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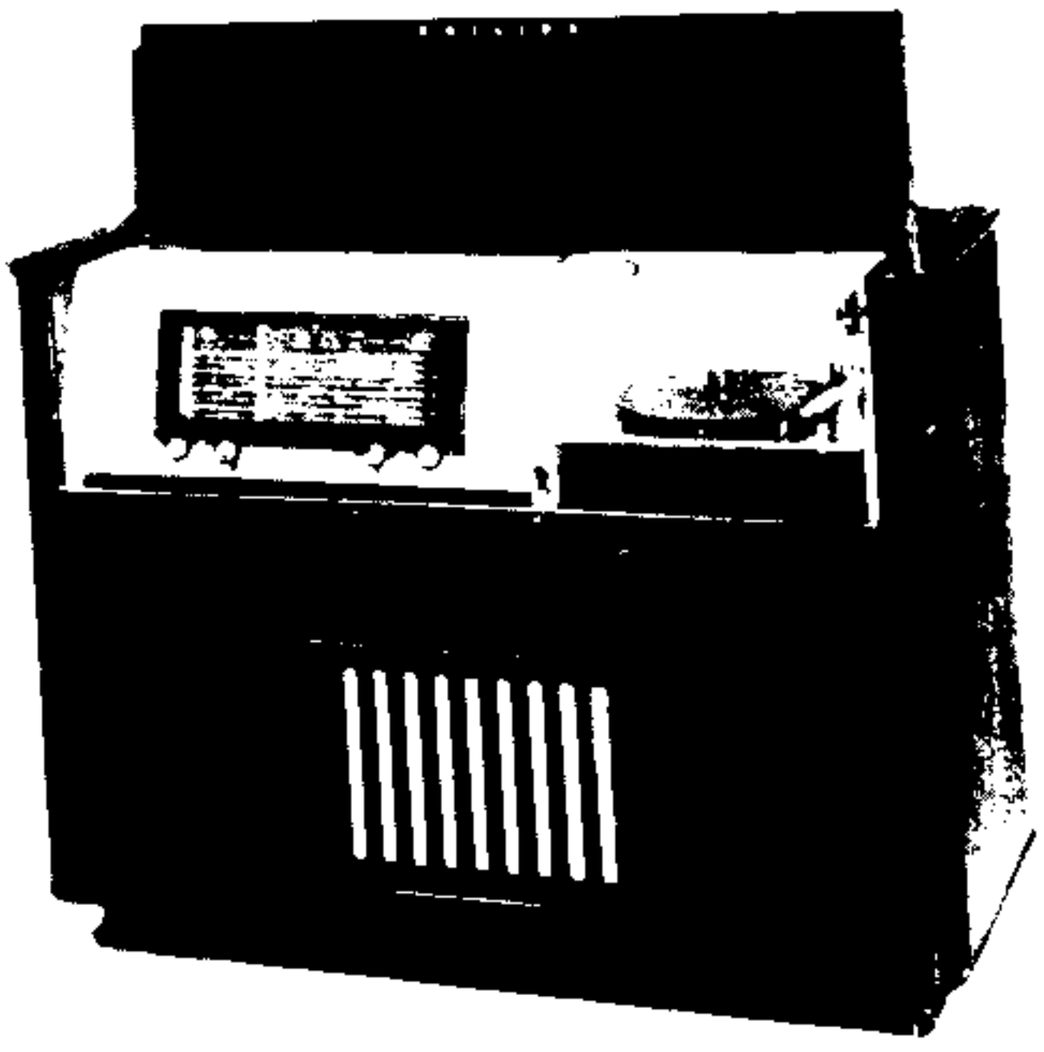
PHILIPS

SERVICE NOTES

for the

radiogram

FX 840 A



1954. For A.C. mains supply.

G E N E R A L

Waveranges

S.W.2a	11,4 - 25,4 m	(26,3 - 11,8 Mc/s)
S.W.2b	24,2 - 32,4 m	(12,4 - 9,26 Mc/s)
S.W.3a	31,6 - 77,9 m	(9,5 - 3,85 Mc/s)
S.W.3b	77,9 - 185 m	(3,85 - 1,622 Mc/s)
M.W.1	185 - 283 m	(1622 - 1060 kc/s)
M.W.2	283 - 580 m	(1060 - 517 kc/s)
L.W.	750 - 2000 m	(400 - 150 kc/s)
F.M.	2,78 - 3,43 m	(108 - 87,5 Mc/s)

Valves (functions)

B1	EF80 (H.F.-A.M.)	B9	EL84(O.P)
B2	ECH81(C+O-A.M.)	B10	EL84(O.P)
B3	EF85 (1 I.F.-A.M.-F.M.)	B11	EZ80(R)
B4	EBF80 (2 I.F.+D - A.M. / 2 I.F.-F.M.)	B12	EZ80(R)
B5	EBF80(3 I.F.-F.M.)	B13	EM34(I)
B6	EQ80 (D-F.M.)	B14	EF80(H.F.-F.M.)
B7	EBC41(A.F.)	B15	EC92(C+O-F.M.)
B8	ECC40(A.F.+F.)	B16	EBC41 (p.u.)

Lamps

L1 - L3	8045D-00	(Illumination)
L4	8006N	(signal)
L5 - L13	7181D	(signal)

Intermediate frequencies

A.M. : 452 kc/s
F.M. : 10,7Mc/s

Mains voltages

110,125,145,200,
220,245 Volt

Mains consumption
(at 220 V A.C.)

125W + 25 W(Tape recorder)

Loudspeaker
9762M

Record changer
A.G. 1006.
For further details see Service Notes of this record changer.

Tape recorder
V3 835 15.
For further data see Service Notes of this tape recorder.

Dimensions

1165x875x450 mm

Weight
ca 77 kg.

93 980 97.1.05

Printed in Holland

List of figures

Remark: After having used the tape recorder, knob "A" should always be placed in position "0", in order to allow the apparatus to operate again as radio or gramophone. It is also recommended to replace knob "B" in position "0".

In the circuit diagram the waverange switch (SK1 to 7) has been drawn in position S.W. 2a. The positions which follow are S.W. 2b, S.W. 3a, S.W. 3b, M.W.1, M.W.2, L.W., F.M. and p.u. The pick-up switch (SK1 p.u., SK2 p.u.) has been drawn in the position A.M., the positions which follow are: F.M. and p.u. This switch has been combined with SK1 to 7. The bass switch SKLT has been put in the position "minimum low notes". The positions which follow are: normal, and maximum low notes. The switch SKSA has been drawn in the position "silent tuning" (muting).
The values mentioned in the circuit diagram for currents and voltages are for guidance and have been measured in position F.M. (with the exception of the values B1 and B2; these values apply to M.W.2).

