NAVSHIPS 92944

TECHNICAL MANUAL

for

RADIO TRANSMITTING SET AN/SRT-17(XN-1)

RADIO CORPORATION OF AMERICA
75 VARICK STREET
NEW YORK 13, N. Y.

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS

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DEPARTMENT OF THE NAVY
BUREAU OF SHIPS
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Code 993-100
19 February 1957

From: Chief, Bureau of Ships
To: All Activities concerned with the Installation, Operation, and Maintenance of the Subject Equipment

Subj: Technical Manual for Radio Transmitting Set AN/SRT-17(XN-1) NAVSHIPS 92944

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2. When superseded by a later edition, this publication shall be destroyed.

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A. G. MUMMA
Chief of Bureau

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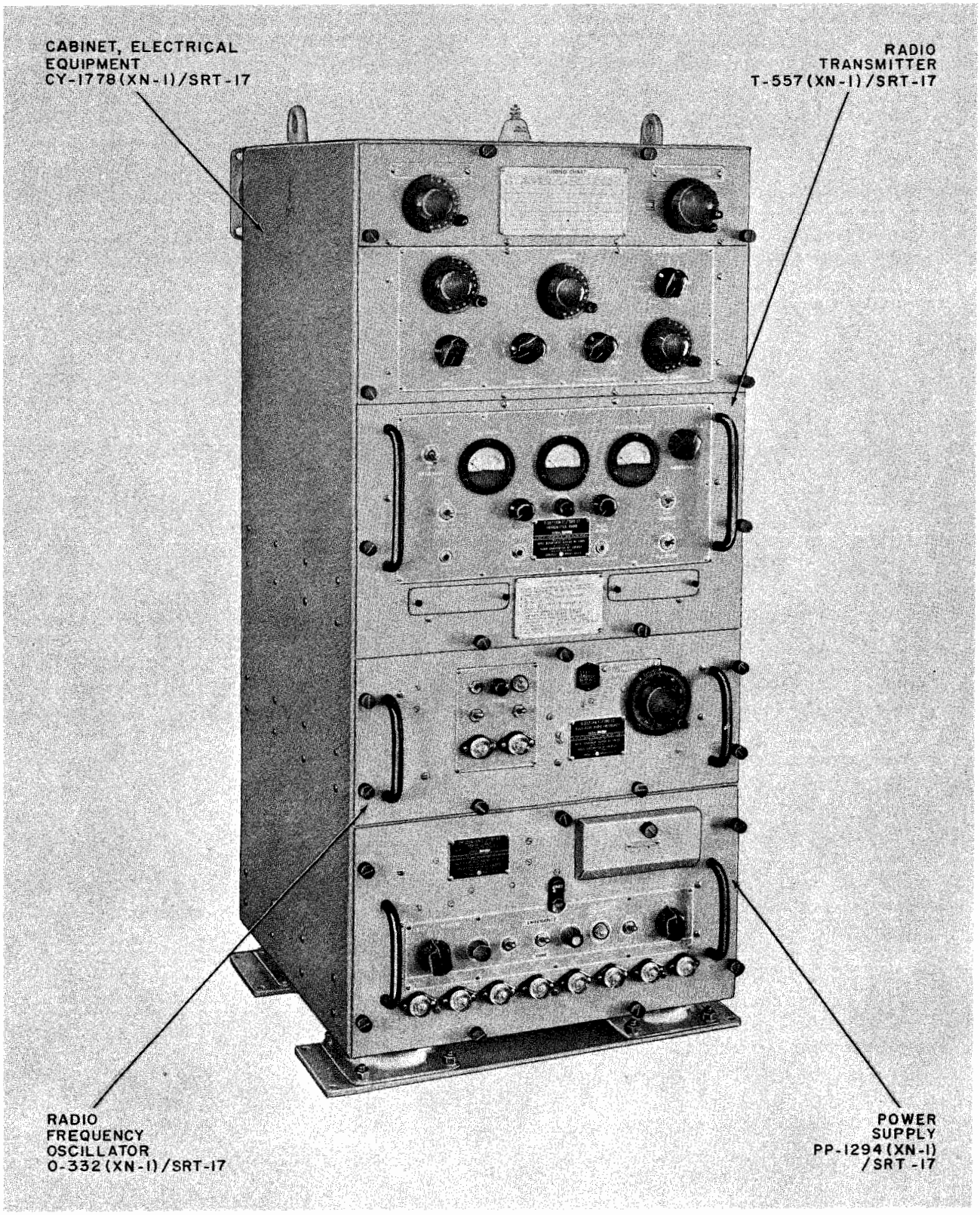


Figure 1-1. Radio Transmitting Set AN/SRT-17(XN-1), Relationship of Units

SECTION 1

GENERAL DESCRIPTION

1. SCOPE OF INSTRUCTION BOOK.

This instruction book contains descriptive material, theory of operation and instructions for installation, operation and maintenance of Radio Transmitting Set, AN/SRT-17 (XN-1). The equipment is being delivered on Contract NObsr-63313.

2. PURPOSE AND BASIC PRINCIPLES.

a. Radio Transmitting Set AN/SRT-17(XN-1) (figure 1-1) is intended for general purpose use on Navy vessels and at Naval radio communication shore stations under widely varying climatic conditions. It provides a complete radio transmitting facility with the exception of antenna, power source, keying and phone equipment. The transmitter has been designed to operate at ambient temperatures between -15 degrees (deg.) and +65 deg. C (5 deg. and 149 deg. F) and in a relative humidity up to 95 percent.

b. The equipment is capable of continuous operation on CW (A-1 emission) or voice (A-3 emission) with a nominal output of 100 watts for A-1 and 75 watts for A-3, within the frequency range of 2 to 30 megacycles (mc). The equipment will operate on any frequency in the specified range for which it is tuned. Frequency control is by means of an internal master oscillator. The equipment is designed for operation into an antenna having an RF resistance between 5 and 1800 ohms and a reactance from plus 2000 to minus 2000 ohms. All potentials necessary for the operation of the transmitter are derived within the equipment from a 115 or 230 volt, 50 to 60 cycle, single phase ac power source. The transmitter may be operated from a remote location with the use of a standard "6-wire" remote unit. A telephone jack is also provided for use with a receiver monitor/headset.

c. EQUIPMENT DESCRIPTION. The Transmitter consists of three sliding drawer type units mounted one above the other in a braced sheet-aluminum cabinet finished in gray. It occupies a deck space 21-1/2 inches by 23 inches with the drawers closed and is 48 inches high overall. The unit at the bottom of Cabinet, Electrical Equipment CY-1778(XN-1)/SRT-17 is Power Supply PP-1294(XN-1)/SRT-17. Above the power supply is the Radio Frequency Oscillator 0-332(XN-1)/SRT-17 which supplies the desired fundamental frequency in the continuous range of 1.875 to 3.75 mc. The third section contains the Radio Transmitter T-557(XN-1)/SRT-17 which includes the modulator and transmitter proper.

Each of the units is of drawer type construction and may be pulled out to provide access for servicing and adjusting. Convenient insulated handles are furnished on the front panel of each unit. All necessary controls, adjustments and indicators for service operation of the equipment are located on the front panels of the unit. A blower is provided for adequate filtered ventilation and tube cooling. Cables for interconnection of the units are installed inside the cabinet. The necessary power input cables are not supplied with the equipment. The complete equipment consists of the major units and accessories listed in table 1-1.

TABLE 1-1. EQUIPMENT SUPPLIED

QUANTITY PER EQUIPMENT	NAME OF UNIT	DESIGNATION	OVERALL DIMENSIONS			VOLUME	WEIGHT
			Height	Width	Depth		
1	Radio Transmitting Set Consisting of:	AN/SRT-17(XN-1)	48	21-1/2	23	13.7	412
1	Cabinet, Electrical Equipment	CY-1778(XN-1)/SRT-17	48	21-1/2	20-1/8	12.0	116
1	Power Supply	PP-1294(XN-1)/SRT-17	11	19-5/8	20	2.5	127
1	Radio Frequency Oscillator	O-332(XN-1)/SRT-17	7-7/8	19-5/8	19-7/8	1.9	38
1	Radio Transmitter	T-557(XN-1)/SRT-17	24-1/8	19-5/8	20-1/4	5.5	131
1 box	Maintenance Parts Kit		15	24	15	3.14	155
1 box	Maintenance Parts Kit		12	18	12	1.5	50
2	Instruction Books	NAVSHIPS 92944	11	8-1/2	3/8	.04	4
2	Servicing Diagrams	NAVSHIPS 92944.51	9-3/4	14-3/4	1/4		1
1 set	Test Cable						10

Dimensions are in inches, volume cubic feet, weight pounds.

TABLE 1-2. EQUIPMENT REQUIRED BUT NOT SUPPLIED

QUAN. PER EQUIP.	NAME OF UNIT	TYPE DESIGNATION	REQUIRED USE	REQUIRED CHARACTERISTICS
1	Antenna		RF output	5 to 1800 ohms rf resistance, ±2000 ohms reactance.
1 (when desired)	Remote Control Unit	Similar to Navy Type 23423	Remote control of start-stop, keying and phone transmission.	Standard "6-wire remote".
2	Remote Control Cables	MHFA-10 and MHFA-7	Connection of Remote Control Unit	One 10 conductor, one 7 conductor.
1	Receiver Monitor Cable	TTHFWA-1-1/2 or equivalent	Connection of Receiver Output.	3 conductor twisted.
1	Receiver Disabling Cable	TTHFWA-1-1/2 or equivalent	Connection to receiver circuit.	3 conductor twisted.
1 (when desired)	Automatic Keyer		High-speed keying of transmitter.	Up to 100 wpm for A-1 emission.
1	Frequency Meter		Monitoring transmitter output.	Range 2 to 30 mc; loosely coupled to transmitter.
1	Power Input Cable	DHFA-9 or equivalent	Connection to power source.	Per MIL-C-915A 10 to 50 ft. lg., 2 No. 12 AWG or larger conductors.

3. DESCRIPTION OF UNITS.

a. RADIO TRANSMITTER T-557(XN-1)/SRT-17 (see figure 1-2).

The Radio Transmitter unit is composed of two sections. The top section contains the buffer, amplifier-multiplier stages, the intermediate power amplifier, power amplifier and the antenna matching network. The lower section includes the audio circuits and most of the transmitter control circuits.

Any one of nine frequency bands may be selected from the front panel. The desired output carrier is obtained from the master oscillator frequency by selecting the proper tuned circuit to multiply the fundamental by 1, 2, 4 or 8 as required. The antenna matching network is designed to load the transmitter output into antennas of varied characteristics. The antenna matching controls and tuning meters are clearly marked with their respective function on the front panel. Dial locks are provided for all tuning dial controls. The complete unit is ventilated with an exhaust type blower located on the top center of this section.

The lower section of the Radio Transmitter contains the audio and control circuits. The audio circuit includes low and high frequency compensating networks to provide a flat audio response from 200 to 2500 cycles. The network includes a limiter circuit to clip the peak of high level audio to prevent over-modulation and allow a high average modulation level.

The audio output circuit includes a pair of 4-65A balanced modulators operating in push-pull. The amount of modulator cathode current, when operating on voice transmission, is indicated on a front panel meter. A front panel control is provided to permit resetting the modulator and power amplifier overload relays, which act to protect component parts of the equipment in event of electrical overload.

Facilities are incorporated for automatic or manual keying. A head-phone jack is provided for monitoring communication and operates in conjunction with a volume level control to adjust the output to the operators headphone. For phone operation a gain control to compensate for background noise and speaker's voice level is included.

Insulated handles located on the front panel are used to withdraw the unit from the cabinet, on drawer slides, to a stop position for servicing. The two sections of this unit may be separated to permit servicing of each section individually or together. Two test cables are provided for this purpose.

b. RADIO FREQUENCY OSCILLATOR 0-332(XN-1)/SRT-17 (see figure 1-3).

The Radio Frequency Oscillator, located just below the Radio Transmitter, contains the stable fundamental frequency generator of the equipment. It is of drawer type construction with insulated handles on the front. The master oscillator is contained in a temperature controlled oven in this unit.

Continuous tuning over the range of 1.875 to 3.75 mc, as read directly on the M.O. tuning dial, is provided. A crystal calibrator is included. Power for the tubes is furnished from an internal power supply which operates from the transmitter 115/230 volt power source.

c. POWER SUPPLY PP-1294(XN-1)/SRT-17 (see figure 1-4).

The Power Supply, located at the bottom of the cabinet, contains the high and low voltage plate rectifier and the main power input circuit. The EMERGENCY-LINE switch on

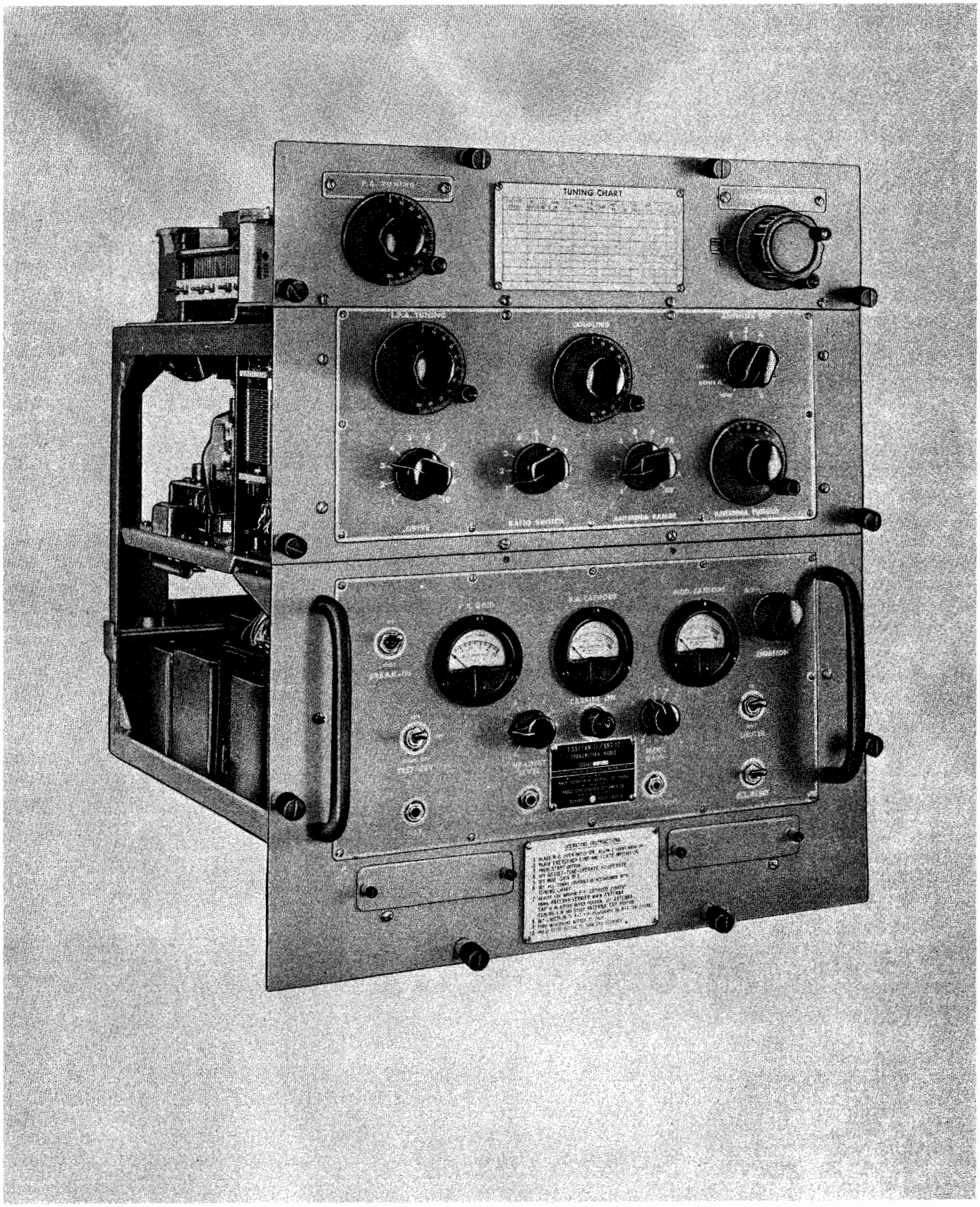


Figure 1-2. Radio Transmitter T-557(XN-1)/SRT-17

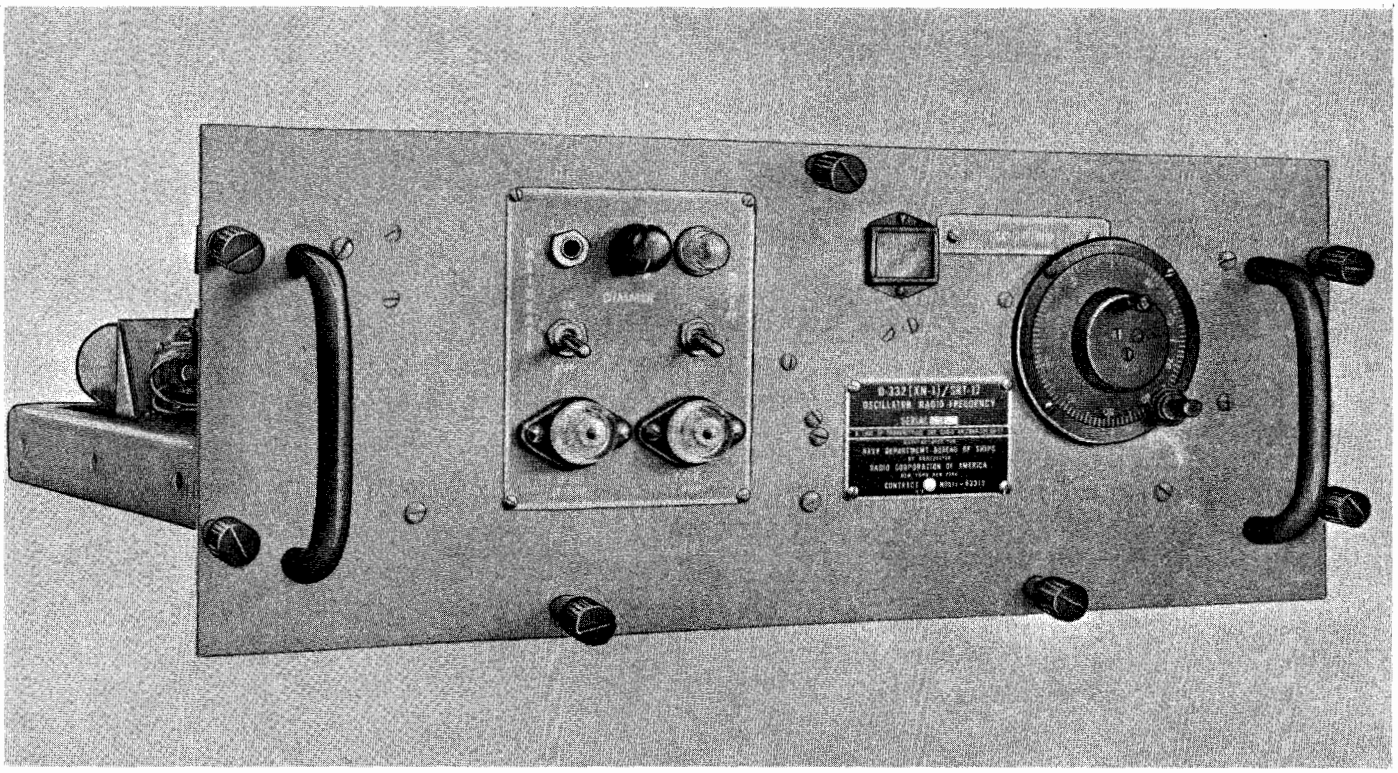


Figure 1-3. Radio Frequency Oscillator 0-332(XN-1)/SRT-17

the front panel acts as the main power switch, controlling application of all power to the equipment. Line fuses and rectifier fuses are all clearly marked with their associated circuits on the front panel. Spare fuses are found in the SPARE FUSES compartment. The high voltage rectifier, used to supply filtered 1500 volts dc to the PA and modulator tube plates, is a two-tube full-wave type and is provided with a two section filter. When the power supply is withdrawn to the service position on drawer slides the ac power for the plate rectifiers is removed and the dc side of the HV rectifier is grounded to protect personnel. This unit includes a BATTLE SHORT switch for use when interlocks are incapacitated by shock due to gunfire or other cause.

d. CABINET, ELECTRICAL EQUIPMENT CY-1778(XN-1)/SRT-17 (see figure 1-1).

The sheet aluminum cabinet is reinforced and braced to support the three transmitter sub-units and provide a complete enclosure. Units are held in place by thumbscrews through the front panels and rest on the drawer slides at the sides. All interconnecting cables are installed in the cabinet and are provided with plug terminations. Remote control terminal boards at the lower rear side of the cabinet may be connected to external cables through a covered access hole at the back of the cabinet. Input power cables connect to a terminal board at the lower right rear. An air filter is located at the bottom of the cabinet and can be removed for cleaning. The cabinet is provided with four shock and vibration mounts at the bottom. These are attached to two horizontal plates for ease of mounting to the operating room table. Two snubber shockmounts are provided at the top rear for attachment of the equipment to a vertical bulkhead as additional support for the equipment.

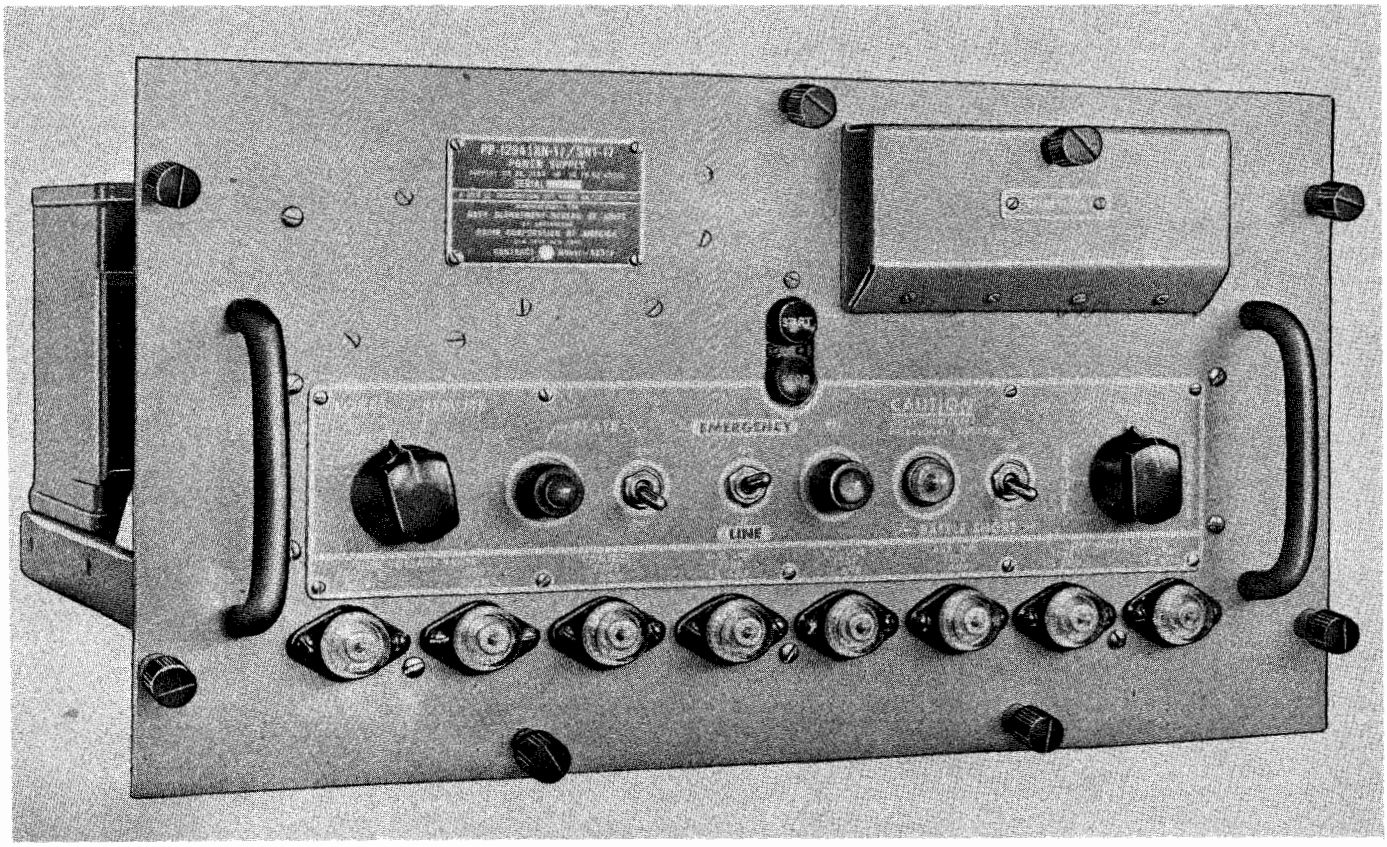


Figure 1-4. Power Supply PP-1294(XN-1)/SRT-17

4. REFERENCE DATA.

a. NOMENCLATURE. Radio Transmitting Set AN/SRT-17(XN-1).

b. CONTRACT DATA. Contract No. NObsr-63313, dated 13 March 1953.

c. CONTRACTOR. Radio Corporation of America, 75 Varic St., New York 13, N. Y.

d. COGNIZANT NAVAL INSPECTOR. Inspector of Naval Material, New York, N. Y.

e. SHIPPING DATA.

(1) NUMBER OF BOXES. Three.

(2) EQUIPMENT SPARES. Included.

(3) TOTAL CUBICAL CONTENTS.

(a) CRATED - 48.6 cubic feet

(b) UNCRATED - 18.4 cubic feet

(4) TOTAL WEIGHT

(a) CRATED - 800 pounds

(b) UNCRATED - 632 pounds

(5) For details see tables 1-1 and 1-3.

5. ELECTRICAL CHARACTERISTICS

a. FREQUENCY RANGE. 2 to 30 megacycles.

TYPE OF FREQUENCY CONTROL. Self-included master oscillator.

TUNING. Continuous over entire range in nine bands, overlapping 3% between each band.

b. TYPES OF EMISSION. Continuous wave telegraph (A-1) or voice modulated (A-3).

AUDIO INPUT. 20 db to 0 into 200 ohm impedance.

AUDIO RESPONSE. 200 to 2500 cycles flat within ±3 db from the 1000 cycle value.

AUDIO COMPRESSION. 20 db increase in input results in less than 3 db change in modulation level. Threshold of clipping in adjustable.

MODULATION CAPABILITY. 100 percent.

c. KEYING TYPE. On-off (electron tube).

KEYING SPEED. Manual with "break-in" 35 wpm.
Automatic without "break-in" 100 wpm.

d. CONTROL. Local or remote for start-stop, phone and keying; manual or automatic start.

REMOTE CONTROL UNIT. Standard "6-wire" unit similar to Navy Type-23423 (not supplied on this contract).

e. NOMINAL RF OUTPUT.

A-1 emission----- 2 mc to 12 mc --- 100 watts
12 mc to 26 mc --- 80 watts
26 mc to 30 mc --- 60 watts

A-3 emission----- at 95% modulation, 75% of A-1 effective power.
Includes sideband power when modulated.
Power is measured into a 75 ohm dummy antenna.

ANTENNA CHARACTERISTICS. Operates into antenna having rf resistance between 5 and 1800 ohms and reactance of plus 2000 to minus 2000 ohms.

SPURIOUS HARMONIC RADIATION. Minimum of 40 db below fundamental output level, for 2nd and 3rd harmonics and 50 db for any other frequency.

f. FREQUENCY CONTROL. Self-included master oscillator.

MO FREQUENCY RANGE. 1.875 mc to 3.75 mc.

TYPE CONTROL. Continuously tunable over entire range.

FREQUENCY STABILITY. ±0.002% over 24 hour period under normal operating conditions.

TEMPERATURE CONTROL. Oven type with thermostat, operates at nominal 60 degree C±.01 degree (140 degree F).

NORMAL OPERATING CONDITIONS.

(1) Temperature range 25 to 35° C (+77° to +95° F).

(2) Relative humidity 40 to 60%.

(3) Three hour oven warm-up time.

(4) 30 minute preliminary oscillator operation.

LOGGING DIAL RESETTABILITY. Within ±0.002%.

MO CALIBRATION. 100 kc Crystal.

g. FREQUENCY ACCURACY AND STABILITY. Within ±0.01 percent of the desired carrier frequency.

h. CONDITIONS OF OPERATION. Continuously operates under any combination of the following conditions:

(1) Ambient temperature -15 deg. C (5 deg. F) to 50 deg. C (122 deg. F).

(2) Relative Humidity up to 95 percent.

(3) Line voltage within ±10 percent.

(4) Line frequency within ±5 percent.

WARM-UP TIME. 3 hours for oven, 30 seconds for plate time delay.

i. POWER SUPPLY REQUIRED. -115/230 volts, 50 to 60 cycles, one phase ac. See table on following page.

POWER CONDITIONS

TRANSMITTER CONDITIONS	LINE CURRENT AMPS 115V	230V	TOTAL KVA	POWER FACTOR	POWER KW
Standby (Plate switch off) (oven on)	2.98	1.49	0.34	0.94	0.321
Key Up	5.30	2.65	0.61	0.90	0.550
Key Down (A-1 emission)	8.60	4.30	0.99	0.87	0.865
Key Down (A-3 emission)	9.04	4.52	1.04	0.92	0.960

j. HEAT DISSIPATION DATA. Approximately 885 watts.

k. EQUIPMENT DATA. Tables 1-1 to 1-4 include pertinent data regarding the material supplied, shipping data and the vacuum tubes required for this equipment.

TABLE 1-3. SHIPPING DATA

SHIPPING BOX NO.	CONTENTS NAME OF UNIT	CONTENTS DESIGNATION	OVERALL DIMENSIONS Height	Width	Depth	VOLUME	WEIGHT
1	Radio Transmitting Set. Includes 2 Instruction Books and Test Cables.	AN/SRT-17(XN-1)	56	31	32	32.2	520
2	Maintenance Parts Kit (box #1)	------	21	32	21	8.2	90
3	Maintenance Parts Kit (box #2)	------	21	32	21	8.2	190

Dimensions are in inches, volume cubic feet, weight pounds.

TABLE 1-4. VACUUM TUBE COMPLEMENT

SYMBOL DESIGNATION	TUBE TYPE	FUNCTION	QUANTITY
POWER SUPPLY PP-1294(XN-1)/SRT-17			
V201	5R4WGXB	Low Voltage Rectifier	1
V202	5R4WGXB	Low Voltage Rectifier	1
V203	3B28	High Voltage Rectifier	1
V204	3B28	High Voltage Rectifier	1
RADIO TRANSMITTER T-557(XN-1)/SRT-17			
V301	12AX7	Limiter	1
V302	12AT7WA	Audio Compensator	1
V303	12AX7	Audio Amplifier and Phase Inverter	1
V304	12AX7	Audio Driver	1
V305	4-65A	Modulator	1
V306	4-65A	Modulator	1
V401	6AG7	Buffer Amplifier	1
V402	6AG7	R. F. Amplifier	1
V403	6AG7	Amplifier-Multiplier	1
V404	807	Amplifier-Multiplier	1
V405	6BG6G	Keying Tube	1
V406	6AQ5W/6005	Clamper	1
V407	4-65A	Power Amplifier	1
V408	4-65A	Power Amplifier	1
RADIO FREQUENCY OSCILLATOR 0-332(XN-1)/SRT-17			
V501	6AG7	Oscillator	1
V502	5814A	Amplifier-Cathode follower	1
V503	5814A	Crystal Calibrator	1
V504	5R4WGB	L. V. Rectifier	1
V505	OA2WA	Voltage Regulator	1
V506	OA2WA	Voltage Regulator	1

SECTION 2

THEORY OF OPERATION

1. GENERAL.

a. INTRODUCTION. - This section contains a detailed description of the electrical theory of operation and mechanical functioning of the entire equipment. After a discussion of the general functions of the component units, detailed circuit analysis and mechanical operation of the radio frequency, audio frequency, power, control, and measuring circuits is given. Circuits will be described in a logical functional order rather then with regard to the physical location in the equipment. Figure 2-1 shows in block form the basic circuitry of the complete transmitter. The complete schematic diagram is figure 7-17.

b. RADIO FREQUENCY CIRCUITS. - Referring to figure 2-1, the basic frequency determining circuit is the Radio Frequency Oscillator section, or master oscillator. Continuous tuning over the frequency range of 1.875 to 3.75 mc is provided. The master oscillator may be calibrated using the integral crystal calibrator V503. V501 is the electron coupled oscillator. V502A acts as a buffer amplifier and feeds the signal to the exciter through a cathode follower V502B. V401 and V402 pentodes are used as fundamental frequency amplifier. V403 is the first frequency multiplier and is followed by V404/ amplifier-multiplier, which in turn supplies the drive for the Power Amplifier stage. For output frequencies up to 30 mc the MO frequency is multiplied by 1, 2, 4 or 8 as necessary, in multiplier tubes V403 and V404. The power amplifier tubes V407 and V408 operate in parallel at the carrier frequency. A clamper tube, V406, maintains the power amplifier screen voltage at the desired value when the transmitter is keyed. The plate circuit of the power amplifier is tuned by a network of inductors and capacitors to cover the entire range of 2 mc to 30 mc. Output from the P.A. is fed into a tuning and matching network having a combination of tapped inductance and a variable capacitor to resonate with any antenna having characteristics of rf resistance from 5 to 1800 ohms and a reactance value anywhere from 0 to ±2000 ohms.

c. AUDIO CIRCUITS. - Energy from the microphone is fed through microphone transformer T301 to LIMITER switch S301. With this switch in the IN position the signal is fed to the grid of audio amplifier V301 which acts as a limiter to cut off peaks of modulation. Adjustments of the limiting action of this tube allows for a high average level of modulation without overmodulation. With LIMITER switch in the OUT position V301 is bypassed. The bypassed signal is then fed through a high and low frequency compensating amplifier. First, the complete signal is fed to the low frequency compensating network and then to one-half of a type 12AT7 dual triode, V302, where it is amplified. This amplified signal is then applied to the high frequency compensating network and on to V302B where it is further amplified. This produces an output response which is flat within ±3 db. The corrected audio signal is fed into phase inverter tube, V303, which amplifies one-half of the signal and inverts the phase of the other half of the signal to produce a push-pull signal for application to push-pull driver amplifier V304. The push-pull driver output feeds the two modulator tubes (V305 and V306) and the modulator output is combined in modulation transformer T302. Output of the modulation transformer is used to modulate both the screen grid of the IPA tube V403 and the plates of the power amplifiers, V407 and V408.

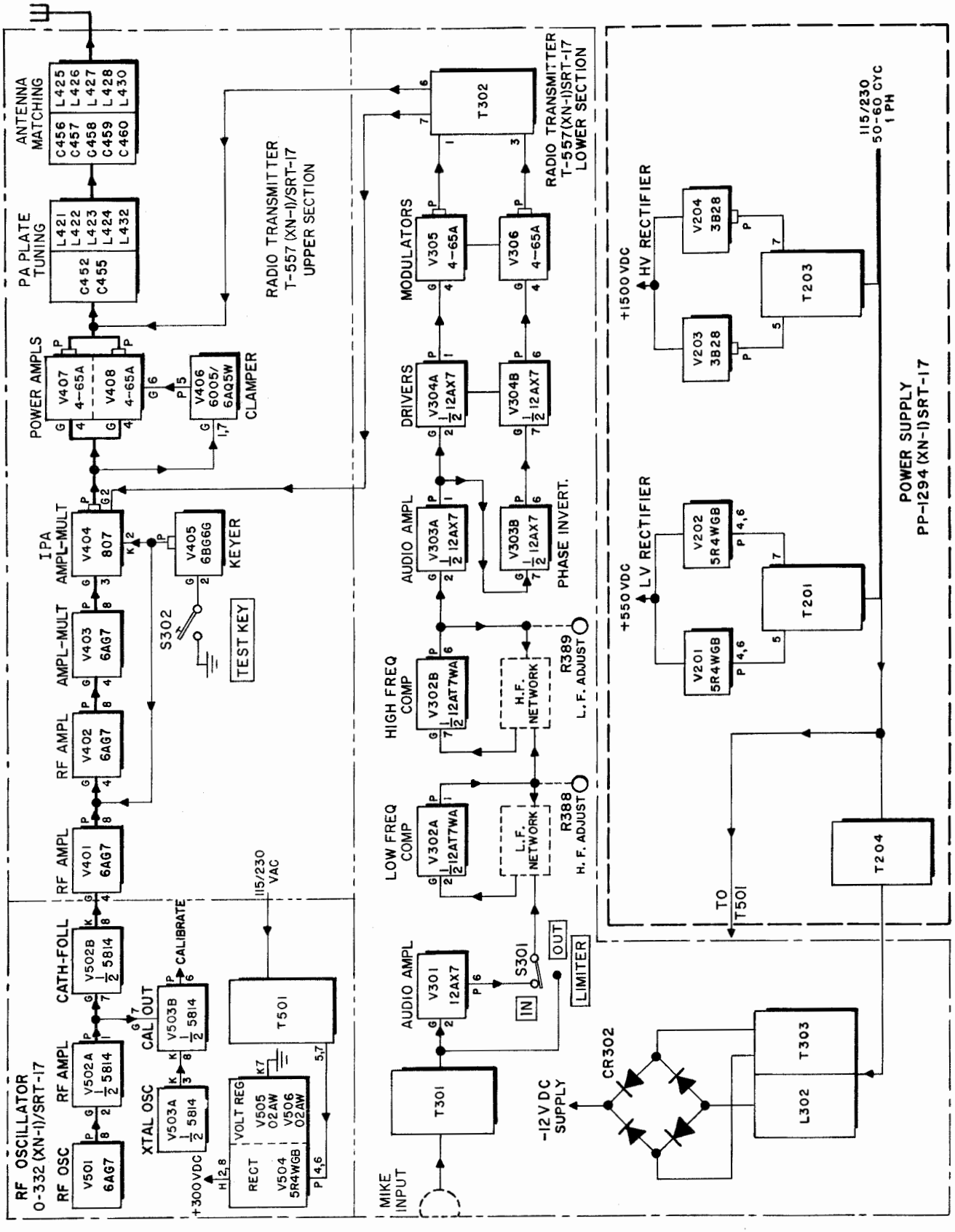


Figure 2-1. Radio Transmitting Set AN/SRT-17(XN-1), Block Diagram

d. KEYING CIRCUIT. - The keying circuit uses a combination of electronic keying with a series of relays to provide delay in part of the keying circuit. A switch, used for break-in operation, provides a means for eliminating the delay circuit action. With the break-in switch in the OUT position, manual (low-speed) operation of the telegraph key or TEST KEY, S302, places a ground on the grid of the keying tube V405 which also allows the IPA tube to pass signals. This ground also energizes the relay series which in turn keys the grids of the amplifier half of V401 and of rf amplifiers V402 and V502A thus keying the carrier "on". For higher speed keying, the delay in the relay circuits results in V401, V402 and V502A remaining in the keyed condition long enough to bridge the "key-off" time. Thus, at high keying speeds, only the IPA tube is keyed.

e. POWER CIRCUITS. - (See figure 2-4.) The power supply system includes a line autotransformer, two filament transformers, and four rectifier power supplies. One filament transformer supplies power for the transmitter tubes, and the other provides filament power for the high and low voltage rectifier. Either 115 volts ac or 230 volts ac single phase may be applied to TB103. Line filters (FL101 and FL102) prevent spurious radiation from entering the power lines. Terminal board jumpers on TB201, TB202, TB501 and TB502 are used to accommodate either 115 or 230 volt input. These jumpers place the primaries of the rectifier transformers in series for 230 volts or in parallel for 115 volt input. High voltage dc (1500V) for modulator and power amplifier tubes is furnished by rectifier tubes V203 and V204, in full-wave center-tapped circuit from the secondary of T203. Low voltage dc (550V) for plates and screens is provided by rectifier tubes V201 and V202 in a full-wave center-tapped circuit from the secondary of T201. Microphone voltage and 12V dc supply for relay coils is supplied by metallic (selenium) rectifier CR302 with saturable core reactor L302 supplied from T303 in the transmitter unit. In addition a separate power supply is provided for the Radio Frequency Oscillator including full-wave, center-tapped rectifier using tube V504. Two voltage regulator tubes V505 and V506 maintain a voltage of 300 volts dc for the plates of V501, V502 and V503. Screen voltage of +150V dc for V501 is supplied by regulator tube V506.

2. RADIO FREQUENCY CIRCUITS.

The radio frequency circuits of the transmitter are shown in simplified form in figure 2-2, and in complete form in figure 7-17.

a. RADIO FREQUENCY OSCILLATOR. - The master oscillator is the frequency determining circuit of the transmitter. The circuit is enclosed in a temperature-controlled oven operated at 60° C (140° F) to provide excellent frequency stability. The components of the RF Oscillator are mounted on an L-shaped chassis having tubes and a calibration crystal mounted on top. The MO tuning capacitor is adjustable from the front panel of the R. F. Oscillator.

(1) MASTER OSCILLATOR: - The continuously variable frequency oscillator in R. F. Oscillator 0-332(XN-1)/SRT-17 produces frequencies between 1.875 mc and 3.75 mc from the tank circuit composed of RF coil L501 and tuning capacitor C503. Capacitors C501 and C502 are padders and C504 is a variable trimmer which may be reached through a hole in the oven cover. The tank circuit is connected to the grid of oscillator V501, a type 6AG7 pentode tube, and capacitors C505 to C511 provide RF voltage feed back. The output of V501 is plate coupled to V502 a dual-triode type 5814. The second triode of V502 is cathode coupled into the output coaxial cable to provide a low impedance and constant load output to the following buffer amplifiers. The main tuning capacitor (C503) is driven through a 50 to 1 reduction from a crank knob on the front panel. A four-digit drum-type counter, driven at approximately 68 to 1 reduction from the crank-knob, provides accurate readings for determination of frequency from the M. O. CALIBRATION CHART, furnished with the equipment. Plate, screen and filament power for the R. F. Oscillator is supplied

by a rectified power supply including voltage regulator tubes V505 and V506 within the unit. A means of calibrating the tank circuit is provided by the 1100 kc crystal oscillator using V503, a type 5816 dual triode. One triode section is the crystal oscillator and the second triode operates as a mixer of the crystal frequency and the master-oscillator frequency.

(2) OVEN HEATER CIRCUIT: - The oven is an aluminum box placed in the center of the R. F. Oscillator unit. The top plate, or oven cover, is removed by releasing eight snap-slide fasteners placed around the edge. Enclosed within the oven is the oscillator tank circuit, the voltage divider capacitors, a mercury-in-glass thermostat and two sets of heaters. An inner lining of aluminum distributes the heat evenly. The heaters are coiled wire wound on a square form and are located between the lining and the outer shell of the oven.

(a) The oven heating circuit is shown in figure 2-4 and the heater control circuit is in figure 2-6. Power for the oven is fed directly from the supply through the oven ON switch S501 to the oven terminal board (TB501), which is equipped with jumpers so that the heaters may be placed in series for 220V or in parallel for 115V operation.

(b) The glass thermostat-switch (S501) is mounted on a bracket within the oven parallel to the base of the chassis. When the column of mercury is below 60^{o} C (140^{o} F) the heater control relay (K501) is not energized and current flows through the back contacts to the heaters. The mercury column rises as the heaters warm the oven until the mercury column closes its contact energizing rectifier CR501 and the coil of K501, closing the relay. This opens the contact supplying current to the heaters. When the mercury column drops below 60^{o} C (140^{o} F) relay K501 de-energizes and current flows again through the heaters. A white indicator light (I501) located on the front panel of the R. F. Oscillator indicates when the heaters are energized. After full warm up the oven heater cycle should be approximately 15 seconds on and one minute off. Heater circuits are bypassed at several points to prevent RF from appearing on the control wires.

b. BUFFER AMPLIFIERS: - A short length of coaxial cable conveys the signal frequency from the R. F. Oscillator to the buffer amplifiers consisting of 6AG7 pentode type tubes V401 and V402. The plate circuits of these tubes are untuned, therefore, the fundamental frequency is passed to the grid of Amplifier Multiplier tube V403. The grid circuits of V401 and V402 are keyed when the keying delay is not used. Good stability for the master oscillator is assured by the isolation from higher power stages.

c. AMPLIFIER-MULTIPLIER: - Output from the Master Oscillator is transferred to the grid of V401 by a coaxial cable. V401 is a 6AG7 pentode type tube operating as an untuned buffer amplifier. V402 is another such stage thereby affording added protection against feed back to the Master Oscillator. The fundamental signal frequency is than applied to the grid of V403, a 6AG7 type pentode tube which operates as a frequency multiplier. (Use table 2-1). For bands 1, 2, 3 and 4, the plate circuit of this stage is tuned to twice the input or signal frequency by capacitor C422 and coil L429. For bands 5 and 6, L406 and C466 are used to increase the output frequency to 4 times the fundamental. For bands 7, 8 and 9, amplifier multiplier L407, L408 and L409 are used with C466, C467 and C468 respectively. C422 is the front panel control capacitor while C466, C467 and C468 are trimmers. Master Oscillator frequencies between 1.875 mc to 3.75 mc are thus applied to the grid of amplifier multiplier V403 and the fundamental is multiplied up to 8 times for the higher frequencies.

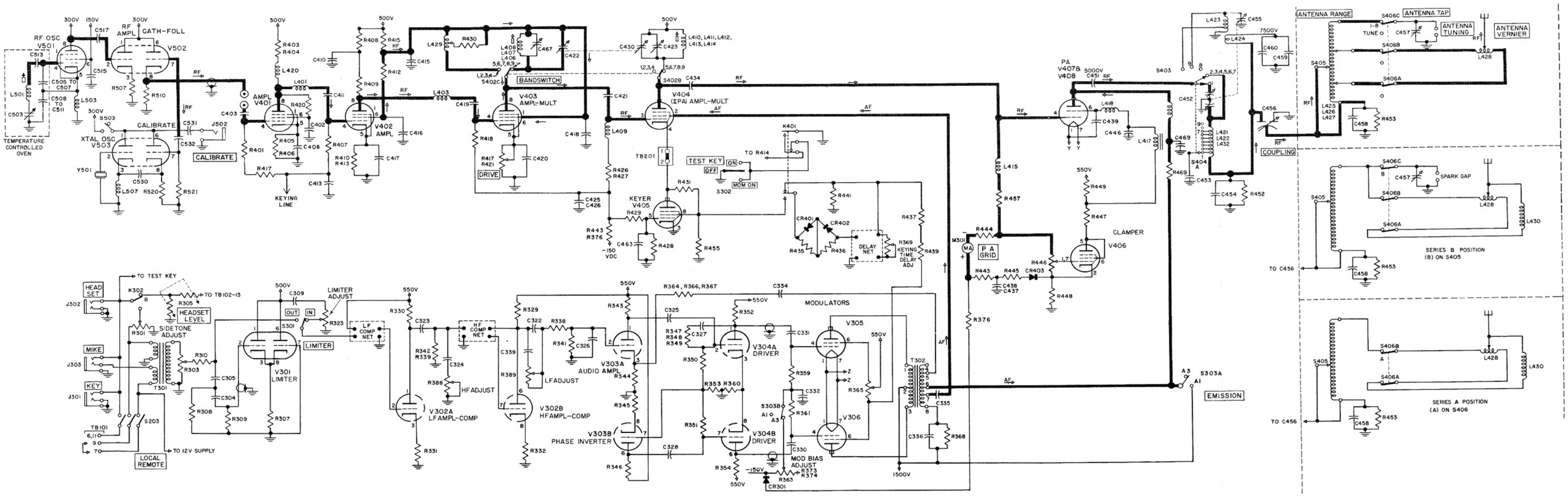


Figure 2-2. Simplified Radio and Audio Frequency Circuits

TABLE 2-1. TRANSMITTER HARMONIC MULTIPLICATION

OUTPUT FREQ. in Mc	BAND NO.	MO FREQ. in Mc	V403 AMPL-MULTI.	TUNED CIRCUIT ELEMENT	V404 IPA MULTI.	TUNED CIRCUIT ELEMENTS (C430, C423)
2-2.75	1	2-2.75	Fund.	L429	Fund. Tuned	L414
2.75-3.75	2	2.75-3.75	Fund.	L429	Fund. Tuned	L414
3.75-5.25	3	1.875-2.625	2nd Harmonic	L429	Fund. Tuned	L413
5.25-7.5	4	2.625-3.75	2nd Harmonic	L429	Fund. Tuned	L413
7.5-10	5	1.875-2.5	4th Harmonic	L407, C422 C466	Fund. Tuned	L412
10-15	6	2.5-3.75	4th Harmonic	L406, C468 C422	Fund. Tuned	L411
15-20	7	1.875-2.5	4th Harmonic	L407, C466 C422	2nd Harmonic	L410
20-26	8	2.5-3.25	4th Harmonic	L406, C466 C422	2nd Harmonic	L410
26-30	9	3.25-3.75	4th Harmonic	L406, C466 C422	2nd Harmonic	L410

NOTE: Tuned circuits are used to obtain harmonics.

d. POWER AMPLIFIERS AND CLAMPERS. - The Power Amplifier, consisting of tubes V407, and V408, type 4-65A tetrodes operated in parallel, is a conventional plate-tuned class C amplifier. The tuned rf signal, at the desired output frequency, is fed from the plate of V404 through coupling capacitor C434 to the control grids of the PA. A portion of this rf energy is applied to the grid of V406, which operates as a screen-grid clamper to V407 and V408. When rf energy is applied to the grid of V406, the grid goes more negative which decreases the plate current through resistors R447 and R449, thereby increasing the PA screen voltage, and prevents excessive current in the screen when rf energy is applied to the power amplifiers. The plate tank for the power amplifier is connected to the plates through dc blocking capacitor C451. The tank circuit is parallel tuned and rf energy is coupled into the antenna circuit through differential-type capacitor C456 connected at the ground end of the tank coil for bands 1 through 7 and through a link coil coupled to the small HF tank coil L423 for bands 8 and 9. The BAND SWITCH, S402-S404, selects appropriate taps on plate tank coils L421 and L422 for bands 1 through 7 and on tank coil L423 for bands 8 and 9. Appropriate sections of PA tuning capacitors C452 and C455 are also selected by the BAND SWITCH. The simplified schematic, figure 2-2, shows the connections for both LF and HF arrangements of the tank circuit. Plate voltage is supplied from the 1500 volts rectifier in the Power Supply unit. Plate voltage is fed through the EMISSION switch S303A and plate decoupling resistor R466. Depending on the position of BAND SWITCH S402 and the operating frequency, plate power is then fed through a combination of plate chokes L419,

L420 and/or L431. On A-3 emission, a small amount of audio voltage is fed back to the screen grid of IPA stage V404 to aid the PA in providing high percentage modulation when the power amplifier is plate modulated.

e. ANTENNA MATCHING NETWORK: - The rf output of the PA tank circuit is coupled to the antenna through an antenna matching network. This network must couple and match from the relatively high impedance tank circuit to any antenna having a resistance between 5 and 1800 ohms with a reactance of between plus 2000 (inductive) and minus 2000 (capacitive) ohms. To accomplish this, three different conditions of operation are provided. The normal wire antenna operated at a frequency where the antenna length is over a quarter wavelength has a relatively low reactive component and high radiation resistance. This type is fed in parallel with the antenna matching circuit. A short wire, less than one-quarter wavelength, or a whip antenna (especially if it is top loaded) may have a very low radiation resistance and relatively high reactive component. This type of antenna is fed in series with the antenna matching circuit and its reactive component (inductive or capacitive) must be balanced out in order to tune the antenna circuit.

The antenna matching network consists of the following elements: COUPLING capacitor C456, ANTENNA TAP selector S406, ANTENNA RANGE selector S405, ANTENNA TUNING capacitor C457 and ANTENNA VERNIER coil L428. These are all controlled from the front panel of the Radio Transmitter. COUPLING control C456 is a differential-type capacitor, which varies the amount of rf energy that is coupled to the antenna, while maintaining a constant capacitance in the tuned tank circuit of the Power Amplifier. ANTENNA RANGE switch S405 acts as a coarse coupling control by selecting the necessary coil taps on L425, L426 and/or L427. It is used in matching the output impedance of the PA to the antenna. The ANTENNA TAP switch together with the ANTENNA TUNING capacitor act as a fine matching control, once the approximate match has been established with the ANTENNA RANGE switch.

(1) NORMAL ANTENNA. - The numbered positions of the ANTENNA TAP switch S406 are used when matching an antenna which is neither highly capacitive nor highly inductive. Different portions of the antenna load coils L425, L426 and L427 are selected with the ANTENNA TAP switch, depending on the output frequency. ANTENNA TUNING capacitor C457 is used together with L428, the ANTENNA VERNIER, for loading and matching the output to the antenna system used for all frequencies from 2 mc to 30 mc. When a resonant condition is reached with the antenna, the COUPLING control or the ANTENNA VERNIER is used for the final fine matching adjustment necessary for maximum output efficiency.

(2) HIGHLY INDUCTIVE ANTENNA. - When loading the output into a highly inductive antenna, the ANTENNA TAP is placed in the SERIES B position which places the ANTENNA TUNING capacitor C457 in parallel with the antenna loading coils, L425, L426 and L427. In this case, the ANTENNA VERNIER is used in series with the antenna, the amount of inductance used is dependent upon the inductance of the antenna. Once the approximate match has been established with the ANTENNA RANGE switch, the ANTENNA TUNING capacitor and the ANTENNA VERNIER coil are used to match and load the transmitter output into the antenna.

(3) HIGHLY CAPACITIVE ANTENNA. - When loading the output of the transmitter into a highly capacitive antenna, the ANTENNA TUNING capacitor C457 is switched out of the circuit in the SERIES A position of the ANTENNA TAP switch. The ANTENNA RANGE switch is used to select different portions of the antenna loading coils L425, L426 and L427 while tuning with the ANTENNA VERNIER to match and load the rf output into the antenna. Rf coil L430, as indicated in figure 2-2, is placed in parallel with the unused portion of L428 to limit high circulating currents which could cause damage to the ANTENNA VERNIER coil.

3. AUDIO CIRCUITS.

The audio circuits for voice modulation are shown in simplified form in figure 2-2 and in complete form in figure 7-17.

a. MICROPHONE AND LIMITER. - With the LOCAL-REMOTE switch S202 in the LOCAL position the input microphone is connected to MIKE jack J303, which feeds audio energy to microphone transformer T301. A portion of this signal is tapped off the primary and applied to HEADSET jack J302 through a side-tone adjust resistor R301, to provide voice monitoring at the transmitter. The front panel MOD. GAIN control R303 adjusts the level of audio modulation. The audio signal is taken from R303 and fed to the LIMITER switch S301. When S301 is in the IN position, the audio signal is applied to the grid of the limiter tube V301, which cuts off the peaks of high level audio to prevent over-modulation and allow a high average modulation level. The amount of compression obtained depends on the setting of the limiter adjust control R323. With the LIMITER switch in the OUT position V301 is bypassed. At approximately 70% modulation, a 10 db increase in input will result in less than 3 db change in modulation level.

b. HIGH AND LOW FREQUENCY COMPENSATORS AND PHASE INVERSION. - The limiter signal or the bypassed signal is then fed first to a low frequency compensating network which includes one-half of V302, a type 12AT7 dual triode and its associated network. Here the complete audio signal is amplified and applied to the HF compensating network. The composite signal is further amplified in V302B. By this means the frequencies below 200 cps and above 2500 cps are sharply cut off while the frequencies between 200 and 2500 cps produce an output response which is flat within ±3 db from the 1000 cps value. Potentiometer R388 is used to adjust the high frequency roll-off which is connected between the plate of V302A and the grid input of HF compensator V302B. The low frequency adjustments are made with potentiometer R389 which is connected between the plate circuit of V302B and the grid input of the phase inverter amplifier V303A. To balance the audio compensated signal to V303, first adjust R389, the low frequency potentiometer, for the proper input level. Then adjust R388 to yield the correct balance level. This balanced signal is now applied to the grid of V303A. A portion of the output is fed back to V303B and is phase inverted before it is passed on to V304.

c. DRIVERS AND MODULATORS. - V304 is a conventional class A amplifier operated push-pull. The signal is then amplified to drive modulators tubes V305 and V306, type 4-65A tetrodes. The modulators, both operating at class AB1, are connected in push-pull. The circuit is conventional with the grid supplied by the balanced output of V304. Plate voltage of 1500 volts DC is supplied from the high voltage rectifier through the primary of modulation transformer T302. Screen voltage for the modulators is obtained from the 550 volt rectifier through the modulator screen balancing potentiometer R365. Thus an equal amount of voltage to each of the modulator screens, assures perfect symmetry and balanced output. The audio output is fed from the modulator transformer T302, tap number 7 to screen grid of the IPA and from tap number 6 to the plate of the PA. In this manner, the PA grid is modulated to aid the effectiveness of plate modulation employed in this transmitter.

4. KEYING CIRCUITS.

The electronic keying circuits consists of vacuum tube V405, a 6BG6G pentode and a series of three relays. The keying relay K401 has two sections of contacts designated "A" and "B". Both are used in keying antenna transfer relay K402 with 3 sections using section "B" in the keying circuit and keying indicator relay K302 using two sections of a 4 section pile-up. Keying is accomplished by varying the bias on V502, V401, V402, V403 and V404 between ground and -150 volts. For higher keying speeds, a delay circuit is used. When the time delay is adjusted to bridge the "key up" time only V404 is subjected to keying while

other tubes in the keying circuit are conducting.

a. Refer to figure 2-3. CW operation (A-1) requires operation of TEST KEY S302 or insertion of a telegraph key into KEY jack J301. When the key is closed a ground is placed on the key line through a contact of keying relay K401. The grounded key line places the grids of V401, V402 and V502 at ground. Current now flows from -150V dc through the antenna change-over relay K402, closing the contacts of K402 and energizing the keying indicator relay K302. This places a ground on R313 and current flows from the 12V dc supply causing the CARRIER ON lamp I301 to light. A ground is also placed on the grid of V405, contacts of K302 and band switch interlocks S303B, S406D, S402D and S405C to the junction of resistors R427 and R429. Therefore, with the key depressed a ground appears upon the grids of V502, V401, V402 and V404 causing these tubes to conduct and pass rf signals. Plate voltage for keying tube V405 is supplied from the LV power supply through a network of resistors. K401, in the screen grid circuit of V405, does not have sufficient current to close its contacts when the key is not depressed, but when V405 conducts enough current flows in its screen circuit to close the contacts of K401. Therefore, relay K401 follows the action of the key. At the same time, V404 is allowed to conduct due to the removal of the bias and because its cathode is now near ground potential. The amount of rf signal passed to V404 is controlled by the GAIN CONTROL, a potentiometer in the cathode circuit of amplifier multiplier V403, a type 6AG7 tube.

b. When the key is closed as explained in paragraph a. the ground on the tube grids is maintained through a contact of K401. This is a make-before-break contact, maintaining the ground upon the grids of V502, V401 and V402. As long as K401 remains energized the relays K302 and K402 remain closed. Keying ground may be removed or supplied at will which removes or supplies bias to V404 and V405 only.

c. When the key is opened, ground is removed from V405 and V404 and bias is supplied placing these tubes well beyond cut-off. When V405 is cut-off current drops through K401 and its contacts removes ground from K402 and K302 causing the contacts to open extinguishing the CARRIER ON light. This also cuts off tubes V502, V401 and V402. However, a method of time delay is used in connection with K401 to hold this relay and consequently K302 and K402 closed after normal energy is removed from the coil of K401. This means that the first closing of the key removes cut-off bias from V502, V401, V402 and V404 in the rf position of the transmitter, but after the key is closed once only the IPA tube V404 is keyed when the delay is used.

d. The time delay circuit which energizes K401 after normal energy is removed is used only on A-1 emission. The circuit is of the capacitor charge-discharge type. With K401 energized, capacitors C337, and C338 are charged to the same potential as the plate end of K401 coil. When the key is up the voltage across K401 coil decreases and the capacitors partially discharge through the emission switch S303B, the polarized discharge network (resistors R435 and R436 with diode rectifiers CR401 and CR402), and the "B" contact of K401 and the relay coil. Keying Time Delay control R369, connected in a resistor network across the discharge circuit of C338 is used to adjust the amount of time delay over a wide range. For "break-in" keying, the time delay is adjusted to just bridge the space between code characters. For high speed or teletypewriter operation the time delay should be adjusted to bridge the blank keying pulses. Thus a system of electronic keying is accomplished, but only at the higher speeds of sending.

e. To establish complete electronic keying at any speed of transmission a BREAK-IN toggle DPDT switch (S305) is connected in the screen grid circuit of V405. When the switch is in the IN position "break-in" operation at slow speeds is available, but with the switch in the OUT position K401 will be held closed continuously after the key is once closed.

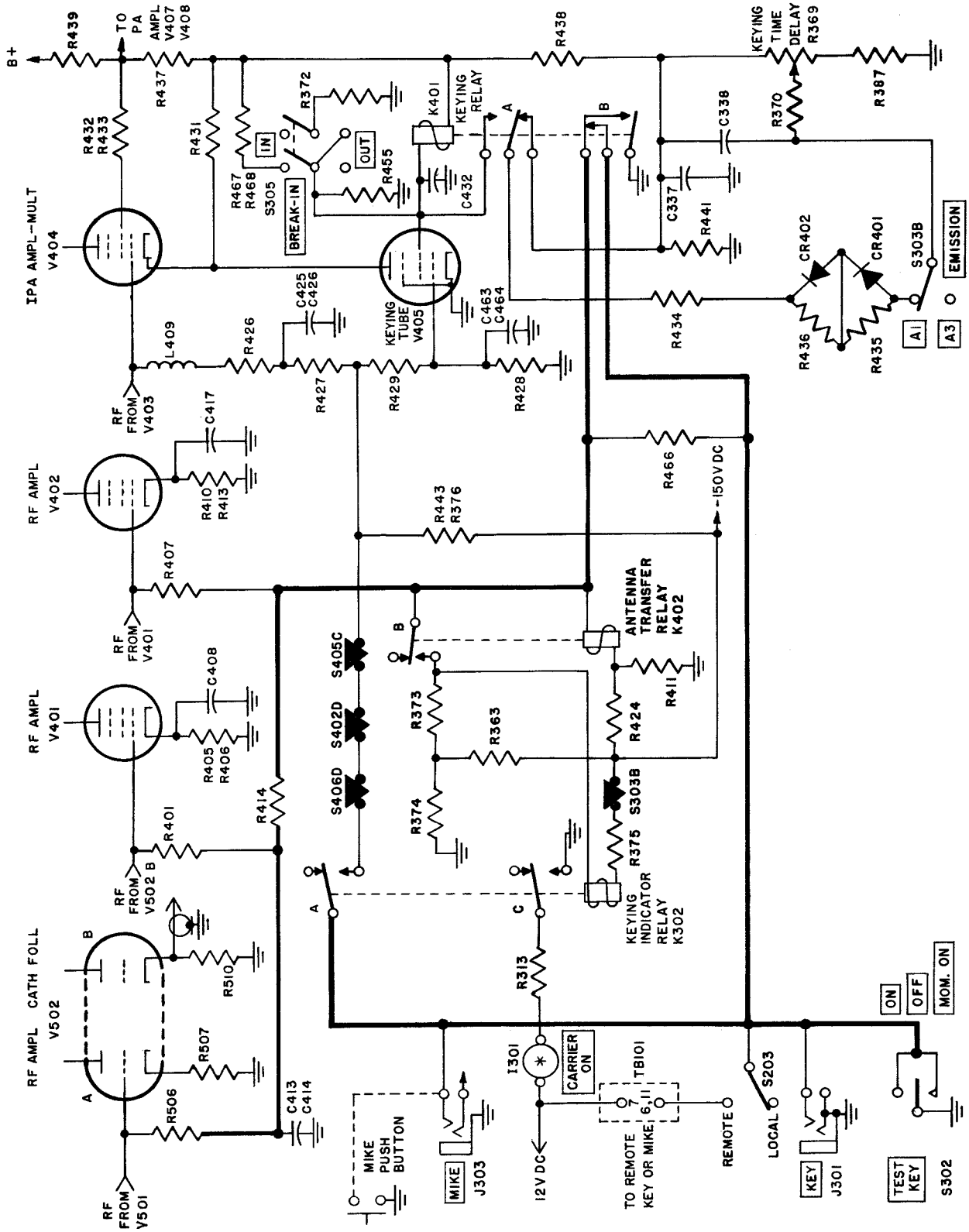


Figure 2-3. Keying Circuit

f. When using voice transmission (A-3) the BREAK-IN switch is placed in the OUT position, K401 is energized by the operation of the microphone button (push to talk) through MICROPHONE jack J303. The emission switch S303B in the A-3 position and the Time Delay circuit is removed from K401.

g. For remote operation the remote microphone push button switch or the telegraph key applies ground in the same manner, when LOCAL-REMOTE switch is placed in the REMOTE position.

5. POWER SUPPLY CIRCUITS (refer to figure 2-4).

a. The equipment operates from either a 115 or 230 volt, 50 to 60 cycles, single phase ac power source. Power is fed into the equipment at terminals 1 and 2 of terminal board TB103 and then through line filters to prevent rf noise from appearing in the line. From this point the power circuit is divided, one branch supplying the oven heating power for the R. F. Oscillator and the other branch supplying all other power required by the transmitter. For standby operation, the R. F. Oscillator oven may thus be kept energized while the remainder of the transmitter is shut down.

