

AERODYNE "SILVER WING"

Circuit.—The combined first detector oscillator valve, FC4 met. (or 15A2) (V1), is preceded by a band-pass aerial tuner, of which the first unit is an aerial transformer.

Oscillator tuning is in the oscillator grid circuit, and bias is by fixed cathode resistance and A.V.C. Coupling to the next valve is by band-pass I.F. transformer (frequency 125 kc.).

The intermediate-frequency amplifying valve, VP4 met. (V2), is also biased by cathode resistance and A.V.C., and is followed by a second band-pass I.F. transformer.

The second detector is a simple diode, 2D4A met. (V3). The A.V.C. diode anode is fed from the primary of the second I.F. transformer, and the load is in the form of a potentiometer R17 and R10, only a portion of the D.C. voltage being fed back for A.V.C. purposes.

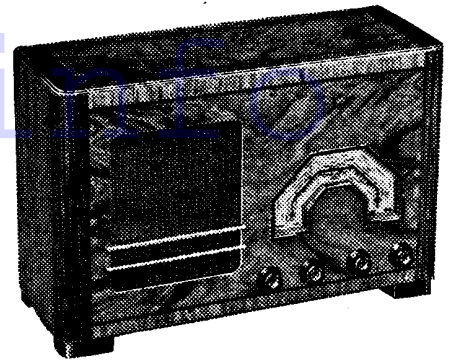
The output from the other diode anode is passed through an I.F. filter of C13 and R8

to the L.F. coupling condenser C12. This diode anode is biased by the voltage drop across R13, while delay is applied to the A.V.C. diode by the full voltage drop across R13, R18 and R12.

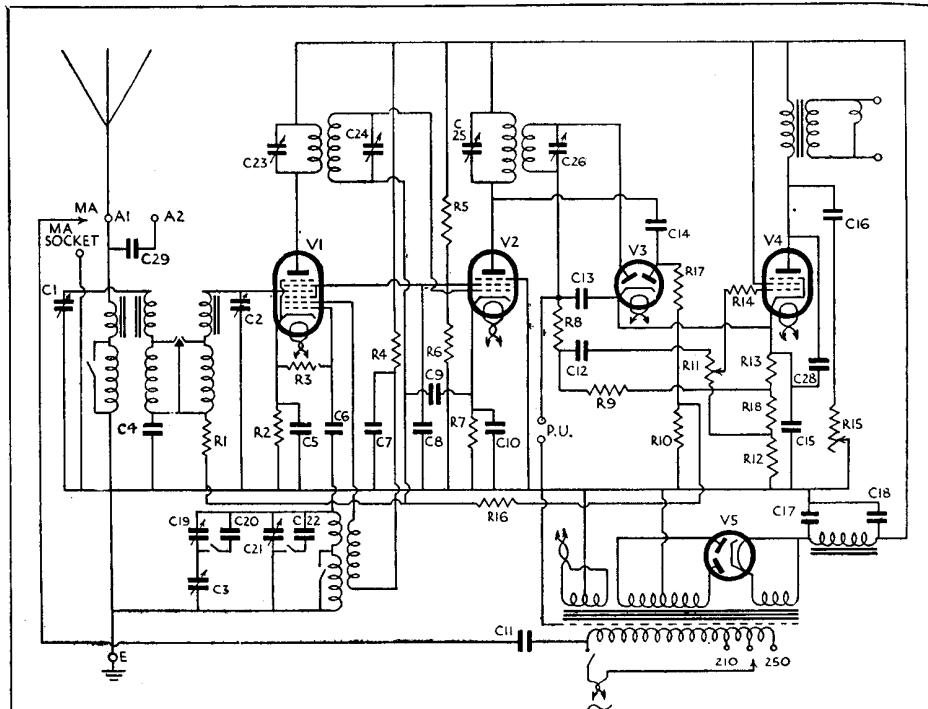
The output valve, Pen. 4VB, or AC2 Pen. (V4), has the grid leak as a potentiometer volume control, and is tone compensated by a condenser between the anode and cathode as well as by a tone control circuit of condenser and variable resistance.

Mains equipment consists of transformer with screened primary, R2; full-wave indirectly-heated rectifier; the speaker field, Which is in the positive H.T. lead; and two 8 mfd. electrolytic condensers.

