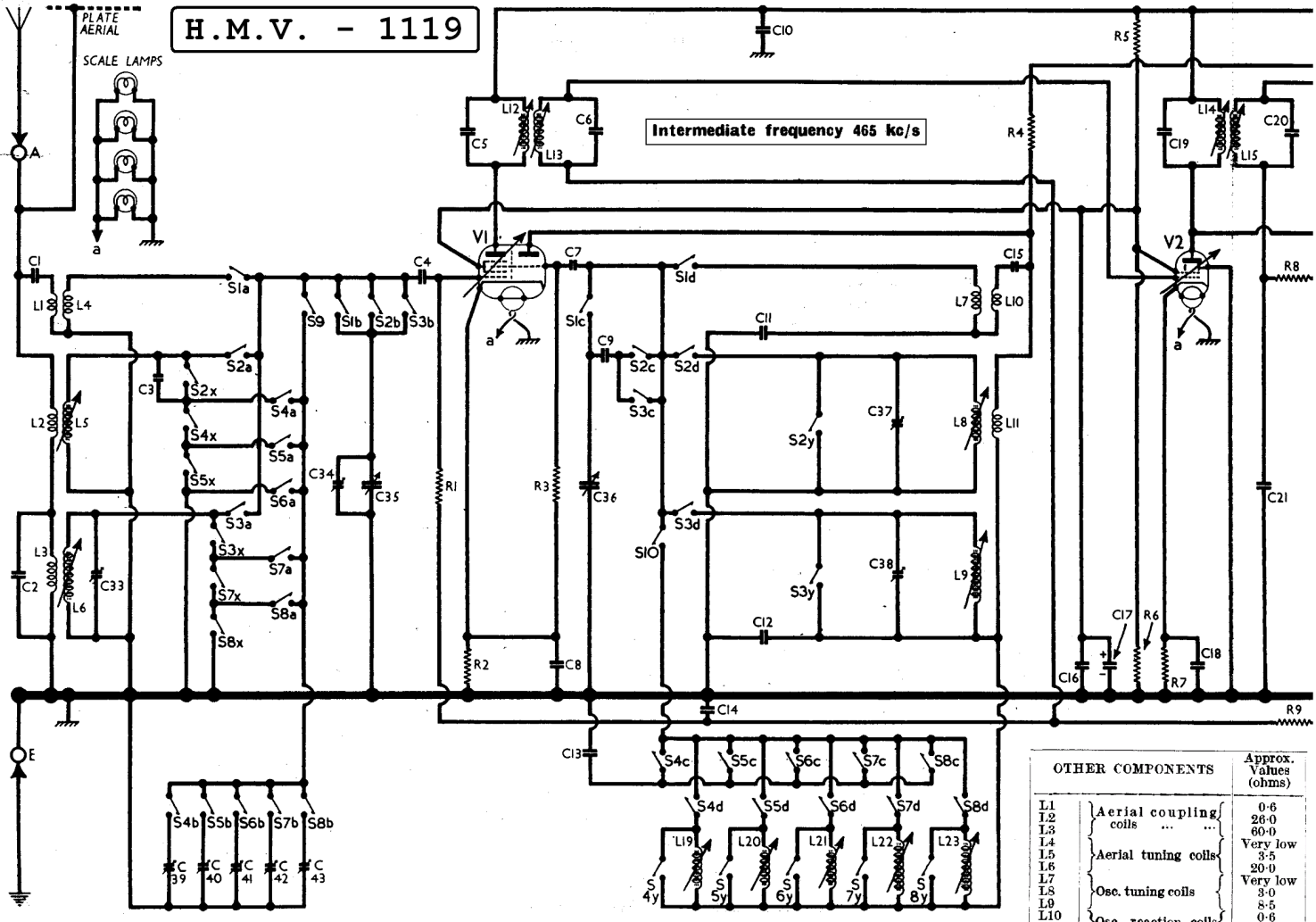
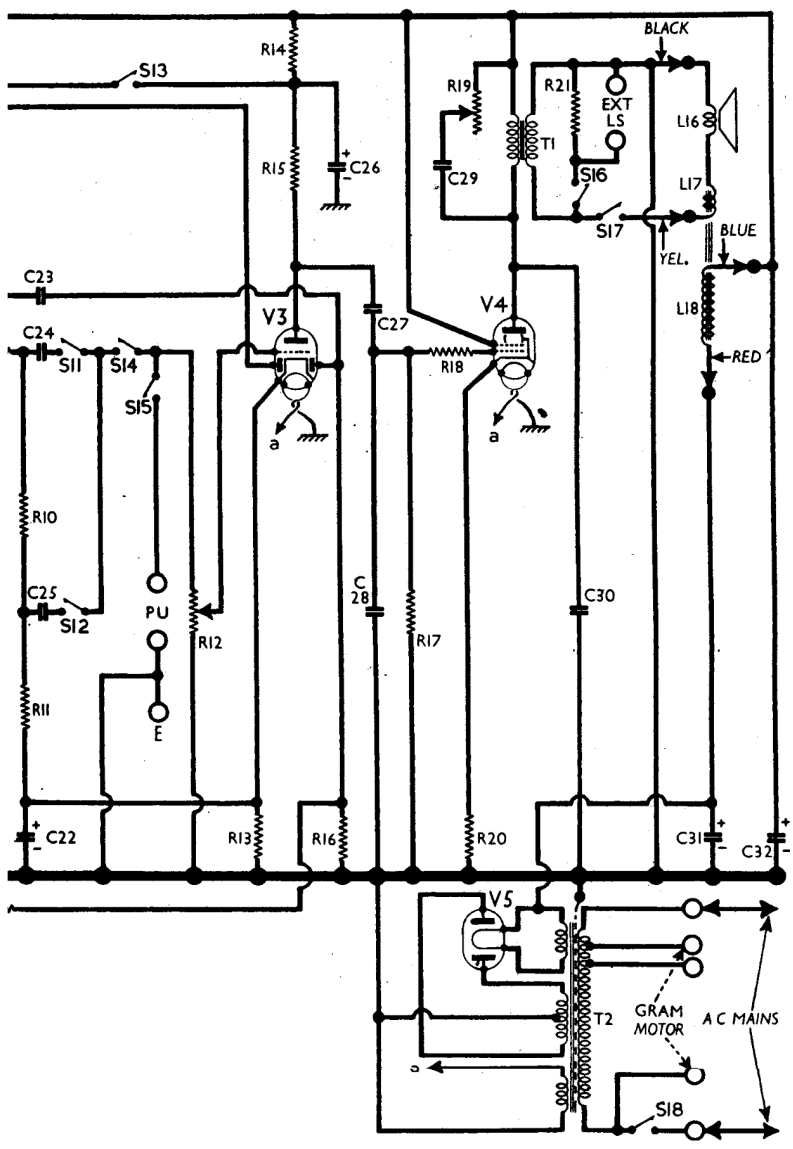
H.M.V. - 1119





OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coils	0·6
L2		26·0
L3		60·0
L4	Aerial tuning coils	Very low
L5		3·5
L6		20·0
L7	Osc. tuning coils	Very low
L8		3·0
L9		8·5
L10	Osc. reaction coils	0·6
L11		1·5
L12	1st I.F. trans. Pri.	5·0
L13	1st I.F. trans. Sec.	5·0
L14	2nd I.F. trans. Pri.	5·0
L15	2nd I.F. trans. Sec.	5·0
L16	Speech coil	4·0
L17	Hum neut. coil	0·2
L18	Field coil	950·0
L19		2·0
L20	Osc. circuit press-button tuning coils	4·5
L21		4·5
L22		10·4
L23		10·4
T1	Output trans. Pri.	390·0
	Output trans. Sec.	0·1
T2	Mains trans. Pri., total	25·0
	Mains trans. Heat. sec.,	Very low
	Mains trans. Rect. heat. sec.,	0.15
	Mains trans. H.T.sec.,total	315.0
S1a, b to S3a, b, x	Aerial circuit wave-band switches	—
S4a, b to S8a, b, x	Aerial press-button tuning switches	—
S1c, d to S3c, d, y	Osc. circuit wave-band switches	—
S4c, d to S 8c, d, y	Osc. press-button tuning switches	—
S9	Press-button tuning master switches	—
S10		—
S11, S12	"Top boost" switches	—
S13-S15	Radio/gram switches	—
S16, S17	Speaker switches	—
S18	Mains SW, g'd R12	—

