

# PHILIPS MODEL 225B PORTABLE

**CIRCUIT.**—Self-contained frame aerials constitute the grid coils and signal pick-up circuits of V1, a frequency changer. Provision is made to connect an external aerial and earth system for use in screened localities. V1 is A.V.C. controlled, the potentials passing to the signal grid via the frame aerial windings.

An iron-cored I.F. transformer couples V1 to the grid of V2, an H.F. pentode operating as the I.F. amplifier. V2 is in turn coupled by a transformer with tapped secondary to the demodulating diode of V3, a double diode triode. The other diode of V3, fed by a coupling condenser C17 from the anode of the I.F. amplifier, provides the potential feeding the A.V.C. network.

The coupling arrangements to the grid of the triode section of V3 includes a manual volume control that is tone compensated by C29.

V3 is resistance capacity transformer fed to the pentode output valve V4. A pentode compensator condenser C25 across the primary of the output transformer effects a fixed modification of tone.

The receiver is operated by an H.T. battery and a jelly-acid accumulator.

**Chassis Removal.**—Remove back of cabinet and take out the batteries. Next remove the three grub-screw fixed control knobs and the two hexagonal nuts securing the carrying handle.

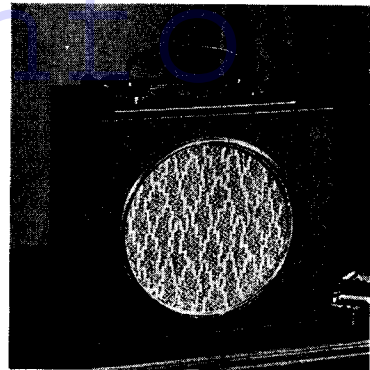
The two tubular split nuts on the (inside) roof of the cabinet securing the

escutcheon should be removed, and the escutcheon plate taken off. When this is done the nut securing the pointer can be taken off and the pointer removed.

Unsolder the lead to the earthing plate near the gang condenser, the yellow lead from top grid of V1 to the top tag of aerial panel on side (inside) of cabinet, the yellow lead from the control shaft end of chassis to middle tag and the black lead from control shaft end of chassis to bottom tag.

Then remove the two chassis securing bolts from the brackets near the rear of the chassis by the speaker. The chassis may then be withdrawn sufficiently to obtain access to the underside components. Care should be taken, when withdrawing chassis, to see that the pointer spindle and spring are not damaged.

**Special Notes.**—C33 is mounted on the aerial panel on the side of the cabinet. C21 and R10 are enclosed in the top grid connector of V3; C11, C12, C15 and C16 are, of course, inside the cans housing the I.F. transformers. C25 is connected



A two-colour dial with forty-six station names is fitted to the Philips model 225B 8½ gns. portable.

