

## THONK SYNTH τ01 VCO

### VOLTAGE CONTROLLED OSCILLATOR

Eurorack DIY Kit  
Build Instructions



## OVERVIEW

For the most recent version of this document please visit

<https://www.thonk.co.uk/shop/thonk-synth-t01-vco-kit/>

This document should be used in conjunction with the relevant user manual.

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All Thonk kits are sold under our standard Terms and Conditions -

<http://www.thonk.co.uk/faq/>

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## 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 [http://youtu.be/I\\_NU2ruzyc4](http://youtu.be/I_NU2ruzyc4) and the **Adafruit guide to excellent soldering** – <http://bit.ly/1l77tF4>

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.**

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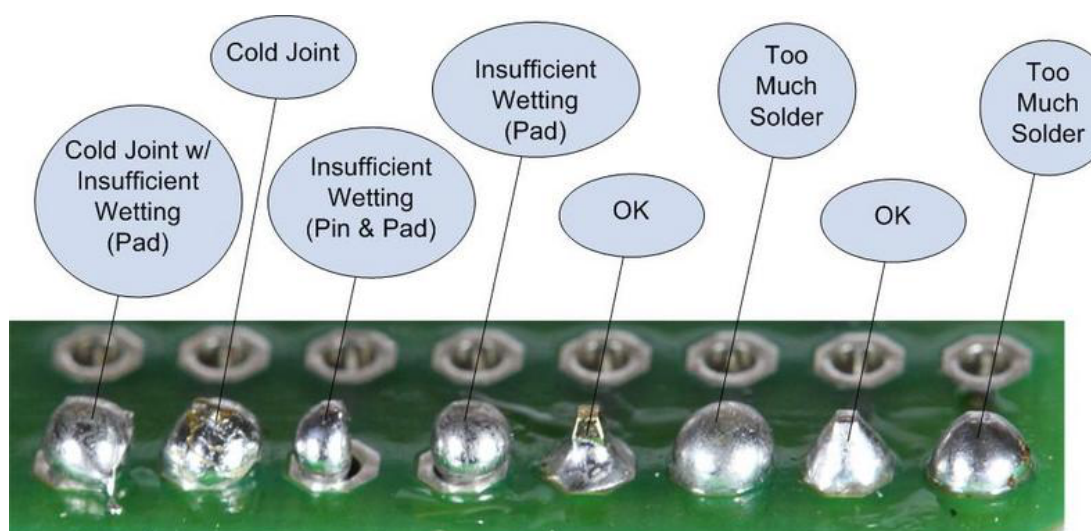
## TOOLS REQUIRED

Soldering iron 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](https://www.adafruit.com/blog/2016/01/27/adafruit-guide-to-excellent-soldering/) and is reproduced under an Attribution-Sharealike creative commons license - <http://creativecommons.org/licenses/by-sa/3.0/>



## BUILD INSTRUCTIONS

1.

First take the main board and solder the 2x5 power header to the rear of the board (the side without the SMD components).

Check that this is soldered flush to the board by first soldering one joint and reflowing and adjusting where necessary.



2.

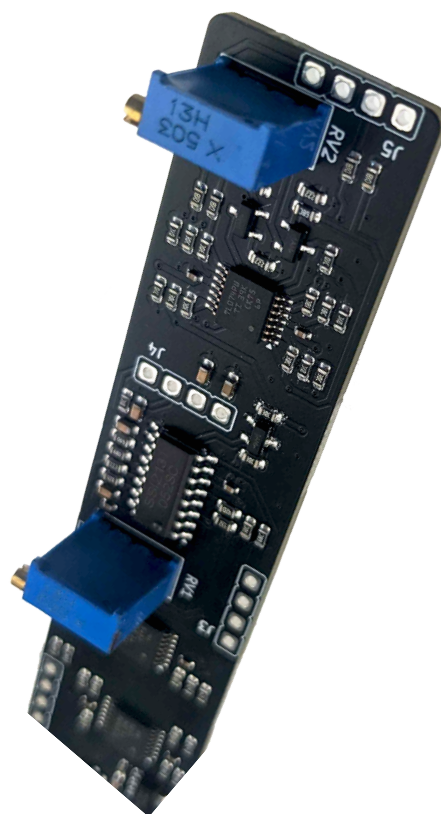
Continuing with the main board, take the 5K and 50K trimmers.

