



## Raise3D N1/N2/N2+



### Assembly and installation manual

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## Introduction

The Bondtech Raise3D DualDirect and SingleDirect extruder, which is developed by Bondtech, is the simplest way to increase the performance of your Raise3D N1/N2/N2+ machine in a matter of minutes. This new revolution in design utilizes the proven **Bondtech Dual Drive Technology** with precision CNC-manufactured parts. This gives the market's best feeder performance and reliability. The upgrade allows you to prototype even faster and print with peace of mind.

## Compatibility

The upgrade is compatible with the following machines:

Raise3D N1/N2/N2+ Dual printer

Raise3D N1/N2/N2+ Single printer

## What's in the box?

### Raise3D DualDirect

- 1 x Bondtech Raise3D DualDirect Extruder
- 1 x Breakout board cover
- 2 x Thumbscrew assembly
- 1 x Shim for CNC machined printhead carrier
- 1 x Shim for casted printhead carrier

### Raise3D SingleDirect

- 1 x Bondtech Raise3D SingleDirect Extruder
- 1 x Breakout board cover
- 2 x Thumbscrew assembly
- 1 x Shim for CNC machined printhead carrier
- 1 x Shim for casted printhead carrier

## Mechanical Installation

### What you need

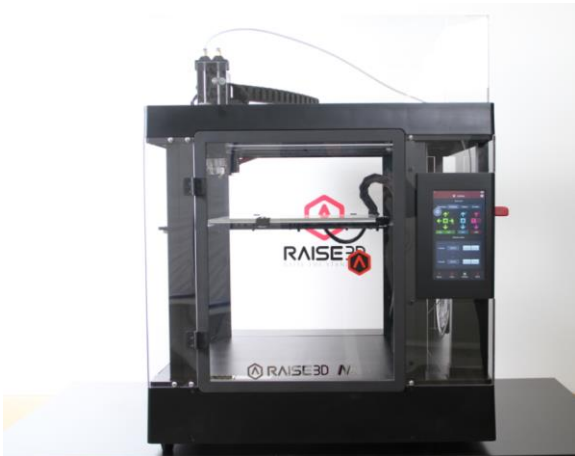
To install the upgrade, you are going to need:

- Hex wrench with sizes 2mm, 2,5mm and 3mm
- A sharp tool, for example a small knife
- A pliers
- Cable tie

### Raise3D DualDirect and Raise3D SingleDirect

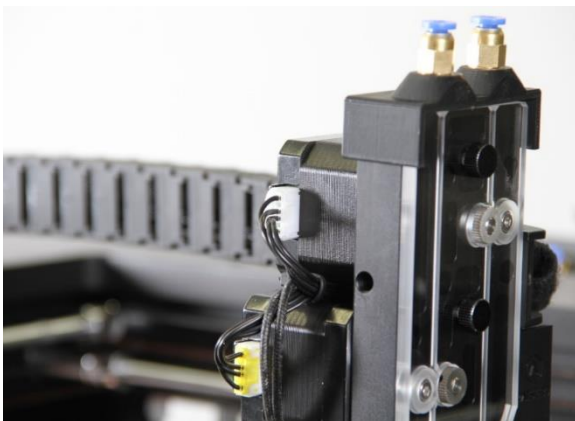
This guide shows the uninstallation of the original extruder (page 3-6)

And the installation on the DualDirect extruder (page 7-13) and SingleDirect extruder (page 14-18).

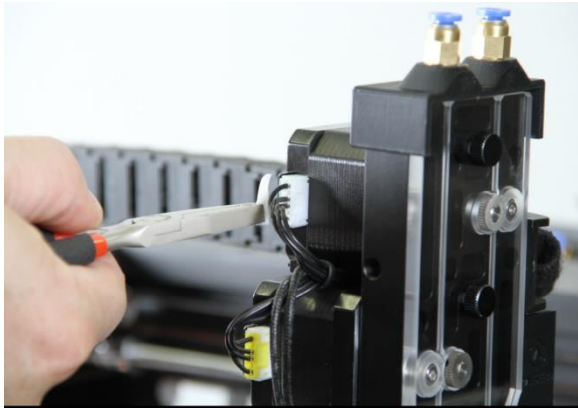


- Start by unloading the filament from your printer.

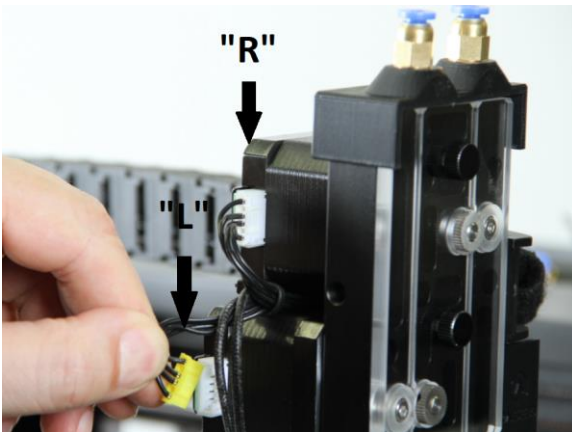
After the filament is removed, power off the printer.



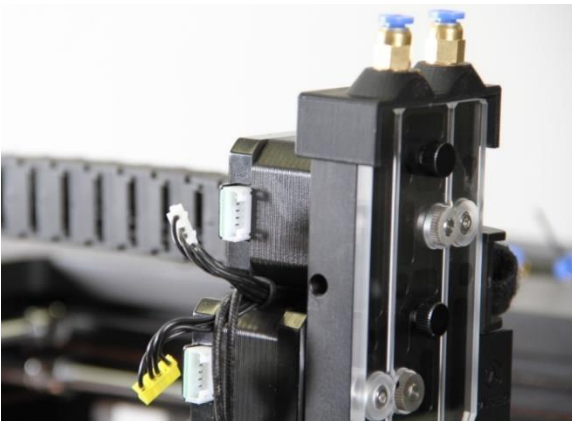
- Start with uninstallation of the original extruder. Note that the two connectors are yellow and white in this case, but the colors may vary.



