



## OVERVIEW

For the most recent version of this document please visit

<https://www.thonk.co.uk/shop/vostok-sena/>

This document has hi-res images. **ZOOM IN** for a closer look



All Thonk kits are sold under our standard Terms and Conditions - <http://www.thonk.co.uk/faq/>

## DIY INSTRUCTIONS

This document gives detailed instructions that assume you have purchased a complete kit from [www.thonk.co.uk](http://www.thonk.co.uk). It also assumes no previous knowledge of electronics. To learn to solder try <https://youtu.be/lpkkfk937mU> and the **Adafruit guide to excellent soldering** – <http://bit.ly/1I77tF4>

**Watch and understand that whole YouTube video! If you're not achieving the results shown in the video then you need to buy new tools or seek advice.**

**You will not end up with a working module otherwise.**

## TOOLS REQUIRED

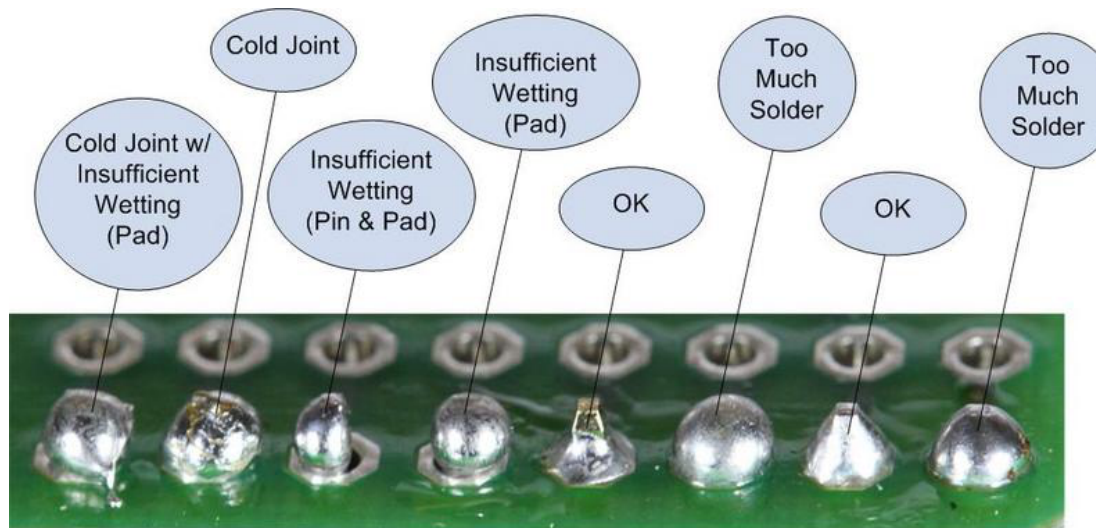
Soldering iron, masking tape, and diagonal cutters AKA snips AKA side-cutters. A Digital Multimeter is always helpful for checking for bad solder joints and continuity. Thonk sell a range of inexpensive tools here - <http://bit.ly/1jxqF3n>



## SOLDER JOINTS

Your solder joints should look like those shown as 'OK' below, they should have that neat conical shape on **BOTH sides of the PCB**. If they don't look the same on both sides then stop! Work out why from the soldering guides linked and don't continue until you are getting those results.

This isn't just OCD talking, you are very likely to end up with a destroyed, damaged or defective unit if you're not hitting that standard.



This photo is from the **Adafruit guide to excellent soldering** - <http://bit.ly/1xqF3n> and is reproduced under an Attribution-Sharealike creative commons license - <http://creativecommons.org/licenses/by-sa/3.0/>



## SENA BUILD INSTRUCTIONS

1.

