PHILCO "TYPE A" AND BV. 530

Four-valve, plus rectifier and vibrator unit, superhet for operation from a six-volt car battery. Three wavebands are covered. Made by Philco Radio and Television Corporation of Great Britain, Ltd., Perivale, Greenford, Middlesex.

Circuit.—The aerial is coupled to V1 by single tuned circuits on each of the three wavebands. A transformer is used on short waves, but on the other bands a special form of coupling utilising the A.V.C. components is utilised.

V1 is the frequency-changer with a tuned grid oscillator section. Feedback from the anode is introduced across the padding condensers on L. and M.W., but there is a straight anode reaction coil on S.W.

Trimmer-tuned I.F. transformers link up V2, the I.F. amplifier, and V3, the double-diode-triode. R12A is the signal diode load, with R18, C18 and C19 for I.F. filtering. VR1 is the volume control, and the L.F. is passed on to V3 triode grid via C14.

The A.V.C. diode is returned to R15 in the negative H.T. lead for delay bias. R9 and R8 together form the load, V2 receiving an intermediate voltage from between the two.

Resistance-capacity coupling leads to V4, the output pentode. R14 is the grid leak and R13–C13 decouple the bias (V4 cathode is returned to chassis, which is positive with respect to H.T. negative by the drop across R15 and CK1).

V5 is a full-wave rectifier with anodes energised from the secondary of a transformer, the transformer of which receives interrupted and reversed D.C. from the 6v. L.T. accumulator via the vibrator unit.

L18 is the vibrator coil and L15 is an H.F. filter choke to prevent spark "noise" getting into the 6v. filament supply to the valves. L14 is an H.F. filter in the H.T.+ line, and L13 is the H.T. smoothing choke in the negative lead.

Notes.—Wavebands, 16–50, 200–550 and 1,000–2,000 metres. Consumption, 30 watts (i.e., 5 amps.).

GANGING

Connect output meter across loudspeaker. Check that with gang closed pointer is vertical between scales. Tune to M.W., volume maximum, no signal.

I.F. Circuits.—Inject 451 kc. between chassis and V1 grid (with grid lead connected). Adjust the four I.F. trimmers for maximum, keeping the signal low.

Short Waves.—Tune to 18 mc. (white dot at 16.6 m.), inject 18 mc. via 400 ohms to aerial and earth and adjust T1 to last signal heard from tight. Peaks are narrowly spaced.

Rocking tuning and adjust T2 for maximum. Readjust T1 with pointer at 16.6 m. Check that image is received at approx. 17.5 m.

Check calibration at 50 m. There is no padding adjustment.

Medium Waves.—Tune to 1,400 kc. (green dot at 214 m.), inject 1,400 kc. via dummy aerial and adjust T3 and T4.

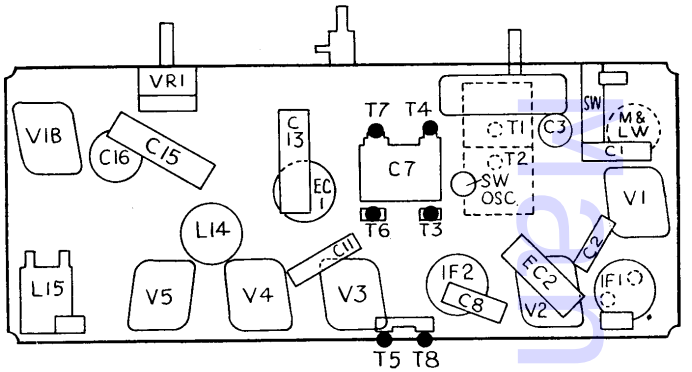
Tune to 500 m., inject 600 kc. and adjust padder T5 while rocking gang.

Repeat operations.

Long Waves.—Tune to 290 kc. (yellow dot at 1,034.5 m.), inject 290 kc. and adjust T6 and T7.

Tune to 160 kc. (yellow dot at 1,875 m.). Inject 160 kc. and pad with T8 while rocking gang.

Repeat operations.



This layout shows where the trimmers are located on this three-waveband Philco model.

Note that S.W. trimmers are in circuit on all bands, and both M. and L.W. must be realigned if T1 and T2 are altered.

VALVE READINGS

V	Type	Electrode	Volts
1	6K8EG	Anode	250
		Screen	90
		Osc. anode	150
2	6K7EG	Anode	250
		Screen	90
3	6Q7G	Anode	75
4	6F6EG	Anode	240
		Screen	250
		Bias	20
5	84	Anodes	300 A.C.

Pilot bulb, M.E.S., 6.3 v., .25 amp.

