Supplement to The Wireless & Electrical Trader, February 7, 1948

"TRADER" SERVICE SHEET

848

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.

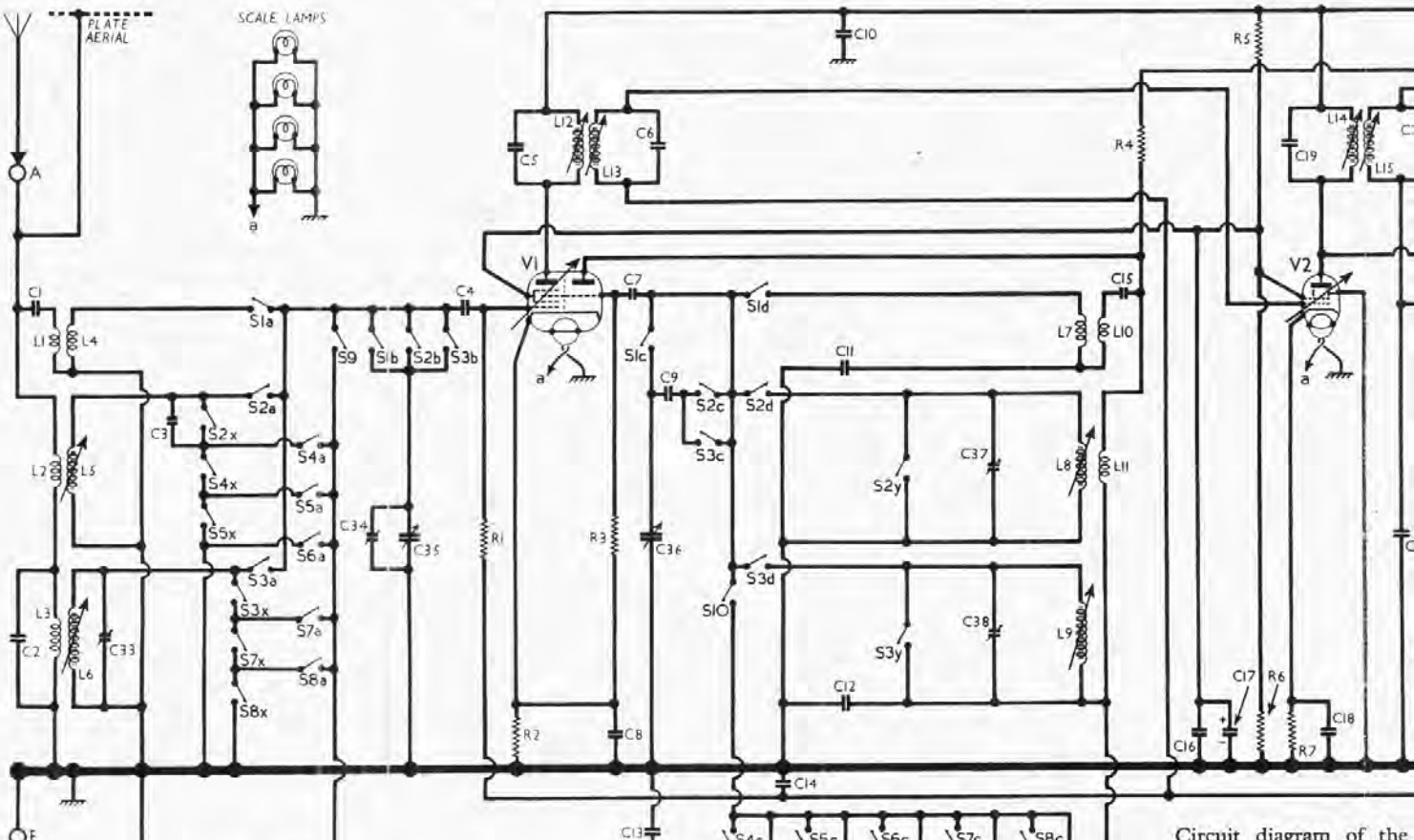
Release dates and original prices: 1119, *April, 1947, £26 5s, increased October, 1947, to £28 7s;* 1114, *October, 1946, £18 18s, increased February, 1947, to £24 3s;* 1605, *February, 1947, £73 10s, increased October, 1947, to £78 15s. Purchase tax is not included in these prices.*

CIRCUIT 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, C40, C41** (M.W.) and **C42, C43** (L.W.). Selection is achieved by press-button switches **S4a, b** to **S8a, 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 **S9, S10.**

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 **S1c, d** to **S3c, 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



Circuit diagram of the
similar in every respect
modified slightly, as expla
to the speaker unit are i
motor connections on the
If a DH63 valve is used f
will be modified

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 **S10**, 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 **S4c, d, y** to **S8c, d, y**, as explained previously.

