

COSSOR 512

"Melody Minor"

ates as frequency changer with electron coupling. Oscillator grid coils L5 (M.W.) and L6 (L.W.) are tuned by C30. Parallel trimming by C31 (M.W.) and C9, C31 (L.W.); series tracking by C11 (M.W.) and C10, C11 (L.W.). Reaction coupling from anode by L7 (M.W.) and L8 (L.W.).

Second valve (V2, Cossor 171DDP) is a double diode R.F. pentode, its pentode section operating as intermediate frequency amplifier with tuned transformer couplings C6, L9, L10, C7 and C16, L11, L12, C17.

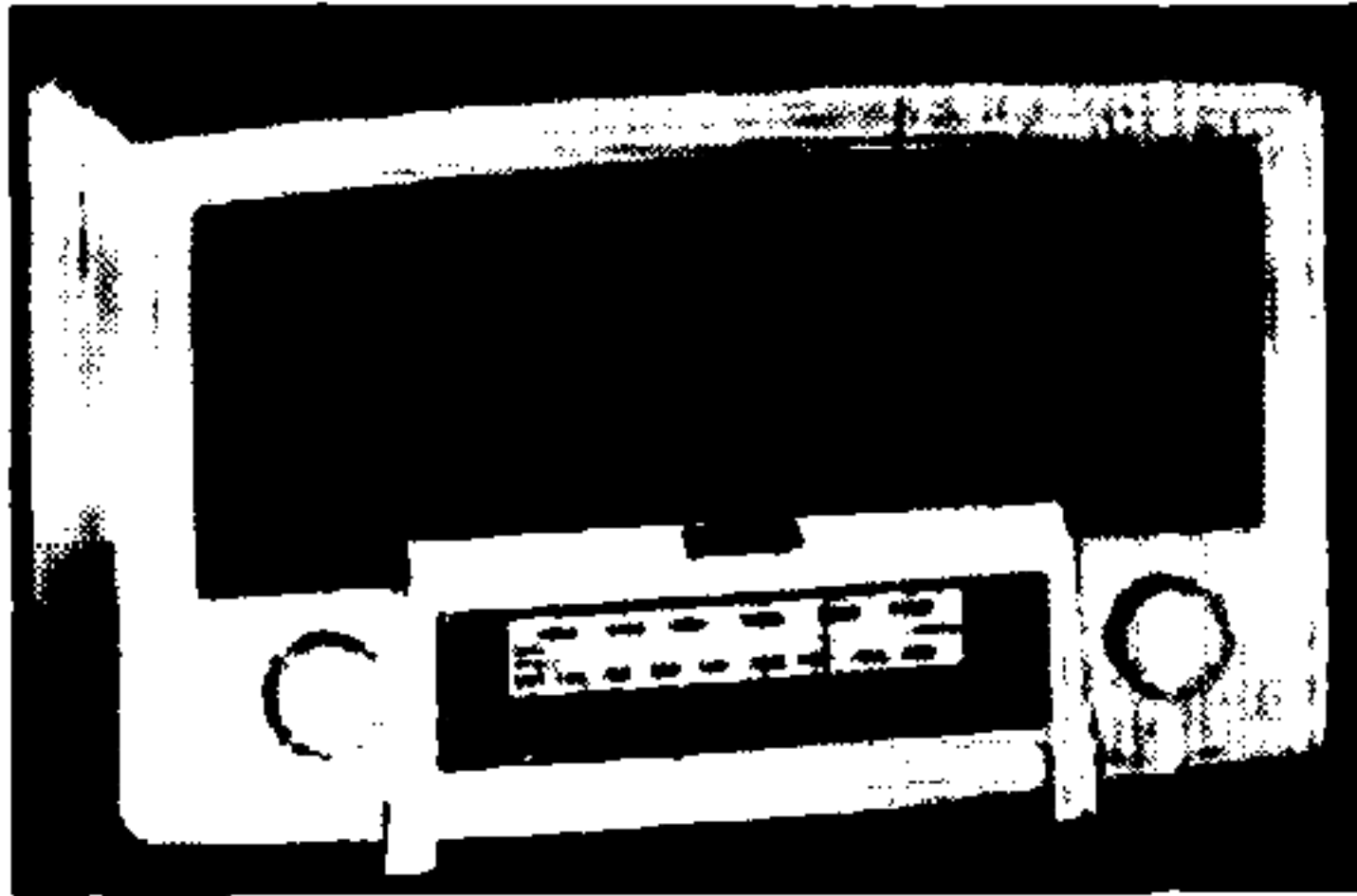
Intermediate frequency 470 kc/s.