Short description of circuit diagram

F.M.

The H.F. signal is amplified in B14 and mixed in valve B15 which also operates as oscillator. The intermediate frequency voltage which is amplified in B3, B4 and B5 is fed via S53 and S54 to the third and fifth grid of B6 (discriminator valve). The voltages across S53 and S54 are shifted in phase whereby the phase-angle is dependent on the frequency of the modulated signal. Because of the fact that these two voltages are mixed in B6, at the anode there will also appear among other components the A.F. signal as mixing product which is then fed via C86 to the A.F. section. Part of the intermediate frequency signal appearing across S55 is fed to one diode of B5. The detected signal across R26 will therefore vary with the strength of the carrier wave, as a result of which the initial grid voltage of B13 changes and at the same time also the anode current of this tuning indicator changes. Without signal the valve B6 is cut off by a high initial grid voltage in the position "silent tuning". The valve B6 is made conductive by a signal because of the fact that the voltage across R30, dependent on the anode current of B13, rises. The A.F. signal appearing across C86 is amplified in B7 and the first triode section of B8 and then fed to the output valve B9. The signal required for the second output valve B10 is reversed in phase in the second triode section of B8. Valve B16 serves as pick-up amplifier.

A.M.

B1 operates on the short wave ranges as R.F. amplifier. In the positions M.W. 1 and M.W. 2 the signal is fed across an input bandfilter and in position L.W. across a normal input circuit directly to the mixing- and oscillator valve B2. B3 and B4 amplify the I.F. which is detected by a diode of B4. The A.F. signal developed across R41 is fed to the A.F. part of the receiver.

Trimming of the receiver (see also fig. 2)

Remark: When trimming it will be necessary to uncase the chassis with baseboard and front panel and to interconnect the points a and b (see circuit diagram).

A. I.F. circuits.

1. Volume control at maximum.
2. Variable capacitor at maximum.
3. Low tone switch to maximum low notes.
4. High tone switch to dull.
5. Connect a voltmeter via trimming transformer to the extension loudspeaker sockets.
6. Turn the cores of the I.F. coils most of the way out.
7. Waverange switch on M.W. 1.
8. Apply an A.M. signal of 452 kc/s via a capacitor of 33,000 pF to g1B2.
9. Trim successively to maximum output: S51-S50-S46-S45-S41 and S42.
10. Waverange switch on L.W.
11. Apply a signal of 452 kc/s via a dummy aerial to the aerial socket.
12. Adjust S64 to minimum output.
13. Seal the cores.

B. H.F. oscillator circuits.

Remark: It is recommended when adjusting the S.W. ranges to connect 4700 Ω between g2B4 and earth.

1. Turn the variable capacitor to minimum and adjust the pointer at the left-hand trimming point of the scale.
2. Volume control at maximum.
3. Low tone switch to maximum low notes.
4. High tone switch to dull.
5. Connect a voltmeter via trimming transformer to the extension loudspeaker sockets.
6. Apply an A.M. signal via a dummy aerial to the A.M. aerial sockets and trim according to the following table:

Sequence		I	II	III	IV	V	VI	VII
a.	Waverange switch on.....	S.W.2a	S.W.2b	S.W.3a	S.W.3b	M.W.1	M.W.2	L.W.
b.	With tuning knob set pointer to right hand trimming point.....	X	-	X	X	X	X	X
c.	Apply a signal of....	12,8 Mc/s	-	4,14 Mc/s	1,743 Mc/s	1116 kc/s	552 kc/s	160 kc/s
d.	Adjust for maximum output.....	(S27 (S19 (S7	-	S29 S20 S9	S31 S21 S11	S33 S22x) S12xx)	S35 S23x) S13xx)	S37 S16
e.	With tuning knob set pointer to left hand trimming point.....	X	X	X	X	X	X	X
f.	Apply a signal of...	26,5 Mc/s	12,5 Mc/s	9,6 Mc/s	3,9 Mc/s	1640 kc/s	1070 kc/s	405 kc/s
g.	Adjust for maximum output.....	(C41 (C29 (C16	C123	C43 C33 C20	C44 C113 C112	C46 C136 C135	C48 C31 C15	C34 C18
h.	Repeat the points...	b-g	e-g	b-g	b-g	b-g	b-g	-
j.	Seal the cores and trimmers.....	X	X	X	X	X	X	X

x) When repeating connect 39 pF across C6 (rear section of variable capacitor).

xx) When repeating connect 39 pF across C8 (middle section of variable capacitor).

Trimming the F.M. section.

A. The intermediate frequency circuits.

1. Volume control on maximum.
2. Variable capacitor on maximum.
3. Low tone switch to maximum low notes.
4. High tone switch to treble.
5. Disconnect silent tuning.
6. Waverange switch on F.M.
7. Connect a diode voltmeter across C124 (see wiring diagram underneath view of chassis).
8. Apply an unmodulated signal of 10.7 Mc/s via a capacitor of 33,000 pF to g1B3.
9. Trim successively S53-S49-S48-S44 and S43, to maximum deflection of the diode voltmeter.
10. Remove the retaining spring from B15 and place a screening can over the valve (screening-can may not make contact with chassis).
11. Apply an unmodulated signal of 10.7 Mc/s between screening-can (B15) and chassis F.M. unit.
12. Unscrew the core of S54 almost entirely and damp S43 with 4700 Ω.
13. Trim successively S55 and S53 to maximum deflection of diode voltmeter.
14. Trim S54 to minimum deflection of diode voltmeter.

15. Trim successively S49-S48-S44-S69 and S67 to maximum deflection of diode voltmeter.
16. Remove 4700 Ω from S43 and connect it across S44.
17. Trim S43 at maximum deflection of diode voltmeter.
18. Remove damper and screening-can and fit back the retaining spring over B15.
19. Seal the cores.

*) If during trimming the voltage across C124 becomes higher than about 4 V, the strength of the input signal should be reduced.

B. H.F. circuits

1. Volume control on maximum.
2. Low tone switch to maximum low notes.
3. High tone switch to treble.
4. Disconnect silent tuning.
5. Waverange switch on F.M.
6. Connect diode voltmeter across C124 (see wiring diagram)
7. Turn C53 to middle position. Screw in the core of S24.
8. Apply an unmodulated signal symmetrically to the dipole sockets and adjust according to the table below.

	Sequence	I	II	III
a.	With tuning knob set pointer on scale to.....	87,5 Mc/s	108 Mc/s	-
b.	Apply a signal of.....	87,5 Mc/s*	108 Mc/s*	90 Mc/s*
c.	Adjust for maximum deflection on diode voltmeter.....	S38	C53	-
d.	Tune the receiver with tuning knob to this signal.....	-	-	X
e.	Adjust for maximum deflection of diode voltmeter.....	-	-	S24 S18
f.	Repeat all points. Seal the cores and trimmers.			

