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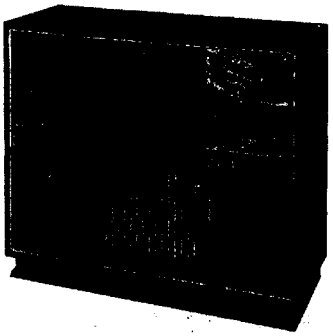
PHILIPS

SERVICE NOTES

for the radiogram

FX727A



1953 — For A.C. mains supply

GENERAL

WAVERANGES

S.W.2a:	11.3 – 14.1 m	(	26.55 – 21.3	Mc/s)	**I.F.** : 452 kc/s
S.W.2b:	16 – 20 m	(	18.75 – 15	Mc/s)	
S.W.2c:	20.9 – 26.2 m	(	14.39 – 11.5	Mc/s)	
S.W.2d:	25.6 – 32.1 m	(	11.72 – 9.3	Mc/s)	
S.W.3 :	30 – 91.5 m	(	10 – 3.28	Mc/s)	
M.W. :	185 – 580 m	(	1622 – 517	kc/s)	

CONTROL KNOBS

From left to right:

1. Mains switch + volume control + radio-gram. switch (push-pull)
2a Bass switch (3 positions)
2b Tone control + bandwidth switch
3. Waverangeswitch
4. Tuning

VALVES

B1 : EF 41	B6 : EL41
B2 : ECH42	B7 : EL41
B3 : EBF80	B8 : AZ41
B4 : EBC41	B9 : AZ41
B5 : ECC40	B10: EM34

DIAL LAMPS

L1 : 8045D-00
L2 : 8045D-00
L3 : 8091D-00
L4 : 8073D-00

WEIGHT

approx: 60 kg.

MAINS VOLTAGES

90-110-125-145-200-220 V

CONSUMPTION

Approx. 70 W (220 V-50c/s)

LOUDSPEAKER

Type 9758-05 (Z=7Ω)

Printed in Holland

DIMENSIONS

Length : 96 cm.
Width : 42,5 cm.
Height : 82 cm.

BANDWIDTH

In the "narrow" position of the bandwidth switch the I.F. bandwidth (1:10) measured from g1 of B1 is about 11 kc/s, and in the "wide" position 17 kc/s.
The overall bandwidth (1:10) measured with a signal of 1000 kc/s from the aerial socket is about 9 kc/s in the "narrow" position of the bandwidth switch and 15 kc/s in the "wide" position.

BRIEF DESCRIPTION OF THE CIRCUIT

A. R.F. PART (Details fig.1)

The R.F. part consists of the pre-selecting and mixing stages. The incoming signal is inductively coupled to the control grid of B1 and after amplification, is passed to the control grid of B2. Bandspread is obtained by connecting capacitors in series with and parallel to each section of the variable capacitor (e.g. C8 in series with C10 and C3 and C4 parallel to C10).

Mixing takes place electronically in B2. For the S.W. ranges a Colpitts oscillator is applied (fig.2), since this gives high stability.
For the waveranges S.W. 3 and M.W. and inductively-coupled oscillator is used.

B. I.F.PART

The valve B3 performs three functions:

1. Amplification of the I.F. signal
2. Detection of the I.F. signal
3. Providing for the A.V.C.

Function 1.

The I.F. signal entering via the band-pass filter (S23-S25) is amplified by B3 and after that applied to the second I.F. band-passfilter (S27-S29).

Functions 2 and 3 are carried out in the 3-diode circuit. The third diode is formed by the suppressor grid and cathode of B3. The I.F. signal to be detected is taken from the secondary circuit of the second I.F. band-passfilter and detected by the right-hand diode of B3. The A.F. signal appears across the detection capacitor C41

Fig. 3 represents the principle of the A.V.C. circuit. Point A has a fixed positive voltage V3, which means that the anode of the left-hand

diode is positive and draws current. The result is that the anode potential of the left-hand diode is practically zero (in Fig.3 the left-hand diode anode in the circuit-diagram is the suppressor grid of B3). The I.F. carrier-wave is detected by the right-hand diode of fig.3 with the result that the anode of this diode receives a negative potential.

The control voltage so obtained is applied directly to the control grid of B3 and the A.V.C. of this valve is not delayed. If the potential V2 is negative enough, this voltage will affect the positive bias of the left-hand diode. The result is that the left-hand diode will no longer draw current and the A.V.C. comes into action. The moment at which this happens is therefore dependent on the size of R61 and R62 and the magnitude of V3 and V2.
The advantage of the above circuit is that distorsion, due to the changing depth of modulation, is considerably limited.

C. The A.F.PART

The A.F. amplifier comprises 3 stages:
1. The pre-amplifier , B4, with tone control circuit.
2. The phase invertor valve, B5.
3. The push-pull output stage.

The A.F. signal obtained after detection is applied via R18-R19, C38, R15 and C36 to gB4. The volume controls R18-R19 and R27-R28 are mounted on one spindle in connection with the physiological tone correction.

1. TONE CONTROL

a. Bass-switch (SK9, fig.4)

Connected between the anode and the grid of B4 is an inverse feed-back circuit some elements of which can be switched in and out of circuit. The working is as follows:
The impedance of the parallel connection R35-C64 is greater for low frequencies than for high ones, as a result of which the inverse feed-back for the bass notes is reduced. The resistor R22 which can be connected in parallel to R35 reduces the influence of the filter R35-C64.
In the grid circuit of B4 there is also C36, a small capacitor which attenuates the bass notes reaching gB4. This capacitor can be short circuited with the bass-switch.

Summary of the 3 positions of SK9:

1. Minimum bass notes:	C36 in series with C38-R15 R22 parallel to R35-C64
2. Normal :	C36 shortcircuited R22 parallel to R35-C64
3. Maximum bass notes:	C36 shortcircuited R22 switched out of circuit

b. Whistle filter (9000 c/s) (fig.4)

The 9000 c/s whistle filter consists of the series circuit: C49-S30. Moreover a signal coming from S35 is applied to C49. At the resonance frequency a maximum voltage is produced across S30 which is applied to gB5 via R24 as inverse feedback voltage. The purpose of C51 is to

prevent another rise of the frequency characteristic above 9000 c/s. The whistle filter is only switched on in the "radio"position of SK7-SK8.

c. Treble control (fig.4)

The treble response is adjusted with R49-R50.
In the position "maximum treble" (slider of R49-R50 at the top of R49) the treble response is boosted because of the fact that C42 is connected in parallel to R44-R47.
In the position "minimum treble"(slider of R49-R50 to the earth side of R50) R44-R49-C39-R51 and R47-C42 form two low-pass filters as a result of which the treble response is attenuated.

d. Pick-up correction

In the position "gramophone" of SK7-SK8, R20 in the inverse feedback circuit of B4 is replaced by the network R54-R46-C46. The impedance of this network is lower for the treble notes than for the bass so that the inverse feedback for the treble notes is reduced.

2. PHASE INVERTOR CIRCUIT (fig.5)

The R.F. signal which appears across R27-R28 is fed via R30 to gB5. B5 operates as normal A.F. amplifier. B'5, which receives part of this amplified signal, is fed back via R67 in such a way that the signal voltage across R42 is equal but opposite in phase to the signal voltage across R40.

