

VE6AFL Power Supply Project.

Power Supply overview.



The box is an old box from a scrapped Heathkit lab supply that I decided needed a new life. It ended up being my Covid Project. There was some smoke, some choice words, and I had to walk away while I waited for parts. I went through a set of SN3055's during the build. Silver lining is that it inspired me to buy a new Transistor tester for this build. It took a while to get the right Transformer out of a 12V supply that I found down at the Red Deer swap meet.

It will output 12.7VDC @ 20A.

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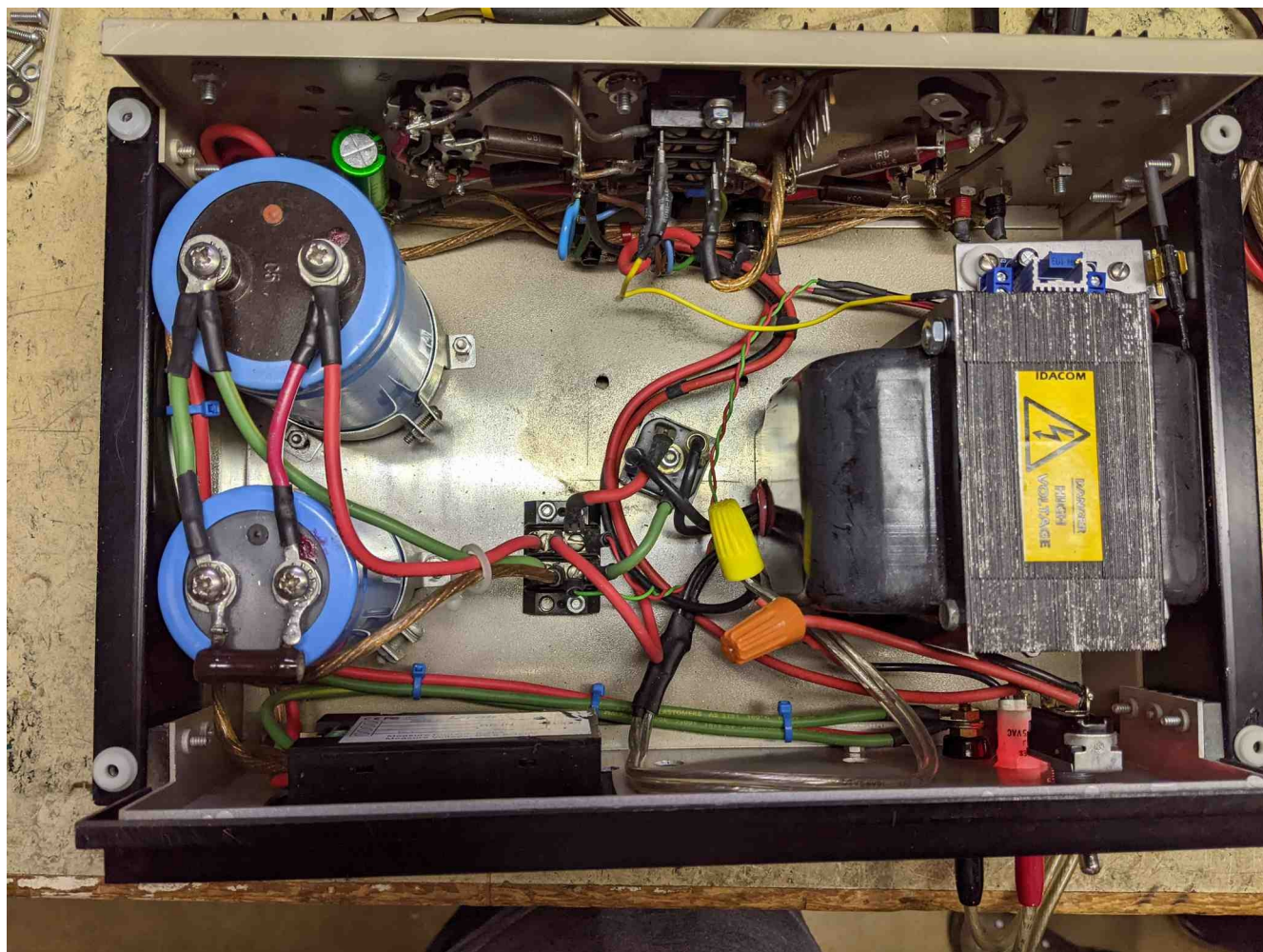
Front Panel



I got the display / power meter off of Amazon. It looks better in person.

