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NAVSHIPS 92121(A)

INSTRUCTION BOOK

for

RADIO TRANSMITTING SETS

**AN/SRT-14, AN/SRT-14A, AN/SRT-15,
AN/SRT-15A, AN/SRT-16 AND AN/SRT-16A**

SECTION 5

OPERATOR'S MAINTENANCE

FEDERAL TELEPHONE AND RADIO COMPANY

A division of INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

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TABLE OF SECTIONS

<i>Section</i>	<i>Title</i>
1	General Description
2	Theory of Operation
3	Installation
4	Operation
5	Operator's Maintenance
6	Preventive Maintenance
7	Corrective Maintenance
8	Parts Lists

TABLE OF CONTENTS

<i>Paragraph</i>	<i>Page</i>	<i>Paragraph</i>	<i>Page</i>
1. Introduction	5-1	(4) Fuse Locations	5-9
<i>a.</i> General	5-1	(5) Spare Fuses	5-9
<i>b.</i> Short or Common Names	5-1	(6) Units Without Fuses	5-10
2. Routine Checks	5-1	<i>c.</i> Tubes	5-10
<i>a.</i> Preliminary Control Positions	5-1	(1) Tube Locations	5-10
<i>b.</i> Routine Check Chart	5-1	(2) PA Tube V-1304	5-10
3. Emergency Maintenance	5-3	(<i>a.</i>) Removing the PA Tube	5-10
<i>a.</i> General	5-3	(<i>b.</i>) Replacing the PA Tube	5-13
(1) Chassis Removal	5-3	(3) Removing the IPA Tubes V-1301	
(2) Chassis Replacement	5-4	and V-1302	5-13
<i>b.</i> Fuses	5-5	(4) Critical Tubes, Adjustment Refer-	
(1) Fuse Replacement	5-5	ences	5-13
(2) Symptoms of Fuse Failure, 100-		(5) Units Without Tubes	5-13
Watt Operation	5-7	<i>d.</i> Shutdown Procedure	5-14
(3) Symptoms of Fuse Failure, 500-		<i>e.</i> Pressurizing the R-f Tuner and Coupler	5-14
Watt Operation	5-9	<i>f.</i> Changing R-f Tuner or Coupler	5-14

LIST OF ILLUSTRATIONS

<i>Figure</i>	<i>Title</i>	<i>Page</i>	<i>Figure</i>	<i>Title</i>	<i>Page</i>
5-1	AN/SRT-15, Routine Checks	5-2	5-8	Radio Modulator MD-230/SRT (HLRM),	
5-2	AN/SRT-15, Front Panel Tube and Fuse			Top View, Tube Locations	5-15
	Locations	5-4	5-9	Radio Frequency Oscillator O-275/SRT	
5-3	Power Supply PP-1094/SRT (LVPS), Left			(RFO), Top View, Tube Locations	5-15
	Side Panel, Fuse Locations	5-10	5-10	Radio Frequency Oscillator O-275/SRT	
5-4	Power Supply PP-1096/SRT (HVPS),			(RFO), Right Side, Tube Locations	5-16
	Top View, Tube and Fuse Locations	5-10	5-11	Radio Frequency Oscillator O-275/SRT	
5-5	Power Supply PP-1095/SRT (MVPS),			(RFO), Left Side, Tube Locations	5-17
	Top View, Tube Locations	5-11	5-12	Radio Frequency Oscillator O-275/SRT	
5-6	Radio Modulator MD-229/SRT (LLRM),			(RFO), Bottom View, Tube Locations	5-18
	Top View, Tube Locations	5-12	5-13	Power Supply PP-1094/SRT (LVPS),	
5-7	Radio Frequency Amplifier AM-1008/ SRT (RFA), Right Side, Tube Locations	5-14	5-14	Top View, Tube Locations	5-18
			5-15	Removing the PA Tube, V-1304	5-19
				Typical Pressurizing Method	5-19

LIST OF TABLES

<i>Table No.</i>	<i>Title</i>	<i>Page</i>	<i>Table No.</i>	<i>Title</i>	<i>Page</i>
5-1	Short or Common Names	5-1	5-5	Symptoms of Fuse Failure, 500-Watt Oper-	
5-2	Preliminary Control Positions	5-3		ation	5-8
5-3	Routine Check Chart	5-5	5-6	Fuse Locations	5-9
5-4	Symptoms of Fuse Failure, 100-Watt Oper-		5-7	Spare Fuses	5-10
	ation	5-8	5-8	Tube Locations	5-11
			5-9	Critical Tubes, Adjustment References	5-13



SECTION 5 OPERATOR'S MAINTENANCE

1. INTRODUCTION.

a. GENERAL.—Many of the operator's adjustment and replacement procedures in servicing AN/SRT-14, 15 and 16 may be accomplished directly in front of the equipment. The operator of the equipment, as a matter of routine, is to make the various checks and adjustments suggested in this section. A general view of the AN/SRT-15 is shown in figure 5-1.

Note

The AN/SRT-14A, 15A and 16A are non-magnetic versions of the AN/SRT-14, 15 and 16, respectively. Since the nonmagnetic versions vary from the standard types only in the material used for cabinet panels, all information on the operator's maintenance of the AN/SRT-14, 15 and 16, as set forth in this section, applies equally to the AN/SRT-14A, 15A and 16A.

Note

Where, throughout this section, reference is made to either low level radio modulator or high level radio modulator, it should not be

interpreted as meaning the technique of modulation known as grid modulation or low level modulation, but rather as referring to the operating *power* level.

b. SHORT OR COMMON NAMES.—To facilitate reference to the equipment, certain short or common names will be used in this section. They are identified in table 5-1, Short or Common Names. Most of these short names will be used throughout the text.

2. ROUTINE CHECKS.

a. PRELIMINARY CONTROL POSITIONS. — In checking the equipment, a certain order should be maintained to avoid confusion during the sequence of operations. Table 5-2 gives the basic positions of certain significant controls at the start of these routine checks.

b. ROUTINE CHECK CHART. (*See figure 5-1.*)— At the beginning of each watch, check the components as listed in table 5-3. At this time, the accessible parts of the equipment should be wiped clean with a dry cloth to check moisture and to maintain the appearance of the equipment.

TABLE 5-1. SHORT OR COMMON NAMES

ITEM	COMMON NAME	NOMENCLATURE	SYMBOL NO.
1	Base Mount	Mounting MT-1423/SRT	701-799
2	Coupler	Antenna Coupler CU-372/SRT	3501-3599
3	HLRM (High Level Radio Modulator)	Radio Modulator MD-230/SRT	1601-1699
4	HLRM Cabinet	Electrical Equipment Cabinet CY-1572/SRT	1401-1499
5	HVPS (High Voltage Power Supply)	Power Supply PP-1096/SRT	1501-1599
6	HVPS Cabinet	Electrical Equipment Cabinet CY-1573/SRT	1401-1499
7	LAU (Load Adjusting Unit)	Transmitter Coupler CU-402/SRT	3201-3250
8	LLRM (Low Level Radio Modulator)	Radio Modulator MD-229/SRT	1001-1299
9	LVPS (Low Voltage Power Supply)	Power Supply PP-1094/SRT	3001-3099
10	MVPS (Medium Voltage Power Supply)	Power Supply PP-1095/SRT	501-599
11	RFA (Radio Frequency Amplifier)	Radio Frequency Amplifier AM-1008/SRT	1301-1399
12	RFO (Radio Frequency Oscillator)*	Radio Frequency Oscillator O-275/SRT	2001-2099
13	R-F Tuner	Radio Frequency Tuner TN-229/SRT	301-399
14	100-Watt Frame	Electrical Equipment Cabinet CY-1571/SRT	601-699

* The RFO contains a series of subunits that will be referred to by number. For example, the RFO frame is designated as Z-2901 and referred to as unit 14.