3. PUSH PULL OUTPUT STAGE

B6 derives its excitation voltage from B5, and B7 from B'5. These voltages are opposite in phase (see C2).
The capacitors C60 and C62 are applied in order to further improve the symmetry of the output stage.

TRIMMING THE RECEIVER

A. THE I.F. CIRCUITS

After removing the back panel and bottom plate, all trimmers and coil cores can easily be reached. It is therefore not necessary to remove the chassis for trimming.
The compound with which the cores of the I.F. coils have been sealed can easily be removed in the cold state with a screwdriver.
The trimming has to be done as follows:

1. Tuning capacitor to minimum capacity; waverange switch to M.W.; volume control to maximum; tone control to position "sharp"; narrow bandwidth; bass switch to maximum.
2. Unscrew the cores of the I.F. coils almost full out.
3. Connect a voltmeter via a trimming transformer to the extension loudspeaker connections.
4. Apply a modulated signal of 452 kc/s via a capacitor of 33000 pF to g1 of B2.
5. Trim in succession the 4th, 3rd, 1st and 2nd I.F. circuit to maximum output voltage.

4th I.F. circuit S29 - S29a- C30; coilL(above)
3rd I.F. circuit S27 - S28 - C29; coil L (under)
1st I.F. circuit S23 - S24 - C31; coil K (under)
2nd I.F. circuit S25 - C32 - C56; coil K (above)

6. Seal the cores of the coils.

REMARK

The sealing compound mentioned in the "List of Spare Parts and Tools" should be used for sealing the cores.

B. TRIMMING THE R.F. CIRCUITS

The trimming of the R.F. circuits has to be done in accordance with the trimming points on the dial.
For all waveranges, except S.W.2a, the oscillator frequency is higher than the signal frequency.
Trimming has to be done as indicated in the following table.

1. Volume control to maximum; low tone switch to maximum, tone control to "dull", bandwidth switch to "narrow".
2. Connect a voltmeter via a trimming transformer to the extension loudspeaker connections.
3. Apply a modulated R.F. signal, obtained from the service oscillator, via a dummy aerial to the aerial socket.

1	Waverange switch in position...	S.W.2b	S.W.2a	S.W.2c	S.W.2d	S.W.3	M.W.
2	Turn pointer to the trimming point for.....	15.25 Mc/s	21.6 Mc/s	11.7 Mc/s	9.55 Mc/s	10.1 Mc/s	1630 kc/s
3	Apply a modulated signal of.... via a dummy aerial to the aerial socket	15.25 Mc/s	21.6 Mc/s	11.7 Mc/s	9.55 Mc/s	10.1 Mc/s	1630 kc/s
4	Trim to maximum output voltage.	S44,S18 S8	S43,S17 S6	S45,S19 S10	S46,S20 S12	C75,C20 C5	C74
5	Turn pointer to the trimming point for.....	17.75 Mc/s	-	-	-	-	555 kc/s
6	Apply a modulated signal of.... via a dummy aerial to the aerial socket	17.75 Mc/s	-	-	-	-	555 kc/s
7	Trim to maximum output voltage	C80,C8 C3	-	-	-	-	C73
8	Repeat the points.....	-	-	-	-	-	2-8
9	Seal the trimmers.....	S44 S18 S 8 C18 C 3 C80	S43 S17 S 6	S45 S19 S10	S46 S20 S12	C75 C20 C 5	

TRIMMING THE M.W. (continued)

9.	Turn the pointer to the trimming point for	: 1630 kc/s
10.	Apply a modulated signal of via a dummy aerial to the aerial socket.	: 1630 kc/s
11.	Trim to maximum output voltage	: C21-C6
12.	Seal the trimmers	: C21-C6 C74-C73

REPAIRS AND REPLACEMENT OF PARTS

A. REMOVING THE CHASSIS FROM THE CABINET

1. Remove back panel of the radio part.
2. Remove the two screws at both sides of the chassis.
3. Push the chassis so far backwards that the terminal boards under the chassis are accessible from the front.
   Disengage the connections between the chassis and the terminal boards.
4. Chassis + front panel can now be taken out of the cabinet.

B. REMOVING THE FRONT PANEL

1. Remove the knobs.
2. Disengage the wave range indicator (1 milled screw) and push it onto the chassis.
3. Unscrew the lampholder and the cord bracket at the lower part of the front panel
4. Unscrew the 4 fixing screws of the front panel (2 wood screws and 2 screws underneath the chassis plate).
   The front panel can now be removed.

C. REPLACING THE DIAL

1. Remove the chassis.
2. Remove the front panel.
3. Disengage the 4 dial fixing brackets.
4. The dial can now be pushed from the dial box.

D. RENEWING THE DRIVING CABLES

1. Remove the chassis
2. Take off the front panel
3. Remove dial + fixing bracket
4. Remove dial box (4 screws)
5. Fit new cable according to fig.6 with the variable capacitor in the maximum capacity position.

E. REMOVING RECORD CHANGER

1. Remove back panel of radio part
2. Remove the 2 screws at both sides of the chassis and push the chassis backwards
3. Disengage the connections for the record changer from the terminal boards underneath the chassis.
4. Disengage the 4 cable brackets.
5. The record changer can now be taken out of the cabinet after having removed the screws at the 4 corners of the mounting plate.

VOLTAGES AND CURRENTS

Valves			Va	Vg2	Vk	Ia	Ig2
B1	EF 41	Pentode	175	80	2	4,8	1,4
B2	ECH42	Hexode	230	75	-	2,3	3,1
		Triode	120	-	-	4,4	-
B3	EBF80	Pentode	230	70	-	4,5	1,7
B4	EBC41	Triode	95	-	1,1	0,45	-
B5	ECC40	Triode (B5)	80	-	1,8	1	-
		Triode (B5')	80	-	1,8	1	-
B6	EL 41	Pentode	260	230	6	27	3,7
B7	EL 41	Pentode	260	230	6	27	3,7
B10	EM 34	Magic eye	230	d1=37	-	0,95	d1=0,18
				d2=27			d2=0,22
			Volts	Volts	Volts	mA	mA

Vc1 : 270 Volts Vc2 : 230 Volts I tot. : 300 mA (220V-50c/s).

