The RoeTest Build – 2024 Sep. 06

First and foremost, I would like to thank Helmut & his associates and the RoeTest community for making available such a powerful and versatile instrument!

At the end of the day, the tool can only be as good as the capability of its users as well as the supports of the people/community involved in making and using it.

And, Helmut has provided 1st-class pre-build and post-build supports that are both extremely timely and thoroughly as well as comprehensively! Thank you!!!

My build started in late 2022 as the V10 kit, but I had to delay the project due to work travel commitments and did not restart the build until the fall of 2023…

As of now it is running V11 FW and has all the HW/circuit modifications (that I know of).

I purchased the PCB set + ALU top plate/deck + bottom vented enclosure + main/backup transformers + FW/parts from Helmut. The rest of the parts came from the usual sources of Digi-Key/Mouser/Reichtel and my local associates.

I opted to powder-coat the vented bottom enclosure in textured silver finish – which also insulates the enclosure from electrical conduction. Then, I installed 4x ¾" tall rubber foot un the bottom enclosure to provide good airflow/ventilation as well as ease of handling (I can easily put my fingers under the "elevated" chassis and grab/lift the whole chassis to move it around when necessary).

The assembly of the PCBs was nothing dramatic – just good patience and steady progress with my Metcal soldering stations using the appropriate tips when called for and the appropriate PCB holders. A few thousand solder joints later, all were ready for the final assembly onto the bottom of the top plate.

I also made the additional circuit modifications on the G1 board and the main board to accommodate the V11 new functions. That way, I don't have to come back to pull everything out for just a couple of jumper wires, TVS diode, 1 relay, etc.

I opted to use a different approach for the various test socket adapters - instead of using the suggested rectangular plastic boxes and the sliding rails bolted on to the top deck.

Having access to a local machine shop, I fabricated a concentric 12-pin socket adapter that takes 10 wires for the 10 tube pins (from the 10 relay switching boards) + 1 filament wire + 1 ground wire. The socket adapter has female banana jack that can receive various 12-pin banana plug-in test tube sockets. The material is a very dense plexiglass-like solid block of stock. We machined it to size, drilled the holes for the banana jacks, and milled out the wiring/routing channels to each jacks.

I made enough mounting templates for the various tube sockets – but only assembled a few so far – 1x octal, 1x 4-pin, 1x 12-pin compactron, 1x 9-pin, and 1x 7-pin.

All wirings are 1500V-rated insulated conductors. Ferrite beads terminate each of the tube pin of tube test socket plug-ins to suppress any unwanted/spurious oscillations during testing.

The adapter/socket setup mentioned above was from my experience with the extensive use of the French-made Metrix LX119 vacuum tube tester and several conversations with my good friend Daniel N. (TV-7 guru).

The final calibration was easy using the auto-cal function in the accompanying SW installation and the calibration fixture.

Overall - the build took about 3 months, but probably around 80 actual hours in total.

Since early April 2024 till now (September 2024), I have tested 750+ tubes of various types on this instrument. And, I can honestly say that it is a very impressive and accurate instrument!

Batch run feature and post-processing easy-match are powerful tools to allow some test automation and effective data analysis capabilities!

These days - I only need to bring out my laptop and the RoeTest. The whole setup fits on a 5sqft (0.6 sqm) surface.

In the past, I need a GPIB-capable PC + my Tektronix Type 576 or the 370 + the power supply to provide the filament voltage + the A/B (manual-switch) tube socket adapter boxes! This needed a 3-tier lab instrument cart!!! This can sweep up to 1200V or higher, though! 😊

I sold my Neuberger RPM375 + my AVO mk-4 + my Maxi-Matcher 2, and haven't looked back.

My Hickok Cardmatic/Bitmatic setup has been effectively "retired".

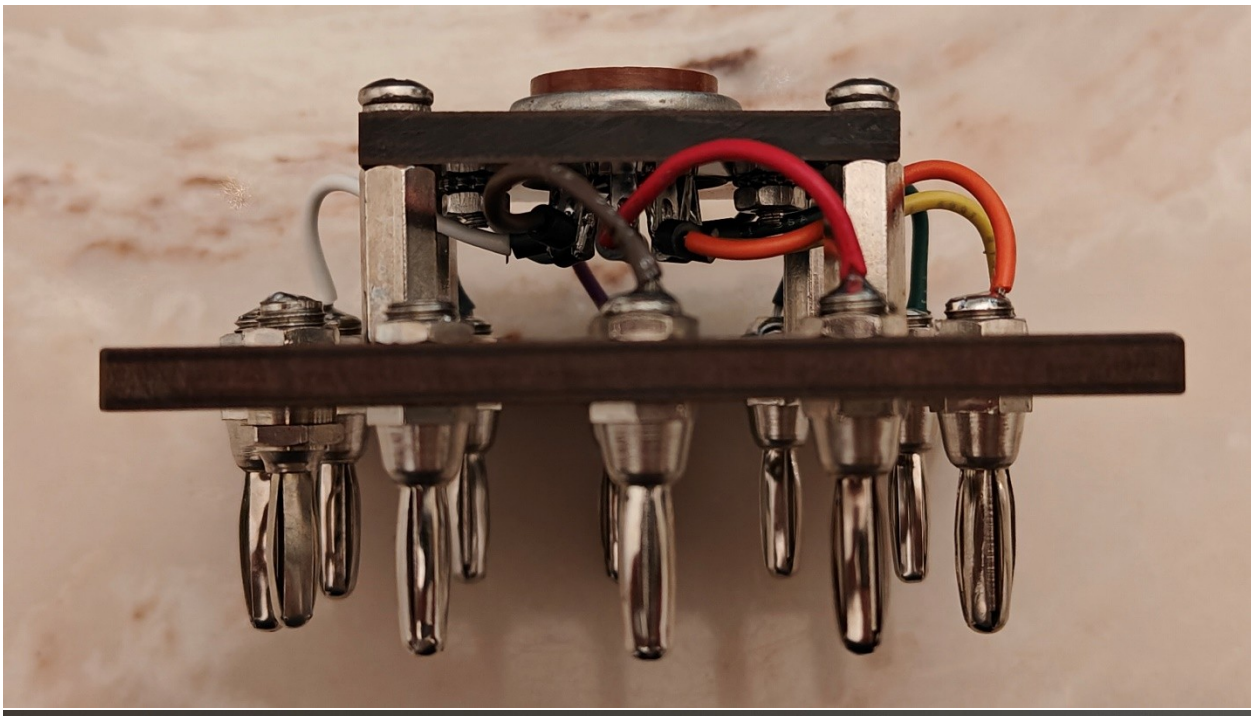
Remain in my stock of tube testers are the New London 901 + the Metrix LX119 + the TV-7/U. The former two testers are basically the vintage versions of the RoeTest in full analog/manual operations. The TV7/U is a reliable and highly portable field tester that does not need a companion laptop/SW. Plus, many tube users have various versions of the TV7s – so they are easy to compare "relative" test results!

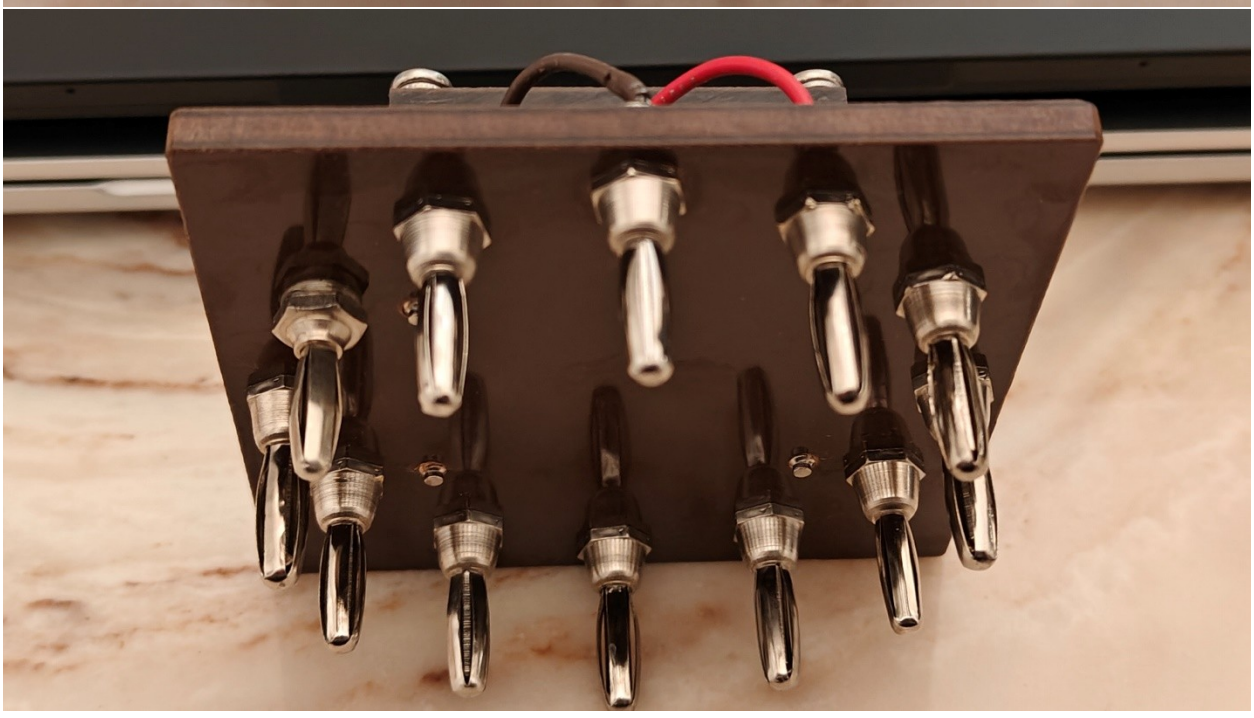
The other two more "specialized" testers I keep are the Maxi-PreAmp 2 and the George Kaye Small-Signal Tube Tester. But, they are only limited to 9-pin tube testing.

