

## INSTRUCTION BOOK ADDENDA

## HQ-110A-VHF -- HQ-170A-VHF

## 2-Meter Converter, 6-Meter Pre-Amplifier

Introduction

The Hammarlund HQ-110A VHF and HQ-170A VHF receivers are equipped to tune all amateur frequencies from 160 meters through 2 meters.

Reception of CW, AM and SSB signals are provided for.

Operation

To receive 6 meter signals (50 to 54 mcs) the bandswitch is placed in the 50 to 54 mc position and the volume control knob pushed in. A suitable antenna must be connected to the proper antenna terminal. (See fig. 2)

The sensitivity of the HQ-110A VHF and the HQ-170A VHF on the 6 meter band is improved over that of the HQ-110A or HQ-170A. This improvement is accomplished by the use of a low noise 6CW4 pre-amplifier stage.

When the bandswitch is in the 50 to 54 mc position and the volume control knob is pulled out, frequency converter stages are turned on which change 144 to 148 mc. signals to 50 to 54 mc signals.

When not receiving 2 meter signals, it is recommended that the volume control knob be pushed in. This reduces the power consumed in the receiver. Separate antennas are recommended for 6 and 2 meter operation. Where it is desired to use a combination 6/2 meter antenna, a switching unit should be used to disconnect the antenna terminal not in use.

On six and two meters the sideband switch is reversed due to the high frequency oscillator being used on the low side of the incoming signal. This results in the upper sideband being received in the lower sideband position and vice versa.

Theory of Operation

The converter consists of (4) type 6CW4 Nuvister tubes in a combination 2 meter converter, 6 meter pre-amplifier circuit.

Signals at 144 to 148 mc are introduced to the converter through a tapped antenna coil. A 6CW4 RF amplifier is coupled to a bandpass filter which consists of L202, C204, C206, L203, and L204.

