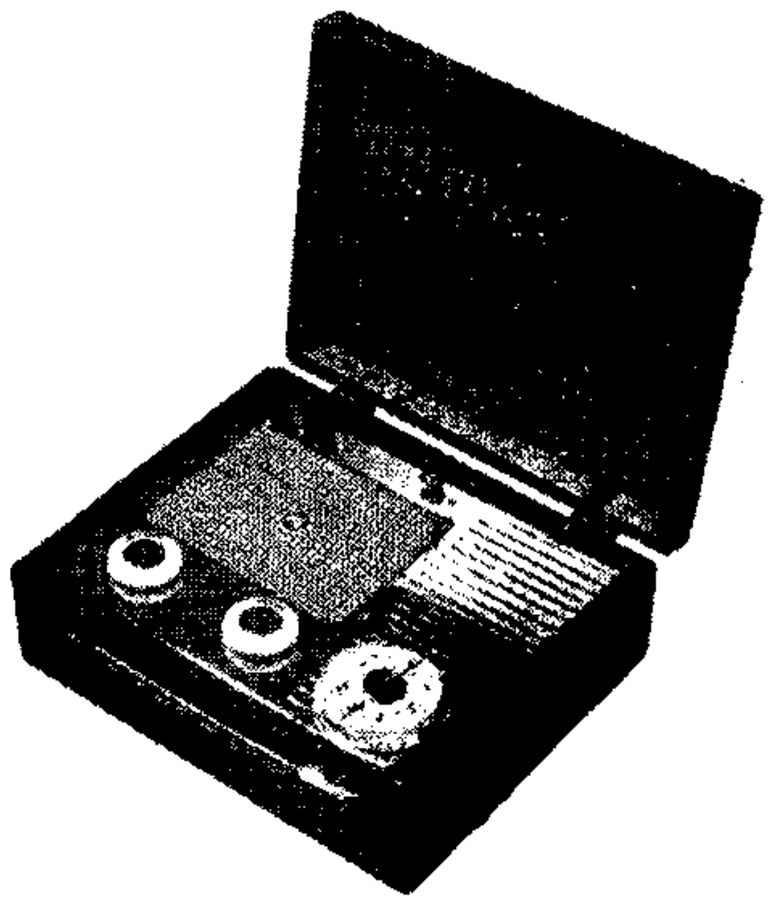
PYE P114BQ

4-valve "Jewel Case" Portable



EMPLOYING a printed circuit for component and valve connections and employing frame aerials, the Pye P114BQ is a 4-valve all-dry battery portable. The waveband ranges are 200-550 m and 1,100-2,000 m.

Although a printed circuit plate replaces the conventional metal chassis in this receiver, the thick chassis line is still employed in the circuit diagram to indicate the common negative base line.

Release date and original price: August 1955, £9 9*s*. 6*d*. *Purchase tax and batteries extra.*

CIRCUIT DESCRIPTION

Tuned frame aerial input by **L1, C3** (M.W.) and **L1, L2, C3** (L.W.) which precede heptode valve **(V1, Mullard DK96)** operating as frequency changer with electron coupling.

Single oscillator grid coil **L3** is tuned by **C11** for M.W. operation, and by **C11, C12** for L.W. operation. Reaction coupling from oscillator anode by **C14, L4** and the common impedance of tracker **C13. C9** is shunted across **C8** on L.W. to give additional reaction coupling.

Second valve **(V2, Mullard DF96)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier.

Intermediate frequency 470 kc/s.

Diode section of diode pentode valve **(V3, Mullard DAF96)** operates as signal detector. Audio frequency component in its rectified output is developed across volume control **R7,** which operates as diode load, and is passed via **C20** to pentode section. I.F. filtering by **C18, R5** and **C19.**

Resistance-capacitance coupling by **R10, C22** and **R12** between **V3** and pentode output valve **(V4, Mullard DL96).** Tone correction by **C23** in **V4** anode circuit. Grid bias for **V4** is developed across **R11** in the H.T. negative lead to chassis.