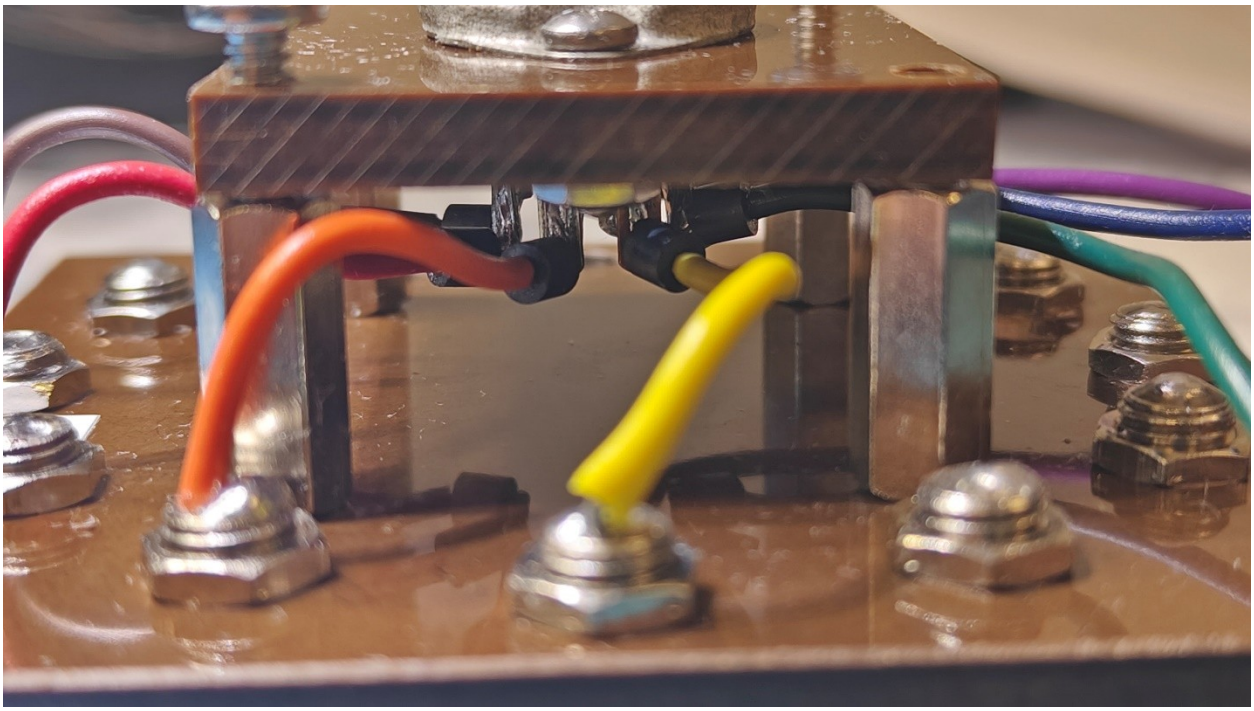
The RoeTest is as powerful and useful as its owner can make it. And Helmut's continuing supports are unvaluable!

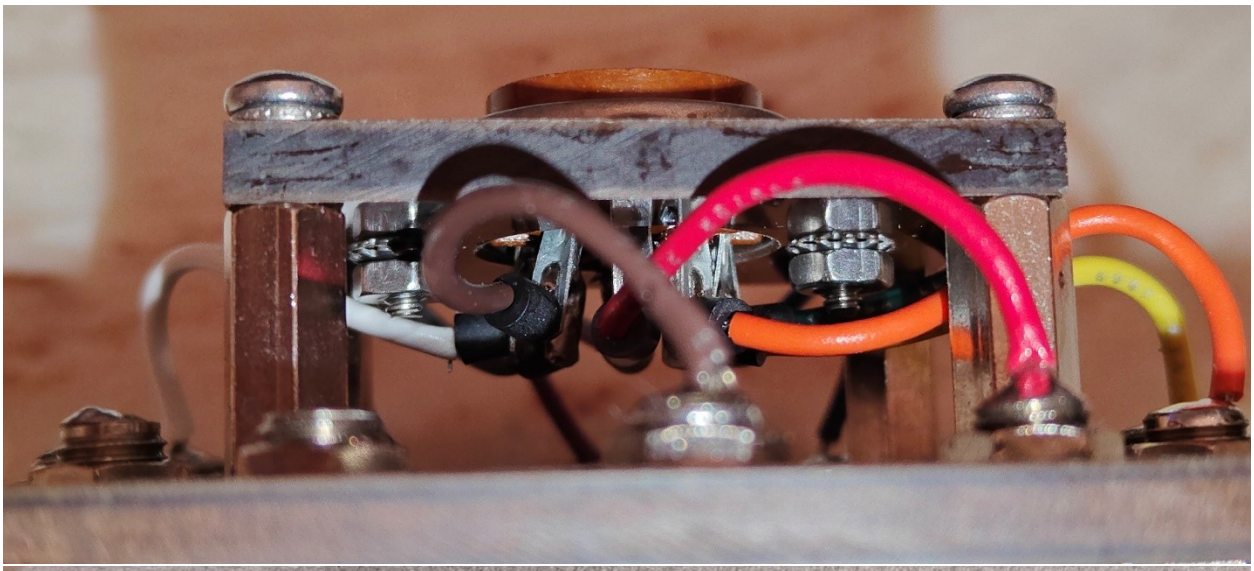
I was debating between getting an Amplitrex AT1000 or building the RoeTest. And building the RoeTest was absolutely the right decision for me. It is of course more expensive in part costs and requires considerable time/skills, but it is well worth the investment! If I have to go back to the beginning again, the choice would still be the same – 100%!

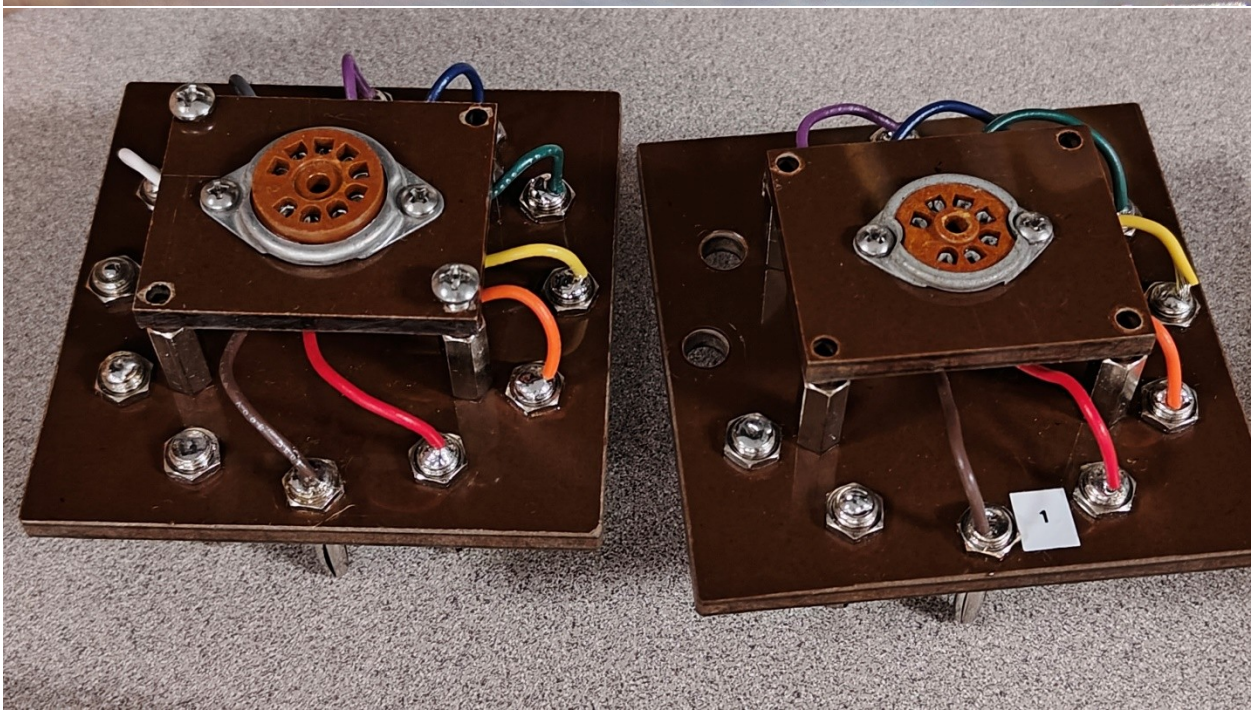
The RoeTest is an absolute essential tool for all serious tube users and I highly recommend building one – if one could!!!







