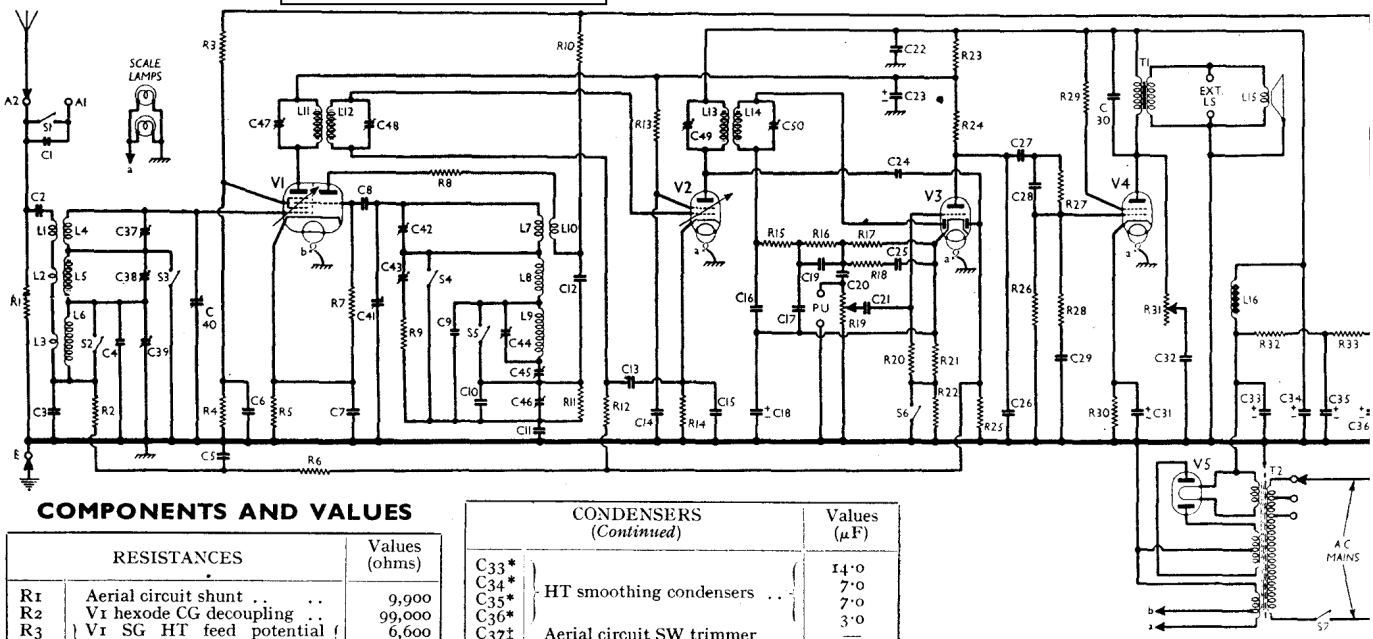
G.E.C. 4040, 4054, 4058



COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	Aerial circuit shunt	9,900
R2	V1 hexode CG decoupling	99,000
R3, R4	V1 SG HT feed potential divider resistances	6,600 and 15,000
R5	V1 fixed GB resistance	200
R6	AVC line decoupling	2,000,000
R7	V1 osc. CG resistance	99,000
R8	V1 osc. anode stabiliser	300
R9	Osc. circuit MW and LW damping	75
R10	V1 osc. anode HT feed	8,800
R11	Part V1 osc. anode coupling	5,500
R12	V2 CG decoupling	2,000,000
R13	V2 SG HT feed resistance	77,000
R14	V2 fixed GB resistance	300
R15	IF stopper	55,000
R16, R17	V3 signal diode load resistances	330,000 and 150,000
R18	Part of fixed tone corrector	99,000
R19	Manual volume control	1,000,000
R20	V3 triode CG resistance	2,000,000
R21, R22	V3 triode GB and AVC delay resistances	3,300 and 44,000
R23	V3 triode anode decoupling	6,600
R24	V3 triode anode load	220,000
R25	AVC diode load	440,000
R26	V4 CG resistance	330,000
R27, R28	Parts of tone correcting circuit	220,000 and 150,000
R29	V4 SG stabiliser	75
R30	V4 GB resistance	90
R31	Variable tone control	55,000
R32, R33	V1 osc. anode and SG HT feed resistances	7,700 and 7,700

