

MODIFICATIONS TO THE

18 SET

BY E. S. SYMONDS

THE main object of these modifications was to extend the original tuning range of this popular receiver and it was decided that the most satisfactory method would be to rebuild the frequency-changer stage as a triode hexode with series-fed oscillator.

Firstly, it was decided that home-made coils were to be wound for ranges 1 and 2, and to use Wearite "P" type coils for range 3. For those who do not wish to wind their own coils, they will find suitable substitutes in the Wearite range. The writer rendered the BFO and AVC circuits inoperative, and these are *not* shown on the circuit diagram. The "high-low" switch mounted on the left of the front panel may be retained as a stand-by switch, and the 4.7K Ω resistor that was originally soldered across this component may be used as a bias resistor in the cathode of the second detector valve. Do not forget to take the earthy end of R10 to the cathode end of the bias resistor. Capacitors C12 and C15 may be omitted with a slight loss in audio output. For those who have access to a signal-generator, the adjustable

cores are arranged as follows: upper core is the secondary winding, the lower core being the primary winding. For those in doubt about the intermediate frequency, it is 465 kcs. One of the redundant capacitors from the original frequency changer will be found in the first IF transformer screening can, and it will be marked 80 μ F; the other capacitors are marked 90 μ F and these should be left undisturbed. For those who do not wish to dismantle the IF transformer, it is only necessary to clip the wire that runs from the third tag on the right hand side of the unearthed rear trimmer, mounted on the underside of the main variable capacitors.

This pair of trimmers are removed from the set, as each grid coil is fitted with its own parallel trimmer. It will be helpful if the base connections of the original VP23 frequency changer valve are traced out before any removing of components is done. This will reveal the IF transformer tag which is unused in the modifications. The main chassis is extended each end by means of an aluminium plate, measuring 3" by

SPACE FOR BFO

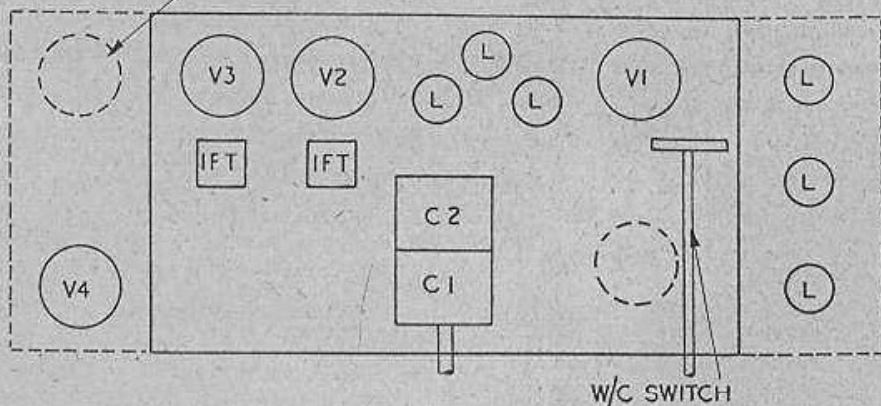


Fig. 1. Sketch showing layout of chassis and main components. The dotted lines indicate the added chassis at either end.