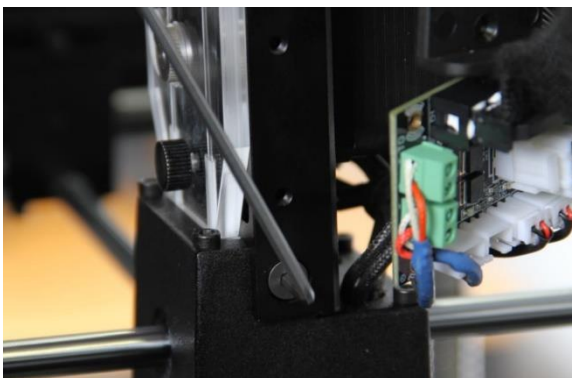
- Use a pliers to remove the hot glue that secures the connector during transportation.



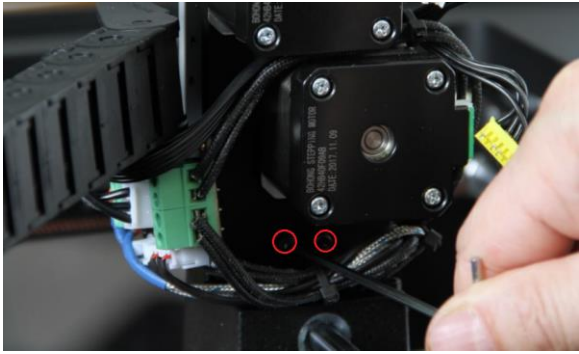
- Mark the cable connecting to the motor to the left feeder with "L" and the cable to the motor to the right feeder with "R", so they don't get mixed up.



- Disconnect both cables from the motors.



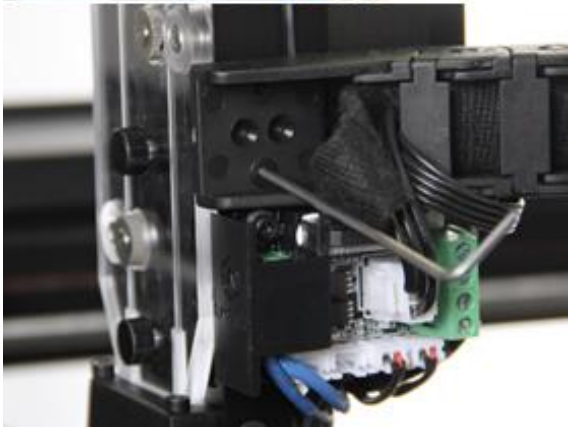
- Remove the 2 screws from the right and the left side with a 2,5mm hex wrench.

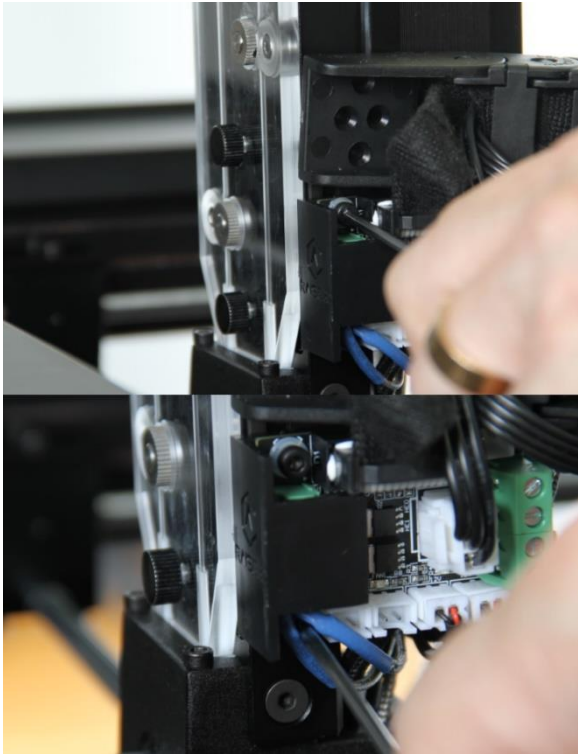


- Remove the 2 rear screws using a 2,5mm hex wrench.

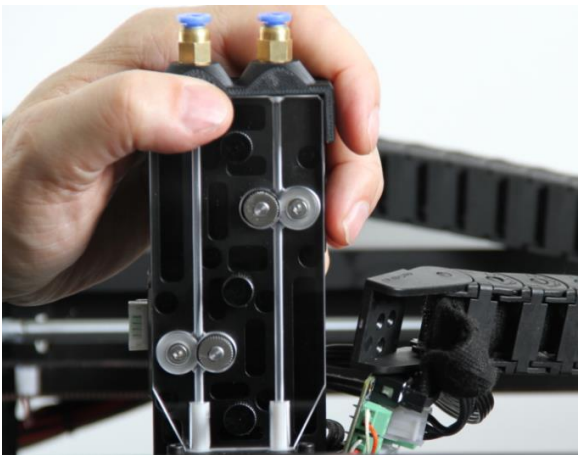


- Unscrew the 2 screws holding the cable chain, with a 2mm hex wrench.





- Remove the 2 screws (3mm hex wrench) holding the breakout board.

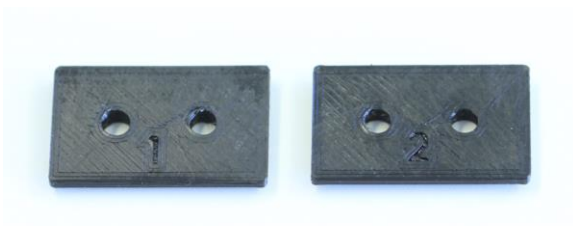
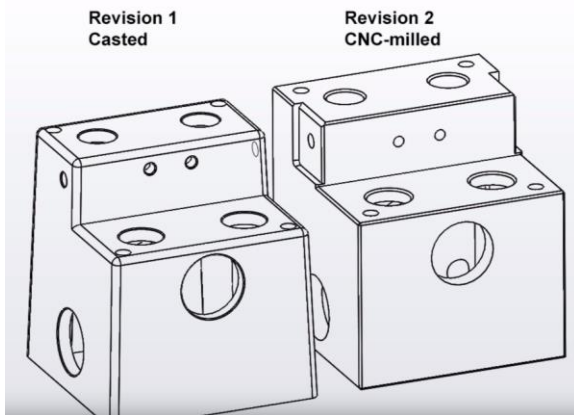


- Remove the original extruder by pulling it straight up.



