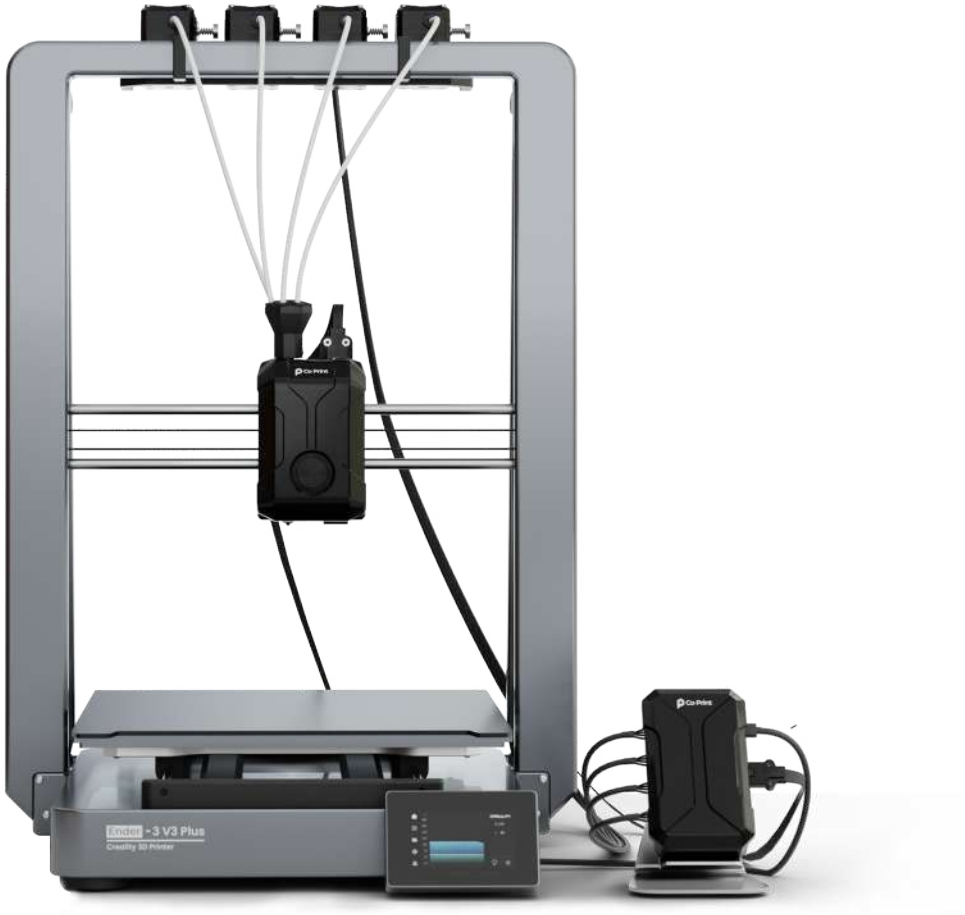
Co Print

KCM Set

User Manual



Content

Dear Consumers,
Thank you for choosing Co Print. For the best experience with Co Print Products, please read the instructions before use. Our support team is always ready to provide you to give best services. When you encounter any problem with Co Print, please feel free to contact us from our website and e-mail address.

1 Installation
- 1.1 Mounting ChromaHead
- 1.2 Mounting CX-I Extruders
- 1.3 Mounting KCM

2 ECM Installation
- 2.1 Mounting ECM

3 Explanation Of Interface Sections
- 3.1 Mainsail Interface

4 Printing
- 4.1 Before Printing
- 4.2 First Printing

KCM Set Safety and Usage Guidelines

1. Prioritize Safety: To prevent accidents and avoid damage to the printer or surroundings, always follow the provided instructions when using the KCM Set.

2. Optimal Setup Placement: During installation, place the printer in a well-ventilated, cool, and dust-free environment, away from heat sources, flammable materials, and explosive objects.

3. Stability for Precision: Ensure the printer is placed on a stable surface to avoid vibrations or instability, which could negatively affect print quality.

4. Use of High-Quality Filaments: For optimal performance, use high-quality filaments. Unapproved filaments may cause nozzle clogging and damage to printer components.

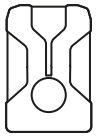
5. Secure Electrical Connections: Do not use power cables from other devices during installation. Always connect the printer to a grounded three-prong outlet with the provided power cable.

6. Operational Safety: Avoid touching the heated nozzle or build plate during operation to prevent burns or personal injury.

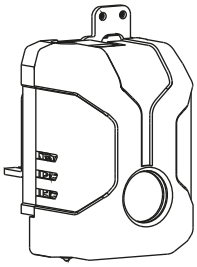
7. Routine Cleaning of Printer and Accessories: Clean the printer regularly. After turning it off, use a dry cloth to wipe the printer body and guide rails, removing dust, filament residue, and other particles to maintain optimal performance.

8. Safe Wiring Practices: For safety, avoid plugging or unplugging cables while the printer is powered on. Perform all wiring tasks only when the printer is powered off.

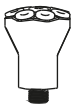
Part List What's in the boxes?



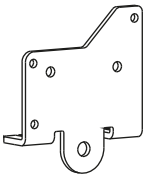
● **ChromaHead**



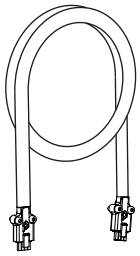
❶ **Chroma Head** 1x



❷ **8 in 1 module** 1x

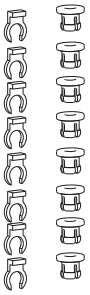


❸ **Connection Sheet** 1x

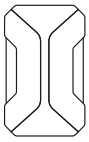


❹ **Chroma Head Cable** 1x

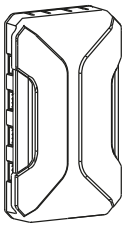
❺ **Metric 3x10 screw** 5x



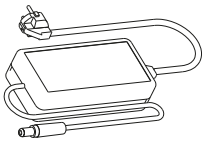
❺ **8 in 1 Connection Fittings** 8x



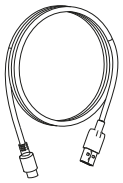
● **KCM**



❶ **KCM** 1x

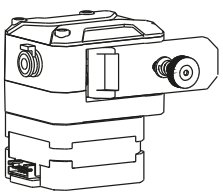


❷ **Power Adapter** 1x

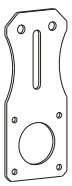


❸ **USB to Type-C Cable** 1x

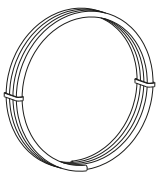
● **CX-I Extruder**
(4 pieces)



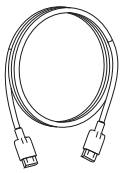
❶ **CX-I Extruder** 1x



❷ **Sigma Metal Sheet** 1x



❸ **PTFE Tube** 1x



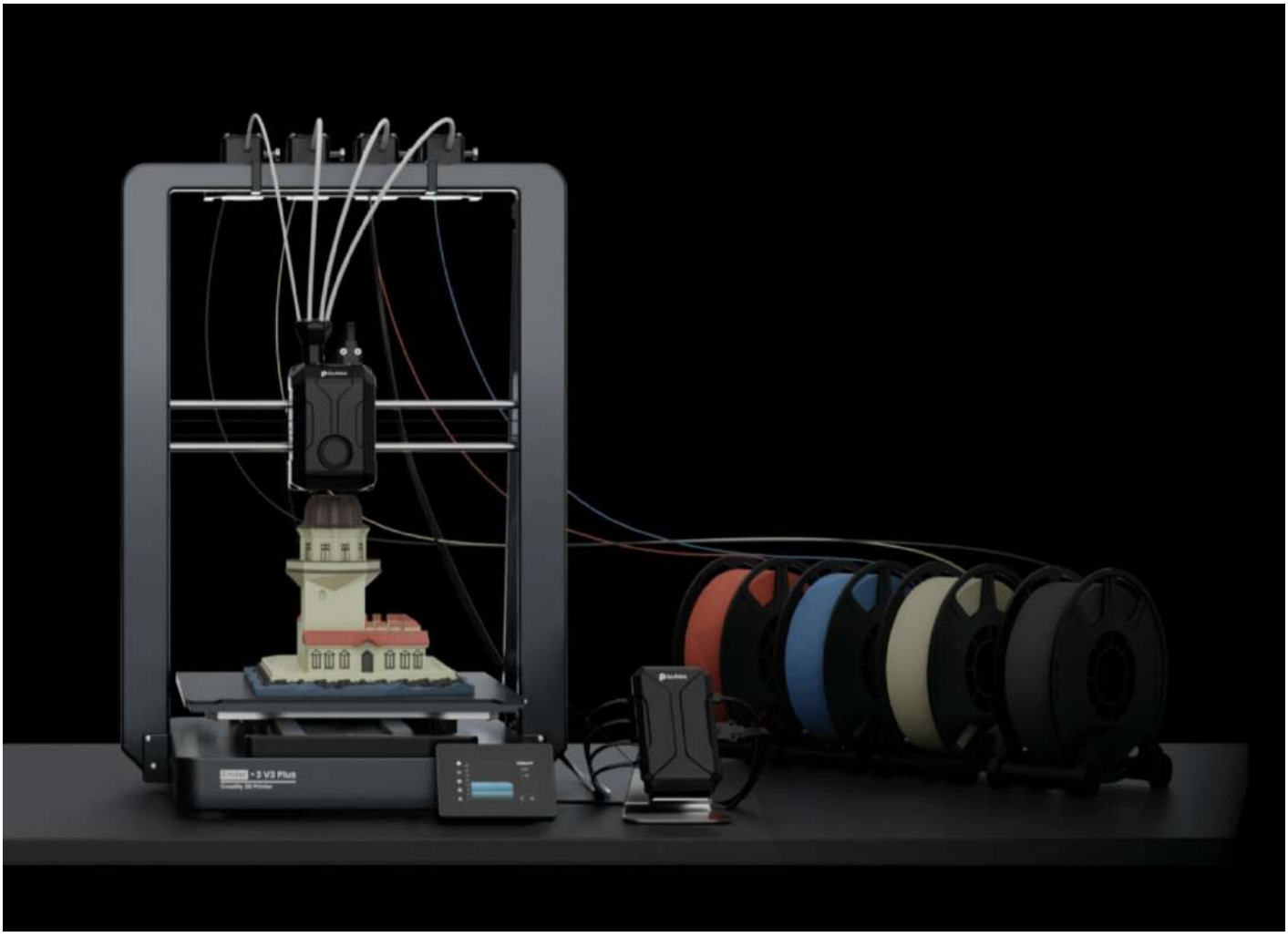
❹ **CX-I Motor Cable** 1x

❺ **Metric 5x10 screw** 2x

❻ **T-nut** 2x

KCMSet

KCM Set is designed to enable multi-color printing for Klipper-based printers. Its compact design allows for easy installation on standard Klipper printers, resulting in higher quality andmore colorful prints. KCM Set is suitable for many Klipper-based printers available on the market. With easily integrable ECMs, it can achieve simultaneous printing with a total of 20 colors. In this content, you will find information on how to install KCM Set on a 3D printer and how to take your first print.



1 Installation

First, we start the installation by making the mechanical connections of the KCM Set.

1.1 Mounting ChromaHead

There are two different connection types for ChromaHead for Sigma profile printers and non-sigma profile printers. Here, we will explain it from the non-sigma printer, and information on how to connect ChromaHead to sigma profile printers is available on our wiki page.
https://wiki.coprint3d.com/assembling-and-disassembling-chromahead-on-sigma-profile

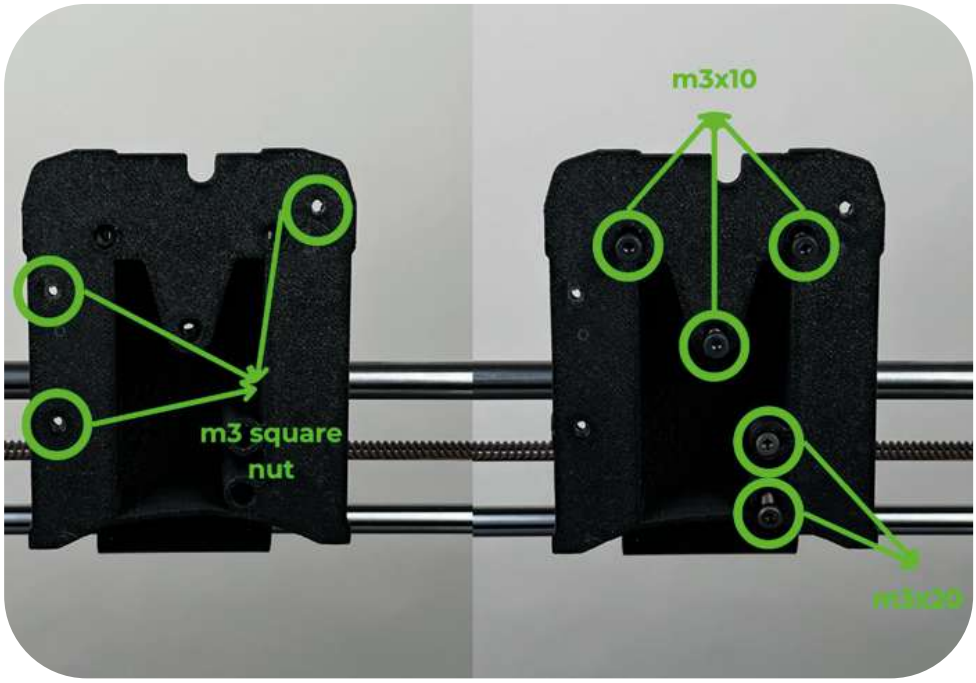
Before starting this process, you must remove the original print head of your printer. How to do this is explained on our wiki page for Ender3 V3. Please visit our wiki page.
https://www.youtube.com/watch?v=KY7wldQBqh4

1- Before starting this process, you need to print the compatible connection part on your printer.

2- As the second step, you should remove your printer head. If we consider the Creality Ender 3 V3 printer, you can see the process of removing the printer head on our wiki page.
https://wiki.coprint3d.com/en/assembling-disassembling-chromahead-on-nonsigma-profiles.

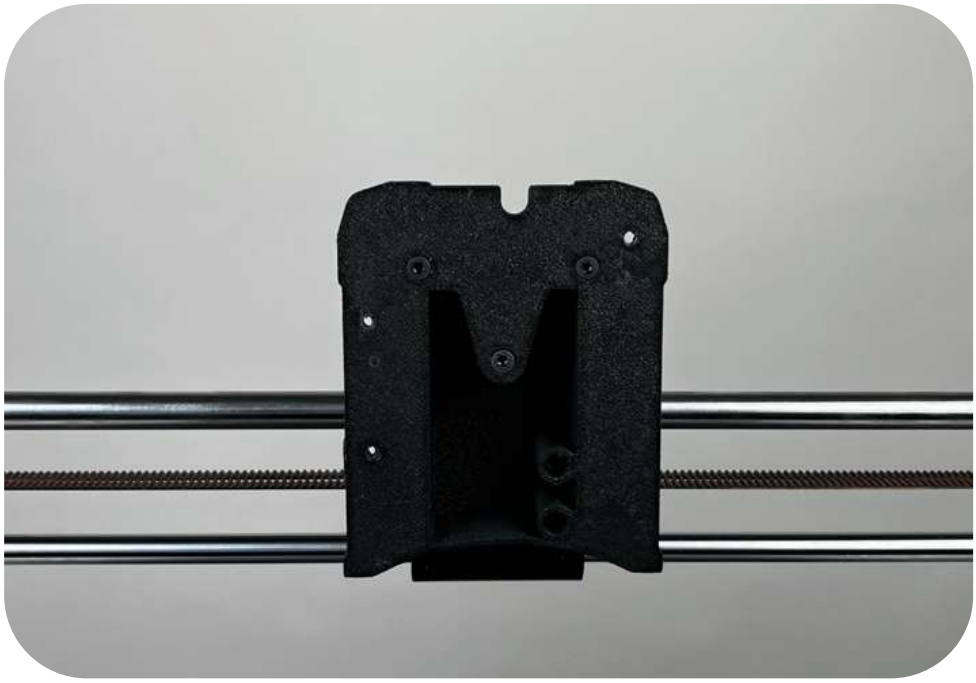
1.1 Mounting ChromaHead

3- Place 3 square nuts on the piece you printed.



1.1 Mounting ChromaHead

4- Place the connection piece in place and tighten 3x m3.10 screws through the holes on the top and 3x m3.20 screws through the holes on the bottom right.

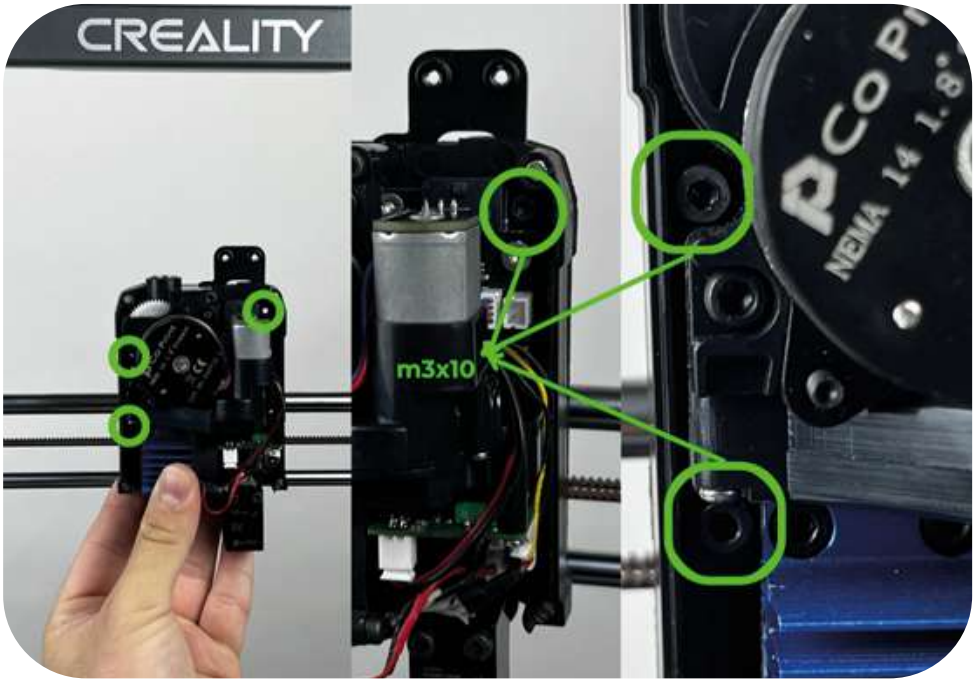


1.1 Mounting ChromaHead

5- Take the ChromaHead in your hand and open its front cover.
6- Remove the front cover fan and separate the cover.

