

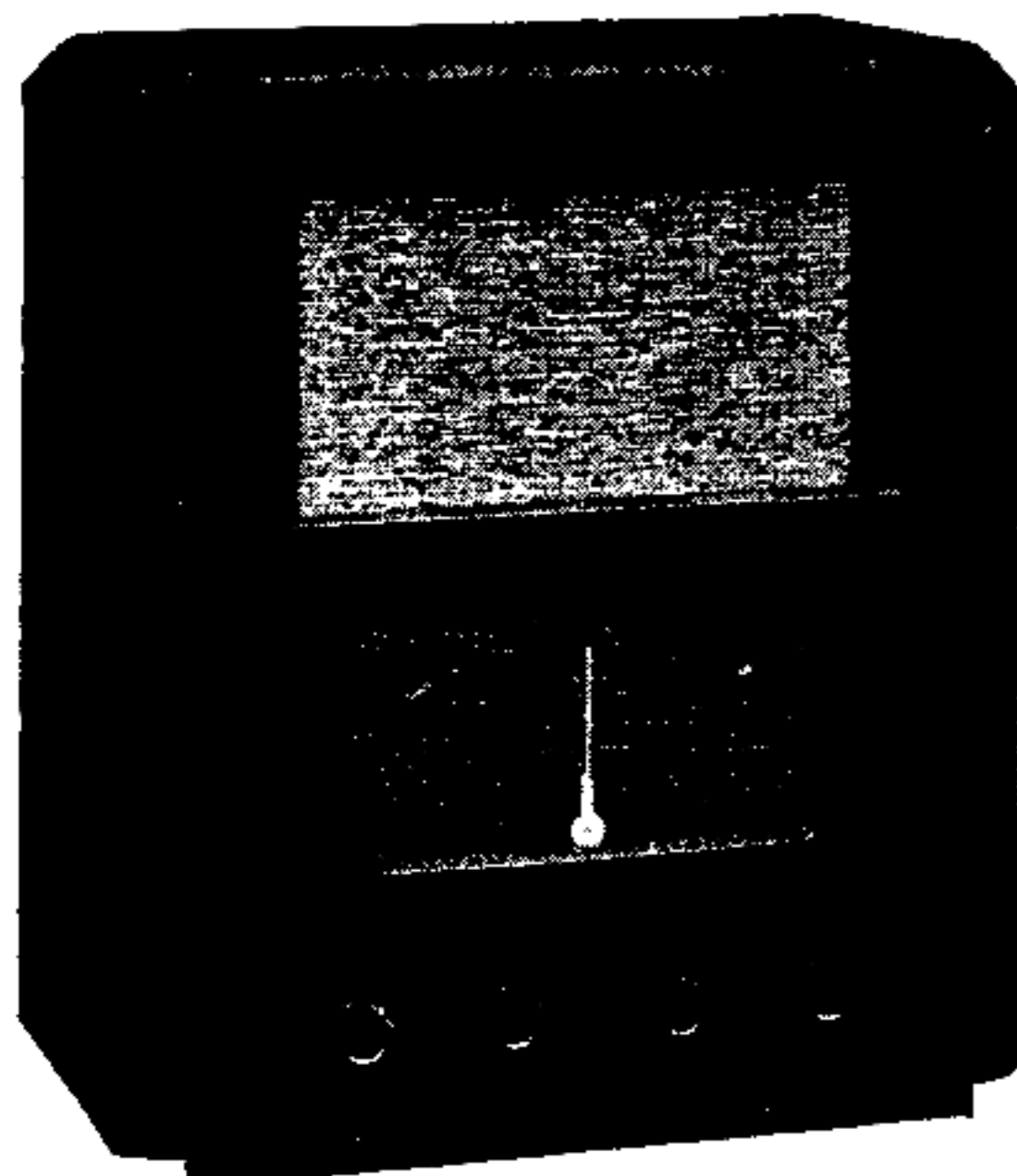


"TRADER" SERVICE SHEET

451

ALBA 830

AND 730 RADIOGRAM



The Alba 830 table receiver.

THE Alba 830 is a table model 4-band AC superhet, using four receiving valves, plus a valve rectifier and a tuning indicator. The SW bands covered are: SW1, 12-38m; SW2, 30-90m. Provision is made for switching to gram. on the fifth position of the waveband switch.

The receiver is suitable for 190-250V, 40-100 C/S AC mains.

Model 730 is the corresponding radio-

gram, which only differs from the 830 table model in that a 10in. speaker is used in place of an 8in., and the machine is suitable for 50-60 C/S AC mains only.

Release date: July, 1939 (both models).

CIRCUIT DESCRIPTION

Aerial input via series condenser C1 and coupling coils L1 (SW1), L2 (SW2) and L3 (MW and LW) with "top" coupling by C2 (MW) to single tuned circuits L4, C33 (SW1), L5, C33 (SW2), L6, C33 (MW) and L7, C33 (LW).

