EVER READY 5103
LISSEN 8453

Four-valve, plus rectifier, three-waveband table model superhet with push-button tuning by pre-set circuits. Suitable for 200–250 volt 40–100 cycle mains. Made by Ever Ready Radio, Ltd., Elzy's Estate, London, N.18, and Lissen, Ltd., Angel Rd., Edmonton, N.18.

Circuit. — There are alternative aerial connections, one including a resistance. A single-tuned circuit forms the input to V1 on S.W., but on medium and long waves a band-pass arrangement is used.

V1 is the frequency-changer, and the oscillator circuits are tuned grid with separate, parallel-fed anode reaction coils on each band.

The push-button circuits are somewhat unusual, as pre-set capacities are used in both aerial and oscillator circuits, and, in addition, they tune special coils and do not utilise the coils of the manual circuits.

Trimmer-tuned I.F. transformers link up V2, the I.F. amplifier, and V3, the double-diode triode.

R14–R15 form a tapped signal demodulation diode load, and the L.F. is applied via C30 to the volume control, R18.

Across R18 is a tone circuit R17–C31, and connections for a pick-up. The A.V.C. diode of V3 is energised via C33 and controls both V2 and V1, the latter on all bands.

V3 is resistance-capacity coupled to V4, an output tetrode. R24 provides inverse feed-back between V4 and V3 for improving the tone. Sockets are provided for the connection of a speaker with its own matching transformer.

H.T. is obtained in the standard way from a full-wave rectifier, V5, with a choke and two electrolytic condensers for smoothing.

GANGING

I.F. Circuits. — Short the oscillator gang section and switch to M.W. Inject 452 kc. through .1 mfd. to V1 grid and adjust I.F. trimmers for maximum on output meter.

Throughout ganging operations keep signal as low as possible to avoid operation of A.V.C.

L.W. Band.—See that pointer registers with 180° line with gang at maximum.

Set T4 approximately three-quarters in. Tune to 1,200 m., inject 1,200 m. to aerial and adjust T1, T2 and T3.

Tune to 1,700 m., inject 1,700 m. and adjust T4.

Repeat 1,200 m. and 1,700 m. adjustments.

M.W. Band.—Set T8 two-thirds in. Tune to and inject 214 m. Adjust T5, T6 and T7.

