

PHILIPS

SERVICE NOTES

for the receiver

BX 311 A

1953.

For A.C. mains supply.

GENERAL

WAVERANGES

S.W.2 16.5 - 50.7 m (18.2 - 5.92 Mc/s)
 M.W. 185 - 580 m (1622 - 517 kc/s)
 L.W. 1053 - 1974 m (285 - 152 kc/s)

CONTROLS

From left to right:

1. Mains switch + volume control
lever: AM-PU-switch.
2. Tone control.
lever: Bass-switch.
3. Waverange switch.
4. Tuning.

VALVES

B1 : ECH42
 B2 : EAF42
 B3 : EBC41
 B4 : EL 41
 B5 : AZ 41

DIMENSIONS

Length: 40 cm) knobs
 Depth : 20 cm) inclu-
 Height: 26.5cm) ded.

WEIGHT: 6 kg.

DIALLAMP

L1 : 8045 D-00

I.F. : 452 kc/s

MAINS VOLTAGE

110, 125, 145, 200, 220, 245V.
(40-100 c/s).

CONSUMPTION

45 Watt (220V 50 c/s).

LOUDSPEAKER

Type number 9770 Z = 5 ohms.

BANDWIDTH

The I.F. bandwidth (1:10)
 measured from g1 of B1 is
 about 10.75 kc/s. The "overall"
 bandwidth measured from the
 aerial socket is about 10,5
 kc/s at 1000 kc/s and about
 10 kc/s at 547 kc/s.

93 979 74.1.05

TRIMMING

There is no need to uncase the chassis for trimming. The position of the trimmers is indicated in fig.1.

A. I.F. BAND-PASS FILTERS

1. Turn the variable capacitor to minimum capacity.
2. Turn the waverange switch to M.W.
3. Turn the volume control to maximum.
4. Turn tone control to "quality".
5. AM-PU-switch on A.M.
6. Connect a voltmeter via a trimming transformer to the sockets for the extra loudspeaker.
7. Unscrew the iron cores of the I.F. band-pass filters almost entirely.
8. Apply a modulated signal of 452 kc/s via a capacitor of 33000 pF to g1 of B1.
9. Trim according to the table below:
4th I.F. circuit S21-S22-C26
3rd I.F. circuit S19-S20-C25
1st I.F. circuit S15-S16-C21
2nd I.F. circuit S17-S18-C22
10. Seal the cores.

NOTE:

The iron cores of the I.F. band-pass filters are sealed with a vase-line compound (see List of Parts and Tools) which can easily be removed in the cold state with a screwdriver. Heating of the core damages the coreholder and makes trimming impossible.

B. I.F. WAVETRAP

1. Turn the variable capacitor to minimum capacity.
2. Turn the waverange switch to M.W.
3. Turn volume control to maximum.
4. Turn tone control to "quality".
5. AM-PU-switch to AM.
6. Connect a voltmeter via trimming transformer to the sockets for the extra loudspeaker.
7. Unscrew the iron core of S26 almost entirely.
8. Apply a modulated signal of 452 kc/s via a normal dummy aerial to the aerial sockets.
9. Trim S26 to minimum output voltage at the first minimum from the position "unscrewed core".
10. Seal the core.

C. R.F. AND OSCILLATOR CIRCUITS

Trimming is done with the trimming points on the dial. Before starting to trim, the pointer has to be adjusted to the trimming point on the left of the dial, with the variable capacitor set to minimum capacity.

The following applies to all waveranges:

1. Turn the volume control to maximum.
2. Turn the tone control to "quality".
3. AM-PU-switch to AM.
4. Connect an outputmeter via a trimming transformer to the sockets for the extra loudspeaker.

Trim as indicated in the following table, keeping strictly to the order given below.

