BONDTECH

Assembly & Installation Guide ULTIMAKER 1.75

The Bondtech QR Extruder for 1.75 mm filament for use as a Bowden or a direct Extruder. The extruder uses high-quality industrial pneumatic push-fit fittings for attaching the bowden tube. It has also thread inserts to have a strong connection of the fasteners. The mount for the hotend is a standard “Groovemount” that makes it possible to use the E3D hotends aswell as others following this standard.

This new revolution in design utilizes the **Bondtech Dual Drive Technology** with precision CNC-manufactured parts which gives the markets best performance and reliability.

Thanks for your support making this project a reality!

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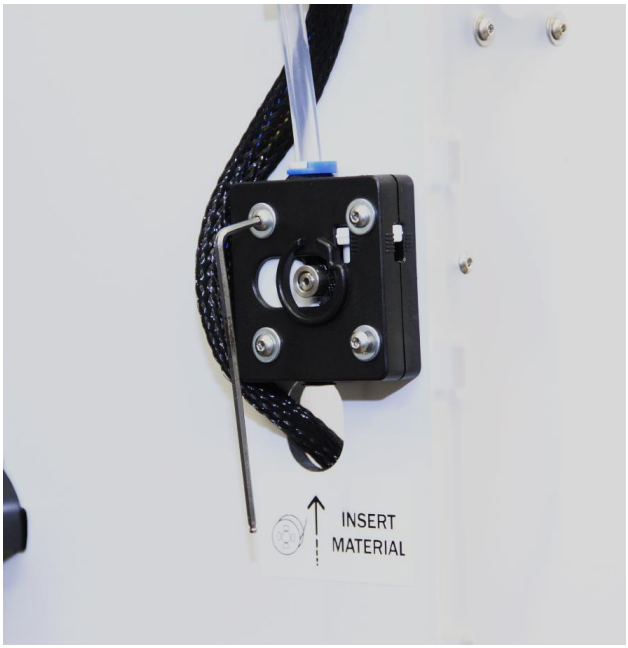
Mechanical & Electrical Installation

This guide shows the installation on a Ultimaker 2 Extended.

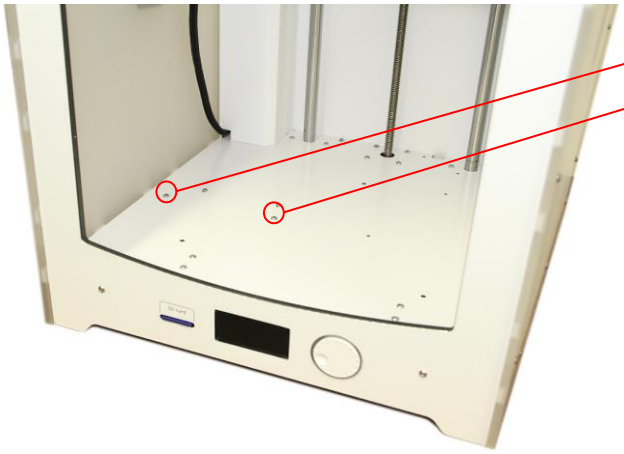
1. Start by removing the material from your printer with selecting “Material”, “Change”, after the filament is removed, power off the printer.
2. Rotate the printer so you can access the side and the rear side.

Loosen M3-screws for the inside cable cover and remove the cable cover.

Remove the holder for the spool.

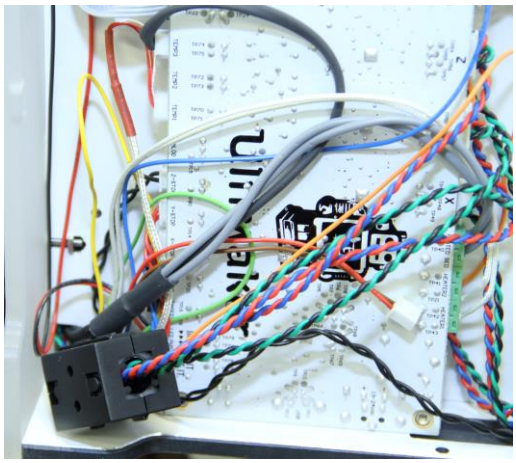


Loosen 4 x M3-screws that holds the original extruder and motor. Support the motor from the inside so it does not fall down and damages the build plate. Remove the blue bowden clip and remove the bowden tube.