First valve (V1, Mullard ECH3) is a triode heptode operating as frequency changer with internal coupling. Triode oscillator grid coils L8 (SW1), L9 (SW2), L10 (MW) and L11 (LW) are tuned by C34; parallel trimming by C35 (SW1), C36 (SW2), C37 (MW) and C38 (LW); series tracking by C7 (SW1), C8 (SW2), C39 (MW) and C40 (LW). Reaction from anode by coils L12 (via damping resistance R6, SW1), L13 (via damping resistance R7, SW2), L14 (MW) and L15 (LW).

Second valve (V2, Mullard EF9) is a variable-mu RF pentode operating as intermediate frequency amplifier with tuned primary, tuned-secondary iron-core transformer couplings C41, L16, L17, C42, L18, C43, L19, C44.

Intermediate frequency 470 KC/S.

Diode second detector is part of double diode triode valve (V3, Mullard

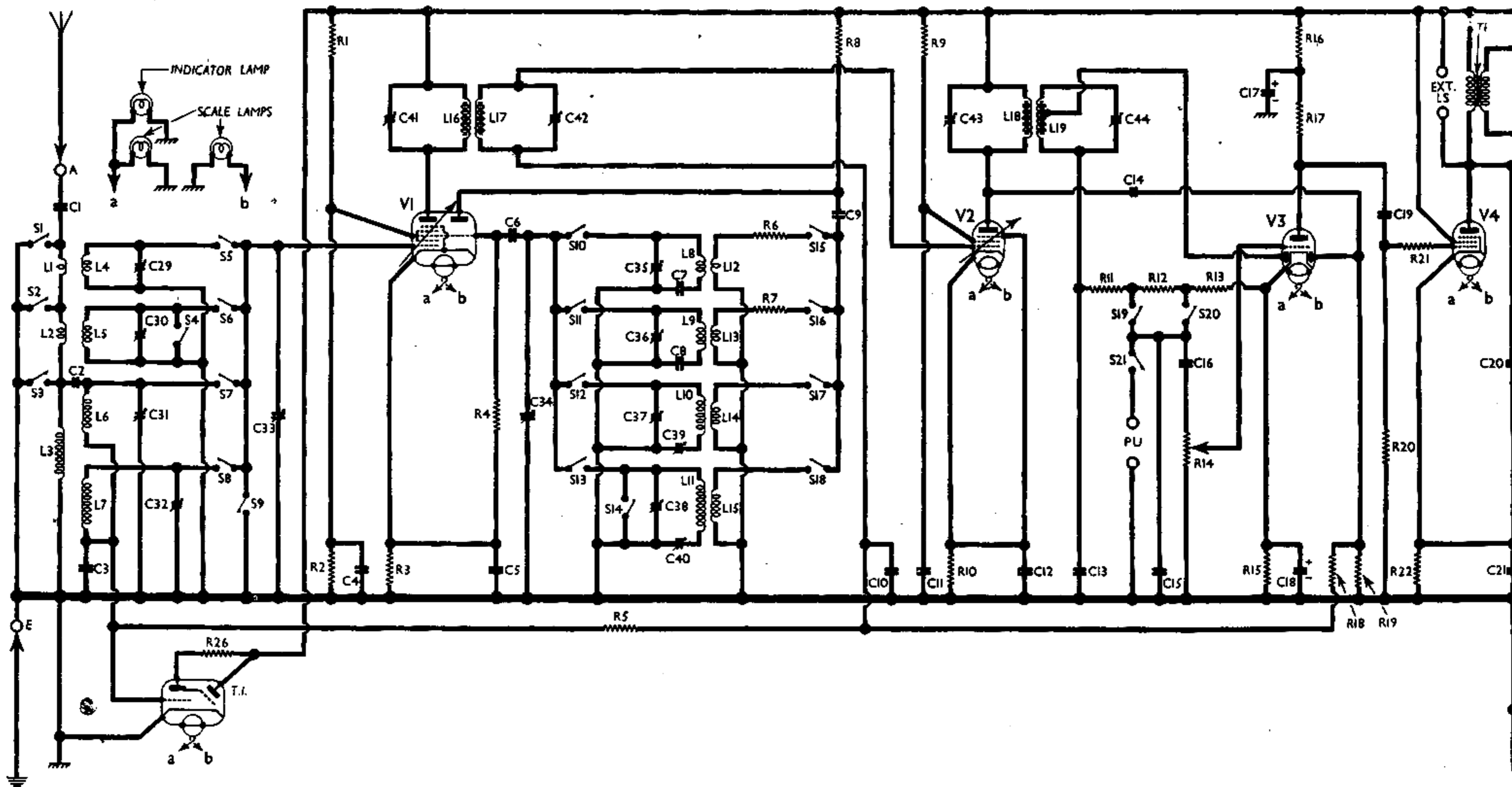
EBC3). Audio frequency component in rectified output is developed across load comprising resistances R12 and R13 and passed via switch S19 (except on MW, when that across R13 is passed via switch S20), AF coupling condenser C16 and manual volume control R14 to CG of triode section, which operates as AF amplifier. IF filtering by C13, R11 and C15.

