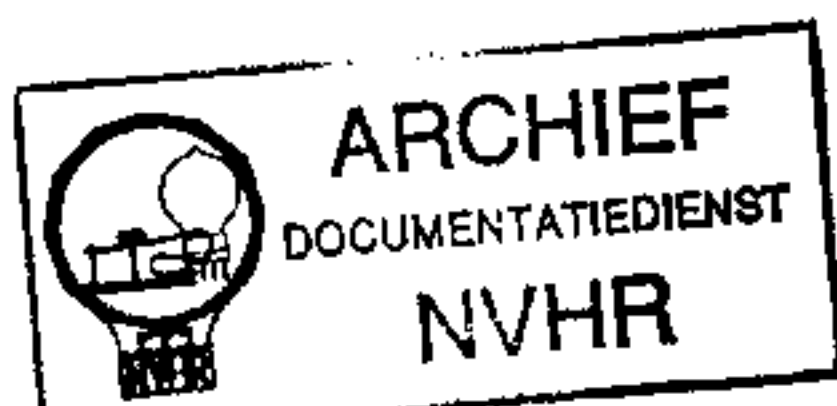


Met dank aan A.R.A. van Rossum

Ned. Ver. v. Historie v/d Radio



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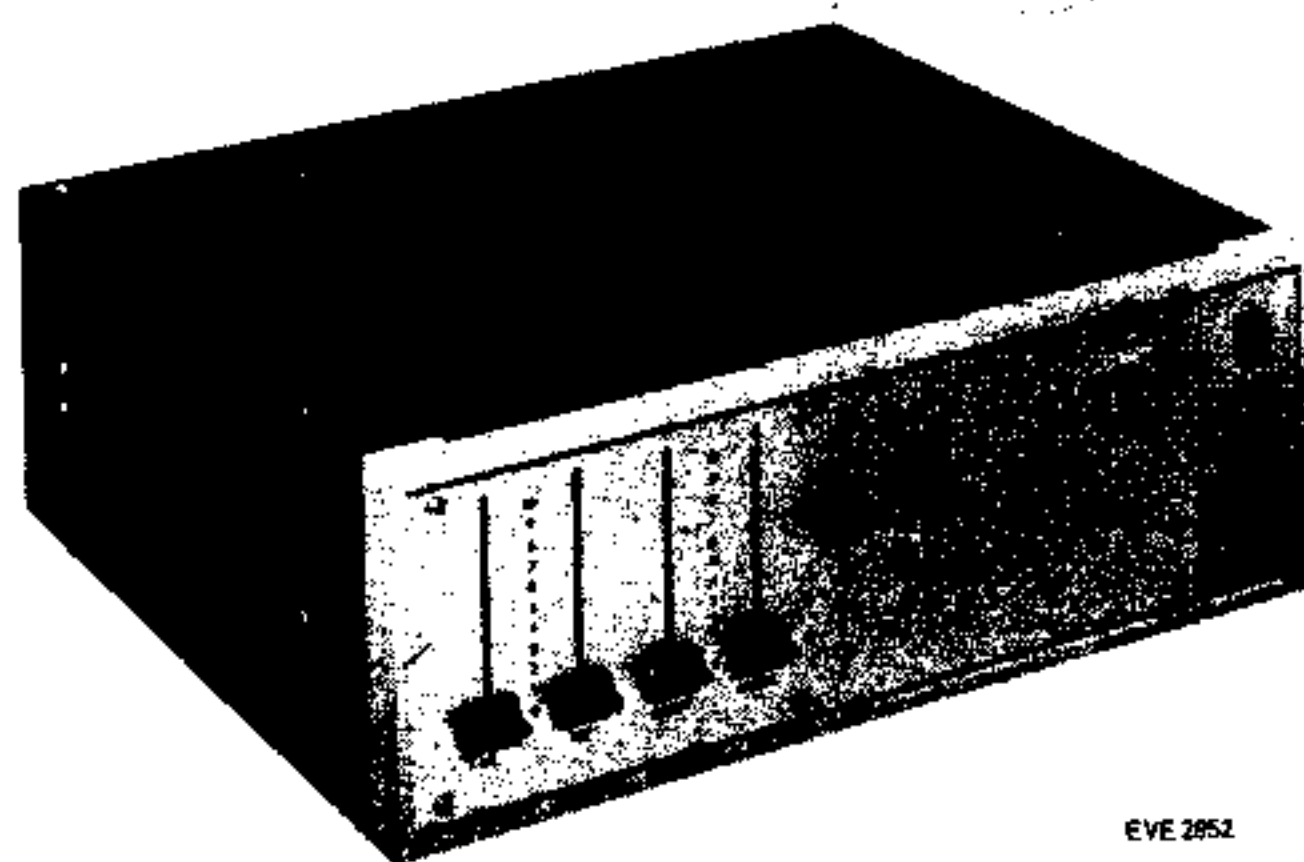
LBB 1251

SQ2-50 watt amplifier



PHILIPS

8 JUNI 1977



EVE 2852

LBB 1251

SQ 2-50 watt amplifier

[illegible]

LBB 1251 is a 50 Watt amplifier with pre-amplifier stages.

GENERAL

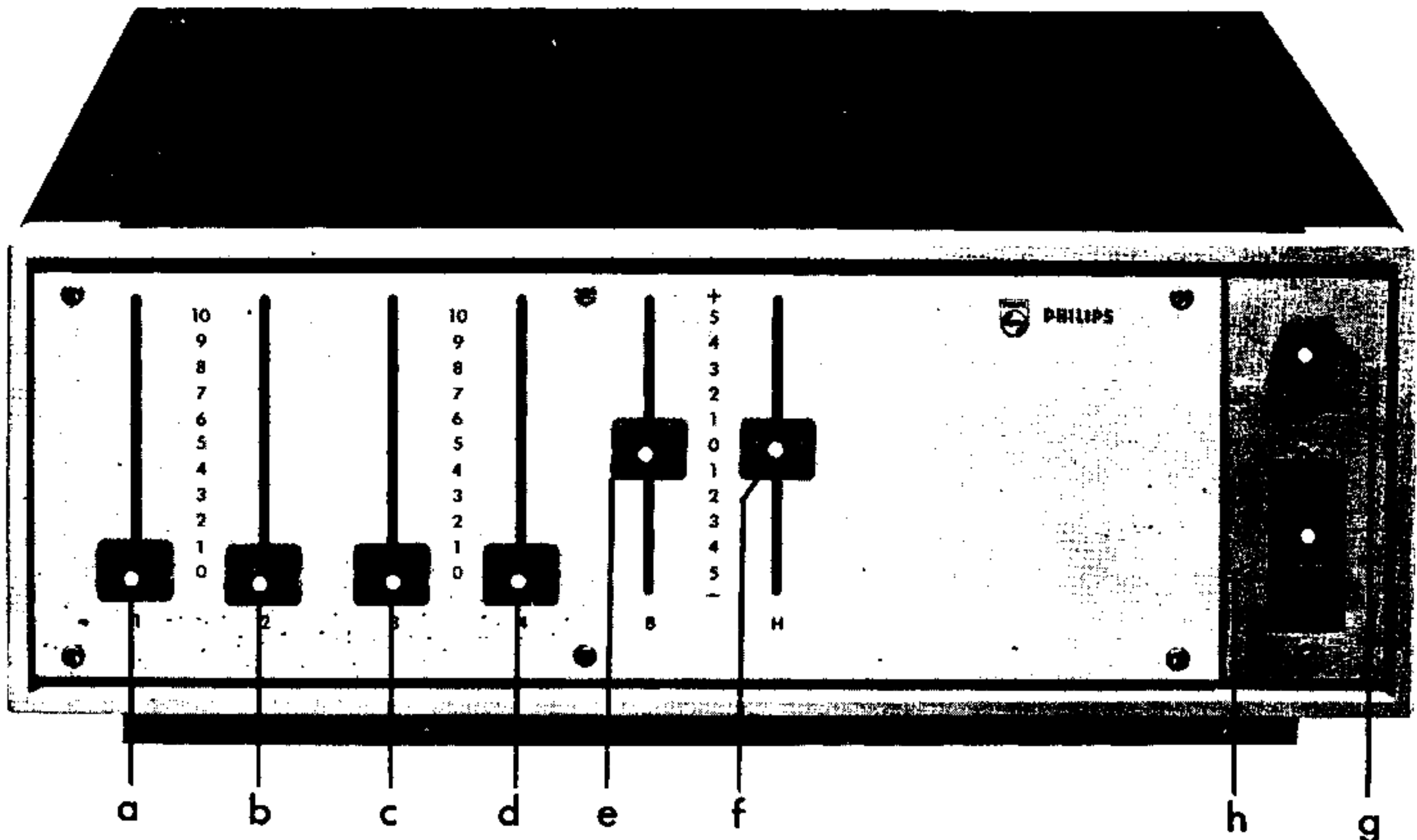
Dimensions	: length 330 mm (13") height 123 mm (4 $\frac{3}{4}$ ") depth 290 mm (11 $\frac{1}{2}$ ")
Weight	: 7.55 kg (16.8 lbs)
Transistors	: 2 x BC107 8 x BC109B 2 x BC179B 3 x BFY50 3 x BDY20
Diodes	: 3 x BA114 1 x BAX12 2 x FD23 1 x BZY94/C16
Fuses	: VL1 thermal fuse VL2 4 A VL3 100 mA

ELECTRICAL DATA

Input sensitivities	: microphone input 1, 2, 3 and 4 0,5 mV music input  3A,  4A and  100 mV electrodynamic pick-up 2 mV (with LBB 1253, see documentation-added)
Input impedances	: microphone inputs 3000 Ω music inputs 1 M Ω pick-up input (with LBB 1253) 50.000 Ω
Nominal output power	: 50 Watt
Output voltages and impedances	: 100 V ~ 200 Ω 70 V - 100 Ω 20 V - 8 Ω 14 V - 4 Ω
Distortion at nominal output power	: 1,5 % at 1000 Hz
Hum and noise	: all channels closed $\leq$ -67 dB One microphone channel open $\leq$ -54 dB  3 A and 4 A $\leq$ -63 dB
Consumption	: without signal: 45 W with signal: 135 W
Supply voltages	: 110, 127, 220 or 245 V $\pm$ 10 %; 50-60 Hz
Battery supply	: see page 7
Source impedance	: microphone inputs 50 - 2000 Ω music inputs < 500 k Ω

OPERATION

- a. Volume control microphone channel 1.
- b. Volume control microphone channel 2.
- c. Volume control channel 3 (microphone - music signals).
- d. Volume control channel 4 (microphone - music signal - tape recorder).
- e. Bass control $\pm$ B.
- f. Treble control $\pm$ H.
- g. Pilot lamp mains voltage.
- h. Mains switch



CONNECTIONS

- a. Mains voltage adapter.
- b. Earth connection
- c. Terminal block with the following terminals:
 - . Mains voltage.
 - . $0 - 4 \Omega - 8 \Omega - 70 \text{ V} - 100 \text{ V}$.
- d. Bass filter microphone channel 1.
- e. Bass filter microphone channel 2.
- 1, 2, 3 and 4 microphone inputs.
- 3 A and 4 A music inputs.
- tape recorder input.

