Tune Up RoeTest V7X to V8 – improved function with minimal effort

The existing hardware can be adjusted to give some improvement in performance. Only minimal changes are necessary and invole swaping a few resistors, resetting the ranges and recalibrating. Let's call the result V8.

Feature	Current	New	Advantage
G1-Voltage	Max -51V	Max -63 V (Measurement range up to-61V*)	higher grid voltage allows for more measurement capabilities (like old power triodes)
G3-Voltage	Max -51V	Max -63 V (Measurement range up to-61V*)	
Measurement Range of Heater Current	5,1 A	6,1 A	The max. continuous current of 5 A does not change. Since measurements are for short duration, 5.5 A can briefly be drawn. With the larger measuring range inrush current will be better displayed.
Measurement Range of Anode Current	250 mA	300 mA	The max continuous current of 250 mA will not change. For short duration, 300 mA is allowed (before reaching the current limit) So, you can record characteristics up to 300 mA
Measurement Range of G2 Current	50 mA	60 mA	The max continuous current of 50 mA does not change. For short duration, 60 mA is allowed (before reaching the current limit) So, you can record characteristics to 60 mA

* The voltage can be generated for G1 and G3 is slightly higher than the range of 61V to 63V. These ranges were deliberately chosen in order to yield linear bit resolutions.

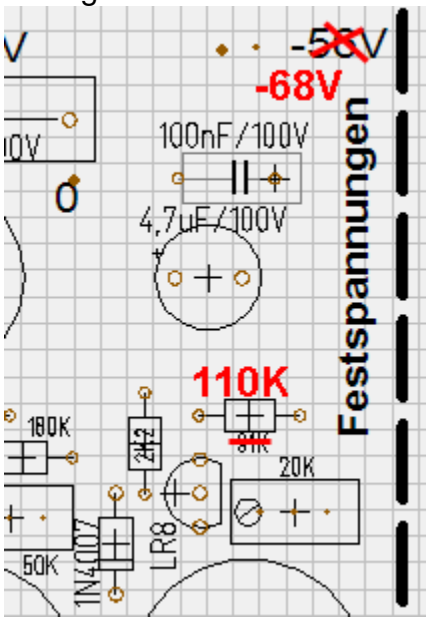
Modifications:

G1 Voltage

The OPA445 is suitable for supply voltage up to 80V. 80V - 12V positive supply voltage leaves a maximum 68V for the negative supply voltage.

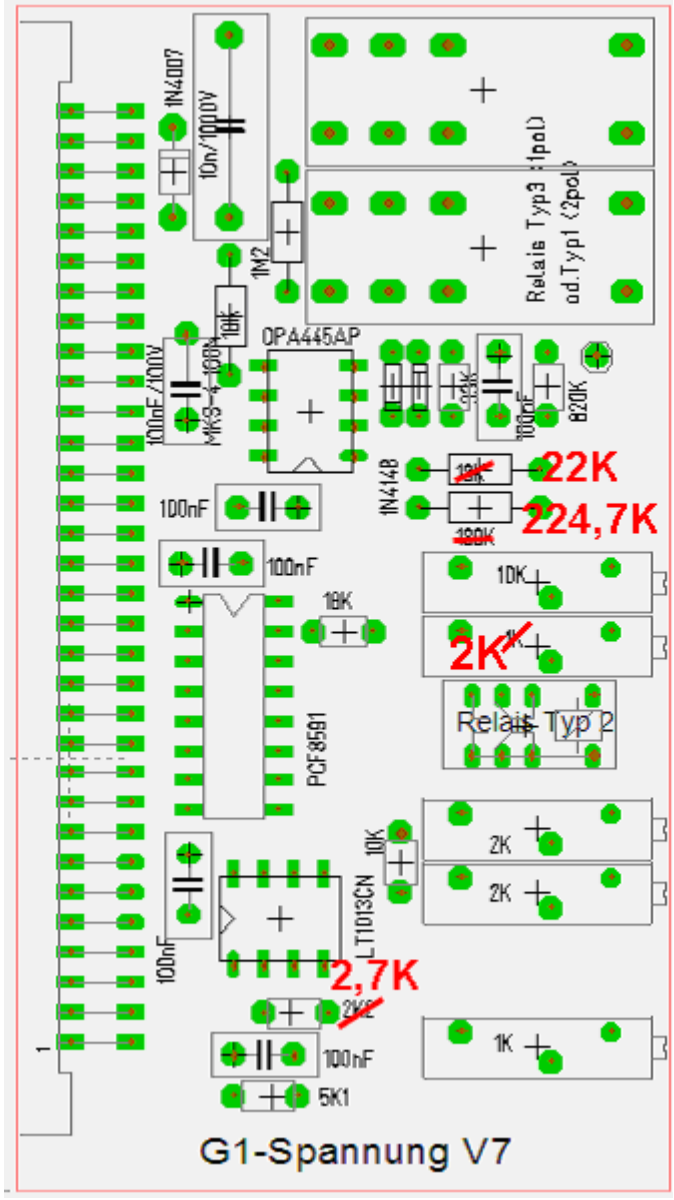
To exploit the possibilities of the OP445 we raise the regulated voltage on the motherboard from -56V to-68V . For this purpose, just the change of a resistance value on the motherboard and a new adjustment of the potentiometer is required.