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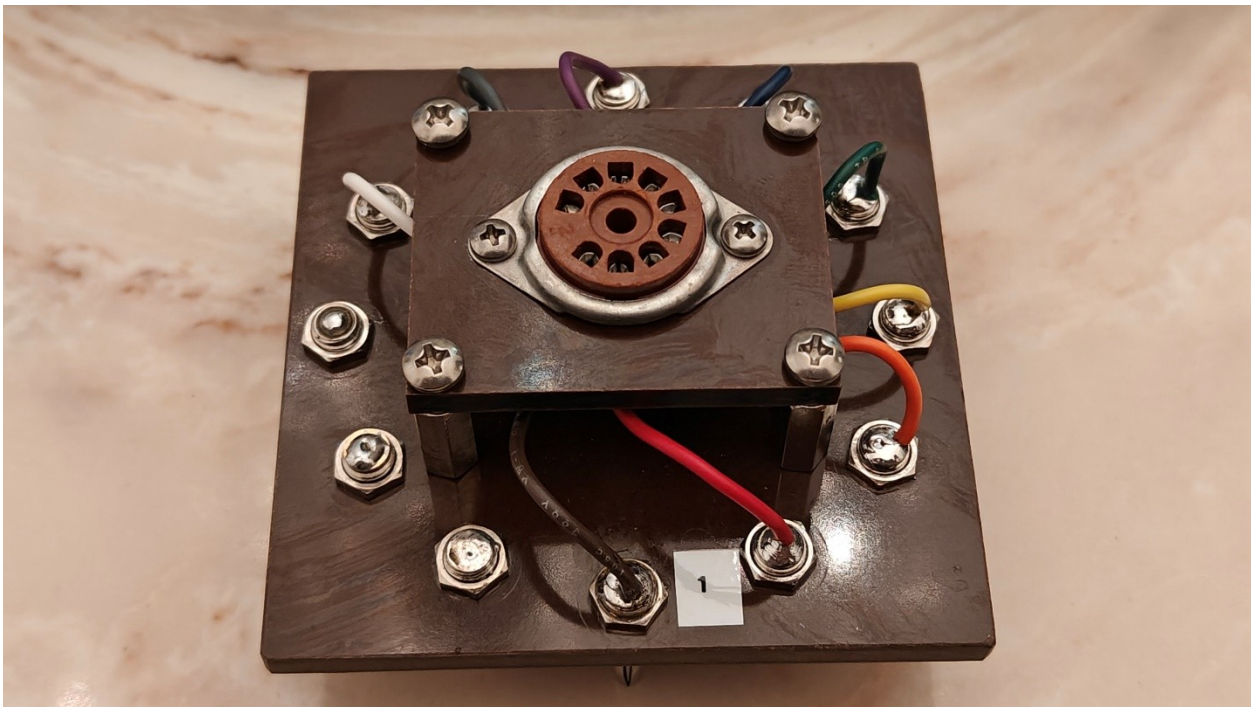
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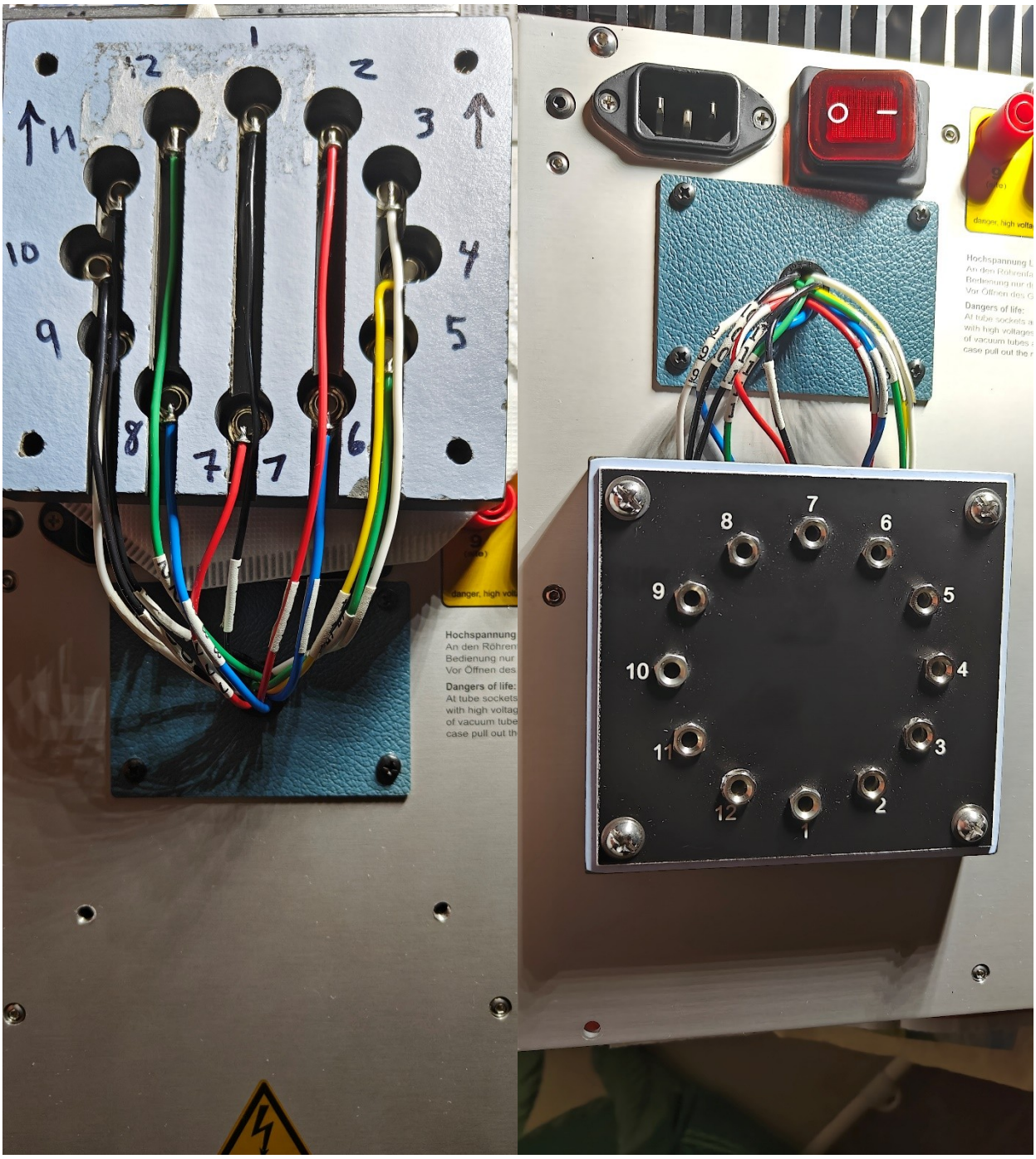