One diode section of V2 operates as signal detector, the audio frequency component in its rectified output being developed across R13 and passed via C22, volume control R14, and R16 to

control grid of pentode output valve (V3, Cossor 451PT). I.F. filtering by C18, R12 and C19. Tone control adjustment by means of C21 and a two-position link at the rear of the chassis. Fixed tone correction by C26 in V3 anode circuit.

Second diode of V2 is fed from V2 pentode anode via C14, and a proportion of the rectified output, that developed across R9 in the potential divider R8, R9, is fed back as bias to V1 and V2 pentode section.

H.T. current is supplied by I.H.C. half-wave rectifier (V4, Cossor 3118U). Smoothing by R15 and electrolytic capacitors C23, C24. Residual hum is neutralized by passing the H.T. current through section a of the output transformer T1. R18 protects the rectifier, and R21 protects the scale lamp from current surges. Mains R.F. filtering by C27.



EMPLOYING two ferrite rod internal aerials, the Cossor 512 "Melody Minor" is a 3-valve (plus rectifier) 2-band table superhet, designed to operate from A.C. or D.C. mains of 200-250 V, 40-100 c/s in the case of A.C. The waveband ranges are 187-547m and 803-2,065m.

Release date and original price: October 1953 £11 18s 6d. Purchase tax extra.

CIRCUIT DESCRIPTION

The aerial input coils L1 (M.W.) and L3 (L.W.) are mounted on lengths of ferrite rod to form the internal aerial, and, together with loading coils L2 (M.W.) and L4 (L.W.), are tuned by C29. Provision is also made for the connection of an external aerial and earth via C1 and C2, which isolate the A and E sockets from chassis. In earlier models, a single frame aerial winding L15 was used instead of the ferrite rod cored aerials. The aerial input circuit of these models is drawn separately to the left of the main circuit diagram.

