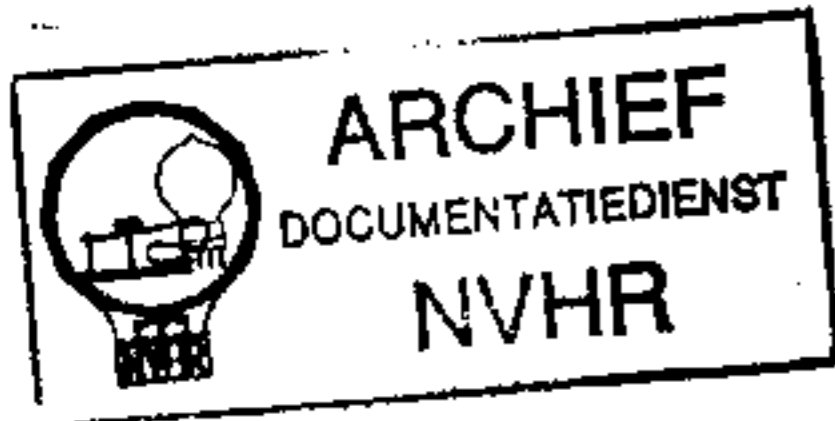


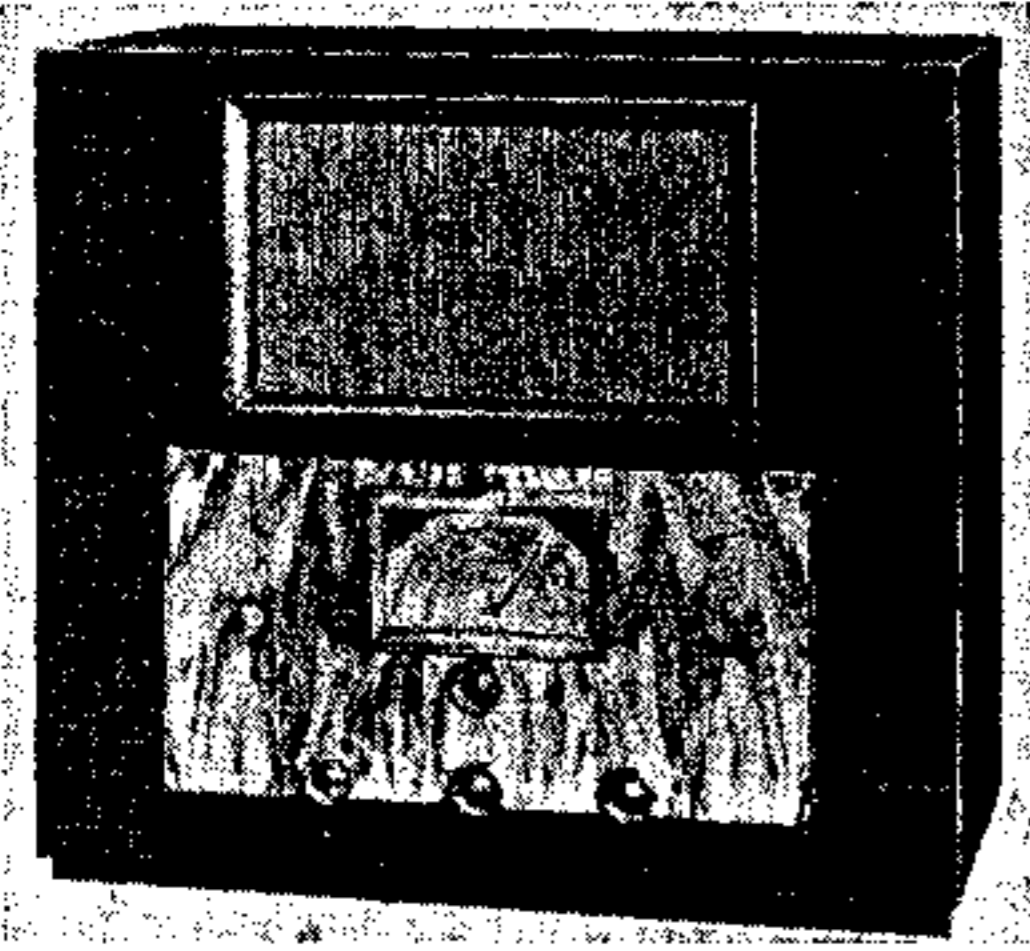
Ned. Ver. v. Historie v/d Radio



ALBA 230 & 450

BATTERY SUPERHETS

REVISED ISSUE OF
SERVICE SHEET No. 169



The Alba 230 table model.

THE Alba 230 is a 5-valve, 2-band battery table superhet. The model 450 is a radiogramophone employing an identical chassis.

Release date, both models: 1936.

CIRCUIT DESCRIPTION

Aerial input via coupling coils **L1, L2** to single tuned circuit **L3, L4, C20** which precedes variable- μ signal frequency amplifier (**V1, Mullard metallised VP2**).

Tuned-secondary RF transformer coupling by **L5, L6, L7, C22** between **V1** and octode frequency changer valve (**V2**,

fier with tuned-primary, tuned-secondary iron-cored transformer couplings **C28, L12, L13, C29** and **C30, L14, L15, C31**.

Intermediate frequency 117.5 KC/S.

Diode second detector is part of separate IHC double-diode valve (**V4, Mullard metallised 2D2**). Audio frequency component in rectified output is developed across load resistance **R7** and passed via IF filter **C11, R6, C9**, coupling condenser **C14**, switch **S9** and manual volume control **R11** to CG of pentode output valve (**V5, Mullard PM22D**). Variable tone control by **C17, R12**; fixed tone correction by **C18**. Provision for connection of high impedance external speaker in anode circuit.

Second diode of **V4**, fed via **C13**, provides DC potential which is developed across load resistance **R8** and fed back through decoupling circuits as GB to RF and FC valves, giving automatic volume control. Delay voltage is obtained from potential divider **R9, R10** across HT circuit.

Provision is made for the connection of a gramophone pick-up in the control grid circuit of **V2**, which then operates as an AF amplifier, **R5** acting as anode load resistance, and **C16** as the coupling condenser, to **R11**. **S8** closes on gram, while **S9** and **S6** open to mute radio. **S7** closes on radio to short-circuit the pick-up connections.

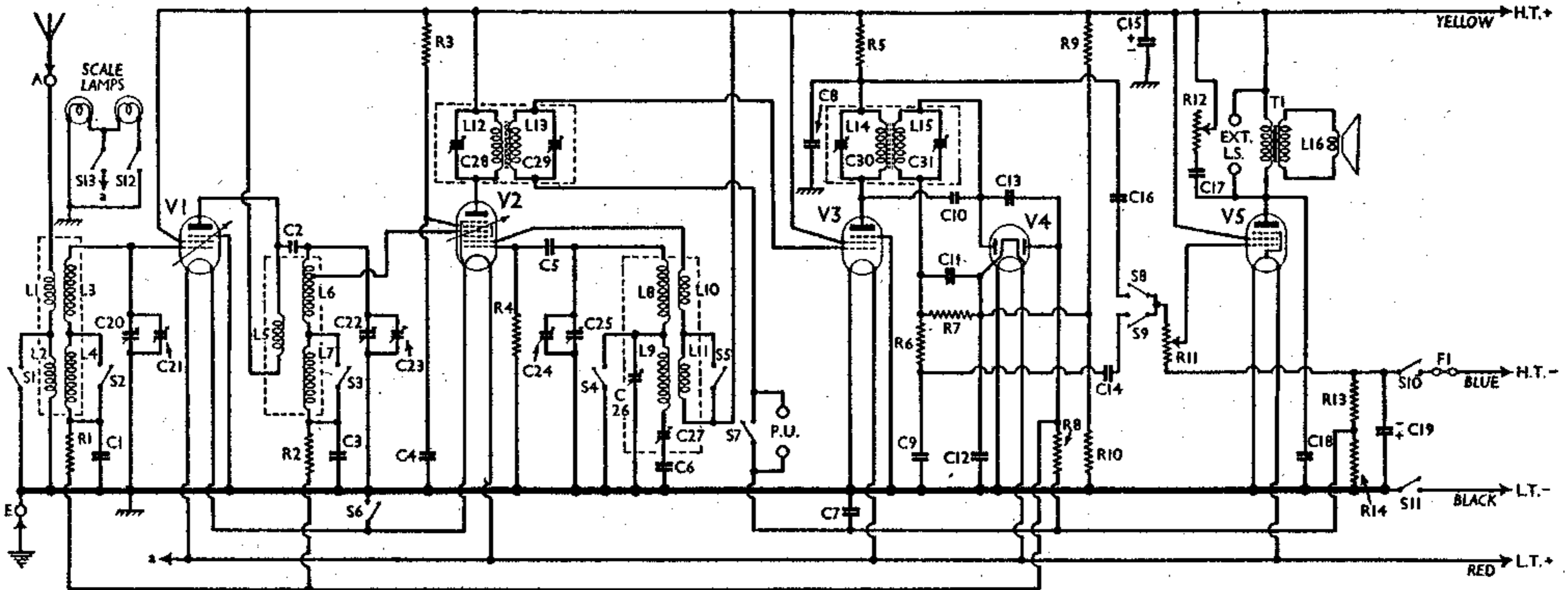
Fixed GB potential for **V1, V2** and **V3**, together with GB for **V5**, is obtained from the potential divider **R13, R14** in the negative HT lead to chassis.