- The removal of the original extruder is now done!

## Raise3D N2 DualDirect



- DualDirect and SingleDirect have separate installations guide. Go to page 14 for the SingleDirect guide. Following chapter is the installation guide for Raise3D DualDirect.
- 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.
- Firmly press down the DualDirect extruder. Support the printhead from underneath to avoid deflection of the linear shafts.





- Like this.



- Install the left and right old screws (2,5mm hex wrench). Don't tighten the screws fully.



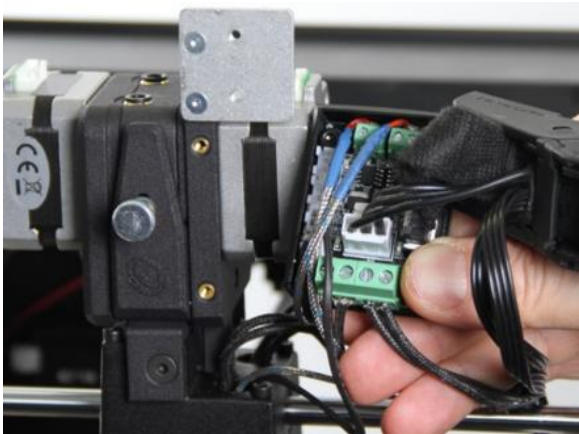
- Install the 2 rear old screws (2,5mm hex wrench). Do not tighten the screws fully. Re-tighten the screws in turns afterwards, (both the previous on the sides and the rear ones) carefully to prevent that the material crack, DO NOT OVERTIGHTEN!.



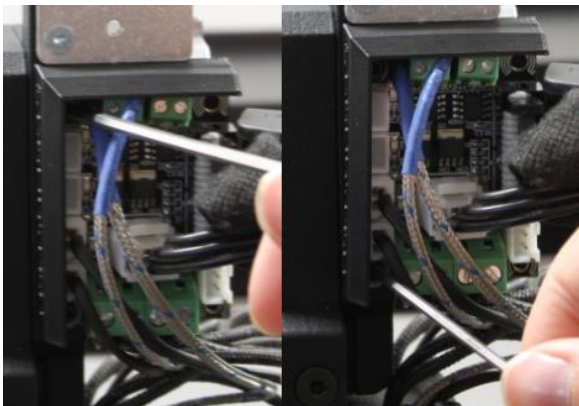
- Cut existing cable ties to make it possible to re-arrange the cables.



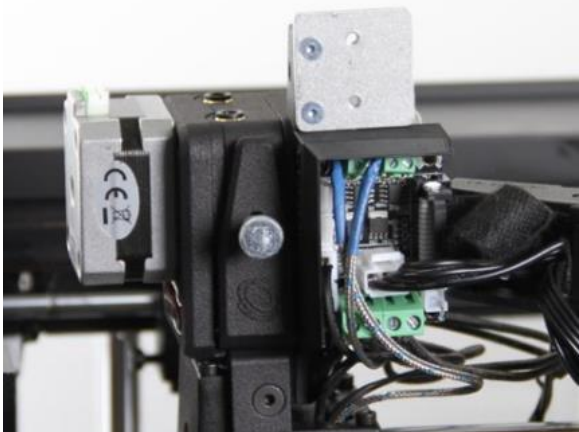
- Remove the supplied 1x M2,5 screw.



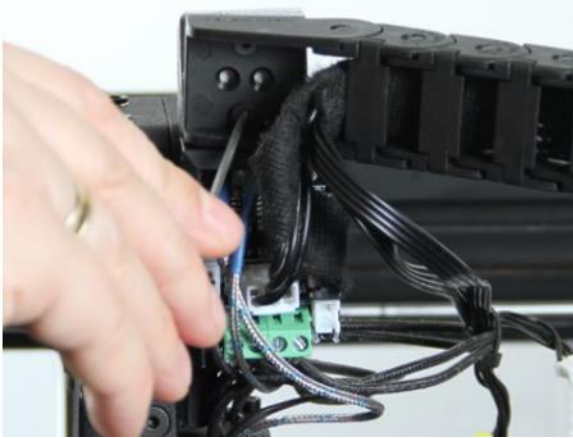
- Place the breakout board into the new holder.



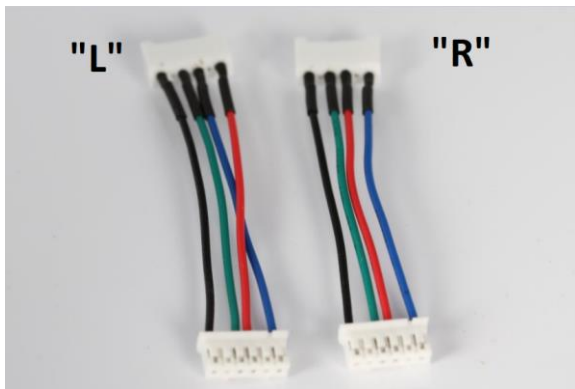
- Install the board holder.  
Note that the bottom screw is M2,5 and the upper one M3.



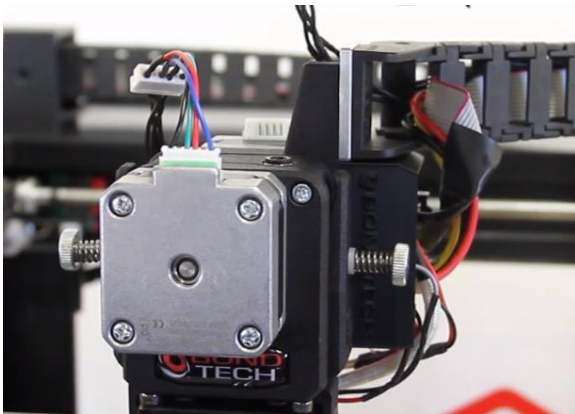
- Done!



