

NAVSHIPS 95740

★

TECHNICAL MANUAL
for
POWER SUPPLY
PP-1175A/SR

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS

★

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SECTION 1
GENERAL INFORMATION

1-1. INTRODUCTION.

This Technical Manual contains information relative to the installation, operation and maintenance of Power Supply PP-1175A/SR.

1-2. FUNCTIONAL DESCRIPTION.

Power Supply PP-1175A/SR is designed to operate from a 115-volt, single-phase, 60-cycle power source to supply the plate, filament, bias, and relay voltages listed in paragraph 1-4. It is intended primarily to provide operating power to Receiver-Transmitter RT-66/GRC, RT-67/GRC, or RT-68/GRC with or without auxiliary Radio Receiver R-108/GRC, R-109/GRC, or R-110/GRC. Means are provided for energizing the power circuits for the receivers only, or the power circuits for both the receivers and transmitter. When interconnected with Adapter, Control MX-1986/SRC, it permits remote control of the above equipments providing modifications are made to the junction box of the associated Mounting MT-299/GR or MT-327/GR as discussed in paragraph 1-3. Figures 1-2 and 1-3 are simplified block diagrams of typical systems in which the power supply can be used.

1-3. FIELD CHANGE.

When Power Supply PP-1175A/SR is to be utilized in an installation with remote control provisions, refer to Field Change Bulletin No. 1 - AN/SRC-10Y, -11Y, -12Y, -13Y, -14Y or -15Y. This bulletin outlines the procedure details for modification of the junction box of the associated Mounting MT-299/GR or MT-327/GR and interconnection of the equipment with Adapter, Control MX-1986/SRC, transfer switchboards and remote radiophone units.

1-4. REFERENCE DATA.

a. POWER SOURCE REQUIREMENTS. - 115 volts \pm 10%, 60 cycles, single phase, 200 watts approximately

b. OUTPUT SUPPLY DATA (volts dc).

	Transmit		Receive	
	HIGH	LOW	HIGH	LOW
Receiver filaments	6.3 (594 ma)	6.3 (594 ma)	6.3 (594 ma)	6.3 (594 ma)

	Transmit		Receive	
	HIGH	LOW	HIGH	LOW
Auxiliary receiver filaments	6.3 (105A)	6.3 (105A)	6.3 0	6.3 0
Transmitter filaments	6.3 (1.415 A)	6.3 (1.415 A)	6.3 0	6.3 0
Relay control circuits	5.6 (431 ma)	5.6 (431 ma)	- 0	- 0
Plate, screen and bias	450 (75 ma)	200 (33.4 ma)	0	0
	250 (11.4 ma)	105 (4.8 ma)	0	0
	150 (37.5 ma)	90 (22.5 ma)	0	0
	105 (20 ma)	105 (20 ma)	105 (20 ma)	105 (20 ma)
	85 (70.8 ma)	90 (75 ma)	85 (50.5 ma)	85 (50.5 ma)
	-27 (2.0 ma)	0	0	0
Auxiliary receiver B+	135 (77.2 ma)	135 (77.2 ma)	135 (77.2 ma)	135 (77.2 ma)
c. AMBIENT TEMPERATURE LIMITATIONS - 0°C. (32°F.) to +50°C. (+122°F.)				
d. HEAT DISSIPATION. - Approximately 108 watts.				
e. OVERALL DIMENSIONS. - See Table 1-1.				
f. WEIGHT. - See Table 1-1.				



Figure 1-1. Power Supply, PP-1175A/SR

TABLE 1-1. EQUIPMENT SUPPLIED

QUANT. PER EQUIP	NOMENCLATURE		OVERALL DIMENSIONS			VOLUME*	WEIGHT*
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH		
1	Power Supply	PP-1175A/SR	9	7-1/4	14-3/32	0.532	37-1/4
1	Mating Connector (POWER IN Plug)	CS-1320-(1) (S)	-	-	-	-	-
1	Mating Connector (AUX RECEIVER Plug)	CS-1320-(1) (P)	-	-	-	-	-
2	Technical Manual	NAVSHIPS ----	1/4	8-1/2	11	0.027	1.6

* Unless otherwise specified, dimensions are in inches, volume in cubic feet, weight in pounds.

TABLE 1-2. EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED

QUANT PER EQUIP	NOMENCLATURE		REQUIRED USE	REQUIRED CHARACTERISTICS
	NAME	DESIGNATION		
1	Cable Assembly	CX-1211/U	Power Supply to Receiver- Transmitter interconnection	-
1	Cable, Power In (2 wire)	DCOP-3	Power Supply to associated Mounting Junction Box interconnection	0.4250 in. OD, 18 in. lg, Neoprene Cover
1	Cable, Output (3 wire)	FCOP-3	Power Supply to associated Mounting Junction Box interconnection	0.480 in. OD, 24 in. lg, Neoprene cover
	Technical Manual for AN/SRC 10 thru 15 series radio sets	NAVSHIPS 92807	Reference	-

TABLE 1-3. SHIPPING DATA

BOX NO.	NOMENCLATURE		*OVERALL DIMENSIONS			VOLUME*	WEIGHT*
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH		
1	Power Supply	PP-1175A/SR	21-3/4	12-1/2	11	1.73	49-1/2 (See note)
	Equipment Spares	-	-	-	-	-	-
2	Instruction Book	NAVSHIPS ----	1/4	8-1/2	11	0.027	1.6

Note: This weight applies to equipment crated for overseas shipment or domestic shipment and storage. Equipments crated for domestic shipment immediate use are approximately five pounds lighter.

* Unless otherwise noted, dimensions are in inches, volume in cubic feet, and weight in pounds, equipment crated and ready for shipment.

TABLE 1-4. ELECTRON TUBE COMPLEMENT

UNIT	NUMBER OF TUBES AND SEMI-CONDUCTORS OF TYPES INDICATED			
	0A2WA	0B2WA	1N248	1N540M
Power Supply PP-1175A/SR	1	1	4	6
	2N1412	2N697	2N1229	1N750AM
	1	1	1	1

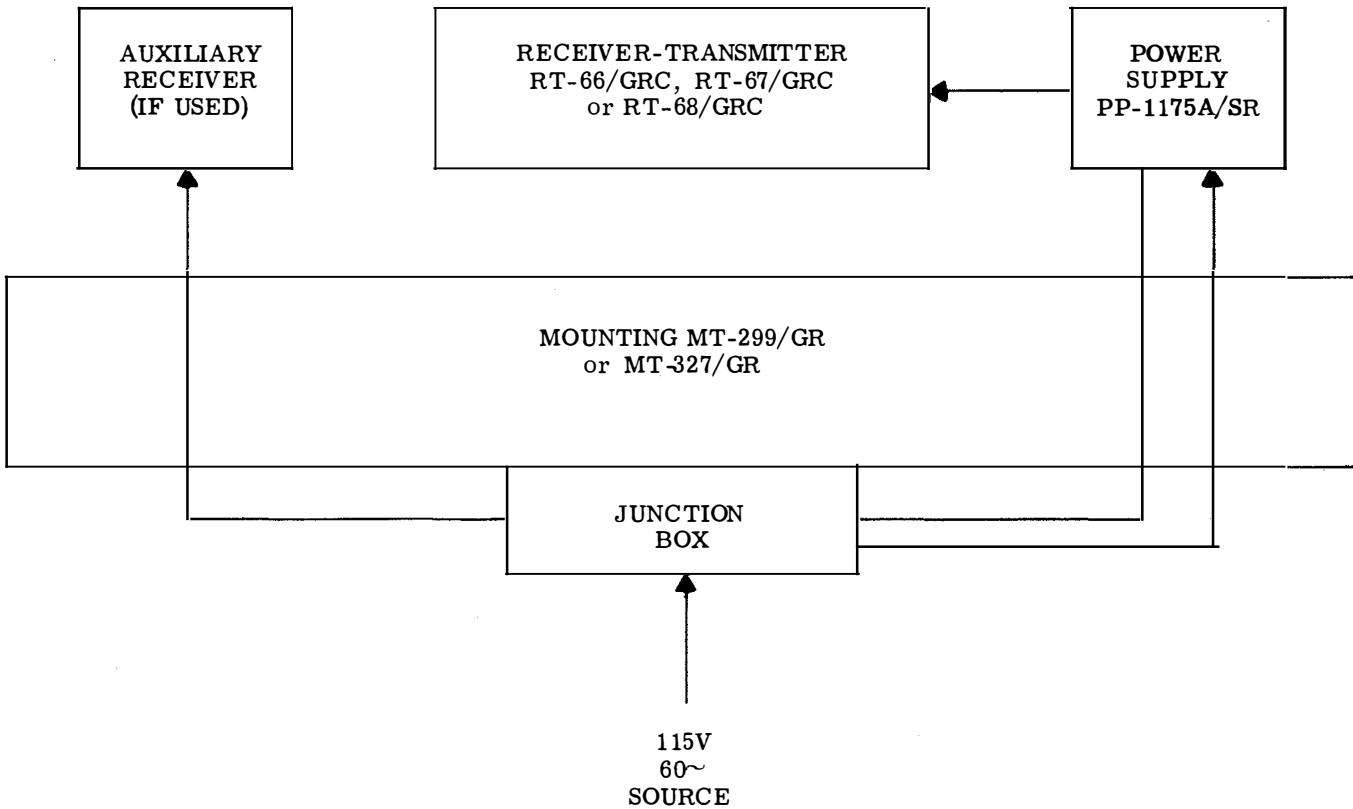


Figure 1-2. Typical Installation without Remote Control Operation Provisions

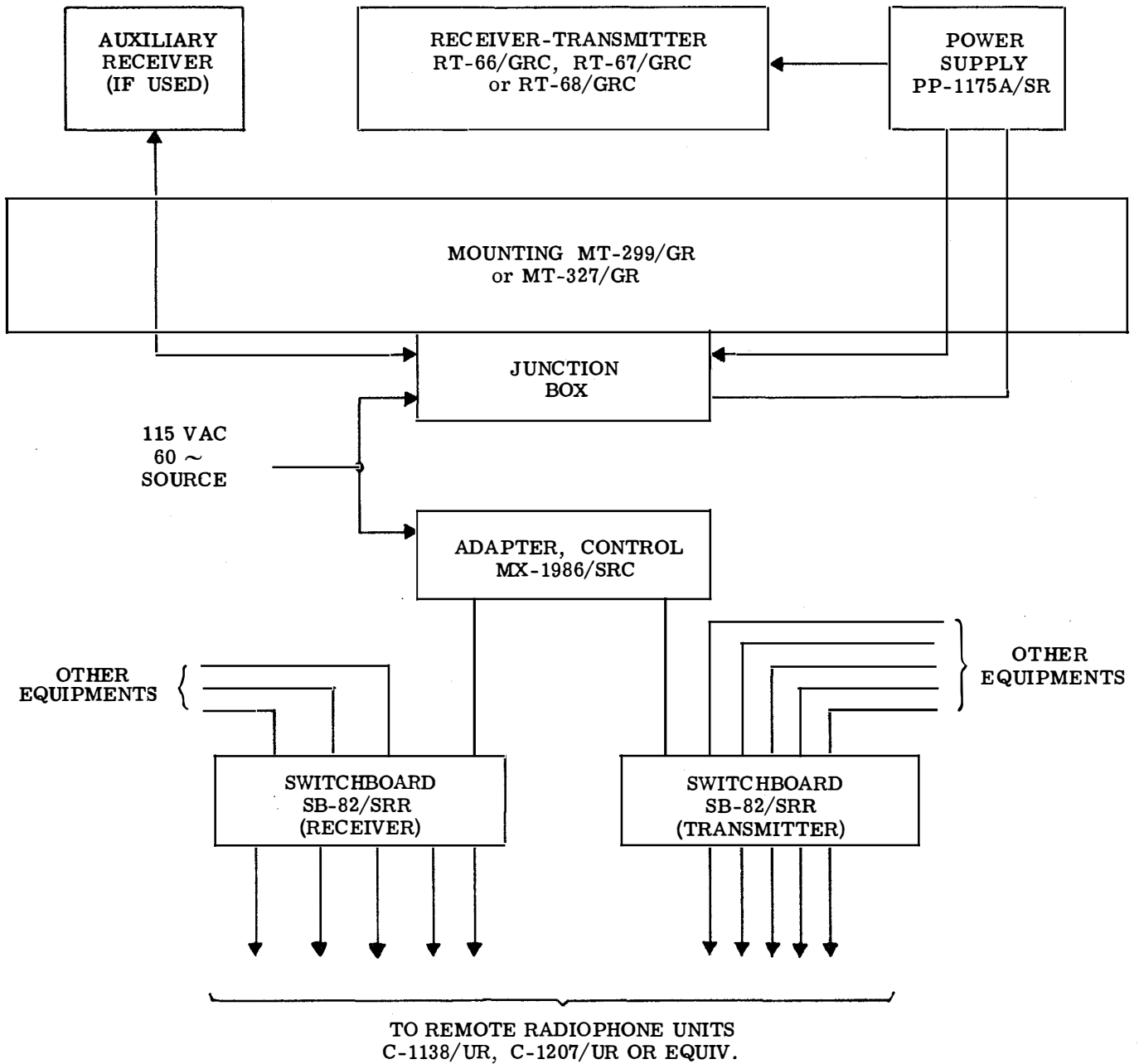
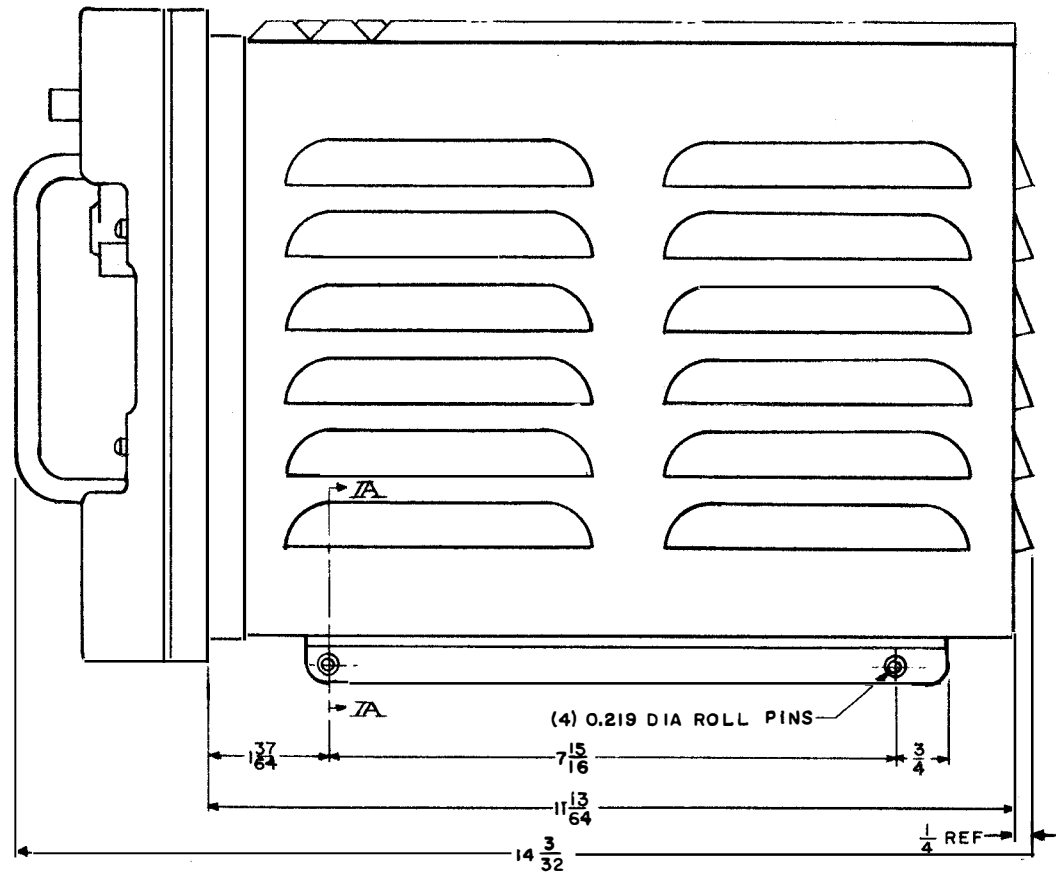
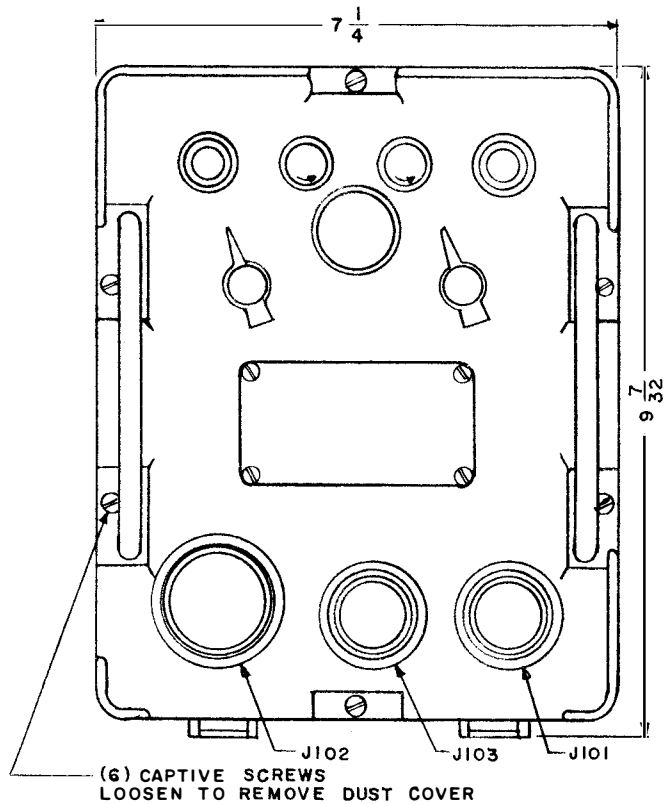


