embrace
SeatMaker

User manual

Version 1.0

Powered by
Create it REAL

embrace SeatMaker - User manual

Revision	Change	Date
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Create it REAL A/S

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1 Intended use

REAL's embrace SeatMaker 3D printer is a Fused Filament Fabrication (FFF) 3D printer. Its purpose is to transform digital 3D models of seats designed in a computer-aided design (CAD) and prepared in Create it REAL's REALvision embrace CAM software into physical objects (seats) by depositing melted thermoplastic material (called filament) layer by layer.

The printer is specifically designed to work with soft filaments such as CreaTECH 85A, provided by Create it REAL. Although the printer accepts other filaments (brand and/or material type), using such will not provide optimal results and in some cases may cause permanent damage to the machine.

WARNING: Using filaments that are not authorized by the manufacturer/sales representative will void the warranty of the printer.

2 Printer overview

1. *Filament chamber*
   For storing the filament used by the printer, and to keep the humidity level stable.

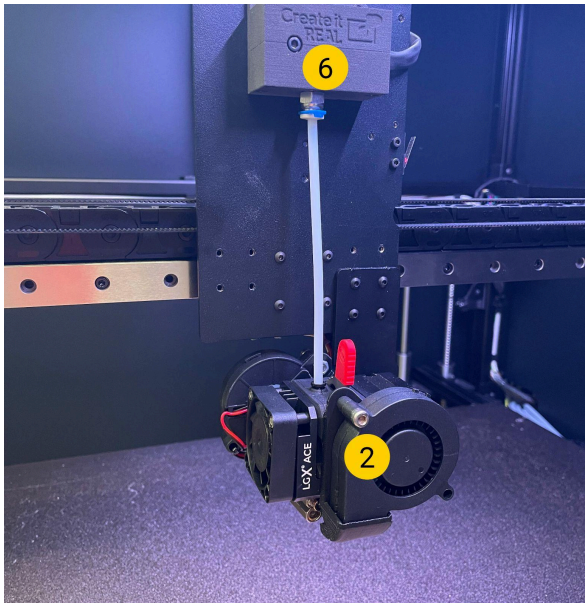
2. *Print head*
   The material extrusion system.

3. *Print bed*
   Removable surface onto which the object is printed.

4. *USB port*
   For printing from USB and updating the printer firmware.

5. *LCD Touch Screen*
   For controlling the printer.

6. *Filament flow sensor*
   Monitors the correct flow of the filament.
7. *Emergency stop* (E-stop) button
   In case of need for an emergency stop, press the big red button on the top left of the machine, to restore power, press turn and pull the button back up again.
8. *On/off button*
   Controls printer's Stand-by mode.



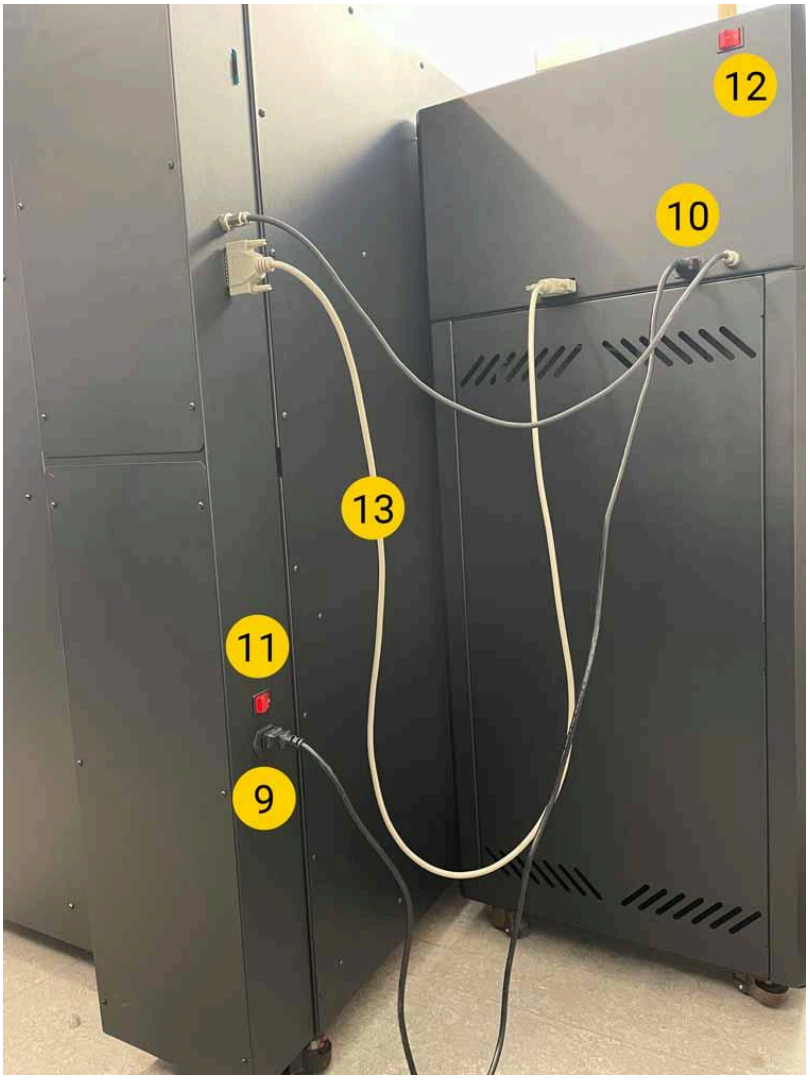
9. *AC power plug of the printer*
   Input plug for the mains power.

10. *AC power plug of the filament chamber*
    Input plug for the mains power.

11. *Power switch for the printer*
    For controlling the flow of power to the internal power supply.

12. *Power switch for the filament chamber*
    For controlling the flow of power to the filament chamber

13. *Interface cables*
    For the connection between the filament chamber and the printer.



14. *Exhaust fan*
    Ventilation for electronics chamber.

15. *Wifi antenna*
    For receiving the wifi signal of the printer. This part should be left uncovered and should not be encapsulated in metal. Otherwise, the wi-fi reception will be poor.

3 General Safety Information

This guide contains safety warnings and notices applicable for Create it REAL 3D printer, model “embrace SeatMaker”.

The following signs are used with the Safety Instructions.

Information helpful to perform an action or to avoid safety problems.

Warning of a potentially dangerous situation, if safety instructions are not being followed (ISO 7010-W001)

Magnetic field (ISO 7010-W006)

Electricity hazard (ISO 7010-W012)

Hot Surface (ISO 7010-W017)

Crushing hands hazard (ISO 7010-W024)

The embrace SeatMaker 3D printer shall only be used after reading the safety instructions and user manual.

Do not use the printer’s cabinet/chamber for any kind of storage.

Always control the embrace SeatMaker 3D printer using the front panel touch screen and/or the power switch at the back.

Do not insert other material in the print head than the compatible filament.

Keep the cabinet's front panel/door closed while the machine is in operation mode. Never reach inside the machine during the printing process.

The main chamber of the machine (printing chamber) has background lighting, indicating the machine's state. The safe conditions to open the front panel/door and reach inside the chamber are "Paused", "Idle" and “Print done” signaled by steady or blinking green light respectively.

All other light colors show "operating" modes where the chamber must be closed. More details on the background lighting in the User Guide/ Machine Instructions.

Do not reach inside the printing chamber from the upper side of the cabinet. Only use the designated front panel/door when retrieving the printed object, for cleaning and maintenance purposes.

Do not touch the nozzle/print head when reaching inside the cabinet to retrieve the printed product. Nozzle parts become hot during printing.

Do not change any spare parts while the machine is in operation mode unless explicitly stated otherwise due to maintenance or service reasons.

Always change the filament using the control panel by following the standard procedure.

The embrace SeatMaker 3D printer is not intended for use by persons with reduced physical and/or mental capabilities, or lack of experience and knowledge unless they are supervised or have been given instructions concerning the use of the appliance by a person responsible for their safety.

Children should never use the machine unattended.

When moving the machine, always lift it from the bottom. Do not lift the machine by its sides. There is a high risk of damaging the printer's functional structure. For unpacking the machine, see User Guide instructions.

3.1 Electrical Safety

The power supply should not be tampered with. If it needs to be replaced due to malfunction, it must only be replaced with the same type of power supply by authorized personnel.

An earthed main socket must be used. Be sure that the building installation has dedicated means for over-current and short-circuiting.

Always unplug the machine before performing maintenance and service operations, unless otherwise specified.

Only trained personnel should reach into the control chamber of the machine (accessible from the bottom cover of the machine), containing the electrical and electronic parts.

Do not place any objects filled with liquids, such as vases or cups, on top, around or inside the machine. Use care not to spill liquids into the system. They can cause a failure and/or a fire hazard.

3.2 Mechanical Safety

The embrace SeatMaker 3D printer contains moving parts. The force of the print bed is large enough to cause damage, so stay away from the print bed during operation.
Keep away from the drive belts at any time. There is a risk of pinching when in operation.

Always unplug the machine before performing cleaning or service tasks, unless otherwise specified.

3.3 Risk of burns

There is a potential risk of burns as the nozzle/print head can reach temperatures beyond 200°C. Do not touch the nozzle with your bare hands. Unless otherwise stated, always allow the machine to cool down for a minimum of 20 minutes before performing maintenance or modifications on the print head.

3.4 Magnetic field

Static magnetic field hazard. Due to the static magnetic field caused by the magnets in the printer, keep a distance of at least 4 cm between any implanted electronic medical devices and implants containing ferromagnetic materials.

3.5 Emission hazard

3D printing thermoplastics may result in the release of Ultra Fine Particles (UFPs) and Volatile Organic Compounds (VOCs) depending on the thermoplastic used and settings of the 3D printer. Above certain concentrations (Threshold Limit Values, TLV), these emissions can pose a risk. Concentrations are influenced by the filament and adhesive used, print conditions (e.g., print temperature), room volume, Air Exchange Rate (AER), and the number of printers in a room.

Please consider other safety measures, such as a filter and/or dedicated ventilation system, depending on your specific situation.

The use of print materials / filament from different suppliers may require additional safety measures. Always check the relevant information provided by the supplier of such filament/material and the safety data sheet of each specific material.

Create It REAL cannot be held responsible for any adverse effects from these materials' use and/or performance.