Special Notes.—The pilot lamp is a 6.2-volt type. The ganged condenser is a straight type without shaped vanes for the oscillator section, and trimming must be carried out both on the condenser trimmer



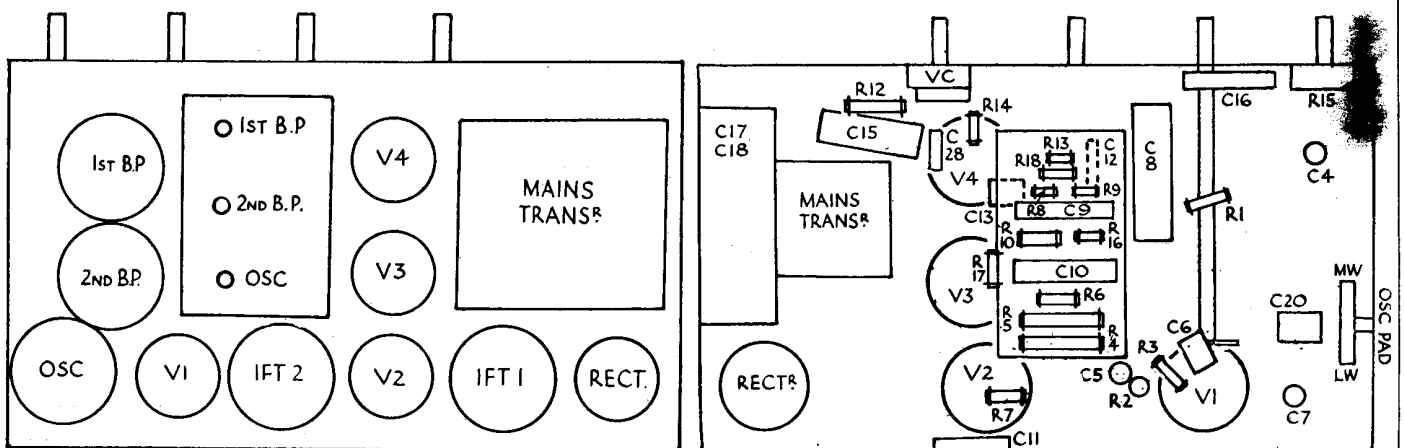
The Aerodyne "Silver Wing" is a four-valve plus rectifier superhet for A.C. mains operation.



CONDENSERS		
C.	Purpose.	Mfd.
4	Band pass coupling .. ..	.05
5	V1 cathode by-pass .. ..	.1
6	V1 osc. grid reservoir .. ..	.0005
7	V1 osc. anode decoupling .. ..	.2
8	V1, V2 aux. grid by-pass .. ..	.2
9	V2 grid decoupling .. ..	.05
10	V2 cathode by-pass .. ..	.1
11	Mains aerial .. ..	.0002
12	L.F. coupling V3 to V4 .. ..	.002
13	H.F. by-pass from diode .. ..	.0001
14	I.F. feed to A.V.C. diode .. ..	.00005
15	V4 cathode by-pass	25 (20v.)
16	V4 anode compensating .. ..	.02
17	H.T. smoothing	8 (450v.)
18	H.T. smoothing	8 (450v.)

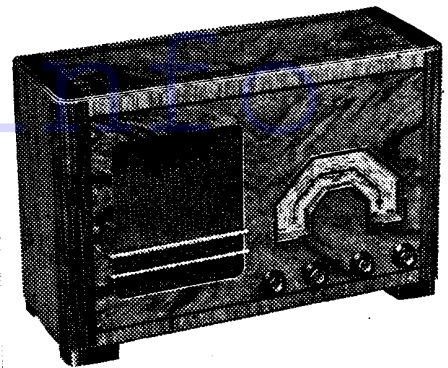
RESISTANCES		
R.	Purpose.	Ohms.
1	V1 grid decoupling .. ..	.5 Meg (1/2w.)
2	V1 cathode bias	250 (1/2)
3	V1 osc. grid leak	50,000 (1/2)
4	V1 osc. anode decoupling	30,000 (1)
5	Top part of aux-grid ptr.	20,000 (1)
6	Lower part of aux-grid ptr.	50,000 (1/2)
7	V2 cathode bias	250 (1/2)
8	H.F. stopper from diode	50,000 (1/2)
9	Diode load	1 Meg (1/2)
10	Part of A.V.C. diode load ptr. .. ..	.3 Meg (1/2)
11	Volume control .. ..	.5 Meg
12	Part of V4 bias ptr.	500 (1/2)
13	Part of V4 bias ptr.	40 (1/2)
14	V4 grid stabiliser	50,000 (1/2)
15	Tone control	Var. 50,000
16	Decoupling A.V.C. line	1 Meg (1/2)
17	Top part of A.V.C. diode load ptr.	1 Meg (1/2)
18	Part of V4 bias ptr.	100 (1/2)
	Speaker field	1,500

Bracketed figures denote wattage rating.



