installation and operating instructions for model HT-17 radio transmitter

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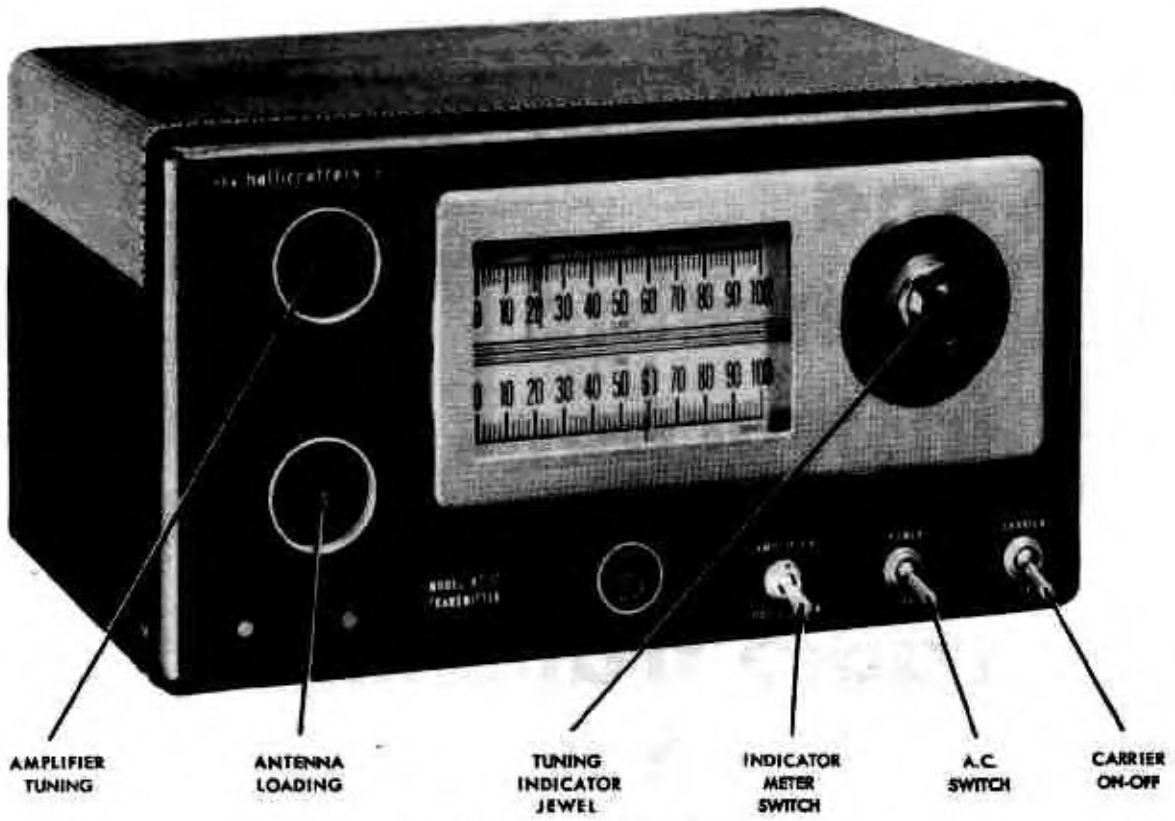

Figure 1. Front View, showing location of controls.

DESCRIPTION

GENERAL: The HT-17 is a crystal controlled transmitter designed to operate from a 105-125 volt 50/60 cycle power source. The normal power input is 25 watts, on all bands from 3.5 to 30 megacycles. The power output depends on the frequency of operation and the type antenna used. PI section antenna matching network and link coupling is provided on all bands with the exception of the 3.5 mc band which has provision for PI- section coupling only. The crystal oscillator operates straight thru on the 3.5 and the 7 mc bands. When using the transmitter on 14 mc band and higher, the crystal oscillator operates as a Tritet by removing the adaptor plug and plugging in the appropriate tank circuit and 7 mc crystal. Provision for external power supply is located on the rear apron of the chassis. A terminal strip for external connection of a modulator for phone operation is provided. A pilot lamp with a jewelled indicator is supplied for a visual tuning indicator, easily removed for installation of a SM-2 milliampre meter when desired.

