

The practical layout diagrams of the Philips 3750 P.A. amplifier.

(Continued from previous page.)

screws from the flange at each side of the base and remove the four screws inside the rubber supports.

General Notes.—The voltages in this amplifier are in the neighbourhood of 1,000 volts, and due care must be taken.

The wires are bunched, and to facilitate the tracing of leads a continuity tester is an advantage.

Replacing Cover.—In replacing the cover it is better to replace the bottom plate and fix by the two screws underneath the valve platform.

The remaining two screws should not be

inserted till after the perforated cover has been replaced.

VALVE READINGS

Valve.	Type.	Electrode.	Volts.	M.A.
1	F 4/60 ..	anode ..	270-330	9.5-10.5
2	MC 1/60 ..	anode ..	950-1050	48-52

GENERAL ELECTRIC D.C. FIVE

Circuit.—The first detector oscillator valve, DSB clear (V1), follows a band-pass aerial coupling. As it is a screen-grid valve, reaction coupling is in the cathode lead, with suppressor feed to the aerial coil.

Coupling to the next valve is by band-pass I.F. transformer (frequency 107 kc.), and the tuning condenser of the primary is used as the H.F. feed to the anode reaction coil.

The I.F. valve, VDS clear (V2), is followed by a second band-pass I.F. transformer, and volume is controlled by means of a potentiometer, R21, which simultaneously damps the aerial and increases the bias on V2.

A DSB clear second detector (V3) operates as an anode-bend detector, and gramophone coupling is obtained from the low H.F. potential end of the secondary of I.F.T.2 and cathode through two isolating condensers. The anode circuit consists of a resistance and by-pass condenser I.F. filter, a resistance capacity L.F. coupling and anode decoupling.

A filter for double the intermediate frequency (214KC) is included in the anode circuit (L7 C38).

The output pentode, DPT (V4), is provided with tone control by a condenser in series with a variable resistance between the anode and chassis, and is tone compensated by a condenser, C11, across the extra speaker sockets.

The extra speaker is filter fed between the anode and cathode. As usual, the speaker connections contain the make-before-break switch for disconnecting the internal speaker.

Mains equipment consists of H.F. chokes and smoothing chokes in each of the mains

leads, while the barretter lamp, type 251, and the speaker field are in series with the valve heater supply. Both mains leads are fused.

The valves are 16 v. .25 amp type.

Special Notes.

—The order of heater wiring is: barretter, speaker field, V4, V1, V2 and V3. The special modifications to the circuit when used with the radiogram are also shown on the circuit diagram.

The dial lamps are the 3.5 v. .3 amp. type. If this type does not have a satisfactory life the 6.4 volt .4 amp. 12 mm. MES type may be substituted. With the latter the illumination will not be so bright.



The D.C.5 by the G.E.C. is equivalent to the familiar A.V.C.5.

VALVE READINGS

No signal; 200 and 250 volt mains.

Valve.	Type.	Electrode.	Volts.		M.A.
			200	250	200 250
1	DSB (5) ..	anode ..	150	190	1 1
		screen ..	55	75	
2	VDS (5) ..	anode ..	170	210	6 9
		screen ..	55	75	
3	DSB (5) ..	anode ..	* 65	75	.3 .35
		screen ..	65	85	
4	DPT (5) ..	anode ..	145	180	30 40
		aux. grid	170	210	

*Very high values of resistances cause readings to be entirely misleading.

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

- Left hand (1) red and black, L.S. field.
- (2) Red, H.T. smoothed, 170 volts.
- (3) Green and black, speech coil.
- (4) Red and black, speech coil.
- (5) Orange and black, speech coil.
- (6) Orange, V4 anode, 145 volts.
- (7) Grey, L.S. field

Removing Chassis.—Remove the knobs by removing insulating composition from central holding screws and remove screws.