A double-diode is used for A.V.C. and second detection in the Aerodyne "Silver Wing," and the necessary L.F. gain is provided by the high-slope output pentode. As the layouts show, the construction is straightforward.

AERODYNE "SILVER WING"



The Aerodyne "Silver Wing" is a four-valve plus rectifier superhet for A.C. mains operation.

Circuit.—The combined first detector oscillator valve, FC4 met. (or 15A2) (V1), is preceded by a band-pass aerial tuner, of which the first unit is an aerial transformer. Oscillator tuning is in the oscillator grid circuit, and bias is by fixed cathode resistance and A.V.C. Coupling to the next valve is by band-pass I.F. transformer (frequency 125 kc.).

The intermediate-frequency amplifying valve, VP4 met. (V2), is also biased by cathode resistance and A.V.C., and is followed by a second band-pass I.F. transformer.

The second detector is a simple diode, 2D4A met. (V3). The A.V.C. diode anode is fed from the primary of the second I.F. transformer, and the load is in the form of a potentiometer R17 and R10, only a portion of the D.C. voltage being fed back for A.V.C. purposes.

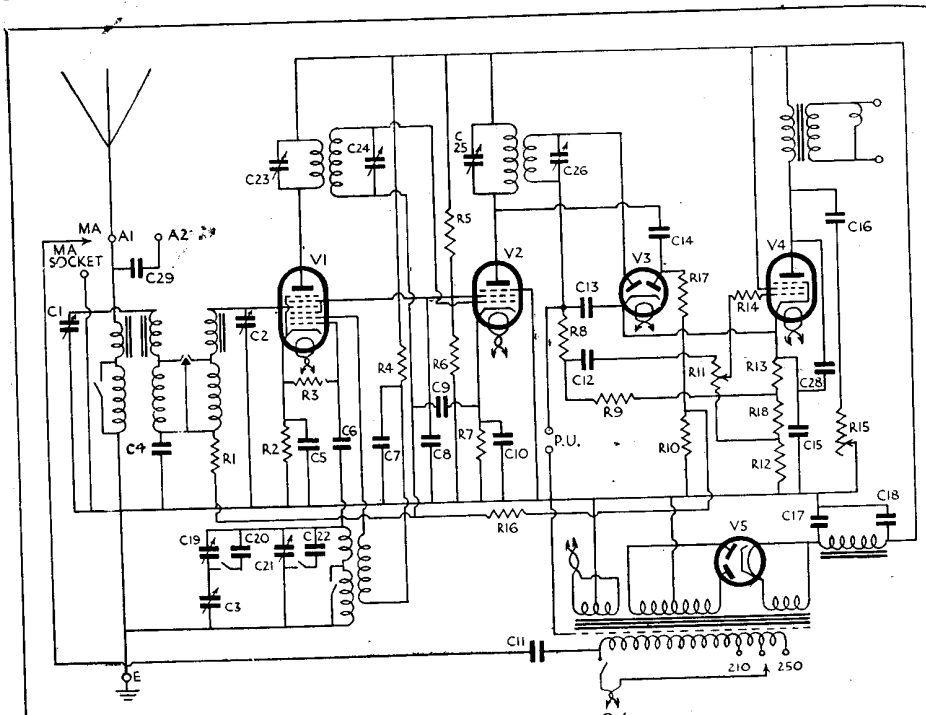
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to the L.F. coupling condenser C12. This diode anode is biased by the voltage drop across R13, while delay is applied to the A.V.C. diode by the full voltage drop across R13, R18 and R12.

The output valve, Pen. 4VB, or AC2 Pen. (V4), has the grid leak as a potentiometer volume control, and is tone compensated by a condenser between the anode and cathode as well as by a tone control circuit of condenser and variable resistance.

Mains equipment consists of transformer with screened primary, R2; full-wave indirectly-heated rectifier; the speaker field, which is in the positive H.T. lead; and two 8 mfd. electrolytic condensers.