- Install the cable chain, use the old screws (2mm hex wrench).



- If you have the Raise3D machine with SILVER MOTORS, use the supplied adapter to connect the motors and follow the guide below. Scroll down 4 pictures to find the guide for the BLACK MOTORS.

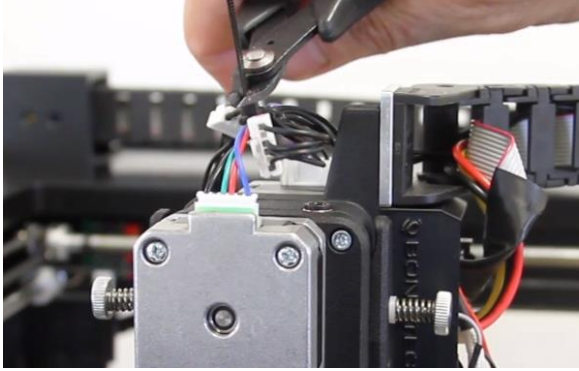


#### SILVER MOTOR

- Connect the cable marked with "L" to the front motor. Use the adapter that has wires reversed, "L".



- Connect the cable marked with "R" to the rear motor. Use the adapter that has straight wires, "R".



- Arrange the cables nicely and use cable tie to secure them on the top. Cut off the end.

You are done with the installation!



#### BLACK MOTOR

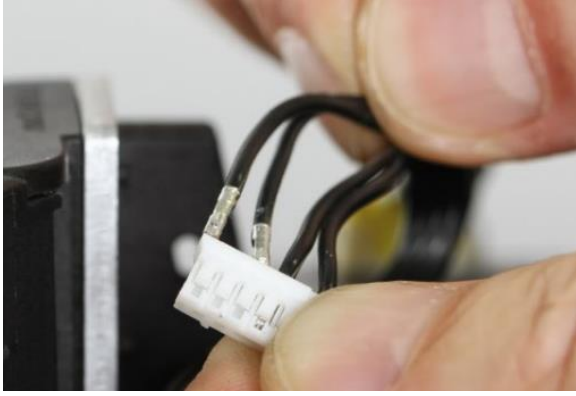
- If you have the black motors you will have to change position of the two leftmost wires in the “R” connector to change the rotation direction. Note that it's *only* the rear motor connector.



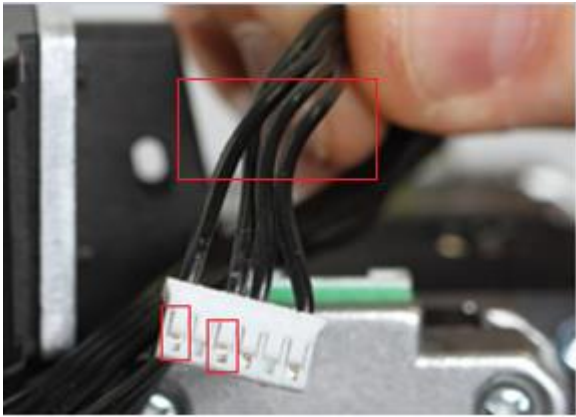
- To reverse two cables, you can use a sharp tool to lift the little plastic tab on the connector and gently pull the crimping contact out of the housing with your fingers.



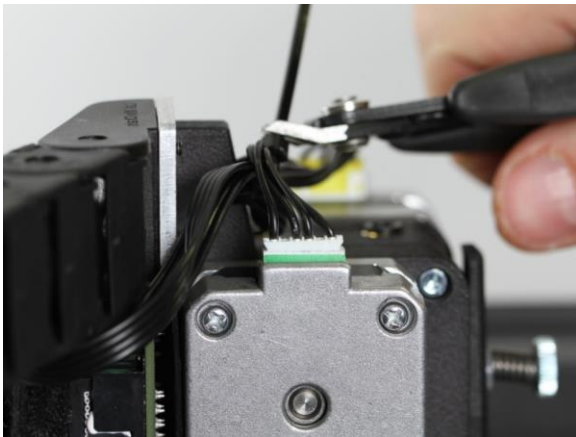
- Like this!



- Do the same with the one next to the first cable.



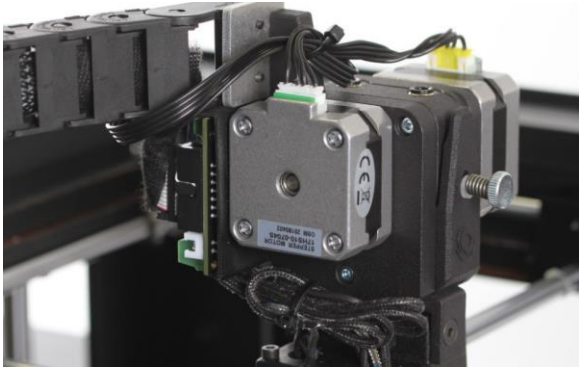
- Change positions of those two cables by pushing it back into place. Reverse position 1 and 3.



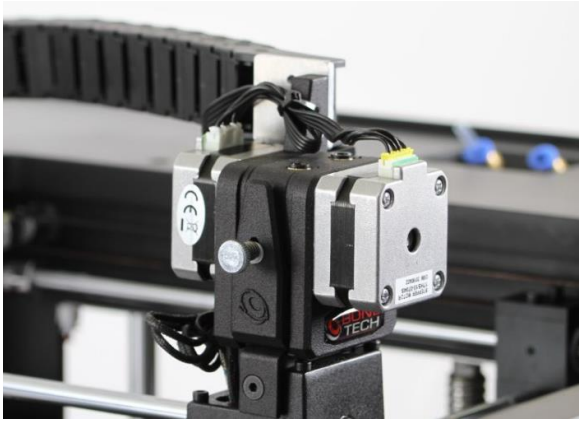
- Arrange the cables nicely and use cable tie to secure them.



- Do the same on the bottom and cut of the ends.

