

Intermediate frequency 456 kc/s.

CAPACITORS		Values (μF)
C1	A1 series coupling	0.000022
C2	Aerial coupling capacitor	0.003
C3	V1 hex. CG capacitor	0.0001
C4	V1 SG decoupling	0.05
C5	V1 osc. CG capacitor	0.0001
C6	AVC line decoupling	0.05
C7	HT circuit RF by-pass	0.05
C8	Osc. LW fixed trimmer	0.000039
C9	Osc. circ. SW tracker	0.00395
C10	Reaction coupling	0.005
C11	Osc. MW fixed tracker	0.0001
C12*	V1 osc. anode decoupling	12.0
C13	V2 SG decoupling	0.05
C14	1F by-pass	0.0003
C15*	V3 cathode by-pass	25.0
C16*	HT line decoupling	4.0
C17	AF coupling to V3 triode	0.02
C18	Coupling to AVC diode	0.000022
C19	1F by-pass	0.0005
C20	AF coupling to V4	0.02
C21	Parts of tone correcting circuits	0.0002
C22		0.0015
C23		0.005
C24	Part of tone control	0.05
C25*	HT smoothing capacitors	16.0
C26*		8.0
C27†	Aerial circ. SW trimmer	—
C28†	Aerial circ. MW trimmer	—
C29†	Aerial circ. LW trimmer	—
C30†	Aerial circuit tuning	—
C31†	Oscillator circuit tuning	—
C32†	Osc. circ. SW trimmer	—
C33†	Osc. circ. MW trimmer	—
C34†	Osc. circ. LW trimmer	—
C35†	Osc. circ. LW tracker	—
C36†	Osc. circ. MW tracker	—
C37†	1st IF trans. pri. tuning	—
C38†	1st IF trans. sec. tuning	—
C39†	2nd IF trans. pri. tuning	—
C40†	2nd IF trans. sec. tuning	—

\* Electrolytic. † Variable. ‡ Pre-set.

#### VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 X61M	181	1.7	70	2.6
V2 KTW61	74	3.3	60	2.3
V3 DH63	256	8.2	256	6.9
V4 KT61	92	0.68	—	—
V5 U50	239	42.0	—	—

† Each anode, AO.

RESISTORS		Values (ohms)
R1	Aerial circuit shunt	10,000
R2	V1 hex. CG resistor	1,000,000
R3	V1 osc. CG resistor	100,000
R4	Oscillator circuit damping resistors	68
R5		10,000
R6		470
R7	V1 SG and Osc. anode HT feed potential divider	22,000
R8		10,000
R9		15,000
R10	V2 SG HT feed	22,000
R11		56,000
R12		56,000
R13	1F stopper	470,000
R14	V3 signal diode load	1,000,000
R15	AVC line decoupling	1,000,000
R16	Manual volume control	15,000
R17	HT feed resistor	100,000
R18	V3 triode anode load	2,200
R19	V3 triode GB	470,000
R20	AVC diode load	680,000
R21	Parts of tone correcting circuit	150,000
R22		100
R23		330,000
R24	V4 CG resistor	91
R25	V4 GB resistor	39
R26	Variable tone control	55,000

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling and image rejector coils, total	0.36
L2		0.06
L3		2.8
L4	Aerial SW tuning coil	19.5
L5	Aerial MW tuning coil	0.06
L6	Aerial LW tuning coil	3.4
L7	Osc. SW tuning coil	7.7
L8	Osc. MW tuning coil	0.32
L9	Osc. LW tuning coil	7.0
L10	Osc. SW reaction coil	7.0
L11	1st IF trans.	7.0
L12		7.0
L13		4.0
L14	2nd IF trans.	4.0
L15		4.0
L16		2.3
T1	Speaker speech coil	650.0
T2	HT smoothing choke	430.0
T3	Output trans.	0.49
T4	Mains	34.0
T5		6.16
T6		0.13
T7	Waveband switches	340.0
T8	Mains switch	—

Switch Table

Button Pressed	Switches Closed	Switches Open
OFF ... ..	S2, S5	S1, S3, S4, S6
LW ... ..	S1	S2, S3, S4, S5, S6
MW ... ..	S2, S5	S1, S3, S4, S6
SW and PU ...	S2, S3, S4, S5, S6	S1

### CIRCUIT ALIGNMENT

**IF Stages.**—Connect signal generator leads via a 0.1  $\mu$ F capacitor to control grid (top cap) of **V1**, leaving original connector in position, and chassis. Turn the volume control to maximum, and the tone control fully clockwise. Press the LW button, and turn the gang to maximum capacitance.

