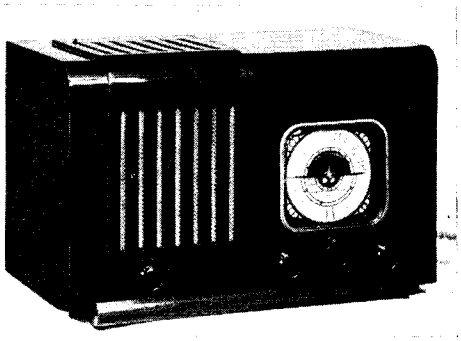
TRUPHONIC PA5 TRANSPORTABLE



The PA5 by Truphonic is a four-valve, plus rectifier, A.C. superhet with a self-contained frame aerial. The set retails at 9 gns.

CIRCUIT.—Frame aerial windings, tuned by the aerial section of the gang, constitute the grid coils of the triode hexode frequency changer, V1. The valve is A.V.C. controlled, the bias potentials passing through the frame windings. In the oscillator section an oscillator anode coupling condenser is used and a regeneration modifier resistance is shunted across the oscillator windings.

An I.F. transformer, tuned to 456 kc., couples V1 to the grid of V2, an H.F. pentode. This, the I.F. amplifier, is also A.V.C. controlled.

Another transformer couples V2 to the demodulating diode of V3, a double diode triode, and to the demodulating diode load, R10, *via* an H.F. stopper resistance, R9. The rectified signal impulse then passes by an L.F. coupling condenser, C27, and manual volume control, R11, to the grid of the triode section of V3. The other diode of V3, also fed from the I.F. transformer, provides the potential operating the A.V.C. network.

V3 is resistance capacity coupled to V4, an output pentode. A condenser, C32, effects a fixed tone modification.

Mains equipment consists of a transformer, a full-wave rectifier, V5, electrolytic smoothing condensers, and a smoothing choke (speaker field coil).

Chassis Removal.—Remove the back of the cabinet and the four grub-screw-fixed control knobs. Take out the four chassis-securing bolts from the base.

The chassis, together with frame aerial structure, may then be withdrawn.

To completely free the chassis the wire from the earth socket to the earthing plate on the roof of the cabinet must be unsoldered and the speaker (secured by four nuts) removed. Alternatively, the leads to the speaker panel may be unsoldered.

Note : It is advisable to align the set with the chassis in the cabinet.

When replacing the speaker the transformer should be nearer the side of the cabinet and the red lead connected to the top tag, the black lead to the centre tag and the blue lead to the lowest.

Special Notes.—The mains voltage adjustment device on the mains transformer takes the form of clips marked with voltage values. These are bridged by a Belling-Lee one amp. cartridge fuse.

There are two dial lights mounted one each side of the wavelength scale in screw-in holders clipped to brackets. The bulbs are rated at 6.2 volts .3 amp. and have M.E.S. bases.

VALVE READINGS

No signal. Volume maximum. M.W. min. cap 200 volt A.C. mains.

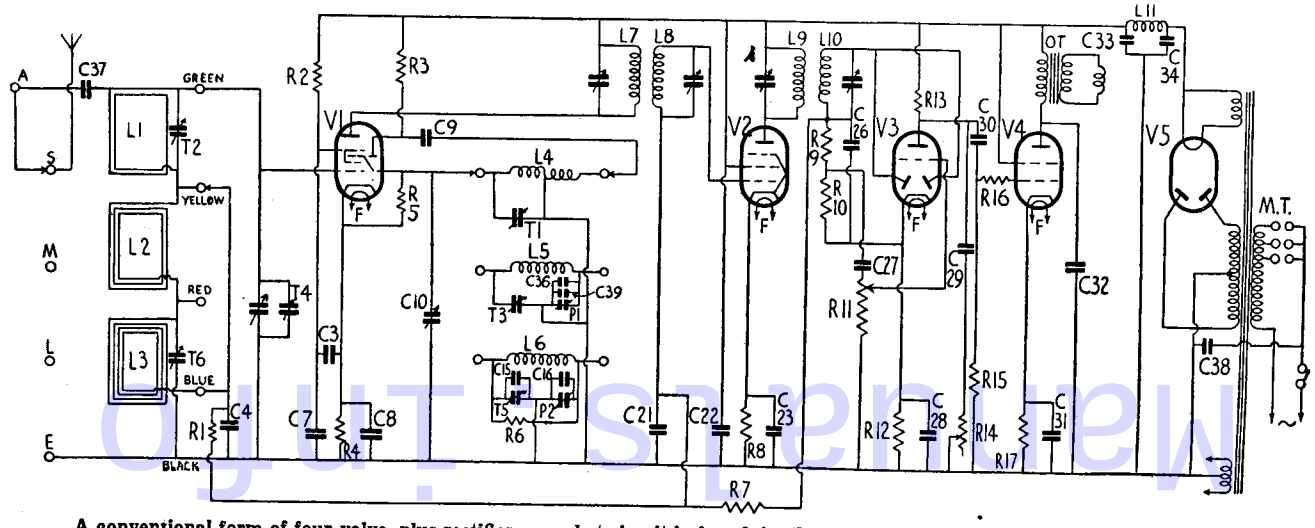
V.	Type.	Electrode.	Volts.	Ma.
	All Mullard.			
1	TH4 A ..	Anode ..	230	1.9
		Screen ..	68	5.8
		Osc. anode	89	5.5
2	VP4B	Anode ..	230	12.5
		Screen ..	230	4.9
3	TDD4	Anode ..	85	2.5
4	Pen A4 ..	Anode ..	220	24.5
		Screen ..	230	3.7
5	IW3	Heater	270	—

