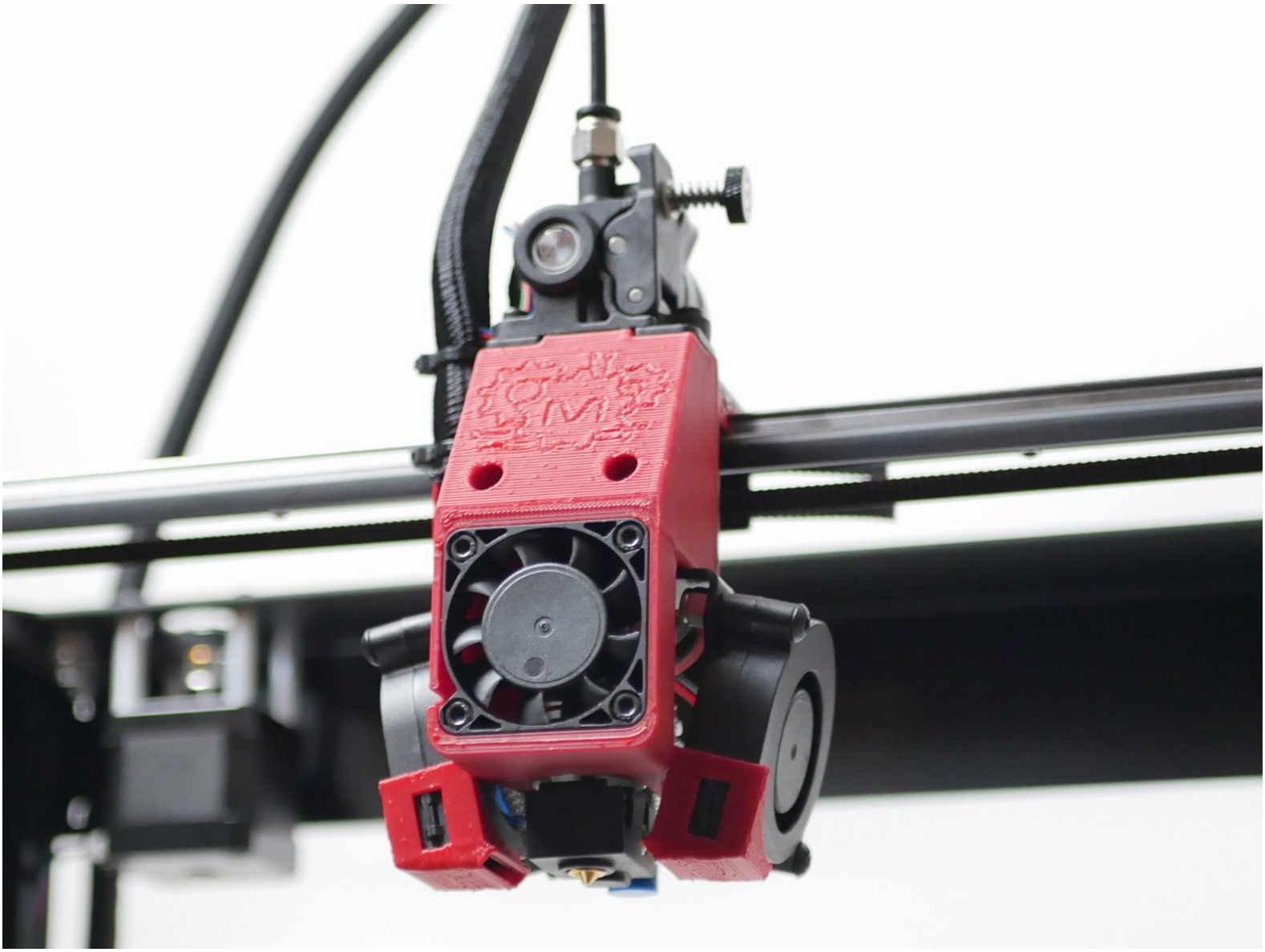
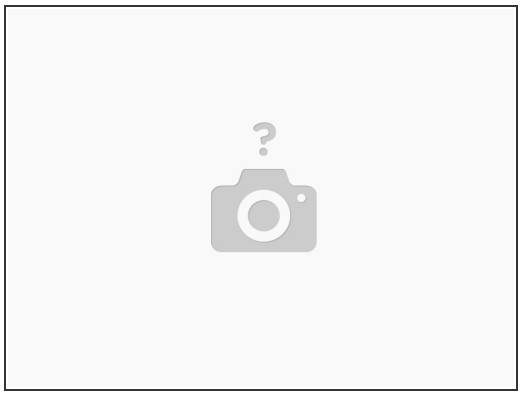
Makertech

