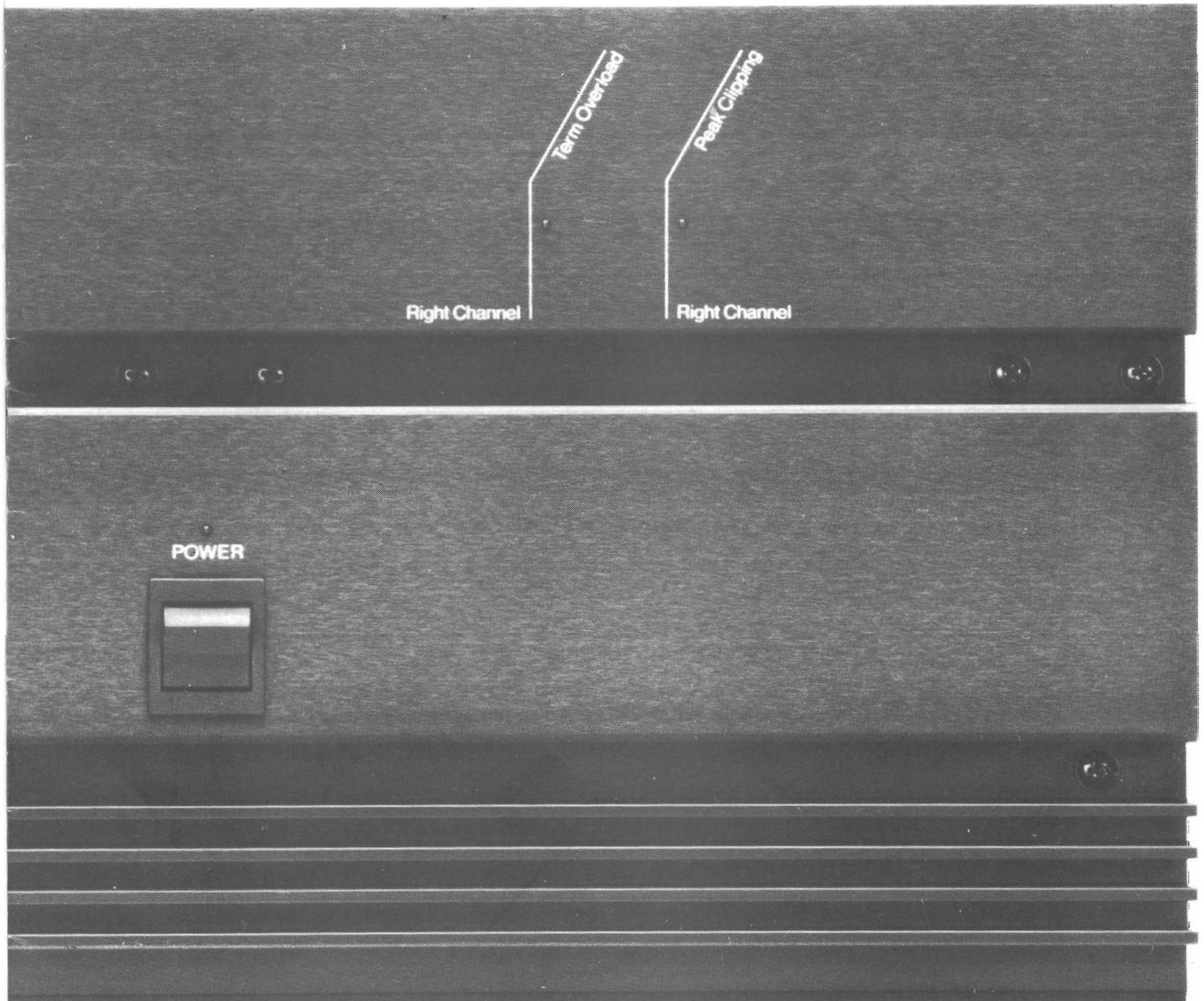


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# TANDBERG® TPA 3016A

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## Circuit Diagram and Alignment Instructions



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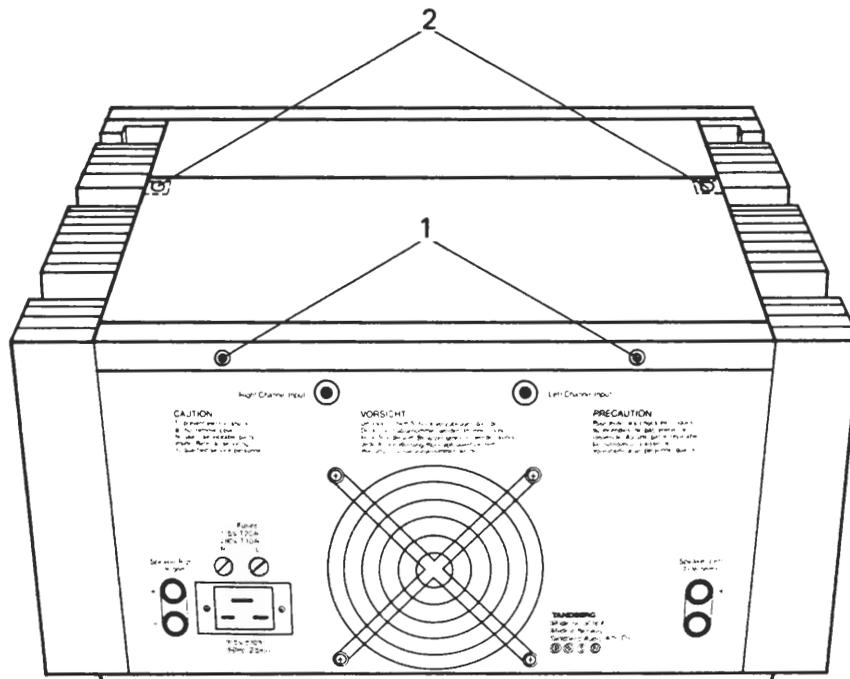
## Dismantling

### Top cover rear:

- Loosen the screws (1), push the cover against the rear of the unit and lift off.