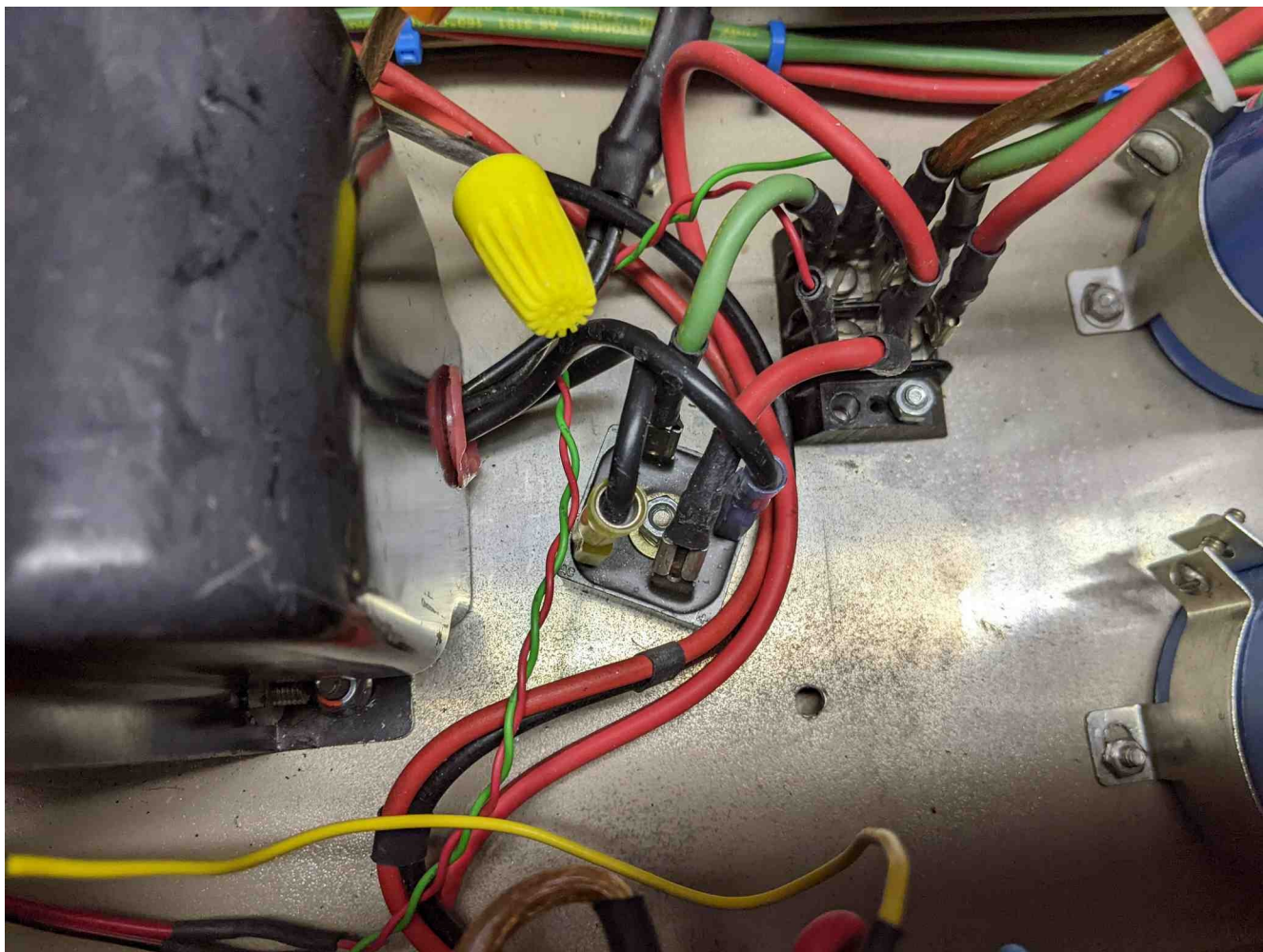
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Top Overall inside



