

### ALIGNMENT PROCEDURE

#### GENERAL INSTRUCTIONS:

1. Remove amplifier from cabinet before beginning alignment.
2. Allow tuner and test equipment to warm up for fifteen minutes before alignment.
3. Remove slack from pulley cord before beginning alignment (see figure 7).
4. Use 30% modulation for AM alignment and 150KC deviation for FM sweep unless otherwise indicated.
5. Keep generator output as low as possible throughout alignment procedure.
6. During FM alignment match generator to 300 ohm unbalanced input by use of a suitable pad.

#### AM ALIGNMENT:

1. I-F alignment. Set generator to 455KC. Connect output of generator through a .05 mfd capacitor to pin 7 of V1; low side of generator to B<sub>-</sub>. Connect VTVM across either speaker voice coil. Adjust top then bottom of T7 and T6 for maximum output. Repeat until there is no further increase in output.

2. Oscillator limits. Set generator, connected as in step 1, to 1630KC. Completely open tuning gang. Adjust VC4 for maximum output as indicated on VTVM connected across speaker as in step 1. Completely close tuning capacitor; set generator to 535KC. Adjust core in T5 for maximum output. Alternately adjust at 1630KC and 535KC until no further increase in output occurs.
3. R-F alignment. Connect generator to a radiating loop (5 or 6 turns, 5" dia.) placed at right angles to antenna. Set generator to 1500KC; tune receiver, as indicated on dial, to same frequency. Adjust VC3 for maximum output as indicated on meter connected across speaker voice coil. Remove radiating loop and tune receiver to a station in the vicinity of 600KC. If performance is satisfactory, proceed to FM alignment.

#### FM ALIGNMENT:

NOTE: Alignment is to be made in FM position. DO NOT USE FM/AFC POSITION.

1. I-F Alignment - Connect sweep and marker generators (see general instructions 4, 5, 6) to FM antenna terminals. Connect oscilloscope, through 100K isolating resistor, to junction of C19 and R8 or terminal #2 of