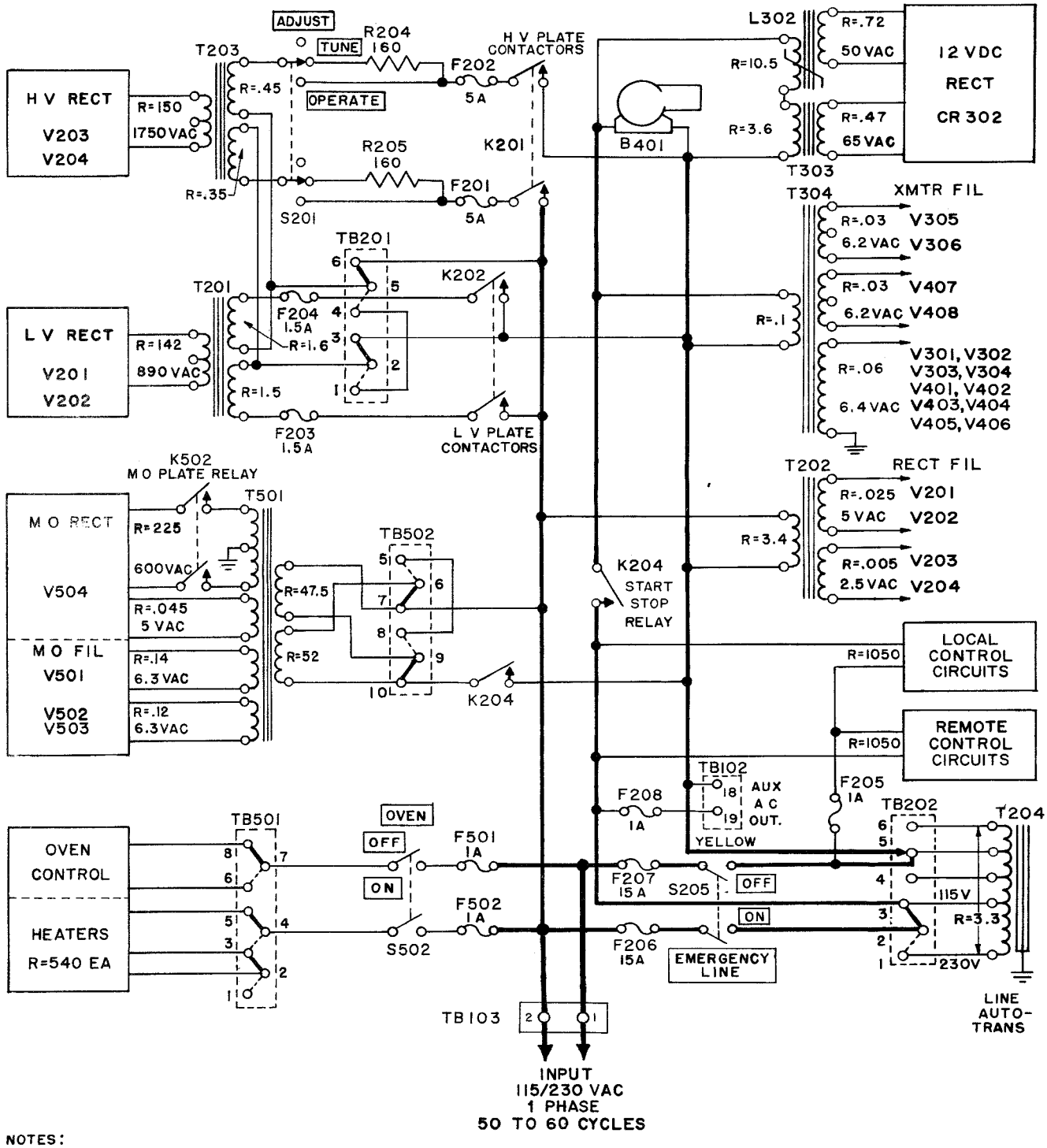
b. OVEN HEATING. - The oven heaters and control circuits are fed through line fuses F501 and F502 and OVEN switch S502 in the ON position to terminal board TB501. This terminal board is provided with three jumpers for connection to match either 115 or 230 volt supply. Jumpers in figure 2-4 are shown in the 115 volt position.

c. The second branch of the line is fed through line fuses F206 and F207 and EMERGENCY LINE switch S205 to line autotransformer T204 and to the HV rectifier, the LV rectifier and the MO rectifier.

d. Line autotransformer T204 is used to provide 115 volt power for components which cannot be used on 230 volt supply and also provides a means of line voltage adjustment. A jumper on terminal board TB202 allows the transformer winding to be matched to the supply voltage and a tap (yellow wire) can be changed to give ±10% voltage adjustment. In figure 2-4 the jumper is shown in the 115 volt position. This transformer supplies the filament transformers the local and remote control circuits (through fuse F205), the 12 volt rectifier, the blower B401 and an auxiliary ac outlet (through fuse F208) at terminals 18 and 19 of TB102.

e. FILAMENT SUPPLY. - Autotransformer T204 furnishes 115V ac to filament transformer T202 through a contact of start stop relay K204 to energize the filaments of LV rectifiers V201 and V202 and HV rectifiers V203 and V204. T204 also furnishes power to the multi-secondary filament transformer through the same contact of K204 to light all of the tube filaments in the Radio Transmitter T-557(XN-1)/SRT-17. Filaments of all tubes in R. F. Oscillator 0-332(XN-1)/SRT-17 are supplied by transformer T501 in that unit.

f. R. F. OSCILLATOR POWER SUPPLY. - Transformer T501 in the R. F. Oscillator supplies both filament and plate power for rectifier tube V504 and MO tubes V501, V502 and V503. Power is fed from the 115 or 230 volt bus through a contact of start-stop relay K204 and terminal board TB502 (jumpers shown connected for 115V operation in figure 2-4) to the primaries of T501. The center-tapped high voltage secondary of T501 is connected through contacts of MO plate relay K502 to full-wave rectifier V504 a type 5R4WGB tube. Filter choke L508 with filter capacitor C535, in connection with voltage regulator tubes V505 and V506 type OA2WA tubes, furnish filtered and regulated 300V dc for the oscillator tubes. Also a 150 volt tap-off from the regulator tubes supplies screen voltage for oscillator tube V501.



NOTES:
1. ALL RESISTANCES IN OHMS.
2. ALL FUSES BUSSMAN TYPE MIN 250V.
3. ALL FUSES LOCATED ON PP-1294 (XN-1)/SRT-17 EXCEPT F501 & F502 LOCATED ON O-332 (XN-1)/SRT-17.
4. SOLID JUMPER CONNECTIONS SHOWN FOR 115V INPUT: DOTTED JUMPERS INDICATE 230V CONNECTIONS.

Figure 2-4. Power Distribution Circuit

g. LOW VOLTAGE RECTIFIER. - The low voltage rectifier, used to supply plate and screen voltages for the lower-stage tubes and bias for all tubes except those in the R. F. Oscillator, is rated at 0.250 ampere at 550 volts. LV rectifier transformer T201 is energized at 115 or 230 volts through contacts of LV plate contactor K202 and terminal board TB201 (with the proper jumper connections to match the input voltage) and through fuses F203 and F204. Transformer T201 the two rectifier tubes V201 and V202, type 5R4WGB, with the plates paralleled in a full-wave center-tapped rectifier circuit. The rectified dc is filtered in a two-section choke-input filter consisting of filter chokes L201 and L202 and capacitors C201, C202 and C203.

h. BIAS VOLTAGE. - (Refer to figure 2-5.) The dc bias voltage of minus 150 volts is established from the negative side of the LV filter circuit to ground. When the transmitter is keyed, the keying indicator relay, K302, is energized. Contact "C" of K302 completes the CARRIER ON indicator circuit, which gives a visual indication that carrier is present. At the same time, the bias voltage is developed between a combination of resistors: R373, R374, R363 and R379 in parallel with R203; to provide a constant bias supply of minus 150 volts. The ground return for this voltage is through the cathodes of the various low level stages. When the transmitter is not keyed, the bias voltage is developed across R377 and R378 to ground through contact "C" of K302. In this manner, a constant bias supplied to both modulator tubes and power amplifier tubes is assured in either "key up" or "key down" condition. The amount of bias voltage supplied to the modulators in controlled through MOD. BIAS ADJ., and additionally filtered by an RC circuit consisting of R424, C427 then R363 and C332. The power amplifiers receive bias voltage directly from selenium rectifier CR301, which smooths out the ripple to provide more steady dc voltage to the grids of V407 and V408.

i. HIGH VOLTAGE RECTIFIER. - The high voltage rectifier, used to supply plate power to the PA and modulator tubes, is rated at 1500 volts, 0.250 ampere, dc. HV rectifier transformer T203 is fed through HV plate contact-or K201 in the closed position, fuses F201 and F202, the ADJUST-TUNE-OPERATE switch S201 in the TUNE or OPERATE position and terminal board TB201. When in the TUNE position S201 inserts resistors R204 and R205 in series with the primary of T203, reducing the voltage applied to the PA tube plates during the transmitter tuning process. The center-tapped secondary of T203 feeds the full-wave rectifier consisting of tubes V203 and V204, type 3B28 half-wave rectifiers. A two section choke-input filter consisting of filter chokes L203 and L204 and capacitors C205 and C206 is used. Bleeder resistors R206, R207 and R208 in series across the dc output provide protection against charged filter capacitors and improve the regulation of the rectifier.

6. CONTROL CIRCUITS.

The control circuits include those for application of power, protection of personnel and equipment, and provision for remote operation as shown in simplified form in figure 2-6, and complete in figure 7-17.

a. The oven control circuit in the R. F. Oscillator are fed directly from the 115 and 230 volt power source with provision for placing resistors R515, R516 and R517 in the circuit when 230 volts is used. OVEN switch S502 controls application of power to the control circuit as well as the oven heaters. Relay K501 is fed through rectifier CR501 and line dropping resistors R513 and R514. Operation of heater-control relay K501 is controlled by the mercury-in-glass thermostat S501 which opens the relay when the oven reaches temperature (70^{o} C).

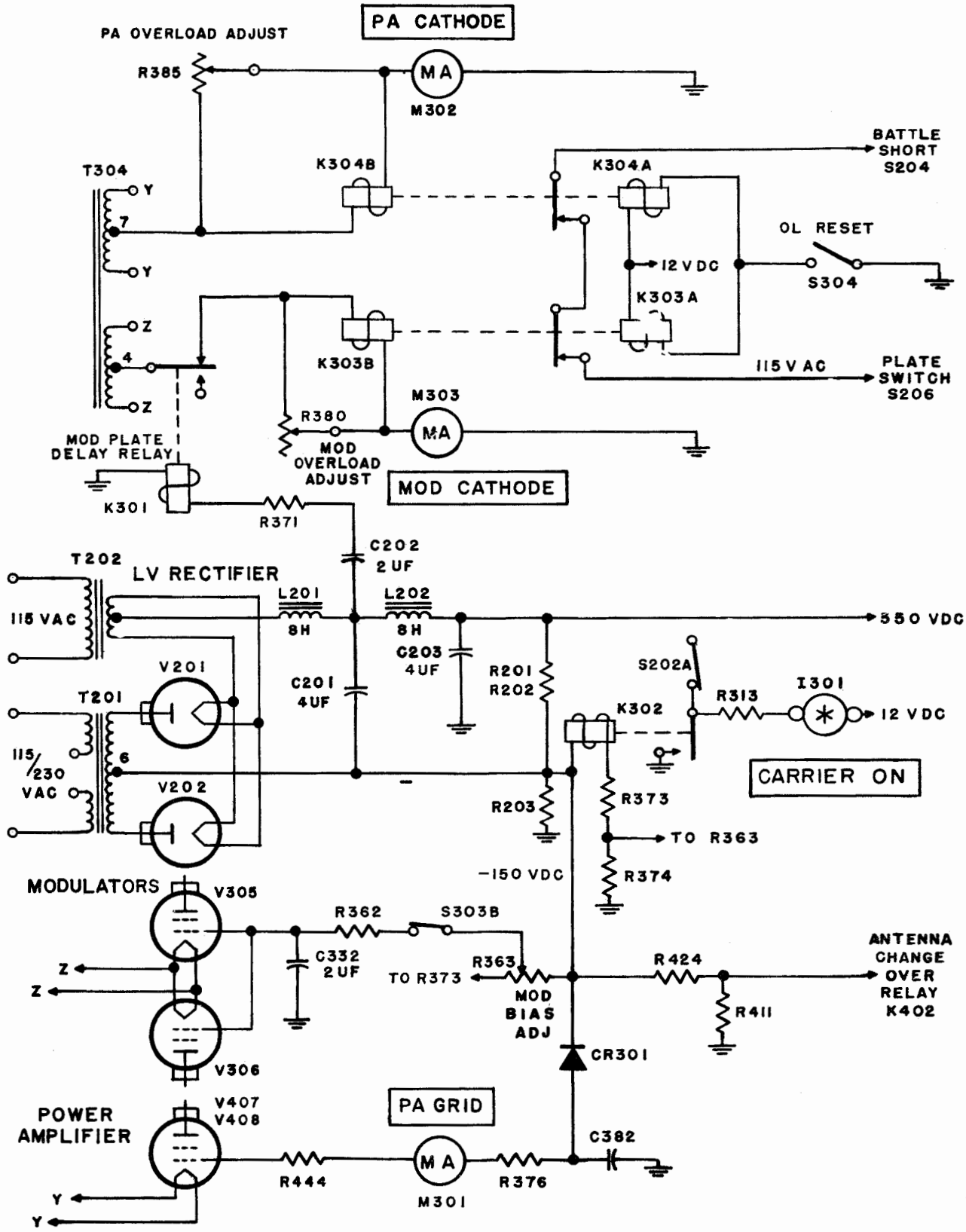


Figure 2-5. Bias Supply Circuit

b. The main local and remote control circuits are fed 115 volts through line autotransformer T204, regardless of whether the input voltage is at 115 or 230 volts thus, when EMERGENCY LINE switch S205 is closed, the autotransformer is energized at 115 or 230 volts and the transformer energizes the control circuits. Pressing the START button S207 energizes start-stop relay K204, closing its contacts, and the relay remains energized over its holding contact. When the STOP button is pressed this relay is momentarily shorted, de-energizing its coil and opening the contacts where it remains until the START button is again pressed. When K204 closes, time delay relay K203 is energized and its motor starts. At the end of the delay time (30 seconds or more) the relay closes its contacts. Placing the PLATE switch in the ON position completes the ac voltage path to the high and low voltage plate contactors K201 and K202, and the MO plate contactor K502. If, however, any of the interlock switches S101, S102, S103 are open or plate overload relay K304 and modulator overload K303 have not closed, the contactors K201, K202 and K501 will not close. The conditions and operation of this protective circuit are discussed in paragraph c below. With high voltage plate contactors closed the high voltage rectifier is energized when the ADJUST-TUNE-OPERATE switch S201 is in either the TUNE or OPERATE position. LV plate contactor K202 in the closed position energizes the LV plate rectifier. MO plate contactor K502 applies plate power to the tubes in the R. F. Oscillator.

c. PROTECTION. - The equipment is provided with protective devices and circuits to prevent damage to equipment or injury to personnel due to shorts, overloads, or by coming in contact with dangerous high voltage. The circuits are shown in figures 2-6 and 7-17, and are described below:

(1) Fusing - Primaries of transformers are fused to protect against shorts or overloads. The control circuit is fused separately for the oven control and the autotransformer.

(2) Time Delay - Time delay relay K203 prevents application of plate power until the tube filaments have had time to warm up. The delay time is adjustable up to 60 seconds and should not be less than 30 seconds.

(3) Modulator Plate Delay - To prevent excessive plate current flow in the modulator tubes V305 and V306, the coil of modulator plate delay relay K301 is connected in series with capacitor C202 across the LV rectifier output. Since the plate voltage would appear at the modulator tubes a very short time before the screen voltage appears, it is necessary to delay plate current flow until the proper screen voltage is developed. When the LV rectifier is energized, the changing current through C202 energizes relay K301. This opens the modulator cathodes circuit. The circuit is restored within a very short time, when C202 becomes charged, but sufficient time has elapsed for the proper screen voltage to be applied to V305 and V306.

(4) Plate Overload - Plate overload relay K304 removes plate power if the PA tubes are overloaded. The operating coil of K304 is in the ground lead of the PA cathode circuit shunted by resistor R384 and potentiometer R385 allowing adjustment of the relay operating current. Reset of this relay is explained in the following paragraph.

(5) Modulator Overload - Modulator overload relay K303 operates in the same manner as the above mentioned plate overload relay. The operating coil of K303 is in the ground lead of the modulator cathodes and is shunted by resistors R381, R382 and potentiometer R380, allowing adjustments of the relay operating point. An O. L. RESET switch S204, is located on the front panel of the Radio Transmitter to energize the reset coils on both the plate and modulator overload relays. To reset the overload relays after operation, reset coil K303A and K304A are energized by manually closing the O. L. RESET switch, which connects the reset coil to the 12 volt dc supply.

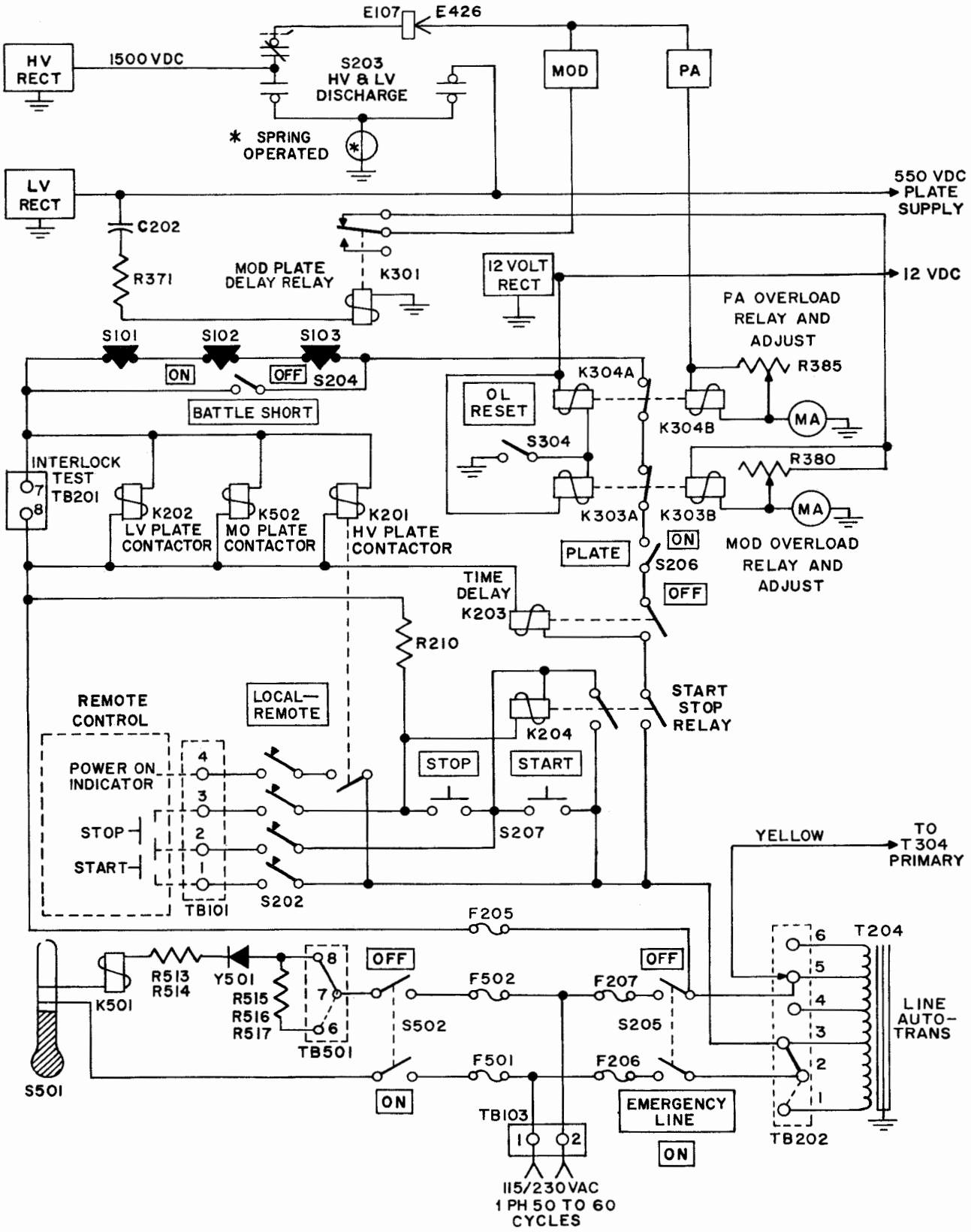


Figure 2-6. Control and Protection Circuits

(6) Interlocks - Application of plate power, when one of the units is out of the cabinet is prevented by the cabinet interlocks S101, S102 and S103. These are sensitive-type switches mounted on the left front of the cabinet so that they are closed only when the front panels are in place. These interlocks are connected in series with the coils of plate power contactors K201, K202 and K502, all three interlocks must be closed before the contactors can be energized. The BATTLESHORT switch S204 in the ON position shorts out the interlocks in case of erratic operation or failure of the interlock switches due to excessive shock such as from gunfire. Connections for an external voltmeter for use in checking the interlock circuit is provided at terminals 7 and 8 on terminal board TB201.

(7) Interlock switches are also provided in series with the keying circuit on BANDSWITCH S402, ANTENNA RANGE switch S405, EMISSION switch S303 and ANTENNA TAP switch S406. When rotating these switches the keying ground is removed from tubes V404 and V405 and cut-off bias voltage is applied. This prevents rf voltage from appearing at these switch points, thus arcing during switching is eliminated.

(8) HV Shorting Switches - A spring-return push switch S203, is provided to ground the high side of the HV and LV rectifier outputs as additional protection. When the Power Supply unit is withdrawn from the cabinet, S203 will ground the 1500 and 550V dc supplies. When separating the upper section of the Radio Transmitter unit from the lower section, HV power is interrupted through the use of two "banana type" connectors. The 1500V dc supply to the plates of the modulator is connected by J402 to J305. The 1500V dc supply to the PA plates is, in the same manner, connected by J405 to J307.

d. PROVISION FOR REMOTE OPERATION. - Refer to figures 2-6 and 3- . - When remote operation of start-stop control of the transmitter is desired, a standard "six-wire remote control unit" similar to Navy type 23423 is connected to terminal board TB101, terminals 1 and 2 are for the start function, terminals 2 and 3 for the stop function and terminal 4 is for a power-on indicator at the remote location. With the LOCAL-REMOTE switch, S202, in the REMOTE position, the remote start and stop buttons are in parallel with the START and STOP buttons in the transmitter and operate start-stop relay K204 in the same manner. The remote power-on indicator is energized over a closed contact of K204. In order to use remote control of stop-start, it is necessary to first tune the transmitter, and then leave the EMERGENCY-LINE and PLATE switches in ON position and place the ADJUST-TUNE-OPERATE switch in the OPERATE position to set up for automatic start.

7. MEASUREMENT AND INDICATION CIRCUITS. *

The various circuits for measurement of current, indication of operating functions, and monitoring the transmitter are shown in the schematic, figure 7-17.

a. MEASUREMENT OF CURRENT. - Three panel-mounted meters are provided and provision for connection of a fourth meter for test purposes is made.

(1) PA Cathode Current - PA CATHODE milliammeter M302 is connected in the center-tap return circuit of the PA secondary of main filament transformer T304 between the overload relay and ground. It reads total dc space current for the two PA tubes and is used in tuning the power amplifier and matching the antenna.

(2) PA Grid Current - PA GRID milliammeter M301 measures the dc current in the PA grid circuit which is a measure of the rf drive on the power amplifier. It is connected in the negative side of the bias supply resistor network which includes R444, R376 and R443.

(3) Modulator Cathode Current - MOD. CATHODE milliammeter M303 measures the total dc space current of the modulator tubes and is used to ascertain that the modulators are operating properly with the transmitter on A-3 emission. It is connected in the center-tap return of the modulator secondary of main filament transformer T304 between the coil of modulator relay K302 and ground.

(4) IPA Cathode Current - For use in trouble-shooting or tuning, a meter link between terminals 1 and 2 of TB402 in the cathode circuit of the IPA amplifier-multiplier V404 can be removed and a 0-100 ma dc milliammeter inserted to read IPA cathode current.

(5) Interlock Test - A 0-150V ac meter may be connected to terminals 7 and 8 of TB201 to check the interlock circuit as explained in Section 7, paragraph 1 c (2).

b. INDICATION CIRCUITS. - The completion of operating functions is indicated by lamps on the front panel of the equipment as follows:

(1) FILAMENT ON indicator I202 (white) - indicates when filaments are energized and is connected across the untapped 6.3V secondary of main filament transformer T304.

(2) PLATE ON indicator I201 (red) - indicates when the low voltage rectifier is energized and is connected in series with a closed contact of LV plate contactor K302 and energized from the 6.3V untapped secondary of main filament transformer T304.

(3) BATTLESHORT ON indicator I203 (clear) - indicates when the BATTLESHORT switch is in the ON position, shorting out the interlocks. This neon lamp is connected in series with one pole of BATTLESHORT switch S204 and limiting resistor R209 across the 115V supply.

(4) CARRIER ON indicator I301 (green) - indicates when the transmitter is keyed. At slow keying speeds the light follows the keying. At higher speeds the light stays on during "key-up" time. It is connected in series with resistor R313 and a contact of key circuit-change relay K302 in the keyed position, across the 12V power supply.

(5) OVEN ON indicator (I501) is a neon glow lamp which indicates when current is flowing through the oven heaters. The power on indicator for the R. F. Oscillator is the dial illumination indicator I502. Dimmer potentiometer, R522 in series controls the current through the dial light.

All fuses are located on the front panel of the power supply unit except two associated with the R. F. Oscillator. F501 and F502 are located on the front panel of the R. F. Oscillator. All fuses are of the small indicating-pin (red) type.

c. MONITORING THE TRANSMITTER. - In order to monitor the transmitter for frequency measurement, the frequency measuring equipment may be placed close to the R. F. Oscillator, and the fundamental frequency may be checked. Also, the frequency measuring equipment may be loosely coupled to the antenna, and the reading divided by 1, 2, 4 or 8 depending upon the transmitter frequency band in use. Receiver output for "break-in" operation only, can be connected to J404. For listening purposes, however, no connection need be made to the transmitter. To monitor the audio signal a headset is plugged into HEADSET jack J302 on the front panel. Connection for the headset and use of the SIDE-TONE-ADJUST control are covered in paragraph 3 above.

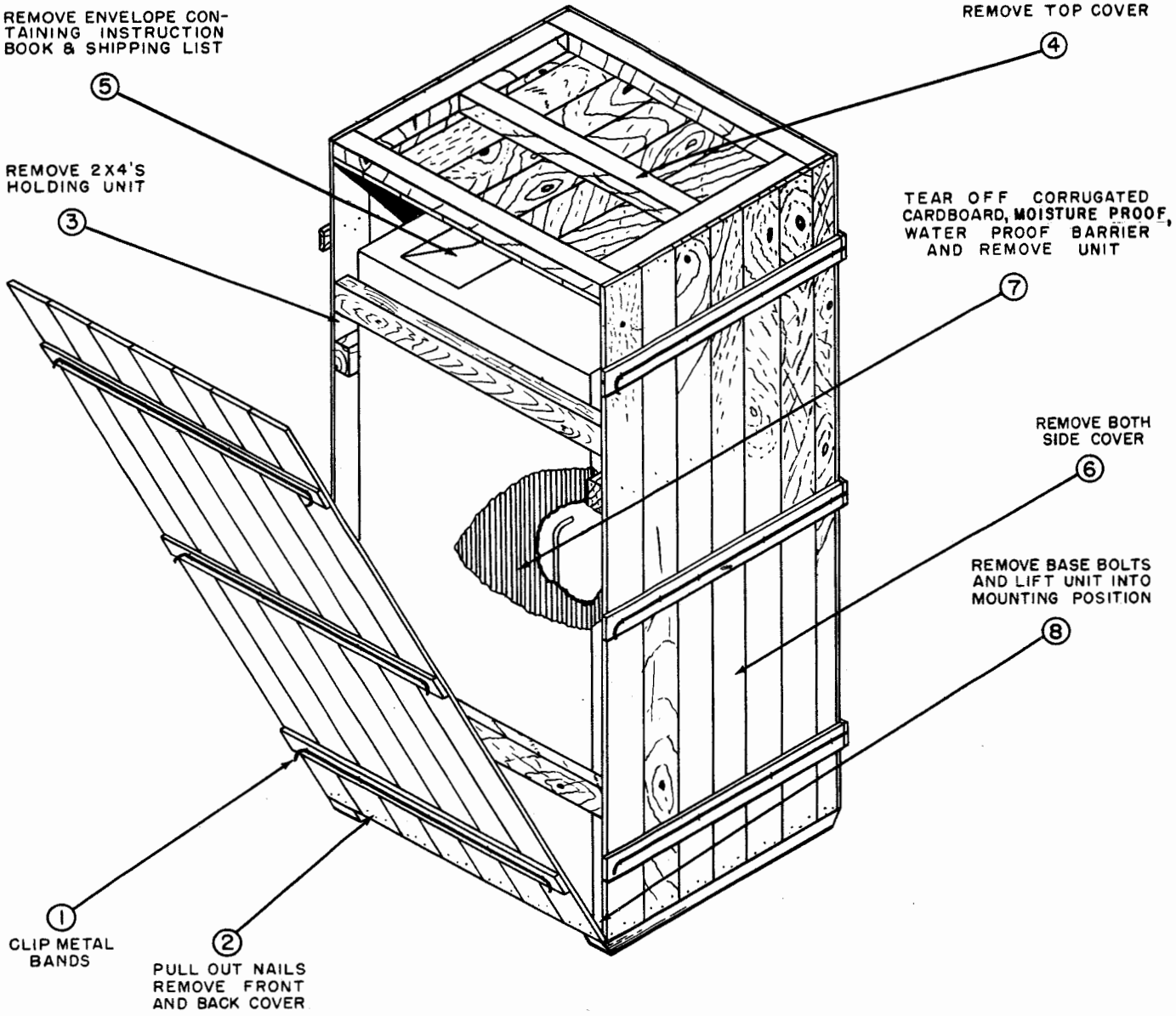


Figure 3-1. Unpacking Procedure

SECTION 3

INSTALLATION

1. UNPACKING

a. GENERAL. - The entire equipment is packed in two wooden boxes. One box contains the complete transmitter. The second box contains the spare parts box and a carton of tubes. Care should be used in opening the packing cases and removing packing materials. The use of hammers or pry-bars should be avoided to prevent damage to the equipment.

b. UNCRATING THE TRANSMITTER. - The procedure to be used in unpacking Radio Transmitting Set AN/SRT-17(XN-1) is shown in figure 3-1. The equipment packing case is marked with a list of the material contained therein. Items should be checked against this list or against the contractor's shipping list included with the Instruction Book in an envelope attached to the equipment.

2. WITHDRAWAL OF UNITS FROM THE CABINET

a. The Power Supply, R.F. Oscillator and Radio Transmitter units slide in and out of the cabinet for inspection and servicing. To withdraw any one of the units from the cabinet to the service position:

(1) Loosen the thumb screws located on the front panel.

(2) Slide the unit out by pulling forward on the front handles until the stops engage. Complete withdrawal of the unit from the cabinet is prevented by the chassis slide lock.

NOTE

This will open the transmitter interlock circuit, removing plate power when the transmitter is energized.

b. RETURN OF UNITS TO CABINET. - To return the unit into the cabinet:

(1) Release the slide lock levers on each side of the chassis, disengaging the stops and push the unit in at the same time.

(2) Tighten the thumb screws on the front panel.

3. INSPECTION OF EQUIPMENT.

a. Immediately after unpacking the equipment, examine it to determine whether any shipping damage has occurred.

(1) Check the switches and control knobs on the front panel to see that they are tight on their shafts. Bristol set-screw wrenches are provided for tightening the set-screws. These wrenches (H202, H203, H204, H205) are mounted on clips inside Power Supply PP-1294(XN-1)/SRT-17.

(2) Loosen the thumb screws and slide the units out one at a time.

WARNING

NEVER WITHDRAW THE POWER SUPPLY UNLESS THE TRANSMITTER IS SECURELY MOUNTED TO BOTH TABLE AND BULKHEAD OR USE BLOCKS TO SUPPORT THE FRONT OF THE UNIT.

(3) Examine the vacuum tubes and sockets for damage. Examine all exposed parts and wiring for any obvious defects, such as cracked insulation and shorted or loose wires.

(4) Repeat (1), (2) and (3) for each unit.

(5) Open the Spare Parts Boxes and examine the contents for any obvious damage.

4. INSTALLATION.

a. LOCATION OF EQUIPMENT. - When selecting a permanent location for the transmitter, the following should be given consideration:

(1) Weight of the Equipment: The transmitter weighs approximately 418 pounds. Make certain that the mounting table or deck will support the added weight of the transmitter.

(2) Space Around the Transmitter: There must be adequate space in front of the transmitter to allow for withdrawal of the units from the cabinet. Refer to figure 3-2.

(3) Adequate Ventilation: Cooling air is taken in at the bottom of the cabinet and exhausted through the top rear. Make sure that intake and outlet are not blocked.

(4) Proper Mounting: The transmitter should be mounted on a level base which is not subject to vibration.

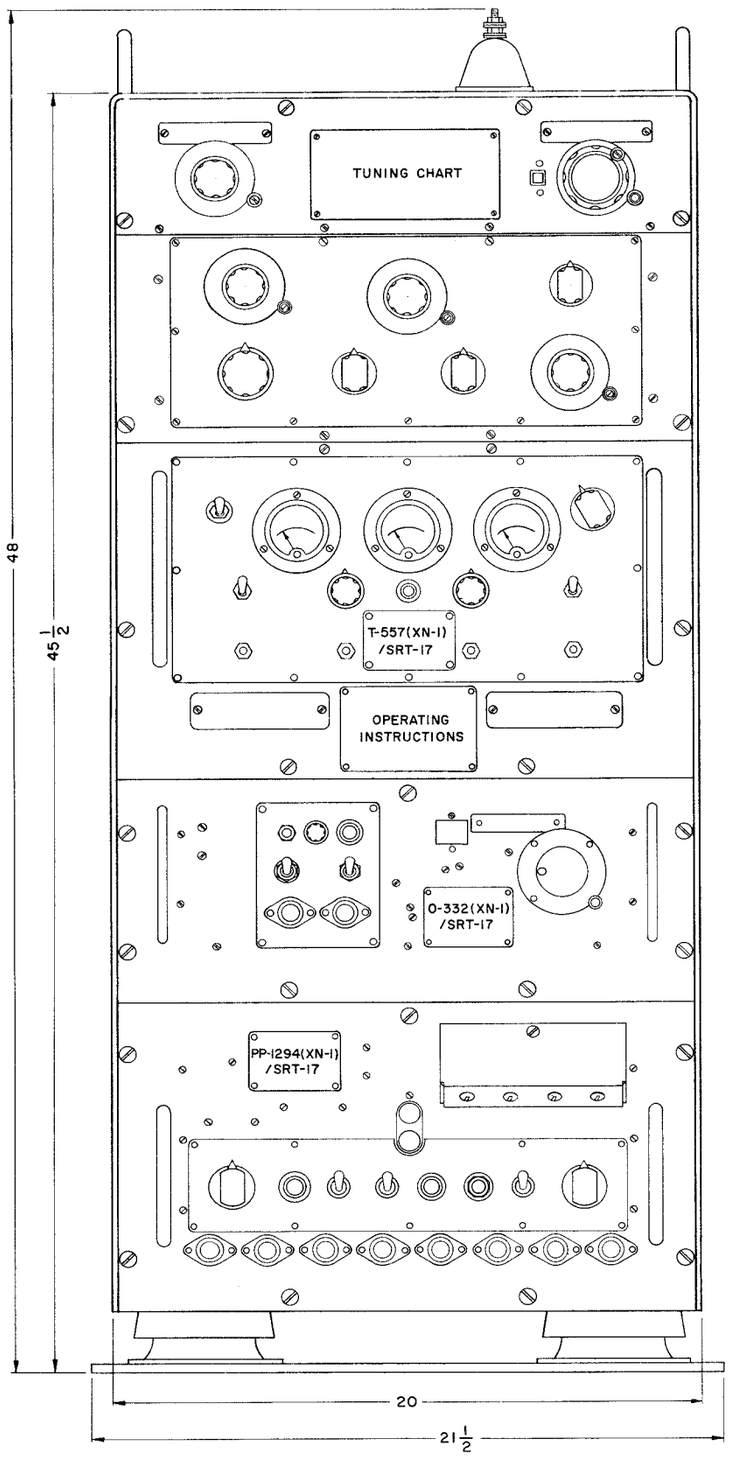
(5) External Connections: Provide sufficient space for power supply cable and remote control cable connections. Antenna connections should be brought in as directly as possible, and the transmission line properly supported. Ground straps should be as short as possible.

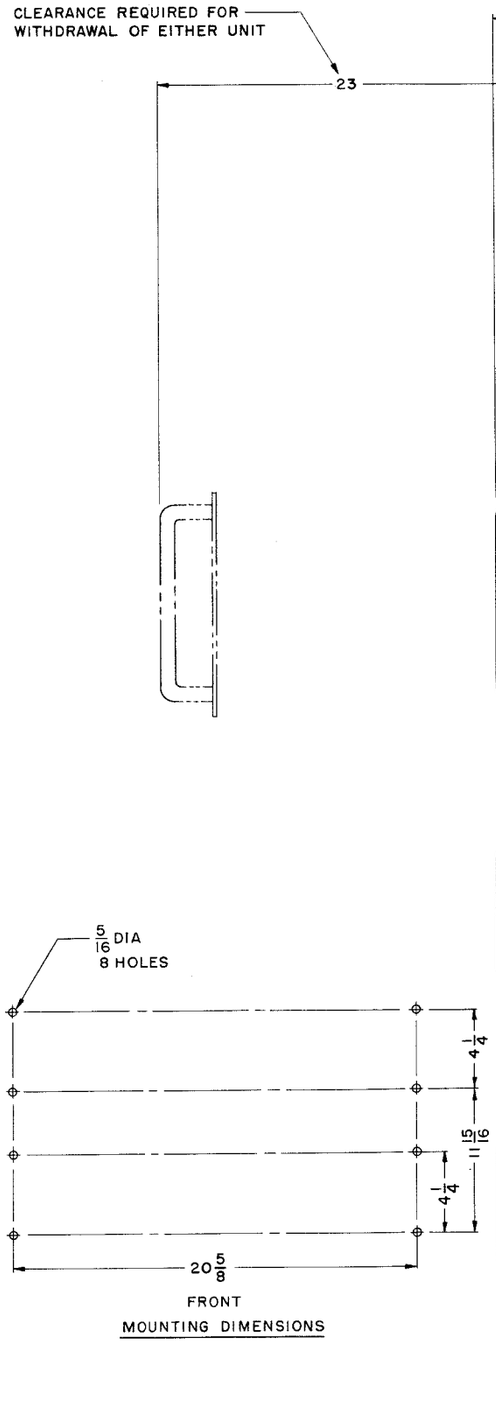
b. MOUNTING. - Refer to figure 3-2 for overall and mounting dimensions. The cabinet is provided with shock and vibration mounts at the base and is arranged for snubbing shock and vibration through mounts located at the upper rear of the cabinet. These snubber mounts are to be attached to the adjacent bulkhead. Care should be exercised in marking and drilling the mounting holes. The following bolt sizes are recommended for mounting:

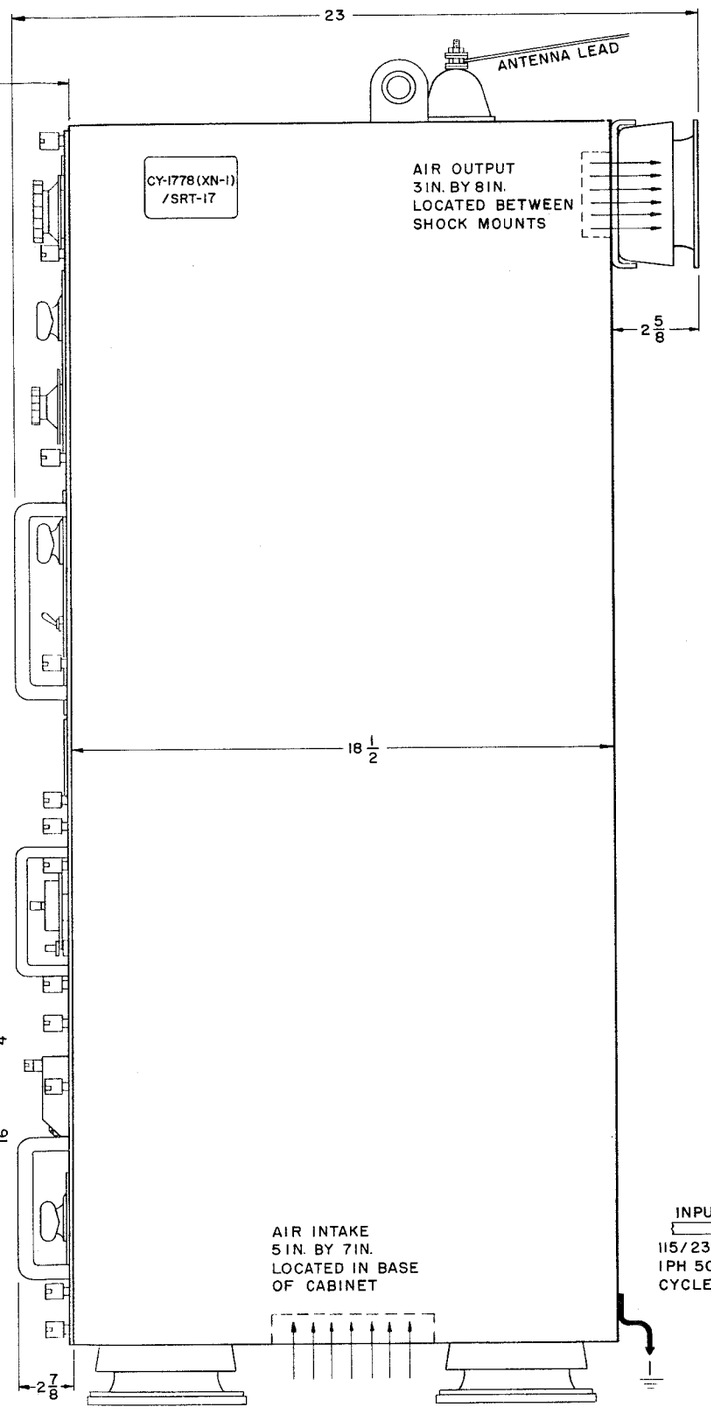
(1) Four 5/16 - 18 thread machine bolts are to be used for cabinet base mounting.

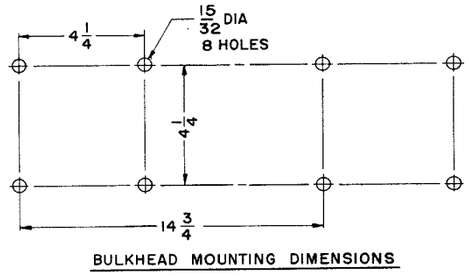
(2) Eight 1/4 - 20 thread machine bolts are to be used to secure the snubber brackets to the bulkhead.

c. EXTERNAL CABLING. - Cable entrances are provided at the rear of the cabinet. Remove access plates to mount cables. Refer to figure 3-3.









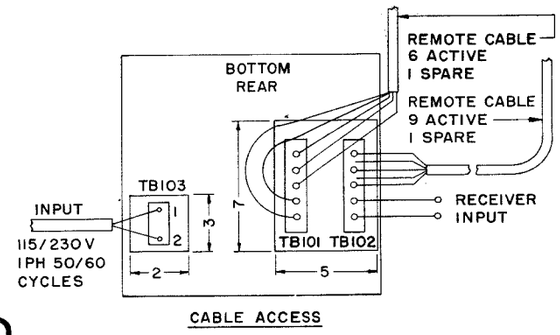


Figure 3-2. Outline and Mounting Dimensions

(1) The rear entrance plates should be marked and drilled to fit the desired cables. It is recommended that stuffing glands be incorporated to protect the cables. The cables should be clamped securely to the access plate after installation.

(2) When remote control of the transmitter is desired, connect the remote control cables to terminal boards TB101 and TB102 as shown in figure 3-4.

TABLE 3-1. RECOMMENDED REMOTE CONTROL CABLES

For Terminals	Cable Type	Number of Leads to each terminal	Spare Conductor
1 to 6 Inclusive 9, 10 and 11	MHFA-10	1	1
7, 8 and 12	MHFA-7	2	1
13 and 14	TTHFWA-1-1/2	1	1

(3) Connect the input power line (DHFA-9) from 115/230 volts, 50 to 60 cycles, single phase, AC, power sources to TB103 terminals 1 and 2. The above cables are not supplied by the contractor.

(4) For the purpose of controlling receiver protective relays or disabling devices in the receiver, contacts D on relay K302, may be wired to terminals 15, 16 and 17 on terminal board TB102 to provide operation equivalent to a SPDT switch. These contacts operate when the carrier is off. See figure 7-17.

(5) Connect receiver audio output, if available, to terminal board TB102, terminals 13 and 14.

d. GROUNDING. - A good low-resistance ground system is essential. Failure to provide an adequate ground connection will seriously impair transmitter performance. If the vessel hull is metal, a 1 inch wide by 1/16 inch thick copper strap or braid should be run from the ground stud to the nearest point which is an integral part of the ship's metal hull. Refer to figure 3-3 for location of ground stud.

e. ANTENNA. - The antenna may be of the "T" or inverted "L" type, and should be installed "in the clear" and as high as possible. For maximum effectiveness, the longest antenna that can be resonated at the hightest frequency should be used. For example, if the transmitter cannot be resonated at its lowest frequency in the 2000 to 7500 Kc range, a longer antenna is necessary. Likewise, if resonance is not obtained at the highest frequency, a shorter antenna is needed. A suitable antenna for shipboard use would be about 54 feet long, installed at least 20 feet above the deck. The effective length of the antenna is measured from the transmitter output terminal to the far end of the antenna. The recommended wire size for the antenna is 19 strand No. 16 AWG flexible wire. An insulator of the bowl type is used to bring the antenna lead through the deck or building. The lead-in should be supported by suitable stand-off insulators (approximately 3 inches long) and high voltage cable should be used as a safety precaution.

On small vessels, a whip-type antenna at least 15 feet high is recommended. Top or bottom loading of the antenna may add to its effectiveness.

Connect the antenna line to the stud of the feed-through insulator E101 located on top of the transmitter cabinet. Copper tubing is recommended for connecting the antenna to E101.

5. INPUT POWER CONNECTION.

The transmitter is designed for operation from either a 115 or 230 volt ac power source. As shipped from the factory, it is connected for 115 volt operation. The internal connections for 115 and 230 volt operation are shown in the power distribution circuit, figure 2-4.

TABLE 3-2. CONNECTIONS FOR 115 OR 230 VOLT OPERATION

TERMINAL BOARD	LOCATION	CONNECT TERMINALS FOR	
		115V OPERATION	230V OPERATION
TB201	PP-1294(XN-1)/SRT-17 left side of chassis	2 and 3, 5 and 6	1 and 2, 4 and 5
TB202	PP-1294(XN-1)/SRT-17 left side of chassis	2 and 3, yellow wire on 4, 5 or 6	1 and 2, yellow wire on 4, 5 or 6
TB501	0-332(XN-1)/SRT-17 left side of chassis	2 and 3, 4 and 5, 7 and 8	1 and 2, 3 and 4, 6 and 7
TB502	0-332(XN-1)/SRT-17 left side of chassis	6 and 7, 9 and 10	5 and 6, 8 and 9

Terminal board jumpers are provided on terminal boards TB201, TB202, TB501 and TB502 for proper connection of the transformer primaries and oven heaters. Check that these jumpers are connected as shown in the table and reconnect them if necessary for the power source to be used in this installation.

6. INITIAL ADJUSTMENT

After the transmitter has been completely installed, the following checks and adjustments are to be made. Section 7 contains additional information on some of these adjustments and should be consulted if difficulties are encountered.

a. MECHANICAL CHECKS. - A complete and detailed inspection of the transmitter should be made before any power is applied. Check the following features:

(1) Connections: All plug and jack connections should be tight. Terminal screws on terminal boards should be tight. Refer to figure 3-5 and photographs in Section 7 for location of parts.

(2) Tubes Properly Set in Sockets: Tubes should be seated properly, clamps or shield tight and top connectors snug. Refer to Section 5, table 5-5 for location of tubes.

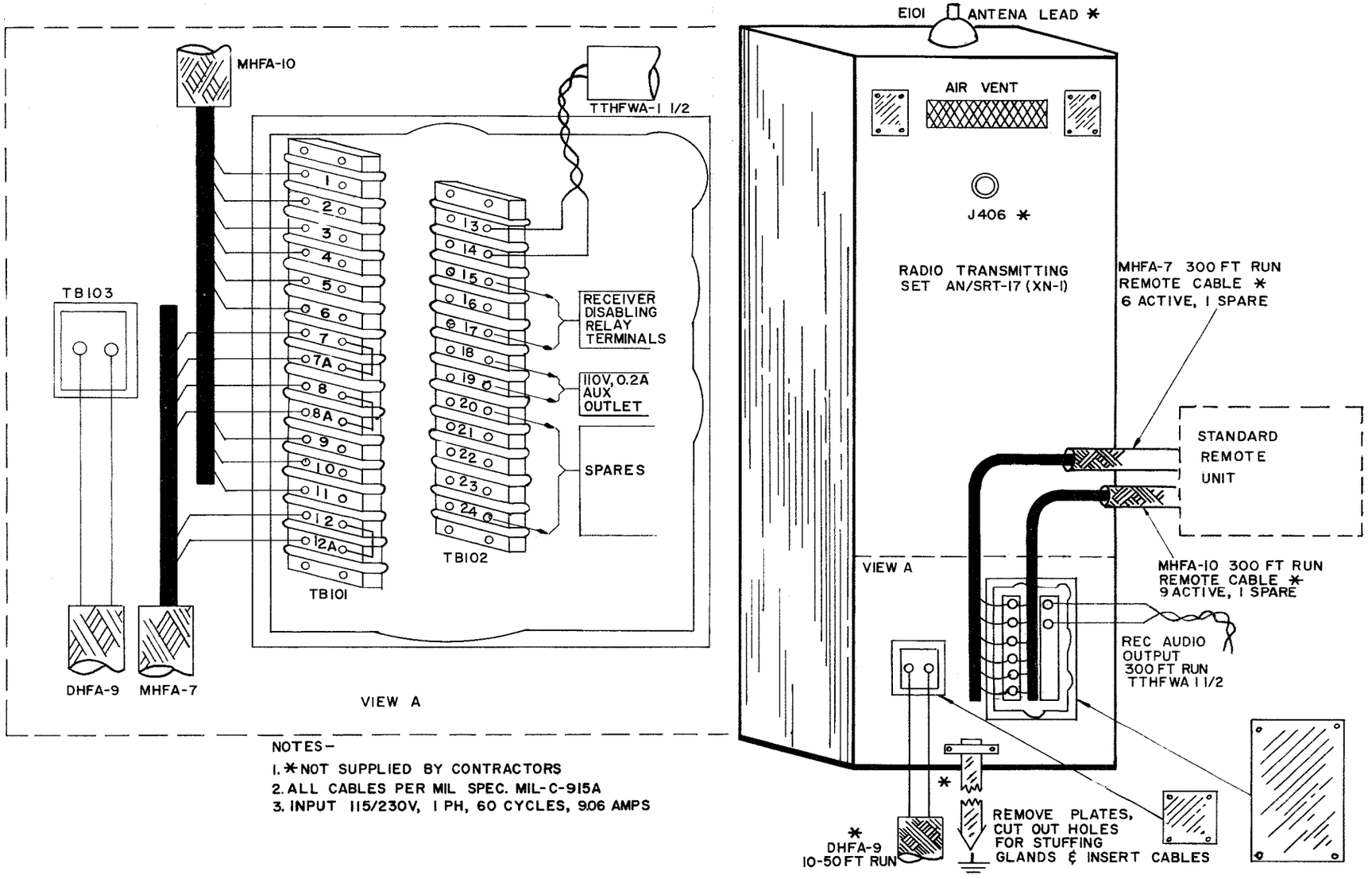
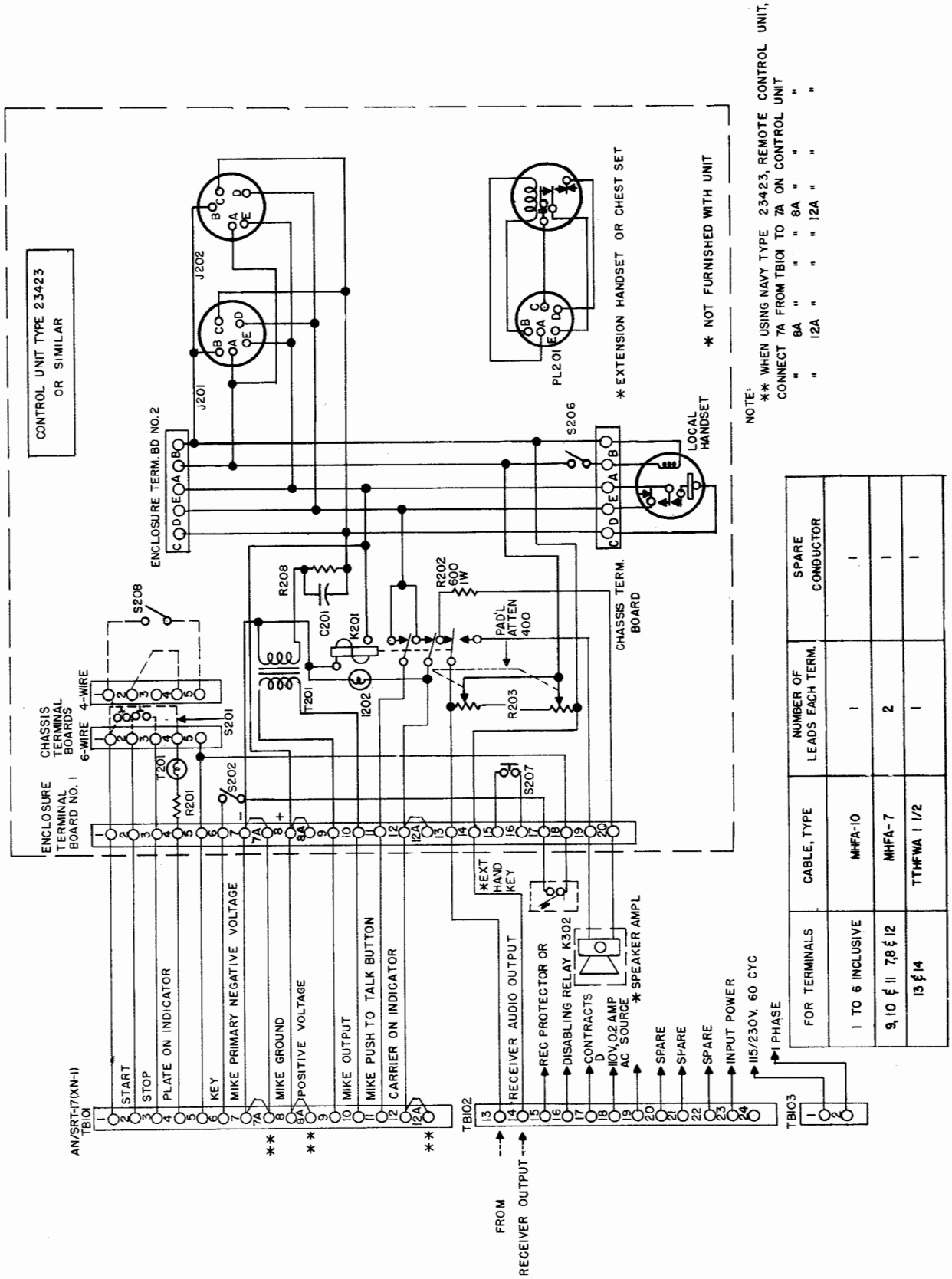


Figure 3-3. External Cabling for AN/SRT-17(XN-1)



FOR TERMINALS	CABLE, TYPE	NUMBER OF LEADS EACH TERM.	SPARE CONDUCTOR
1 TO 6 INCLUSIVE	MHFA-10	1	1
9, 10 & 11 7,8 & 12	MHFA-7	2	1
13 & 14	TTHFWA 1 1/2	1	1

Figure 3-4. Remote Control Connections, AN/SRT-17(XN-1)

(3) Fuses in Fuseholders: Fuses should make proper contact and be of proper rating. Refer to Section 5, table 5-2 for location and rating of fuses.

(4) Pilot Lamps in Socket: Remove pilot lamp caps and check that all lamps are in place and seated properly in holders. Refer to Section 5, table 5-4.

(5) Shafts and Couplings: Set must be tight.

(6) Relays Operate Satisfactorily: Manually operate all relays to check that they are free. Burnish all relay contacts using No. 0000 sandpaper or a burnishing tool.

(7) Insulators are Clean: Wipe dust off all insulators using a lint-free cloth.

(8) Toggle Switches: Operate properly.

(9) Knob Controls Operate Properly: Set-screws are tight and knob rotates through proper angular range without excess friction.

(10) Interlock Checks: Withdraw each unit to the service position and manually check that all cabinet interlock switches are free. Push the protruding plunger to make sure springs are not jammed. Also check the HV shorting switches on the individual chassis, make certain that the contacts are clean. Burnish these contact surfaces, if necessary, with No. 0000 sandpaper or a burnishing tool. Refer to Section 7 photographs for the location of interlocks and HV shorting switches.

b. ELECTRICAL CHECKS. - The best and simplest overall check of the installation wiring of the transmitter is to check the resistance to ground from each terminal connection. Use an ohmmeter (Multimeter TS-352/U series) and check between each terminal and ground for all main terminal boards. Resistance values are given in Section 7, table 7-3.

One crystal Y501, is supplied with the equipment in the Radio Frequency Oscillator. Check to see that it is secure in its socket.

7. INITIAL START-UP.

After installation of the Radio Transmitting Set has been completed (including antenna and ground connections), start the equipment up as follows:

NOTE

Before any power is applied study the normal operating procedures given in Section 4.

Step 1. Refer to Section 4, paragraph 5b and complete Steps 1 to 10 inclusive. Check that FILAMENT indicator lights. Also check that blower B401 is supplying air for cooling.

Step 2. Time delay relay K203 will commence operation the moment the START button is depressed. The delay time of this relay may be more than 30 seconds but should not be less than this value. Adjust the relay, if necessary, in accordance with Section 7, paragraph 3b(10).

Step 3. Continue with tuning procedure, Section 4, paragraph 6, Steps 11 to 25 inclusive. Check that PLATE indicator lights.

WIRE NUMBER	WIRE CONNECTS FROM	WIRE CONNECTS TO	WIRE CODE	COLOR CODE	WIRE NUMBER	WIRE CONNECTS FROM	WIRE CONNECTS TO	WIRE CODE	COLOR CODE
	INTERCONNECTING CABLE					INTERCONNECTING CABLE (cont'd)			
1	J102-2	S102-1	E	930	26	FL101	J101-25	J	983
2	J101-2	S102-1	E	930	27	TB102-14	J104-10	D	0
3	J102-3	J101-3	E	950	28	S101-1	J104-11	E	980
4	J102-4	J101-4	E	910	29	S101-1	J101-1	E	980
5	J102-5	J101-5	D	8	30	S101-2	S103-1	E	930
6	J102-6	TB102-18	D	4	31	S102-2	S103-2	E	930
7	J102-7	J101-7	D	0	32	J101-26	J104-12	E	984
8	J102-8	J101-8	E	935	33	TB101-3	J101-15	E	98
9	J102-9	J101-9	E	2	34	TB101-2	J101-16	E	96
10	J102-10	J101-10	E	9	35	TB101-1	J101-17	E	91
11	J102-11	J101-11	E	924	36	TB101-9	J101-18	E	954
12	J102-12	J101-12	E	5	37	TB102-19	J101-19	E	913
13	J102-13	J101-13	E	920	38	TB102-12	J101-20	E	95
14	J102-14	J101-14	E	936	39	TB101-4	J101-21	E	93
15	J102-15	TB102-13	E	98	40	TB101-6	J101-22	E	968
16	J102-16	TB102-17	E	96	41	TB101-6	TB101-11	E	968
17	J102-17	TB102-16	E	91	42	TB101-7	J101-23	E	912
18	J102-18	TB102-15	E	954	43	TB101-5	TB101-14	E	0
19	J102-19	J104-6	E	913	44	TB101-5	TB101-8	E	0
20	J101-27	J104-1	E	4	45	TB101-10	TB101-8	E	0
21	J101-28	J104-2	E	904	46	TB102-18	J101-6	D	4
22	FL102	J104-3	D	981		SUPPLEMENTARY WIRES			
23	FL102	J101-24	J	981	47	E107	Bumper for S203	D	0
24	P101	J104-4	U	coax.	48	E106	External ground	3/4 in. X .032 in.	Copper Strap
25	FL101	J104-7	D	983					

NOTES:

1. FOR WIRE AND COLOR CODE SEE WIRING CODE FIG. 7-25
2. W-101 TEST CABLE ASSY #16 AWG 28 CONDUCTOR.
3. W-102 TEST CABLE ASSY #20 AWG 30 CONDUCTOR.
4. W-103 TEST CABLE ASSY #16 AWG 12 CONDUCTOR. INCLUDING 1 RG58/U COAXIAL CONDUCTOR.
5. J103 NOT USED

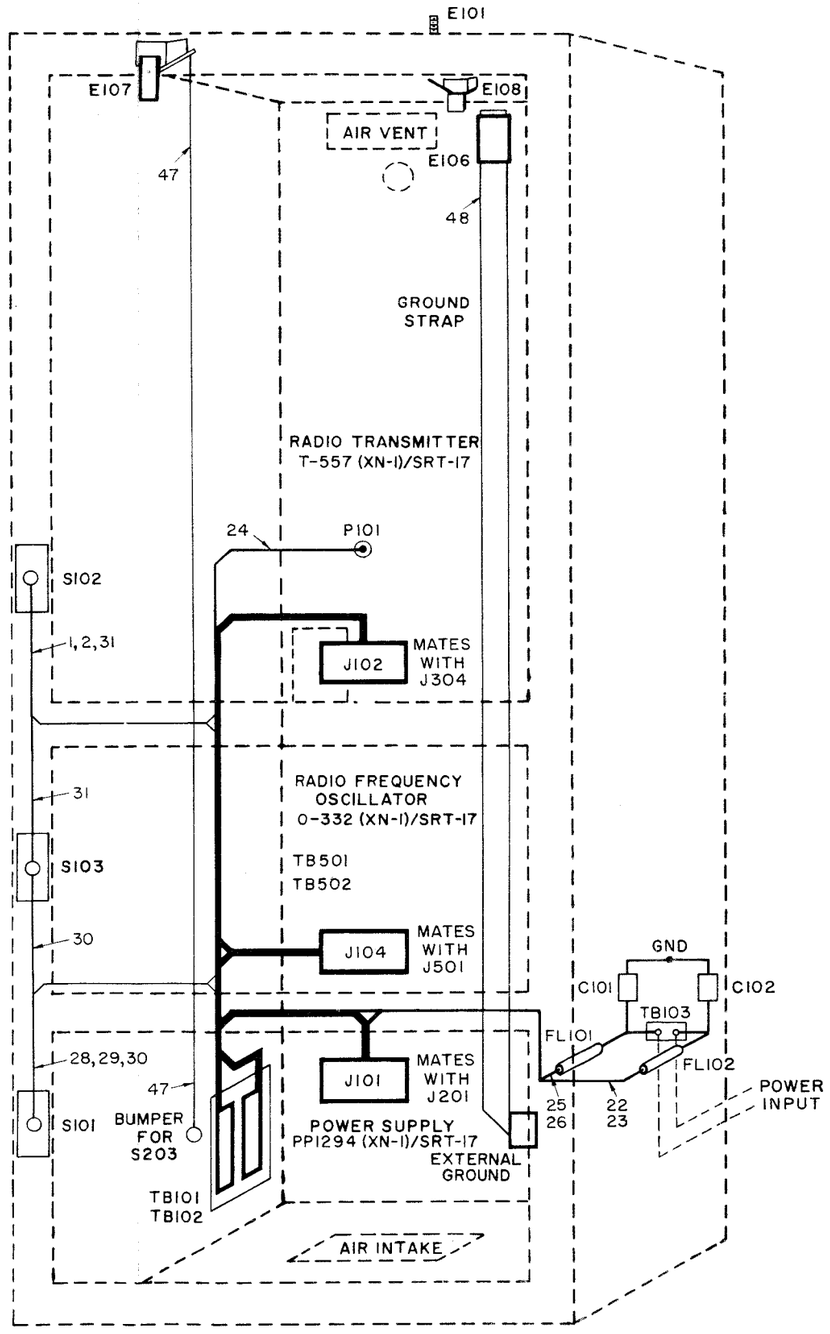


Figure 3-5. AN/SRT-17(XN-1) Internal Cabling Diagram

Step 4. Check the interlock circuit with a Multimeter TS-352/U series or equivalent as described in Section 7, paragraph 1c(2). Connect the meter to terminal board TB201, terminals 7 and 8.

Step 5. Plate BATTLE SHORT switch in ON position; the indicator light will glow. Return the BATTLE SHORT switch to the OFF position.

8. INITIAL TUNING.

a. After completion of the above checks of the power controls, continue to tune the transmitter beginning with Step 26 and through Step 30. Load out the transmitter in accordance with Section 4, paragraph 7.

NOTE

Choose the lowest operating frequency and then repeat for each of the other assigned frequencies. Record dial readings on TUNING CHART on transmitter front panel.

b. Check that the transmitter is operating properly for A-3 emission in accordance with Section 4, paragraph 8.

c. Check that the O. L. RESET operates. Detune the P. A. TUNING control. This will overload the P. A. tubes. Overload relay K304 will operate, removing plate power. Reset P. A. TUNING to original value. Press the O. L. RESET switch to energize the reset coil and place the transmitter back into operation. Adjust the O. L. RESET, if necessary, in accordance with Section 7, paragraph 3b(3).

d. Check the ANTENNA TAP, ANTENNA RANGE and BAND SWITCH, one at a time, by slowly rotating the switch to its next position. The interlocks attached to the switch will remove ac voltage from the plate supply as shown by a sharp decrease on the P. A. CATHODE meter. The PLATE indicator light will also go out momentarily.

e. Check the operation of the transmitter from the remote control unit (if used). Refer to Section 4, paragraph 10 and complete Steps 1 to 6 inclusive.

9. TRANSMITTER PERFORMANCE TESTS.

Before the transmitter is used under service conditions, perform the following final tests:

a. TYPE AND QUALITY OF EMISSION. Use a communications receiver as a monitor. Two methods are available, either connect the receiver audio output to terminals 13 and 14 of terminal board TB102 and insert headphones in the HEADSET jack located on front panel of Radio Transmitter T-557(XN-1)/SRT-17 or use a nearby receiving station to monitor the signal. Tune the receiver to the operating frequency of the transmitter. Key the transmitter manually and also with an automatic keyer. Check the quality of the signal for key-clicks and lilt. With the transmitter operating at full power on voice modulation, compare the MOD. CATHODE meter reading with the typical values given in table 4-6. Adjust the MOD. GAIN control to the operator's speaking level and then increase or decrease in accordance with the amount of background noise present. Place the LIMITER in the IN position to provide high level modulation without over-modulating the output signal. Check the quality of emission on a monitor receiver.

b. RF POWER OUTPUT. With the transmitter operating on A-1 at full power, check the P. A. CATHODE meter and the P. A. GRID meter readings against the inspection test data or table 4-6. Repeat for full power output on A-3 operation.

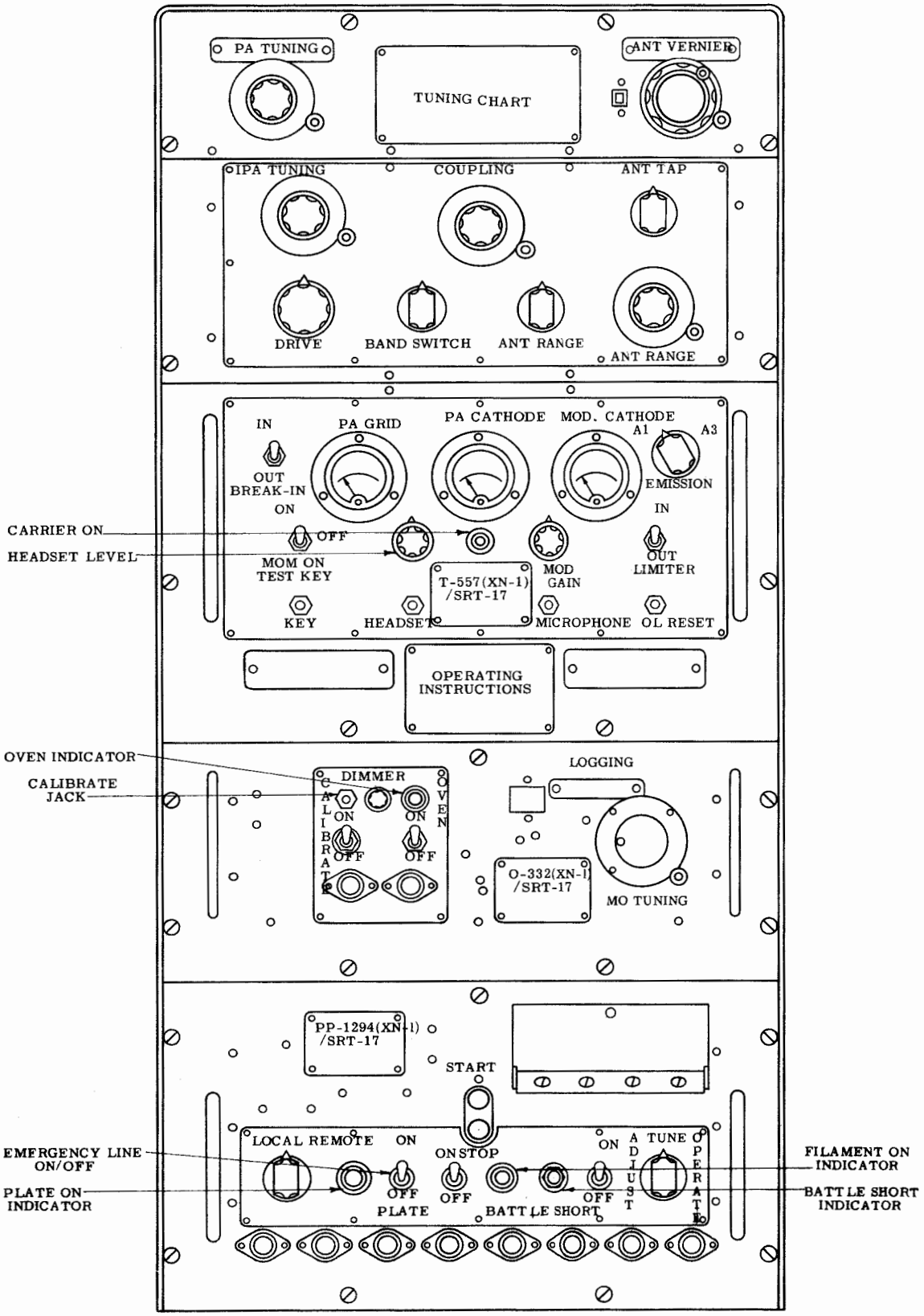


Figure 4-1. Location of Controls on AN/SRT-17(XN-1)

SECTION 4

OPERATION

1. INTRODUCTION

a. Radio Transmitting Set AN/SRT-17(XN-1) is designed for continuous duty in conventional A-1 operation using on-off keying of CW (telegraph) and for A-3 phone (voice) transmission in the frequency range of 2 mc to 30 mc. The transmitter frequency range is divided into nine frequency bands. Refer to table 4-1. The equipment operates on 115/230 volts, 50 to 60 cycles, single phase ac power. The nominal output power is 100 watts on A-1 emission and 75 watts on A-3 emission. An antenna at least 20 feet above the deck and about 54 feet long is recommended for use on shipboard over the operating frequency of 2 to 30 mc. However, the transmitter is designed to work into longer or shorter antennas having any value of resistance between 5 ohms and 1800 ohms, together with any value of reactance between plus 2000 ohms (inductive) and minus 2000 ohms (capacitive).