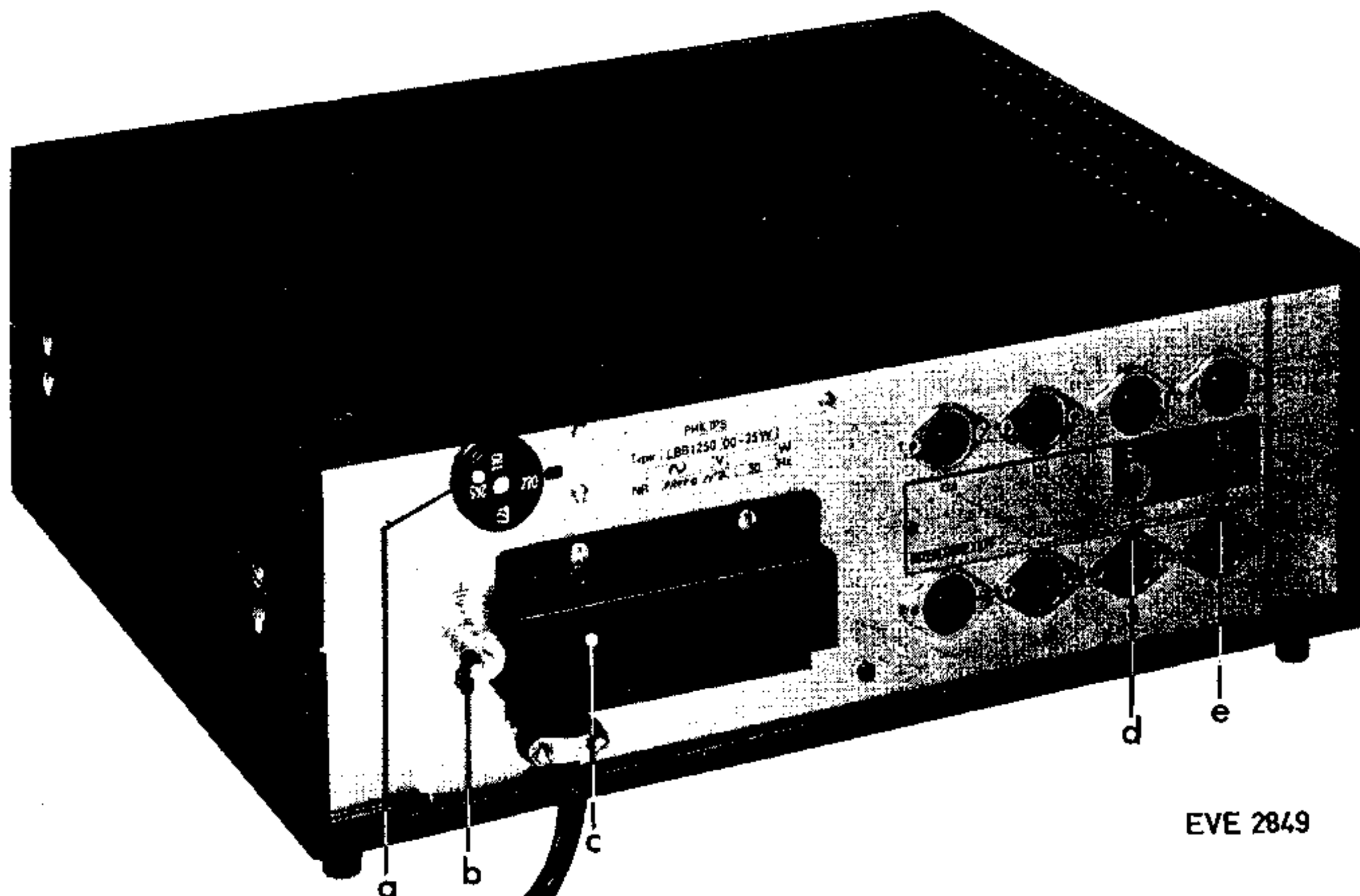
Interconnection: Output signal pre-amplifier.

Input signal output amplifier.

24 V output.

When a plug is inserted in one of the sockets 3 or 3 A the other socket is automatically disconnected. When a plug is inserted in socket 4, socket 4 A and are automatically disconnected.

When a plug is inserted in one of the sockets 4 A or , socket 4 is automatically disconnected.



EVE 2849

INTERCONNECTION

The pre-amplifier output and the power-amplifier input of two or more amplifiers can be interconnected or a signal source can be connected direct to the power amplifier, via this socket. In addition, the direct voltage of 24 V is available at this socket for supply of other apparatus. The maximum current is 100 mA.

CONNECTIONS OF THE PLUGS

Microphone plugs 1, 2, 3 and 4:

- | | | |
|--------------------|---|---------------------------------|
| . 1 sensitive core |] | interconnected inside amplifier |
| . 2 screening | | |
| . 3 neutral core | | |

Music input plugs:

- . 1 + 3 : sensitive core
- . 2 : screening or neutral core.

Interconnection plug:

- . 1 : input power amplifier.
- . 2 : mass
- . 3 : output pre-amplifier.
- . 4 : +24 V d. c.

On the socket contacts 1 and 3 are interconnected. By breaking this interconnection the pre-amplifier and power amplifier are electrically separated.

Tape recorder plug:

- . 1 : output amplifier / input recorder - record.
- . 2 : mass
- . 3 : input pre-amplifier / output recorder - play-back

TRANSISTOR D. C. VOLTAGES

	TS1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
VCE	3,5	3,5	3,5	6	3,5	6	8,6	11,8	1	3	3	3	35	35	11,5	11	10,4	20,7 V

CIRCUIT DESCRIPTION

Via one of the pre-amplifiers the input signal is fed to the base of TS7. The bass and treble controls are included between transistors TS7 and TS8. R83 serves for bass control and R84 for treble control.

Transistors TS9 and TS10 ensure that the two output transistors TS13 and TS14 are driven in push-pull. TS11 and TS12 are the actual driver transistors.

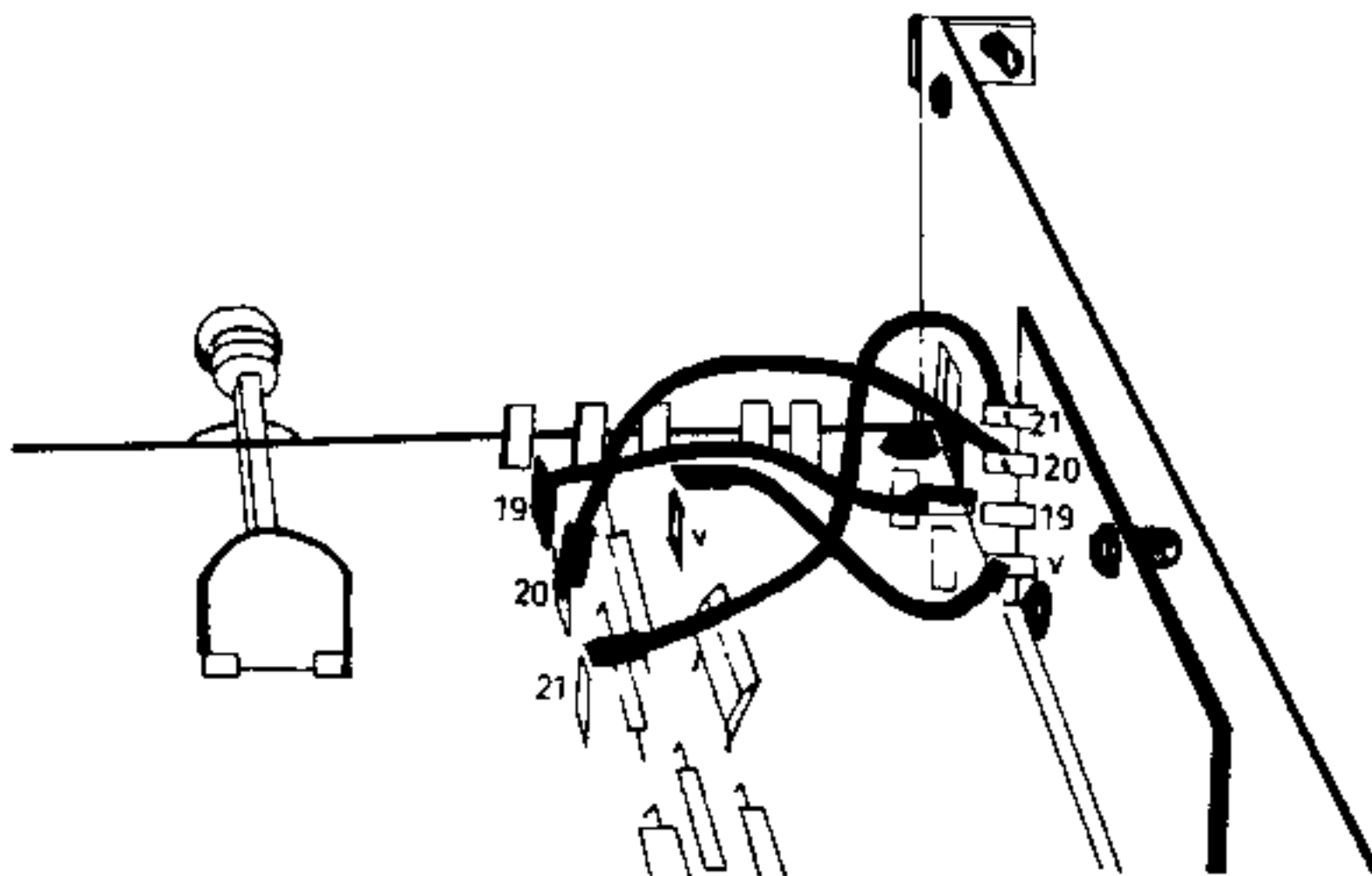
With potentiometers R71 and R72 (at the rear of amplifiers, d and e) the intelligibility can be improved.