Change the 91K resistor to 110K and adjust the trimmer to yield -68V.



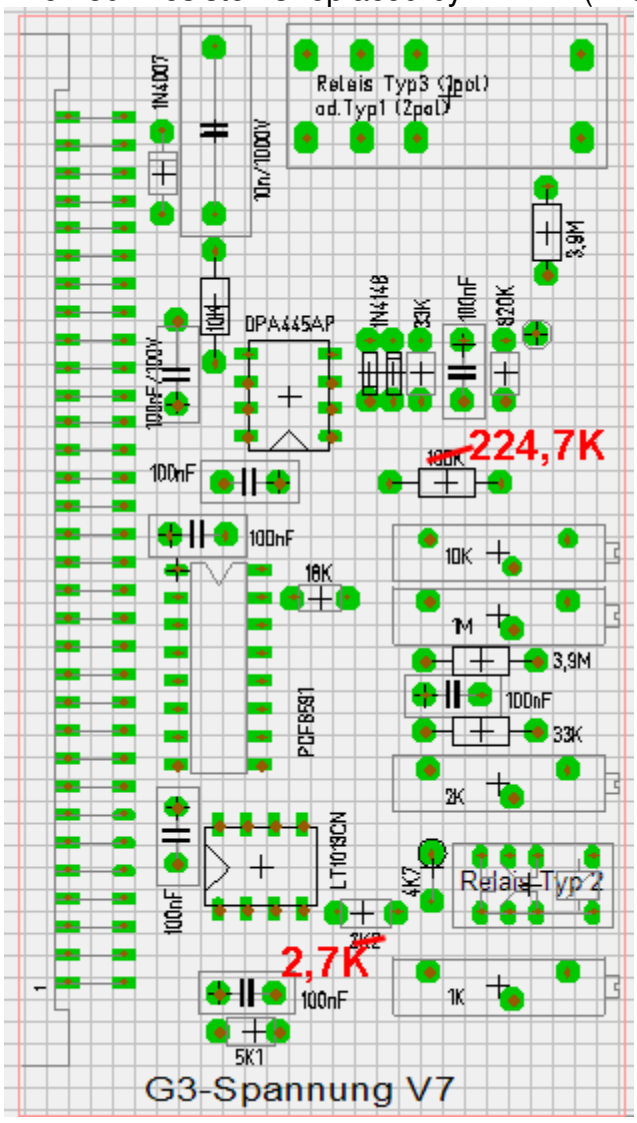
The G1 board is modified Next:

For voltage measurement: The 2.2 K resistor is replaced by a 2.7 K. For voltage output: the 18K resistor is replaced by a 22K and the 180K resistor is replaced by a 224.7 K (220K + 4.7K in series). Replace the 1K trimmer with a 2 K trimmer.