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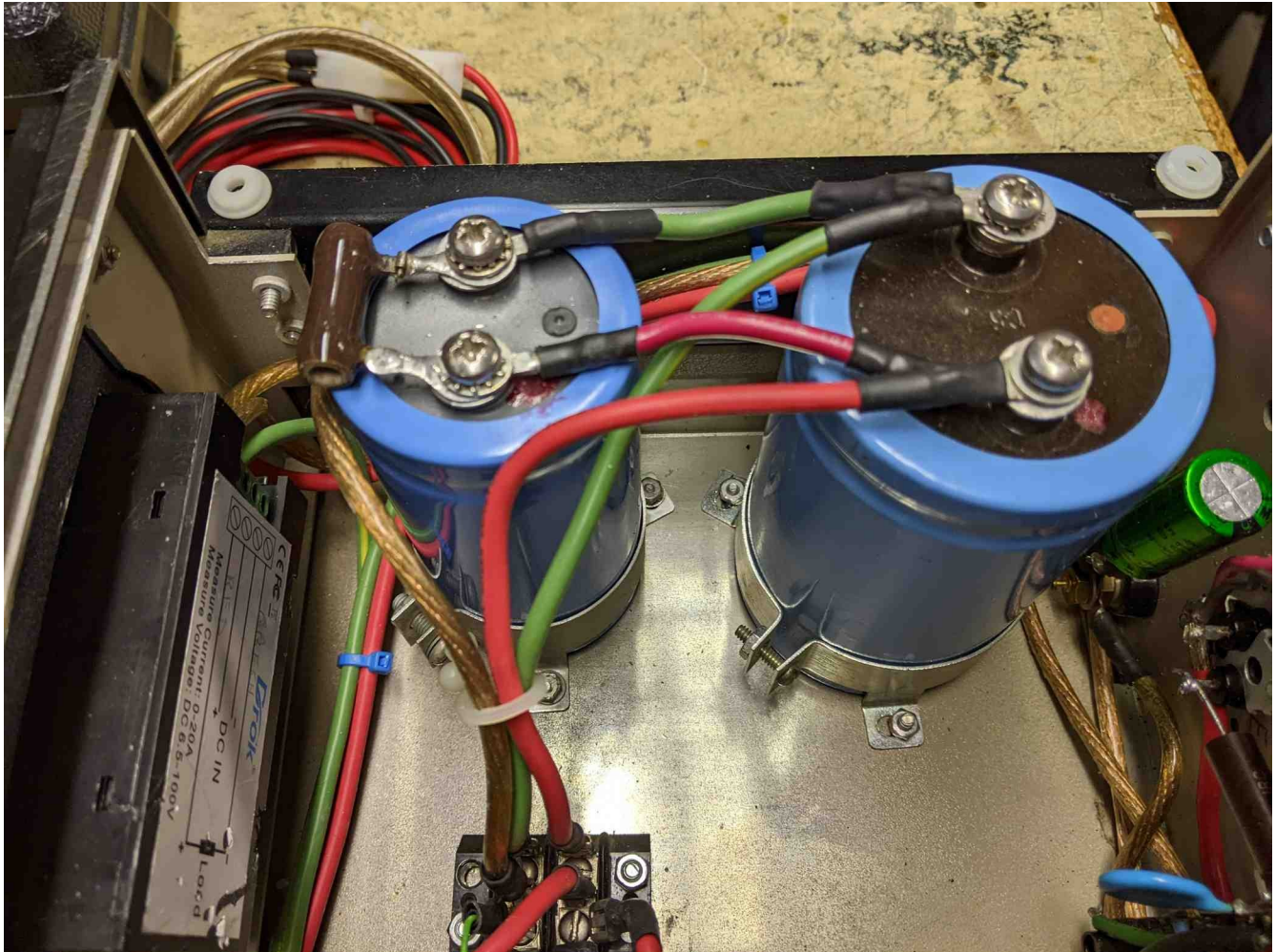
Full Wave Bridge