Second valve **(V2, Marconi metallized KTW61M)** is a variable-mu R.F. tetrode operating as I.F. amplifier with tuned transformer couplings.

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 **L18** and electrolytic capacitors **C31, C32**. H.T. circuit R.F. filtering by **C10**.

COMPONENTS AND VALUES

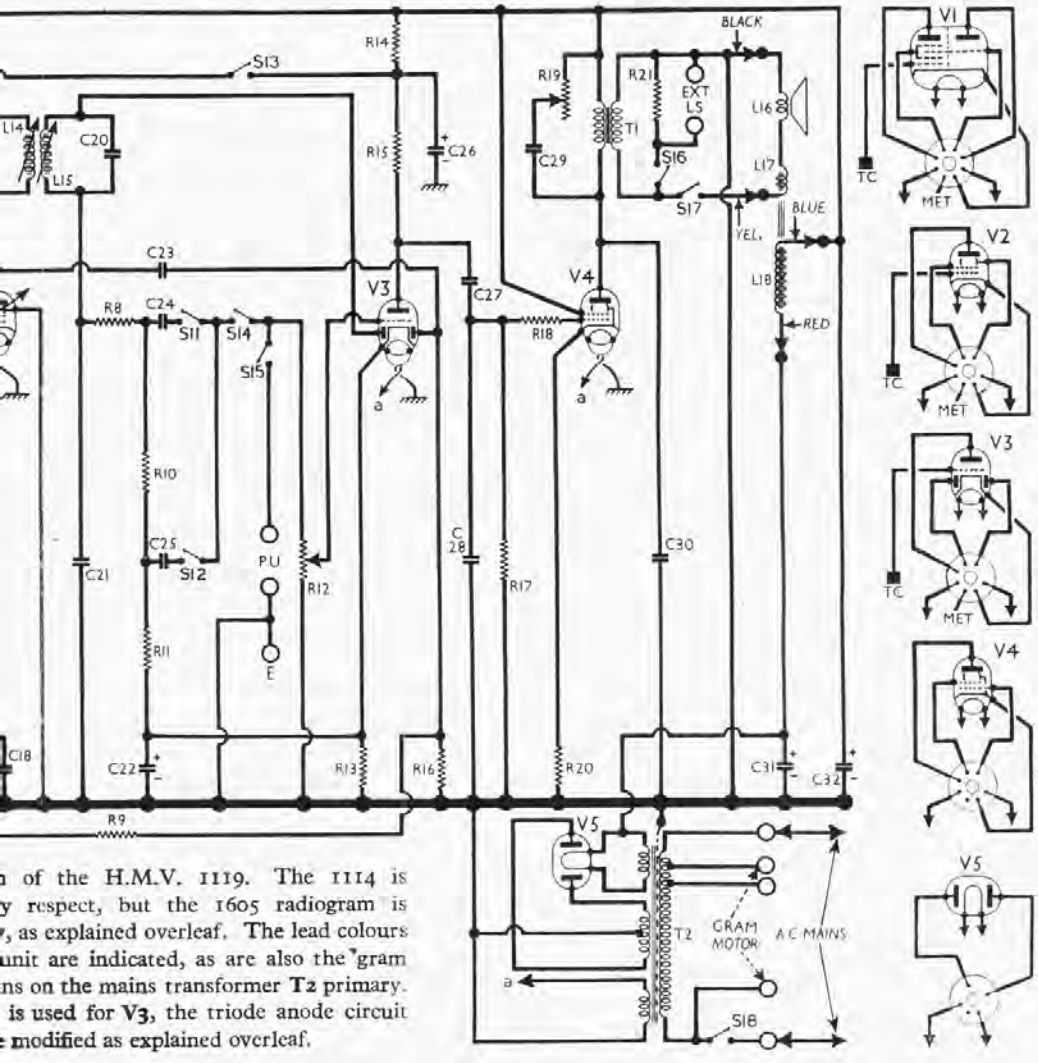
	RESISTORS	Values (ohms)	Locations
R1	V1 hex. C.G.	470,000	H4
R2	V1 fixed G.B.	220	J4
R3	V1 osc. C.G.	47,000	I5
R4	Osc. H.T. feed	22,000	I5
R5	V1, V2 S.G.'s H.T. potential divider	15,000	I5
R6		15,000	J5
R7	V2 fixed G.B.	330	J5
R8	I.F. stopper	150,000	H5
R9	A.V.C. decoupling	680,000	H5
R10	Signal diode load resistors	150,000	H5
R11		330,000	H6
R12	Volume control	2,000,000	E3
R13	V3 G.B., A.V.C. delay	2,200	H6
R14	H.T. decoupling	10,000	H5
R15	V3 triode load	150,000	H5
R16	A.V.C. diode load	680,000	H5
R17	V4 C.G. resistor	330,000	H5
R18	V4 grid stopper	22,000	G5
R19	Tone control	50,000	E4
R20	V4 G.B. resistor	100	G6
R21	Dummy L.S. load	15	F6