TUBE COMPLIMENT: 807 Power Amplifier, 6V6 GT/G Crystal oscillator, and 5U4G Rectifier.

POWER CONSUMPTION: 90 watts nominal at 117 volts, 60 cycle AC.

CAUTION: Moderately high voltage is present in the HT-17 transmitter and accidental contact with the plate supply could be fatal. When working with radio transmitters it is essential that safety precautions be observed at all times.

TUNING PROCEDURE

80 METERS:

Connect a ground lead to terminal #5 on TS-1 located on the rear apron of the chassis. (see Fig. 2). Plug in the line cord, switch "Power-Off" to "Power' and allow a few minutes for warm-up. Plug in

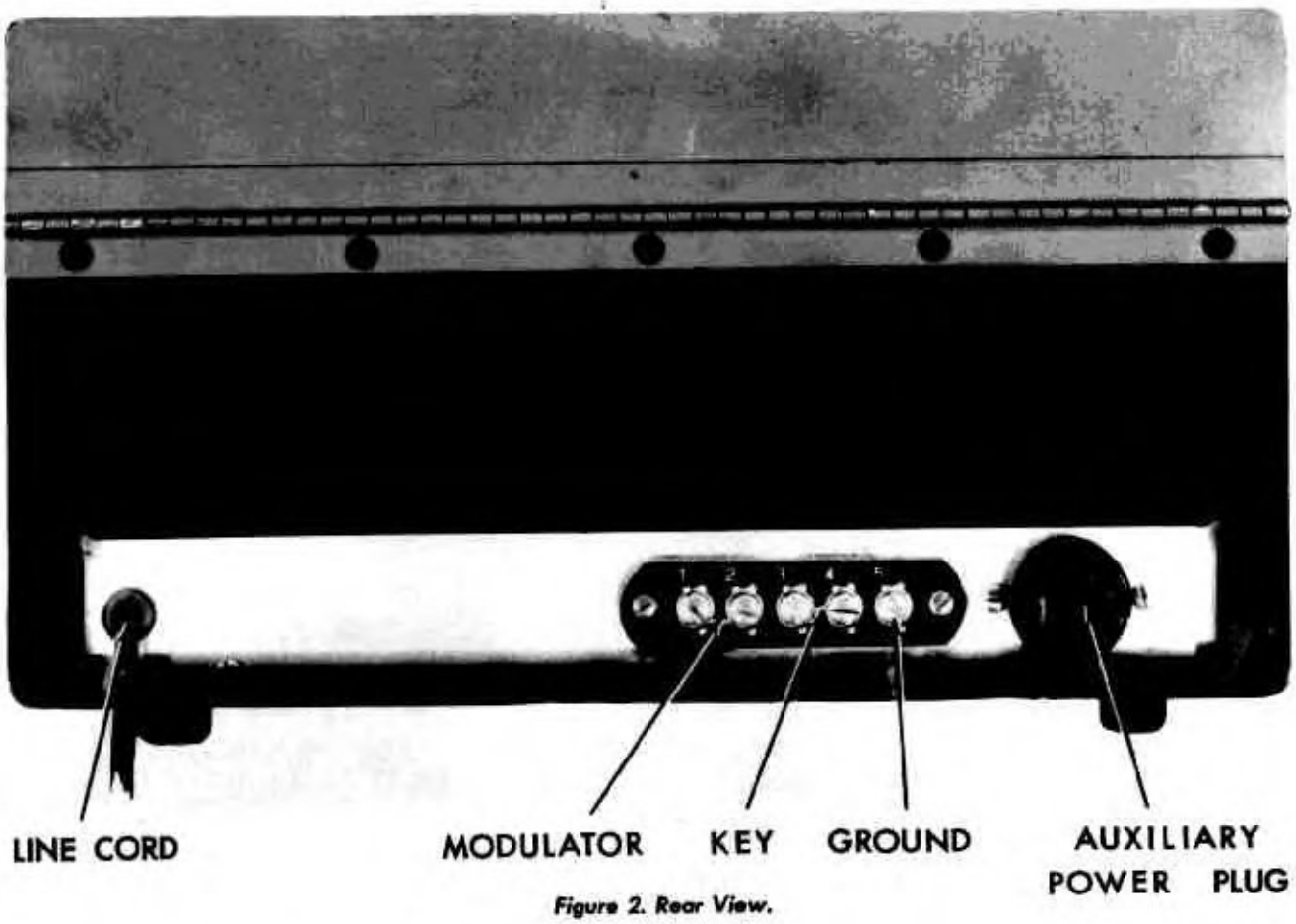

Figure 2. Rear View.

