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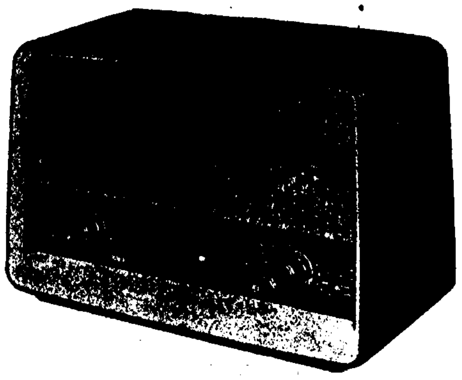
PHILIPS

SERVICE NOTES

for the receiver

B5X65Z



R 17065

1957. For AC mains and battery supply.

PUSH BUTTONS AND WAVERANGES

From left to right :
1. Switch
2. Pick-up
3. M.W. : 185-580 m (1622-517 kc/s)
4. S.W.3 : 59-187 m (5,1-1,6 Mc/s)
5. S.W.2c : 25-60 m (12-5 Mc/s)
6. S.W.2b : 16.75-25.64 m (17.9-11.7 Mc/s)
7. S.W.2a : 11.4-16.94 m (26.2-17.7 Mc/s)

CONTROL KNOBS

From left to right :
1. Low notes
2. Switch (at the left: battery
   (at the right: mains.
3. Volume control
4. Ferroceptor
5. Tuning
6. High notes
7. Dial lamp switch

TUBES

B1 : EF89
B2 : ECH81
B3 : EBF80
B4 : EBC81
B5 : EL84
B6 : EM80
B7 : EZ80

I.F. : 452 kc/s

MAINS VOLTAGES

90-110-127-180-200-220 V
6 V =

CONSUMPTION

220 V : 57 W
26,4 W (with dial lamps)
6 V : 22,8 W (without dial lamps)

LOUDSPEAKER

AD 3700 x (Z = 5 Ω)

DIMENSIONS

510 x 343 x 256.

DIAL LAMPS

2 x 8024 N-91.

VIBRATOR UNIT

AU 1004 or AU 1006.

Printed in Holland

Trimming of the receiver

I.F. band filters

1. Set volume control to maximum.
2. Waverange switch to M.W.
3. Variable capacitor at minimum.
4. Unscrew the core of the I.F. band filters as far as possible.
5. Connect a voltmeter via a trimming transformer to the extension loudspeaker socket.
6. Apply a modulated signal of 452 kc/s via a capacitor of 33.000 pF to g1 of B2
7. Trim the I.F. filters for maximum output voltage in the order S28, S27, S25, S26, S27.
8. Seal the cores of the I.F. band filters.

R.F. and oscillator circuits

Trimming is done with the aid of the trimming points on the dial. Trimming point 1 at the left, trimming point 2 at the right. Adjust the pointer to trimming point 1 with the variable capacitor at minimum.

1. Volume control at maximum.
2. Connect a voltmeter via a trimming transformer to the extension loudspeaker sockets.
3. Treble control at minimum high notes.
4. Bass control at maximum low notes.

All signals are applied via a capacitor of 33000 pF to g1B1

Waverange switch in position	Pointer at trimming point	apply a modulated signal of	Trim for max output voltage	
M.W.	2	550 kc/s	S24, S15	repeat
	1	1630 kc/s	C36, C24	
S.W.3	2	1,72 Mc/s	S22-S14-S14a	
	1	5,15 Mc/s	C35, C23	
S.W.2c	2	5,26 Mc/s	S20b, S13	
	1	12,1 Mc/s	C62	
S.W. 2b	2	11,75 Mc/s	S19, S12	
	1	18 Mc/s	C40, C21	
S.W. 2a	2	17,8 Mc/s	S17, S11	
	1	26,4 Mc/s	C39, C20 *	

* The capacitive variation of C20 will be perceptible in the oscillator circuit, as a result of which the latter is detuned again.
In order to compensate the small frequency variation, the frequency of the service oscillator should be readjusted during the adjustment of C20, so that the deflection of the voltmeter is always maximum.

All signals are applied via a normal dummy aerial to the aerial sockets.

Waverange switch in position	Pointer at trimming point	apply a modulated signal of	Trim for max. output voltage	
M.W.	2	550 kc/s	S10-S10a	repeat
	1	1630 kc/s	C14	
S.W.2b	2	11,75 Mc/s	S5	
	1	18 Mc/s	C66	
S.W.2a	2	17,8 Mc/s	S6	
	1	26,4 Mc/s	C8	
S.W.2C	2	5,26 Mc/s	S7	
S.W.3	2	1,72 Mc/s	S9	
	1	5,15 Mc/s	C12	

Seal the cores and trimmers.

Mains transformer

If the original mains or output transformer gets defective, it should be replaced by the standard transformer mentioned in the electrical parts list. For the connections, see fig. 2.

Cable drive

For the path and the lenghts of the cables, see fig. 1.

Voltages

The voltages are indicated in the circuit diagram and have been measured with the GM4257.