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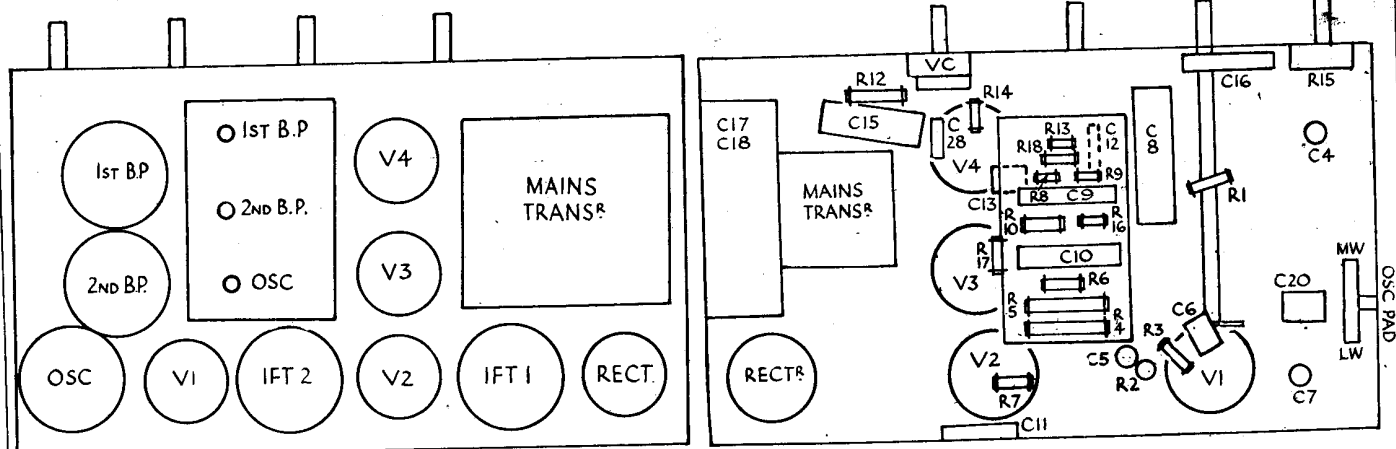
CONDENSERS

C.	Purpose.	MFL.
4	Band pass coupling05
5	V1 cathode by-pass1
6	V1 osc. grid reservoir0005
7	V1 osc. anode decoupling .. .. .	.1
8	V1, V2 aux. grid by-pass .. .. .	.1
9	V2 grid decoupling .. .. .	.02
10	V2 cathode by-pass .. .. .	.1
11	Mains aerial .. .. .	.0002
12	L.F. coupling V3 to V4 .. .. .	.002
13	H.F. by-pass from diode0001
14	I.F. feed to A.V.C. diode00005
15	V4 cathode by-pass	25 (20v.)
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17	H.T. smoothing	8 (450v.)
18	H.T. smoothing	8 (450v.)

RESISTANCES

R.	Purpose.	Ohms.
1	V1 grid decoupling5 Meg (1/2w.)
2	V1 cathode bias	250 (1/2)
3	V1 osc. grid leak	50,000 (1/2)
4	V1 osc. anode decoupling	30,000 (1)
5	Top part of aux-grid ptr.	20,000 (1)
6	Lower part of aux-grid ptr.	50,000 (1/2)
7	V2 cathode bias	250 (1/2)
8	H.F. stopper from diode	50,000 (1/2)
9	Diode load	1 Meg (1/2)
10	Part of A.V.C. diode load ptr. .. .. .	.3 Meg (1/2)
11	Volume control .. .. .	.5 Meg
12	Part of V4 bias ptr.	500 (1/2)
13	Part of V4 bias ptr.	40 (1/2)
14	V4 grid stabiliser	50,000 (1/2)
15	Tone control	Var.
16	Decoupling A.V.C. line	1 Meg (1/2)
17	Top part A.V.C. diode load ptr.	1 Meg (1/2)
18	Part of V4 bias ptr.	100 (1/2)
	Speaker field	1,500

Bracketed figures denote wattage rating.



A double-diode is used for A.V.C. and second detection in the Aerodyne "Silver Wing," and the necessary L.F. gain is provided by the high-slope output pentode. As the layouts show, the construction is straightforward.

AERODYNE "SILVER WING" (Cont.)

and the additional trimmers shown in the lay-out diagram.

