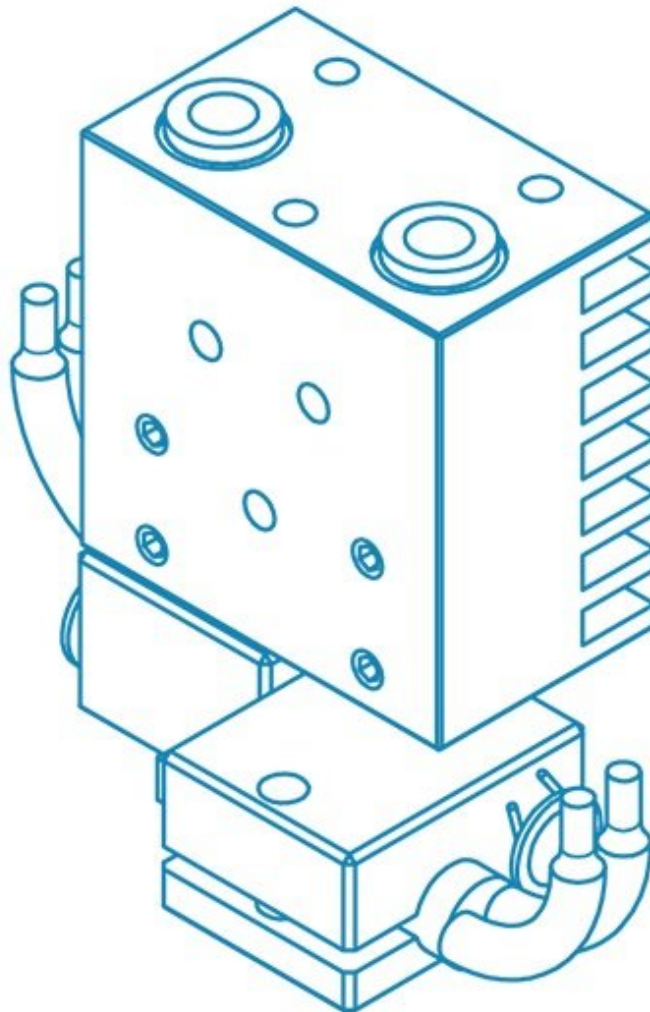




# Chimera+ Aircooled Assembly

Assembly steps for Chimera

Written By: Daniel Halsall





## TOOLS:

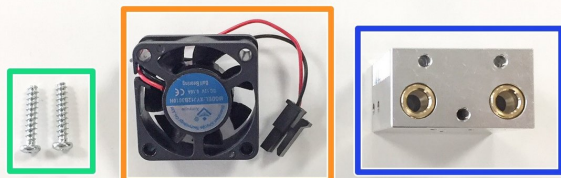
- [Philips Screwdriver](#) (1)
- [Hex Wrench, 1.5mm](#) (1)
- [Hex Wrench, 2.5mm](#) (1)
- [Multimeter](#) (1)



## PARTS:

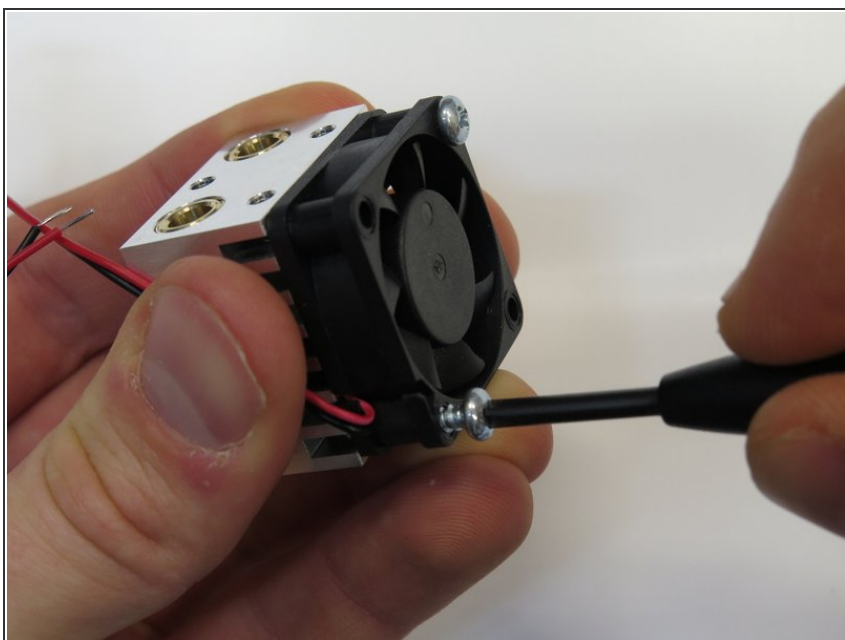
- [Plastic Screws](#) (4)
- [Collet](#) (2)
- [Collet Clip](#) (2)
- [30mm Fan](#) (1)
- [Cyclops Heatsink](#) (1)
- [PTFE Tubing](#) (2)
- [M3 Grub Screw](#) (10)
- [M3x10 Socket Dome Screw](#) (6)
- [V6 Nozzles](#) (2)
- [Heater Cartridge](#) (2)
- [V6 Heater Block](#) (2)
- [Kraken Heat Break](#) (2)
- [Thermistor Cartridge](#) (2)
- [M3 Washer](#) (2)
- [Thermal Paste Sachet](#) (1)
- [Cable-Tie](#) (1)
- [Silicone HotEnd Sock](#) (2)

## Step 1 — Gather Fan Parts



- Gather
  - 30mm Fan
  - 2 Plasti-fast Screws
  - Cyclops/Chimera Heatsink

## Step 2



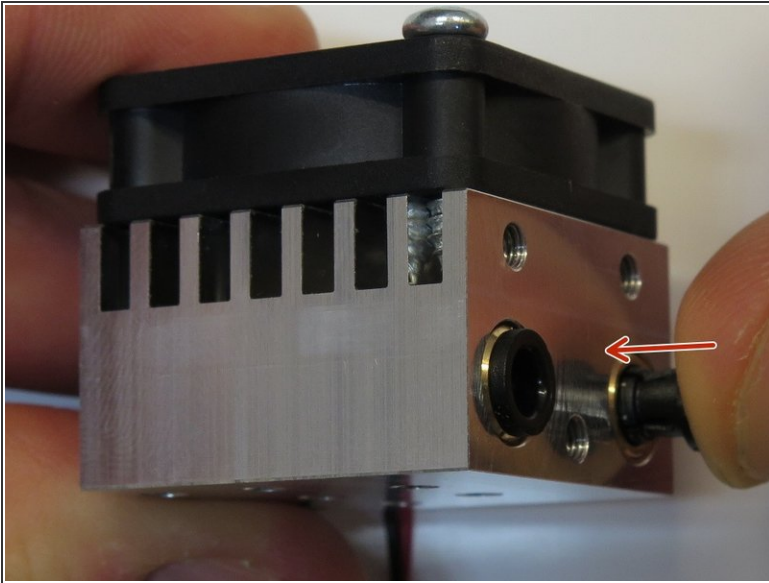
- ⚠ The sticker of the fan must face towards to fins of the heatsink in order that the fan blows air through the heatsink.
- ⓘ Plan the direction you want your wire from your fan to come out.
- Screw in the fan onto heatsink using the two supplied silver self tapping screws for metal. **Use the top-right and bottom-left screw holes.**