Stage 06: Direct Driver Extruder

Written By: Makertech



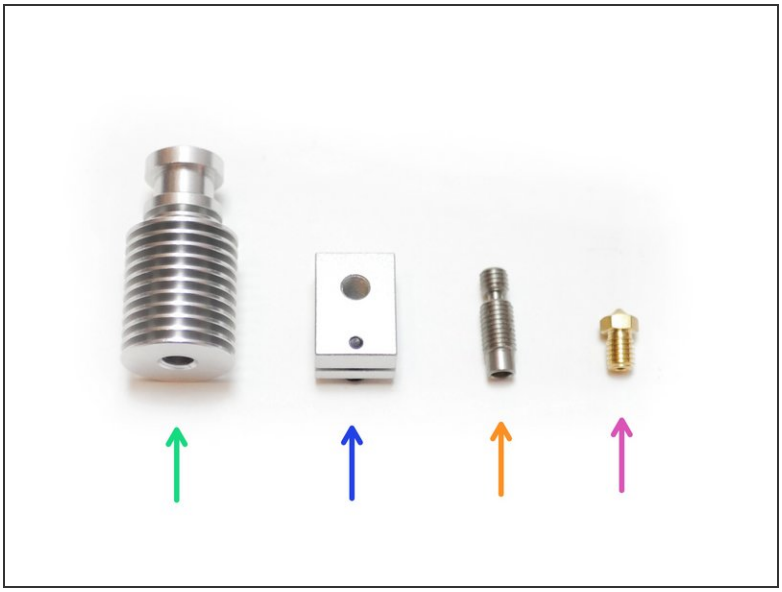
Step 1 — Direct Drive Setup

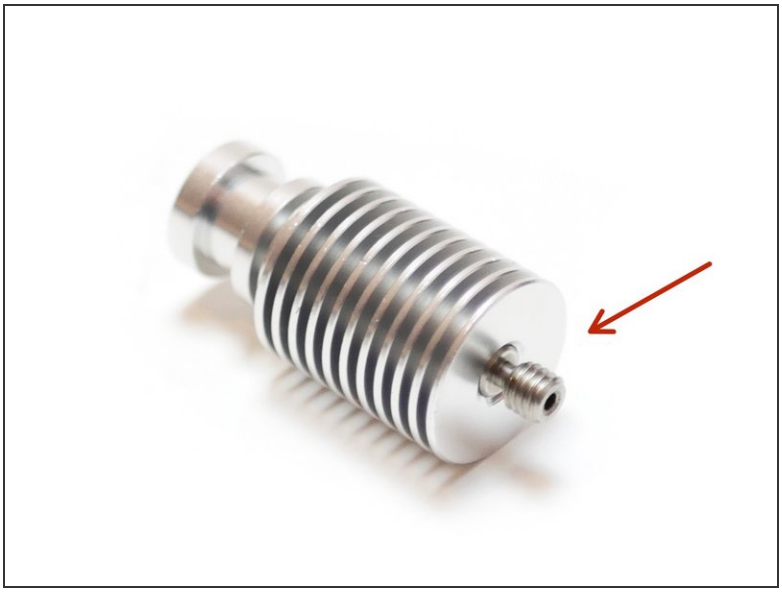


If you plan to run the Proforge 3 with the Direct Drive extruder please continue to follow this guide.

If you intend to install the Dual Switching Hotend please continue your build from here.

Step 2 — Hotend Assembly



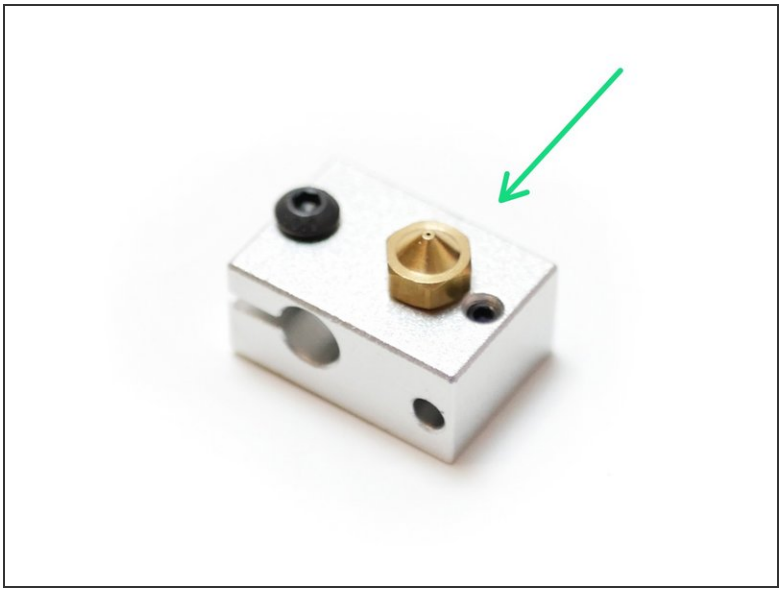


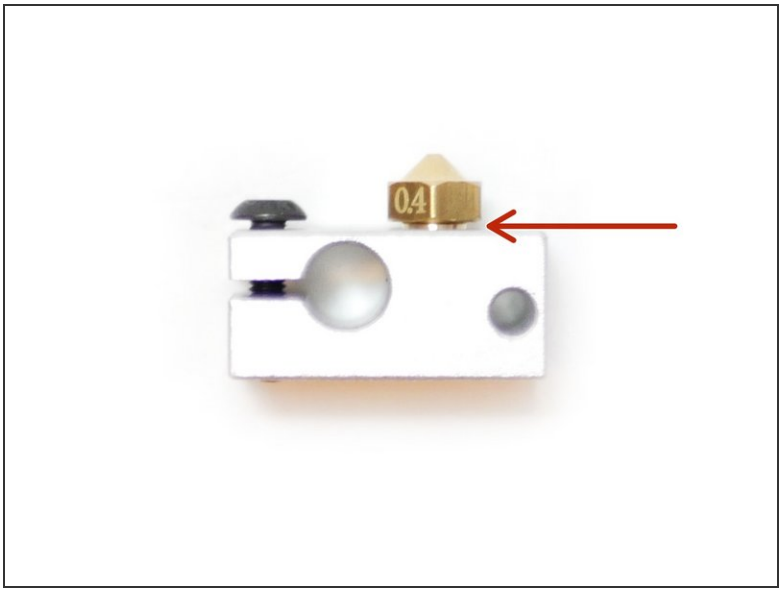
Locate these four parts for the Hotend:

- Heatsink
- Heater Block
- Heatbreak
- Nozzle

- Secure the Heatbreak into the Heatsink.

