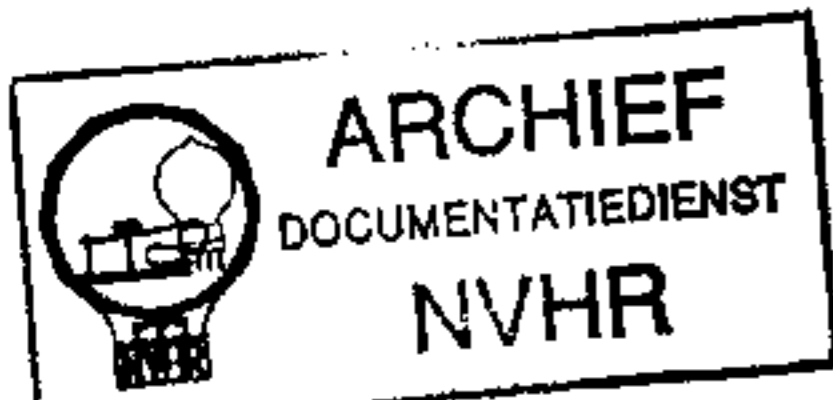


ALBA 825, 625 AND 920

Ned. Ver. v. Historie v/d Radio



A SHORT-WAVE range of 17-50 m. is covered by the Alba 825 4-valve (plus rectifier) A.C. 3-band superhet, which is suitable for mains of 190-250 V, 40-100 C/S. Provision is made for a gramophone pick-up, an extension speaker and for using the mains as an aerial.

An identical chassis is fitted in the 625 armchair type console, the 920 radiogram and the 920 automatic radiogram. Standard models of the radiograms are for mains of 190-250 V, 50-60 C/S, but special models are available to order for 40-100 C/S. This *Service Sheet* was prepared on an 825.

CIRCUIT DESCRIPTION

Aerial input via L11 and coupling coils L1 (M.W.), L2 (L.W.), to inductively coupled band-pass filter. Primary coils L3, L4 are tuned by C24; secondaries L9, L10 by C27; coupling by coils L5, L6, L7, L8. On S.W. input is via coupling coil L11 to single-tuned circuit L12, C27.

First valve (V1, Mullard metallised TH4) is a triode hexode operating as frequency changer with internal coupling. Triode oscillator grid coils L13 (S.W.), L15 (M.W.) and L17 (L.W.) are tuned by C28. Parallel trimming by C29 (S.W.), C30 (M.W.) and C31 (L.W.); series tracking by C6 (M.W.) and C32 (L.W.). Reaction by coils L14 (S.W.), L16 (M.W.) and L18 (L.W.).

Second valve (V2, Mullard metallised VP4B) is a variable-mu R.F. pentode operating as intermediate frequency

amplifier with tuned-primary tuned-secondary transformer couplings C33, L19, L20, C34 and C35, L21, L22, C36.

Intermediate frequency 117.5 KC/S.

Variable sensitivity control by pre-set variable resistance R6 in cathode circuits of V1, V2.

Diode second detector is part of double diode triode valve (V3, Mullard metallised TDD4). Audio frequency component in rectified output is developed across load resistance R13 and passed via I.F. stopper R12, A.F. coupling condenser C11, potential divider R14, R15, switch S15 and C.G. resistance R16 to C.G. of triode section, which operates as A.F. amplifier. Provision for connection of gramophone pick-up via switch S16 which closes on "Gram" position of control switch, whilst S15 opens, muting radio.

