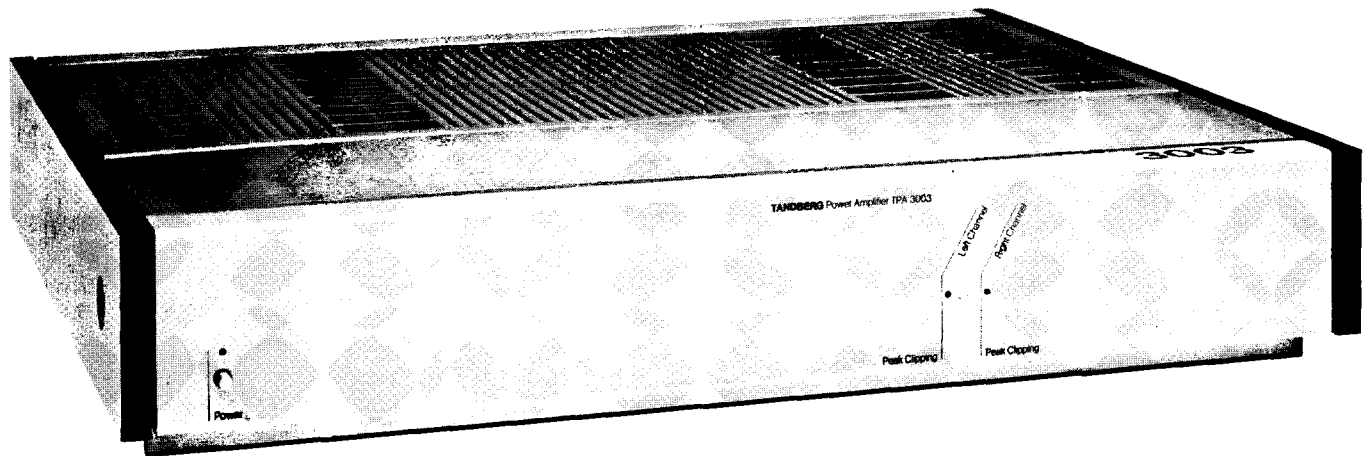


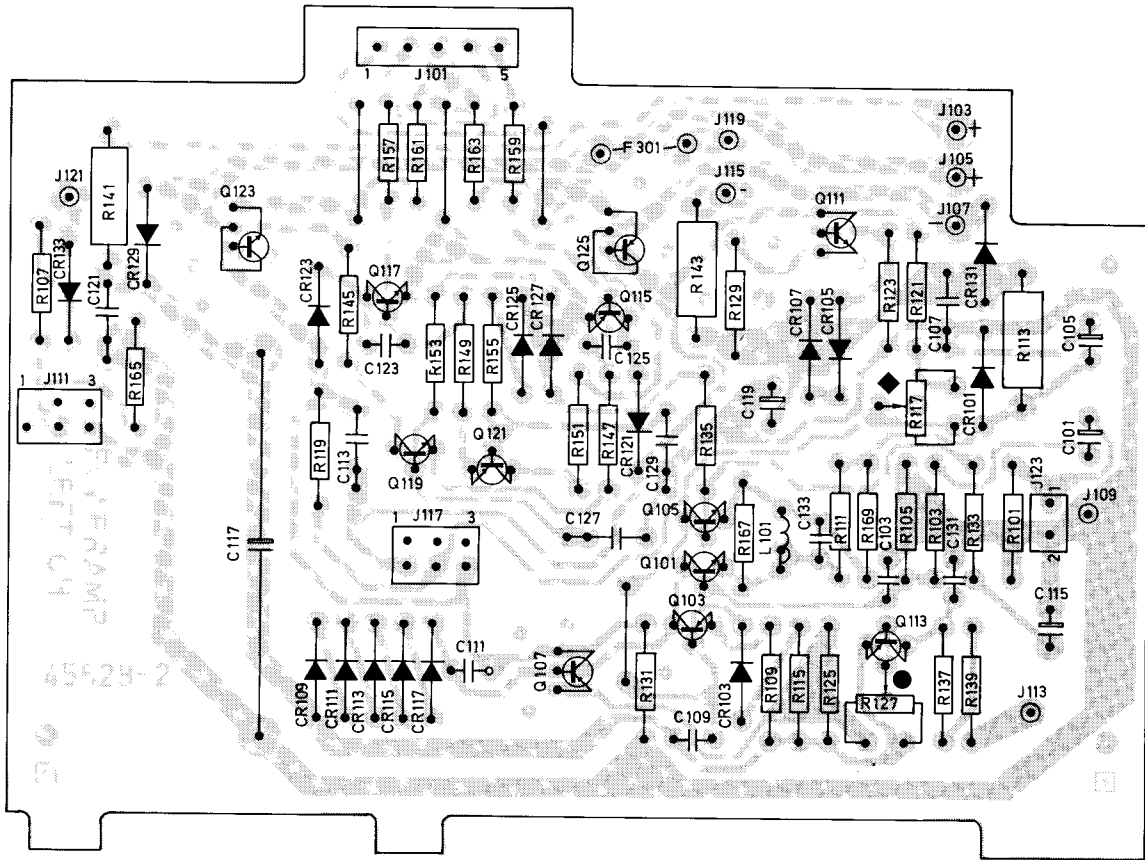
TANDBERG