1	Waverange switch in position	M.W.	L.W.	S.W.
2	With the tuning knob set the pointer to trimming mark for	548.3 m	1386 m	48.4 m
3	Apply to aerial socket via the dummy aerial a modulated signal of	547 kc/s	159 kc/s	6.2 Mc/s
4	Trim to maximum output voltage	S14, S8	C17 S9	S12, S6
5	With the tuning knob set the pointer to the trimming mark utmost left on the dial			
6	Apply to aerial socket via the dummy aerial a modulated signal of	1630 kc/s	-	20.1 Mc/s
7	Trim to maximum output voltage	C16, C9		C15
8	Repeat the points	2-8		2-8
9	Seal the trimmers and cores	S14, S8, C16, C9	S9, C17	S12, S6, C15

REPLACEMENT OF PARTS

TAKING THE CHASSIS OUT OF THE CABINET

1. Remove the rear panel and the bottom plate.
2. Unsolder the loudspeaker connections.
3. Pull the knobs from the spindles.
4. Detach the station pointer from the driving cord.
5. Unscrew the 4 bottom screws.
6. Carefully draw the chassis out of the cabinet.

CABLE DRIVE FOR STATION POINTER AND VARIABLE CAPACITOR

The run and the length of the driving cables are shown in fig.3, with the variable capacitor set to maximum capacity. When laying on the cords, bear the following points in mind.

1. Follow exactly the run of the cable and cord as shown in the diagram.
2. When laying the cord always begin at the smallest pulley.
3. Turn the small pulley till the groove in it is above the bracket and shove the grip (in the mid of the cord) in this groove and turn the pulley back in the right position.
4. The two loops of the cord on the tuning spindle has to move in the same direction, when turning the spindle.
5. Make sure that the tension of the cord and cables is not too small to prevent slip and play in the drive.

VOLTAGES AND CURRENTS

		Va	Vg2(+4)	Vk	Ia	Ig2(+4)
B1	Hexode	245	55	-	1.9	2.2
	Triode	90	-	-	4.9	-
B2	Pentode	245	55	-	4.4	0.85
B3	Triode	110	-	1.25	0.6	-
B4	Pentode	235	245	6	36	4.8

VC 1 = 265 Volts
VC 2 = 245 Volts

I prim (220V) = 195 mA

These measurements have been taken with the Universal Measuring Instrument GM4257. Receiver connected to 220 V 50 c/s, waverange switch to M.W., AM-PU switch to A.M. and without any signal on the aerial socket.

MECHANICAL SPARE PARTS LIST

When ordering always quote:

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

Description	Code number
Cabinet (Philite, colour MD)	23 643 95.0
Grommet under chassis	A3 327 14.0
Pointer	A3 693 37.0
Speed nut for fixing baffle	A3 321 74.0
Lever (colour MD)	23 643 94.0
Knop (colour UD)	A3 369 32.0
Spring for fixing coils	A3 652 58.3
Spring in drum of variable capacitor	A3 646 26.0
Spring (pointer drive)	A3 646 14.0
Spring for fixing coil	A3 652 92.0
Socket plate (aerial-earth)	A3 382 13.0
Voltage adaptor	A3 228 85.0
Switch	A3 402 44.0
Disc for drive	P4 095 01.0
Variable capacitor	see capacitors
Lampholder	A3 343 86.0
Dial (North)	A3 223 48.0
Nut for potentiometer	49 758 21.0
Spindle for potentiometer	A3 432 95.0
Mounting plate for potentiometer	A3 537 90.0
Vaseline Compound	X 009 47.0