3.6 Personal protective equipment

The following items are recommended for working safely with the Embrace SeatMaker 3D printer, especially for performing maintenance actions:

- Tweezers. These are required for safely removing material residue from the tip of the nozzle.
- Thermal gloves. It is recommended to wear thermal gloves while cleaning the nozzle as the nozzle may be hot during these procedures.

4 Preparing the printer

4.1 Printer Placement

The 3D printer is intended to be used in an office environment with adequate ventilation and room temperature.

The printer requires an AC outlet with an earth connection for power.

For optimal working position of the operator, it is recommended to leave space on the left side of the printer to easily access the position of the spool.

For standard operations, access from the front side of the machine is necessary.

4.2 Opening the box

The printer is shipped in a wooden box.

1	To access the printer, remove the top panel. This will reveal the printer with its protective elements.  

2	Remove the side panels of the box. Each panel is held with 3-4 screws on each side (top, center and bottom).  	
3	At the end of the action, you should have a printer revealed, staying on top of a pallet.	

4.3 Unpacking the printer

WARNING: Since the machine weighs 130 kg, it is **highly recommended NOT to lift it**.

1	Inside the printer you will find two wood ramps used to roll out the printer from the box.	  

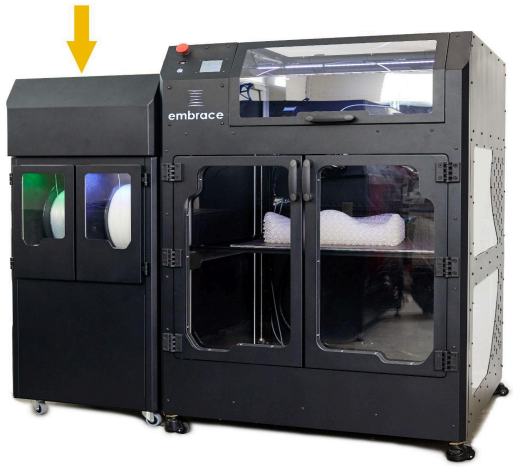
2	Lift the feet of the casters by rotating clockwise the dedicated screw. This way the printer will stay only on its wheels.	
3	Place the platform feet (which you removed in 1.) next to the pallet such that they are on the same level as the wheels.	

4	Carefully push the printer from the pallet to the floor using the platform feet. **Warning**: The machine is heavy, so two persons are recommended for this action - one to push and one to pull and navigate.	

4.4 Unpacking the filament chamber

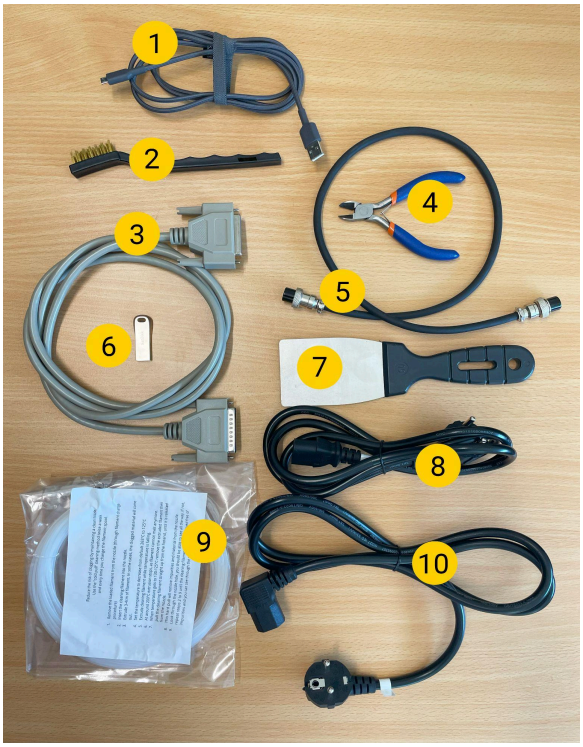
The printer comes in two boxes. One is the printer, the other is the filament chamber. Repeat the unboxing and lifting steps above for the chamber as well.

4.5 Placement of the printer and the filament chamber

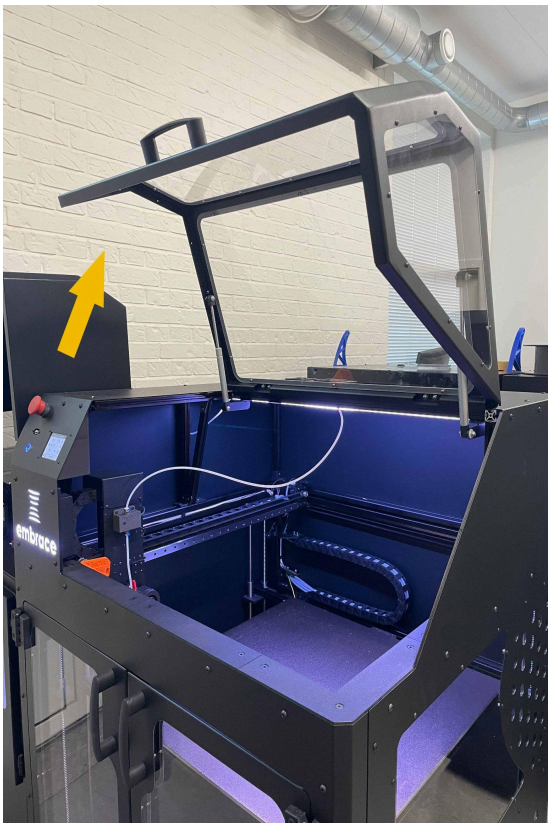
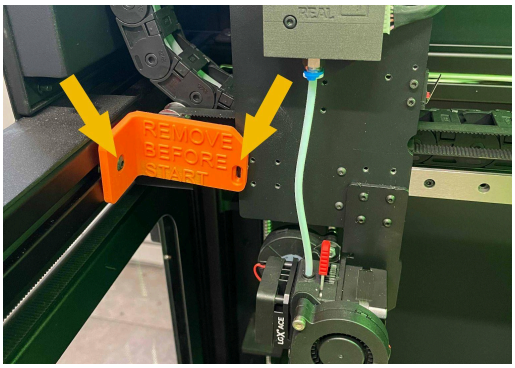
1	The filament chamber should be placed on the left side of the printer.	

4.6 What is inside the box

1	You will find a large accessory box in the filament chamber that contains tools to get your printer started. Open the box.	

2	The box will contain 1. USB cable 2. Nozzle cleaning brush 3. Interface cable (to connect the filament chamber and the printer) 4. Cutting plier 5. Filament chamber cable 6. USB stick 7. Spatula 8. AC power cable for the printer 9. Cleaning filament 10. AC power cable for the filament chamber	

4.7 Removing transportation fasteners

1	Open the top lid of the printer and look inside to the left.  	
2	Remove the orange plate which is held with two screws.	

4.8 Powering the printer

1	Connect the filament chamber with the printer: plug the four cables to their respective places.	
2	Plug the provided standard IEC AC cable into the connector located on the printer's rear side. Plug the other side of the cable into the power socket with an earth connection. Do the same with the filament chamber. The connectors are located on the back of the chamber.	

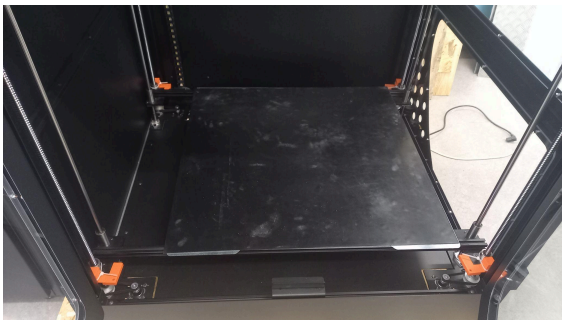
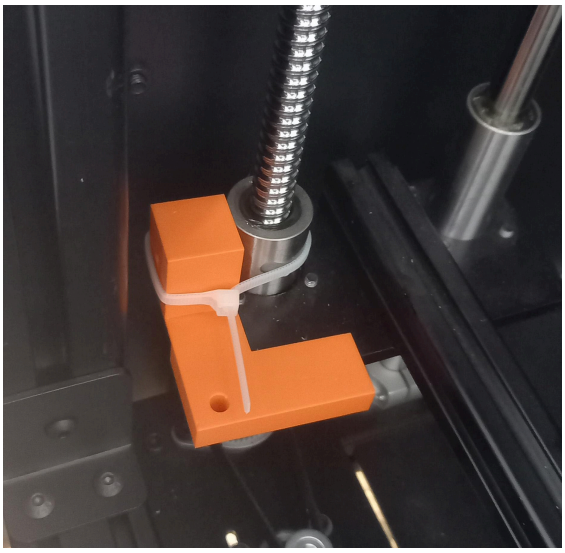
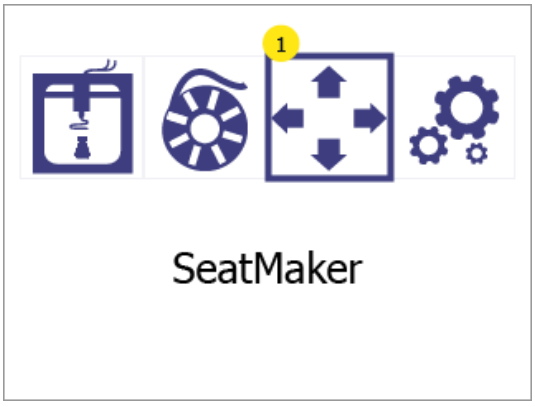
	IMPORTANT: The red switch must be in 0 (OFF) when the power cable is being installed. Turn ON the power switches on the back. This switch controls: 1. Internal power supply 2. Filament chamber heating **IMPORTANT:** The filament chamber is always ON when the Main power switch is ON. This ensures the correct environment for the filament in the chamber even when the printer is in stand-by mode. Before you turn off the filament chamber, please make sure you have moved the filament to another place with a controlled temperature and humidity environment.	
3	Use the ON/OFF button on the front to get the printer out of Standby mode. Note: When in Standby, power is delivered only to the Filament chamber and the internal power supply. All other parts of the printer are OFF.	

To prevent damage during the last part of the printer assembly, the printer must be turned fully off.