Power Amplifier 3003

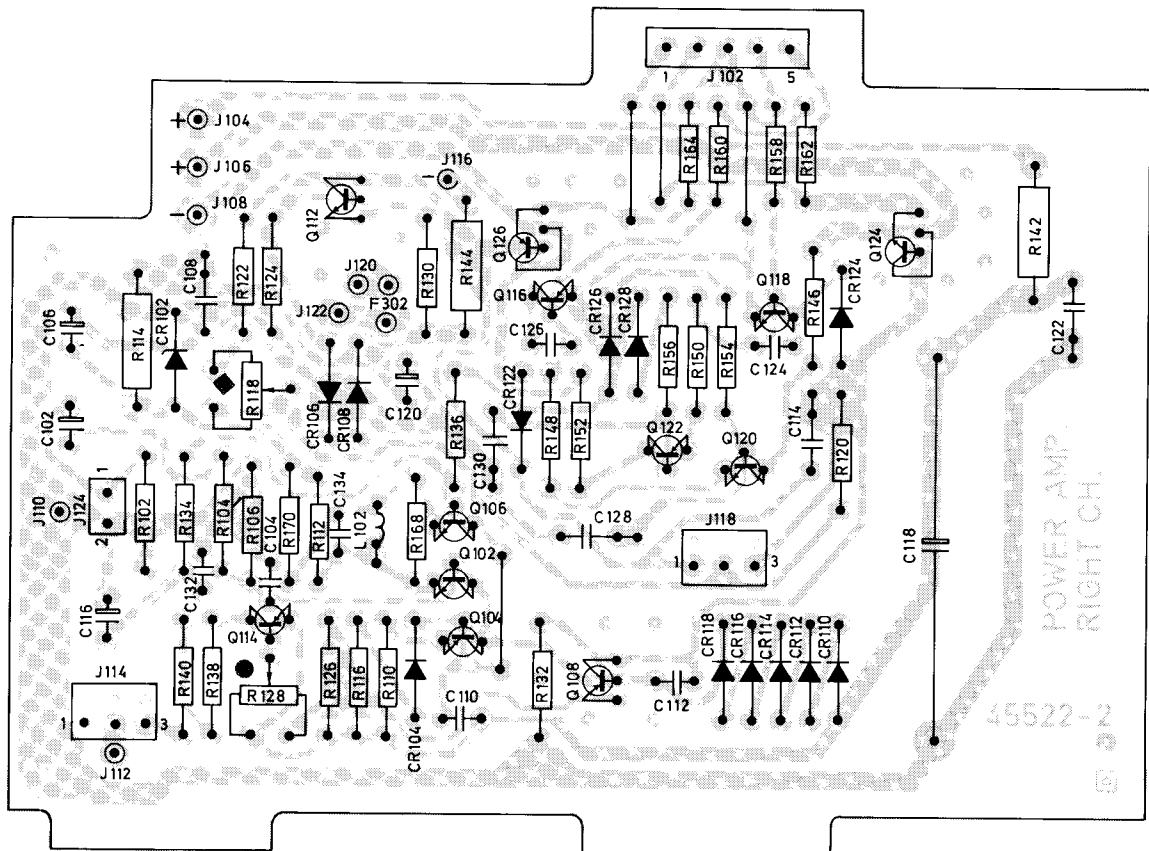
Circuit Diagram and
Alignment Instructions