*) If these frequencies are not attainable with the Service oscillator it will be necessary to adjust on the harmonics, e.g. 108 Mc/s is the 4th harmonic of 27 Mc/s. Therefore a signal of 27 Mc/s is applied and the circuit is adjusted to maximum (pointer on 108 Mc/s).

Repairs of the radiogram.

A. Removing the chassis from the cabinet with bottom and front plate.

1. Remove the rear panel.
2. Disconnect the wires on the interconnecting strips (mark the wires.)
3. Remove the fixing screws of bottom and front plate.
4. Remove the chassis with bottom and front plate from the cabinet.

B. Removing the record changer from the cabinet.

1. Unscrew the 4 screws at the upper side of the record changer.
2. Lift up the front edge and loosen the wires from the interconnecting strips.

C. Removing the tape recorder from the cabinet.

1. Remove the rear panel.
2. Loosen connecting wires from the interconnecting strips.
3. Loosen binding clip (wire connection).
4. Remove the 4 fixing screws underneath which connect the brackets of the slider with the drawer.
5. Pull out the drawer and remove the last 2 screws of the bracket.
6. The tape recorder with cables can now be removed.

D. Drive.

This is shown seen from above in fig. 1 with the variable capacitor drawn in the maximum position.
The discs which have been drawn separately are seen from the front.

LIST OF SPARE PARTS

When ordering always quote:
1. Code number and colour code number
2. Description.
3. Type number of the set

		Description	Code number
		Knob (UC) (volume control,high tone control and tuning)	A3 738 30.0
		Knob (UC) (waverange switch)	A3 739 02.0
		Lever (UC) (low tone switch)	A3 737 95.0
		Lever (UC) (silent tuning)	P4 075 62.0
		Valve holder (noval)	B1 506 59.0
		Valve holder (miniature)	B1 506 55.0
		Valve holder (octal)	B1 505 26.1
		Lamp holder (illumination)	A3 359 16.1
		Spring (fixing record changer)	49 933 87.0
		Spring (in knob)	28 753 01.2
		Spring (in cord)	A3 646 14.0
		Spring (fixing double coil can)	A3 652 58.3
		Tension spring (in drum variable capacitor)	A3 646 26.0
		Coil can (AA) (Philite)	P4 105 03.0
		Grommet (fixing F.M. unit)	49 622 35.0
		Plate (fixing record changer)	49 935 66.0
		Cap (AA) (illumination lamp record changer)	23 644 19.1
		Male connecting plate) internal dipole	A3 392 73.0
		Dipole lead) internal dipole	R210 KN/03AA
		Mains switch	A3 186 57.0
		Voltage adaptor	A3 228 85.0
		Male connecting plate (loudspeaker,pick-up)	A3 382 13.0
		Variable capacitor	49 001 67.0
		Drum (III) (drive)	23 644 41.2
		Pointer	A3 701 06.0
		Lens, opal (indication)	P5 310 02.0
		Lens, green (indication)	P5 310 02.0
		Scale (oversea)	A3 741 19.2
		Scale (south)	A3 741 21.0
		Scale (north)	A3 741 20.0

Ro/HL

FX840A

R1	10000 Ω		A9 999 00/10K
R4	15 Ω		A9 999 00/15E
R5	1 MΩ		A9 999 00/1M
R6	2700 Ω		A9 999 00/2K7
R7	1000 Ω		A9 999 00/1K
R8	1000 Ω		A9 999 00/1K
R9	1 MΩ		A9 999 00/1M
R10	28000 Ω	+	(A9 999 00/56K (A9 999 00/56K//
R11	10 Ω		A9 999 00/10E
R12	27000 Ω		48 766 05/27K
R13	47000 Ω		A9 999 00/47K
R14	1000 Ω		A9 999 00/1K
R15	270 Ω		A9 999 00/270E
R16	0,47 MΩ		A9 999 00/470K
R17	56000 Ω		A9 999 00/56K
R18	1000 Ω		A9 999 00/1K
R19	0,47 MΩ		A9 999 00/470K
R20	0,1 MΩ		A9 999 00/100K
R21	47000 Ω		A9 999 00/47K
R22	1 MΩ		A9 999 00/1M
R23	47000 Ω		A9 999 00/47K
R24	1000 Ω		A9 999 00/1K
R25	1 MΩ		A9 999 00/1M
R26	2,2 MΩ		A9 999 00/2M2
R27	0,1 MΩ		A9 999 00/100K
R28	1000 Ω		A9 999 00/1K
R29	10 MΩ		A9 999 00/10M
R30	0,22 MΩ		A9 999 00/220K
R31	56000 Ω		A9 999 00/56K
R32	47000 Ω		A9 999 00/47K
R33	0,47 MΩ		A9 999 00/470K
R34	3300 Ω		A9 999 00/3K3
R35	680 Ω		A9 999 00/680E
R36	1 MΩ		A9 999 00/1M
R37	1800 Ω		A9 999 00/1K8
R38	1 MΩ		A9 999 00/1M
R39	1 MΩ		A9 999 00/1M
R40	34000 Ω	+	(A9 999 00/68K (A9 999 00/68K//
R41	0,68 MΩ		A9 999 00/680K
R42	0,65 MΩ		49 501 11.0
R43	0,2 MΩ		
R44	0,18 MΩ		A9 999 00/180K
R45	10 MΩ		A9 999 00/10M
R46	1 MΩ		A9 999 00/1M
R47	6,8 MΩ		A9 999 00/6M8
R48	2200 Ω		A9 999 00/2K2
R50	0,47 MΩ		A9 999 00/470K
R51	1800 Ω		A9 999 00/1K8
R52	0,22 MΩ		A9 999 00/220K
R53	0,15 MΩ		A9 999 00/150K
R54	0,22 MΩ		A9 999 00/220K
R55	0,65 MΩ		49 501 23.0
R56	2 MΩ		
R57	0,56 MΩ		A9 999 00/560K
R58	68000 Ω		A9 999 00/68K
R59	3900 Ω		A9 999 00/3K9
R60	0,22 MΩ		A9 999 00/220K
R61	0,15 MΩ		A9 999 00/150K
R62	1 MΩ		A9 999 00/1M
R63	0,15 MΩ		A9 999 00/150K
R64	56 Ω		A9 999 00/56E
R65	2200 Ω		A9 999 00/2K2
R66	0,68 MΩ		A9 999 00/680K
R67	0,68 MΩ		A9 999 00/680K
R68	1000 Ω		A9 999 00/1K
R69	100 Ω		A9 999 00/100E
R70	1000 Ω		A9 999 00/1K
R71	1 MΩ		A9 999 00/1M
R72	33 Ω		A9 999 00/33E
R73	1 MΩ		A9 999 00/1M
R74	1 MΩ		A9 999 00/1M
R75	2200 Ω		A9 999 00/2K2
R76	0,56 MΩ		A9 999 00/560K
R77	1 MΩ		A9 999 00/1M
R78	1 MΩ		A9 999 00/1M
R80	1 MΩ		A9 999 00/1M
R81	2,2 MΩ		A9 999 00/2M2
R82	0,1 MΩ		A9 999 00/100K
R83	0,65 MΩ		49 501 07.0
R84	0,2 MΩ		
R85	1 MΩ		A9 999 00/1M
R86	2200 Ω		A9 999 00/2K2
R87	47 Ω		A9 999 00/47E
R88	390 Ω		A9 999 00/390E
R90	2200 Ω		A9 999 00/2K2
R91	0,22 MΩ		A9 999 00/220K
R92	0,1 MΩ		A9 999 00/100K
R93	22000 Ω		A9 999 00/22K
R94	0,1 MΩ		A9 999 00/100K
R95	10000 Ω		A9 999 00/10K
R96	47 Ω		A9 999 00/47E
R97	47 Ω		A9 999 00/47E
R98	1800 Ω		49 380 26.0
R150	1 MΩ		A9 999 00/1M
R151	1 MΩ		A9 999 00/1M
R152	3,9 MΩ		A9 999 00/3M9
R153	1800 Ω		A9 999 00/1K8
R154	0,22 MΩ		A9 999 00/220K
R155	1 MΩ		A9 999 00/1M
R156	0,47 MΩ		A9 999 00/470K
R157	33000 Ω		A9 999 00/33K
R158	0,22 MΩ		A9 999 00/220K
R159	0,18 MΩ		A9 999 00/180K
C1	50 µF		48 312 14/50
C2	50 µF		48 317 63/50+50
C3	50 µF		
C4	50 µF		A9 999 10/50
C5	50 µF		A9 999 10/50
C6) C7) C8) C9) C10) C11)	≠		49 001 67.0

