

STRICTLY CONFIDENTIAL

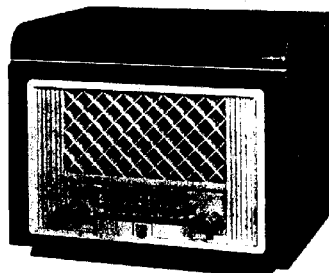
For Philips
Service Dealers only
Copyright

Published by
THE CENTRAL SERVICE DIVISION
N.V. Philips' Gloeilampenfabrieken
Eindhoven

PHILIPS

SERVICE NOTES

for the Radiogramophone
HX428A-00-60



R14637

1953

For A.C. mains supply.

GENERAL.

Waveranges.

S.W.2: 13.7 - 45.4 m (21.89 - 6.59 Mc/s)
S.W.3: 44.05-136 m (6.81 - 2.2 Mc/s)
M.W. : 185 -580 m (1622 - 517 kc/s)

I.F.: 452 kc/s

CONTROLS.

(see fig.1.)

- 1: Volume control+mains switch
- 2: Waverange switch
- 3: Tuning
- 4: Tone control switch
- 5: Radio-Gramophone switch

MAINS VOLTAGE.

110-127-220 V (50c/s)

CONSUMPTION.

Approx.43 Watts(220V a.c.)
without motor
Approx.50 Watts(220V a.c.)
with motor running.

VALVES.

B1: UCH42
B2: UF41
B3: UBC41
B4: UL41
B5: UY41

DIMENSIONS.

Length: 38 cm)
Depth : 31 cm) knobs
Height:31,5cm) included.

WEIGHT: 7.2 kg.

LOUDSPEAKER.

9768X Z = 5 ohms

RECORD PLAYER.

For HX428A-00 type AG2001
For HX428A-60 type AG2001-60

DIALLAMP.

L1: 8697D-38

BANDWIDTH.

The I.F. bandwidth (1:10) measured from g1 of B1 is about 14 kc/s. The "overall" bandwidth (1:10) measured from the aerial socket at 1000 kc/s is about 13 kc/s and about 12 kc/s at 550 kc/s

93 97794.1.05

RECORDPLAYER.

For repairs to this recordplayer see Service Notes AG2001 and fig.10.

LIST OF ILLUSTRATIONS.

- Fig. 1: Location of knobs.
- Fig. 2: Position of the trimmers.
- Fig. 3: Trimming points on the dial.
- Fig. 4: Segments of the waverange switch.
- Fig. 5: Pointer drive.
- Fig. 6: Circuit diagram.
- Fig. 7: Wiring diagram (under)
- Fig. 8: Wiring diagram (above)
- Fig. 9: Wiring in the cabinet.
- Fig.10: Motor connections.

IMPORTANT.

When connecting to a.c. mains supply for repair or trimming it is necessary to use a transformer with separate windings. The secondary winding must not be earthed and only one set should be connected to the transformer. The chassis can then be earthed. In the circuit diagram the waverange switch has been drawn in the SW2 position.

TRIMMING THE RECEIVER.

The chassis has not be removed from the cabinet for trimming only the rear panel and bottomplate should be removed.

A. I.F. BANDFILTERS.

1. Variable capacitor to minimum capacity.
2. Waverange switch to M.W.
3. Volume control to maximum.
4. Tone control in the mellow position.
5. P.U.-radioswitch in the radioposition.
6. Connect a voltmeter via a trimming transformer to the loudspeaker connections.
7. Unscrew the cores of the I.F. bandfiltercoils almost entirely.
8. Apply a modulated signal of 452 kc/s via a capacitor of 33000 pF to g1 of valve B1.
9. Trim successively to maximum outputvoltage.

4 th I.F. circuit	S18-C25 (coil G)
3 rd I.F. circuit	S17-C24 (coil G)
1 st I.F. circuit	S15-C22 (coil F)
2 nd I.F. circuit	S16-C23 (coil F)

When the last I.F. circuit has been adjusted the cores of the I.F. coils previously trimmed must be left as they are.

10. Seal the cores.

B. R.F. AND OSCILLATORCIRCUITS.

Trimming is done with aid of trimming points on the deal, indicated in fig. 3 to facilitate their location on the dial.