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 CG decoupling ...	500,000
R2	V2 pent. CG decoupling...	500,000
R3	V2 SG HT feed ...	50,000
R4	V2 osc. CG resistance ...	50,000
R5	V3 anode decoupling ...	2,000
R6	IF stopper ...	50,000
R7	V4 signal diode load ...	500,000
R8	V4 AVC diode load ...	500,000
R9	AVC delay voltage potential divider ...	1,000,000
R10		
R11	Manual volume control ...	500,000
R12	Variable tone control ...	50,000
R13	V3 and V5 automatic GB resistances ...	100
R14		

CONDENSERS		Values (μ F)
C1	V1 CG decoupling ...	0.1
C2	RF trans. top coupling ...	0.00005
C3	V2 pent. CG decoupling ...	0.1
C4	V2 SG decoupling ...	0.1
C5	V2 osc. CG condenser ...	0.0001
C6	Osc. LW fixed tracker ...	0.005
C7	V3 CG decoupling ...	0.1
C8	V3 anode decoupling ...	0.002
C9	IF by-pass ...	0.0001
C10	Coupling to V4 signal diode ...	0.000025
C11	IF by-pass ...	0.0001
C12	V4 cathode by-pass ...	0.1
C13	Coupling to V4 AVC diode ...	0.0001
C14	Radio coupling to V5 ...	0.002
C15*	HT circuit reservoir ...	8.0
C16	Gram. coupling to V5 ...	0.01
C17	Part of TC filter ...	0.02
C18	Fixed tone corrector ...	0.005
C19*	Auto. GB circuit by-pass ...	50.0

