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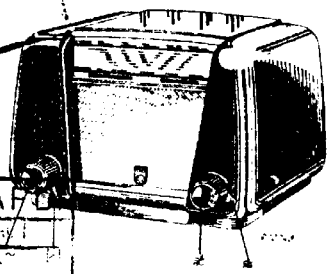
PHILIPS SERVICE NOTES

for the receiver

BX307U



1950 For A.C. ~~and D.C. mains~~ supplies

WAVEBANDS

S.W.2: 13.5 - 28 m (22.2 - 10.7 Mc/s)
S.W.3: 30 - 90 m (10 - 3.34 Mc/s)
M.W. : 187 - 565 m (1604 - 531 kc/s)

VALVE COMBINATION

B1 : UCH42
B2 : UAF42
B3 : UBC41
B4 : UL41
B5 : UY41

PILOT LAMP

L1 : 8097D-00

BANDWIDTH

The I.F. bandwidth (1:10) measured from the control grid g1 of B1 is about 14 kc/s. The "overall" bandwidth measured from the aerial socket is both at 1000 kc/s and 250 kc/s, 13 kc/s.

CONSUMPTION

45 W (220 V≂)
35 W (117 V≂)

WEIGHT

Approx.: 3,2 kg (valves included).

TRIMMING FREQUENCIES

21.6 Mc/s
9.6 Mc/s
1630, 550 kc/s

INTERMEDIATE FREQUENCY

452 kc/s

LOUDSPEAKER

Type 9742X Z = ,
5 ohm (1000 c/s

KNOBS

Frontside right:
Tuning and waverange-switch
left:
mainsswitch, volume control and tone switch

MAINS TENSIONS

Adaptable for 117 and 220 V≂
By short-circuiting R4 suited for 200V≂ (position 220V≂).

DIMENSIONS

Height: 20cm)knobs
Width : 27cm)incl.
Depth : 19cm)

Printed in Holland

IMPORTANT

When repairing or trimming a set while it is connected to A.C. mains, a transformer has to be used with separate windings. The secondary winding must not be earthed, and only one set may be connected to the transformer at a time. The chassis can then be earthed. The codenumber of a suitable type of transformer is given in the "List of Parts and Tools". When connecting the set to D.C. mains the connection must be made with the right polarity.

SOME PARTICULARS ABOUT THE PRINCIPLE DIAGRAM

This set has been provided with a frame-aerial, which is very effective on S.W.3 and M.W., while there is a capacitive aerial for the S.W.2 band. When an outdoor-aerial is used, both antennas remain connected to their circuits.

TRIMMING

For trimming the I.F. part the set need not be uncased but the screening plate, which covers the R.F. part, has to be removed. The oscillator frequency is higher than the signal frequency.

A. I.F. BANDFILTERS

1. Volume control to maximum.
2. Variable condenser to minimum capacity.
3. Earth chassis, taking into account the remarks above under Important.
4. Connect outputmeter via trimming transformer to loudspeaker connections.
5. Apply I.F. signal of 452 kc/s via a 33000 pF condenser to g1 of B1.
6. Loosen the screws on the I.F. transformers.
7. Trim successively to maximum output the 4th, 3rd, 1st and 2nd I.F. circuit (see fig.7).
8. Seal the screws with sealing compound.

B. H.F. AND OSCILLATOR CIRCUITS

1. Volume control to maximum. Earth the chassis taking into account the remarks under "Important".
2. Connect outputmeter via trimming transformer to loudspeaker connections.
3. Turn the variable condenser on minimum, adjust the pointer to the zeropoint on the dial. If necessary unscrew the fixing screw on the pointer and readjust the position of the pointer.
4. Wave range switch on M.W. and apply now a signal of 1630 kc/s.
5. Trim at maximum output C21 and C11.
6. Pointer on trimming point at 550 kc/s, apply a modulated signal of 550 kc/s to the aerial socket via the dummy aerial.
7. Trim at maximum output C18.
8. Waverangeswitch at S.W.3.
   Apply modulated signal of 9.6 Mc/s to the aerial socket via the dummy aerial. Tune the set on this frequency.

9. Trim C12 at maximum output.
10. Waverange switch at S.W.2. Apply a modulated signal of 21.6 Mc/s and tune the set on this frequency.
11. Trim C10 at maximum output.