List of parts

When ordering always quote:
1. Codenumber and description
2. Colour code
3. Typenumber of the set

		Description	Code number
		Cabinet	A3 770 57.0
		Knob (small)	A3 751 59.0
		Knob (large)	A3 751 60.0
		Push button	A3 417 75.0
		Knob for tone control	A3 769 70
		Tension spring for mains switch	A9 999 64/8x31
		Variable capacitor	A9 001 97.0
		Leaf spring for fixing HQ coil	A3 651 89.
		Spring for fixing double coil can	A3 652 58.
		Spring for fixing single coil can	A3 652 75.
		Tension spring in drum variable capacitor	89 312 10.3
		Spring for driving cable	A9 999 64/6x17
		Grommet (colour HA) dial fixing	P5 420 03/08
		Spring in ferroceptor drum	89 312 10.3
		Cover (for mains switch)	P5 280 25/08
		Dial (overseas)	A3 809 00
		Dial (south)	A3 809 54
			JG/KD

S1-S3		A3 141 37.5
S5		A3 119 41.0
S6		A3 119 42.0
S7		A3 119 43.0
S9		A3 119 50.0
S10 S10a		A3 118 35.0
S11		A3 119 53.0
S12		A3 119 49.0
S13		A3 119 44.0
S14 S14a		A3 119 45.0
S15		A3 125 48.0
S16 S17		A3 119 46.0
S18 S19		A3 119 47.0
S20		A3 118 45.0
S20a S20b		A3 119 51.0
S21 S22		A3 119 48.0
S23 S24		A3 125 93.0
S25 S26		A9 999 25/452
C37	110 pF	
C38	195 pF	
S27 S28		A9 999 25/452
C43	110 pF	
C44	195 pF	
S30 S31 S32 S33		A9 999 18/07
C1	50 µF	A9 999 13/M50+50+50
C1a	50 µF	
C2	50 µF	
C3	12,5-489 pF	49 001 97.0
C4	12,5-489 pF	
C5	12,5-511 pF	
C6	330 pF	A9 999 04/330E
C7	2200 pF	A9 999 06/2K2
C8	30 pF	A9 999 08/30E
C9	33 pF	A9 999 04/33E
C10	10 pF	A9 999 04/10E
C11	100 pF	A9 999 07/20E-100E

C12	22pF	A9 999 08/22E
C13	3000pF	A9 999 05/3K
C14	22pF	A9 999 08/22E
C15	100pF	A9 999 04/100E
C16	10000pF	A9 999 04/10K
C17	106pF	A9 999 05/15E A9 999 05/91E
C18	150pF	A9 999 04/150E
C19	10000pF	A9 999 04/10K
C20	22pF	A9 999 08/22E
C21	30pF	A9 999 08/30E
C22	3000pF	A9 999 05/3K
C23	22pF	A9 999 08/22E
C24	22pF	A9 999 08/22E
C25	65pF 2x	A9 999 04/33E
C26	120pF	A9 999 05/120E
C27	100pF	A9 999 04/100E
C28	390pF	A9 999 04/390E
C29	68pF	A9 999 04/68E
C30	120pF	A9 999 05/120E
C31	10000pF	A9 999 04/10K
C32	82pF	A9 999 04/82E
C33	455pF 2x	A9 999 05/910E
C34	56pF	A9 999 05/56E
C35	22pF	A9 999 08/22E
C36	30pF	A9 999 08/30E
C37 C38	See coils, voir	bobines, vease bobinas
C39	30pF	A9 999 08/30E
C40	30pF	A9 999 08/30E
C41	33000pF	A9 999 06/33K
C42	10pF	A9 999 04/10E
C43 C44	See coils, voir	bobines, véase bobinas
C45	47pF	A9 999 04/47E
C46	10000pF	A9 999 04/10K
C47	33000pF	A9 999 06/3K3
C48	8200pF	A9 999 06/8K2
C49	22000pF	A9 999 06/22K
C50	10000pF	A9 999 04/10K
C51	0,1 µF	A9 999 06/100K
C52	47000pF	A9 999 06/47K
C53	2200pF	A9 999 06/2K2
C54	4700pF	A9 999 06/V4K7
C55	50 µF	A9 999 10/D50
C56	1000pF	A9 999 06/1K
C57	1500pF	A9 999 04/1K5
C58	12000pF	A9 999 06/12K
C59	2200pF	A9 999 06/2K2
C60	12pF	A9 999 04/12E
C61	10pF	A9 999 04/10E
C62	30pF	A9 999 08/30E
C63	2100pF	A9 999 05/1K A9 999 05/1K1 par
C65	10pF	A9 999 04/10E

C66	30 pF	A9 999 08/30E
C67	10 pF	A9 999 04/10E
C68	10000 pF	A9 999 04/10K
C69	0,1 µF	A9 999 06/100K
C70	1500 pF	A9 999 04/1K5
C71	1500 pF	A9 999 04/1K5
C72	1500 pF	A9 999 04/1K5
R1	1000 Ω 2x	A9 999 00/2K
R1a	100 Ω	A9 999 00/100E
R2	10000 Ω	A9 999 00/10K
R3	1 MΩ	A9 999 00/1M
R4	0,1 MΩ	A9 999 00/100K
R5	22000 Ω	A9 999 00/22K
R6	150 Ω	A9 999 00/150E
R7	1 MΩ	A9 999 00/1M
R8	3900 (	A9 999 00/3K9
[illegible]	[illegible] (	[illegible]
R9	27000	A9 999 00/27K
R10	47000	A9 999 00/47K
R11	1 MΩ	A9 999 00/1M
R12	1,2 MΩ	A9 999 00/1M2
R13	0,33 MΩ	A9 999 00/330K
R14	2,2 MΩ	A9 999 00/2M2
R15	68000 Ω	A9 999 00/68K
R16	1,6 MΩ	A9 999 16/GL400K
R17	0,4 MΩ	+1M6
R18	0,1 MΩ	A9 999 00/100K
R19	10 MΩ	A9 999 00/10M
R20	0,47 MΩ	A9 999 00/470K

R21	47000 Ω	A9 999 00/47K
R22	47000 Ω	A9 999 00/47K
R23	0,1 MΩ	A9 999 00/100K
R24	27000 Ω	A9 999 00/27K
R25	0,15 MΩ	A9 999 00/150K
R26	0,05 MΩ)	B1 639 49
R27	0,45 MΩ)	
R28	1000 Ω	A9 999 00/1K
R29	165 Ω 2x	A9 999 00/330E
R30	22000 Ω	A9 999 00/22K
R31	0,45 MΩ)	B1 639 49
R31a	0,05 MΩ)	
R32	0,1 MΩ	A9 999 00/100K
R33	0,18 MΩ	A9 999 00/180K
R34	18 Ω	A9 999 00/18E
R35	820 Ω	A9 999 00/820E
R36	68000 Ω	A9 999 00/68K
R37	0,1 MΩ	A9 999 00/100K
R38	1500 Ω	A9 999 00/1K5
R39	1500 Ω	A9 999 00/1K5
R40	6800 Ω	A9 999 00/6K8
R41	18000 Ω	A9 999 00/18K
R42	100 Ω	A9 999 00/100E
R60	100 Ω	A9 999 00/100E
		JG/KD