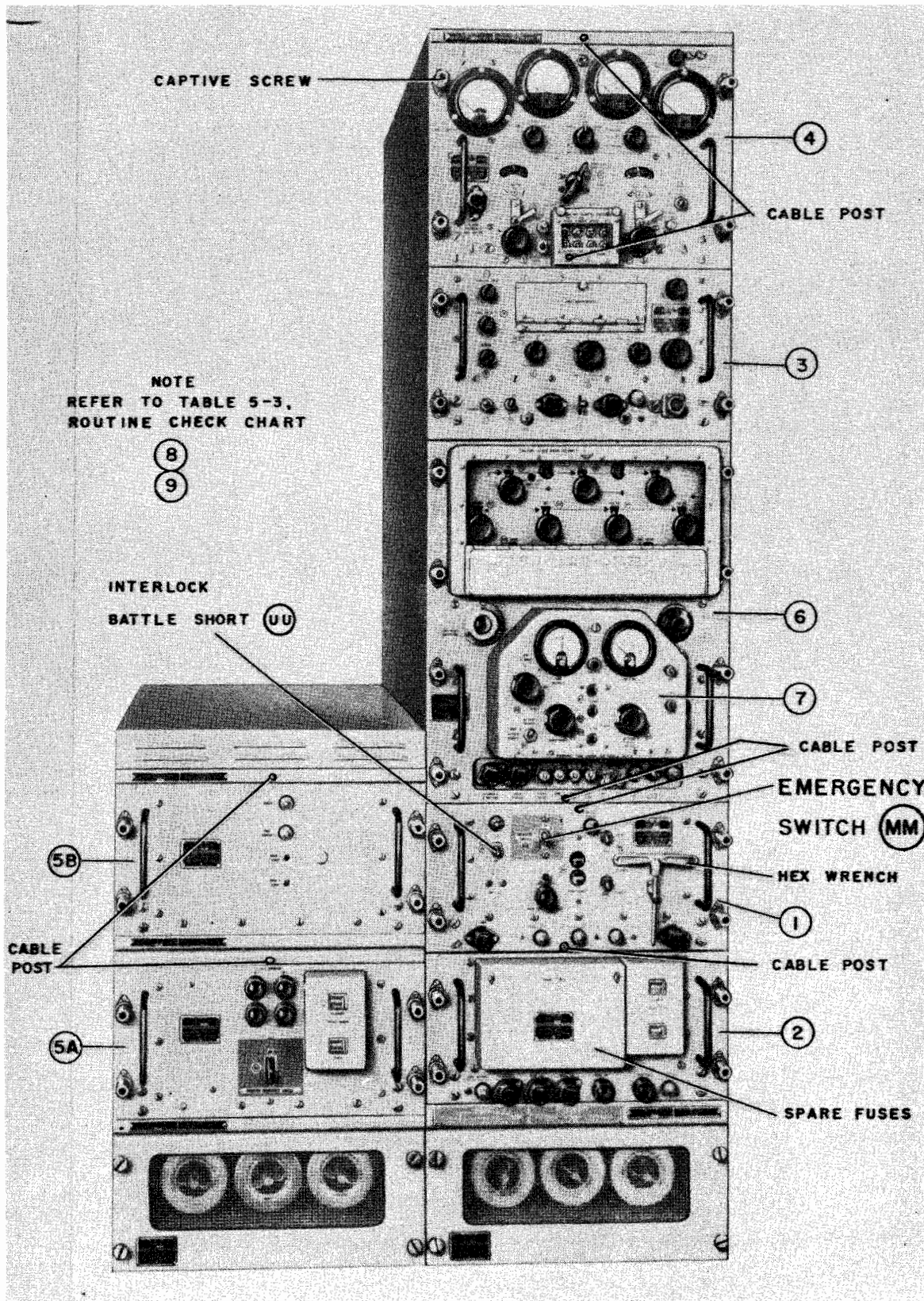


Figure 5-1. AN/SRT-15, Routine Checks

TABLE 5-2. PRELIMINARY CONTROL POSITIONS

ITEM	CONTROL	POSITION	COMPONENT
1	PA switch ①	I _{e1} (50 MA)	Radio Frequency Amplifier AM-1008/SRT (RFA)
2	IPA switch ②	I _{e1} (5 MA)	
3	VOLTMETER switch ③	RF IN (5 V)	
4	INT-OSC-EXT ④	INT	
5	EXCITATION ⑤	180 degrees CW	
6	LOCAL-REM. ⑥	LOCAL	Radio Modulator MD-229/SRT (LLRM)
7	NEUT-POLAR ⑦	NEUT	
8	SPACE-OPER.-MARK ⑧	OPER.	
9	SERVICE SELECTOR ⑨	HAND	
10	TEST KEY ⑩	Off	
11	ZERO ADJ. switch ⑪	Center	Radio Frequency Oscillator O-275/SRT (RFO)
12	Frequency Knobs	Set for 2 mc.	
13	ANTENNA TRANSFER ⑬	BYPASS	Control-Indicator C-1352/SRT
14	SWR CALIBRATE ⑭	OFF	
15	TRANSFORMER ⑮	DIRECT	
16	ANTENNA COUPLER LOADING ⑯	DIRECT	Power Supply PP-1094/SRT (LVPS)
17	EMERGENCY SWITCH ⑰	OFF	
18	INTERLOCK BATTLE SHORT ⑱	OFF	
19	CABINET HEATER ⑲	OFF	
20	OPERATE-STANDBY ⑳	STANDBY	Power Supply PP-1096/SRT (HVPS)
21	BOOSTER EMERGENCY SWITCH ㉑	OFF	

Note

If equipment is already in operation at the time of change-over, check the various indicators noted in table 5-3, item 9 for the 100-watt level and item 10 for the 500-watt level.

The checks in table 5-3 should be made in the numerical sequence established in this chart to avoid confusion concerning the relative positions of the controls. The routine checks are started with the controls in the positions listed in table 5-2.

3. EMERGENCY MAINTENANCE.

a. GENERAL.—The operator should make himself familiar with the equipment in order to correct minor trouble that may develop during periods of emergency. When technical aid is not immediately available, the operator should be able to recognize some of the symptoms that indicate trouble in any of the components.

(1) CHASSIS REMOVAL.—To remove a unit from its drawer, the socket-head captive screws on the front panel (see figure 5-1) must be loosened. These screws are protected by retaining cups. A hex wrench with a T-handle, attached to the front panel of the LVPS (see figure 5-1), is supplied for this purpose.

With these captive screws loosened, the unit may be pulled out for its entire length along the chassis slide runners in the cabinet. The latches, located directly on the slides towards the rear, must be pressed down before the chassis can be lifted out. The latches cannot be pressed down until the two screws under the latches are removed. Two men will be needed to lift any chassis out of its compartment.

Note

Before actually lifting the chassis out of its drawer, its interconnecting cable plug must be removed and fastened to the cable post (see figure 5-1) on the chassis just above, to prevent its springing back into the drawer. If the chassis above the withdrawn unit has been removed, too, this will, of course, be impossible. In the latter case, the cable is to be allowed to retract gently into the vacated drawer recess.

When a drawer is pulled out, two stop buttons are placed in operation, one in each chassis slide. To push the drawer back in, these two spring-loaded stop buttons must be pressed in completely, to clear the inner slide. This will allow the chassis to continue the rest of the way back into its compartment.

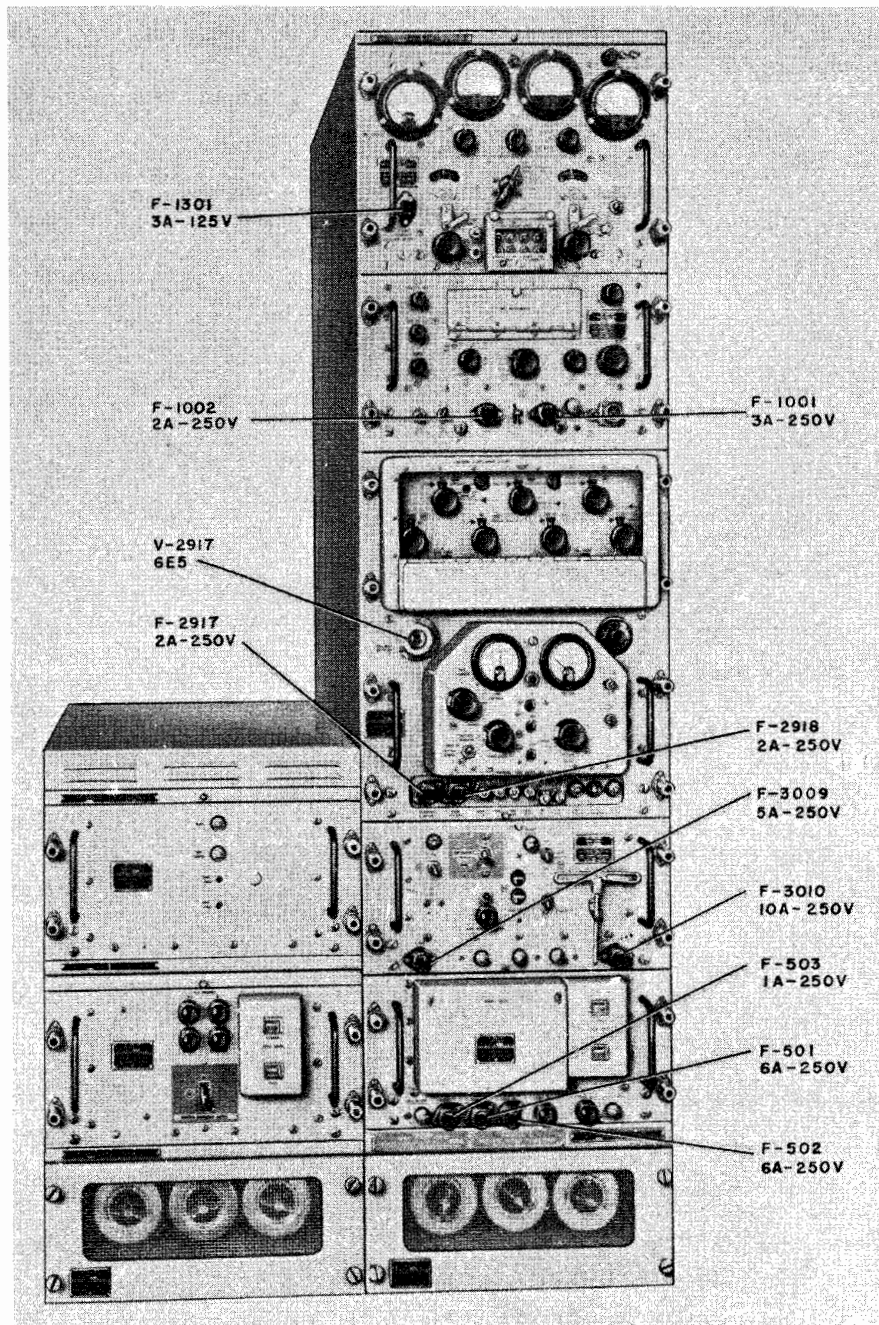



Figure 5-2. AN/SRT-15, Front Panel Tube and Fuse Locations

The interlock continuity is interrupted when the drawer is pulled out. To bypass the interlock, a "cheater" switch has been installed on the left side of each chassis, towards the rear. This switch may be closed to energize the withdrawn chassis. The hard rubber push rod is pushed in to complete the circuit. Another means of circumventing the interlock is provided on the Power Supply PP-1094/SRT (LVPS) front panel in the form of a switch called INTERLOCK BATTLE SHORT . (See figure 5-1.) This bypasses all the interlocks in every chassis.

Note

The INTERLOCK BATTLE SHORT switch is used only under emergency conditions.

(2) CHASSIS REPLACEMENT. — The chassis slides, which are located along the side of each unit, are made in two parts, an inner part and an outer part. Check to be sure that the inner slide is fully engaged in the outer slide before replacing the chassis in its drawer. This will avoid damage to the inner slide. The spring-loaded stop buttons in each of the slides must be depressed to engage the inner slide.

If binding is encountered when replacing a unit, the front of the chassis should be raised slightly and then pushed in.

The EMERGENCY SWITCH (M) on the LVPS must always be turned to OFF before any of the fuses are removed.

Note

The safety screws under the slide latches must be replaced whenever a chassis is returned to its drawer. The front panel hex screws must be securely fastened to prevent the drawer from sliding out unexpectedly.

Most of the fuses are accessible from in front of the equipment (see figure 5-2). Some fuses are available only when the chassis is withdrawn from its compartment (see figure 5-3). This withdrawal procedure is described in this section, paragraph 3a(1). Two of the LVPS fuses are located on the front panel, as shown in figure 5-2. The remainder of the LVPS fuses are located on the left side of the chassis and are available only when the chassis is partially withdrawn (see figure 5-3).

b. FUSES.

(1) FUSE REPLACEMENT.

CAUTION

Never replace a fuse with one of higher rating, unless continued operation of the equipment is more important than possible damage. Never replace a fuse while the power is on.

The fuses for Power Supply PP-1096/SRT (HVPS) are located on terminal boards that are mounted on the chassis towards the rear (see figure 5-4). To remove these fuses, the drawer should be removed from its compartment as described in paragraph 3a(1).

