

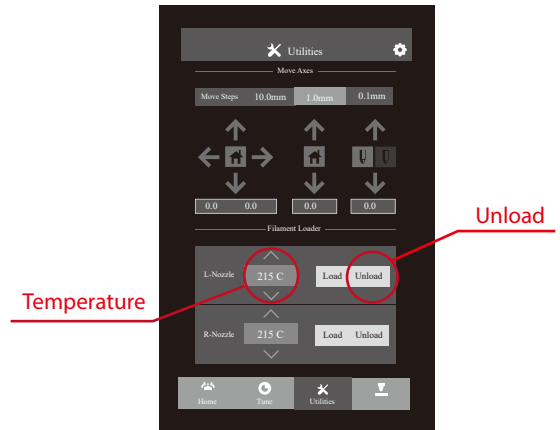
The steps of replace Extruder is similar for N2/N1. And this document is based on N2 to do introduction.

Step 1: Unload Filament

In the 'Utilities' tab, verify that the temperature is set for your material. (215 C for Raise3D PLA)
Use the arrows to adjust the temperature if required.
Press the "Unload" button to begin.

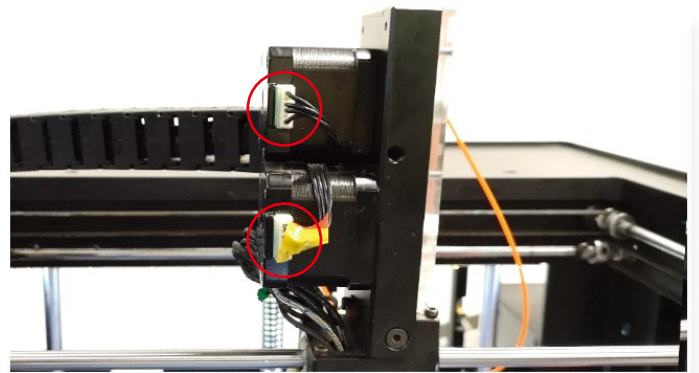
The printer will begin to heat up to the designated temperature. Once the temperature is reached the Unload button will become available.
Press Unload to withdraw the filament.

Power off the printer once unloading has been completed.



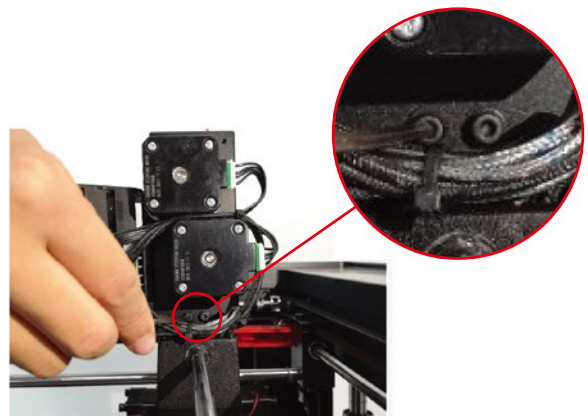
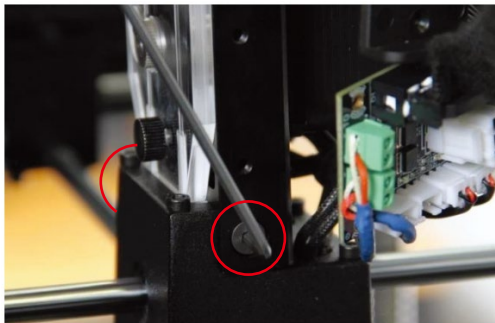
Step 2: Unplug Cables

Unplug the two connectors marked in the image below.
If you have a dual extrusion model, use tape to mark the left extruder motor (lower position). This will help distinguish the cables when it comes time to connect the new extruder.



Step 3: Remove Screws

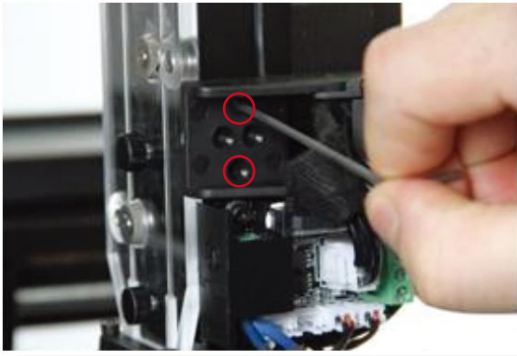
First, remove the hex screws on the left and right sides of the extruder head with a 2.5mm hex wrench. There will be 1 screw on each side.
Then, remove the two screws on the back side of the extruder. They are located underneath the two motors.