Figure 1-3. Typical Installation with Remote Control Operation Provisions

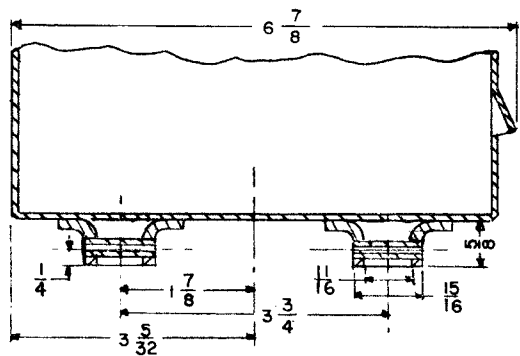


NOTES:

1. MOUNTS ON MOUNTING MT-299/GR OR MT-327/GR.
2. REQUIRES APPROX 12" FRONT CLEARANCE TO REMOVE FRONT PANEL & CHASSIS ASSEMBLY FROM DUST COVER WHEN MOUNTED.
3. HEAT DISSIPATION APPROX 108 WATTS.
4. AMBIENT TEMPERATURE DESIGN 0°C. (+32°F) TO +50° (+122°F)



(6) CAPTIVE SCREWS
LOOSEN TO REMOVE DUST COVER



SECTION - A-A - A-A
(SEE NOTE 1)

Figure 2-1. Power Supply PP-1175A/SR, Outline Drawing

SECTION 2
INSTALLATION

2-1. UNPACKING AND HANDLING.

Depending upon the supply channels involved, the equipment may be received in overseas or domestic packing cases. When equipment is received, select a location convenient to the permanent or semipermanent installation where the equipment may be unpacked without exposure to the elements.

No special instructions are required for unpacking or handling the equipment. Note, however, that care should be exercised in uncrating and handling to avoid damaging the equipment. Save all packing cases and containers. They may be required in the event storage or reshipment is necessary.

2-2. POWER REQUIREMENTS.

When utilized with Receiver-Transmitter RT-66/GRC, RT-67/GRC, or RT-68/GRC simultaneously with auxiliary Radio Receiver R-108/GRC, R-109/GRC or R-110/GRC in a typical installation as shown in figures 1-2 and 1-3, an external single-phase, 115-volt, 60-cycle power source capable of delivering 200 watts is required.

2-3. INSTALLATION REQUIREMENTS.

a. MOUNTING. - Mounting rails provided on the bottom of Power Supply PP-1175A/SR permit installing it on Mounting MT-299/GR or MT-327/GR. When used with Receiver-Transmitter RT-66/GRC, RT-67/GRC, or RT-68/GRC, the power supply should be mounted on the right-hand side of the mounting with the receiver-transmitter adjacent to it on its left-hand side. Refer to figure 2-1 for mounting and clearance dimensions.

b. INTERCONNECTIONS. - Mating connector plugs CS-1320-(1)(S) and CS-1320-(1)(P) for the POWER IN connector receptacle and the AUX RECEIVER connector receptacle are supplied as accessories to Power Supply PP-1175A/SR. Assemble the POWER IN plug, CS-1320-(1)(S), to one end of an 18 inch length of DCOP-3 cable and run the other end of the cable into the junction box of the associated Mounting MT-229/GR or MT-327/GR. If the power supply is used with Mounting MT-327/GR along with auxiliary Radio Receiver R-108/GRC, R-109/GRC, or R-110/GRC, assemble the AUX RECEIVER plug, CS-1320-(1)(P) to one end of an 18-inch length of FCOP-3 cable and run the other end of the cable into the mounting junction box. For information concerning cable fabrication and termination within the mounting junction box and details of the interconnection cabling to associated equipments, such as Adapter, Control MX-1986/SRC, Radio Transfer Switchboards and Remote Radiophone units, of a particular system, refer to Field Change Bulletin No. 1-AN/SRC-10Y, -11Y, -12Y, -13Y, -14Y, or -15Y and other applicable AN/SRC equipment technical manuals.

2-4. INSTALLATION CHECK.

When the installation is complete, check all interconnections and proceed to check the equipment performance. To place the equipment in operation refer to Section 3, paragraph 3-2. Information concerning operational testing and performance data is given in Section 4, paragraph 4-3d and tables 4-1, 4-2, and 4-3.

SECTION 3

OPERATION

3-1. FUNCTIONAL OPERATION.

Power Supply PP-1175A/SR operates from a single-phase, 115-volt, 60-cycle power source. When operated as an integral part of a radio set installation (see figures 1-2 and 1-3), it provides all the necessary dc voltages for operation of Receiver-Transmitter RT-66/GRC, RT-67/GRC, or RT-68/GRC and auxiliary equipments such as Radio Receiver R-108/GRC, R-109/GRC, or R-110/GRC.

Depending upon the services required of the particular system installation, the equipment may be operated from either a local (direct panel control) or a remote position (ships radio remote control).

3-2. OPERATING PROCEDURES.

a. DESCRIPTION OF CONTROLS AND INDICATORS. - All controls required for operation of the Power Supply PP-1175A/SR are located on the front panel of the equipment. The various front panel controls and indicators are shown in figure 3-1, and are as follows:

(1) OPERATE SWITCH. - This switch is the main power control switch when operating the equipment directly from the front panel. It controls operation of the power supply to furnish operating voltages for the receiver or receiver and transmitter circuits of the associated equipment.

(2) TRANS POWER SWITCH. - This switch permits connecting the power supply output circuits to furnish operating voltages for high or low-power transmission by the associated receiver-transmitter. This function cannot be controlled from a remote position.

(3) POWER ON INDICATOR. - This indicator lights to indicate that the power supply primary circuits are energized.

(4) BLOWN FUSE INDICATORS. - These indicators light to provide blown fuse indication of the 1A or 3A fuse in the power supply primary circuits.

b. SEQUENCE OF OPERATION.

(1) LOCAL OPERATION. - This sequence of operation assumes that Power Supply PP-1175A/SR is installed in a system without remote control provisions (see figure 1-2). To place the power supply in operation, proceed as follows:

(a) Place OPERATE switch in the RECEIVE or TRANS & RECEIVE position depending

upon the mode of operation desired. The POWER ON indicator should light.

(b) If mode of operation calls for transmitting, place the TRANS POWER switch in either the HIGH or LOW position depending upon whether high or low-power operation of the transmitter is desired. Operation of a push-to-talk button on associated equipment of the installation will now energize the push-to-talk relay in the power supply allowing it to supply the necessary operating voltages to the associated receiver-transmitter for transmission.

(2) REMOTE OPERATION. - Remote control of Power Supply PP-1175A/SR is possible when it is used in conjunction with Adapter, Control MX-1986/SRC and interconnected to a standard radio remote control system (see figure 1-3). To operate the power supply from a remote position, the OPERATE switch must first be set in the OFF position and the TRANS POWER switch in either the HIGH or LOW position depending upon whether high or low-power operation of the transmitter is desired. With these initial adjustments completed, the power supply can be placed in operation by simply depressing a START button on the remote radiophone unit used with the remote radio control system. The power supply output for receiving or transmitting is controlled by means of a push-to-talk switch on a handset associated with the remote radiophone unit.

3-3. OPERATOR'S MAINTENANCE.

a. OPERATING CHECKS AND ADJUSTMENTS. - No operating checks or adjustments other than those outlined in paragraph 3-2 are required prior to or during normal operation.

CAUTION

Never attempt to operate Power Supply PP-1175A/SR without a suitable load. This practice could damage the equipment.

b. EMERGENCY MAINTENANCE. - In the event of power supply failure, check the cable connections to the equipment and fuses (1A), F102, and (3A), F101, on the front panel. Should either of these fuses burn out, the blown fuse indicator corresponding with the fuse will light. Failure of fuse (1A), F102, will also prevent POWER ON indicator from lighting. Replace fuses if necessary.

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 again until the cause has been corrected.

3-4. PRINCIPLES OF OPERATION.

a. OVERALL FUNCTIONAL DESCRIPTION. - Power Supply PP-1175A/SR fulfills a requirement for an ac operated unit to replace the 12 and 24-volt battery operated units previously employed to furnish plate, filament, bias, and relay voltages required to operate Receiver-Transmitter RT-66/GRC, RT-67/GRC, and RT-68/GRC. In addition to the above, it is also capable of simultaneously furnishing plate and filament voltages to auxiliary equipments, such as auxiliary Radio Receiver R-108/GRC, R-109/GRC, or R-110/GRC, if used. For shipboard use, the power supply provides the necessary circuit and switching facilities for remote operation when interconnected with Adapter, Control MX-1986/SRC and the ships radio remote control system. When used in a system with remote control provisions, minor receiver-transmitter circuit modifications and minor wiring changes in the junction boxes of the associated Mounting MT-299/GR or MT-327/GR are required. Field Change No. 2 AN/SRC-10Y, -11Y, -12Y, -13Y, -14Y, or -15Y outlines the procedures for accomplishing these modifications.

b. FUNCTIONAL SECTIONS. - Schematic diagram, figure 3-2, shows that Power Supply PP-1175A/SR has three separate power supply sections. These sections are controlled by manually operated front panel switches and relays which are externally controlled to provide for all the modes of power supply operation. The following paragraphs outline the functional operation of each section.

(1) FILAMENT AND RELAY VOLTAGE SUPPLY.

The filament and relay voltage supply section provides receiver-transmitter filament voltages at J102 connector terminals N and L, receiver transmitter relay voltage at terminal A and energizing voltage for the push-to-talk relay K102 when terminal K is grounded externally. Filament voltage for the auxiliary receiver is also provided at terminal A of connector J103. Operation of the filament and relay voltage supply section is as follows: When OPERATE switch S101 is placed in either the RECEIVE or TRANS & RECEIVE position, or alternately, when S101 is in the OFF position and control relay K101 is energized from a remote position, primary power is applied to transformer T102. The voltage is stepped down through transformer action and is rectified by the full-wave bridge type rectifier circuit consisting of CR107 through CR110. Rectified dc output voltage from the bridge is routed through the series resistor-divider and capacitor-filter network (R126 through R128, C109, and C110) to the output terminals.

A shunt regulator is added in the filament and relay voltage supply section to provide voltage clamping action which limits the output voltage to 7.3 volts maximum under any operating condition. The operation of the shunt regulator is described as follows: When the output voltage is below the setting of the potential-divider consisting of resistors R136 through R139, the transistors Q102 and Q103 are turned on and are conducting full current. Simultaneously, the base drive of transistor Q101, which is in parallel with the output terminals, is shunted with transistor Q102, thus allowing transistor Q101 to turn off. As the output voltage is increased, the zener voltage level of diode VR101 is exceeded. Any further increase in voltage appears directly across resistor R135 causing transistor Q103 to turn off and transistor Q101 to turn on, clamping the voltage to the maximum allowable setting of 7.3 volts. Resistors R132 and R133 provide the conduction path for transistor Q101. R134 is a series dropping resistor to limit the dissipation of transistor Q103.