Before starting to trim, check the adjustment of the pointer. With the variable capacitor at minimum, the pointer must be on the extreme left trimming mark on the dial. If not, release the pointer from its cord and adjust it to the correct position.

For all waveranges the following applies:

1. Volume control to maximum.
2. Tone control in the mellow position.
3. P.U. radioswitch in the radio-position.
4. Connect a voltmeter via a trimming transformer to the loudspeaker connections.
5. Signals are to be applied via a normal dummy aerial to the aerial socket.

Trim as indicated in the following table, strictly observing the order given.

1	Waverange switch in position	M.W.	S.W.3	S.W.2
2	Adjust pointer on trimming mark	2	3	4
3	Apply modulated signal of	550 kc/s	2335 kc/s	6.75 mc/s
4	Trim to max. output voltage	S14 S 7	S12 S 4	S10 S 2
5	Adjust pointer on trimming mark	1	-	-
6	Apply modulated signal of	1630 kc/s	-	-
7	Trim to max. output voltage	C16 C 5	-	-
8	Repeat the points	2-7	-	-
9	Seal the cores and trimmers	S14 S 7 C16 C 5	S12-S4	S10-S2

REPAIRS AND REPLACEMENTS OF PARTS.

Removing the chassis and recordplayer from the cabinet.

The chassis.

1. Remove the rear panel and bottom plate.
2. Unsolder the loudspeaker connections.
3. Unsolder the pickup lead to plate B (see fig. 9)
4. Unscrew plate B after the knob has been removed.
5. Detach the mains-cable from the cabinet.
6. Disconnect the motor connections from the terminal strip in the cabinet.
7. Remove the knobs on the front panel.
8. Release the pointer from its cord.
9. Unscrew the chassis from the front panel (2 screws under chassis, 2 screws at the top of the supporting brackets).
10. Draw the chassis carefully out of the cabinet.

The recordplayer.

1. Disconnect motor connections from the terminal strip in the cabinet and unsolder pickup lead from plate B.
2. Remove the turntable from the spindle.
3. Remove the ornamental cover of the recordplayer (3 screws).
4. Unscrew the three supporting brackets.
5. Lift the recordplayer carefully out of the cabinet.

Renewing the drivingcord.

The path of the drivingcord is shown in figure 5, where the variable capacitor is drawn in the maximum position.
 When turning the driving spindle, both loops around this spindle should move in the same direction on the spindle.
 The length of the cord is 1052 mm.
 The length of the outer cables is 85 mm.

VOLTAGES AND CURRENTS.

			Va	Vg2(+4)	Vk	Ia	Ig2(+4)
B1	UCH42	Hexode	156	95	-	2.25	3.2
		Triode	70	-	-	3.8	-
B2	UF41	Pentode	156	95	-	5.6	1.7
B3	UBC41	Triode	56	-	-	0.4	-
B4	UL41	Pentode	156	156	8.5	46	8
			Volts	Volts	Volts	mA	mA

VC1 : 175 V

VC2 : 156 V

Iprim : approx. 185 mA (220V a.c.)

These measurements have been taken with the Universal Measuring Instrument GM4257. Receiver connected to 220 V a.c. and no signal applied to the aerial socket.

LIST OF PARTS AND TOOLS.

When ordering always quote:

1. Codenumber
2. Description and colour
3. Type number of the set

	Description	Code number.
	Cabinet	A3 003 25.0
	Philite ornamental front panel	A3 358 02.0
	Spire fix for fixing reflector	A3 321 46.0
	Ornamental screw for fixing dial	A3 712 79.0
	Dial (overseas)	A3 740 11.0
	Dial (Mediterranean)	A3 740 12.0
	Knob (2x)	A3 370 75.0
	Lever (colour MG) Waverange switch	P4 380.00.0
	Lever (colour MG) Tone control	P4 075 19.0
	Rear panel	A3 254 38.0
	Knob (colour UC) P.U.-radio switch	23 951 96.2
	<u>CHASSIS.</u>	
	Connecting plate (aerial-earth)	A3 388 29.0
	Connecting plate (voltage adaptor)	A3 228 98.0
	Knob (voltage adaptor)	A3 229 00.0
	Spring clip for fixing coil cans 4x	A3 652 58.3
	Dial lamp holder	A3 359 07.1
	Spring in drum of variable capacitor	A3 646 26.0
	Leaf spring for waverange switch	A3 648 79.0
	Switch for tone control	A3 401 79.0
	Spindle for volume control	A3 432 94.0
	Nut for fixing volume control	49 758 21.0
	Spring clip for fixing coil can (1x)	A3 652 92.0
	<u>TOOLS.</u>	
	Signal Generator	GM2882 or GM2883 or GM2884
	Universal Measuring Instrument	GM4256 or GM4257