### Top cover front:

- Remove the screws (2), and lift off the front cover.



*Dismantling the top covers*

## Adjustments

### Test conditions

Approx. 30 minutes **warming up time** without signal applied. The top cover should not be removed, otherwise the unit must be covered.

### Distortion, unloaded

Adjust R131/R231 to minimum distortion, at 12 V output, 1 kHz, and no load. The distortion should be less than 0.004%.

### D.c. offset adjustment

- Short the contacts J106 and J206.
- Adjust R115 (left) and R215 (right) to max.  $\pm 50$  mV d.c. at the output terminal.
- Remove the shorting and check that the d.c. voltage is less than  $\pm 30$  mV.

### Quiescent current

The quiescent current should be adjusted without load and no signal applied at the input terminals.

- Adjust R164 (left) and R264 (right) on the Output Amplifier boards to 32 mV across R309/R310 (M301 and to the top of R310) left and R409/R410 (M401 and to the top of R410) right on the Output Power boards.

### Distortion, loaded

Apply a signal of 1 kHz and drive the amplifier to 12 V on the output terminals when the load is 4 ohm.

- Adjust R153 (left) and R253 (right) to minimum distortion. The distortion should be less than 0.005%.

### Checking the speaker protection relay

- Disconnect the mains and speaker load.
- Remove the screws and the necessary connections on the left and right Power amplifier boards to get access to the Relay boards below.
- Remove the screws on both Relay boards.
- Solder a wire with 220 kohm in series to the joint between the resistors R504/R505 (solder side) on the left Relay board. Solder an equal wire on the joint of R604/R605 on the right Relay board.
- Fasten the four boards sufficient to avoid shortcircuiting by using the screws and connect the boards.
- Turn on the mains and connect the speaker loads.
- Apply 6 to 8 V d.c. to each of the wires. The relays should then open.
- Unsolder the wires and fasten the boards.

### Peak clipping

Adjust R137/R237 to minimum light in LED at slight clipping on the output terminals.

### NOTE!

Input FET's Q103/Q104 and Q203/Q204 are matched pairs, and should be replaced within the same group. Each matched pair of transistors needs a specific value of source resistors (written by hand on the pc board). After replacing the FET's, check for correct current.

The voltage across R147/R247 should be  $2.2 \text{ V} \pm 0.2 \text{ V}$ .

All measurements in the amplifier must be made with a probe having minimum 5 kohm.

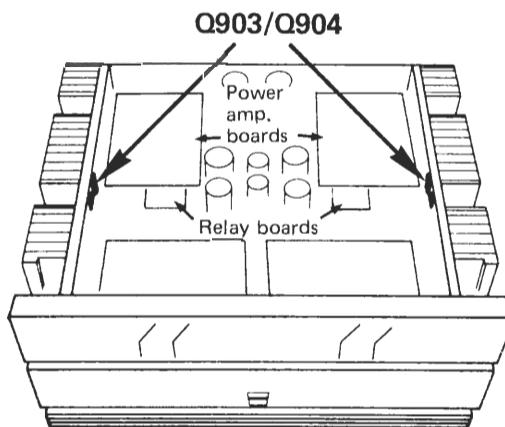
### Fan circuit adjustment

#### Test conditions

Connect a 2 ohm's load on **both** output terminals.

Apply a signal of 1 kHz to **both** input sockets and adjust to 20 V across the loads.

At a chassis temperature of  $60^\circ\text{C}$ ,  $\pm 1^\circ\text{C}$  (approx.  $140^\circ\text{F}$ ) **next to** the temperature sensing transistors Q903 or Q904 the fan should start.



**NOTE!** When measuring the temperature be aware of shortcircuiting between the transistors Q903/Q904 and the chassis, because this will damage the Fan circuit.

- Adjust carefully to startpoint at  $60^\circ\text{C}$  ( $140^\circ\text{F}$ ) with R907 on the Power board.

At a temperature of  $62 - 64^\circ\text{C}$  ( $143,6 - 147,2^\circ\text{F}$ ) the fan should have reached full speed.

**WARNING!** Under no circumstances R907 must be turned rapidly from one end to the other.

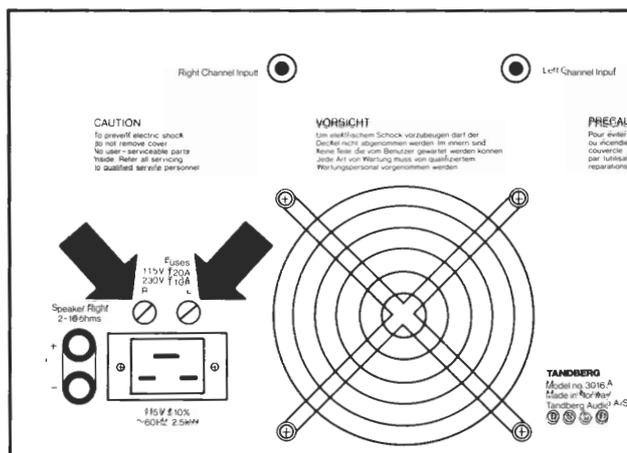
If so, the power transistor connected in series with the fan might be damaged.

## If a fuse is blown

Fuse L (left channel): No sound, left speaker.

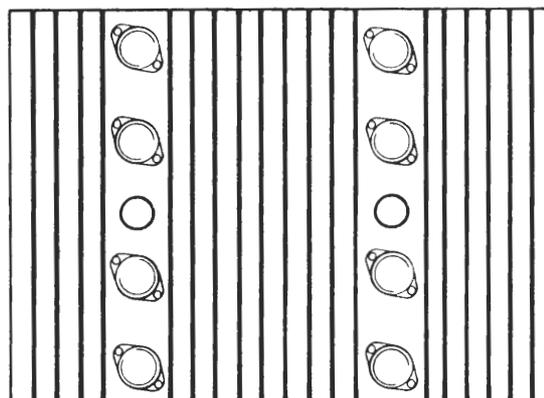
Fuse R (right channel): No sound **both** speakers.