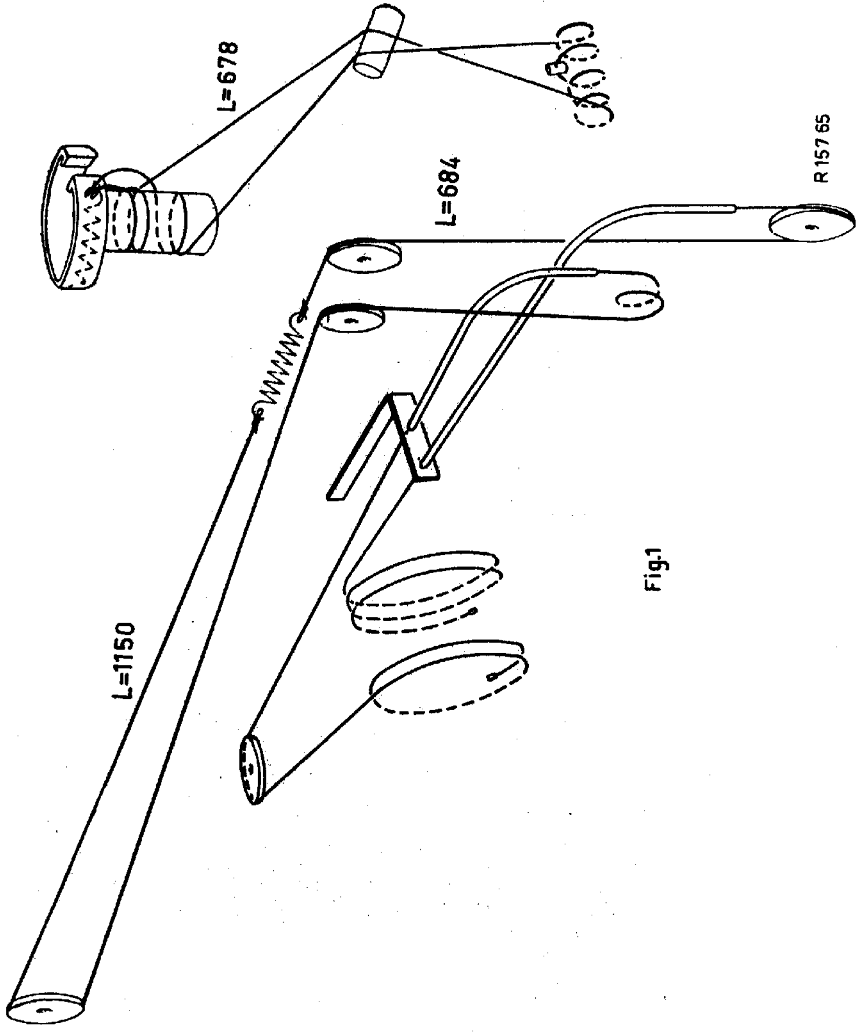


Fig.1

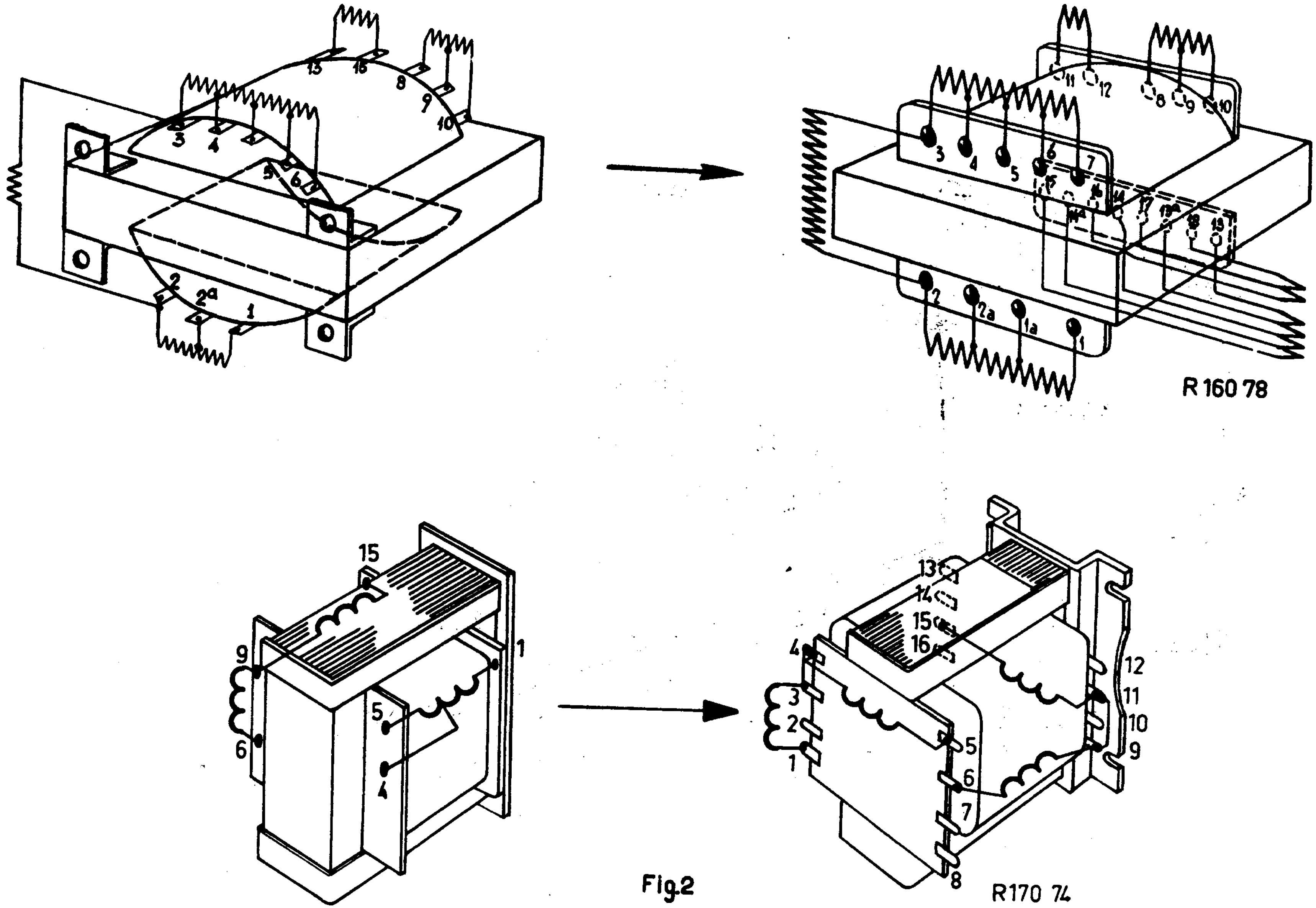