**Before soldering check the trimmers are placed in the correct positions**

The 5K trimmer (labelled “502”) must be placed in the position marked RV1/502

The 50K trimmer (labelled “503”) into position RV2/503.

**Ensure the trimmers are soldered flush to the board and following the footprint with the screws lining up with the edge of the module.**

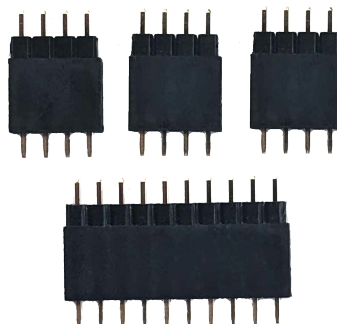






3.

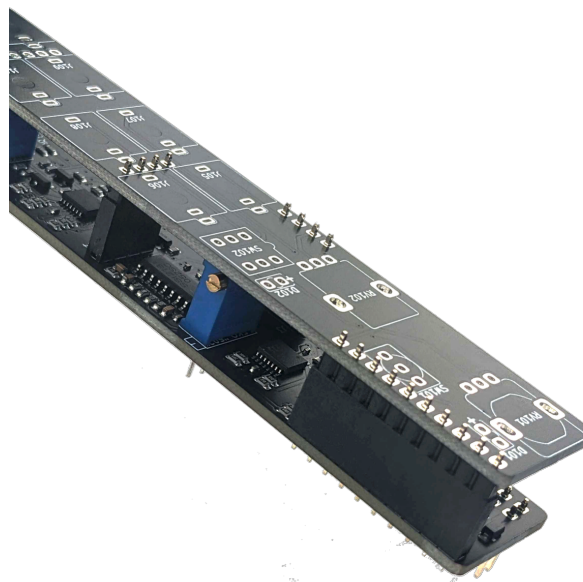
To make the connections between the PCB's, first insert the sets of pins together before placing the socket side on the main board and the pins onto the control board. See picture for reference.



With the two PCB's held securely together, solder one joint of each set of pins on each PCB before checking all headers are flush to the surface of the PCB's.

Reflow and adjust the pins of the headers as necessary before soldering all remaining pins.

The main board is now complete - pull the two PCB's apart and set aside the main board for the next steps.

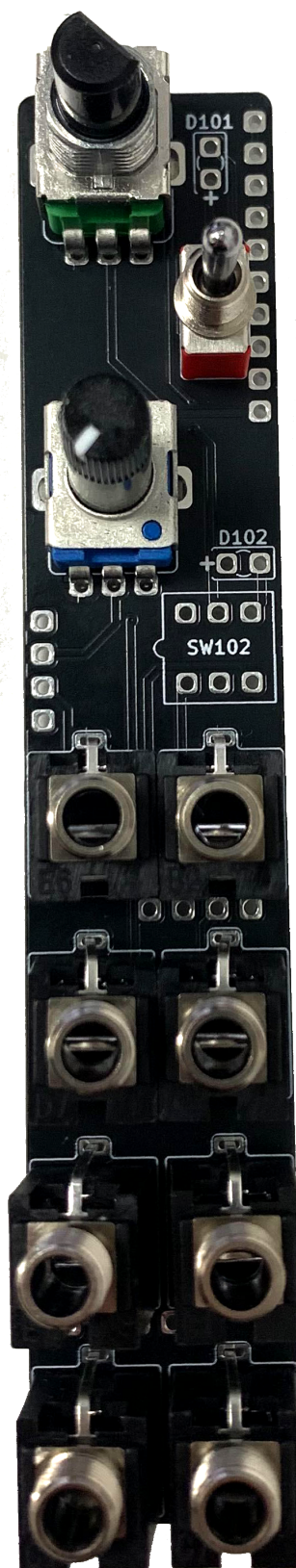




4.