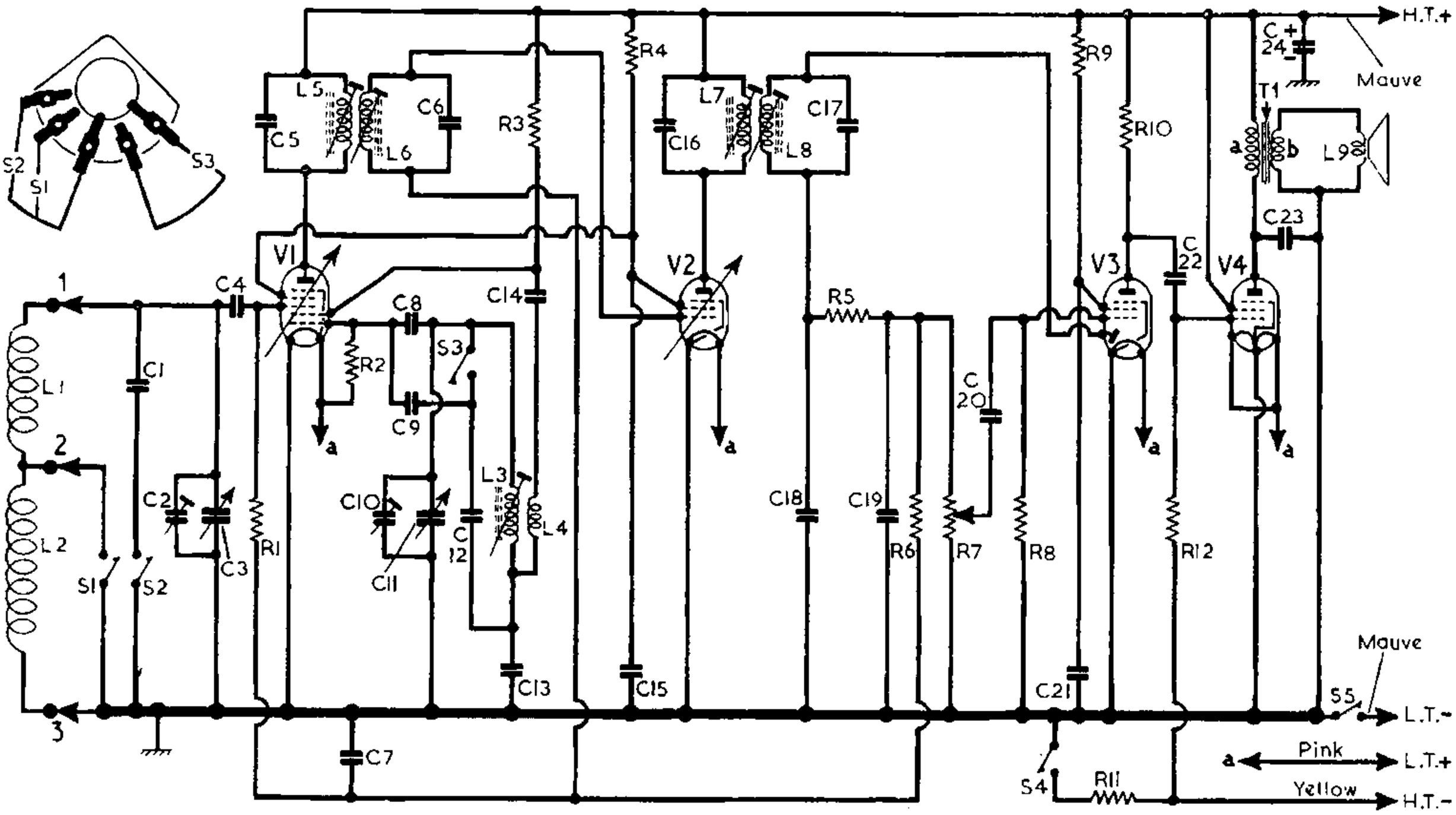
	CAPACITORS	Values	Locations
C1	L.W. aerial trim ...	180pF	A1
C2	M.W. aerial trim	30pF	A1
C3	Aerial tuning ...	523pF	A1
C4	V1 C.G.	100pF	A1
C5	1st I.F.T. tuning	100pF	B1
C6	1st I.F.T. tuning	100pF	B1
C7	A.G.C. decoupling	0·01μF	B1
C8	V1 osc. C.G. ...	100pF	A1
C9	V1 osc. C.G. ...	27pF	A1
C10	M.W. osc. trim ...	30pF	A1
C11	Oscillator tuning	523pF	A1
C12	L.W. osc. trim ...	530pF	A1
C13	Osc. tracker ...	580pF	B1
C14	Osc. reaction coup.	220pF	B1
C15	S.G. decoup. ...	0·01μF	B1
C16	2nd I.F.T. tuning	100pF	B1
C17	2nd I.F.T. tuning	100pF	B1
C18	I.F. by-passes ...	100pF	B1
C19	I.F. by-passes ...	100pF	B1
C20	A.F. coupling ...	0·002μF	C1
C21	V3 S.G. decoup. ...	0·01μF	C1
C22	A.F. coupling ...	0·01μF	C1
C23	Tone corrector ...	0·002μF	C1
C24	H.T. by-pass ...	8μF	C1

