



## COMPONENTS AND VALUES

RESISTANCES	Values (ohms)
R1 Interference suppressor control	1,000
R2 V1 SG HT feed	250,000
R3 V1 anode HT feed	50,000
R4 V1 GB resistance	500
R5 V2 hexode CG resistance	2,000,000
R6 V2 SG HT feed potential divider	20,000
R7 V2 SG HT feed potential divider	30,000
R8 Part V2 fixed GB	130
R9 V2 osc. CG resistance	40,000
R10 V2 hexode CG decoupling	500,000
R11 V2 osc. anode HT feed	30,000
R12 V3 SG HT feed resistance	100,000
R13 V3 anode HT feed	5,000
R14 IF stopper	50,000
R15 Manual volume control; V4 signal diode load	500,000
R16 V4 triode CG stopper	100,000
R17 V4 triode CG resistance	2,000,000
R18 V4 GB and AVC delay resistor	750
R19 V4 triode anode load	1,000
R20 V4 triode anode load	5,000
R21 AVC line decoupling	3,000,000
R22 V4 AVC diode load	1,000,000
R23 V5 CG resistance	500,000
R24 V5 grid stopper	100,000
R25 V3, V5 and part V2 fixed GB; AVC delay	20,000
R26 V5 grid stopper	300,000
R27 V1-V4 heater circuit pot.	750,000
R28 V5 heater circuit pot.	25
R29 V5 heater circuit pot.	25

\* Centre-tapped. † See Chassis Divergencies.

CONDENSERS	Values (μF)
C1 V1 CG circuit shunt	0.0002
C2 V1 SG decoupling	0.05
C3 V1 anode coupling	0.005
C4 261 m filter tuning	0.000065
C5 Auto "setting" coupling	0.000005
C6 V2 hexode CG decoupling	0.05
C7 342 m filter tuning	0.0001
C8 V2 SG decoupling	0.05
C9 1st IF transformer tuning condensers	0.000225
C10 V2 osc. CG condenser	0.0001
C11 V2 cathode by-pass	0.0001
C12 HT circuit RF by-pass	0.1
C13 Osc. circuit LW fixed trimmer	0.00005
C14 Osc. circuit MW tracker	0.000638
C15 Osc. circuit LW fixed tracker	0.00014
C16 V2 osc. anode coupling	0.0005
C17 V3 CG decoupling	0.05
C18 V3 SG decoupling	0.05
C19 V3 anode coupling	0.1
C20 2nd IF transformer tuning condensers	0.00006
C21 Coupling to V4 AVC diode	0.000075
C22 IF by-pass condensers	0.00005
C23 V4 cathode by-pass	50.0
C24 AF coupling to V4 triode	0.005
C25 V4 triode to V5 AF coupling	0.01
C26 V5 CG decoupling	10.0
C27 HT smoothing condensers	16.0
C28 Aerial auto tuning input coupling condensers	0.0005
C29 Oscillator auto circuit tuning condensers	0.00022
C30 Aerial circuit SW trimmer	0.00039
C31 Aerial circuit MW trimmer	0.00172
C32 Aerial circuit LW trimmer	—
C33 Aerial circ. manual tuning	—
C34 Osc. circ. manual tuning	—
C35 Osc. circuit SW trimmer	—
C36 Osc. circuit MW trimmer	—
C37 Osc. circuit LW trimmer	—
C38 Osc. circuit LW trimmer	—
C39 Osc. circuit LW trimmer	—
C40 Osc. circuit LW trimmer	—
C41 Osc. circuit LW trimmer	—
C42 Osc. circuit LW trimmer	—
C43 Osc. circuit LW trimmer	—
C44 Osc. circuit LW trimmer	—

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

## VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 228 V, using the 220 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium 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.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 MSPenB	147	2.6	62	0.9
V2 41STH	290	2.4	100	5.8
V3 MVS PenB	260	5.2	110	1.6
V4 DIT	132	2.8	—	—
V5 2XP	282	42.0	—	—
V6 43IU	338†	—	—	—

† Each anode, AC.