TABLE 5-3. ROUTINE CHECK CHART

WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS
1. Low Voltage Power Supply PP-1094/SRT (LVPS)	(See 1, figure 5-1.) Note Check table 5-2. <i>Step 1.</i> Place EMERGENCY SWITCH (M) in ON position.	Note The HEATER ON lamps on the RFO front panel will be illuminated at all times. They operate intermittently.
	<i>Step 2.</i> Check the CABINET HEATER switch (N) and the INTERLOCK BATTLE SHORT (U). Note Keep these two switches turned off, unless they are actually needed.	The CABINET HEATER lamp and the INTERLOCK SHORTED WHEN ON lamp will be illuminated. If they do not light, check table 5-4, Symptoms of Fuse Failure.
	<i>Step 3.</i> Press START button of MAIN POWER switch (R).	The MAIN POWER INDICATOR will be illuminated and the blower in the RFA will operate. The 250 V. P.S. lamp on the LLRM front panel will be illuminated. After the time delay, the blowers in the base mount will operate and the following lamps will be illuminated: (1) TIME DELAYS (LVPS) (2) -220 V (3) +250 V (4) Overload lamps (RFA) (5) 100 W-READY lamp Note The overload lamps will be extinguished only when trouble is indicated. Press the SCREEN OVERLOAD RESET button (K) on RFA.
2. Medium Voltage Power Supply PP-1095/SRT (MVPS)	(See 2, figure 5-1.) <i>Step 1.</i> Place OPERATE-STANDBY switch (P) (LVPS) in OPERATE.	The following lamps will be illuminated: (1) 500 V PRI. (MVPS) (2) 500 V OUTPUT (3) 1300 V PRI. (4) 1300 V OUTPUT (5) 100 W-ON (RFA) (6) +300 V (LVPS)

TABLE 5-3. ROUTINE CHECK CHART (Cont'd)

WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS
3. Radio Modulator MD-229/SRT (LLRM)	(See 3, figure 5-1.) <i>Step 1.</i> Place SERVICE SELECTOR switch ① in PHONE position.	The +300 V lamp on the LVPS will be extinguished, together with the following: (1) 500 V PRI. (MVPS) (2) 500 V OUTPUT (3) 1300 V PRI. (4) 1300 V OUTPUT
	<i>Step 2.</i> Connect phone to HANDSET jack and close the press-to-talk switch.	The lamps in step 1, above, will be illuminated when the press-to-talk switch is closed. The following meters will indicate: (1) ANT CURRENT (RFA) (2) PA CURRENT (3) IPA CURRENT (4) VOLTMETER
	<i>Step 3.</i> Check sidetone by varying the SIDETONE control while modulating the carrier.	The SIDETONE control is adjusted to the individual need.
	<i>Step 4.</i> Check modulation by watching the ANT CURRENT meter.	The ANT CURRENT meter will show variations during modulation.
	<i>Step 5.</i> Release the press-to-talk key on the phone and press the TEST KEY ⑦.	The result will be the same as in step 2.
	<i>Step 6.</i> Place SERVICE SELECTOR switch ①, successively, in FAX and FSK. Press the TEST KEY ⑦ in each position.	The result will be the same as in step 2.
	<i>Step 7.</i> Place SERVICE SELECTOR switch ① in MACH position.	The lamps which were extinguished in step 1 will remain illuminated, even without pressing the TEST KEY ⑦.
	<i>Step 8.</i> Press TEST KEY ⑦ and place SPACE-OPER.-MARK switch ⑤ in MARK.	The meters on the RFA will indicate normal operation. Restore TEST KEY ⑦ to center position.
4. Radio Frequency Amplifier AM-1008/SRT (RFA)	(See 4, figure 5-1.) <i>Step 1.</i> Listen for blower operation in rear of RFA.	The RFA blower is on at all times during operation of equipment.
	<i>Step 2.</i> Place VOLTMETER control ④ in BIAS (500 V).	The VOLTMETER will show a reading without energizing the TEST KEY ⑦ on the LLRM.
	<i>Step 3.</i> Place VOLTMETER control ④ in its various positions.	The VOLTMETER will show a different reading in each position. If no reading is seen, try turning the EXCITATION control ② clockwise.
	<i>Step 4.</i> With TEST KEY ⑦ energized, place the METER SELECTOR controls in their various positions.	The meters that correspond to the controls will vary with each setting.
	<i>Step 5.</i> With TEST KEY ⑦ energized, check to be sure transmitter is on-frequency.	If off-frequency, check correct operation of units 1, 6, 8, and 12 of the RFO.
5. Booster a. Power Supply PP-1096/SRT (HVPS)	(See 5, figure 5-1.) <i>Step 1.</i> Place the BOOSTER EMERGENCY SWITCH ⑤ in its ON position.	After time delay, the TIME DELAY lamp on the HVPS will be illuminated.

TABLE 5-3. ROUTINE CHECK CHART (Cont'd)

WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS
b. Radio Modulator MD-230/SRT (HLRM)	Step 2. Press the PUSH FOR 500 W switch Ⓔ on the RFA.	The following lamps will be illuminated: (1) $\phi 1$ (HVPS) (2) $\phi 2$ (3) H.V. $\phi 3$ (4) 3000 VOLTS (HLRM) (5) 500 W-READY (RFA) (6) 500 W-ON At the same time, the following lamps will be extinguished: (1) 1300 V PRI. (MVPS) (2) 1300 V OUTPUT (3) 100 W-READY (RFA) (4) 100 W-ON
	Step 3. Press the DISABLE 500 W push button switch Ⓕ on the RFA.	The results obtained in step 2, above, will be reversed.
6. Radio Frequency Oscillator O-275/SRT (RFO)	(See 6, figure 5-1.) HEATER ON lamps should be illuminated intermittently even when equipment is not energized.	Check table 5-4, Symptoms of Fuse Failure, if these lamps do not light.
7. Control-Indicator C-1352/SRT	(See 7, figure 5-1.) Place ANTENNA TRANSFER switch Ⓖ in TUNER IN position.	The TUNER IN lamp will be illuminated. Now restore switch to BY-PASS.
8. Radio Frequency Tuner TN-229/SRT and Antenna Coupler CU-372/SRT Pressure Gauges	If the r-f tuner and antenna coupler are readily accessible, check readings on pressure gauges.	Each gauge should read 20 psi. Refer to paragraph 3e for pressurizing information.
9. 100-watt Operation	With the equipment operating at the 100-watt level, check the following key indicators: a. 250 V. P.S. (LLRM) b. MAIN POWER INDICATOR (LVPS) c. 500 V OUTPUT (MVPS) d. 1300 V OUTPUT	If any of these lamps is not illuminated at the 100-watt level, check table 5-4, Symptoms of Fuse Failure—100-watt Operation.
10. 500-watt Operation	With the equipment operating at the 500-watt level, check the following key indicators: a. TIME DELAY (HVPS) b. $\phi 1$ c. $\phi 2$ d. H.V. $\phi 3$ e. 3000 V (HLRM)	Note BAND SWITCH Ⓒ must be in 2-5 MC position. If any of these lamps is not illuminated at the 500-watt level, check table 5-5, Symptoms of Fuse Failure—500 Watt Operation.

Notice to Operators

OPERATORS MUST NOT PERFORM THIS WORK UNLESS SPECIFICALLY AUTHORIZED.

Example: In the body of the table, it will be noted that F-1301 and F-2917 have the same general symptoms. The correct fuse is located by checking the "Comments" column.

(2) SYMPTOMS OF FUSE FAILURE, 100-WATT OPERATION.—Table 5-4 has been compiled to enable the operator to check for blown fuses when the equipment is operating at the 100-watt level. The operator will check fuses on the same horizontal line as the indicators designated as "OFF" in the body of the table. In some cases, the main symptoms are the same for several fuses. To avoid such conflict, the "Comments" column is consulted in order to locate the faulty fuse.

Note

Refer to table 5-1 for nomenclature. The lamps utilized in table 5-4 are lamps which have a definite significance in regard to fuse failure. Other lamps that may be illuminated at this time are not pertinent to this procedure.

TABLE 5-4. SYMPTOMS OF FUSE FAILURE, 100-WATT OPERATION

LLRM	RFO	LVPS		MVPS		BLOWN FUSE	VALUE—AMPS	COMMENTS
		MAIN POWER INDICATOR	CABINET HEATER	500 V OUTPUT	1300 V OUTPUT			
*ON	ON	ON	ON	ON	ON	—	—	See figures 5-2 and 5-3 for fuse locations.
				OFF		F-501 (MVPS)	6	Press TEST KEY (T). Only VOLTME-TER on RFA will indicate.
					OFF	F-502	6	Press TEST KEY (T). ANT CURRENT meter will not indicate.
				OFF	OFF	F-503	1	Press TEST KEY (T). All RFA panel meters will indicate.
OFF						F-1001 (LLRM)	3	
						F-1002	2	
						F-1301 (RFA)	3	Press TEST KEY (T). Only VOLTME-TER of RFA front panel meters will indicate.
						F-2917 (RFO)	2	TUNING POSITION meter on control-indicator will operate at slow speed only.
	OFF					F-2918	2	The HEATER ON lamps operate intermittently. Be sure to check operation before condemning fuse.
			OFF			F-3001 (LVPS)	10	Place CABINET HEATER switch (M) in ON position. Lamp will fail to light. Check both fuses.
						F-3002	10	
						F-3003	5	These fuses have been installed in an internal circuit (not active).
						F-3004	5	
OFF				OFF	OFF	F-3005	6	Check both fuses.
						F-3006	6	
OFF		OFF		OFF	OFF	F-3007	1	Check both fuses.
						F-3008	1	
				OFF	OFF	F-3009	5	Press TEST KEY (T). None of the RFA front panel meters will indicate. Check both fuses.
						F-3010	10	

* Top line shows normal operating conditions. Check any deviation from normal. In some cases, the lamp may be defective, missing, or loose.

TABLE 5-5. SYMPTOMS OF FUSE FAILURE, 500-WATT OPERATION

HLRM	HVPS				440-VOLT INPUT		220-VOLT INPUT		COMMENTS
	TIME DELAY	φ1	φ2	H.V. φ3	BLOWN FUSE	VALUE—AMPS	BLOWN FUSE	VALUE—AMPS	
3000 V									
*ON	ON	ON	ON	ON	—	—			See figure 5-4 for HVPS fuse locations.
				OFF	F-1501	3½	F-1506	6¼	F-1501 through F-1505, inclusive, are used with the 440-volt input. F-1506 through F-1510, inclusive, are used with the 220-volt input.
			OFF		F-1502	3½	F-1507	6¼	
		OFF			F-1503	3½	F-1508	6¼	
OFF	OFF	OFF	OFF	OFF	F-1504	3½	F-1509	6¼	F-1504, F-1505, F-1509, and F-1510 produce the same general symptoms.
OFF	OFF	OFF	OFF	OFF	F-1505	3½	F-1510	6¼	

* Top row shows normal operation. Any deviation from normal is to be investigated. In some cases, the lamp itself may be defective, missing or loose in its socket.

