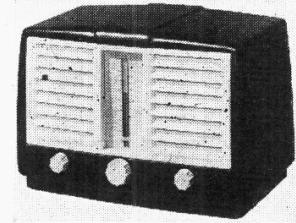


"TRADER" SERVICE SHEET

830

G.E.C. COMPACT

COVERING MODEL BC4835R ONLY



COMPONENTS AND VALUES

CAPACITORS		Values (μF)
C1	Aerial isolator ...	0.001
C2	Earth isolator ...	0.04‡
C3	Aerial coupling capacitor	0.003
C4	V1 hex. C.G. capacitor ...	0.0005
C5	V1 osc. C.G. capacitor ...	0.0001
C6	H.T. circuit R.F. by-pass	0.05
C7	Osc. M.W. fixed tracker...	0.0001
C8	Osc. L.W. fixed trimmer...	0.000039
C9	Osc. circ. S.W. tracker ...	0.00395
C10	Reaction coupling ...	0.005
C11	V1, V2 S.G.'s decoupling ...	0.05
C12	V1, V2, V3 cathode by-pass	0.25
C13	I.F. by-pass capacitor ...	0.0003
C14	Isolating capacitor ...	0.001
C15	V3 A.V.C. diode coupling	0.000022
C16	A.F. coupling to V3 triode	0.005
C17	A.V.C. line decoupling ...	0.05
C18	V3 anode I.F. by-pass ...	0.0003
C19	A.F. coupling to V4 C.G. ...	0.01
C20	Fixed tone corrector ...	0.02
C21	Mains R.F. by-pass ...	0.01
C22*	H.T. smoothing capaci-	16.0
C23*	tors ...	32.0
C24†	Aerial circ. S.W. trimmer	—
C25†	Aerial circ. M.W. trimmer	—
C26†	Aerial circ. L.W. trimmer	—
C27†	Aerial circuit tuning ...	—
C28†	Oscillator circuit tuning...	—
C29†	Osc. circ. S.W. trimmer...	—
C30†	Osc. circ. M.W. trimmer...	—
C31†	Osc. circ. L.W. trimmer...	—
C32†	Osc. circ. L.W. tracker ...	—
C33†	Osc. circ. 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	—

RESISTORS		Values (ohms)
R1	V1 hex. C.G. resistor ...	680,000
R2	V1 osc. C.G. resistor ...	100,000
R3	Oscillator circuit stabilis- ing resistors ...	68
R4		390
R5	V1 osc. anode H.T. feed...	12,000
R6	Oscillator stabiliser ...	10,000
R7	V1, V2 S.G.'s H.T. feed...	27,000
R8	V1, V2, V3 G.B. resistor...	150
R9	Manual volume control ...	1,000,000
R10	V3 triode C.G. resistor ...	10,000,000
R11	V3 triode anode load ...	100,000
R12	A.V.C. line decoupling ...	680,000
R13	V3 A.V.C. diode load ...	1,000,000
R14	V4 C.G. resistor ...	470,000
R15	V4 grid stopper ...	82,000
R16	V4 G.B. resistor ...	330
R17	H.T. smoothing resistor ...	2,700
R18	V5 anode surge limiter ...	330