GENERAL NOTES

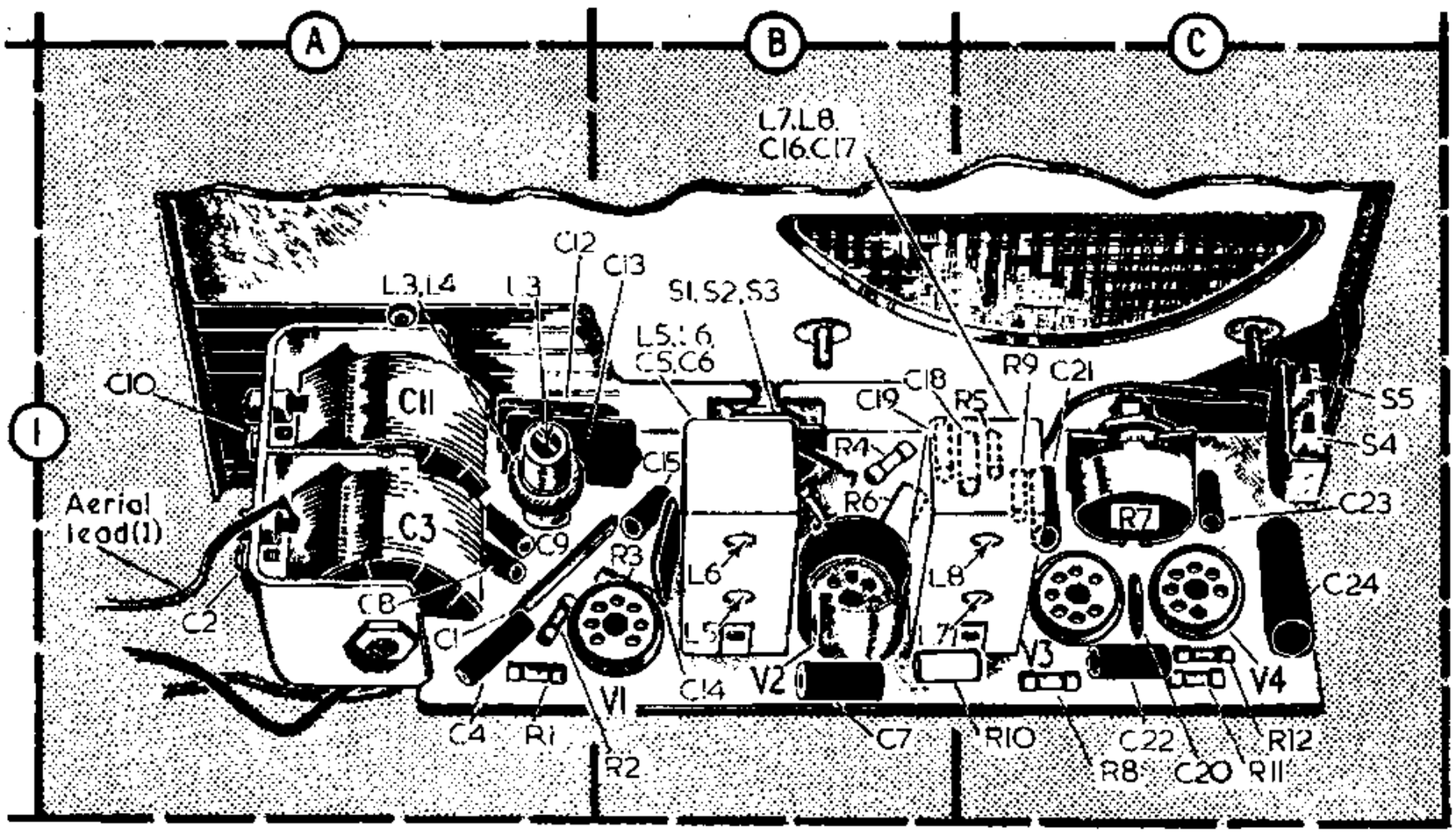
Switches.—S1-S3 are the band switches, ganged in a single rotary unit on the receiver panel. This unit is indicated in the three-quarter rear view of the chassis and is also shown in detail in the diagram