LIST OF SPARE PARTS AND TOOLS

When ordering always quote:

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

1. GENERAL

Description	Code number
Pointer	A3 692 61.0
Dial (Oversea)	
Dial (Mediterranean)	
Rear panel	A3 254 43.0
Emblem	23 654 14.0
Lid support	A3 403 08.0
Grommet (2x)	A3 642 18.0
Rubber ring around dial	A1 755 85.0
Tension spring for record changer	89 312 44.3
Compression spring assembly under record changer	49 924 95.0

2. KNOBS

Description	Code number
Bass switch (041)	23 952 37.0
Tone control + Waverange switch	A3 366 33.0
Volume control + tuning	A3 365 65.0
Ring behind waverange switch (041)	23 735 17.0

3. VOLTAGE ADAPTOR

Description	Code number
Knob	A3 228 03.0
Plate	A3 228 33.0

4. CHASSIS

Description	Code number
Socket plate (aerial earth)	A1 340 92.0
Screw for 9 kc/s filter	07 703 45.0
Pulley (111) for saverange switch	23 644 48.2
Bush (Radio-Pickup switch)	A3 305 03.0
Spring for I.F.-coils	A3 652 58.3
Spring for pointer drive	A3 646 14.0
Valveholder (EBF 80)	R1 662 11.0
Valveholder (EM 34)	B1 505 26.1

5. WAVERANGE INDICATOR ASSEMBLY

Description	Code number
Ornamental ring	A3 395 81.0
Torsion spring	A3 651 00.3
Spindle	A3 600 13.0
Waverange indicator	A3 396 01.0

6. VARIABLE CAPACITOR ASSEMBLY

Description	Code number
Variable capacitor with drum	see condensers
Spring in drum	A3 646 09.3
Drum (large, Philite 111)	23 644 41.2
Small drum	A3 324 94.0
Friction discs	A3 574 20.4
Triangular plate in small drum	A3 320 80.0
Spindle for tuning	A3 333 53.0

7. TOOLS

Service oscillator	GM 2882 or GM 2883 or GM 2884
Universal test instrument	GM 4256 or GM 4257
Vaseline compound	X 009 47.0

FX 727 A

COILS - CAPACITORS - RESISTORS

BOBINAS - CONDENSADORES - RESISTENCIAS

S1	14 Ω	A3 141 85.0
S2	100 Ω	
S3	1 Ω	
S4	1 Ω	
S4a	1 Ω	
S5	1 Ω	A3 124 01.0
S6	1 Ω	
S9	1,8 Ω	
S10	1 Ω	
S7	1,2 Ω	A3 124 02.1
S8	1 Ω	
S11	2,4 Ω	
S12	1 Ω	
S13	6,7 Ω	A3 124 30.0
S14	1,5 Ω	
S15	100 Ω	
S16	5 Ω	
S17	1 Ω	A3 124 03.1
S19	1 Ω	
S18	1 Ω	A3 124 04.1
S20	1 Ω	
S21	1 Ω	A3 124 31.0
S22	1,4 Ω	
S41	100 Ω	
S42	5,2 Ω	
S43	1 Ω	A3 124 05.1
S45	1 Ω	
S44	1 Ω	A3 124 06.1
S46	1 Ω	
S47	1 Ω	A3 124 32.0
S48	1 Ω	
S49	2,5 Ω	
S50	7,5 Ω	
S40	37 Ω	A3 110 66.0
S23	8 Ω	A3 122 38.2
S24	1 Ω	
S25	5 Ω	
C31	115 pF	
C32	115 pF	
C56	115 pF	

S27	3 Ω	A3 121 94.2
S28	4,8 Ω	
S29	3 Ω	
S29a	4,8 Ω	
C29	115 pF	
C30	115 pF	
S30	100 Ω	A1 000 68.2
S31	260 Ω	A3 169 45.0
S32	360 Ω	
S33	1 Ω	
S34	7 Ω	
S51	1 Ω	A3 166 19.3
C1	50 µF	48 317 59/50+50
C2	50 µF	
C3	3-30 pF	28 212 36.4
C4	56 pF	48 203 05/56E
C5	3-30 pF	28 212 36.4
C6	3-30 pF	28 212 36.4
C7	150 pF	48 203 20/150E
C8	100 pF	48 203 01/100E
C9	15000 pF	48 750 10/15K
C10		49 001 66.1
C11		
C12		
C13	22000 pF	48 758 20/22K
C14	47000 pF	48 750 10/47K
C15	150 pF	48 203 20/150E
C16	82000 pF	48 751 10/82K
C17	150 pF	48 203 20/150E
C18	3-30 pF	28 212 36.4
C19	39 pF	48 203 05/39E
C20	3-30 pF	28 212 36.4
C21	3-30 pF	28 212 36.4
C22	100 pF	48 203 01/100E
C23	0,22µF	48 751 10/220K
C24	150 pF	48 203 20/150E
C25	100 pF	48 203 20/100E
C26	220 pF	48 203 20/220E
C27	200 pF	48 336 01/200E
C28	15000 pF	48 750 10/15K
C29	115 pF	Coils Bobinas
C30	115 pF	
C31	115 pF	
C32	115 pF	
C33	12 pF	48 201 10/12E
C34	47000 pF	48 750 10/47K
C35	10 µF	48 313 09/10

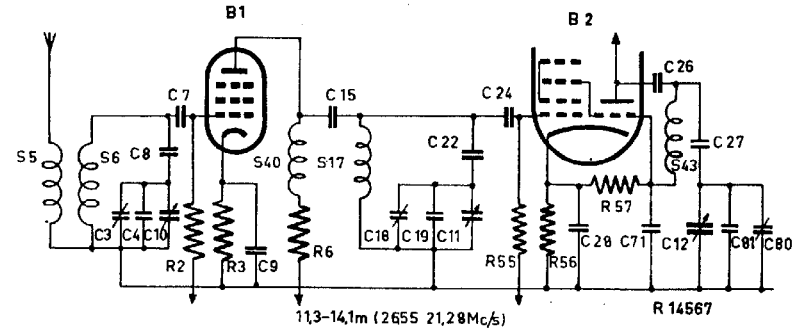
C36	470	pF	48 203 20/470E
C37	50	µF	48 313 22/50
C38	3900	pF	48 751 10/3k9
C39	680	pF	48 203 20/680E
C41	47	pF	48 203 10/47E
C42	680	pF	48 203 20/680E
C43	150	pF	48 203 20/150E
C44	1500	pF	49 059 87.0
C45	50	µF	48 313 22/50
C46	680	pF	48 203 10/680E
C47	10000	pF	48 751 20/10K
C49	20000	pF	48 750 10/10K par.
C50	22	pF	48 201 20/22E
C51	5,6	pF	48 201 20/5E6
C52	33000	pF	48 751 10/33K
C54	6800	pF	48 751 10/6K8
C55	2200	pF	48 751 10/2K2
C56			coils-bobinas
C60	1000	pF	48 758 20/1K
C61	33000	pF	48 751 10/33K
C62	1000	pF	48 758 20/1K
C63	68	pF	48 203 20/68E
C64	270	pF	48 203 10/270E
C71	150	pF	48 336 01/150E
C72	2500	pF	48 429 02/2K5
C73	50	pF	49 005 50.2
C74	3-30	pF	28 212 36.4
C75	3-30	pF	28 212 36.4
C76	47000	pF	48 750 10/47K
C77	82000	pF	48 751 10/82K
C80	3-30	pF	28 212 36.4
C81	56	pF	48 336 05/56E
C83	1500	pF	49 059 87.0
C84	450	pF	48 429 02/450E
C90	22000	pF	48 757 20/22K
C95	1500	pF	49 059 87.0
R1	1200	Ω	49 379 79.0
R2	1	MΩ	A9 999 00/1M
R3	330	Ω	/330E
R4	0,1	MΩ	/100K
R5	1000	Ω	/1K
R6	10000	Ω	/10K

