

PHILCO B2

Four-valve all-dry battery portable covering three wavebands. Made by Philco Radio and Television Corp. of G.B., Ltd., Perivale, Middlesex.

Circuit.—The aerial is transformer coupled to V1 on short waves and choke-condenser coupled on medium and long bands. In the circuit the coils are inverted compared with the usual order, L1 being the L.W. coil. A.V.C. is applied on each band.

V1 is the frequency-changer with tuned grid oscillator circuits. Reaction is obtained by a coupled winding on S.W., but injecting energy from the anode to the tops of the padding condensers (T8 and T5) on L. and M.W. It will be seen that R12 is in parallel with the padding condensers.

A switched pick-up connection is provided, and in this position the aerial switch connects the P.U. to the top of the

volume control, the oscillator anode switch "shorts" R12 across the aerial input (CK1) and the two grid switches connect the grids to a negative bias point.

Trimmer-tuned I.F. transformers link up V2, the I.F. amplifier, and V3, the single diode triode. R6 is the diode load and R5-R7 form a high resistance potentiometer to tap off A.V.C. from V1.

V2 is not A.V.C. controlled, but is fixed-biased by the drop of the negative H.T. current from L.T. negative to H.T. negative through R8.

L.F. is passed to the volume control VR2 by C1, the grid of V3 being isolated by C6 and the valve "biasing itself" across R3.

Resistance-capacity coupling leads to V4, the output pentode. This has R2 as grid leak and is biased by the drop across both R8 and R4. The valve has both fixed and variable tone controllers in shunt with the anode.

Notes.—The standard battery is a combined 1.5v. L.T. and 90v. H.T. unit (Philco No. 419-8008, Drydex H1157, Ever Ready No. 3, G.E.C. BB395, Siemens 1438, or Sterling 2242).

Provision is made for an adaptor lead which incorporates a 2.5 ohm voltage dropping resistor which enables a 2-volt accumulator to be used with a normal H.T. battery such as the Drydex H1146. Bias is automatic.

The consumption is: H.T., 10 ma.; L.T., .25 amp.

Provision is made for a 2-3 ohm extension speaker, and a pick-up may be permanently connected.

GANGING

I.F. Circuits.—Inject 451 kc. to V1 grid and adjust the I.F. trimmers for maximum reducing the signal to keep below the A.V.C. operation level.

S.W. Band.—Inject to the aerial via a 400-ohm resistance. Tune to 18 mc., inject 18 mc., and adjust T1 to the last signal heard from tight (the peaks are close together). Rocking gang, adjust T2. Readjust both T1 and T2, and check that the image is heard at 17.1 mc.

Padding is fixed, but check calibration at upper end of band and compensate with trimmers if necessary.

M.W. Band.—Tune to dot at 214 m. Inject 1,400 kc. via dummy aerial to aerial and adjust T3 and T4.

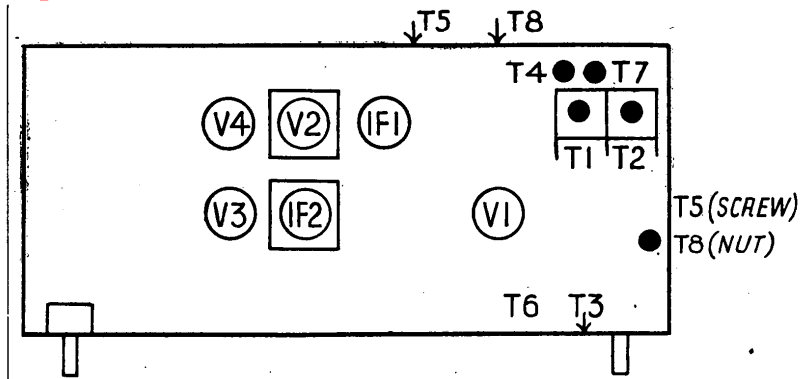
Tune to 500 m., inject 600 kc., and adjust T5 (screw) while rocking gang slightly. Repeat all adjustments.

L.W. Band.—Tune to dot at 1,034.5 m. (T in Tifis), inject 290 kc. and adjust T6.

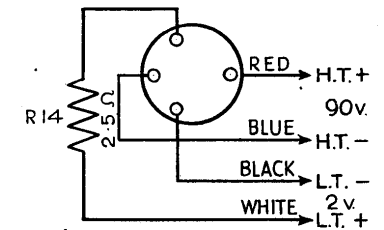
Tune to 1,304.3 m. (3 in 1,300), inject 230 kc. and adjust T7.

Tune to dot at 1,875 m., inject 160 kc. and adjust T8 (nut) while rocking gang.

Repeat all adjustments.

