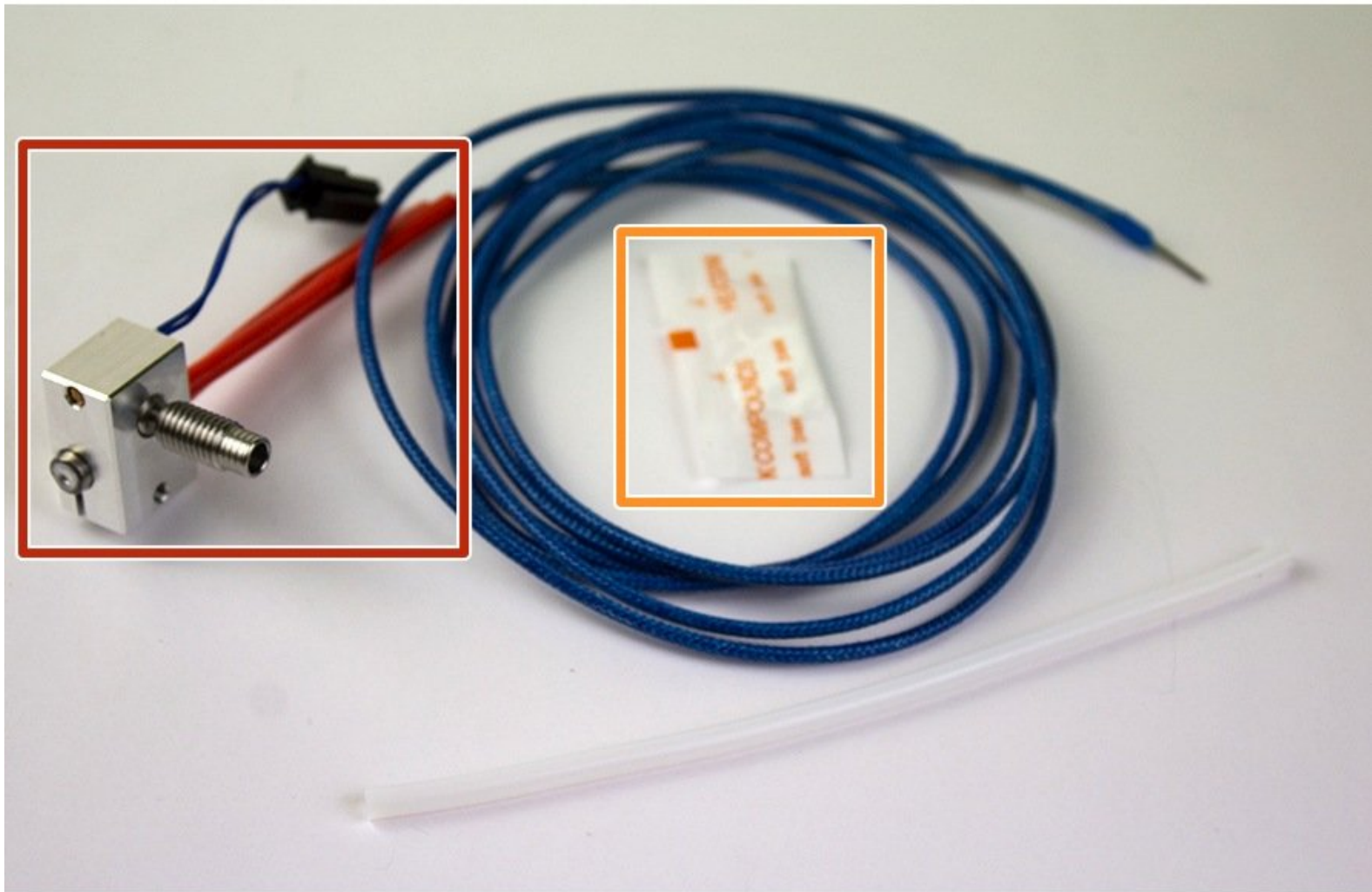




Prusa i3 MK1 with Titan + V6

Upgrade your older (non-mk2) Prusa i3 to Titan + V6!

Written By: John Bamford



INTRODUCTION

There are many incarnations of the Prusa i3, the one used in this example is but one of them, accordingly there may additional or redundant steps in this guide. Please familiarise yourself with the steps in the guide and establish if it is relevant and possible on your printer before choosing to continue.

The plethora of Prusa i3's available makes assuring compatibility hard.

This guide assumes the following:

- 8mm Rods using LM8UU Bearings (or similar).
- 45mm Rod Spacing, ~15mm Belt Spacing.
- One bearing on the top rod, two on the bottom, or the other way around.



TOOLS:

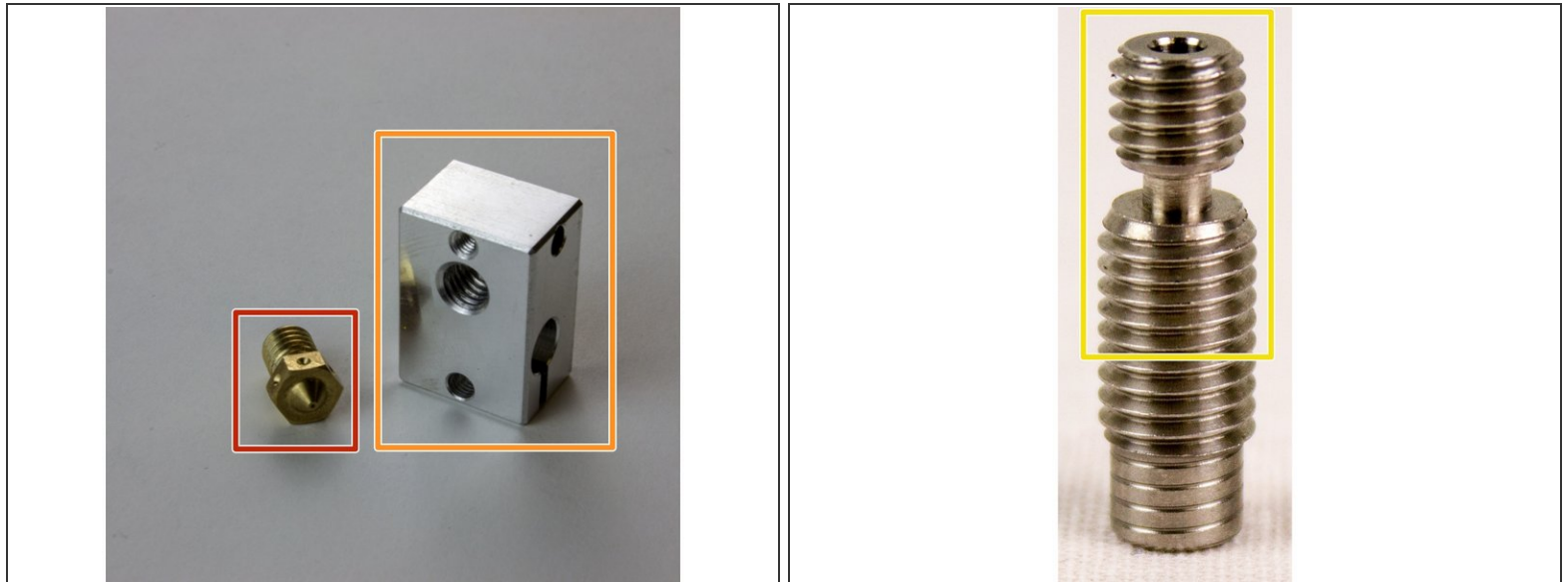
- [Hex Wrench, 2.5mm](#) (1)
- [Hex Wrench, 1.5mm](#) (1)



PARTS:

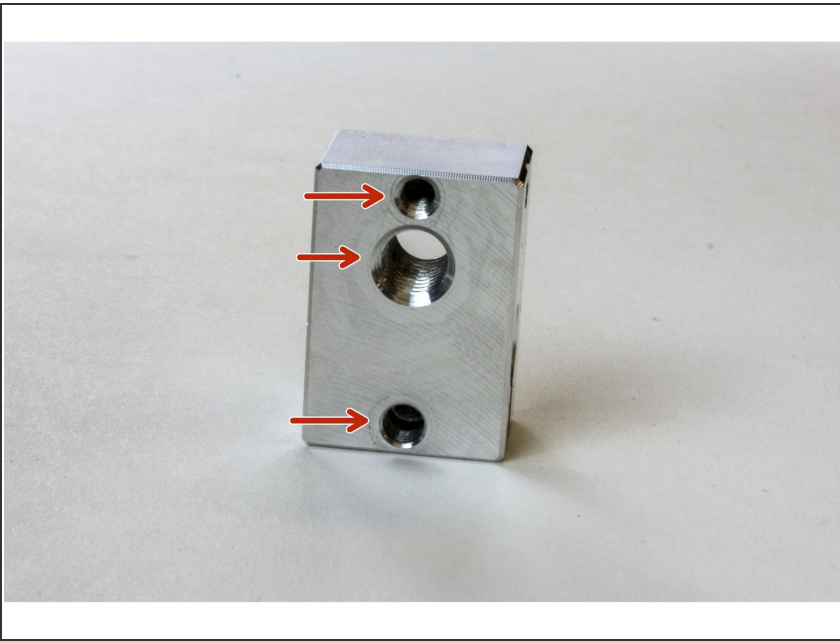
- [V6 Heater Block](#) (1)
- [V6 Nozzles](#) (1)
- [V6 Heat Break](#) (1)
- [Thermistor Cartridge](#) (1)
- [Heater Cartridge](#) (1)
- [M3 Grub Screw](#) (1)
- [M3 Washer](#) (1)
- [M3x10 Socket Dome Screw](#) (1)
- [Extension Wires](#) (1)

Step 1 — Gather parts



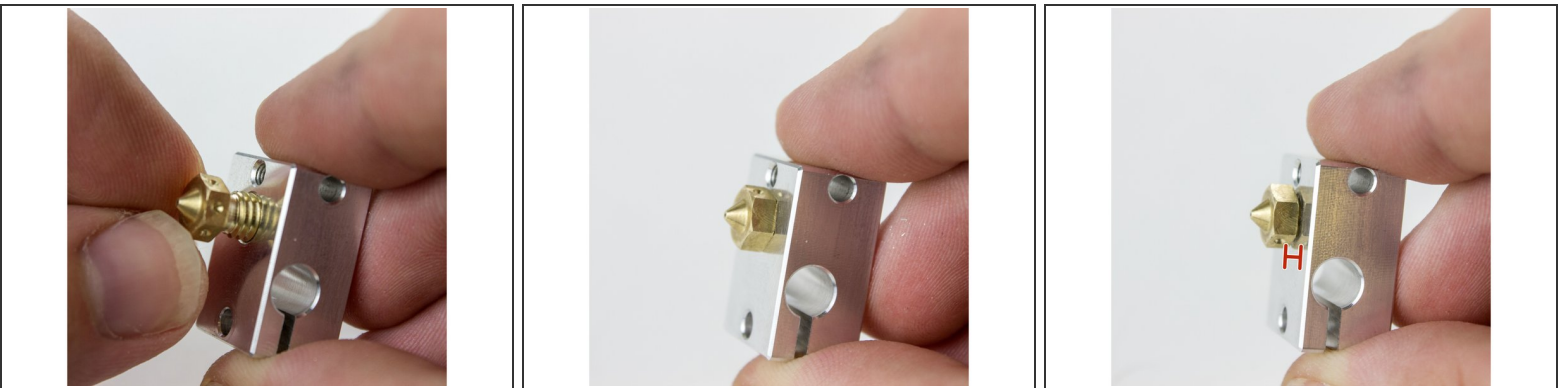
- Gather the nozzle, heater block and heat break:
 - Nozzle
 - Heater Block
 - Heat Break