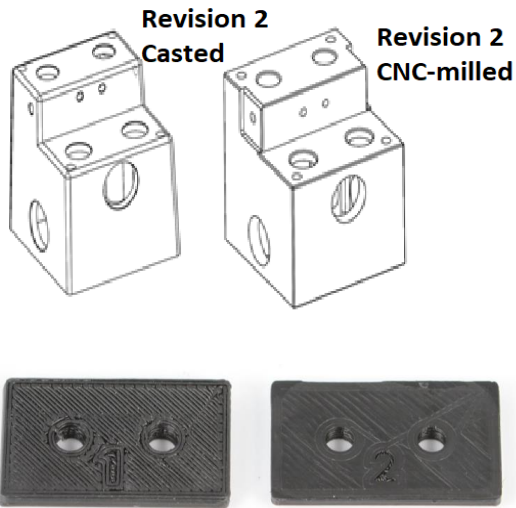


- Done!

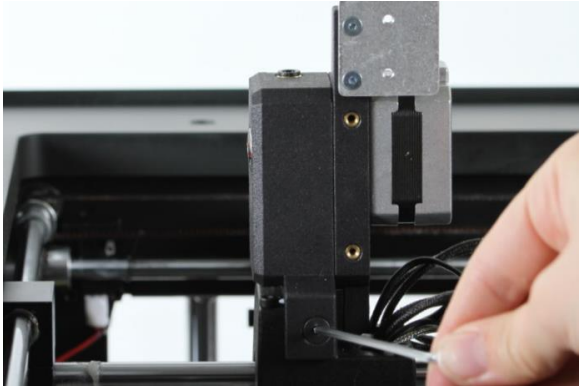


- You are done with the installation of Raise3D DualDirect!

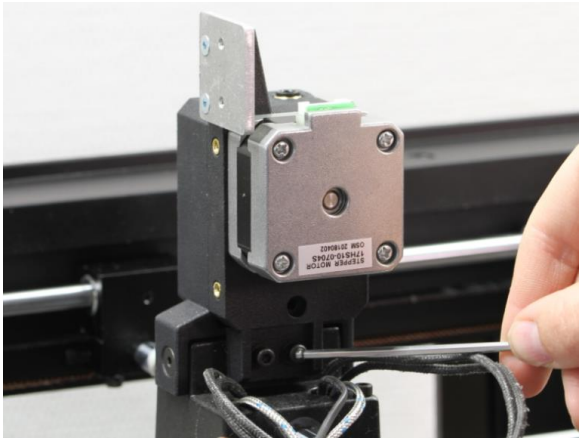
## Raise3D N2 SingleDirect



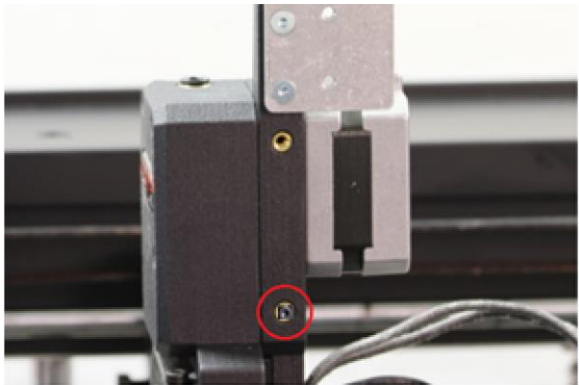
- Following chapter is the installation guide for Raise3D SingleDirect.
- There are currently 2 versions of the printhead carrier existing, you need to identify what version your printer has.
- The shims are marked with the appropriate revision.
- Place the correct shim on the rear mount.
- Firmly press down the SingleDirect extruder. Support the printhead from underneath to avoid deflection of the linear shaft.



- Install the left and right old screws (2,5mm hex wrench). Don't tighten the screws fully.

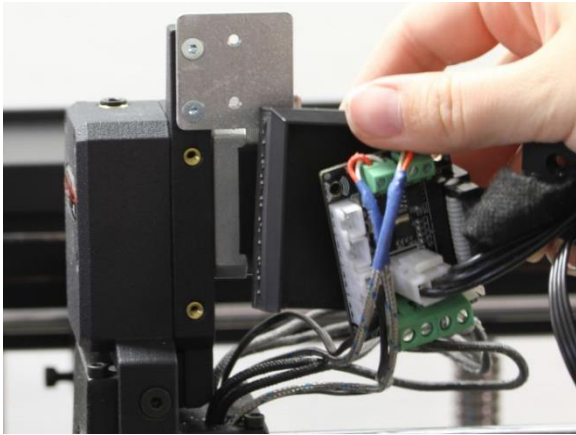


- Install the 2 rear old screws (2,5mm hex wrench). Do not tighten the screws fully. Re-tighten the screws in turns afterwards, (both the previous on the sides and the rear ones) carefully to prevent that the material crack.

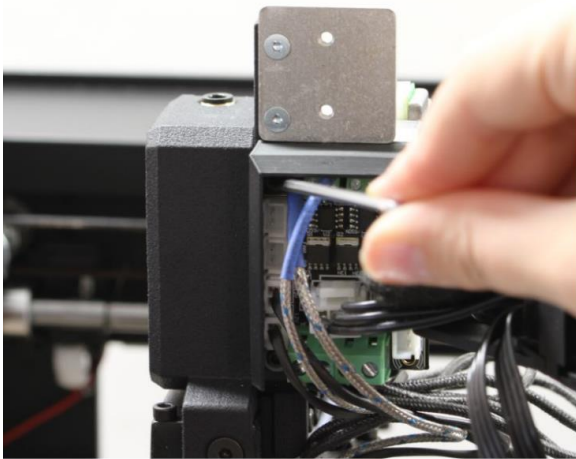


- Remove supplied 1x M2,5 screw.

