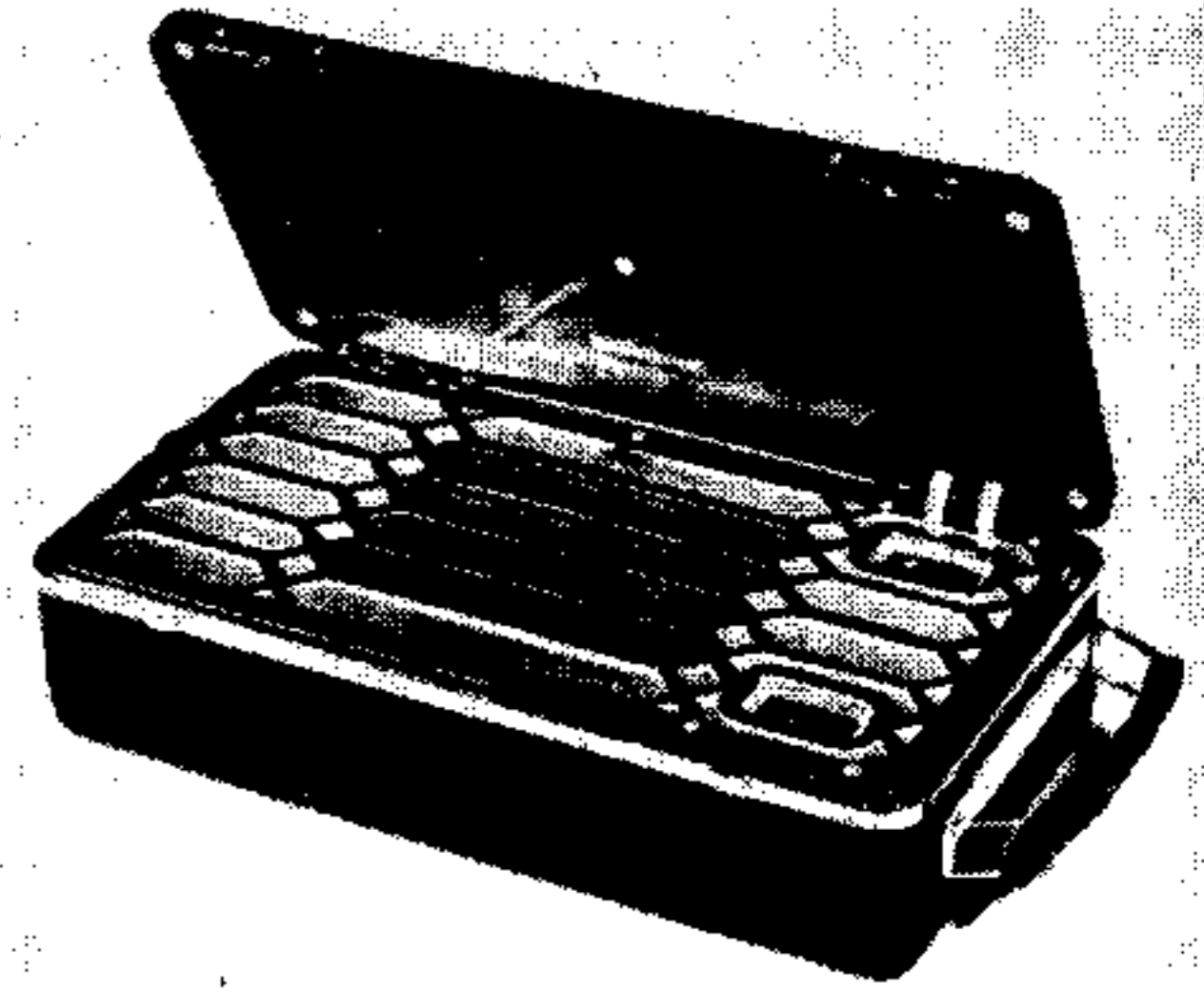


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MARCONIPHONE P17B

869

ALL-DRY PERSONAL PORTABLE



MEASURING 9½ in by 5 in and weighing 3lb 10oz complete with its self-contained all-dry H.T./L.T. battery, the Marconiphone P17B is a 4-valve single-band "Personal" superhet. It has a spring-loaded self-opening lid that automatically switches on the receiver.