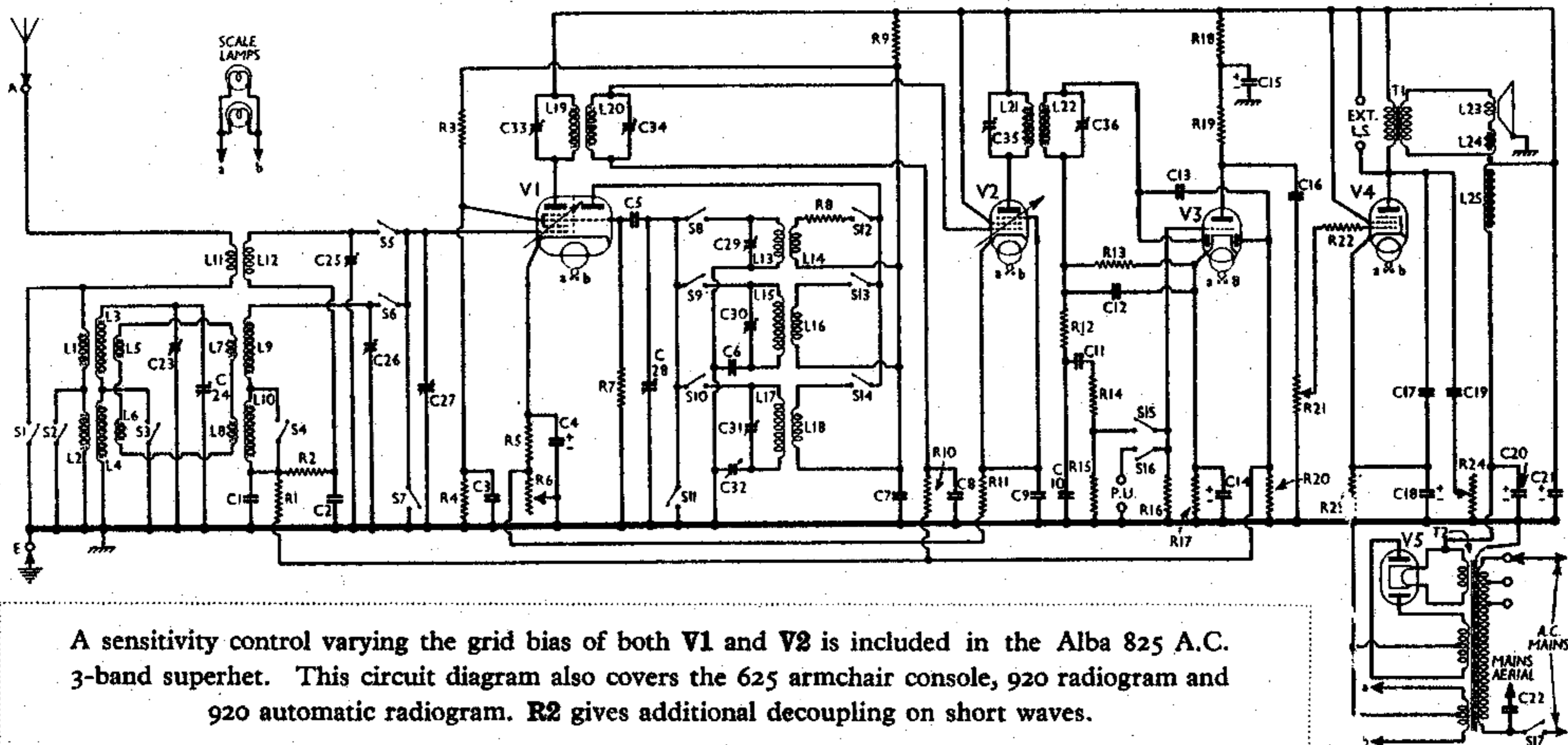
Resistance-capacity coupling by R19, C16 and R21, via stopper R22, between V3 triode and pentode output valve (V4, Mullard PenB4), R21 operating as manual volume control. Fixed tone correction by C17 and variable tone control by C19, R24, in anode circuit. Provision for connection of high impedance external speaker across primary of transformer T1.

H.T. current is supplied by I.H.C. full-wave rectifying valve (V5, Mullard IW4/350). Smoothing by speaker field L25 and dry electrolytic condensers C20, C21. Mains aerial coupling by condenser C22 which, when not required as such, is plugged into a second "E" socket and operates as mains R.F. filter.