Take the control board and after removing the jack nuts place the green pot, blue tall trimmer, red toggle switch and thonkiconn jacks on the PCB.

**DON'T SOLDER YET** – follow the remaining steps before resuming soldering at step 9.

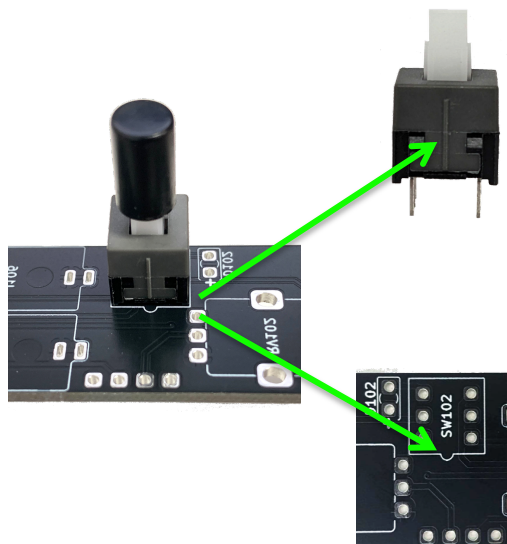




5.

Push the black button cap firmly onto the white latching button before placing it on the PCB, this will help it sit in the panel correctly.

**CHECK ORIENTATION** – This component is polarized and must be placed as pictured with the notch on the switch body lining up with the PCB footprint.

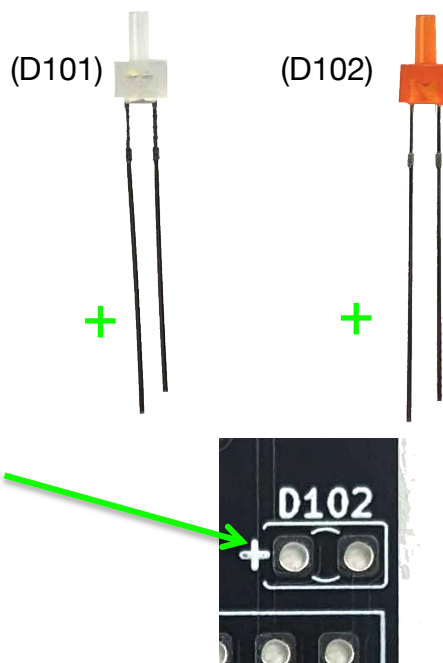


**DON'T SOLDER YET**

7.

Place the LED's as pictured with the clear bi-colour LED in position marked D101 (next to the fine tune knob) and the orange LED into position marked D102 (above the button)

**CHECK ORIENTATION** – these components are polarized and must be placed as pictured with the long leg inserted into the pad marked with '+'. **DON'T SOLDER YET**



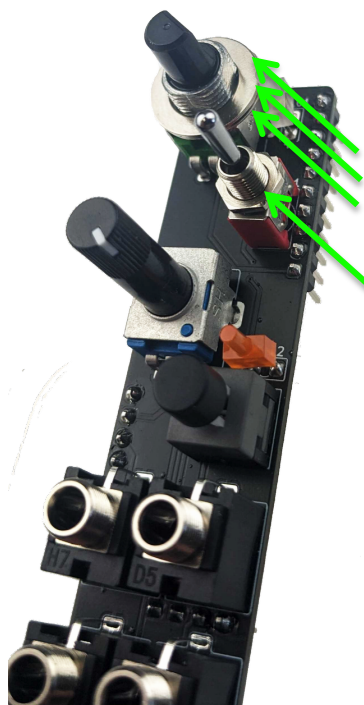


6.

Place the provided silver nut onto the red switch and all three washers onto the green pot as shown.

These will keep the components level between the panel and PCB.

**DON'T SOLDER YET**



8.

Place the panel and secure the pot, switch and jacks with the remaining nuts, tighten firmly to hold all components in place but don't overtighten.

