

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 pentode CG decoupling ..	1,000,000
R2	V1 SG HT feed resistance ..	20,000
R3	V1 fixed GB resistance ..	150
R4	V1 osc. CG stabiliser ..	150
R5	V1 osc. CG resistance ..	47,000
R6	Osc. circuit SW damping ..	10,000
R7	Osc. circuit MW damping ..	22
R8	Osc. circuit LW damping ..	100
R9	V1 anodes decoupling ..	2,000
R10	V1 osc. anode HT feed ..	10,000
R11	V1, V2 SG HT feed ..	10,000
R12	V2 fixed GB resistance ..	150
R13	V3 signal diode load resistance ..	100,000
R14	tances ..	470,000
R15	Part of tone compensator ..	30,000
R16	Volume control limiter ..	510,000
R17	Manual volume control ..	1,000,000*
R18	Negative feed-back coupling ..	22
R19	*V3 GB resistance; AVC delay ..	1,500
R20	V3 triode anode decoupling ..	20,000
R21	V3 triode anode load ..	50,000
R22	AVC line decoupling ..	1,000,000
R23	V3 AVC diode load ..	1,000,000
R24	V4 GB resistance ..	100,000
R25	V4 GB resistance ..	150
R26	Part of fixed tone corrector ..	10,000
R27	Part of negative feed-back feed ..	100

* Tapped at 400,000 Ω from R18.

CONDENSERS		Values (μF)
C1	V1 pentode CG decoupling ..	0.05
C2	External aerial coupling ..	0.000005
C3	V1 SG decoupling ..	0.1
C4	1st IF transformer fixed tuning condensers ..	0.00013
C5	V1 cathode by-pass ..	0.00014
C6	V1 osc. CG condenser ..	0.1
C7	V1 osc. CG condenser ..	0.0002
C8	Osc. MW reaction shunt ..	0.0005
C9	V1 anodes decoupling ..	0.1
C10	Osc. circuit SW tracker ..	0.0005
C11	Osc. circuit MW tracker ..	0.00063
C12	Oscillator reaction coupling ..	0.002
C13	Oscillator circuit LW and auto fixed trimmer ..	0.00009
C14	Osc. circ. auto fixed tuning ..	0.00041
C15	V2 CG decoupling ..	0.05
C16	V2 SG decoupling ..	0.1
C17	2nd IF transformer fixed tuning trimmers ..	0.00013
C18	V2 cathode by-pass ..	0.00014
C19	V2 cathode by-pass ..	0.1
C20	Parts of tone compensator ..	0.0002
C21	Parts of tone compensator ..	0.01
C22	AF coupling to V3 triode ..	0.0005
C23	Coupling to V3 AVC diode ..	0.00002
C24	IF by-pass condensers ..	0.0001
C25	V3 triode anode decoupling ..	2.0
C26*	V3 cathode by-pass ..	20.0
C27*	V3 triode to V4 AF coupling ..	0.05
C28	Bass attenuator condenser ..	0.0025
C29	Parts of fixed tone corrector circuit ..	0.0005
C30	Parts of fixed tone corrector circuit ..	0.001
C31	Parts of fixed tone corrector circuit ..	0.005
C32	High-note attenuator ..	0.01
C33	V4 cathode by-pass ..	50.0
C34*	HT smoothing condensers ..	16.0
C35*	HT smoothing condensers ..	16.0
C36*	MW frame aerial trimmer ..	—
C37†	Aerial circuit LW auto tuning trimmers ..	—
C38†	Aerial circuit MW auto tuning trimmers ..	—
C39†	Aerial circuit LW auto tuning trimmers ..	—
C40†	Aerial circuit MW auto tuning trimmers ..	—
C41†	Aerial circuit LW trimmer ..	—
C42†	Aerial circuit manual tuning ..	—
C43†	Osc. circuit LW tracker ..	—
C44†	Osc. circuit MW trimmer ..	—
C45†	Osc. circuit LW tracker ..	—
C46†	Osc. circuit MW trimmer ..	—
C47†	Osc. circuit manual tuning ..	—
C48†	Osc. circuit SW 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 227 V, using the 216-235 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 TH4B	{ 235 160 260	{ 2.2 7.5 9.3	80	4.5
V2 VP4B	260	9.3	173	3.3
V3 TDD4	95	2.2	—	—
V4 PenA4	240	35.0	260	5.6
V5 DW4/350	332†	—	—	—

† Each anode, AC.