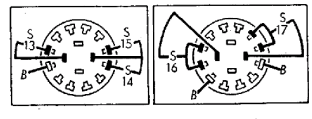
CAPACITORS		Values (μF)
C1	Aerial S.W. series	0·00005
C2	Aerial L.W. shunt	0·0005
C3	M.W. fixed trim.	0·0000023
C4	V1 hex. C.G.	0·0001
C5	1st I.F. transformer tuning	0·0002
C6		0·0002
C7	V1 osc. C.G.	0·000075
C8	V1 cath. by-pass	0·05
C9	Osc. M.W. tracker	0·0005
C10	H.T. R.F. by-pass	0·05
C11	Osc. S.W. track	0·005
C12	Osc. L.W. track	0·00035
C13	Osc. auto-tuning	0·00023
C14	A.V.C. decoupling	0·05
C15	Osc. S.W. anode coup.	0·00005
C16	V1, V2 S.G.'s H.T. decoupling	0·05
C17*		4·0
C18	V2 cath. by-pass	0·05
C19	2nd I.F. trans-former tuning	0·0002
C20		0·0002
C21	I.F. by-pass	0·0001
C22*	V3 cath. by-pass	50·0
C23	A.V.C. coupling	0·0001
C24	A.F. coupling ca-pacitors	0·00023
C25		0·05
C26*	H.T. decoupling	4·0
C27	A.F. coupling	0·05
C28	I.F. by-pass	0·00023
C29	Part tone control	0·05
C30	Tone corrector	0·002
C31*	H.T. smoothing ca-pacitors	16·0
C32*		8·0
C33‡	Aerial L.W. trim.	0·000135
C34‡	Aerial M.W. trim.	—
C35†	Aerial tuning	—
C36†	Oscillator tuning	—
C37‡	Osc. M.W. trim.	0·000045
C38‡	Osc. L.W. trim.	0·000135
C39‡	Aerial circuit press-button tuning trimmers	0·000135
C40‡		0·00045
C41‡		0·00045
C42‡		0·00045
C43‡		0·00045

RESISTORS		Values (ohms)
R1	V1 hex. C.G.	470,000
R2	V1 fixed G.B.	220
R3	V1 osc. C.G.	47,000
R4	Osc. H.T. feed	22,000
R5	V1, V2 S.G.'s H.T. potential divider	15,000
R6		15,000
R7	V2 fixed G.B.	330
R8	I.F. stopper	150,000
R9	A.V.C. decoupling	680,000
R10	Signal diode load resistors	150,000
R11		330,000
R12	Volume control	2,000,000
R13	V3 G.B., A.V.C. delay	2,200
R14	H.T. decoupling	10,000
R15	V3 triode load	150,000
R16	A.V.C. diode load	680,000
R17	V4 C.G. resistor	330,000
R18	V4 grid stopper	22,000
R19	Tone control	50,000
R20	V4 G.B. resistor	100
R21	Dummy L.S. load	15

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 X61M	244	5·8	92	1·3
	Oscillator 65	6·0		
V2 KTW61M	244	8·2	92	2·7
V3 DL63M	68	0·5	—	—
V4 KT61	230	35·2	244	5·9
V5 U50	319§	—	—	—

§ Each anode, A.C.



Diagrams of the two small switch units, drawn as seen from the front of an inverted chassis. Left, the radio/gram switch unit ; right, the speaker switch unit.

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Drive Wire Replacement.—It is important that only the correct type of wire be used for the tuning drive wire replacement. This can be obtained from E.M.I. Sales and Service, Ltd., Sheraton Works, Hayes, Middlesex. The overall length is about 88 ins.

Make a $\frac{1}{4}$ in. diameter loop at one end of the wire (which will solder quite easily), pass it through the groove slot in the drum and hook it on to the anchor pin as shown in the sketch (col. 6), where the gang is at maximum.

Take the wire $\frac{3}{4}$ of a turn clockwise round the drum, then follow the course shown in the sketch, finishing off with another loop like the first, twisting the wire and soldering. The loop is then passed through the second groove slot and hooked on to the spring, which is in turn hooked to the anchor peg. The length of the wire should be such that the coils of the spring open slightly.

Chassis Divergencies.—In some cases **V3** may be a DH63 instead of a DL63. **R15** will then become 100,000Ω, and a 68,000 resistor will be inserted between the anode of **V3** and the junction of **R15** with **C27.**

C3 may be 5pF, or two 5pF capacitors in series, or it may be omitted altogether. The **S9, S10** switch unit on the press-button assembly is omitted in some early versions. **C31,** which we show in the same unit as **C17, C26** and **C32,** may be in a separate unit beneath the chassis.

RADIOGRAM MODIFICATIONS

In the 1605 radiogram, a slightly modified 1119 chassis is used. The **S13, S14, S15** switch unit is removed from the chassis and mounted on the motor board, and the **S16, S17** unit is likewise removed and mounted at the rear of the cabinet with the ext. L.S. sockets and **R21.**

The pick-up (No. 13, D.C. resistance 1.3Ω) is connected via a matching unit mounted as a separate assembly, whose circuit is shown in the diagram in col. 4. A new automatic record-changer unit (type 35000N) is fitted.