Release date and original price: December, 1947; £13 2s. 6d. plus purchase tax.

CIRCUIT DESCRIPTION

Tuned frame aerial input by **L1**, **C21** precedes a heptode valve (**V1**, Marconi **X17**) operating as frequency changer with electron coupling.

Triode oscillator grid coil **L2** is tuned by **C22**. Parallel trimming by **C7**, **C23**, and series tracking by **C8**. Inductive reaction coupling from anode by **L3**, with additional capacitive coupling from the tracker **C8**.

Second valve (**V2**, Marconi **W17**) is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned-primary, tuned-secondary transformer couplings **C3**, **L4**, **L5**, **C4** and **C10**, **L6**, **L7**, **C11**.

Intermediate frequency 465 kc/s.

Diode second detector is part of single diode pentode valve (**V3**, Marconi **ZD17**). Audio frequency component in rectified output is developed across manual volume control **R6**, which is also the diode load resistor, and passed via A.F. coupling capacitor **C13**, C.G. resistor **R7** and grid stopper **R8** to control grid of pentode section, which operates as A.F. amplifier. I.F. filtering by **C12** in diode circuit, and by **R8** and **C15** in pentode C.G. and anode circuits respectively.

The D.C. potential developed across **R6** is tapped off and fed back via a decoupling circuit **R5**, **C2** as G.B. to F.C. and I.F. valves, giving automatic volume control.

Resistance-capacitance coupling by **R10**, **C16** and **R11** between **V3** pentode and pentode output valve (**V4**, Marconi **N17**), the filament sections of which are wired in parallel. Fixed tone correction by **C18** in anode circuit.

G.B. potential for **V4** is obtained from the drop across **R12** in the H.T. negative lead to chassis. H.T. circuit R.F. filtering by **C6**.