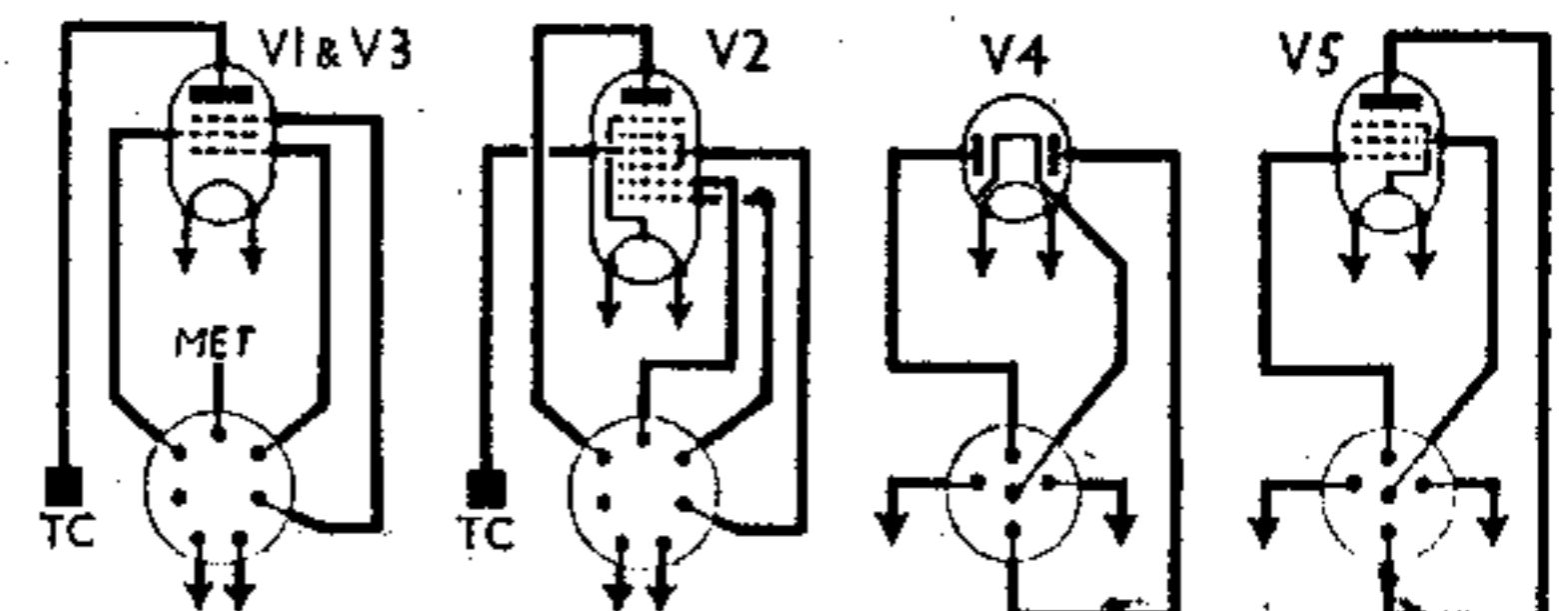
* Electrolytic. † Variable. ‡ Pre-set.



Mullard metallised FC2). Oscillator grid coils **L8, L9** are tuned by **C25**; parallel trimming by **C24** (MW) and **C26** (LW); tracking by shaped condenser plates and series condensers **C6, C27**; oscillator anode reaction coils **L10, L11**.

Third valve (**V3, Mullard metallised VP2**) is an RF pentode operating with fixed GB as intermediate frequency ampli-

Circuit diagram of the Alba 230 battery superhet. On gramophone operation **V2** operates as an AF amplifier. The circuit of the 450 radiogram is identical.



CONDENSERS (continued)		Values (μ F)
C20†	Aerial circuit tuning ...	—
C21†	Aerial circ. MW trimmer	—
C22†	RF trans. sec. tuning ...	—
C23†	RF trans. MW trimmer...	—
C24†	Osc. circuit MW trimmer	—
C25†	Osc. circuit tuning ...	—
C26†	Osc. circuit LW trimmer	0.000075
C27†	Osc. LW tracker ...	0.0011
C28†	1st IF trans. pri. tuning	—
C29†	1st IF trans. sec. tuning	—
C30†	2nd IF trans. pri. tuning	—
C31†	2nd IF trans. sec. tuning	—