### Step 3 — Gather PTFE Tubing Parts



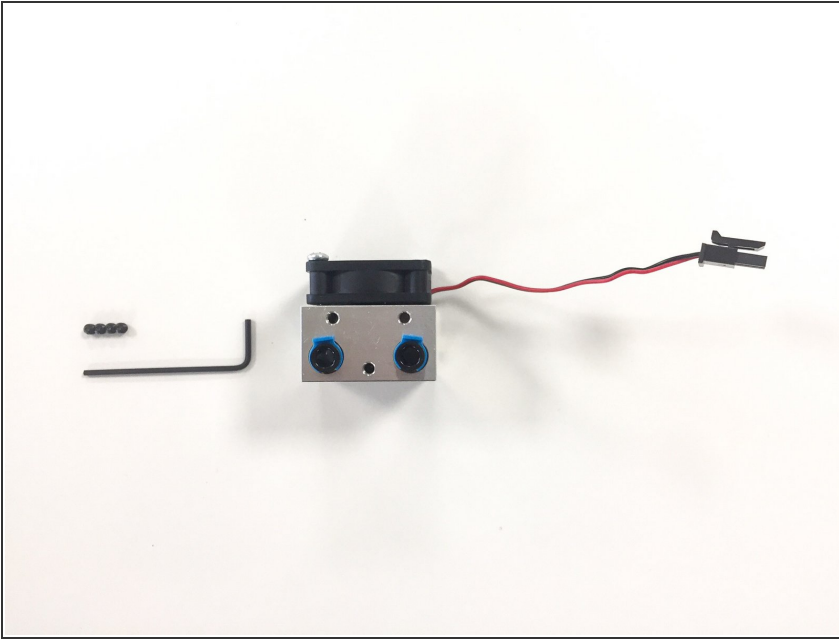
- Gather
  - 2 Collets
  - Heatsink
  - PTFE Tubing

## Step 4 — Bowden Prep



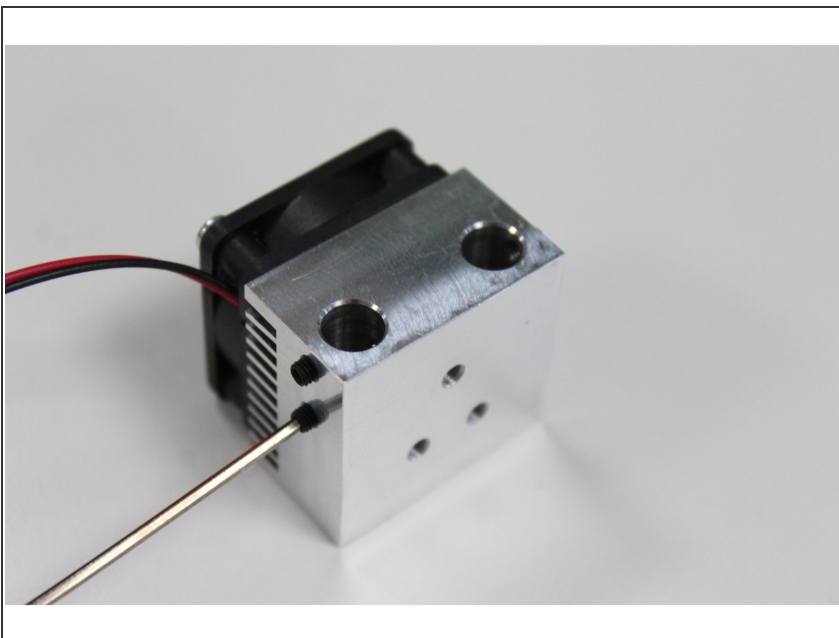
- ① Because the Cyclops/Chimera heatsink is so compact, it is best to use it with a bowden setup.
- ① If you still want to use a direct setup, skip inserting the collet, but make sure you still insert PTFE tubing to guide filament through the heatsink.
  - Press in the two collets into the holes with the brass ring.
  - Connect the two collet clips

## Step 5 — Gather Heat Break Grub Screws



- Gather
  - Heatsink
  - 4x 3mm Grub Screws
  - The Smaller, 1.5mm Hex key

## Step 6



- Screw in the 4 grub screws into the sides of the heatsink.
- These screws will tighten the heat breaks to the heatsink later. For now, just screw them in so you don't lose them.

## Step 7 — Mount Heatsink




- Use the 3 M3 dome screws left over to mount your heatsink to your printer, when you're ready to do so.

## Step 8 — Assemble Nozzle and Heat Break

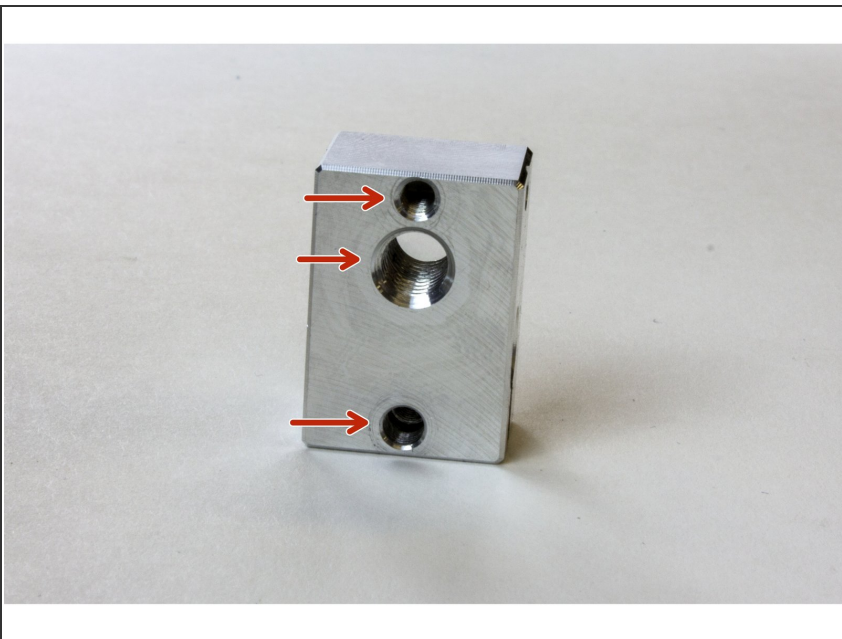


- Gather:
  - 2 x Heater Blocks
  - 2 x Nozzles
  - 2 x Kraken Heat Breaks

 Notice that the Kraken heat breaks are fully smooth, compared to the Cyclops heat breaks which have a little little flat bit.