Part of the output signal is fed back via parallel network R66//C31.

The circuit diagram shows a circuit (A) with two trimming potentiometers. With these potentiometers the quiescent current through the output stage can be adjusted; this current should be about 50 - 60 mA.

We can also measure the voltage across resistors R65 or R85, so that the current flow through the output transistors without an input signal can be calculated.

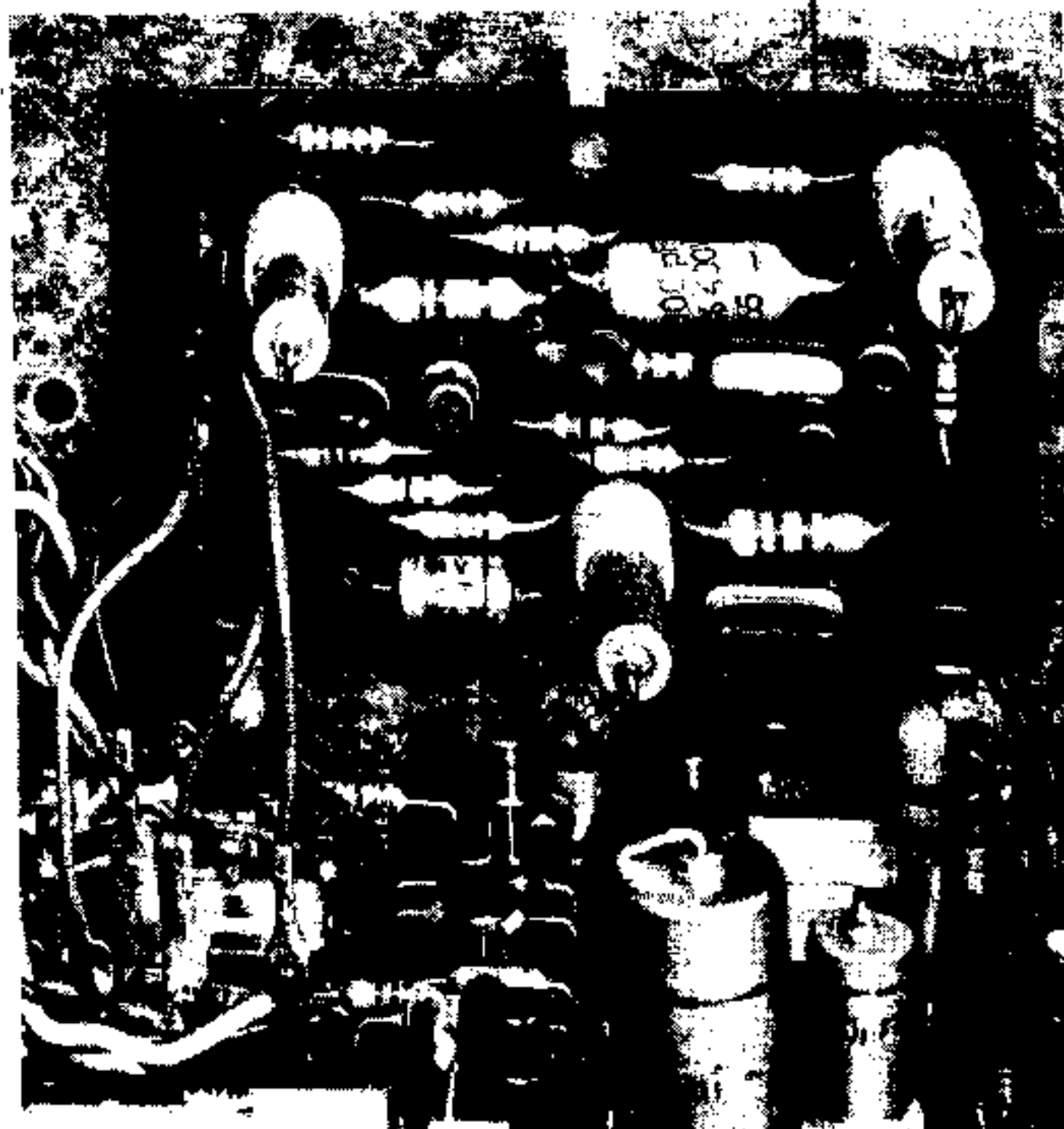
MOUNTING PRE-AMPLIFIER LBB 1253



CONNECTION LBB 1253

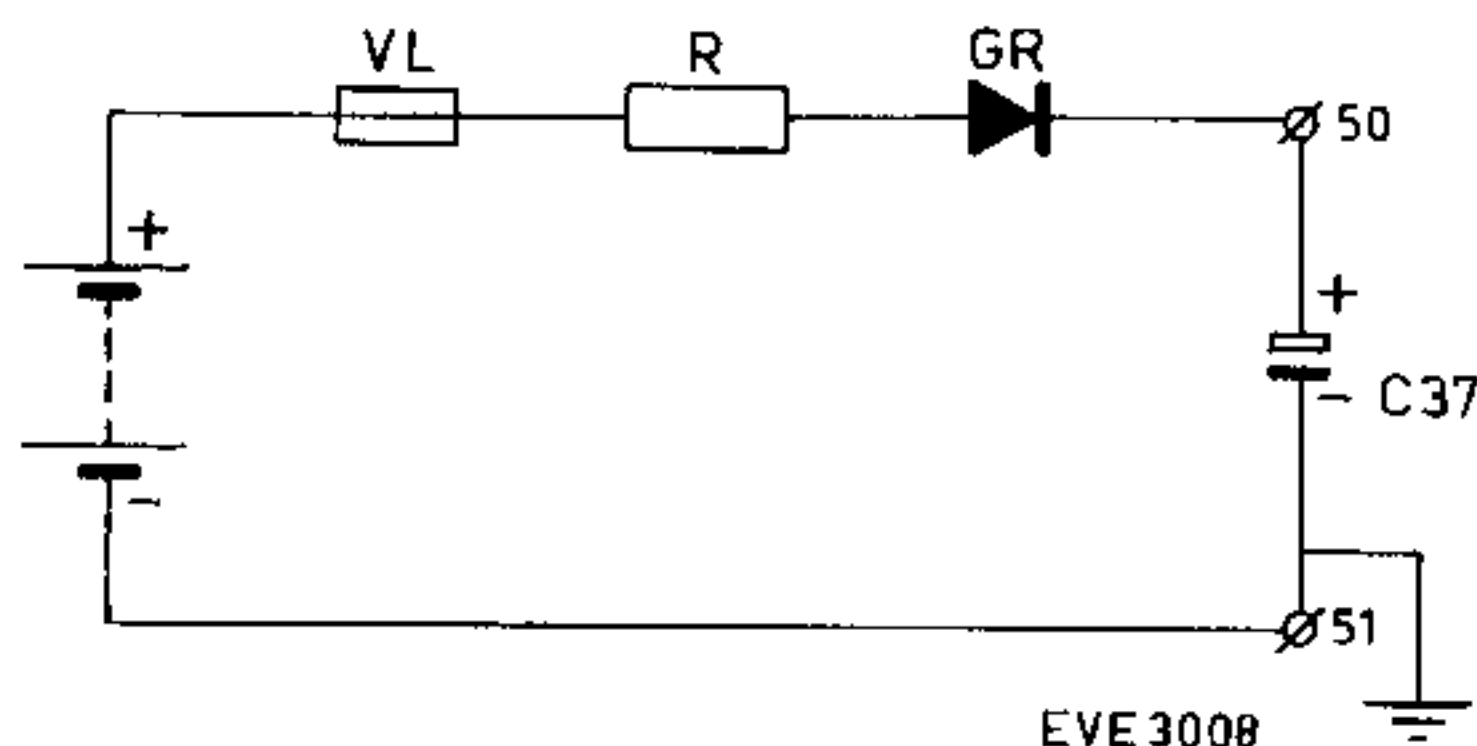
- . Disconnect red wire 19 from terminal v and connect it to terminal 19 of p.u. pre-amplifier LBB 1253.
- . Connect red wire 21 to terminal 21.
- . Connect black wire to terminal 20.
- . Connect violet wire V to terminal V.

LBB 1253



BATTERY SUPPLY

These SQ2 amplifiers may only be supplied from DC-power sources, e. g. motor vehicle batteries, when they are connected according to the following diagram:



Nomm. supply voltage	36 V
Max. supply voltage	42 V
Fuse VL	4 A
Code number fuse	4822 253 20026
Resistance R	4E7
Wattage	≥ 5 Watt
Diode GR: any type with max. forward current of at least 2 A, e. g.	AAV10 (= OA31), BYX38, BYX42, BYX48

Fuse VL2 in the amplifier, should be maintained for protection of the rectifiers.

The amplifier can also be supplied via fuse VL2. However, the rectifier stage should then be unsoldered.