	CAPACITORS	Values (μF)	Location
C1	Aerial S.W. series	0·00005	I4
C2	Aerial L.W. shunt	0·0005	G4
C3	M.W. fixed trim.	0·0000023	H4
C4	V1 hex. C.G.	0·0001	I4
C5	1st I.F. transformer tuning	0·0002	A2
C6		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	J5
C11	Osc. S.W. track	0·005	I3
C12	Osc. L.W. track	0·00035	K7
C13	Osc. auto-tuning	0·00023	K7
C14	A.V.C. decoupling	0·05	H5
C15	Osc. S.W. anode coup.	0·00005	N7
C16	V1, V2 S.G.'s H.T. decoupling	0·05	J5
C17*		4·0	B2
C18	V2 cath. by-pass	0·05	J5
C19	2nd I.F. trans-former tuning	0·0002	B2
C20		0·0002	B2
C21	I.F. by-pass	0·0001	H5
C22*	V3 cath. by-pass	50·0	G6
C23	A.V.C. coupling	0·0001	H6
C24	A.F. coupling capacitors	0·00023	H5
C25		0·05	H5
C26*	H.T. decoupling	4·0	B2
C27	A.F. coupling	0·05	G5
C28	I.F. by-pass	0·00023	H5
C29	Part tone control	0·05	E4
C30	Tone corrector	0·002	F5
C31*	H.T. smoothing capacitors	16·0	B2
C32*		8·0	B2
C33‡	Aerial L.W. trim.	0·000135	G3
C34‡	Aerial M.W. trim.	—	J4
C35†	Aerial tuning	—	J4
C36†	Oscillator tuning	—	J3
C37‡	Osc. M.W. trim.	0·000045	N8
C38‡	Osc. L.W. trim.	0·000135	N8
C39‡	Aerial circuit press-button tuning trimmers	0·000135	G3
C40‡		0·00045	G3
C41‡		0·00045	F3
C42‡		0·00045	F3
C43‡		0·00045	F3

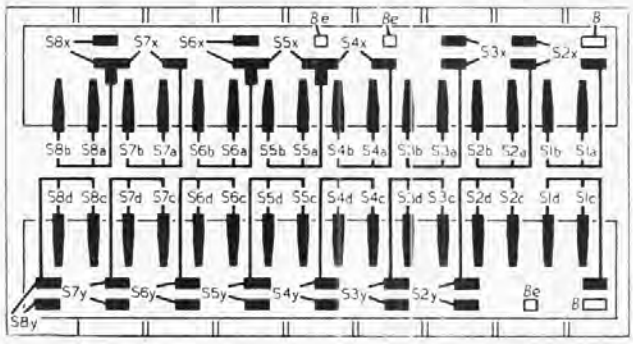
* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)	Location
L1	Aerial coupling coils	0·6	I3
L2		26·0	H3
L3		60·0	H3
L4	Aerial tuning coils	Very low	I3
L5		3·5	H3
L6		20·0	H3
L7	Osc. tuning coils	Very low	N7
L8		3·0	M7
L9		8·5	M7
L10	Osc. reaction coils	0·6	N7
L11		1·5	M7
L12	1st I.F. trans. Pri.	5·0	A2
L13	Sec.	5·0	A2
L14	2nd I.F. trans. Pri.	5·0	B2
L15	Sec.	5·0	B2
L16	Speech coil	4·0	—
L17	Hum neut. coil	0·2	—
L18	Field coil	950·0	—
L19	Osc. circuit press-button tuning coils	2·0	L7
L20		4·5	L7
L21		4·5	K7
L22		10·4	K7
L23		10·4	K7
T1	Output trans. Pri.	390·0	C1
	Sec.	0·1	C1
T2	Mains trans. Pri., total	25·0	D2
	Heat. sec.,	Very low	D2
	Rect. heat. sec.,	0.15	D2
	H.T.sec.,total	315.0	D2
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 S8c, d, y	Osc. press-button tuning switches	—	—