RESISTANCES

R.	Purpose.	Ohms.
1	V1 A.V.C. decoupling ..	500,000
2	V1 screen decoupling ..	25,000
3	Osc. anode load	25,000
4	V1 cathode bias	200
5	Osc. grid leak	50,000
6	L.W. regeneration modifier	15,000
7	V2 A.V.C. decoupling ..	500,000
8	V2 cathode bias	200
9	H.F. stopper	50,000
10	Demodulating diode load ..	250,000
11	Volume control	500,000
12	V3 cathode bias	1,000
13	V3 anode load	50,000
14	Tone control	100,000
15	V4 grid leak	500,000
16	V4 grid stopper	50,000
17	V4 cathode bias	150

CONDENSERS

C.	Purpose.	Mfds.
3	V1 screen decoupling (part)	.05
4	V1 A.V.C. decoupling ..	.05
7	V1 screen decoupling (part)	.1
8	V1 cathode bias shunt ..	.1
9	Osc. anode coupling.. ..	.003
15	L.W. osc. fixed trimmer ..	.00007
16	L.W. osc. fixed padder ..	.00014
21	V2 A.V.C. decoupling ..	.05
22	V2 screen decoupling ..	.1
23	V2 cathode bias shunt ..	.1
26	H.F. bypass	.0002
27	L.F. coupling..	.01
28	V3 cathode bias shunt ..	25
29	Tone control	.05
30	L.F. coupling..	.05
31	V4 cathode bias shunt ..	25
32	Pentode compensator ..	.01
33	H.T. smoothing	24
34	H.T. smoothing	8
36	M.W. osc. fixed padder ..	.0005
37	Aerial coupling	.00007
38	Mains suppressor	.01
39	M.W. osc. fixed padder ..	.00007



A conventional form of four-valve, plus rectifier, superhet circuit is found in the Truphonic transportable. A note regarding switching is given at the end of "Special Notes."

Sockets on an insulating panel secured to the frame aerial structure enable an external aerial and earth system to be connected.

C37 the external aerial coupling condenser is mounted on the frame aerial structure near T2. In our particular chassis, R17 was found to have a value of 160 ohms. C16 consists of two .00007 mfd. condensers in parallel. The smoothing choke, L11, is mounted under the chassis deck.

The wavechange switch is of simple although of enclosed construction. No details are shown, however, as the leads are colour coded as shown in circuit and resistance measurements are taken from other sources.

Circuit Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Switch receiver to M.W. band, turn gang to maximum, volume to maximum, and tone to "high" position. Connect a service oscillator between the top grid of V1 and chassis.

Tune service oscillator to 456 kcs. and adjust the trimmers of I.F.T.2 and then I.F.T.1 for maximum response reducing the input as the circuits come into line to render the A.V.C. inoperative.

Signal Circuits.—Connect the service oscillator to a few turns of wire and bring this near the frame aerial of the receiver to obtain a signal. As the signals become louder owing to adjustment of trimmers move the coil further away so as to obtain only an audible and not a loud signal.

Short Waves.—Tune set and oscillator to 19 metres (15.7 mcs.) and adjust T1 and then T2 (trimmer on frame aerial structure) for maximum response.

Medium Waves.—Tune set and oscillator to 200 metres (1,500 kcs.) and adjust T3 and then T4 for maximum response.

