"TRADER" SERVICE SHEET

H.M.V. 1119

Covering also 1114 and Radiogram 1605



The appearance of the H.M.V. 1119 A.C. superhet. The 1114 is of somewhat similar appearance, but the cabinet is a plastic moulding.

PRESS-BUTTON tuning is provided for five stations in the H.M.V.1119, a 4-valve (plus rectifier) 3-band superhet, designed to operate from A.C. mains of 195-255V, 40-60 c/s. Switching is provided for a gramophone pick-up and external speakers, and they may be left permanently connected.

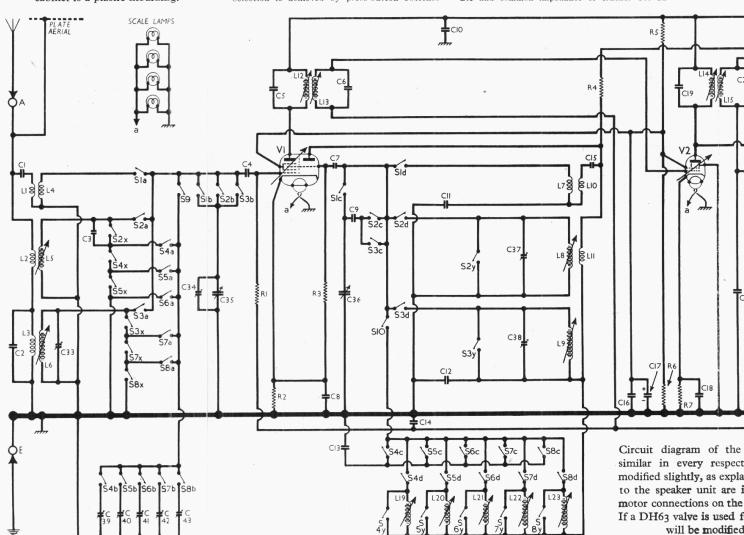
The 1114 chassis is like that in the 1119, but the cabinet is made of plastic instead of wood. The 1605 autoradiogram employs a modified 1119 chassis, the differences being explained overleaf. Release dates and original prices: 1119, April, 1947, £26 5s, increased October, 1947, to £28 7s; 1114, October, 1946, £18 18s, increased February, 1947, to £24 3s; 1605, February, 1947, £78 15s. Purchase tax is not included in these prices.

GIRCUIT DESCRIPTION

Aerial input is via coupling coils L1 (S.W.), L2 (M.W.) and L3 (L.W.) to L4 (S.W.), L5 (M.W.) and L6 (L.W.), tuned manually by C35, via S1a, b (S.W.), S2a, b (M.W.) and S3a, b (L.W.). For automatic tuning, C35 is replaced by pre-set trimmer type capacitors C39, C49, C41 (M.W.) and C42, C43 (L.W.). Selection is achieved by press-button switches

\$4a, b to \$8a, b, x. These switches are coded with suffix letters to indicate their functions, and are arranged in groups. Two groups are controlled by each press-button, one belonging to the aerial circuit and one to the oscillator. All the switches in the two groups belonging to a given press-button bear the same number, the individual switches in each group being identified by the suffix letter. If the suffix is a, b, c or d, the switch closes when its button is pressed; if the suffix is x or y, the switch opens. When a button is released (by pressing another button), its a, b, c, d switches open, and its x and y switches close. When the manual tuning system is in operation the automatic tuning switches are disconnected, via master switches \$9, \$10.

First valve (V1, Marconi metallised X61M) is a triode-hexode operating as frequency changer with internal coupling. For manual operation, triode oscillator grid coils L7 (S.W.). L8 (M.W.). and L9 (L.W.) are tuned by C36 via \$1c, d to \$3c, d. Parallel trimming by C37 (M.W.) and C38 (L.W.); series tracking by C11 (S.W.), C9 (M.W.), and C9, C12 (L.W.). Mixed reaction coupling from anode, via C15, L10 and common impedance of tracker C11 on



S.W., inductive coupling by L11 on M.W., and capacitative coupling across tracker C12 on L.W.

