

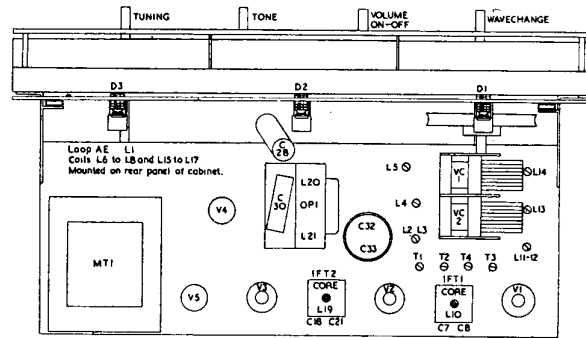
GEC BC5839

Five-valve three-waveband table-type superhet receiver with provision for three switch-selected pre-tuned stations. Sockets for aerial, earth, high-resistance magnetic or crystal pickup and low-impedance extension speaker. Self-contained loop aerial, attached to rear panel of cabinet, can be plugged into aerial and earth sockets for use in good reception areas. Walnut-finished cabinet. Suitable for 200-250V 40-100c/s. Model BC5839L is similar in all respects but suitable for 115-125 and 220V 40-100c/s mains. Manufactured by The General Electric Co. Ltd., Magnet House, Kingsway, London, WC2.

AERIAL input, from either loop L1 or external aerial, is damped by R1 and fed by C2 through SW aerial coupling coil L2 and thence passes to bottom end of grid tuned coils L4(MW) L5(LW) and preset tuned coils L6 L7 L8.

In SW position of wavechange switch, L3(SW) trimmed by T1 is switched by S1 to aerial tuning

Continued on p. 14



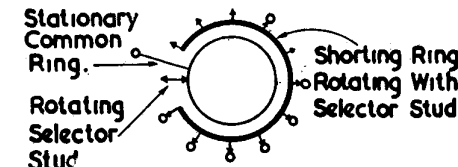
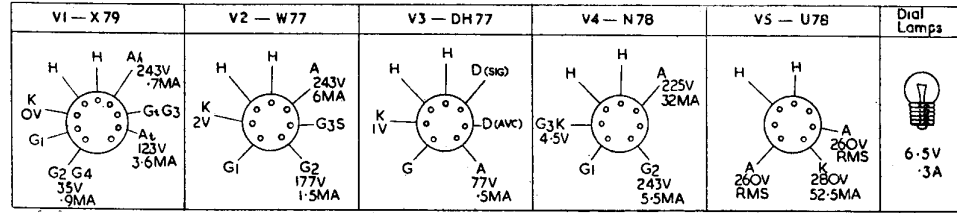
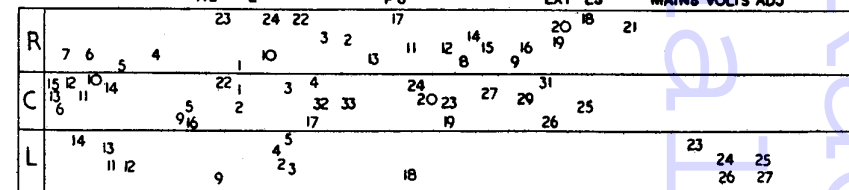
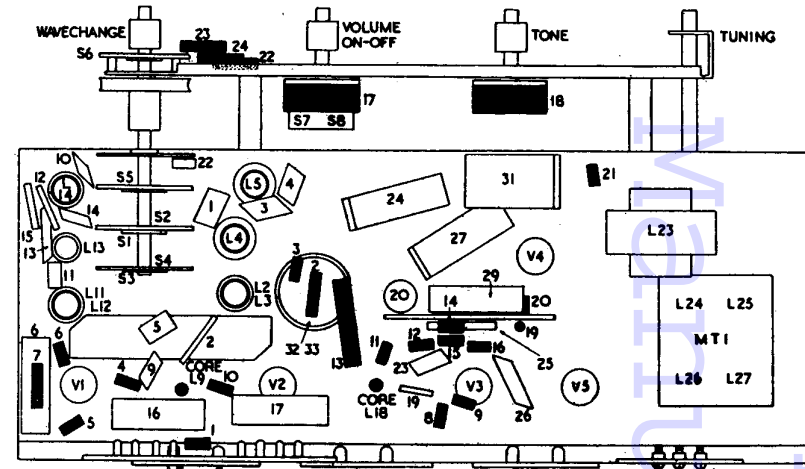
RESISTORS

