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VIDOR CN429

"Lady Margaret" Battery Portable

THE Vidor "Lady Margaret" personal portable, model CN429, is a 4-valve, 2-band all-dry battery superhet covering the ranges 187-570 m and 1,086-1,986 m. The receiver is housed in a small attaché-case type of carrying case whose lid-stay operates the on-off switch, switching the receiver off when the lid is closed.

Release date and original price: June 1954, £9 2s 10d. Purchase tax and batteries extra.

CIRCUIT DESCRIPTION

Tuned frame aerial input on L.W. by **L2** and **C20** to heptode valve **(V1, Mullard DK96)** which operates as frequency changer with electron coupling. For M.W. operation, **S1** closes and shunts **L1** across **L2.**

A single oscillator tuning coil **L3,** tuned by **C21,** is used for both M.W. and L.W. bands. **C22** is the M.W. trimmer, and for L.W. operation **C7** is shunted across the circuit by the closing of **S3.** The series tracker **C6** is in the high potential side of the circuit. Reaction coupling from anode by **L4.**

Second valve **(V2, Mullard DF96)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C3, L5, L6, C4** and **C10, L7, L8, C11.**

Intermediate frequency 470 kc/s.

Diode signal detector is part of diode pentode valve **(V3, Mullard DAF96).** Audio frequency component in rectified output is developed across volume control **R7,** which acts as diode load, and passed via **C14** to control grid of pentode section, which operates as A.F. amplifier. I.F. filtering by **C12, R6** and the capacitance of the screened leads to the volume control.

D.C. potential developed across **R6, R7** is fed back as bias via decoupling circuit **R5, C13** to F.C. and I.F. stages, giving automatic gain control.

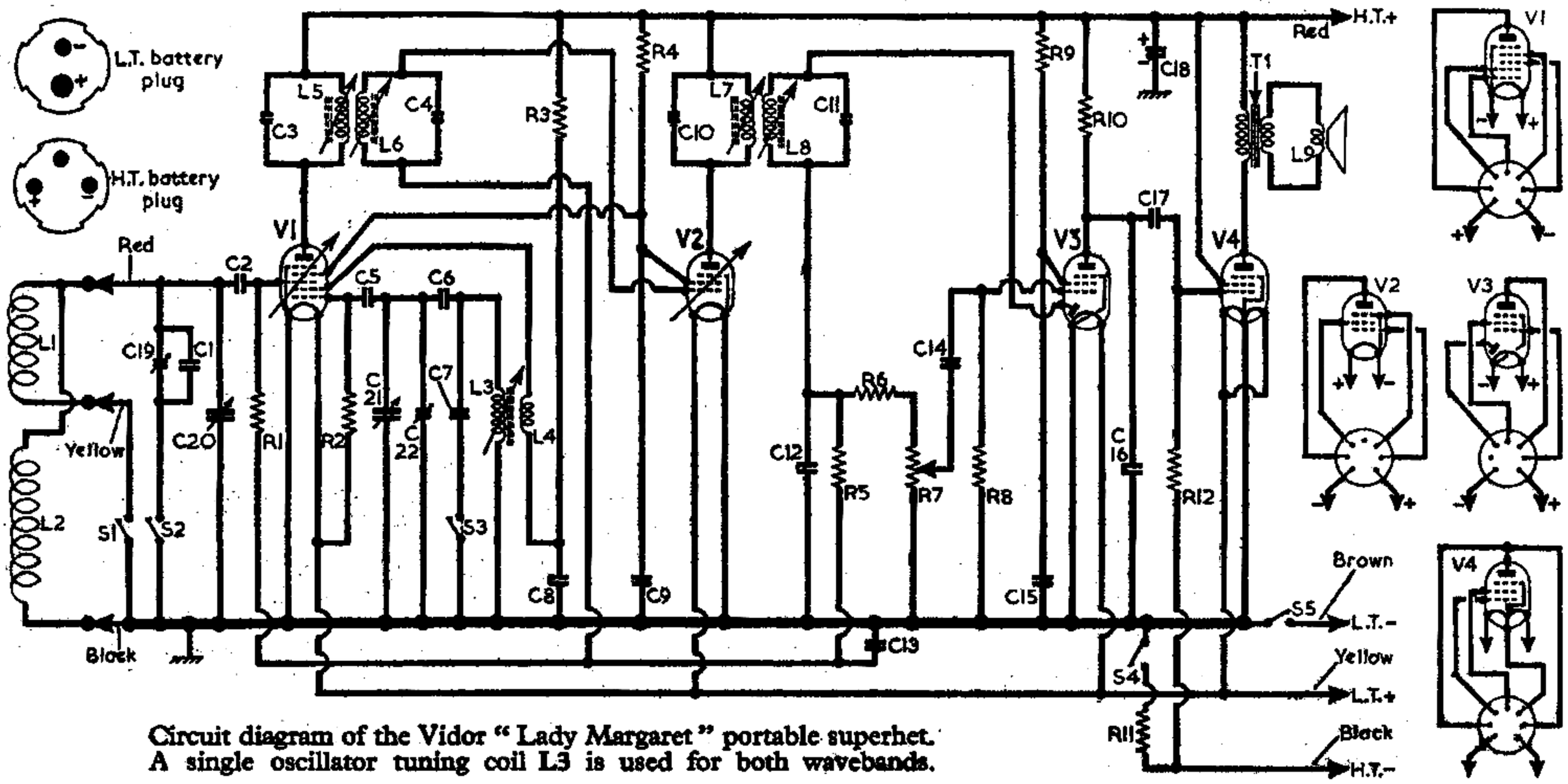
Resistance-capacitance coupling by **R10, C17** and **R12** between **V3** pentode anode and control grid of pentode output valve **(V4, Mullard DL96).** Further I.F. filtering by **C16.** Grid bias for **V4** is obtained from the voltage drop across **R11** in the H.T. negative lead to chassis, and as this resistor is not by-passed, a degree of negative feed-back is developed across it and applied to the valve, giving tone correction. The two halves of **V4** filament are connected in parallel for 1.4 V operation. **C18** by-passes the H.T. battery.

