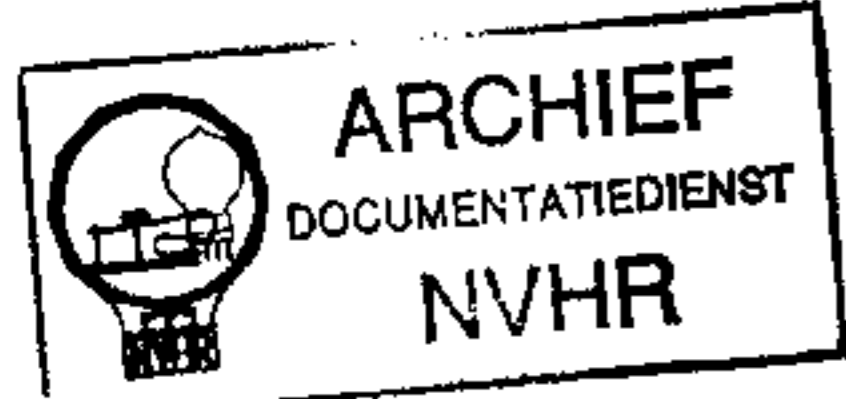


Ned. Ver. v. Historie v/d Radio



ALBA 815,

615, 650 AND 910 (A.C.)

A SHORT-WAVE range of 16.5-50 metres is covered by the Alba 815 (A.C.) 4-valve (plus rectifier) A.C. 3-band superhet, which is suitable for operation on mains of 190-250 V, 40-100 C/S. The receiver has provision for using the mains as an aerial and for connecting a gramophone pick-up and an extension speaker.

An identical chassis is fitted in the 615 (A.C.) armchair console and the 650 (A.C.) console receiver, while the chassis in the 910 (A.C.) radiogram is modified in certain respects, which are mentioned in "General Notes." This Service Sheet was prepared on an 815 (A.C.) table model.

It should be noted that there are A.C./D.C. models bearing the numbers 815, 615, 650 and 910, but these are not covered in this Service Sheet, although the general design is similar.

CIRCUIT DESCRIPTION

Aerial input on M.W. and L.W. is via S.W. coupling coil L11 to coupling coils L1, L2 and inductively coupled band-pass filter. Primary coils L3, L4 are tuned by C19; secondaries L9, L10 by C22; coupling coils L5, L6, L7 and L8. On S.W. band aerial input is via coupling coil L11 to single-tuned circuit L12, C22.

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 C23; parallel trimming by C24 (S.W.), C25 (M.W.) and C26 (L.W.); series tracking by C5 (M.W.) and C27 (L.W.); oscillator anode reaction coils L14 (S.W.), L16 (M.W.) and L18 (L.W.).

Single variable-mu R.F. pentode intermediate frequency amplifier (V2, Mullard metallised VP4B) operates with tuned-primary tuned-secondary transformer couplings C28, L19, L20, C29 and C30, L21, L22, C31.

Intermediate frequency 117.5 KC/S.

Diode second detector is part of separate double diode valve (V3, Mullard metallised 2D4A). Audio-frequency component in rectified output is developed across load resistance R10 and passed via stopper R9, C11 and manual volume control R13 to C.G. of pentode output valve (V4, Mullard PenA4). Fixed tone correction in anode circuit by C13. Provision for connection of high impedance external speaker across primary of T1. Provision for connection of gramophone pick-up across R13.

