

The Lissen 8111 table model superhet A.C. "four."

to that of V4, and the L.F. coupling is a resistance capacity filter. Tone control is provided by a variable condenser, C12, across the diode output.

The output pentode, A/70/C (V4), has a grid stabilising resistance and is tone compensated by a condenser in series with a resistance across the primary of the output transformer.

Mains equipment consists of transformer, full-wave A/11/B rectifier, the speaker field in the positive H.T. lead for smoothing, and two electrolytic condensers.

**Special Notes.**—Pilot lamp is a 3.5 volt .3 amp. flash-lamp bulb.

CONDENSERS		
C.	Purpose.	Mfd.
13	Series aerial	.000015
14	Decoupling V1 grid	.25 (350)
15	V1 aux. grid by-pass	2 (300)
16	V1 cathode by-pass	.1 (350)
17	V1 osc. grid reservoir	.001 (350)
18	Gram. feed from V1 to V4	.1 (350)
19	V1 anode decoupling	.1 (350)
20	V2 screen by-pass	.1 (350)
21	V2 grid decoupling	.1 (350)
22	V2 cathode by-pass	.1 (350)
23	I.F. feed to A.V.C. diode	.0001(350)
24	H.F. by-pass from diode	.0001(350)
25	L.F. coupling	.05 (350)
26	H.F. by-pass from diode	.0001(350)
27	H.T. smoothing	el. 8 (450)
28	H.T. smoothing	el. 8 (450)
29	V4 cathode by-pass	el. 20 (30)
30	Part of tone compensating circuit	.01 (450)

Bracketed figures denote D.C. working voltages.

The variable resistance R2 is at the back of the chassis and provides a certain amount of control over inter-station "noise."

An extra speaker should be used without a transformer and should have an impedance of between 3 and 5 ohms.

**Quick Tests.**—Between the right-hand terminals on the speaker and chassis:—

Outside, 450 volts, H.T. unsmoothed,

Inside, 275 volts, H.T. smoothed.

**Removing Chassis.**—There is no need to remove the knobs. Simply undo the screws holding the fibre cover on the bottom of the cabinet to reveal all the under-chassis components.

When the chassis must be removed, undo

RESISTANCES		
R.	Purpose.	Ohms.
1	V1 cathode bias	300 (4)
2	Sensitivity control	var. 2,000
3	V1 osc. grid, harmonic suppressor	1,000 (4)
4	V1 osc. grid leak	100,000(4)
5	V1 aux. grid ptr.	40,000 (4)
6	V1 aux. grid ptr.	40,000 (1)
7	V1 osc. anode decoupling	100,000(4)
8	Voltage dropping to V2 aux.grid	80,000 (4)
9	V2 cathode bias	200 (4)
10	Decoupling V2 grid	510,000(4)
11	A.V.C. load ptr.	510,000(4)
12	A.V.C. load ptr.	510,000(4)
13	Decoupling A.V.C. to V1	510,000(4)
14	H.F. stopper in gram. feed	100,000(4)
15	H.F. stopper from diode	100,000(4)
16	Diode load	260,000(4)
17	V.C.	500,000
18	V4 grid stabiliser	25,000 (4)
19	V4 cathode bias	150 (4)
20	Providing relay bias for A.V.C.	500 (1)
21	Tone compensating V4 anode	10,000 (4)
	Speaker field	3,000ohms

Bracketed figures denote voltage rating.

the four holding bolts, pull off the knobs and free the speaker lead from the clip.

**General Notes.**—The condensers C27 and C28 are of identical value and working voltage.

The oscillator section of V1 is converted into an L.F. amplifier for gram. by switching the decoupling condenser C18 over to the grid circuit of V4. The connection of the pick-up prevents V1 oscillating.

**Replacing Chassis.**—Lay the chassis inside the cabinet, replace the bolts, the cover underneath, and the knobs (springs opposite rounded sides of spindles).

## PHILIPS 585U SUPERHET "FIVE"

**Circuit.**—The octode frequency changer, FC13 met. (V1), has a band-pass aerial coupling with special coils and includes an I.F. filter. Oscillator tuning is in the grid circuit. Bias for the oscillator section is from a cathode potentiometer, while that for the pentode section is by A.V.C. and cathode resistance.