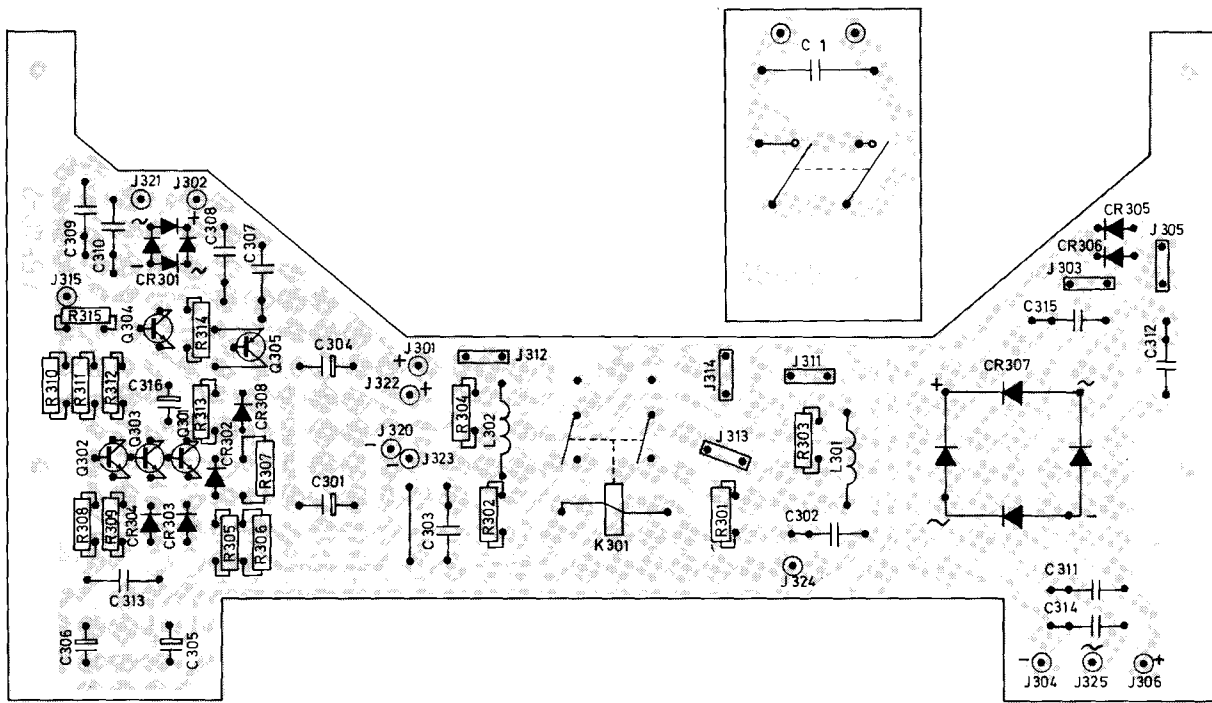
ALL BOARDS ARE SEEN FROM THE SOLDER SIDE