Continued overleaf



n of the H.M.V. 1119. The 1114 is y respect, but the 1605 radiogram is , as explained overleaf. The lead colours unit are indicated, as are also the 'gram ns on the mains transformer **T2** primary. is used for **V3**, the triode anode circuit e modified as explained overleaf.



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.

OTHER COMPONENTS (*continued*)		Approx. Value (ohms)	Location
S9	Press-button tuning	—	G4
S10	master switches	—	M7
S11	"Top boost"	—	
S12	switches ...	—	H4
S13	Radio/gram	—	
S15	switches ...	—	I6
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 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.

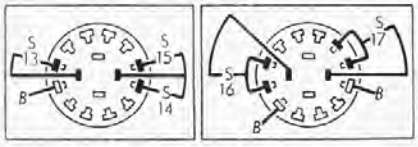
DISMANTLING THE SET

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); detach the plate aerial lead (one round-head wood screw and washer), and unclip 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 hexagon-head chassis retaining bolts (with spring 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.
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 indicated 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.
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 tinned 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.



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.

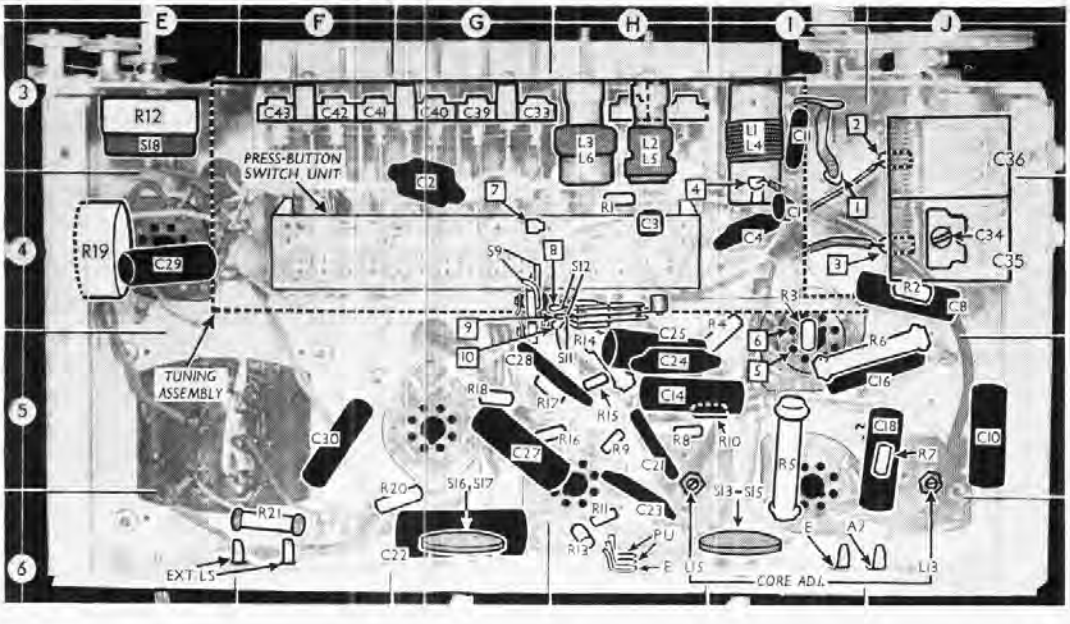
GENERAL NOTES

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.