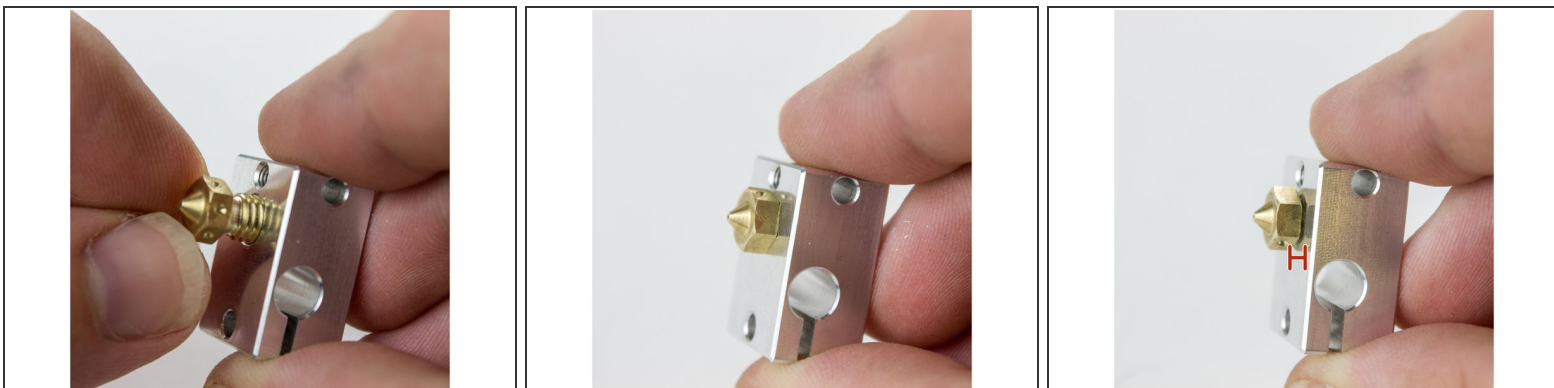
## Step 9 — Orient your Heater Blocks



**i** Before starting work on your heater blocks, make sure that you're going to screw your nozzles into the correct side.

- You should be looking at the side of the heater blocks with three holes in it

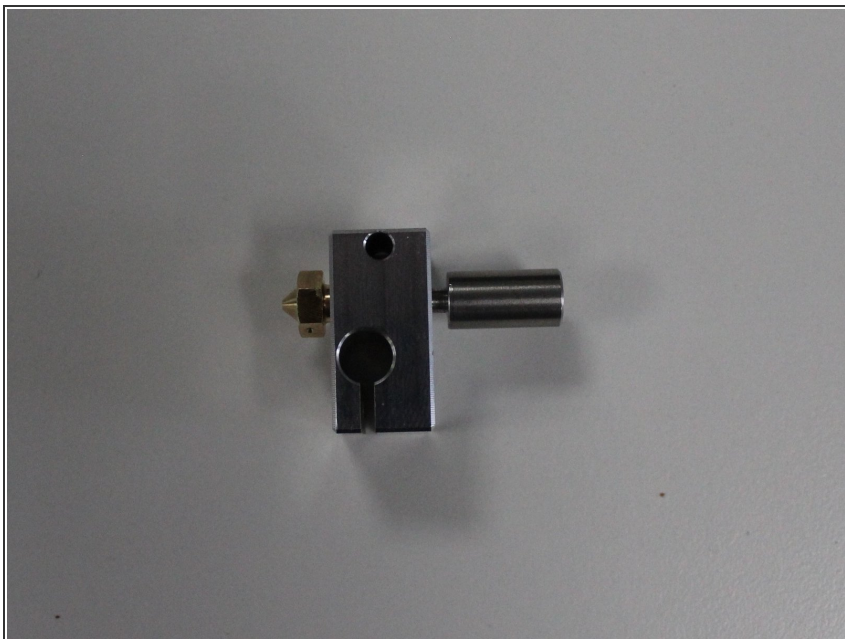
## Step 10 — Screw in Nozzles



- Screw in the nozzle all the way into the heater block. Don't worry about tightness yet.
- Then, unscrew the nozzle by a 1/4 of a turn. This will leave a little space to tighten after screwing in the heat break.



## Step 11 — Screw in Heat Breaks



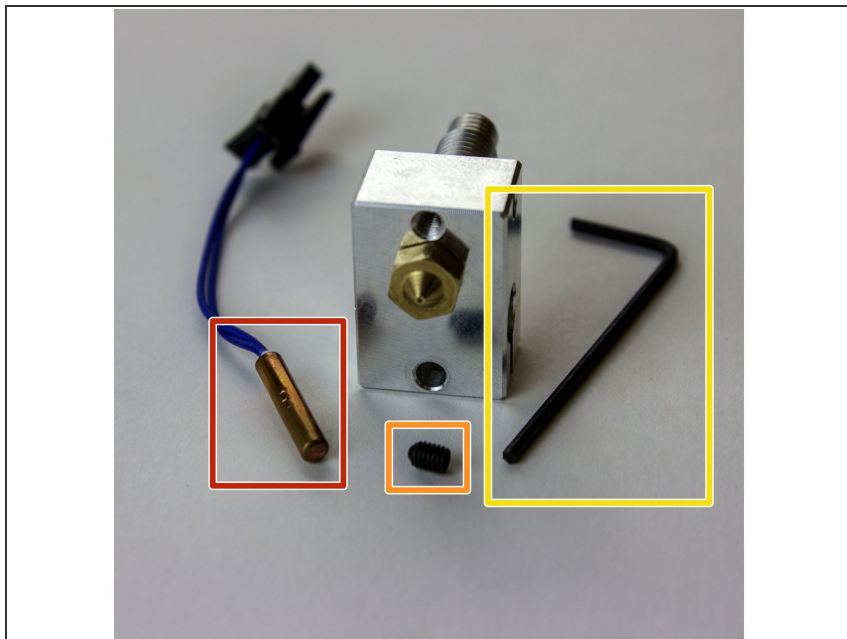
- Screw in the heat break until it touches the nozzle.
- Tighten the nozzle against the heat break. No need to over tighten, we'll be hot-tightening later.
- These pictures show normal V6 heat breaks, instead of the Kraken ones you're using (which are smooth).