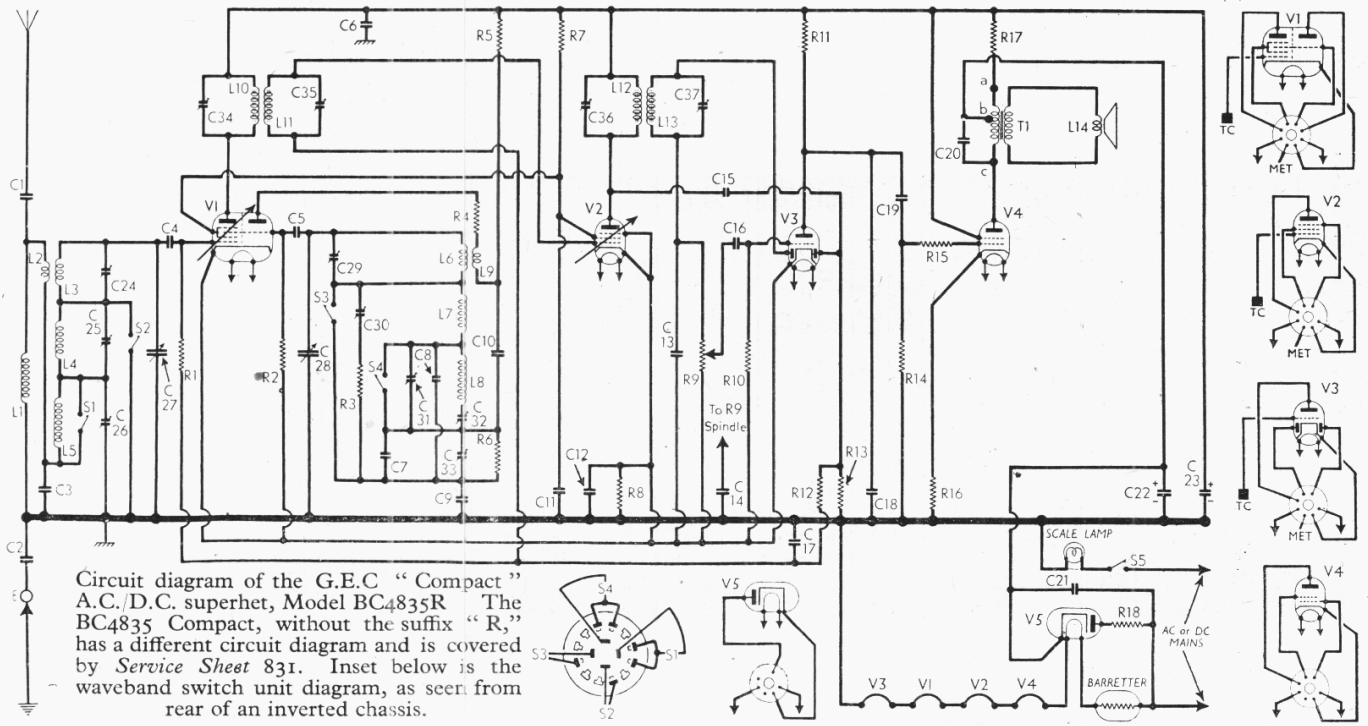
OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial circuit shunt ...	60.0
L2	Aerial S.W. coupling coil...	0.36
L3	Aerial S.W. tuning coil ...	0.06
L4	Aerial M.W. tuning coil ...	2.46
L5	Aerial L.W. tuning coil ...	19.5
L6	Osc. S.W. tuning coil ...	0.06
L7	Osc. M.W. tuning coil ...	3.4
L8	Osc. L.W. tuning coil ...	7.7
L9	Osc. S.W. reaction coil ...	0.32
L10	1st I.F. trans. { Pri. ...	7.0
L11		{ Sec. ...
L12	2nd I.F. trans. { Pri. ...	4.0
L13		{ Sec. ...
L14	Speaker speech coil ...	2.25
T1	Speaker input { Pri., a-b	25.0
	{ Pri., b-c	270.0
	{ Sec. ...	0.2
S1-S4	Waveband switches	—
S5	Mains switch, ganged R9	—

THE G.E.C. "Compact" receiver BC4835R is a small table model with an attached aerial lead which may be wound on to the base when not in use. It is a 4-valve (plus rectifier and barretter) 3-band superhet designed to operate from A.C. or D.C. mains of 200-250 V. The S.W. range is 16.5-50 m. The BC4835R is housed in a plastic cabinet of brown or some other body colour. Another "Compact" model, BC4835, which is housed always in a black-bodied cabinet, is not covered here, but on *Service Sheet 831*.
Release date and original price: May, 1947, £14 14s plus £3 3s 3d purchase tax.

CIRCUIT DESCRIPTION

Input from attached aerial, via isolating capacitor **C1**, is developed across **L2**, **C3** in series, which are shunted by choke **L1** to prevent modulation hum.
 On S.W., where the impedance of **C3** is negligible, the signal is developed mainly across **L2** and passed to single-tuned circuit **L3**, **C27**.
 On M.W. and L.W., coupling is mainly capacitive from **C5**, which is common to the aerial and single-tuned circuits **L4**, **C27** (M.W.) and **L5**, **C27** (L.W.).
 First valve (**V1** Osram metaHized **X76M**) is a triode-hexode operating as frequency changer with internal coupling. Oscillator grid coils **L6** (S.W.), **L7** (M.W.) and **L8** (L.W.) are tuned by **C28**. Parallel trimming by **C29** (S.W.), **C30** (Continued overleaf.)

* Electrolytic. † Variable. ‡ Pre-set.
 § 2 × 0.02μF in parallel.



Circuit diagram of the G.E.C. "Compact" A.C./D.C. superhet, Model BC4835R. The BC4835 Compact, without the suffix "R", has a different circuit diagram and is covered by *Service Sheet 831*. Inset below is the waveband switch unit diagram, as seen from rear of an inverted chassis.