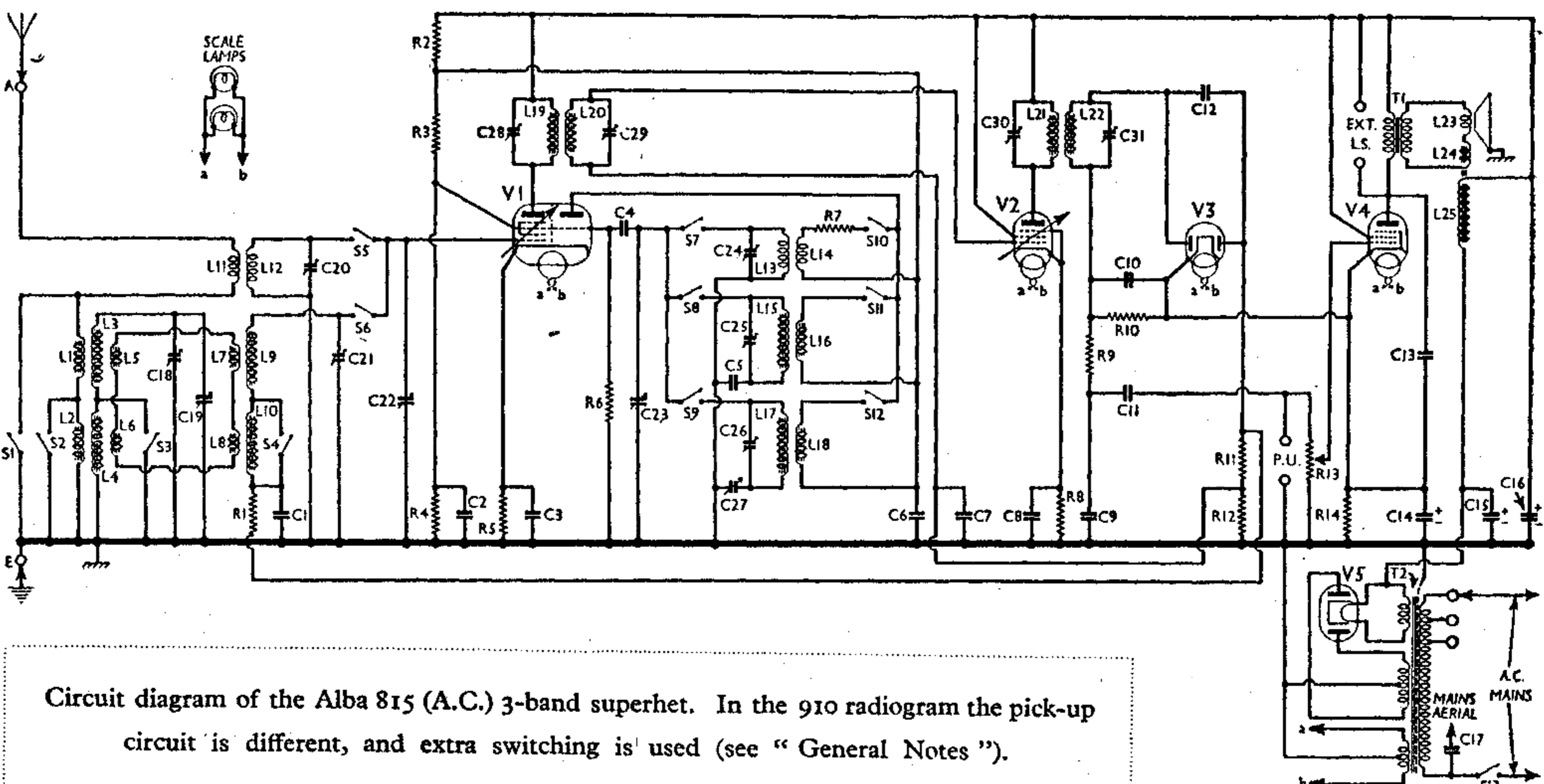
Second diode of V3, fed via C12, provides D.C. potentials which are developed across load resistances R11, R12 and fed back through decoupling circuits as G.B. to F.C. and I.F. valves, giving automatic volume control. Delay voltage is obtained from drop along V4 cathode resistance R14.

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 C15, C16. Mains aerial coupling by C17.