Provision for connection of gramophone pick-up via S21, which closes when the waveband control is turned to the gram. position, across C16, R14.

Second diode of V3, fed from V2 anode via C14, provides DC potential which is developed across load resistance R19 and fed back through decoupling circuits as GB to FC (except on SW bands) and IF valves, giving automatic volume control. Delay voltage, together with GB for triode section, is obtained from drop along R15 in cathode lead to chassis.

AVC line potential at the junction of C3 and R5 is also used as control voltage to operate the cathode ray tuning indicator (T. I., Mullard EM1).

Resistance-capacity coupling by R17, C19 and R20, via grid stopper R21, between V3 triode and pentode output valve (V4, Mullard EL6). Fixed tone correction by C20 in anode circuit; variable tone control by C22 and R23, also in anode circuit. Provision for connection

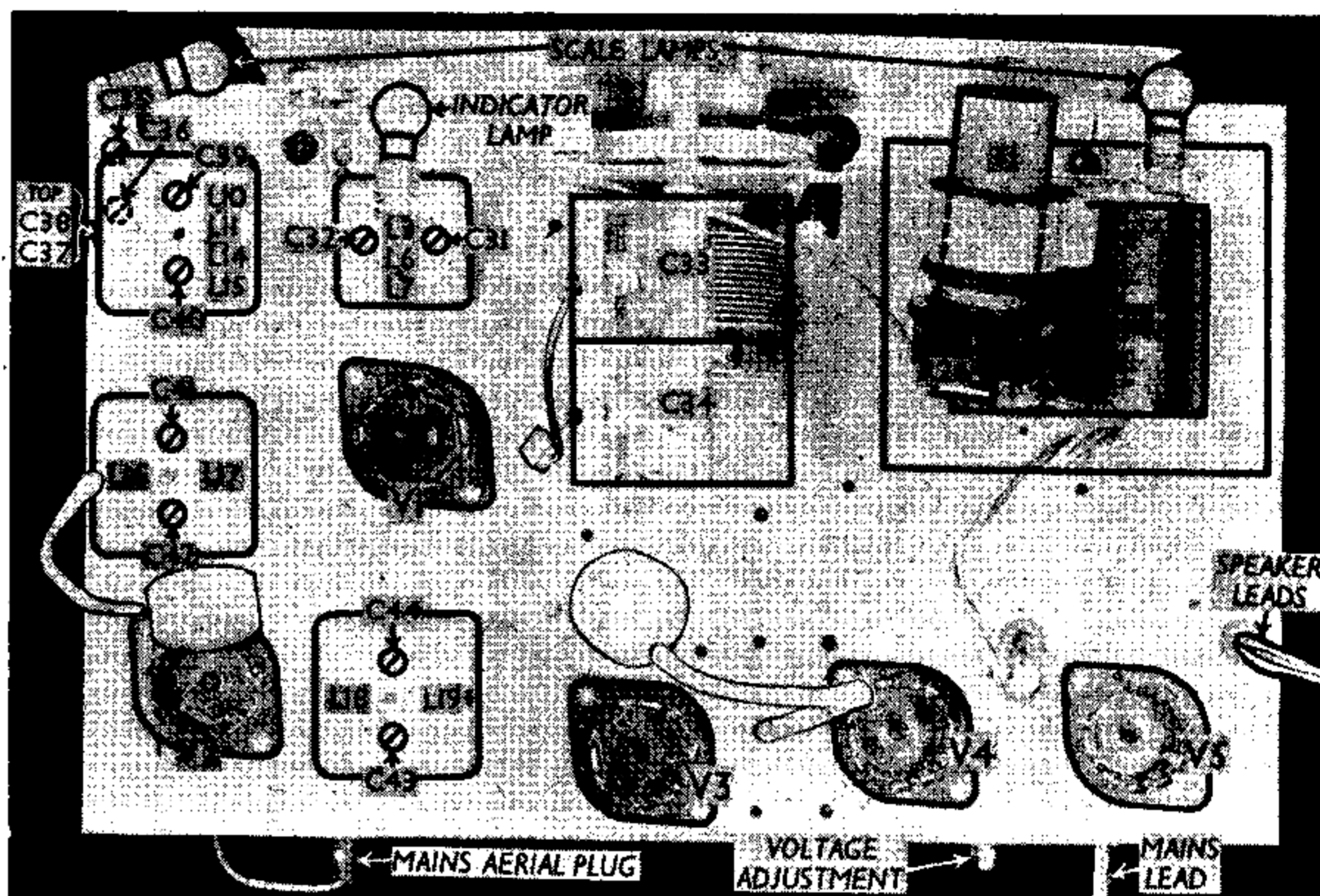


of high impedance external speaker by terminals connected to the ends of the primary winding of the speaker input transformer T1.