C12	22 pF		A9 999 04/22E
C13	33 pF		A9 999 04/33E
C14	27 pF		A9 999 04/27E
C15	30 pF		28 212 36.4
C16	30 pF		28 212 36.4
C17	100 pF		A9 999 04/100E
C18	30 pF		28 212 36.4
C19	33 pF		A9 999 04/33E
C20	30 pF		28 212 36.4
C21	210 pF		A9 999 04/180
		+	A9 999 04/33E//
C22	18 pF		A9 999 04/18E
C23	210 pF		A9 999 04/180E
		+	A9 999 04/33E//
C24	82 pF		A9 999 04/82E
C25	1500 pF		A9 999 04/1K5
C26	10000 pF		A9 999 04/10K
C27	1500 pF		A9 999 04/1K5
C28	190 pF		A9 999 05/180E
		+	A9 999 05/10K//
C29	30 pF		28 212 36.4
C30	100 pF		A9 999 04/100E
C31	30 pF		28 212 36.4
C32	180 pF		A9 999 04/180E
C33	30 pF		28 212 36.4
C34	30 pF		28 212 36.4
C35	100 pF		A9 999 04/100E
C36	10000 pF		A9 999 06/10K
C37	1500 pF		A9 999 04/1K5
C38	47000 pF		A9 999 06/47K
C39	82 pF		A9 999 04/82E
C40	47 pF		A9 999 04/47E
C41	30 pF		28 212 36.4
C42	150 pF		A9 999 04/150E
C43	30 pF		28 212 36.4
C44	30 pF		28 212 36.4
C45	955 pF		A9 999 05/910E
		+	A9 999 05/47E//
C46	30 pF		28 212 36.4
C47	313 pF		A9 999 05/300E
		+	A9 999 05/13E//
C48	30 pF		28 212 36.4
C49	58 pF		A9 999 04/56E
C50	10000 pF		A9 999 06/10K
C51	47 pF		A9 999 04/47E
C52	270 pF		A9 999 04/270E
C53	8 pF		49 005 47.0
C54	110 pF		Zie spoelen See coils Voir bobines Siehe Spulen Vease bobinas
C55	10 pF		A9 999 04/10E
C56	110 pF		Zie spoelen See coils Voir bobines Siehe Spulen Vease bobinas
C57	12 pF		A9 999 04/12E
C58	10000 pF		A9 999 06/10K
C59	150 pF		A9 999 04/150E
C60	47000 pF		A9 999 06/47K
C61	33 pF		Zie spoelen See coils Voir bobines Siehe Spulen Vease bobinas
C62	33 pF		Idem
C63	10000 pF		A9 999 06/10K
C64	115 pF		Zie spoelen See coils Voir bobines Siehe Spulen Vease bobinas
C65	230 pF		Idem
C66	12 pF		A9 999 04/12E
C67	47000 pF		A9 999 06/47K
C68	150 pF		A9 999 04/150E
C69	33 pF		Zie spoelen See coils Voir bobines Siehe Spulen Vease bobinas
C70	33 pF		Idem
C71	110 pF		Idem
C72	110 pF		Idem
C73	10 pF		A9 999 04/10E
C74	47000 pF		A9 999 06/47K
C75	10000 pF		A9 999 06/10K
C76	56 pF		A9 999 04/56E
C77	10 pF		A9 999 04/10E
C78	27 pF		Zie spoelen See coils Voir bobines Siehe Spulen Vease bobinas
C79	47000 pF		A9 999 06/47K
C80	33 pF		Zie spoelen See coils Voir bobines Siehe Spulen Vease bobinas
C81	33 pF		Idem
C82	1500 pF		A9 999 04/1K5
C83	1500 pF		A9 999 04/1K5
C84	47000 pF		A9 999 06/47K
C85	1500 pF		A9 999 04/1K5
C86	10000 pF		A9 999 06/10K
C87	10000 pF		A9 999 06/10K
C88	47000 pF		A9 999 06/47K

