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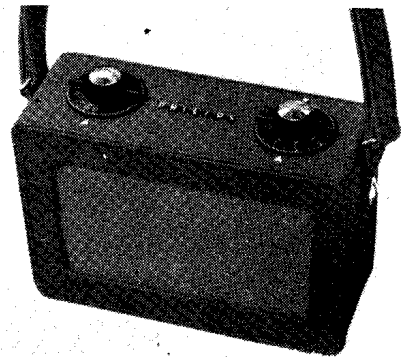
"TRADER" SERVICE SHEET

1352

PHILIPS G77B

"Musette"



EMPLOYING an internal ferrite rod aerial, the Philips G77B is a 2-band 4-valve portable receiver, designed to operate from all-dry batteries. The waveband ranges are M.W. (187-569m), L.W. (1,177-2,000m).

Release date and original price: May 1957; £9 1*s* 11*d*. *Batteries and purchase tax extra.*

CIRCUIT DESCRIPTION

Tuned aerial input on M.W. by **C2, C3** and **L1, L2** connected in parallel to heptode valve **V1,** which operates as frequency changer with electronic coupling. For L.W. operation **S1** is open, **S2** is closed and tuning is by **L2, C1, C2** and **C3. L1** and **L2** are mounted on a long ferrite rod forming an internal aerial.

Oscillator grid coil **L5** is tuned by **C8, C9** (M.W.), and in addition by **C7** (L.W.). Reaction coupling from oscillator anode by **L6.**

Second valve **V2** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C4, L3, L4, C5** and **C13, L7, L8, C14.**

Intermediate frequency 470kc/s

Diode signal detector is part of a diode-pentode valve **V3.** Audio-frequency component is developed across volume control **R6,** which operates as diode load, and is passed via **C16** to control grid of pentode section, which operates as A.F. amplifier. I.F. filtering by **C15.** D.C. potential developed across **R6** is fed back as bias via decoupling circuit **R4, C10** to **V1, V2,** giving automatic gain control.

Resistance-capacitance coupling by **R9, C19** between **V3** pentode and pentode output valve **V4.** Grid bias for **V4** is obtained from the voltage drop across **R11,** which is in series with the negative lead to chassis. Tone correction by **C21.** H.T. decoupling by **C20.**

CIRCUIT ALIGNMENT

Equipment Required.—An accurately calibrated signal generator; an audio output meter; a non-metallic trimming tool.

L1 (D3) and **L2** (C3) are ferrite rod tuned and should be adjusted for maximum output by sliding the formers along the ferrite rod and securing them to the rod with an adhesive after alignment to prevent them from moving.

Reduce the signal generator output as the circuits are brought into line to keep the audio output level below 50mW.

