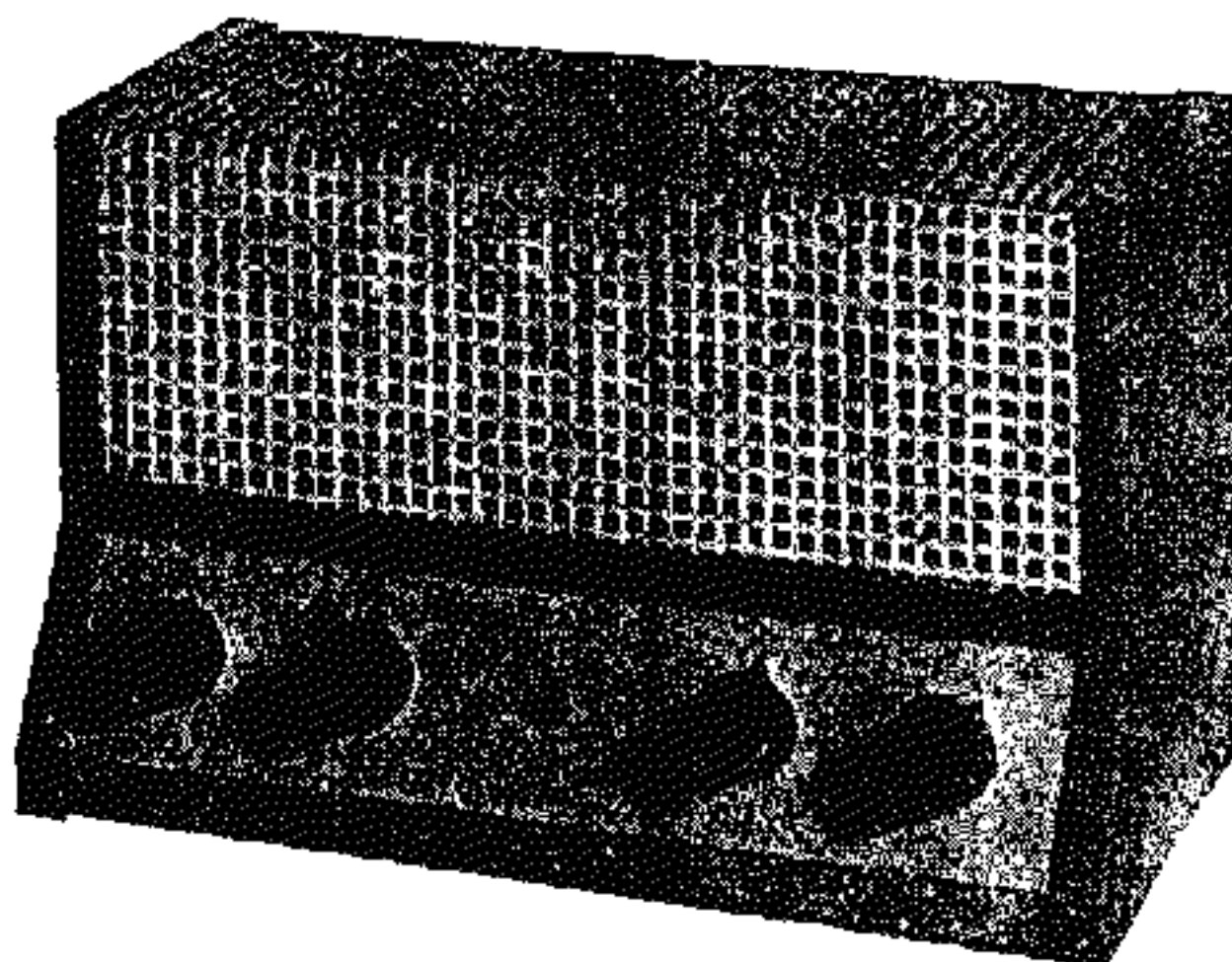
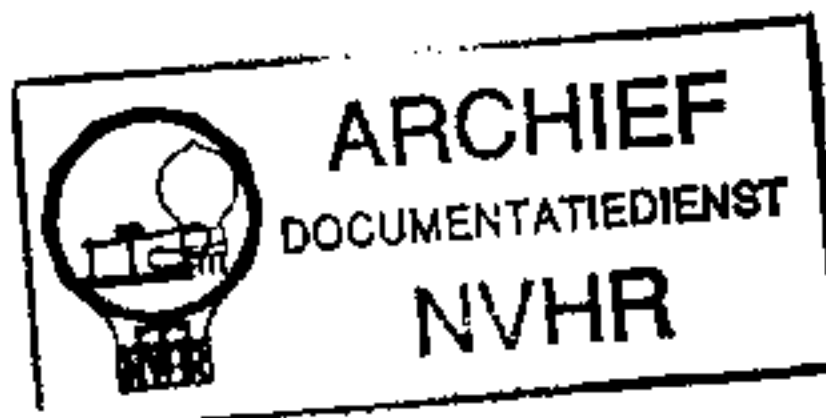


# PHILIPS

Service instructions for the 20 W amplifier

## 2848/00



I20182

### GENERAL DATA

This amplifier is mounted in a metal casing with detachable cap. A voltage adapter is provided to adjust the apparatus for mains voltages of 110, 125, 145, 200, 220 and 245 V, with frequencies between 50 and 100 c/s. It also has connections for a microphone, a pick-up and a radio set.