REPAIRS AND REPLACEMENTS OF PARTS

DECASING THE CHASSIS

1. Remove the back panel.
2. Remove control knobs - tuning and volume control.
3. Unscrew pointer from driving cable.
4. Unsolder the loudspeaker connections & the connection to the capacitive aerial (above the loudspeaker).
5. Remove 2 screws at the bottom side and two at top side of the cabinet.
6. Draw the chassis out of the cabinet.

N.B.
After having uncased the chassis, the lever knob of the waverangeswitch and toneswitch can be taken out of the cabinet carefully.

DRIVING CABLE

The path of the driving cable is shown in fig.8. The variable condenser here stands in its minimum position, the length of the driving cords are 675 mm and 705 mm.

LOUDSPEAKER

The loudspeaker cannot be repared and has to be replaced, when defective.

WAVE RANGE SWITCH

The complete segments of the wave range switch are not mentioned in the "List of Spare parts". These segments have to be assembled in the service workshop. All components for them, can be found in the "General Spare parts List" on sheets D1 up to D4.
A special pair of pliers (code number 09 994 14.0, see sheet G2 of the General List) has been made for putting the switch segments together. With the aid of these pliers and the parts mentioned in the above sheets, any desired switch segment can be assembled. As a model one can take an old segment, but after studying the applied method of drawing, one can easily make a segment from the schematic diagram.
To facilitate the making of new segments a brief description is given of drawing to be followed. In the drawing a switch is showed as viewed from the operating side, the apparatus standing upright.
The numbers of the contact lugs in the circuit diagram correspond with those of the wiring diagram. The rotor is shown in the extreme anti-clockwise position. The contact springs of the stator are represented by small circles; the places on the stator where there are no contact springs are indicated by dots (see fig. 9a).

The outermost ring of circles are the stator contacts on the front of the segment (even numbers) while the innermost ring of circles are the contact springs at the back. (odd numbers). When looking through the cylindrical hole one sees the largest diameter at the front and the smallest at the back. These circles indicate the points of contact. The soldering lugs are displaced 22.5° to the right for the even numbers and 22.5° to the left for the odd numbers (see fig. 9b). The rotor contacts are represented by arcs and radial lines. Rotor contacts at the front are fully drawn while those at the back are drawn in dotted lines. Interconnections from front to back are indicated by fully-drawn radial lines. To assemble a segment, proceed as follows:

1. First fix the required number of contact lugs (A9 863 17.0) to the top of the stator, making sure that the actual point of contact lies over a hole in the rotor.
2. Push the rotor out of the stator, remove any hard paper burrs and fix the contacts on the rotor with the aid of the special pliers. Take care that the rotor contacts are not deformed by the pressure of the pliers. In fig.10a, b and c the faulty and the right contacts are shown.
3. Put the rotor back in the stator and affix the required number of contact lugs on the back of the stator.
4. See that the rotor can turn easily and makes good contact with the stator plugs.
5. Slightly grease the contacts with castor oil or a special switch lubricant.

CURRENT AND TENSIONS

		Vf	Va	Vg2(4)	Vk	Ia	Ig2(4)
UCH42 B1	Triode	14	90		-	4.9	
	Heptode		170	80	-	2.4	3
UAF42 B2		12.6	170	80	-	6.2	0.9
UBC41 B3		12.6	55	-	-	0 3	
UL41 B4		45	177	170	9	46	8.4
UY41 B5		31	-	-	-	-	-
		V	V	V	V	mA	mA

VC1 : 195 V VC2 : 170 V

The above mentioned values were measured with the GM 4257, the set to M.W. no signal applied to the aerial, mains tension 220 V~ . In the principle diagram the waverange switch is drawn in the S.W. position. The sequence of switching is : SW2, SW3, MW.

LIST OF SPARE PARTS AND TOOLS

When ordering always state:

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

Fig.	Pos.	Description	Code number
		Cabinet (044)	23 642 73.0
		Rear panel	A3 691 23.0
6	1	Bracket for fixing rear panel	A3 467 62.1
		Knob - tuning, volume control 2x✓	A3 365 67.0
		Lever knob - waverangeswitch (044) 1x✓	23 648 61.0
		Lever knob - tone switch (044) 1x✓	23 952 12.0
6	2	Bracket for fixing I.F. transformer	A3 652 42.0
		Pilot lampholder	A3 359 07.0
6	3	Plug socket plate - aerial - earth	A3 382 32.0
		Voltage adaptor plate	A3 227 91.0
		Knob for voltage adaptor plate (110/127 - 220V ≃) (111)	A3 364 73.1
		Gang condenser with drum	49 001 38.0
		Rubber grommet under gang condenser	49 922 26.2
		Grommet on pointer driving rod	23 687 77.0
		Station dial (Oversea)	A3 221 84.0
		Pointer	A3 691 12.0
		Tension spring in drum	A3 646 26.0
		Tension spring for driving cable	A3 646 35.0
		Spindle of the volume control	A3 426 80.2
		Grubscrew for the same	A3 578 86.0
		Tuning spindle	A3 333 01.3
		Holdspring for stopplate (wave-range switch)	A3 648 79.0
		MODEL -04	
		Cabinet (509)	23 643 25.0
		Rear panel	A3 691 93.0
		Pointer	A3 691 92.0
		Lever knob - waverange switch (509)	23 608 90.0
		Lever knob - tone switch (509)	23 952 19.0
		Station dial (Oversea)	A3 221 84.0
		TOOLS	
		Service oscillator	GM 2882 or GM 2883 or GM 2884
		Universal measure apparatus	GM 4256 or GM 4257
		Separating transformer	E4 848 03.0
		Vaseline compound	X 009 47.0

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WEERSTANDEN-RESISTANCES-RESISTANCES-WIDERSTAENDE

R1	1000 ohm	48 553 10/1K	R13	47000 ohm	48 550 10/47K
R2	220 ohm	49 379 62.0	R14	0,45 Mohm	49 501 14.0
R3	430 ohm		R14a	0,05 Mohm	
R4	200 ohm	49 364 63.0	R15	6,8 Mohm	48 550 10/6M8
R5	180 ohm		R16	0,47 Mohm	48 551 10/470K
R6	10000 ohm	48 425 10/10K	R17	0,82 Mohm	48 550 10/820K
R7	47000 ohm	48 550 10/47K	R18	150 ohm	48 553 10/150E
R9	22000 ohm	48 552 10/22K	R19	1000 ohm	48 550 10/1K
R11	22000 ohm	48 552 10/22K	R20		49 379 67.3
R12	2,7 Mohm	48 550 10/2M7	R21	82 ohm	48 550 10/82E

CONDENSATOREN-CONDENSERS-CONDENSATEURS-KONDENSATOREN

C1	50 uF	48 317 58/50+50	C19	15 pF	48 601 10/15E
C2	50 uF		C20	6.8 pF	48 601 20/6E8
C3	12-492pF	49 001 38.0	C21	30 pF	28 212 36.4
C4	12-492pF		C22	2400 pF	48 429 02/2K4
C5	1000 pF	48 757 20/1K	C23	390 pF	48 601 02/390E
C6	100 pF	48 601 10/100E	C24	115 pF	
C7	4700 pF	48 757 20/4K7	C25	115 pF	
C9	47000 pF	48 750 20/47K	C26	47000 pF	48 751 20/47K
C10	25 pF	49 005 49.2	C27	102 pF	
C11	25 pF	49 005 49.2	C28	102 pF	
C12	25 pF	49 005 49.2	C29	6800 pF	48 751 20/6K8
C13	330 pF	48 601 05/330E	C30	82 pF	48 601 10/82E
C14	47000 pF	48 752 20/47K	C31	390 pF	48 601 10/390E
C15	82 pF	48 601 10/82E	C32	6800 pF	48 751 20/6K8
C16	15000 pF	48 750 20/15K	C34	22000 pF	48 758 20/22K
C17	220 pF	48 601 10/220E	C36	47 pF	48 605 10/47E
C18	400-575	49 005 55.2	C38	220 pF	48 601 10/220E

SPOELEN-COILS-BOBINES-SPULE

S1	1.1 ohm	
S2	1 ohm	
S3	3.8 ohm	
S4	1 ohm	A3 123 50.0
S5	48 ohm	
S6	4.2 ohm	
S7	1 ohm	
S8	1 ohm	
S9	1 ohm	
S10	1 ohm	A3 122 97.0
S11	1 ohm	
S12	2.6 ohm	
S13	6.8 ohm	

S15	~~1,5~~ ohm	
S16	~~1,5~~ ohm	A3 122 84.0
C24		
C25		
S19	1,5 ohm	
S20	1,5 ohm	A3 122 84.0
C27		
C28		
S23	350 ohm	
S24	1 ohm	A3 168 88.1
S26	19 ohm	