(*Continued col.* 1 *overleaf*)

	RESISTORS	Values	Locations
R1	V1 C.G.	1MΩ	A1
R2	V1 osc. C.G. ...	27kΩ	B1
R3	V1 osc. H.T. feed	47kΩ	B1
R4	S.G. H.T. feed ...	27kΩ	B1
R5	I.F. stopper ...	100kΩ	C1
R6	A.G.C. decoupling	2·2MΩ	B1
R7	Volume control ...	1MΩ	C1
R8	V3 C.G.	10MΩ	C1
R9	V3 S.G. H.T. feed	10MΩ	C1
R10	V3 anode load ...	2·2MΩ	C1
R11	V4 G.B.	560Ω	C1
R12	V4 C.G.	4·7MΩ	C1



Circuit diagram of the Pye P114BQ. A single oscillator tuning and reaction coil **L3, L4** is used for both M.W. and L.W. operation.



OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1, L2	Frame aerials ...	2·0 13·0	— —
L3	Osc. tuning coil ...	3·0	A1
L4	Osc. reaction coil ...	1·0	A1
L5	1st I.F.T. Pri. ...	10·5	B1
L6	1st I.F.T. Sec. ...	10·5	B1
L7	2nd I.F.T. Pri. ...	10·5	B1
L8	2nd I.F.T. Sec. ...	10·5	B1
L9	Speech coil ...	2·5	—
T1	O.P. trans. Pri.	570·0	—
	Sec.	—	—
S1-S3	Band switches ...	—	B1
S4, S5	Battery sw. ...	—	C1

General Notes—*continued*

inset in the top left-hand corner of the circuit diagram. **S1** closes for M.W. operation, and **S2, S3** close for L.W.

S4, S5.—These are the lid operated on/off battery switches.

Batteries.—Those recommended by the manufacturers are: H.T. (90 V), Ever Ready B126, or Vidor L5512 or Drydex 526; L.T. (1.5 V), Ever Ready AD35 or Vidor L5040 or Drydex H1184.

Circuit Plate.—To avoid damaging the printed circuit when replacing components, a soldering iron having a small bit and rated at not more than 60 watts should be used.

CIRCUIT ALIGNMENT

1.—Remove receiver from its carrying case, leaving the frame aerial connected.

2.—Connect output of signal generator, via 0.1 μF capacitor in "live" lead, to control grid (pin 6) of **V1** and chassis.

3.—Switch receiver to M.W. and tune to high wavelength end of band.

4.—Feed in a 470 kc/s signal and adjust the cores of **L8** (location reference C1), **L7** (C1), **L6** (B1) and **L5** (B1) for maximum output.

5.—Repeat operation 4 until no further improvement results.

6.—Switch receiver to M.W. and tune to 500 m. Feed in a 600 kc/s signal and adjust the core of **L3** (A1) for maximum.

7.—Tune receiver to 200 m. Feed in a 1,500 kc/s signal and adjust **C10** (A1) for maximum output.

8.—Repeat operations 6 and 7 until calibration is correct.

9.—Switch receiver to L.W. and tune to 1,400 m. Feed in a 214 kc/s signal and check calibration. If a large error exists, the capacitance of **C12** should be checked.

10.—Replace receiver in its carrying case and switch it to M.W.

11.—Transfer signal generator leads to 6in diameter coupling loop consisting of ten turns of insulated wire. Place this loop parallel to, and about 20in from, the receiver frame aerial windings.