When the amplifier is battery-powered, it cannot be switched on and off with mains switch SK1. For this purpose switch 124701 is available from the Commercial Dept. ELA.

The purpose of R is to limit the capacitors charging current; its value equals approximately the internal resistance of the amplifier mains supply. The diode GR precludes reverse currents in the case of faulty mounting or connection.

If necessary the battery leads for power supply of the amplifier can be connected to the terminal block at the rear of the amplifier.

The original mains leads which are connected to the terminal block (inside the amplifier) should then be unsoldered, and two new wires should be connected between these points and points 50, 51.

MEASURING DIAGRAMS

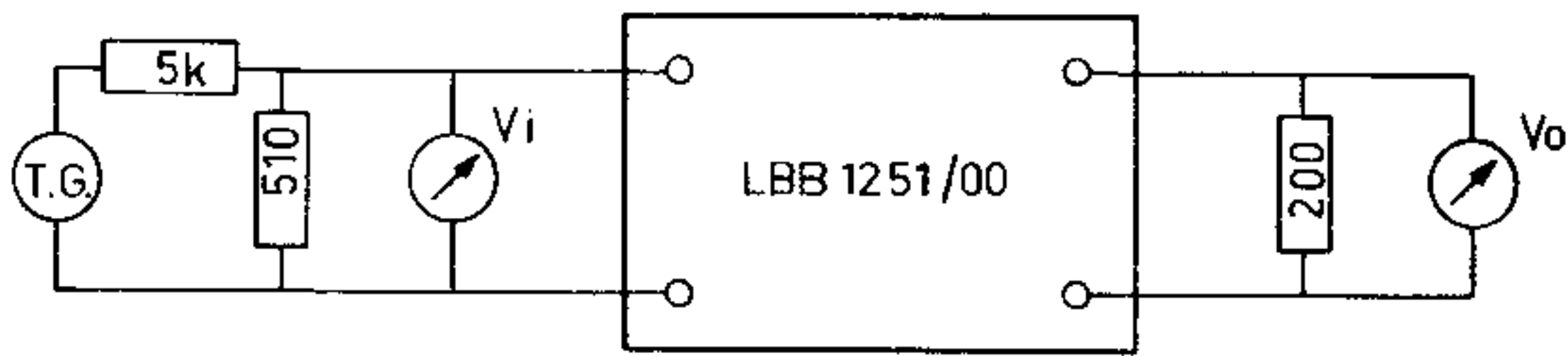
Sensitivity

The bass and treble controls should be set to the zero position. Only the controls of the channel which is in use should be set to maximum.

Microphone input 1, 2, 3 and 4

Adjust the input voltage in such a way that the voltage on the 100 V output is 100 V (1000 Hz).

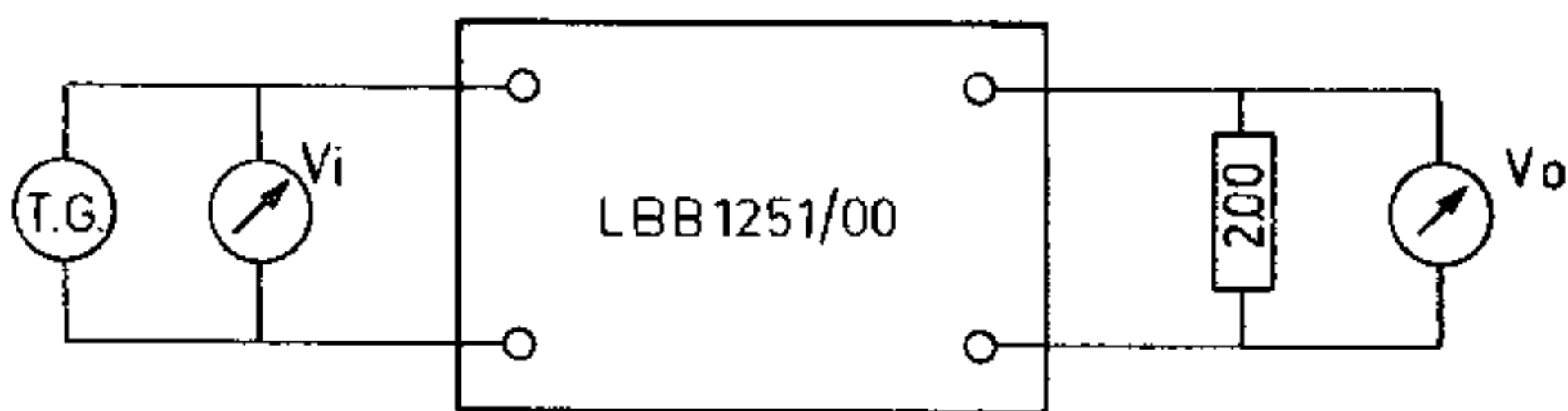
The input voltage should then be $V_i = 0,5 \text{ mV}$.



Music input $\text{O}3$ A and $\text{O}4$ A, $\text{O}5$

See microphone input.

The input voltage should then be $V_i = 100 \text{ mV}$.

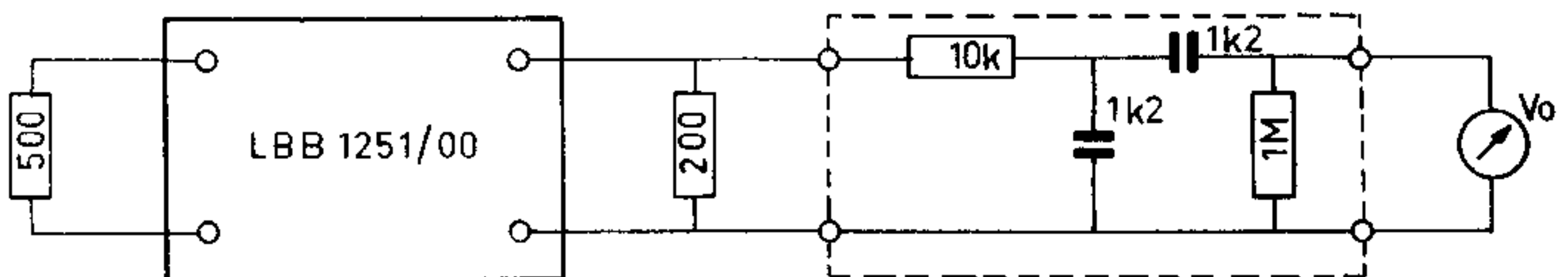


Hum and noise (see Electrical data page 2)

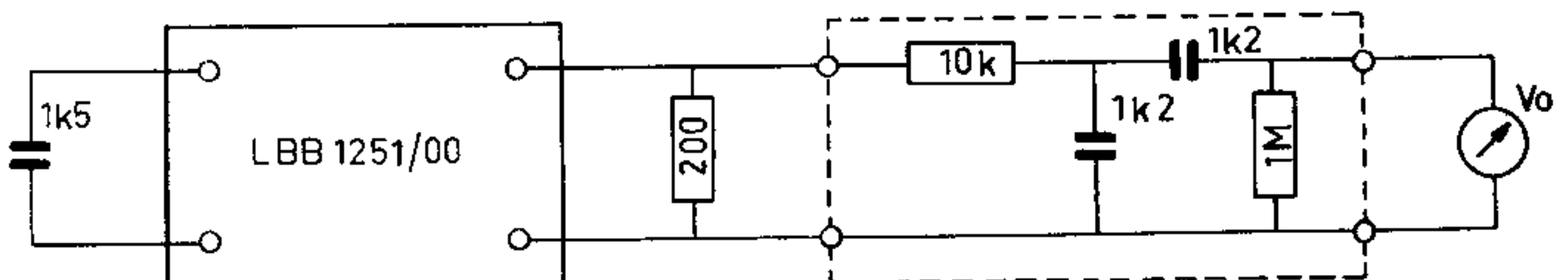
- . Terminate microphone inputs 1, 2, 3 and 4 with a 500Ω resistor.
- . Terminate the music inputs with a 1500 pF capacitor.
- . Set the tone controls to the zero position.

Diagrams:

Microphone input 1, 2, 3 and 4:



Music inputs:



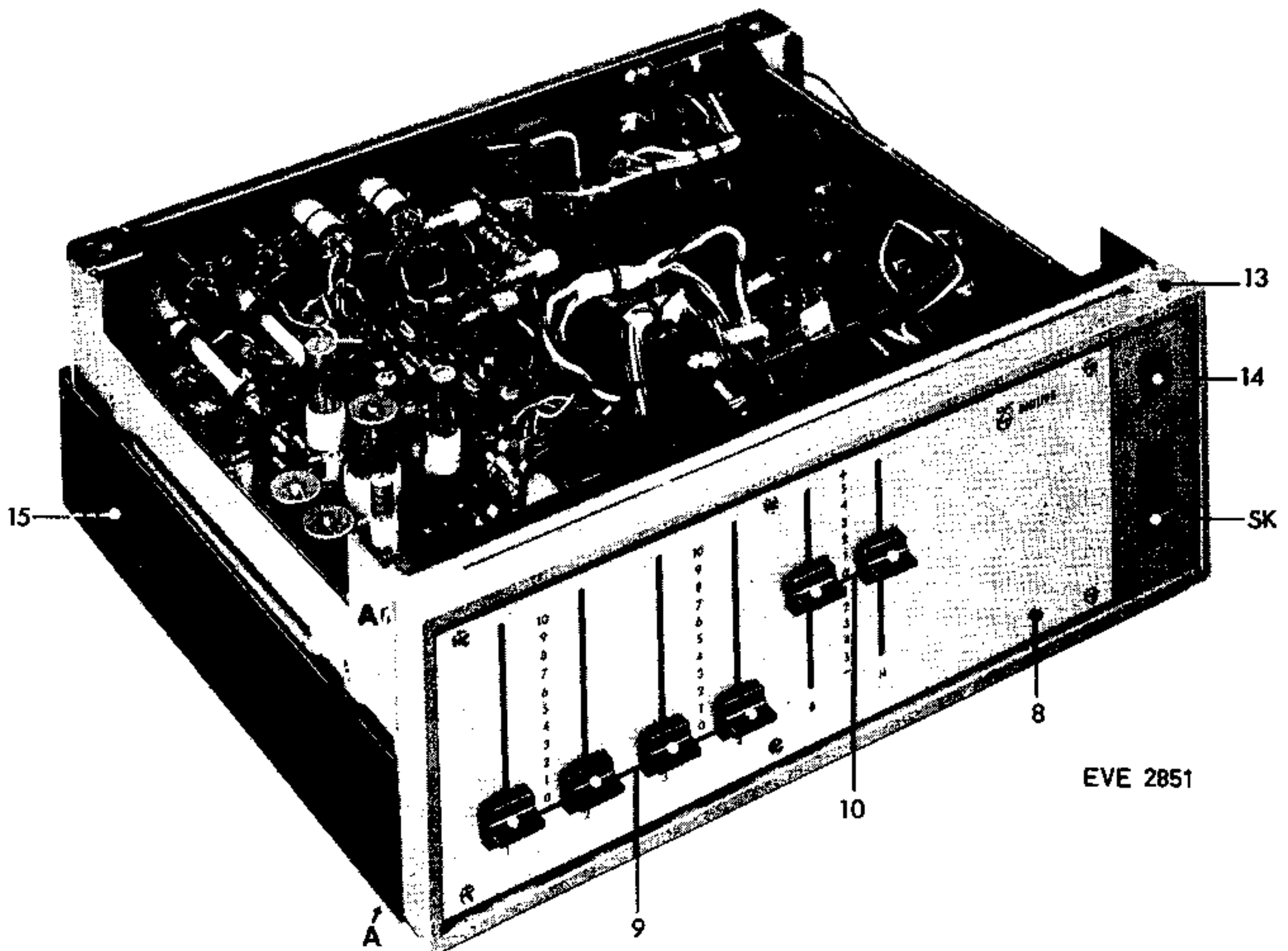
REPLACEMENT OF PARTS

To replace the parts mounted on the plastic front cover (item 13), it is recommended to remove this cover.

- a. Remove the metal bottom and the top plate from the amplifier.
- b. Remove the four little screws (A) from the side panel of the amplifier. These screws are located just behind the plastic front cover.
- c. All parts can now be replaced.

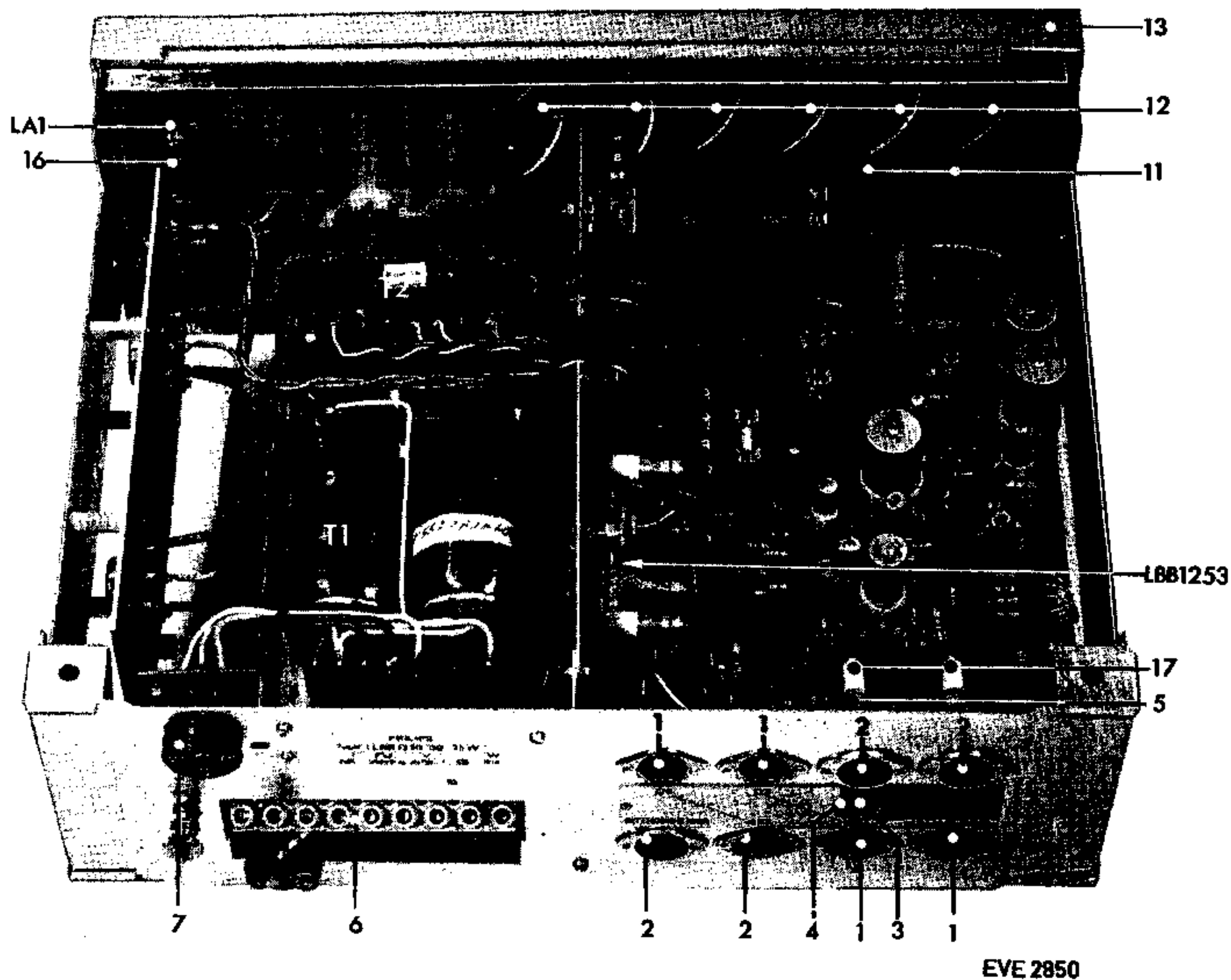
Plastic guides (item 5) of trimming potentiometers

From the inside of the housing of the amplifier these guides can be pushed outwards.



NOTE:

As from serial number 19750, amplifier LBB 1251 has been provided with two 200 k Ω resistors (R86 and R87). The way in which these resistors are fitted is indicated in the circuit diagram.



PARTS LIST

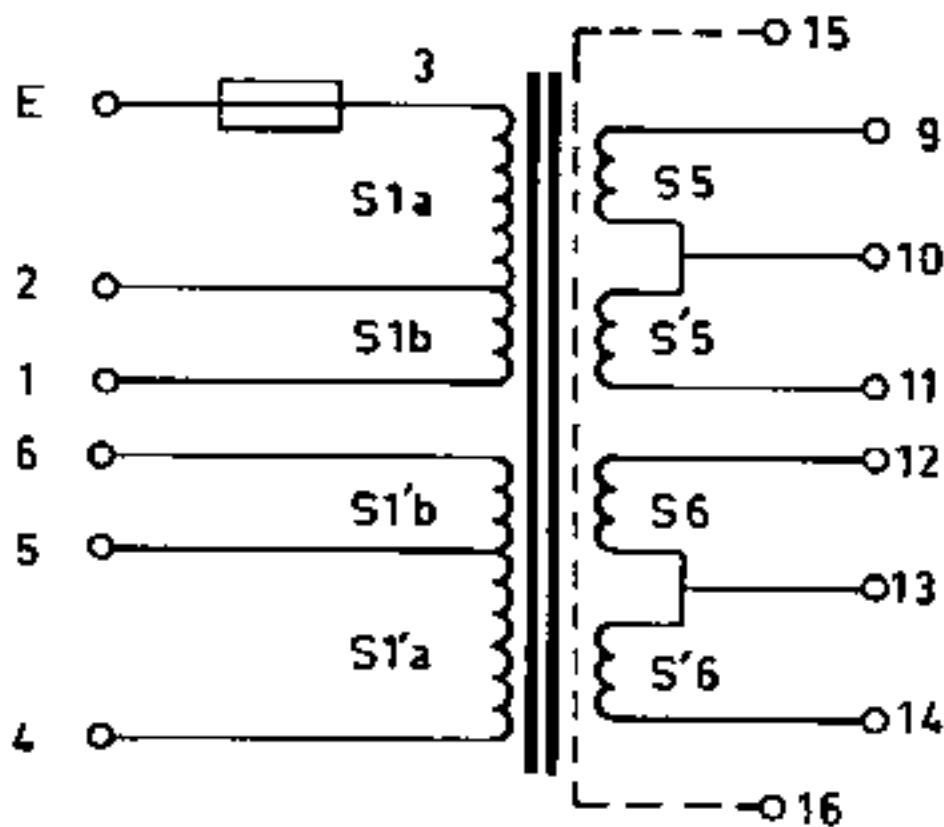
Item	Code number	Description
1	4822 267 40041	Plug with switch
2	4822 267 40039	Plug
3	4822 535 90711	Guide
4	4822 532 60484	Holder
5	4822 535 90712	Guide
6	4822 290 60122	Connection block
7	4822 272 10037	Voltage adapter
8	4822 454 40054	Front plate
9	4822 411 60113	Knob (red)
10	4822 411 60114	Knob (grey)
11	4822 693 50071	Guide
12	4822 535 70321	Spiral
13	4822 447 50079	Front section
14	4822 381 10288	Lens
15	4822 462 40229	Stud
	4822 447 50081	Cap for connection block
16	4822 255 10007	Lamp holder
17	4822 462 70425	Cap