COMPONENTS AND VALUES

	RESISTORS	Values	Locations
R1	V1 C.G.	470kΩ	G4
R2	V1 osc. C.G. ...	27kΩ	G4
R3	Osc. anode feed ...	33kΩ	F4
R4	S.G. feed	33kΩ	G4
R5	A.G.C. decoupling	2·2MΩ	F4
R6	I.F. stopper ...	100kΩ	F4
R7	Volume control ...	500kΩ	H3
R8	V3 C.G.	10MΩ	F3
R9	V3 S.G. feed ...	2·7MΩ	E3
R10	V3 anode load ...	1MΩ	E4
R11	V4 G.B.	680Ω	F4
R12	V4 C.G.	1·8MΩ	F4

	CAPACITORS	Values	Locations
C1	L.W. aerial trim. ...	150pF	A1
C2	V1 C.G.	100pF	H4
C3	1st I.F. trans. tuning	65pF	B2
C4	1st I.F. trans. tuning	65pF	B2
C5	V1 osc. C.G. ...	100pF	H4
C6	Osc. tracker ...	532pF	H4
C7	L.W. osc. trim. ...	470pF	H4
C8	Osc. decoupling ...	0·05μF	C1
C9	S.G. decoupling ...	0·05μF	C1
C10	2nd I.F. trans. tuning	65pF	C2
C11	2nd I.F. trans. tuning	65pF	C2
C12	I.F. by-pass ...	100pF	F4
C13	A.G.C. decoupling	0·05μF	G4
C14	A.F. coupling ...	0·001μF	F3
C15	V3 S.G. decoupling	0·05μF	F4
C16	I.F. by-pass ...	200pF	F3
C17	A.F. coupling ...	0·01μF	E4
C18*	H.T. decoupling ...	2μF	B2
C19‡	L.W. aerial trim ...	50pF	B1
C20†	Aerial tuning ...	523pF	A2
C21†	Oscillator tuning...	523pF	A1
C22‡	M.W. osc. trim. ...	50pF	A1

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Vidor "Lady Margaret" portable superhet. A single oscillator tuning coil L3 is used for both wavebands.

