

# Dual

Edition October 1971

## Dual HS 51 Service Manual



|                                                          |            |
|----------------------------------------------------------|------------|
| Technical data                                           | page 2     |
| Wiring diagram                                           | page 3     |
| Adjustment- and test datas                               | page 4     |
| Schematic diagram of preamplifier                        | page 5     |
| Circuit board of preamplifier (printed wiring side)      | page 5     |
| Schematic diagram of control amplifier                   | page 6     |
| Circuit board of control amplifier (printed wiring side) | page 6     |
| Schematic diagram of power amplifier                     | page 7     |
| Circuit board of power amplifier (printed wiring side)   | page 7     |
| Replacement parts of transistor stereo amplifier TV 121  | page 8,10  |
| Chassis of transistor stereo amplifier TV 121            | page 9     |
| Replacement parts HS 51                                  | page 11,12 |

**Dual Gebrüder Steidinger · 7742 St. Georgen/Schwarzwald**

**dunlcan**

## Technical data

### Output power

(measured at 4 Ohm for 1 % distortion)

music power 12 Watt/channel  
continuous tone at 1 kHz 9 Watt/channel

### Frequency range

30 Hz - 20 kHz

### Intermodulation distortion

250 Hz/8000 Hz 4/1 at nominal output 2,5 %

### Inputs

#### sensitivity

tuner 340 mV at 470 kOhm  
tape 340 mV at 470 kOhm

### Frequency response

(measured with tone controls in their mechanical centers)

phono 20 Hz - 20 kHz  $\pm$  3 dB

tuner and  
tape inputs 20 Hz - 20 kHz  $\pm$  1,5 dB

### Tone control

bass + 13 - 16 dB at 50 Hz  
treble + 12 - 16 dB at 15 kHz

### Volume control

with switchable contour control

### Balance control

control range 14 dB

### Mono/stéréo switch

### Outputs

2 loudspeaker jacks DIN 41 529, 4 Ohm impedance  
1 Stereo jack 1/4" for headphones

### Signal/noise-ratio

phono:  
signal/injected-noise ratio  $\geq$  35 dB  
signal/random-noise ratio  $\geq$  55 dB

tuner and tape:  
referred to  $N_a = 2 \times 50$  mW  $\geq$  50 dB  
referred to nominal power  $\geq$  70 dB

### Crosstalk damping at 1000 Hz

phono  $\geq$  20 dB  
tuner and tape  $\geq$  45 dB

### Power consumption

approx. 55 VA

### Line voltages

110/130/150/220/240 V

### Fuses

at 110/130/150 V 630 mA slow-blow  
at 220/240 V 315 mA slow-blow

### Dimensions

control unit with dust cover CH 20  
16 1/2" x 14 7/8" x 8 7/8"

### Weight

control unit with dust cover CH 20  
27,5 lbs.

### Complement

preamplifier: 4 silicon transistors  
control-amplifier: 4 silicon transistors  
power amplifier  
with power supply: 6 silicon transistors  
4 silicon power transistors  
2 silicon diodes  
1 silicon rectifier  
2 C-Fuses 1 A medium blow  
for protection of final stages

### Speaker box

### Frequency range

50 Hz - 20 000 Hz, according to DIN 45 500

### Resonance

85 Hz

### Nominal impedance

4 Ohm

### Power handling capacity

20 Watt

### Maximum power handling capacity

35 Watt

### Minimum power required

(measured under room conditions)  
3 Watt

### Distortion

according to DIN 45 500  
measured at rated power:

250 Hz - 600 Hz  $\leq$  2 %  
600 Hz - 20 kHz  $\leq$  1 %

### Complement

1 special woofer 7 11/16" dia., 1" voice coil, air-gap induction 12 000 gauss, magnetic flux 57 000 maxwell  
1 special tweeter 4 1/8" x 2 3/4", 5/8" voice coil, air-gap induction 10 000 gauss, magnetic flux 21 000 maxwell  
2 LC filters, crossover at 1200 Hz  
Attenuation 12 dB/octave

### Connection

recessed standardized socket, according to DIN 41 529

### Dimensions

14 5/16" x 9 1/16" x 6 3/8" (H x W x D)

### Gross volume

3 gallons

### Weight

9,3 lbs.