a 3.5 to 4.0 mc crystal in the crystal socket and plug in a 80 meter "PA" coil in the amplifier socket. (see Fig. 3) Switch "PA-Osc" to "PA", tune amplifier tank condenser for minimum "glow" on the jewelled indicator lamp. (see Fig. 1) Switch "Carrier-off" to "Off". Connect a single wire feed or end feed antenna to post #1 on antenna connector strip. Switch "Carrier-Off" to "Carrier". Adjust PI-section load condenser to 85 degrees on the dial scale. Tune "PA" tuning condenser for minimum "glow" on indicator lamp. Reset antenna load control to a lower reading on the dial scale and resonate "PA" tuning condenser. Continue to lower the reading on the load scale, resonating "PA" condenser at all times until there is no change in brilliancy in the indicator lamp. This condition indicates that the antenna is "overcoupled" and for maximum efficiency the load control should be backed off until there is a slight change in brilliancy as the "PA" condenser is resonated. The transmitter is now ready for operation on the 80 meter band.

40 METERS

Follow the same procedure as described in the 80 meter tuning procedure with the exception of plugging in a 40 meter PA coil and a 40 meter crystal. The same tuning procedure for the antenna tuning should be observed when using a single wire antenna on 40 meters except that the clip on the link coil is clipped onto the end turn of the tank coil. When feeding a two wire low impedence transmission line, the link coil clip should be clipped approximately three turns from the back end of the link coil for a 72 ohm line and slightly more turns for a higher impedence transmission line. Adjust the load control to "100" on the dial or "short". The only adjustment required is the "PA" control as the PI-section tuner is no longer in the circuit. Connect the transmission line to posts #1 and #2, turn on "Carrier" and adjust "PA" control for minimum "glow" on the tuning indicator.

