PHILCO A3

Five-valve, plus rectifier, two wave-band transportable with twin-loop, shielded aerials and six push-buttons. Suitable for 200–250 v., 50–60 cycles.

Circuit.—Distinctive features of this set are the twin-loop, shielded frame aerials and the H.F. amplifier, V1. The aerials are electro-statically screened, reducing pick-up of "noise," and rely chiefly on the electro-magnetic component for radio reception. The first valve has a tuned input and is coupled without further tuning to V2.

V2, the frequency-changer, has an untuned input and a simple oscillator coil assembly. The first I.F. transformer has a third winding connected between the screen of V3 and chassis.

V4 is a double-diode-triode for demodulation, A.V.C. and L.F. amplification. The diodes are separated by a resistance instead of the usual condenser. V5 is an output pentode, and V6 a full-wave rectifier.

Bias for V5 and A.V.C. is obtained from the volt drop across R1 and R5.

Provision for P.U. and 2–3 ohm. extension speaker. Pilot lamps: 6.3v.

Power consumption: 38 watts.

GANGING

Remove chassis from cabinet and lay L.W. frame down at rear. With gang fully closed, see that pointer registers with index line at left-hand side of scale.

I.F. CIRCUITS: Adjust at 451 kc.

L.W. BAND (1,000–2,000 m.): Switch to L.W., tune to 1,034.5 m. (290 kc.), inject this frequency at A and E sockets and adjust T10.

At 1,293 m. (232 kc.) adjust T14. Pad at 1,875 m. (160 kc.) with T11, rocking gang slightly.

Readjust T10 at 290 kc.

IMAGE REJECTION: Switch to L.W., inject 274 m. (1,095 kc.), tune to image at 193 kc. and adjust T13 for minimum.

M.W. BAND (200–520 m.): Adjust T1 and T12 at 214 m. (1,400 kc.).

Check at 500 m. There is no padding adjustment.

L.W. BAND: Finally repeat L.W. adjustments given above.

BUTTONS ADJUSTMENT

Six push-buttons are provided, the two inner ones being L.W. and M.W. switches.

The station buttons with ranges and trimmers are:—

Button	Range (m.	Osc.	Aerial
1	555–295	T8	T9
2	230–200	T6	T7
5	2,000–1,200	T5	T4
6	1,300–1,000	T3	T2

To ensure set is not tuned to an image, rotate signal generator through L.W. and M.W. bands. Only one signal should be obtained for each button adjustment.

VALVE VOLTAGES

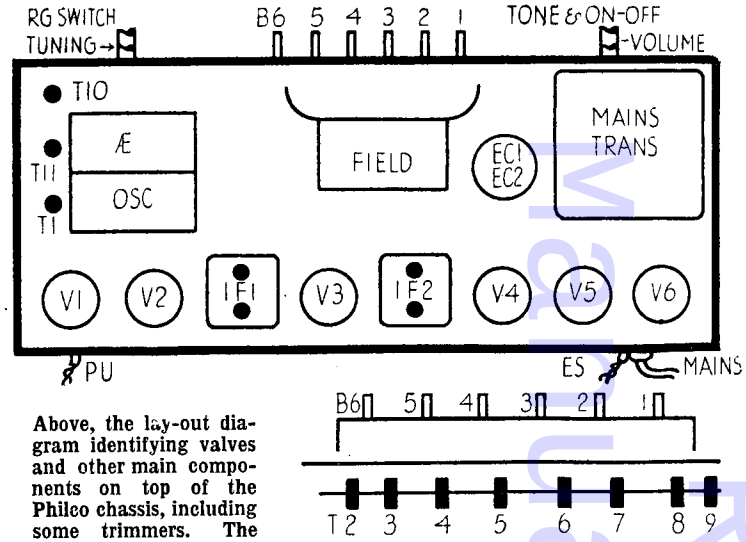
V	Type	Anode	Screen	Cathode
1	7C7E	185	115	—
2	7A8E	210	102	—
		156 (Osc. anode)		
3	7B7E	220	102	—
4	7C6	100	—	2.7
5	7B5E	200	220	14.5
6	7Y4	305 A.C.	—	320

CONDENSERS

C	Mfds.	C.	Mfds.
EC1	8	9	.065
EC2	16	10	.065
EC3	35	11	250 mmfds.
1–2	.015	12	250 ,,
1–3	.015	13	77 ,,
2	.025	14	250 ,,
3	.025	15	100 ,,
4	.004	16	100 ,,
5	250 mmfds.	17	4
6	.01	18	35 mmfds.
7	.065	19	100 ,,
8	.065		

RESISTANCES

R.	Ohms.	R.	Ohms.
VR1	.5 meg.	8	20,000
1	200	9	51,000
2	1 meg.	10	10,000
3	4 ,,	11	1,000
4	.25 ,,	12	4,000
5	50	13	400,000
6	1.5 meg.	14	1 meg.
7	.15 ,,	15	47,000