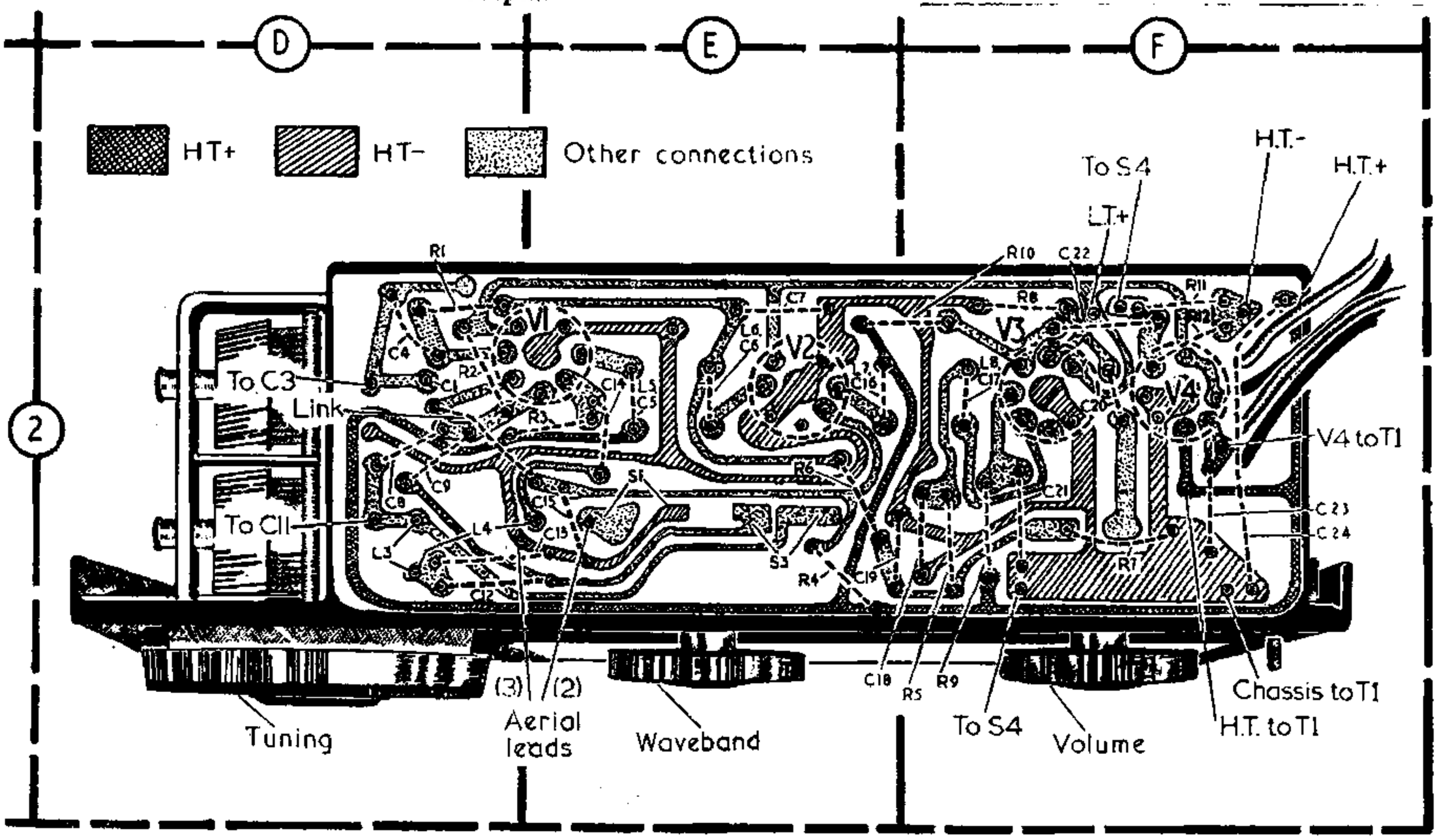
12.—Tune receiver to 200 m. Feed in a 1,500 kc/s signal and adjust **C2** (A1) for maximum output.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those derived from the manufacturers' information. They were measured with the receiver operating from a new set of batteries.

Voltages were measured with a Model 8 Avometer, chassis being the negative connection in every case. The voltage measured across **R11** was 5.5 V, positive connection to chassis.

Valve	Anode		Screen	
	V	mA	V	mA
V1 DK96 ...	84·5	0·37		
	Oscillator		66	0·05
	30	1·0		
V2 DF96 ...	84·5	1·52	66	0·51
V3 DAF96 ...	20	0·025	16	0·005
V4 DL96 ...	82	4·9	84·5	0·93



Underside view of the printed circuit plate showing the circuit connections. These connections are coded as indicated by the key above the plate. A three-quarter rear view of the complete chassis appears above at the head of Cols. 1 and 2.

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