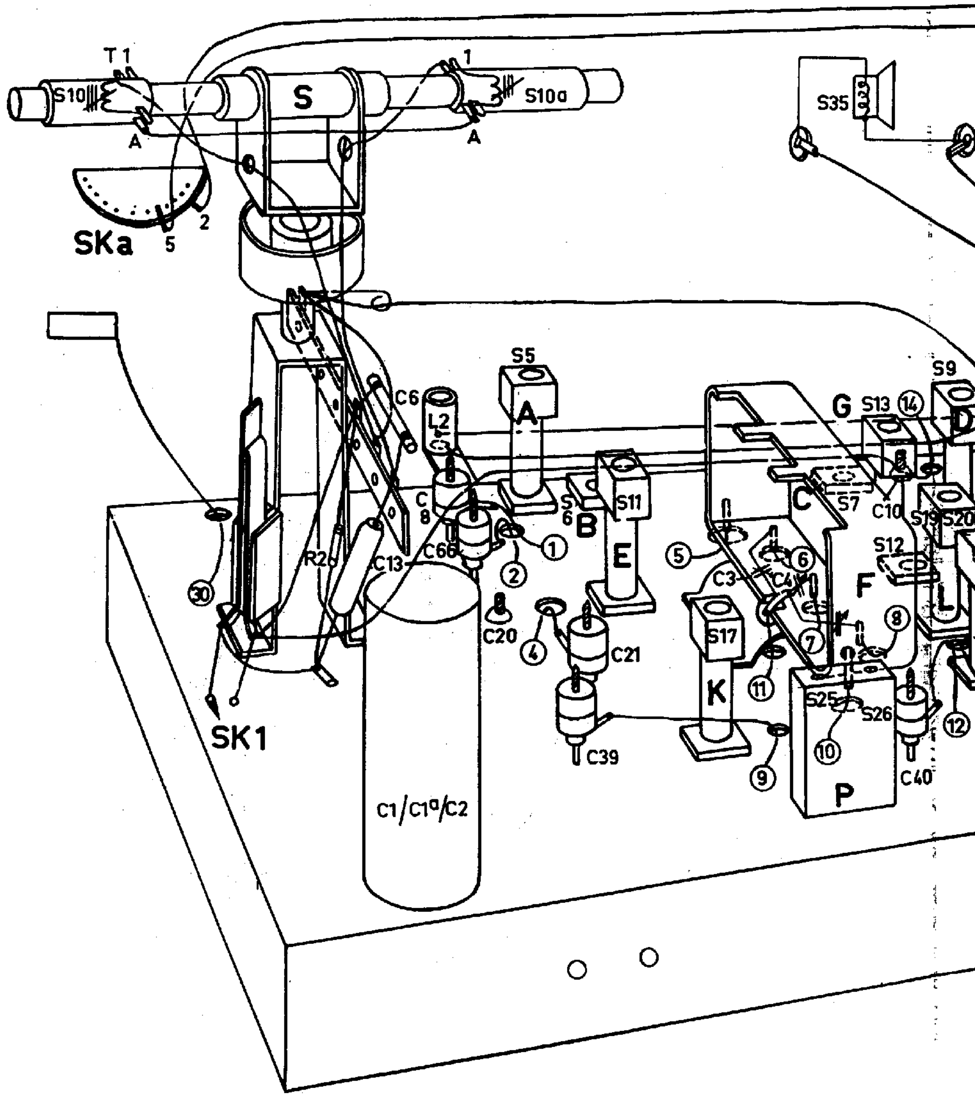
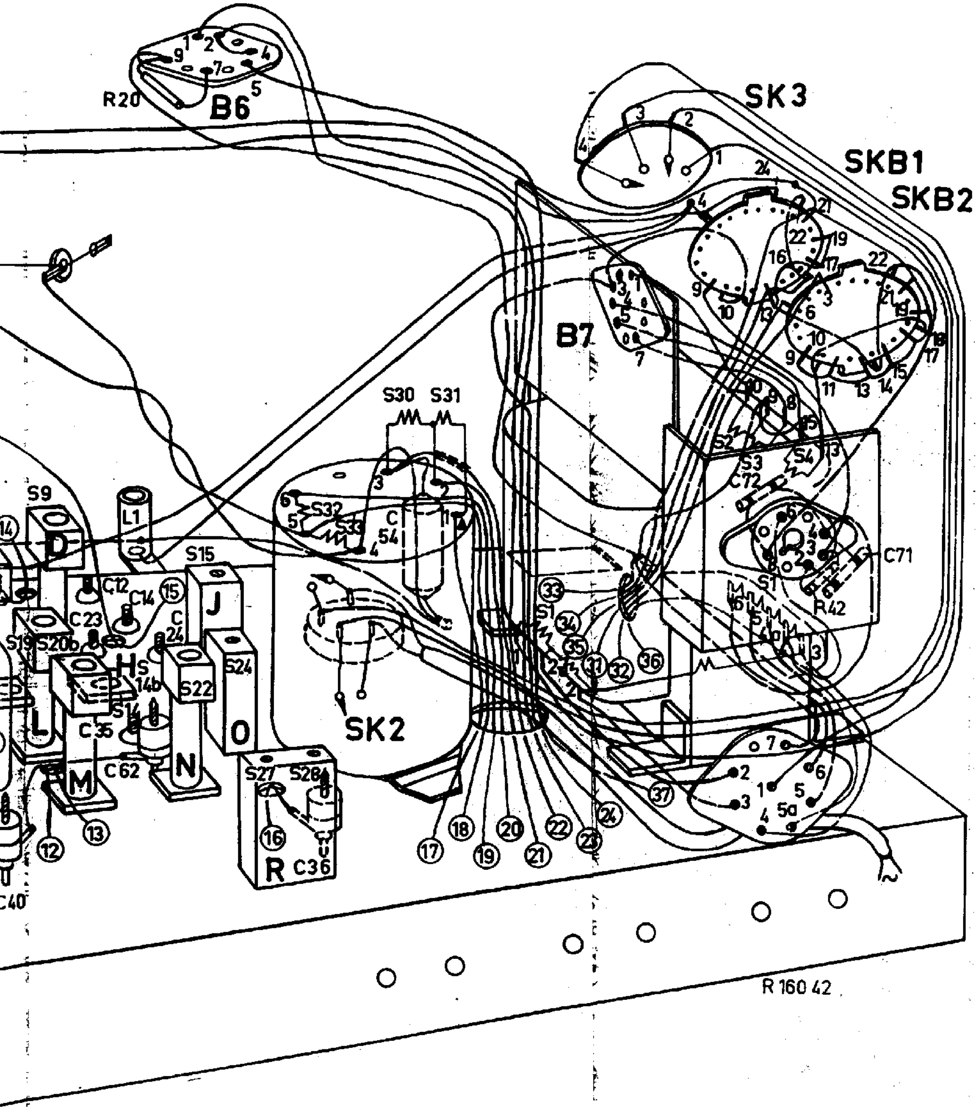