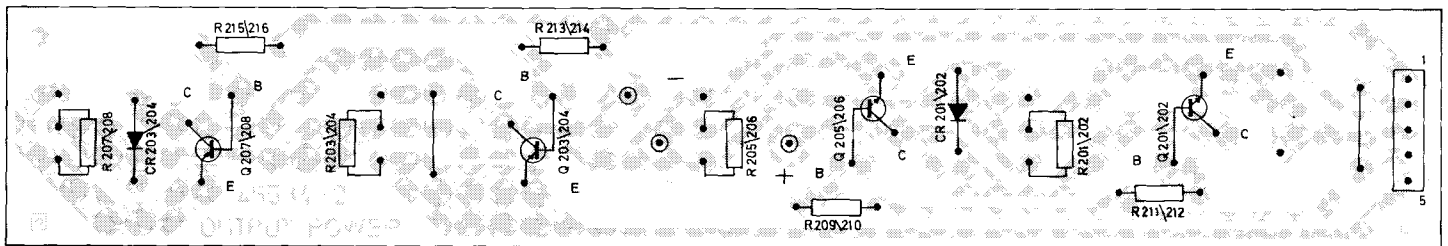
Power amplifier board, left channel



Power amplifier board, right channel



Power supply board



Output power amplifier board

Adjustments

Quiescent current

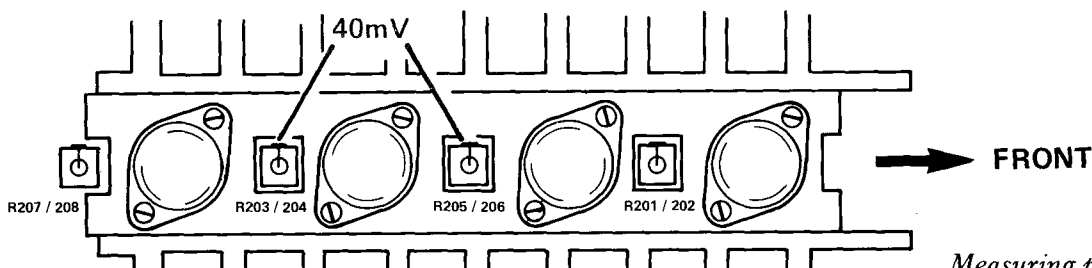
Test condition:

Approx. 10 min. warming up time from *cold* condition without signal applied.

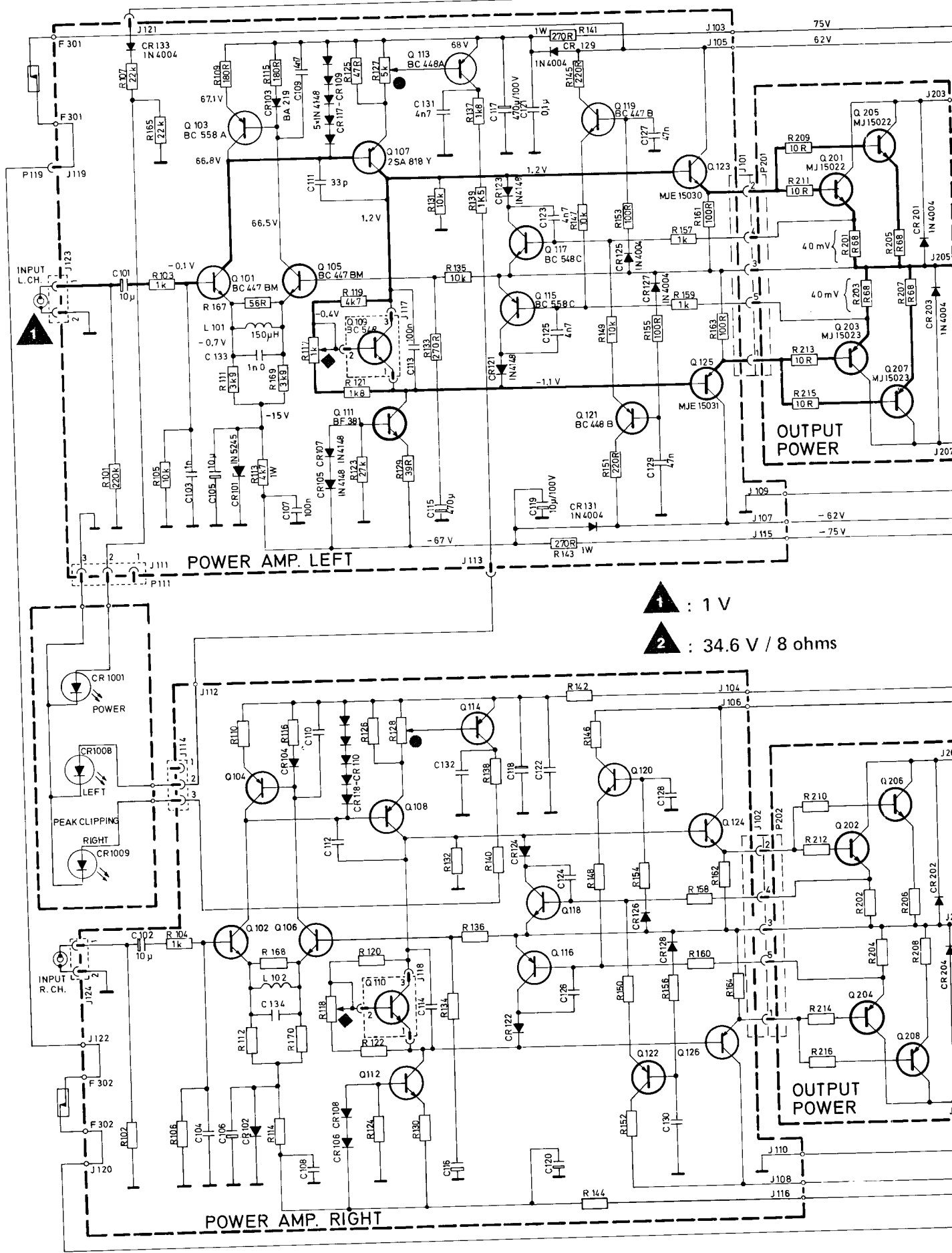
- Connect a VTVM across R203/R204 for left/right channels respectively, i.e. between the top terminals of R203 and R205/R204 and R206, see figure.
- Adjust R117/R118 (◆) for 40 mV reading on the VTVM.