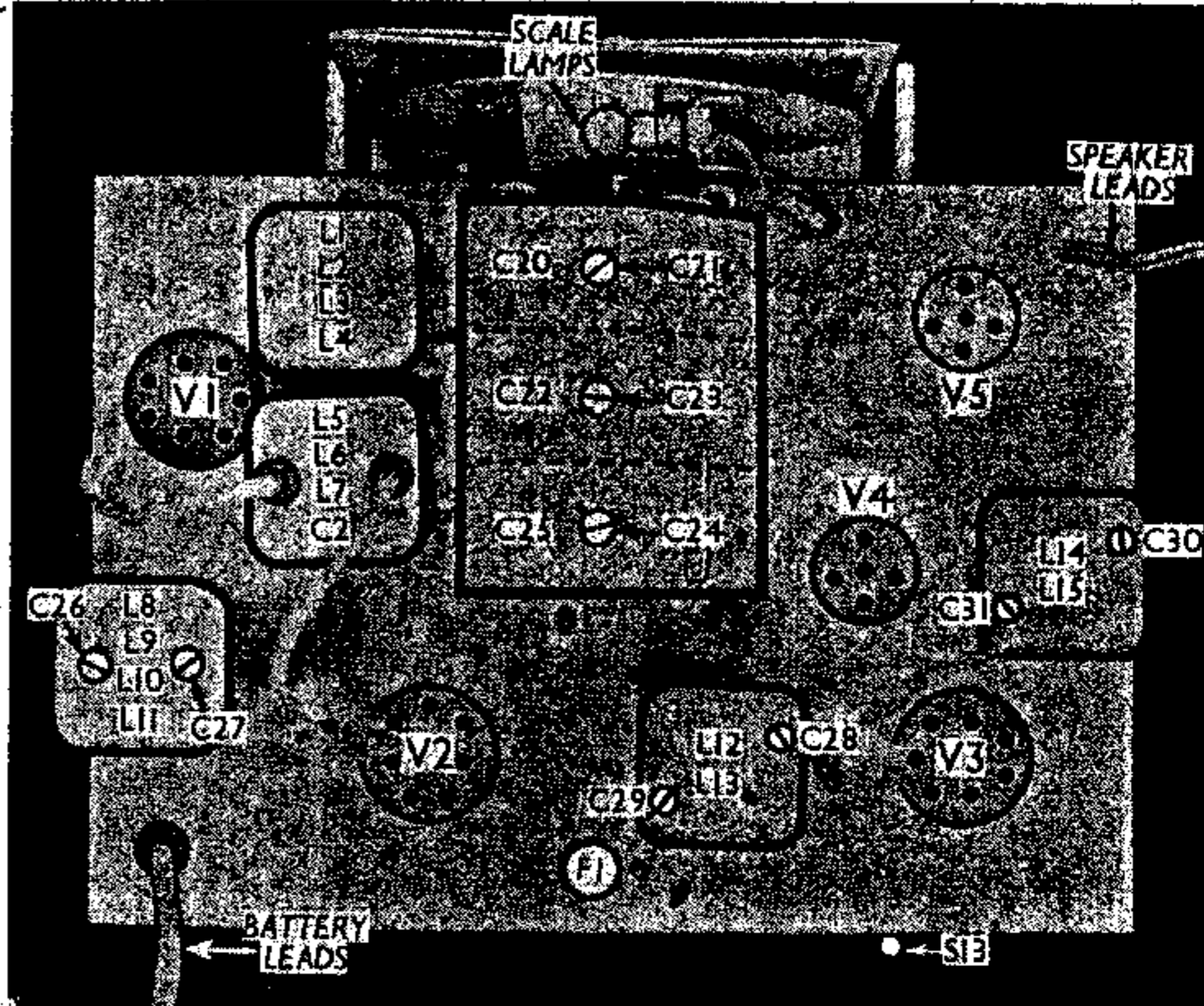
* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coils ...	12.0
L2		40.0
L3		3.5
L4	Aerial tuning coils ...	12.0
L5		125.0
L6	RF trans. primary ...	3.5
L7	RF trans. secondary ...	12.0
L8	Oscillator tuning coils ...	3.0
L9		7.0
L10	Oscillator reaction coils ...	125.0
L11		400.0
L12	1st IF trans. { Pri. ...	50.0
L13		Sec. ... 50.0
L14	2nd IF trans. { Pri. ...	50.0
L15		Sec. ... 50.0
L16	Speaker speech coil ...	2.6
T1	Speaker input { Pri. ...	700.0
	trans. { Sec. ...	0.4
S1-S5	Waveband switches ...	—
S6	V1, V2 LT circuit switch	—
S7-S9	Radio-gram changeover switches ...	—
S10	HT circuit switch ...	—
S11	LT circuit switch ...	—
S12	Scale lamp switches ...	—
S13		—
F1	HT circuit fuse ...	—