I

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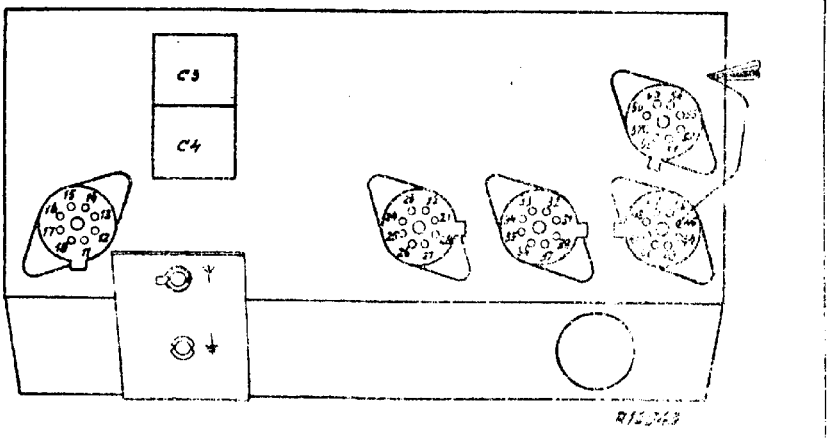


R15043

Ω

x 1	12	17	22	24	27	31	34	35	36	37	45						
	135	495	140	495	495	495	495	495	495	495	495						
x 1																	
x 10	47																
	125																
x 10^2	42	57															
	140	165															
x 10^3																	
x 10^4	13	14	15	25													
	350	265	350	350													
x 10^5	23	32	46														
	240	255	185														
5x 10^5	16	26	33														
	215	215	135														

µF

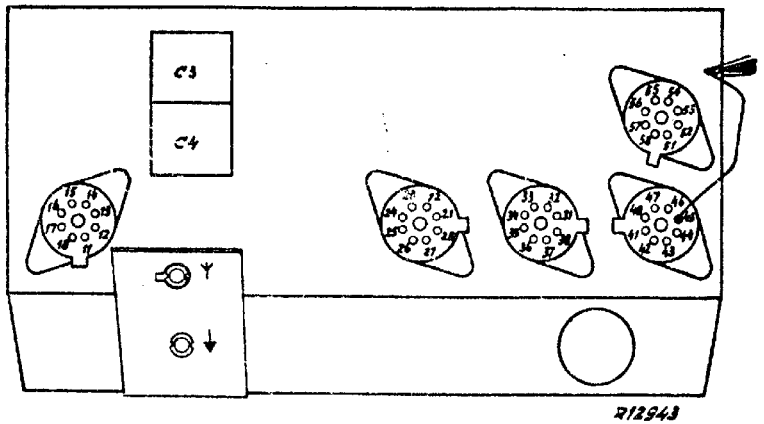
x 10^{-3}	32	42/32						x 1	42								
	240	240							135								
x 10^{-2}	15	16	25	52				x 10	45	47	57						
	290	200	290	220					240	80	245						
x 10^{-1}																	

R15007

R
45

BX307U

II



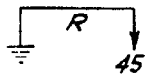
R

9	16	23	26	32	33	46												
	50	200	50	210	25	150												
10	13	14	15	25														
	225	140	225	225														
11	42	47	57															
	430	205	410															
12	12	17	22	24	27	31	34	35	36	37	45							
	280	10	270	10	10	10	10	10	10	10	10							
12																		

C

9	45	57							11	15	26	25	52					
	435	435								210	105	210	115					
10	42								12	32	42/32							
	390									160	160							

R13006



GM4256

S:	1.3.5.2.4.6.7 8.10.12 9.11.13. 15.16 19.20. 23.24.26.25
C: 5.36.	7. 6. 9. 10 11 12.3 13 14. 1. 45 17 2. 18.19 20 21.22 23.4 24 25 26 27 28. 29 30 15 31.38. 32. 34
R:	20. 2. 3. 45. 7. 1.9 21. 11 12 13 14 14a. 6.16 16. 17. 19. 18.