R7	28000	Ω	A9 999 00/56K par
R8	1	MΩ	/1M
R9	1	MΩ	/1M
R10	47000	Ω	/47K
R11	2,2	MΩ	/2M2
R12	0,68	MΩ	/680K
R14	0,18	MΩ	/180K
R15	1	MΩ	/1M
R16	1	MΩ	/1M
R17	1	MΩ	/1M
R18	0,65	MΩ	49 501 11.0
R19	0,2	MΩ	
R20	0,47	MΩ	A9 999 00/470K
R21	1	MΩ	/1M
R22	0,56	MΩ	/560K
R24	2,2	MΩ	/2M2
R25	1800	Ω	/1K8
R26	0,22	MΩ	/220K
R27	0,65	MΩ	49 500 64.0
R28	0,2	MΩ	
R29	27000	Ω	A9 999 00/27K
R30	0,1	MΩ	/100K
R31	10000	Ω	/10K
R32	2200	Ω	/2K2
R33	1	MΩ	/1M
R34	390	Ω	/390E
R35	6,8	MΩ	/6M8
R36	1	MΩ	/1M
R37	0,15	MΩ	/150K
R38	0,15	MΩ	/150K
R39	1000	Ω	/1K
R40	0,68	MΩ	/680K
R41	100	Ω	/100E
R42	0,68	MΩ	/680K
R43	1000	Ω	/1K
R44	0,22	MΩ	/220K
R45	56	Ω	/56E
R46	0,68	MΩ	/680K
R47	0,22	MΩ	/220K
R48	3900	Ω	/3K9
R49	0,65	MΩ	49 501 23.0
R50	2	MΩ	
R51	0,15	MΩ	A9 999 00/150K
R52	0,56	MΩ	/560K
R53	68000	Ω	/68K
R54	82000	Ω	/82K
R55	1	MΩ	/1M
R56	180	Ω	/180E
R57	47000	Ω	/47K
R58	27000	Ω	/27K

R59	0,47	MΩ	A9 999 00/470K
R60	0,1	MΩ	A9 999 00/100K
R61	10	MΩ	A9 999 00/10M
R62	1	MΩ	A9 999 00/1M
R63	0,1	MΩ	A9 999 00/100K
R64	100	Ω	48 516 10/100E
R65	1000	Ω	A9 999 00/1K
R66	1	MΩ	/1M
R67	1	MΩ	/1M
R68	2200	Ω	+ /2K2

ÜSt/MS
27-2-53

FX727A



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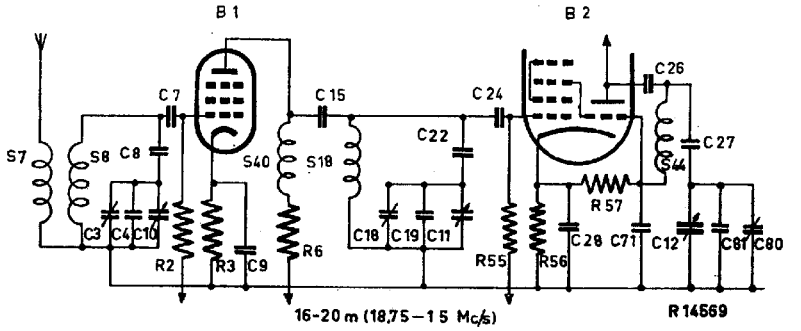

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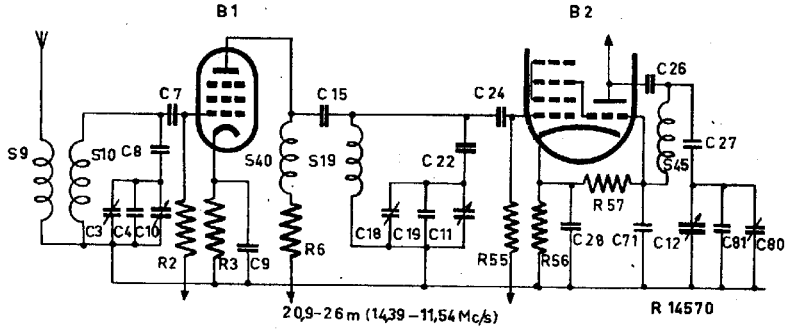
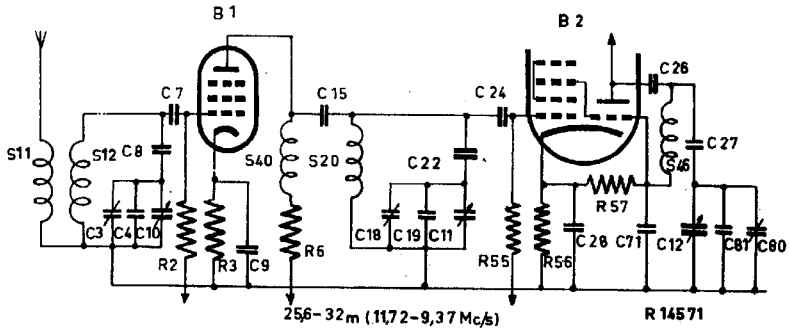
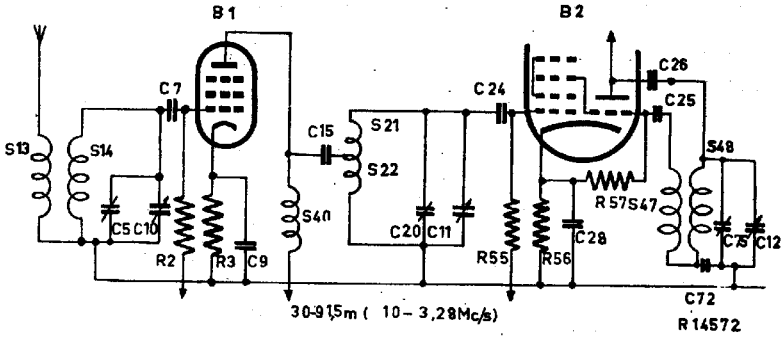


c

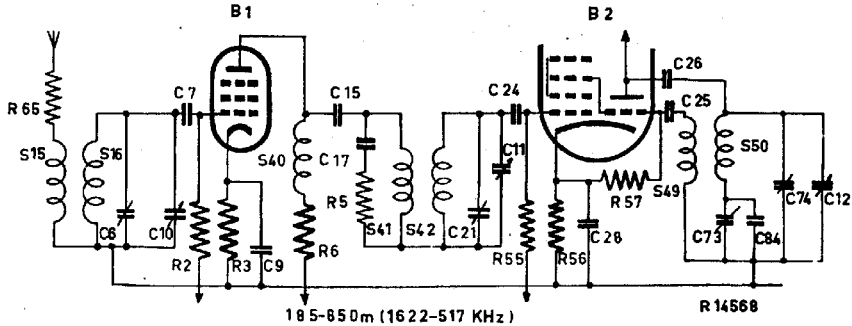
Fig.1


B 1
B 2
S11
S12
C8
C7
S40
C15
S20
C24
C22
C26
C27
S45
R57
C3
C4
C10
R2
R3
C9
R6
C18
C19
C11
R55
R56
C28
C71
C12
C87
C80
256-32m (11,72-9,37 Mc/s)
R 14571

d

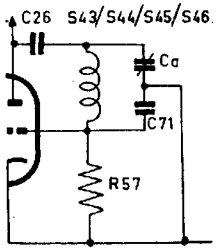

B 1
B 2
S13
S14
C7
C15
S21
S22
C24
C26
C25
S48
R57
S47
C5
C10
R2
R3
C9
S40
C20
C11
R55
R56
C28
C75
C12
C72
30-91,5m (10- 3,28Mc/s)
R 14572