(3) SYMPTOMS OF FUSE FAILURE, 500-WATT OPERATION.—Table 5-5 is used to assist the operator in locating blown fuses when the equipment is in 500-watt operation. Check the indicators designated as "OFF" in the body of the table; this will identify the faulty fuse on the same horizontal line.

Example: If the indicator lamp designated as "ϕ1" on the HVPS is the only lamp which is "OFF" (extinguished), the faulty fuse will be F-1503 or F-1508. These fuses perform the same function, depending on the voltage input.

Note

Refer to table 5-1 for nomenclature. The lamps utilized in table 5-5 have been chosen for

their special significance in locating fuse failures. Other lamps which may be illuminated at this time are not pertinent to this procedure.

(4) FUSE LOCATIONS.—Table 5-6 will enable the operator to locate the positions of the various fuses in the equipment.

(5) SPARE FUSES.—Table 5-7 is a list of the spare fuses supplied with the equipment. A box of spare fuses is located on the front panel of the Medium Voltage Power Supply PP-1095/SRT (MVPS). (See figure 5-1.)

TABLE 5-6. FUSE LOCATIONS

LOCATION	SYMBOL	PROTECTS	AMPS	VOLTS	TYPE
Power Supply PP-1095/SRT (MVPS) (See figure 5-2.)	F-501	T-500; 500-volt supply	6	250	F09G6R00B
	F-502	T-503; 1,050-1,300-volt supply	6	250	F09G6R00B
	F-503	T-502	1	250	R09G1R00B
Radio Modulator MD-229/SRT (LLRM) (See figure 5-2.)	F-1001	T-1001; 250-volt regulated supply	3	250	F09G3R00B
	F-1002	T-1002; filament supply	2	250	R09G2R00B
Radio Frequency Amplifier AM-1008/ SRT (RFA) (See figure 5-2.)	F-1301	B-1306; T-1302	3	125	R09G3R00B
Power Supply PP-1096/SRT (HVPS) (See figure 5-4.)	F-1501	Phase 1, 440 volts	3½	600	FRS 3½
	F-1502	Phase 2, 440 volts	3½	600	FRS 3½
	F-1503	Phase 3, 440 volts	3½	600	FRS 3½
	F-1504	T-1501, 440 volts	3½	600	FRS 3½
	F-1505	T-1501, 440 volts	3½	600	FRS 3½
	F-1506	Phase 1, 220 volts	6¼	600	FRS 6¼
	F-1507	Phase 2, 220 volts	6¼	600	FRS 6¼
	F-1508	Phase 3, 220 volts	6¼	600	FRS 6¼
	F-1509	T-1501, 220 volts	6¼	600	FRS 6¼
	F-1510	T-1501, 220 volts	6¼	600	FRS 6¼
Radio Frequency Oscillator O-275/ SRT (RFO) (See figure 5-2.)	F-2917	Filaments and tuner motors	2	250	F09G2R00B
	F-2918	Oven heaters	2	250	F09G2R00B
Power Supply PP-1094/SRT (LVPS) (See figure 5-3.) (See figure 5-2.)	F-3001	Cabinet heater	10	250	F09D10R0B
	F-3002	Cabinet heater	10	250	F09D10R0B
	F-3003	Fused a-c line	5	250	F09G5R00B
	F-3004	Fused a-c line	5	250	F09G5R00B
	F-3005	Main a-c line	15	250	F09G15R0A
	F-3006	Main a-c line	15	250	F09G15R0A
	F-3007	Input a-c line	1	250	F09G1R00B
	F-3008	Input a-c line	1	250	F09G1R00B
	F-3009	T-3001	5	250	F09G5R00B
	F-3010	CR-3001; CR-3003; -24-volt control	10	250	F09D10R0B

TABLE 5-7. SPARE FUSES

SPARES FOR	NO. OF SPARES	AMPS	VOLTS	TYPE
F-501	3	6	250	F09G6R00B
F-503	2	1	250	F09G1R00B
F-1301	3	3	250	F09G3R00B
F-2917	4	2	250	F09G2R00B
F-3001	4	10	125	F09D10R0B
F-3003	4	5	250	F09G5R00B
F-3005	3	15	250	F09G15R0A

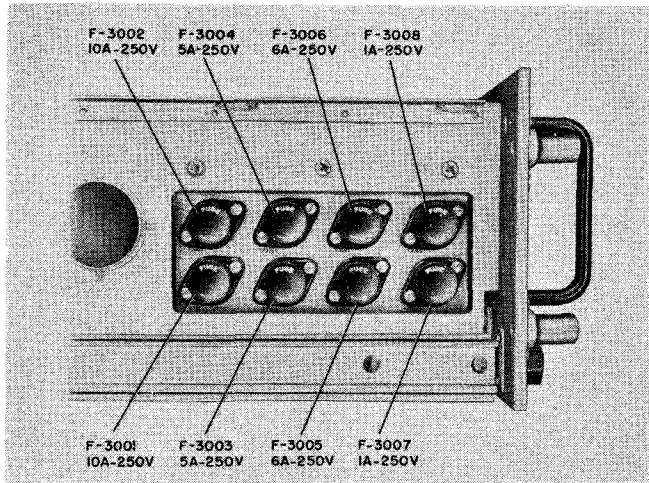


Figure 5-3. Power Supply PP-1094/SRT (LVPS), Left Side Panel, Fuse Locations

(6) UNITS WITHOUT FUSES.—The following units contain no fuses.

- (a) Radio Frequency Tuner TN-229/SRT (R-F Tuner)
- (b) Control-Indicator C-1352/SRT
- (c) Antenna Coupler CU-372/SRT (Coupler)
- (d) Transmitter Coupler CU-402/SRT (LAU)

- (e) Mounting MT-1423/SRT (Base Mount)
 - (f) Radio Modulator MD-230/SRT (HLRM)
- c. TUBES.

(1) TUBE LOCATIONS.—Table 5-8 is a list of the tubes, with illustration references that will enable the operator to locate the tubes in the equipment. The tubes are listed in order of their numerical symbols, from the lowest number, V-501 (MVPS), through the highest number, V-3003 (LVPS).

(2) PA TUBE V-1304.

(a) REMOVING THE PA TUBE. (See figure 5-14.)—The following procedure is followed in removing the power amplifier tube, V-1304 (4-400A):