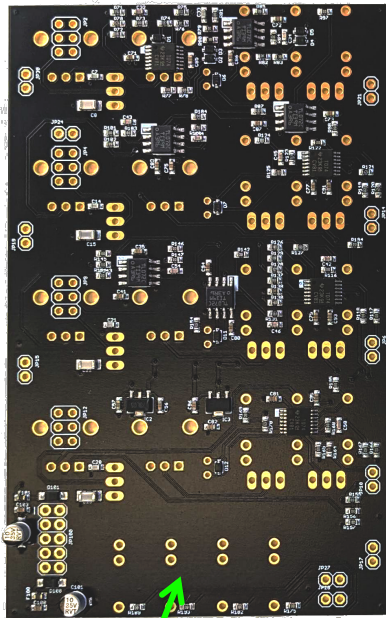
### **PLEASE NOTE**

Follow these instructions carefully and take good care and attention while building your kit. The tightness of PCB layout and a larger than normal ground plane means you'll need to be **accurate with your solder iron placement and extra careful how you feed in your solder**. We recommend using solder that you're familiar with and that will flow easily. If you create any solder bridges, they could potentially be very hard to remove.

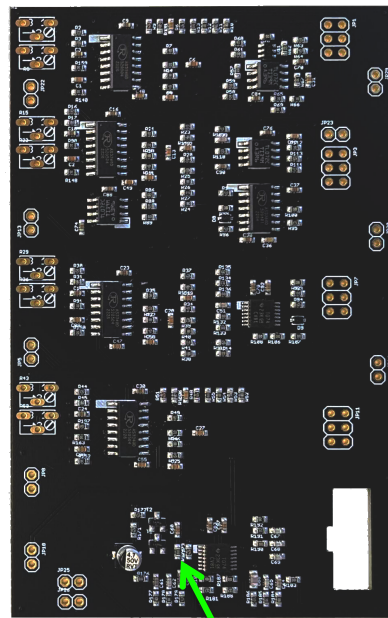
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2.

There are two PCBs in this build, but they may arrive joined together or separately as shown. If they are joined, then gently separate them by twisting the outer connecting strips with a pair of pliers.



Front PCB



Back PCB



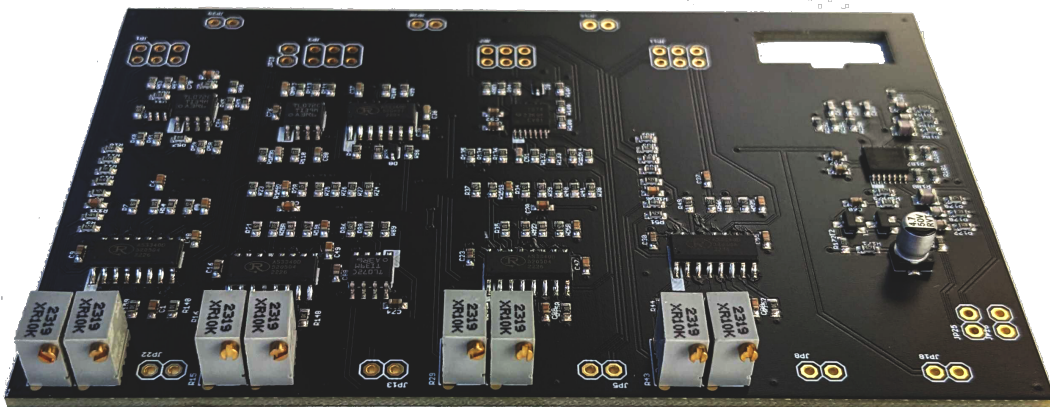
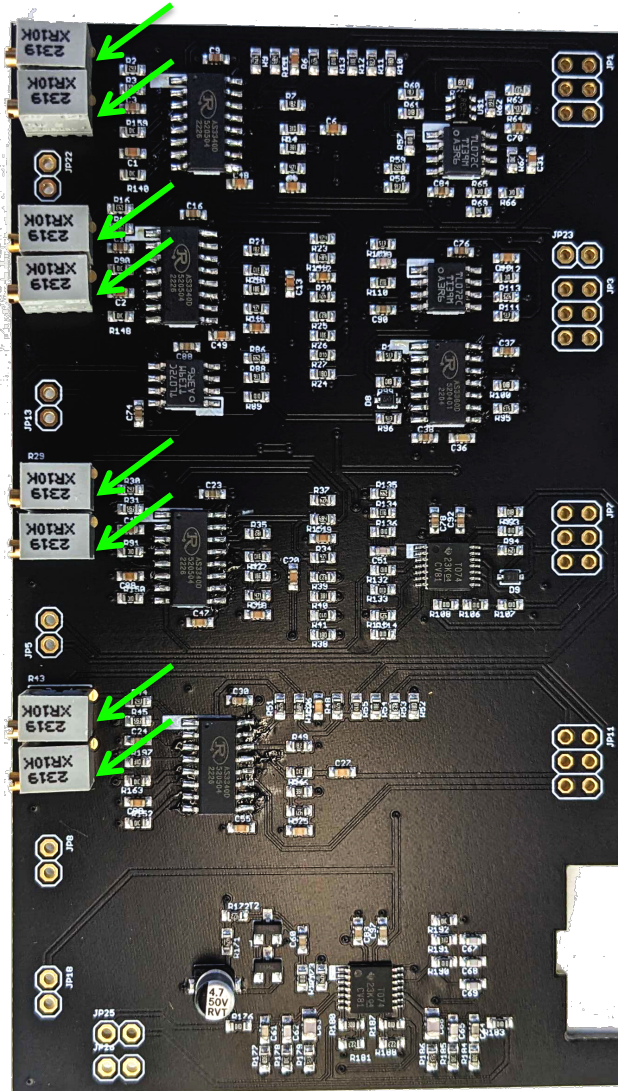
3.