R	Ohms	Watts
1	10K	1/2
2	56K	1/2
3	22K	1/2
4	1M	1/2
5	100K	1/2
6	470	1/2
7	15K	1/2
8	1M	1/2
9	470K	1/2
10	270	1/2
11	56K	1/2
12	470K	1/2

R	Ohms	Watts
13	8.2K	1
14	100K	1
15	100K	1
16	2.2K	1
17	1M Law K Potr. with DP Switch	1
18	500K Law C Potr.	1
19	270K	1
20	10K	1
21	120	1
22	10K	1
23	7.5	1
24	7.5	1

INDUCTORS

L	Ohms
1	Very low
2	.5
3	Very low
4	.2
5	17.5
6	2.4
7	2.4
8	2.4
9	9.5
10	9.5
11	Very low
12	Very low

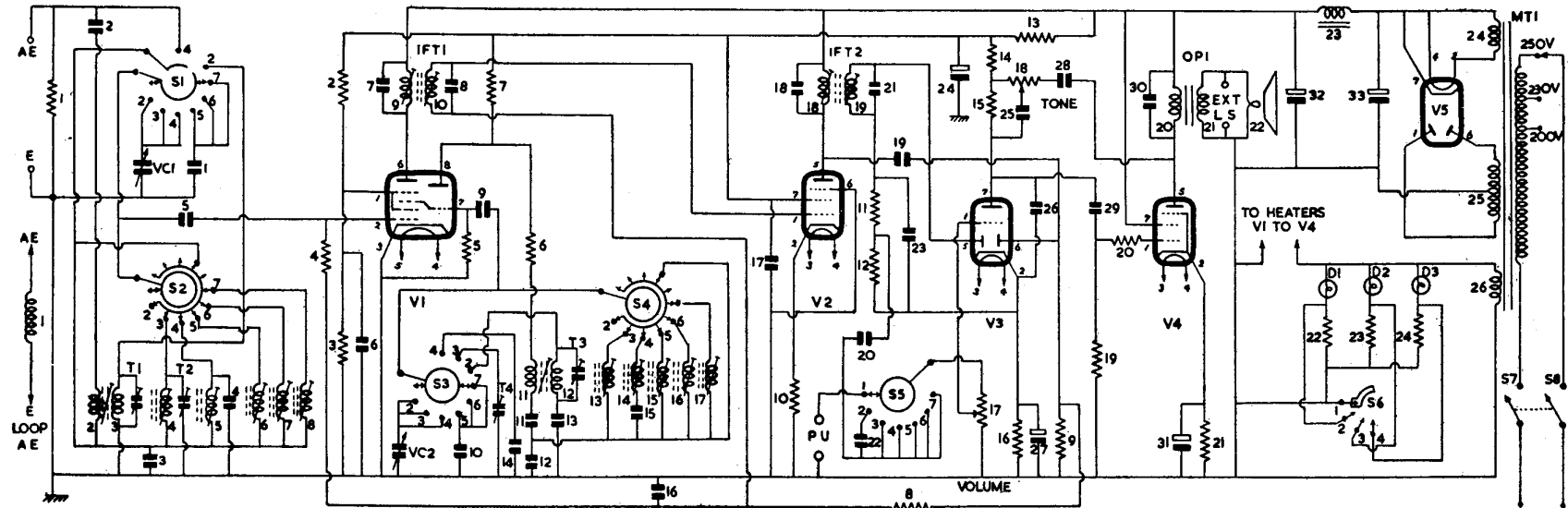


L	Ohms
13	3
14	7
15	7
16	7
17	7
18	9.5
19	9.5
20	600
21	.5

L	Ohms
22	2.75
23	650
24	Very low
25	607
26	Very low
27	36 Total

CAPACITORS

C	Capacity	Type
1	200pF	Silver Mica
2	1000pF	Silver Mica
3	3950pF	Silver Mica
4	82pF	Silver Mica
5	100pF	Silver Mica
6	.05	Tubular 500V
7	120pF	Silver Mica
8	120pF	Silver Mica
9	100pF	Silver Mica
10	470pF	Silver Mica
11	.005	Tubular 350V
12	410pF	Silver Mica
13	6000pF	Silver Mica
14	120pF	Silver Mica
15	270pF	Silver Mica
16	.05	Tubular 500V
17	.05	Tubular 500V
18	120pF	Silver Mica
19	22pF	Silver Mica
20	.05	Tubular 500V
21	120pF	Silver Mica
22	.001	Tubular 350V
23	100pF	Silver Mica
24	4	Electrolytic 350V
25	500pF	Silver Mica
26	500pF	Silver Mica
27	25	Electrolytic 25V
28	.005	Tubular 1000V
29	.05	Tubular 500V
30	.002	Tubular 1000V
31	100	Electrolytic 12V
32	32	Electrolytic 450V
33	16	Electrolytic 450V



GRAFTON IRON—Continued

clearance hole in lower switch blade and being insulated from upper blade by flanged ceramic bush.

When iron is switched on, mains are connected through the closed circuit switch to element, and soleplate commences to heat up. As soleplate temperature increases, the bi-metal strip curls upwards and allows the pair of closed switch blades to rise. When roller on lower switch blade comes into contact with heat control cam, further increase of soleplate temperature, and consequent further upward movement of bi-metal strip, cause only upper switch blade to rise, hence switch contacts separate and power to element is cut off. As soleplate temperature falls bi-metal moves downwards and as it does so, pulls upper switch blade down until it makes contact with lower blade, thus switching on power to element to repeat the cycle of events.

The manual heat control, by fixing the amount of rise of bi-metal before switch contacts open, determines the temperature at which soleplate is automatically maintained. The range of temperature covered by control is from 90 to 220 deg. C.

The adjusting nut fitted to top of link allows thermostat to be aligned with calibrations on control knob.