C89	470 pF		A9 999 04/470E
C90	20000 pF		A9 999 06/10K
		+	A9 999 06/10K//
C92	270 pF		A9 999 04/270E
C93	10000 pF		A9 999 06/10K
C94	100 pF		A9 999 04/100E
C95	680 pF		A9 999 04/680E
C96	680 pF		A9 999 04/680E
C97	150 pF		A9 999 04/150E
C98	6800 pF		A9 999 06/6K8
C99	5,6 pF		A9 999 04/5E6
C100	3900 pF		A9 999 06/3K9
C102	33000 pF		A9 999 06/33K
C103	33000 pF		A9 999 06/33K
C104	120 pF		A9 999 04/120E
C105	1000 pF		A9 999 06/V1K
C106	1000 pF		A9 999 06/V1K
C107	22000 pF		A9 999 06/V22K
C108	6800 pF		A9 999 04/6K8
C109	840 pF		A9 999 05/820E
		+	A9 999 05/20E//
C110	22 pF		A9 999 04/22E
C111	12 pF		A9 999 04/12E
C112	30 pF		28 212 36.4
C113	30 pF		28 212 36.4
C114	15 pF		A9 999 04/15E
C115	15 pF		A9 999 04/15E
C116	22 pF		A9 999 04/22E
C117	15 pF		A9 999 04/15E
C118	10000 pF		A9 999 04/10K
C119	120 pF		A9 999 04/120E
C120	22 pF		A9 999 04/22E
C121	82 pF		A9 999 04/82E
C122	22 pF		A9 999 04/22E
C123	30 pF		28 212 36.4
C124	1500 pF		A9 999 04/1K5
C125	68 pF		A9 999 04/68E
C126	50 µF		A9 999 10/50
C127	68 pF		A9 999 04/68E
C130	100 µF		A9 999 10/100
C131	1500 pF		A9 999 04/1K5
C132	6800 pF		A9 999 04/6K8
C133	33 pF		Zie spoelen See coils Voir bobines Siehe Spulen Vease bobinas
C134	56 pF		A9 999 04/56E
C135	30 pF		28 212 36.4
C136	30 pF		28 212 36.4
C137	15 pF		A9 999 04/15E
C138	4,3 pF		A9 999 04/4E7
C139	3,3 pF		A9 999 04/3E3
C140	1500 pF		A9 999 04/1K5
C141	50 µF		48 312 09/50
C150	15 pF		A9 999 04/15E
C151	330 pF		A9 999 04/330E

C152	50 µF	A9 999 10/50
C153	10000 pF	A9 999 06/10K
C154	1000 pF	A9 999 06/1K
	S1,S1a,S2,S3,S4, S5,(Z1)	A3 142 37.0
	S5a	V3 598 01.0
	S6,S7	A3 125 25.0
	S8,S9	A3 125 31.0
	S10,S11	A3 125 34.0
	S12,S13	A3 125 83.0
	S14,S16,S16a	A3 125 37.0
	S15	A1 000 81.0
	S17,S17a,S18	A3 126 63.0
	S19,S19a	A3 125 81.0
	S20,S20a	A3 125 82.0
	S21,S21a	A3 125 47.0
	S22,S23	A3 125 83.0
	S24,S24a	A3 126 61.0
	S25,S26,S27	A3 125 50.0
	S28,S28a,S29	A3 125 64.0
	S30,S31	A3 125 70.0
	S32,S33	A3 125 71.0
	S34,S35	A3 125 74.0
	S36,S37	A3 125 78.0
	S38,S39,S40	A3 126 62.0
	S41,S42(C54,C56)	A3 124 25.4
	S43,S44(C61,C62)	A3 124 78.1
	S45,S46,S47(C64, C65)	A3 122 38.2
	S48,S49(C69,C70)	A3 124 78.1
	S50,S51(C71,C72)	A3 124 25.4
	S52,S53,S54(C80, C81)	A3 125 05.0
	S55,S55a,S56(C78)	A3 125 06.0
	S57	A1 000 68.2
	S58,S59,S60,S61	A3 152 64.0
	S64	A3 125 86.1
	S66,S67,S68	A3 126 64.0
	S69,S69a(C133)	A3 126 66.0
	S65	A1 000 81.0
	S70,S71	A3 125 39.0
	S72,S73	A3 125 44.0