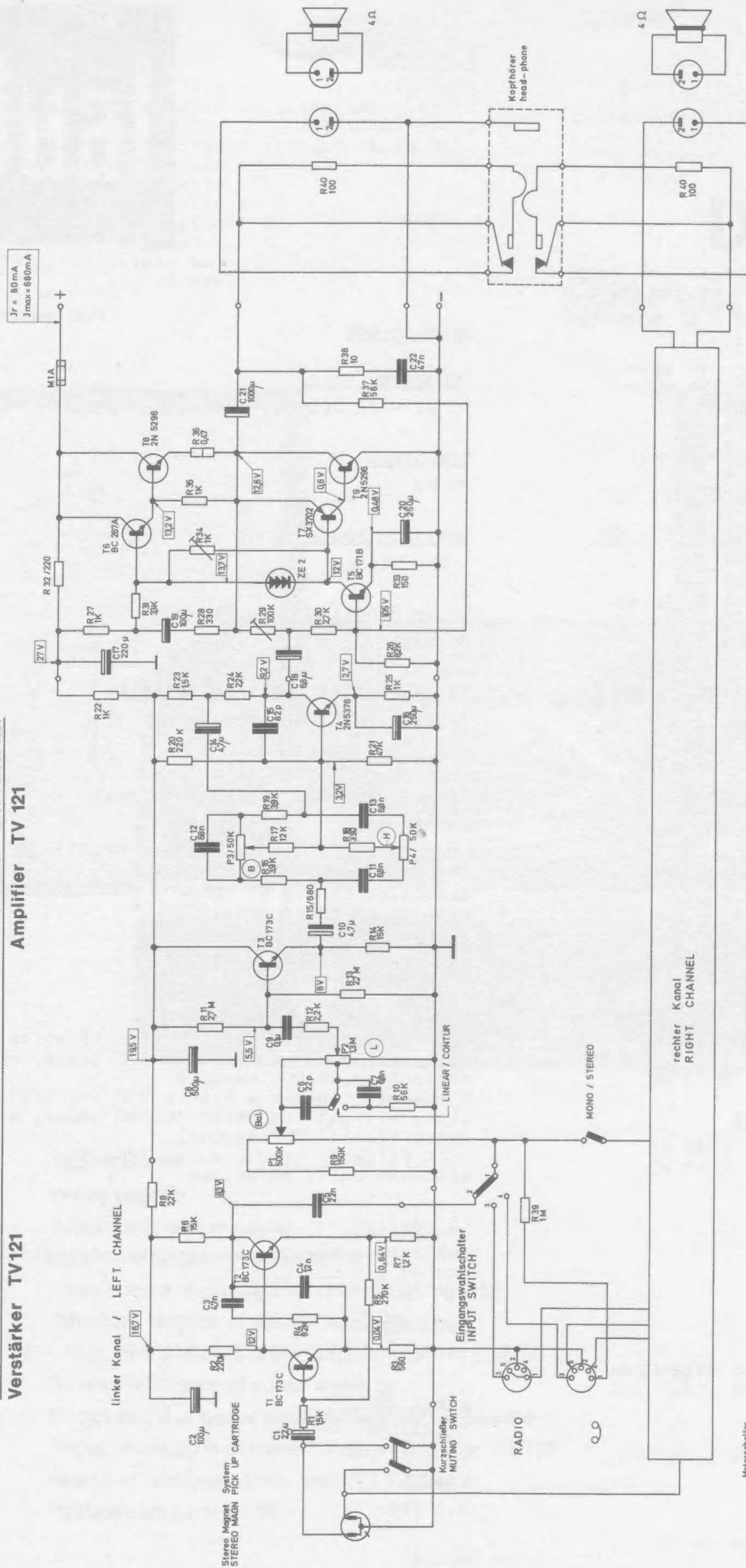
### Grill

anodized aluminium

Fig. 1

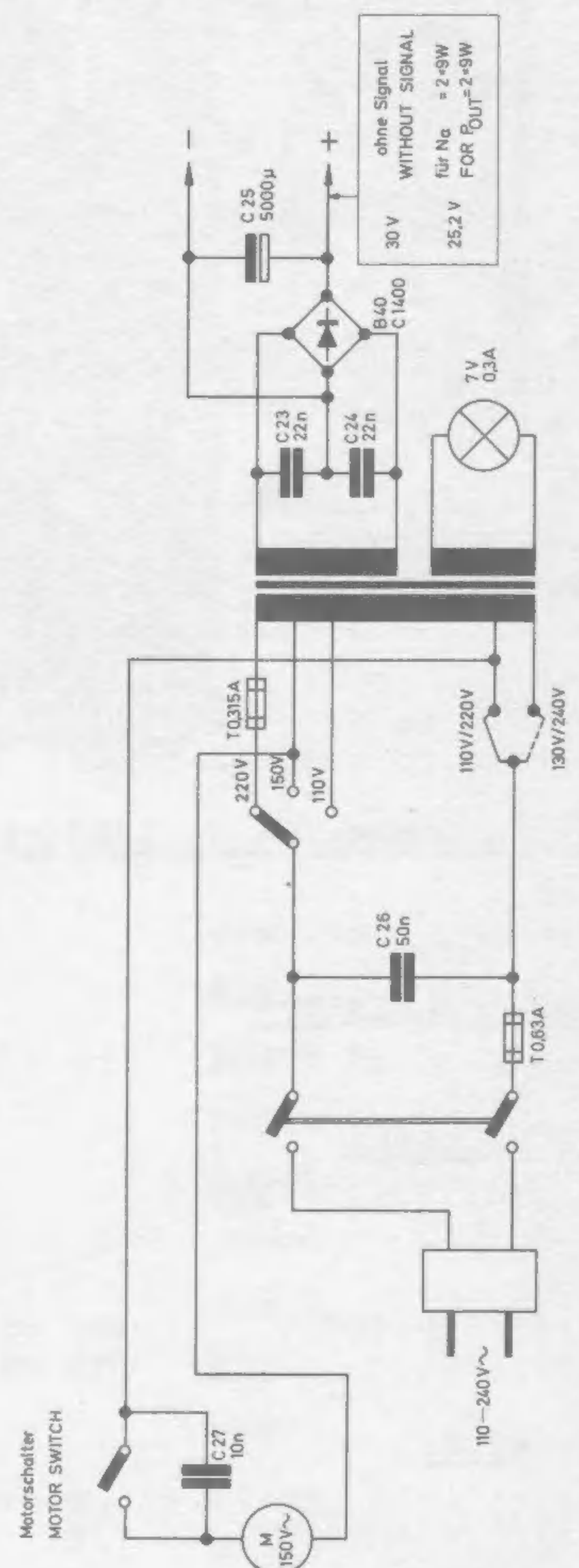
# Schaltsschema Verstärker TV121

## WIRING DIAGRAM Amplifier TV 121



Spannungen gemessen mit Multizet ( 50000 Ω / V )  
 Strome gemessen mit Multavi II ( 333 Ω / V )  
 voltages measured with Multizet ( 50000 Ω / V )  
 currents measured with Multavi II ( 333 Ω / V )

Änderungen vorbehalten!  
 alterations reserved!



## Adjustment- and test datas

### Power consumption

at 220 V unloaded approx. 170 mA  
at 220 V under full load approx. 350 mA

### Operating voltages

preamplifier approx. 16,7 V  
control amplifier approx. 19,5 V  
power amplifier approx. 27 V

### Symmetry and none-signal current of the output stages

turn back control R 34 to 0 Ohm on a switched off unit (about 70° F) then switch the unit on and adjust the none-signal current to 70 mA.

Now adjust center voltage (measured from C 21 and against chassis) to 12.5 V with control R 29. Check and adjust none-signal current once again. After the unit warms up (after about 5 minutes) the none-signal current should reach a maximum of 80 mA.

### Output power / headphones

feed 1000 Hz signal to radio or tape input, both channels driven, volume control at max., balance control and tone controls in center position.

Tune output signal to 6 V (9 W).

Input signal approx. 340 mV,  
on the tape recorder output (pin 1/2 and 4/2):  
about 3,4 mV, 10kOhm should be available.  
On headphones: 4,3 - 5,3 V/400 Ohm

### Distortion

see fig. 3

### Bass and treble lift and attenuation

see fig. 4

### Physiological volume control

see fig. 5

### Balance control

control range 14 dB

### Pre-amplifier frequency response

measured on the tape recorder output, terminating resistance 100 kOhm. Feed 10 mV/1000 Hz on to the PU-magnetic input.

Output voltage at 1000 Hz on tape output:  
75-95 mV.

Bass lift at 100 Hz 11 - 14 dB

treble attenuation at 10 kHz 15 - 18 dB

### Input sensitivity

measurement frequency 1000 Hz. Necessary input signal for 6 V output signal:

Tuner: approx. 340 mV

Tape: approx. 340 mV

### Fluctuation voltage measurement

switch on "linear" position, turn the volume control, bass, treble and balance control on electrical center:

maximum 1,4 mV/channel.

Input selector switch on position "Tuner" volume control on maximum, tone controls on maximum, balance control on electrical center, radio input with 100 kOhm closed:

maximum 2 mV/channel.

Input selector switch on position "Phono", volume control on maximum, balance control on electrical center. Automatic changer switched on. Tonearm on support:

maximum 30 mV  $\pm$  46 dB.