### INPUT DATA

	Sensitivity	Impedance
Microphone	approx. 20 mV	approx. 0,25 MOhm
Pick-up	approx. 190 mV	approx. 44000 Ohm
Radio	approx. 2,3 V	approx. 50000 Ohm

The output is on the 100 V system and is adjustable with a voltage adapter.

### OUTPUT DATA

Output voltage	Volume attenuation	Total nom. loudspeaker capacity			Total loudspeaker impedance		
		Wmin. Watt	Znorm. Watt	Zmax. Watt	Zmax. Ohm	Znorm. Ohm	Zmin. Ohm
100 V	0 db	15	20	25	625	500	400
60 V	4,4 db	45	56	70	225	180	144
35 V	9,2 db	132	153	210	76	61	48
20 V	14 db	400	500	625	25	20	16
12 V	Low-ohmic loudspeakers and/or head-phones				9	7,2	5,8
7 V					3,1	2,45	2,0

### DISTORTION AT FULL LOAD and 1000 c/s <10%

Hum : better than -50 db.  
Noise : better than -60 db.

### POWER CONSUMPTION

105 W (125 V.A.)

### WEIGHT

Incl. valves 8,9 kg.

### DIMENSIONS

Length 340 mm  
Width 195 mm  
Height 210 mm

### CIRCUITING

The pick-up signal is conducted via one half of R1 to earth. The signal from the radio connection is led from the generator R4-R5 via the other half of R1 to earth. R1 thus serves as volume control for pick-up, anti-clockwise, or for radio, clockwise. The microphone signal is applied across R2, thus in series with the pick-up or the radio signal. This gives two possibilities of mixing:

1. Radio with gramophone
2. Pick-up with microphone.

R2 is the volume control of the microphone and when this is fully turned to minimum then SK2, being coupled with R2, short-circuits the microphone. From the centre of rotation of R2 the signal passes via C3 to the grid of B3, which in addition to being the amplifying valve serves at the same time as phase-changing valve. From a tapping of the anode resistance of B3 a reverse feedback is applied via C4 to the first grid of B3. Via C8 and C9, respectively R19 and R20-R26, the signals from the anode and second cathode of B3 are conducted to the grids of the output valves, which are of class A/B adjustment. With R3 in the extreme left-hand position (thus when C11 is in parallel to the whole resistance R) the filter R3 - C11 attenuates the high notes by about 18 db at 10000 c/s. The output transformer, which is provided on the primary side with a sparking bridge against excessive voltages, is made on the 100 V system.

### CHECK MEASUREMENTS

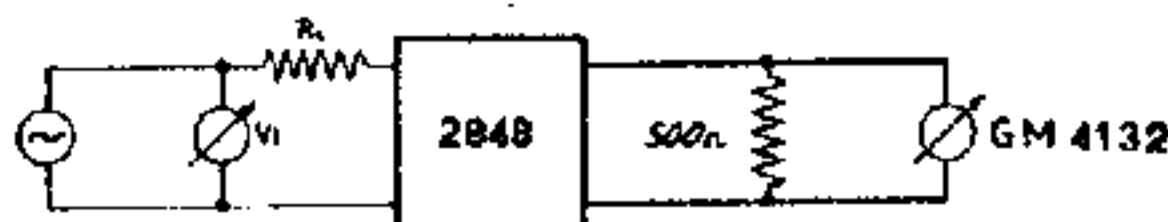
Valve Measurements	B3 6EP1	B2 4699	B1 4699	B4 4652	
Va		390 - 410	390 - 410		Volt
Is	4,4 - 5,4	39 - 51	39 - 51		mA
Vg2		390 - 410	390 - 410		Volt
Ig2	0,29 - 0,39	4 - 6	4 - 6		mA
IK2	3 - 5				mA
-Vg		-14 - 18	-14 - 18		Volt
Vf	6,15 - 6,5	6,15 - 6,5	6,15 - 6,5	3,85 - 4,2	Volt

