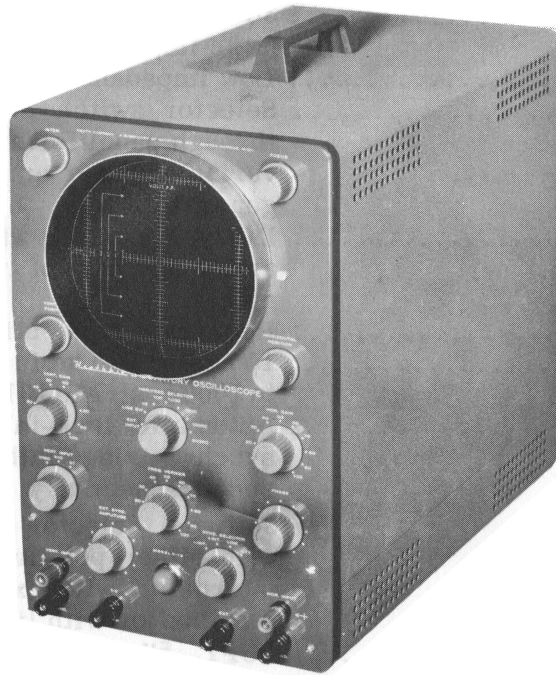


Heathkit Laboratory Oscilloscope

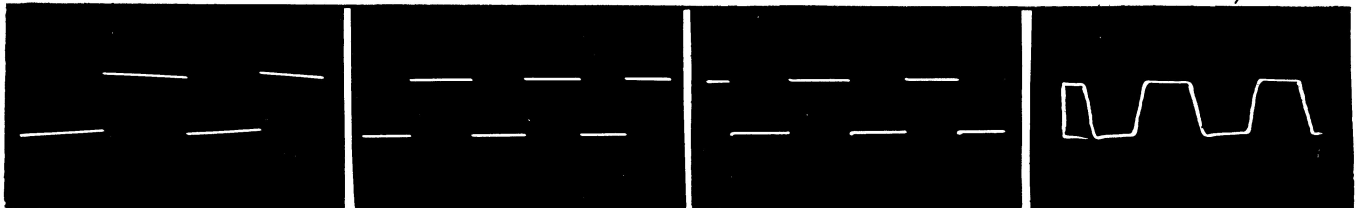
MODEL O-12



SPECIFICATIONS

Vertical Channel:

Sensitivity.....	0.025 volts (RMS) per inch at 1 kc.
Frequency Response.....	Flat within ± 1 db from 8 cps, to 2.5 mc. Flat, +1.5 to -5 db; 3 cps to 5 mc. Response at 3.58 mc, - 2.2 db.
Rise Time.....	(All response measurements referred to 1 kc) 0.08 microseconds or less.
Overshoot.....	10% or less.
Transient Response.....	Oscillograms below are unretouched displays of square wave signals. (Rise time of source generator was less than 0.02 microseconds.)



	50 CPS	1000 CPS	100 KC	1 MC
Input Impedance.....	In X1 attenuator position, 2.9 megohms shunted by 21 $\mu\mu\text{f}$. (1 kc impedance, 2.7 megohms) In X10 and X100 positions, 3.4 megohms shunted by 12 $\mu\mu\text{f}$. (1 kc impedance, 3.3 megohms)			
Attenuator.....	Three-position, switch-type, fully compensated; no visible change in wave shape at any attenuator setting.			
Input Characteristics.....	Special low-capacity input terminal; built-in blocking capacitor rated at 600 volts DC.			
Vertical Positioning.....	DC type; permits placement of undeflected trace at any horizontal level on usable area ($\pm 1 \frac{1}{2}$ " from center) of screen; positioning is instantaneous and free of drift.			

Horizontal Channel:

Sensitivity.....	0.3 volts (RMS) per inch at 1 kc.
Frequency Response.....	Flat within ± 1 db 1 cps to 200 kc. Flat within ± 3 db 1 cps to 400 kc.
Input Impedance.....	30 megohms shunted by 31 $\mu\mu$ f. (1 kc impedance, 4.9 megohms)
Attenuator.....	Low impedance type in cathode follower output.
Input Characteristics.....	Selector switch permits use of external input through panel terminal, line-frequency sweep of variable phase or internal sweep from sweep generator.
Horizontal Positioning.....	DC type; permits wide range of positioning to examine any part of trace even with full horizontal gain.

Sweep Generator.....

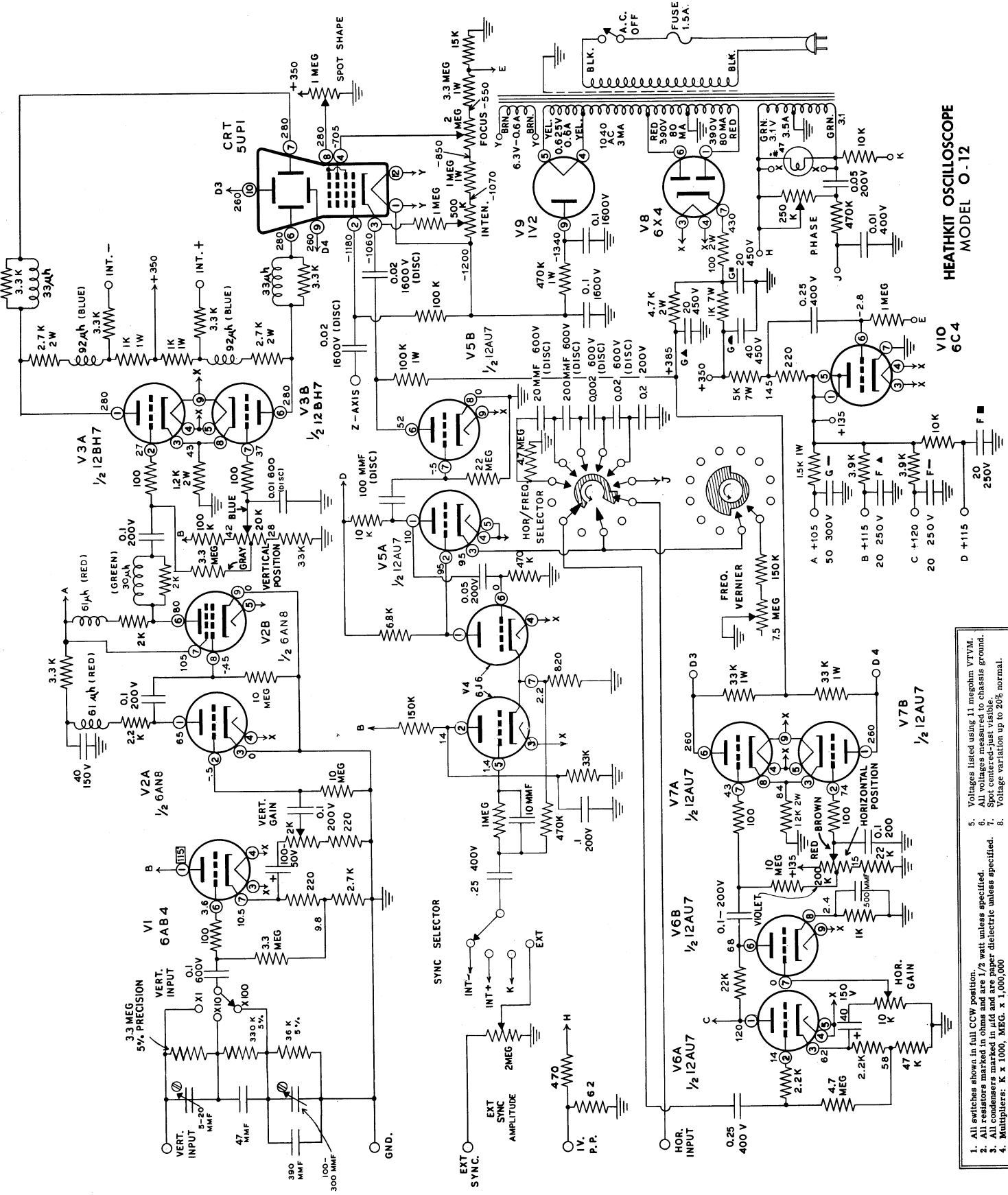
Range.....	Recurrent type, utilizing Heath sweep circuit. 10 cps to 500 kc in five steps: 10 to 100 cps, 100 to 1000 cps, 1 to 10 kc, 10 to 100 kc, 100 to 500 kc.
Synchronizing.....	Automatic lock-in circuit using self-limiting synchronizing cathode follower. Holds sweep speed essentially independent of vertical gain settings. Selector switch permits synchronizing with either positive or negative signal pulses internally, with external source through panel terminal or with line frequency.
Cathode Ray Tube.....	5UP1, 5" screen, green medium-persistence phosphor.
Power Supplies.....	High-voltage supply; transformer-rectifier type, developing 1200 volts at output of RC filter system. Low-voltage supply; transformer-rectifier type, full electronic voltage regulation for all critical amplifier, sweep generator and positioning potentials.