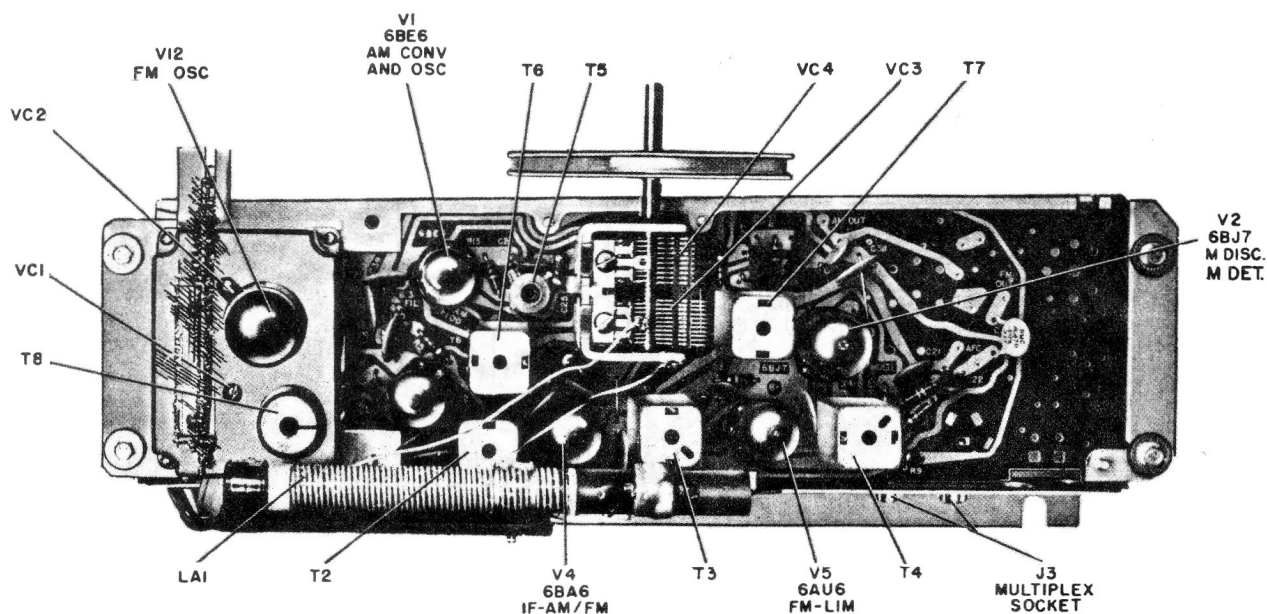


Figure 1. Top View of Tuner Perma-Circuit Panel

T3. Set generators to 10.7mc and adjust top and bottom cores of T8, T2 and T3 for a symmetrical maximum amplitude curve with 10.7mc marker at top. Input should be adjusted so that no more than .7 VDC is developed across R8.

Initial adjustments may be made using a high deviation, but final adjustment should be made with no more than 150KC deviation.

2. **Discriminator Alignment** - Change the scope connection to the common connection of R12, R1, C22 and C30. Connect an AM generator (30% modulation), set at 10.7mc, to pin 1 of V5; adjust T4 top for minimum peak-to-peak amplitude. Inject 10.7mc sweep signal and 10.7mc marker at pin 1 of V5. Adjust T4-bottom for a symmetrical, maximum amplitude "S" curve centered at 10.7mc and having a central linear portion of no less than 200KC. Connect generator to antenna input and re-adjust the top core of T3 for maximum amplitude and linearity of "S" curve. It is essential that input be adjusted to develop no more than .7VDC across R8.
3. **Tuner Drive Cord Adjustment** - With the pulley held in its most clockwise position, (viewed from front), rotate the fastener located on the pulley shaft clockwise until the tuner drive cord is slack. At this time, the movable core assembly in the tuner should be against the stop at its rear

most position; this may be determined by gently pulling, then releasing, the drive cord at the point at which it leaves the tuner housing. Holding the pulley in its most clockwise position rotate the fastener counterclockwise to the point at which all slack is removed from the drive cord but not far enough to cause the movable core assembly to move off its stop. It is of utmost importance that the tuner drive cord is wound smoothly on the pulley shaft without space between adjacent turns and with turns piled one on another.

4. **FM Tuning Range Adjustment** - This adjustment is initially made at the factory and under normal conditions should not need readjustment.
5. **TV Trap Adjustment** - This trap, factory adjusted for maximum attenuation at 203mc, will reduce interference from channel 9 through channel 13 television stations. If severe interference occurs on one particular channel, it may be minimized by tuning this trap to that particular channel. To do this, connect a VTVM to the junction of C19 and R8, tune the receiver to maximum interference and adjust T1 for minimum meter indication.

NOTE: AFC adjustment is not necessary due to the close tolerances used in this circuit. When replacing this diode, it is suggested that only an exact replacement be used.