We'll start on the back PCB (labelled above).

Locate the eight trimmers and place them on the same side of the PCB as the pre-soldered components as shown.

Ensure the brass screw on each trimmer is facing towards the edge of the PCB.

Solder one leg first and then make sure the trimmer body is sitting completely flat against the PCB, if it's not sitting completely flush then reflow the solder joint while pushing the body down at the same time.





4.

Put the back PCB aside and take the front PCB.

Locate the 4 x Orange LEDs and place them as shown. The LEDs sit on the opposite side of the PCB to the SMD pre-soldered parts.

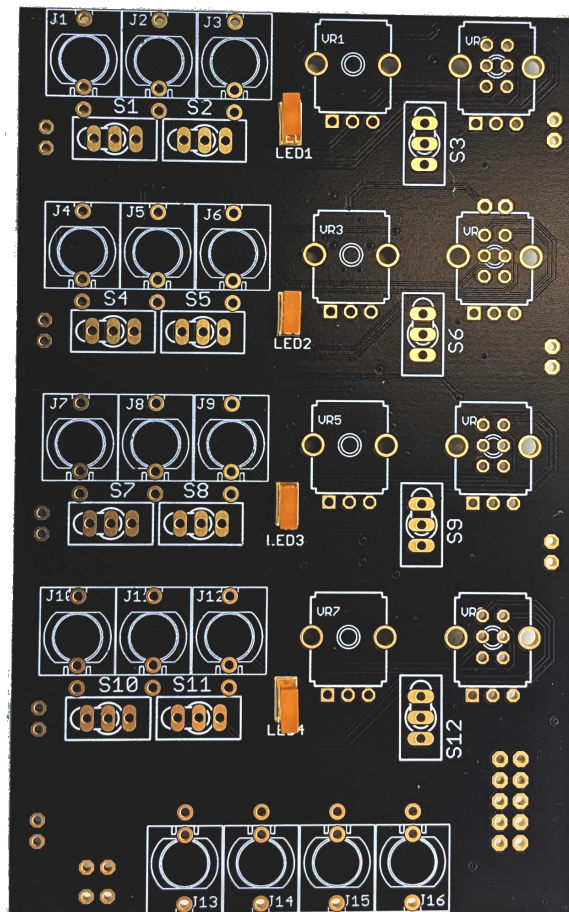
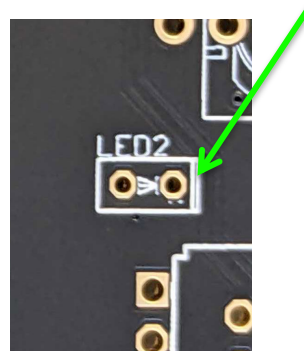
**Note: orientation is vital!** the short leg of the LED must go to the side with the white line on the PCB silkscreen.