COMPONENTS AND VALUES

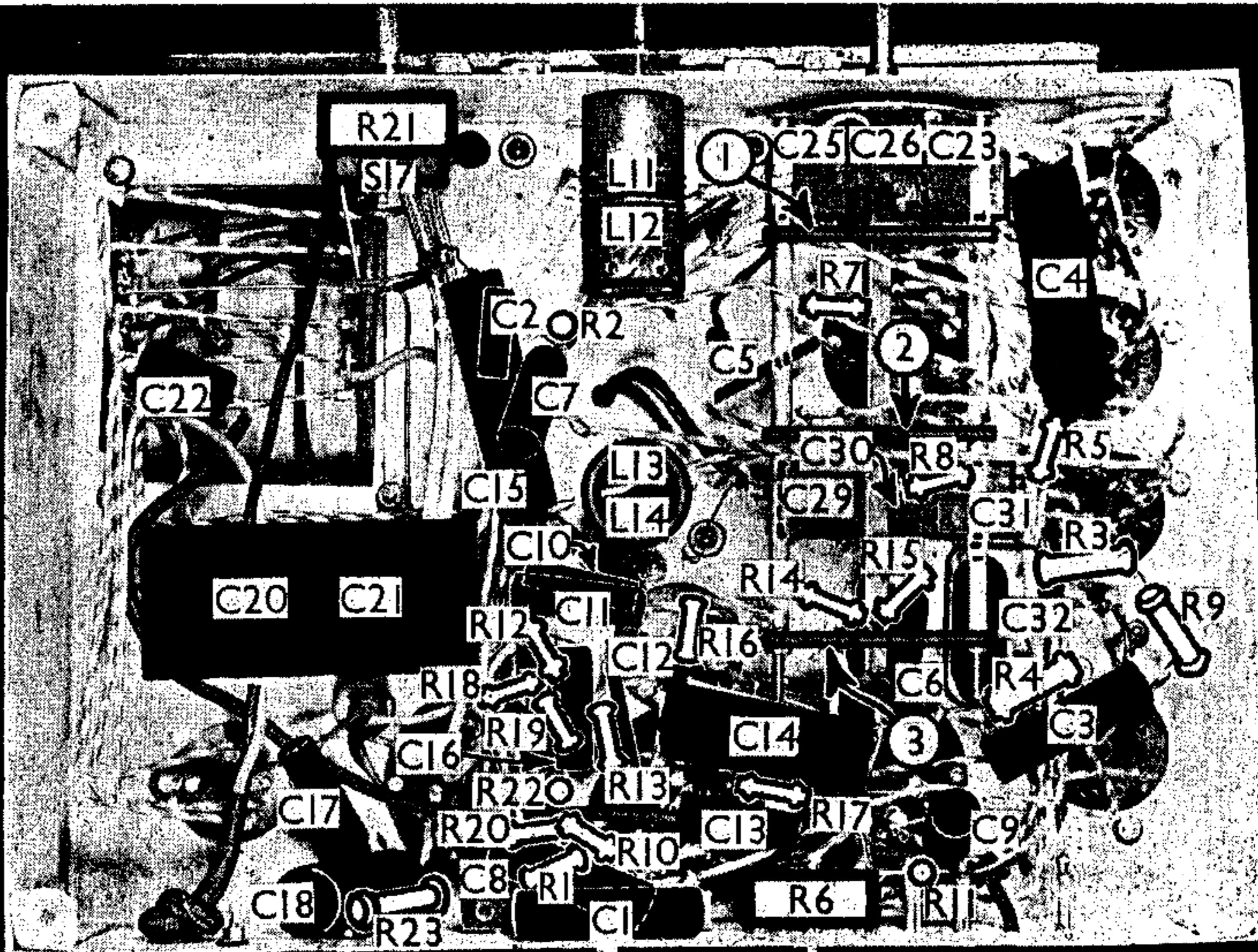
CONDENSERS		Values (μF)
C1	V1 hex. C.G. M.W. and L.W. decoupling	0.1
C2	V1 hex. C.G. S.W. decoupling	0.01
C3	V1 S.G. decoupling	0.1
C4*	V1 cathode by-pass	8.0
C5	V1 osc. C.G. condenser	0.0007
C6	Osc. circuit M.W. tracker	0.002
C7	V1 osc. anode decoupling	0.1
C8	V2 C.G. decoupling	0.1
C9	V2 cathode by-pass	0.1
C10	I.F. by-pass	0.0002
C11	A.F. coupling to V3 triode	0.005
C12	I.F. by-pass	0.0002
C13	Coupling to V3 A.V.C. diode	0.0002
C14*	V3 cathode by-pass	25.0
C15*	V3 triode anode decoupling	2.0
C16	V3 triode to V4 A.F. coupling	0.01
C17	Fixed tone corrector	0.01
C18*	V4 cathode by-pass	25.0
C19	Part of variable tone control	0.05
C20*	H.T. smoothing	8.0
C21*		12.0
C22	Mains aerial coupling	0.00015
C23†	Band-pass pri. M.W. trimmer	0.00003
C24†	Band-pass pri. tuning	—
C25†	Aerial S.W. trimmer	0.00003
C26†	Band-pass sec. M.W. trimmer	0.00003
C27†	Band-pass sec. and S.W. aerial tuning	—
C28†	Oscillator circuit tuning	—
C29†	Osc. circuit S.W. trimmer	0.00003
C30†	Osc. circuit M.W. trimmer	0.00003
C31†	Osc. circuit L.W. trimmer	0.00003
C32†	Osc. circuit L.W. tracker	0.0007
C33†	1st I.F. trans. pri. tuning	—
C34†	1st I.F. trans. sec. tuning	—
C35†	2nd I.F. trans. pri. tuning	—
C36†	2nd I.F. trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.