### FREQUENCY CHARACTERISTICS

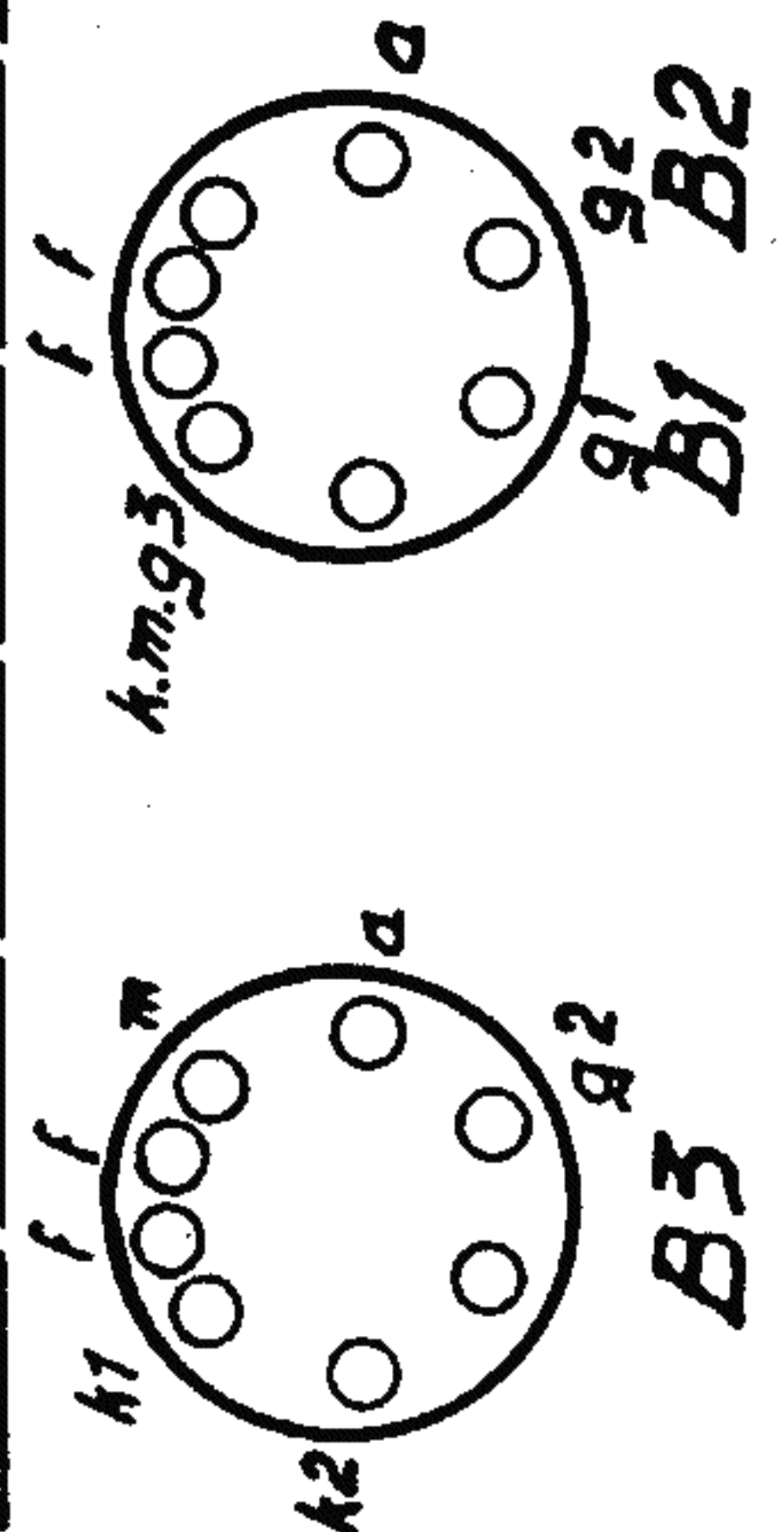
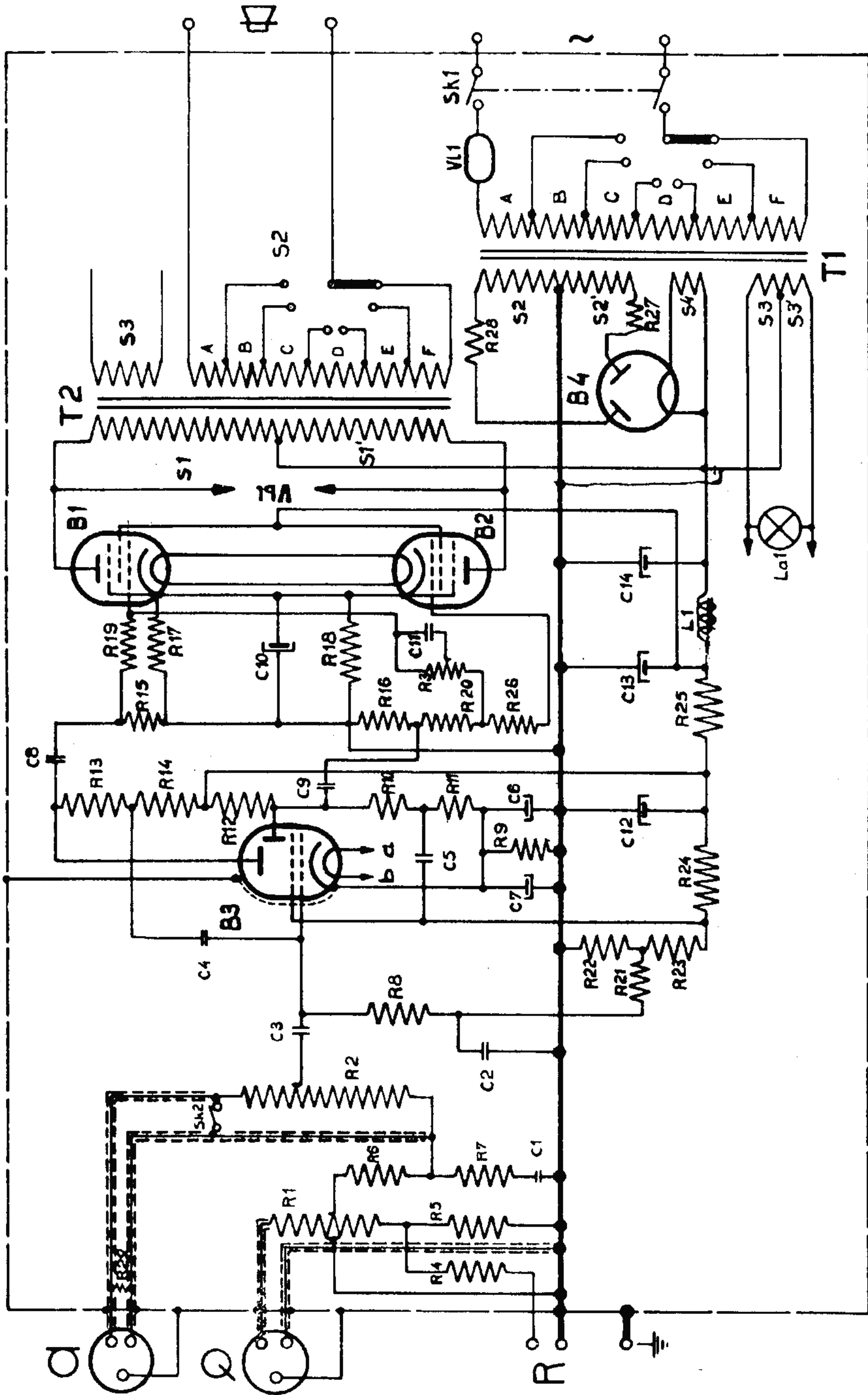
The characteristics are to be measured according to the diagram given below:

For  $\odot$  R1 = 12000 Ohm  
For  $\ominus$  R1 = 12000 Ohm  
For radio R1 = 0 Ohm

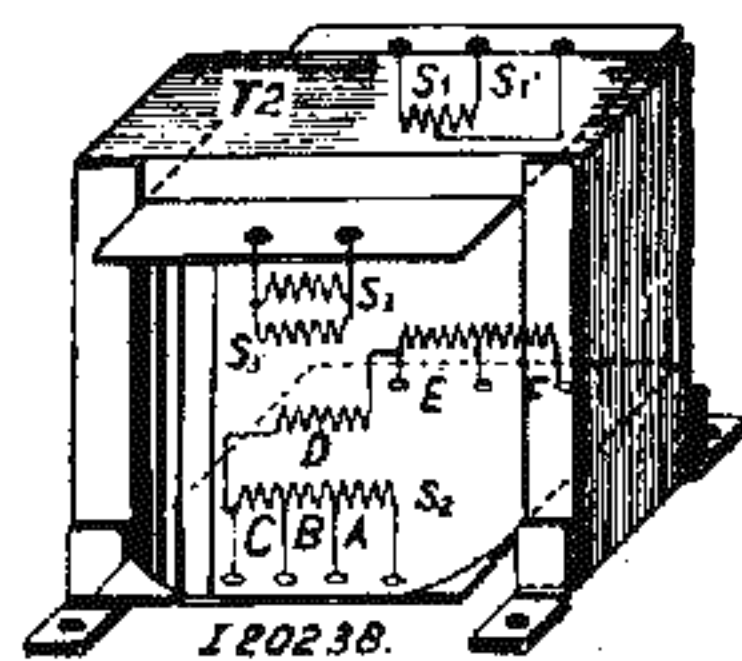