General

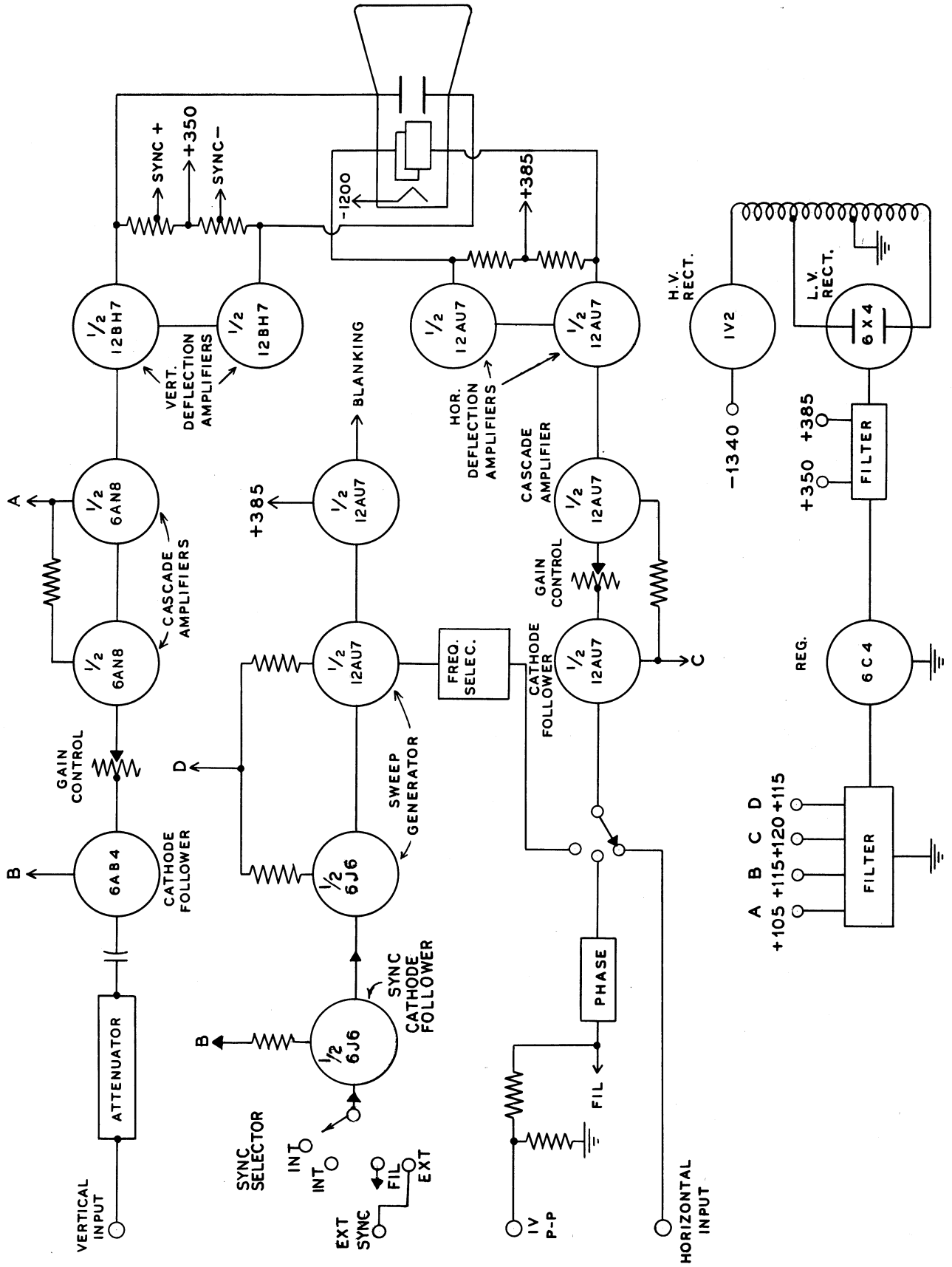
Retrace Blanking.....	Blanking interval less than 30% sweep rate regardless of sweep speed. Blanking amplifier provided.
Phasing Control.....	Provides fully controlled phase shift for line sweep applications. Phasing continuously variable from zero to over 135 degrees.
Voltage Calibrator.....	Built-in source, 1 volt peak-to-peak; calibrated grid screen and accurately calibrated input attenuator to permit voltage measurements over range of 10,000 to 1 or more.
Z-Axis Modulation.....	Provision for intensity modulation of electron stream through high-voltage isolation capacitor; 8 to 20 volts (RMS) required for complete blanking of trace.
Access Panel.....	Removable panel at rear of cabinet for access to CRT socket terminals. No terminals are provided for direct connection, since stray capacities introduced would be detrimental. When required, such connections can be readily made direct to socket terminals, without removing chassis from cabinet.
Power Requirements.....	105-125 volts 50-60 cycles AC at 80 watts; fused.
Dimensions.....	8 5/8" wide x 14 1/8" high x 16" deep.
Net Weight.....	20 1/2 lbs.
Shipping Weight.....	21 lbs.

HEATHKIT OSCILLOSCOPE MODEL O-12

V10
6C4



1. All switches shown in full CCW position.
2. All resistors marked in ohms and are 1/2 watt unless specified.
3. All condensers marked in μ fd and are paper dielectric unless specified.
4. Multipliers: K x 1000, MEG. x 1,000,000
5. Voltages listed using 11 megohm VTVM.
6. All voltages measured to chassis ground.
7. Spot centered-just visible.
8. Voltage variation up to 20% normal.



