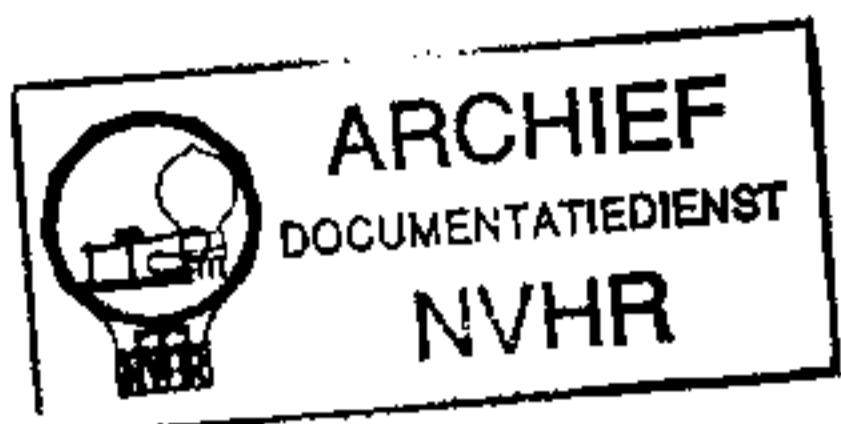


COSSOR 437B

AND 436 B

Ned. Ver. v. Historie v/d Radio



A CLASS B output stage is employed in the Cossor 437 B 2-band 4-valve battery-operated receiver. It has provision for both a gramophone pick-up and an extension speaker, and there is an aerial trimmer concentric with the main tuning control.

The 436 B is very similar to the 437 B, the differences being indicated under "General Notes."

CIRCUIT DESCRIPTION

Aerial input via series condenser **C1** and coupling condenser **C2** (M.W.) or coupling coil **L1** (L.W.), to single-tuned circuit **L2, L3, C14**, which precedes first valve (**V1, Cossor metallised 210VPT**), a variable-mu R.F. pentode operating as signal frequency amplifier, with gain control by potentiometer **R3** across G.B. battery, which varies G.B. applied.

Tuned-primary R.F. transformer coupling by **C16, L4, L5, L6** and **L7** via circuit stabiliser to second valve (**V2, Cossor 210SPT**), an R.F. pentode operating as detector on grid leak system with **C7** and **R10**. Reaction is applied from anode via stabilising resistance **R9** by coils **L8** and **L9** and controlled by variable condenser **C18**. Provision for connection of gramophone pick-up in grid circuit between **L7** and G.B. potentiometer **R5, R6**.

Parallel-fed auto-transformer coupling by **R12, C9** and **T1** via R.F. stopper **R13** between **V2** and driver valve (**V3, Cossor 215P**) which is in turn coupled to positive drive Class B valve (**V4, Cossor 220B**) by transformer **T2**. Fixed tone correction in anode circuits by **R14**,

C11 and **C12, R15**. Provision for connection of high impedance external speaker between the two anodes of **V4**.

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 C.G. decoupling	2,000,000
R2	V1 S.G. H.T. feed	30,000
R3	V1 gain control	50,000
R4	V1 anode H.T. feed	10,000
R5	V2 G.B. potentiometer	100,000
R6	for pick-up	500,000
R7	V2 C.G. circuit stabiliser	200
R8	V2 S.G. H.T. feed	500,000
R9	Reaction circuit stabiliser	200
R10	V2 grid leak	2,000,000
R11	V2 anode decoupling	25,000
R12	V2 anode load	100,000
R13	V3 C.G. H.F. stopper	500,000
R14	Parts of fixed tone corrector	4,000
R15	circuit	4,000

CONDENSERS		Values (μF)
C1	Series aerial condenser	0.0005
C2	M.W. aerial coupling	0.000015
C3	V1 C.G. decoupling	0.1
C4	V1 S.G. decoupling	0.1
C5	V1 anode decoupling	0.1
C6	V2 S.G. decoupling	0.1
C7	V2 C.G. condenser	0.0001
C8	V2 anode decoupling	0.25
C9	A.F. coupling to T1	0.1
C10	V2 anode R.F. by-pass	0.0001
C11	Parts of fixed tone corrector	0.02
C12	circuit	0.02
C13	H.T. reservoir condenser	2.0
C14†	Aerial circuit tuning	—
C15†	Aerial circuit fine tuning	—
C16†	V1 anode circuit tuning	—
C17†	V1 anode circuit trimmer	—
C18†	Reaction control	0.0005

† Variable. ‡ Pre-set.

