# Bondtech Dual Extruder Installation Instruction (N Series Printer Only)

- ## Hardware Installation

STEP 1: Unloading

Unload the filament from both nozzles.

After the filament has been removed, power off the printer.
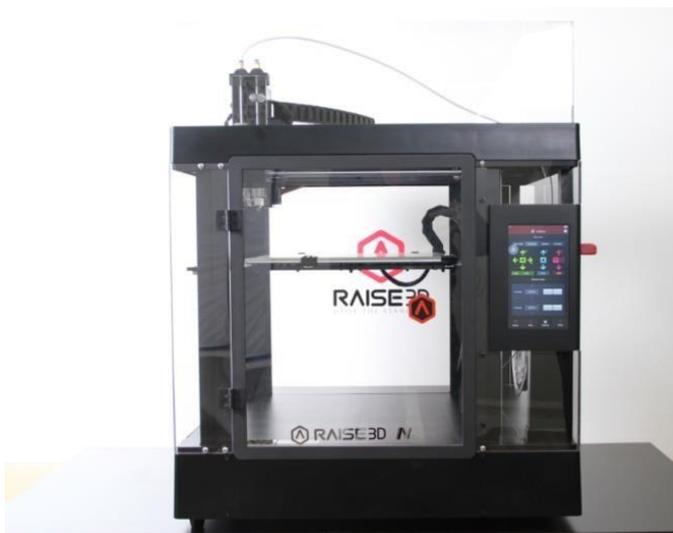
STEP 2: Unplugging Cables.

Unplug the two connectors marked in the image below. With some tape, mark the cable of the right extruder motor that in lower position to distinguish the two cables from each other for reconnecting the cables onto new extruder.
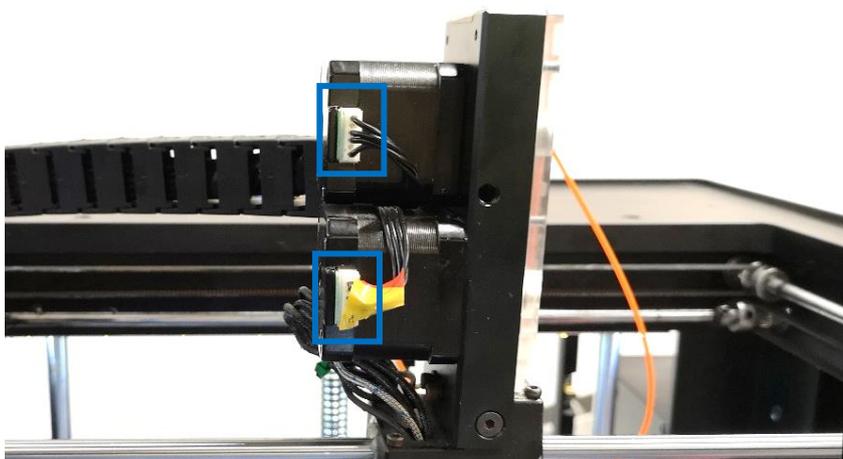
STEP 3: Remove the Original Extruder

