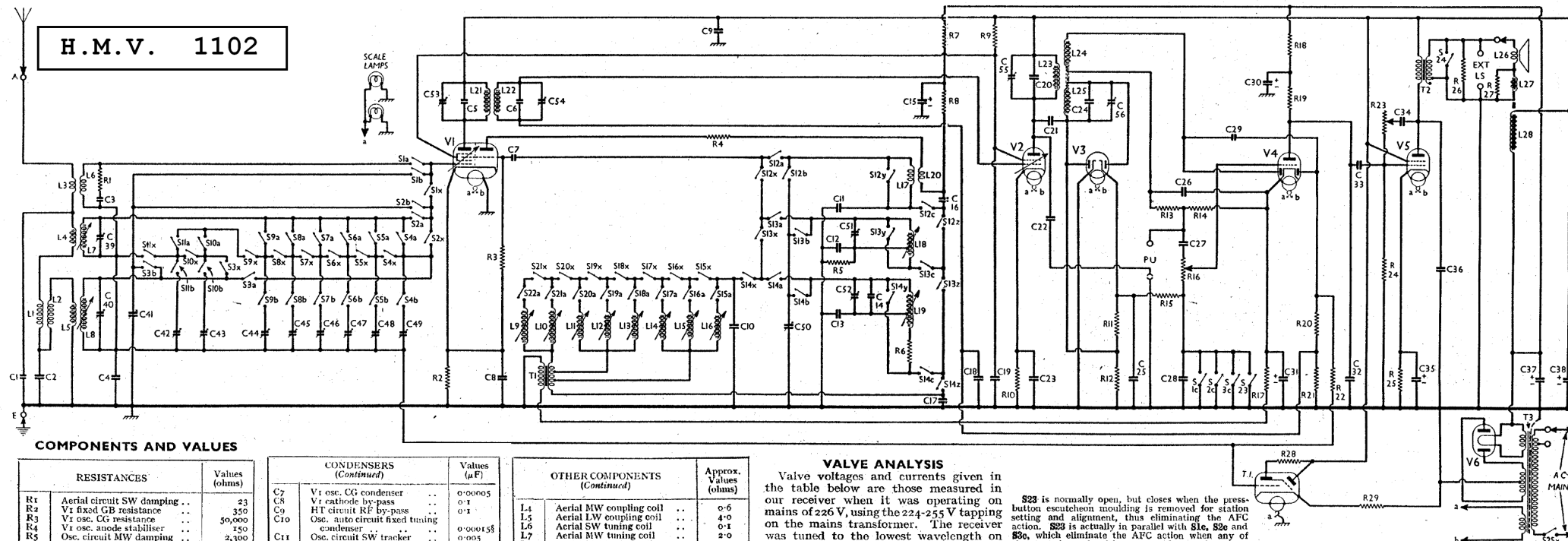


H.M.V. 1102



COMPONENTS AND VALUES

RESISTANCES	Values (ohms)
R1 Aerial circuit SW damping ..	23
R2 V1 fixed GB resistance ..	350
R3 V1 osc. CG resistance ..	50,000
R4 V1 osc. anode stabiliser ..	150
R5 Osc. circuit MW damping ..	2,300
R6 Osc. circuit LW damping ..	1,000
R7 V1 osc. anode decoupling ..	23,000
R8 V1 osc. anode HT feed ..	35,000
R9 V1 and V2 SC's HT feed ..	35,000
R10 V2 fixed GB resistance ..	350
R11 V3 diodes load resistances ..	2,300,000
R12 V3 signal diode load resistances ..	100,000
R13 V4 triode CG decoupling ..	1,000,000
R14 Manual volume control ..	2,000,000
R15 V4 triode fixed GB; AVC delay ..	2,300
R16 V4 triode anode decoupling ..	50,000
R17 V4 triode anode load ..	150,000
R18 V4 AVC diode load resistances ..	1,500,000
R19 AVC line decoupling ..	1,500,000
R20 Variable tone control ..	2,000,000
R21 V5 CG resistance ..	500,000
R22 V5 GB resistance ..	400
R23 T1 sec. artificial loading ..	50
R24 Hum neut. coil shunt ..	0.4
R25 T1 anode HT feed ..	1,000,000
R26 T1 GB resistance ..	500

CONDENSERS	Values (µF)
C1 Part aerial SW coupling ..	0.000015
C2 Part LW image rejector ..	0.00035
C3 Aerial circuit SW trimmer ..	0.00001
C4 V1 hexode CG decoupling ..	0.05
C5 1st IF transformer fixed trimmers ..	0.000075
C6	0.000075