A sensitivity control varying the grid bias of both V1 and V2 is included in the Alba 825 A.C. 3-band superhet. This circuit diagram also covers the 625 armchair console, 920 radiogram and 920 automatic radiogram. R2 gives additional decoupling on short waves.

The three switch units are indicated in this under-chassis view, and detail diagrams drawn from the directions of the arrows given here appear on the next page. The only coils under the chassis are L11, L12 and L13, L14. Note the sensitivity control, R6.



RESISTANCES		Values (ohms)
R1	V1 hex. C.G. M.W. and L.W. decoupling	500,000
R2	V1 hex. C.G. S.W. decoupling	250,000
R3	V1 S.G. H.T. potential divider	10,000
R4		25,000
R5	V1 fixed G.B. resistance	200
R6	Sensitivity control	500
R7	V1 osc. C.G. resistance	25,000
R8	Osc. circuit S.W. stabiliser	100
R9	V1 S.G. and anode H.T. feed	13,000
R10	V2 C.G. decoupling	250,000
R11	V2 fixed G.B. resistance	150
R12	I.F. stopper	50,000
R13	V3 signal diode load	500,000
R14	Audio signal potential divider	200,000
R15		200,000
R16	V3 triode C.G. resistance	500,000
R17	V3 G.B. and A.V.C. delay	1,000
R18	V3 triode anode decoupling	10,000
R19	V3 triode anode load	20,000
R20	V3 A.V.C. diode load	500,000
R21	Manual volume control	250,000
R22	V4 grid stopper	50,000
R23	V4 G.B. resistance	170
R24	Variable tone control	50,000

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coils	70.0
L2		6.75
L3	Band-pass primary coils	1.6
L4		14.0
L5	Band-pass coupling coils	22.0
L6		22.0
L7	Band-pass coupling coils	22.0
L8		22.0
L9	Band-pass secondary coils	1.6
L10		15.0
L11	Aerial S.W. coupling coil	0.1
L12	Aerial S.W. tuning coil	Very low
L13	Osc. circuit S.W. tuning coil	Very low
L14	Oscillator S.W. reaction	35.0
L15	Osc. circuit M.W. tuning coil	1.6
L16	Oscillator M.W. reaction	50.0
L17	Osc. circuit L.W. tuning coil	10.0
L18	Oscillator L.W. reaction	2.5

OTHER COMPONENTS (Continued)		Approx. Values (ohms)
L19	1st I.F. trans.	Pri. .. 33.0
L20		Sec. .. 33.0
L21	2nd I.F. trans.	Pri. .. 33.0
L22		Sec. .. 33.0
L23	Speaker speech coil	1.9
L24	Hum neutralising coil	0.1
L25	Speaker field coil	1,000.0
T1	Speaker input trans.	Pri. .. 320.0 Sec. .. 0.4
T2	Mains trans.	Pri., total .. 42.0 Heater sec. .. 0.1 Rect. heat. sec. .. 0.1 H.T. sec., total .. 360.0
S1-S14	Waveband switches	—
S15-S16	Radio-gram. change switches	—
S17	Mains switch, ganged R21	—