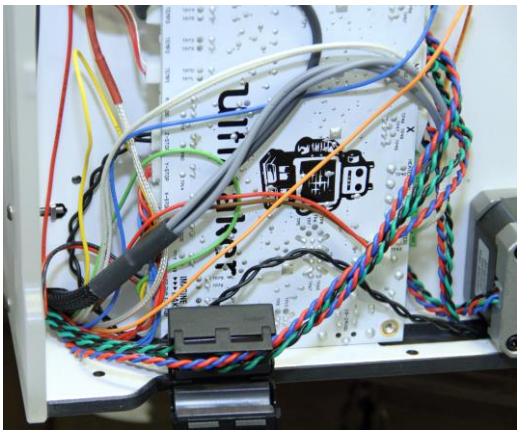


Loosen 2 x M3-screws that holds the cover for the controller board.

Use a spanner to hold the nut from the underside of the printer.



This reveals the controller board.



Open the ferrite core and place it aside.

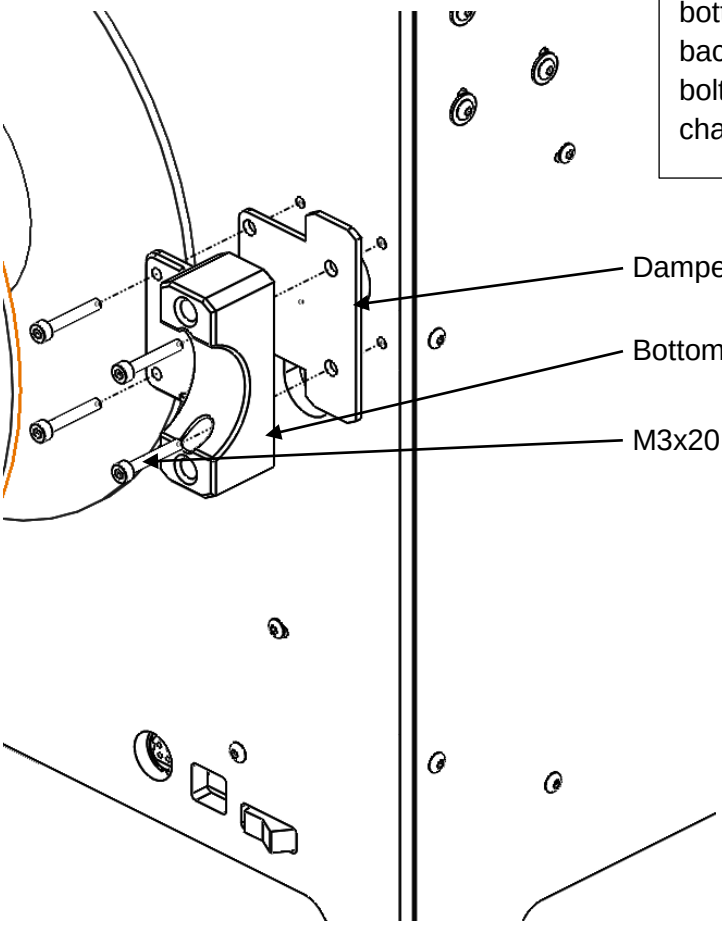
Disconnect the old extruder cable on the controller.