## Step 12 — Heat Break Check



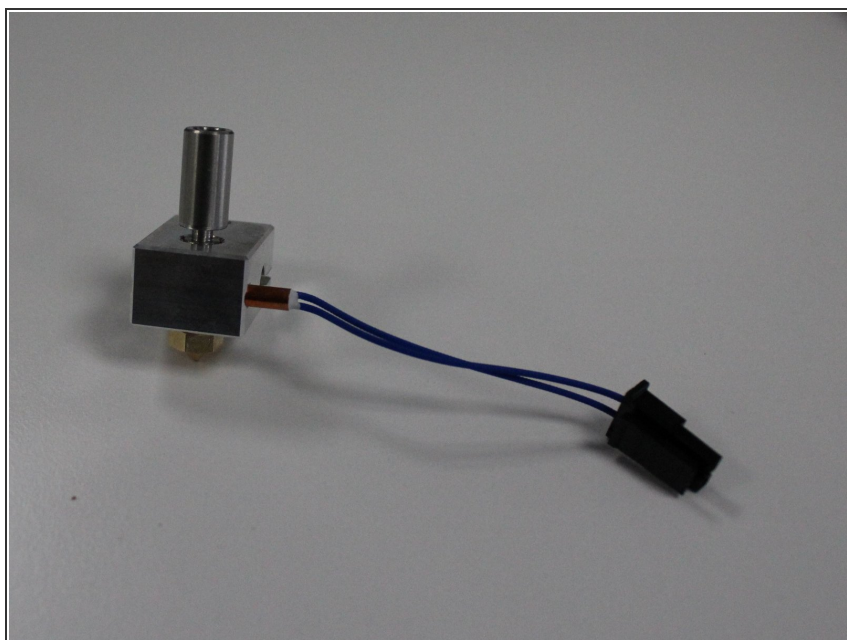
- ⚠ Double check that your nozzle is still almost flush with your heater block.
- If there is significant space between the nozzle top and the heater block you should re-adjust your nozzle and heat break to eliminate that space.

## Step 13 — Gather Thermistor Parts



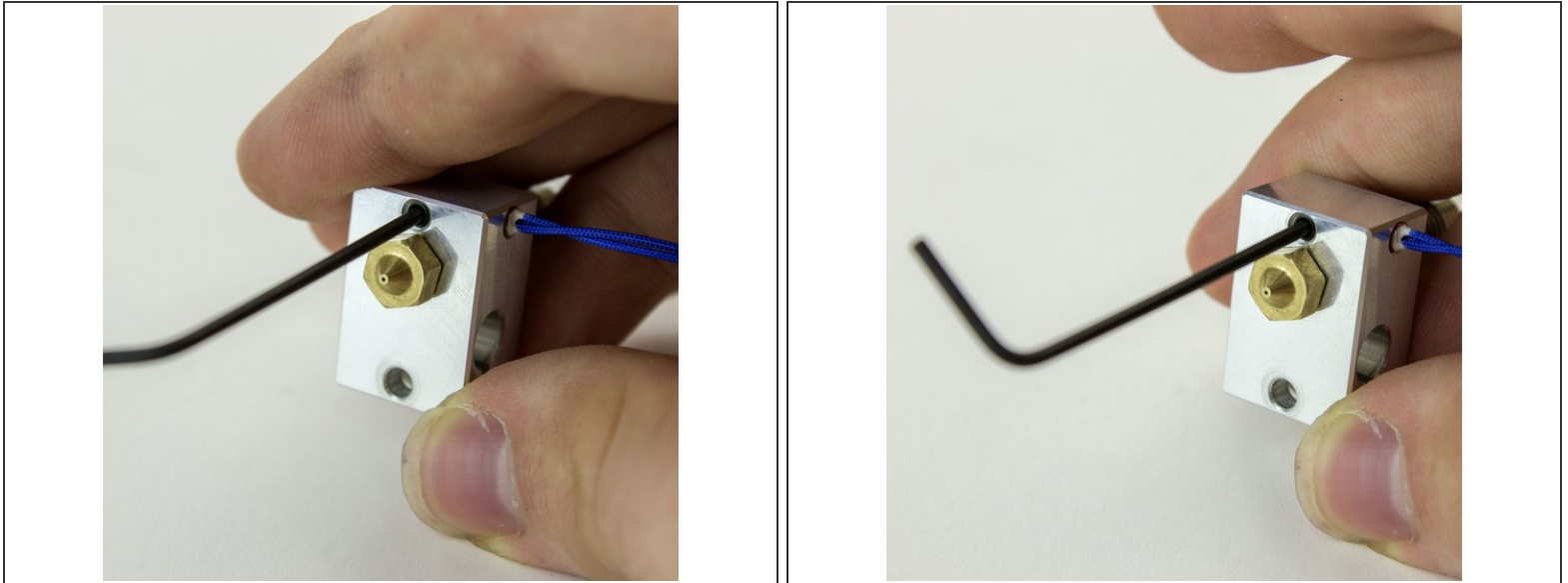
- Gather
  - 2x Thermistor Cartridges
  - The Smaller, 1.5mm Hex Wrench
  - 2x 3mm Grub Screws
- 2x Heater Blocks

## Step 14 — Slide in Thermistors



- Slide in the thermistor cartridge.
- You can slide the cartridge in either direction so that the wires extend from one side or the other of your heater block. Think about how you'll be organising your wiring to decide which makes sense for your printer.

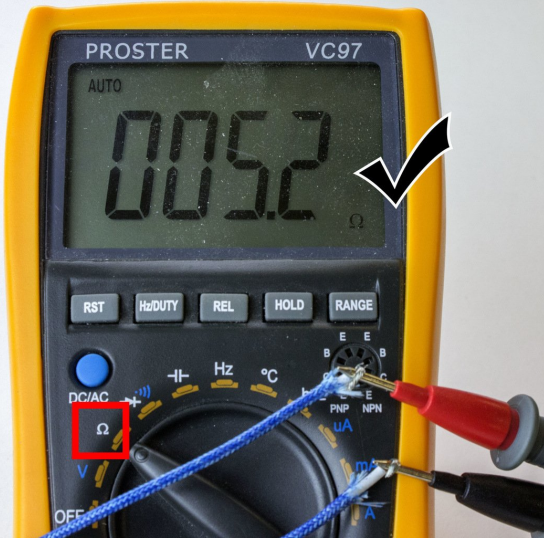
## Step 15 — Screw in Grub Screw



- Screw in grub screw until it just touches the thermistor.
- Tighten M3 grub screw by an 1/8 of a turn.
- Do not over tighten the screw. The thermistor cartridge is soft, and you might deform it if you over-tighten the screw.