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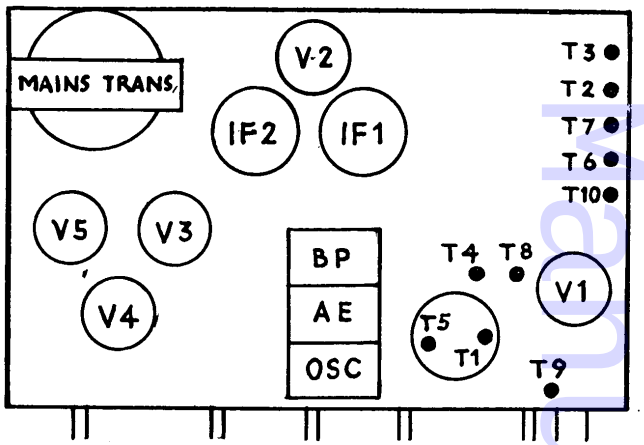
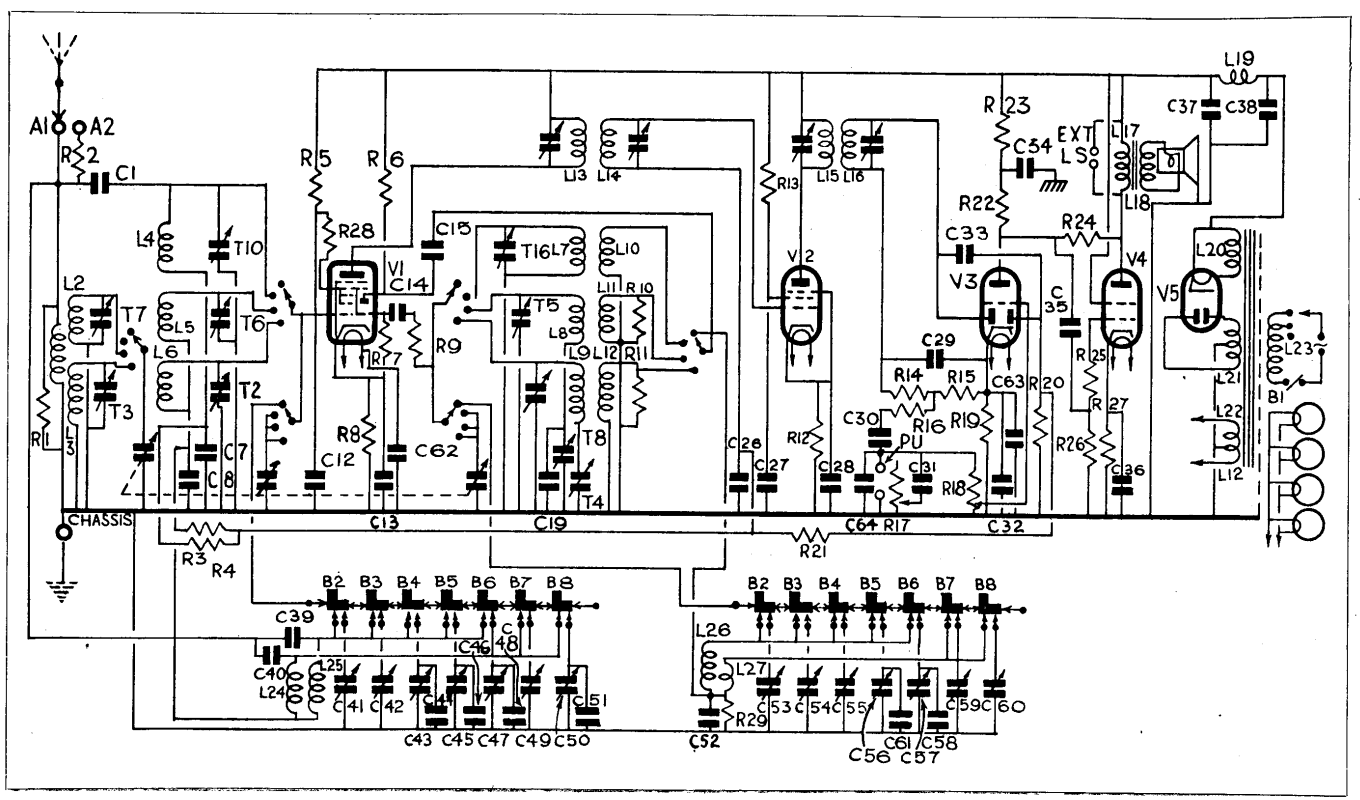


The top of the chassis is arranged in a logical manner with all the trimmers accessible from above.



The circuit is carefully designed with several small refinements. P.B. tuning is by pre-set capacities with special coils.

CONDENSERS

C		Mfds.
1	..	10 mmfds.
7	..	.01
8	..	.1
12	..	.1
13	..	.1
14	..	.0001
15	..	.0003
19	..	.005
26	..	.1
27	..	.1
28	..	.1
29	..	.00005
30	..	.05
31	..	.002
32	..	50
33	..	10 mmfds.
34	..	2
35	..	.05
36	..	50
37	..	16
38	..	8
39	..	10 mmfds.
40	..	10 mmfds.
44	..	50 mmfds.
46	..	100 mmfds.
48	..	200 mmfds.
51	..	200 mmfds.
52	..	200 mmfds.
58	..	300 mmfds.
61	..	50 mmfds.
62	..	.005
63	..	.0005
64	..	.0001

VALVE READINGS

V	Type	Electrode	Volts	Ma.
1	A36B	Anode	273	3.5
		Screen	107	7.1
		Osc. anode	106	6.8
		Cathode	2.6	17.4
2	A50P	Anode	273	8.1
		Screen	191	2.9
		Cathode	2.3	11.0
3	A23A	Anode	128	2.6
		Cathode	2.7	5.0
4	A70D	Anode	246	36
		Screen	273	5
		Cathode	6.6	41
5	A11D	Anodes	516 A.C.	—
		Cathode	292 D.C.	73

Dia lamps, 5.5 v., 3 amp. 12 mm.