I.F. Stages

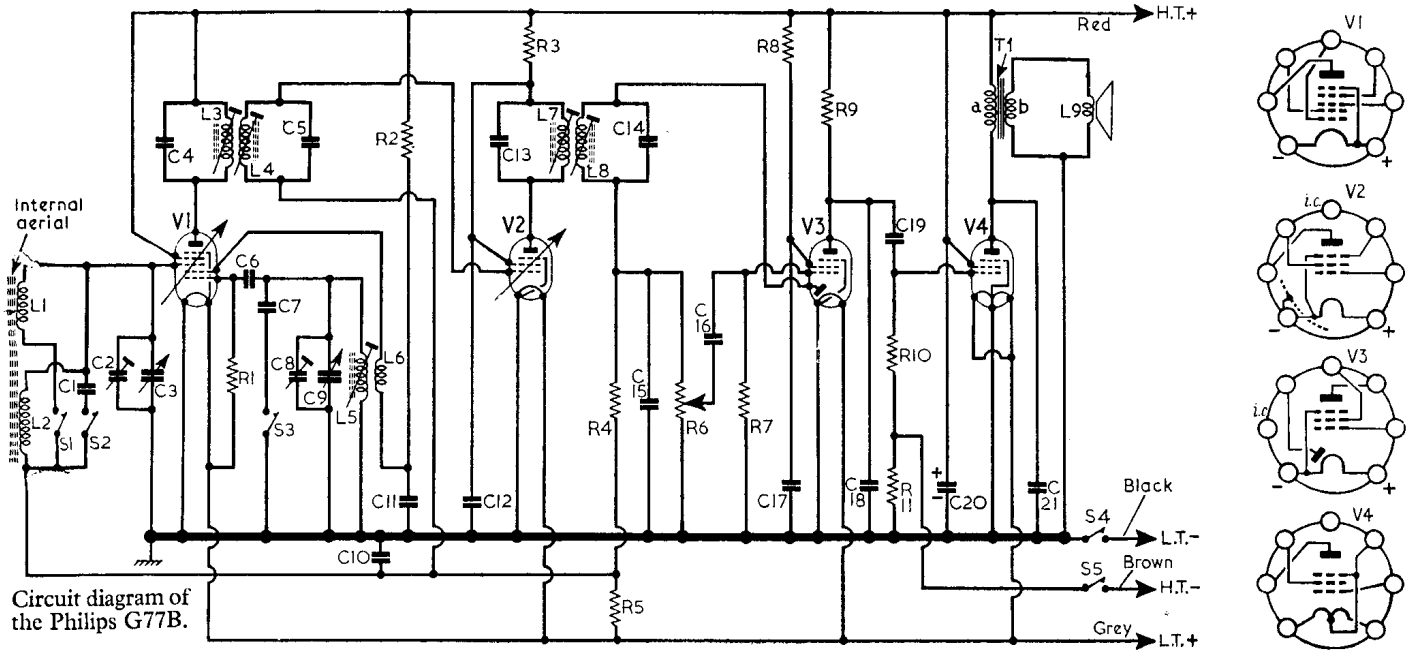
1.—Switch receiver to M.W. and turn

(*Continued overleaf in col.* 1)

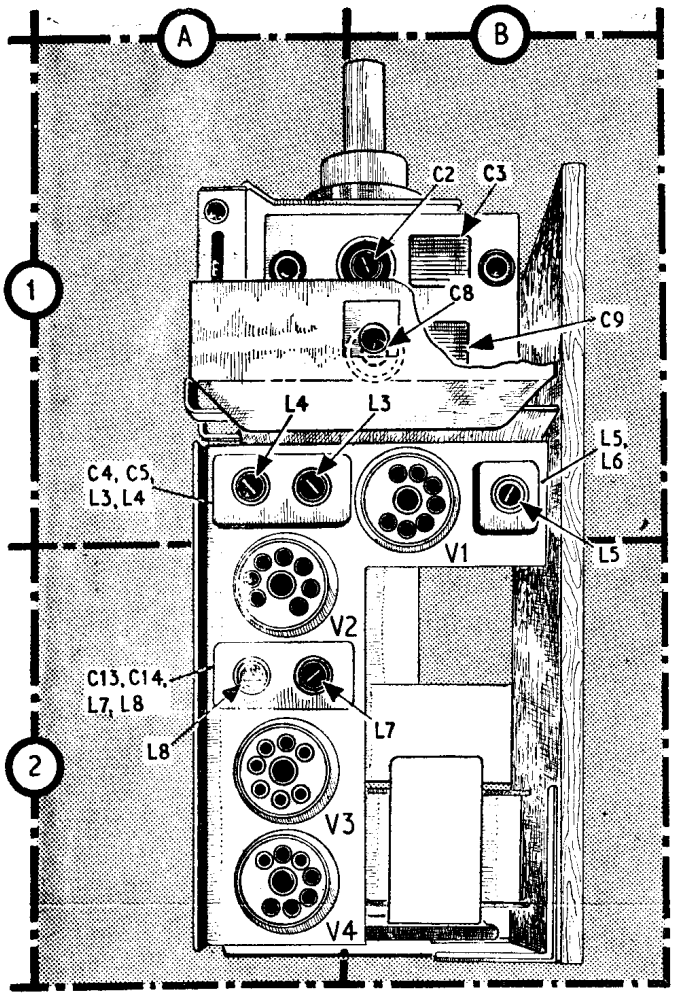
OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	M.W. aerial coil	1·25	D3
L2	L.W. aerial coil	4·25	C3
L3	1st I.F. trans. Pri.	7·5	A1
L4	1st I.F. trans. Sec.	4·5	A1
L5	Osc. tuning coil	12·0	B1
L6	Osc. reaction	6·5	B1
L7	2nd I.F. trans. Pri.	7·5	A2
L8	2nd I.F. trans. Sec.	4·5	A2
L9	Speech coil	3·0	—
T1	O.P. trans. Pri.	800·0	C4
	O.P. trans. Sec.	—	
S1-S3	Waveband switches	—	D3
S1,S5	Battery switches	—	D3