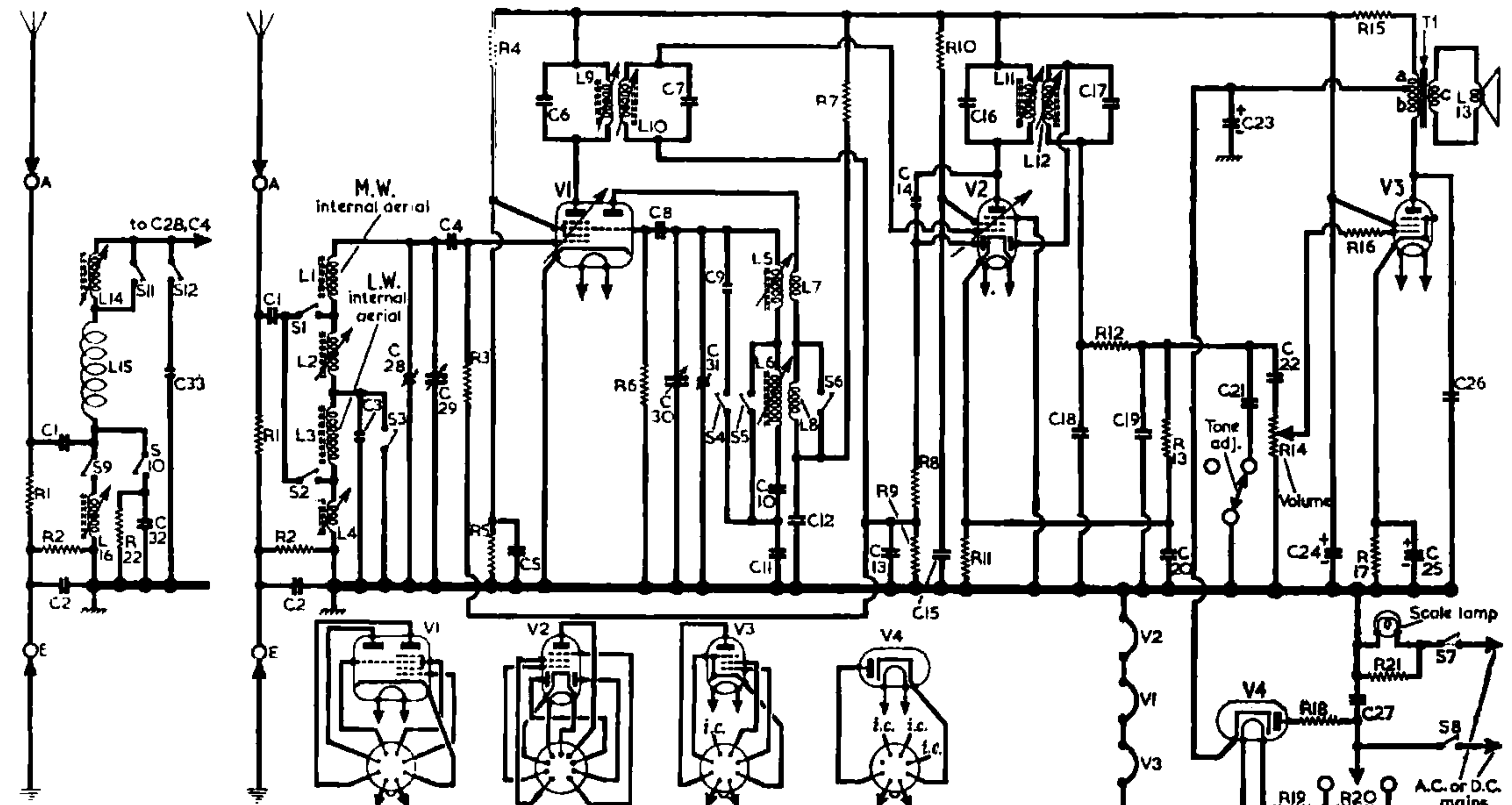
Triode hexode valve (V1, Cossor 141TH) op-

COMPONENTS AND VALUES

RESISTORS	Values	Locations
R1	Aerial shunt ...	1.5MΩ G4
R2	Anti-static leak ...	330kΩ F3
R3	V1 C.G. ...	2.2MΩ G3
R4	V1 S.G. pot. divider {	15kΩ F4
R5		27kΩ F4
R6		47kΩ F4
R7	Osc. anode feed ...	33kΩ G3
R8	A.G.C. diode load {	2.2MΩ F4
R9		470kΩ E4
R10	V2 S.G. feed ...	22kΩ F4
R11	V2 G.B. ...	500Ω E4
R12	I.F. stopper ...	47kΩ E4
R13	Signal diode load ...	220kΩ E3
R14	Volume control ...	500kΩ D3
R15	H.T. smoothing ...	1.2kΩ D3
R16	V3 C.G. stopper ...	47kΩ D3
R17	V3 G.B. ...	270Ω D4
R18	V4 surge limiter ...	150Ω D4
R19	Heater ballast ...	950Ω C2
R20		300Ω C2
R21	Scale lamp shunt ...	83Ω D3
R22	L.W. aerial shunt ...	4.7kΩ —