3
4
5
6
13
16
8
9
10
2
2a
1
11
12
7
14
14a
15
17
13a
18
19
1a
R 160 78
15
9
6
5
4
1
13
14
15
16
12
11
10
9
4
3
2
1
5
6
7
8
R170 74

Fig.2


T 1
S10
S
1
S10a
A
A
SKa
5
2
S35
C6
L2
S5
A
S9
G
S13
⑭
D
C
8
C66
①
②
S
6
B
S11
E
C
S7
C10
S19
S20
⑤
C3
C4
⑥
S12
F
L
R2
C13
㉚
C20
④
C21
S17
⑦
⑧
⑪
K
S25
S26
⑩
⑫
C39
⑨
C40
P
SK1
C1/C1a/C2


B6
R20
SK3
SKB1
SKB2
B7
S30
S31
S32
S33
C54
S9
D
L1
S15
J
C12
C14
C23
C24
S19
S20b
H
S
14b
S22
S24
L
C35
S14
C62
N
O
M
S27
S28
R
C36
C40
SK2
S1
S2
S3
S4
C72
C71
R42
⑫
⑬
⑭
⑮
⑯
⑰
⑱
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㉟
㊱
㊲
R 160 42

Fig.3

S: J. O. R. D. C. G. F. L.

C: 48.47.55. 49.56.46.59. 53. 58. 52. 51, 63. 33.12.14.24.22.10.60.23.35.65.45.67.42.32. 25.

R: 31a. 31. 15. 29.29a.17.16.14.30.25. 28. 23.21.37.33.13.19.18.35. 22.36.34. 24. 12.11. 40.