Fig. 2 Power bandwidth, according to DIN 45 500

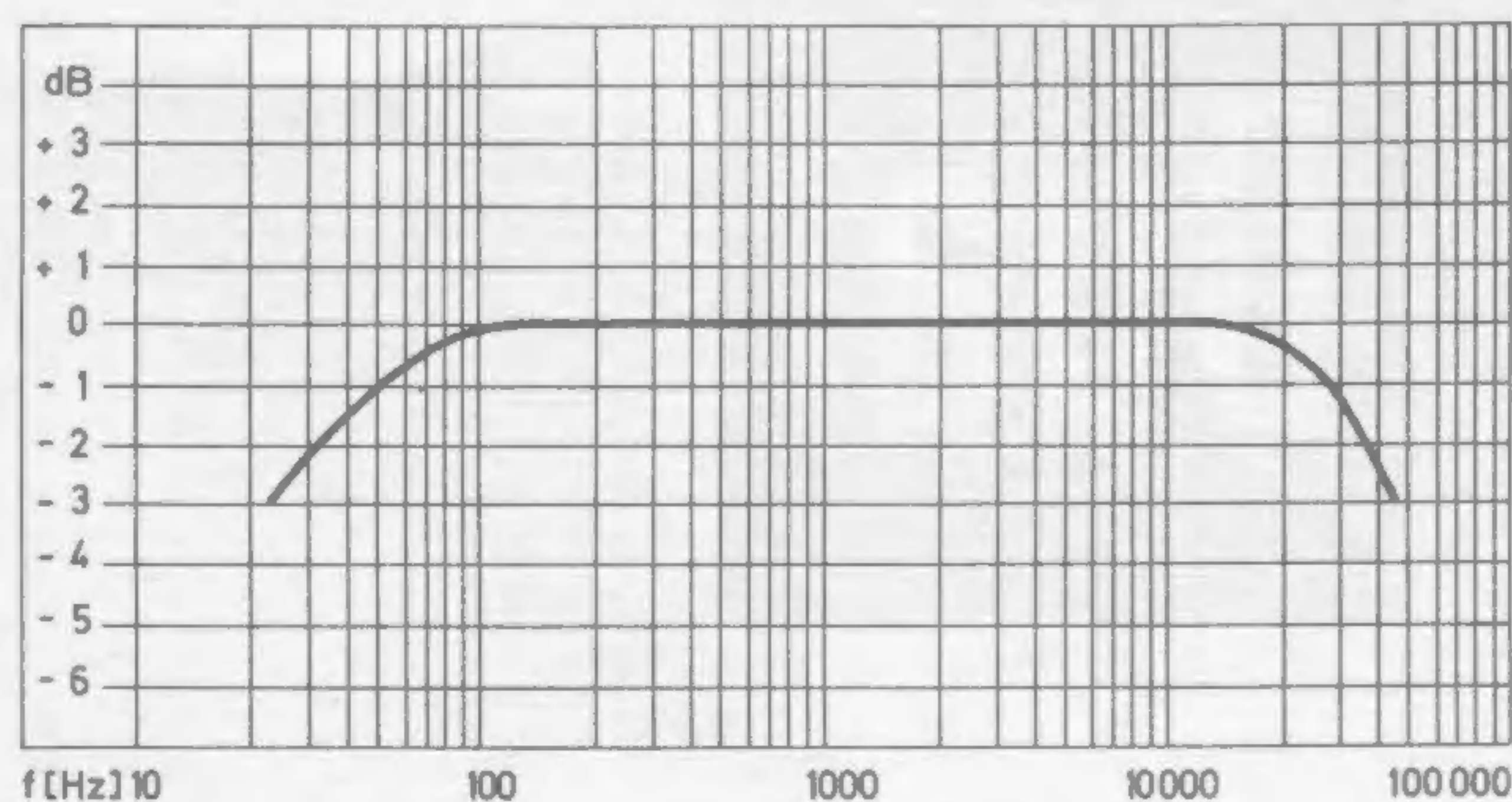


Fig. 3 Distortion at 60 Hz, 1000 Hz and 10 000 Hz plotted against output power

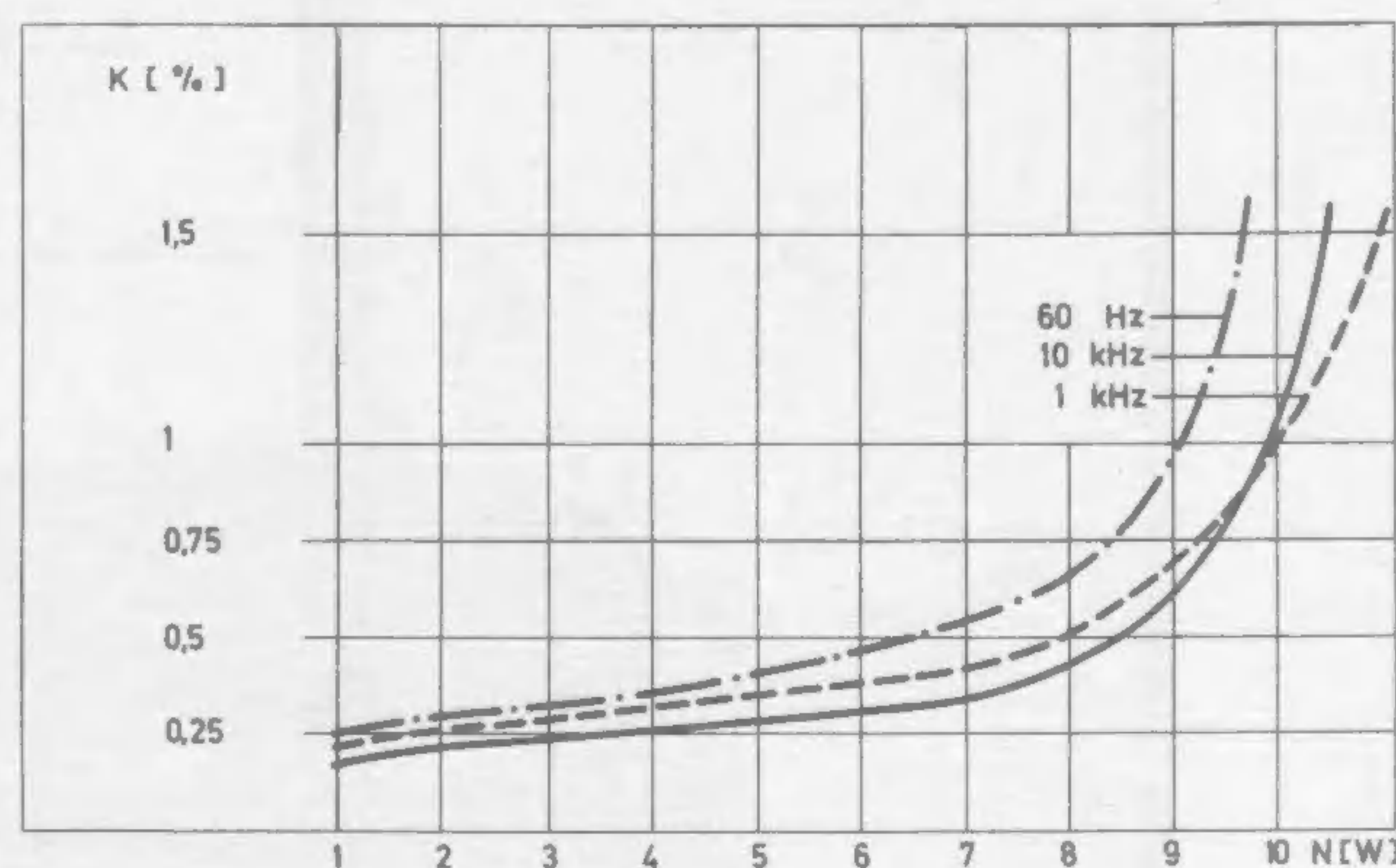


Fig. 4 Range of tone controls, 0 dB reference with controls at zero

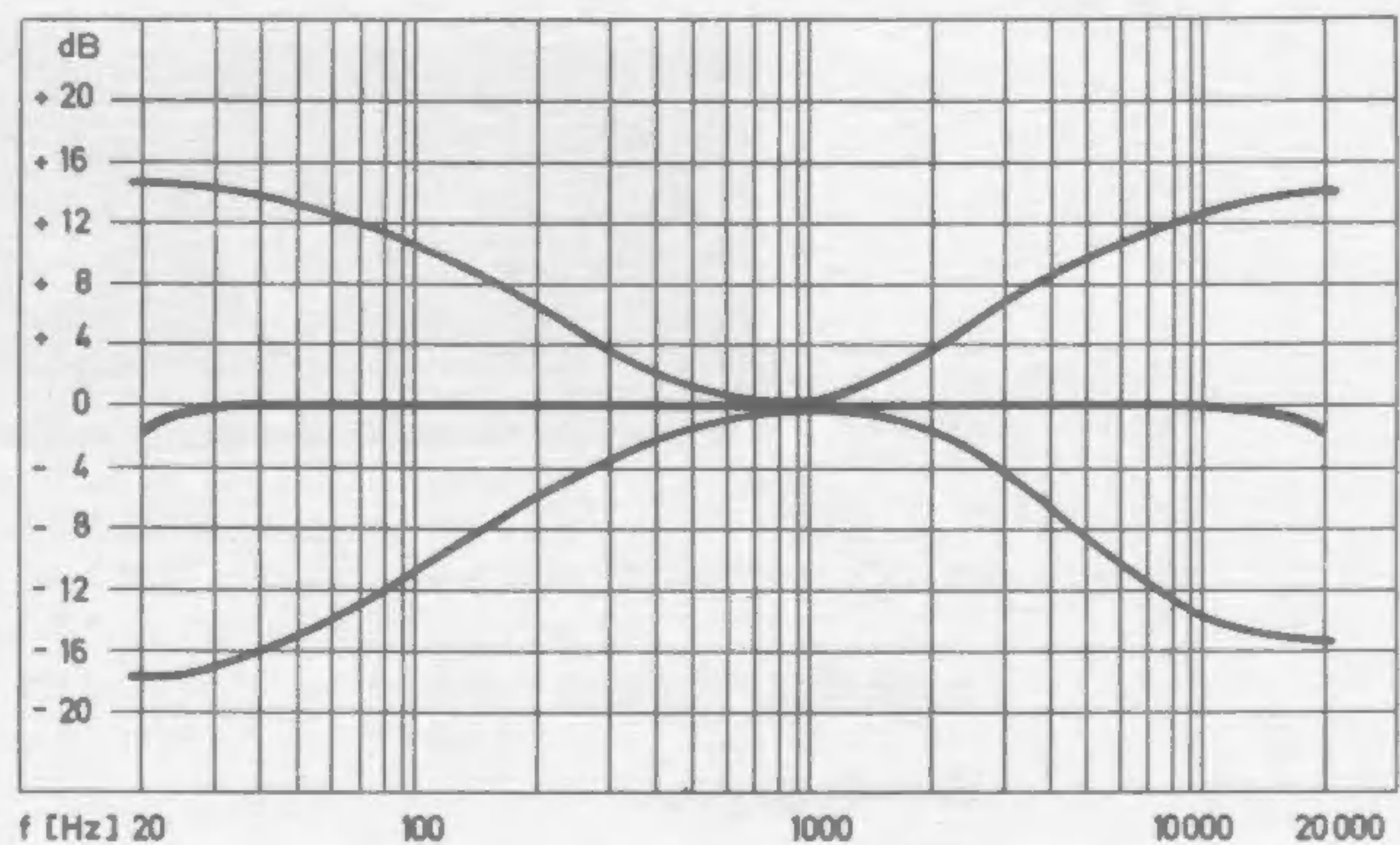


Fig. 5 Characteristics of loudness compensation  
0 dB line indicates volume control at maximum