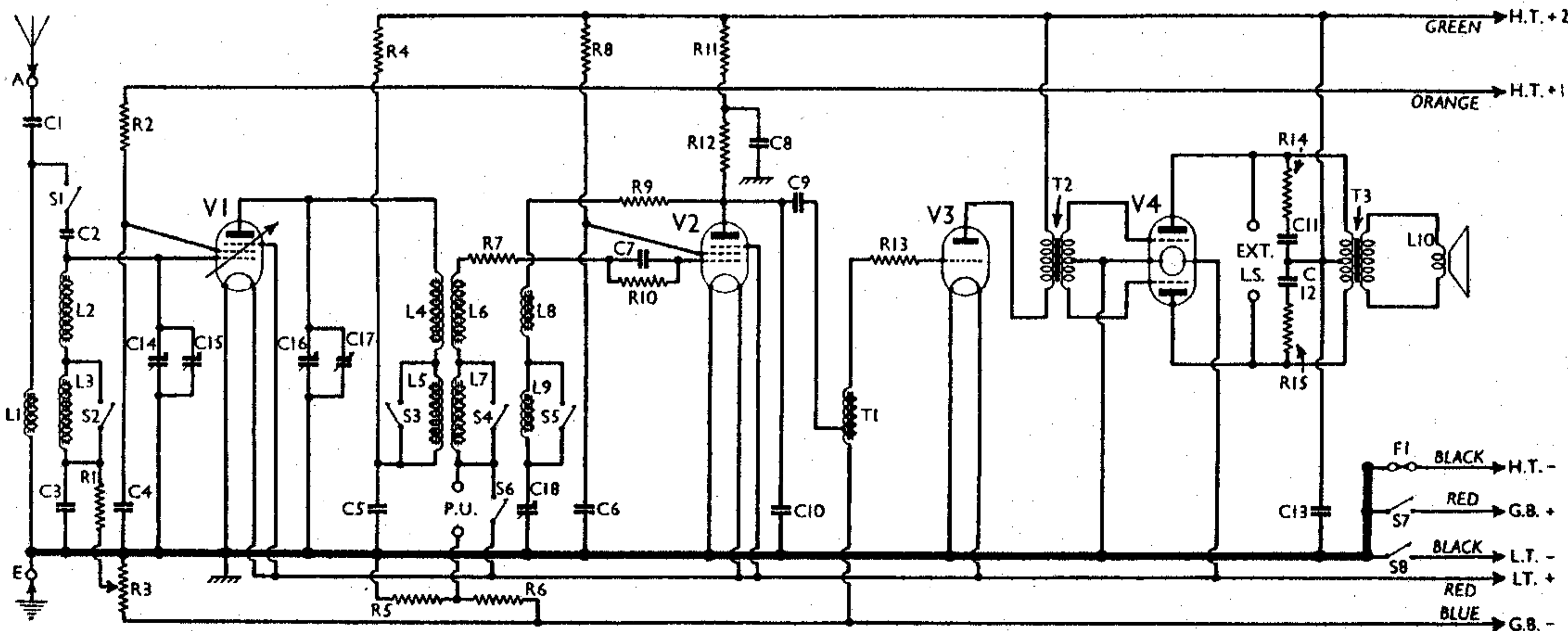
OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial L.W. coupling coil	10.0
L2	Aerial circuit tuning coils	2.4
L3		14.0
L4		1.5
L5	R.F. transformer primary	13.0
L6		1.4
L7	R.F. transformer secondary	14.0
L8		0.9
L9	Reaction coils	6.0
L10		2.0
T1	Intervalve auto-trans. total	2,500.0
T2	Driver trans.	1,000.0
T3		430.0
T3	Speaker input trans.	750.0
S1-S5		0.15
S6	Waveband switches	—
S7	Gram. pick-up switch	—
S8	G.B. circuit switch	—
F1	L.T. circuit switch	—
	Fuse bulb	—

