

# TRUPHONIC A.W.5A SUPERHET



The Truphonic A.W.5A is an A.C. four valve plus rectifier superhet operating on three wavebands.

**CIRCUIT.**—The aerial is coupled to the grid of V1, an octode frequency changer, through a set of band pass coils. The output of V1 passes to V2, an H.F. pentode, by means of the usual I.F. transformer.

The second I.F. transformer is in the anode circuit of V2. The secondary of this transformer feeds the demodulating diode of V3, a double diode triode, and connects the A.V.C. line of the rectifier. A cathode ray tuning device is also fed from this I.F. transformer.

The triode section of V3 amplifies the rectified signal from the demodulating section, and in its grid circuit is connected the volume control.

The tone control of the receiver is in the anode circuit of the triode section of this valve.

The output of V3 is resistance capacity coupled to V4, an output pentode, in the anode circuit of which is incorporated a tone compensating condenser. The signal then passes to the moving-coil speaker.

Mains equipment consists of the transformer, with the usual mains voltage tapings, electrolytic smoothing condensers, the speaker field, which acts as the smoothing choke, and an indirectly heated full wave rectifying valve.

**Special Notes.**—An interference sup-

pression device is incorporated in the mains transformer. This takes the form of two H.F. chokes in the leads and two condensers connected across the supply with the centre tap connected to earth.

A wander plug is provided enabling the mains wiring to be used as an aerial. The makers state that better results are obtained when the mains aerial is being used if an earth is also employed.

The dial lights, of which there are four, are each rated at 6.2 volts .3 amp, and are fitted in the usual type of screw-in holder. Three of the bulbs are clamped to the tuning spindle assembly, and rotate with the movement of the tuning control. Only one of these bulbs is lit up at a time, according to the position of the wavechange switch so as to light up the portion of the scale to which the receiver is switched.

The fourth bulb lights up an indicator marked "Gram."

The cathode ray tuning indicator is mounted on a bakelite base to which is

clamped an extension piece made of metal. At the end of this is fixed a five-pin plug which fits in a holder made to receive it on the receiver chassis. There is a hole cut out of the wavelength scale to accommodate the bulb end of the tuning device, so that the variation of the light intensity can be seen.

A pair of pick-up sockets is provided. The mains voltage adjustment is to be found on the top rear of the chassis. This takes the form of a four-pin holder with a wander plug.

A pair of sockets is provided for plugging in an external speaker. The extra speaker is connected in parallel with the primary of the speaker transformer in the set. A permanent-magnet moving coil type with its own transformer should be used therefore.

In our particular chassis C24 was found to be 25 mfd. and R23 was 1 megohm.

**Removing Chassis.**—Remove four control knobs on the face of the cabinet. These are all fixed by grub screws. Then turn

