

K.-B. OB10

Kolster-Brandes "Minuet" Transportable

EMPLYING a printed circuit and a ferrite rod internal aerial, the K.-B. OB10 is a 2-band 4-valve (plus rectifier) transportable receiver designed to operate from A.C. mains only of 200-250V 40-100c/s. Mains consumption is approximately 36W. The waveband ranges are: 185-600m (M.W.) and 1,070-1,875m (L.W.).

Release date and original price: Sept. 1957, £8 6s 9d. Purchase tax extra.

CIRCUIT DESCRIPTION

The aerial input coils L1 (M.W.) and L1, L2 (L.W.) are mounted at opposite ends of a ferrite rod to form the internal aerial, and are tuned by C2, C3 (M.W.) and by C1, C2 and C3 (L.W.).

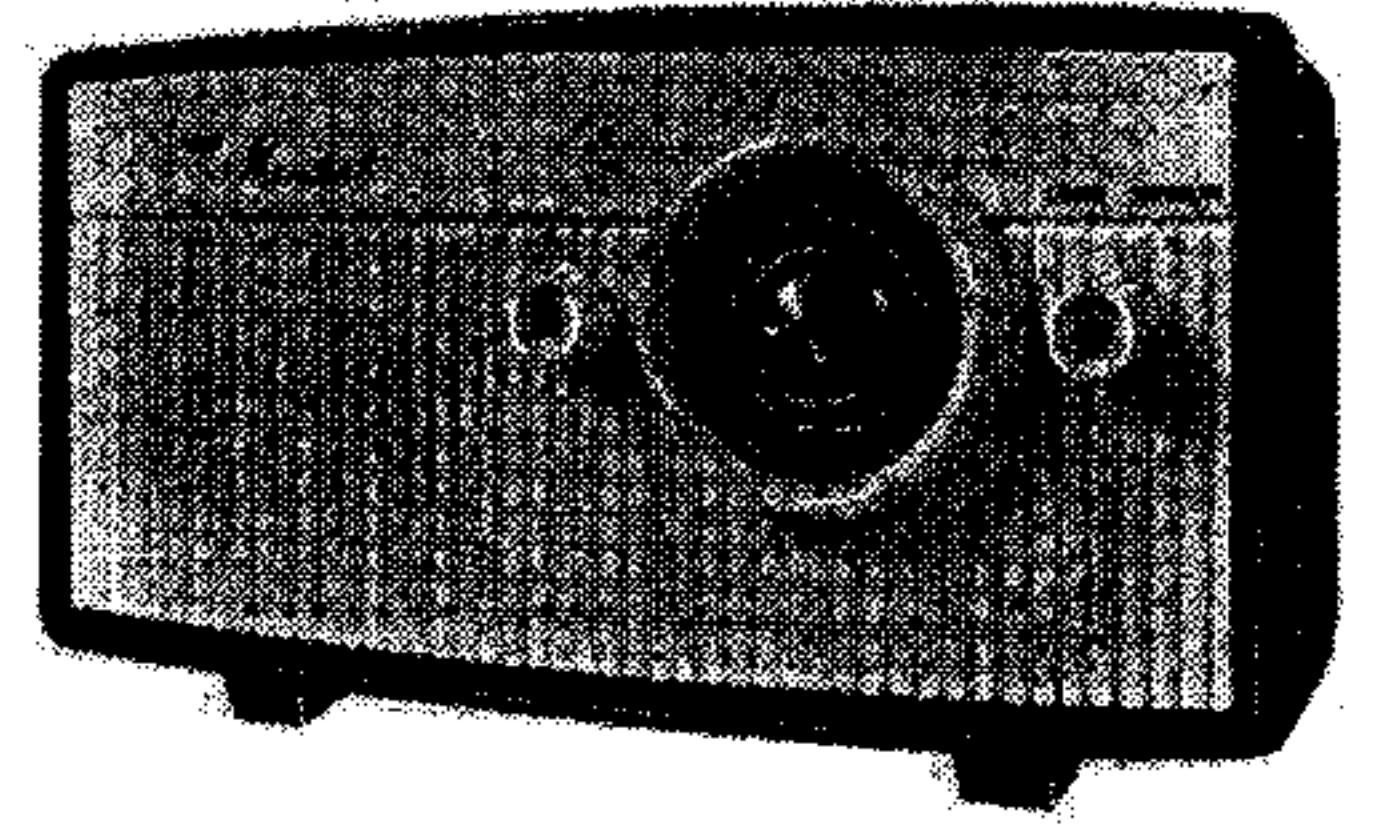
Heptode valve (V1, 6BE6) operates as a frequency changer with electron coupling.