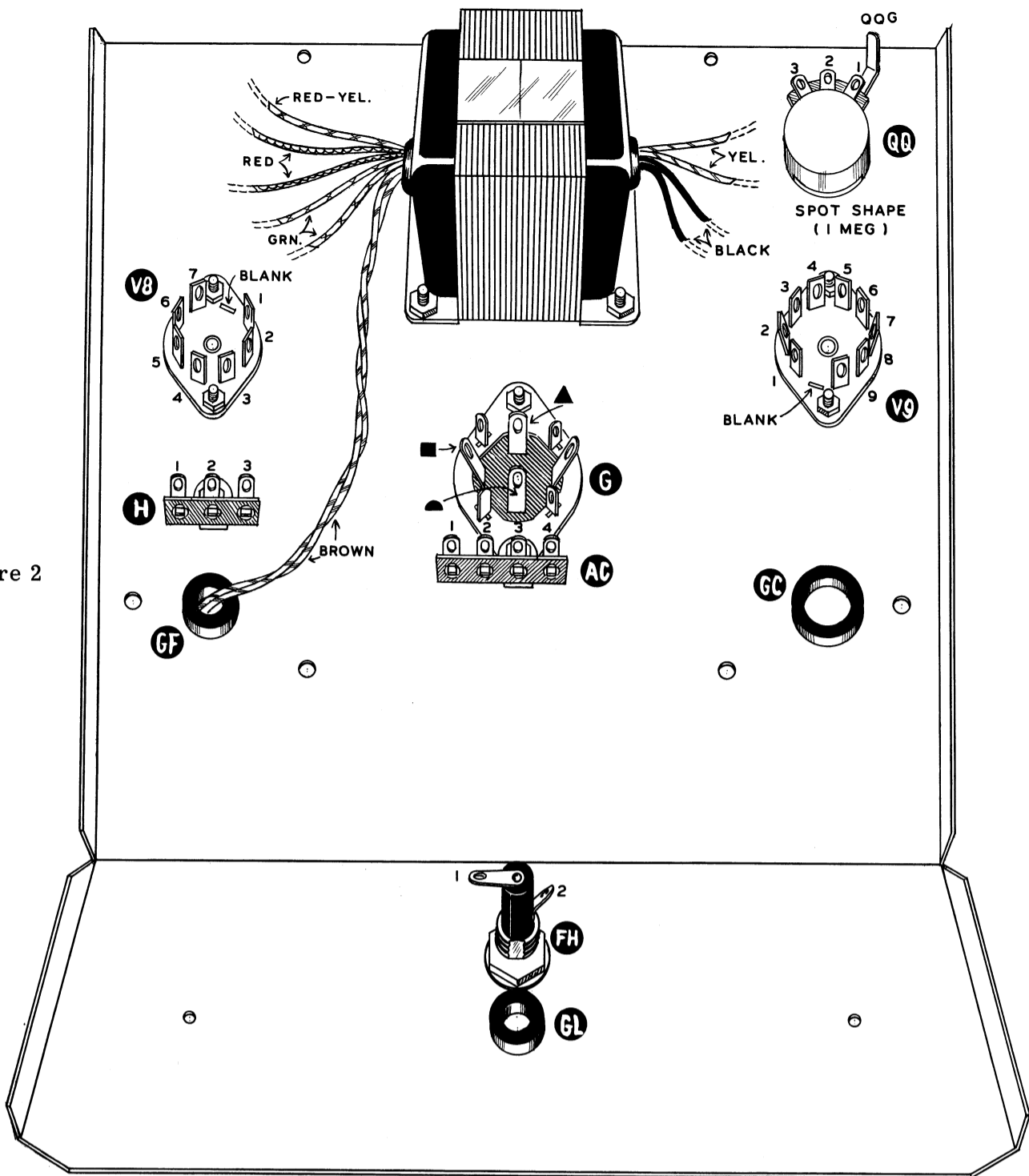


Figure 2

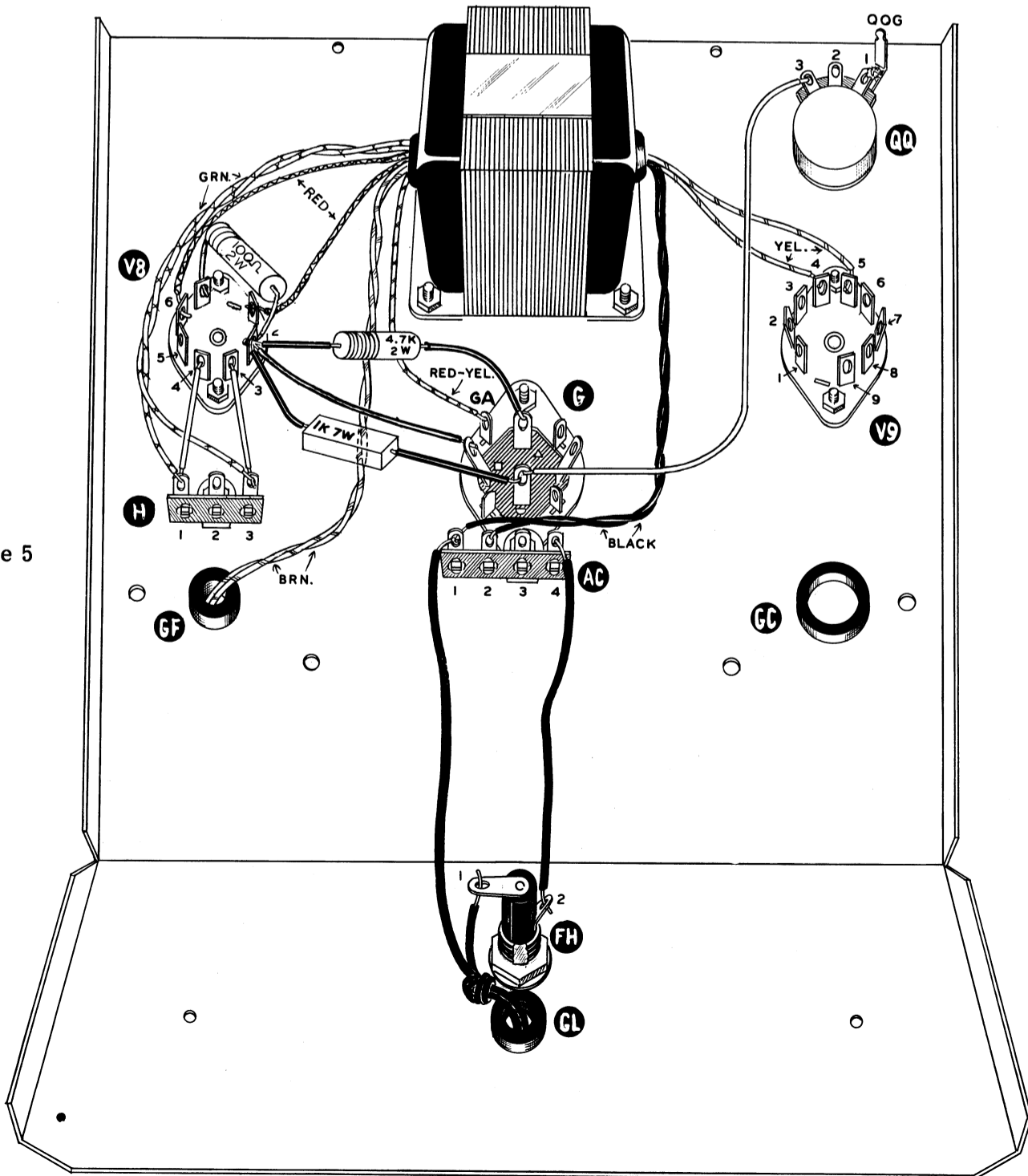


Figure 5

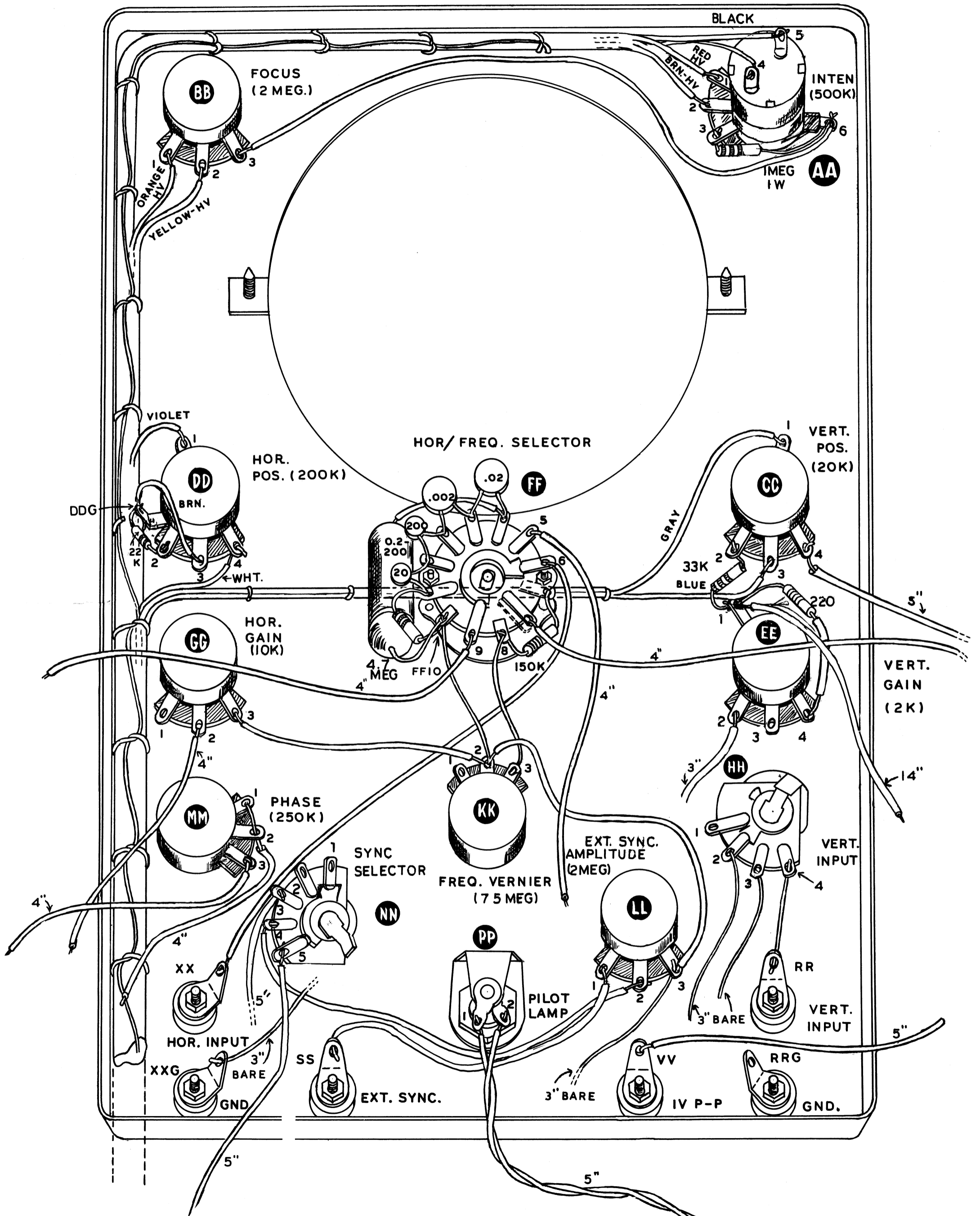


Figure 13

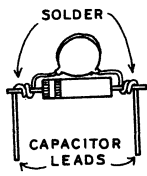
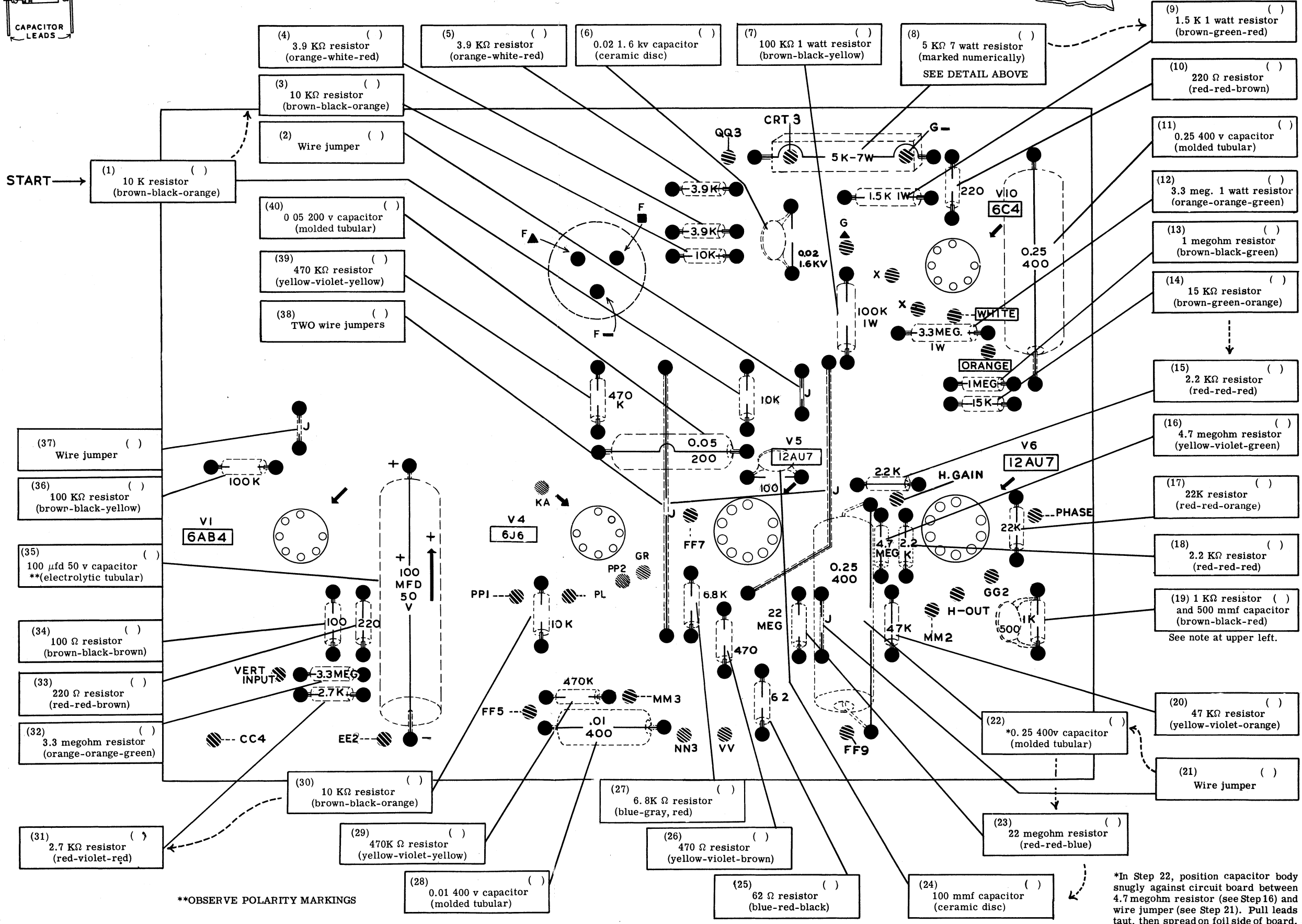
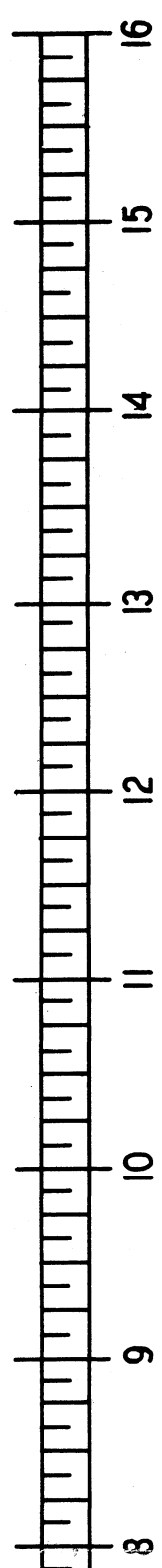
