

RECEPTION SETS, P.C.R., NOS. 1, 2 AND 3

TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

(Service data - Second to fourth echelon)

ALIGNMENT AND PERFORMANCE TESTING

I.F. MEASUREMENTS

1. Sensitivity

Apply a signal of approx. 465kc/s modulated 30% at 400c/s to the F.C. grid. With the receiver gain at maximum, adjust the input for an output of 50mW, tuning the signal generator to resonance with the I.F. amplifier. The input must not be greater than 15µV. The resonance frequency must be within 465 ± 1kc/s.

2. Selectivity

With an input as described in para. 1 increase the input by the amounts given in the table below, and in each case detune the signal generator to each side in turn until the output drops to 50mW. Note the difference between the two frequencies at which this occurs to obtain the bandwidth, which must be within the tolerances in the following table:-

Input	Bandwidth
+ 6db.	4kc/s min.
+ 20db.	10.5kc/s max.
+ 40db.	16kc/s max.
+ 60db.	23kc/s max.

R.F. MEASUREMENTS

3. Adjustments

During trimming and while measuring the R.F. sensitivity, a load consisting of 5,000Ω in series with 0.1µF is connected between the second I.F. grid and the chassis. This reduces the I.F. amplification 40 to 50 times.

The following table gives the trimming points:-

P.C.R.2			P.C.R.3		
Band	Trim	Track	Band	Trim	Track
S.W.	20Mc/s	6.5Mc/s	S.W.2	20Mc/s	8.5Mc/s
M.W.	200m.	520m.	S.W.1	7Mc/s	2.6Mc/s
L.W.	1,000m.	1,800m.	M.W.	200m.	520m.

(Note: On the P.C.R.3., S.W.2 must be trimmed before S.W.1 and M.W.)

4. R.F. sensitivity

Connect a signal generator to the aerial and earth terminals via a standard dummy aerial on M.W. and L.W. and via a 400Ω non-inductive resistance on S.W. The signal generator should be modulated 30% at 400c/s. With the set damped as described in para. 3, the input for 50mW output must not be greater than the figures in the following table, which gives the production test frequencies and wavelengths:-

P.C.R.2		P.C.R.3	
Frequency	μV	Frequency	μV
20Mc/s	60	20Mc/s	60
14Mc/s	60	12Mc/s	60
9Mc/s	70	8.5Mc/s	70
6.5Mc/s	70	7Mc/s	30
		4Mc/s	30
200m.	20	2.6Mc/s	35
300m.	20		
520m.	25	200m.	20
		300m.	20
1,000m.	60	520m.	25
1,800m.	80		

5. I.F. rejection

With the set damped, apply an input of approx. 465kc/s connected as described in para. 4 with the set tuned to 520m. Tune the signal generator for maximum output from the set and adjust the input for an output of 50mA. The input must not be less than 40mV.

6. A.V.C.

With the signal generator connected as described in para. 4 and the set not damped, tune in a signal of 10μV at 300m., and adjust the gain-control for an output of 10mW. Increase the input to 100mV; the output must not rise more than 11db.

7. Over-all A.F. response

With the signal generator connected as described in para. 4 and the set not damped, tune in a signal of 10mV at 300m. Change the modulation frequency to 5,000c/s, and readjust both the tuning control and the aerial trimmer for the minimum between the two maxima indicated on the output meter. Return the modulation frequency to 400c/s, and adjust the gain for an output of 500mW (referred to as 0db.). Set the modulation frequency to the values given below and the output readings should be within the limits given:-

A.F.	Output
100c/s	+3 to -1db.
150c/s	+2 to -1db.

7. (contd.)

A.F.	Output
400c/s	0db.
1,000c/s	+2 to -1db.
2,000c/s	+3 to 0db.
3,000c/s	+2db.
4,000c/s	-1 to -6db.
5,000c/s	-8 to -17db.

Set the Tone switch to 'Low'

A.F.	Output
5,000c/s	-22 to -28db.