The bridge uses the bottom of the box as a heat sink

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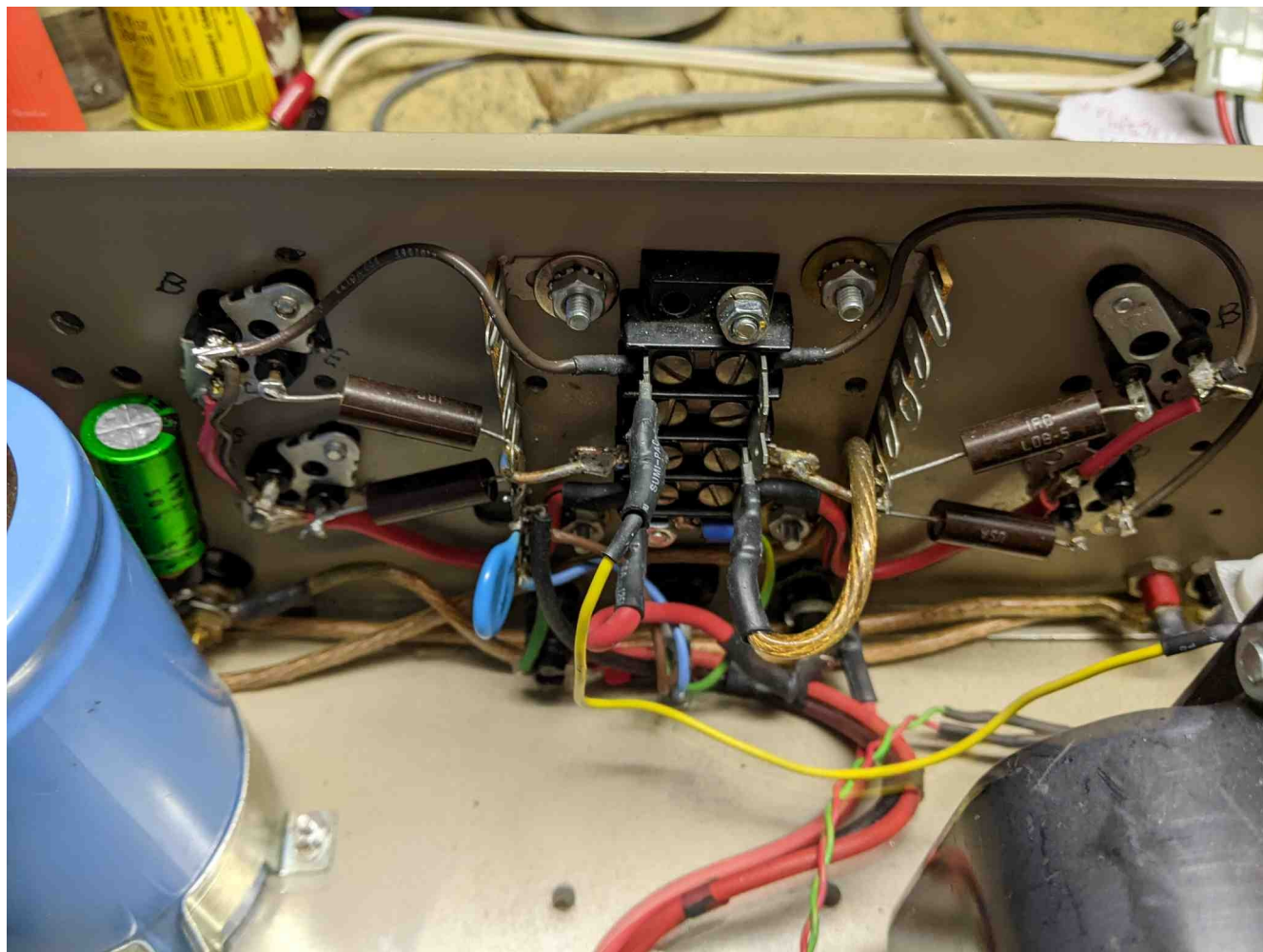
Caps with bleed resistor



I grabbed the two biggest caps I had on hand. A 55,000uF and a 10,000uF in parallel so 65,000uF in total