S1)	1,5	Ω	A3 125 27.0	C16	30	pF	28 212 36.4
S2)	1	Ω		C17	1830	pF	48 336 02/1K83
S3)	20	Ω	A3 125 22.0	C20	0,1	μF	48 751 10/100K
S4)	3	Ω		C21	456	pF	48 203 01/456K
S6)	50	Ω	A3 125 35.0	C22)			
S7)	7	Ω		C23)			
S8)	1	Ω		C24)			
S9)	1	Ω	A3 125 55.0	C25)			
S10)	1	Ω		C26	100	pF	48 203 10/100K
S11)	1	Ω		C27	33000	pF	48 750 10/33K
S12)	1	Ω	A3 125 66.0	C28	3300	pF	48 751 10/33K
S13)	5	Ω		C29	10000	pF	48 751 10/10K
S14)	12	Ω	A3 125 73.0	C30	10000	pF	48 103 10/10K
S15)	13	Ω		C31	10000	pF	48 751 10/10K
S16)	13	Ω		C32	33000	pF	48 752 10/33K
G22)	110	pF	A3 124 25.4	C33	330	pF	48 203 10/330K
C23)	110	pF		C34	4700	pF	48 757 20/47K
S17)	13	Ω		J40	18	pF	48 201 10/18K
S18)	13	Ω		C41	4700	pF	48 103 10/47K
C24)	110	pF	A3 124 25.4	C43	0,1	μF	48 750 10/100K
C25)	110	pF		C44	0,47	μF	48 750 10/470K
S19)	380	Ω		R1	1000	Ω	A9 999 00/1K
S20)	3,4	Ω	A3 169 07.1	R2)	180	Ω	
S30)	10000	Ω		R3)	200	Ω	49 417 03.1
S31)	5000	Ω	A3 161 52.0	R4)	430	Ω	
C1	50	μF		R5			49 379 62.0
C2	50	μF	48 317 08/50+50	R6	0,82	MΩ	A9 999 00/820K
C3	1000	pF	48 757 20/1K	R7	22000	Ω	A9 999 00/22K
C4	3,3	pF	48 200 20/3E3	R8	22000	Ω	A9 999 00/22K
C5	30	pF	28 212 36.4	R9	18000	Ω	A9 999 00/18K
C7	82	pF	48 203 10/82K	R10	1,5	MΩ	A9 999 00/1M5
C8	11-500	pF	49 001 56.1	R11	15000	Ω	A9 999 00/15K
C9	11-500	pF		R12	4,7	MΩ	A9 999 00/4M7
C10	100	pF	48 203 20/100K	R13	0,45	MΩ	48 900 00/DL50K+450 F
C11	3,9	pF	48 200 20/3E9	R14	0,05	MΩ	
C12	47000	pF	48 750 10/47K	R15	0,22	MΩ	A9 999 00/220K
C13	470	pF	48 203 20/470K	R16	0,68	MΩ	A9 999 00/680K
C14	47	pF	48 203 20/47K	R17	150	Ω	A9 999 00/150K
C15	47	pF	48 203 02/47K	R18	560	Ω	A9 999 00/560K
				R19			49 379 67.3
				R21	1000	Ω	A9 999 00/1K
				R30	280	Ω	A9 999 00/280K
				R31	47000	Ω	A9 999 00/47K
				R32	4700	Ω	A9 999 00/47K
				R33	150	Ω	A9 999 00/150K

