

'TRADER' SERVICE SHEETS

BURNDEPT MODEL 226 A.C. SUPERHET

COMPONENTS AND VALUES

Resistances		Values (ohms)
R1	V1 pent. cont. grid decoupling	100,000
R2	V1 pent. anode and V2 anode decoupling	5,000
R3	V1 fixed G.B. resistance	250
R4	V1 osc. grid resistance	50,000
R5	V1 S.G.'s and osc. anode decoupling	30,000
R6	V2 cont. grid decoupling	100,000
R7	V2 fixed G.B. resistance	200
R8	V2 S.G. potential divider and	10,000
R9	A.V.C. delay voltage re-	8,000
R10	sistance (R10)	700
R11	Rectifier diode load	1,000,000
R12	I.F. stopper	100,000
R13	Manual volume control	500,000
R14	A.V.C. circuit decoupling	250,000
R15	A.V.C. diode load	500,000
R16		1,000,000
R17	V4 grid I.F. stopper	250,000
R18	V4 G.B. resistance	150
R19	Variable tone control	250,000
R20*	Osc. anode resistance	250

* In our chassis.

Condensers		Values (μF)
C1	V1 cont. grid decoupling	0.1
C2	V1 pent. anode and V2 anode decoupling	0.1
C3	V1 cathode by-pass	0.1
C4	V1 S.G.'s by-pass	0.1
C5	V1 osc. grid condenser	0.001
C6	Osc. M.W. trackers, fixed	0.0005
C7*		0.01
C8	V1 osc. anode decoupling	8.0
C9	V2 cont. grid decoupling	0.1
C10	V2 cathode by-pass	0.1
C11	V2 S.G. by-pass	0.1
C12	I.F. by-pass	0.0001
C13	A.V.C. diode coupling	0.0001
C14	L.F. coupling to V4	0.01
C15	A.V.C. circuit decoupling	0.1
C16	V4 cathode by-pass	50.0
C17	Ext. speaker coupling	0.5
C18	Tone control condenser	0.1
C19	H.T. smoothing	6.0
C20		6.0

* Not in our chassis.

THE Burndept Model 226 receiver is a 4-valve (plus valve rectifier) A.C. superhet, incorporating A.V.C., a visual tuning indicator and a high efficiency output pentode. An octode frequency changer is employed, while second detection and A.V.C. is provided by a double-diode valve.

CIRCUIT DESCRIPTION

Aerial input on L.W. by way of switch **S1**, and on M.W. by switch **S2** to tappings on primary of inductively coupled band-pass filter. Primary **L1**, **L2** tuned by **C22**; secondary **L7**, **L8** tuned by **C24**; coupling coils **L3**, **L4**, **L5**, **L6**.

First valve (**V1**, Mullard metallised **FC4**) is an octode operating as frequency-changer with electron coupling. Oscillator grid coils **L9**, **L10** tuned by **C26**; anode reaction coils **L11**, **L12**; tracking by condensers **C28** (L.W.) and **C6**, **C7** (M.W.).

Second valve, a variable-mu pentode (**V2**, Mullard metallised **VP4A**), functions as intermediate frequency amplifier with tuned-primary tuned-secondary transformer couplings **L13**, **L14** and **L15**, **L16**.