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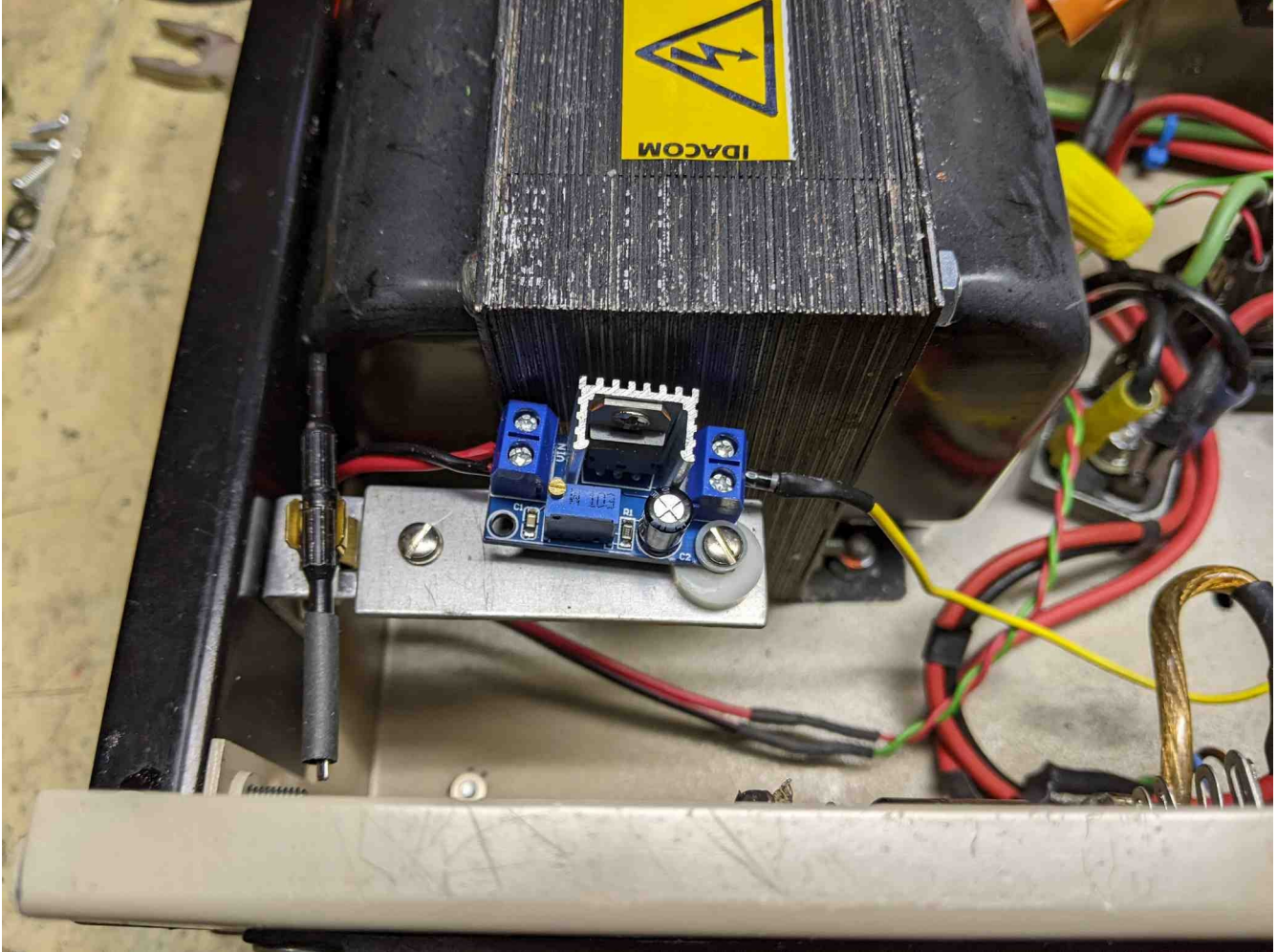
Transistor Bias circuit



See the Schematic below if you want to make sense of this spaghetti. Hi Hi.

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Transistor Base regulator using a little LM317 voltage regulator board.



I got this little 317 circuit board off of Amazon to regulate the base voltage.

