

Howlin' Amps Dumble ODS 50 All Tube Amp Kit

Disclaimer

To build this amplifier knowledge in electric engineering, experience with high voltage, reading and understanding of schematics and dealing with measurement devices is highly recommended.

This is not a kit for beginners. The layout plan includes all relevant information. If you don't understand it, then don't build it.

THIS IS NOT A BEGINNERS PROJECT !

Please note that some parts seen on these pictures might be different from the parts you receive in the kit. The build process is however the same.

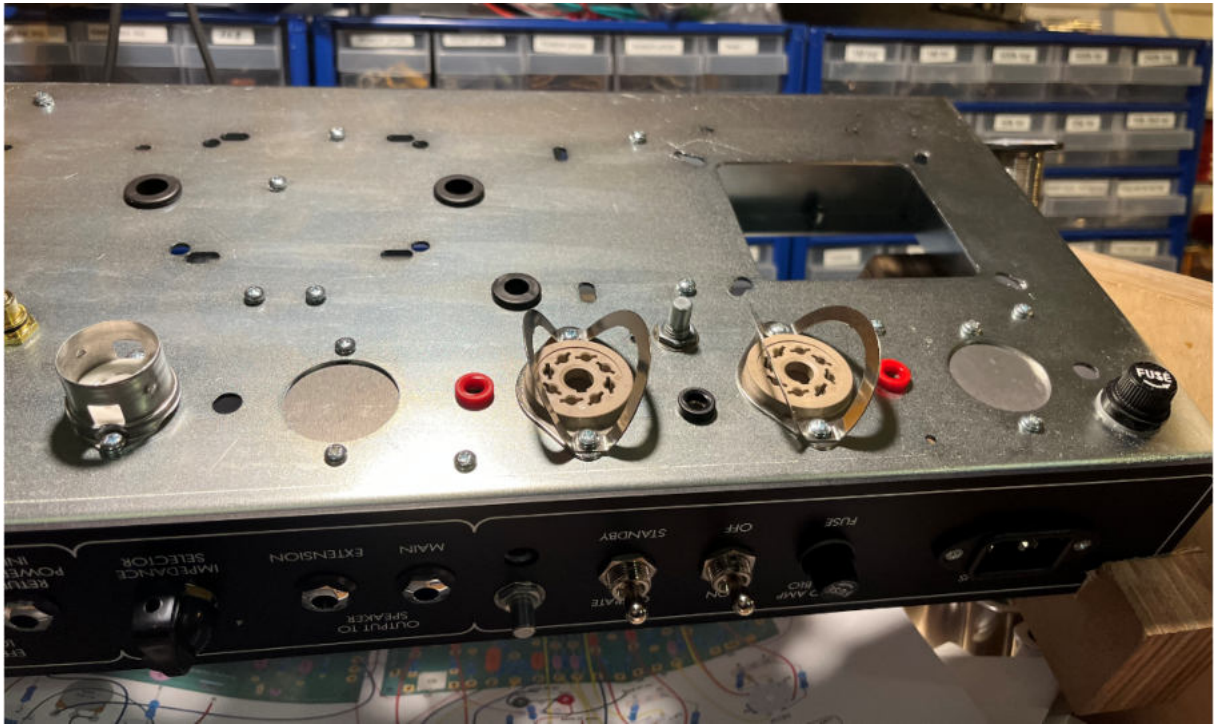
If you have any questions about the build process, you can also contact us on info@howlinamps.com

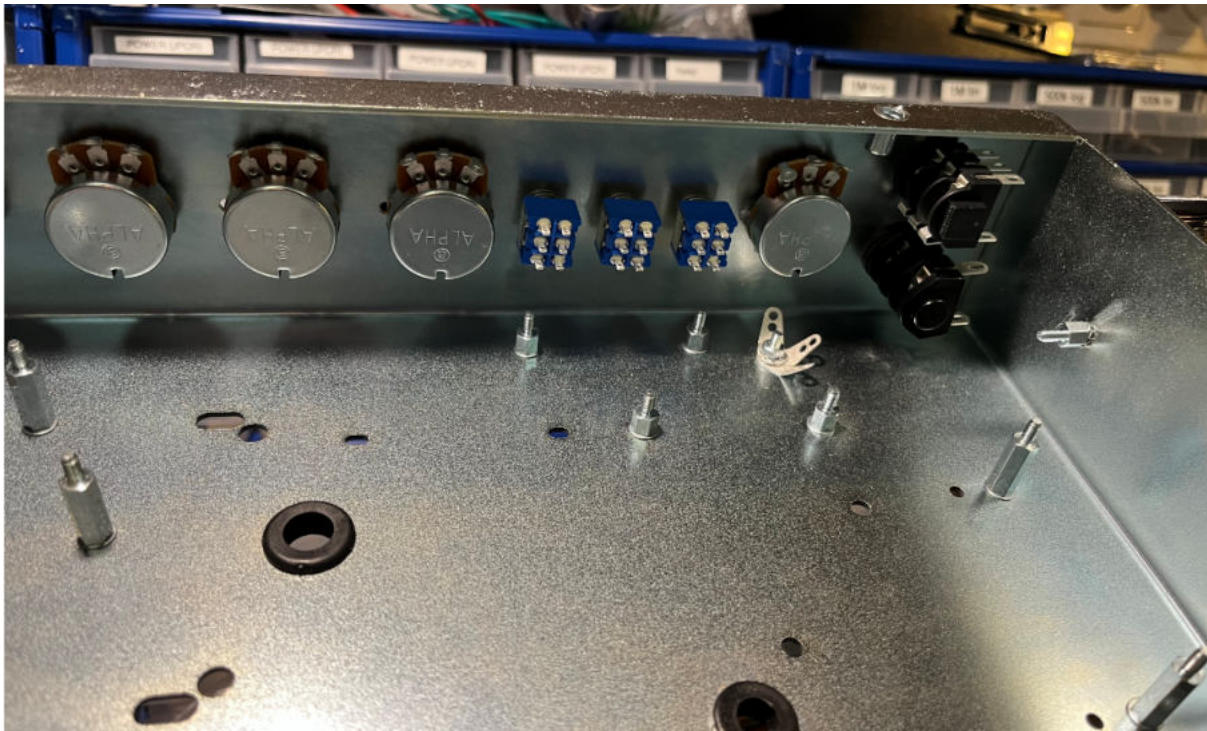
1. Unpack and inspect the kit material



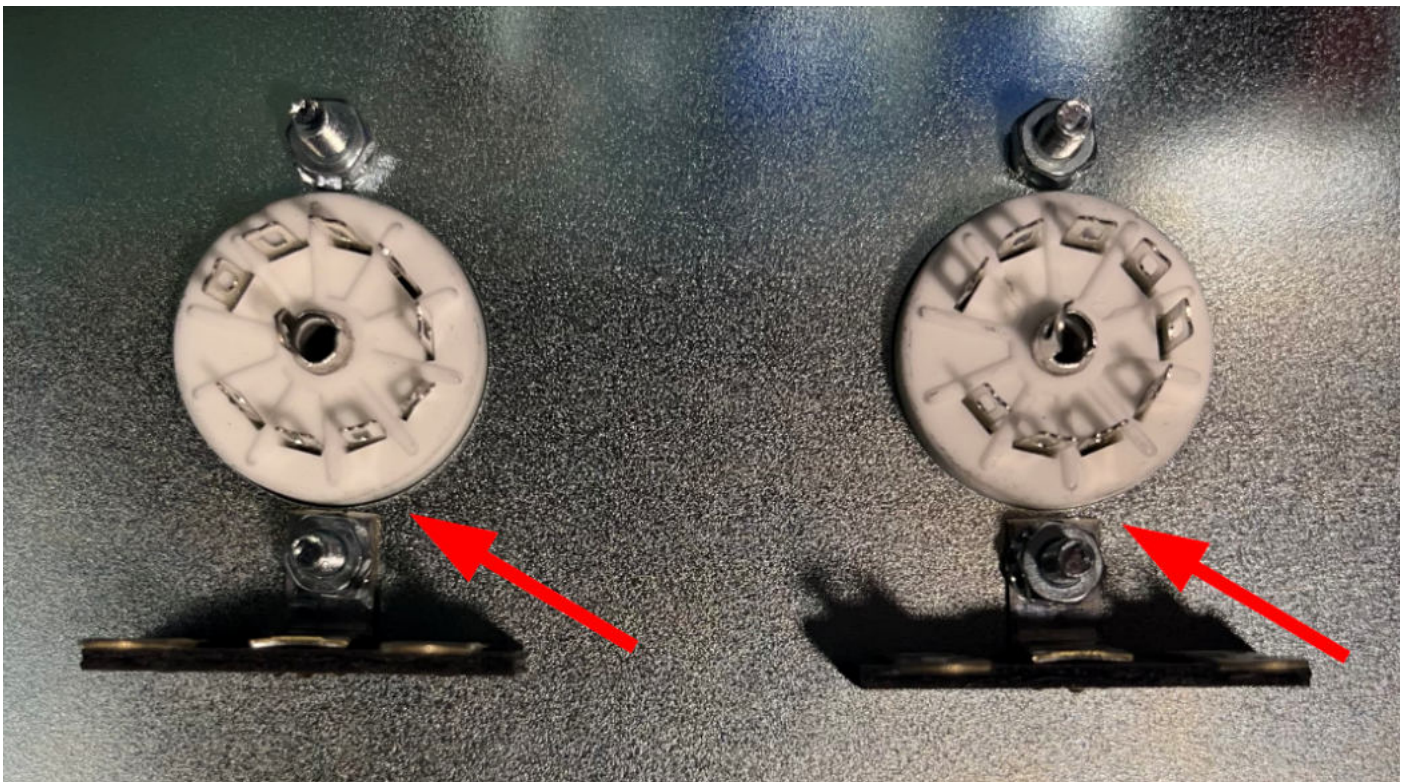
2. We suggest you start installing the hardware first. Don't install any transformers at this point. They are heavy and it makes navigating the chassis harder. We will install them at the point when we need it.