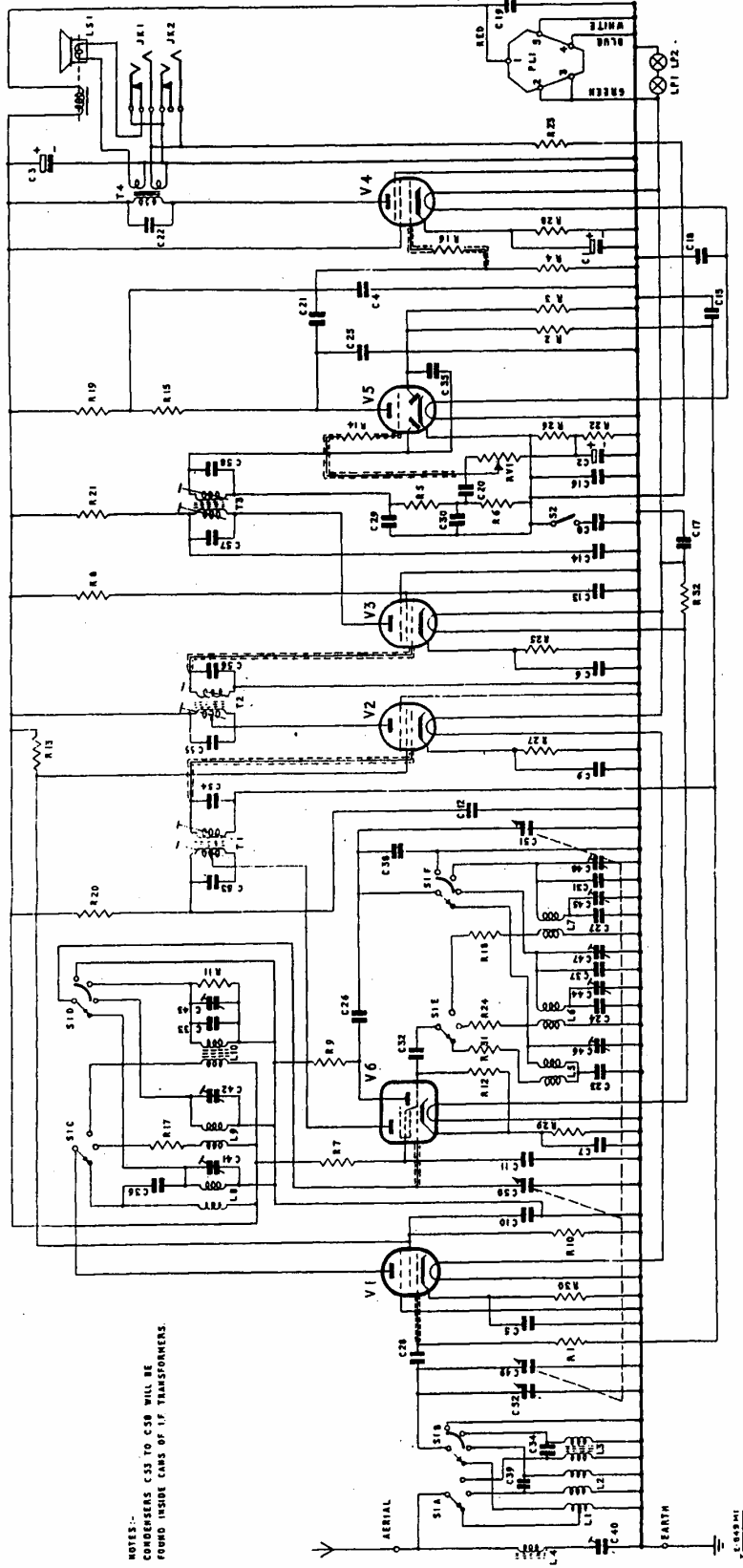
8. A.F. output

With input as described in para. 7 and 400c/s modulation, increase the gain-control until the point where distortion just becomes evident. Then measure the output, which should be at least 2W. Next turn the gain to maximum and again read the output, which should be at least 3W.

9. Calibration

Maximum tolerances:-

P.C.R.2	P.C.R.3
S.W. $\left\{ \begin{array}{l} + 100\text{kc/s above } 12\text{Mc/s} \\ \pm 50\text{kc/s below } 12\text{Mc/s} \end{array} \right.$ M.W. $\pm 2.5\text{m.}$ L.W. $\pm 10\text{m.}$	S.W.2 $\left\{ \begin{array}{l} \pm 100\text{kc/s above } 12\text{Mc/s} \\ \pm 50\text{kc/s below } 12\text{Mc/s} \end{array} \right.$ S.W.1 $\left\{ \begin{array}{l} + 50\text{kc/s above } 5\text{Mc/s} \\ \pm 25\text{kc/s below } 5\text{Mc/s} \end{array} \right.$ M.W. $\pm 2.5\text{m.}$



NOTES:-  
CONDENSERS C35 TO C50 WILL BE  
FOUND INSIDE CABS OF I.F. TRANSFORMERS.

Fig. 1 - Reception set, F.C.R. No. 1