No light Power LED.  
(The relays for both channels are regulated from right channel).

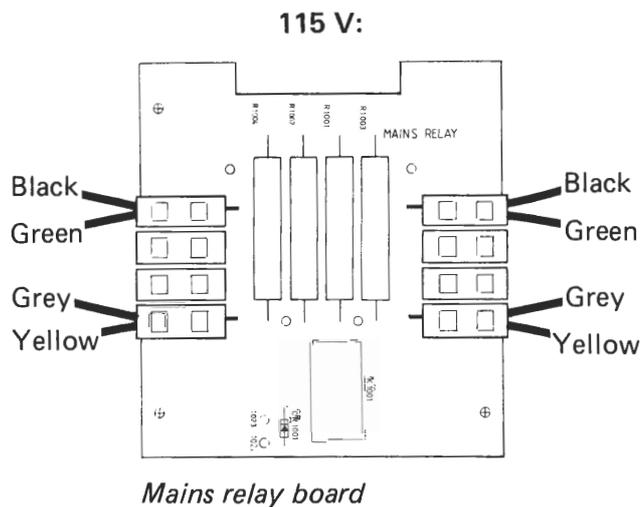
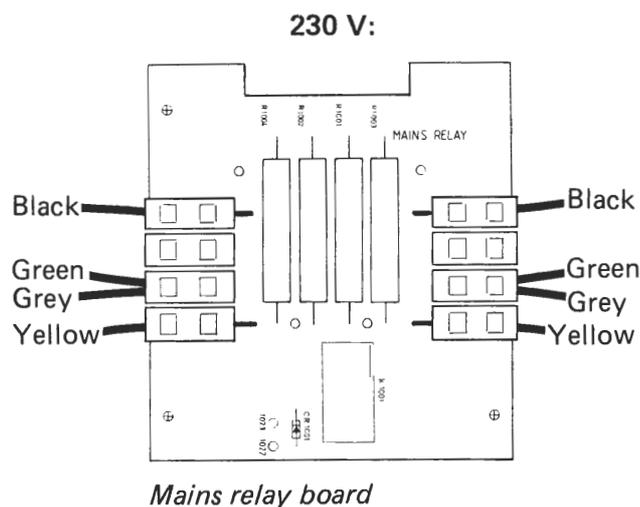


## Changing output transistors

- Remove the screws.
- Pull out the transistor, remove the sleeves and unsolder the transistor.
- When replacing the transistor, check the mica washer for damage, put new sleeves on the wires, paste heat sink compound on both sides of the mica washer if necessary and solder the two wires to the terminals on the transistor.
- Mount and fasten the transistor properly with the two screws and check if there is any shortcircuiting between the transistor and the chassis before the mains is turned on.



## Mains connections

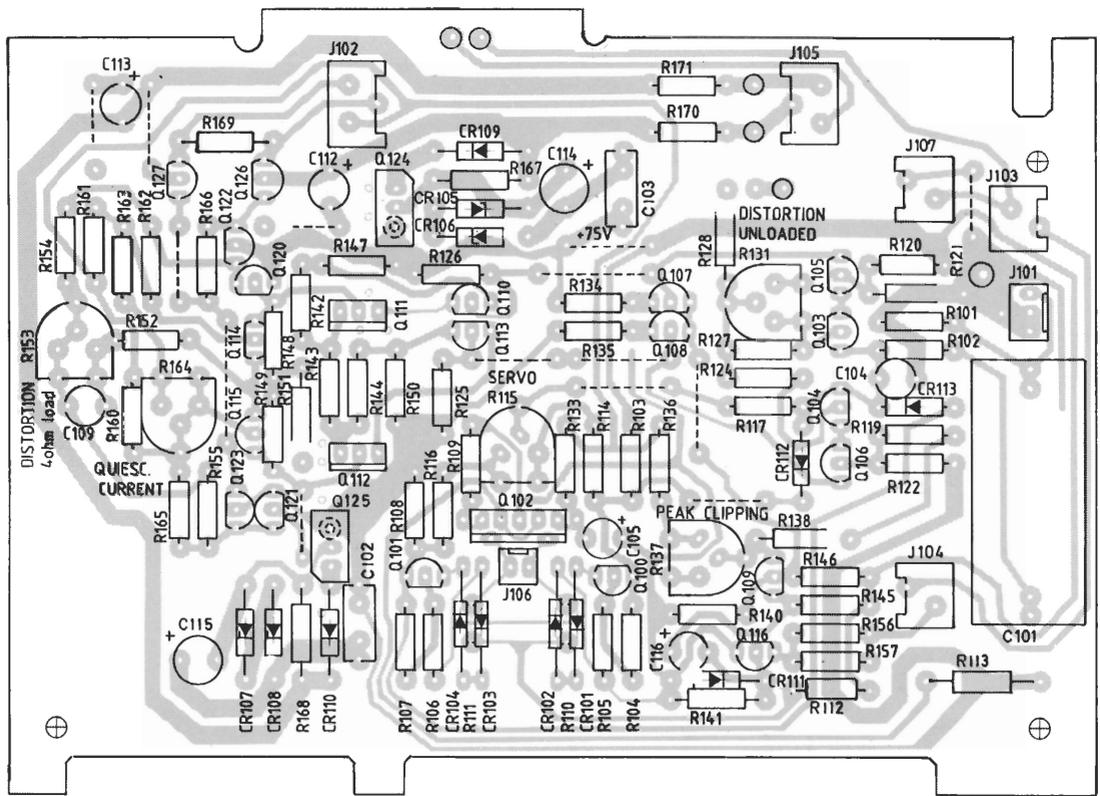


- Connect the wires from the mains transformer as shown in the figure.