3.1 Remove the 2 screws on the left and right side with 2.5 mm hex wrench.
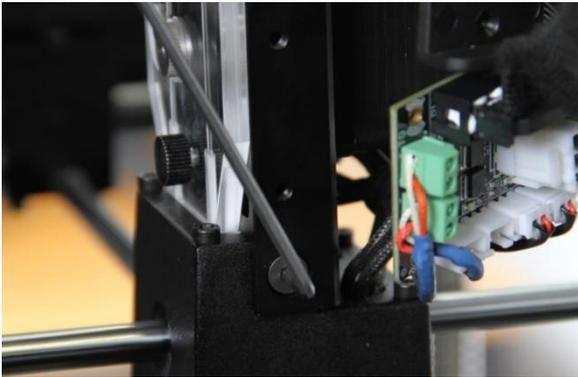
3.2 Remove the 2 screws on the back side with 2.5mm hex wrench.
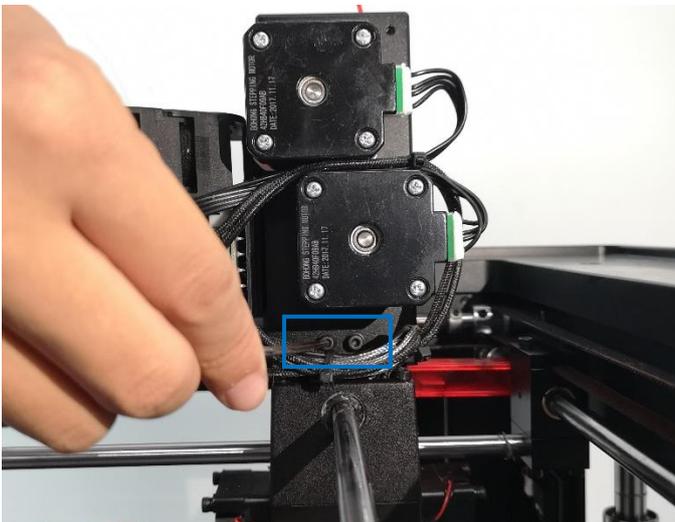
3.3 Remove the 2 screws fixing the cable chain with a 2.5mm hex wrench.
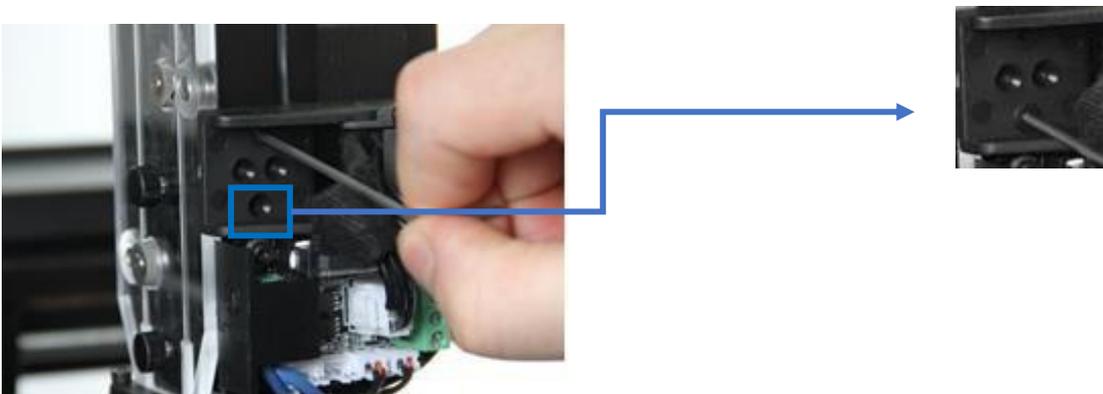
3.4 Remove the 2 screws fixing the extruder board and its origin cover with a 2.5mm hex wrench.
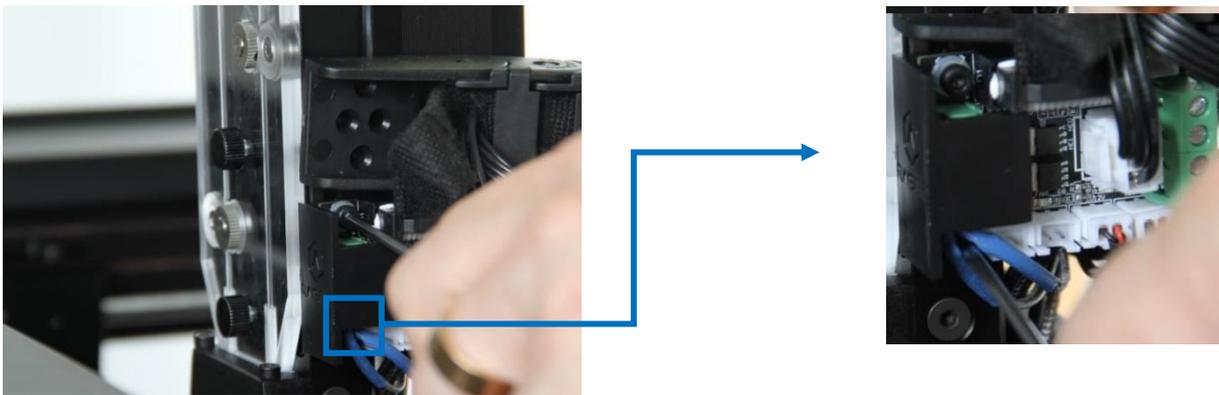

3.5 Remove the original extruder by pulling it straight up.
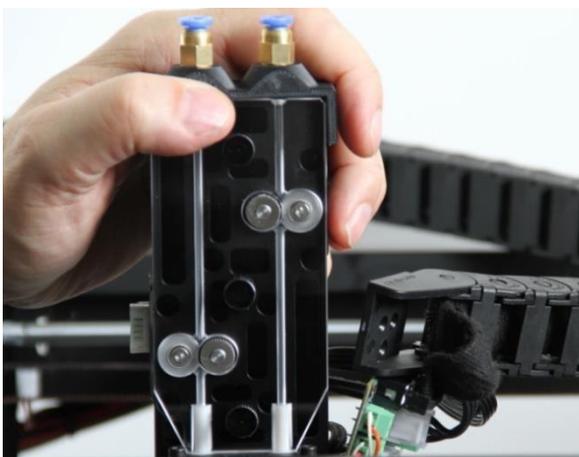
STEP 4: Install the New Extruder