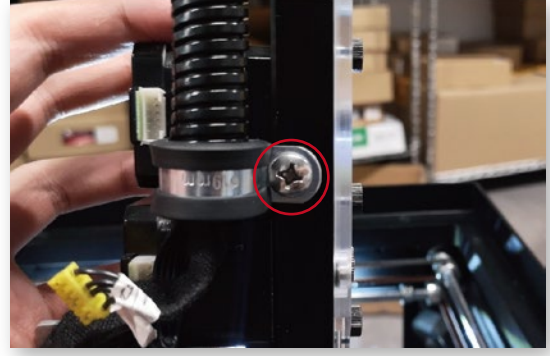
Step 4: Remove Screws (Cont.)

Remove the two screws that affix the cable chain with a 2.5mm hex key.

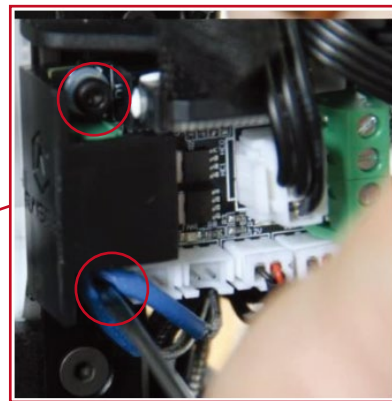
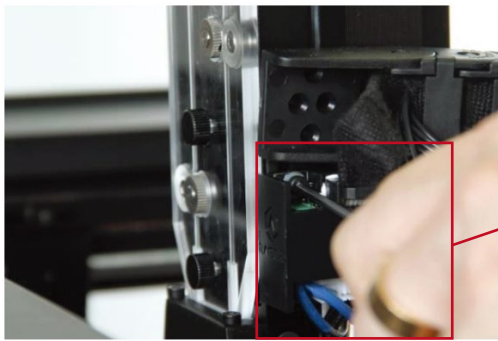
For N2:



For N1:

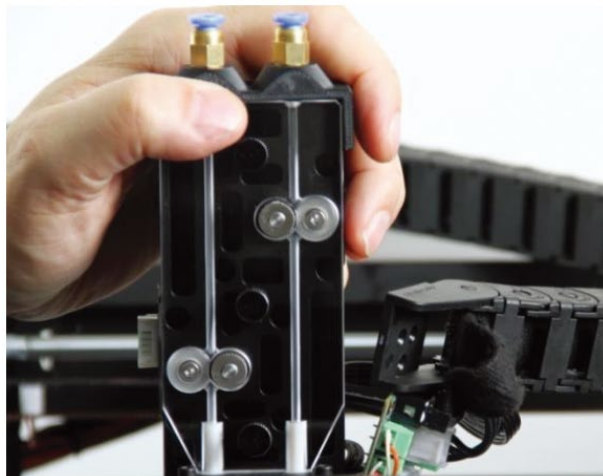


Lastly, remove the two fixing screws and cover from the extruder board.



Step 5: Remove the Extruder

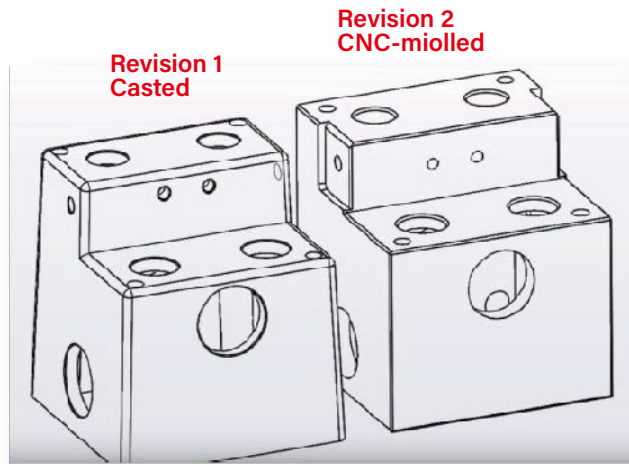
Remove the original extruder by pulling straight up.



Step 6: Select the Suitable Shims

There are currently 2 versions of the printhead carrier existing, you need to identify what version your printer has.

The shims are marked with the appropriate revision.