DISMANTLING THE SET

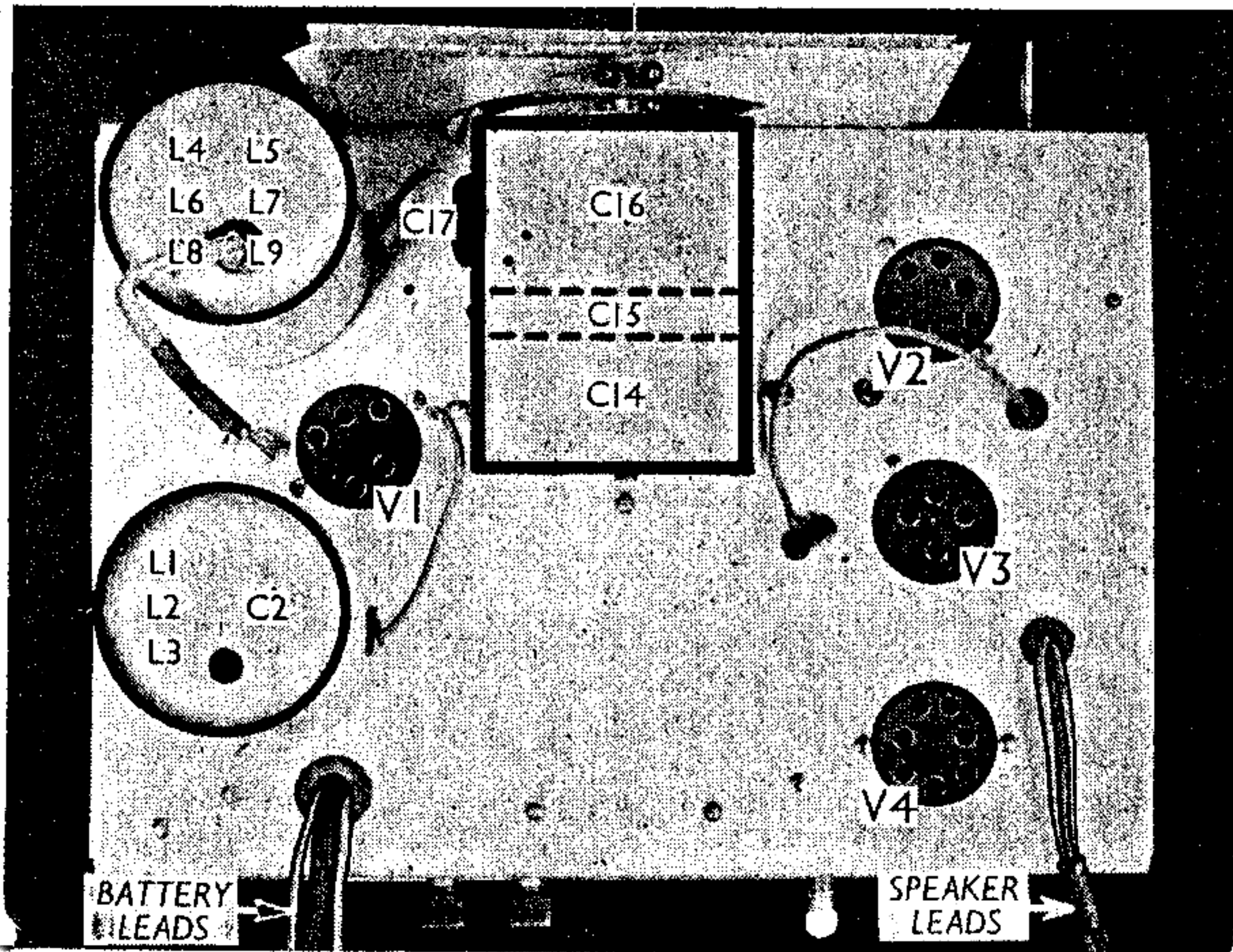
A detachable bottom is fitted to the cabinet and upon removal (two screws with washers) gives access to most of the components beneath the chassis.