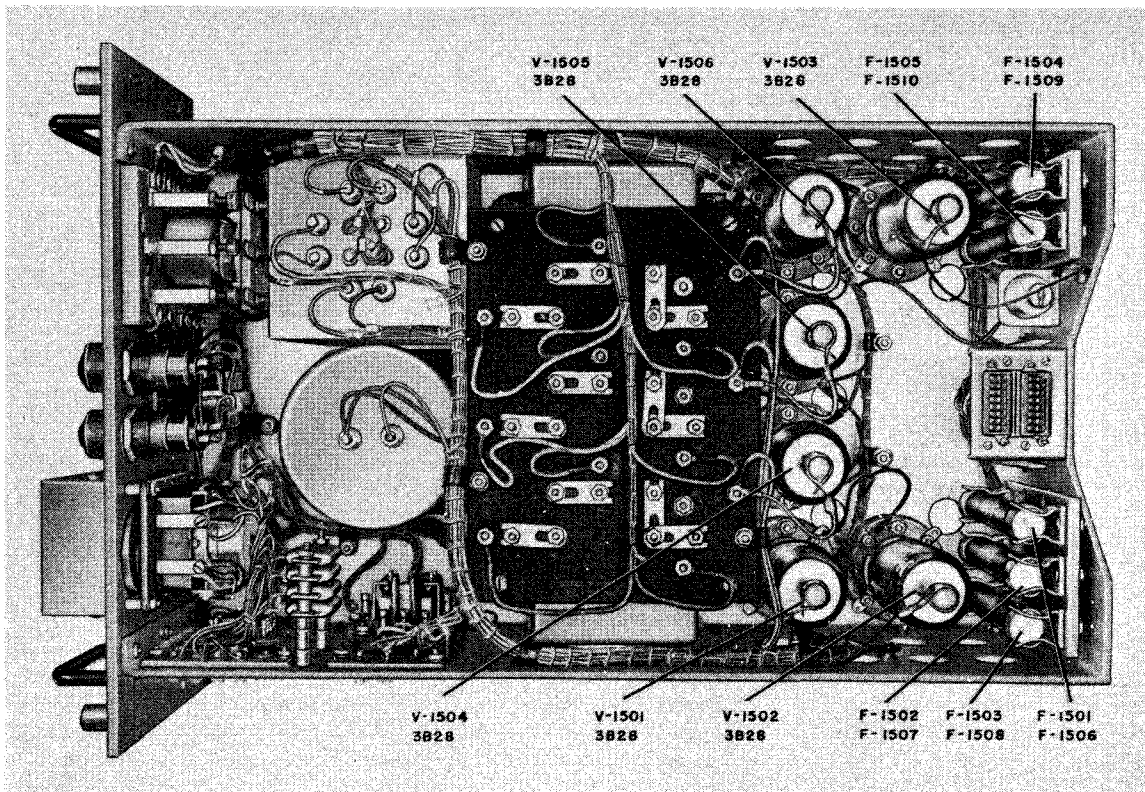


Figure 5-4. Power Supply PP-1096/SRT (HVPS), Top View, Tube and Fuse Locations

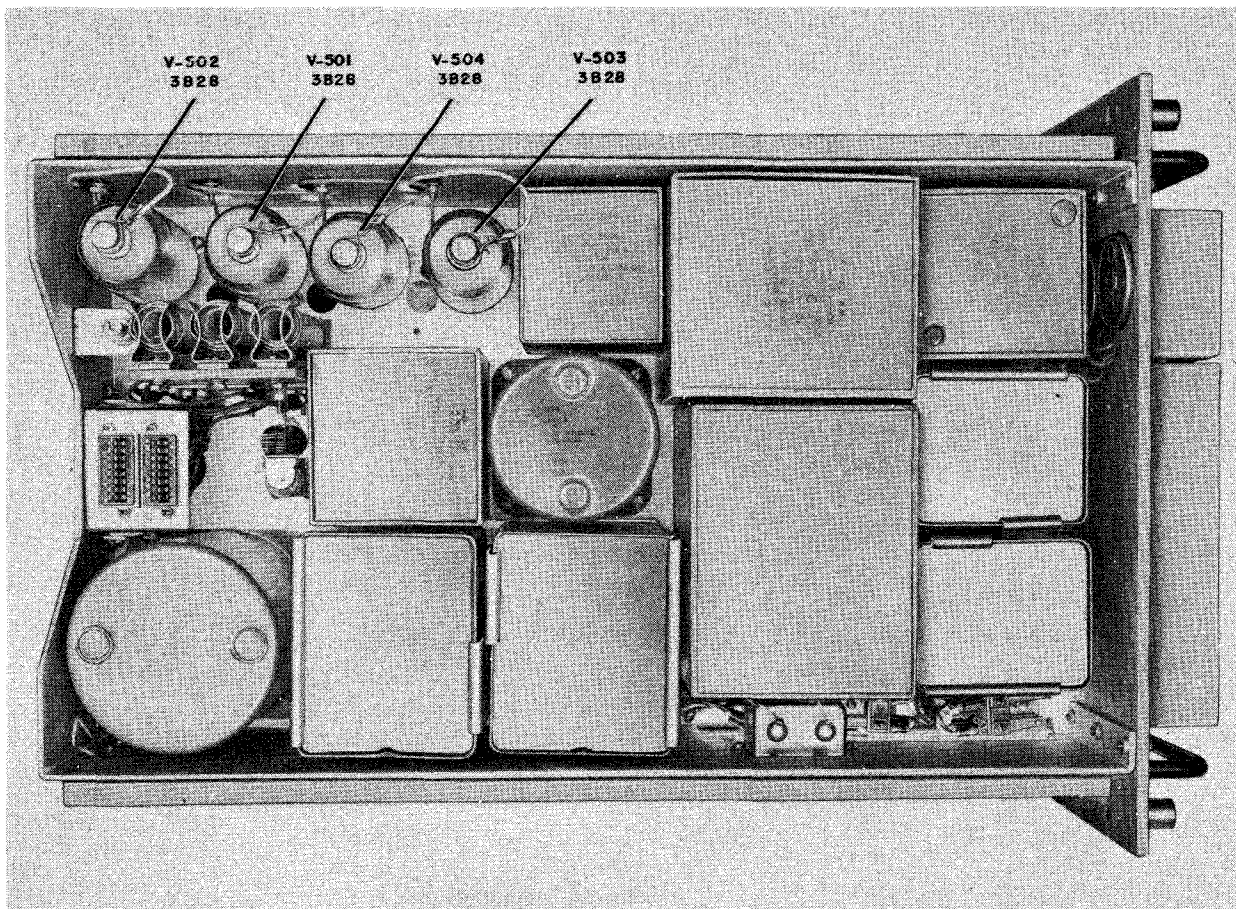


Figure 5-5. Power Supply PP-1095/SRT (MVPS), Top View, Tube Locations

TABLE 5-8. TUBE LOCATIONS

	SYMBOL	TYPE	SYMBOL	TYPE
1.	Power Supply PP-1095/SRT (MVPS). (See figure 5-5.)			
	V-501	3B28	V-503	3B28
	V-502	3B28	V-504	3B28
2.	Radio Modulator MD-229/SRT (LLRM). See figure 5-6.)			
	V-1001	5725	V-1013	5726
	V-1002	5751	V-1014	5726
	V-1003	5751	V-1015	6201
	V-1004	5814	V-1016	5726
	V-1005	5814	V-1017	6201
	V-1006	5933	V-1018	5726
	V-1007	5933	V-1019	6201
	V-1008	5814	V-1020	6201
	V-1009	5R4WGB	V-1021	0B2
	V-1010	6AS7G	V-1022	0B2
	V-1011	5751	V-1023	6201
	V-1012	5651		

TABLE 5-8. TUBE LOCATIONS (Cont'd)

	SYMBOL	TYPE	SYMBOL	TYPE
3.	Radio Frequency Amplifier AM-1008/SRT (RFA). (See figure 5-7.)			
	V-1301	6AG7	V-1303	0A2
	V-1302	5933	V-1304	*4-400A
4.	Power Supply PP-1096/SRT (HVPS). (See figure 5-4.)			
	V-1501	3B28	V-1504	3B28
	V-1502	3B28	V-1505	3B28
	V-1503	3B28	V-1506	3B28
5.	Radio Modulator MD-230/SRT (HLRM). (See figure 5-8.)			
	V-1601	4D21	V-1604	0B2
	V-1602	4D21	V-1605	0B2
	V-1603	0A2		
6.	Radio Frequency Oscillator Z-2001 (RFO-Unit 1). (See figure 5-9.)			
	V-2001	5654	V-2003	5814
	V-2002	5814		

* In emergencies, tube type 5D21 may be used, if available, in place of the 4-400A, but only at the 100-watt level.

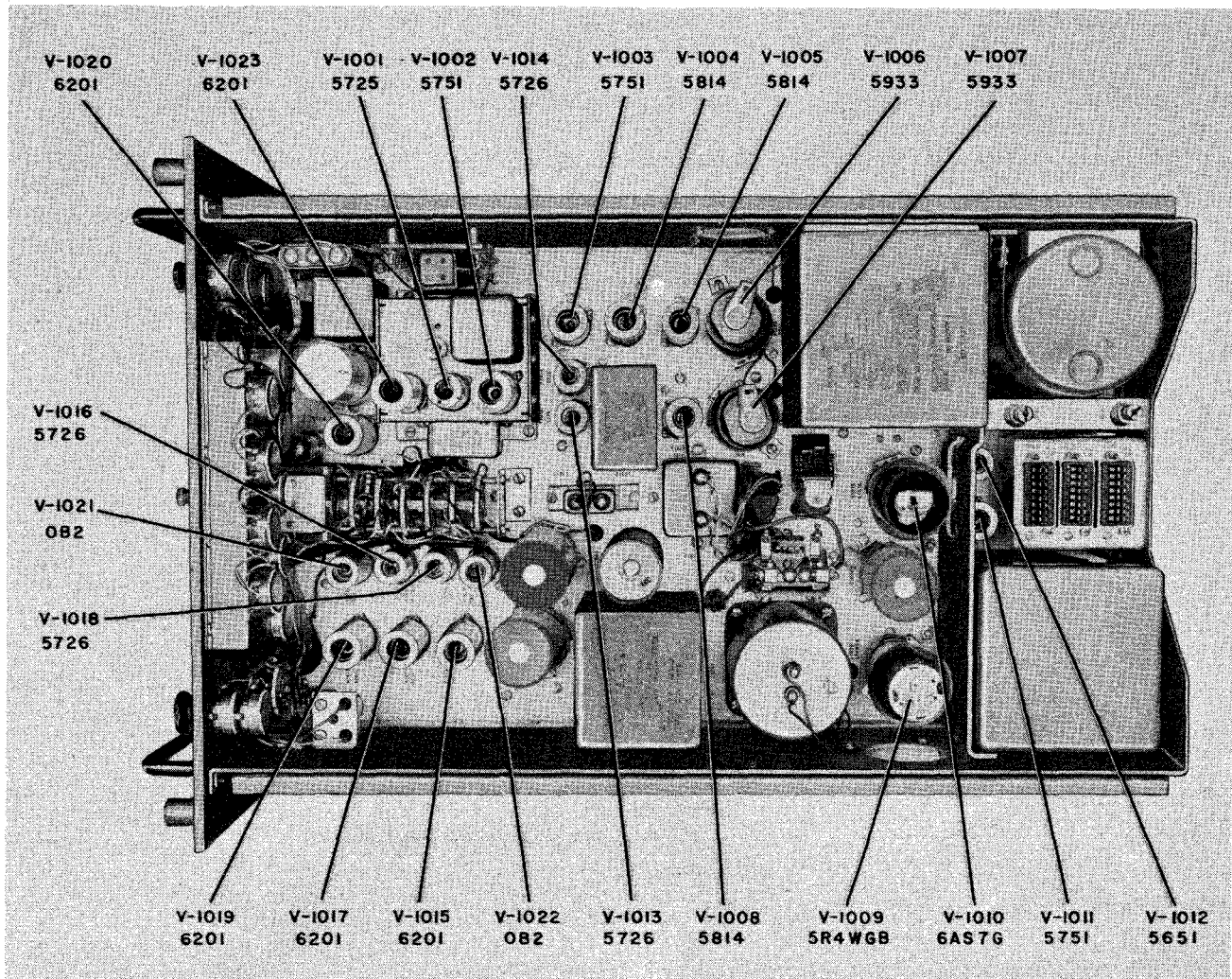


Figure 5-6. Radio Modulator MD-229/SRT (LLRM), Top View, Tube Locations

TABLE 5-8. TUBE LOCATIONS (Cont'd)

	SYMBOL	TYPE	SYMBOL	TYPE
7.	Frequency Multiplier Z-2034 (RFO-Unit 2). (See figure 5-9.)			
	V-2031	5654	V-2033	5814
	V-2032	5654	V-2034	5814
8.	Radio Frequency Oscillator Z-2053 (RFO-Unit 3). (See figure 5-10.)			
	V-2051	6AK6		
9.	Frequency Multiplier Z-2103 (RFO-Unit 4). (See figure 5-9.)			
	V-2101	5654	V-2102	5654
10.	Radio Frequency Oscillator Z-2127 (RFO-Unit 12). (See figure 5-9.)			
	V-2126	6AG5	V-2128	6AK6
	V-2127	6AG5		

TABLE 5-8. TUBE LOCATIONS (Cont'd)

	SYMBOL	TYPE	SYMBOL	TYPE
11.	Electron Frequency Converter Z-2158 (RFO-Unit 5). (See figure 5-9.)			
	V-2151	5725	V-2153	5725
	V-2152	5725	V-2154	5654
12.	Electron Frequency Converter Z-2204 (RFO-Unit 6). (See figure 5-10.)			
	V-2201	5654	V-2206	5725
	V-2202	12AU7	V-2207	5725
	V-2203	5725	V-2208	5654
	V-2204	5654	V-2209	5654
	V-2205	6AK6		
13.	Frequency Multiplier Z-2305 (RFO-Unit 7). (See figure 5-9.)			
	V-2301	5654	V-2303	5654
	V-2302	5654	V-2304	5654

TABLE 5-8. TUBE LOCATIONS (Cont'd)

	SYMBOL	TYPE	SYMBOL	TYPE
14.	Electron Frequency Converter Z-2330 (RFO—Unit 8). (See figure 5-11.)			
	V-2326	6201	V-2331	5725
	V-2327	5725	V-2332	5654
	V-2328	5654	V-2333	5654
	V-2329	6AK6	V-2334	6AK6
	V-2330	5725		
15.	Electron Frequency Converter Z-2426 (RFO—Unit 9). (See figure 5-11.)			
	V-2426	5725	V-2428	5654
	V-2427	5654	V-2429	6AK6
16.	Frequency Multiplier Z-2526 (RFO—Unit 10). (See figure 5-11.)			
	V-2526	5654	V-2528	5654
	V-2527	5654	V-2529	5654
17.	Electron Frequency Converter Z-2626 (RFO—Unit 11A). (See figure 5-12.)			
	V-2626	5725	V-2628	5654
	V-2627	5654	V-2629	5687
18.	Electron Frequency Converter Z-2651 (RFO—Unit 11B). (See figure 5-10.)			
	V-2651	5725	V-2653	5654
	V-2652	5654	V-2654	6AK6
19.	Electron Frequency Converter Z-2801 (RFO—Unit 11C). (See figure 5-10.)			
	V-2801	5725	V-2803	5654
	V-2802	5654	V-2804	6AK6
20.	Mounting Z-2901 (RFO—Unit 14). (See figure 5-2.)			
	V-2917	6E5		
21.	Power Supply PP-1094/SRT (LVPS). (See figure 5-13.)			
	V-3001	5R4WGB	V-3003	5R3WGB
	V-3002	5R4WGB		

Step 1. Short the plate to ground.