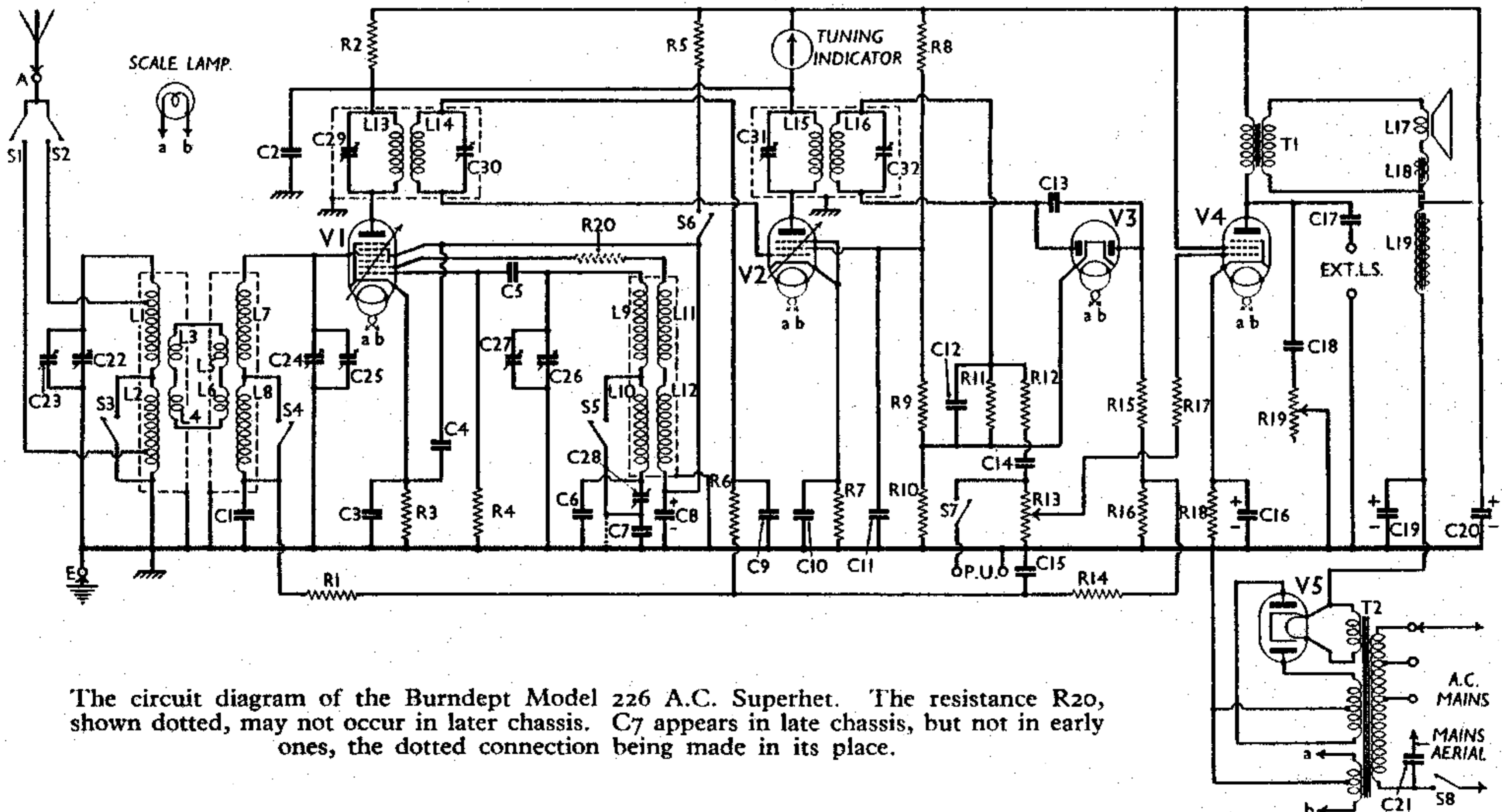
Intermediate frequency 130 KC/S; in early chassis 117.5 KC/S.

Visual tuning indicator of moving iron meter type in common anode feed circuit to **V1** and **V2**.

Diode second detector is part of double diode (**V3**, Mullard metallised **2D4A**). Second diode provides steady potential, developed across **R15**, **R16**, which is fed back in part as G.B. to **V1** and **V2**, giving automatic volume control. Delay voltage is obtained from voltage drop along **R10**.

Audio-frequency output from rectifier diode is developed across **R11**, and passed by way of I.F. stopper **R12**, coupling condenser **C14**, manual volume control **R13**, and I.F. stopper **R17**, to control grid of high-efficiency output pentode (**V4**, Mullard **Pen4VB**). Provision for connection of gramophone pick-up across volume control. Variable tone control by resistance-capacity filter **R19**, **C18**. Provision for connection of high-resistance external speaker.