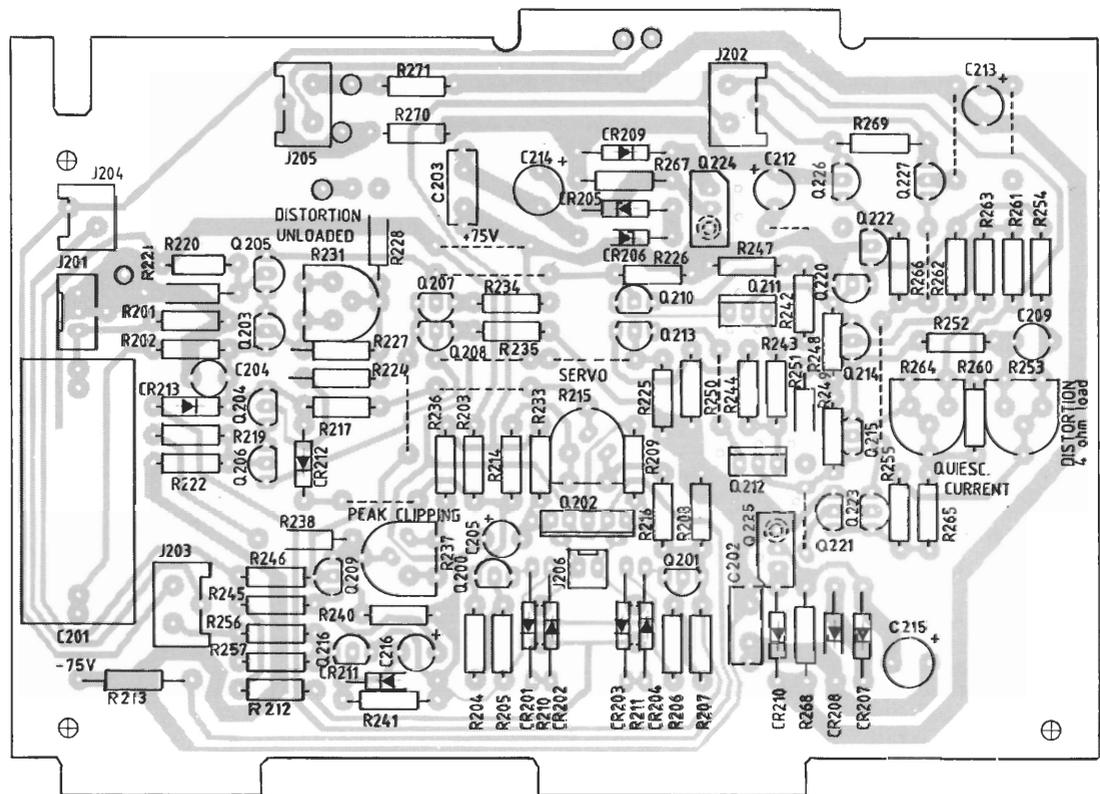
- Connect the wires from the mains transformer as shown in the figure.

**NOTE!** The resistors R1001/R1003 and R1002/R1004 shall for each pair have a total resistance of 22 ohm (10 W).

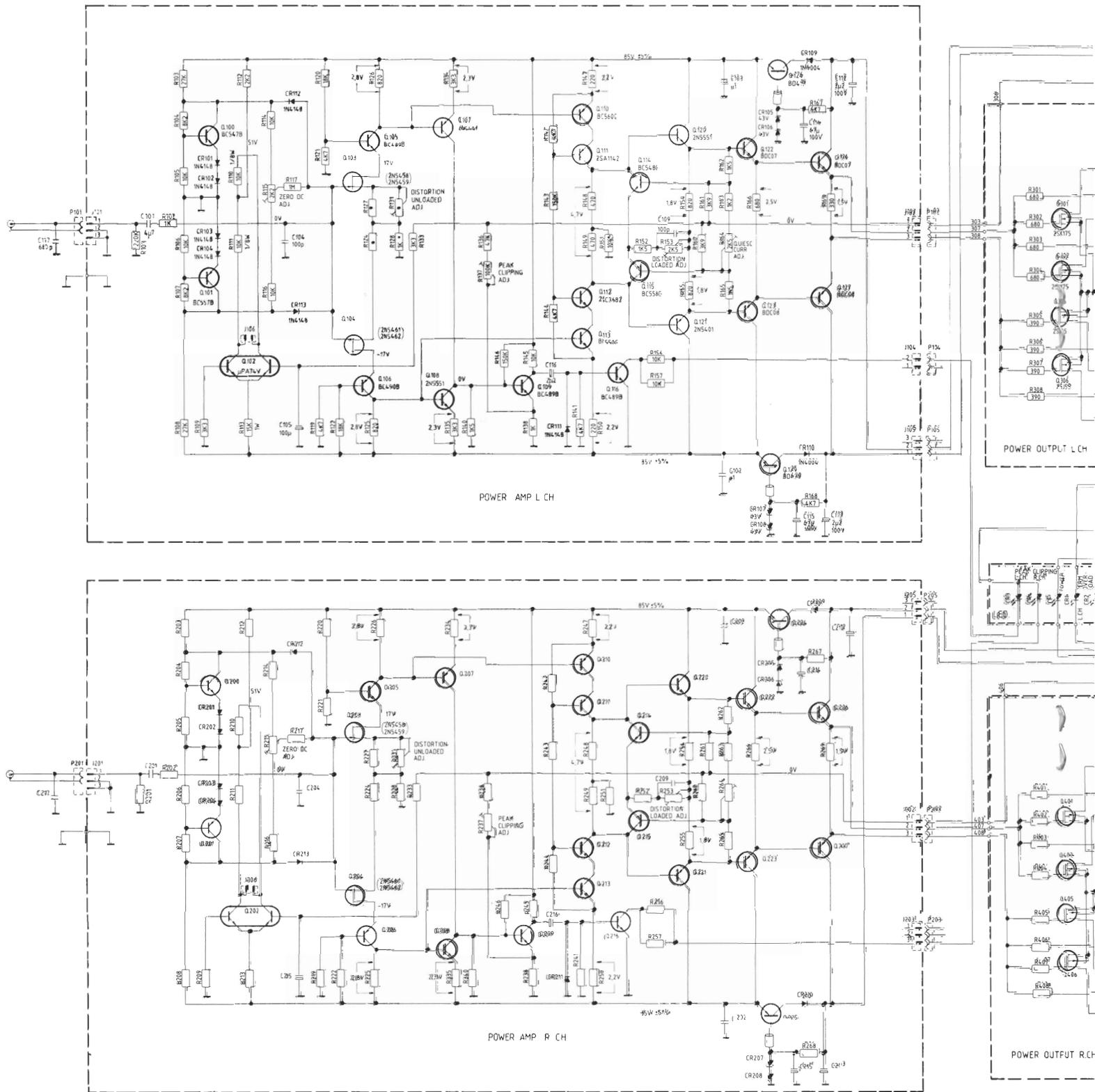
**NOTE!** The resistors R1001/R1003 and R1002/R1004 shall for each pair have a total resistance of 11 ohm (10 W).