For automatic tuning, all the foregoing circuits are disconnected and replaced, via \$10, by one of the iron-dust cored pre-set coils L19 to L23, which are tuned by fixed capacitors C12, C13 in series, selection being determined by switches \$4c, d, y to \$8c, d, y, as explained proviously.

previously.
Second valve (V2, Marconi metallized KTW-61M) is a variable-mu R.F. tetrode operating as I.F. amplifier with tuned transformer couplings.

Intermediate frequency 465 kc/s

Intermediate frequency 465 kc/s

Diode second detector is part of double diode triode valve (V3, Marconi metallized DL63). Audio-frequency component in rectified output is developed across load resistors R10, R11 in series, and passed via C25, S12, S14 and the manual volume control R12 to C.G. of triode section, which operates as A.F. amplifier. On S.W. only, S12 opens and S11 closes to connect the bass cut A.F. coupling capacitor C24 and increase the gain. Provision for the connection of a gramophone pick-up across R12, via S15. I.F. filtering by C21, R8 in diode circuit, and C28 in V4 C.G. circuit

Second diode of V3, fed from V2 anode via C23, provides D.C. potentials which are developed across load resistor R16 and fed back via a decoupling circuit as G.B. to F.C. and I.F. valves, giving A.V.C. Delay voltage, together with G.B. for V3 triode section, is obtained from the drop across R13 in V3 cathode lead to chassis.

Resistance-capacitance coupling by R15, C27 R17, via grid stopper R18, between V3 triode and beam tetrode output valve (V4, Marconi

KT61). Fixed tone correction by C30, and variable tone control by R19, C29, in anode circuit. Provision for the connection of a low impedance external speaker across T1 secondary winding. H.T. current is supplied by full-wave rectifying valve (V5, Marconi U50). Smoothing by speaker field L13 and electrolytic capacitors C31, C32. H.T. circuit R.F. filtering by C10.

COMPONENTS AND VALUES

	RESISTORS	Values (ohms)	Loca- tions
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18	V1 hex. C.G V1 fixed G.B V1 osc. C.G Osc. H.T. feed V1, V2 S.G.'s H.T. for the control of th		
R19 R20 R21	Tone control V4 G.B. resistor Dummy L.S. load	50,000 100 15	E4 G6 F6

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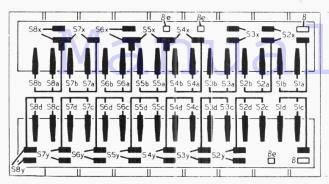
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CAPACITORS		Values (μF)	
C1	Aerial S.W. series	0.00005	14
C2	Aerial L.W. shunt	0.0005	G4
C3	M.W. fixed trim	0.0000023	\mathbf{H}_4
C4	V1 hex. C.G	0.0001	14
C5	\}\frac{1st I.F. transformer \}{tuning \ldots \ldot	0.0002	A2
C6	\int tuning	0.0002	A2
C7	V1 osc. C.G	0.000075	N7
C8	V1 cath. by-pass	0.05	J4
C9	Osc. M.W. tracker	0.0005	M7
C10	H.T. R.F. by-pass	0.05	J_5
C11	Osc. S.W. track	0.005	13
C12	Osc. L.W. track	0.00035	K7
C13	Osc. auto-tuning	0.00023	K7
C14	A.V.C. decoupling	0.05	H_{2}
C15	Osc. S.W. anode		
	coup	0.00005	N7
C16	V1, V2 S.G.'s H.T.	0.05	$_{\rm J5}$
C17*	decoupling	4.0	B_2
C18	V2 cath. by-pass	0.05	J_5
C19	2nd I.F. trans-	0.0002	B_2
C20	former tuning	0.0002	B_2
C21	I.F. by-pass	0.0001	$\mathbf{H}_{\mathbf{i}}$
C22*	V3 cath. by-pass	50.0	Ge
C23	A.V.C. coupling	0.0001	\mathbf{H}^{ϵ}
C24	A.F. coupling ca-∫	0.00023	\mathbf{H}
C25	} pacitors \	0.05	H
C26*	H.T. decoupling	4.0	\mathbf{B}_{2}
C27	A.F. coupling I.F. by-pass	0.05	G
C28		0.00023	H
C29	Part tone control	0.05	E4
C30	Tone corrector	0.002	F
C31*	\dagger H.T. smoothing ca- \{	16.0	B
C32*	} pacitors {	8.0	B2
C33‡	Aerial L.W. trim	0.000135	GS
C34‡	Aerial M.W. trim		J4
C35†	Aerial tuning		J4
C36†	Oscillator tuning		J3
C37‡	Osc. M.W. trim	0.000045	N
C38‡	Osc. L.W. trim	0.000135	N
C39‡	1	0.000135	GS
C40‡	Aerial circuit press-	0.00045	GS
C41‡	button tuning	0.00045	F3
C42‡	trimmers	0.00045	F3
C43‡		0.00045	F3