S1)	65	Ω		C24	0.1	μF	A9 999 06/100K
S2)	500	Ω		C25)			Spoelen, coils
S3)	1	Ω	A3 141 35.3	C26)			bobines
S4)	1	Ω		C27	82	pF	A9 999 04/82E
S5)	1.7	Ω		C28	12000	pF	A9 999 06/12K
S6)	1	Ω	A3 125 27.0	C29	15000	pF	A9 999 06/15K
S7)	48	Ω		C30	8200	pF	A9 999 06/8K2
S8)	2.8	Ω	A3 125 35.0	C31	2700	pF	A9 999 06/2K7
S9)	24-8	Ω	A3 125 35.0	C32	3300	pF	A9 999 06/3K3
S26)				C33	6800	pF	A9 999 06/6K8
S10)	1.5	Ω		C34	0.1	μF	A9 999 06/100K
S11)	1	Ω	A3 125 56.0	R1	1200	Ω	48 379 78.0
S12)	1	Ω		R2	12000	Ω	A9 999 00/12K
S13	4.2	Ω		R3	8200	Ω	A9 999 00/8K2
S14)	11	Ω	A3 125 72.0	R4	0.82	MΩ	A9 999 00/820K
S15)	2.9	Ω		R5	33000	Ω	A9 999 00/33K
S16)	4.8	Ω		R6	33000	Ω	A9 999 00/33K
S17)	2.9	Ω		R7	1.5	MΩ	A9 999 00/1M5
S18)	4.8	Ω	A3 121 94.2	R8	56000	Ω	A9 999 00/56K
C21)	115	pF		R9	47000	Ω	A9 999 00/47K
C22)	115	pF		R10	1	MΩ	A9 999 00/1M
S19)	2.9	Ω		R11	27000	Ω	A9 999 00/27K
S20)	4.8	Ω		R12)	0.05	MΩ	48 900 00/
S21)	2.8	Ω		R13)	0.45	MΩ	DL50K+450K
S22)	4.8	Ω	A3 121 94.2	R14	1800	Ω	A9 999 00/1K8
C25)	115	pF		R15	0.12	MΩ	A9 999 00/120K
C26)	115	pF		R16	50000	Ω	49 472 49.0
S23)	900	Ω		R18	0.1	MΩ	A9 999 00/100K
S24)	1	Ω	A3 152 13.1	R19	0.68	MΩ	A9 999 00/680K
S27)	1	Ω		R20	1000	Ω	A9 999 00/1K
C1)	50+50	μF	48 317 59/	R21	150	Ω	A9 999 00/150E
C2)			50+50	R22	39000	Ω	A9 999 00/39K
C4)	39	pF	A9 999 04/39E				
C5)							
C6)	11-500	pF	49 001 42.0				
C7)	270	pF	A9 999 04/270E				
C8)	1800	pF	A9 999 06/1K8				
C9)	30	pF	28 212 36.4				
C10)	68	pF	A9 999 04/68E				
C11)	220	pF	A9 999 04/220E				
C12)	470	pF	A9 999 04/470E				
C13)	56	pF	A9 999 04/56E				
C14)	82	pF	A9 999 04/82E				
C15)	30	pF	28 212 36.4				
C16)	30	pF	28 212 36.4				
C17)	250-400	pF	49 005 54.0				
C18)	100	pF	A9 999 04/100E				
C19)	430	pF	A9 999 05/430E				
C20)	1800	pF	A9 999 06/1K8				
C21)			Spoelen-coils				
C22)			bobines				
C23)	47000	pF	A9 999 06/47K				

BX.311 A

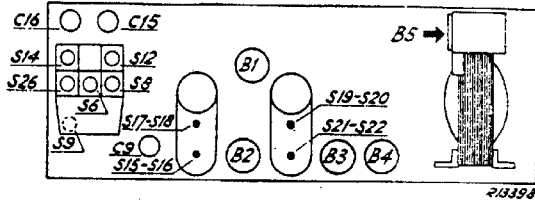


Fig.1

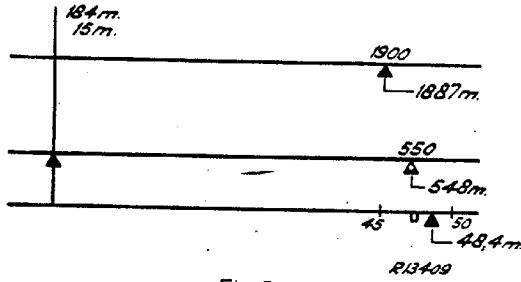
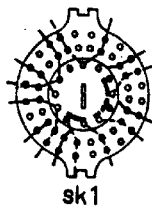
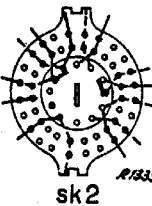