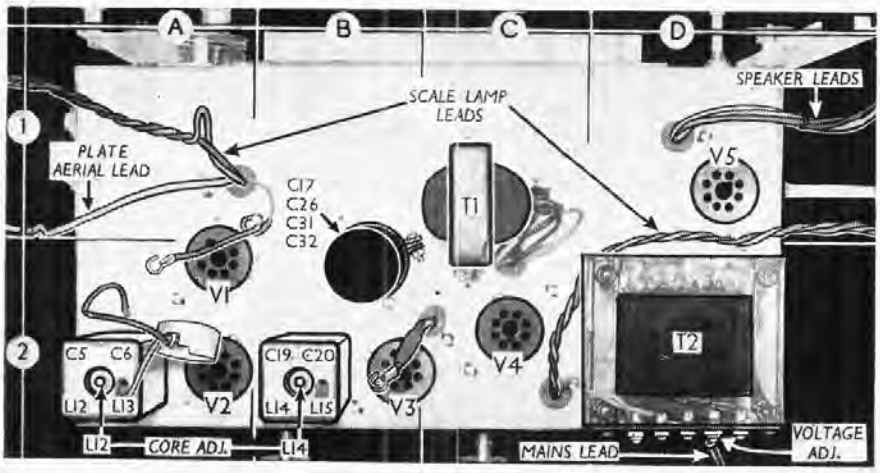
S9, S10 and **S11, S12** are in two external units mounted on the press-button unit and operated by the plungers. **S9, S10** open when any manual button is pressed, and close when any auto button is pressed. When the S.W. button is pressed, **S12** opens and **S11** closes, but otherwise **S12** is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

S13-S15 is the radio/gram switch unit, and **S16, S17** 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.

S13 and **S14** close when their control is turned to radio (anti-clockwise), or **S15** closes when



Under-chassis view. The press-button unit is indicated here, but diagrams at the head of cols. 1 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 1 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. **S17** closes to connect the internal speaker (control fully clockwise); **S16** and **S17** close in the next position, when internal and external speakers are connected; and **S16** only closes in the anti-clockwise position, to connect the external speaker, the internal speaker being muted. The dummy load **R21** prevents damage to **V4** 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

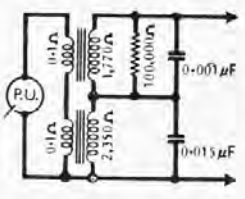


Diagram showing the pick-up matching circuit, using two transformers, in the 1605 ARG.

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 X631."

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 ¼ 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 ¾ 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 5⅛in 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.

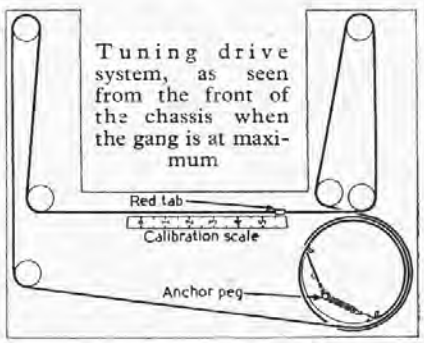
M.W.—Press the M.W. button, set tab to 25/32 ins., feed in a 210m (1,427 kc/s) signal, and adjust **C37** (M8) and **C34** (J4) for maximum output. Set tab to 4½ ins., feed in a 510 m (588 kc/s) signal, and adjust the cores of **L8** (M8) and **L5** (N8) for maximum output. Repeat these adjustments.

L.W.—Press the L.W. button, set tab to 1½ 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 5⅛ 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



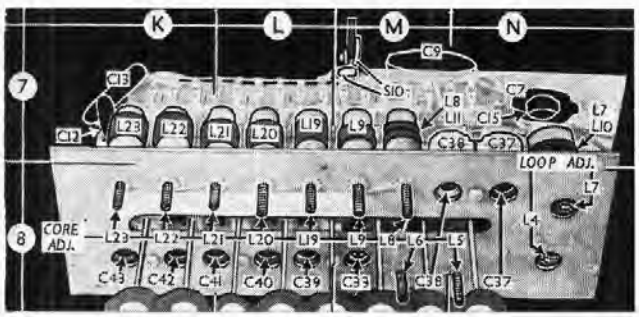
Tuning drive system, as seen from the front of the chassis when the gang is at maximum

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 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.



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.

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