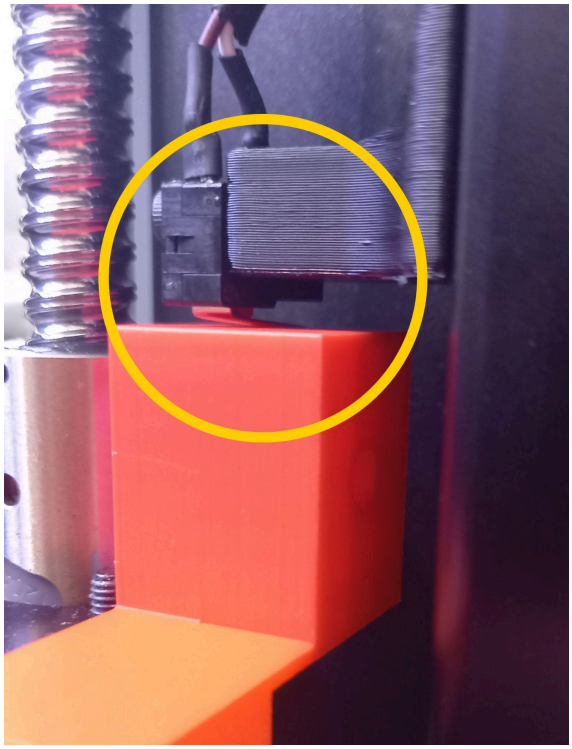
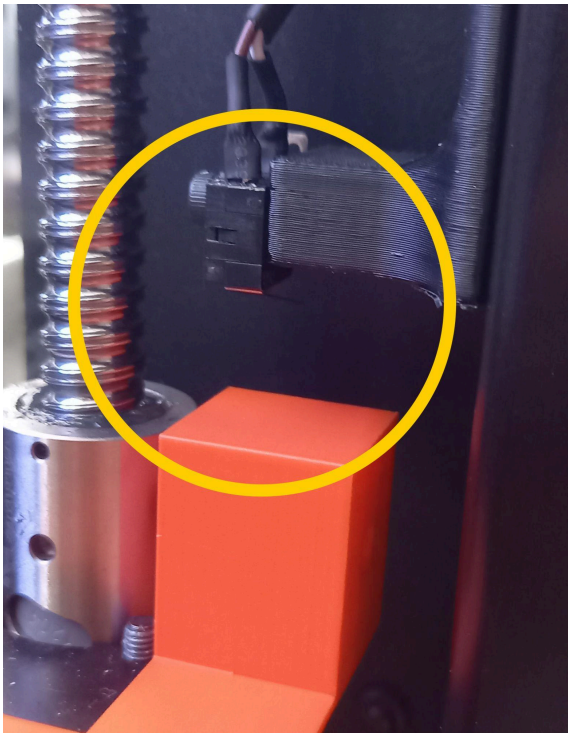
1	Turn the printer off from the front button	
2	Switch off both of the AC power switch	

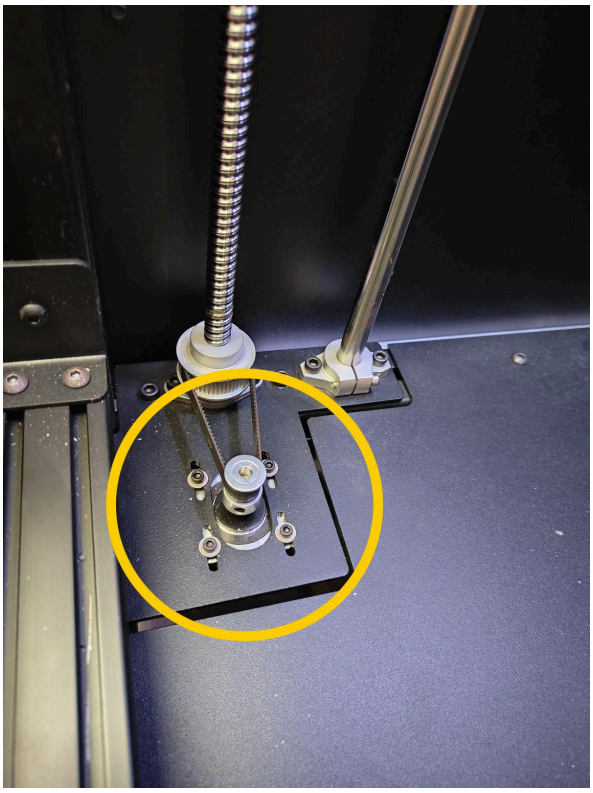
4.9 Bed leveling adjustment using brackets

Before the first print, the bed should be adjusted to ensure it is leveled.

1	On the printer, there are four brackets (one in each corner) zip-tied to the bed.	 
2	After setting up the printer, power it on and go to the *Manual movement* menu (1).	

3	In this menu, move the bed up as far as possible.	
4	Once one or more of the brackets hit a limit switch (the small metal piece circled on the picture), the bed will stop and be unable to move further up.	

5	Look in all four corners of the bed and verify which of the limit switches are triggered and pushed against the bracket. If any of the switches are not triggered and pushed against a bracket, adjust the screw for that specific corner (see the picture at step 6) until all four limit switches are triggered at the same time.  Limit switch triggered  The limit switch is not triggered - your bracket is far away from the limit switch. You should turn the screw to move the bed up in that corner until the limit switch is triggered.

6	The bed is moved by turning the screw (see the picture on the right). Move the bed down, cut the zip ties, and remove the brackets. Save them for later use, in case a new bed adjustment has to be made. 

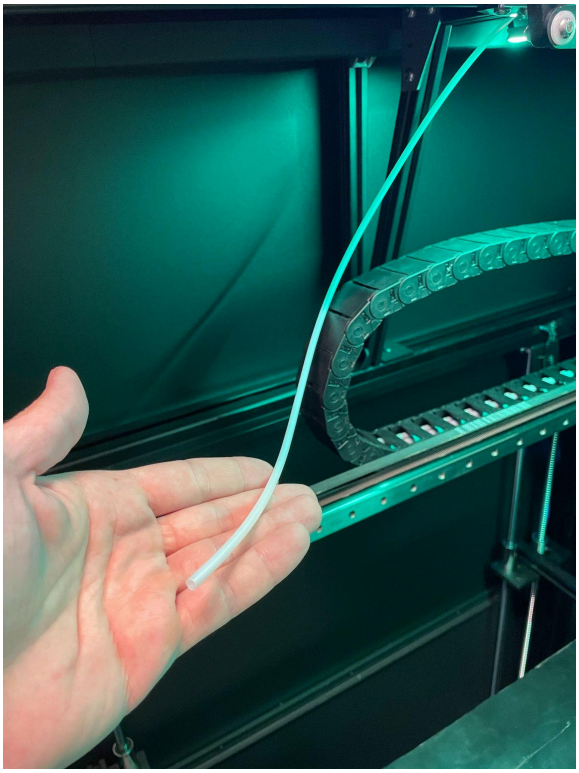
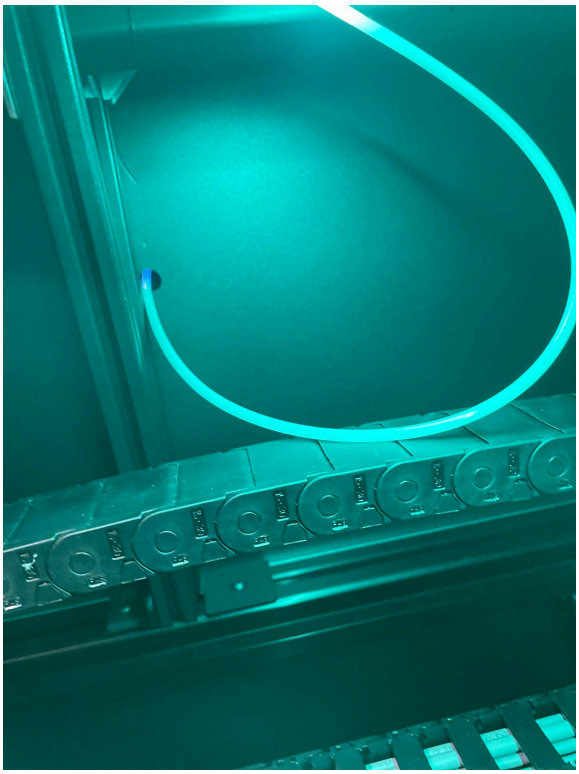
4.10 Filament chamber functionality

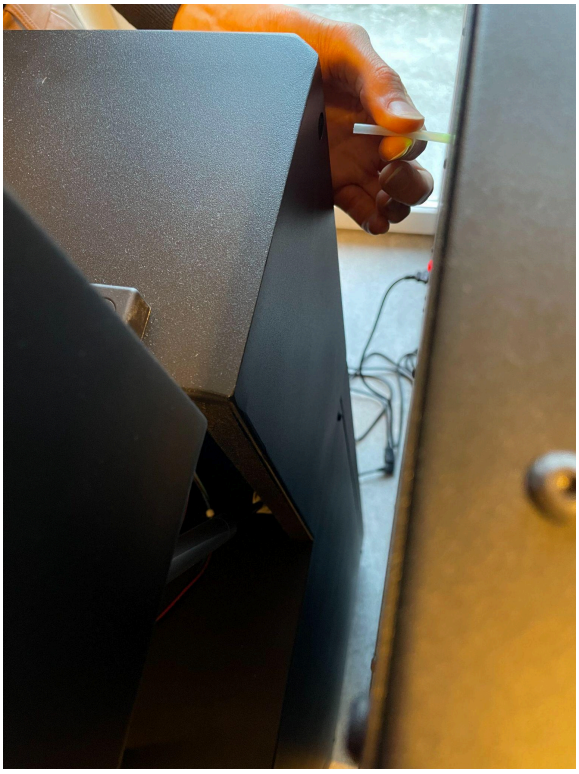
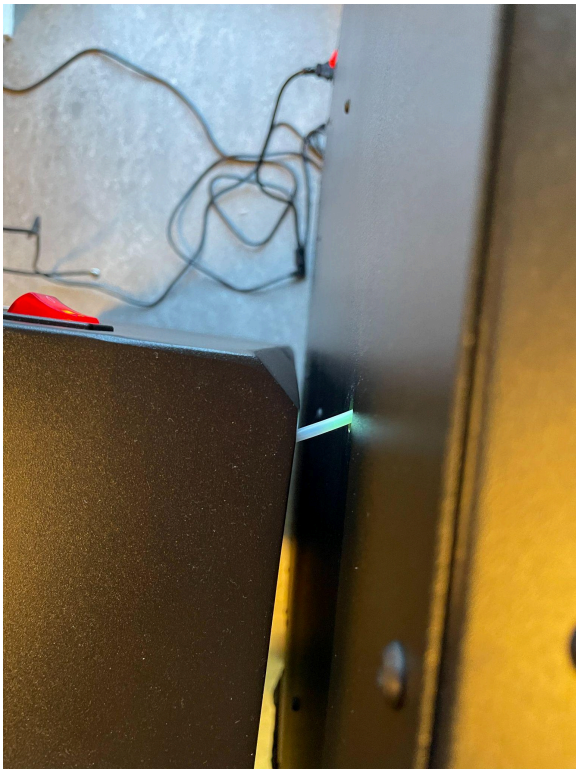
The filament chamber holds the filament spool in place but also keeps it in optimal conditions of temperature and humidity.