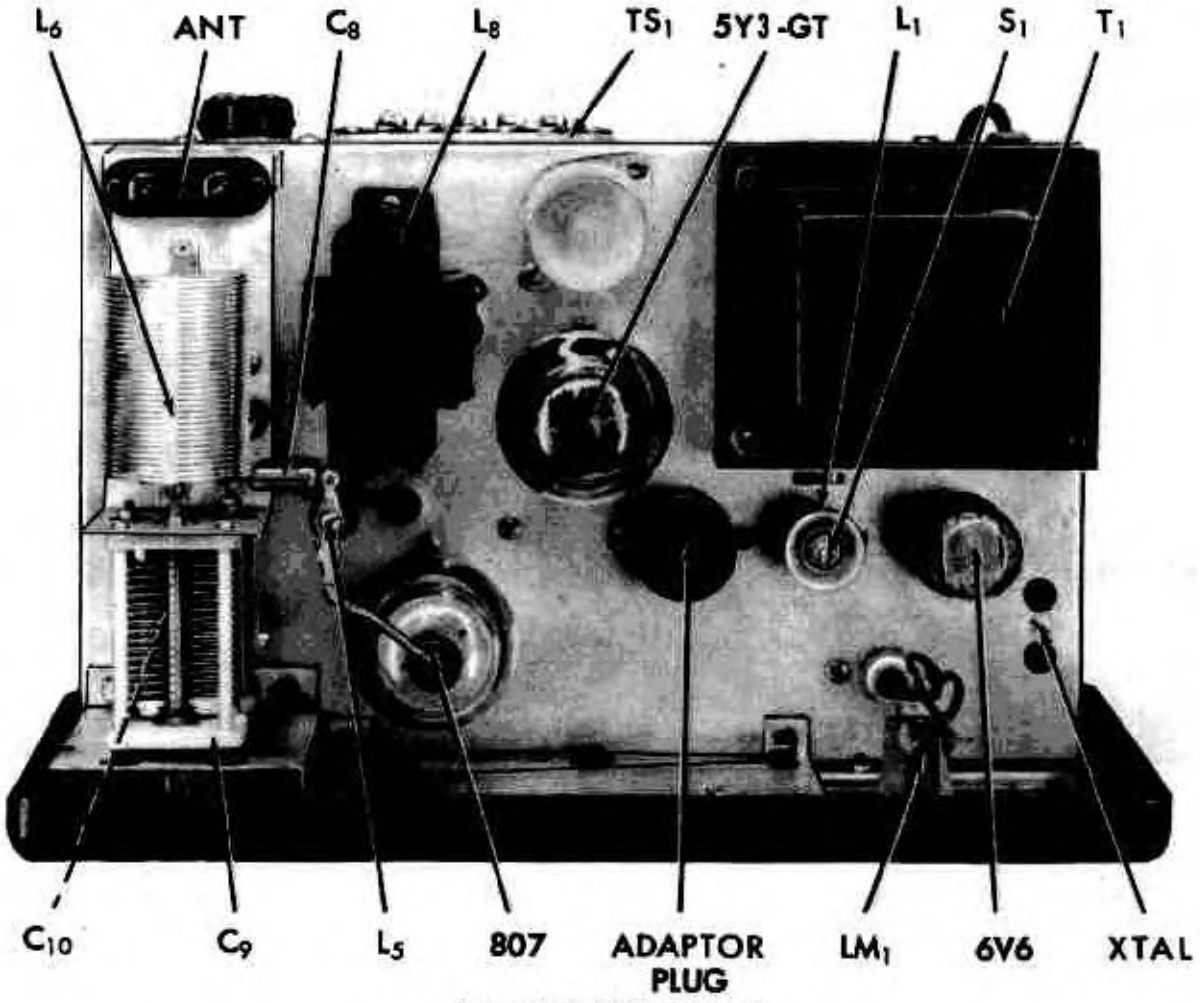

Figure 3. Top View of Chassis.

20, 15,* 11, AND 10 METERS:

Plug in a 40 meter crystal, (first make certain that the harmonic out-put will fall in the authorized Amateur bands) remove the adaptor plug, plug in proper oscillator coil (51B894, 14 mc), (51B895, 21 mc*) (51B896, 28mc) and plug in proper Amplifier coil. Proceed as follows: "Power" on, "Osc" on, "Carrier" on. Tune Oscillator control knob located on top of the plug in oscillator coil for maximum "glow" on the tuning indicator. Adjust S-1 for maximum "glow" (see Fig. 3 for location) using a screw driver or alignment tool. Adjustment of S-1 is not critical, provided that active crystals are used however there will be an optimum setting for S-1 for best keying characteristics, and maximum excitation. Switch from "Osc" to "PA", tune amplifier control for minimum "glow" on the indicator lamp. Switch "Carrier" to "Off". Connect antenna and tune as described in the previous chapter.

CAUTION: It is recommended that the 807 amplifier tube draw no more than 100 ma fully loaded, as higher plate current will shorten tube life.

KEYING:

Remove jumper wire from posts #3 and #4 on terminal strip TS-1 located on the rear apron of the chassis and connect keying leads to these terminals. Switch "Carrier-Off" to "Carrier" position. Monitor the signals, the keying should be crisp and clean. When operating the transmitter on the higher frequency bands, adjustment of S-1 to optimum setting will improve the keying quite noticeably. No trouble from "key-clicks" should be experienced because of a built in key-click filter employed in the circuit.