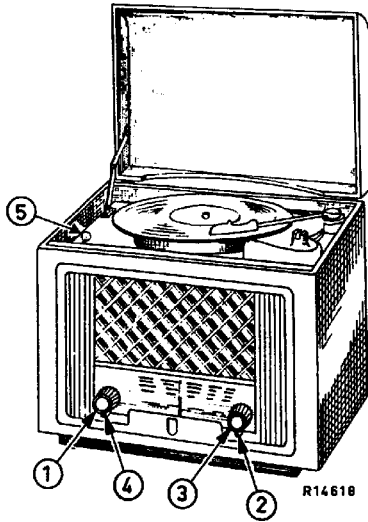


Fig1

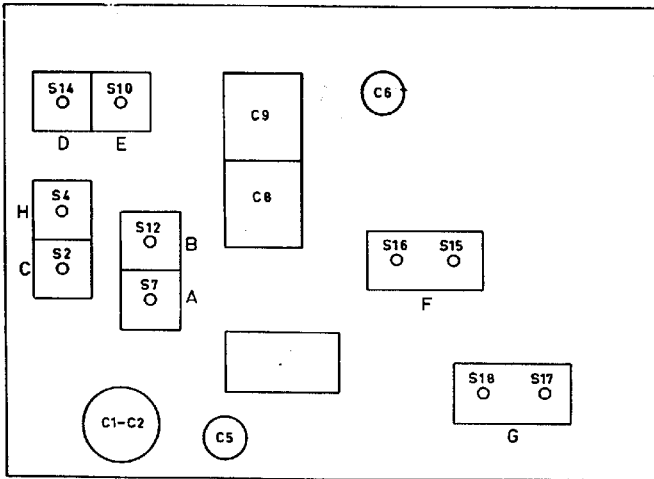


Fig2

R14619

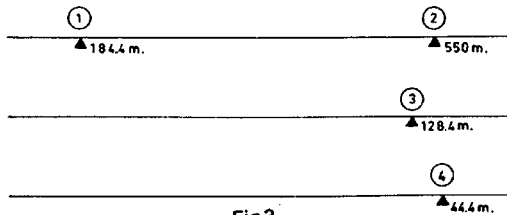


Fig3

R14620

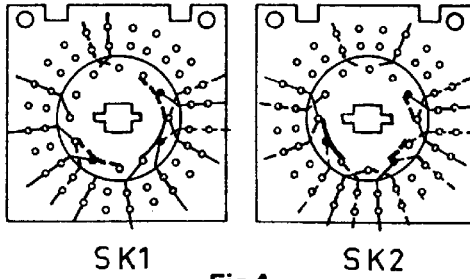


Fig.4

R14621

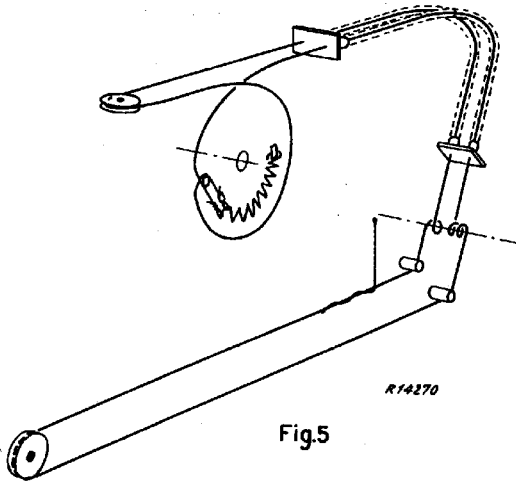
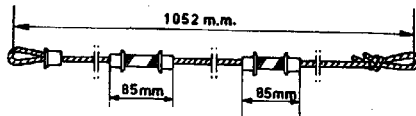