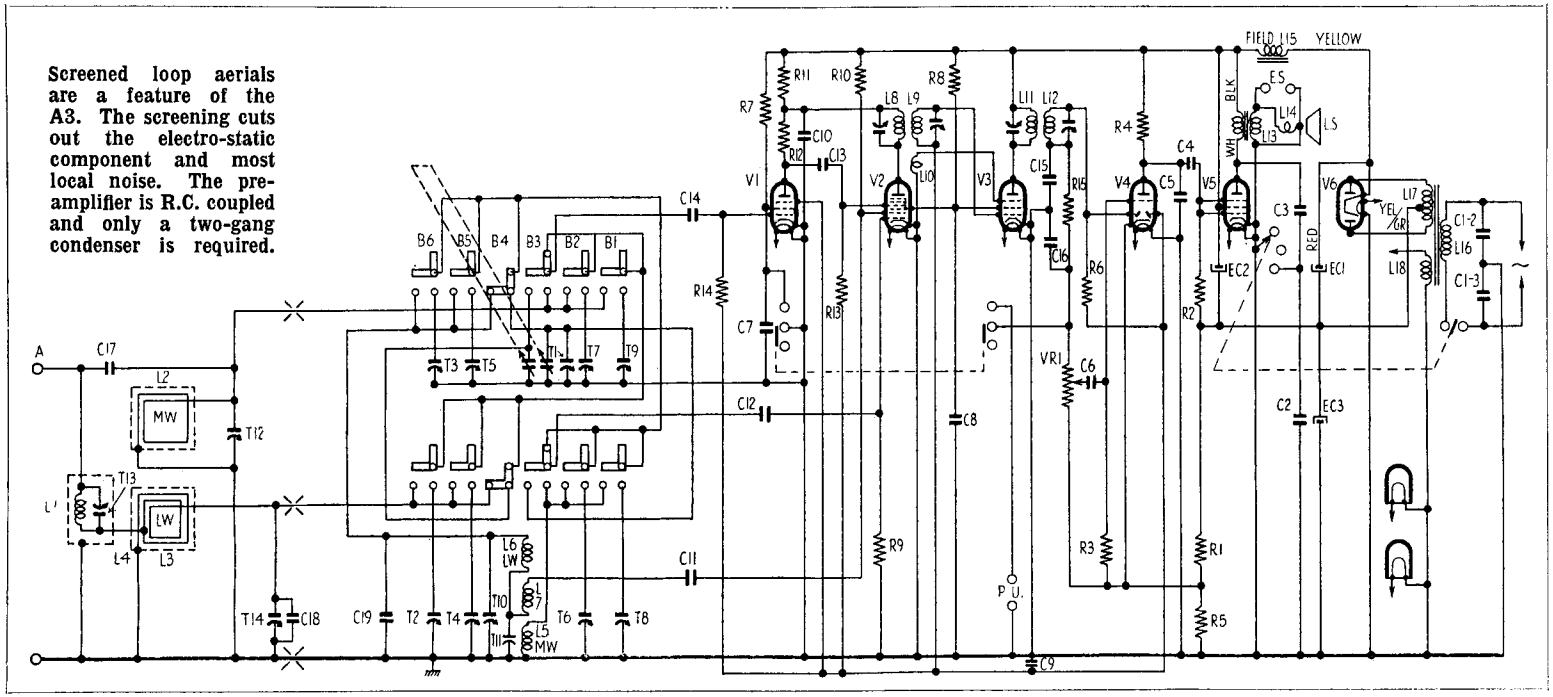


Above, the lay-out diagram identifying valves and other main components on top of the Philco chassis, including some trimmers. The small diagram on the right shows how the trimmer condensers for button tuning are positioned with respect to the buttons.

WINDINGS

L.	Ohms.	L.	Ohms.
1	3	10	less than .1
2	1	11	30
3	30	12	30
4 (L3 tap)	4	13	.5
5	4	14	3
6	4	15	1,700
7	1	16	65
8	20	17 (total)	700
9	20	18	.2

Screened loop aerials are a feature of the A3. The screening cuts out the electro-static component and most local noise. The pre-amplifier is R.C. coupled and only a two-gang condenser is required.



Unusual Smoothing Fault

IN the last few months I have had to service several Marconiphone and H.M.V. receivers of the 262 and 272 class, all of which have come in with very loud hum.

On testing the smoothing condensers I found them open circuited, but on replacing with new electrolytics the trouble persisted. As these new condensers were tested for capacity and leakage and found satisfactory, I spent a long time testing other components, but without result.

Finally I discovered that fitting condensers of the Mansbridge paper type solved the problem. I can only assume this is due to the special bias circuit used in these sets which, apparently, makes any condenser leakage very important.

A broken humdinger or dirty earth slider may also cause a deep hum in these models.—F. L. DRUMMER, Drummer's Radio, Southampton.