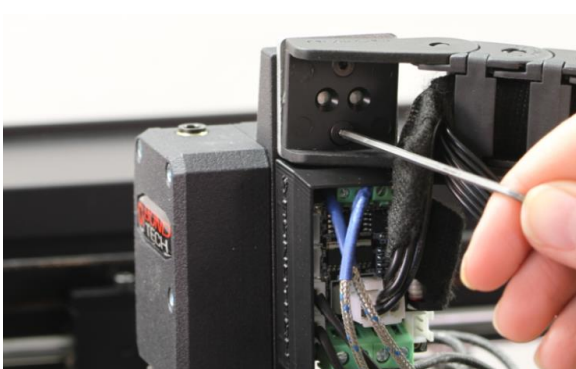
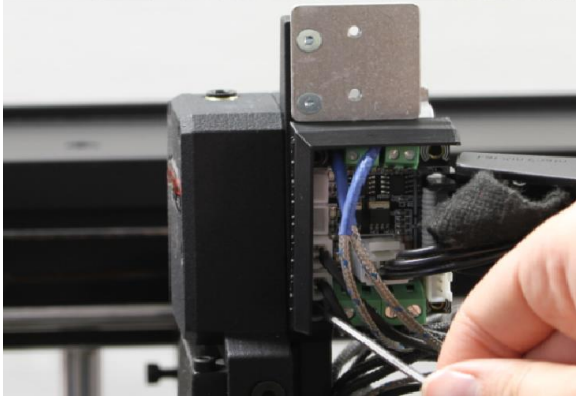




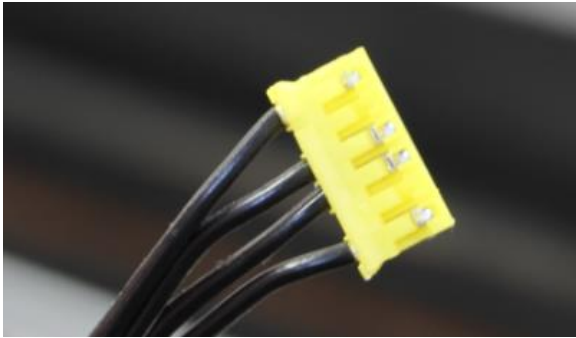
- Place the breakout board into the new holder.



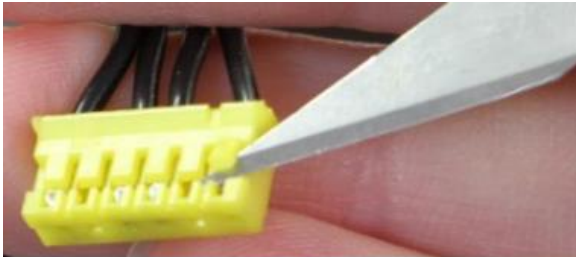
- Install the board holder. Note that the bottom screw is the supplied M2,5 and the upper one M3.



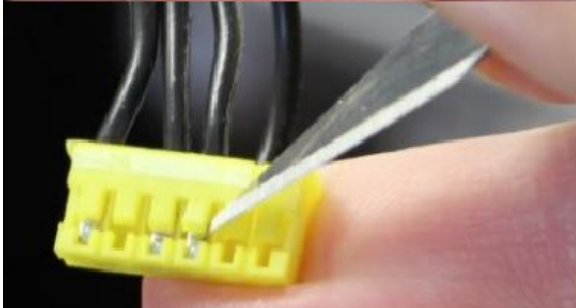
- Install the cable chain, use the old screws (2mm hex wrench).



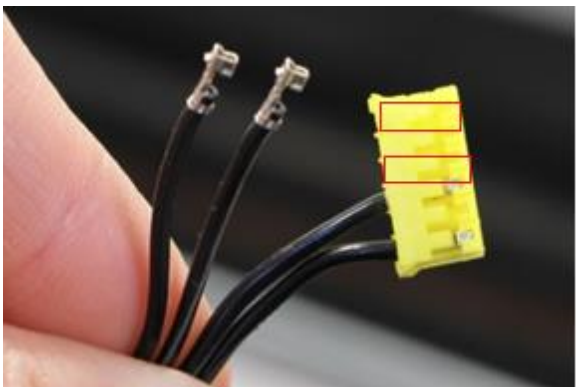
- You will have to change position of two wires in the “L” connector to change the rotation direction.



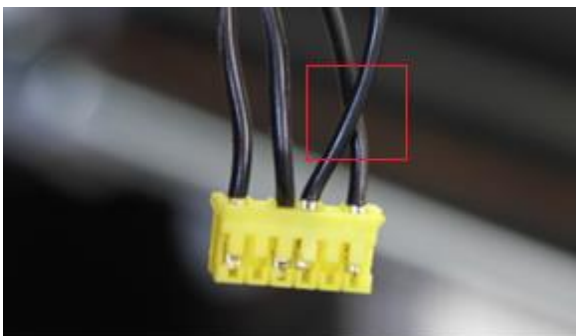
- To reverse two cables, you can use a sharp tool to lift the little plastic tab on the connector and gently pull the crimping contact out of the housing with your fingers.



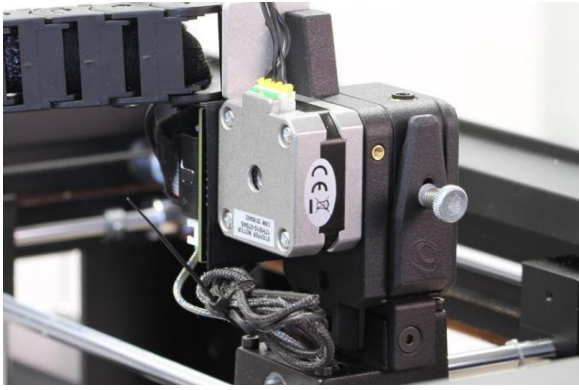
- Do the same with the cable next to the first one.