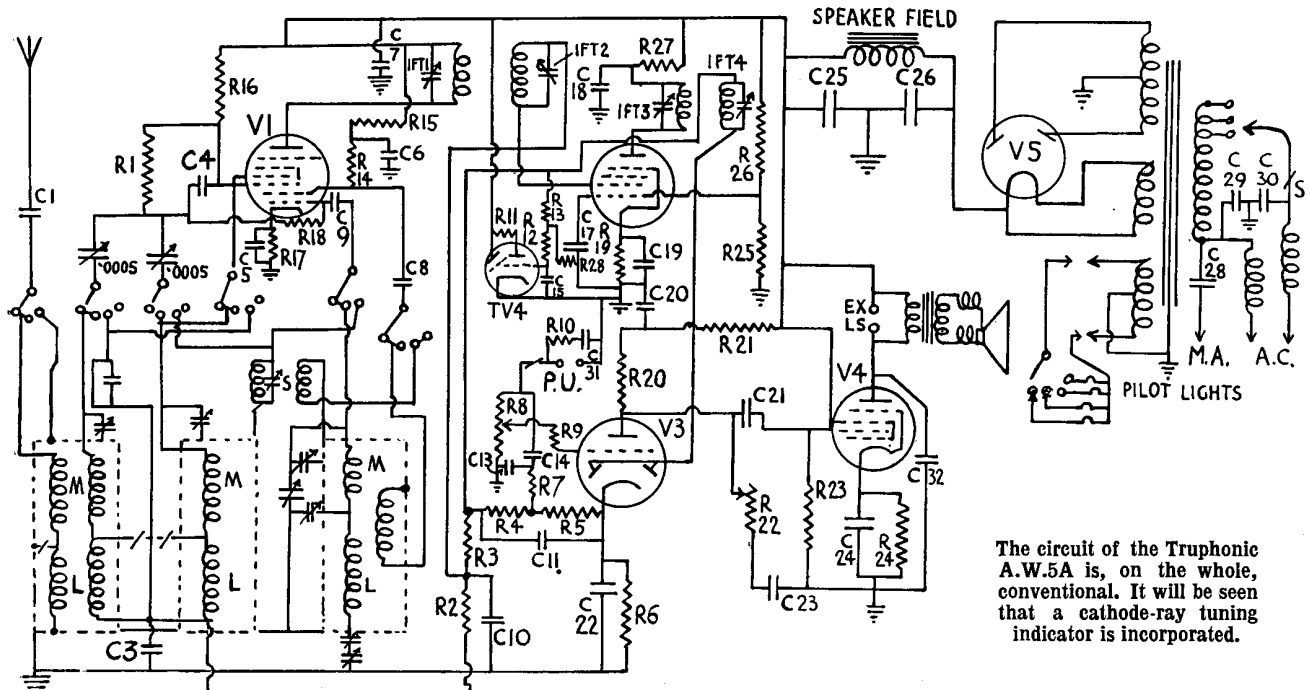
## VALVE READINGS

No signal. Volume maximum. 200 volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	Mullard FC4 met. (7).	Anode ..	218	Inaccess.
		Screen ..	75	3.0
		Osc. anode ..	80	2.5
2	Mullard VP4B met. (7).	Anode ..	220	6.0
		Screen ..	105	2.5
3	Mazda AC/HL/DD met. (7).	Anode ..	118	2.3
		Screen ..	105	2.5
4	Mazda AC/pen (7).	Anode ..	200	4.6
		Screen ..	220	4.5
5	Brimar R2(4)	Filament ..	360	—

## QUICK TESTS

Quick tests are available on this receiver on the speaker transformer leads. Volts measured between these and the chassis should be:—  
Red lead, 222 volts, smoothed H.T.  
Blue lead, 205 volts, smoothed H.F.  
Yellow lead, 369 volts, unsmoothed H.T.



The circuit of the Truphonic A.W.5A is, on the whole, conventional. It will be seen that a cathode-ray tuning indicator is incorporated.

the set up on one side and take out the four fixing bolts and washers securing the chassis to the cabinet. The chassis is then free to the extent of the speaker leads, which is sufficient for most, if not all, service requirements.

If it be found necessary to further withdraw the chassis from the cabinet, the speaker (held in position by four fixing screws) can be removed or else the leads to the speaker transformer can be detached from the chassis by pulling out the four-pin plug from its holder on the chassis.

The receiver should not be switched on while this plug is withdrawn.

### Alignment Notes

**I.F. Circuits.**—Connect a service oscillator tuned to 127 kc. between the top grid cap of the frequency changer, V1, and chassis, through a small fixed condenser in the usual manner.

Adjust I.F. trimmers IFT1, IFT2, IFT3 and IFT4 for maximum response on an output meter connected across the external speaker terminals.

Reduce the input from the service oscillator as the I.F. circuits come into line so as to render the A.V.C. inoperative.

**Signal Circuits.**—Turn the volume control to maximum and tone control to the "high" position. Connect the oscillator between the aerial terminal of the receiver and chassis (earth terminal). Only sufficient input from the oscillator should be fed to obtain a half-scale deflection of the output meter.

**Short-wave Band.**—Switch the set to the short waves and tune to 6 metres (1,875 kc.) and inject an oscillator signal of the same wavelength. Adjust T6 and T7 for maximum.

**Medium-wave Band.**—Switch the set to medium waves and inject a signal of 200 metres (1,500 kc.). Tune the set to 200 metres. Adjust T1 to maximum and then P2 and P3.

Tune the set and service oscillator to 500 metres (600 kc.) and check for maximum response on P2 and P3.

**Long-wave Band.**—Tune the set to 2,200 metres on the long-wave band. Inject an

## Truphonic on Test

**MODEL AW5A.**—Standard model for A.C. mains operation, 200-240 volts, 40-80 cycles. Price 12 gns.

**DESCRIPTION.**—Three waveband, four-valve plus rectifier table superheterodyne.

**FEATURES.**—Controls for waveband, tone, tuning and volume. Full-vision scale calibrated in names and wavelengths with gramophone indication. Tuning indicator mounted as part of the scale. Pick-up and extension speaker sockets.

**LOADING.**—52 watts.

### Sensitivity and Selectivity

**SHORT WAVES (16-49 metres).**—Sensitivity and selectivity satisfactory.

**MEDIUM WAVES (200-600 metres).**—Representative gain and selectivity with local stations spreading on adjacent channels only. Reasonable background. Free from whistles.

**LONG WAVES (1,000-2,000 metres).**—Very good selectivity and average gain. Deutschlandsender received with slight side splash.

### Acoustic Output

With tone in maximum position, reasonable amount of attack and brilliance with well-balanced output. Tone control fairly vigorous in action.

Output is sufficient for an average size room, without any overloading.

oscillator signal of 2,200 metres (136 kc.) and adjust P4 for maximum.

Tune the set to 900 metres (333 kc.) and inject the same wavelength. Adjust T5 for maximum response.