Peak clipping

- Connect an oscilloscope to left/right speaker output across 8 ohms load.
- Apply a 1 kHz signal and drive the amplifier to just below clipping point.
- Adjust R127/R128 (●) so that the Peak Clipping indicators on the front lights up. Then fine adjust the potentiometers down until the lights just goes off.



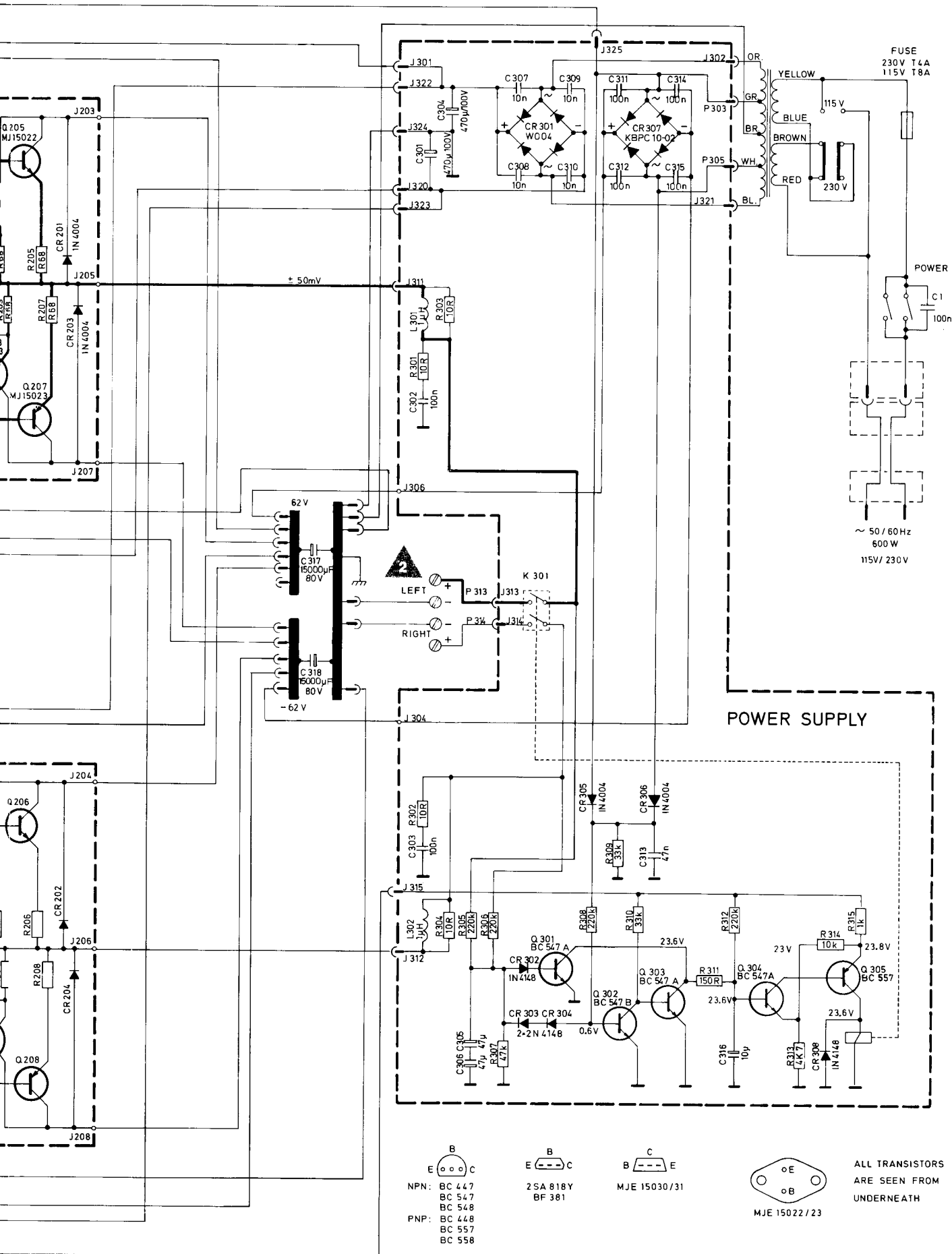
Measuring point, quiescent current.