Step 2 — Orientate heater block



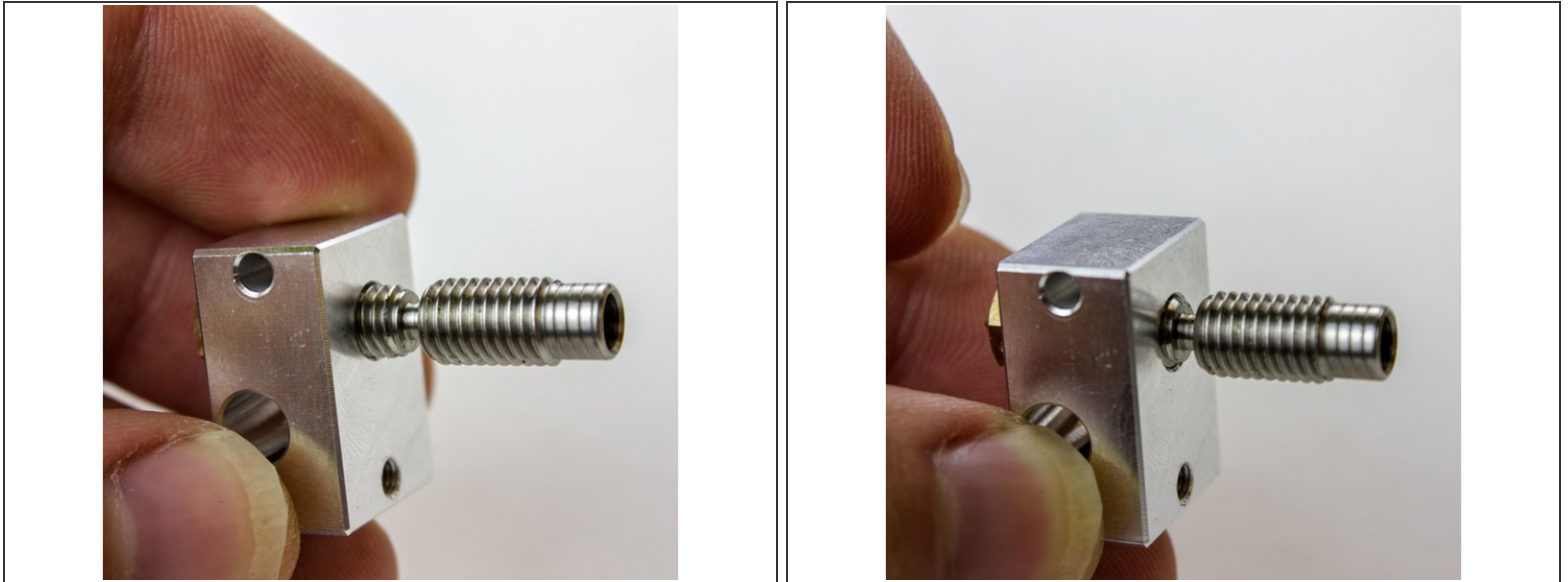
- ⓘ Before starting work on your heater block, make sure that you'll going to screw your nozzle into the correct side.
- You should be looking at the side of the heater block with three holes in it

Step 3 — Screw in nozzle



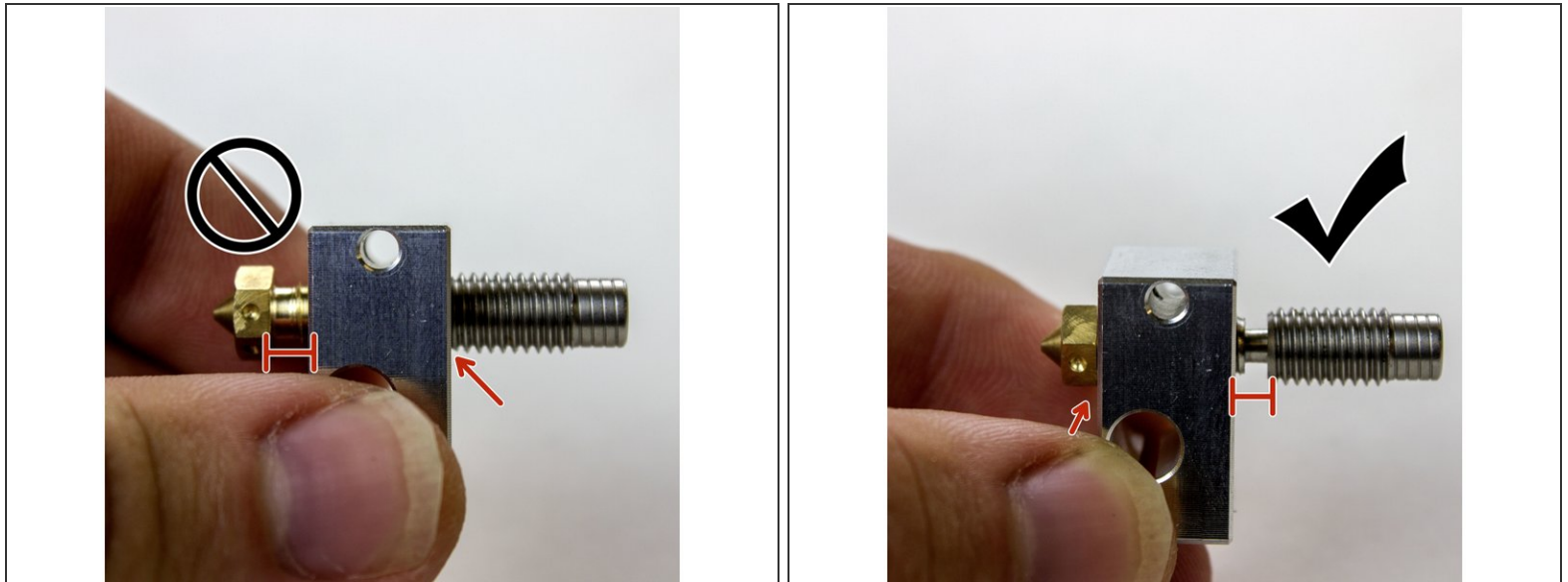
- Screw in the nozzle all the way into the heater block. Don't worry about tightness yet.
- Then, unscrew the nozzle by a 1/4 of a turn. This will leave a little space to tighten after screwing in the heat break.

