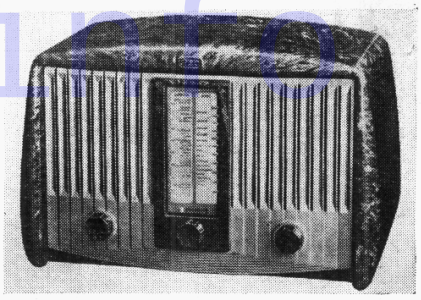
"TRADER" SERVICE SHEET

978

G.E.C. BC6242



DESIGNED to operate from A.C. or D.C. mains of 200-250V, 25-100c/s in the case of A.C., the G.E.C. BC6242 is otherwise equivalent to BC5243, covered in our Service Sheet 977. The receiver is a 4-valve (plus rectifier) 2-band superhet covering 187-575m and 1,000-2,000m. An optional frame aerial is wound on the inside of the back cover with flexible connecting leads.

Release date and original price: August, 1950. £12 2s 2d; purchase tax extra.

CIRCUIT DESCRIPTION

Frame aerial input via **C1** across common impedance of **C3** to tuned circuits **L3, C29** (M.W.) or **L4, C29** (L.W.). Provision is made for the connection of an external aerial and earth in place of the frame aerial **L1,** and modulation hum is bypassed by R.F. choke **L2.**

First valve **(V1, Osram X61M)** is triode-hexode operating as frequency changer with internal coupling. Oscillator grid coils **L5** (M.W.) and **L6** (L.W.) are tuned by **C30.** Parallel trimming by **C31** (M.W.) and **C9** (L.W.); series tracking by **C11** (M.W.) and **C10, C11** (L.W.). Reaction coupling from anode via **C12** across common impedance of tracker **C11.**

Second valve **(V2, Osram KTW61)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C6, L7, L8, C7** and **C15, L9, L10, C16.**

Intermediate frequency 470kc/s

Diode signal detector is part of double diode triode valve **(V3, Osram DH63).** Audio frequency component in rectified output is developed across volume control **R6,** which is the diode load, and passed via **C19** to the grid of the triode section, which operates as A.F. Amplifier. I.F. filtering by **C17** and **C21.**

D.C. potential developed across **R6** is fed back via decoupling resistor **R5** as G.B. to the F.C. and I.F. stages, giving automatic gain control.

Resistance-capacitance coupling by **R10, C22, R11,** via stopper **R12,** between **V3** triode and control grid of beam tetrode output valve **(V4, Osram KT33C).**

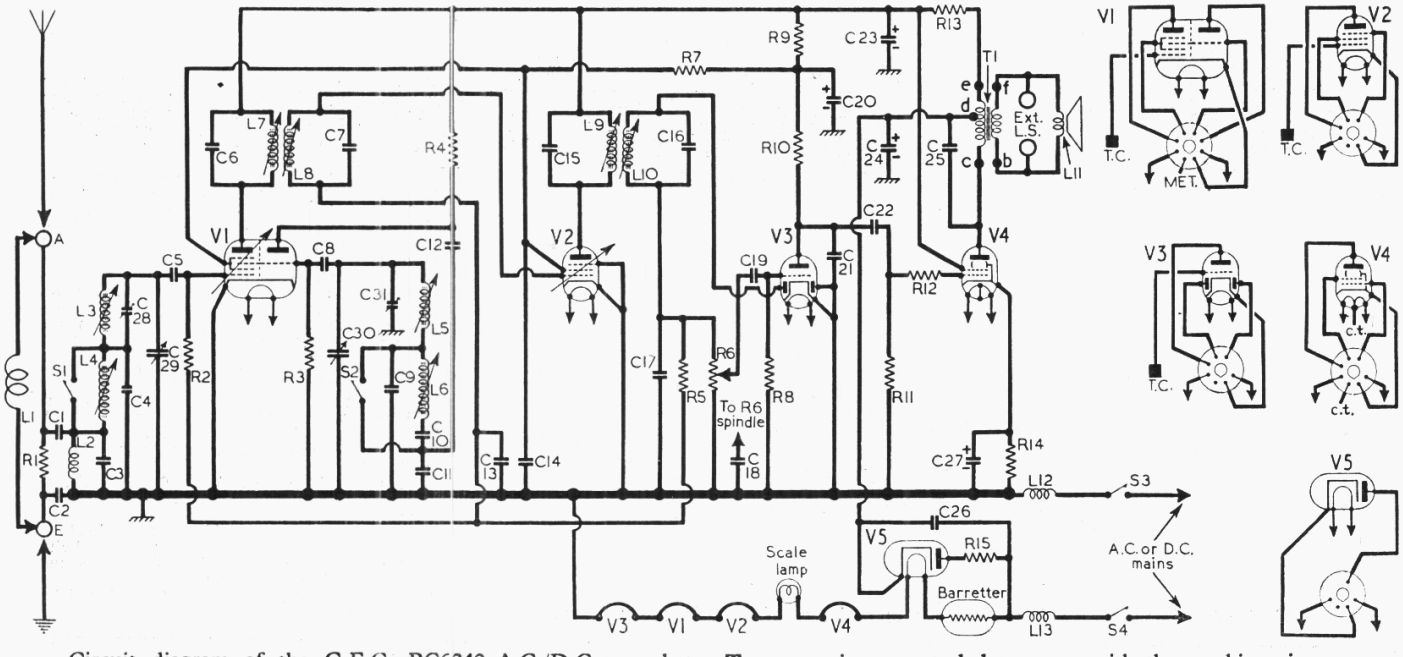
Fixed tone correction by **C25.** Provision is made for the connection of a low impedance external speaker across **T1** secondary winding.