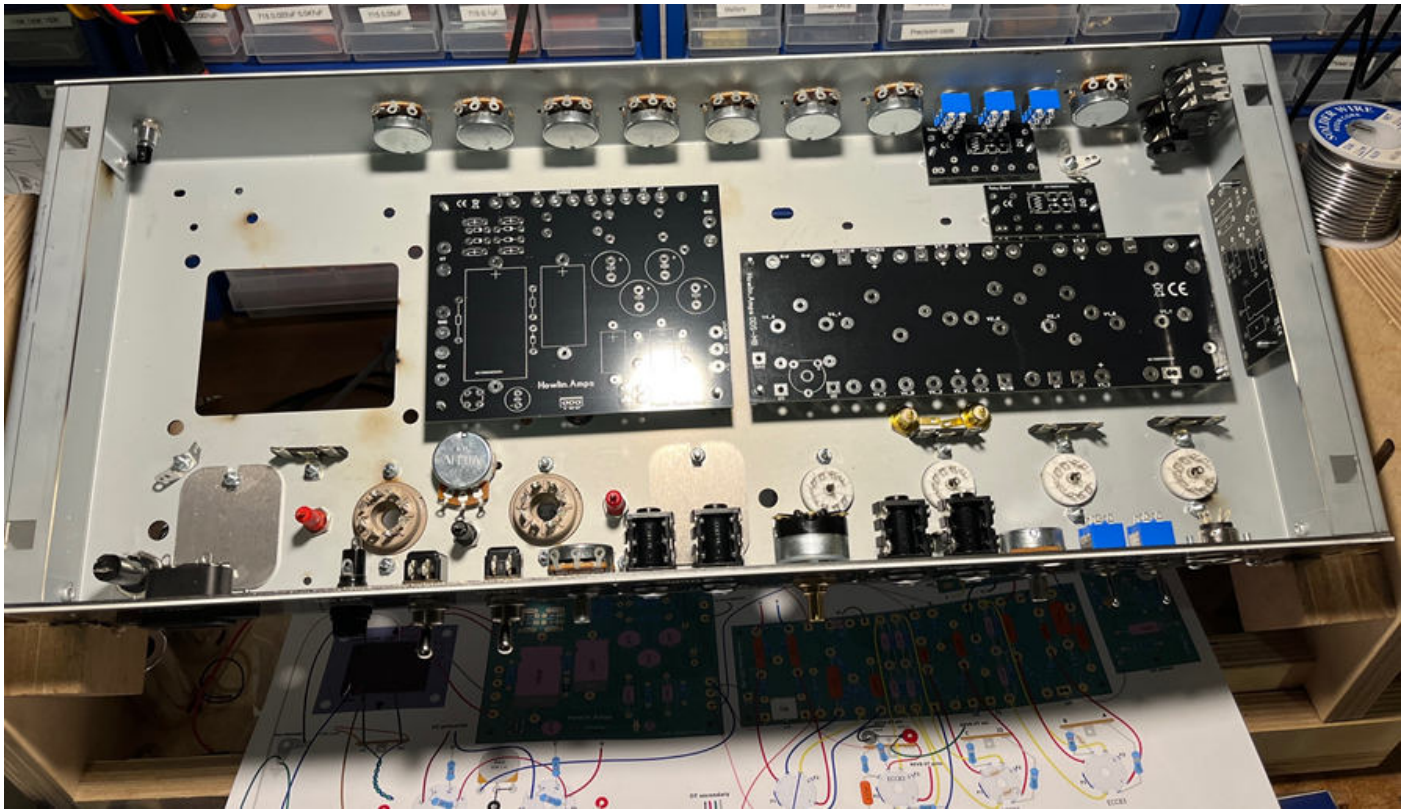




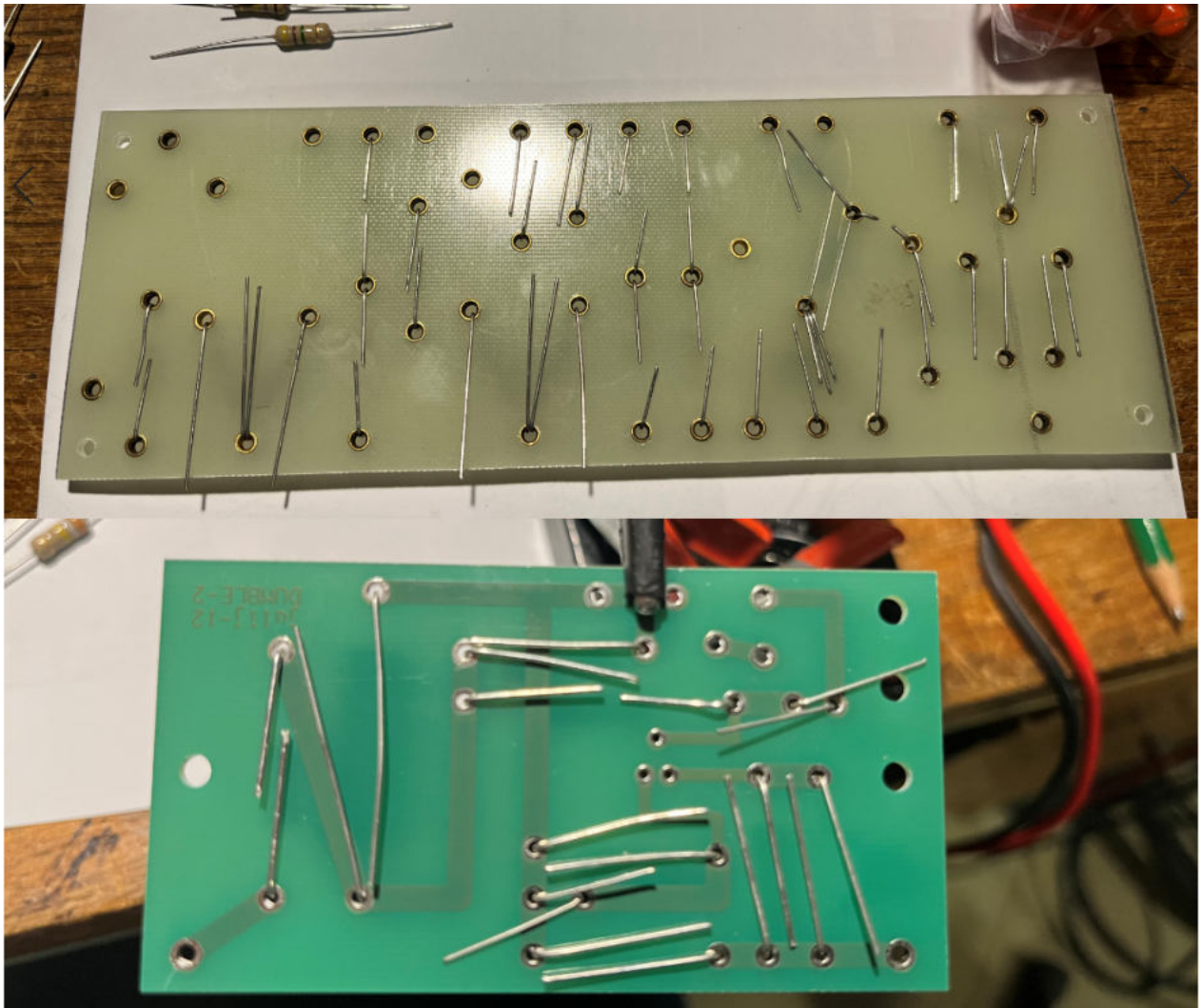
3. Please note, when installing the solder lugs near the Noval sockets, you will have to snip off the tips in order to fit them in there.



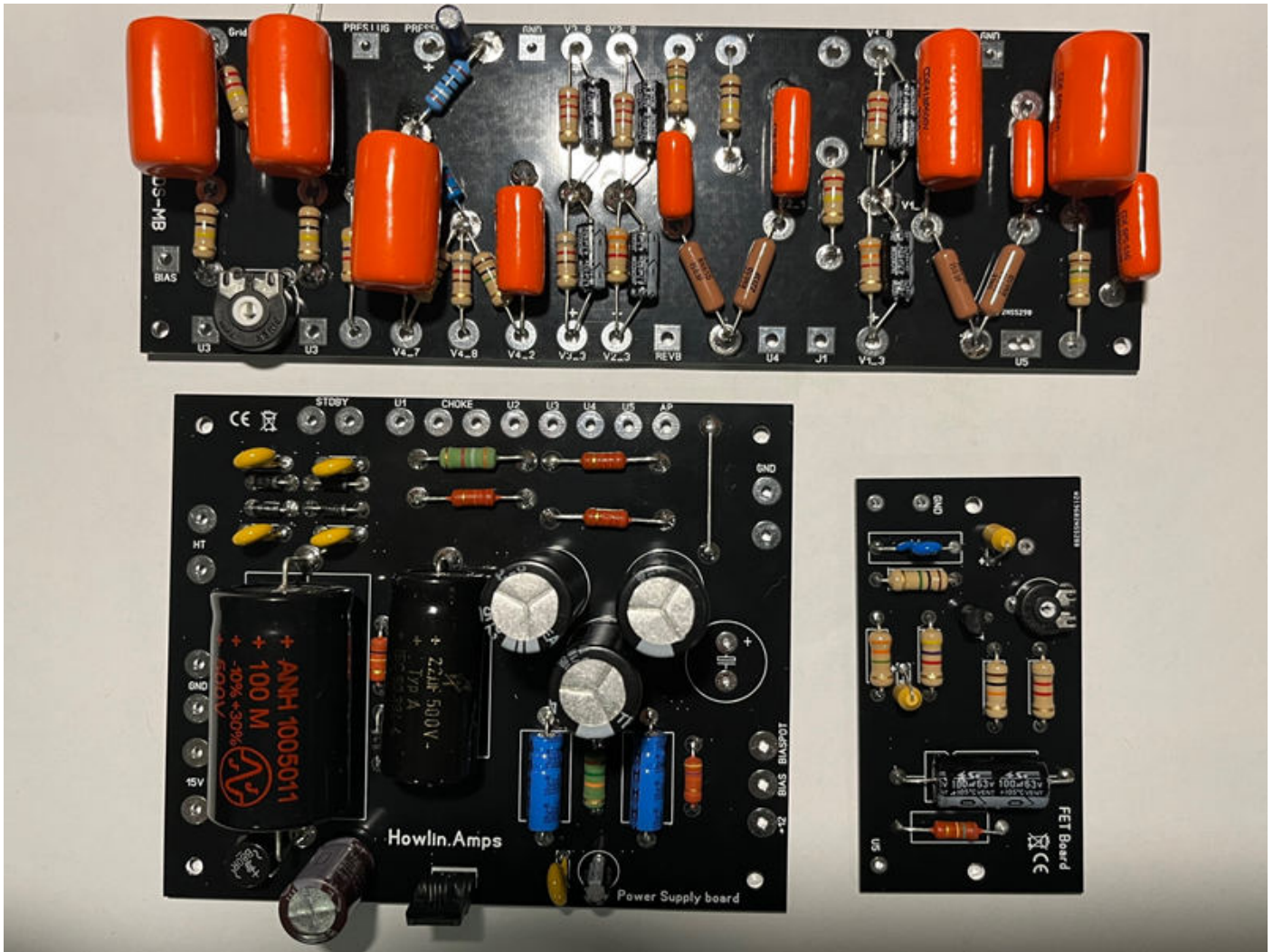
4. At this point we suggest you start populating the boards. Follow carefully the layout and install parts on the designated board.



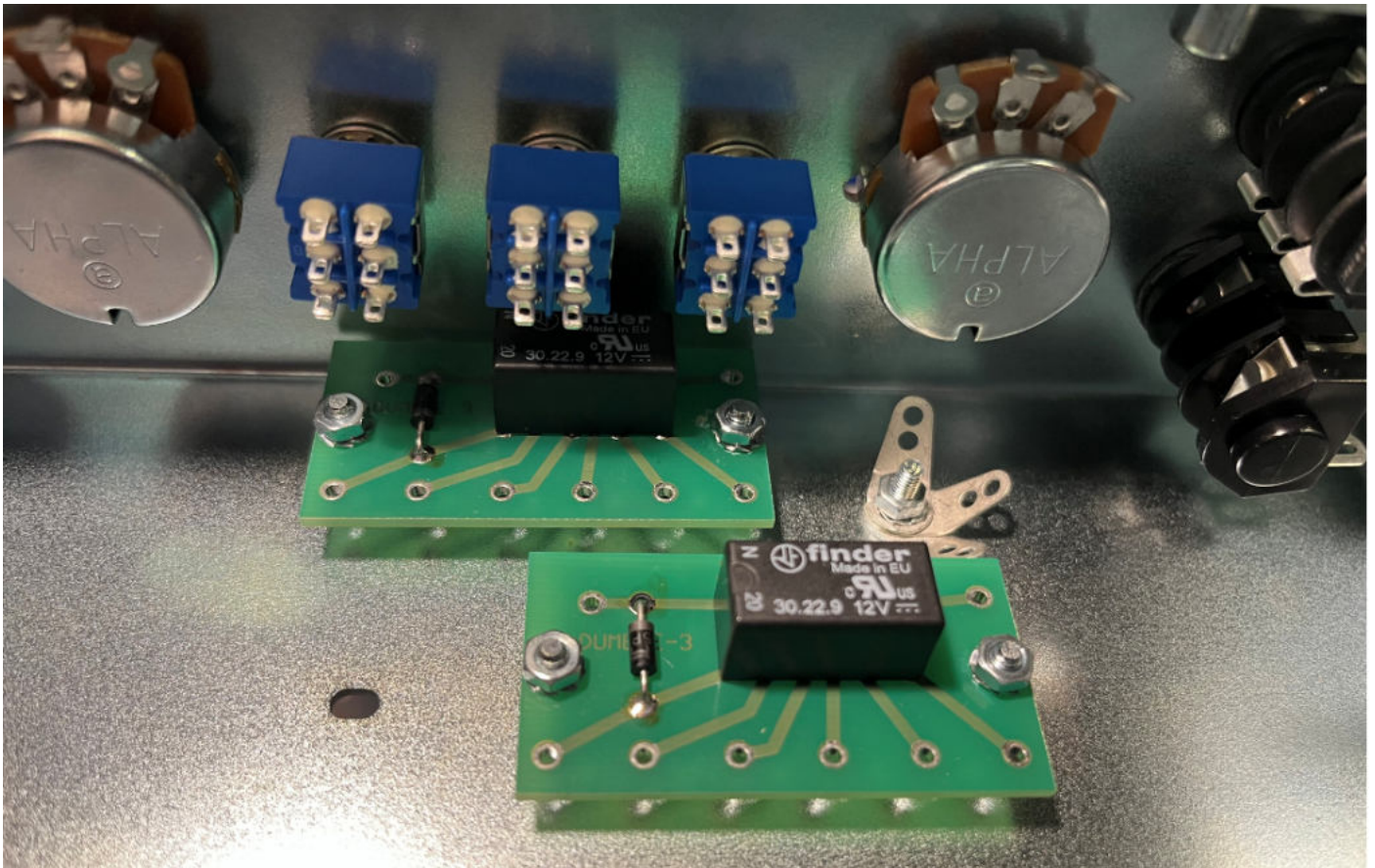
5. When populating the boards it's a good practice to measure every part, just to make sure the part is good and within the tolerance. This can save a lot of headaches later on. Whenever possible bend the leads in order to establish good mechanical contact and always turn the value label up, so it can be seen.



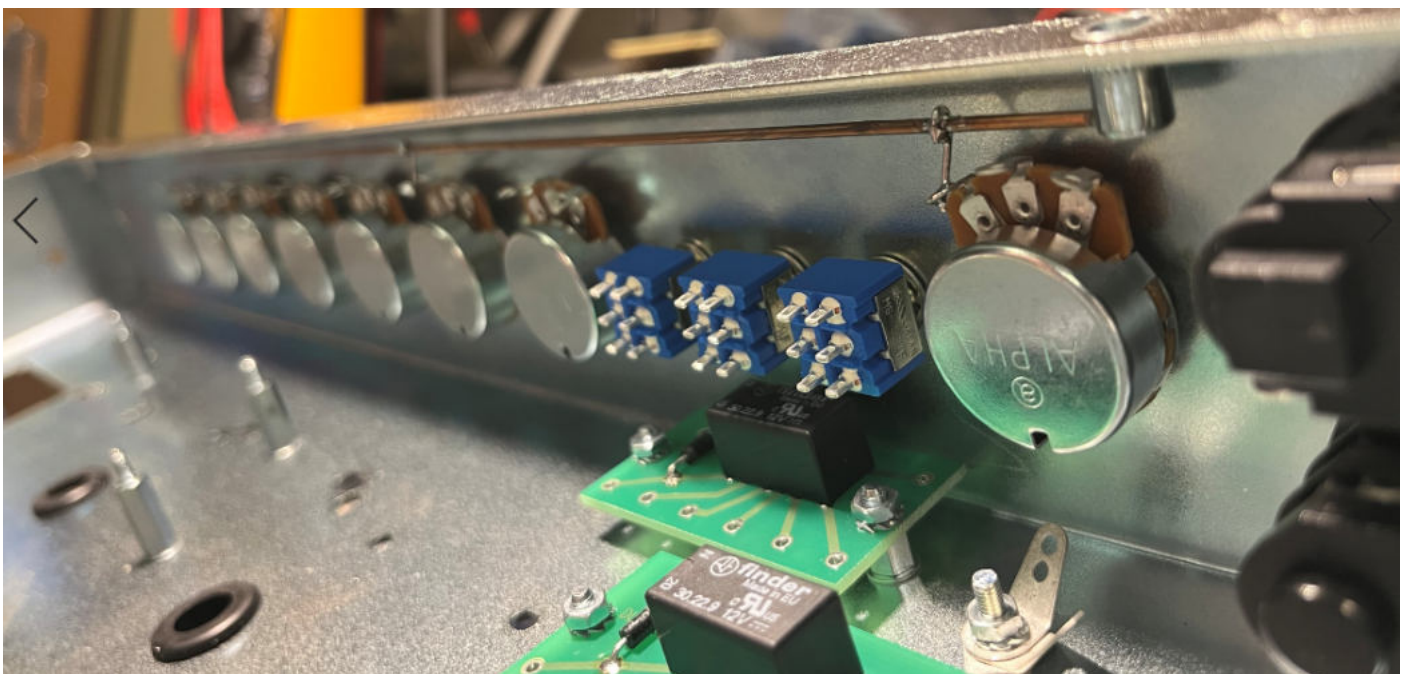
For the Power supply board use Metal Oxide 2W resistors which you have in the kit. It's not needed everywhere but why not.