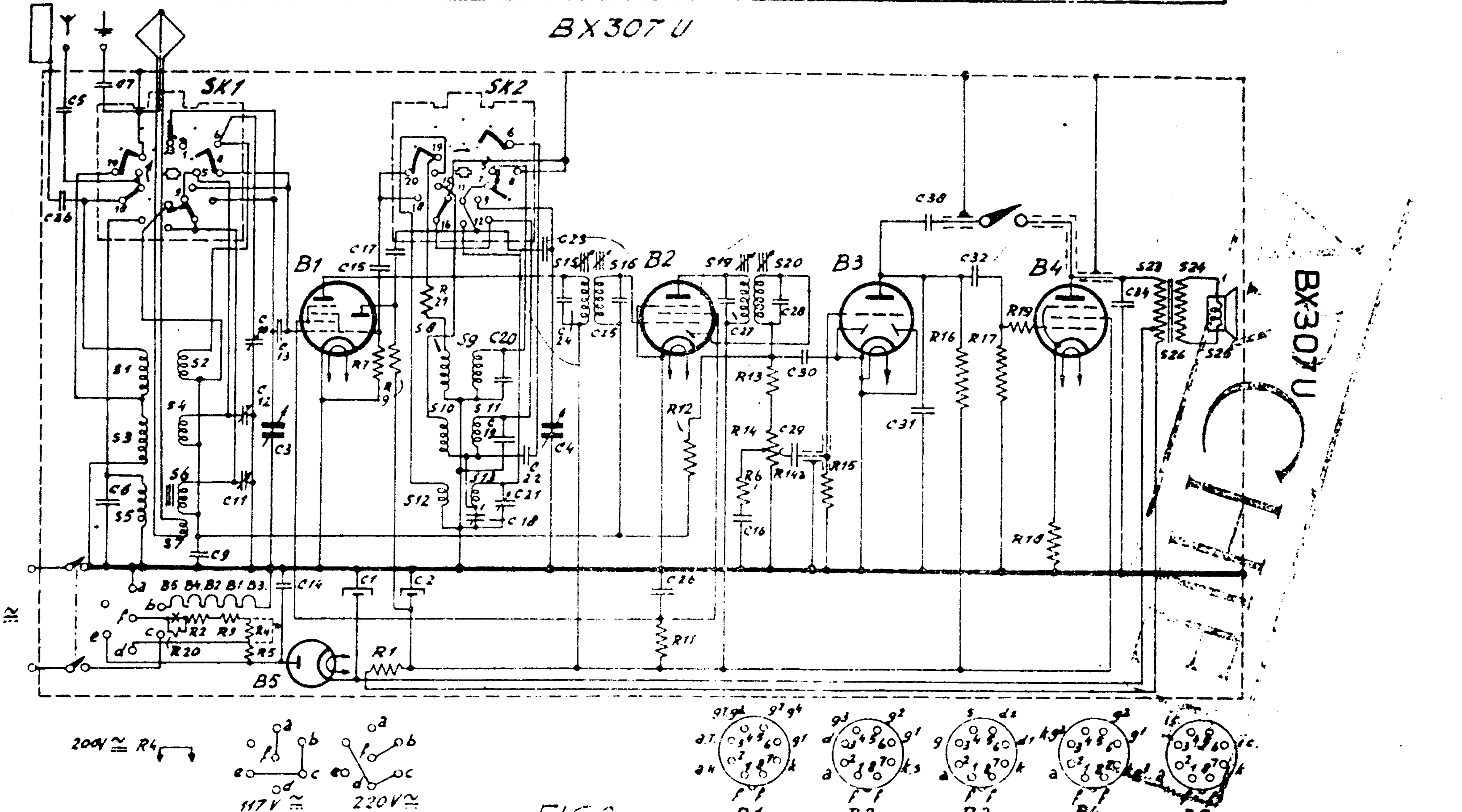
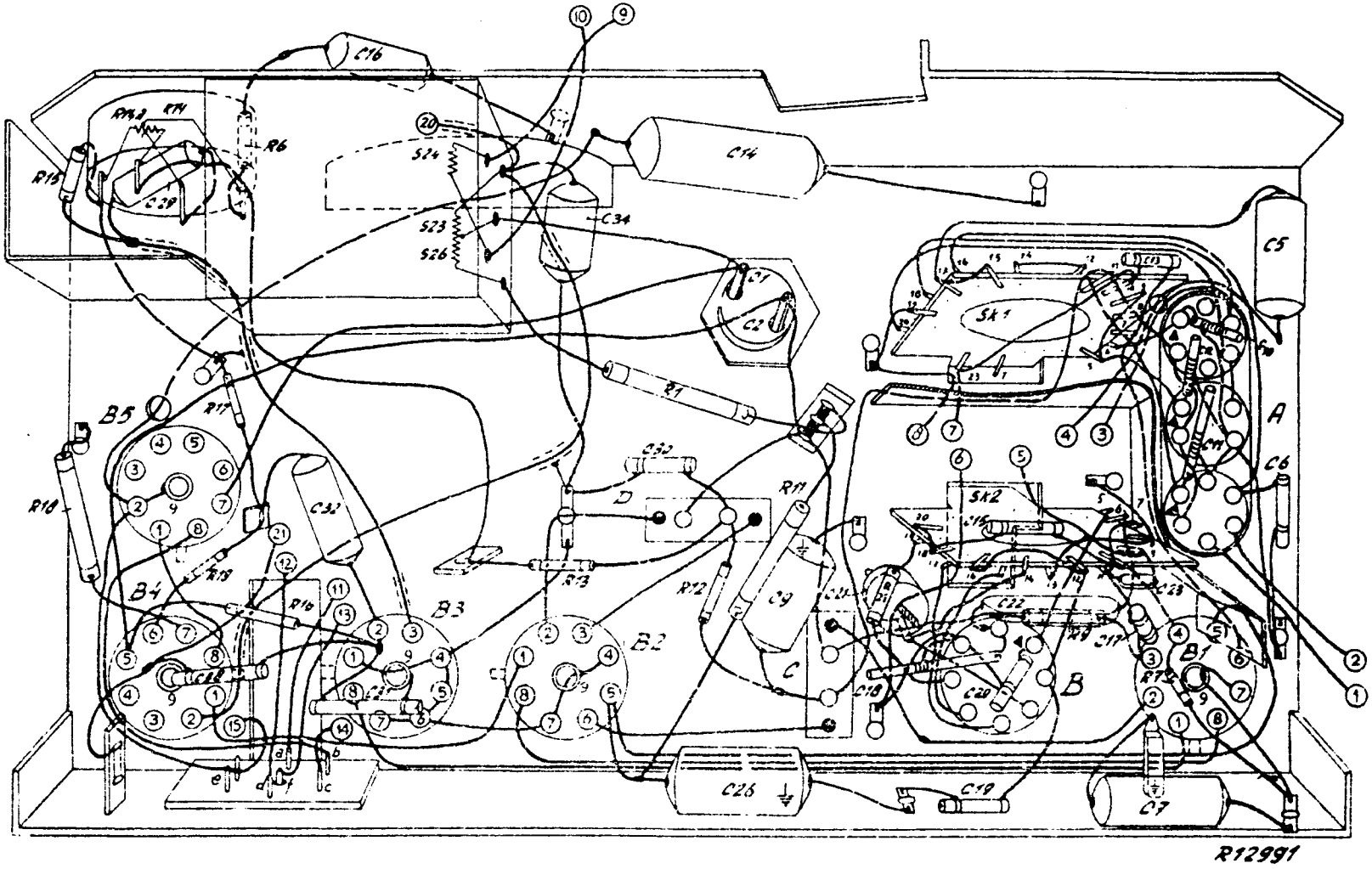
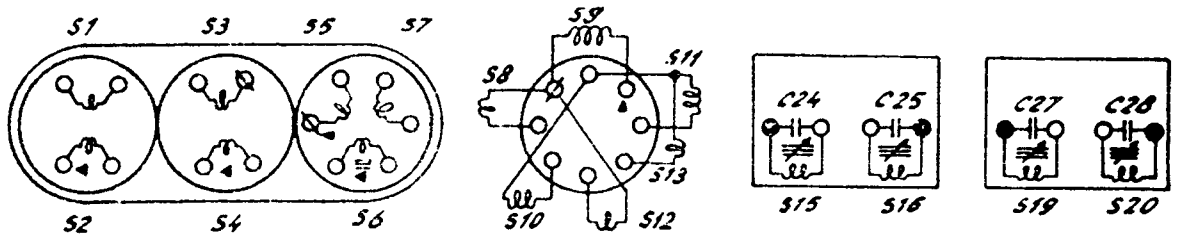