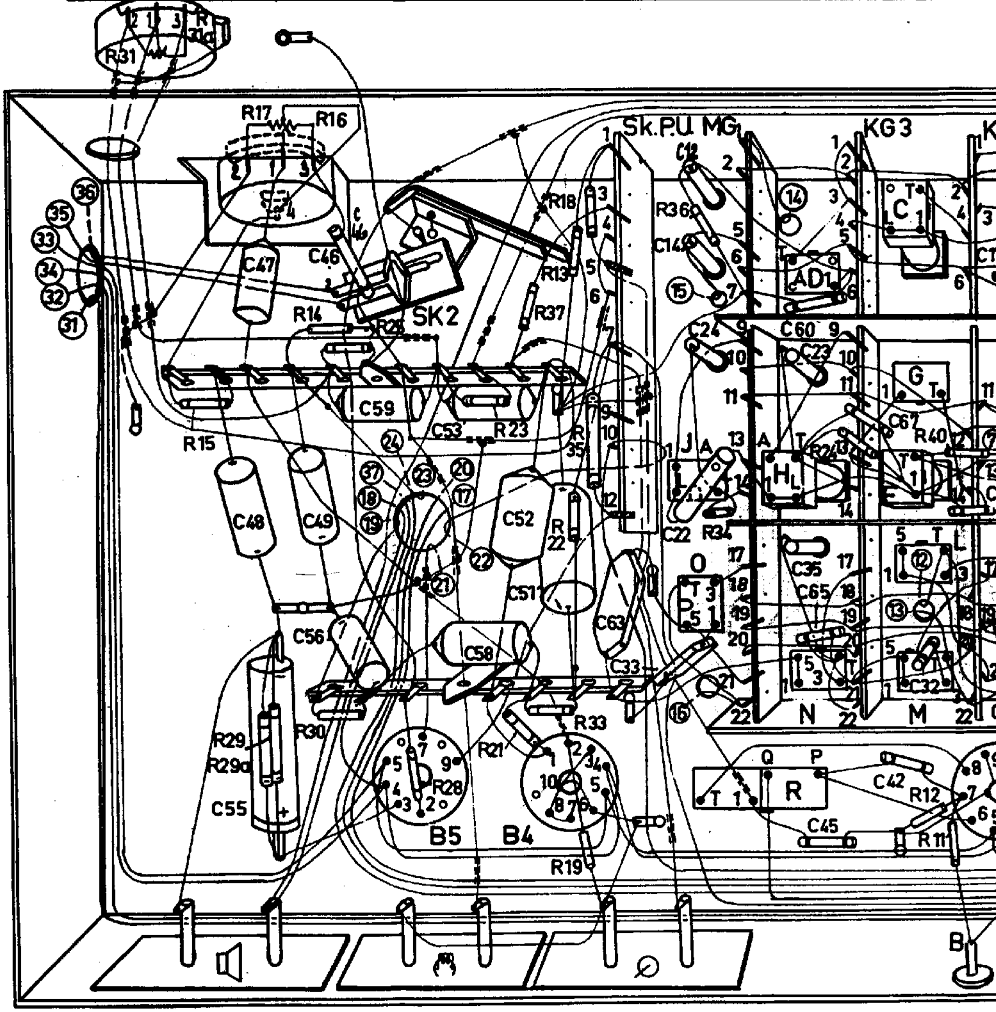

Fig.4

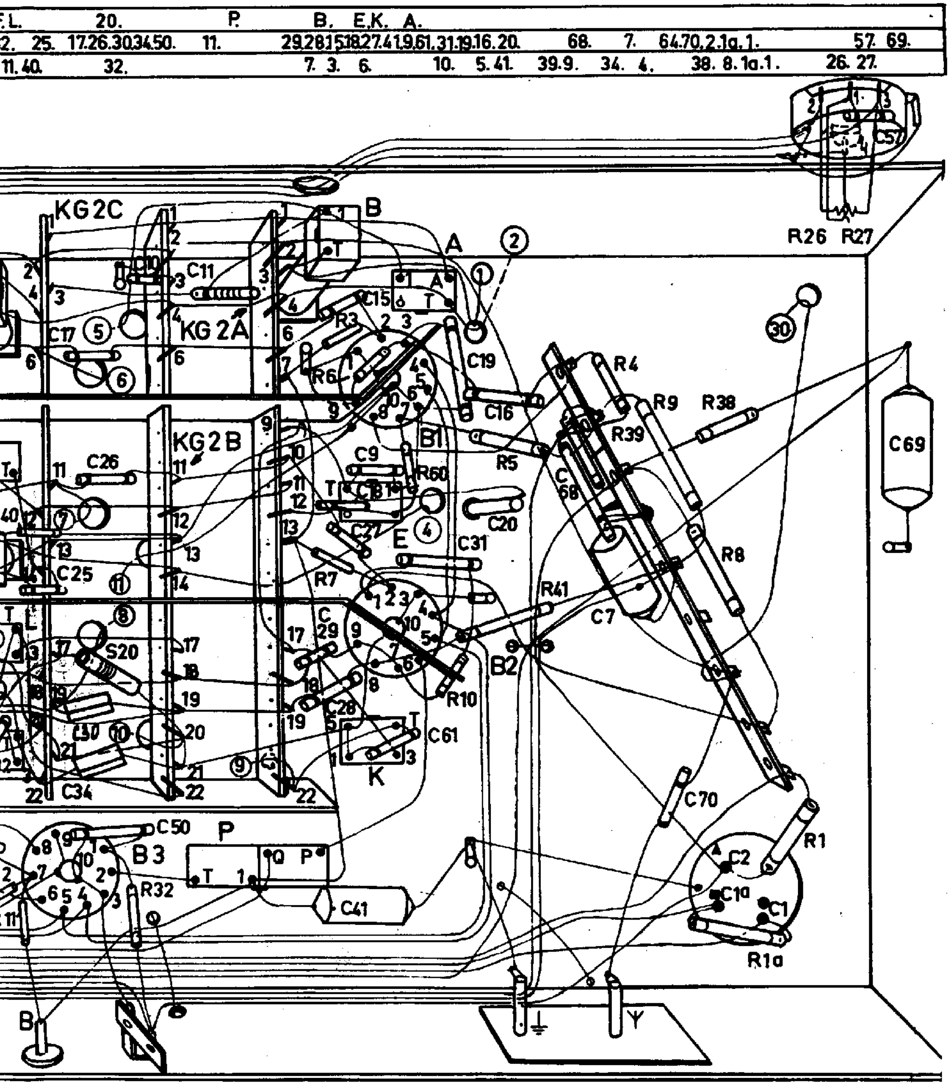
L.
20.
P.
B. E.K. A.
2. 25. 17.26.30.34.50. 11. 29.28.15.18.27.41.9.61.31.19.16.20. 68. 7. 64.70.2.1a.1. 57. 69.
11. 40. 32. 7. 3. 6. 10. 5. 41. 39.9. 34. 4. 38. 8. 1a.1. 26. 27.
C57
R26
R27
KG2C
KG2A
KG2B
B
A
T
C10
C11
C15
C17
C19
C16
R3
R6
R4
R9
R38
R39
R5
R60
C9
C18
C68
C69
C26
C20
C27
C31
C25
E
R7
R8
R41
C7
B1
B2
S20
C29
C28
C61
R10
K
C30
C34
C70
C50
P
Q
B3
R32
C41
R1
R1a
C1
C1a
C2
L
30
R 160 43

