

COMPONENTS AND VALUES

CONDENSERS		Values (μF)
C1	A1 socket series condenser ..	0.00002
C2	Aerial coupling condenser ..	0.0005
C3	M.W. and L.W. aerial coupling ..	0.0003
C4	V1 cathode by-pass ..	0.1
C5	V1 osc. C.G. condenser ..	0.0001
C6	Osc. circuit M.W. fixed tracker ..	0.00002
C7	Osc. circuit L.W. fixed trimmer ..	0.00002
C8	Osc. circuit S.W. fixed tracker ..	0.0004
C9	Osc. anode M.W. and L.W. coupling ..	0.0005
C10	V1, V2 S.G.'s R.F. by-pass ..	0.05
C11*	V1, V2 S.G.'s decoupling ..	3.0
C12	V2 C.G. decoupling ..	0.05
C13	V2 cathode by-pass ..	0.1
C14	A.F. coupling to V3 triode ..	0.0005
C15	V3 triode to V4 A.F. coupling ..	0.00002
C16	I.F. by-passes ..	0.0003
C17	Coupling to V3 A.V.C. diode ..	0.0001
C18	V3 triode to V4 A.F. coupling ..	0.02
C19	Fixed tone corrector ..	0.0005
C20*	V4 cathode by-pass ..	35.0
C21*	H.T. smoothing ..	7.0
C22*	H.T. smoothing ..	7.0
C23*	H.T. smoothing ..	7.0
C24†	Aerial circuit S.W. trimmer ..	—
C25†	Aerial circuit M.W. trimmer ..	—
C26†	Aerial circuit L.W. trimmer ..	—
C27†	Aerial circuit tuning ..	—
C28†	Oscillator circuit tuning ..	—

CONDENSERS (Continued)		Values (μF)
C29†	Osc. circuit S.W. trimmer ..	—
C30†	Osc. circuit M.W. trimmer ..	—
C31†	Osc. circuit L.W. trimmer ..	—
C32†	Osc. circuit L.W. tracker ..	—
C33†	Osc. circuit M.W. tracker ..	—
C34†	1st I.F. trans. pri. tuning ..	—
C35†	1st I.F. trans. sec. tuning ..	—
C36†	2nd I.F. trans. pri. tuning ..	—
C37†	2nd I.F. trans. sec. tuning ..	—

* Electrolytic. † Variable. ‡ Pre-set.

RESISTANCES		Values (ohms)
R1	Aerial circuit shunt ..	9,900
R2	Aerial L.W. coil damping ..	440,000
R3	V1 hex. C.G. decoupling ..	440,000
R4	V1 fixed G.B. resistance ..	300
R5	V1 osc. C.G. resistance ..	99,000
R6	V1 osc. anode circuit stabiliser ..	150
R7	V1 osc. anode H.T. feed ..	9,900
R8	V1, V2 S.G.'s H.T. potential divider ..	11,000*
R9	V2 fixed G.B. resistance ..	15,000
R10	V2 fixed G.B. resistance ..	400
R11	I.F. stopper ..	55,000
R12	Manual volume control ..	1,000,000
R13	V3 signal diode load ..	440,000
R14	V3 G.B. resistance ..	400
R15	V3 triode anode load ..	220,000
R16	A.V.C. line decoupling ..	440,000
R17	V3 A.V.C. diode load ..	440,000
R18	V4 C.G. resistance ..	440,000
R19	V4 G.B. resistance ..	400
R20	V1 osc. anode and V1, V2 S.G. H.T. feed ..	11,000*

* Two 22,000 Ω resistances connected in parallel.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial S.W. coupling coil ..	0.035
L2	Aerial S.W. tuning coil ..	0.2
L3	Aerial M.W. tuning coil ..	2.25
L4	Aerial L.W. tuning coil ..	17.5
L5	Oscillator S.W. tuning coil ..	0.05
L6	Oscillator M.W. tuning coil ..	2.8
L7	Oscillator L.W. tuning coil ..	14.4
L8	Osc. anode S.W. reaction ..	0.5
L9	1st I.F. trans. { Pri. ..	8.0
L10	1st I.F. trans. { Sec. ..	8.0
L11	2nd I.F. trans. { Pri. ..	4.5
L12	2nd I.F. trans. { Sec. ..	4.5
L13	Speaker speech coil ..	2.1
L14	Hum neutralising coil ..	0.04
L15	Speaker field coil ..	1,250.0
T1	Output trans. { Pri. ..	850.0
	Output trans. { Sec. ..	0.32
	Output trans. { Pri., total ..	41.5
T2	Mains trans. { Heater sec. ..	0.075
	Mains trans. { Rect. heat. sec. ..	0.13
	Mains trans. { H.T. sec., total ..	580.0
Sr-S5	Waveband switches ..	—
S6	Mains switch, ganged R12 ..	—

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 X42*	270	2.4	75	3.0
V2 W42	270	4.8	75	1.3
V3 DH42	115	0.5	—	—
V4 N42	245	29.0	270	4.3
V5 U12	310†	—	—	—

* Oscillator anode (G2) 130 V, 3.5 mA.
† Each anode, A.C.

Valve voltages and currents given in the table above are those measured in our receiver when it was operating on mains of 235 V, using the 230-250 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.