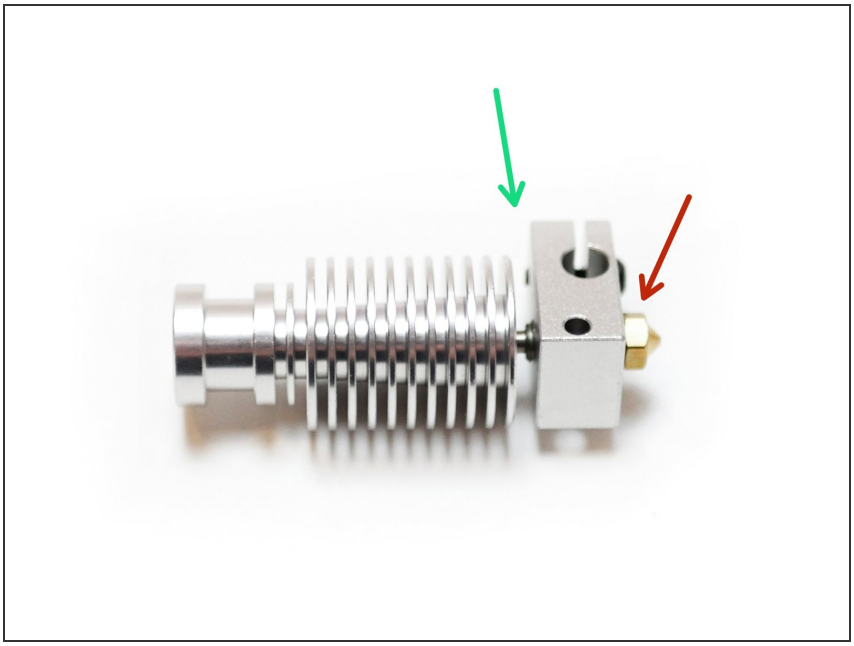
Step 3 — Nozzle to Heater Block





- Fasten the Nozzle into the heater block.
  - Note the side that it's fastened into.
- Also leave approximately a 1mm gap between the nozzle and heater block.

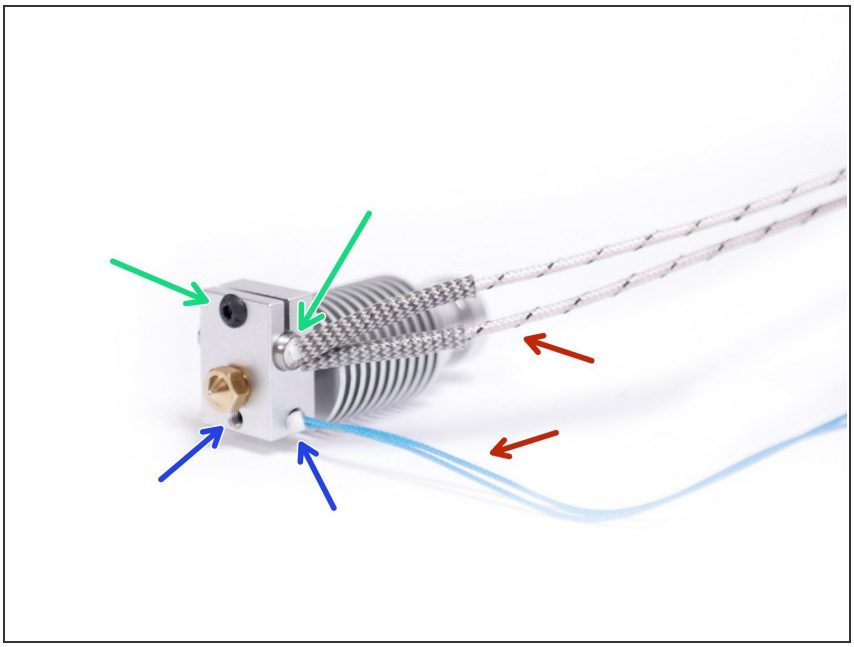
Step 4 — Heater Block to Heatsink



- Fasten the Heater Block assembly to the Heatsink assembly.
  - Apply the turning force through the nozzle.

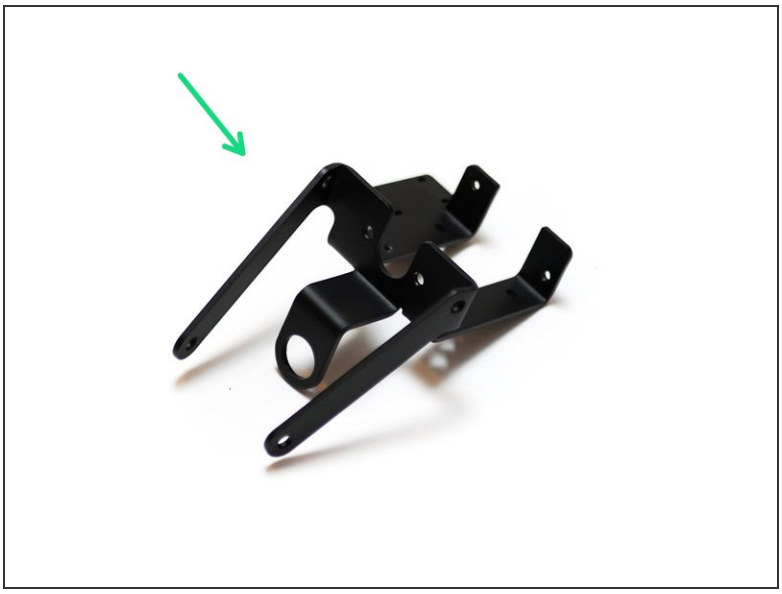
⚠ Be careful not to apply too much force when tightening, as it may cause the heatbreak to snap!