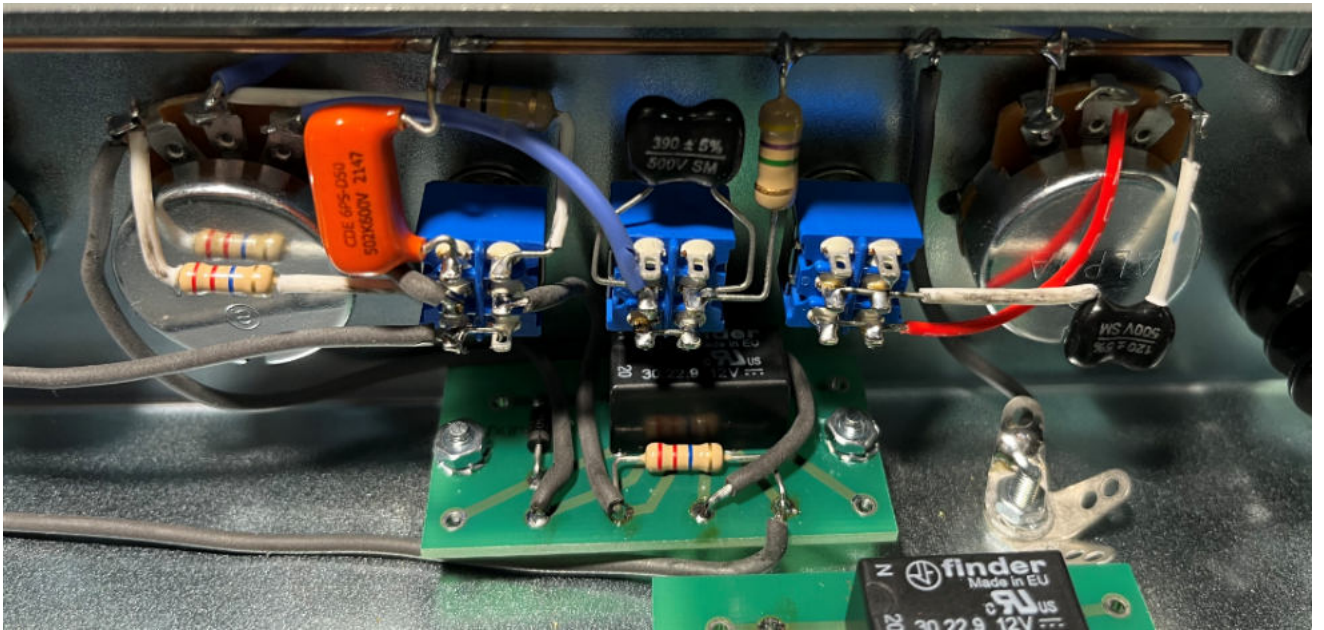
6. Now it's time to mount the Relay boards. Use 5mm spacers and pay attention to the diode orientation. It matters where certain board goes.



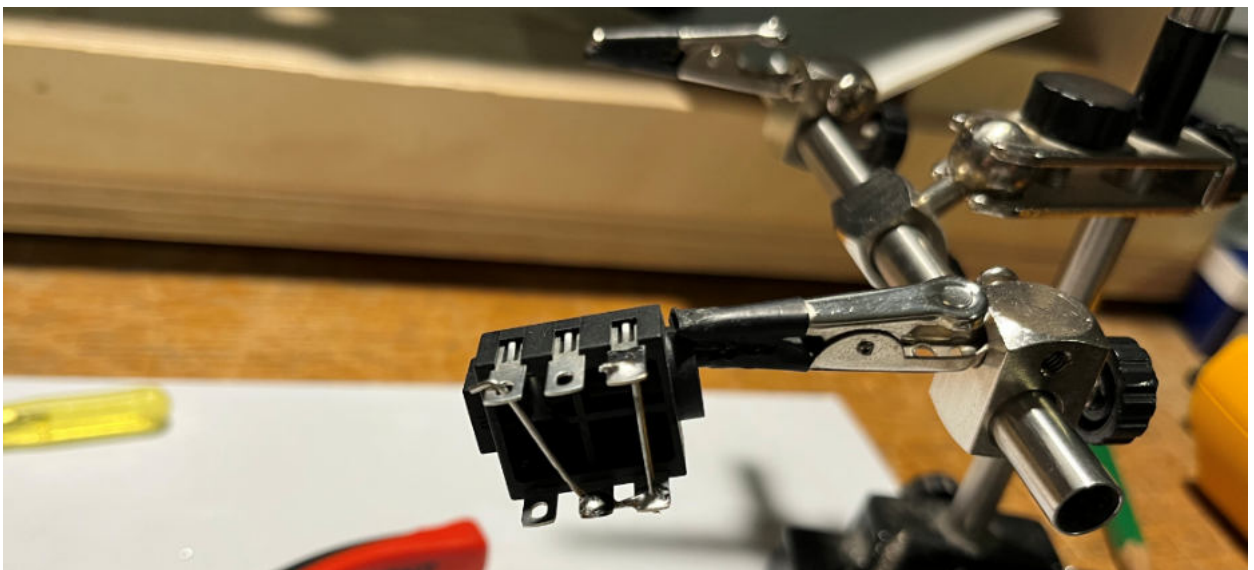
7. Install ground buss

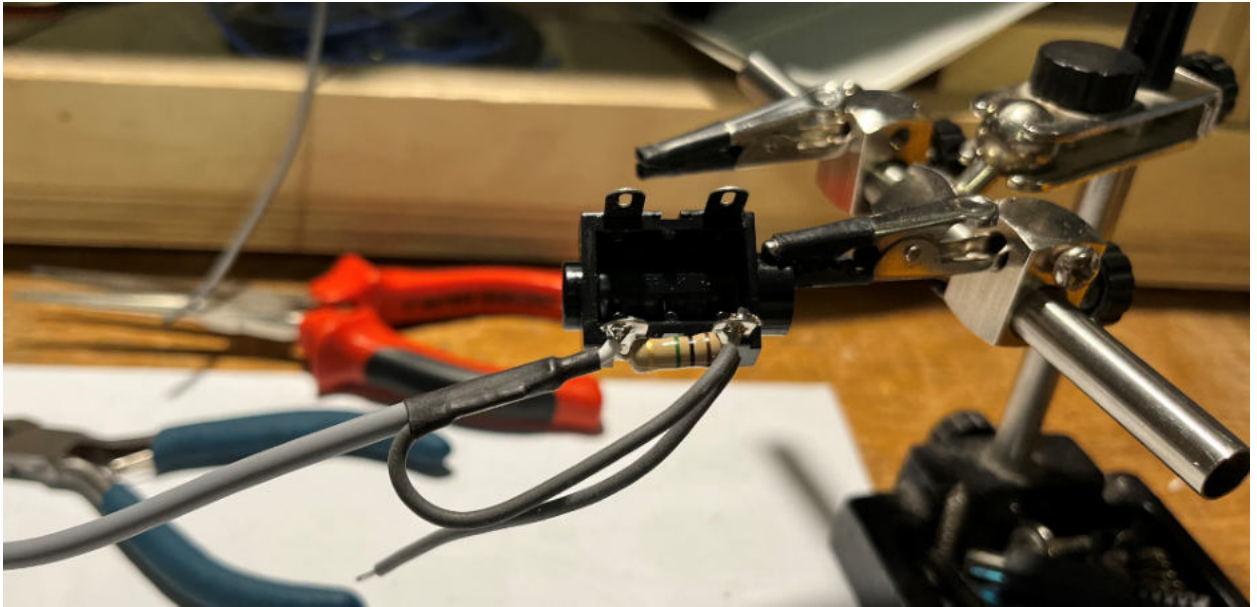


8. Start wiring the Bright, Mid, Jazz/Rock switch and the PAB relay board

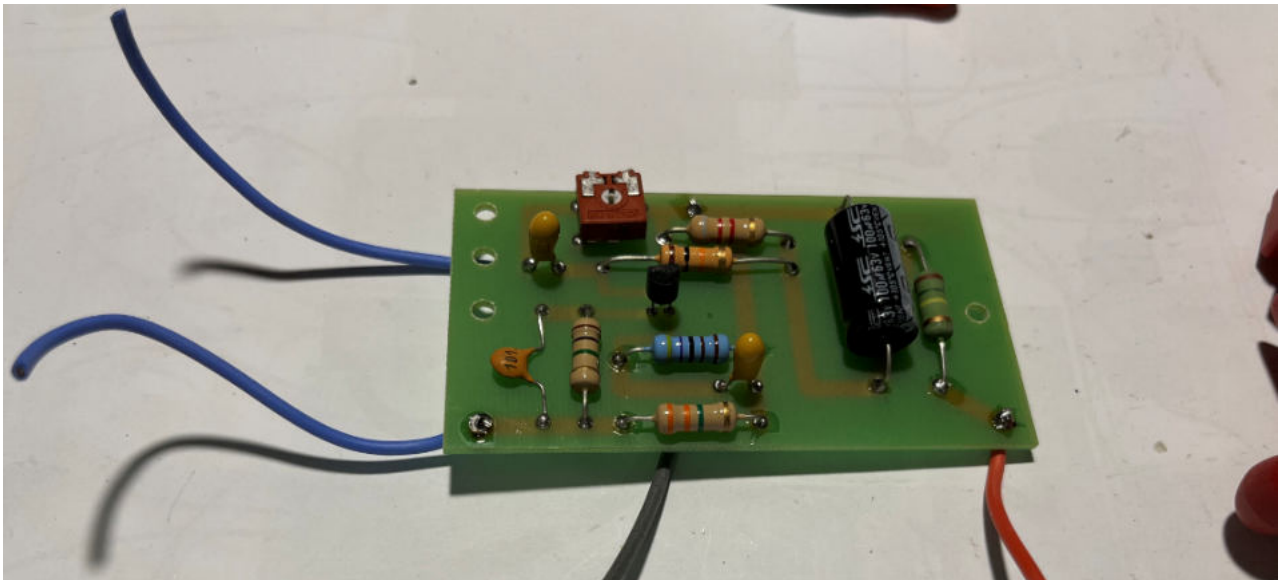


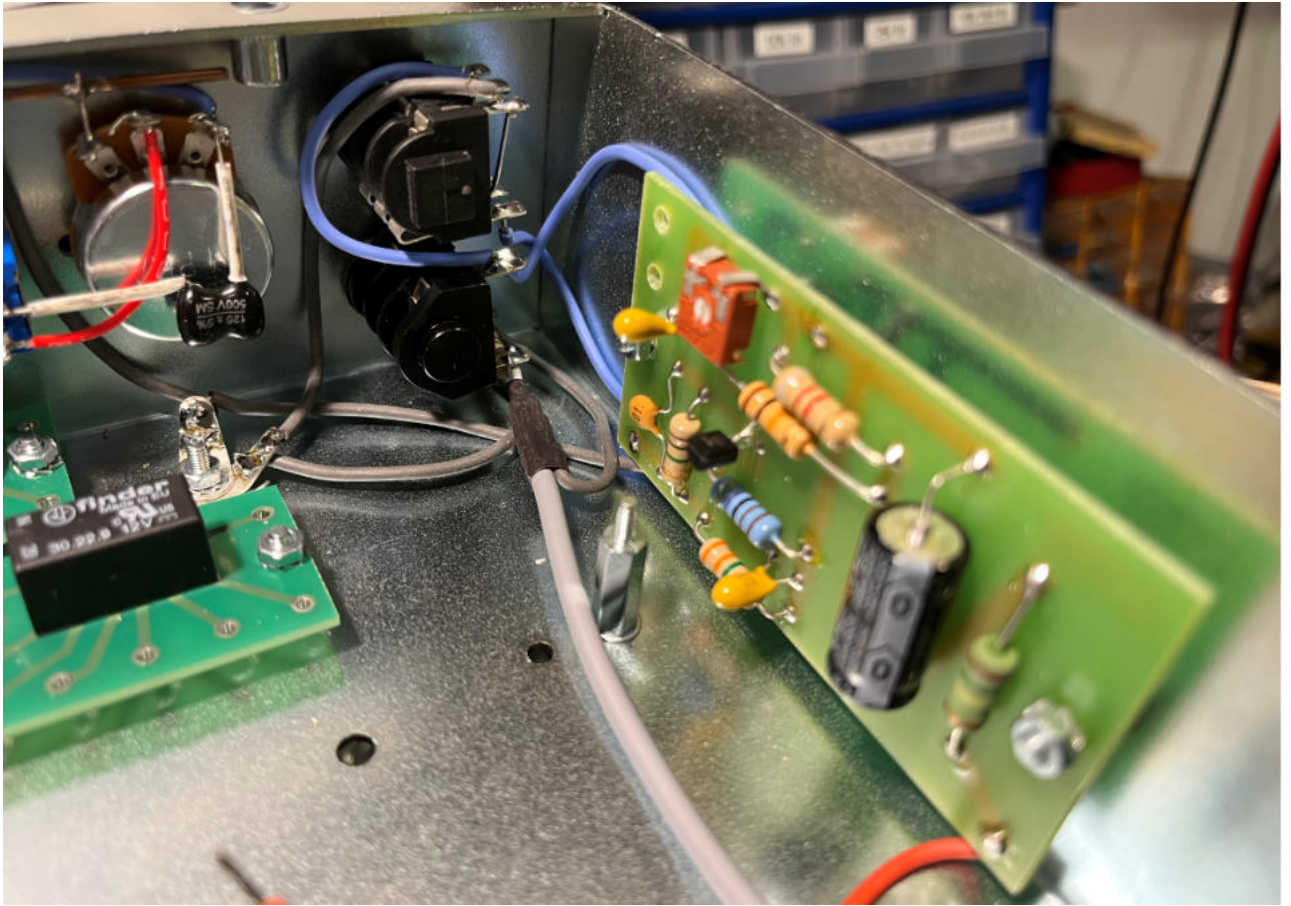
9. Next start working on input jacks. It's easier to wire them if you take them out:





10. Next step is to mount the FET Board. We suggest you solder the wires first. Use 5mm spacers as well.:

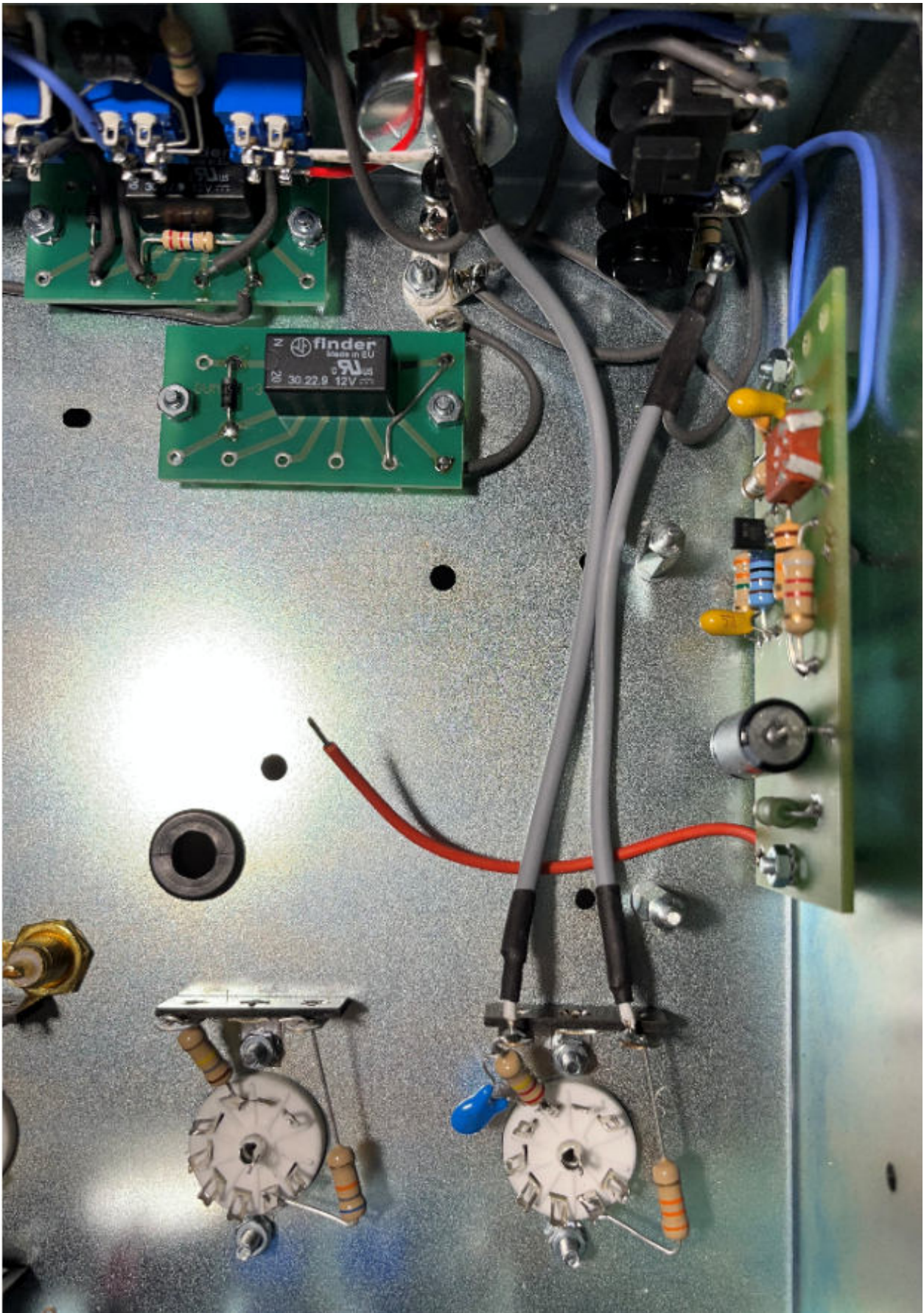




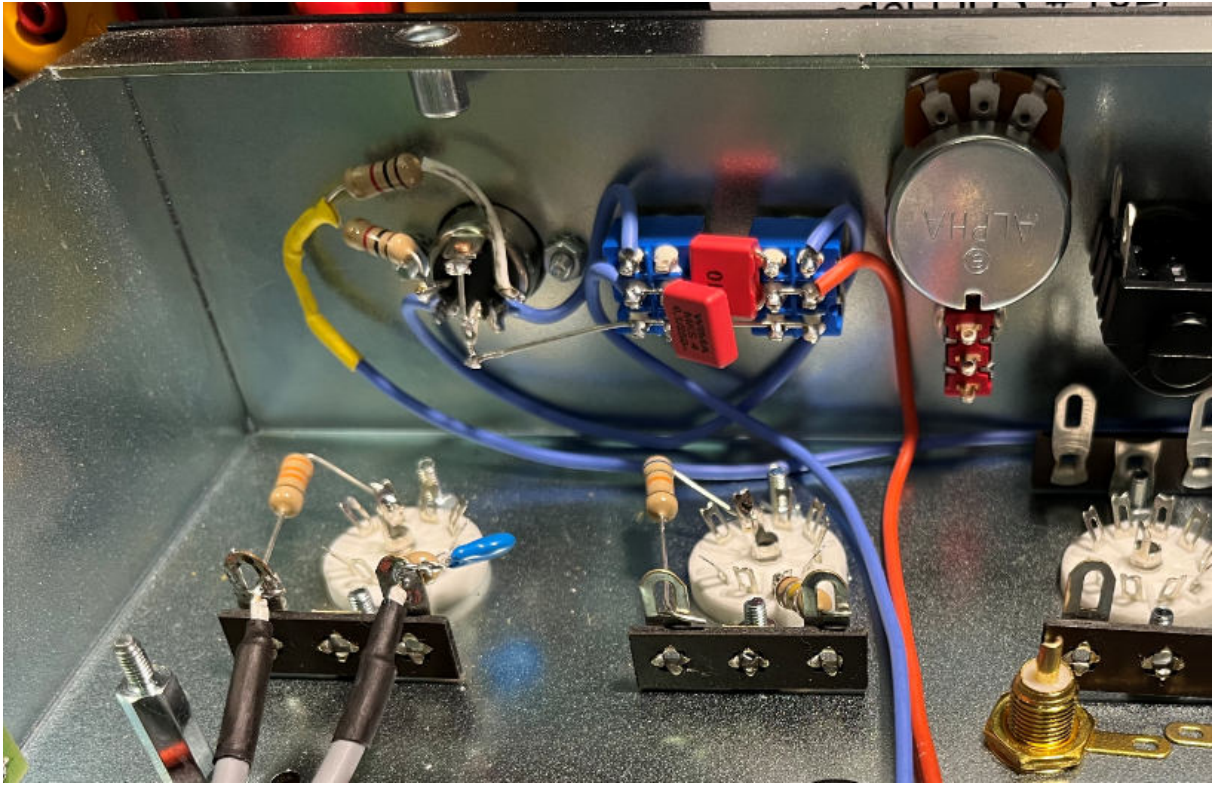
11. There are a few ways to prepare a shielded signal wire. We like to do it like this:



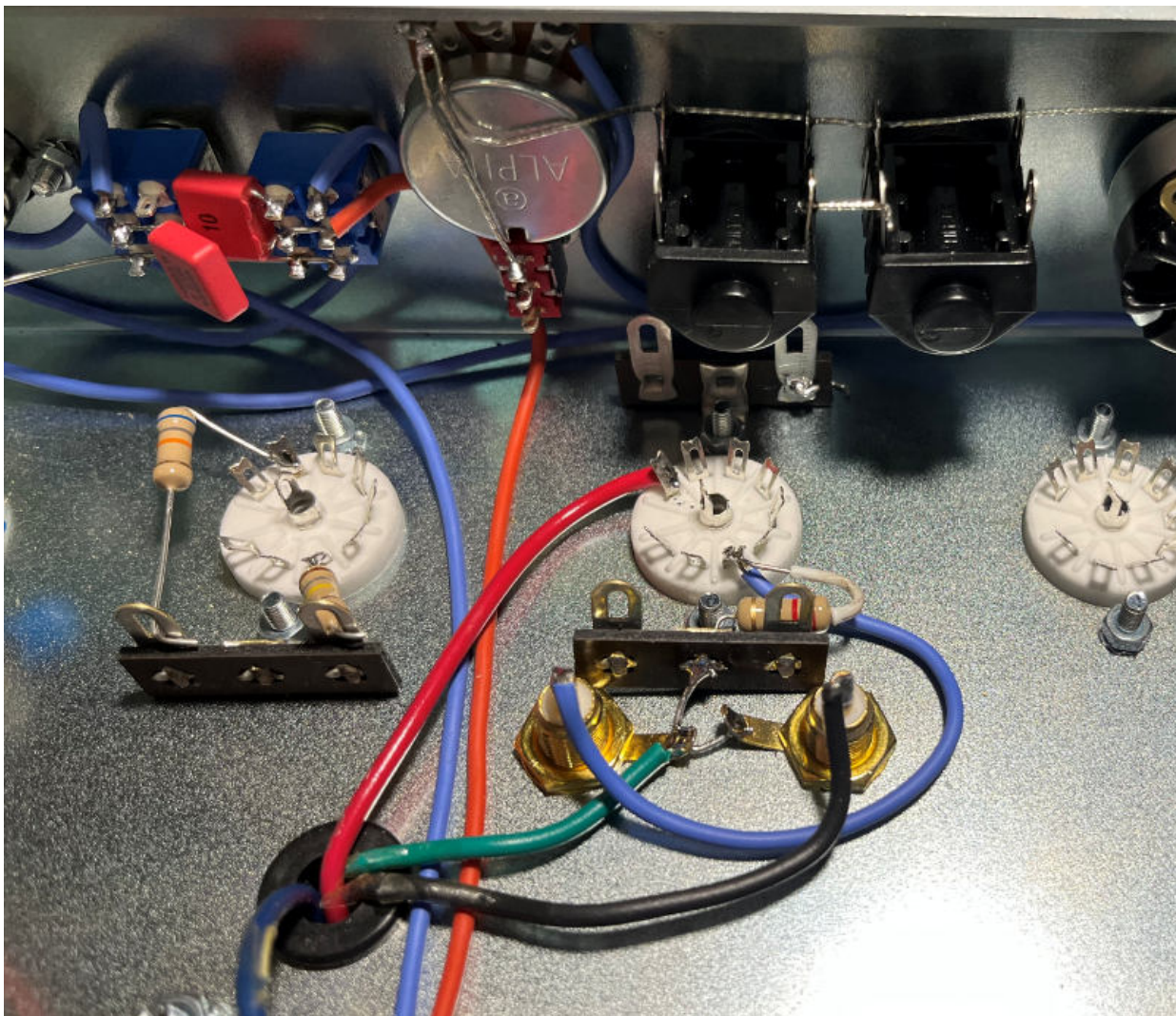
12. Move to the V1, V2 sockets and solder the resistors and install shielded wires on V1