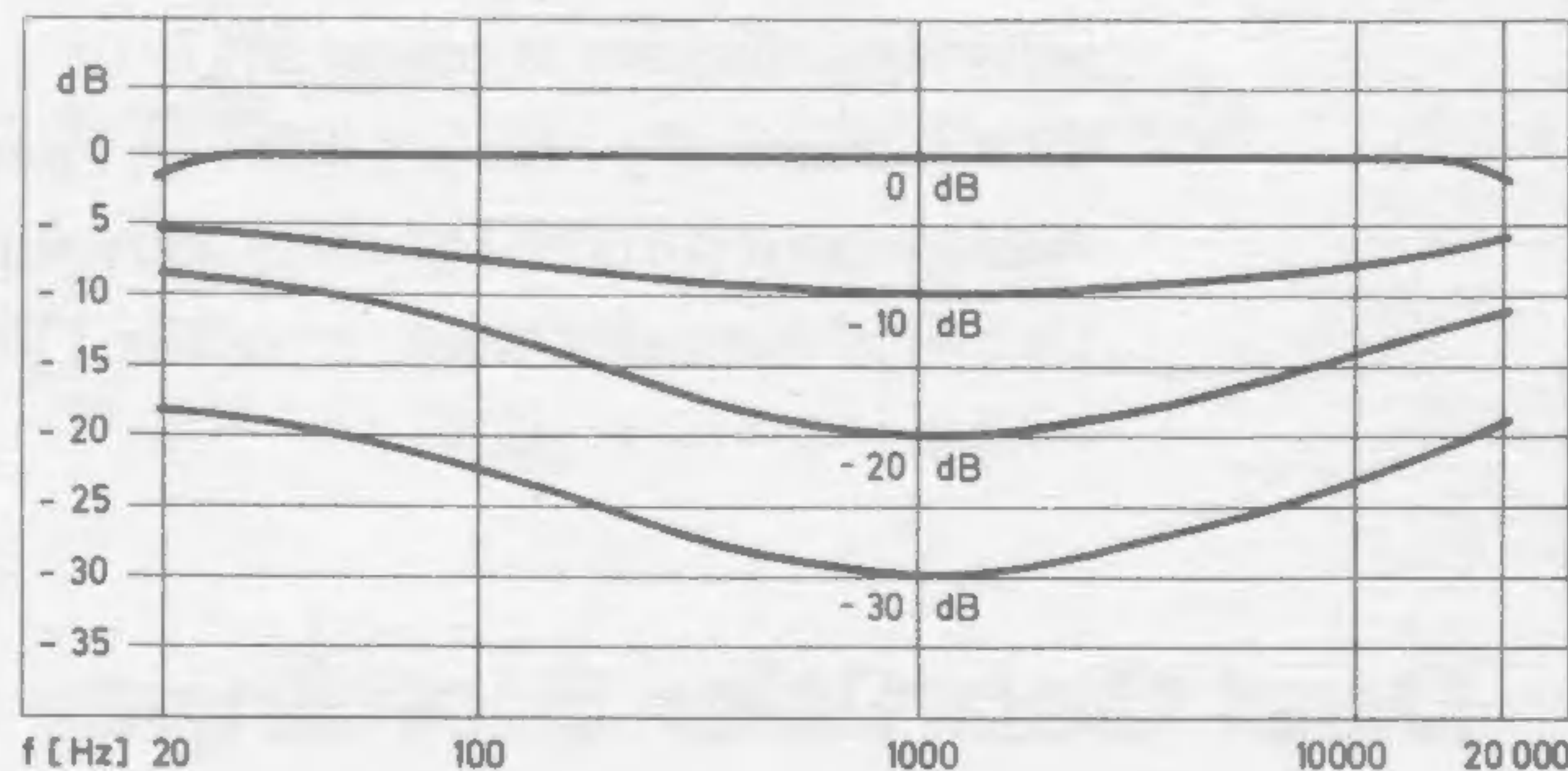


Fig. 6 Schematic diagram of preamplifier

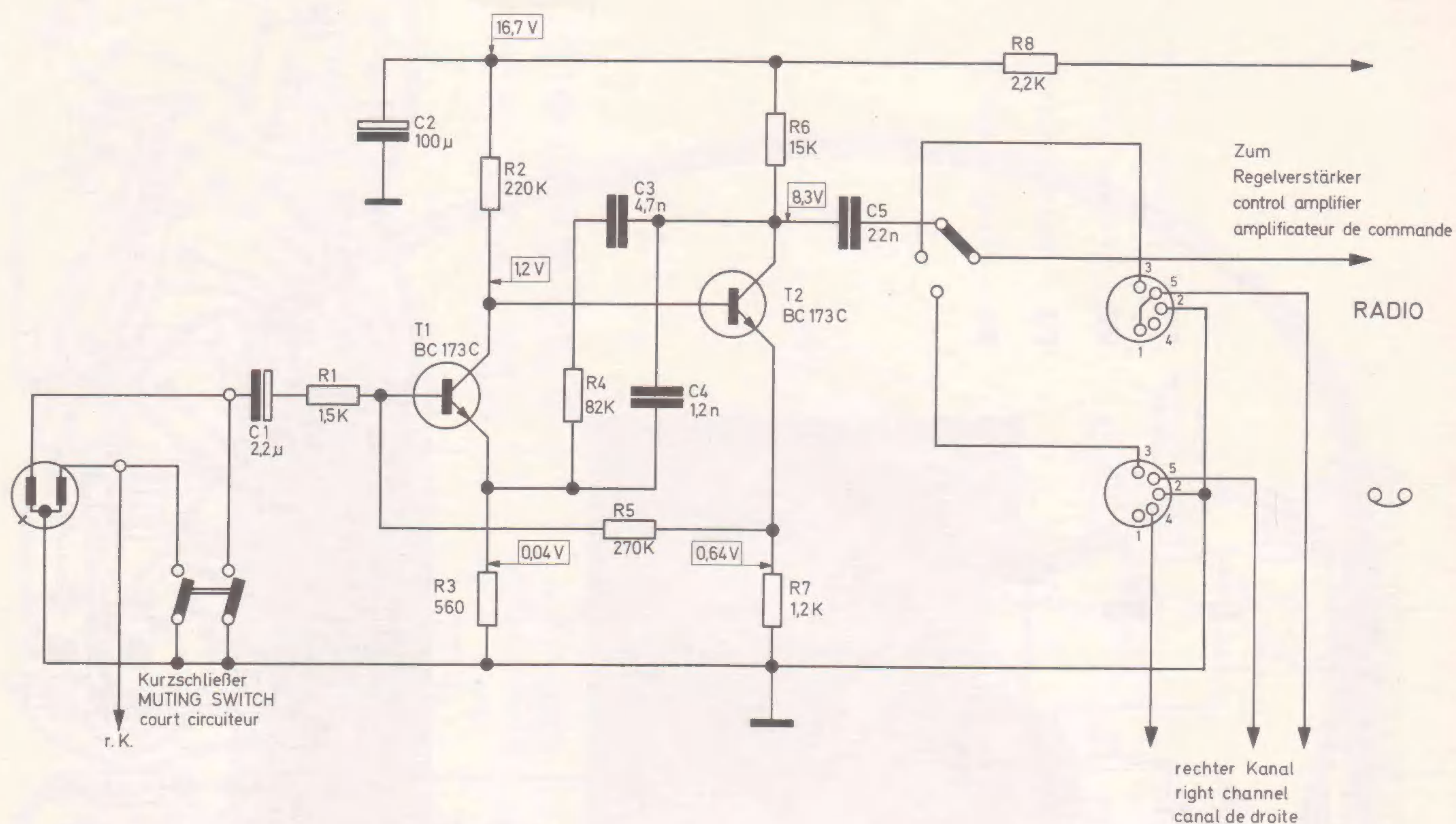


Fig. 7 Circuit-board of preamplifier 217 650 (printed wiring side)