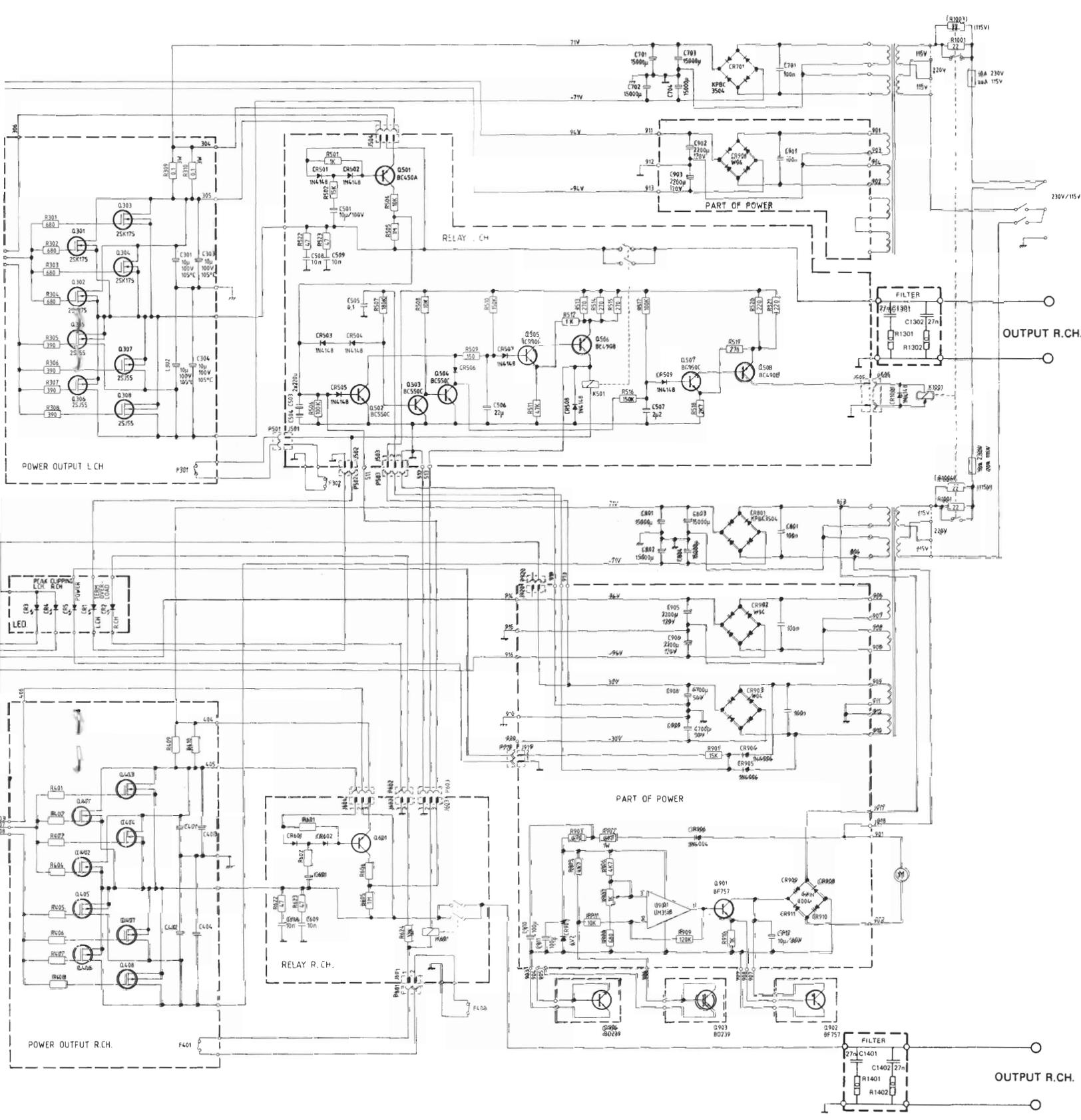
Power amplifier board, left channel, component side