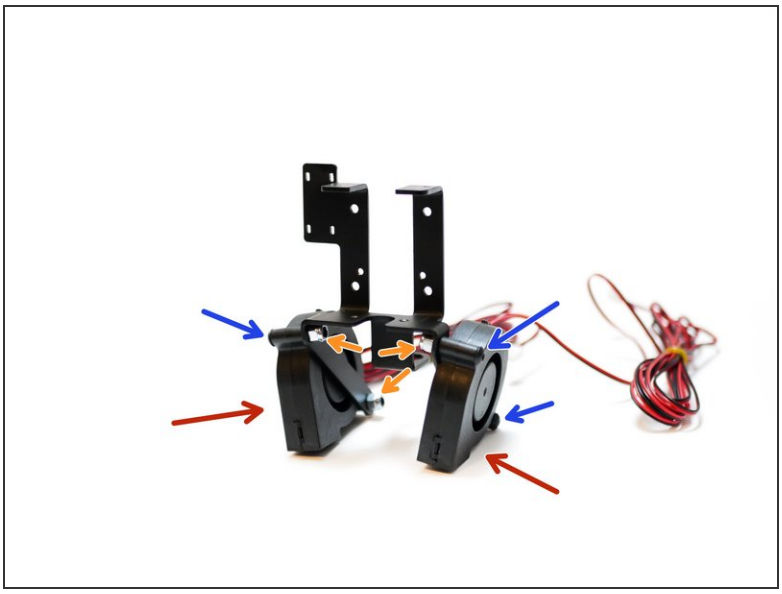
Step 5 — Heater and Thermistor



- Fix the heater cartridge as shown. Tighten this bolt to secure it.
- Slide the thermistor cartridge in place. Tighten this set screw to secure.
- Make sure that the cables are point out of the side shown.

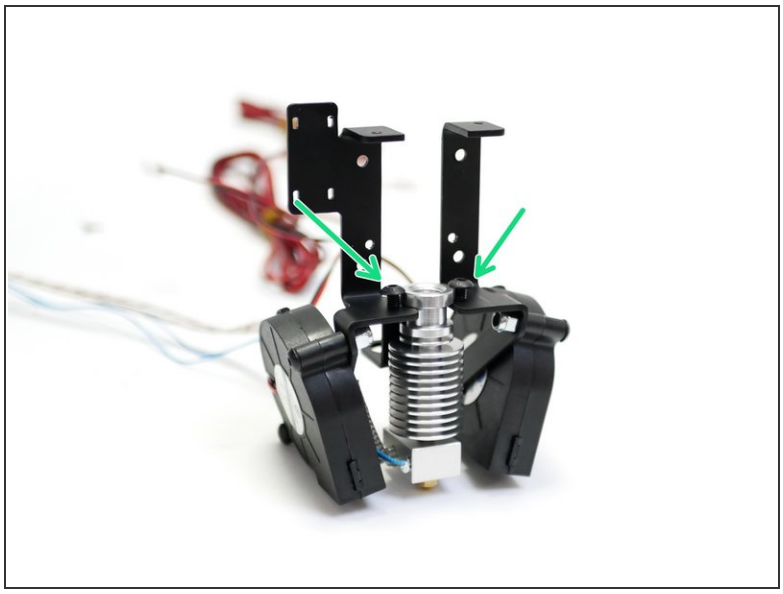
Step 6 — Direct Drive Mount and Cooling Fans

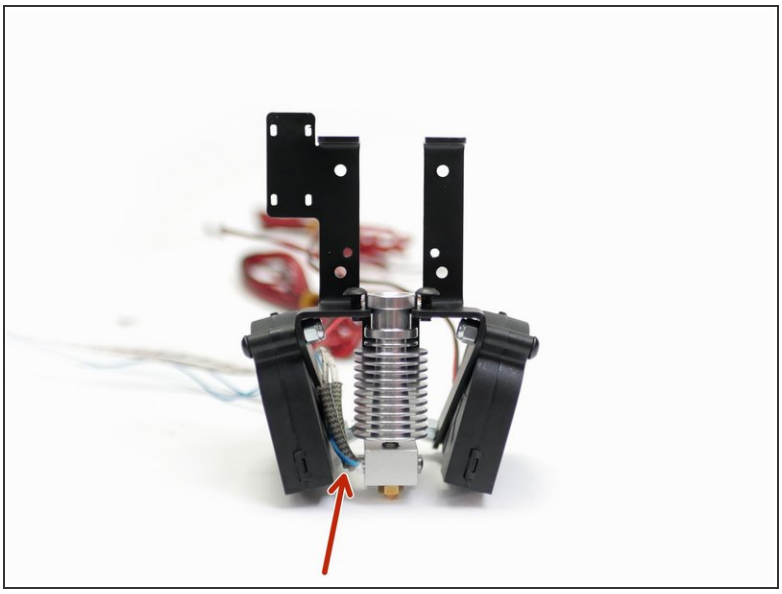




- Locate the Direct Drive Mount bracket.
- Secure to it the two 50mm blower fans as shown.
  - M4 x 22mm Button (x4)
  - M4 Nyloc Nut (x4)