TABLE 4-1. BAND SELECTION CHART

BAND SWITCH POSITIONS (S402)	FREQUENCY IN Mc.
1	2-2.75
2	2.75-3.75
3	3.75-5.25
4	5.25-7.5
5	7.5-10
6	10-15
7	15-20
8	20-26
9	26-30

b. The transmitter uses a continuously tuned master oscillator, broad-band amplifiers, intermediate power amplifier, power amplifier and the associated output network. All stages except the broad-band amplifier-multipliers are manually tuned. The R. F. Oscillator provides the desired fundamental frequency in the range of 1.875 to 3.75 mc. With the transmitter BAND SWITCH set at the position shown in table 4-1 for the range covering, the desired carrier frequency, the amplifier-multiplier circuits are set up to

multiply the fundamental to produce the desired carrier. To determine the proper master oscillator frequency, divide the desired output frequency by the multiplying factor shown in table 4-2 for the appropriate frequency range.

TABLE 4-2. FREQUENCY MULTIPLICATION FACTOR

OUTPUT CARRIER FREQUENCY RANGE IN Mc.	MULTIPLICATION FACTOR
2.0 to 3.75	1
3.75 to 7.5	2
7.5 to 15.0	4
15.0 to 30.0	8

NOTE

Before attempting to tune or operate the equipment, the operator should familiarize himself with the functions and location of all meters, knobs, tuning dials, switches and pilot lights. Refer to table 4-3.

2. OPERATIONAL FEATURES.

a. This transmitter is designed and constructed to give reliable performance where installation space is small and vibration, shock, salt spray and other adverse conditions exist, such as encountered on small vessels.

b. This transmitter is arranged for direct connection to the antenna lead-in. No transmission line or other coupling circuits are required. The antenna is connected to the ceramic bushing at the top center of the transmitter. Through the use of a transfer relay, the same antenna is used for the station receiver.

c. A-1 operation (CW) or A-3 emission (telephone transmission) may be readily selected by the EMISSION switch. Provisions have been made for connecting a standard "six wire remote control" unit to terminal board TB101 to provide for starting, stopping, keying and phone transmission. This is accomplished when the LOCAL-REMOTE switch, at the transmitter, is in the REMOTE position.

d. Overall protection of the equipment against electrical surges, short-circuits and overloads is provided by overload relays and a bias failure relay. In addition, ac input line and primaries of the power transformers are fused. Indicating type fuses are clearly marked on the front panel with their ratings and the circuits involved. Spare fuses for each of the different types used are found in the SPARE FUSES box located on the front panel of the Power Supply PP-1294(XN-1)/SRT-17. Protection of personnel against contact with high voltage circuits is assured by the use of cabinet interlocks. The removal of any one chassis from the cabinet will de-energize the plate supply in the unit. The BATTLE SHORT switch is placed in the ON position to short out the interlocks in case of erratic

operation or failure of the interlock switches due to excessive shock such as from gunfire.

3. CONTROLS.

a. Table 4-3 gives the location and function of each of the operating controls and indicators. These have been divided into groups corresponding to the approximate location and general control function. The six dial controls; I. P. A. TUNING, P. A. TUNING, COUPLING, ANTENNA VERNIER, ANTENNA TUNING, and R. F. OSCILLATOR TUNING are equipped with dial locks. Once the transmitter has been tuned these dials should be locked in position. All of the switches, controls and indicators referred to in the following operating procedure are located on the front panel of the equipment. Refer to figure 4-1.

4. PRELIMINARY START.

This equipment has been designed to provide excellent stability using a temperature controlled oven which houses all the basic frequency determining components. Therefore, for stable operation, the oven control circuits must be energized for a period of up to three hours previous to operation of the complete equipment. Of course, the equipment will operate as soon as it is energized, although it may be slightly off frequency.

FOR PRELIMINARY START:

Step 1. Turn on OVEN switch on R. F. Oscillator. This energizes the oven heaters. OVEN indicator will light.

Step 2. After oven has been heated for over an hour but less than two hours, the OVEN light should begin to cycle on and off. This indicates that the oven is nearing the operating temperature. The rate of cycling of the indicator light will decrease and the "off" time increase as the oven nears a stable condition.

Step 3. After the oven has been cycling evenly for about an hour the frequencies of the oscillator is stabilized and the transmitter may be placed in service operation.

NOTE

During the warm-up time, the transmitter may be tuned up and adjusted so that it will be ready for service as soon as the oven is stabilized.

5. STARTING THE TRANSMITTER

WARNING

DO NOT APPLY PLATE VOLTAGE UNTIL CERTAIN THAT THE TRANSMITTER HAS BEEN TUNED COMPLETELY.

a. AUTOMATIC STARTING. - Automatic starting can be accomplished provided that the transmitter has been previously tuned to the desired frequency.

TABLE 4-3. CONTROLS AND INDICATORS - LOCATION AND FUNCTION

CONTROL DESIGNATION	TYPE OF COMPONENT	SYMBOL	PURPOSE OF CONTROL
POWER CONTROLS on Power Supply PP-1294(XN-1)/SRT-17 Front Panel			
EMERGENCY LINE ON/OFF	Toggle switch	S205	Controls 115/230 volts ac power to Power Supply, Radio Transmitter and power supply of R. F. Oscillator.
START-STOP	Push button switch	S207	START button energizes K204, filaments, blower and control circuits. STOP button turns off transmitter.
FILament on Indicator, white	Incandescent lamp	I202	Indicates when filaments are on.
PLATE ON-OFF	Toggle switch	S206	In ON position, low and high voltage plate supplies are energized.
PLATE on Indicator, red	Incandescent lamp	I201	Indicates ON position of plate switch.
LOCAL-REMOTE	Rotary switch	S202	In LOCAL position, transmitter is controlled from front panel at the transmitter. In REMOTE position, transmitter may be operated from remote location.
ADJUST-TUNE-OPERATE	Rotary switch	S201	In ADJUST position, removes plate voltage from the power amplifier and modulator tubes, low voltage supply is on. In TUNE position, reduced plate voltage is applied while tuning. In OPERATE position, high voltage transformer is connected to give full plate voltage.
BATTLE SHORT ON-OFF	Toggle switch	S204	Normally operates in OFF position, placing cabinet interlock switches in circuit. In ON position, the cabinet interlock switches are shorted out.
BATTLE SHORT Indicator, clear	Neon lamp	I203	Indicates the ON position of the BATTLE SHORT switch or when interlocks are shorted.
MASTER OSCILLATOR on R. F. Oscillator O-332(XN-1)/SRT-17 Front Panel			
OVEN ON-OFF	Toggle switch	S502	Energizes oven heaters.
OVEN Indicator	Indicator light	I501	Indicates oven operation.
M.O. Tuning	Variable capacitor	C502	Tunes Master Oscillator.
LOGGING	Tuning indicator	O501	Tuning indicator. Left side in hundredths, right side in units of desired frequency.
CALIBRATE ON-OFF	Toggle switch	S503	Energizes calibration circuit.
CALIBRATE	Jack	J502	For head set insertion to obtain beat note between calibrating crystal frequency and M. O. frequency.
DIMMER	Potentiometer	R524	Dims dial light.

TABLE 4-3. CONTROLS AND INDICATORS - LOCATION AND FUNCTION (Cont'd)

CONTROL DESIGNATION	TYPE OF COMPONENTS	SYMBOL	PURPOSE OF CONTROL
TRANSMITTER CONTROLS on Radio Transmitter T-557(XN-1)/SRT-17 Front Panel			
DRIVE	Potentiometer	R417	Adjusts drive to P. A. grid.
BAND SWITCH	Rotary switch	S404	Selects the desired frequency band.
I. P. A. TUNING	Variable capacitor	C422	Tunes the exciter to provide drive for power amplifier.
P. A. TUNING	Variable capacitor	C452 C455	Tunes power amplifier stage. (C452 operates in the low frequency region and C455 operates in the high frequency region).
ANTENNA TAP	Rotary switch	S406	When ANTENNA TAP switch is in the numbered position (when used in conjunction with the Antenna Vernier), it provides a second coupling control to allow matching of antenna to power amplifier. In SERIES "A" and SERIES "B" positions the ANTENNA TAP switch allows antenna to be series tuned with the ANTENNA VERNIER.
ANTENNA RANGE	Rotary switch	S405	Selects the proper antenna tuning band.
COUPLING	Variable capacitor	C456	Adjusts the coupling between the antenna and the power amplifier.
ANTENNA VERNIER	Rotary inductor	L428	When ANTENNA TAP switch is in SERIES "A" or SERIES "B" position this ANTENNA VERNIER acts as a vernier for the ANTENNA RANGE switch to provide continuous tuning of the antenna. When ANTENNA TAP switch is in the numbered position this ANTENNA VERNIER operates as a vernier for the ANTENNA RANGE switch to allow a continuous variation of antenna coupling for matching purposes.
ANTENNA TUNING	Variable capacitor	C457	Tunes the antenna circuit when the ANTENNA TAP switch is in the numbered position. When the ANTENNA TAP is in the SERIES "B" position the antenna tuning range is extended. In the SERIES "A" position this control has no effect.
O. L. RESET	Toggle switch	S304	Resets the modulator overload relay and the power amplifier overload relay.
BREAK-IN	Toggle switch	S305	Controls keying carrier for different speeds of A-1 emission.
MODULATION CONTROLS on Radio Transmitter T-557(XN-1)/SRT-17 Front Panel			
CARRIER ON Indicator, green	Incandescent lamp	I301	Indicates transmitter is keyed.
P. A. GRID	Milliammeter	M301	Indicates grid current to the power amplifier.
P. A. CATHODE	Milliammeter	M302	Indicates loading to the power amplifier; used also to tune power amplifier.
MODulator CATHODE	Milliammeter	M303	Indicates cathode current to modulators V305 and V306.

TABLE 4-3. CONTROLS AND INDICATORS - LOCATION AND FUNCTION (Cont'd)

CONTROL DESIGNATION	TYPE OF COMPONENTS	SYMBOL	PURPOSE OF CONTROL
MODULATION CONTROLS (Cont'd) on Radio Transmitter T-557(XN-1)/SRT-17 Front Panel			
EMISSION A-1 A-3	Rotary switch	S303	Selects desired type of emission. A-1 a carrier wave keyed normally for telegraph. A-3 a carrier wave amplitude-modulated for voice transmission.
TEST KEY ON-OFF MOM. - ON	Toggle switch	S302	Keys the transmitter for tuning and test purposes. ON position-the carrier is locked on. OFF position-the carrier is off. MOM. ON position-key must be held in position to hold carrier on.
HEADSET LEVEL	Potentiometer	R305	Sets the audio level to the head-phones.
MODulator GAIN	Potentiometer	R303	Adjusts the level of audio modulation.
LIMITER IN-OUT	Toggle switch	S301	IN position - clips the peak of high level audio to prevent over-modulation, and allows high average modulation level. OFF position - limiter is not in operation.
KEY	Jack	J301	Permits insertion of telegraph key for local A-1 operation.
HEADSET	Jack	J302	Permits insertion of headset for receiving.
MICROPHONE	Jack	J303	Permits insertion of microphone for local A-3 operation.

CAUTION

PROCEED TO MANUAL STARTING IF PREVIOUS TUNING ADJUSTMENTS ARE NOT KNOWN.

Step A. Visually check and set front panel controls as follows:

CONTROL	POSITION
OVEN Switch	ON
CALIBRATE Switch	OFF
LOCAL-REMOTE	LOCAL
EMISSION	A-1
ADJUST-TUNE-OPERATE	OPERATE
TEST KEY	ON
EMERGENCY LINE	ON
PLATE Switch	ON

Step B. Set all tuning controls for the desired frequency in accordance with the TUNING CHART located on the front panel of the transmitter.

Step C. Push START (black) button and allow sufficient time (30 seconds) for warm-up before operation.

CAUTION

WHEN THE ANTENNA TAP SWITCH IS IN EITHER THE SERIES A OR SERIES B POSITION PROCEED WITH STEP D. WHEN THE ANTENNA TAP SWITCH IS IN A NUMBERED POSITION OMIT STEP D AND PROCEED TO STEP E.

Step D. Adjust the ANTENNA VERNIER for maximum current reading on the P.A. CATHODE meter.

Step E. Adjust the ANTENNA TUNING control for maximum current reading on the P.A. CATHODE meter.

NOTE

The P.A. CATHODE meter should now read approximately 180 to 200 ma. If the above meter reading cannot be obtained with either Step D or Step E proceed to paragraph 5b MANUAL STARTING for a complete step-by-step procedure.

Step F. Place TEST KEY in OFF position. For A-1 emission insert telegraph key in KEY jack. For A-3 emission, place EMISSION selector switch to the A-3 position.

b. MANUAL STARTING. - Since this transmitter may be operated for continuous wave telegraph (A-1) and radio telephone (A-3) from either a local or a remote position, it must first be tuned for A-1 emission at the local position. After the R. F. Oscillator oven has warmed up (paragraph 4) proceed as follows:

Step 4. Place LOCAL-REMOTE switch in LOCAL position.

Step 5. Place EMISSION switch to A-1.

Step 6. Place ADJUST-TUNE-OPERATE switch to the ADJUST position.

Step 7. Place TEST KEY in OFF position.

Step 8. Place PLATE switch in OFF position.

Step 9. Place EMERGENCY LINE switch in ON position.

Step 10. Push START button (black); this will trip a 30 second automatic time delay. FILAMENT indicator will light.

NOTE

When transmitter is not already tuned to desired frequency proceed with TUNING THE TRANSMITTER, paragraph 6.

6. TUNING THE TRANSMITTER.

Use the complete tuning procedure when setting up a new frequency on the transmitter or for initial tuning after repairs to the transmitter or changes in the installation have been made. After completion of manual starting (paragraph 5b above) proceed as follows:

Step 11. Check that OVEN indicator on R. F. Oscillator 0-332(XN-1)/SRT-17 is cycling on and off regularly, indicating that master oscillator oven has reached operating temperature.

Step 12. Determine the required master oscillator frequency for the desired transmitter output frequency in accordance with paragraph 1b and table 4-2 above.

Step 13. Find the approximate setting for the MO LOGGING dial by consulting figure 4-2 as follows:

(a) Find the desire MO frequency along the bottom of the curve sheet and project upward to the calibration curve.

(b) Project horizontally to the left from this point on the curve and read the dial setting as accurately as possible (to the nearest unit).

NOTE

This reading, if carefully obtained, will allow the MO frequency to be set to approximately the nearest kilocycle. For more accurate setting of the MO frequency, refer to paragraph 12b.

Step 14. Set the MO LOGGING dial to the reading obtained in Step 13 as follows:

(a) Turn the crank until the LOGGING scale behind the window reads the proper whole number (hundreds) and 0 on the knob is opposite the arrow on the vernier scale.

(b) Advance the knob until the index point is opposite the units portion (last two digits) of the desired dial setting.

Step 15. Check that the CALIBRATE switch is in OFF position.

Step 16. Rotate the BAND SWITCH to the desired position as indicated in the Band Selection Chart, table 4-1.

Step 17. Set the DRIVE control to maximum (fully clockwise).

Step 18. Set I. P. A. TUNING control to the reading obtained from the IPA Tuning Calibration, figure 4-3. Do not lock the dial in position.

Step 19. Set P. A. TUNING control to the reading obtained from the PA Tuning Calibration, figure 4-4. Do not lock.

Step 20. Rotate COUPLING dial until it reads 20. Do not lock.

Step 21. Place ANTENNA RANGE switch in 8B position.

Step 22. Rotate ANTENNA TUNING dial to 0.

Step 23. Set ANTENNA TAP switch to TUNE position.

Step 24. Crank ANTENNA VERNIER control until the counter indicates "000".

Step 25. Place PLATE switch in ON position. PLATE on indicator will light.

Step 26. Place TEST KEY in ON position. The CARRIER indicator will light.

Step 27. Adjust the I. P. A. TUNING control for maximum reading on the P. A. GRID meter.

Step 28. Adjust DRIVE control until P. A. GRID meter reads 15 milliamperes (ma).

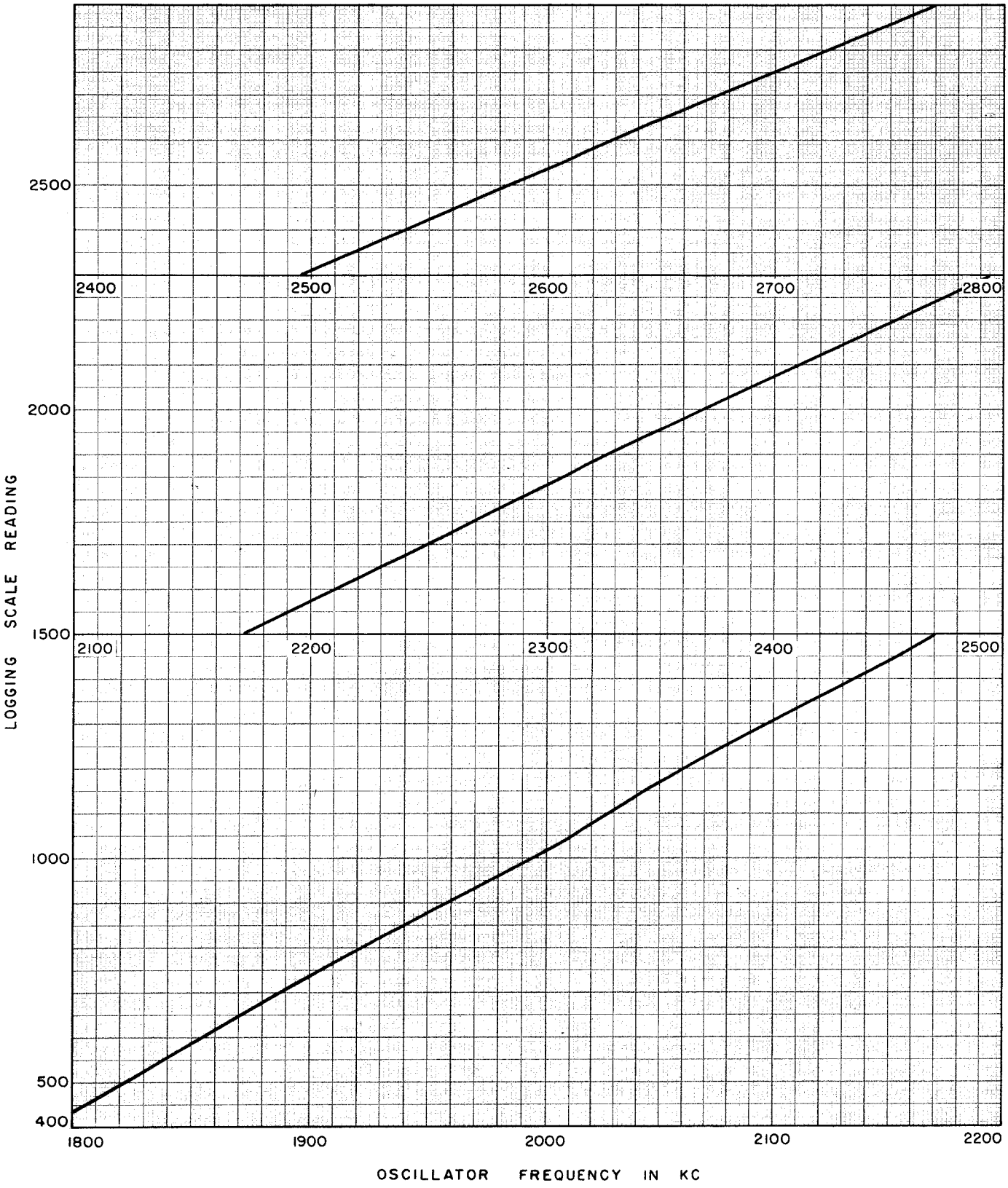


Figure 4-2. R. F. Oscillator Calibration (Typical) (Sheet 1 of 2 sheets)

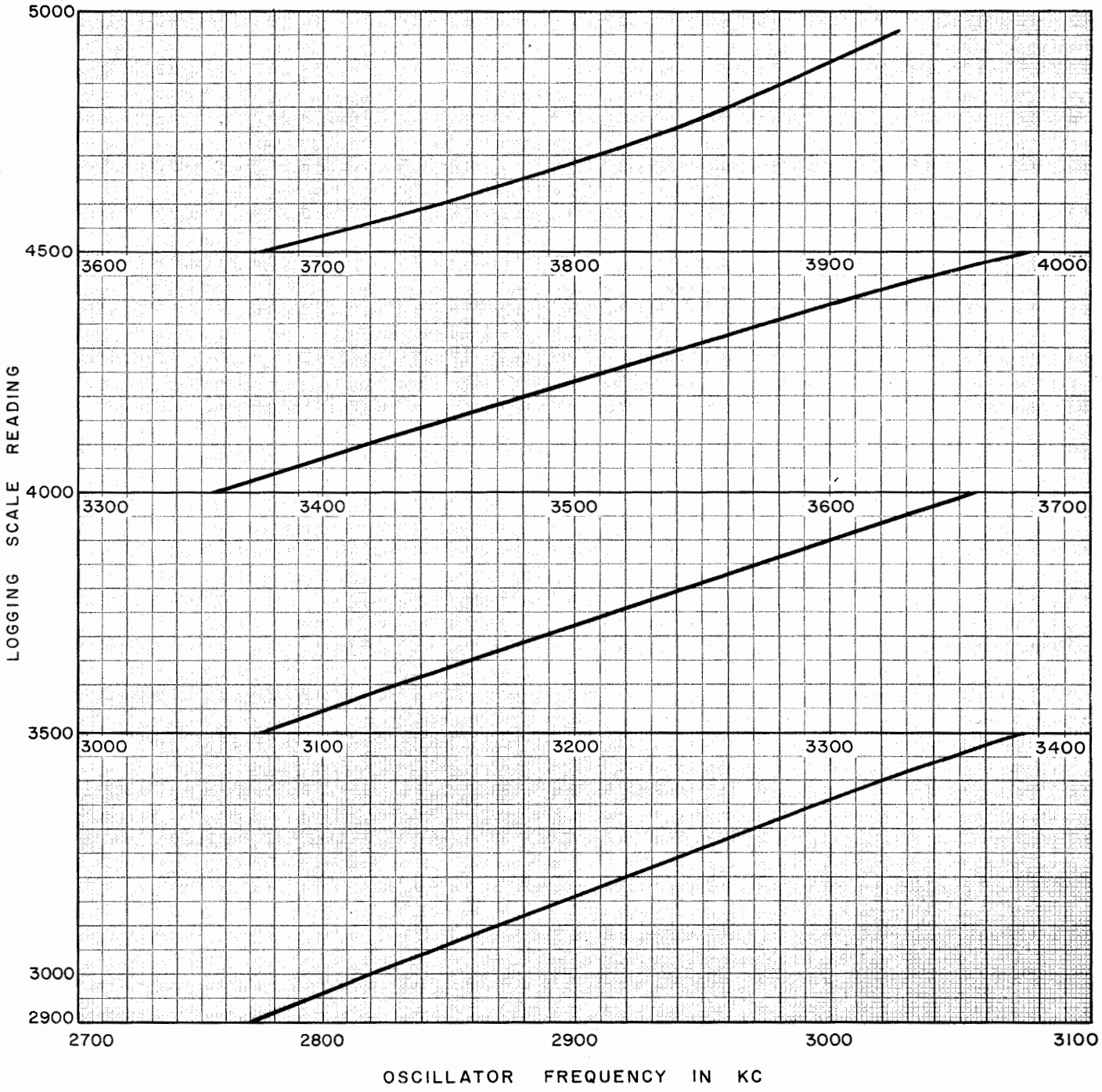


Figure 4-2. R. F. Oscillator Calibration (Typical) (Sheet 2 of 2 sheets)

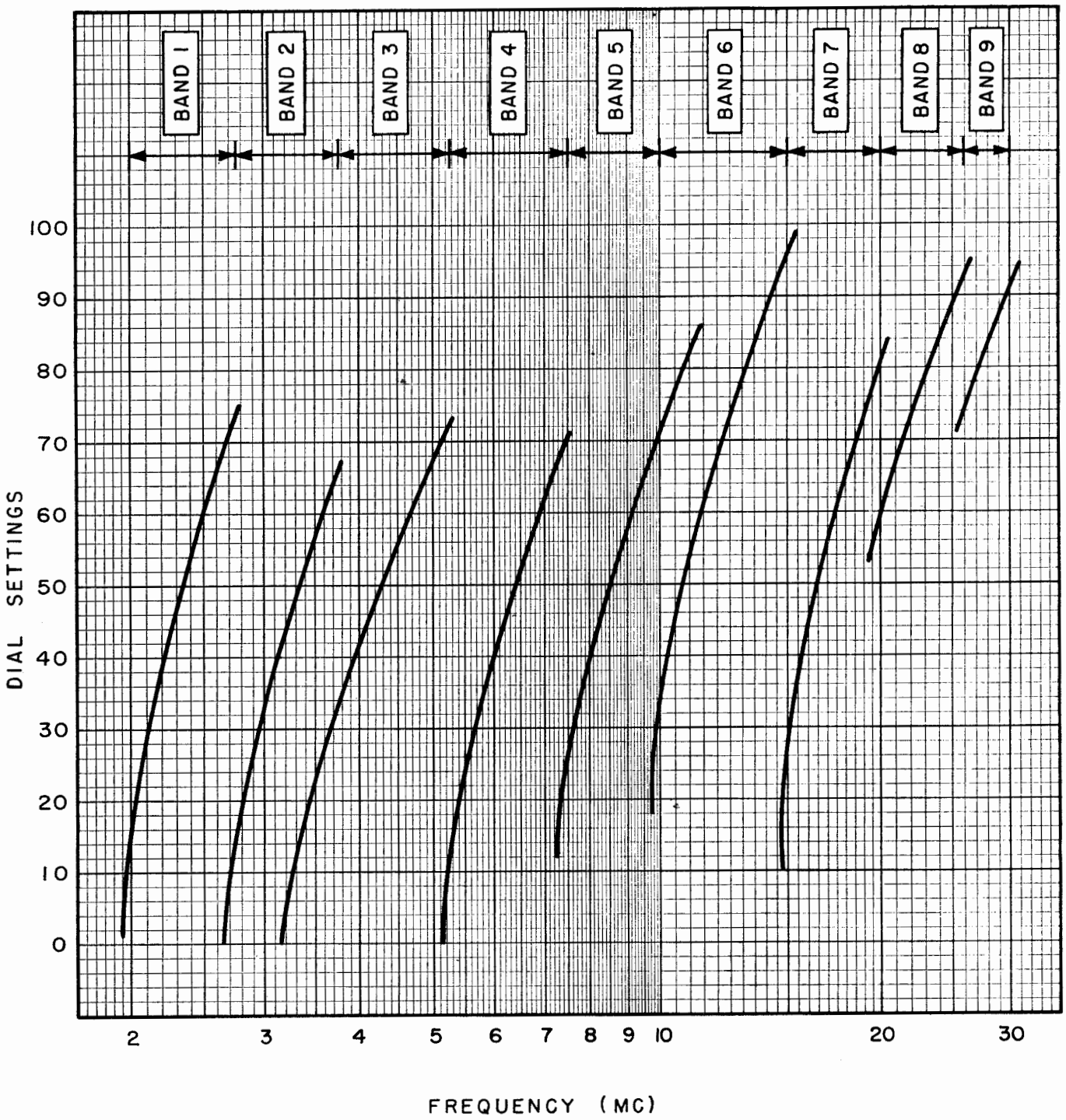


Figure 4-3. IPA Tuning Calibration (Typical)

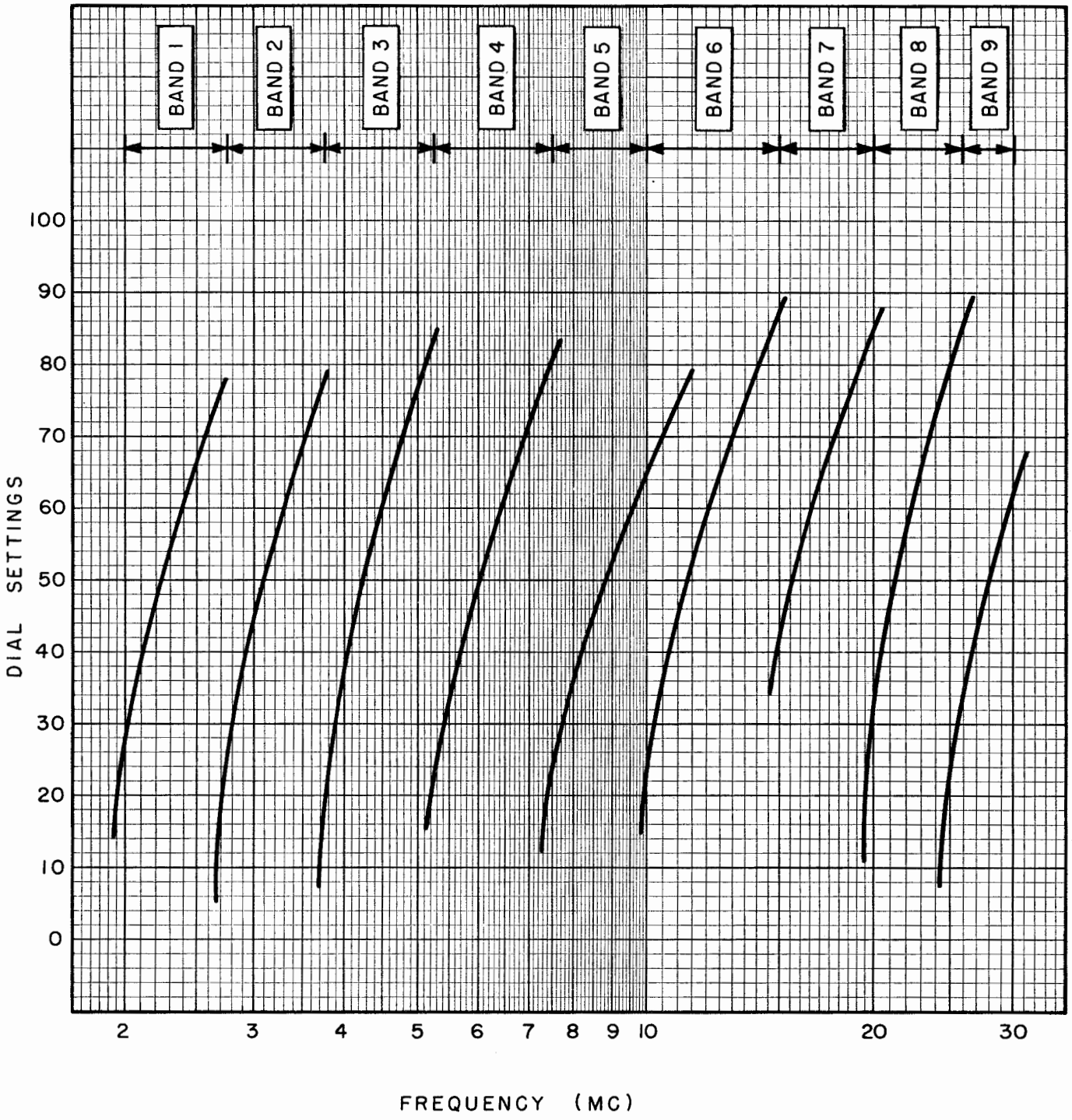


Figure 4-4. PA Tuning Calibration (Typical)

Step 29. Place ADJUST-TUNE-OPERATE switch in TUNE position.

Step 30. Adjust the P.A. TUNING control for a minimum reading (dip) on the P.A. CATHODE meter. Do not lock.

NOTE

Adjust, as necessary, the I.P.A. TUNING control to maintain the 15 ma reading on the P.A. GRID meter.

7. LOADING AND MATCHING THE ANTENNA.

a. Three different network conditions can be set up using the ANTENNA TAP switch as follows:

(1) The SERIES A position of the ANTENNA TAP switch is used when matching a highly capacitive antenna.

(2) The SERIES B position of the ANTENNA TAP switch is used when matching a highly inductive antenna.

(3) The "numbered" positions of the ANTENNA TAP switch are used when matching an antenna which is neither highly capacitive nor highly inductive.

At high frequencies a normal wire antenna (well over one-quarter wave-length at the operating frequency) is usually mainly resistive and paragraphs b and c of the procedure below may be omitted.

A whip type antenna, especially if top-or-bottom-loaded may be either inductive or capacitive and the procedures in paragraphs b and c should be followed.

In most cases, where electrical data on the actual antenna is not available, the only safe rule to obtain proper matching is to follow the complete step-by-step procedure until proper readings are obtained.

b. "SERIES A" MATCHING. - To match a highly capacitive antenna or an antenna of unknown electrical characteristics:

Step 31. Rotate ANTENNA TAP switch to the SERIES A position.

Step 32. Crank the ANTENNA VERNIER control through its entire range looking for a maximum reading (peak) on the P.A. CATHODE meter.

NOTE

When a peak is indicated on the P.A. CATHODE meter omit the following steps and proceed to Step 40. If a peak is not evident proceed with Step 33. The indication of a peak means that a tuning point has been located and the operator may proceed to load out the transmitter for most efficient operation.

Step 33. Move ANTENNA RANGE switch to the 8A position and repeat Step 32. If a peak is not found, move ANTENNA RANGE switch to the 7B position and again repeat Step 32. Repeat this procedure, as necessary, using successive positions of the ANTENNA RANGE switch until a peak is found. If a tuning point is not located proceed to the next step. When a peak is found, proceed to Step 40.

Step 34. Rotate the ANTENNA RANGE switch to the 7A position.

c. "SERIES B" MATCHING. - To match a highly inductive antenna or when a tuning point has not yet been found:

Step 35. Rotate ANTENNA TAP switch to the SERIES B position.

Step 36. Crank the ANTENNA VERNIER control through its entire range and look for a peak on the P.A. CATHODE meter. When a peak is indicated, proceed to Step 40. If a peak is not found proceed with Step 37.

Step 37. Repeat Step 36 with the ANTENNA RANGE switch successively in the 7B, 8A and 8B positions. If a peak is indicated proceed with the following steps.

Step 38. Reset the ANTENNA RANGE switch to the 8B position and the ANTENNA VERNIER control to "000".

Step 39. Carefully rotate the ANTENNA TUNING control looking for a peak on the P.A. CATHODE meter.

NOTE

Any one of the following conditions may be encountered when tuning with the ANTENNA TUNING control.

(a) When a tuning point is indicated with the ANTENNA TUNING control set below 10, proceed to load out the transmitter in accordance with Step 40.

(b) When a tuning point is indicated with control slightly above 10, omit Steps 40 to 44 inclusive.

(c) If a tuning point is not indicated proceed to Step 48.

Step 40. Increase or decrease the COUPLING control until the P.A. CATHODE meter reads approximately 115 ma.

Step 41. Readjust the ANTENNA VERNIER control for a peak indication on the P.A. CATHODE meter.

Step 42. Note the reading on the P.A. CATHODE meter. Adjust the P.A. TUNING control for a dip on the P.A. CATHODE meter and note the new meter reading. Retune the P.A. TUNING control until the P.A. CATHODE meter reads approximately halfway between the above two readings.

Step 43. Adjust ANTENNA VERNIER for a peak reading on the P.A. CATHODE meter.

Step 44. Place the ADJUST-TUNE-OPERATE switch in the OPERATE position.

Step 45. Adjust I. P. A. TUNING control, if necessary, to obtain 15 ma on the P. A. GRID meter.

Step 46. Increase or decrease COUPLING control until the P. A. CATHODE meter reads approximately 190 ma.

Step 47. Place TEST KEY in OFF position and insert telegraph key in KEY jack.

The transmitter is now ready for service operation on A-1 (CW) emission. Lock all tuning controls, and record all dial settings on the TUNING CHART for future reference.

d. "NUMBERED" MATCHING POSITIONS. - To match an antenna which is neither highly inductive nor highly capacitive or in case a peak is not found upon completion of Step 39, proceed as follows:

Step 48. Move the ANTENNA RANGE switch to a position selected from table 4-4.

TABLE 4-4. RECOMMENDED INITIAL ANTENNA RANGE POSITION

Conditions:

1. Use this table as a starting point only.
2. The ANTENNA RANGE position may vary from the values given in this table due to the characteristics of the antenna in use.

RANGE OF FREQUENCIES in Mc.	ANTENNA RANGE SWITCH POSITION
2 to 3	1 or 2
3 to 4	3
4 to 7	4
7 to 10	5
10 to 15	6
15 to 20	7A
20 to 24	7B
24 to 28	8A
28 to 30	8B

Step 49. Rotate COUPLING control to 70.

Step 50. Rotate the ANTENNA TAP switch to the TUNE position.

Step 51. Adjust the P.A. TUNING control for a dip on the P.A. CATHODE meter.

Step 52. Crank the ANTENNA VERNIER to "000" on the counter.

Step 53. Move ANTENNA TAP switch to the number 1 position.

Step 54. Rotate ANTENNA TUNING control looking for a peak on the P.A. CATHODE meter. When a peak is found omit the following steps and proceed to Step 57. If a peak is not indicated continue with Step 55.

CAUTION

NEVER INCREASE THE ANTENNA TAP SWITCH BEYOND A POINT WHERE THE SUM OF THE ANTENNA RANGE SWITCH POSITION NUMBER AND THE ANTENNA TAP SWITCH POSITION NUMBER EXCEEDS NINE (9).

Step 55. Find a tuning point as follows:

(a) Move the ANTENNA TAP to the number 2 position and repeat Step 54. If no peak is found, proceed with (b).

(b) Move the ANTENNA TAP switch to the number 3 position and repeat Step 54. Continue in this manner without violating the "NINE (9)" rule. If a peak is not indicated, continue with (c).

(c) Repeat (b) above for each position of the ANTENNA RANGE switch. Start first by moving the ANTENNA RANGE switch first one position higher and then one position lower than the initial point. If a peak is not found, continue by moving two positions above and below the initial point.

Step 56. When the tuning point has been found with the procedure outlined in Step 55 decrease the ANTENNA TAP switch one position and repeat Step 54. If a peak is not indicated, move the ANTENNA TAP switch back to its original peak position.

Step 57. If the peak point occurs at less than approximately 115 ma on the P.A. CATHODE meter, complete procedure of part (a) below. If this peak is at greater than approximately 115 ma, proceed to part (b) of this step.

(a) Increase the COUPLING slightly until 115 ma (plus or minus 2 ma) is obtained on the P.A. CATHODE meter. If this condition is not achieved, rotate the ANTENNA VERNIER "up-scale" until the 115 ma point is obtained. Adjust the ANTENNA TUNING control to indicate a peak on the P.A. CATHODE meter. Increase or decrease the ANTENNA VERNIER or COUPLING control whichever has the greater effect, until the required 115 ma is obtained. Keep in mind that the ANTENNA TUNING control should indicate the peak. When this is accomplished, omit the following and proceed to Step 59.

(b) Decrease the COUPLING to obtain 115 ma (plus or minus 2 ma) on the P.A. CATHODE meter, keeping the ANTENNA TUNING control tuned to indicate a peak. Continue decreasing the COUPLING and peaking with the ANTENNA TUNING control until the required 115 ma is obtained.

NOTE

Do not decrease the COUPLING control below 60 on the dial. If the tuning point of 115 ma cannot be achieved with COUPLING control set at 60 or above, proceed to Step 58.

Step 58. Crank the ANTENNA VERNIER, through its range observing the P.A. CATHODE meter. It will go through the peak point and back down until it reads the required 115 ma. Check that the ANTENNA TUNING control will peak at the same point as the ANTENNA VERNIER.

Step 59. Decrease the ANTENNA TAP switch one position, increase the ANTENNA RANGE switch one position and repeat Step 54. If the ANTENNA TUNING control still peaks at zero proceed to Step 60. If the tuning is not at zero proceed to Step 61.

Step 60. Increase the ANTENNA TAP one position, decrease the ANTENNA RANGE one position and repeat Step 54. Once the tuning conditions are satisfied, proceed with Step 61, to complete the tuning procedure.

Step 61. Note the reading on the P.A. CATHODE meter. Adjust the P.A. TUNING control for a dip on the meter and note this reading. Retune the P.A. TUNING control until the meter reads approximately half-way between the two readings.

Step 62. Place the ADJUST-TUNE-OPERATE switch in the OPERATE position.

NOTE

The P.A. CATHODE meter should normally read approximately 190 ma.

Step 63. Adjust the COUPLING control or the ANTENNA VERNIER control for a reading of 190 ma on the P.A. CATHODE meter. Always check that the ANTENNA TUNING control is peaked.

Step 64. Tighten all tuning control locks and record all dial readings on the TUNING CHART for future reference.

Step 65. Place TEST KEY in OFF position and insert telegraph key in KEY jack.

The transmitter is now ready for service operation on A-1 emission. If "break-in" operation is not desired, refer to paragraph 12 c.

8. PHONE OPERATION (A-3 EMISSION).

In order to operate this equipment on A-3 emission, first set up the transmitter for service operation on A-1.

Step 1. Start the transmitter in accordance with paragraphs 4 and 5.

Step 2. Tune the transmitter in accordance with paragraphs 6 and 7.

Step 3. Place EMISSION switch to the A-3 position and check that the TEST KEY is in the OFF position.

Step 4. Insert microphone into jack, and speak into microphone. MOD. CATHODE meter reading will increase.

Step 5. Rotate the MODULATOR GAIN control to number 5. This is a starting point only. Increase or decrease this control to adjust for background noise and speaking level. MOD. CATHODE meter should read approximately 30 ma with no modulation and 175 ma with steady tone modulation.

Step 6. Place the LIMITER switch to the IN position.

NOTE

Under normal operating condition the LIMITER IN position is used to provide a high output level without over-modulating the transmitter.

The transmitter is now ready for service operation on phone transmission (A-3). If "break-in" (push-to-talk) operation is desired, see paragraph 12 c.

9. REMOTE OPERATION.

Radio Transmitting Set AN/SRT-17(XN-1) provides for remote operation from a standard "six-wire remote" unit. When such a control unit is installed and it is desired to control the transmitter at the remote point proceed as follows:

AT THE TRANSMITTER:

Step 1. Set up the transmitter for service operation.

a. Start the transmitter in accordance with paragraph 4 and 5.

b. Tune the transmitter channel in accordance with paragraphs 6 and 7.

Step 2. Place the LOCAL-REMOTE switch to the REMOTE position.

Step 3. Place EMISSION switch to the desired emission (A-1 or A-3).

Step 4. Place LIMITER IN or OUT as desired.

Step 5. Push STOP button on the START-STOP control. The transmitter is now ready for remote operation.

AT THE REMOTE LOCATION.

Step 6. Push START button on the START-OFF control. The light indicator will glow indicating that the transmitter is in service operation for either A-1 or A-3 emission as required for operation from the remote location.

10. STOPPING THE TRANSMITTER.

Three types of shut-down may be necessary, emergency, stand-by or complete shut-down.

a. EMERGENCY SHUT-DOWN.

In case of an accident to personnel or equipment.

Step 1. Place EMERGENCY-LINE switch in OFF position. This removes power from the transmitter and pilot lights will go out (except the OVEN indicator on the R. F. Oscillator).

Before re-energizing the transmitter, place PLATE switch in OFF position. Rotate ADJUST-TUNE-OPERATE switch to the ADJUST position, then start transmitter in accordance with paragraphs 4, 5, 6 and 7.

b. STANDBY SHUT-DOWN.

When the transmitter is not in active use but it is desired to keep it in readiness for operation or when minor repairs or adjustments are to be made, proceed as follows:

Step 1. Push STOP (red) button. This will remove plate and filament power. All pilot lights, except the OVEN indicator, will go out. To bring the transmitter back in service operation: push START (black) button. This will restore power to all stages. The equipment will be ready for operation without any other adjustments.

c. COMPLETE SHUT-DOWN.

When the transmitter is to be idle for several days or repairs are necessary involving considerable time or the removal of units of the transmitter, make a complete shut-down as follows:

Step 1. Place PLATE switch in OFF position.

Step 2. Place EMERGENCY-LINE switch in OFF position.

Step 3. Place OVEN switch in OFF position.

All indicator lights will go out. This removes all power from the transmitter.

11. SUMMARIZED OPERATING PROCEDURE

The summarized procedure covers placing the transmitter in service operation after it has been properly set up, tuned and adjusted on the required frequency channel.

TO START THE TRANSMITTER.

Step A. Set the following controls to their corresponding positions:

OVEN	ON
LOCAL-REMOTE	LOCAL
EMISSION	A-1
ADJUST-TUNE-OPERATE	TUNE
TEST KEY	ON
BREAK-IN	IN or OUT as desired
EMERGENCY-LINE	ON
PLATE	ON
START-STOP	push START

Step B. Select desired frequency, set MO LOGGING dial and corresponding BAND SWITCH position in accordance with TUNING CHART on front panel.

Step C. Set all tuning controls to values indicated on the TUNING CHART.

When ANTENNA TAP switch is in either SERIES position on complete Steps D and E.

Step D. Adjust ANTENNA VERNIER for maximum P. A. CATHODE current (approximately 115 ma).

Step E. Place ADJUST-TUNE-OPERATE switch to the OPERATE position. Note P. A. CATHODE current. If it is not 190 ma, place ADJUST-TUNE-OPERATE switch to TUNE, increase COUPLING control and repeat Step D. If 190 ma is still not obtained after COUPLING control has been increased proceed to paragraphs 6 and 7 for complete tuning procedure.

OR:

When ANTENNA TAP switch is in a "numbered" position complete Step F and G.

Step F. Rotate ANTENNA TUNING control for a peak on the P. A. CATHODE meter.

Step G. Place ADJUST-TUNE-OPERATE switch in the OPERATE position. If P.A. CATHODE meter does not read approximately 190 ma, use the complete procedure in paragraphs 6 and 7.

The transmitter is now ready for A-1 communications. For A-3 communication, place EMISSION switch in A-3 position.

12. OPERATING NOTES

a. CALIBRATION OF OSCILLATOR TUNING DIAL. - An internal crystal calibration circuit in the R. F. Oscillator enables the operator to set the tuning dial on frequency at two points before accurately setting the dial to a desired transmitter frequency. This 1100 kc crystal oscillator allows the dial to be set at 2200 kc (second harmonic) and 3300 kc (third harmonic). With EMERGENCY-LINE switch in OFF position, proceed as follows:

Step 1. Place the OVEN switch in the ON position and allow the oven to heat for a minimum of two and one-half hours.

Step 2. Withdraw the Power Supply unit to the service position and remove the alignment tool, H201, from the clip on the right hand chassis bracket. Return the Power Supply unit into the cabinet.

Step 3. Obtain the master oscillator test cable, W103 from the Spare Parts Box.

Step 4. Place OVEN switch in OFF position and withdraw the R. F. Oscillator to the service position.

NOTE

Proceed at once with the following steps in order not to allow the oven time to cool appreciably.

Step 5. Connect test cable W103 between receptacle J501 on the R. F. Oscillator and J104 on the cabinet.

WARNING

DO NOT TOUCH CONTACTS OF PLUGS OR RECEPTACLES WHEN INSERTING THEM. J104 HAS UP TO 230 VOLTS AC ON ITS TERMINALS EVEN WITH OVEN SWITCH IN OFF POSITION.

Step 6. Place the OVEN switch in the ON position.

Step 7. Rotate the DRIVE control fully counterclockwise.

Step 8. Place the BATTLE SHORT switch in the ON position.

WARNING

USE EXTREME CARE IN MAKING THE FOLLOWING ADJUSTMENTS INSIDE THE R. F. OSCILLATOR. VOLTAGES UP TO 500 VOLTS DC ARE EXPOSED AND MAY CAUSE SEVERE SHOCK. DO NOT TOUCH ANY COMPONENTS INSIDE THE EQUIPMENT WITH BARE HANDS.

Step 9. Place EMERGENCY-LINE switch in ON position, push START button and place PLATE switch in ON position. BATTLE SHORT indicator should light. Allow plate voltage to remain on for one-half hour before proceeding to the next step.

Step 10. Place CALIBRATE switch on R. F. Oscillator in ON position and insert headphones into CALIBRATE jack.

Step 11. Set the MO LOGGING dial as exactly as possible to 1575.0 (15 on the LOGGING scale, 75 on the MO dial). Listen in headphones for an audio note.

Step 12. Adjust MO frequency to exactly 2200 kc as follows:

(a) Locate the low frequency coil, L501, slug adjustment at the right front on the oscillator oven cover.

(b) Remove the snap button covering the hole in the cover.

(c) Using alignment tool H201, adjust the coil slug to obtain zero beat (no tone) in the headphones. The master oscillator is now adjusted to a frequency of 2200 kc for the MO dial reading of 1575.0.

(d) Replace snap button in oven cover.

Step 13. Set the MO LOGGING dial as exactly as possible to 3900.0 (30 on the LOGGING scale, 0 on the MO dial). Listen for a beat note.

Step 14. Adjust MO frequency to 3300 kc as follows:

(a) Locate the high-frequency trimmer capacitor, C504, at the left rear on the oven cover.

(b) Remove the snap button covering the hole in the cover.

(c) Using alignment tool H201, adjust the trimmer capacitor to obtain zero beat (no tone) in the headphones. The master oscillator is now adjusted to a frequency of 330 kc for the MO dial reading of 3900.0.

(d) Replace snap button in oven cover.

Step 15. Remove power by placing switches in following positions in order.

PLATE switch ----------OFF

BATTLE SHORT ----------OFF

EMERGENCY LINE----------OFF

OVEN switch----------OFF

All pilot lights will go out.

Step 16. Remove test cable W103, return R.F. Oscillator unit to cabinet and tighten panel screws.

b. ACCURATE SETTING OF R.F. OSCILLATOR FREQUENCY. - Accurate adjustment of the master oscillator to a desired frequency involves the use of a dependable frequency meter (Navy Model LM or LR series is satisfactory). When it is desired to adjust the oscillator to a frequency for which the LOGGING scale frequency calibration or a TUNING CHART entry is not sufficiently accurate, proceed as follows:

Step 1. Calibrate the MO LOGGING dial in accordance with paragraph a.

NOTE

Omit this step only when the dial has been calibrated within the last few days.

Step 2. Knowing the desired transmitter output frequency, determine the exact master oscillator frequency in accordance with paragraph 1b and table 4-2 above.

Step 3. Start up, tune and load the transmitter in the normal manner for A-1 emission. Refer to paragraphs 4, 5, 6 and 7.

NOTE

For accurate settings the MO OVEN must have been energized for a period of at least three hours.

Step 4. Check the calibration of the frequency meter (Navy LM or LR series). Refer to the Instruction Book for that equipment.

Step 5. Set up the frequency meter to operate on the exact output frequency desired from the transmitter.

Step 6. Carefully couple the frequency meter antenna loosely to the transmitter antenna lead on top of the cabinet.

Step 7. Rotate the MO tuning dial very slowly listening for an audible beat note in the frequency meter headphones. Adjust frequency meter DRIVE control for comfortable headphone level.

Step 8. Tune the MO to exactly zero beat with the frequency meter.

NOTE

For best accuracy, perform Steps 5 through 8 in the shortest possible time after Step 4. This will insure minimum frequency drift in the test equipment.

Step 9. Record the MO LOGGING dial setting in hundreds (LOGGING scale), units (tuning dial) and tenths (vernier scale above tuning dial) opposite the transmitter frequency on the TUNING CHART on the front panel of Radio Transmitter T-557(XN-1)/SRT-17. For example, the readings for a frequency of 3750 kc might be:

LOGGING scale	46+	(hundreds)
Tuning dial	02+	(units)
Vernier on dial	1 division	(tenths)

The MO LOGGING dial setting would be recorded as 4602.1 for a 3750 kc carrier frequency.

Step 10. Remove the frequency meter.

Step 11. Lock the MO LOGGING dial and touch up all transmitter tuning controls for best operating point. Lock all tuning controls and record settings on TUNING CHART.

Step 12. When transmitter is not required for immediate service, shut it down in accordance with paragraph 10.

c. USE OF "BREAK-IN" SWITCH. - The keying circuit in this transmitter is designed so that the first pulse of the key causes the antenna to be switched from the "receive" to the "transmit" position. The antenna will remain in the "transmit" position until completion of keying provided that the "delay" circuit in the transmitter is adjusted to bridge the "key-off" time for the keying speed being used. This "delay" time is set by means of the KEYING ADJUST control located behind an access plate on the front panel of the Radio Transmitter unit. This "break-in" type of keying operation is available when the BREAK-IN switch is in the IN position.

When this switch is placed in the OUT position, after the first pulse of the key the antenna will remain in the "transmit" position until the BREAK-IN switch is placed in the IN position or the transmitter power is turned off. This might be termed "carrier locked" position since the transmitter remains connected to the antenna and the "receive" position is locked out.

TO OPERATE "BREAK-IN" ON A-1 EMISSION.

Step 1. Place BREAK-IN switch in IN position.

Step 2. Operate transmitter in normal manner as given in above paragraphs.

NOTE

When antenna does not remain locked in "transmit" position during normal transmission at keying speed used, readjust KEYING DELAY in accordance with Section 7, paragraph 3a (9).

TO OPERATE "CARRIER LOCKED" ON A-1 EMISSION.

Step 1. Place BREAK-IN switch in OUT position.

Step 2. Operate transmitter in normal manner.

TO OPERATE ON A-3 EMISSION.

Step 1. Place BREAK-IN switch in IN position.

Step 2. Operate transmitter in normal manner as given in paragraph 8 above.

NOTE

With EMISSION switch in the A-3 position, the keying delay circuit is disabled. The "push-to-talk" button on the handset or microphone is used for "break-in" operation.

d. TRANSMITTER FREQUENCY MONITORING. - The transmitter signal is best monitored by picking it up on a receiver. An accurately calibrated receiver will indicate that the signal is on the proper frequency, has good quality and is being keyed properly. Accurate measurement of frequency must, of course, be made with a reliable frequency standard.

e. TYPICAL OPERATING DATA. - Table 4-5 shows typical dial readings for the transmitter when set up for various output frequencies. These readings should not be used in actual tune-up of a transmitter when readings are available on the TUNING CHART. In addition the Output Matching, Coupling and Tuning readings are based on the use of a 75 ohm dummy antenna and should only be used as a rough check when a similar antenna is used.

Table 4-6 shows typical meter readings for various conditions of operation of the transmitter.

TABLE 4-5. TYPICAL DIAL SETTINGS

CARRIER FREQ. Kc.	M.O. DIAL SETTINGS	BAND SWITCH	I.P.A. TUNING	P.A. TUNING	ANT. RANGE	ANT. TAP	COU-PLING	ANT. VER-NIER	ANT. TUN-ING*
2000	10.03	1	14.5	29.5	2	4	67.0	006	1.0
2750	28.5	1	73.0	76.0	2	5	87.5	057	41.0
3750	46.02	2	66.5	80.5	4	4	73.5	006	49.5
5250	25.9	3	71.0	81.0	5	4	97.0	048	74.0
7500	46.02	4	71.5	79.5	6	3	91.0	023	70.5
10,000	23.02	5	85.0	76.5	7A	2	74.5	080	40.0
15,000	6.75	6	95.0	87.5	7A	2	80	040	96.0
20,000	22.02	7	81.0	85.0	8A	1	93.5	134	4.0
26,000	25.04	8	92.0	84	8A	1	62.5	098	65.0
30,000	46.75	9	91.0	59.5	8A	1	88.0	023	66.0
30,900	46.8	9	94.0	67.5	8A	1	85.0	153	70.0

* Readings taken using artificial antenna having resistance varying between 75 and 100 ohms and reactance between +8 ohms inductive and -17 ohms capacitive over the frequency range.

TABLE 4-6. TYPICAL METER READINGS

OPERATING CONDITIONS	P.A. GRID (ma)	P.A. CATHODE (ma)	MOD. CATHODE (ma)
A-1	15-18	180-200	30
A-3 (without modulation)	15-18	180-200	30
A-3 (with modulation)	15-18	18-200	175

SECTION 5

OPERATOR'S MAINTENANCE

1. INTRODUCTION

In order to maintain the equipment at peak performance, it will be necessary that the operator perform routine checks during each watch when he is responsible for the operation of the equipment. During operation the transmitter may develop minor defects which can be rectified without difficulty by the operator. Correction of these minor troubles at once may prevent the occurrence of major troubles at a later date. The operator should become sufficiently familiar with the technical details of the equipment to service minor defects that may develop when trained technical aid is not available.

2. OPERATOR'S CHECK CHART

Table 5-1 gives the routine for the operator to follow in making the necessary checks on the equipment during each watch.

TABLE 5-1. ROUTINE CHECK CHART

WHAT TO CHECK	HOW TO CHECK	PRECAUTION
TRANSMITTER IN OPERATION-EACH WATCH		
1. Information from previous operator or communication officer.	a. Review log-book from previous watch.	a. Note changes in operation scheduled during watch.
2. Observe all meters.	a. Record all meter readings. b. Compare with previous readings.	a. Notice abnormal readings. b. Investigate abnormal readings.
3. Check indicators.	a. Observe interlock indicators (BATTLESHORT). b. Observe power indicators (PLATE and FILAMENT). c. Observe OVEN indicator.	a. Replace defective lamp.
4. RF output.	a. Check loading and power output of transmitter. b. Check frequency by frequency standards or communication receiver.	a. Check meter readings. b. Frequency should not drift.

TABLE 5-1. ROUTINE CHECK CHART (Cont'd)

WHAT TO CHECK	HOW TO CHECK	PRECAUTION
TRANSMITTER IN OPERATION-EACH WATCH (Cont'd)		
5. Character of emission.	a. A1-Check keying by listening on receiver. b. A3-Voice-Check quality of emission by listening on receiver.	a. Keying should be clean, without lilt. b. Emission should be clear, not over modulated.
TRANSMITTER ON STANDBY-EACH WATCH		
1. Information from previous operator or communication officer.	a. Review log-book from previous watch. b. Review and/or record verbal instructions.	a. Note change in operation schedule during watch.
2. Control circuit operation.	a. Check EMERGENCY-LINE switch by switching it ON and OFF. b. Check operation of remote unit (if one is used) by placing LOCAL-REMOTE to REMOTE position and operate remote controls.	a. Report any inoperative circuits or loose control. b. Note that time delay relays operate and that power circuit indicators light. c. Report any unsatisfactory circuit operation.
3. Transmitter operation.	a. Place in operation, and check for proper tuning and loading. b. Check meter readings under load for each channel. c. Check output on A1 or A3 emission.	a. Observe all phases of operation to determine deficiencies or inoperative features.
4. Clean equipment.	4. Using a lint-free cloth, remove any dust from outside of cabinet and controls.	4. Do not disturb control settings.

3. EMERGENCY MAINTENANCE

NOTICE TO OPERATORS

OPERATORS SHALL NOT PERFORM ANY OF THE FOLLOWING EMERGENCY MAINTENANCE PROCEDURES WITHOUT PROPER AUTHORIZATION.

a. REPLACEMENT OF FUSES: All the power circuits are protected by indicating type cartridge fuses. Table 5-2 shows location of fuses and table 5-3 gives symptoms of fuse failure.

TABLE 5-2. FUSE LOCATION

SYMBOL	LOCATION	PROTECTS	AMPS	VOLTS	FEDERAL STOCK NUMBERS
F201	PP-1294(XN-1)/SRT-17, front panel	H. V. transformer primary	5	250	G5920-243-3800
F202	PP-1294(XN-1)/SRT-17, front panel	High voltage transformer primary	5	250	G5920-243-3800
F203	PP-1294(XN-1)/SRT-17, front panel	Rectifier filament supply	1.5	250	
F204	PP-1294(XN-1)/SRT-17, front panel	Low voltage transformer primary	1.5	250	
F205	PP-1294(XN-1)/SRT-17, front panel	Time delay circuit	1	250	N5920-243-3789
F206	PP-1294(XN-1)/SRT-17, front panel	Line	15	250	G5920-280-4009
F207	PP-1294(XN-1)/SRT-17, front panel	Line	15	250	G5920-280-4009
F208	PP-1294(XN-1)/SRT-17, front panel	Auxiliary AC outlet	1	250	N5920-243-3789
F209	PP-1294(XN-1)/SRT-17, SPARE FUSES compartment	Spare for F202			
F210	PP-1294(XN-1)/SRT-17, SPARE FUSES compartment	Spare for F204			
F211	PP-1294(XN-1)/SRT-17, SPARE FUSES compartment	Spare for F205			
F212	PP-1294(XN-1)/SRT-17, SPARE FUSES compartment	Spare for F206			
F213	PP-1294(XN-1)/SRT-17, SPARE FUSES compartment	Spare for F207			
F214	PP-1294(XN-1)/SRT-17, SPARE FUSES compartment	Spare for F201			
F215	PP-1294(XN-1)/SRT-17, SPARE FUSES compartment	Spare for F203, F501, F502			
F216	PP-1294(XN-1)/SRT-17, SPARE FUSES compartment	Spare for F208			
F501	0-332(XN-1)/SRT-17, front panel	M. O. oven	1	250	N5920-243-3789
F502	0-332(XN-1)/SRT-17, front panel	M. O. oven	1	250	N5920-243-3789

TABLE 5-3. SYMPTOMS OF FUSE FAILURE

SYMTOM	BLOWN FUSE
Blown fuse condition is indicated by red pin extending from fuse	
FILAMENT indicator (I202) is out, breaks filament supply current	F201
PLATE indicator (I201) is out, breaks plate supply circuit	F202
No meter reading on P.A. GRID current meter	F203 F204
All front panel indicators are out	F205 F206 F207
No voltage on terminals 18 and 19 of TB102	F208
Oven does not warm up and no M.O. DIAL LIGHT shows	F501 F502

CAUTION

NEVER REPLACE A FUSE WITH ONE OF HIGHER RATING UNLESS CONTINUED OPERATION OF THE EQUIPMENT IS MORE IMPORTANT THAN PROBABLE DAMAGE. IF A FUSE BURNS OUT IMMEDIATELY AFTER REPLACEMENT, DO NOT REPLACE IT A SECOND TIME UNTIL THE CAUSE HAS BEEN CORRECTED.

TO REPLACE A FUSE PROCEED AS FOLLOWS:

(1) Turn the cap of the fuse holder counterclockwise until it releases, and pull the cap with fuse out of the holder.

(2) Remove the defective fuse from the cap.

(3) Replace the fuse with another of the same rating having the red indicating pin visible through the cap. Tighten the cap in the holder by turning clockwise.

b. REPLACEMENT OF INDICATOR LAMPS: Location and types of indicator lamps are shown in table 5-4. All lamps are of the bayonet base type.

TO REPLACE FRONT PANEL LAMPS:

(1) Remove the lens by grasping the knurled portion and turning counterclockwise

TABLE 5-4. REPLACEMENT OF INDICATOR LAMPS

FRONT PANEL MARKING	LOCATION	SYMBOL	MANUFACTURER'S TYPE	FEDERAL STOCK NUMBER
PLATE	PP-1294(XN-1)/SRT-17, front panel lower left	I201	Mazda No. 44	G6240-057-2887
FILAMENT	PP-1294(XN-1)/SRT-17, front panel lower center	I202	Mazda No. 44	G6240-057-2887
BATTLE SHORT	PP-1294(XN-1)/SRT-17, front panel lower right of center	I203	GE No. NE-51	G8240-223-9100
CARRIER ON	T-557(XN-1)/SRT-17, front panel	I301	Mazda No. 44	G6240-057-2887
DIMMER	0-332(XN-1)/SRT-17, behind front panel Dial	I502	Mazda No. 44	G6240-057-2887
OVEN INDICATOR	0-332(XN-1)/SRT-17, front panel upper center	I501	GE No. NE-51	G6240-223-9100

(2) Press the lamp inward and turn counterclockwise; then pull the lamp out.

(3) Press the new lamp inward and turn clockwise.

(4) Replace the lens.

c. REPLACEMENT OF VACUUM TUBES: Vacuum tubes should give many hours of trouble-free service. Failure of the filament of a tube can usually be noted visually; exceptions are the metal tubes. Other failures may be observable through noting improper meter readings, noise or unsatisfactory quality of monitored signals. When replacing tubes, consult table 1-4 for location and type.

WARNING

ALLOW TUBES TO COOL BEFORE HANDLING. IF IMMEDIATE REPLACEMENT IS REQUIRED, USE AN ASBESTOS GLOVE AND HANDLE CAREFULLY.

(1) To replace any of the electron tubes, it is first necessary to withdraw the unit from the cabinet.

WARNING

THE EMERGENCY-LINE SWITCH MUST BE IN THE OFF POSITION BEFORE THE UNITS ARE WITHDRAWN FROM THE CABINET. THIS IS IN ORDER TO PREVENT THE OPERATOR FROM COMING IN CONTACT WITH VOLTAGES INSIDE THE EQUIPMENT WHICH MIGHT CAUSE SERIOUS INJURY.

(a) Loosen the thumbscrew around the edges of the front panel.

(b) Grasping the handles on the front panel, pull forward carefully until the chassis rolls outward and the stops engage.

(2) Miniature tubes are equipped with shields which also act as tube clamps. When replacing a tube of this type proceed as follows:

(a) Remove the tube shield, turning it approximately 45 degrees counter-clockwise until the bayonet pin releases.

(b) Grasp the glass bulb of the tube and pull it from the socket, rocking it very gently in order to release the prongs.

(c) Orient the new tube so that it will slide into the socket properly, then press it down firmly.

(d) Replace the tube shield, holding it down and turning about 45 degrees clockwise to lock.

(3) When removing tubes having medium bases such as type 807 (V404) or H. V. rectifier tubes, type 3B28 (V203, V204) proceed as follows:

(a) Remove plate cap located on top of tube.

(b) Release snap clip at base of tube.

(c) Grasp the glass bulb of the tube and pull it from the socket, rocking it very gently in order to release the prongs.

(d) Orient the new tube properly and press it firmly into the socket.