Circuit Description—continued

(M.W.) and C8, C31 (L.W.); series tracking by C9 (S.W.), C7, C33 (M.W.) and C32 (L.W.). Reaction coupling by L9 (S.W.) and across the impedance of the trackers on M.W. and L.W.

Second valve (V2, Osram W76) is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned primary, tuned secondary transformer couplings C34, L10, L11, C35 and C36, L12, L13, C37.

Intermediate frequency 456 kc/s. Diode second detector is part of double diode triode valve (V3, Osram DH76). Audio frequency component in rectified output is developed across manual volume control R9, which also acts as diode load resistor, and passed via A.F. coupling capacitor C16, and C.G. resistor R10 to C.G. of triode section, which operates as A.F. amplifier. I.F. filtering by C13 in diode circuit and C18 in triode anode circuit.

Second diode of V3, fed from V2 anode via C15, provides D.C. potential which is developed across load resistor R13 and fed back through decoupling circuit as G.B. to F.C. and I.F. valves, giving automatic volume-control. Delay voltage, together with fixed G.B. for V1 and V2 is obtained from the drop along R8 which is common to the cathode circuits of V1, V2 and V3.

Resistance-capacitance coupling by R11, C19 and R14, via grid stopper R15, between V3 triode and tetrode output valve (V4, Osram KT76). Fixed tone correction by C20 in tetrode anode circuit.

When the receiver is operated from A.C. mains, H.T. current is supplied by I.H.C. half-wave rectifying valve (V5, Osram U76) which, with D.C. mains, behaves as a low resistance. Smoothing by resistor R17 and electrolytic capacitors C22, C23, residual hum being neutralized by passing the H.T. current through a portion of the output transformer primary winding. Mains R.F. filtering by C21, H.T. circuit R.F. filtering by C6, and earth isolation by C2.

Valve heaters, together with scale lamp and current regulating barretter (Osram 161), are connected in series across mains input.

VALVE ANALYSIS

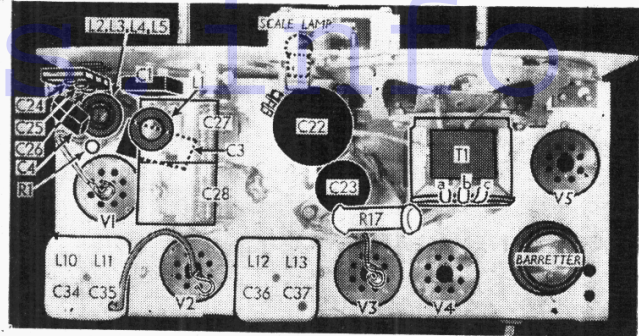
Valve voltages and currents given in the table below are those measured in our receiver when it was operating on A.C. mains of 230 V.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being the negative connection.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 X76M	150 Oscillator	1.7	58	2.5
V2 W76	90	4.0	58	1.0
V3 DH76	150	4.0	58	1.0
V4 KT76	72	0.74	150	4.4
V5 U76†	194	28.0	—	—

† Cathode to chassis, 202 V, D.C.

Plan view of the chassis. R17 is a 2 W carbon H.T. smoothing resistor. The primary tags of the speaker transformer T1 are coded a, b, c to agree with letters in the circuit diagram overleaf.

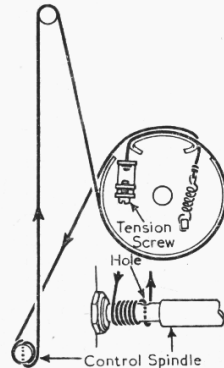


DRIVE CORD REPLACEMENT

Remove tuning scale, waveband indicator and tuning ribbon; turn gang to minimum, when drum should be in position shown in sketch, where it is viewed from the front. 30in of cord is sufficient.

Tie one end of cord securely to the spring, and hook spring to anchor tag, take cord through gap as shown and down to control spindle.

Sketch of the cord drive system, as seen from the front with the gang at minimum. Inset is a side view of the control spindle, showing the turns round it.



winding on six turns anti-clockwise as shown in side view of spindle. See that small hole in spindle is vertical, then thread cord downwards through it, continuing with a further half-turn anti-clockwise and up over top pulley and back to drum, tying off with a knot inside finishing bracket. Tension may then be adjusted by screw. Attach tuning ribbon clamp and adjust as explained in "Circuit Alignment."

GENERAL NOTES

Switches.—S1-S4 are the waveband switches, ganged in a rotary unit beneath the chassis. This is indicated in our under-chassis view, and shown in detail in the diagram inset in the circuit diagram overleaf. In the M.W. position

(knob fully anti-clockwise) S1 and S4 close; in the next position (S.W.), all are closed; and on L.W. all are open.