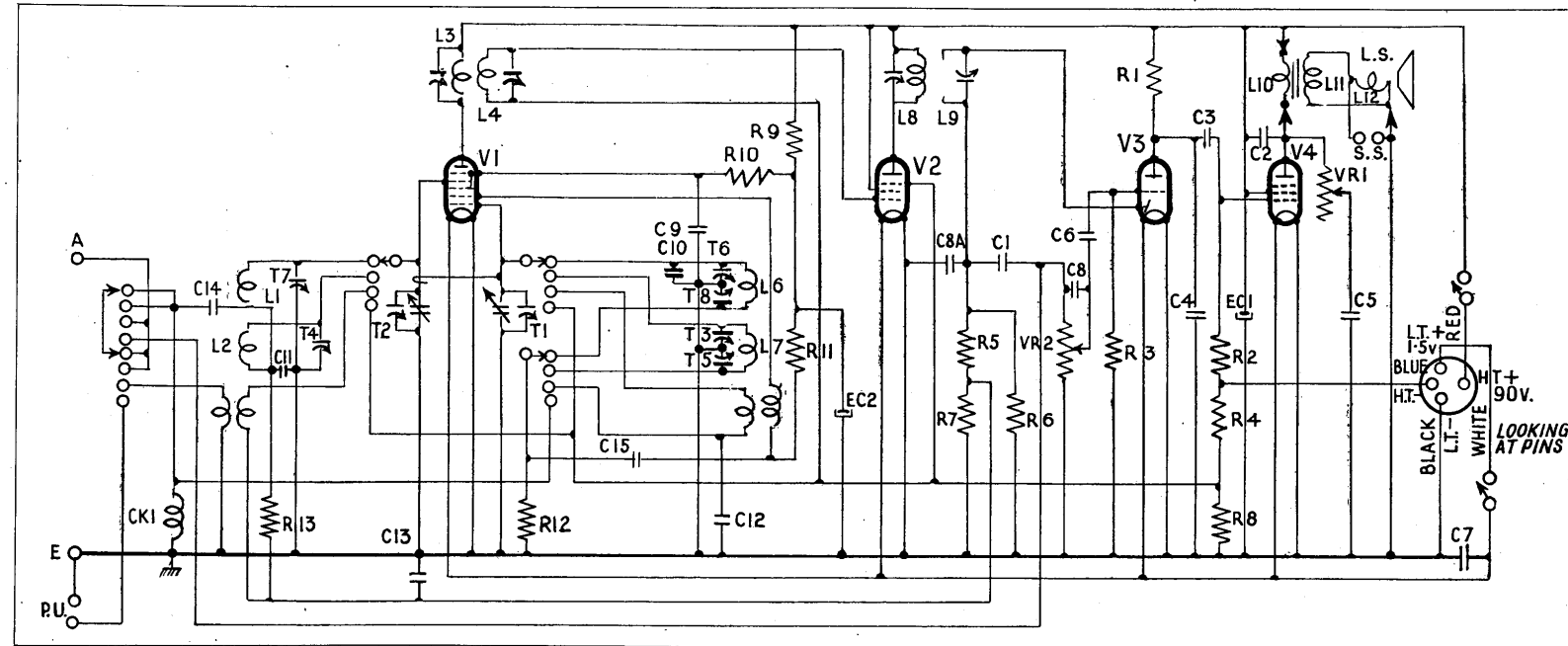


The upper diagram of the top of chassis shows the trimmer positions, and the one on the right gives details of the adaptor which enables a 2-volt accumulator to be used.



VALVE VOLTAGES

V	Type	Electrode	Volts
1	1A7EG	Anode	83
		Screen	54
		Osc. anode	54
2	1N5EG	Anode	83
		Screen	83
		Bias	.3
		Bias	.3
3	1H5G	Anode	61
		Anode	80
4	1C5EG	Screen	83
		Screen	83
		Bias	7.25



WINDINGS

L	Ohms.	L	Ohms.
CK1	20	7	2.5
1	25	8	12
2	3	9	8
3	8	10	450
4	12	11	.2
5	45	12	2
6	16.5		

CONDENSERS

C	Mfds.	C	Mfds.
EC1	8	8	60, 77, 70 or
EC2	8		65 mmfds.
1	.01 or .025	8A	240 or 250
2	.0065		mmfds.
3	.004	9	.09
4	.30 or 35	10	.35 mmfds.
	mmfds.	11	.0046
5	.025	12	3,000mmfds.
6	.004	13	.04
7	.04	14	.01
		15	400 mmfds.

RESISTANCES

R	Ohms.	R	Ohms.
1	1 meg.	10	51,000 or
2	4 meg.		60,000 or
3	4 meg.		65,000
4	600 or 650	11	10,000
5	9 meg.	12	150,000
6	330,000 or	13	51,000 or
	400,000 or		60,000 or
	300,000		65,000
7	4 meg.	14	In cable
8	20 or 25		assembly
9	6,500	VR1	100,000
		VR2	2 meg.