4.1 Insert the two PTFE tubes into the mounting holes under the new dual-extruder and push the extruder all the way down.
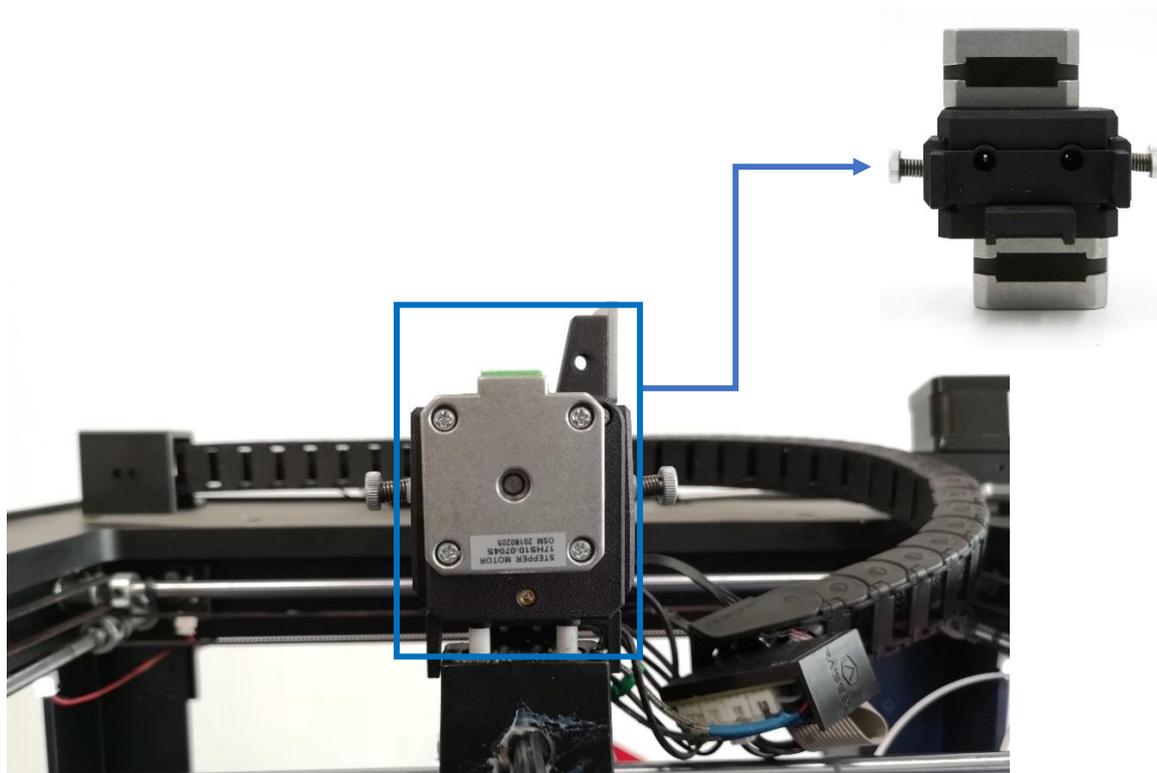
4.2 Install the original screws to the left and right (2,5mm hex wrench). Do not tighten the screws fully.
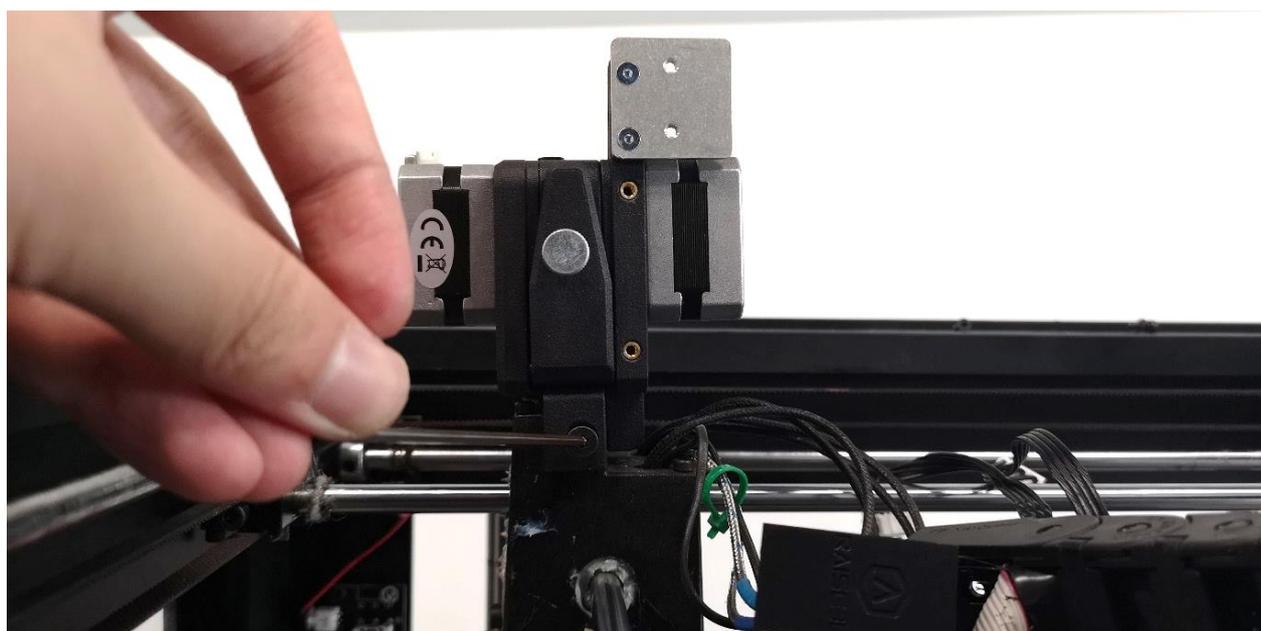
4.3 Install the 2 rear old screws with a 2.5mm hex wrench. Do not tighten the screws fully. (both sides and the rear screws)