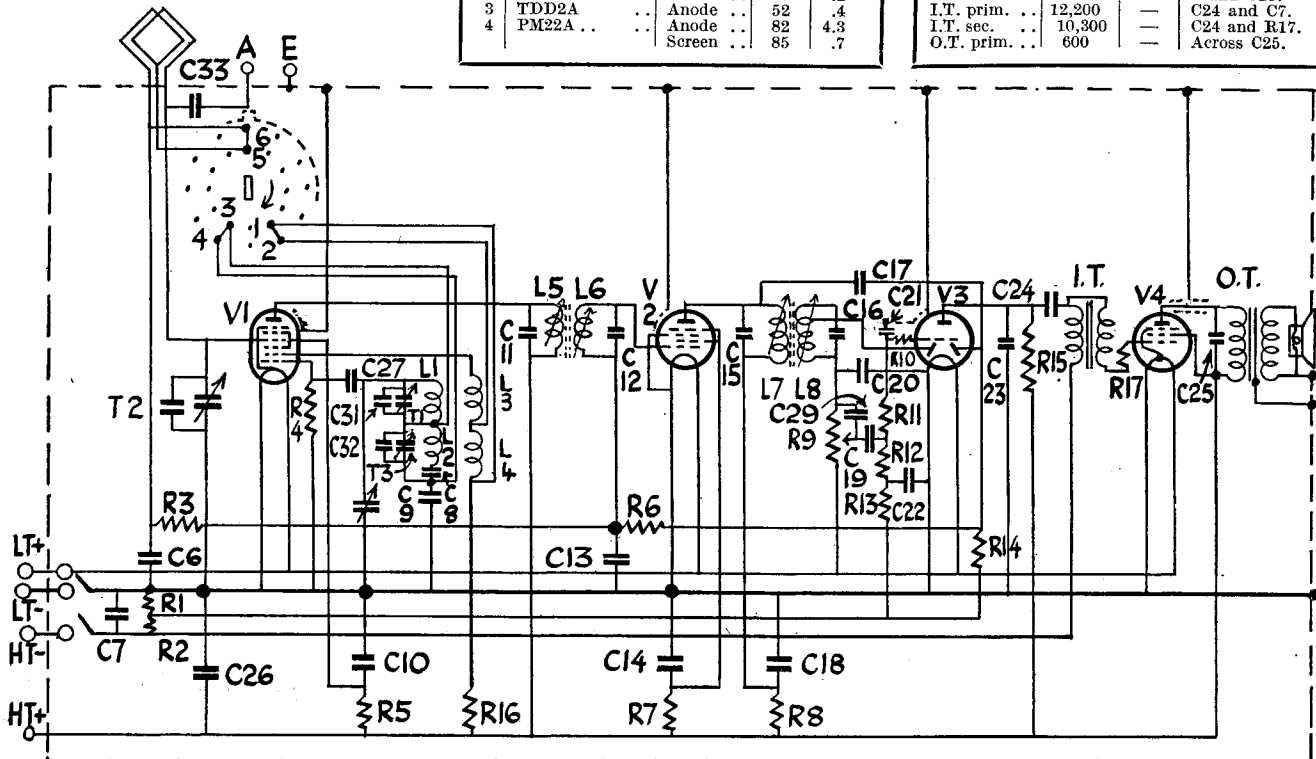
## VALVE READINGS

No signal. Volume maximum. M.W. min. cap. New batteries.

V.	Type.	Electrode.	Volts.	Ma.
1	All Mullard. FC2A .. ..	Anode ..	85	.5
		Screen ..	30	.9
		Osc. anode	80	1.4
2	VP2B .. ..	Anode ..	85	.7
		Screen ..	38	.2
3	TDD2A .. ..	Anode ..	52	.4
		Anode ..	82	4.3
4	PM22A .. ..	Anode ..	85	.7
		Screen ..	85	.7

## WINDINGS (D.C. Resistances)

Winding.	Ohms.	Range.	Where measured.
M.W. frame	Low	M.W.	Aerial panel.
L.W. frame	14	L.W.	Aerial panel.
L1 .. ..	7	M.W.	Contact 3 and osc. gang.
L1 + L2 ..	22	L.W.	Osc. gang and C8.
L3 .. ..	3	M.W.	Contact 2 and osc. anode V1.
L4 .. ..	4	L.W.	Contact 2 and R16 (contact 1)
L5 .. ..	7	—	Anode pin V1 and C26.
L6 .. ..	7	—	Top grid V2 and tag.
L7 .. ..	7	—	Anode V2 and R8 + C18.
L8 (part) ..	5	—	Demod. diode V3 and C20.
I.T. prim. ..	12,200	—	C24 and C7.
I.T. sec. ..	10,300	—	C24 and R17.
O.T. prim. ..	600	—	Across C25.



Although a four-valve superhet arrangement, the circuit of the 225B is simple. The frame aerial windings form the grid coils of V1, and the I.F. transformers have iron-cored coils tuned by fixed condensers.

For more information remember

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across the primary of the speaker transformer.

Sockets on the side of the cabinet enable an external aerial and earth system to be connected. The socket nearer the back of the set is the aerial and the front one the earth.

The valves are strapped into position by

rubber tension members, and these should be replaced after any replacements.