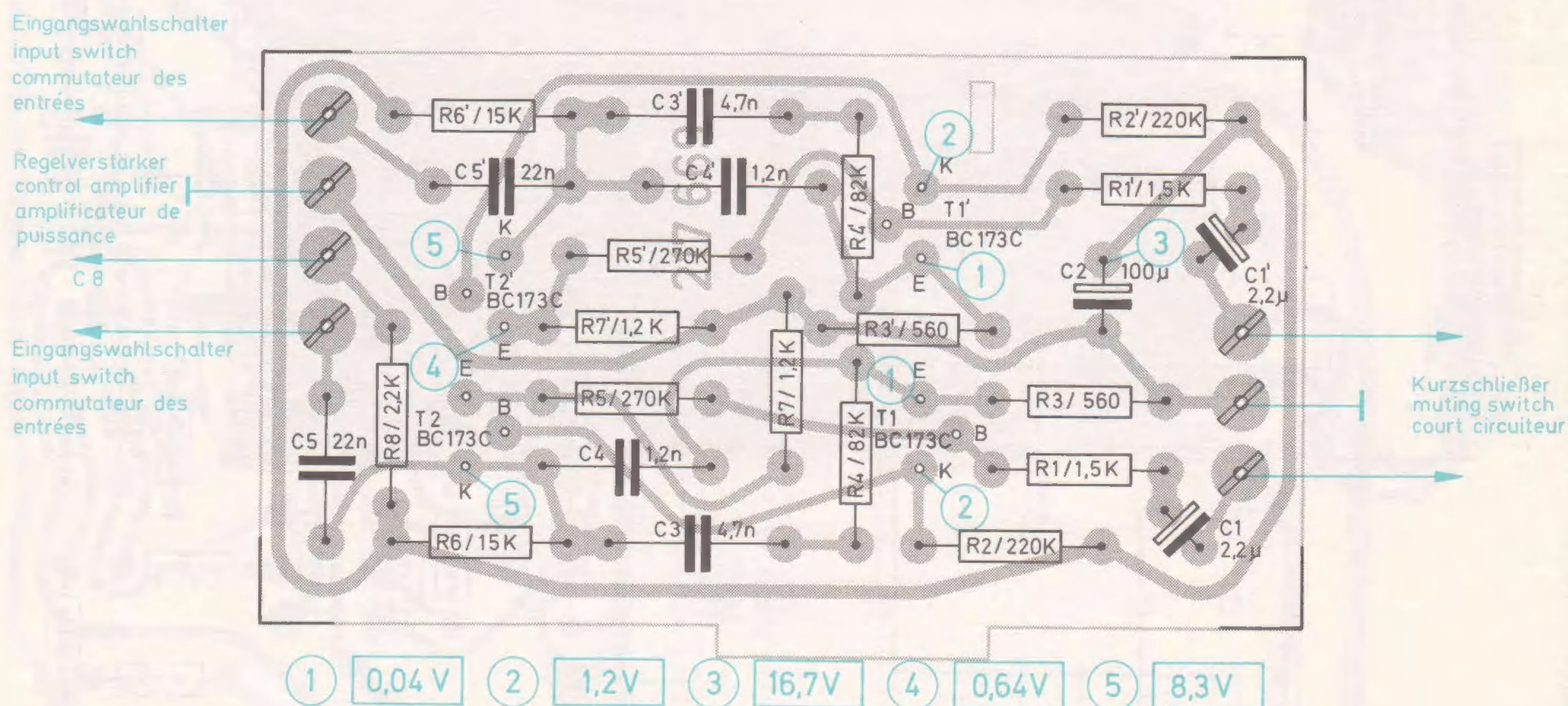


Fig. 8 Schematic diagram of control amplifier

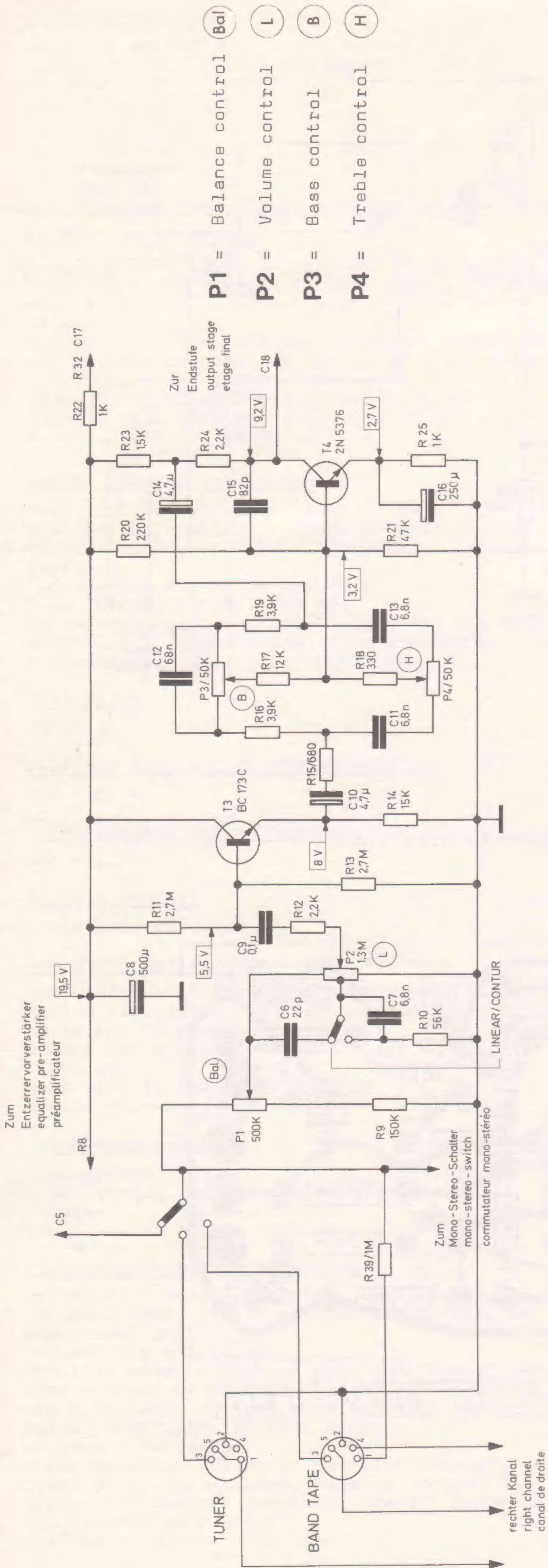


Fig. 9 Circuit-board of control amplifier 220 225 (printed wiring side)