Scale Lamp.—This is an Osram type "S," with a small clear spherical bulb and an M.E.S. base. Its Cat. No. is O.S.75 and it is rated at 6.5 V, 0.3 A. A spare bulb is kept in a holder mounted on the back cover of the receiver.

DISMANTLING THE SET

Almost unimpeded access to the under-side of the chassis may be obtained upon removal of the bottom cover (two cheese-head screws).

Removing Chassis.—Remove the three control knobs (pull-off), and the bottom cover as previously described;

with a long-bladed screwdriver remove the black-painted cheese-head screws (with washers) securing the speaker mounting plate to the front of the cabinet;

remove the four cheese-head screws (two long, two short, with washers) holding the chassis to the moulded flange on the base of the cabinet.

The chassis may now be withdrawn, complete with speaker, but in order to avoid damage to the windings of the oscillator coil, the four chassis-retaining screws should be refitted to the chassis to give adequate bench clearance.

When replacing, the two shorter chassis-retaining screws must be used to secure the front of the chassis to the flange on the base of the cabinet.

Do not omit to replace the black-painted screws above the gang and to the right of the speaker. Note that the front edge of the bottom cover fits into grooves at the front of the cabinet, and that the distance pieces on the bottom cover go inside, holding it off the side flanges.

CIRCUIT ALIGNMENT

Connect signal generator, via a 0.001 μF capacitor in the "live" lead, to control grid (top cap) of V1 and to the receiver E socket. Switch set to L.W., tune to 2,000 m on scale, and turn the volume control to maximum.

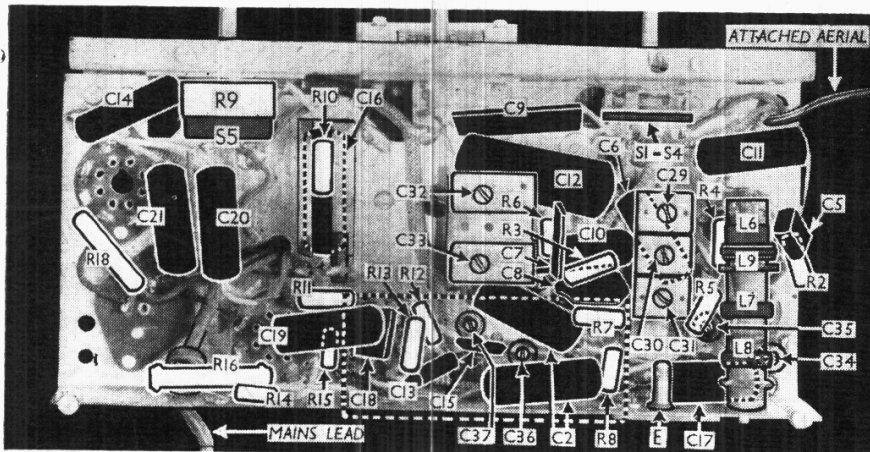
Feed in a 456 kc/s (657.8 m) signal and adjust C37, C36, C35 and C34, in that order, for maximum output, keeping the input low to avoid A.V.C. action.

R.F. and Oscillator Stages.—Transfer signal generator "live" output lead to remote end of attached aerial, connecting it via a suitable dummy aerial. With the gang at minimum capacitance the junction of the two-colour ribbon indicator should be horizontal and appear 1/2 in below the bottom edge of the register window.

S.W.—Switch set to S.W., tune to 16.7 m (spot on scale), feed in a 16.7 m (17.96 Mc/s) signal, and adjust C29, then C24, for maximum output, choosing the setting of C29 involving the lesser trimmer capacitance. The final adjustment to C24 should be accompanied by slight readjustment of the gang, to obtain maximum output.

M.W.—Switch set to M.W., tune to 214 m (spot on scale), feed in a 214 m (1,400 kc/s) signal, and adjust C30, then C25, for maximum output. Tune to 500 m on scale, feed in a 500 m (600 kc/s) signal, and adjust C33 for maximum output while rocking the gang. Finally, repeat the 214 m adjustments.

L.W.—Switch set to L.W., tune to 1,000 m on scale, feed in a 1,009 m (300 kc/s) signal, and adjust C31, then C26, for maximum output. Tune to 1,818 m (spot on scale), feed in a 1,818 m (165 kc/s) signal, and adjust C32 for maximum output while rocking the gang. Finally, repeat the 1,000 m adjustments and reseal all trimmers with a suitable compound.



Under chassis view. A dotted outline shows position of metal screen removed for photographing.