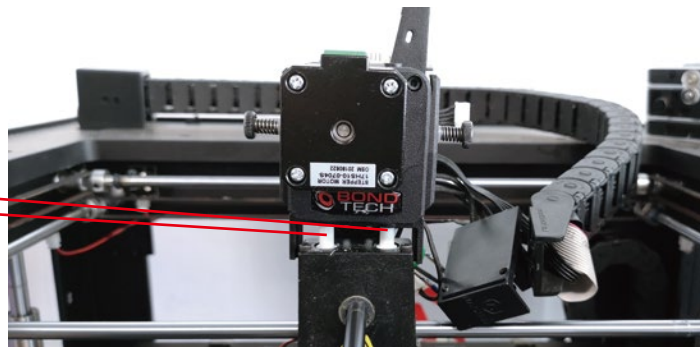


Place the correct shim on the rear mount.



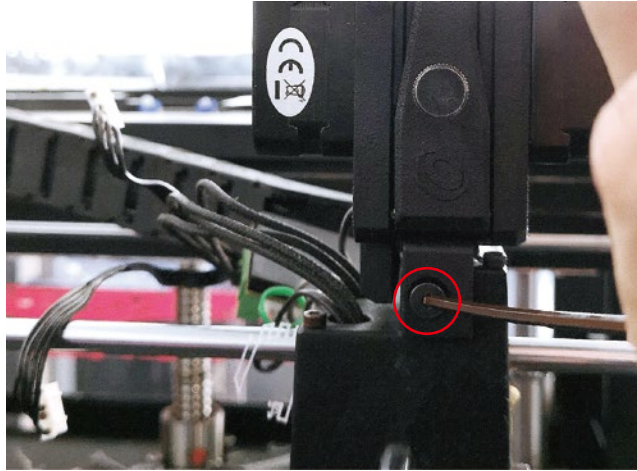
Step 7: Attach New Extruder

Locate the openings at the bottom of the extruder and insert the PTFE tubes into the mounting holes. Push the extruder all the way down until it is securely seated.



Step 8: Insert Screws

Insert the original screws to the left and right of the extruder head. Do not tighten these fully.



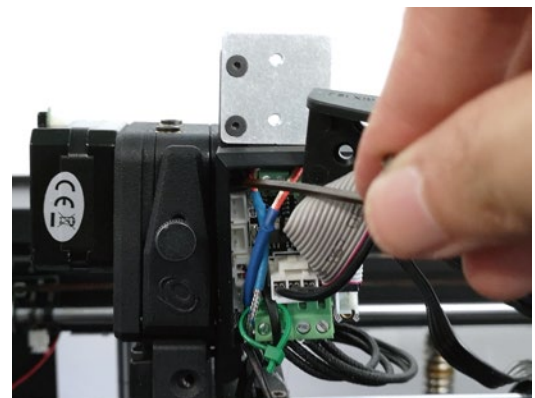
Install the 2 original rear screws with the 2.5mm hex wrench. Do not tighten the screws fully.

Once the 4 screws from this step are installed, take turns evenly tightening each one. Be careful not to over tighten these screws as the tension can create cracks in the material.



Step 9: Connect the Extruder Board

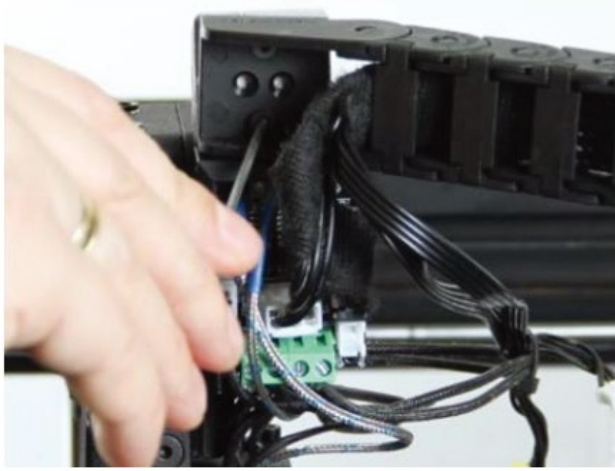
Attach the extruder board with the new holder at the top point. Do not fix lower screw.