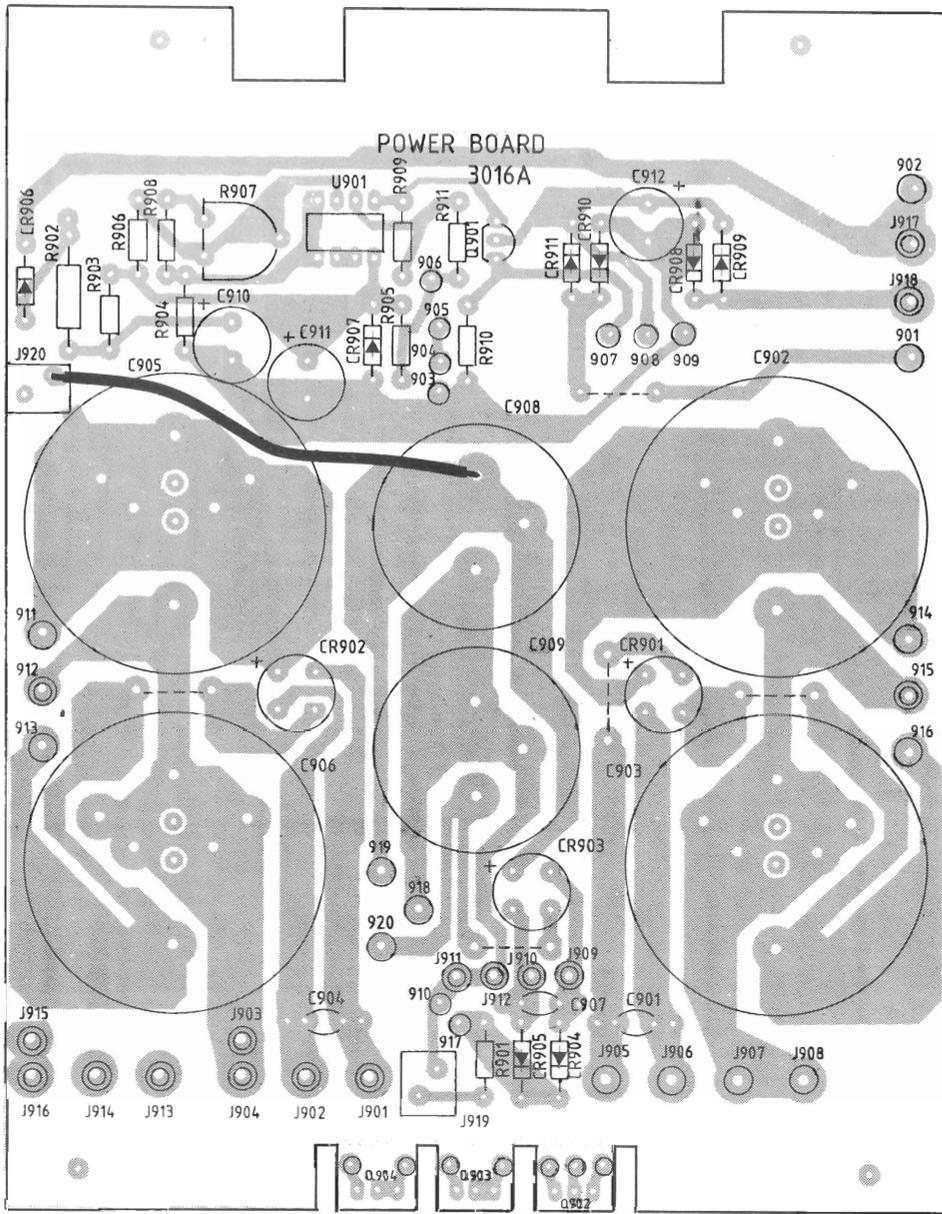


Power amplifier board, right channel, component side

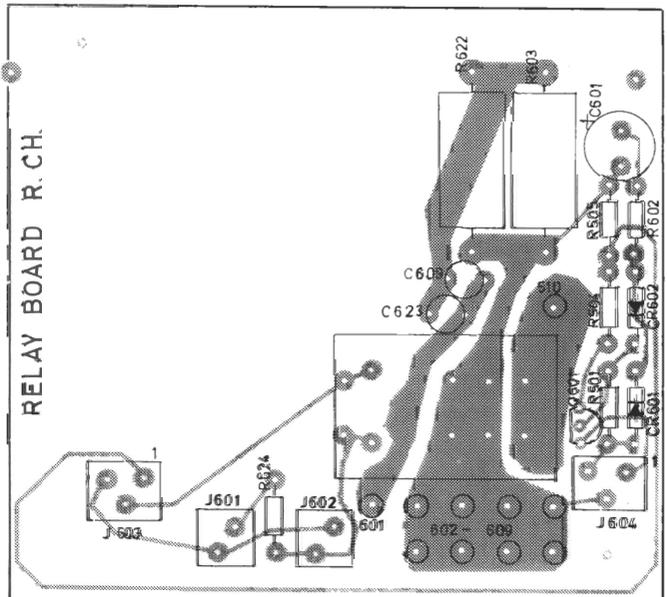
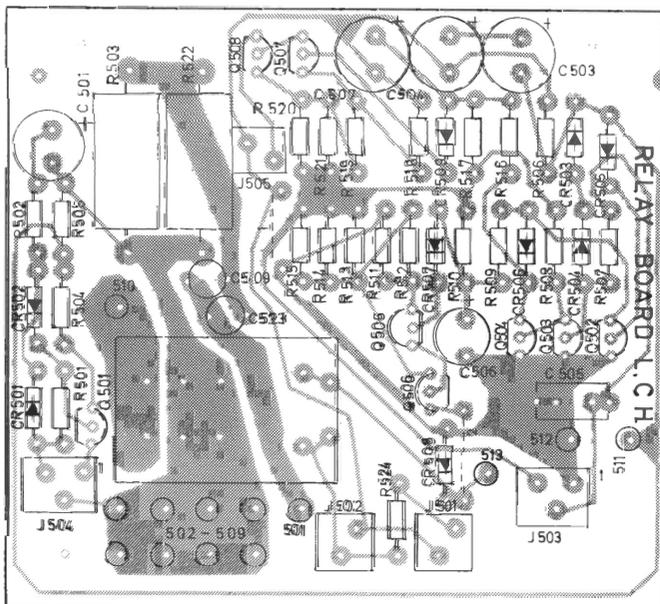