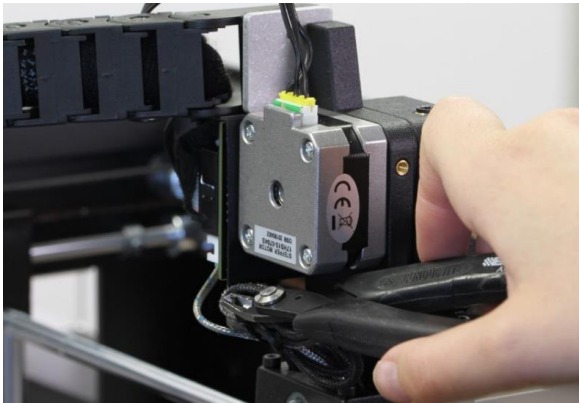
- Change positions of those two cables by pushing it back into place. Position 1 and 3 change position.



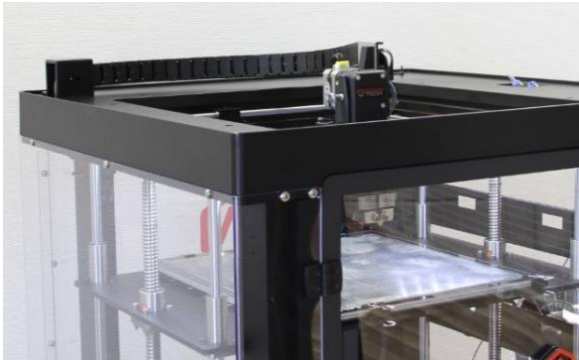
- Like this!



- Use cable tie around the cables.



- Cut off the end.



- You are done with the installation of Raise3D SingleDirect!

# Software Configuration

## Changing the E-step value

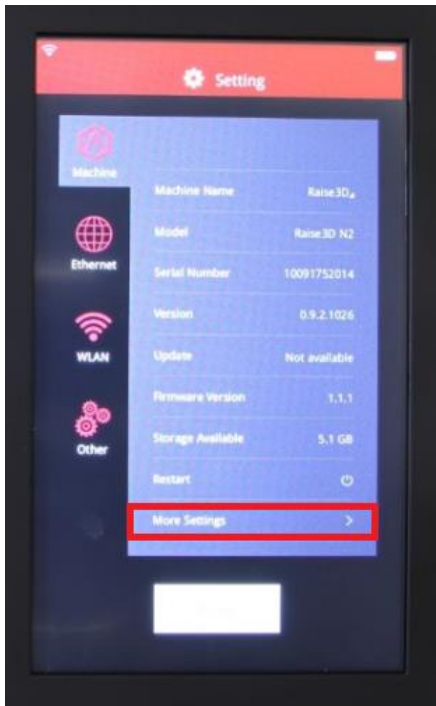
The E-step value tells the controller how many steps (micro steps) that needs to be sent to feed 1mm filament. The Raise3D E-step value needs to be updated to achieve the correct extrusion volume. The reason for this is that the Bondtech Dual Drive system has a different drive gear diameter and a gearing ratio. The increased E step value means that the extruder will feed the material with higher precision. This guide will show how the E-step value can be adjusted directly on the printer.



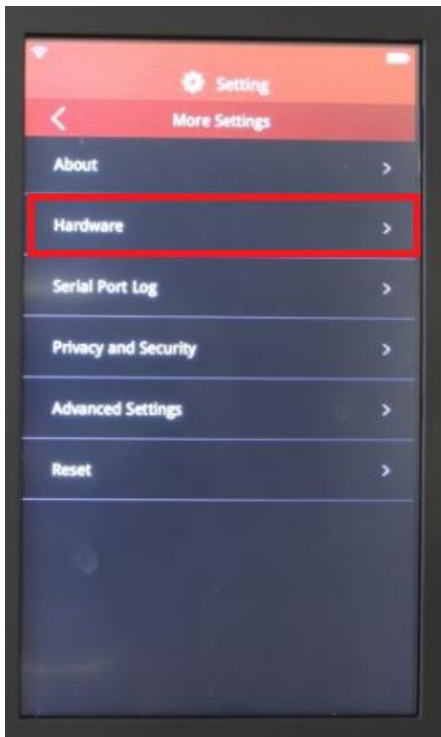
- The E-step value can easily be changed on the touch panel home screen. Click on *Utilities*.



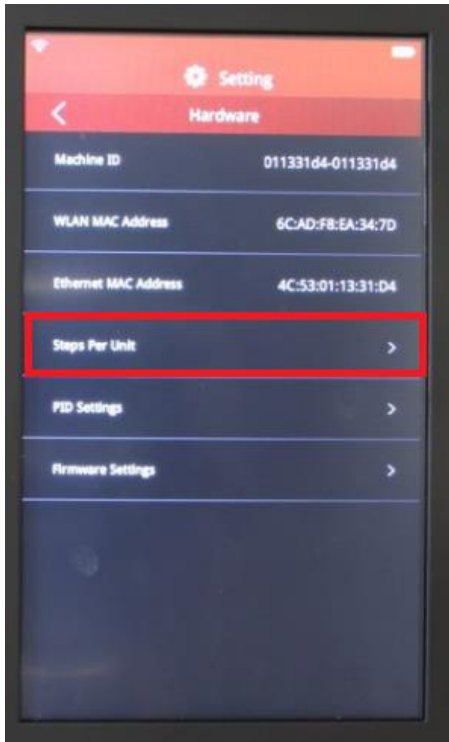
- Click on the gear for settings in the top right corner of the display.



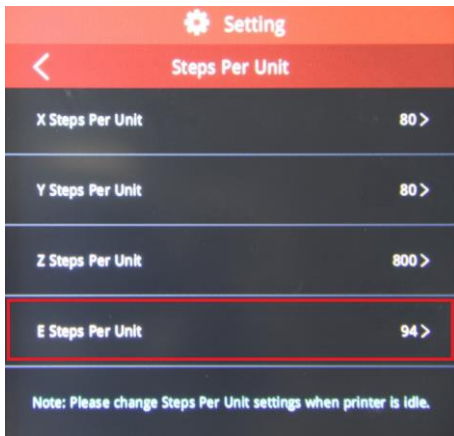
- Click on *More settings*.



- Click on *Hardware*.