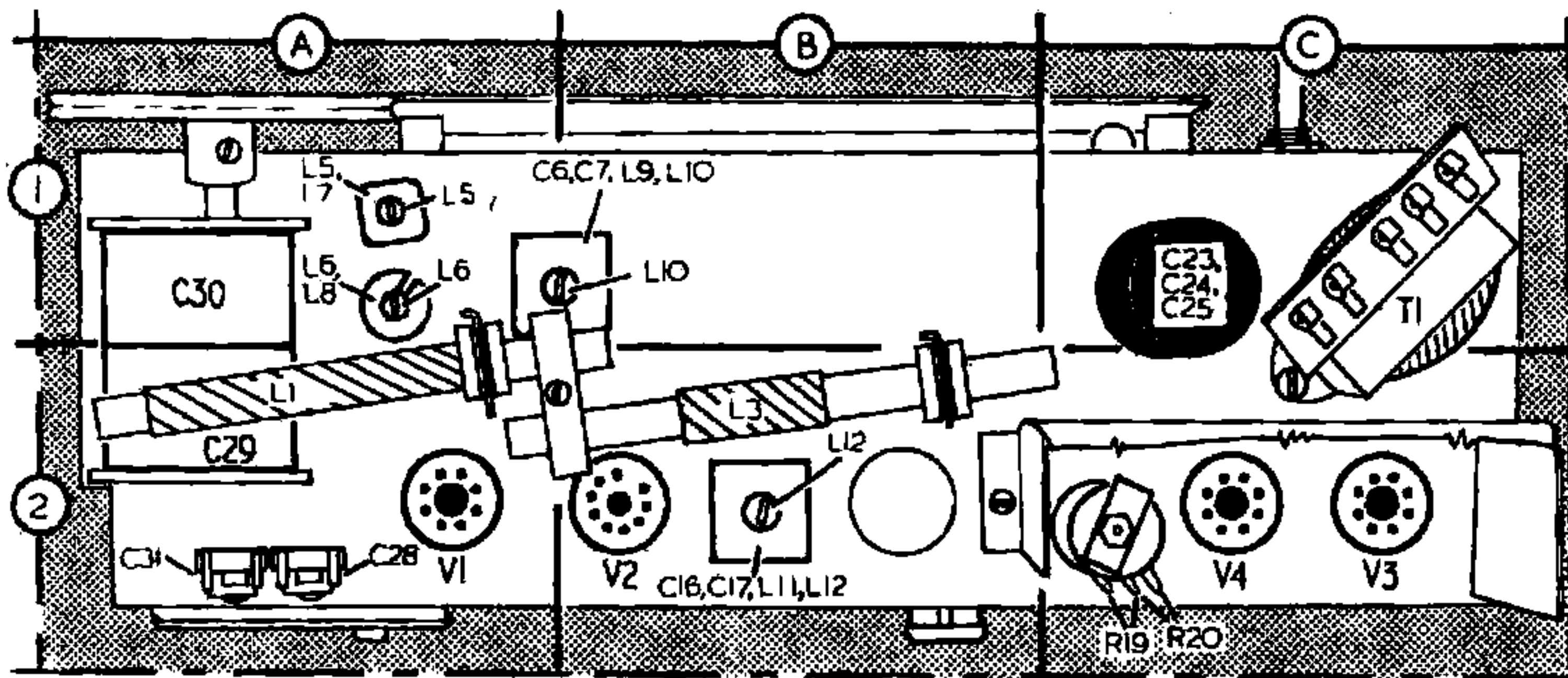
CAPACITORS	Values	Locations
C1	Aerial coupling ...	0.0018μF G4
C2	E socket isolator ...	0.01μF E3
C3	L.W. aerial trim ...	33pF G4
C4	V1 C.G. ...	100pF G4
C5	V1 S.G. decoupling ...	0.1μF F3
C6	1st I.F. trans. tun. {	100pF A1
C7		100pF A1
C8	V1 osc. C.G. ...	120pF G3
C9	L.W. osc. trimmer ...	47pF G3
C10	L.W. osc. tracker ...	220pF G3
C11	M.W. osc. tracker ...	638pF G3
C12	Osc. anode decoupl. ...	0.1μF G3
C13	A.G.C. decoupling ...	0.05μF F4
C14	A.G.C. coupling ...	10pF F4
C15	V2 S.G. decoupling ...	0.1μF F3
C16	2nd I.F. trans. tun. {	100pF B2
C17		175pF B2
C18	I.F. by-passes ...	100pF E4
C19		100pF E4
C20	V2 cath. by-pass ...	0.1μF E4
C21	Tone adjustment ...	0.001μF E4
C22	A.F. coupling ...	0.01μF D3
C23*	H.T. smoothing ...	32μF C1
C24*		32μF C1
C25*	V3 cath. by-pass ...	50pF C1
C26	Tone corrector ...	0.005μF D3
C27	Mains R.F. by-pass ...	0.01μF D3
C28†	M.W. aerial trim ...	— A2
C29†	Aerial tuning ...	— A2
C30†	Oscillator tuning ...	— A1
C31†	M.W. osc. trim ...	— A2
C32	L.W. aerial coup ...	0.0015μF —
C33	L.W. aerial trim ...	22pF —