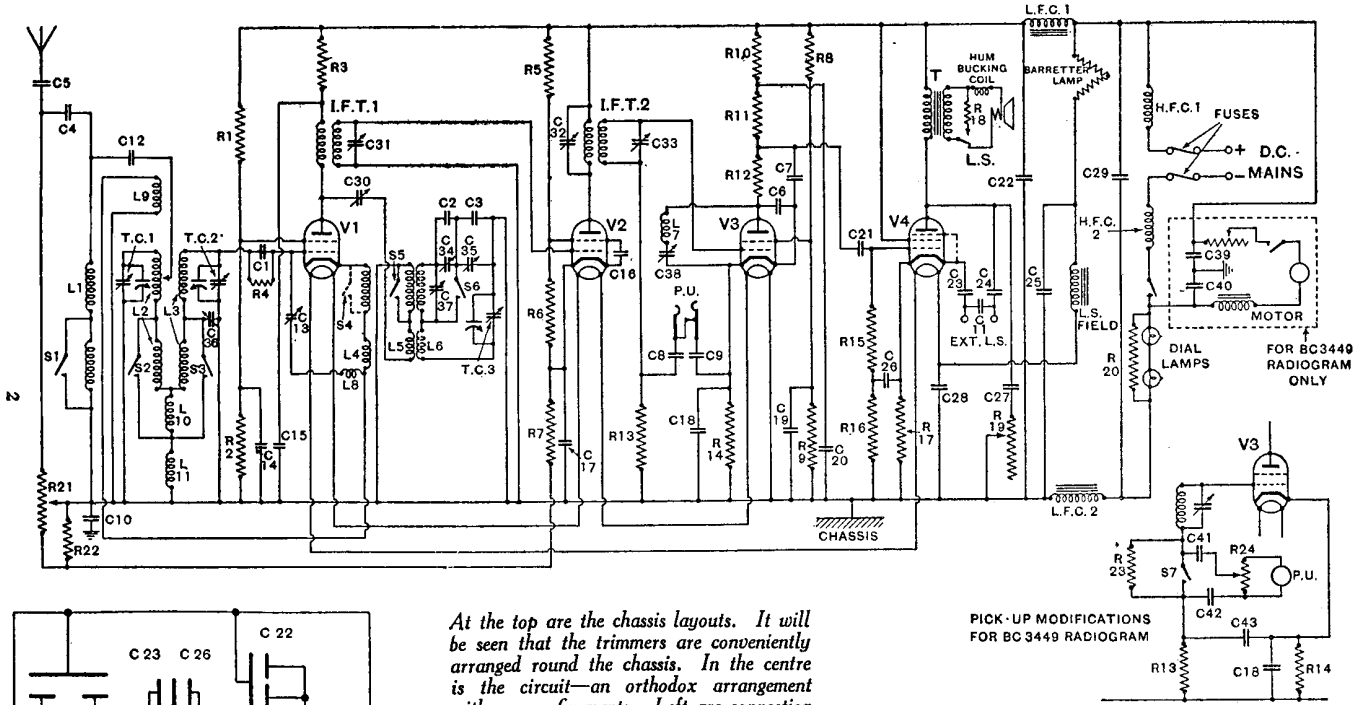
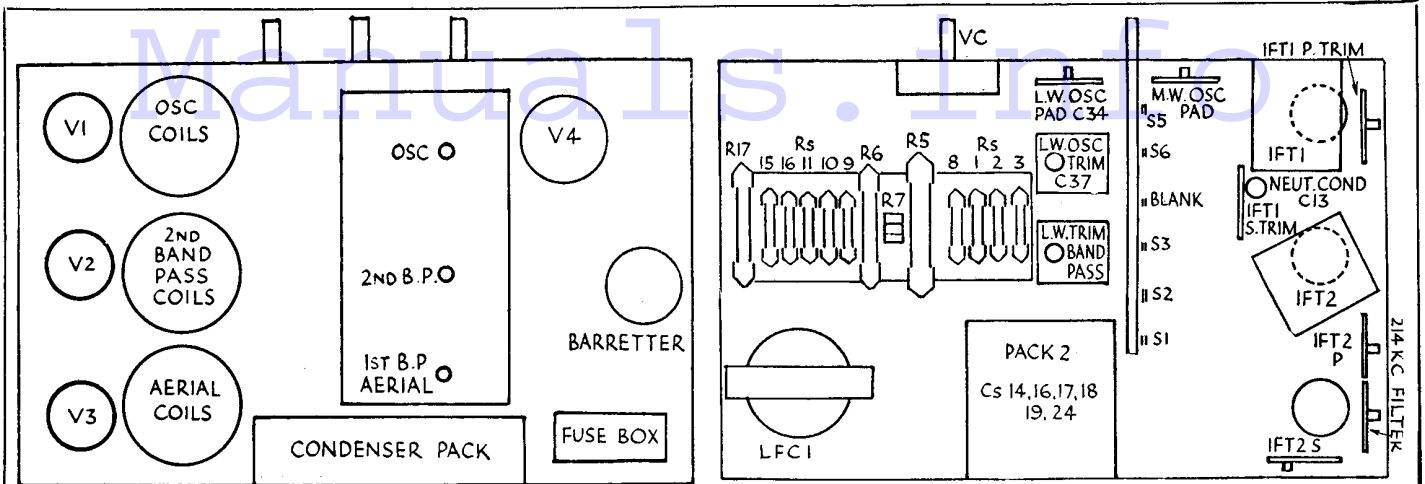
In the table model remove the two wooden battens underneath the cabinet, and then remove the four holding screws. In the console and radiogram models the screws are underneath the platforms.