(2) RECEIVER AND TRANSMITTER LOW PLATE VOLTAGE SUPPLY. - This section of the power supply utilizes terminals 5 and 6 of transformer T101 along with rectifiers CR105 and CR106 and capacitors C106 and C107 in a full-wave voltage-doubler type circuit. Primary power for transformer T101 in this section is obtained in the same manner as for transformer T102 in the filament and relay supply section discussed in the preceding paragraph. The rectified output is filtered by the LC network consisting of reactor L102 and capacitor C108 and routed through series resistor networks to the POWER OUT connector J102 terminals B, C, and M and terminal D of the AUX RECEIVER connector J103. Output voltage at terminal C is also routed through the TRANS POWER switch S102. When S102 is in its HIGH position, voltage will be available at terminal C only when the push-to-talk relay K102 is energized. Voltage regulator V101 in the output circuit functions to maintain the output at terminal C within its required limits. With S102 in the LOW position, however, voltage is supplied through voltage dropping resistor R112 directly to terminal C. This voltage is held down by the clamping action of V101 during standby condition. During low transmit operation, V101 is extinguished, close regulation of the output at terminal C not being required for this condition. The extra load presented by the associated transmitter circuits during low-transmit condition lowers this output voltage to within proper operating limits. The voltage at terminals B and M are held essentially constant under varying load conditions by the voltage regulating action of V102. The output at terminal M supplies voltage for the receiver section of the associated receiver-transmitter, while the output at terminal B supplies the receiver during standby (receiving conditions) and plate potential for the transmitter section low-level stages when transmitting, switching being accomplished by means of relays in the associated equipment. Resistor R121 serves to drop the regulated voltage at the anode of V102 to the value required at terminal B. Resistor R121 tends to equalize the current of V102 under various load conditions without seriously affecting the regulated output at terminal M. Grounding of connector J102 terminal

E for proper circuit operation is accomplished through interconnecting cable within the associated receiver-transmitter.

(3) **TRANSMITTER HIGH PLATE VOLTAGE AND BIAS SUPPLY.** - In this section, terminals 3 and 4 of transformer T101 is used in conjunction with rectifiers CR101 through CR104 and capacitors C101 and C102 in a half-wave voltage-quadrupler type rectifier circuit to provide dc plate potentials for the power amplifier stage and bias supply for the transmitter section of the associated receiver-transmitter at connector J102 terminals P, F, and R. Primary voltage for this section is obtained in the same manner as for the section discussed in the preceding paragraph. With primary power applied to transformer T101 and the TRANS POWER switch S102 in the HIGH position, the full pulsating high dc voltage output of the half-wave voltage-quadrupling circuit is routed through switch S102, LC filter network consisting of reactor L101, capacitors C103, C104, and

C105, and voltage-dividing network consisting of resistors R168, R109 and R110 to the output terminals when the push-to-talk relay K102 is energized. Energizing of this relay is accomplished when connector J102 terminal K is grounded externally, usually through a switch on the operator's microphone. When the push-to-talk relay K102 is not energized, this section of the power supply is in standby condition; i. e., the circuit of T101 terminal 3 is open preventing power from being applied to the rectifier circuit. Consequently no output is available. The operation of this section when switch S102 is in the LOW position is similar to that discussed above. In this position, however, only one-half of the quadrupler circuit is used resulting in approximately one-half the output obtained previously at connector J102 terminals P and F. Since the associated transmitter develops its own self-bias when operating at low power, switch S102 is wired to short terminal R to ground when in the LOW position; thus, providing no output at terminal R for this mode of operation.

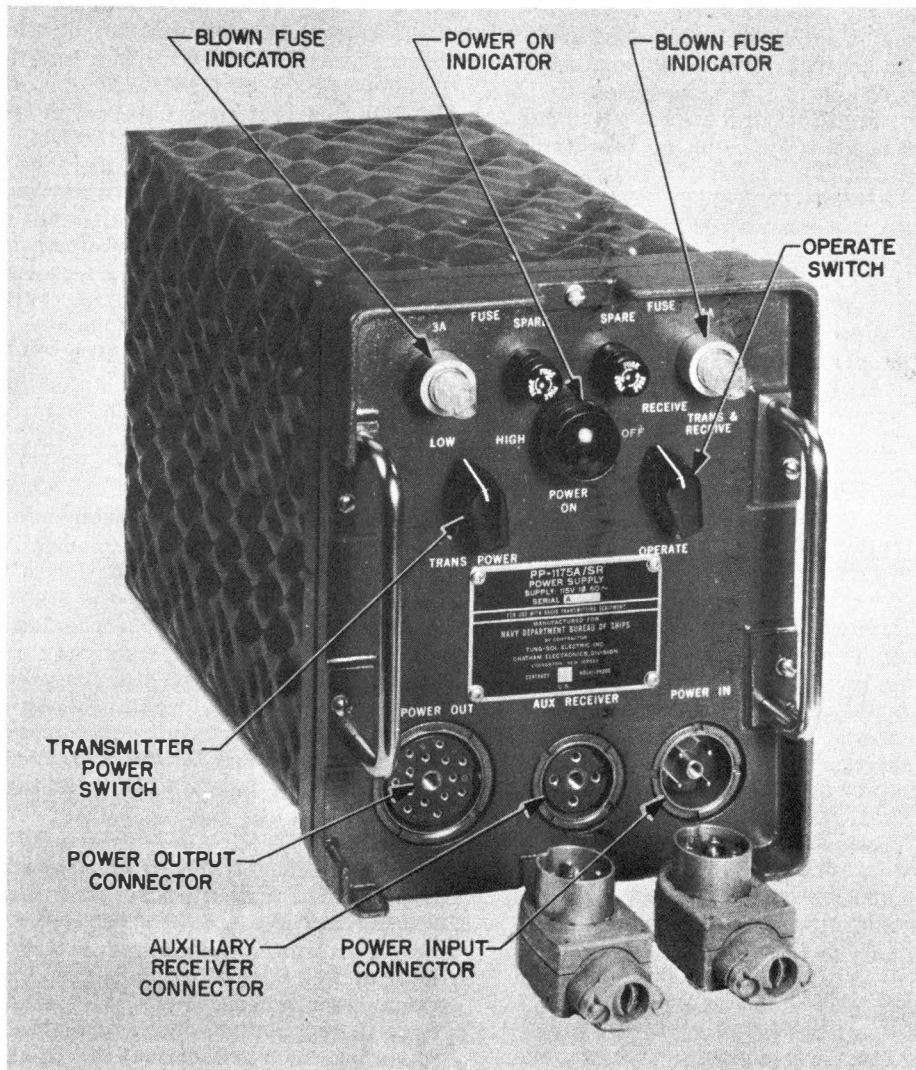


Figure 3-1. Front Panel Controls, Indicators and Connectors

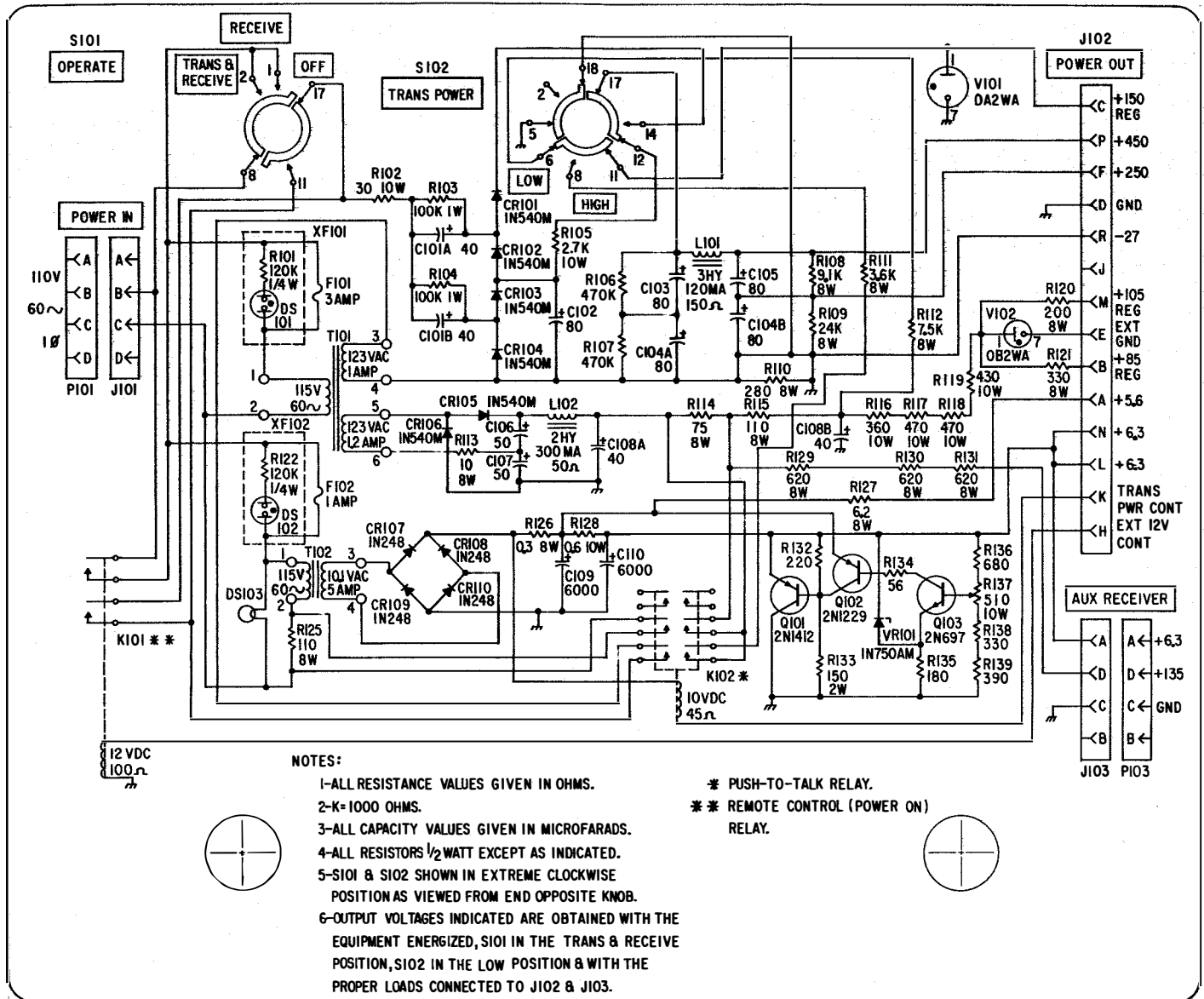


Figure 3-2. Power Supply PP-1175A/SR, Schematic Diagram

SECTION 4

TROUBLE SHOOTING

4-1. GENERAL.

Since the Power Supply PP-1175A/SR circuitry and components are not complicated, no specific trouble-shooting chart is included in this technical manual. In employing any systematic method for trouble shooting, the methods and procedures followed by technicians will vary. Any method employed is satisfactory as long as it will produce accurate results with the greatest expediency. To assist the technician, operation performance data (tables 4-1, 4-2, and 4-3), schematic diagram (figure 3-2) and illustrations showing the location of circuit components (figures 5-1 through 5-9) are included for use along with the recommended procedures listed below and outlined in paragraph 4-3.

a. **VISUAL INSPECTION.** - Visual examination of equipment and components for abnormal conditions. This procedure often produces a quick means of isolating faults.

b. **CONTINUITY CHECKS.** - Continuity and resistance checks are made to locate faults not disclosed by the previous procedure.

c. **OPERATIONAL TEST.** - Operational test includes measurements of input and output voltages for quickly checking the performance of the equipment.

4-2. TEST EQUIPMENT AND ACCESSORIES.

A wide variation of applicable test equipment and accessories may be available for trouble shooting Power Supply PP-1175A/SR. The following equipment, however, is recommended:

- a. Multimeter ME-25A/U or equivalent.
- b. Electronic Multimeter ME-6B/U series or equivalent.
- c. Tube Tester TV-3/U series or equivalent.
- d. Impedance Bridge TS-460/U series or equivalent.
- e. Relay with 5.6 vdc, 13-ohm armature and two single-throw, normally open, 2-ampere contacts.
- f. Switch, double-pole, single-throw.
- g. Switch, single-pole, single-throw.
- h. Ten Dummy Load Resistors, wirewound, $\pm 5\%$ tolerance. For values see figure 4-1.
- i. Resistor, fixed, composition, 5, 100 ohms $\pm 10\%$, 1/2 watt.
- j. Capacitor, fixed 2 uf $\pm 10\%$, 600 vdcw.
- k. Storage Battery, 12 volt.
- l. Terminal Strip.

4-3. TROUBLE SHOOTING.

WARNING

Extreme caution should be observed when servicing this equipment because of the high voltages that are exposed. Even though primary power is disconnected, high potentials may still be present in the equipment because of the charges retained by filter capacitors. Before touching any part, short the part to ground.

a. **PRELIMINARY CHECK.** - Prior to disconnecting the cable connections from the power supply and removing it from its mounting when power supply failure occurs, check for loose cable connections and defective front panel fuses. Failure of fuse F101 or F102 will be indicated by the lighting of the corresponding blown fuse indicator, which is an integral part of the fuseholder, when primary power is applied to the equipment. Failure of fuse F102 will also prevent the POWER ON indicator from lighting when primary power is applied. Note that a burned-out fuse is usually a sign of failure of another part in the circuit. When one of the two fuses burns out, it automatically localizes the trouble to the associated section of the power supply. If a fuse is found defective, replace it.

CAUTION

Never replace a fuse with one of higher rating. If fuse burns out immediately after replacement, do not replace it again until the cause has been corrected.

b. **VISUAL INSPECTION.** - Before visual inspection can be performed, the cable connections to the equipment must be disconnected and the unit removed from its dust cover. To remove the dust cover, loosen the six captive screws around the edges of the front panel, stand the unit on the front panel handles and lift off the dust cover. The unit may now be inspected. Examine the unit thoroughly for any of the abnormal conditions noted below. If this inspection does not reveal the fault and the unit is known to be operating unsatisfactorily, proceed with the checks and tests outlined in paragraphs 4-3c and 4-3d.

(1) **RESISTORS.** - Examine resistors for blistering, discoloration, or other signs of overheating. Inspect leads and all other connections for corrosion, dirt, dust, looseness, or broken or trailing strands in the connecting wires. Discoloration of a resistor usually indicates that the component has been overheated or operated under overload; this indicates a defect in another component.

(2) CAPACITORS. - Examine capacitors for signs of discoloration, leaks, bulges, dirt, loose mounting, or loose connections. Check for swelling or leaky electrolytic capacitors.

(3) WIRING. - Examine for loose, defective, or broken wiring. Look for charring, loose connections, breaks in the insulation, or other evidence of damage. Examine especially the lugs on capacitors, tube sockets, transformers, chokes, switches, and connectors.

(4) TRANSFORMERS AND REACTORS. - Leakage of potting compound from a reactor and transformers usually indicates a short-circuited or overloaded coil winding and possibly a defective resistor or capacitor.

(5) RELAYS. - Examine the relays for defective, dirty, and broken contacts. Check contact tension and note whether relay contacts are properly made. Check for broken connecting leads.

(6) FUSE HOLDER. - Check fuse holders and fuse caps for signs of burning, charring, or corrosion, and for poor contact with the fuse.

(7) SWITCHES. - Operate the switches on the front panel to each of their operating positions, to determine that they work easily with no searching for contacts. Examine switch contacts for evidences of corrosion, improper contact or dirt.

