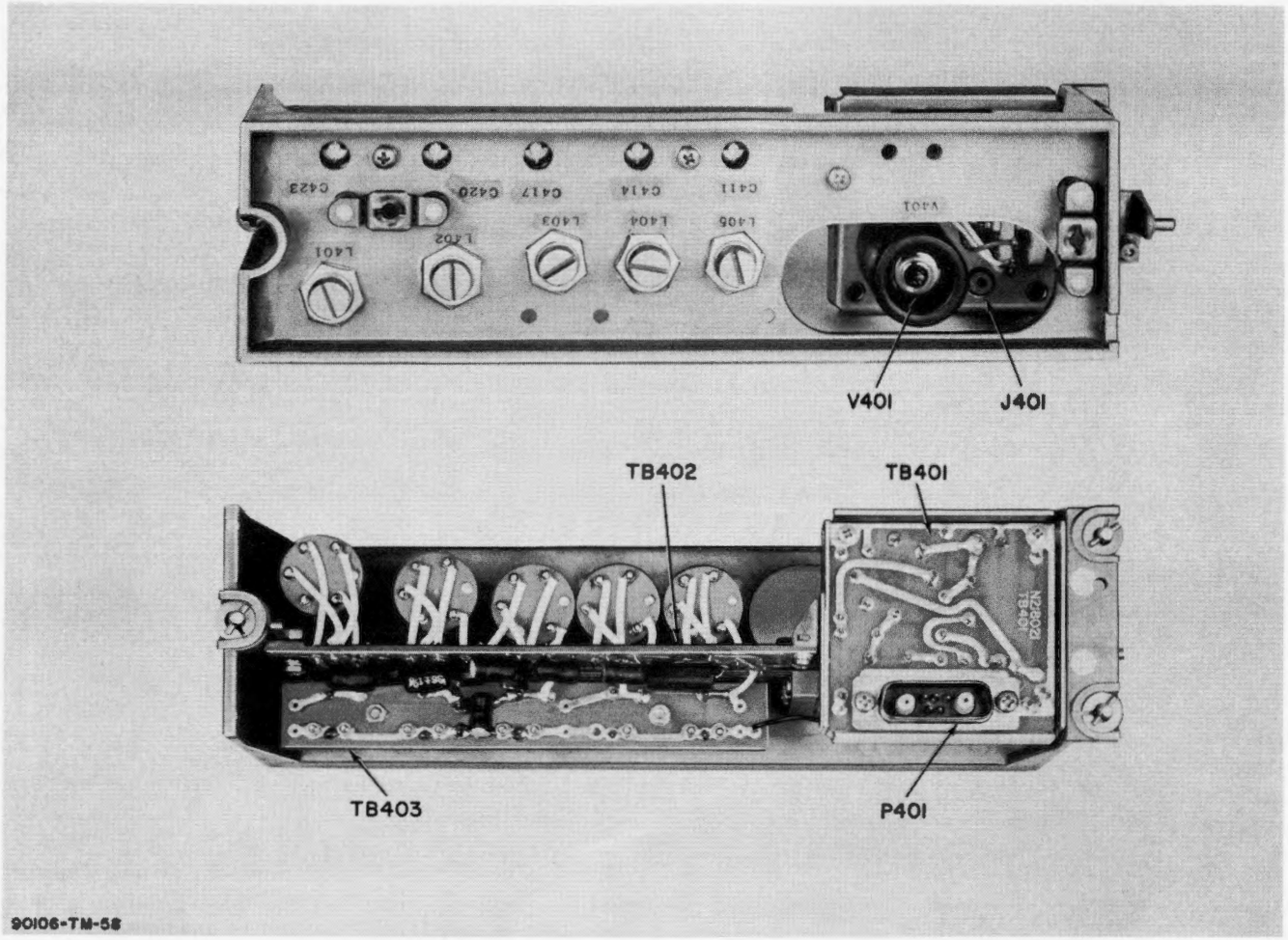


Figure 6-29. RF Oscillator, Top and Bottom Views

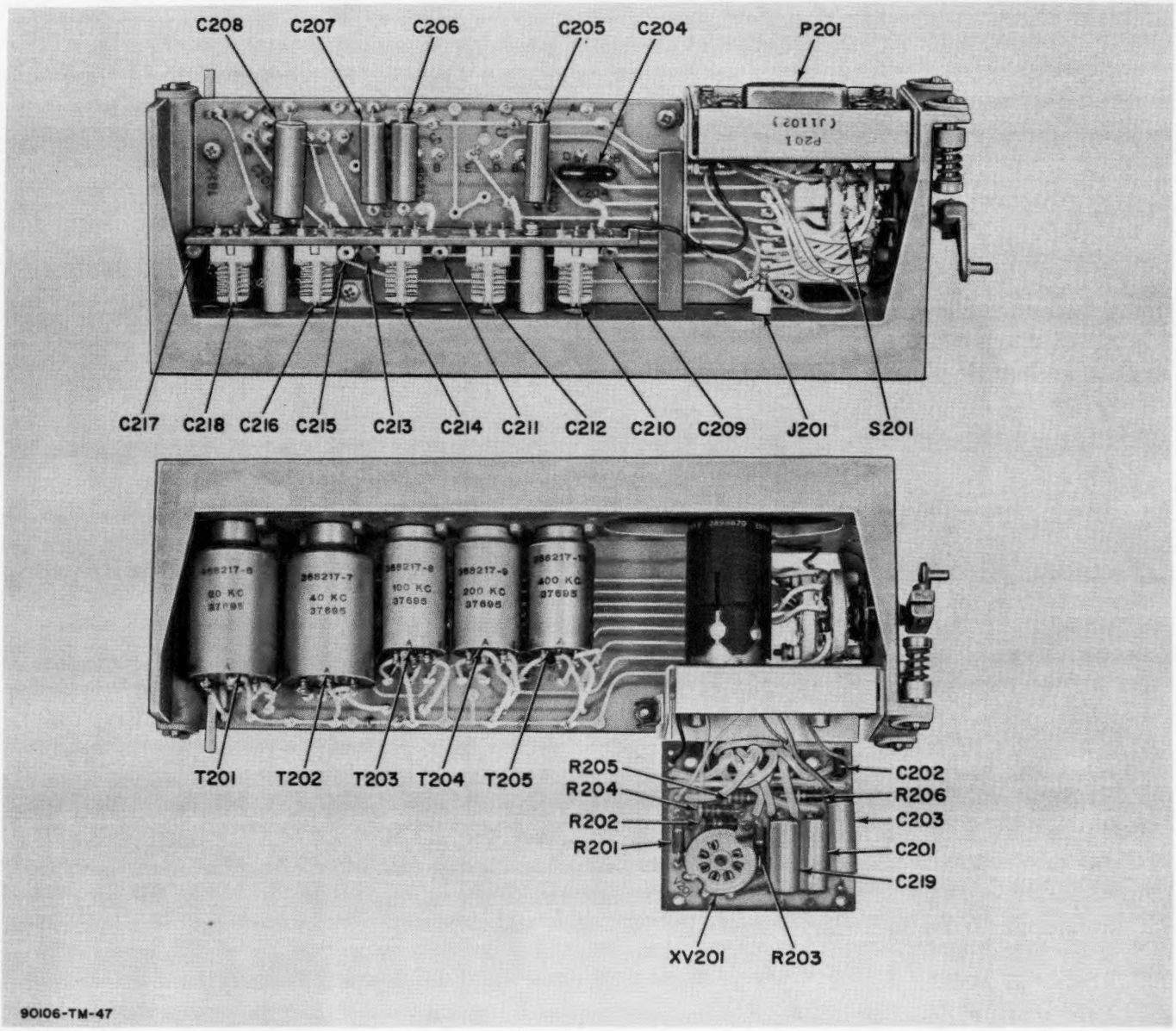


Figure 6-30. Main RF Amplifier, Side Views

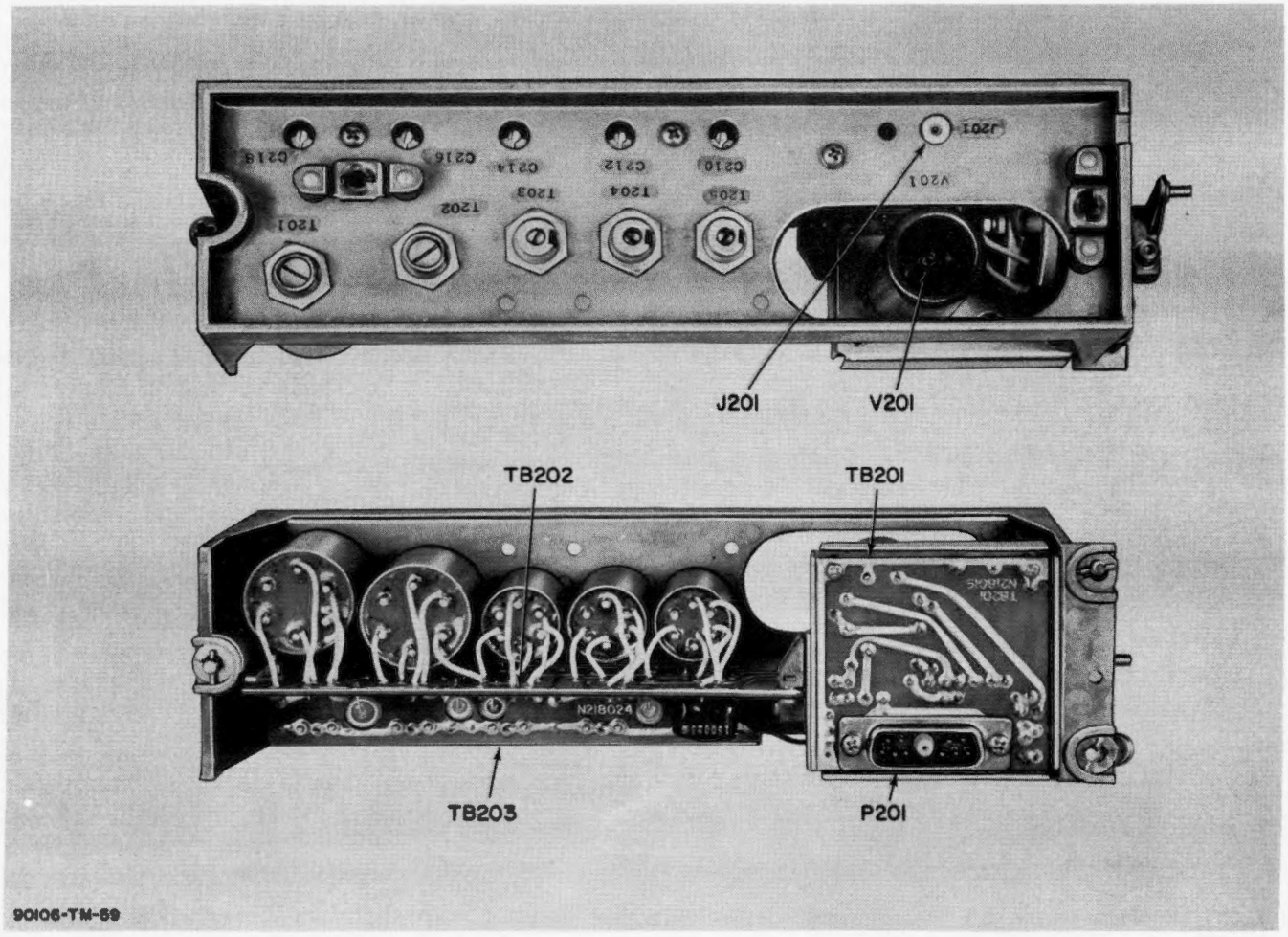


Figure 6-31. Main RF Amplifier, Top and Bottom Views

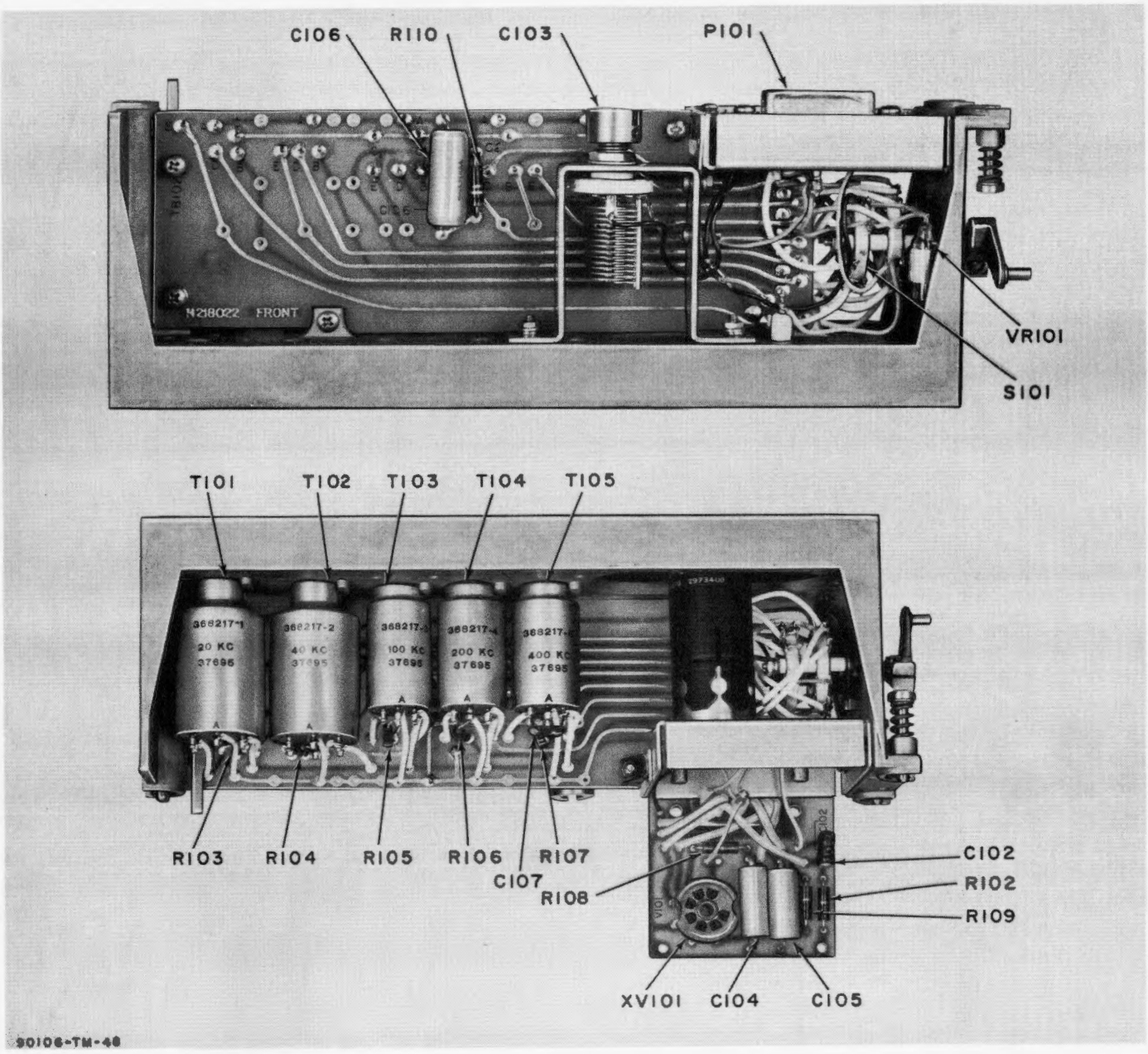


Figure 6-32. Antenna RF Amplifier, Side Views

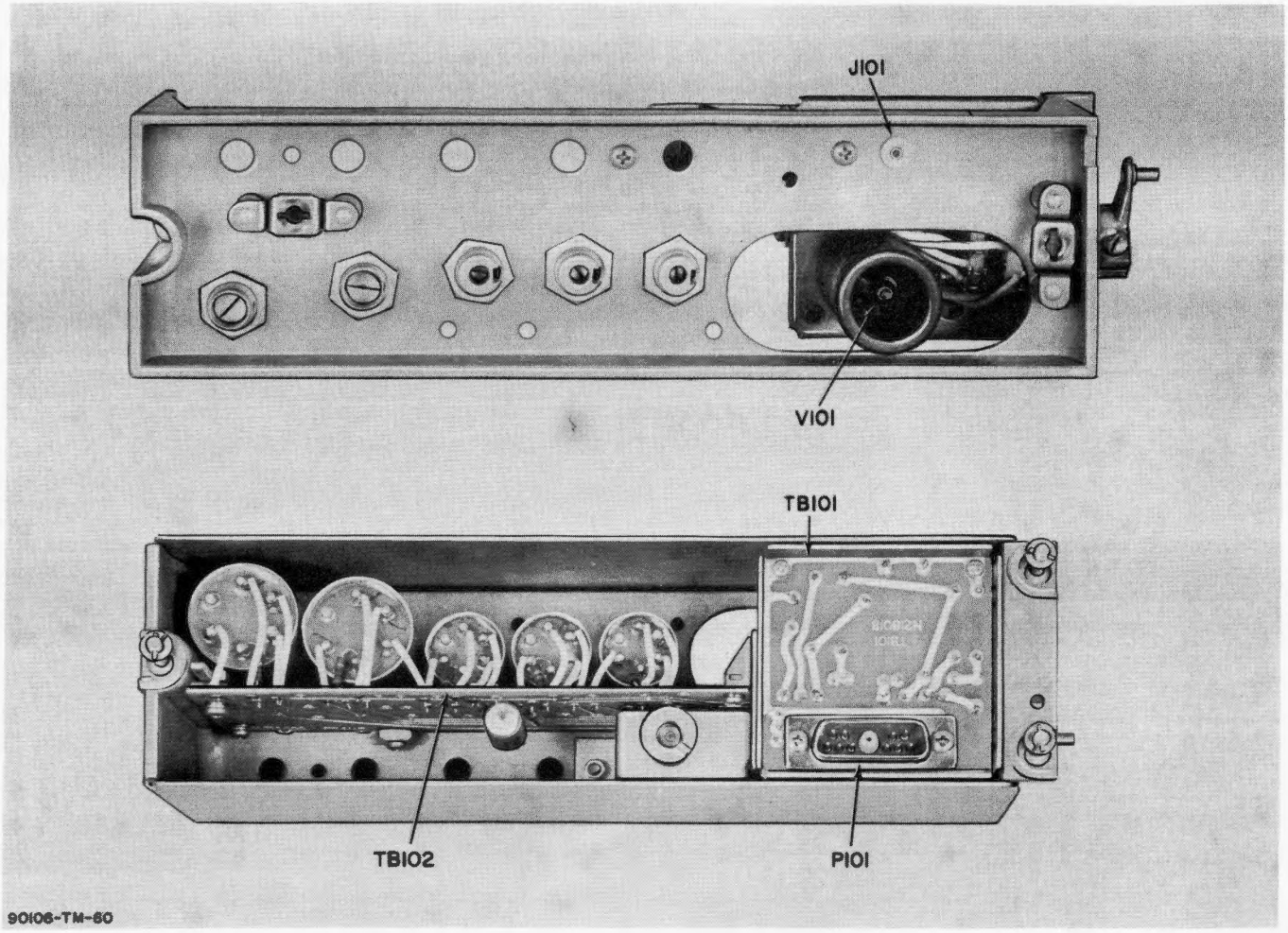


Figure 6-33. Antenna RF Amplifier, Top and Bottom Views

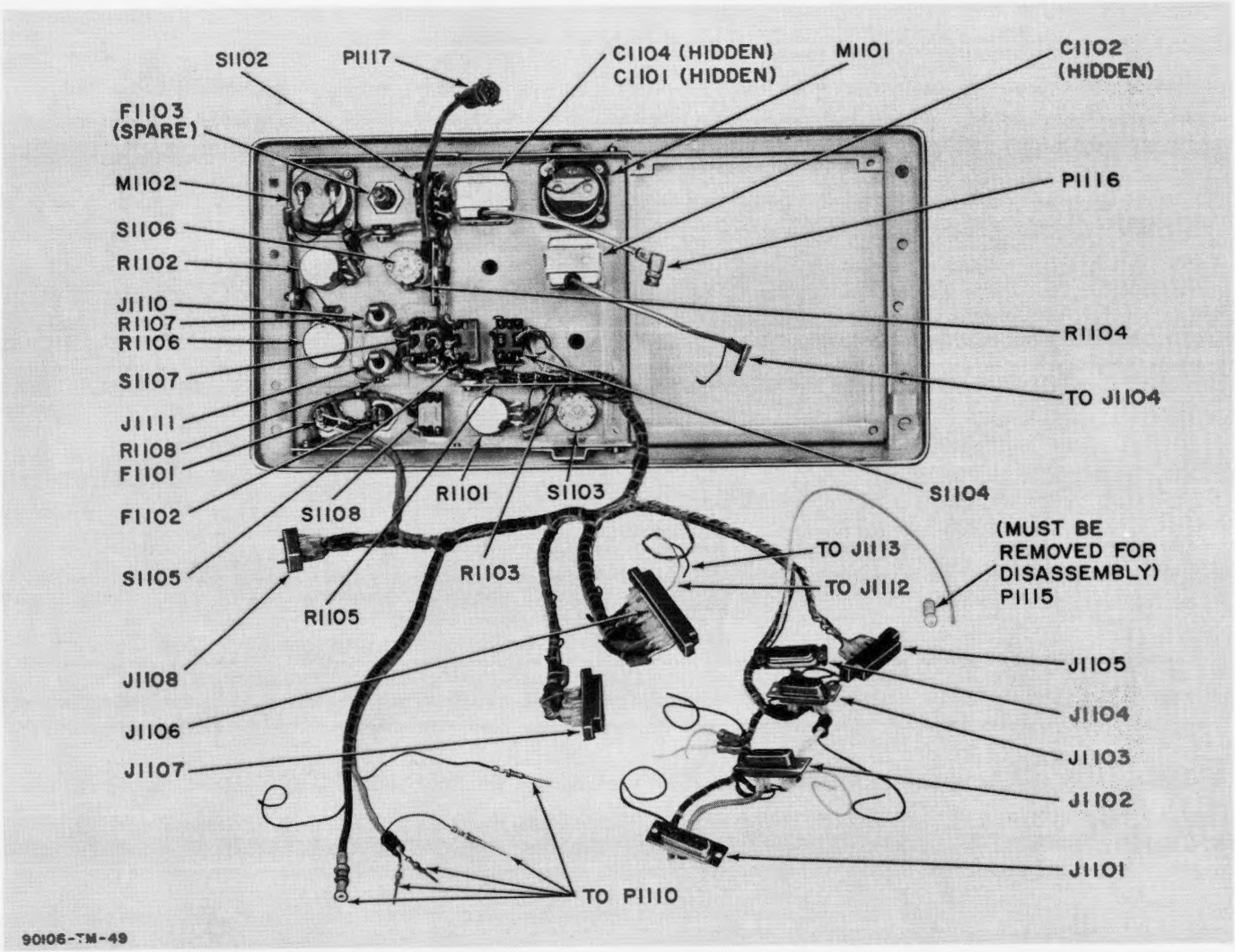


Figure 6-34. Front Panel and Wiring Harness

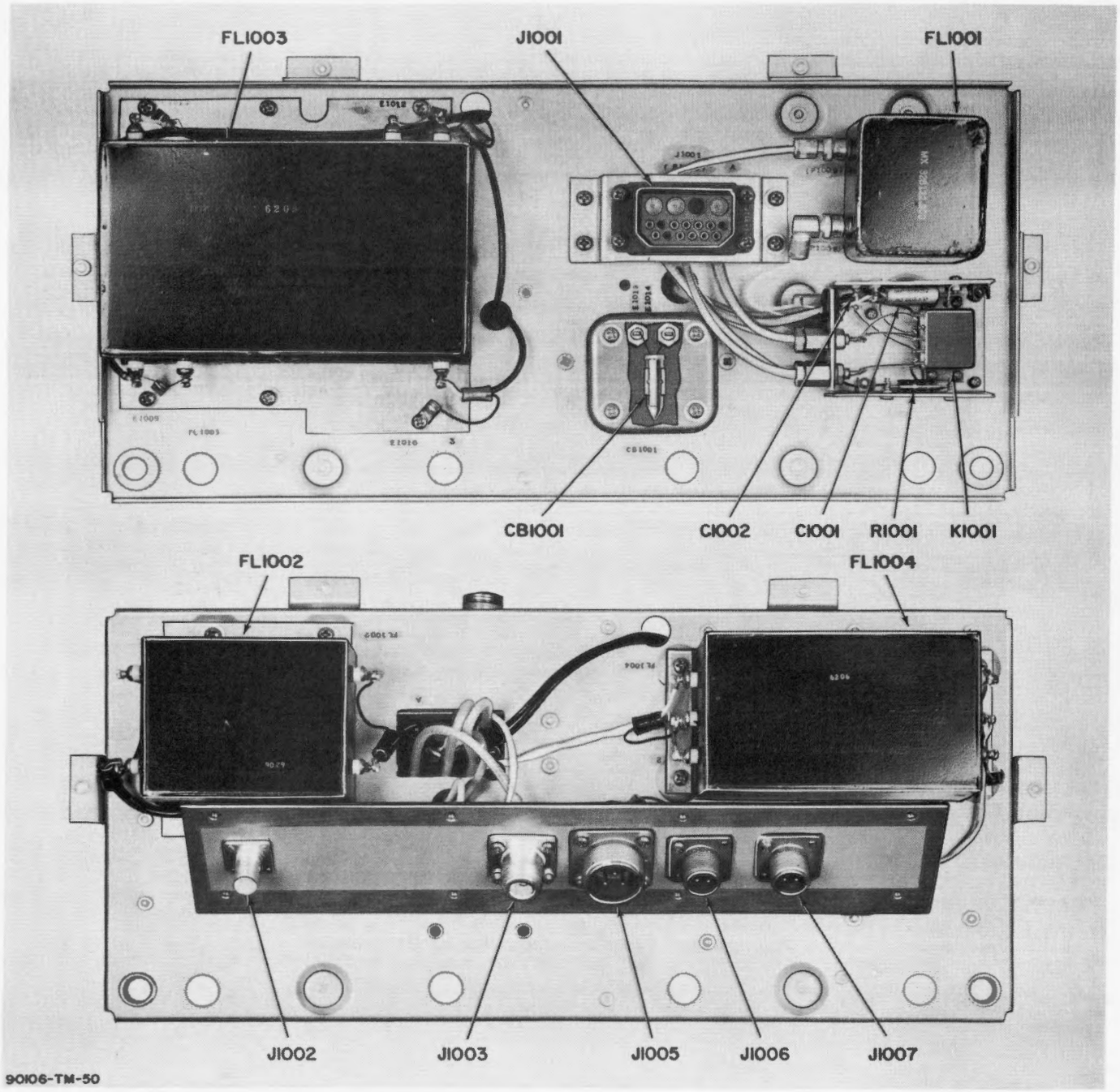
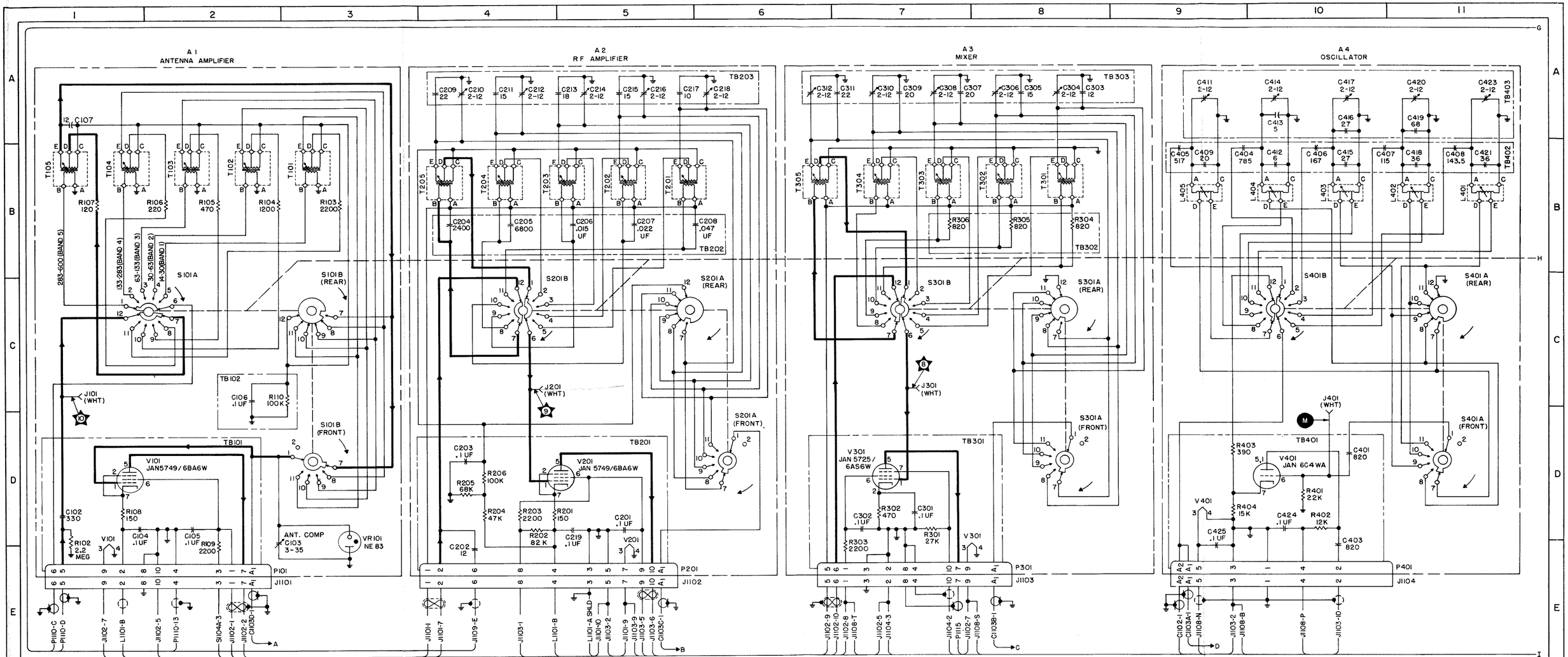


Figure 6-35. Radio Interference Filter

Ref. Desig.	Coordinates	Ref. Desig.	Coordinates	Ref. Desig.	Coordinates	Ref. Desig.	Coordinates	Ref. Desig.	Coordinates	Ref. Desig.	Coordinates	Ref. Desig.	Coordinates	Ref. Desig.	Coordinates	Ref. Desig.	Coordinates	Ref. Desig.	Coordinates
A1	1A to 3D	C404	7B	C620	15D	CB1001	26B	J711 ★ 5	20D	P1004	not used	R204	4D	R637	18C	R1105	31C	V501	12B
A2	4A to 6D	C405	9B	C621	14D	CR601	19B	J1001	26A	P1005	not used	R205	4D	R701	19C	R1106	32E	V601	15B
A3	6A to 8D	C406	10B	C622	17C	CR602	19D	J1002 ★ 12	25C	P1006	not used	R206	4D	R702	not used	R1107	32E	V602	16B
A4	9A to 11D	C407	10B	C623	17D	CR701	not used	J1003 ★ 11	24C	P1007	not used	R301	7D	R703	not used	R1108	32E	V603	18B
A5	12A to 13D	C408	11B	C624	18C	CR702	21B	J1004	not used	P1008	25B	R302	7D	R704	not used	S101	3C & 3D	V604	17D
A6	14A to 19D	C409	9B	C625	18D	CR703	21B	J1005	26C	P1009	26B	R303	7D	R705	not used	S201	5C & 5D	V605	15D
A7	19A to 23D	C410	not used	C626	18D	CR801	25D	J1006	27C	P1101	not used	R304	8B	R706	not used	S301	8C & 8D	V606	16D
A8	24C to 27D	C411	9A	C627	not used	CR802	25D	J1007	27C	P1102	not used	R305	8B	R707	not used	S401	11C & 11D	V701	20D
A9	28D	C412	10B	C628	not used	CR803	26D	J1008	25B	P1103	not used	R306	7B	R708	not used	S501	12D	V702	20B & 22B
A10	24A to 27B	C413	10A	C629	16C	CR804	25D	J1009	26B	P1104	not used	R401	10D	R709	not used	S502	12B	V703	23B
A11	1A thru 34E	C414	10A	C630	16D	CR805	25E	J1101	2E	P1105	not used	R402	10D	R710	19D	S601	14A & 14B	V704	21D
A1001	25B	C415	10B	C631	17C	DS901	29E	J1102	5E	P1106	not used	R403	9D	R711	20C	S1101	not used	V705	22D
A1101	33E	C416	10B	C632	17D	DS902	29E	J1103	7E	P1107	not used	R404	9D	R712	20C	S1102	28C	YR101	3D
A1102	33E	C417	10A	C633	17D	DS903	29E	J1104	10E	P1108	not used	R501	12C	R713	19C	S1103	28C	XF1101	32D
C101	not used	C418	11B	C634	18C	F1101	32D	J1105	13E	P1109	not used	R502	13C	R714	not used	S1104	29C	XF1102	32D
C102	1D	C419	11A	C635	18D	F1102	33D	J1106	17E	P1110	26A	R503	13C	R715	20C	S1105	30C	XF1103	32D
C103	3D	C420	11A	C636	19D	F1103	32D	J1107	21E	P1111	not used	R504	12C	R716	20C	S1106	31C	Y501	12C
C104	2D	C421	11B	C637	18D	FL501	13D	J1108	26E	P1112	not used	R505	12B	R717	not used	S1107	32C	Y701	20C
C105	2D	C422	not used	C638	16D	FL601	14C	J1109	23A	P1113	not used	R506	12C	R718	20B	S1108	33C	Z601	16B
C106	2C	C423	11A	C639	17D	FL701	19B	J1110	32D	P1114	not used	R601	15B	R719	20B	T101	3B	Z601C1	15B
C107	1A	C424	10D	C640	17D	FL1001	26B	J1111	32E	P1115	12E	R602	not used	R720	21B	T102	2B	Z601C2	16B
C201	5D	C425	9D	C701	not used	FL1002	26C	J1112	28D	P1116	14E	R603	not used	R721	21C	T103	2B	Z601C3	16B
C202	4D	C501	13D	C702	not used	FL1003	26B	J1113	28E	P1117	19E	R604	15B	R722	21B	T104	1B	Z601L1	15B
C203	4D	C502	13D	C703	20D	FL1004	27B	K1001	24B	P1118	not used	R605	16B	R723	21C	T105	2B	Z601L2	16B
C204	4B	C503	13C	C704	19C	J101 ★ 10	1C	L401	11B	P1119	not used	R606	16C	R724	not used	T201	5B	Z602	17B
C205	4B	C504	13B	C705	19B	J201 ★ 9	4C	L402	11B	P1120	not used	R607	not used	R725	21B	T202	5B	Z602C1	17B
C206	5B	C505	12C	C706	20C	J301 ★ 8	7C	L403	10B	P1121	not used	R608	16C	R726	21C	T203	5B	Z602C2	17B
C207	5B	C506	12C	C707	20C	J401 ● M	10C	L404	10B	P1122	not used	R609	17B	R727	21B	T204	4B	Z602C3	17B
C208	6B	C507	12C	C708	20B	J501	12E	L405	9B	P1123	not used	R610	17C	R728	22C	T205	4B	Z602L1	17B
C209	4A	C508	13B	C709	21B	J502	13B	L801	26C	P1124	not used	R611	18C	R729	22B	T301	8B	Z602L2	17B
C210	4A	C509	13B	C710	22B	J503 ★ 7	12D	L802	25D	P1125	13A	R612	18B	R730	22B	T302	8B	Z603	18B
C211	4A	C510	12B	C711	23B	J504 ● R	12C	L1101	30E	P1126	15A	R613	18C	R731	22C	T303	7B	Z603C1	18B
C212	4A	C511	12C	C712	20D	J505 ● P	13C	M1101	29D	P1127	not used	R614	14D	R732	22C	T304	7B	Z603C2	18B
C213	5A	C512	not used	C713	20D	J601	14E	M1102	32E	P1128	not used	R615	14D	R733	22B	T305	6B	Z603L1	18B
C214	5A	C513	13D	C714	21C	J602	15A	P101	2E	P1129	not used	R616	15C	R734	22C	T501	12A	Z603T1	18B
C215	5A	C514	12D	C715	21C	J603 ★ 6	14A	P201	5E	P1130	not used	R617	17D	R735	21D	T701	23B	Z604	15D
C216	5A	C601	15B	C716	21D	J604	15B	P301	7E	P1131	not used	R618	17D	R736	21D	T801	24D		
C217	5A	C602	15C	C717	21C	J605	14C	P401	10E	P1132	not used	R619	17D	R737	21C	TB101	2D		
C218	6A	C603	15B	C718	21C	J606 ● J	15B	P501	12E	P1133	not used	R620	17C	R738	21C	TB102	2C		
C219	5D	C604	not used	C719	21C	J607 ● I	16B	P601	17E	P1134	not used	R621	17D	R739	21D	TB201	5D		
C301	7D	C605	not used	C720	22C	J608 ● H	17B	P602	not used	P1135	not used	R622	18D	R740	22D	TB202	5B		
C302	7D	C606	not used	C721	23D	J609 ● F	18B	P603	not used	P1136	14A	R623	16D	R741	22D	TB203	5A		
C303	8A	C607	15B	C722	21D	J610 ● G	18C	P604	18B	R101	not used	R624	16D	R742	22C	TB301	7D		
C304	8A	C608	16B	C723	21D	J611 ● L	18D	P605	14C	R102	1D	R625	16D	R743	23C	TB302	8B		
C305	8A	C609	17C	C801	26D	J612 ● K	16C	P701	21E	R103	3B	R626	16C	R744	22D	TB303	8A		
C306	8A	C610	not used	C802	26D	J701	19E	P702	23A	R104	2B	R627	16D	R745	22C	TB401	10D		
C307	7A	C611	not used	C803	26D	J702	not used	P703	not used	R105	2B	R628	18C	R801	25D	TB402	10B		
C308	7A	C612	not used	C804	25D	J703 E	20B	P704	19D	R106	2B	R629	18D	R802	26D	TB403	10A		
C309	7A	C613	17C	C1001	25B	J704	20D	P705	19C	R107	1B	R630	not used	R803	26D	TB501	12C		
C310	7A	C614	18B	C1002	25B	J705	19C	P801	26E	R108	1D	R631	not used	R804	25E	TB601	15A thru 18D		
C311	7A	C615	not used	C1101	33E	J706 ● D	20B	P901	28D	R109	2D	R632	18D	R1001	25B	TB1101	28E		
C312	6A	C616	not used	C1102	33E	J707 ● C	22B	P902	28E	R110	2C	R633	19D	R1101	31E	V101	2D		
C401	10D	C617	19B	C1103	33D	J708 ● B	22B	P1001	not used	R201	4D	R634	16C	R1102	32C	V201	5D		
C402	not used	C618	18B	C1104	33E	J709 ● N	20D	P1002	not used	R202	4D	R635	18B	R1103	30D	V301	7D		
C403	10D	C619	15C	C1105	30E	J710 ● O	23D	P1003	not used	R203	4D	R636	18C	R1104	31D	V401	10D		

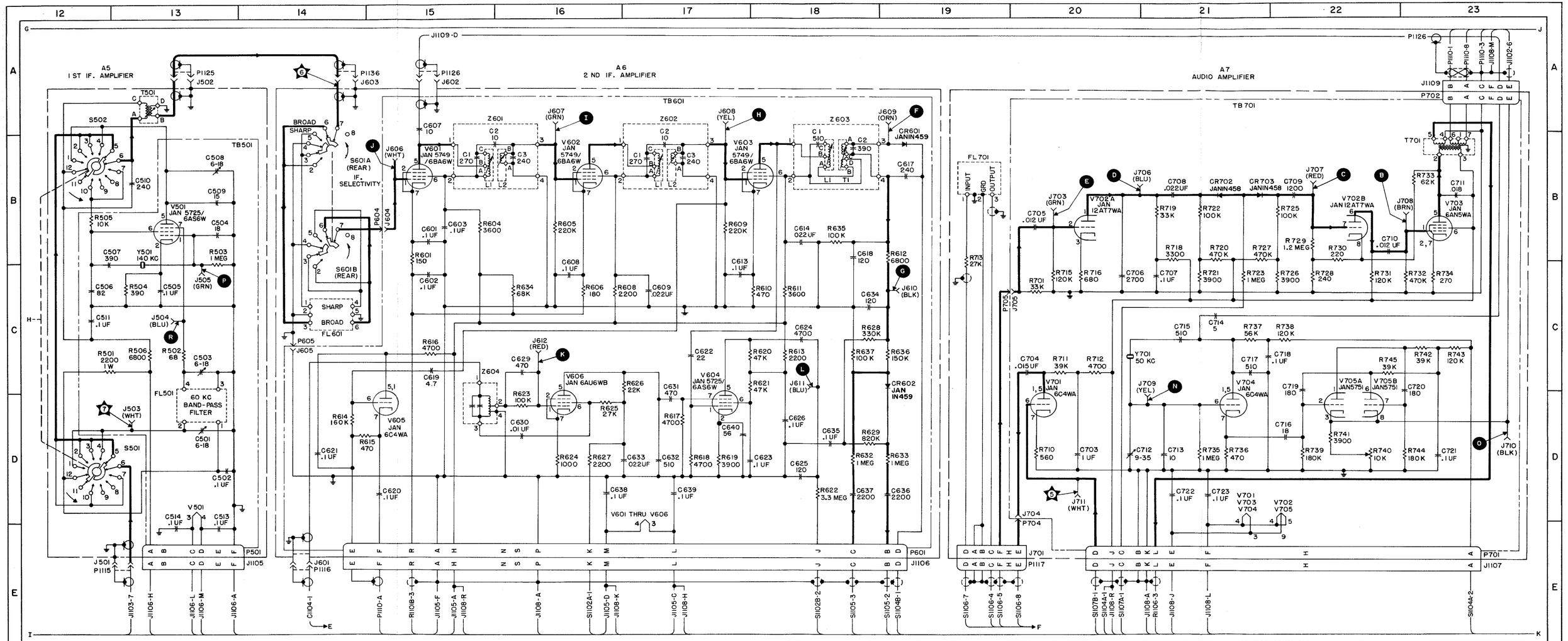
90106-TM-53

Figure 6-38. Schematic Diagram (Sheet 1 of 4)



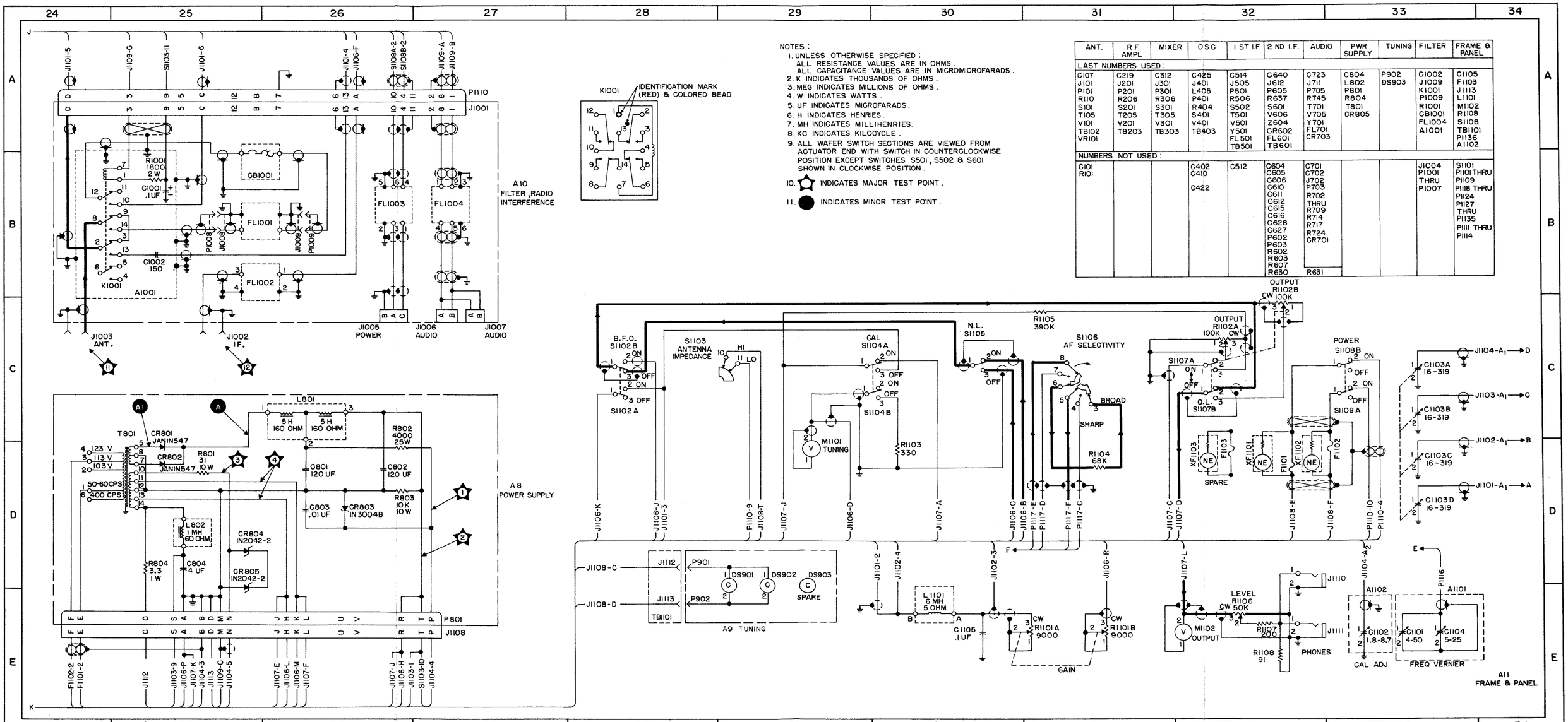
90106-TM-72
REF: MX DWG NO. 59872I (PARTIAL)

Figure 6-38. Schematic Diagram (Sheet 2 of 4)



90106-TM-73
REF: MX DWG NO. 598721 (PARTIAL)

Figure 6-38. Schematic Diagram (Sheet 3 of 4)



NOTES:

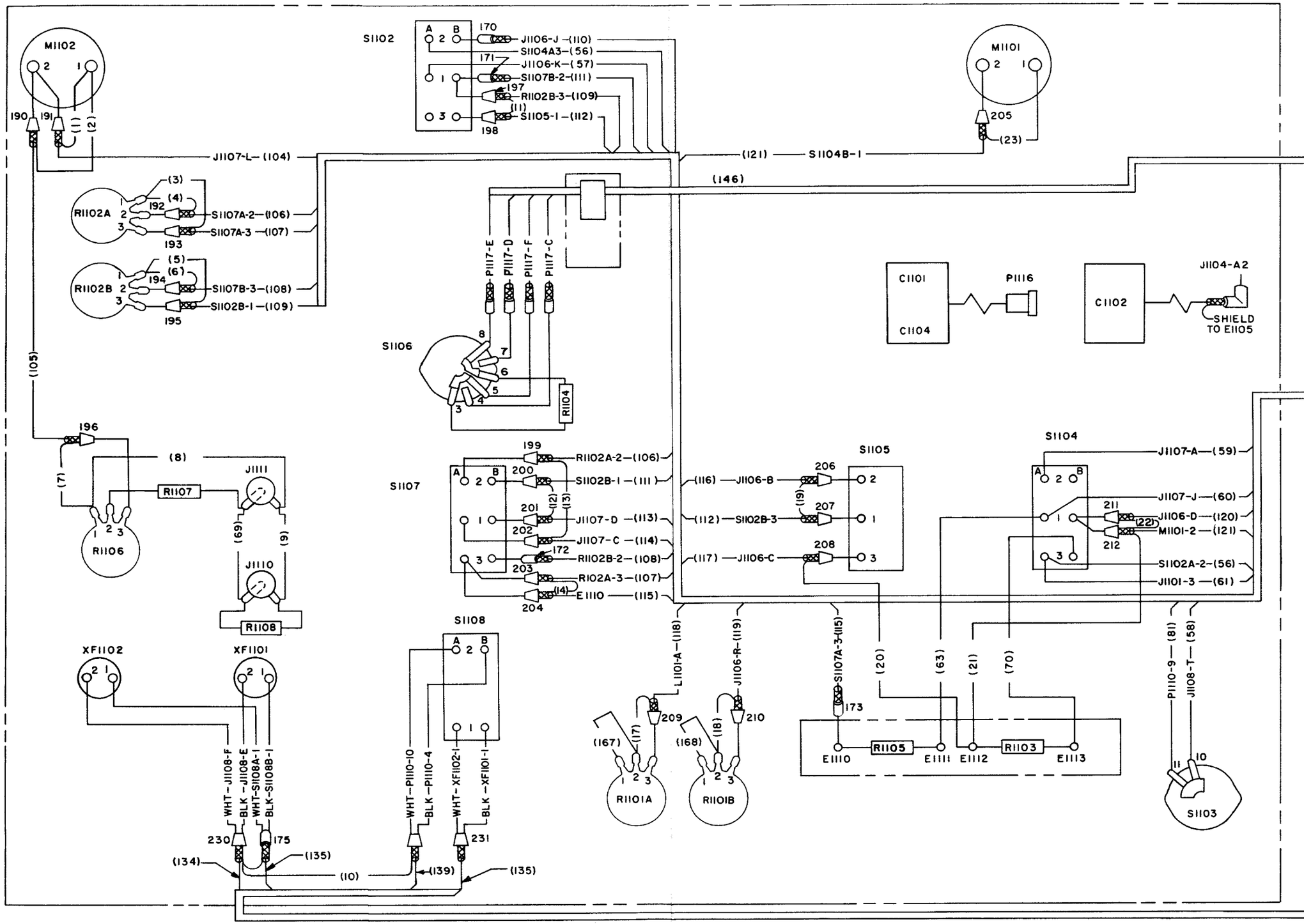
1. UNLESS OTHERWISE SPECIFIED: ALL RESISTANCE VALUES ARE IN OHMS. ALL CAPACITANCE VALUES ARE IN MICROMICROFARADS.
2. K INDICATES THOUSANDS OF OHMS.
3. MEG INDICATES MILLIONS OF OHMS.
4. W INDICATES WATTS.
5. UF INDICATES MICROFARADS.
6. H INDICATES HENRIES.
7. MH INDICATES MILLIHENRIES.
8. KC INDICATES KILOCYCLE.
9. ALL WAFER SWITCH SECTIONS ARE VIEWED FROM ACTUATOR END WITH SWITCH IN COUNTERCLOCKWISE POSITION EXCEPT SWITCHES S501, S502 & S601 SHOWN IN CLOCKWISE POSITION.
10. ☆ INDICATES MAJOR TEST POINT.
11. ● INDICATES MINOR TEST POINT.

ANT.	R F AMPL	MIXER	OSC	1 ST I.F.	2 ND I.F.	AUDIO	PWR SUPPLY	TUNING	FILTER	FRAME & PANEL
LAST NUMBERS USED:										
C107	C219	C312	C425	C514	C640	C723	C804	P902	C1002	C1105
J101	J201	J301	J401	J505	J612	J711	L802	DS903	J1009	F1103
P101	P201	P301	L405	P501	P605	P705	P801		K1001	J1113
R110	R206	R306	P401	R506	R637	R745	R804		P1009	L1101
S101	S201	S301	R404	S502	S601	T701	T801		R1001	M1102
T105	T205	T305	S401	T501	V606	V705	CR805		CB1001	R1108
V101	V201	V301	V401	V501	Z604	Y701			FL1004	S1108
TB102	TB203	TB303	TB403	Y501	CR602	FL701			A1001	TB1101
VR101				FL501	FL601	CR703				P1136
				TB501	TB601					A1102
NUMBERS NOT USED:										
C101			C402	C512	C604	C701			J1004	S1101
R101			C410		C605	C702			P1001	P1101 THRU
					C606	J702			THRU	P1109
			C422		C610	P703			P1007	P1118 THRU
					C611	R702				P1124
					C612	THRU				P1127
					C615	R709				THRU
					C616	R714				P1135
					C628	R717				P1111 THRU
					C627	R724				P1114
					P602	CR701				
					P603					
					R602					
					R603					
					R607					
					R630	R631				

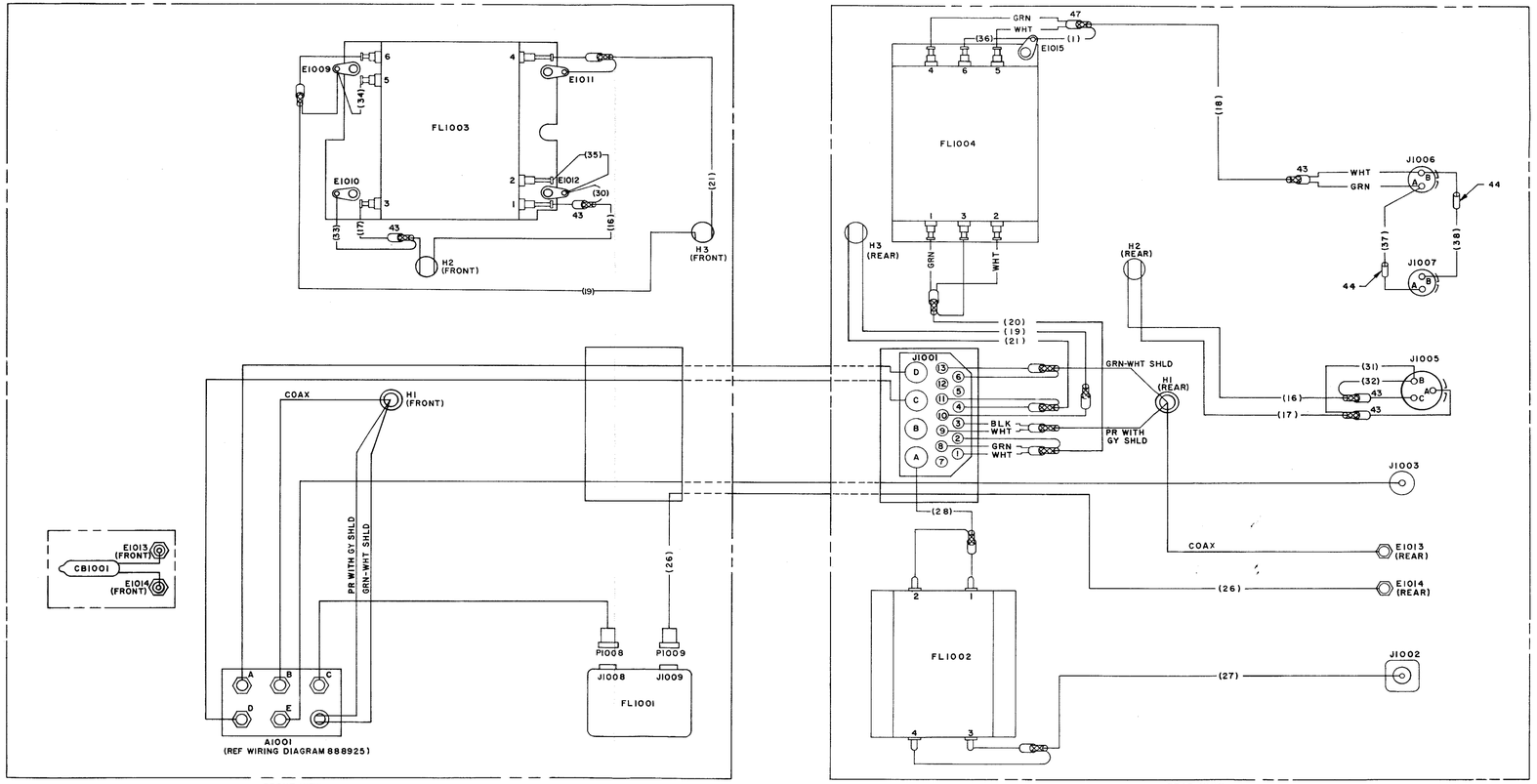
90106-TM-74
REF: MX DWG NO. 598721 (PARTIAL)

Figure 6-38. Schematic Diagram (Sheet 4 of 4)

Figure 6-39. Wiring Diagram, Front Panel



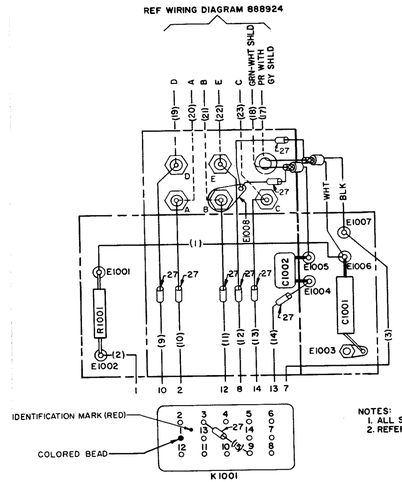
90106-TM-61
REF: MX DWG NO. 888924 & 888925



90106-TM-62
REF: MX DWG NO. 888924 & 888925

WIRE LEGEND			
NO.	DRAWING NO.	GA	DESCR
1	465002-50	24	BLK
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16	465003-31	20	SHLD
17	465003-31		
18	465033-16		
19	469275-801		
20	469278-801	20	SHLD
21	469275-802	20	SHLD
22			
23			
24			
25			
26	469277-801	—	COAX
27	469276-801	—	COAX
28	469279-801	—	COAX
29			
30	465006-20	20	BUS
31			
32			
33			
34	465006-20	20	BUS
35			
36			
37			
38	465006-20	20	BUS
39			
40			
41			
42			
43	449682-9	9	SLV
44	445013-527	20	SLV
45			
46			
47	MS25311-130		FERRULE
48			

NOTES:
1. ALL SOLDERING TO BE PER MIL-S-6872.
2. REFERENCE SCHEMATIC NO. 598721.



WIRE LEGEND			
NO.	DRAWING NO.	GA	DESCR
1	465002-52	24	RED
2	465002-52	24	RED
3	465002-50	24	BLK
4			
5			
6			
7			
8			
9	465006-24	24	BUS
10			
11			
12			
13			
14			
15	465006-24	24	BUS
16			
17	465065-801	20	SHLD
18	465065-803	20	SHLD
19	465060-801		COAX
20	465060-801		
21	465062-801		
22	465061-801		
23	465063-801		COAX
24			
25			
26			
27	445013-9029	24	SLV
28			

NOTES:
1. ALL SOLDERING TO BE PER MIL-S-6872
2. REFERENCE SCHEMATIC NO. 598721

Figure 6-40. Wiring Diagram, Radio Interference Filter

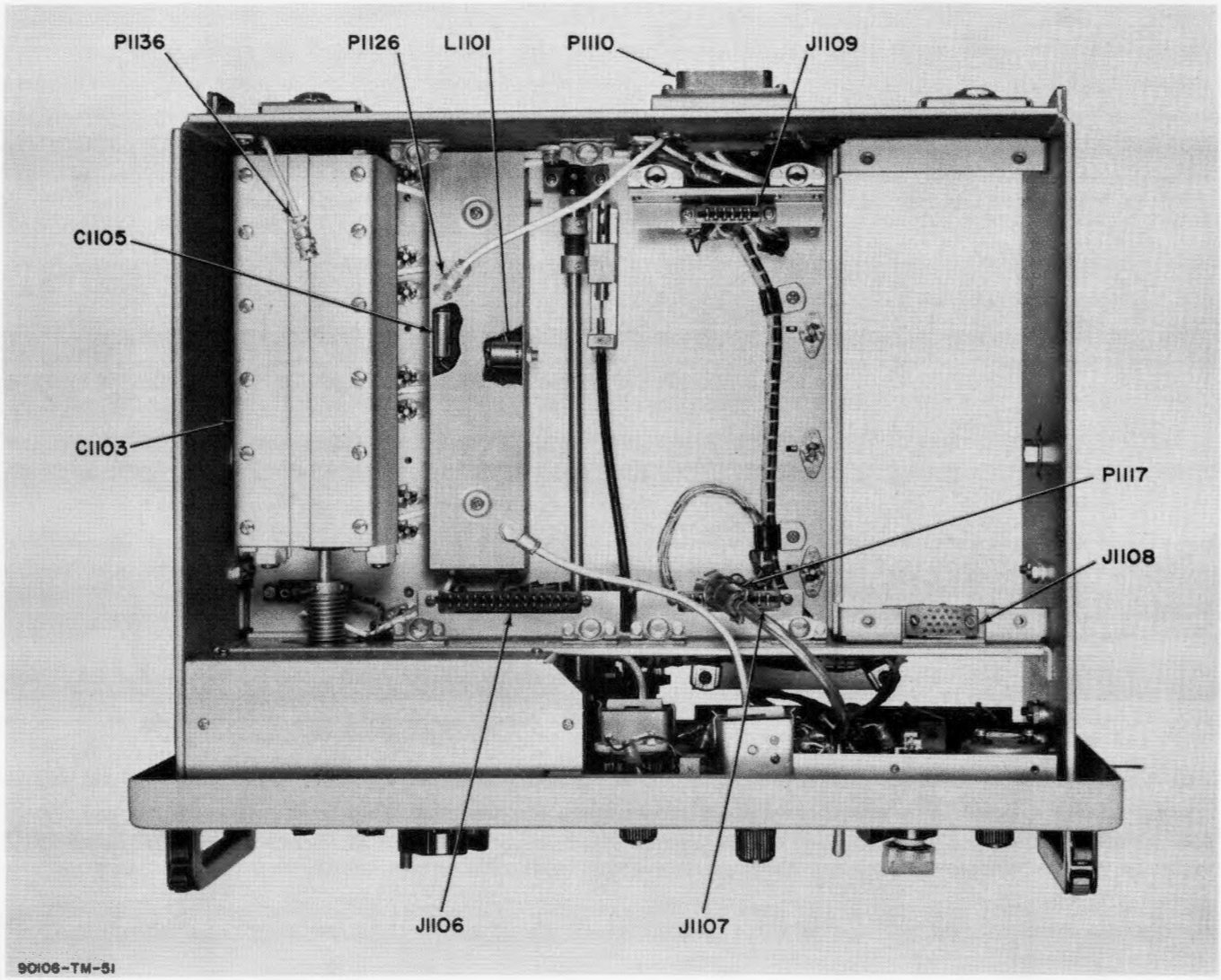


Figure 6-36. Main Chassis, Top View, Plug-In Assemblies Removed

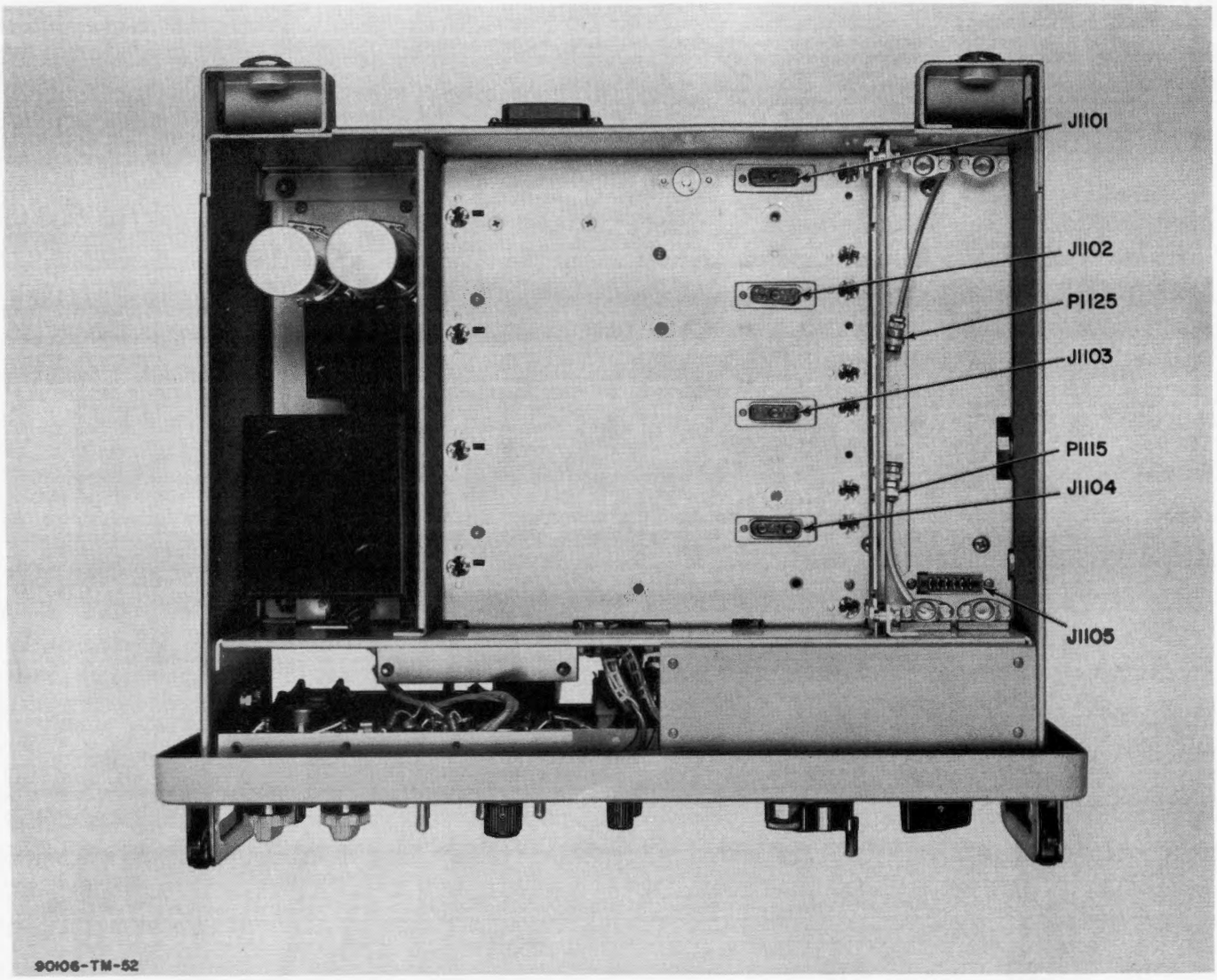
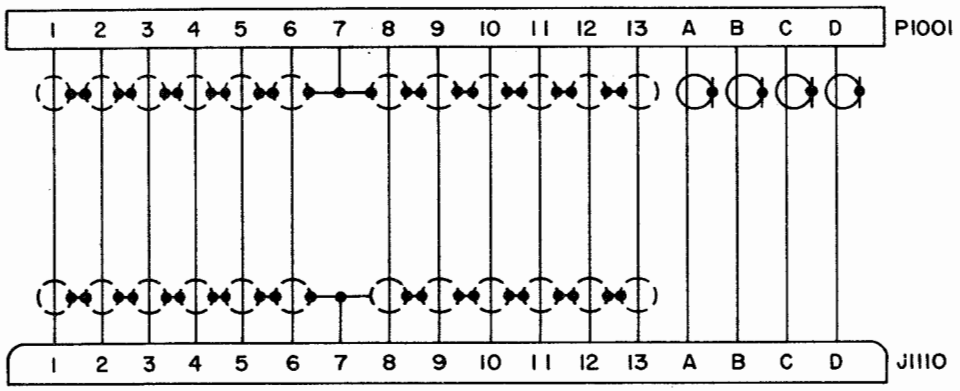


Figure 6-37. Main Chassis, Bottom View, Plug-In Assemblies Removed



90106-TM-64
REF: MX DWG NO. 469162

Figure 6-41. Test Cable, Wiring Diagram

SECTION 7

PARTS LIST

7-1. INTRODUCTION.

Reference designations (previously referred to as circuit symbols, reference symbols, etc.) have been assigned to identify all maintenance parts of the equipment. They are used for marking the equipment (adjacent to the part they identify) and are included on drawings, diagrams and in the parts list. The letters of a reference designation indicate the kind of part (generic group), such as resistor, amplifier, or electron tube. The number differentiates between different parts of the same generic group.

7-2. LIST OF MAJOR ASSEMBLIES.

Table 7-1 gives the blocks of reference designations that apply to a major assembly. Thus, when a reference desigantion of a part is known, this table will furnish a ready reference to the major assembly in which it is used. The table also gives the following information for each major assembly: (1) quantity in one equipment (see column 2); (2) official nomenclature (see column 3); location of its parts in table 7-3.

7-3. LIST OF MAJOR UNITS BY COLLOQUIAL NAME.

Table 7-2 is arranged by the common or colloquial name of major units. Only those major units are included where the common name differs from the official nomenclature. The table also locates the parts description of the major units in 7-3.

7-4. MAINTENANCE PARTS LIST.

Table 7-3 lists all major units and their maintenance parts. The parts of each major unit are grouped together. Column 1 lists the reference series of each major unit, followed by the reference designation of the various parts in alphabetical and numerical order. Column 2 refers to the explanatory notes that appear in paragraph 7-8 below. Column 3 gives the names and descriptions of the various parts. Complete information is given on all key parts (parts differing from any part previously listed in this table). When the same part appears more than once in the Maintenance Parts List, a reference is made to the key part for the data. Column 4 indicates how the part is used and gives its functional location in the equipment. It also includes the figure number on which the part is identified.

7-5. STOCK NUMBER IDENTIFICATION AND LISTS OF PARTS SUPPLIED.

Table 7-4 is arranged by key designation. The "Stock Number" column gives stock numbers for the various key parts. Therefore, if you have the reference designation for a part, find its key designation from table 7-3 before using this table. Stock numbers preceded by an asterisk (*) apply to replacement items which differ from the items initially supplied in the equipment.

7-6. STOCK NUMBER CROSS REFERENCE.

Table 7-5 lists by stock numbers all key parts that have been assigned stock numbers. If the stock number of a part used in the equipment is known, this table can be used to locate the description of the part in table 7-3.

7-7. LIST OF MANUFACTURERS.

Table 7-6 lists manufacturers of parts used in the equipment. The first column includes the abbreviations used in table 7-3 to identify manufacturers.

7-8. NOTES.

The following notes provide additional information about items listed in table 7-3.

1. Shop manufacture.
2. Replace with the substitute part having the stock number listed in table 7-4.
3. Stock number listed in table 7-4.
4. Non-replaceable in this application. Listed for reference only.
5. Will be procured on demand by the nearest Naval Shore Supply Activity.
6. Assemble from component parts.
7. Stock number deleted.