HT current is supplied by full-wave rectifying valve (V5, Mullard AZ2). Smoothing by speaker field L22 and dry electrolytic condensers C23 and C24. RF filtering by C25 in HT circuit, R24, R25 and C26, C27 in rectifier anodes circuit, and the mains aerial coupling condenser C28 (which, when not used for aerial coupling, is plugged into a second earth socket specially provided), in the mains circuit.

COMPONENTS AND VALUES

CONDENSERS		Values (μF)
C1	Aerial series condenser ...	0.0002
C2	Aerial MW top coupling ...	0.000005
C3	V1 hex. and T.I. CG's decoupling	0.05
C4	V1 SG decoupling ...	0.1
C5	V1 cathode by-pass ...	0.1
C6	V1 osc. CG condenser ...	0.0001
C7	Osc. circ. SW1 tracker ...	0.01
C8	Osc. circ. SW2 tracker ...	0.00365
C9	V1 osc. anode coupling ...	0.0005
C10	V2 CG decoupling ...	0.05
C11	V2 SG decoupling ...	0.1
C12	V2 cathode by-pass ...	0.1
C13	IF by-pass ...	0.0001
C14	Coupling to V3 AVC diode	0.000075
C15	IF by-pass ...	0.0001
C16	AF coupling to V3 triode ...	0.005
C17*	V3 triode anode decoupling	8.0
C18*	V3 cathode by-pass ...	25.0
C19	V3 triode to V4 AF coupling	0.01
C20	Fixed tone corrector ...	0.005
C21*	V4 cathode by-pass ...	25.0
C22	Part of variable tone control	0.02
C23*	HT smoothing condensers	16.0
C24*		16.0
C25	HT circuit RF by-pass ...	0.1
C26	Parts of rectifier circuit R.F. filter ...	0.01
C27		0.01
C28	Mains aerial coupling ...	0.0001



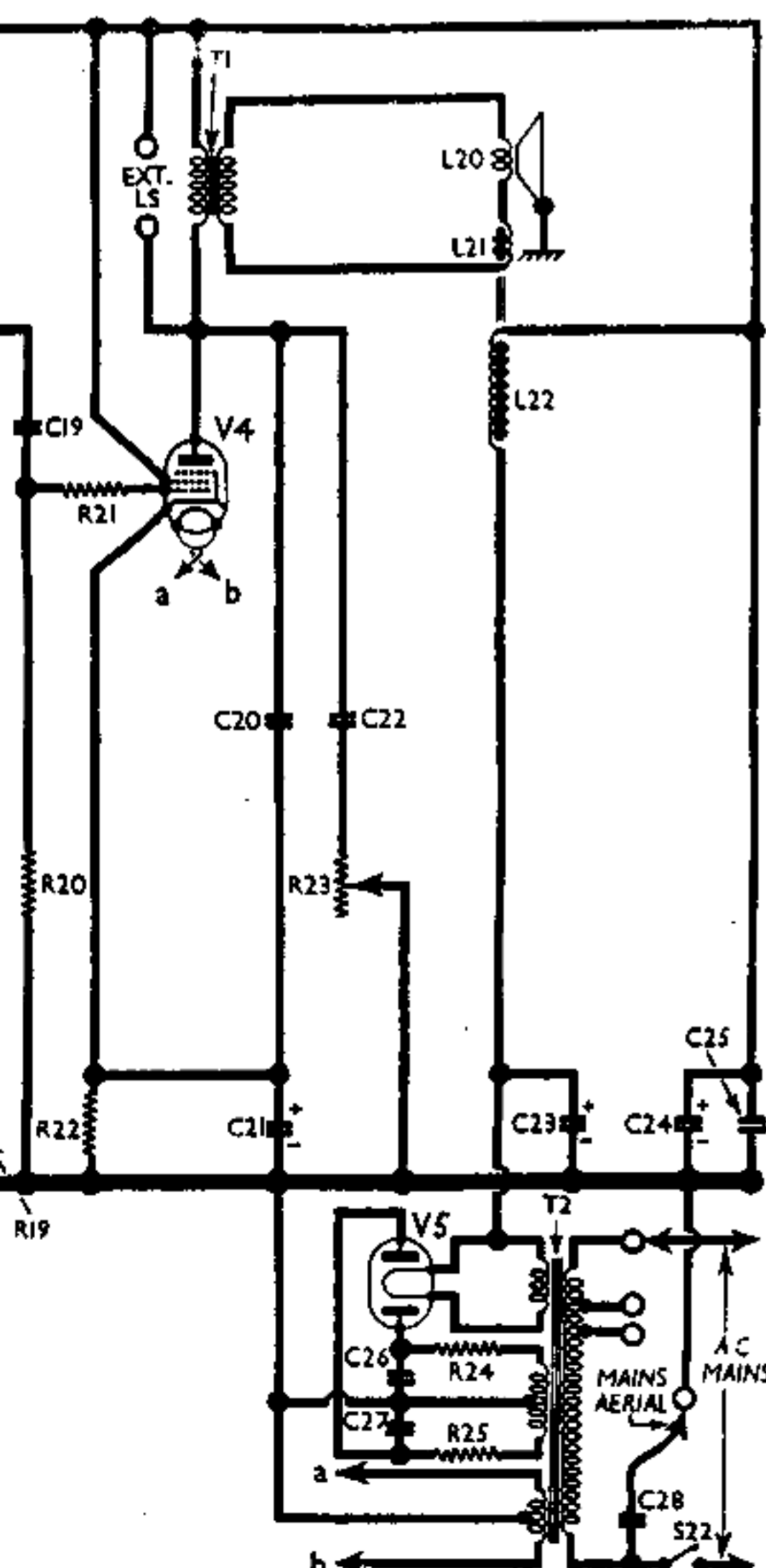
Plan view of the chassis. C37, C38 are reached through holes in the side of the MW and LW oscillator coil can, while C35 and C36 are reached through holes in the chassis deck.