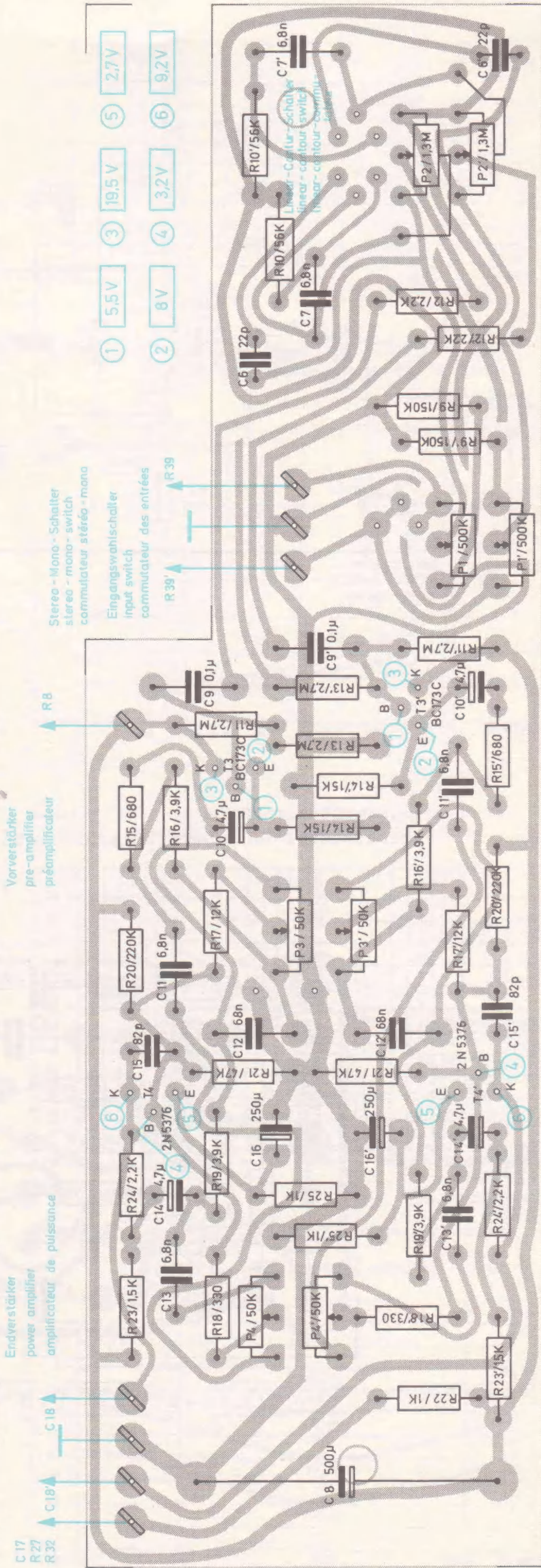


Fig. 10 Schematic diagram of power amplifier

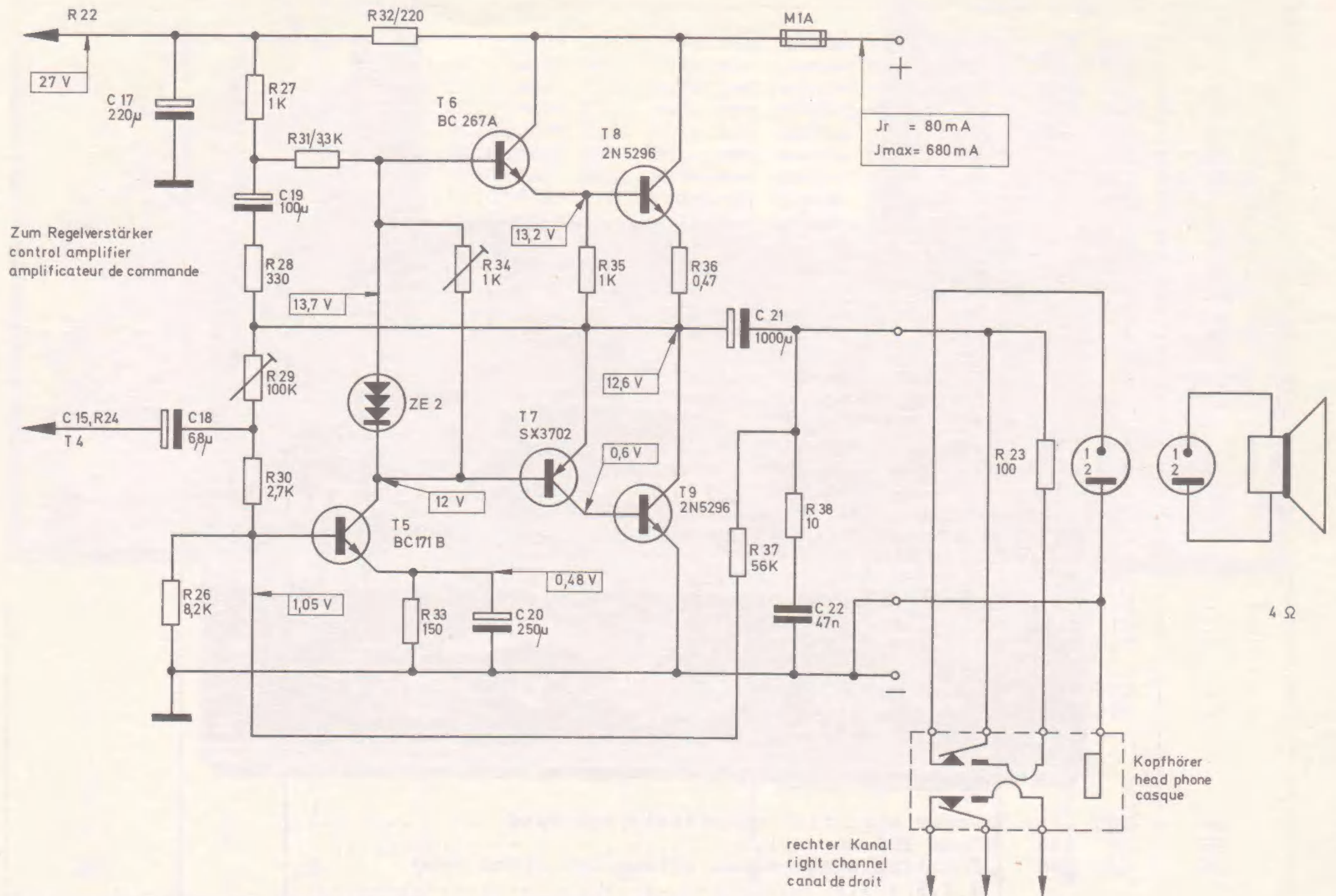
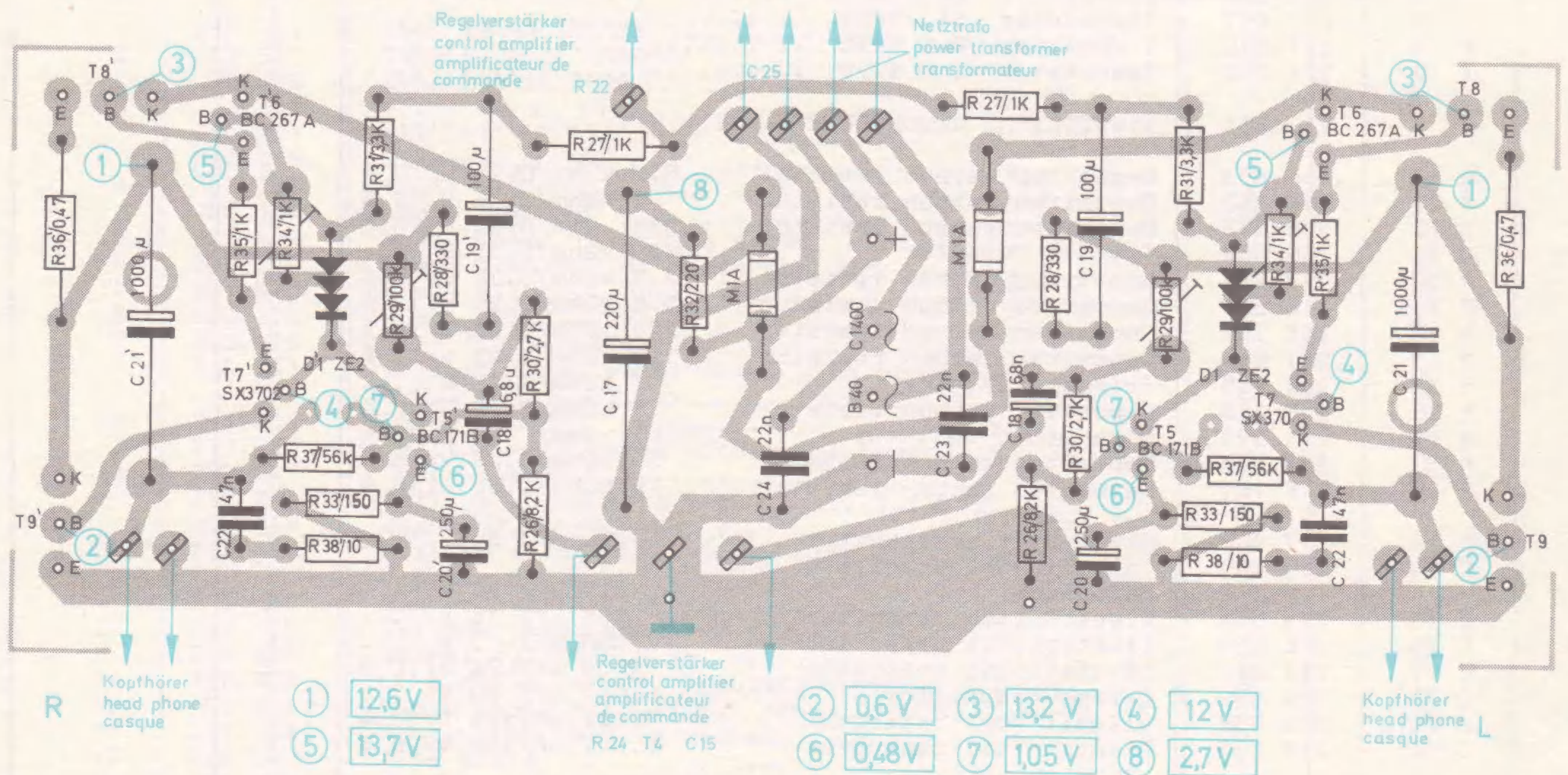


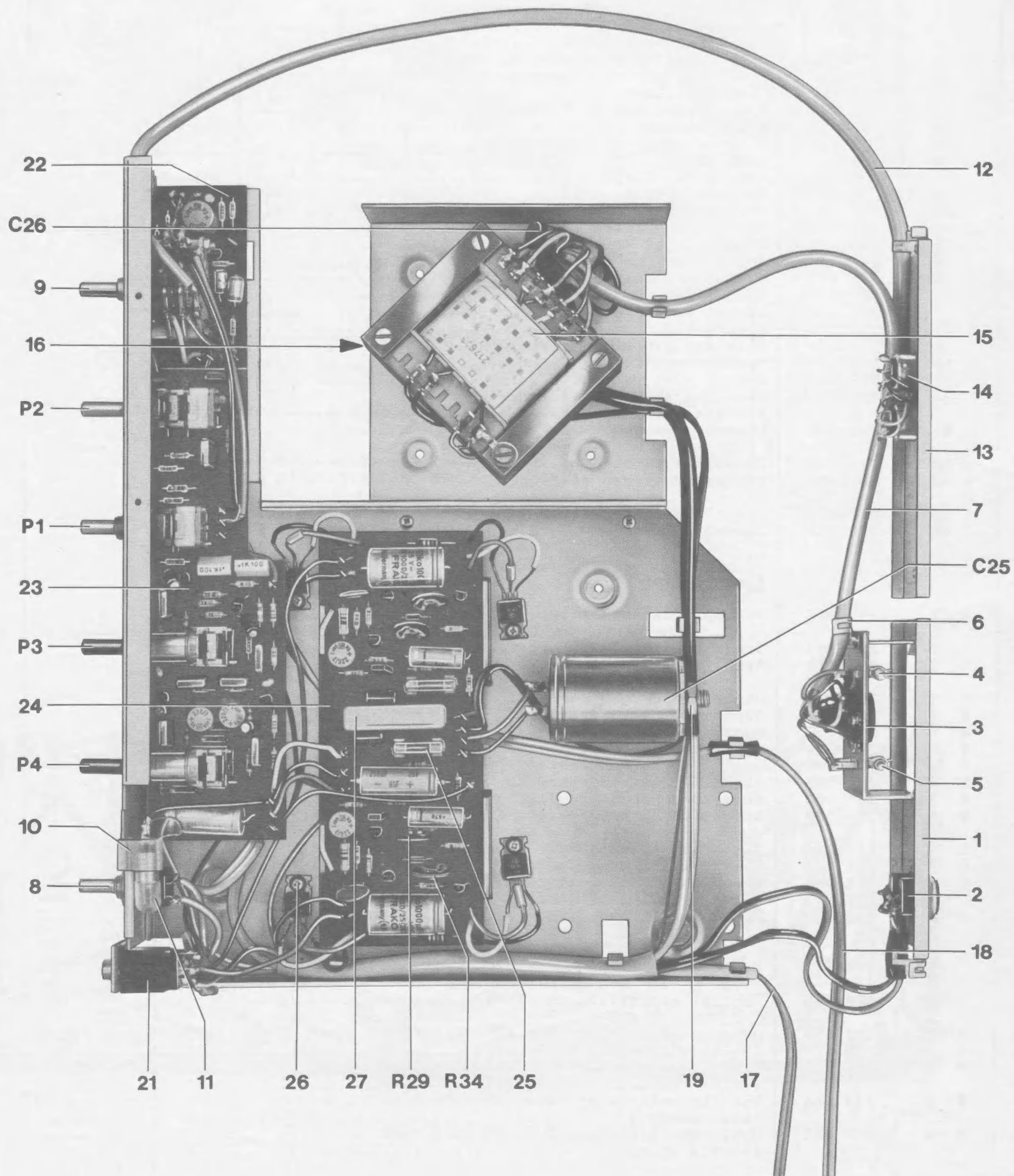
Fig. 11 Circuit-board of power amplifier 220 227 (printed wiring side)