1.1 Mounting ChromaHead

7- Screw the ChromaHead in three places with 3x m3.10 screws



1.1 Mounting ChromaHead

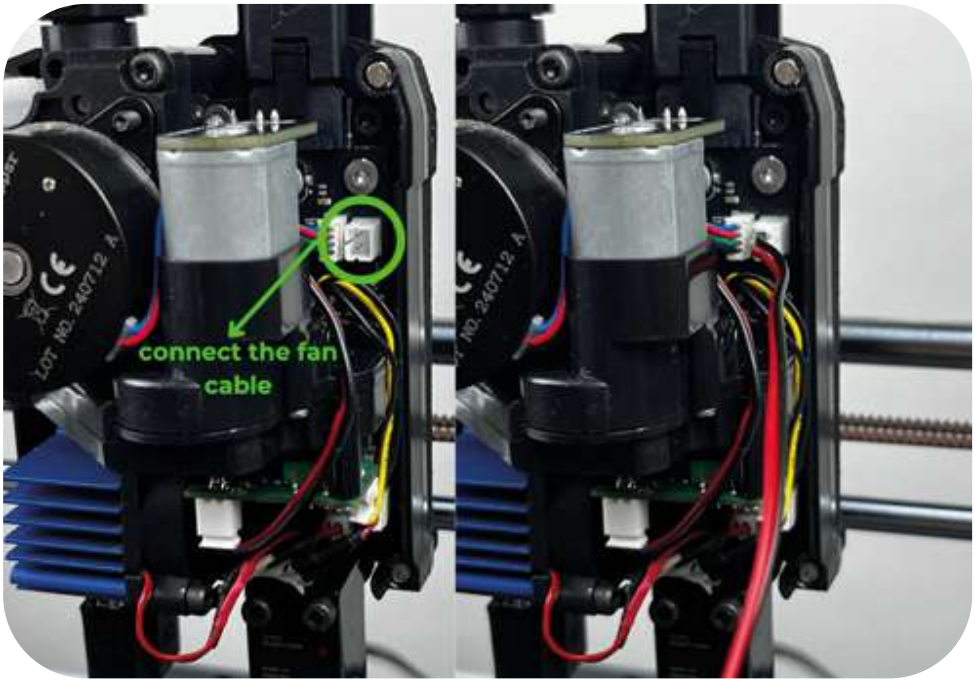
8- Attach the head cable and screw the Chromahead cable with 2x m3.10 screws.

1.1 Mounting ChromaHead

9- Attach the 8in1 to ChromaHead
10- Install the fittings included in the 8in1.

1.1 Mounting ChromaHead

11- Connect the fan cable of the front cover and close the cover.



1.1 Mounting ChromaHead

12- The ChromaHead installation is complete.

For more detailed information and video explanations, please visit our wiki page.
https://wiki.coprint3d.com/en/Mounting-the-ChromaHead

1.2 Mounting CX-I Extruders

Multi-Extruder Attachment features a structure capable of simultaneously holding 4 extruders. It's perfect for mounting extruders on printers without Sigma profiles.

1- Remove the CX-I Extruders from the box. If you have a printer with a non-sigma profile, like the Ender 3 V3 Plus, you need to use a printable Multi-Extruder Attachment part. You can download and print the Multi-Extruder Attachment from the link below.
https://github.com/coprint/AssemblingParts

1.2 Mounting CX-I Extruders

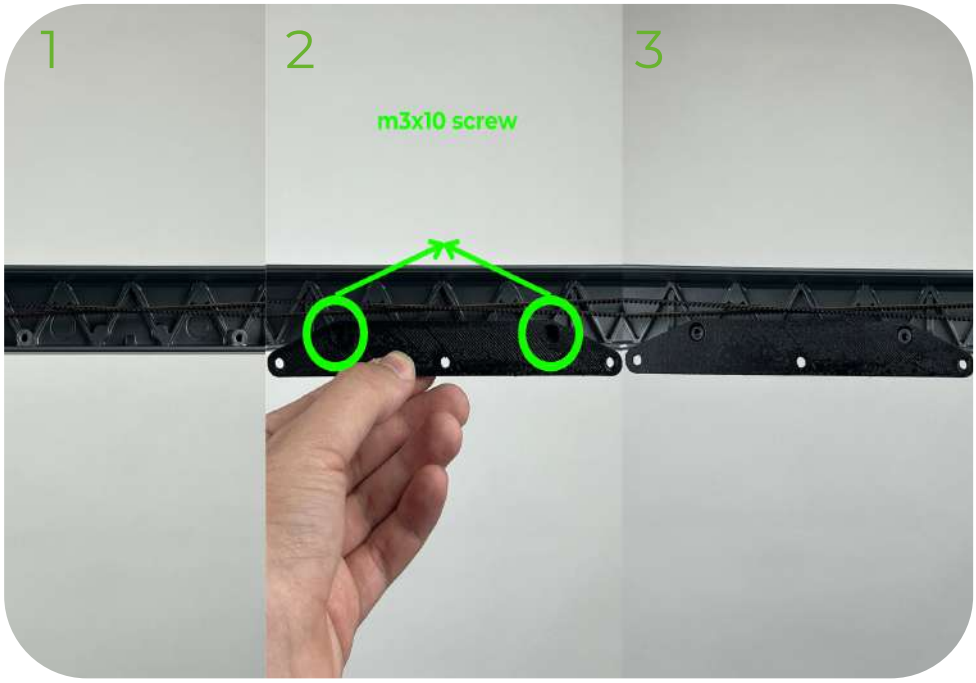
2- Place the CX-1 Extruders on top of Multi-Extruder Attachment.

1.2 Mounting CX-I Extruders

3- Place the Motors on bottom of Multi-Extruder Attachment.
4- Use three 3x35mm screws for each motor to attach the motors and extruders to Multi-Extruder Attachment.

1.2 Mounting CX-I Extruders

5- Different hooks can be attached to the front screw sockets. A custom part designed for the Creality Ender 3 V3 is being used. You can complete the assembly by following the images below.

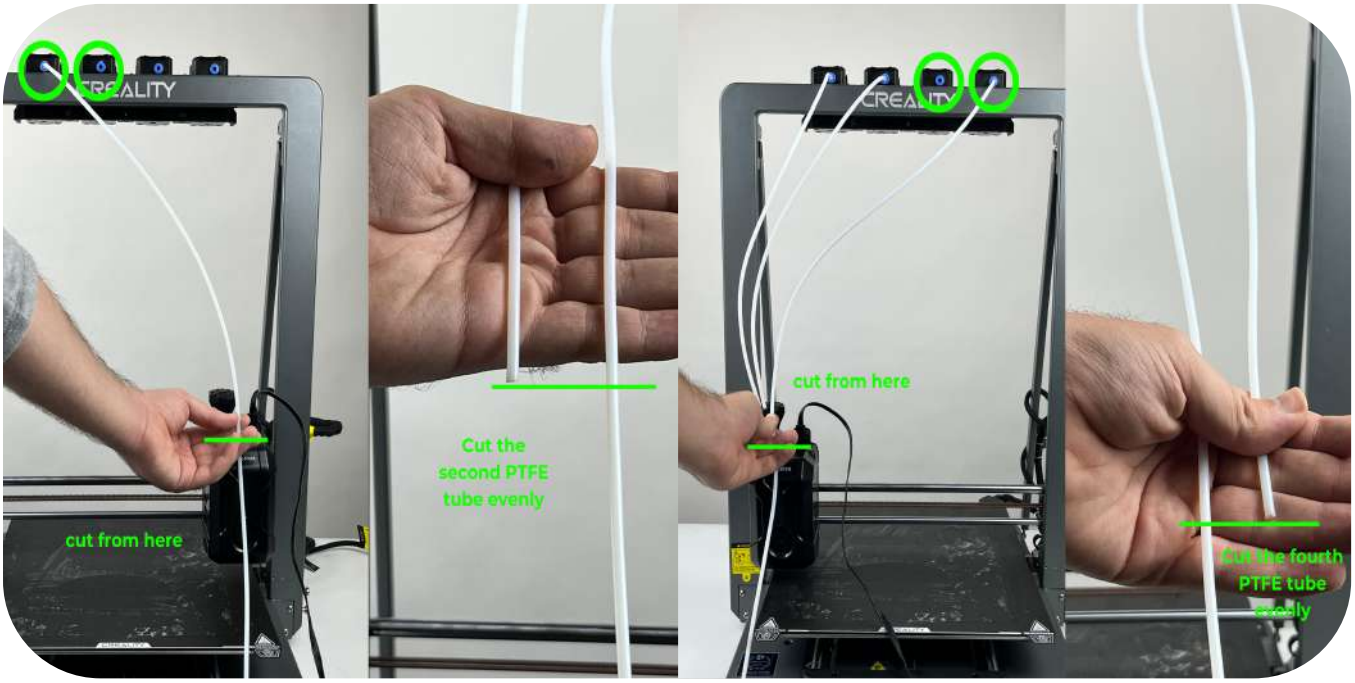


1.2 Mounting CX-I Extruders

6- You need to add square nuts to the slots at the bottom of the part. After placing the part in the screw holes at the top, tighten and fix it with M3x10 screws. Place the 4-extruder holder on the part you fixed as shown in the picture below and fix it by tightening it with M3X10 screws.

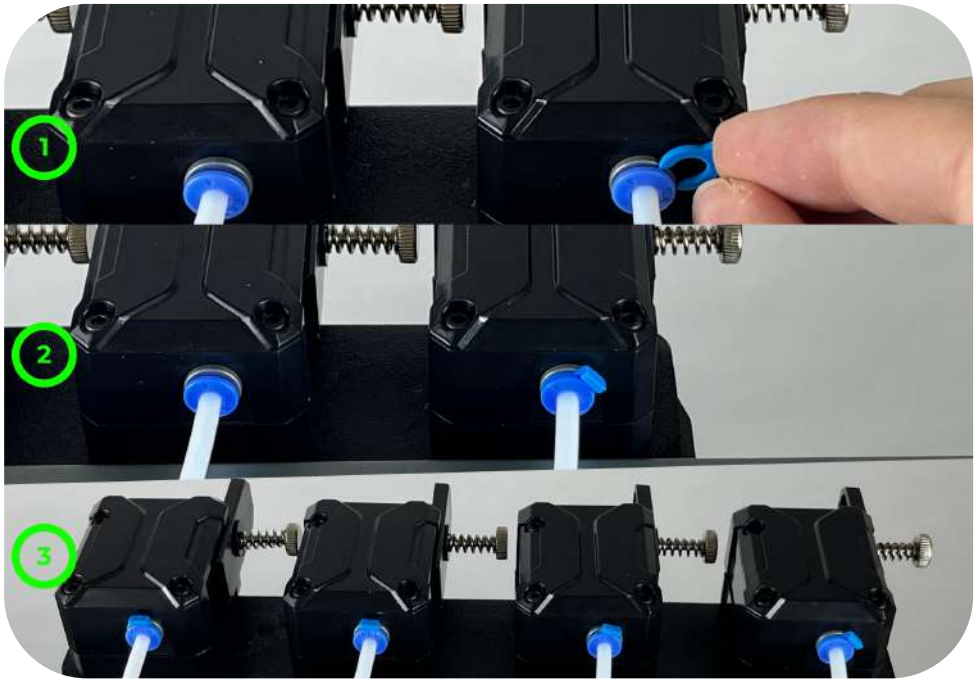
1.2 Mounting CX-I Extruders

7- Attach a PTFE tube to each CX-1 Extruder. To adjust the length of the PTFE tube, pull the ChromaHead to the right for the left extruder, then trim it to the desired length. Cut each PTFE tube to the same length and install them onto the 8 in 1 unit.



1.2 Mounting CX-I Extruders

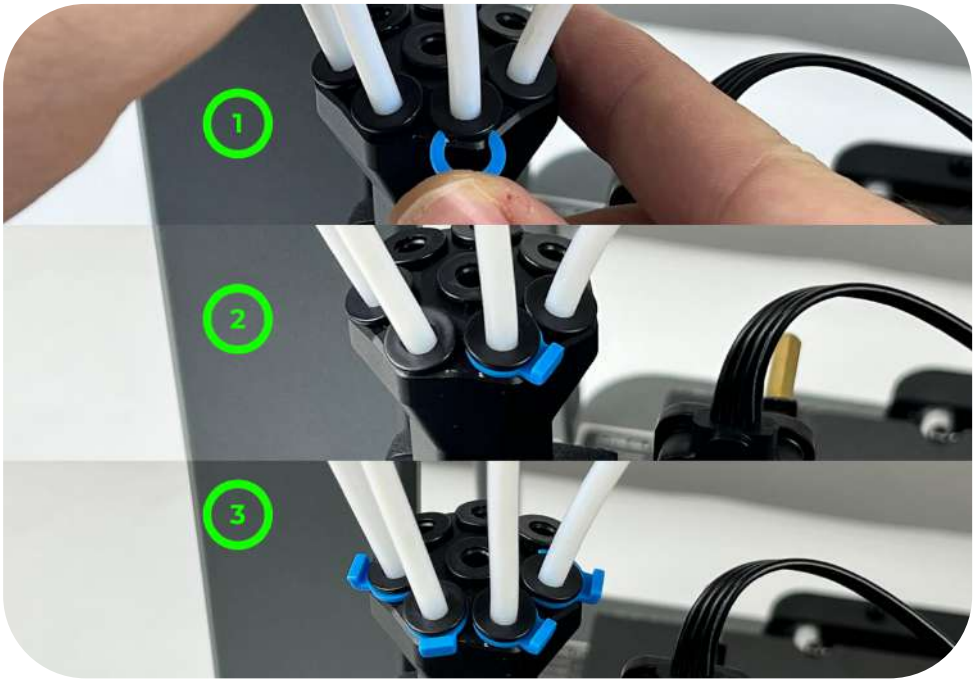
8- Place the PTFE compressive blue pieces in the box into the locations in the extruder section.



1.2 Mounting CX-I Extruders

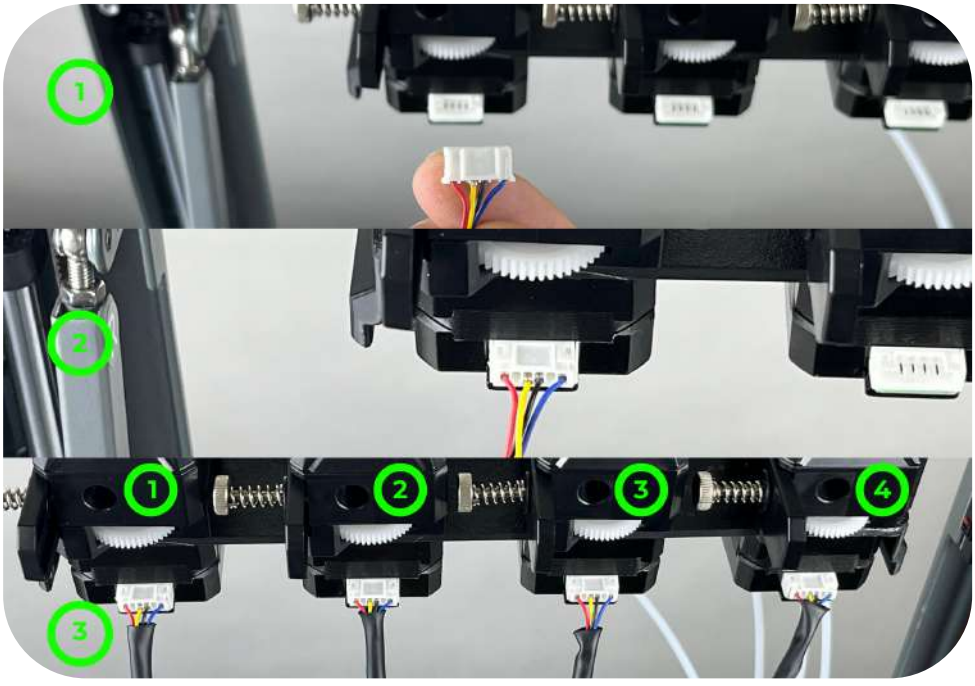
9- You should do the same process for 8in1.

For more detailed information, please visit our wiki page.
https://wiki.coprint3d.com/Installation-of-PTFE-tubing-and-fittings



1.2 Mounting CX-I Extruders

10- After this process, you should connect the CX-I motor cables as in the photo.



1.2 Mounting CX-I Extruders

11- Then connect the CX-I motor wires to the KCM.

Note

If you have a sigma profile 3D Printer such as Ender 3 V2, Elegoo Neptune 4 Series or similar, you can check our Wiki page to mount CX-1 Extruders to any sigma profile 3D printer. https://wiki.coprint3d.com/en/mounting-the-cx-1-extruders

1.3 Mounting KCM

At this stage, KCM's ChromaHead and printer connection are shown.

1- Connect the USB type-C cable that came in the box to the printer. Your printer must be turned off during this process.

1.3 Mounting KCM

2- After connecting the USB cable to the printer, plug the ChromeHead cable into the KCM.

1.3 Mounting KCM

3- Plug the Type-c usb cable into KCM and then plug the power cable.

1.3 Mounting KCM

4- After this process, turn on your printer.
5- Download the Ender3-V3 cfg files from our Github page.
https://github.com/coprint/configs/tree/main/Creality/Ender%203%20V3%20Plus
6- Type the IP address from the wifi tab on your printer screen into your browser and enter the site.