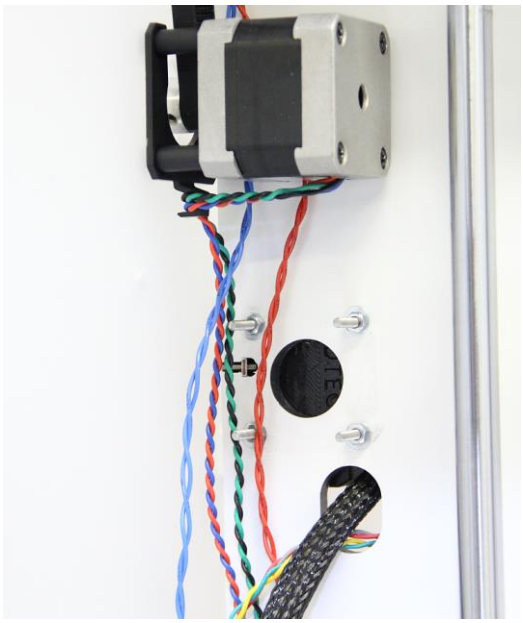
Route the new cable from the hole on the back plate through the printer and down to the controller, connect the cable in the EXT1 port (for single extruder)

Place the stepper cables inside the ferrite core and close it.

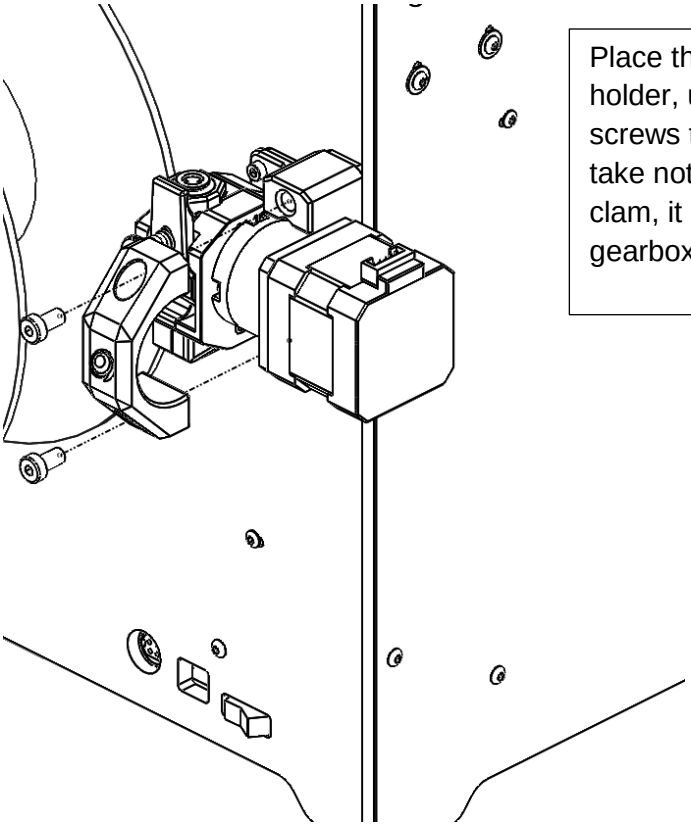
Install the cover for the controller board.

Place the the damping plate and the bottom part of the holder against the rear back plate and insert the M3x20 mm bolts through the mount and into the chassis





Use a washer and a M3 nut on the inside to secure the mounting screws.



Place the Bondtech Extruder in the holder, use the top-clamp and the 2 M5 screws to secure the extruder, please take not of the orienting tab of the top clam, it shall fit inside the cutout on the gearbox.

Connect the cable and the bowden tube, make sure the bowden tube is pressed down all the way into the extruder housing, place the clip underneath the plastic collar to prevent movement of the bowden tube.