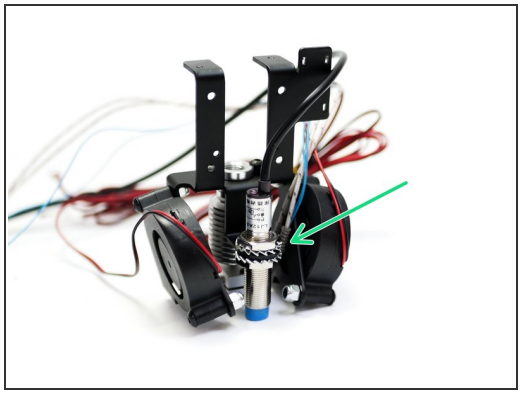
Step 7 — Hotend to Mount

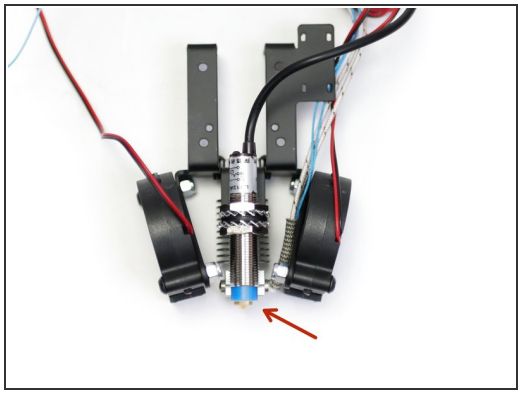


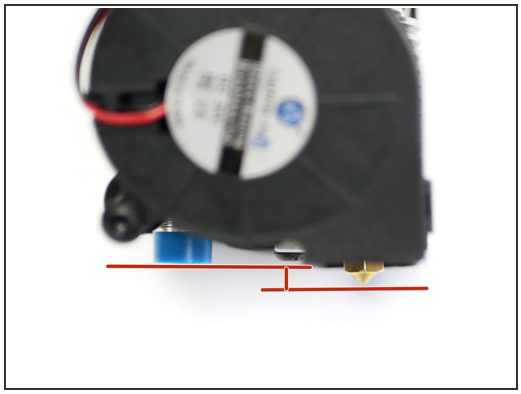


- Fix the Hotend to the Mount with two M4 x 8mm button bolts.
  - Ensure the Hotend is pushed all the way into the mount.
- Ensure that the Hotend's cables point to the left.

Step 8 — Fixing the Probe

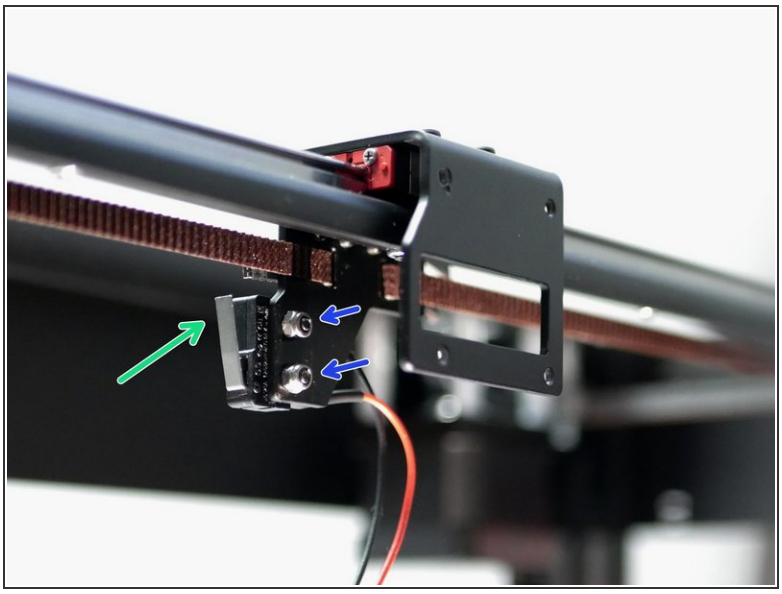


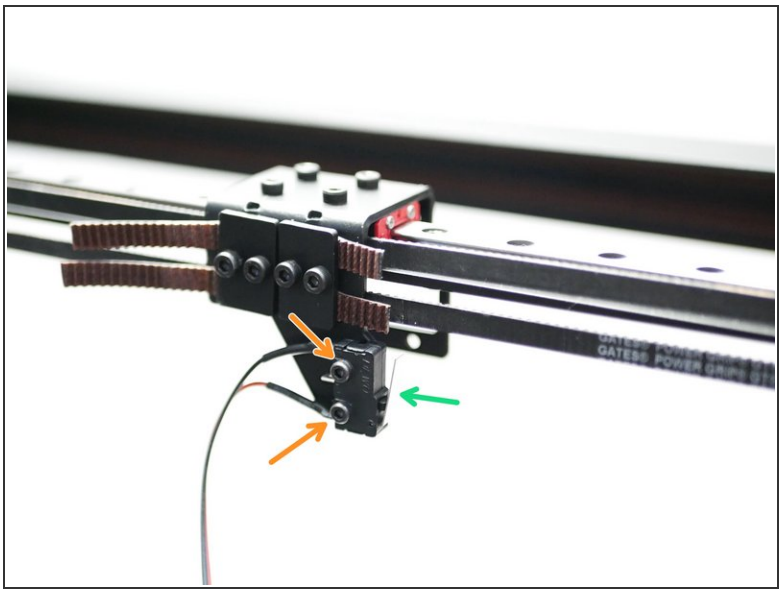




- The probe is secured to the back of the Mount as shown.
- The bottom of the probe should be between 1-2mm above the tip of the nozzle.