RESISTORS		Values	Locations
R1	V1 osc. C.G.	27kΩ	D3
R2	Osc. anode feed	33kΩ	D3
R3	V2 H.T. feed	2·2kΩ	D4
R4	A.G.C. decoupling	2·2MΩ	D4
R5	Diode bias	5·6MΩ	D3
R6	Volume control	500kΩ	C3
R7	V3 C.G.	10MΩ	D4
R8	V3 S.G. feed	2·7MΩ	D4
R9	V3 anode load	1MΩ	D4
R10	V4 C.G.	1·5MΩ	D4
R11	V4 G.B.	220Ω	D4

CAPACITORS		Values	Locations
C1	L.W. aerial tuning	135pF	D3
C2	Aerial trim.	—	B1
C3	Aerial tuning	—	B1
C4	1st I.F. trans. tuning	—	A1
C5	1st I.F. trans. tuning	—	A1
C6	V1 osc. C.G.	47pF	D3
C7	L.W. osc. tuning	348pF	D3
C8	Oscillator trim.	—	B1
C9	Oscillator tuning	—	B1
C10	A.G.C. decoupling	0·018μF	D4
C11	Osc. anode decoup.	2,200pF	D3
C12	V2 S.G. decoup.	3,300pF	D4
C13	2nd I.F. trans. tuning	—	A2
C14	2nd I.F. trans. tuning	—	A2
C15	I.F. by-pass	220pF	D4
C16	A.F. coupling	2,200pF	D4
C17	V3 S.G. decoup.	0·01μF	D4
C18	V3 I.F. by-pass	100pF	D4
C19	A.F. coupling	2,200pF	D4
C20	H.T. decoupling	10μF	C4
C21	Tone corrector	2,200pF	D4



Circuit diagram of the Philips G77B.



Plan view of chassis as seen from the right-hand end of the set (when viewed from the front), with the case removed. The H.T. battery is housed in the space shown at the right of **V2, V3** and **V4.**

GENERAL NOTES

Switches.—S1-S3 are the waveband switches and **S4, S5** are the battery "on-off" switches ganged in a 3-position sliding unit. **S1** is closed on M.W.; **S2** and **S3** are closed on L.W.

Batteries.—Those recommended by the manufacturer are: L.T. (3V), 2 Ever Ready U2's or Vidor 0002's; H.T., Ever Ready B101 or Vidor L5500, rated at 67.5V.

DISMANTLING

Removing chassis.—Remove the two bolts securing the carrying strap;
remove the strap and the lower half of the case;
remove the control knobs (pull off) and the top half of the case;
remove the speaker grille by prising off the metal clamping strip. The chassis is fixed to fibre panels on which are also mounted the ferrite rod aerial, output transformer, volume control and speaker.

To gain access to components remove ten countersunk self-tapping screws from the speaker panel; lift panel and speaker clear of chassis to the extent of the speaker leads.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from new batteries. The receiver was switchd to M.W. and tuned to the high wavelength end of the band.

Voltages were measured with an Avo Electronic Test Meter. Allowance should be made for the current drawn when using other types of meter. Chassis was the negative connection in every case.