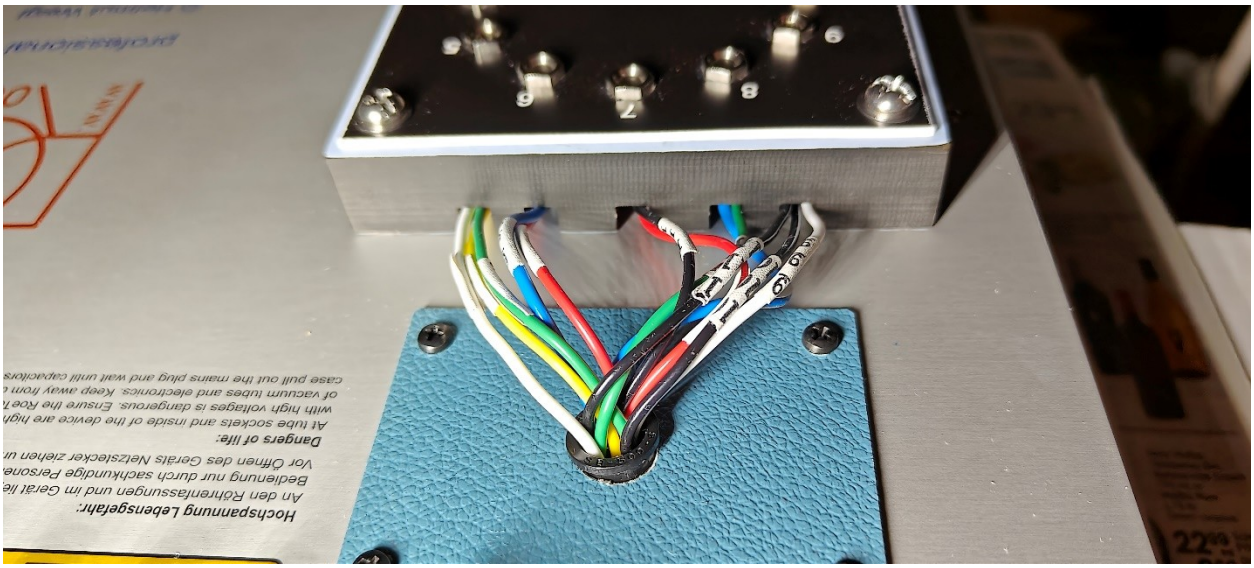
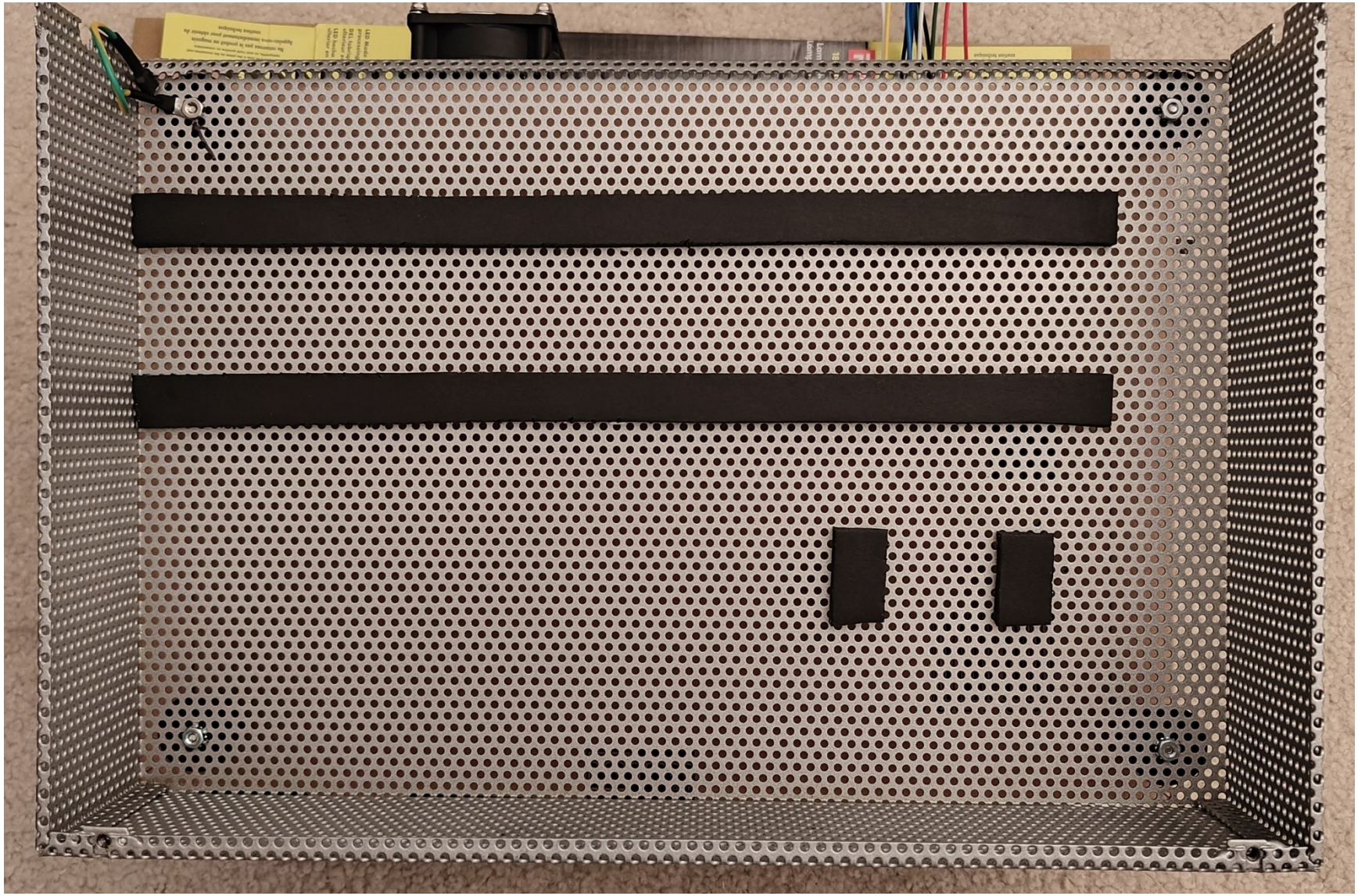
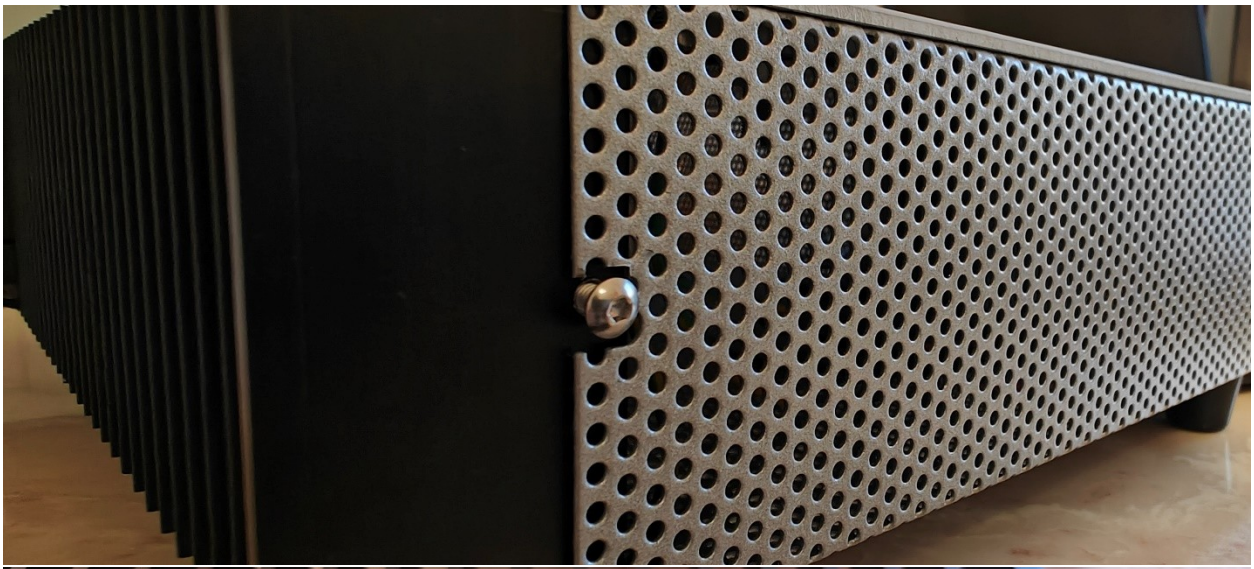
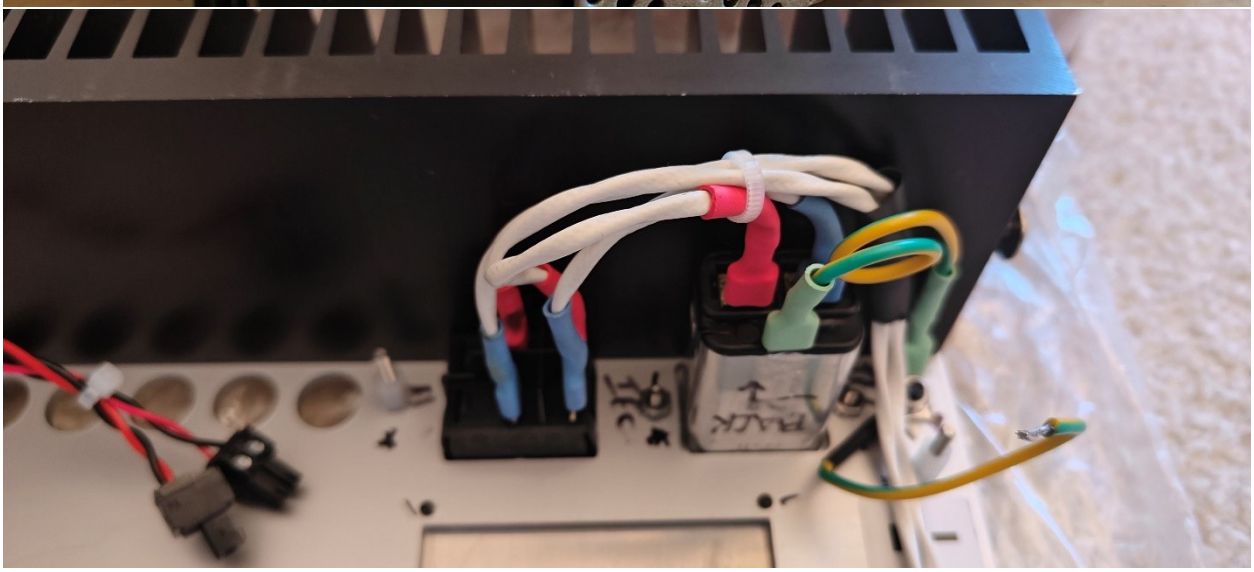
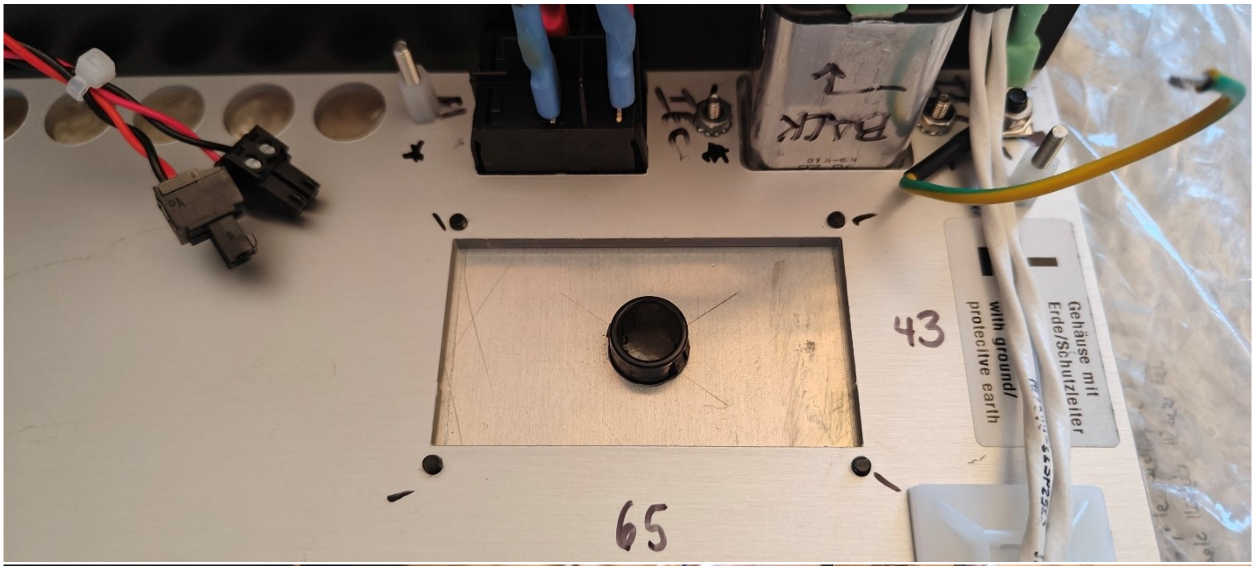