H.T. current is supplied by half-wave rectifying valve **(V5, Osram U31),** which on D.C. mains behaves as a low resistance. Smoothing by **R13** and electrolytic capacitors **C23, C24,** residual hum being neutralized by passing the current through part of the primary winding of the output transformer **T1.** Valve heaters, together with scale lamp and current regulating barretter **(Osram 304),** are connected in series across the mains input. R.F. filtering by **C26** and chokes **L12, L13.**

COMPONENTS AND VALUES

	CAPACITORS	Values	Locations
C1	Aerial coupling ...	0·001μF	E4
C2	Chassis isolator ...	0·02μF	D4
C3	Aerial coupling ...	0·008μF	E3
C4	L.W. trimmer ...	82pF	E3
C5	V1 C.G.	100pF	E3
C6	1st I.F. trans. tuning ...	120pF	C2
C7	1st I.F. trans. tuning ...	120pF	C2
C8	V1 osc. C.G. ...	100pF	D4
C9	L.W. trimmer ...	100pF	D3
C10	L.W. tracker ...	200pF	D3
C11	M.W. tracker ...	375pF	D3
C12	Osc. anode coup. ...	0·005pF	D3
C13	A.G.C. decoupling ...	0·05μF	E4
C14	S.G. decoupling ...	0·05μF	E4
C15	2nd I.F. trans. tuning ...	120pF	B2
C16	2nd I.F. trans. tuning ...	120pF	B2
C17	I.F. by-pass ...	300pF	F4
C18	V.C. earthing ...	0·01μF	H3
C19	A.F. coupling ...	0·02μF	F4
C20*	H.T. decoupling ...	4μF	H3
C21	I.F. by-pass ...	500pF	F4
C22	A.F. coupling ...	0·02μF	G3
C23*	H.T. smoothing ...	32μF	E3
C24*	H.T. smoothing ...	32μF	E3
C25	Tone correction ...	0·01μF	F3
C26	R.F. filter	0·01μF	G4
C27*	V4 cath. by-pass ...	100μF	F3
C28‡	M.W. aerial trim. ...	—	D3
C29†	Aerial tuning ...	—	C1
C30†	Osc. tuning ...	—	C2
C31‡	M.W. osc. trim. ...	—	D3

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the G.E.C. BC6242 A.C./D.C. superhet. T1 connections are coded to agree with the markings in our plan view overleaf. Inset on the right are the valve diagrams.