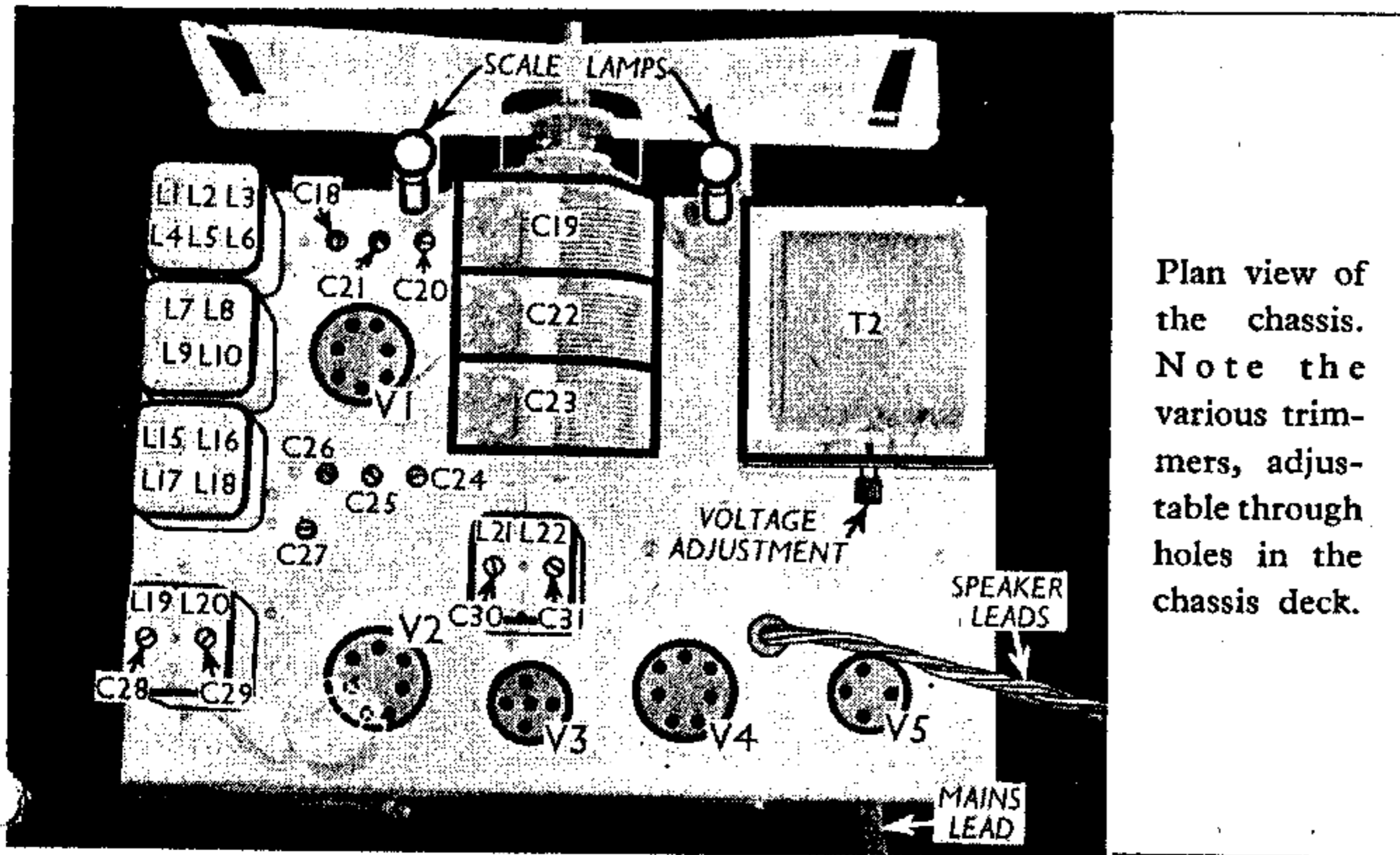
COMPONENTS AND VALUES

RESISTANCES		Values (Ohms)
R1	V1 hexode C.G. decoupling ..	1,000,000
R2	V1 S.G. and osc. anode H.T. potential divider ..	13,000
R3		10,000
R4		25,000
R5	V1 fixed G.B. resistance ..	200
R6	V1 osc. C.G. resistance ..	25,000
R7	V1 osc. anode S.W. stabiliser ..	100
R8	V2 fixed G.B. resistance ..	150
R9	I.F. stopper ..	50,000
R10	V3 signal diode load ..	500,000
R11	V3 A.V.C. diode load resistances ..	500,000
R12		500,000
R13	Manual volume control ..	500,000
R14	V4 G.B. resistance ..	150