12
1
2
11
3
10
4
9
5
8
7
7
6
danger, high volt
Hochspannung
An den Röhren
Bedienung nur
Vor Öffnen des
Dangers of life:
At tube sockets
with high voltag
of vacuum tube
case pull out th
O
8
7
6
9
5
10
4
11
3
12
2
1

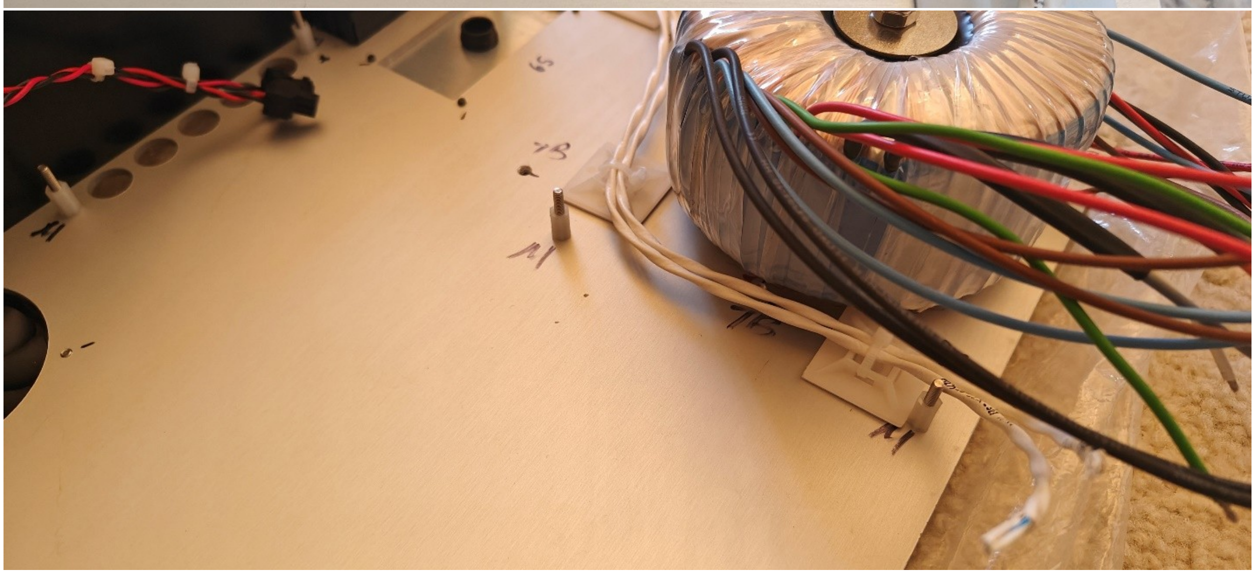


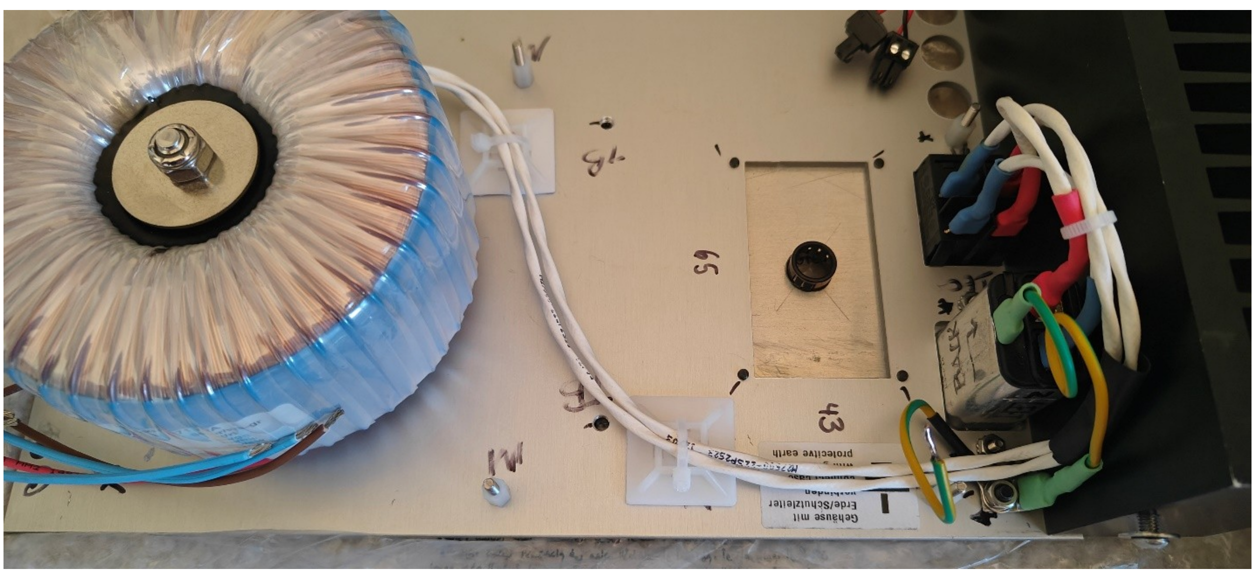


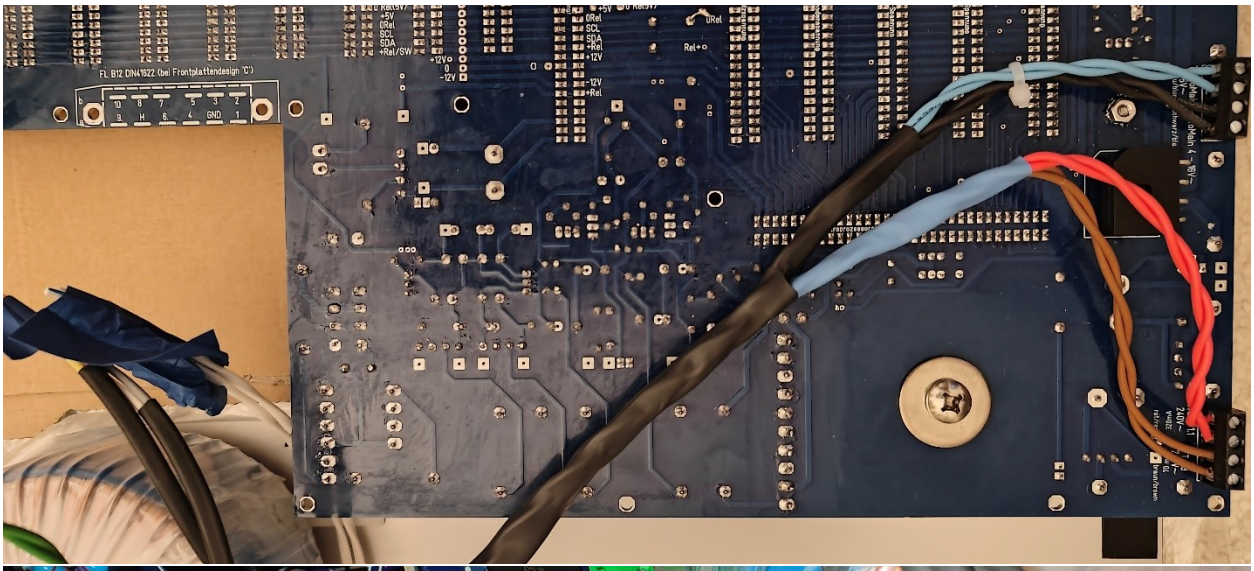


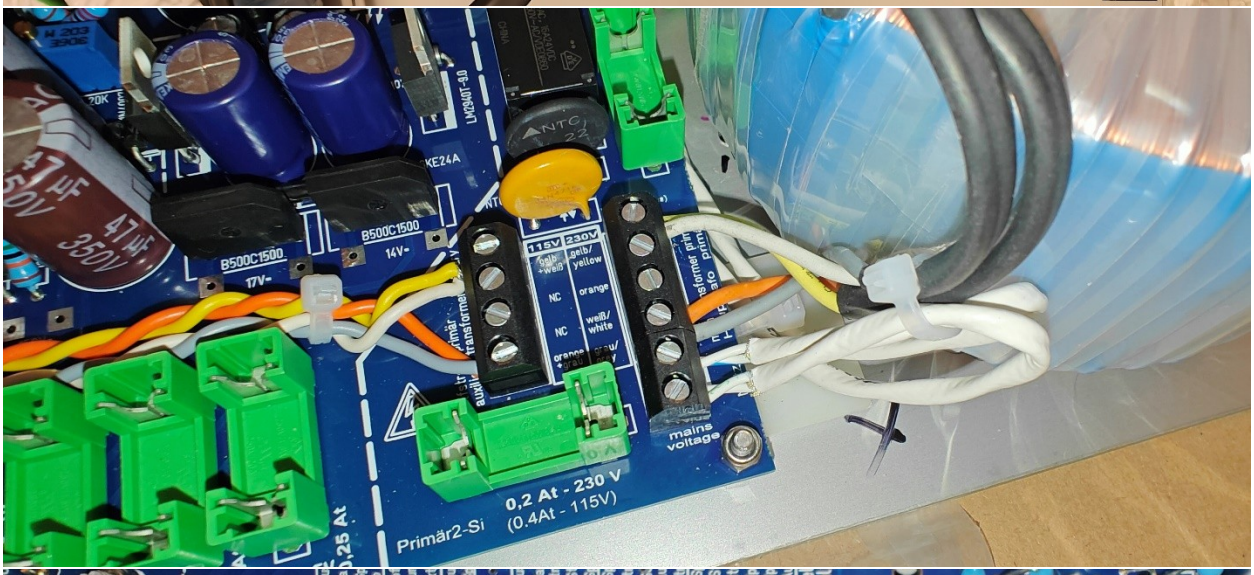


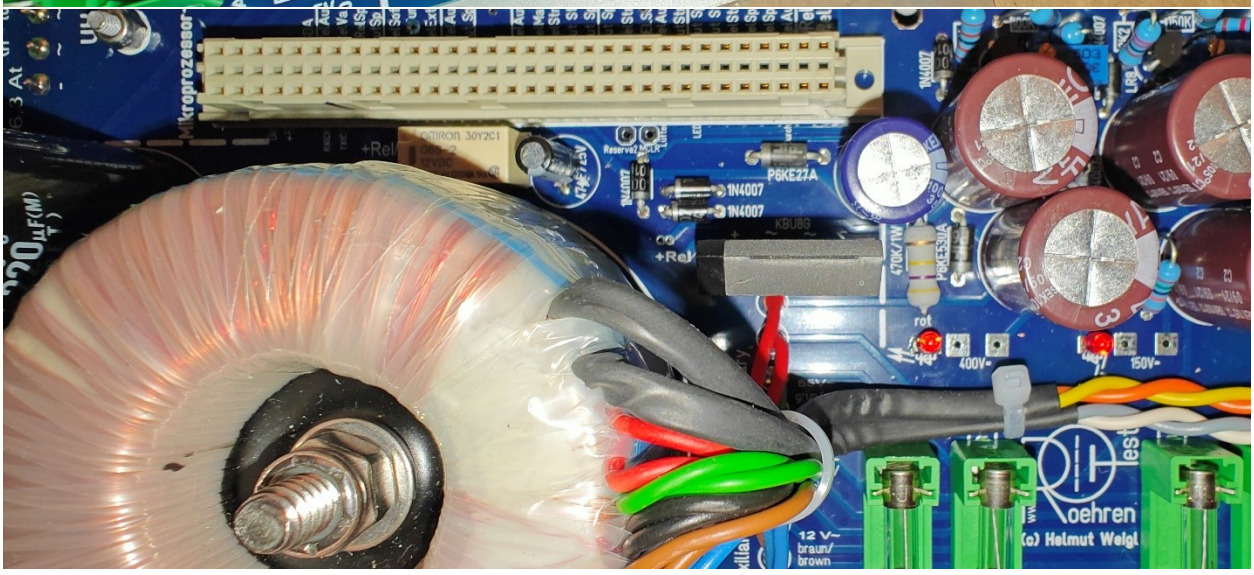

Gehäuse mit
Erde/Schutzleiter