OTHER COMPONENTS			Approx. Values	Locations
L1	M.W. frame aerial		2·0	—
L2	L.W. frame aerial		15·0	—
L3	Osc. tuning coil ...		1·4	G3
L4	Osc. reaction coil...		1·0	G3
L5	1st I.F. trans.	Pri.	22·0	B2
L6	1st I.F. trans.	Sec.	22·0	B2
L7	2nd I.F. trans	Pri.	22·0	C2
L8	2nd I.F. trans	Sec.	22·0	C2
L9	Speech coil ...		3·0	E3
T1	O.P. trans.	Pri.	420·0	—
		Sec.	—	
S1-S3	Waveband switches		—	H3
S4, S5	Battery switches ...		—	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a new set of batteries. The volume control was turned to maximum, and the receiver was tuned to the highest wavelength end of M.W., but there was no signal input.

Voltage readings were measured with an Avo Electronic TestMeter, which draws no appreciable current, and allowance should be made for the current drawn by other types of meter. Chassis was the negative connection.

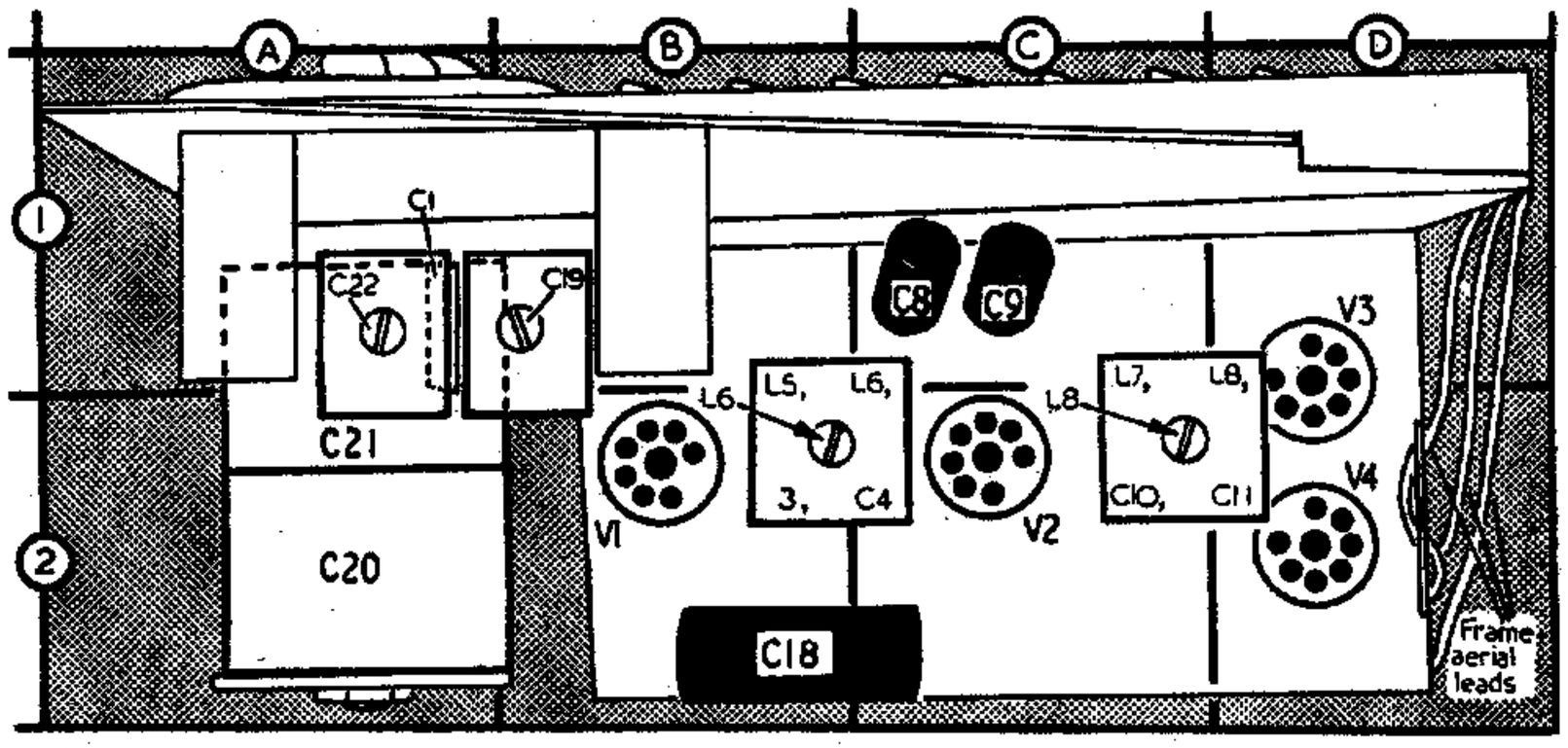
Valves	Anode		Screen	
	V	mA	V	mA
V1 DK96 ...	86	0·35	67	0·1
	Oscillator			
	35	1·6		
V2 DF96 ...	86	1·4	67	0·5
V3 DAF96 ...	25	0·06	36	0·01
V4 DL96 ...	83	4·0	86	0·75