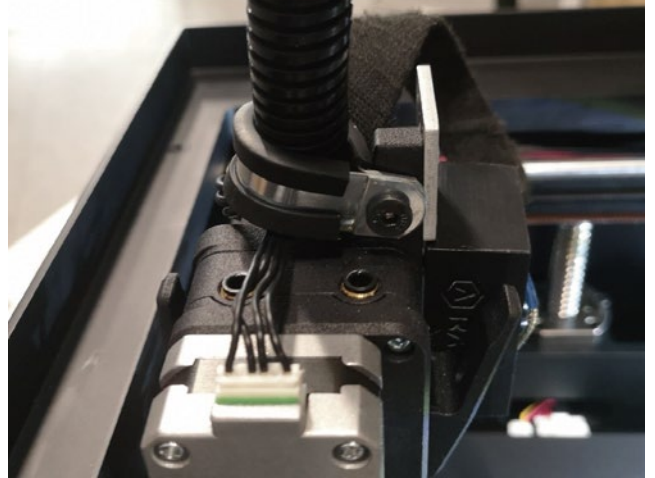
Step 10: Connect the Cable Chain

Use the original screws to connect the cable chain.

For N2:



For N1:

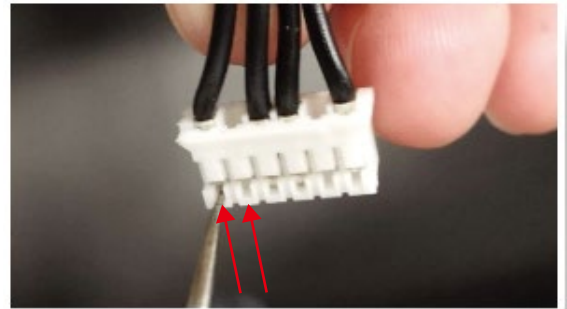


Step 11: Connector Wiring

If you have a dual extruder machine, select the wire that was not marked with tape from step 2.

Remove the two leftmost wires.

Use a sharp tool to lift the small plastic tab on the connector and gently pull the crimping contact out of the housing with your hand.



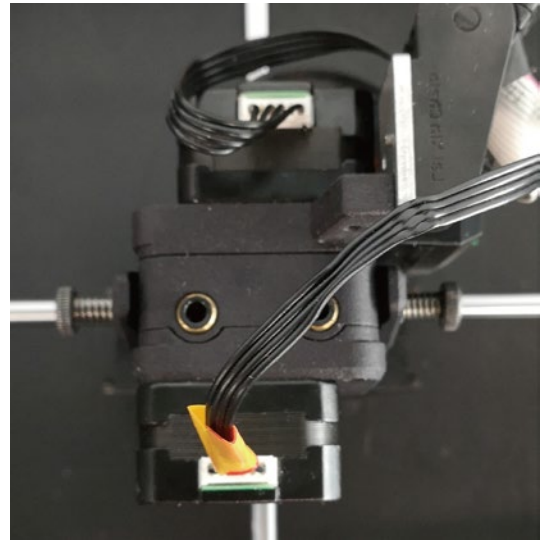
Reverse the position of these two wires and reinsert them into the connector.



Step 12: Motor Wiring

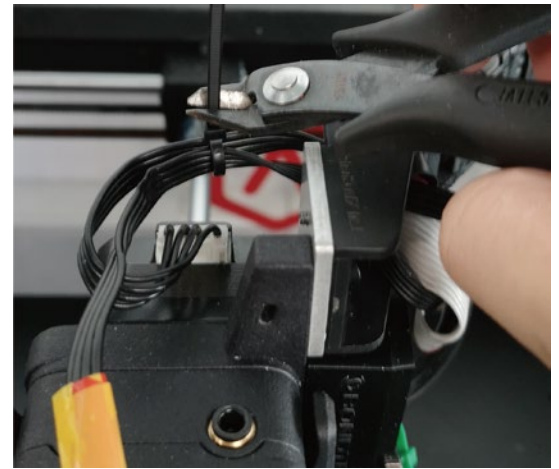
Attach the unmarked cable to the port on the back extruder.

Attach the marked cable to the port on the front extruder.



Step 13: Cable Management

Use cable ties to secure loose wires.
Gather the motor wires on the top of the extruder and secure them.
Cut off the cable tie excess.



Secure the wires underneath the motors with another cable tie.
Cut off the cable tie excess.



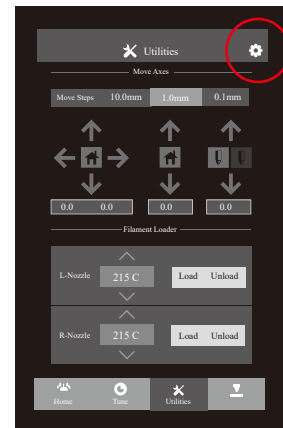
Software Configuration

The following section will show how the E-Step value can be adjusted directly on the printer.