## Circuit Alignment

**I.F. Circuits.**—As the I.F. transformers have adjustable iron cores and fixed trimming condensers, they should only be adjusted when a transformer is replaced.

Switch the set to the M.W. band, turn gang to maximum, volume to maximum, connect an output meter across the primary of the speaker transformer and a service oscillator between the top grid cap of V1 and chassis.

Tune service oscillator to 470 kcs. and

CONDENSERS		
C.	Purpose.	Mfds.
6	V1 A.V.C. decoupling . . . . .	.05
7	Bias potr. shunt . . . . .	25
8	L.W. osc. fixed padder . . . . .	.000263
9	Osc. fixed padder . . . . .	.00057
10	V1 screen decoupling . . . . .	.05
11	I.F.T.1 prim. fixed trimmer . . . . .	.000106
12	I.F.T.1 sec. fixed trimmer . . . . .	.0001
13	V2 A.V.C. decoupling . . . . .	.05
14	V2 screen decoupling . . . . .	.01
15	I.F.T.2 prim. fixed trimmer . . . . .	.000106
16	I.F.T.2 sec. fixed trimmer . . . . .	.000113
17	A.V.C. diode coupling . . . . .	.00001
18	V2 anode decoupling . . . . .	.01
19	L.F. coupling . . . . .	.005
20	H.F. bypass . . . . .	.00005
21	H.F. filter . . . . .	.0001
22	V3 grid decoupling . . . . .	.05
23	V3 anode shunt . . . . .	.001
24	L.F. coupling . . . . .	.25
25	Tone modifier . . . . .	.004
26	H.T. reservoir . . . . .	8
27	Osc. grid . . . . .	.0001
29	Tone compensator . . . . .	.00005
31	M.W. osc. fixed trimmer . . . . .	.00004
32	L.W. osc. fixed trimmer . . . . .	.00008
33	External aerial coupling . . . . .	.000002

RESISTANCES		
R.	Purpose.	Ohms.
1	Bias potr. (part) . . . . .	80
2	Bias potr. (part) . . . . .	160
3	V1 A.V.C. decoupling . . . . .	80,000
4	Osc. grid leak . . . . .	50,000
5	V1 screen decoupling . . . . .	80,000
6	V2 A.V.C. decoupling . . . . .	1 meg.
7	V2 screen decoupling . . . . .	160,000
8	V2 anode decoupling . . . . .	1,000
9	Volume control . . . . .	1 meg.
10	V3 grid stopper . . . . .	200,000
11	H.F. filter . . . . .	200,000
12	V3 grid leak . . . . .	1 meg.
13	V3 grid decoupling . . . . .	500,000
14	A.V.C. diode load . . . . .	1 meg.
15	V3 anode load . . . . .	50,000
16	Osc. anode feed . . . . .	2,500
17	V4 grid stopper . . . . .	100,000

## Philips 225B Portable

**MODEL 225B.**—Standard model for battery operation, requiring an Oldham JRLV3 20-ah. 2-volt accumulator and an Ever Ready Portable 61 90-volt H.T. battery. Price 8½ gns., with batteries.

**DESCRIPTION.**—Four-valve, two-band superhet portable receiver.

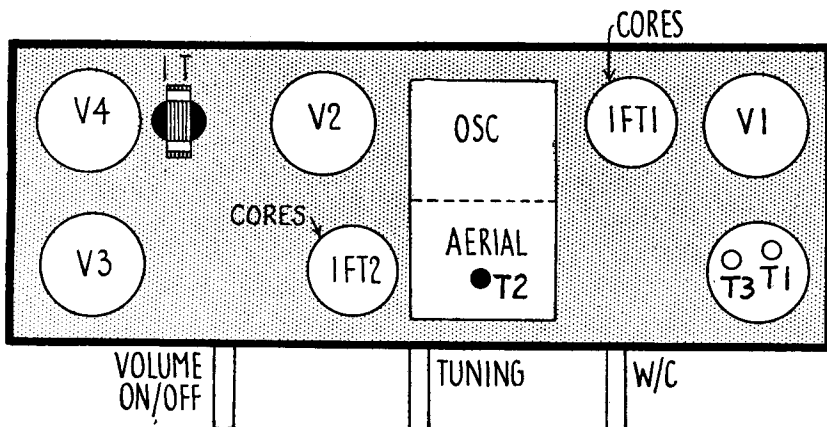
**FEATURES.**—Self-contained frame aeriels. Leatherette-covered cabinet with metal carrying strap. Mounted on turntable. Full-vision scale calibrated in metres and station names, with nearly 360 degrees pointer travel. Controls for combined volume and master switch, tuning and wave selection. Sockets for external aerial and earth system.