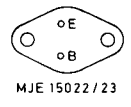
Circuit diagram

◆ Quiescent current

● Peak clipping



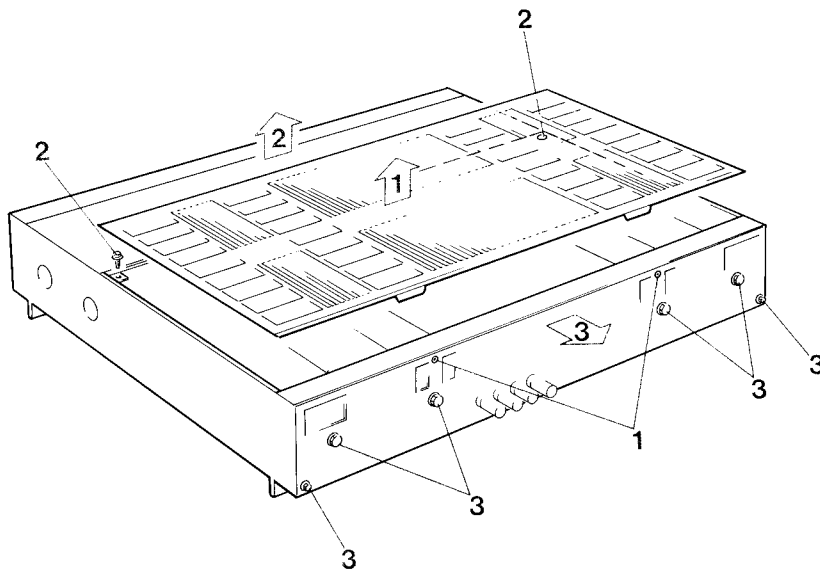
- | | | |
|---------------------------------|--------------------|--------------|
| | | |
| NPN: BC 447
BC 547
BC 548 | 2SA 818Y
BF 381 | MJE 15030/31 |
| PNP: BC 448
BC 557
BC 558 | | |