Cathode injection is used in the oscillator circuit with tapped oscillator coil L5 tuned by C7, C8 (M.W.) and by C7, C8 and C10 (L.W.).

Second valve (V2, 6BJ6) is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings C5, L3, L4, C6 and C11, L6, L7, C12.

Intermediate frequency 422 kc/s

Diode signal detector is part of a double-diode-triode valve (V3, 6AT6). Audio frequency component in its rectified output is developed across volume control R7, which also operates as the diode load resistance, and is passed via C16 to the triode section of V3, which operates as an A.F. amplifier. The D.C. potential developed across R7 is fed back



Appearance of the K.-B. OB10 "Minuet"

as bias to V1 and V2, giving automatic gain control. Decoupling by R5, C13.

Resistance-capacitance coupling by R10, C17 and R11 to tetrode output valve (V4, 6AQ5). Tone correction by C20 across the output transformer T1. Bass compensation is provided at lower settings of the tapped volume control R7 by C15, R6.

H.T. current is supplied by half-wave rectifier circuit employing an indirectly-heated full-wave thermionic valve (V5, EZ80), with its anodes strapped. Smoothing by C19, R12 and C18. Residual hum is neutralized by passing H.T. current through section a of T1.

COMPONENT VALUES AND LOCATIONS

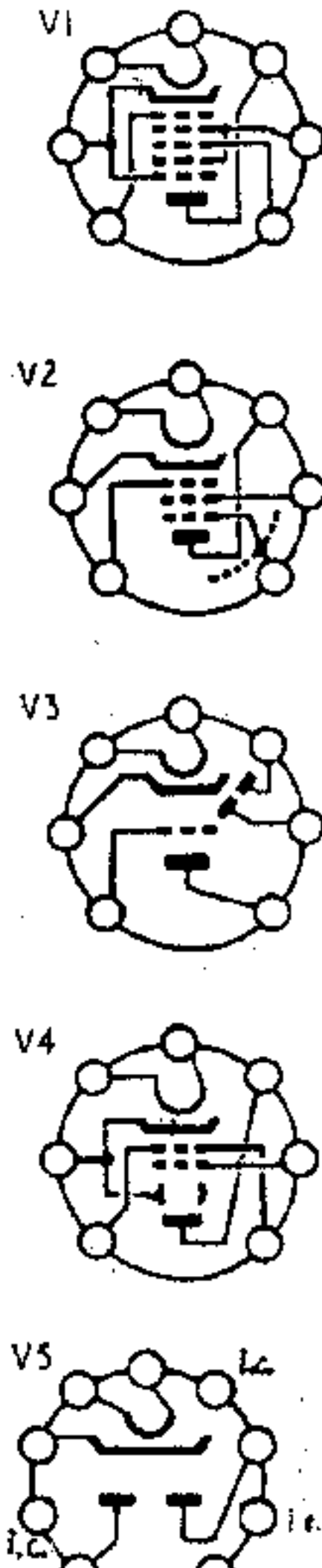
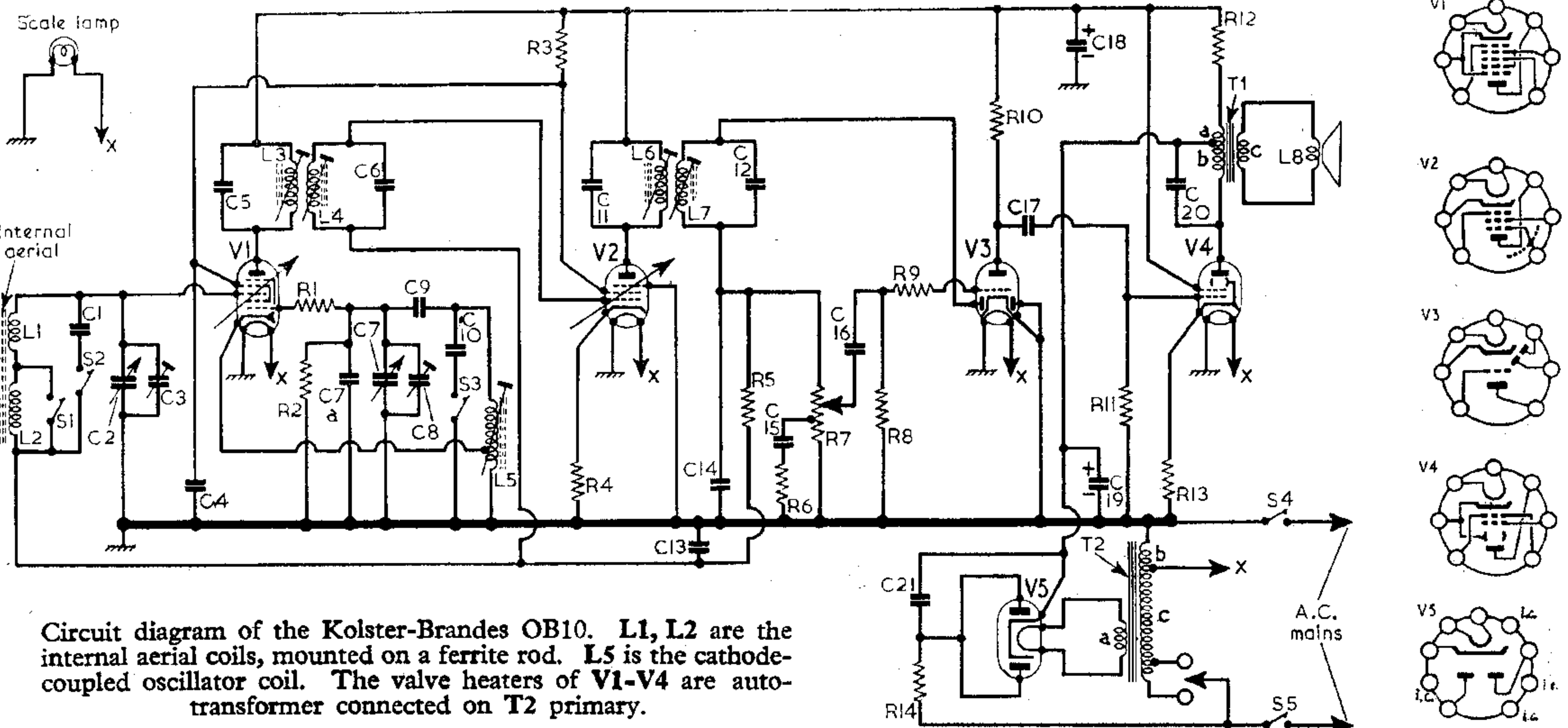
Capacitors			Resistors			Coils*			Miscellaneous*		
C1	120pF	A1	R1	220Ω	A1	L1	1.2	A1	T1	{ a 8.0	—
C2	405pF	A1	R2	22kΩ	A1	L2	3.4	C1	T1	{ b 480.0	—
C3	35pF	A1	R3	15kΩ	A1	L3	8.5	A2	T1	{ c —	—
C4	0.03μF	A2	R4	47Ω	A2	L4	8.5	A2	T2	{ a —	B2
C5	150pF	A2	R5	2.2MΩ	A2	L5	6.0	A1	T2	{ b —	—
C6	150pF	A2	R6	22kΩ	B1	L6	8.5	B2	T2	{ c 180.0	—
C7	405pF	A1	R7	500kΩ	B1	L7	8.5	B2	S1-S3	—	A1
C7a	4.7pF†	A1	R8	10MΩ	B1	L8	2.6	—	S4, S5	—	B1
C8	35pF	A1	R9	220kΩ	B1						
C9	390pF	A1	R10	220kΩ	B1						
C10	320pF	A1	R11	470kΩ	B2						
C11	150pF	B2	R12	1.8kΩ	B1						
C12	150pF	B2	R13	240Ω	B2						
C13	0.05μF	A2	R14	75Ω	A2						
C14	330pF	A2									
C15	0.01μF	B1									
C16	0.01μF	B1									
C17	0.01μF	B1									
C18	32μF	A2									
C19	32μF	A2									
C20	0.01μF	B2									
C21	0.03μF	A2									