FIG.3

R12983



R12991



R12979

FIG. 4.

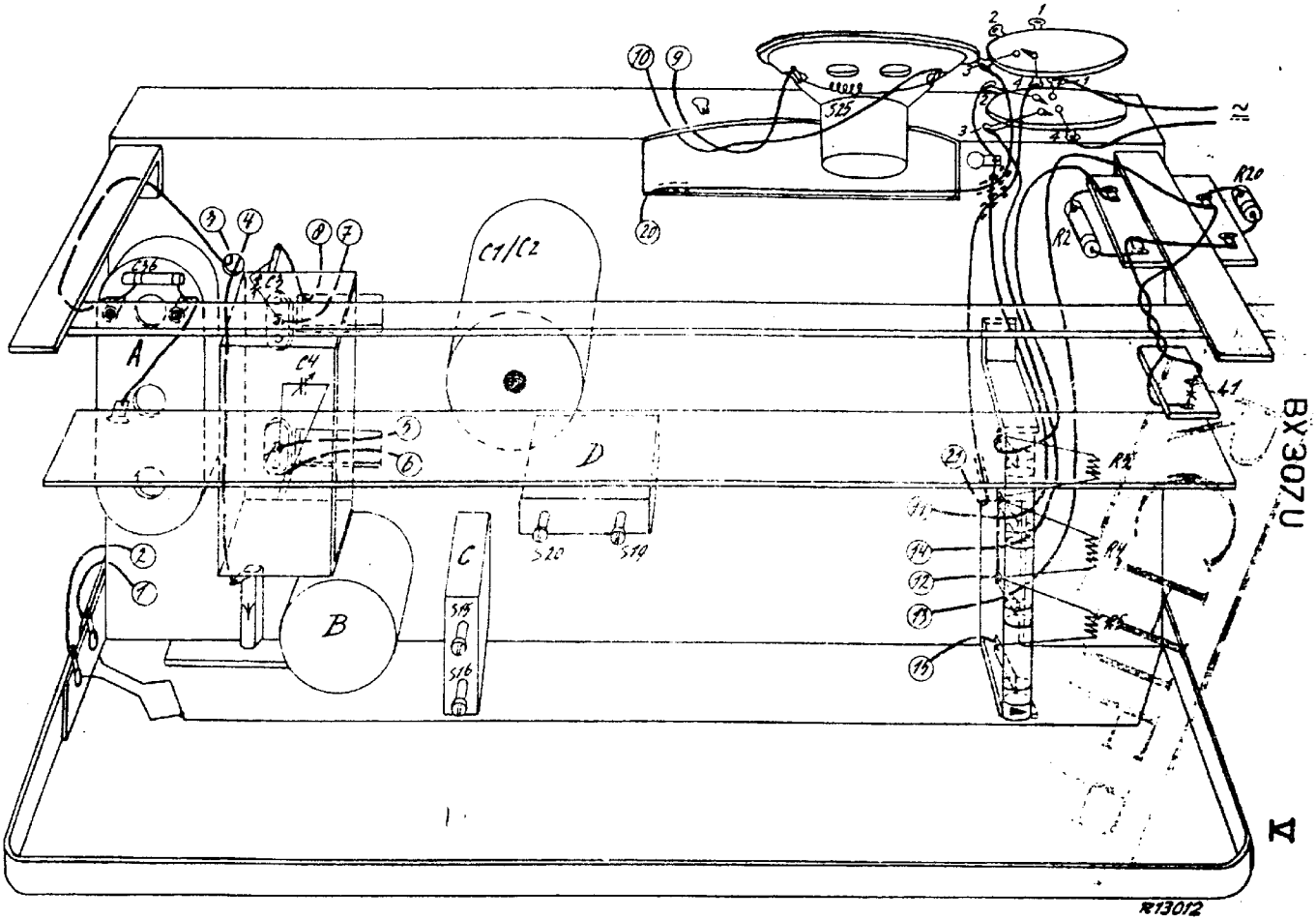


FIG.5

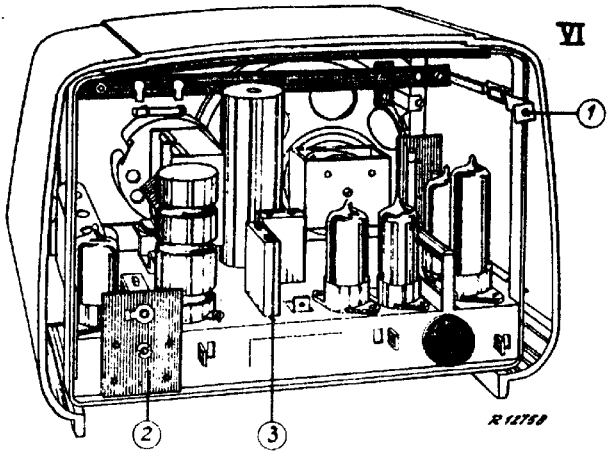

VI
1
2
3
R 12758

FIG. 6

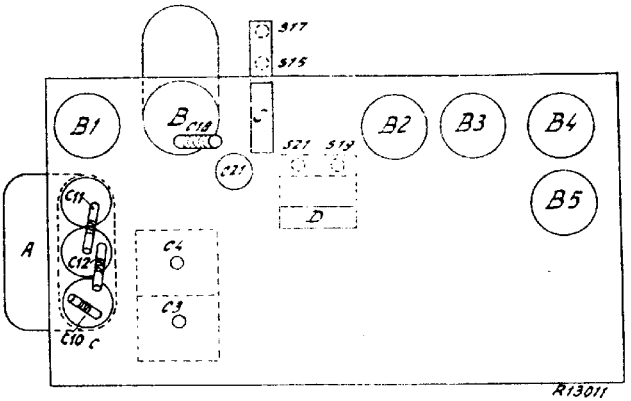
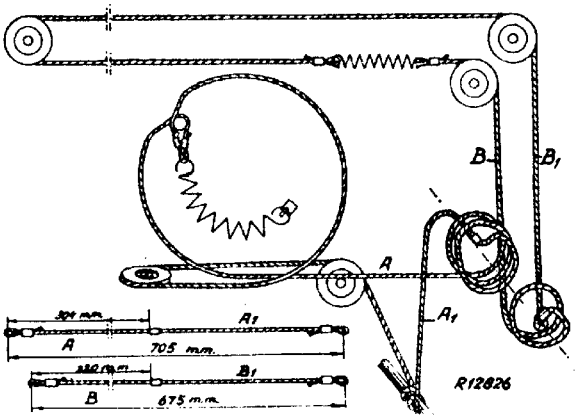