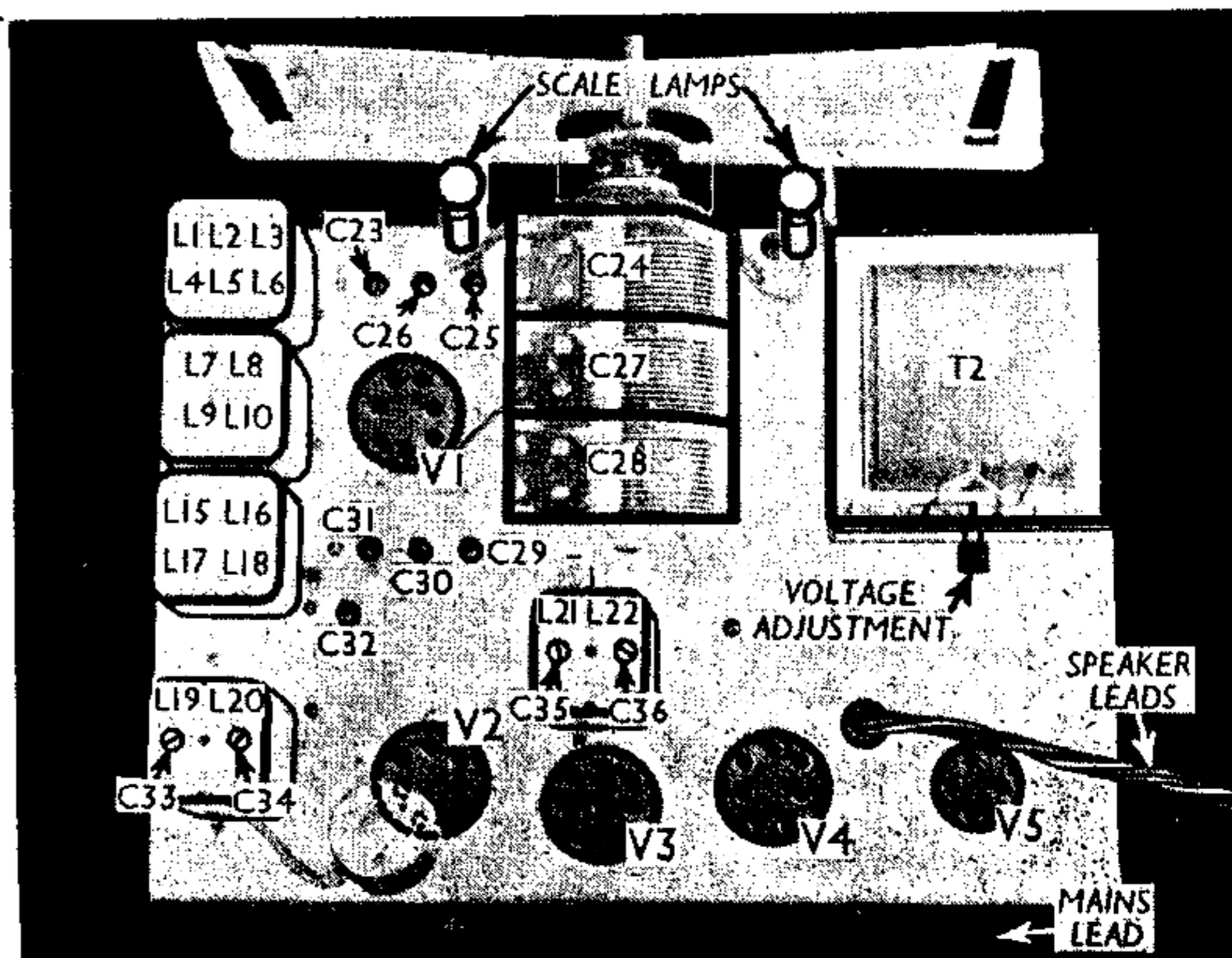
DISMANTLING THE SET

Removing Chassis.—If it is desired to remove the chassis from the cabinet, remove the knobs from all the controls except the tone control (recessed screws) and the four bolts (with washers and rubber washers), when the chassis can be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes.

When replacing, see that there are rubber washers between the chassis and the bottom of the cabinet, and note that the knob with the coloured dots

Continued overleaf

All the R.F. and oscillator trimmers are accessible through holes in the chassis deck, six of them being arranged as two separate units, while the seventh is a unit by itself. The I.F. trimmers are adjustable from the tops of the cans.



ALBA 825—Continued

goes on the spindle of the wave-change switch.

To free the chassis entirely, unsolder the leads from the chassis to the speaker and when replacing, connect them as follows:—P, black; 2, blue; 4 and P joined together, red. The white lead goes to the tag on the speaker frame.