Removing Chassis.—If it should be necessary to remove the chassis from the cabinet first remove the trimmer knob (screw down the centre) and then the other four knobs (recessed screws). Now remove the battery platform (pull out) and the two round-head wood screws holding the top of the tuning dial to the sub-baffle.

Next remove the detachable bottom and the four screws (with washers and lock washers) holding the chassis to the bottom of the cabinet, when the chassis can be withdrawn to the extent of the



Circuit diagram of the Cossor 437 B battery-operated receiver. The 436 B is very similar, the slight differences being mentioned under "General Notes."



Plan view of the chassis. The aerial trimmer, C15, is built into the gang condenser. The L1-L3 coil unit also contains C2.

high impedance (12,000 O) external speaker.

Condenser C15.—This is an air dielectric trimmer, with a knob concentric with the main tuning knob, and is situated in the gang condenser between C14 and C16.

Trimmer C17.—This is mounted on the side of the gang condenser, as indicated in our plan chassis view.

Batteries.—The recommended types are: L.T., 2V, 70AH accumulator, such as the Cossor type E370; H.T., Cossor 120 V dry battery, type 2120, or other similar double capacity unit; G.B., Cossor 9 V G.B. battery, type 933.

Battery Leads and Voltages.—Blue lead, black spade tag, L.T. negative; blue lead, red spade tag, L.T. positive 2V; black lead, black plug, H.T. negative; orange lead, black plug marked "S.G.S.," H.T. positive 1, 60 V; green lead, black plug marked "Power," H.T. positive 2, 120 V; red lead, black plug, G.B. positive; blue lead, black plug, G.B. negative 1, -9 V.

Chassis Divergencies.—In the makers' diagram R11 is 50,000 O; R12, 50,000 O; and R13, 100,000 O.

Model 436 B modifications.—The chief differences in model 436 B are that V3 is a 220 PA valve, instead of a 215 P; R14 and R15 are omitted, and C11, C12 are 0.01 μF; and two extra condensers, each 0.0001 μF, are connected one across each half of the secondary of T2. C8 is 0.1 μF.

speaker leads, which should be just sufficient for normal purposes.

To free the chassis entirely, disconnect the speaker leads (screw terminals) and when replacing, connect them as follows, numbering the terminals from left to right:—1, blue; 2, red; 3, blue.

Removing Speaker.—To remove the speaker from the cabinet, slacken the four clamps (nuts and lock washers) holding it to the sub-baffle and when replacing, see that the transformer is at the top.

unit beneath the chassis, stretching across it from front to back. The rotor is easily removed for contact cleaning, if necessary. The individual switches are clearly marked in our under-chassis view, and the table (Col. 1), gives the switch positions for the M.W., L.W. and Gram. settings, turning the knob clockwise from the "off" position. O indicates open, and C closed.

Coils.—L1-L3 and L4-L9 are in two screened units on the chassis deck. The coils are iron-dust cored. Note that the L1-L3 unit also contains C2.

Fuse F1.—This is an Osram M.E.S. type bulb, rated at 3.5 V, 0.15 A. It is screwed into a holder at the rear of the chassis.

External Speaker.—Two sockets are provided at the rear of the chassis for a

CIRCUIT ALIGNMENT

The only alignment possible in this receiver is to feed in a low wavelength signal on the M.W. band, say 220 m., tune to 220 m. on the scale, using the trimmer knob (C15) as well as the main knob. Then adjust C17 for maximum output with fairly critical reaction.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating with an H.T. battery reading 120 V on load. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but the reaction control was at minimum. There was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 210VPT	95	1.7	40	0.5
V2 210SPT	30	0.6	20	0.2
V3 215P	118	2.6	—	—
V4 220B	120†	1.4†	—	—