* Electrolytic. † Variable. ‡ Pre-set.

ОТН	HER COMPONENTS	Approx. Values (ohms)	Loca tion
L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15 L16 L17 L18 L19 L10 L11 L12 L20 L21 L21 L21 L21 L21 L21 L31 L41 L41 L41 L41 L41 L41 L41 L4	Aerial coupling coils	0·6 26·0 60·0 Very low 3·5 20·0 8·5 0·6 1·5 5·0 5·0 5·0 4·0 0·2 950·0 2·0 4·5 4·5 10·4 10·4 390·0 Very low	13 H3 H3 H3 H3 H3 H7 M7 M7 M7 M7 A2 A2 B2 B2 E2 C1 C1 C1 C1 C1 C1 C2 D2
S1a, b	H.T.sec.,total	315.0	D_2^2
S3a, b,	band switches		_
S4a, b to S8a, b, X S1c, d	Aerial press-button tuning switches		_
to S3c, d,	Osc. circuit wave- band switches	T	
S4c, d to S 8c, d,	Osc. press - button tuning switches	L -	_
	Continued overleaf		

S13	RI4	RIP R21 O		
C20	RIS C26	TC29 SI6	BLUE	MET
C23 R8 C24 SII SI4 SI5	V3 C27	V4	YEL. HARMAN	V2 TC MET
C25 PU R12	28 <u>1</u>	C30		TC MET
C18 C22	RI3W RI6W	₩R20 V5	G31 - G32 -	VI P
	colours ne gram orimary.	T2 GI	RAM A C MAINS	VS



Diagrams of the two sides of the press-button switch unit. Upper, the side seen in our under-chassis view; lower, the side seen in our view of the tuning assembly at the foot of cols. 5 and 6.

CO	THER COMPONENTS (continued)	Approx. Values (ohms)	Loca- tion
S9	Press-button tuning		G4
$rac{ ext{S10}}{ ext{S11}}$	master switches { "Top boost"	_	M7
S12 S13-	switches	-	H4
S15	$\left. egin{array}{ll} { m Radio/gram} \\ { m switches} & \dots \end{array} \right.$		16
S16, S17	Speaker switches		G6
S18	Mains SW, g'd R12		E3

VALVE ANALYSIS

Valve voltages and currents given in the table below are those quoted by the manufacturers. With the receiver operating on mains of 220V they give the total H.T. current as 72mA. Voltages were measured with a meter having a resistance of 500 ohms-per-volt.

Valve		Anode Current (mA)		
V1 X61M	{ 244 Osci 65	$\left\{ egin{array}{c} 5.8 \\ \text{flator} \\ 6.0 \end{array} \right\}$	92	1.3
V2 KTW61M V3 DL63M	244 68	8·2 0·5	92	2.7
V4 KT61 V5 U50	$\frac{230}{319}$	35.2	244	5.9

§ Each anode, A.C.

DISMANTLING THE SET

Almost unimpeded access to the underside of the chassis may be obtained upon removal of

the bottom cover (three round-head wood

screws).