- Re-tighten the screws in turns, Do this carefully to prevent any material cracks.
  DO NOT OVERTIGHTEN.
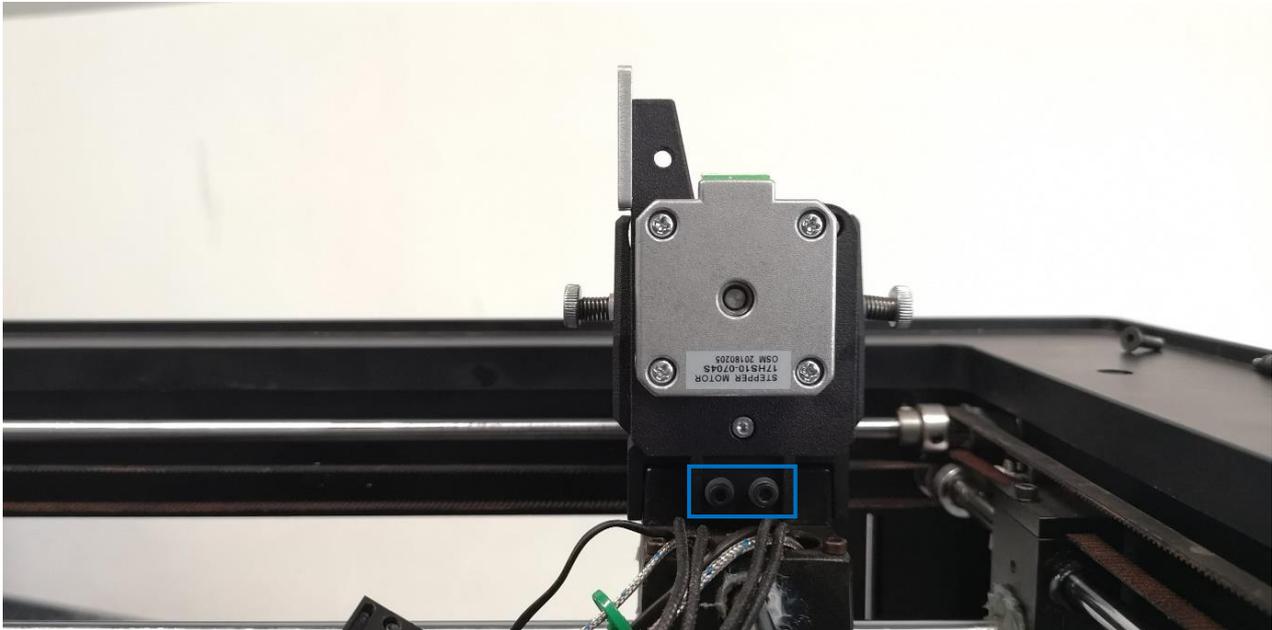
STEP 5: Attach the Extruder Board