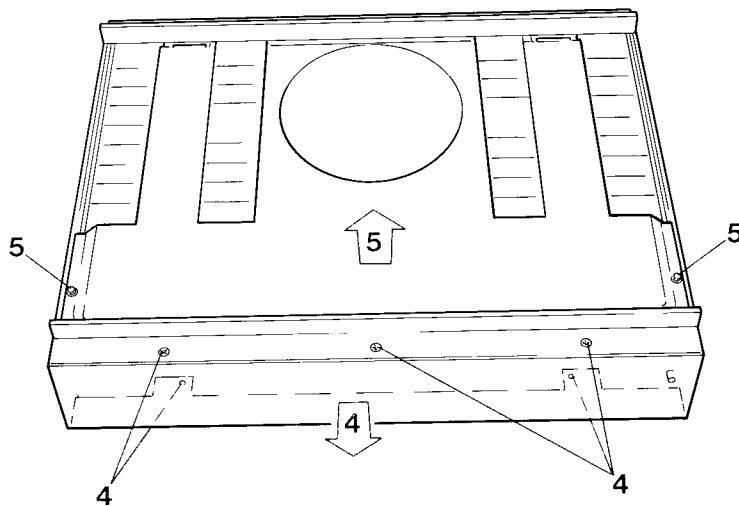
ALL TRANSISTORS
ARE SEEN FROM
UNDERNEATH

Dismantling

- Top cover, rear (1)
- Top cover, front (2)
- Rear panel (3)
- Front panel (4)
- Bottom cover (5)



Dismantling the rear and top covers.

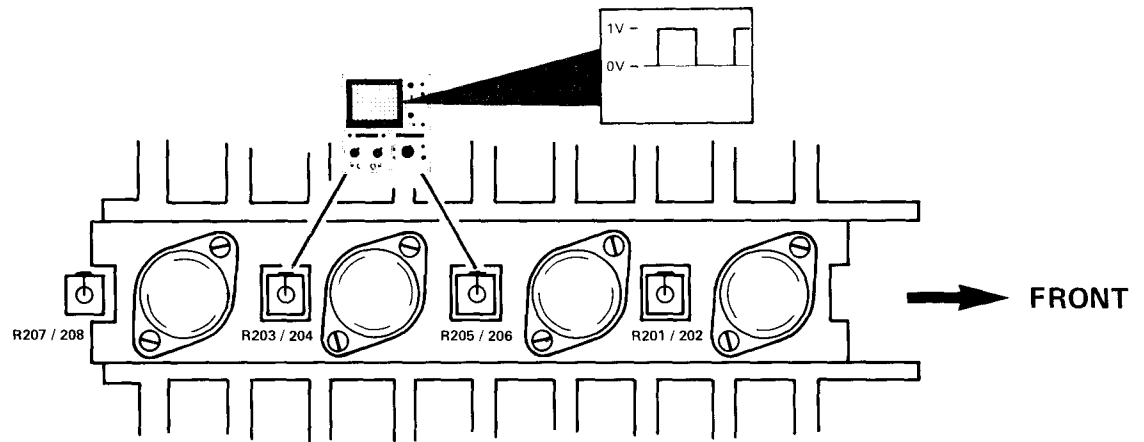


Dismantling the front and bottom covers.

Service hints

Checking the shortcircuiting protection circuit

- Connect an oscilloscope across R203/R204 for left/right channels respectively, i.e. between the top terminals of R203 and R205/R204 and R206 see figure.
- Shortcircuit the output terminals (+ to -).
- Apply a signal of 0.1 V to the input terminals.
- The oscilloscope should then show the following picture:



Checking the shortcircuiting protection circuit.

Checking the speaker protection relay

If some fault occurs in the output power circuits, causing d.c.-voltages at the speaker outputs the relay should disconnect the speakers to prevent damage.

- Disconnect white wire from the output transistors at terminal J311, see figure.
- Disconnect speaker load.
- Apply 6 to 8 V d.c. (+ and - alternately) to J311. The relay should then open.