(e) Lock snap clip at base to secure tube in its socket and replace plate cap.

(4) Replacing the low voltage rectifier tubes, type 5R4WGY (V201, V202, V504) is the same as above, except omit step (a).

(5) The Power Amplifier and Modulator tubes, type 4-65A (V407, V408, V305, V306)are held in place by a pressure spring clamp. When replacing a tube of this type proceed as follows:

(a) Remove plate cap.

(b) Release the pressure on the spring clamp, grasp the glass bulb of the tube and pull it from the socket.

(c) Release spring clamp and orient the new tube to seat firmly in the socket.

(d) Replace plate cap.

d. REPLACEMENT OF CRYSTAL. The calibration frequency crystal Y501, (type CR-18/U) which is supplied with the equipment, is located behind the oven in the R. F. OSCILLATOR 0-332(XN-1)/SRT-17. When replacing this 1100 kc crystal be certain the replacement is marked with this frequency. The location of this crystal is shown in figure 5-1. To change the crystal proceed as follows:

NOTE

Crystals may be safely replaced while the EMERGENCY-LINE switch is ON, but it is not recommended that this be done, unless it is imperative that the equipment be kept continuously energized.

(a) Withdraw the MO section to the service position.

(b) Remove the crystal by working it gently upward. Replace with a new crystal.

(c) Slide the unit back into the cabinet.

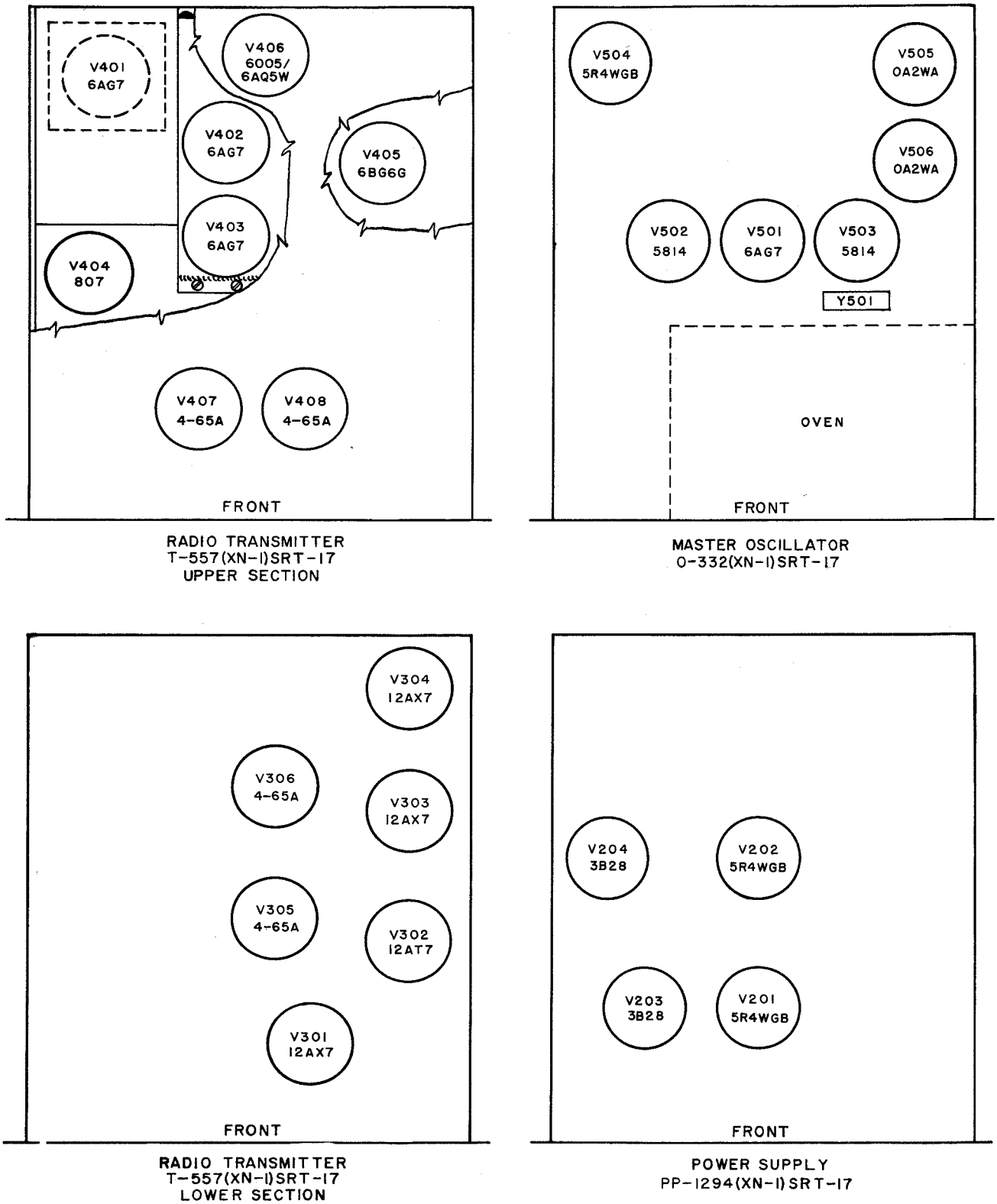


Figure 5-1. Location of Tubes and Crystal

SECTION 6

PREVENTIVE MAINTENANCE

1. INTRODUCTION

The maintenance of radio equipment does not begin when the equipment fails to operate in the normal manner. Maintenance must begin as soon as the equipment is installed and continued regularly during the entire life of the equipment. Regular inspection and care, known as preventive maintenance, is just as important as corrective maintenance. A schedule of preventive maintenance, if rigidly adhered to, will prevent most of the common faults and breakdown. Only a few minutes each day are needed to make sure that the equipment is free from dirt, dust, excess moisture, vermin; that all cables and plugs of the equipment are clean and tight-fitting; that parts are properly lubricated and that no component of the set is being abused or neglected.

2. PREVENTIVE MAINTENANCE SCHEDULE

NOTE

Maintenance procedures other than those covered in Section 5 should be performed by qualified technical personnel only.

The maintenance schedule in table 6-1 provides a guide for the personnel charged with the maintenance of this equipment. Before performing any maintenance inspection or checks, personnel should familiarize themselves with Section 4 and paragraph 2 of Section 5. The tightening and adjustment specified in the table can all be performed with usual small tools available to a technician. An alignment tool is provided with the equipment. Cleaning operations should be performed using a lint-free cloth and ~~dry-cleaning solvent~~ (NOT GASOLINE) or using No. 0000 wet-or-dry sandpaper as is appropriate.

*DRY-CLEANING SOLVENT, 140F, FSN W6850-274-5421

3. LUBRICATION

a. In case there is mechanical binding of dials, switch detents, sliding contacts, or rotating parts, (NOT ELECTRICAL CONTACTS), a small amount of Navy spec 14-L-3 Grade I grease or commercial "Lubriplate No. 105" may be applied. When necessary apply a small amount of light machine or instrument oil (Spec. MIL-0-6085) to the drawer slides on the chassis and in the cabinet.

TABLE 6-1. PREVENTIVE MAINTENANCE SCHEDULE

	WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS AND REMEDIES
HOURLY	1. Control and emission indicator.	Follow procedures in check chart in section 5.	Replace lamp if defective.
EACH WATCH	1. Transmitter in operation.	a. Standby: - Check items 1, 2 and 3 in first section of table 5-1. b. Operating: - Check items 1, 2, 3, 4, and 5 of second section of table 5-1.	a. Report unsatisfactory operation and have them corrected as soon as possible. b. Report unsatisfactory operation. Readjust tuning if necessary.
DAILY	1. Clean equipment.	a. Remove dirt from controls and outside of cabinet. b. Place EMERGENCY-LINE switch in OFF position and dust inside of equipment.	a. Do not disturb control settings. b. Do not touch contacts, complicated mechanisms or delicate components such as relays and switches. Do not disassemble units or remove covers.
	2. Check connections.	a. Feel all plug connections for possible looseness. b. Check that set screws and couplings are tight.	Tighten, if necessary.
	3. Transformers, reactors, capacitors.	Visually inspect and/or feel components for overheating or damage.	a. Watch for breakage. b. Investigate and remedy overheating or breakdown. c. Replace damaged components.
	4. Relay contacts.	Examine for pitting, corrosion or uneven pressure.	a. Clean contacts with carbon tetrachloride. b. Burnish with burnishing tool. c. Adjust contact pressure.
	5. Interlocks and HV grounding switches.	a. Check chassis and cabinet interlocks manually. b. Check HV grounding switches on chassis manually.	Spring return should be positive. Replace if defective.
	6. Zero setting of meters.	Remove all power and check position of meter pointers.	Adjust to "0" with small screwdriver.
WEEKLY	1. Rotary switch contacts.	Visually inspect contacts for pitting, corrosion or loss of tension.	a. Clean with ~~carbon tetrachloride~~* or crocus cloth. b. Replace, if necessary. Refer to Section 7.
	2. Air-filters.	Inspect filters for dust and dirt.	Remove filters and clean by tapping them lightly or dousing in ~~carbon tetrachloride~~* OR WATER
	3. Blower.	Check motor for overheating and that impeller is not loose.	Investigate cause and tighten impeller or replace motor if necessary.

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TABLE 6-1. PREVENTIVE MAINTENANCE SCHEDULE (Cont'd)

	WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS AND REMEDIES
WEEKLY	4. Operation of controls.	a. Operate all power controls.	a. Report any improper operation. If repair is required, refer to Section 7.
		b. Check operation of modulator bias failure relay (K301) by removing fuse F204.	b. MOD. CATHODE meter indicator goes to zero.
		c. Check operation of overload relay by detuning PA.	c. CAUTION: Do not allow PA to remain untuned for more than a few seconds.
MONTHLY	1. Operation of tuning controls.	a. Rotate all tuning controls and check couplings and dials.	a. Couplings should be tight, switches should line up at proper points. b. Operation should be smooth.
	2. Tubes, sockets and connections.	a. Remove tubes, check pins for dirt or corrosion.	a. Clean pins using crocus cloth.
		b. Examine socket connections and plate clips for dirt, corrosion and loss of pressure.	b. Remove dirt or corrosion with crocus cloth. Bend socket clips slightly to increase pressure if necessary.
		c. Examine sockets for cracks or breakage.	c. Replace broken or cracked socket.
	3. Terminal screws and component screws.	Check for tightness.	Tighten where necessary.
QUARTERLY	1. Tube life.	Review tube life history to see if replacement is warranted.	Replace tubes where necessary.
	2. Blower.	Rotate and note if bearings are worn.	Replace motor is necessary.
	3. 12 volt dc supply.	Check output with voltmeter.	If output is less than 9.5 volts, replace rectifier (CR302).
ANNUALLY	1. Transmitter overhaul.	a. Remove transmitter from service and disassemble units from cabinet.	a. Experienced technicians must be available for this work.
		b. Disassemble and clean every accessible component.	b. Use care and follow cleaning procedures above.
		c. Replace damaged or worn out parts or frayed wiring.	c. Check all connections after reassembly. Follow Section 3 procedures in placing equipment back in operation.

FAILURE REPORTS

"Report each failure of the equipment, whether caused by a defective part, wear, improper operation, or an external cause. Use ELECTRONIC FAILURE REPORT form DD 787. Each pad of the forms includes full instructions for filling out the forms and forwarding them to the Bureau of Ships. However, the importance of providing complete information cannot be emphasized too much. Be sure that you include the model designation and serial number of the equipment (from the equipment nameplate), the type number of the major unit (from the major unit nameplate), and the type number and reference designations of the particular defective part (from the instruction book). Describe the cause of the failure completely, continuing on the back of the form if necessary. Do not substitute brevity for clarity. And remember-there are two sides to the failure report---

"YOUR SIDE"

Every FAILURE REPORT is a boost for you:

1. It shows that you are doing your job.
2. It helps make your job easier.
3. It insures available replacements.
4. It gives you a chance to pass your knowledge to every man on the team.

"BUREAU SIDE"

The Bureau of Ships uses the information to:

1. Evaluate present equipment.
2. Improve future equipment.
3. Order replacements for stock.
4. Prepare field changes.
5. Publish maintenance data.

Always keep a supply of failure report forms on board. You can get them from the nearest District Publications and Printing Office."

Figure 7-1. Failure Report

SECTION 7

CORRECTIVE MAINTENANCE

WARNING

ELECTRICAL OR MECHANICAL SERVICING OF THIS EQUIPMENT SHOULD BE ATTEMPTED ONLY BY QUALIFIED TECHNICAL PERSONNEL AUTHORIZED FOR SUCH WORK. OPERATION OF THIS EQUIPMENT INVOLVES THE USE OF VOLTAGES WHICH MAY BE DANGEROUS TO LIFE. PERSONNEL MUST CONTINUALLY OBSERVE ALL SAFETY REGULATIONS.

1. INTRODUCTION.

a. During the normal service life of a transmitter, faults and breakdowns will develop. The use of a logical corrective maintenance routine will greatly facilitate prompt repair. Corrective maintenance procedure involves first, the localization of the faulty stage or circuit, second, the location of the faulty component, and third, the necessary adjustment, repair or replacement of that component. Adjustment and repair covered in this section should be performed only by competent radio technicians supplied with proper tools and test equipment. Technicians should familiarize themselves with the details of operation and component make-up of the equipment prior to the occurrence of trouble.

b. The material contained in this section includes a trouble-shooting chart, alignment and adjustment procedures and component characteristics. Reference to photographs, schematics and practical wiring diagrams should be made frequently as an aid to servicing.

c. GENERAL PRECAUTIONS. -When working with the equipment, remember that high voltage (7500 volts) may be exposed.

WARNING

USE EXTREME CARE. DO NOT DEPEND ON INTERLOCKS. WHEN SPECIFICALLY REQUIRED FOR SERVICING, SHORT INDIVIDUAL INTERLOCK. DO NOT ATTEMPT TO SERVICE THE EQUIPMENT WITH THE BATTLE-SHORT SWITCH ON.

(1) The cabinet interlocks S101, S102 and S103 are in series with the coil circuits of the low voltage plate contactor K202, high voltage contactor K201 and MO plate voltage contactor K502. When a unit is withdrawn, the plate contactors are de-energized, cutting off the plate voltage supplies. Additional protection is provided through the use of interlocks S303B, S402D, S405C and S406D. These interlocks are of the switch-wafer type, located in Radio Transmitter T-557(XN-1)/SRT-17, mounted on the rear of the EMISSION Switch S303, BAND SWITCH S402, ANTENNA RANGE S405, and ANTENNA TAP S406. When any one of

these controls is rotated from one position to the next, the interlock removes the keying ground from the grids of keying tube V405 and IPA amplifier-multiplier V404, blocking the keying tube and raising the cathode voltage on the IPA amplifier-multiplier V404. This cuts off V404. This action removes rf energy from the switch contacts thereby preventing HV arcing during switching.

High voltage shorting switches are provided to ground the high side of the HV rectifier and the LV rectifier outputs. When the Power Supply unit is withdrawn, a spring-operated mechanical interlock S203 shorts both the 1500v dc and 550v dc supply. As the Radio Transmitter unit is withdrawn, a bumper-type connector (E107 and E426), breaks the high voltage supply to the P. A. and modulator tubes.

(2) INTERLOCK TEST. -Start the equipment in accordance with Section 4, paragraphs 5, 6 and 7. Set the POWER switch to ADJUST and connect a multimeter (TS-352/U or equivalent) across terminals 7 and 8 of terminal board TB201. The meter will read 115v. Open each cabinet interlock in turn by withdrawing the units to the service position, one at a time. For each open condition the voltmeter will read zero.

WARNING

WHEN MAKING MEASUREMENTS ON TRANSMITTER DO NOT TOUCH TERMINALS. VOLTAGES UP TO 7500 VOLTS AC AND 1500 VOLTS DC ARE PRESENT.

Do not replace a part until reasonably sure that this replacement will eliminate the trouble. In making repairs or replacements make every effort to duplicate the original condition of the equipment. Use standard replacement parts as supplied in the spare parts kit. Wiring should be run in the identical manner and position as the original. Use resin-core solder only and immediately remove any excess solder which may have dropped within the chassis or cabinet.

d. EMERGENCY REPAIRS. -In case of emergency repairs, where exact replacement of parts is impossible, the same care and workmanship must be used. Conspicuously tag all temporary repairs. Complete the permanent repair and restore equipment to its original condition at the first opportunity.

2. LOCALIZING TROUBLE.

The first step in servicing a transmitter is to localize the fault, that is, to determine quickly and efficiently the major component or circuit which is causing the trouble. Observe the equipment in operation to determine abnormal conditions. Check all meter readings and indicator lights for proper operation. Abnormal readings or indications of burned-out resistors, rf arcing, and shorted or open components. However, the majority of faults can best be localized by voltage and/or resistance measurements. Use the trouble-shooting information given in table 7-1, and voltage and resistance data in tables 7-2 and 7-3.

Always check accessible parts before proceeding to any intricate servicing. Electron tubes, fuses, filter capacitors and crystals are the most likely cause of electrical trouble. After it is determined that these items are not at fault, the faulty circuit and its associated component should be checked systematically for continuity, defective resistors, shorted or open capacitors, loose connections and faulty switch or relay contacts.

When performing continuity checks or resistance measurements, take into account other components which may be in parallel with the part under test. As a precaution,

TABLE 7-1. TROUBLE SHOOTING CHART

TROUBLE	SYMPTOM	CHECK POINT	ADDITIONAL CHECKS AND CORRECTIONS
		POWER SUPPLY CIRCUITS	
Power not on.	With EMERGENCY LINE switch ON, equipment not energized.	1. Check fuses F206 and F207. 2. Check line filters FL-201 and FL202. 3. Check jumpers on TB-202 for firm contact.	1. Replace fuses, if necessary. See Table 5-3 in Technical Manual. 2. Replace line filters, if no continuity. 3. Tighten jumpers on TB202.
Power on but transmitter will not start.	Push START button, relay K204 does not operate.	1. Fuse F205 blown. 2. Check relay K204. 3. Check autotransformer T-204.	1. Investigate cause and replace fuse. 2. Coil open or shorted or contacts defective, replace relay. 3. Windings may be open.
Filament power	With START-STOP relay in closed position. 1. Transmitter or modulator tube filaments do not light. 2. Rectifier filaments do not light. 3. Indicator lamps and/or filaments out.	1a. Transformer T304 windings. b. Connections may be broken. c. Check fuse F201. 2a. Check transformer T202 and wiring, also fuse F203 and sockets XV201, 202, 203, 204. b. Check for loose jumpers on TB201. 3a. Check individual lamps and tubes. b. Check connections. c. Check applicable tube or lamp sockets.	1a. Replace transformer, if defective coil. b. Rewire, if defective. c. Replace, if blown. 2a. Windings may be open, leads broken or socket contacts dirty or broken. Replace or clean as necessary. b. Tighten screws. 3a. See Table 5-4 and figure 5-1 in Technical Manual. Replace if necessary. b. Leads may be open or shorted. c. Contacts may be broken or dirty. Replace or clean, as necessary.
Fan not running.	No ventilation.	Fan does not run.	Defective motor, broken fan: replace.
No plate power.	PA CATHODE and MOD. CATHODE current meters read 0 with PLATE switch ON and filaments light	1. Plate contactors K201, K202 coils & contacts. 2. Time delay K203 may be open. 3. K203 operates. a. Interlocks all must close. b. Overload relay K303, K304 operation. Reset. c. Relay K301 operation. d. Shorting switch S203 may be closed.	1a. Coil may be open. b. Contacts defective. 2. Motor may be defective. Setting may be inaccurate. 3. a. Replace, if defective. b. If relay does not reset, investigate cause. Check relay coils. c. If K301 remains closed, C202 may be shorted: if K301 opens, check R371 d. Check circuits and switch spring.
550 vdc power off but 1500 vdc on PA.	No PA grid drive on PA CATHODE meter with ADJUST-TUNE-OPERATE switch in TUNE or OPERATE position.	1. Check tubes V201, 202 and fuses F203, 204. 2. Check trans T201 and filters L201, 202. 3. Check filter capacitors C201 and C203.	1. Replace, if defective. 2. Windings may be open or shorted. 3. Replace, if shorted.
550 vdc power on but 1500 vdc off.	No PA CATHODE or MOD. CATHODE current meter reading with ADJUST-TUNE-OPERATE switch in TUNE or OPERATE position. PA GRID drive satisfactory.	1. Check tubes V203, 204 and fuse F202. 2. Check trans T203 and filter chokes L203, 204. 3. Check filter capacitors C205, 206. 4. Check res R204, 205 in in TUNE position of ADJUST-TUNE-OPERATE switch.	1. See figure 5-1 in Technical Manual. Replace, if required. 2. Windings may be open or shorted. 3. Replace, if shorted. 4. Replace, if shorted or open.
1500 vdc power on PA but not on modulators.	PA CATHODE meter reads ok but MOD. CATHODE meter re reads 0 with voice input on A3.	1. Check primary of T302 2. Jacks J305, 402 and connections. 3. Check K301.	1. Winding may be open. 2. Check jacks and rewire, if necessary. 3. Investigate reason, if closed.

TABLE 7-1. TROUBLE SHOOTING CHART (Cont'd)

TROUBLE	SYMPTOM	CHECK POINT	ADDITIONAL CHECKS AND CORRECTIONS
		POWER SUPPLY CIRCUITS (Cont'd)	
No bias voltage.	Mod. and PA Overload relays K303B, 304A will not stay closed.	1. Check bias rect CR301. 2. Check trans T201 and choke L201. 3. Check R363 for open. 4. Check filter cap. C201.	1. Replace, if defective. 2. Windings may be open or shorted. 3. Replace, if open. 4. Replace, if shorted.
Bias voltage low or incorrect.	Transmitter will not load up to full output. PA GRID drive low.	1. Rectifier CR301 output voltage less than 150 v. 2. Adjust bias voltage for mod. tubes if incorrect.	1. If low, replace rectifier. 2. Adjust in accordance with Section 7 in Technical Manual.
		OVEN CIRCUITS	
Oven does not heat up	1. Oven indicator light remains out. 2. Oven indicator light remains on.	1a. Check fuse F501, 502. b. Broken or dirty contact on K501. c. Defective lamp I501. 2. Check continuity of heater res HR501, 502. 3. Check connections at oven terminals.	1a. Replace, if blown. b. Clean contact or replace relay. c. Replace lamp. 2. Replace heater wire if no continuity. See Sec. 7 par 6(3), Technical Manual. 3. Tighten loose connections.
Oven heats up and does not cut off.	1. Oven indicator light remains on.	1a. Check relay K501 for open coil. b. Check K501 contacts. c. Thermo sw S501.	1a. Replace K501. b. Clean, or replace relay. c. Replace thermostat if defective.
		RADIO FREQUENCY CIRCUITS	
Transmitter energized but no carrier output.	PA CATHODE meter reads low.	1. Transmitter not loaded out properly. 2. Check coils L421 to L428; L430, 432 and switches S403 to S406. 3. Check capacitors C452 to C460.	1. Readjust per Section 4 in Technical Manual. 2. Coil may be open or turns shorted. Switch contacts burned or broken. Replace, if necessary. 3. Capacitors shorted. Variables have bent plates. Repair.
Carrier output low.	1. PA CATHODE current meter reads low. 2. PA CATHODE current meter reads high. 3. PA CATHODE current meter reads correctly but PA tube plates show red color. WARNING STOP TRANSMITTER IMMEDIATELY	1a. Transmitter not loaded out sufficiently. b. PA not properly tuned or driven. 2a. Check overload relay K304 setting. b. PA not properly tuned. 3a. PA not properly tuned. b. PA tubes V407, 408 have low emission. c. Parasitics present.	1a. Recouple and retune antenna per Section 4 in Technical Manual. b. Reduce coupling, retune PA and load out to antenna. Retune IPA for drive. 2a. Readjust per Section 7, paragraph 3a(3) in Technical Manual. b. Retune PA & coupling, Sec 4, Tech Manual. 3a. Reduce coupling, retune PA and recouple per Sec 4, Technical Manual. b. Replace tubes. c. Check E403 to E406 for shorted turns. Check PA bypass cap. C451 for opens. Check tubes by replacement. Check that paralleling connections are tight. Check that PA wiring has not been disturbed. Use "grid-dip" or other frequency meter to locate parasitic.
Carrier does not key properly.	1. With TEST KEY open (middle position) carrier stays on. 2. Keyed wave shape is incorrect. 3. With TEST KEY closed carrier does not come on.	1. Check V405 and the keyer circuit. 2. Check wave-shaping components K302, K401, C428, C425, C333, C464, R369, R370, R387, R411, R414 and R466. 3a. Check V405. b. Check as in 1 above.	1. Tubes may be defective. Voltages and resistances in Tables 7-2 and 7-3 in Technical Manual. 2. Relay contacts may be broken, capacitors or resistors open or shorted. Replace, as necessary. 3a. Tube may be defective. b. Replace components, if defective.

TABLE 7-1. TROUBLE SHOOTING CHART (Cont'd)

TROUBLE	SYMPTOM	CHECK POINT	ADDITIONAL CHECKS AND CORRECTIONS
		RADIO FREQUENCY CIRCUITS (Cont'd)	
Carrier present at PA grid but no PA output.	PA GRID current is proper, but PA CATHODE current is low or zero.	1. Overload relay K304 may be open. 2. PA tubes V407, 408 may be defective.	1. Reset relay. 2. Replace as necessary.
Carrier not present in PA grid circuit.	1. PA GRID meter reads 0 when TEST KEY is closed.	1a. IPA stage may be inoperative. Check RF output at V403. b. Check PA grid circuit resistors. c. Check PA bias voltage. 2. Previous stages may be defective. Check RF output at V404.	1a. Check V404 and its circuit components Check L407, L409 through L414 for open turns. b. See Sect 7, par. 3a(5) in Technical Manual. c. R437, R439 may be open. d. See Sec 7, par. 3a(2), Technical Manual. 2. Check keyer per previous instructions. Check oscillator per following instructions.
No RF output from amplifier-mult. V404.	1. No RF at V404 with TEST KEY depressed; but RF present at V403. 2. No RF at V403.	1a. Check keyer V405 and its circuits. b. Check operation of relay K401. c. Check IPA tuning on all bands. d. Check BAND SWITCH S402. 2. Check IPA tuning.	1a. Refer to Table 7-2 in Technical Manual. Replace components if necessary. b. See Sec 7, par. 3a(9) in Technical Manual. c. Coils may be open or short. Replace, if necessary, retrack, Sec 7 par 7-4, Tech. Man. d. Contacts may be dirty or broken. Clean or replace, as necessary. 2. See par. 7-4 in Technical Manual.
RF output at V404 off frequency.	Output on wrong frequency but none no correct frequency.	1. Check IPA tuning. 2. Check MO tuning. 3. Check oven for proper heating operation.	1. See par. 7-4 in Technical Manual. 2. MO mis-tuned. 3. Check oven heater for open, replace.
No RF output from ampl V403.	1. Output not present but RF input to grid ok. 2. No RF input to V403	1a. Check plate tuning. b. Check V403 voltages and resistances. 2. Check previous stage.	1a. See par. 7-4 in Technical Manual. b. See Tables 7-2 and 7-3 in Technical Manual. 2. Oscillator may be defective.
No RF output from amplifier V402.	1. Output not present but RF input to grid OK. 2. No RF input to V402.	1. V402 defective. 2. Check previous stages and L401.	1. Replace tube, if necessary. 2. Master Oscillator may be defective.
No RF output from amplifier V401.	1. Oscillator OK but no output from V401. 2. No output from RF Oscillator.	1. Check tubes and coil L402. 2. Check tubes V501 and V502. 3. Check K502.	1. Replace, if defective. 2. Check at junction J105 and P101 for good contact. a. Check for defective MO Power Supply. b. Be certain S503 is turned off. 3. Clean and replace contacts if necessary.
		KEYING CIRCUIT	
On CW operation transmitter does not key.	With TEST KEY depressed, CARRIER ON indicator lights but PA CATHODE meter reads low. PA and IPA appear OK.	1. Check tube V405. 2. Check voltages and resistances in V405 circuit. 3. Check operation of keying relay K401.	1. Replace, if defective. 2. See Tables 7-2 and 7-3 in the Technical Manual. 3. Relay coil may be open. Contacts may be broken, bent or dirty. Replace or clean, as necessary.
Circuit keys but does not hold in during "key-off" time when S304 is in OUT position.	Relays K401 and K402 both follow keying.	1. Relay K402 "A" contact may be defective. 2. Check band switch interlocks S402D, S405C, S406D. 3. Check time delay circuit for K401. 4. Check S304.	1. Clean contact or replace relay. 2. Contacts may be broken or dirty. Replace or clean, as necessary. 3. Rectifiers CR401, CR402, resistors R369, R370, R387 or capacitors C336, C337 may be defective. Replace as necessary. 4. Defective S304, replace as necessary.

TABLE 7-1. TROUBLE SHOOTING CHART (Cont'd)

TROUBLE	SYMPTOM	CHECK POINT	ADDITIONAL CHECKS AND CORRECTIONS
		KEYING CIRCUIT (Cont'd)	
Circuit does not key properly with S304 in IN position.	Relays K401 and K402 do not follow keying.	1. Relay coil may be open. 2. Resistors R467 or R468 may be open or shorted.	1. Replace. 2. Replace.
		AUDIO FREQUENCY CIRCUITS	
No modulator output.	PA does not modulate with EMISSION switch in A2 position.	1a. Modulator tubes V305 or V306 may be defective. b. Check switch S303A and transformer T302. 2. Check input to grid V305 and V306.	1a. See Table 7-2 in Technical Manual. Replace, if defective. b. Switch may be broken; transformer may be open or shorted. 2. Previous stage may be defective.
No audio at modulator grids.	Modulator circuit checks out.	1. Check tube V304 voltages. a. If grid voltage is not correct with TEST KEY on. Check tubes V303 and V302. 2. Check transformer T301. 3. Check other circuit components. 4. Check audio input to V302 grid.	1. Refer to Table 7-2 in Technical Manual. a. V303 and V302 voltages are given in Table 7-2 in Technical Manual. 2. Coils may be open or shorted. 3. Check HV and LV network and audio by-pass capacitors. Replace, if necessary. 4. Limiter or input may be defective. Check as below.
No limiter action with S301 IN.	Modulator overloads at high peaks. MOD. CATHODE meter reads high.	1. Check LIMITER switch S301 and LIMITER ADJ. R323. 2. Check V301 voltages. 3. Check presence of audio at pin 2 of V301.	1. Contact may be broken or dirty. Replace or clean. 2. See Table 7-2 in Technical Manual. 3. R303 or R318 or microphone may be defective. Replace, if necessary.
No RF output from cathode follower V502B.	No RF at P101.	1. Check continuity of coaxial line. 2. Check tubes V501 and V502.	1. Replace, if open. 2. Replace, if defective.
No RF output from V501 Master Oscillator.	No RF present at grid V502A.	1. Check V501. 2. Voltage divider capacitors shorted.	1. Replace with new tube. 2. Replace shorted capacitor.
No Calibration signal	No sound in headphones with CALIBRATE switch ON.	1. Check tube V503. 2. Check crystal Y501.	1. Replace, if defective. 2. Replace, if defective.

TABLE 7-2. VOLTAGE MEASUREMENT, TUBE SOCKETS AND TERMINALS

Conditions of Measurements:

1. Readings taken with Multimeter MS-25/U.
2. Unless otherwise specified all voltages are from pin or terminal to ground.
3. TEST KEY OFF.
4. ADJUST-TUNE-OPERATE switch in TUNE position.
5. LIMITER OUT.
6. EMISSION A-1.
7. MOD GAIN ZERO.
8. HEADSET LEVEL ZERO.
9. LOCAL POSITION.
10. BAND SWITCH on No. 1.
11. PLATE ON.
12. M.O. FREQUENCY 2 to 3.75 Mc.

REFERENCE SYMBOL	PIN NUMBERS									
	1	2	3	4	5	6	7	8	9	CAP
V201	—	620	—	930AC	—	930AC	—	620		
V202	—	620	—	930AC	—	930AC	—	620		
V203	900DC	—	—	900DC	—	—	—	—	—	1000VAC
V204	900DC	—	—	900DC	—	—	—	—	—	1000VAC
V301	182	0	1.57	6.3AC	6.3AC	160	0	1.57		
V302	78	.35	1.3	6.3AC	6.3AC	132	.3	2.2		
V303	190	0	1.5	6.3AC	6.3AC	190	0	1.5		
V304	290	0	2.5	6.3AC	6.3AC	290	0	2.5		
V305	3.2AC	600	290	-128	-130	0	3.2AC	—	—	1235
V306	3.2AC	600	290	-128	-130	0	3.2AC	—	—	1235
V401	0	6.3AC	—	-56	0	500	0	500		
V402	0	6.3AC	—	-56	0	500	0	500		
V403	0	6.3AC	—	-122	.12	500	0	500		
V404	6.3AC	560	-124	485	0	—	—	—	—	615
V405	—	6.3AC	0	—	-116	—	0	480	—	480
V406	—	19	6.3AC	0	330	330	-4			
V407	1.2AC	360	-128	-128	—	360	1.2AC	—	—	1300
V408	1.2AC	360	-128	-128	—	360	1.2AC	—	—	1300
V501	0	6.3AC	0	-24	.66	160	0	300		
V502	350	-58	0	6.3AC	6.3AC	230	0	6		
V503*	-1.3	-.39	0	6.3AC	6.3AC	-1.3	-1.23	0		
V504	1.8	515	0	660AC	—	660AC	—	515		
V505	160	—	0	—	—	—	0			
V506	330	160	0	—	330	—	160			

* - Crystal calibrator not energized.

TABLE 7-2. VOLTAGE MEASUREMENT, TUBE SOCKETS AND TERMINALS (Cont'd)

REF. SYM.	TERMINAL NUMBERS														
	1	2	3	4	5	6	7	7A	8	8A	9	10	11	12	12A
TB101	* 120AC	* 120AC	*	*	0	-60	-15	-15	0	0	0	0	-60	-15	-15
	13	14	15	16	17	18	19	20	21	22	23	24			
TB102	0	0	0	0	0	0	—	—	—	—	—	—			
	1	2	3	4	5	6	7	8	9	10	11	12	13		
TB103	115AC	115AC													
TB201	—	†† 120AC	††	—	†† 120AC	††									
TB202	—	††	††	—	††	††									
TB401	-123	-123	500	6.3AC	-59	-123									
TB402	500	500													
TB403	†† 120AC	††	†† 115AC	††											
TB404	2.8AC	—	-122	-58	-122	-128	21AC	—	-58	-123	2.8AC	19	620	—	—
TB501	—	†† 120AC	†† 120AC	†† 120AC	†† 120AC	—	—	†† 120AC	†† 120AC	—					
TB502	—	—	—	—	—	120AC	120AC	—	120AC	120AC					

* TB101 REMOTE Switch in REMOTE position
MAIN LINE Switch "ON"
STOP START Switch on STOP

1 and 3	120AC
1 and 4	0
2 and 3	0
2 and 4	120AC

†† The following voltage measurements are taken between the terminal described below:

TB102	(18 and 119...110VAC	TB404	2 and 8.....115VAC
	(23 and 24....115VAC	TB501	2-3 and 4-5..120AC
TB201	2-3 and 5-6...110VAC		4-5 and 7-8..120AC
TB202	2-3 and 5-6...120VAC	TB502	6-7 and 9-10.120AC
TB403	(1 and 2.....115VAC	TB103	115/230VAC
	(3 and 4.....120VAC		

TABLE 7-3. RESISTANCE MEASUREMENTS, TUBE SOCKETS AND TERMINALS

Condition of Measurements:

1. ALL POWER off.
2. Readings taken between pin or terminal and ground.
3. Readings taken with Multimeter MS-25/U.

REFERENCE SYMBOL	PIN NUMBERS									
	1	2	3	4	5	6	7	8	9	CAP
V201, V202	1NF	10K	1NF	1.4K	1NF	1.4K	1NF	10K	—	90
V203, V204	80K	1NF	1NF	80K						
V301	3.1K	460K	3K	0	0	120K	0	3.2K	0	—
V302	280K	1NF	1K	0	0	160K	700K	1K	0	—
V303	300K	440K	2.2K	0	0	320K	220K	2.2K	0	—
V304	500K	440K	2K	0	0	500K	420K	1.0K	0	—
V305, V306	28	9K	500K	240K	12K	9K	28	—	—	75K
V401	0	0	1NF	460K	320	10K	0	12K		
V402	0	0	1NF	460K	320	10K	0	12K		
V403	0	0	53K	1NF	2.6K	8.5K	0	8.5K		
V404	0	20K	85K	120K	0	—	—	—	—	9.5K
V405	1NF	0	0	1NF	52K	1NF	0	10K	—	120K
V406	120K	520K	0	0	18K	18K	1NF			
V407, V408	42	16K	50K	50K	1NF	18K	42			
V501	0	0	0	110K	42	1NF	0	130K		
V502	120K	130K	700	0	0	130K	3.4K	0		
V503	1NF	0	42	0	0	1NF	460K	2.2K	0	—
V504	1NF	120K	1NF	1NF	1NF	1NF	1NF	120K		
V505	1NF	1NF	1NF	1NF	1NF	1NF	0			
V506	120K	1NF	1NF	1NF	120K	1NF	120K			

Resistance is in ohms, or when marked "k" is in kilohms.

TABLE 7-3. RESISTANCE MEASUREMENTS, TUBE SOCKETS AND TERMINALS (Cont'd)

Condition of Measurements:

1. ALL POWER off.
2. Readings taken between pin or terminal and ground.
3. Readings taken with Multimeter MS-25/U.

REF. SYM.	PIN NUMBERS															
	1	2	3	4	5	6	7	7A	8	8A	9	10	11	12		12A
TB101	1NF	1NF	1NF	1NF	0	1NF	1NF	1NF	1NF	1NF	120	1NF	1NF	0		1NF
	13	14	15	16	17	18	19	20	21	22	23	24				
TB102	1NF	1NF	0	1NF	1NF	1NF	1NF									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TB103	1NF	1NF														
TB201	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF								
TB202	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF								
TB401	48K	48K	7.4K	0	26K	50K										
TB402	120K	120K														
TB403	1NF	1NF	1NF	1NF												
TB404	42	1NF	48K	950	50K	3.8K	1NF	42	540	50K	0	540	9K			
TB501	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF				
TB502	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF				
TB503	1NF	1NF	1NF	1NF	1NF											
J201**	1NF	1NF	1NF	9	1NF	1NF	0	1NF	500K	2K	1NF	1NF	1NF	1NF	1NF	1NF
J304**	1NF	1NF	1NF	0	1NF	1NF	0	320	10K	1.2K	40K	90	60	10K	600	1NF
J306††	20K	1NF	22K	120K	1NF	100K	0	1NF	1NF	115K	1 Meg	1 Meg	1NF	40	40	0
J401††	1.2K	1K	1NF	64K	64K	3K	0	25K	20K	1 Meg	100K	8K	1NF	1NF	1NF	0
J501	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	0				
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
J201	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF				
J304	1NF	26K	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF				
J306	1NF	1NF	1NF	1NF	1NF	500K	1NF	500K	1NF	500K	1NF	1NF	1NF	1NF	1NF	1NF
J401	1NF	1NF	12K	1NF	13K	10K	1NF	10K	1NF	1NF	1NF	1NF	1NF	1NF	1NF	1NF

** 28 Connectors †† 32 Connectors

disconnect one lead of the part being checked before taking measurements. Manually close relay or switch contacts which are normally open when the transmitter is not operating. Make full use of schematic and practical wiring diagram.

To measure the dc plate voltage of the Power Amplifiers use a dc voltmeter having a scale of at least 5000 volts (Multimeter TS-352-U) and high voltage leads capable of withstanding 10,000 volts or higher connected semi-permanently to the points of measurement. For the PA tubes proceed as follows:

a. Start transmitter in accordance with Section 4, paragraphs 5, 6, and 7.

b. Push the STOP (red) button.

c. Withdraw the Radio Transmitter unit to the service position.

d. Insert the flexible meter lead through one of the grommets at the top rear of the transmitter. Connect this lead to E107. Connect the other lead to the ground stud. Tape the connection, if any wire is exposed.

CAUTION

FASTEN WIRE LEADS UNDER SCREW HEADS.
DO NOT USE PROBES OR CLIPS.

e. Bring the leads out to the voltmeter. Place the voltmeter on a wooden stool or box or on a dry board on the deck.

f. Return the Radio Transmitter unit into the cabinet. Slowly pick-up any slack on the internally connected lead. Push the START button and read the dc voltage first with the ADJUST-TUNE-POWER switch in the TUNE position and then in the OPERATE position. In the OPERATE position, the PA plate voltage should read 1500v dc.

WARNING

DO NOT TOUCH THE VOLTMETER WHILE THE
PLATE SWITCH IS ON.

g. Push the STOP (red) button and remove the voltmeter leads. Use a similar method for measuring the voltage at the plates of the modulator tubes V305 and V306 located in the lower section of the same unit.

3. ELECTRICAL ADJUSTMENTS.

After the equipment has been in service for some time, or after replacement of tubes or other components, it may be necessary to make certain electrical adjustments or alignments to bring the equipment back to an efficient operating condition. The information given in this and the succeeding paragraph covers the complete alignment and adjustment procedure required to place the transmitter in proper operating condition. Make only such adjustments or partial alignments as appear necessary in the particular case. A list of suggested test equipment is given in table 7-4.

NOTE

Never change an adjustment without proper authorization and until certain as to the desirability of such a change.

TABLE 7-4. TEST EQUIPMENT REQUIRED

EQUIPMENT	RECOMMENDED TYPE OR MODEL	USED TO
Voltohmmeter, ac and dc voltage 20,000 ohm per volt	Multimeter TS-352-U or AN/PSM-4 series	Measure resistance, dc and ac voltages and currents
Audio Oscillator, 20 cycles to 20 kc, 1 volt output	Audio Oscillator TS-382A/U	Check audio response in Radio Transmitter T-557 (XN-1)/SRT-17
Oscilloscope, cathode ray (up to 4 mc response)	Oscilloscope OS-8/U series	Check modulation and audio response
Distortion Analyzer	Hewlett Packard Distortion Analyzer Model 330D or equivalent	Check modulation and audio response
Frequency Meter	Navy LR series Frequency Meter	Monitor transmitter output frequencies
Artificial Antenna, 75 ohms resistance, 2 to 30 Mc	Ohmite Dummy Antenna, Resistance Model D-251 or equivalent	Measure power output
RF Ammeter, 0 to 30 amperes range	JAN MR35W3RORFAA or equivalent	Measure power output

a. RADIO TRANSMITTER T-557(XN-1)/SRT-17 ADJUSTMENTS. -Before making any adjustments on the Radio Transmitter, check its operation in accordance with Section 3 paragraph 8. When adjustments are necessary systematically perform the following:

(1) PA SCREEN-GRID CLAMPER ADJUSTMENTS. -The screen-grid clamping voltage is adjusted through a potentiometer (R446) located next to the blower on the Radio Transmitter unit. Set the PA screen-grid voltage as follows:

WARNING

BE ESPECIALLY CAREFUL OF HIGH VOLTAGE ON THE PA PLATE CAPS.

Step (a) Start transmitter in accordance with Section 4, paragraphs 5, 6 and 7 for A-1 emission.

Step (b) Push the STOP (red) button.

Step (c) Withdraw the Radio Transmitter unit to the service position.

Step (d) Connect one high voltage lead between E426, and E107, another between the antenna contact, E108, and the corresponding chassis bumper. Connect a third lead between the transmitter ground strap and the Radio Transmitter unit.

Step (e) Connect the positive side of the dc multimeter TS-352/U to pin 6 of V407 or V408 and ground the negative side of the meter. Use the 500v dc scale on the meter.

Step (f) Insert test cable W101 and pull out the plunger on S102 on the cabinet.

Step (g) Push the START (black) button and set R446 for a reading of 225v dc. This adjustment will regulate the output of the clamper tube, V406, to control the dc voltage swing in the PA screens from approximately 230 to 400 volts.

Step (h) Push the STOP (red) button. Disconnect test cables and return the unit into the cabinet.

(2) BIAS VOLTAGE ADJUSTMENT. -The bias voltage of minus 150 volts is developed at the output of the LV filter circuit across R411 and R424. Bias voltage adjustment for the modulators, V305 and V306, is provided through R363, a potentiometer located behind the left cover plate on the front panel of Radio Transmitter T-557(XN-1)/SRT-17. Refer to figure 7-2. Before adjusting the modulator bias check that the transmitter is operating on A-1 emission, full power. Depress the TEST KEY to the MOM. ON position and adjust R363 for a reading of 30 ma on the MOD. CATHODE meter.

(3) OVERLOAD ADJUSTMENTS. -The power amplifier and modulator overload adjustments are screwdriver adjusted potentiometers located behind the left cover plate on the front panel of Radio Transmitter T-557(XN-1)/SRT-17. Each is clearly marked for identification. Refer to figure 7-2.

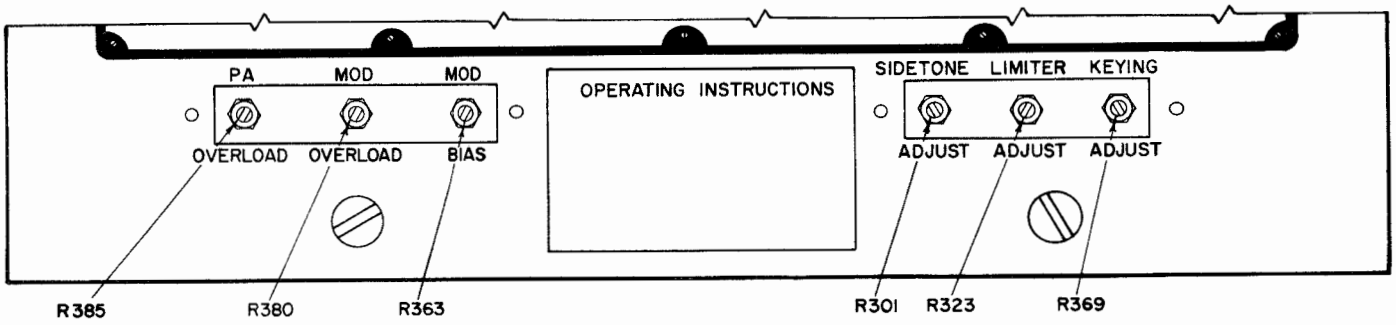


Figure 7-2. Screwdriver Adjustments on Transmitter Front Panel

(a) PA OVERLOAD RELAY. -The overload relay (K304) is adjusted by potentiometer R385 to release when the PA cathode current value is 250 ma. Operation of the relay indicates that the PA tubes have been overloaded during tuning. Depress the O. L. RESET switch on the front panel to energize the reset coil (K304A) which will mechanically reset

the operating coil (K304B). To adjust the overload relay, first tune the transmitter for A-1 emission in accordance with Section 4, paragraphs 5, 6, and 7 and proceed as follows:

Step 1. Record reading of PA TUNING control.

Step 2. Release lock nut (0303) and set R385 to maximum clockwise position.

Step 3. Detune the PA TUNING control until the PA CATHODE meter on the front panel reads 250 ma.

CAUTION

DO NOT ENERGIZE PA TUBES AT THIS CURRENT FOR MORE THAN A FEW SECONDS.

Step 4. Adjust potentiometer R385 until K304 just opens. Reset the PA TUNING control and depress the O. L. RESET switch (S304). This will energize K304A, the reset coil, which in turn will mechanically reset K304B, the operating coil.

Step 5. Tighten lock nut (0303) and replace cover plate. The above adjustment also sets the PA overload relay for A-3 emission.

(b) MODULATOR OVERLOAD RELAY. -The modulator overload relay, K303, operates on the same principle as the PA overload relay (K304). K303 is adjusted by potentiometer R380 to release when the modulator cathode current value is 200 ma. To adjust this relay, first tune the transmitter for A-3 emission in accordance with Section 4, paragraph 7.

Step 1. Insert a carbon microphone into the MICROPHONE jack on the front panel of the Radio Transmitter unit.

Step 2. Rotate the MOD. GAIN control to maximum.

Step 3. Release lock nut (0303) and adjust R380 for maximum by rotating shaft clockwise.

Step 4. Whistle into microphone to produce 200 ma on the MOD. CATHODE meter on the front panel.

Step 5. Adjust R380 until K303 justs opens. With modulation, corresponding MOD. CATHODE current should be approximately 175 ma. Tighten lock nut and replace cover plate.

(4) MODULATOR BALANCING ADJUSTMENT. -When adjusting the modulator screen-balancing potentiometer R365 located in the lower section of the Radio Transmitter unit (figure 7-13), first complete Steps (a), (b), (c), (d) and (f) of paragraph 3a(1) above and proceed as follows:

Step (a). Push the START (black) button.

Step (b). Rotate EMISSION switch to the A-3 position.

Step (c). Loosen the lock nut (0303) and adjust R365 so that the dull red color of both modulator tubes V305 and V306, is the same.

Step (d). Tighten lock nut. Push STOP (red) button and disconnect cables. Return the unit into the cabinet.

(5) DRIVE ADJUSTMENT. -When it becomes necessary to replace potentiometer R417, the DRIVE control, set the new potentiometer to the mid-point position and proceed to tune the transmitter in accordance with Section 4 paragraph 4c. and 5. Upon completion of Step 16 check that the maximum DRIVE, as indicated on the P.A. GRID meter, is 20 ma or more. If this is not the case, complete Steps (b), (c), (d) and (f) of paragraphs 3a(1) above and then proceed as follows:

Step (a). Push START (black) button.

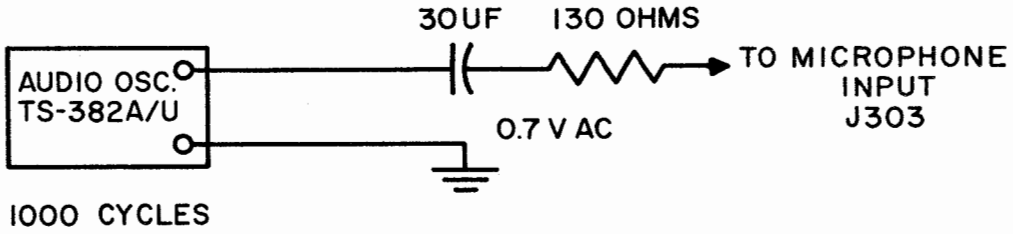
Step (b). Check the I.P.A. TUNING for maximum by reading the P.A. GRID meter.

Step (c). Loosen lock nut 0405 and adjust R417 for a reading of 20 to 30 ma on the P.A. GRID meter.

Step (d). Push the STOP (red) button. Disconnect test cables and return the unit into the cabinet.

(6) LIMITER ADJUSTMENT. -The limiter adjust potentiometer R323 is used to control the output of V301 in order to clip the peak of high level audio to prevent over-modulation, thus allowing high average modulation levels. This potentiometer is located behind the right cover plate on the front panel of the Radio Transmitter unit. Refer to figure 7- . To adjust the limiter, first set up the transmitter for A-3 emission in accordance with Section 4 paragraph 7, and proceed with the following:

Step (a). Connect an Audio Oscillator (TS-382A/U or equivalent) to the MICROPHONE jack J303, on the front panel of the transmitter as shown below:



CONNECTION FOR AUDIO OSCILLATOR

Step (b). Place LIMITER switch in OUT position and rotate MOD. GAIN control on front panel to maximum.

Step (c). Loosely couple a small pickup coil to the transmitter antenna line and connect it to the vertical plates of an oscilloscope (Oscilloscope OS-8/U or equivalent) which will respond to radio frequencies up to 2 megacycles. Adjust the oscilloscope, using internal synchronization, to show a pattern of the modulated wave. Also connect a distortion analyzer (Hewlett Packard model 330D or equivalent), to the pickup coil.

CAUTION

USE ONLY SUFFICIENT COUPLING TO GIVE A SUITABLE READING ON THE OSCILLOSCOPE WITH THE TRANSMITTER OPERATING AT FULL POWER.

Step (d). Increase the input audio voltage until the troughs in the modulation wave are about 18% of the peaks (70% modulation). Record this input voltage.

Step (e). Set the LIMITER switch to the IN position. Adjust R323 so that the clipping action starts at 70% modulation as shown on the scope.

Step (f). Adjust the Distortion Analyzer to indicate 0 db level.

Step (g). Increase the audio input voltage to 3 times the voltage of Step (d) above. The change indicated on the Distortion Analyzer should not be over 3 db. Check that the scope pattern does not indicate over-modulation.

Step (h). Use a monitor receiver to check the quality of emission.

(7) AUDIO RESPONSE ADJUSTMENT. -After changing components in the audio or modulator circuits, it may be desirable to adjust the audio response. To decide when such adjustments are warranted, listen to the quality of transmission on a monitor receiver. If the voice output is distorted to the point where the intelligibility becomes poor, adjust the fidelity of the audio response as follows:

Step (a). Withdraw the Radio Transmitter to the service position and complete Steps (a), (b), (c), (d) and (f) of paragraph 3a(1) above.

Step (b). Push START (black) button.

Step (c). Rotate the EMISSION switch to A-3 and set MOD. GAIN clockwise to maximum.

Step (d). Connect an Audio Oscillator (TS-382A/U or equivalent) as explained in Step (a) of sub-paragraph (6) above.

Step (e). Loosely couple a Distortion Analyzer (Hewlett Packard model 330D or equivalent) and an Oscilloscope (OS-8/U or equivalent) to an artificial antenna connected to the output of the transmitter.

NOTE

The artificial antenna should be approximately 75 ohms resistance and capable of dissipating 200 watts.

Step (f). Set R388 (High Frequency Adjust) and R389 (Low Frequency Adjust) approximately in midposition. These potentiometers are located next to V305 and V306 on the transmitter chassis, figure 7-14.

Step (g). Adjust the Distortion Analyzer for 0 db at 1000 cycles.

Step (h). Set the audio oscillator for a constant output of 0.7v ac. For each of the frequencies shown in table 7-5 record the reading of the Distortion Analyzer. Start with 100 cycles and increase to 5000 cycles.

Step (i). Adjust R388 and/or R389 to bring the response values within the limits with those shown in table 7-5. Increasing the potentiometers clockwise will increase the response level and vice versa.

NOTE

Any adjustment of R388 will change the 1000 cycle level. Reset Distortion Analyzer to zero db level at 1000 cycles. Then repeat Step (h).

TABLE 7-5. AUDIO FREQUENCY RESPONSE

FREQUENCY IN KC	RESPONSE LEVEL IN DB
100	-15 db
200	±3 db
500	±3 db
1000	0
1500	±3 db
2500	±3 db
5000	-25 db

Step (j). Repeat Step (i), as necessary, until response lies within the limits of table 7- .

Step (k). Increase the audio input voltage at 1000 cycles to indicate 95% modulation on the oscilloscope.

Step (l). Monitor the transmitter output on a receiver to check the quality of voice transmission.

(8) SIDETONE ADJUSTMENT. -The sidetone adjust potentiometer R301, controls that portion of the audio signal which is applied to the HEADSET jack J302, used in conjunction with a headset, for voice monitoring at the transmitter. R301 is located behind the right cover plate on the front panel of the Radio Transmitter unit. Adjust the sidetone level as follows:

Step (a). Set up the transmitter for A-3 emission in accordance with Section 4, paragraph 7.

Step (b). Connect an Audio Oscillator (TS-382A/U or equivalent) to terminal numbered 9 on TB101. Adjust the audio signal to approximately one volt at 1000 cycles.

Step (c). Insert headset into the HEADSET jack and adjust R301 to the desired level.

(9) KEYING ADJUSTMENT. -The keying time-delay circuit coordinates the response of the keying relay K401 with the keying speeds of the transmitter. With K401 closed,

antenna transfer relay K402 is also held closed.

In order to hold K402, closed, relay K401 must bridge the "key-up" time at the keying speed used. The discharge time-constant that controls the holding voltage of K402 must be greater than the longest "key-up" time. This time-constant is controlled by potentiometer R369, located behind the right front panel of the Radio Transmitter unit. Refer to figure 7-2. Proceed with the following adjustment for manual keying speeds:

Step (a). Complete Steps (a), (b), (c), (d) and (f) of paragraph 3a(1) above.

Step (b). Place BREAK-IN switch to OUT.

Step (c). Push START (black) button.

Step (d). Loosen lock nut (0303) and rotate R369 clockwise to its maximum position.

Step (e). Depress TEST KEY momentarily. Keying relay K401 will remain closed for approximately two seconds.

Step (f). Adjust R369 until K401 remains closed for approximately one second. This will allow K401 to "bridge" the key-up intervals at approximately 50 words per minute.

Step (g). Tighten lock nut. Push STOP (red) button and disconnect cables. Return unit back into the cabinet.

(10) TIME DELAY RELAY. -It is recommended that in case of failure of the time delay relay (K303) the entire relay be replaced. However, contacts on the time delay relay may be cleaned using a strip of No. 0000 wet-or-dry sandpaper or a piece of brown wrapping paper. Adjust the timing indicator on the back of K303 to 30 on the dial. This corresponds to 30 seconds time delay.

(11) CRYSTAL CALIBRATOR. -Should the calibration crystal (Y501) fail to operate it is recommended that it be replaced and a substitute crystal of the proper frequency be calibrated against a frequency standard. To calibrate the crystal the following equipment is required:

(a) Oscilloscope or headphones.

(b) A source of unmodulated radio frequency of 1100kc (frequency standard).

(c) Neutralizing tool.

1. Calibrate the crystal as follows:

2. Withdraw the R. F. Oscillator to the service position and remove V502 from its socket.

3. Connect one output lead of the frequency standard to a pin jack and insert into terminal no. 1 of XV502. Connect the other lead to ground.

4. Insert the headphones in jack J502.

5. Apply power to the unit and the frequency standard.

6. Listen in the headphones and vary C526 slowly with the neutralizing tool until the sound in the headphones decreases toward inaudibility, then begins to increase.

7. Locate the point of least signal between the two louder sounds.

8. Remove the frequency standard, replace V502 and return the unit into the cabinet.

If an oscilloscope is used; and with the frequency standard connected as in 3 above, connect the vertical input of the oscilloscope between ground and the frequency standard output. The horizontal input terminals are connected between the crystal (Y501) output and ground. Set the sweep knob on "external sweep". As capacitor C526 is turned slowly, a circle will be traced on the screen of the oscilloscope tube as the two frequencies coincide and become equal.

4. TRANSMITTER ALIGNMENT.

The complete alignment of the radio frequency bands includes calibration of the MO in the R. F. Oscillator, removal of the Radio Transmitter unit from the cabinet, adjustment of the circuit elements for the frequencies covered in each of the nine bands, the return of the unit to the cabinet, and the final test for serive operation.

a. Calibrate the master oscillator as outlined in Section 4, paragraph 12.

b. Remove the Radio Transmitter unit in accordance with paragraph 6b below and place it on a wooden bench near the equipment.

c. Connect test cables in accordance with Steps (d) and (f) of paragraph 3a(1). Set controls and start as follows:

CONTROLS	POSITION
LOCAL-REMOTE	LOCAL
PLATE	OFF
EMERGENCY-LINE	ON
ADJUST-POWER-OPERATE	ADJUST
TEST KEY	OFF
LIMITER	OUT
EMISSION	A-1
ANTENNA TAP	TUNE
BREAK-IN	OUT
START-STOP	Press START button.
PLATE SWITCH	ON

d. Press TEST KEY and check P. A. grid drive on bands one to four, starting with the BAND SWITCH in position 1 and continue consecutively to position 4. For each of these bands set the DRIVE control at maximum and tune the control (C422 ganged with C430). Table 7-6 gives an approximate setting for the I. P. A. TUNING control; adjust this control for each MO frequency to produce maximum drive at the P. A. GRID meter and then reduce the drive to 15 ma using the DRIVE control.

TABLE 7-6. EXCITER TRACKING ADJUSTMENT

BAND SWITCH	OUTPUT FREQ. KC	MO FREQ. KC	APPROX IPA TUNING	ADJUST	REMARKS
1	2000	2000	14.5	C422	Note 1
	2750	2750	73.0	C422	Note 1
2	2750	2750	1.0	C422	Note 1
	3750	3750	66.5	C422	Note 1
3	3750	1875	6.5	C422	Note 1
	5250	2625	71.0	C422	Note 1
4	5250	2625	6.0	C422	Note 1
	7500	3750	71.5	C422	Note 1
5	7500	1875	25.0	L412	Set slug 10 turns into coil.
	10000	2500	85.0	L412, C422	Note 2
6	10000	2500	23.5	L411	Set slug 6 turns into coil.
	15000	3750	95.0	L411, C422	Note 2
7	15000	1875	10.0	L406, C466	Set slug 15 turns into coil. Set C466 midposition.
	20000	2500	81.0	C422, L407 C466	Note 2
8	20000	2500	59.5	L408, C467	Set slug 11 turns into coil. Set C467 midposition.
	26000	3250	92.0	L408, C467 C422	Note 2
9	26000	3250	74.5	C468, L406 C423	Set slug 12 turns into coil.
	30000	3750	91.0	R437, L406 C423	Note 2

Note 1. Adjust I.P.A. TUNING control for maximum drive on P.A. GRID meter, then rotate DRIVE control counterclockwise to obtain 15 ma on meter.

Note 2. Tune for same maximum indication on P.A. GRID meter.

NOTE

As an aid to tracking, remove the link connecting terminals 1 and 2 of TB402 in the cathode of V404. Connect a 0-200 ma dc milliammeter between these points. Tune for a dip in the meter reading.

Once bands 1, 2, 3 and 4 have been checked for drive proceed with bands 9, 8, 7, 6 and 5, in that order, as follows:

e. Track BAND 9 in accordance with the following procedure. Begin with an MO frequency of 3750 kc. (30 mc output frequency).

(1) Set slug of L406, in V403 plate tank, twelve turns into the coil and adjust padder C423 in V404 plate tank to its midposition.

(2) Tune I.P.A. TUNING control for maximum grid current as indicated on the P.A. GRID meter.

(3) Adjust padder C468 in V403 tank for a peak indication on the P.A. GRID meter and retune the I.P.A. TUNING control for maximum grid current. Repeat this step for C423 in V404 tank.

(4) Change MO frequency to 3250 kc; (26 ma output frequency); adjust I.P.A. TUNING control for maximum P.A. grid current.

(5) Adjust L406 slug and then I.P.A. TUNING control for maximum grid current.

(6) Change to MO frequency of 3750 kc and repeat steps (2) and (3).

(7) Adjust DRIVE control R417, at both frequencies for 15 ma drive on the P.A. GRID meter.

(8) Monitor the transmitter output frequency with an LM series frequency meter or equivalent.

NOTE

If 20 ma or more maximum grid current cannot be obtained for both MO frequencies (3250 kc and 3750 kc) repeat subparagraphs (1) through (6).

f. Track Bands 8, 7, 6 and 5, in that order, using the same technique described for Band 9. Refer to table 7-6 for the corresponding tuning elements. For each band begin with the lowest MO frequency and complete the tracking procedure with the highest MO frequency indicated.

g. Push the STOP (red) button and disconnect test cables. Return the unit into the cabinet. Perform final test as described in paragraph 7 below.

5. MECHANICAL ADJUSTMENTS.

a. RELAY AND CONTACTOR MAINTENANCE. -Dependable operation of the equipment requires proper operation of all relays. Some of the smaller relays have critical adjustments and should not be tampered with.

(1) TELEPHONE TYPE RELAYS. -These relays have very light contacts and small contact openings. In case of failure replace the entire relay. The only maintenance required is periodic cleaning by the use of a burnishing tool or strip of wrapping paper drawn between the contact surfaces while manually holding the relay closed. Use extreme care not to bend contacts when cleaning them.

CAUTION

NEVER USE EMERY CLOTH OR ROUGH SAND-PAPER IN CLEANING CONTACTS.

Excessive hum usually indicates improper seating. Dirt on the pole faces may be removed by cleaning with a cloth moistened with carbon tetrachloride.

(2) TIME DELAY RELAY. -It is recommended that in case of failure of the time delay relay K203, the entire relay be replaced. Contacts on this relay may be cleaned using a strip of No. 0000 wet-or-dry sandpaper or a piece of wrapping paper.

(3) PLATE CONTACTORS K201, K202 and K502. -The coil and contacts may be replaced individually if available. Clean the contacts with a strip of No. 0000 wet-or-dry sandpaper.

NOTE

Brown discoloration on silver or silver-plated contacts is silver oxide which is a good conductor. Do not clean contacts unless it is required for some other reason.

b. ANTENNA VERNIER AND COUNTER ASSEMBLY. -The ANTENNA VERNIER coil (I428) consists of a wound rotor with a stop on each end. A slide contact rides the coil wires which continuously selects the inductance necessary to load the transmitter and match its output to the antenna system. To set the counter, first withdraw the transmitter unit to the service position. Then rotate the rotor knob counterclockwise until the sliding contact just touches the stop. Loosen coupling 0423 and set the counter (0410) to the "000" position. Carefully tighten the shaft coupling (0423) and the two level gears (0424, 0425) to retain the "000" reading of the counter. Check the other stop by rotating the rotor knob clockwise. The counter will now read 169. Return the unit into the cabinet.

c. ELECTRICAL SURGE ARRESTOR ADJUSTMENT. - This electrical surge arrestor, commonly known as a spark gap, is located on the right side of the transmitter unit. Withdraw the transmitter unit and adjust the spacing between the spark gap balls, (E424) with the feeler gauge attached to the housing. Tighten the lock nut so that the .072 in. feeler gauge just slides through without binding.

d. ADJUSTMENT OF VARIABLE CAPACITORS. -Withdraw the transmitter unit and manually adjust the following variable capacitors to the fully meshed position. Orient the corresponding front panel dials to indicator zero.

CONTROL	REFERENCE SYMBOL
P.A. TUNING	C455, C452
I.P.A. TUNING	C422, C430
COUPLING	C456
ANTENNA TUNING	C457

NOTE

Coupling capacitor C456 is a differential type capacitor, with two stators and one rotor. Adjust the dial to "0" with the rotor fully meshed with the top stator.

6. REPAIR AND REPLACEMENT OF PARTS.

a. GENERAL PROCEDURE. -When repairing or replacing parts use ordinary hand tools (not supplied with the equipment). Exercise care in the use of tools. Be sure that the tool used is of the proper type and size for the work to be done.

In applying heat to soldered joints be careful not to overheat or damage adjacent parts or wiring with the soldering iron. The application of even a small amount of heat may cause serious damage.

When a part is to be removed be sure to mark or tag the part. Screws, nuts, washers and other mounting hardware should be placed in containers to prevent their being misplaced or lost. Technical lugs at the ends of cables should be labeled to insure proper replacement.

b. REMOVAL OF UNITS FROM CABINET.

(1) Loosen front panel screws, and pull unit from the cabinet to the service position.

(2) The slides are fastened to the base of the chassis. Remove the bolts from both sides of the slides. This will free the chassis from the slides.

NOTE

Assistance will be required when removing the chassis from the slides.

(3) Lift the chassis up and outward from the cabinet.

CAUTION

DO NOT ATTEMPT TO LIFT THE POWER SUPPLY PP-1294(XN-1)/SRT-17 MANUALLY. THIS UNIT WEIGHS APPROXIMATELY 200 POUNDS.

(4) To disassemble the Radio Transmitter unit (refer to figure 7-3):

(a) Loosen the four bolts located one at each corner of the upper section.

(b) Lift top section straight up clear of assembly guides and rest it on its side or back.

c. TO RETURN UNITS TO CABINET:

(1) Pull both slides out until the stops engage.