	CONDENSERS	Values (μF)
C1	A1 series condenser	0·00002
C2, C3	Aerial coupling condensers	0·005 and 0·003
C4	Aerial circ. LW fixed trimmer	0·00002
C5	AVC line decoupling	0·005
C6	V1 SG decoupling	0·05
C7	V1 cathode by-pass	0·1
C8	V1 osc. CG condenser	0·0001
C9	Osc. circuit LW fixed trimmer	0·000048§
C10	Osc. circuit MW fixed tracker	0·0001
C11	Osc. circuit SW tracker	0·00395
C12	V1 osc. anode coupling	0·005
C13	V2 CG decoupling	0·1
C14	V2 SG decoupling	0·1
C15	V2 cathode by-pass	0·1
C16, C17	IF by-pass condensers	0·0003 and 0·0001
C18*	V3 cathode by-pass	30·0
C19	Part of fixed tone corrector	0·0002
C20, C21	AF coupling condensers to V3 triode	0·02 and 0·01
C22	HT circuit RF by-pass	0·05
C23*	V1, V3 anodes and V2 SG decoupling	3·0
C24	Coupling to V3 AVC diode	0·00002
C25	Part of fixed tone corrector	0·01
C26	V3 triode anode IF by-pass	0·001
C27	V3 triode to V4 AF coupling	0·02
C28, C29	Parts of tone correcting circuit	0·0005 and 0·0015
C30	Fixed tone corrector	0·005
C31*	V4 cathode by-pass	30·0
C32	Part of variable tone control	0·05

	CONDENSERS (*Continued*)	Values (μF)
C33*, C34*, C35*, C36*	HT smoothing condensers	14·0, 7·0, 7·0, 3·0
C37‡	Aerial circuit SW trimmer	—
C38‡	Aerial circuit MW trimmer	—
C39‡	Aerial circuit LW trimmer	—
C40†	Aerial circuit tuning	—
C41†	Oscillator circuit tuning	—
C42‡	Osc. circuit SW trimmer	—
C43‡	Osc. circuit MW trimmer	—
C44‡	Osc. circuit LW trimmer	—
C45‡	Osc. circuit LW tracker	—
C46‡	Osc. circuit MW tracker	—
C47‡	1st IF trans. pri. tuning	—
C48‡	1st IF trans. sec. tuning	—
C49‡	2nd IF trans. pri. tuning	—
C50‡	2nd IF trans. sec. tuning	—

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

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial SW coupling coil	0·3
L2	Aerial MW small coupling coil	Very low
L3	Aerial LW small coupling coil	Very low
L4	Aerial SW tuning coil	0·08
L5	Aerial MW tuning coil	2·0
L6	Aerial LW tuning coil	22·0
L7	Osc. circuit SW tuning coil	0·07
L8	Osc. circuit MW tuning coil	2·7
L9	Osc. circuit LW tuning coil	8·0
L10	Oscillator SW reaction	0·4
L11	1st IF trans. Pri.	7·0
L12	1st IF trans. Sec.	7·0
L13	2nd IF trans. Pri.	4·0
L14	2nd IF trans. Sec.	4·0
L15	Speaker speech coil	2·0
L16	HT smoothing choke	650·0
T1	Output trans. Pri.	450·0
	Output trans. Sec.	0·4
T2	Mains trans. Pri., total	32·6
	Mains trans. Heater sec., total	0·15
	Mains trans. Rect. heat. sec.	0·19
	Mains trans. HT sec., total	375·0
S1-S6	Waveband switches	—
S7	Mains switch	—

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 X41	233	2·9	80	3·3
	Oscillator			
	100	3·3		
V2 KTW61	270	7·8	60	2·2
V3 DH63	90	0·5	—	—
V4 KT61	250	41·0	270	8·2
V5 U50	310†	—	—	—

† Each anode, AC.

VALVE ANALYSIS

Valve voltages and currents given in the table overleaf are those measured in our receiver when it was operating on mains of 228 V, using the 210-230 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the MW 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.

GENERAL NOTES

Switches.—**S1-S6** are the waveband switches, in a single rotary unit beneath the chassis, operated through a link by three of the four press-buttons in the lower row. It is indicated in our under-chassis view, and shown in detail in the diagram in col. 3. The table (col. 2) gives the switch positions for the three control settings, starting from the fully anti-clockwise position of the spindle. A dash indicates *open*, and **C**, *closed*.