Step 2. Loosen the holding screw on top of the plate cap radiator and slip the clip off the plate cap.

Step 3. Release the three captive screws holding the glass chimney and remove the chimney.

Step 4. Loosen the two tube-clamp screws and the clamp adjustment screw.

Step 5. Turn the tube-clamp to clear the two tube-clamp screws and remove the tube.

Note

The plate cap radiator is removed and re-used on the replacement tube. A socket wrench,

provided for this purpose, is attached to the right side of the chassis, forward. (See figure 5-7.)

(b) REPLACING THE PA TUBE.—Replace this tube by simply reversing the removal procedure described in preceding paragraph 3c(2)(a).

(3) REMOVING THE IPA TUBES V-1301 AND V-1302. (See figure 5-7.)—The voltage regulator tube, V-1303, requires no special removal procedure. The other tubes in the Radio Frequency Amplifier are part of the IPA subassembly. These tubes are V-1301 and V-1302. The subassembly cover plate must be removed to gain access to these tubes. V-1302 must be removed before V-1301 can be reached.

Note

The subassembly cover plate has already been removed as seen in figure 5-7 to show the tubes.

(4) CRITICAL TUBES, ADJUSTMENT REFERENCES.—In some of the critical circuits in the Radio Frequency Oscillator O-275/SRT (RFO), certain adjustments may be required after a critical tube has been changed. Table 5-9 is a list of these critical tubes with a reference to the adjustments needed.

TABLE 5-9. CRITICAL TUBES, ADJUSTMENT REFERENCES

RFO UNIT	TUBE SYMBOL	FIGURE REFERENCE	SECTION AND PARAGRAPH REFERENCE
1.	V-2001	5-9	Section 6, paragraph 4g(1)(a)
3.	V-2051	5-10	Section 6, paragraph 4g(2)(a)
6.	V-2202	5-10	Section 6, paragraph 4g(3)(a)
	V-2203	5-10	Section 6, paragraph 4g(3)(b)
	V-2204		
	V-2205		
8.	V-2327	5-11	Section 6, paragraph 4g(4)(a)
	V-2328		
	V-2329		
	V-2330	5-11	Section 6, paragraph 4g(4)(b)
12.	V-2331		
	V-2126	5-9	Section 6, paragraph 4g(5)(a)
	V-2127		
	V-2128		

(5) UNITS WITHOUT TUBES.—The following units contain no tubes:

(a) Radio Frequency Tuner TN-229/SRT (R-F Tuner)

(b) Control-Indicator C-1352/SRT

(c) Antenna Coupler CU-372/SRT (Coupler)

(d) Transmitter Coupler CU-402/SRT (LAU)

(e) Mounting MT-1423/SRT (Base Mount)

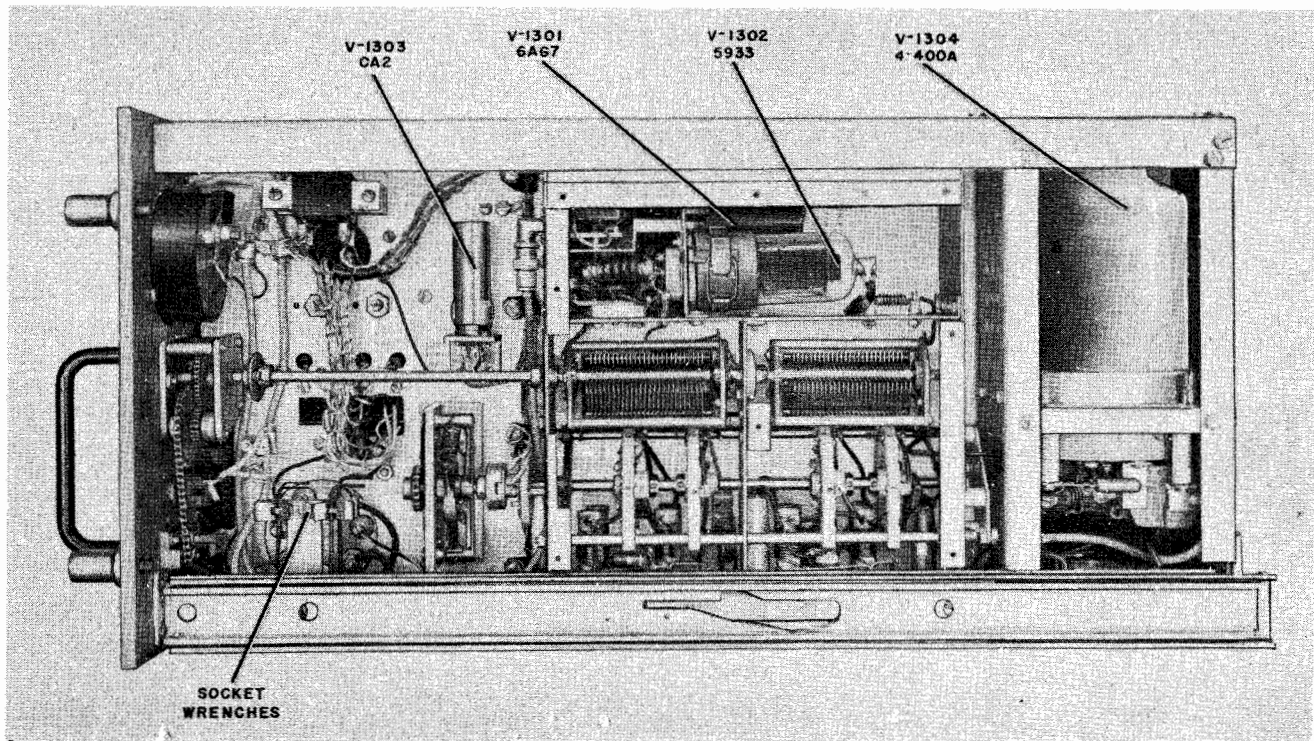


Figure 5-7. Radio Frequency Amplifier AM-1008/SRT (RFA), Right Side, Tube Locations

d. SHUTDOWN PROCEDURE. — The equipment may be completely shut down at the front panel of Power Supply PP-1094/SRT (LVPS) by simply placing EMERGENCY SWITCH (M) in the OFF position. (See figure 5-2.)

Note

With the EMERGENCY SWITCH (M) in its OFF position, all the lamps, except the HEATER ON lamps, will be extinguished.

e. PRESSURIZING THE R-F TUNER AND COUPLER.—When it becomes necessary to recharge either of these units, it is important that only fresh, dry gas be used. Refer to Section 7 for recharging, purging, and exhausting procedures.

f. CHARGING R-F TUNER OR COUPLER. (See figure 5-15.)—When pressure in the r-f tuner or the coupler falls below 15 psi, it will be necessary to add more nitrogen to bring the pressure up to its normal 20 psi. A method for charging these units follows:

Note

This procedure, with its accompanying illustration, pertains to the r-f tuner. However, the antenna coupler is treated in exactly the same manner.

Step 1. Check the regulator (1) to be sure that the adjusting screw (2) and the needle valve (3) are closed at this time.

Step 2. Fasten the delivery hose (4) securely to the regulator (1) by means of the hose coupling nut (5).

Step 3. Attach the regulator (1) to the gas cylinder and secure the hexagonal inlet coupling nut (6).

Step 4. Connect the delivery hose (4) to the r-f tuner intake valve (7).

Step 5. Open the cylinder valve (8).

Note

With a full 9-cubic foot nitrogen gas cylinder, the cylinder-pressure gauge (9) on the regulator (1) should read about 1,600 psi.

Step 6. Open the adjusting screw (2) until the delivery-pressure gauge (10) reads 20 psi.

Note

The exhaust valve (11) is not used, except for purging or exhausting the cylinder as outlined in Section 7.

Step 7. Open the needle valve (3) and bring the r-f tuner pressure up to 20 psi as indicated on the r-f tuner pressure gauge (12). When the desired pressure is attained, the cylinder valve (8) is closed. The regulator (1) may then be removed from the gas cylinder.

