

# H.R.O. ALIGNMENT DATA

MANY H.R.O. receivers have become available from disposal sources, and their new owners may not know how to bring them up to peak performance. The following data will assist all H.R.O. owners to ensure that their receivers are operating in first class order.

The first step is to purchase new paper condensers to replace every condenser in the set. In addition, two 25  $\mu$ F. electrolytic (50 volt) condensers will be required. Remove one condenser at a time from the set and replace it with a new one. (By so doing, you cannot affect the set's performance by rendering it inoperative because no condenser replaced is in any frequency determining location.) Having done this and replaced all condensers, the set can then be re-aligned as follows:

Let the set run for two hours before commencing re-alignment.

Disconnect the aerial, a.v.c. off, r.f. gain at 9, crystal filter ON, phasing control at 5 (central), selectivity maximum, and c.w. osc. on. The c.w. osc. control should be turned until the background noise is lowest (i.e. about 9) and the exact setting noted. Disconnect the phasing control (turn to 0) and set the selectivity control for lowest background noise. If the i.f. is correct the c.w. osc. will have the same dial reading. If not, then the i.f. requires alignment. To do this, connect the aerial, set r.f. gain at 9, connect the crystal filter and tune in a steady c.w. signal, tuned exactly to the crystal peak response. Trim all i.f. transformers for maximum output; if the gain has to be reduced remove the aerial, but do not reduce the r.f. gain control. Repeat the above until the i.f. strip is correctly aligned.

The c.w. osc. may be adjusted for beat note by varying the trimmers on top of the b.f.o. coil; left hand front corner.

To adjust the coil boxes, set all controls normally, r.f. gain max., c.w. osc. off, a.v.c. off, phasing control at 0, selectivity control for maximum back-

ground noise. The following data applies to the general coverage coils and it should be remembered that the adjustments for general coverage must be made before altering the bandsread coils. To change to bandsread, place the coil screws in the right hand screw holes.

Coil	High		Low		Note
	Dial	Freq.	Dial	Freq.	
D	490	4 Mc.	13.5	1.7 Mc.	
A	485	30 Mc.	20	14 Mc.	1
C	490	7.3 Mc.	50	3.5 Mc.	
B	485	14.4 Mc.	50	7 Mc.	
E	470	2 Mc.	50	900 Kc.	2
F	436	900 Kc.	50	480 Kc.	3
G	450	400 Kc.	50	180 Kc.	3
H	490	200 Kc.	50	100 Kc.	3
J	490	100 Kc.	50	50 Kc.	3

Note 1—Bend the oscillator wire leads from the gang to the coil box to adjust the 14 Mc. setting, then repeat the procedure for coil "D".

" 2—Trim the r.f. stages with the dial set at 490.

" 3—As for Note 2, but adjust the low end by means of the padders located at the rear of the oscillator coil box. (If other coil sets are very far out from calibration the oscillator coil may have the half turn loop of wire (inside the coil former) moved until the low end calibration is correct.

" 4—In every case the image will appear at a lower dial setting.

" 5—The r.f. and mixer trimmers are adjusted for maximum noise output, without any aerial connected, and the dial should be set as shown for each coil box.

The above procedure will enable you to re-align your H.R.O. and can be carried out by anyone who is prepared to take their time. The final results de-

pend upon the care with which the coil boxes are re-aligned.

The trimmer controls are located directly alongside the inside front panel, and reading from right to left are as follows (in every case refer to the right hand trimmer in each coil set, the left hand trimmers only apply to the bandsread settings): Oscillator, first mixer, second r.f., first r.f. stage.

To adjust the bandsread coils, place the coil screw in the right hand screw slot. Bandsread adjustments will not affect the general coverage setting, but the converse does not apply.

The dial should be set at 450 and the coil set adjusted for the frequency as shown on the chart (e.g. 0.4 Mc.) by trimming the left hand oscillator trimmer; the other trimmers should then be peaked for maximum background noise—without an aerial connected. The dial is then set at 50 and the low frequency band edge adjusted by the series trimmer at the back of the oscillator coil. Re-adjust the other left hand trimmers and see if the background noise increases. If it does, adjust the trimmers at the back of each coil set. Repeat the above until an even background noise and correct tracking is obtained over the entire bandsread range.

By doing this apparently complicated task, which in reality is very simple, you will have your H.R.O. performing like new.

The above data applies to the following series of H.R.O.'s: H.R.O., H.R.O.-5, H.R.O.-5T, H.R.O.-5R, H.R.O.-M, H.R.O.-MX, H.R.O.-M-RR, H.R.O.-M-TM, H.R.O.-SR. and the H.R.O.-JR.

If required, an article could be prepared upon adding a new rf. stage, and product detector; which in combination really up-grade your H.R.O. Drop a line if you wish this article to appear in "A.R." —VK3ZFQ.

## HINTS AND KINKS

### HOME-BREW TEST PRODS

Materials required: Two "BIC" ball point pens (used or not, they are very cheap), two banana plugs (red and black), and two hook-up wire leads (red and black).

Take the pens, remove the brass inserts and then the ink tubes. After cleaning the insert cavity, solder in each wire, keeping solder off the outside.

Drill a clearance hole for the wires in the top plastic plug of each pen and thread the wires through, replacing the inserts in their original position. Finally fit the banana plugs and that's all there is to it!—VK3UJ.

### MODIFICATION TO FT243 CRYSTAL HOLDERS

The popular FT243 type crystals can be made to fit the  $\frac{1}{2}$ " large-pin crystal sockets (such as used on the 522) by using the pins from an old tube base. Take any old tube that has large type pins, break off its base and remove two pins. Open the seam on these pins with a sharp screw driver or knife and slide them over the pins of the 243 crystal. Now the crystal, with its new pins, will fit the large wide spaced socket.

—Courtesy "QST," May 1959.

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