Step 4 — Screw in heat break



- 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.

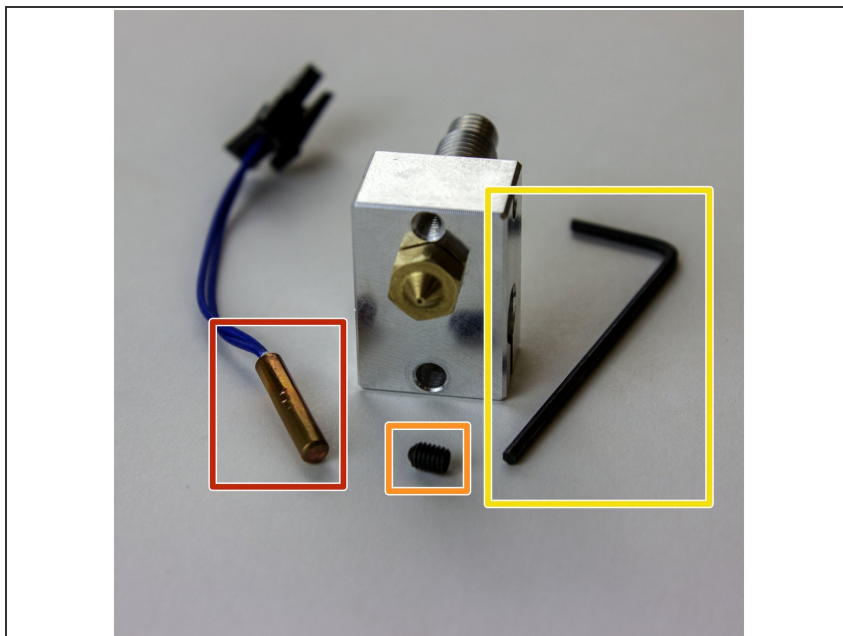
Step 5 — Check nozzle



⚠ Double check that your nozzle is still almost flush with your heater block.

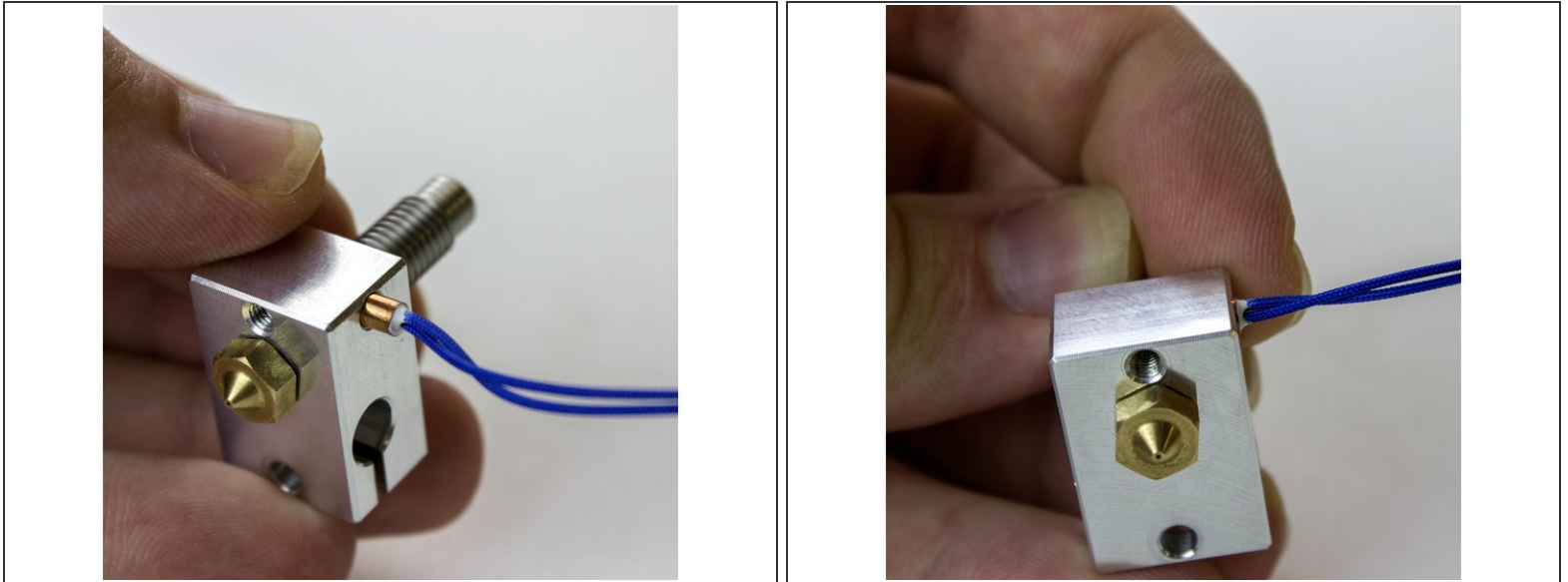
- If there is significant space between the nozzle top and the heater block you should re-adjust your nozzle and heat break to eliminate that space.