**Note:** Be very careful with your soldering iron placement as there are SMD parts placed close to the LED solder pads.

The LEDs should sit completely flush to the PCB. Solder one leg first and check the LED body is flat against the PCB. If it's not sitting totally flush, then reflow the solder joint while pushing the LED body down against the PCB.



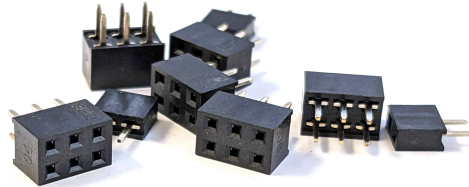
Short leg to side with white line





5.

Next locate the pin sockets in the small bag. These are placed on the front PCB on the same side as the SMD pre-soldered components. **Don't solder them yet!**



6.

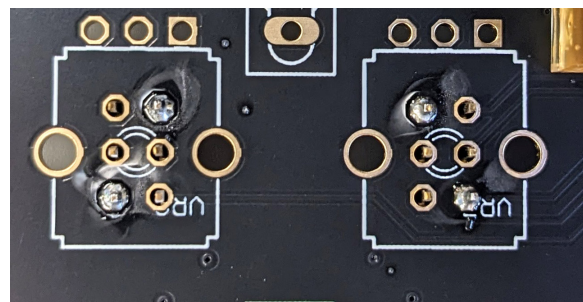
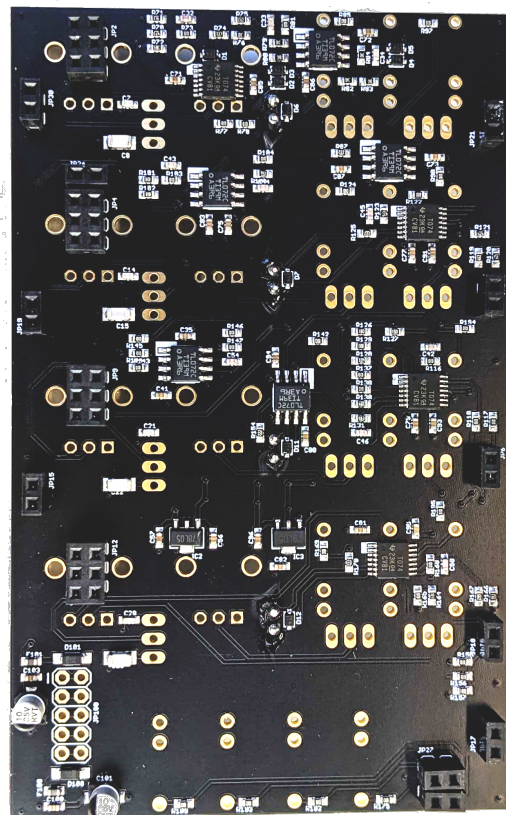
Place all sockets.

Hold something flat over the sockets and then flip the PCB over to solder.

**Note:** the sockets must sit completely flush to the PCB – for the 6 pin sockets, start by soldering 2 opposite corner pins as shown, then check if the header is totally flush, reflowing and adjusting if needed as with previous steps.

For the 2 pin sockets, solder just one pin first before making sure the part is flush and reflowing and adjusting if required.

Then solder the remaining joints for all sockets.