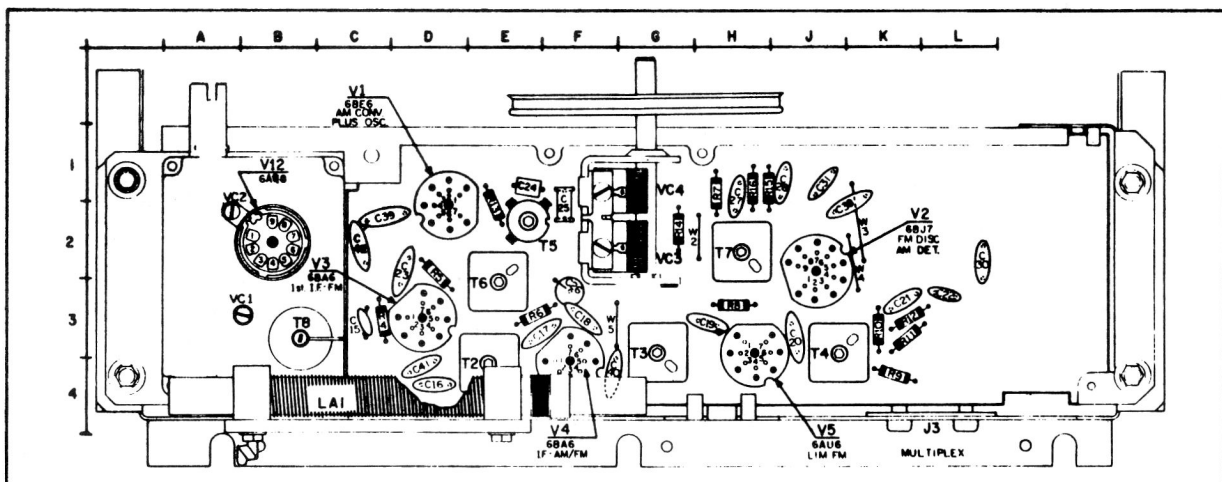


Figure 2. Top View Showing Component Layout

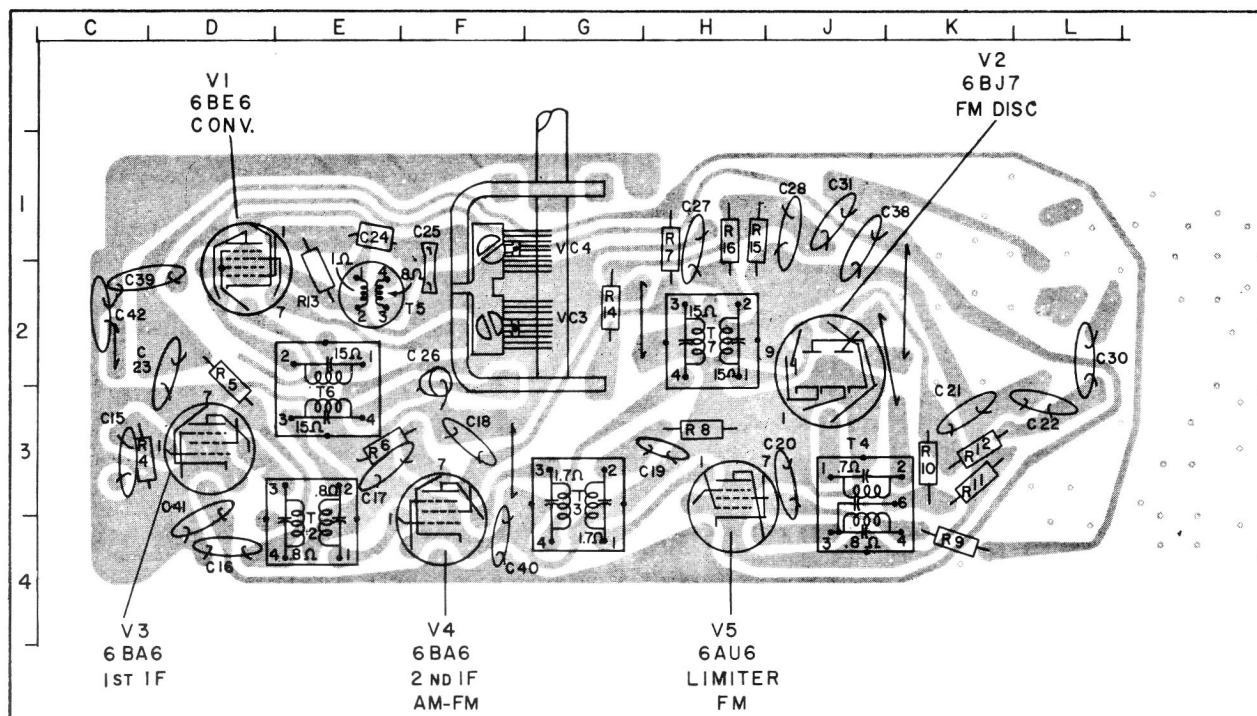


Figure 3. Composite View Showing Foil Locations

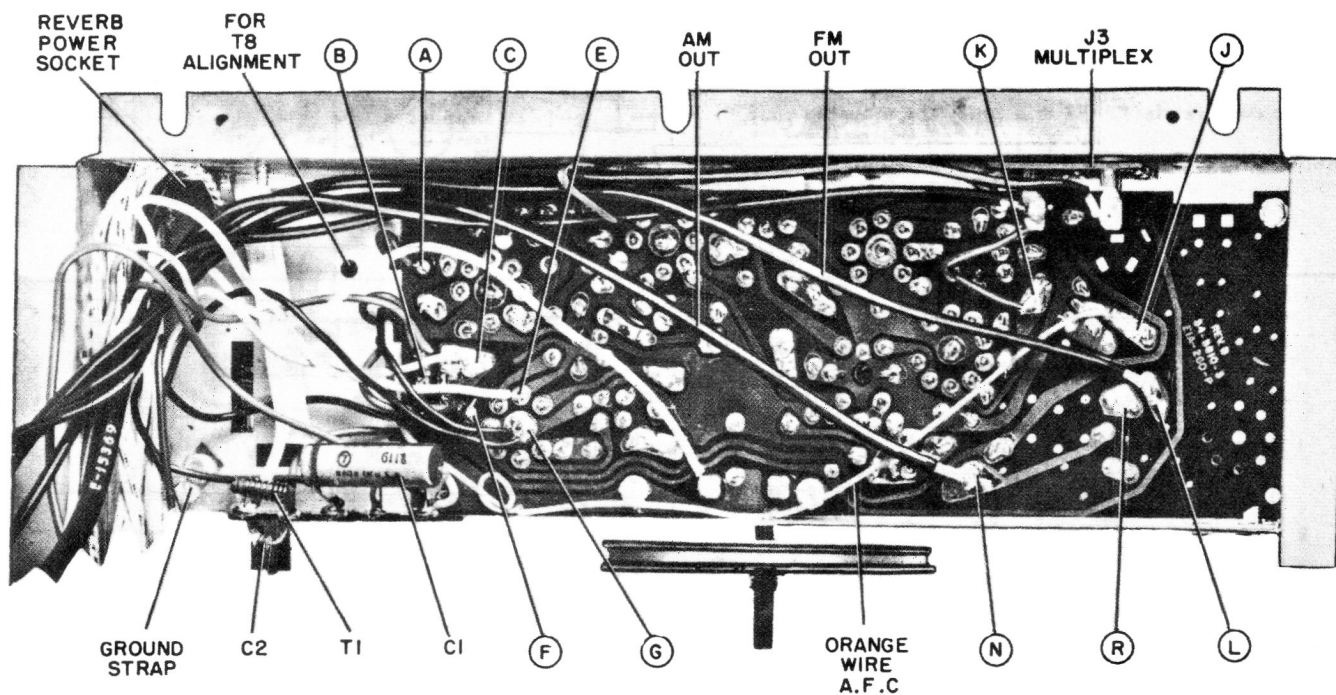


Figure 4. Bottom View of Tuner Perma-Circuit Panel

## THE TRIPLEX AUDIO SYSTEM

The Model 1748/42 employs the Philco Triplex audio system. The circuit design provides both push-pull operation for the common bass signal having non-directional characteristics and single ended operation for middle and high frequency signals containing the directional information. The left and right stereo channel information, in phase at the signal input, is fed into the amplifier. In the right hand channel, the signal goes through double phase inversion and amplification stages. In the left hand channel we have only single phase inversion and amplification. As a result, we now have two signals, 180° out of phase at the grid of each output tube. Recalling now that the middle and high frequency signals contain the directional stereo information, the low frequency information from both left and right channels is added and reproduced in a central channel speaker system. The left and right channel output combine forming a push-pull output for the center channel system. The crossover network consists of three output transformer primaries and