## Step 16 — Test Heater Cartridge

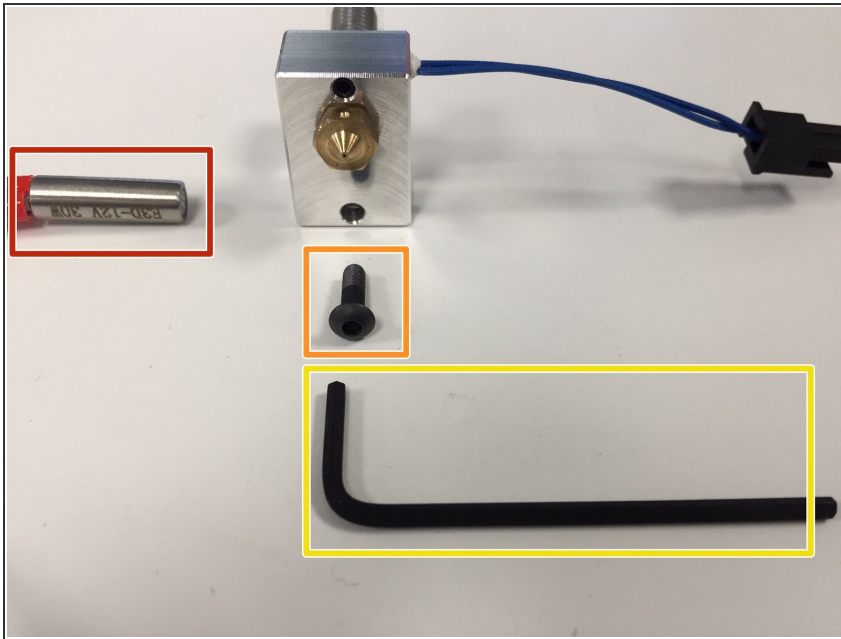
This is within acceptable bounds  
for a 12v heater cartridge



- Before you install your heater cartridge, you should double check that you both purchased and received the correct voltage cartridge. *This process is less annoying than putting out a house fire.*
- If you have a 12v30w heater cartridge, your multimeter should read 4.8Ω
- If you have a 24v30w heater cartridge, your multimeter should read 19.2Ω
- Your cartridges resistance may deviate slightly from these numbers, which is fine. We're mostly interested in verifying which cartridge type you have.

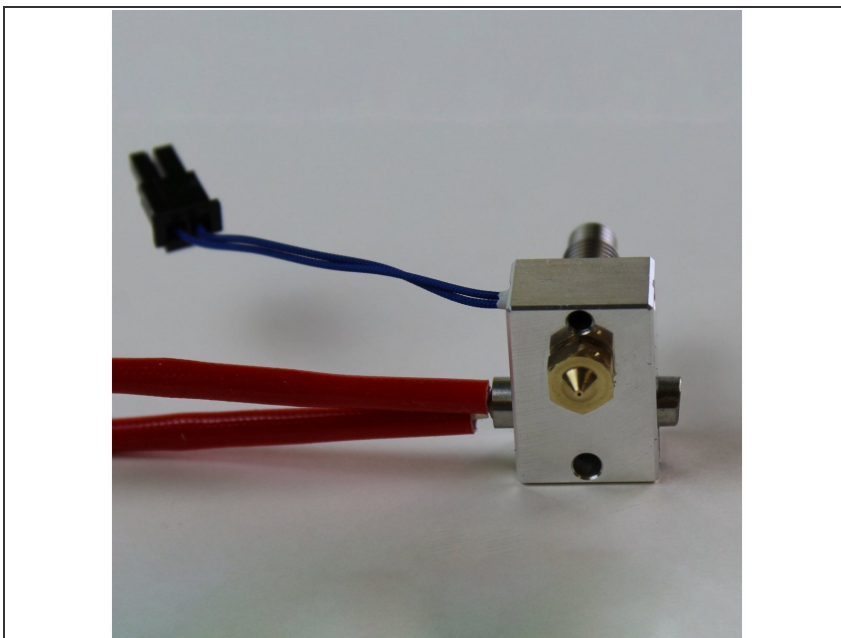


## Step 17 — Gather Heater Cartridge Parts



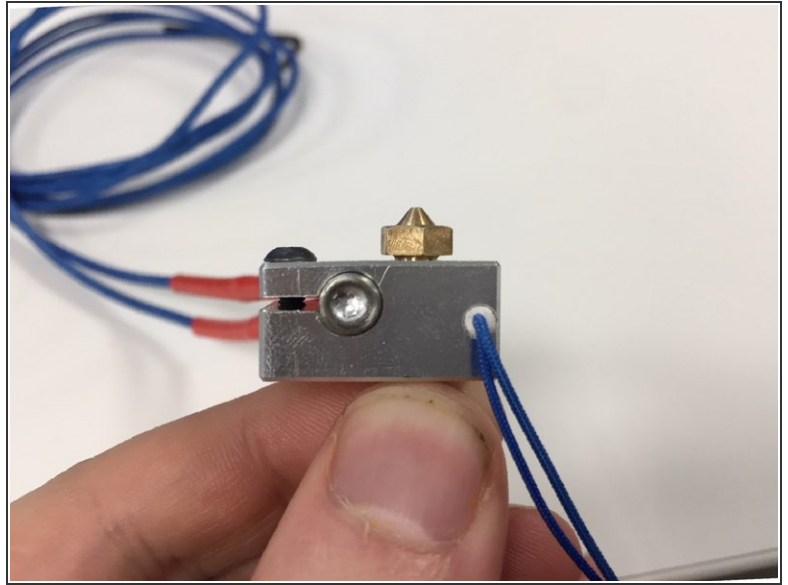
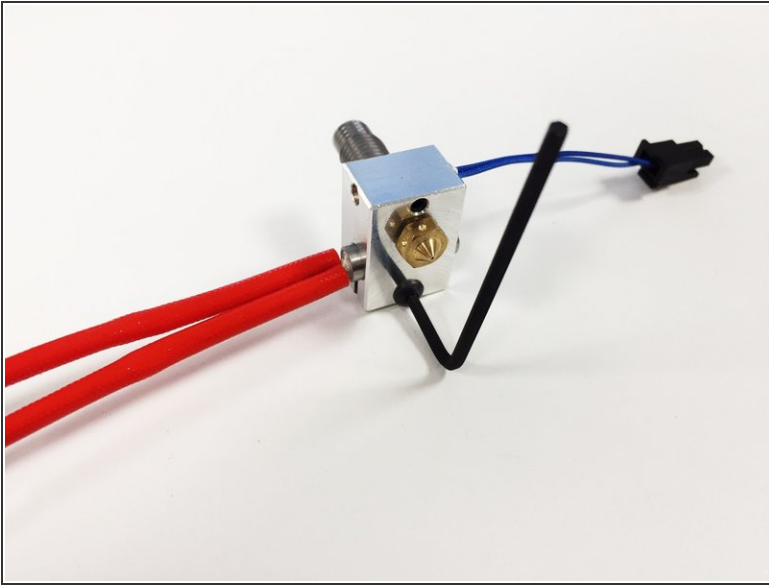
- Gather the parts you'll need to install your heater cartridge:
  - Heater Blocks
  - 2x Heater Cartridges
  - The Larger, 2.5mm Hex Wrench
  - Two of the longer M3x15 Screws.