GENERAL NOTES

Switches.—S1-S3 are the waveband switches, ganged in a simple slide-type unit. In the M.W. position (slider towards the tuning spindle) **S1** closes; on L.W., **S2** and **S3** close.

S4 and **S5** are the battery circuit switches, mounted in a special spring-loaded unit on the side of the carrying case. It is so positioned that the lid-stay depresses the spring-loaded bar when the lid is closed, switching off the receiver. When the lid is raised, the spring brings the bar into contact with the two isolated tags, closing the switches.

Batteries.—The L.T. unit is a Vidor type L5040, rated at 1.5 V. It is fitted with a 2-pin socket, whose plug diagram, together with that of the H.T. plug, is inset in the top left-hand corner of the circuit diagram. The H.T. battery is a Vidor type L5512, rated at 90 V.



Plan view of the chassis. The frame aerial leads are colour coded in the circuit diagram.

CIRCUIT ALIGNMENT

All the core and trimmer adjustments are made accessible by unscrewing the captive bolt in the front edge of the receiver escutcheon and raising the escutcheon. The chassis need not be removed.

I.F. Stages.—Switch receiver to M.W., tune to 200 m and turn volume control to maximum. Connect signal generator leads to junction of **C19** and **C2,** and to chassis, feed in a 470 kc/s (638·3 m) signal and adjust the cores of **L8** (location reference C2), **L7** (F4), **L6** (B2) and **L5** (G4) for maximum output, reducing the input as the circuits come into line to avoid A.G.C. action. Repeat these adjustments.

R.F. and Oscillator Stages.—Check that with the gang at maximum capacitance, the fixed cursor marks on the escutcheon coincide with the lines dividing the M.W. and L.W. scales. The signal generator should be coupled to the frame aerials by laying the leads near the lid of the receiver. If insufficient coupling is obtained in this way, the "live" signal generator lead may be connected to the chassis frame.

M.W.—Switch receiver to M.W., tune to 200m, feed in a 200m (1,500 kc/s) signal and adjust **C22** (A1) for maximum output. Tune receiver to 500m, feed in a 500m (600 kc/s) signal and adjust the core of **L3** (G4) for maximum output, rocking the gang slightly to obtain maximum output. Repeat these adjustments until the calibration is correct at both ends of the band.

L.W.—Switch receiver to L.W., tune to 1,200m, feed in a 1,200m (250 kc/s) signal and adjust **C19** (B1) for maximum output. If the calibration at the high wavelength end of the band is badly out, **C6** should be checked and replaced if its value is outside the stated ±1 per cent tolerance.

DISMANTLING

The majority of the chassis components can be made accessible by unscrewing the captive bolt in the front edge of the escutcheon and raising the escutcheon.

Removing Chassis.—Remove tuning and volume control knobs (pull-off) and disconnect battery plugs;

remove two wood screws with metal spacers from inside corners of lid and carefully prise out from the lid the rexine-covered board carrying the frame aerial windings;

remove two wood screws securing battery switch unit to side of carrying case below lid stay;

release switch, transformer and battery leads from clamp on rear edge of carrying case;

