



COMPONENTS AND VALUES

CONDENSERS		Values (μF)
C1	Part aerial I.F. filter tuning	0.000064
C2	Image suppressor	0.00005
C3	M.W. and L.W. aerial coupling	0.00002
C4	Band-pass L.W. coupling	0.016
C5	Band-pass M.W. coupling	0.025
C6	Aerial S.W. trimmer	0.00001
C7	Small coupling	0.000002
C8	V1 cathode by-pass	0.05
C9	1st I.F. trans. pri. trimmer	0.00005
C10	1st I.F. trans. sec. trimmer	0.00005
C11	V1 pentode anode decoupling	0.1
C12	V1 osc. C.G. condenser	0.0001
C13	Osc. circuit L.W. tracker	0.00067
C14	Osc. circuit M.W. tracker	0.0014
C15	V1 S.G. and osc. anode decoupling	0.1
C16	V2 C.G. decoupling	0.1
C17	V2 S.G. decoupling	0.05
C18	2nd I.F. trans. pri. trimmer	0.00005
C19	2nd I.F. trans. sec. trimmer	0.000064
C20	Coupling to V3 A.V.C. diode	0.00002
C21	V2 cathode by-pass	0.1
C22	V2 cathode by-pass	25.0
C23	V3 cathode I.F. by-pass	0.1
C24	I.F. by-pass	0.001
C25	A.F. coupling to V3 triode	0.01
C26	Part H.T. smoothing	32.0
C27	I.F. by-pass	0.00025
C28	V3 triode to V4 A.F. coupling	0.01
C29	Part variable I.C. circuit	0.05
C30	Fixed tone corrector	0.002
C31	Part H.T. smoothing	32.0
C32	Part aerial I.F. filter tuning	0.00003
C33	Band-pass pri. M.W. trimmer	0.00003
C34	Band-pass pri. tuning	0.00049
C35	Band-pass sec. M.W. trimmer	0.00003
C36	Band-pass sec. and S.W. aerial tuning	0.00049
C37	Oscillator circuit tuning	0.00049
C38	Osc. circuit M.W. trimmer	0.00003
C39	Osc. circuit L.W. trimmer	0.000068
C40	1st I.F. trans. pri. tuning	0.00003
C41	1st I.F. trans. sec. tuning	0.00003
C42	2nd I.F. trans. pri. tuning	0.00003
C43	2nd I.F. trans. sec. tuning	0.00003

* Electrolytic. † Variable. ‡ Pre-set.

RESISTANCES		Values (ohms)
R1	V1 pentode C.G. decoupling	100,000
R2	V1 pentode C.G. stabiliser	50
R3	V1 pent. fixed G.B. resistance	320
R4	V1 pent. anode H.T. feed	2,000
R5	V1 osc. C.G. resistance	50,000
R6	V1 S.G. and osc. anode and	8,000
R7	V2 S.G. H.T. feed	12,300*
R8	V2 fixed G.B. resistance	250
R9	V3 signal diode load resistances	400,000
R10	Manual volume control	160,000
R11	V3 triode C.G. decoupling	500,000
R12	V3 triode G.B. and A.V.C. delay resistances	160,000
R13	V3 triode anode load	2,500
R14	A.V.C. line decoupling	6,400
R15	V3 triode anode load	100,000
R16	A.V.C. line decoupling	160,000
R17	V3 A.V.C. diode load	500,000
R18	V4 C.G. resistance	800,000
R19	Part H.T. smoothing	2,000†
R20	Variable tone control	50,000
R21	Part of variable T.C. circuit	100
R22	V4 C.G. R.F. stopper	1,000
R23	V4 G.B. resistance	125
R24	Part H.T. smoothing	10

* 20,000 Ω and 32,000 Ω resistances connected in parallel.