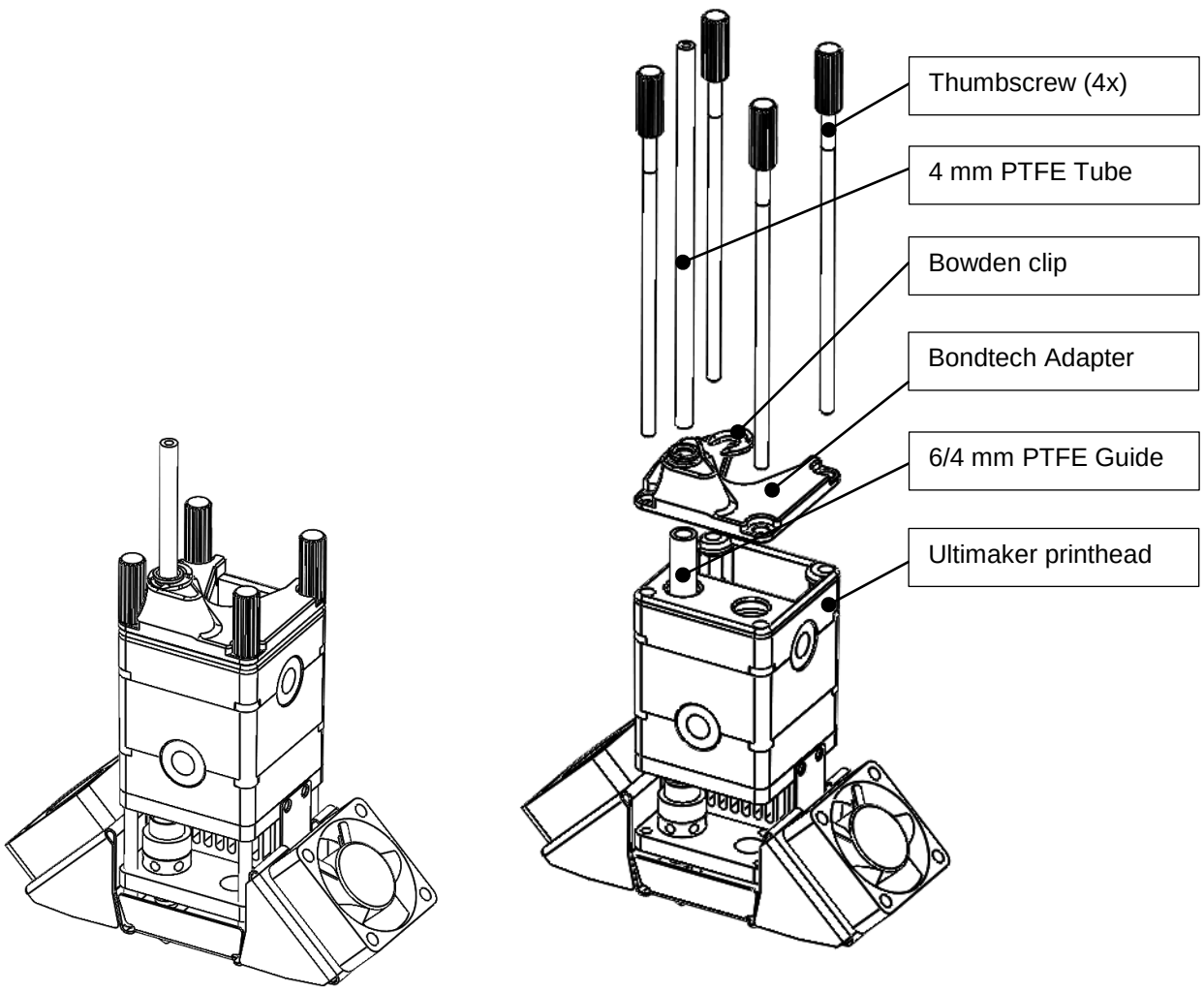
Remount the cable cover from the inside and secure it with the two m3 screws. Make sure that no cable is pinched between the cover and the plates.

Re-attach the spool holder.