with ground/
protective earth
43
65

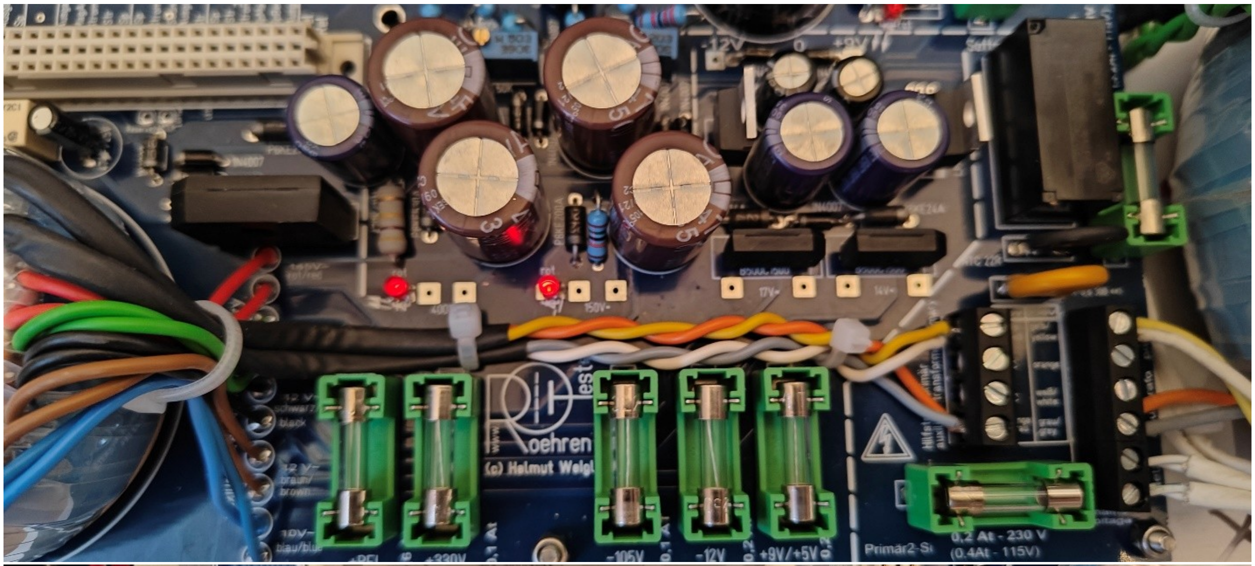


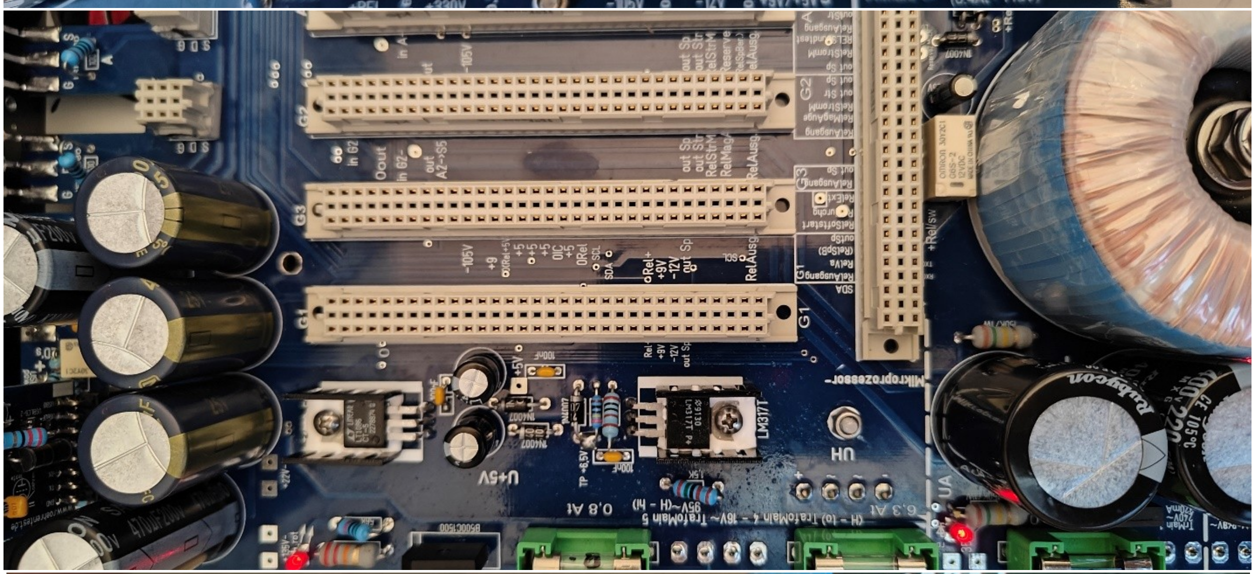


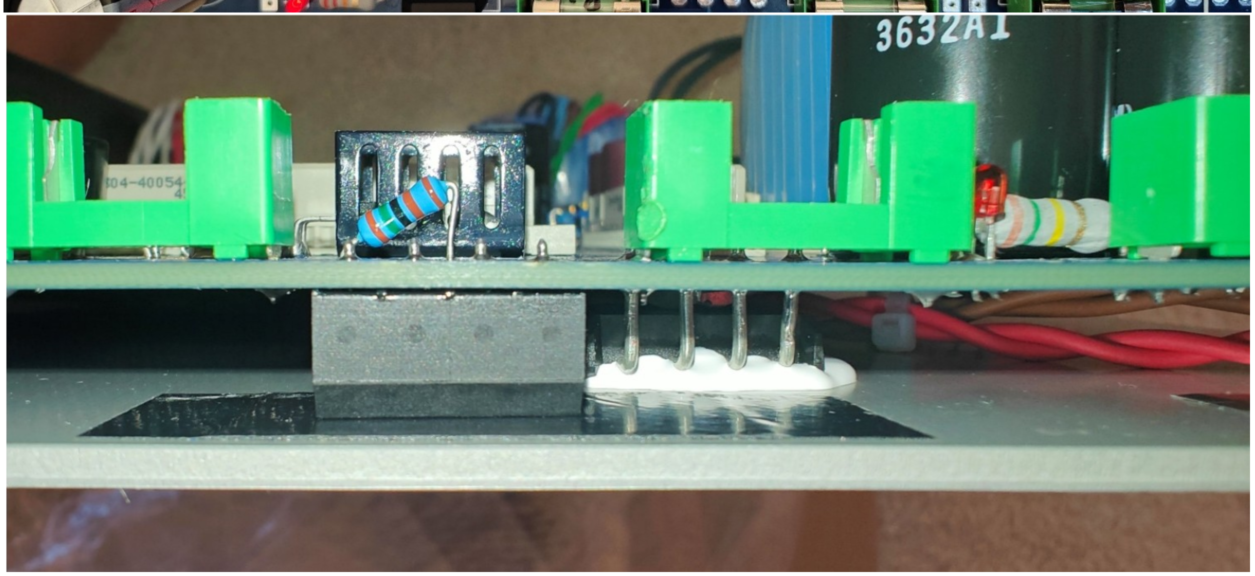

FL B12 DIN41622 (bei Frontplattendesign 'C')
10 8 7 5 3 2
9 H 6 4 GND 1
+5V
(Rel
SCL
SDA
+Rel
+12V
-12V
+Rel
URel
Rel+o
240V~

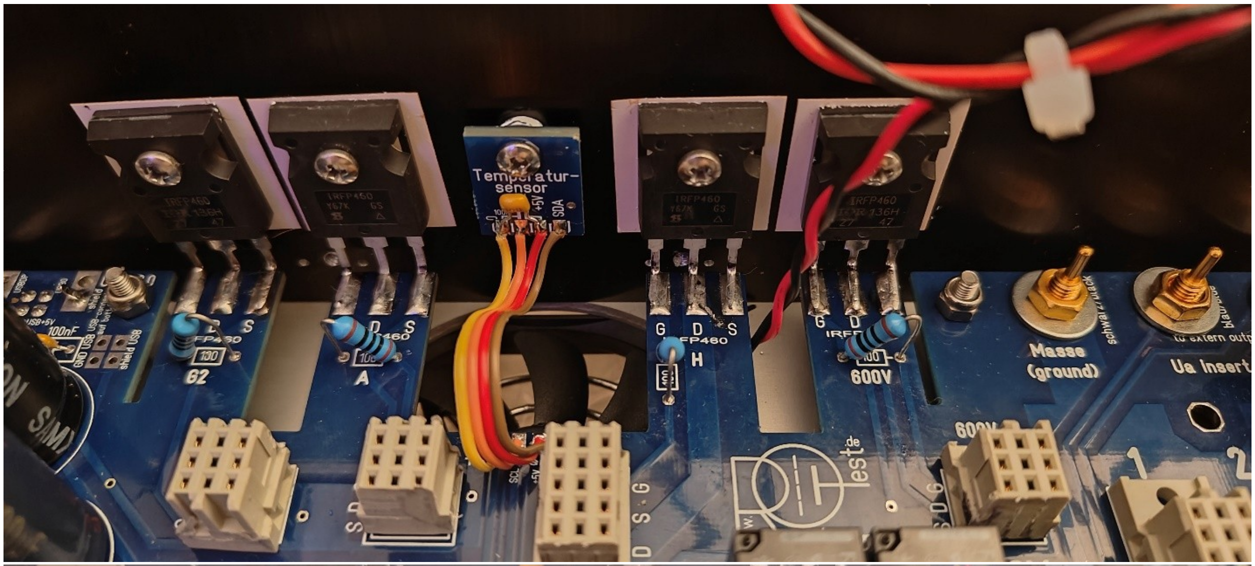

B500C1500
17V~
B500C1500
14V~
115V
230V
gelb/
yellow
NC
orange
NC
weiß/
white
mains
voltage
0,2 At - 230 V
(0.4At - 115V)
Primär2-Si