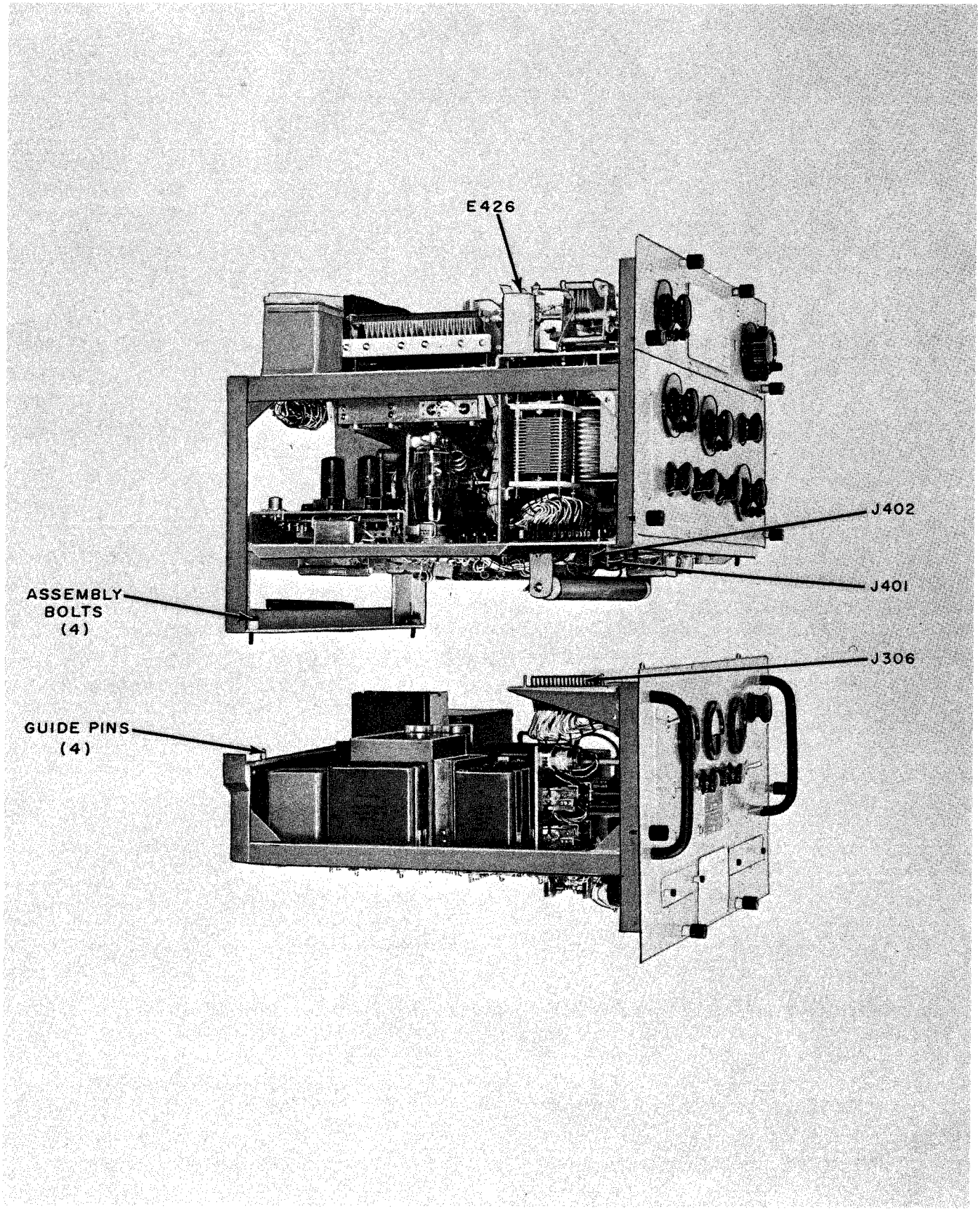


Figure 7-3. Disassembly of Radio Transmitter Unit

(2) Place the chassis on the slide runners and align the fastening holes on the sides of both slides.

(3) Replace the bolts and tighten nuts securely.

(4) Release stop lever and push unit into cabinet. Secure the front panel screws.

d. SWITCH MAINTENANCE.

(1) GENERAL. -Visually inspect all switch contacts for loss of tension. Check that contacts are not pitted or corroded. Make certain that all terminal connections are secure. Remake any frayed wire connections and tighten loose bolts and nuts where necessary.

NOTE

When removing switch connections carefully tag individual wires to facilitate replacement.

e. OVEN REPAIRS. (Refer to figure 7-15). -In order to get at the oven for repairs, withdraw the R. F. Oscillator unit from the cabinet and remove the oven cover.

(1) To repair oven heater HR501 or HR502, proceed as follows:

Step (a) Remove the four screws holding aluminum outer oven shield to base and remove shield.

Step (b) Unsolder heater wires from terminal board TB503.

Step (c) Remove the coiled resistor wire from the melamine form for the heater to be repaired.

Step (d) Select nine feet of coiled resistance wire.

Step (e) Solder one end of the heater wire to terminal 3 of TB503 and loop the wire over the axial pins along opposite edges of the melamine form.

Step (f) When one form is wound secure the heater wire to terminal 5 of TB503, and continue to wind the second form.

Step (g) Solder the end of the resistance wire to terminal 2 of TB503.

Step (h) Solder all connections and replace the aluminum shield. Replace the oven cover.

NOTE

The heater wire should not be stretched, and neither should it be loose enough to sag when expansion occurs. When wound properly nine feet of wire should fill the two forms evenly.

(2) To replace a damaged heater form:

(a) Refer to 6e(1), steps A, B and C.

(b) Remove the four machine nuts at the corners of the melamine heater form.

(c) Replace with new 4 inch square of melamine.

(d) Perform Steps D, E, F, and G above.

(e) Return unit into cabinet.

f. THERMOSTAT, S501. -The temperature in the oven is controlled by a mercury-in-glass thermostat. Three spring clips mount the thermostat on a melamine board at an angle against the back wall of the oven. Two of these clips establish electrical contact with metal ring on the glass stem.

(1) To remove the thermostat proceed as follows:

Step (a) Withdraw R. F. Oscillator to service position.

Step (b) Remove oven cover.

Step (c) Loosen the clips holding the thermostat.

Step (d) Grasp the thermostat by the pointed end and lift slowly.

NOTE

Do not place undue pressure upon the glass column and never grasp the thermostat at the bulb end.

(2) BAND SWITCH. -(Refer to figure 7-4)

(a) To replace and align the switch wafers of the BAND SWITCH, first withdraw the transmitter unit to the service position, and then orient the rotor section of each switch wafer to correspond to figure 7-4. This figure gives a pictorial layout of the complete switch without showing the structural portions and wiring. Use figure 7-4 for the mechanical alignment. The electrical connections of the wafer sections are given in figure 7-17 and figure 7-20.

(b) Proceed to replace BAND SWITCH sections as follows:

1. Loosen coupling set-screws and/or detents to release switch section to be replaced.

2. Remove damaged section.

3. Align rotor segment and replace the new section.

4. Tighten coupling set-screws. This locks switch rotor in position. Orient front panel knob to agree with the switch positions.

(c) The steel shaft extending from wafer switches S403A and S403B is at rf potential and therefore ungrounded. Exercise care in reassembly of this switch to provide maximum clearance between this shaft and the joining shaft extending from coupling 0426. After completion of step 3 in paragraph (b) above proceed as follows:

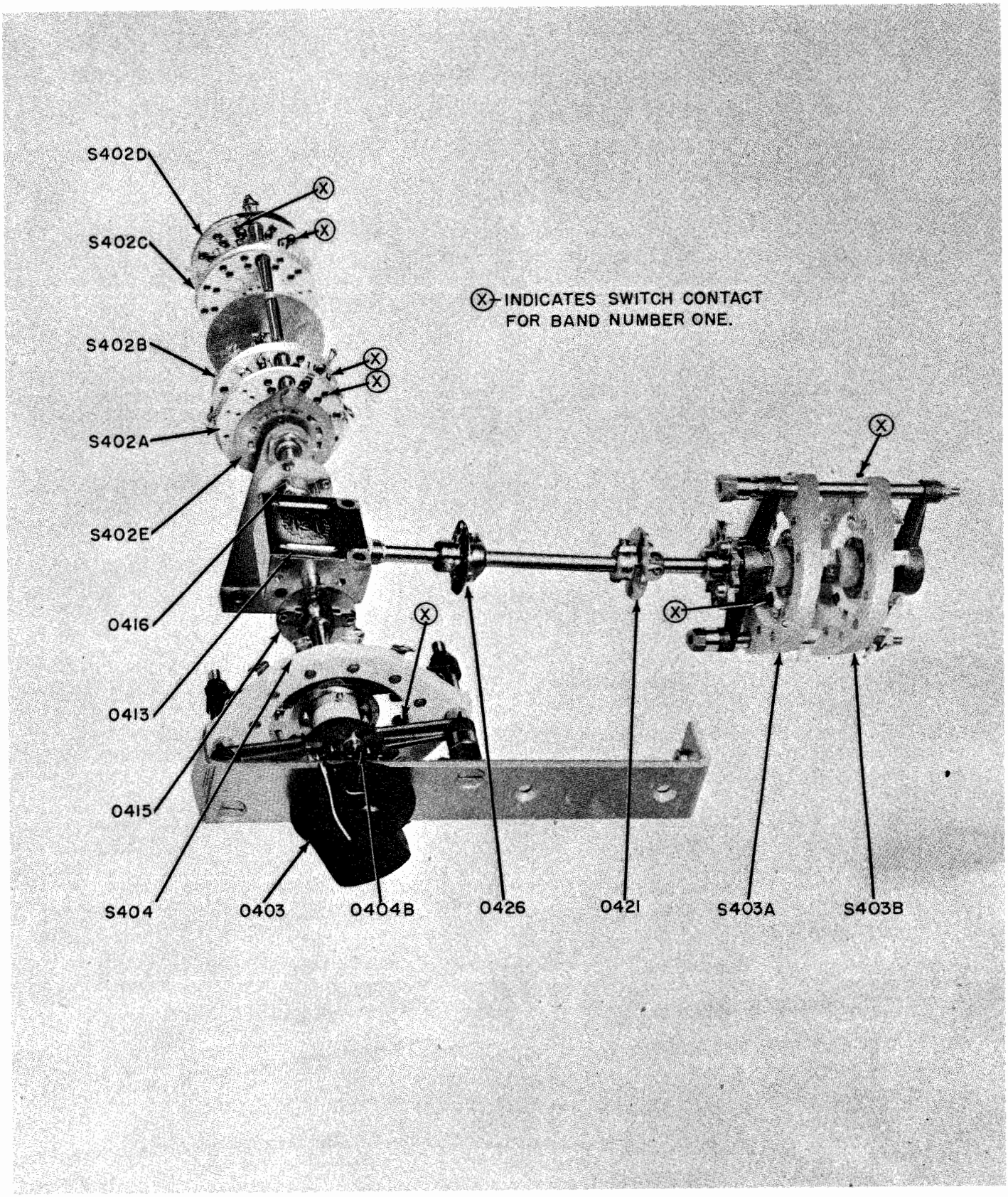


Figure 7-4. PA Band Switch Wafer Positioning

1. Slide the grounded steel shaft completely into coupling 0426 providing about 1/32 inch spacing with the shaft extending from the gear box 0413.

2. Tighten the screws upon the grounded steel shaft in coupling 0421.

3. Insert the ungrounded steel shaft in coupling 0421, spacing the end of the shaft at least 1/4 inch from the end of the grounded shaft.

4. Tighten 0421 coupling set-screws upon both shafts.

5. Check for electrical continuity between the switch shaft and the grounded shaft. There should be none.

6. Orient front panel knob to agree with switch positions.

7. FINAL TESTS.

After any major repair or adjustment, sound maintenance practice requires the completion of a check and final test to determine the quality of the repaired equipment. Follow the procedure given below to the extent indicated by the nature of the repair.

a. PRELIMINARY CHECKS AND ADJUSTMENTS. -Follow the procedures given in Section 3, paragraph 5. Be sure that any alignments or adjustments required have been completed in accordance with paragraphs 3, 4 and 5 above.

b. OPERATIONAL CHECKS. -Start up and tune the transmitter in accordance with Section 3, paragraphs 6 and 7. Check operation of all controls and circuits which might be affected by the repair in accordance with Section 4 for all operating conditions.

c. FREQUENCY COVERAGE AND POWER OUTPUT TEST. -When any replacement of frequency determining elements or an extensive overhaul has been completed, a test to verify that the transmitter will cover the required frequency range and give rated power output is necessary. This test may be limited to the portion applicable to the particular replacement or repair conditions but at least check the power output on each of the operating frequencies if they are known. Proceed as follows:

(1) Connect a 75 ohm artificial (dummy) antenna (see table 7-4) in series with a 0-3 ampere rf ammeter, between the transmitter antenna terminal and ground. Use short heavy loads.

(2) Energize the transmitter on one of the frequencies from table 7-7 or one of the operating frequencies.

(3) Load the transmitter up to full power output. This is indicated by a PA CATHODE current meter reading of 190 ma.

(4) Read the antenna current on the rf ammeter. The reading should be equal to or greater than the reading given in table 7-7.

NOTE

If rf ammeter reading is low, try retuning and matching the antenna before deciding that the transmitter will not produce full output power.

TABLE 7-7. POWER AND FREQUENCY COVERAGE TEST

BAND SWITCH POSITION	FREQUENCY IN MC		MINIMUM OUTPUT IN WATTS	ANTENNA CURRENT * RF AMPS
	LOW END	HIGH END		
1	2.0	—	100	1.42
	—	2.75	100	1.42
2	2.75	—	100	1.38
	—	3.75	100	1.26
3	3.75	—	100	1.33
	—	5.25	100	1.26
4	5.25	—	100	1.38
	—	7.5	100	1.25
5	7.5	—	100	1.38
	—	10.0	100	1.34
6	10.0	—	100	1.31
	—	15.0	100	1.32
7	15.0	—	100	1.26
	—	20.0	100	1.40
8	20.0	—	100	1.38
	—	26.0	100	1.26
9	26.0	—	100	1.25
	—	30.0	100	1.18

* using 75 ohm dummy load.

NOTE: Antenna power = (Antenna current)^2 X antenna resistance; i.e. at 2.0 Mc

Antenna power = $(1.15)^2$ X 75

= (1.33) X 75

= 100 watts

(5) Repeat above procedure on each of the operating frequencies or on each of the frequencies in table 7-7 when it is desired to check the transmitter for frequency coverage.

8. COMPONENT CHARACTERISTICS.

In checking and servicing the transmitter, data regarding the component parts will be useful. Such data is given in this paragraph and in the material referenced herein.

a. ELECTRON TUBES. -Electron tubes are the heart of the equipment and the transmitter cannot be expected to operate satisfactorily if any of them are defective. Check suspected faulty tubes in a standard tube tester or in actual operation. Tube operating voltages and rating characteristics are shown in tables 7-9 and 7-8 . Before discarding any tube, try to determine that a replacement will remedy the trouble.

TABLE 7-8. RATED TUBE CHARACTERISTICS

TUBE TYPE	FILAMENT VOLTAGE (V)	FILAMENT CURRENT (A)	PLATE VOLTAGE (V)	GRID BIAS (V)	SCREEN VOLTAGE (V)	PLATE CURRENT (MA)	MAX. GRID DRIVE	SCREEN CURRENT (MA)	AC PLATE RESISTANCE (ohms)	AMPLIFICATION FACTOR (MU)	TRANSCONDUCTANCE (micromhos)	REMARKS
3B28	2.5ac	5.4	3500	-	-	500 max[1]	-	-	-	-	-	H.V. rectifier with choke input filter. Filament heating time 10 seconds.
4-65A	6.0	3.5	3000	-110	600	150	85v	20	—	-	-	Audio frequency modulator class AB_1. Maximum rating. Plate dissipation 65 watts, screen dissipation 10 watts.
	6.0	3.5	2500	-500	400	120	2.6watts	25	-	5[4]	4000[3]	Plate modulated RF class C Amplifier. Maximum ratings.
5R4WGY	5.0	2.0	1900 full load, plate to plate	-	-	650 max 175 avg	-	-	-	-	-	Low voltage rectifier with choke input filter.
6AG7	6.3	0.65	375	-75	250	30	-	9	-	-	11000	Sharp cut-off pentode RF amplifiers and multipliers class C. Maximum ratings.
6BG6G	6.3	0.9	700	-50	350	100	3.2 watts	-	-	7.6[6]	6000[5]	Beam power amplifier keying tube, maximum rating.
12AT7WA	Parallel Connected 6.3	0.3	300	-50	-	10	12v	-	10.9K	60	5500	High-mu twin triode. Class A. amplifier maximum ratings.
12AX7	Parallel Connected 6.3	0.3	300	-50	-	1.2	-	-	62.5K	100	1600	High-mu triode. Class A. amplifier maximum ratings.
807	6.3	0.9	600	-40	300	80	36v	4	10K	8[6]	6000[5]	R.F. Power Amplifier class AB_1 maximum ratings.
5814A	6.3	0.35	250	-8.5	-	-	-	10.5	6250	19.5	2200	Twin triode RF amplifier Class C. Maximum ratings.
6005/ 6AQ5W	6.3	0.45	250	-12.5	120	47.0	12.5v	7.0	52K	-	4100	Maximum screen dissipation 2 watts. Class A amplifier.
OA2WA	-	-	156	-	-	5-30	-	-	-	-	-	Voltage Regulator.

NOTES

1. For maximum peak inverse anode voltage of 5000 volts.
2. Peak AF grid voltage.
3. Transconductance: 4000 μmhos with I_b = 125 ma, E_b = 500v, E_{c2} = 250v.
4. Average Grid - screen amplification factor.
5. Transconductance: 6000 μmhos for E_b = 250v, E_{g2} = 250v, E_{g1} = -14v.
6. Mu-factor, Grid No. 2 to Grid No. 1 for E_b = 250v, E_{g2} = 250v, E_{g1} = -20v.
7. Grid biased -12v for plate current of 10μ amp.

TABLE 7-9. TUBE OPERATING VOLTAGES AND CURRENTS

TUBE TYPE	FUNCTION	DESIG-NATION	PLATE P (E)	PLATE I (MA)	SCREEN (E)	SCREEN (MA)	SUPPRESSOR (E)	CATHODE (E)	GRID (E)	HEATER (E) AC
POWER SUPPLY PP-1294(XN-1)/SRT-17										
5R4WGB	LV RECTIFIERS	V201 V202	930AC	—	—	—	—	+620	—	—
3B28	HV RECTIFIERS	V203 V204	1000AC	—	—	—	—	0900	—	—
RADIO FREQUENCY OSCILLATOR 0-332(XN-1)/SRT-17										
6AG7	R. F. OSCILLATOR	V501	300	—	160	—	0	0.7	-24	6.3AC
5814A	R. F. AMPLIFIER CATH. FOLL.	V502A V502B	350 230	1 1	—	—	—	0 6	-58 0	6.3AC
5814A	CRYSTAL OSC. CRYSTAL CAL.	V503A V503B	300 300	1 1	—	—	—	0	-0.4 -1.2	6.3AC
5R4WGB	M. O. RECTIFIER	V504	660AC	—	—	—	—	+515	—	—
OA2WA	VOLTAGE REGULATORS	V505 V506	330 160	—	—	—	—	160 0	—	—
	RADIO TRANSMITTER T-557(XN-1)/SRT-17									
12AX7	LIMITER	V301A V301B	182 160	1 1	—	—	—	1.6 1.6	0	6.3AC
12AT7WA	AUDIO COMPENSATOR	V302A V302B	78 132	3 3	—	—	—	1.3 2.2	.3 .3	6.3AC
12AX7	AUDIO AMP. PHASE INVERT.	V303A V303B	190	1	—	—	—	1.5	0	6.3AC
	AUDIO DRIVER	V304A V304B	290 #240	1 #1	—	—	—	2.5 #1.95	0	6.3AC
4-65A	MODULATORS	V305 V306	1235 #520	15 #80	—	— #15	—	6.3AC	-130 #-70	—
	BUFFER AMPL.	V401		4					-56	
6AG7	RF AMPLIFIER	V402	500	30	500	—	—	0	-56	6.3AC
	AMPL. MULTI.	V403		40					-122	
807	AMPL. MULTI.	V404	565	50	460	—	360	360	-128	6.3AC
6BG6G	KEYING TUBE	V405	480	—	480	—	0	0	-116	6.3AC
6005/ 6AQ5	CLAMPER	V406	*25 330 *260	*60 — *20	*155 330 *260	— — —	— 19 —	— 19 —	*150 -4 *0.5	6.3AC
4-65A	POWER AMPL.	V407 V408	1300 *650	15 *80	360 *230	— *15	—	6.3AC	-128 *-80	—

\+ 6.3VAC Filament
0 2.5VAC Filament
Readings taken with KEY OFF unless otherwise specified
* KEY ON
\# MODULATION ON

b. CRYSTAL DATA. -This equipment uses one piezoelectric crystal for calibration of the R. F. Oscillator frequencies. This crystal delivers a frequency output of 1100kc. When ordering another crystal specify the following:

(1) CRYSTAL UNIT. (including crystal and holder).
TYPE: MIL type CR-18/U
FREQUENCY: 1100 kc; for use in Radio Transmitting Set AN/SRT-17(XN-1)
TEMPERATURE RANGE: -55° C to +90° C(-67° F to +194° F).
STABILITY: Within ±0.005% of 1100kc over temperature range.
HOLDER: Type HC-6/U.

(2) The holder is 0.750 in. wide by 0.345 in. thick by 1.034 in. high including the pins. Two pins, 0.050 in. diameter, 0.238 in. long, spaced 0.486 in. center to center provide connections. The crystal is of the plated, wire-mounted type.

c. THERMOSTAT MAINTENANCE. -The oven in the R. F. Oscillator uses a mercury-in-glass type of thermostat. In case of apparent failure, first carefully check the heater control relay circuit as this is a more likely cause for trouble. When it is desired to check or replace thermostat, first remove the oscillator assembly then the oven cover, revealing the thermostat, and the heaters. Remove the thermostat carefully by first pulling out at the small end to free it from the mounting clips. Examine the thermostat carefully for physical breakage, slight cracks, and for gas bubbles (separation) in the mercury column. Any type of crack or breakage requires a replacement. A gas bubble can sometimes be removed by repeated shaking with the bulb held downward or by warming the bulb very slowly with a match or other small flame.

CAUTION

DO NOT APPLY MORE THAN A VERY SMALL FLAME FOR A FEW SECONDS AS THE MERCURY COLUMN MAY RISE RAPIDLY AND POSSIBLY BREAK THE THERMOSTAT.

As soon as the bubble reaches the expansion chamber, quickly remove the heat and shake the mercury column. If this is not successful discard the thermostat and replace it.

d. WINDING DATA. -For use in shop repairs where exactly equivalent spares are not available and for exact identification, winding data on all coils (other than resistors) has been included in table 7-10.

e. PHOTOGRAPHS AND DRAWINGS. -Additional photographs, schematic diagrams and practical wiring diagrams of units and assemblies are included. Wiring information can be obtained from practical wiring diagrams, figures 7-18 through 7-23. The color codes used to identify fixed resistors, capacitors and wiring are shown in figures 7-24 and 7-25.

TABLE 7-10 WINDING DATA

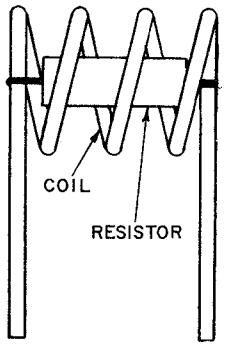
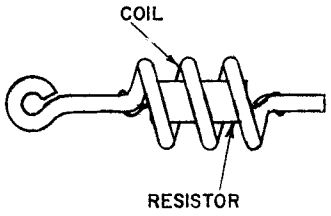
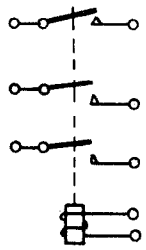
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
E401	Radio-marine Dwg A11985		Single 7/16 in. ID	No. 14 AWG Bare Copper wire	3	-	-	-	Coil- Silver plated Resistor- 47 ohms, 1 w, ±10%; JAN RC30BF470K
E403 E406	Radio-marine Dwg A11984		Single 5/16 in. ID	No. 14 AWG Bare Copper wire	8	-	-	-	Coil- Silver plated Resistor- 22 ohms, 1 w, ±10%; JAN RC30BF220K
E402	Radio-marine Dwg A11983 Part 2		Single 7/16 in. ID 2-7/8 in. lg.	No. 10 AWG Bare Copper wire	3	-	-	-	Coil- Silver plated Resistor- 47 ohms, 2 w. ±10%; JAN RC42BF470K
E404 E405	Radio-marine Dwg B31517		Single 7/16 in. ID 2-1/8 in. lg.	No. 10 AWG Bare Copper wire	3	-	-	-	Coil- Silver plated Resistor- 47 ohms, 2 w, ±10%; JAN RC42BF470K
K201 K202	Advance Type No. PC34-115VA		Single inductive	-	-	450±10%	-	1250 v rms	115 v dc nominal voltage at 5 ma Non pile-up 3PST, single break type contacts. Contact rating: 26.5 v dc non-inductive load at 10 a. 26.5 v dc inductive load at 5 a.
K204	Advance Spec No 3835Y		Single inductive	No. 34 AWG	3600	250±10%	-	1250 v rms	60 v ac nominal voltage at 4 ma Non pile-up 3PST, type, normally open contacts. Contact rating: 26.5 v dc non-inductive load at 10 a. 26.5 v dc inductive load at 5 a.

TABLE 7-10 WINDING DATA

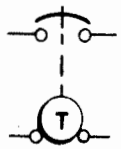
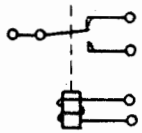
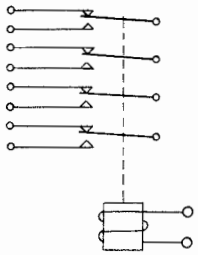
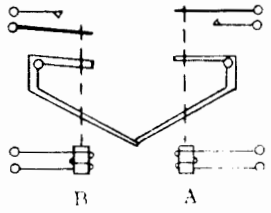
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
K203	Advance Spec No 3019-4		Single inductive	No. 38 AWG	3900	613±10%	-	1250 v rms	Motor timer-open relay relay time delay 0 to 60 seconds Contacts: SPDT Micro-Switch BZ-R88 rated at 115 v ac non-inductive load at 10 a.
K301	Advance Spec No 3932Y		Single inductive	No. 43 AWG	35,000	10,000 ±10%	-	1250 v rms	100 v dc nominal voltage Contact arrangement 1c, MBCA Ref Dwg Group 4. Contact ratings: 26.5 v dc non-inductive load at 2 a. 26.5 v dc induc-tive load at 1 a.
K302	Advance Spec No 3834Y		Single inductive	No. 38 AWG	11,000	1000±10%	-	1250 v rms	32 v dc nominal voltage at 32 ma Contact arrangement 4c, MBCA Ref Dwg Group 4. Contact ratings: 26.5 v dc non-inductive load at 2 a. 26.5 v dc induc-tive load at 1 a.
K303 K304	Advance Spec No 3484Y		Two inductive windings						A - Operating Coil: pick-up current 100 ma dc max, 75 ma dc min. B - Reset Coil: pick-up voltage 10 v dc or less.
			A. Operate	No. 33 AWG	3400	100±10%	-	1250 v rms	
			B. Reset	No. 33 AWG	3400	100±10%	-	1250 v rms	

TABLE 7-10 WINDING DATA

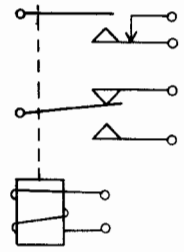
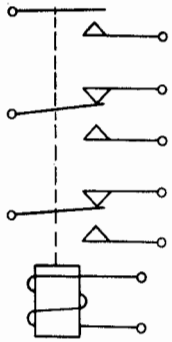
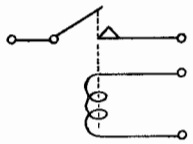
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
K401	Advance Spec No. 3473Y		Single inductive	No. 43 AWG	35,000	10,000 ±10%		1250v rms	100v dc operating voltage at 10 ma. SPDT, SPDT make before break Contact rating: 1.5 amperes at 24v dc or 115v ac non-inductive loads.
K402	Advance Spec No. 3836Y		Single inductive	No. 35 AWG	4500	400±10%		1250v rms	32v dc nominal voltage at 80 ma 3P, 2DT, 1ST:non pile-up type contacts. Contact ratings: 26.5v dc non-inductive load at 10a. 26.5v dc inductive load at 6 a.
K501	Advance spec No. 3424Y		Single inductive	No. 40 AWG		1250±10%			15v dc nominal at 12 ma SPST. Contact ratings: 1.5 amperes at 24v dc or 115 volts ac non-inductive load. Insulation: silicone glass.

TABLE 7-10 WINDING DATA

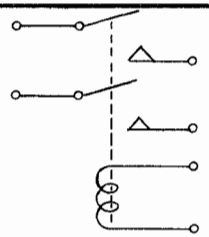
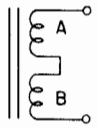
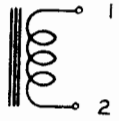
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
K502	Advance Spec No. 3967Y		Single inductive	No. 40 AWG	-	900 ±10%	-	-	115v ac nominal at 130 ma. DPST. Contact ratings: 2 amperes at 26.5v dc non-inductive; 1 amperes at 26.5v dc inductive load.
L201 L202 L204	Radio-marine Dwg B-207		Multi. layer insulated winding A B	 No. 28 AWG No. 27 AWG	 1400 1350	Total 100±15%	-	3000v rms winding to case	8 henries +20%, -10%, inductance measured at 10v rms at 60 cps with 250 ma dc. Hermetically sealed metal case Silicon steel core. Vacuum varnish impregnated.
L203	Radio-marine Dwg B208		Multi. layer insulated	No. 26 AWG	2200	85	-	5000 v rms	7.5 to 34 henries +20%, -10% inductance measured with 250 to 50 ma dc at 10v rms at 60 cps. Silicon steel core. Vacuum varnish impregnated.

TABLE 7-10 WINDING DATA

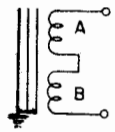
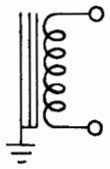
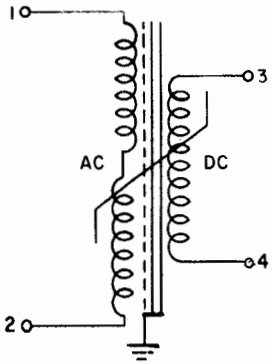
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
L301	Radio-marine Dwg B-214		Multi. layer insulated winding A B	 No. 31AWG No. 32AWG	 792 891	Total 80±15%	-	500 v rms winding to case	5 henries +20%, -10%, inductance measured at 10 v rms at 60 cps with 60 ma dc Hermetically sealed metal case Core grounded to case.
L303	Radio-marine Dwg B-321		Multi. layer insulated	No. 20AWG	308	1.7	-	500 v rms	0.10 henries +20%, -10% inductance measured at 10 v rms 60 cps with 1.2 amp dc Hermetically sealed metal case Silicon steel core Vacuum varnish impregnated Core grounded to case.
L417	Radio-marine Dwg B-210		Multi. layer insulated	No. 33AWG	4750	550 max	-	1500 v rms	12 henries +20%, -10%, inductance measured at 10 v rms at 60 cps with 100 ma dc. Hermetically sealed metal case Silicon steel core Vacuum varnish impregnated.
L302	Radio-marine Dwg B-393		Terms. 1-2 Multi. layer insulated 2 coils/unit Terms. 3-4	No. 26AWG No. 21AWG	370ea. 132	10.5±5% 0.72 ±15%	- -	500 v rms	0.33 henries ±10% tolerance; Inductance measured at 52 v rms 60 cycles with 1.0 amp dc across terminals 3 & 4. Silicon steel core Vacuum varnish impregnated.

TABLE 7-10 WINDING DATA

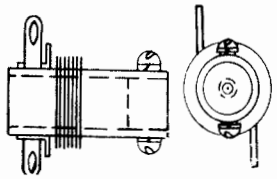
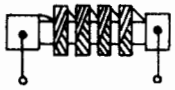
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
L401 L504	CTC Part No. X-2082-10		1 pie universal wound	No. 36 AWG single nylon enamel	202	8.8	-	-	Inductance 220 uh at 25 mc. Molded phenolic coil form.
L402	CGT Part No. X-2082-12		1 pie universal wound	No. 30 AWG SNE	276	12.1	-	-	Inductance: 470 uh at 790 kc, 100 ma dc; Molded phenolic coil form.
L403	CTC Part No. X-2082-9		1 pie universal wonnd	No. 36 AWG SNE	171	7.0	-	-	Inductance: 150 uh at 2.5 mc. Molded phenolic coil form.
L501	Radio-marine Dwg B-1239632		Single layer wound	No. 19 AWG nylon enamel Litz wire	60	-	-	-	Adjustable core.
L505	CTC Part No. X-2082-6		1 pie universal wound	No. 36AWG SNE	102	3.5	-	-	Inductance: 47 uh at 2 mc. Molded phenolic coil form.
L419	E. F. Johnson Part No. 102-752		5 pie universal wonnd	-	-	5.2	-	1500v	1 mh inductance at 1 mc; 500 ma dc, Steatite coil form.
L502 L503 L506 L507	National Part No. R100ST		4 pie universal wound	-	-	44	-	-	2.5 mh inductance 125 ma dc, Steatite coil form.

TABLE 7-10 WINDING DATA

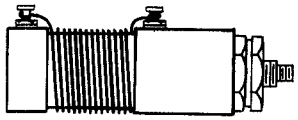
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
L508	Kenyon Part No. S-29587		Multi. layer	No. 28 AWG plain enamel	2300	100	-	2000v	10 h inductance, 125 ma dc; core 1-1/2 inch stack EI; 1-1/8 26 ga. Trancor silicon steel. Vacuum varnish impregnated.
L406 L411	Radio-marine Dwg A-11994 part 1		Single layer wound	No. 16 AWG	13	0.008	-	-	Mica filled bakelite coil form Adjustable core.
L407 L408	Radio-marine Dwg A-11994 part 2		Single layer wound	No. 18 AWG	15	0.015	-	-	Mica filled bakelite coil form; adjustable core.
L409	Radio-marine Dwg X-161-4		Single layer wound	No. 38 AWG	46-1/2	4.5	-	-	Mica filled bakelite coil form. Single silk enamel covered wire.
L412	Radio-marine Dwg A-11994 part 4		Single layer wound	No. 20 AWG	19	-	-	-	Mica filled bakelite coil form; adjustable core.
L418	Radio-marine Dwg A-11995		Single layer wound	No. 34 AWG	101	1.9	-	-	Ceramic coil form; o/a dimensions, 1/4 in. dia, 1 in. lg.

TABLE 7-10 WINDING DATA

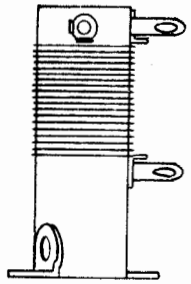
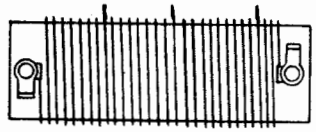
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
L413	Radio-marine Dwg A-11992		Single layer wound	No. 20 AWG	31-3/4	0.07	-	-	Laminated thermosetting plastic coil form; Silver plated finish. Tapped at 12-1/8 turns.
L414	Radio-marine Dwg A-11991		Single layer wound	No. 26 AWG	54-3/4	0.5	-	-	Laminated thermosetting plastic coil form; Silver plated finish. Tapped at 19-7/8 turns.
L429	Radio-marine Dwg A-1214401		Single layer wound	No. 32 AWG	79	2.6	-	-	Laminated thermosetting plastic coil form; Silver plated finish. Tapped at 38 turns.
L422	Radio-marine Dwg B-1233507		Single layer wound	No. 12 AWG	34	0.014	-	-	Laminated thermosetting plastic coil form; Silver plated finish. Tapped at 6, 19 and 27 turns.
L425	Radio-marine Dwg A-11998		Air wound single layer	3/16 in. od copper tubing	3-1/2	-	-	-	Tapped at 1-1/2 turns; Silver plated finish.

TABLE 7-10 WINDING DATA

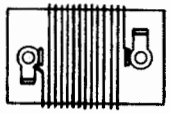
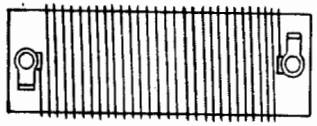
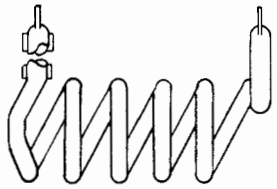
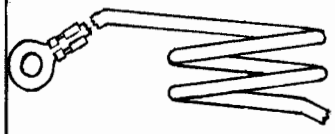
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
L416	Radio-marine Dwg A-11989		Single layer wound	No. 30 AWG	62	1.3	-	-	Laminated thermosetting plastic coil form; enamel insulated wire.
L420	Radio-marine Dwg A-11993		Single layer wound	No. 26 AWG	70	0.6	-	-	Laminated thermosetting plastic coil form; enamel insulated wire.
L415	National Co. Inc. Part No. R300ST		3 pie universal wound	No. 30 AWG	-	10	-	-	1 mh inductance at 1000 cycles, 300 ma.
L431	Radio-marine Dwg A-12045		Single layer wound	No. 26 AWG	100	-	-	-	Laminated thermosetting plastic tubing coil form; enamel insulated wire.
L423	Radio-marine Dwg B-31535		Air wound single layer	1/4 in. od copper tubing	4-5/6	-	-	-	Silver plated finish. One end flattened terminal; other end mounted with two hole clamp.
L430	Radio-marine Dwg A-11999		Air wound single layer	No. 10 AWG	2-1/8	-	-	-	Silver plated finish. Lug terminal soldered on one end.

TABLE 7-10 WINDING DATA

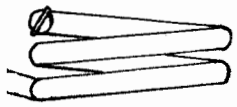
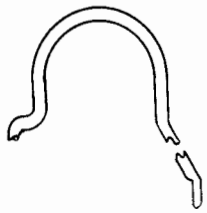
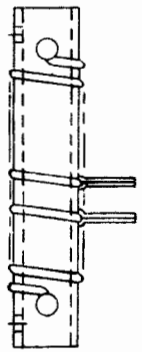
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
L432	Radio-marine Dwg A-14100		Air wound single layer	3/16 in. od copper tubing	2	-	-	-	Silver plated finish. Flattened terminals at each end.
L424	Radio-marine Dwg B-31534		Link coupling	1/4 in. od copper tubing	1/2	-	-	-	Silver plated finish. Flattened terminals at each end.
L410	Radio-marine Dwg B-1214461		Single layer wound	No. 14 AWG	14	0.005	-	-	Laminated thermosetting plastic coil form; Silver plated finish. Tapped at 6-1/4, 9-1/4 turns.
L421	Radio-marine Dwg B-31528		Single layer wound	3/16 in. od copper tubing	12-1/2	-	-	-	Laminated thermosetting plastic coil form; Silver plated finish. Tapped at 5 and 8 turns.

TABLE 7-10 WINDING DATA

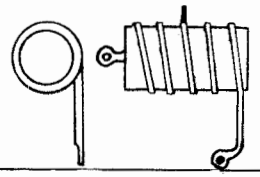
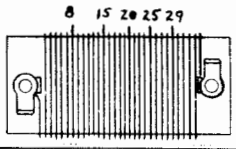
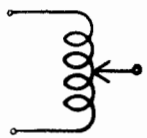
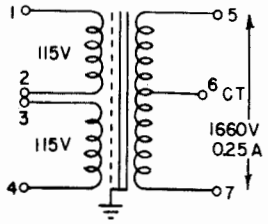
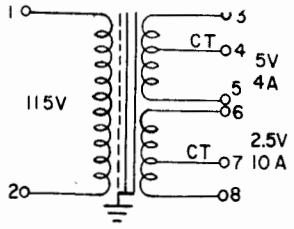
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
L426	Radio-marine Dwg B-31527		Air wound single layer	1/8 in. od copper tubing	11	-	-	-	Laminated thermosetting plastic coil form; Tapped at 7 turns. Silver plated finish.
L427	Radio-marine Dwg C-40822		Single layer wound	No. 12 AWG	33-1/2	0.043	-	-	Ceramic coil form; Tapped at 8, 15, 20, 25 and 29 turns. Silver plated finish.
L428	Radio-marine Dwg A-12005		Single layer wound	No. 14 AWG	17	-	-	-	Rolling contact; Adjustable tuning; 10 uh max inductance; Steatite coil form.
T201	Radio-marine Dwg B-204		Primary: Term. 1-2 Term. 3-4 Secondary: Term. 5-7	 No. 21 AWG No. 21 AWG No. 28 AWG	 141 141 2180ct	 1.5 1.6 142	 - - -	1000v rms, Pri #1 to Pri #2. 3500v rms, Pri to second	Core: 3 in. stack, no. 29 guage transformer "A" lamination. EI-13 interleaved 5 x 5. Vacuum varnish impregnation. Hermetically sealed. Electrostatic shield and core grounded to case.
T202	Radio-marine Dwg B-203		Primary: Term. 1-2 Multi. layers insulated Secondary: Term. 3-5 Single layer Term. 6-8 Single layer	 No. 23 AWG No. 14 AWG No. 10 AWG	 310 14ct 7ct	 3.4 0.025 0.005	 - - -	 500v rms 5000v rms 5000v rms	Core material-silicon steel Vacuum varnish impregnation Hermetically sealed Electrostatic shield and core grounded to case.

TABLE 7-10 WINDING DATA

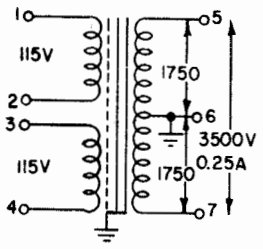
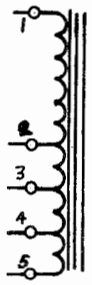
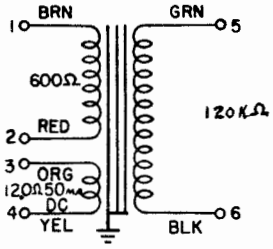
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
T203	Radio-marine Dwg B-205		Multi. layers insulated Primary: Term. 1-2 Term. 3-4 Secondary: Term. 5-7	 No. 14 AWG No. 14 AWG No. 27 AWG	 96 96 3000ct	 0.35 0.45 150	 - - -	 1000v rms 1000v rms 5000v rms	Core material-silicon steel Vacuum varnish impregnation Hermetically sealed Electrostatic shield and core grounded to case.
T204	Radio-marine Dwg B-209							1000v rms	
T301	Radio-marine Dwg B-211		Primary: Term. 1-2 Term. 3-4 Secondary: Term. 5-6 Random wound	 No. 44 AWG No. 35 AWG No. 44 AWG	 700 100 10,000	 500 8 5500	 1:200 - 1:1000	 500 v rms 500 v rms 500 v rms	Core material-silicon steel Vacuum varnish impregnation 200 to 2500 cps ±1 db frequency range.

TABLE 7-10 WINDING DATA

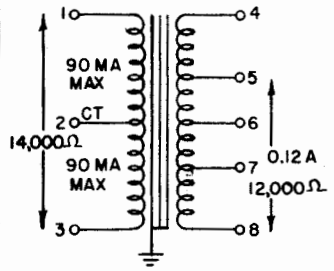
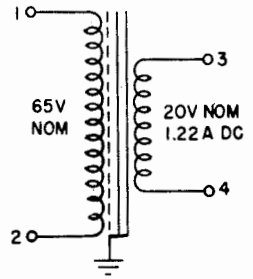
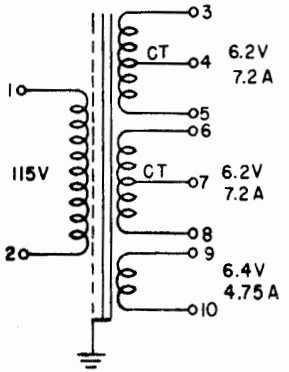
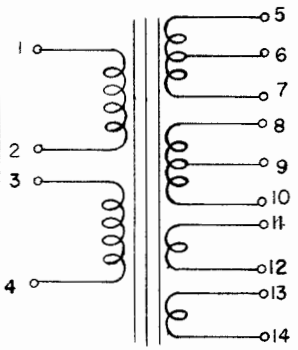
REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	HI-POT A.C. VOLTS	REMARKS
T302	Radio-marine Dwg B-208		Primary: Term. 1-3 Multi. layer insulated Secondary: Term. 4-8	 No. 30 AWG No. 28 AWG	 2500ct 2430	 270 157	 7:6 -	 5300 v rms 5300 v rms	Silicon steel core Vacuum varnish impregnation Taps 4 and 6, ±5% voltage ratio of winding between term. 5 and 8. Taps 7, 10% voltage ratio of winding between term. 5 and 8. 200 to 2500 cps ±1 db frequency range.
T303	Radio-marine Dwg B-394		Primary: Term. 1-2 Multi. layer insulated Secondary: Term. 3-4	 No. 24 AWG No. 19 AWG	 300 102	 3.6 0.47	 - -	 500 v rms 500 v rms	Silicon steel core Vacuum varnish impregnation Hermetically sealed Electrostatic shield and core grounded to case.
T304	Radio-marine Dwg B-202		Primary: Term. 1-2 Secondary: Term. 3-5 Term. 6-8 Term. 9-10	 No. 21 AWG No. 12 AWG No. 12 AWG No. 19 AWG	 276-1/2 16ct 16ct 16-1/2	 0.1 .03 .03 .06	 - - - -	 500 v rms 500 v rms 500 v rms 500 v rms	Core: 1-1/2 in. stack, no. 29 gauge grain oriented orthosil lamination EI-125 interleaved 5 x 5. Vacuum varnish impregnation

TABLE 7-10 WINDING DATA

REF. SYMBOL	MFR. SPEC./ DWG.	DIAGRAM	WINDING	WIRE SIZE	TURNS	DC RES. IN OHMS	IMPED-ANCE RATIO	H1-POT A.C. VOLTS	REMARKS
T501	Radio-marine Dwg B-444		Primary: Term. 1-2 Term. 3-4 Secondary: Term. 5-7 Term. 8-10 Term. 11-12 Term. 13-14	 No. 26 AWG No. 26 AWG No. 31 AWG No. 20 AWG No. 19 AWG No. 20 AWG	 220 220 2400 10 13 13	 47.5 52.5 225.0 0.045 0.14 0.12	 - - - - - -	 3000 v rms 3000 v rms 3000 v rms 3000 v rms 3000 v rms 3000 v rms	Core: 2 inch stack 29 ga. Grain oriented Silicon steel. Lamination EI-1/4 interleaved Vacuum varnish impregnation.

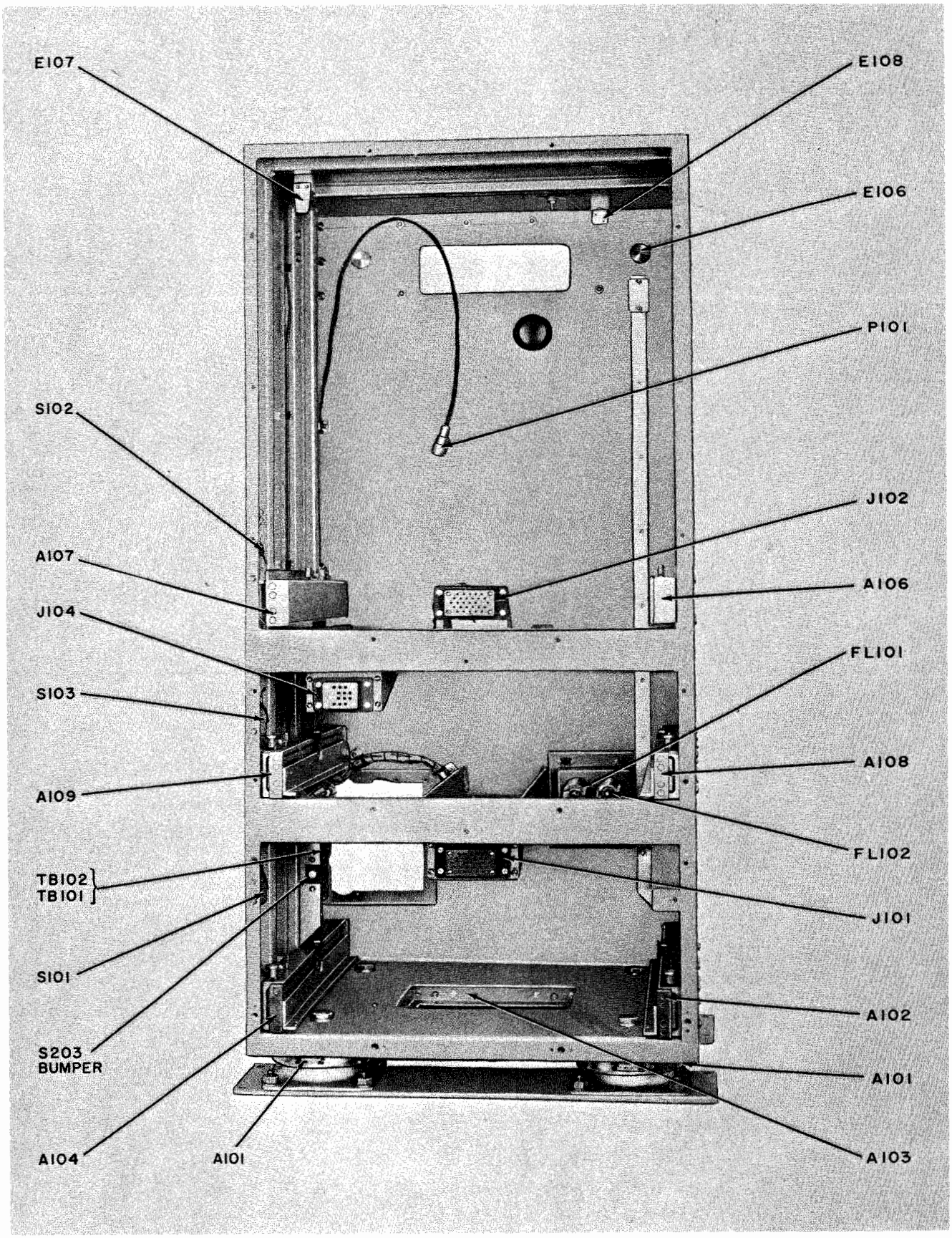


Figure 7-5. Cabinet, Electrical Equipment CY-1778(XN-1)/SRT-17, Front View

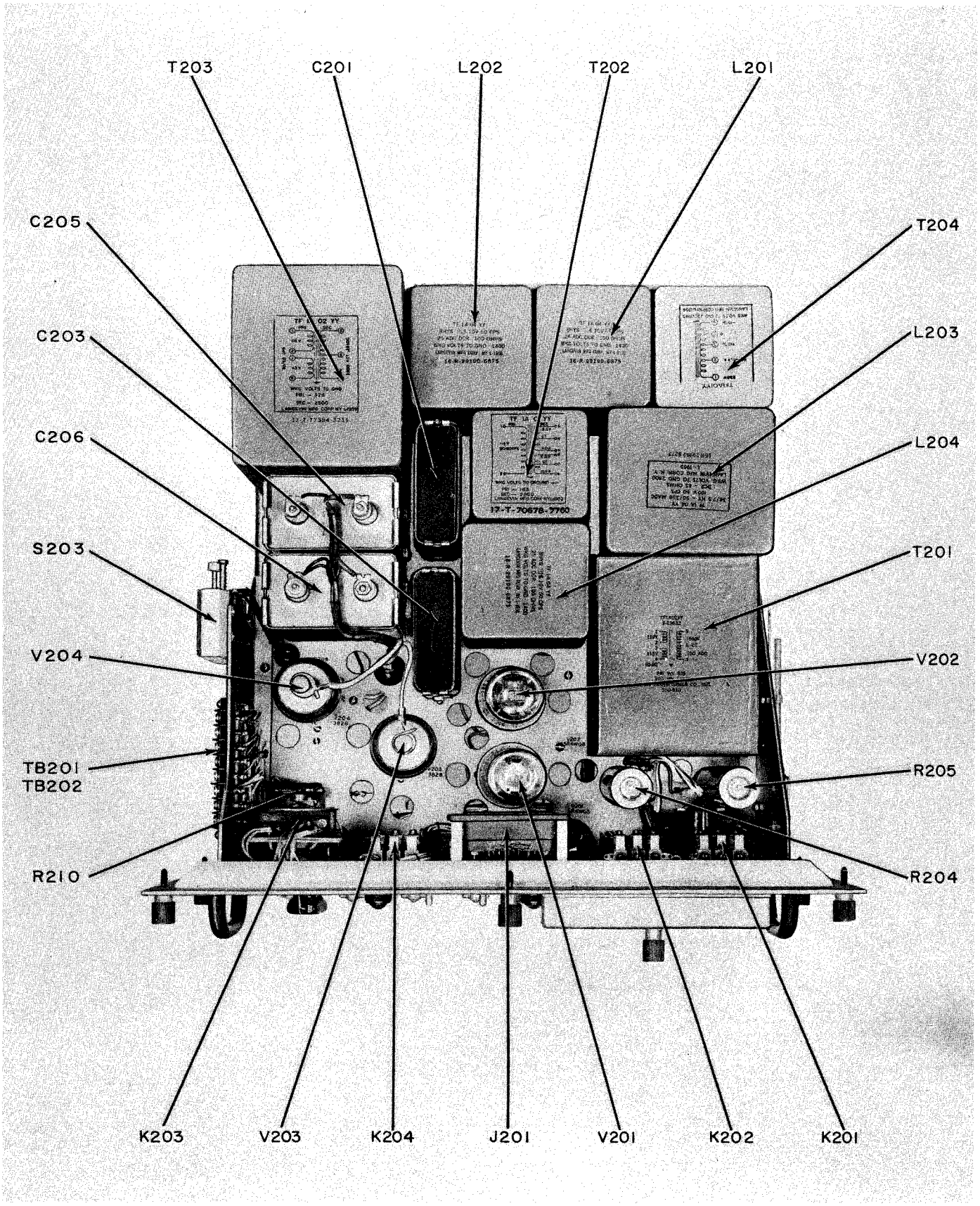


Figure 7-6. Power Supply PP-1294(XN-1)/SRT-17, Top View

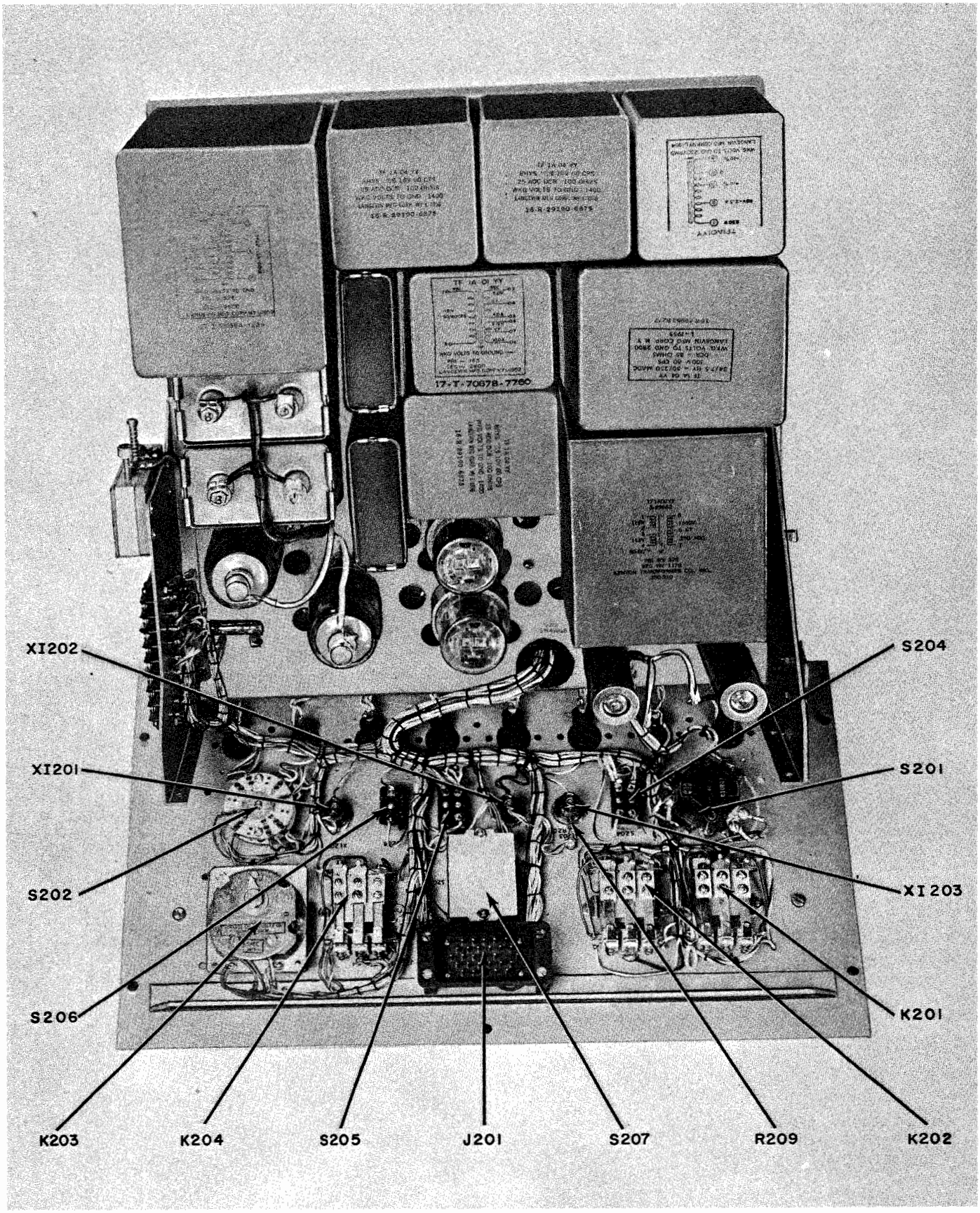


Figure 7-7. Power Supply PP-1294(XN-1)/SRT-17, Front Panel, Rear View

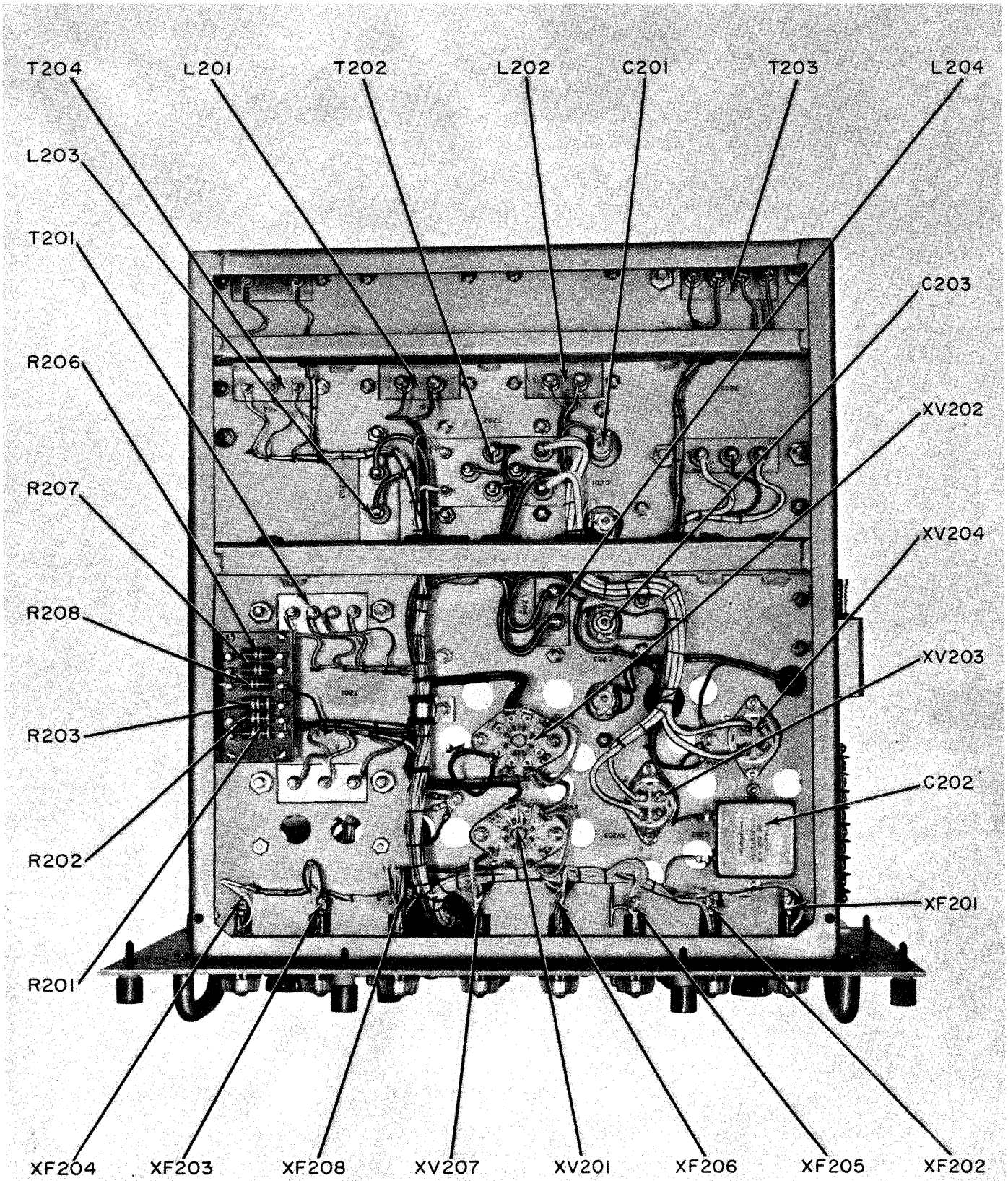


Figure 7-8. Power Supply PP-1294(XN-1)/SRT-17, Bottom View

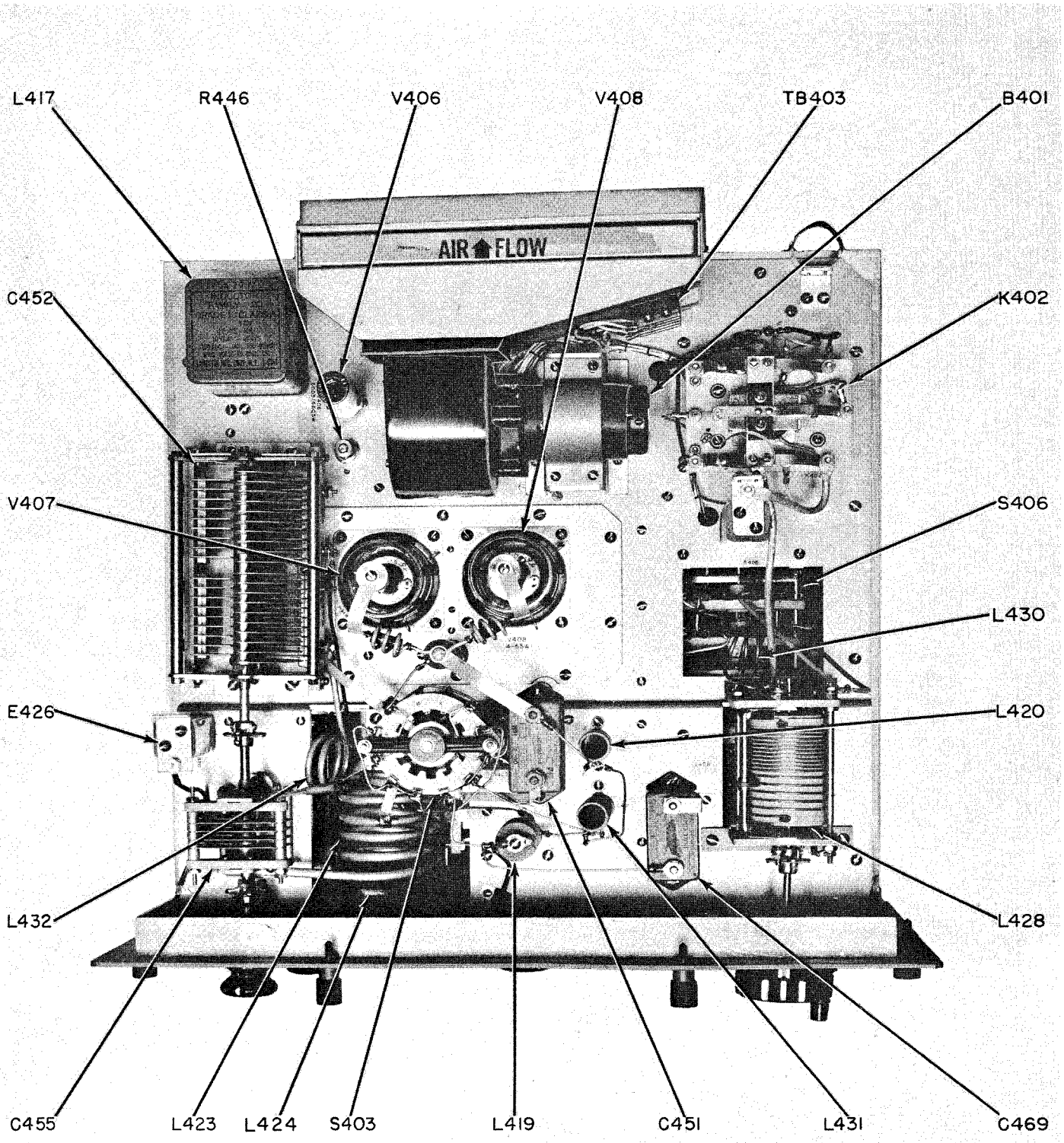


Figure 7-9. Radio Transmitter T-557(XN-1)/SRT-17, Top View

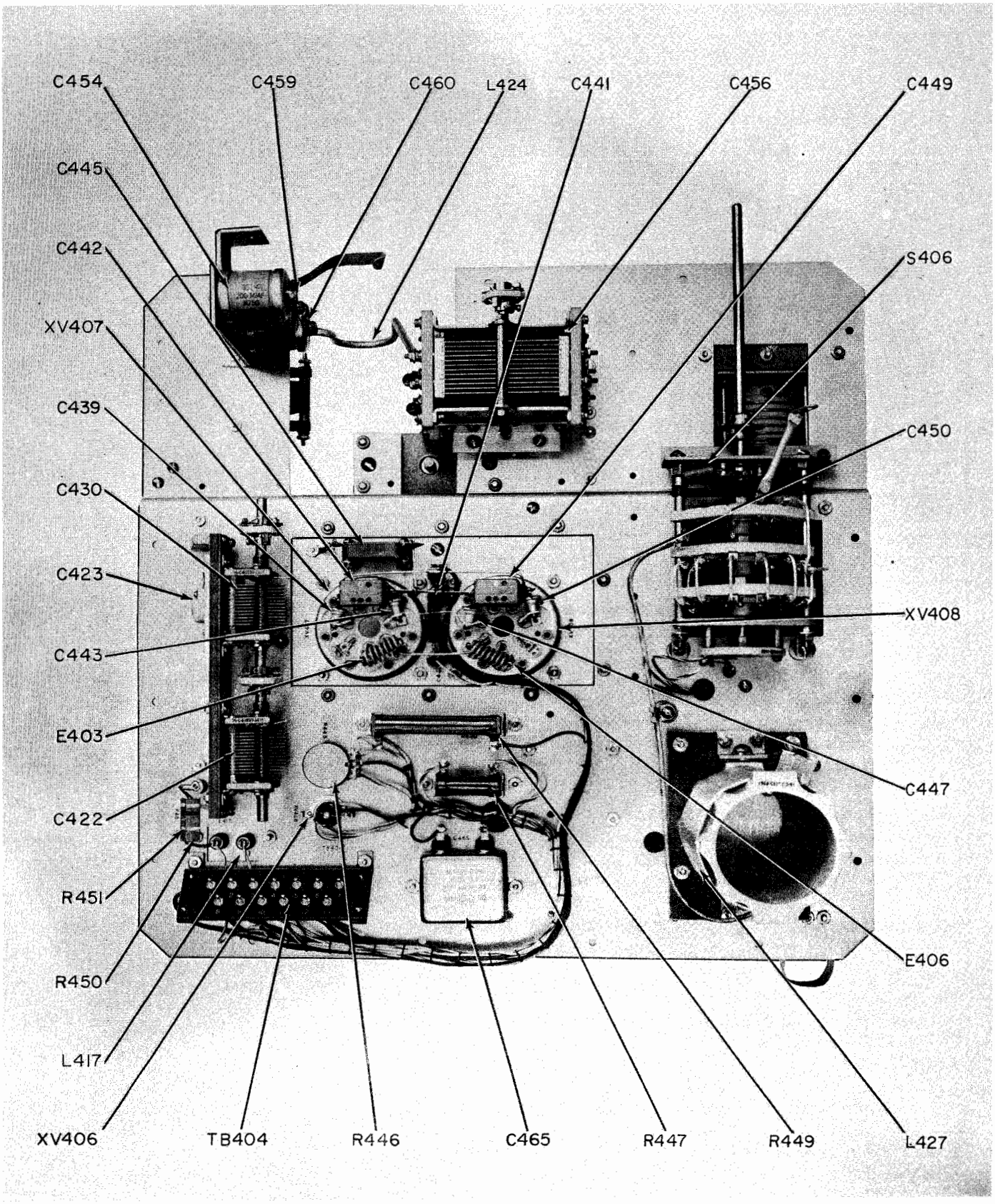


Figure 7-10. Radio Transmitter T-557(XN-1)/SRT-17, Upper Section, Top Shelf, Bottom View