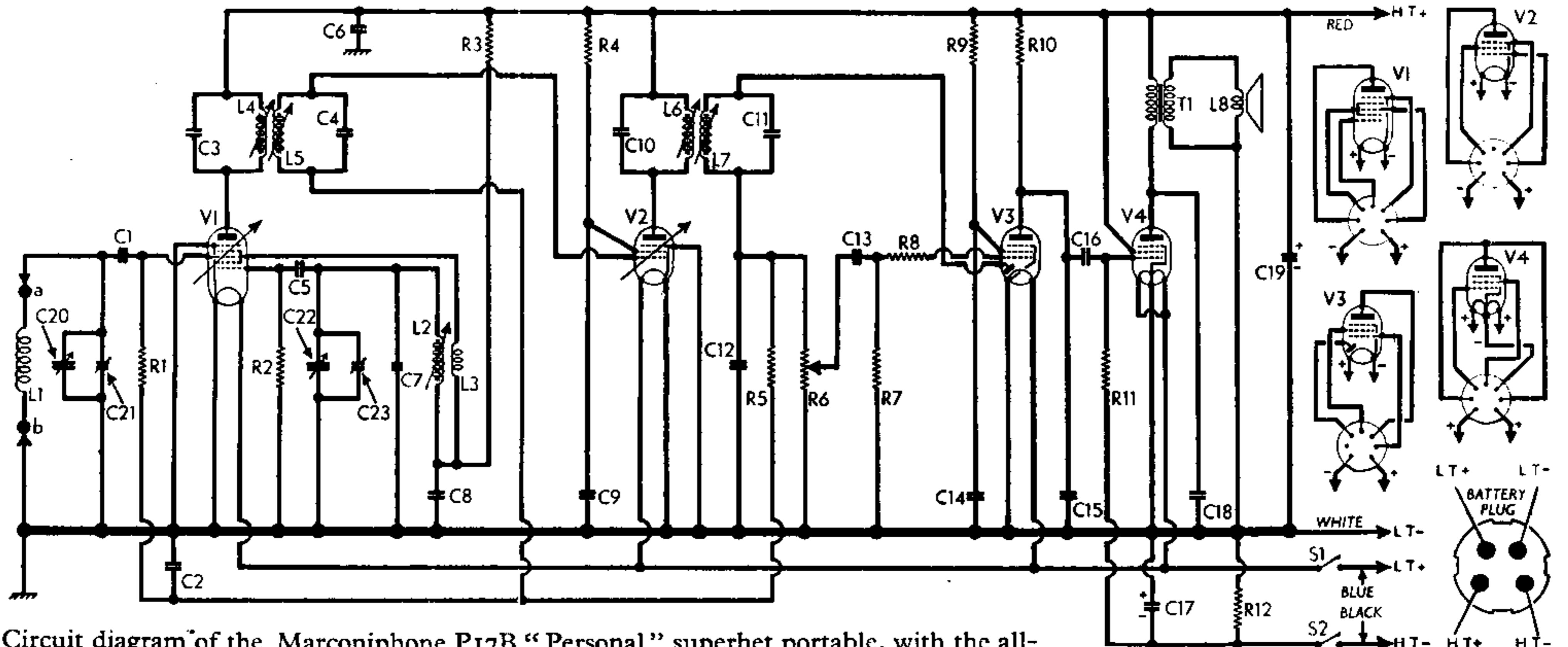
COMPONENTS AND VALUES

CAPACITORS		Values (µF)	Locations
C1	V1 pent. C.G.	0.0001	D7
C2	A.V.C. decoupling	0.1	D6
C3	1st I.F. transformer tuning	0.0001	A2
C4			
C5	V1 osc. C.G.	0.0001	D6
C6	H.T. R.F. by-pass	0.1	B1
C7	M.W. fixed trim.	0.000015	F7
C8	M.W. tracker	0.00043	E7
C9	V2 S.G. decoup.	0.1	F5
C10	2nd I.F. transformer tuning	0.0001	C2
C11			
C12	I.F. by-pass	0.0001	H6
C13	A.F. coupling	0.005	H6
C14	V3 S.G. decoup.	0.1	H7
C15	I.F. by-pass	0.0001	H7
C16	A.F. coupling	0.01	H7
C17*	G.B. by-pass	20.0	C1
C18*	Tone corrector	0.005	B1
C19*	H.T. reservoir	2.0	A1
C20†	Aerial M.W. trim.	—	F7
C21†	Aerial tuning	0.00037§	F6
C22†	Osc. tuning	0.00037§	F6
C23†	Osc. M.W. trim.	—	F7

* Electrolytic. † Variable. ‡ Pre-set. § Swing value, min. to max.

RESISTORS		Values (ohms)	Locations
R1	V1 pent. C.G.	1,000,000	D7
R2	V1 osc. C.G.	100,000	D6
R3	Osc. H.T. feed	22,000	F4
R4	V2 S.G. feed	22,000	F4
R5	A.V.C. decoupling	2,200,000	F5
R6	Volume control	1,000,000	H6
R7	V3 pent. C.G.	6,800,000	F4
R8	I.F. stopper	22,000	H6
R9	V3 S.G. feed	2,200,000	F4
R10	V3 pent. load	470,000	H7
R11	V4 C.G.	1,000,000	H5
R12	V4 G.B.	1,000	F4

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Frame aerial	1.25	D6
L2	Osc. tuning coil	2.1	D7
L3	Osc. reaction coil	0.75	D7
L4	1st I.F. trans.	8.25	A2
L5			
L6	2nd I.F. trans.	8.25	C2
L7			
L8	Speech coil	10.0	B1
T1	Speaker trans.	580.0	B2
S1	L.T. circuit switch	—	D3
S2	H.T. circuit switch	—	E3



Circuit diagram of the Marconiphone P17B "Personal" superhet portable, with the all-dry battery plug diagram, as seen from the free ends of the pins, inset on the right. The aerial connections **a** and **b** are identified in the underside illustration overleaf.