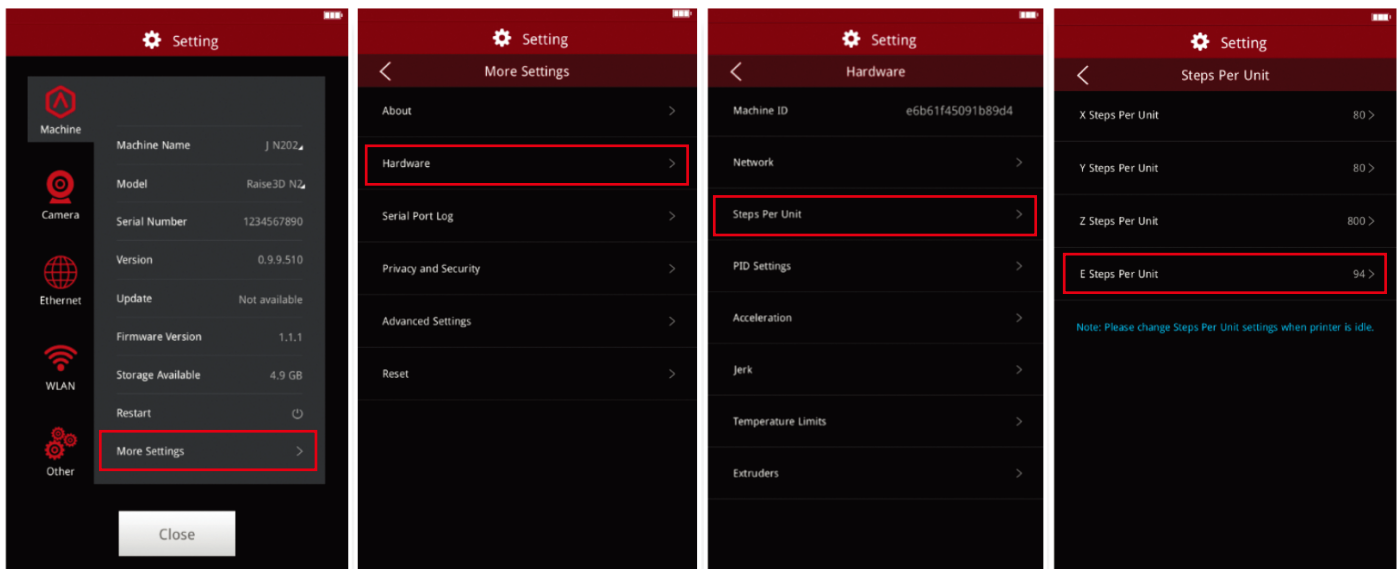
The E-Step value tells the controller the number of steps (micro steps) that are needed to extrude 1mm of filament. The new extruder has a different drive gear diameter and gearing ratio and must be adjusted to extrude the proper amount of material. In return, the increased step value means that the extruder will feed the filament with higher precision.

Step 14: Open Settings

In the 'Utilities' tab select the settings icon in the upper right hand corner.



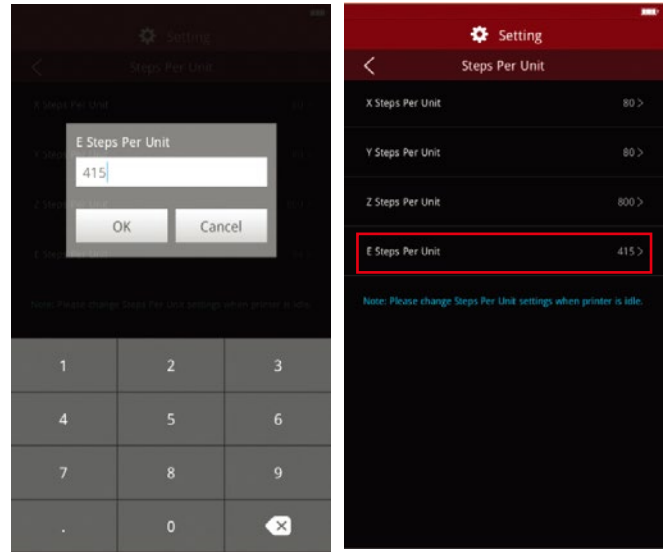
Select: More Settings > Hardware > Step Per Unit. > E Steps Per Unit.



Step 15: Change Value

Change the E Step value to 415 and press OK.

Verify that the value has correctly been changed in the previous menu.