RESISTANCES

R		Ohms.	R		Ohms.
1	..	11,000	16	..	110,000
2	..	110,000	17	..	2 meg.
3	..	110,000	18	..	500,000
4	..	110,000	19	..	1,000
5	..	20,000	20	..	1.1 meg.
6	..	20,000	21	..	260,000
7	..	51,000	22	..	40,000
8	..	150	23	..	11,000
9	..	200	24	..	250,000
10	..	1,100	25	..	110,000
11	..	2,100	26	..	510,000
12	..	250	27	..	150
13	..	25,000	28	..	75
14	..	510,000	29	..	5,100
15	..	260,000			

WINDINGS

L		Ohms.	L		Ohms.
1	..	11.4	13-16		6.7
2	..	2.5	17	..	650
3	..	11.1	18	..	V. low
4	..	V. low	19	..	230
5	..	2.5	20	..	V. low
6	..	11.0	21	..	255
7	..	V. low	22	..	V. low
8	..	1.8	23	..	19
9	..	5	24	..	11.2
10	..	V. low	25	..	2.5
11	..	6.1	26	..	2.5
12	..	8.4	27	..	7.4

KOLSTER-BRANDES 817

Four-valve, two-waveband, all-dry battery-operated portable superhet. Made by Kolster-Brandes, Ltd., Cray Works, Sidcup, Kent.

Circuit.—The medium-wave grid coil of V1 also forms the frame aerial. A connection is provided by C1 for an external aerial. An iron-dust cored loading coil is brought into circuit for long-wave reception.

V1 is a frequency-changer and the oscillator circuits are a simple tuned grid arrangement with coupling coils actually in the anode path. Tracking is obtained by the shape of the gang condenser vanes and there is no padding.

A trimmer - tuned intermediate - frequency transformer passes the signal on to V2, the amplifier. A second similar I.F. transformer leads to V3, a single-diode triode.

The volume control forms the diode load. The "steady" modulation voltage is tapped off by R4 and taken to V1 and V2 for A.V.C. The L.F. component is tapped off by C8 and introduced to the grid circuit of V3. R5 and C7 form an H.F. filter.

V3 biases itself. The amplified signal is developed across R7 and injected via C9 to the grid circuit of V4, which consists of an auto-transformer with a series stabiliser R8. Bias is obtained by the voltage drop of the common anode current through R9 between L.T. negative and H.T. negative.

V4 is an output pentode. The H.T. battery is decoupled by C13, an electrolytic, with a H.F. by-pass C11.

Batteries.—The L.T. unit is an Alpha type 217 providing 1.5 volts and the H.T. is an Alpha type 233 giving 90 volts. The total H.T. consumption should be about 9.6 ma., and the L.T. .25 amp. Bias is provided by R9, the voltage drop being 7.3 volts.

VALVE READINGS

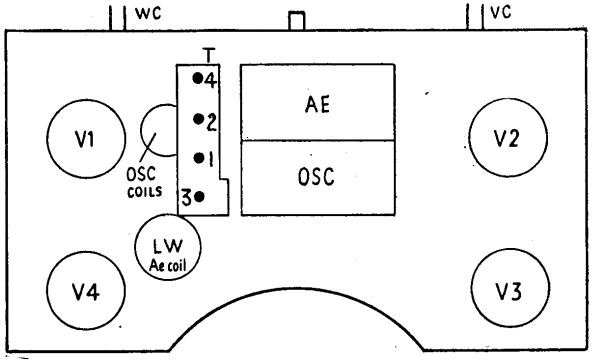
V	Type	Electrode	Volts	Ma.
1	1A7EG	Anode	80	.42
		Screen	31	.57
		Osc. anode	80	1.04
2	1N5EG	Anode	80	.66
		Screen	80	.16
3	1H5G	Anode	39	.05
4	1C5EG	Anode	76	5.5
		Screen	80	1.2

RESISTANCES

R	Ohms.	R	Ohms.
1	.25 meg.	7	.25 meg.
3	50,000	8	50,000
4	1 meg.	9	800
5	50,000	VC	1 meg.
6	2 meg.		

CONDENSERS

C	Mfds.	C	Mfds.
1	5 mmfds.	8	.02
3	100 mmfds.	9	.02
4	100 mmfds.	10	.005
5	.1	11	.1
6	.1	12	25
7	200 mmfds.	13	2



This is a neat little all-dry portable superhet covering two bands only. Trimmers must be finally adjusted with the chassis in the cabinet.

GANGING

I.F. Circuits.—Inject 464 kc. to the grid of V1 via a .1 mfd. condenser. Tune the set to 580 m. Adjust I.F. trimmers for maximum, keeping the signal below A.V.C. level.

