

G. E. C.
BC3946

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	Aerial circuit shunt	9,900
R2	V1 tetrode CG decoupling	1,000,000
R3	V1 tetrode CG decoupling	440,000
R4	V1 osc. CG resistance	99,000
R5	V1 osc. anode HT feed resistances	990
R6		500
R7		500
R8	V1 SG HT feed	300
R9	IF stopper	3,000
R10	V3 signal diode load	440,000
R11	Manual volume control	1,000,000
R12	V3 triode CG decoupling	99,000
R13	V3 triode anode load	99,000
R14	V3 AVC diode load	440,000
R15	V4 CG resistance	220,000
R16	IF stopper	33,000
R17	V1 fixed, V2, V3, and V4 auto GB and AVC delay resistances	100
R18		150

CONDENSERS		Values (μF)
C1	A2 aerial series condenser	0.00002
C2	Aerial MW and LW coupling	0.003
C3	Aerial circuit LW fixed trimmer	0.00002
C4	V1 tetrode CG condenser	0.0005
C5	V1 tetrode CG decoupling	0.05
C6	Osc. circuit LW fixed trimmer	0.000048
C7	HT circuit RF by-pass	0.25
C8	Osc. circuit SW tracker	0.00395
C9	V1 osc. anode RF by-pass	0.005
C10	V1 osc. anode decoupling	0.58
C11	V1 SG decoupling	0.25
C12	IF by-pass condensers	0.0001
C13		0.0001
C14	AF coupling to V3 triode	0.02
C15	V3 triode CG decoupling	0.25
C16	Coupling to V3 AVC diode	0.00005
C17	V3 triode to V4 AF coupling	0.02
C18	V4 CG IF by-pass	0.0002
C19	Fixed tone corrector	0.005
C20*	Auto GB circuit AF by-pass	50.0
C21†	Aerial circuit SW trimmer	—
C22†	Aerial circuit MW trimmer	—
C23†	Aerial circuit LW trimmer	—
C24†	Aerial circuit tuning	—
C25†	Oscillator circuit tuning	—
C26†	Osc. circuit SW trimmer	—
C27†	Osc. circuit MW trimmer	—
C28†	Osc. circuit LW trimmer	—
C29†	Osc. circuit LW tracker	—
C30†	Osc. circuit MW tracker	—
C31†	1st IF trans. pri. tuning	—
C32†	1st IF trans. sec. tuning	—
C33†	2nd IF trans. pri. tuning	—
C34†	2nd IF trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.
§ Made up of two condensers in parallel.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating with an HT battery reading 120 V on load. 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 X22	117 Oscillator	1.0	54	1.8
V2 W21	65	1.4	—	—
V3 HD22	117	1.2	117	0.4
V4 KT21	75	0.4	—	—
	110	4.8	117	0.9

GENERAL NOTES

Switches.—S1-S7 are the waveband switches, in a single rotary unit beneath the chassis. It is indicated in our under-chassis view, and shown in detail in the diagram on the back of this sheet. The table (on the back of this sheet) gives the switch positions for the three control settings, starting from fully anti-clockwise. A dash indicates open, and C, closed.

S8 and S9 are the QMB HT and LT circuit switches, gauged with the volume control R11.

S10 is the scale lamps switch, formed by one tag of S9 and a spring leaf contact mounted on a small paxolin strip beneath the chassis. R11 is also spring mounted, and when its spindle is depressed, it causes the tag on S9 to touch the leaf contact and so S10 closes and switches on the scale lamps. Normally this switch is open.

Coils.—L1-L11 are in unshielded units beneath the chassis, to the right of the gang condenser in our under-chassis view. They are underneath two paxolin panels carrying six trimmers, and their positions are roughly indicated by arrows in our illustration. L2 is a small coupling coil consisting of one turn of thick tinned copper wire.

The IF transformers L12, L13 and L14, L15 are in two screened units on the chassis deck, their trimmers being at their bases, and adjustable from beneath the chassis.