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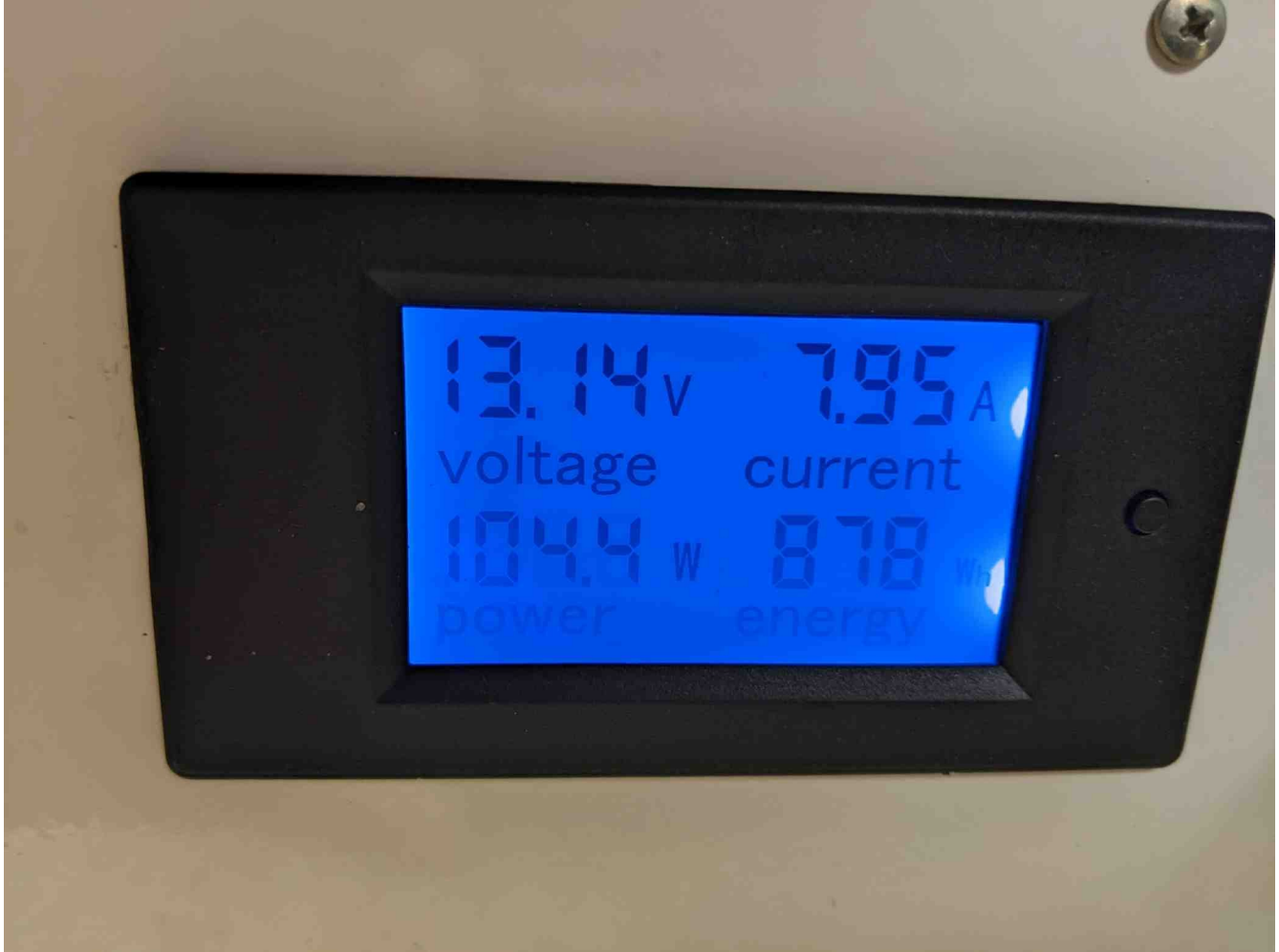
SN3055 NPN Power Transistors on heat sinks



Had to drill a bunch of holes in the back of the box. The heatsinks cover some of the old holes.

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Regulated output to a 2M Radio.