TABLE 7-1. RADIO RECEIVING SET AN/WRR-3, LIST OF MAJOR UNITS

Ref. Desig.	Quant.	Name of Major Unit	Colloquial Name	Page
101 to 199	1	Radio Frequency Amplifier	Antenna RF Amplifier	7-3
201 to 299	1	Radio Frequency Amplifier	Main RF Amplifier	7-5
301 to 399	1	Frequency Mixer Stage	Frequency Mixer	7-8
401 to 499	1	Radio Frequency Oscillator	RF Oscillator	7-11
501 to 599	1	Intermediate Frequency Amplifier	First IF Amplifier	7-14
601 to 699	1	Intermediate Frequency Amplifier	Second IF Amplifier	7-17
701 to 799	1	Audio Frequency Amplifier	AF Amplifier	7-25
801 to 899	1	Power Supply		7-31
901 to 999	1	Tuning Drive	Tuning Drive Assembly	7-33
1001 to 1099	1	Radio Interference Filter		7-37
1101 to 1199	1	Frame and Panel Assembly		7-40

TABLE 7-2. RADIO RECEIVING SET AN/WRR-3, LIST OF MAJOR UNITS BY COLLOQUIAL NAME

Colloquial Name	Designation	Page
AF Amplifier	Audio Frequency Amplifier	7-25
Antenna RF Amplifier	Radio Frequency Amplifier	7-2
First IF Amplifier	Intermediate Frequency Amplifier	7-14
Frequency Mixer	Frequency Mixer Stage	7-8
Main RF Amplifier	Radio Frequency Amplifier	7-5
RF Oscillator	Radio Frequency Oscillator	7-11
Second IF Amplifier	Intermediate Frequency Amplifier	7-16
Tuning Drive Assembly	Tuning Drive	7-33