e


B 1
B 2
R 65
S15
S16
C7
S40
C15
C17
R5
C24
C11
C26
C25
S50
R57
S49
C74
C12
C6
C10
R2
R3
C9
R6
S41
S42
C21
R55
R56
C28
C73
C84
185-850m (1622-517 KHz)
R 14568

f

Fig.1



R 14574

Fig.2

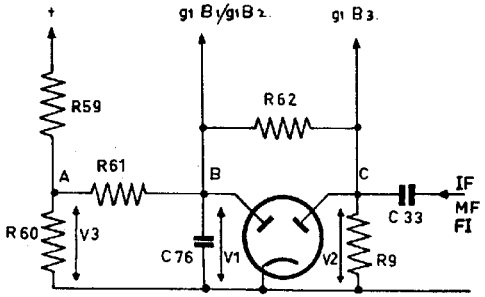


Fig.3

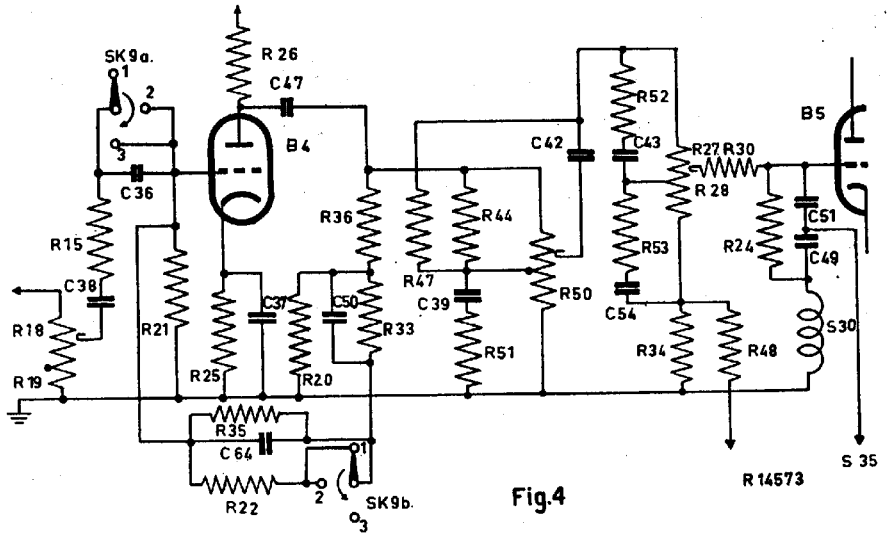


Fig.4

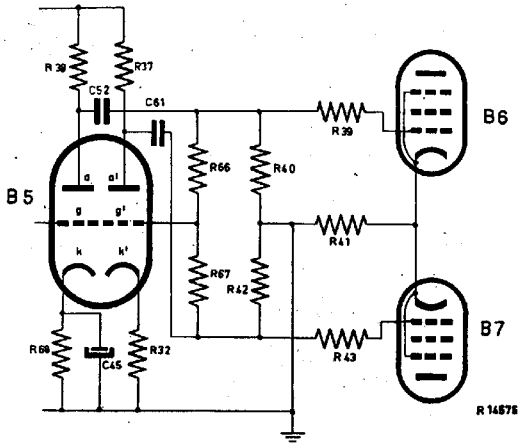

R 38
R37
C52
C61
B5
a
a'
g
g'
k
k'
R66
R40
R67
R42
R 39
R41
R 43
B6
B7
R 14575

Fig.5

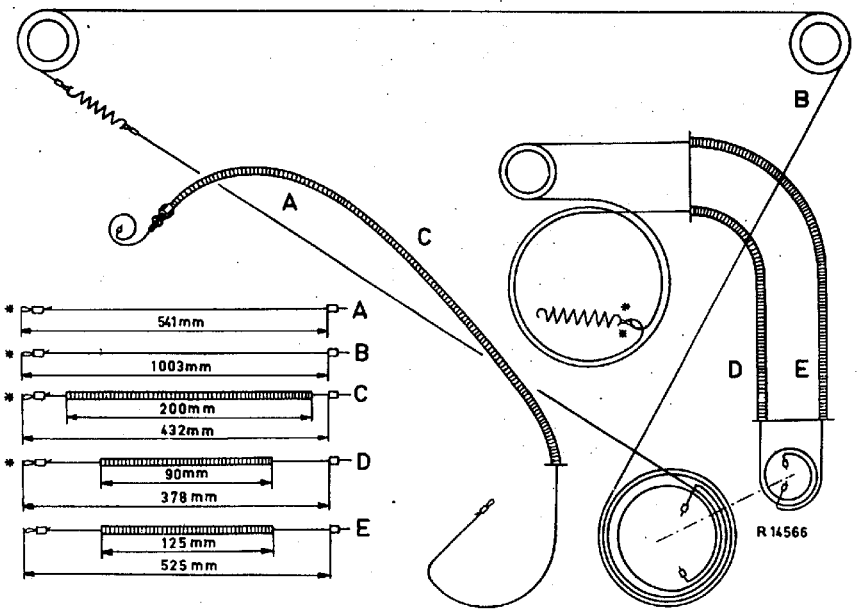

A
B
C
D
E
541mm
1003mm
200mm
432mm
90mm
378 mm
125 mm
525 mm
R 14566