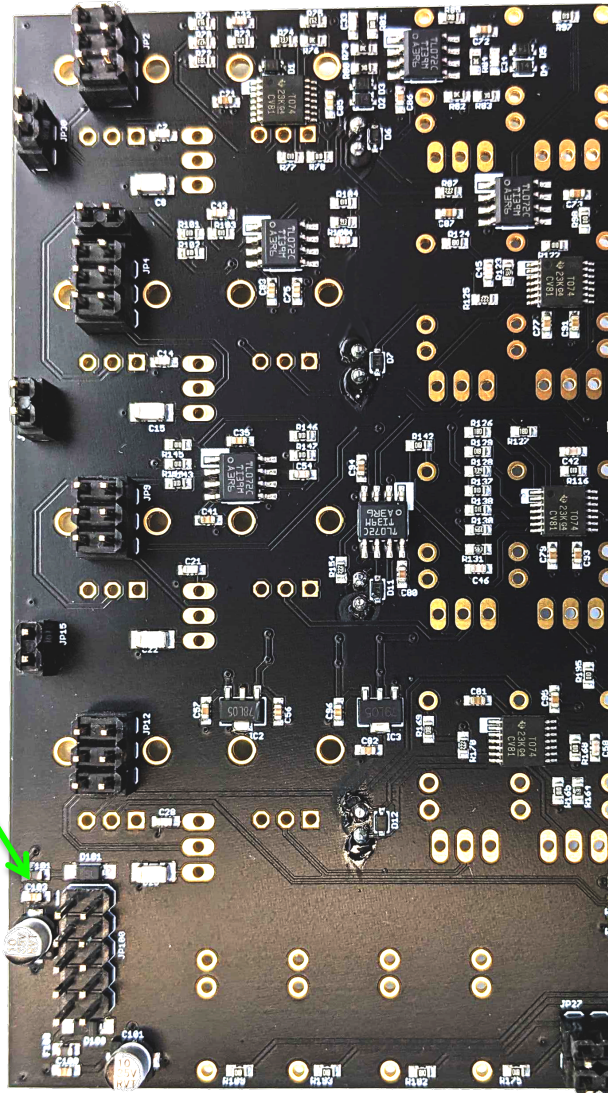
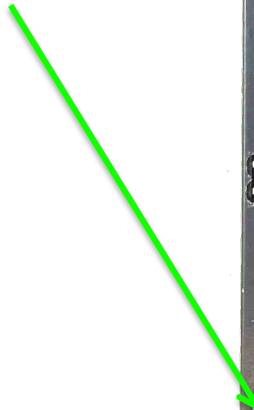




8.

Now locate the 10 pin power header. This is placed on the same side of the PCB as the sockets

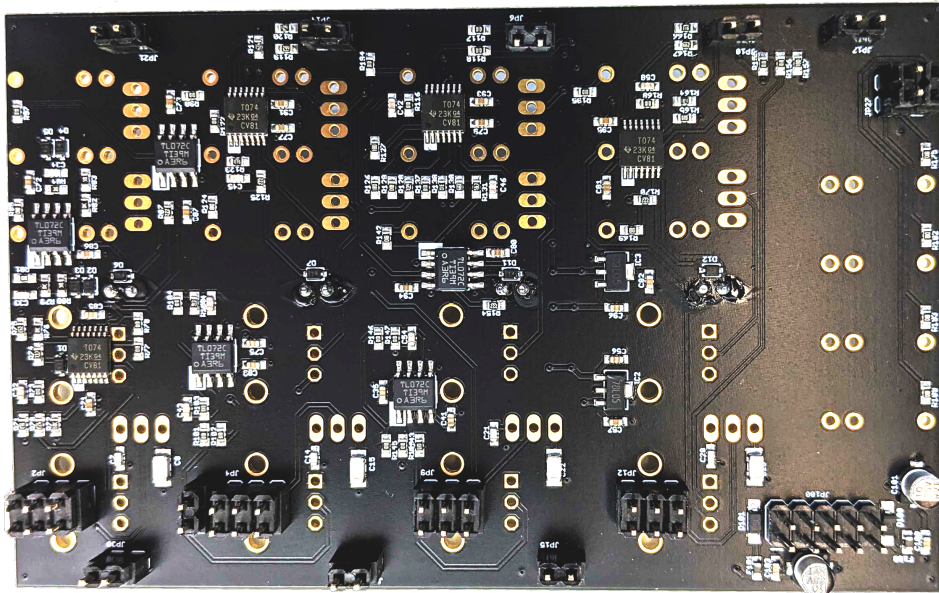
Solder 2 edge pins on opposite corners first, and then check the header is flush before soldering the rest.