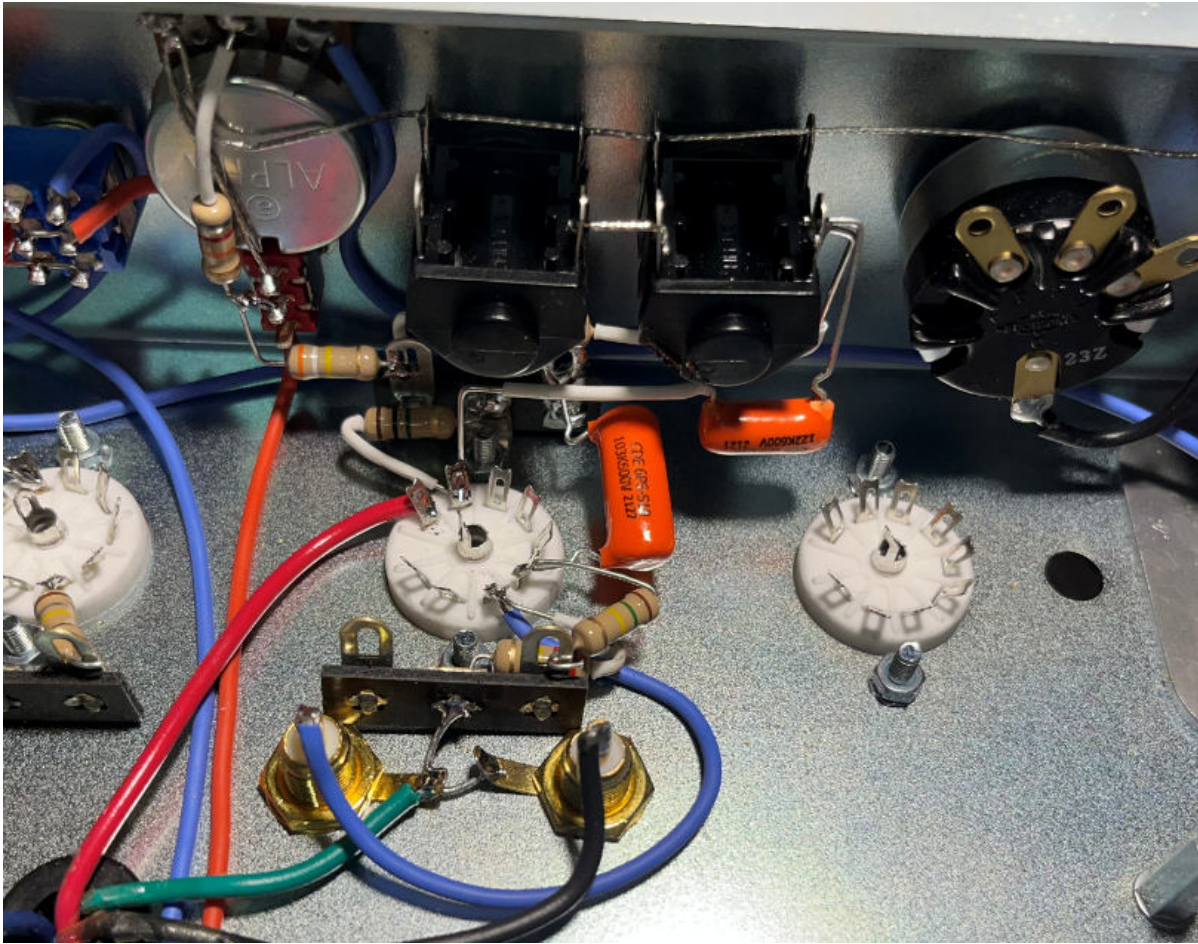


13. Start wiring PAB and OD switches:



14. Install Reverb transformer and start wiring the V3 reverb socket:

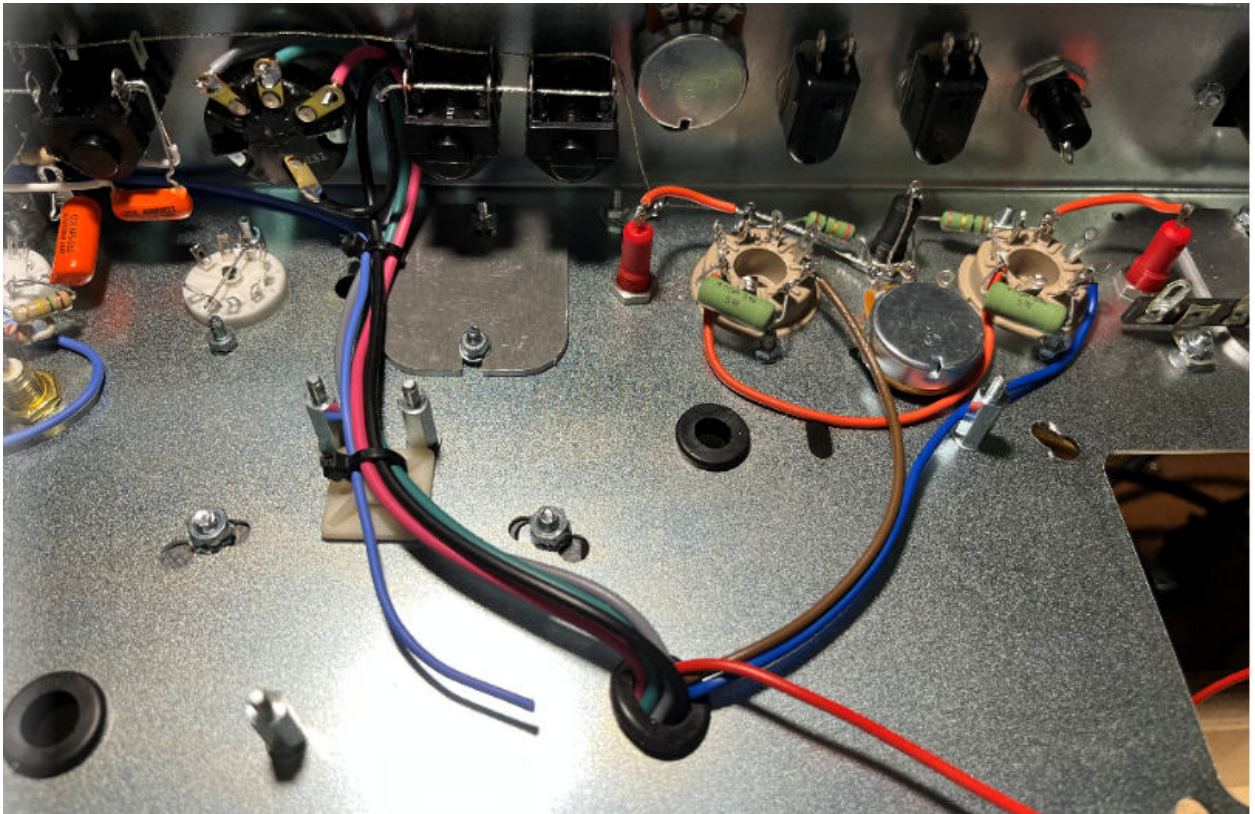




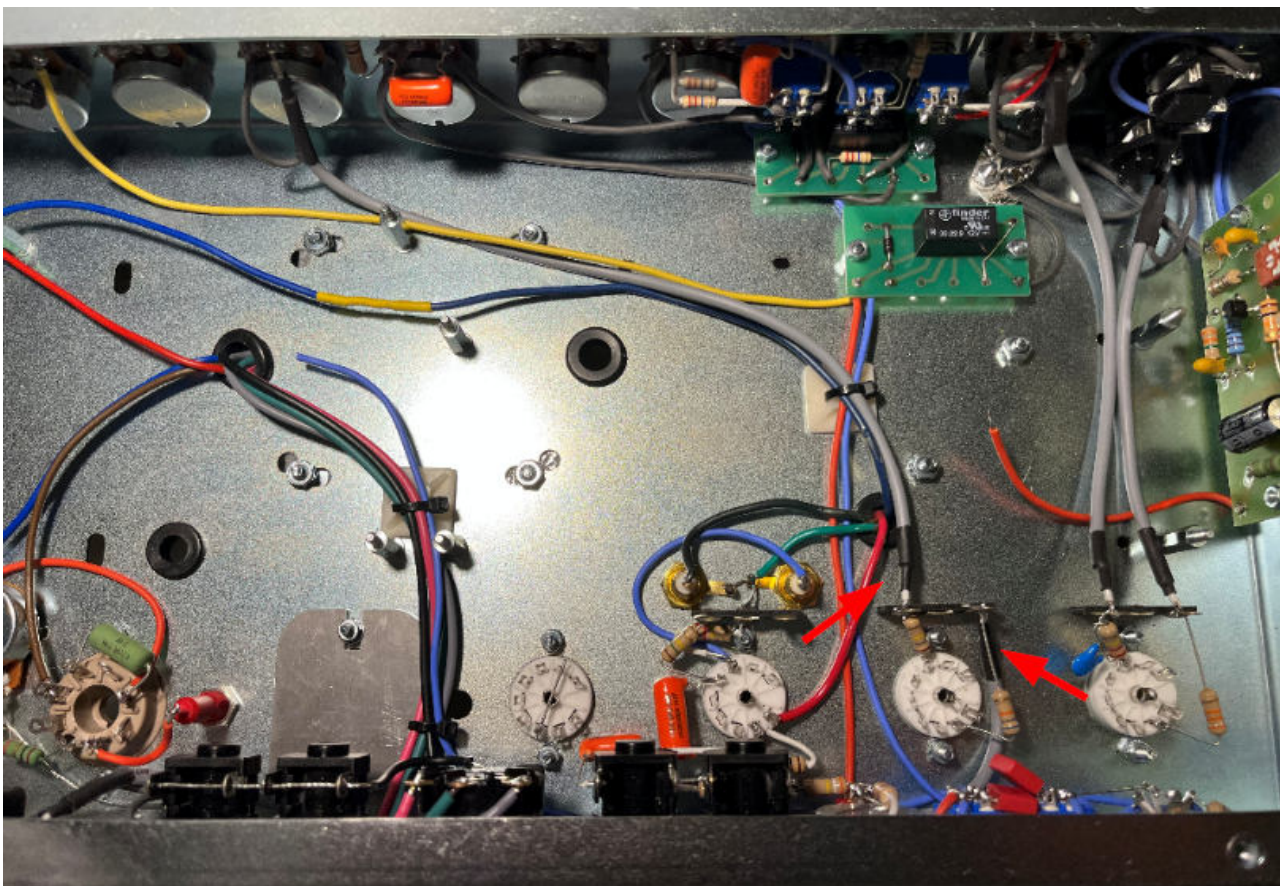
15. Next step, move to the Power tubes sockets