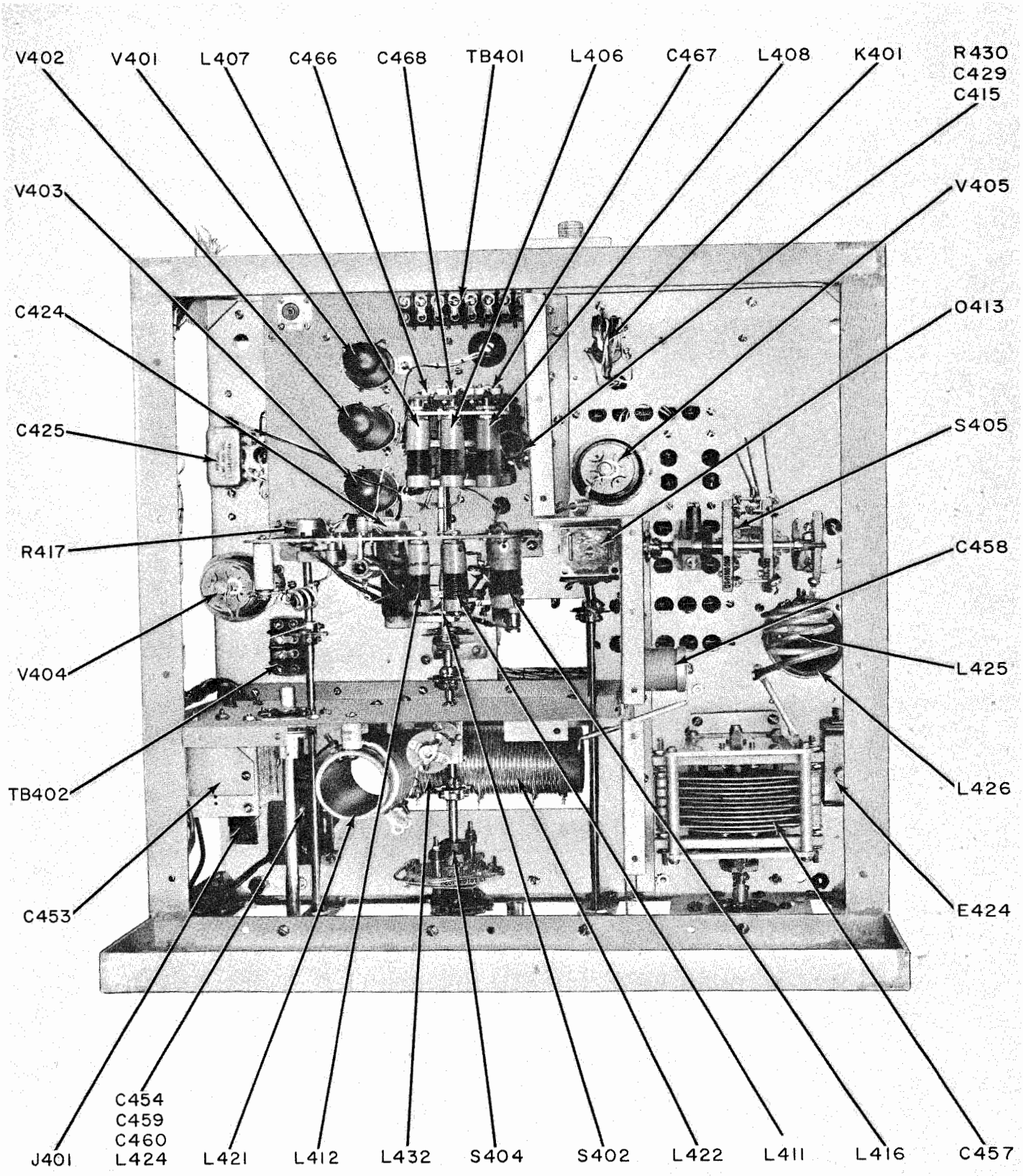


Figure 7-11. Radio Transmitter T-557(XN-1)/SRT-17, Upper Section, Bottom Shelf, Top View

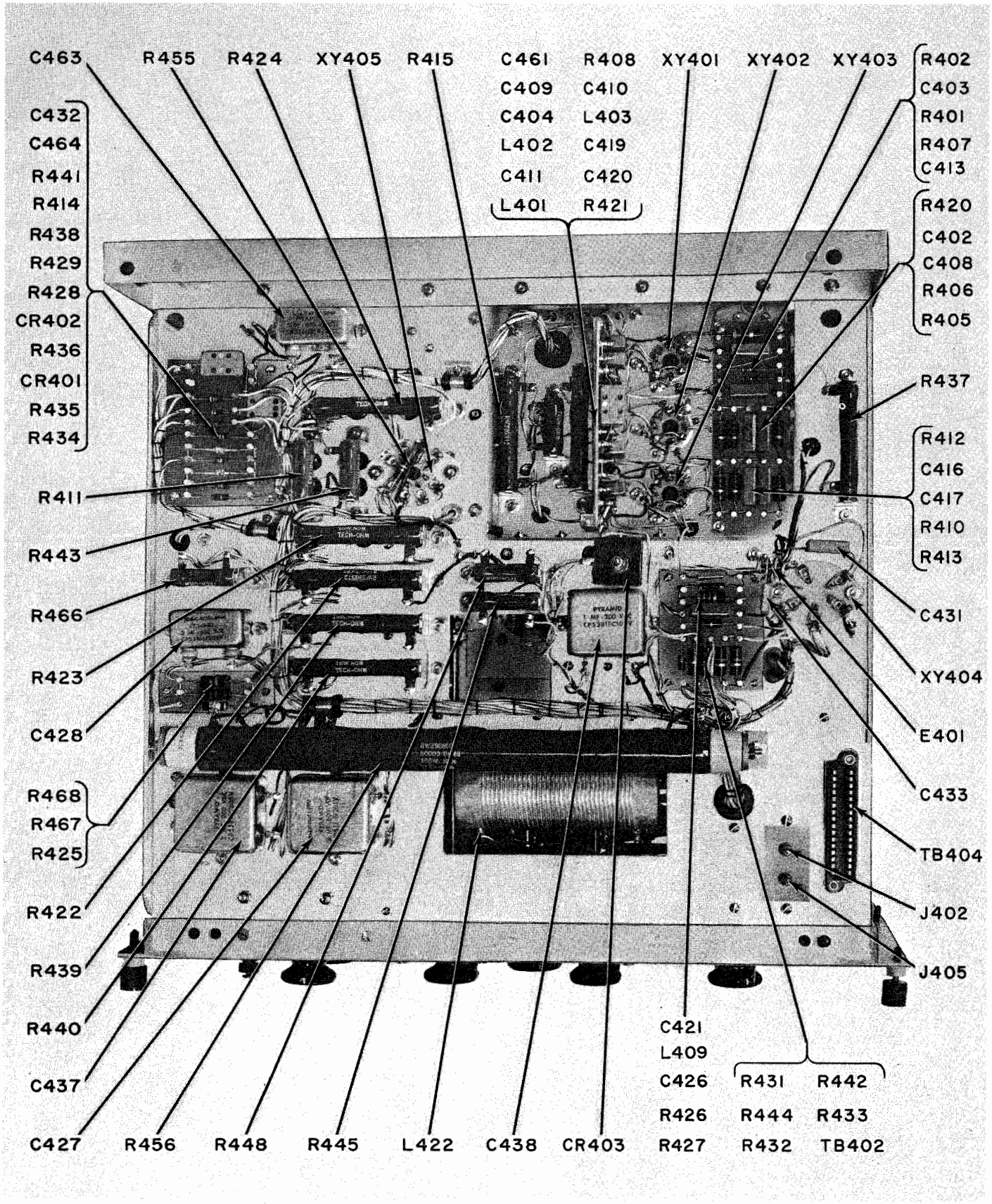


Figure 7-12. Radio Transmitter T-557(XN-1)/SRT-17, Upper Section, Bottom View

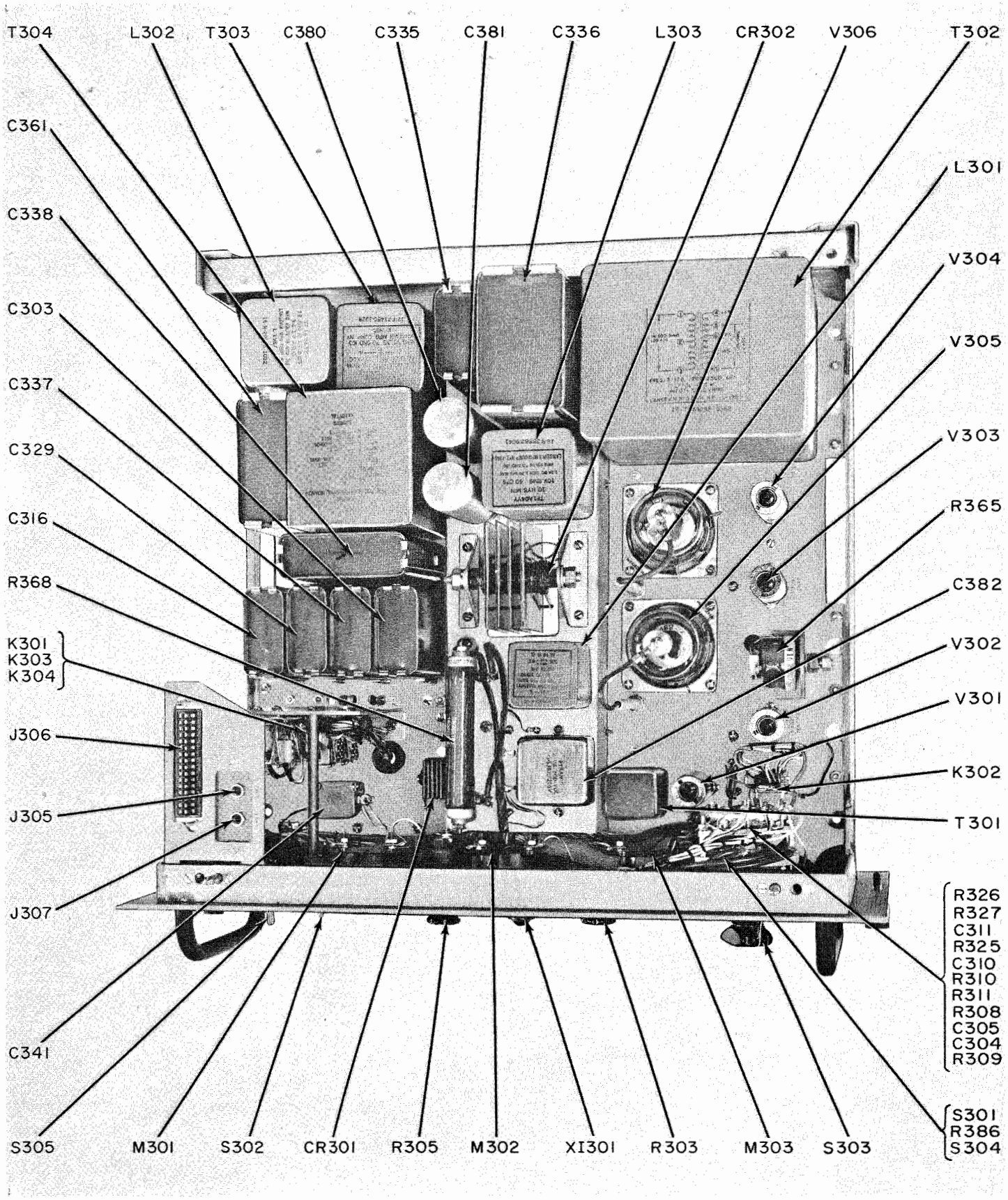


Figure 7-13. Radio Transmitter T-557 (XN-1), Lower Section, Top View

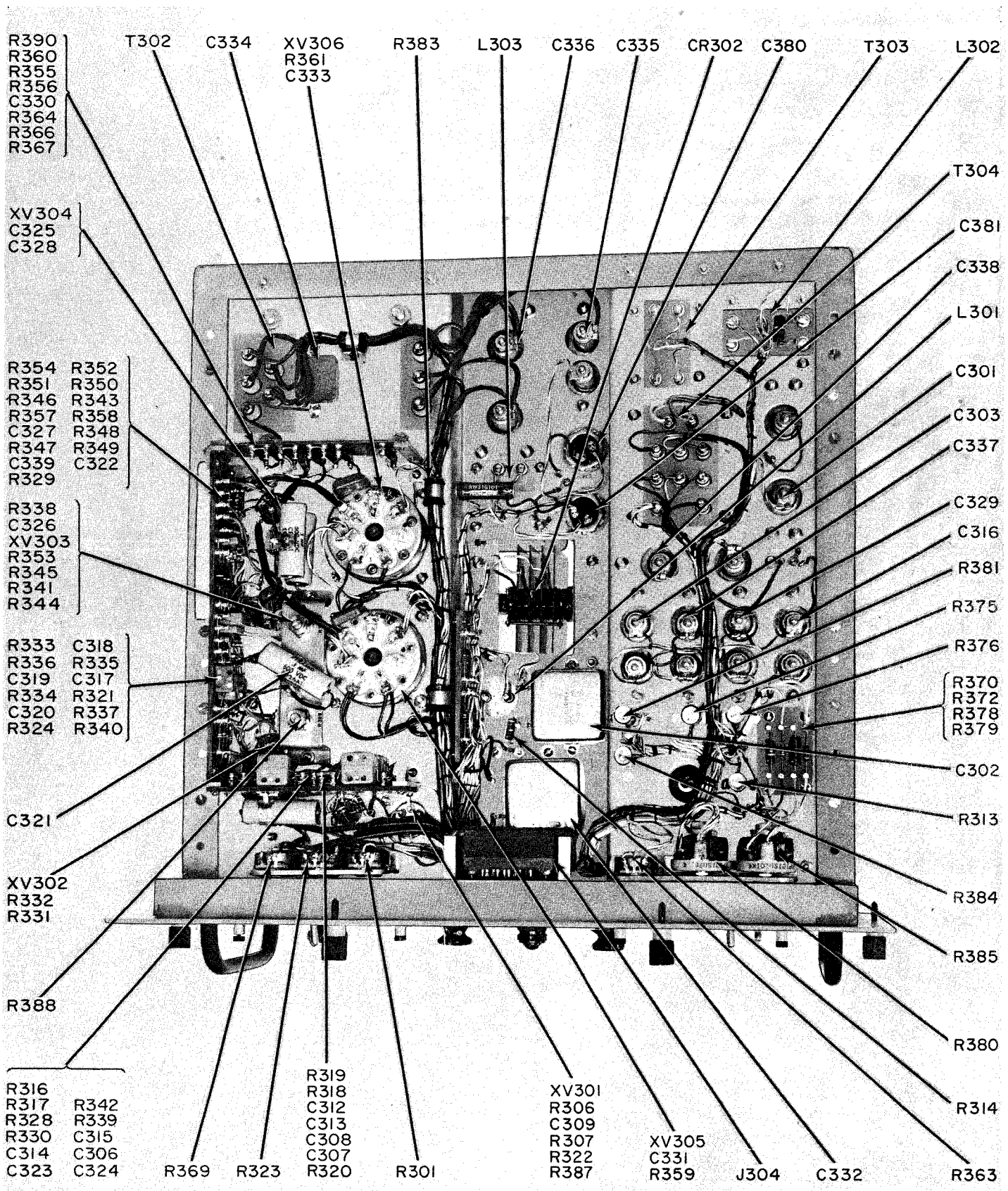


Figure 7-14. Radio Transmitter T-557(XN-1)/SRT-17, Bottom View

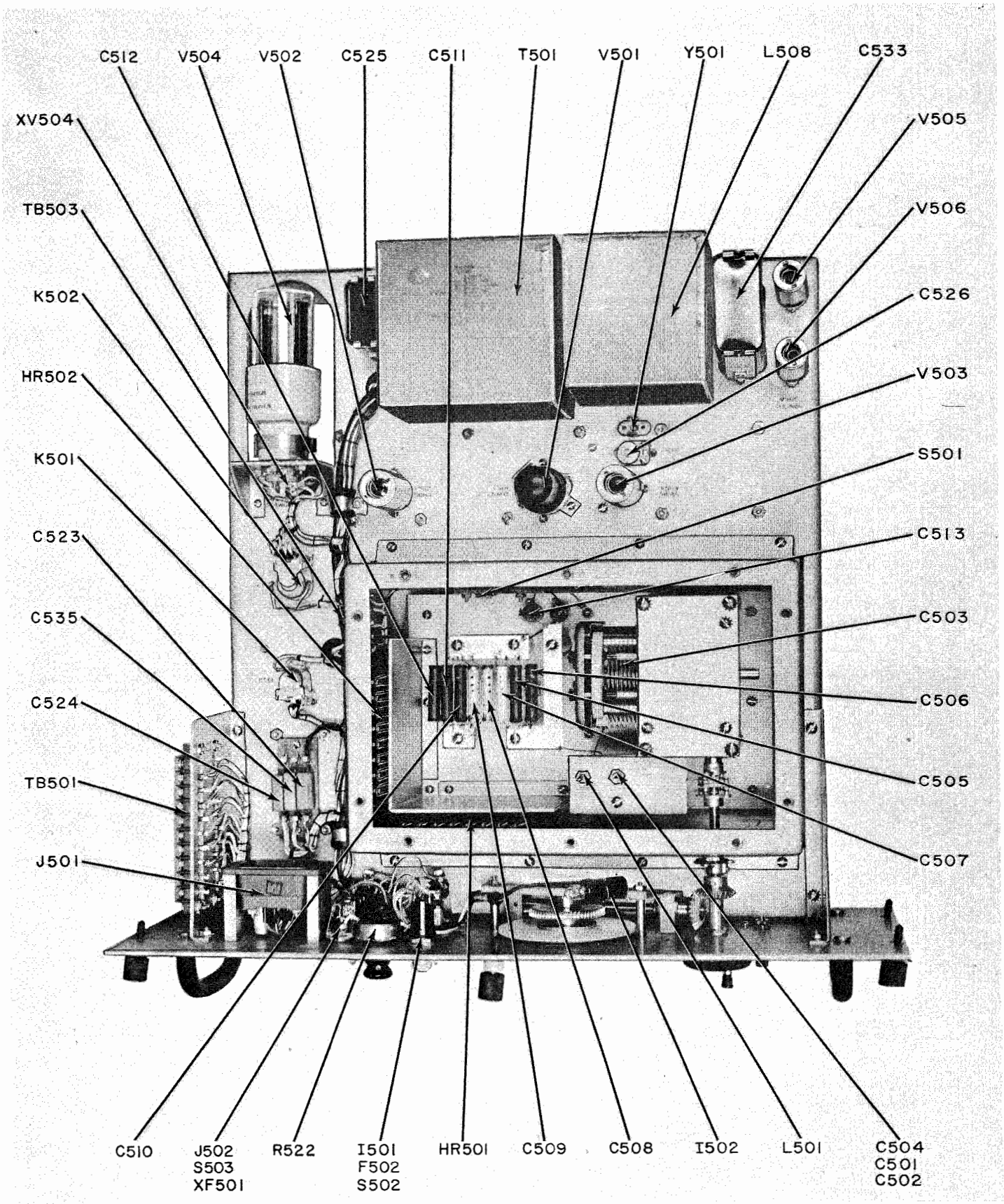


Figure 7-15. Radio Frequency Oscillator 0-332(XN-1)/SRT-17, Top View, Cover Removed

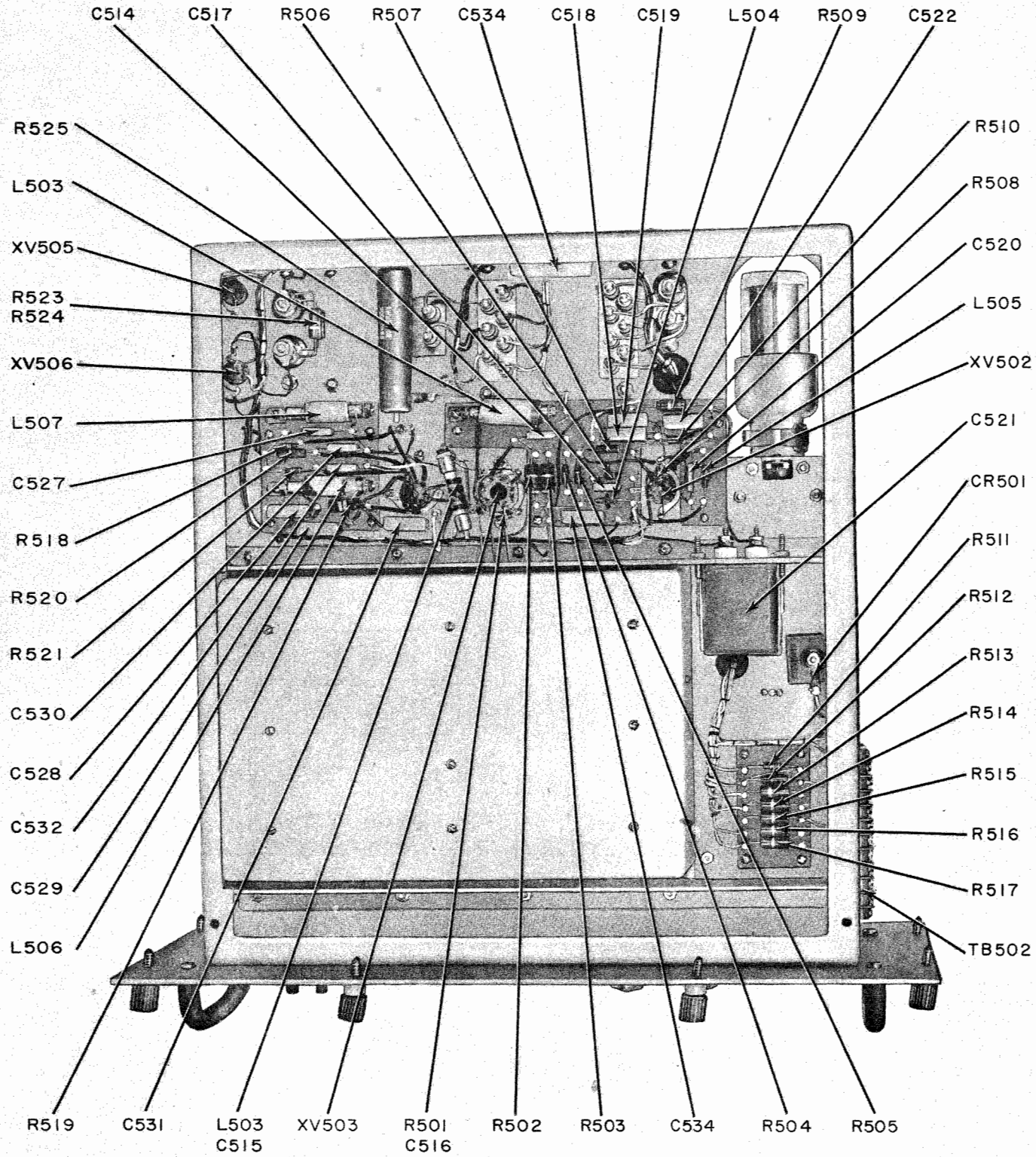


Figure 7-16. Radio Frequency Oscillator 0-332(XN-1)/SRT-17, Bottom View

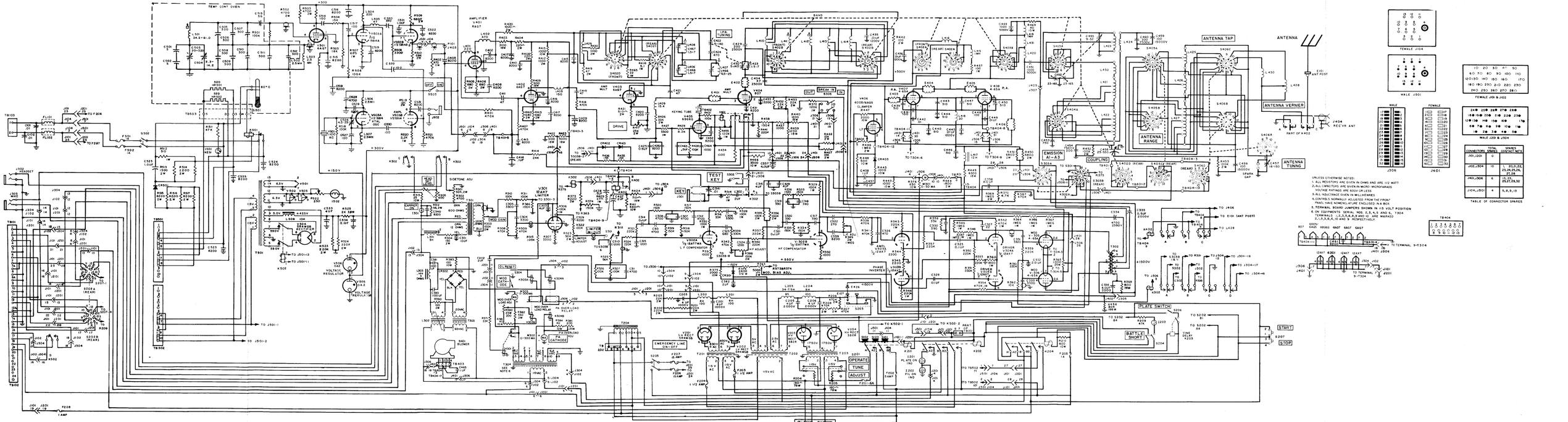
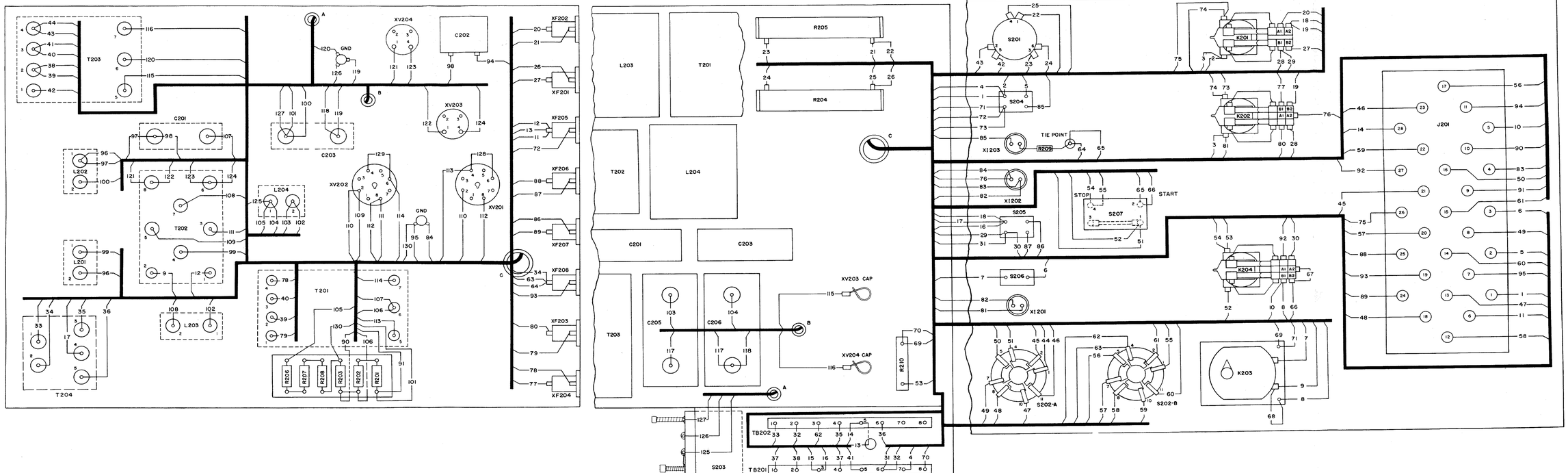


Figure 7-17. Radio Transmitting Set AN/SRT-17(XN-1), Schematic



NOTES:
1- FOR WIRE CODE INDICATED IN TABLE, SEE WIRING CODE CHART

Figure 7-18. Power Supply PP-1294(XN-1)/SRT-17, Practical Wiring Diagram

WIRE NUMBER	WIRE CONNECTS		WIRE CODE	COLOR CODE
	FROM	TO		
1	J201-1	S204	E	980
2	K201	S204	E	980
3	K201	K202	E	980
4	S204	TB201-7	E	980
5	J201-2	S204	E	930
6	J201-3	S206	E	950
7	K203	S206	E	98
8	K203 COIL	K204-B1	C	8
9	K203	T202-2	C	8
10	J201-5	K204-B1	C	8
11	J201-6	XF205	C	4
12	T202-1	XF205	C	4
13	TB202-5	XF205	C	4
14	TB202-5	J201-28	C	904
15	TB202-5	TB201-3	C	904
16	S205	TB201-3	C	904
17	S205	T204-4	E	904
18	S205	K201-A2	C	904
19	K202-B2	K201-A2	E	904
20	XF202	K201-A1	C	904
21	XF202	R205	C	904
22	S201	R205	C	904
23	S201	R205	C	6
24	S201	R204	C	8
25	S201	R204	C	4
26	XF201	R204	C	4
27	XF201	K201-B2	C	4
28	K202	K201-B1	E	945
29	S205	K201-B1	C	945
30	S205	K204	E	945
31	S205	TB201-6	C	945
32	TB202-2	TB201-6	C	945
33	T204-1	TB202-1	E	920
34	T204-2	XF208	E	913
35	T204-3	TB202-4	E	950
36	T204-5	TB202-6	E	963
37	TB201-1	TB201-4	C	1
38	TB201-2	T203-2	C	8
39	T201-2	T203-2	C	8
40	T201-3	T203-3	C	6
41	TB201-5	T203-3	C	6
42	S201	T203-1	C	1
43	S201	T203-4	C	3
44	S202A-1	T203-4	E	3
45	S202A-2	J201-21	E	93
46	S202A-11	J201-23	E	92
47	S202A-10	J201-13	E	920
48	S202A-8	J201-18	E	954
49	S202A-7	J201-8	E	935
50	S202A-5	J201-16	E	96
51	S202A-4	S207-1	E	9
52	K204 COIL	S207-1	E	9
53	K204 COIL	R210	E	8
54	K204 COIL	S207-4	E	8
55	S202B-1	S207-4	E	8
56	S202B-5	J201-17	E	91
57	S202B-7	J201-20	E	95
58	S202B-8	J201-12	E	5
59	S202B-10	J201-22	E	968
60	S202B-11	J201-14	E	936
61	S202B-2	J201-15	E	98
62	S202B-4	TB202-3	E	915
63	S202B-4	XF208	E	915
64	R209	XF208	E	915
65	R209	S207-2	E	915

WIRE NUMBER	WIRE CONNECTS		WIRE CODE	COLOR CODE
	FROM	TO		
66	K204-B2	S207-2	E	915
67	K204-B2	K204-A2	E	915
68	K203 COIL	K203	C	8
69	K203 COIL	R210	E	984
70	TB201-8	R210	E	984
71	K203 COIL	S204	E	984
72	F205	S204	C	984
73	S204	K202 COIL	E	984
74	K201 COIL	K202 COIL	E	984
75	K201 COIL	J201-26	E	984
76	K202-A2	I202	E	0
77	K202-B1	F204	E	904
78	T201-4	F204	E	904
79	T201-1	F203	E	4
80	K202	F203	E	4
81	K202-A1	I201	E	913
82	I202	I201	E	910
83	I202	J201 4	E	910
84	GND	I202	E	0
85	I203	S204	E	903
86	S205	XF207	C	981
87	S205	XF206	C	983
88	J201-25	XF206	C	983
89	J201-24	XF207	C	981
90	J201-10	R203	E	9
91	R201	J201-9	E	2
92	K204	J201-27	E	4
93	XF208	J201-19	E	913
94	C202	J201-11	E	924
95	GND	J201-7	C	0
96	L201-2	L202-1	C	2
97	C201	L202-1	C	2
98	C201	C202	C	2
99	L201-1	T202-4	D	2
100	L202-2	C203	C	2
101	R201	C203	C	2
102	L203-1	L204-2	G	2
103	L204-2	C205	G	2
104	L204-1	C206	G	2
105	R206	L204-1	G	2
106	R202	T201-6	E	9
107	C201	T201-6	E	9
108	L203-2	T202-7	G	2
109	T202-5	XV202-2	D	1
110	XV201-2	XV202-2	D	1
111	T202-3	XV202-8	D	1
112	XV201-8	XV202-8	D	1
113	XV201-4	T201-5	D	6
114	XV202-6	T201-7	D	6
115	T203-5	V203 CAP	G	9
116	T203-7	V204 CAP	G	9
117	C205	C206	C	0
118	C203	C206	C	0
119	C203	GND	C	0
120	T203-6	GND	C	0
121	T202-8	XV204-1	G	9
122	T202-8	XV203-1	G	9
123	T202-6	XV204-4	G	9
124	T202-6	XV203-4	G	9
125	S203	L204-1	D	2
126	S203	GND	C	0
127	S203	C203	C	12
128	XV201-4	XV201-6	D	6
129	XV202-4	XV202-6	D	6
130	R203	GND	E	0

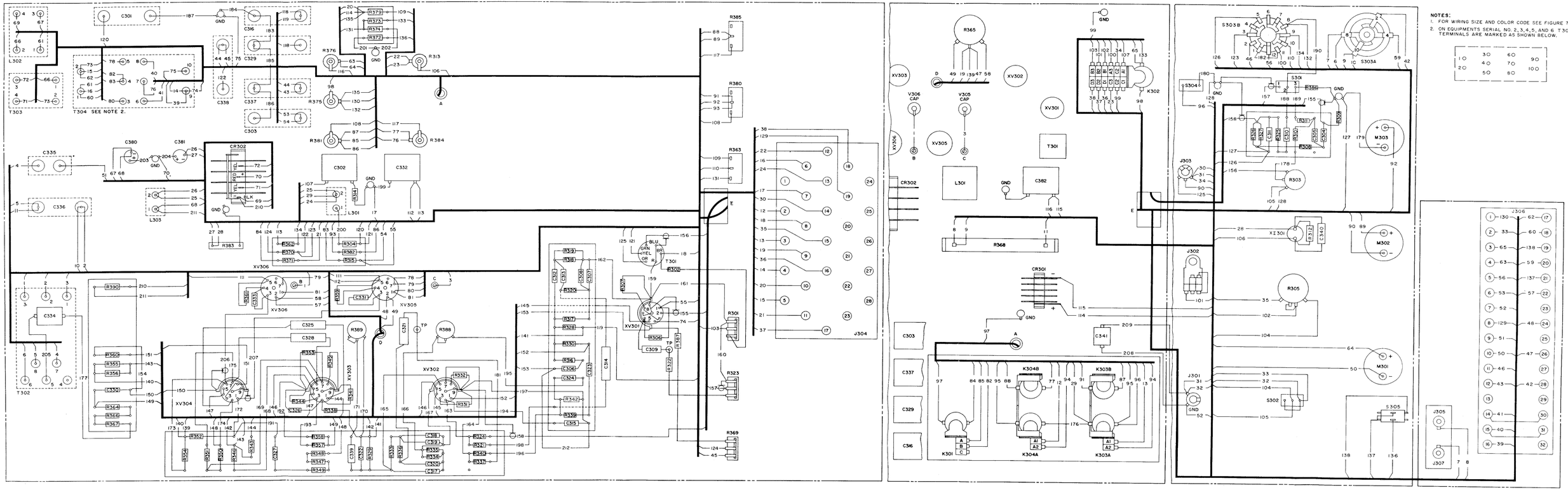


Figure 7-19. Radio Transmitter T-557(XN-1)/SRT-17, Lower Section, Practical Wiring Diagram

WIRE NUMBER	WIRE CONNECTS FROM	WIRE CONNECTS TO	WIRE CODE	COLOR CODE
1	T302-3	XV306 CAP	G	2
2	T302-3	C336	G	2
3	T302-1	XV305 CAP	G	2
4	T302-7	C335	G	2
5	T302-8	C336	G	2
6	T302-6	S303A-8	G	2
7	J307	S303A-8	G	2
8	J305	R368	G	2
9	S303A-10	R368	G	2
10	S303A-10	C336	G	2
11	R368	C336	G	2
12	J304-2	K304A-A1	E	930
13	J304-3	K303A-A1	E	930
14	J304-4	T304-9	E	910
15	J304-5	T304-2	C	8
16	J304-6	T304-1	C	4
17	J304-7	GND	C	0
18	J304-8	T301 BROWN	E	935
19	J304-9	R365	E	2
20	J304-10	R379	E	9
21	J304-11	R371	E	924
22	J304-12	R313	E	5
23	K302-C3	R313	E	5
24	J304-13	L301-2	E	920
25	L303	L301-2	E	920
26	L303	C381	E	920
27	R383	C381	E	920
28	R383	XI301	E	920
29	L301-2	K303A COIL	E	920
30	J304-14	J303	E	936
31	J301	J303	E	936
32	J301	S302	E	936
33	J306-2	S302	E	936
34	J303	K302A-A2	E	936
35	J304-15	R305	E	98
36	J304-16	K302-D1	E	96
37	J304-17	K302-D2	E	91
38	J304-18	K304-D3	E	954
39	J306-16	T304-9	C	910
40	J306-15	T304-8	C	1
41	J306-14	T304-6	C	1
42	J306-28	S303A-2	E	92
43	J306-12	C337	E	912
44	C338	C337	E	912
45	C338	R369	E	912
46	J306-11	S303B-2	E	901
47	J306-26	R365	E	2
48	J306-24	XV305-2	E	920
49	R365	XV305-2	E	920
50	J306-10	M301 (-)	E	985
51	J306-9	C335	E	950
52	J306-7	GND	C	0
53	J306-6	C303	E	925
54	C303	R315	E	925
55	XV301-1	R315	E	925
56	J306-5	S303B-12	E	980
57	J306-2	XV306-2	E	923
58	R365	XV306-2	E	923
59	J306-20	S303A-4	E	92
60	J306-18	T304-1	E	4
61	L302-1	T304-1	E	4
62	J306-17	T304-2	E	8
63	J306-4	R376	E	986
64	M301 (+)	R376	E	986
65	J306-3	K302 COIL	E	6
66	L302-2	T303-1	E	930
67	L302-3	C380	E	935
68	L303-1	C380	E	935
69	L302-4	CR302 BLACK	E	936
70	GND	CR302 RED	E	0
71	T303-4	CR302 YELLOW	E	940
72	T303-3	CR302 YELLOW	E	940
73	T303-2	T304-2	E	8
74	XV301-4	T304-9	C	910
75	GND	T304-10	C	0
76	T304-7	R384	E	915
77	K304B COIL	R384	E	915
78	T304-5	XV305-7	C	1
79	XV306-7	XV305-7	C	1
80	T304-3	XV305-1	C	1
81	XV306-1	XV305-1	C	1
82	T304-4	K301-A2	E	912
83	T304-4	R315	E	912
84	K301 COIL	R371	E	960
85	R381	K301-A1	E	954
86	R381	R382	E	954
87	R381	K303B COIL	E	954
88	K304B COIL	R385	E	925
89	M302 (+)	R385	E	925
90	M302 (-)	GND	E	0
91	K303B COIL	R380	E	954
92	M303 (+)	R380	E	954
93	R382	R380	E	954
94	K303A-A2	K304A-A2	E	946
95	K303A COIL	K304A COIL	E	986
96	K303A COIL	S304	E	986
97	K301 COIL	GND	E	0
98	K302 COIL	R375	E	9
99	K302-C2	GND	E	0
100	S303B-11	K302-A3	E	908
101	K302-B2	J302	E	950
102	K302-B1	R305	E	904
103	K302-B3	R301	E	928
104	R305	S302	E	0
105	R303	S302	E	0
106	XI301	R313	E	950
107	C302	K302-A1	E	913
108	R380	R381	E	926
109	R363	R379	E	950
110	R363	S303B-10	E	913
111	R361	R359	E	916
112	C332	R359	E	916
113	C332	R362	E	916
114	R379	CR301 (+)	E	9
115	CR301 (-)	C382	E	915
116	R376	C382	E	915
117	R384	R385	E	982
118	C329	C316	E	940
119	R328	C316	E	940
120	C301	R304	E	963
121	T301 YELLOW	R304	E	963
122	C338	R370	E	968
123	S303B-3	R370	E	968
124	R369	R370	E	946
125	J303	T301 ORANGE	E	982
126	S303B-5	GND	E	0
127	GND	GND	E	0
128	GND	R303	E	0
129	J304-19	J306-8	E	913
130	R375	J306-1	E	9
131	R363	R374	E	946
132	R375	S303B-8	E	9
133	R373	K302 COIL	E	6
134	S303B-9	R362	E	910
135	R375	R379	E	9
136	S305	R372	E	7
137	J306-21	S305	E	954
138	J306-19	S305	E	5
139	R365	R354	E	2
140	R356	R354	E	2
141	R328	R329	E	946
142	R346	R329	E	946
143	R346	R355	E	946
144	XV303-1	R343	E	980
145	XV301-4	XV302-4	C	910
146	XV303-4	XV302-4	C	910
147	XV303-4	XV304-4	C	910
148	R348	R350	E	915
149	R357	R364	E	946
150	C330	GND	E	0
151	XV304-8	R360	E	981
152	XV302-1	R330	E	962
153	C306	GND	E	0
154	R360	GND	E	0
155	XV301-2	C304	U	---
156	T301 GREEN	R303	U	---
157	S301-1	R323	U	---
158	C311	R324	U	---
159	T301 RED	GND	E	0
160	R301	R323	E	0
161	GND	R323	E	0
162	GND	C307	E	0
163	R324	XV302-2	E	5
164	R337	XV302-7	E	5
165	R333	XV302-6	E	6
166	R388	GND	E	0
167	C319	GND	E	0
168	XV303-6	R346	E	6
169	XV303-7	R350	E	5
170	R389	C332	E	954
171	R389	C339	E	935
172	XV304-1	R352	E	6
173	XV304-6	R354	E	6
174	R350	XV304-2	E	915
175	R351	XV304-7	E	5
176	K303A COIL	K304A COIL	E	920
177	R367	C334	E	2
178	R303	R310	E	5
179	M303 (-)	GND	E	0
180	S304	GND	E	0
181	R337	C321	E	926
182	S303B-11	S303B-1	E	980
183	C316	C329	E	0
184	C316	GND	E	0
185	C337	C329	E	0
186	C303	C337	E	0
187	GND	C301	E	0
188	C310	S301-2	E	923
189	R311	S301-3	E	9
190	S303B-8	S301-2	E	9
191	R352	C327	E	6
192	R358	GND	E	0
193	XV303-3	R357	E	4
194	XV302-2	C315	E	5
195	C324	R388	E	923
196	C324	R340	E	936
197	R342	GND	E	0
198	C314	R321	E	980
199	C332	GND	E	0
200	L301-1	R304	E	92
201	R372	GND	E	0
202	R374	GND	E	0
203	C380	GND	E	0
204	C381	GND	E	0
205	T302-5	C334	C	2
206	XV304-6	C333	U	---
207	XV304-1	C331	U	---
208	J301	C341	E	0
209	J301	C341	E	936
210	R390	CR302 BLACK	E	936
211	R390	L303-1	E	935
212	C306	C315	E	0

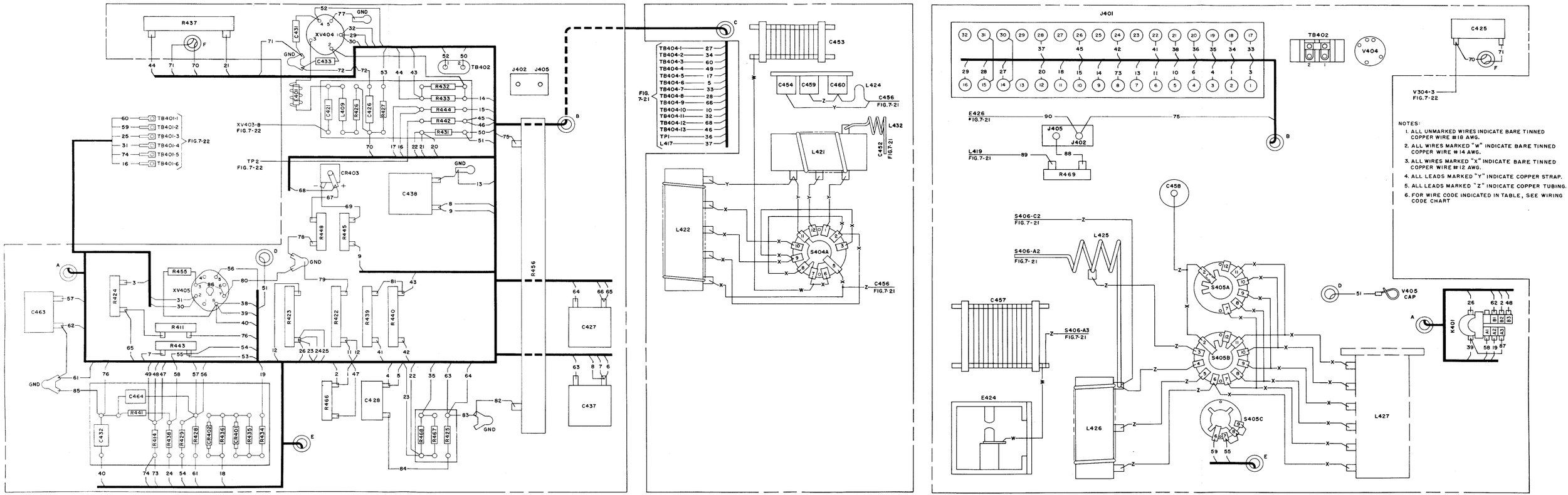


Figure 7-20. Radio Transmitter T-557(XN-1)/SRT-17, Upper Section, Lower Shelf, Practical Wiring Diagram

WIRE NUMBER	WIRE CONNECTS		WIRE CODE	COLOR CODE
	FROM	TO		
1	J401-2	R466	E	930
2	K401-B2	R466	E	930
3	J401-1	R424	E	9
4	J401-3	C428	E	6
5	TB404-6	C428	E	6
6	J401-4	C437	E	986
7	R443	C437	E	986
8	C438	C437	E	986
9	C438	R445	E	986
10	J401-5	TB404-10	E	980
11	J401-6	R422	E	925
12	R423	R422	E	925
13	J401-7	GND	C	0
14	J401-9	R433	E	950
15	J401-10	R444	E	985
16	TB401-6	R444	E	985
17	TB404-5	R444	E	985
18	J401-11	R436	E	901
19	K401-A2	R434	E	2
20	J401-12	R431	E	912
21	R437	R431	E	912
22	R468	R431	E	912
23	R468	R423	E	912
24	R438	R423	E	912
25	TB401-3	R423	E	912
26	K401 COIL	R423	E	912
27	J401-14	TB404-1	C	1
28	J401-15	TB404-8	C	1
29	J401-16	XV404-1	C	910
30	XV405-2	XV404-1	C	910
31	XV405-2	TB401-4	C	910
32	TB404-11	XV404-1	E	910
33	J401-17	TB404-7	E	8
34	J401-18	TB404-2	E	4
35	J401-19	R468	E	5
36	J401-20	TP-1	E	92
37	J401-28	L417	E	92
38	J401-21	XV405-8	E	954
39	K401 COIL	XV405-8	E	956
40	C432	XV405-8	E	954
41	J401-22	R439	E	923
42	J401-24	R440	E	920
43	R440	R433	E	9
44	R437	R433	E	9
45	J401-26	R442	E	2
46	TB404-13	R442	E	2
47	R466	R414	E	913
48	K401-B3	R414	E	913
49	TB404-4	R414	E	913
50	R431	TB402-2	E	6
51	R431	XV405 CAP	N	6
52	XV404-4	TB402-1	E	964
53	R427	R443	E	97
54	R429	R443	E	97
55	S405C-7	R443	E	97
56	R429	XV405-5	E	953
57	R429	C463	E	953
58	K401-A1	R438	E	940
59	S405C-6	TB401-2	E	986
60	TB401-1	TB404-3	E	980
61	R428	GND	E	0
62	K401-B1	C463	E	0
63	C437	GND	E	0
64	C427	GND	E	0
65	R424	C427	E	958
66	TB404-9	C427	E	958
67	CR403 (+)	R448	E	964
68	CR403 (+)	TB404-12	E	964
69	CR403 (-)	R445	E	986
70	C426	C425	E	958
71	GND	C425	E	0
72	GND	C426	E	0
73	J401-8	R414	E	93
74	TB401-5	R414	E	93
75	R456	J402	D	2
76	GND	R411	E	0
77	XV404-5	GND	C	0
78	R448	GND	E	0
79	R422	GND	E	0
80	XV405-7	GND	C	0
81	R439	R440	E	9
82	R456	GND	C	0
83	R425	GND	E	0
84	R425	C428	E	4
85	C432	GND	E	0
86	XV405-3	XV405-7	C	0
87	K401 COIL	K401-A3	E	954
88	J405	R469	D	2
89	L419	R469	D	2
90	E426	J402	D	2

WIRE NUMBER	WIRE CONNECTS FROM	WIRE CONNECTS TO	WIRE CODE	COLOR CODE
1	B401-1	TB403-1	E	9
2	B401-2	TB403-2	E	9
3	B401-3	TB403-3	E	9
4	B401-4	TB403-4	E	9
5	TB403-1	TB404-2	E	4
6	TB403-1	TB403-3	E	4
7	TB403-2	TB404-7	E	8
8	TB403-2	C465	E	8
9	TB403-4	C465	E	5
10	K402 COIL	K402-B2	E	6
11	K402-A2	GND	C	0
12	K402-A1	J406	RG-58A/U	-
13	K402 COIL	TB404-4	E	964
14	K402-B1	TB404-6	E	6
15	K402 COIL	TB404-9	E	9
16	L419	R466	D	2
17	E426	J402	D	2
18	J403	J404	RG-58A/U	-
19	TB404-1	XV408-1	C	1
20	TB404-8	XV407-1	C	1
21	TB404-3	S406-D6	E	981
22	TB404-10	S406-D8	E	980
23	TB404-11	XV406-3	E	910
24	TB404-5	R466	E	985
25	TB404-12	R466	E	968
26	TB404-13	R449	E	2
27	TB404-1	J401-30	C	1
28	TB404-2	J401-18	E	4
29	TB404-3	TB401-1	E	981
30	TB404-4	R414	E	964
31	TB404-5	R444	E	985
32	TB404-6	C428	E	6
33	TB404-7	J401-17	E	3
34	TB404-8	J401-15	C	1
35	TB404-9	C427	E	9
36	TB404-10	J401-5	E	980
37	TB404-11	XV404-1	E	910
38	TB404-12	R448	E	968
39	TB404-13	R442	E	2
40	L417-1	R447	E	920
41	L417-2	C446	E	92
42	L417-1	J401-28	E	92
43	TP-1	J401-20	E	92
44	XV406-2	R446	E	968
45	XV406-6	R447	E	920
46	XV406-7	R446	E	5
47	R447	R449	E	920

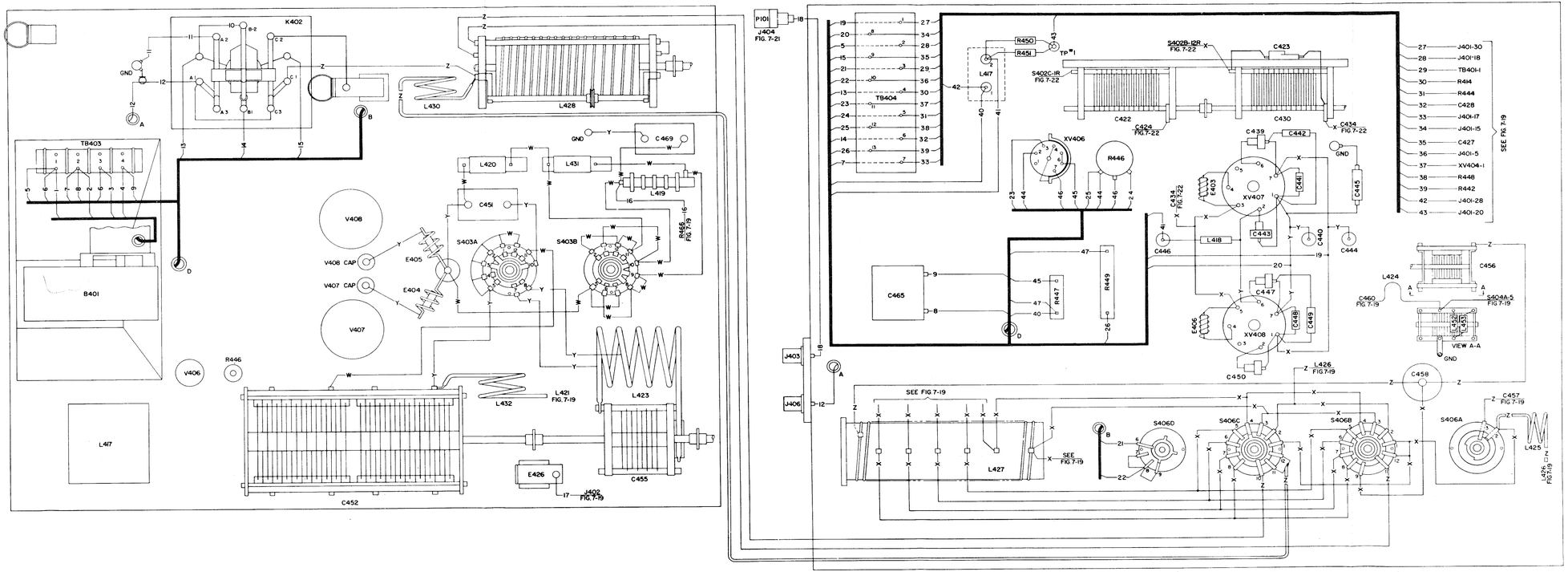
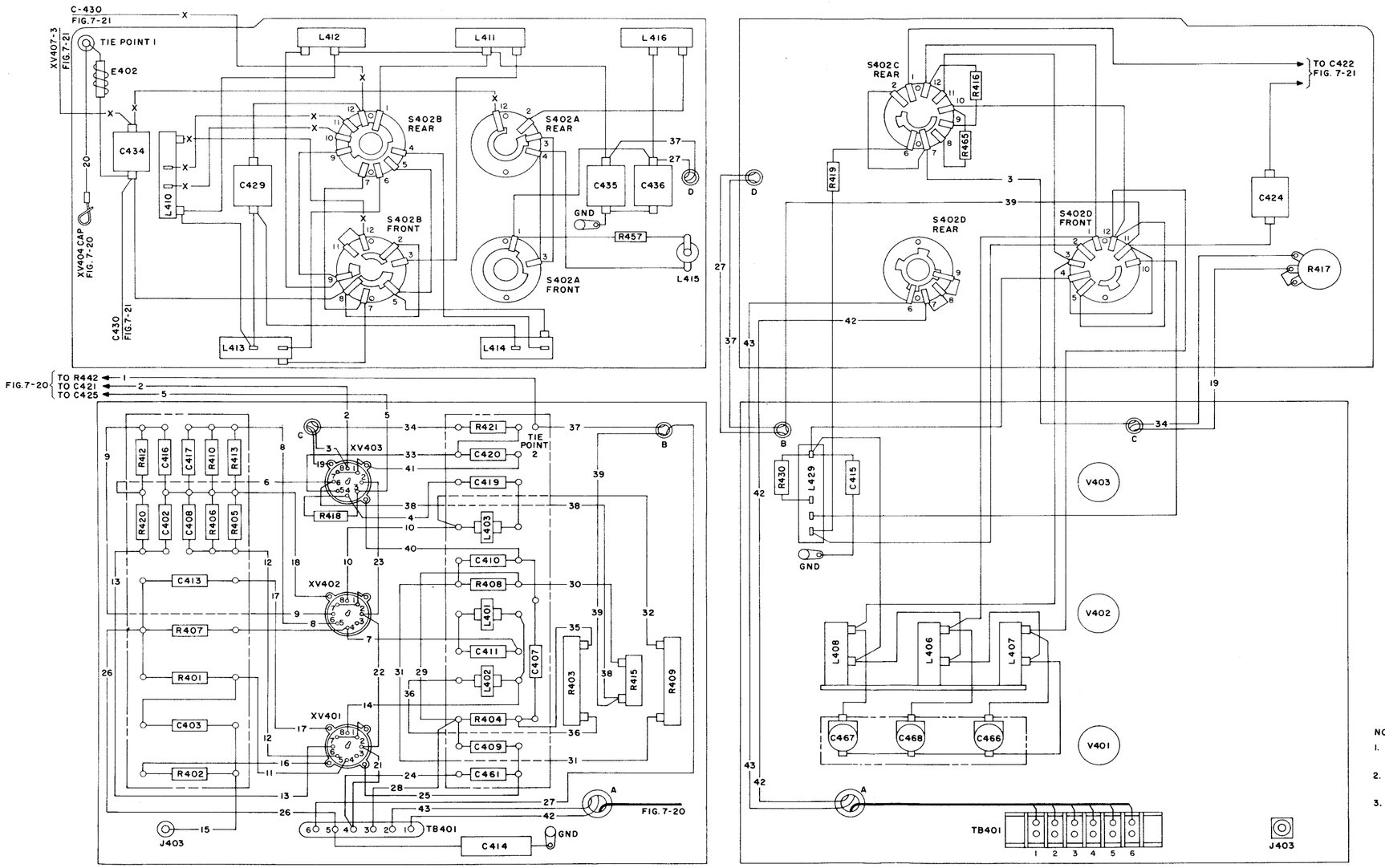


Figure 7-21. Radio Transmitter T-557(XN-1)/SRT-17, Upper Section, Top Shelf, Practical Wiring Diagram

NOTES -
1- ALL UNMARKED WIRES INDICATE BARE TINNED COPPER WIRE # 18 AWG.
2- ALL WIRES MARKED "W" INDICATE BARE TINNED COPPER WIRE # 14 AWG.
3- ALL WIRES MARKED "X" INDICATE BARE TINNED COPPER WIRE # 12 AWG.
4- ALL LEADS MARKED "Y" INDICATE COPPER STRAP.
5- ALL LEADS MARKED "Z" INDICATE COPPER TUBING.
6- FOR WIRE CODE INDICATED IN TABLE, SEE WIRING CODE CHART DWG 8-123957A.

WIRE NUMBER	WIRE CONNECTS		WIRE CODE	COLOR CODE
	FROM	TO		
1	R442	TP-2	E	92
2	C421	XV403-8	E	96
3	S402C-7	XV403-8	E	96
4	C419	XV403-4	E	5
5	XV403-3	C425	E	958
6	XV403-6	R412	E	926
7	XV402-4	C411	E	5
8	XV402-5	R413	E	4
9	XV402-6	R412	E	926
10	XV402-8	L403	E	6
11	XV401-4	R401	E	5
12	XV401-5	R405	E	4
13	XV401-6	R420	E	926
14	XV401-8	L402	E	6
15	J403	R402	E	5
16	GND	R402	E	0
17	GND	C413	E	0
18	GND	R405	E	0
19	GND	R417	E	0
20	XV404 CAP	TP-1	E	6
21	TB401-4	XV401-2	E	910
22	XV402-2	XV401-2	E	910
23	XV402-2	XV403-2	E	910
24	TB401-4	C461	E	910
25	GND	C461	E	0
26	TB401-5	R407	E	93
27	TB401-6	C436	E	985
28	TB401-3	R404	E	912
29	R408	R404	E	912
30	R408	R415	E	912
31	R408	R409	E	926
32	L403	R409	E	6
33	C420	XV403-5	E	4
34	R421	R417	E	940
35	R404	R403	E	96
36	L402	R403	E	96
37	TP-2	C435	E	92
38	XV403-6	R415	E	926
39	S402D-11 FRONT	R415	E	926
40	C410	GND	E	0
41	C420	GND	E	0
42	TB401-1	S402D-7 REAR	E	980
43	TB401-2	S402D-6 REAR	E	986

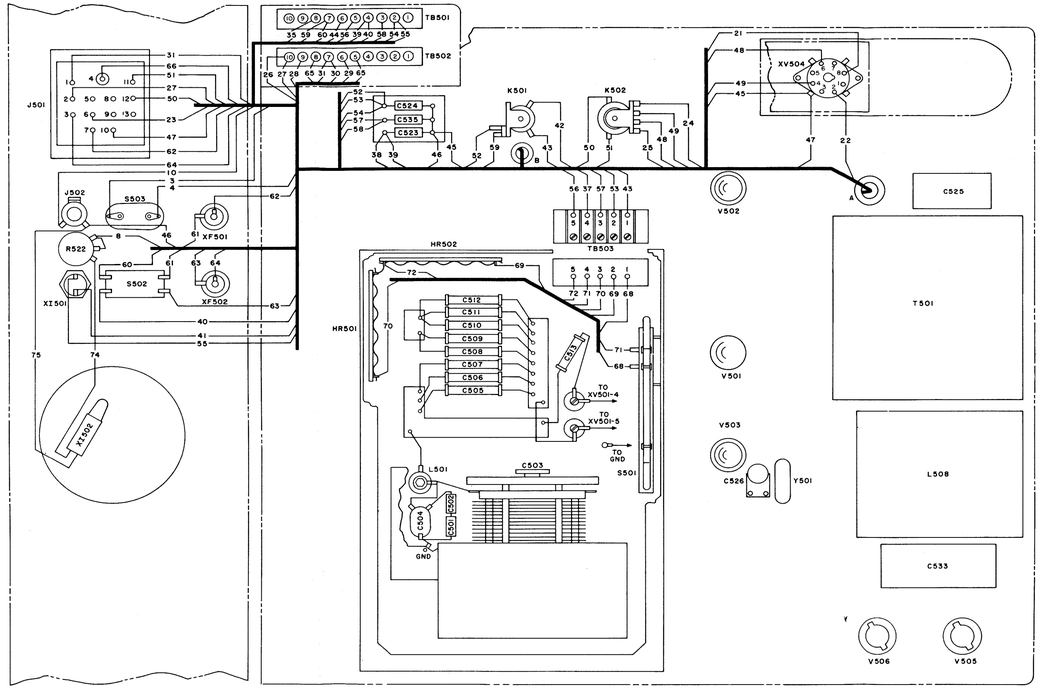


NOTES:
1. WIRES MARKED X INDICATE BARE TINNED COPPER WIRE #14 AWG.
2. ALL UNMARKED WIRES INDICATE BARE TINNED COPPER WIRE #18 AWG.
3. FOR WIRE CODE INDICATED IN TABLE, SEE WIRING CODE CHART

Figure 7-22. Radio Transmitter T-557(XN-1)/SRT-17, Exciter Section, Practical Wiring Diagram

WIRE NUMBER	WIRE CONNECTS FROM	WIRE CONNECTS TO	WIRE CODE	COLOR CODE
1	L504	C532	E	902
2	C516	XV506-5	E	2
3	R519	S503	E	2
4	XV506-5	S503	E	2
5	R525	XV506-1	E	2
6	T501-12	XV503-4	E	1
7	XV502-4	XV503-5	E	1
8	T501-12	R522	E	1
9	T501-13	XV501-2	E	1
10	C531	J502	E	9
11	R520	GND	E	0
12	XV506-2	L503	E	92
13	XV506-7	XV505-1	E	92
14	GND	C533	E	0
15	GND	T501-11	E	0
16	T501-14	T501-11	E	0
17	T501-14	T501-6	E	0
18	C533	L508	E	2
19	R525	L508	E	2
20	T501-9	L508	E	92
21	T501-8	XV504-8	E	912
22	T501-10	XV504-2	E	912
23	C518	J501-8	E	958
24	T501-7	K502	E	924
25	T501-5	K502	E	924
26	T501-4	TB502-10	E	904
27	J501-2	TB502-10	E	904
28	T501-2	TB502-9	E	90
29	T501-3	TB502-6	E	95
30	T501-1	TB502-7	E	5
31	J501-1	TB502-7	E	5
32	C525	R513	E	96
33	CR501 (+)	R514	E	96
34	CR501 (-)	R515	E	3
35	TB501-8	R516	E	3
36	R512	C525	E	916
37	R512	TB503-4	E	916
38	R512	C523	E	916

WIRE NUMBER	WIRE CONNECTS FROM	WIRE CONNECTS TO	WIRE CODE	COLOR CODE
39	TB501-4	C523	E	916
40	TB501-4	S502	E	916
41	R511	X1501	E	6
42	R512	K501 COIL	E	936
43	K501 COIL	TB503-1	E	936
44	R516	TB501-6	E	935
45	GND	C523	E	0
46	J502	C523	E	0
47	GND	J501-10	C	0
48	XV504-6	K502	E	926
49	XV504-4	K502	E	926
50	K502 COIL	J501-12	E	948
51	K502 COIL	J501-11	E	980
52	K501	C524	E	94
53	TB503-2	C524	E	94
54	TB501-2	C524	E	94
55	TB501-2	X1501	E	94
56	TB501-5	TB503-5	E	914
57	C535	TB503-3	E	964
58	C535	TB501-3	E	964
59	K501	TB501-7	E	983
60	S502	TB501-7	E	983
61	S502	F501	E	983
62	J501-7	F501	E	983
63	S502	F502	E	916
64	J501-3	F502	E	916
65	TB502-5	TB502-8	E	9
66	R510	J501-4	U	---
67	C521	C534	E	0
68	TB503-1	S501	E	936
69	TB503-2	HR502	E	94
70	TB503-3	HR501	E	964
71	TB503-4	S501	E	916
72	TB503-5	HR502	E	914
73	C521	R509	E	2
74	X1502	R522	C	9
75	X1502	J502	C	0



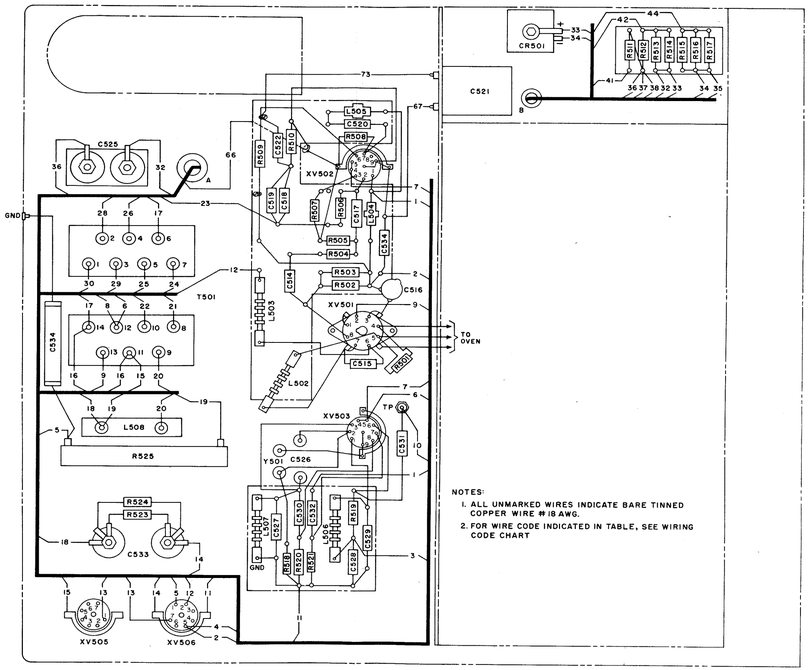


Figure 7-23. Radio Frequency Oscillator O-332 (XN-1)/SRT-17, Practical Wiring Diagram

DIRECTIONS – Identify similar component type in the proper column on the lower section of the page. Read across the rows at the top to determine the significance or value of the various colors.