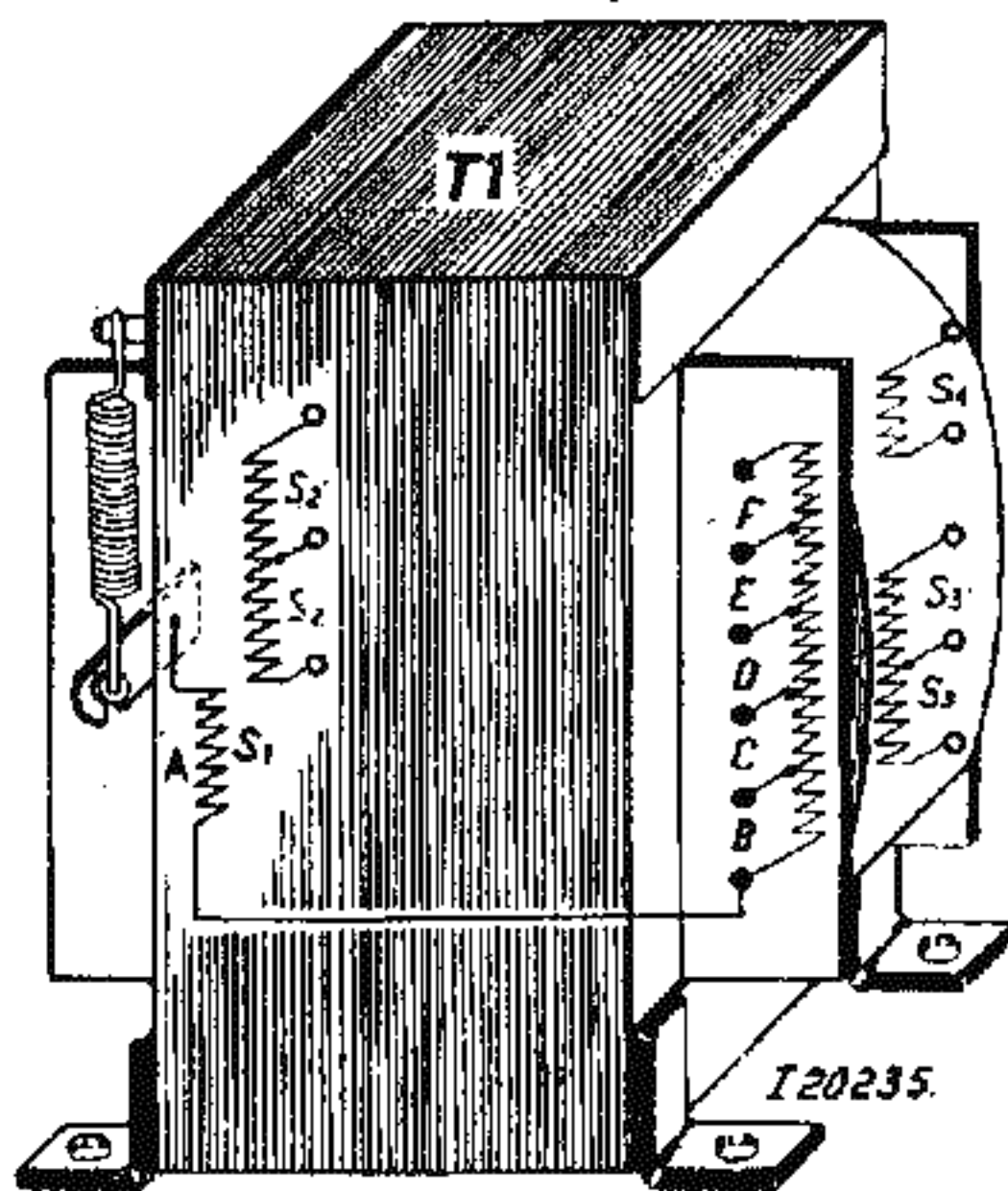
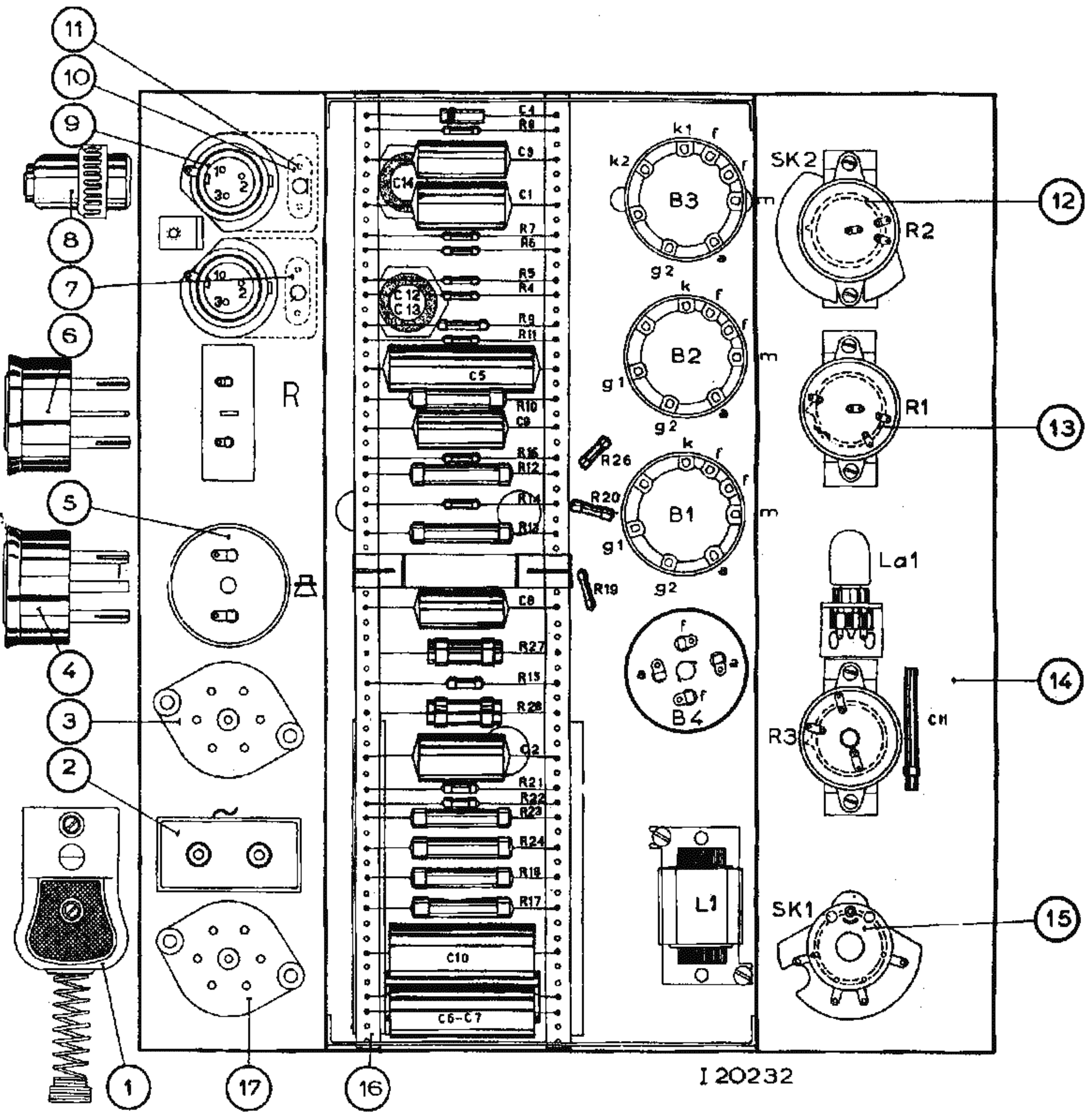
V1-abt. 7 mV see fig. 2  
V1-abt. 85 mV see fig. 3  
V1-abt. 0,85 V see fig. 1