DISMANTLING THE SET

Removing Chassis.—Remove the four control knobs (recessed grub screws) from the front of the cabinet; remove the four bolts (with washers) holding the chassis to the bottom of the cabinet. If its rear is now tilted slightly, the chassis may be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes, or it may be freed by unsoldering the leads. *When replacing,* connect the black and white leads to the tags on the terminal strip;

Plan view of the chassis. All the trimmers are accessible from above the chassis, and are indicated here. The HT circuit fuse F1 is an MES lamp. G2 is housed in the RF transformer L5-L7 unit.



connect the blue earthing lead to the speaker frame by clamping it between one of the transformer mounting feet and its seating flange. **Removing Speaker.**—Remove the four nuts and two counter-sunk head wood screws holding the sub-baffle to the front of the cabinet. *When replacing,* the transformer should be on the right. If the leads have been disconnected, they should be connected as indicated above.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a new HT battery read-

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VP2	140	1.0	140	0.3
V2 FC2	140	0.8	70	1.2
	Oscillator			
	140	0.9		
V3 VP2	130	0.8	140	0.2
V4 2D2	—	—	—	—
V5 PM22D	135	4.3	140	0.7

ing 142 V. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input.

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

GENERAL NOTES

Switches.—S1-S5 are the waveband switches, S6-S9 the radio/gram change-over switches, and S12 the scale lamp switch, in a leaf-type rotary unit beneath the chassis. The switches are all indicated in our under-chassis view. The switch positions for the three control settings are given in the table below.

S10, S11 are the QMB HT and LT control switches, ganged with the volume control R11, while S13 is the QMB scale lamp master switch, mounted on the rear member of the chassis. It is closed when the knob is down.

Scale Lamps.—These are two Osram MES types rated at 2.5 V 0.2 A.

Fuse F1.—This is a Competa MES type lamp, rated at 0.15 A.

Batteries.—LT, Three Star Type SGF3, 2V 36 AH glass cell. HT, Drydrex 135 V, Type S65.

Battery Leads and Voltages.—Black lead, spade tag, LT negative; red lead, spade tag, LT positive 2 V; blue lead, black plug, HT negative; yellow lead, red plug, HT positive 135 V.

External Speaker.—Two terminals are provided on the internal speaker terminal strip for the connection of a high impedance (20,000 Ω) external speaker.

