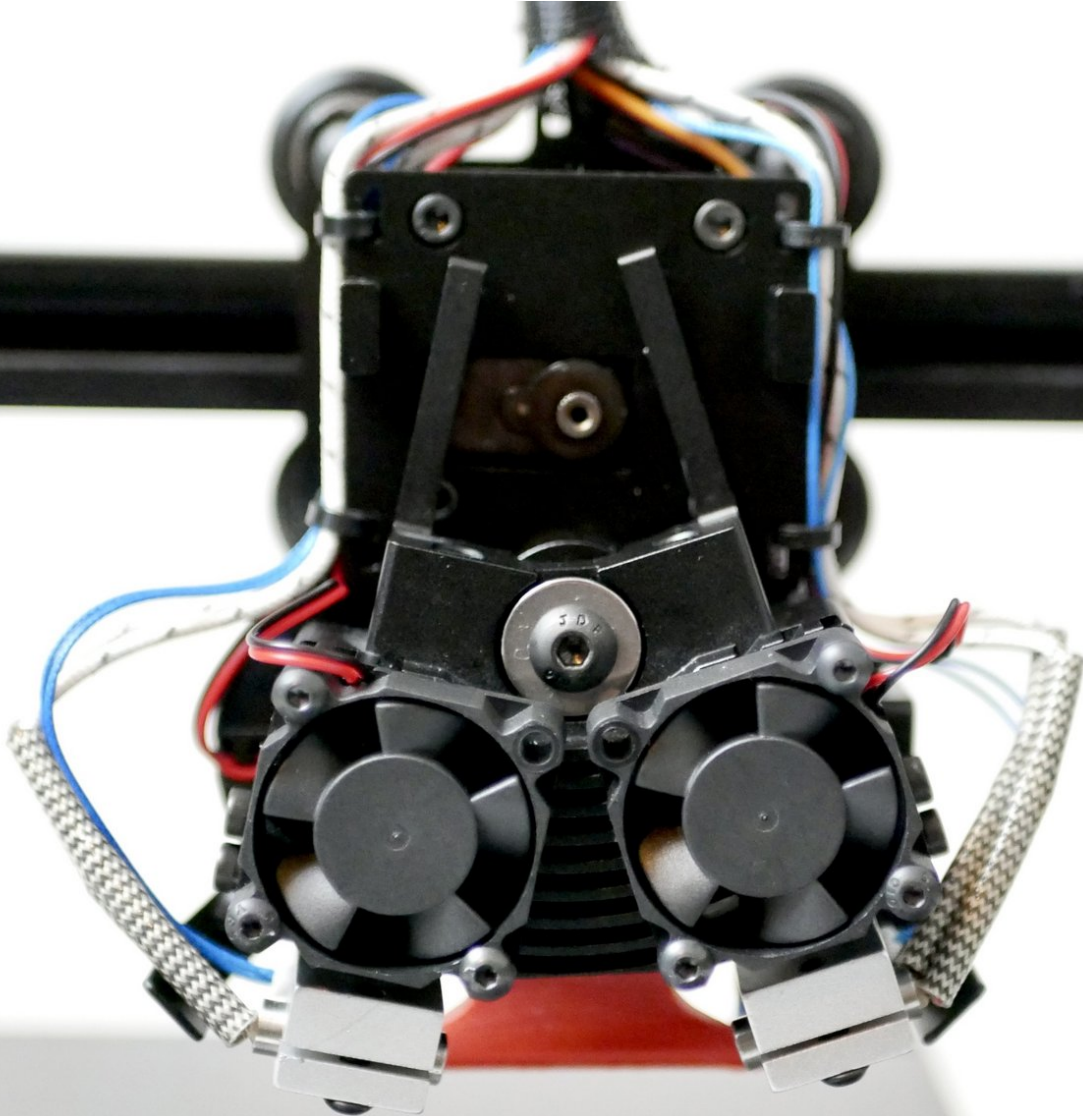


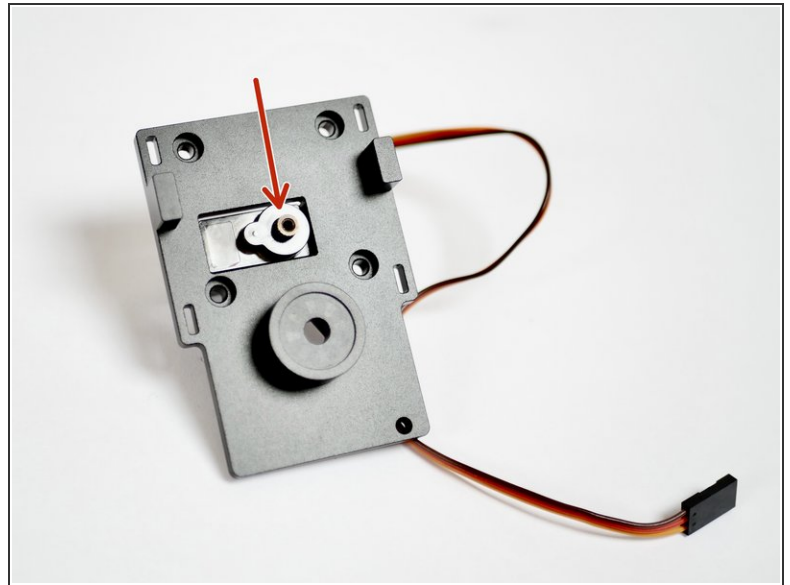
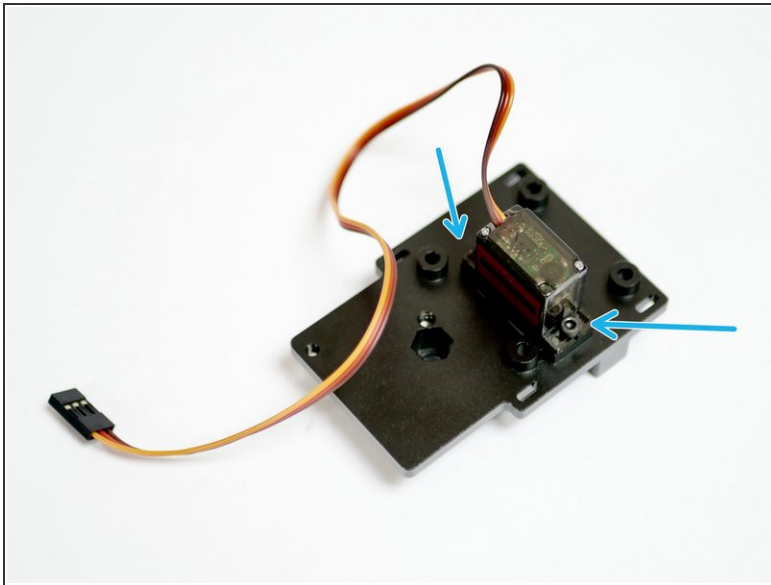
Makertech

