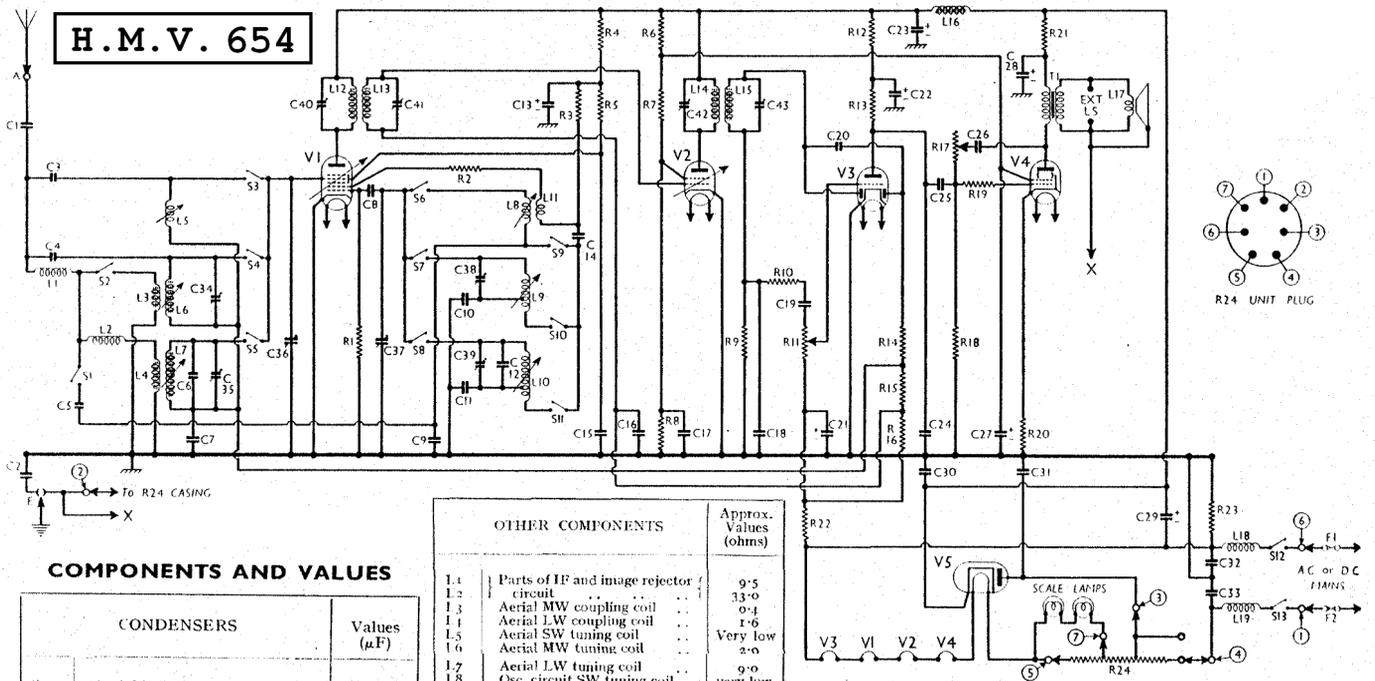


H.M.V. 654



COMPONENTS AND VALUES

CONDENSERS		Values (μF)
C1	Aerial isolating condenser	0.0001
C2	Earth isolating condenser	0.01
C3	Aerial SW coupling	0.000015
C4	Image rejector condensers	0.0000023
C5		0.00005
C6	Aerial LW fixed trimmer	0.00005
C7	V1 tetrode CG decoupling	0.05
C8	V1 osc. CG condenser	0.0001
C9	Osc. circuit SW tracker	0.005
C10	Osc. circuit MW tracker	0.00055
C11	Osc. circuit LW tracker	0.0003
C12	Osc. circ. LW fixed trimmer	0.000175
C13*	V1 osc. anode and SG decoupling	4.0
C14	V1 osc. anode coupling	0.005
C15	V1 SG RF by-pass	0.05
C16	V2 CG decoupling	0.05
C17	V2 SG RF by-pass	0.05
C18	IF by-pass	0.0001
C19	AF coupling to V3 triode	0.001
C20	Coupling to V3 AVC diode	0.000075
C21*	V3 triode CG decoupling	50.0
C22*	V3 triode anode decoupling	8.0
C23*	Part of HT smoothing	0.001
C24	IF by-pass	0.00035
C25	V3 triode to V4 AF coupling	0.023
C26	Part of variable tone control	0.0005
C27*	V4 SG decoupling	4.0
C28*	V4 anode decoupling	32.0
C29*	Part HT smoothing	16.0
C30	V5 cathode RF by-pass	0.05
C31	V5 anode RF by-pass	0.05
C32	Mains RF by-pass condensers	0.01
C33		0.01
C34†	Aerial circuit MW trimmer	—
C35†	Aerial circuit LW trimmer	—
C36†	Aerial circuit tuning	—
C37†	Oscillator circuit tuning	—
C38†	Osc. circuit MW trimmer	—
C39†	Osc. circuit LW trimmer	—
C40†	1st IF trans. pri. tuning	—
C41†	1st IF trans. sec. tuning	—
C42†	2nd IF trans. pri. tuning	—
C43†	2nd IF trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

RESISTANCES		Values (ohms)
R1	V1 osc. CG resistance	100,000
R2	V1 osc. anode stabiliser	150
R3	V1 oscillator anode and SG HT feed resistances	10,000
R4		3,500
R5		75,000
R6	V2 and V4 SG's HT feed potential divider resistances	5,000
R7		5,000
R8		15,000
R9	V3 signal diode load	500,000
R10	IF stopper	230,000
R11	Manual volume control	2,000,000
R12	V3 triode anode decoupling	35,000
R13	V3 triode anode load	75,000
R14		1,000,000
R15	V3 AVC diode load resistances	500,000
R16		2,300,000
R17	Variable tone control	2,000,000
R18	V4 CG resistance	350,000
R19	V4 grid stopper	50,000
R20	V4 GB resistance	100
R21	V4 anode HT feed	1,000
R22	V3 CG decoupling	100,000
R23	V1, V2 fixed GB; V3 triode GB; AVC delay resistance	23
R24	Heater circuit ballast resistance, total	496*

* 64 Ω + 370 Ω + 62 Ω from 5 V heater.