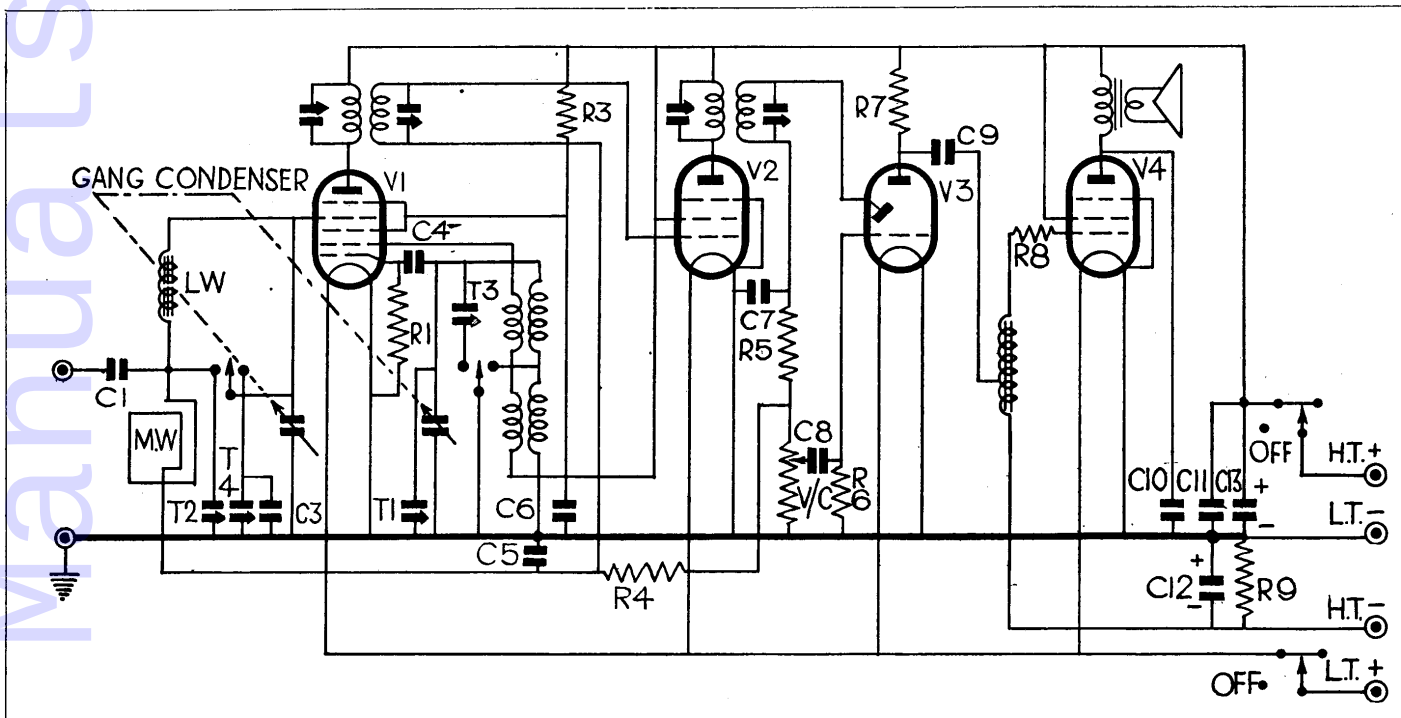
M.W. Band.—Tune to 214 m. (spot). Inject 1,400 kc. to aerial. Adjust T1 and T2. There is no padding.

L.W. Band—Tune to 1,200 m. Inject 250 kc. and adjust T3 and T4.

Then, with set mounted in cabinet, batteries in position and back replaced, connect generator to a short length of wire trailed a foot or two from the set.

Tune to 214 m., inject 1,400 kc. and adjust T2 through aperture in back.

Tune to 1,200 m., inject 250 kc. and adjust T4 through aperture in back.



Points of interest are the aerial loading coil for long-wave reception and the simplicity of the combined L.F. and A.V.C. diode circuit. An auto-connected L.F. transformer increases gain.

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Tune to and inject 500 m., and adjust T8.

Repeat both trimming and padding.

S.W. Band.—Inject and tune 15 mc. Screw T9 right in, and then set to the first peak heard from light (one with higher capacity). Adjust T1.

Tune to and inject 7.5 mc. and adjust top turn of S.W. oscillator coil.

Readjust T9 and T10.

PUSH-BUTTONS

With the P.B. trimmers, the oscillator one should be adjusted first.

The coverage of the buttons is :—

Button	Range
1	Mains On-Off
2	200—300
3	200—300
4	290—445
5	350—480
6	470—535
7	850—1,460
8	1,300—1,665

Fuses Blowing

THE fuses of a set continually blew. There was no short circuit to be found and the rectifier was replaced without success.

Checking the rectifier circuit, however, disclosed that a carbonised leakage path had formed between the wafers of the valve-holder.