9.

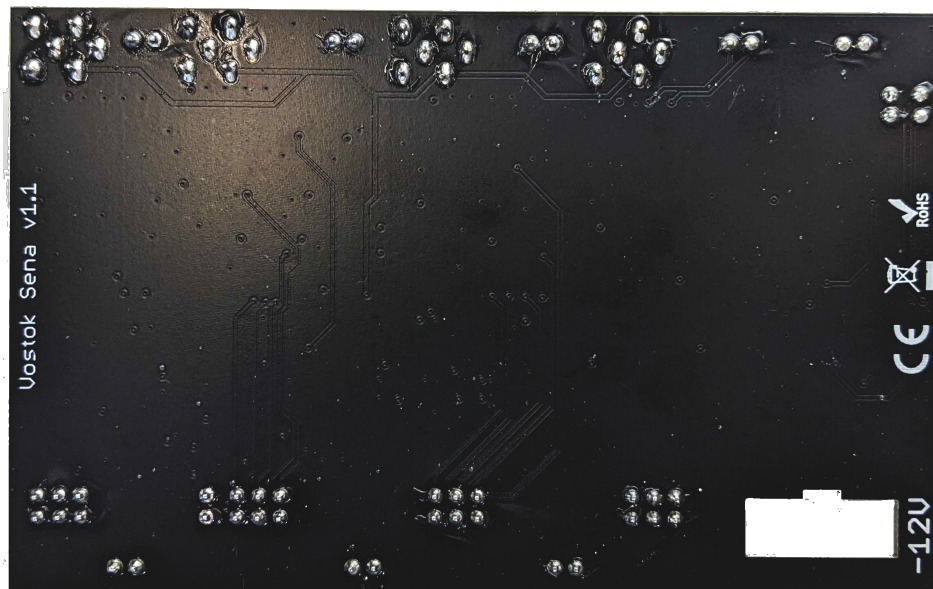
Now locate the small pin headers and insert them all into the sockets as shown:



10.

Next place the back PCB onto the pin headers to sandwich the PCBs together. You might need to wiggle the PCB slightly to ease the headers through their holes. Using pliers or a screwdriver can also be helpful to gently nudge the 2 pin headers to line up properly.

Once the headers are all aligned then go ahead and solder them onto the back PCB.







11.

Now it's time to move onto the remaining parts on the front PCB, so separate the PCBs from each other again and locate the pots, jacks and switches.

Remove all the nuts from the jacks. Now place but **don't solder yet**, the jacks, pots and switches onto the PCB. Orientation doesn't matter for the switches, and all pots are B100K.

Place the frontpanel over the components, and then secure it in place by screwing all silver nuts onto the jacks and black nuts onto the pots.