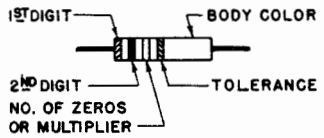
COLOR	DIGITS OR NO. OF ZEROS	RESISTORS RMA & JAN		CAPACITORS MOLDED MICA RMA & JAN			CAPACITORS MOLDED PAPER		CAPACITORS CERAMIC RMA & JAN				DIGITS OR NO. OF ZEROS	COLOR
		MULTIPLIER	TOLERANCE	MULTIPLIER	TOLERANCE	CLASS OR CHARACTERISTIC	MULTIPLIER	TOLERANCE	MULTIPLIER	TOLERANCE C>10 μμf	TOLERANCE C≤10 μμf	TEMP. COEFF. PTS. / MIL. / °C.		
BLACK	0	1		1	20%	A	1	20%	1	20%	2.0	0	0	BLACK
BROWN	1	10		10		B	10		10	1%		-30	1	BROWN
RED	2	100		100	2%	C	100		100	2%		-80	2	RED
ORANGE	3	1000		1000	3%(RMA)	D	1000		1000	2.5%(RMA)		-150	3	ORANGE
YELLOW	4	10000		10000		E	10000	5%	10000(RMA)			-220	4	YELLOW
GREEN	5	10^5			5%(RMA)	F(JAN)				5%	0.5	-330	5	GREEN
BLUE	6	10^6				G(JAN)						-470	6	BLUE
VIOLET	7	10^7										-750	7	VIOLET
GRAY	8	10^8				I(RMA)			.01		0.25	+30	8	GRAY
WHITE	9	10^9				J(RMA)		10%	.1	10%	1.0	-330±500 JAN +120-750 RMA	9	WHITE
GOLD		.1	5%		5%(JAN)		.1	5%						GOLD
SILVER		.01	10%		10%			10%						SILVER
NO COLOR			20%					20%						NO COLOR

RESISTORS

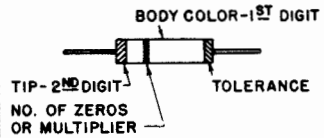
RMA & JAN COLOR CODING FOR FIXED COMPOSITION RESISTORS ARE IDENTICAL.
COLOR CODE GIVES THE RESISTANCE IN OHMS.

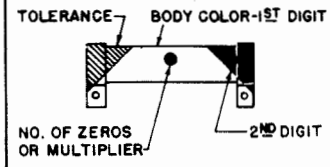
COLOR BAND SYSTEM

RESISTORS WITH BLACK BODY COLOR ARE COMPOSITION, NON-INSULATED.
RESISTORS WITH COLORED BODIES ARE COMPOSITION, INSULATED.
WIRE-WOUND RESISTORS HAVE THE 1ST DIGIT COLOR BAND DOUBLE WIDTH.



BODY, TIP, DOT OR NARROW BAND SYSTEM



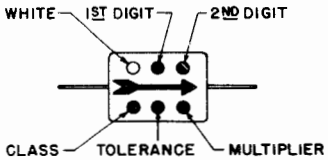


EXAMPLE –
BROWN-GREEN-RED = 1500Ω ± 20%

CAPACITORS, MOLD. MICA

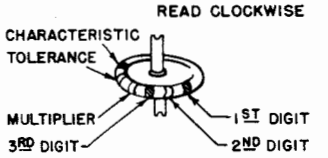
ALL AXIAL LEAD MICA CAPACITORS HAVE A VOLTAGE RATING OF 300 TO 500 VOLTS. THE MAXIMUM CAPACITY OBTAINABLE IS 10,000 μμf.
THE COLOR CODE GIVES THE CAPACITY IN μμf.

RMA 6 DOT SYSTEM

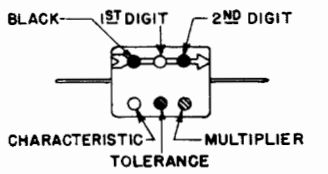


CLASS WAS PREVIOUSLY VOLTAGE.

BUTTON SILVER MICA



JAN 6 DOT SYSTEM

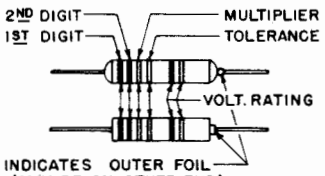


EXAMPLE – RMA 6 DOT
WHITE-ORANGE-BLUE
WHITE— RED—BROWN } 360 μμf ± 2% CLASS J

CAPACITORS, MOLD. PAPER

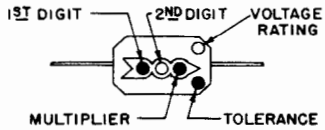
VOLTAGE RATINGS IN HUNDREDS OF VOLTS. ONE COLOR BAND EMPLOYED FOR RATINGS UNDER 1000 VOLTS.
THE COLOR CODE GIVES THE CAPACITY IN μμf.

BAND SYSTEM

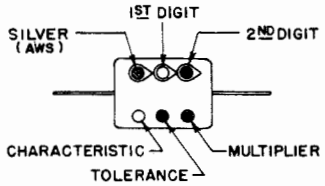


INDICATES OUTER FOIL (MAY BE ON OTHER END)

DOT SYSTEM



ARROW POINTS TO OUTER FOIL END



EXAMPLE –
RED-GREEN-ORANGE-BLACK-BROWN-RED
25000 μμf ± 20% 1200 Volts

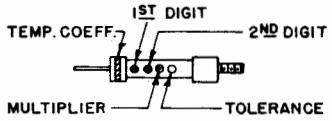
CAPACITORS, CERAMIC

ALL TUBULAR CERAMIC CAPACITORS ARE RATED AT 500 VOLTS.
THE COLOR CODE GIVES THE CAPACITY IN μμf.

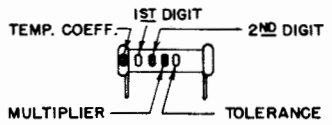
MOLDED INSULATED

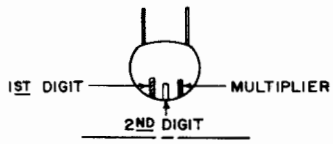
NOTE – DO NOT CONFUSE WITH RESISTORS. FIVE COLOR BANDS USED, (ONE BROAD, FOUR NARROW), WHILE RESISTORS USE FOUR BANDS.

STANDOFF CERAMIC

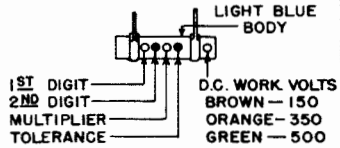


DIPPED PHENOLIC INSULATED OR NON-INSULATED





HI-CAPACITY CERAMIC TYPE (NOT TEMPERATURE COMPENSATED)



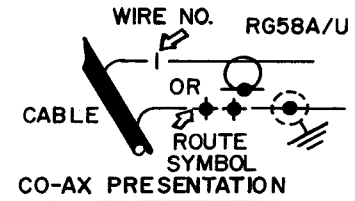
EXAMPLE –
BROWN-BLACK-ORANGE = 10000 μμf

Figure 7-24. Applicable Color Codes

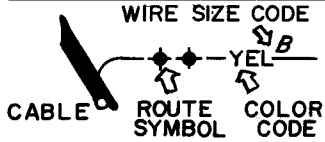
WIRING CODE

COLOR CODE TABLE

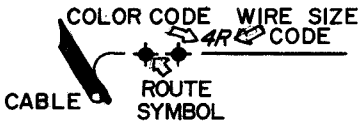
COLOR	NO. CODE	LETTER CODE
BLACK	0	BLK
BROWN	1	BRN
RED	2	RED
ORANGE	3	OR
YELLOW	4	YEL
GREEN	5	GRN
BLUE	6	BLU
VIOLET	7	VIO
SLATE	8	SL
WHITE	9	WH



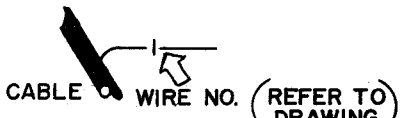
CO-AX PRESENTATION



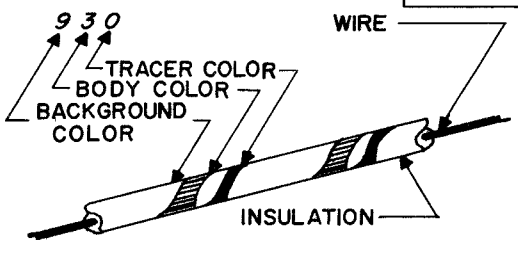
LETTER CODE PRESENTATION



NUMBER CODE PRESENTATION



PRESENTATION



MIL-W-76A CODING

SIZE CODE TABLE

STANDARD WIRE DESCRIPTION	SPEC	EQUIV. AWG NO.	CODE
SRIR-17(133)-8C-*	JAN-C-76	8	A
MW-C-12(19)-U-* MW-C-16(19)-U-* HW-C-16(19)-U-* MW-C-20(7)-U-*	MIL-W-76A MIL-W-76A MIL-W-76A MIL-W-76A	12 16 16 20	B C D E
MW-C-12(19)-U-8 with Bentley-Harris Special treated fiberglass sleeving double-braid size No. 10 MW-C-16(19)-U-8 as above	Used on oven-heater wires	12 16	BH CH
H. V. Cable, Boston Wire and Cable Co., Type PF GU-15000-16	Similar to Type 1, Grade B, Class 1, 7mm MIL-C-3162	21	F
H. V. Cable, 10 KV, 16 AWG, 26/.010, Gavitt Mfg. Co. H. V. Cable, 10 KV, 18 AWG, 16/.010, Gavitt Mfg. Co.	--- ---	16 18	G H
MW-C-14(19)-U-* MW-C-20(1)-U-*	MIL-W-76A MIL-W-76A	14 20	J K
Tinned Copper Bus Wire	---	As coded on individual drawing	
MW-C-16(1)-U-*	MIL-W-76A	16	L
ALPHA #1706 Coax. Shld. Wire			M
HW-C-20(U)	MIL-W-76A	20	N
#14 AWG Heavy Duty Polyethyl.		14	P
HW-C-8(127)-U-*	MIL-W-76A	8	Q
#24 AWG TEFLON		24	R
#4 AWG STRANDED T.W.	Kohler Electric	4	S
ALPHA #1298			T
RG-58 A/U			U

* ONE, TWO, OR THREE DIGIT NUMBER PER COLOR CODE TABLE AND SPEC. MIL-W-76A

Figure 7-25. Wiring Code

SECTION 8

PARTS LISTS

1. INTRODUCTION.

This section contains tables of replaceable parts, maintenance parts, and government stock numbers. Reference designations (previously referred to as circuit symbols, reference symbols, etc.) have been assigned to identify all maintenance parts of the equipment, and appear as markings on drawings, diagrams, and the parts list. The letter or letters of the reference designation indicate the general group to which the part belongs, and the number differentiates between parts of the same group. Parts of the first major unit are numbered from 1 to 199; parts of the second unit 201 to 299, etc. Sockets associated with a particular plug-in device, such as an electron tube or a fuse, are identified by reference designation which includes the reference designation of the plug-in device. For example, the socket for fuse F7 is designated XF7.

2. TABLE OF REPLACEABLE PARTS.

Table 8-1 lists all major units and the maintenance parts of each. Column 1 lists the reference designation in alphabetical and numerical order. Column 2 includes explanatory notes as follows:

Note 1 - Replace with the substitute part having the Federal Stock Number listed in table 8-2.

Column 3 contains the part number and description of all parts appearing for the first time in this table (key parts). Other parts are described as "same as" items, indicating the part description is the same as for the key part. Column 4 indicates the use of the part and gives its functional location in the equipment.

3. STOCK NUMBER IDENTIFICATION.

Table 8-2 lists all key parts arranged in the same reference designation order appearing in the Table of Replaceable Parts in Column 1. The "Stock Number" column contains Federal stock numbers, where available. Therefore, if you have the reference designation for a part, find the key designation from table 8-1 before using this table. Stock numbers preceded by an asterisk (*) apply to replacement items which differ from the items initially supplied in the equipment.

4. STOCK NUMBER CROSS REFERENCE.

Table 8-3 lists by Federal Stock Numbers all key parts that have been assigned stock numbers. If you know the stock number of a part used in this equipment, this table will enable you to locate the part's description in table 8-1.

5. LIST OF MANUFACTURERS.

Table 8-4 lists manufacturers of parts used in the equipment. Column 1 gives the manufacturer's abbreviation or trade name used in table 8-1. Column 2 lists the prefix assigned by the Navy. Column 3 gives the proper name and column 4 the address of the manufacturer.

TABLE 8-1 TABLE OF REPLACEABLE PARTS

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
100 to 599		TRANSMITTING SET, RADIO: A1 and A3 emission; freq range 2 to 30 mc 9 bands, master oscillator freq control; 100w power output, A1 emission 75w power output, A3 emission, input power, 115/230 V 50 to 60 cycles, single phase AC; metal case; o/a dim. 20-7/8 in. lg, 20-1/2 in. w, 45 in. h; floor or table mtg; major components, 1 AN Cabinet, Electrical Equipment CY-1778(XN-1)/SRT-17; 1 AN Transmitter Radio T-557(XN-1)/SRT-17; 1 AN Oscillator, RF O-332(XN-1)/SRT-17; 1 AN Power Supply PP-1294(XN-1)/SRT-17; provision for use w/standard Navy "6 wire" remote control; mfr Radio Corporation of America dwg D-50225; spec SHIPS-T-1080; Army-Navy Transmitting Set, Radio AN/SRT-17 (XN-1); for general purpose use.	For general communications
100 to 199		CABINET, ELECTRICAL EQUIPMENT: aluminum alloy, light gray enameled finish; o/a dim. 20-7/8 in. lg, 20-1/2 in. w; 45 in. h; 6 shock mts, 4 on base and 2 on upper rear, includes interlock switches, terminal board, connectors and cables for unit interconnection, slides for mtg major components, and air filters; Navy spec SHIPS-T-1080; Army-Navy Cabinet Electrical Equipment CY-1778 (XN-1)/SRT-17; mfr Radio Corporation of America, dwg D-50550.	Housing, p/o AN/SRT-17(XN-1)
200 to 299		POWER SUPPLY: electronic type; full wave rectification; output 1500v DC at 250 ma; 650v DC at 250 ma; 115v 1.1 amp 60 cycles AC; input power 115/230v, 50 to 60 cycles one ph; o/a dim. 20 in. lg; 19-5/8 in. w, 11 in. h; filter included; 8 12-24 mtg holes spaced 5 in. c to c; mfr Radio Corporation of America; dwg C-40499; Navy spec SHIPS-T-1080, Army-Navy Power Supply PP-1294 (XN-1)/SRT-17.	P/o AN/SRT-17 (XN-1), provides DC voltages
300 to 499		TRANSMITTER, RADIO: A1 and A3 emission; freq range 2 to 30 mc, 9 bands; external master oscillator freq control; power output 100 w A1 emission, 75 w A3 emission; power requirements 115 V, 50 to 60 cycles single phase AC; 1500V and 650V DC; o/a dim. 20-1/4 in. lg, 19-5/8 in. w, 24-1/8 in. h; mtd in metal cabinet; mfr Radio Corporation of America, dwg D-50549; Navy spec SHIPS-T-1080; Army-Navy Transmitter, Radio T-557 (XN-1)/SRT-17.	P/o AN/SRT-17 (XN-1), provides rf output and audio modulation
500 to 599		OSCILLATOR, RADIO FREQUENCY: freq range 1.875 to 3.75 mc, 1 band; no power output rating; inductance-capacity freq control; power requirements 230V and 115V, with jumpers 50 to 60 cycles single phase AC and minus 30 V DC; integral power supply; o/a dim. 19-7/8 in. lg, 19-5/8 in. w, 7-7/8 in. h; mfr Radio Corporation of America, dwg C-40500; Army-Navy Radio Frequency Oscillator O-332(XN-1)/SRT-17.	P/o AN/SRT-17 (XN-1), generates rf for T-557(XN-1)/SRT-17
A101		MOUNT SHOCK: high impact mild steel and rubber, 250 to 350 lbs. load range; static deflection range 0.015 to 0.050 in. min to max load,, o/a dia 5-1/4 in. by 5-1/4 in. by 2-1/2 in. high C hole for 5/8 in. tap; Barry, C4300-T10.	Cabinet mounting
A102		GUIDE, DRAWER: Channel type, aluminum, right hand; 200 lbs capacity per pair; 17-7/8 in. lg o/a closed; travel length 17 in. Radiomarine dwg C-40816-2.	Mts PP-1294(XN-1) / SRT-17
A103		CLEANER ELEMENT; AIR: replaceable type; aluminum filter and frame; o/a dim. 6 in. w, 8 in. lg, 3/4 in. thk; Radiomarine dwg B-31525.	Cabinet air filter
A104		GUIDE, DRAWER: channel type, aluminum, left hand; 200 lbs capacity per pair; 17-7/8 in. lg o/a closed; travel length 17 in. Radiomarine dwg C-40816-1.	Mts PP-1294(XN-1)/SRT-17

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
A105		COVER: aluminum 24 ST 8-25/32 in. lg, 4-1/32 in. w, mts w/ten 8/32, 5/16 in. lg, NPRHBM screws; Radiomarine dwg A-1214394.	Cabinet rear access
A106		GUIDE, DRAWER: channel type; aluminum, right hand, 200 lbs capacity per pair; 16-7/8 in. lg o/a closed; travel length 21 in. Radiomarine dwg D-50559-2.	Mts T-557(XN-1) /SRT-17
A107		GUIDE, DRAWER: channel type; aluminum, left hand, 200 lbs capacity per pair; 16-7/8 in. lg o/a closed; travel length 21 in. Radiomarine dwg D-50559-1.	Mts T-557(XN-1) /SRT-17
A108		Same as A102.	Mts O-332(XN-1) /SRT-17
A109		Same as A102.	Mts O-332(XN-1) /SRT-17
A201		Not Used.	
A202 (2 ea)		RETAINER, CAPACITOR:MIL type CP07SC2; spec MIL-C-25.	C201 mtg
A203 (2 ea)		Same as A202.	C203 mtg
A204 (2 ea)		RETAINER, CAPACITOR: MIL type CP07SE6; MIL-C-25.	C205 mtg
A205 (2 ea)		Same as A204.	C206 mtg
A301		Not Used.	
A302		COVER, CONTROL; aluminum alloy 24 ST lt gray enamel; 4-11/16 in. lg, 1-1/4 in. thk o/a; mts by two 6-32 thd retainer 4-3/16 in. c to c; Radiomarine dwg A-1214396.	Front control cover
A303 (2 ea)		RETAINER CAPACITOR: MIL type CP07SD3; spec MIL-C-25.	C301 mtg
A304 (2 ea)		RETAINER CAPACITOR: MIL type CP07SB4; spec MIL-C-25.	C303 mtg
A305 (2 ea)		Same as A304.	C316 mtg
A306 (2 ea)		Same as A304.	C329 mtg
A307 (2 ea)		Same as A304.	C337 mtg
A308 (2 ea)		RETAINER CAPACITOR: MIL type CP07SB2, spec MIL-C-25.	C335 mtg
A309 (2 ea)		RETAINER CAPACITOR: MIL type CP07SC3; spec MIL-C-25.	C338 mtg
A401		CLEANER, ELEMENT; AIR; replaceable type, material aluminum filter and frame; o/a dim. 4 in. w, 9 in. lg; 3/4 in. thk; Radiomarine dwg B-31524.	Blower air filter

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
A501		Not Used.	
A502 (2 ea)		RETAINER CAPACITOR: MIL type CP07SA2; spec MIL-C-25.	C510 mtg
A503 (2 ea)		Same as A502.	C511 mtg
A504 (2 ea)		Same as A202.	C528 mtg
B401		FAN, CENTRIFUGAL: single unit operating on a common shaft; 1/300 hp, 115v AC, 50/60 cyc, single phase, 3200 rpm; Air-Marine, no. A-15BF-24.	Cooling AN/SRT-17(XN-1)
B401A		IMPELLER, BLOWER: centrifugal; steel, zinc pl, paddle type double width; appx o/a dim. 2-1/2 in. dia. 2 in. lg, Torrington part 216D031; p/o Air-Marine dwg A-15BF-24.	P/o B401
B401B		MOTOR, ALTERNATING CURRENT: induction type, 115v AC, 50/60 cyc, 1 ph; 1/300 hp, 3200 rpm, CCW rotation viewed at load end, temperature data; 1-40 deg, C to 115 deg C, motor dim. 2.910 in. lg, excl shaft, 1.950 in. dia, 1/4 in. dia shaft extends 2-1/4 in. beyond frame; Air-Marine part A15CF dwg A-15BF-24.	Motor for B401
C101	Note 1	CAPACITOR, FIXED, MICA, DIELECTRIC: 0.01 uf, ±10% tolerance; 1200v DC working; MIL type CM50B103K; spec MIL-C-5.	FL101 RF bypass
C102		Same as C101.	FL101 RF bypass
C201	Note 1	CAPACITOR, FIXED, PAPER, DIELECTRIC: 4 uf, +20%-10% tolerance; 1000v DC working; MIL type CP70E1EG405V; spec MIL-C-25.	Low voltage filter
C202	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 2 uf +20%-10% tolerance; 600v DC working; MIL type CP53B1EF205V; spec MIL-C-25.	K301 time delay
C203		Same as C201.	Low voltage filter
C204		Not Used.	
C205	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 4 uf, +20%-10% tolerance; 2000v DC working; MIL type CP70E1EJ405V; spec MIL-C-25.	High voltage filter
C206		Same as C205.	High voltage filter
C301	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 10 uf +20%-10% tolerance; 600v DC working; MIL type CP70E1EF106V; spec MIL-C-25.	Microphone supply filter
C302		Same as C202.	Key spark suppressor
C303	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 4 uf +20%-10% tolerance; 600v DC working; MIL type CP70E1EF405V; spec MIL-C-25.	V301 plate decoupling
C304	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 3300 uuf, ±5% tolerance; 500v DC working; MIL type CM30D332J; spec MIL-C-5.	V301 grid filtering

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
C305		Same as C304.	V301 grid filtering
C306		Same as C304.	V302 plate decoupling
C307	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 4700 uuf, ±5% tolerance; 500v DC working; MIL type CM35B472J; spec MIL-C-5.	V302 L. F. compensation
C308		Same as C307.	V302 L. F. compensation
C309	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 8200 uuf, ±10% tolerance; 500v DC working; MIL type CM40B822K; spec MIL-C-5.	V301 plate decoupling
C310	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 1200 uuf, ±5% tolerance; 500v DC working; MIL type CM30D122J; spec MIL-C-5.	V302 grid coupling
C311		Same as C307.	Modulation level shunt
C312		Same as C307.	V302 low frequency compensator
C313		Same as C307.	V302 low frequency compensator
C314	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 0.1 uf, ±20% tolerance; 600v DC working; MIL type CP26A1EF104M; spec MIL-C-25.	V302 inverse feedback
C315		Same as C310.	V302 grid shunt
C316		Same as C303.	V302, V303, V304 decoupler
C317		CAPACITOR, FIXED, MICA DIELECTRIC: 390 uuf, ±5% tolerance; 500v DC working; MIL type CM20D391J; spec MIL-C-5.	V302 H. F. compensator
C318		Same as C317.	V302 H. F. compensator
C319		Same as C317.	V302 H. F. compensator
C320		Same as C317.	V302 H. F. compensator
C321		Same as C314.	V302 inverse feedback
C322	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 270 uuf, ±10% tolerance; 500v DC working; MIL type CM20B271K; spec MIL-C-5.	V303 grid coupler
C323	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 680 uuf, ±10% tolerance; 500v DC working; MIL type CM30B681K; spec MIL-C-5.	V302 grid coupler
C324		Same as C310.	V302 H. F. response

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
C325		Same as C314.	V304 grid coupling
C326		CAPACITOR, FIXED, MICA DIELECTRIC: 470 uuf, ±5% tolerance; 500v DC working; MIL type CM20D470J; spec MIL-C-5.	V303A grid shunt
C327	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 22 uuf, ±10% tolerance; 500v DC working; MIL type CM20B220K; spec MIL-C-5.	V304 step attenuator
C328		Same as C314.	V304B grid coupling
C329		Same as C303.	V302, V303, V304 decoupler
C330		Same as C317.	V303 inverse feedback
C331		Same as C304.	V305 grid coupling
C332		Same as C202.	V305 bias filter
C333		Same as C304.	V306 grid coupling
C334	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 4700 uuf, ±10% tolerance; 2500v DC working; MIL type CM50B472K; spec MIL-C-5.	V303 inverse feedback
C335	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 0.5 uf, +20%-10%, 2000v DC working; MIL type CP70E1EJ504V; spec MIL-C-25.	V404 screen blocking capacitor
C336		Same as C205.	R368 audio bypass
C337		Same as C303.	V405 plate decoupler
C338	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 8 uf, +20%-10% tolerance; 600v DC working; MIL type CP70E1EF805V; spec MIL-C-25.	R369 keying relay time delay adjust
C339		Same as C309.	LF compensator
C340		Same as C309.	I301 bypass
C341		Same as C101.	Key spark suppressor
C342 to C379		Not Used.	
C380	Note 1	CAPACITOR, FIXED, ELECTROLYTIC: 1100 uf, ±10% tolerance, 25v DC working; MIL type CE41F112F; spec MIL-C-62.	12 volt supply filter
C381		Same as C380.	12 volt supply filter
C382		Same as C202.	Bias supply filter
C401		Not Used.	
C402		Same as C309.	V401 screen grid decoupling

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
C403		Same as C309.	V401 grid coupling
C404 to C406		Not Used.	
C407		Same as C309.	V401 plate decoupling
C408		Same as C309.	V401 cathode bypass
C409		Same as C309.	V401 plate decoupler
C410		Same as C309.	V402 plate decoupling
C411	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 47 uuf ±10% tolerance 500v DC working; MIL type CM20B470K; spec MIL-C-5A.	V403 grid coupling
C412		Not Used.	
C413		Same as C309.	V402 grid bypass
C414		Same as C314.	V402 key wave shaping
C415		Same as C309.	V401, V402, V403 screen grid decoupler
C416		Same as C309.	V402 screen grid decoupler
C417		Same as C309.	V402 cathode bypass
C418		Not Used.	
C419		Same as C411.	V403 grid coupling
C420		Same as C309.	V403 cathode bypass
C421		Same as C411.	V404 grid coupler
C422		CAPACITOR, VARIABLE, AIR DIELECTRIC: plate meshing type; 1 section; 7.6 uuf ±20% + 2 uuf to 147 uuf ±10%; SLC characteristic; 0.020" air gap; o/a dim. excl shaft and mtg bkt 1-3/4 in. lg, 1-1/32 in. h, 1/4 in. shaft extends 13/16 in. each mts by two "L" shaped bkts; Cardwell part no. PL-6018-8; per Radiomarine dwg A-12002.	IPA TUNING
C423		CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: 1.5 to 7 uuf, 500v DC working; MIL type CV11A070; spec MIL-C-20A.	V404 plate trimmer
C424	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 470 uuf, ±10% tolerance; 2500v DC working; MIL type CM45B471K; spec MIL-C-5A.	V403 plate tank
C425	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 0.5 uf, +20%-10% tolerance; 600v DC working; MIL type CP53B1EF504V; spec MIL-C-25.	V405 keying wave shaping

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
C426		Same as C309.	V404 grid decoupler
C427		Same as C202.	Aid closing of K402
C428		Same as C425.	V405 keying wave shaping
C429		CAPACITOR, FIXED, MICA DIELECTRIC: 200 uuf. ±5%, tolerance; 2500v DC working; MIL type CM45B201J; spec MIL-C-5A.	V404 plate padder
C430		Same as C422.	V404 plate tuner
C431		Same as C309.	V404 cathode bypass
C432		Same as C309.	V405 screen grid decoupler
C433	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 2200 uuf ±10%, 500v DC working; MIL type CM30B222K; spec MIL-C-5A.	V404 screen grid decoupler
C434	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 47 uuf ±10%, 2500v DC working; MIL type CM45B470K; spec MIL-C-5A.	V407, V408 grid coupler
C435		Same as C101.	V404 plate decoupler
C436		Same as C101.	V407, V408 grid bypass
C437	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 2 uf, +20%-10%, 200v DC working; MIL type CP53B1EC205V; spec MIL-C-25.	CR301 RF bypass
C438	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 1 uf, +20%-10%, 200v DC working; MIL type CP53B1EC105V; spec MIL-C-25.	CR301 RF bypass
C439		CAPACITOR, FIXED, MICA DIELECTRIC: 510 uuf ±10%, 500v DC working; Erie type no. 370-FA.	V407 screen decoupler
C440		Same as C439.	V407, V408 filament bypass
C441	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 100 uuf, ±10%, 500v DC working; MIL type CM20B101K, spec MIL-C-5A.	V407 filament bypass
C442	NOTE 1	CAPACITOR, FIXED, MICA DIELECTRIC: 10,000 uuf, ±10%, 500v DC working; MIL type CM40B103K, spec MIL-C-5A.	V407 filament bypass
C443		Same as C439.	V407 screen decoupler
C444		Same as C439.	V407, V408 filament bypass
C445		Same as C101.	V407, V408 filament bypass
C446		Same as C439.	V407, V408 screen decoupler

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
C447		Same as C439.	V408 screen decoupler
C448		Same as C441.	V408 filament bypass
C449		Same as C442.	V408 filament bypass
C450		Same as C439.	V408 screen decoupler
C451		CAPACITOR, FIXED, MICA DIELECTRIC: 1000 uuf ±5%, 500v DC working; MIL type CM70B102J; spec MIL-C-5A.	V407, V408 plate blocking
C452		CAPACITOR, VARIABLE, AIR DIELECTRIC: two sections; 23-165 uuf per sections, Cardwell No. PL-8066-1 per Radiomarine dwg B-31556.	PA TUNING (for bands 1, 2, 7)
C453		CAPACITOR, FIXED, AIR DIELECTRIC: 750 uuf, 33 plates, two ceramic end plates, threaded studs to extend 7/16 in. beyond each end plate, no banana plugs required; Cardwell type PL-9706-1; per Radiomarine dwg A-12004.	PA tank RF bypass
C454		CAPACITOR, FIXED, CERAMIC: 200 uuf, ±10% tolerance, 7500v DC working; 1-9/32 in. dia by 1-7/16 in. lg axial screw terminals, 10-32 tapped hole; Centralab type 851-200N.	PA tank RF bypass
C455		CAPACITOR, VARIABLE, AIR DIELECTRIC: 9 to 53 uuf, 0.075 in spacing; o/a dim. 3-25/32 in. lg, 2-5/8 in. w, 2-31/32 in. h; Johnson type No. 50E30; per Radiomarine dwg A-12003.	PA TUNING (for bands 8 and 9)
C456		CAPACITOR, VARIABLE, AIR DIELECTRIC: differential type, ea section 25-550 uuf, 2 stator sections set 180 deg apart, single rotor 13/16 in. lg shaft; Cardwell type PL-8345-1; per Radiomarine dwg B-31555.	Antenna coupling control
C457		CAPACITOR, VARIABLE, AIR DIELECTRIC: plate meshing type, single section; 18 to 150 uuf, 3500v peak breakdown voltage approx o/a dim. excl mtg bracket 4-5/32 in. lg, 4-1/4 in. w, 4-3/16 in. h; Johnson part no. 150D35 w/two hole mtg bkt #115-101; per Radiomarine dwg B-31557.	ANTENNA TUNING
C458		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 100 uuf, ±10% tolerance; 15000v DC working; o/a dim. 1-9/32 in. dia by 1-7/16 in. lg; Centralab Cat. No. 851-100N.	Antenna matching
C459		Same as C458.	Antenna matching
C460		Same as C454.	Antenna matching
C461		Same as C309.	Filament line bypass
C462		Not Used.	
C463		Same as C425.	V405 keying wave shaping
C464	Note 1	CAPACITOR, FIXED, MICA DIELECTRIC: 1000 uuf ±10%; 500v DC working; MIL type CM30B102K; per spec MIL-C-5A.	V405 wave shaping
C465	Note 1	CAPACITOR, FIXED, PAPER DIELECTRIC: 1.0 uf, +20% -10%; 600v DC working; MIL type CP53B1EF105V, MIL-C-25.	Blower motor bypass

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
C466		CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: 4.5 to 25 uuf, +50 -0%; 500v DC working; MIL CV11A250; spec MIL-C-81.	V403 plate band 5 and 7 trimmer
C467		Same as C423.	V403 plate band 8 trimmer
C468		Same as C423.	V403 plate band 6 and 9 trimmer
C469		Same as C451.	PA plate tank rf bypass
C501		CAPACITOR, FIXED, CERAMIC: 5 uuf ±0.5 uuf, temp characteristic N750; MIL CC20UJ050D; spec MIL-C-20A.	MO tank padder
C502		Same as C501.	MO tank padder
C503		CAPACITOR, VARIABLE, AIR DIELECTRIC: 21 uuf min. 220 max capacitance; 5-1/2 in. lg, 3-1/2 in. d, 3-1/2 in. h, Cardwell 4.080.	MO tank tuning
C504		CAPACITOR, VARIABLE. CERAMIC DIELECTRIC: 2.3 to 14.2 uuf, 500v DC; Johnson no. 15M-11.	MO tank trimmer
C505		CAPACITOR, FIXED, CERAMIC: 300 uuf temp characteristic N80; 600v DC tolerance ±30uuf; CC45LG301F, spec MIL-C-20.	MO temp. comp voltage divider
C506		CAPACITOR, FIXED, CERAMIC: 300 uuf; temp. characteristic; NPO tolerance ±30 uuf; CC45CG301F, spec MIL-C-20.	MO temp comp volt divider
C507		Same as C506.	MO temp comp volt divider
C508		Same as C505.	MO temp comp volt divider
C509		Same as C505.	MO temp comp volt divider
C510		Same as C506.	MO temp comp volt divider
C511		Same as C506.	MO temp comp. volt divider
C512		Same as C506.	MO temp comp volt divider
C513		CAPACITOR, FIXED, CERAMIC: 56 uuf, NPO 5% tolerance; 500v DC; Erie NPO-C56±5%.	MO tank series
C514		Same as C441.	V501 plate blocking
C515		Same as C309.	V501 screen grid decoupler
C516		Same as C309.	V501 plate decoupler
C517		Same as C441.	V502A grid coupling
C518		Same as C309.	Keying line rf bypass

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
C519		Same as C309.	V502A cathode bypass
C520		Same as C317.	V502B plate blocking
C521	Note 1	CAPACITOR, FIXED, PAPER: metal case; 1 uf; 600v DC; tolerance +20% -10%; CP70E1EF105V; spec MIL-C-25.	V502B plate decoupler
C522		Same as C309.	V502B plate decoupler
C523		Same as C309.	S501 bypass
C524		Same as C309.	Bypass for switch contacts on K501
C525		Same as C521.	Blocking for CR501
C526		Same as C466.	Crystal calibrator tuning
C527		Same as C441.	Crystal calibrator padder
C528	NOTE 1	CAPACITOR, FIXED, MICA DIELECTRIC: 4700 uuf, ±10%, 500v DC working; MIL type CM40B472K, spec MIL-C-5A.	V503A plate decoupler
C529		Same as C309.	V503A plate decoupler
C530		Same as C441.	V503A, V503B cathode coupler
C531		Same as C309.	J502 blocking
C532		Same as C441.	Mixer coupler
C533		Same as C303.	V504 filter capacity
C534		Same as C314.	Filter capacitor
C535		Same as C309.	Heater bypass
CR301		RECTIFIER, METALLIC: selenium; half-wave, miniature 130v, 100 ma DC; Radio Receptor No. 5P1 with no. 5 finish.	PA bias supply
CR302		RECTIFIER, METALLIC: selenium single phase bridge, 24v; 3.2 amps DC; Radio Receptor part no. U1B1S5F.	12 volt rectifier
CR401		CRYSTAL, UNIT, RECTIFYING: germanium type; 40 ma max continuous forward current; 60v peak inverse voltage; 1.0 uuf shunt capacitance; type 1N34A.	V405 screen grid DC supply
CR402		Same as CR401.	V405 screen grid DC supply
CR403		Same as CR301.	V406 cathode bias
CR501		Same as CR301.	K501 DC supply
E101		INSULATOR, BOWL: ceramic; white, 2-1/2 in. OD, 1-5/8 in. o/a h; Grade L-5; spec MIL-I-8 type NS5W4601.	Cabinet top antenna post
E102		INSULATOR, STAND-OFF: ceramic 1 in. lg; 1 in. w; 1 in. h; spec MIL-I-8 type NS5W1408.	Antenna contact support

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
E103		Same as E102.	High voltage pickup support
E104 (5 ea)		LEAD, ELECTRICAL: brass nickel plate, o/a 0.750 in. lg, 0.312 in. w, 0.015 in. thick; 2 holes; Kulka part no. 601.	Terminal board jumper
E105		Not Used.	
E106		CONTACT, ELECTRICAL: movable connector, brass per MIL-B-895 silver plated; 1-1/2 in. long, 1 in. w; 1/8 in. thick; Radiomarine A-11907.	Ground connection for T557(XN-1)/ SRT-17
E107		CONTACT, ELECTRICAL: movable connector; blade spring phosphor bronze; MIL-B-892; silver plated; 1-1/2 in. lg, 11/16 in. at wide end; tapers to 5/8 in. at small end; 0.020 in. thk; Radiomarine A-11904.	HV contact
E108		CONTACT, ELECTRICAL: brass per MIL-B-895; silver plated L-shaped one leg 1-7/16 in. lg; other 7/8 in. lg; 3/4 in. wide; Radiomarine A-11901.	RF contact
E201		CLIP, ELECTRICAL: electronic tube contact type; plate and grid cap; brass; 1-3/8 in. lg, 19/32 in. w; 1/2 in. dia; one solder lug connection for 9/16 in. tube cap; National type 12.	V203, V204 plate connectors
E202		INSULATOR, BUSHING: ceramic conical, round shank 1-15/16 in. dia, 1-1/8 in. lg, spec MIL-I-8; MIL type NS5W4104.	High voltage bleeder resistor R210, R211
E203 (2 ea)		TERMINAL, INSULATED: ceramic grade L-5; 5/16 in. across flats, 19/32 in. lg; o/a Cambridge Part no. X-1942-F6.	Tie points
E204 (3 ea)		Same as E104.	Terminal board jumpers
E205		Not Used.	
E301 (4 ea)		SHIELD, ELECTRON TUBE: brass 1-15/16 in. lg, 61/64 in. dia twist lock mtd; spec MIL-S-28A; MIL type TS103U02.	Tube shields V301, V302, V303, V304
E302 (2 ea)		CONTACT, ELECTRON TUBE: female round, 3/4 in. by 7/8 in. OD, has set screw for mtg on tube plate contact; EIMAC part no. HR6.	V305, V306 plate connector
E303		Same as E203.	Tie points
E304 to E308		Not Used.	
E309 (2 ea)		INSULATOR, STAND-OFF: ceramic 7/16 in. lg; 0.20 in. i/d; spec MIL-I-8; MIL type NS5W4003.	R469 mtg
E401		SUPPRESSOR, PARASITIC: resistor and coil; 3 turns no. 14; silver plated, includes (R458) 3/4 in. lg, 7/16 in. i/d; Radiomarine dwg A-11985.	V404 parastic grid suppressor
E402		SUPPRESSOR, PARASITIC: resistor and coil, 3 turns no. 10; silver plated copper wire; 2-7/8 in. lg, 7/16 in. i/d; with 1-47 ohm resistor (R459) Radiomarine dwg A-11983-2.	V404 parasitic plate suppressor
E403		SUPPRESSOR, PARASITIC: resistor and coil type, 8 turns no. 14 silver plated copper wire; 1 in. by 5/16 in. i/d; includes 1-22 ohm resistor (R462); Radiomarine dwg A-11984.	V407 grid suppressor
E404		SUPPRESSOR, PARASITIC: resistor and coil type 3turns no.10sil plated copper wire, 2-1/8 in. by 7/16 in. i/d; includes 1-47 ohm resistor (R460); Radiomarine dwg B-31517.	V407 plate suppressor

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
E405		Same as E404.	V408 plate suppressor
E406		Same as E403.	V408 grid suppressor
E407 (2 ea)		Same as E302.	V407, V408 plate connector
E408 (4 ea)		INSULATOR, STAND-OFF: ceramic 5/8 in. lg, 1/2 in. dia; MIL type NS5W0205; spec MIL-I-8.	C456 mtg
E409 (4 ea)		INSULATOR, STAND-OFF: ceramic 1/2 in. dia, 3/4 in. lg; thd each end; MIL type NS5AW0206; spec MIL-I-8.	Support for PA coils L422 and L423
E410		INSULATOR, STAND-OFF: ceramic; 1/2 in. dia; 1-1/4 in. lg; MIL type NS5W0210; spec MIL-I-8.	V404 plate suppressor stand-off
E411		INSULATOR, STAND-OFF: ceramic; 1/2 in. dia, 1 in. lg; MIL type NS5W0208; spec MIL-I-8.	Mts C451
E412 (2 ea)		INSULATOR, STAND-OFF: ceramic; 1/2 in. dia, 1-1/2 in. lg; MIL type NS5W0212; spec MIL-I-8.	Mts C451
E413		INSULATOR, STAND-OFF: ceramic; 3/4 in. dia; 3 in. lg; MIL type NS5W0324; spec MIL-I-8.	E404, E405 mtg
E414		INSULATOR, STAND-OFF: ceramic; 3 in. h; 1 in. w; 1 in. lg; MIL type NS5W1424; spec MIL-I-8.	Antenna pick-up
E415		INSULATOR, STAND-OFF: ceramic; 1 in. lg, 1 in. w, 2-1/2 in. h; MIL type NS5W1420; spec MIL-I-8.	High voltage pick-up
E416		Not Used.	
E417		INSULATOR, STAND-OFF; ceramic; 3/8 in. , 1/2 in. lg; each end thd; MIL type NS5W0104; spec MIL-I-8.	L401 mtg
E418		Not Used.	
E419 (2 ea)		Same as E409.	S406 mtg
E420 and E421		Not Used.	
E422		SHIELD, ELECTRON TUBE: brass, cylindrical; 2-1/4 in. , 13/16 in. dia; twist lock mtg; MIL type TS102U03; spec MIL-S-28A.	Shield for V406
E423 (2 ea)		CLIP, ELECTRICAL: brass, nickel plated, 1 in. lg; 7/16 in. w; 3/8 in. h; solder lug connection for 3/8 in. dia tube cap; National no. 24.	V404, V405 plate connectors
E424		ARRESTOR, ELECTRICAL SURGE: air gap type, for inside use, o/a dia 2-1/4 in. lg, 1 in. w; 2-3/8 in. h; one term. solder lug; ceramic insulation; Radiomarine B-31536.	Spark gap
E425		INSULATOR, STAND-OFF; ceramic, 3/4 in. dia, 1 in. lg; MIL type NS5W0308, spec MIL-I-8.	P/o E424
E426		CONTACT ELECTRICAL: silver plated brass; Radiomarine A-11902.	HV pickup
E427 (2 ea)		Same as E417.	Mts R466.
E428		Same as E417.	Tiepoint for R450, R451

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
E429 (2 ea)		Same as E411.	Mts S406
E430 (2 ea)		Same as E203.	Tiepoints
E431		Same as E104.	Terminal board jumper TB402
E501 (4 ea)		INSULATOR, STAND-OFF: steatite; Grade 5; white glaze finish; style, 02; 2 in. lg; 3/8 in. deep threaded holes each end; 1/2 in. dia tapped with 8-32 thd; MIL type NS5W0216, spec MIL-I-8.	Supports for MO capacitors
E502 (2 ea)		Same as E301.	Shield for V502, V503
E503 (2 ea)		Same as E422.	Shield for V505, V506
E504 (6 ea)		LEAD, ELECTRICAL: brass nickel pl; o/a dim. .650 in. lg, .250 in. w; .015 in. thick; two .145 in. dia holes; Kulka no.600-J.	Terminal board jumper
E505 (2ea)		Same as E408.	Support for leads
F201		FUSE, CARTRIDGE: 5 amp, 250v instantaneous, non-renewable fuse; indicating type, 1-1/2 in. lg, 3/8 in. dia; Bussman type MIN.	High voltage transformer primary
F202		Same as F201.	High voltage transformer primary
F203		FUSE, CARTRIDGE: 1.5 amp, 250v, instantaneous, non-renewable, indicating type; 1-1/2 in. lg, 3/8 in. dia; Bussman type MIN.	Low voltage transformer primary
F204		Same as F203.	Low voltage transformer primary
F205		FUSE, CARTRIDGE: 1 amp, 250v, instantaneous, non-renewable indicating type 1-1/2 in. lg, 3/8 in. dia; Bussman type MIN.	Time delay circuit protection
F206		FUSE, CARTRIDGE: 15 amp, 250v, instantaneous, ferrule type, non-renewable, indicating type, 1-1/2 in. lg, 3/8 in. dia; Bussman type MIN.	Line supply
F207		Same as F206.	Line supply
F208		Same as F205.	Auxiliary outlet line
F209		Same as F201.	Spare for F201, 202
F210		Same as F201.	Spare for F201, 202
F211		Same as F203.	Spare for F203, 204
F212		Same as F203.	Spare for F203, 204
F213		Same as F205.	Spare for F205, 208 or F501, F502
F214		Same as F206.	Spare for F206, F207

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
F215		Same as F206.	Spare for F206, F207
F216		Same as F205.	Spare for F208, F205
F501 (2 ea)		Same as F205.	MO line protection
F502		Same as F205.	MO line protection
FL101		SUPPRESSOR, ELECTRICAL NOISE: low pass. capacity 10A; 0-1000 cycles; 86db attenuation 150kc to 1000 mc; Tobe type 1600.	AC line rf filtering
FL102		Same as FL101.	AC line rf filtering
H101 (3 ea)		CLAMP, ELECTRICAL: 0.017 in. aluminum; zinc chromate finish; one bolt type fastening device; o/a dim. 51/64 in. lg, 5/8 in. w; 0.346 in. high; one 11/64 in. dia mtg hole; designed to hold material 1/4 in. dia; Tinnerman part no. 3044-1.	Wire harness clamp
H102 (3 ea)		CLAMP, ELECTRICAL: 0.017 in. aluminum; zinc chromate finish; one bolt type fastening device; o/a dim. 55/64 in. lg, 5/8 in. w; 0.409 in. h; one 11/64 in. dia mtg hole; designed to hold material 5/16 in. dia; Tinnerman part no. 3044-2.	Wire harness clamp
H103 (6 ea)		CLAMP, ELECTRICAL: 0.017 in. aluminum, zinc chromate finish; one bolt type fastening device; o/a dim., 59/64 in. lg, 5/8 in. w, 0.471 in. h; one 11/16 in. dia mtg holes; designed to hold material 3/8 in. dia; Tinnerman part no. 3044-3.	Wire harness clamp
H104 (5 ea)		CLAMP, ELECTRICAL: 0.025 in. aluminum, zinc chromate; one bolt type fastening device; o/a dim. 1-3/64 in. 5/8 in. w; 0.612 in. h; one 11/64 in. dia mtg hole; designed to hold material 1/2 in. dia; Tinnerman part no. 3044-4.	Wire harness clamp
H201		ALIGNMENT TOOL, ELECTRONIC EQUIPMENT: screw driver type, 2 working ends; recessed and extended blades; 7-1/8 in. lg, o/a; tenite w/steel blade; Insuline dwg 6192.	Oscillator tuning
H202		WRENCH: multiple spline set screw key; double-ended; L-shaped no. 6; 0.076 dia by 3/4 in. w, by 1-15/16 in. lg; Bristolco No. 6, short arm.	Tighten set screws
H203		WRENCH; multiple spline set screw key; double-ended L-shaped No. 8; 0.094 in. dia by 13/16 in. w by 2-1/8 in. lg; Bristolco No. 8, short arm.	Tighten set screws
H204		WRENCH: multiple spline set screw key; double-ended, L-shaped No. 10; 7/64 in. dia, by 5-5/64 in. w, by 2-13/64 in. lg; Bristolco No. 10, short arm.	Tighten set screws
H205		WRENCH: multiple spline set screw key: double-ended, L-shaped No. 8; 3/32 in. dia by 51/64 in. w, by 8 in. lg; Bristolco No. 8, long arm.	Tighten set screws
HR501		HEATER RESISTANCE ELEMENT: electrical, coil type wire 10 ohms per in.; cap. 0.223 amps; 4-1/2 ft lg, each unit; wound on square melamine form 4 in. by 4 in. with 17 axial pins; Radiomarine dwg 1214462.	Oven heater
HR502		Same as HR501.	Oven heater

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
I201		LAMP, INCANDESCENT: 6-8v, 250 ma; min. bay base; T-3-1/4 bulb; GE type Mazda part #44.	Lamp for XI201
I202		Same as I201.	Lamp for XI202
I203		LAMP, GLOW: 1/25 w; 65v AC, 115v DC, min. bay base; T-3-1/4 bulb; C-2R electrode; neon gas filled; GE co type NE-51.	Lamp for XI203
I301		Same as I201.	Lamp for XI301
I501		Same as I203.	Lamp for XI501
I502		Same as I201.	Lamp for XI502
J101		CONNECTOR, RECEPTACLE: 28 female contacts, round, straight type, o/a dim. excl protruding contacts and term., 3-3/8 in. lg, 1-11/16 in. w, 63/64 in. h; contacts rating 10 amps; Cannon Part no. DPD-B28-33S-A29 type L.	Cabinet interconnection for power supply
J102		Same as J101.	Power connection to modulator
J103		Not Used.	
J104		CONNECTOR, RECEPTACLE: 13 female contacts, 12 round straight type, 1 coxial connector; rated 10 amps; o/a dim. 3-3/8 in. lg; 1-11/16 in.w; 1-7/64 in. h; Cannon DPB-13C 1-33S-A29 type L.	MO interconnection power and rf output
J201		CONNECTOR, RECEPTACLE: 28 male contacts, round straight type; o/a dim. excl protruding contacts and term., 3-3/8 in. lg, 1-11/16 in. w, 1-7/64 in. h; contacts electrically rated at 10 amps, Cannon part No. DPD-B28-34P-A29 type L.	Power input connection to J101.
J301		JACK, TELEPHONE: for 2 conductor plug; J1 contact arrangement, MBCA Ref Dwg Group 4, 1-9/32 in. lg, 25/32 in. dia; w/ 3/8 in. hex mtg nut 3/32 in. thk and 11/16 in. OD, 3/8 in. ID, 020 thk washer; MIL type JJ-034; per spec MIL-J-641.	KEY (external)
J302		JACK, TELEPHONE: for 2 conductor plug; J7 contact arrangement; MIL type JJ-101, spec MIL-J-641.	HEADSET connection for monitoring
J303		JACK, TELEPHONE: for 3 conductor plug; contact arrangement J2; 3/8 in. dia mtg hole; MIL type JJ-033, spec MIL-J-641.	Mircophone input
J304		Same as J201.	Power connection to transmitter
J305		CONNECTOR, RECEPTACLE: one round female straight type contact; o/a dim. 1/2 in. lg, 3/8 dia. 1/4-28 thd; complete w/ 3/8 OD, 1/4-28 hex nut and solder lug; Birnback part no. 403.	P/o J308, 1500 v for modulator
J306		CONNECTOR, RECEPTACLE: 32 ribbon male contacts; solder lug term. o/a dim. excl protruding contacts and term. 3-51/64 in. lg, 7/8 in. w, 7/8 in. h; Amphenol part no. 26-159-32 plug.	Modulator to rf section connections
J307		Same as J305.	P/o J308, 1500v for PA tubes
J308		JACK, ASSEMBLY, TIP: 2 female contact; o/a dim. 2-7/8 in. lg, 1-1/4 in. w; 5/8 in. h; Radiomarine dwg B-32142.	Chassis HV interconnection

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
J401		CONNECTOR, RECEPTACLE: 32 ribbon female contacts solder lug term; o/a dim. excl protruding term. and contacts; 3-51/64 in. lg, 7/8 in. w, 27/32 in. h; Amphenol part no. 26-190-32 receptacle.	Modulator to rf section connections
J402		PLUG TIP: one male round straight, banana type contact; o/a dim. excl term. 31/32 in. lg; one 6-32 center tap hole for 6-32 mtg screws; contact electrically rated at 5 amps; Bud Radio Cat no. PL469.	P/o J407, 1500v to modulator tubes
J403		CONNECTOR, RECEPTACLE: one female round contact; straight type o/a dim. 1-1/8 in. lg, 1 in. w; 1 in. h; radio frequency connector cylindrical w/square mtg flange; 4 mtg holes .125 in. dia located on 23/32 in. by 23/32 in. c; Army-Navy no. 49194; Amphenol no. 83-1R or equivalent.	Input to V401
J404		Not Used.	
J405		Same as J402.	P/o J407, 1500v to PA tubes
J406		Same as J403.	Receiver antenna input
J407		PLUG ASSEMBLY, TIP: 2 female contact o/a dim. 2-3/4 in. lg, 1-1/4 in. w; 1-3/16 in. h; Radiomarine dwg B-32141.	Chassis HV interconnection
J501		CONNECTOR, RECEPTACLE: 13 male contacts; 12 round straight type, 1 right angle coaxial grounded connector; contacts electrically rated at 10 amps; o/a dim. excl protruding contacts and term. 3-3/8 in. lg, 1-11/16 in. w; 1-7/64 in. h; Cannon part no. DPB-13C1-34P; 90 deg coax, short contact, A29 type L.	MO power interconnection to J104.
J502		Same as J301.	CALIBRATE (with headphones)
K201		RELAY, ARMATURE: 3PST; normally open 115v AC, 50/60 cyc; coil resistance 450 ohms, ±10%, Advance type PC34115VA.	High voltage plate contactor
K202		Same as K201.	Low voltage plate contactor
K203		RELAY, MOTOR DRIVEN: SPDT; 115v 50/60 cyc, 0-60 sec; normally open; Navy type 3019 w/Navy approved motor; Advance spec 3019-4, Rev A.	Plate contact time delay
K204		RELAY, ARMATURE: 3PST;, normally open; 60v AC coil; 50/60 cyc; 250 ohms DC resistance ±10%; Advance dwg no. 3835Y.	Start-stop operation
K301		RELAY, ARMATURE: magnetic type, single winding; SPDT; 10,000 ohms DC resistance; Advance type no. 3932Y.	Modulator plate delay
K302		RELAY, ARMATURE: magnetic type, single winding; 4PDT; 1000 ohms DC coil resistance 32v DC; Advance spec no. 3834Y.	Circuit changeover and keying indicator
K303		RELAY, ARMATURE: latching type, SPST, normally open contacts on reset coil only, no contacts on operate coil; adjusted to pull in at 75 to 100 ma DC, operating coil 100 ohms DC resistance; release coil 12v DC, 100 ohms DC resistance; pulls in at 9.5 to 15v DC; Advance spec no. 3484Y, Rev A.	Modulator overload
K304		Same as K303.	PA overload
K401		RELAY, ARMATURE: SPDT and make before break contacts rated at 1.5 amps, 24v DC, 10,000 ohms DC coil resistance; Advance spec no. 3473Y.	Keying

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
K402		RELAY, ARMATURE: DPDT and SPST normally open center contact, 32v 400 ohms DC coil, adjusted to pull at 22v or less; Advance spec no. 3836Y.	Antenna change over
K501		RELAY, ARMATURE: SPST 15v DC operation, Advance part no. 3424Y.	Oven heater on/off
K502		RELAY, ARMATURE: DPST 115v, AC 50/60 cycles operation; Advance part no. 3967Y.	MO plate power
L201		REACTOR: 8 henries, 250 ma DC; 100 ohms DC resistance; insulation voltage 3000v RMS winding to case; 2 solder lug term.; hermetically sealed metal case; type TF1A04YY; spec MIL-T-27; Radiomarine dwg B207.	Low voltage filter
L202		Same as L201.	Low voltage filter
L203		REACTOR: 34/7.5 henries, 50/250 ma DC, 85 ohms DC resistance; hermetically sealed metal case; 2 solder lug term.; insulation test voltage 5000v RMS winding to case; type TF1A04YY; spec MIL-T-27; Radiomarine dwg B-206.	High voltage filter
L204		Same as L201.	High voltage filter
L301		REACTOR: 5 henries, 60 ma DC; one winding; 80 ohms DC resistance; 500v RMS insulation test voltage; type TF1A04YY; spec MIL-T-27; Radiomarine dwg B-214.	Microphone supply filter
L302		SATURABLE REACTOR: supply winding; 110v , 50/60 cycles 0.22 amps, max., control winding 0.72 ohms DC resistance 1.1 amp max., 1.1 amp DC saturation; 4 solder lug term.; type TF1A04YY; spec MIL-T-27; Radiomarine dwg B-393.	12 volt power supply regulator
L303		REACTOR: fixed inductor type; 0.10 henries, 10v RMS, 60 cyc; 1.2 amps DC single winding; 1.7 ohms max. DC resistance; Hipot voltage 500v RMS; 2 solder lug term; hermetically sealed metal case; Type TF1A04YY, spec MIL-T-27; Radiomarine dwg B-321.	12 volt filter
L401		COIL, RF: 220 uh, 202 turns no. 36 AWG pie universal wound; 8.8 ohms DC resistance; single nylon enamel cover; Cambridge no. X2082-10.	V402 grid peaking
L402		COIL, RF: 470 uh; 276 turns of no. 30NE single universal wound; 12.1 ohms DC resistance; 100 ma DC; Q-20 at 790 Kc; LPB-C phenolic coil form; Cambridge no. X2082-12.	V401 plate peaking
L403		COIL, RF: 150 uh; 171 turns of no. 36 AWG pie universal wound single nylon enamel cover; 7 ohms DC resistance; Cambridge no. X2082-9	V403 grid peaking
L404 & L405		Not Used.	
L406		COIL, RF: 13 turns of no. 16 AWG wire; screw type adjustable iron slug; Radiomarine dwg A-11994-1.	V403 plate tuning band 6 and 9
L407		COIL, RF: 15 turns, no. 18 AWG wire; screw type adjustable iron slug; Radiomarine dwg A-11994-2.	V403 plate tuning band 5 and 7
L408		Same as L407.	V403 plate tuning band 8
L409		COIL, RF: 15.4 uh; 46-1/2 turns 38 single silk enamel covered; Radiomarine dwg X-161-part 4.	V404 grid choke

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
L410		COIL, RF: 14 turns, #14 AWG wire; copper silver pl; tapped at 5-1/4 and 8-1/4 turns; 3 solder lug term; laminated thermosetting plastic coil form; 2-5/8 in. by 1/2 in. dia; Radiomarine dwg A-1214461.	V404 plate tuning band 7, 8 and 9
L411		Same as L406.	V404 plate tuning band 6
L412		COIL,RF: single laver. 19 turns #20 AWG enamel insulated; mica bakelite filled form; o/a dim. 5/8 in. OD; 1-13/16 in. lg; Radiomarine dwg A-11994, part 4.	V404 plate tuning band 5
L413		COIL,RF: 34 uh; 31-3/4 turns of #20 AWG enamel covered wire; tapped at 12-1/8 turns; three solder lugs term. laminated thermosetting plastic coil form; Radiomarine dwg A-11992 (includes Radiomarine ref dwg A-11965).	V404 plate tuning band 3 and 4
L414		COIL,RF: 54-3/4 turns of #26 AWG wire, enamel insulation; tapped at 19-7/8 turns; 3 solder lug term.; laminated thermosetting plastic coil form; Radiomarine dwg A-11991 (includes Radiomarine ref dwg A-11964).	V404 plate tuning band 1 and 2
L415		COIL,RF: 3 pie universal wound; 1 mh, 300 ma, 10 ohms DC res; 17/32 in. dia by 1-7/8 in. lg excl terms per MIL-C-173 grade B; National no. R300ST, dwg No. SD5868.	PA grid choke
L416		COIL,RF: 62 turns #30 enamel covered wire; 2 solder lug term; Radiomarine dwg A-11989 (includes Radiomarine ref dwg A-11968).	PA grid choke
L417		REACTOR: fixed inductance type; 12 henries inductance; 0.1 amp DC; 550 ohms DC; 2 solder lug term.; Langevin no. 1951; Radiomarine dwg B-210 sub 4; spec MIL-T-27.	PA screen choke
L418		COIL,RF: 20 uh, 101 turns close wound #34 enamel wire, ceramic core; 1/4 in. dia by 1 in. lg; Radiomarine dwg A-11995.	PA screen grid choke
L419		COIL,RF: 5 pie universal wound 1 mh inductance at 1 mc; 1.5 KV rms; test insulation; 500 ma; steatite coil form 1-1/16 in. dia 2-7/8 in. lg; Johnson no. 102-752.	PA plate choke
L420		COIL,RF: 70 turns close wound; #26 AWG enamel covered wire; 2 solder lug term.; laminated thermosetting plastic coil form; Radiomarine dwg A-11993 (includes ref dwg A-11963).	PA plate choke
L421		COIL,RF: 12-1/2 turns of 3/16 in. OD silver pl copper tubing; 2 solder lug taps, 1 at 5 turns and another at 8 turns; 2-8-32 by 5/8 in. lg; screw term. at each end of coil; laminated thermosetting plastic coil form; Radiomarine dwg B-31528 (includes Radiomarine ref dwg A-11987).	PA medium frequency tank circuit
L422		COIL,RF: 34 turns no. 12AWG silver plated wire, tapped at 6, 19 and 27 turns o/a dim. 2 in. dia, 5 in. lg; Radiomarine dwg B-1233507 (includes Radiomarine ref dwg A-1214403).	PA low frequency tank circuit
L423		COIL,RF: 4-5/6 turns at 1/4 in. OD silver pl copper tubing; term. mtd by 3 #18 drill holes; Radiomarine dwg B-31535 (includes Radiomarine ref dwg A-11903).	PA high frequency tank circuit
L424		COIL,RF: 1/2 turn, 1/4 in. OD silver pl copper tubing term. mtd by 3 mtg holes; 1 #18 and 2 #7 drill holes; Radiomarine dwg B-31534.	Link coupling
L425		COIL,RF: 3-1/2 turns of 3/16 in. OD silver pl copper tubing; tapped at 1-1/2 turns; term. mtd by 2 #25 drill holes; Radiomarine dwg A-11998.	Antenna tuning coil

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
L426		COIL, RF: 11 turns, 1/8 in. OD silver pl copper tubing; tapped at 7 turns; 3 terms. 2 screw type and 1 solder lug; laminated thermosetting plastic coil form; Radiomarine dwg B-31527 (includes Radiomarine ref dwg A-11967).	Antenna tuning coil
L427		COIL, RF: 33-1/2 turns of no. 12 copper wire; tapped at 8, 15, 20, 25 and 29 turns; ceramic coil form; 6 solder lug term; Radiomarine dwg C-40822.	Antenna tuning coil
L428		COIL, RF: rotary inductor type; no. 14 tinned copper wire; max inductance 10 uh; form and end plates of steatite; 2-31/32 in. h; Johnson part no. 229-201-modified; Radiomarine dwg A-12005.	ANTENNA VERNIER
L429		TRANSFORMER, RF: s/layer #32 AWG; 79 turns; 2.6 ohms; enamel wire tapped at 26 & 37 turns; 3/4 in. OD; 2 in. lg; Radiomarine dwg A-1214401.	6AG7 plate coil
L430		COIL, RF: 2-1/8 turns of no. 10 bare tinned copper wire; 1 solder lug term; one wire lead term; Radiomarine dwg A-11999.	Antenna tuning coil
L431		COIL, RF: 100 turns close wound; no. 26 AWG enamel covered wire; 2 solder lug terms.; laminated thermosetting plastic coil form; Radiomarine dwg A-12045.	PA plate choke
L432		COIL, RF: 2 turns 3/16 silver plated copper tubing; term. mtd by two 5-32 in. drilled holes, one at each end; Radiomarine dwg A-14100.	PA medium frequency circuit
L501		COIL, RF: 60 turns, #19/44 nylon enamel litz wire; Radiomarine dwg B-1239632.	MO tank
L502		COIL, RF; CHOKE: 4 pie winding, 125 ma 44 ohms DC resistance 2.5 MH; National part R100ST.	V501 cathode choke
L503		Same as L502.	V501 screen grid rf choke
L504		Same as L401.	V502A plate choke
L505		COIL: series plate, 47uh 102 turns 36 AWG wire; single nylon enamel cover; 3.5 ohms DC resistance; Cambridge X2082-6.	V502B grid peaking
L506		Same as L502.	V503A plate loading
L507		Same as L502.	V503A cathode choke
L508		REACTOR, COIL: 10h, 125ma; Grade 1 class 6, o/a dim. 3-1/2 in. by 3-7/8 in. by 3-1/2 in. Kenyon S29587; Radiomarine dwg B-445.	Filter choke for power supply
M301	Note 1	AMMETER: round, molded phenolic case for use on non-magnetic panel; 0-50 ma DC; black markings and pointer on white background; shatterproof glass; MIL type MR25W050DCMA spec MIL-M-6A.	PA GRID circuit
M302		AMMETER: round, molded phenolic case for use on non-magnetic panel; 0-300 ma DC; black markings and pointer on white background; shatterproof glass; MIL type MR25W300DCMA spec MIL-M-6A.	PA CATHODE circuit
M303		Same as M302.	MOD. CATHODE current
N401 (4 ea)		DIAL SCALE: 0-100 divisions plotted on 180 deg of dial; aluminum blk anodize, white lettering; 2-3/4 in. dia; 3 mtg holes; 120 deg apart; Radiomarine dwg A-12008.	p/a PA, IPA and antenna tuning coupling