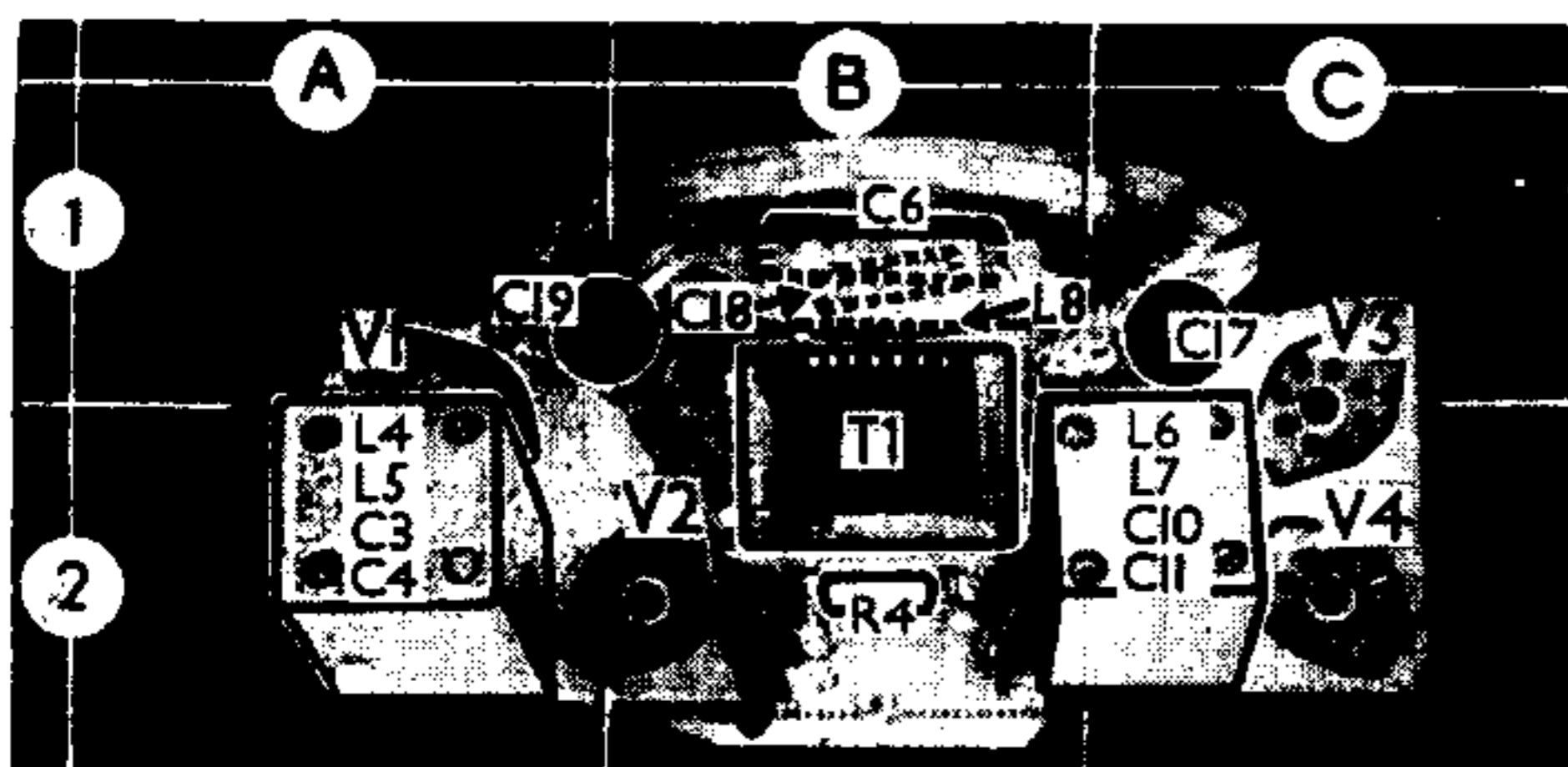


Illustration of chassis deck assembly, as seen from the battery compartment. The battery switch has been omitted for clarity. C6 and C18 are just behind the speaker. L8 is the speech coil.