Fig.6

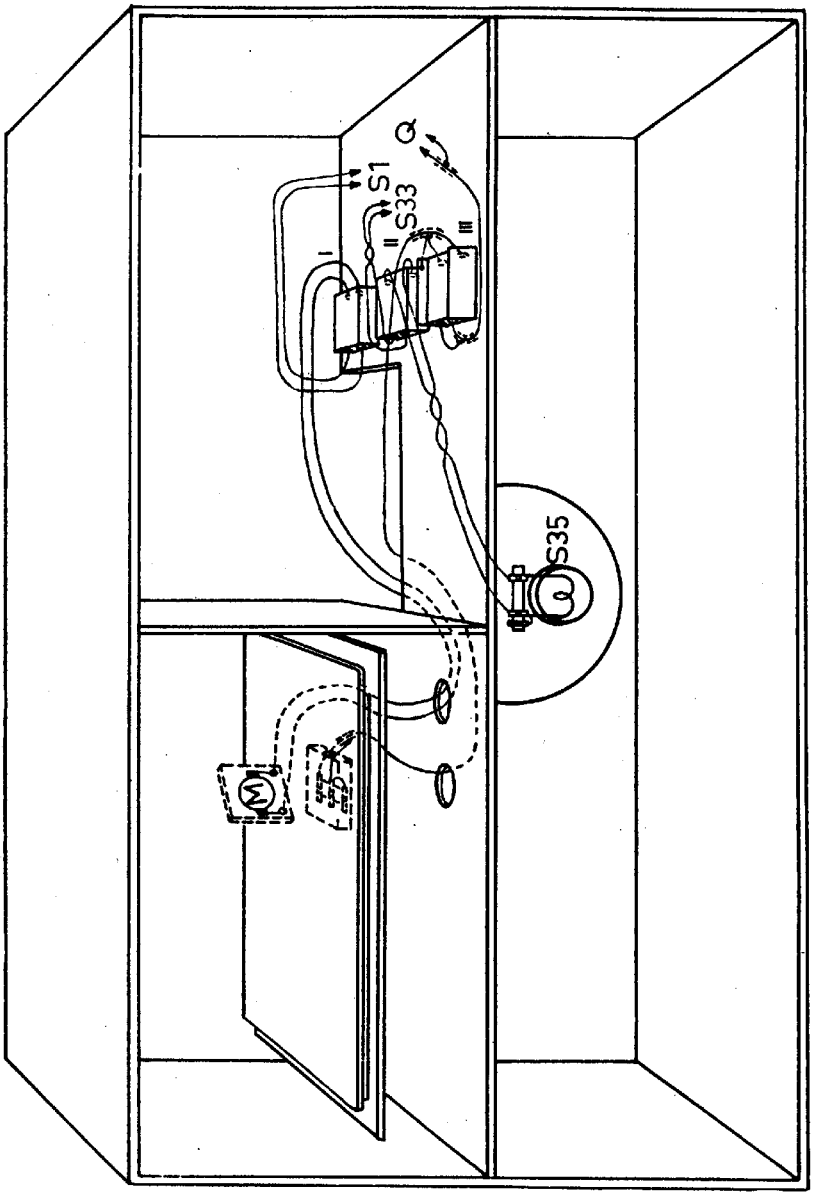
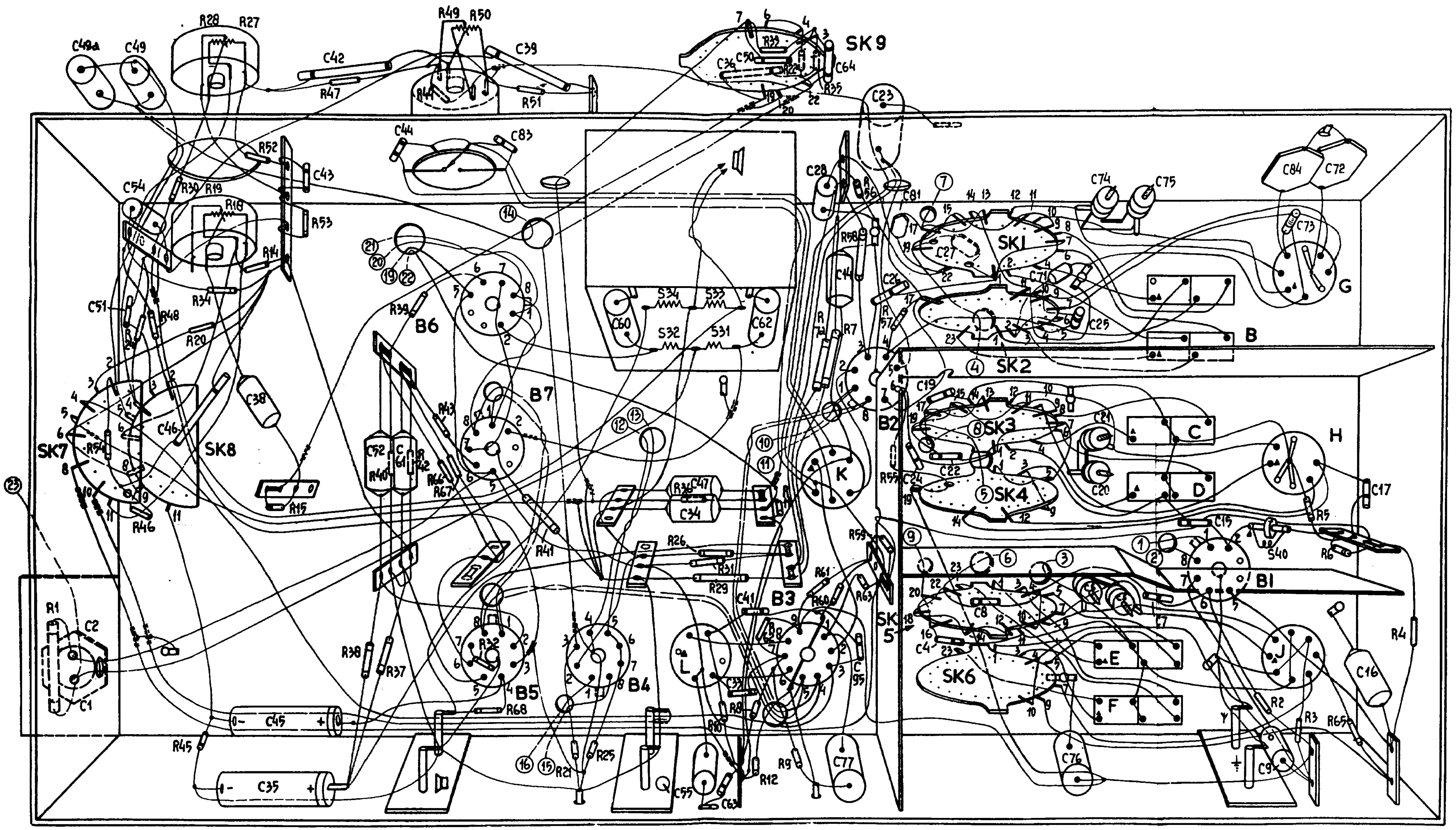


Fig.7

S	34.32. 33.31.L. K. E.F. C.D. A.B. 40. G.H.J.
C	2.1.49a. 51.54.49. 46. 38.45.35.43. 42. 52.61.44. 39.83. 60. 47.34.55.63.33.41.36.62.50. 64.28.14.77.95.23.26.81.24.19.22.4. 27.8. 71.25.76.74.21.20.6.5.75. 7. 15. 9.84.73. 72. 17.16.
R	1. 54. 24.46.48.30.20.45.28.27.19.18.34.52.14.15.53. 47. 38. 37.40.42.39.44.43.66.67.49.50.32.68. 51.41. 21.25. 36.26.31.29.10.8.12.62.33.11.22.9.35.61.7a.7.60.56.58.63.59.57.55. 2. 3. 5. 6. 65. 4.