STUKLIJST

Item	Code number	Description		
TS1-8	4822 130 40145	BC109B		
TS9-10	4822 130 40369	BC179B		
TS11-12	4822 130 40638	BFY50/E1 (pair)		
TS13-14	4822 130 40637	BDY20 (pair)		
TS15	4822 130 40449	BDY20		
TS16	4822 130 40294	BFY50		
TS17-18	4822 130 40184	BC107		
GR1-2-6	4822 130 30189	BA114		
GR3	4822 130 30438	BZY94/C16		
GR4-5	4822 130 30524	FD23		
GR7	4822 130 30346	BZY88/C12		
T1	4822 146 20404			
T2	4822 140 60197			
SK1	4822 277 20048			
SK2	4822 272 10037			
LA1	4822 134 40065	24 V, 50 mA		
VL1	4822 252 20001	Thermal		
VL2	4822 253 20026	4 A		
VL3	4822 253 20006	100 mA		
C1-4	4822 124 20354	10 μ F	4 V	
C5-6-20	4822 121 40055	47 KpF	250 V	$\pm 10 \%$
C7-8	4822 121 40053	27 KpF	250 V	$\pm 10 \%$
C9-12	4822 124 20358	15 μ F	16 V	
C13	4822 124 20411	680 μ F	16 V	
C14	4822 124 20358	15 μ F	16 V	
C15	4822 124 20397	220 μ F	6,3 V	
C16	4822 124 20358	15 μ F	16 V	
C17	4822 121 40053	27 KpF	250 V	$\pm 10 \%$
C18	4822 121 40268	0,68 μ F	250 V	$\pm 10 \%$
C19	4822 120 20121	3K3 pF	500 V	$\pm 20 \%$
C21	4822 124 20398	220 μ F	25 V	
C22	4822 124 20358	15 μ F	16 V	
C23	4822 124 20409	470 μ F	10 V	
C24	4822 124 20368	33 μ F	16 V	
C26	4822 124 20398	220 μ F	25 V	
C27	4822 124 20378	68 μ F	4 V	
C28-29	4822 124 20365	33 μ F	40 V	
C30	4822 124 20412	680 μ F	25 V	
C31	4822 120 20074	56 pF	500 V	$\pm 15 \%$
C32	4822 120 40134	10 KpF	400 V	$\pm 10 \%$
C33	4822 124 20533	470 μ F	40 V	
C34	4822 124 20365	33 μ F	40 V	
C35	4822 121 40047	10 KpF	250 V	$\pm 10 \%$

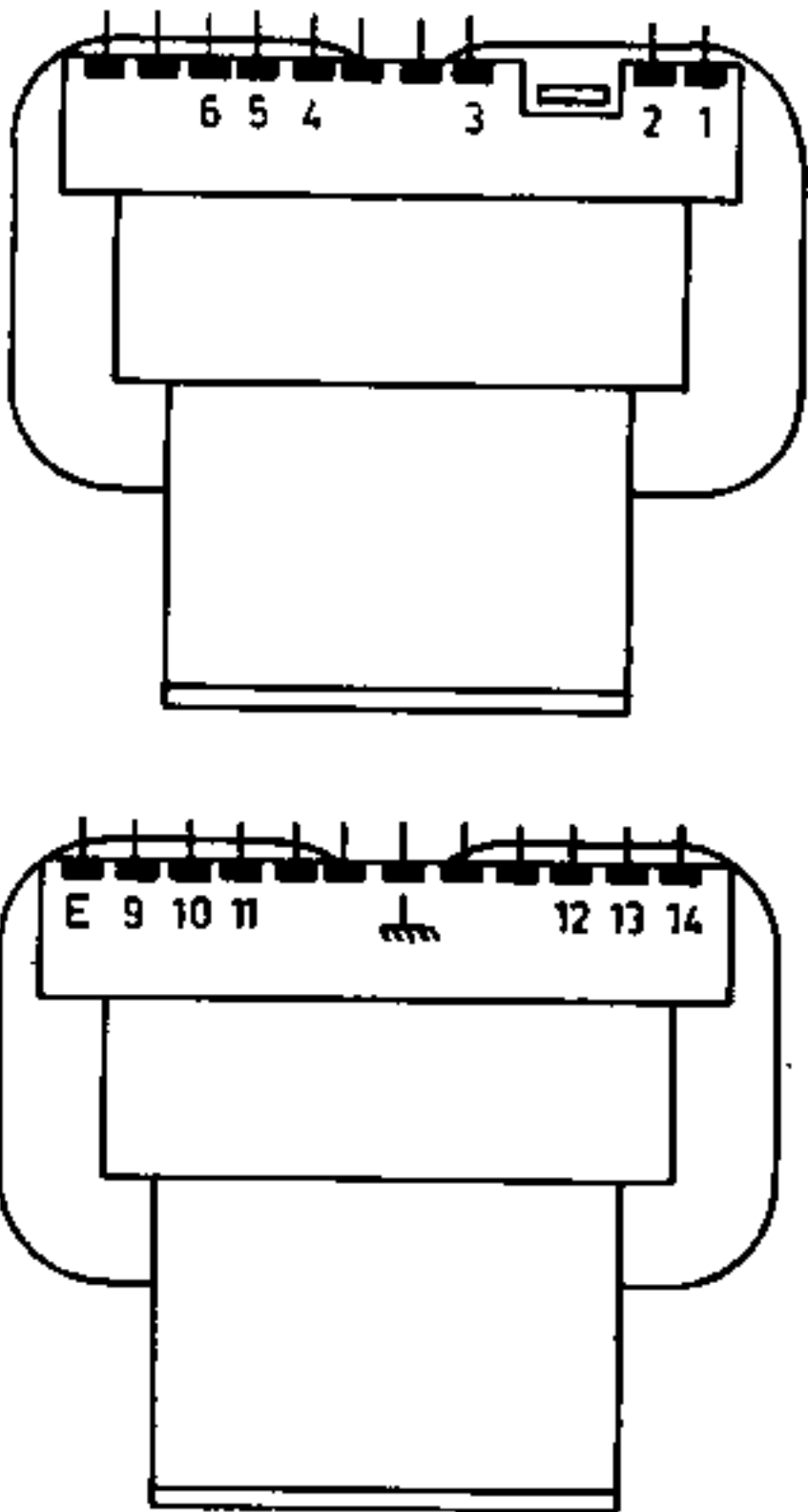
Item	Code number	Description			
C36	4822 124 20363	22 μ F	63 V		
C37	4822 124 70024	2500 μ F	64 V		
C38	4822 120 20121	3K3 pF	500 V	$\pm 20\%$	
C39-41-43-45-49	4822 120 20058	15 pF	500 V	$\pm 20\%$	
C40-42-44-46	4822 120 20107	1000 pF	500 V	$\pm 20\%$	
C47	4822 120 20067	33 pF	500 V	$\pm 20\%$	
C48	4822 120 20098	470 pF	500 V	$\pm 20\%$	
R1-5-9-13	4822 110 60171	240 k Ω	1/8 W	$\pm 5\%$	
R2-6-10-14	4822 110 60157	75 k Ω	1/8 W	$\pm 5\%$	
R3-7-11-15	4822 110 60126	5K1 Ω	1/8 W	$\pm 5\%$	
R4-8-12-16	4822 110 60065	27 Ω	1/8 W	$\pm 5\%$	
R17-22-56-58	4822 110 60147	33 k Ω	1/8 W	$\pm 5\%$	
R18-23	4822 110 60156	68 k Ω	1/8 W	$\pm 5\%$	
R19-24	4822 110 50194	1M8 Ω	1/4 W	$\pm 10\%$	
R20-25-68	4822 110 60133	9K1 Ω	1/8 W	$\pm 5\%$	
R21-26	4822 110 60129	6K8 Ω	1/8 W	$\pm 5\%$	
R27	4822 110 60099	510 Ω	1/8 W	$\pm 5\%$	
R28-29-30-31	4822 110 60131	7K5 Ω	1/8 W	$\pm 5\%$	
R32	4822 110 60164	130 k Ω	1/8 W	$\pm 5\%$	
R33	4822 110 60152	47 k Ω	1/8 W	$\pm 5\%$	
R34	4822 110 60071	43 Ω	1/8 W	$\pm 5\%$	
R35-46	4822 110 60125	4K7 Ω	1/8 W	$\pm 5\%$	
R36-48	4822 110 60123	3K9 Ω	1/8 W	$\pm 5\%$	
R37	4822 110 60132	8K2 Ω	1/8 W	$\pm 5\%$	
R38	4822 110 60105	820 Ω	1/8 W	$\pm 5\%$	
R39	4822 110 60111	1K3 Ω	1/8 W	$\pm 5\%$	
R40	4822 110 60158	82 k Ω	1/8 W	$\pm 5\%$	
R41	4822 110 60153	51 k Ω	1/8 W	$\pm 5\%$	
R42	4822 110 60067	33 Ω	1/8 W	$\pm 5\%$	
R43	4822 110 50105	820 Ω	1/4 W	$\pm 5\%$	
R44	4822 110 60126	5K1	1/8 W	$\pm 5\%$	
R45	4822 110 60123	3K9 Ω	1/8 W	$\pm 5\%$	
R47-49	4822 110 60145	27 k Ω	1/8 W	$\pm 5\%$	
R50	4822 110 50054	10 Ω	1/4 W	$\pm 5\%$	
R51	4822 110 60124	4K3 Ω	1/8 W	$\pm 5\%$	
R52-54	4822 110 50087	180 Ω	1/4 W	$\pm 5\%$	
R53-55	4822 110 30108	1K1 Ω	1/2 W	$\pm 5\%$	
R61	4822 110 21092	270 Ω	1 W	$\pm 5\%$	
R62	4822 112 20073	51 Ω	4W7	$\pm 5\%$	
R63-64	4822 110 30073	51 Ω	1/4 W	$\pm 5\%$	
R65	4822 113 60093	0,39 Ω	2 W	$\pm 10\%$	
R66	4822 110 60144	24 k Ω	1/8 W	$\pm 5\%$	
R67-70	4822 110 60134	10 k Ω	1/8 W	$\pm 5\%$	
R69	4822 110 50081	100 Ω	1/4 W	$\pm 5\%$	
R71	4822 110 40123	3K9 Ω	1/2 W	$\pm 10\%$	
R72	4822 110 50129	6K8 Ω	1/4 W	$\pm 5\%$	