CONDENSERS

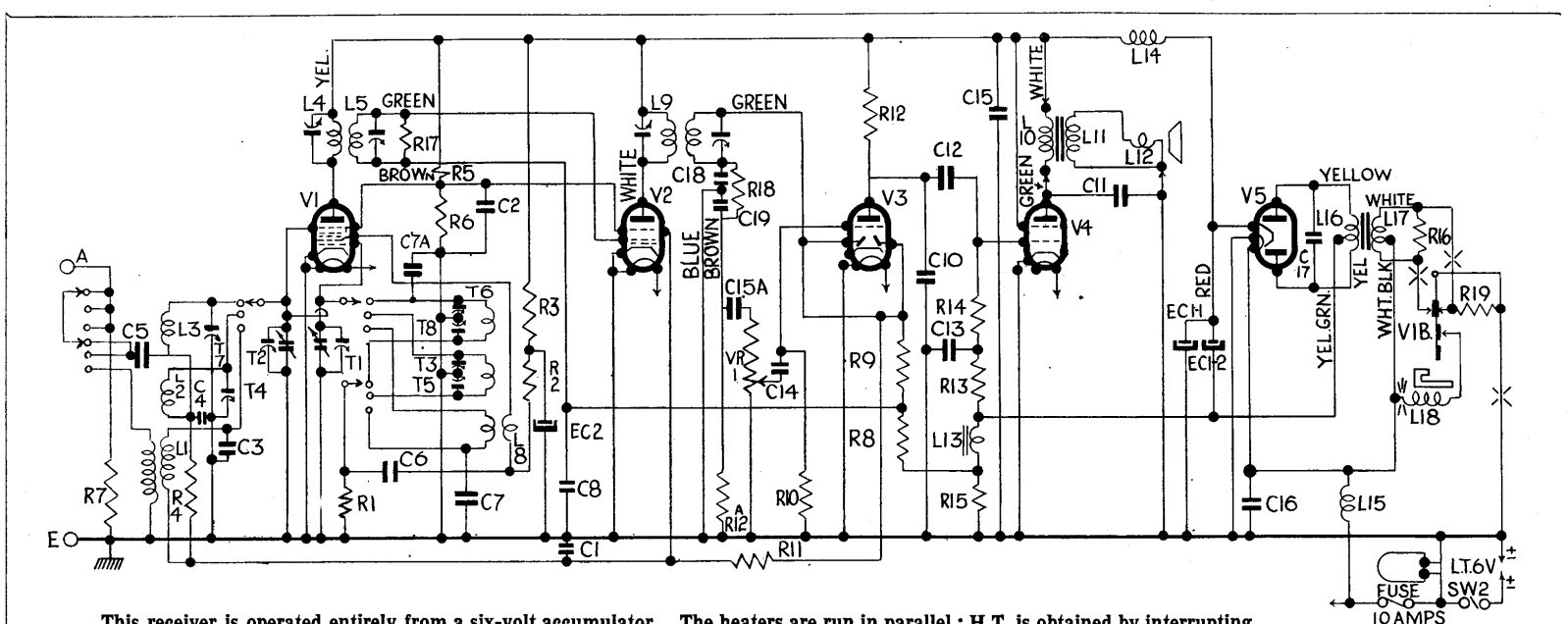
C	Mfds.	C	Mfds.
EC1	8+8	10	77 or 100 mmfds.
EC2	4	11	.004
1	.065	12	.0065
2	.065	13	.25
3	10 mmfds.	14	.0065
4	.0025	15	.25
5	.0065	15A	.0065
7	.0025	16	1
7A	35 mmfds.	17	.01
8	.065	18	100 mmfds.
9	77 or 100 mmfds.	19	100 mmfds.

RESISTANCES

R	Ohms.	R	Ohms.
1	51,000	11	1 meg.
2	5,000	12	.25 meg.
3	10,000	13	.25 meg.
4	100,000	14	.25 meg.
5	25,000 or 20,000	15	65
		16	400
6	51,000	17	.25 meg.
7	10,000	18	51,000 or 65,000
8	400,000		
9	650,000	19	400
10	9 meg.		

WINDINGS

L	Ohms.	L	Ohms.
1	.1	10	250
2	3	11	.2
3	25	12	2
4	8	13	350
5	12	14	5
6	16.5	15	.1
7	2.5	16	500
8	.5	17	.1
9	12	18	10



This receiver is operated entirely from a six-volt accumulator. The heaters are run in parallel; H.T. is obtained by interrupting the L.T. supply by a vibrator, stepping up the voltage between L17-L16 and rectifying by V5.

Radiated Crackle

A LOUD intermittent crackle was heard on a T.R.F. receiver. Due to the loudness, the H.F. stages were suspected of causing the defect. The aerial and earth were disconnected, but the crackle still continued, although it was slightly attenuated.

It was found that insulation on the aerial had worn through where it passed a gutter-pipe. The crackle due to the intermittent connection was still being picked up by the unscreened H.F. coil and wiring.—ALFRED ROSE.