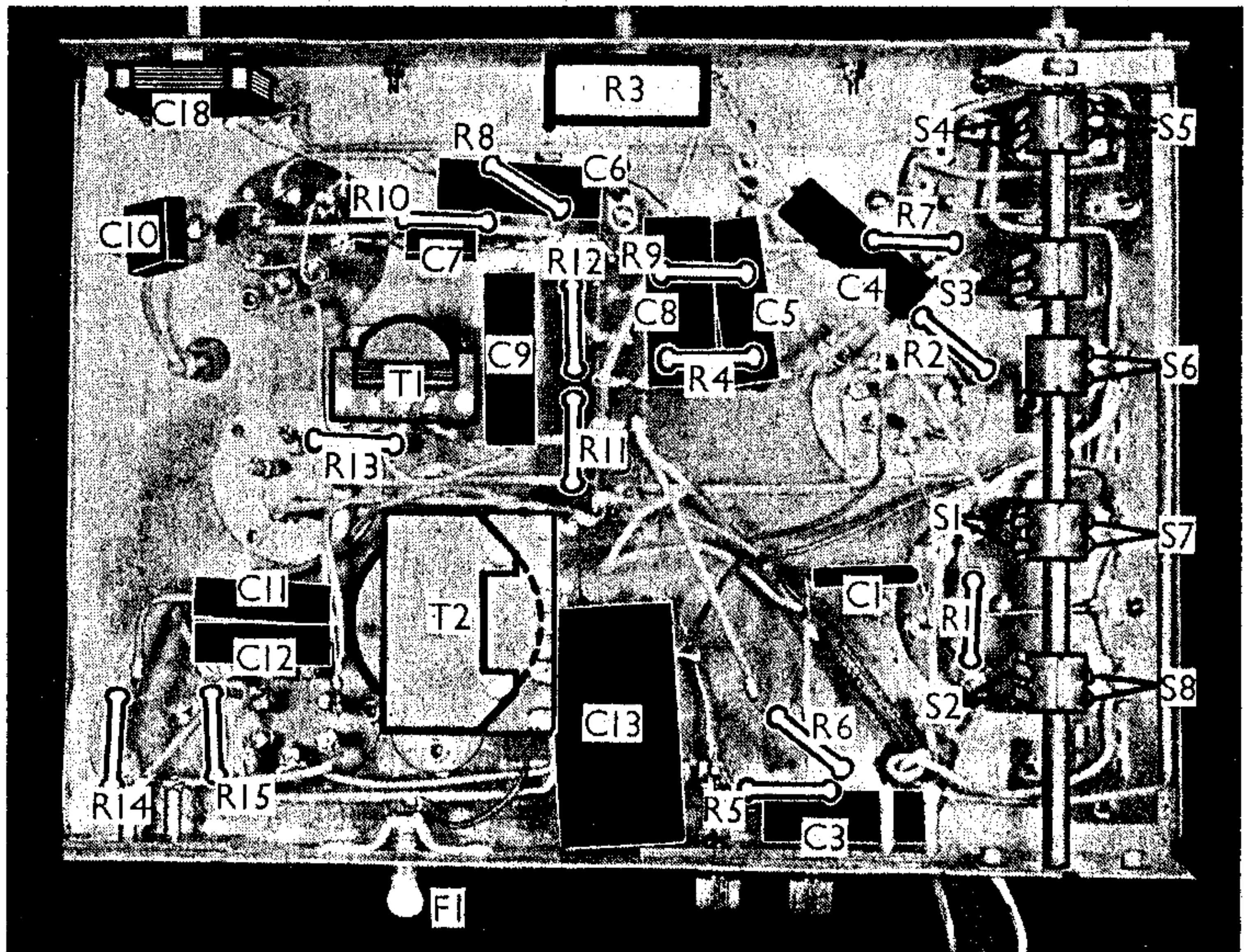
† Each anode.

GENERAL NOTES

Switches.—S1-S6 are the waveband and gramophone switches, and S7 and S8 the battery circuit switches, in a single

Switch	M.W.	L.W.	Gram.
S1	C	O	C
S2	C	O	C
S3	C	O	C
S4	C	O	C
S5	C	O	C
S6	C	C	C
S7*	C	C	C
S8*	C	C	C

* Opens in "off" position.



Under-chassis view. All the switches are clearly marked. F1 is a fuse bulb which screws into a holder at the rear of the chassis.