## Field Alignment Procedure

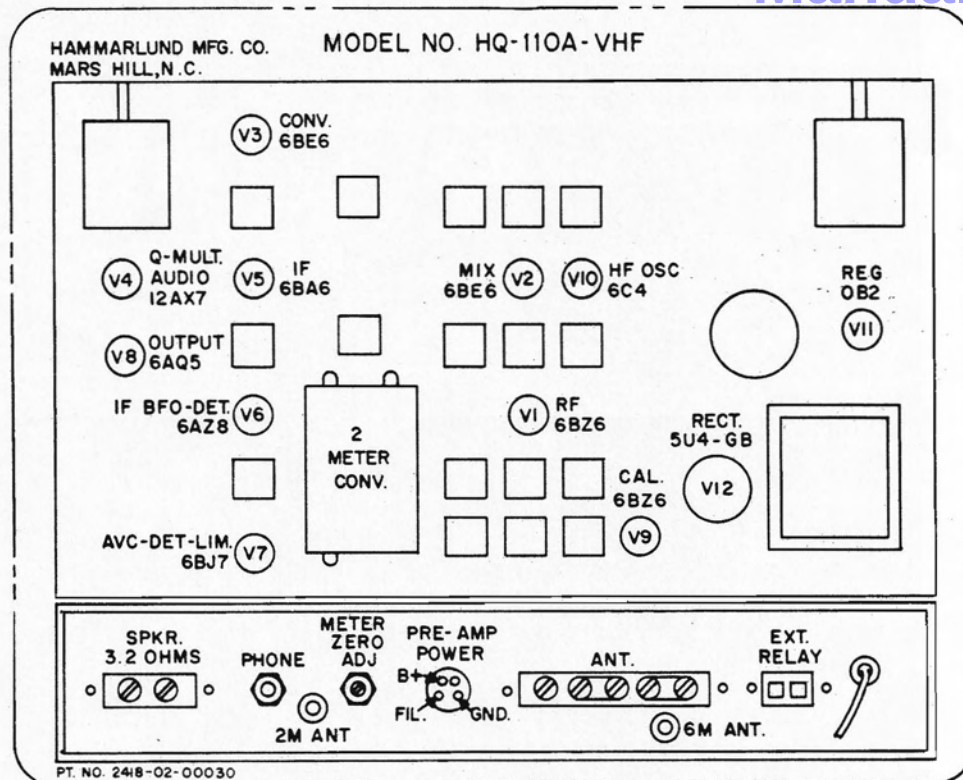
### Equipment Required

1. Signal generator.
2. Alignment tools.

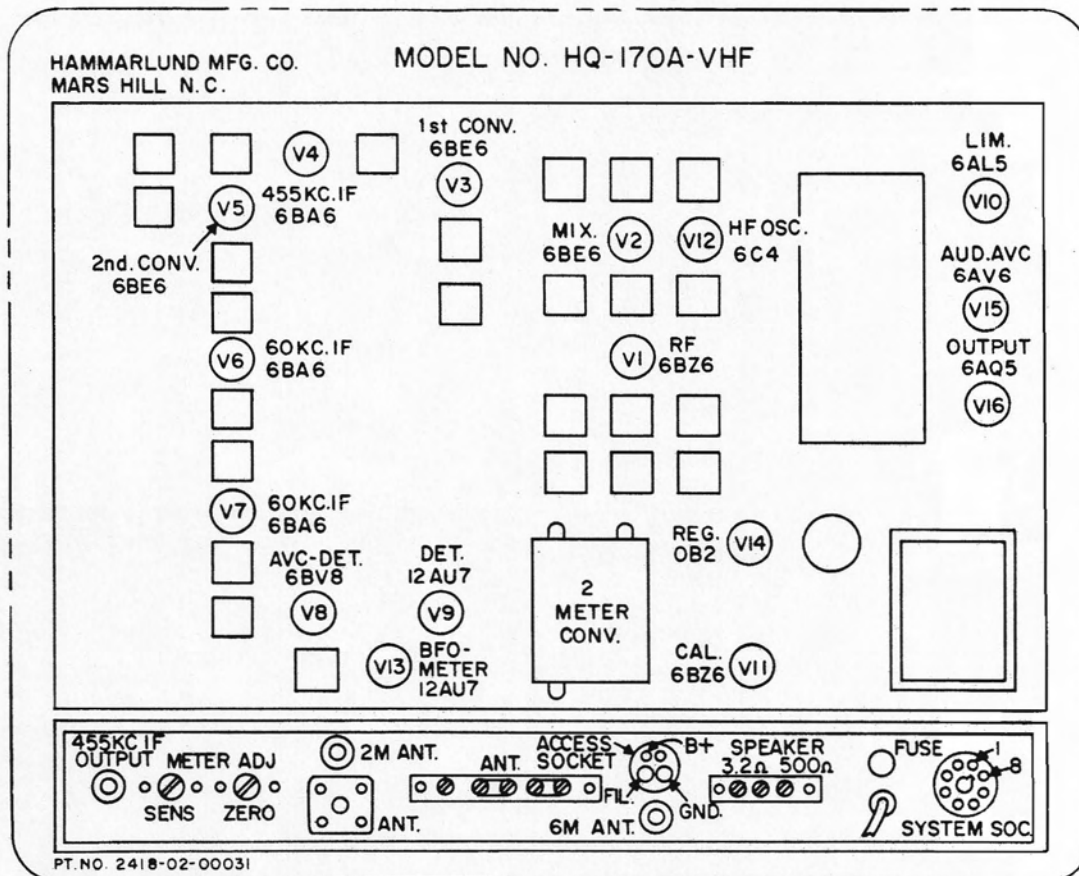
Refer to Figure 1 for location of coils.