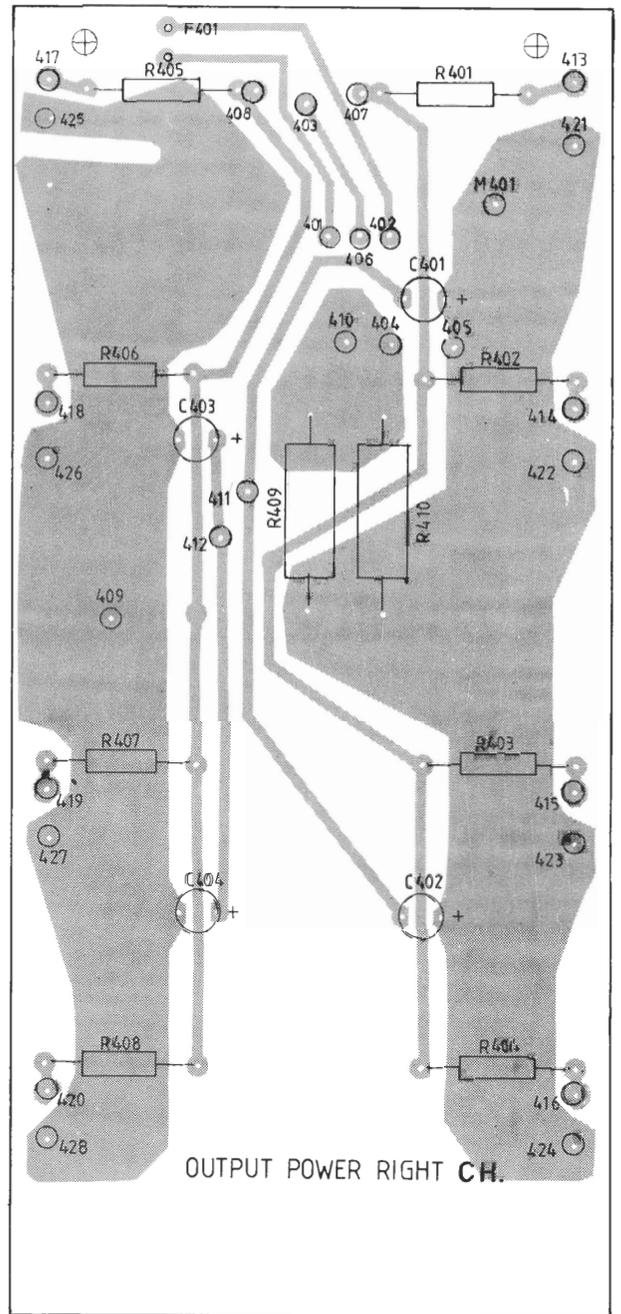
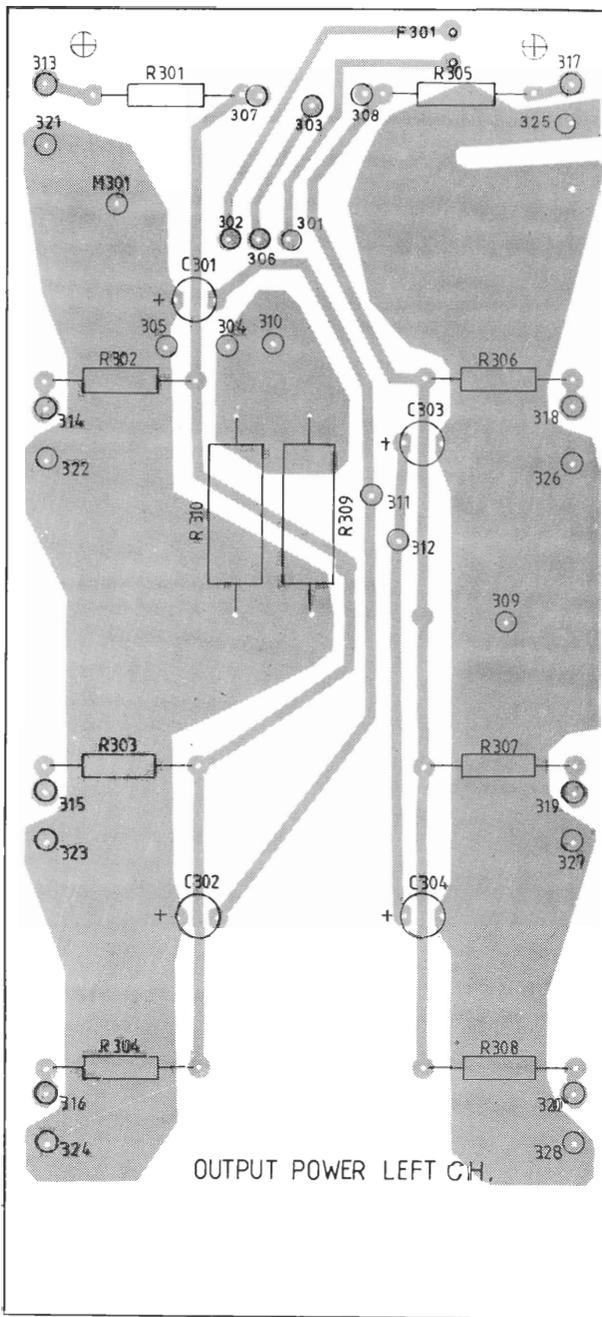
Circuit diagram



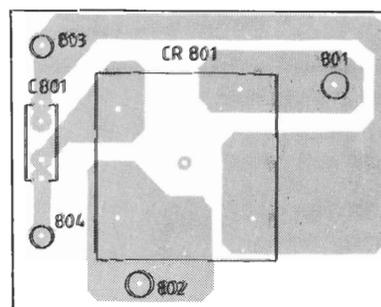
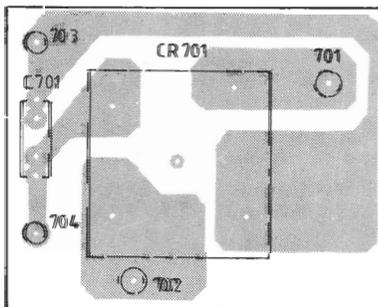