Scale Lamps.—These are two Osram MBS types, with 10 mm diameter bulbs, rated at 2 V, 0.6 A. They are controlled by S10.

CIRCUIT ALIGNMENT

A removable panel is fitted to the bottom of the cabinet so that complete alignment can be carried out without removing the chassis from the cabinet.

IF Stages.—Switch set to MW and turn gang to maximum. Turn volume control to maximum. Short-circuit C25, and connect signal generator via a 0.1 μF condenser to grid (top cap) of V1 and chassis. Leave existing top cap connection in place.

Feed in a 456 KC/S signal, and adjust C31, C32, C33 and C34 for maximum output. Remove the short from C25.

Note the unusual aerial coupling arrangements.

RF and Oscillator Stages.—Check that the scale is central in its clips, and that the pointer is straight, and coincides with the horizontal mark on the scale when the gang is at maximum. Connect signal generator via a suitable dummy aerial to the A2 and earth sockets.

MW.—Switch set to MW, tune to 214 m on scale, feed in a 214 m (1,400 KC/S) signal, and adjust C27, then C22, for maximum output.

Disconnect C25 by unsoldering the lead from its fixed plates, and connect an external variable condenser between the disconnected lead and chassis. Feed in a 500 m (600 KC/S) signal, and adjust external condenser and receiver tuning control together for maximum output. Disconnect external condenser and re-connect C25. Without altering tuning control setting, adjust C30 for maximum output. Repeat the 214 m adjustments.

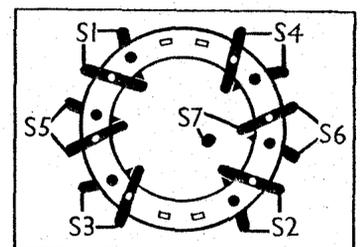
LW.—Switch set to LW, and tune to 1,000 m on scale. Feed in a 1,000 m (300 KC/S) signal, and adjust C28, then C23, for maximum output.

Disconnect C25 as before, and connect external condenser. Feed in an 1,818 m (165 KC/S) signal, and adjust external condenser and receiver tuning control together for maximum output. Disconnect external condenser, re-connect C25, and without altering tuning control setting, adjust C29 for maximum output. Repeat the 1,000 m adjustments.

SW.—Switch set to SW, tune to 16.7 m on scale, feed in a 16.7 m (18 MC/S) signal (via a SW dummy aerial), and adjust C26, then C21, for maximum output. C26 should be adjusted to the higher frequency peak (lower capacity). If "pulling" is experienced when C21 is adjusted, rock the gang slightly to compensate for this.

SWITCH TABLE AND DIAGRAM

Switch	LW	SW	MW
S1	C	—	—
S2	—	C	—
S3	—	C	C
S4	—	C	—
S5	—	C	C
S6	—	C	—
S7	—	C	—



OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial circuit SW coupling coil	0.3
L2	Aerial circuit MW coupling coil	Very low
L3	Aerial circuit SW tuning coil	0.08
L4	Aerial circuit MW tuning coil	2.0
L5	Aerial circuit LW tuning coil	22.0
L6	Osc. circuit SW tuning coil	0.07
L7	Osc. circuit MW tuning coil	2.7
L8	Osc. circuit LW tuning coil	8.0
L9	Oscillator SW reaction coil	0.4
L10	Oscillator MW reaction coil	1.2
L11	Oscillator LW reaction coil	2.8
L12	1st IF trans.	Pri. 7.0
L13		Sec. 7.0
L14	2nd IF trans.	Pri. 4.0
L15		Sec. 4.0
L16	Speaker speech coil	2.3
T1	Output trans. Pri.	1,570.0
	Output trans. Sec.	0.385
S1-S7	Waveband switches	—
S8	HT circuit switch	—
S9	LT circuit switch	—
S10	Scale lamps switch	—
F1	HT circuit fuse	—