**Don't solder yet!**





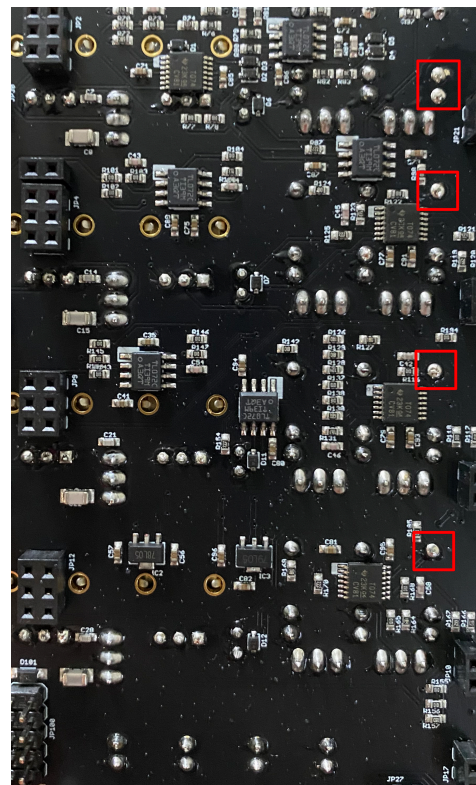
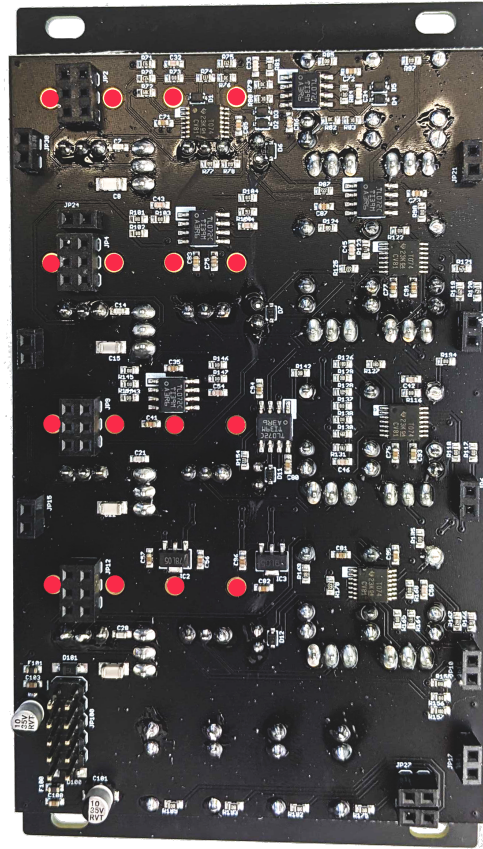
12. Check all components are lining up with the panel and all pots/switches move smoothly before soldering all the remaining solder joints for the switches, pots and jacks.

**Note: go slowly and carefully!** Be precise with your soldering iron placement, some areas are quite tight with a lot of close and delicate SMD parts that need to be avoided.

**Note:** We advise to leave the 2 side legs of each of the pots unsoldered – these are circled in red in the image on the right. The reason for not soldering these is because there are pins under the pots, so it makes it easier to fix any problem in case of accidental shorting, (these 2 side legs only function as mechanical stability).

13. To ensure you can place the PCB's together securely you will need to trim the joints of the jack legs circled in red.

These are the solder joints that will sit directly above the trimmers.





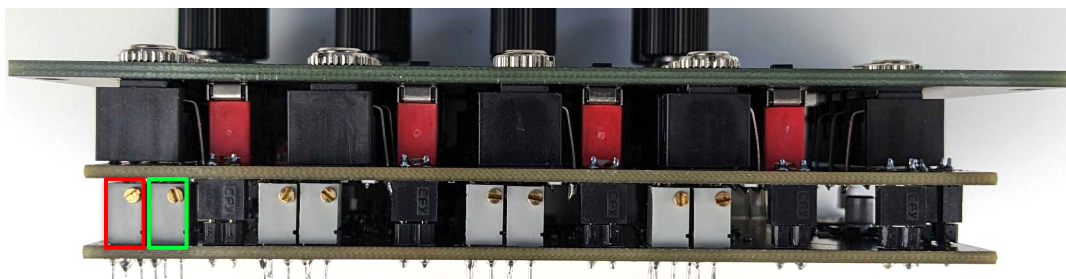
14. Now you can connect both PCBs again and place the knobs on to the pots. Finally attach the power cable with red stripe facing the -12V. The build is done!



15. Before using the module it is recommended to calibrate each of the four oscillators contained in the module following the guide linked below. This is to ensure the module tracks v/oct correctly over multiple octaves and so that each oscillator is in tune with the v/oct signals you are sending to the module. [Sena Calibration Worksheet](#)

Open the above google sheets link and make your own copy of the spreadsheet to be able to edit and use the calculator system to help calibrate your module successfully.

We recommend using tuner within your DAW or hardware tuner that can clearly show Hz to a minimum of two decimal places.



SCALE INIT