Step 6 — Gather Thermistor Parts



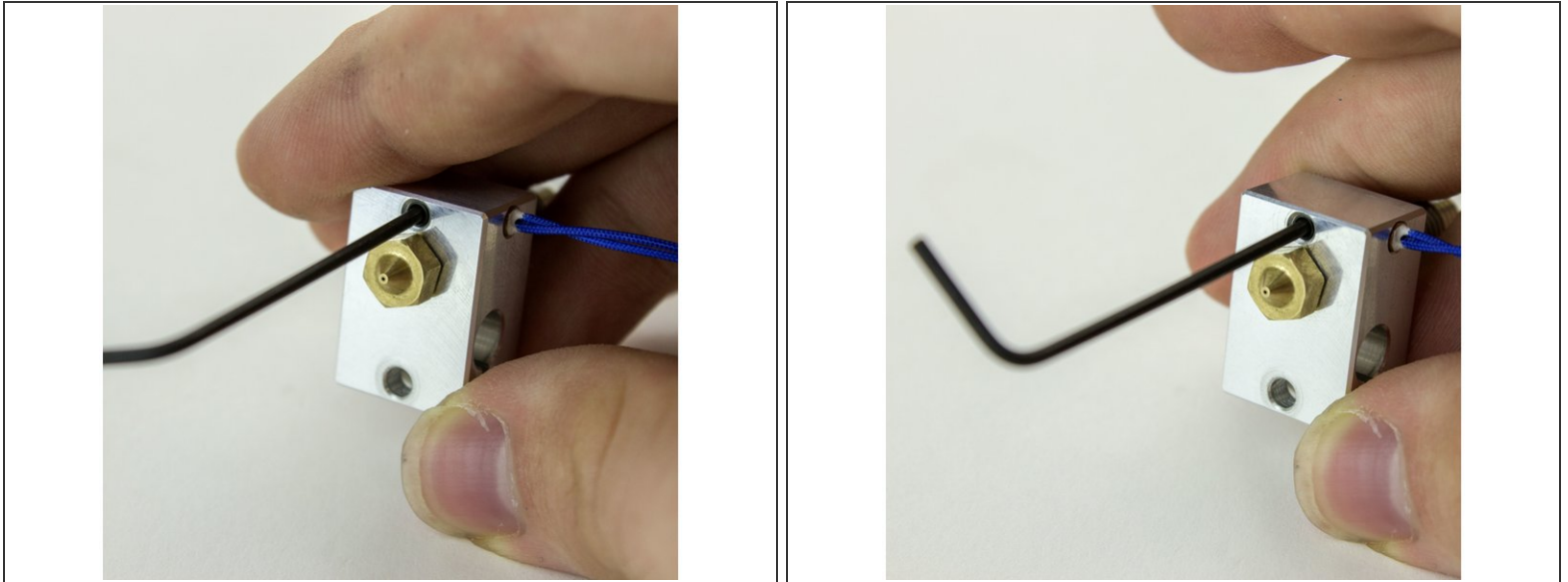
- Gather the parts you'll need to install the thermistor:
 - Thermistor Cartridge
 - The Smaller, 1.5mm Hex Wrench
 - M3 Grub Screw
 - Heater Block

Step 7 — Slide in Thermistor




- 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 8 — 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.