Item	Code number	Description			
R73	4822 110 50112	1K5Ω	1/4 W	± 5 %	
R74	4822 112 20091	240 Ω	4, 7 W	± 5 %	
R75	4822 112 20098	470 Ω	4, 7 W	± 5 %	
R76	4822 116 30101	NTC 2K5Ω			
R77-78	4822 101 10069	470 kΩ	lin.		
R79-80-81-82	4822 101 30244	10 kΩ	log.		
R83-84	4822 101 30245	47 kΩ	log.		
R85	4822 113 60093	0, 39 Ω	2 W	± 10 %	
R86-87	4822 110 60168	200 Ω	1/8 W	± 5 %	

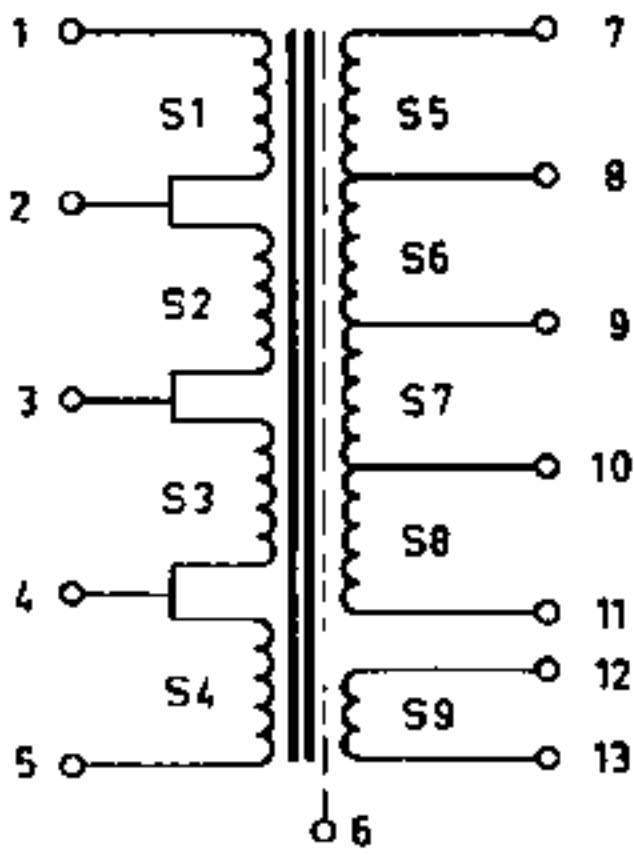


	S1a	S1b	S1'b	S1'a	S 5	S'5	S 6	S'6
N	612	77	77	612	102	102	102	102
V	110	14	14	110	18,5	18,5	18,5	18,5
Ω	14	2	2	14	0,37	0,41	0,41	0,37