I20233



I 20231.





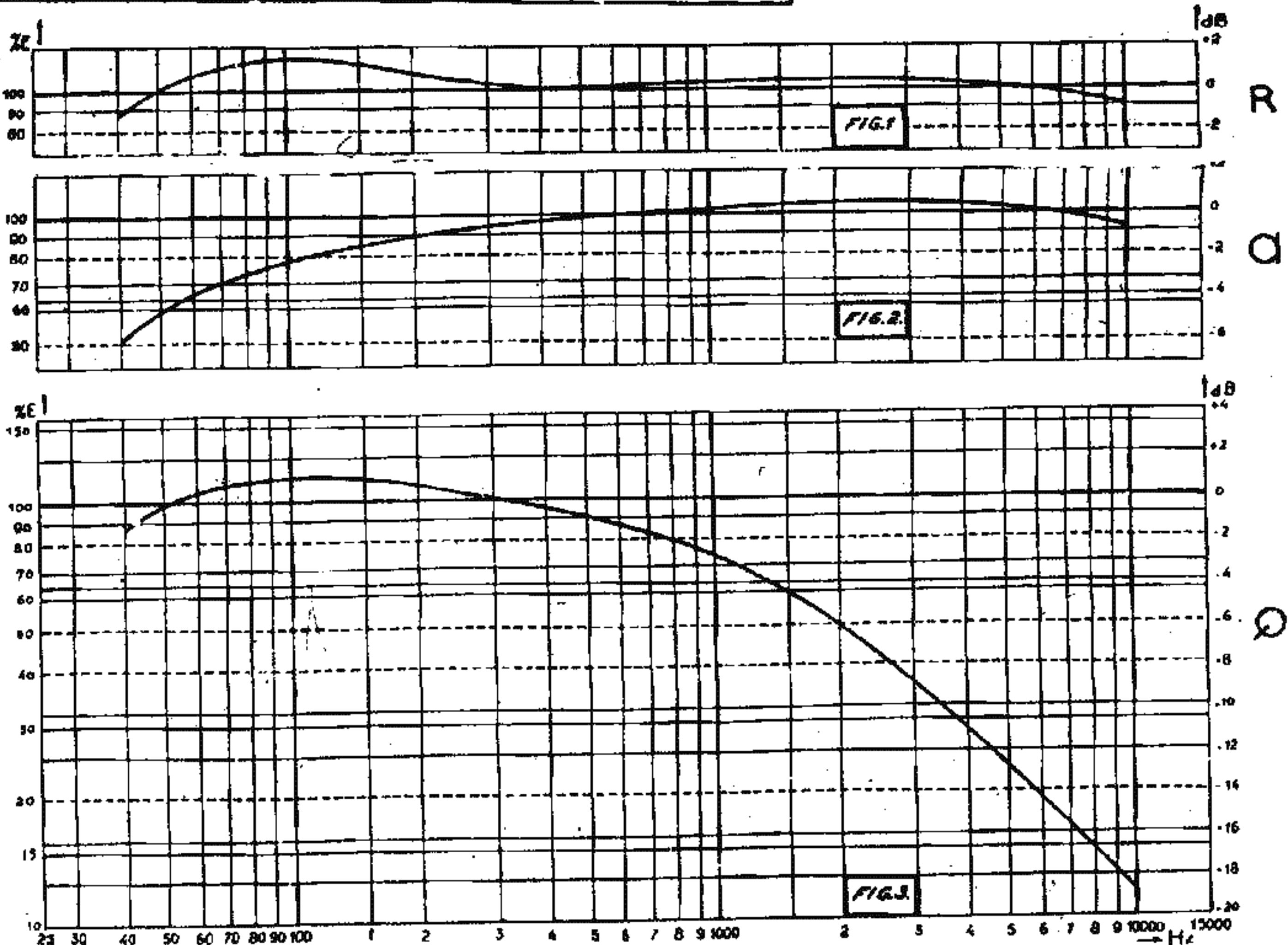
ELECTRICAL PARTS

Nr.	Description	Codenumber
T1	Mains transformer	E3 228 42.0
T2	Output transformer	E3 223 33.0
L1	Choke	28 546 08.1
C1	0,22 uF	48 695 10/A220K
C2	0,22 uF	48 695 10/A220K
C3	68000 pF	48 695 10/A68K
C4	3,9 pF	49 059 84.0
C5	0,33 uF	48 695 10/C330K
C6	32 uF	49 020 41.0
C7	32 uF	49 020 41.0
C8	47000 pF	48 695 10/E47K
C9	47000 pF	48 695 10/E47K
C10	32 uF	49 020 41.0
C11	680 pF	48 406 10/680E
C12)	25 + 25 uF	48 317 11/25+25
C13)		
C14	25 + 25 uF par.	48 317 11/25+25
R1	2 x 0,3 MOhm lin.	49 470 39.0
R2	0,35 MOhm log.	49 500 32.0
R3	2,5 MOhm log.	49 472 47.0
R4	47000 Ohm	48 425 10/47K
R5	4700 Ohm	48 425 10/47K
R6	47000 Ohm	48 425 10/47K
