

# Riot ST VCF Full Kit – Step-by-Step Assembly Guide

This guide describes the step-by-step assembly of the Riot ST VCF Full Kit. Please read the entire guide before starting the build.

### Tools required:

Soldering iron (*fine tip recommended*)

## Solder

## Side cutters

Small Allen key or screw driver (*for knob set screw*)

Multimeter & Oscilloscope (*recommended*)

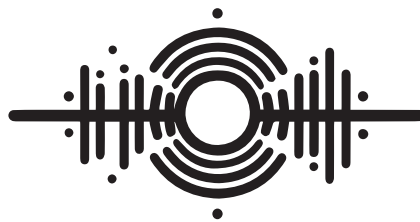
## General Notes / Warnings

Make sure to observe component orientation where applicable.

Do not overtighten nuts or screws.

Take your time and check each step before soldering.

Always power the module with the correct Eurorack polarity.



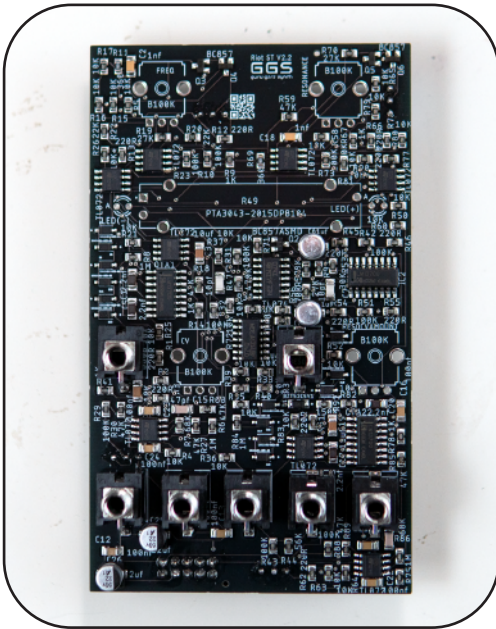
## Step 1 – Install the bottom-side components

Solder the following parts on the bottom side of the PCB:

2 x 500R trimmer resistors

2 x 100K trimmer resistors

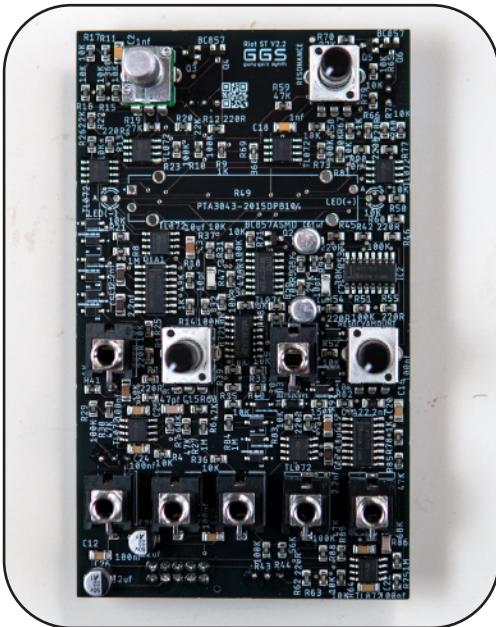
1 x 10-pin IDC socket



## Step 2 – Install the jack sockets (top side)

Solder the following on the top side of the PCB:

7 × 3.5 mm jack sockets (*PJ398SM* or *PJ-301HM*)