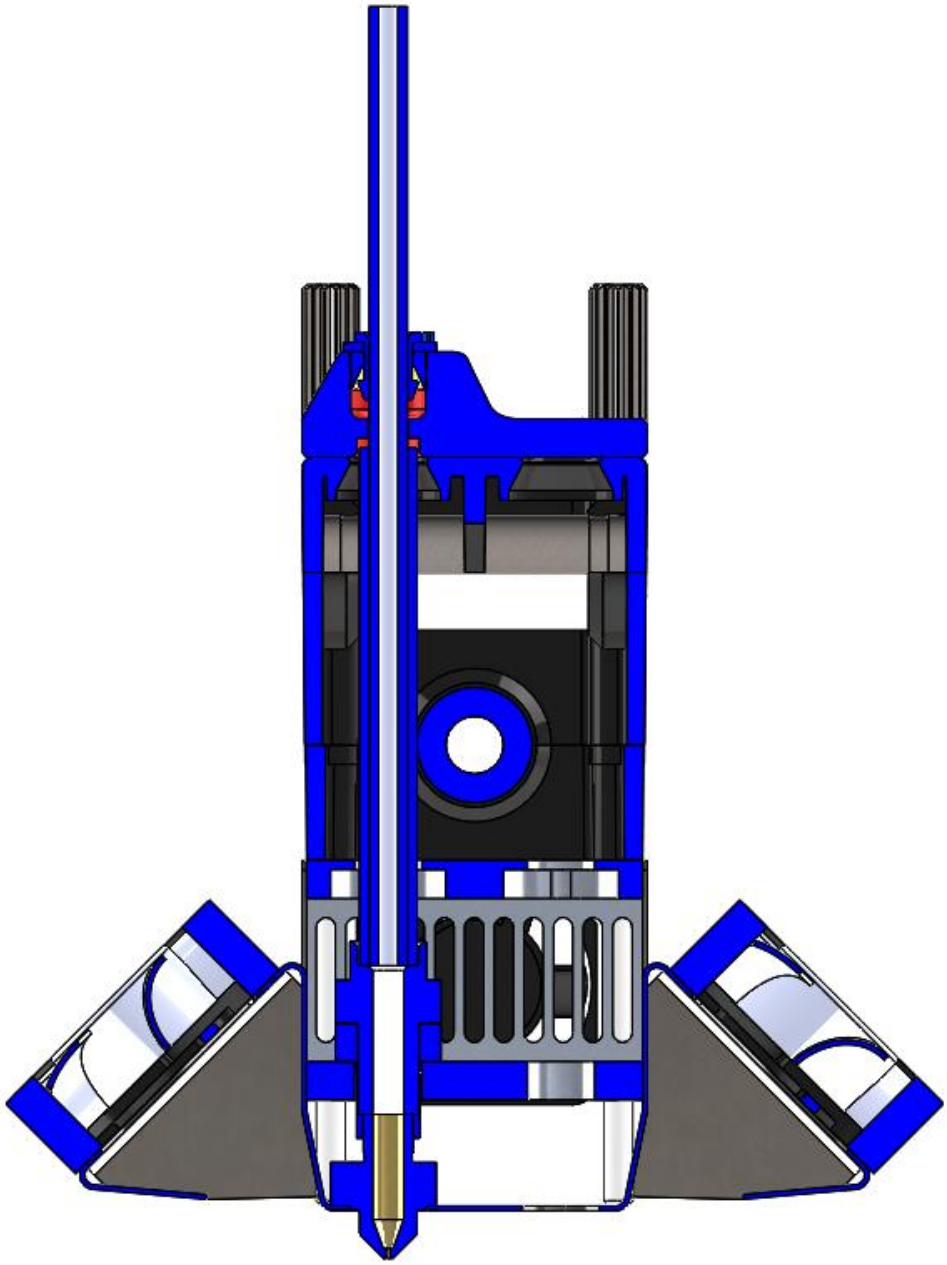
Bondtech QR 1.75 mm kit

The BondtechQR 1.75 mm extruder is fitted with a pushfit connector for 4 mm tube. The printhead of the Ultimaker2 is equipped with a pushfitconnector for 6 mm tube. The best performance and the lowest backlash is achieved with a PTFE tube that is 2 mm inside diameter and 4 mm outside diameter. In order to connect this to the printhead of the Ultimaker2 we have developed an adapter with an integrated 4 mm pushfit connector.

This adapter is placed on top of the printhead and is held in place by the 4 long Thumbscrews. In order to guide the 4 mm PTFE tube down to the PTFE Coupler a short piece of 6 / 4 mm tube is needed.



As you can see on the below illustration the filament is guided all the way down to the PTFE coupler. The 4 mm PTFE tube is held in place with the pushfit connector on the adapter.



To install the adapter start by undoing the 4 Thumbscrews, hold the printhead togheter so it does not fall apart. Remove the 6 mm Pushfit coupler, insert the 52 mm long 6/4 mm guide tube down to the PTFE coupler, Place the adapter ontop of the printhead, insert the 4 mm PTFE tube so it goes into the 6/4 mm guide tube before you tighten the thumbscrews. Place the Bowden clip under the pushfit collar to remove any free play of the pushfit.