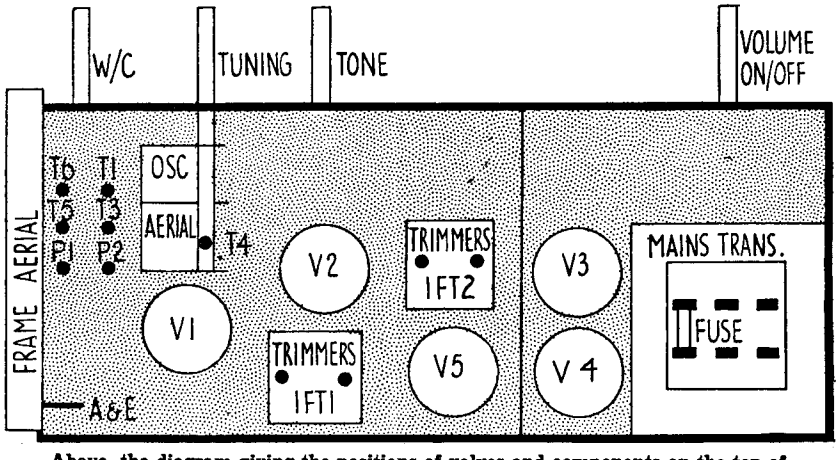
Tune set and oscillator to 500 metres (600 kcs.) and adjust P1 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

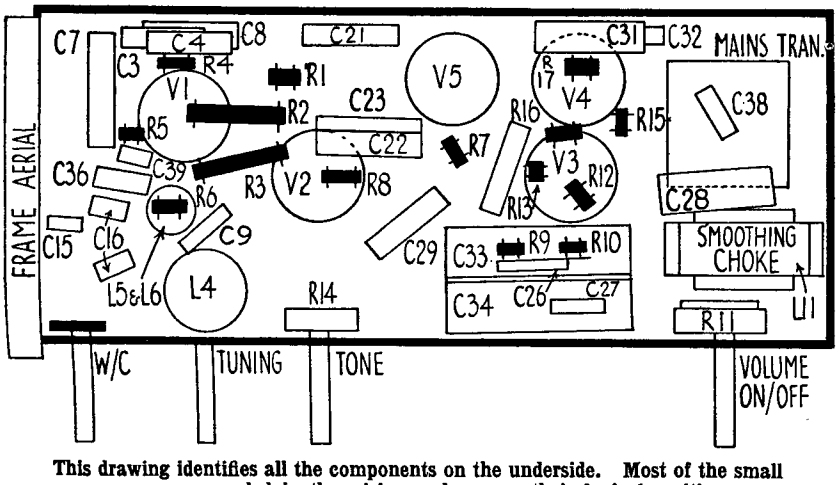
Long Waves.—Tune set and oscillator to 1,000 metres (300 kcs.) and adjust T5 and then T6 for maximum.

Tune set and oscillator to 1,875 metres (160 kcs.) and adjust P2 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.



Above, the diagram giving the positions of valves and components on the top of the Truphonic chassis. All the trimmers are accessibly arranged on the top "deck."



This drawing identifies all the components on the underside. Most of the small ones are suspended in the wiring and occupy their logical positions.

Truphonic PA5 on Test

MODEL PA.5.—Standard model for A.C. mains operation, 200-250 volts, 40-80 cycles. Price 9 gns.

DESCRIPTION. — Four-valve, plus rectifier, three-band transportable superhet.

FEATURES.—Full-vision, airplane scale calibrated in station names and metres. Controls for concentric tuning, wave selection, tone and combined volume and master switch. Speaker at side of chassis, with speaker grilles at front and top of cabinet. Wave selection control operates indicator on scale. Sockets for external aerial and earth system. Mains fuse included.

LOADING.—64 watts.

Sensitivity and Selectivity

SHORT WAVES (16-49 metres).—Good gain and selectivity with gain well maintained throughout band. No noticeable drift. Excellent signals on frame aerial.

MEDIUM WAVES (200-560 metres).—Very good gain and adequate selectivity. All main stations easily received, reasonably good background, local station spread small.

LONG WAVES (900-2,200 metres).—Representative gain and excellent selectivity, Deutschlandsender being received with very little interference. All main stations come in well.

Acoustic Output

Ample volume for an ordinary room, with good tone. The lower registers are in evidence and the reproduction has definite crispness and attack.

Replacement Condensers

EXACT replacement condensers for the PA5 are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18. These are: for either C28 or C31, unit list number 2.918, 1s. 9d.; for C33, 4,038, 6s., and for C34, 3,625, 3s. 6d.

WINDINGS (D.C. Resistances)

Winding.	Ohms.	Range.	Where measured.
L1	Below .1	S.W.	Top grid V1 and R1+C4.
L1+L2 . .	1.8	M.W.	Top grid V1 and R1+C4.
L1+L2+L3	24	L.W.	Top grid V1 and R1+C4.
L4	30	S.W.	Across tags.
L5	3	M.W.	Across tags.
L6	7	L.W.	Across tags (R6).
L7	3	—	Across tags.
L8	6	—	Top grid V2 and tag.
L9	4	—	Across tags.
L10	6	—	Across tags.
O.T. prim.	460	—	Blue and red leads, speaker panel.
M.T. prim.	32	—	Across mains plug.
Total H.T. sec.	640	—	Anode pains V5.
L11 (field)	600	—	C33 and C34.