L12, L13 and L14, L15 are the IF transformers, in two screened units on the chassis deck, with their trimmers.

L16 is the HT smoothing choke, on the chassis deck, while L18, L19 are the mains filter chokes, beneath the chassis.

Scale Lamps.—These are two Bulgin MES types, rated at 8 V, 0.15 A, and fitted with frosted bulbs.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Parts of IF and image rejector circuit	9.5
L2		33.0
L3	Aerial MW coupling coil	0.4
L4	Aerial LW coupling coil	1.6
L5	Aerial SW tuning coil	Very low
L6	Aerial MW tuning coil	2.0
L7	Aerial LW tuning coil	9.0
L8	Osc. circuit SW tuning coil	very low
L9	Osc. circuit MW coil, total	2.8
L10	Osc. circuit LW coil, total	3.6
L11	Oscillator SW reaction	1.2
L12	1st IF trans. (Pri. Sec.)	4.0
L13		4.0
L14	2nd IF trans. (Pri. Sec.)	4.0
L15		4.0
L16	HT smoothing choke	550.0
L17	Speaker speech coil	3.0
L18	Mains filter chokes	3.0
L19		1.6.0
T1	Output trans. (Pri. Sec.)	0.7
S1-S11	Waveband switches	—
S2, S3	Mains switches, ganged R11	—
F1, F2	Mains circuit fuses	—

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 X63	{ 166 118	{ 2.2 2.4	60	1.3
V2 KTW63	166	6.1	75	1.5
V3 DH63	98	0.4	—	—
V4 KT32	118	51.0	108	5.0
V5 U31†	—	—	—	—

† Cathode to chassis 182 V DC.

Valve voltages and currents given in the table above are those measured in our receiver when it was operating on AC mains of 225 V, using the 223-250 V tapping on the mains resistance. 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.

If, as in our case, V1 should become unstable when its anode current is being measured, it can be stabilised by connecting a non-inductive condenser of about 0.1 μF from control grid (top cap) to chassis.

GENERAL NOTES

Switches.—S1-S11 are the waveband switches, in a single rotary unit beneath the chassis, indicated in our under-chassis view, and shown in detail in the diagram in col. 3. The table (col. 2) gives the switch positions for the three control settings, starting from fully anti-clockwise. A dash indicates open, and C closed.

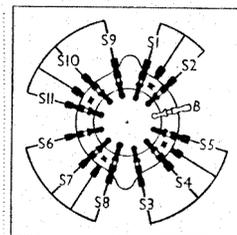
S12 and S13 are the QMB mains switches, ganged with the volume control R11.

Coils.—L1, L2; L3, L6; L4, L7; L5; L8, L11; L9; and L10 are in seven unshielded units beneath the chassis. L3, L6 and L4, L7 are iron-cored, the cores of L6 and L7 being adjustable. The inductances of L5 and L8 are adjustable by wire loops inside the coil formers. L9 and L10 are also adjustable in inductance by metal "spade" trimmers, whose positions are varied by means of screw adjusters, indicated in our under-chassis view.

TABLE AND DIAGRAM

Switch	SW	MW	LW
S1	—	—	C
S2	—	C	—
S3	C	—	—
S4	—	C	—
S5	—	—	C
S6	C	—	—
S7	—	C	—
S8	—	—	C
S9	C	—	—
S10	—	C	—
S11	—	—	C

Switch diagram, drawn as seen from the underside of the chassis.



RF and Oscillator Stages.—The scale must be positioned so that the pointer spindle hole is exactly concentric with the spindle, and the scale is square in its frame. With gang at maximum, pointer must coincide exactly with the small black spot at the top right-hand corner of the scale.

Turn volume control to maximum, and tone control fully anti-clockwise, and connect signal generator to A and E sockets.

MW.—Switch set to MW, and tune to 225 m on scale (black spot). Feed in a 225 m (1,333 KC/S) signal and adjust C38 for maximum output. Tune to 530 m on scale (black spot) and feed in a 530 m (566 KC/S) signal. Adjust inductance ("spade" trimmer) of L9 (screw on paxolin coil mounting strip) for maximum output. Repeat these operations until no further improvement results. Return to 225 m and adjust C34 for maximum output.

Return to 530 m, and rotate upper core of L6 for maximum output. This is reached through a hole in the chassis deck by means of a special tool (EMI Service, Part No. 20730A) which consists of a pointed rod of insulating material with a rubber bush. It should be inserted through the hole in the chassis, the point located in the hole in the paxolin coil mounting strip, and the rubber bush bearing on the core. The core may now be rotated by turning the tool.

Repeat the adjustments of C34 and L6. **LW.**—Switch set to LW, tune to 1,100 m on scale, and feed in a 1,100 m (272.7 KC/S) signal. Adjust C39 for maximum output. Tune to 1,900 m on scale, feed in a 1,900 m (158 KC/S) signal, and adjust inductance ("spade" trimmer) of L10 (screw on paxolin coil mounting strip) for maximum output. Repeat these adjustments.