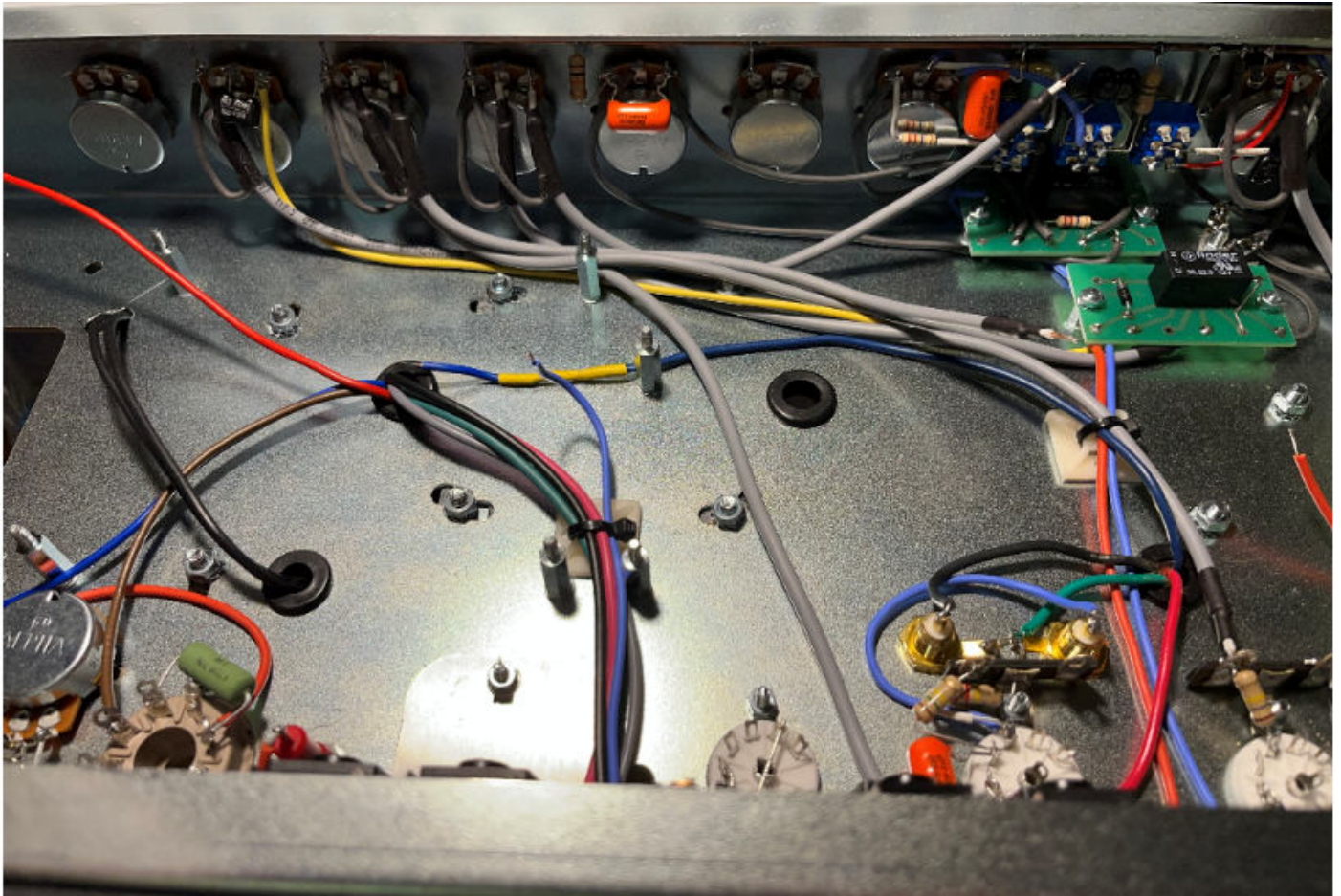


16. Time to install Output Transformer and wire it to the power sockets and impedance selector

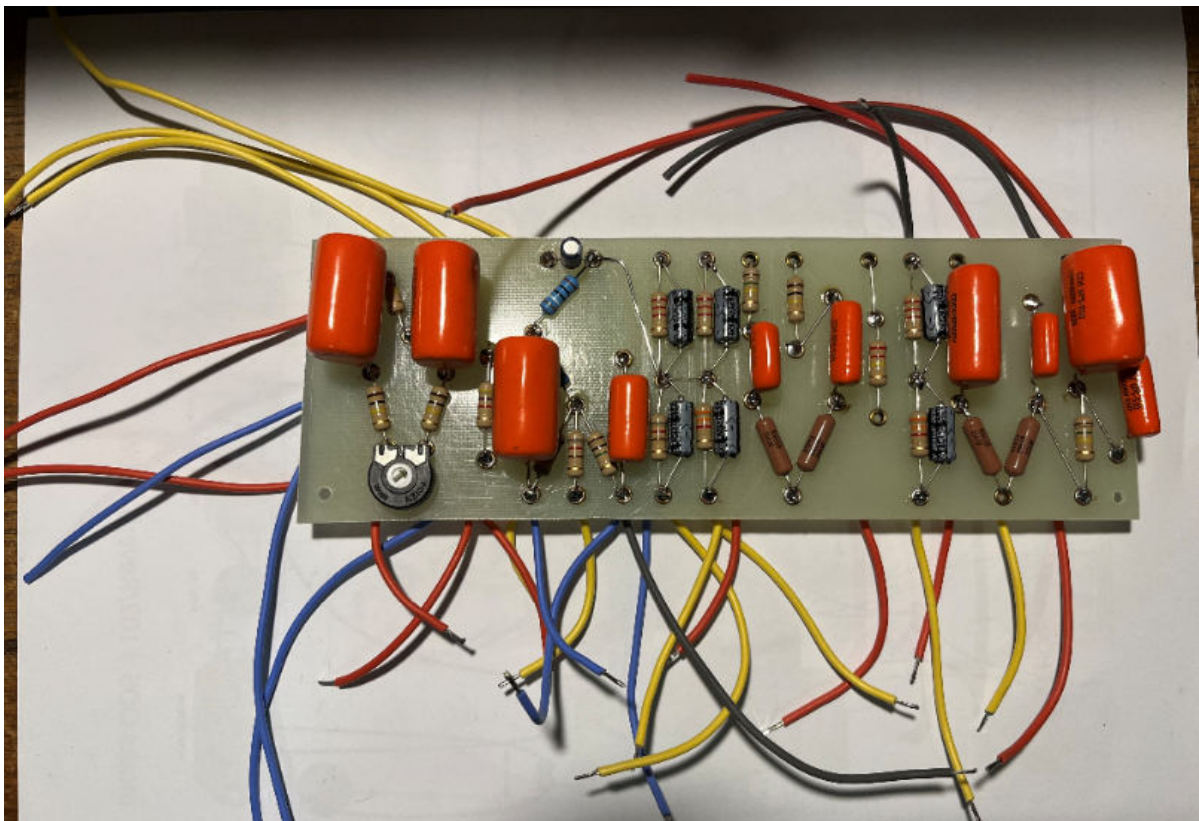


17. Now wire the V2 grid connections and now is also a good time to start wiring the OD relay board and all the pots on the front panel (apart from Presence pot). At this point you can also install the Choke.

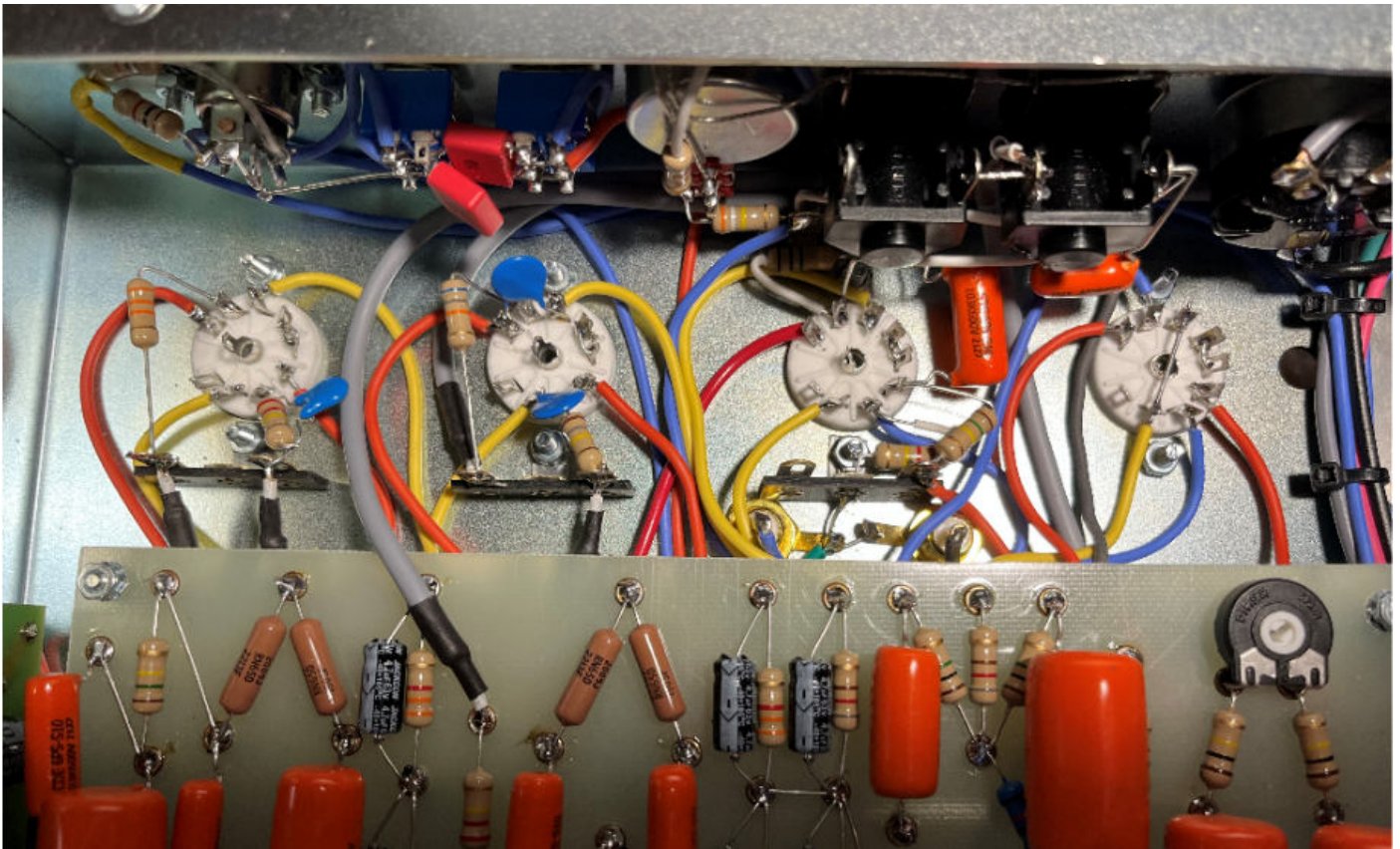




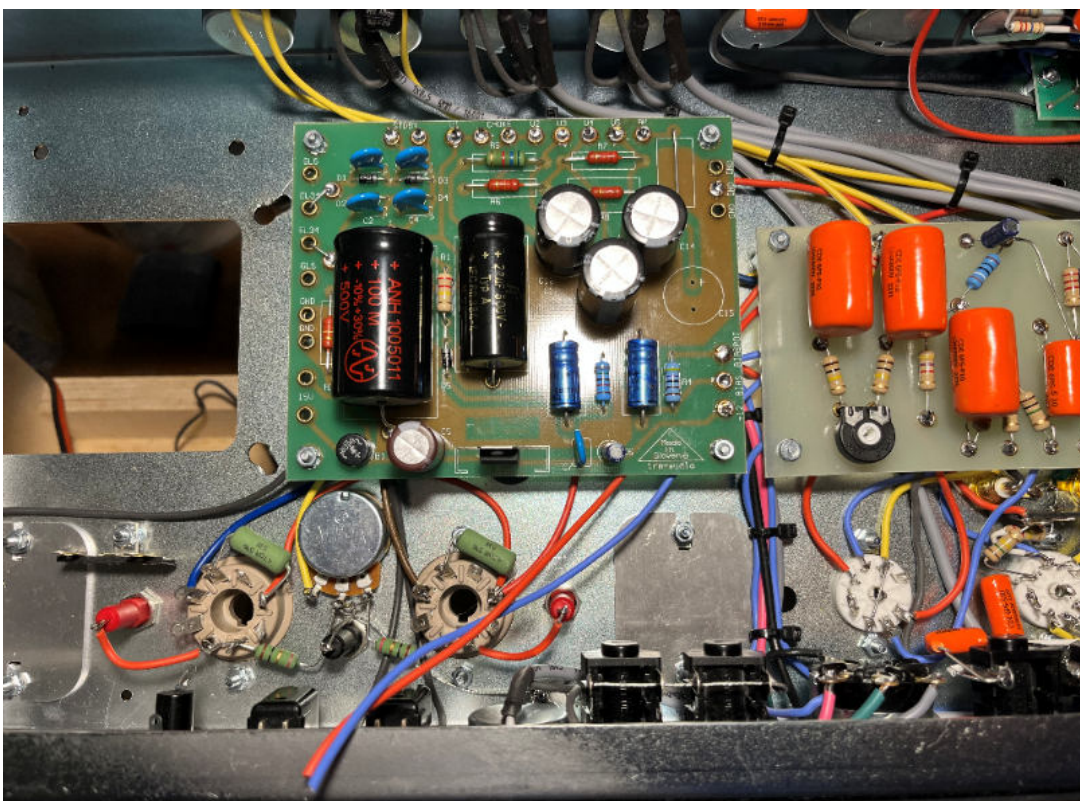
18. Now we are ready to install the Main Board but before that, we need to solder all the wires to the board



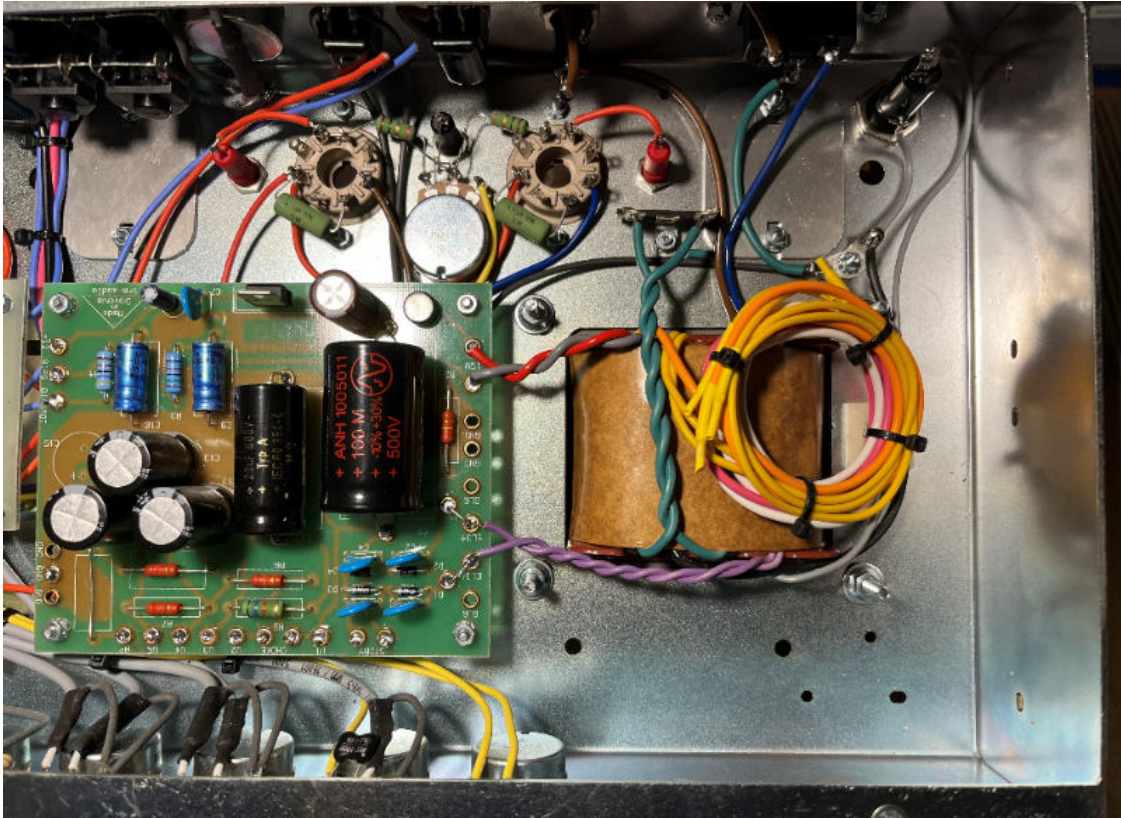
19. Carefully install the board and start soldering the wires.