CONDENSERS		Values (μF)
C1	V1 hexode C.G. decoupling ..	0.1
C2	V1 hexode S.G. by-pass ..	0.1
C3	V1 cathode by-pass ..	0.1
C4	V1 osc. C.G. condenser ..	0.0001
C5	Osc. circuit M.W. tracker ..	0.002
C6	V1 osc. anode decoupling ..	0.1
C7	V2 C.G. decoupling ..	0.1
C8	V2 cathode by-pass ..	0.1
C9	I.F. by-passes ..	0.0002
C10		0.0002
C11	A.F. coupling to V4 ..	0.005
C12	V3 A.V.C. diode feed ..	0.0002
C13	Fixed tone corrector ..	0.005
C14	V4 cathode by-pass ..	25.0
C15*	H.T. smoothing ..	6.0
C16*		6.0
C17	Mains aerial coupling ..	0.00015
C18†	Band-pass pri. M.W. trimmer ..	0.00003
C19†	Band-pass pri. tuning ..	—
C20†	Aerial S.W. trimmer ..	0.00003
C21†	Band-pass sec. M.W. trimmer ..	0.00003
C22†	Band-pass sec. and S.W. tuning ..	—
C23†	Oscillator circuit tuning ..	—
C24†	Oscillator S.W. trimmer ..	0.00003



Circuit diagram of the Alba 815 (A.C.) 3-band superhet. In the 910 radiogram the pick-up circuit is different, and extra switching is used (see "General Notes").



Plan view of the chassis. Note the various trimmers, adjustable through holes in the chassis deck.

the medium 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.

If V2 should become unstable when measurements are made of its anode current, as in our case, it can be stabilised by connecting a non-inductive condenser of about 0.1 μF from that electrode to chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 TH4*	257	3.0	58	3.5
V2 VP4B ..	257	12.0	257	4.6
V3 2D4A ..	—	—	—	—
V4 PenA4 ..	242	29.0	257	4.7
V5 IW4/350	312†	—	—	—

* Oscillator anode 115 V, 4.8 mA.
† Each anode, A.C.

GENERAL NOTES

Switches.—S1-S12 are the wavechange switches, in two rotary units beneath the chassis. These are indicated in our under-chassis view, and are shown in detail in the diagram on page IV, where they are as seen looking from the front of the underside of the chassis.

The table (p. IV) gives the switch positions for the three control settings, starting from fully anti-clockwise. A dash indicates open, and C closed.

S13 is the Q.M.B. mains switch, ganged with the volume control R13.

Coils.—L1-L6, L7-L10 and L15-L18 are in three screened units on the chassis deck. L11, L12 and L13, L14 are in two unscreened tubular units beneath the chassis. L12 and L13 respectively are the thick windings of tinned copper wire. The I.F. transformers L19, L20

Continued overleaf

CONDENSERS (Continued)		Values (μF)
C25†	Oscillator M.W. trimmer ..	0.00003
C26†	Oscillator L.W. trimmer ..	0.00003
C27†	Oscillator L.W. tracker ..	0.0007
C28†	1st I.F. trans. pri. tuning ..	—
C29†	1st I.F. trans. sec. tuning ..	—
C30†	2nd I.F. trans. pri. tuning ..	—
C31†	2nd I.F. trans. sec. tuning ..	—

* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial M.W. and L.W. coupling coils ..	70.0
L2	..	6.5
L3	Band-pass primary coils ..	1.6
L4	..	13.5
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 ..	2.0
L10	..	14.0
L11	Aerial S.W. coupling coil ..	0.3
L12	Aerial S.W. tuning coil ..	Very low
L13	Oscillator S.W. tuning coil ..	Very low
L14	Oscillator S.W. reaction coil ..	35.0
L15	Oscillator M.W. tuning coil ..	1.6
L16	Oscillator M.W. reaction coil ..	50.0
L17	Oscillator L.W. tuning coil ..	9.5
L18	Oscillator L.W. reaction coil ..	2.5
L19	1st I.F. trans. { Pri. ..	34.0
L20		Sec. ..
L21	2nd I.F. trans. { Pri. ..	34.0
L22		Sec. ..
L23	Speaker speech coil ..	1.9
L24	Hum neutralising coil ..	0.1
L25	Speaker field coil ..	1200.0
T1	Speaker input trans. { Pri. ..	450.0
	{ Sec. ..	0.4
	{ Pri., total ..	53.0
T2	Mains trans. { Heater sec. ..	0.1
	{ Rect. heat. sec. ..	0.1
	{ H.T. sec., total ..	430.0
S1-S12	Waveband switches ..	—
S13	Mains switch, ganged R13 ..	—

the speaker leads and when replacing, connect them as follows:—F, blue; 3, black; 1 and F joined together, red. The white lead goes to the earthing tag on one of the speaker fixing screws.

Removing Speaker.—Should it be necessary to remove the speaker from the cabinet, remove the nuts from the four screws holding it to the sub-baffle. When replacing, see that the transformer is on the right and do not forget to replace the soldering tag for the earthing lead on the bottom right-hand screw.