R 14579

Fig.11

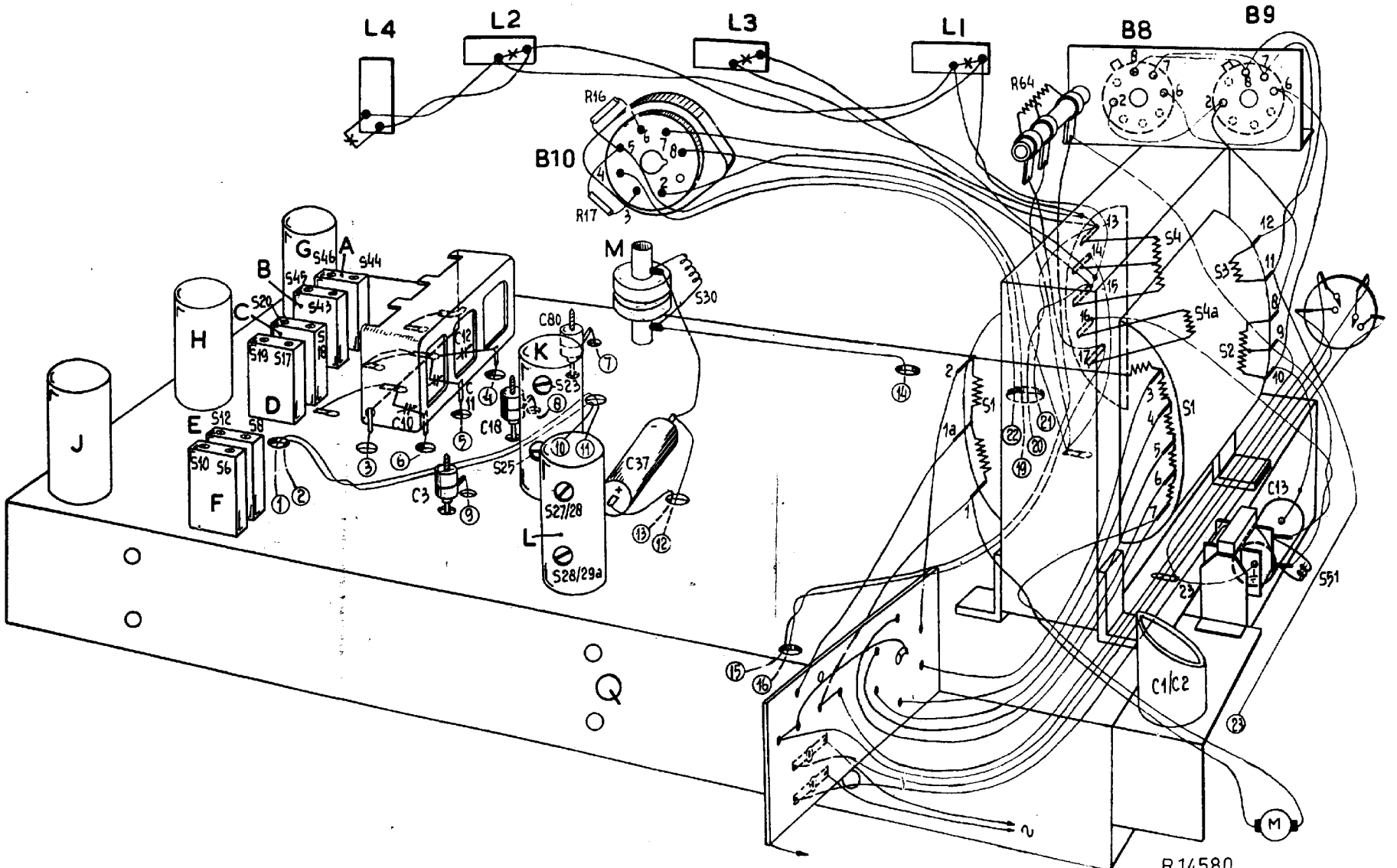

L4
L2
L3
L1
B8
B9
B10
R16
R17
R64
M
S30
G
A
B
C
D
E
F
H
J
K
L
Q
S44
S45
S46
S43
S20
S19
S17
S18
S12
S8
S10
S6
S25
S23
S27/28
S28/29a
C80
C10
C11
C12
C18
C3
C37
S4
S4a
S3
S2
S1
C13
S51
C1/C2
R14580

