

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	510,000
R10	I.F. stopper	110,000
R11	V3 signal diode load	510,000
R12	I.F. stopper	510,000
R13	Manual volume control	500,000
R14	V3 G.B. resistance	1,000
R15	V3 triode anode decoupling	25,000
R16	V3 triode anode load	110,000
R17	V3 A.V.C. diode load	1,100,000
R18	V4 C.G. resistance	260,000
R19	Part of variable T.C. filter	20,000
R20	V4 C.G. I.F. stopper	25,000
R21	V4 G.B. resistance	150
R22	T.I. anode H.T. feed	2,100,000

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	0.005
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	0.0001
C17	Coupling to V3 A.V.C. diode	0.0001
C18*	V3 cathode by-pass	20.0
C19*	V3 triode anode decoupling	2.0
C20	V3 triode to V4 A.F. coupling	0.025
C21	V4 C.G. I.F. by-pass	0.0005
C22	Parts of variable T.C. filter	0.025
C23	Part of heterodyne filter	0.025
C24	V4 anode fixed tone corrector	0.002
C25	V4 cathode by-pass	0.001
C26	H.T. smoothing	50.0
C27*		8.0
C28*		16.0
C29*		
C30†	Aerial circuit I.F. filter tuning	
C31†	Aerial circuit S.W. trimmer	
C32†	Aerial circuit M.W. trimmer	
C33†	Aerial circuit L.W. trimmer	
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.

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.	200.0
	Sec.	7.0
T2	Mains trans. 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	—
S10-12	Tone control switches	—
S13-17	Scale lamp switches	—
S18	Mains switch, ganged R14	—

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 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

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

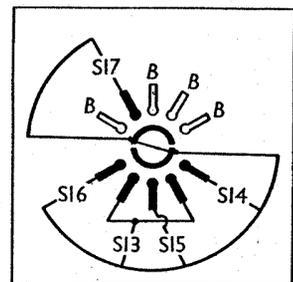
Note that S8 consists of one fixed contact in the bank and a moving metal contact rivetted to the rotor spindle, and hence connecting to chassis.

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.