Power supply board, component side





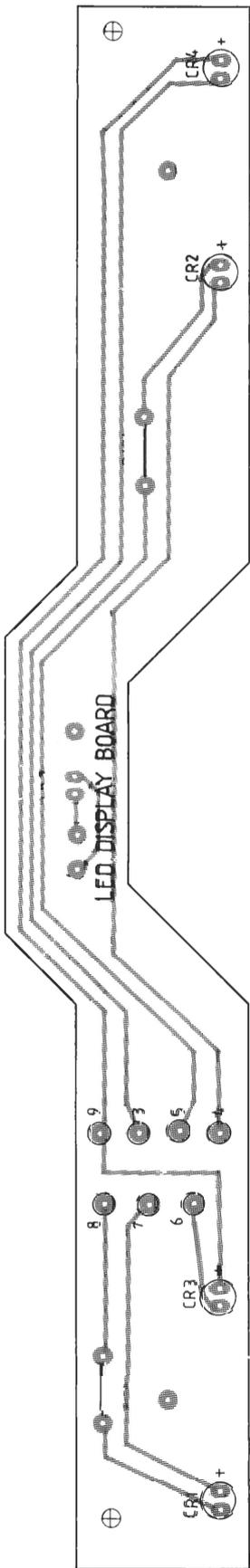
Output Power boards, component sides



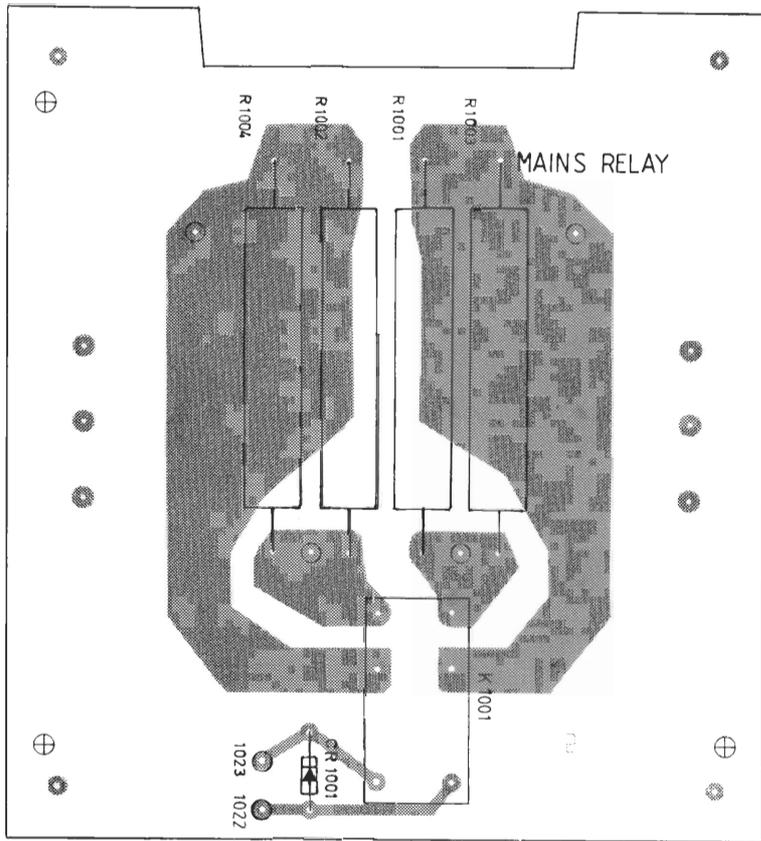
Rectifier board left, component side

Rectifier board right, component side

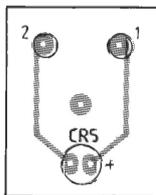
These boards may be omitted.



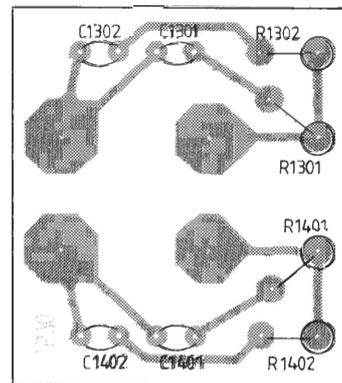
LED display board, component side



Mains relay board, component side



Power LED board, component side



Output filter board, component side

# Technical Data

<b>Tandberg Power Amplifier 3016A</b>	<b>Power requirements:</b>	115 V $\pm$ 10%, 60 Hz or 230 V $\pm$ 10%, 50 Hz
	<b>Power consumption:</b>	210 – 2500 W
	<b>Dimensions:</b>	Width: 17 1/8" (43.5 cm) Depth: 13 3/4" (35.0 cm) Height: 8 11/16" (22.1 cm) Weight: 62 lbs (28 kg)

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<b>Technical Data according to IHF-A-202, 1978</b>	<b>Continuous Average Power Output:</b>	(8 ohm, 20 – 20.000 Hz, THD < 0.05%)	220 W
	<b>Frequency range:</b>		+ 0/– 0,1 dB, 20 – 20.000 Hz
	<b>A-weighted Signal-to-Noise ratio:</b>	(Ref. 1 W/8 ohm)	94 dB

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<b>Secondary Disclosures</b>	<b>Output Impedance (20 – 20.000 Hz):</b>		typical 0.02 ohm
	<b>Wideband Damping Factor:</b>		typical 400
	<b>SMPTE Intermodulation Distortion:</b>		typical 0.05%
	<b>IHF Intermodulation Distortion:</b>		typical 0.05%
	<b>Channel Separation:</b>		> 90 dB
	<b>Transient Overload Recovery Time:</b>		Immeasurable

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<b>Other Technical Data</b>	<b>Continuous Average Power Output in 4 ohm:</b>		400 W
	<b>Continuous Average Power Output in 2 ohm:</b>		600 W
	<b>Frequency range:</b>		+ 0/– 0.2 dB, 0.07 – 1.5 MHz
	<b>Sensitivity (1 W/8 ohm/1 kHz):</b>		100 mV
	<b>A-weighted Signal-to-Noise ratio:</b>	(Ref. 220 W/8 ohm)	117 dB
	<b>Pulse power:</b>		2500 W in 0.5 ohm

\* Specifications are subject to change for further improvement without notice.

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