# Replacement parts Dual TV 121

| Pos.No.                  | Part No. | Description                                                     | Quantity |
|--------------------------|----------|-----------------------------------------------------------------|----------|
| 1                        | 217 647  | Connection frame, complete .....                                | 1        |
|                          | 205 168  | Connection plate .....                                          | 1        |
| 2                        | 209 470  | Speaker socket .....                                            | 2        |
| 3                        | 212 228  | Printed circuit board, complete with voltage selector .....     | 1        |
|                          | 217 661  | Fuse equipment plate .....                                      | 1        |
| 4                        | 217 884  | Line fuse 315 mA slow-blow (220/240 V) .....                    | 1        |
| 5                        | 217 883  | Line fuse 630 mA slow-blow (110/150 V) .....                    | 1        |
| 6                        | 204 722  | Clamp .....                                                     | 1        |
| 7                        | 217 658  | Transformer cable, 7 leads .....                                | 1        |
| 8                        | 209 632  | Power switch .....                                              | 1        |
| 9                        | 209 656  | Stepped input selector switch .....                             | 1        |
| 10                       | 210 113  | Lamp socket E 10 .....                                          | 1        |
| 11                       | 209 439  | Lamp E 10, 7 V/0.3 A .....                                      | 1        |
| 12                       | 205 237  | Shielded cable, 6 leads .....                                   | 1        |
| 13                       | 217 481  | Socket plate, complete .....                                    | 1        |
|                          | 205 176  | Connection plate .....                                          | 1        |
| 14                       | 209 461  | Standardized 5-pole socket .....                                | 2        |
| 15                       | 220 228  | Power transformer, complete .....                               | 1        |
| 16                       | 210 512  | Cylinder-head screw AM 4 x 5 .....                              | 4        |
|                          | 209 977  | Solder lug .....                                                | 1        |
|                          | 210 639  | Washer 4.2/10/0.5 St .....                                      | 1        |
| 17                       | 220 141  | Line cable, complete .....                                      | 1        |
| 18                       | 218 254  | Shielded cable with flat prong plug .....                       | 1        |
| 19                       | 217 667  | Support nut .....                                               | 2        |
|                          | 217 668  | Spacer ring .....                                               | 1        |
| 20                       | 210 283  | Phillips sheet-metal screw with cross head B 2.9 x 6.5 .....    | 5        |
| 21                       | 223 948  | Headphone-socket .....                                          | 1        |
| R 39                     | 216 415  | Deposited carbon resistor 1 MOhm/0.25 W/10 %                    | 2        |
| R 40                     | 216 704  | Deposited carbon resistor 100 Ohm/0.25 W/10 %                   | 2        |
| C 25                     | 217 677  | Electrolytic capacitor 5000 µF/ 35 V .....                      | 1        |
| C 26                     | 216 314  | Paper capacitor 0.05 µF/250 V~/20 %                             | 1        |
| <u>Preamplifier</u>      |          |                                                                 |          |
| 22                       | 217 650  | Preamplifier completely equipped .....                          | 1        |
| T 1                      | 209 863  | Transistor BC 173 C .....                                       | 6        |
| T 2                      | 209 863  | Transistor BC 173 C .....                                       | 6        |
| R 1                      | 216 322  | Deposited carbon resistor 1.5 kOhm/0.25 W/10 %                  | 2        |
| R 2                      | 216 381  | Deposited carbon resistor 220 kOhm/0.25 W/10 %                  | 4        |
| R 3                      | 217 868  | Deposited carbon resistor 560 Ohm/0.25 W/ 5 %                   | 2        |
| R 4                      | 216 383  | Deposited carbon resistor 82 kOhm/0.25 W/ 5 %                   | 2        |
| R 5                      | 217 869  | Deposited carbon resistor 270 kOhm/0.25 W/10 %                  | 2        |
| R 6                      | 216 355  | Deposited carbon resistor 15 kOhm/0.25 W/10 %                   | 4        |
| R 7                      | 217 860  | Deposited carbon resistor 1.2 kOhm/0.25 W/10 %                  | 2        |
| R 8                      | 211 179  | Deposited carbon resistor 2.2 kOhm/0.25 W/10 %                  | 3        |
| C 1                      | 217 871  | Tantalum electrolytic capacitor 2.2 µF/ 16 V ..                 | 2        |
| C 2                      | 216 333  | Electrolytic capacitor 100 µF/ 35 V ..                          | 1        |
| C 3                      | 217 981  | Plastic foil capacitor 0.0047 µF/ 63 V/ 5%                      | 2        |
| C 4                      | 217 873  | Plastic foil capacitor 0.0012 µF/120 V/ 5%                      | 2        |
| C 5                      | 216 332  | Plastic foil capacitor 0.022 µF/160 V/20%                       | 4        |
| <u>Control amplifier</u> |          |                                                                 |          |
| 23                       | 220 225  | Control amplifier, completely equipped .....                    | 1        |
| P 1                      | 217 664  | Dual potentiometer 2 x 500 kOhm flat (balance control) .....    | 1        |
| P 2                      | 217 665  | Dual potentiometer 2 x 1.3 MOhm pos.log. (volume control) ..... | 1        |
| P 3                      | 217 666  | Dual potentiometer 2 x 50 kOhm flat (bass control) .....        | 2        |
| P 4                      | 217 666  | Dual potentiometer 2 x 50 kOhm flat (treble control) .....      | 2        |
| T 3                      | 209 863  | Transistor BC 173 C .....                                       | 6        |
| T 4                      | 217 979  | Transistor 2 N 5376 .....                                       | 2        |