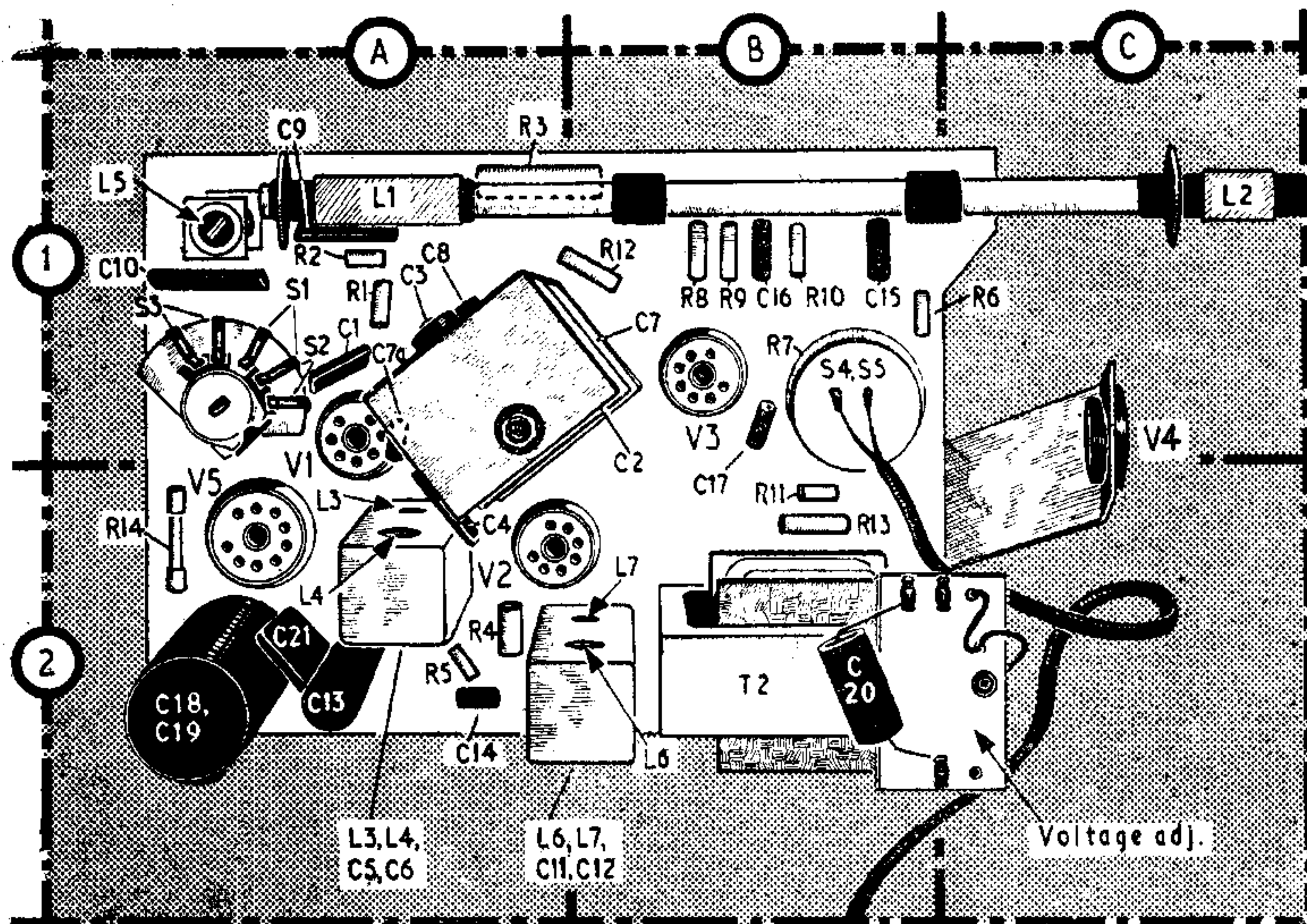
†Negative temperature co-efficient.