General Notes.—In some models resistances of 80 ohms each may be found connected across the pilot lamp leads.

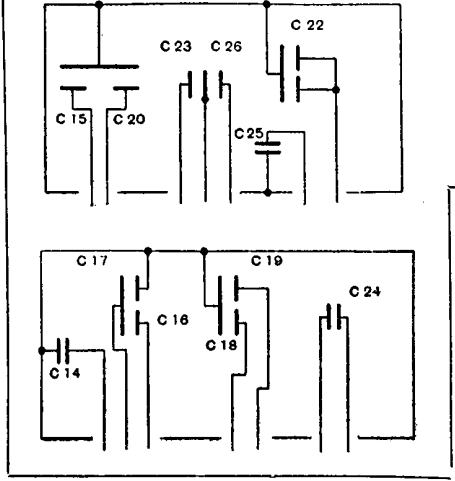
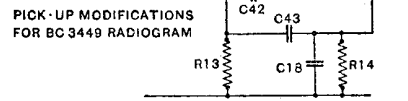
With the valves in position and cold the total resistance between the mains leads should be approximately 600 ohms.

In the table and console models all the

(Continued on opposite page.)



At the top are the chassis layouts. It will be seen that the trimmers are conveniently arranged round the chassis. In the centre is the circuit—an orthodox arrangement with some refinements. Left are connection details of the two condenser blocks.



(Continued from opposite page.)
 contacts are closed on the medium waveband and open on the long.
 A noisy volume control can usually be cured by removing the back cover by raising one of the flanges, and, while pressing gently on the wiping contact, rotating the spindle so as to clear the contact all round.
Replacing Chassis.—Lay the chassis inside the cabinet (or on the platform), replace holding screws and knobs.
 In the table model replace the wooden blocks covering the screws, and in all models replace the plastic insulating compound over the grub screws.

RESISTANCES

R.	Purpose.	Ohms.
1	Top part of V1 screen ptr.	70,000 (½)
2	Lower part of V1 screen ptr.	50,000 (½)
3	V1 anode decoupling	10,000 (½)
4	V1 grid leak	2 meg. (½)
5	Top part of V2 screen ptr.	20,000 (2)
6	Lower part of V2 screen ptr.	15,000 (1)
7	Fixed part of cathode resistance	150
8	Top part of V3 screen ptr.	70,000 (½)
9	Lower part of V3 screen ptr.	50,000 (½)
10	V3 anode decoupling	20,000 (½)
11	V3 anode L.F. coupling	200,000 (½)
12	I.F. stopper	33,000 (½)
13	Bias feed to V3 grid	*1 meg (½)
14	V3 cathode bias	8,800 (½)
15	V4 grid leak	420,000 (½)
16	V4 grid decoupling	88,000 (½)
17	V4 cathode bias	250 (1)
18	Safety load across speech winding	8
19	Tone control	50,000
20	Across dial lamps	80
21	V.C. volume control	10,000
22	Fixed resistance across V.C. slider	15,000 (½)
23	Bias feed to V3 on gram**	200,000 (½)
24	Volume control (gram)**	10,000
	L.S. field	75

* In the radiogram R13 is 20,000 (½).
 ** In radiogram only.

CONDENSERS

C.	Purpose.	Mfd.
1	V1 grid	.00005
4	Input to aerial transformer	.0001
5	Series aerial	.01
6	V3 anode L.F. filter	.0001
7	V3 anode L.F. filter	.0001
8	Isolating P.U.	.02
9	"	.02
10	Series earth	.1
11	Tone compensating V4 anode	.001
12	Aerial input filter	.000025
14	V1 screen by-pass	1**
15	V1 anode decoupling	.1*
16	V2 screen by-pass	.2**
17	V2 cathode by-pass	.5**
18	V3 cathode by-pass	.2**
19	V3 screen by-pass	.5**
20	V3 anode decoupling	.1*
21	V3, V4, L.F. coupling	.01
22	H.T. smoothing	.6*
23	Filter feed to ex. speaker	.5**
24	Filter feed to ex. speaker	.5**
25	L.T. smoothing	.1*
26	V4 cathode by-pass	.1*
27	Tone control circuit	.04
28	L.T. smoothing (by-pass)	.1
29	H.F. by-pass across mains	.02
39	Filter across motor	.01 (G)
40	Filter across motor	.01 (G)
41	P.U. isolator	.5 (G)
42	P.U. isolator	.5 (G)
43	Decoupling V3 grid	.25 (G)

*Top block. **Under block.