CONDENSERS (Continued)		Values (μF)
C29†	Aerial SW1 trimmer ...	0.00003
C30†	Aerial SW2 trimmer ...	0.00003
C31†	Aerial MW trimmer ...	0.00003
C32†	Aerial LW trimmer ...	0.00003
C33†	Aerial circuit tuning ...	0.0005
C34†	Oscillator circuit tuning ...	0.0005
C35†	Osc. circuit SW1 trimmer ...	0.00003
C36†	Osc. circuit SW2 trimmer ...	0.00003
C37†	Osc. circuit MW trimmer ...	0.00003
C38†	Osc. circuit LW trimmer ...	0.00003
C39†	Osc. circuit MW tracker ...	0.0006
C40†	Osc. circuit LW tracker ...	0.0003
C41†	1st IF trans. pri. tuning ...	0.00025
C42†	1st IF trans. sec. tuning ...	0.00025
C43†	2nd IF trans. pri. tuning ...	0.00025
C44†	2nd IF trans. sec. tuning ...	0.00025

* Electrolytic. † Variable. ‡ Pre-set.

RESISTANCES		Values (ohms)
R1	V1 SG potential divider	25,000
R2	resistances ...	40,000
R3	V1 fixed GB resistance ...	200
R4	V1 osc. CG resistance ...	50,000
R5	V1 and T.I. CG's decoupling	250,000
R6	Osc. SW1 reaction damping	40
R7	Osc. SW2 reaction damping	200
R8	V1 osc. anode HT feed ...	25,000
R9	V2 SG HT feed ...	90,000
R10	V2 fixed GB resistance ...	300
R11	IF stopper ...	50,000
R12	V3 signal diode load resistances ...	250,000
R13		250,000
R14	Manual volume control ...	500,000
R15	V3 triode GB; AVC delay	1,500
R16	V3 triode anode decoupling	2,500
R17	V3 triode anode load ...	15,000
R18	AVC line decoupling ...	500,000
R19	V3 AVC diode load ...	750,000
R20	V4 CG resistance ...	250,000
R21	V4 grid stopper ...	50,000
R22	V4 GB resistance ...	82
R23	Variable tone control ...	50,000
R24	Parts of rectifier circuit R.F. filter ...	75
R25		75
R26	T.I. anode HT feed ...	2,000,000

OTHER COMPONENTS		Approx. Values (ohms)	
L1	Aerial SW1 coupling coil ...	0.2	
L2	Aerial SW2 coupling coil ...	0.2	
L3	Aerial MW and LW coupling coil ...	38.0	
L4	Aerial SW1 tuning coil ...	Very low	
L5	Aerial SW2 tuning coil ...	0.2	
L6	Aerial MW tuning coil ...	1.4	
L7	Aerial LW tuning coil ...	14.0	
L8	Osc. circuit SW1 tuning coil	Very low	
L9	Osc. circuit SW2 tuning coil	0.2	
L10	Osc. circuit MW tuning coil	3.0	
L11	Osc. circuit LW tuning coil	9.5	
L12	Oscillator SW1 reaction ...	18.0	
L13	Oscillator SW2 reaction ...	0.4	
L14	Oscillator MW reaction ...	30.0	
L15	Oscillator LW reaction ...	50.0	
L16	1st IF trans. { Pri. ...	4.5	
L17		Sec. ...	4.5
L18	2nd IF trans. { Pri. ...	4.5	
L19		Sec., total ...	4.5
L20	Speaker speech coil ...	1.5	
L21	Hum neutralising coil ...	0.2	
L22	Speaker field coil ...	700.0	
T1	Speaker input trans. { Pri. ...	350.0	
	Sec. ...	0.3	
	Pri., total ...	15.0	
T2	Mains trans. { Heater sec. ...	0.05	
		Rect. heat sec. ...	0.1
		HT sec., total ...	130.0
S1-S20	Waveband switches ...	—	
S21	Gram. pick-up switch ...	—	
S22	Mains switch, gaged R23 ...	—	



Circuit diagram of the Alba 830 4-band AC superhet. The model 730 radio-gram has an identical circuit. Pick-up switching is incorporated, a fifth position of the waveband switch being provided for this purpose.