(8) SOCKETS. - Inspect tube and electrolytic capacitor sockets for broken or excessively spread contacts. Examine the contacts for evidence of corrosion and accumulation of dirt or grease. Check socket mounting hardware to determine that the sockets are secured firmly to the chassis. Check the condition of all wiring to the sockets.

(9) PLUGS AND CONNECTORS. - Examine plugs and connectors for improper contact tension, loose mounting hardware, or corrosion. Check wiring to the connectors for improper connection, breaks or damage to insulation.

(10) MOUNTING HARDWARE. - Examine all nuts, bolts, and other mounting hardware on the chassis to make sure that they are not loose. Loose mounting hardware may cause intermittent noises in the set which is operated from the power supply.

c. CONTINUITY CHECKS. - These checks require the use of Multimeter ME-25A/U (or equivalent). They do not necessarily test the part for actual performance. If a part is suspected of being defective and the continuity checks do not satisfactorily verify the fault, substitution of the part in an equipment known to be operating properly, if available, should. Do not, however, substitute the part in another equipment if the continuity check indicates the part to be defective.

(1) PLUG-IN CAPACITORS. - Remove these capacitors from their respective sockets (see Section 5, paragraph 5-3c(3) and figures 5-2 and 5-5)

and test each capacitor for charging action. Test each section of dual capacitors. For capacitors, C101, C102, C103, C104, C105, C106, C107 and C108, use the highest resistance scale of the meter and connect the positive lead of the meter to the positive terminal of the capacitor. Connect the negative lead of the meter to the negative terminal of the capacitor. The meter will first indicate a very low resistance which should gradually increase to a relatively high value for a satisfactory capacitor. This resistance value will vary for different capacitors and capacitance values. Due to the very high capacitance values of C109 and C110, use the lowest resistance scale of the meter for checking these capacitors. In this case, this test will only serve to indicate an obvious short when indication is on the low end of the scale. Note that if Impedance Bridge TS-460/U (or equivalent) is available, it should be used in preference to the above for testing capacitors C101, C102, C103, C104, C105, C106, C107 and C108.

(2) RESISTORS. - Check all resistors for the nominal values indicated in the schematic diagram. Resistance checks should be made with the electrolytic capacitors out of the circuit. Failure to remove the capacitors may result in abnormal indications due to the charging of the capacitors by the meter supply source.

(3) RECTIFIERS. - Check silicon rectifiers CR101 through CR106 for continuity with one side disconnected from the circuit. To check the rectifiers, connect the positive meter lead to the anode terminal (arrow) and the negative lead to the cathode. With the meter set for the highest resistance scale, the indication should approach infinity. Note this indication, then reverse the lead connections and switch to a lower resistance range. The meter should indicate up to several thousand ohms. Compare the ratio of the two readings. A relatively high ratio should be obtained. Note, however, that this ratio will vary somewhat between similar units. This method of checking silicon rectifiers is not recommended for CR107 through CR110 since it is not practical to disconnect them because of the heavy leads used for wiring. Any functional deficiency caused by these components can be isolated by the voltage measurement tests which follow in paragraph 4-3d.

(4) TRANSFORMERS AND REACTOR. - These items can be checked for continuity of windings. Shorted turns, however, will not necessarily be indicated. Operational Tests will indicate if these components are functioning properly.

(5) TRANSISTORS. - Check transistors Q101 through Q103 for continuity by comparing the forward and reverse resistance ratios between the emitter and collector, the emitter and base, and between the base and collector of each transistor. The emitter-to-collector ratio shall be less than the ratios of emitter-to-base or base-to-collector and shall not be indicative of a faulty transistor.

(6) SWITCHES. - Check switch contacts for continuity in each of the switch positions.

(7) RELAYS. - Check the resistance of the armature for each of the relays. The armature for relay K101 should be approximately 100 ohms and for K102 approximately 45 ohms.

(8) VOLTAGE REGULATOR TUBES. - Test the voltage regulator tubes V101 and V102 on a reliable tube tester (Tube Tester TV-3/U series or equivalent).

(9) WIRING. - Point to point test of wiring can also be made on suspected circuitry.

d. OPERATIONAL TEST. - The voltage tests which follow are intended to supplement the preceding procedures in locating defects which have not been readily determined by them. These tests should also be performed after repairs are made to ascertain that the equipment is functioning properly. The tests are made for the various conditions under which the unit may be operated. To accomplish the tests, proceed as follows:

(1) Replace all parts removed for the previous checks (see Section 5, paragraph 5-3d).

(2) Refer to the operational test set up figure 4-1 and connect the dummy load resistors, test equipment and other accessories to the power supply receptacles as shown.

(3) Set the power supply OPERATE switch to RECEIVE position and TRANS POWER switch to LOW position. Place S-1 in OFF position.

(4) Check terminal output and ripple voltages against table 4-1. If abnormal indications are

obtained, refer to the last column of the table for probable fault hint.

(5) Set the power supply OPERATE switch in the TRANS & RECEIVE position and the TRANS POWER switch in the LOW position. Place S-1 in the ON position.

(6) Check terminal output and ripple voltages against table 4-2. If abnormal readings are obtained, refer to the last column of the table for probable fault hint.

(7) Set the power supply OPERATE switch in the TRANS & RECEIVE position, and the TRANS POWER switch in the HIGH position. Place S-1 in the ON position.

(8) Check terminal output and ripple voltages against table 4-3. If abnormal readings are obtained, refer to the last column of the table for the probable fault hint.

(9) Set the power supply OPERATE switch in the OFF position and the TRANS POWER switch in the HIGH position. Place switches S-1 and S-2 in their ON position.

(10) Check terminal output and ripple voltages against table 4-3. Refer to the last column of the table if abnormal readings are encountered. Also note that relay K101 and its associated wiring should be suspected if the proper readings are not obtained.

(11) Remove the auxiliary load and check the terminal output and ripple voltage output of connector J102 terminals L, N, and A at 126.5 volts input. The resistor R137 shall be adjusted if the voltage records in excess of 7.0 volts.

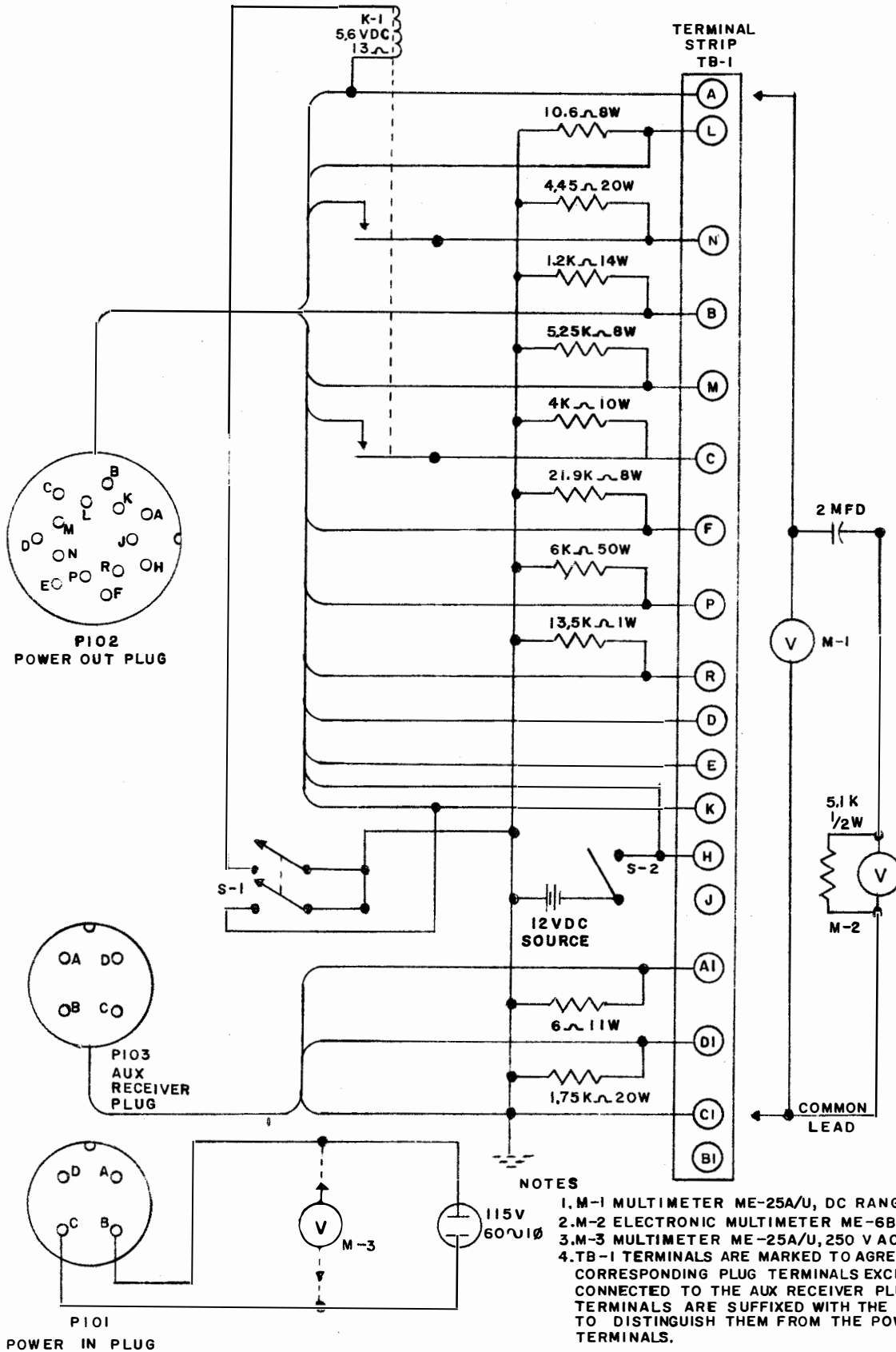


Figure 4-1. Performance Test Set Up

TABLE 4-1. OPERATION PERFORMANCE DATA, RECEIVE, HIGH AND LOW

TERMINAL STRIP TB-1 TERMINAL	NOMINAL VOLTAGES (To Ground)	MAXIMUM RIPPLE (Volts to Ground)	PROBABLE FAULT
* L and A1	6.3 ± .3	0.3	S101, F102, T102, CR107 thru CR110, R125, R126, R128, C109, C110 or wiring.
B	85 ± 5	0.06	S101, F101, T101 primary or section 2 secondary, C106, C107, C108, L102, R113 thru R121, CR105, CR106, V102 or wiring.
M	105 ± 7	0.2	
D1	135 ± 5	0.3	S101, F101, T101 primary or section 2 secondary, C106, C107, C108, L102, R114, R129 thru R131 or wiring.

TABLE 4-2. OPERATION PERFORMANCE DATA, TRANSMIT, LOW

TERMINAL STRIP TB-1 TERMINAL	NOMINAL VOLTAGES (To Ground)	MAXIMUM RIPPLE (Volts to Ground)	PROBABLE FAULT
* L, N and A1	6.3 ± .3	0.3	S101, F102, T102, CR107, thru CR110, R125, R126, R128, C109, C110 or wiring.
** A	5.6 ± .3	N/A	Same as above plus R127
B	90 ± 10	0.06	Same as table 4-1 for these terminals
M	105 ± 7	0.3	
C	90 ± 10	0.05	S101, F101, T101 primary or section 2 secondary, C106, C107, C108, R112, S102, V101
D1	135 ± 5	0.3	Same as table 4-1 for this terminal
P	200 ± 25	0.1	S101, F101, T101 primary or section 1 secondary, R102, R105, R108, R109, C101 thru C105, CR103, CR104, S102. If voltage is indicated on terminal R check K102, coil supply and wiring.
F	105 ± 10	0.2	
R	0 ± 2	N/A	

* With the auxiliary receiver disconnected, the extreme voltage limits are 5.4 volts min to 7.3 volts max.

** With the auxiliary receiver disconnected, the extreme voltage limits are 4.7 volts min to 6.4 volts max.

TABLE 4-3. OPERATION PERFORMANCE DATA, TRANSMIT, HIGH

TERMINAL STRIP TB-1 TERMINAL	NOMINAL VOLTAGES (To Ground)	MAXIMUM RIPPLE (Volts to Ground)	PROBABLE FAULT
* L, N and A1	6.3 ± .3	0.3	Same as table 4-1 for these terminals
** A	5.6 ± .3	N/A	Same as above plus R128
B	85 ± 5	0.06	Same as table 4-1 for these terminals
M	105 ± 7	0.3	
C	150 ± 8	0.3	S101, F101, T101 primary or section 2 secondary, C106, C107, C108, CR105, CR106, L102, K102 or coil supply, R113, R111, S102, V101 or wiring.
D1	135 ± 5	0.3	Same as table 4-1 for this terminal.
P	450 ± 25	0.5	S101, F101, T101 primary or section 1 secondary, R102, R108, R109, R110, C101 thru C105, CR101 thru CR104 and S102
F	250 ± 20	0.5	
R	-27 ± 3	0.05	

* With the auxiliary receiver disconnected, the extreme voltage limits are 5.4 volts min to 7.3 volts max.

** With the auxiliary receiver disconnected, the extreme voltage limits are 4.7 volts min to 6.4 volts max.

SECTION 5

MAINTENANCE

5-1. PREVENTIVE MAINTENANCE.

a. GENERAL. - To minimize frequency of breakdown and needless service interruptions, it is recommended that the periodic preventive measures outlined in this section be taken at the intervals indicated.

b. PREVENTIVE MAINTENANCE TECHNIQUES.

(1) Use a clean, dry, lint-free cloth or a dry brush for removing dust from the equipment. If available, a vacuum cleaner or dry compressed air at a line pressure not exceeding 60 pounds per square inch may be used to remove dust from inaccessible places; be careful, however, or mechanical damage may result from the air blast.

(2) Remove corrosion with no. 0000 sandpaper.

(3) Clean electrical contacts with a cloth moistened with carbon tetrachloride; then wipe them dry.

(4) Stubborn dirt or foreign matter on surfaces other than electrical contacts can be removed with a cloth or brush moistened with dry-cleaning solvent (P-S-661B).

c. ROUTINE PROCEDURES. - The intervals specified for the following procedures are based on average use of the equipment. In the case of intense activity or periods of non-use, the intervals should be revised accordingly.

(1) DAILY. - Place the equipment in operation in accordance with section 3, paragraph 3-2 and check the operating condition for each mode of operation.

(2) WEEKLY. - Visually examine the exterior of the unit for obvious abnormalities, such as loose or misaligned knobs, signs of corrosion etc. Check all interconnections between the power supply and associated equipment in the installation. All connections should be mechanically secure. Clean all accessible parts without removing the dust cover.