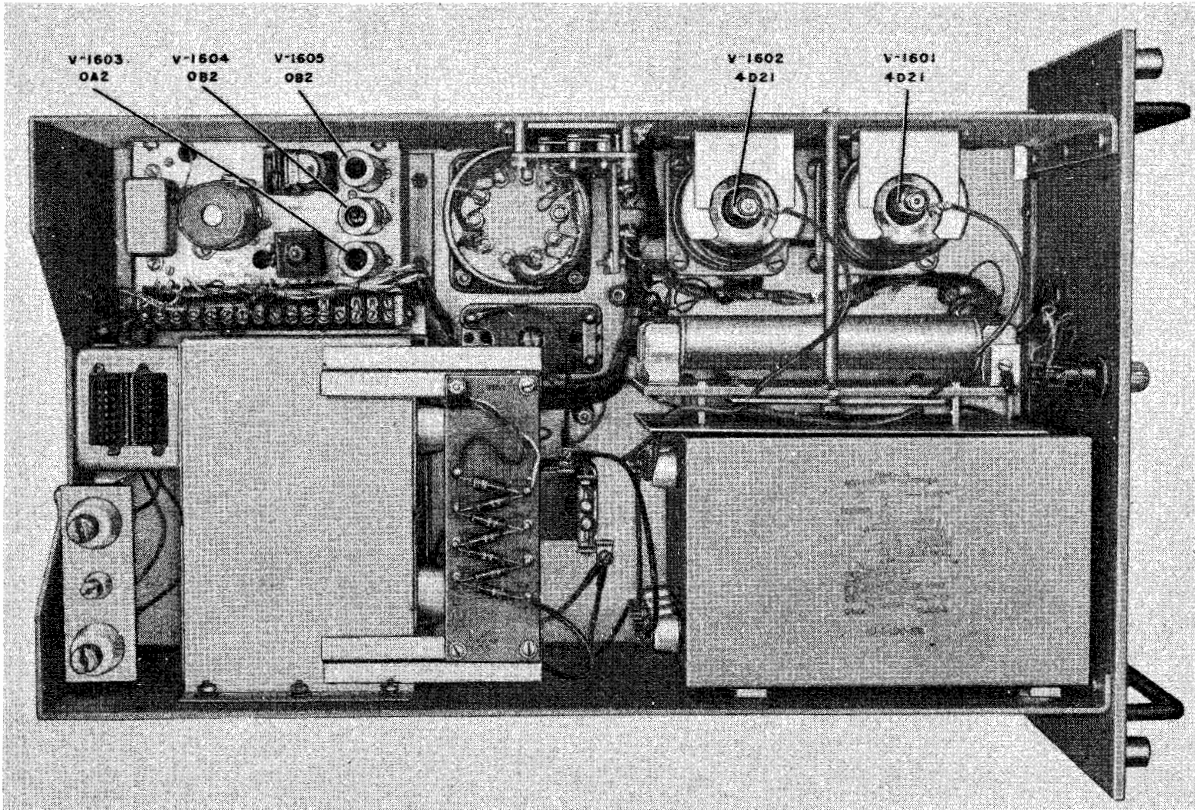


Figure 5-8. Radio Modulator MD-230/SRT (HLRM), Top View, Tube Locations

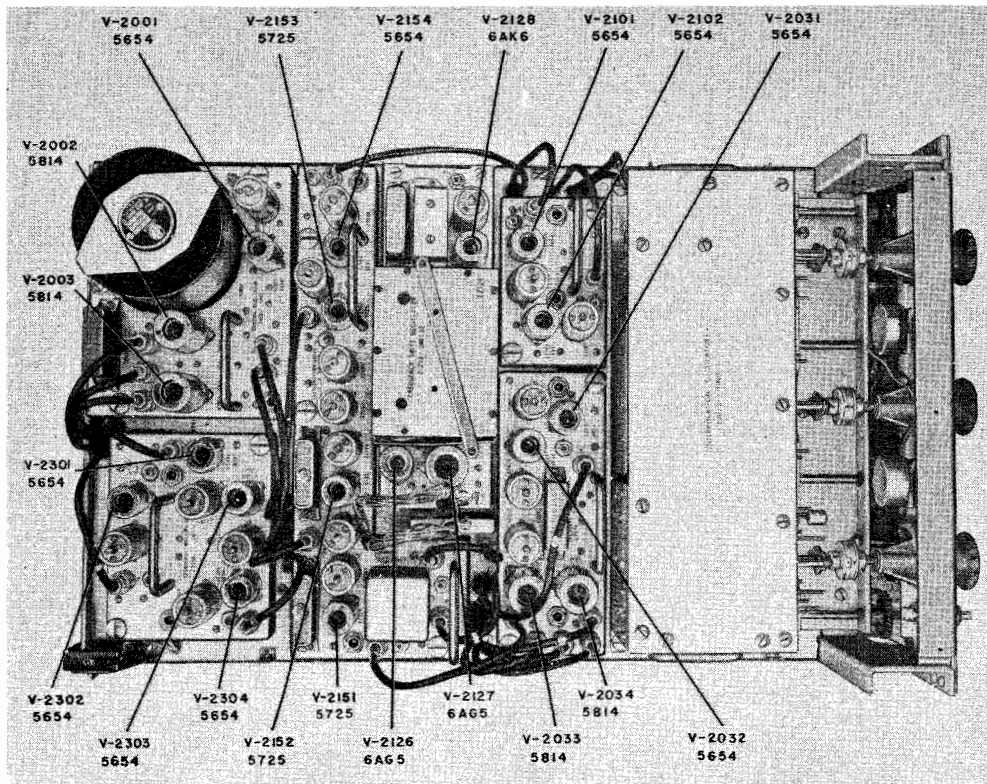


Figure 5-9. Radio Frequency Oscillator O-275/SRT (RFO), Top View, Tube Locations

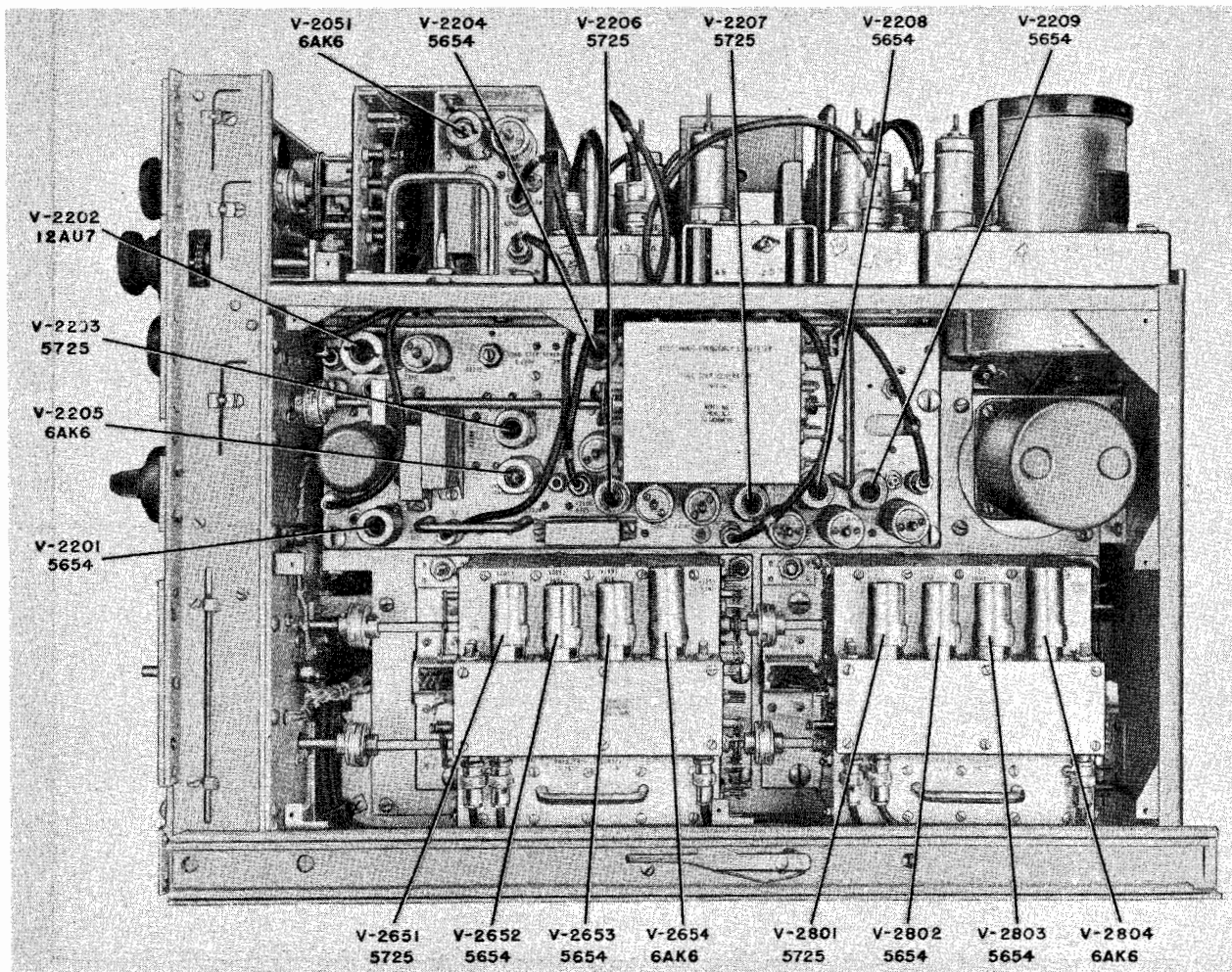


Figure 5-10. Radio Frequency Oscillator O-275/SRT (RFO), Right Side, Tube Locations

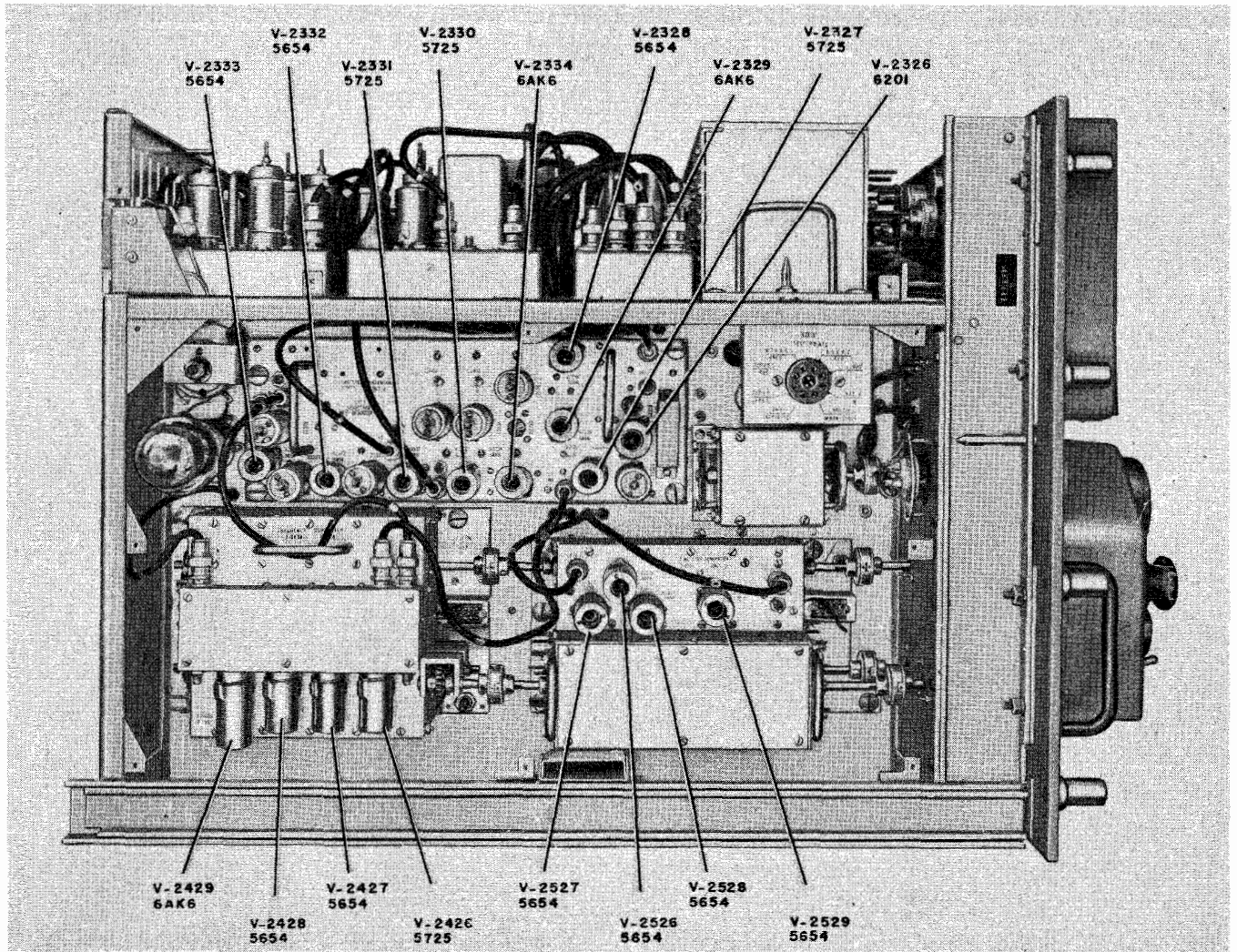


Figure 5-11. Radio Frequency Oscillator O-275/SRT (RFO), Left Side, Tube Locations

