

STRICTLY CONFIDENTIAL

FOR PHILIPS SERVICE  
DEALERS ONLY

Copyright reserved

# PHILIPS

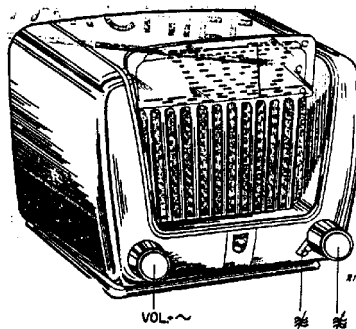
SERVICE DOCUMENTATION

FOR THE RECEIVER:

## BX 297 U

1949

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



### WAVEBANDS

S.W.2 : 13,5 - 28 m (22.22 - 10.7 Mc/s)  
S.W.3 : 30 - 90 m (10 - 3.34 Mc/s)  
M.W. : 187 - 565 m (1604 - 531 kc/s)

### TRIMMING FREQUENCIES

21.6 Mc/s ;  
9.6 Mc/s ;  
1525 kc/s ; 575 kc/s  
I.F. : 452 kc/s

### VALVES AND PILOT LAMP

B1 : UCH42      B4 : UL41  
B2 : UAF42      B5 : UY41  
B3 : UBC41      L1 : 8097-D00

LOUDSPEAKER: Type 9730 X

### KNOBS

Frontside : right side : tuning and waverange switch  
left side : mains switch and volume control

### BANDWIDTH

The I.F. bandwidth (1:10) measured from the control grid g1 of B1 is about 12 kc/s. The "overall" bandwidth measured from the aerial socket is at 1000 kc/s : 11.5 kc/s.

### MAINS TENSIONS

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

### CONSUMPTION

45 W ( 220 V $\sim$  )  
35 W ( 117 V $\sim$  )

Printed in the Netherlands

49 972 14.1.05

DIMENSIONS

Height: 21 cm.  
Width : 26,5 cm; Knobs included  
Depth : 18 cm)

WEIGHT: Approx. : 3 kg. (valves included)

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 while only one set may be connected to the transformer at a time. The chassis can then be earthed. The code number 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 M.W., while there is a capacitive aerial for the S.W. bands. When an outdoor aerial is used, both antennas remain connected to their circuits. If no outdoor-aerial is connected and thus the built-in frame-aerial on M.W. is used, C35 is switched parallel to C6. This to compensate the influence of the outdoor-aerial capacity.

TRIMMING

For trimming the set need not be uncased. Only the rear panel and the screening plate, which covers the R.F. part, have to be removed. The latter can be pulled out between the side of the chassis and the cabinet. 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 about 452 kc/s via a 33000 pF condenser to g1 of B2.
6. Determine the tuning of the 3rd and 4th I.F. circuit.
7. Apply this signal to the control grid g1 of B1 via a condenser of 33000 pF and turn the cores of the 1st and 2nd I.F. circuit as far out as possible.
8. Trim successively to maximum output the 1st and 2nd I.F. circuit.
9. Seal the cores.

REMARK

The iron cores of the I.F. bandfilter are sealed with "vaseline compound" (for code number see "List of Parts and Tools"). This compound does not require heating for making adjustments, because it can be removed in the cold state with a screw-driver. HEATING OF THE CORES DAMAGES THE COREHOLDER AND MAKES ADJUSTMENT IMPOSSIBLE.

B. H.F. AND OSCILLATOR CIRCUITS

1. Volume control to maximum. Earth the chassis taking into account the remarks above 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. Waverangeswitch at M.W. Pointer on trimming point at 1525 kc/s ( $15^\circ$ ). Apply a modulated signal at 1525 kc/s to the aerial socket via dummy aerial. Trim respectively at maximum output C21 and C11. Pointer on trimming point at 575 kc/s (521.7 m), apply a modulated signal of 575 kc/s to the aerial socket via dummy aerial. Trim at maximum output C18. Pointer back on trimming point at 1525 kc/s ( $15^\circ$ ) and feed in a modulated signal of 1525 kc/s to the aerial socket. Adjust C21 for maximum output.
5. Waverangeswitch at S.W.3. Pointer on trimming point at 9,6 Mc/s ( $15^\circ$ ). Apply a modulated signal of 9,6 Mc/s to the aerial socket via dummy aerial. Trim C12 at maximum output.
6. Waverangeswitch at S.W.2. Apply a modulated signal of 21,6 Mc/s to the aerial socket via dummy aerial. When tuning the set to this signal, chose the peak involving the lowest wavelength.
7. Adjust the trimmer C10 to maximum output. During the alignment of E10 it might be necessary to retune the Service Oscillator slightly to compensate the influence of C10 to the oscillator circuit of the set.
8. Finally seal all the trimmers with Superlawax.