(3) MONTHLY. - Check the equipment against the performance standards (see paragraph 5-2). If the equipment fails to meet the minimum performance standards, refer the equipment to maintenance personnel for corrective action.

(4) QUARTERLY. - Remove the dust cover and thoroughly clean the interior of the equip-

ment. Examine all parts for abnormal conditions, symptoms of wear, aging, looseness, or shorts. Tighten loose hardware being careful not to tighten beyond the pressure for which they are designed. Refer any major corrective maintenance to maintenance personnel for the necessary repairs.

5-2. PERFORMANCE STANDARDS.

Refer to section 4, paragraph 4-3d and tables 4-1, 4-2 and 4-3 for information concerning performance test procedures and data.

5-3. REPAIR.

a. FAILURE REPORT. - Report each failure of the equipment, whether caused by a defective part, wear, improper operation, or an external cause. Use ELECTRONIC FAILURE REPORT form DD787. Each pad of the forms includes full instructions for filing and forwarding them to the Bureau of Ships. However, the importance of providing complete information cannot be overemphasized. Be sure that you include the model designation and serial number of the equipment (from the identification plate), the type number and serial number of the major unit (from the major unit identification plate), and the type number and reference designation of the particular defective part (from the technical manual). Describe the cause of the failure completely, continuing on the back of the form if necessary. Do not substitute brevity for clarity.

b. REPLACEMENT OF PARTS. - A list of parts to maintain the unit in an operational condition during its service life is included in table 6-1. Symbol designations are utilized as a cross-reference of parts listed in the schematic diagram (figure 3-2), parts layout photographs (figures 5-1 through 5-9), and the Maintenance Parts List (table 6-1). When replacing parts observe the precautions given below.

(1) TAGGING LEADS. - Tagging leads is essential to assure that correct rewiring will be made when a part is replaced. Before unsoldering any leads, tie together the leads that are attached to each part. Use small tags or short pieces of adhesive tape to identify every lead that is to be removed.

(2) PARTS AND SUBSTITUTIONS. - When damaged parts must be replaced, refer to the Maintenance Parts List, Table 6-1, and use only identical parts for replacement. If identical parts are not available and the damaged component is beyond repair, a substitute must be made. The part substituted must have identical electrical properties and must be of equal or higher voltage and current rating.

(3) LOCATION. - Relocation of substituted parts may cause hum and is not recommended.

(4) MOUNTING. - Mount the new or replaced part in the same mounting as that formerly occupied by the damaged part. Fasten all mountings securely.

(5) SOLDERING. - Before soldering any connection, carefully scrape all parts that will be touched by the solder, until all traces of rust, corrosion, paint or varnish are removed. Tin all surfaces to be soldered. Wrap the wire around the lug to obtain mechanical support. Use a small amount of solder to make the connection and use sufficient heat to make the solder flow evenly around the tinned surfaces.

c. DISASSEMBLY. - To gain access to wiring and component parts, disassemble the equipment as necessary in accordance with the following subparagraphs.

(1) DUST COVER. - To remove the dust cover, loosen the six captive screws on the outer edges of the front panel, stand the unit on the front panel handles and lift off the dust cover. Be careful not to damage any wiring or components while removing dust cover.

(2) RESISTOR ASSEMBLY. - To remove this assembly, all wiring harness connections would have to be disconnected. Normally, it should only be necessary to rotate the assembly away from the main chassis. To do this, remove the four flat-head screws holding it to the left-hand side of the chassis and the two binder-head screws holding it to the support bracket on the right-hand side of the equipment. Rotate the resistor assembly away from the main chassis.

(3) REMOVING ELECTROLYTIC CAPACITORS. - Removal of capacitors C109 and C110 simply requires loosening of the associated capacitor clamps. C101 thru C108 are plug-in type capacitors. Before they can be removed, the resistor assembly and the capacitor shield must be removed. Removal of the resistor assembly is accomplished as noted in the preceding paragraph. To remove the capacitor shield, loosen the two screws holding the shield in

place and lift the shield off. The capacitors can now be removed by pulling them straight out of their respective sockets. Do not rock or jiggle the capacitors in their sockets; the capacitor or socket may be damaged.

(4) RELAYS K101 AND K102. - After the disassembly procedure described in subparagraphs (1), (2) and (3) above, relays K101 and K102 can be removed by simply disengaging the two attaching screws and lockwashers used to hold them in place. Do not loosen the small phillips head screws that are painted red; these screws hold the relay armature core in place.

(5) TRANSFORMERS T101 AND T102. - Removal of transformer T101 requires no special instructions. Before transformer T102 can be removed, however, electrolytic capacitors C109 and C110 along with the associated capacitor platform must be removed.

(6) FRONT PANEL. - To separate the front panel from the chassis assembly, place the unit, less dust cover, on the edge of a flat surface with the front panel hanging over the edge of the surface and the bottom of the chassis resting on the surface. Remove the eight binder head screws and lockwashers which hold the panel to the chassis assembly and carefully pull the panel away from the chassis. Do not place any undue strain on the wiring harness. Removal of the front panel provides access to resistor R105, R113 and R128 along with all front panel mounted parts.

(7) REACTORS L101, L102 AND TUBE SOCKETS XV101 AND XV102. - To gain access to these components for replacement purposes, transformer T101 must be removed.

d. REASSEMBLY. - After all repairs are completed, the equipment is ready for reassembly. To reassemble the unit, reverse the procedures described in paragraph 5-3c. Make sure that all wiring and harness are back in their original position and that wires are not pinched, stretched or otherwise damaged during reassembly. Upon completion of the reassembly, refer to section 4, paragraph 4-3d, and perform the test outlined to ascertain that the equipment is operating properly and meets the minimum performance standards.