DISMANTLING THE SET

The bottom of the cabinet is fitted with a detachable cover, upon removal of which (four counter-sunk head wood screws) access can be gained to the components beneath the chassis.

Removing Chassis. — Remove the four control knobs (recessed grub screws);

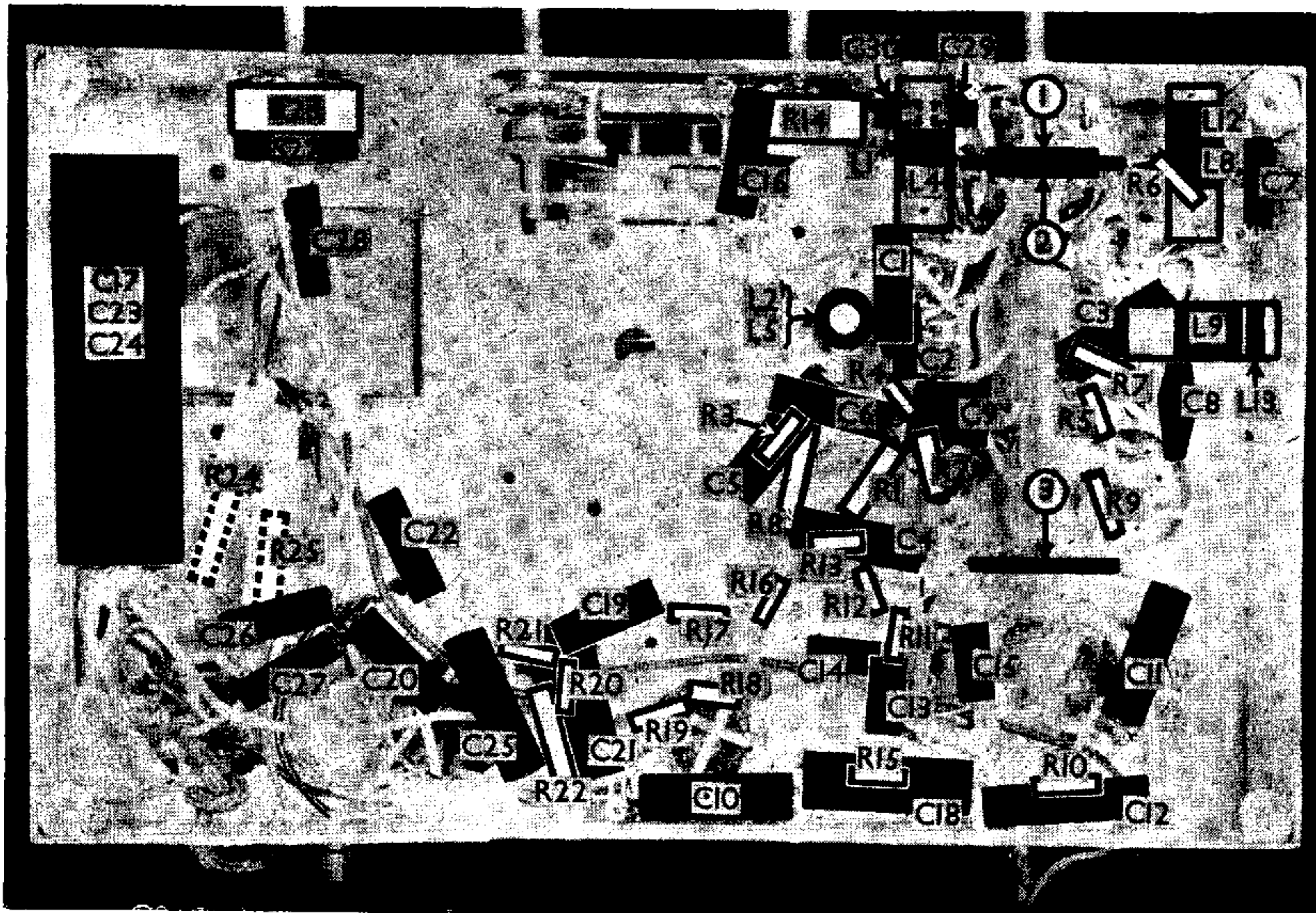
remove the four screws (with washers) holding the chassis to the bottom of the cabinet.

The chassis can now be withdrawn to the extent of the speaker leads and stood on one end, which is sufficient for most purposes.

To free chassis entirely, unsolder the speaker leads from the tags on the speaker transformer, and one from the transformer casing.