S17
S15
B1
B C18
B2
B3
B4
B5
C21
S21
S19
D
A
C11
C12
C10 C
C4
C3
R13011

FIG. 7.


B
B1
A
A1
A
705 m.m.
B1
B
675 m.m.
R12826

VII

BX307U

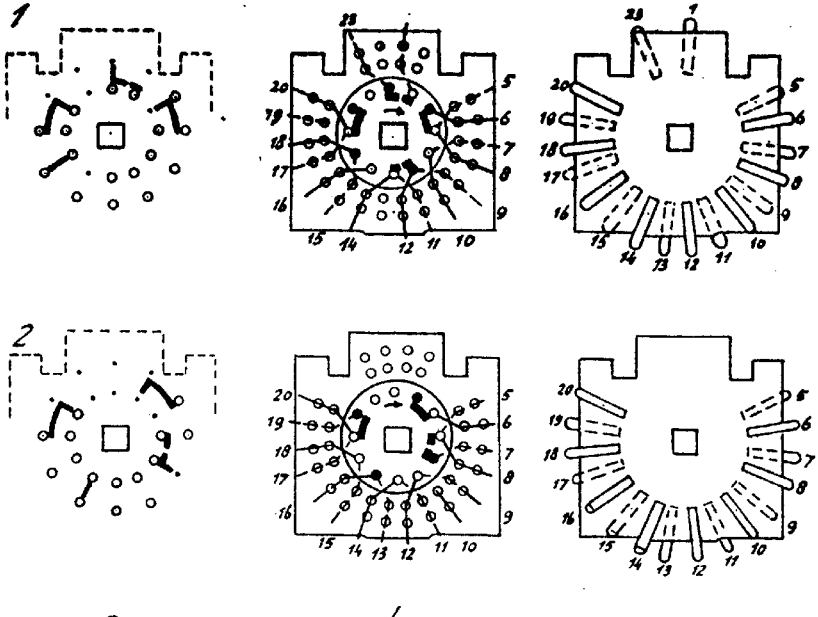


FIG.9.

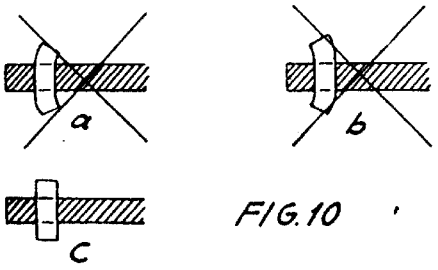


FIG.10

R12676