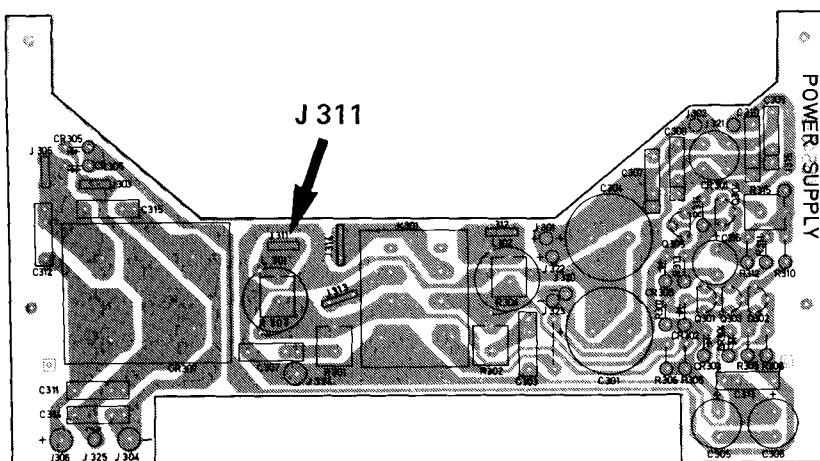
What to check after replacement of power transistors

After having replaced a defective power transistor the following components should be checked with an ohmmeter and replaced if necessary.

The component numbers refer to the left channel.

R157/159
R161/163
R209/211/213/215
R201/203/205/207

Q109
Q123/125/115/117
CR109-117
CR121/123



The power supply board seen from the component side.

Tandberg Power Amplifier TPA 3003

Technical Data

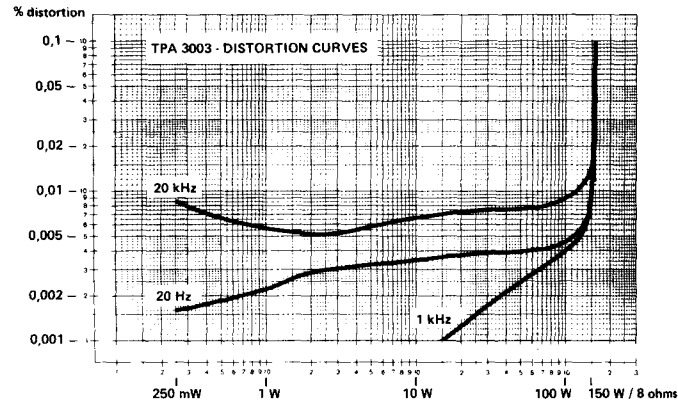
Power requirements:	115/230 V \pm 10%, 50/60 Hz
Power consumption:	50 – 770 W
Dimensions:	Width: 17 1/8" (43.5 cm) Depth: 13 3/4" (35.0 cm) Height: 3 1/4" (8.3 cm) Weight: 25 lbs (11.3 kg)

Technical Data according to IHF-A-202, 1978

Continuous Average Power Output: (8 ohms, 20 – 20,000 Hz, THD < 0.02%)	2 x 150 W
Dynamic Headroom:	0.35 dB
Frequency Response:	20 – 20,000 Hz, + 0/- 0.2 dB
Sensitivity:	1 V
A-weighted Signal-to-Noise Ratio: (Ref. 1 W/8 ohms)	98 dB

Secondary Disclosures

Clipping Headroom:	1.05
Output Impedance (20 - 20,000 Hz):	0.08 ohms
Wideband Damping Factor:	100
Low Frequency Damping Factor:	200
SMPT E Intermodulation Distortion:	0.02%
IHF Intermodulation Distortion:	0.02%
Transient Overload Recovery Time:	Immeasurable
Reactive Load Factor:	1.2
Reactive Load Rating:	0.8 dB
Separation:	> 75 dB
Difference of Frequency Response:	< 0.1 dB



Total harmonic distortion versus output power

Other Technical Data

Frequency Response:	5 – 100,000 Hz, + 0/- 1.5 dB
Output Impedance (20 – 1000 Hz):	0.04 ohms
Slew rate:	> 70 V/us
A-weighted Signal-to-Noise Ratio: (Ref. 150 W/8 ohms)	120 dB

- Specifications are subject to change for further improvement without notice.

Optional Extras

- Black acrylic side walls for freestanding units.
- Attachment sets for installation in 19 inch racks.

TANDBERG
The European Alternative

Tandberg A/S, Post Office Box 55, Bogerud, N-Oslo 6, Norway