Switch Table

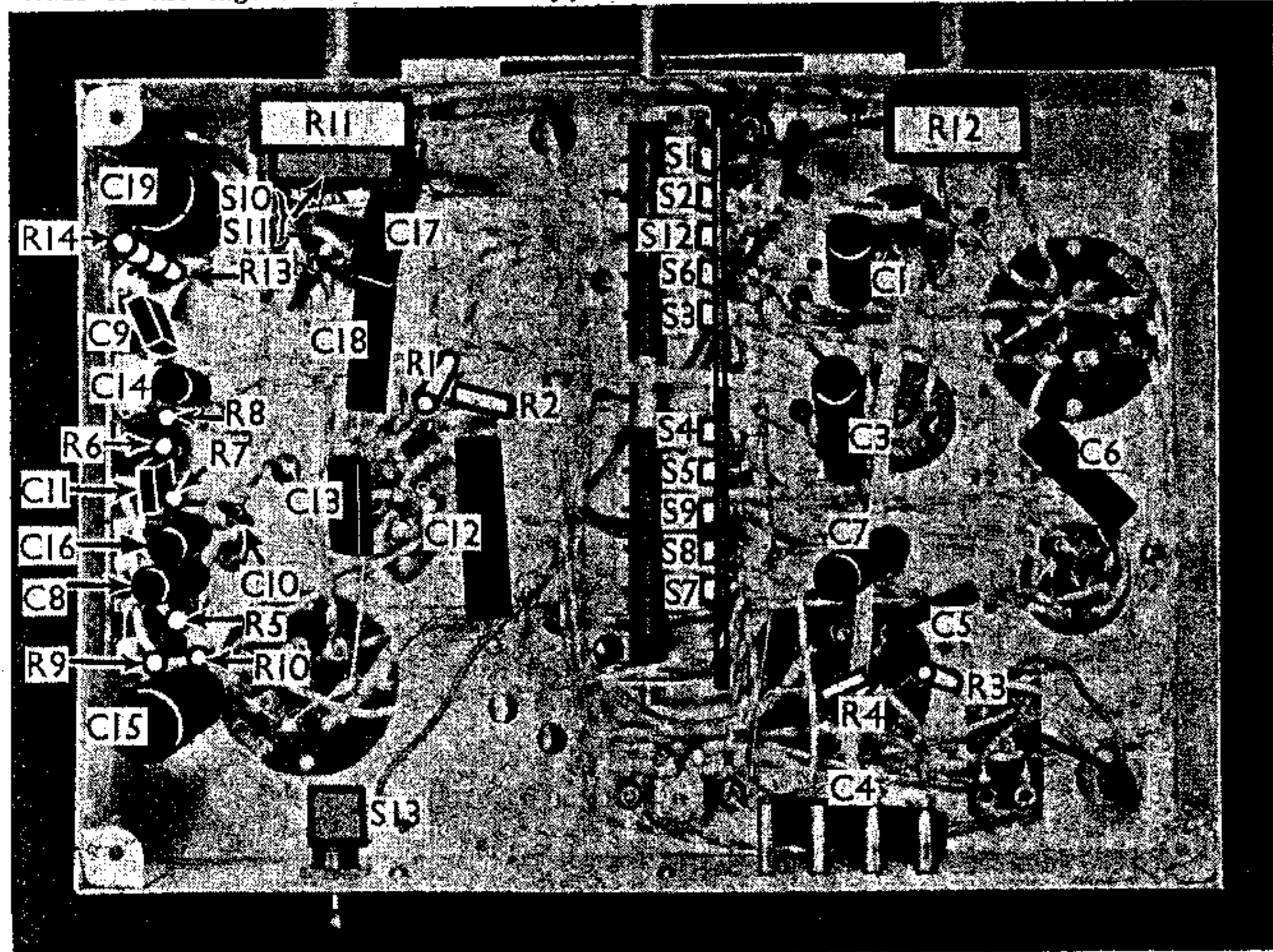
Switch	MW	LW	Gram
S1	○	—	—
S2	○	—	—
S3	○	—	○
S4	○	—	—
S5	○	—	—
S6	○	—	—
S7	○	○	—
S8	—	○	○
S9	○	—	—
S12	○	—	○

CIRCUIT ALIGNMENT

IF Stages.—Connect signal generator between top cap of V2 and chassis, switch set to MW and feed in a 117.5 KC/S (2553.2 m) signal. Adjust C31, C30, C29 and G25 in that order for maximum output, keeping the input low.

RF and Oscillator Stages.—Adjust pointer to coincide with horizontal lines at top end of scale when gang is at maximum. Connect signal generator to A and E sockets, switch set to MW, adjust pointer to 250 m on scale, feed in a 250 m (1,200 KC/S) signal, and adjust G24, G23 and G21, in that order, for maximum output.

Switch set to LW, tune to 1,000 m on scale, feed in a 1,000 m (300 KC/S) signal, and adjust G26 for maximum output. Feed in a 1,900 m (158 KC/S) signal, tune it in, and adjust G27 for maximum output while rocking the gang for optimum results.



Plan view of the chassis. S13 is the scale lamp master switch.