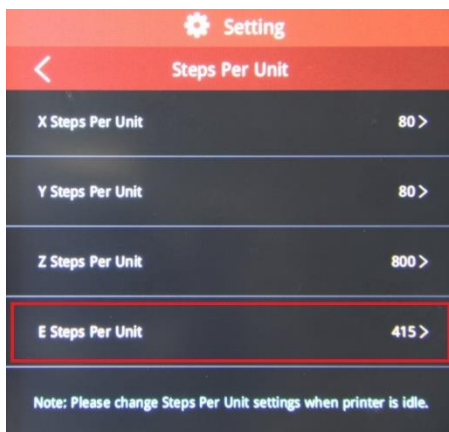
- Click on *Step per unit*.



- Click on *E steps per unit*.



- Set the E step unit to 415.

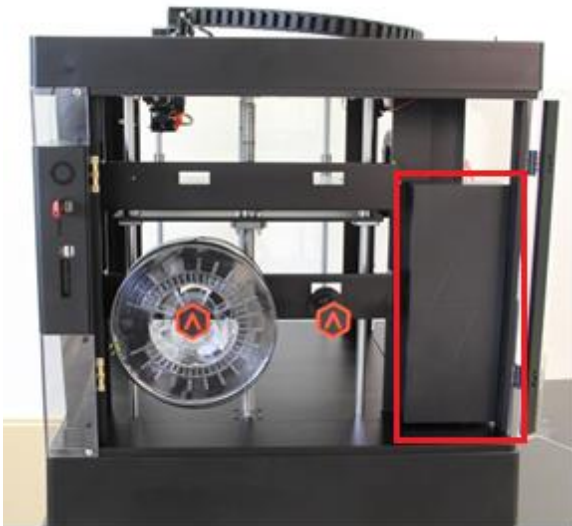


- Double check that the new value has been changed to 415.  
Done!

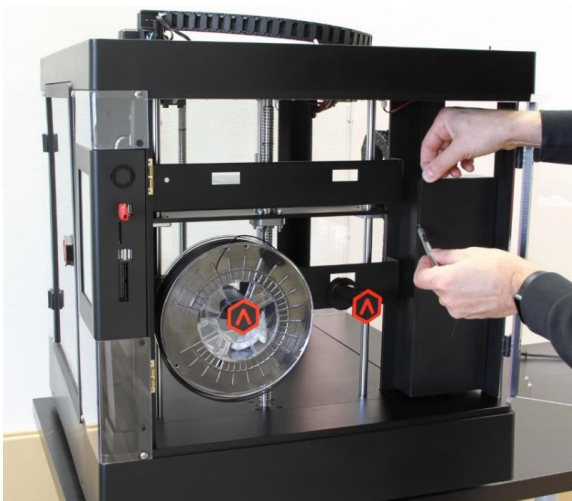
# Electronic Configuration

## Adjustment of the stepper driver current

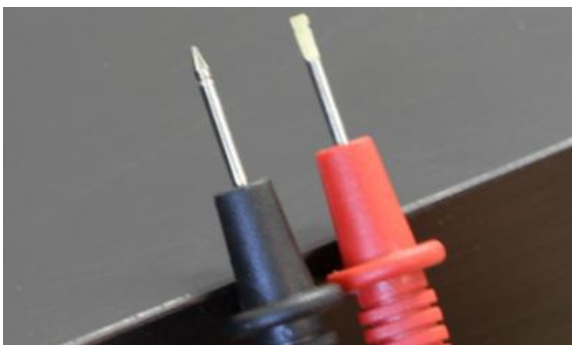
The stepper driver needs to be adjusted due to that we have changed the previous motor to a smaller one that requires lower current. There is a risk that the motor getting overheated and damaged If we don't do the adjustment.



- You need:
  - A Multimeter
  - A Sharp tool
- The electronic box is on the left side of the printer.

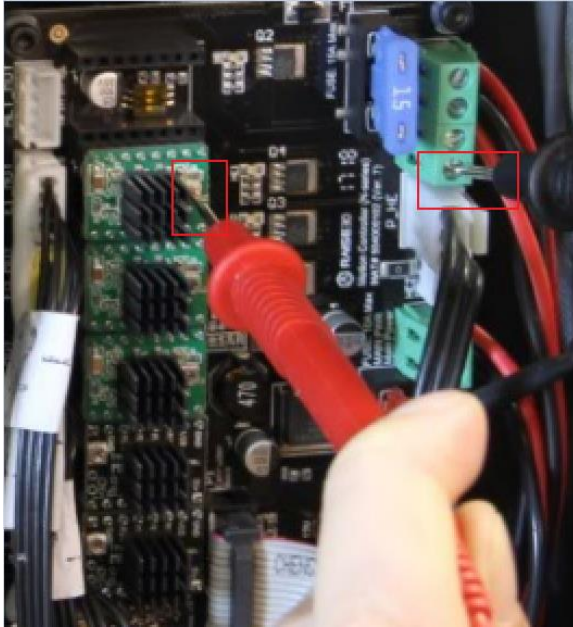


- Depending on which cover your machine has, either use a sharp tool or a hex wrench to take the cover of.



- Tip! Grind the tip on the probe to make it easier to do the adjustment. Shape the tip like a small flat screw driver.





- Touch the red probe to the potentiometer on the stepper driver for the extruder/extruders. From bottom they are in the following order, X Y Z E0 E1 You need to adjust both drivers for the extruders E0 and E1

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

Now you can see the Vref voltage of the driver.



- Turn the potentiometer carefully until you reach the value of 0,5V(500mV), clockwise increase, counter-clockwise decrease.
- Repeat this for both stepperdrivers for the extruders (if you have a dual printer)

Good luck with your Bondtech feeder!

If you have any questions, please first read the FAQ (<http://www.bondtech.se/en/faq/>). If the question still hasn't been answered feel free to contact us by email or telephone.



Repslagarvägen 3  
33153 Värnamo  
Sweden

e-mail: [support@bondtech.se](mailto:support@bondtech.se)

phone: +46702220193

paypal: [paymentsorder@bondtech.se](mailto:paymentsorder@bondtech.se)@bondtech.se

web: [www.bondtech.se](http://www.bondtech.se)

VAT-registration number: SE556995564301