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
		RECEIVING SET, RADIO: AN/WRR-3, Magnavox part/ dwg no. 708552-801	(See figure 1-1)
		RECEIVER, RADIO: R-1134/WRR-3, AM (A1, A2, F1); for communication; 14 KC to 600 KC in 5 bands, input power 105, 115, 125V; 50, 60, 400 CPS; 60 W nominal; mtd in aluminum cabinet; 18-3/4 in. by 17-1/4 in. by 8-3/4 in.; 25 tube double superheterodyne ckt; including 5 connector plugs for ext connections; 5 receptacles marked "IF", "ANT", "POWER", "AUDIO", and "AUDIO"; 2 handles on front for removing from cabinet; including BFO, int xtal calibrator, 2 degrees of IF selectivity and 2 degrees of audio response; spec MIL-R-3936 (SHIPS) W/Amendment 1; Magnavox part/ dwg no. 708553-801, p/o AN/WRR-3	(See figure 1-1)
A001		LEAD, TEST: c/o of 1 cable, 1 connector, 1 clip, 1 test prod, over-all length 24 in.; Magnavox part/dwg no. 469307-801	(See figure 2-4)
MP001		ALIGNMENT TOOL, ELECTRONIC EQUIPMENT: Screw-driver type, 1 working end; Magnavox part/dwg no. 807854-1	
MP002		ALIGNMENT TOOL, ELECTRONIC EQUIPMENT: Screw-driver type, 2 working ends; Magnavox part/dwg no. 807855-1	
P001	3	CONNECTOR, PLUG, ELECTRICAL: 3 contacts; 1 connector mating end; MIL-C-5015 type no. AN3106A16S55; Magnavox part/dwg no. 187983-25	(See figure 1-1)
P002		CONNECTOR, PLUG, ELECTRICAL: 2 contacts; 1 connector mating end; MIL-C-5015 type no. AN3106A 10SL 45; Magnavox part/dwg 187984-14	(See figure 1-1)
P003		Same as P002.	(See figure 1-1)
P004		CONNECTOR, PLUG, ELECTRICAL: 1 contact; 1 connector mating end; MIL-C-3608 type no. UG-88U; Magnavox part/dwg no. 187862-1	(See figure 1-1)
P005	3	CONNECTOR, PLUG, ELECTRICAL: 1 contact; 1 connector mating end; MIL-C-71A type UG-21BU: Magnavox part/dwg no. 187922-1	(See figure 1-1)
W001		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL: c/o 2 connectors, 50 contacts, 24 ferrules, 2 shields; Magnavox part/dwg no. 469162-801	(See figure 1-1)
A011		CONTROL SUBASSEMBLY, PUSH-PULL: c/o the following, 1 flexible shaft assy., 1 steel wire; Magnavox part/dwg no. 713862-801	
E1		PROD, TEST: Magnavox part/dwg no. 188718-1	(See figure 1-1)
A1		AMPLIFIER, RADIO FREQUENCY: 14 KC to 600 KC frequency range; Magnavox part/dwg no. 712595-802	(See figure 1-3)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
CP101		ADAPTER, RADIO FREQUENCY CABLE: used to rigidly adapt radio frequency cable to a connector; Burndy part no. YHM22HG2: Magnavox part/dwg no. 188393-2	
C102		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 330 uuf ± 5%; insulated case, 0.240 in. by 0.250 in. by 0.460 in.; Erie part no. 331-052Y5D331J: Magnavox part/dwg no. 255006-33, p/o TB101	RF input coupling capacitor (See figure 6-32)
C103	3	CAPACITOR, VARIABLE, AIR DIELECTRIC: 3 uuf min capacity, 33 uuf max capacity, straight line capacity tuning characteristic, 600 vac peak, 28 brass plates; Magnavox part/dwg no. 267821-1 p/o A1	Antenna Compensation trimmer capacitor (See figure 6-32)
C104		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC: 200 VDC working, 10,000 uuf ± 10%; uninsulated metal case, hermetically sealed; 0.312 in. by 0.781 in.; MIL-C-18312A type no. CH04A3NC104K p/o TB101	Cathode bypass capacitor for V101 (See figure 6-32)
C105		Same as C104 p/o TB101	Output decoupling capacitor for V101 (See figure 6-32)
C106		CAPACITOR, FIXED, PAPER DIELECTRIC: 100 VDC working 100,000 uuf ±10%; hermetically sealed metal case, uninsulated; 0.312 in. by 0.813 in.; MIL-C-25C type no. CP04A3KB104K1, p/o TB102	Part of tuned circuit of T101 through T105 (See figure 6-32)
C107		CAPACITOR, FIXED, MICADIELECTRIC: 500 VDC working 12 uuf ± 10%; plastic case, 0.220 in. by 0.473 in. by 0.480 in.; MIL-C-5/18B type no. CM05C120K03 p/o TB102	Part of tuned circuit of T105 (See figure 6-32)
E101	3	TERMINAL, LUG: phosphor bronze tin dipped; Shakeproof part no. 2104-4: Magnavox part/dwg no. 208330-4	
E102	3	SHIELD, ELECTRON TUBE: accomodates a 7 pin miniature tube; straight cylinder shape; open top; aluminum alloy with beryllium copper liner; International Electronic part no. TRT5-5020B: Magnavox part/dwg no. 185189-2, p/o TB101	
E103		PRINTED CIRCUIT BOARD: laminated galss cloth; 0.062 in. by 2.125 in. by 6.125 in. over-all dim; Magnavox part/dwg no. 218022-801, p/o TB 102	
J101		JACK, TIP: contact beryllium copper with precious metal finish; Garlock part no. 69003-1183: Magnavox part/dwg no. 208778-1, p/o TB101	RF input signal test point (See figure 6-33)
P101		CONNECTOR, RECEPTACLE, ELECTRICAL: arc resistant plastic dielectric; 11 pins, 5 amps current rating; Cannon part no. DAM11W1P: Magnavox part/dwg no. 185124-112, p/o TB 101	Antenna Rf Amplifier input connector (See figure 6-33)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R102	3	RESISTOR, FIXED, COMPOSITION: 2,200,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristics letter F; MIL-R11 type no. RC20GF225J p/o TB 101	Input impedance matching (See figure 6-32)
R103		RESISTOR, FIXED, COMPOSITION: 2200 Ohms ± 5% 1/4 W, rated at 70 degrees C ambient temp; characteristic letter F; MIL-R-11 type no. RC07GF222J p/o A1	Impedance matching (See figure 6-32)
R104	3	RESISTOR, FIXED, COMPOSITION: 1200 Ohms ± 5% 1/4 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC07GF122J p/o A1	Impedance matching (See figure 6-32)
R105	3	RESISTOR, FIXED, COMPOSITION: 470 Ohms ± 5% 1/4 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC07GF471J p/o A1	Impedance matching (See figure 6-32)
R106		RESISTOR, FIXED, COMPOSITION: 220 Ohms ± 5% 1/4 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC07GF221J p/o A1	Impedance matching (See figure 6-32)
R107		RESISTOR, FIXED, COMPOSITION: 120 Ohms ± 5% 1/4 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC07GF121J p/o A1	Impedance matching (See figure 6-32)
R108		RESISTOR, FIXED, COMPOSITION: 150 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF151J p/o TB 101	Cathode bias resistor for V101 (See figure 6-32)
R109		RESISTOR, FIXED, COMPOSITION: 2200 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF222J p/o TB 101	Decoupling resistor for V101 (See figure 6-32)
R110	3	RESISTOR, FIXED, COMPOSITION: 100,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF104J p/o TB102	Part of tuned circuit of T101 through T105 (See figure 6-32)
S101		SWITCH, ROTARY: 2 section, 5 position; electrical rating 1 amp at 6 vdc or 100 ma at 110 vac; Magnavox part/dwg no. 168467-1 p/o A1	Part of Band Selector switch (See figure 6-32)
TB101		AMPLIFIER SUBASSEMBLY: c/o the following, 1 adapter, 3 capacitors, 2 connectors, 1 printed circuit board, 3 resistors, and 1 socket; Magnavox part/dwg no. 713484-801 p/o A1	(See figure 6-33)
TB102		AMPLIFIER SUBASSEMBLY: Magnavox part/dwg no. 713489-801 p/o A1	(See figure 6-33)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
T101	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 387 mh nom inductance of secondary winding, tapped at 45.5 mh; 20 kc operating frequency; Magnavox part/dwg no. 368217-1 p/o A1	Input transformer for Band I (See figure 6-32)
T102	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 31.3 mh nom inductance of secondary winding, secondary winding tapped at 7.35 mh; 40 KC operating frequency; Magnavox part/dwg no. 368217-2 p/o A1	Input transformer for Band II (See figure 6-32)
T103	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 18.6 mh nom inductance of secondary winding, secondary winding tapped at 1.76 mh; 100 KC operating frequency; Magnavox part/dwg no. 368217-3 p/o A1	Input transformer for Band III (See figure 6-32)
T104	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 1.13 mh nom inductance of secondary winding, secondary winding tapped at 0.395 mh; 200 KC operating frequency; Magnavox part/dwg no. 368217-4 p/o A1	Input transformer for Band IV (See figure 6-32)
T105	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 0.895 mh nom inductance of secondary winding, secondary winding tapped at 0.078 mh; 400 KC operating frequency; Magnavox part/dwg no. 368217-5 p/o A1	Input transformer for Band V (See figure 6-32)
VR101		LAMP, GLOW: neon gas; 60 V AC striking voltage, 85 VDC striking voltage; 105 to 125 V circuit voltage; Mazda part no. NE83: Magnavox part/dwg no. 187970-11 p/o A1	High level input signal protector (See figure 6-32)
V101		ELECTRON TUBE: MIL-E-1D, type no. JAN5749/6BA6W p/o A1	First RF Amplifier (See figure 6-33)
XV101		SOCKET, ELECTRON TUBE: 7 phosphor bronze or beryllium copper contacts; low loss plastic dielectric; Methode part no. PMNJ150M BCAGAU: Magnavox part/dwg no. 185158-2 p/o TB 101	Socket for V101 (See figure 6-32)
A2		AMPLIFIER, RADIO FREQUENCY: 14 KC to 600 KC frequency range; Magnavox part/dwg no. 712596-802	(See figure 1-3)
C201		Same as C104, p/o TB201	Decoupling capacitor for V201 output. (See figure 6-30)
C202		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 200 VDC working, 12 uuf ± 10%; insulated case, 0.140 in. by 0.250 in. by 0.330 in.; Erie part no. 375-051C0G120K: Magnavox part/dwg no. 257947-26 p/o TB201	Calibration signal input coupling. (See figure 6-30)
C203		Same as C106, p/o TB201	RF filter capacitor (See figure 6-30)
C204		CAPACITOR, FIXED, MICADIELECTRIC: 500 VDC working 2400 uuf ± 5%; plastic case, 0.259 in. by 0.591 in. by 0.720 in.; MIL-C-5/18B type no. CM06D242J03 p/o TB202	Part of tuned circuit of T205. (See figure 6-30)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C205		CAPACITOR, FIXED, PAPER DIELECTRIC: 200 VDC working, 6800 uuf ± 10% hermetically sealed metal case, plastic insulation; 0.298 in. by 0.813 in.; MIL-C-25C type no. CP05A1KF682K1 p/o TB202	Part of tuned circuit of T204. (See figure 6-30)
C206		CAPACITOR, FIXED, PAPER DIELECTRIC: 200 VDC working; 15,000 uuf ± 10%; hermetically sealed metal case, plastic insulation; 0.298 in. by 0.813 in.; MIL-C-25C type no. CP05A1KC153K1 p/o TB202	Part of tuned circuit of T203. (See figure 6-30)
C207		CAPACITOR, FIXED, PAPER DIELECTRIC: 200 VDC working, 22,000 uuf ± 10% hermetically sealed metal case, plastic insulation; 0.298 in. by 0.813 in.; MIL-C-25C type no. CP05A1KC223K1 p/o TB 202	Part of tuned circuit of T202. (See figure 6-30)
C208		CAPACITOR, FIXED, PAPER DIELECTRIC: 200 VDC working, 47,000 uuf ± 10%; hermetically sealed metal case, plastic insulation; 0.298 in. by 0.813 in.; MIL-C-25C type no. CP05A1KC153K1 p/o TB202	Part of tuned circuit of T201. (See figure 6-30)
C209	3	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working 22 uuf ± 2%; tubular wire lead type; MIL-C-20D type no. CC20UJ220G p/o TB203	Temperature compensating capacitor for T205. (See figure 6-30)
C210		CAPACITOR, VARIABLE, AIR DIELECTRIC: 2 uuf min capacity, 12.4 uuf max capacity, straight line capacity tuning characteristic, 500 vac peak, 14 brass plates; Magnavox part/dwg no. 267893-1 p/o TB203	Trimmer capacitor for T205. (See figure 6-30)
C211		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 15 uuf ±2%; uninsulated case, 0.200 in. by 0.250 in. by 0.400 in.; Erie part no. 301-651P3K150G: Magnavox part/dwg no. 257947-28 p/o TB203	Temperature compensating capacitor for T204. (See figure 6-30)
C212		Same as C210, p/o TB203	Trimmer capacitor for T204. (See figure 6-30)
C213		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 18 uuf ± 2%; uninsulated case, 0.200 in. by 0.250 in. by 0.400 in.; Erie part no. 301-651P3K180G: Magnavox part/dwg no. 257947-33 p/o TB203	Temperature compensating capacitor for T203. (See figure 6-30)
C214		Same as C210 p/o TB203	Trimmer capacitor for T203 (See figure 6-30)
C215		Same as C211 p/o TB203	Temperature compensating capacitor for T202 (See figure 6-30)
C216		Same as C210 p/o TB203	Trimmer capacitor for T202 (See figure 6-30)
C217		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 10 uuf ± 2.5%; uninsulated case, 0.200 in. by 0.250 in. by 0.400 in.; Erie part no. 301-651P3K100C: Magnavox part/dwg no. 257947-29 p/o TB203	Temperature compensating capacitor for T201 (See figure 6-30)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C218		Same as C210 p/o TB203	Trimmer capacitor for T201 (See figure 6-30)
C219		Same as C106 p/o TB201	Feedback capacitor (See figure 6-30)
E201		Same as E101	
E202		CONTACT, ELECTRICAL: brass; gold plate over silver finish; 1700 vac; Cannon part no. DM53745: Magnavox part/dwg no. 188450-17	
E203		PRINTED CIRCUIT BOARD: laminated glass cloth; 0.062 in. by 2.125 in. by 6.125 in. over-all dim.; Magnavox part/dwg no. 218022-802 p/o TB202	
J201		Same as J101 p/o TB201	Second RF Amplifier input test point (See figure 6-30)
P201		Same as P101 p/o TB201	Main RF Amplifier input connector (See figure 6-31)
R201		Same as R108 p/o TB201	Cathode bias resistor for V201 (See figure 6-30)
R202		RESISTOR, FIXED, COMPOSITION: 82,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF823J p/o TB201	Cathode bias resistor for V201 (See figure 6-30)
R203		Same as R109 p/o TB201	Decoupling resistor for output of V201 (See figure 6-30)
R204	3	RESISTOR, FIXED, COMPOSITION: 47,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF473J p/o TB201	Grid bias resistor for V201 (See figure 6-30)
R205		RESISTOR, FIXED, COMPOSITION: 68,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF683J p/o TB201	Grid bias resistor for V201 (See figure 6-30)
R206	3	Same as R110 p/o TB201	RF filter resistor (See figure 6-30)
S201		SWITCH, ROTARY: 2 section, 5 position; electrical rating 1 amp at 6 VDC or 100 ma at 110 VAC: Magnavox part/dwg no. 168400-1 p/o A2	Part of Band selector switch (See figure 6-30)
TB201		AMPLIFIER SUBASSEMBLY: c/o the following, 4 capacitors, 2 connectors, 1 printed circiut board, 6 resistors, and 1 socket; Magnavox part/dwg no. 713485-801 p/o A2	(See figure 6-31)
TB202		AMPLIFIER SUBASSEMBLY: Magnavox part/dwg no. 713910-801 p/o A2	(See figure 6-31)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
TB203		AMPLIFIER SUBASSEMBLY: Magnavox part/dwg no. 713491-801 p/oA2	(See figure 6-31)
T201	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 6.79 mh nom inductance of primary winding, 380 mh nom inductance of secondary winding, secondary winding tapped at 109.3 mh; 20 KC operating frequency; Magnavox part/dwg no. 368217-6 p/o A2	Band I coupling transformer (See figure 6-30)
T202	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 2.53 mh nom inductance of primary winding, 82.3 mh nom inductance of secondary winding, secondary winding tapped at 25.1 mh; 40 KC operating frequency; Magnavox part/dwg no. 368217-7 p/o A2	Band II coupling transformer (See figure 6-30)
T203	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 1.03 mh nom inductance of primary winding, 19.2 mh nom inductance of secondary winding, secondary winding tapped at 6.20 mh; 100 KC operating frequency; Magnavox part/dwg no. 368217-8 p/o A2	Band III coupling transformer (See figure 6-30)
T204	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 0.414 mh nom inductance of primary winding, 4.21 mh nom inductance of secondary winding, secondary winding tapped at 1.36 mh; 200 KC operating frequency; Magnavox part/dwg no. 368217-9 p/o A2	Band IV coupling transformer (See figure 6-30)
T205	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 0.412 mh nom inductance of primary winding, 0.912 mh nom inductance of secondary winding, secondary winding tapped at 0.292 mh; 400 KC operating frequency; Magnavox part/dwg no. 368217-10 p/o A2	Band V coupling transformer (See figure 6-30)
V201		Same as V101 p/o A2	Second RF Amplifier (See figure 6-31)
XV201		Same as XV101 p/o TB201	Socket for V201 (See figure 6-30)
A3		MIXER STAGE, FREQUENCY: 14 KC to 600 KC and 74 KC to 800 KC incoming frequencies, 60 KC to 200 KC outgoing frequencies; Magnavox part/dwg no. 712597-802	(See figure 1-3)
C301		Same as C106 p/o TB301	Cathode bias capacitor for V301 (See figure 6-26)
C302		Same as C104 p/o TB301	Decoupling capacitor for V301 (See figure 6-26)
C303		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 12 uuf ± 2%; uninsulated case, 0.200 in. by 0.250 in. by 0.400 in.; Erie part no. 301-651P3K120G: Magnavox part/dwg no. 257947-30 p/o TB303	Temperature compensating capacitor for T301 (See figure 6-26)
C304		Same as C210 p/o TB303	Trimmer capacitor for T301 (See figure 6-26)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C305		Same as C211 p/o TB303	Temperature compensating capacitor for T302 (See figure 6-26)
C306		Same as C210 p/o TB303	Trimmer capacitor for T302 (See figure 6-26)
C307		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working 20 uuf ± 2%; tubular wire lead type; MIL-C-20D type no. CC20UJ200G p/o TB303	Temperature compensating capacitor for T303 (See figure 6-26)
C308		Same as C210 p/o TB303	Trimmer capacitor for T303 (See figure 6-26)
C309		Same as C307 p/o TB303	Temperature compensating capacitor for T304 (See figure 6-26)
C310		Same as C210 p/o TB303	Trimmer capacitor for T304 (See figure 6-26)
C311		Same as C209 p/o TB303	Temperature compensating capacitor for T304 (See figure 6-26)
C312		Same as C210 p/o TB303	Trimmer capacitor for T305 (See figure 6-26)
E301		Same as E101	
E302	3	SHIELD, ELECTRON TUBE: accomodates a 7 pin miniature tube; straight cylinder shape; open top; aluminum alloy with beryllium copper liner; International Electronic part no. TRT5-5015B: Magnavox part/dwg no. 185189-1	Shield for V301
E303		Same as E202	
E304		PRINTED CIRCUIT BOARD: laminated glass cloth; 0.062 in. by 2.125 in. by 6.125 in. over-all dim; Magnavox part/dwg no. 218022-803	
J301		Same as J101 p/o A3	V301 input signal test point (See figure 6-27)
P301		Same as P101 p/o TB301	Frequency mixer input connector (See figure 6-27)
R301		RESISTOR, FIXED, COMPOSITION: 27,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF273J p/o TB301	DC return resistor for suppressor grid of V301 (See figure 6-26)
R302	3	RESISTOR, FIXED, COMPOSITION: 470 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF471J p/o TB301	Cathode bias resistor for V301 (See figure 6-26)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R303		Same as R109 p/o TB301	Decoupling resistor for screen grid of V301 (See figure 6-26)
R304	3	RESISTOR, FIXED, COMPOSITION: 820 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF821J p/o TB302	Impedance matching (See figure 6-26)
R305	3	Same as R304 p/o TB302	Impedance matching (See figure 6-26)
R306	3	Same as R304 p/o TB302	Impedance matching (See figure 6-26)
S301		Same as S201 p/o A6	Part of Band Selector switch (See figure 6-26)
TB301		MIXER STAGE SUBASSEMBLY: c/o the following, 2 capacitors, 1 connector, 1 contact, 1 printed circuit board, 3 resistors and 1 socket; Magnavox part/dwg no. 713486-801 p/o A3	(See figure 6-27)
TB302		MIXER STAGE SUBASSEMBLY: 0.250 in. by 2.125 in. by 6.125 in.; Magnavox part/dwg no. 713913-801 p/o A3	(See figure 6-27)
TB303		MIXER STAGE SUBASSEMBLY: 0.656 in. by 0.906 in. by 4.578 in; Magnavox part/dwg no. 713912-801 p/o A3	(See figure 6-27)
T301	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 6.79 mh nom inductance of primary winding, 380 mh nom inductance of secondary winding, secondary winding tapped at 109.3 mh; 20 KC operating frequency; Magnavox part/dwg no. 368217-11 p/o A3	Band I coupling transformer (See figure 6-26)
T302	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 2.53 mh nom inductance of primary winding, 82.3 mh nom inductance of secondary winding, secondary winding tapped at 25.1 mh; 40 KC operating frequency; Magnavox part/dwg no. 368217-12 p/o A3	Band II coupling transformer (See figure 6-26)
T303	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 0.450 mh nom inductance of primary winding, 18.7 mh nom inductance of secondary winding, secondary winding tapped at 5.93 mh; 100 KC operating frequency; Magnavox part/dwg no. 368217-13 p/o A3	Band III coupling transformer (See figure 6-26)
T304	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 0.115 mh nom inductance of primary winding, 4.10 mh nom inductance of secondary winding, secondary winding tapped at 1.30 mh; 200 KC operating frequency; Magnavox part/dwg no. 368217-14 p/o A3	Band IV coupling transformer (See figure 6-26)
T305	3	TRANSFORMER, RADIO FREQUENCY: 2 windings; 0.109 mh nom inductance of primary winding, 0.89 mh nom inductance of secondary winding, secondary winding tapped at 0.312 mh; 400 KC operating frequency; Magnavox part/dwg no. 368217-15 p/o A3	Band V coupling transformer (See figure 6-26)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
V301		ELECTRON TUBE: MIL-E-1D, type no. JAN5725/6AS6W p/o A3	Frequency mixer (See figure 6-26)
XV301		Same as XV101 p/o TB301	Socket for V301 (See figure 6-26)
A4		OSCILLATOR, RADIO FREQUENCY: 74 KC to 800 KC frequency range; Magnavox part/dwg no. 712598-802	(See figure 1-3)
C401		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 820 uuf ± 5%; insulated case, 0.240 in. by 0.375 in. by 0.710 in.; Erie part no. 332-052Y5D821J: Magnavox part/dwg no. 255006-32 p/o TB401	Grid bias capacitor of V401 (See figure 6-28)
C403		Same as C401 p/o TB401	Coupling capacitor for V401 output (See figure 6-28)
C404		CAPACITOR, FIXED, MICA DIELECTRIC: 300 VDC working, 600 VDC peak working, 766 uuf ± 0.5%; hermetically sealed, low loss bakelite case, 0.219 in. by 0.438 in. by 0.688 in.; Magnavox part/dwg no. 257818-76 p/o TB402	Frequency tracking capacitor for Band IV (See figure 6-28)
C405		CAPACITOR, FIXED, MICA DIELECTRIC: 300 VDC working, 600 VDC peak working, 517 uuf ± 0.5%; hermetically sealed, low loss bakelite case, 0.219 in. by 0.438 in. by 0.688 in.; Magnavox part/dwg no. 257818-77 p/o TB402	Frequency tracking capacitor for Band V (See figure 6-28)
C406		CAPACITOR, FIXED, MICA DIELECTRIC: 300 VDC working, 600 VDC peak working, 167 ± 0.5%; hermetically sealed, low loss bakelite case, 0.219 in. by 0.313 in. by 0.547 in.; Magnavox part/dwg no. 257818-75 p/o TB402	Frequency tracking capacitor for Band III (See figure 6-28)
C407		CAPACITOR, FIXED, MICA DIELECTRIC: 300 VDC working, 600 VDC peak working, 115 uuf ± 0.5%; hermetically sealed, low loss bakelite case, 0.219 in by 0.313 in. by 0.547 in.; Magnavox part/dwg no. 257818-74 p/o TB402	Frequency tracking capacitor for Band II (See figure 6-28)
C408		CAPACITOR, FIXED, MICA DIELECTRIC: 300 VDC working, 600 VDC peak working, 143.5 uuf ± 0.5%; hermetically sealed, low loss bakelite case, 0.219 in. by 0.313 in.by 0.547 in.; Magnavox part/dwg no. 257818-73 p/o TB402	Frequency tracking capacitor for Band I (See figure 6-28)
C409		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 20 uuf ± 1%; uninsulated case, 0.240 in. by 0.250 in. by 0.460 in.; Erie part no. 331-051T2H200F: Magnavox part/dwg no. 257947-32 p/o TB402	Temperature compensation capacitor for L405 (See figure 6-28)
C411		Same as C210 p/o TB403	Trimmer capacitor for L405 (See figure 6-28)
C412		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC 10 uuf ± 0.25%; tubular wire lead type; MIL-C-20D type no. CC22UJ100C p/o TB402	Temperature compensation capacitor for L404 (See figure 6-28)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C413		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 5 uuf ± 5%; uninsulated case, 0.200 in. by 0.250 in. by 0.400 in; Erie part no. 301-651S3B509C: Magnavox part/dwg no. 257947-37 p/o TB402	Temperature compensation capacitor for L404 (See figure 6-28)
C414		Same as C210 p/o TB403	Trimmer capacitor for L404 (See figure 6-28)
C415		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 27 uuf ± 1%; uninsulated case, 0.240 in. by 0.250 in. by 0.460 in.; Erie part no. 331-051R2G270F: Magnavox part/dwg no. 257947-27 p/o TB402	Temperature compensation capacitor for L403 (See figure 6-28)
C416		Same as C415 p/o TB402	Temperature compensation capacitor for L403 (See figure 6-28)
C417		Same as C210 p/o TB403	Trimmer capacitor for L403 (See figure 6-28)
C418		CAPACITOR, FIXED MICA DIELECTRIC: 1 section, 500 VDC working, 36 uuf ± 1%; resin case hermetically sealed 0.170 in. by 0.360 in. by 0.450 in. overall dim; Electro part no. DM15E360F: Magnavox part/dwg no. 255003-413 p/o TB402	Temperature compensation capacitor for L402 (See figure 6-28)
C419		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working, 68 uuf ± 1%; uninsulated case, 0.250 in. by 0.290 in. by 0.540 in.; Erie part no. 338-051P2G680F: Magnavox part/dwg no. 257947-31 p/o TB402	Temperature compensation capacitor for L402 (See figure 6-28)
C420		Same as C210 p/o TB403	Trimmer capacitor for L402 (See figure 6-28)
C421		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC 36 uuf ± 1%; tubular wire lead type; MIL-C-20D type no. CC22SH360F p/o TB402	Temperature compensation capacitor for L401 (See figure 6-28)
C423		Same as C210 p/o TB403	Trimmer capacitor for L401 (See figure 6-28)
C424		Same as C104 p/o TB401	RF bypass capacitor for output of V401 (See figure 6-28)
C425		Same as C106 p/o TB401	Filament supply filter for V401 (See figure 6-28)
J401		JACK, TIP: precious metal plated; nylon insulation, color of insulation, white; Raytheon part no. 2420-1310G9: Magnavox part/dwg no. 185104-27 p/o TB401	Oscillator input test point (See figure 6-28)
E401	3	Same as E101	
E402	3	Same as E102	
E403		Same as E202	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
E404		Same as E202	
E405		PRINTED CIRCUIT BOARD: laminated glass cloth; 0.062 in. by 2.125 in. by 6.125 in. over-all dim; Magnavox part/dwg no. 218023-8d.	
L401	3	TRANSFORMER, RADIO FREQUENCY: 1 winding; 17.5 mh nom inductance over-all, tapped at 1.37 mh and 10.5 mh; 0.082 mc operating frequency; Magnavox part/dwg no. 368216-1 p/o A4	Band I feedback transformer (See figure 6-28)
L402	3	TRANSFORMER, RADIO FREQUENCY: 1 winding; 1.43 mh nom inductance over-all, tapped at 0.387 mh and 0.823 mh; 0.250 mc operating frequency; Magnavox part/dwg no. 368215-2 p/o A4	Band II feedback transformer (See figure 6-28)
L403	3	TRANSFORMER, RADIO FREQUENCY: 1 winding; 1.37 mh nom inductance over-all, tapped at 0.381 mh and 0.806 mh; 0.300 mc operating frequency; Magnavox part/dwg no. 368216-3 p/o A4	Band III feedback transformer (See figure 6-28)
L404	3	TRANSFORMER, RADIO FREQUENCY: 1 winding; 2.38 mh nom inductance over-all, tapped at 0.197 mh and 1.37 mh; 0.270 mc operating frequency; Magnavox part/dwg no. 368216-4 p/o A4	Band IV feedback transformer (See figure 6-28)
L405	3	TRANSFORMER, RADIO FREQUENCY: 1 winding; 0.431 mh nom inductance over-all, tapped at 0.118 mh and 0.249 mh; 0.700 mc operating frequency; Magnavox part/dwg no. 368216-5 p/o A4	Band V feedback transformer (See figure 6-28)
P401		CONNECTOR, RECEPTACLE, ELECTRICAL: arc resistant plastic dielectric; 7 pins, 5 amps current rating; Cannon part no. DAM7W2P: Magnavox part/dwg no. 185124-111 p/o TB401	RF Oscillator input connector (See figure 6-29)
R401		RESISTOR, FIXED, COMPOSITION: 22,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF223J p/o TB401	Grid bias resistor for V401 (See figure 6-28)