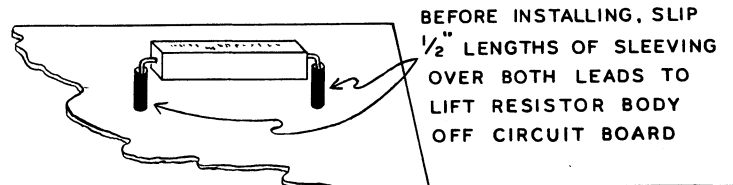


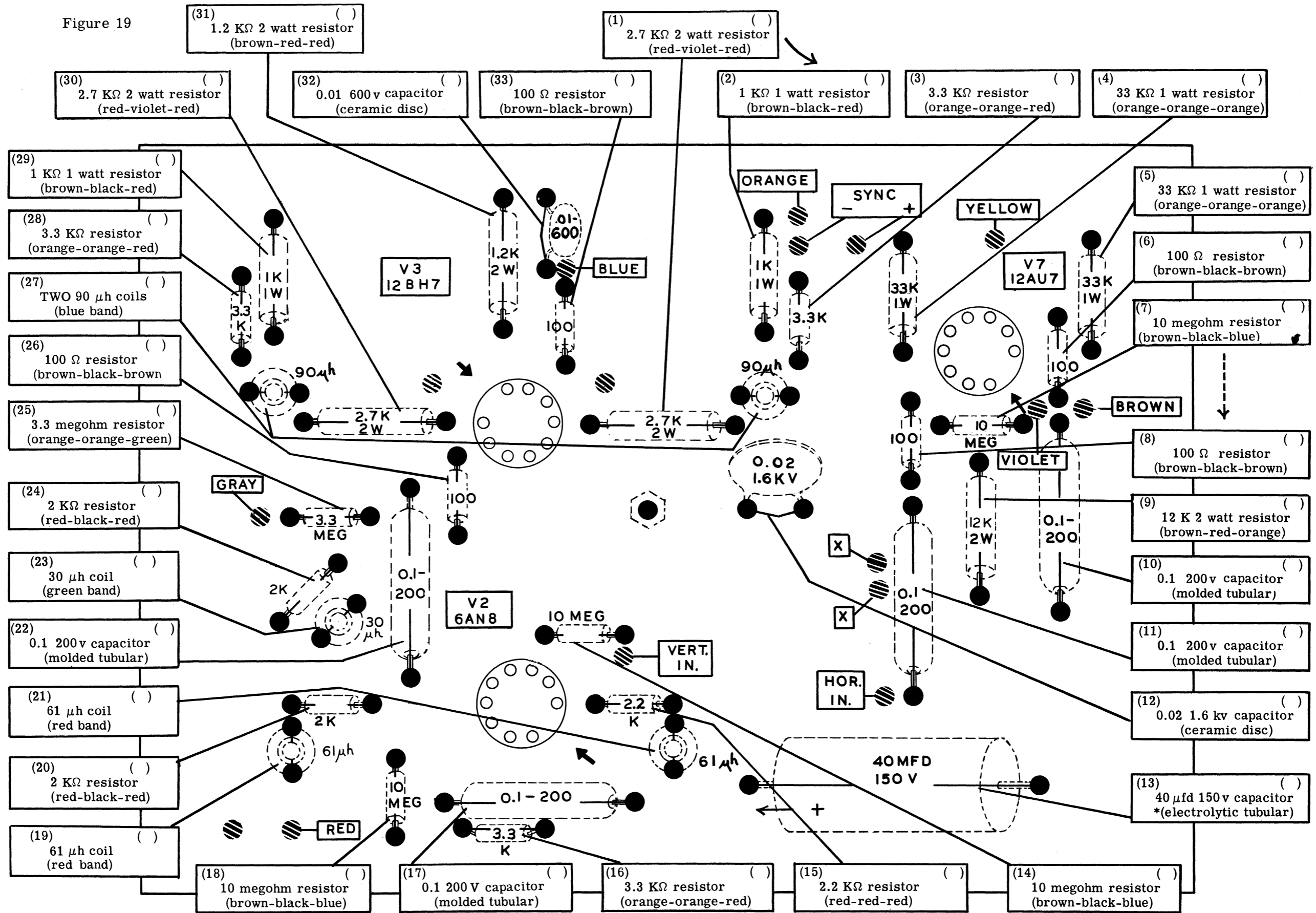
Figure 16



**OBSERVE POLARITY MARKINGS

*In Step 22, position capacitor body snugly against circuit board between 4.7 megohm resistor (see Step 16) and wire jumper (see Step 21). Pull leads taut, then spread on foil side of board.