R7	4700 Ohm	48 425 10/47K
R8	0,82 MOhm	48 425 10/820K
R9	3000 Ohm	48 545 02/3K
R10	27000 Ohm	48 547 02/27K
R11	2700 Ohm	48 545 02/27K
R12	0,27 MOhm	48 427 05/270K
R13	20000 Ohm	48 547 02/20K
R14	1200 Ohm	48 545 02/12K
R15	0,56 MOhm	48 425 10/560K
R16	0,56 MOhm	48 425 10/560K
R17	330 Ohm	48 427 05/330E
R18	330 Ohm	48 427 05/330E
R19	33000 Ohm	48 425 10/33K
R20	33000 Ohm	48 425 10/33K
R21	0,1 MOhm	48 425 10/100K
R22	6800 Ohm	48 545 02/68K
R23	56000 Ohm	48 547 02/56K
R24	91000 Ohm	48 547 02/91K
R25	3300 Ohm	48 425 10/33K
R26	1000 Ohm	48 425 10/1K
R27	56 Ohm	48 494 10/56E
R28	56 Ohm	48 494 10/56E
R29	0,1 MOhm	48 425 10/100K
VL1	Temp. fuse	

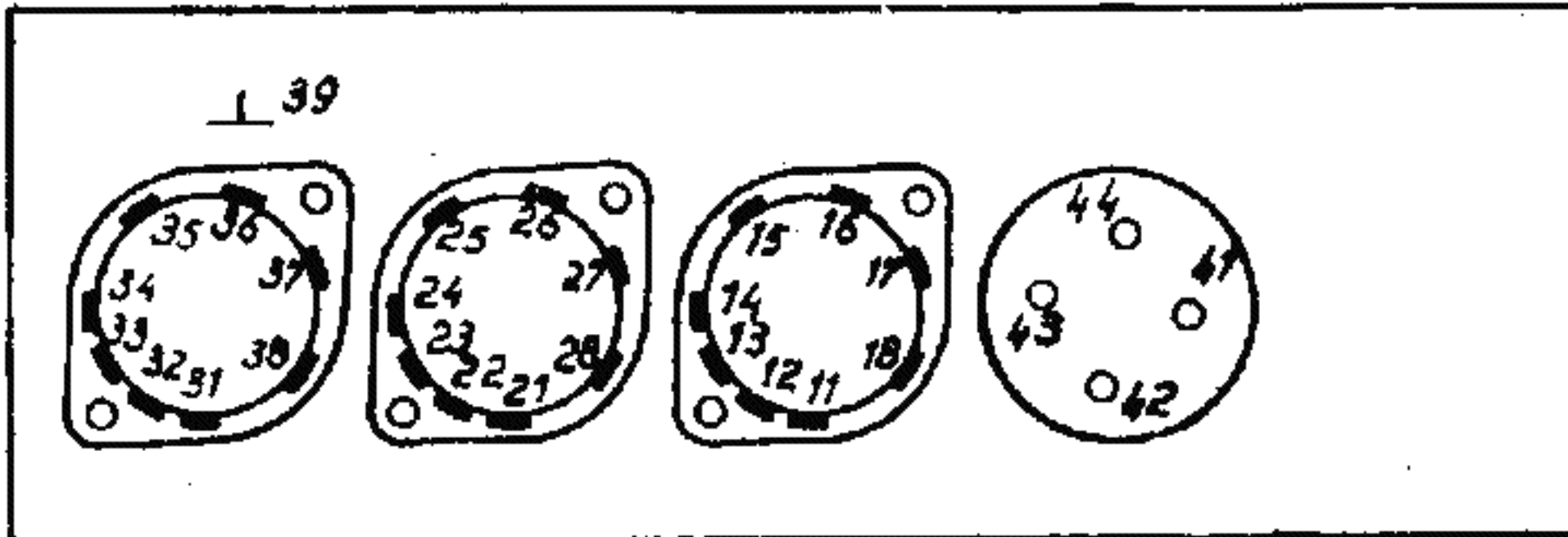
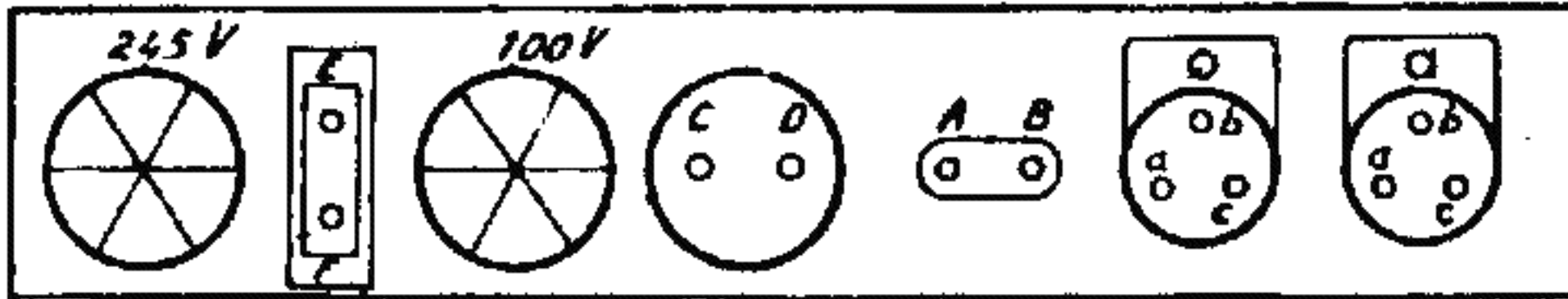
MECHANICAL PARTS