Removing Speaker.—If it is necessary to remove the speaker from the cabinet, remove the nuts, washers and rubber washers from the four screws holding it to the sub-baffle. When replacing, make sure that there is a rubber washer on each of the screws, between the sub-baffle and speaker, and see that the transformer is on the right. Connect the leads from the tone control (R24) to the tag on the speaker frame, and the tone control condenser (C19) to the lower P tag.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 223 V, using the 220 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band and both the volume and sensitivity controls were at maximum (both fully clockwise), but there was no signal input.

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

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 TH4	230 Oscillator	3.0	52	3.4
V2 VP4B	103	4.4	—	—
V3 TDD4	230	10.0	230	3.3
V4 PenB4	121	3.0	—	—
V5 IW4/350	210 320†	57.0	230	7.4

† Each anode, A.C.

GENERAL NOTES

Switches.—S1-S14 are the wavechange and S15, S16 are the radio/gramophone switches, ganged in three rotary units beneath the chassis. The front two units are for wavechanging, while the back unit contains the two radio/gramophone switches. There is an additional switch (not shown in the diagram or circuit diagram) which connects the junction of L9, L10 to chassis in the gramophone position. The units are indicated in our under-chassis view, and are shown in detail in the diagrams in col. 3, where the first two are shown as seen when looking from the front of the underside of the chassis, and the third (radio/gramophone) is as seen looking from the back.

The table in col. 2 gives the switch positions for the four control settings, starting from fully anti-clockwise. A dash indicates open, and C closed.

S17 is the Q.M.B. mains switch, ganged with the volume control, R21.

Coils.—L1-L6, L7-L10 and L15-L18 are in three screened units on the chassis deck, while the I.F. transformers (L19, L20 and L21, L22) are in two further

TABLE AND DIAGRAMS OF THE SWITCH UNITS

Switch	S.W.	M.W.	L.W.	Gram.
S1	C	—	—	—
S2	—	C	—	C
S3	—	C	—	—
S4	—	C	—	—
S5	C	—	—	—
S6	—	C	C	—
S7	—	—	—	C
S8	C	—	—	—
S9	—	C	—	—
S10	—	—	C	—
S11	—	—	—	C
S12	C	—	—	—
S13	—	C	—	—
S14	—	—	C	C
S15	C	C	C	C
S16	—	—	—	C

screened units on the deck, which also contain the associated trimmers. L11, L12 and L13, L14 are in two unscreened tubular units beneath the chassis, L12 and L13 being the windings of thick tinned copper wire.

Scale Lamp.—The two scale lamps are Osram M.E.S. types, rated at 6.2 V, 0.3 A.

External Speaker.—Two terminals are provided on the internal speaker transformer for the connection of a high impedance external speaker.

Condensers C20, C21.—These are two dry electrolytic condensers in a single carton beneath the chassis, with a working voltage rating of 450 V. The black lead is the common negative, the red lead is the positive of C20 (8µF) and the yellow lead is the positive of C21 (12µF).

Condenser C4.—This is an 8µF dry electrolytic tubular condenser with a working voltage rating of 150 V.

Components C19, R24.—These components form the variable tone control circuit and are not mounted on the chassis. C19 is connected direct to that tag marked P on the internal speaker transformer which is nearer to tag 1. R24 is mounted on a piece of wood screwed to the front of the cabinet, the spindle emerging through a hole in the cabinet so that it can be operated in the normal way from the front of the cabinet.