Removing Chassis.—Remove the two front control knobs (take care not to loose their fixing screws) and the side control knob (pull off); detagh the plate aerial lead (one round-head wood screw and washer), and unclip the four scale lum halders.

wood screw and washer), and uncilp the four scale lamp holders; loosen the clamping screw of each scale cursor, and lift out the associated drive wire; loosen the speaker lead cleat on the sub-baffle, lift out the leads, and remove the four hexa-

30 ED-20 20 12 2 2 D

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

gon-head chassis retaining bolts (with spring and claw washers) from the underside of the

and claw washers) from the underside of the cabinet; the chassis may now be removed from the cabinet to the extent of the speaker leads, which is sufficient for most purposes. To free the chassis entirely, unsolder from the panel on the speaker the four leads joining it to chassis

o chassis.

When replacing, reconnect the speaker leads as follows, numbering the tags on the panel in a clockwise direction when viewed from the

rear: 1, no external connection; 2, blue; 3, yellow, 4, red; 5, black.

Removing Speaker.—Remove the four round-

head bolts (with washers) securing the speaker to the sub-baffle.

When replacing, the connecting panel should be at the top, and if the leads have been unsoldered they should be reconnected as previously described.

Removing Tuning Assembly.-Unsolder the ten leads connecting the assembly (at points indi-cated in our under-chassis picture by the numbers 1-10 in squares), remove the top cap connector from V1 grid lead, and draw the lead back into the chassis through grommet provided;

remove the four self-threading screws securing the tuning assembly and substitute scale to the front chassis member, and lift out the assembly, taking care not to foul the pointer drive wire.

drive wire.

When replacing, the ten leads should be reconnected to the numbered points indicated in our under-chassis picture as follows; 1, metal braided lead from tuning assembly; 2, stiff timed copper lead; 3, short green lead from press-button switch unit; 4, screened aerial lead; 5, yellow plastic covered lead; 6, white; 7, yellow rubber covered lead from C14; 8, lead from C25; 9, screened lead from S14; 10, lead from C24.

The long green lead from C4, R1 on the press-button switch should be threaded back, through the grommet provided, to the chassis deck where V1 top cap connector may be resoldered to it.

resoldered to it.

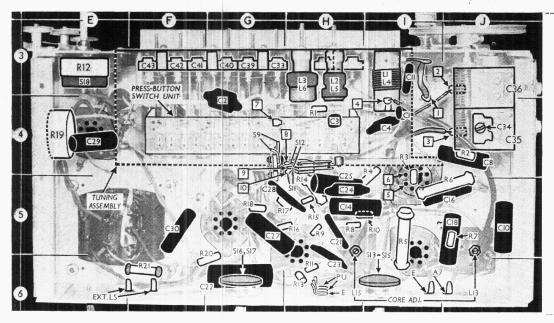
GENERAL NOTES

Switches.—The press-button switches are numbered S1 to S8, with suffix letters a, b, c, d, as explained under "Circuit Description" overleaf. The S1 switches are controlled by the S.W. manual button, the S2 switches by the M.W. manual button, and the S3 group by the L.W. manual button. S4, S5 and S6 groups are controlled by the three M.W. pre-set station buttons, and S7 and S8 by the two L.W. pre-set buttons. Both sides of the press-button switch unit are shown in detail in the diagrams at the head of cols. 1 and 2. Switches.—The press-button switches

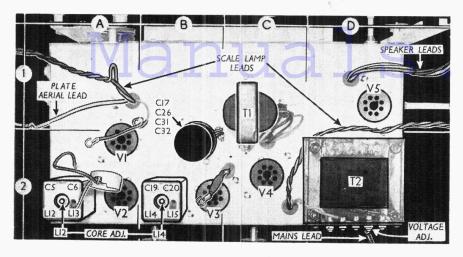
\$9, \$10 and \$11, \$12 are in two external units mounted on the press-button unit and operated by the plungers. S9, S10 open when any manual button is pressed, and close when any auto button is pressed. When the S.W. button is pressed, S12 opens and S11 closes, but otherwise S12 is closed, and S11 open.