## Step 18 — Slide in Heater Cartridges



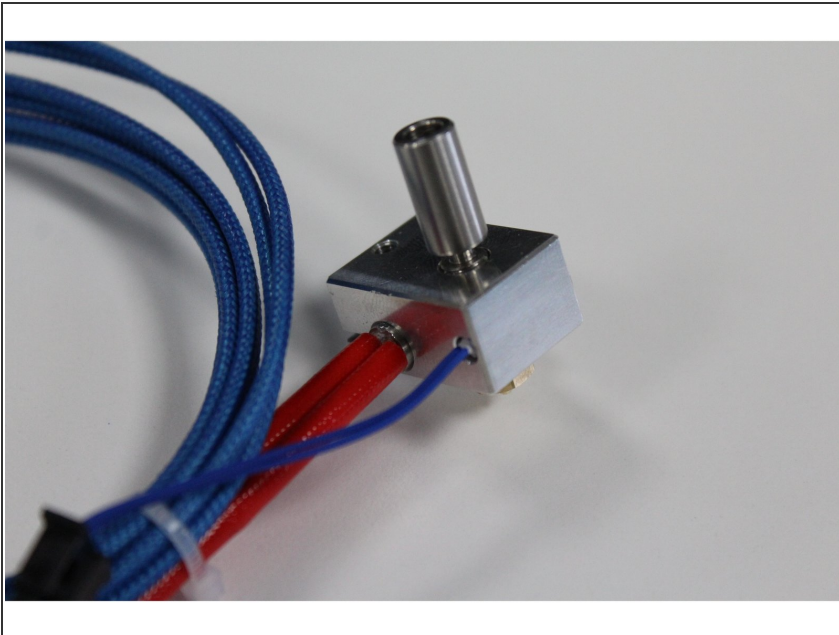
- Slide in the heater cartridge. Typically you'd want the wires to come out the same side as your thermistor wires.

## Step 19 — Screw in M3x15 Screw



- Tighten the M3 x 10 socket dome screw (with the M3 washer on it) with 2 mm hex key until the clamp deforms slightly (as shown in the second picture).

## Step 20 — Tug Test



- Before moving on, gently tug on your thermistor and heater cartridge wires. We don't want them slipping out during a print!

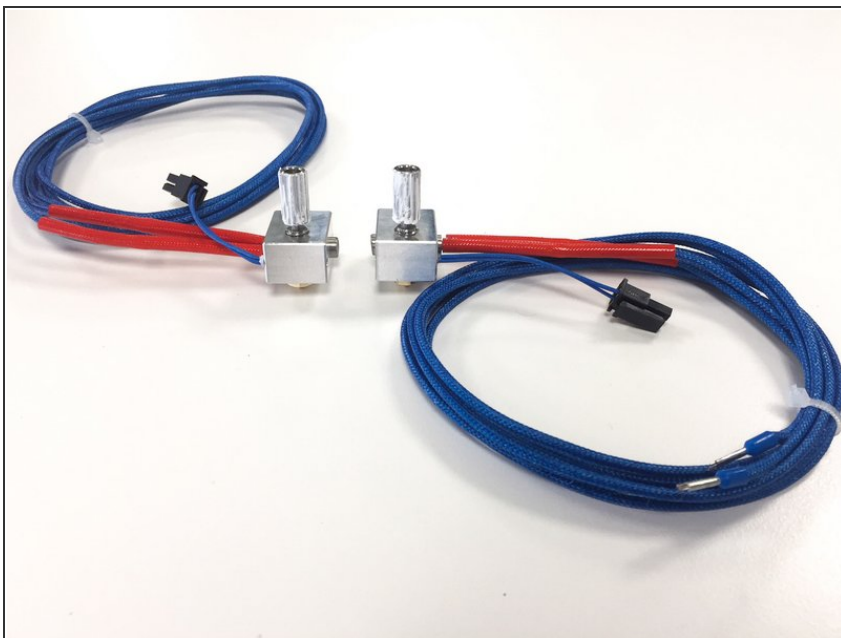


## Step 21 — Gather Thermal Paste



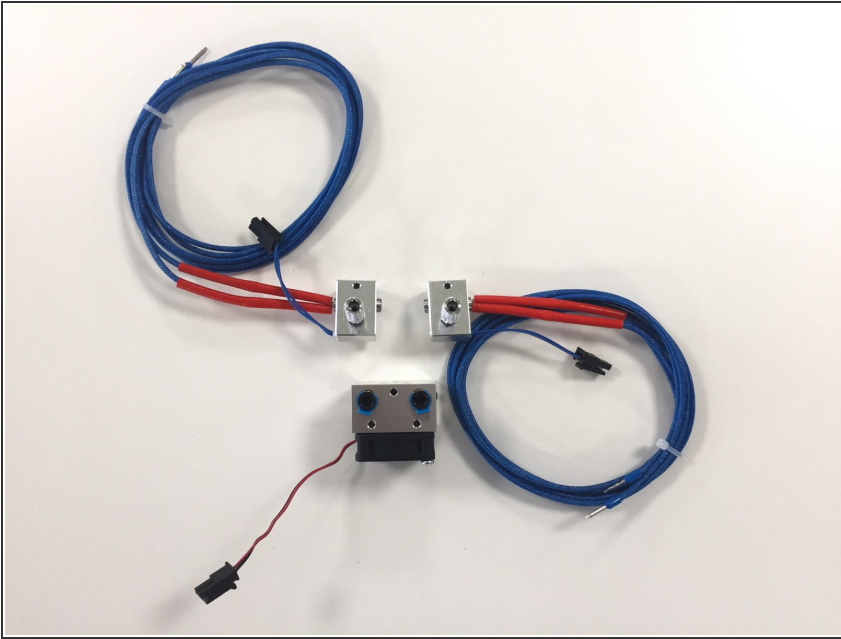
- Gather
  - Thermal Paste Sachet
  - 2x Assembled Heater Blocks