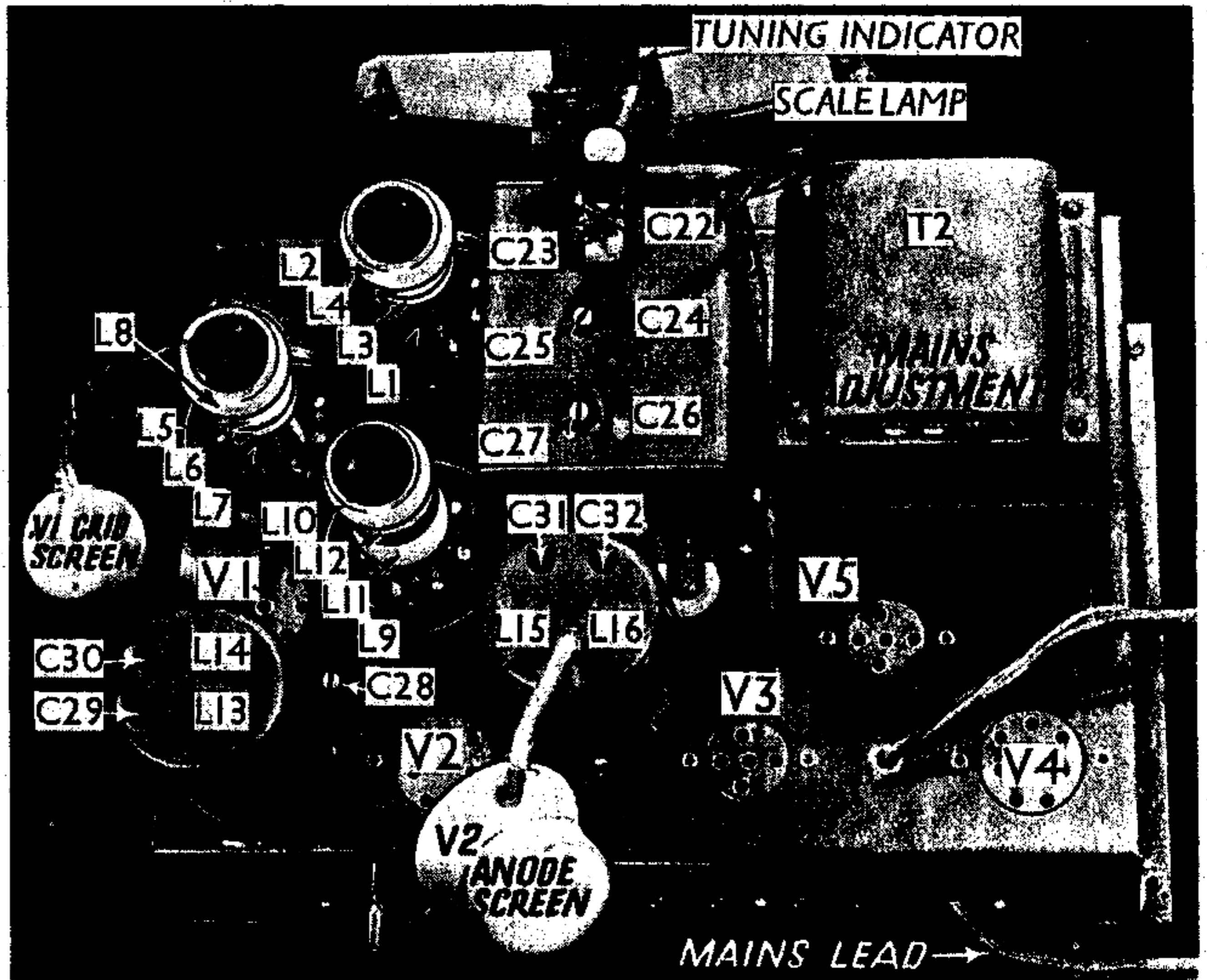
High-tension current is supplied by full-wave rectifying valve (**V5**, Micro-mesh **R2**). Smoothing by speaker field **L19** and dry electrolytic condensers **C19**, **C20**.



The circuit diagram of the Burndept Model 226 A.C. Superhet. The resistance R20, shown dotted, may not occur in later chassis. C7 appears in late chassis, but not in early ones, the dotted connection being made in its place.

Condensers (Contd.)		Values (μF)
C21	Mains aerial condenser	0.0001
C22	Band-pass primary tuning	---
C23	Band-pass primary trimmer	---
C24	Band-pass secondary tuning	---
C25	Band-pass secondary trimmer	---
C26	Oscillator tuning	---
C27	Oscillator trimmer	---
C28	Osc. L.W. tracker, pre-set	---
C29	1st I.F. trans. pri. tuning	---
C30	1st I.F. trans. sec. tuning	---
C31	2nd I.F. trans. pri. tuning	---
C32	2nd I.F. trans. sec. tuning	---

Other Components		Values (ohms)
L1	Band-pass primary coils	5.3
L2		10.2
L3	Band-pass coupling coils	2
L4		2
L5	Band-pass secondary coils	5.3
L6		10.2
L7	Oscillator grid tuning coils	4.3
L8		6.3
L9	Oscillator anode coils	0.8
L10		1.9
L11	1st I.F. trans.	Pri. 29.0
L12		Sec. 29.0
L13	2nd I.F. trans.	Pri. 29.0
L14		Sec. 29.0
L15	Speaker speech coil	1.75
L16	Hum neutralising coil	0.2
L17	Speaker field winding	2,500
L18	Speaker input trans.	750
L19		0.35
T1	Mains trans.	Pri. total 21.0
T2		Heater sec. 0.03
		Rect. heater sec. 0.05
		H.T. sec. 400
Sr-S5	Waveband switches, ganged	---
S6, S7	Radio-gramophone switches	---
S8	Mains switch, gauged R13	---



Plan view of the chassis. The signal frequency and oscillator coil screens have been removed to show the various coils.