Quick Tests.—Between the terminals on the speaker transformer and chassis:—

- Top.—(1) Black, H.T., unsmoothed, 325 volts.
- (2) Blue, V4 anode, 227 volts.
- (3) and (4) Red, H.T. smoothed, 240 volts.

(1) and (4) are speaker field; (2) and (3) are primary of output transformer.

Removing Chassis.—Undo two wood screws holding the dial frame to the cabinet. Pull off the knobs and remove the four holding screws from underneath.

General Notes.—In a few models R17 was omitted, and some of the components may have slightly different values from those given in the table:—

- R4, 20,000 ohm; R7, 140 ohm; R10,

100,000 ohm or .5 megohm; R13, 140 ohm; R16, .25 megohm; R17, .25 megohm; and C20, .0012 mfd.

Whenever a replacement for one of these is required, the new type should be of the same value as is given in the table.

The condenser C13 is mounted behind the condenser and resistance panel, and the L.F. coupling condenser C12 may either be mounted behind the panel or suspended in the wiring between the panel and the volume control.

The two 8-mfd. electrolytic condensers are in one block. The leads are: C17, yellow; C18, red. The common negative is black.

Replacing Chassis.—Lay the chassis inside the cabinet, replace holding screws and knobs, and insert the two wood screws in the corners of the dial frame.

Valve.	Type.	Electrode.	Volts.	M.A.
1	FC4 met (7)	anode ..	240	1.5
		aux. grid ..	97	
		osc. anode ..	181	
		anode ..	240	
2	VP4 met (7)	anode ..	240	6
		aux. grid ..	97	
		cathode* ..	16.5	
3	2D4A met.	anode ..	227	27
4	Pen 4 VB (7)	anode ..	240	5.
		aux. grid ..	240	

* This represents voltage drop across R 13, R 18 and R 12.

MARCONIPHONE 223 UNIVERSAL SUPERHET "THREE"

Circuit.—The first detector-oscillator, X30 met. (V1), is preceded by a single tuned aerial circuit which incorporates a special "damping" circuit L1, TC6, R6, to provide local-distance variation.

Oscillator tuning is in the grid circuit and bias is by cathode resistance and A.V.C. Coupling to the next valve is by band pass I.F. transformer (frequency 456 k.c.). (See special note on trimmers.)

The second valve is a double-diode-H.F. pentode, WD30 met. The I.F. is fed to the grid which is biased by A.V.C. only. The pentode section is followed by a second band-pass I.F. transformer, which is connected to the one diode anode that is used. The other diode anode is connected to cathode.

The L.F. signal is returned through the A.V.C. line, the H.F. stopper R11 and the secondary of I.F.T.1, to the grid of the pentode section of V2. There it is

amplified and coupled to the next valve by R9 and C13, C12 acting as I.F. by-pass condenser with R9 as I.F. decoupler.

The output valve, an N30 Cat. (V3), is a pentode, of which the grid leak forms the volume control. In the output circuit a muting switch is connected across the secondary of the transformer to short-circuit the speaker when the wavelength is being changed.

Mains equipment consists of an H.F. filter in the mains leads, a voltage adjustment resistance, a double rectifier used in a half-

wave circuit with smoothing effected by a choke in the positive H.T. lead used in conjunction with electrolytic condensers. The field coil is connected across the H.T.

Special Notes.—The H.F. filter and voltage adjustment resistance are mounted on the aluminium plate near the top of the cabinet.