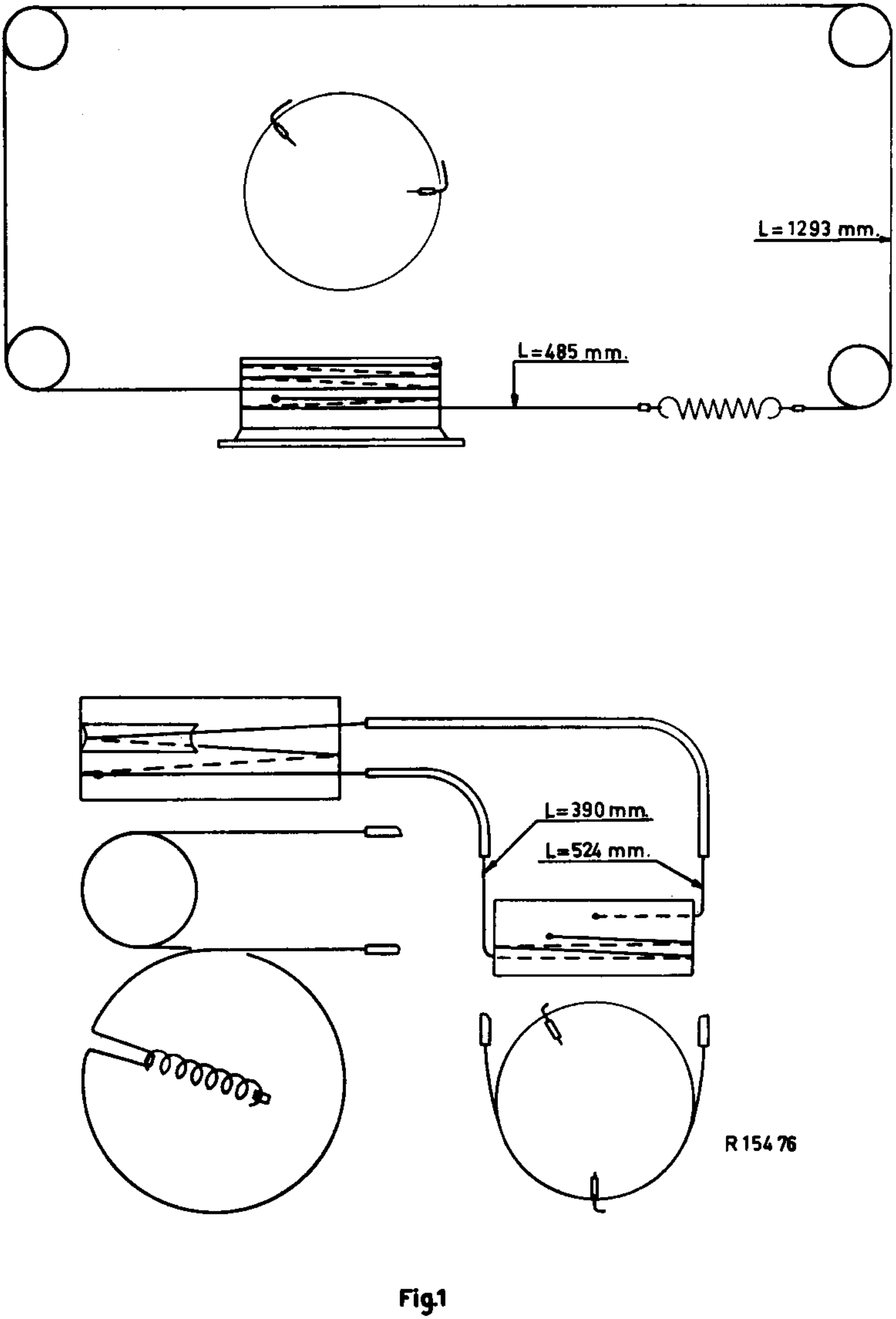


Fig.1

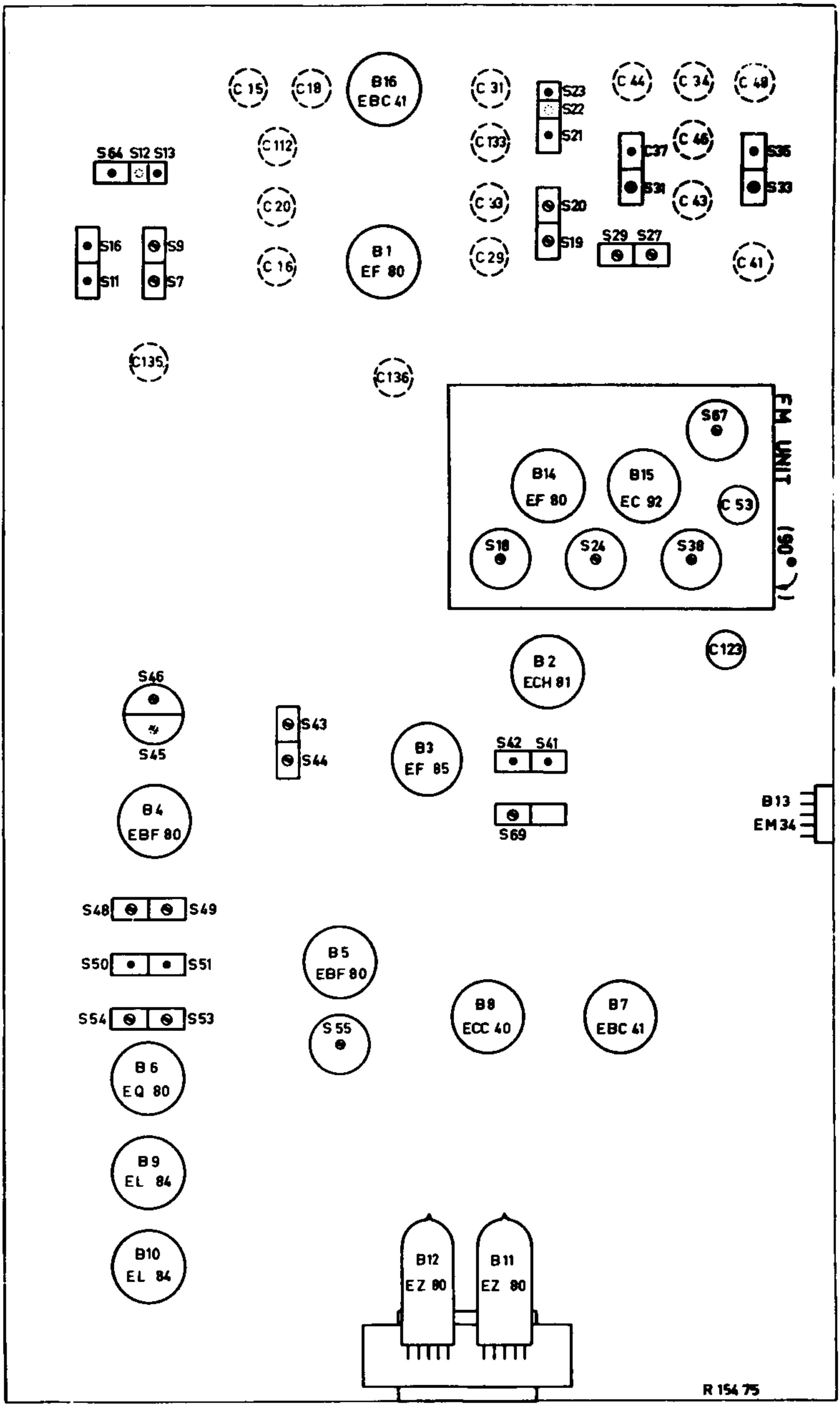
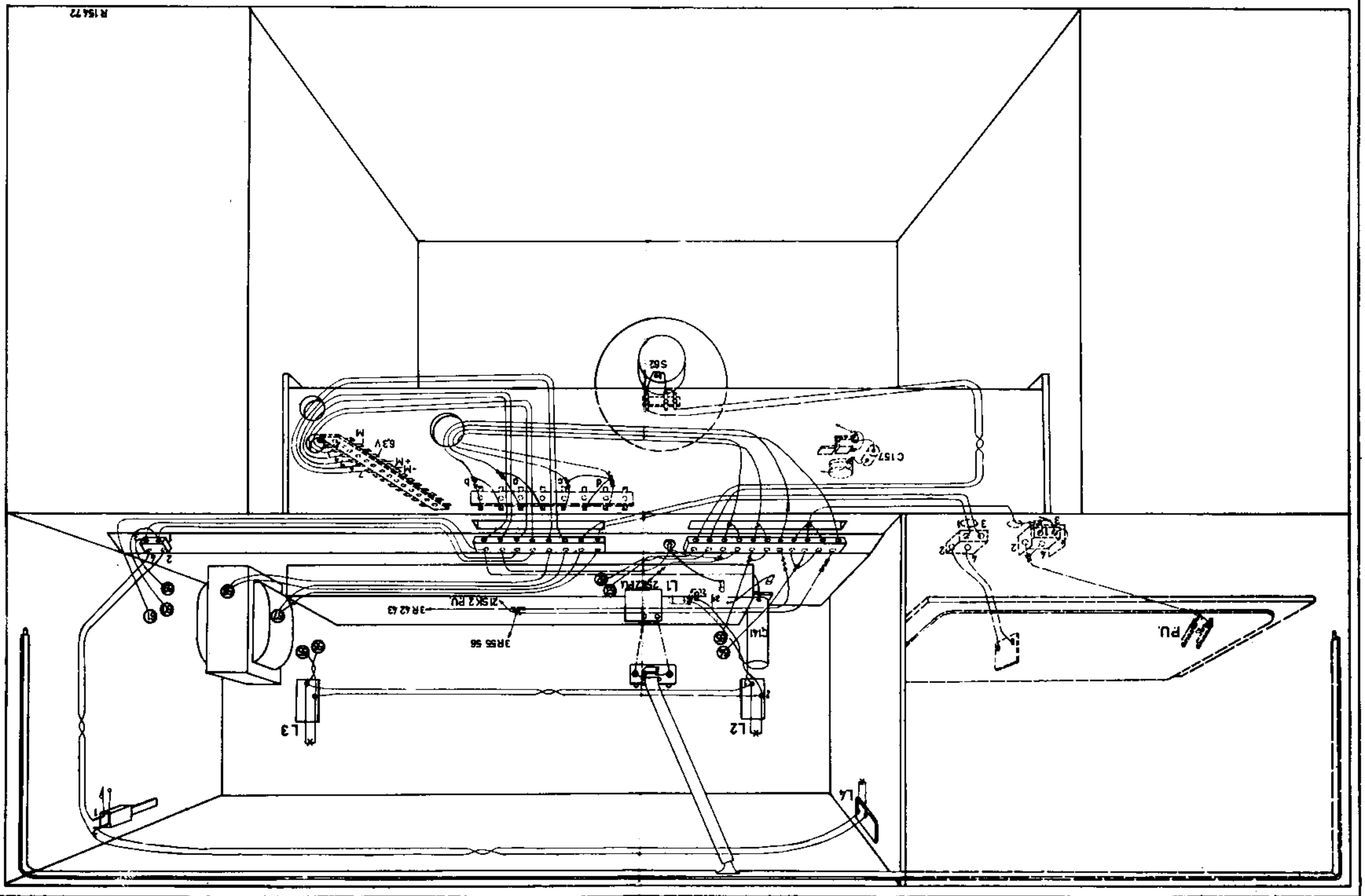

