

### COMPONENTS AND VALUES

RESISTANCES	Values (ohms)
R1	V1 S.G. H.T. feed .. 80,000
R2	V1 hex. C.G. decoupling .. 110,000
R3	V1 osc. grid circuit stabiliser .. 50
R4	V1 osc. C.G. resistance .. 25,000
R5	V1 fixed G.B. resistance .. 200
R6	V1 osc. anode H.T. feed .. 80,000
R7	V2 fixed G.B. resistance .. 300
R8	A.V.C. line decoupling .. 1,100,000
R9	T.I. C.G. potentiometer .. 2,100,000
R10	I.F. stopper .. 510,000
R11	V3 signal diode load .. 110,000
R12	I.F. stopper .. 510,000
R13	Manual volume control .. 510,000
R14	V3 G.B. resistance .. 500,000
R15	V3 triode anode decoupling .. 1,000
R16	V3 triode anode load .. 25,000
R17	V3 triode anode load .. 110,000
R18	V3 A.V.C. diode load .. 1,100,000
R19	V4 C.G. resistance .. 260,000
R20	Part of variable T.C. filter .. 20,000
R21	V4 C.G. I.F. stopper .. 25,000
R22	V4 G.B. resistance .. 150
R23	T.I. anode H.T. feed .. 2,100,000

### OTHER COMPONENTS

	Approx. Values (ohms)
L1	Aerial I.F. filter coil .. 11·0
L2	Aerial S.W. coupling .. 0·5
L3	Aerial M.W. and L.W. coupling .. 130·0
L4	Aerial S.W. tuning coil .. Very low
L5	Aerial M.W. tuning coil .. 2·8
L6	Aerial L.W. tuning coil .. 11·2
L7	Oscillator S.W. tuning coil .. Very low
L8	Oscillator M.W. tuning coil .. 1·8
L9	Oscillator L.W. tuning coil .. 4·5
L10	Oscillator anode S.W. reaction .. 33·0
L11	Oscillator anode M.W. and L.W. reaction .. 8·0
L12	1st I.F. trans. Pri. .. 5·0
L13	1st I.F. trans. Sec. .. 5·0
L14	2nd I.F. trans. Pri. .. 5·0
L15	2nd I.F. trans. Sec. .. 5·0
L16	Heterodyne filter choke .. 440·0
L17	Speaker speech coil .. 1·8
L18	Hum neutralising coil .. 0·25
L19	Speaker field coil .. 1,800·0
T1	Output transformer Pri. total .. 700·0
	Heater sec. .. 22·6
	Rect. heat. sec. .. 0·2
	H.T. sec. total .. 778·0
T.I.	Cathode ray tuning indicator .. —
S1-S6	Waveband switches .. —
S7-S9	Radio-gram change switches .. —
S10-S12	Tone control switches .. —
S13-S17	Scale lamp switches .. —
S18	Mains switch, ganged R14 .. —

Switch	S.W.	M.W.	L.W.	Gram.
S1	O	O	O	O
S2	O	O	O	O
S3	O	O	O	O
S4	O	O	O	O
S5	O	O	O	O
S6	O	O	O	O
S7	O	O	O	O
S8	O	O	O	O
S9	O	O	O	O

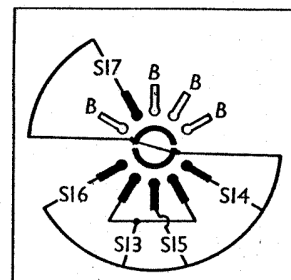
Note that **S8** consists of one fixed contact in the bank and a moving metal contact rivetted to the rotor spindle, and hence connecting to chassis.

**S10-S12** are the tone control switches in a separate rotary unit, all the contacts being indicated in our under-chassis view. Five of the fixed contacts are blank, and three are used. In the fully anti-clockwise position **S12** is closed, in the next position **S11** is closed, in the third position **S10** is closed, and in the fourth position all the switches are open.

**S13-S17** are the scale lamp switches, in a rotary unit in front of the chassis, ganged with the wavechange and gram. unit. **S13** controls the general lighting, and **S14, S15, S16** and **S17** the S.W., M.W., L.W. and gram. scale indicators respectively. A diagram of the switch unit is given below, indicating the switches as seen from the front of the chassis, when it is standing on its base. The table below gives the switch positions for the four control settings, starting from fully anti-clockwise. O indicates open, and C closed.

The tone and volume indicator lamps are always on when the set is operating.

Switch	S.W.	M.W.	L.W.	Gram.
S13	C	C	C	O
S14	O	O	O	O
S15	O	O	O	O
S16	O	O	O	O
S17	O	O	O	C



The scale lamp switch unit, looking from the front of the chassis when it is standing on its base.