Stage 03: Assembly

Written By: Makertech 3D

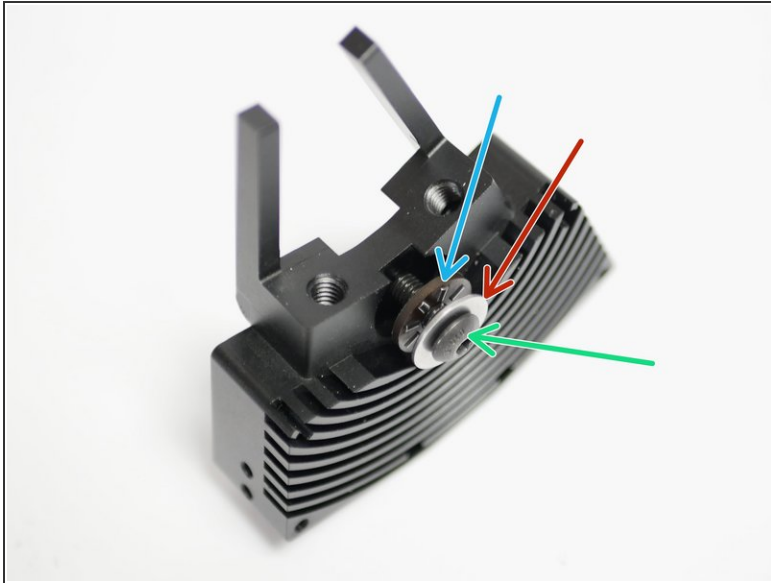


Step 1 — Servo to Backplate



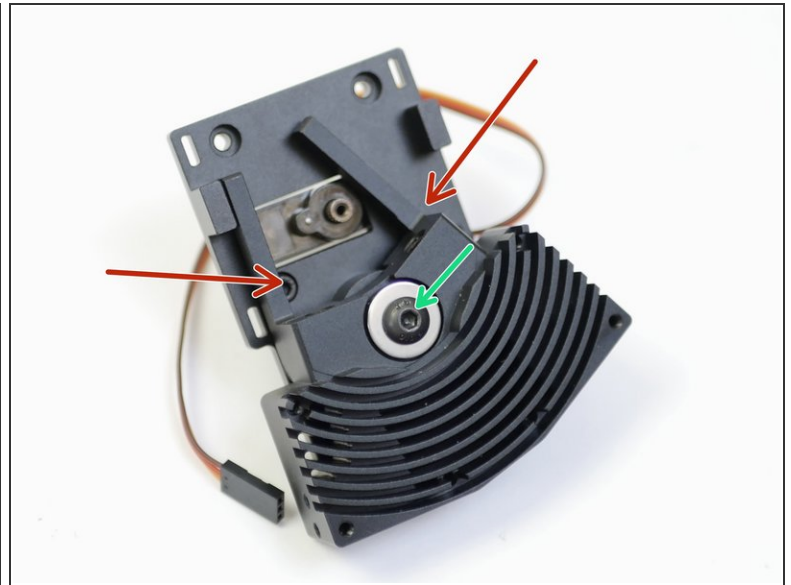
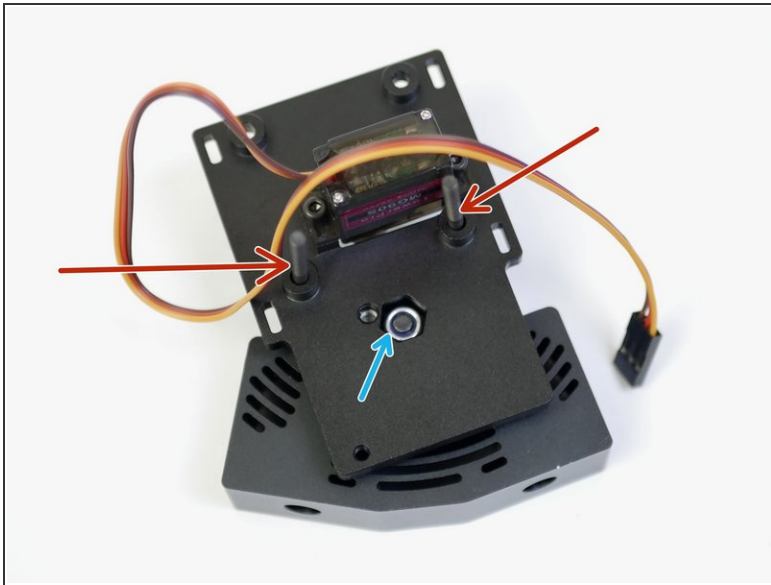
- Use two M2.5 x 6mm bolts to fix the servo onto the backplate.
- Make sure that the servo shaft is centrally aligned with the backplate.

Step 2 — Preparing the Heatsink



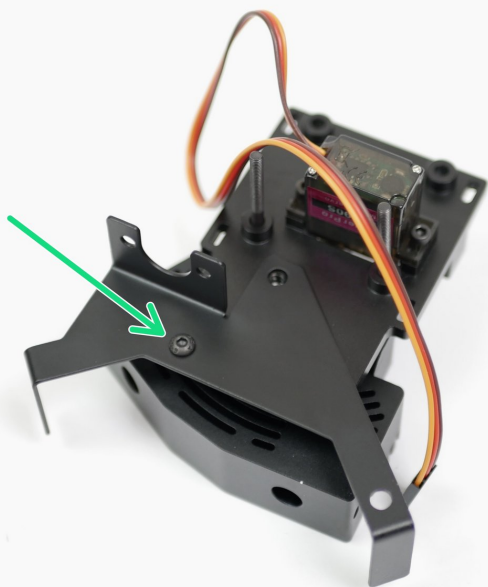
- ① Insert an M5 x 20mm bolt with a needle bearing and shim.
- M5 x 20mm Bolt
 - Thrust Bearing
 - Shim
 - On the other side of the heatsink slide on another thrust bearing.

Step 3 — Heatsink to Backplate



- Begin by preparing the backplate with two M3 x 30mm bolts as shown.
- Drop an M5 nut into the back of the Backplate.
- Fix the assembly together, making sure that there is no play in the switching motion.
- ① The bolt should be tightened down enough to allow the heatsink to rock, but there shouldn't be any play along the axis of rotation or on the plane of contact.

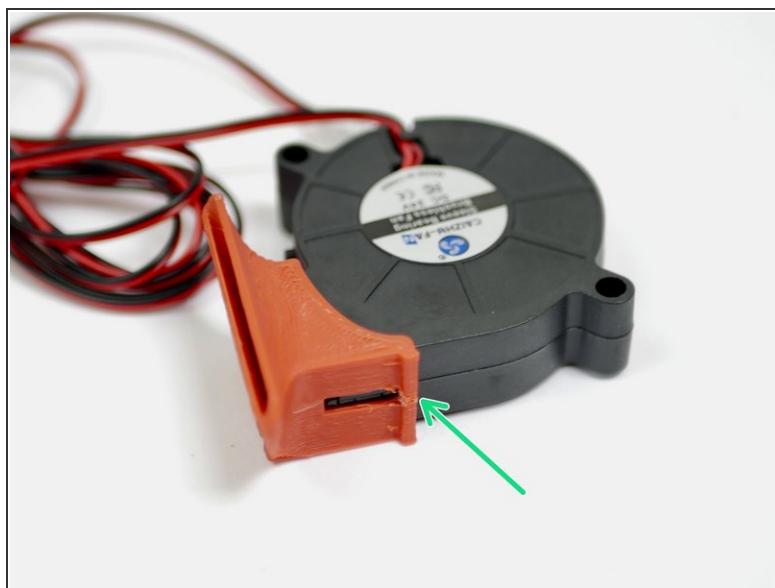
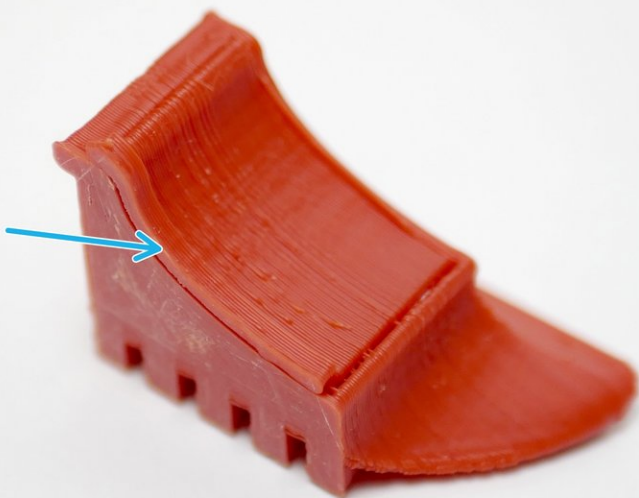
Step 4 — Probe and Fan Mount



- Fix the Probe and Fan mount onto the back of the backplate with an M3 x 6mm button head bolt.

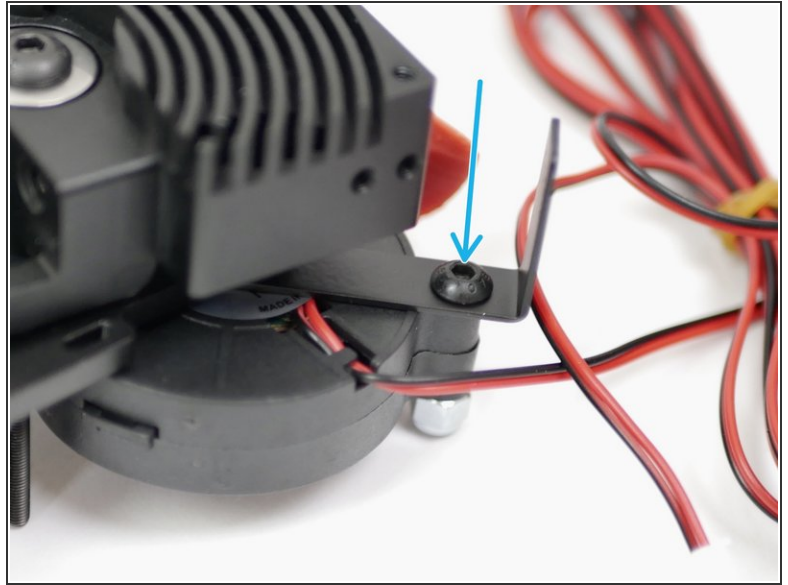
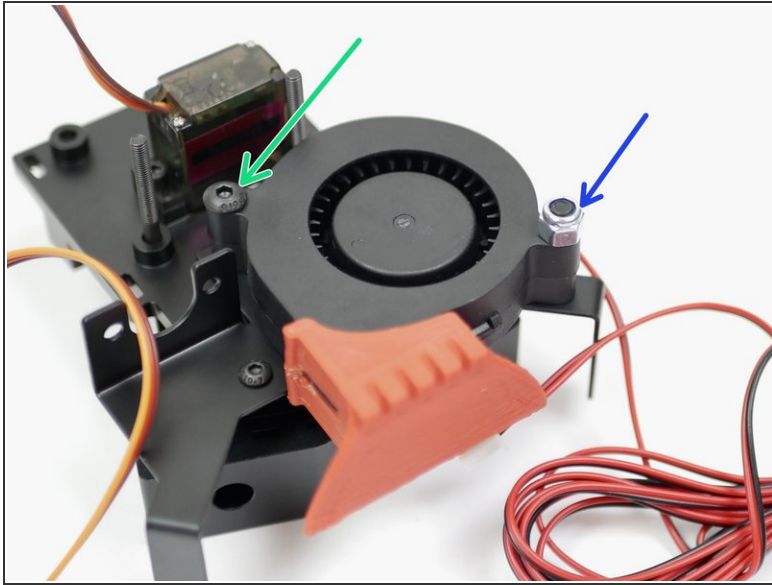
⚠ This will be an M2.5 x 6mm bolt on v2.1 Switching Hotends.

Step 5 — Print Fan Shroud



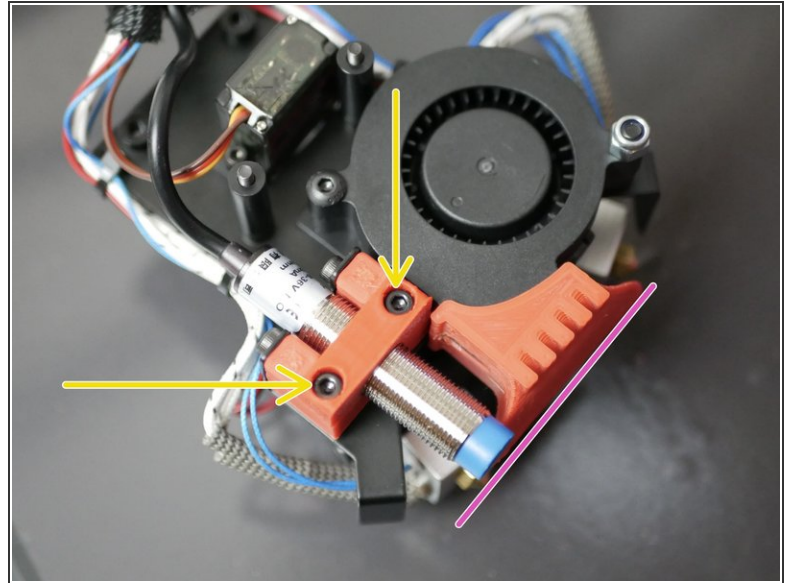
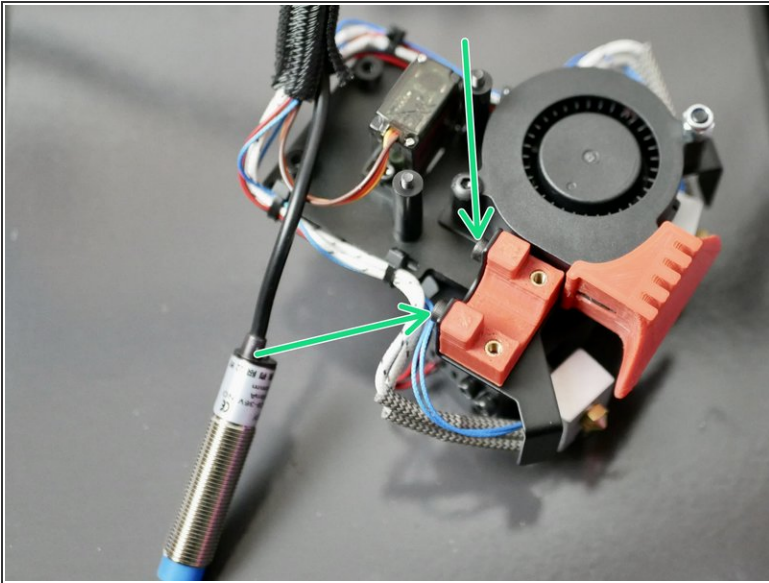
- The part cooling fan shroud is a 3D-printed ABS part. Begin by removing the support with a pair of pliers by pulling on the tab.
- Fix the fan shroud onto the blower fan. The fan shroud is designed to snap in place.

Step 6 — Blower Fan to Backplate



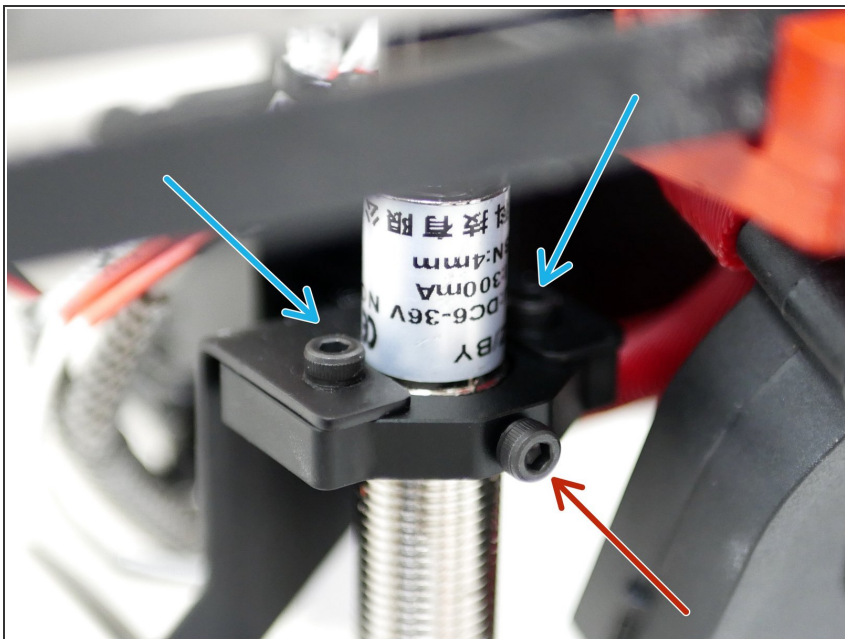
- Fix onto the Backplate with an M4x22mm
- Fix onto the Probe and Fan Mount with an M4 x 22mm bolt and M4 Nyloc nut.

Step 7 — Probe Mount (3D Printed)



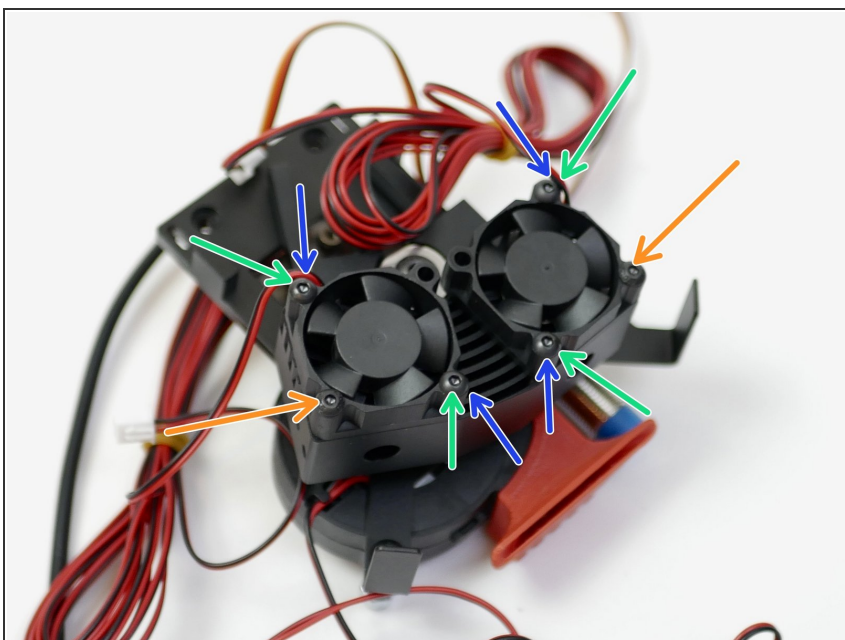
- Fix the 3D printed probe mount to the metal mount like shown with two M3 x 6mm bolts.
- Remove the nuts and washers from the probe and fix the probe to the mount, again with two M3 x 6mm bolts.
- Adjust the probe so that the bottom of it is level with the bottom of the fan shroud, like shown.
- ① Note, we've had to back track a little here, that's why more of the assembly is done in the images.

Step 8 — Probe Mount v2.1 (CNC'd)



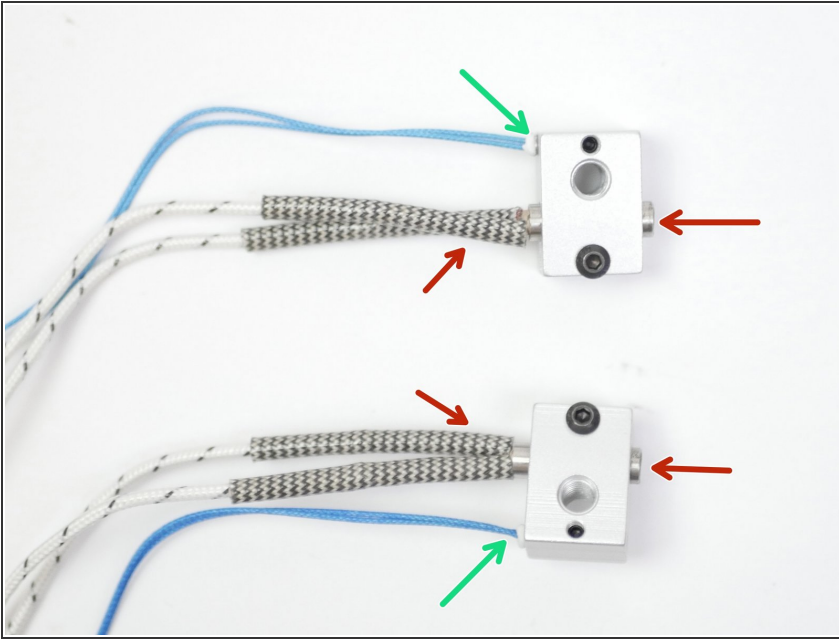
- ① The v2.1 update replaced the 3d printed mount with a CNC'd Aluminum one.
- Mount it using two M2.5 x 6mm bolts.
- Secure the probe to it using another M2.5 x 6mm bolt.

Step 9 — Heatsink Cooling Fans



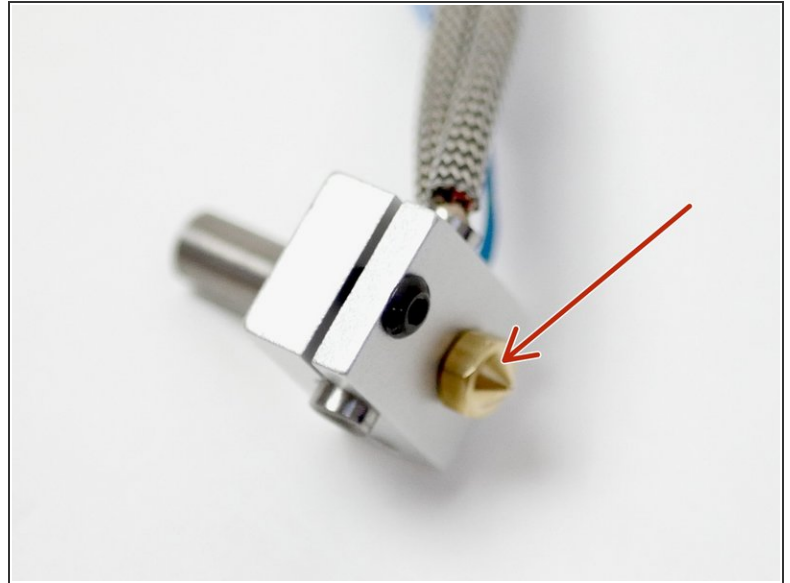
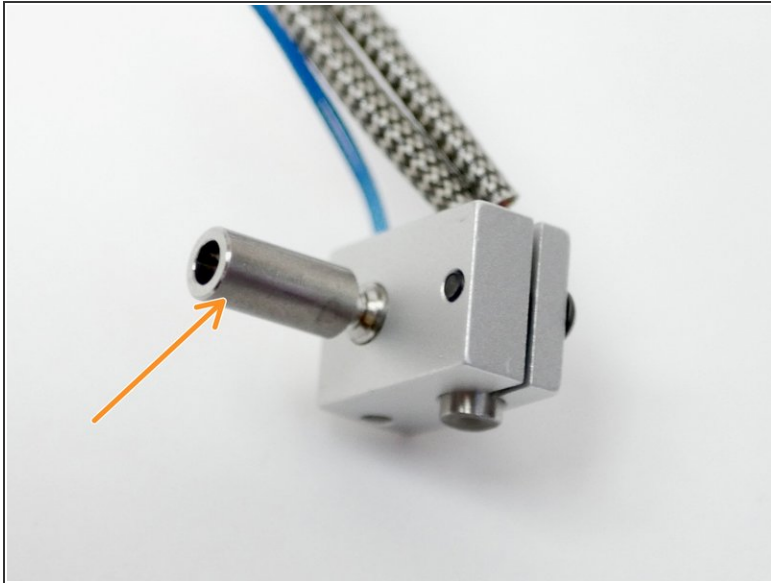
- ① Fix the two 30mm fans onto the heatsink. Orientate the cables as shown.
- M3 x 20mm bolt
- M3 x 12mm bolt
- ⚠ The V2.1 update uses the following bolts in only these locations:
- M3 x 30mm Cap Head Bolt

Step 10 — Preparing the Heater Blocks



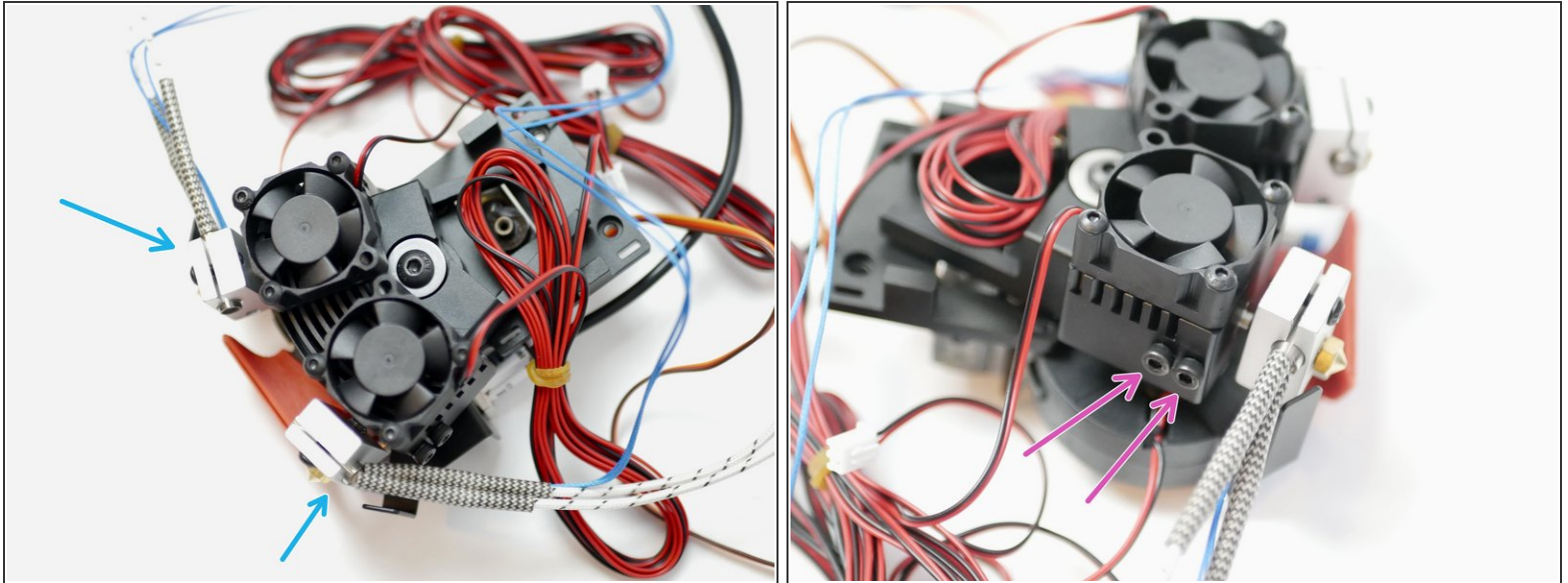
- Take the two heater blocks and fix into them the two heater cartridges as shown.
 - Fix two thermistors to the blocks. We've shown two high temp. thermistors being installed here, but it is identical for the low temp thermistors too.
- ⚠ Make sure to match the orientation as shown in the photos. The two assemblies should mirror each other.

Step 11 — Heater Block Assembly Cont.



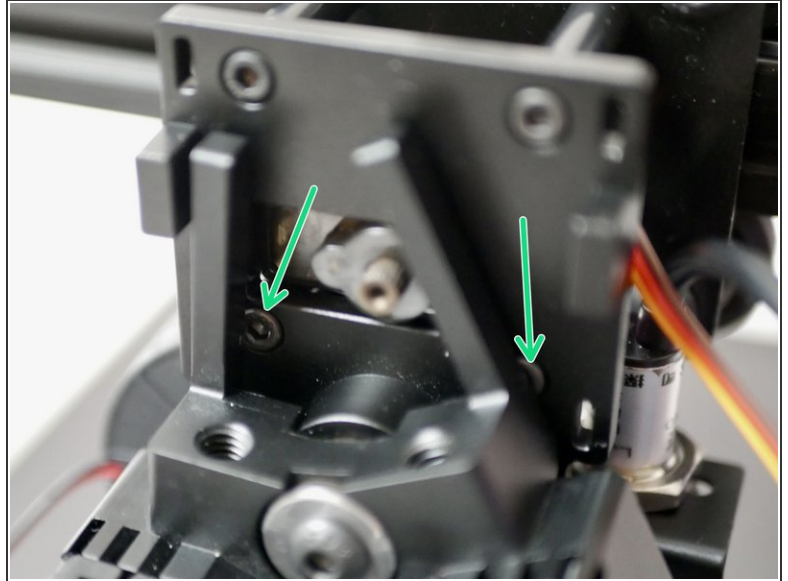
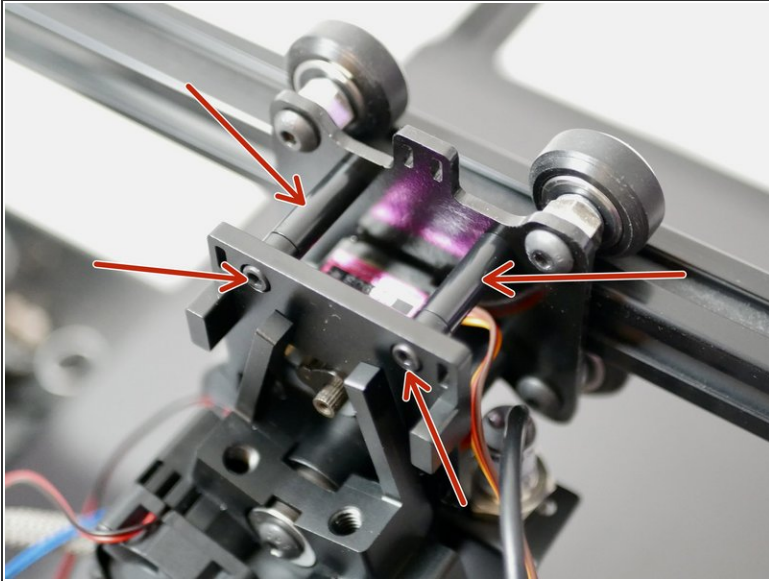
- Fix onto both the heater blocks, the heat-break.
 - and the nozzle.
 - ☑ The v2.1 Update will also include a Copper/Titanium heat-break. It is installed in the same way.
- ⚠ Make sure that the nozzle is tight against the heatbreak, but leave a slight gap between the nozzle and heater block when tightening. The nozzle will need to be tightened again when hot.

Step 12 — Installing the Heater Block Assemblies



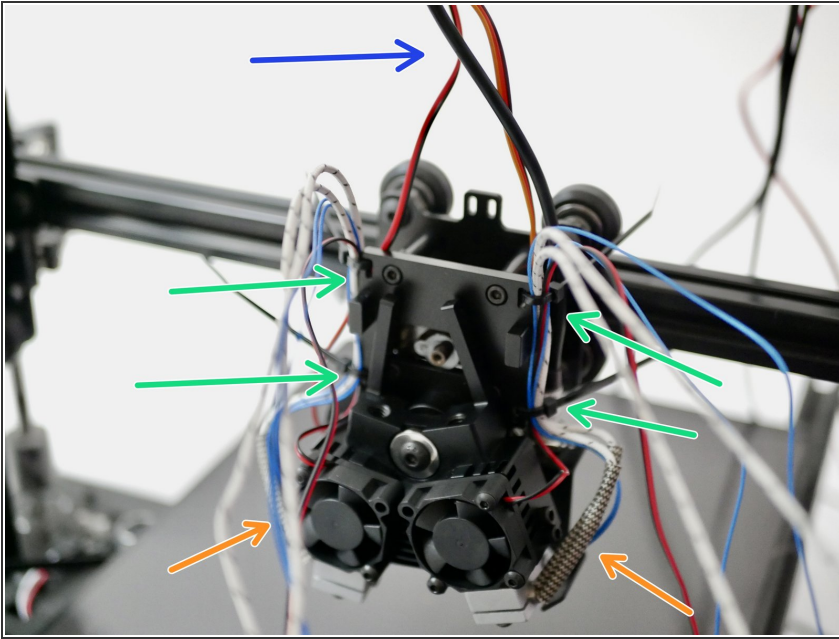
- Take the two heater block assemblies from the previous step and install them into the heatsink.
- Fix the heater block assemblies in place with two M3 x 12mm bolts. Make sure that the bottom of the heartbreak lines up with the face of the heatsink. The height will be adjusted later to match your print platform.
- ① Note the orientation in the image. The heater side of the block should be facing forward.

Step 13 — Mounting the Switching Hotend Assembly



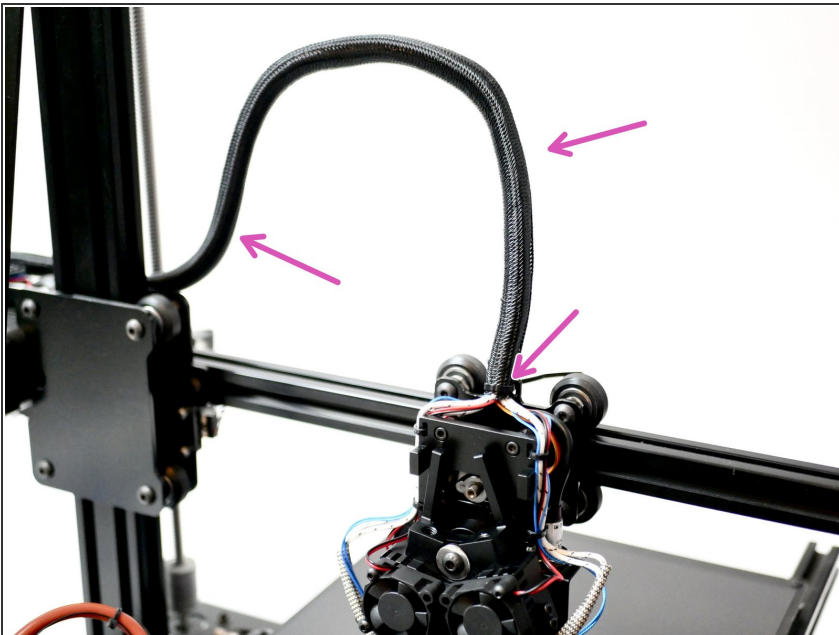
- Mount the assembly to your printer's tool carriage with four M3 x 30mm bolts and four M3 x 20mm spacers.
 - ① We are showing it being mounted onto the 2020 tool carriage from the Proforge 2S.
- Tighten the bolts by beginning with the bottom two, you will have to tighten each one slightly, in turn, to prevent it from getting jammed up on the heatsink's horns.

Step 14 — Tidying the Cables



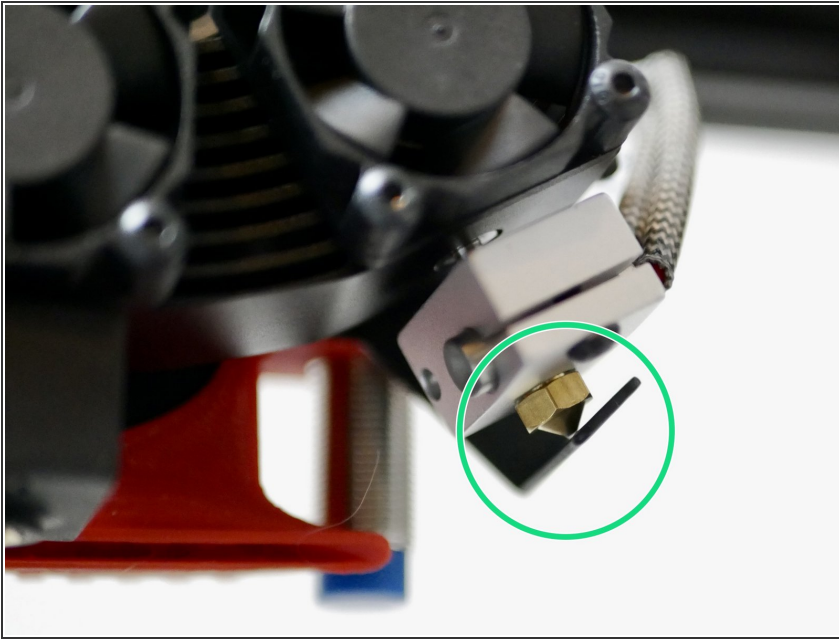
- Take the heater assembly cables and route them along the sides of the backplate. Use cable ties to secure them in place like shown.
- Heater, thermistor, 30mm fan cables.
- Before firmly securing the cable ties, make sure that there is enough slack in the cables to allow the hotend to pivot.
- Take the probe, blower fan and servo cables and point them upwards.

Step 15 — Servo Cable Extension and Braided Slewing



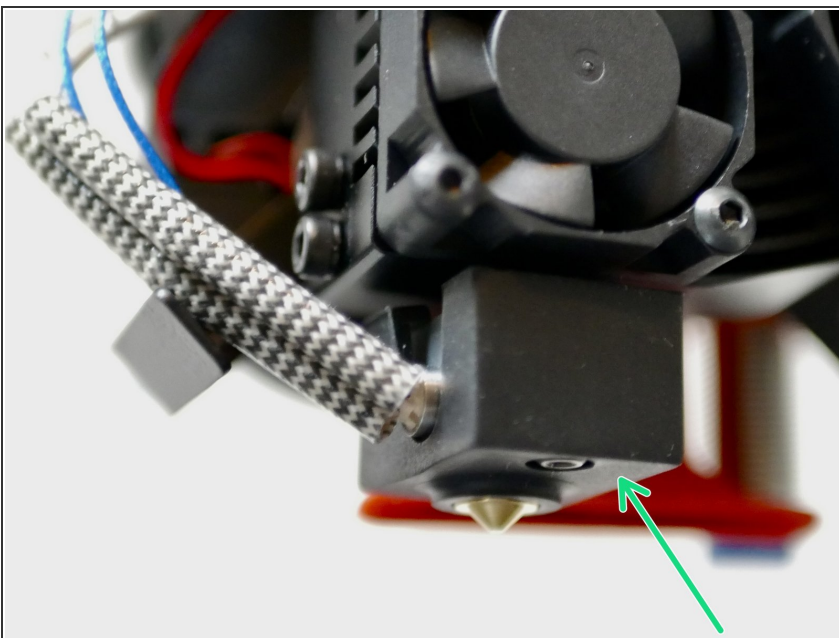
- ① Fix the servo extension cable to the servo's cable. Make a note of the cable's orientation.
- Finally, use the braided cable slewing to wrap the cables and route them down to your electronics main board.

Step 16 — Adjusting the Ooze Shields



- Adjust the ooze shields by bending the metal sleds until they are able to make contact with the tips of both nozzles.

Step 17 — Attaching the Hotend Covers



- The Hotend covers simply slide in place over the heater blocks.