Electronic Configuration

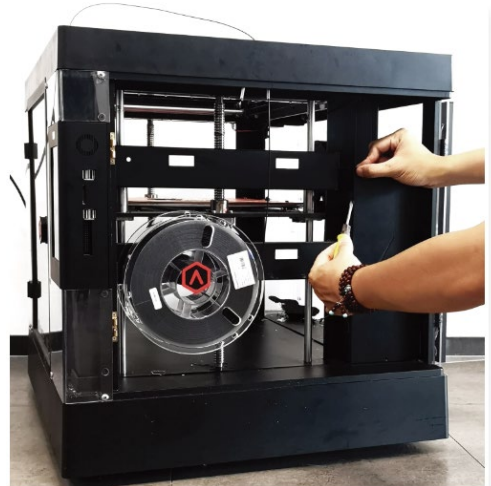
The installation of the new extruder also requires that the stepper driver is adjusted. The current motors are smaller and require lower current than the original motors. Without this adjustment, there is a risk that the motors can overheat and become damaged.

To complete this adjustment, you will need:

- A Multimeter
- A Hex Wrench or Flathead Screwdriver

Step 16: Access Electronics

Use a hex wrench to remove the electronics cover. If your model does not use hex bolts, use a flathead screwdriver to pop open the cover.

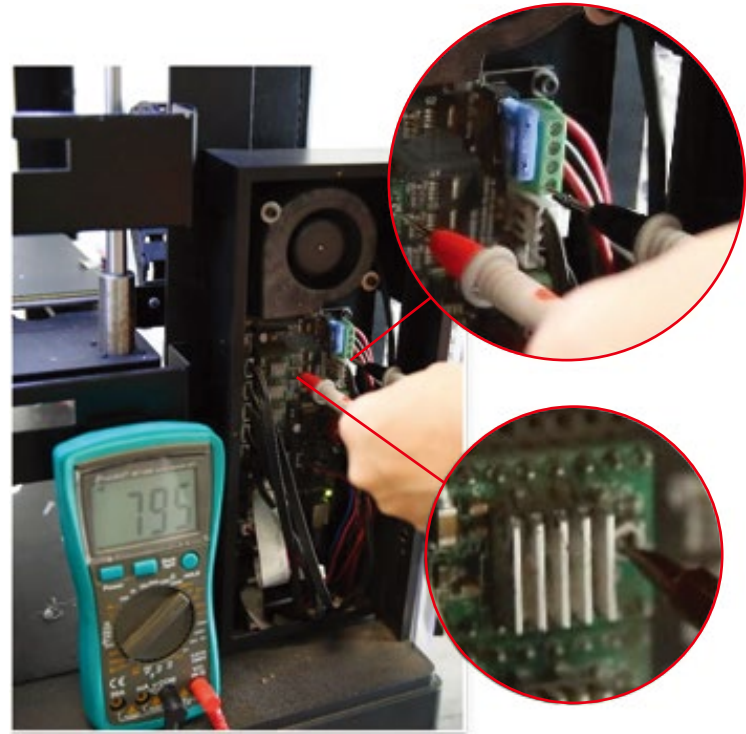


Step 17: Measure Vref Voltage

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

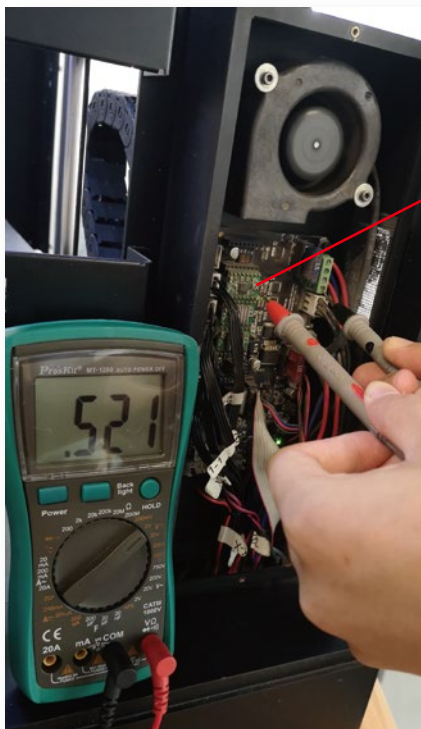
Touch the red probe of the multimeter to the screw of the stepper driver potentiometer located in the upper left.

The multimeter should now display the Vref voltage of the driver.



Step 18: Adjust

Turn the adjusting screw carefully until the meter reads 0,5V(500mV),. Clockwise will increase the number and counterclockwise will decrease it.



If upgrading a dual extruder printer, repeat this step with the second motor.