DISMANTLING THE SET

To gain access to the battery compartment, place the receiver face down with the lid closed and release the clasp at the opposite end of the case to the carrying handle. With the right hand grasp the edges of the case near the clasp, and lift it carefully until the metal tongues, which fit in slots close to the handle, disengage.

To gain access to the chassis, it is only necessary to remove the flexible insulating cover (one screw and washer) and detach it from its securing tongues. When replacing, ensure that the springy metal strips, to which the frame aerial connections are made on the chassis, are located inside the flexible cover before screwing it down.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those quoted by the manufacturers. Their receiver was operating from a new battery, and voltages were measured on the 100 V scale of a model 7 Avometer, chassis being the negative connection.

Owing to the high values of V3 anode load and screen feed resistors, negligible voltage readings were obtained, and therefore current readings only are quoted.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 X17	60	0.08	25	1.4
V2 W17	60	1.25	35	0.5
V3 ZD17	†	0.06	†	0.05
V4 N17	57	4.2	60	0.7

† Negligible reading.

GENERAL NOTES

Switches.—The only switches in this receiver are the battery switches S1 and S2. These are in a small unit mounted at the centre of the main panel, behind the speaker grille, and are operated by a spring-loaded plunger which is depressed when the lid is closed, switching the set off. When the lid springs open, the plunger is released, and the set is automatically switched on.

Coils.—The frame aerial winding L1 is wound flat and concealed in the lid. Contact between it and the chassis is effected by two flat metal strips a, b which slide in and out as the lid is operated. flexible leads at the chassis end taking up the movement. The oscillator unit, L2, L3 is mounted at the spindle end of the gang.

Battery and Leads.—The combined al-dry H.T. and L.T. battery is an Ever Ready Batrymax type B114 with a 4-pin

outlet socket. A diagram of the associated plug, drawn as seen from the free ends of the pins, is inset in the circuit diagram overleaf, where the lead colours are also indicated. The L.T. section is 1.5 V, and the H.T. section is 69 V.

The battery should be fitted with label side showing and plug towards V4, the lead being tucked under the battery.

Capacitors C17, C19.—These are two T.C.C. "Picopack" electrolytics of very small dimensions, held in spring clips on either side of the speaker. C17 is rated at 20 μF, 12 V D.C. working; C19 is rated at 2 μF, 150 V D.C. working. In each case the upper end is the positive connection; and the lower end (projecting down through chassis deck) the negative.

Valves.—The Marconi 17 valve series is used, with the American 7-pin "Button" base. Filament ratings are 1.4 V, 0.05 A for V1, V2 and V3, and 1.4 V, 0.1 A (or 2.8 V, 0.05 A) for V4. In general they