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Cossor 512 showing the two ferrite rod internal aerials. On the left is shown the aerial input used on earlier versions, where L16 is the M.W. tuning coil and L14 is the L.W. coil. L15 is the frame aerial winding.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	M.W. Int. aerial	100	A2
L2	M.W. loading coil	1.5	G4
L3	L.W. Int. aerial	2.2	B2
L4	L.W. loading coil	2.2	G4
L5	Oscillator tun. coils	2.6	A1
L6		2.0	A1
L7		2.0	A1
L8		1.0	A1
L9	1st I.F. trans. {Prl.	12.0	A1
L10		Sec.	13.0
L11	2nd I.F. trans. {Prl.	13.0	B2
L12		Sec.	12.0
L13	Speech coil	2.5	-
L14	L.W. loading coil	2.2	-
L15	Frame aerial	0.5	-
L16	M.W. loading coil	1.5	-
T1	O.P. trans. {0	30.0	C1
	{h	480.0	C1
S1-S6	Waveband switches	-	B3
S7, S8	Mains sw., g'd R14	-	D3



Plan view of chassis, showing the positions of the ferrite rod aerials L1 and L3.

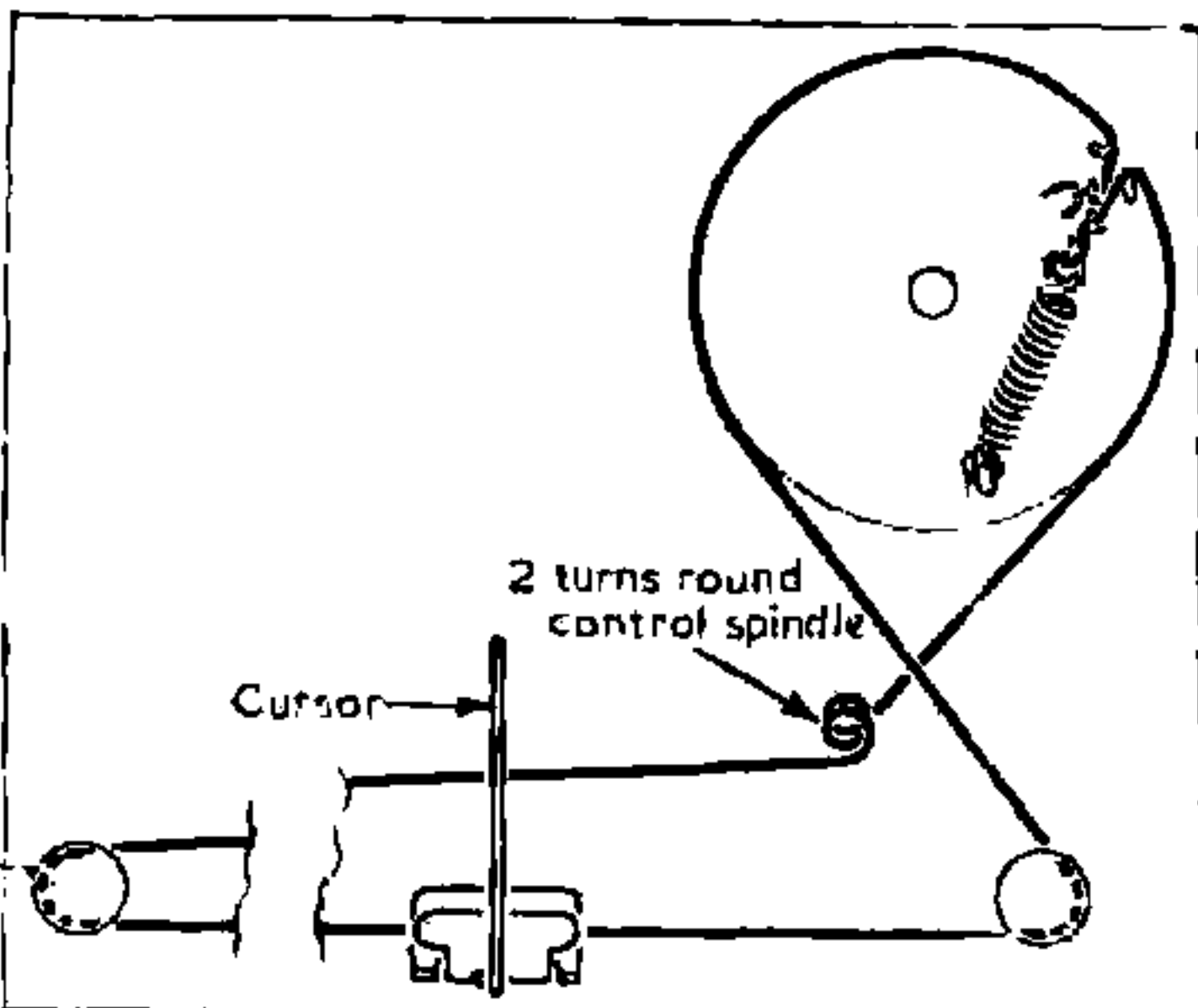
Modification. Earlier models were fitted with a single conventional frame aerial winding in place of the ferrite internal aeriels. A separate aerial input circuit for the earlier models is shown on the left of the main circuit diagram overhead.