GENERAL NOTES

Switches.—S1a, b, x, y to S16a, x are the waveband and auto-tuning press-button switches, which, together with the mains switch S19x, are contained in a single two-sided press-button unit at the front of the underside of the chassis, having nine buttons. Two other buttons, one at each extremity of the unit, control S17x and S18a, the tone control switches. These two switches are indicated in the under-chassis view, while the main press-button unit is shown in detail in two diagrams in coils 5 and 6. The upper diagram shows the unit as seen from the underside of the chassis, and the lower one shows the reverse side, as it would be seen if it were possible to look through the chassis deck.

The buttons, from left to right looking at the front of the cabinet, are: Less Top; Off; two LW stations; three MW stations; LW manual; MW manual; SW; Less Bass.

The switch groups are numbered with suffixes a, b, x or y, and when a button is pressed, all its a and b switches close, and its x and y switches open, and vice-versa. The same applies to the tone control and mains switches. See also the beginning of Circuit Description.

The tone control switches are not automatically released when another button is pressed, so that both may be in the "depressed" position if desired. To release, their buttons must be pressed towards the top of the cabinet.

Coils.—L1 and L3 are frame aerial windings inside the cabinet. L1 is a single turn on the speaker baffle. L3 is at the left of the cabinet, and with it is associated the trimmer C37. L2 is an unscreened unit on the chassis deck, while L14, L15 and L16, L17 are in two screened units on the chassis deck, having their core adjustments at the sides of the cans facing the rear of the chassis.

L4, L6; L5, L7; L8; and the auto-tuning oscillator coils L9-L13 are all in unscreened units beneath the chassis. L9-L13 all have adjustable iron cores for station setting.

Scale and Indicator Lamps.—Three lamps are used behind the press-button panel, and two others for general illumination of the tuning scale. They are all Ever Ready MES types, rated at 6.0 V, 0.5 A.

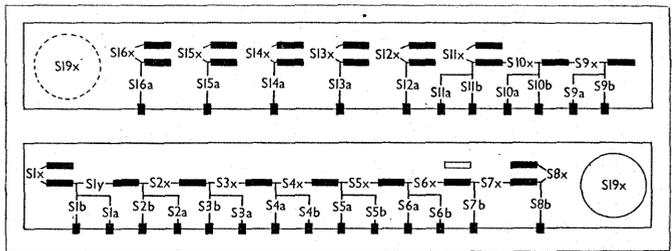
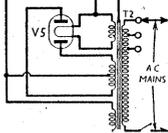
Condensers C35, C36.—These are two 16 μF (500 V working) dry electrolytics in a single tubular metal unit on the chassis deck, the can being the common negative connection. The tag to which R20 is connected is the positive of C36; the other tag (coded red) is the positive of C35.

Chassis Divergencies.—R16, C20, R26 and C32 are not shown in the makers' diagram. C31 is across T1 primary in the makers' diagram, and has a value of 0.005 μF. C36 is given as 8 μF by the makers. Several discrepancies in the coil resistances were found. The values we give are those measured in our chassis. Certain resistors may have values differing by up to 10 per cent. from those quoted by us.

AUTO-TUNING ADJUSTMENT

The wavelength ranges of the auto-tuning buttons, starting with the third button from the left, looking at the front of the cabinet are: 900-2,000 m; 900-2,000 m; 280-560 m; 250-470 m; 190-330 m. The ranges can be changed, if necessary, by fitting new oscillator coils, and associated aerial trimmers.

Station setting is achieved by depressing the appropriate button and adjusting the associated aerial trimmer (C38-C42),



Diagrams of the press-button unit. Above, as seen from beneath the chassis; below, as would be seen looking through the chassis deck.

and the core of the corresponding oscillator coil (L9-L13).

CIRCUIT ALIGNMENT

In all cases, the signal from the generator is fed into the set by coupling to the frame aerials. A single turn of wire round the cabinet, or even some distance away, should provide adequate coupling.

IF Stages.—Press MW button, and tune to higher wavelength end of scale. Feed in a 465 KC/S signal, and adjust cores of L14, L15, L16 and L17 for maximum output. Repeat these adjustments carefully.

RF and Oscillator Stages.—With gang at maximum, pointer should be at the tops of the clear glass strips on which the scales are printed.

SW.—Press SW button, tune to 20 m on scale, feed in a 20 m (15 MC/S) signal, and adjust C48 (on gang) for maximum output.

MW.—Press MW button, tune to 200 m on scale, feed in a 200m (1,500 KC/S) signal and adjust C46, then C37 (on MW frame), for maximum output. Repeat these adjustments.

LW.—Press LW button, tune to 1,800 m on scale, feed in an 1,800 m (166.7 KC/S) signal, and adjust C45 for maximum output. Tune to 1,300 m on scale, feed in a 1,300 m (230 KC/S) signal, and adjust C43 for maximum output. Repeat the LW adjustments.