The I.F. trimmers are the new type, in which a central screw tunes the primary

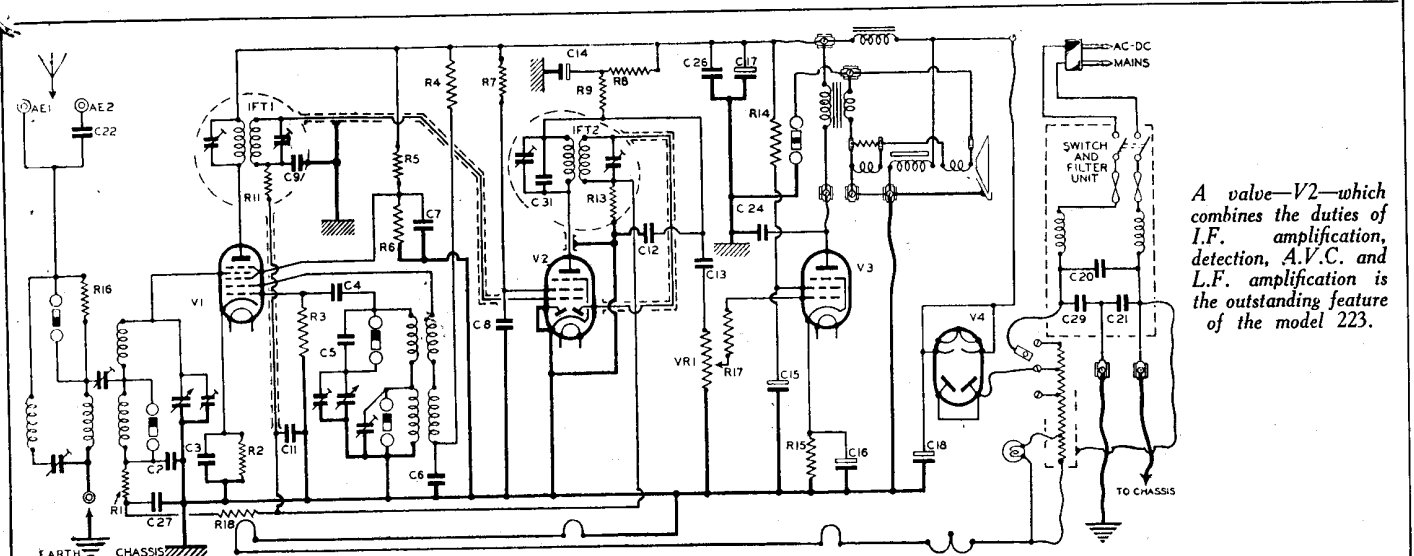
Valve	Type.	Electrode.	Volts.	M.a.
1	X30 met. (7)	anode ..	200	.5 to 1.3*
		screen ..	56	
		osc. anode ..	70	
2	W.D. 30 met. (7)	anode ..	65	3
		aux. grid ..	50	
3	N.30 cat (7)	anode ..	180	24
		aux. grid ..	145	
		aux. grid ..	145	

*Varies with position of L.D. switch.

R.	Purpose.	Ohms.
1	Decoupling V1 grid ..	100,000 (±)
2	V1 cathode bias ..	230 (±)
3	V1 osc. grid-leak ..	50,000 (±)
4	V1 osc. anode decoupling ..	100,000 (±)
4	Top part of V1 screen ptr. ..	35,000 (1)
5	Lower part of V1 screen ptr. ..	50,000 (±)
6	Voltage dropping to V2 aux. grid ..	75,000 (±)
8	V2 anode decoupling ..	5,000 (±)
9	V2 anode L.F. coupling ..	35,000 (1)
11	H.F. stopper in return L.F. lead to V2.	100,000 (±)
13	Diode load ..	.5 Meg. (±)
14	Voltage dropping to V3 aux. grid ..	10,000 (±)
15	V3 cathode bias ..	230 (±)
16	In selectivity aerial circuit ..	100,000 (±)
17	V3 grid stabiliser ..	50,000 (±)
18	Decoupling A.V.C. to V1 L.S. field ..	350,000 (±)
	Smoothing choke ..	5,000
		475

C.	Purpose.	Mfd.
2	V1 grid decoupling ..	.1
3	V1 cathode by-pass ..	.1
4	V1 osc. grid reservoir ..	.0001
5	L.W. osc. tracking ..	.0005
6	V1 osc. anode decoupling ..	.1
7	V1 screen by-pass ..	.5
8	V2 aux. grid by-pass ..	.5
9	L.F. return from V2 grid ..	.0005
11	Decoupling A.V.C. to V2 ..	.002
12	I.F. by-pass from R9 ..	.0005
13	L.F. coupling V2 to V3 ..	.1
14*	L.F. decoupling V2 anode ..	4
15*	V3 aux. grid by-pass ..	1
16	V3 cathode by-pass ..	50
17*	H.T. smoothing ..	12
18*	H.T. smoothing ..	12
20	H.F. by-pass across mains ..	.01
21	H.F. mains filter ..	.005
22	Series aerial ..	.0005
24	V3 anode, tone compensating ..	.002
26	Across C17 ..	.1
27	A.V.C. to V1 grid decoupling ..	.01
29	H.F. mains filter ..	.005

* In condenser block (Part No. 19851A).



A valve—V2—which combines the duties of I.F. amplification, detection, A.V.C. and L.F. amplification is the outstanding feature of the model 223.