Figure 19



REAR END

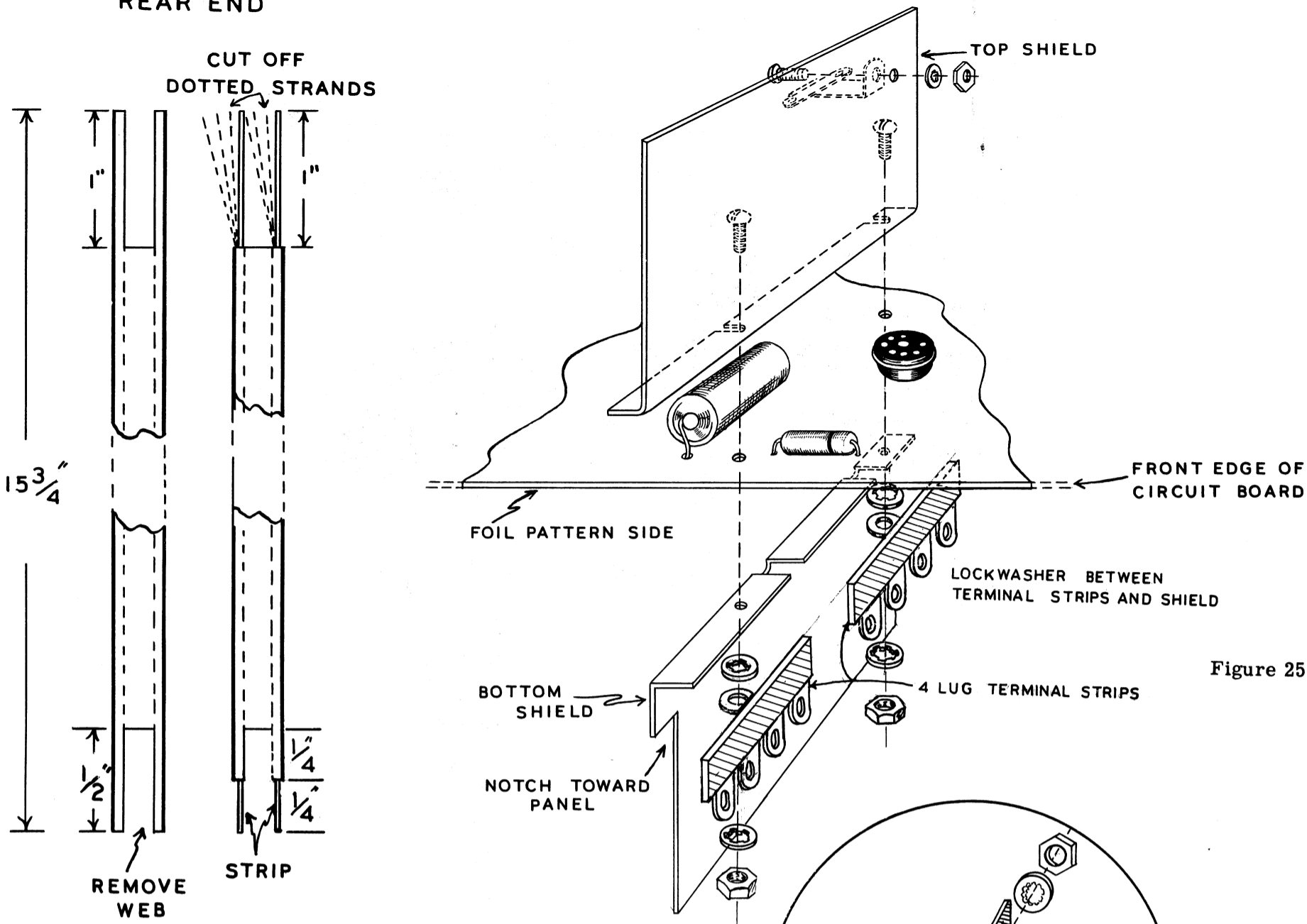


Figure 25

PANEL END

Figure 24

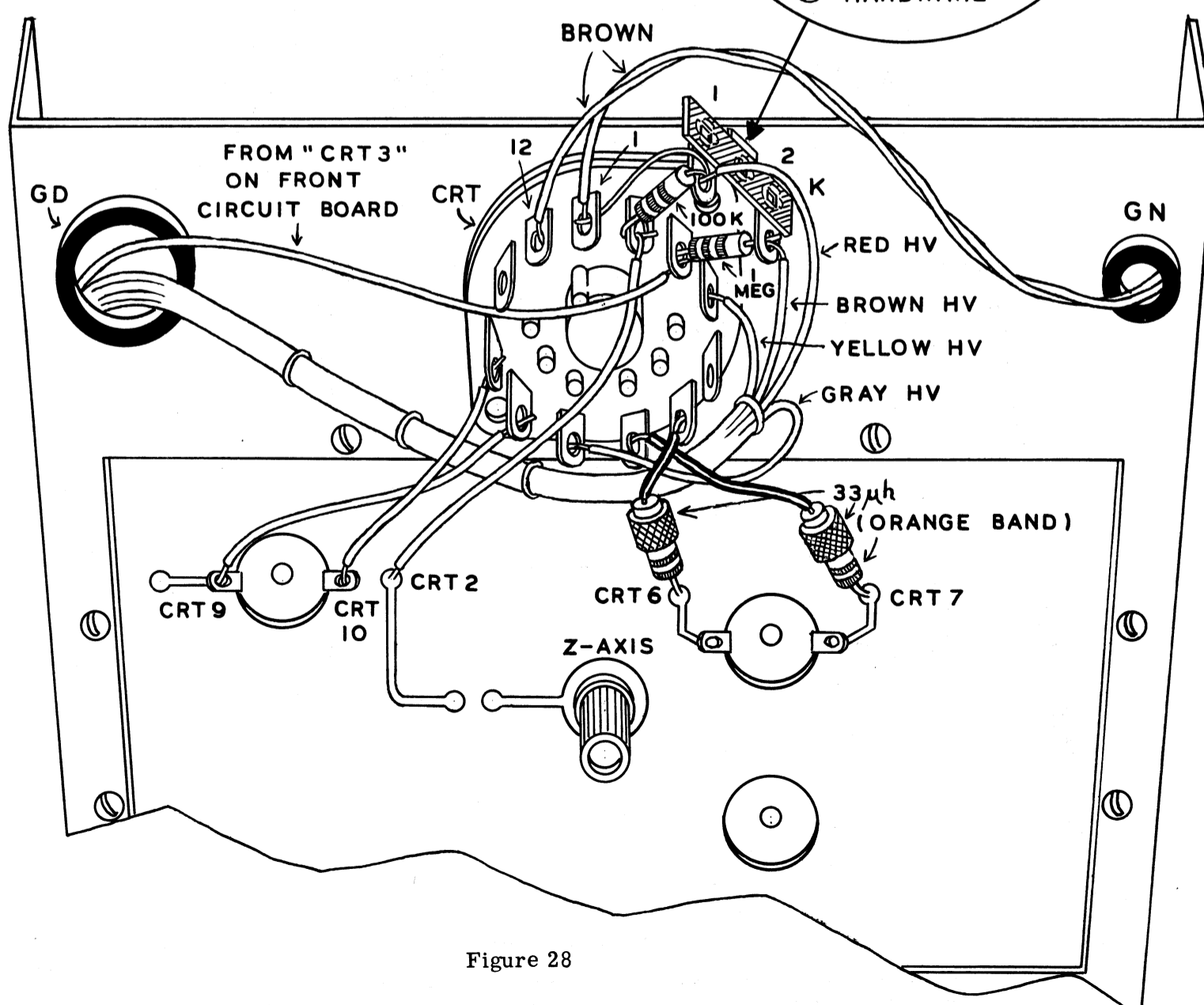


Figure 28