	RESISTORS	Values	Locations
R1	Aerial shunt ...	1MΩ	E4
R2	V1 C.G. ...	1MΩ	D4
R3	V1 osc. C.G. ...	100kΩ	D4
R4	V1 osc. anode ...	22kΩ	D4
R5	A.G.C. decoupling	470kΩ	E4
R6	Volume control ...	1MΩ	G3
R7	S.G. feed	39kΩ	F4
R8	V3 C.G.	10MΩ	F4
R9	H.T. decoupling ...	18kΩ	G3
R10	V3 anode load ...	100kΩ	G4
R11	V4 C.G.	330kΩ	G3
R12	V4 grid stopper ...	100kΩ	G3
R13	H.T. smoothing ...	2.2kΩ	B2
R14	V4 G.B.	220Ω	G3
R15	V5 surge limiter ...	330Ω	G4

	OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Frame aerial ...		Very low	—
L2	R.F. choke ...		50.0	E3
L3	Aerial tun. coils ...		2.25	E3
L4			17.0	E3
L5	Oscillator tun. coils		3.0	D3
L6			7.5	D3
L7	1st I.F.	Pri. ...	9.5	C2
L8	trans.	Sec. ...	9.5	C2
L9	2nd I.F.	Pri. ...	9.5	B2
L10	trans.	Sec. ...	9.5	B2
L11	Speech coil ...		3.2	—
L12	Mains filter chokes		2.8	H4
L13			2.8	H4
T1	Primary e-d ...		25.0	
	Primary d-c ...		360.0	B2
	Secondary... ...		0.6	
S1, S2	Waveband switches		—	E3
S3, S4	Mains sw., g'd R6		—	G3

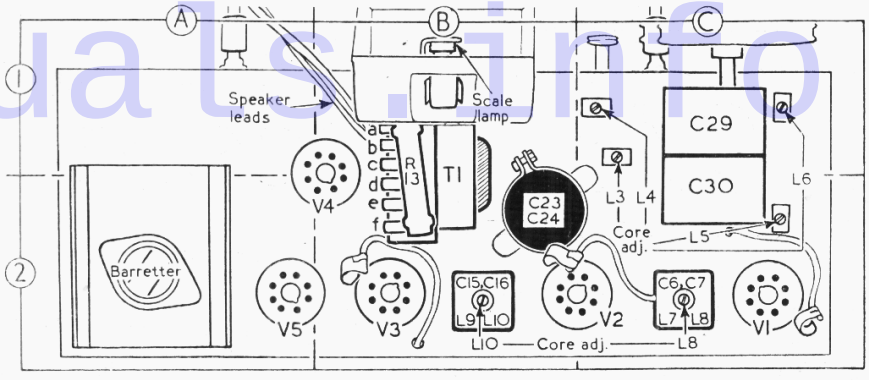
VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from A.C. mains of 225 V. The receiver was tuned to the highest wavelength end of M.W., and the volume control set at maximum, but there was no signal input.

Voltage measurements were made with an Avo Electronic TestMeter, which introduces no appreciable voltage drop, and allowances must be made for the current taken by other meters. Chassis was the negative connection in every case.

Valve	Anode V	Anode mA	Screen V	Screen mA	Cath. V
V1 X61M	152	0.6	32	1.0	—
	Oscillator				
	102	2.4			
V2 KTW61	152	4.0	32	1.0	—
V3 DH63	66	0.4	—	—	—
V4 KT33C	173	42.0	152	6.0	10.5
V5 U31 ...	210†	—	—	—	186.0

† A.C., each anode.



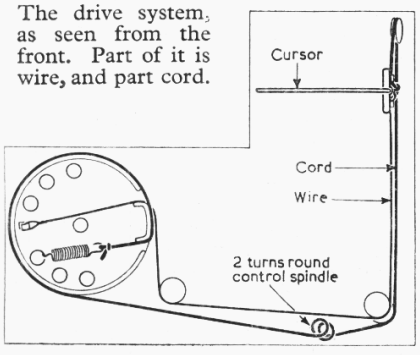
Plan of chassis, showing most of the R.F. and I.F. alignment adjustments. **T1** connections are coded to agree with the circuit diagram overleaf.

GENERAL NOTES

Switches.—**S1, S2** are the waveband switches in a simple two-position rotary unit beneath the chassis. The switch tags are identified in our underside view of the chassis. Both switches close for M.W. (control knob anti-clockwise) and open for L.W.

S3, S4 are the double-pole Q.M.B. mains switches, ganged with the volume control **R6.**

The drive system, as seen from the front. Part of it is wire, and part cord.