Coupling to the next valve is by band-pass I.F. transformer (frequency 115 kc.). The I.F. valve, VP13A met. (V2), is biased in a special manner to provide muting and amplification of the A.V.C. by having the grid return taken to a positive tapping on an H.T. potentiometer, the actual biasing potential being controlled by the difference in voltage drop across R4 and R10.

Coupling to the next valve is by another band-pass I.F. transformer.

The second detector, 2D13A (V3), uses the second anode for A.V.C., and the negative bias for noise suppression is obtained on the first anode by the potentiometer R11 (mounted on the back of the cabinet top).

VALVE READINGS				
13 volt "Universal" valves.				
Valve.	Type.	Electrode.	Volts.	M.A.
1	F.C.13 met.	anode	190	.7
		aux.grid	65	
		osc. anode	65	
2	V.P. 13A	anode	180	1.5
		aux.grid	60	
		diode	60	
3	2D 13A	diode	140	.75
4	H.L.13	anode	167	40
5	Pen. 26	anode	167	40
		aux.grid	90	5.5

Coupling to the L.F. valve is by resistance-capacity filter.

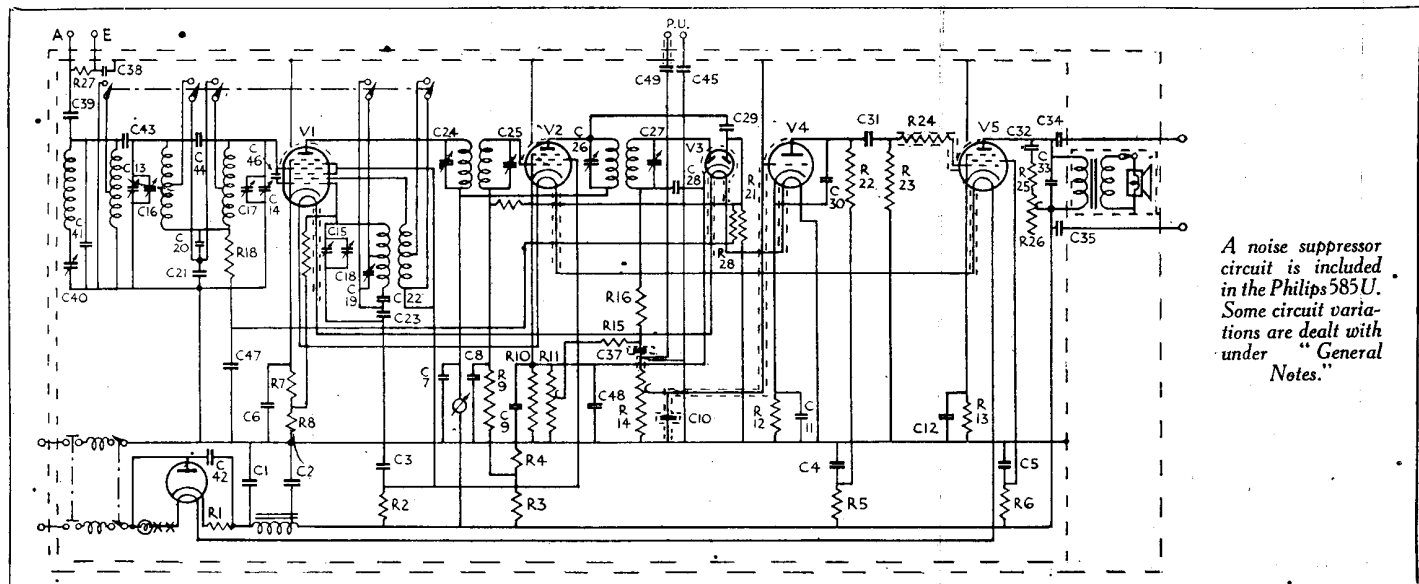
This valve, HL13 (V4), is a triode with a tone correction circuit in the cathode lead. It is also coupled to the output valve by another resistance-capacity filter.

The output pentode, Pen.26 (V5), is stabilised by grid resistance, and tone control is by condenser and variable resistance. The speaker is a permanent magnet model.