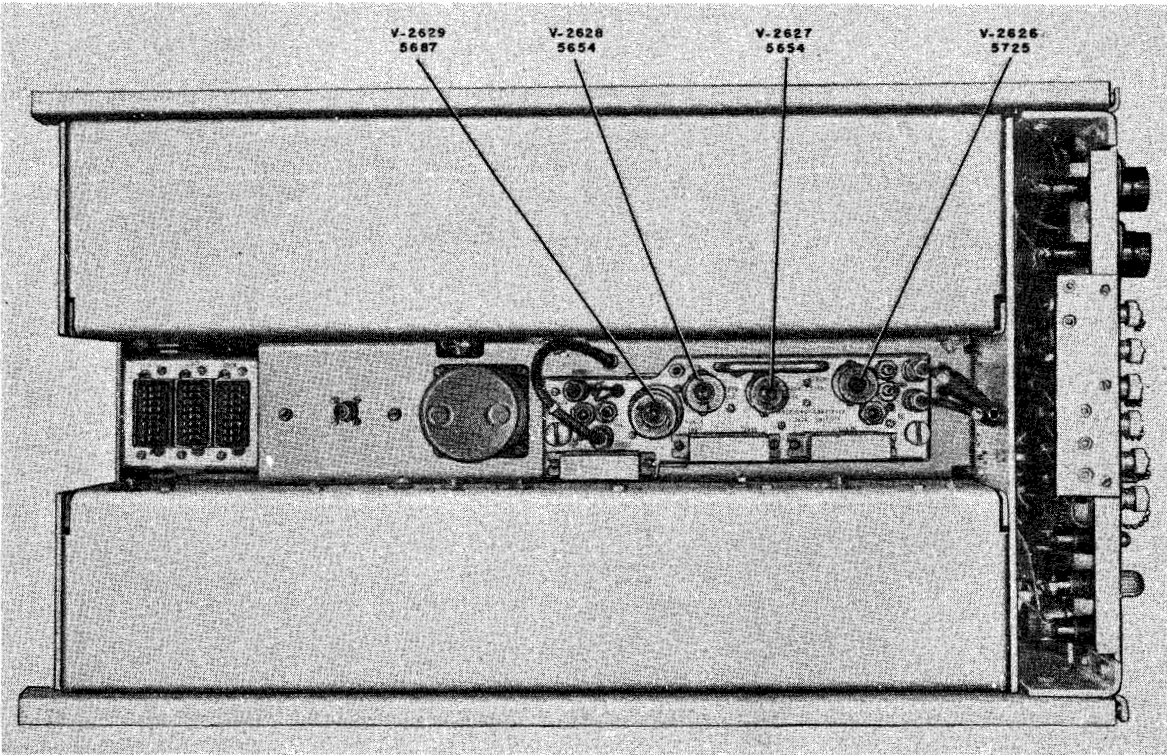


Figure 5-12. Radio Frequency Oscillator O-275/SRT (RFO), Bottom View, Tube Locations

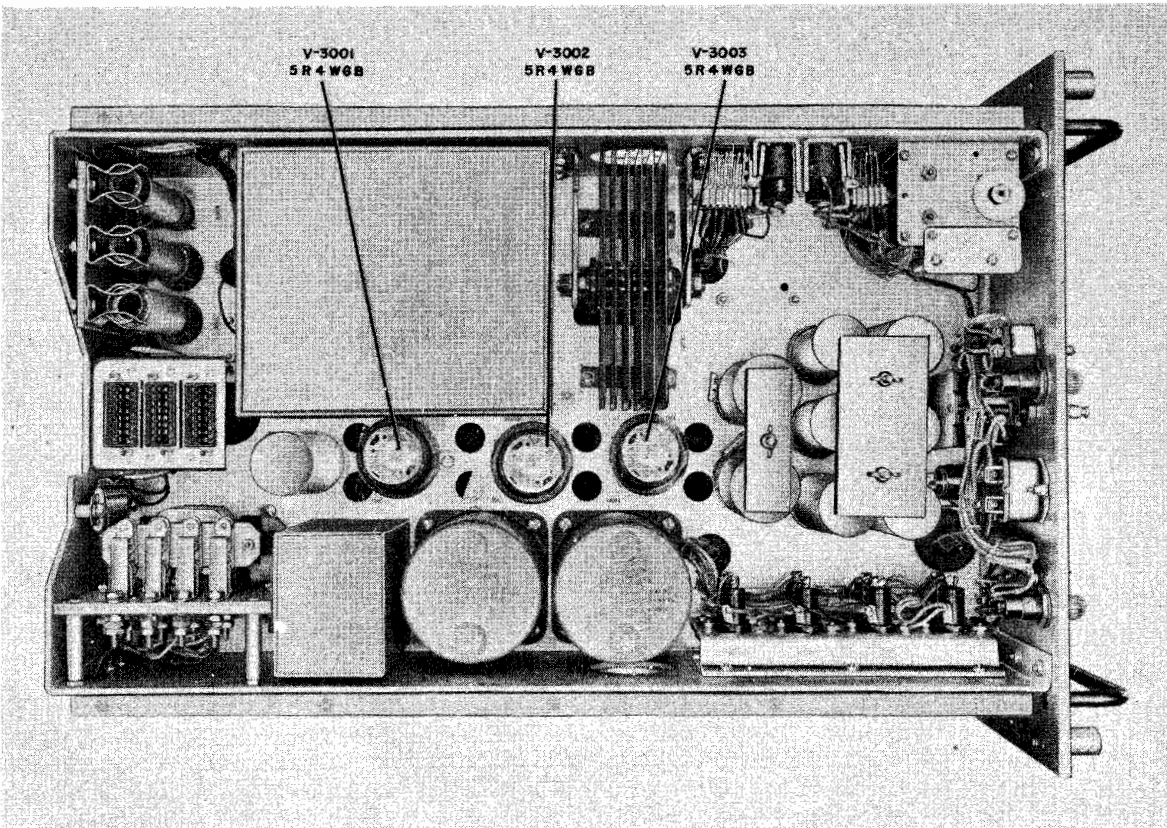


Figure 5-13. Power Supply PP-1094/SRT (LVPS), Top View, Tube Locations

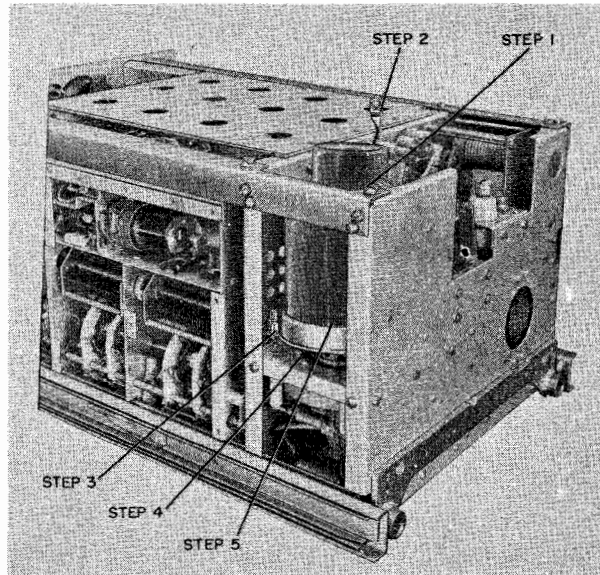


Figure 5-14. Removing the PA Tube, V-1304

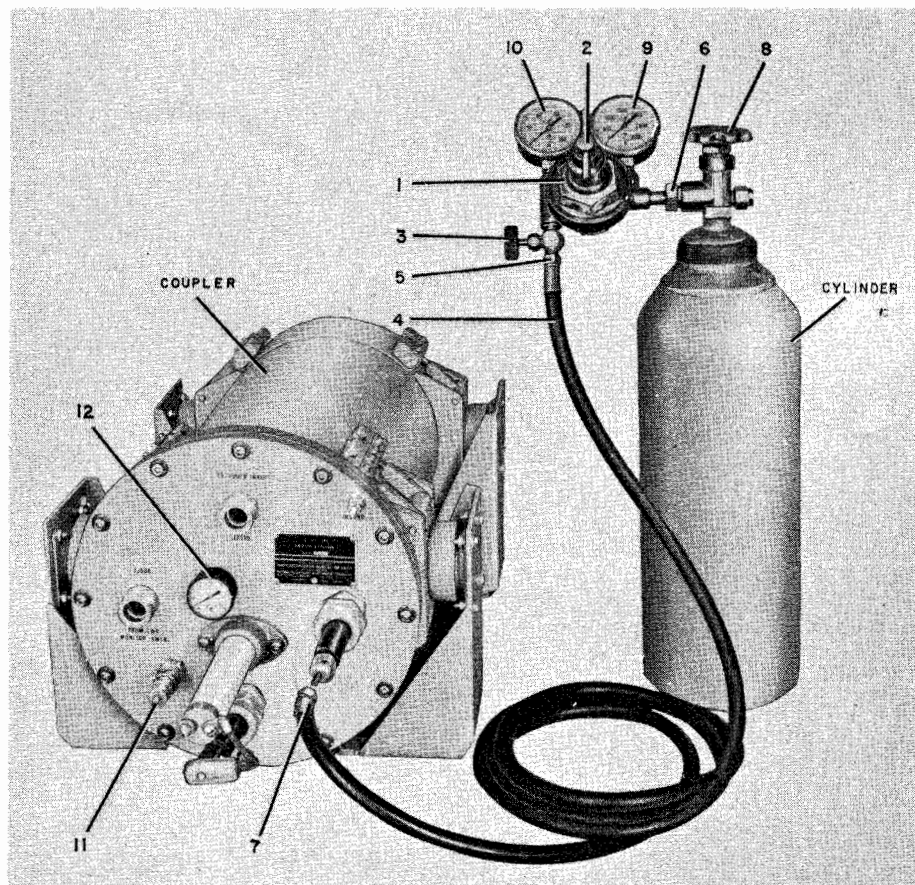


Figure 5-15. Typical Pressurizing Method

NOTES