Note

Before doing this, you must perform the procedure on our wiki page to resolve the klipper incompatibility.

1.3 Mounting KCM

7- Check the files you downloaded from the Github page, delete the files with the same name in the mainsail machine section and upload the files you downloaded here.

8- You will not need to make any adjustments thanks to this process.

9- Your printer is ready to use.

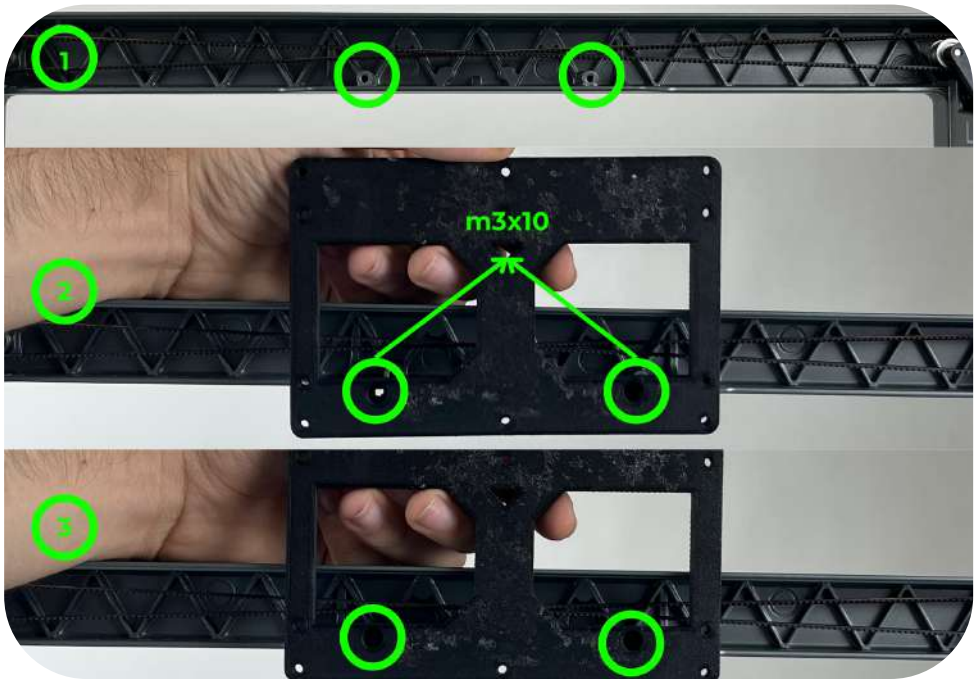
2 ECM Installation

At this stage, it will be explained how to install ECM and 4 extra CX-I extruders. The 4 CX-I extruders you are using and the ones you just installed will not change and will remain in the same format. No action will be taken for your first 4 extruders.

2.1 Mounting ECM

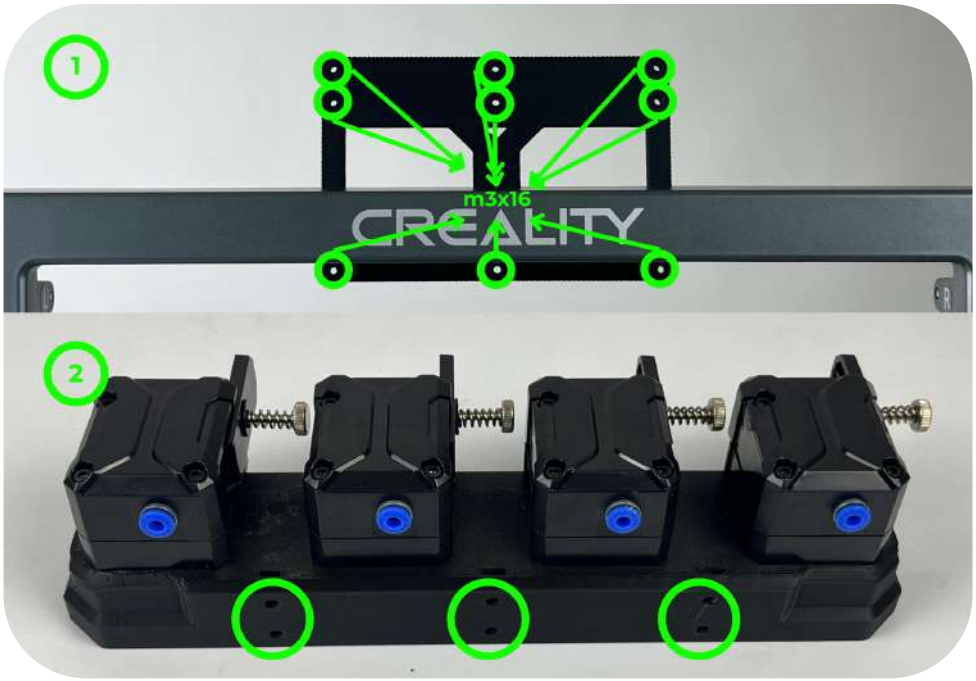
1- Before starting this process, you must print the specially designed 8-piece CX-I holder parts.
2- Mount the printed part using m3x10 screws as seen in the photo below.

For 8-piece extruder connection piece: https://github.com/coprint/AssemblingParts/tree/main/Creality/Ender%203%20V3%20Plus



2.1 Mounting ECM

3- For CX-I and holder assembly, you can visit our wiki page or go back to the mounting CX-I page.

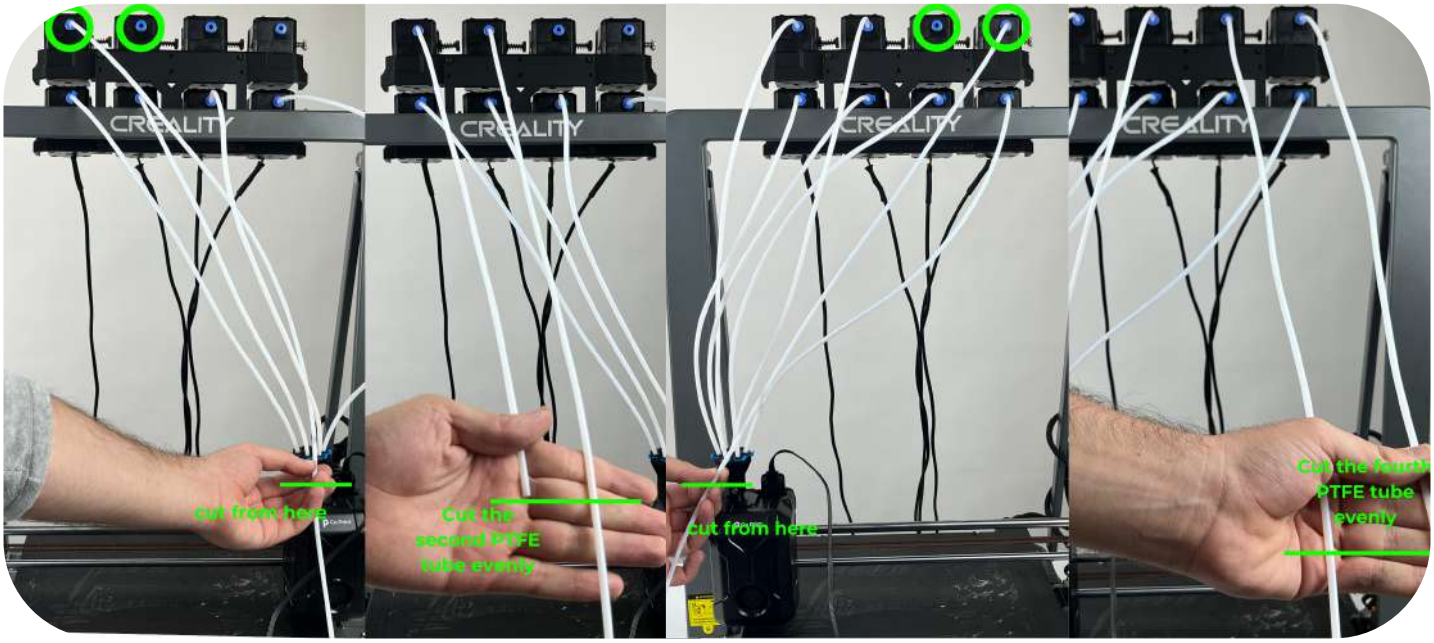


2.1 Mounting ECM

4- Mount the CX-I holders with m3x16 screws.

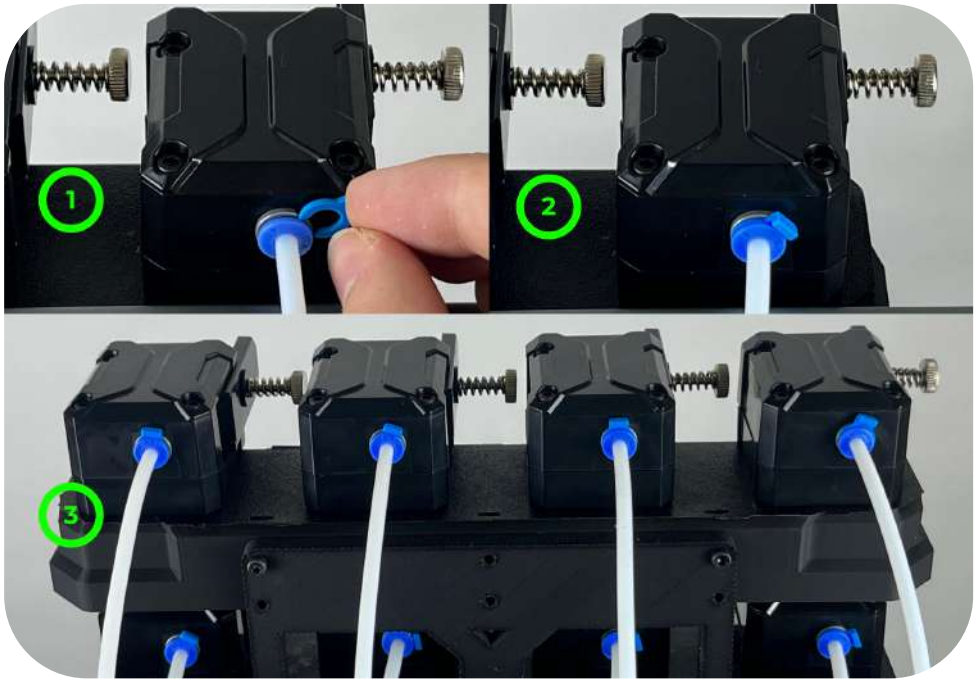
2.1 Mounting ECM

5- Attach a PTFE tube to each CX-1 Extruder. To adjust the length of the PTFE tube, pull the ChromaHead to the right for the left extruder, then trim it to the desired length. Cut each PTFE tube to the same length and install them onto the 8 in 1 unit.



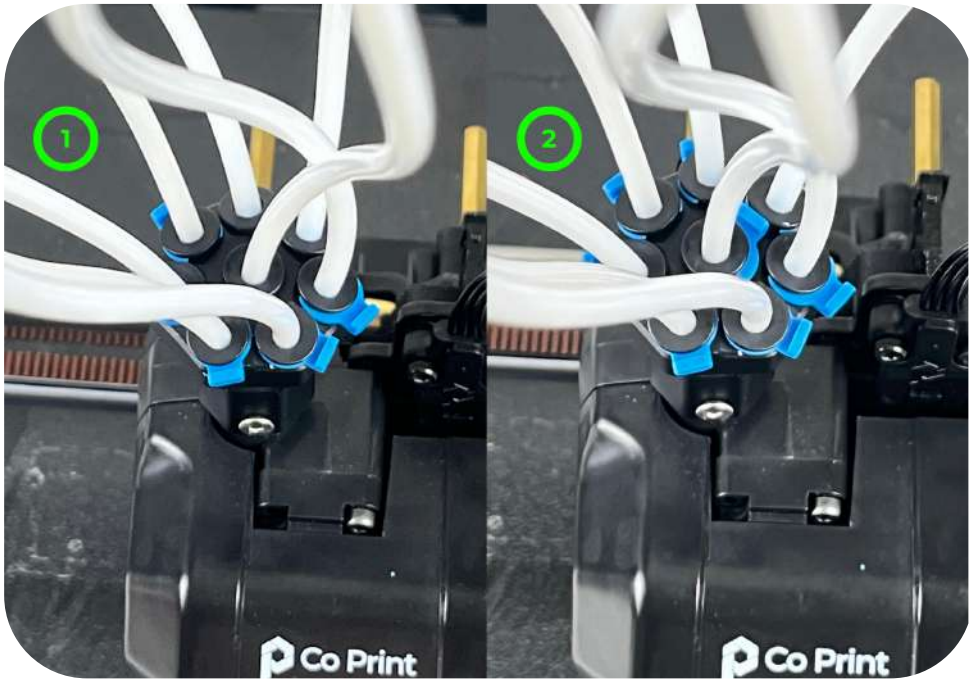
2.1 Mounting ECM

6- Place the PTFE compressed blue parts inside the box in their places in the extruder section.



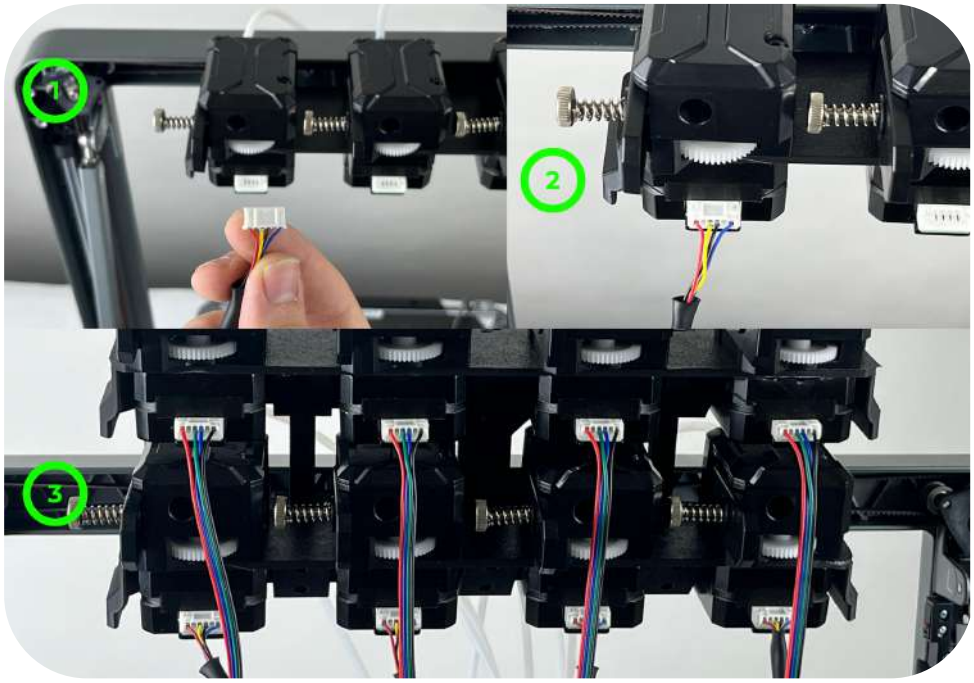
2.1 Mounting ECM

7- You should do the same process for 8in1.



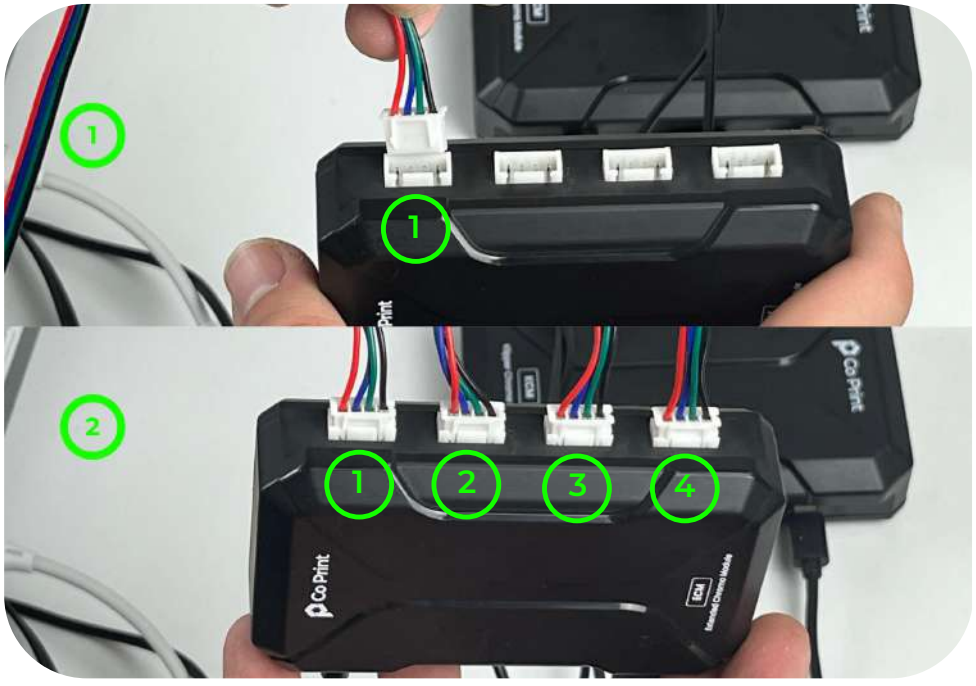
2.1 Mounting ECM

8- After this process, you should connect the CX-I motor cables as in the photo.