Valve	Anode		Screen	
	V	mA	V	mA
V1 DK96	66	0·26	67·5	0·067
V2 DF96	61	0·95	61	0·38
V3 DAF96	20·5	0·04	26·5	0·012
V4 DL96	62	6·0	67·5	1·3

Circuit Alignment—*continued*

gang to minimum and volume control to maximum. Connect audio output meter across **T1** secondary winding. Connect signal generator output via a 0.05μF capacitor to **C3** (B1) and chassis.

2.—Feed in a 470kc/s signal and adjust the cores of **L8** (A2), **L7** (A2), **L4** (A1) and **L3** (A1) in that order for maximum output.

R.F. and Oscillator Stages

3.—Switch receiver to M.W. and with the gang turned to maximum feed in a 525kc/s (571.4m) signal and adjust **L5** (B1) for maximum output.

4.—Turn gang to minimum, feed in a 1,610kc/s (186m) signal and adjust **C8** (B1) for maximum output.

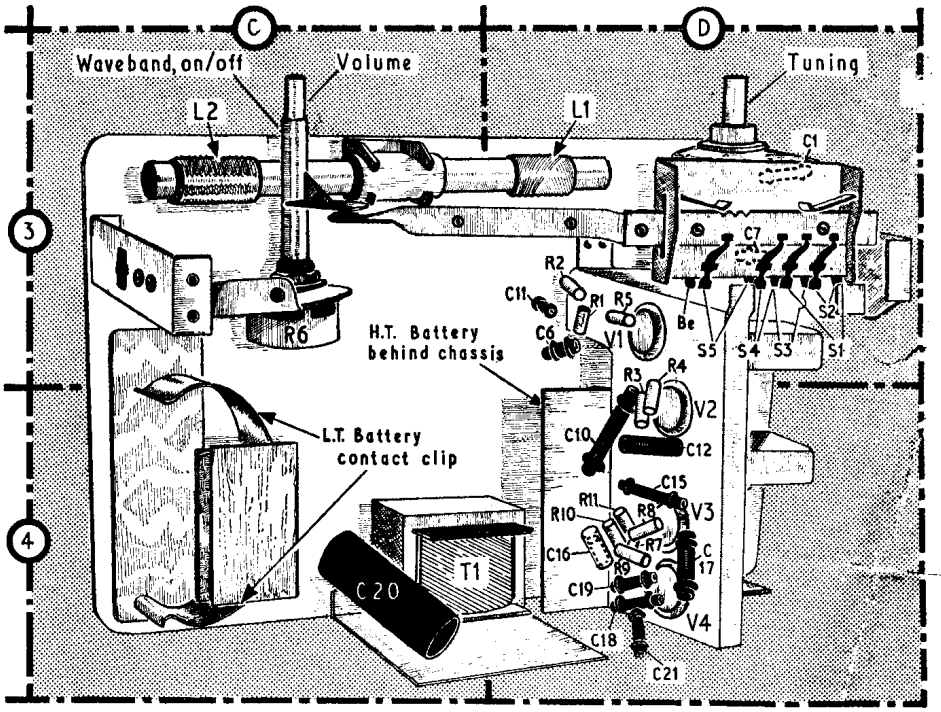
5.—Repeat operations 3 and 4.

6.—Feed in a 640kc/s signal and tune it in on the receiver. Transfer signal generator output to the junction of **R4, R5** (D3) and chassis, and adjust **L1** (D3) for maximum output at the same frequency.

7.—Feed in a 1,500kc/s (200m) signal, tune it in on the receiver and adjust **C2** (B1) for maximum output.

8.—Switch receiver to L.W. Connect signal generator output via a 0.05μF capacitor to **C3** (B1) and chassis. Feed in a 170kc/s signal and tune it in on the receiver. Transfer signal generator output to the junction of **R4, R5** (D3) and chassis. Adjust **L2** (C3) for max. output.

Below: Back board assembly and underside of chassis with speaker panel removed.



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