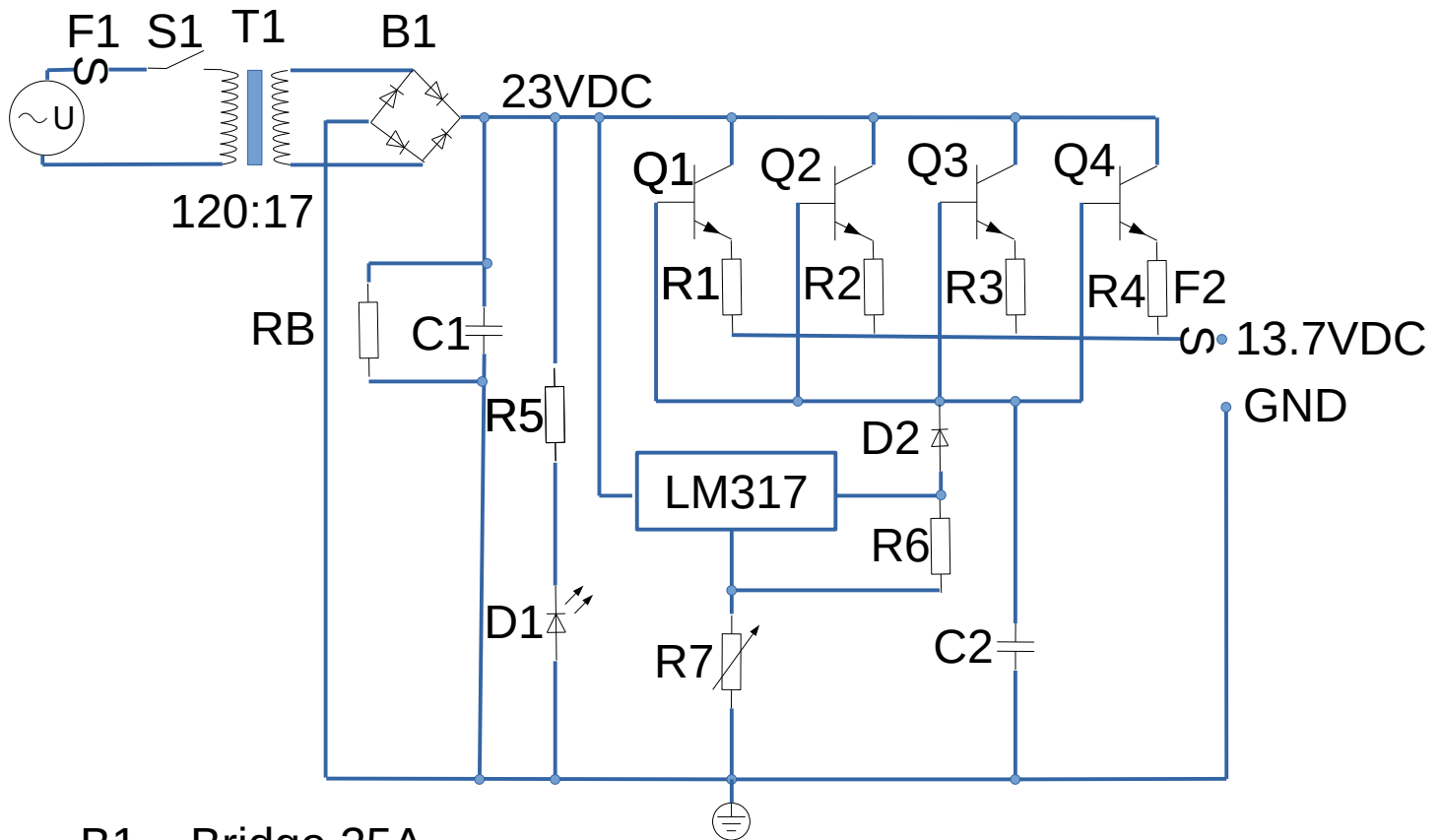
Trimmed to 13.7V no load

It will sag to 13.14 V with an 8 Amp load.

And will sag down to 12.7 V with a 20A load.

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This is the schematic. Not shown is a 15V TransZorb (TVS) across the output that will go short cct and take out F2 if the output voltage ever goes over 15VDC.



- B1 – Bridge 25A
- C1 – 65,000uF
- C2 – 10 uF
- D1 – LED
- D2 - 1N4001
- F1 – Fuse 3A
- F2 - 20A
- Q1,2,3,4 - SN3055
- R1,2,3,4 – 0.1 ohm 5W
- R5 – 2.2K
- R6 – 270 ohm
- R7 – 10K pot
- RB – 10M ohm 5W
- S1 - Switch
- T1 – 120:17 VAC