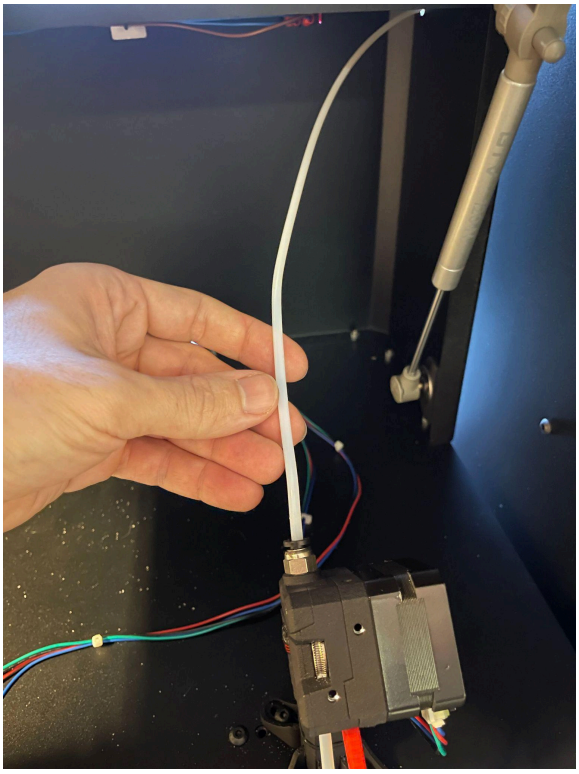
When the filament chamber is powered, a red light inside the chamber will turn on.

IMPORTANT: In case the power is disconnected (power button on the back or cable have been removed), make sure to remove the filament spool and store it in a temperature and humidity-controlled environment.

4.11 Operating the filament chamber

1	To start operating the filament chamber you need to attach the filament tube coming out from the printer to the filament chamber.	
2	Place the filament tube into the hole on the left wall of the printer.	

3	Drive it through the hole found on the right wall of the filament chamber.	
4	Now there should be a connection between the printer and the filament chamber.	

5	Attach the end of the filament tube to the feeding extruder.	
6	Close the lid of the filament chamber.	

5 User interface brief overview

5.1 Main menu

1. Print from USB
Allows printing from a USB flash drive.

For more information see Print from USB

2. Filament change
Use the filament change menu to insert and change the filament in the print head.

For more information see Filament load/change procedure

3. Manual movement
The manual movement gives access to move the print head and print bed in all three axes of the printer. It also gives you access to manually extrude or retract filament in the print head.

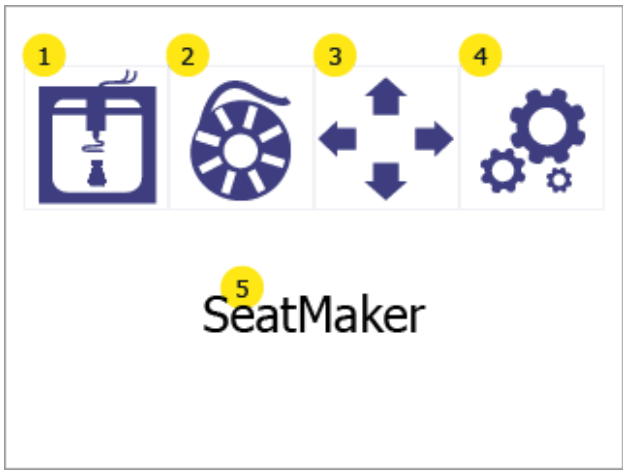
For more information see Manual control

4. Settings menu
Gives access to an additional menu, where you can find:

1. Adjust the bed leveling
2. Access Wi-Fi settings
3. Change printer menu language
4. See printer information and update the firmware

For more information see Settings menu

5. Printer nickname
Shows the printer's name in the local WiFi network, as given by the user. By default, it is the name of the printer model.



5.2 Settings menu

1. Bed leveling
Give access to the bed leveling menu

For more information see Bed leveling

2. Wi-Fi setup
Gives access to information and configuration of the printer in the local network.

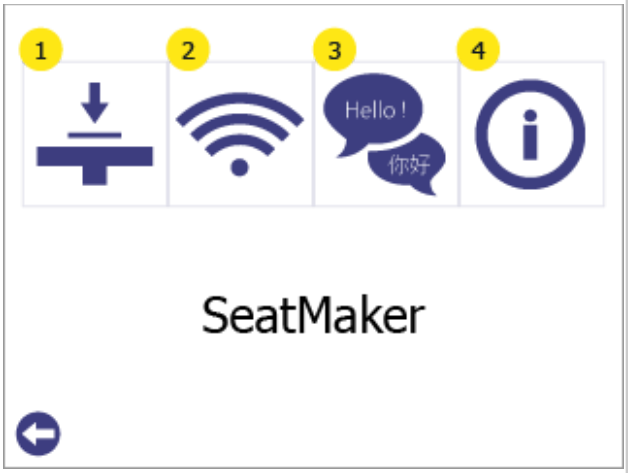
For more information see Wi-Fi setup

3. Language options
Allows the user to change the language of the printer menu.

For more information see Language selection

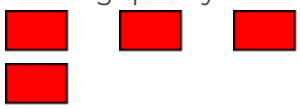
4. Information
Shows information about the printer and gives access to the printer firmware update option

For more information see Printer information and Updating printer firmware



5.3 Printer lights

The printing chamber is equipped with lights to help the user see inside and also to show the state of the printer. Depending on the state, the colors will change as follows:

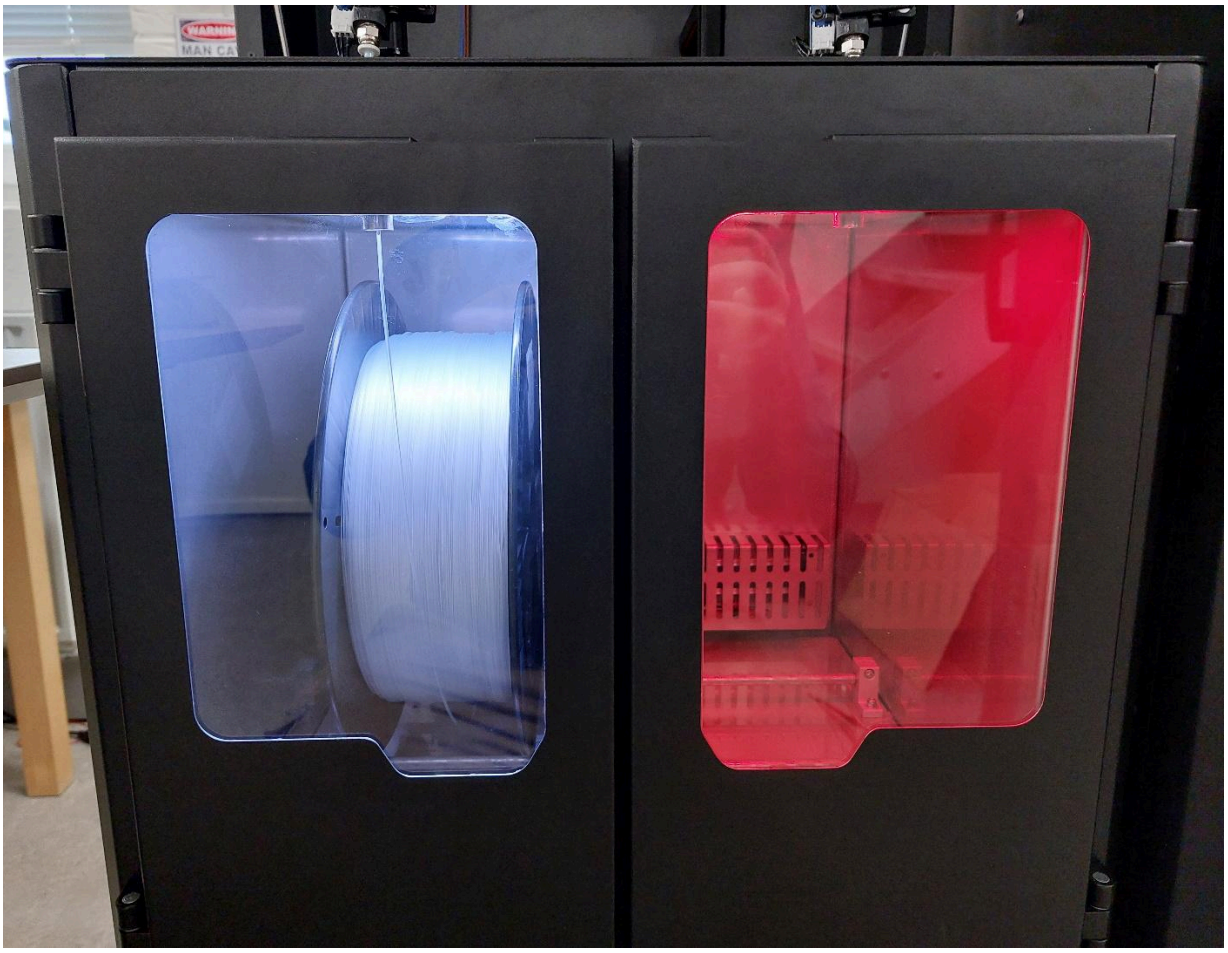
Color pattern	State
Static GREEN 	**IDLE** Printer is in the Main Menu and is ready to be used.
Blinking GREEN 	**PRINT DONE** Printer has finished the print job and the object is ready to be collected.
Static WHITE 	**BUSY** Printer is either printing, or used for other operations, e.g., Filament change.
Blinking GREEN and WHITE 	**PAUSED** Printer is paused
Blinking quickly RED 	**ERROR** Error has occurred. See the Error message on the screen. (See also Troubleshooting section 15.4)
Blinking BLUE 	**UPDATING** Printer is updating. Do not disconnect the USB drive and do not power off the printer.
Static PURPLE 	**HEATING** Printer is heated at the start of a print, resume after pause or from Manual control.
Blinking PURPLE 	**TEMPERATURE REACHED** The printer has reached the temperature defined in Manual control.

5.4 Filament chamber lights

The filament chamber is equipped with lights to help the user see inside and also to show the state of the printer. Depending on the state, the colors will change as follows:

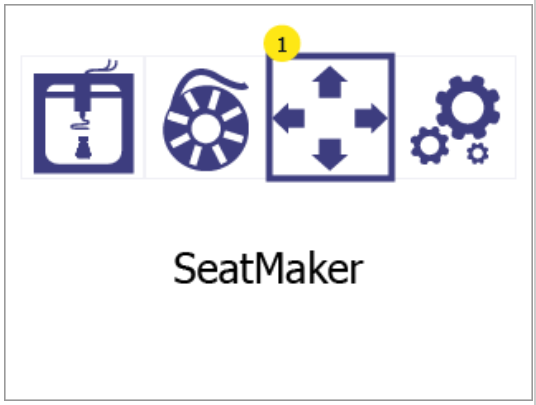
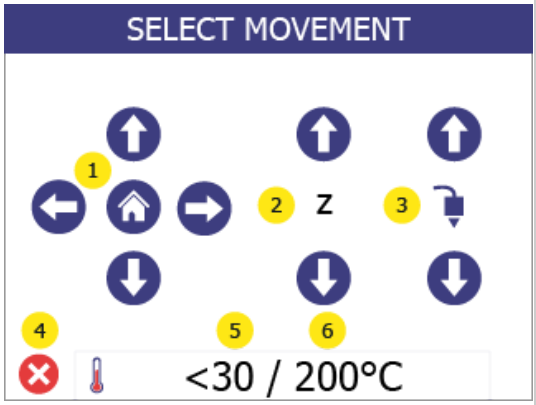
Colour pattern	State
WHITE 	**ACTIVE** Actively following the extruder motor and mimicking that behavior

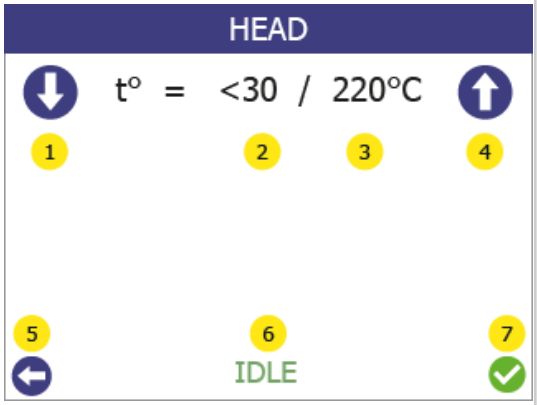
GREEN	**PRIMED** Primed state signifies this chamber is ready to be switched into action as soon as the other chamber runs out
CYAN	**PRIMING** This chamber is currently priming and is spinning the motor to get to a known state
BLUE	**CATCH PRIMER** This state is when we have just changed chamber and is moving filament through the merger before it starts its catching up procedure
PURPLE	**CATCHING UP** The filament is attempting to catch up to any lost filament during a change
RED	**OUT OF FILAMENT** Out of filament stage is signifying the user should do something about the chamber as soon as they can



6 Manual control

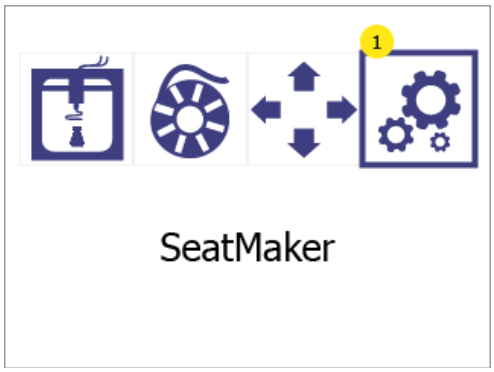
If needed, it is possible to manually control the movement and heating of the printer

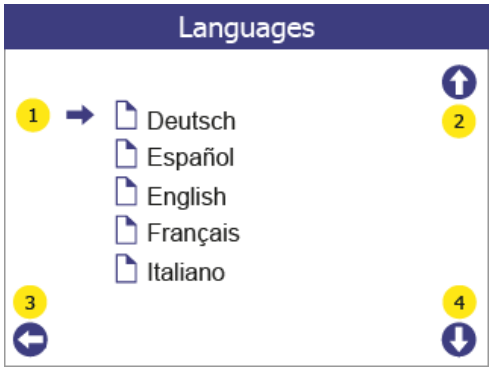
1	Enter the manual movement menu by pressing the manual movement button (1).	
2	Use the arrows (1) to move the print head around the workspace. Press the Home button in the centre (1) to bring all its axes to their “home” (zero) position. Move the bed up and down by using the Z-axis arrows (2). Extrude or retract filament using the print head control arrows (3). (Note that these buttons will be disabled if the print head temperature (5) is lower than the target temperature (6)). Start manual heating by pressing on the temperatures (5 or 6). If manual heating is started (the printer is keeping or reaching for a temperature), the button will have a red outline. If no manual heating is enabled the outline is green.	
3	Set the target temperature by pressing the down arrow (1) and up arrow (4). To confirm the target temperature and start heating press the confirm button (7).	

	The status of the heating controller can be seen on the status label (6), which will show IDLE when not heating, and HEATING when heating. Additionally, the lights inside the printer will be white if the heating control is OFF and Purple if the control is ON. To stop the heating, either go back to the Main menu, or reduce the target temperature (3) below 30 °C (it will show "---") and click Confirm (7) Press the back button (5) to go back to the manual movement screen. Press the back button again to go to the Main menu.	

7 Language selection

Choose a language for the printer menu

1	Enter the settings menu (1)	
2	Enter the language menu by pressing the language button (1) Press the back button (2) to go back to the main menu	

3	The list arrow (1) indicates the current selected language. To select a new language, press on the desired language to select it, and then click on it again to accept it as the new language. Press on the up (2) and down (4) arrows to scroll through the list of available languages. Press the back button (3) to go back to the settings menu.	

8 Filament change/load

8.1 When to do a filament change procedure

Using the filament change procedure is necessary when:

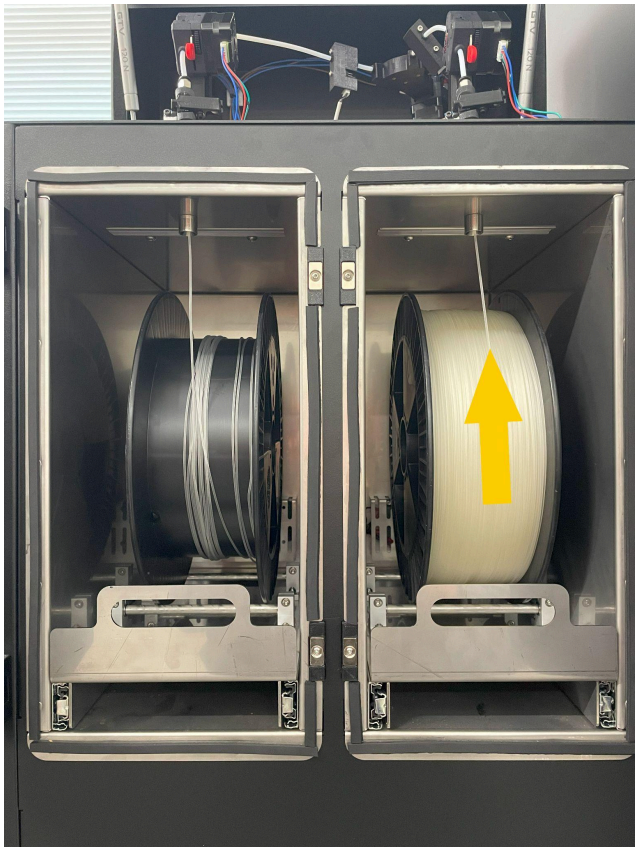
- Inserting filament for the first time
- Changing from an empty spool to a new spool
- Adding a spool to a printer with no filament
- Removing filament from a printer

8.2 Filament change preparations

8.2.1 Install filament spool

When installing a filament spool into the filament chamber, the spool must be oriented correctly to avoid issues.

The spool should be installed in a way that the filament unrolls from the top, as shown in the picture.

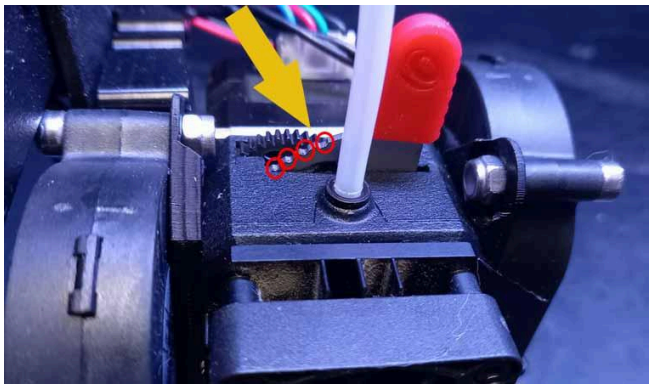


Make sure the spool edges are smooth and they rotate smoothly.

The black spool edge - "the wheel" sometimes is not so smooth and the spool just doesn't rotate, so you need to cut it to make sure everything spins easily.

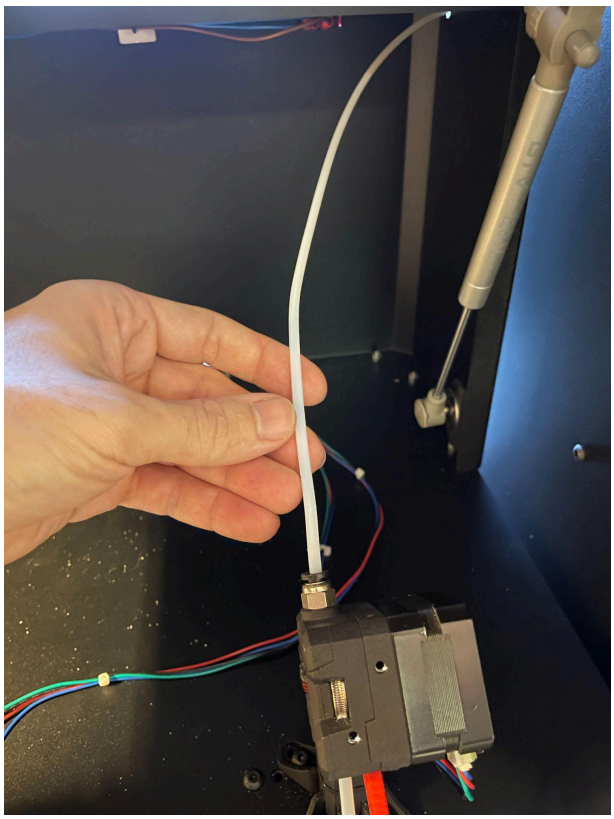
8.2.2 Check lever position

To ensure that the extruder is ready to print, the position of the lever should be on position *4*. In this position four indents are visible.



8.2.3 Attach the filament tube

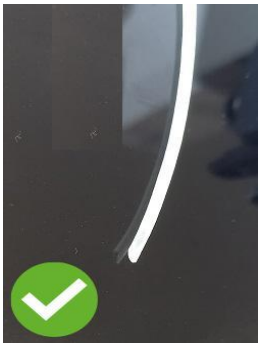
Insert the filament tube in the printhead inlet. Follow the instructions in section 4.13 Operating the filament chamber



8.2.4 Inspecting the filament

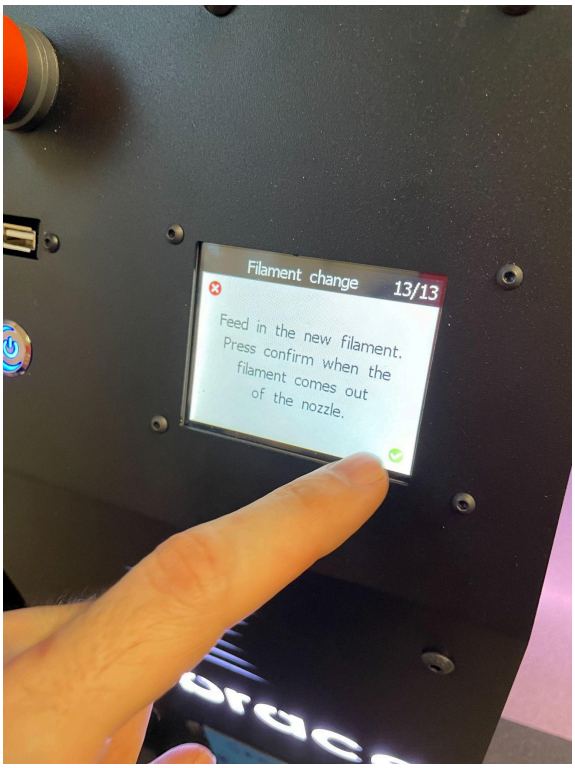
Before inserting the filament into the printhead, make sure that the end of the filament does not have any defects, as these can cause the filament to not load properly.

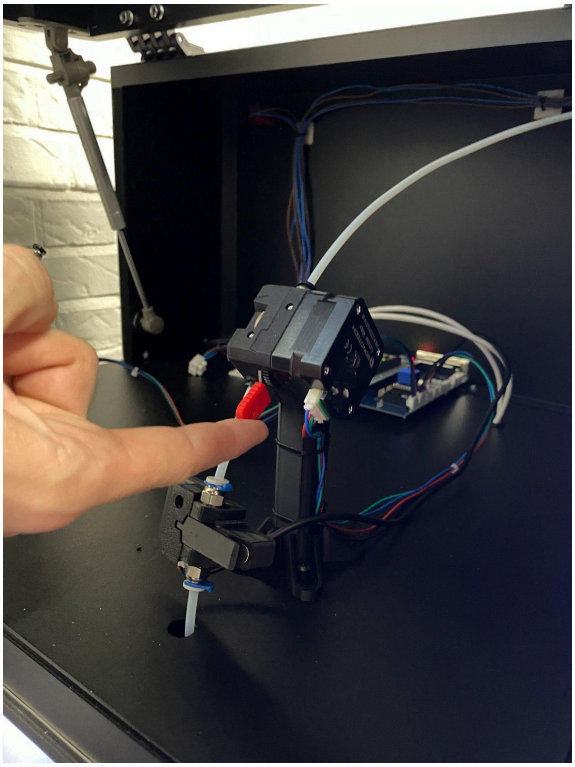
In case there is such, cut it with scissors, side cutters or another cutting tool.



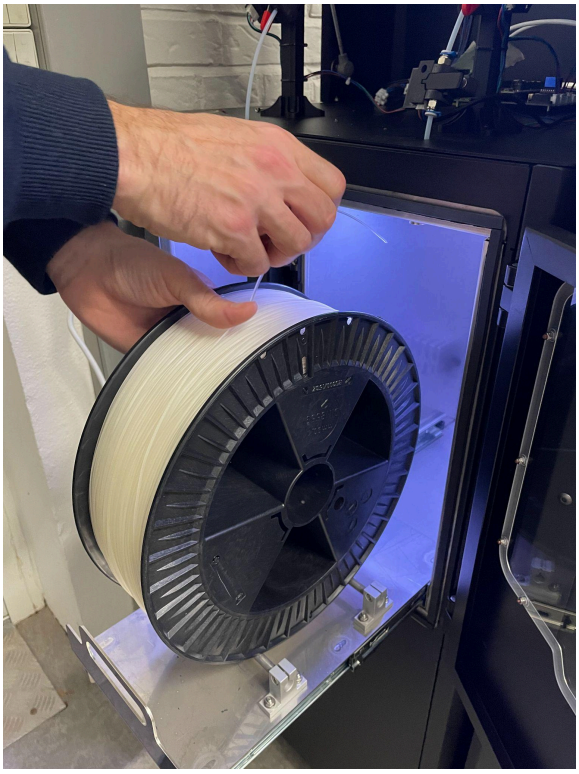
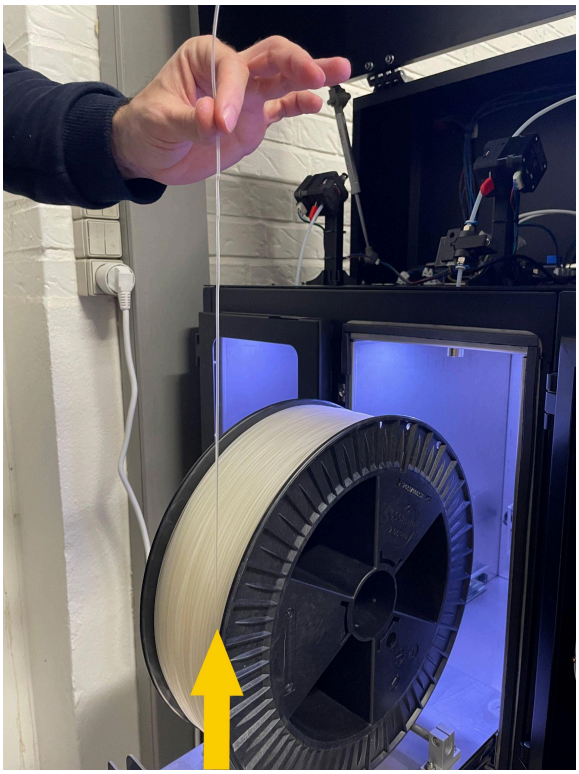
8.3 Filament load/change procedure

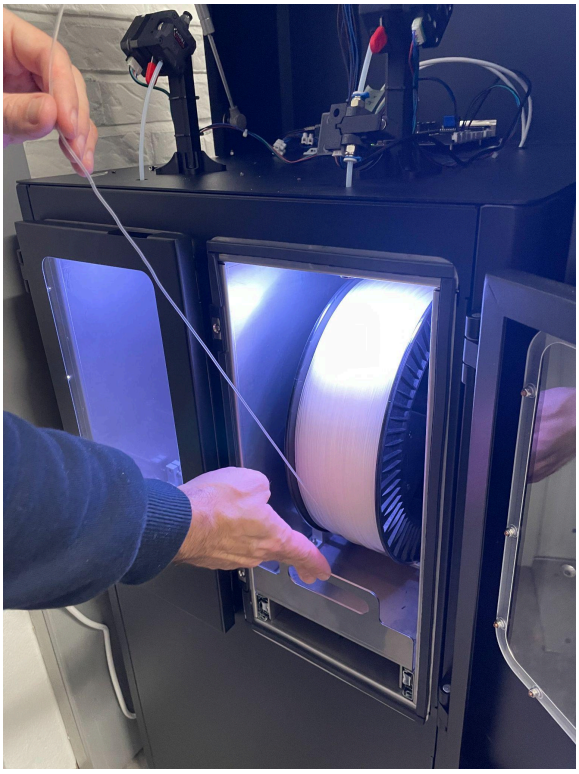
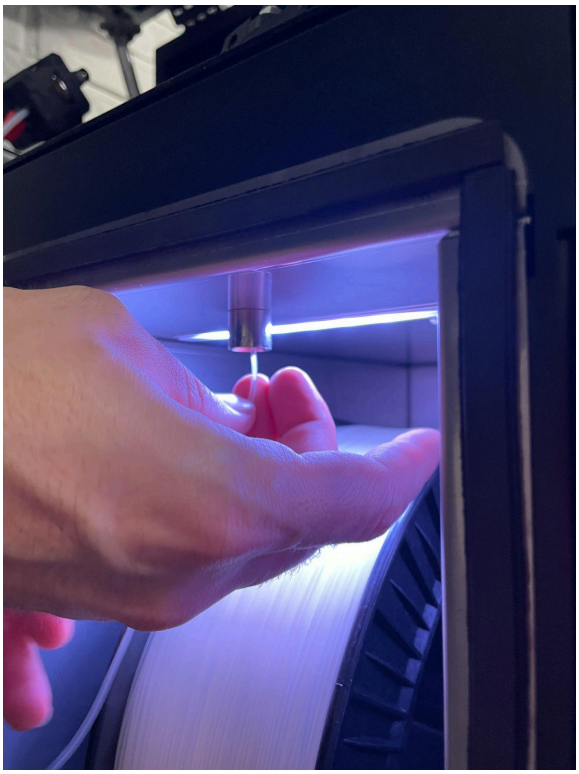
The filament change procedure always runs in two stages – Removing the old filament and Installing the new filament. In case the filament is loaded for the first time (there is no filament to remove), just go through the procedure as if there is already an installed filament.

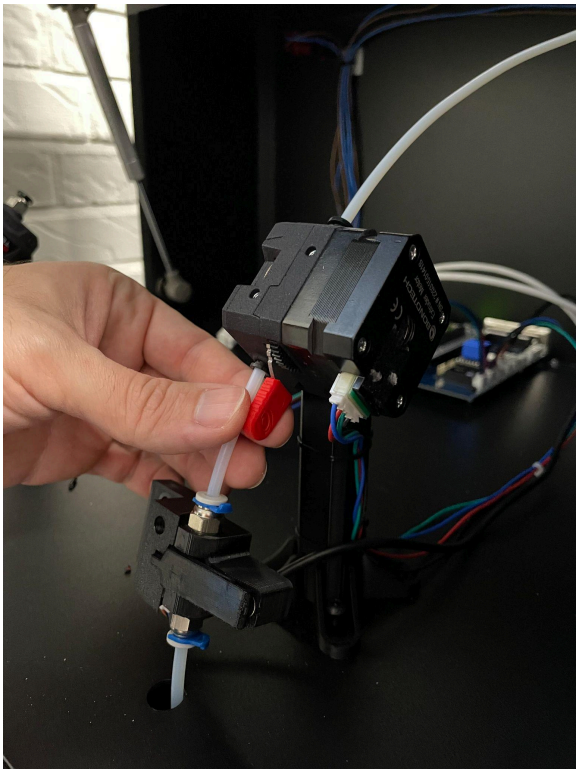
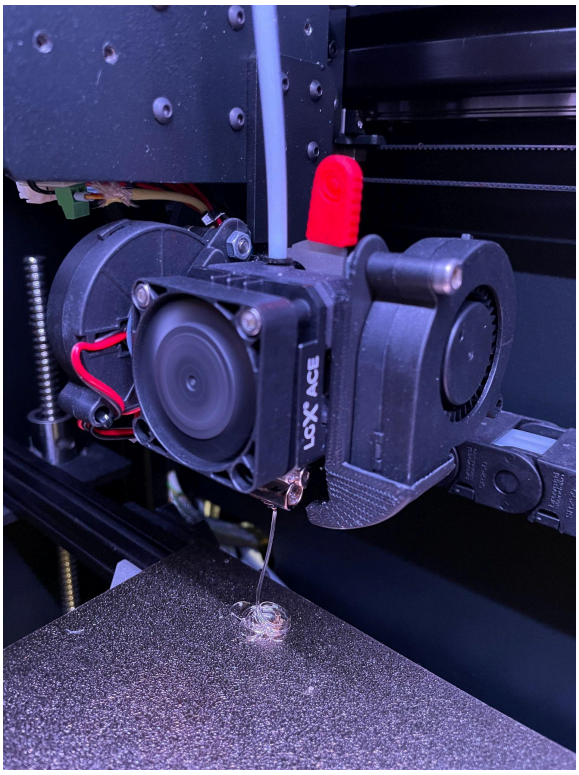
1	During the entire process, follow the instructions on the screen, explained in section 7.1 Filament load/change procedure.	

2	Open the filament chamber lid.	
3	Pull the feeding extruder lever towards you. You should see 0 indents.	

4	Open the door of the filament chamber.	
5	Pull out the filament holding drawer.	

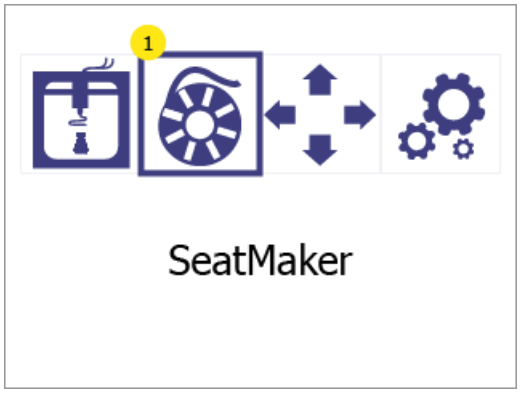
6	Place the filament spool in the drawer.	
7	Grab the filament - watch out for the correct direction.	

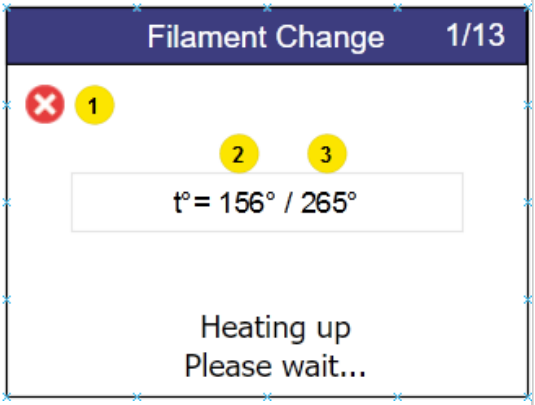
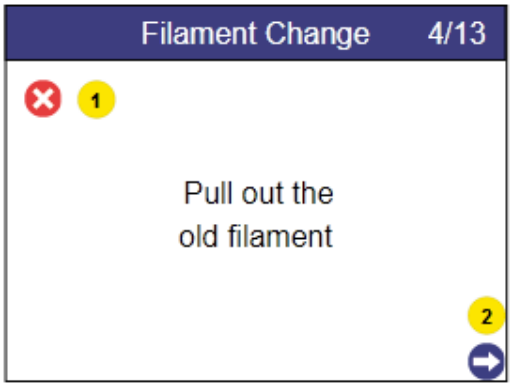
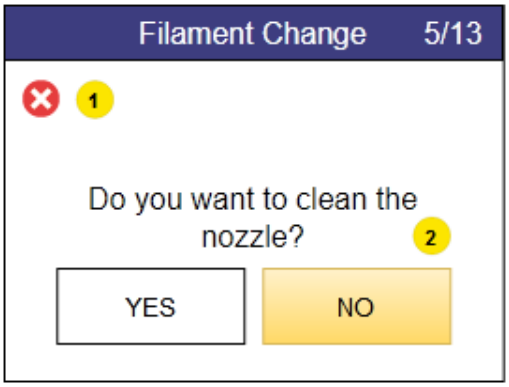
8	Close the drawer.	
9	Insert the filament into the tube and start pushing it. There is 170 cm to reach the sensor. Push until you feel resistance and cannot push further. This will take approx. 30 seconds. If the material was not pushed far enough before starting the filament loading procedure on the printer, the safety time-out will activate. The machine will go to the main menu before the material comes out of the nozzle. You need to repeat the filament change procedure.	

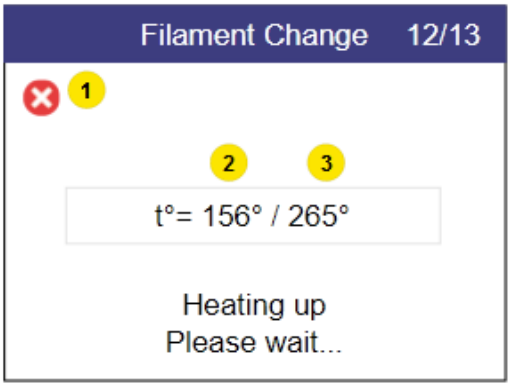
10	Set the lever into the 2nd position.	
11	The filament should start coming out through the nozzle.	

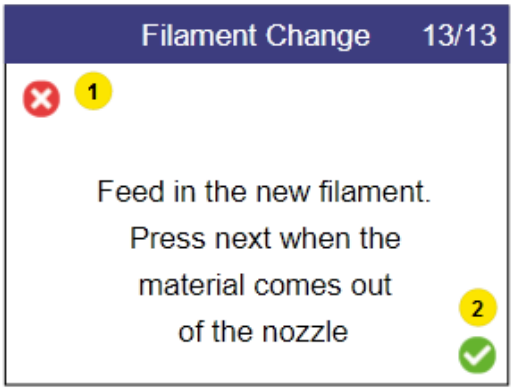
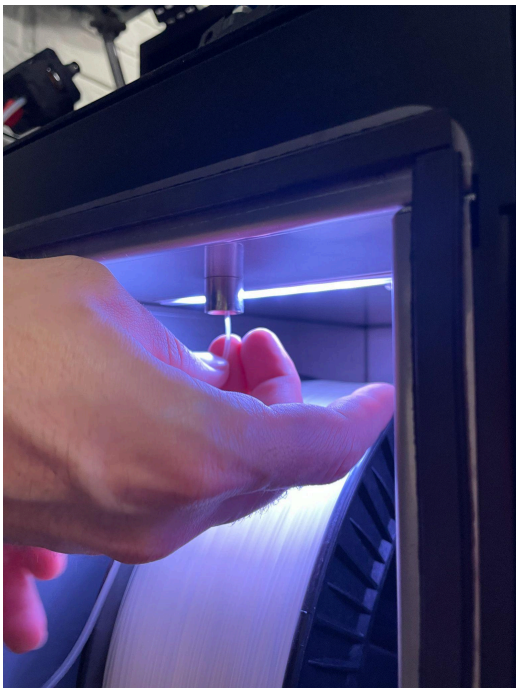
12	Close the lid of the filament chamber.	