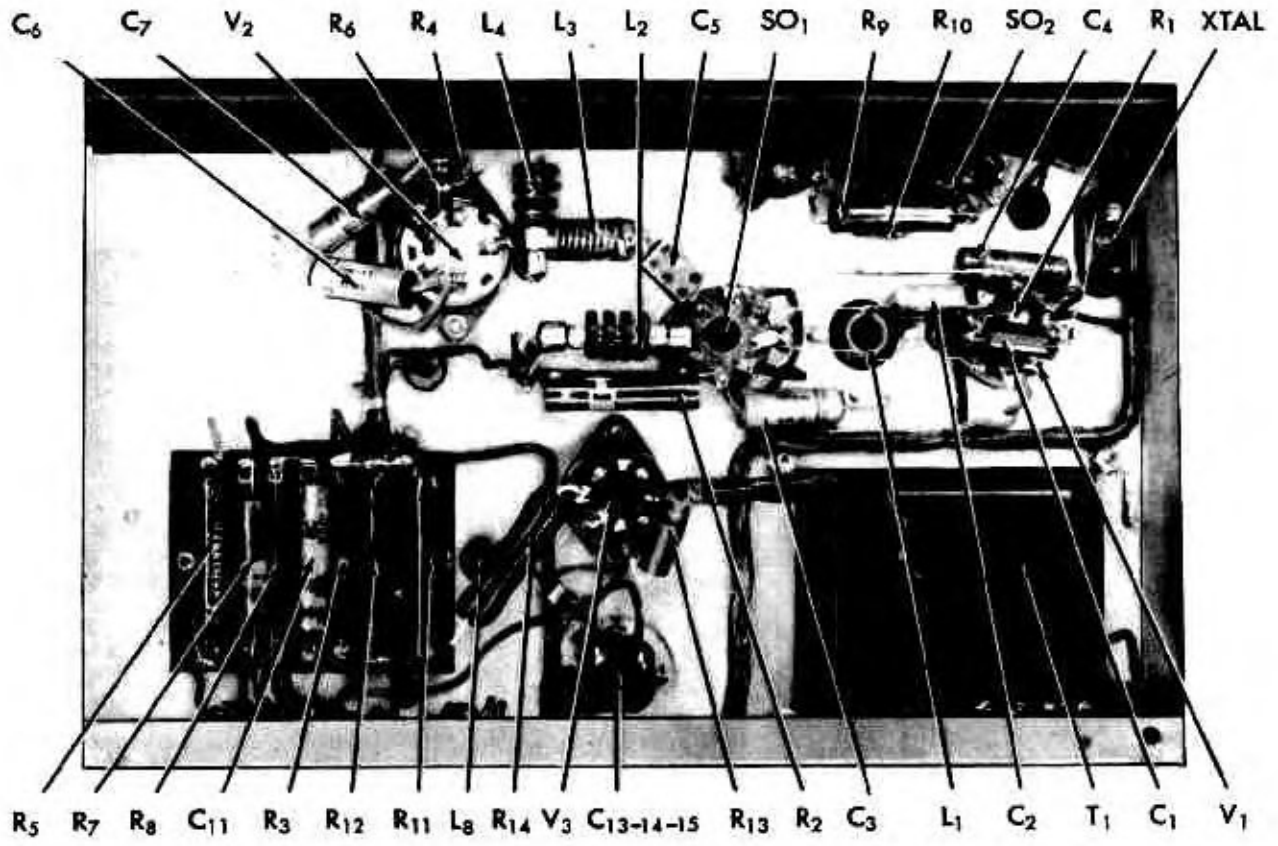

Figure 4. Bottom View of Chassis, showing location of component parts.

PHONE OPERATION:

Remove the jumper wire from terminals #1 and #2, connect the 5,000 ohm secondary winding of the modulation transformer to terminals #1 and #2. Constructional details for a suitable low power modulator may be found in the "Radio Amateurs Handbook" published by the ARRL, West Hartford, Conn. CAUTION: Do not operate the modulator unit without transmitter load as damage will result to the modulation transformer. The modulator should deliver about 10 to 15 watts of audio to modulate the final amplifier 100%.

ANTENNAS:

For general all band operation, a 136' (approximately) end feed or single wire feed antenna should be erected as high as possible and in the clear. Other types of antennas can be erected. It is suggested that you refer to your "Radio Amateurs Handbook" for detailed constructional instructions.

AUXILIARY POWER PLUG:

Connections for external power supply is provided by means of a plug and socket located on the rear apron of the chassis. (See Fig. 2). Heater current for auxiliary power supply operation is 1.35 amperes at 6 volts, plate current is 135 ma at 400 volts DC. Total demand when used with a vibrapack on a 6 volt battery is 18 amperes. See Fig. 5 for wiring diagram for PL-3.