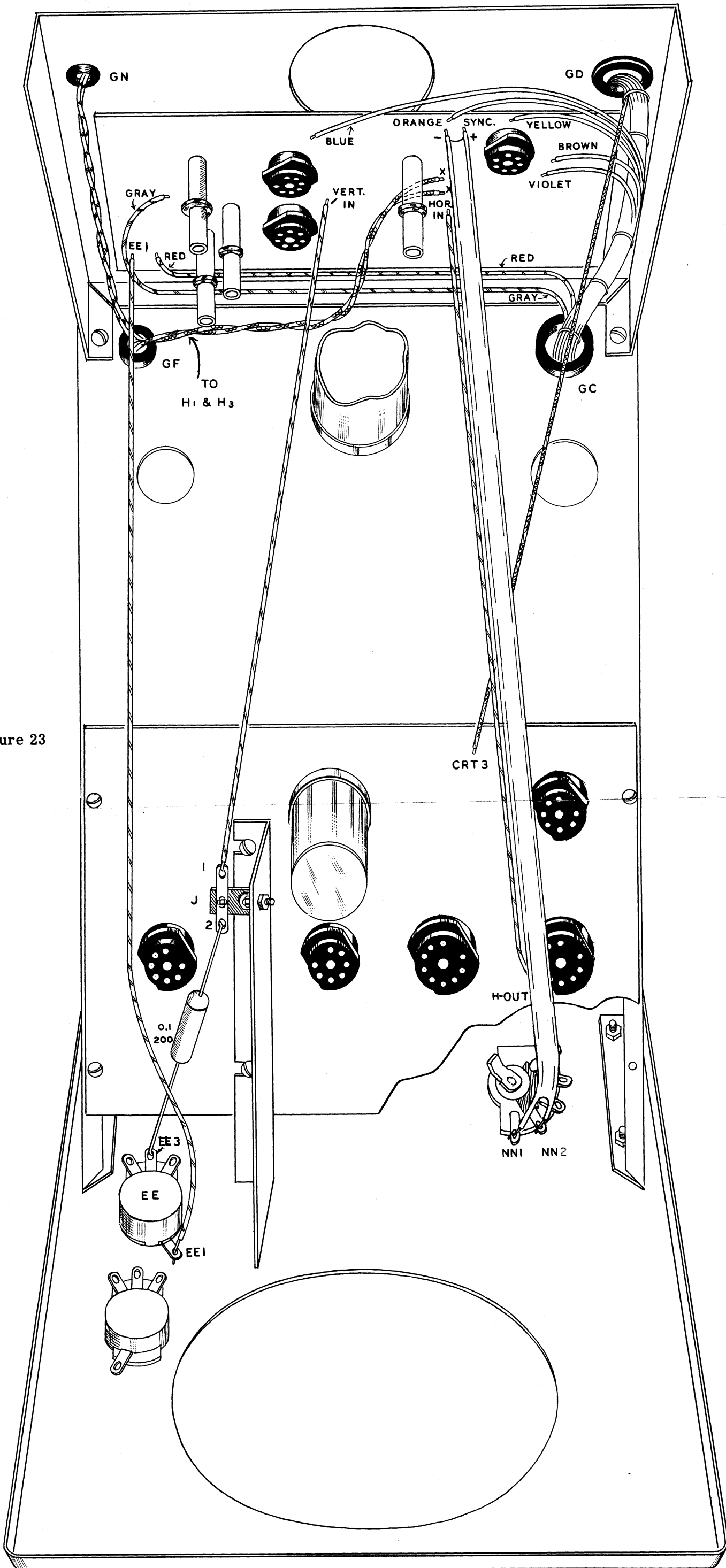


Figure 23

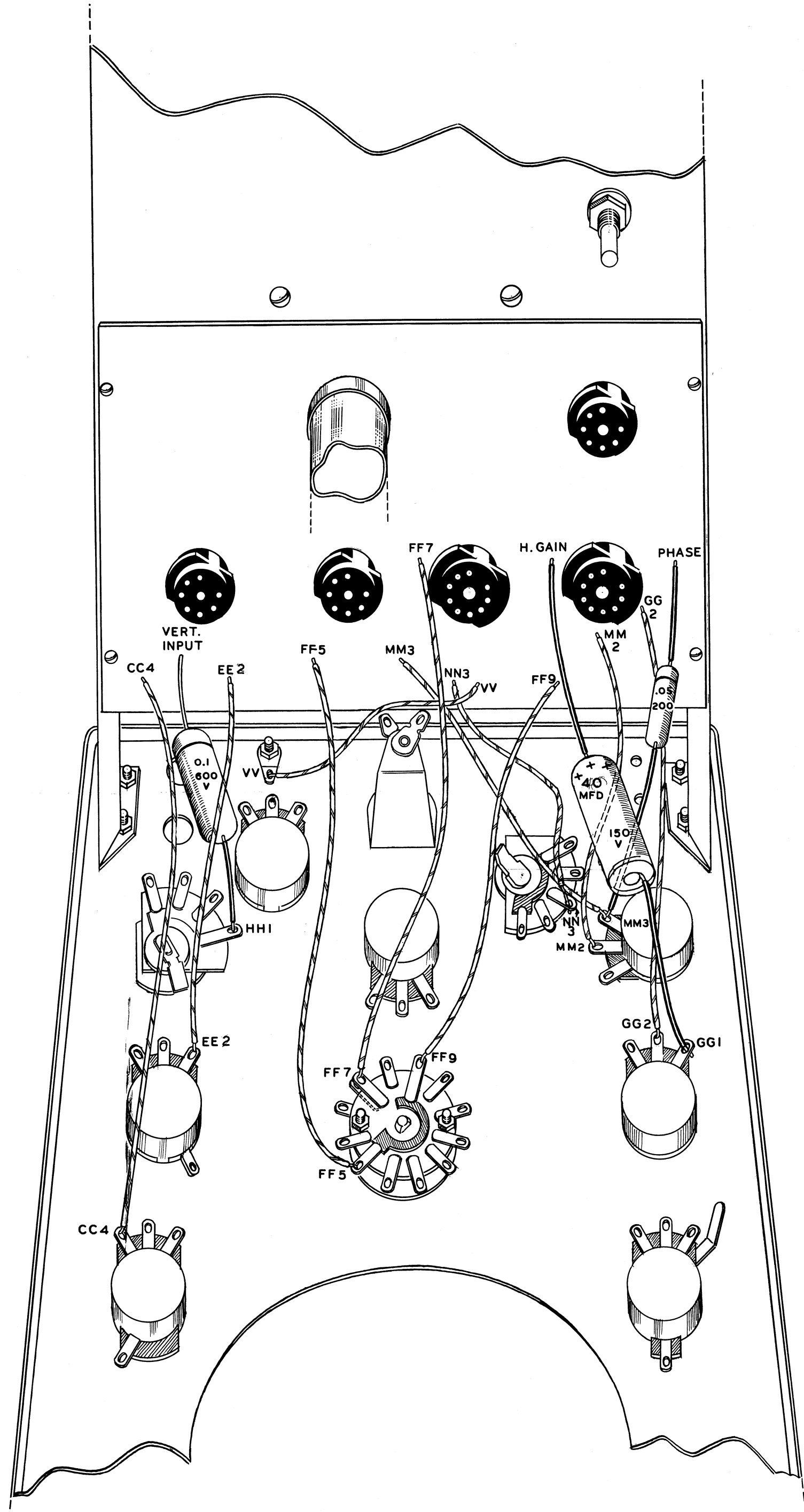
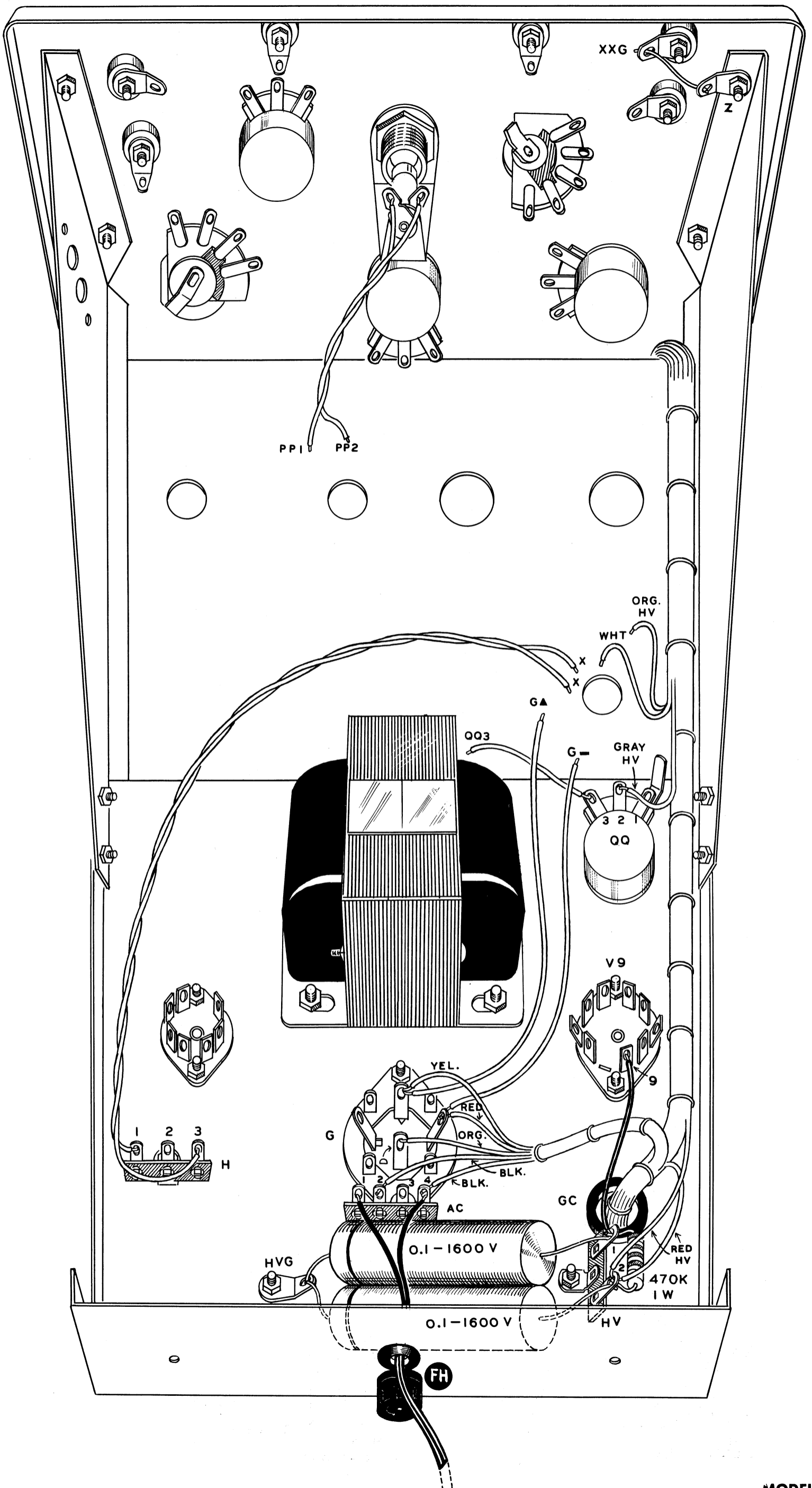
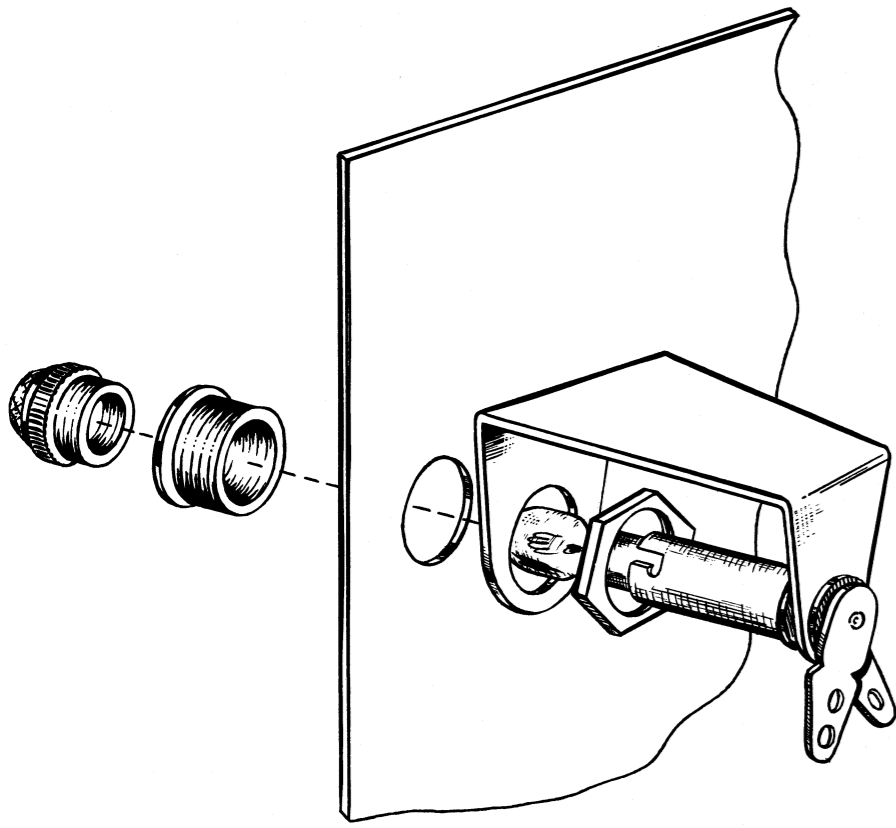