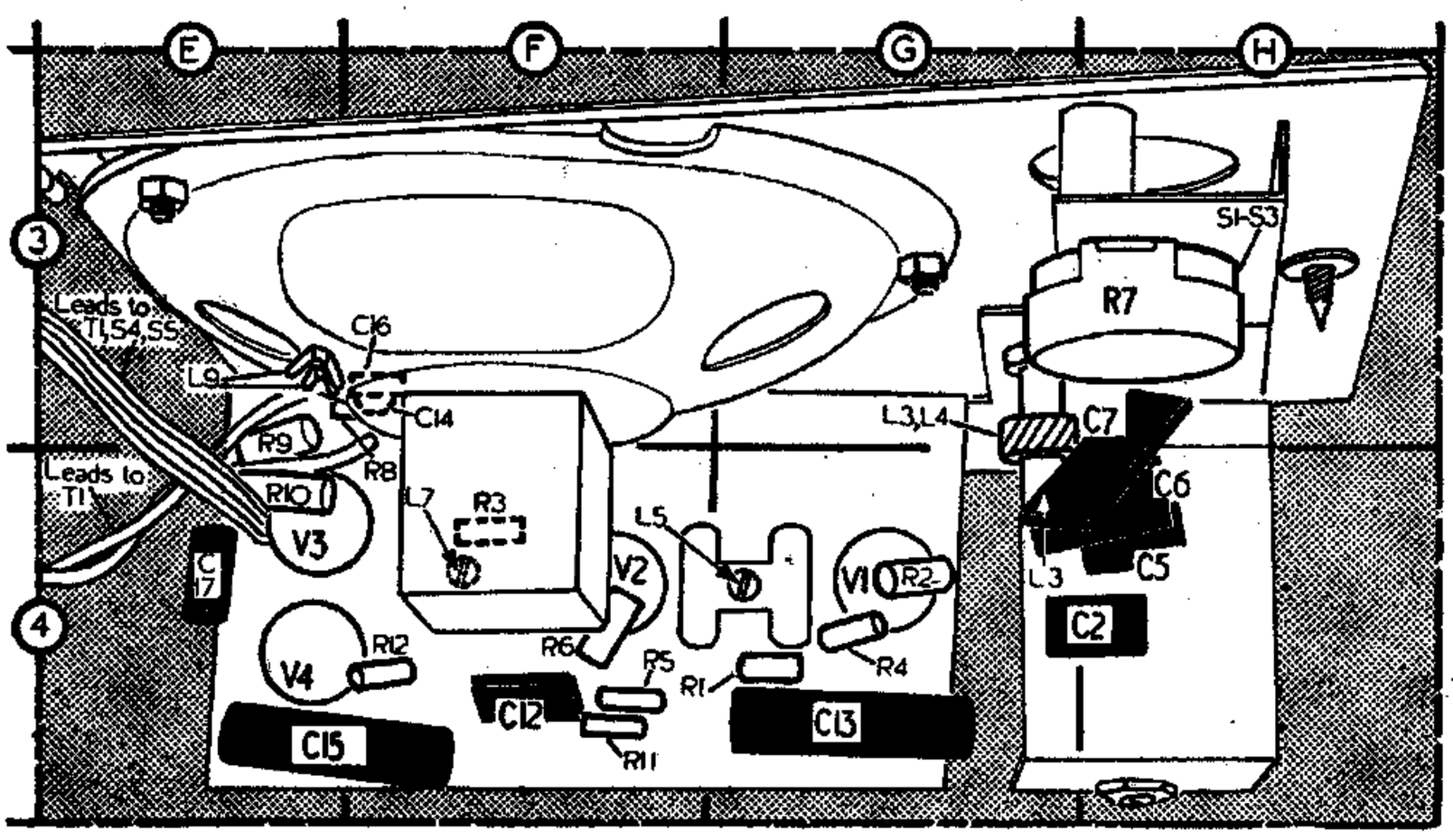
unsolder orange and white leads from tags on output transformer;

remove four 4BA nuts with shakeproof washers securing chassis and spacing pillars to escutcheon, and withdraw chassis.

When replacing, check that the spacers are in position on the chassis-fixing bolts.

The tags on the battery switch should point downwards.

Make sure that the waveband switch lug on the escutcheon engages in the switch unit by placing them both in the M.W. position (towards tuning spindle) before replacing chassis.



Underside view of the chassis. Battery switches **S4, S5** are mounted in the carrying case.

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