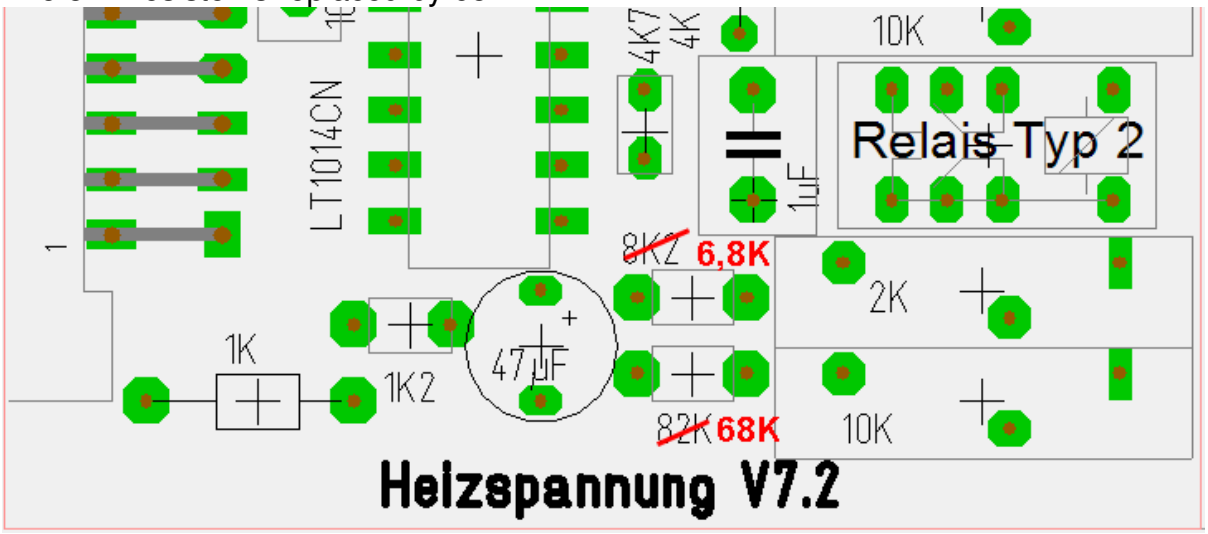
G3 Voltage:

For voltage measurement: The 2.2K resistor is replaced by 2.7K. For voltage output: The 180K resistor is replaced by 224.7K (220K + 4.7K in series).



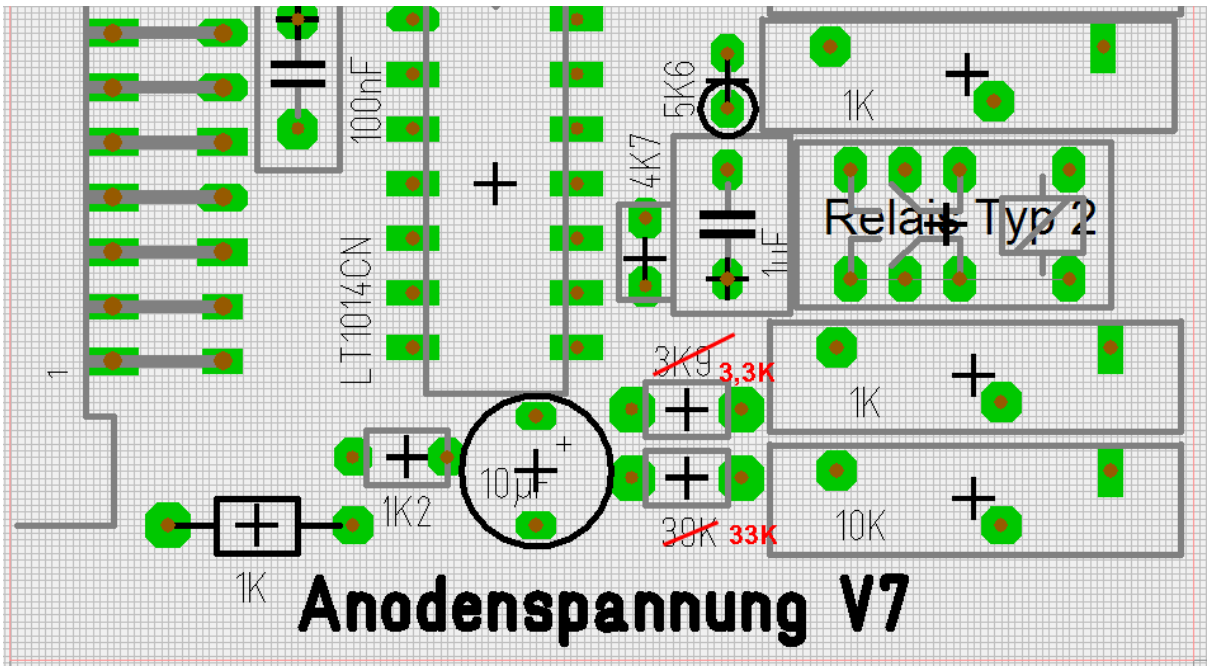
Heater Voltage board:

The 8.2 K resitstor is replaced by 6.8K.
The 82K resistor is replaced by 68K.



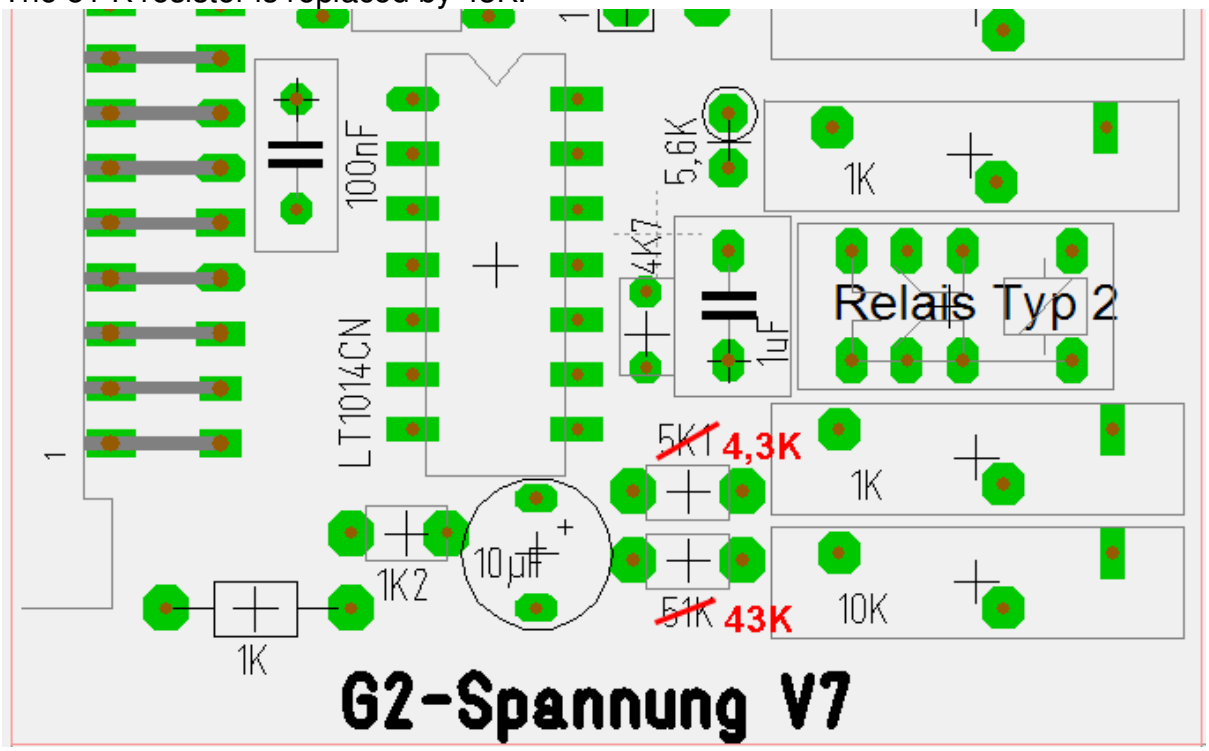
Anode Voltage

The 3.9K resistor is replaced by 3.3K.
The 39K resistor is replaced by 33K.



G2 Voltage

The 5.1K resistor is replaced by 4.3 K.
The 51 K resistor is replaced by 43K.



Setting the new ranges:

In software go to Options>Range Selection, the new ranges are set as shown below and then the trimmers in the RoeTest are to recalibrate. To set the ranges, use the preset key for 'RoeTest V8'.