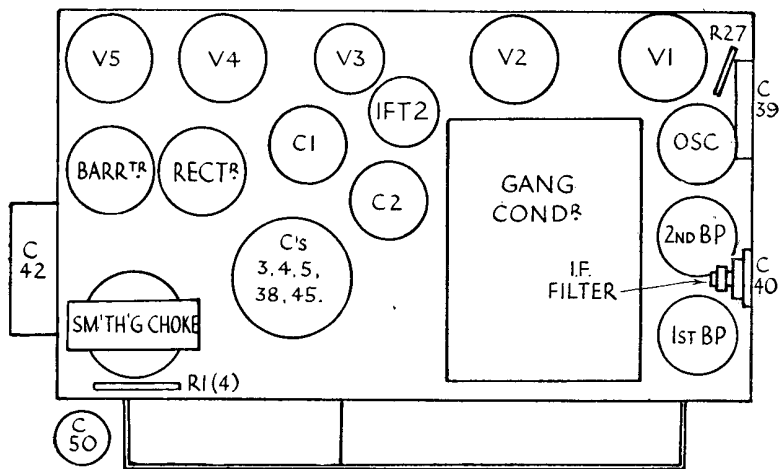
Mains equipment consists of H.F. mains chokes in each lead, barretter lamp for the heater supplies, half-wave rectifier, a choke in the positive H.T. lead, and electrolytic condensers.

**Special Notes.**—To remove the pilot lamps (No.8070) undo the screw and lift out.

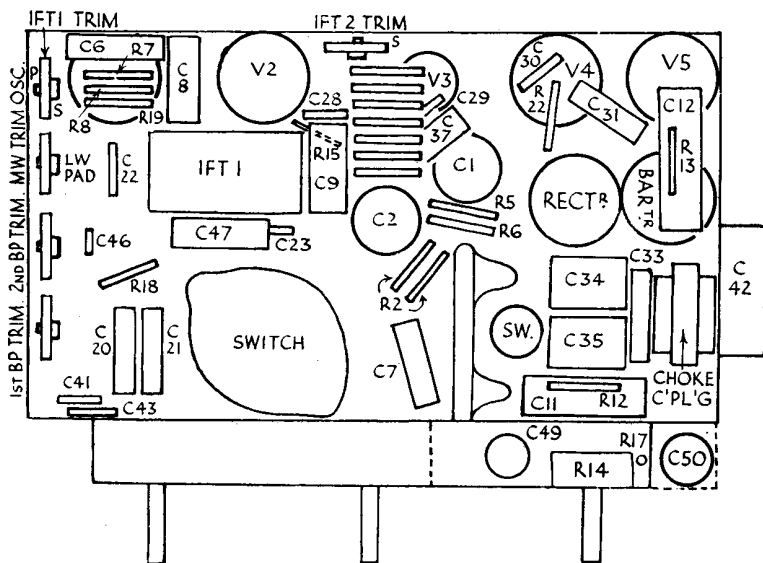
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A noise suppressor circuit is included in the Philips 585U. Some circuit variations are dealt with under "General Notes."

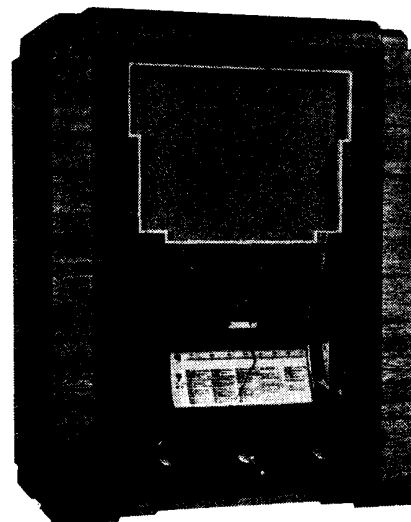


Mullard universal valves are used and leads to the tone and suppressor controls are carried in heavy cables.



The row of resistors in the centre towards the back of the Philips chassis are, in order from the outside; R's 21, 28, 20, 1, 9, 4, and 3.

PHILIPS MODEL 585 U (Contd.)



The Philips 585 U is a five-valve plus rectifier and barretter receiver for A.C.-D.C. operation and includes a number of interesting features.

the insulating bracket, taking care not to drop the washer.

**Quick Tests.**—Between the two terminals on the output transformer bobbin and chassis:—

- Front (red), V5 anode, 167 volts,
- Rear (black), H.T. smoothed, 190 volts.