**Scale Lamps.**—There are eight of these in all, all Ever-Ready M.E.S. types, rated at 6·2 V, 0·3 A, and having small bulbs. All the lamps are sprayed green, except the two used for general illumination, which are clear. The lamps are controlled by five switches, dealt with above.

### CONDENSERS

	Values (μF)
C1	V1 hex. C.G. decoupling .. 0·05
C2	Aerial circuit L.W. trimmer .. 0·00001
C3	V1 S.G. decoupling .. 0·1
C4	V1 cathode by-pass .. 0·1
C5	H.T. positive R.F. by-pass .. 0·1
C6	V1 oscillator C.G. condenser .. 0·0001
C7	Osc. circuit M.W. fixed tracker .. 0·00055
C8	Osc. circuit L.W. fixed trimmer .. 0·00002
C9	Fixed tracker .. 0·0005
C10*	V1 osc. anode decoupling .. 2·0
C11	V2 C.G. decoupling .. 0·05
C12	V2 cathode by-pass .. 0·1
C13	T.I. feed decoupling .. 0·1
C14	I.F. by-passes .. 0·00005
C15	A.F. coupling to V3 triode .. 0·00005
C16	I.F. by-pass .. 0·01
C17	Coupling to V3 A.V.C. diode .. 0·0002
C18	V3 cathode by-pass .. 0·0001
C19*	V3 triode anode decoupling .. 20·0
C20*	V3 triode anode load .. 2·0
C21	V3 triode to V4 A.F. coupling .. 0·025
C22	V4 C.G. I.F. by-pass .. 0·0005
C23	Parts of variable T.C. filter .. 0·025
C24	Part of heterodyne filter .. 0·025
C25	V4 anode fixed tone corrector .. 0·002
C26	V4 cathode by-pass .. 0·001
C27*	H.T. smoothing .. 50·0
C28*	.. 8·0
C29*	.. 16·0
C30†	Aerial circuit I.F. filter tuning .. —
C31†	Aerial circuit S.W. trimmer .. —
C32†	Aerial circuit M.W. trimmer .. —
C33†	Aerial circuit tuning .. —
C34†	Oscillator circuit tuning .. —
C35†	Oscillator circuit M.W. trimmer .. —
C36†	Oscillator circuit M.W. tracker .. —
C37†	Oscillator circuit L.W. tracker .. —
C38†	1st I.F. trans. pri. tuning .. —
C39†	1st I.F. trans. sec. tuning .. —
C40†	2nd I.F. trans. pri. tuning .. —
C41†	2nd I.F. trans. sec. tuning .. —

\* Electrolytic. † Variable. ‡ Pre-set.

order for maximum output. Remove the swamp condenser and the 0·5 MO resistance, and replace top cap connection of **V1**.

**R.F. and Oscillator Stages.**—Switch set to S.W., tune to 15 MC/S on scale, feed a 15 MC/S (20 m.) signal into **A** and **E** sockets, and adjust **C31** for maximum output.

Switch set to M.W., tune to 210 m. on scale, feed in a 210 m. (1·428 KC/S) signal via a dummy aerial, and adjust **C35**, then **C32**, for maximum output. Tune to 520 m. on scale, feed in a 520 m. (577 KC/S) signal, and adjust **C36** (front of chassis) for maximum output, whilst rocking the gang for optimum results. Re-check at 210 m.

Switch set to L.W., tune to 1,800 m. on scale and feed in an 1,800, (166·5 KC/S) signal. Adjust **C37** maximum output whilst rocking the gang.

**I.F. Filter.**—Feed in a 465 KC/S signal, and adjust **C30** for minimum output.

### VALVE ANALYSIS

Valve voltages and currents given in the table (col. 3) are those measured in our receiver when it was operating on mains of 235 V, using the 216-235 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 A36A	250	1·6	40	2·9
V2 A50P	250	10·1	250	3·6
V3 A23A	80	1·3	—	—
V4 A70D	210	42·0	250	6·9
V5 A11D	360	—	—	—

Oscillator anode 55 V, 2·5 mA.  
Each anode, A.C.

### GENERAL NOTES

**Switches.**—**S1-S9** are the waveband and gramophone switches, in a ganged unit beneath the chassis. All these switches are indicated in our under-chassis view. The table below gives the switch positions for the four control settings, starting from fully anti-clockwise. O indicates open, and C closed.

**S18** is the Q.M.B. mains switch, ganged with the volume control **R14**.

### CIRCUIT ALIGNMENT

When the gang is full in mesh the cursor should be on the setting mark at the top end of the M.W. scale (beyond the 550 m. mark).

**I.F. Stages.**—Feed in a 465 KC/S signal to control grid (top cap) of **V1** via a 0·002 μF condenser, and chassis, first removing the existing lead to **V1** control grid, and connecting a 0·5 M resistance between control grid and chassis. Also connect a 0·25 μF condenser between oscillator anode of **V1** and chassis. Adjust **C41, C40, C39** and **C38** in that