R402	3	RESISTOR, FIXED, COMPOSITION: 12,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF123J p/o TB401	Plate load resistor for V401 (See figure 6-28)
R403	3	RESISTOR, FIXED, COMPOSITION: 390 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF391J p/o TB401	Stabilizing resistor for V401 (See figure 6-28)
R404	3	RESISTOR, FIXED, COMPOSITION: 15,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF153J p/o TB401	Stabilizing resistor for V401 (See figure 6-28)
S401		Same as S201 p/o A4	Part of Band Selector switch (See figure 6-28)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
TB401		OSCILLATOR SUBASSEMBLY: c/o the following, 4 capacitors, 3 connectors, 1 jack tip, 1 printed circuit board, 4 resistor, and 1 socket; Magnavox part/dwg no. 713487-801 p/o A4	(See figure 6-29)
TB402		OSCILLATOR SUBASSEMBLY: Magnavox part/dwg no. 713490-801 p/o A4	(See figure 6-29)
TB403		OSCILLATOR SUBASSEMBLY: Magnavox part/dwg no. 713911-801 p/o A4	(See figure 6-29)
V401		ELECTRON TUBE: MIL-E-1D, type no. JAN6C4WA p/o A4	RF Oscillator (See figure 6-29)
XV401		Same as XV101 p/o TB401	Socket for V401 (See figure 6-28)
A5		AMPLIFIER, INTERMEDIATE FREQUENCY: 60 KC operating frequency; Magnavox part/dwg no. 713229-801	(See figure 1-3)
C501		CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: 5.5 uuf min capacity, 18 uuf max capacity, 350 VDC working at - 55 deg to + 85 deg C, 200 VDC working at - 55 deg to + 125 deg C; Erie Electronics part no. 538-011C0P092R: Magnavox part/dwg no. 265011-5 p/o TB501	Input tuning capacitor for FL501 (See figure 6-25)
C502		Same as C104 p/o TB501	Decoupling Capacitor (See figure 6-25)
C503		Same as C501 p/o TB501	Output tuning capacitor for FL501 (See figure 6-25)
C504		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 18 uuf ± 10%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15B180K03 p/o TB501	Grid bias capacitor for V501 (See figure 6-25)
C505		Same as C106 p/o TB501	Cathode bias capacitor for V501 (See figure 6-25)
C506		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 82 uuf ± 5%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15C820J03 p/o TB501	RF Decoupling capacitor for screen grid of V501 (See figure 6-25)
C507		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 390 uuf ± 5%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15D391J03 p/o TB501	Feedback capacitor for V501 (See figure 6-25)
C508		Same as C501 p/o TB501	Trimmer capacitor for plate circuit of V501 (See figure 6-25)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C509		CAPACITOR, FIXED MICA DIELECTRIC: 1 section 300 VDC working, 15 uuf, ± 5%; resin case hermetically sealed 0.200 in. by 0.380 in. by 0.460 in. overall dim; Electro part no. DM15C150J300: Magnavox part/dwg no. 255002-204 p/o TB501	Part of tuned circuit in plate circuit of V501 (See figure 6-25)
C510		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section 300 VDC working, 240 uuf ± 5%; resin case hermetically sealed 0.200 in. by 0.380 in. by 0.460 in. overall dim; Electro part no. DM15F241J300: Magnavox part/dwg no. 255002-235 p/o TB501	Part of tuned circuit in plate circuit of V501 (See figure 6-25)
C511		Same as C104 p/o TB501	RF decoupling capacitor for output of V501 (See figure 6-25)
C513		Same as C106 p/o TB501	Filament supply filter for V501 (See figure 6-25)
C514		Same as C106 p/o TB501	Filament supply filter for V501 (See figure 6-25)
E501	3	TERMINAL, LUG: phosphorus bronze; Shakeproof type no. 2104-04-00: Magnavox part/dwg no. 205011-2 p/o A5	
FL501		FILTER, BANDPASS: frequency 60 KC, bandwidth at 6 DB 2 KC; Magnavox part/dwg no. 328126-801 p/o A5	60 KC filter for input to first IF Amplifier (See figure 6-25)
J501		CONNECTOR, RECEPTACLE, ELECTRICAL: low loss plastic dielectric insulation; 500 V peak, maximum frequency 500 mc; Automatic part no. RF0730: Magnavox part/dwg no. 188217-3 p/o TB501	RF Input connector for first IF Amplifier (See figure 6-24)
J502		Same as J501 p/o TB501	RF Output connector for first IF Amplifier (See figure 6-24)
J503		Same as J401 p/o TB501	Filter input signal test point (See figure 6-24)
J504		JACK, TIP: precious metal plated; nylon insulation, color of insulation, blue: Raytheon part no. 2420-1310G8: Magnavox part/dwg no. 185104-26 p/o TB501	Filter output signal test point (See figure 6-24)
J505		JACK, TIP: precious metal plated; nylon insulation, color of insulation, green; Raytheon part no. 2420-1310G7: Magnavox part/dwg no. 185104-25 p/o TB501	Converter input signal test point (See figure 6-24)
P501		CONNECTOR, PLUG, ELECTRICAL: 6 contacts; 1 connector mating end; arc resistant plastic dielectric; Amphenol part no. 133-006-13: Magnavox part/dwg no. 185097-2500 p/o TB501	First IF Amplifier input connector (See figure 6-24)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R501		RESISTOR, FIXED, COMPOSITION: 2200 Ohms ± 5% 1 W rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC32GF222J p/o TB501	RF decoupling resistor for input to FL501 (See figure 6-25)
R502	3	RESISTOR, FIXED, COMPOSITION: 68 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF680J p/o TB501	Suppressor grid resistor for V501 (See figure 6-25)
R503		RESISTOR, FIXED, COMPOSITION: 1,000,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF105J p/o TB501	Grid bias resistor for V501 (See figure 6-25)
R504	3	Same as R403 p/o TB501	Cathode bias resistor for V501 (See figure 6-25)
R505	3	RESISTOR, FIXED, COMPOSITION: 10,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF103J p/o TB501	RF decoupling resistor for V501 screen grid (See figure 6-25)
R506		RESISTOR, FIXED, COMPOSITION: 6800 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF682J p/o TB501	RF decoupling resistor for V501 output (See figure 6-25)
S501	3	SWITCH, ROTARY: single section, 5 position; electrical rating 1 amp at 6 VDC or 100 MA at 110 VAC; Magnavox part/dwg no. 168261-1 p/o TB501	Part of Band selector switch (See figure 6-25)
S502	3	Same as S501 p/o TB501	Part of Band Selector switch (See figure 6-25)
TB501		AMPLIFIER SUBASSEMBLY: c/o the following, 1 bracket, 13 capacitors, 1 coil, 3 connectors, 9 jack tips, 1 printed circuit board, 6 resistors, 1 socket, 2 switches, 1 terminal lug; Magnavox part/dwg no. 712602-801 p/o A5	
T501	3	TRANSFORMER, RADIO FREQUENCY: 2 windings nominal primary inductance 2.1 mh; frequency 200 KC; Magnavox part/dwg no. 368215-3 p/o A5	IF Output transformer (See figure 6-25)
V501		Same as V301 p/o A5	Converter for Bands I and IV (See figure 6-25)
VX501		Same as XV101 p/o TB501	Socket for V501 (See figure 6-25)
Y501		CRYSTAL UNIT, QUARTZ: 1 plate, 140 KC ± 0.016% over temp range -40 deg C to + 85 deg C, fundamental mode of operation; Magnavox part no. 537862-2 p/o TB501	Converter crystal oscillator (See figure 6-25)
A6		AMPLIFIER, INTERMEDIATE FREQUENCY: 200 KC operating frequency; Magnavox part/dwg no. 713227-801	(See figure 1-2)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
CR601		SEMICONDUCTOR DEVICE, DIODE: Hughes type no. 1N459: Magnavox part/dwg no. 617817-6 p/o TB601	Audio detector (See figure 6-23)
CR602		Same as CR601 p/o TB601	Noise limiting diode (See figure 6-23)
C601		Same as C106 p/o TB601	Cathode bias capacitor for V601 (See figure 6-23)
C602		Same as C106 p/o TB601	RF coupling capacitor for V602 output (See figure 6-23)
C603		Same as C104 p/o TB601	Decoupling capacitor for V601 output (See figure 6-23)
C607		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 10 uuf ± 10%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15B100K03 p/o TB601	Calibration signal input coupling capacitor (See figure 6-23)
C608		Same as C106 p/o TB601	Cathode bias capacitor for V602 (See figure 6-23)
C609		CAPACITOR, FIXED, PAPER DIELECTRIC: 400 VDC working 10,000 uuf ± 10%; hermetically sealed metal case, uninsulated; 0.235 in. by 0.688 in.; MIL-C-25C type no. CP04A3KE103K1 p/o TB601	Decoupling capacitor for V602 output (See figure 6-23)
C613		Same as C106 p/o TB601	Cathode bias resistor for V603 (See figure 6-23)
C614		Same as C609 p/o TB601	Decoupling capacitor for V603 output (See figure 6-23)
C617		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 200 VDC working, 240 uuf ± 5%; uninsulated case, 0.125 in. by 0.250 in. by 0.320 in.; Erie part no. 374-000X5F241J: Magnavox part/dwg no.255006-38 p/o TB601	Shunt capacitor for M1101 (See figure 6-23)
C618		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 200 VDC working, 120 uuf ± 5%; uninsulated case, 0.125 in. by 0.250 in. by 0.320 in.; Erie part no. 374-000X5F121J: Magnavox part/dwg no. 255006-39 p/o TB601	Output filter for audio detector CR601 (See figure 6-23)
C619		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC 4.7 uuf ± 0.5 uuf; tubular wire lead type; MIL-C-20D type no. CC22CH4R7D p/o TB601	Coupling capacitor between Z602 and V605 (See figure 6-23)
C620		CAPACITOR, FIXED, PAPER DIELECTRIC: 100 VDC working 100,000 uuf ± 10%; hermetically sealed metal case, uninsulated; 0.312 in. by 0.875 in.; MIL-C-25C type no. CP04A1KB104K1 p/o TB601	Coupling capacitor between V605 and FL1002 (See figure 6-23)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C621		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC: 200 VDC working, 10,000 uuf ± 10%; uninsulated metal case, hermetically sealed; 0.312 in. by 0.781 in.; MIL-C-18312A type no. CH04A1NC104K p/o TB601	Plate bypass capacitor for V605 (See figure 6-23)
C622		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 500 VDC working 22 uuf ± 5%; tubular wire lead type; MIL-C-20D type no. CC22CH220J p/o TB601	Coupling capacitor between V603 and V604 (See figure 6-23)
C623		Same as C104 p/o TB601	Screen grid bypass capacitor for V604 (See figure 6-23)
C624		CAPACITOR, FIXED, PAPER DIELECTRIC: 600 VDC working 4700 uuf ± 10%; hermetically sealed metal case, uninsulated; 0.235 in. by 0.750 in.; MIL-C-25C type no. CP04A1KF472K1 p/o TB601	Output coupling capacitor for V604 (See figure 6-23)
C625		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 120 uuf ± 10%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15B121K03 p/o TB601	High frequency shunt for output of V604 (See figure 6-23)
C626		Same as C104 p/o TB601	RF decoupling capacitor for output of V604 (See figure 6-23)
C629		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 470 uuf ± 10%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15D471K03 p/o TB601	Grid bias capacitor for V606 (See figure 6-23)
C630		CAPACITOR, FIXED, PAPER DIELECTRIC: 400 VDC working 10,000 uuf ± 10%; hermetically sealed metal case, plastic insulation; 0.298 in. by 0.813 in.; MIL-C-25C type no. CP05A1KE103K1 p/o TB601	Feedback capacitor for V606 (See figure 6-23)
C631		Same as C629 p/o TB601	Coupling capacitor between V606 and V604 (See figure 6-23)
C632		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 510 uuf ± 5%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15D511J03 p/o TB601	Plate bypass capacitor for V606 (See figure 6-23)
C633		Same as C609 p/o TB601	RF decoupling capacitor for output of V606 (See figure 6-23)
C634		Same as C618 p/o TB601	Output filter for audio detector CR601 (See figure 6-23)
C635		Same as C106 p/o TB601	Filter for output of audio detector CR601 (See figure 6-23)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C636		CAPACITOR, FIXED, PAPER DIELECTRIC: 600 VDC working 2200 uuf ± 10%; hermetically sealed metal case, uninsulated; 0.235 in. by 0.750 in.; MIL-C-25C type no. CP04A1KF222K1 p/o TB601	Audio output coupling capacitor (See figure 6-23)
C637		Same as C636 p/o TB601	Audio output coupling capacitor (See figure 6-23)
C638		Same as C106 p/o TB601	Filament supply filter for V601 thru V606 (See figure 6-23)
C639		Same as C106 p/o TB601	Filament supply filter for V601 thru V606 (See figure 6-23)
C640		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 56 uuf ± 5%; plastic case, 0.220 in. by 0.473 in. by 0.480 in.; MIL-C-5/18B type no. CM05D560J03 p/o TB601	Cathode bias capacitor for V604 (See figure 6-23)
E601		TERMINAL, LUG: phosphorus bronze; Shakeproof type no. 2101-14-03: Magnavox part/dwg no. 205011-12	
E602		TERMINAL, LUG: brass; Shakeproof type no. 2504-06-00: Magnavox part/dwg no. 205018-126	
E603		Same as E602	
E604	3	Same as E302	
E605	3	Same as E102	
E606	3	Same as E102	
E607	3	Same as E102	
E608	3	Same as E102	
E609	3	Same as E102	
E610		RETAINER, ELECTRON TUBE: special 1.120 in. dia tube base retained; corrosion resistant steel, type 302; Augat part no. S160V2-391H: Magnavox part/dwg no. 185257-1	
FL601		FILTER, BAND PASS: filter #1, frequency 200 KC, bandwidth at 6 DB 1 KC, filter #2, frequency 200 KC, bandwidth at 6 DB 3 KC; output impedance 3000 Ohms Magnavox part/dwg no. 327915-1 p/o A6	IF selectivity filter (See figure 6-20)
J601		CONNECTOR, RECEPTACLE, ELECTRICAL: low loss plastic; Automatic part no. RF5564BC28: Magnavox part/dwg no. 188449-1 p/o TB601	Frequency vernier input for Z604 (See figure 6-23)
J602		Same as J601 p/o TB601	Calibrator input to V601 (See figure 6-23)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
J603		Same as J501 p/o TB601	IF input to FL601 (See figure 6-20)
J604		JACK, TIP: shell brass, contact copper alloy, gold plate over silver finish; Nugent part no. NS-432-.065: Magnavox part/dwg no. 185259-1 p/o TB601	IF input to V601 (See figure 6-23)
J605		Same as J604 p/o TB601	Ground connection for FL601 (See figure 6-23)
J606		Same as J401 p/o TB601	V601 input test point (See figure 6-23)
J607		Same as J505 p/o TB601	V602 input test point (See figure 6-23)
J608		JACK, TIP: precious metal plated; nylon insulation, color of insulation, yellow; Raytheon part no. 2420-1310G2: Magnavox part/dwg no. 185104-20 p/o TB601	V603 input test point (See figure 6-23)
J609		JACK, TIP: precious metal plated; nylon insulation, color of insulation, orange; Raytheon part no. 2420-1310G5: Magnavox part/dwg no. 185104-23 p/o TB601	Z603 output test point (See figure 6-23)
J610		JACK, TIP: precious metal plated; nylon insulation, color of insulation, black; Raytheon part no. 2420-1310G6: Magnavox part/dwg no. 185104-24 p/o TB601	Audio detector output test point (See figure 6-23)
J611		Same as J504 p/o TB601	V604 output test point (See figure 6-23)
J612		JACK, TIP: precious metal plated; nylon insulation, color of insulation, red; Raytheon part no. 2420-1310G4: Magnavox part/dwg no. 185104-22 p/o TB601	Z604 output test point (See figure 6-23)
P601		CONNECTOR, PLUG, ELECTRICAL: 15 contacts; 1 connector mating end; arc resistant plastic dielectric; Amphenol part no. 133-015-13: Magnavox part/dwg no. 185097-2200 p/o A6	Second IF Amplifier input connector (See figure 6-21)
P604		PLUG, TIP: 15 amps current rating; insulator color black; No. 22 gage, 7 strand no. 30 copper wire recommended hook-up wire; Cambridge part no. 2660-1-0810: Magnavox part/dwg no. 185263-6 p/o A6	IF Selectivity switch output connector (See figure 6-21)
P605		PLUG, TIP: 15 amps current rating; insulator color, white; No. 22 gage, 7 strand no. 30 copper wire recommended hook-up wire; Cambridge part no. 2660-1-0819: Magnavox part/dwg no. 185263-4 p/o A6	FL601 ground connector (See figure 6-21)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R601	3	RESISTOR, FIXED, COMPOSITION: 120 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF121J p/o TB601	Cathode bias resistor for V601 (See figure 6-22)
R604	3	RESISTOR, FIXED, COMPOSITION: 3600 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF362J p/o TB601	Decoupling resistor for output of V601 (See figure 6-22)
R605		RESISTOR, FIXED, COMPOSITION: 220,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF224J p/o TB601	Shunt impedance for Z601 output (See figure 6-22)
R606	3	Same as R601 p/o TB601	Cathode bias resistor for V602 (See figure 6-22)
R608		Same as R109 p/o TB601	Decoupling resistor for output of V602 (See figure 6-22)
R609		Same as R605 p/o TB601	Shunt impedance for Z602 output (See figure 6-22)
R610	3	Same as R302 p/o TB601	Cathode bias resistor for V603 (See figure 6-22)
R611		Same as R604 p/o TB601	Decoupling resistor for output of V603 (See figure 6-22)
R612		Same as R506 p/o TB601	Output filter for audio detector CR601 (See figure 6-22)
R613		Same as R109 p/o TB601	Decoupling resistor for output of V604 (See figure 6-22)
R614	3	RESISTOR, FIXED, COMPOSITION: 160,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF164J p/o TB601	Grid bias resistor for V605 (See figure 6-22)
R615	3	Same as R302 p/o TB601	Cathode resistor for V605 (See figure 6-22)
R616	3	RESISTOR, FIXED, COMPOSITION: 4700 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF472J p/o TB601	Plate load resistor for V605 (See figure 6-22)
R617	3	Same as R616 p/o TB601	Grid bias resistor for V604 (See figure 6-22)
R618	3	Same as R616 p/o TB601	Grid bias resistor for V604 (See figure 6-22)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R619		RESISTOR, FIXED, COMPOSITION: 3900 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF392J p/o TB601	Cathode bias resistor for V604 (See figure 6-22)
R620	3	Same as R204 p/o TB601	Plate load resistor for V604 (See figure 6-22)
R621	3	Same as R204 p/o TB601	Current limiting resistor for V604 screen grid (See figure 6-22)
R622		RESISTOR, FIXED, COMPOSITION: 3,300,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF335J p/o TB601	Output coupling resistor for V604 (See figure 6-22)
R623	3	Same as R110 p/o TB601	Grid bias resistor for V606 (See figure 6-22)
R624		RESISTOR, FIXED, COMPOSITION: 1000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type No. RC20GF102J p/o TB601	Cathode bias resistor for V606 (See figure 6-22)
R625		Same as R301 p/o TB601	Screen grid resistor for V606 (See figure 6-22)
R626		Same as R401 p/o TB601	Plate load resistor for V606 (See figure 6-22)
R627		Same as R109 p/o TB601	RF decoupling resistor for output of V606 (See figure 6-22)
R628	3	RESISTOR, FIXED, COMPOSITION: 330,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF334J p/o TB601	Filter resistor for audio detector CR601 (See figure 6-22)
R629	3	RESISTOR, FIXED, COMPOSITION: 820,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF824J p/o TB601	Bias resistor for CR602 (See figure 6-22)
R632		Same as R503 p/o TB601	Bias resistor for CR602 (See figure 6-22)
R633		Same as R503 p/o TB601	Bias resistor for CR602 (See figure 6-22)
R634		Same as R205 p/o TB601	Voltage divider for V601 and V602 (See figure 6-22)
R635	3	Same as R110 p/o TB601	Filter for audio detector CR601 (See figure 6-22)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R636		RESISTOR, FIXED, COMPOSITION: 150,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF154J p/o TB601	Bias resistor for CR602 (See figure 6-22)
R637	3	Same as R110 p/o TB601	Bias resistor for CR602 (See figure 6-22)
S601	3	SWITCH, ROTARY: two section, 2 position; electrical rating 1 amp at 6 VDC or 100 MA at 110 V AC; Magnavox part/dwg no. 168260-1 p/o A6	IF selectivity switch (See figure 6-21)
TB601		AMPLIFIER SUBASSEMBLY: c/o the following, 30 capacitors, 3 connectors, 25 jack tips, 1 printed circuit board, 32 resistors, 2 semiconductor devices, 6 sockets, and 2 spacers; Magnavox part/dwg no. 712600-801 p/o A6	
V601		Same as V101 p/o A6	First IF Amplifier (See figure 6-20)
V602		Same as V101 p/o A6	Second Amplifier (See figure 6-20)
V603		Same as V101 p/o A6	Third IF Amplifier (See figure 6-20)
V604		Same as V301 p/o A6	BFO mixer (See figure 6-20)
V605		Same as V401 p/o A6	IF cathode follower (See figure 6-20)
V606		ELECTRON TUBE: MIL-E-1D, type no. JAN6AU6WB p/o A6	Beat frequency Oscillator (See figure 6-20)
XV601		Same as XV101 p/o A6	Socket for V601
XV602		Same as XV101 p/o A6	Socket for V602
XV603		Same as XV101 p/o A6	Socket for V603
XV604		Same as XV101 p/o A6	Socket for V604
XV605		Same as XV101 p/o A6	Socket for V605
XV606		Same as XV101 p/o A6	Socket for V606
Z601		TRANSFORMER, INTERMEDIATE FREQUENCY: 200 KC peak operating frequency; adjustable core; Magnavox part/dwg no. 368289-801 p/o TB601	IF transformer (See figure 6-23)
Z601C1		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section 300 VDC working, 270 uuf ± 5%; resin case hermetically sealed 0.200 in. by 0.380 in. by 0.460 in. overall dim; Electro part no. DM15F271J300: Magnavox part/dwg no. 255002-236 p/o TB601	Part of tuned primary of Z601 (See figure 6-38 15B)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
Z601C2		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section 300 VDC working, 10 uuf ± 10%; resin case hermetically sealed 0.200 in. by 0.380 in. by 0.460 in. o/a dim; Electro part no. DM15C100K300: Magnavox part/dwg no. 255002-102 p/o TB601	Part of tuned secondary of Z601 (See figure 6-38 15B)
Z601C3		Same as C510 p/o TB601	Part of tuned secondary of Z601 (See figure 6-38 16B)
Z601L1	2	TRANSFORMER, RADIO FREQUENCY: 1 winding center tapped at 0.661 mh, nominal inductance 2.29 mh; frequency 200 KC; Magnavox part/dwg no. 368215-7 p/o TB601	Part of primary of Z601 (See figure 6-20)
Z601L2	3	COIL, RADIO FREQUENCY: 1 winding nominal inductance 2.24 mh; frequency 200 KC; Magnavox part/dwg no. 368215-6 p/o TB601	Part of tuned secondary of Z601 (See figure 6-20)
Z602		Same as Z601 p/o TB601	IF transformer (See figure 6-23)
Z602C1		Same as Z601C1 p/o TB601	Part of tuned primary of Z602 (See figure 6-38 17B)
Z602C2		Same as Z601C2 p/o TB601	Part of tuned secondary of Z602 (See figure 6-38 17B)
Z602C3		Same as C510 p/o TB601	Part of tuned secondary of Z602 (See figure 6-38 17B)
Z602L1	3	Same as Z601L1 p/o TB601	Part of tuned primary of Z602 (See figure 6-20)
Z602L2	3	Same as Z601L2 p/o TB601	Part of tuned secondary of Z602 (See figure 6-20)
Z603		TRANSFORMER, INTERMEDIATE FREQUENCY: 200 KC peak operating frequency; adjustable core: Magnavox part/dwg no. 368290-801 p/o TB601	IF transformer (See figure 6-23)
Z603C1		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section 300 VDC working, 510 uuf ± 5%; resin case hermetically sealed 0.200 in. by 0.380 in. by 0.470 in. overall dim; Electro part no. DM15F511J300: Magnavox part/dwg no. 255002-244 p/o TB601	Part of tuned primary of Z603 (See figure 6-38 18B)
Z603C2		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section 300 VDC working, 390 uuf ± 5%; resin case hermetically sealed 0.200 in. by 0.380 in. by 0.460 in. overall dim; Electro part no. DM15F391J300: Magnavox part/dwg no. 255002-241 p/o TB601	Part of tuned secondary of Z603 (See figure 6-38 18B)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
Z603L1	3	TRANSFORMER, RADIO FREQUENCY: 1 winding center tapped at 0.358 mh nominal inductance 1.18 mh; frequency 200 KC; Magnavox part/dwg no. 368215-8 p/o TB601	Part of tuned primary of Z603 (See figure 6-20)
Z603T1		TRANSFORMER, RADIO FREQUENCY: 2 windings nominal primary inductance 1.55 mh; frequency 200 KC; Magnavox part/dwg no. 368215-5	Part of tuned secondary of Z603 (See figure 6-38 18B)
Z604	3	TRANSFORMER, RADIO FREQUENCY: 1 winding, nominal inductance 2.34 mh, tapped at 0.59 mh and 1.17 mh; frequency 200 KC; Magnavox part/dwg no. 368214-1 p/o TB601	Resonant tank circuit for V606 (See figure 6-23)
A7		AMPLIFIER, AUDIO FREQUENCY: 6 mw nominal power output, 43 DB gain; Magnavox part/dwg no. 713228-801	(See figure 1-2)
CR702		SEMICONDUCTOR DEVICE, DIODE: Hughes Aircraft Co., type no. 1N458: Magnavox part/dwg no. 617817-9 p/o TB701	Output limiter diode for V702A (See figure 6-19)
CR703		Same as CR702 p/o TB701	Output limiter diode for V702A (See figure 6-19)
C703		Same as C104 p/o TB701	Decoupling capacitor for V701 (See figure 6-19)
C704		Same as C206 p/o TB701	Coupling capacitor for output of V701 (See figure 6-19)
C705		CAPACITOR, FIXED, PAPER DIELECTRIC: 100 VDC working, 12,000 uuf ± 10%; hermetically sealed, non-magnetic metal, plastic insulated case, 0.175 in. dia by 0.750 in. lg; Sprague part no. 96P12391S4: Magnavox part/dwg no. 255019-105 p/o TB701	Input coupling capacitor for V702A (See figure 6-19)
C706		CAPACITOR, FIXED, PAPER DIELECTRIC: 600 VDC working 2700 uuf ± 10%; hermetically sealed metal case, plastic insulation; 0.298 in. by 0.750 in.; MIL-C-25C type no. CP05A3KF272K1 p/o TB701	High frequency response attenuator for V702A (See figure 6-19)
C707		Same as C104 p/o TB701	Output decoupling capacitor for V702A (See figure 6-19)
C708		CAPACITOR, FIXED, PAPER DIELECTRIC: 200 VDC working 22,000 uuf ± 10%; hermetically sealed metal case, uninsulated; 0.235 in. by 0.750 in.; MIL-C-25C type no. CP04A1KC223K1 p/o TB701	Output coupling capacitor for V702A (See figure 6-19)
C709		CAPACITOR, FIXED, PAPER DIELECTRIC: 600 VDC working 1200 uuf ± 10%; hermetically sealed metal case, uninsulated; 0.235 in. by 0.750 in.; MIL-C-25C type no. CP04A1KF122K1 p/o TB701	Input coupling capacitor for V702B (See figure 6-19)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C710		CAPACITOR, FIXED, PAPER DIELECTRIC: 200 VDC working 12,000 uuf ± 10%; hermetically sealed metal case, uninsulated; 0.235 in. by 0.750 in.; MIL-C-25C type no. CP04A1KC123K1 p/o TB701	Coupling capacitor between V702B and V703 (See figure 6-19)
C711		Same as C624 p/o TB701	Part of tuned primary of T701 (See figure 6-19)
C712		CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: 9 uuf min capacity, 35 uuf max capacity, 200 VDC working at -55 deg to + 85 deg C, 100 VDC at - 55 deg to + 125 deg C; Erie Electronics part no. 538-011E2P094R Magnavox part/dwg no. 265011-6 p/o TB701	Part of tank circuit for V704 (See figure 6-19)
C713		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 10 uuf ± 10%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15C100K03 p/o TB701	Part of tank circuit for V704 (See figure 6-19)
C714		CAPACITOR, FIXED, MICA DIELECTRIC: 300 VDC working, 5 uuf ± 0.5 uuf; hermetically sealed phenolic case, 0.188 in. by 0.297 in. by 0.516 in.; Magnavox part/dwg no. 255030-17 p/o TB701	Output coupling capacitor for V704 (See figure 6-19)
C715		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 510 uuf ± 5%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15C511J03 p/o TB701	Feedback capacitor for V704 (See figure 6-19)
C716		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 18 uuf ± 10%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15C180K03 p/o TB701	Coupling capacitor between V704 cathode and V705A (See figure 6-19)
C717		Same as C715 p/o TB701	Decoupling capacitor for output of V704 (See figure 6-19)
C718		Same as C104 p/o TB701	Decoupling capacitor for output of V704 (See figure 6-19)
C719		CAPACITOR, FIXED, MICA DIELECTRIC: 500 VDC working 180 uuf ± 5%; plastic case, 0.188 in. by 0.297 in. by 0.516 in.; MIL-C-5/1B type no. CM15C181J03 p/o TB701	Timing capacitor for V705 (See figure 6-19)
C720		Same as C719 p/o TB701	Timing capacitor for V705 (See figure 6-19)
C721		Same as C104 p/o TB701	Decoupling capacitor for output of V705 (See figure 6-19)
C722		Same as C106 p/o TB701	Filament supply filter for V701 thru V705 (See figure 6-19