**Removing Chassis.**—Remove the knobs (grub screw) and the wavechange lever (two grub screws).

Release the cables from the cleats, and, after turning the tuning to minimum, release the band from the clip on the pointer (to do this, ease up the flat spring on the clip and slip the stud out).

Remove the insulating covers over the holding screws and remove the latter. Unsolder the leads from the tuning meter terminals. The chassis can now be withdrawn for examination.

**General Notes.**—The disposition of the components may be slightly different in production models.

In some, R23 may be replaced by a choke mounted as shown in the diagram (underneath layout).

C32 may be mounted between C34 and C35 in the same diagram. In other models it will be found on the tone control R26.

The condenser C50 and resistance R17 shown in the lay-out diagram near the volume control may be absent. These are connected between C37 and R14 and prevent overloading with the volume control at maximum.

The oscillator padding condensers and the I.F. transformer trimmers are double condensers, one section being adjustable from the outside and the other from the inside.

**Replacing Chassis.**—Lay the chassis inside the cabinet, taking care that the rubber bushes are in position. Place the earthing plate between the right-hand rear corner (looking from the back) and the screening foil on the inside of the cabinet.

Replace the holding screws and clip the leads and the condenser driving band. Replace the knobs and the insulating covers on the holding screws. Re-solder the meter leads, red to the right (from back).

RESISTANCES

R.	Purpose.	Ohms.
1	Rectifier stabilising resistance	4 x 800 (1)
2	Voltage dropping to aux. grids	2 x 40,000 (1)
3	V2 bias ptr. across H.T.	.4 meg. (½)
4	V2 bias ptr. across H.T.	80,000 (½)
5	V4 anode decoupling	20,000 (½)
6	Voltage dropping to V5 aux.grid	16,000 (1)
7	V1 cathode bias ptr.	250 (½)
8	V1 cathode bias ptr.	160 (½)
9	Decoupling V2 grid	2 x 5 meg. (½)
10	V2 cathode bias	5,000 (½)
11	Noise suppressor control	50,000
12	V4 cathode bias	5,000 (½)
13	V5 cathode bias	320 (1)
14	Volume control	var.
15	Decoupling delay bias feed	.8 meg. (½)
16	H.F. stopper	.2 meg. (½)
18	V1 grid decoupling	.5 meg. (½)
19	V1 osc. grid leak	50,000 (½)
20	A.V.C. feed to V2	2.5 meg. (½)
21	A.V.C. diode load	.32 meg. (½)
22	V4 anode, L.F. coupling	.2 meg. (½)
23	V5 grid leak	.64 meg. (½)
24	V5 grid stabiliser (inside lead)	1,000
25	Part of tone control circuit	100 (½)
26	Part of tone control circuit	*50,000
27	Across aerial input	.2 meg. (½)
28	A.V.C. feed to V1	.5 meg. (½)

Bracketed figures denote wattage rating.  
\* May be 64,000 or 80,000 ohms.

CONDENSERS

C.	Purpose.	Mfd.
1	H.T. smoothing	el. 32
2	H.T. smoothing	el. 32
3*	Aux. grids by-pass	.5
4*	V4 anode decoupling	.5
5*	V5 aux. grid by-pass	.1
6	V1 cathode by-pass	.05
7	Decoupling tuning meter	.1
8	V2 grid decoupling	.1
9	V2 cathode by-pass	.1
10	H.F. by-pass	.000064
11	V4 cathode by-pass	el. 25
12	V5 cathode by-pass	el. 25
20	Band pass coupling	.025
21	Band pass coupling	.025
22	L.W. osc. tracking	.0009
23	M.W. osc. tracking	.00181
28	H.F. by-pass	.0001
29	I.F. feed to A.V.C. diode	.000064
30	H.F. by-pass	.000025
31	L.F. coupling V4 to V5	.05
32	Tone control circuit	.05
33	V5 tone compensating	.002
34	Ex. L.S. feed	.2
35	Ex. L.S. feed	.2
37	L.F. coupling to V4	.05
38*	Series earth	.1
39	Series aerial	.001
42	Rectifier stabiliser	.1
45*	M. P.U. lead	.05
47	V1 grid decoupling	.1
48	V4 cathode by-pass	el. 25
49	M. P.U. lead	.05
50	R.17 by-pass	.2

\* In condenser block. Code No. 28160600 B.E.