REPAIRS AND REPLACEMENTS OF PARTSDECASING THE CHASSIS

1. Remove the rear panel.
2. Remove control knobs - tuning and volume control.
3. Unscrew pointer from driving cable.
4. Unsolder the loudspeaker connections as 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 wave-range switch can be taken out of the cabinet carefully.

DRIVING CABLE

The path of the driving cable is shown in fig.7. The variable condenser here stands in its minimum position. The length of the driving cords are 622 mm and 580 mm.

RENEWAL OF THE LOUDSPEAKER CONE

1. Cut off the clamping ring and draw out the old cone from the cone carrier.
2. Clean the air gap and put a paper ring over the carrier.

3. Rub in the special glue on the cone carrier.  
It is of importance not to use any other adhesive because the joint between the linen centering ring and the cone carrier has to answer heavy demands.
4. Insert the speaker coil together with a small piece of celluloid in the air gap.
5. Press the linen centering ring well up against the cone carrier and let it dry for at least one hour.
6. Put on the second paper ring, fix the clamping ring and remove the celluloid.

The cone should then be properly centered, otherwise the procedure must be repeated. Finally glue on the linen disc over the opening of the speaker coil.

For code numbers of glue and celluloid see "List of Parts and Tools".

A piece of film of 5,5 x 3 cm. and 0,15 mm thickness can be used for the celluloid.

#### CABINET

The philite cabinet is supplied without transparent emblem. This emblem has to be ordered separately and must be fixed to the cabinet by means of a special glue.  
The code numbers are as follows:

Transparent emblem	23 654 14
Special glue	Z 050 00

#### CURRENTS AND TENSIONS

			Vf	Va	Vg2(4)	Vk	Ia	Ig2(4)
UCH42	B1	Triode	114	95	-	-	2,6	-
		Heptode		165	65	-	2,4	3,6
UAF42	B2		12,6	165	65	-	5	1,4
UBC41	B3		12,6	55	-	-	0,25	-
UL41	B4		45	170	165	9	53	10
UY41	B5		31	-	-	-	-	-
			V	V	V	V	mA	mA

VC1 : 190 V  
VC2 : 165 V

The above mentioned values were measured with the GM 4257, the set switched 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. 2 position. The sequence of switching is: S.W.2, S.W.3, M.W.

Fig.	Pos.	Description	Code number
1	1	Cabinet - 038	23 642 14.0
		Rear panel	A3 690 11.0
		Bracket for fixing rear panel	A3 467 62.1
		Knob - tuning - 038	23 608 14.4
	2	Knob - volume control - 038	23 608 21.0
		Lever knob - waverangeswitch - 038	23 648 61.0
		Fixing bracket - coilcan	28 072 64.2
		Switch segment 1	A3 200 09.1
	3	Switch segment 2	A3 200 10.3
		Pilot lampholder	A3 359 07.0
		Plug socket plate	A3 340 13.0
		Voltage adaptor plate	A3 227 70.0
		Knob for voltage adaptor plate (111)	A3 364 73.0
		Rubber grommet under variable condenser	49 922 26.2
		Tuning spindle	A3 333 01.3
		Spindle of the volume control	A3 426 80.0
		Grubscrew for same	A3 324 16.0
		Variable condenser with drum	49 001 33.0
		Tension spring in drum	A3 646 26.0
		Pointer	A3 424 97.2
		Tension spring (driving cable)	A3 646 35.0
		Dial overseas	A3 220 51.0
		<u>Model -04</u>	
		Cabinet - 509	23 642 62.0
		Rear panel	A3 690 95.0
		Pointer	A3 690 79.0
		Knob - tuning - 509	23 608 88.0
		Knob - volume control - 509	23 608 89.0
		Lever knob - waverangeswitch - 509	23 608 90.0
		Dial - overseas	A3 220 52.0
		<u>LOUDSPEAKER 9730 X</u>	
		Cone with coil	49 981 20.0
		Clamping ring	25 871 80.0
		Paper ring	28 451 26.1
		Linen disc	49 976 04.0
		<u>TOOLS</u>	
		Service oscillator	GM 2882
		Universal measure apparatus	GM 4256 or GM 4257
		Trimming transformer	E4 848 03.0
		Celluloid	09 994 15.0
		Glue	A9 863 54.0
		Vaseline compound	X 007 14.0