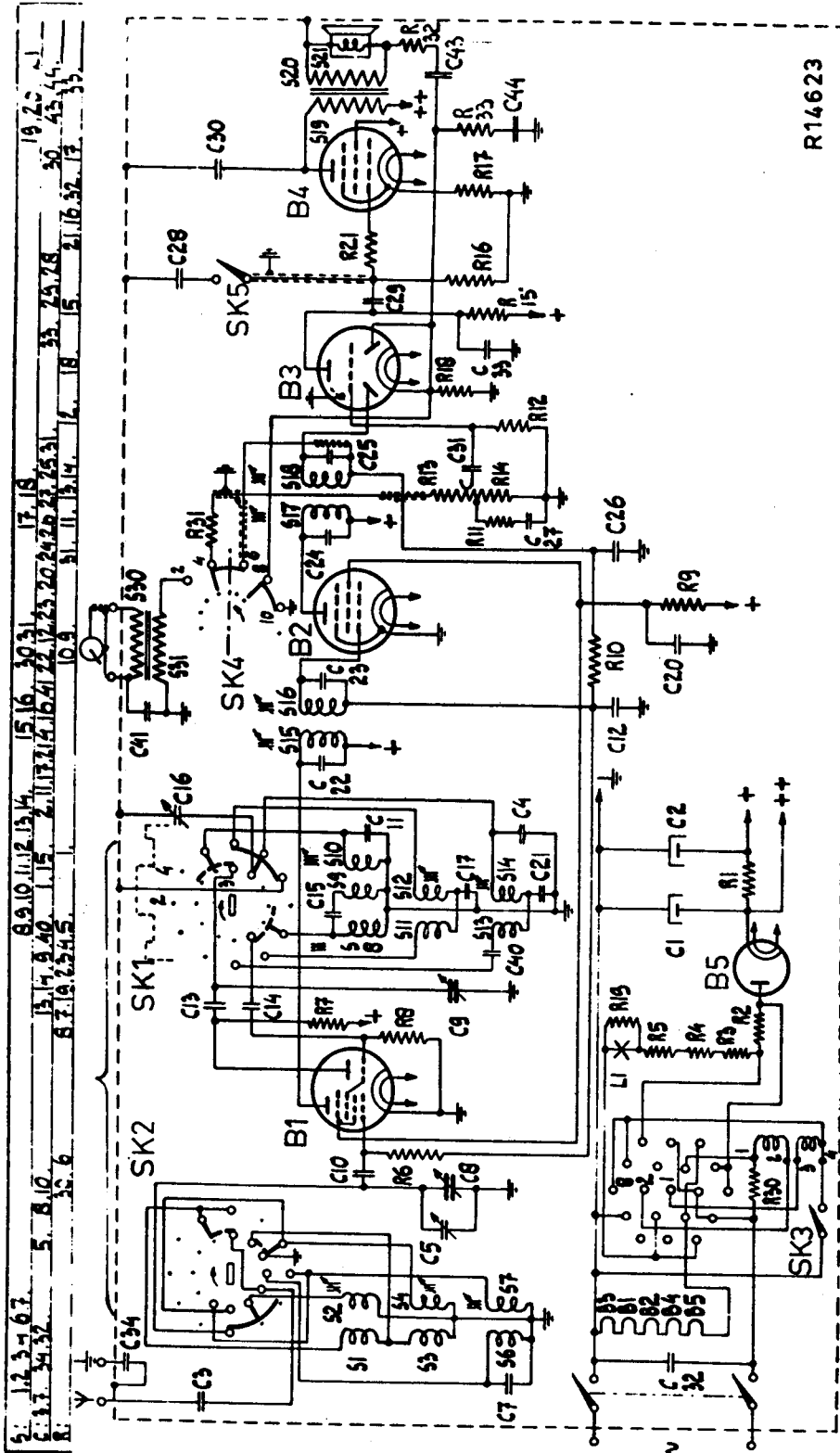


Fig.5



R14623

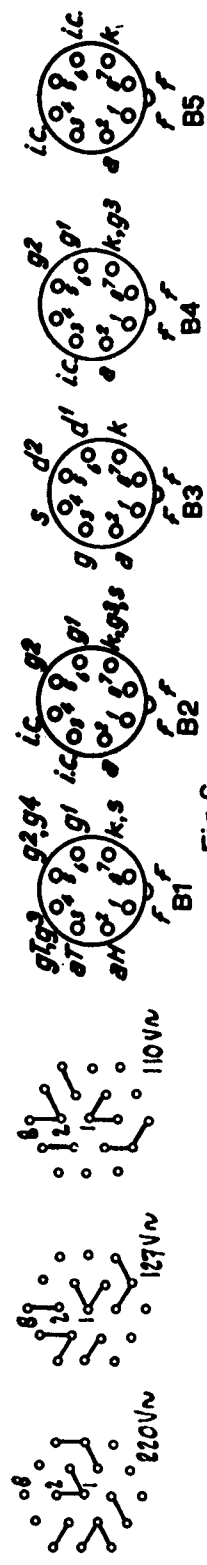


FIG. 6

S:	G.	F.	DA.	D.	H.C.
C: 32.	31, 29, 43.	33, 27, 20, 26, 12.	41, 40, 40, 13, 39, 4, 7, 11, 2, 21, 15, 3, 17.		
R:	1, 5, 41, 13, 33.	21, 15, 17, 12, 18, 11, 10, 19, 7, 6, 8.			