5.1 Place the extruder board into the new holder.
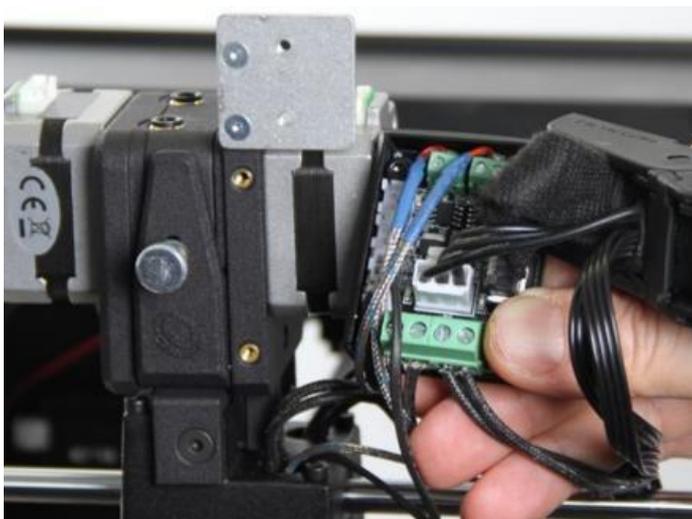
5.2 Attach the board holder. Note that the bottom screw is M2.5 and the upper one is M3.
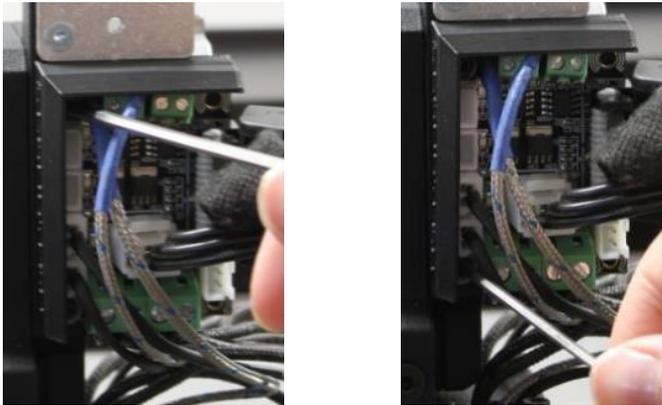
5.3 Fix the cable chain with the original screws.

STEP 6: Wring (divided in Dual-extruder and Single-extruder)