## Step 22 — Apply Thermal Paste



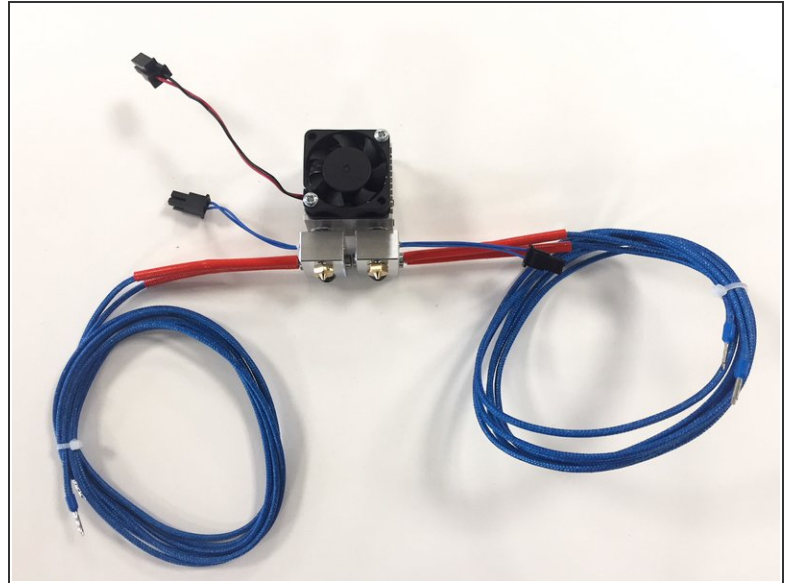
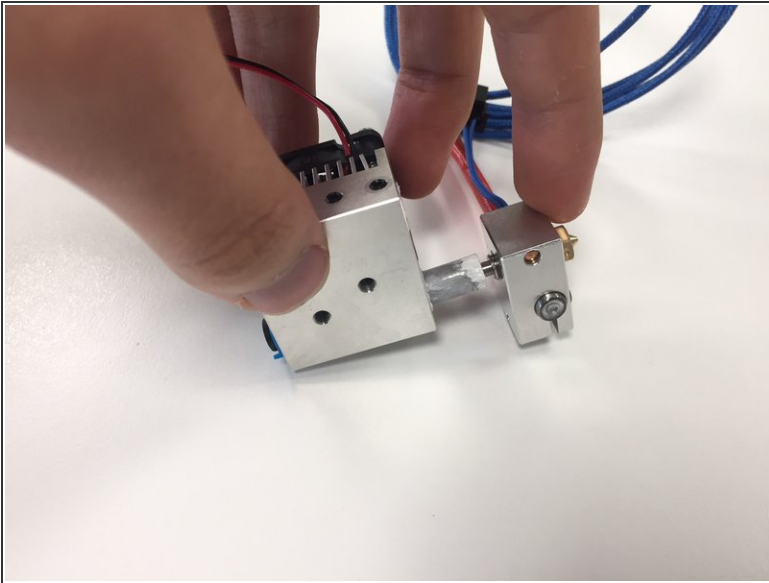
- Apply the thermal paste to your Kraken heat breaks.
- ① You don't have to use the whole sachet for both heat breaks.
- ★ Wash your hands after working with thermal paste.

## Step 23 — Hot-side + Cold-side



- Gather
  - Your assembled heater blocks
  - Your assembled heatsink

## Step 24 — Slide in heat breaks



- Slide the two heat breaks into your heatsink.
- ⚠ Ensure the bottom of the breaks are flush with the bottom of the sink.
- Tighten the four grub screws to secure the heatsinks
- ⚠ Do not over-tighten the grub screws—you don't want to damage the surface of the heat breaks. Only tighten them enough to hold the hot-sides in place.

## Step 25 — Clean up wiring



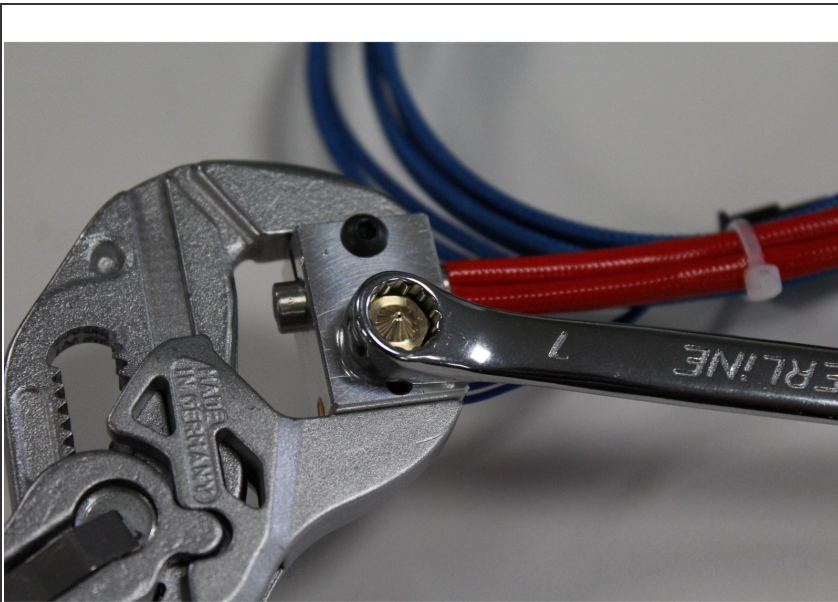
- Plug in your heater cartridges, thermistors, and fan into your electronics board.
- Make sure to cable manage as you go! You'll be happier later if everything is neat and tidy.

## Step 26 — Firmware Configuration



- You'll need to update your printer's firmware (or configure new firmware from scratch). Follow the link to the relevant guides, then come back to finish up:
  - [Marlin](#)
  - [Repetier](#)
  - [Smoothieware](#)
  - [RepRap Firmware](#)

## Step 27 — Hot-Tightening



- Using your printer's control software (or LCD screen), set both hotend's temperature to 285°C.
- Allow them to reach 285°C and wait one minute to allow all components to equalise in temperature.
- Gently tighten both nozzles whilst holding their heater blocks in place with a spanner. Use a smaller 7mm spanner to tighten the nozzle.
- You want to aim for 3Nm of torque on the hot nozzle—this is about as much pressure as you can apply with one finger on a small spanner.