C 15
C 18
B16
EBC 41
C 31
S23
S22
S21
C 44
C 34
C 48
S64 S12 S13
C112
C133
C37
C 46
S36
S31
S33
C 20
C 33
S20
C 43
S16
S9
S11
S7
S19
S29 S27
C 16
B1
EF 80
C 29
C 41
C135
C136
FM UNIT (90 •)
S67
B14
EF 80
B15
EC 92
C 53
S18
S24
S38
C123
B2
ECH 81
S46
S45
S43
S44
B3
EF 85
S42 S41
S69
B13
EM34
S48
S49
S50
S51
S54
S53
B5
EBF 80
S 55
B8
ECC 40
B7
EBC 41
B6
EQ 80
B9
EL 84
B10
EL 84
B12
EZ 80
B11
EZ 80
R 154 75

Fig.2

R 154 72



S	61. 58. 59.60. Y. X. W. 65. V. S. R.T. U. A.C.L.M.H.B.E.O.N.T.D.F.P.Q.J.15. K. 72. 73. 70. 71.
C	130. 106. 96 4 126 102 84. 87. 90. 82. 99. 83. 76. 74. 73. 75. 92. 59. 108. 2. 89. 66. 139. 63. 123. 39. 23. 21. 14. 28 30. 118. 136. 127. 12. 114. 16. 42. 26. 29. 17. 111. 49. 119. 112. 110. 117. 27. 15. 120. 44. 13.
C	105. 98. 100. 97. 122. 95. 103. 86. 93. 90a. 50. 85. 88. 124. 1. 79. 60. 67. 137. 58. 57. 68. 3. 36. 132. 38. 40. 52. 37. 35. 125. 13 40. 24. 135. 121. 45. 41. 116. 25. 104. 43. 20. 33. 109. 46. 47. 113. 115. 18. 48.
R	90. 88. 84. 83. 82. 54. 46. 68. 53. 60. 45. 85. 77. 63. 61. 80. 48. 34. 73. 86. 71. 26. 41. 81. 50. 74. 25. 78. 17. 21. 47. 12. 16. 20. 9. 87. 15. 6.
R	89. 59. 58. 43. 42. 57. 66. 67. 69. 70. 55. 56. 62. 32. 52. 65. 33. 35. 37. 51. 29. 40. 40a. 28. 31. 24. 27. 64. 23. 75. 22. 14. 1. 10a. 10. 19. 76. 18. 13. 5. 7. 8.