† Two 4,000 Ω resistances connected in parallel.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial I.F. filter coil	120.0
L2	Aerial M.W. coupling coil	35.0
L3	Aerial L.W. coupling coil	100.0
L4	Band-pass primary coils	4.5
L5	Band-pass coupling coils	48.0
L6	Band-pass coupling coils	1.0
L7	Band-pass coupling coils	1.0
L8	Aerial S.W. coupling coil	2.2
L9	Aerial S.W. tuning coil	0.05
L10	Band-pass secondary coils	4.5
L11	Osc. circuit S.W. tuning coil	48.0
L12	Osc. circuit M.W. tuning coil	0.05
L13	Osc. circuit L.W. tuning coil	10.0
L14	Oscillator S.W. reaction	40.0
L15	Oscillator M.W. reaction	3.3
L16	Oscillator L.W. reaction	7.0
L17	1st I.F. trans. Pri.	130.0
L18	1st I.F. trans. Sec.	130.0
L19	2nd I.F. trans. Pri.	130.0
L20	2nd I.F. trans. Sec., total	130.0
L21	Speaker speech coil	3.6
L22	Output trans. Pri.	600.0
L23	Output trans. Sec.	0.8
T1	Mains Pri., total	47.0
T2	Mains Heater sec.	0.1
T3	Rect. heat. sec.	0.25
T4	H.T. sec.	100.0
S1-S16	Waveband switches	—
S17,18	Mains switches, ganged R11.	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 230 V, using the 220 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 400 V scale of a model 7 Universal Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 FC4	214	1.7	75	2.7
V2 VP4B	75	1.9	150	2.7
V3 TDD4	218	7.8	—	—
V4 PenA4	48	1.6	218	5.0
V5 DW2	250	38.0	—	—

GENERAL NOTES

The receiver comprises three main chassis, which for convenience of reference below we shall designate as R.F., A.F. and power supply. The three chassis do not divide up so simply, but the reference will be near enough.

Switches.—S1-S16 are the waveband switches, in two rotary units beneath the R.F. chassis. They are placed close together and screened, and cannot be easily reached without partial dismantling.

After this dismantling, the nearer unit is number 1 and the further, number 2 (close to the chassis deck). Diagrams of the units, as seen from the underside of the R.F. chassis, are in column 3.

The table (col. 2) gives the switch positions for the three control settings,

starting from fully anti-clockwise. A dash indicates open, and C closed.

Switch	S.W.	M.W.	L.W.
S1	C	—	—
S2	—	C	C
S3	—	C	—
S4	—	C	—
S5	—	C	—
S6	—	C	—
S7	—	C	C
S8	—	C	C
S9	—	C	C
S10	—	C	C
S11	—	C	C
S12	—	C	C
S13	—	C	—
S14	—	C	—
S15	—	C	—
S16	—	C	C

S17 and S18 are the Q.M.B. mains switches, ganged with the volume control R11, in front of the A.F. chassis.

Coils.—L1 and L6, L7 are beneath the R.F. chassis, and are unscreened. L2-L5, L8-L11; L12-L17; and the first I.F. transformer L18, L19 are in four screened units on the R.F. chassis deck, the first three each having a trimmer at the top of the can. The second I.F. transformer, L20, L21, is in a further screened unit, on the A.F. chassis deck.

Scale Lamp.—This is a special Philips M.E.S. type, with a tubular frosted bulb, type number 8042-07.

CIRCUIT ALIGNMENT

When adjusting the special tubular trimmers, proceed as follows: Melt the wax with a warm soldering iron, undo the wire spiral until the output meter just passes its maximum reading (minimum in the case of C32). Replace one or two turns to give maximum deflection, and cut off the surplus wire. Seal the spiral in position with wax. If the wire is not long enough, replace the trimmer with a new one.

When applying signals to the control grid of a valve, its normal grid connection must remain. The volume control must be at maximum. The receiver must be re-aligned if V1 is replaced.

I.F. Stages.—Turn gang to maximum. Short circuit R5 and C16. Connect signal generator via a 0.32 μF condenser to grid (top cap) of V2 and chassis. Feed in a 128 KC/S signal and adjust C42 and C43 for maximum output. Transfer signal generator to grid (top cap) of V1, and adjust C41 and C40 for maximum output. Remove the short circuits from R5 and C16.

R.F. and Oscillator Stages.—Earth the chassis, and turn volume control to maximum. Fit a 15 deg. jig (No. M.09991741) by slipping the boss over the locating pin just above the condenser spindle. When the jig is turned so that it bears upon the jig the vanes are advanced exactly 15 degrees, which is the standard alignment position.

M.W.—Switch set to M.W., and turn gang until it bears on the jig. Connect signal generator to aerial socket (via a standard dummy aerial) and chassis. Feed in a 1,442 KC/S (208 m.) signal, and adjust C38, C33 and C35, in that order, for maximum output. Repeat these adjustments.

L.W.—Switch set to L.W., and advance gang to bear on jig. Feed in a 395 KC/S (760 m.) signal, and adjust C39 for maximum output.

There are no S.W. adjustments.