Use masking tape or similar placed over the LED holes to keep them flush against the panel whilst soldering.

**DON'T SOLDER YET**





9.

Solder all 44 joints on the pots, switches, jacks and LED's.

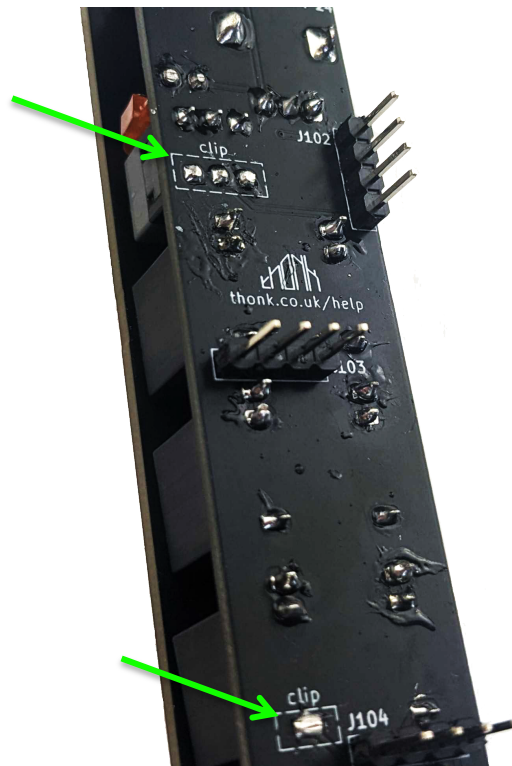
Ensuring all components stay lined up between the panel and PCB during the process.



10.

Once all joints are soldered, clip the four joints marked on the PCB as pictured so they are nearly flush to the surface.

This is necessary so that the solder joints don't get in the way of the trimmers on the main board.

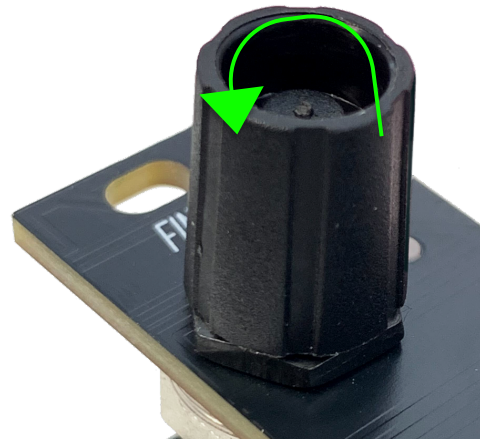




11.

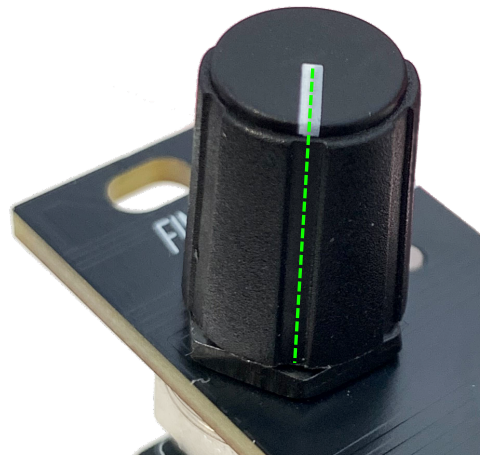
For the next step find the knob and knob cap which come as separate pieces.

First place the knob onto the pot, with the pot turned fully counter clockwise.



This is your 'zero' point for the knob.

From here you can clip on the cap – lining up the pointer and indent on the knob at the zero point.



12.

Place the two PCB's back together and finally attach the power cable.

Be sure to follow the polarity by lining the red stripe on the cable up with the text on the PCB. Picture shown for reference.







13.

The module is now complete – follow the steps detailed in the user manual to calibrate your new Thonk Synth VCO.

Find the manual and other product info on the Thonk website.

<https://www.thonk.co.uk/shop/thonk-synth-t01-vco-kit/>