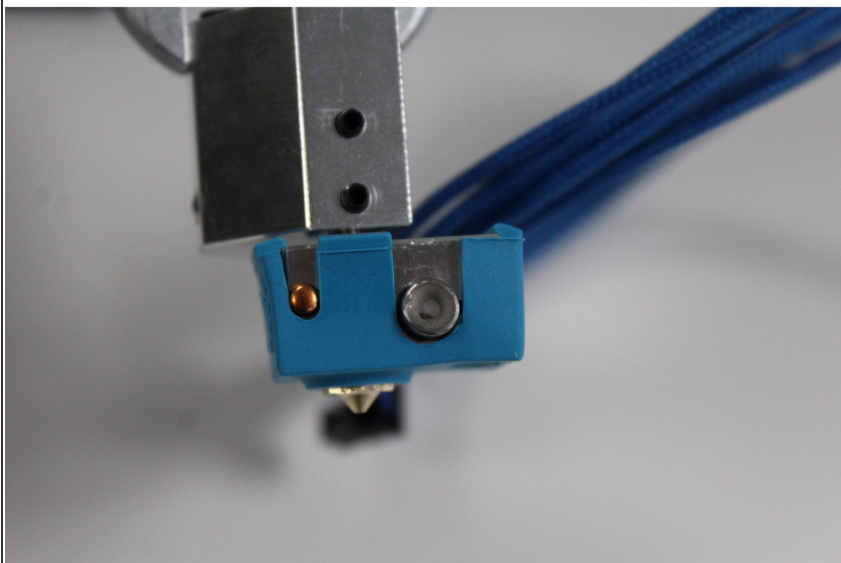
## Step 28 — Gather Socks



- Gather
  - Your Hotend
  - Either:
    - 2x Pro Socks
    - Or 2x Normal Socks

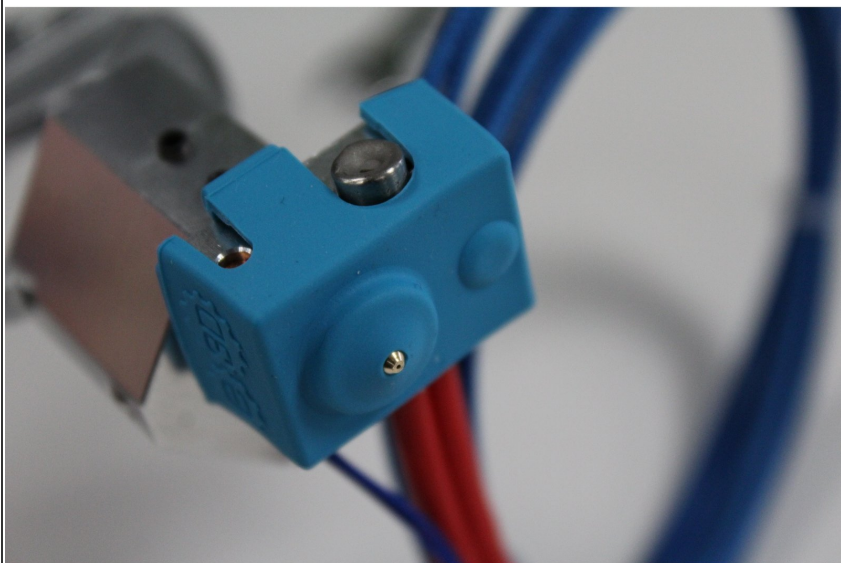


## Step 29 — Attaching Socks



- First, let your hotends cool down
- Slip your silicone sock over the hotend. Try to get each of the little clips on the top of the heat block so the sock will stay on better.
- ❗ It may look like your sock doesn't quite fit. Don't worry, when you heat up your HotEnd, the sock will expand, and the clips will fit just fine.

## Step 30 — Final Adjustments




- If you're using the pro sock make sure that the tip of the nozzle protrudes from the sock.
- If you're using a normal sock, it should look like the second picture when you're finished.

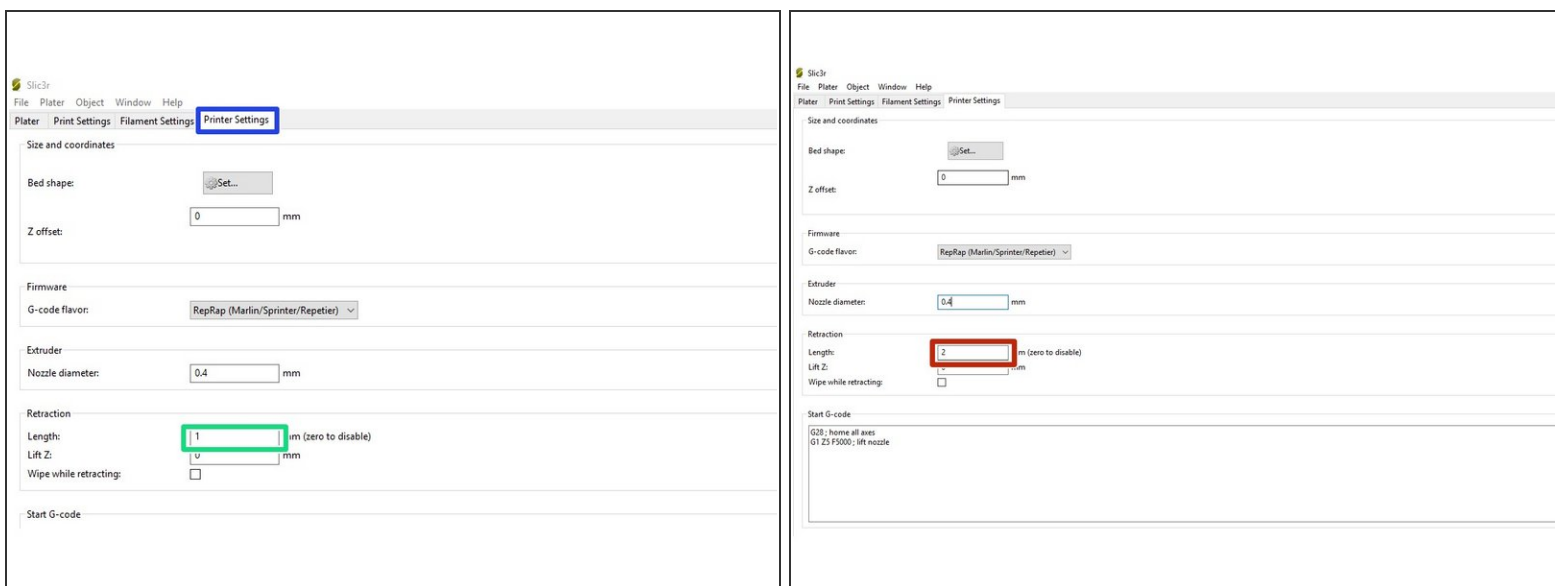


## Step 31 — PID Tuning



-  Make sure you have your HotEnd in a place where it can get hot without damaging anything or setting any fires! Mounted on your printer or held with a spanner will work fine. Take care not to touch your hotend when it heats up.
- Send the command M303 to autotune your PID. Remember to do it for both HotEnds. For more detailed instructions, check out [Thomas Sanladerer's video guide](#) for more information.

## Step 32 — Retraction Settings



- In your slicer of preference find the retraction settings. In Slic3r this is in printer settings.
- Start with a retraction length of 1 mm
- If you experience blobs or stringing on the surface of the print increase the retraction length to 2mm.
- ⚠ Do not increase the retraction length more than 2mm as this can lead to molten plastic being pulled into the heat break, increasing the likelihood of jams.

## Step 33 — CONGRATULATIONS



- You're ready to finish your calibration!
- You'll have to make sure your nozzles are level to each other. You can adjust this by unscrewing the grub screws holding the heat breaks in place, and gently moving them to be better aligned.
- You'll also have to calibrate the distance between your nozzles, so that they print on top of each other
- Don't forget to update your slicer to tell it you have two nozzles!