S7 is the QMB mains switch, operated by the fourth press-button of the lower row. **S7** opens when its button is pressed, but closes when any of the waveband buttons is pressed.

Coils.—**L1-L6** and **L7-L10** are in two unscreened units beneath the chassis. The IF transformers **L11, L12** and **L13, L14** are in two screened units on the chassis deck, their trimmers being at their bases, and adjustable from beneath the chassis. **L16** is the smoothing choke, mounted on the chassis deck.

Scale Lamps.—These are two Osram MES types, with 10 mm diameter bulbs, rated at 6·5 V, 0·3 A.

RADIOGRAM MODIFICATIONS

In the 4058 models, the pick-up is connected permanently, one side to chassis and the other via a 22,000 Ω resistance to the top pick-up terminal. A 33,000 Ω resistor is connected from the top pick-up terminal to chassis.

The "off" button becomes the radiogram control, which switches **V2** screen to chassis, and alters the range switch to SW.

The volume control **R19** is moved to a new position and combined with the QMB on-off switch **S7,** while a 2-position bass control occupies the position of the volume control shown in our illustrations.

AUTO-TUNING UNIT

The mechanical automatic tuning unit incorporated in this receiver is of the type which converts a direct movement of the press-button into a rotary movement of the gang condenser by means of internally toothed forks and toothed wheels.

A full description of the construction and action, with illustrations, was given in *Radio Maintenance* for May 28, 1938, and in the *ABC of Automatic Tuning* on pages 3 and 4.

Each press-button can be set to tune to any point on the scale in the following manner. Operate the manual tuning control until the pointer is fully anti-clockwise. With a screwdriver, slacken the locking screw (at the side of the cabinet near the tuning control) by one complete turn. Switch the receiver to the correct waveband, and tune in the required station manually. Holding the manual control fully "in," depress the required button to its fullest extent, without jarring, and without allowing the manual control to move. Release the button, and also the manual control. Proceed similarly for each new station required, then rotate the manual control until the pointer is fully clockwise, and tighten up the locking screw. Check the press-button settings.

Condensers C23, C34, C35, C36.—These are four dry electrolytics (450 V peak) in a single tubular metal-cased unit on the chassis deck, having a common negative (black) lead. The yellow lead to **R23, R24** is the positive of **C23** (3μF); the yellow lead to **R33** is the positive of **C36** (3μF); the red lead to **R23** is the positive of **C34** (7μF); the red lead to **R32** is the positive of **C35** (7μF).

Condenser C33.—This 14 μF dry electrolytic is in a separate metal-cased tubular unit on the chassis deck.

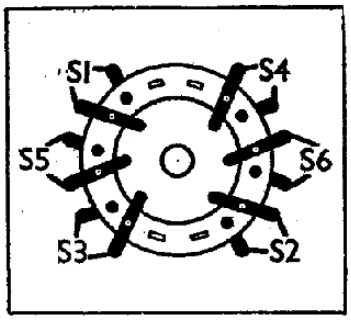
Condenser C9.—This fixed trimmer comprises two 0·00002 μF types in parallel.

G.E.C. BC4050, BC4054 AND BC4058

TABLE AND DIAGRAM

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

Diagram of the **S1-S6** switch unit seen from one end of the underside of the chassis.



CIRCUIT ALIGNMENT

IF Stages.—Switch set to LW and turn gang to maximum. Turn volume control to maximum. 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 **C47, C48, C49** and **C50** for maximum output.

RF and Oscillator Stages.—Check that the pointer is straight, and coincides with the mark at the end of 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 **C43,** then **C38,** for maximum output.

Disconnect **C41** 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 (500 KC/S) signal, and adjust external condenser and receiver tuning control together for maximum output. Disconnect external condenser and reconnect **C41.** Without altering tuning control setting, adjust **C46** 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 **C44,** then **C39,** for maximum output.

Disconnect **C41** 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 **C41,** and without altering tuning control setting, adjust **C45** 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 (18MC/S) signal (via a SW dummy aerial), and adjust **C42,** then **C37,** for maximum output. **C42** should be adjusted to the higher frequency peak (lower capacity). If "pulling" is experienced when **C37** is adjusted, rock the gang slightly to compensate for this.