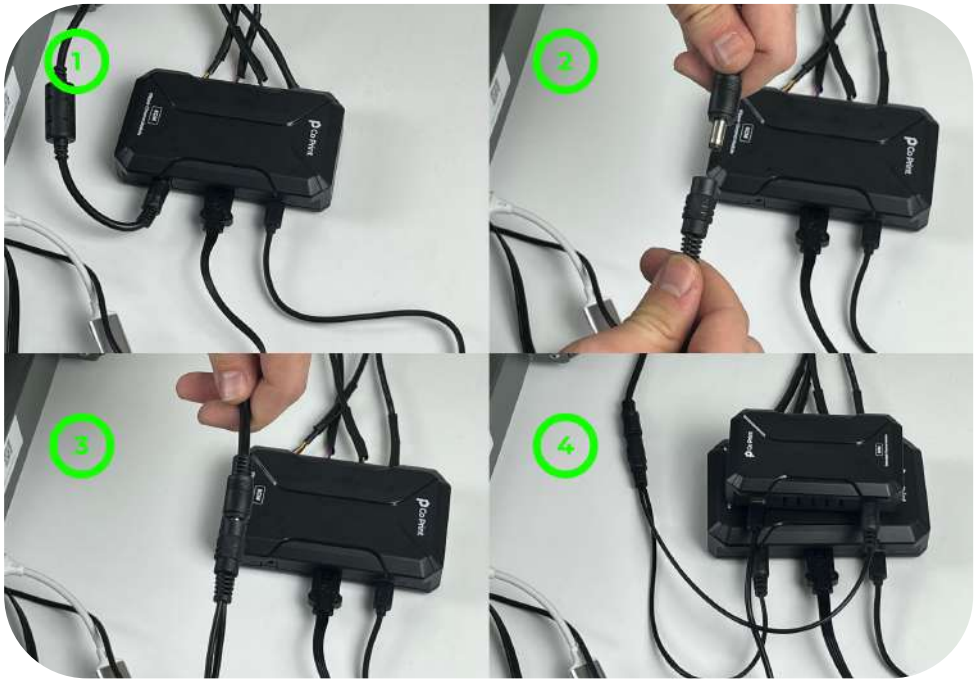
2.1 Mounting ECM

9- Then connect the CX-I motor wires to the ECM.



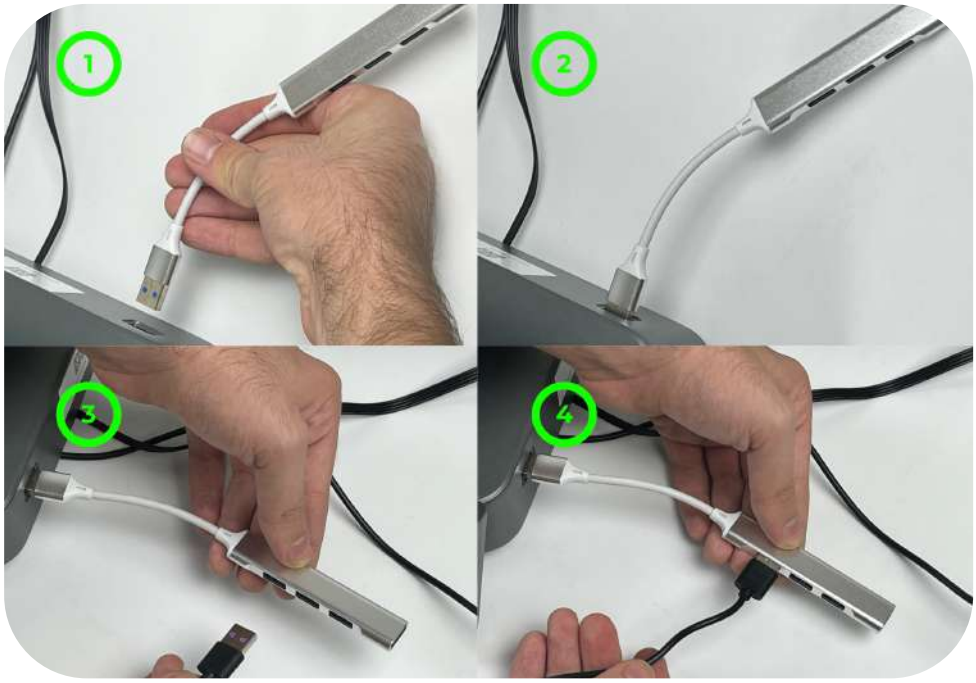
2.1 Mounting ECM

10- To power the ECM, connect the splitter included in the box to the KCM adapter and connect one end to the KCM and the other end to the ECM and turn it on.



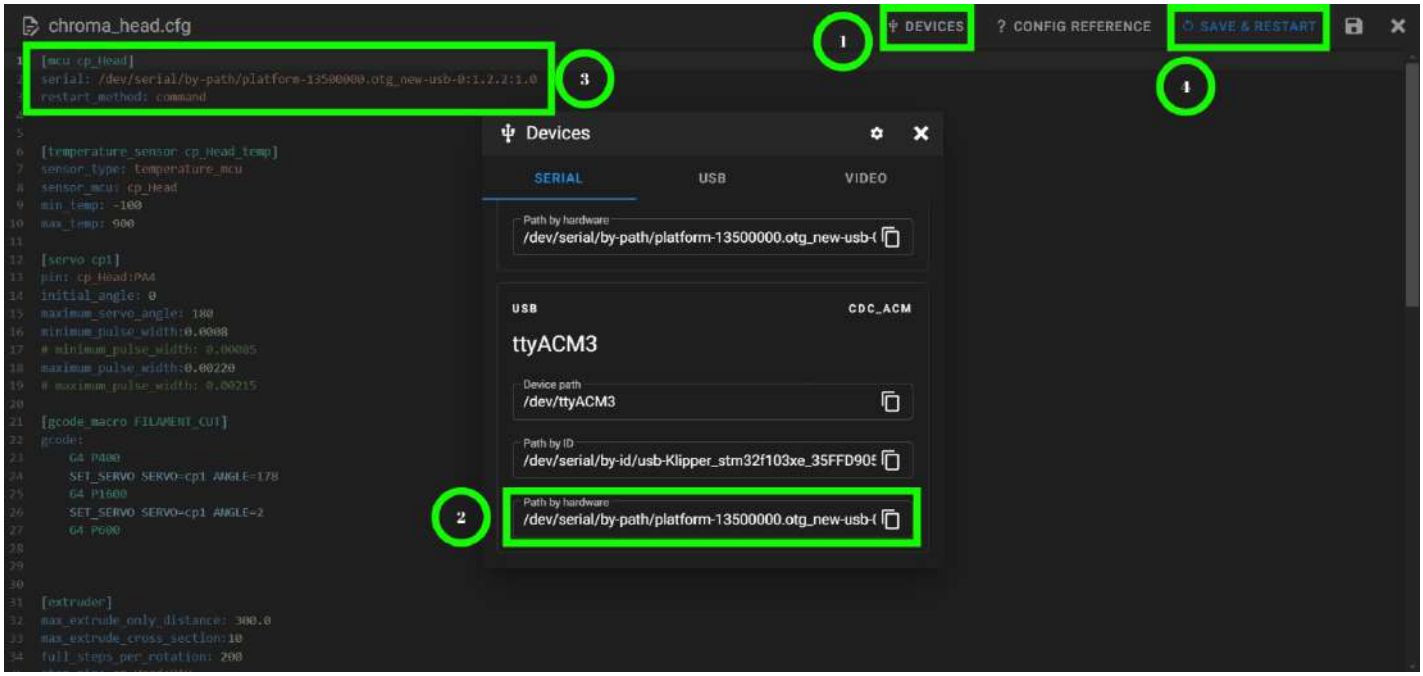
2.1 Mounting ECM

11- You must install a USB hub to install ECM on your Ender 3 V3 printer. After installing the USB hub, connect the KCM cable to the first port.



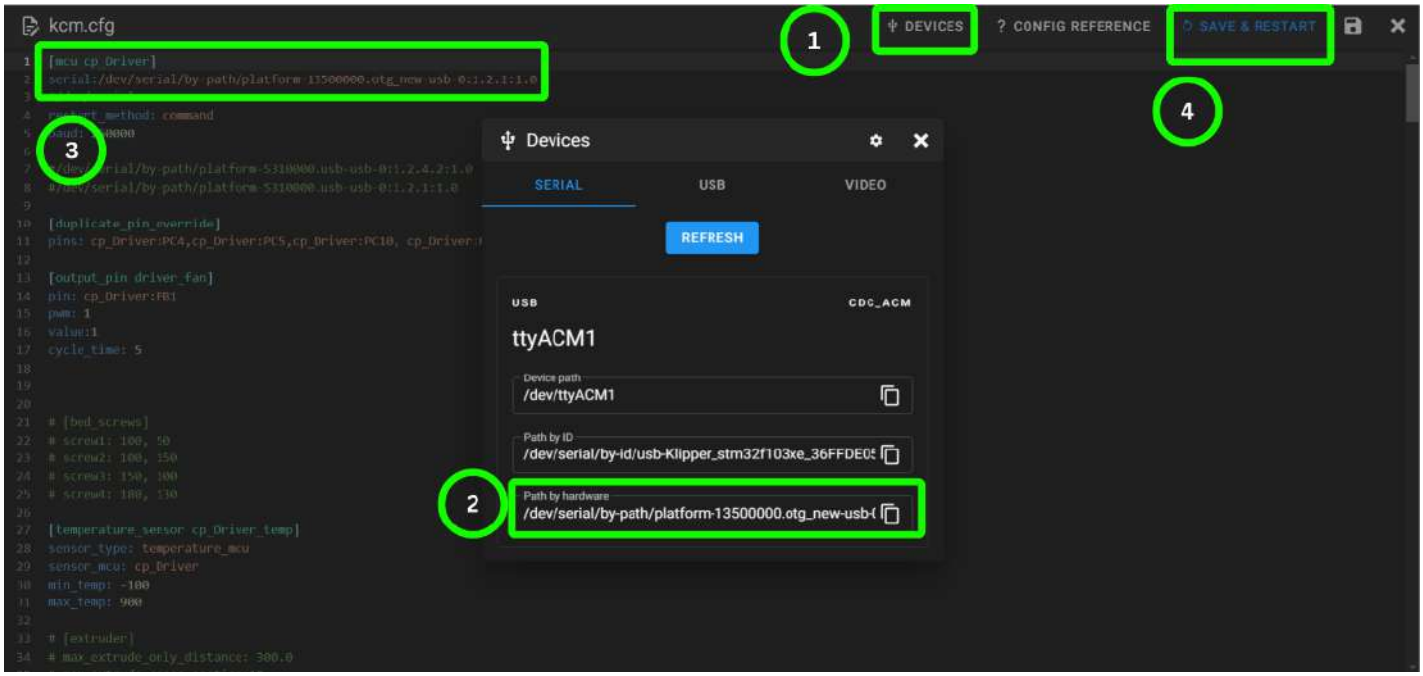
2.1 Mounting ECM

12- Since you have plugged in a USB hub, the ChromaHead serial path will also change. You need to fix that as well. Go to ChromaHead.cfg and edit it as shown in the image.



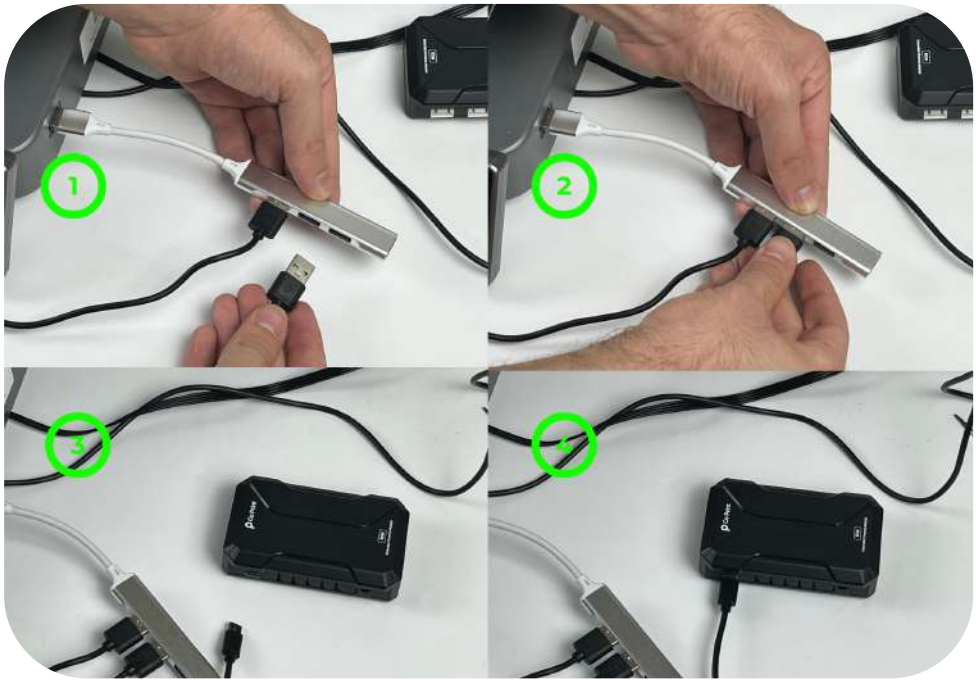
2.1 Mounting ECM

13- After installing the KCM, go to the "MACHINE" section in Mainsail and open the kcm.cfg file. Click on the "DEVICES" button. After determining the KCM path, copy and paste it into the location specified in section 3. Then, press the save & restart button and close the file.



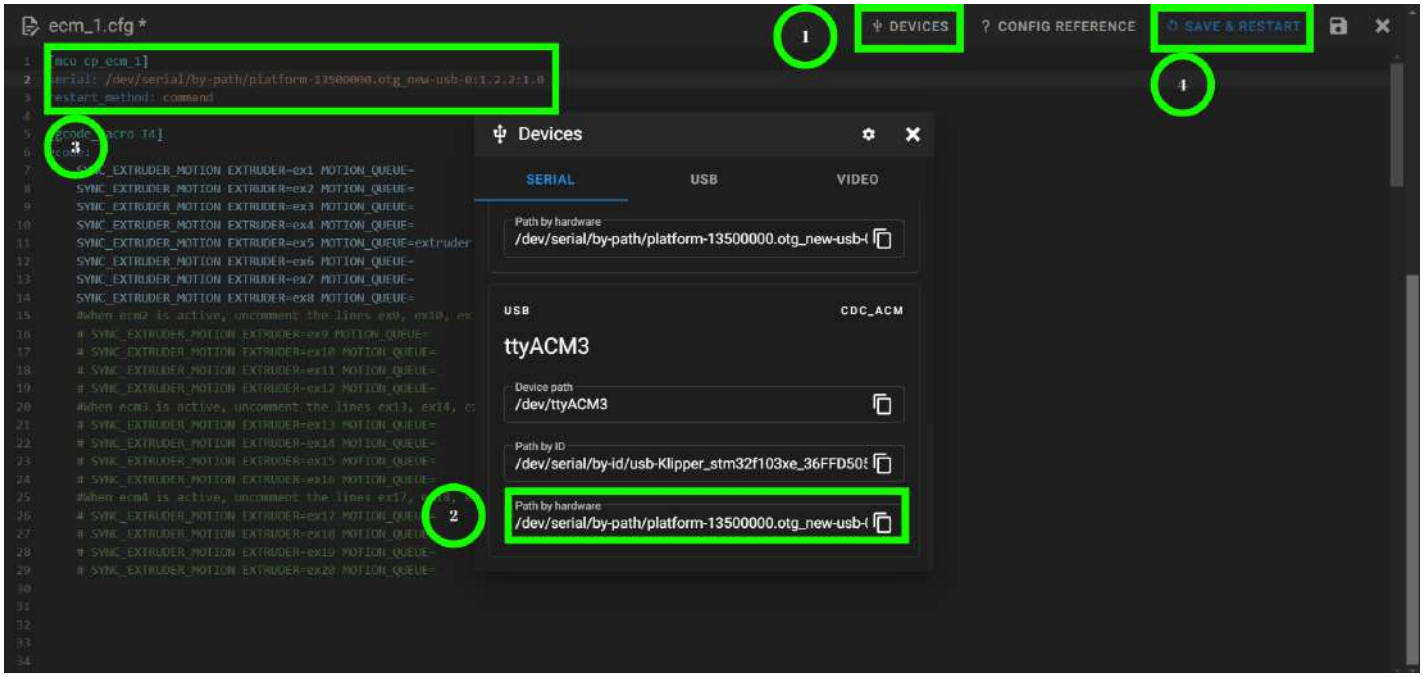
2.1 Mounting ECM

14- Then plug the USB cable that came in the ECM box into the splitter and connect the type-c end to the ECM.



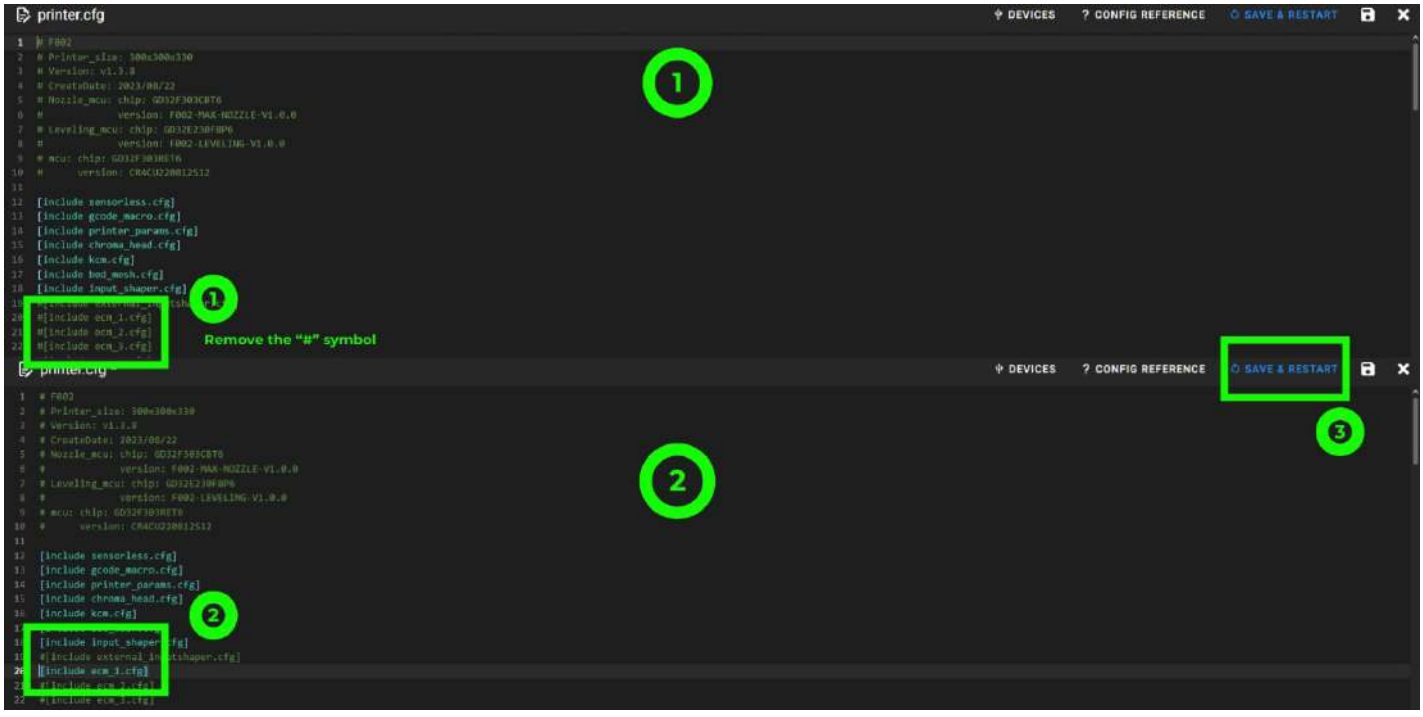
2.1 Mounting ECM

15- After installing the ECM, go to the "MACHINE" section in Mainsail and open the ecm_1.cfg file. Click on the "DEVICES" button. After determining the ECM path, copy and paste it into the location specified in section 3. Then, press the save & restart button and close the file.