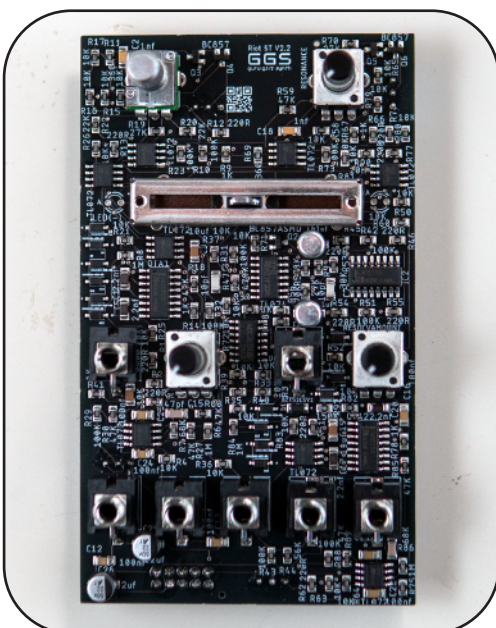
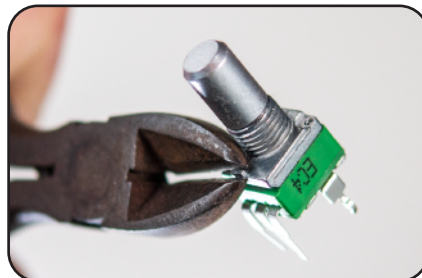


## Step 3 – Install the potentiometers

3 × plastic shaft potentiometers (*B100K*)

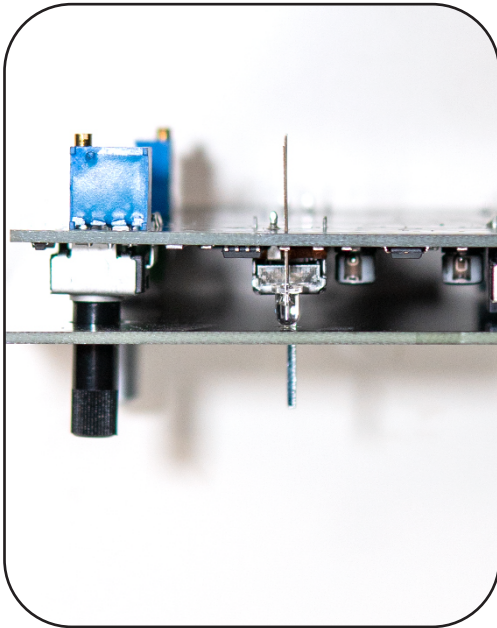
1 × metal shaft potentiometer (*B100K*)

Before installing, cut off the anti-rotation tab on metal shaft potentiometer if present.



## Step 4 – Install the fader

Place the fader onto the PCB, ensure it sits flat and aligned, then solder it in place.



### Step 5 – Install the LEDs

Insert the LEDs into the PCB.

Place the front panel over the components to adjust the LED height so they sit at the correct position.

Once aligned, solder the LEDs in place.

### Step 6 – Install the knobs and fader cap

Push the knobs onto the potentiometer shafts and install the fader cap.





## Calibration

### Input Level Adjustment

Set the Frequency control fully clockwise, Resonance fully counterclockwise, and place the Stereo Space fader in the center position.

Connect a sound source - for example, a square wave from a VCO — to the left input. Turn the L In LVL Trim (R28) all the way down, then slowly increase it until you see an 8V peak-to-peak square wave on the output. 8Vpp gives enough headroom for resonance. Repeat the same procedure for the right channel by adjusting the R In LVL Trim (R87).

### Frequency Resolution Adjustment

Set Resonance fully counterclockwise, and the Stereo Space fader in the center position.

Connect a square wave from a VCO to the left input. Adjust the L Freq. Trim (R24) to spread the filter sweep evenly across the Frequency potentiometer's range — initially, the sweep may be limited to a small section of the control.

Repeat the process for the R Freq. Trim (R74).

### Fine Tuning Frequency

Once both channels track properly, perform a fine-tuning adjustment:

Insert a jack into the Stereo Space CV input and leave the other end unconnected. This disables the fader, putting the module into mono mode.

Now connect both the left and right outputs to a two-channel oscilloscope, overlap the waveforms, and check for any differences at various cutoff frequencies.

Adjust only one trimmer (for example, the R Freq. Trim) to align the right channel's response with the left channel for a perfectly matched mono behaviour.



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