Drive Cord Replacement.—About 40 inches of nylon-braided glass yarn is required for a new drive cord, which should be run as shown in the sketch in column 1, starting with the gang at maximum capacitance and running the cord clockwise round the drum.

receiver which was tuned to the highest wavelength end of M.W., but with no signal input. Voltages were measured with a 20,000 ohms-per-volt meter, and allowance should be made for the current drawn by meters having a lower internal resistance. Chassis was the negative connection in every case.

GENERAL NOTES

Switches.—S1-S6 are the waveband switches ganged in a single rotary unit beneath the chassis. The unit is indicated in our underside



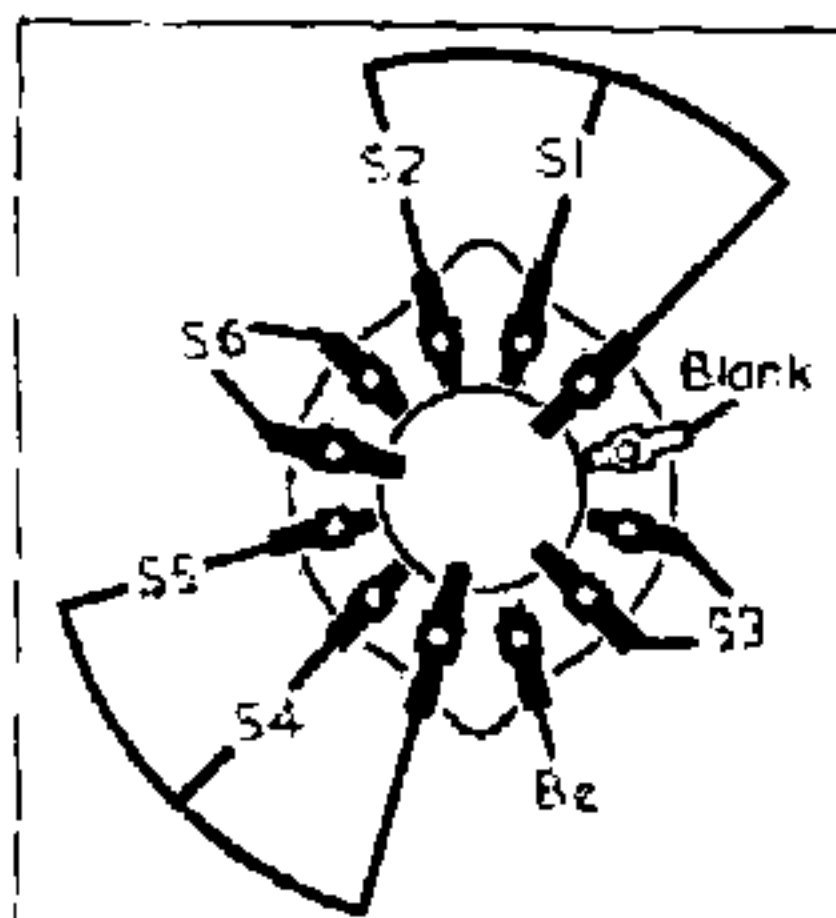
Sketch of the tuning drive cord system, drawn as seen from the front of the chassis with the gang at maximum capacitance.