Fig.2



sk1



sk2

R13399

Fig.4

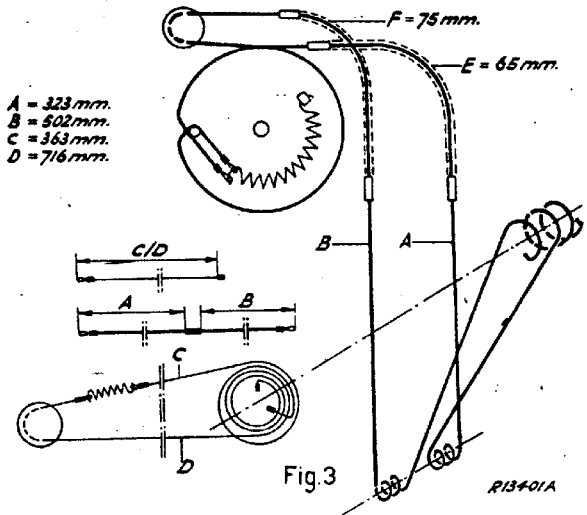


Fig.3

R13401A

BX 311 A

S:	26, 9, 5, 7, 6, 8, 1, 2, 3, 4	10, 11, 12, 13, 14	15, 16, 17, 18	19, 20, 21, 22	23, 24, 25, 27
C:	7, 10, 1, 8	13, 12, 20, 6	14, 17, 18, 19, 15, 16, 21	22, 23, 24, 31	25, 27, 29, 26, 30
R:	2	4, 1	3	5, 6	7, 8
					9, 11, 9, 12, 13, 16
					14, 15, 18, 19, 20, 22, 21
					28, 34, 32
					33
					16