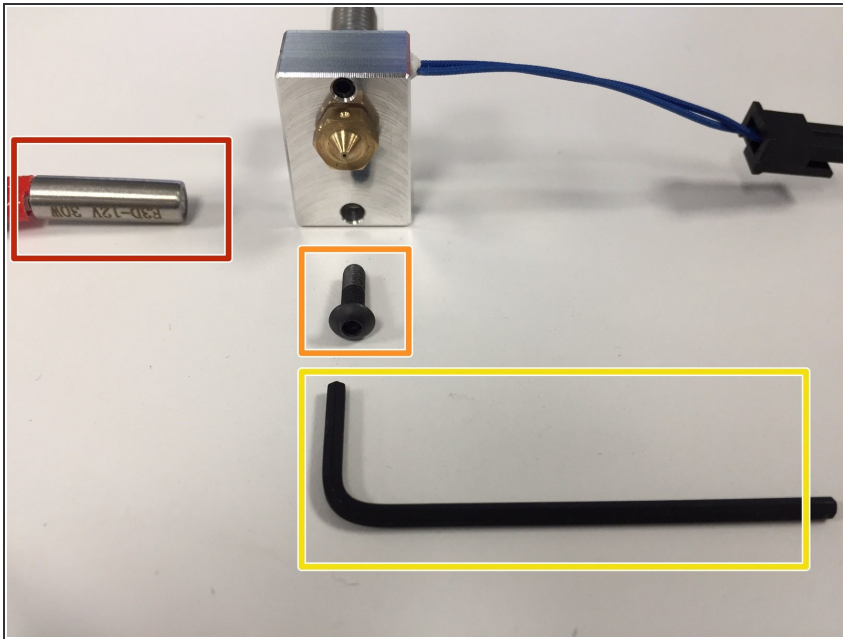
Step 9 — Test Heater Cartridge

This is within acceptable bounds
for a 12v heater cartridge



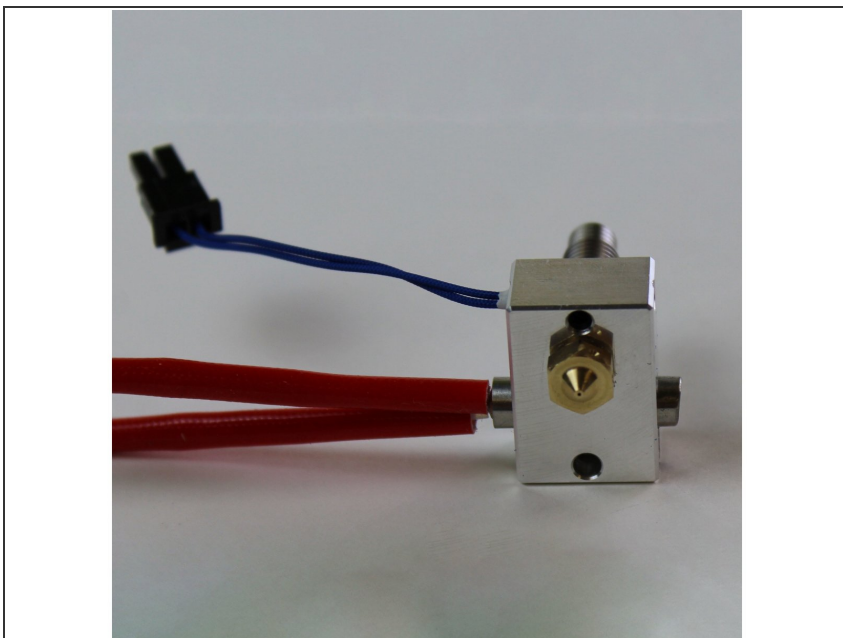
- Before you install your heater cartridge, you should double check that you both purchased and received the correct voltage cartridge. *This process is less annoying than putting out a house fire.*
- Your heater cartridge will be either 30w or 40w, with blue and red wires receptively.
- If you have a 12v heater cartridge, your resistance reading will be (about) 3.5 or 4.8 Ω for 40w and 30w respectively.
- If you have a 24v heater cartridge, your resistance reading will be (about) 14.4 or 19.2 Ω for 40w and 30w respectively.

Step 10 — Gather Heater Cartridge Parts



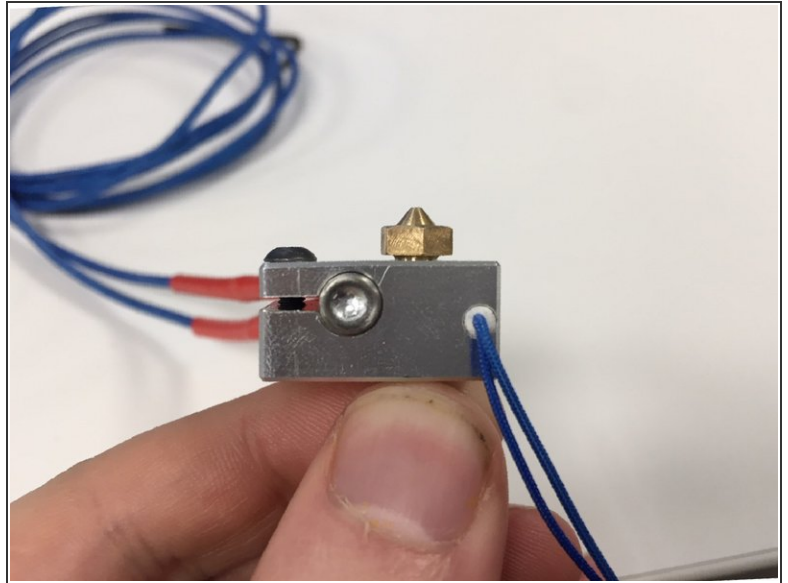
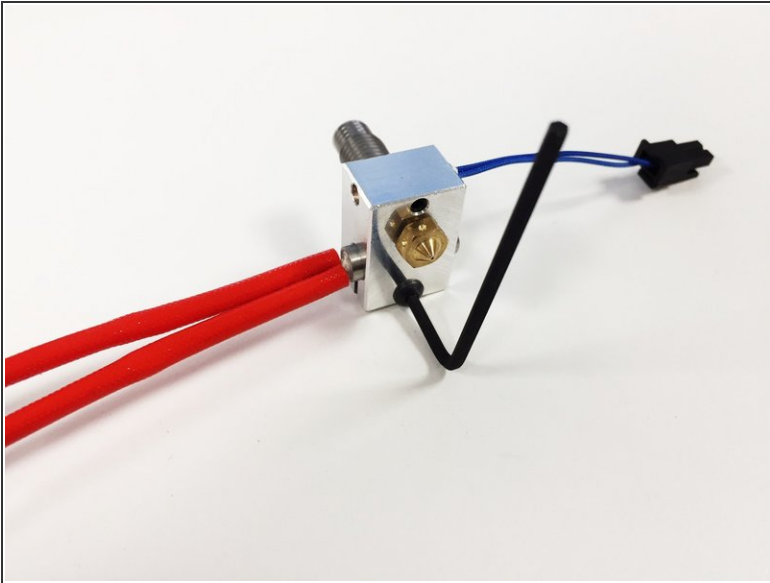
- Gather heater block, heater cartridge, 2mm hex key and M3x10 screw with washer:
 - Heater Block
 - Heater cartridge
 - 2.5mm, Hex Wrench
 - One of the longer M3x10.

Step 11 — Slide in Heater Cartridge



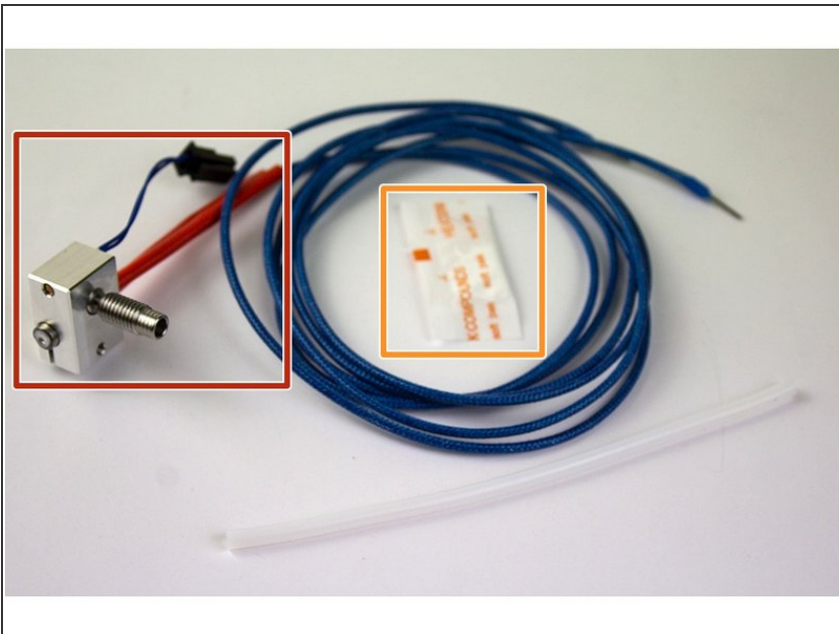
- Slide in the heater cartridge. Typically you'd want the wires to come out the same side as your thermistor wires.