Fig.12

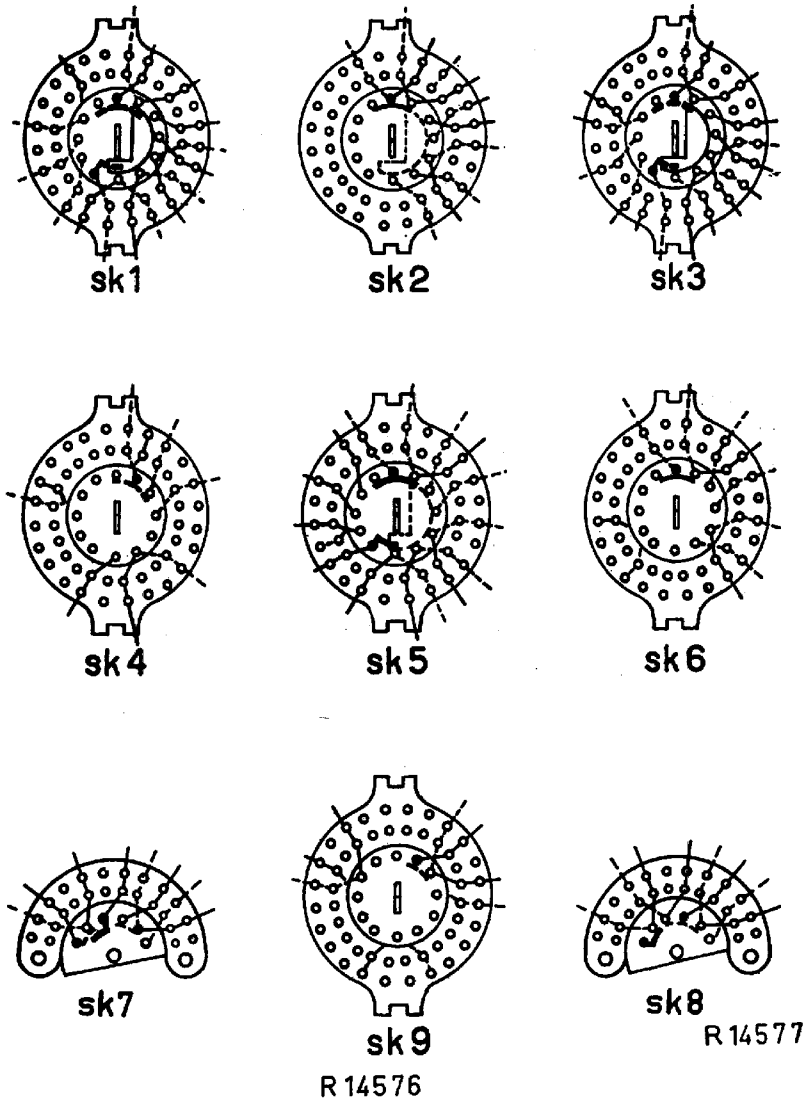

sk1
sk2
sk3
sk4
sk5
sk6
sk7
sk8
sk9
R14576
R14577

Fig.9

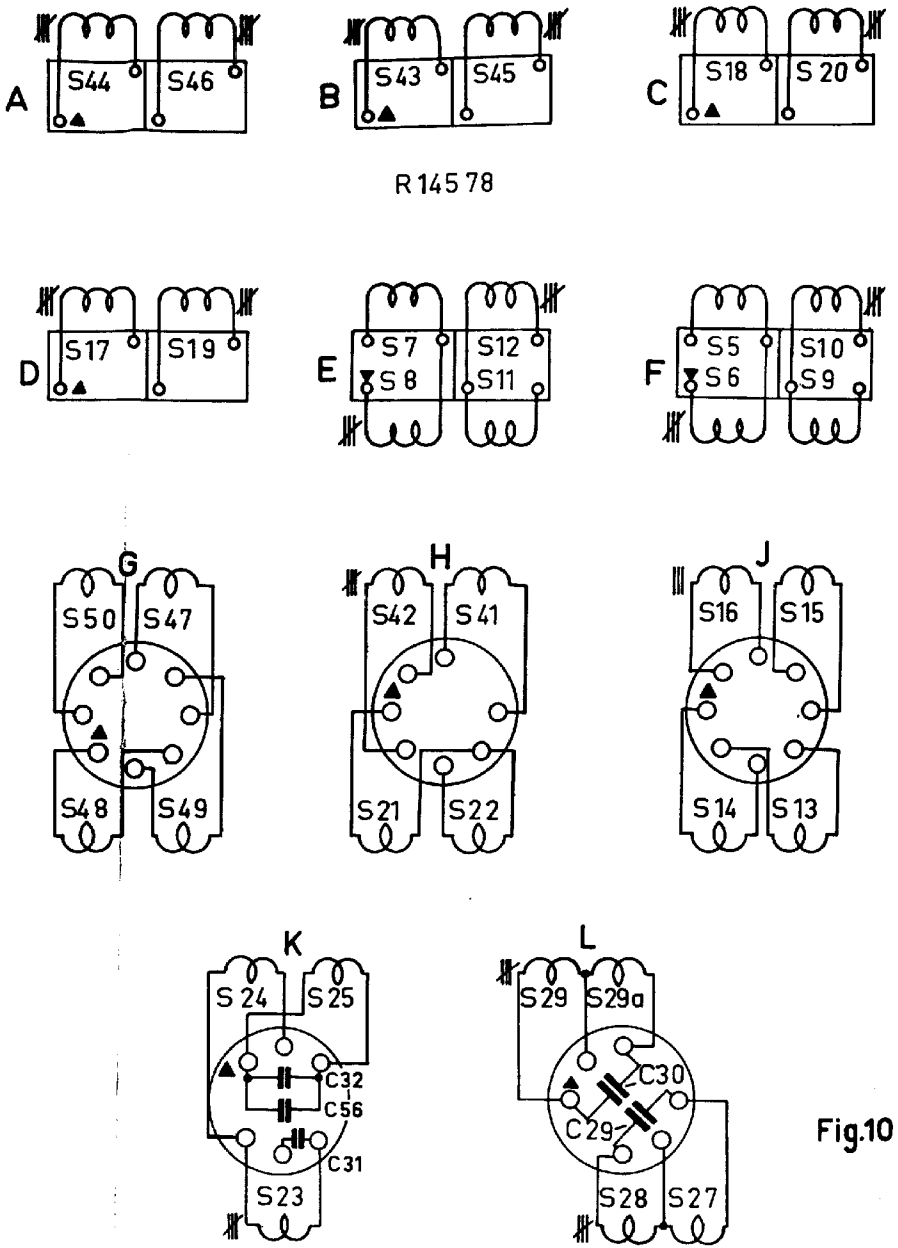

A
S44
S46
B
S43
S45
C
S18
S20
R14578
D
S17
S19
E
S7
S8
S12
S11
F
S5
S6
S10
S9
G
S50
S47
S48
S49
H
S42
S41
S21
S22
J
S16
S15
S14
S13
K
S24
S25
C32
C56
C31
S23
L
S29
S29a
C30
C29
S28
S27

Fig.10

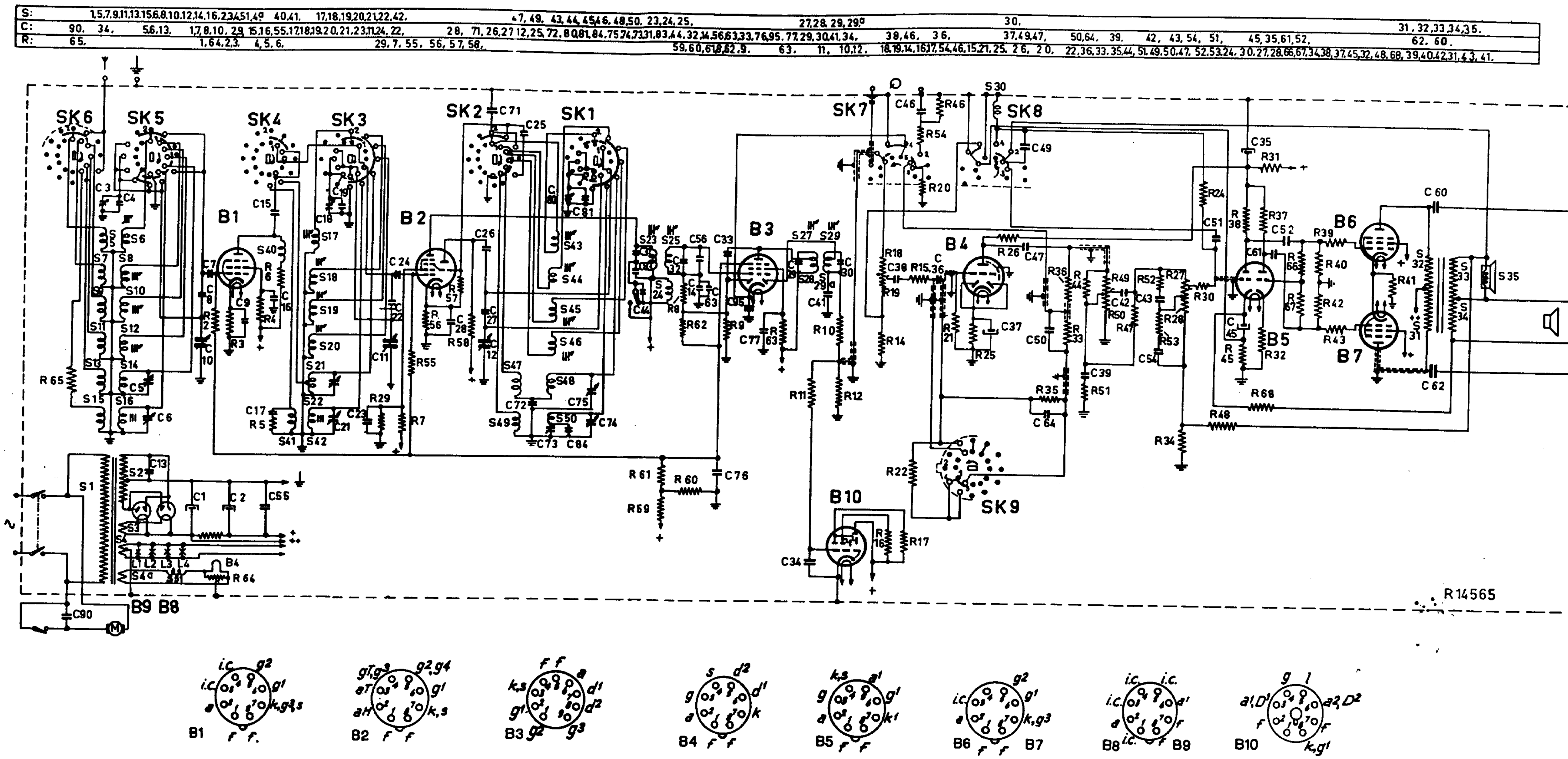

S:
C:
R:
SK6
SK5
SK4
SK3
SK2
SK1
SK7
SK8
SK9
B1
B2
B3
B4
B5
B6
B7
B9 B8
B10
R14565
B1
B2
B3
B4
B5
B6 B7
B8 B9
B10

Fig.8