### Procedure (Cover must be in place during tuneup)

1. Turn all slugs counter clockwise so that they are near bottom of coil. (nearest chassis)
2. Tune receiver to 50 mc.  
  
Feed the signal generator to 6 meter antenna terminals and adjust so that signal is heard.
3. Adjust L205 and L206 for peak reading on meter. Turn each 2 turns at a time till they peak. Repeat several times.
4. Unsolder B+ lead to the converter. (Be sure to turn off set)
5. Turn set on and tune L211 for a minimum reading on meter.
6. Resolder B+ lead and check tuning of L205 and L206.
7. Change generator to 144 mcs and move generator output to 2 meter antenna connector. Pull out volume control knob for 2 meter operation. Tune receiver to 144 mc.
8. Tune L207 & L208 while rocking signal generator around operating frequency until oscillation starts. Peak both coils.
9. Tune T201 and L204 for peak readings. Peak several times to be sure of proper tuning.
10. Peak C202 for maximum reading then turn clockwise 1 full turns.
11. Tune generator and receiver to 147 mc. Peak L203 for maximum. Trim L207 and L208 for maximum.
12. Tune receiver and generator to 145 mc. Peak receiver.



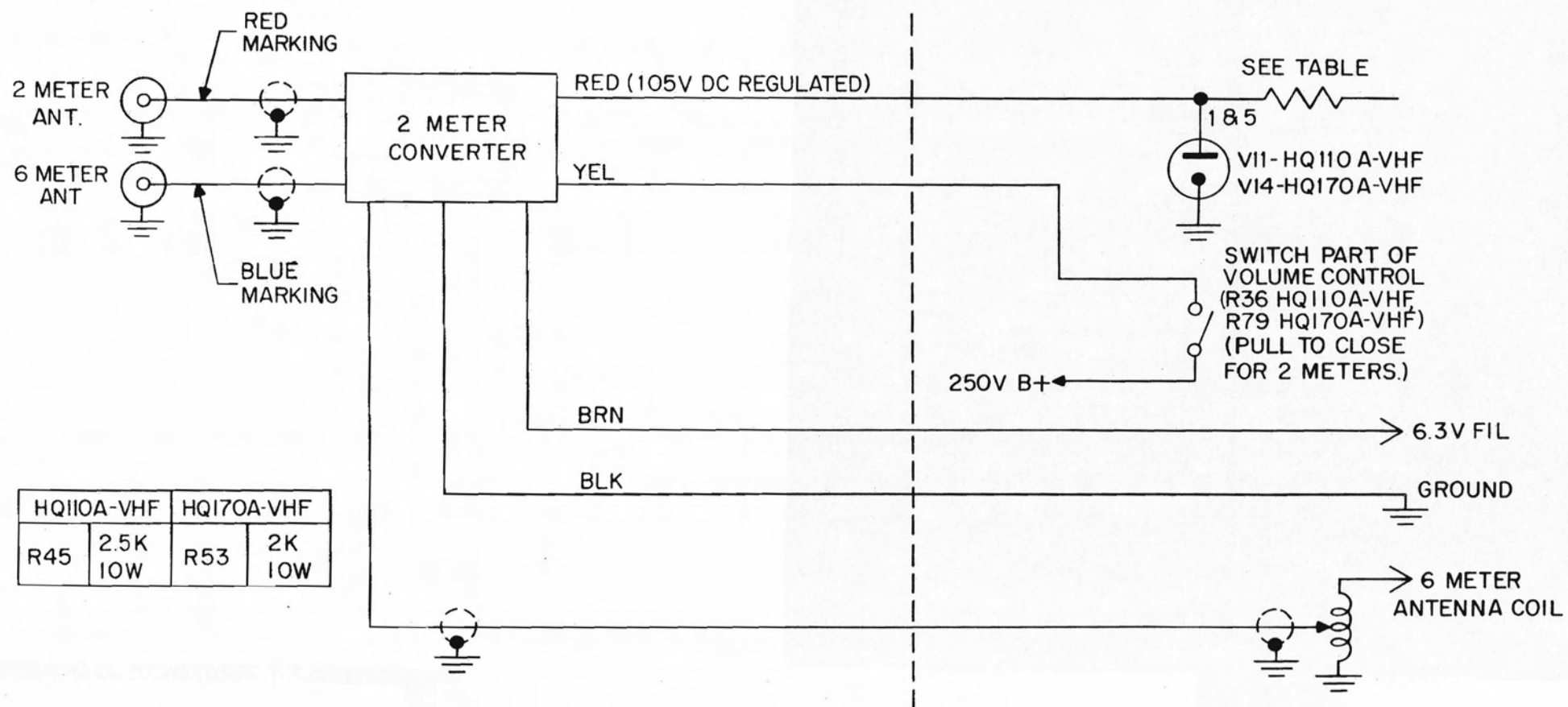
TUBE LOCATION HQ110A - VHF



TUBE LOCATION HQ170A - VHF

Parts List

| <u>Schematic Designation</u> | <u>Description</u>                    | <u>Hammarlund Part No.</u> |
|------------------------------|---------------------------------------|----------------------------|
| C201                         | Dur-Mica DM15 22 pf $\pm 5\%$ 500V    | M1519-01-00050             |
| C202                         | Trimmer - 1-8 pf                      | K1527-01-00002             |
| C203, 211                    | Fixed molded 1 pf $\pm 10\%$ 500V     | K1509-02-04001             |
| 222, 224                     |                                       |                            |
| 225                          |                                       |                            |
| C204, 206                    | Dur-Mica DM15 5 pf $\pm 10\%$ 500V    | M1519-01-00003             |
| 208,                         |                                       |                            |
| C207                         | Dur-Mica DM15 3pf $\pm .5$ pf 500V    | M1519-01-00011             |
| C209                         | Dur-Mica DM15 10 pf $\pm 10\%$ 500V   | M1519-01-00006             |
| C210, 223                    | Dur-Mica DM15 4 pf $\pm .5$ pf 500V   | M1519-02-00025             |
| C213, 215                    | Disc Ceramic.001MFD $\pm 10\%$ 1000V  | M1509-01-01013             |