T1

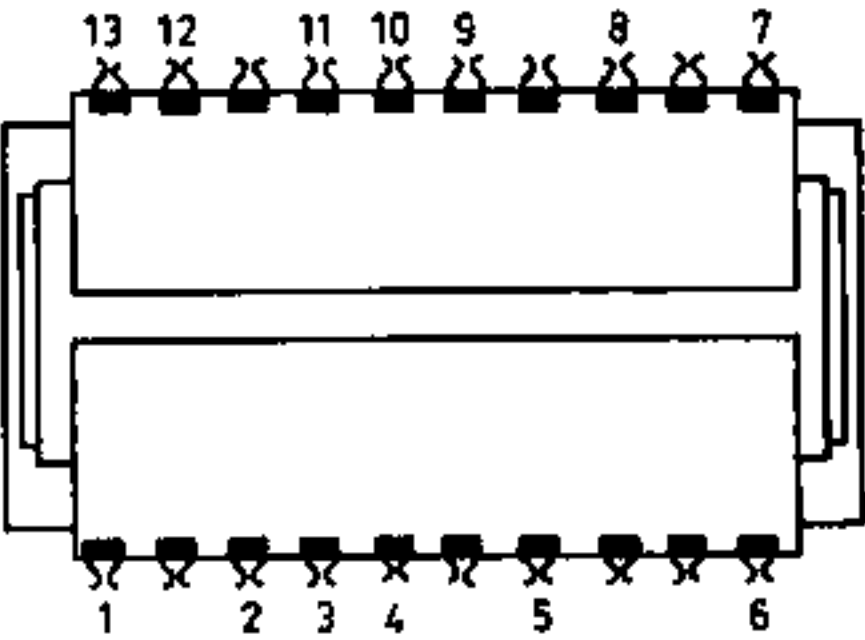


EVE 3164

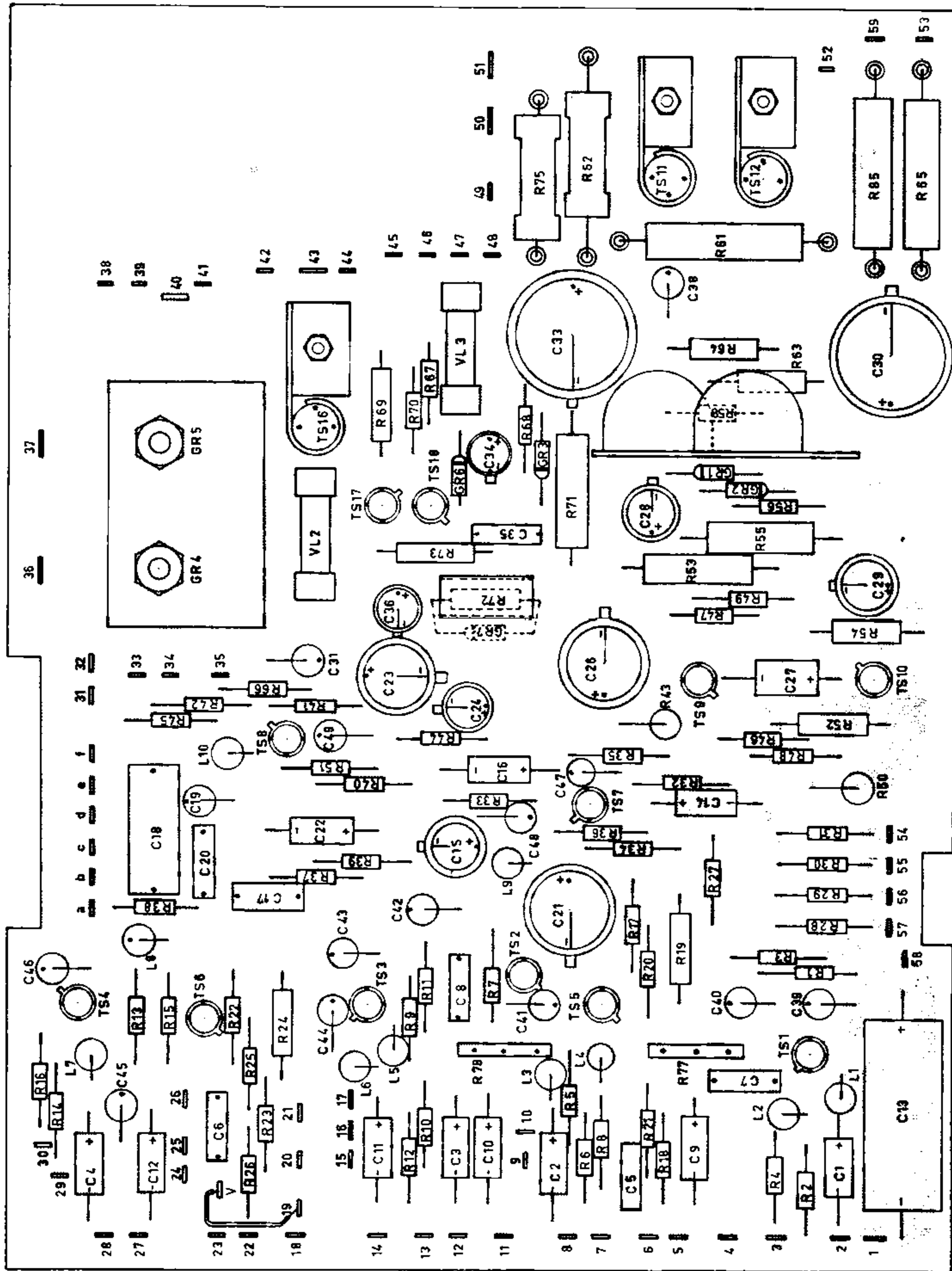


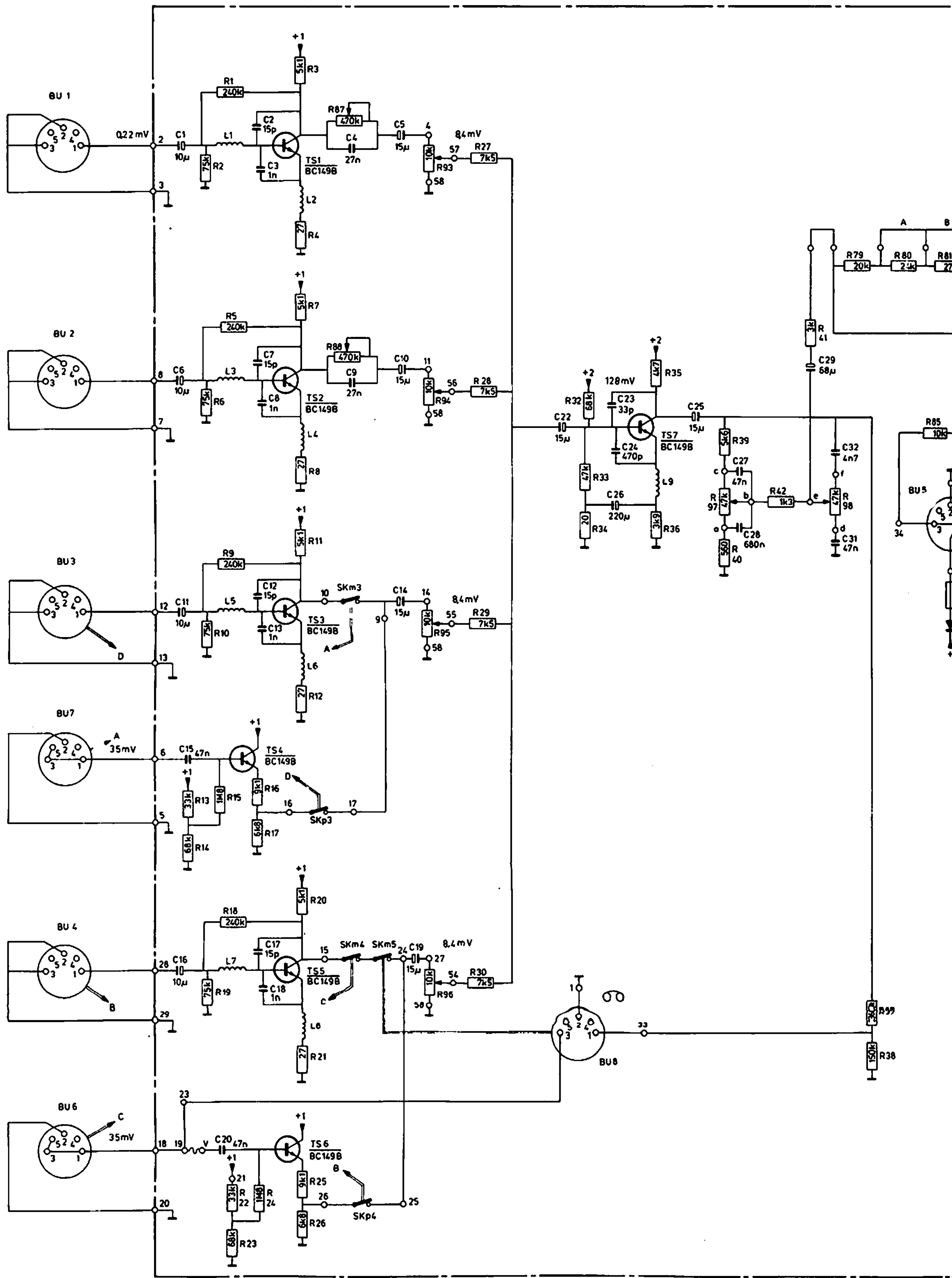
	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	S 9
N	47	47	47	47	74	28	260	150	47
V	10	10	10	10	14	6	50	30	10
Ω	0,2	0,23	0,2	0,23	0,3	0,1	5	3	1

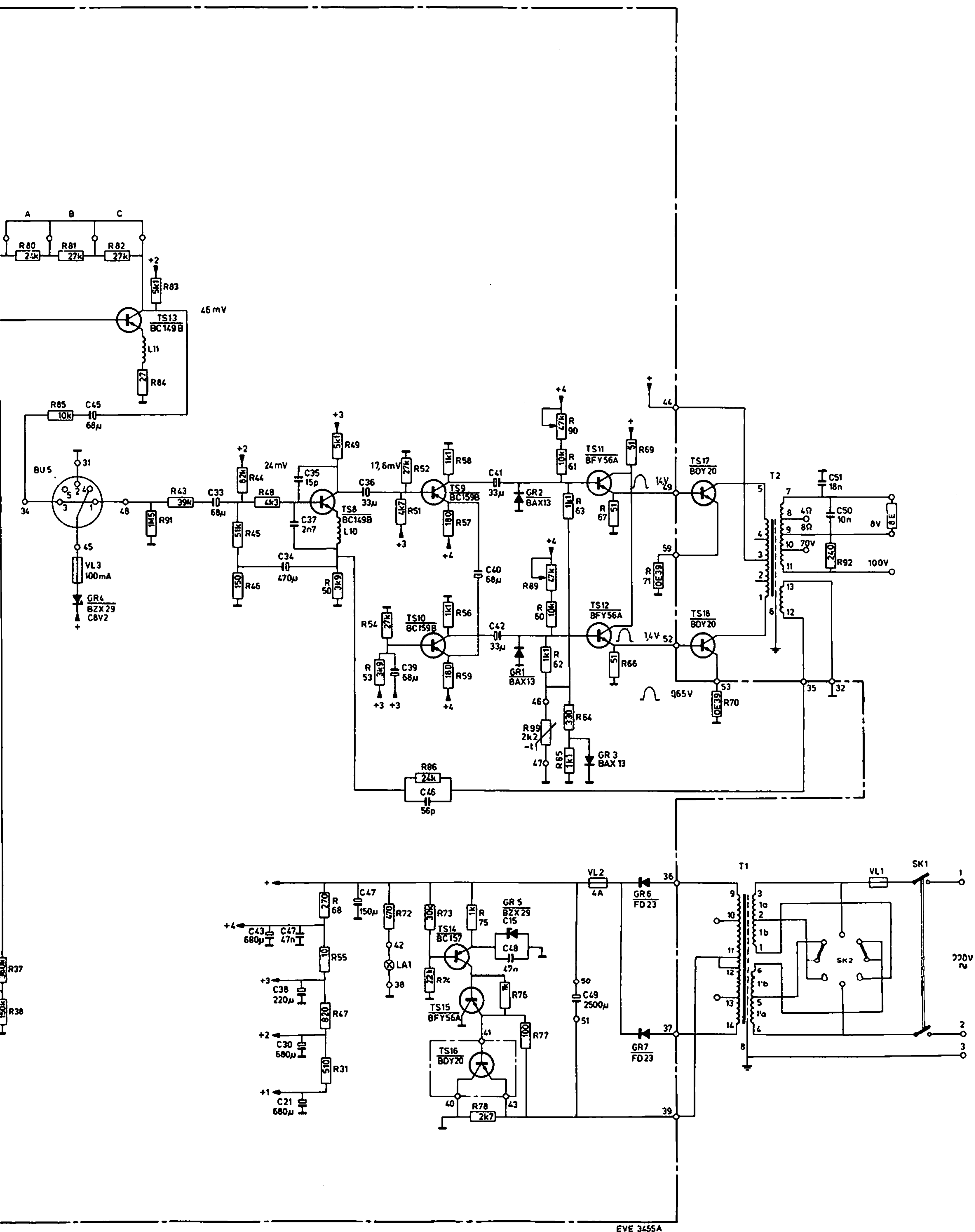
T2



EVE 3162







PHILIPS*Service*

5-1-1971

LBB 1251

Eb 522

Information

It may occur that the setting of the output stage of amplifiers LBB 1251 is not correct. This may also be the case after replacement of the output transistors. As from serial number 19601 all 50-W amplifiers LBB 1251 are equipped with a potentiometer board. With the aid of these potentiometers the quiescent current in the output stage can be adjusted. For mounting this printed circuit board, reference is made to the Service Manual of LBB 1251.

Code number of the p.c. board 4822 214 10083.

Het kan voorkomen dat bij de versterkers LBB 1251 de eindtrap niet helemaal goed ingesteld is. Dit kan ook het geval zijn bij het vervangen van de eindtransistoren. Vanaf serienummer 19601 zijn alle 50 Watt versterkers LBB 1251, uitgerust met een instelpotentiometer print. Met behulp van deze potentiometers kan de ruststroom door de eindtrap ingesteld worden. Zie voor het aanbrengen van deze print de documentatie van de LBB 1251.

Codenummer print: 4822 214 10083.

Es kann vorkommen dass die Einstellung der Endstufe der Verstärker LBB 1251 nicht ganz korrekt ist; dies kann die Folge des Austausches der Endtransistoren sein. Ab Seriennummer 19601 wurden alle 50-W-Verstärker LBB 1251 mit einer Einstellpotentiometer-Druckplatine ausgerüstet. Mit diesen Potentiometern ist der Ruhestrom durch die Endstufe einstellbar. Für die Montage dieser Druckplatine siehe die Anleitung von LBB 1251. Code-Nummer der Druckplatine 4822 214 10083.

Il peut arriver que le réglage de l'étage final des amplificateurs LBB 1251 n'est pas correct. Ce cas peut également se présenter après remplacement des transistors de sortie. A partir du no de série 19601 tous les amplificateurs de 50 W LBB 1251 sont équipés d'une platine imprimée potentiométrique. A l'aide de ces potentiomètres le courant de repos dans l'étage final est réglable. Pour le montage de cette platine imprimée, se référer au manuel Service de LBB 1251. Le no de code de la platine imprimée est 4822 214 10083.

Podría suceder que la etapa final de los amplificadores no esté bien ajustada por completo. Semejante cosa puede suceder cuando se substituyen los transistores finales. Desde el número de serie 19601 todos los amplificadores de 50 W LBB 1251 han sido equipados con una placa impreso para potenciómetro de ajuste. Con la ayuda de estos potenciómetros la corriente de reposo puede ser ajustada por la etapa final. Para el montaje de esta placa impreso véase la documentación del amplificador LBB 1251.

Número de código de la placa impreso: 4822 214 10083.

PHILIPS

Service



29-1-1971	LBB 1250 - LBB 1251	Eb 525
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Information

The code-number of item 1, plug with switch, has been changed into 4822 467 40193.
Item 12 should be 4822 535 70231 in stead of 4822 535 70321.

Het codenummer van pos. 1 steker met schakelaar is gewijzigd in 4822 467 40193.
Pos. 12 moet zijn 4822 535 70231 i.p.v. 4822 535 70321.

Die Code-Nummer für Pos. 1 Stecker mit Schalter wurde in 4822 467 40193 geändert.
Pos. 12 hat statt 4822 535 70321 die Code-Nummer 4822 535 70231.

Le numéro de code de rep. 1 fiche avec commutateur a été modifié à 4822 467 40193.
Le numéro de code de rep. 12 4822 535 70321 doit être modifié à 4822 535 70231.

El número de código para la posición 1, saber enchufe con conmutador ha sido
modificado en 4822 467 40193.
La posición 12 llevará el número de código 4822 535 70231 en vez de 4822 535 70321.