Figure 21





PILOT LIGHT ASSEMBLY

Figure 6

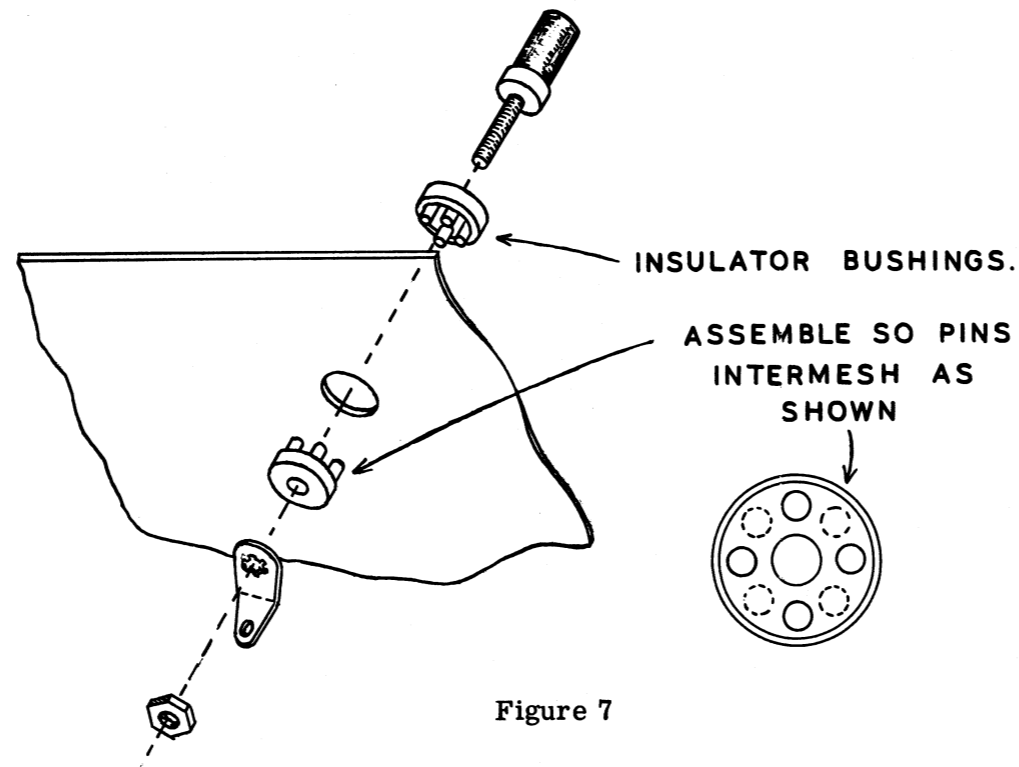


Figure 7

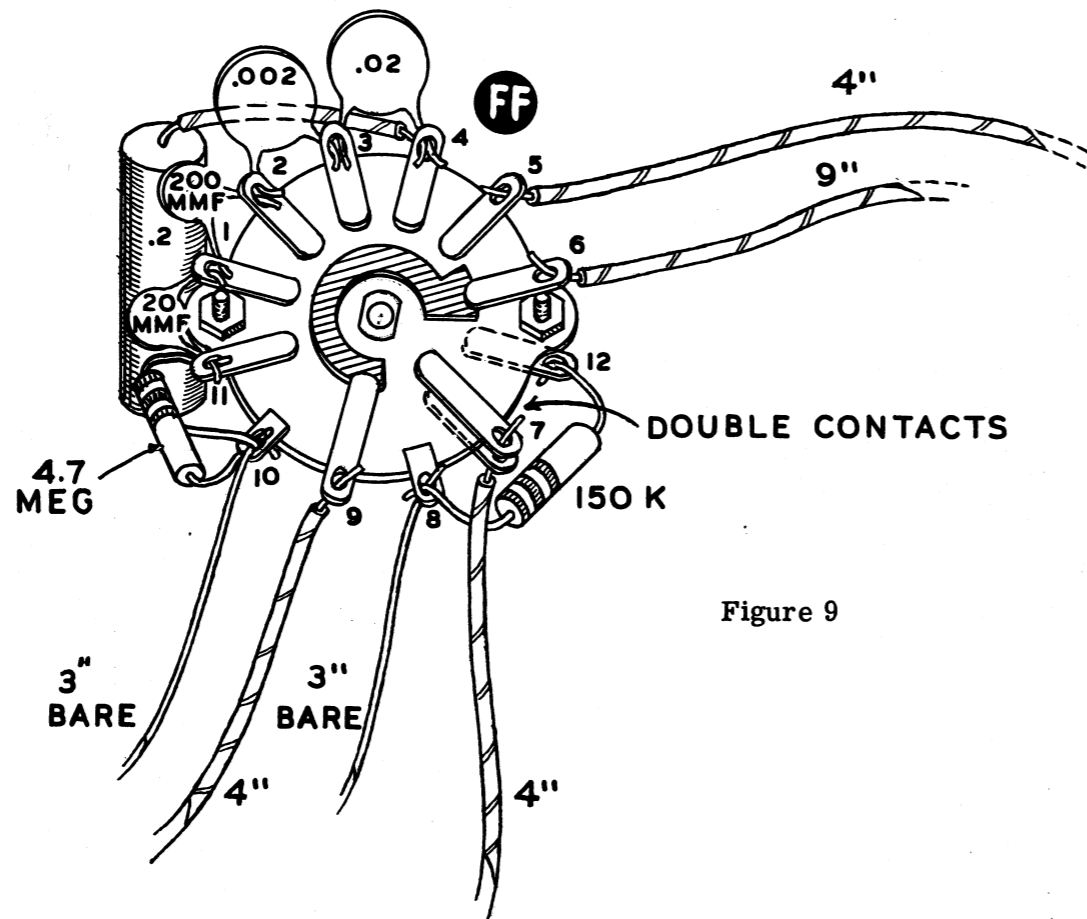


Figure 9