Fig. 12 Chassis of transistor stereo amplifier TV 121



| Pos.No.                | Part No. | Description                                                  | Quantity |
|------------------------|----------|--------------------------------------------------------------|----------|
| R 9                    | 211 251  | Deposited carbon resistor 150 kOhm/0.25 W/10 % ..            | 2        |
| R 10                   | 220 253  | Deposited carbon resistor 56 kOhm/0.25 W/10 % ..             | 2        |
| R 11                   | 217 858  | Deposited carbon resistor 2.7 MOhm/0.25 W/10 % ..            | 4        |
| R 12                   | 211 179  | Deposited carbon resistor 2.2 kOhm/0.25 W/10 % ..            | 3        |
| R 13                   | 217 858  | Deposited carbon resistor 2.7 MOhm/0.25 W/10 % ..            | 4        |
| R 14                   | 216 355  | Deposited carbon resistor 15 kOhm/0.25 W/10 % ..             | 4        |
| R 15                   | 216 700  | Deposited carbon resistor 680 Ohm/0.25 W/10 % ..             | 2        |
| R 16                   | 217 859  | Deposited carbon resistor 3.9 kOhm/0.25 W/ 5 % ..            | 4        |
| R 17                   | 216 694  | Deposited carbon resistor 12 kOhm/0.25 W/10 % ..             | 2        |
| R 18                   | 216 675  | Deposited carbon resistor 330 Ohm/0.25 W/10 % ..             | 4        |
| R 19                   | 217 859  | Deposited carbon resistor 3.9 kOhm/0.25 W/ 5 % ..            | 4        |
| R 20                   | 216 381  | Deposited carbon resistor 220 kOhm/0.25 W/10 % ..            | 4        |
| R 21                   | 211 228  | Deposited carbon resistor 47 kOhm/0.25 W/10 % ..             | 2        |
| R 22                   | 216 353  | Deposited carbon resistor 1 kOhm/0.25 W/10 % ..              | 7        |
| R 23                   | 216 838  | Deposited carbon resistor 1.5 kOhm/0.25 W/ 5 % ..            | 2        |
| R 24                   | 217 861  | Deposited carbon resistor 2.2 kOhm/0.25 W/ 5 % ..            | 2        |
| R 25                   | 216 353  | Deposited carbon resistor 1 kOhm/0.25 W/10 % ..              | 7        |
| C 6                    | 217 862  | Ceramic capacitor 22 pF/500 V/10 % ...                       | 2        |
| C 7                    | 217 863  | Plastic foil capacitor 0.0068 μF/400 V/10 % ...              | 6        |
| C 8                    | 217 864  | Electrolytic capacitor 500 μF/ 25 V ...                      | 1        |
| C 9                    | 216 671  | Plastic foil capacitor 0.1 μF/100 V/20 % ...                 | 2        |
| C 10                   | 216 407  | Tantalum electrolytic capacitor 4.7 μF/ 16 V ....            | 4        |
| C 11                   | 217 863  | Plastic foil capacitor 0.0068 μF/400 V/10 % ...              | 6        |
| C 12                   | 216 402  | Plastic foil capacitor 0.068 μF/100 V/10 % ...               | 2        |
| C 13                   | 217 863  | Plastic foil capacitor 0.0068 μF/400 V/10 % ...              | 6        |
| C 14                   | 216 407  | Tantalum electrolytic capacitor 4.7 μF/ 16 V ....            | 4        |
| C 15                   | 216 404  | Ceramic capacitor 82 pF/500 V/10 % ...                       | 2        |
| C 16                   | 216 656  | Electrolytic capacitor 250 μF/ 3 V ....                      | 4        |
| <u>Power amplifier</u> |          |                                                              |          |
| 24                     | 220 227  | Power amplifier completely equipped .....                    | 1        |
| 25                     | 217 854  | Fuse 250 mA .....                                            | 2        |
| 26                     | 210 286  | Phillips sheet-metal screw with cross head B 2,9 x 9,5 ..... | 4        |
|                        | 217 679  | Heat shield for transistors T8 and T9 .....                  | 4        |
|                        | 217 680  | Insulating material for transistors T8 and T9 ...            | 4        |
| 27                     | 217 849  | Silicon rectifier B 40 C 1400 .....                          | 1        |
| T 5                    | 213 186  | Transistor BC 171 B .....                                    | 2        |
| T 6                    | 217 656  | Transistor BC 267 A .....                                    | 2        |
| T 7                    | 217 657  | Transistor SX 3702 .....                                     | 2        |
| T 8                    | 221 370  | Transistor 2 N 5296 .....                                    | 4        |
| T 9                    | 221 370  | Transistor 2 N 5296 .....                                    | 4        |
| D 1                    | 217 654  | Stabilizing diode ZE 2 .....                                 | 2        |
| R 26                   | 216 433  | Deposited carbon resistor 8.2 kOhm/0.25 W/10 %               | 2        |
| R 27                   | 216 353  | Deposited carbon resistor 1 kOhm/0.25 W/10 %                 | 7        |
| R 28                   | 216 675  | Deposited carbon resistor 330 Ohm/0.25 W/10 %                | 4        |
| R 29                   | 209 658  | Trimmer resistor 100 kOhm/0.15 W ...                         | 2        |
| R 30                   | 217 841  | Deposited carbon resistor 2.7 kOhm/0.25 W/ 5 %               | 2        |
| R 31                   | 216 697  | Deposited carbon resistor 3.3 kOhm/0.25 W/10 %               | 2        |
| R 32                   | 216 703  | Deposited carbon resistor 220 Ohm/0.25 W/10 %                | 2        |
| R 33                   | 217 842  | Deposited carbon resistor 150 Ohm/0.25 W/10 %                | 2        |
| R 34                   | 209 625  | Trimmer resistor 1 kOhm/0.15 W ...                           | 2        |
| R 35                   | 216 353  | Deposited carbon resistor 1 kOhm/0.25 W/10 %                 | 7        |
| R 36                   | 211 279  | Wire-wound resistor 0.47 Ohm/ 1 W/10 %                       | 2        |
| R 37                   | 217 843  | Deposited carbon resistor 56 kOhm/0.25 W/ 5 %                | 2        |
| R 38                   | 216 701  | Deposited carbon resistor 10 kOhm/0.25 W/10 %                | 2        |
| C 17                   | 217 845  | Electrolytic capacitor 220 μF/ 35 V ...                      | 1        |
| C 18                   | 216 409  | Tantalum electrolytic capacitor 6.8 μF/ 20 V ...             | 2        |
| C 19                   | 211 054  | Electrolytic capacitor 100 μF/ 15 V ...                      | 2        |
| C 20                   | 216 656  | Electrolytic capacitor 250 μF/ 3 V ...                       | 4        |
| C 21                   | 217 847  | Electrolytic capacitor 1000 μF/ 25 V/10 %                    | 2        |
| C 22                   | 216 389  | Ceramic capacitor 0.047 μF/ 50 V ...                         | 2        |
| C 23                   | 216 332  | Plastic foil capacitor 0.022 μF/160 V/20 %                   | 4        |
| C 24                   | 216 332  | Plastic foil capacitor 0.022 μF/160 V/20 %                   | 4        |

Fig. 13 Home stereo unit



Replacement parts Dual HS 51

| Pos.No. | Part No. | Description                                                    | Quantity |
|---------|----------|----------------------------------------------------------------|----------|
| 1       | 218 991  | Dust cover CH 20 .....                                         | 1        |
| 2       | 223 567  | Case walnut, compl. ....                                       | 1        |
|         | 223 568  | Case white, compl. ....                                        | 1        |
| 3       | 223 573  | Front panel compl. ....                                        | 1        |
|         | 210 361  | Hex nut M 3 .....                                              | 8        |
|         | 210 586  | Washer 3,2/7/0,5 St .....                                      | 4        |
| 4       | 203 763  | Light rod .....                                                | 1        |
|         | 200 444  | Spring washer .....                                            | 1        |
| 5       | 222 335  | Dual symbol for front panel .....                              | 1        |
| 6       | 222 178  | Cover bushing for headphone jack .....                         | 1        |
| 7       | 221 912  | Knob .....                                                     | 1        |
| 8       | 221 913  | Knob .....                                                     | 5        |
| 9       | 202 371  | Clip for spindle .....                                         | 1        |
|         | 210 286  | Philips sheet metal screw with cross head<br>B 2,9 x 9,5 ..... | 2        |
| 10      | 203 315  | Cover frame .....                                              | 2        |
|         | 210 345  | Philips sink screw with cross head BM 3 x 18 ...               | 4        |
| 11      | 203 317  | Cover washer .....                                             | 1        |
|         | 210 271  | Philips screw AM 3 x 4 .....                                   | 1        |
|         | 210 554  | Washer 2,4/6/0,3 Ps .....                                      | 1        |
| 12      | 210 289  | Philips sheet metal screw with cross head<br>B 3,5 x 16 .....  | 8        |
|         | 210 648  | Washer 4,2/14/1 St .....                                       | 8        |
| 13      | 210 525  | Cylinder head screw AM 4 x 25 .....                            | 1        |
|         | 210 638  | Washer 4,2/10/0,5 Ps .....                                     | 1        |
| 14      | 216 488  | Line cable, compl. (amplifier-phono chassis) ...               | 1        |
| 15      | 205 344  | Audio cable for speaker connection CA 3 compl. .               | 1        |
| 16      | 215 594  | Protecting felt (8 washers) .....                              | 1        |
| 17      | 222 540  | Type plate .....                                               | 1        |
| 18      | 220 689  | Shipping carton compl. ....                                    | 1        |
| 19      | 222 539  | Operating manual .....                                         | 1        |

| Pos.No. | Part No. | Description                                                    | Quantity |  |
|---------|----------|----------------------------------------------------------------|----------|--|
|         |          | <u>Replacement parts loudspeaker</u>                           |          |  |
| 20      | 223 569  | Case walnut, compl. ....                                       | 1        |  |
|         | 223 570  | Case white, compl. ....                                        | 1        |  |
| 21      | 215 888  | Dual escutcheon for loudspeaker ....                           | 1        |  |
|         | 221 455  | Locking disc ....                                              | 1        |  |
| 22      | 223 571  | Rear cover compl. ....                                         | 1        |  |
|         | 217 590  | Special sink screw with cross head 4 x 25 ....                 | 6        |  |
| 23      | 203 925  | Hull for speaker jack compl. ....                              | 1        |  |
|         | 213 589  | Speaker jack ....                                              | 1        |  |
|         | 216 481  | Sheet metal sink screw with cross head<br>B 2,9 x 9,5 ....     | 4        |  |
| 24      | 222 401  | Woofers 7 11/16" dia. ....                                     | 1        |  |
|         | 220 072  | Spacer ....                                                    | 4        |  |
|         | 211 556  | Washer 4,3/9/0,8 St ....                                       | 4        |  |
|         | 210 367  | Hex nut M 4 ....                                               | 4        |  |
| 25      | 221 534  | Tweeter 4 1/8" x 2 3/4" ....                                   | 1        |  |
|         | 210 609  | Washer 3,2/10/1 St ....                                        | 4        |  |
|         | 210 361  | Hex nut M 3 ....                                               | 4        |  |
| 26      | 222 130  | Low frequency coil 1,5 mH ....                                 | 1        |  |
|         | 218 306  | Holder for coil ....                                           | 1        |  |
| 27      | 213 330  | High frequency coil 0,38 mH ....                               | 1        |  |
|         | 218 307  | Holder for coil ....                                           | 1        |  |
| 28      | 202 198  | Solder lug board (5 lugs) ....                                 | 2        |  |
| 29      | 210 639  | Washer 4,2/10/0,5 St ....                                      | 2        |  |
|         | 217 556  | Cylinder head screw M 4 x 45 ....                              | 1        |  |
|         | 217 557  | Cylinder head screw M 4 x 30 ....                              | 1        |  |
| 30      | 203 953  | Foam mat 13 1/4" x 8" x 2" ....                                | 2        |  |
| 31      | 203 929  | Voice frequency electrolytic capacitor<br>60 µF/35 V/20 % .... | 1        |  |
| 32      | 203 930  | Voice frequency electrolytic capacitor<br>8 µF/35 V/20 % ....  | 1        |  |
| 33      | 204*032  | Wire-wound resistor 2,7 Ohm/5 W/10 % ....                      | 1        |  |

Alterations reserved

You will find replacement parts, funktion description and the trouble-shooting chart in the Dual 1218 Service Manual.

**Dual**

**Dual Gebrüder Steidinger · 7742 St.Georgen/Schwarzwald**