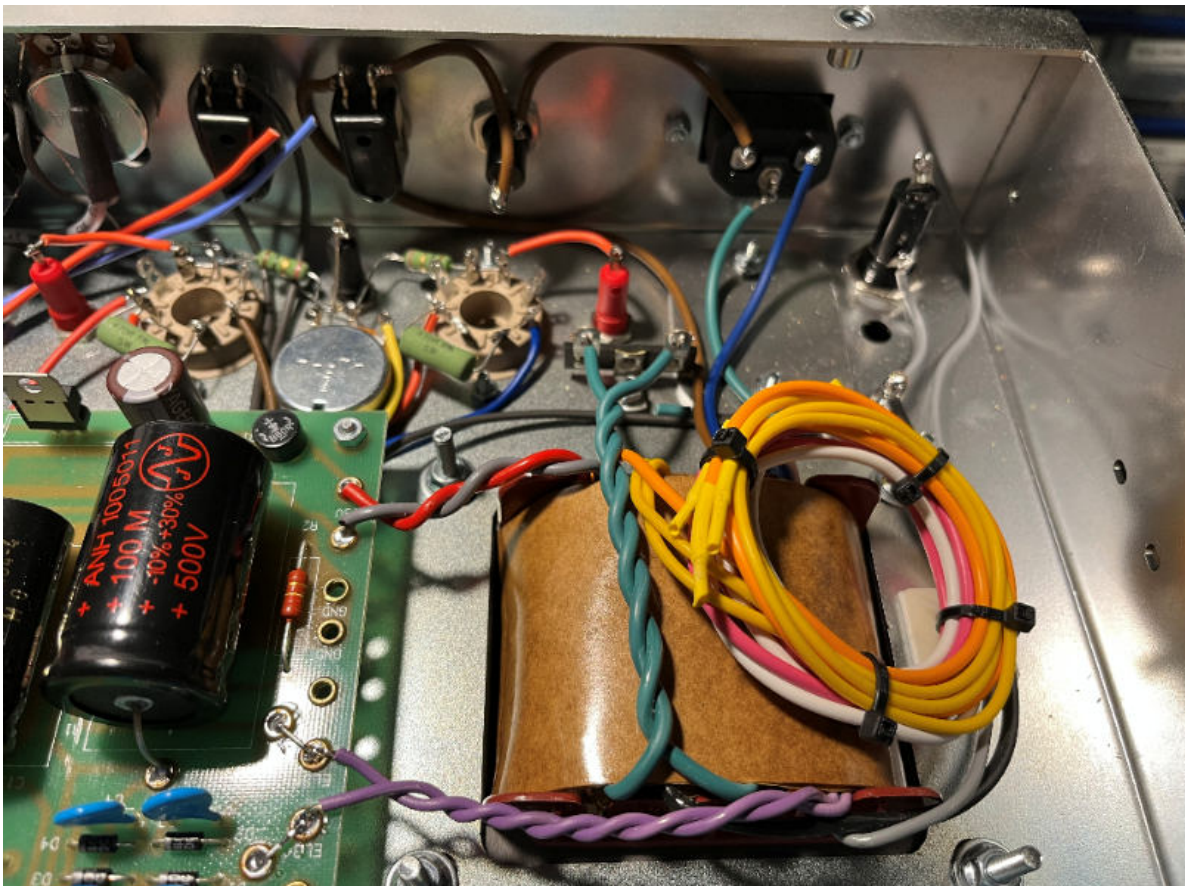
20. Next step is to install the Power Supply board (tip: don't screw the board in, solder the wires without screwing the board. Once only the Power Transformer connections are still open, then screw in the board). You can see on the picture that leads for the grids are quite long. Leave it like that, as we don't know yet which lead will be soldered to which power tube socket. We will determine that when we power on the amp.



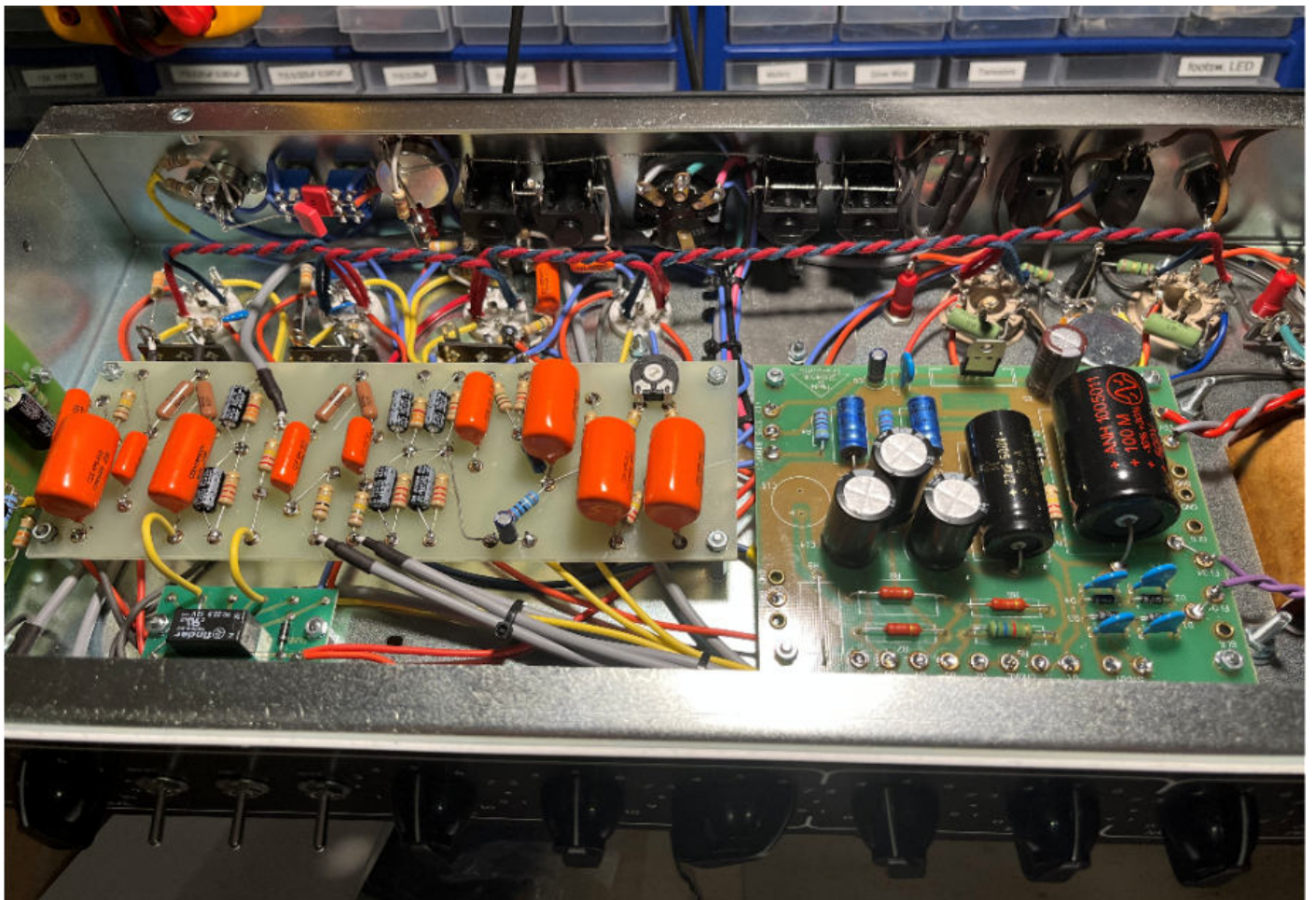
21. Now it's time for the Power Transformer installation. As this amp is for a client, I didn't cut of the leads which we don't need. This leaves some options for the future.



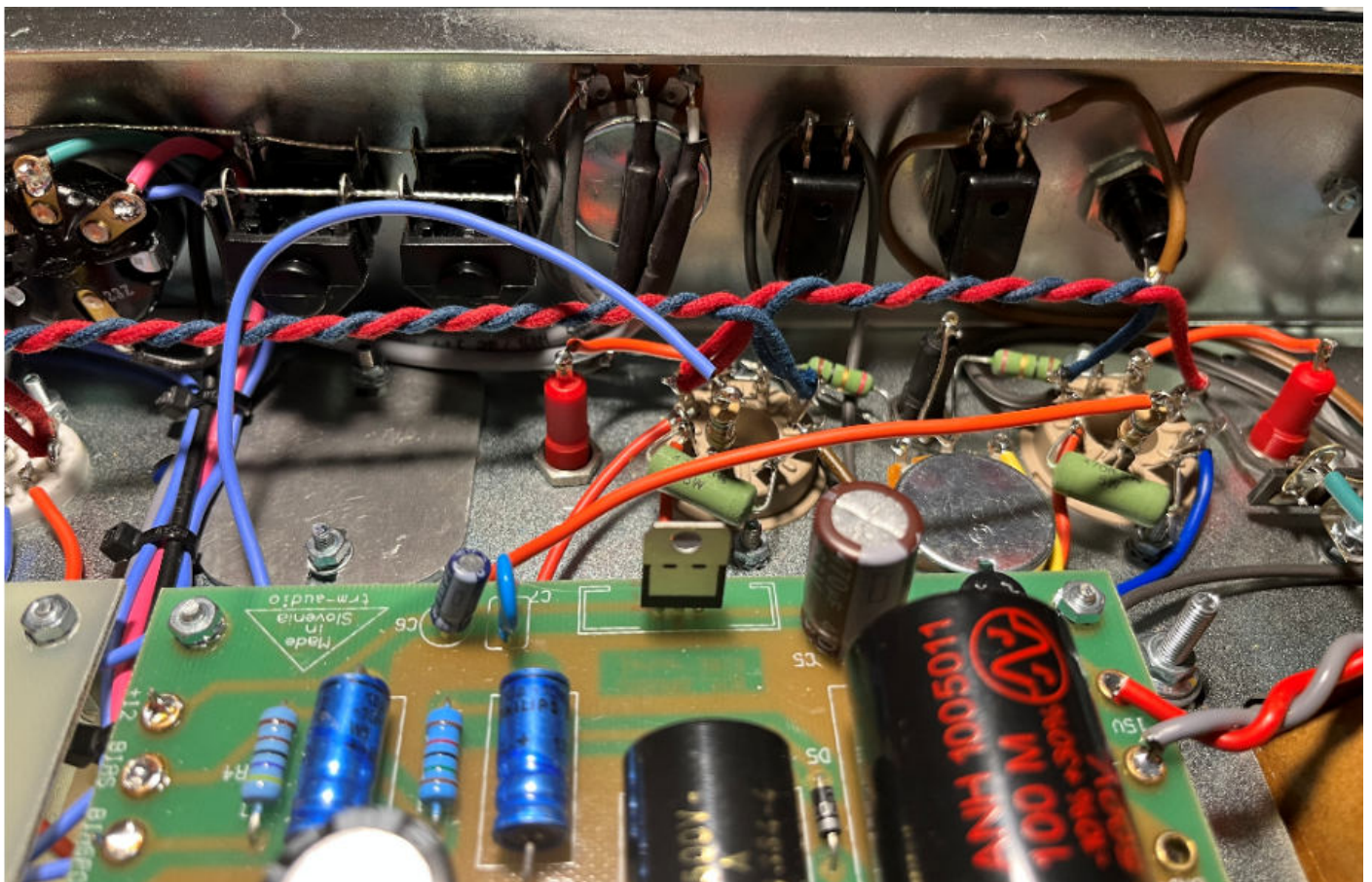
22. Also wire the power switch and fuse



23. Please carefully check if there are any connection still to be made and finish those now. The last step is to connect the tube heaters. I prefer using solid core wire for wiring heaters. This is how to prepare the wires.



24. Last thing to do is to connect the grid resistors and connect the grid leads. Preparing the grid resistors.



Starting up the amp:

For starting up the amp we suggest that some sort of Variac Transformer or a Light Bulb Current Limiter is used. At this point don't insert the tubes yet. Power up the amp (Left the Standby SW still on OFF) and if you are using the Variac, slowly bring up the voltage. Watch if the current is surging in anyway. If everything is fine, inspect the following things. On the power tubes, measure the grid voltage (pin5) and adjust the bias pot, so that you have the maximum negative voltage. On V1 measure the AC heater voltage across pins 5 and 9. On the Variac bring the voltage down and switch Standby to ON. Again bring the voltage slowly up and watch the current. If everything is OK,

measure all the plate voltages on the preamp tube pins (pins 1 and 6). If the voltage is present, you are good to insert the tubes.

CAUTION!!

Before inserting the tubes, switch down the amp and drain the filter capacitors. As there are no tubes in the amp capacitors will retain the high voltage for a while longer than usual.

Once the tubes are in, power up the amp and let the heaters warm up before you engage the standby switch. Turn on the amp and measure the plate voltages across the amp.

On the V1 and V2 you should see voltage at around 200V and on the PI V4 tube the voltage should be somewhere around 300V.

The plate voltage on the power tubes should be somewhere in the neighborhood of 440V.

Now it's a good time to set up the BIAS. Measure this at pin 1 or 8 or you can use the bias jack connectors. As tubes are expensive these days, don't set up the bias to hot. Hot bias will worn out the tubes quicker. I would suggest bias to be set somewhere between 32mV and 35mV.

If you have a signal generator and oscilloscope, inject 1kHz signal into the NOR input and watch the signal on the scope.

Test all functions of the amp (tonestack, all tone switches, OD/PAB) to see if everything is working as expected. You will have to change the freq setting to see if bass pot works as 1kHz is to high for a bass pot. Also treble works better is you set up the freq higher than 1kHz.

We suggest to inject a sweep signal into the amp (if you have this capability) and bring the level up (where the amp starts to brake up) and run the amp for 10min like that. This is in a way a stress test.

Check the bias again, after the stress test, it might change a little bit.

Now we will set up the PI balance (pot on the main board).

CAUTION!!