illustration of the chassis and shown in detail in column 2, where it is drawn as seen from the volume control end of an inverted chassis. The associated switch table below it shows the switch operations starting from the fully anticlockwise setting of the control knob. A dash indicates open, and C, closed.

S7, S8. These are the Q.M.B. mains switches, ganged with the volume control R14.

Scale Lamp.—This is a 3.5 V, 0.15 A lamp with a round spherical bulb and an M.E.S. case.

Right: Diagram of the waveband switch unit.



Below: Waveband switch table.

Switch	M.W.	L.W.
S1	C	-
S2	-	C
S3	C	-
S4	-	C
S5	C	-
S6	C	-
S7	-	-
S8	-	C

VALVE ANALYSIS

Valve voltages and currents given in the table (col. 3) are those derived from the manufacturers' information and were measured on a

Valve	Anode		Screen		Cath.
	V	mA	V	mA	
V1 141TH	155	2.4	75	3.7	-
	Oscillator				
	70	2.9			
V2 171DDP	155	5.0	115	1.9	3.0
V3 451PT	108	33.0	150	0.3	4.2
V4 311SU	185*	-	-	-	184.0†

* A.C. reading. † Cathode current, 56.4 mA.

CIRCUIT ALIGNMENT

All the core and trimmer adjustments can be made accessible by removing the cabinet base and back cover. Turn volume control to maximum and set the tone adjustment to "Brilliant."