## GENERAL NOTES

**Switches.**—S1-S28 are the waveband and scale lamp switches, in four ganged rotary units beneath the chassis. These are indicated in our under-chassis view, and shown in detail in the diagrams (1 to 4) in col. 6, where they are drawn as seen looking from the underside of the chassis in the directions of the arrows. The table (col. 5) gives the switch positions for the five control settings, starting from fully anti-clockwise. A dash indicates open, and C, closed.

The QMB mains switch S35 is ganged with these switches, and operated by an arm on the main shaft, which opens S35 in the "off" position, and closes it for all other positions.

**S29-S33** are the switches associated with the spring-loaded station setting control, which projects from the rear of the chassis. They are ganged in a single rotary unit, indicated in our under-chassis view, and shown in detail in the fifth diagram in col. 6. In the normal (central) position of the control, S31 and S32 are closed; in the clockwise (1) position, S29 and S33 are closed; while in the anti-clockwise (2) position, S30 and S32 are closed.

S34 is the internal speaker muting switch, associated with one of the Ext. LS sockets, in the power and output unit. On fully inserting the external speaker plug, S34 opens and breaks the primary circuit of T1, thus muting the internal speaker. S35 is the mains switch.

**S36-S47** are the auto-tuning selector switches, ganged in a press-button unit, on the auto-tuning assembly above the chassis deck. The contacts of all these switches are indicated in our plan chassis view. Each button controls two switches (one aerial circuit and one oscillator) which are closed when the button is pressed.

**Coils.**—L1 and L8 are two adjustable iron-cored coils beneath the chassis, with screw adjustments at the rear of the chassis. L2, L5; L3, L6; L4, L7; L9, L12; L10, L13 and L11, L14 are in six unscreened units beneath the chassis. The IF transformers L15, L16 and L17, L18 are in two screened units on the chassis deck, with core adjustments at the sides of the cans. L22-L33 are the permeability-tuned auto-tuning coils, in the assembly above the chassis. The aerial coils are the upper ones in each case.

**Scale Lamps.**—Under this heading come two actual scale lamps, controlled by S24, three waveband indicator lamps switched by S25-S27 and two auto-indicator lamps, controlled by S28. They are all Osram MES types, rated at 6.5 V, 0.3 A, with small bulbs.

## CIRCUIT ALIGNMENT

**IF Stages.**—Connect signal generator via a 0.1 μF condenser to control grid (top cap) of V3 and chassis, feed in a 465 KC/S signal, and adjust the cores of L17 and L18, having first softened the wax by the application of a warm screwdriver. Transfer signal generator to top cap of

V2, and similarly adjust cores of L15, L16. The existing lead to each top cap should be left in position, and the response curve of the IF stages should be symmetrical, with a perceptible flat top when viewed on an oscilloscope.

**RF and Oscillator Stages.**—With gang at maximum, pointer should cover the vertical lines at the extreme right-hand ends of the scales. Connect signal generator to A1 and E sockets, via a suitable dummy aerial. Turn noise suppressor knob fully anti-clockwise.

**LW.**—Switch set to LW, and tune to 1,200 m on scale. Feed in a 1,200 m (250 KC/S) signal, and adjust C43, then C38, for maximum output. Feed in a 1,875 m (160 KC/S) signal, tune it in, and adjust C44 for maximum output, while rocking the gang for optimum results. Repeat the LW adjustments.

**MW.**—Switch set to MW, and tune to 214 m on scale. Feed in a 214 m (1,400 KC/S) signal, and adjust C42, then C37, for maximum output. Tracking is fixed on this band.

**SW.**—Switch set to SW, tune to 18 MC/S on scale, and feed in an 18 MC/S (16.67 m) signal. Adjust C41, then C36 for maximum output. C41 must be adjusted to the peak involving the smaller trimmer capacity.

**L1, C4 Filter.**—This has to be set to 261 m to reject the National stations when operating on LW (manual or AT). Feed a 261 m signal into the A1 and E sockets, and tune it in manually at about 1,370 m on LW. Adjust core of L1 (rear of chassis) for minimum output.

**L8, C7 Filter.**—This is for the rejection of London Regional on AT button 6. Feed in a 342.1 m signal, switch set to AT, and depress button 6. Adjust the lower adjusting screw for this button until the signal is tuned in, then adjust the core of L8 (rear of chassis) for minimum output.