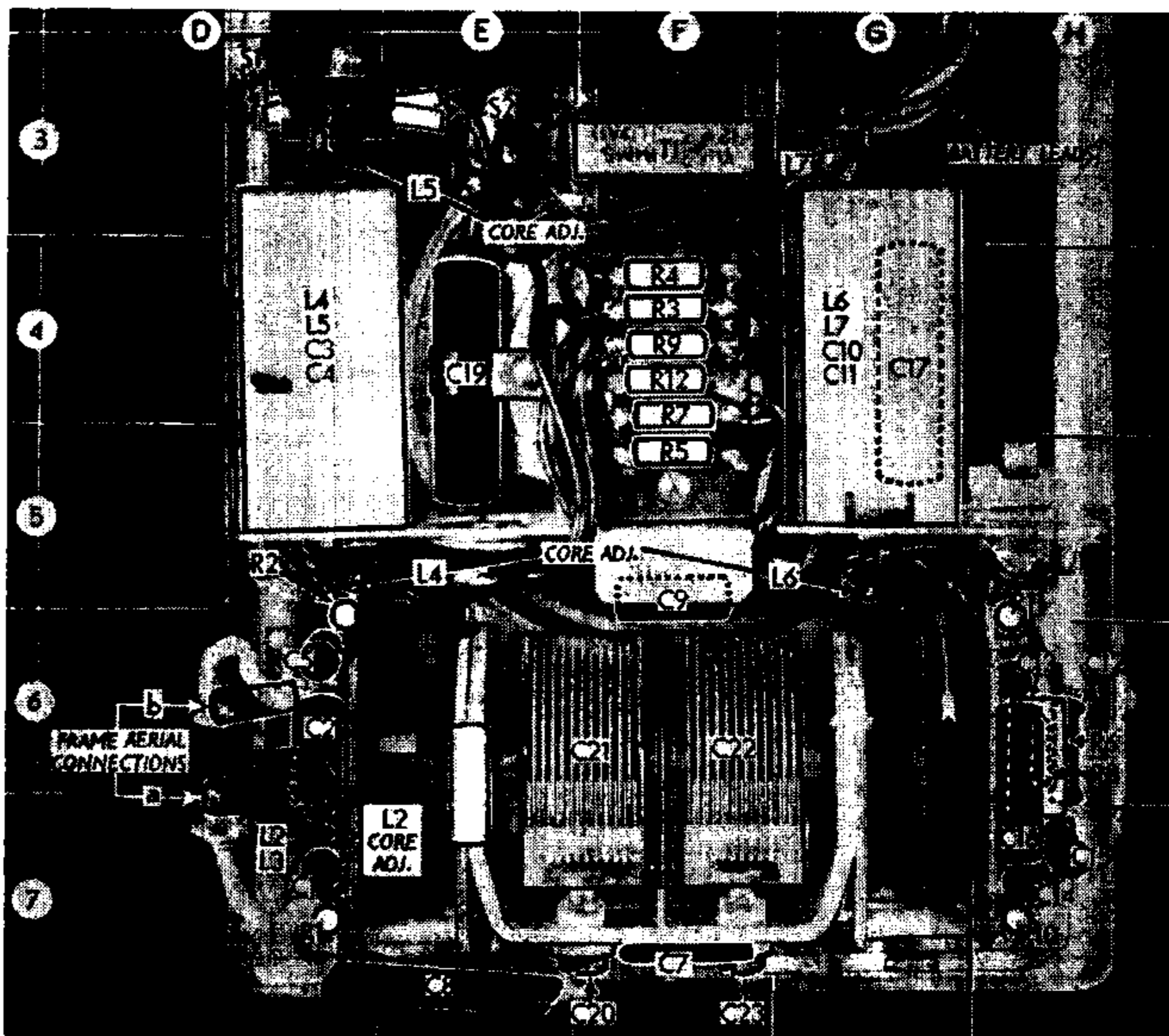
have characteristic data closely following the American types 1R5, 1T4, 1S5 and 3Q4 respectively.

CIRCUIT ALIGNMENT

I.F. Stages.—Connect signal generator leads to control grid (pin 6) of V2, via a 0.1 μF capacitor, and chassis. Turn gang to minimum capacitance and volume control to maximum, and feed in a 465 kc/s (645.16 m) signal. Using a non-metallic trimming tool, adjust the cores of L7 and L8 (chassis location G3, G5) for maximum output, keeping the input low to avoid A.V.C. action and overloading. Transfer "live" signal generator lead, with series capacitor, to control grid (pin 6) of V1 and adjust the cores of L5 (D3) and L4 (D5) for maximum output.

R.F. and Oscillator Stages.—Couple the signal generator output via a loop of wire set up on the bench at a minimum distance of two feet from the open lid of the receiver. With gang at maximum capacitance the 560 m calibration line on the tuning drum should coincide with the black groove at the centre of the escutcheon. The drum may be adjusted in position by slackening its grub screw.

M.W.—Tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal, and adjust C23 (F7) for maximum output. Tune to 500 m on scale, feed in a 500 m (600 kc/s) signal, and adjust the core of L2 (D7) for maximum output. Repeat the 200 m adjustment to C23 and finally tune to 230 m on scale, feed in a 230 m (1,304 kc/s) signal, and adjust C20 (F7) for maximum output.



Underside view of the receiver, omitting the battery compartment (above T1). The white object on the left frame member of the gang is a tension spring which holds the gang steady.