a 0.1 mfd capacitor shunt across the primary of the center transformer. At low or bass frequencies, the right and left channel primary impedances are low, however, the center channel primary impedance is high. The opposite is also true of the left and right channel output transformer primaries, namely, their respective impedances are high to middle and high frequencies, while the central output primary is low.

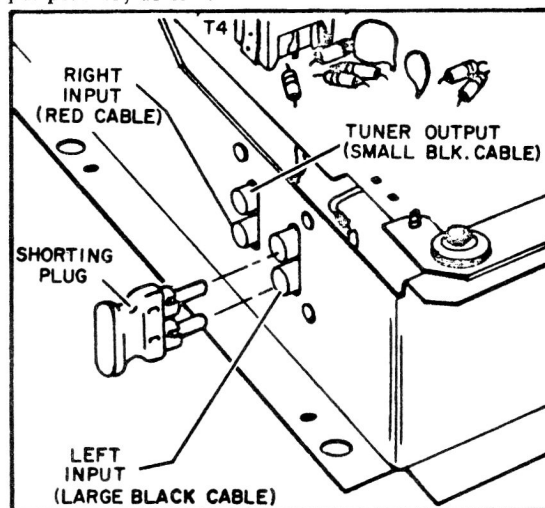


Figure 5. Multiplex Sockets

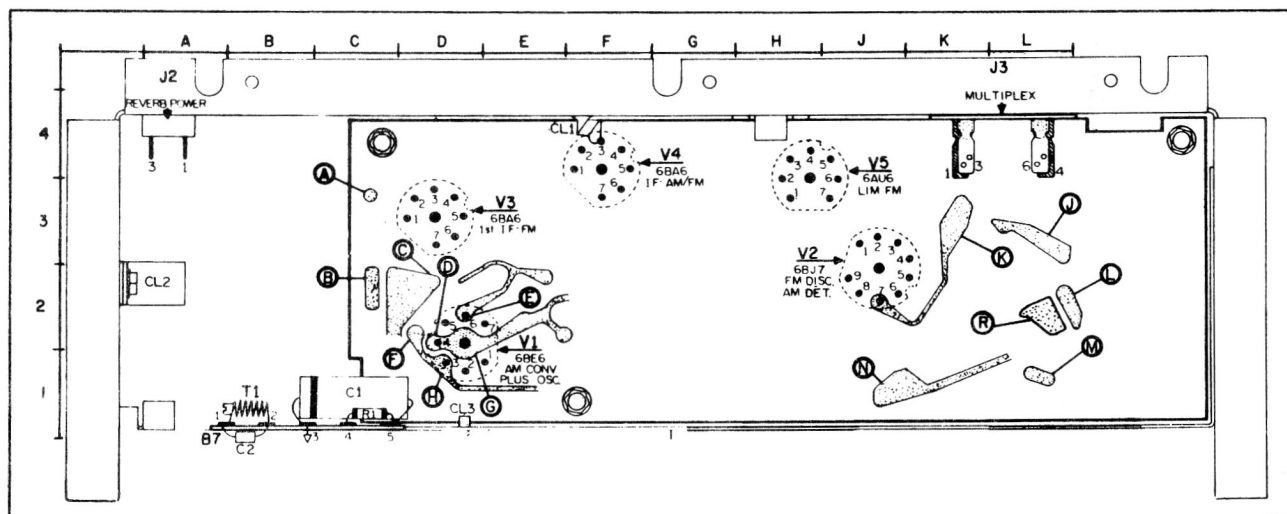


Figure 6. Bottom View of Tuner Layout Showing Wiring Locations