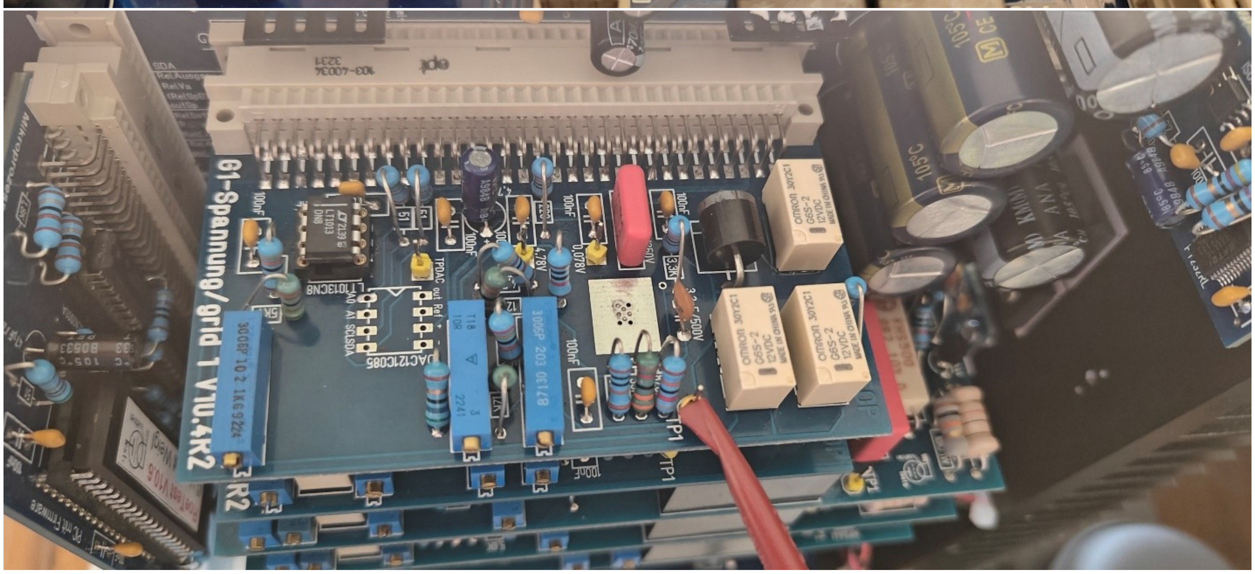

P6KE27A
1N4007
1N4007
+Rel
rot
400V~
150V~
12 V~
braun/
brown
oehren

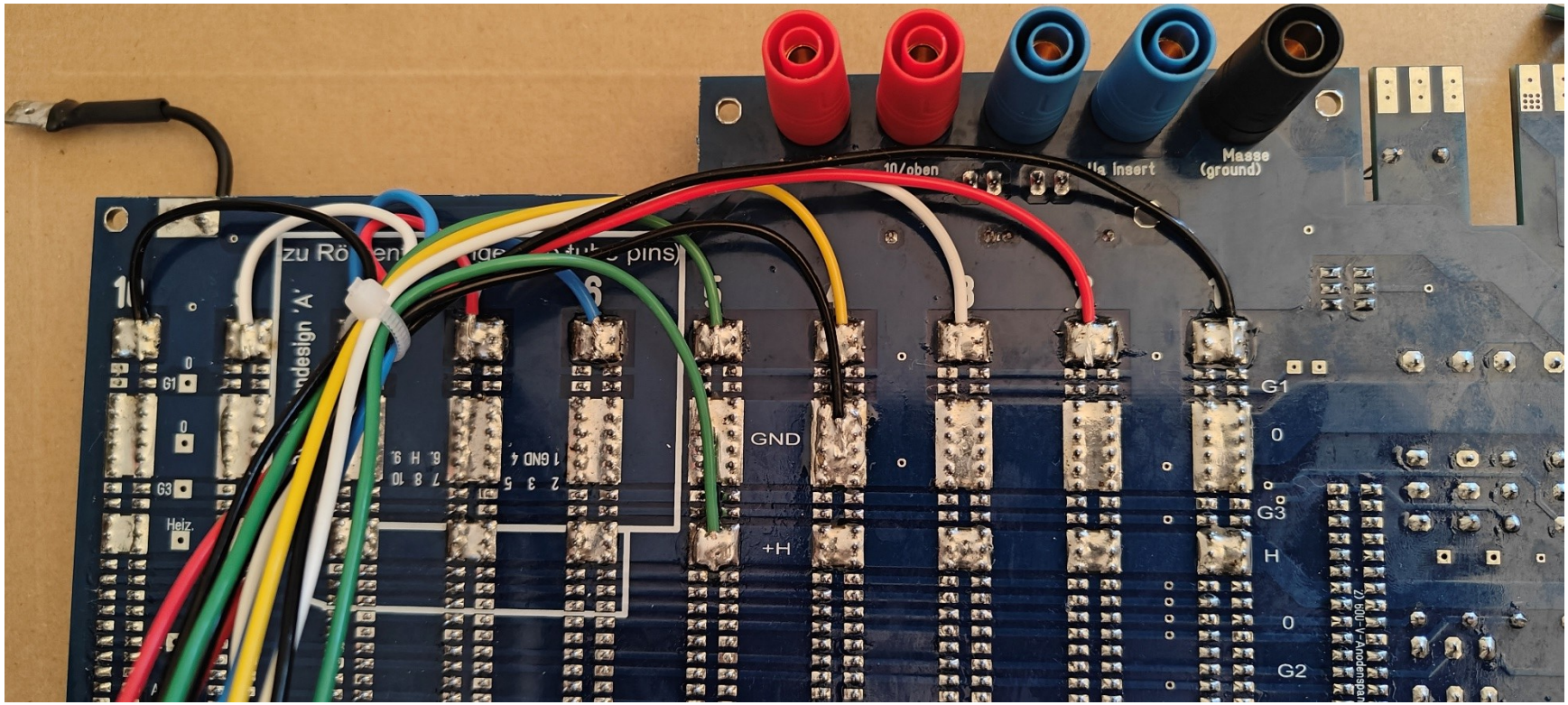

Roehren
(c) Helmut Weigl
+330V
-105V
-12V
+9V/+5V
0,2 At - 230 V
(0.4At - 115V)
Primar2-Si