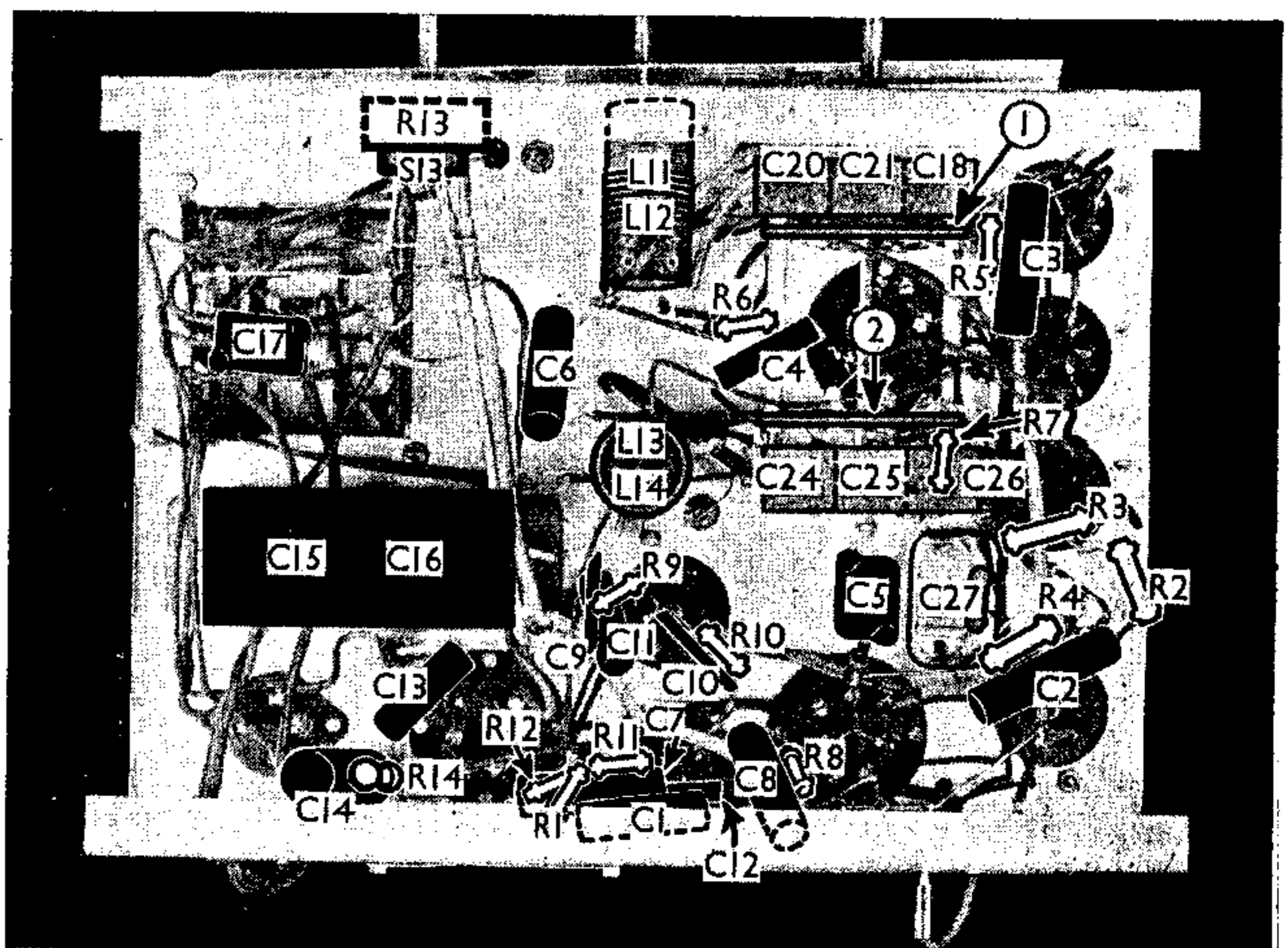
VALVE ANALYSIS

Valve voltages and currents given in the table (col. 3) are those measured in our receiver when it was operating on mains of 230 V, using the 220 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on

DISMANTLING THE SET

Removing Chassis.—If it is desired to remove the chassis from the cabinet, remove the three control knobs (recessed grub screws) and the four bolts (with washers) holding the chassis to the bottom of the cabinet. The chassis can now be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes.

To free the chassis entire unsolder



Under-chassis view. Diagrams of the two switch units are given overleaf.

ALBA 815—Continued

and **L21**, **L22** are in two other screened units on the chassis deck, with their associated trimmers.

Scale Lamps.—These are two Osram 6.2 V, 0.3 A M.E.S. types.

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

Condensers C15, C16.—These are two 6 μ F dry electrolytics in a single carton beneath the chassis, with a common negative (black) lead. The yellow lead is the positive of **C15**, and the red lead the positive of **C16**.

Trimmers.—All the trimmers, except those of the I.F. transformers, are adjustable through holes in the chassis deck.

Chassis Divergency.—**C17** in our chassis is 0.00015 μ F, not 0.0001 μ F as given in the makers' diagram.

Radiogram Model 910.—Although the basic circuit of this is similar, there are certain differences, particularly in the pick-up circuit. There is a fourth position on the wavechange switch for "Gram," and the pick-up is switched into the grid circuit of the I.F. valve **V2**, instead of **V4**.

On "Gram," the bottom end of **L20** is disconnected from the A.V.C. line, and taken to one side of the pick-up, the other side of the pick-up going to chassis. An anode load resistance is included in series with the connection from H.T. line to the top of **L21**, and the bottom end of this resistance is connected via a coupling condenser and

switch to the top of **R13**. On "Gram," this switch closes, and another switch, in series with the lead from **C11** to the top of **R13**, opens and mutes radio. **C15** and **C16** become 8 μ F and 12 μ F respectively.

The arrangement is very similar to that used in the models 870 and 970 (*Service Sheet 193*).

by means of the pointer clip on drive spindle.

Feed a 250 m. signal into **A** and **E** sockets, switch set to M.W., tune to 250 m. on the scale, and adjust **C25**, then **C21** and **C18** for maximum output.

Switch set to L.W., feed in a 1,200 m. signal, tune to 1,200 m. on the scale, and adjust **C26** 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. signal, tune it in, and adjust **C27** for maximum output, rocking the gang meanwhile.

Switch set to S.W., feed in a 31 m. signal, tune to 31 m. on the scale, and adjust **C24** and **C20** for maximum output. If **C24** gives two peaks, choose that obtained with **C24** nearest its minimum position.