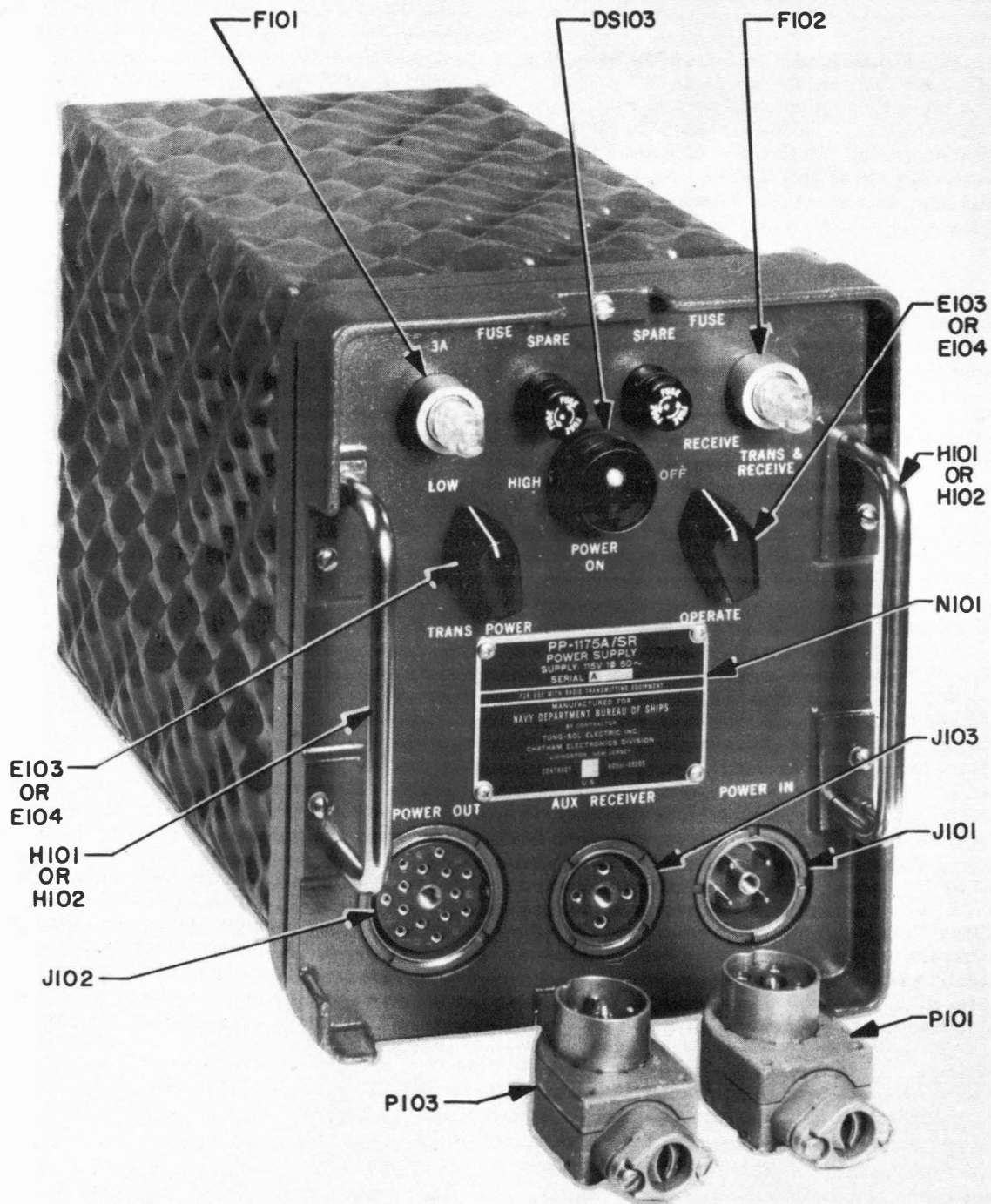


Figure 5-1. Power Supply PP-1175A/SR, Assembled

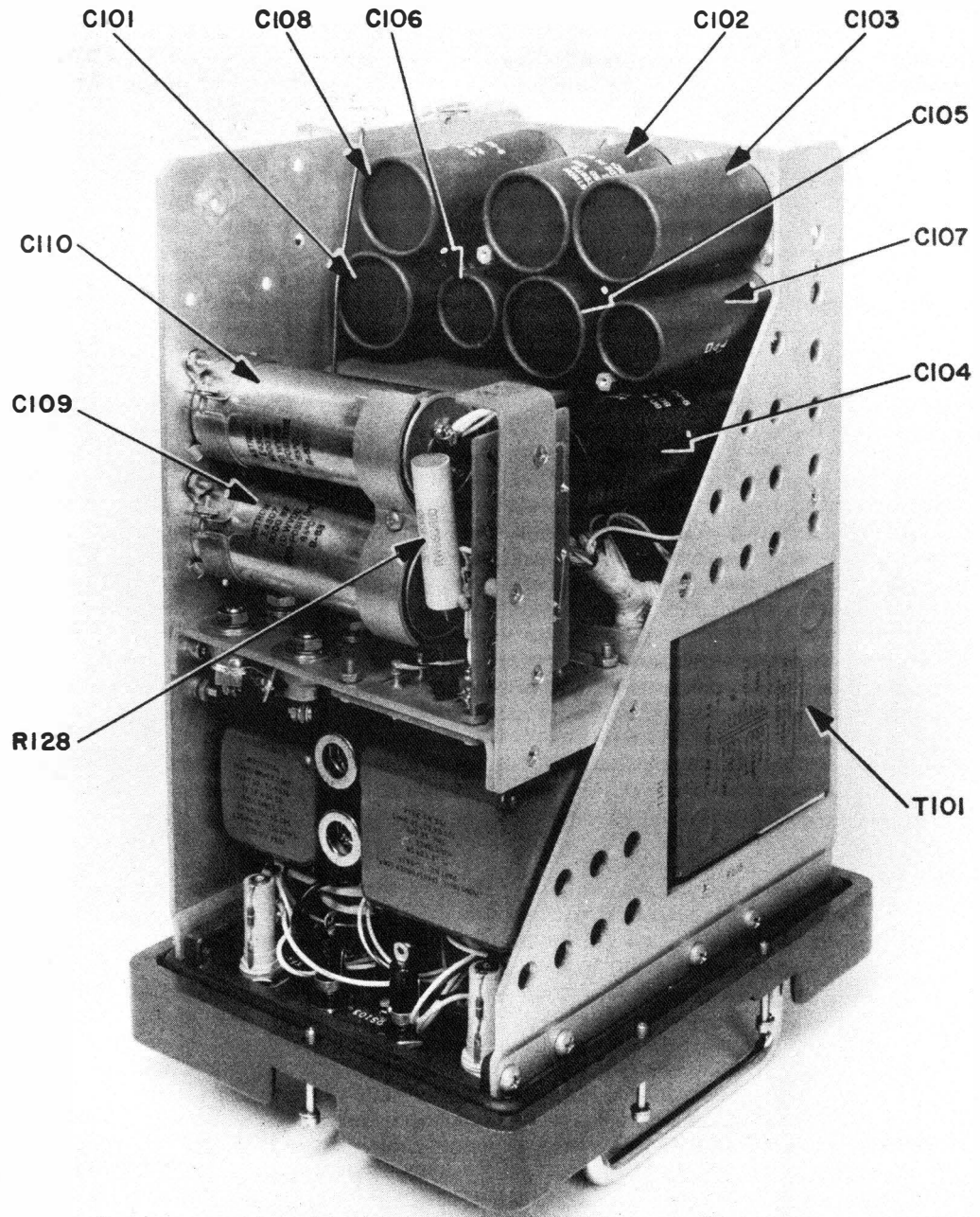


Figure 5-2. Power Supply PP-1175A/SR, Top, Right View with Dust Cover Removed

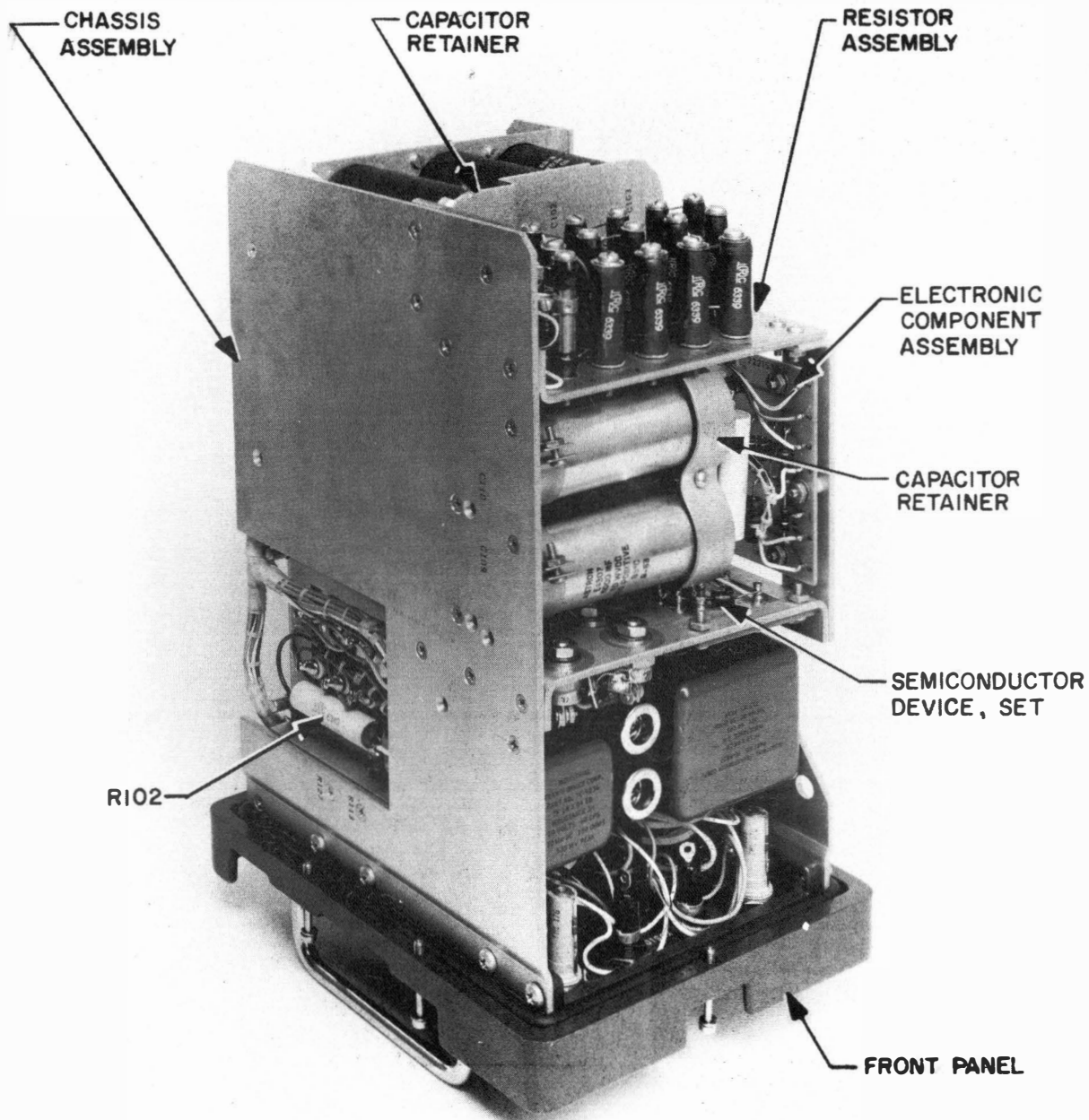


Figure 5-3. Power Supply PP-1175A/SR, Top, Left View with Dust Cover Removed

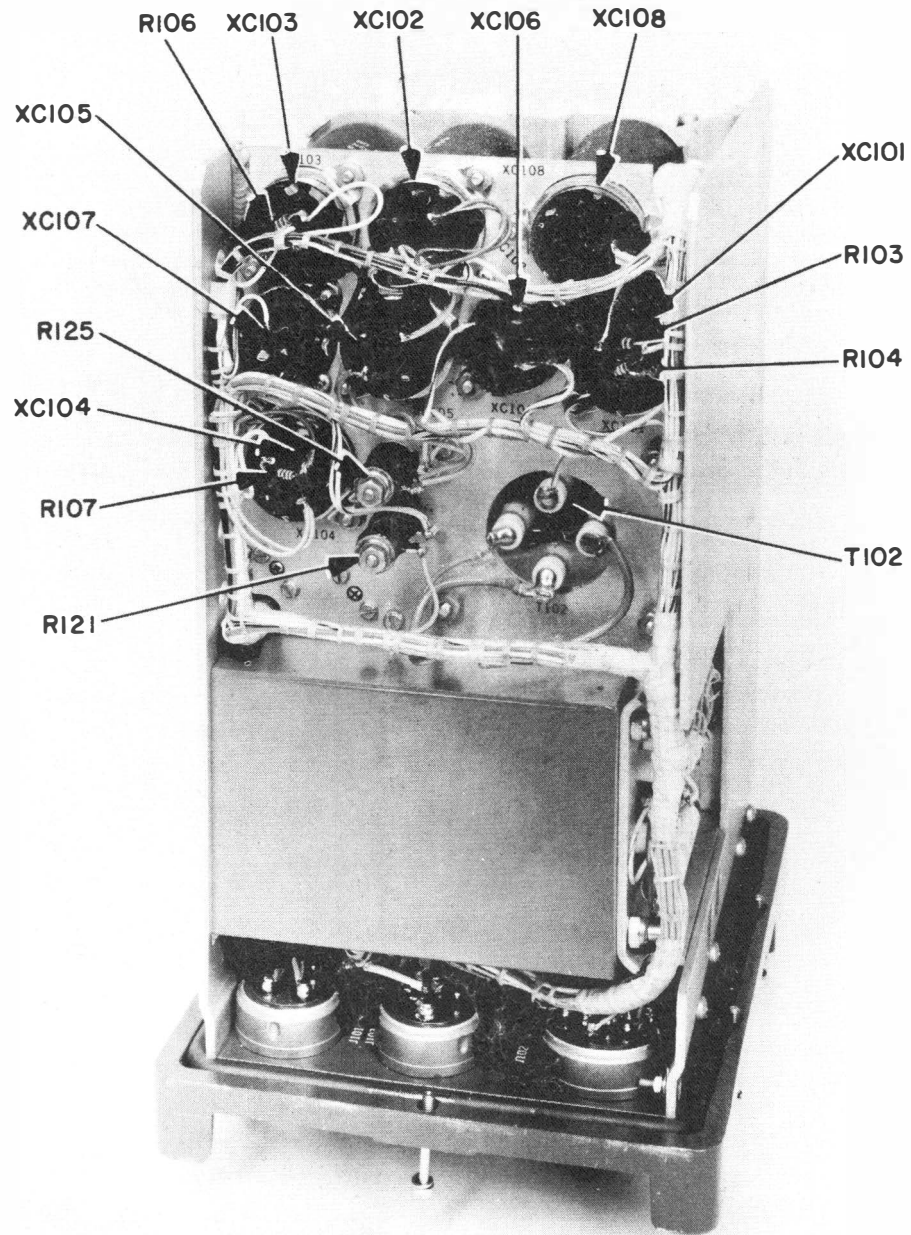


Figure 5-4. Power Supply PP-1175A/SR, Bottom View

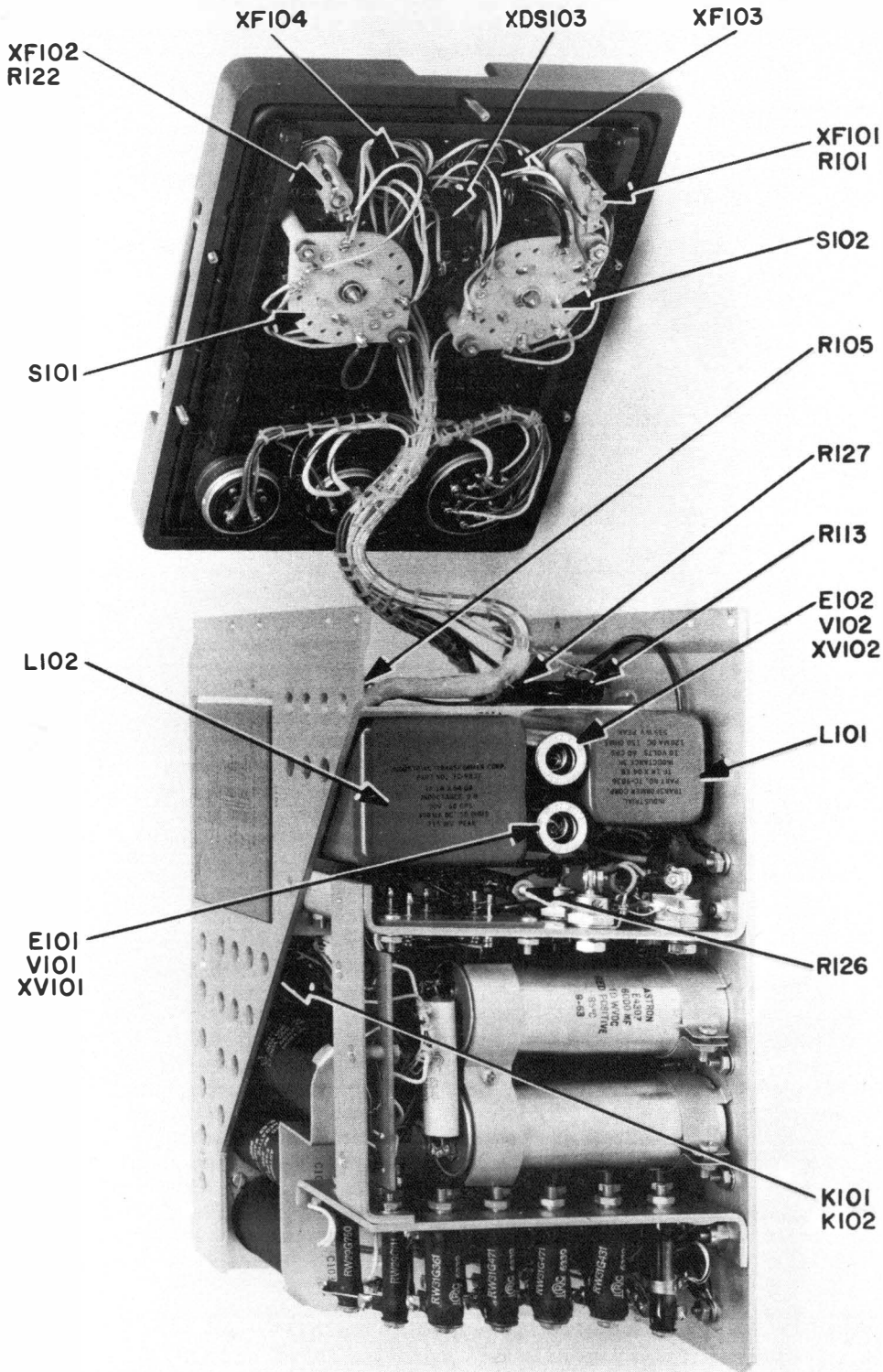
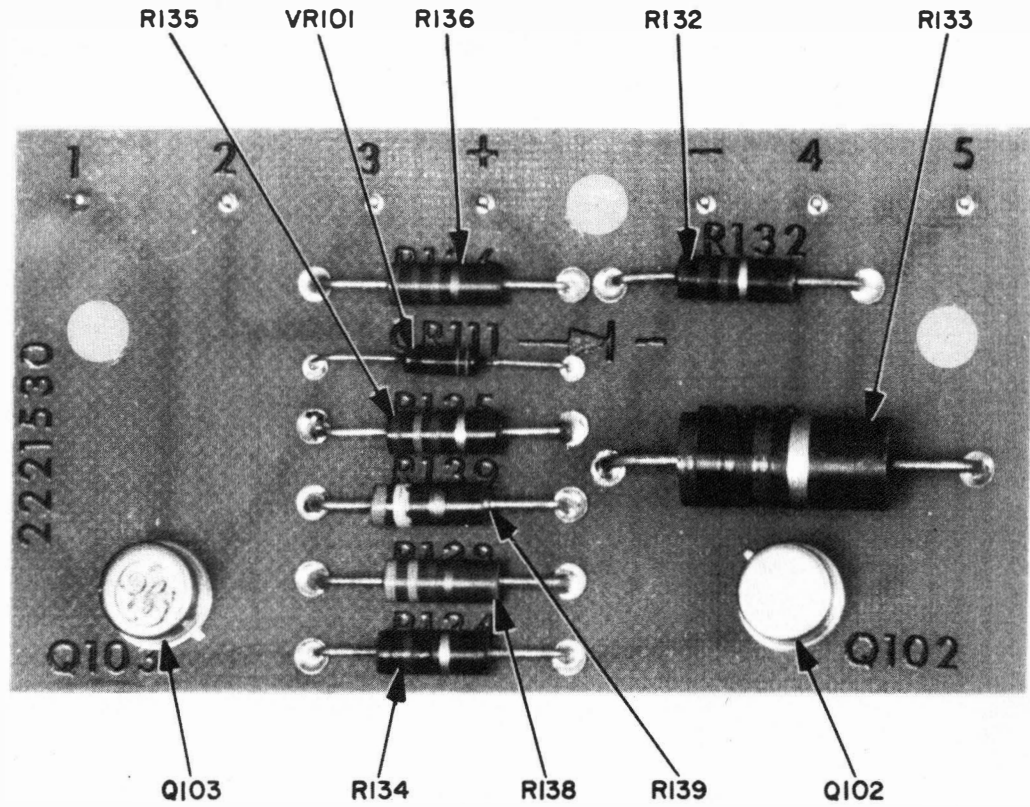
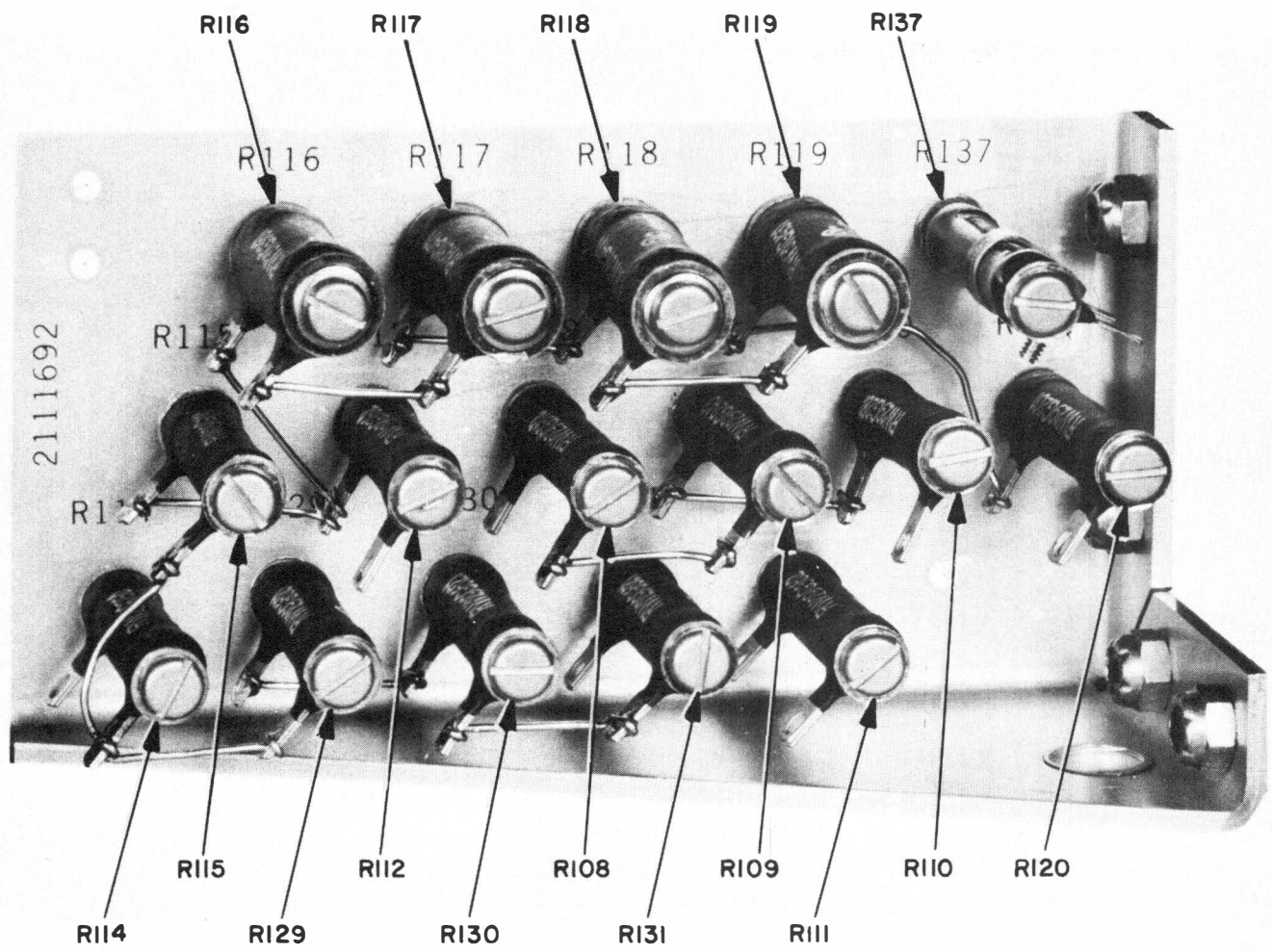