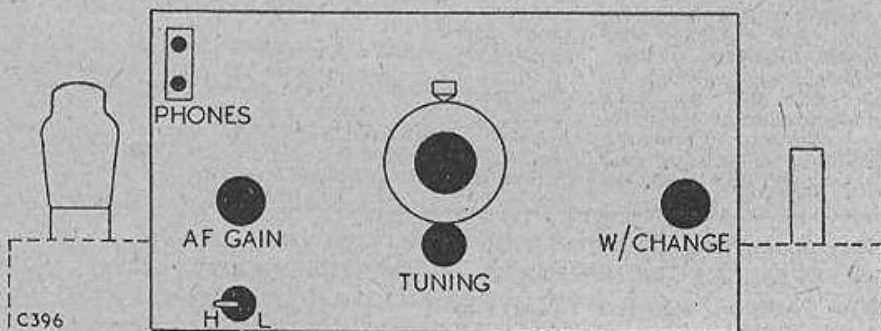
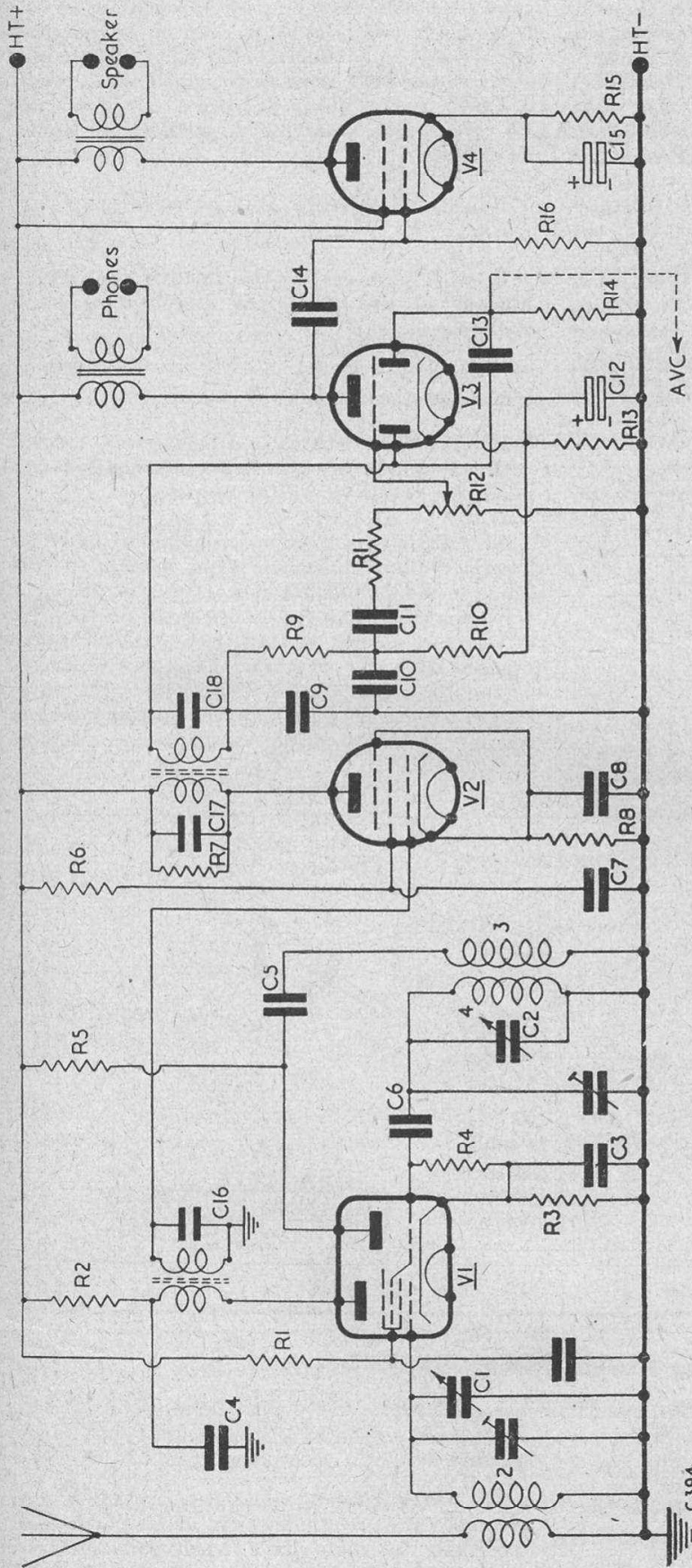


Fig. 2. Layout of front panel showing the various controls.



CIRCUIT DIAGRAM OF THE 1B SET

Components not marked are items which are not modified or removed.

List of Components

Capacitors

- C1, C2, 120 μ F variables.
- C3, 4, 7, 8, 14, 0.1 μ F 350v paper.
- C5, 11, 0.002 μ F mica.
- C16, 140 μ F mica.
- C6, 100 μ F mica.
- C17, 130 μ F mica.
- C9, 100 μ F mica.
- C10, 500 μ F mica.

- C12, 15, 25.0 μ F 25VW.
- C13, 5 μ F mica.
- C18, 90 μ F mica.

TC (trimmers), 30 μ F Phillips trimmer

Resistors

- R1, 33 K Ω
- R3, 220 Ω
- R5, 82 K Ω
- R7, 470 K Ω
- R9, 100 K Ω
- R2, 1 K Ω
- R4, 47 K Ω
- R6, 47 K Ω
- R8, 470 Ω
- R10, 500 K Ω

- R11, 47 K Ω
- R13, 4.7 K Ω
- R16, 500 K Ω
- R17 (For 6V6) 240 Ω 1 watt.
- R17 (For 6F6) 400 Ω 1 watt.
- R17 (For KT63) 420 Ω 1 watt.
- R12, 1 M Ω
- R14, 1 M Ω
- R15, see valve list.