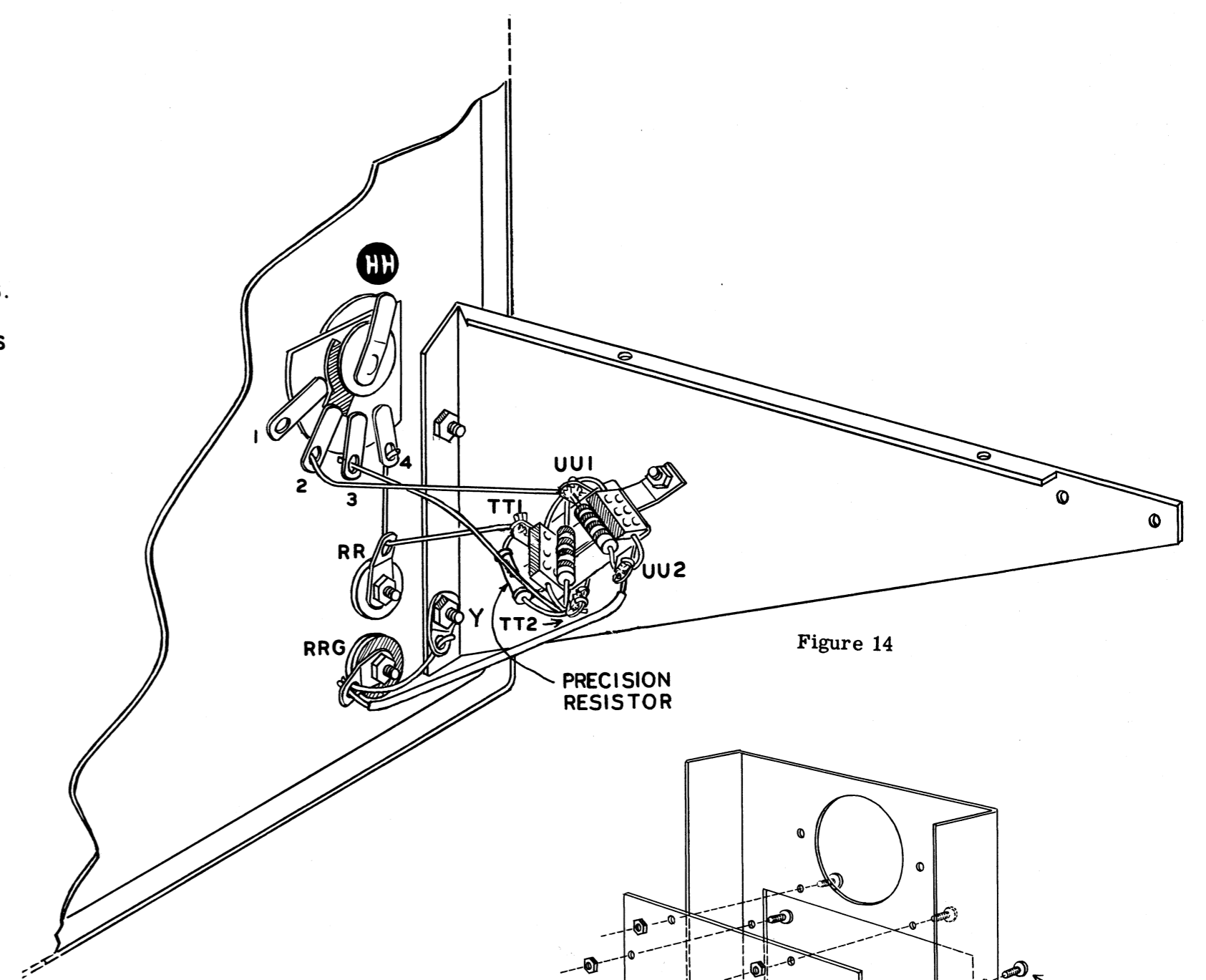


Figure 14

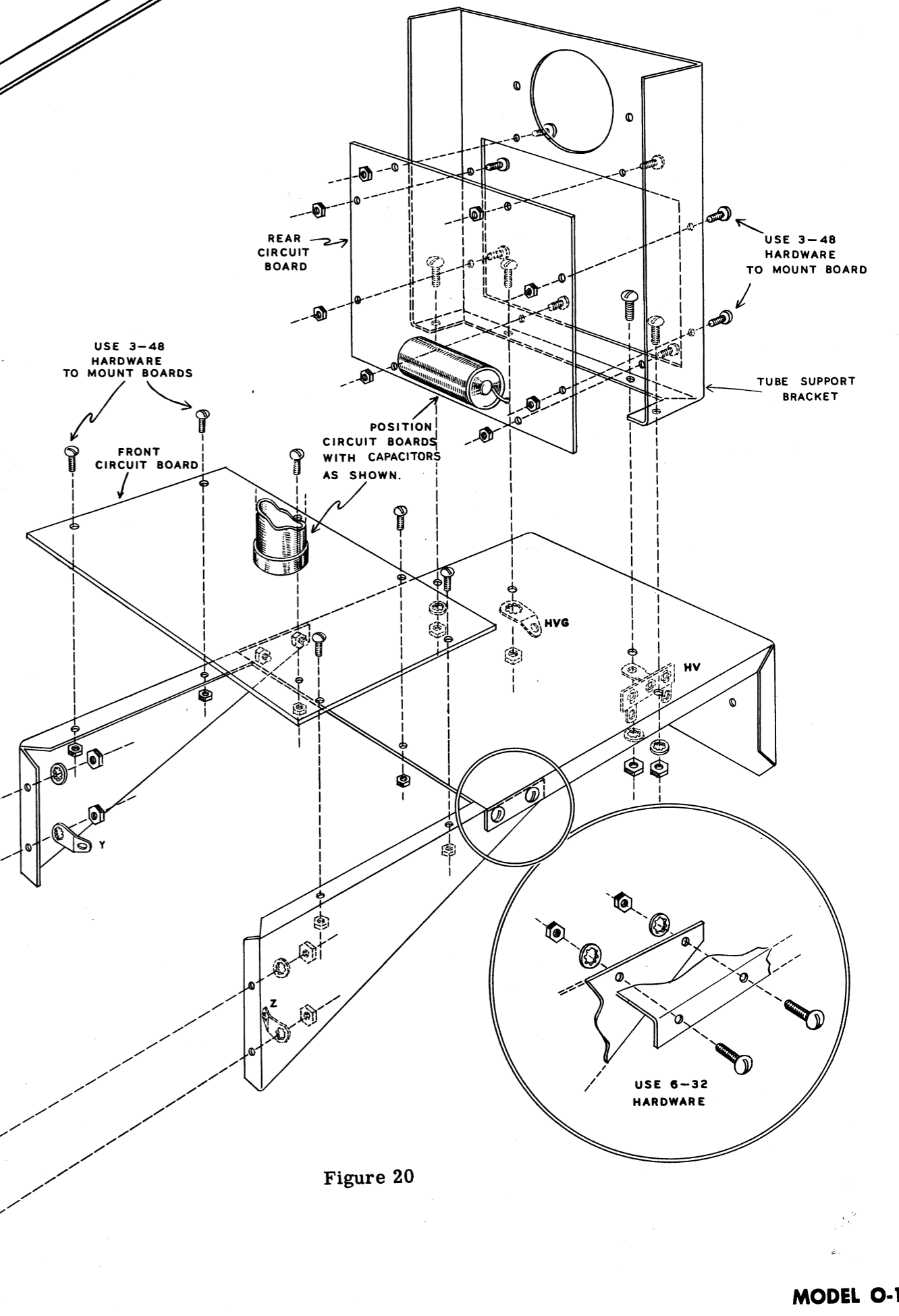


Figure 20

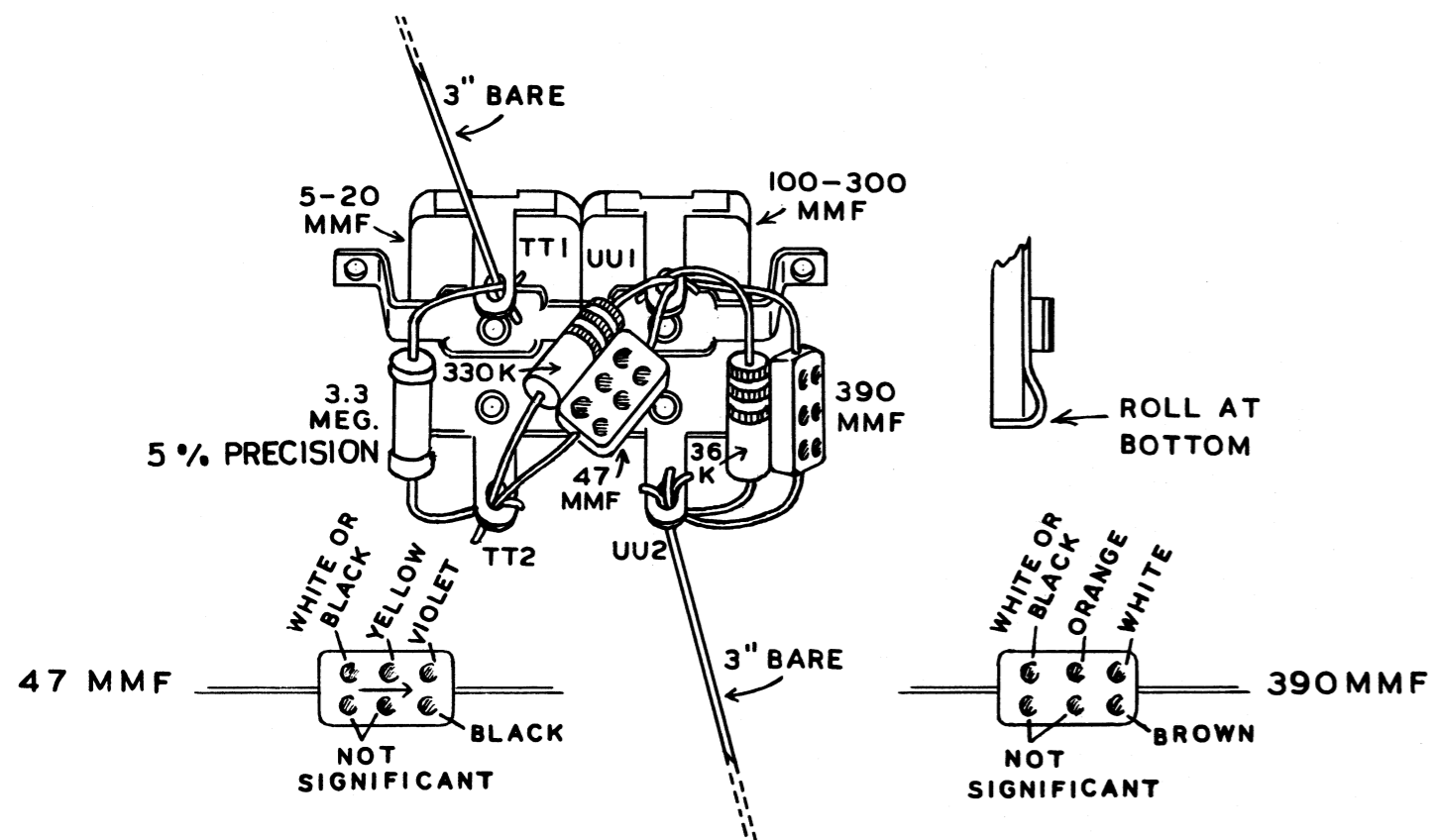


Figure 10