Figure 5-5. Power Supply PP-1175A/SR, Partially Disassembled View



REF DESIG PREFIX 1A1

Figure 5-6. Electronic Component Assembly, Chatham Dwg. No. 2651706



REF DESIG PREFIX 1A2

Figure 5-7. Resistor Assembly, Chatham Dwg. No. 2651702

NAVSHIPS 95740

PP-1175A/SR
MAINTENANCE

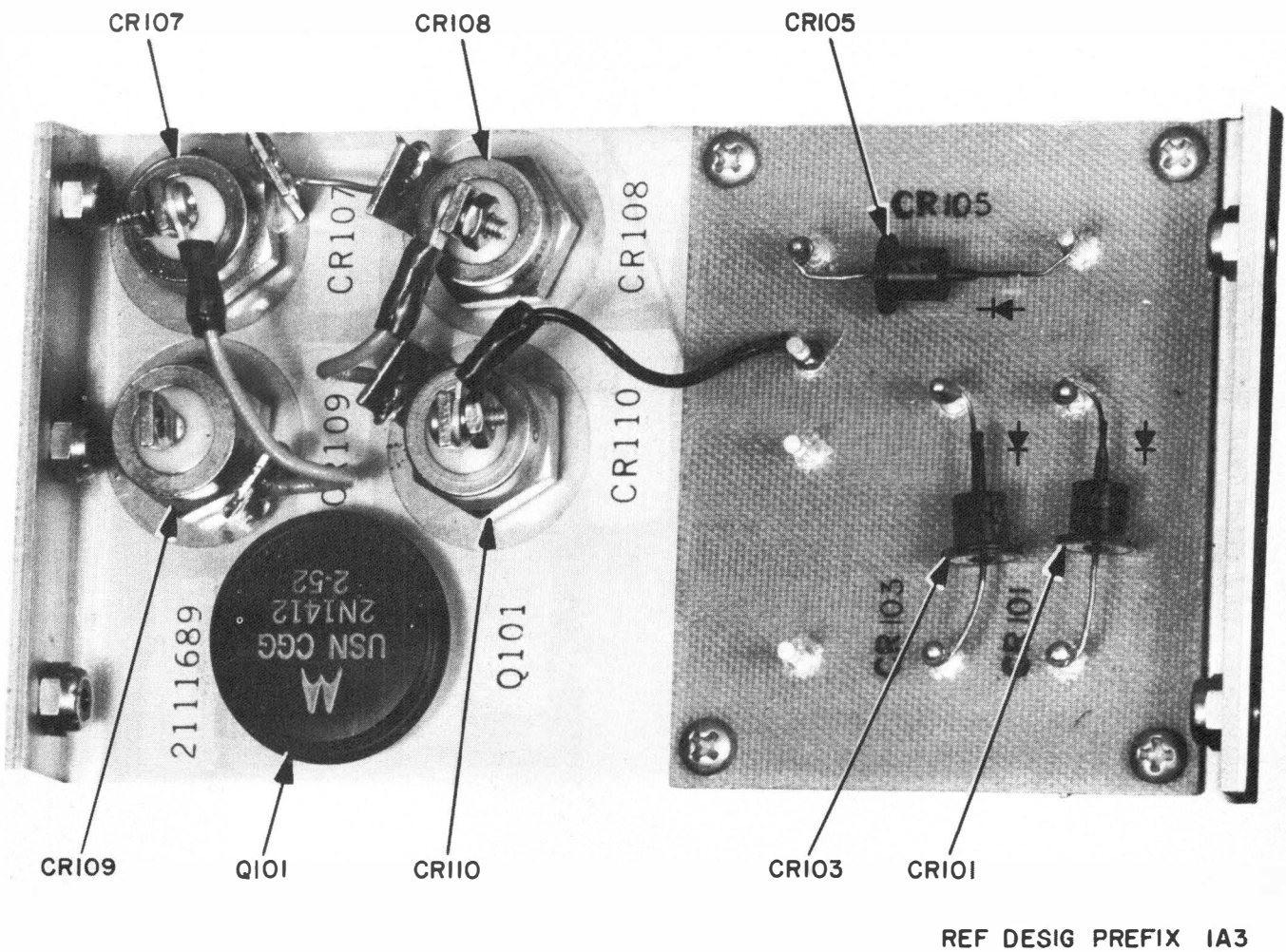
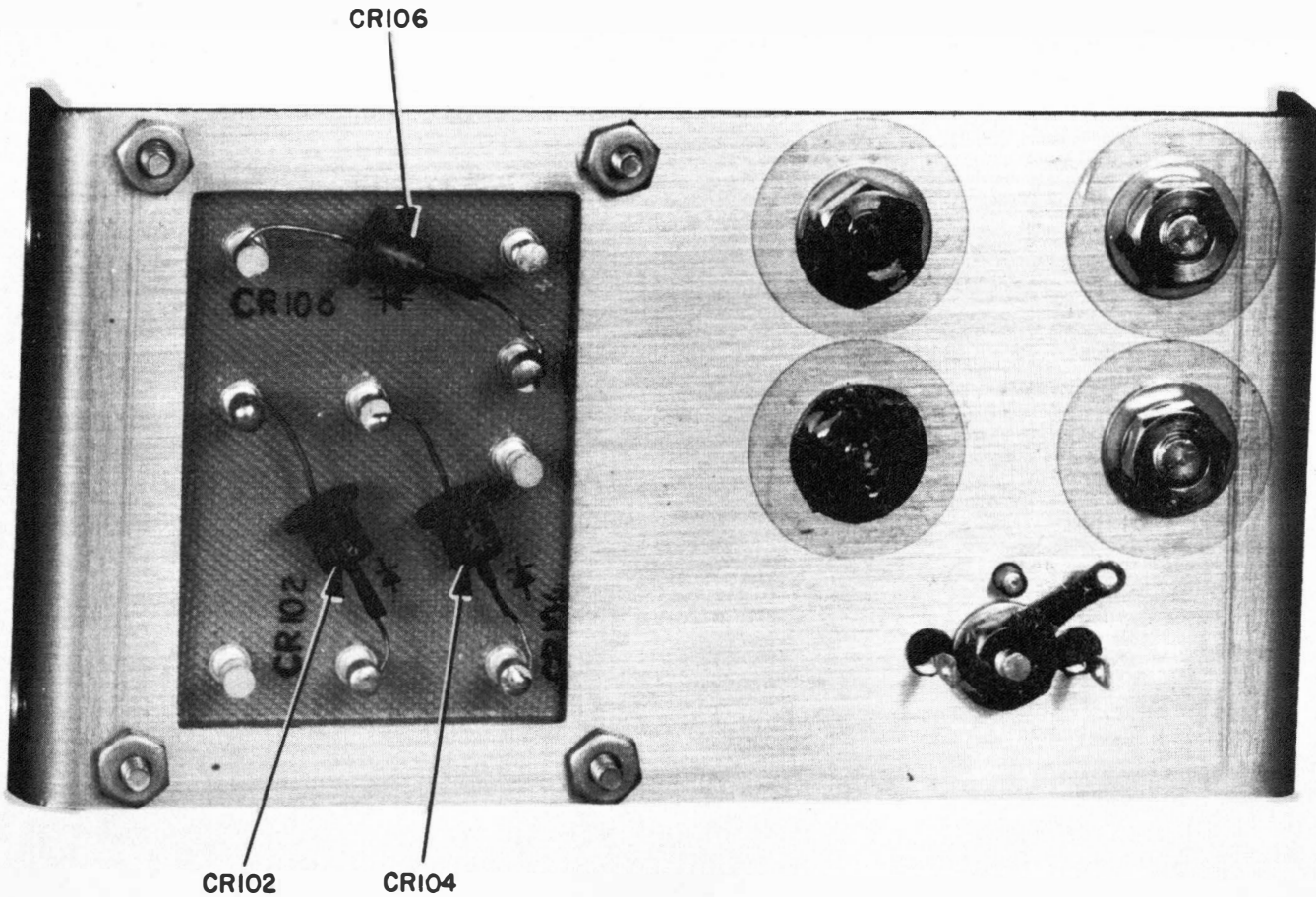


Figure 5-8. Semiconductor Device Set, Chatham Dwg. No. 2651704, Front View



REF DESIG PREFIX IA3

Figure 5-9. Semiconductor Device Set, Chatham Dwg. No. 2651704, Rear View

SECTION 6

PARTS LIST

6-1. INTRODUCTION.

a. This section consists of a maintenance parts list (table 6-1) for Power Supply PP-1175A/SR which includes the information noted below.

(1) The REF DESIG column contains the complete reference designations of all parts listed, in alphabetical-numerical order. The complete reference designation is obtained by placing the proper prefix before the partial reference designations. The partial reference designations consist of the class letter(s) and the identifying number and are used on the equipment and illustrations. Prefixes are provided on illustrations following the notation "REF DESIG PREFIX".

(2) In the NOTES column, the number 1 is used as a code to denote that the part is "Listed for reference only".

(3) The NAME AND DESCRIPTION column contains the noun name and military type designation. For parts not covered by a military designation, suf-

ficient descriptive data is included to aid in identification of the part within the equipment and in determining the suitability of an intended substitute. The name and description is omitted for the second and succeeding listing of parts used two or more times in the equipment and reference "Same as" is substituted for the data. Subassemblies are listed as individual items and are broken down into separate parts listings at the completion of the parts listing for the unit.

(4) The FIG. NO. column includes the figure number of the pictorial illustration which identifies the physical location of the part.

b. Also contained in this section as table 6-2 is a list of manufacturers. The complete names and addresses of the manufacturers can be found adjacent to the codes used in the NAME AND DESCRIPTION column of the maintenance parts list.

TABLE 6-1. MAINTENANCE PARTS LIST

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1		POWER SUPPLY: Mfr CE, model PP-1175A/SR.	
1A1		ELECTRONIC COMPONENT ASSEMBLY: Consists of printed circuit board w/all components assembled for operation; mfr CE, dwg 2651706.	5-3
1A2		RESISTOR ASSEMBLY: Consists of resistor bracket w/all components assembled for operation; mfr CE, dwg 2651702.	5-3
1A3		SEMICONDUCTOR DEVICE SET: Consists of insulator plate w/all components assembled for operation; mfr CE, dwg 2651704.	5-3
1C101		CAPACITOR, FIXED, ELECTROLYTIC: 40 uf, 500 vdcw each section; 85°C(185°F) working temperature; style 7-J, ref dwg gr 1; insulated al case, 1-3/8 in. dia x 3 in. lg; mfr AC, dwg E2443.	5-2
1C101A		Part of 1C101.	
1C101B		Part of 1C101.	
1C102		CAPACITOR, FIXED, ELECTROLYTIC: 80 uf; 350 vdcw; 85°C (185°F) working temperature; style 7-J, ref dwg gr 1; insulated al case, 1-3/8 in. dia x 2-1/2 in. lg; mfr AC, dwg E2879.	5-2

TABLE 6-1. MAINTENANCE PARTS LIST (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1C103		Same as 1C102.	5-2
1C104		CAPACITOR, FIXED, ELECTROLYTIC: 80 uf; 350 vdcw each section; 85°C(185°F) working temperature; style 7-J, ref dwg gr 1; insulated al case 1-3/8 in. dia x 4 in. lg; mfr AC, dwg E2889.	5-2
1C104A		Part of 1C104.	
1C104B		Part of 1C104.	
1C105		Same as 1C102.	5-2
1C106		CAPACITOR, FIXED, ELECTROLYTIC: 50 uf; 350 vdcw; 85°C(185°F) working temperature; style 7-J; ref dwg gr 1; insulated al case, 1 in. dia x 2-1/2 in. lg; mfr AC, dwg E4474.	5-2
1C107		Same as 1C106.	5-2
1C108		Same as 1C101.	5-2
1C108A		Part of 1C108.	
1C108B		Part of 1C108.	
1C109		CAPACITOR, FIXED, ELECTROLYTIC: 6000 uf; 10 vdcw; 0° to 85°C(32°F to 185°F) working temperature; style 12-J, ref dwg gr 1; uninsulated al case, 1-1/2 in. dia x 4-1/8 in. lg; mfr AC, dwg E4307.	5-2
1C110		Same as 1C109.	5-2
1DS101	1	LAMP, GLOW: Part of 1XF101.	
1DS102	1	LAMP, GLOW: Part of 1XF102.	
1DS103		LAMP, GLOW: MS15567-1, per W-L-101.	5-1
1E101		SHIELD, ELECTRON TUBE: JAN type TS102U03, per JAN-S-28A.	5-5
1E102		Same as 1E101.	5-5
1E103		KNOB: MS91528-1A2B, per MIL-K-3926.	5-1
1E104		Same as 1E103.	5-1
1F101		FUSE, CARTRIDGE: MS90078-27-1, per MIL-F-15160.	5-1
1F102		FUSE, CARTRIDGE: MS90078-9-1, per MIL-F-15160.	5-1
1F103		Same as 1F101.	
1F104		Same as 1F102.	
1H101	1	HANDLE, PROTECTIVE: u-shaped; 4-13/16 in. lg x 1-1/2 in. high x 5/16 in. dia; 10-32 tap x 1/2 in. deep, both ends; stainless steel; mfr PMPC, dwg 2122.	5-1