CIRCUIT ALIGNMENT

I.F. Stages.—Connect signal generator, via an 0.05μF capacitor in the "live" lead, to control grid (top cap) of **V2** (leaving existing top cap connector in position) and the **E** socket. Press the s.w. button, turn the gang to maximum capacitance and the volume control to maximum, feed in a 465 kc/s (645.16 m) signal, and adjust the cores of **L15** and **L14** (location references H5, B2) for maximum output, damping **L14** with a 33,000Ω resistor while adjusting **L15,** and vice versa.

Transfer "live" signal generator lead to control grid (top cap) of **V1,** leaving existing connector in position, and adjust the cores of **L13** (J5) and **L12** (A2) for maximum output, damping the associated winding in each case, as previously explained.

R.F. and Oscillator Stages.—Since the calibrated glass scales are mounted on the cabinet, and the alignment adjustments are carried out with the chassis on the bench, a substitute scale is fixed on the front chassis member. This is divided into inches and sixteenths of an inch, and linear measurements on this scale correspond to frequencies given in the alignment instructions, which are read against the left-hand edge of a red tab attached to the horizontal section of the drive wire.

With the gang at maximum capacitance, the left-hand edge of the red tab should coincide with the $5\frac{1}{2}$in mark on the scale. If any adjustment is necessary, slacken the two screws securing the scale and slide it horizontally to correct the error. Then tighten the fixing screws.

Connect "live" signal generator lead to **A** socket, via a suitable dummy aerial.

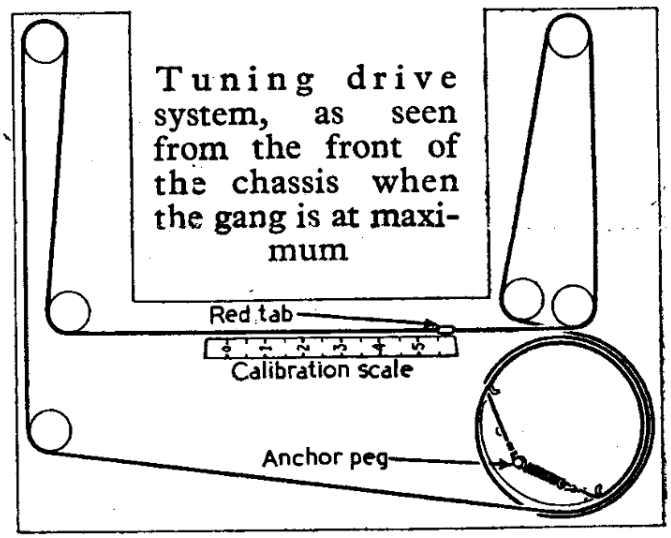
M.W.—Press the M.W. button, set tab to 25/32 ins., feed in a 210m (1,427 kc/s) signal, and adjust **C37** (M8) and **C34** (J4) for maximum output. Set tab to $4\frac{1}{2}$ ins., feed in a 510 m (588 kc/s) signal, and adjust the cores of **L8** (M8) and **L5** (N8) for maximum output. Repeat these adjustments.

L.W.—Press the L.W. button, set tab to $1\frac{3}{8}$ ins., feed in a 1,000 m (300 kc/s) signal, and adjust **C38** (N8) and **C33** (M8) for maximum output. Set tab to $4\frac{13}{32}$ ins., feed in a 1,850 m (162 kc/s) signal, and adjust the cores of **L9** (M8) and **L6** (M8) for maximum output. Repeat these adjustments.

S.W.—Press the S.W. button and use a S.W. dummy aerial. Set tab to $5\frac{1}{8}$ ins, feed in a 50 m (6.0 Mc/s) signal, and adjust the internal loops of **L7** (N8) and **L4** (N8) for maximum output.

Finally, replace the chassis in the cabinet and turn the gang to maximum capacitance. The two cursors should be positioned so that they coincide with the horizontal lines at the tops of the scales and then clamped to the drive wires.

Check the calibration on known stations at approximately mid-scale positions, and adjust the cursors as necessary. On M.W. and L.W. it may be necessary to set the cursor to give the best compromise on both wavebands.



Tuning drive system, as seen from the front of the chassis when the gang is at maximum

Press-button Setting

The press-button circuits should be reset after alignment. The process is simple, but it should be carried out at the customer's address, on actual stations, after allowing a warming-up period of 15 minutes. The ranges are shown on a label just above the plungers.

Adjust the upper (oscillator coil) trimmer first to the required station, then the lower (aerial capacitor) trimmer for maximum volume.