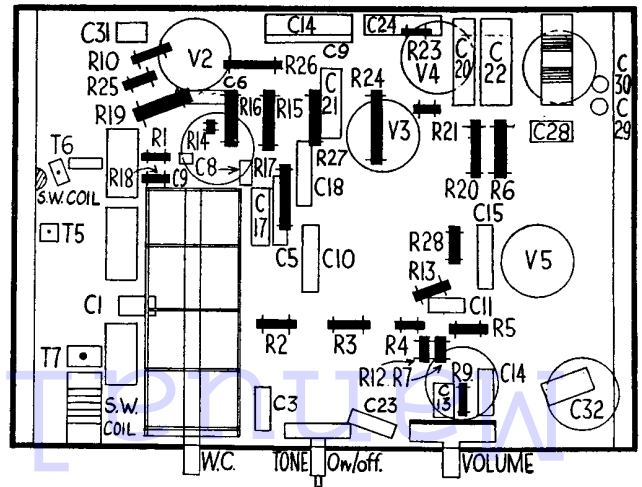
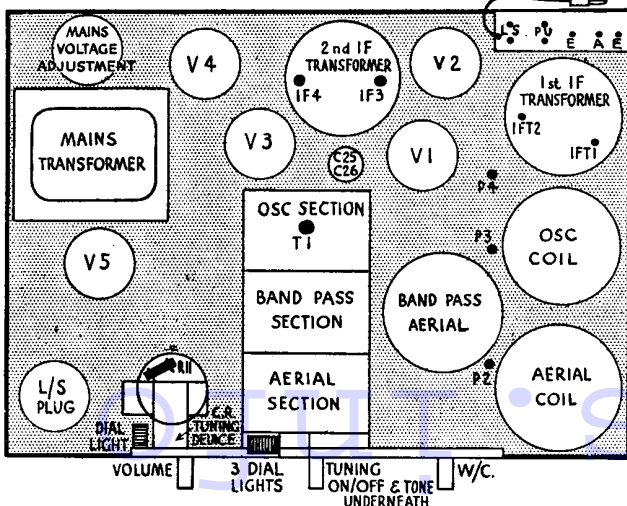
Exact replacement condensers for the A.W.5A, made by A. H. Hunt, Ltd., are: C24, list 1,954, 1s. 9d.; C20, list 2,519, 2s., and the unit containing C.s 25 and 26, list 3,561, 8s. 6d.

### RESISTANCES

R.	Purpose.	Ohms.
1	Screen potr. (part) ..	30,000
2	A.V.C. decoupling ..	100,000
3	A.V.C. feed ..	1 meg.
4	A.V.C. diode load (part) ..	50,000
5	A.V.C. diode load (part) ..	250,000
6	V3 cathode bias ..	1,000
7	H.F. filter ..	100,000
8	Volume control ..	1 meg.
9	V3 grid stopper ..	250,000
10	Pick-up tone ..	250
11	Tuning indicator feed ..	2 meg.
12	Tuning indicator series grids ..	250,000
13	Tuning indicator grid potr. ..	500,000
14	Oscillator anode feed ..	50,000
15	Oscillator anode decouplings ..	1,000
16	V1 screen decoupling ..	25,000
17	V1 cathode bias ..	250
18	Oscillator grid leak ..	50,000
19	V2 cathode bias ..	250
20	V3 anode load ..	25,000
21	V3 anode decoupling ..	5,000
22	Tone control ..	100,000
23	V4 grid leak ..	500,000
24	V4 cathode bias ..	500
25	V2 screen potr. (part) ..	75,000
26	V2 screen potr. (part) ..	25,000
27	V2 anode decoupling ..	10,000
28	Tuning indicator grid potr. ..	1 meg.

### CONDENSERS

C.	Purpose.	Mfds.
1	Series aerial ..	.0002
3	Lower band-pass coupling ..	.02
4	V1 screen decoupling ..	.1
5	V1 cathode shunt ..	.1
6	Oscillator anode decoupling ..	.1
7	V1 anode supply shunt ..	.1
8	Oscillator anode coupling ..	.002
9	Oscillator grid ..	.00005
10	V2 A.V.C. decoupling ..	.1
11	H.F. by-pass ..	.0001
13	L.F. by-pass ..	.0001
14	L.F. coupling ..	.01
15	Tuning indicator grid shunt ..	.1
17	V2 screen decoupling ..	.1
18	V2 anode decoupling ..	.1
19	V2 cathode shunt ..	.1
20	V3 anode decoupling ..	2.0
21	L.F. coupling ..	.1
22	V3 cathode shunt ..	50
23	Tone control ..	.05
24	V4 cathode shunt ..	50
25	H.T. smoothing ..	12
26	H.T. smoothing ..	8
28	Mains aerial ..	.0001
29	Mains filter ..	.01
30	Mains filter ..	.01
31	Pick-up tone ..	.001
32	Pentode compensator ..	.002



Constructional details, including the positions of the trimming and padding condensers, are shown clearly by these layout diagrams. The tinted one shows the "top deck" view.