FX 840 A Fig.4

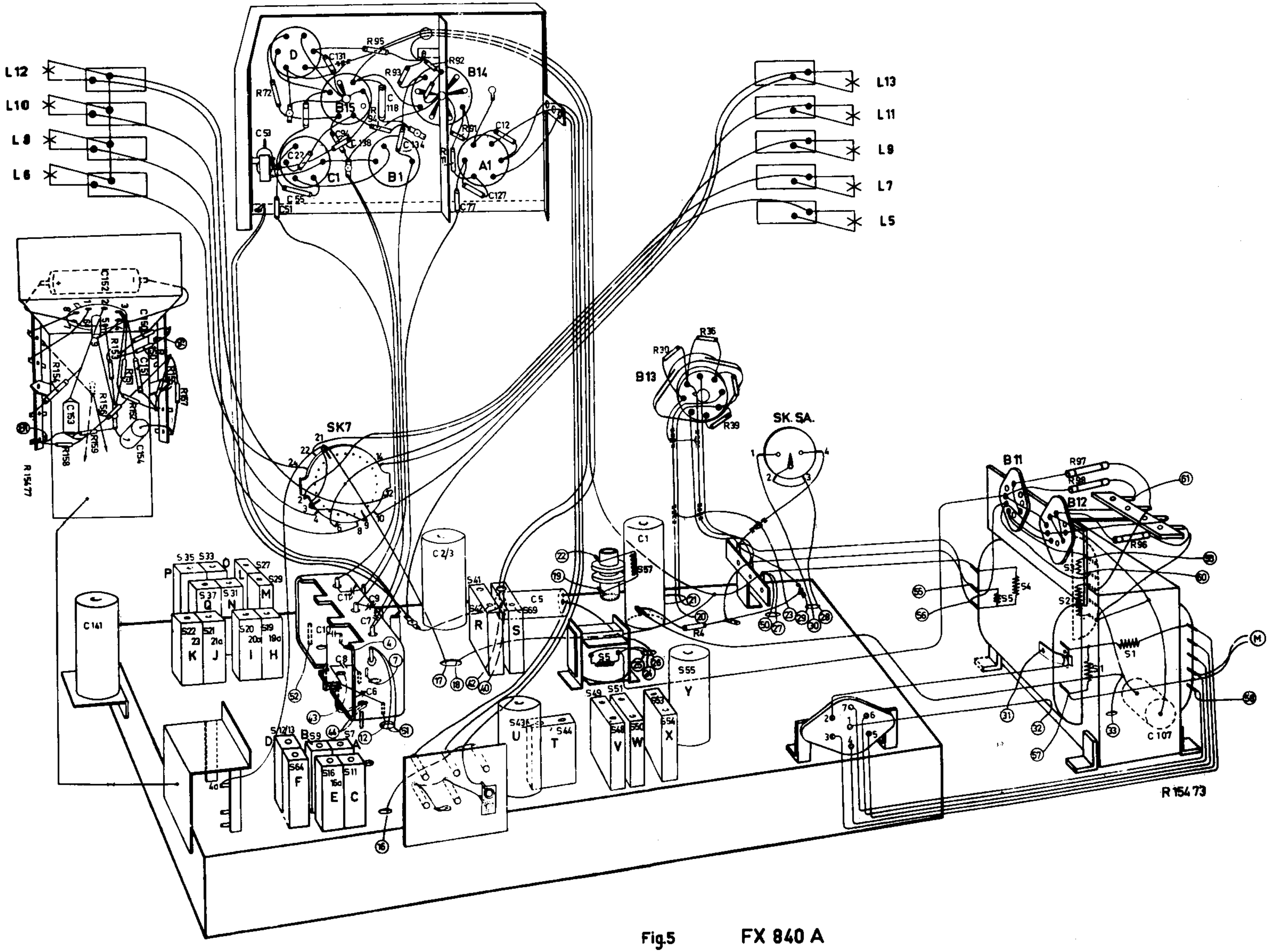
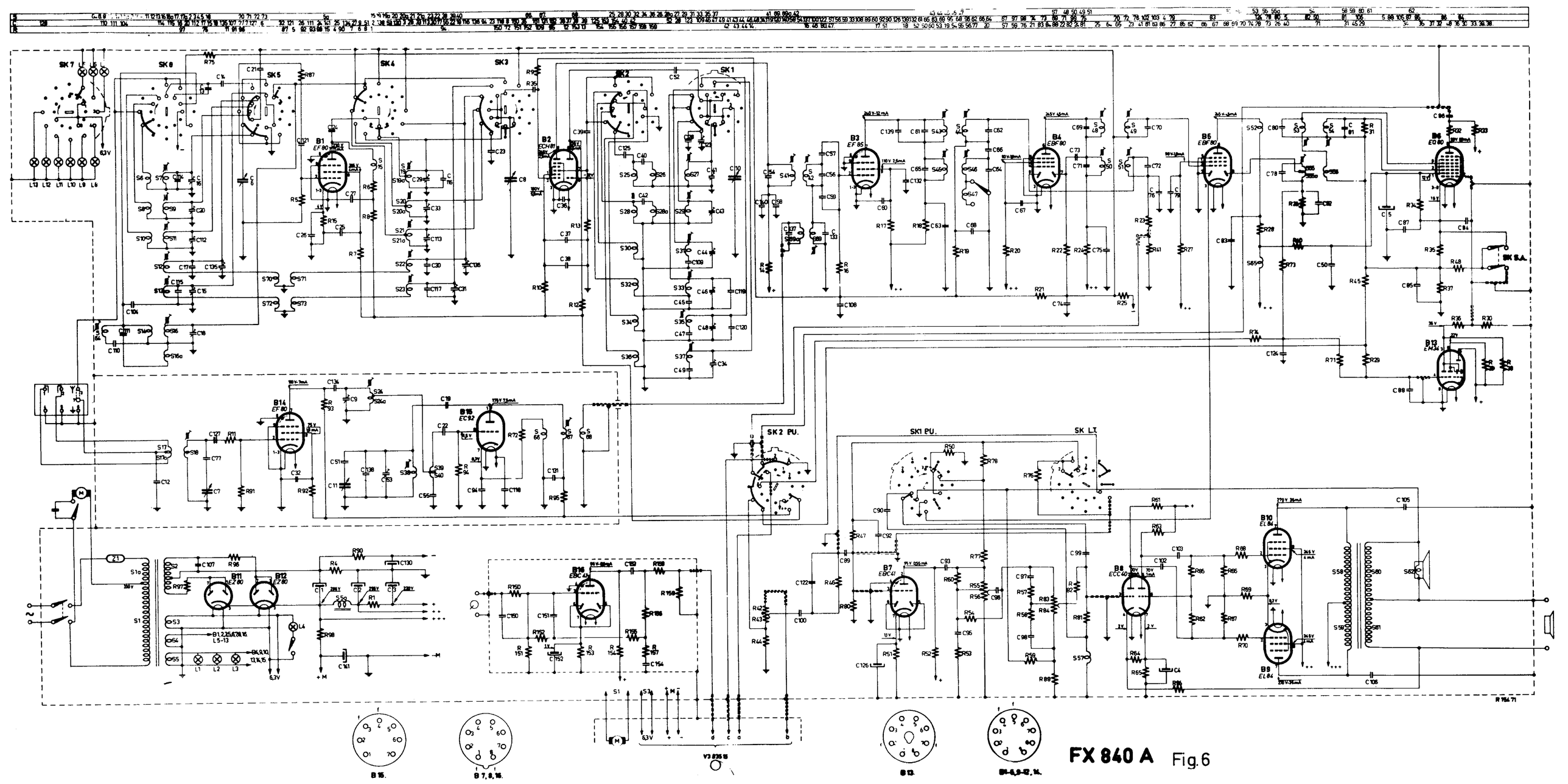

L12
L10
L8
L6
L13
L11
L9
L7
L5
D
B14
B15
A1
B1
C1
B13
B11
B12
SK7
SK. SA.
R 154 77
R 154 73

Fig.5 FX 840 A


SK 7
SK 6
SK 5
SK 4
SK 3
SK 2
SK 1
SK 2 PU.
SK 1 PU.
SK LT
SK S.A.
B1 EF80
B2 ECH81
B3 EF85
B4 EBF80
B5 EBF80
B6 ECL80
B7 EBC41
B8 ECC40
B9 EL84
B10 EL84
B11 EZ80
B12 EZ80
B13 EM34
B14 EF80
B15 EC92
B16 EBC41
B 15.
B 7, 8, 16.
B 13.
B4-6,9-12, 14.
FX 840 A Fig.6

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NVHR

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for the

Radiogram

FX 840 A-60

1954. For A.C. Mains Supply (60 c/s).

The FX 840 A-60 is identical to the FX 840 A with the following modifications

Delete: Record changer AG 1006-85
Magnetophone V3 835 15

Add: Record changer AG 1006-86
Magnetophone V3 835 14

WV/MZ

Printed in Holland