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C723		Same as C106 p/o TB701	Filament supply filter for V701 thru V705 (See figure 6-19)
E701		TERMINAL, LUG: brass; Shakeproof type no. 2905-06-00: Magnavox part/dwg no. 205018-145 p/o A7	
E702		TERMINAL, STUD: brass, solder coated; Garlock part no. RSTSM1TURP5: Magnavox part/dwg no. 205004-1 p/o A7	
E703	3	Same as E102 p/o A7	
E704	3	Same as E102 p/o A7	
E705	3	Same as E102 p/o A7	
E706	3	SHIELD, ELECTRON TUBE: accomodates a 9 pin miniature tube; straight cylinder shape; open top; aluminum alloy with beryllium copper liner; International Electronic part no. TRT6-6020B: Magnavox part/dwg no. 185189-5 p/o A7	
E707	3	Same As E706 p/o A7	
FL701	3	FILTER, BANDPASS: operating frequency 1000 CPS, bandwidth 825 to 1175 CPS; impedance input and output 30,000 Ohms; Magnavox part/dwg no. 327870-1 p/o A7	Audio output filter (See figure 6-16)
J701		CONNECTOR, RECEPTACLE, ELECTRICAL: glass dielectric; 7 pins, 5 amps current rating; Winchester part no. HM7PLR: Magnavox part/dwg no. 185120-3 p/o A7	AF selectivity control input connector (See figure 6-16)
J703		Same as J505 p/o TB701	Audio input test point (See figure 6-19)
J704		Same as J604 p/o TB701	Audio signal output to FL701 (See figure 6-19)
J705		Same as J604 p/o TB701	Audio signal input from FL701 (See figure 6-19)
J706		Same as J504 p/o TB701	Second audio amplifier output test point (See figure 6-19)
J707		Same as J612 p/o TB701	Third audio amplifier input test point (See figure 6-19)
J708		JACK, TIP: precious metal plated; nylon insulation, color of insulation, brown; Raytheon part no. 2420-1310G3: Magnavox part no. 185104-21 p/o TB701	Third audio amplifier output test point (See figure 6-19)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
J709		Same as J608 p/o TB701	Oscillator input test point (See figure 6-19)
J710		Same as J610 p/o TB701	Multivibrator output test point (See figure 6-19)
J711		Same as J401 p/o TB701	First audio amplifier input test point (See figure 6-19)
P701		CONNECTOR, PLUG, ELECTRICAL: 10 contacts; 1 connector mating end; arc resistant plastic dielectric Amphenol part no. 133-010-13: Magnavox part/dwg no. 185097-2100 p/o A7	AF Amplifier input connector (See figure 6-17)
P702		Same as P501 p/o A7	AF Amplifier output connector (See figure 6-17)
P704		Same as P604 p/o A7	Audio input signal connector (See figure 6-16)
P705		Same as P605 p/o A7	Selectivity filter output connector (See figure 6-16)
R701		RESISTOR, FIXED, COMPOSITION: 33,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF333J p/o TB701	Terminating resistor for FL701 (See figure 6-18)
R710	3	RESISTOR, FIXED, COMPOSITION: 560 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF561J p/o TB701	Cathode bias resistor for V701 (See figure 6-18)
R711	3	RESISTOR, FIXED, COMPOSITION: 39,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF393J p/o TB701	Plate load resistor for V701 (See figure 6-18)
R712	3	Same as R616 p/o TB701	Decoupling resistor for V701 output (See figure 6-18)
R713		Same as R301 p/o A7	Input impedance resistor for FL701 (See figure 6-16)
R715		RESISTOR, FIXED, COMPOSITION: 120,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF124J p/o TB701	Grid bias resistor for V702A (See figure 6-18)
R716	3	RESISTOR, FIXED, COMPOSITION: 680 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF681J p/o TB701	Cathode bias resistor for V702A (See figure 6-18)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R718	3	RESISTOR, FIXED, COMPOSITION: 3300 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF332J p/o TB701	Decoupling resistor for V702A output (See figure 6-18)
R719		Same as R701 p/o TB701	Plate load resistor for V702A (See figure 6-18)
R720	3	RESISTOR, FIXED, COMPOSITION: 470,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF474J p/o TB701	Bias resistor for CR702 (See figure 6-18)
R721		Same as R619 p/o TB701	Bias resistor for CR702 (See figure 6-18)
R722	3	Same as R110 p/o TB701	Current limiting resistor for CR702 (See figure 6-18)
R723		Same as R503 p/o TB701	Current limiting resistor for CR702 and CR703 (See figure 6-18)
R725	3	Same as R110 p/o TB701	Current limiting resistor for CR703 (See figure 6-18)
R726		Same as R619 p/o TB701	Bias resistor for CR703 (See figure 6-18)
R727	3	Same as R720 p/o TB701	Bias resistor for CR703 (See figure 6-18)
R728	3	Same as R710 p/o TB701	Cathode Bias resistor for V702B (See figure 6-18)
R729	3	RESISTOR, FIXED, COMPOSITION: 1,200,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF125J p/o TB701	Grid bias resistor for V702B (See figure 6-18)
R730		RESISTOR, FIXED, COMPOSITION: 270 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF271J p/o TB701	Cathode bias resistor for V702B (See figure 6-18)
R731		Same as R715 p/o TB701	Plate load resistor for V702B (See figure 6-18)
R732	3	Same as R720 p/o TB701	Grid bias resistor for V703 (See figure 6-18)
R733		RESISTOR, FIXED, COMPOSITION: 75,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no.RC20GF753 J p/o TB701	Feedback resistor for V702B (See figure 6-18)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R734		RESISTOR, FIXED, COMPOSITION: 330 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF331J p/o TB701	Cathode bias resistor for V703 (See figure 6-18)
R735		Same as R503 p/o TB701	Grid bias resistor for V704 (See figure 6-18)
R736	3	Same as R302 p/o TB701	Cathode bias resistor for V704 (See figure 6-18)
R737	3	RESISTOR, FIXED, COMPOSITION: 56,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF563J p/o TB701	Plate load resistor for V704 (See figure 6-18)
R738		Same as R715 p/o TB701	Decoupling resistor for output of V704 (See figure 6-18)
R739	3	RESISTOR, FIXED, COMPOSITION: 180,000 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF184J p/o TB701	Timing resistor for V705 (See figure 6-18)
R740	3	RESISTOR, VARIABLE COMPOSITION: 1 section, 10,000 Ohms ± 10%; 0.25 watts; standard A taper; slotted metal shaft 0.125 in. dia.; normal torque; Magnavox part/dwg no. 227873-10 p/o TB701	Stability control for V705 (See figure 6-18)
R741		Same as R619 p/o TB701	Cathode bias resistor for V705 (See figure 6-18)
R742	3	Same as R711 p/o TB701	Plate load resistor for V705A (See figure 6-18)
R743		Same as R715 p/o TB701	Decoupling resistor for output of V705 (See figure 6-18)
R744	3	Same as R739 p/o TB701	Timing resistor for V705 (See figure 6-18)
R745	3	Same as R711 p/o TB701	Plate load for V705B (See figure 6-18)
TB701		AMPLIFIER SUBASSEMBLY: c/o the following, 21 capacitors, 2 connectors, 18 jack tips, 1 printed circuit board, 33 resistors, 2 semiconductor devices, 5 sockets; Magnavox part/dwg no. 712601-801 p/o A7	
T701		TRANSFORMER, AUDIO FREQUENCY: primary impedance 4100 Ohms, secondary 150 Ohms, tertiary 200 Ohms center tapped; Foster part no. 8451-1: Magnavox part/dwg no. 328167-1 p/o TB701	Coupling between V703 and FL1004 (See figure 6-19)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
V701		Same as V401 p/o A7	First audio amplifier (See figure 6-16)
V702		ELECTRON TUBE: MIL-E-1D, type no. JAN12ATWA p/o A7	Second and third audio amplifiers (See figure 6-16)
V703		ELECTRON TUBE: MIL-E-1D, type no. JAN6AN5WA p/o A7	Output amplifier (See figure 6-16)
V704		Same as V401 p/o A7	Oscillator (See figure 6-16)
V705		ELECTRON TUBE: MIL-E-1D, type no. JAN5751 p/o A7	Multivibrator (See figure 6-16)
XV701		Same as XV101 p/o A7	Socket for V701
XV702		SOCKET, ELECTRON TUBE: 9 phosphor bronze or beryllium copper contacts; low loss plastic dielectric; Methode part no. PMNJ160MBCAGAU: Magnavox part/dwg no. 185158-1 p/o A7	Socket for V702
XV703		Same as XV101 p/o A7	Socket for V703
XV704		Same as XV101 p/o A7	Socket for V704
XV705		Same as XV702 p/o A7	Socket for V705
Y701		CRYSTAL UNIT, QUARTZ: 1 plate, 50 KC ± 0.012% over temp range - 40 deg C to + 85 deg C, fundamental mode of operation; Magnavox part/dwg no. 537862-1 p/o TB701	Crystal control for V704 (See figure 6-19)
A8		POWER SUPPLY: 140 volts DC at 133 MA, 91 volts DC at 6 MA, 6.3 volts at 3.1 amps, 5.9 volts at 0.15 amp, 6.3 volts at 0.33 amp, 6.3 volts at 0.775 amp; alternate operating power requirement 105, 115, or 125 volts AC at 50 to 60 or 400 cycles per second, single phases Magnavox part/dwg no. 713226-802	(See figure 1-2)
CR801		SEMICONDUCTOR DEVICE, DIODE: Raytheon type no. 1N547: Magnavox part/dwg no. 615007-14 p/o A8	Diode rectifier (See figure 6-15)
CR802		Same as CR801 p/o A8	Diode rectifier (See figure 6-15)
CR803		SEMICONDUCTOR DEVICE, DIODE: Motorola part no. 1N3004B: Magnavox part/dwg no. 615003-332 p/o A8	Diode regulator (See figure 6-15)
CR804	3	SEMICONDUCTOR DEVICE, DIODE: Transitron part no. SV2007: Magnavox part/dwg no. 615003-325 p/o A8	Diode regulator (See figure 6-15)
CR805	3	Same as CR804 p/o A8	Diode regulator (See figure 6-15)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C801	3	CAPACITOR, FIXED, ELECTROLYTIC: 350 VDC working, 120 uf - 10% and + 75%; - 40 deg to + 85 deg C working temp range; hermetically sealed uninsulated aluminum case, 1.380 in. by 1.500 in. by 4.250 in.; MIL-C-62B type no. CE51C121P p/o A8	Filter capacitor for + 140 volt supply (See figure 6-14)
C802	3	Same as C801 p/o A8	Filter capacitor for + 140 volt supply (See figure 6-14)
C803		CAPACITOR, FIXED, PAPER DIELECTRIC: 600 VDC working 10,000 uuf ± 10%; hermetically sealed metal case, uninsulated; 0.312 in. by 0.875 in.; MIL-C-25C type no. CP12A1KF103K1 p/o A8	Filter for + 91 volt supply (See figure 6-15)
C804		CAPACITOR, FIXED, PAPER DIELECTRIC: single section, 150 volts DC working at 4 MF ± 20%: uninsulated hermetically sealed metal case; 0.750 in. by 1.000 in. by 2.500 in. over-all dim.; MIL-C-18312 p/o A8	Filter for 6.3 VAC supply (See figure 6-15)
E801		TERMINAL, STUD: brass, silver plated; Winchester part no. X2045F4: Magnavox part/dwg no. 207814-13 p/o A8	
E802		Same as E801 p/o A8	
E803		Same as E801 p/o A8	
E804		TERMINAL, LUG: brass solder plate; Malco part no. 2115: Magnavox part/dwg no. 208515-7 p/o A8	
E805		Same as E804 p/o A8	
E806		Same as E804 p/o A8	
E807		TERMINAL, LUG: phosphor bronze; Shakeproof type no. 2104-08-00: Magnavox part/dwg no. 205018-528 p/o A8	
E808		Same as E801 p/o A8	
E809		Same as E801 p/o A8	
E810		RETAINER, ELECTRON TUBE: special, 1.380 in. dia tube base retained; corrosior resistant steel, type 302; Augat part no. S169F26-681G: Magnavox part/dwg no. 185258-1 p/o A8	
E811		Same as E810 p/o A8	
L801		REACTOR: 1 winding 5 h, 50 VAC, 60 CPS, 119 MA, 1 winding 5 h, 5 VAC, 60 CPS, 104 MA; each winding 160 Ohms DC resistance; Magnavox part/dwg no. 327871-1 p/o A8	Filter for + 140 volt supply (See figure 6-14)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
L802	3	REACTOR: minimum inductance 1 mh at 60 CPS with 0.45 amps AC; maximum DC resistance 0.41 Ohms; impedance at 60 CPS 0.8 Ohm max, at 14 KC 88 Ohms min; at 60 KC 32 Ohms min; Magnavox part/ dwg no. 327857-1 p/o A8	Filter for 6.3 VAC supply (See figure 6-15)
P801	3	CONNECTOR, PLUG, ELECTRICAL: 18 contact pins; 1 connector mating end; low loss plastic dielectric; Magnavox part/dwg no. 187991-3 p/o A8	Input connector for power supply (See figure 6-15)
R801	3	RESISTOR, FIXED, WIRE WOUND: inductive winding; 31 Ohms ± 3%; 10 watt 40 deg C ambient temp; Magnavox part/dwg no. 245002-54 p/o A8	Current limiting resistor for 5.8 VAC supply (See figure 6-15)
R802		RESISTOR, FIXED, WIRE WOUND: inductive winding; 4000 Ohms ± 3%; 20 watt 40 deg C ambient temp; Magnavox part/dwg no. 245002-2 p/o A8	Current limiting resistor for + 91 volt supply (See figure 6-15)
R803	3	RESISTOR, FIXED, WIRE WOUND: inductive winding; 10,000 Ohms ± 3%; 10 watt 40 deg C ambient temp; Magnavox part/dwg no. 245002-53 p/o A8	Bleeder resistor for + 140 volt supply (See figure 6-15)
R804	3	RESISTOR, FIXED, COMPOSITION: 3.3 Ohms ± 5% 1 W, rated at 70 deg C ambient temp; character- istic letter F; MIL-R-11 type no. RC32GF3R3J p/o A8	Current limiting resistor for panel lamp supply (See figure 6-15)
T801	3	TRANSFORMER, POWER, STEP-DOWN AND STEP-UP: primary winding, 103, 113, 123 V 50 to 60 or 400 CPS: secondary winding, 1 high voltage secondary center tapped 390 V 130 MA 1 low voltage secondary 1 tap ground 14.4 V, 0.15 amp ground to second tap 6.2 V, 1.125 amp ground to third tap 6.2 V, 3.1 amp between 2 additional taps balanced to ground; Mag- navox part/dwg no. 307857-1 p/o A8	Power transformer (See figure 6-14)
XC801	3	SOCKET, ELECTRON TUBE: silver plated phosphor bronze contacts; low loss plastic dielectric; Am- phenol part no. 59-103: Magnavox part/dwg no. 185101-1 p/o A8	Socket for C801 (See figure 6-15)
XC802	3	Same as XC801 p/o A8	Socket for C802 (See figure 6-15)
A9		DRIVE, TUNING: manually operated, continuous tuning, selector knob actuation; Magnavox part/ dwg no. 712599-801	(See figure 6-6)
A901		TUNING DRIVE SUBASSEMBLY: Magnavox part/dwg no. 712675-801	
DS901		LAMP, INCANDESCENT: 6 V, 0.2 amp design cur- rent; MIL-L-6363, type no. MS25237-328	Illuminates tuning drive assembly (See figure 3-1)
DS902		Same as DS901	Illuminates tuning drive assembly (See figure 3-1)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
DS903		Same as DS901	Spare lamp for DS901 and DS902 (See figure 3-1)
DS905		LENS, INDICATOR LIGHT: 0.531 in. dia., black plastic lens with smooth face and back; colorless clear filter; Dialight typical type reference no. 54327B7: Magnavox part/dwg no. 188311-15	Lens for DS901
DS906		Same as DS905	Lens for DS902
DS907		Same as DS905	Lens for DS903
E901		KNOB: setscrew type; phenolic body, MIL-M-14 type no. CFG; Magnavox part/dwg no. 145014-1	
E902		KNOB: setscrew type; aluminum body; Jan part no. K-1376: Magnavox part/dwg no. 145015-1	
E903		KNOB: setscrew type; phenolic body, MIL-P-10420; Jan part no. K-1376: Magnavox part/dwg no. 147899-1	
MP901		THUMBSCREW: corrosion resistant steel per FED QQ-S-763 class 303, Cond A; No. 10-32UNF-2A thd; Magnavox part/dwg no. 109053-1	
MP902		GEAR CLUSTER, SPUR: aluminum bronze alloy, FED QQ-B-671 class 3; Magnavox part/dwg no. 115464-1	
MP903		GEAR CLUSTER, SPUR: aluminum bronze alloy, FED QQ-B-671 class 3; Magnavox part/dwg no. 115466-1	
MP904		GEAR, BEVEL: brass, MIL-C-895; Magnavox part/dwg no. 115467-1	
MP905		Same as MP904	
MP906		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115468-1	
MP907		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115469-1	
MP908		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115470-1	
MP909		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115471-1	
MP910		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115472-1	
MP911		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115473-1	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
MP912		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115474-1	
MP913		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115475-1	
MP914		GEAR, HELICAL: steel, FED QQ-S-763-303-A; Magnavox part/dwg no. 115476-1	
MP915		GEAR, HELICAL: brass, FED QQ-B-638 comp 1; Magnavox part/dwg no. 115476-2	
MP916		GEAR, INDEXING: plastic material; Magnavox part/dwg no. 115477-1	
MP917		Same as MP916	
MP918		Same as MP916	
MP919		Same as MP916	
MP920		Same as MP916	
MP921		Same as MP916	
MP922		Same as MP916	
MP923		Same as MP916	
MP924		Same as MP916	
MP925		Same as MP916	
MP926		Same as MP916	
MP927		Same as MP916	
MP928		Same as MP916	
MP929		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115478-1	
MP930		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 115479-1	
MP931		GEAR, SPUR: al bronze alloy FED QQ-B-671 class 3; Magnavox part/dwg no. 115480-1	
MP932		GEAR, SPUR: al bronze alloy FED QQ-B-671 class 3; Magnavox part/dwg no. 115481-1	
MP933		GEAR, SPUR: al bronze alloy FED QQ-B-671 class 3; Magnavox part/dwg no. 115482-1	
MP934		GEAR, SPUR: brass FED QQ-B-626 comp 22 SAE 72; Magnavox part/dwg no. 115483-1	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
MP935		GEAR, ANTI-BACKLASH: bronze, ASTM-B-139, brass, FED QQ-B-626 comp 22, spring wire FED QQ-W-470; Magnavox part/dwg no. 115484-1	
MP936		GEAR, ANTI-BACKLASH: bronze, ASTM-B-139, brass, FED QQ-B-626 comp 22, spring wire FED QQ-W-470; Magnavox part/dwg no. 115484-2	
MP937		SHAFT, TUNING: steel FED QQ-S-763-303-A, 0.125 in. by 0.187 in. by 1.444 in.; Magnavox part/dwg no. 115488-1	
MP938		CAM, DIAL MASK: steel, FED QQ-S-763-303A, 0.266 in. by 0.938 in. ; Magnavox part/dwg no. 115498-1	
MP939		Same as MP938	
MP940		Same as MP938	
MP941		Same as MP938	
MP942		Same as MP938	
MP943		DIAL, SCALE: 0 to 9, bottom to top, range of inscription is linear, graduated in 1 scale division; plastic type; Magnavox part/dwg no. 158122-1	
MP944		Same as MP943	
MP945		Same as MP943	
MP946		Same as MP943	
MP947		Same as MP943	
MP948		Same as MP943	
MP949		Same as MP943	
MP950		Same as MP943	
MP951		Same as MP943	
MP952		Same as MP943	
MP953		Same as MP943	
MP954		Same as MP943	
MP955		Same as MP943	
MP956		DIAL, SCALE: 0 to 9 bottom to top, range of inscription is linear, graduated in 1 scale division; plastic type; Magnavox part/dwg no. 158123-1	
MP957		Same as MP956	
MP958		Same as MP956	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
MP959		Same as MP956	
MP960		Same as MP956	
MP961		GEAR RACK: steel, FED QQ-S-763-302A; Magnavox part/dwg no. 115560-1	
MP962		DISTRIBUTOR, LIGHT: plastic, MIL-P-5425B, 0.188 in. by 1.031 in. by 5.500 in.; Magnavox part/dwg no. 449612-1	
P901		PLUG, TIP: contact is of nonprecious metal with bright alloy plate and plastic insulation; Cambridge part no. 2225-1: Magnavox part/dwg no. 188441-1	Power connector for panel lamp (See figure 6-5)
P902		Same as P901	Power connector for panel lamps (See figure 6-5)
XDS901		LAMP HOLDER: a twin terminal type, accommodating a T-1.750 in. midget flanged type lamp; Magnavos part/dwg no. 188310-2001	Socket for DS901
XDS902		Same as XDS901	Socket for DS902
A10		FILTER, RADIO INTERFERENCE: 117 VAC at 0.5 amps; Magnavox part/dwg no. 707966-801	(See figure 6-12)
A1001		SWITCHING UNIT, ANTENNA: Magnavox part/dwg no. 737581-802 p/o A10	Switches input impedance to match antenna (See figure 6-38 25B)
CB1001		CIRCUIT BREAKER: air arc quenching; single pole; 500 MA at + 50 deg C continuous rating; Sylvania part no. MB122: Magnavox part/dwg no. 168277-1 p/o A10	Protects against high level input signals (See figure 6-35)
C1001		CAPACITOR, FIXED, METALIZED PAPER DIELECTRIC: 200 VDC working, 10,000 uuf ± 10%; insulated metal case, hermetically sealed; 0.375 in. by 0.843 in.; MIL-C-18312A type no. CH05A3NC104K p/o A1001	Protects K1001 (See figure 6-35)
C1002		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section 500 VDC working, 150 uuf. ± 5%; resin case hermetically sealed 0.190 in. by 0.370 in. by 0.460 in. overall dim; Electro part no. DM15F151J: Magnavox part/dwg no. 255003-229 p/o A1001	Matches input circuit to high impedance antennas (See figure 6-38)
E1001		Same as E702	
E1002		Same as E702	
E1003	3	TERMINAL, LUG: phosphorus bronze; Shakeproof type no. 2177-04-00: Magnavox part/dwg no. 205011-5	
E1004		Same as E702	
E1005		Same as E702	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
E1006		Same as E702	
E1007		Same as E702	
E1008		Same as E601	
E1009		TERMINAL, LUG: steel; Illinois part no. 2320-06-02: Magnavox part/dwg no. 208515-1	
E1010		Same as E1009	
E1011		Same as E1009	
E1012		Same as E1009	
E1013		FEEDTHRU, RADIO FREQUENCY CABLE, GROUNDING: brass with cadmium plate finish; use with 0.110 in. od cable; Magnavox part/dwg no. 185255-802	
E1014		Same as E1013	
E1015		Same as E1013	
E1016		Same as E1013	
E1017		Same as E1013	
E1018		Same as E1013	
E1019		FEEDTHRU, RADIO FREQUENCY CABLE, GROUNDING: brass, FED QQ-B0611A comp B; Magnavox part/dwg no. 185255-801	
E1020		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 50 Ohm; Burndy part no. RM22W6F29: Magnavox part/dwg no. 188541-10	
E1021		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 22 amp; Burndy part no. RC20M6F29: Magnavox part/dwg no. 188541-4	
E1022		Same as E1021	
E1023		Same as E1021	
E1024		Same as E1021	
E1025		Same as E1021	
E1026		Same as E1021	
E1027		Same as E1021	
E1028		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 75 Ohm; Burndy part no. RM26W1F29: Magnavox part/dwg no. 188541-5	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
E1029		Same as E1028	
E1030		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 50 Ohm; Burndy part no. RCX109-1F29: Magnavox part/dwg no. 188541-8	
E1031		Same as E1030	
E1032		Same as E1030	
E1033		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 50 Ohm; Burndy part no. YOC128L: Magnavox part/dwg no. 188541-9	
E1034		Same as E1033	
E1035		Same as E1033	
E1036		SHIELD, ELECTRICAL CONNECTOR: metallic material, resistant to corrosion, silver plated finish; Magnavox part/dwg no. 187978-2	
E1037		Same as E1009	
FL1001		FILTER, LOW PASS: cut off frequency 800 KC; impedance input and output 50 Ohms; Magnavox part/dwg no. 328122-803 p/o A10	Filter high frequencies from input signals (See figure 6-35)
FL1002		FILTER, LOW PASS: cut-off frequency 225KC; impedance input and output 70 Ohm; Magnavox part/dwg no. 327869-1 p/o A10	Filter for IF output signal (See figure 6-35)
FL1003	3	FILTER, RADIO INTERFERENCE: 105, 115, or 125 VAC, 50 to 400 cycles per second; Magnavox part/dwg no. 327867-1 p/o A10	Filter for input power (See figure 6-35)
FL1004	3	FILTER, LOW PASS: 20 KC cut-off frequency; impedance input and output 600 Ohm; Magnavox part/dwg no. 327866-1 p/o A10	Audio output filter (See figure 6-35)
J1001		CONNECTOR, SUBASSEMBLY: aluminum alloy, FED QQ-A-591, arc resistant plastic dielectric, contacts not supplied with connector; Burndy part no. ME4X13P1: Magnavox part/dwg no. 188542-1 p/o A10	Radio interference filter input connector (See figure 6-35)
J1002		CONNECTOR, RECEPTACLE, ELECTRICAL: low loss plastic dielectric; MIL-C-3608 type no. UG290U: Magnavox part/dwg no. 187863-1 p/o A10	IF output connector (See figure 6-35)
J1003	3	CONNECTOR, RECEPTACLE, ELECTRICAL: low loss plastic dielectric; MIL-C-71A type no. UG58AU: Magnavox part/dwg no. 187980-1 p/o A10	Antenna input connector (See figure 6-35)
J1005	3	CONNECTOR, RECEPTACLE, ELECTRICAL: arc resistant plastic dielectric; MIL-C-5015 type no. AN3102A165-5P: Magnavox part/dwg no. 187936-5 p/o A10	Power input connector (See fiugre 6-35)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
J1006		CONNECTOR, RECEPTACLE, ELECTRICAL: arc resistant plastic dielectric; MIL-C-5015 type no. AN3102A10SL4P; Magnavox part/dwg no. 187985-4 p/o A10	Audio output connector (See figure 6-35)
J1007		Same as J1006 p/o A10	Audio output connector (See figure 6-35)
K1001		RELAY, ARMATURE: 4 form C contacts, 2 amps at 28 VDC, or 1 amp at 115 VAC resistive rating; General part no. 3SAH1106A2: Magnavox part/dwg no. 165015-9 p/o A1001	Antenna switching relay (See figure 6-35)
MP1001		SHIELD, ELECTRICAL CONNECTOR: metallic material; for use with RG-58/U or equivalent type cable; Magnavox part/dwg no. 185033-1 p/o A10	
P1008		CONNECTOR, PLUG, ELECTRICAL: 2 female contacts; 2 mating ends; 500 V peak, maximum frequency 500 MC; automatic part no. RF0722-35: Magnavox part/dwg no. 188215-5 p/o A10	Input connector for RF filter (See figure 6-38 25B)
R1001	3	RESISTOR, FIXED, COMPOSITION: 1800 Ohms ± 5% 1 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC32GF182J p/o A1001	Protects K1001 (See figure 6-32)
A11		FRAME AND PANEL ASSEMBLY: consist of the chassis, front panel, front panel controls, electrical components and all interconnecting wiring necessary for addition of plug in modules for the AN/WRR-3 RADIO RECEIVER: Magnavox part/dwg no. 713225-801	
A1101		CAPACITOR ASSEMBLY: 1 variable air dielectric, Magnavox part/dwg no. 267818-1, 1 variable ceramic dielectric, Magnavox part/dwg no. 267820-2; Magnavox part/dwg no. 708781-801 p/o A11	Mounting for frequency vernier capacitors (See figure 6-38 33E)
A1102		CAPACITOR, VARIABLE, AIR DIELECTRIC: 2.2 minimum pf, 8.1 maximum pf capacity, straight line capacity tuning characteristic, 500 VDC working voltage, 9 brass plates; Magnavox part/dwg no. 708782-801 p/o A11	Mounting for calibration adjust capacitor (See figure 6-38 33E)
CP1101		ADAPTER, RADIO FREQUENCY CABLE: used to rigidly adapt radio frequency cable to a connector; Burndy part no. YHM22HG1: Magnavox part/dwg no. 188393-1 p/o A11	
C1101		CAPACITOR, VARIABLE, AIR DIELECTRIC: 4 uuf min capacity, 47 uuf max capacity, straight line capacity tuning characteristic, 500 VAC peak, 19 brass plates; Magnavox part/dwg no. 267818-1 p/o A1101	Adjusts frequency of V606 (See figure 6-34)
C1102		CAPACITOR, VARIABLE, AIR DIELECTRIC: 2.2 uuf min capacity, 8.1 uuf max capacity, straight line capacity tuning characteristic, 1250 VAC peak, 9 brass plates; Magnavox part/dwg no. 265041-3 p/o A1102	Adjusts frequency of V401 (See figure 6-34)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
C1103		CAPACITOR, VARIABLE, AIR DIELECTRIC: 4 section, straight line frequency tuning characteristic, 900 VAC peak, section A 20 uuf min capacity, 310 uuf max capacity, 31 steel plates, section B 18 uuf min capacity, 308 uuf max capacity, 31 brass plates, section C 20 uuf min capacity, 310 uuf max capacity, 31 brass plates, section D 18 uuf min capacity, 308 uuf max capacity, 31 brass plates; Radio part no. CN882585: Magnavox part/dwg no. 267883-1 p/o A11	Adjusts frequency response of V201 and V301 (See figure 6-36)
C1104		CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: 5 uuf min capacity, 25 uuf max capacity, 100 VDC working; Magnavox part/dwg no. 267820-2 p/o A1101	Adjusts frequency of V606 (See figure 6-34)
C1105		Same as C106 p/o A11	Gain control filter (See figure 6-36)
E1101		Same as E702	
E1102		TERMINAL, LUG: brass FED QQ-B-613 comp 2; Magnavox part/dwg no. 208780-1	
E1104		Same as E1102	
E1105		Same as E1102	
E1106		Same as E1102	
E1107		Same as E1102	
E1108		Same as E1102	
E1109		TERMINAL, LUG: phosphor bronze; Shakeproof type no. 2104-06-00: Magnavox part/dwg no. 205018-526	
E1110		Same as E702	
E1111		Same as E702	
E1112		Same as E702	
E1113		Same as E702	
E1114		KNOB: setscrew type; plastic body; MIL-K-3926, type no. MS91528-1F2B	
E1115		Same as E1114	
E1116		Same as E1114	
E1117		Same as E1114	
E1118		Same as E1114	
E1119		Same as E1114	
E1120		KNOB: setscrew type; plastic body; MIL-K-3926, type no. MS91528-1K2B	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
E1121		Same as E1120	
E1122		KNOB: setscrew type; plastic body; MIL-K-3926, type no. MS91528-0K1B	
E1123		CONTACT, ELECTRICAL: brass; gold plate over silver finish; 50 to 70 Ohm; Cannon part no. DM53743-5003: Magnavox part/dwg no. 188450-15	
E1124		TERMINAL BOARD: designed to accomodate 2 terminals; board is of laminated glass cloth and is 0.063 in. by 0.500 in. by 1.375 in. over-all dim; Magnavox part/dwg no. 188452-1	
E1125		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 22 amp; Burndy part no. RM16M1F29: Magnavox part/dwg no. 188541-1	
E1126		Same as E1125	
E1127		Same as E1125	
E1128		Same as E1125	
E1129		Same as E1125	
E1130		Same as E1125	
E1131		Same as E1125	
E1132		Same as E1125	
E1133		Same as E1125	
E1134		Same as E1125	
E1135		Same as E1125	
E1136		Same as E1125	
E1137		Same as E1020	
E1138		Same as E1020	
E1139		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 50 Ohm; Burndy part no. RC22W6F29: Magnavox part/dwg no. 188541-11	
E1140		Same as E1139	
E1141		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 22 amp; Burndy part no. RC16M1F29: Magnavox part/dwg no. 188541-2	
E1142		Same as E1141	
E1143		Same as E1141	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
E1144		Same as E1141	
E1145		Same as E1141	
E1146		Same as E1141	
E1147		Same as E1141	
E1148		Same as E1141	
E1149		Same as E1141	
E1150		Same as E1141	
E1151		Same as E1141	
E1152		Same as E1141	
E1153		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 22 amp; Burndy part no. RM20M6F29: Magnavox part/dwg no. 188541-3	
E1154		Same as E1153	
E1155		Same as E1153	
E1156		Same as E1153	
E1157		Same as E1153	
E1158		Same as E1021	
E1159		Same as E1028	
E1160		Same as E1028	
E1161		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 75 Ohm; Burndy part no. RC26W1F29: Magnavox part/dwg no. 188541-6	
E1162		Same as E1161	
E1163		Same as E1161	
E1164		CONTACT, ELECTRICAL: copper alloy; gold plate over silver finish; 50 Ohm; Burndy part no. RMX109-1F29: Magnavox part/dwg no. 188541-7	
E1165		Same as E1164	
E1166		Same as E1164	
E1167		Same as E1164	
E1168		Same as E1164	
E1169		Same as E1030	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
E1170		Same as E1030	
E1171		Same as E1030	
E1172		Same as E1030	
E1173		Same as E1033	
E1174		Same as E1033	
E1175		Same as E1033	
E1176		Same as E1033	
E1177		Same as E1033	
E1178		Same as E1033	
E1179		Same as E1033	
E1180		Same as E1033	
E1181		Same as E1033	
E1182		Same as E807	
F1101	3	FUSE, CARTRIDGE: electrical rating, 1 amp at 125 V; slow blow type; Littel fuse part no. 313001: Magnavox part/dwg no. 185074-26 p/o A11	Input power protection (See figure 6-34)
F1102	3	Same as F1101 p/o A11	Input power protection (See figure 6-34)
F1103	3	Same as F1101 p/o A11	Spare for F1101 and F1102 (See figure 6-34)
J1101		CONNECTOR, RECEPTACLE, ELECTRICAL: Arc resistant plastic dielectric; 11 pins, 5 amps current rating; Cannon part no. DAMF11W1S: Magnavox part/dwg no. 185155-9 p/o A11	Connector for antenna RF amplifier (See figure 6-34)
J1102		Same as J1101 p/o A11	Connector for Main RF amplifier (See figure 6-34)
J1103		Same as J1101 p/o A11	Connector for frequency mixer (See figure 6-34)
J1104		CONNECTOR, RECEPTACLE, ELECTRICAL: arc resistant plastic dielectric; 7 pins, 5 amps current rating; Cannon part no. DAMF7W2S: Magnavox part/dwg no. 185155-8 p/o A11	Connector for RF Oscillator (See figure 6-34)
J1105	3	CONNECTOR, RECEPTACLE, ELECTRICAL: arc resistant plastic dielectric; 6 contacts 5 amps current rating; Amphenol part no. 143-006-01: Magnavox part/dwg no. 185154-1100 p/o A11	Connector for first IF amplifier (See figure 6-34)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
J1106	3	CONNECTOR, RECEPTACLE, ELECTRICAL: arc resistant plastic dielectric; 15 contacts, 5 amps current rating; Amphenol part no. 143-015-01: Magnavox part/dwg no. 185154-1400 p/o A11	Connector for second IF amplifier (See figure 6-34)
J1107	3	CONNECTOR, RECEPTACLE, ELECTRICAL: arc resistant plastic dielectric; 10 contacts, 5 amps current rating; Amphenol part no. 143-010-01: Magnavox part/dwg no. 185154-1200 p/o A11	Connector for AF amplifier (See figure 6-34)
J1108		CONNECTOR, RECEPTACLE, ELECTRICAL: low loss plastic dielectric; 18 contacts, 7.5 amps current rating; Magnavox part/dwg no. 187991-2 p/o A11	Connector for power supply (See figure 6-34)
J1109	3	Same as J1105 p/o A11	Connector for AF amplifier (See figure 6-36)
J1110	3	JACK, TELEPHONE: nickel-silver, or silver plated copper alloy contacts; JAN-J-641 type no. JJ034: Magnavox part/dwg no. 187987-1 p/o A11	Audio Output connector (See figure 6-34)
J1111	3	Same as J1110 p/o A11	Audio output connector (See figure 6-34)
J1112		JACK, TIP: contact brass with nonprecious bright alloy plate; Cambridge part no. 2265-1-08: Magnavox part/dwg no. 188699-11 p/o A11	Power connector for panel lamps (See figure 6-5)
J1113		Same as J1112 p/o A11	Power connector for panel lamps (See figure 6-5)
L1101	3	COIL, RADIO FREQUENCY: 1 winding, nominal inductance 6 mh; DC resistance 50.2 Ohms, frequency 200 KC; Magnavox part/dwg no. 368215-2 p/o A11	Gain control filter (See figure 6-36)
MP1101		BEARING, DRIVE ASSEMBLY: bronze, 0.875 in. by 0.875 in. by 1.250 in.; Magnavox part/dwg no. 115541-1	
MP1102		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 116212-1	
MP1103		Same as MP1102	
MP1104		GEAR, SPUR: steel FED QQ-S-763-303-A; Magnavox part/dwg no. 116213-1	
MP1105		GEAR, HELICAL: brass, navy spec 47B2h; Magnavox part no. 118327-2	
MP1106		Same as MP1105	
MP1107		HANDLE, LATCHING: aluminum alloy, die casting FED QQ-A-591 comp 7; camloc part no. 40L2-1: Magnavox part/dwg no. 127866-1	
MP1108		Same as MP1107	