2.1 Mounting ECM

16- In Mainsail, within the printer.cfg file, remove the '#' symbol at the beginning of the line that says #[include ecm_1], and then perform a save & restart.

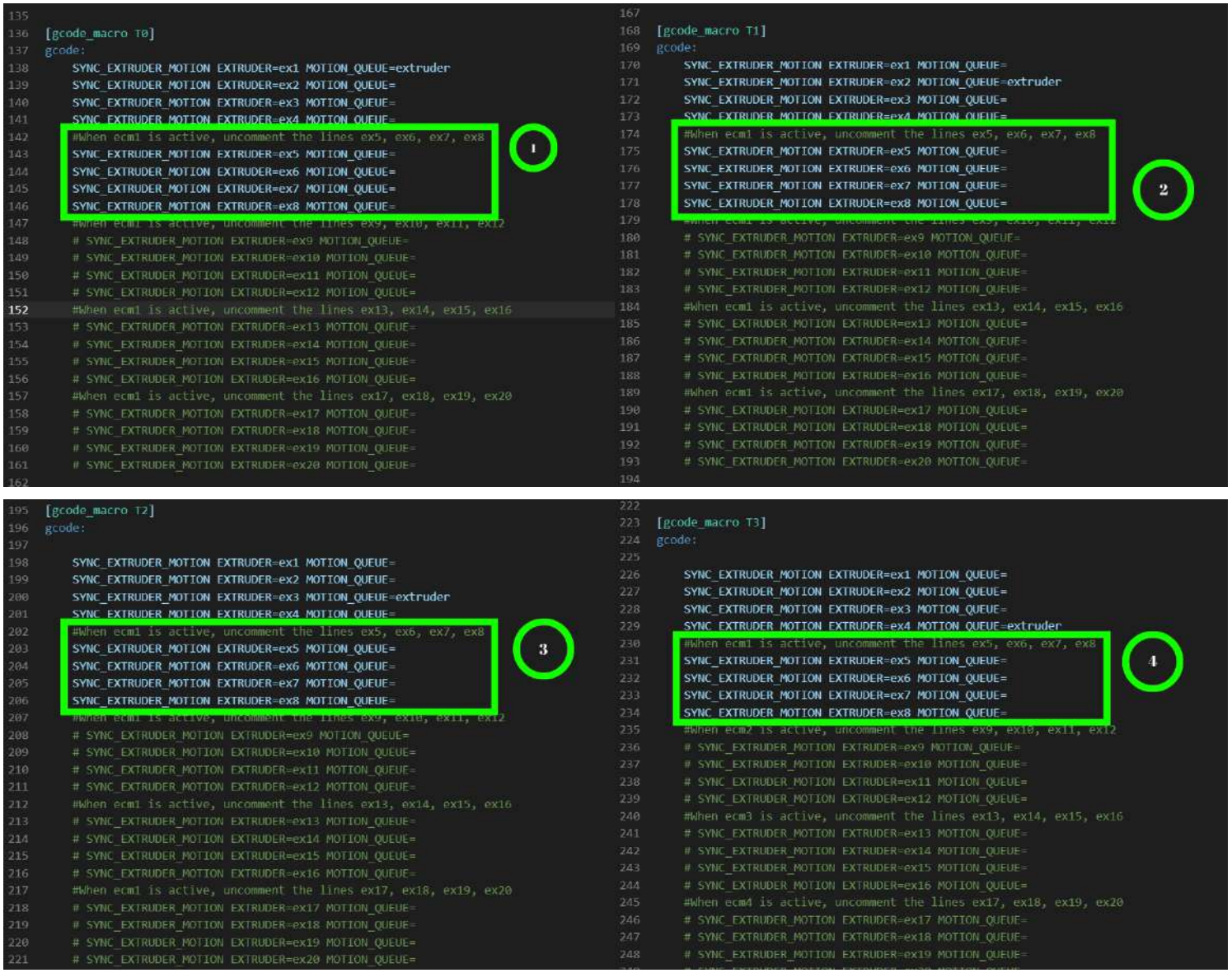


2.1 Mounting ECM

17- Open the kcm.cfg file in Mainsail

```
# SYNC_EXTRUDER_MOTION EXTRUDER=ex5 MOTION_QUEUE=
# SYNC_EXTRUDER_MOTION EXTRUDER=ex6 MOTION_QUEUE=
# SYNC_EXTRUDER_MOTION EXTRUDER=ex7 MOTION_QUEUE=
# SYNC_EXTRUDER_MOTION EXTRUDER=ex8 MOTION_QUEUE=
```

Remove the “#” symbol at the beginning of the lines and save&restart.



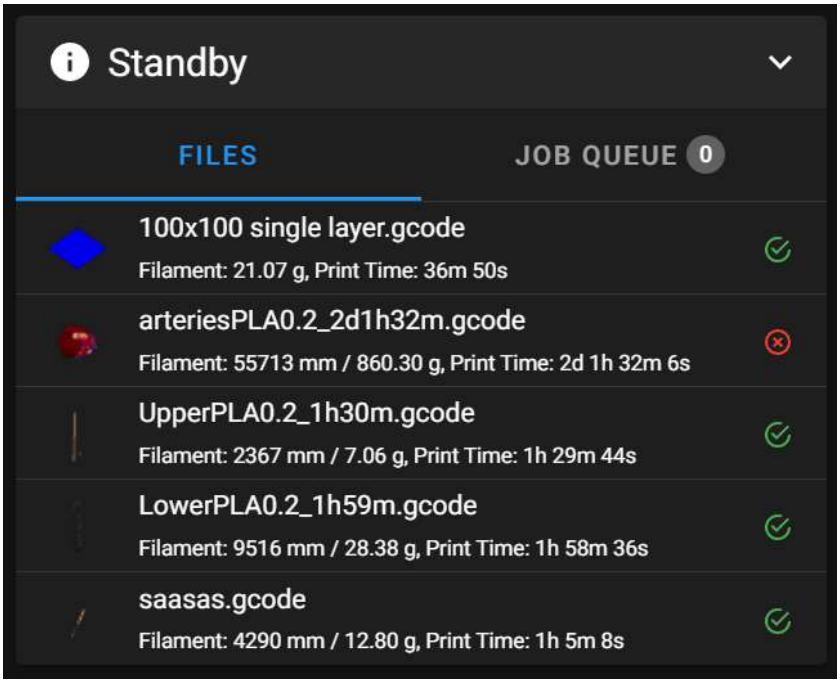
After this process, ECM is ready to use and you can print in 8 colors.

For a more detailed explanation, please visit our wiki page.
https://wiki.coprint3d.com/How-to-Set-Up-Extra-4-Color-Printing-Feature-with-ECM

3 Explanation Of Interface Sections

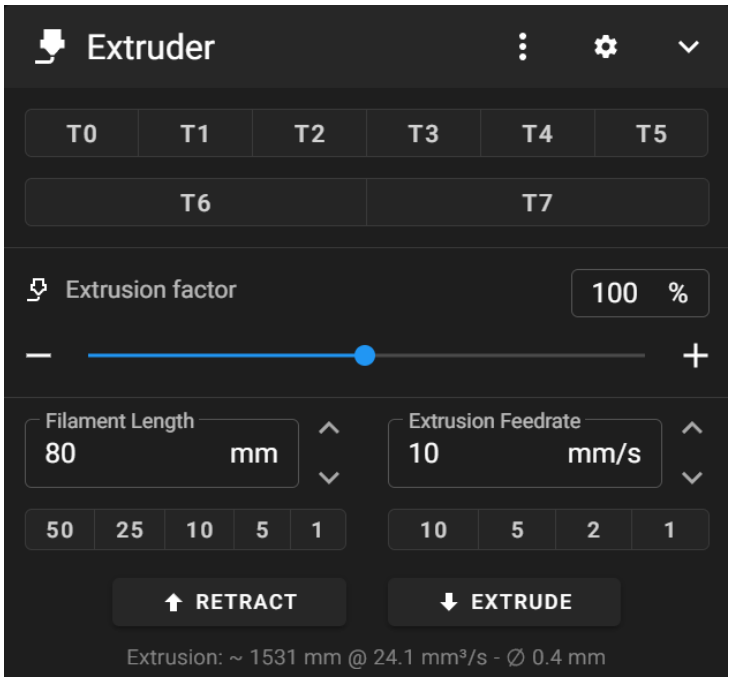
3.1 Mainsail Interface

1- You can control your printing in the Standby section in Mainsail. After uploading a G-code file to Mainsail, it shows up in Standby section. By clicking on any .gcode file in Standby section, you can start a printing process.



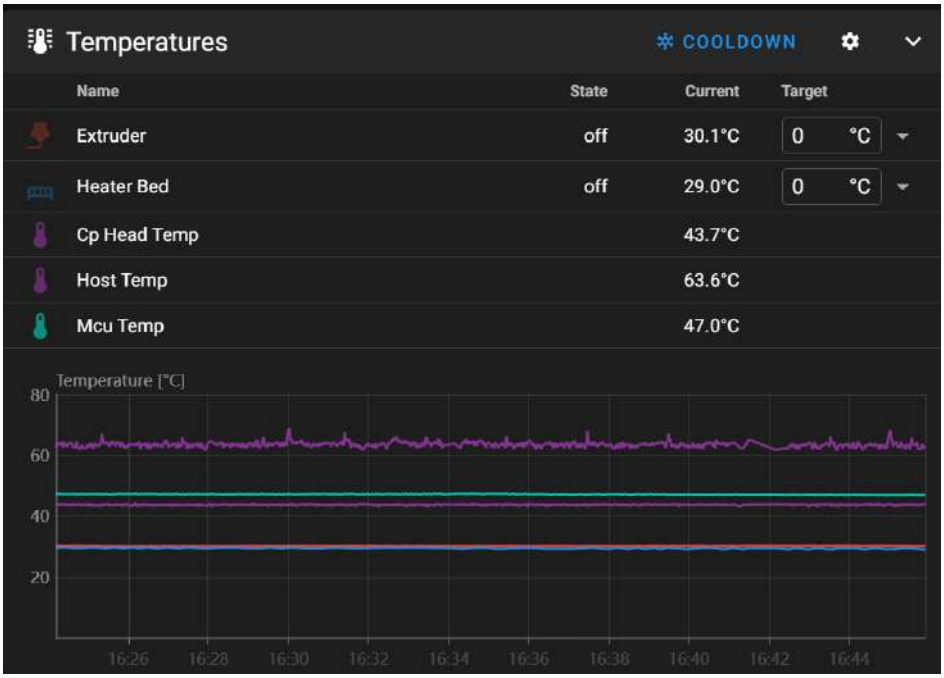
3.1 Mainsail Interface

2- You can control the CX-1 Extruders in Extruders section. You can control how many centimeters can be extruded or retracted, as well as the speed at which this occurs.



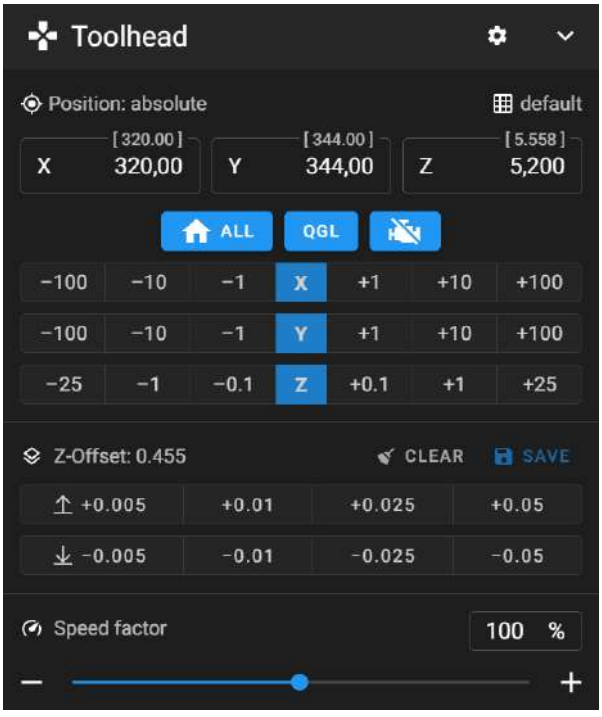
3.1 Mainsail Interface

3- You can control the temperatures of Extruder and Heater Bed in Temperatures section.



3.1 Mainsail Interface

4- In Toolhead section, you can control the position of ChromaHead and adjust the Z-offset.

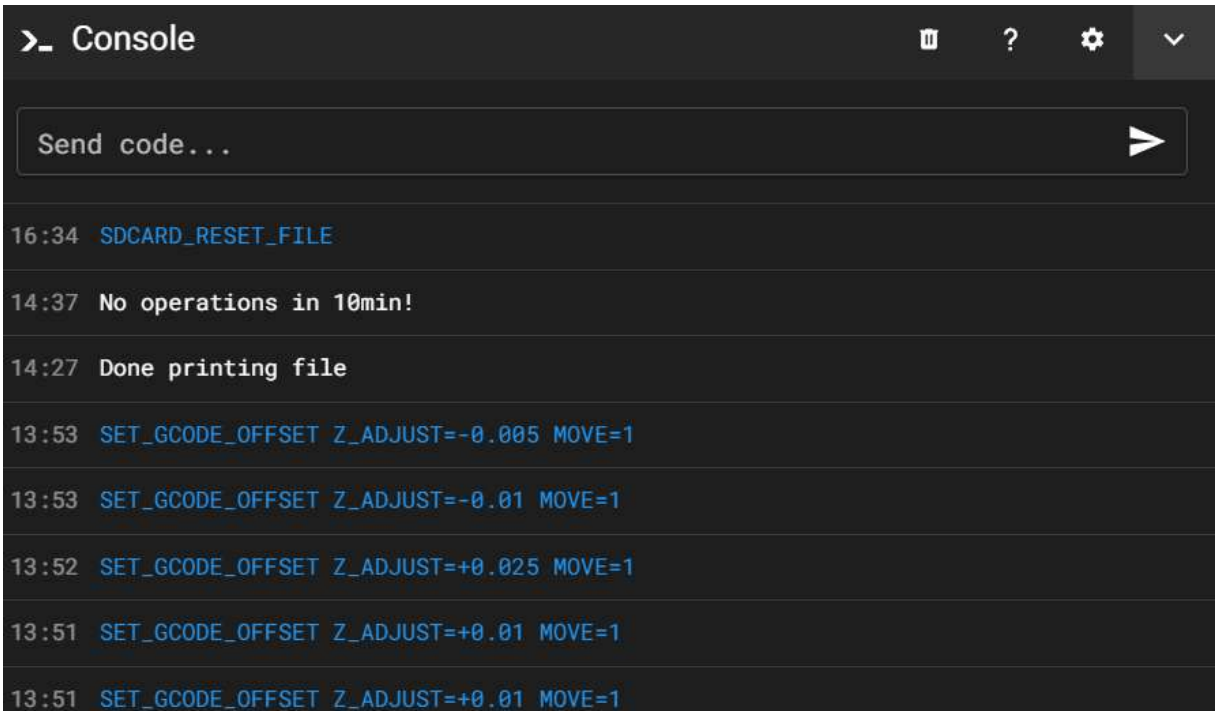


3.1 Mainsail Interface

5- On the left menu, you can switch between different menues such as “MACHINE”, “HISTORY” and “HEIGHTMAP”.

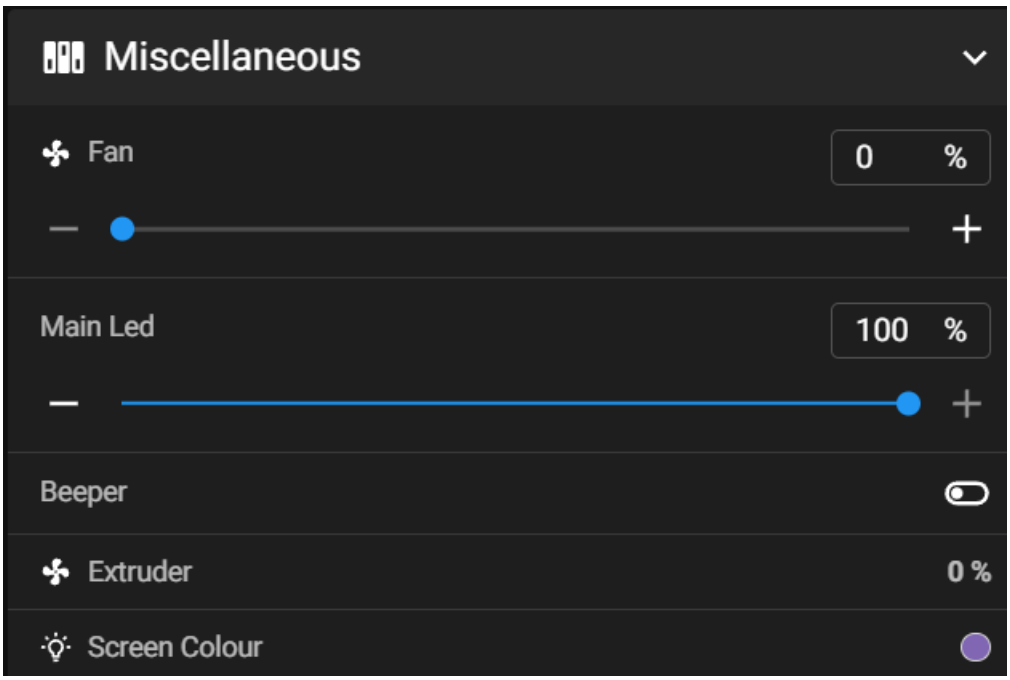
3.1 Mainsail Interface

6- You can send specifical commands to your printer from the “Console”.