The pressed steel body is fitted with a moulded plastic handle having twin thumb rests for left or right-handed users. Body is attached to soleplate assembly by hexagonal locking nut on heat control spindle bush and by nut on to shank of nameplate fixing bolt which projects up through into terminal compartment at rear of handle—this nut also secures the bracket into which rear cover retaining screw is tapped.

A blue coated 3.5V .3A MES pilot lamp is embedded in an embossed circular aperture at left-hand side of terminal compartment of handle. Lampholder and contact spring are attached by screws to lefthand and centre terminal strips respectively—the lamp shunt resistor being connected across these on the switch block. The 8½ft. of cotton-braided three-core rubber-insulated flex is fed to terminal compartment through a rubber protector at side of handle. Earth lead of flex is clamped under one of handle-to-body fixing bolts. Rear of handle is enclosed by moulded bakelite cover held in place by single screw.

The Bakelite heat control knob is calibrated for wool, art silk, silk, cotton and linen, and attached to its spindle by recessed grub screw. Universal AC/DC iron shave a 0.01mF capacitor connected across the circuit switch contacts.

SERVICING

General Checks. With iron cold, test for continuity through mains lead, circuit switch and element. The 100-130V model should give a reading of 15 ohms and 200-250V model 60 ohms approximately. Place iron on soleplate temperature tester—set knob to Low and connect to mains and switch on. Thermostat should cut out at between 90-100 deg. C.

Renewal of element. Remove rear cover of handle, held by recessed screw. Disconnect two mains leads and lamp centre contact spring from terminal strips. Undo and remove screw-nut clamping rear cover bracket in position. Remove control knob held by grub screw—and unscrew hexagonal brass locking nut below. Lift off body (Fig. 5).

Disconnect element straps from lower switch

blade and right-hand terminal strip. Unscrew and remove adjusting nut and ceramic insulating bush on bi-metal link. Remove the two hexagonal nuts securing switch block to rear soleplate studs—carefully lift off switch block complete. Undo and remove hexagonal nuts on two rear and one front soleplate studs.

Pressure plate with heat control cam bridge, etc., can now be removed together with asbestos pad below—finally lift off faulty element.