6.1 Remove the unmarked cable.

To reverse the two cables, you can use a sharp tool to lift the little plastic tab on the connector and gently pull the crimping contact out of the housing with your hand.
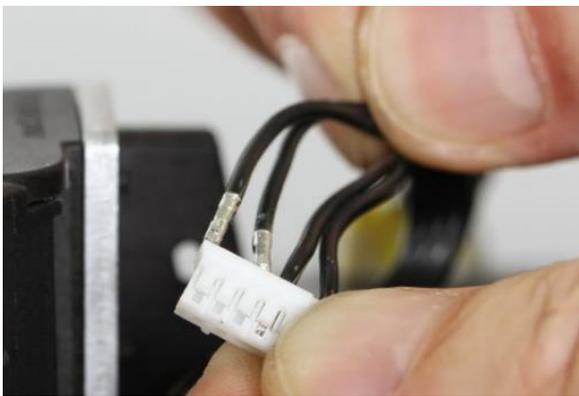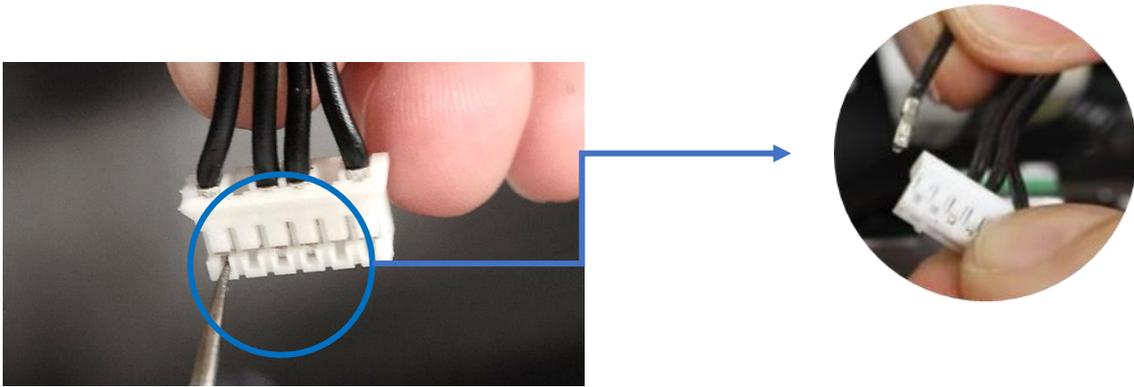
6.2 Change positions of those two cables by pushing it back into place. Reverse position 1 and 3.
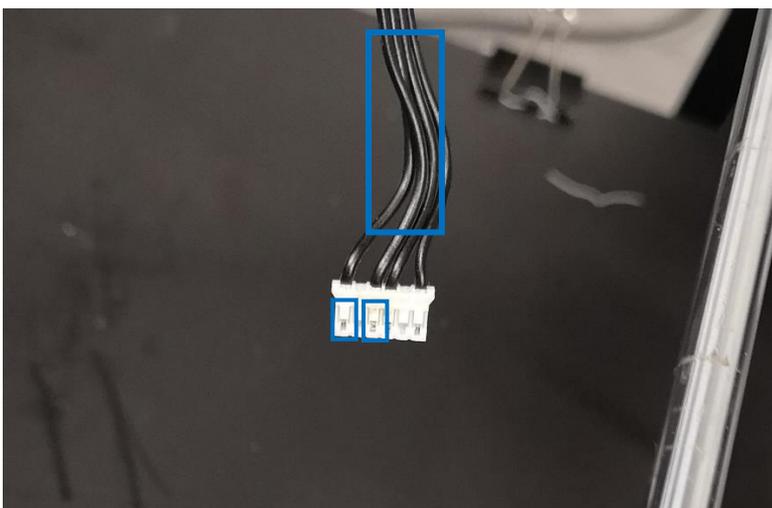
6.3 Plug the unmarked cable onto the rear motor and the marked cable into the front motor.
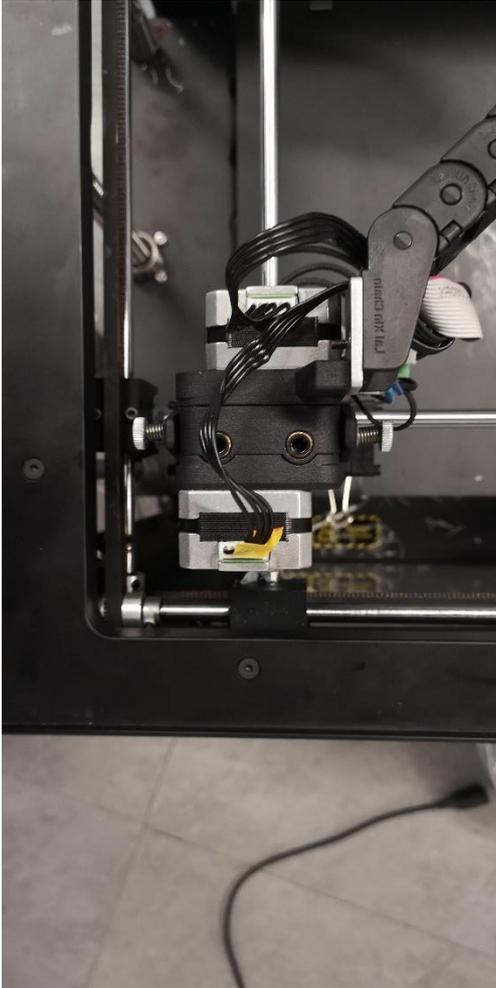
6.4 Use the zip tie to secure them, then cut tail of the zip tie.
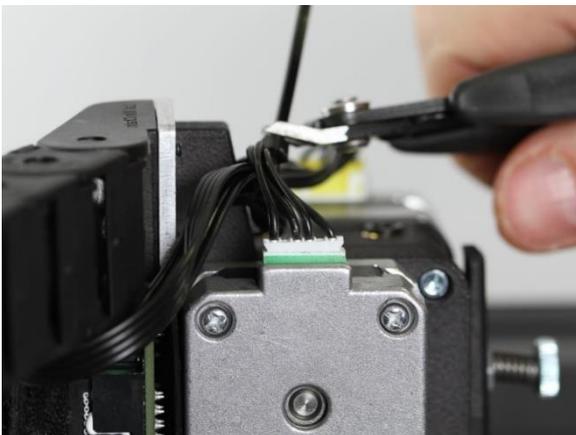
6.5 Do the same operation at the bottom and cut of the ends.

- **Software Configuration**

The E-step value tells the controller how many steps (micro steps) that needs to be sent to feed 1mm of filament. The Raise3D E-step value needs to be updated to achieve the correct extrusion volume for the new extruder.