TABLE 6-1. MAINTENANCE PARTS LIST (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1H102		Same as 1H101.	5-1
1J101		CONNECTOR, RECEPTACLE, ELECTRICAL: Signal Corps type CS-2020-(1)(P); mfr ABEC, dwg 164-101-1P.	5-1
1J102		CONNECTOR, RECEPTACLE, ELECTRICAL: Signal Corps type CS-2020-(1)(S); mfr ABEC, dwg 164-102-5S.	5-1
1J103		CONNECTOR, RECEPTACLE, ELECTRICAL: Signal Corps type CS-2020-(1)(S); mfr ABEC, dwg 164-101-1S.	5-1
1K101		RELAY, ARMATURE: contact arrangement 2A, ref dwg gr 4; contacts rated 500 vac, 3 amp; one inductive winding, dc, 100 ohms resistance, 12v operating voltage, 0.120 amp operating current; 1-5/8 in. lg x 3/4 in. w x 1-1/4 in. h; mfr CE, dwg 2060007.	5-5
1K102		RELAY, ARMATURE: contact arrangement 6A, ref dwg gr 4; contacts rated 500 vdc, 3 amp; one inductive winding, dc, 450 ohms resistance, 10v operating voltage, 0.22 amp operating current; 1-1/2 in. lg x 1 in. w x 1-3/8 in. h; mfr CE, dwg 2060008.	5-5
1L101		REACTOR: 3h, 120 ma dc, 150 ohms dc resistance; per spec MIL-T-27; mfr ITC, type TC9836.	5-5
1L102		REACTOR: 2h, 300 ma dc, 50 ohms dc resistance; per spec MIL-T-27; mfr ITC, type TC9837.	5-5
1N101	1	PLATE, IDENTIFICATION: Reverse etched al, satin silver inscription, black background; 3 in. lg x 2 in. w x 0.020 in. thk; mtd by four 1/8 in. dia mtg holes on 1-3/4 in. x 2-3/4 in. mtg centers; mfr CE, dwg 2281541.	5-1
1P101		CONNECTOR, PLUG, ELECTRICAL: Signal Corps type CS-1320-(1)(S); mfr ABEC, dwg 164-201-1S-15.	5-1
1P103		CONNECTOR, PLUG, ELECTRICAL: Signal Corps type CS-1320-(1)(P); mfr ABEC, dwg 164-201-1P-15.	5-1
1R101		RESISTOR, FIXED, COMPOSITION: RC07GF124K, per MIL-R-11; part of XF101.	5-5
1R102		RESISTOR, FIXED, WIREWOUND: RW56G300, per MIL-R-26.	5-3
1R103		RESISTOR, FIXED, COMPOSITION: RC32G104K, per MIL-R-11.	5-4
1R104		Same as 1R103.	5-4
1R105		RESISTOR, FIXED, WIREWOUND: RW31G272, per MIL-R-26.	5-5
1R106		RESISTOR, FIXED, COMPOSITION: RC20GF474K, per MIL-R-11.	5-4

TABLE 6-1. MAINTENANCE PARTS LIST (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1R107		Same as 1R106.	5-4
1R113		RESISTOR, FIXED, WIREWOUND: RW29G100, per MIL-R-26.	5-5
1R121		RESISTOR, FIXED, WIREWOUND: RW30G331, per MIL-R-26.	5-4
1R122		Same as 1R101 (except part of 1XF102).	5-5
1R125		RESISTOR, FIXED, WIREWOUND: RW30G111, per MIL-R-26.	5-4
1R126		RESISTOR, FIXED, WIREWOUND: RW29GR30, per MIL-R-26. (except tolerance is 3%)	5-5
1R127		RESISTOR, FIXED, WIREWOUND: RW29G6R2, per MIL-R-26.	5-5
1R128		RESISTOR, FIXED, WIREWOUND: RW56GR60, per MIL-R-26. (except tolerance is 3%)	5-2
1S101		SWITCH ROTARY: one section, three positions max, adjustable stop; "Non-pile-up" type contact arrangement, 2 moving contacts, 8 fixed contacts, 2 poles, 3 throws; 375 vac max, 5 amp rating; nonshorting; solid silver contacts; ceramic section insulation; 1-1/2 in. lg x 1-7/8 in. w x 2-13/16 in. h; mtd by 3/8-22 TPI x 3/8 in. lg bushing; shaft 1/4 in. dia x 1-1/16 in. lg (including integral handle) with double flat; solder lug terminals, (unused terminals removed); 20° detent action; mfr CE, dwg 2060004.	5-5
1S102		SWITCH ROTARY: one section, two positions max, adjustable stop, "Non-pile-up" type contact arrangement, 3 moving contacts, 9 fixed contacts, 3 poles, 2 throws, 500 vdc max, 5 amp resistive load, 2 amp inductive load rating, nonshorting, solid silver contacts; ceramic section insulation; 1-1/2 in. lg x 1-7/8 in. w x 2-13/16 in. h; mtd by 3/8-32 TPI x 3/8 in. lg bushing; round double flatted type shaft, 1/4 in. dia x 1-1/16 in. lg (including integral handle); solder lug terminals (unused terminals removed); 40° detent action, detent modified to override center terminal (normally 20° stop) without stopping providing 2 positions 40° apart; mfr CE, dwg 2060003.	5-5
1T101		TRANSFORMER, POWER: step-up; hermetically sealed metal case; primary winding data; 115v, 60 cy, single-phase; output winding data: No. 1 secondary 123v, 1 amp, No. 2 secondary 123v, 1.2 amp; 1500v insulation; air cooled; ref dwg gr 12; 4-1/2 in. lg x 3-5/8 in. w x 5-1/4 in. h; mfr ITC, type TP9834.	5-2

TABLE 6-1. MAINTENANCE PARTS LIST (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1T102		TRANSFORMER, POWER: step-down; hermetically sealed metal enclosing case; primary winding data: 115v, 60 cy, single-phase; secondary winding data; 10.1v, 5 amp; 500v insulation; ref dwg gr 12; 3-9/16 in. lg x 3-1/16 in. w x 3-7/8 in. h; mfr ITC, type TP9835.	5-4
1V101		TUBE, ELECTRON: JAN type 0A2WA; glow discharge diode voltage regulator; per MIL-E-1B.	5-5
1V102		TUBE, ELECTRON: JAN type 0B2WA; glow discharge diode voltage regulator; per MIL-E-1B.	5-5
1XC101		SOCKET, CAPACITOR: 4 contacts; 90° spacing on 5/8 in. dia; copper base alloy contacts; molded plastic body; 1-3/8 in. dia x 11/16 in. h (excluding terminals and contacts); solder tab type contact terminals; requires plain, round body accommodation hole 1-3/8 in. dia x 3/32 in. deep; retaining ring type mtg; two 0.156 in. dia mtg holes spaced 1.844 in. C to C; mfr CMC, dwg 203-42-07-089.	5-4
1XC102		Same as 1XC101.	5-4
1XC103		Same as 1XC101.	5-4
1XC104		Same as 1XC101.	5-4
1XC105		Same as 1XC101.	5-4
1XC106		SOCKET, CAPACITOR: 3 contacts spaced at corners of a triangle with 3/8 in. sides; copper base alloy contacts; molded plastic body; 1-7/64 in. dia x 11/16 in. h (excluding terminals and contacts); solder tab type contact terminals; requires 1-7/64 in. dia x 3/32 in. deep, plain, round, body accommodation hole; retaining ring type mtg; two 0.145 in. dia mtg holes spaced 0.500 in. C to C; mfr CMC, dwg 203-42-05-088.	5-4
1XC107		Same as 1XC106.	5-4
1XC108		Same as 1XC101.	5-4
1XDS103		LIGHT, INDICATOR: supplied with 1 in. dia, smooth face, translucent red lens; friction mtd lens holder; lamp data: MBCA ref dwg gr 7; rated 105 to 125v, less than one watt; 1-3/16 in. dia x 2-5/8 in. lg; lamp holder data: lamp replaceable from front of panel; MIL type LH80LC21RD, per MIL-L-3661.	5-5
1XF101		FUSEHOLDER: glow lamp indication; rated 100 to 250v; 13/16 in. dia x 2-3/4 in; MIL type FHL17G, per MIL-F-19207.	5-5
1XF102		Same as 1XF101.	5-5

TABLE 6-1. MAINTENANCE PARTS LIST (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1XF103		FUSEHOLDER: extractor post type; max electrical rating of holder 250v, 20 amp; designed to hold one spare 1/4 in. dia x 1 in. lg cartridge type fuse; 11/16 in. dia x 2-9/32 in. lg; terminal data: 2 solder lug type terminals: MIL type FD1, per MIL-STD-242.	5-5
1XF104		Same as 1XF103.	5-5
1XV101		SOCKET, ELECTRON TUBE: JAN type TS102C01, per JAN-S-28A.	5-5
1XV102		Same as 1XV101.	5-5

ELECTRONIC COMPONENT ASSEMBLY, DWG 2651706

1A1Q102		TRANSISTOR: silicon material; junction contact type construction; P-N-P internal configuration; case outline (T0-5); hermetically sealed; 3 wire lead type terminals; mfr HAC, type 2N1229.	5-6
1A1Q103		TRANSISTOR: MIL type 2N697, per MIL-S-19500/99.	5-6
1A1R132		RESISTOR, FIXED, COMPOSITION: RC20GF221K per MIL-R-11.	5-6
1A1R133		RESISTOR, FIXED, COMPOSITION: RC42GF151K per MIL-R-11.	5-6
1A1R134		RESISTOR, FIXED, COMPOSITION: RC20GF560K per MIL-R-11.	5-6
1A1R135		RESISTOR, FIXED, COMPOSITION: RC20GF181K per MIL-R-11.	5-6
1A1R136		RESISTOR, FIXED, COMPOSITION: RC20GF680J per MIL-R-11.	5-6
1A1R138		RESISTOR, FIXED, COMPOSITION: RC20GF331J per MIL-R-11.	5-6
1A1R139		RESISTOR, FIXED, COMPOSITION: RC20GF391J per MIL-R-11.	5-6
1A1VR101		SEMICONDUCTOR DEVICE, DIODE: MIL type 1N750AM, per MIL-S-19500/127.	5-6

RESISTOR ASSEMBLY, DWG 2651702

1A2R108		RESISTOR, FIXED, WIREWOUND: 9.1K \pm 5%, 8w, mfr IRC, type 1-3/4A-12A-B-9100 \pm 5%.	5-7
1A2R109		RESISTOR, FIXED, WIREWOUND: 24K \pm 5%, 8w, mfr IRC, type 1-3/4A-12A-B-2400 \pm 5%.	5-7
1A2R110		RESISTOR, FIXED, WIREWOUND: RW29G281 per MIL-R-26.	5-7

TABLE 6-1. MAINTENANCE PARTS LIST (Cont)

RESISTOR ASSEMBLY, DWG 2651702 (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1A2R111		RESISTOR, FIXED, WIREWOUND: RW29G362 per MIL-R-26.	5-7
1A2R112		RESISTOR, FIXED, WIREWOUND: 7.5K \pm 5%, 8w, mfr IRC, type 1-3/4A-12A-B-7500 \pm 5%.	5-7
1A2R114		RESISTOR, FIXED, WIREWOUND: RW29G750 per MIL-R-26.	5-7
1A2R115		RESISTOR, FIXED, WIREWOUND: RW29G111 per MIL-R-26.	5-7
1A2R116		RESISTOR, FIXED, WIREWOUND: RW29G361 per MIL-R-26.	5-7
1A2R117		RESISTOR, FIXED, WIREWOUND: RW29G471 per MIL-R-26.	5-7
1A2R118		Same as 1A2R117.	5-7
1A2R119		RESISTOR, FIXED, WIREWOUND: RW31G431 per MIL-R-26.	5-7
1A2R120		RESISTOR, FIXED, WIREWOUND: RW29G201 per MIL-R-26.	5-7
1A2R129		RESISTOR, FIXED, WIREWOUND: RW29G621 per MIL-R-26 (except for resistance value).	5-7
1A2R130		Same as 1A2R129.	5-7
1A2R131		Same as 1A2R129.	5-7
1A2R137		RESISTOR, ADJUSTABLE: 510 ohms, 10w, mfr OMC, type 1-3/4D-57D-510.	5-7

SEMICONDUCTOR DEVICE SET, DWG 2651704

1A3CR101		SEMICONDUCTOR DEVICE, DIODE: MIL type 1N540M, per MIL-S-19500/202.	5-8
1A3CR102		Same as 1A3CR101.	5-9
1A3CR103		Same as 1A3CR101.	5-8
1A3CR104		Same as 1A3CR101.	5-9
1A3CR105		Same as 1A3CR101.	5-8
1A3CR106		Same as 1A3CR101.	5-9
1A3CR107		SEMICONDUCTOR DEVICE, DIODE: 10 amp max forward current; 45 amp max peak recurrent forward current; 1.5 v max forward voltage at 25 amp at 25°C (77°F); -65°C to +175°C (-85°F to +347°F) operating temperature range; hermetically sealed metal case 13/32 in. lg from mounting surface, 1/2 in. dia with 11/16 in. hex base; one solder lug terminal on one end, and one 1/4-28 thread stud on opposite end, with mounting hardware; mfr WEC, type 1N248.	5-8

TABLE 6-1. MAINTENANCE PARTS LIST (Cont)

SEMICONDUCTOR DEVICE SET, DWG 2651704 (Cont)

REF DESIG	NOTES	NAME AND DESCRIPTION	FIG. NO.
1A3CR108		Same as 1A3CR107.	5-8
1A3CR109		Same as 1A3CR107.	5-8
1A3CR110		Same as 1A3CR107.	5-8
1A3Q101		TRANSISTOR: MIL type 2N1412, per MIL-S-19500/76.	5-8

TABLE 6-2. LIST OF MANUFACTURERS

MFR CODE	NAME	ADDRESS
ABEC	Amphenol-Borge Electronics Corp.	Great Neck, Long Island, N. Y.
AC	Astron Co.	East Newark, N. J.
CE	Chatham Electronics Division of Tung-Sol Electric Inc.	Livingston, N. J.
CMC	Cinch Mfg. Corp.	Chicago, Ill.
HAC	Hughes Aircraft Co., Semiconductor Div.	Los Angeles, Calif.
ITC	Industrial Transformer Corp.	Gouldsboro, Pa.
IRC	International Resistance Co.	Boone, N. C.
OMC	Ohmite Manufacturing Co.	Skokie, Ill.
PMPC	Precision Metal Products Co.	Ellwood City, Pa.
WEC	Westinghouse Electrical Corp., Semi-Conductor Dept.	Youngwood, Pa.