\$13-\$15 is the radio/gram switch unit, and \$16, \$17 is a 3-position speaker muting switch unit. Both are indicated in our under-chassis view, mounted on the rear chassis member. They are shown in detail in the diagrams in col. 2, where they are viewed from the front of an inverted chassis.

\$13 and \$14 close when their control is turned to radio (anti-clockwise), or \$15 closes when



Under-chassis view. The pressbutton unit is indicated here, but diagrams at the head of cols. I and 2 above show both sides in detail. The upper side of the tuning unit is shown in the photograph at the foot of cols. 5 and 6. The numbers I to 8 in squares show the interconnecting points between the tuning assembly and the main chassis.



Plan view of the chassis, showing the I.F. transformer primary adjustments, the secondary adjustments being beneath the deck. In some cases C31 may not be in the same container as C17, C26 and C32, but in a separate unit beneath the chassis.

it is turned to gram. \$17 closes to connect the It is turned to gram. \$17 closes to connect the internal speaker (control fully clockwise); \$16 and \$17 close in the next position, when internal and external speakers are connected; and \$16 only closes in the anti-clockwise position, to connect the external speaker, the internal speaker being muted. The dummy load \$21 prevents damage to \$\mathbf{V}\$4 if the external speaker is inadvertently left unconnected.

Tuning Assembly.—All the R.F. and oscillator tuning coils are mounted in a removable assembly with the press-button unit. One side of the assembly is seen in the under-chassis illustration, but the other side is shown in a separate photograph at the foot of cols. 5 and 6

Here the assembly is viewed from the front after removal from the chassis as described

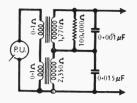


Diagram showing the pick-up matching circuit, using two transformers, in the 1605 ARG.

under "Dismantling the Set," showing all the pre-set adjustments.

Scale Lamps.—There are four of these, with clear tubular bulbs and M.E.S. bases, rated at 7 V, 0.32 A. Ours were marked "Vitality X531."

at 7 V, 0.32 A. Ours were marked "Vitality X531."

External Speaker.—Two sockets are provided on the rear chassis member for a low impedance (about 5 Ω) external speaker. S16, S17 permit the external speaker to remain permanently connected, as explained under "Switches."

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 ½ 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 ⅓ 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 booked 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 open slightly.

Chassis Divergencies.—In some cases V3 may be a DH63 instead of a DL63. R15 will then

become $100,000\Omega$, 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 senarate assembly, whose circuit is shown in

separate assembly, whose circuit is shown in the diagram in col. 4. A new automatic record-changer unit (type 35000N) is fitted.

CIRCUIT ALIGNMENT

1.F. Stages.—Connect signal generator, via an $0.05\mu\text{F}$ 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.

L14 with a 33,0000 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.

D. F. and Oscillator Stages. Since the cali-

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 5½ 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.

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 637 (Ms) and C34 (J4) for maximum output. Set tab to 4½ ins., feed in a 510 m (588 kc/s) signal, and adjust the cores of L8 (Ms) and L5 (Ns) for maximum output. Repeat these adjustments.

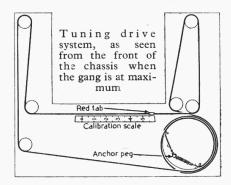
L.W.—Press the L.W. button, set tab to 1½ ins., feed in a 1,000 m (300 kc/s) signal, and adjust C33 (Ns) and C33 (Ms) for maximum output. Set tab to 4½ ins., feed in a 1,850 m (162 kc/s) signal, and adjust the cores of L9 (Ms) and L6 (Ms) for maximum output. Repeat these adjustments.

(MS) and L6 (MS) for maximum output. Repeat these adjustments,

S.W.—Press the S.W. button and use a S.W. dummy aerial. Set tab to 5½ ins, feed in a 50 m (6.0 Mc/s) signal, and adjust the internal loops of L7 (NS) and L4 (NS) 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.

Press-button Setting

The 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 warmingup 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.

volume.

Three-quarter front view of the tuning assembly, showing the upper side which faces the underside of the chassis deck. The pre-set tuning trimmers are on the left, and the manual tuning trimmers on the right.