**LOADING.**—H.T. 9.1 ma.; L.T., .54 amp.

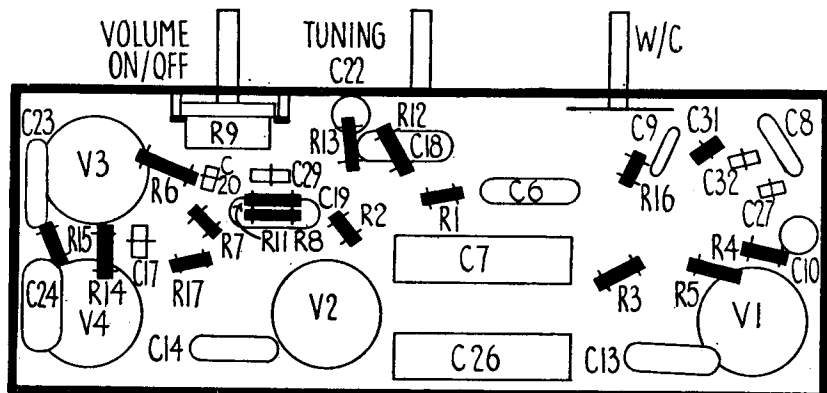
**Sensitivity and Selectivity**  
**MEDIUM WAVES (200-550 metres).**  
 —Well-maintained sensitivity over the entire band, with adequate volume on all main stations and many of the weaker transmitters in daylight. Very easy handling, good general performance, with clean background.

**LONG WAVES (900-2,000 metres).**—Good gain and selectivity. Deutschlandsender obtainable practically free of interference by means of frame aerial. Other stations easily received with ample volume.

**Acoustic Output**  
 Well balanced tone, with no undue top cutting and a good forward tone. Well-maintained middle and lower note radiation. Very slight coloration on speech. Ample volume for an ordinary room.

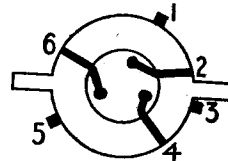


There are only three trimmers for alignment of the 225B, and these are all accessible from above, as this top "deck" diagram shows.



While small, the underside of the chassis is not unduly crowded. This diagram, and the fact that most parts are suspended by the wiring, simplify the task of identifying them.

The switch of the 225B with contacts numbered to correspond with the circuit diagram.



adjust the iron cores of the transformers, starting with I.F.T.2, for maximum response. Reduce the input from the service oscillator as the circuits come into line to keep below the A.V.C. point. Reseal the cores with wax.

A non-metallic instrument must be used for adjusting the cores.

**Signal Circuits.**—Replace chassis in cabinet so that it is in the normal operating condition. Connect the leads from the service oscillator to a few turns of wire, and inductively couple this to the frame aeriels so as to obtain signals when receiver and oscillator are in tune.

**Medium Waves.**—Tune set and oscillator to 214 metres (1,400 kcs.), and adjust T1 and then T2 for maximum response.

The padding is fixed, but check calibration and sensitivity throughout range covered.

**Long Waves.**—Tune set and oscillator to 1,000 metres (300 kcs.), and adjust T3 for maximum response.

**Replacement Condensers.**

Exact replacement condensers for the Model 225B are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18.

For C25 there is unit list number 3477, price 1s. 9d.; and for C7 there is unit 2915, 1s. 9d.