Scale Lamp.—This is an Osram M.E.S. type, with a small clear spherical bulb, rated at 6.5 V, 0.3 A. Its type No. is OS75.

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

Drive Cord Replacement.—The total length of the tuning drive cable in our sample was 40⅜in overall when made up, consisting of 15⅜in of wire, and 25¼in of cord, the two being tied together where they met at the cursor carriage. The course they take is shown in the sketch above, where the system is drawn as seen from the front with the gang at maximum.

CIRCUIT ALIGNMENT

I.F. Stages.—These adjustments may be carried out with the chassis in the cabinet upon disconnecting the frame aerial and removing the back and base covers. Switch set to L.W., tune to 2,000 m and turn volume control to maximum. Connect signal generator, via a 0.1 μF capacitor in each lead, to control grid (top cap) of **V2** and chassis.

Feed in a 470 kc/s (638.3 m) signal and adjust the cores of **L10** (location reference B2) and **L9** (F4) for maximum output. Transfer "live" lead to control grid (top cap) of **V1**, and adjust the cores of **L8** (C2) and **L7** (E4) for maximum output. During these adjustments, reduce the input as the circuits come into line to avoid A.G.C. action.

R.F. Stages.—To make these adjustments accessible, the chassis should be withdrawn from the cabinet and placed on the bench, and as the tuning scale remains in the cabinet, alignment is carried out with reference to the printed scale on the metal bracket carrying the cursor carriage. Readings on this scale are taken against the top edge of the cursor carriage, and with the gang at maximum capacitance the scale should read 90. Transfer signal generator leads to **A** and **E** sockets, leaving the frame aerial disconnected.

If the component numbers given in this Service Sheet are used when ordering spares, dealers are requested to say so, as these usually differ from those used in the manufacturers' diagram.

M.W.—Switch set to M.W., tune to 70.0 on substitute scale, feed in a 500 m (600 kc/s) signal and adjust the cores of **L5** (C2) and **L3** (C1) for maximum output. Tune to 10.5 on scale, feed in a 214.3 m (1.4 Mc/s) signal and adjust **C31** (D3) and **C28** (D3) for maximum output. Repeat these adjustments.

L.W.—Switch set to L.W., tune to 32.5 on scale, feed in a 1,304 m (230 kc/s) signal and adjust the cores of **L6** (C1) and **L4** (C1) for maximum output. Repeat these adjustments.

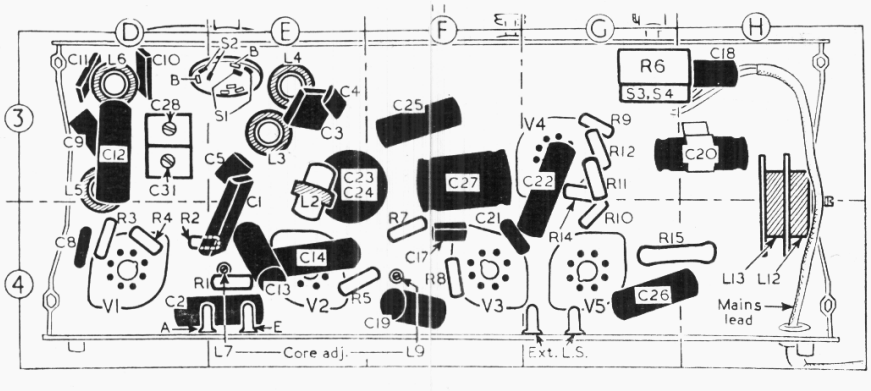
DISMANTLING THE SET

Access to Underchassis.—Remove back cover, held by two self-tapping screws and two 4BA bolts, and withdraw base cover.

Removing Chassis.—Remove the control knobs (pull off);
remove four 2BA chassis bolts (with washers) accessible through holes in the cabinet base flange;
withdraw chassis and unsolder speaker leads.

Removing Speaker.—Remove four 4BA bolts (with plain washers and lock washers) securing edge of speaker to cabinet.

When replacing, the speech coil tags should be at the top.



Underchassis view showing the trackers and two of the I.F. adjustments.

Printed in England by Cornwall Press Ltd., Paris Garden, London, S.E.1.