Item	Description	Codenumber
1	Female plug	08 280 95.0
2	Plug	E2 555 65.0
3	Voltage disc	E1 390 70.0
4	Plug with round pin	49 291 12.0
5	Plug socket holder	28 852 30.0
6	Plug with flat pin	49 291 10.0
7	Text plate	E3 048 77.0
8	Plug contact box	E2 555 46.0
9	Pin contact box	E2 555 49.0
10	Text plate	E3 048 76.0
11	Notch nail	07 597 00.0
12	Knob	23 610 84.1
13	Knob	23 722 34.0
14	Text plate	E3 051 92.0
15	Switch	08 522 70.0
16	Connecting rod L = 160	23 647 68.0
17	Voltage disc	08 524 92.0

B1	4699
B2	4699
B3	EEP1
B4	4652
La1	8073D



SERVICE



R													
9	38/39	39	26	26/16	16			$\frac{D}{B/C}$	$\frac{D_b}{D_b}$				
	148	150	210	150	210			265	245				
10	35	38	37		B/A						$\frac{D_b}{D_c}$	$\frac{D_c}{B^*}$	
	207	215	170		143						150	135	
11	34	28/18	28	27	17	18							
	470	287	244	350	350	248							
12	31	32/33	32	33	22	22/23	23	12	13	12/13	C/D	E/F	$\frac{D}{B/C}$
	10	15	15	15	15	15	15	15	15	15	365	215	10
12													

C													
9	24											$\frac{D_c}{D_c/39}$	37
	465											315	172 395
10												$\frac{38}{16}$	$\frac{35}{26}$
												400	400

R<sub>1</sub> - R<sub>2</sub> - R<sub>3</sub> - Sk<sub>1</sub> ○

\* R<sub>1</sub> ○

\*\* R<sub>2</sub> ○

\*\*\* R<sub>3</sub> ○

ERRATA

In het principeschema is de middenaftakking van de wikkeling S3-S3' van T1 abusievelijk met de positieve hoogspanning verbonden i.p.v. met aarde.

In the principle diagram the junction of the coils S3-S3' of T1 is erroneously connected with the positive high tension; it should be connected with the chassis.

Dans le schéma de principe la prise de l'enroulement S3-S3' de T1 est connectée par erreur avec la haute tension positive, au lieu d'avec le châssis.

Im Prinzipschaltbild ist die Mittelanzapfung der Spulen S3-S3' des Transformator T1 mit der positiven Hochspannung verbunden gezeichnet anstatt mit dem Chassis.

En el esquema de principio la toma de las bobinas S3 y S3' está equivocadamente conectada con la tensión positiva en lugar de con el chasis.

Gu/AS/



Pour les appareils, mentionnés en rubrique, un transformateur de sortie sera livré à l'avenir qui a les mêmes propriétés électriques que le transformateur primitif, mais qui est enveloppé dans une boîte. Par là celui-ci peut mieux résister aux influences du climat.

Il est à conseiller que le transformateur est monté de telle façon que le côté le plus long du transformateur (mesuré au côté inférieur) va parallèlement au côté le plus long de l'amplificateur. A déplacer un peu éventuellement les résistances R27 et R28 (exécutions 00, 01, 02 et 03) ou R33 et R34 (exécutions 04 et 06).

Il s'ensuit du croquis entre quels noeuds se trouvent les divers enroulements.

Tandis que pour l'enroulement primaire de l'ancien transformateur un éclateur à étincelles a été appliqué, ceci n'est pas le cas avec le nouveau transformateur. Pour cette raison un éclateur à étincelles doit être commandé chez chaque nouveau transformateur; celui-ci doit être connecté entre les points 7 et 9.

Le transformateur E3 223 33 devient V3 621 03.0.  
Eclateur à étincelles (400 V) V3 693 22.0.

CENTRAL SERVICE DÉPARTEMENT

D.W. Waldus

JM/LB