DISMANTLING THE SET

Removing Chassis.—Remove knobs (grub screws). Now undo the four screws (with washers) underneath the cabinet

which hold the chassis in position. Chassis may now be withdrawn to extent of speaker leads, which is ample for most repair work. To remove chassis entirely, unsolder the three speaker leads from the tags on speaker transformer. When replacing, note that the black lead goes

to the top tag, which is also joined to the second. The blue lead goes to the tag next to the bottom, and the red lead to the bottom tag.

Removing Speaker.—It is best to remove this on its sub-baffle, which is held to the front of the cabinet by six wood screws. When replacing, note that the speaker transformer is to the right of the chassis.

CIRCUIT ALIGNMENT

The following instructions are issued by the makers. Set the receiver to the bottom of the L.W. band. Inject a 130 KC/S (or 117.5 KC/S) signal from the oscillator into the aerial and earth terminals of the set. Connect a 10,000 O resistance across the primary of 2nd I.F. transformer L15 (i.e., from anode of V2 to negative side of tuning indicator).

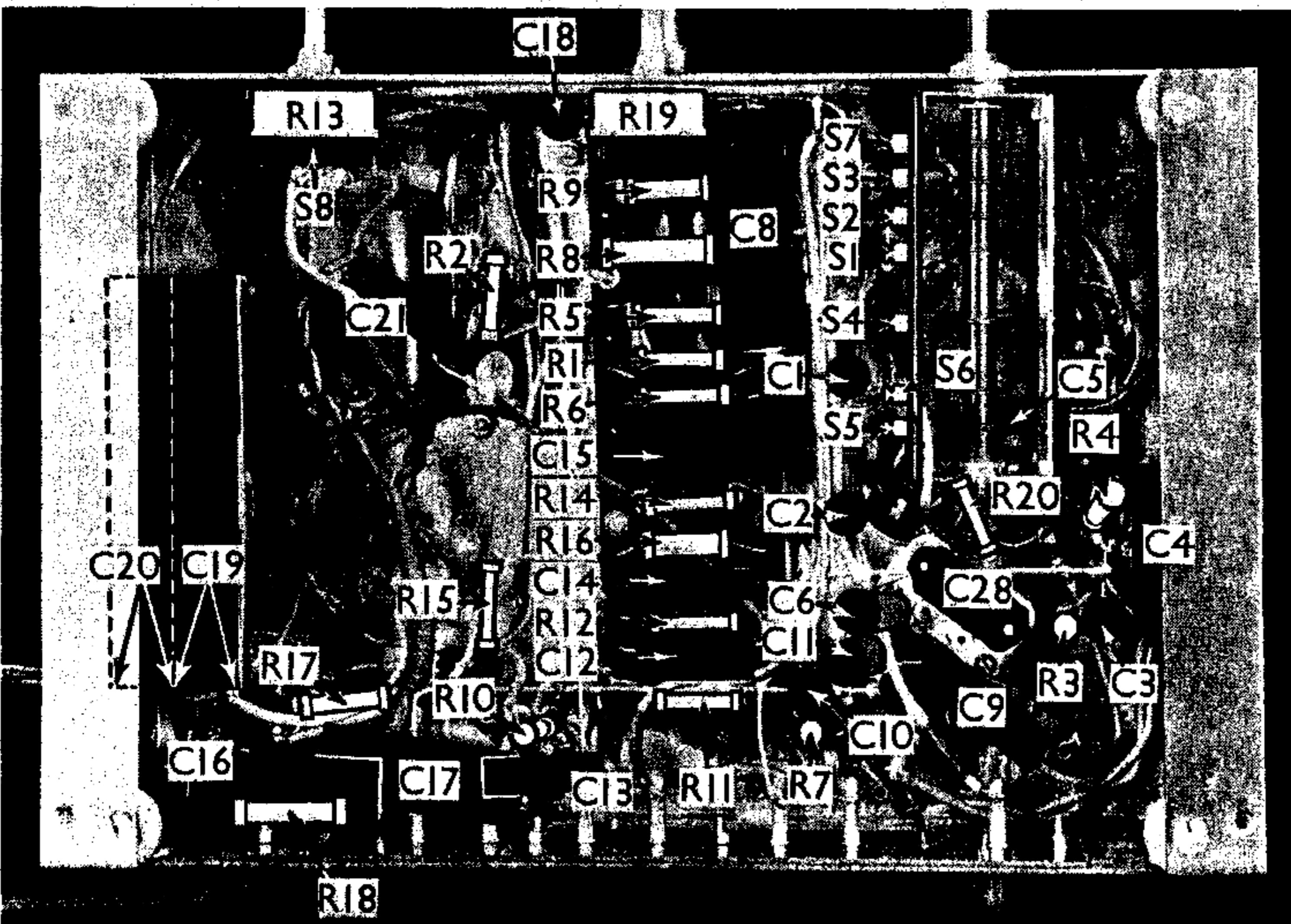
Adjust C32 for maximum output as shown on a suitable output meter. Keep input as low as possible to avoid A.V.C. action. Remove shunt resistance from L15, and place it across L16.