| 216, 217, 218,               |                                       |                            |
| 221, 226, 227                |                                       |                            |
| C219                         | Dur-Mica DM15 15 pf $\pm .5$ pf 300V  | M1519-02-00022             |
| C220                         | Dur-Mica DM15 2 pf $\pm .5$ pf 500V   | M1519-01-00024             |
| C228, 229                    | Feed thru 1000 pf GMV 500V            | K1524-02-01001             |
| K201                         | Relay 4PDT DC                         | K4515-01-00002             |
| L201                         | Coil, Ant 146 mc                      | K1806-02-00102             |
| L203                         | Coil RF 146 mc                        | K1806-02-00101             |
| L204                         | Coil RF 146 mc                        | K1806-02-00100             |
| L205, 206                    | Coil RF 52 mc                         | K1806-02-00103             |
| L207, 208                    | Coil Osc 94 mc                        | K1806-02-00104             |
| L209                         | Coil Trap 188 mc                      | K1806-02-00105             |
| L210                         | Coil neutralizing                     | K1805-01-00001             |
| L211                         | Coil RF 146 mc                        | K1805-02-00122             |
| R201, 203, 212               | Resistor Fixed 47K $+10\%$ 1/2 W      | K4703-01-00352             |
| R202, 209                    | Resistor Fixed 6.2K $+5\%$ 1/2 W      | K4703-02-00466             |
| R204, 205                    | Resistor Fixed 10K $+10\%$ 1/2 W      | K4703-01-00344             |
| R207                         | Resistor Fixed 68 OHMS $+10\%$ 1/2 W  | K4703-01-00318             |
| R208                         | Resistor Fixed 180 OHMS $+10\%$ 1/2 W | K4703-01-00323             |
| R210                         | Resistor Fixed 12K $+10\%$ 2 W        | K4705-01-00945             |
| T201                         | Transformer RF 146 mc                 | K1812-01-00018             |
| Y201                         | Crystal 31.3333 mc                    | M2305-01-00074             |
| V201, 202,                   | Tube Electron 6CW4                    | K5704-02-00002             |
| 203, 204                     |                                       |                            |



2 METER CONVERTER SYSTEM DIAGRAM  
HQ110A-VHF, HQ170A-VHF