

# PHILIPS V7A

Four-valve, plus rectifier, three-waveband superhet for operation from AC mains, 110, 125, 145, 200, 220 and 245 volts. Provision is made for the connection of a pick-up. Made by Philips Lamps, Ltd., Service Department, 74-94, Cherry Orchard Road, Croydon.

**I**N MW and LW the aerial input is fed via C1 to the coupling coils, L2 (MW) and L3 (LW), of the band-pass filter, L4, L6 (MW), L5, L7 (LW). The coils are tuned by VC1 and VC2 sections of the triple-gang condenser. Inductive coupling is provided for the lower end of the MW range by L8 and L9, while capacity coupling is by means of C4 and C5. An IF aerial filter is provided by L1 and C3.

On SW the bandpass filter is not

employed, the aerial input being connected to L10, which is a coupling coil for the single tuned circuit comprising L11 and VC2.

The control grid of the frequency changer valve, V1, is fed via R17, the grid stopper, and is returned via R2 to the AVC line.

The first two grids of V1 are used in the conventional manner as an oscillator triode employing a tuned grid circuit. R3 is the grid leak, and C8 and C9 the grid condensers. L12 (SW), L13 (MW), L14 (LW) are the grid coils tuned by VC3, while the reaction windings in the anode circuit are L15, L16, and L17.

The oscillator anode voltage is derived from the HT line through R15 and R16, while on SW R4 is switched into circuit. The screening grid of V1 is also fed from R15.

The IF output from V1 is coupled by the IF transformer, L18, L19, to the grid of V2, the IF amplifying valve, and a second IF transformer, L20, L21, hands on the signal via C15 to the signal diode of the double diode triode, V3.

The signal diode load comprises R5, filter resistance, and R6, the volume control. The slider of the volume

control is connected via C17 to the grid of the triode portion of V3. The PU sockets are connected across the volume control without any switching. Bias is obtained via a resistance filter network, R7, C18, R8, to the negative end of R18.

The AVC diode of V3 is fed from L20 via C16, the diode load being R9, from which the grid circuits of V1 and V2 are fed via the filter resistance, R10, and condenser, C12.

The LF signals are resistance-capacity coupled by R11, C20, R12, to the grid of V4, pentode output valve, through a grid stopper, R13. V4 is cathode biased by R14, which is not decoupled, thus providing a degree of negative feedback.

The output from V4 is transformer coupled by L22, L23, to the permanent magnet low-impedance loudspeaker.

The HT supply circuit comprises V5, the full-wave rectifier, with its anodes "strapped," operating as a half-wave rectifier. The output is smoothed by R17, C24, and C25.

### GANGING.

**IF Circuits.**—Inject a 128 kc signal via a .032 mfd condenser to the control grid of V2; adjust T1 and T2 for maximum output.

Inject a 128 kc signal via a .032 mfd condenser to the fourth (control) grid of V1, and adjust T3 and T4 for maximum output.

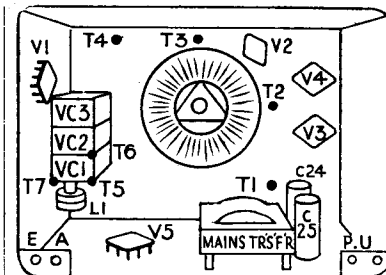
The above trimmers are windings on an insulated bush internally sprayed with a layer of metal. The capacity is adjusted by unwinding some of the wire until the output meter, having reached its maximum deflection, commences to drop back. A turn or two of the wire is then replaced and the surplus clipped off, the winding being held in position by wax.

**IF Aerial Filter.**—This is adjusted by varying the distance (and hence the total inductance) between the two windings comprising L1. The windings are held in position by wax, which must be warmed so as to loosen the coils, which can then be slipped along the former. Adjust them for minimum output.

Some models are fitted with trimming condensers in place of the variable coils.

**MW Band.**—Fully close T6 and adjust T5 to half capacity. Switch to MW and set tuning condenser to minimum capacity.

Inject a 1,450 kc signal via a .0005 mfd condenser to the aerial socket. Slowly rotate the tuning condenser to the first



Back view of the V7A showing valve and trimmer positions and L1, the variable inductance IF filter.

signal from minimum capacity and tune for maximum output. Adjust T5 and T6 for maximum output.

**LW Band.**—Leave the tuning condenser in exactly the position found when carrying out MW adjustments and switch to LW.

Inject a signal of 411 kc and adjust T7 for maximum output.

### VALVE READINGS

V	Type	Electrode	Volts	Ma
1	FC4	Anode	230	1.9
		Osc anode	70	2
		Screen	70	3.5
2	VPB4	Anode	155	6
		Screen	155	2
3	TDD4	Anode	60	.5
		Anode	245	.38
4	PEN4A	Screen	225	4.5
		Grid	5	—

### CONDENSERS

C	Mjds	C	Mjds
1	.00002	14	.000165
2	.00005	15	.000016
3	.0001	16	6.4 mmfd
4	.016	17	.01
5	.025	18	.25
6	.000002	19	.001
7	.01	20	.001
8	.0007	21	.002
9	.00149	22	.1
10	.000155	23	.1
11	.000165	24	.32
12	.1	25	.32
13	.000155		

The circuit of the V7A shows a four-valve plus rectifier three waveband set, basically conventional, but employing characteristic Philips' features. For example, the HT to the output valve is smoothed only by C25, and the other smoothing is by resistance instead of inductance.

### RESISTANCES

R	Ohms
1	50
2	100,000
3	50,000
4	40
5	200,000
6	500,000
7	800,000
8	250,000
9	500,000
10	1 meg
11	320,000
12	800,000
13	200,000
14	125
15	10,000
	+ 6,400
16	10,000/2
17	20,000
18	40

### WINDINGS

L	Ohms	L	Ohms
1	130	15	25
2	25	16	6.5
3	90	17	100
4	4.5	18	100
5	50	19	100
6	4.5	20	100
7	45	21	100
8	.75	22	500
9	.75	23	.4
10	2	24	1.5
11	.2	25	130
12	.2	26	.2
13	10	27	.2
14	25	28	40