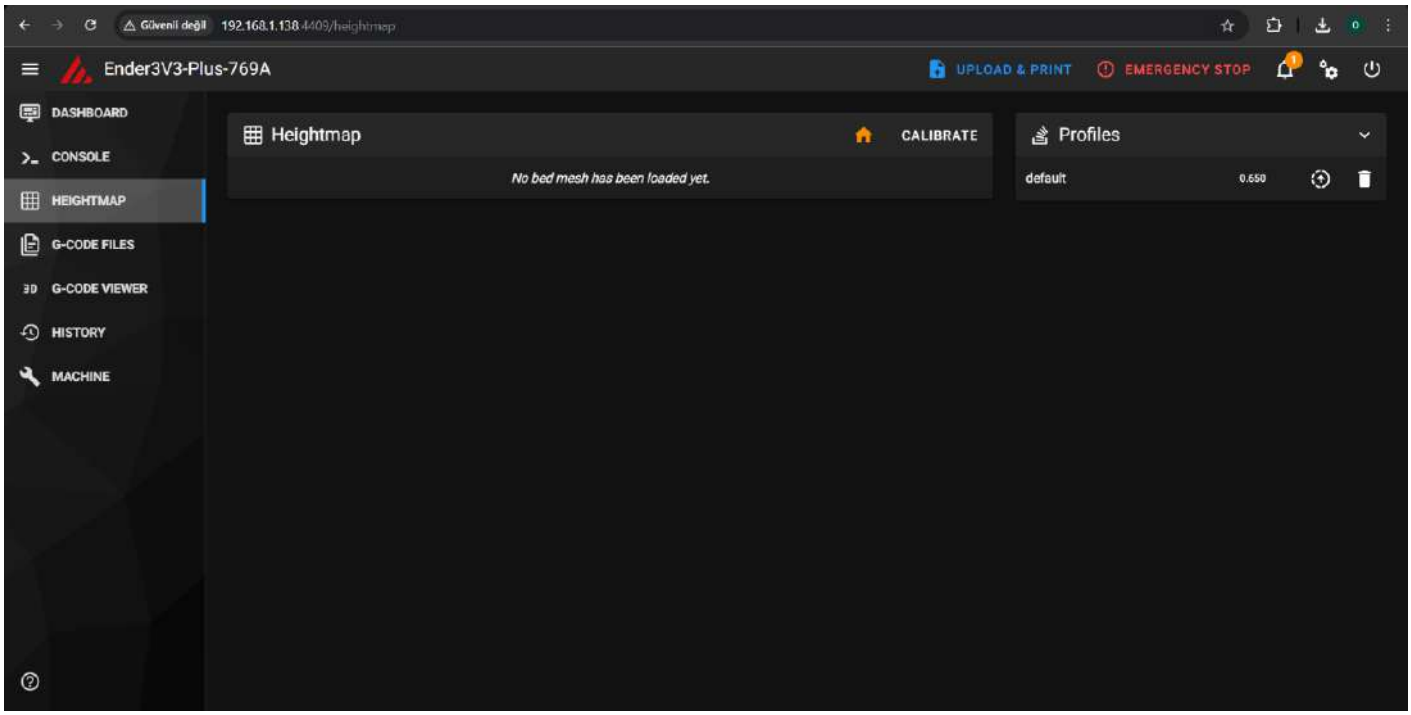
3.1 Mainsail Interface

7- On “Miscellaneous” you can control the fan speed and led systems of your printer.



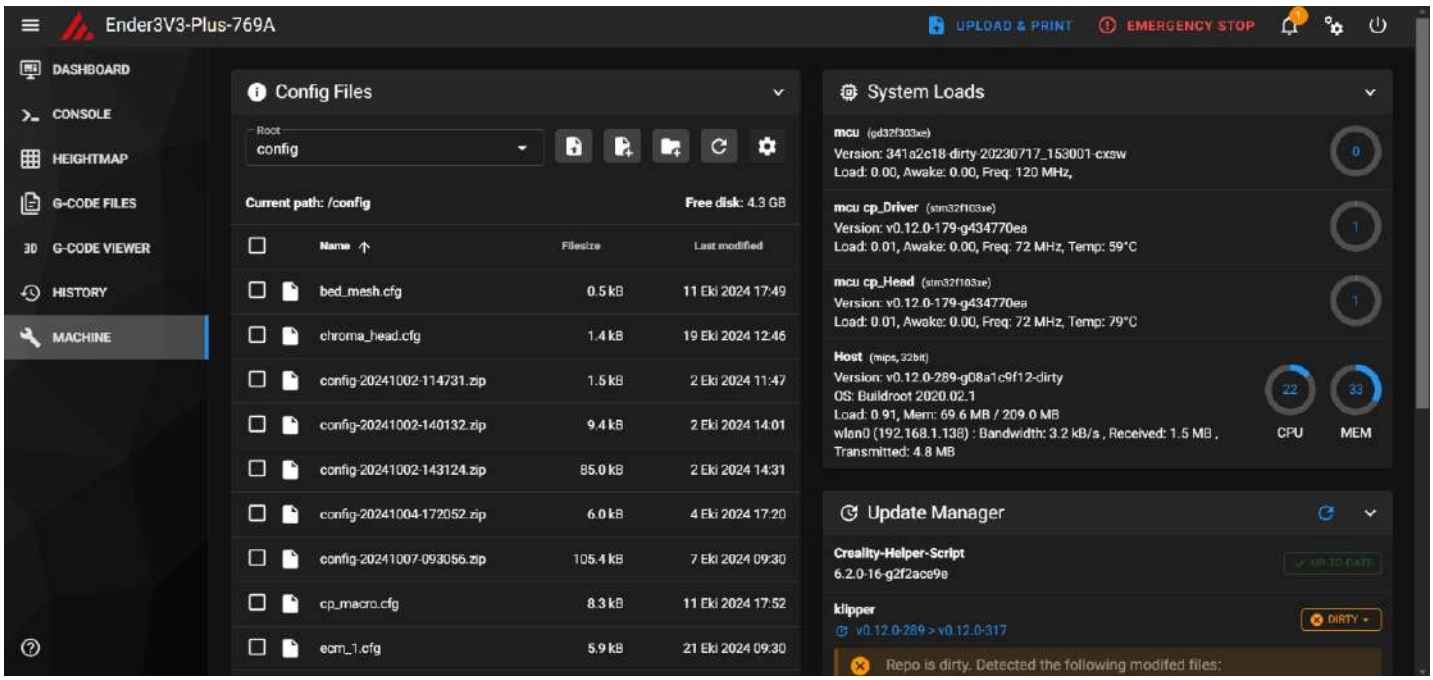
3.1 Mainsail Interface

8- On “HEIGHTMAP” menu, you can calibrate a new bed mesh, or upload the bed mesh that you already calibrated.



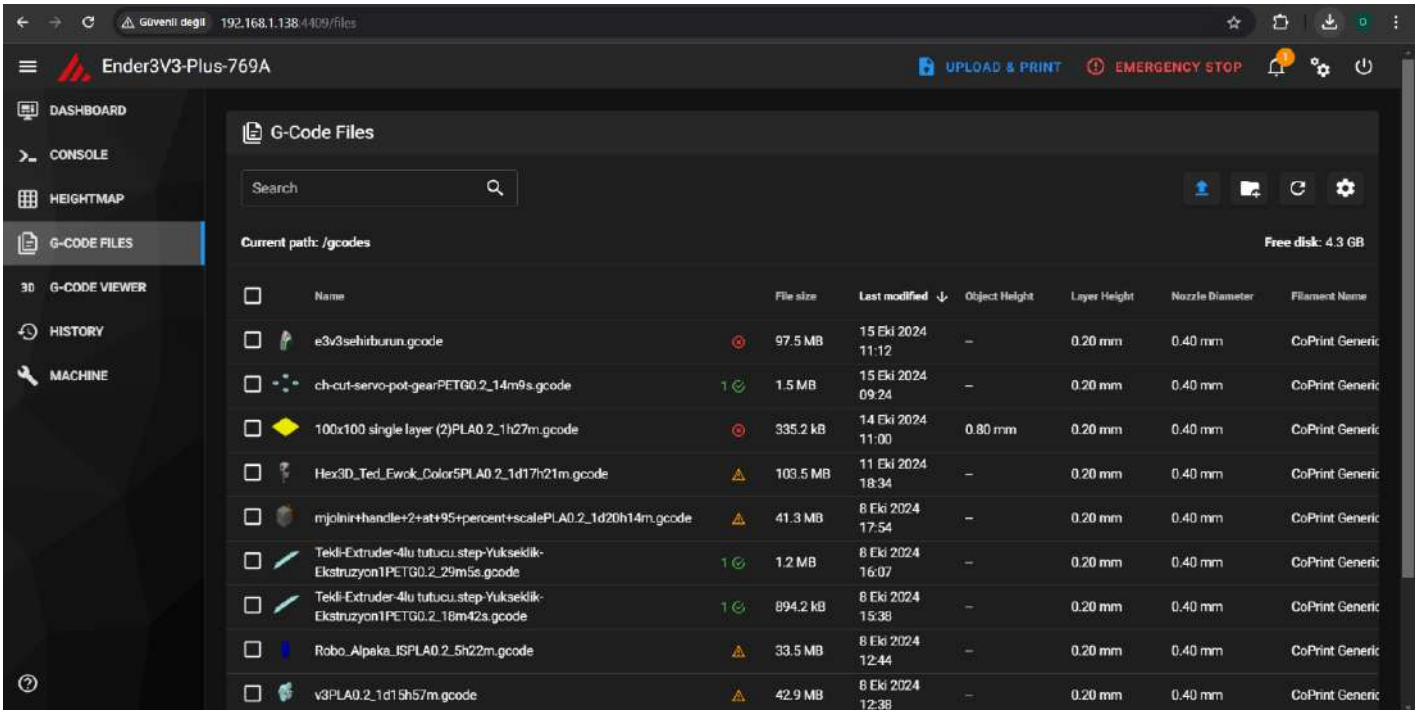
3.1 Mainsail Interface

9- On the “MACHINE” menu, you can control your config files.



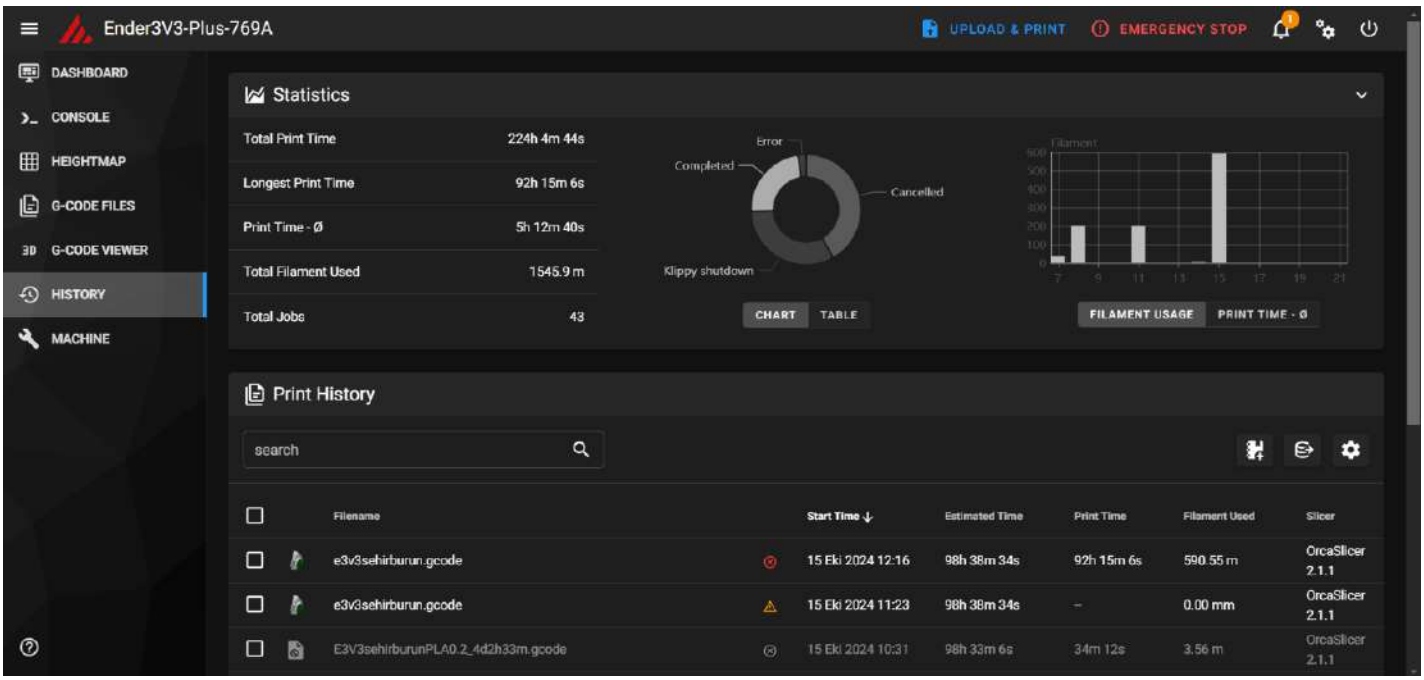
3.1 Mainsail Interface

10- In the G-code files section, you can add G-code files or download a previously added G-code file.



3.1 Mainsail Interface

11- In the History section, you can access information such as your total printing time, the number of successful and failed prints, your longest print, and your total filament usage.



4 Printing

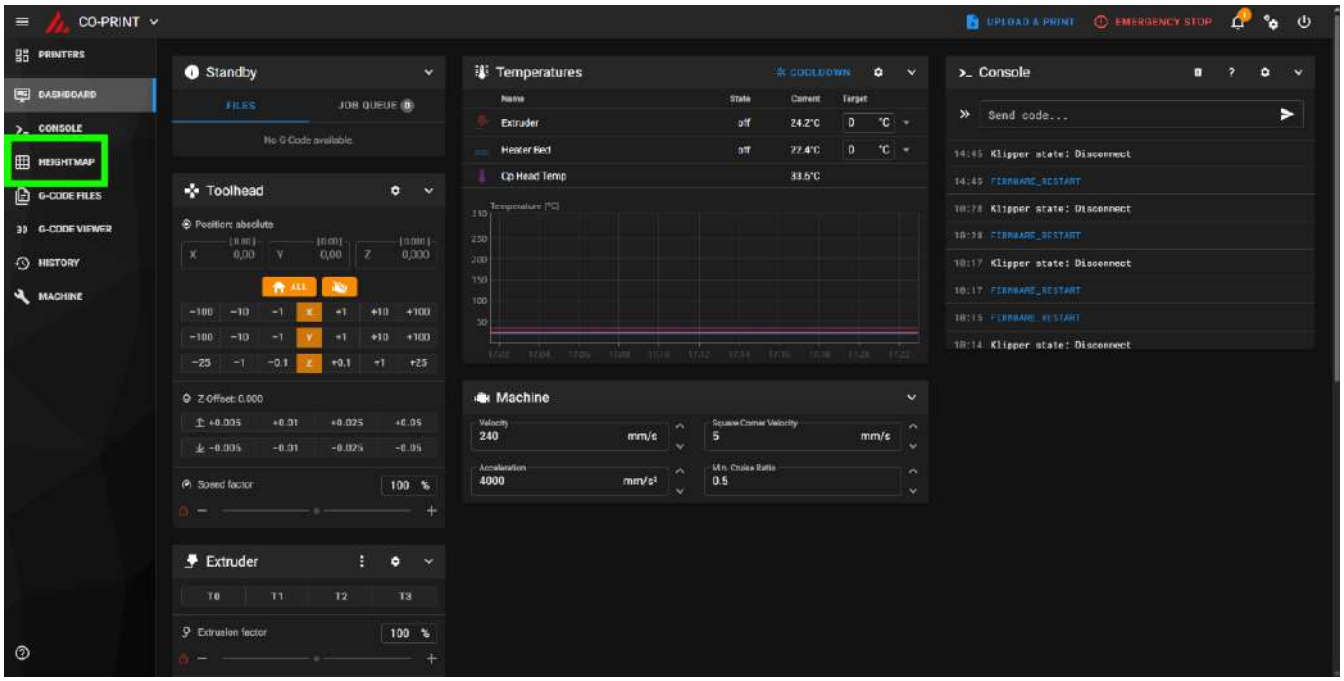
4.1 Before Printing

Before you start printing, you need to open bed_mesh. What is bed_mesh? Bed mesh is a calibration method used to compensate for irregularities and curvatures of the printing surface (printing table) in 3D printers. It maps the deviations on this surface by measuring the distance between the printer's nozzle and the printing table at various points and dynamically adjusts the height of the nozzle to compensate for these differences during printing. In this way, a smooth printing surface can be obtained and higher quality prints can be obtained.

Thanks to the config files we have shared with you for bed mesh, you do not need to do anything.