*Approximate D.C. resistance in ohms.

MODIFICATIONS

C7a (A1) may not be included in early versions of this receiver. This capacitor has a negative temperature co-efficient and in later receivers is connected across the oscillator tuning gang C7 (A1), to improve oscillator stability.





Rear view of the vertical printed circuit panel which forms the chassis structure.

DISMANTLING

Remove Chassis.—Remove cabinet back moulding by removing one screw in carrying handle recess, and two screws from the cabinet base. The front plate, complete with circuit and speaker, may now be withdrawn; remove tuning knob (pull off), remove volume control and wavechange switch knobs (recessed grub screws); remove four fixing screws holding printed circuit assembly to the front panel. The printed circuit may now be removed, leaving the leads to the output transformer still connected for servicing.

VALVE ANALYSIS

Valve voltages given in the table below are those derived from the manufacturers' information. They were measured in a receiver operating from A.C. mains of 240V with the voltage adjustment correctly set, but with no signal input.

Voltages were measured with a 1,000 Ω/V meter, chassis being the negative connection in every case.

Valve	Anode (V)	Screen (V)	Cath. (V)
V1 6BE6	224	82	—
V2 6BJ6	224	82	0.5
V3 6AT6	65	—	—
V4 6AQ5	248	224	10.0
V5 EZ80	228*	—	263.0†

*A.C. voltage.

†Total H.T. current 60mA.

CIRCUIT ALIGNMENT

Equipment Required.—An accurately calibrated signal generator covering the range 140-1,700kc/s; a sound output meter; and an insulated trimming tool. As no aerial or earth sockets are provided, connection of the signal generator for R.F. alignment must be made via a test

coil loosely coupled to the ferrite rod aerial coils. The test coil may be constructed by winding twelve turns of P.V.C. insulated wire on a 2in diameter former.

L1 (A1) and L2 (C1) are ferrite rod tuned and should be adjusted for maximum output by sliding them along the ferrite rod and securing them after align-