Adjust C31 for maximum output. Remove shunt from L16, and transfer to L18 (anode of V1 to negative of tuning indicator).

Adjust C30 for maximum output. Transfer shunt to L14 (grid of V2 to chassis).

Adjust C29 for maximum output. I.F. transformers are then ganged correctly.

To align the oscillator circuits, set receiver to 200 m., and inject (Continued overleaf)



The under-chassis view. The wave-change and gramophone switches are clearly indicated. R20 may not occur in late chassis, but another condenser, C7, may be present, though it is not shown above.

BURNDIPT MODEL 226 (continued)

a 200 m. signal between A and E. Adjust **C27** for maximum output. Inject 220 m., tune receiver to 220 m and adjust **C23** and **C25**. Now inject a 2,000 m. signal, set receiver to 2,000 m. and adjust **C28** for maximum output. Again adjust main tuner accurately, and slightly reset **C28** if necessary.

VALVE ANALYSIS

The voltage and current readings listed in the table are those given by Burndipt for an average chassis working with no aerial or earth connected. All voltages were measured with a high resistance voltmeter (1,000 Ω per V), the chassis being negative.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V ₁ FC4*	230	2.0	85	5.0
V ₂ VP4A	230	5.0	100	3.0
V ₃ 2D4A	---	---	---	---
V ₄ Pen4VB	275	33.0	240	3.0
V ₅ R2	350†	---	---	---

* Osc. anode (G₂) 85V, 2 mA. † A.C., each anode.

GENERAL NOTES

Chassis Divergencies.—The first few sets issued had an I.F. setting of 117.5 KC/S. Later models operate with an I.F. of 130 KC/S, and are distinguished by the fact that the screens of their I.F. transformers are marked with a white dot. The 117.5 KC/S models have no mark.

It will be found that in the early chassis there may be a resistance, **R20**, in the oscillator anode circuit, and this is shown dotted in our circuit diagram, since it is not present in the later 130 KC/S models. Further, the additional tracking condenser **C7** which occurs in the 130 KC/S models is omitted in the early chassis, the connection from the bottom of **S5** and **C28** being taken direct to chassis.

Switches.—**S1-S7** are the wavechange and pick-up switches, in one unit. This is shown in our under-chassis view, and the individual switches are indicated. **S8** is the mains switch, ganged with **R13**.

The following table gives the switch positions. O indicates "open," and C "closed."

Switch	M.W.	L.W.	Gram.
S ₁	O	C	O
S ₂	C	O	O
S ₃	C	O	O
S ₄	C	O	O
S ₅	C	O	O
S ₆	C	C	O
S ₇	O	O	C

Coils.—All the coils are mounted in screening cans on top of the chassis. The three signal frequency and oscillator units have had their screens removed in our plan view of the chassis to show the individual coils. These are clearly indicated by arrows. Note that **L11** is wound partly over **L9**. **L3**, **L4** and **L5**, **L6** each comprise only a few turns of wire.

The I.F. units, **L13**, **L14** and **L15**, **L16** are shown with their screens in position. The trimmers are operated through holes in the tops of the screens.

Scale Lamp.—This is an Osram M.E.S. type, rated at 6.5 V, 0.3 A.