CONDENSERS (Continued)	Values (µF)
C7 V1 osc. CG condenser ..	0.00005
C8 V1 cathode by-pass ..	0.1
C9 HT circuit RF by-pass ..	0.1
C10 Osc. auto circuit fixed tuning condenser ..	0.00015
C11 Osc. circuit SW trimmer ..	0.005
C12 Osc. circuit MW trimmer ..	0.00023
C13 Osc. circuit LW trimmer ..	0.000075
C14 V1 and V2 SC's HT feed ..	4.0
C15 V1 osc. anode coupling condenser ..	0.005
C16 V2 CG decoupling ..	0.05
C17 V1 and V2 SC's decoupling ..	0.1
C18 2nd IF trans. pri. fixed trimmer ..	0.00013
C19 Part coupling to V3 ..	0.0001
C20 Radio muting on gram ..	0.05
C21 V2 cathode by-pass ..	0.1
C22 2nd IF trans. disc. sec. trimmer ..	0.00013
C23 IF by-pass ..	0.001
C24 IF by-pass ..	0.0001
C25 V4 triode to V3 ..	0.0001
C26 V4 triode to V3 ..	0.0001
C27 AF coupling to V4 triode ..	0.0023
C28 V4 triode CG decoupling ..	0.5
C29 Coupling to V4 AVC diode ..	0.000075
C30 V4 triode anode decoupling ..	1.0
C31 V4 cathode by-pass ..	50.0
C32 IF by-pass ..	0.001
C33 V4 triode to V5 AVC coupling ..	0.1
C34 Part of variable tone control ..	0.001
C35 V5 cathode by-pass ..	10.0
C36 Fixed tone corrector ..	0.0035
C37 V5 smoothing condensers ..	10.0
C38	5.0
C39 Aerial circuit MW trimmer ..	—
C40 Aerial circuit LW trimmer ..	—
C41 Aerial circ. manual tuning ..	—
C42 Aerial circuit LW auto tuning trimmers ..	—
C43	—
C44	—
C45 Aerial circuit MW auto tuning trimmers ..	—
C46	—
C47	—
C48	—
C49	—
C50	—
C51 Osc. circ. manual tuning ..	—
C52 Osc. circuit LW trimmer ..	—
C53 1st IF trans. pri. tuning ..	—
C54 1st IF trans. sec. tuning ..	—
C55 2nd IF trans. pri. tuning ..	—
C56 2nd IF trans. discriminator sec. tuning ..	—

* Electrolytic. † Variable. ‡ Pre-set.
§ Two 0.000075 µF in parallel.

OTHER COMPONENTS	Approx. Values (ohms)
L1 Aerial LW image rejector ..	18.0
L2 coils ..	10.0
L3 Aerial SW coupling coil ..	5.5

OTHER COMPONENTS (Continued)	Approx. Values (ohms)
L4 Aerial MW coupling coil ..	0.6
L5 Aerial LW coupling coil ..	4.0
L6 Aerial SW tuning coil ..	4.0
L7 Aerial MW tuning coil ..	2.0
L8 Aerial LW tuning coil ..	9.5
L9 Oscillator circuit LW auto tuning coils ..	10.5
L10	10.5
L11	6.5
L12	6.5
L13 Oscillator circuit MW auto tuning coils ..	2.5
L14	6.5
L15	2.3
L16	2.3
L17 Osc. circuit SW tuning coil ..	0.1
L18 Osc. manual MW coil, total ..	4.5
L19 Osc. manual LW coil, total ..	11.0
L20 Oscillator SW reaction ..	0.3
L21 1st IF trans. Pri. ..	6.5
L22	6.5
L23	5.0
L24 2nd IF trans. Sec. ..	10.5
L25 Discriminator sec. ..	4.0
L26 Speaker speech coil ..	3.0
L27 Hum neutralising coil ..	0.5
L28 Speaker field coil ..	1,600.0
L29 AFC control Pri. ..	430.0
L30 trans. Sec., total ..	1.75
L31 Output trans. Pri. ..	280.0
L32	0.6
L33 Pri., total ..	30.0
L34 Rect. heat. sec. ..	0.1
L35 HT sec., total ..	630.0
L36	—
L37 Aerial circuit waveband switches (manual tuning) ..	—
L38	—
L39	—
L40	—
L41	—
L42	—
L43	—
L44	—
L45 Aerial circuit auto tuning selector switches ..	—
L46	—
L47	—
L48	—
L49	—
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L99	—
L100	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 226 V, using the 224-255 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the MW 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 X65 ..	250	1.2	90	3.1
V2 6X4 ..	250	3.5	—	—
V3 6X4 ..	120	0.8	—	—
V4 6X4 ..	236	35.0	250	5.2
V5 6X4 ..	330†	—	—	—
V6 U90 ..	25	2.5	—	—
T.T. Y63 ..	246	1.3	—	—

† Each anode, AC.

If, as in our case, V2 should become unstable when its currents are being measured, it can be stabilised by connecting a non-inductive condenser (about 0.1 µF) between its top-cap and chassis.

GENERAL NOTES

Switches.—All the switches, except S23, are associated with the press-button unit. S12a, b, x to S22a are of the normal press-button type, those with a, b, or c suffixes closing when their button is pressed, and those with x, y or z suffixes opening when their button is pressed.