Step 12 — Screw in M3x10 Screw



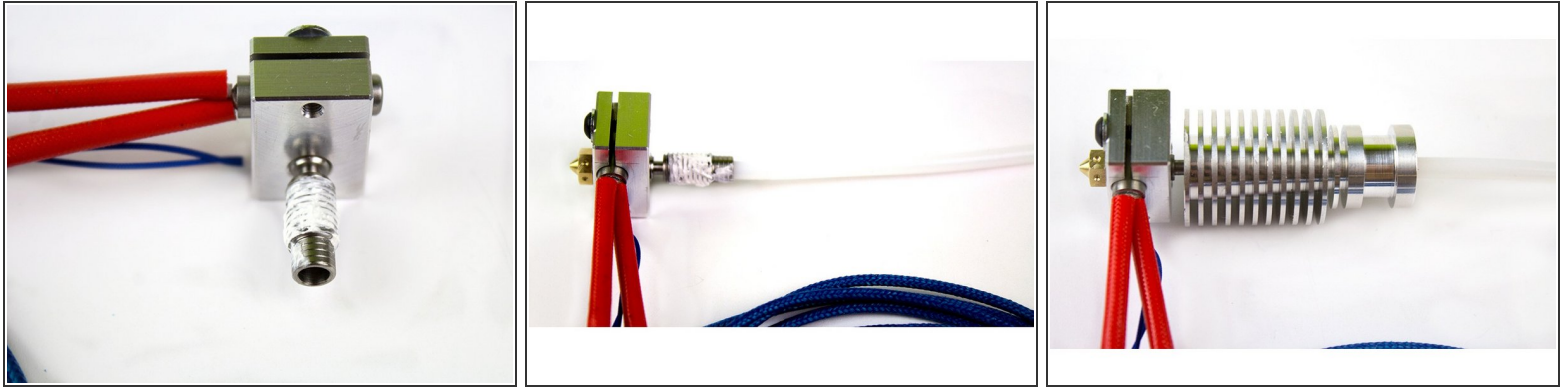
- Tighten the M3 x 10 socket dome screw with 2.5 mm hex key until the clamp deforms slightly (as shown in the second picture).
- Gently tug the heater and thermistor wires to check they won't slide out

Step 13 — Gather V6 parts



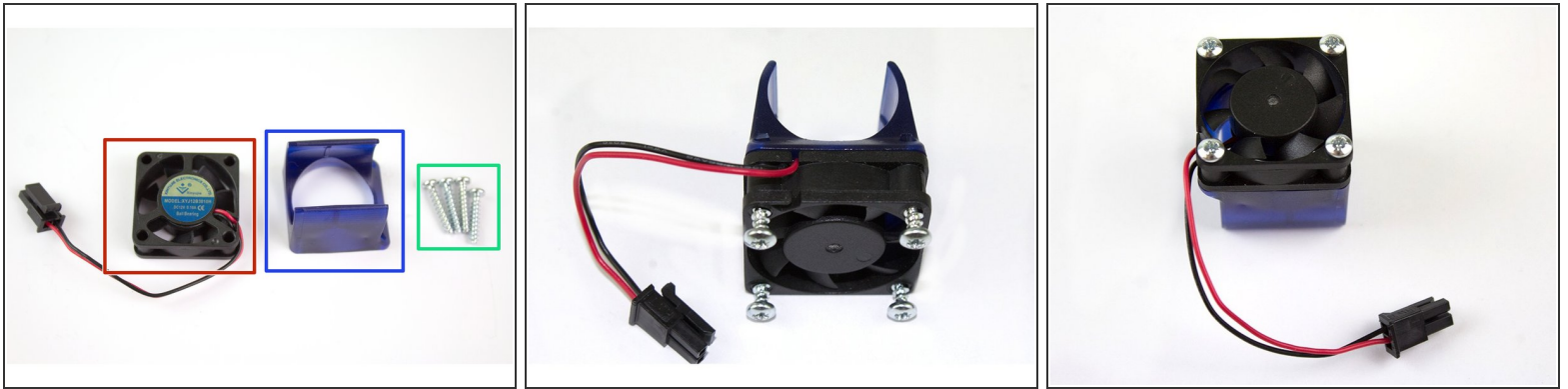
- Gather thermal compound paste, PTFE tube, heat sink and block assembly from previous step:
 - Block assembly
 - PTFE tube
 - thermal compound paste
 - heat sink