The reason for this is that the new extruder has a different drive gear diameter and gearing ratio. The increased E step value means that the extruder will feed the filament with higher precision. This guide will show how the E-step value can be adjusted directly on the printer.

1. Click on *Utilities.*
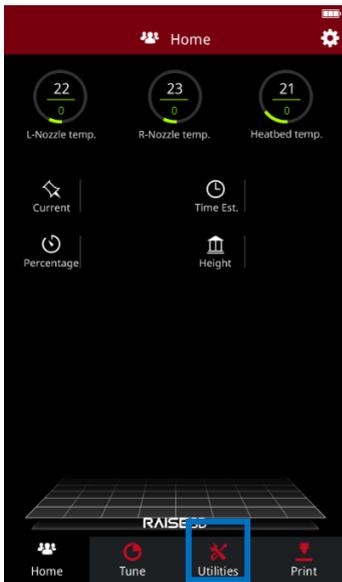
2. Press the button marked in the following picture.
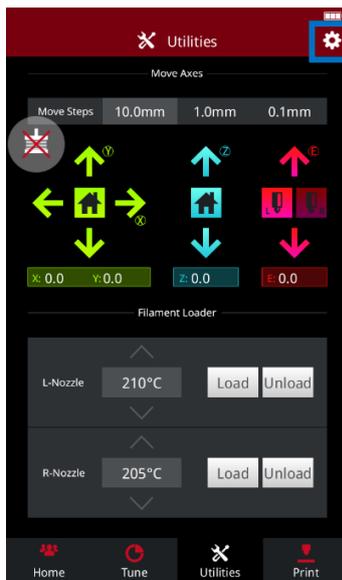
3. Go to *More Settings* -> *Hardware* -> *Step Per Unit.* to edit *E Steps Per Unit.*
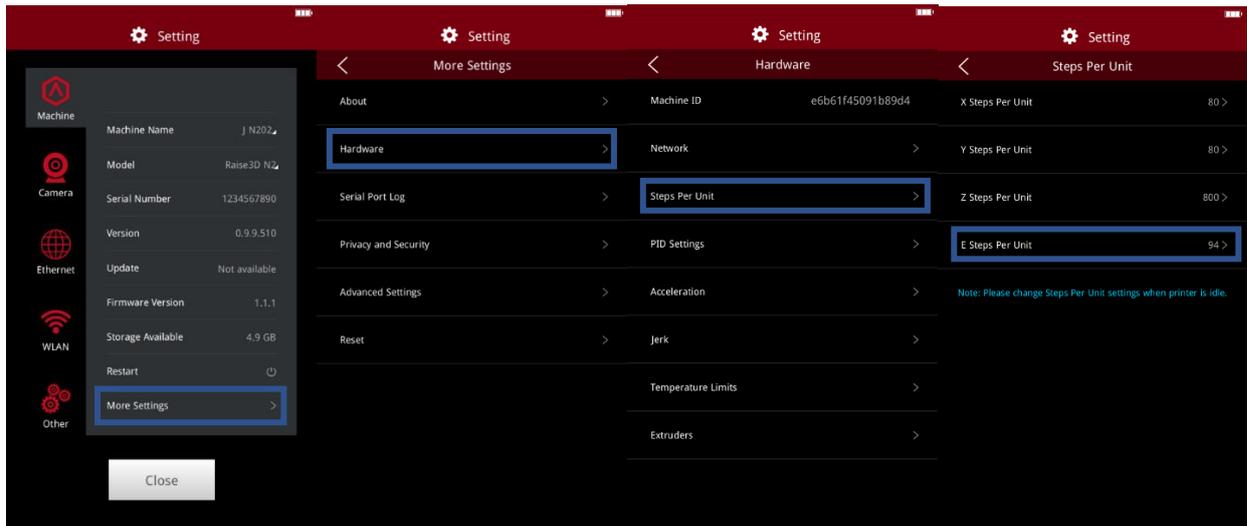
4. Set the E Steps Per Unit to be 415.
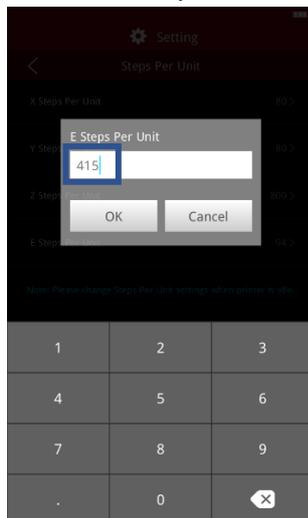
5. Double check that the new value has been changed to be 415.
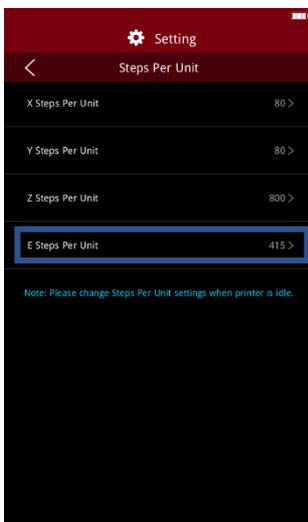
- **Electronic Configuration**

The stepper driver needs to be adjusted because we have changed the previous motor(s) to smaller one(s) that requires a lower current. There is a risk that the motors will overheat and cause damage if they are not adjusted.