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
MP1109		COUPLING, SHAFT FLEXIBLE: bellows type with exposed setscrews, brass bellows with brass bushing; Magnavox part/dwg no. 713751-802	
M1101	3	AMMETER; DC type: microamperes type, 0 to 100 CW range, linear: Magnavox part/dwg no. 557807-1 p/o A11	Tuning meter (See figure 6-34)
M1102		METER, AUDIO LEVEL: - 12 DB to + 22 DB CW; International Instruments part no. 3201-040: Magnavox part/dwg no. 557850-1 p/o A11	Output meter (See figure 6-34)
P1110		Same as P1001 p/o A11	Connector for radio inter-ference filter (See figure 6-36)
P1115		CONNECTOR, PLUG, ELECTRICAL: 2 female contacts; 2 mating ends; 500 V peak, maximum frequency 500 MC; Automatic part no. RF0701-25: Magnavox part/dwg no. 188213-2 p/o A11	Input connector for first IF amplifier (See figure 6-37)
P1116		CONNECTOR, PLUG, ELECTRICAL: 2 female contacts; 2 mating ends; 500 V peak, maximum frequency 500 MC; Automatic part no. RF0722-47: Magnavox part/dwg no. 188215-3 p/o A11	Input connector for vernier frequency control (See figure 6-34)
P1117	3	CONNECTOR, RECEPTACLE, ELECTRICAL: arc resistant plastic dielectric; 7 contacts, 5 amps current rating; Winchester part no. M7S: Magnavox part/dwg no. 185042-3 p/o A11	Connector for AF amplifier (See figure 6-34)
P1125		Same as P1115 p/o A11	Output connector for first IF amplifier (See figure 6-37)
P1126		Same as P1115 p/o A11	Calibrator signal input connector (See figure 6-36)
P1136		Same as P1115 p/o A11	Input signal connector to second IF amplifier (See figure 6-36)
R1101		RESISTOR, VARIABLE: composition; 2 sections both 9000 Ohm ± 10%; 2 watts; special taper 80,000, 40,000, 6,000 Ohms at 10, 30, 60% rotation; round metal single shaft normal torque; Clarostat part no. CM27451: Magnavox part/dwg no. 227896-2 p/o A11	Gain control (See figure 6-34)
R1102		RESISTOR, VARIABLE: composition; 2 sections both 10,000 Ohm ± 20%; 2 watts; special taper 10,000, 30,000, 72,000 Ohms at 40, 70, 90% rotation; round metal single shaft normal torque; Clarostat part no. CM27450: Magnavox part/dwg no. 227896-1 p/o A11	Output level control (See figure 6-34)
R1103		Same as R734 p/o A11	Shunt resistor for M1101 (See figure 6-34)