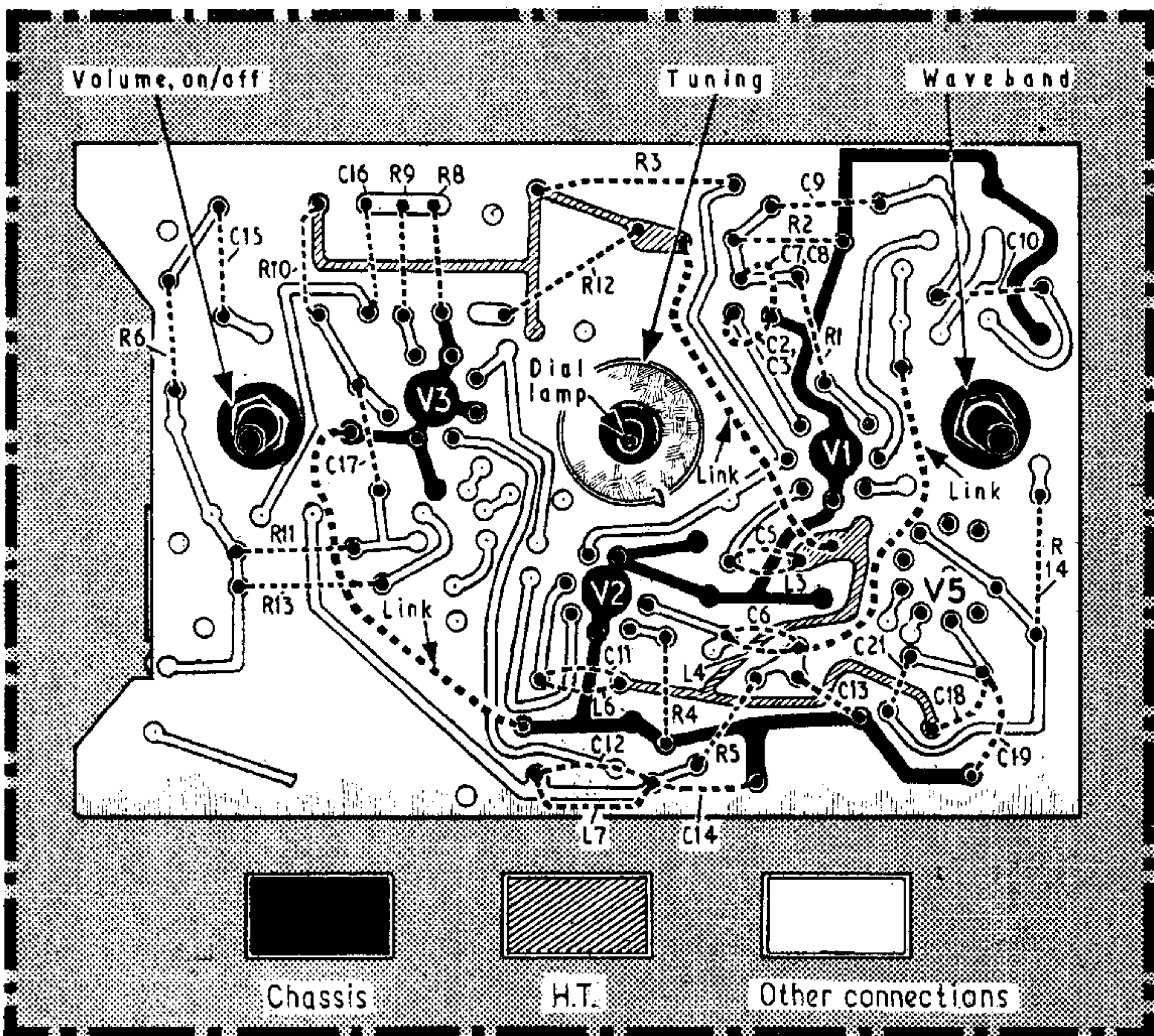
ment to prevent them from moving. With the gang at maximum capacitance, the cursor should coincide with the black horizontal datum line that separates the L.W. and M.W. scales. Isolate the signal generator from chassis with a 0.1μF capacitor.

I.F. Stages

- 1.—Switch receiver to M.W. and turn volume control and gang to maximum. Connect signal generator output via a 0.1μF capacitor across C2 (A1). Feed in a 422kc/s signal and adjust L7 (B2), L6 (B2), L3 (A2) and L4 (A2) in that order for maximum output, progressively reducing signal generator output to maintain a reading of approximately 50mW on the output meter.
- 2.—Re-adjust L6 (B2) for maximum output.

R.F. and Oscillator Stages

- 3.—Connect signal generator to the test coil, and loosely couple this to the aerial coils on the ferrite rod. Tune receiver to 500m, feed in a 600kc/s signal and adjust L5 (A1) and L1 (A1) for maximum output.
- 4.—Tune receiver to 214m, feed in a 1,400kc/s signal and adjust C8 (A1) and C3 (A1) for maximum output, rocking the gang capacitor for maximum output whilst adjusting C3 (A1).
- 5.—Repeat adjustments 3 and 4 until no improvement can be obtained.
- 6.—Switch receiver to L.W., tune to 1,333m on scale. Feed in a 225kc/s signal and adjust L2 (C1) for maximum output.



Front view of the printed circuit panel. H.T. and earthy conductors are coded.