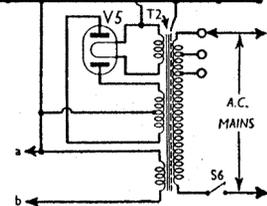
If, as in our case, V2 should become unstable when measurements are being made in its anode and screen circuits, it can be stabilised by connecting a non-inductive condenser of about 0.1 μF from the grid (top cap) to chassis.

GENERAL NOTES

Switches.—S1-S5 are the waveband switches, in a single rotary unit beneath the chassis, which is indicated in our under-chassis view. It is shown in detail in the diagram in col. 2, where it is seen looking from the rear of the underside of the chassis.

The table below 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	—	—
S3	C	—	—
S4	—	C	—
S5	C	C	—



S6 is the Q.M.B. mains switch, ganged with the volume control R12.

Coils.—L1, L2; L3, L4; L5, L8 and L6, L7 are in four unscreened units beneath the chassis, wound on tubular formers, and shown in our under-chassis view. In the L1, L2 and L5, L8 units the thick wire windings are L2 and L5.

The I.F. transformers L9, L10 and L11, L12 are in two screened units on the chassis deck. Note that the trimmers are not at the tops of the cans, but beneath them, and are adjustable from the underside of the chassis.

Scale Lamps.—These are two Osram M.E.S. types, with tubular bulbs, rated at 6.2 V, 0.3 A.

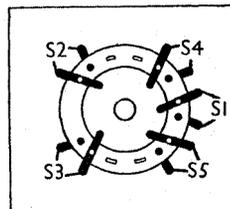
External Speaker.—Two terminals are provided at the rear of the chassis for a low impedance (2-4 Ω) external speaker.

Condensers C11, C21, C22, C23.—These are four dry electrolytics in a single carton beneath the chassis. The black lead is the common negative, and the yellow the positive of C11 (3 μF). The red lead next to the yellow is the positive of C23 (7 μF), the middle red lead the positive of C22 (7 μF), and the lowest red lead (nearest chassis deck) is the positive of C21 (7 μF).

Resistances R8, R20.—These each consist of two 22,000 Ω resistors connected in parallel to give a value of 11,000 Ω.

V2 Suppressor.—This is shown by the makers as being connected to chassis, but in our case it goes to cathode of V2.

Model BC3850L.—In the case of the



Switch diagram, looking from the rear of the underside of the chassis.

low voltage model the primary of T2 has a resistance of 26.4 Ω total, not 41.5 Ω as in the standard model.

Trimmers.—The trimmers for the I.F. transformers are reached from the underside of the chassis, and are beneath their respective coil units. The S.W. trimmers C24 and C29 are reached from the front of the chassis. The remaining six trimmers and trackers are adjustable through holes in the chassis deck, and are shown in our plan chassis view.

Wiring Code.—The receiver is wired in accordance with the colour code given in detail on page 1 of *Radio Maintenance* dated September 11, 1937.

CIRCUIT ALIGNMENT

I.F. Stages.—Switch set to M.W. and turn gang to maximum. Turn volume control to maximum. Short-circuit **C28** by connecting stator to chassis. Connect signal generator via a $0.1 \mu\text{F}$ condenser to grid (top cap) of **V1** (leaving existing connection attached) and chassis.

Feed in a 456 KC/S signal, and adjust **C34**, **C35**, **C36** and **C37** in turn for maximum output, reducing input signal strength progressively.

R.F. and Oscillator Stages.—**S.W.**—Check that scale is central in clips, and that pointer is straight and coincides with horizontal lines on scale when gang is at maximum.

Connect signal generator via dummy aerial to **A2** socket and **E**, and feed in a 17 MC/S (17.6 m.) signal. Switch set to S.W., tune to 17.6 m. on scale and adjust **C29**, then **C24**, for maximum output. It is essential that **C29** should be adjusted to the lower capacity peak (higher frequency). If "pulling" is experienced when adjusting **C24**, rock the gang slightly to compensate for this.

M.W.—Switch set to M.W., tune to 200 m. on scale, feed in a 1,500 KC/S (200 m.) signal and adjust **C30** for maximum output, using lower capacity peak. Tune to 214 m. on scale, feed in a 1,400 KC/S (214 m.) signal and adjust **C25** for maximum output.

Disconnect **C28**, by unsoldering the lead to the stator, and connect an external variable condenser between the disconnected lead and chassis. Feed in a 600 KC/S (500 m.) signal, and adjust the external variable condenser and the receiver tuning control simultaneously for maximum output. Disconnect external condenser, re-connect **C28**, and *without altering tuning control setting*, adjust **C33** for maximum output. Repeat the 214 m. adjustments.

L.W.—Switch set to L.W., tune to 1,000 m. on scale, feed in a 300 KC/S (1,000 m.) signal, and adjust **C31** and **C26** in that order for maximum output.

Disconnect **C28** as before and connect external variable condenser. Feed in a 165 KC/S (1,818 m.) signal, and adjust external condenser and tuning control simultaneously for maximum output. Disconnect external condenser, re-connect **C28**, and, *without altering tuning control setting*, adjust **C32** for maximum output. Repeat the 1,000 m. adjustments.