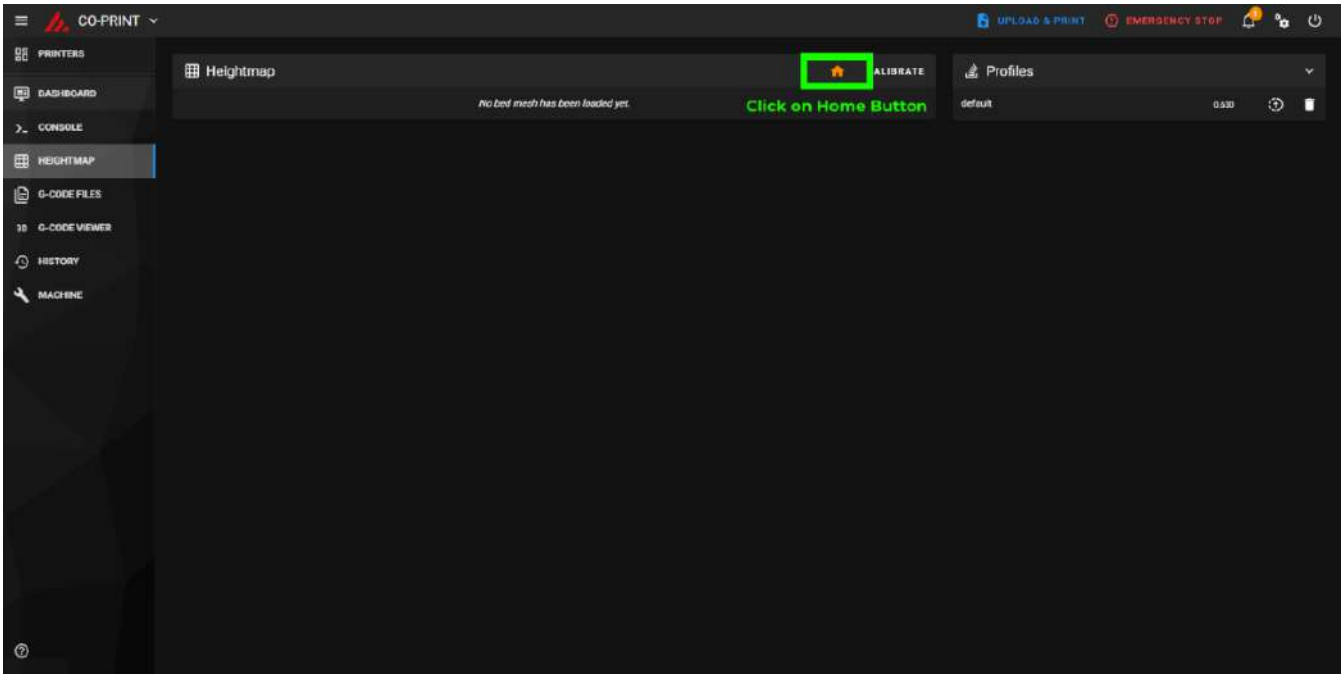
4.1 Before Printing

1- Click on the HeightMap button on the left side of the Mainsail bar.



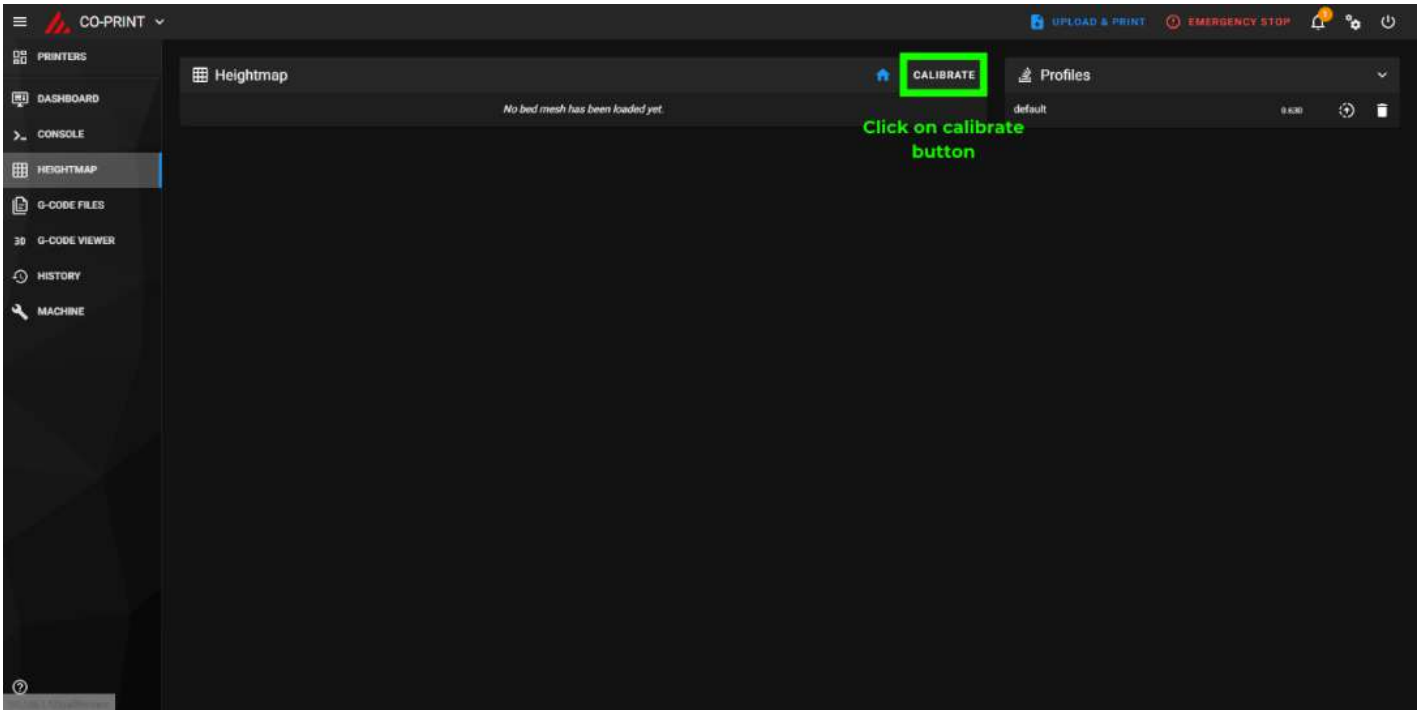
4.1 Before Printing

2- Press the Home button.



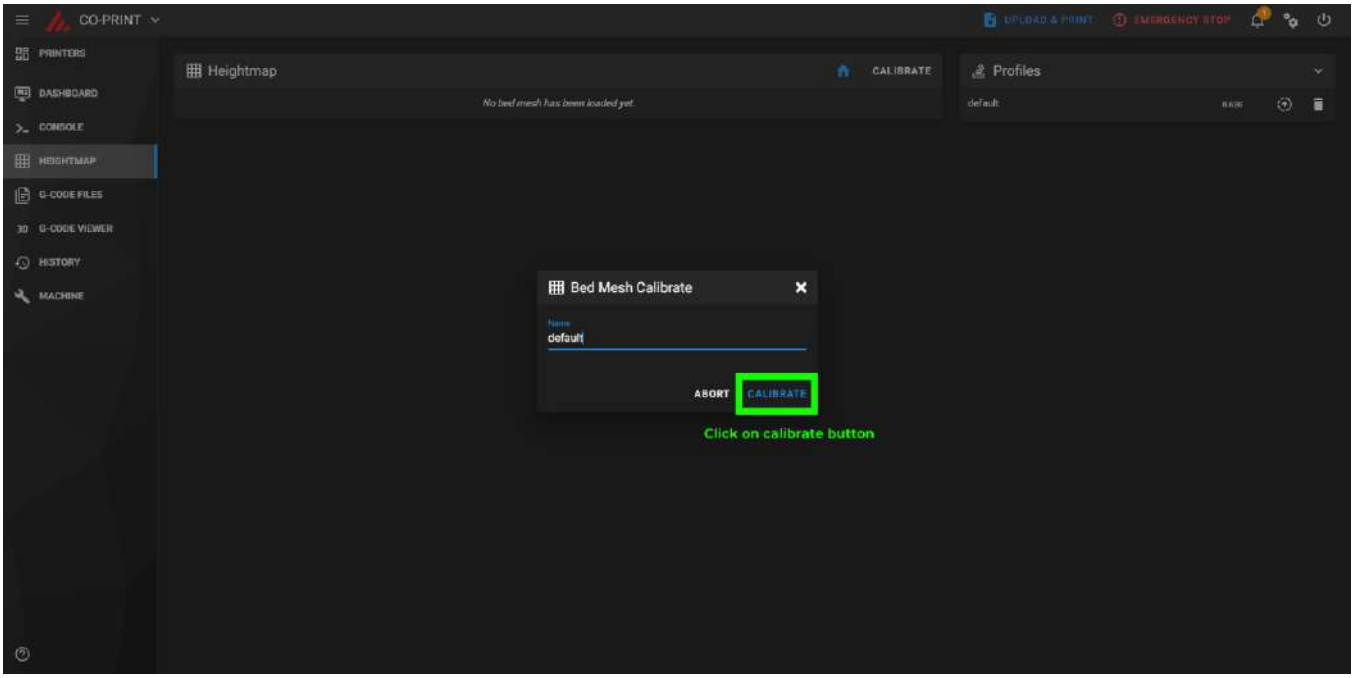
4.1 Before Printing

3- Click the Calibrate button.



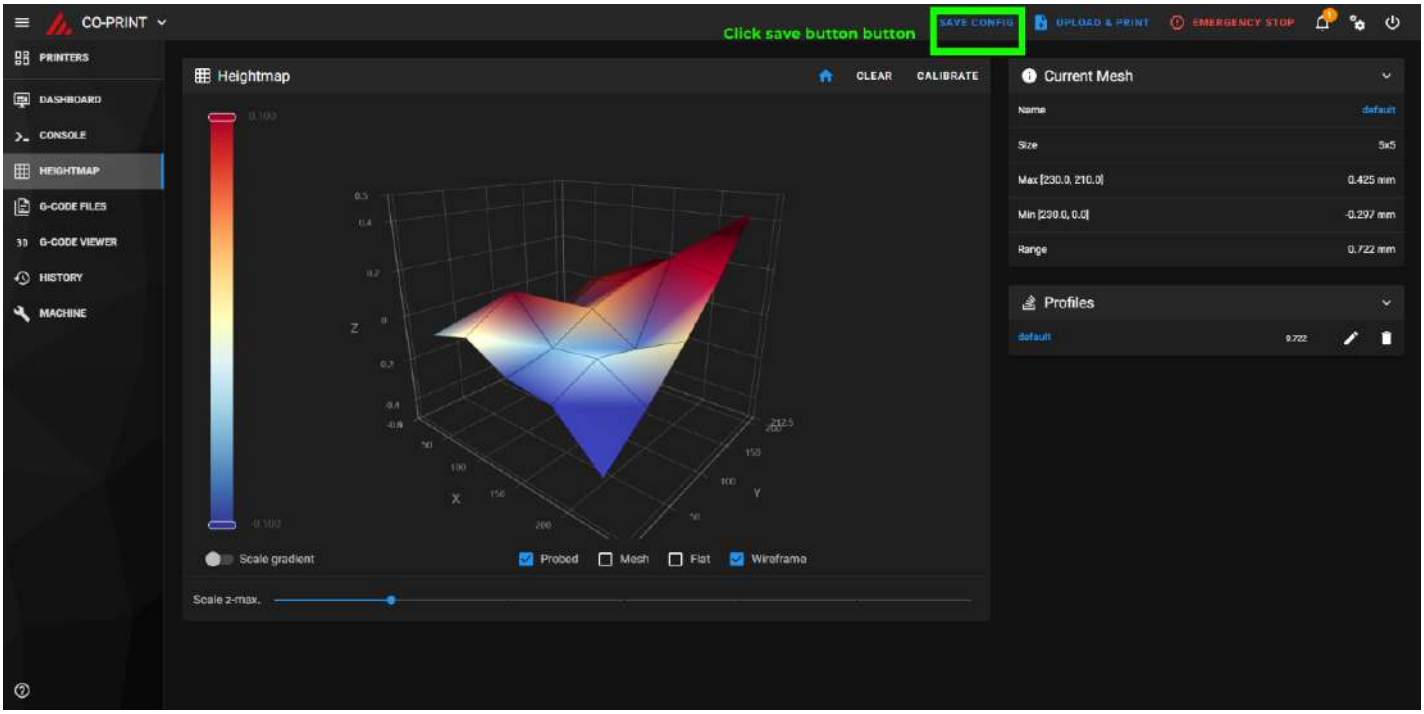
4.1 Before Printing

4- On the page that opens, press calibrate and wait for it to finish.



4.1 Before Printing

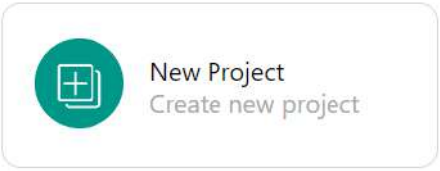
5- Bed_mesh is completed. Click the "save config" option at the top to save it.



4.2 First Printing

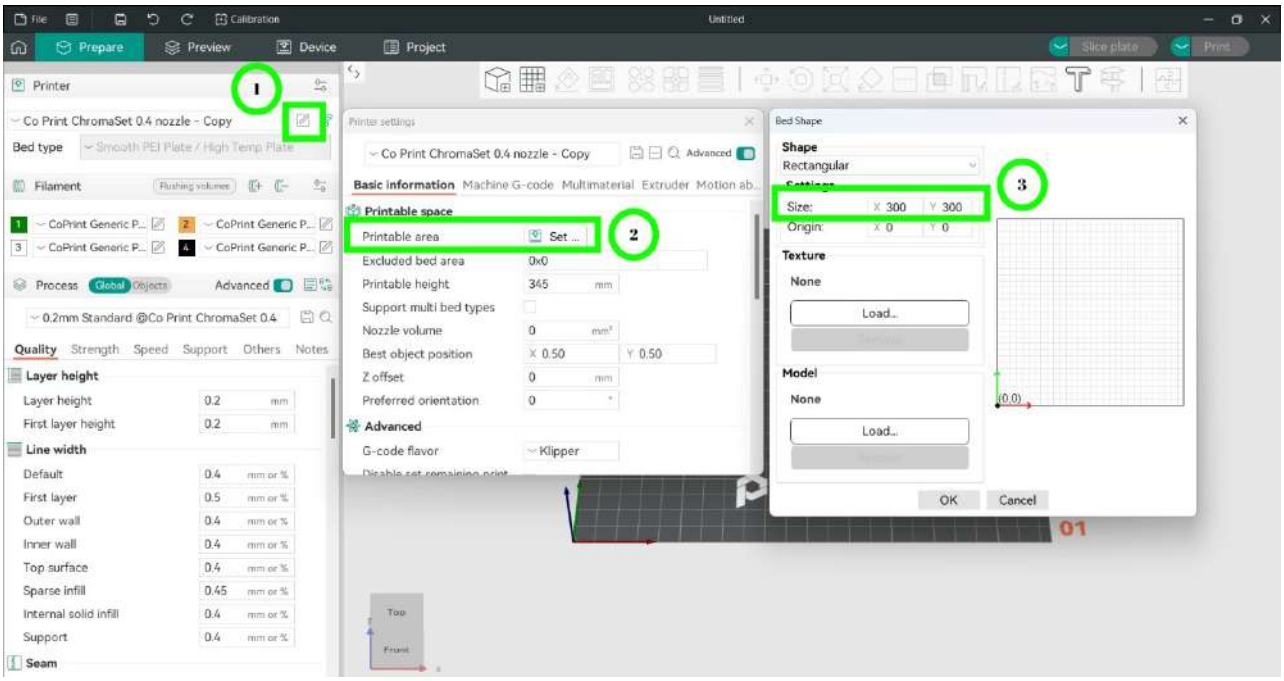
For OrcaSlicer installation, please visit our wiki page.
https://wiki.coprint3d.com/en/orcaslicer

The steps you need to take to get your first print with the KCM Set are listed below.
1- Open the OrcaSlicer program.
2- Click on the 'New Project' button.



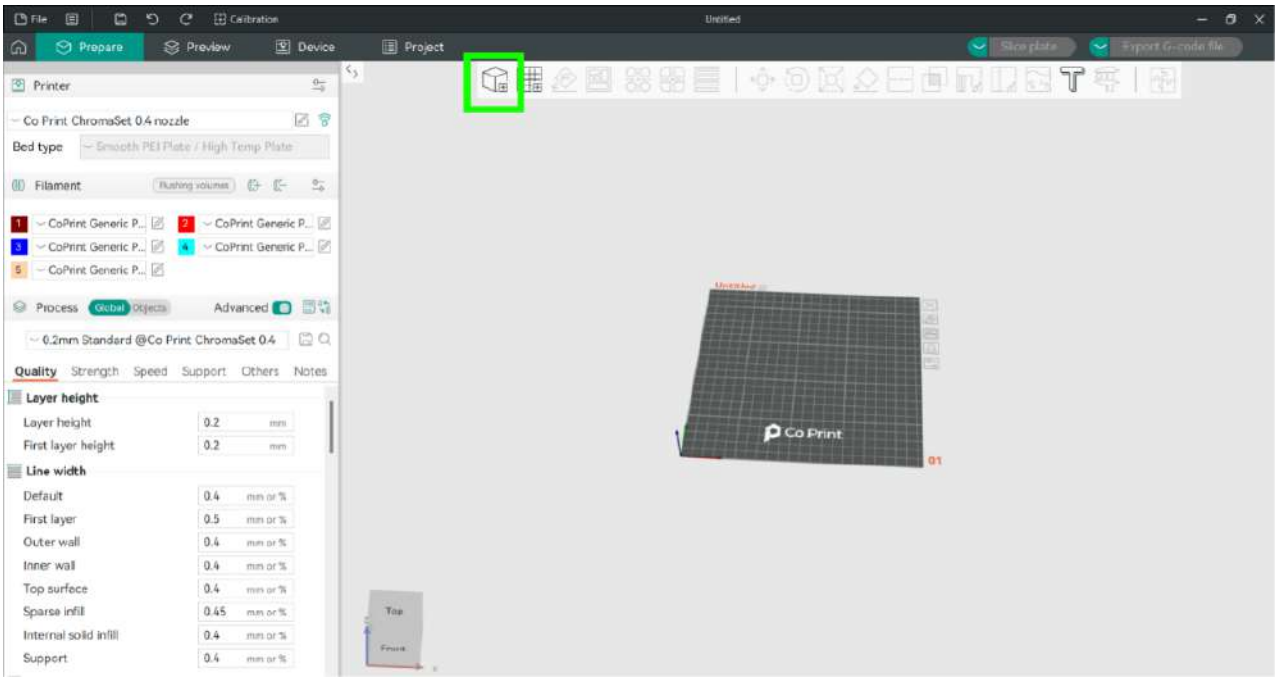
4.2 First Printing

3- Adjust your print area to match the print area of your printer. For Ender 3 V3 you should write the printable area as 300x300.