Step 9 — X-Endstop



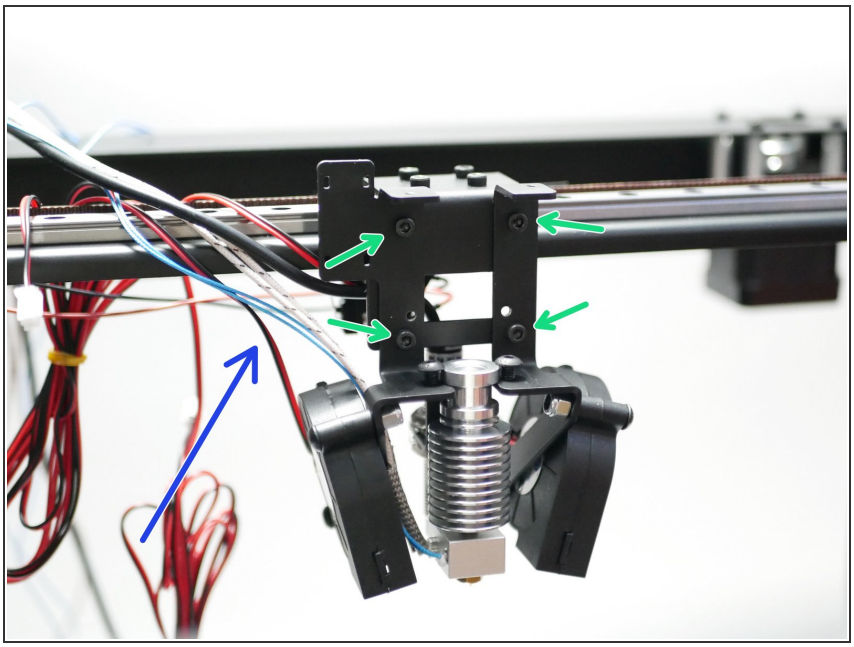


- Install the X-Endstop as shown.

Note that the X-Endstop is the one with the longer 2M cable.

- M2.5 x 12mm Bolt
- M2.5 Nyloc Nut

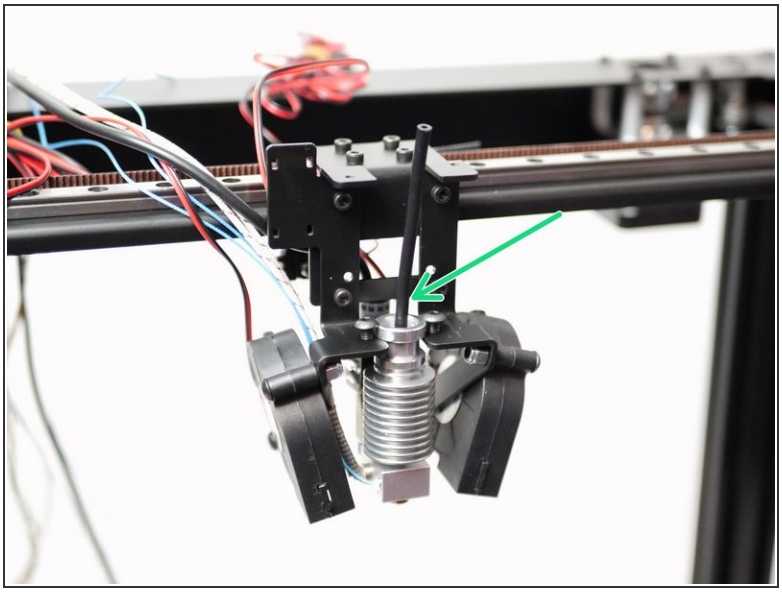
Step 10 — Mount to Carriage



Secure the Mount to the Tool Carriage on the gantry.

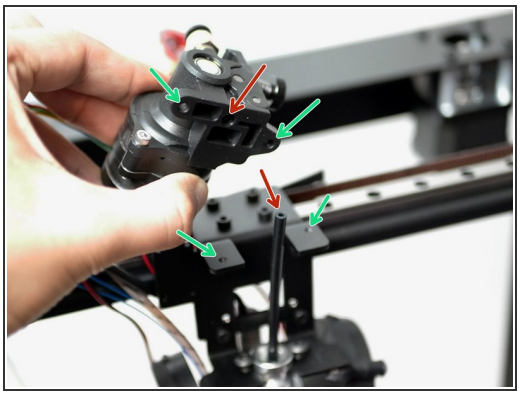
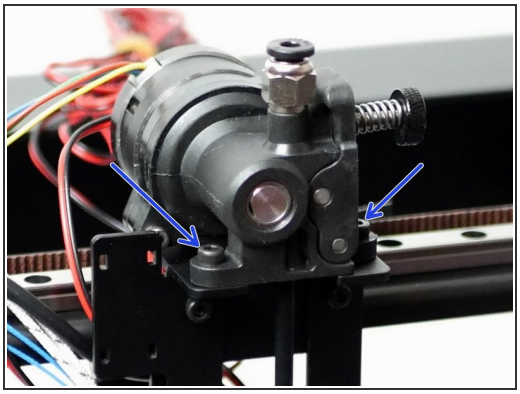
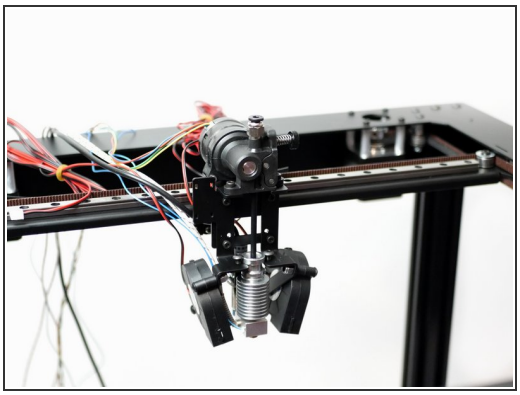
- M3 x 6mm Cap Bolt
- Have the cables come out of the left side of the mount.

Step 11 — Extruder PTFE Tube



- Cut 91mm of PTFE tubing.
- Push the tubing into the Hotend as shown.

Step 12 — Orbiter Extruder

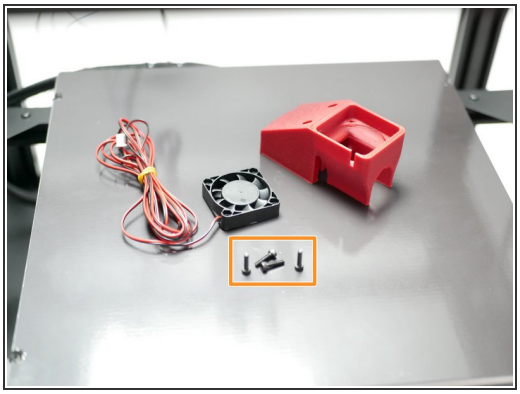
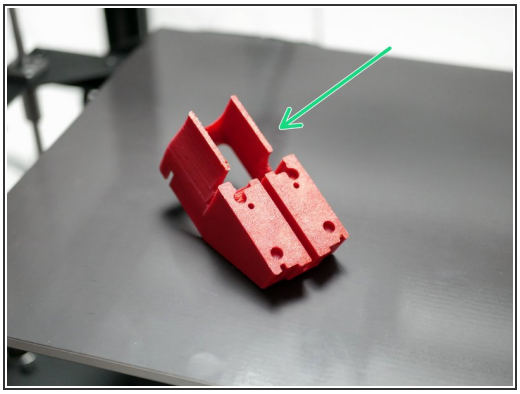
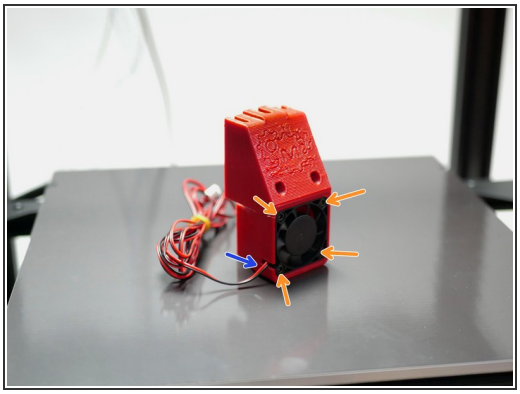




Secure the Orbiter Extruder as shown.

- The mounting holes line up with those on the hotend mount.
- The PTFE tube goes into this hole.

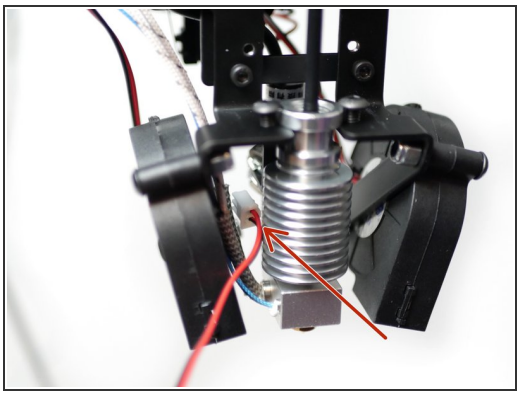
- Secure with two M3 x 8mm Cap head bolts.

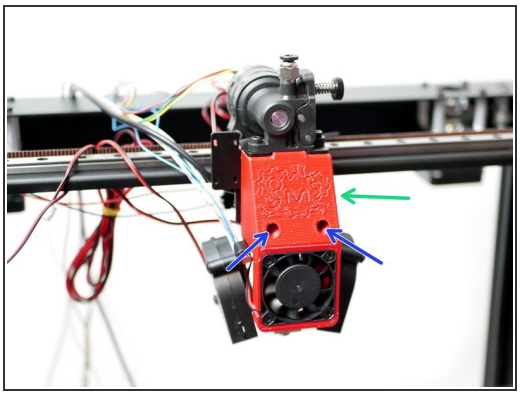
Step 13 — Hotend Cooling Fan Assembly

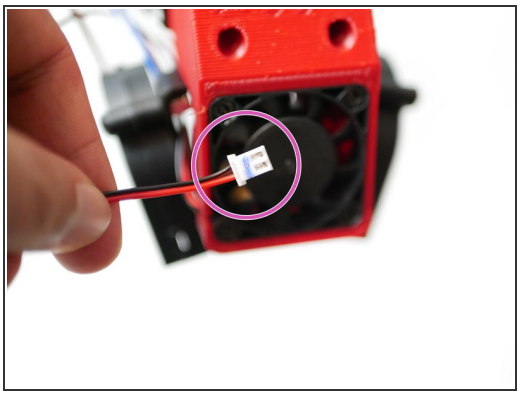




- Take the 3D printed mount and remove the support raft from underneath.
- Fix the fan with 4 M3 x 12mm bolts.
- Ensure the fan is installed sticker side in and with its cable aligned with the slot.

Step 14 — Attaching the Cooling Fan Assembly

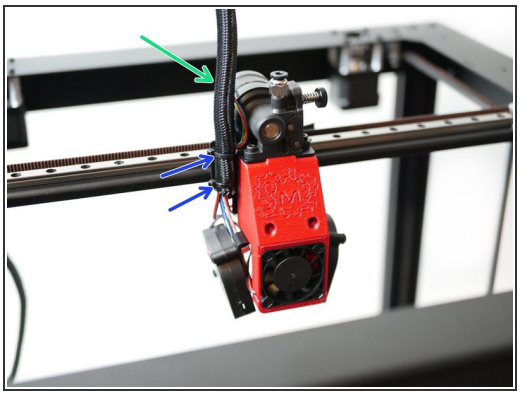
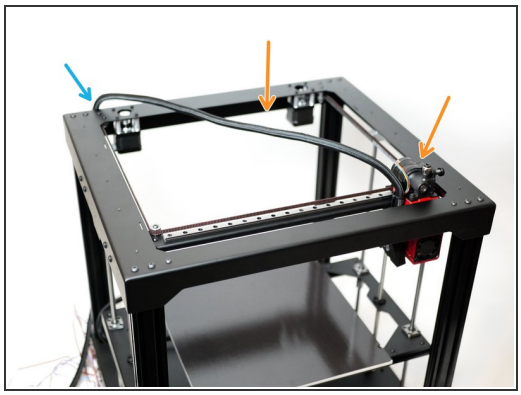
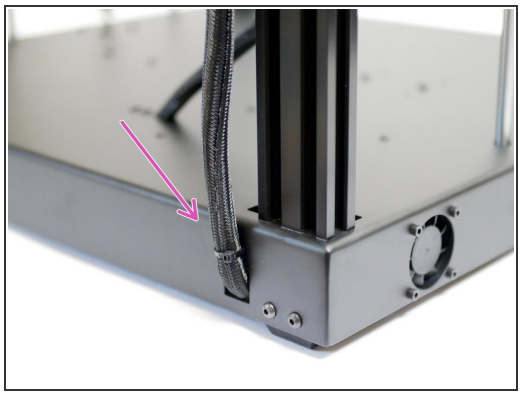






- Begin by feeding the fans cable into the left side of the mount as shown.
- Push the cooling fan mount assembly onto the metal mount.
- Secure with two M3 x 20mm bolts. Avoid over tightening.
- Before continuing, use a marker to mark the hotend cooling fan's connector, this will come in handy later when wiring.

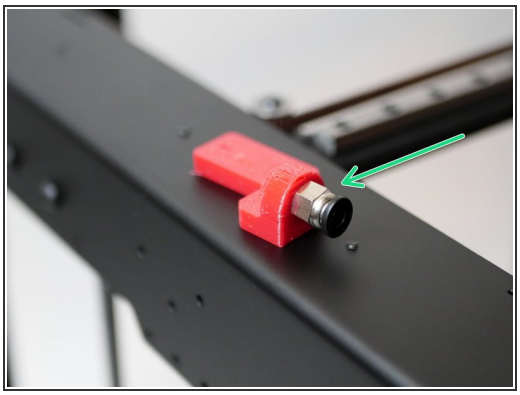
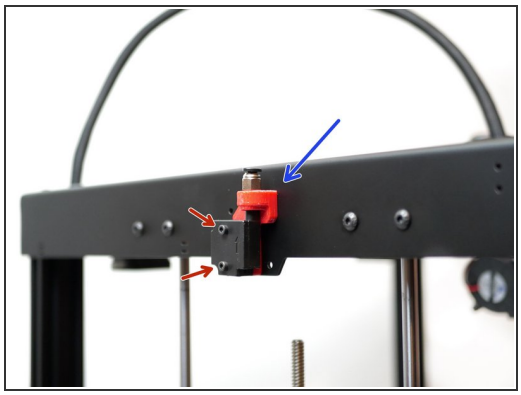
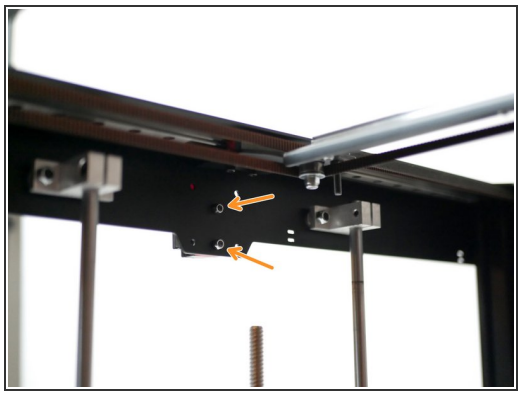
Step 15 — Braided Sleeving

- Use the braided sleeving to wrap the cables from the tool head.
- Use two cable ties to secure it to the hotend mount as shown.
- Extend the tool head to the bottom right corner.
- Secure the other side of the cable loom to the rear of the printer.
- Feed all of the cables into the base. Fix the loom to the base with cable ties.

The Orbiter cable is short, but included is a black extension cable, use this to reach the control board.

Step 16 — Filament Sensor

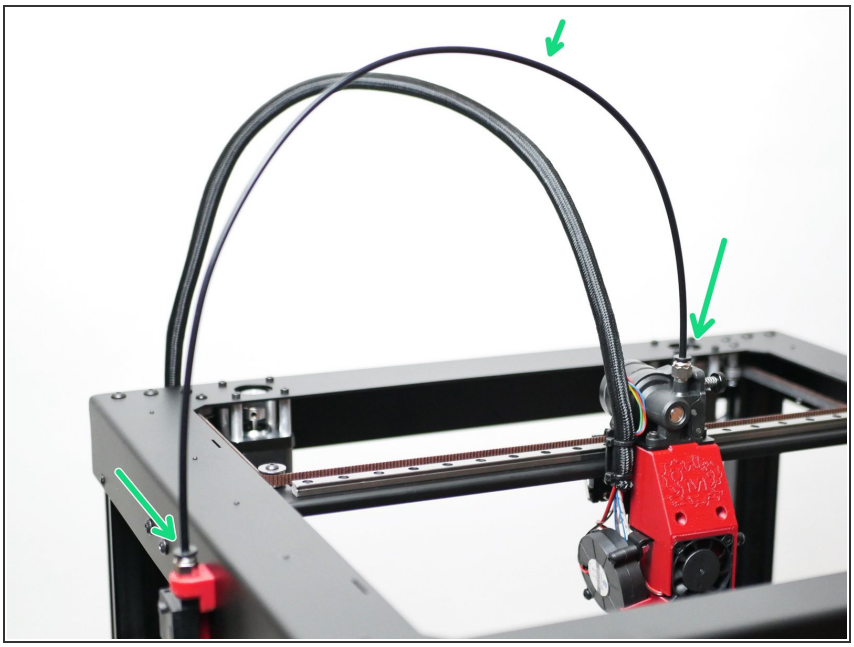




- Take the filament sensor mount and fix to it the PC4 Coupling. The coupling can thread straight into it, you will need to use a pair of pliers to turn and secure it.
- Secure it along with the filament sensor to the side of the printer.

You can secure it to either side of the printer.

- M3 x 25mm Cap bolt
- M3 Nyloc Nut

Step 17 — PTFE Tubing



- Finally, attach the PTFE tube from the filament sensor assembly to the Orbiter Extruder.

The length of the tubing should be approx 60cm.