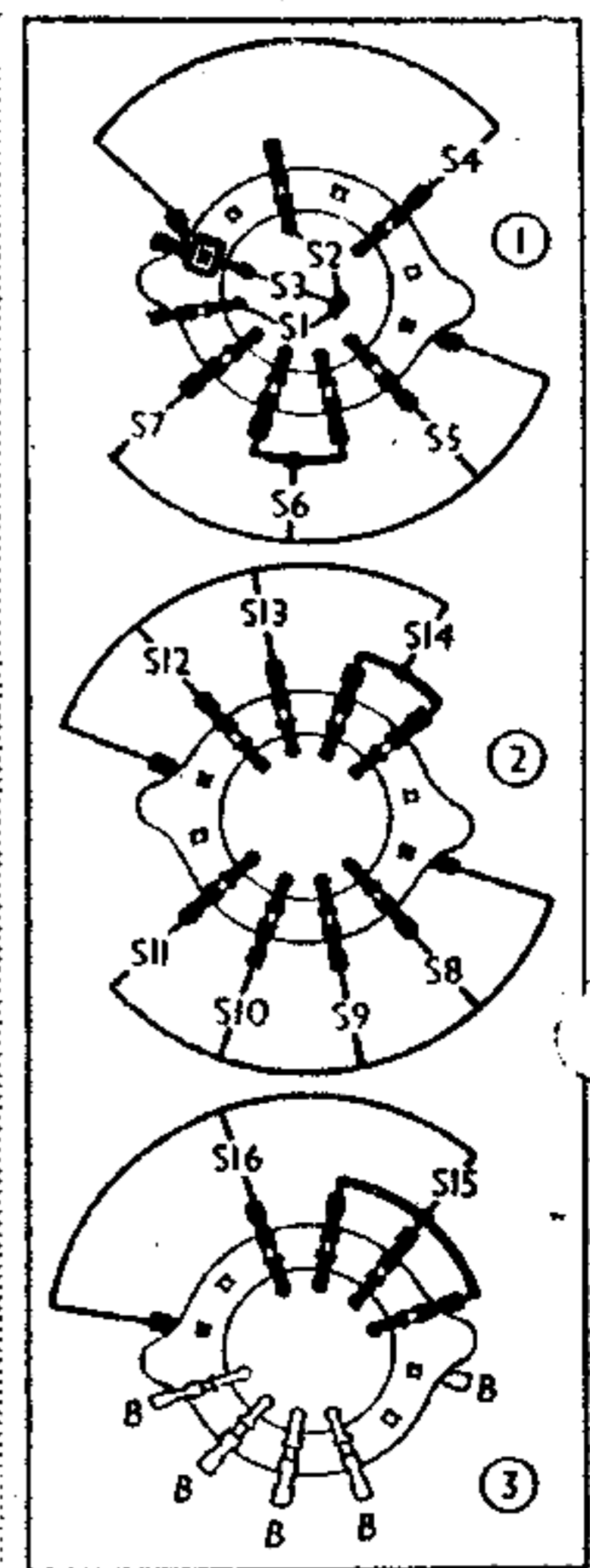
Trimmers.—All the trimmers, except those for the I.F. transformers, are adjustable through holes in the chassis deck. C23-C25 are in a single unit, C29-C31 are in another single unit and C32 is a separate trimmer by itself.

Chassis Divergencies.—C22 is 0.00015µF, not 0.0001µF as given in the makers' diagram, while R6 is 500 Ω not 5,000 Ω, and R23 is 170 Ω not 150 Ω, as given in the diagram. In some early chassis the bottom of L12 was taken direct to the bottom of L10 (not through R2) and C25 was then connected across L12 and not returned to chassis.

CIRCUIT ALIGNMENT

I.F. Stages.—Feed in a 117.5 KC/S signal between the top cap of V1 and chassis, with the set switched to M.W. Adjust C36, C35, C34 and C33 in that order for maximum output, reducing input progressively as the circuits come into alignment.

Diagrams of the three switch units. The first two, which are for wave-changing, are shown as seen when looking from the front of the underside of the chassis, while the third (radio/gram) is as seen when looking from the back of the underside. The switch positions for the four control settings are given in the table on the left.



R.F. and Oscillator Stages.—See that the scale pointer is horizontal at the maximum position of the gang condenser. If not, adjust it by means of the pointer clip on the drive spindle.

Feed a 250 m. (1,200 KC/S) signal into the A and E sockets, switch the set to M.W., tune to 250 m. on the scale and adjust C30, then C26 and C23 for maximum output.

Switch the set to L.W., feed in a 1,200 m. (250 KC/S) signal, tune to 1,200 m. on the scale and adjust C31 for maximum output, rocking the gang slightly for optimum results, since there are no separate L.W. band-pass trimmers. Feed in a 1,900 m. (157.1 KC/S) signal, tune it in, and adjust C32 for maximum output, rocking the gang meanwhile.

Switch the set to S.W., feed in a 31 m. (9.67 MC/S) signal, tune to 31 m. on the scale, and adjust C29 and C25 for maximum output. If C29 gives two peaks, choose that obtained with C29 nearer its minimum position.