

PHILIPS 830 A

Four-valve, plus rectifier, TRF receiver covering medium and long wavebands. Suitable for operation from AC supplies between 100-260 v. 40-100 cycles. Marketed in 1932 by Philips Lamps, Ltd., Service Department, 74/94, Cherry Orchard Road, Croydon.

Circuit.—The aerial is coupled to the special low-loss tuning coils L1 and L2 through C1, with C2 as a fixed aerial trimming capacity. A1 is the normal aerial socket, but where local transmissions are very strong and interfere with transmissions on adjacent wavelengths A2 may be used. A2 is coupled to A1 by the mutual capacity of the two sockets.

A tapping on the MW aerial coil feeds the grid of V1, which has a tuned anode coupling L3, L4, with L3, the MW coil, tapped for maximum selectivity.

The tuning condensers VC1 and VC2 are of Philips special design, and are

totally screened by metal cans, which are not directly earthed. The screen of VC2 is at HT potential due to its position in the anode circuit of V1.

Bias for V1 is obtained by a resistance network between HT negative and chassis. R8 provides a minimum bias, while VR1, the volume control, allows the bias and hence the gain of V1 to be varied.

Signals are passed from the anode circuits of V1 to the grid of V2 via the low capacity coupling condenser C5 with R5 the grid to earth resistance for V2. Bias is obtained by the cathode resistance R4, which is decoupled by C6.

V2 is coupled to V3 by a periodic HF anode choke L5, coupling condenser C9, and HF grid choke L6. On LW, S3, which is ganged to S1 and S2, switches condenser C7 across the choke.

V3 acts as a triode grid detector with C10 and R7 as the grid condenser and "leak."

A high impedance pick-up may be connected to the PU sockets across the grid circuit of V3. Bias for LF amplifier operation of V3 is obtained by the PU being connected to the bias line to V1.

As there is no PU switch, the tuning control should be adjusted away from the tuning point of any powerful transmission in order to prevent radio interference on gram, which may occur even with V3 biased. For best results on radio, the pick-up should be disconnected after

use, as the change of bias on V3 with the pick-up in circuit will upset the grid rectification conditions.

An LF transformer (L7, L8) couples V3 to the pentode output valve V4. C11 by-passes HF from the primary L7 of the transformer, while R6, decoupled by C8, drops the voltage for the anode of V3 and the screen of V2.

V4 is coupled to the loudspeaker by an LF choke L9, in its anode circuit and the coupling condenser C13. C12 is the high note tone correcting condenser for the pentode anode circuit.

C13 feeds the primary of the PM speaker matching transformer with extra loudspeaker sockets connected across the primary for a high impedance speaker of about 10,000 ohms.

A straightforward HT supply circuit employs a full-wave rectifier valve V5 with a smoothing choke L13 in the negative lead and two smoothing condensers C14 and C15.

All receiving valve heaters are fed from one LT secondary winding which is centre tapped.

GANGING

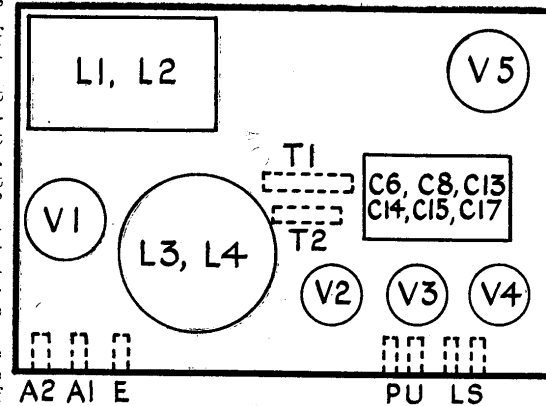
MW Band.—Inject a 230 m. signal into A1 and E, switch to MW (push in tuning knob) and turn volume control to maximum. Tune receiver to 230 m. and adjust trimmer T1 after breaking the paint which seals the two tubes comprising the condenser.

When maximum output has been

attained, connect "live" oscillator lead to A2 for final adjustment of T1 on weak signal.

LW Band.—Pull out tuning knob to set receiver to LW. Inject and tune in a 900 m. signal. If this cannot be heard, connect "live" oscillator lead to A1 socket and adjust trimmer T2 for maximum output. Connect oscillator lead to A2 for fine adjustment of T2.

After ganging, the trimmers should be resealed with a touch of shellac varnish.



CONDENSERS

C	Mfds	C	Mfds
1	20 mmfds	9	640 mmfds
2	.0001	10	125 mmfds
3	.5	11	.0032
4	.5	12	.008
5	20 mmfds	13	.1
6	.5	14	2.5
7	.001	15	3
8	1	16	.5
		17	.5

RESISTANCES

R	Ohms	R	Ohms
1	50,000	6	18,000
2	125,000	7	200,000
3	8,000	8	40
4	640	9	200,000
5	1 meg.	10	100,000
		VR1	600

VALVE READINGS

V	Type	Electrode	Volts	Ma
1	S4VB	Anode	170	2.0
		Screen	75	—
2	S4VB	Anode	170	2.0
		Screen	75	—
3	244V	Anode	80	4.8
4	PM24A	Anode	160	15
		Screen	160	—
5	1821	Cathode	to Chassis	165

Pilot lamp, Philips single-pole SBC, 6 v. 3 W

WINDINGS

L	Ohms	L	Ohms
1	3	9	1,000
2	22	10	400
3	2.75	11	1
4	22	12	6.5
5	37	13	1,000
6	125	14	900
7	400	15	.2
8	1,500	16	.1
		17	115

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vided for connection to a low impedance speaker of about 8 ohms DC resistance.

HT is provided by a full-wave rectifier V5. Smoothing to V6 is effected by L21, C15 and C16. R20 and C19 provide smoothing for the remainder of the valves with R21, decoupled by C17, reducing voltage for V5. R16 drops the voltage for the anodes of V1, V3 and V4.

GANGING

IF Circuits.—Remove V2 and connect milliammeter in place of test link or output meter to ext. LS sockets.

Switch to LW, adjust volume control to maximum and set gang to about half capacity. Connect service oscillator to A and E with aerial jack switch open to disconnect C3.

Inject 125.65 kc signal and peak T1, T2, T3, T4.

MW Band.—Switch set to MW, adjust gang to 215 m. and adjust T5, T6, T7 for maximum output on a 215 m. signal.

Inject and tune in 500 m. signal and adjust T9.

T8 should be adjusted on customer's aerial.

LW Band.—There are no trimmers.

NOTE.—With a short trimmer driver, ganging can be carried out with the chassis in the cabinet. A long flexible driver is helpful when adjusting T5 and T7, due to components immediately in front of trimmers.