*NOTE: Amateur operation in the 15 meter band (21 mc) as of this date of publication, has NOT been authorized by the Federal Communications Commission.

REPLACEMENT PARTS LIST FOR HT-17

RESISTORS

Ref. No.	DESCRIPTION	Stock No.
R-2	15,000 ohms, 10%, 10 W WW	24B6153E
R-11	2500 ohms, 10%, 20 W WW	24B6252E
R-5	350 ohms, 10%, 10 W WW	24B6351E
R-12	50,000 ohms, 10%, 10 W WW	24B6503E
R-8	100 ohms, 20% ½ W carbon	RC20AE101M
R-3	100,000 ohms, 20% ½ W Carbon	RC20AE104M
R-4	12,000 ohms, 10% ½ W Carbon	RC20AE123K
R-10,6	47 ohms, 10% ½ W Carbon	RC20AE470K
R-1	47,000 ohms, 20% ½ W Carbon	RC20AE473M
R-7	22,000 ohms, 10% 2 W Carbon	RC40AE223K
R-9	3,000 ohms, 5% 2 W Carbon	RC40AE302J

CONDENSERS

C-13,14,15	Electrolytic, 10-30-10 mfd.	45A052
C-4	Tubular, .01, 400 V, paper	46AM103J
C-6	Tubular, .02 400 V, paper	46AM203J
C-3,11	Tubular, .02, 600 V, paper	46AY203J
C-12	Tubular, .05, 200 V, paper	46AU503J
C-7	Tubular, .002 600 V, paper	46AZ202J
C-10	Variable, 250 mmf. Air	48B180
C-9	Variable, 150 mmf. Air	48B181
C-1	Mica, 5 mmf. 20%, 500 V.	CM20A050M
C-5	Mica, 100 mmf, 10%, 500 V.	CM20A101K
C-8	Mica,.001 mfd., 10%, 500 V.	CM25A102K
C-17	Mica, 2200 mmf. 10%, 500 V.	CM30A222K
C-2, 16	Mica, .0027 mfd. 10% 500 V.	CM30A272K

COILS, CHOKES & TRANSFORMERS

L-4	Coil, R.F., 1.0 mh	51A134
L-1	Coil, cathode	51B891
T-1	Transformer, power	52C132-1
L-2	Choke, R.F. 2.5 mh.	53A038
L-5	Choke, R.F. 2.5 mh. long dowel	53B103
L-3	Parasitic suppressor choke	53A105
L-8	Choke, filter, 8 henry	56B083
L-9	Oscillator plate tuning unit, 28.0 mc	51B896
L-8	Oscillator plate tuning unit, 21.0 mc	51B895
L-9	Oscillator plate tuning unit, 14.0 mc	51B894
L-6	PA tank coil, plug in, 3.5 mc	51B897
L-6,7	PA tank coil, plug in, 7.0 mc	51B898
L-6,7	PA tank coil, plug in, 14.0 mc	51B899
L-6,7	PA tank coil, plug in, 21.0 mc	51B900
L-6,7	PA tank coil, plug in, 28.0 mc	51B901

MISCELLANEOUS

	Line cord	87A078
	Dial Cord	38A001
LM-1	Bulb, pink bead	39A017
	Pointer, dial	82A123
	Pointer, dial	82A123-1
	Dial scale	83C801
M-1	Meter, 0-150 ma.	82B136*
	Knob, control	15A047
	Plate cap, 807 (with lead)	88A029
	Antenna binding post	88A226
	Octal tube socket, mica filled	6A019
	Coil socket, 5 prong	6A187
	Crystal socket	6A286
SO-2	Socket, 5 prong, meter-indicator	6A246
	Socket, tube, 5 prong	6A281
PL-2	Plug, indicator-meter	10A197
PL-3	Plug, octal, aux. power.	10A239-1
SW-1	Switch, DPDT, Bat handle	60A277
SW-3, 2	Switch, SPST, Bat handle	60A281
	Pilot Light Socket	86B038