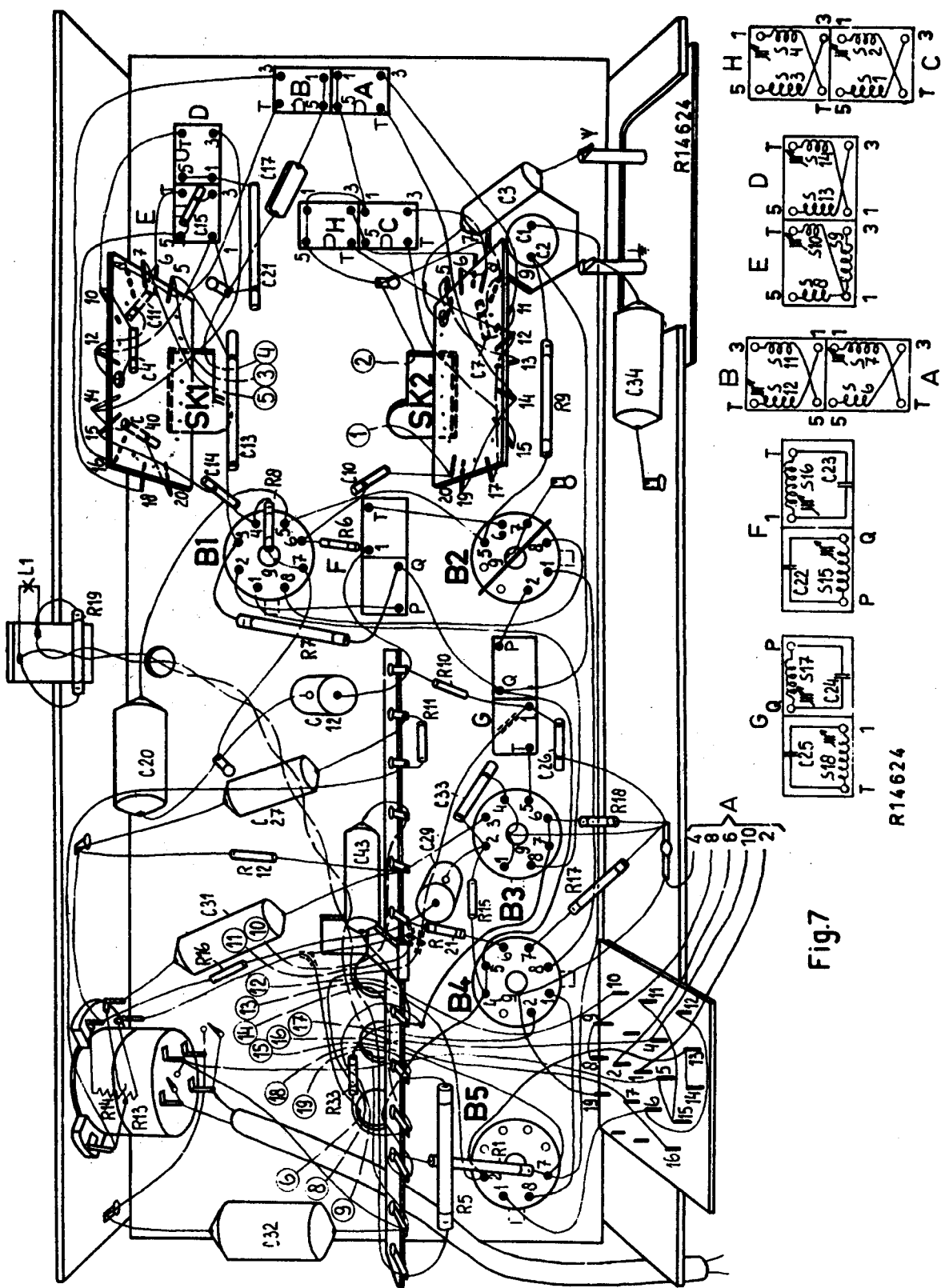


Fig. 7

R14624

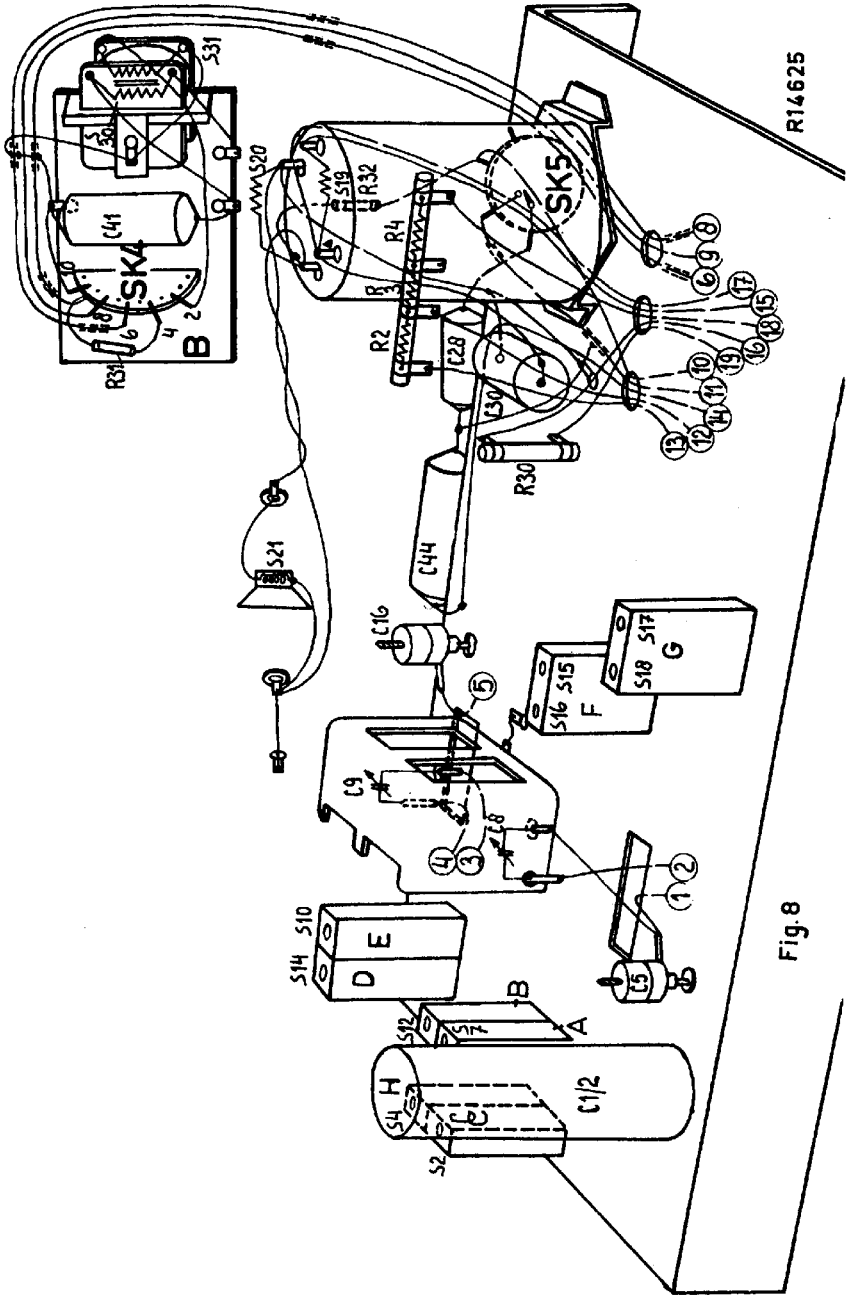


Fig. 8

PHILIPS

SERVICE NOTES

for the radio-gramophone

HX 428 A-03-63

1954 For A.C. mains supply

This receiver is identical to the HX 428 A-00 with the exception of :

For HX 428 A-03 : record player AG 2002 - 75 (220 V - 50)
For HX 428 A-63 : record player AG 2002 - 75 (110 V - 60)

For more details see Service Notes HX 428 A-00 and subjoined diagram.