You need:

      - A Multimeter
      - A Sharp tool

Depending on which cover your machine has, either use a sharp tool or a hex wrench to take the cover off.
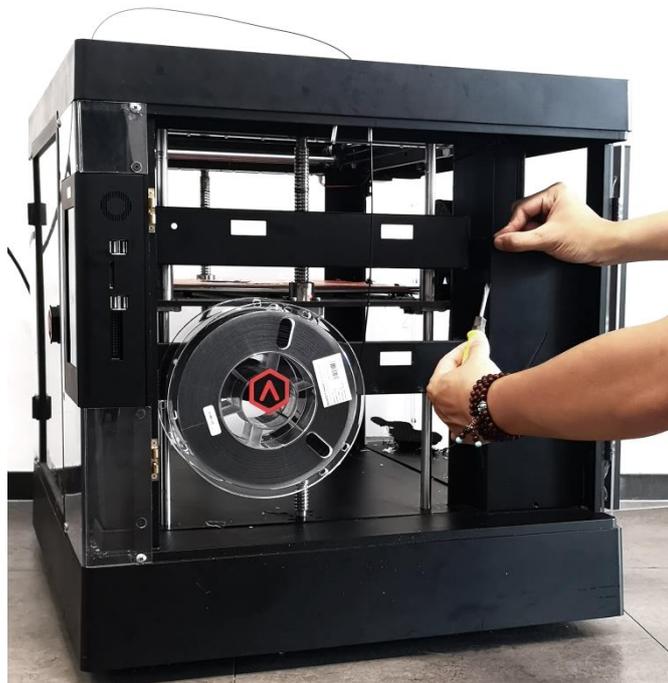
Touch the black probe to the potentiometer on the stepper driver in the top to the left.

Touch the red probe to the lower screw of the green terminal.

Now you can see the Vref voltage of the driver.
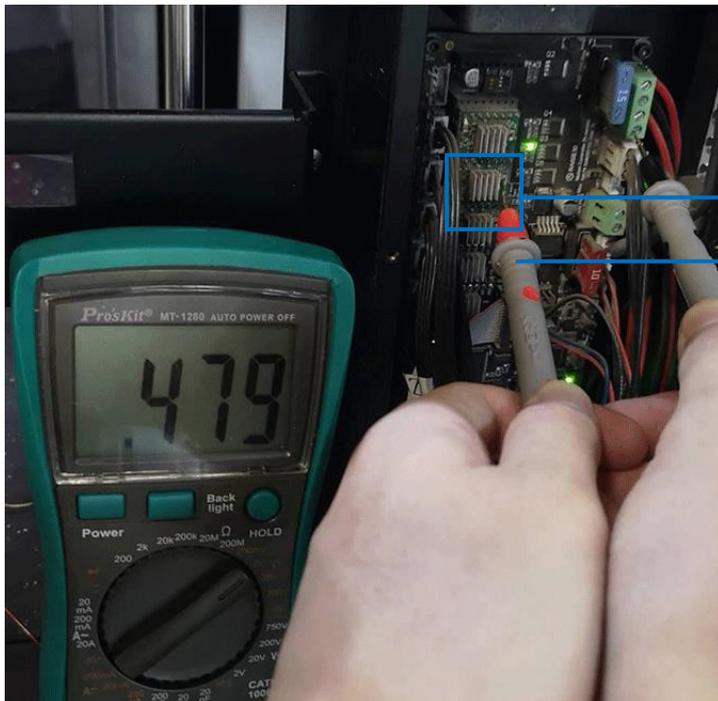
- Turn the adjusting screw carefully until you reach the value of about 0,5V(500mV), clockwise increase, counter-clockwise decrease.
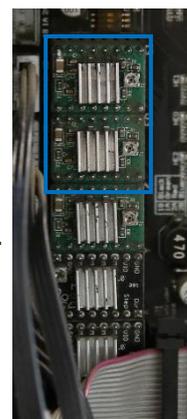
- Carry out the operation to all the top two drivers.