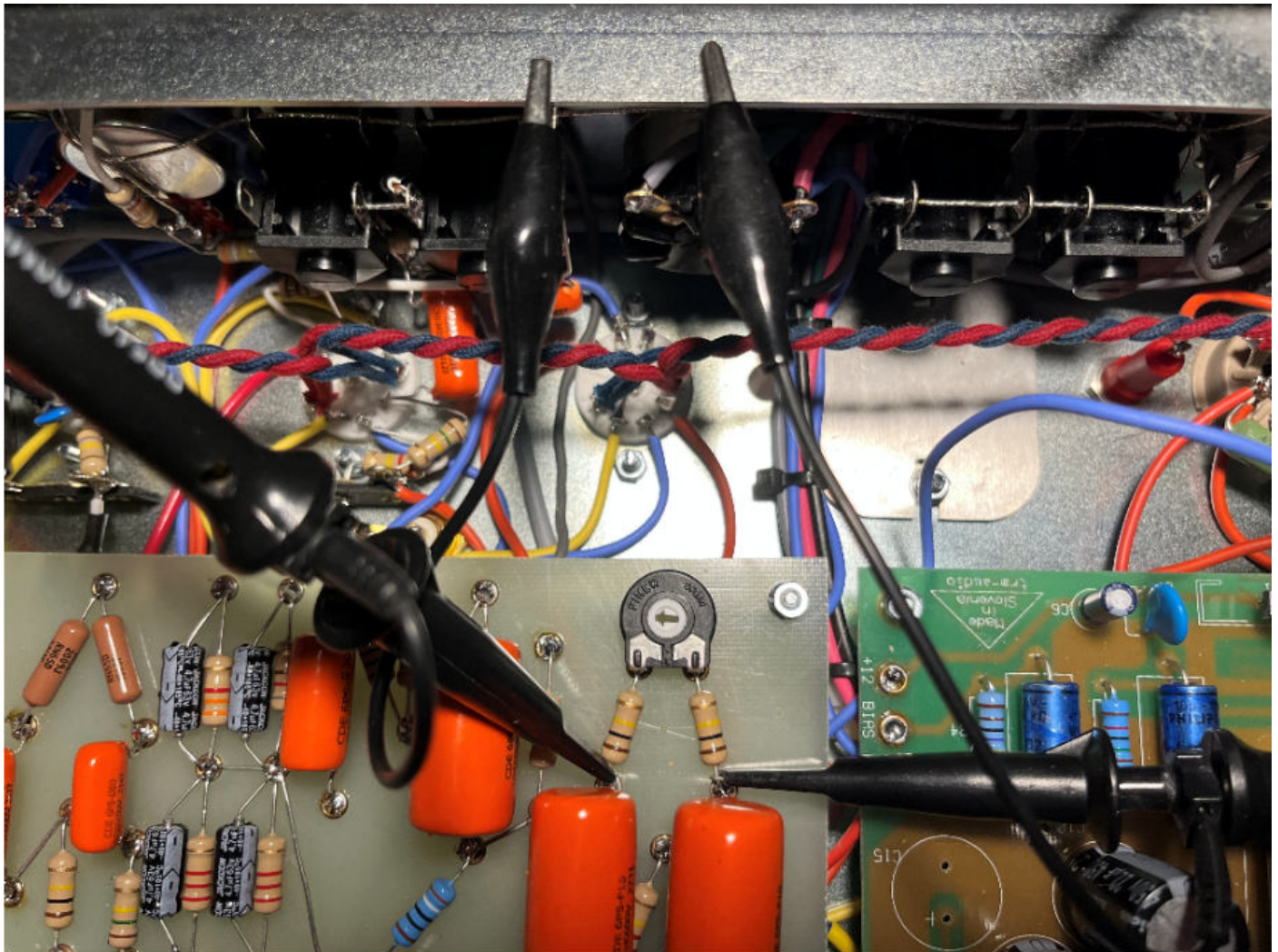
If you don't have a professional oscilloscope, don't do this step at all. As you need to connect your probes to the PI tube plates and measure the AC voltage but at the same time, on the plates you will have 300V of DC and a USB scopes or some cheap ones, can't take this. If you have a scope, please check technical specification, to see if it can take this voltage.

So if you are fine, connect both probes to the plates and set the trimmer in a way that both signals match in amplitude. At the moment your plates resistors are booth 100k. If you can't dial in the equal amplitudes and you are still far away, you will have to change one of the resistors. (this is not a must) The amp will work just fine even without this. As Dumbles are all about perfection, this is where you decide how perfect you want your amp to be.

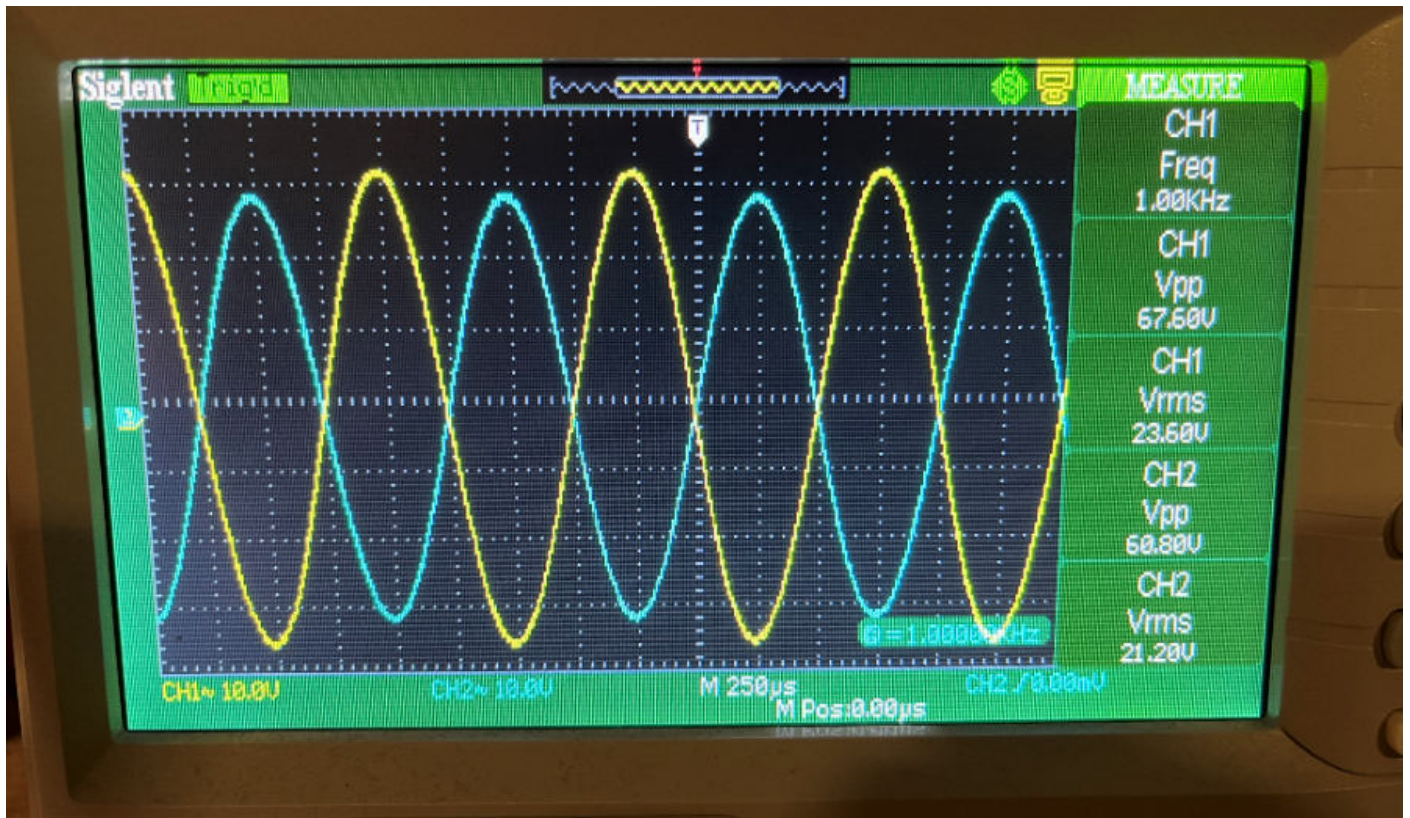
In real Dumbles we have seen plate resistors to be 100k-110k, 120k-110k, 90k-110k combos in order to make this work.

If you have resistor Decade box this is a good time to utilize it and find the correct values.

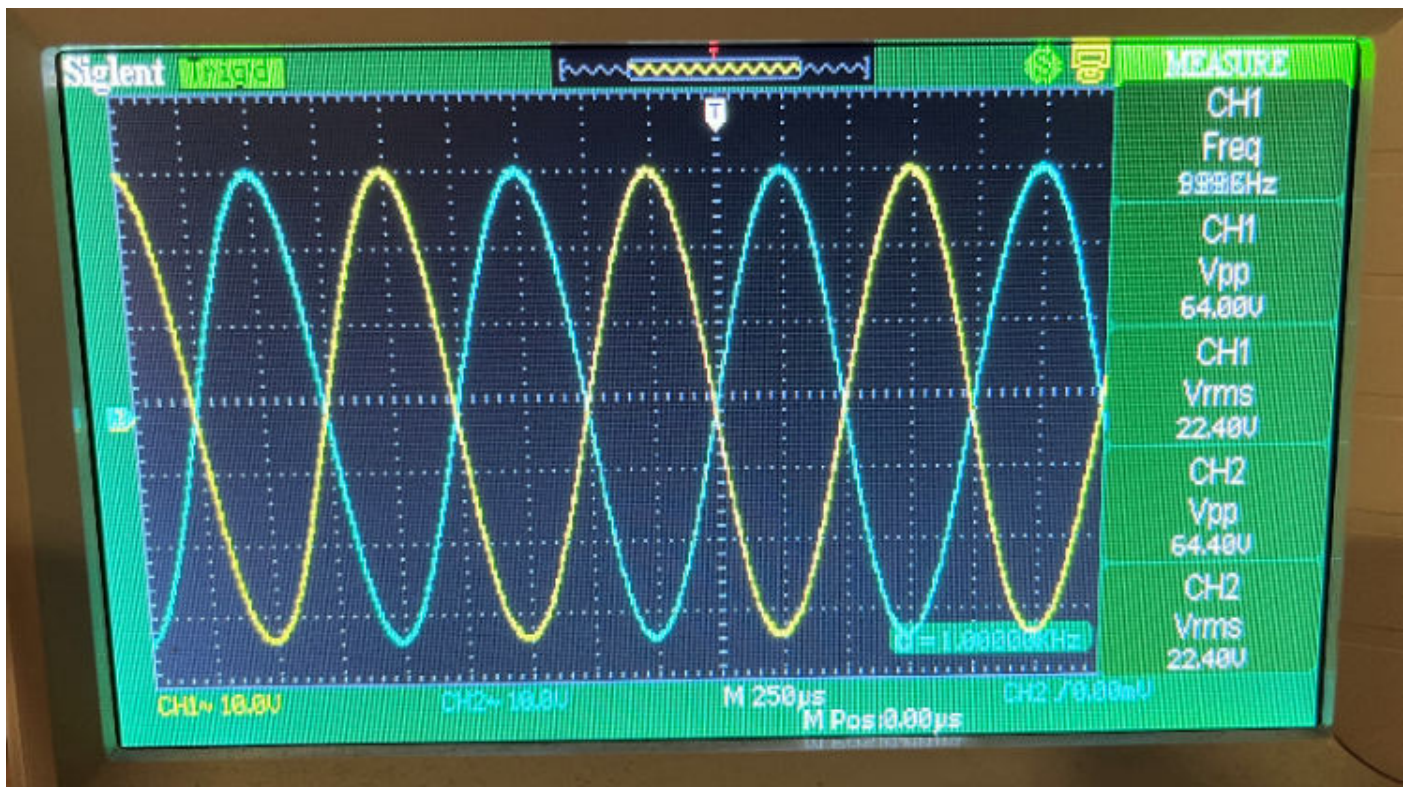
Connecting the probes to the PI plates. You can see where my trim is set for the correct balance – almost fully left. So I don't have to swap out the plate resistors :



Unbalanced PI with the trim set at noon:



After adjusting the trim:

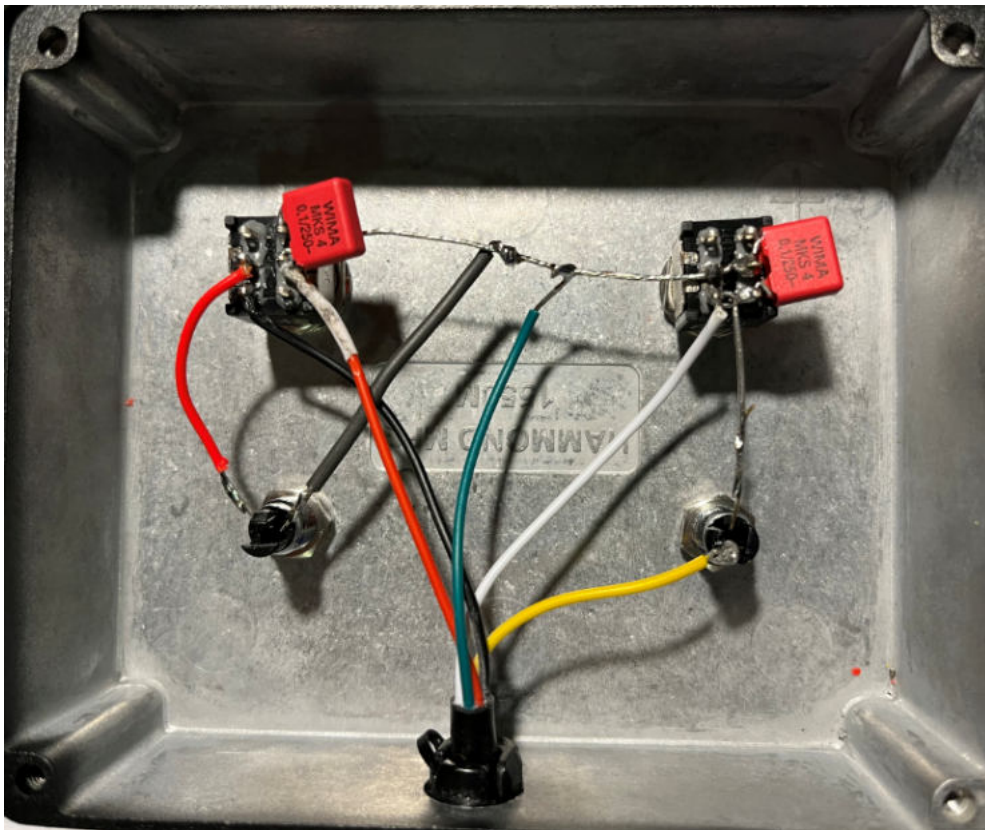


When you connect the speaker for the first time and turn on the amp with the speaker. If in this case amp starts to oscillate you need to swap the grid leads which go to power tubes. Once this is OK, you can cut the leads to correct size and solder them to grid resistors.

After this step CONGRATULATION, you have a full working Dumble style amp. Now go and play it!!

Just one more thing to do. FOOTSWITCH!

Drill the holes, mount the parts and wire the switch





Some final pictures:

