



# Quick Start Guide FELIX Food 1.5

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# 1 Safety



## General safety

- Keep children under the age of 14 out of reach of the printer.
- FELIXprinters are only suitable for professional use.

## Considerations when in operation.

- Don't leave the printer unattended, before making sure the first layer is printed properly.
- Don't lean on the printer.
- Be careful with long hair and wide clothes.
- Don't transport the printer while printing.
- Make sure all moving parts can move without any obstructions.
- Don't remove any objects from the hot plate while printing.
- Caution with any moving parts that move in the X, Y and Z direction. Moving parts can have a pinching hazard.



## Electronic safety

- Only use the power supplies and cables supplied by FELIXprinters. Always turn off and unplug the printer before performing maintenance or modifications.
- The power supply meets all CE mark regulations and is protected against short-circuit, overload, over voltage and over temperature.

## Printer placement

- Place the FELIXprinter on a stable table/desk or something with a similar height.
- Place the printer on a height where children cannot reach it.
- Use the FELIXprinter in a clean environment at room temperature.



## Caution with harmful print media

- Some media can be toxic or harmful when consumed. FELIXprinters is in no way responsible for harm by poisoning when printing objects with poisonous media. The responsibility for consuming printed media rests entirely with the end-user/consumer.



## Caution with heater elements

- There is a potential risk of burning, as the print head and bed add-on module can reach temperatures of up to 80°C and the standard heated bed up to 90°C.
- Always let the printer cool down for at least 5 minutes before doing maintenance or modifications.

# 2 Introduction

Thank you for choosing FELIXprinters!

**IMPORTANT: READ THIS MANUAL AND SAVE COUNTLESS HOURS OF YOUR TIME.**

We know you can't wait to start using the product and not many people like to read. For most household appliances this might work but taking this strategy will most likely set you up for failure and frustration.

So please follow this manual, we made it as short and understandable as possible to enjoy your FOODprinter.

Kind regards,

FELIXprinters

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# 4 Printer specifications

## SYSTEM SPECIFICATIONS

- Printer dimensions (L, W, H) 430 x 500 x 700 mm
- Weight 14,0 kg
- Power requirements: 110 - 220 V

## CAPABILITIES

- Layer height range 0,25 – 2,0 mm
- Flex plate (301 Stainless Steel)
- Automatic motorized bed levelling

## EXTRUDERS

- Dual motorized piston extruder (switch & twin)
- Suitable for 100 mL standard luer lock type
- Standard nozzle diameter from 1,6, 2,5 and 3,5 mm (8G, 11G & 14G)
- (optional) Heated syringe temperature range 20°C up to 80°C

## STANDARD PRINT BED

- Bed temperature up to 90 °C

## INTERFACE

- 5" Capacitive Touchscreen with embedded octa-core processor
- Print server (Repetier-Server)
- Webcam monitoring
- Print file management
- 16GB memory

## PRINT MATERIALS

- All viscous materials up to viscosity of 1000PaS

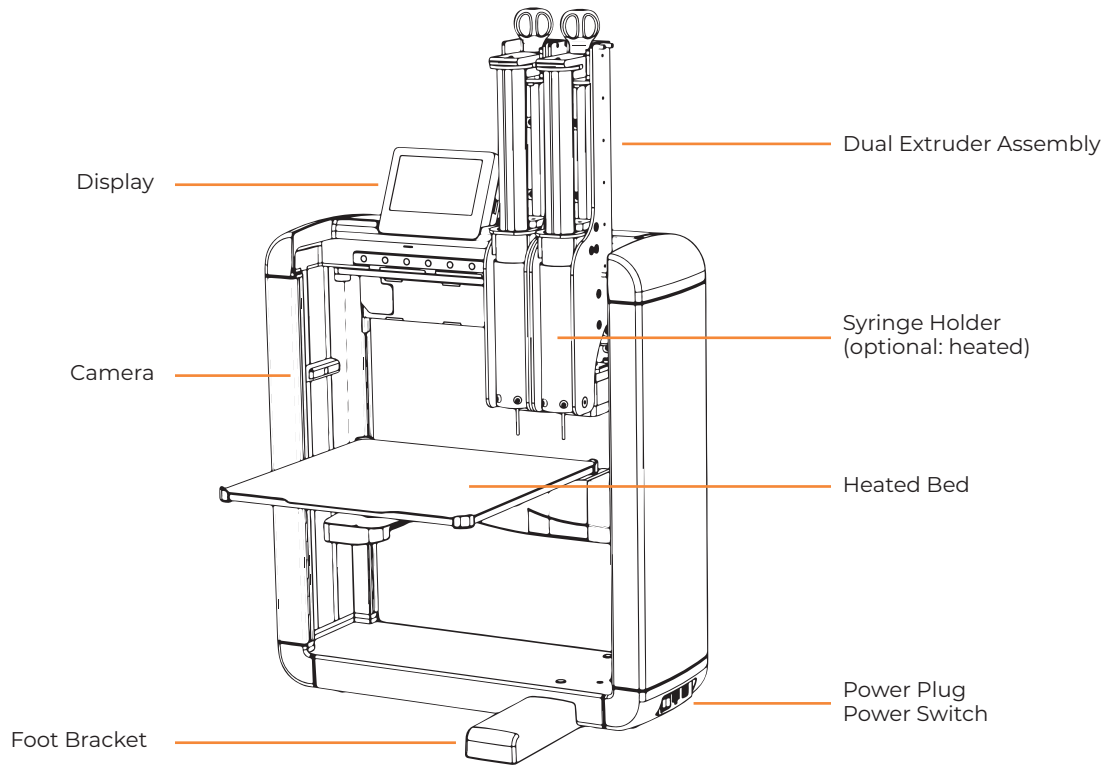
## CONNECTIVITY

- USB flash drive
- WIFI
- Wired Ethernet

## SOFTWARE

- Simplify3D

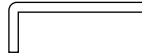
# 5 FELIX Food at a glance



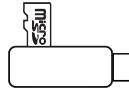
# 6 Unboxing

## 6.1 What's in the box?

A 1x Allen key



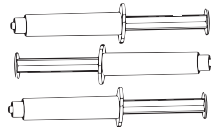
B 1x MicroSD card +  
USB Stick



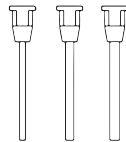
C 2x M4x12 bolts



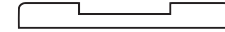
D 3x 100ML Luer  
lock Syringes



E Stainless  
steel nozzle pack (6 needles)



F 1x Foot bracket



G 1x Power cable



H 1x Power unit



I 1x Display unit



NB: The box could contain extra materials you have ordered.

# 7 Installation

## 7.1 Install Foot bracket



1. Take the printer out of the box and remove the foam blocks.
2. Place the foot bracket on a sturdy flat surface and place the printer onto the foot bracket.



Fix the foot with 2x supplied M4x12 bolts and allen key.



Repeat at the back of the printer.



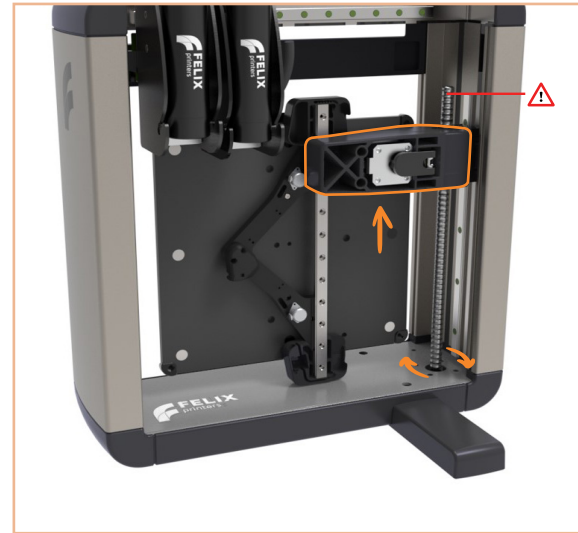
Finished!



## 7.2 Prepare the printbed



Place the printer on a stable surface and locate the Z-stage (bed bracket arm).



Push the Z-stage to the top position of the spindle while rotating the spindle **clockwise** (by hand).

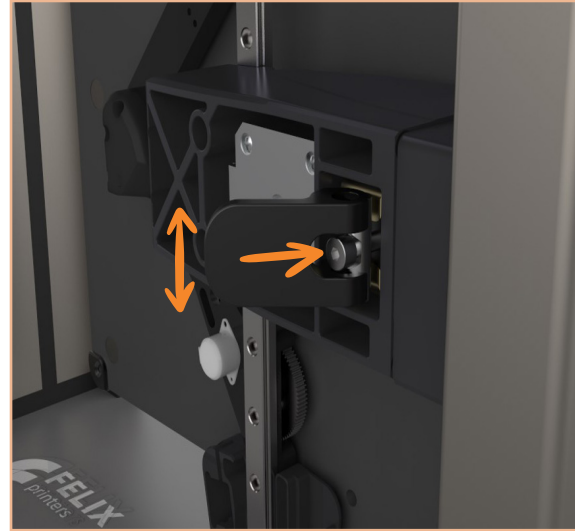


**DO NOT SURPASS THE SPINDLE END**





Flip out the lever at the bottom of the buildplate.



Shake the lever and firmly push on the bolt head to loosen the mechanism. This may take some force, but if you listen closely you can hear it pop loose.



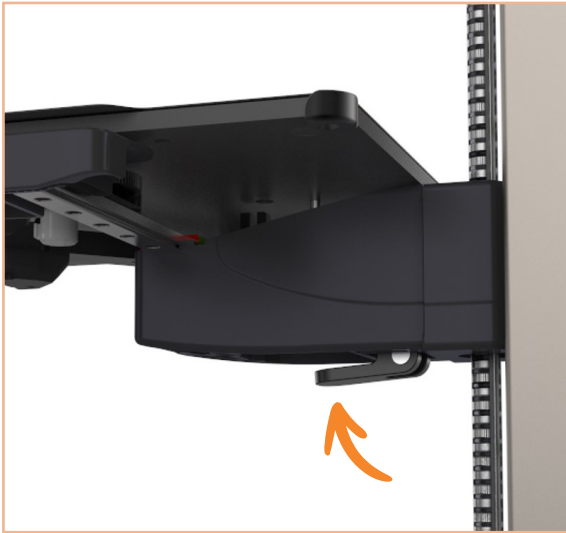
Grab the buildplate by the two black end blocks and rotate the bed assembly 90 degrees.



**AVOID COLLISION WITH THE  
EXTRUDER MOTORS!**



Rotate the buildplate until the edges of the bed bracket arm are parallel.



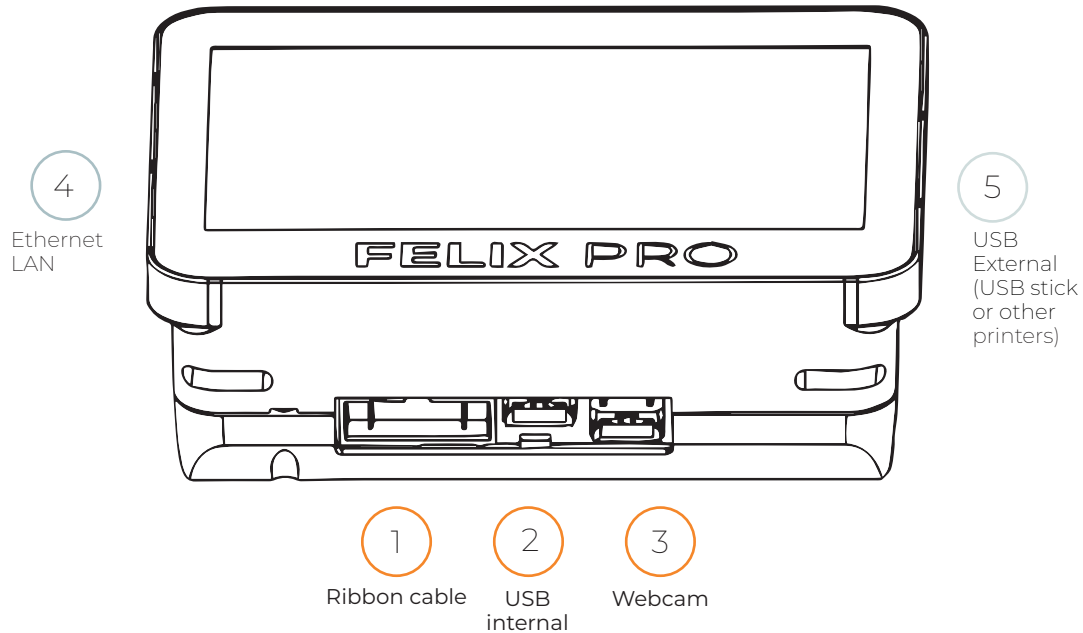
Flip the lever back, to lock the buildplate into its position.



Finished!

# 8 Display and Power

## 8.1 Display Overview



**IMPORTANT**  
Make sure the power is turned **off** when connecting the display.  
Failing to do so could cause serious damage to the screen.



## 8.2 Installing the display unit



1. Connect cables on designated positions.
2. Slide the screen onto the metal pins.

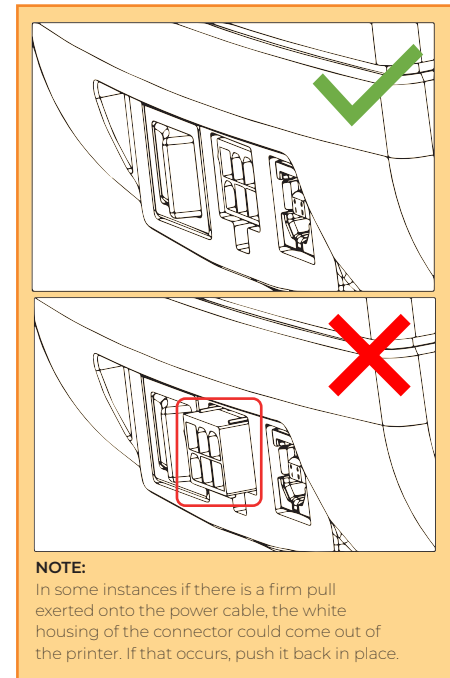
**NOTE:** Watch out that the cables are not pinched when installing the display into place.



## 8.3 Installing the power cable



1. Insert the power cable into the printer and the power socket.
2. Flip the power switch of the printer.
3. The display should light up immediately after turning on the machine and after a while the FELIX boot screen should be displayed.
4. Bootup time takes approx 40 seconds.



# 8.4 Display menu overview

The screenshot shows the FELIX printer control interface with the following callouts:

- USB stick**: G-codes on the USB
- Gcode menu**: Gcodes sent via wifi or internal memory
- Home**: Returns to Home menu
- Move**: Move menu for the printhead, extruder and bed.
- Webcam**: Opens the webcam
- Status menu**: General printer settings
- Emergency stop**: Stops everything, only use when necessary.
- Tutorials**: Tutorials and quick tips
- Temp Graph**: Shows a temperature graph of the extruders and bed
- Change Syringe**: Load and unload syringes
- Move**: Move the printhead and print bed
- Printers Menu**: Currently connected printers and additional connected printers.
- Settings**: General server settings
- Printer Calibration**: Wizards for the calibration of the machine
- Restart UI**: Restarts the touchscreen interface
- Timelapse**: Timelapse menu
- Advanced**: Eeprom & console
- Printer cmds.**: Useful command presets
- Shutdown**: Shuts down server



# 9 Connecting to the internet

## 9.1 Connect printer through WIFI/WLAN



Tap the **"Settings"** button.



Tap the **"Network"** button. A list of available networks appears, select your network and insert credentials. The printer is now connected to the WLAN/Wi-Fi.

## 9.2 Connect via LAN

Plug in the cable on the left side of the touchscreen, and the printer should automatically obtain an IP address in the network.

## 9.3 Connect through web UI



Once the printer is connected to the internet you can setup the printer on the web UI (remote control). To use remote control, tap the **“Settings”** button.

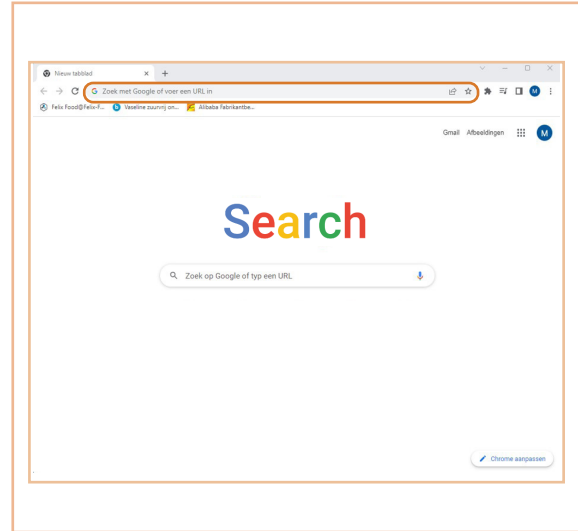


Tap the **“Info”** button.



Write down the shown IP http-address or scan the QR code on the device which is connected to the same network.

NOTE: No IP adress shown? Check your printer's internet connection!

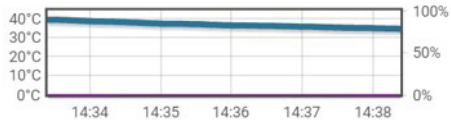


Enter the IP-adress in the URL bar of the internet browser of your choice.

## Dashboard

Vrije schijfruimte: 11.5 GB

### FELIX Food Switch



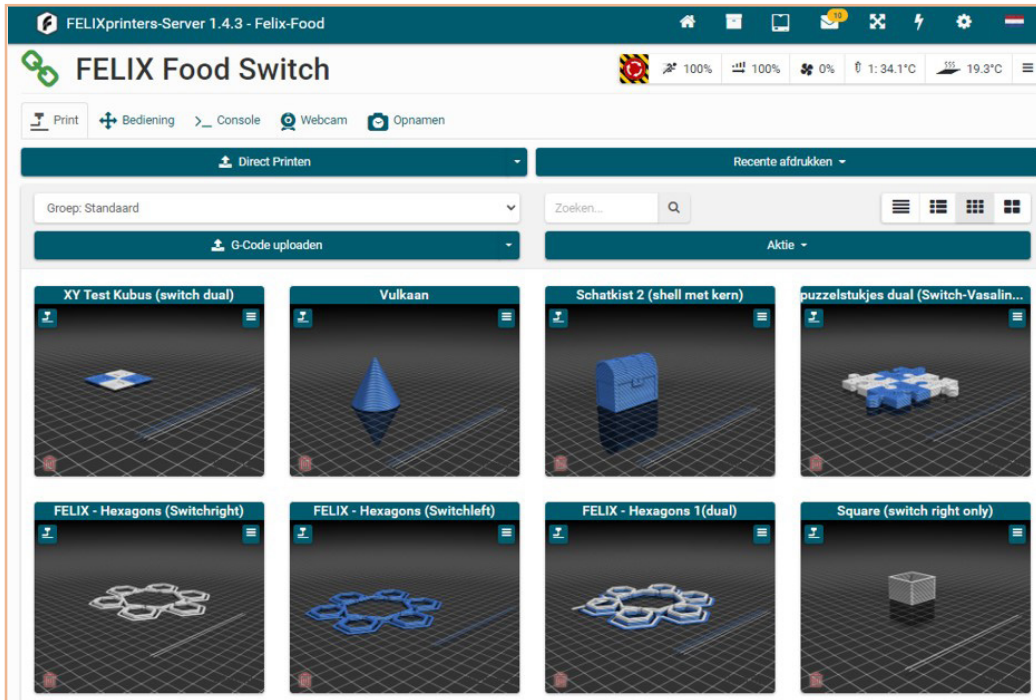
Print: Geen print in uitvoering

Ga naar printer



### Netwerk

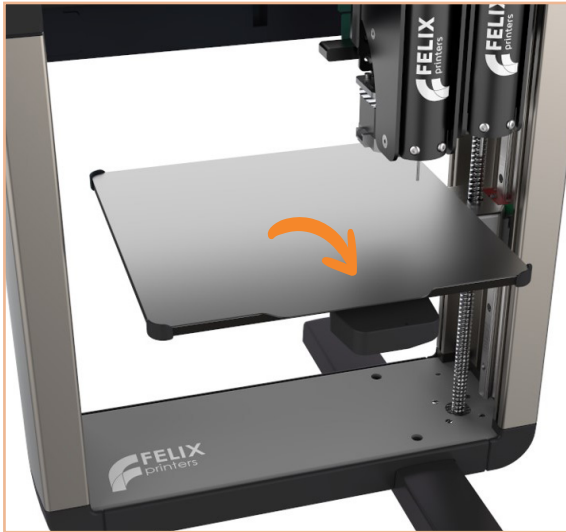
In your webbrowser, tap the “go to printer” button.



You've successfully reached the web-UI of the 3D printer!

# 10 Calibration

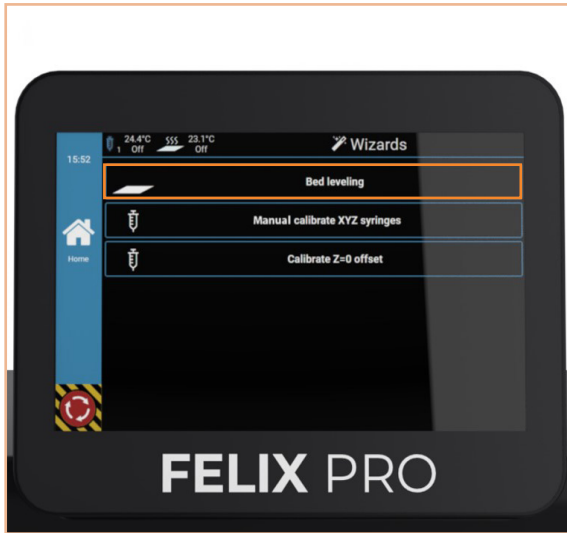
## 10.1 Level the print surface



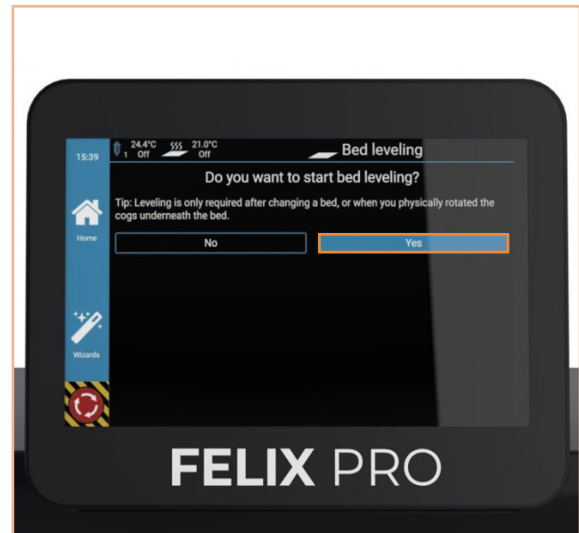
This calibration wizard will automatically level the printbed for you. First, place the stainless steel flexplate on the build plate and make sure it's free of any debris.



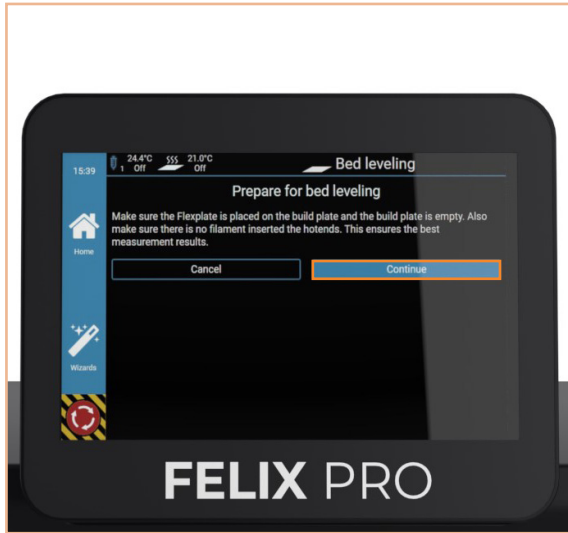
Tap the **"Printer Calibration"** button in the main menu of the printer.



Tap the **"Bed Levelling"** button.



Tap the **"Yes"** button.



Tap the **“Continue”** button.



NOTE: Planning on using the heated bed? Enter your desired bed temperature here to ensure the most accurate sensor reading for the bed levelling.

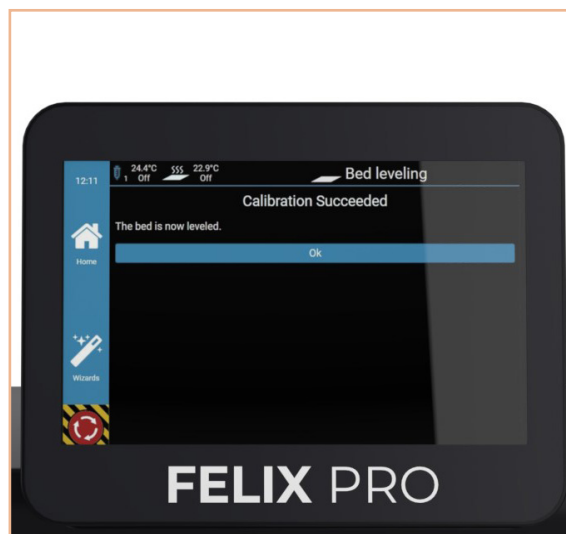
If you're not going to use the heated bed, tap the **“Custom Temperature”** button.





In this menu you can select your desired bed temperature before you start the bed levelling calibration.

Are you not using a heated bed? Set this value to **0 °C**.



The printer will now start the bed levelling sequence. When the calibration is done the printer will prompt the message **"Calibration Succeeded"**.

## 10.2 Calibrate the bed distance (Z=0)



This calibration wizard will setup the distance between the nozzle and the build plate.

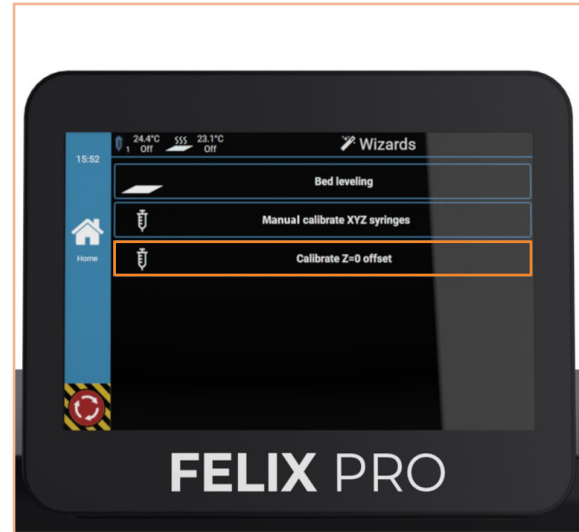
Place the desired print surface on the printbed. This could be the stainless steel flexplate, the silicon-baking mat or the glass plate.



Place a syringe (filled or empty) in the left syringe holder. Make sure that your desired nozzle is twisted onto the syringe thread.



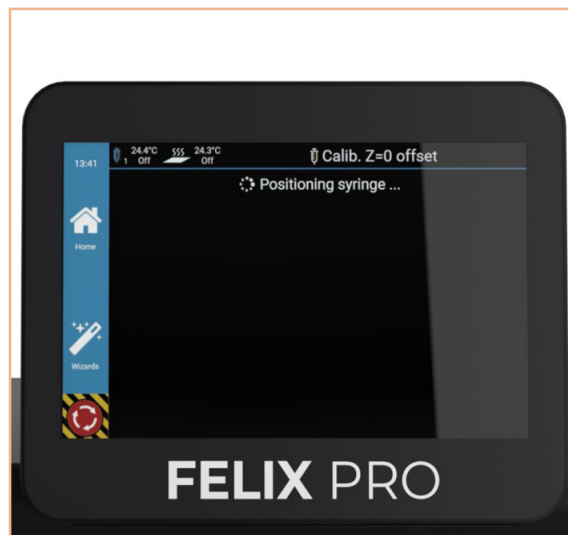
Tap the **"Printer Calibration"** button in the main menu of the printer.



Tap the **"Calibrate Z=0 offset"** button.



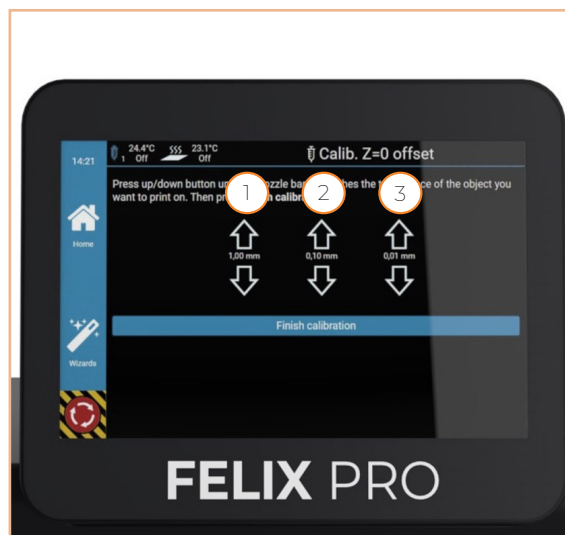
Tap the “Yes” button.



The printer will start a homing sequence and halt when done.



Once the printer is done homing, a selection menu appears on the display menu.



In this selection menu you can move your bed up or down to calibrate the distance to the nozzle.

1. Move the bed with 1.00 mm increments.
2. Move the bed with 0.10 mm increments.
3. Move the bed with 0.01 mm increments.

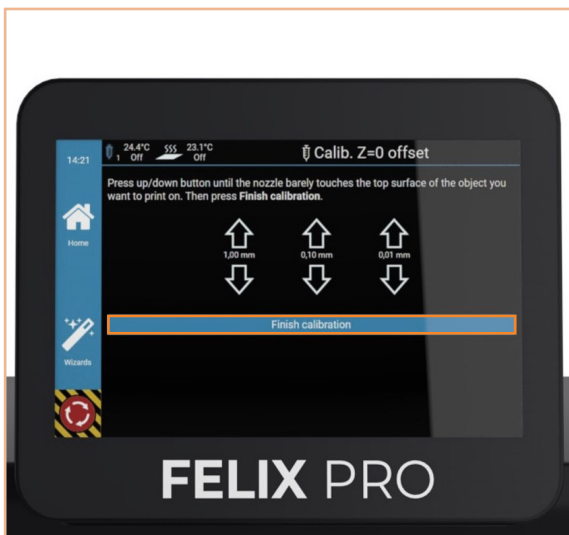


Press the arrows until the nozzle barely touches the buildplate.

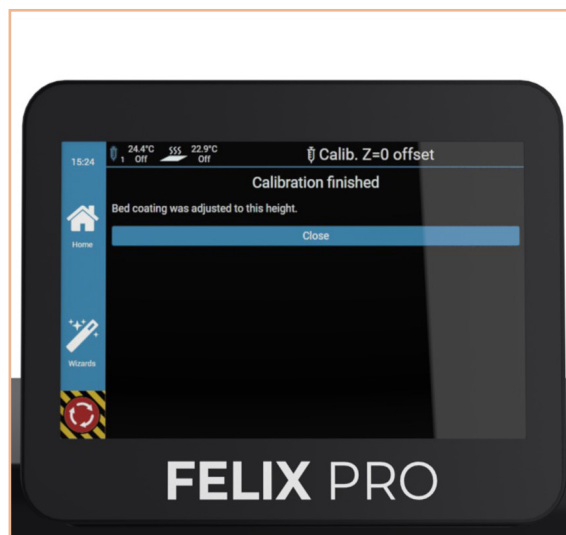
NOTE: The arrows move relative to the nozzle. When you press the “Up” button the nozzle will rise and the bed will be lowered.



Move the nozzle 0.10 mm up to ensure that the nozzle is not scraping on the buildplate.

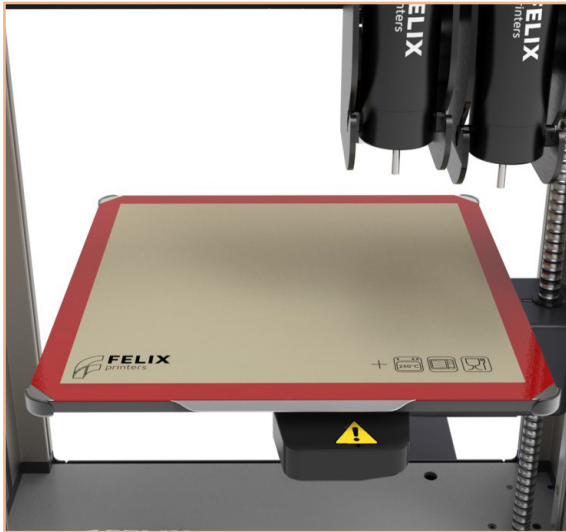


Once the distance has been determined you can press the **“Finish Calibration”** button to save the new values.



Once the values have been saved the display will prompt the message **“Calibration Finished”**. Afterwards you can tap the **“Close”** button to finish the calibration.

## 10.3 Calibrate the extruder XYZ offset (switch only)



To ensure that the left printhead will print on the same XYZ position as the right printhead, a XYZ calibration is sometimes necessary.

Begin the calibration by putting the silicon baking mat down on the printbed.

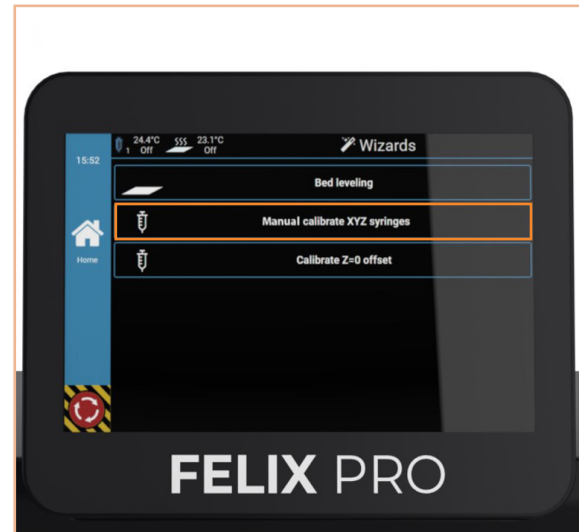


Locate the calibration cross on the silicon baking mat.

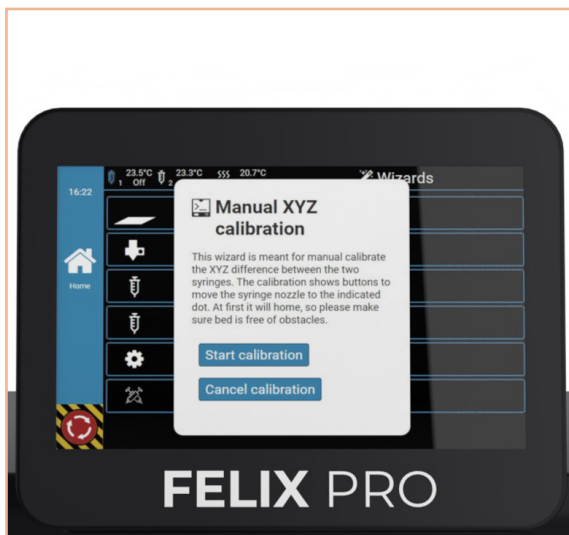




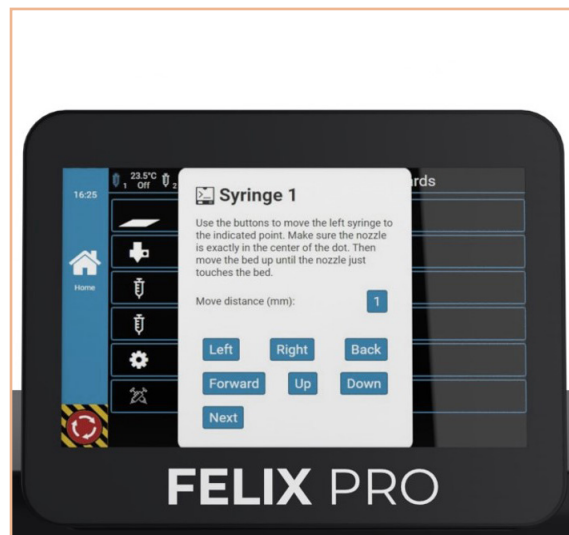
On the printer display tap the “**Printer Calibration**” button.



Tap the “**Manual calibrate XYZ syringes**” button.



Read the instructions and tap the “**Start calibration**” button to start the calibration wizard.

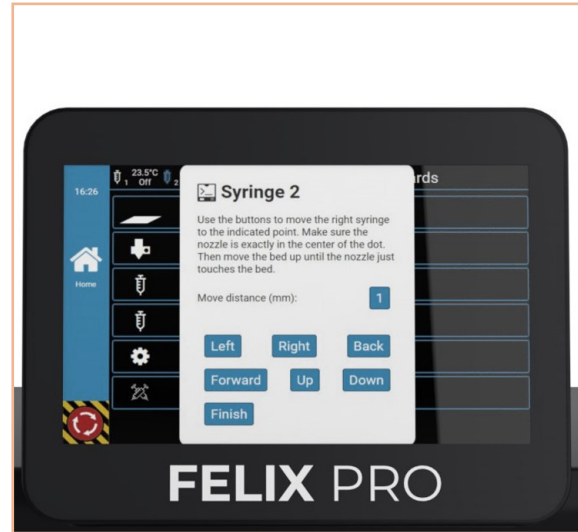


The printer will perform a homing sequence and pause at the calibration cross.



Using the arrows, move **"Syringe 1"** to the exact middle of the calibration cross. It should barely touch the silicon sheet in the z-direction (height).

When done tap the **"Next"** button at the bottom of the menu.



The printer will switch to **"Syringe 2"** and again pause near the calibration cross.

Repeat the previous step for **"Syringe 2"** and tap the **"Finish"** button when done.



Tap the **“Save new Values”** button to save the XYZ-offset values in the EEPROM.

Calibration is completed!

# 11 Preparation for printing

## 11.1 Upload G-code using a USB stick



Insert the USB-stick containing the G-code in the USB port on the right side of the display.

Tap the **“USB Stick”** button in the main menu.



In the USB-stick menu, tap the **“Refresh”** button on the bottom left side of the touch screen.



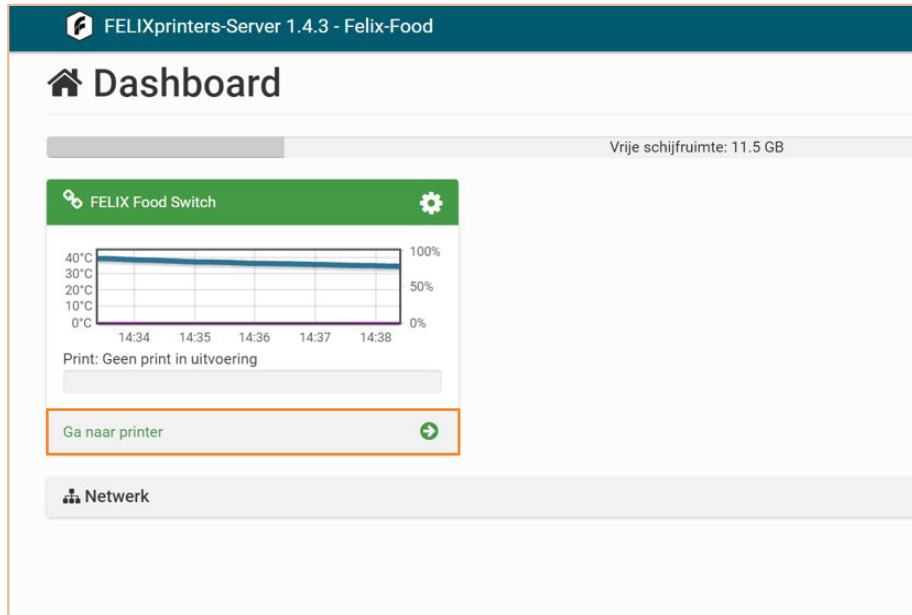
Once the page is refreshed, your G-code file should appear in the menu.



Here you can choose whether you'd like to print directly from the USB stick or import the file onto the printer (recommended).

## 11.2 Upload G-code using the web interface

Overview of the dashboard.



Tap the "Go to Printer" button.

1. Press Upload G-Code, to upload a g-code for printing to the library

After uploading the touchscreen will render an image for printing.

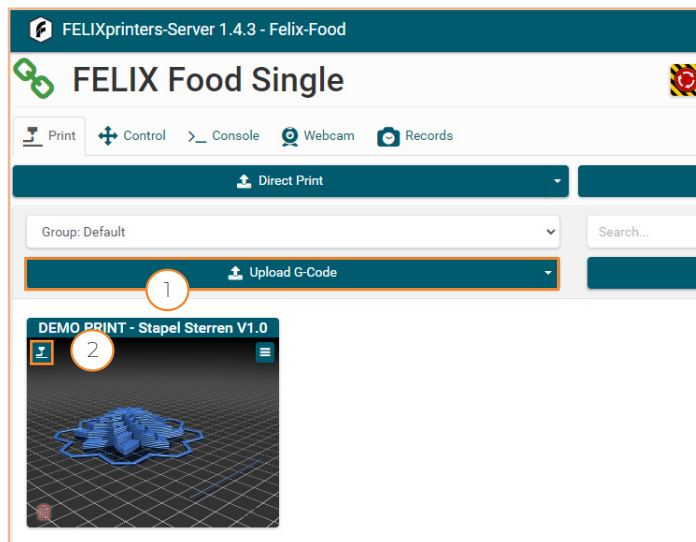
2. Tap the “print” icon, the print will start.

### Webcam monitoring

You can conveniently monitor a print-job via the webcam. For now, this is only enabled on the internal network. If you want to access this from an external network, a port needs to be forwarded in your router directed to the IP-address of the printer.

### Timelapse

You can create a timelapse video of your print. For more information about timelapses please visit the FELIXPrinters website.



### WARNING!!

If you set the timelapse function to “ALWAYS ON” it can cause problems during the printing process when the SD card is running out of memory.



## 11.3 Preparing the Syringe



Remove the plunger from the syringe and inspect the items for any dirt or impurities. Rinse with warm water if necessary.



Connect the Luer lock nozzle with the syringe. If you're calibrating the bed, remember to use a steel nozzle!

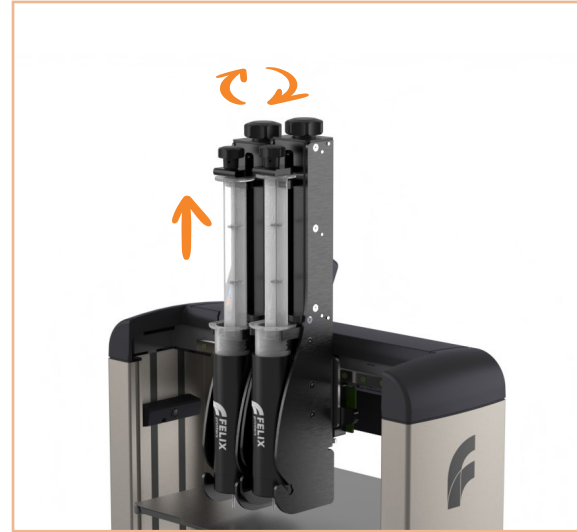


Fill the syringe with the print medium. It's recommended to knock the syringe against a hard surface to release any air bubbles.

## 11.4 Move the plunger pusher (by hand)



Rotate the big knob clockwise, to move the plunger pusher upwards.



Rotate the big knob clockwise until the plunger pusher is at the very top of the thread.

## 11.5 Move the plunger pusher (through menu)



Tap the **"Move"** button in the main menu.



Tap the **"Extrude"** button at the bottom left side of the display.



You now enter the extrusion menu of the printer. Here you have the following options:

1. Select moving distance.
2. Move extruder plunger slowly.
3. Move extruder plunger quickly.

## 11.6 Loading a Syringe



Place the filled syringe in the syringe holder.



Firmly push on the top side of the printer to lock the syringe in place. You should hear it pop when it's locked in place.



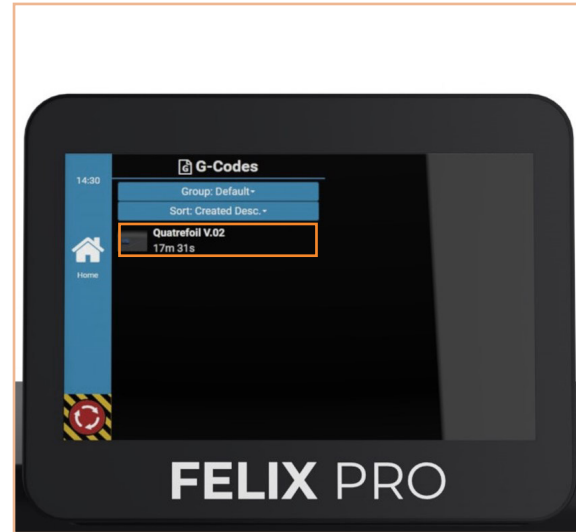
Rotate the small knob clockwise to lock the plunger into its position.

# 12 Starting a print

## 12.1 Start a print via the display menu

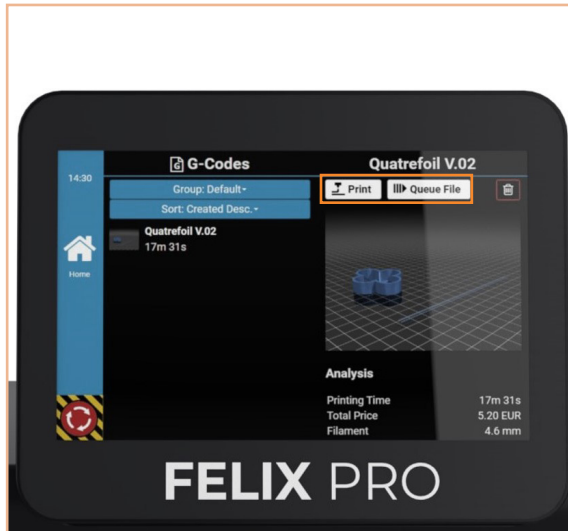


Start by tapping the “G-codes” button in the display menu.

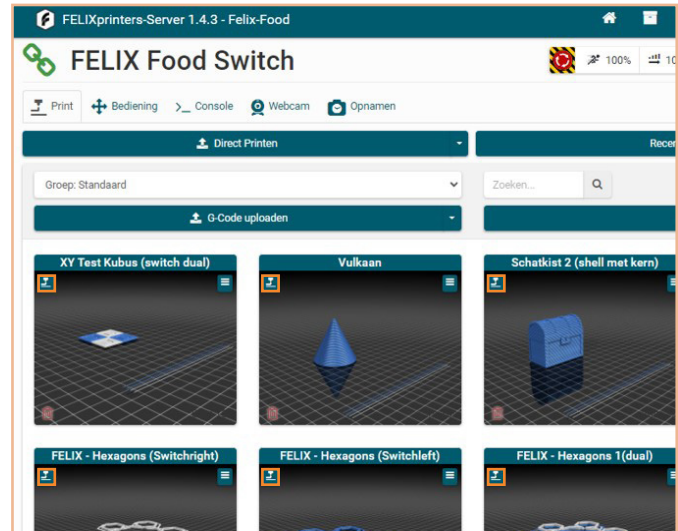


Tap on your desired file that you would like to print.

## 12.2 Start print via the web-UI

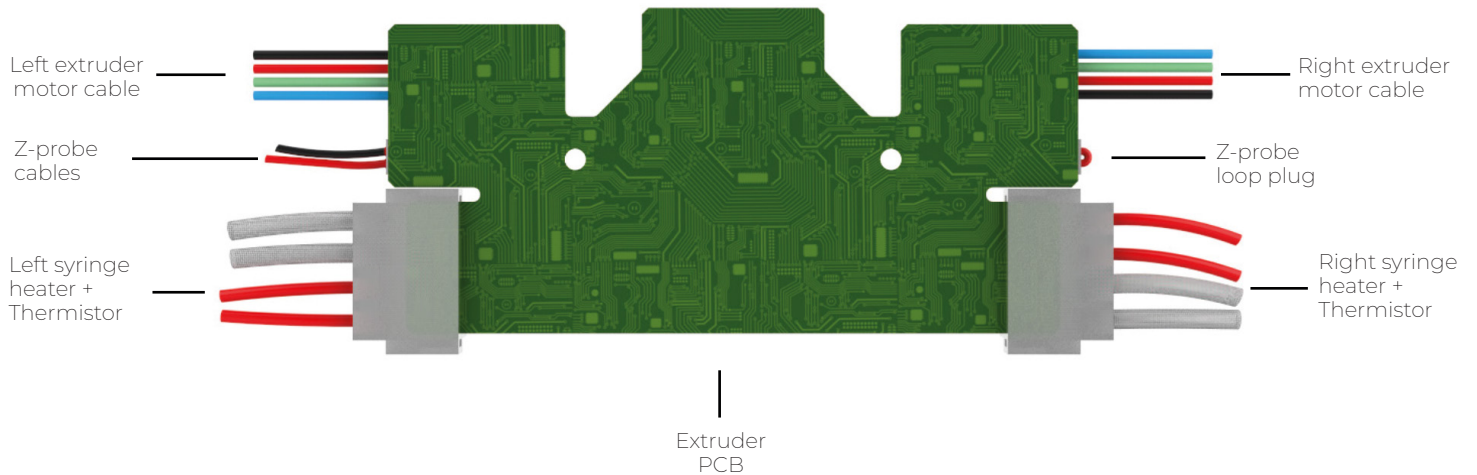


Two buttons will appear at the top right corner of the display. Tap **“Print”** to start your print. Tap **“Queue File”** to add your file to the print queue.



In the web interface, tap the **“print”** icon on the upper left corner of the file (repeat step 11.2.2).

# 13 PCB Overview



**WARNING!!**

Make sure the power is turned off when (dis)connecting the cables. Failing to do so could cause serious damage to the printer.





# 14 Frequently Asked Questions

## Printing

### *“My nozzle is leaking while printing with 1 color”*

- If the nozzle leaks while printing with 1 color, the **“retraction distance”** is probably not high enough. It could also be that the **“extrusion multiplier”** is set too high, so that too much pressure remains on the nozzle.  
(S3D - Tab: Extruder)

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### *“My nozzle is leaking while printing with 2 colors”*

- If the nozzle leaks during color change, the **“tool change retraction distance”** is not set high enough.  
(S3D - Tab: Other)

---

### *“No material comes out of my nozzle while printing”*

- Stop the print. When the print has stopped, manually rotate the big extruder knob to prime the nozzle. If nothing still comes out the nozzle, even with manual priming, there is a good chance the nozzle is clogged.  
ATTENTION: lumps may not be larger than 2.50mm!

---

### *“Too little material comes out of the nozzle during printing”*

- If too little material comes out of the nozzle during printing, the **“extrusion multiplier”** (flow) is probably set too low.  
(S3D - Tab: Extruder)

---

### *“Too much material comes out of the nozzle during printing / My nozzle gets very dirty during printing”*

- If the nozzle gets dirty during printing, the **“extrusion multiplier”** is probably set too high.  
(S3D - Tab: Extruder)

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### *“My extruder freezes and starts clicking during print”*

- If the extruder jams and starts to click there are several possible causes. First, the nozzle may be clogged with a lump. Second, the material may be too thick for the extruder to extrude it. Third, the user may also print too quickly. In that case try to lower the **“default printing speed”**. (S3D - Tab: Speeds)

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## MACHINE

### *“The printing symbol in the web interface is red”*

- When the printing icon is red it means that the printer is trying to reach a coordinate that is not physically possible. Usually this is because the correct slice profile has not been imported or selected.

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### *“The display gives me a DEF value where the temperature is normally displayed”*

- If there is DEF on the temperature reading, it means that the syringe's temperature sensor cannot get a reading. This may mean that the thermistor of the heater is broken. Please contact FELIX Support.

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### *“The display gives me a DEC value where the temperature is normally displayed”*

- If there is DEC at the temperature value, it means that the printer has a target temperature that it cannot reach/hold or within a preset time window. Decrease the machine syringe temperature or increase the syringe paste temperature.

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### *“The printer does not home itself when asked for in the menu (only moves bed down)”*

- Sometimes the machine may fail to home and only move the bed down. This is usually the result of careless shipping that caused calibration bolts in the extruder head to vibrate loose. Please contact FELIX for a detailed guide to solving this problem.

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### *“A lot of icons in the main menu have disappeared”*

- This is caused by a communication error between the printer and the display. Press the **“Restart UI”** button and wait for the printer to restart. Press the **“shut down”** button and let the printer completely shut down. Flip the power switch to disable the power to the printer. Flip the power switch again and wait 1 minute for the printer to bootup. After bootup the printer will display the complete menu again including all the icons.

## CALIBRATION

### ***"When do I need to level my bed?"***

- It is wise to level the bed when the machine has just come out of the box. It can also be useful to level the bed when the machine is moved. For the rest, it is only necessary to level the bed if the first layer of the print is not nice and smooth. (step 10.1)

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### ***"When do I perform a Z=0 calibration?"***

- The Z=0 calibration is already very finely adjusted in the factory during the test phase of the machine. It may still happen that the syringe needle scrapes on the bed, in which case, a Z=0 calibration is required. (step 10.2)

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### ***"When do I perform a XYZ calibration?"***

- There are several reasons to perform an XYZ calibration. First, it may be that nozzle 1 prints fine but nozzle 2 scrapes across the bed/print. Second, nozzle 1 and nozzle 2 may not align nicely over the XY direction. It is advisable to perform an XYZ calibration for every dual color print to guarantee the best result. (step 10.3)

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