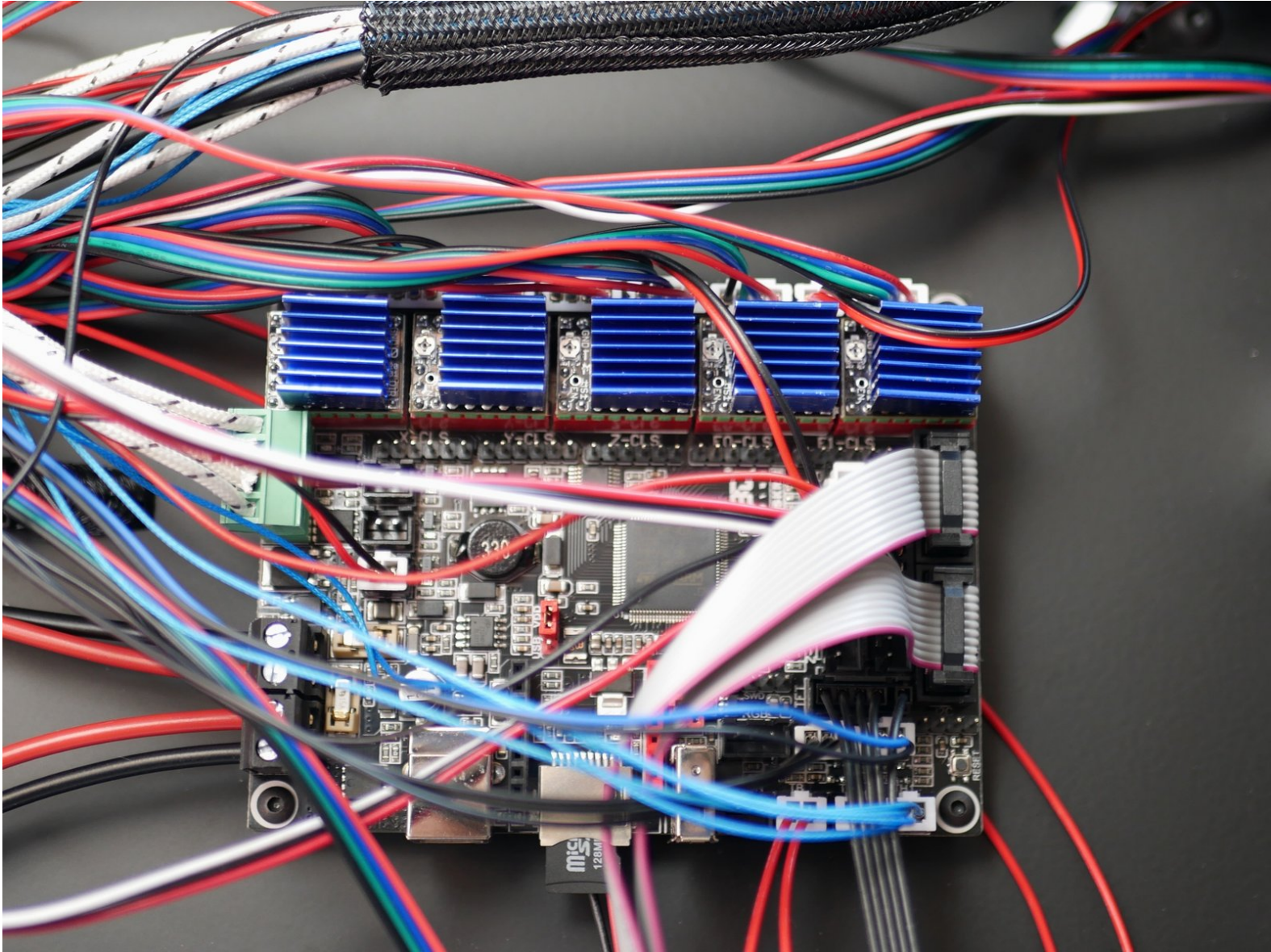


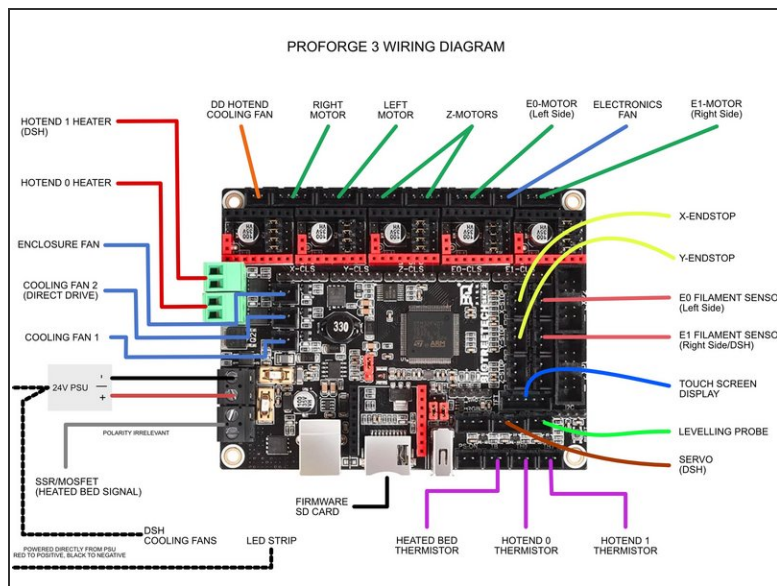
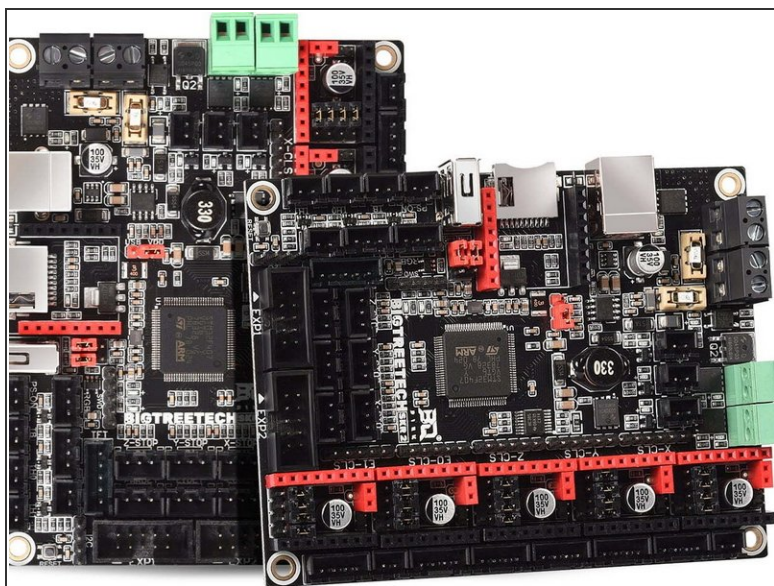
Makertech

Stage 02: Wiring

Written By: Makertech

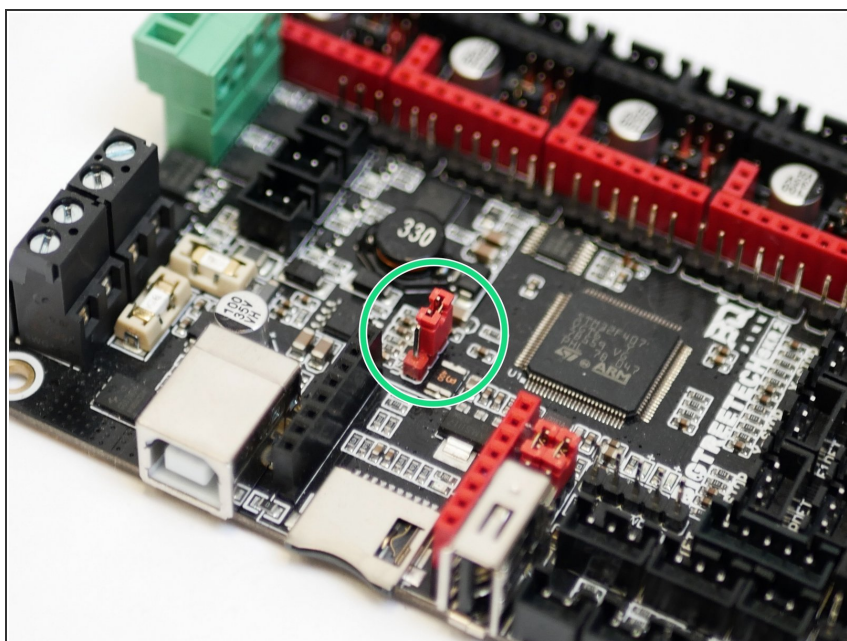


Step 1 — The SKR 2 Control Board



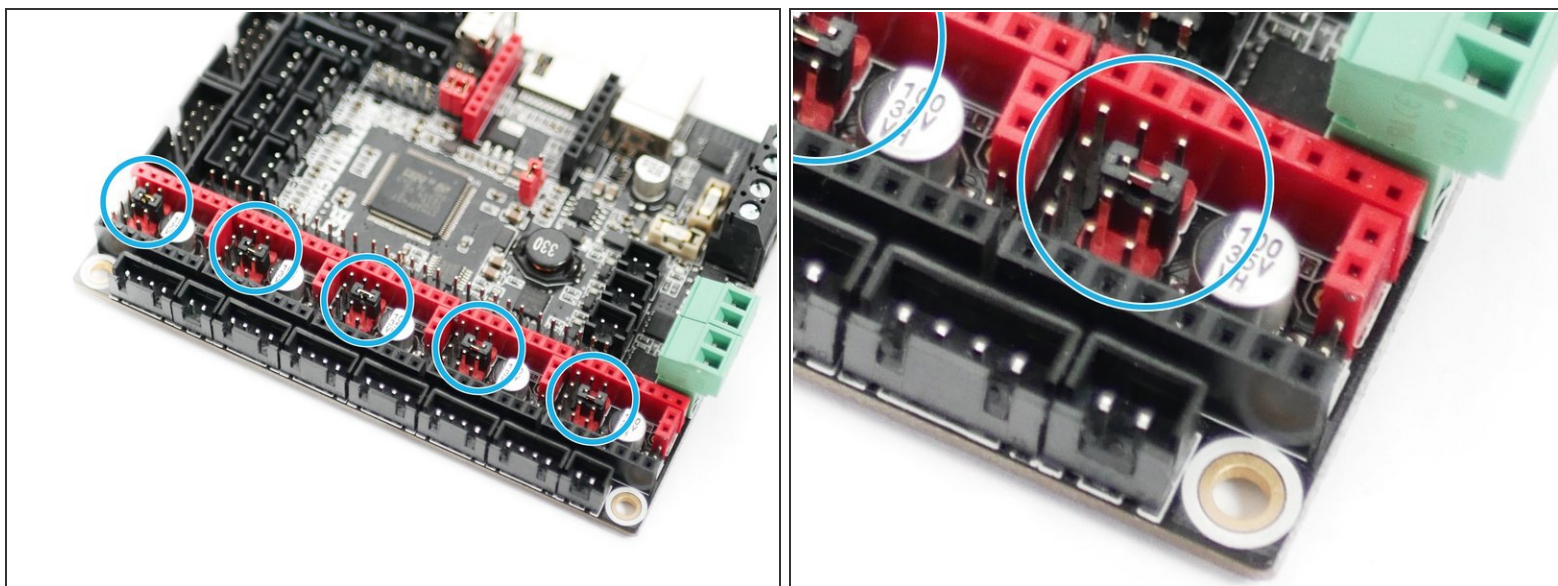
- i** The control board used in the Proforge 3 is the SKR 2 board by BigtreeTech.
- i** More information about it can be found [here](#).
- i** A complete wiring diagram can be found [here](#).

Step 2 — Preparing the Control Board



- Check that this jumper is set to VDD.

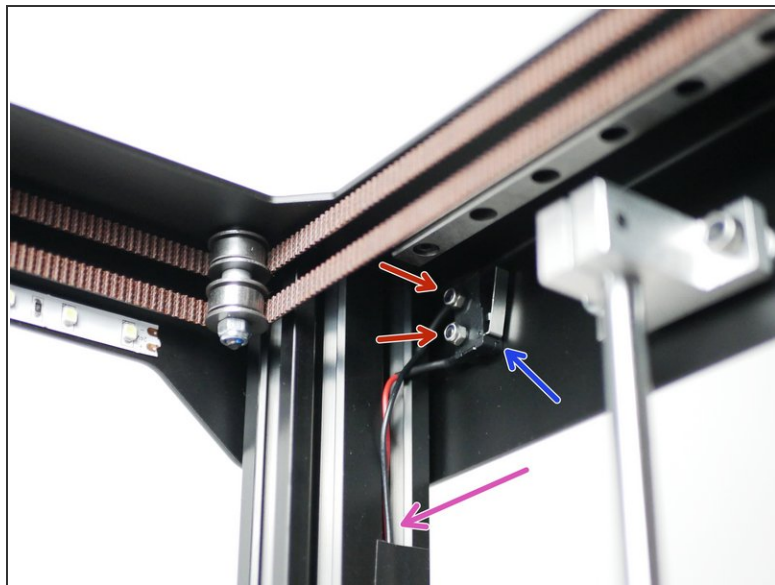
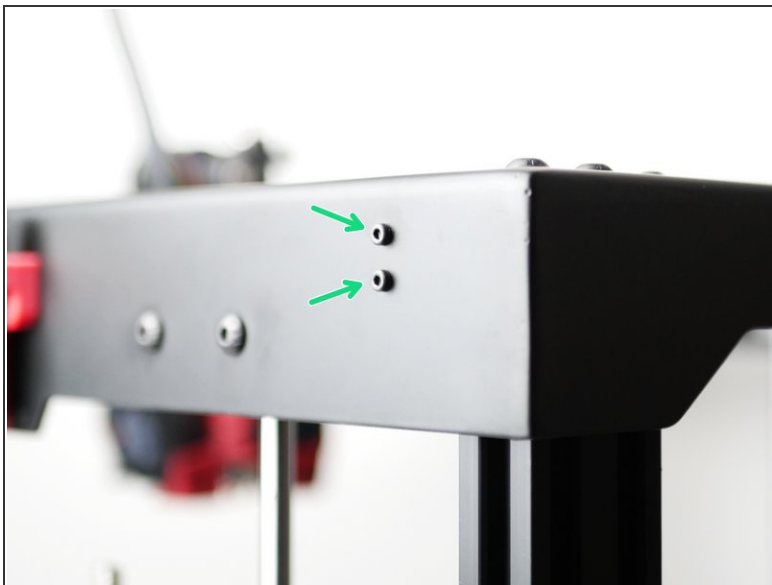
Step 3 — Stepper Jumpers



- Make sure the jumpers under the steppers are positioned as shown.

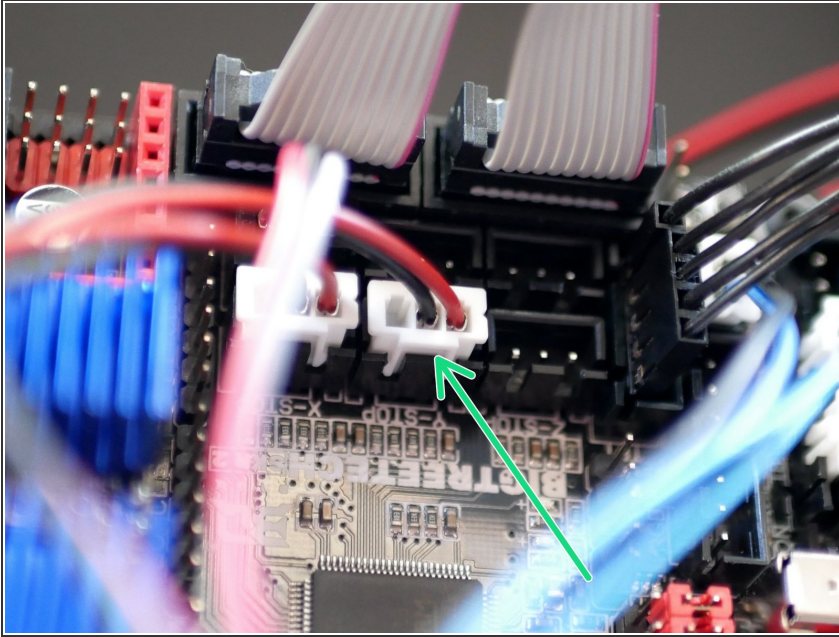
⚠ You will need to pull the other jumpers out, so you have just one connected at each stepper location, as shown.

Step 4 — Y-Endstop



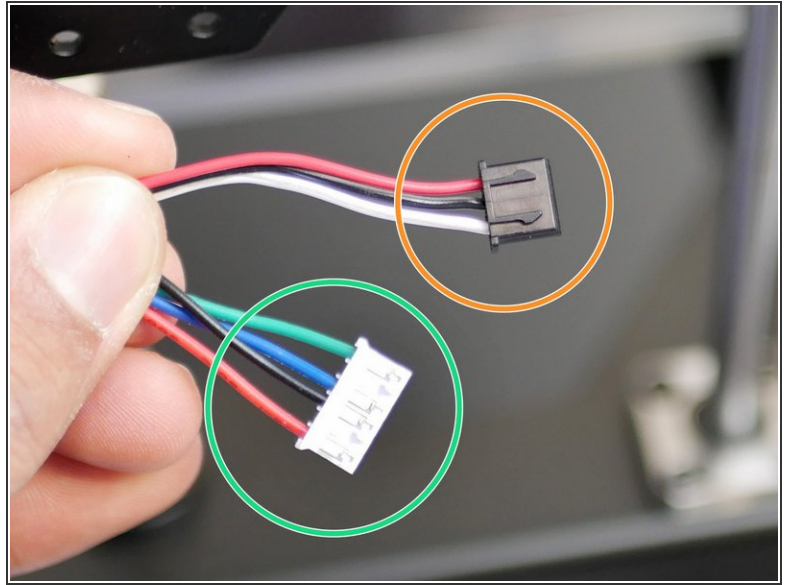
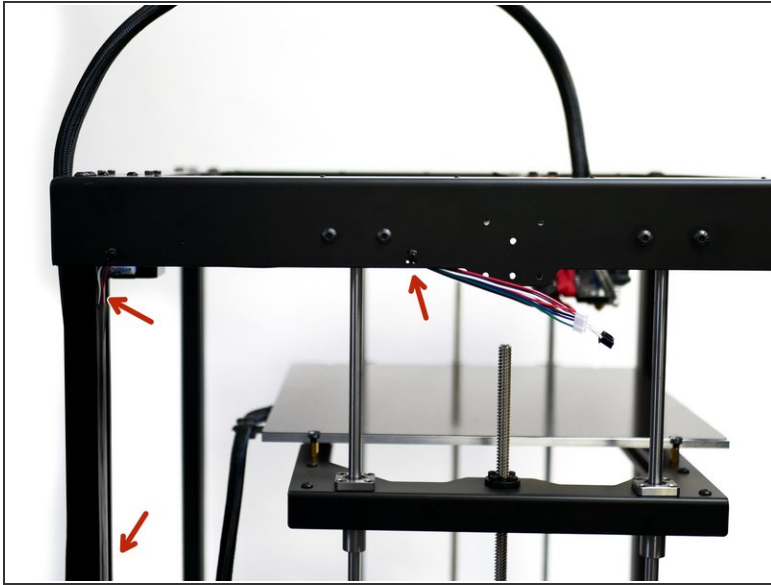
- Fix the Y-Endstop to the top panel.
 - M2.5 x 12mm
 - M2.5 Nyloc
- Route the cable down the 2040 extrusion.
- ☑ Optional - Use electrical tape to better secure and hide the cable.

Step 5 — Y-Endstop to Board



- Connect the Y-Endstop to the control board.

Step 6 — Filament Sensor and Motor Cable (Left Side)

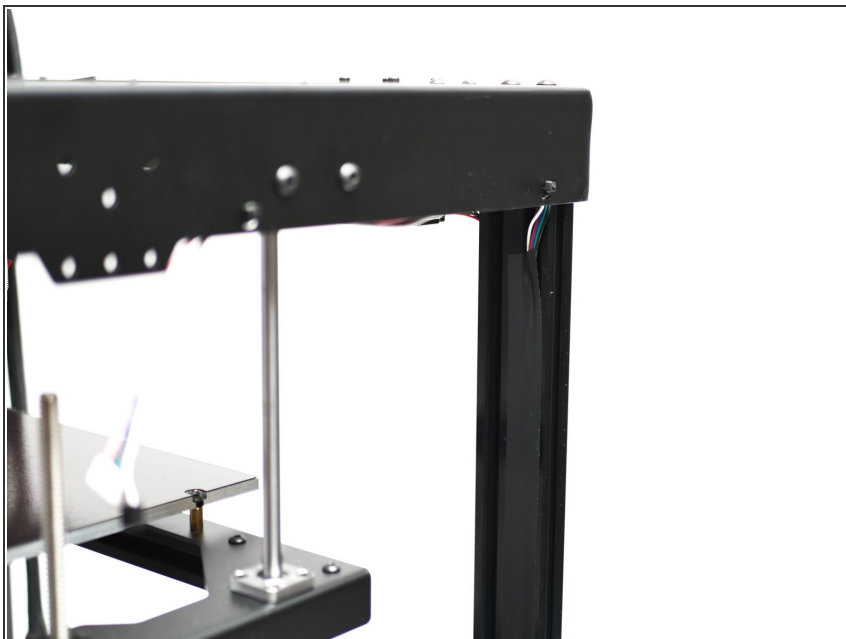


- i** Take the filament sensor and motor cables together and fix with a cable tie to the top panel.

 - Route the cables down the 2040 extrusion as shown. Use electrical tape to cover the cables.
- i** Make sure that the sides of the cable that are fixed to the top panel are those that are shown in the photo.

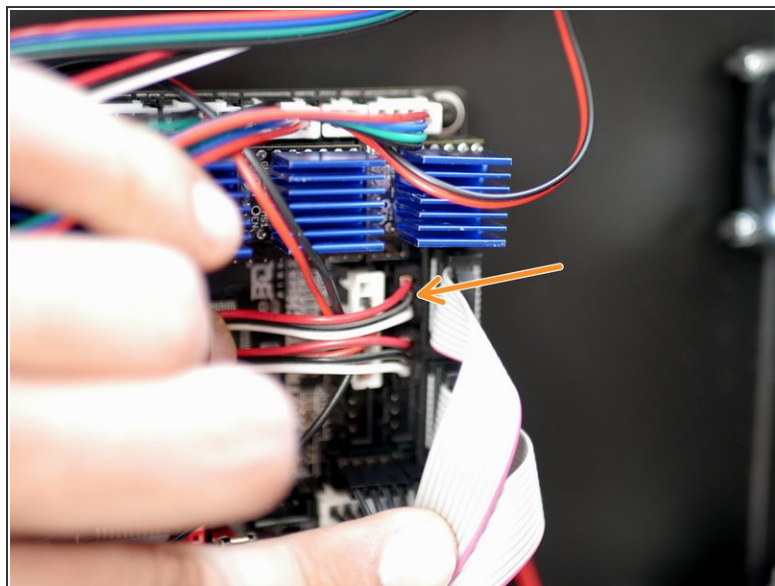
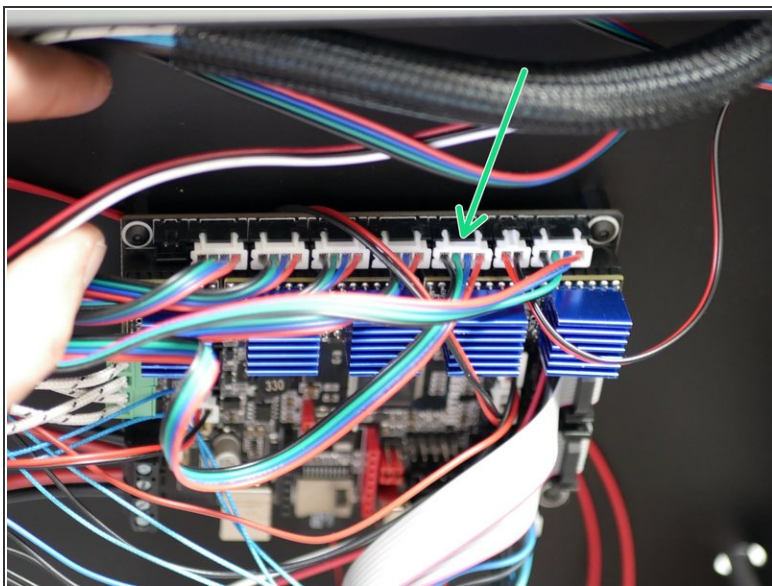
 - Motor cable
 - Filament sensor cable

Step 7 — Filament Sensor and Motor Cable (Right Side)



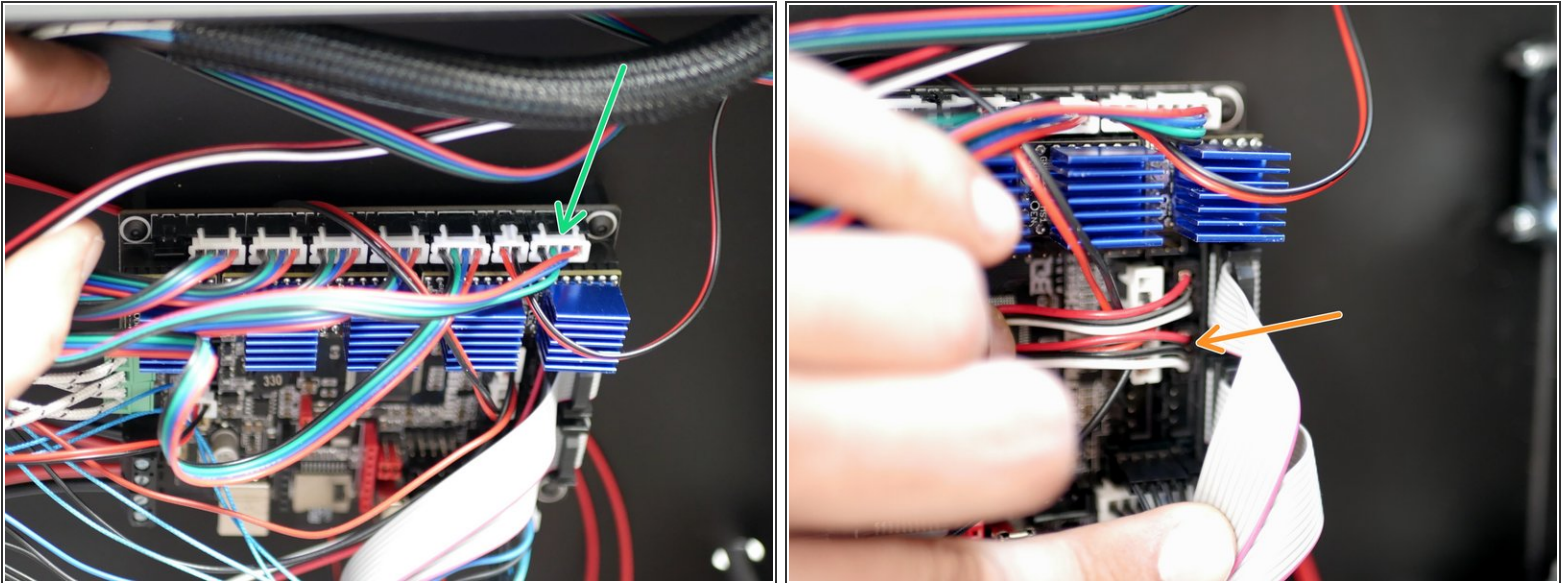
- ① Repeat the previous step, but this time on the right side of the printer.

Step 8 — Filament Sensor and Extruder Motor Cable to Board (Left Side)



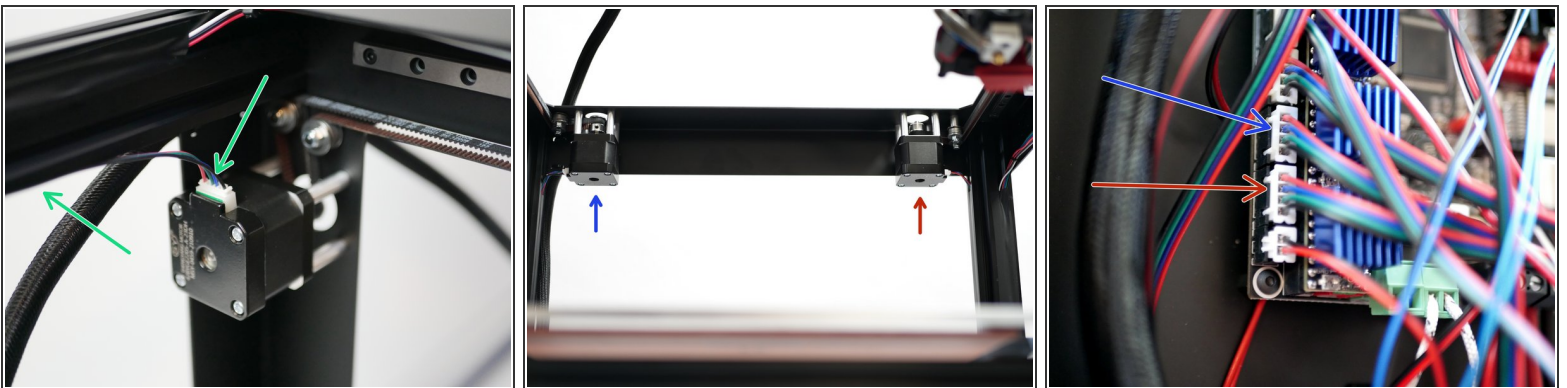
- Connect the left side extruder motor cable to the control board.
- Connect the left side extruder filament sensor to the control board.

Step 9 — Filament Sensor and Motor Cable to Board (Righth Side)



- Connect the right sides motor cable to the control board.
- Connect the right sides filament sensor to the control board.

Step 10 — X/Y Motor Cables



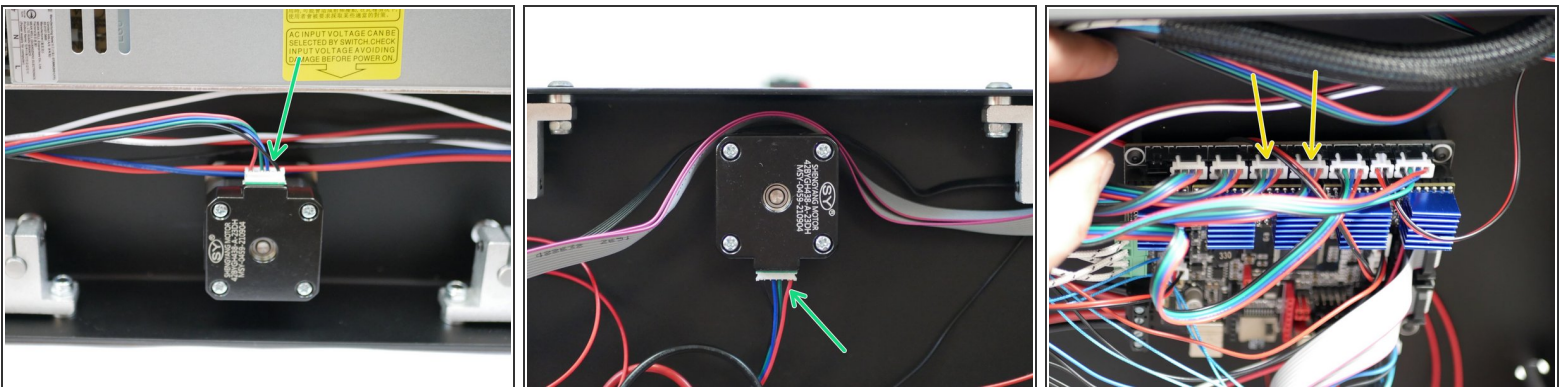
- Connect a motor cable to the X/Y Motors and route them down the side of the 2040 Extrusion.
- ✦ Use electrical tape to hide and secure in place.
- ⓘ Connect the motor cables to the control board.
 - Left Motor
 - Right Motor

Step 11 — LED Lights



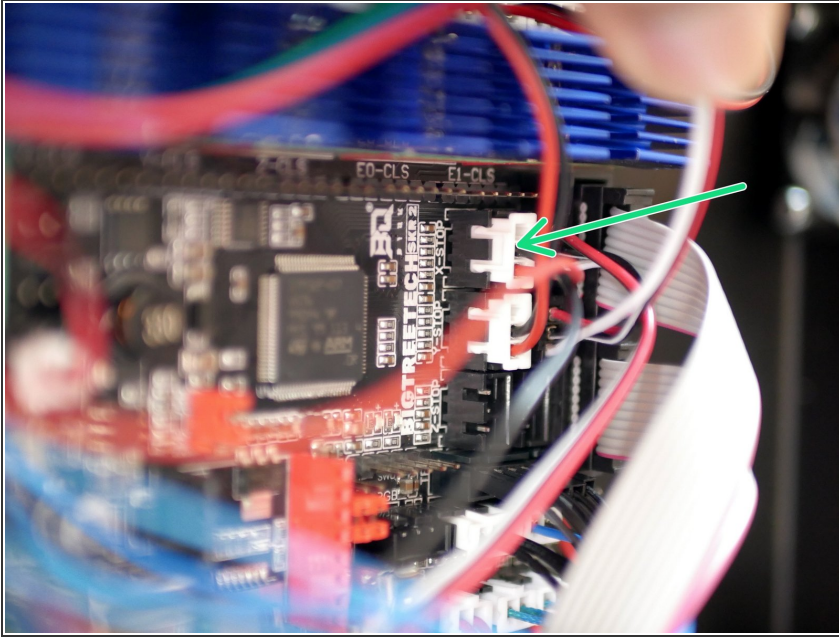
- Stick the LED strip light to the inside front of the top panel.
- Route the cable down the front right side. Again, use electrical tape to hide and hold the cable in place.
- ⓘ Wire the LED's directly to the power supply.
 - Red to positive
 - Black to negative

Step 12 — Z-Axis Motors



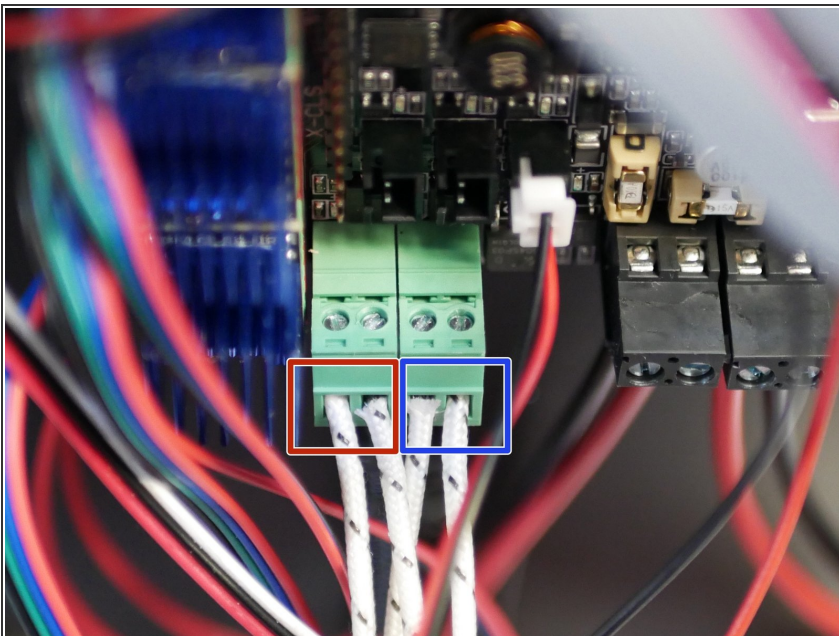
- Connect the remaining two motor cables to the two z-axis motors.
- Connect the other side to the control board.

Step 13 — X-Endstop



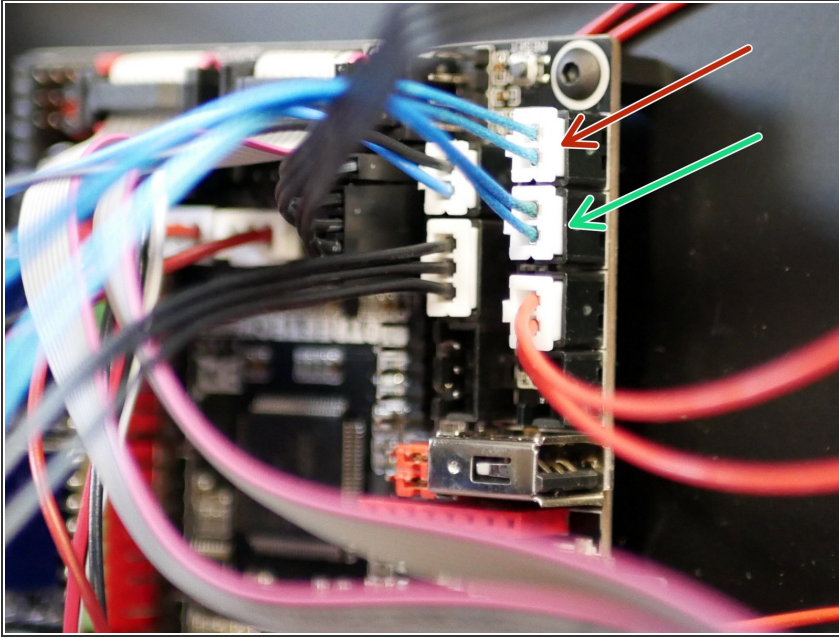
- Connect the X-Endstop to the control board.
- ☒ This is the endstop cable from the tool carriage wiring loom.

Step 14 — Hotend Heaters



- Take the **left** sides hotend heater and attach the cables to this connector.
- Take the **right** sides hotend heater and attach the cables to this connector.
- ☒ The connector can actually be pulled out of the board to make connecting the cables easier.
- ☒ You will need a small flat head screw driver for this step.

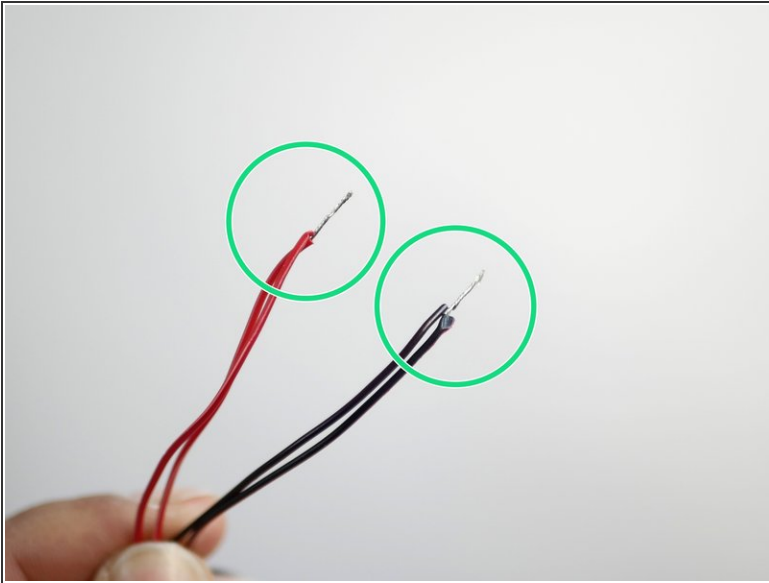
Step 15 — Hotend Thermistor



① Connect the two hotend thermistors to the control board.

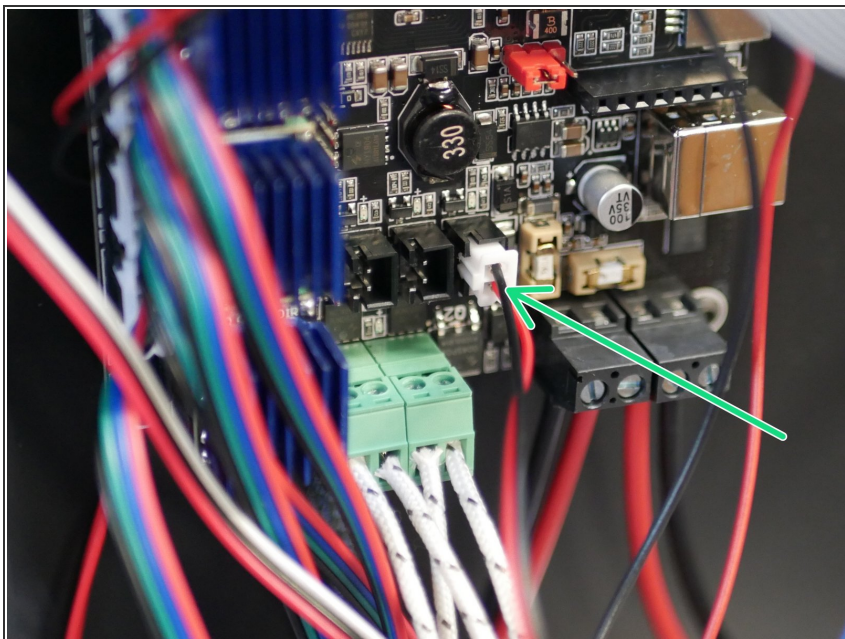
- Left Hotend Thermistor
- Right Hotend Thermistor

Step 16 — Hotend Cooling Fans



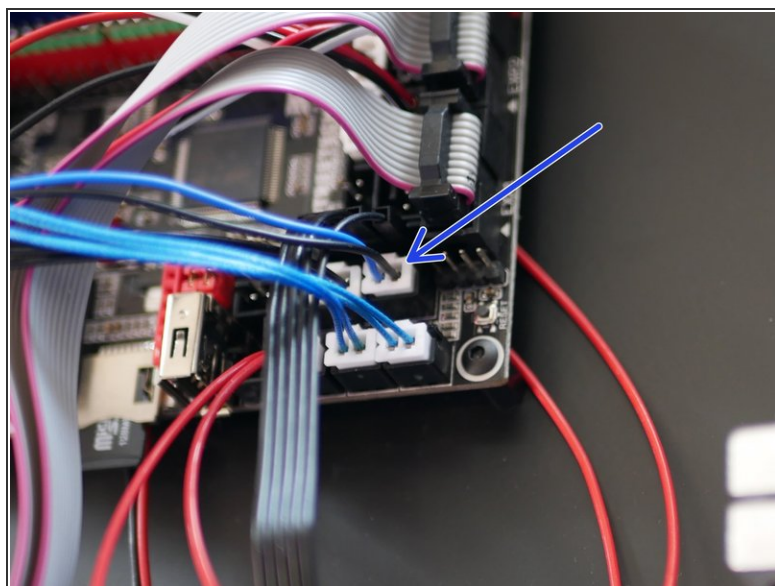
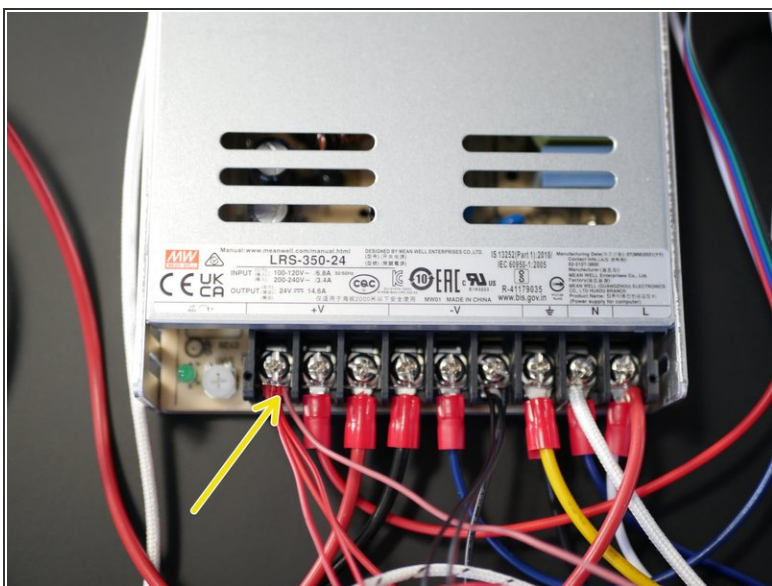
- i The two 30mm fans on the DSH heatsink are connected directly to the power supply.
- i Use scissors or side cutters to remove the two connectors and expose some wire.
 - Twist the two red and black cables together as shown.
- i Connect them directly to the power supply.
 - Red to positive.
 - Black to negative.

Step 17 — Part Cooling Fan



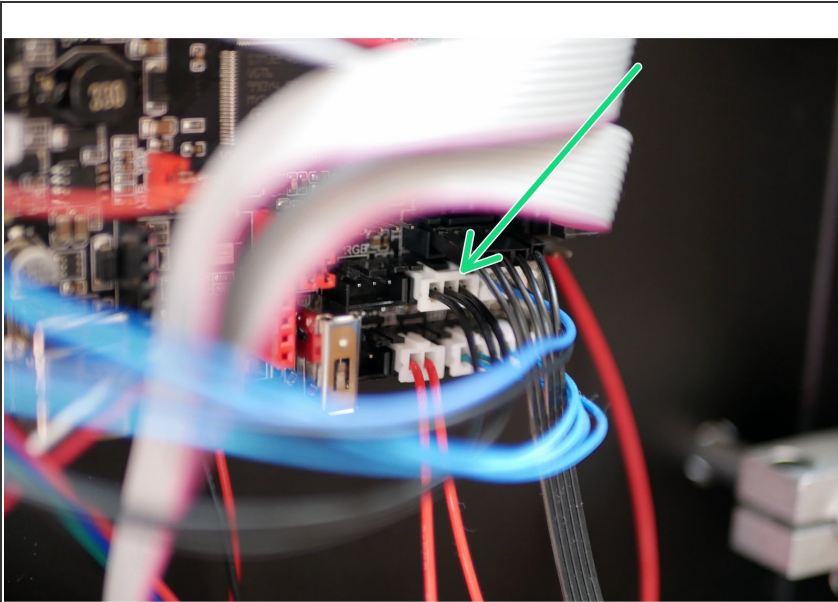
- Connect the part cooling fan to the control board as shown.

Step 18 — Probe



- Connect the brown cable from the probe directly to a positive terminal on the power supply.
- Connect the black and blue cable from the probe to the control board in the position shown.

Step 19 — Servo



- Connect the servo to the control board as shown.
- ☑ This is the servo extension cable.

Step 20 — Stepper Drivers

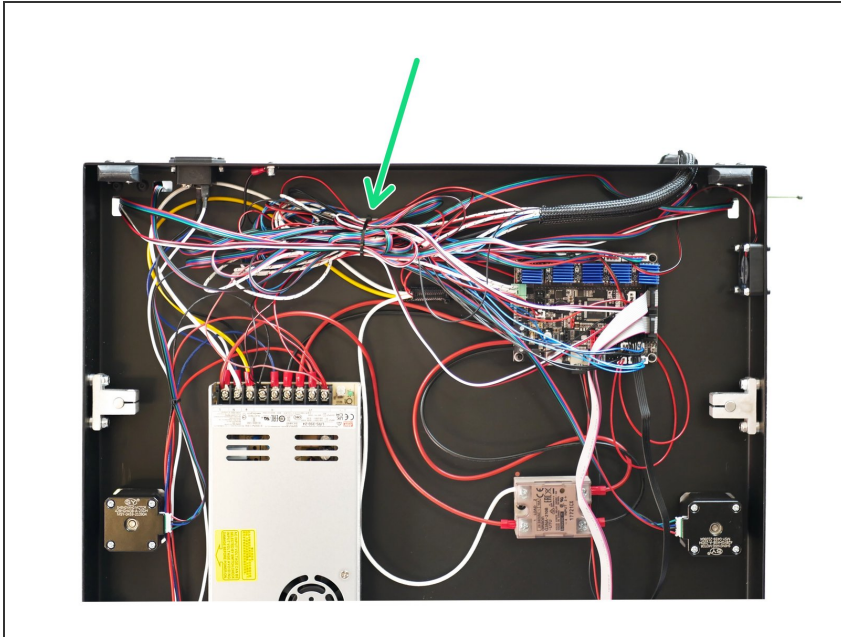


⚠ Before beginning, make sure that you have earthed yourself (by touching a large metal object) to avoid the chances of static damage.

- Prepare the five TMC2209 stepper drivers by removing them from their packaging and securing onto them their heat sinks as shown in the first image.
 - ☑ Make sure the heatsink is not touching any of the pins.
 - ☑ Orient the fins of the heatsink as shown.
- Mount all five of the TMC2209 Stepper Drivers to the control board as shown.
 - ☑ When installing, match the orientation of the drivers as shown, the green side of the stepper should go onto the red side of the mounts on the board.

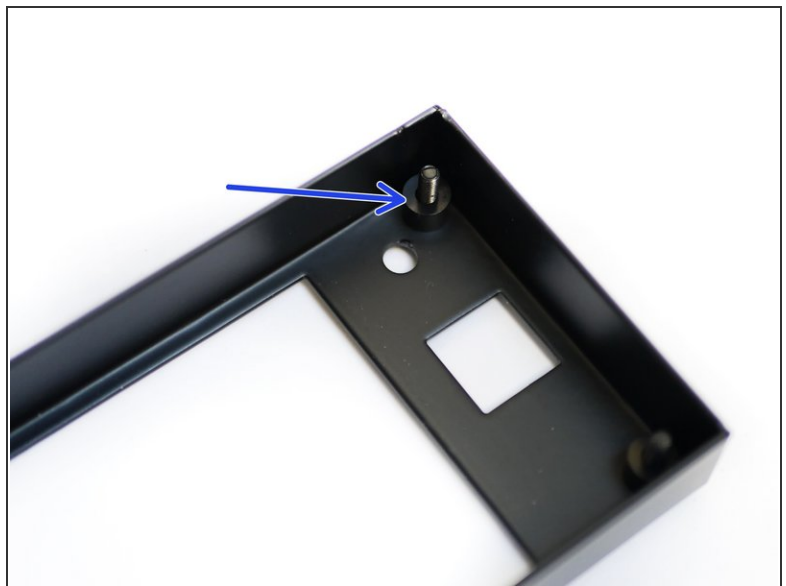
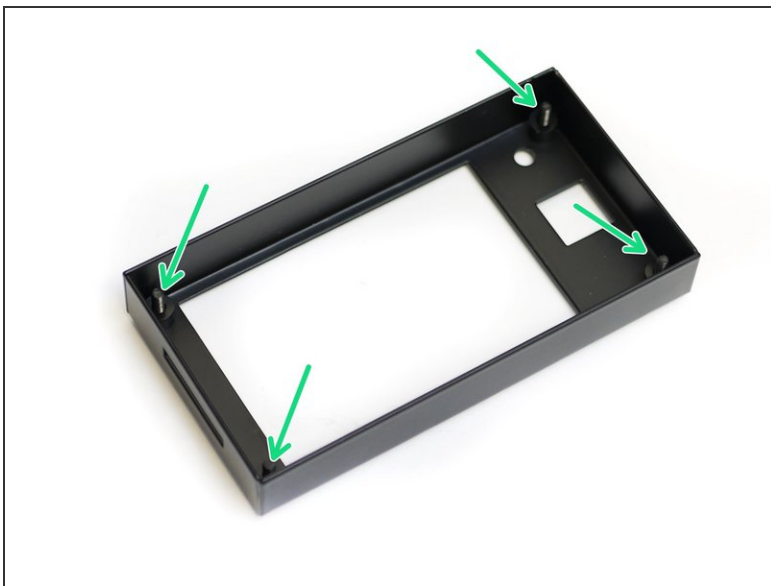
⚠ Installing a stepper driver the wrong way round will destroy it.

Step 21 — Tidying Up



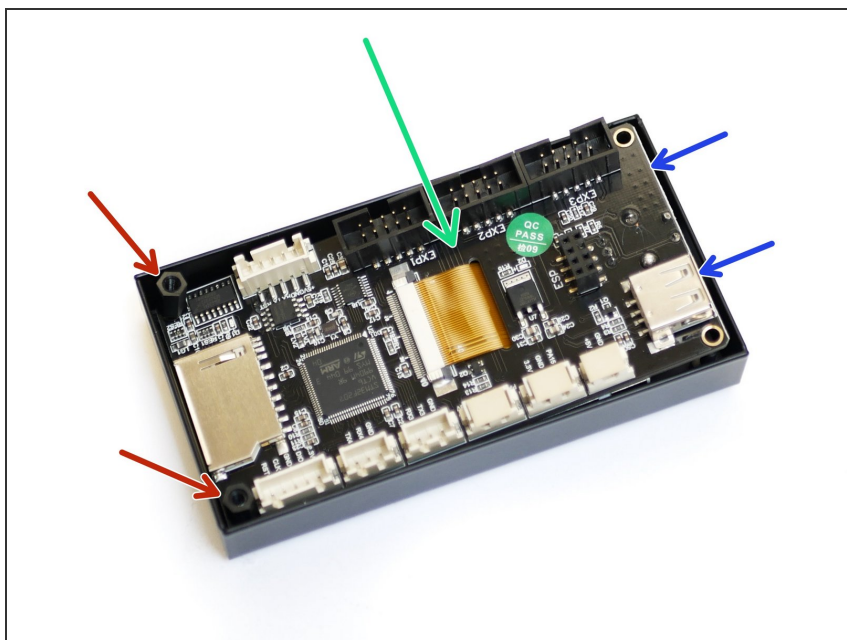
- Finally, use cable tie mounts to clean up the cables.

Step 22 — Preparing the Touchscreen Case



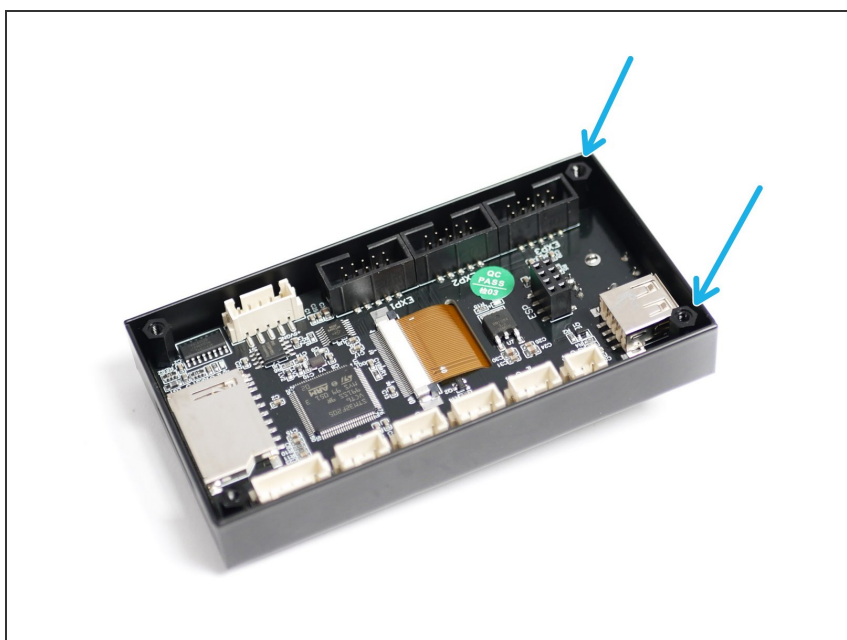
- Begin by taking the touch screen case and insert four M3 x 12mm bolts through the four holes shown.
- Place onto each of these bolts an M3 x 5mm spacer.

Step 23 — Installing the Touch Screen



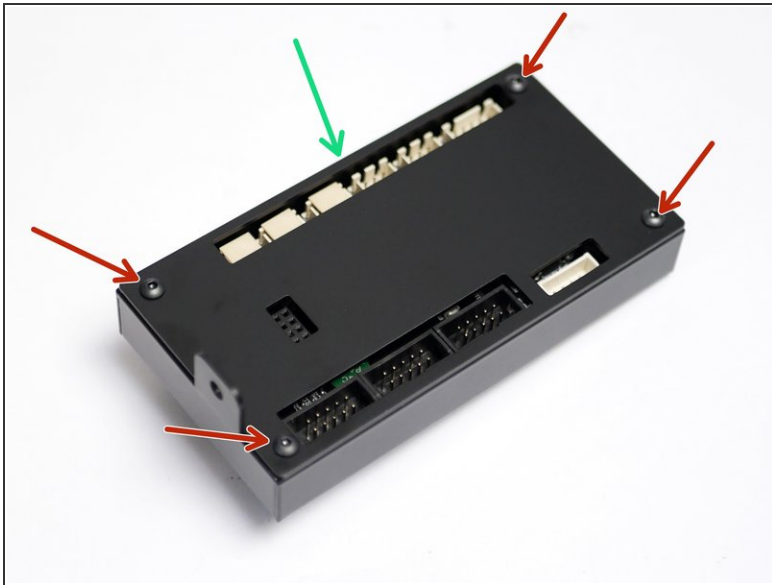
- i Begin by removing the black control knob from the front side of the screen, it should simply pull off.
- Align the touch screen with the case and drop it onto the four bolts.
- When you drop the touch screen into the case, you'll find that the control knob side will stick up.
- Thread on two M3 x 10mm threaded spacers to the two bolts on the left as shown.

Step 24 — Installing the Touch Screen Cont.



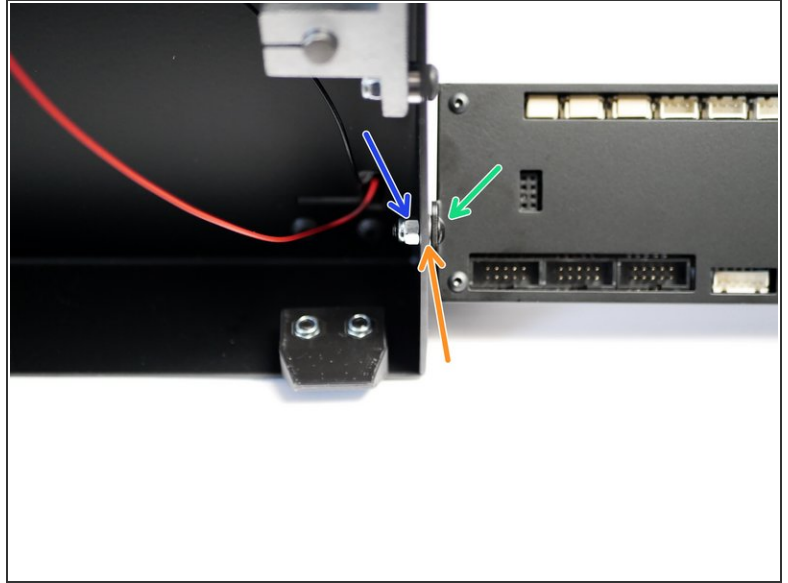
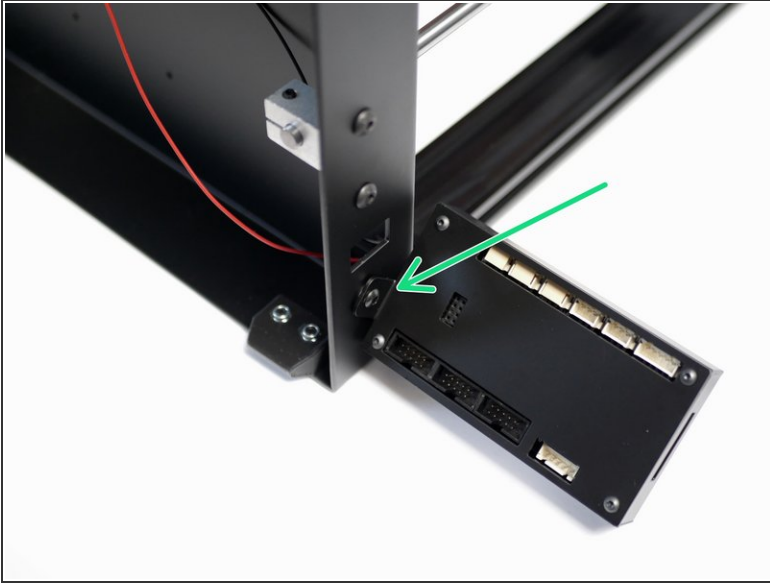
- With the left side secured, thread on two M3 x 10 threaded spacers to the remaining two bolts.
- ⚠ Hold the bolts from the underneath to prevent them from falling out.

Step 25 — Fixing the Mounting Plate



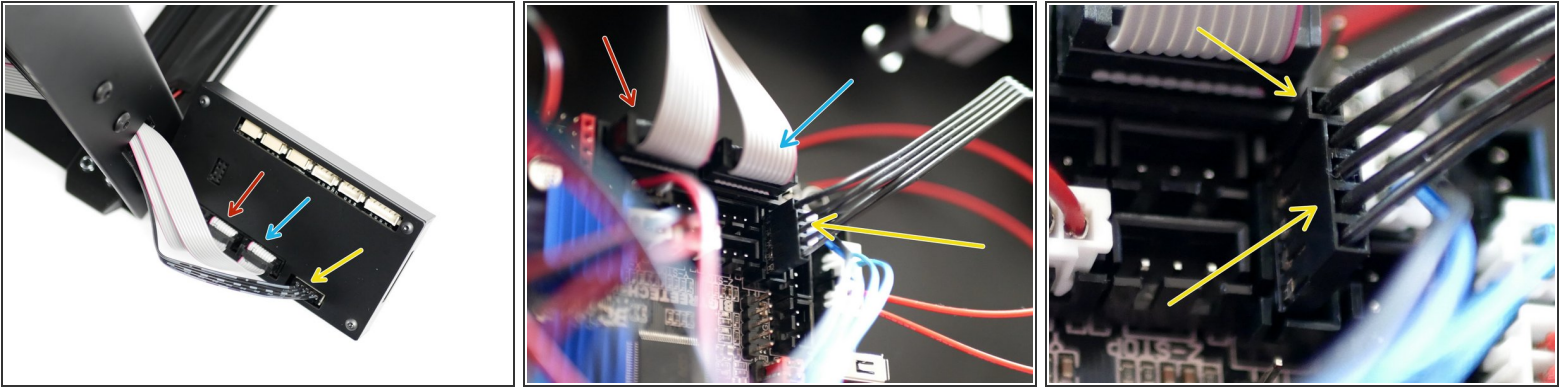
- Fix the mounting plate onto the back of the casing as shown.
 - M3 x 6mm bolt
- Push the control knob back back on.

Step 26 — Attaching to the Base



- Attach the touch screen case assembly to the base of the printer as shown.
 - M4 x 10mm bolt
 - M4 Washer
 - M4 Nyloc

Step 27 — Touch Screen Cables



- Black cable: This is for controlling the printer through the touch screen interface via serial.
 - ⓘ The two white cables are for controlling the printer directly via marlin's interface through *emulation mode*.
 - EXP 1
 - EXP 2
 - Black cable - board side.
- ⚠ Note the orientation of the loose connector and the 4-pin connector, match as shown in the third image.