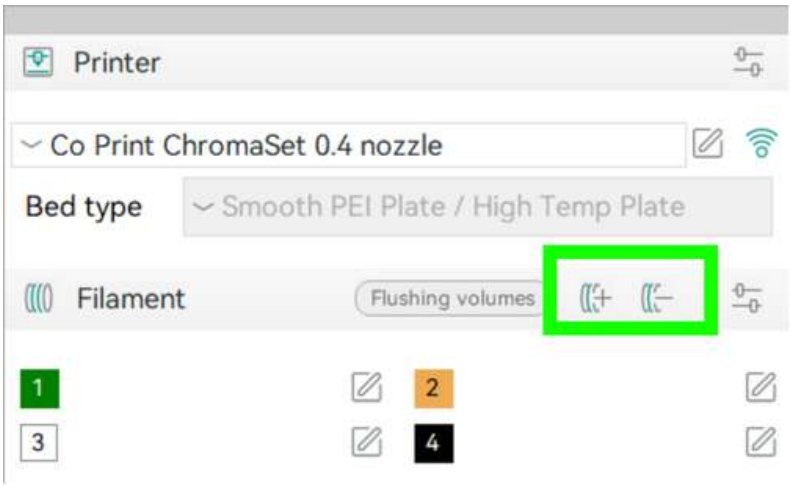
4.2 First Printing

4- In the menu at the top, click on the 'add model' icon on the left to add the model you want to print.



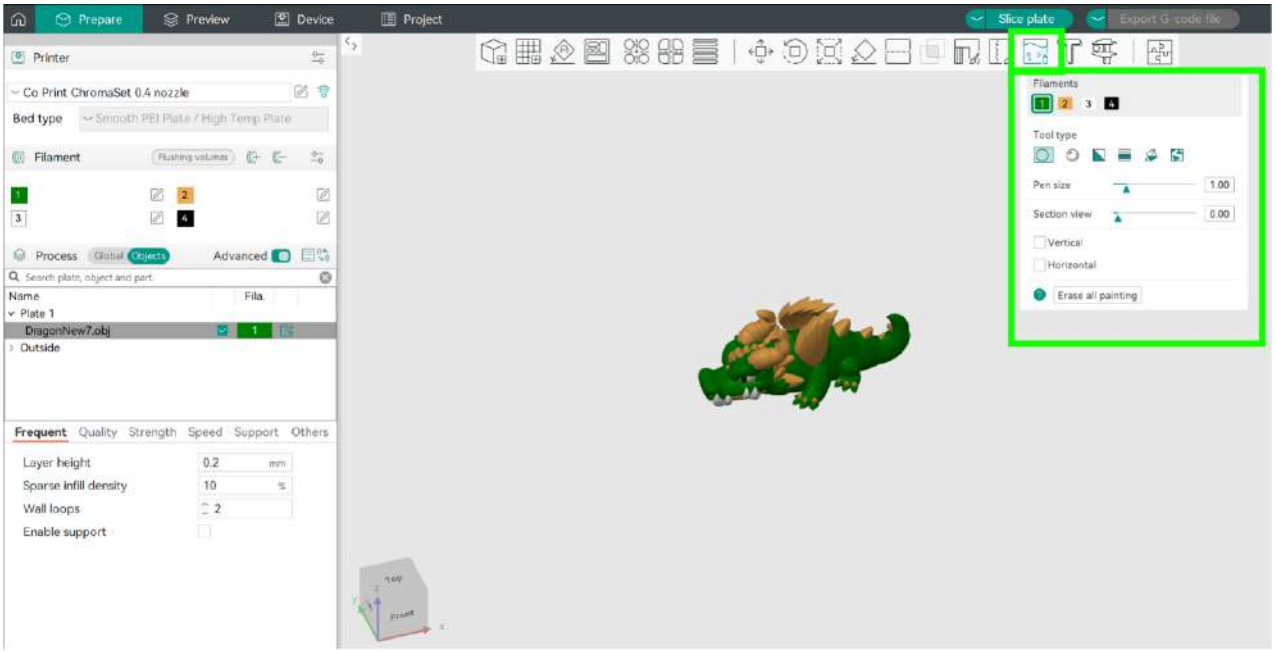
4.2 First Printing

5- You can add colors from the menu on the left to print in as many colors as you like.



4.2 First Printing

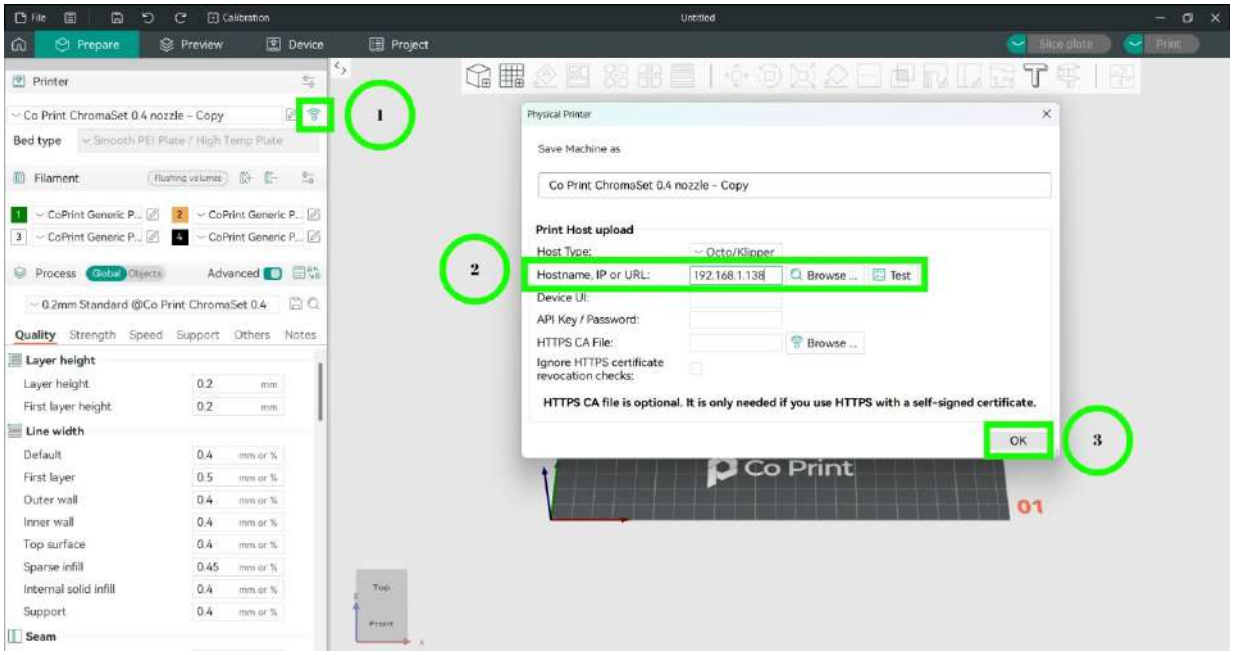
6- After selecting your colors, click on the 'paint model' icon after clicking on your model in the menu at the top to paint your model. You can use the painting tools on the right to paint your model as you wish.



If you want to see how to make more detailed adjustments in OrcaSlicer, we recommend checking the OrcaSlicer section on the Co Print Wiki page.
https://wiki.coprint3d.com/en/orcaslicer

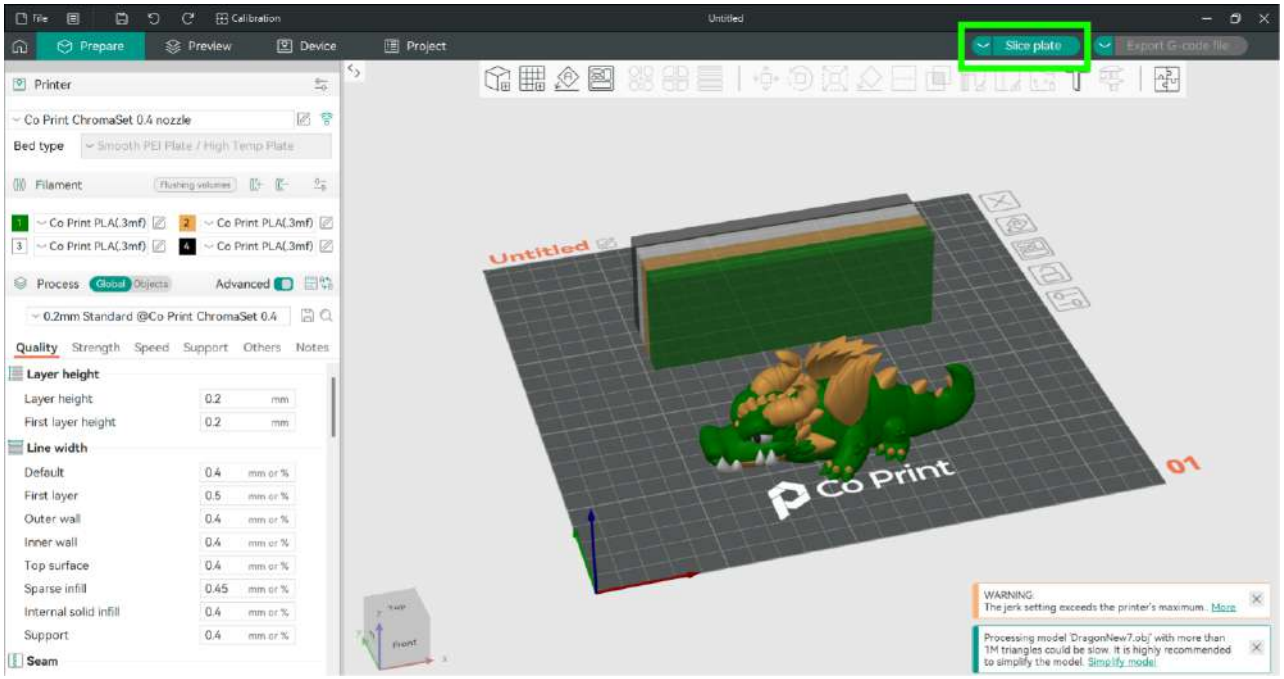
4.2 First Printing

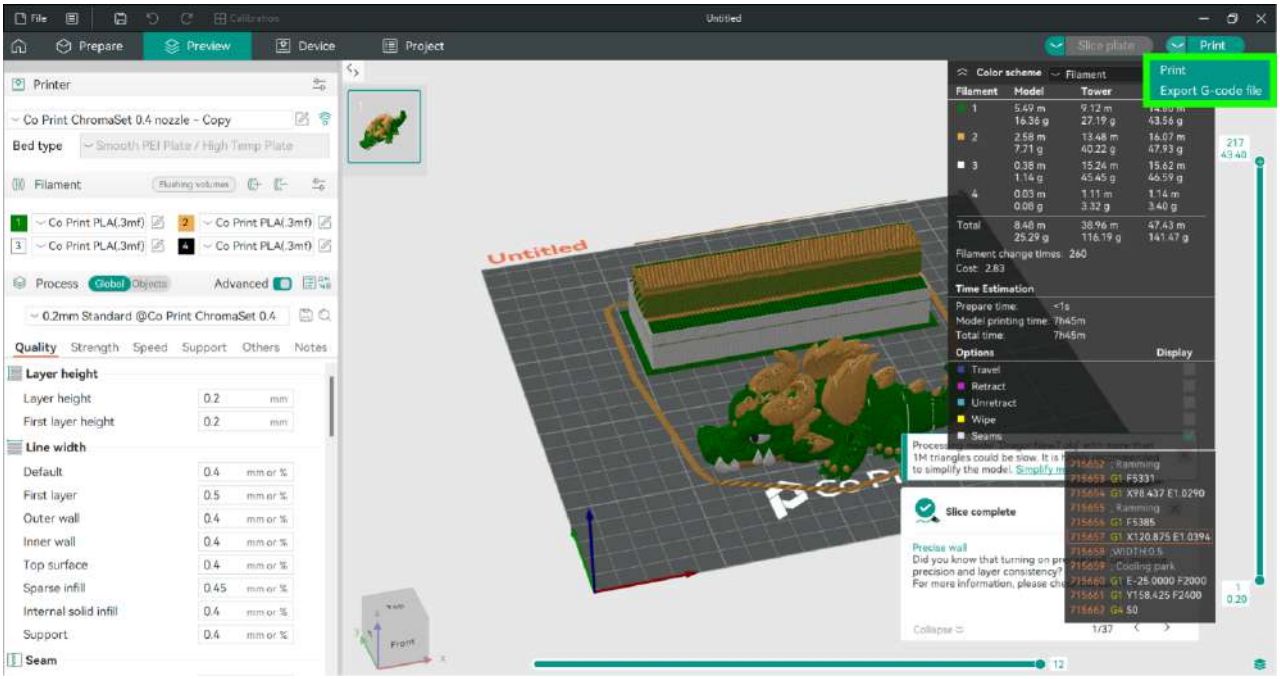
7- You can control your printer via OrcaSlicer by entering its IP address and start your printing.



4.2 First Printing

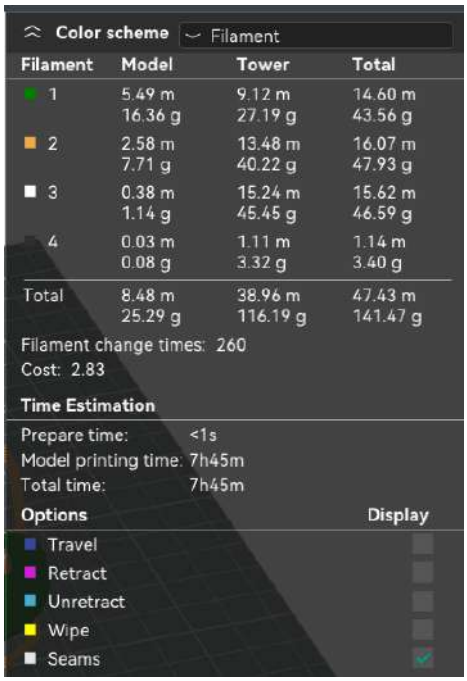
8- After finishing the adjustments to your model, click the 'Slice' button in the top right. Once the slicing process is complete, you can either start your print directly from OrcaSlicer or export the file by clicking the 'Export G-code File' button. You can drag the exported file into Mainsail to upload it.





4.2 First Printing

9- After the slicing process, you should pay attention to the color order of the filaments in the information table at the top right. You need to install the filaments in your extruders according to that order.

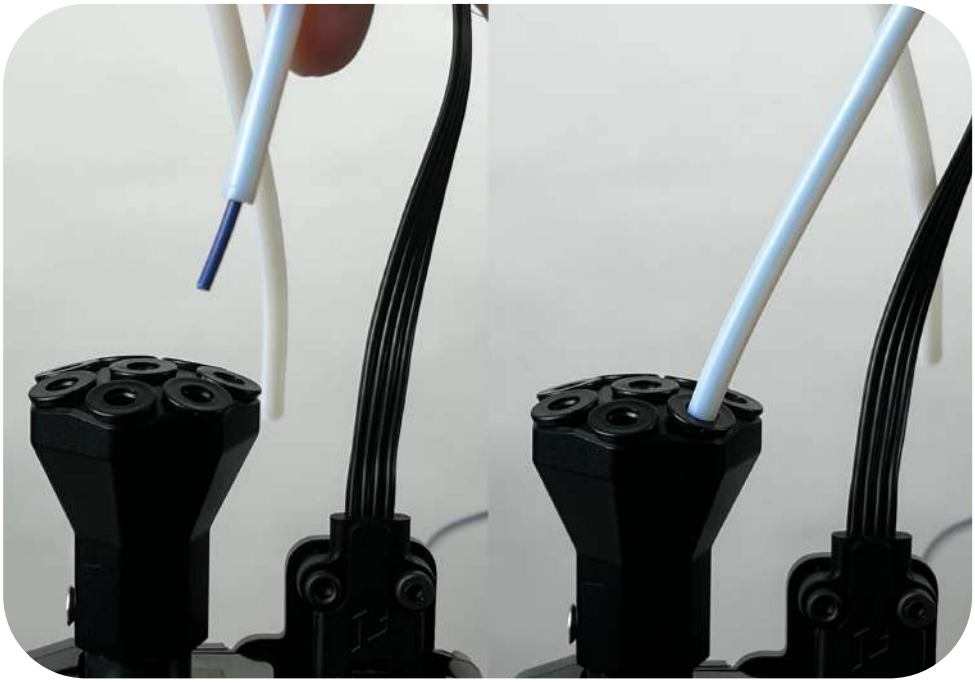


4.2 First Printing

10- After starting your first print, you need to adjust your Z offset. Once you've set it correctly, press the 'save' button. After your print is finished, please remember to click the 'save config' button in Mainsail.

4.2 First Printing

11- You should remove the filament from the PTFE tube by a maximum of 10mm. If you remove more, the possibility of jamming increases and may cause bad results.



Assembling And Disassembling

Please visit our wiki page to see part replacements of ChromaHead.
https://wiki.coprint3d.com/en/chromahead

Visit our wiki page for technical support and assistance about Co Print Series II products.
https://wiki.coprint3d.com