Software Configuration

The Ultimakers firmware needs to be changed since the feeder needs to run slower in order to work right. There is no possibility to change the settings of feeder pace in the original Ultimaker2 firmware so another custom firmware called “Tinkergnome” is being used to do so. This allows you to change the settings for feeder speed and so on.

For the Ultimaker2 the Tinkergnome firmware (Tinker-MarlinUltimaker2-16.08.2.hex) can be downloaded here:
https://github.com/TinkerGnome/Ultimaker2Marlin/releases/download/V16.08.2/Tinker-MarlinUltimaker2-16.08.2.hex

For all other Ultimaker versions there is a full list here:
https://github.com/TinkerGnome/Ultimaker2Marlin/releases

Save this TinkerGnome firmware somewhere on your computer where you can find it again.
The firmware is installed using an older version of Cura. Theoretically this should work with every 15.X version but you can use version 15.04.6 which can be downloaded here:
https://ultimaker.com/en/products/cura-software/list

Run Cura 15.X, choose Ultimaker2 as your printer and click on the left upper corner on “Machine” and “Install custom firmware…”

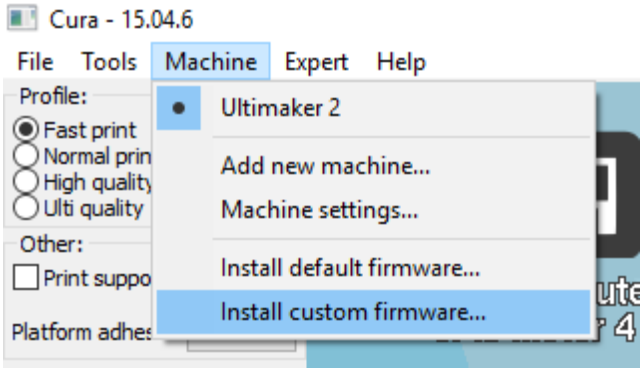


Figure 1 Cura - Machine

Choose the “Tinker-Marlinltimaker2-16.08.2.hex” you just downloaded, connect the Ultimaker to your PC using an USB cable and upload the firmware onto the printer (Note: Ultimaker needs to be connected to PC using the USB cable, needs to be plugged in and switched on).

After that all that is left are some settings:

You need to set

E-step = 476.50
E current = 1000 mA

To do so plug and run the printer. From the start menu follow:
ADVANCED → *Preferences* → *Motion settings*
At the very bottom you should find **"Motor Current"** and **"Axis steps/mm".**
Make sure to **STORE** the settings before you leave the menu (set the values as shown in Figure 2 and 3 and press "STORE" afterwards).

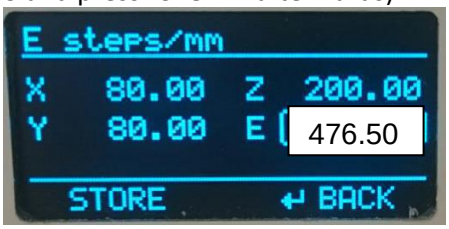


Figure 2 Settings for E steps/mm = 492.45

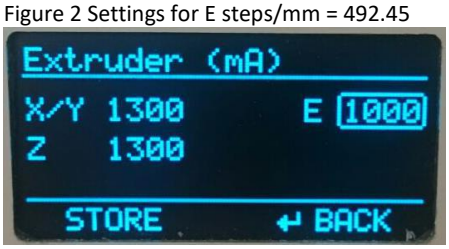


Figure 3 Settings for E current = 1000 mA

Insert new material and adjust the building late and the printer should run normally.

Simplify3D

If you are using Simplify3D as a slicer you will need to change a line in the start script section that say M907 E1450 to M907 E1000.

If you are printing a part with extremely much retracts the motor can get quite hot, in order to lower the temperature of the stepper motor you can lower the current to 800 mA, the pushing force of the extruder is more than enough also on this setting.

Good luck with your Bondtech Extruder!

If you have any questions please contact us by email or telephone.

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