CIRCUIT ALIGNMENT

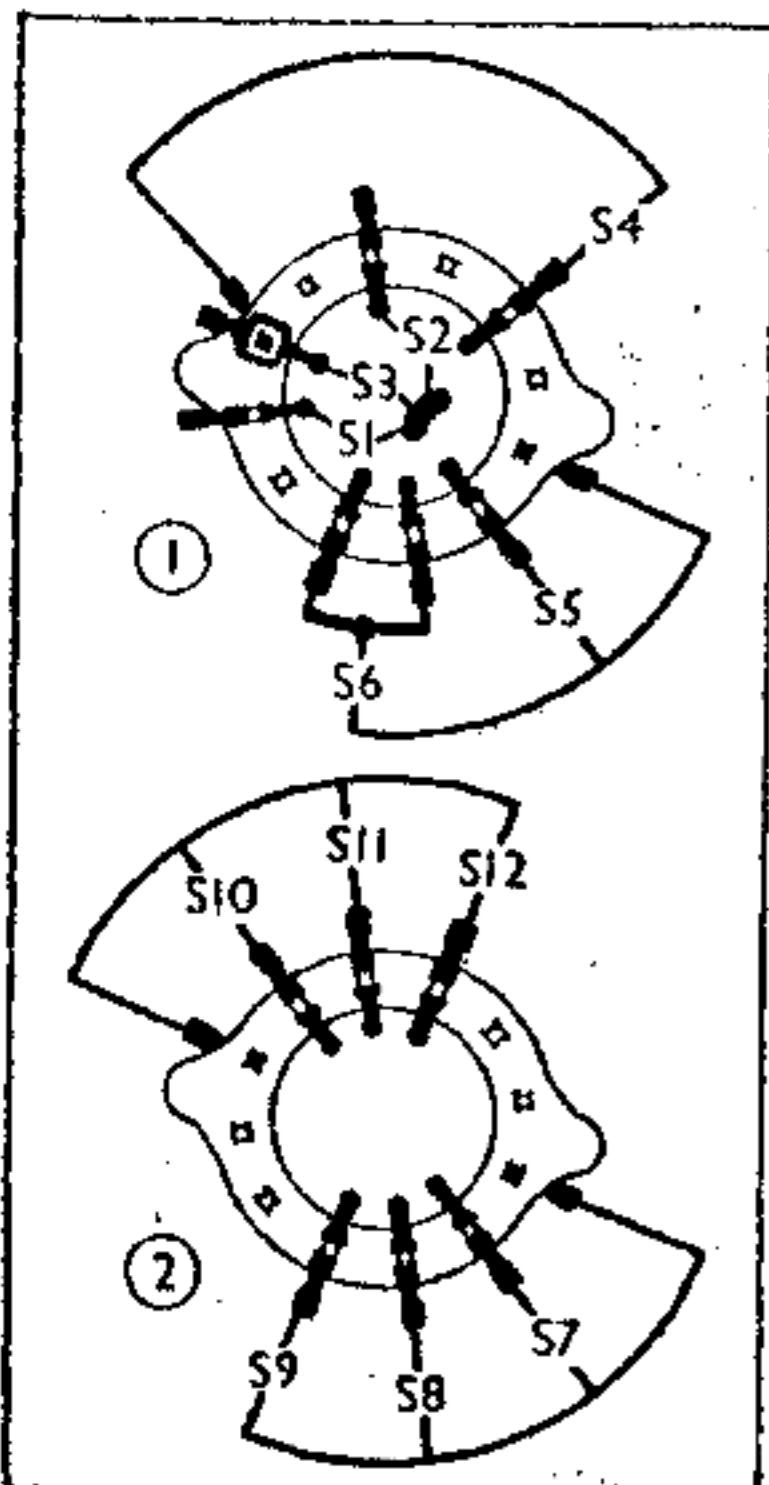
I.F. Stages.—Feed in a 117.5 KC/S signal between the top cap of **V1** and chassis, with set switched to M.W.

Adjust **C31**, **C30**, **C28** and **C29** for maximum output, in that order, reducing input progressively as the circuits come into alignment.

R.F. and Oscillator Stages.—See that scale pointer is horizontal at maximum position of gang condenser. If not, adjust

SWITCH TABLE AND DIAGRAMS

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



Switch diagrams as seen looking in the direction of the arrows in the under-chassis view.