Thoroughly clean up top surface of soleplate. If recess in which bi-metal strip rests is choked with rust or particles of asbestos then remove bi-metal strip and clean both it and recess. When refitting bi-metal make sure it is mounted correct side up (spacing plate on underside) and that it is positioned centrally in recess.

Place new element with new asbestos pad in position over front stud and replace pressure plate and switch assembly. Check to see that lock washers are placed under pressure plate and switch block fixing nuts. Connect element straps to terminal strip and lower switch blade—replace ceramic bush and adjusting nut on link. Do not replace body until thermostat has been re-set as described below.

Thermostat adjustment. Set cam to Low position, place iron on a thermocouple or similar heat meter. Connect mains to two outer contact strips. The circuit should include an ammeter, which should serve to check current consumption and also indicate when thermostat cuts in and out. Screw down brass adjusting nut until circuit is closed; then adjust so that contacts open when iron reaches approximately 90 deg. C. If correctly adjusted, soleplate temperature will then be maintained at between 80-95 deg. C. To lock nut in position, clench parallel portion with pliers.

Place body on chassis so that control spindle passes through hole in front and terminal strips through the slots at rear. Replace brass nut on control bush, align body to soleplate and tighten down nut firmly, but do not use any undue force. Replace lamp centre contact, insert lamp (3.5V MES) into its holder, connect red lead to left-hand and black lead to righthand terminal strip. Replace terminal cover fixing bracket and tighten down screw nut. Replace cover and control knob.

Finally, check for insulation between mains and earth and for continuity, with iron cold, at all knob positions—noting that the bulb lights up when the current is on.

Renewal lamp. This is best carried out by first removing rear cover of handle, the bulb can then be easily unscrewed from its holder.

Filing Service Charts

MAINTENANCE of orderly, well-preserved service data is of considerable economic importance. One of the best ways is to keep the monthly *Service Charts* supplements in a snap-in type of file with a running index on the front.

A pair of stiff covers with a strong metal clip inside the "hinge," this type of file, available at stationers, costs only a few shillings and holds at least two years' charts.

Every half-year this file can be supplemented by purchase of a *Service Chart Manual*, providing the same charts in a form that will keep them safe and tidy for many years to come. If you have not seen previous *Manuals* why not inquire for earlier volumes, some of which are still available?

GEC BC5839—Contd. from p.12

capacitor VC1 and thence coupled by C5 to control grid (g1) of triode-hexode frequency-changer V1, the unused coils L4 to L8 being shorted out by S2.

On MW band, L4 trimmed by T2 is tuned by VC1 and L5 to L8 are shorted out. Similarly, on LW, L5 trimmed by C4, is tuned by VC1 and L4 L6 L7 L8 are shorted; in addition, on this band only, L2 C2 are short circuited by S1, thus feeding aerial signal direct to bottom of L5.

On preset positions of wavechange switch, VC1 is switched out by S1 and instead a fixed capacitor C1 is shunted across L6 L7 L8. The coils are tuned to any desired station between 200 and 550 metres by adjustment of their iron dust cores by means of slider controls. The coils are located under a removable cover on rear panel of receiver.

As in the case of manually tuned MW and LW bands, the unused coils, excepting L3(SW), are shorted out by S2. In Gram position of wavechange switch, tuned circuits are disconnected from grid V1, and all except L3(SW) short circuited by S2.

Cathode V1 is connected to chassis and AVC voltages, decoupled by R8 C16, are fed through R4 to its grid. Screen (g2 g4) voltage is obtained from potential divider R2 R3 decoupling being by C6. Primary L9 C7 of IFT1 is in the hexode anode circuit.

Oscillator is triode section V1 connected in a tuned-grid shunt-fed circuit. Grid coils L12(SW) L13(MW) L14(LW), padded by C13 C12 C15/12 respectively, are switched by S4 S3 to manual oscillator tuning capacitor VC2 and coupled through C9 to oscillator grid. T3, the SW trimmer, is permanently connected across L12 whilst MW and LW trimmers, T4 C14 respectively, are switched in as required by S3.

On preset positions of wavechange switch, VC2 is switched out by S3 and a fixed capacitor C10 shunted across L15 to L17, the coils being preset tuned by adjustment of their iron dust cores. Unused tuned coils, excepting L12(SW), are shorted out by S4. Automatic bias for oscillator grid is developed on C9 with R5 as leak.