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17(XN-1)	
N402		CHART, CALIBRATION: opaque white plastic; blank columns; o/a dim. 6-7/16 in. by 3-1/4 in. by 3/32 in.; Radiomarine dwg A-1214398.	Tuning chart
N403		CHART, INSTRUCTION: glossy white plastic; printed instructions one side; o/a dim. 4-1/2 in. by 2-3/4 in. by 3/32 in.; Radiomarine dwg A-1214399.	Operating instruction
N501		DIAL, CONTROL: knob type dial; range 0 to 100 CCW, range of inscription linear; graduated in 100 scale division; o/a dim. 3 in. dia, 1-5/16 in. w; Cardwell part nos. A4.199 and A4.198.	MO vernier tuning
N502		DIAL, SCALE: 10 engraved divisions plotted on 36 deg; 3 in. inside dia; 3-1/2 in. outside dia; 4 mtg holes located 3-3/8 in. dia spaced 90 deg apart; Cardwell part no. 3.004.	MO vernier scale
N503		DIAL, SCALE: 0 to 50 engraved divisions plotted on 300 deg; subdivided in units; 3-1/2 in. dia, 3/16 in. thk; mts by three #6 holes spaced 120 deg apart on 1-1/4 in. dia; Radiomarine dwg A-1214445.	MO course calibrator
O201 (2 ea)		KNOB: phenolic; black; dimensional data, 1-5/8 in. lg o/a, 1-7/16 max od, 7/8 in. thk o/a; Radiomarine dwg A-14039.	Knob for S201, S202
O202 (4 ea)		CLAMP, ELECTRICAL: electron tube clamp, type 302 stainless steel; 3-1/8 in. dia, o/a w/clip in open position, 1-3/8 in. id closed, 3/4 in. h; single mtg hole for no. 10 machine screw; Birtcher part no. 926-C-5.	Clamp for V201, V202, V203, V204
O301		Same as O201.	Emission selector knob
O302 (2 ea)		KNOB: phenolic; black; dim. data, 1-5/32 in. lg o/a, 1 in. max. od, 5/8 in. thk; with marking, white, depressed marking; data regarding "the mfr", RCA Dwg no. 737820-507.	Head set level and modulation level knobs
O303 (9 ea)	Note 1	CLAMP: brass, nickel plated; shaft lock; consists of split bushing and lock nut; 5/8 in. lg, 1/2 in. o/a; for 1/4 in. dia shaft; Millen, part no. K10061.	Shaft locks for R301, R323, R363, R365, R369, R380, R385, R388, R389
O401 (2 ea)		Same as O202.	V404, V405 clamps
O402		Not Used.	
O403 (4 ea)		Same as O201.	Band switch, antenna range, and antenna tap knobs.
O404 (4 ea)		KNOB: phenolic; blk; dim. data, 1-1/2 in. lg, o/a 1-7/16 in. max od, 7/8 in. thk o/a; data regarding "the mfr", RCA dwg no. 737820-509.	Antenna tuning, IPA tuning, PA tuning, and coupling knobs
O405 (2 ea)		Same as O303.	Shaft lock for R437, R446.
O406		KNOB: set screw type; round, section A, ref dwg Group 186; phenolic, blk, w/o markings, o/a dim. 1-5/8 in. lg, 2-3/4 in. dia; data regarding "the mfr" Radiomarine dwg A-12007.	Antenna vernier knob
O407 & O408		Not Used.	
O409 (4 ea)		DRIVE, TUNING: positioning data, 360 deg. rotation continuous knob actuated; o/a dim., 1-53/64 in. lg, 2-9/16 in. o/a dia; Radiomarine dwg B-32143.	U/w PA tuning, IPA tuning, antenna tap switch, antenna coupling

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
O410		COUNTER, ROTATING, FIXED MOUNTING: register data, 3 figures, 0.166 in. high; blk on metal, non-reset, designed to subtract; shaft located on right, 100 rpm rated max. speed, cw rotation; 0.1 shaft revolution to register one count; o/a dim. 1-5/16 in. lg, 1-3/8 in. h; 7/8 in. w; Veeder-Root type A-114133	Antenna vernier counter
O411		DIAL LOCK: black oxide on brass; o/a 1.375 in. lg; mts by a 10-32 thd 0.375 in. lg stud; Cambridge no. X1552.	Lock for PA tuning, antenna vernier,IPA tuning, coupling control, antenna tuning
O412		GEAR, CASE: right angle switch drive; c/o 1 hot tinned brass case supporting 2 SST shafts driven by 2 nickel pl brass bevel gears; assembly enclosed by brass cover; 3 in. lg, 2-23/32 in. w, 3/4 in. h; o/a; Radiomarine dwg A-12023.	Antenna band switch coupling
O413		GEAR CASE: right angle switch drive; c/o 1 hot tinned brass case supporting 2 SST shafts driven by 2 nickel pl brass bevel gears; assembly enclosed by brass cover; 2-1/4 in lg, 2-13/32 in. w, 3/4 in. h, o/a; Radiomarine dwg A-12022.	S405 coupling
O414		COUPLING, FLEXIBLE: formed phos. bronze cad, pl; 1/4 by 1/4 in. bore by 0.320 in. lg, each end; round; 1.094 in. dia by 0.656 in. lg; two 8-32 tapped holes each end spaced 140 deg. apart on hubs; disc is 1.094 in. OD w/0.375 in. dia hole; Oak part lab 1637-11.	S405 coupling
O415		Same as O414.	S402 coupling
O416		COUPLING, SHAFT, FLEXICLBE, INSULATED: flexible disc type, exposed set screws; body brass, disc silicone; cromate finish shaft, rd type, 1/4 in. dia; o/a dim. 1-1/8 in. dia; 43/64 in. lg; mts by 4 set screws; Oak Mfg Co. Dwg 1637-42.	S405 drive coupling
O417		Same as O416.	C455 coupling
O418		Same as O416.	S402 coupling
O419		COUPLING: slide type shaft connector; shaft opening, 1/4 in. dia, each end; 2 set screws each end, 6-32 thd; o/a dim., 7/8 in. lg, 7/8 in. w, 7/8 in. h max.; material brass hubs nickel pl, bronze coupling yokes nickel pl, steatite insulating plate; Millen dwg K-39006.	C456 coupling
O420		Same as O419.	C457 coupling
O421		Same as O416.	S403 coupling
O422		Same as O416.	C452 coupling
O423		COUPLING, SHAFT, FLEXIBLE, INSULATED: disc type, exposed set screws; brass body, silicone round disc; nickel pl shaft; 3/16 in. dia; o/a dim., 1-1/8 in. dia, 43/64 in. lg, Oak dwg 6403-153.	Antenna vernier coupling
O424		GEAR, BEVEL: brass, 1/4 in. dia bore; 16 teeth, 0.500 in. pitch dia, 5/16 in. lg, mts by two 4-40 tap holes spaced 90 deg. apart, Radiomarine dwg A-11892.	Counter drive gear
O425		Same as O424.	Counter drive gear
O426		Same as O414.	S403A & B coupling
O427		CLAMP,ELECTRICAL: electron tube clamp, type 302 stainless steel 3/8 in. dia o/a; open position 1-1/4 in. dia closed position, single mtg hole for no. 10 machine screw; Birtcher 926B2.	Clamps for V401, V402, V403

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
O428		Same as O416.	S406 coupling
O501		WINDOW, DIAL: clear safety glass; o/a dim. 1-9/64 in. lg, by 57/64 in. w., by 3/32 in. thk; w/frame; w/vertical index line; Radiomarine dwg A-1214443.	LOGGING (MC tuning indicator
O502		COUPLING SHAFT, FLEXIBLE, INSULATED: disc type; cad. plated brass; o/a dim. 7/8 in. lg by 3/4 in. dia hub 3/8 in., hub bore 3/4 in., w/2 set screws per hub placed 90 deg. apart; Rembrandt type C25S25S.	C504 drive
O503		KNOB: phenolic; o/a dia; 13/16 in. for 1/4 in. shaft; 2 set screws w/o pointer; Molded Insulation 741622-503.	MO dimming for R522
O504		Same as O414.	C504 drive
O505		DIAL LOCK: black anodized brass; approx o/a dim. 1 in. lg, 5/8 in. dia; Radiomarine dwg B-1214384.	Dial lock for N501
O506		GEAR, BEVEL: brass miter gear 1.0 in. pitch dia, 24 pitch; 24 teeth; 1/4 in. dia, 17/32 in. lg bore; 5/8 in. hub dia; hub projects 1/4 in.; Boston Gear part no. G464.	MO coarse tuning drive
O507		Same as O506.	MO tuning drive
O508		GEAR,WORM: steel; 0.438 in. pitch dia; 11/16 in. lg, face; 3/16 in. bore; hub dia, 0.36 in. hub projects 3/16 in. from face, Boston Gear part no. LTHB.	MO coarse tuning drive
O509		GEAR, WORM WHEEL: brass 32 pitch single thread; 1.875 in. pitch dia; 1/4 in. hole; 60 teeth; hub dia, 11/16 in. ; hub projects 5/16 in.; Boston Gear part no. G1032.	MO coarse tuning drive
O510		RETAINER, CRYSTAL HOLDER: phosphor bronze; o/a dim. 11/16 in. lg, 13/32 in. w; Radiomarine dwg A-12076.	Y501 crystal clamp
O511		SHIELD, PILOT LAMP: brass, cad. plated; AmerRadioHdwe, no. 113.	Light shield for I502
O512 (1 ea)		Same as O202.	Clamp for V504
O513 (1 ea)		Same as O427.	Clamp for V501
P101		CONNECTOR, PLUG: coaxial; 1 round male contact; o/a dim. 1-11/16 in. lg by 11/16 in. dia; Army-Navy type UG-111/U; Amphenol part 83-750.	RF input to V401
R201	Note 1	RESISTOR, FIXED, COMP: 220,000 ohms ±10% 2W; MIL RC42BF224K, spec MIL-R-11A.	Low voltage bleeder
R202		Same as R201.	Low voltage bleeder
R203	NOTE 1	RESISTOR, FIXED, COMP: 22,000 ohms ±10% 2W; MIL RC42BF223K, spec MIL-R-11A.	Low voltage bleeder
R204		RESISTOR, FIXED, WW: 160 ohms ±5%; 78W; MIL RW37G161; spec MIL-R-26B.	T203 primary voltage dropping
R205		Same as R204.	T203 primary voltage dropping
R206	NOTE 1	RESISTOR, FIXED, COMP: 470,000 ohms ±10% 2W; MIL RC42BF474K, spec MIL-R-11A.	High voltage bleeder

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
R207		Same as R206.	High voltage bleeder
R208		Same as R206.	High voltage bleeder
R209	Note 1	RESISTOR, FIXED, COMP: 47,000 ohms ±10%, 1/2W; MIL RC20BF473K, spec MIL-R-11.	I203 current limiter
R210		RESISTOR, FIXED, WW: 800 ohms ±5%, 10W; MIL RW31G801, spec MIL-R-26B.	K204 dropping
R301		RESISTOR, VAR, COMP: 50,000 ohms ±10%, 2W; MIL RV4ATSD503A, spec MIL-R-94.	Sidetone adjust
R302	Note 1	RESISTOR, FIXED, COMP: 4700 ohms ±10%, 1/2W; MIL RC20BF472K, spec MIL-R-11.	Sidetone adjust range setting
R303		RESISTOR, VAR, COMP: 100,000 ohms ±10%, 2W; MIL RV4ATSD104A, spec MIL-R-94.	MOD. GAIN
R304	Note 1	RESISTOR, FIXED, COMP: 150 ohms ±10%, 2W; MIL RC42BF151K, spec MIL-R-11A.	Microphone current limiter
R305		ATTENUATOR, VARIABLE: "L" network; wire wound; 600 ohms input or output but not both; 2.5W max power; round plain shaft 1/2 in. lg; with 2 mtg nuts and lockwashers; Clarostat series CIL-58.	HEADSET LEVEL
R306	Note 1	RESISTOR, FIXED, COMP: 100,000 ohms ±10%; 1W; MIL RC30BF104K, spec MIL-R-11.	V301 plate load
R307	Note 1	RESISTOR, FIXED, COMP: 3300 ohms ±10%, 1/2W; MIL RC20BF332K, spec MIL-R-11.	V301 cathode
R308	Note 1	RESISTOR, FIXED, COMP: 470,000 ohms ±10%, 1/2W; MIL RC20BF474K, spec MIL-R-11.	V301 grid
R309		Same as R308.	V301 grid
R310	Note 1	RESISTOR, FIXED, COMP: 100,000 ohms ±10%, 1/2W; MIL RC20BF104K, spec MIL-R-11.	Mod. gain control range set
R311		Same as R310.	Mod. gain control range set
R312	Note 1	RESISTOR, FIXED, COMP: 56 ohms ±10%, 2W; MIL RC42BF560K, spec MIL-R-11A.	I301 shunt
R313		RESISTOR, FIXED, WW: 25 ohms ±5%, 10W; MIL RW31G250, spec MIL-R-26B.	I301 voltage dropping
R314	Note 1	RESISTOR, FIXED, COMP: 47 ohms ±10% 1W, MIL RC30BF470K, spec MIL-R-11A.	K302A time delay
R315		Same as R310.	V301 plate
R316	Note 1	RESISTOR, FIXED, COMP: 33,000 ohms ±10%, 1/2W; MIL RC20BF333K, spec MIL-R-11A.	V302A plate high frequency shunt
R317	Note 1	RESISTOR, FIXED, COMP: 150,000 ohms ±10%, 1/2W; MIL RC20BF154K, spec MIL-R-11A.	V302A low frequency compensator
R318		Same as R317.	V302A low frequency compensator

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
R319		Same as R317.	V302A low frequency compensator
R320		Same as R317.	V302A low frequency compensator
R321	Note 1	RESISTOR, FIXED, COMP: 220,000 ohms ±10%, 1/2W; MIL RC20BF224K, spec MIL-R-11.	V302A grid inverse compensator
R322		Same as R310.	Limiter (R323) range
R323		Same as R301.	Limiter adjust
R324		Same as R321.	V302A grid limiter
R325	Note 1	RESISTOR, FIXED, COMP: 56,000 ohms ±10%, 1/2W; MIL RC20BF563K, spec MIL-R-11.	V302A grid limiter
R326		Same as R310.	Voltage divider V302A grid input
R327		Same as R310.	Voltage divider V302A grid input
R328		Same as R306.	V302A plate load
R329		Same as R306.	V302B plate load
R330		Same as R306.	V302A plate load
R331		RESISTOR, FIXED, COMP: 1000 ohms ±10%, 1/2W; MIL RC20BF102K, spec MIL-R-11A.	V302A cathode
R332		Same as R331.	V302B cathode
R333		Same as R317.	V302B high frequency compensator
R334		Same as R317.	V302B high frequency compensator
R335		Same as R317.	V302B high frequency compensator
R336		Same as R317.	V302B high frequency compensator
R337		Same as R321.	V302B grid inverse feedback
R338		Same as R308.	V303A grid input
R339	Note 1	RESISTOR, FIXED, COMP: 330,000 ohms ±10%, 1/2W; MIL RC20BF334K, spec MIL-R-11A.	V302A plate compensator
R340		Same as R321.	V302A plate compensator
R341		Same as R308.	V303 grid leak
R342		Same as R308.	V302B grid leak
R343	Note 1	RESISTOR, FIXED, COMP: 220,000 ohms ±10%, 1W; MIL RC30BF224K, spec MIL-R-11A.	V303B plate load

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
R344	Note 1	RESISTOR, FIXED, COMP: 2200 ohms ±10%, 1/2W, MIL RC20BF222K, spec MIL-R-11A.	V303A cathode
R345		Same as R344.	V303B cathode
R346		Same as R343.	V303 plate load
R347	Note 1	RESISTOR, FIXED, COMP: 1 megohm ±10%, 1W; MIL RC30BF105K, spec MIL-R-11A.	V304A feedback attenuator
R348		Same as R347.	V304A feedback attenuator
R349		Same as R347.	V304A feedback attenuator
R350		Same as R321.	V304A grid bias
R351		Same as R321.	V304B grid bias
R352	Note 1	RESISTOR, FIXED, COMP: 470,000 ohms ±10%, 1W, MIL RC30BF474K, spec MIL-R-11A.	V304A plate load
R353		Same as R321.	V304 grid bias
R354		Same as R352.	V304B plate load
R355	Note 1	RESISTOR, FIXED, COMP: 100,000 ohms ±10%, 2W; MIL RC42BF104K, spec MIL-R-11A.	Plate load for V302, V303
R356		Same as R355.	Plate load for V302, V303
R357		Same as R321.	Inverse feedback to V303A from T302
R358		Same as R316.	Inverse feedback to V303A
R359		Same as R321.	V305 grid leak
R360	Note 1	RESISTOR, FIXED, COMP: 1800 ohms ±10%, 1W; MIL RC30BF182K, spec MIL-R-11A.	V304 cathode limiter
R361		Same as R321.	V306 grid leak
R362	Note 1	RESISTOR, FIXED, COMP: 10,000 ohms ±10%, 1/2W; MIL RC20BF103K, spec MIL-R-11A.	V304 grid limiter
R363		RESISTOR, VARIABLE, COMP: 5000 ohms, ±10%, 2W; MIL RV4ATSD502A, spec MIL-R-94A.	Modulation bias adjust
R364		Same as R347.	Inverse feedback to V303A
R365		RESISTOR, VAR, WW: 1000 ohms ±10%, 25W; MIL RP101SD102KK, spec MIL-R-22A.	Modulator screen balancing adjust
R366		Same as R347.	Inverse feedback to V303A
R367		Same as R347.	Inverse feedback to V303A
R368		RESISTOR, FIXED, WW: 1600 ohms ±5%, 38W; MIL RW35G162; spec MIL-R-26B.	PA plate dropping

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
R369		RESISTOR, VAR, COMP: 1 megohm, ±10%, 2W; MIL RV4ATSD105A; spec MIL-R-94A.	Keying adjust
R370		Same as R302.	Keying adjust range
R371		Same as R316.	Modulator bias protection
R372	Note 1	RESISTOR, FIXED, COMP: 120,000 ohms, ±5%, 1W; MIL RC30BF124J; spec MIL-R-11A.	Carrier locking
R373	Note 1	RESISTOR, FIXED, COMP: 8200 ohms, ±10%, 2W; MIL RC42BF822K, spec MIL-R-11A.	K302 dropping
R374		Same as R317.	-100V bleeder
R375		RESISTOR, FIXED, WW: 2000 ohms ±5%, 10W; MIL RW31G202; spec MIL-R-26B.	K302 voltage dropping
R376		RESISTOR, FIXED, WW: 630 ohms ±5%, 10W; MIL RW31G631; spec MIL-R-26B.	Bias filter for PA
R377 & R378		Not Used.	
R379	Note 1	RESISTOR, FIXED, COMP: 2400 ohms, ±10%, 1/2W; MIL RC20BF242K, spec MIL-R-11A.	Mod. bias adjust range
R380		RESISTOR, VAR. WW: 200 ohms ±10%, 25W, MIL RP101SD201K, spec MIL-R-22A.	Modulator overload adjust
R381		RESISTOR, FIXED, WW: 40 ohms ±5%, 10W; MIL RW31G400; spec MIL-R-26B.	Modulator overload range set
R382	Note 1	RESISTOR, FIXED, COMP: 330 ohms ±10%, 2W; MIL RC42BF331K, spec MIL-R-11A.	Shunt for R380 Mod overload
R383		RESISTOR, FIXED, WW: 100 ohms, ±5%, 10W; MIL RW31G101; spec MIL-R-26B.	12v power supply bleeder
R384		Same as R381.	PA overload adjust range set
R385		Same as R380.	PA overload adjust
R386		Same as R310.	Modulator gain control range set
R387		Same as R308.	Keying adjust range set
R388		Same as R303.	H. F. adjust
R389		Same as R369.	L. F. adjust
R390	Note 1	RESISTOR, FIXED, COMP: 100 ohms ±10%, 2W; MIL RC42BF101K, spec MIL-R-11A.	12v bleeder
R401		Same as R308.	V401 grid leak
R402	Note 1	RESISTOR, FIXED, COMP: 470 ohms ±10%, 2W; MIL RC42BF471K, spec MIL-R-11A.	Coupling resistor V401
R403		RESISTOR, FIXED, WW: 3100 ohms ±5%, 18W; MIL RW33G312; spec MIL-R-26B.	V401B amplifier grid resistor

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
R404	Note 1	RESISTOR, FIXED, COMP: 220 ohms ±10%, 2W; MIL RC42BF221K, spec MIL-R-11A.	V401B plate dropping
R405	Note 1	RESISTOR, FIXED, COMP: 680 ohms ±10%, 2W; MIL RC42BF681K; spec MIL-R-11A.	V401 cathode
R406		Same as R405.	V401 cathode
R407		Same as R308.	V402 grid leak
R408		Same as R404.	V402 plate load
R409		Same as R403.	V402 plate load
R410		Same as R405.	V402 cathode
R411		RESISTOR, FIXED, WW: 560 ohms ±5%, 10W, MIL RW31G561; spec MIL-R-26A.	K402 dropping
R412	Note 1	RESISTOR, FIXED, COMP: 1000 ohms ±10%, 2W; MIL RC42BF102K, spec MIL-R-11A.	V402 screen grid
R413		Same as R405.	V402 cathode
R414		RESISTOR, FIXED, COMP: 24,000 ohms ±5%; 1/2W; MIL RC20BF243J, spec MIL-R-11A.	Dropping for keying line
R415		RESISTOR, FIXED, WW: 1000 ohms ±5%, 10W; MIL RW31G102; spec MIL-R-26B.	V402, V403 plate dropping.
R416		RESISTOR, FIXED, COMP: 5.1 ohms ±5%, 1W; MIL RC32BF5R1J, spec MIL-R-11A.	V403 plate dropping
R417		RESISTOR, VARIABLE, COMP: 25,000 ohms 2W; MIL RV4ATSG253A, spec MIL-R-94A.	DRIVE control (V403 cathode)
R418		Same as R308.	V403 grid bias
R419	Note 1	RESISTOR, FIXED, COMP: 47 ohms ±10%, 2W; MIL RC42BF470K, spec MIL-R-11A.	V403 plate load
R420		Same as R412.	V401 screen dropping
R421	Note 1	RESISTOR, FIXED, COMP: 510 ohms ±10%, 2W; MIL RC42BF511K, spec MIL-R-11A.	V403 cathode
R422 (3 ea)		Same as R403.	V401, V402, V301 plate voltage divider
R423 (3 ea)		RESISTOR, FIXED, WW: 5000 ohms ±5%, 18W; MIL RW33G502; spec MIL-R-26B.	V401, V402, V301 plate voltage divider
R424		RESISTOR, FIXED, WW: 710 ohms ±5%, 18W; MIL RW33G711; spec MIL-R-26B.	Dropping for K402
R425		Same as R314.	K402B delay
R426	Note 1	RESISTOR, FIXED, COMP: 33,000 ohms ±10%, 2W; MIL RC42BF333K, spec MIL-R-11A.	V404 grid limiter
R427	Note 1	RESISTOR, FIXED, COMP: 3300 ohms ±10%, 1W; MIL RC30BF332K, spec MIL-R-11A.	V405 grid limiter
R428		Same as R310.	V405 grid bias
R429	Note 1	RESISTOR, FIXED, COMP: 8.2K ohms ±5%, 1/2W; MIL RC20BF822J; spec MIL-R-11A.	V405 keying bias voltage to grid

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-	
R430		Same as R412.	Parasitic suppressor V403
R431		Same as R306.	V405 key off bias
R432		Same as R203.	V404 screen grid voltage divider
R433		Same as R203.	V404 screen grid voltage divider
R434		Same as R331.	K401 current limiter
R435	Note 1	RESISTOR, FIXED, COMP: 15,000 ohms ±10%, 1/2W; MIL RC20BF153K, spec MIL-R-11A.	CR401 voltage divider
R436		Same as R435.	CR402 voltage divider
R437		RESISTOR, FIXED, WW: 1,000 ohms ±5%, 18W; MIL RW33G102 spec MIL-R-26B.	V404 voltage divider
R438		Same as R317.	V404 voltage divider
R439		RESISTOR, FIXED, WW: 1200 ohms ±5%, 18W; MIL RW33G122; spec MIL-R-26B.	Dropping for L. V. stages
R440		Same as R439.	V404 voltage divider
R441		Same as R321.	V404 voltage divider
R442		Same as R390.	V404 plate dropping
R443		Same as R415.	V406 cathode voltage divider
R444	Note 1	RESISTOR, FIXED, COMP: 1800 ohms ±10%, 2W; RC42BF182K, spec MIL-R-11A.	PA grid bias
R445		Same as R415.	Cathode voltage divider
R446		Same as R369.	V406 control grid
R447		Same as R375.	V406 plate load
R448		RESISTOR, FIXED, WW: 500 ohms ±5%, 10W; MIL RW31G501; spec MIL-R-26B.	V406 cathode bias
R449		RESISTOR, FIXED, WW: 6300 ohms ±5%, 18W; MIL RW33G632; spec MIL-R-26B.	V407, V408 screen dropping
R450	Note 1	RESISTOR, FIXED, COMP: 6800 ohms ±10%, 2W; MIL RC42BF682K, spec MIL-R-11A.	V407, V408 screen grid dropping
R451		Same as R450.	V407, V408 screen grid dropping
R452		Same as R355.	C454 H. V. leak

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
R453		Same as R355.	C458 H.V. leak
R454		Not Used.	
R455		Same as R372.	V405 screen grid leak
R456		RESISTOR, FIXED, WW: 80,000 ohms ±5%, 166W; MIL RW39G803; spec MIL-R-26B.	High voltage bleeder
R457	Note 1	RESISTOR, FIXED, COMP: 100 ohms ±10%, 1W; MIL RC30BF101K, spec MIL-R-11A.	V407, V408 grid limiter
R458 to R464		Not Used.	
R465	Note 1	RESISTOR, FIXED, COMP: 22 ohms ±10%, 1W; MIL RC30BF220K; spec MIL-R-11A.	V403 plate loading
R466		RESISTOR, FIXED, WW: 3500 ohms ±5%, 10W; MIL RW31G352; spec MIL-R-26B.	Keying dropping
R467	Note 1	RESISTOR, FIXED, COMP: 10,000 ohms ±5%, 2W; MIL RC42BF103J; spec MIL-R-11A.	Dropping for carrier lock
R468		Same as R467.	Dropping for carrier lock
R469		Same as R381.	V407, V408 plate load
R501		Same as R310.	V501 grid leak
R502	Note 1	RESISTOR, FIXED, COMP: 4700 ohms ±10%, 2W; MIL RC30BF472K, spec MIL-R-11A.	V501 plate dropping
R503		Same as R502.	V501 plate dropping
R504		Same as R435.	V502A grid voltage divider
R505	Note 1	RESISTOR, FIXED, COMP: 18,000 ohms ±10%, 1/2W; MIL RC20BF183K, spec MIL-R-11A.	Plate decoupler V502A
R506		Same as R310.	Keying bias V502A
R507	Note 1	RESISTOR, FIXED, COMP: 680 ohms ±10%, 1W; MIL RC30BF681K, spec MIL-R-11A.	Cathode resistor V502A
R508		Same as R307.	Grid bias resistor V502B
R509		Same as R450.	Plate dropping V502B
R510	Note 1	RESISTOR, FIXED, COMP: 68,000 ohms ±10%, 2W; MIL RC42BF683K; spec MIL-R-11A.	Cathode V502B
R511		Same as R209.	Dropping I501
R512	Note 1	RESISTOR, FIXED, COMP: 510 ohms ±10%, 1W; MIL RC30BF511K, spec MIL-R-11A.	Series limiting for S501
R513	Note 1	RESISTOR, FIXED, COMP: 1500 ohms ±10%, 2W; MIL RC42BF152K, spec MIL-R-11A.	Limiting for S501

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
R514	Note 1	RESISTOR, FIXED, COMP: 2200 ohms ±10%, 2W; MIL RC42BF222K; spec MIL-R-11A.	Limiting for S501
R515		Same as R373.	Limiting for CR501
R516		Same as R373.	Limiting for CR501
R517		Same as R373.	Limiting for CR501
R518		Same as R310.	Grid bias V503A
R519		Same as R467.	Plate dropping V503B
R520	Note 1	RESISTOR, FIXED, COMP: 2200 ohms ±10%, 1W; MIL RC30BF222K; spec MIL-R-11A.	Cathode V503B
R521		Same as R308.	Grid leak V503B
R522	Note 1	RESISTOR, VARIABLE: wirewound, 250 ohms 2W MIL RV4ATSD251A; spec MIL-R-94; Taper A.	Dimming for I502
R523		Same as R201.	Bleeder for MO power supply
R524		Same as R201.	Bleeder for MO power supply
R525		RESISTOR, FIXED, WIREWOUND: 2000 ohms ±5%, 38W; MIL RW35G202, spec MIL-R-26B.	Filter MO power supply
S101		SWITCH, SENSITIVE: SPDT 10 amps, 250v AC; Microswitch no. 2AC3.	Cabinet interlock power supply unit
S102		Same as S101.	Cabinet interlock transmitter unit
S103		Same as S101.	Cabinet interlock MO unit
S201		SWITCH, ROTARY: 3 positions, non-pile-up type; 2 poles, 3 throws; current rating for nominal load, 10 amps AC; max voltage rating 230v; 6 screw type term. Electro Switch type P, style II part no. C10227.	ADJUST-TUNE-OPERATE switch
S202		SWITCH, ASSEMBLY: 2 sections; 2 max no. of switching positions possible; 2 moving contacts, 16 fixed contacts; Radiomarine dwg A-230.	LOCAL-REMOTE switch
S202A		SWITCH SECTION, ROTARY: 4 moving, 8 fixed silver alloy contacts; 4 poles; ceramic; dim. excl. terms. 1-15/16 in. dia. 0.180 in. thk; Radiomarine dwg A-230, wafer A.	P/o S202 local remote
S202B		Same as S202A.	P/o S202 local remote'
S202C		DETENT: provisions for 2 switch positions non-adjustable stop included; o/a dim. 2-3/8 in. lg, 1-33/64 in. w, 1-15/16 in. h; Radiomarine A-230-detent.	P/o S202
S203		SWITCH, INTERLOCK: spring plunger type; DPDT; coin silver contacts; 3/8 in. face; operated normally open; 2 contacts mtd on phosphorus bronze strip 1-7/8 in. lg, 3/8 in. w; .015 in, thk; two 3/8 in. dual silver contacts soldered on no. 6-32 thud, 1 contact 1-9/16 in. plunger rod w/3/8 in. dia silver contact face, switch mts in box 3-1/8 in. lg; 7/8 in. w, 3-5/8 in. h; Radiomarine dwg C-40820.	Power supply high voltage shorting switch

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
S204		SWITCH, TOGGLE: DPST; 4 solder lug term. MIL type ST52K, spec MIL-S-23.	BATTLE SHORT ON-OFF switch
S205		Same as S204.	EMERGENCY LINE ON-OFF switch
S206		SWITCH, TOGGLE: SPST: 30v DC, 2 amps; black plastic case; 2 solder lug term. on back; MIL ST42A; spec MIL-S-23.	PLATE ON-OFF switch
S207		SWITCH, PUSH: 2 position, selector switch; 2 normally open circuits; one black button imprinted start, 1 red button imprinted stop; Cutler-Hammer part no. 6881ED70 element per dwg C-86-356 except item 26428 and use bottom for 53-300-6, engraved START-STOP.	START-STOP push button
S301		SWITCH, TOGGLE: solder lug term.; MIL ST42D; spec MIL-S-23.	LIMITER IN-OUT switch
S302		SWITCH, TOGGLE: solder lug term.; MIL ST42H; spec MIL-S-23.	TEST KEY IN-OUT MOM. ON switch
S303		SWITCH ASSEMBLY: 2 rotary type section; common rotary actuator incl; 1 ceramic wafer; 1 Oak type DHC wafer mtd on rear; Radiomarine dwg B-1233519.	EMISSION A-1 A-3 switch
S303A		SWITCH SECTION, ROTARY: 2 moving 4 fixed contacts; 2 poles silver; ceramic; dim. excl. terms. 3-5/16 in. dia by 1/4 in. thk; Radiomarine dwg B-31560-A, wafer A.	P/o S303 V407, V408 plate voltage
S303B		SWITCH SECTION, ROTARY: 4 moving 12 fixed; silver plated contacts; 4 poles ceramic; dim. excl. terms. 1-15/16 in. dia 0.180 in. thk; Radiomarine dwg A-1219798.	P/o S303 bias voltage selector
S304		SWITCH, TOGGLE: MOMENTARY: solder lug term; MIL ST42C; spec MIL-S-23.	O. L. RESET switch
S305		SWITCH, TOGGLE: DPDT: break-in; MIL ST23N; spec MIL-S-23.	BREAK-IN IN-OUT
S401		Not Used.	
S402		SWITCH, ROTARY: 4 sections; 9 max number of switching position possible 9 moving contacts; 44 fixed contacts, no dummy contact; Radiomarine dwg A-231.	Exciter band change
S402A		SWITCH SECTION, ROTARY: 2 moving and 6 fixed contacts; steatite ceramic; silver alloy dim. excl terms. 1-15/16 in. dia 0.180 in. thk; Radiomarine dwg A-231, wafer A.	P/o S402 PA grid tuning selector
S402B		SWITCH SECTION, ROTARY: 4 moving 17 fixed contacts; 3 poles; steatite ceramic; silver alloy; dim. excl terms. 1-15/16 in. dia 0.180 in. thk; Radiomarine dwg A-231, wafer B.	P/o S402, V404 tuned coil selector
S402C		SWITCH SECTION, ROTARY: 1 moving 9 fixed contacts; steatite ceramic; dim. excl. term. 1-15/16 in. dia. 0.180 in. thk; Radiomarine dwg A-231, wafer C.	P/o S402, V404 tuned circuit selector
S402D		SWITCH SECTION, ROTARY: 2 moving 12 fixed contacts; steatite ceramic; silver alloy dim. 1-15/16 in. dia. 0.180 in. thk; Radiomarine dwg A-231, wafer D.	P/o S402, V404 tuning coil selector
S402E		DETENT: provisions for 9 switch positions; non-adjustable stop; o/a dim. 7-15/32 in. lg; 1-33/64 in. wide; 1-15/16 in. high; Radiomarine A-231-detent.	P/o S402

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
S403		SWITCH, ROTARY: 2 sections 9 max number of switching positions; 2 moving contacts; 20 fixed contacts; solder lug term. Radiomarine dwg C-40823.	Band selector
S403A		SWITCH SECTION, ROTARY: 1 moving 9 fixed silver contacts ceramic: dim excl. terms. 3-5/16 in. dia 1/4 in. thk; Radiomarine dwg C-40823A.	P/o S402, PA capacitor tuning selector
S403B		SWITCH SECTION, ROTARY: 1 moving 10 fixed contacts; ceramic; dim. excl. term. 3-5/16 in. dia. 1/4 in. thk; Radiomarine dwg C-40823B.	P/o S402 PA plate coil tuning selector
S404		SWITCH, ROTARY: 1 section; 9 max number of switching position; 1 moving contact; 11 fixed contacts; solder lug term; Radiomarine dwg B-31561.	BAND SWITCH
S404A		SWITCH SECTION, ROTARY: 1 moving 11 fixed silver contacts; ceramic; dim. excl. terms. 3-5/16 in. dia by 1/4 in. thk; Radiomarine dwg B-31561-A.	P/o S404 PA tuning selector
S405		SWITCH ASSEMBLY: 3 rotary type sections; common rotary actuator incl; 3 ceramic wafers mtd on a common actuator; Radiomarine dwg B-31563.	ANTENNA RANGE switch
S405A		SWITCH SECTION, ROTARY: 1 moving 7 fixed silver contacts; ceramic; dim. excl. terms. 3-5/16 in. dia. by 1/4 in. thk; Radiomarine dwg B-31563A.	P/o S405 antenna tuning coil selector
S405B		SWITCH SECTION, ROTARY: 1 moving 11 fixed silver contacts; ceramic; dim. excl. terms. 3-5/16 in. by 1/4 in. thk; Radiomarine dwg B-31563-B.	P/o S405 antenna tuning coil selector
S405C		SWITCH SELECTOR, ROTARY: 1 moving 4 fixed silver plated contacts; ceramic; dim. excl. terms. 1-15/16 in. dia; 0.180 in. thk; Radiomarine dwg B-31563-C.	P/o S405 removes bias from V405
S406		SWITCH ASSEMBLY: 4 rotary type sections; common rotary actuator incl; 3 ceramic wafers, 1 Oak type DHC wafer mtd on rear; Radiomarine dwg B-31564.	ANTENNA TAP switch
S406A		SWITCH SECTION, ROTARY: 1 moving 2 fixed silver contacts; ceramic; dim. excl terms. 3-5/16 in. dia, 1/4 in. thk; Radiomarine dwg B-31564-A.	P/o S406 antenna tuning coil selector
S406B		SWITCH SECTION, ROTARY: 1 moving 11 fixed silver contacts; ceramic; dim. excl. terms. 3-5/16 in. dia by 1/4 in. thk; Radiomarine dwg B-31564-B.	P/o S406 antenna tuning coil selector
S406C		SWITCH SECTION, ROTARY: 1 moving 11 fixed silver contacts; ceramic; dim. excl. terms 3-5/16 in. dia by 1/4 in. thk; Radiomarine dwg B-31564-C.	P/o S406 antenna tuning coil selector
S501		SWITCH, THERMOSTATIC: normally open, contacts close at 60 deg. C p/m 0.01 deg. C; mercury electrical rating; 12 ma at 20v DC; Precision 5777; Navy type 40020; BuShips spec RE13A486D.	Oven temperature control
S502		Same as S204.	OVEN ON-OFF switch
S503		Same as S206.	CALIBRATE ON-OFF switch

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
T201		TRANSFORMER, POWER, STEP-UP; primary 115/230v AC, 50 to 60 cyc; secondary 830-0-830 center tapped; 250 ma; electrostatic shield and core grounded to case; insulation test voltage 1000v RMS primary case, 3000v RMS secondary to case; 3500v RMS primary to secondary; 7 solder lug term.; Radiomarine dwg B204.	Low voltage power supply V401, V402 V403, V404, V405 V406
T202		TRANSFORMER, POWER, STEP DOWN: primary 115v AC, 50/60 cyc; secondary 1, 5v at 4.0 amps; c.t.; secondary 2, 2.5v at 10.0 amps, c.t.; electrostatic shield and core grounded to case; insulation test voltage 500v RMS pri to case, 5000v RMS secondary 1 and 2 to case, 5000v RMS secondary 1 and 2 to primary, 5000v RMS secondary 1 to 2 secondary; Radiomarine dwg B203, spec MIL-T-27.	Filament supply for V201, V202, V203, V204
T203		TRANSFORMER, POWER STEP UP: pri 115/230v AC, 50/60 cyc; secondary 1750-0-1750, 250ma c.t.; electrostatic shield and core grounded to case; insulation test voltage; 1000v RMS pri to case; 5000v RMS pri to secondary; Radiomarine dwg B-205; spec MIL-T-27.	High voltage plate supply V407, V408 V305, V306
T204		TRANSFORMER, POWER, FIXED AUTOTRANSFORMER: sealed case; input 115/230v, 50/60 cyc; 1 ph; output at 115v, 3a, with line voltage 10% high and low; insulation test; 1000v RMS winding to case; o/a dim. 3-3/4 in. lg, 3-1/2 in. w; 5-1/4 in. h; four 10-32 by 7/16 in. lg mtg studs; 5 solder lug terms. Mil spec MIL-T-27; Radiomarine dwg B209.	Line voltage control circuit 115/230v input
T301		TRANSFORMER, AF: microphone and line type; pri impedance 600 ohms and 120 ohms, secondary impedance 120,000 ohms pri rated at 50 ma DC; hermetically sealed metal case; 6 solder lug terms; located on bottom; Radiomarine dwg B-211; spec MIL-T-27.	Microphone transformer
T302		TRANSFORMER, AF: modulation type; pri impedance 14,000 ohms, secondary impedance 12,000 ohms; pri rated at 90 ma DC, secondary rated at 120 ma; hermetically sealed metal case; 90 W max, audio operating level; 5300v RMS each winding to ground; 8 solder lug term. located on bottom; Radiomarine dwg B-208; spec MIL-T-27.	Modulator transformer
T303		TRANSFORMER, POWER, STEP DOWN: pri 65v AC NOM, 60 cyc, secondary 20v NOM, 1.22 amps DC; electrostatic shield and core grounded to case; hermetically sealed metal case; 4 solder lug terminals; Radiomarine dwg B-394; spec MIL-T-27.	12 volt power supply transformer
T304		TRANSFORMER, POWER, STEP DOWN: pri 115v AC, 50/60 cyc, secondary; 6.2 V, center tapped, 7.2 amps; 6.2 V, center tapped, 7.2 amp; 6.4 V 4.75 amp; electrostatic shield and core grounded to case; hermetically sealed metal case; 10 solder lug term.; Radiomarine dwg B-202; spec MIL-T-27.	Filament supply for V301 to V305 and V401 to V408
T501		TRANSFORMER, POWER STEP-UP AND STEP-DOWN: hermetically sealed metal case; primary winding data; 115V-50/60 cyc; single phase, 2 windings for 220 v operation; grade 1 class A; secondary 1 voltage 590-0-590 at 0.140 amps center tapped, insulation test voltage 3000v sec to case, sec 2, 5V ct. 2A; sec 3 6.3V 2.3a; sec 4 6.3v 1.3a, tolerance ±3% all windings; Kenyon part no. S29586; Radiomarine dwg B-444; MIL-T-27.	Power supply for master oscillator, filament supply for V501, V502, V503 and V504
TB101	Note 1	TERMINAL BOARD: melamine type CMG per MIL-P-14B; 15 double screw terminals; barrier type; Jones Code 15-141B.	Terminals points for remote operation
TB102		TERMINAL BOARD: melamine type CMG per MIL-P-14B, 12 double screw terms; barrier type; Jones Code 12-141B.	Terminals points for remote operation
TB103		TERMINAL BOARD: melamine type CMG per MIL-P-14B, 2 terminal; Jones Code 2-142B.	Terminals points for power input

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
TB201		TERMINAL BOARD: melamine type CMG per MIL-P-14B, 8 solder lug terminals; barrier type; Jones Code 8-141YB.	Input power terminal points
TB202		Same as TB201.	Input power terminal points for T204
TB401		TERMINAL BOARD: melamine type CMG per MIL-P-14B, 6 solder lug terminals; barrier type; Jones Code 6-141YB	Terminal points for transmitter unit
TB402	Note 1	TERMINAL BOARD: melamine type CMG per MIL-P-14B, 2 solder lug terminals; barrier type; Jones Code 2-141YB.	IPA cathode current check points
TB403		TERMINAL BOARD: melamine type CMG per MIL-P-14B, 4 double screw terminals; barrier type; Jones Code 4-141B.	Blower connection terminal points
TB404		TERMINAL BOARD: laminated thermosetting plastic; 13 solder term., feed-thru type; Radiomarine dwg A-12016.	Terminal points for transmitter unit
TB501	Note 1	TERMINAL BOARD: melamine body, 10 solder lug terminals; barrier type; Jones part 10-140YB.	Terminal points MO connections
TB502		Same as TB501.	Terminal points MO connections
TB503		TERMINAL BOARD: melamine body; 5 solder lug term.; barrier type; Jones part no. 5-140YB.	Terminal points oven connections
V201		ELECTRON TUBE: full wave rectifier; 5R4WGB.	Low voltage rectifier
V202		Same as V201.	Low voltage rectifier
V203		ELECTRON TUBE: half wave rectifier; MIL 3B28; spec MIL-E-1B.	High voltage rectifier
V204		Same as V203.	High voltage rectifier
V301		ELECTRON TUBE: miniature twin triode; MIL 12AX7; spec MIL-E-1B.	Limiter
V302		ELECTRON TUBE: miniature twin triode; MIL 12AT7WA; spec MIL-E-1B.	Audio compensator
V303		Same as V301.	Audio amplifier and phase inverter
V304		Same as V301.	Audio driver
V305		ELECTRON TUBE: transmitting tetrode; MIL 4-65A; spec MIL-E-1B.	Modulator
V306		Same as V305.	Modulator
V401		ELECTRON TUBE: pentode; MIL 6AG7; spec MIL-E-1B.	RF amplifier
V402		Same as V401.	RF amp mult.
V403		Same as V401.	RF amp mult.
V404		ELECTRON TUBE: transmitting pentode amplifier; MIL 807, MIL-E-1B.	Amplifier multiplier
V405		ELECTRON TUBE: beam power amplifier; MIL 6BG6G; spec MIL-E-1B.	Keying tube
V406		ELECTRON TUBE: pentode; MIL 6AQ5W/6005; spec MIL-E-1B.	Clamper tube

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
V407		Same as V305.	PA amplifier
V408		Same as V305.	PA amplifier
V501		Same as V401.	Oscillator amplifier
V502		ELECTRON TUBE: twin triode MIL 5814A; spec MIL-E-1B.	Mixer
V503		Same as V502.	Crystal calibrator
V504		Same as V201.	MO power supply rectifier
V505		ELECTRON TUBE: regulator; MIL OA2WA; spec MIL-E-1B.	Regulates 300v supply MO
V506		Same as V505.	Regulates 150v supply MO
W101		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL: 24 in. lg, 28 conductors 16SRIR; black vinylite sleeve o/a; terminated at one end w/plug DPD-B28-34P-A29 type "L"; w/Cannon plug DPD-B28-33S-A29 type "L"; includes two Cannon shells 19745, Radiomarine dwg B-31532.	Test cable
W102		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL: 36 in. lg, excl protruding contacts; 30 conductors, 28 conductors 20 SRIR, 2 conductors 16 SRIR; black vinylite sleeve o/a; terminated at one end w/American Phenolic plug 26-159-32; terminated on opposite end w/American Phenolic plug 26-190-32; includes steel shells 3-51/64 in. lg; 1-1/2 in. w; 7/8 in. h; on each end; w/two Jones cable clamps 61-1/2; Radiomarine dwg B-31533.	Test cable
W103		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL: 24 in. lg, 13 total conductors, 12 conductors no. 16SRIR, one RG58/U coaxial conductor; black vinylite sleeve o/a; terminated at one end with Cannon plug DPB-13C1-34P-A29 type "L"; on opposite end with Cannon plug DPB-13C1-34S-A29 type "L"; includes Cannon shells no. DPB-33-A29 and DPB-34-A29 one on each end; Radiomarine dwg B-1233563.	Test cable for master oscillator
XF201		FUSEHOLDER: extractor post type; molded bakelite, transparent knob; 2 solder lug term.; Bussman type HPC-C.	F201 holder
XF202		Same as XF201.	F202 holder
XF203		Same as XF201.	F203 holder
XF204		Same as XF201.	F204 holder
XF205		Same as XF201.	F205 holder
XF206		Same as XF201.	F206 holder
XF207		Same as XF201.	F207 holder
XF208		Same as XF201.	F208 holder
XF209		FUSEHOLDER: clip type, spring bronze, nickel plated; o/a dim. 3/4 in. h, by 15/32 in. w; Bussman part 4551.	F209 holder
XF210		Same as XF209.	F210 holder
XF211		Same as XF209.	F211 holder
XF212		Same as XF209.	F212 holder

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
XF213		Same as XF209.	F213 holder
XF214		Same as XF209.	F214 holder
XF215		Same as XF209.	F215 holder
XF216		Same as XF209.	F216 holder
XF501		Same as XF201.	Line fuse for MO
XF502		Same as XF201.	Line fuse for MO
XI201		LIGHT,INDICATOR: supplied w/lens, red; dimmer cap type accomodates min bay base lamp; front projection 1 in.; back projection 1-5/16 in.; solder lug terms.; black nickel finish; Dialco type 12B410-111; spec MIL-L-1132.	PLATE ON indicator
XI202		LIGHT,INDICATOR: supplied w/lens, white; dimmer cap type; accomodates min bay base lamp; front projection 1 in.; back projection 1-5/16 in.; 2 solder lug term.; black nickel finish; Dialco type 12B410-117; spec MIL-L-1132.	FILament ON indicator
XI203		LIGHT,INDICATOR: supplied w/lens, clear; accomodates min bay base lamp; o/a dim. 2-1/8 in. lg, 2 solder lug term. black nickel finish; Dialco type no. 91410-937; spec MIL-L-1132.	BATTLESHORT ON indicator
XI301		LIGHT,INDICATOR: supplied w/lens,green; dimmer cap type; accomodates min bay base lamp; front projection 1 in.; back projection 1-5/16 in.; requires 11-16 in. mtg holes; 2 solder lug term.; black nickel finish; Dialco type 12B410-112; spec MIL-L-1132.	CARRIER ON indicator
XI501		Same as XI203.	OVEN indicator
XI502,		LAMPHOLDER: bakelite insulated; bracket mtd, miniature bayonet base with 10 in. leads; Dialco No. 306.	Holder for MO dial light
XV201 (2 ea)		SOCKET, ELECTRON TUBE: 8 contacts, oval ceramic body; Johnson type no. 122-228-200.	Mtg for V201
XV202		Same as XV201.	Mtg for V202
XV203		SOCKET, ELECTRON TUBE: medium 4 pin silver pl phos. bronze contacts; Millen part 33004, Navy type 49368.	Mtg for V203
XV204		Same as XV203.	Mtg for V204.
XV301		SOCKET, ELECTRON TUBE: 9 pins, molded thermosetting plastic MIL TS103P01; spec MIL-S-28A.	Mtg for V301
XV302		Same as XV301.	Mtg for V302
XV303		Same as XV301.	Mtg for V303
XV304		Same as XV301.	Mtg for V304
XV305		SOCKET, ELECTRON TUBE: 7 pin steatite wafer socket; Johnson type 122-101-200.	Mtg for V305
XV306		Same as XV305.	Mtg for V306
XV401	Note 1	SOCKET, ELECTRON TUBE: 8 pin octal; mica, Cinch no. 9886.	Mtg for V401

TABLE 8-1 TABLE OF REPLACEABLE PARTS (Cont'd)

Reference Symbol	Notes	Name and Description	Locating Function
		RADIO TRANSMITTER SET AN/SRT-17 (XN-1)	
XV402		Same as XV401.	Mtg for V402
XV403		Same as XV401.	Mtg for V403
XV404		SOCKET, ELECTRON TUBE: 5 pins oval ceramic body; Johnson type 122-225-200.	Mtg for V404
XV405		Same as XV201.	Mtg for V405
XV406	Note 1	SOCKET, ELECTRON TUBE: min. type, 7 pins, molded thermosetting plastic; MIL TS102P01; spec MIL-S-28A.	Mtg for V406
XV407		Same as XV305.	Mtg for V407
XV408		Same as XV305.	Mtg for V408
XV501		Same as XV201.	Socket for V501
XV502		Same as XV301.	Socket for V502
XV503		Same as XV301.	Socket for V503
XV504		Same as XV201.	Socket for V504
XV505		Same as XV406.	Socket for V505
XV506		Same as XV406.	Socket for V506
XY501		SOCKET, CRYSTAL: steatite, two beryllium copper silver pl contacts; for 0.05 in. dia pins, 0.486 in. spacing; o/a dim. 55/64 in. lg, 3/8 in. w; 3/8 in. h; excl term.; Eby part 9006; Spec MIL-I-10.	Mtg for Y501
Y501		CRYSTAL UNIT, QUARTZ: 1100kc two 0.243 in. lg, 0.05 in. dia pins spaced 0.486 in. c to c; located on bottom; rectangular shape; o/a dim. 0.720 in. lg, 0.345 in. w, 1.031 in. high; MIL type CR-18/U; MIL-C-3098A.	Crystal oscillator for MO calibrate

TABLE 8-2. STOCK NUMBERING IDENTIFICATION, AN/SRT-17(XN-1)

REF. DESIG.	FEDERAL STOCK NO.	REF. DESIG.	FEDERAL STOCK NO.	REF. DESIG.	FEDERAL STOCK NO.	REF. DESIG.	FEDERAL STOCK NO.
A101	N5340-216-6772	E102	N5970-117-5258	P101	N5935-568-0857	R444	N5905-195-5524*
A202	N5910-666-0088	E201	N5940-186-8953	R201	N5905-279-1930*	R449	N5905-270-6511
A204	N5910-666-5661	E202	N5970-158-6854	R203	N5905-239-0568*	R450	N5905-279-2528*
A303	N5910-666-6725	E203	N5940-259-9052	R206	N5905-279-1903*	R457	N5905-279-2643*
A304	N5910-666-0087	E301	N5690-264-3004	R209	N5905-254-9201*	R465	N5905-279-1738*
A308	N5910-186-9484	E302	N5960-643-9218	R301	N5905-299-1625	R467	N5905-185-8516*
A309	N5910-129-6115	E309	N5970-158-6863	R302	N5905-279-3504*	R502	N5905-257-0937*
A502	N5910-666-0084	E408	N5970-151-7970	R303	N5905-248-3340	R505	N5905-279-3500*
C101	N5910-101-4758*	E409	N5970-151-7973	R304	N5905-171-1975*	R507	N5905-279-2626*
C201	N5910-120-1660*	E410	N5970-117-5139	R305	N5905-666-1363	R510	N5905-249-3663*
C202	N5910-112-7399*	E411	N5970-151-8012	R306	N5905-299-2003*	R512	N5905-643-6325*
C205	X ~~N5910-120-1687*~~	E412	N5970-117-5146	R307	N5905-195-9457*	R513	N5905-279-2530*
C301	N5910-112-7432*	E413	N5970-151-8021	R310	N5905-195-6761*	R514	N5905-192-0445*
C303	N5910-120-1687*	E414	N5970-284-4297	R312	N5905-279-2302*	R520	N5905-279-1723*
C304	N5910-160-1155*	E415	N5970-284-7227	R314	N5905-279-2637*	R522	N5905-642-0308*
C307	N5910-184-2697*	E417	N5970-117-5197	R316	N5905-171-1998*	S101	N5930-548-9420
C309	N5910-191-2866*	E422	N5960-669-8808	R317	N5905-195-9483*	S204	N5930-050-2704
C310	N5910-665-0170	E423	N5940-177-1692	R321	N5905-192-0667*	S206	N5930-050-2680
C314	N5910-112-7625*	E425	N5970-151-8000	R325	N5905-171-1986*	S301	N5930-229-3390
C317	N5910-101-4909	F201	G5920-243-3800	R331	N5905-817-5636*	S302	N5930-108-7019
C322	N5910-112-8187	F205	G5920-243-3789	R339	N5905-192-0379*	S304	N5930-666-0260
C323	N5910-191-9364*	F206	G5920-280-4009	R343	N5905-299-2000*	S305	N5930-050-2638
C326	N5910-101-4890	H102	N5340-178-1062	R344	N5905-279-1876*	TB101	N5940-296-7860*
C327	N5910-101-5627*	H103	N5340-377-2921	R347	N5905-279-2617*	TB201	N5940-764-4270
C334	N5910-184-5185*	H104	N5340-597-0147	R352	N5905-299-1993*	TB402	N5940-549-2785*
C335	N5910-112-7099*	H202	G5120-249-9670	R355	N5903-254-7101*	TB501	N5940-258-4483*
C338	N5910-112-7437*	H203	G5120-223-6995	R360	N5905-279-2661*	V201	N5960-262-0148
C380	N5910-281-0895*	I201	G6240-057-2887	R362	N5905-185-8510*	V203	N5960-108-0252
C411	N5910-101-4900*	I203	G6240-223-9100	R363	N5905-248-6393	V301	N5960-166-7664
C423	N5910-126-1618	J101	N5935-549-2653	R365	N5905-174-2341	V302	N5960-262-0167
C424	N5910-191-2682*	J201	N5935-258-2681	R369	N5905-252-6968	V305	N5960-243-5017
C425	N5910-112-7408*	J301	N5935-283-1269	R372	N5905-299-2001*	V401	N5960-228-0033
C429	N5910-101-4521	J303	N5935-192-4729	R373	N5905-192-4504*	V404	N5960-114-4868
C433	N5910-190-8060*	J306	N5935-258-8172	R379	N5905-279-1877*	V405	N5960-228-5307
C434	N5910-183-9328*	J401	N5935-259-3957	R380	N5905-549-8057	V406	N5960-248-3089
C437	N5910-112-6890*	J402	N5935-192-4517	R382	N5905-253-1229*	V502	N5960-262-0210
C438	N5910-129-6257*	J403	N5935-505-4258	R390	N5905-279-1979*	V505	N5960-262-0964
C441	N5910-101-5616*	K501	N5945-199-7187	R402	N5905-185-6580*	XF201	N5920-247-3826
C451	N5910-107-7778	L409	N5950-188-6525	R404	N5905-279-1933*	XF209	N5920-279-9269
C454	N5910-508-1854	L415	N5950-318-3622	R405	N5905-256-0390*	XI201	N6210-299-7549
C364	N5910-101-4014*	M301	N6625-635-4139*	R412	N5905-256-3361*	XI203	N6210-186-8013
C465	N5910-129-6260*	M302	N6625-643-2582	R414	N5905-279-1878*	XI301	N6210-299-7486
C466	N5910-126-1619	O202	N5960-249-4883	R417	N5905-204-6485	XV201	N5935-161-8778
C501	N5910-255-0125	O303	N5990-560-1685*	R419	N5905-279-3527*	XV203	N5935-644-7928
C503	N5910-186-1573	O404	N5355-644-3829	R421	N5905-186-2972*	XV301	N5935-160-1365
C504	N5910-284-4441	O410	N6680-171-9486	R426	N5905-279-2675*	XV305	N5935-173-8224
C506	N5910-184-2337	O411	N5820-312-0969	R427	N5905-299-2059*	XV401	N5935-259-3995*
C521	N5910-666-0130*	O419	N3010-289-7504	R429	N5095-239-0579*	XV404	N5935-162-3071
CR301	N6130-233-7379	O427	N5960-295-7683	R435	N5905-243-6821*	XV406	N5935-259-1944*
CR401	N5960-170-4430	O511	N6240-264-8244	R439	N5905-191-9118	XY501	N5935-256-8693
E101	N5970-144-1600	C442	N5910-101-3979*	R416	N5905-279-2558*	C528	N5910-184-2703*

X N5910-120-1665 *

TABLE 8-3. STOCK NUMBER CROSS REFERENCE, AN/SRT-17(XN-1)

FEDERAL STOCK NO.	REF. DESIG.	FEDERAL STOCK NO.	REF. DESIG.	FEDERAL STOCK NO.	REF. DESIG.	FEDERAL STOCK NO.	REF. DESIG.
N3010-289-7504	O419	N5905-279-2302*	R312	N5910-184-2337	C506	N5940-186-8953	E201
G5120-223-6995	H203	N5905-279-2528*	R450	N5910-184-2697*	C307	N5940-258-4483*	TB501
G5120-249-9670	H202	N5905-279-2530*	R513	N5910-184-5185*	C334	N5940-259-9052	E203
N5340-178-1062	H102	N5905-279-2617*	R347	N5910-186-1573	C503	N5940-296-7860*	TB101
N5340-216-6772	A101	N5905-279-2626*	R507	N5910-186-9484	A308	N5940-549-2785*	TB402
N5340-377-2921	H103	N5905-279-2637*	R314	N5910-190-8060*	C433	N5940-764-4270	TB201
N5340-597-0147	H104	N5905-279-2643*	R457	N5910-191-2682*	C424	N5945-199-7187	K501
N5355-644-3829	O404	N5905-279-2661*	R360	N5910-191-2866*	C309	N5950-188-6525	L409
N5690-264-3004	E301	N5905-279-2675*	R426	N5910-191-9364*	C323	N5950-318-3622	L415
N5820-312-0969	O411	N5905-279-3500*	R505	N5910-255-0125	C501	N5960-108-0252	V203
N5903-254-7101*	R355	N5905-279-3504*	R302	N5910-281-0895*	C380	N5960-114-4868	V404
N5905-171-1975*	R304	N5905-279-3527*	R419	N5910-284-4441	C504	N5960-166-7664	V301
N5905-171-1986*	R325	N5905-299-1625	R301	N5910-665-0170	C310	N5960-170-4430	CR401
N5905-171-1998*	R316	N5905-299-1993*	R352	N5910-666-0130*	C521	N5960-228-0033	V401
N5905-174-2341	R365	N5905-299-2000*	R343	N5910-666-0084	A502	N5960-228-5307	V405
N5905-185-6580*	R402	N5905-299-2001*	R372	N5910-666-0087	A304	N5960-243-5017	V305
N5905-185-8510*	R362	N5905-299-2003*	R306	N5910-666-0088	A202	N5960-248-3089	V406
N5905-185-8516*	R467	N5905-299-2059*	R427	N5910-666-5661	A204	N5960-249-4883	O202
N5905-186-2972*	R421	N5905-549-8057	R380	N5910-666-6725	A303	N5960-262-0148	V201
N5905-191-9118	R439	N5905-642-0308*	R522	N5910-808-1854	C454	N5960-262-0167	V302
N5905-192-0379*	R339	N5905-643-6325*	R512	G5920-243-3789	F205	N5960-262-0210	V502
N5905-192-0445*	R514	N5905-666-1363	R305	G5920-243-3800	F201	N5960-262-0964	V505
N5905-192-0667*	R321	N5905-817-5636	R331	N5920-247-3826	XF201	N5960-295-7683	O427
N5905-192-4504*	R373	N5910-101-4014*	C464	N5920-279-9269	XF209	N5960-643-9218	E302
N5905-195-5524*	R444	N5910-101-4521	C429	G5920-280-4009	F206	N5960-669-8808	E422
N5905-195-6761*	R310	N5910-101-4758*	C101	N5930-050-2638	S305	N5970-117-5139	E410
N5905-195-9457*	R307	N5910-101-4890	C326	N5930-050-2680	S206	N5970-117-5146	E412
N5905-195-9483*	R317	N5910-101-4900*	C411	N5930-050-2704	S204	N5970-117-5197	E417
N5905-204-6485	R417	N5910-101-4909	C317	N5930-108-7019	S302	N5970-117-5258	E102
N5905-239-0568*	R203	N5910-101-5616*	C441	N5930-229-3390	S301	N5970-144-1600	E101
N5905-239-0579*	R429	N5910-101-5627*	C327	N5930-548-9420	S101	N5970-151-7970	E408
N5905-243-6821*	R435	N5910-107-7778	C451	N5930-666-0260	S304	N5970-151-7973	E409
N5905-248-3340	R303	N5910-112-6890*	C437	N5935-160-1365	XV301	N5970-151-8000	E425
N5905-248-6393	R363	N5910-112-7099*	C335	N5935-161-8778	XV201	N5970-151-8012	E411
N5905-249-3663*	R510	N5910-112-7399*	C202	N5935-162-3071	XV404	N5970-151-8021	E413
N5905-252-6968	R369	N5910-112-7408*	C425	N5935-173-8224	XV305	N5970-158-6854	E202
N5905-253-1229*	R382	N5910-112-7432*	C301	N5935-192-4517	J402	N5970-158-6863	E309
N5905-254-9201*	R209	N5910-112-7437*	C338	N5935-192-4729	J303	N5970-284-4297	E414
N5905-256-0390*	R405	N5910-112-7625*	C314	N5935-256-8693	XY501	N5970-284-7227	E415
N5905-256-3361*	R412	N5910-112-8187*	C322	N5935-258-2681	J201	N5999-560-1658*	O303
N5905-257-0937*	R502	N5910-120-1660*	C201	N5935-258-8172	J306	N6130-233-7379	CR301
N5905-270-6511	R449	N5910-120-1687*	C303	N5935-259-1944*	XV406	N6210-186-8013	XI203
N5905-279-1723*	R520	~~XN5910-120-1687*~~	C205	N5935-259-3957	J401	N6210-299-7486	XI301
N5905-279-1738*	R465	N5910-126-1618	C423	N5935-259-3995*	XV401	N6210-299-7549	XI201
N5905-279-1876*	R344	N5910-126-1619	C466	N5935-283-1269	J301	G6240-057-2887	I201
N5905-279-1877*	R379	N5910-129-6115	A309	N5935-505-4258	J403	G6240-223-9100	I203
N5905-279-1878*	R414	N5910-129-6257*	C438	N5935-549-2653	J101	N6240-264-8244	O511
N5905-279-1933*	R404	N5910-129-6260*	C465	N5935-568-0857	P101	N6625-635-4139*	M301
N5905-279-1979*	R390	N5910-160-1155*	C304	N5935-644-7928	XV203	N6625-643-2582	M302
N5905-279-1903*	R206	N5910-183-9328*	C434	N5940-177-1692	E423	N6680-171-9486	O410
N5905-279-1930*	R201	N5910-101-3979*	C442	N5910-184-2703*	C528	N5905-279-2558*	R416

X N5910-120-1665 *

TABLE 8-4. LIST OF MANUFACTURERS

ABBREVIATION	PREFIX	NAME	ADDRESS
Advance	CATM	Advance Electric Division, Elgin Watch Company	2435 Naomi Street Burbank, California
Air-Marine		Air-Marine Motors, Inc.	369 Bayview Avenue Amityville, N.Y.
Amphenol	CPH	Amphenol Electronics Corp.	1830 South 54th Avenue Chicago 50, Illinois
AmerRadioHdw	CHH	American Radio Hardware Co., Inc.	152 Macquestan Pkwy, S. Mt. Vernon 86, N.Y.
Barry	CAYU	The Barry Corporation	700 Pleasant Street Watertown 72, Mass.
Birnback	CYB	Birnback Radio Corporation	145 Hudson Street New York, New York
Birtcher	CAIS	The Birtcher Corporation	4371 Valley Road Los Angeles 32, Calif.
Boston Gear	CBH	Boston Gear Works	10 Hayward Street North Quincy, Mass.
Bristolco	CTB	The Bristol Company	64 Brude Street Waterbury 91, Conn.
Bud Radio	CDB	The Bud Radio Company	2118 East 55th Street Cleveland 3, Ohio
Bussman	CFA	Bussman Manufacturing Company	2538 W. University St. St. Louis 7, Mo.
Cambridge	CAMQ	Cambridge Thermionic Corp.	447 Concord Avenue Cambridge 38, Mass.
Cannon	CED	Cannon Electric Company	3211 Humboldt Street Los Angeles 31, Calif.
Cardwell	CBK	Allan D. Cardwell, Mfg. Corp.	97 Whiting Street Plainville, Conn.
Centralab	CBN	Centralab Division, Globe Union	900 East Keefe Ave. Milwaukee, Wisconsin
Cinch	CMG	Cinch Manufacturing Corp.	1026 South Homan Ave. Chicago 24, Illinois
Clarostat	CMC	Clarostat Mfg. Company, Inc.	1 Washington Street Dover, New Hampshire

TABLE 8-4. LIST OF MANUFACTURERS (Cont'd)

ABBREVIATION	PREFIX	NAME	ADDRESS
Cutler-Hammer	CAE	Cutler-Hammer Inc.	1407 West St. Paul Ave. Milwaukee, Wisconsin
Dialco	CAYZ	Dialight Corporation	60 Stewart Avenue Brooklyn, New York
Eby	CEB	Hugh H. Eby, Inc.	4700 Stenton Avenue Philadelphia, Penna.
Eimac	CIM	Eitel-McCullough, Inc.	San Bruno, Calif.
Electro switch	CBKO	Electro Switch Company	South Weymouth, Mass.
Erie	CER	Erie Resistor Corp.	644 West 12th Street Erie 6, Pennsylvania
GE	CG	General Electric Comapny	1 River Road Schenectady 4, N.Y.
Insuline	CAXD	Insuline Corp. of America	36-02 35th Avenue Long Island City, N.Y.
Johnson	CEJ	E.F. Johnson Company	Waseco, Minn.
Jones	CIC	Howard B. Jones, Division Cinch Mfg. Corp.	1026 South Homan Ave. Chicago 24, Illinois
Kenyon	CKT	Kenyon Transformer Company	840 Barry Street New York 59, N.Y.
Kulka		Kulka Electrical Mfg. Co.	30 South Street Mt.Vernon, New York
Langevin	CLJ	Maxson Corporation	43-37 Austell Place Long Island City, N.Y.
Microswitch	CMU	Micro Switch Company	Freeport, Illinois
Millen	CJA	James Millen Mfg. Co. Inc.	150 Exchange Street Malden, Mass.
Molded Insulation	CMI	Molded Insulation Company	335 East Price St. Philadelphia, Pa.
National	CNA	National Company, Inc.	61 Sherman Street Malden, Mass.
Oak	COC	Oak Mfg. Company	1260 N. Clybourn Ave. Chicago 10, Illinois

TABLE 8-4. LIST OF MANUFACTURERS (Cont')

ABBREVIATION	PREFIX	NAME	ADDRESS
Precision	CPT	Precision Thermometers & Instrument Co.	1434 Brandywine St. Philadelphia 30, Pa.
RCA		Radio Corporation of America	Front & Cooper St. Camden, New Jersey
Radiomarine	CRM	Radio Corporation of America	75 Varick Street New York, New York
Radio Receptor	CAFQ	Selectron Division, Radio Receptor Company	251 West 19th St. New York, New York
Rembrandt		Rembrandt, Inc.	98 Kirkland Street Cambridge 38, Mass.
Tinnerman		Tinnerman Products, Inc.	2038-2046 Fulton Rd. Cleveland 13, Ohio
Tobe	CTD	Tobe Deutschmann Corp.	Norwood, Mass.
Veeder-Root	CASV	Veeder-Root, Inc.	Garden & Sargeant Sts. Hartford 2, Conn.