Fig.4

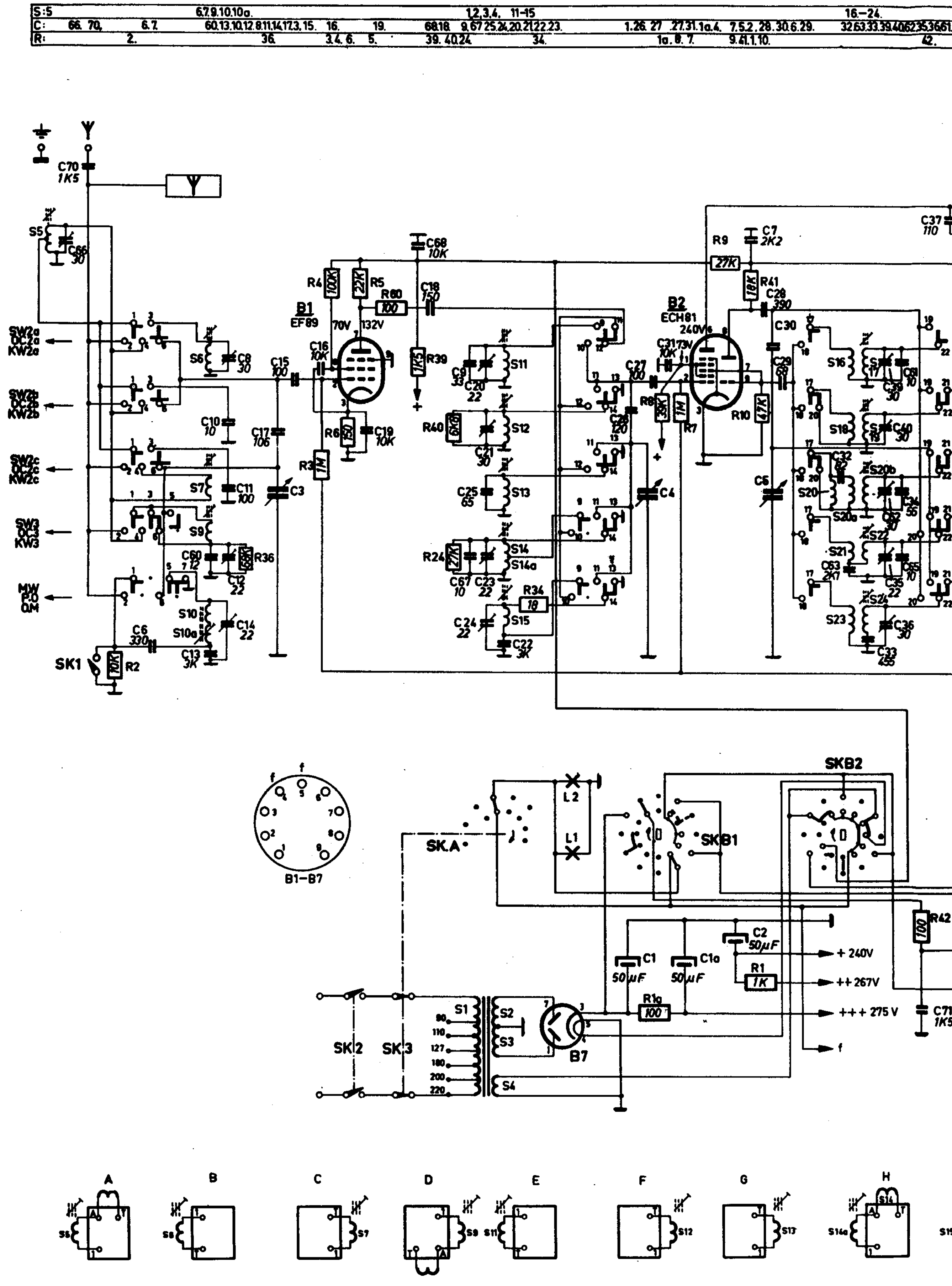
S:5 6.7.9.10.10a. 1.2.3.4. 11-15 16.-24.
C: 66. 70. 6.7. 60.13.10.12.8.11.14.17.3.15. 16. 19. 68.18. 9.67.25.24.20.21.22.23. 1.26. 27 .27.31.1a.4. 7.5.2.28.30.6.29. 32.63.33.39.40.62.35.36.61.
R: 2. 36. 3.4.6. 5. 39.40.24 34. 1a.8.7. 9.41.1.10. 42.
C70
1K5
S5
C66
30
SW2a
OC2a
KW2a
SW2b
OC2b
KW2b
SW2c
OC2c
KW2c
SW3
OC3
KW3
MW
P.O
GM
S6
C8
30
C10
10
S7
C11
100
S9
C60
12
C12
22
R36
68K
S10
S10a
C14
22
C6
330
C13
3K
SK1
10K
R2
C15
100
C17
106
C3
C16
10K
B1
EF89
R4
100K
R5
22K
70V
132V
R60
100
C68
10K
C18
150
R39
1K5
R6
150
C19
10K
R3
1M
C9
33
S11
C20
22
R40
6K8
S12
C21
30
C25
65
S13
R24
27K
S14
S14a
C67
10
C23
22
R34
18
C24
22
S15
C22
3K
C27
100
C26
120
C4
R9
27K
C7
2K2
R41
18K
C28
390
B2
ECH81
240V
C31
10K
73V
R8
33K
R7
1M
R10
47K
C30
C29
68
C5
S16
S17
C38
10
C39
30
S18
S19
C40
30
C32
82
S20
S20b
S20a
C34
56
C62
30
S21
S22
C63
2K7
C35
22
C65
10
S23
S24
C36
30
C33
455
C37
110
f
B1-B7
SK.A
L2
L1
SKB1
SKB2
R42
100
C1
50μF
C1a
50μF
C2
50μF
R1
1K
R1a
100
+ 240V
++ 267V
+++ 275 V
f
C71
1K5
SK2
SK3
S1
S2
S3
S4
B7
80
110
127
180
200
220
A
B
C
D
E
F
G
H
S5
S6
S7
S9
S11
S12
S13
S14
S14a