Anode reaction voltages on SW band are obtained from L11 and applied through limiter R6 to oscillator grid of which R7 is load resistor. On MW LW and preset ranges reaction voltages are developed across padders and fed through C11 L11 R6 to grid.

In Gram position of wavechange switch tuned circuits are disconnected from oscillator grid and all except L12(SW) short circuited by S4.

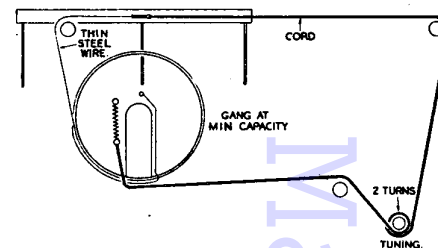
IF amplifier operates at 470kc/s. Secondary L10 C8 of IFT1 feeds signal and AVC voltages, decoupled by R8 C16, to grid of IF amplifier V2. Cathode bias is provided by R10. Screen (g2) voltage is obtained direct from HT line for V1 to V3, decoupling being by C17.

Signal rectifier. Secondary L19 C21 of IFT2 feeds IF signal to one diode of V3. R12 is diode load and R11 C23 form an IF filter.

AVC. IF signal at anode V2 is fed by C19 to second diode V3 of which R9 is the load. AVC voltage is decoupled by R8 C16 and fed to grids V1 V2. Cathode bias across R16 C27 provides AVC line delay voltage.

Pickup. Sockets are provided for connection of any high-resistance magnetic or crystal pickup.

AF amplifier. Signal across R12, or pickup signal, is switched by S5 to volume control R17 in grid of triode AF amplifier section V3. R14 R15



form its anode load with C26 as anode RF bypass.

Tone control is provided by negative feedback from anode of output amplifier V4 fed by C28 R18 to centre tap of anode load V3. Variable control is provided by R18 C25.

Output stage. C29 feeds signal at anode V3 through stopper R20 to grid of pentode output amplifier V4. R19 is its grid resistor and R21 decoupled by C31 provides cathode bias. Anode is transformer coupled by OP1 to an 8 in PM speaker L22. Sockets are fitted on secondary L21 of OP1 for connection of a low-impedance extension speaker.

HT is provided by an indirectly heated full-wave rectifier V5 with anode voltages obtained from HT secondary L25 and heater current from secondary L24 of mains input transformer MT1. Choke-capacity smoothing is by L23 C32 C33. Reservoir smoothing capacitor C33 should be rated to handle 100mA ripple current. HT feed to anode V3, oscillator anode V1, and screen V1 V2 is voltage dropped and further smoothed by R13 C24.

Heaters V1 to V4 are parallel connected and fed from secondary L26 of MT1.

Dial lights are each connected in series with a dropper resistor R22 R23 R24 to give low intensity illumination. When wavechange switch is placed in SW MW or LW position then appropriate dropper is short circuited by S6 to give full brilliance to its associated lamp thus indicating waveband.

TRIMMING INSTRUCTIONS

Apply signal as stated below	Tune Receiver to	Trim in Order stated for Max. Output
(1) 470 kc/s to g1 of V1 via .01 mF	LW band with dial set to 90 mark	Cores L19, L18, L10 and L9
(2) 7.5 mc/s to aerial socket via dummy aerial	SW band Dial at 60.5	Cores L12, L3
(3) 18 mc/s as above ...	Dial at 5.5	T3, T1 and repeat (2) and (3)
(4) 600 kc/s as above...	MW band Dial at 70	Cores L13, L4
(5) 1.4 mc/s as above...	Dial at 9.5	T4, T2 and repeat (4) and (5)
(6) 230 kc/s as above...	LW band Dial at 30.5	Cores L14, L5

Note.—In operations 1 to 6 righthand end of dial cursor carriage is set against calibration numbers printed on face of carriage track.

Pre-set Stations

Place wavechange switch in Station 1 position. Adjust slider of aerial coil No. 1 and oscillator coil No. 1 to approximately desired wavelength. Complete tuning of each by adjusting small screws in centre of slider. Pre-set stations 2 and 3 are set up in a similar manner.