Tubes

V-1	6V6GT/G, oscillator	90X6V6GT/G
V-2	807 Power amplifier	90X807
V-3	5U4G Rectifier	90X5U4G

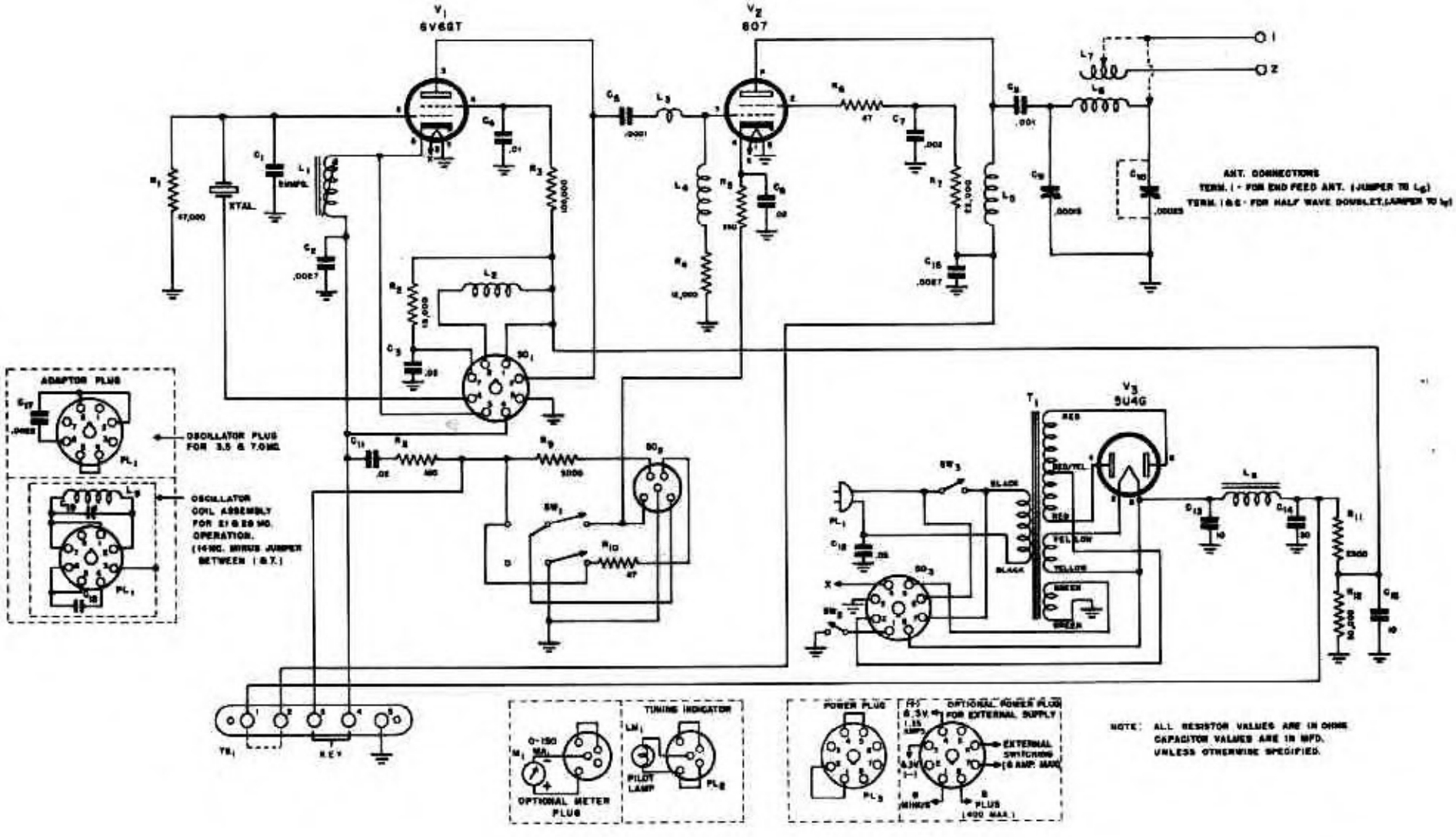

Figure 5. Schematic Diagram.