All resistors are half-watt carbon, unless otherwise stated. C19, 20, are inside the IF transformer cans and are not shown on the circuit diagram.

4½" (16 swg). The right hand plate carries the mixer coils. The left hand plate carries the output pentode valve holder, and allows space at the rear for a BFO valve when required. The plates overlap the main chassis by about ½", and 4BA bolts used to affix to the main chassis. The more advanced builder may bend a flange on the outer edges to make a more rigid structure. The writer has not re-pannelled his set as yet, but the original friction drive was retained for preliminary tests. It was found, however, that the tuning range was fairly sharply tuned owing to the increased bandwidth. For those who listen solely to the amateur bands, the main tuning capacitors may be changed for a two-gang 25µµF, so that the bands are well spread over the dial. The new dial will depend on the builder's choice and his financial resources.

The home-made coil data is as follows, and includes ready-made substitutes:—

	(Aerial or Mixer)		(Oscillator)		
	Grid	Coupling	Grid	Coupling	Padders
Range 1 ..	7	4	6	4	—
Range 2 ..	16	9	15	8	.0014µF
Range 3 ..	PA6		PO6		900µµF

All windings are close-wound and 26 swg enamelled wire may be used throughout for the home-made coils. Four paxolin or waxed cardboard tubes 1½" diameter x 2½" long. These may be anchored by a brass strip tapped 4BA, details of which may be obtained when a pair of Wearite P6 type coils are purchased, as these are similar in design.

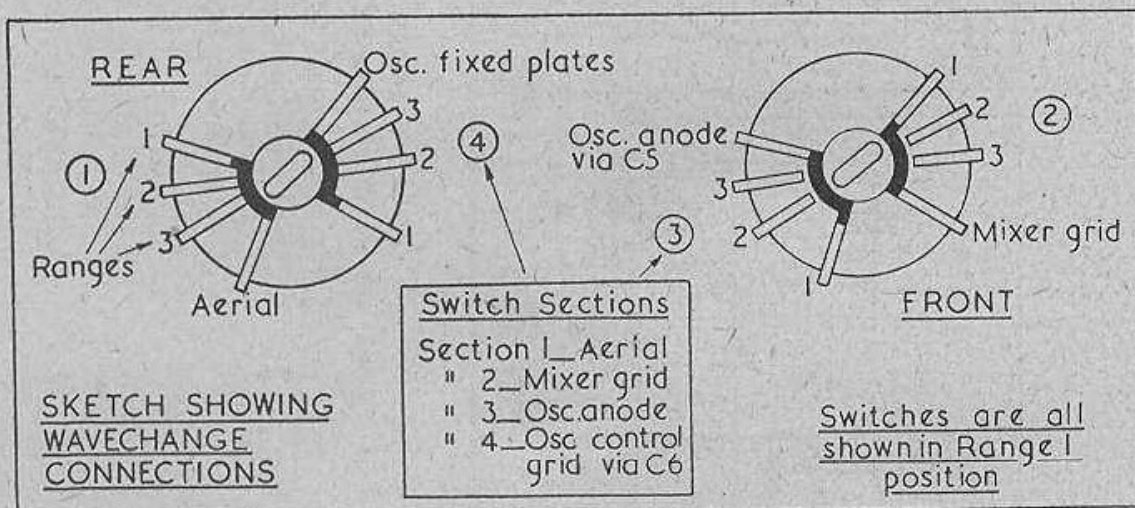
- Range 1. Wearite PA3—PO3
- Range 2. Wearite PA5-PO5

It will be necessary to remove the anchor bracket at rear to provide space for oscillator coils (see sketch).

Additional Components

A wavechange switch, a 4-pole 3-way Yaxley, with a 3" spindle or equivalent extension rod with mounting brackets, will be required.

Also needed are trimmers, which may be of the 30µµF Phillips concentric type, similar to that found in the popular RF units, types 24, 25. The wave-change switch can be mounted on the edge of the main chassis, so that the spindle clears the original RF valve position. For those who have no further use for the RF valve-holder, the wave-change switch may be mounted further inboard, but not so far as to foul the capacitor rotors at mid-position.



THE REAL HAM SPIRIT

An advertiser in the Personal Advertisement Col. of this journal received the following reply recently to an advertisement for a number of valves.

"Dear OM,

With reference to your advertisement . . . I enclose herewith an ex-Service X66, the only

valve I have of the types you want. Since the valve cost me nothing in the first place, I am sending it to you with compliments."

We think readers will agree that is a true example of the real ham spirit, and is particularly creditable in these days when sometimes we wonder what has happened to this "ham spirit."