When replacing, connect the speaker leads as follows, numbering the tags from top to bottom:

- 1, blue (with blue from speaker field);
- 2, white;



Under - chassis view. Note that the front switch unit is double-sided, and two views (marked 1 and 2) are given in the diagram below. C29 and C30 are adjustable through holes in the front chassis member. All the SW1 and SW2 coils are in four tubular units seen in this view

3, blank;
4 and 5, joined together, red (with red from speaker field).
The black lead is soldered to the transformer casing.
A rubber washer should be fitted to each chassis fixing bolt, between the chassis and the bottom of the cabinet.
A felt washer should be fitted on each control spindle, between the control knob and the cabinet.
Removing Speaker. — Unsolder the speaker leads;
remove the four nuts (with metal washers) holding the speaker to the sub-baffle, taking care not to lose the rubber washers as the speaker is withdrawn.
When replacing, fit a rubber washer to each of the fixing screws on the sub-baffle before placing the speaker in position;
so place the speaker that the transformer is on the right;
connect the leads from chassis as indicated above.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 ECH3	216	2.2	99	2.0
	Oscillator	4.7		
V2 EF9	100	4.8	82	1.5
V3 EBC3	216	2.6	—	—
V4 EL6	158	85.0	216	7.3
V5 AZ2	191	—	—	—
T.I. EM1	288†	0.1	—	—
	17 Target	—		
	216	0.37		

†Each anode, AC.

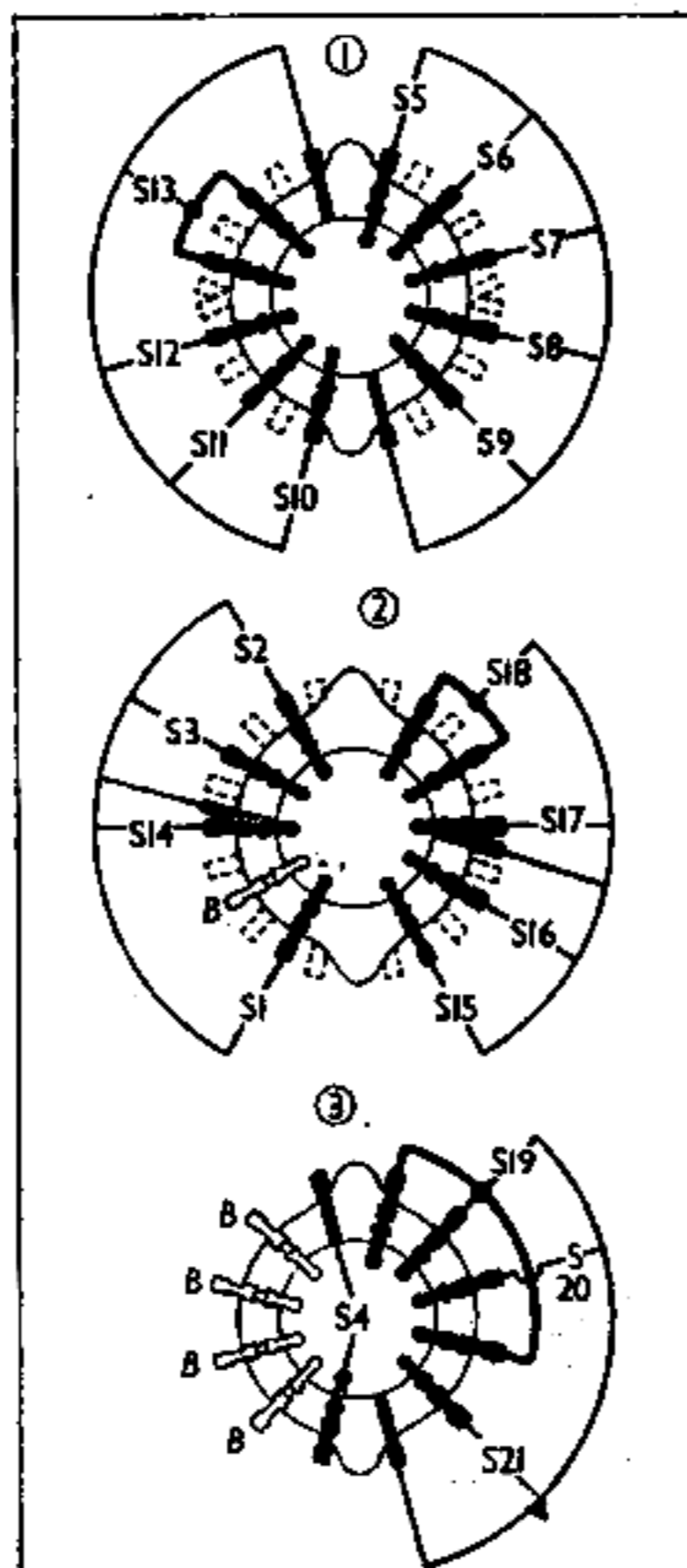
our receiver when it was operating on mains of 225 V using the 210-230 V tapping on the mains transformer. The

receiver was tuned to the lowest wavelength on the MW band, and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

GENERAL NOTES

Switches.—S1-S20 are the waveband switches, and S21 the gram. pick-up switch, ganged in two rotary units beneath the chassis. The unit nearest the front of the chassis is double-sided, and two views of it, the first from the front of the underside of the chassis, and the second, from the rear, are given in the diagrams below. The second unit is drawn as seen from the front of the underside of the chassis.