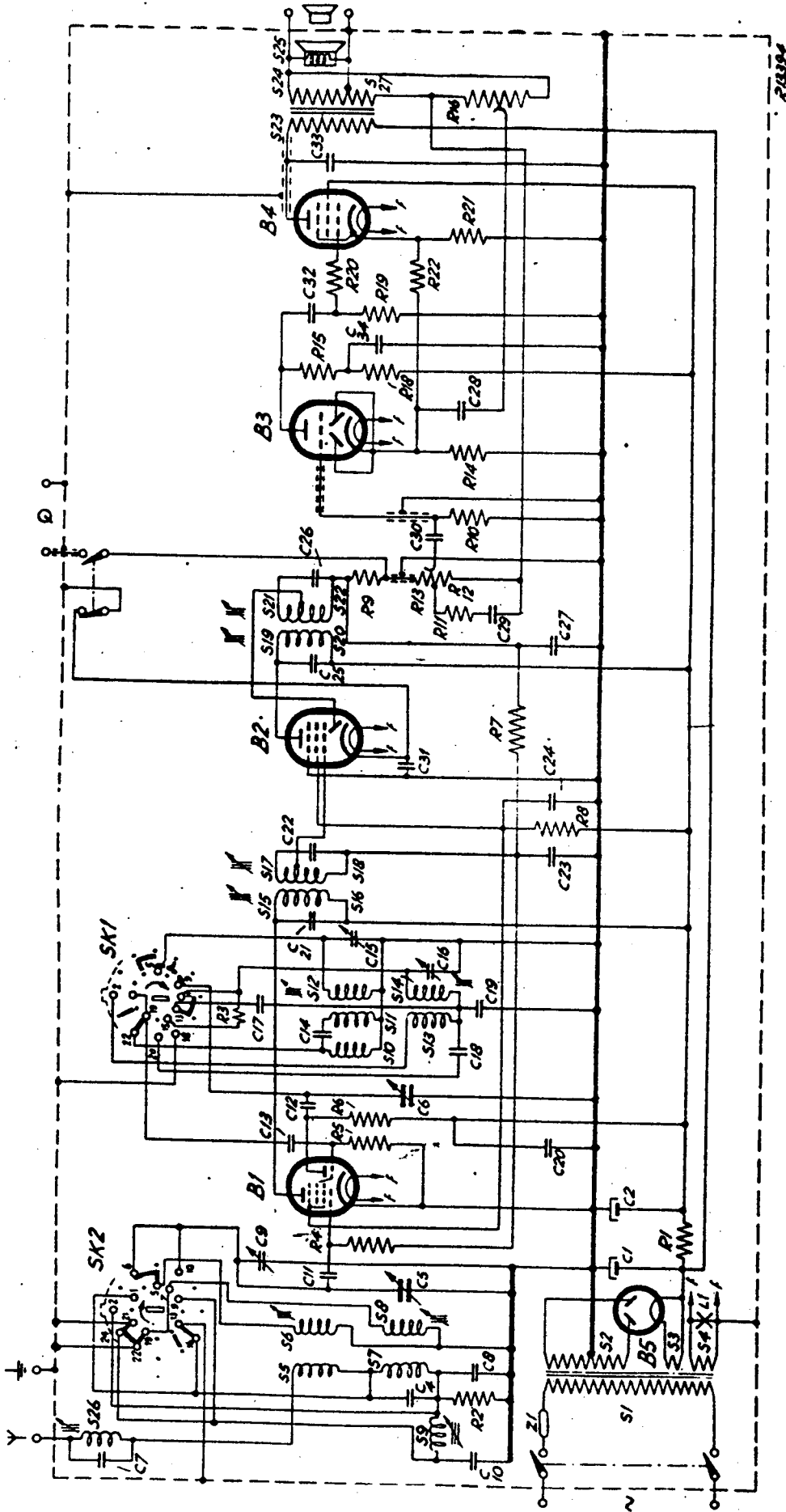


Fig.5

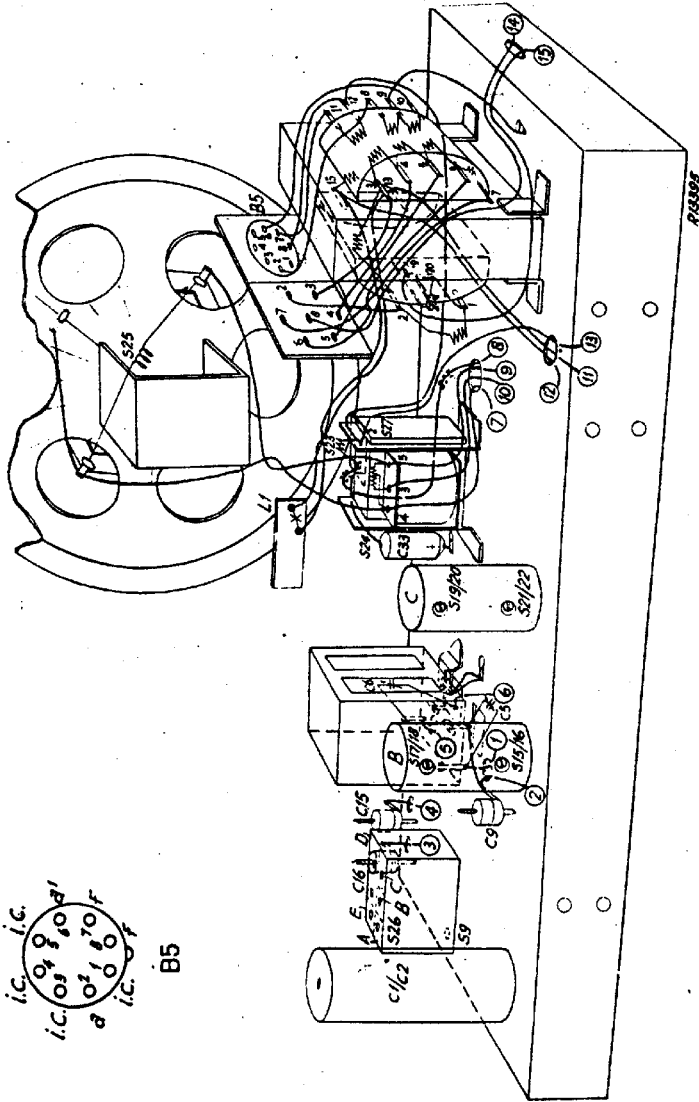


Fig. 7