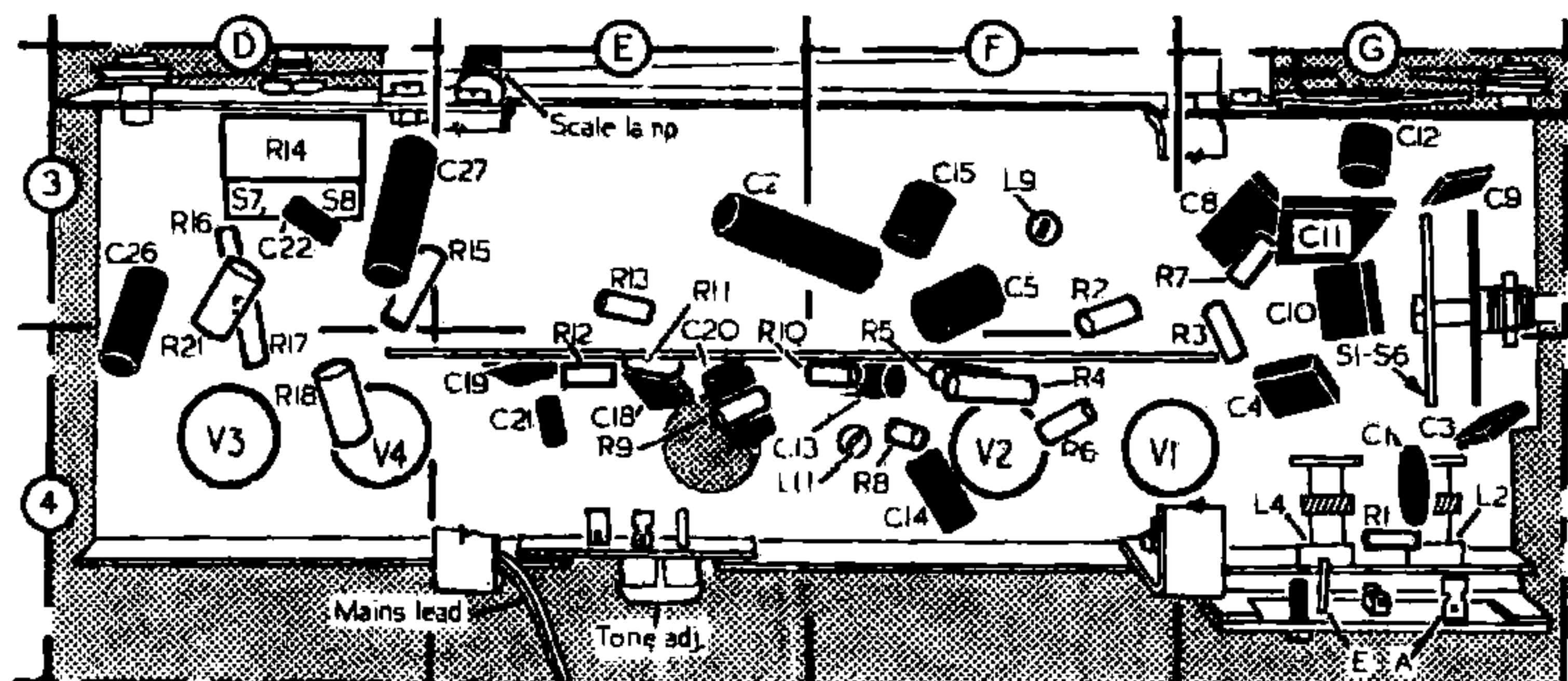
I.F. Stages.—Switch receiver to M.W. and turn gang to minimum capacitance. Connect output of signal generator, via an 0.1 μF capacitor in each lead, to control grid (pin 6) of V1 and chassis. Feed in a 470 kc/s (438.3 m) signal and adjust the cores of L12 (location reference B2) L17 (F4), L10 (A1) and L9 (F3) for maximum output. The core of L11 must be adjusted to the peak obtained with it screwed to its inner-most setting in the coil former, and the cores of the remaining coils adjusted to their outer-most settings.

R.F. and Oscillator Stages.—Although the receiver may be aligned with the chassis in its cabinet, calibration marks have been provided on the scale backing plate to allow for alignment outside the cabinet. Check that with the gang at maximum capacitance the cursor coincides with the high wavelength end of the tuning scale, or with the extreme right-hand calibration mark on the lower edge of the scale backing plate.

If it is intended to operate the receiver mainly from an external aerial and earth, then the output of the signal generator should be fed, via a standard dummy aerial, to the A and E sockets. If, however, the receiver is to be operated mainly from the internal aeriels, then the output of the signal generator should be connected to a 20-turn, 4-inch diameter coil of wire, placed about one foot away from the internal aeriels.

M.W.—Switch receiver to M.W., tune to 193.6 m (calibration mark at lower left-hand edge of backing plate) feed in a 103.6 m (1,560 kc/s) signal and adjust C21 (A2) and C28 (A2) for maximum output. Tune receiver to 521.7 m (middle calibration mark on lower edge of backing plate) feed in a 521.7 m (575 kc/s) signal and adjust the cores of L5 (A1) and L2 (G4) for maximum output. Repeat these adjustments until no further improvement results.

L.W.—Switch receiver to L.W., tune to 1,875 m (calibration mark at top edge of backing plate) feed in a 1,875 m (100 kc/s) signal and adjust the cores of L6 (A1) and L4 (G1) for maximum output.



Underside view of chassis. The two-position tone adjustment plug is shown in location reference E4.