Diagrams of the switch units. The upper two are views of the front unit from the front and back of the chassis respectively, while the bottom one is a view of the rear unit from the front of the chassis

The table below gives the switch positions for the five control settings, starting from fully anti-clockwise. A dash indicates open, and C, closed.

S22 is the QMB mains switch, ganged with the tone control, R23.

Coils.—L1, L4; L2, L5; L8, L12 and L9, L13 are in four unscreened tubular units beneath the chassis. L3, L6, L7; L10, L11, L14, L15; and the IF transformers L16, L17 and L18, L19 are in four screened units on the chassis deck. Three of these units contain two trimmers each, while the remaining one contains four trimmers, two at the side and two at the top.

External Speaker.—Two terminals are provided on the internal speaker connection panel for a high impedance (about 5,000) external speaker.

Indicator and Scale Lamps.—These are three Osram MES types, rated at 4.5V, 0.3A. Each one is connected across

SWITCH TABLE

Switch	SW1	SW2	MW	LW	Gram
S1	—	—	—	—	C
S2	C	—	—	—	—
S3	—	C	—	—	—
S4	C	—	—	—	—
S5	—	C	—	—	—
S6	C	—	—	—	—
S7	—	C	—	—	—
S8	—	—	C	—	—
S9	—	—	—	C	—
S10	—	—	—	—	C
S11	C	—	—	—	—
S12	—	C	—	—	—
S13	—	—	C	—	—
S14	—	—	—	C	—
S15	C	—	—	—	—
S16	—	C	—	—	—
S17	—	—	C	—	—
S18	—	—	—	C	—
S19	C	—	—	—	—
S20	—	C	—	—	—
S21	—	—	C	—	C

half the heater secondary, as shown at the top left hand corner of the circuit diagram.

Condensers C17, C23, C24.—These are three 500V working dry electrolytics in a single tubular metal can beneath the chassis, the can being the common negative connection. The yellow coded tag is the positive of **C17** ($8\mu\text{F}$); the red coded tag is the positive of **C23** ($16\mu\text{F}$); and the plain tag is the positive of **C24** ($16\mu\text{F}$).

Trimmers.—Apart from the ten trimmers in the screened coil units, there are two reached through holes in the chassis deck, and two reached through holes in the front member of the chassis. The latter are indicated in our under-chassis view, all the others being shown in the plan chassis view.

Chassis Divergencies.—The makers' diagram shows **R23, C22** connected in series across the primary of **T1**, and

not from anode of **V4** to chassis. **R3** may be 1500; **R24, R25** may be 1000 each; **R26** may be 1M0; **C1** may be $0.0001\mu\text{F}$; there may be a $25\mu\text{F}$ fixed condenser across **C32**; **S4** is not shown in the makers' diagram; **C13** may be returned to cathode of **V3**, not to chassis.

CIRCUIT ALIGNMENT

IF Stages.—Short-circuit **C34**, and connect signal generator, via a $0.1\mu\text{F}$ condenser, to control grid (top cap) of **V1** and chassis. Feed in a 470 KC/S signal, and adjust **C44, C43, C42** and **C41** in turn for maximum output. Re-check these settings, then remove short from **C34**.

RF and Oscillator Stages.—With gang at maximum, pointer should be horizontal. Connect signal generator, via a suitable dummy aerial, to **A** and **E** sockets.

MW.—Switch set to MW, tune to

250m on scale, feed in a 250m (1,200 KC/S) signal, and adjust **C37**, then **C31**, for maximum output. Feed in a 500m (600 KC/S) signal, tune it in, and adjust **C39** for maximum output, while rocking the gang for optimum results. Repeat the 250m adjustments.

LW.—Switch set to LW, tune to 1,300m on scale, feed in a 1,300m (233 KC/S) signal, and adjust **C38**, then **C32**, for maximum output. Feed in a 1,900m (158 KC/S) signal, tune it in, and adjust **C40** for maximum output, while rocking the gang for optimum results. Repeat the 1,300m adjustments.

SW1.—Switch set to SW1, tune to 25m on scale, feed in a 25m (12 MC/S) signal, and adjust **C35**, then **C29**, for maximum output. Tracking is fixed.

SW2.—Switch set to SW2, tune to 50m on scale, feed in a 50m (6 MC/S) signal, and adjust **C36**, then **C30**, for maximum output. Tracking is fixed.