TABLE 7-3. RADIO RECEIVING SET AN/WRR-3, MAINTENANCE PARTS LIST (Cont.)

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTION
R1104		Same as R205 p/o A11	Series resistor between V701 and V702A (See figure 6-34)
R1105		RESISTOR, FIXED, COMPOSITION: 390,000 Ohms ± 5%; 0.50 watt rated at 70 deg C ambient temp; MIL-R-11 rev C type no. RC20GF394J p/o A11	Bias resistor for CR702 and CR703 (see figure 6-34)
R1106	3	RESISTOR, VARIABLE: composition; 1 section 50,000 Ohms ± 20%; 2 watts; special taper 32500, 10,000, 1,000 Ohms at 20, 50, 80% rotation; round metal single shaft normal torque; Magnavox part/dwg no. 227838-2 p/o A11	Controls headset volume (See figure 6-34)
R1107	3	RESISTOR, FIXED, COMPOSITION: 300 Ohms ± 5% 1/2 W, rated at 70 deg C ambient temp; characteristic letter F; MIL-R-11 type no. RC20GF301J p/o A11	Dropping resistor for headphone output (See figure 6-34)
R1108	3	Same as R601 p/o A11	Matches output impedance to headphone impedance (See figure 6-34)
S1102	3	SWITCH, TOGGLE: dpdt; MIL-S-3950, type no. MS25100-23 p/o A11	Switches BFO into circuit for A1 reception (See figure 6-34)
S1103		SWITCH, ROTARY: single section, 2 position; electrical rating, 1 amp at 6 VDC or 100 MA at 110 V AC; Magnavox part/dwg no. 168259-1 p/o A11	Selects antenna input impedance (See figure 6-34)
S1104	3	Same as S1102 p/o A11	Makes the calibrator operative (See figure 6-34)
S1105	3	SWITCH, TOGGLE: spdt; MIL-S-3950, type no. MS25098-23 p/o A11	Noise limiter switch (See figure 6-34)
S1106		SWITCH, ROTARY: single section, 2 position; electrical rating, 1 amp at 6 V DC, or 100 MA at 110 V AC; Magnavox part/dwg no. 168258-1 p/o A11	AF selectivity switch (See figure 6-34)
S1107	3	Same as S1102 p/o A11	Output limiter switch (See figure 6-34)
S1108	3	SWITCH, TOGGLE: dpdt; MIL-S-3950, type no. MS25100-22 p/o A11	Power switch (See figure 6-34)
TB1101		JACK ASSEMBLY, TIP: 2 jack tips; mounted on a 0.500 in. by 1.375 in. laminated galss cloth board; Magnavox part/dwg no. 188452-801	
XF1101	3	FUSE HOLDER: extractor post type; 20 amp max current, 100-125V; Littelfuse part no. 344125: Magnavox part/dwg no. 188698-2	Socket for F1101
XF1102	3	Same as XF1101	Socket for F1102
XF1103	3	Same as XF1101	Socket for F1103

TABLE 7-4. RADIO RECEIVING SET AN/WRR-3, STOCK NUMBER IDENTIFICATION

REF. DESIG.		STOCK NUMBERS			
		FEDERAL	STANDARD NAVY	SIGNAL CORPS	USAF
P001		N5935-201-7973			
P005		N5935-149-4236			
C103		N5910-806-2853			
E101		N5940-156-7342			
E102		N5960-850-6172			
R102		N5905-190-8885			
R104		N5905-686-9994			
R105		N5905-683-2242			
R110		N5905-195-6761			
T101		N5950-806-2849			
T102		N5950-806-2850			
T103		N5950-806-2854			
T104		N5950-806-2855			
T105		N5950-806-2856			
E201		N5940-156-7342			
R202		N5905-279-3494			
R204		N5905-254-9201			
R206		N5905-195-6761			
T201		N5950-806-2857			
T202		N5950-806-2860			
T203		N5950-806-2861			
T204		N5950-806-2869			
T205		N5950-806-2894			
E301		N5940-156-7342			
E302		N5960-851-8290			
R302		N5905-192-3973			
R304		N5905-171-1999			
R305		N5905-171-1999			
R306		N5905-171-1999			
T301		N5950-806-2895			
T302		N5950-806-2896			
T303		N5950-806-2897			
T304		N5950-806-2901			
T305		N5950-806-2902			
E401		N5940-156-7342			
E402		N5960-850-6172			
L401		N5950-807-8438			
L402		N5950-816-4582			
L403		N5950-807-8439			
L404		N5950-807-8449			
L405		N5950-807-8451			
R402		N5905-279-3502			
R403		N5905-279-1890			
R404		N5905-279-2616			
E501		N5940-617-7559			
R502		N5905-195-5571			
R504		N5905-279-1890			
R505		N5905-799-8724			
S501		N5930-807-8436			
S502		N5930-807-8436			
T501		N5950-806-2903			
E604		N5960-851-8290			
E605		N5960-850-6172			
E606		N5960-850-6172			
E607		N5960-850-6172			
E608		N5960-850-6172			
E609		N5960-850-6172			

TABLE 7-4. RADIO RECEIVING SET AN/WRR-3, STOCK NUMBER IDENTIFICATION (Cont.)

REF. DESIG.	NOTES	STOCK NUMBERS			
		FEDERAL	STANDARD NAVY	SIGNAL CORPS	USAF
R601		N5905-252-5434			
R604		N5905-171-2001			
R606		N5905-252-5434			
R610		N5905-192-3973			
R614		N5905-279-1871			
R615		N5905-192-3973			
R616		N5905-841-7457			
R617		N5905-841-7457			
R618		N5905-841-7457			
R620		N5905-254-9201			
R621		N5905-254-9201			
R623		N5905-195-6761			
R628		N5905-279-2519			
R629		N5905-221-5848			
R635		N5905-195-6761			
R637		N5905-195-6761			
S601		N5930-807-8437			
Z601L1		N5950-807-8433			
Z601L2		N5950-806-2904			
Z602L1		N5950-807-8433			
Z502L2		N5950-806-2904			
Z603L1		N5950-807-8434			
Z604		N5950-807-8453			
E703		N5960-850-6172			
E704		N5960-850-6172			
E705		N5960-850-6172			
E706		N5960-851-8286			
E707		N5960-851-8286			
FL701		N5915-807-8483			
R710		N5905-842-2968			
R711		N5905-279-3497			
R712		N5905-841-7457			
R716		N5905-474-4135			
R718		N5905-279-3506			
R720		N5905-279-2515			
R722		N5905-195-6761			
R725		N5905-195-6761			
R727		N5905-279-2515			
R728		N5905-842-2968			
R729		N5905-190-8874			
R732		N5905-279-2515			
R736		N5905-192-3973			
R737		N5905-171-1986			
R739		N5905-474-0446			
R740		N5905-885-6241			
R742		N5905-279-3497			
R744		N5905-474-0446			
R745		N5905-279-3497			
CR804		N5960-685-8470			
CR805		N5960-685-8470			
C801		N5910-543-9278			
C802		N5910-543-9278			
L802		N5950-806-2841			
P801		N5935-687-0406			
R801		N5905-813-7808			
R803		N5905-813-7809			
R804		N5905-101-7892			

TABLE 7-4. RADIO RECEIVING SET AN/WRR-3, STOCK NUMBER IDENTIFICATION (Cont.)

REF. DESIG.	NOTES	STOCK NUMBERS			
		FEDERAL	STANDARD NAVY	SIGNAL CORPS	USAF
T801		N5950-806-2926			
XC801		N5935-201-4783			
XC802		N5935-201-4783			
E1003		N5940-271-6759			
FL1002		N5915-807-8466			
FL1003		N5915-816-4272			
FL1004		N5915-807-8481			
J1003		N5935-149-3483			
J1005		N5935-807-3496			
R1001		N5905-279-2661			
F1101		N5920-295-9602			
F1102		N5920-295-9602			
F1103		N5920-295-9602			
J1105		N5935-683-5146			
J1106		N5935-553-2789			
J1107		N5935-577-8713			
J1109		N5935-683-5146			
J1110		N5935-683-2746			
J1111		N5935-683-2746			
L1101		N6625-807-3461			
M1101		N5950-807-8452			
P1117		N5935-259-2039			
R1106		N5905-806-2846			
R1107		N5905-299-1965			
R1108		N5905-252-5434			
S1102		N5930-655-1508			
S1104		N5930-655-1508			
S1105		N5930-655-1923			
S1107		N5930-655-1508			
S1108		N5930-050-2635			
XF1101		N5920-705-2914			
XF1102		N5920-705-2914			
XF1103		N5920-705-2914			

TABLE 7-5. RADIO RECEIVING SET AN/WRR-3, STOCK NUMBER CROSS REFERENCE

FEDERAL STOCK NUMBER	REFERENCE DESIGNATION
N5905-101-7892	R804
N5905-171-1986	R737
N5905-171-1999	R304
N5905-171-1999	R305
N5905-171-1999	R306
N5905-171-2001	R604
N5905-190-8874	R729
N5905-190-8885	R102
N5905-192-3973	R302
N5905-192-3973	R610
N5905-192-3973	R615
N5905-192-3973	R736
N5905-195-5571	R502
N5905-195-6761	R110
N5905-195-6761	R206
N5905-195-6761	R623
N5905-195-6761	R635
N5905-195-6761	R637
N5905-195-6761	R722
N5905-195-6761	R725
N5905-221-5848	R629
N5905-252-5434	R601
N5905-252-5434	R606
N5905-252-5434	R1108
N5905-254-9201	R204
N5905-254-9201	R620
N5905-254-9201	R621
N5905-279-1871	R614
N5905-279-1890	R403
N5905-279-1890	R504
N5905-279-2515	R720
N5905-279-2515	R727
N5905-279-2515	R732
N5905-279-2519	R628
N5905-279-2616	R404
N5905-279-2661	R1001
N5905-279-3479	R742
N5905-279-3494	R202
N5905-279-3497	R711
N5905-279-3497	R745
N5905-279-3502	R402
N5905-279-3506	R718
N5905-299-1965	R1107
N5905-474-0446	R739
N5905-474-0446	R744
N5905-474-4135	R716
N5905-683-2242	R105
N5905-686-9994	R104
N5905-799-8724	R505
N5905-806-2846	R1106
N5905-813-7808	R801
N5905-813-7809	R803
N5905-841-7457	R616
N5905-841-7457	R617
N5905-841-7457	R618
N5905-841-7457	R712
N5905-842-2968	R710

FEDERAL STOCK NUMBER	REFERENCE DESIGNATION
N5905-842-2968	R728
N5905-885-6241	R740
N5910-543-9278	C801
N5910-543-9278	C802
N5910-806-2853	C103
N5915-807-8466	FL1002
N5915-807-8481	FL1004
N5915-807-8483	FL701
N5915-816-4272	FL1003
N5920-295-9602	F1101
N5920-295-9602	F1102
N5920-295-9602	F1103
N5920-705-2914	XF1101
N5920-705-2914	XF1102
N5920-705-2914	XF1103
N5930-050-2635	S1108
N5930-655-1508	S1102
N5930-655-1508	S1104
N5930-655-1508	S1107
N5930-655-1923	S1105
N5930-807-8436	S501
N5930-807-8436	S502
N5930-807-8437	S601
N5935-149-3483	J1003
N5935-149-4236	P005
N5935-201-4783	XC801
N5935-201-4783	XC802
N5935-201-7973	P001
N5935-259-2039	P1117
N5935-553-2789	J1106
N5935-577-8713	J1107
N5935-683-2746	J1110
N5935-683-2746	J1111
N5935-683-5146	J1105
N5935-683-5146	J1109
N5935-687-0406	P801
N5935-807-3496	J1005
N5940-156-7342	E101
N5940-156-7342	E201
N5940-156-7342	E301
N5940-156-7342	E401
N5940-271-6759	E1003
N5940-617-7559	E501
N5950-806-2841	L802
N5950-806-2849	T101
N5950-806-2850	T102
N5950-806-2854	T103
N5950-806-2855	T104
N5950-806-2856	T105
N5950-806-2857	T201
N5950-806-2860	T202
N5950-806-2861	T203
N5950-806-2869	T204
N5950-806-2894	T205
N5950-806-2895	T301
N5950-806-2896	T302
N5950-806-2897	T303

TABLE 7-5. RADIO RECEIVING SET AN/WRR-3, STOCK NUMBER CROSS REFERENCE (Cont.)

FEDERAL STOCK NUMBER	REFERENCE DESIGNATION
N5950-806-2901	T304
N5950-806-2902	T305
N5950-806-2903	T501
N5950-806-2904	Z601L1
N5950-806-2904	Z602L2
N5950-806-2926	T801
N5950-807-8433	Z601L1
N5950-807-8433	Z602L2
N5950-807-8434	Z603L1
N5950-807-8438	L401
N5950-807-8439	L403
N5950-807-8449	L404
N5950-807-8451	L405
N5950-807-8452	M1101
N5950-807-8453	Z604
N5950-816-4582	L402
N5960-685-8470	CR804
N5960-685-8470	CR805
N5960-850-6172	E102
N5960-850-6172	E402
N5960-850-6172	E605
N5960-850-6172	E606
N5960-850-6172	E607
N5960-850-6172	E608
N5960-850-6172	E609
N5960-850-6172	E703
N5960-850-6172	E704
N5960-850-6172	E705
N5960-851-8286	E706
N5960-851-8286	E707
N5960-851-8290	E302
N5960-851-8290	E604
N6625-807-3461	L1101

TABLE 7-6. RADIO RECEIVING SET AN/WRR-3, LIST OF MANUFACTURERS

ABBREVIATION	NAME	ADDRESS
Amphenol	Amphenol-Borg Electronics Corp.	Broadview (Chicago), Ill.
Augut	Augut Bros., Inc.	Attleboro, Mass.
Automatic	Automatic Metal Products Co.	Brooklyn, N. Y.
Burndy	Burndy Corp.	Lynwood, Calif.
Cambridge	Cambridge Thermionic Corp.	Cambridge, Mass.
Camloc	Camloc Fastener Corp.	Paramus, N. J.
Cannon	Cannon Electric Co.	Los Angeles, Calif.
Clarostat	Clarostat Manufacturing Co., Inc.	Dover, N. H.
Dialight	Dialight Corp.	Brooklyn, N. Y.
Electro	Electro-Motive Manufacturing Co.	Chicago, Ill.
Erie	Erie Resistor Corp.	Erie, Pa.
Erie Electronics	Erie Electronics Div., of Erie Resistor Corp.	Erie, Pa.
Foster	Foster Transformer Co.	Cincinnati, O.
Garlock	Garlock Inc., Electronic Products Div.	Camden, N.J.
General	General Electric Co.	Waynesboro, Va.
Hughes	Hughes Prods. Div., of Hughes Aircraft Co.	Los Angeles, Calif.
Illinois	Illinois Tool Works	Chicago, Ill.
International Electronic	International Electronic Research Corp.	Burbank, Calif.
International Instrument	International Instrument, Inc.	New Haven, Conn.
Jan	Jan Hardware Manufacturing Co., Inc.	Brooklyn, N. Y.
Littelfuse	Littelfuse, Inc.	Chicago, Ill.
Magnavox	The Magnavox Co.	Fort Wayne, Ind.
Malco	Malco Tool and Manufacturing Co.	Chicago, Ill.
Mazda	General Electric Co.	Cleveland, O.
Methode	Methode Manufacturing Co.	Chicago, Ill.
Motorola	Motorola, Inc.	Chicago, Ill.
Nugent	Nugent Electronics Co.	New Albany, Ind.
Radio	Radio Condensor Co.	Camden, N. J.
Raytheon	Raytheon Manufacturing Co.	Waltham, Mass.

TABLE 7-6. RADIO RECEIVING SET AN/WRR-3, LIST OF MANUFACTURERS (Cont.)

ABBREVIATION	NAME	ADDRESS
Shakeproof	Shakeproof Div., of Illinois Tool Works	Elgin, Ill.
Sprague	Sprague Electric Co.	North Adams, Mass.
Sylvania	Lighting Prods. Div., of Sylvania Electric Products, Inc.	Ipswich, Mass.
Transitron	Transitron Electronic Corp.	Wakefield, Mass.
Winchester	Winchester Electronics Co., Inc.	Norwalk, Conn.