All these switches are indicated in the diagrams of each side of the press-button unit in cols. 5 and 6. S24 is the speaker muting switch (shown in the lower of the two diagrams) which is normally open, but closes whilst any one of the press-buttons is being operated.

S25x is the QMB mains switch operated by the press-button numbered 1 ("Off"). It opens when the button is pressed, and switches the set off. Operation of any other button causes this switch to close, and switch the set on.

S23 is normally open, but closes when the press-button escutcheon moulding is removed for station setting and alignment, thus eliminating the AFC action. S23 is actually in parallel with S12c, S22c and S26, which eliminates the AFC action when any of the manual waveband buttons are depressed.

Coils.—L1, L2, L3, L6, L4, L7 and L5, L8 are in four units beneath the chassis, to the right of our under-chassis view. L9-L18 are the eight permalloy-tuned oscillator auto coils, in a row above the press-button unit. L17, L20, L18 and L19, which are the oscillator manual coils, are in the same row, at the right-hand end in the under-chassis view. L9-L16 and L18, L19 all have adjustable iron cores.

The IF transformers L21, L22 and L23-L25 are in two screened units on the chassis deck, with their associated trimmers, and certain other components.

The transformers T1-T3 are all on the chassis deck.

Scale Lamps.—These are two Osram MES types, rated at 6.5 V, 0.3 A. They are tubular bulbs.

CIRCUIT ALIGNMENT

IF and AF Stages.—Press the Droitwich button, turn tone control fully anti-clockwise, and short-circuit C17. Connect signal generator to control grid (top cap) of V2 and chassis. Connect a DC milliammeter in series with the earth return of the AF unit (V1 primary, yellow lead).

Screw C56 fully in. Feed in a 465 KC/S signal, and adjust C55 for maximum output. Note the exact reading of the DC milliammeter, then insert a piece of paper between the contacts of S23, and adjust C56 for exactly the same milliammeter reading as before. Remove paper from S23, and re-adjust C55 for maximum output.

Repeat these adjustments, and finally remove paper from S23 and connect signal generator to control grid (top cap) of V1 and chassis. Adjust C53 and C54 for maximum output.

To check AFC action, connect signal generator to A and E sockets, feed in a 1,293 m (232 KC/S) signal, adjust attenuator to 1 mV input and press Luxembourg button. Check up the pre-set trimmers for this button, then open S23 with a piece of paper. De-tune signal generator, then slowly tune towards 1,293 m. Note the point at which the signal is pulled in; the frequencies should be not more than 226 KC/S or less than 238 KC/S (that is, plus or minus 6 KC/S from the nominal 232 KC/S). Repeat the test on 274 m (button 8).

To check whether C56 is correctly set, first see that the press-button trimmers are correct for a given station (S23 closed), then open S23. This should have no effect on the tuning indicator.

RF and Oscillator Stages.—Turn gang to maximum and see that the pointer registers accurately on the small mark below the LW calibration line at the bottom right-hand corner of the scale. If adjustment is necessary, slacken the two grub screws securing the drive disc to the condenser spindle. Connect signal generator to A and E sockets via a suitable dummy aerial, set tone control fully anti-clockwise, and volume control to maximum.

SW.—Switch set to SW, feed in a 50 m (600 KC/S) signal, tune to 50 m on scale, and adjust loop of wire inside L17 for maximum output. Feed in a 30 m (10 MC/S) signal, tune to 30 m on scale, and adjust loop of wire inside L6 for maximum output. Repeat these adjustments.

MW.—Switch set to MW, and tune to 225 m on scale. Feed in a 225 m (1,333 KC/S) signal, and adjust C51, then C52, for maximum output. Tune to 530 m on scale, feed in a 530 m (56 KC/S) signal, and adjust the cores of L18 and L7 for maximum output. Unless these coils have been changed, little adjustment should be necessary. Repeat the MW adjustments.

LW.—Switch set to LW, tune to 850 m on scale, and feed in an 850 m (352.9 KC/S) signal. Adjust C52, then C40, for maximum output. Tune to 1,900 m on scale, feed in a 1,900 m (157.9 KC/S) signal, and adjust cores of L19 and L8 for maximum output if necessary. Repeat the LW adjustments.

Press-buttons.—Adjustments to the press-button trimmers should always be made after IF alignment and after any adjustments to the MW and LW aerial coils. Final press-button adjustments must be made on the mains on which the set is to work.

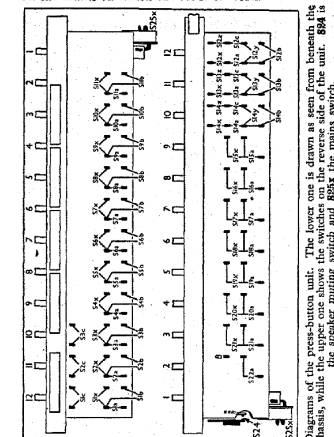


Diagram of the press-button unit. This lower case is shown as seen from beneath the chassis, while the upper case shows the switches on the reverse side of the unit. S24 is the speaker muting switch and S25x the mains switch.