Feed in a 456 kc/s (657.8 m) signal, and adjust **C40**, **C39**, **C38** and **C37** in that order for maximum output.

**RF and Oscillator Stages.**—Transfer signal generator leads to **A2** and **E** sockets, via a suitable dummy aerial. Check concentricity of pointer as follows: Turn gang to maximum, and set pointer horizontally, pointing to the left. The short tail point of the pointer should now be directly over a small spot on the scale, and the point of the long arm over the centre of letter "I" in "Medium." With the gang at minimum, the pointer should again lie along the centre-line of the top line of lettering, its long point lying over the centre limb of the letter "E" in "Medium," and its tail point lying over a second small spot on the scale.

If the scale requires adjustment, this can be performed after slackening the six fixing screws. If the pointer requires adjustment, the lock-nut at the rear end of its threaded spindle must be slackened. This is best done with a long narrow-bladed screwdriver inserted through a box spanner, the nut first being heated with a soldering iron.

**MW.**—Press MW button, tune to 214 m (spot on scale), feed in a 214 m (1,400 kc/s) signal, and adjust **C33**, then **C28**, for maximum output. Tune to 500 m on scale, feed in a 500 m (600 kc/s) signal, and adjust **C36** for maximum output, rocking the gang slightly either way for optimum results. Repeat 214 m adjustments.

## G.E.C. - BC4650

**LW.**—Press LW button, tune to 1,000 m on scale, feed in a 1,000 m (300 kc/s) signal, and adjust **C34**, then **C29**, for maximum output. Tune to 1818 m (spot on scale), feed in an 1818 m (165 kc/s) signal, and adjust **C35** for maximum output, rocking the gang again for optimum results. Repeat 1,000 m adjustments.

**SW.**—Press SW button, tune to 16.7 m (spot on scale), feed in a 16.7 m (18 Mc/s) signal, and adjust **C32**, then **C27**, for

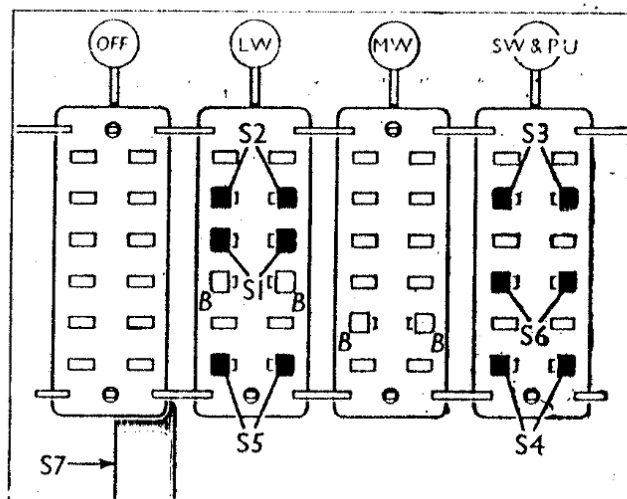


Diagram showing the connections of the press-button waveband switch unit, as seen in our under-chassis view overleaf. The "MW" section has no connections at all, its function being merely to release the other plungers when its own button is pressed. The "OFF" button operates the QMB mains switch **S7**.

maximum output. Two peaks should be found for **C32**, and that involving the lesser trimmer capacitance should be selected. Both trimmers should then be readjusted while rocking the gang slightly about the correct tuning point to overcome "pulling" between circuits.

All trimmers should finally be sealed with a dab of paint. The makers use a substance called "Necol," and they suggest that it should be well spread over the upper plates of **C32**, **C33** and **C34** to damp down microphonic vibration, which may otherwise set up a "howl."