Step 14 — Attach heat sink



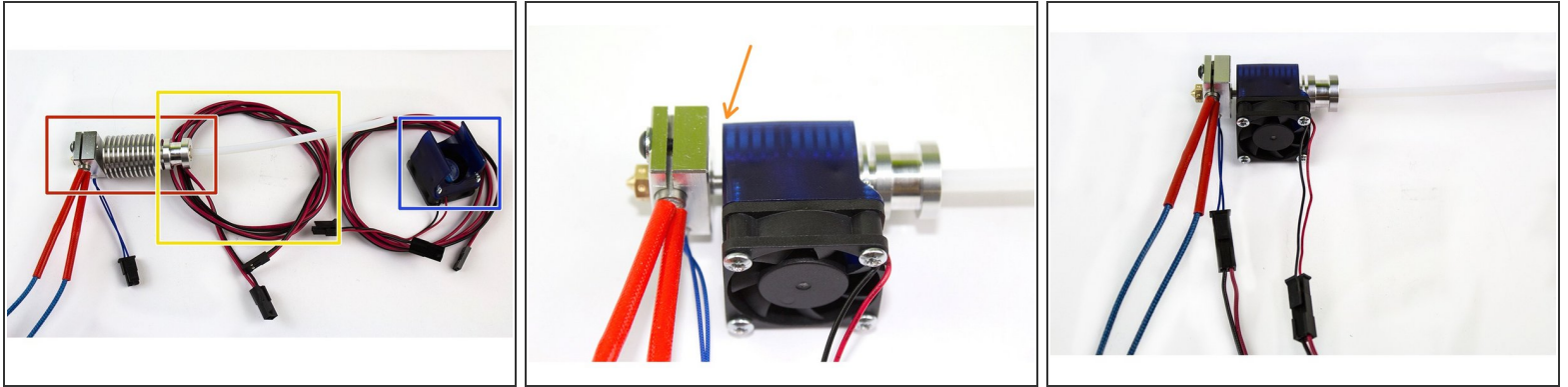
- Apply thermal paste to the threads of the heat break. You won't need the whole sachet
- be careful not to apply too much paste to the lower parts of the thread closest to the heater block
- Insert PTFE into the heat break, make sure it's well seated
- Screw on the heat sink and tighten by hand. Do not apply excessive torque.

Step 15 — Attach fan to duct



- Gather the fan, blue fan duct and tapping screws:
 - Fan
 - Fan duct
 - Tapping screws
- Use a cross head screwdriver to screw the fan to its duct.
- The fan label needs to be facing into the duct

Step 16 — completing V6



- Gather the V6 assembly, fan + duct and the 2 extension cables:
 - V6 assembly
 - fan + duct
 - extension wires
- Clip the fan duct on to the heat sink so that it covers the bottom fin of the sink
- Clip the extension cables onto the thermistor and fan Molex connectors

Step 17 — Trim PTFE



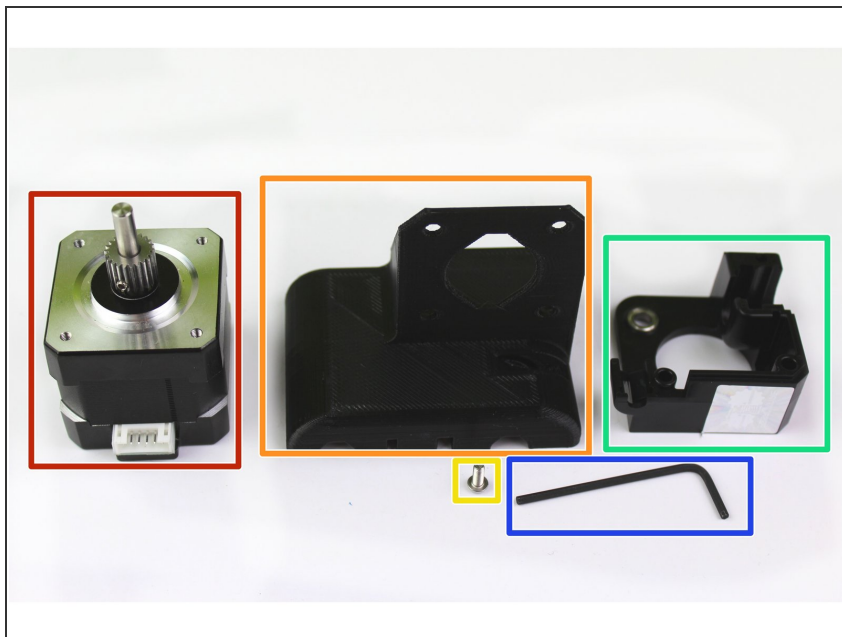
- Trim the over shoot PTFE to 23mm

Step 18 — Attach pinion gear



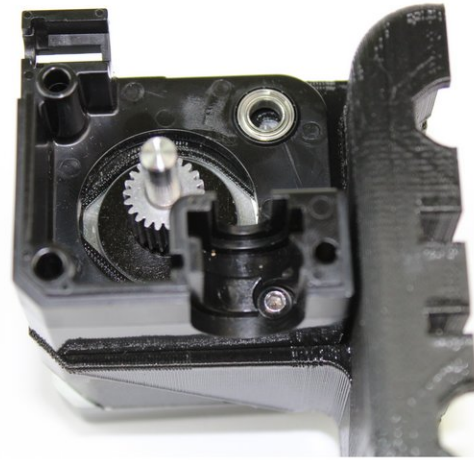
- Partly screw the M3 grub screw into the pinion gear
- Slide the pinion gear onto the motor shaft and tighten slightly
- Don't over tighten, you'll want enough torque to keep it from moving on it's own, but can still slide with a little force

Step 19 — Gather components



- Gather Motor, Titan body, mounting bracket, button screw and 2mm hex key:
 - Motor and pinion gear
 - Mounting bracket
 - Titan body
 - Button screw
 - 2mm hex key

Step 20 — Attach body



- Place the mounting bracket over the motor as shown in first image
- Place Titan body over the top and secure with the screw, add little tension to the screw. You'll want to be able to freely rotate the body.

Step 21 — Inserting Titan hobbs



- Gather Titan hobbs
- Attach hobbs and make sure they're fully seated. Rotate body so that the black gear is meshed with the pinion gear
- Nudge the pinion gear down until it's flush with the black gear
- Now tighten the grub screw in the pinion gear to lock it in place. You may have to remove some components in order to do this
- Reconstruct with the gears flush and tighten the button screw in the Titan body