Fig.5

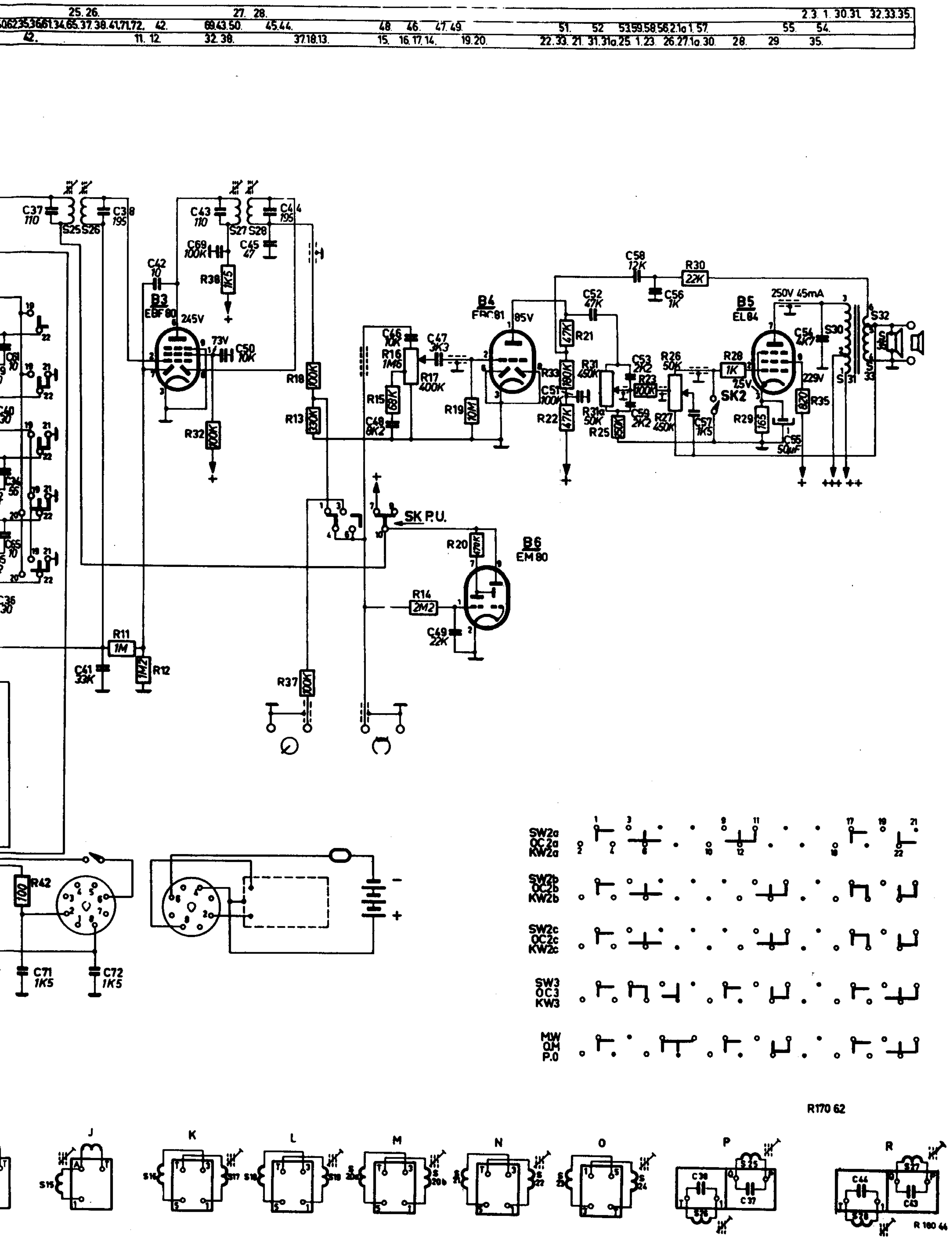
25.26. 27. 28. 2.3. 1. 30.31. 32.33.35.
42. 69.43.50. 45.44. 48. 46. 47.49. 51. 52 55. 54.
42. 11. 12. 32.38. 37.18.13. 15. 16.17.14. 19.20. 22.33. 21. 31.31a.25 1.23. 26.27.1a.30. 28. 29 35.
C37 110
S25 S26
C38 195
C43 110
S27 S28
C44 195
C69 100K
C45 47
R38 1K5
C42 10
B3 EBF80
245V
73V
C50 10K
R32 100K
R18 100K
R13 330K
C46 10K
R16 1M6
C47 3K3
R17 400K
R15 68K
C48 6K2
B4 EBC81
85V
R19 10M
C52 47K
R21 47K
R33 180K
C51 100K
R22 47K
C58 12K
C56 1K
R30 22K
R31 450K
R31a 50K
R25 150K
C53 2K2
R23 100K
C59 2K2
R26 50K
R27 450K
C57 1K5
SK2
R28 1K
B5 EL84
250V 45mA
25V
229V
C54 4K7
S30
S32
S31
S33
R29 165
R35 820
C55 50µF
SK P.U.
B6 EM80
R20 470K
R14 2M2
C49 22K
R11 1M
R12 1M2
C41 33K
R37 100K
C36 30
C40 50
R42 100
C71 1K5
C72 1K5
SW2a OC2a KW2a
SW2b OC2b KW2b
SW2c OC2c KW2c
SW3 OC3 KW3
MW OM P.O
J K L M N O P R
S15 S16 S17 S18 S19 S20a S20b S21 S22 S23 S24
C38 S26 C37 S25
C44 S28 C43 S27
R 180 44
R170 62

Fig.5