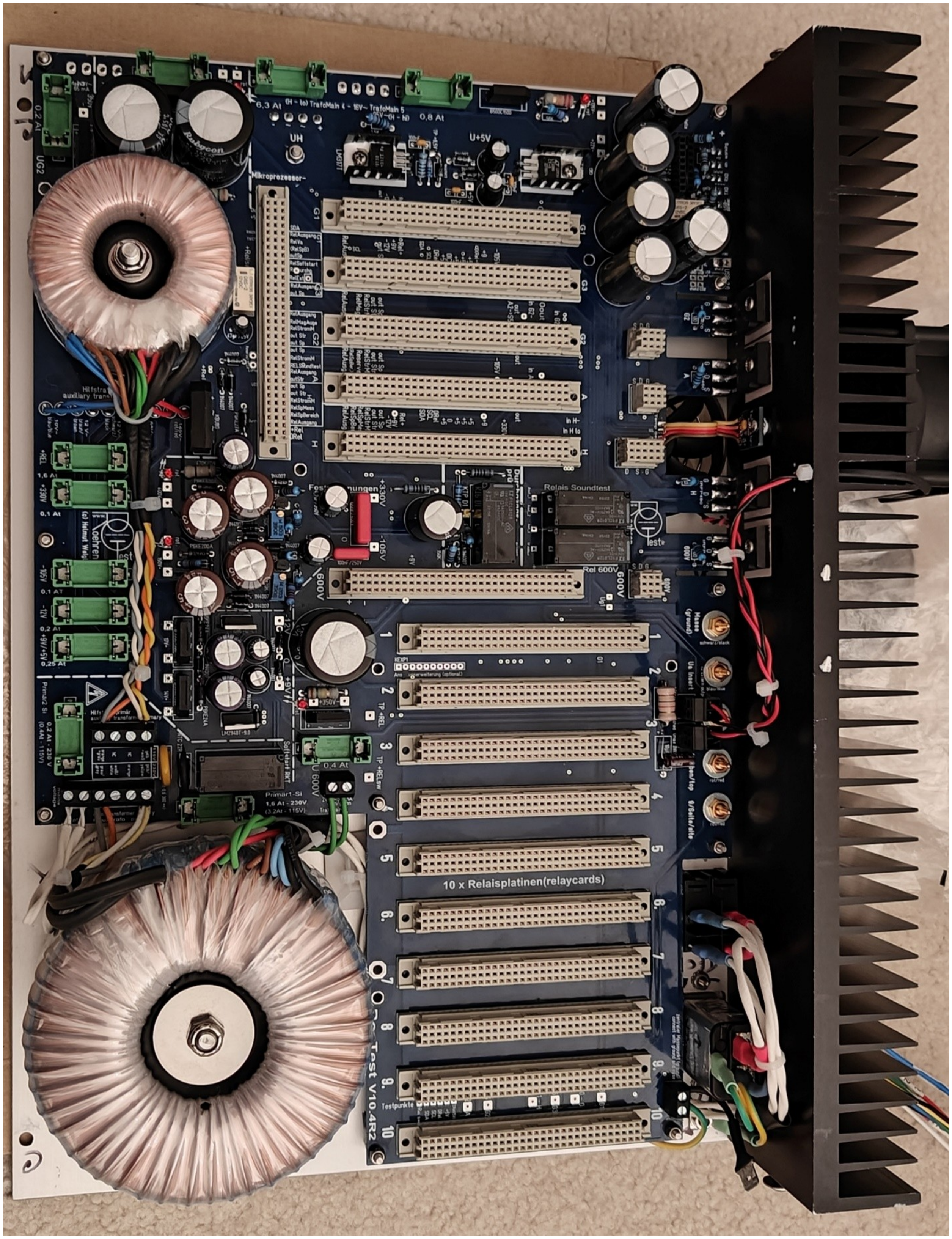

G1
G2
G3
LM317T
U+5V
0.8 At
6.3 At
Mikroprozessor
Rubycon


3632A1

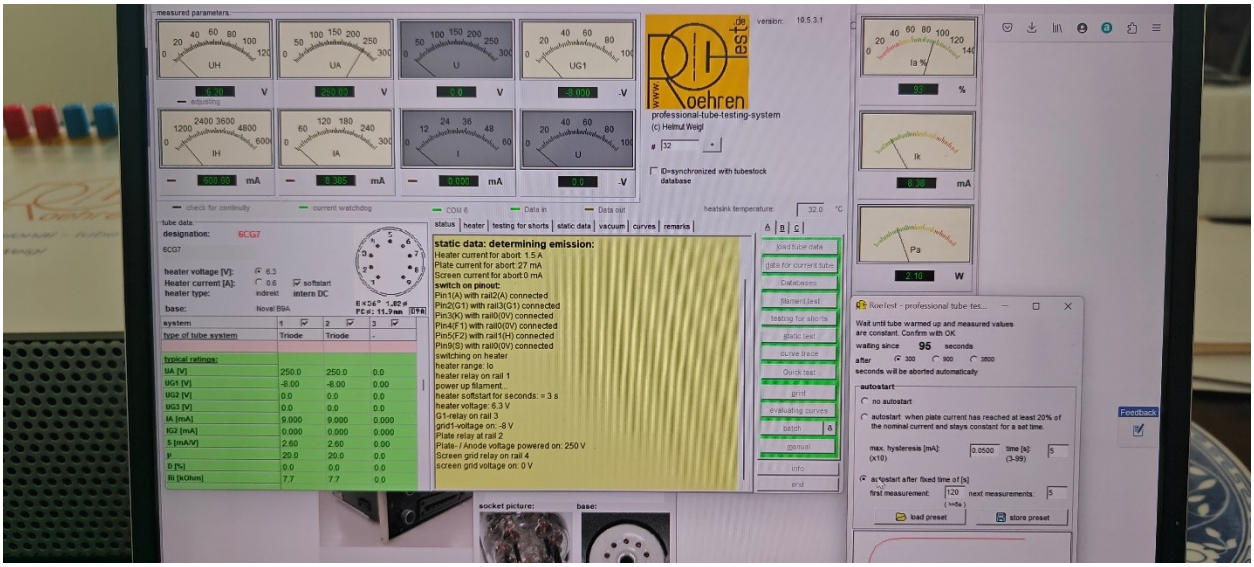

Temperatur-
sensor
IRFP460
G D S
G2
A
H
600V
Masse
(ground)

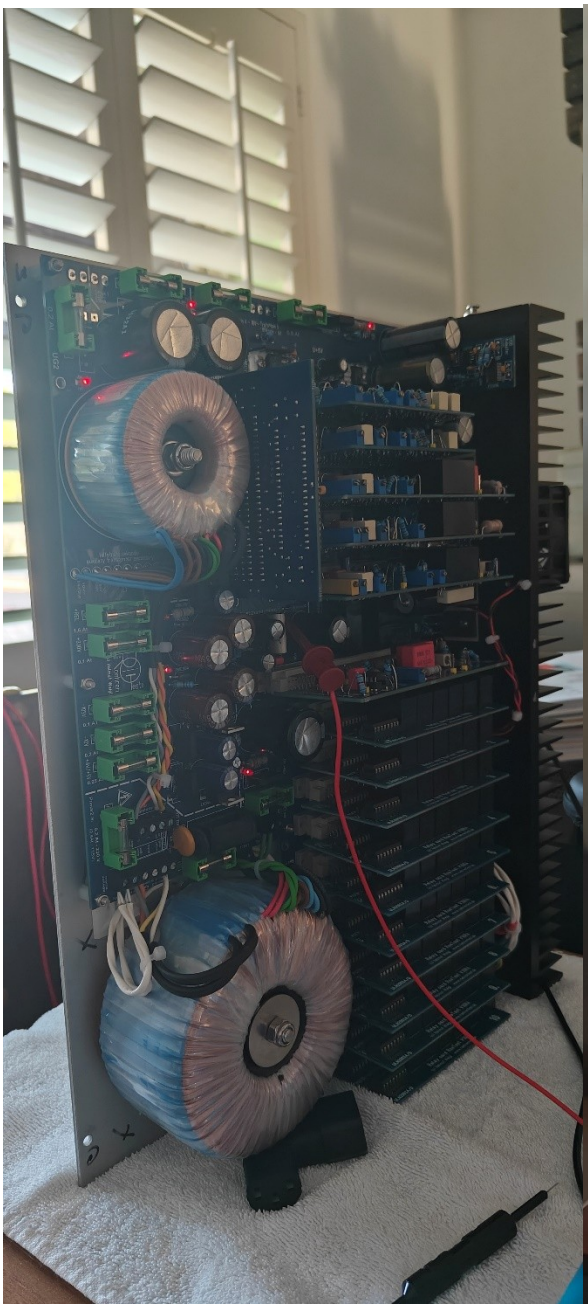

G1-Spannung/grid 1 V10.4R2
OMRON
G6S-2
12VDC


10/oben
Masse
(ground)
G1
0
GND
G3
H
+H
0
G2


6,3 At
0,8 At
UH
U+5V
Mikroprozessor
Relais Soundtest
Rel 600V
600V
10 x Relaisplatinen(relaycards)
0,4 At
Primar1-Si
1,6 At - 230V
(3,2At - 115V)


9 (alte)
10 (neu)
Ua insert
danger, high voltage
Hochspannung Lebensgefahr:
An den Röhrenfassungen und im Gerät liegen hohe, lebensgefährliche Spannungen an. Bedienung nur durch sachkundige Personen. Vor Zugriff von Kindern und Tieren schützen. Vor Öffnen des Geräts Netzstecker ziehen und warten bis Kondensatoren entladen sind.
Dangers of life.
At tube sockets and inside of the device are high voltages present. Please note that working with high voltages is dangerous. Ensure the RoeTest is only used by adults with knowledge of vacuum tubes and electronics. Keep away from children and animals. Before opening the case pull out the mains plug and wait until capacitors are discharged.
USB 2.0
working
on
RXD
TXD
USB power
www.
oehren
.de
V10
professional - tube - testing - system
© Helmut Weigl


measured parameters
UH
UA
U
UG1
IH
IA
I
U
version: 19.5.3.1
professional-tube-testing-system
(c) Helmut Weigl
synchronized with tubestock database
tube data
designation: 6CG7
heater voltage [V]:
Heater current [A]:
heater type:
base:
system
type of tube system
typical ratings:
UA [V]
UG1 [V]
UG2 [V]
UG3 [V]
IA [mA]
IG2 [mA]
S [mA/V]
μ
D [%]
Ri [kOhm]
status
heater
testing for shorts
static data
vacuum
curves
remarks
static data: determining emission:
Heater current for abort: 1.5 A
Plate current for abort: 27 mA
Screen current for abort 0 mA
switch on pinout:
Pin1(A) with rail2(A) connected
Pin2(G1) with rail3(G1) connected
Pin3(K) with rail0(0V) connected
Pin4(F1) with rail0(0V) connected
Pin5(F2) with rail1(H) connected
Pin9(S) with rail0(0V) connected
switching on heater
heater range: lo
heater relay on rail 1
power up filament...
heater softstart for seconds: = 3 s
heater voltage: 6.3 V
G1-relay on rail 3
grid1-voltage on: -8 V
Plate relay at rail 2
Plate- / Anode voltage powered on: 250 V
Screen grid relay on rail 4
screen grid voltage on: 0 V
load tube data
data for current tube
Databases
filament test
testing for shorts
static test
curve trace
Quick test
grid
evaluating curves
batch
manual
info
end
heatsink temperature:
socket picture:
base:
RoeTest - professional tube tes...
Wait until tube warmed up and measured values are constant. Confirm with OK
waiting since 95 seconds
autostart
no autostart
autostart when plate current has reached at least 20% of the nominal current and stays constant for a set time.
max. hysteresis [mA]:
time [s]:
first measurement:
next measurements:
load preset
store preset
Feedback

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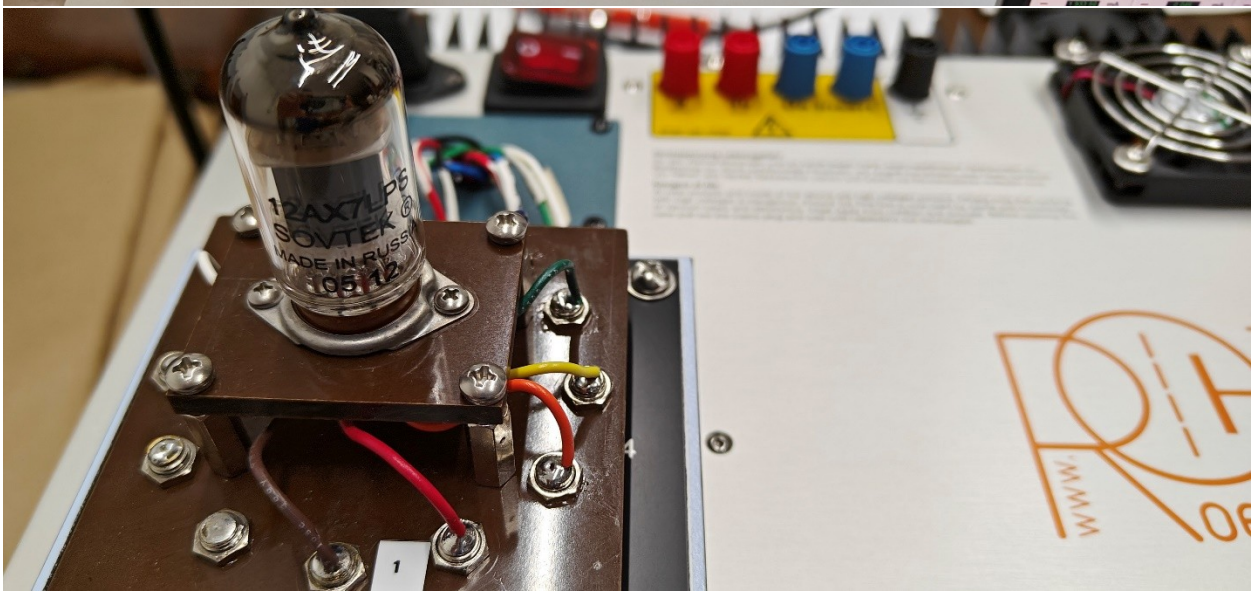
12AX7LP6
SOVTEK
MADE IN RUSS
05 12
1