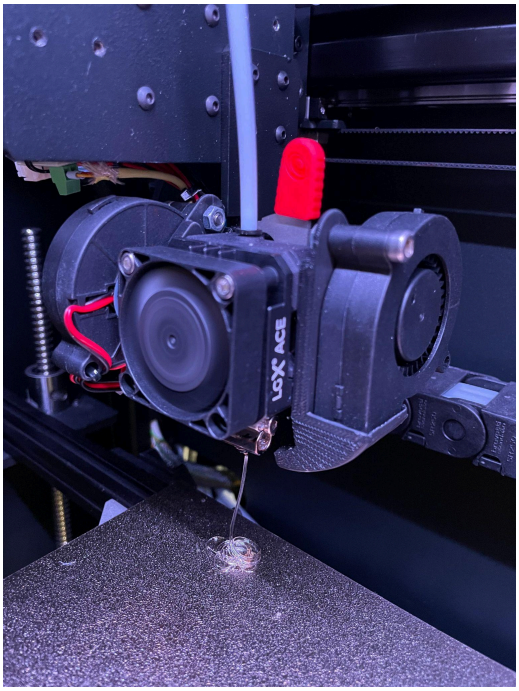
8.4 Filament load/change procedure - on-screen instructions

1	Enter the filament change menu by pressing the *filament change* button (1)	

2	**REMOVING THE OLD FILAMENT** The printer will automatically begin to heat up. The procedure will continue once the target temperature is reached. During heat up both the current temperature (2) and the target temperature (3) is shown. To abort the procedure, press the *cancel* button (1).	
3	When target temperature is reached, the printer will start a procedure to unload the filament. Once the filament is ready for removal, pull out the old filament and press the *continue* button (2). To abort the procedure, press the *cancel* button (1).	
4	Cleaning the nozzle is optional. For the first-time setup, press *NO* (2) to go to the next step. To abort the procedure, press the *cancel* button (1). **IMPORTANT:** Cleaning the nozzle is strongly recommended to be done after every 1kg (1 spool) of material has been used. For guidance how to do that, please see Cleaning the print head	

6	**INSTALLING THE NEW FILAMENT** The printer will automatically begin to heat up. The procedure will continue once the target temperature is reached. During heat up both the current temperature (2) and the target temperature (3) is shown. To abort the procedure, press the *cancel* button (1).	

7	Once the printer has reached the target temperature, it will automatically start an attempt to extrude. Insert the filament through the filament tube and push it down until the print head grabs it. Then release the filament and look under the print head.	 

8	Once the print head begins to extrude filament with consistent shape and speed, press the *confirm* button (2) on the LCD screen. The filament change procedure is now complete. To abort the procedure, press the *cancel* button (1).	

9 Bed leveling

9.1 What is Bed leveling

It is an essential requirement of the 3D printing process that the print head is always at a constant distance from the printing surface (print bed) while printing the bottom of the object.

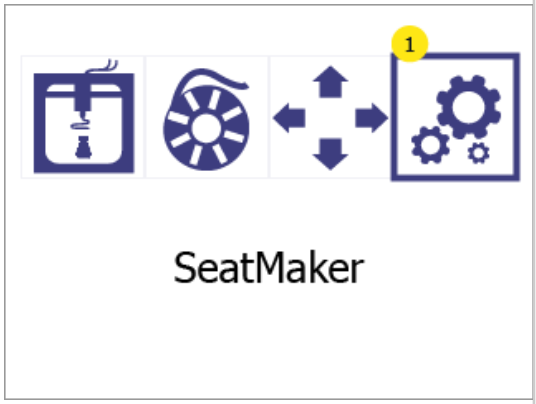
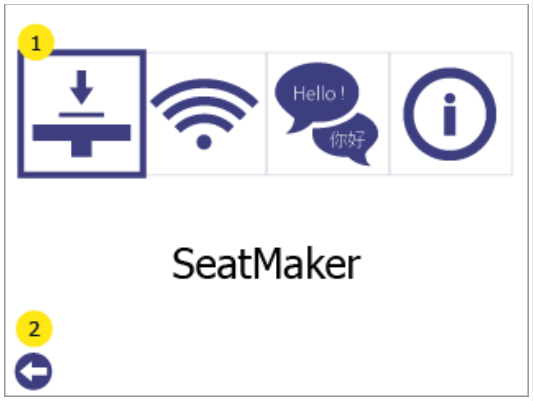
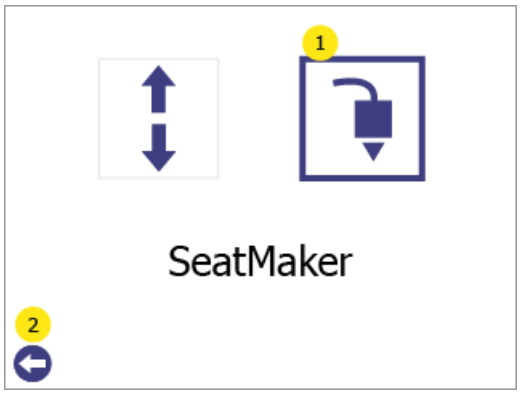
If the distance is too big, the extruded material will not stick to the printing surface and will be dragged around by the head.

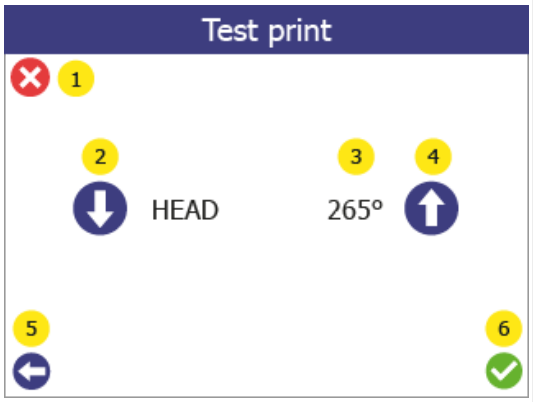
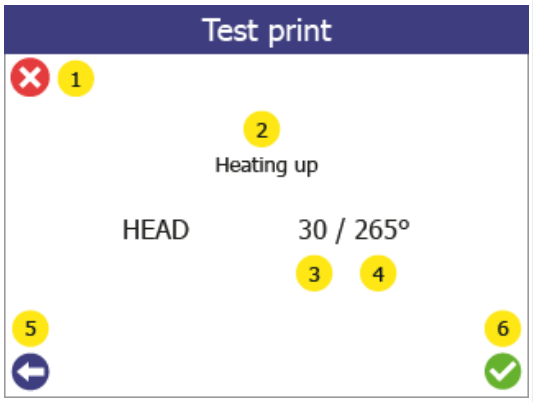
If the distance is too little (or the head and bed are touching), material will not come out of the head, which may result in clogging (the material will get stuck inside the head and additional maintenance will be required to bring the printer back in operating conditions)

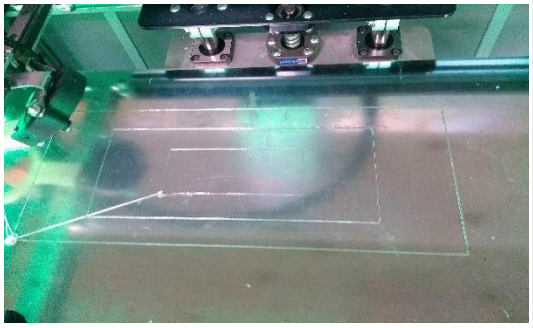
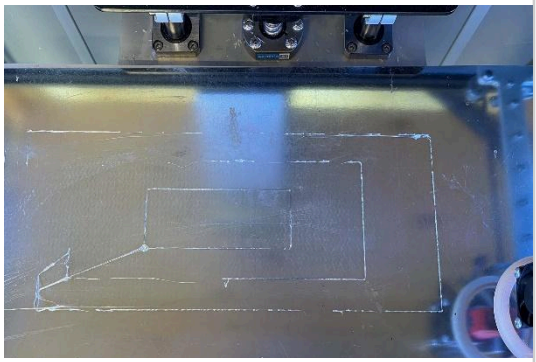
Embrace SeatMaker 3D printer features an algorithm for correcting imperfections in the bed level. However, sometimes the reference height (starting point) parameter is required to be adjusted with the help of the user.

9.2 How to check if the bed is properly leveled

Checking whether the bed is properly leveled can be done by performing a test print. To do that:

1	Enter the *Settings* menu by pressing the *settings* button (1).	
2	Enter in the *Bed leveling* menu (1) Press Back (2) to go back to the main menu.	
3	Enter in *Test print* menu (1) Press Back (2) to go back to the *Settings* menu.	

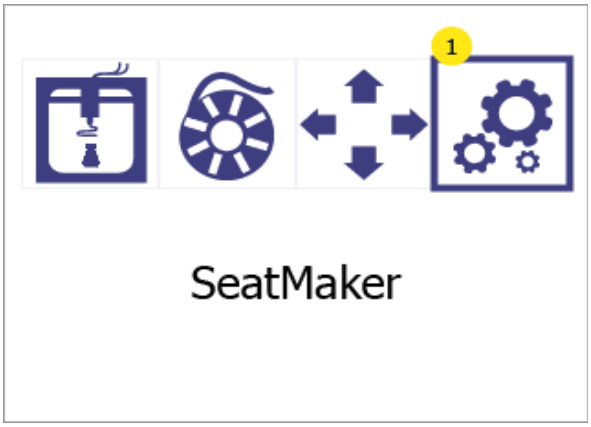
4	Choose the printing temperature of the print head for the test print. Change the target temperature (3) of the test print up (4) or down (2) If you are using the default CreaTECH 85A material, 265 °C is the correct value. Press the confirm button (6) to start. Press Cancel (1) to go to the main menu Press Back (5) to go back to Bed leveling menu	
5	When the test print starts, the screen will show the status of the printer (2), the current temperature (3), and the target temperature (4). Press Cancel (1) to stop the print and get back in the Main menu Press Back (5) to stop the print and go one menu back.	

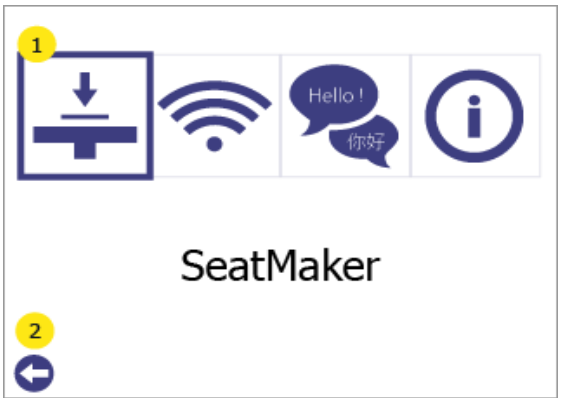
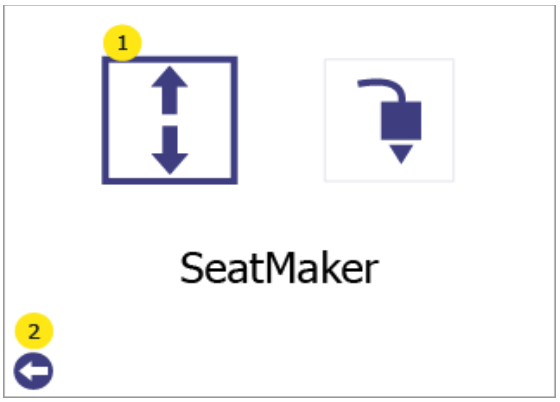
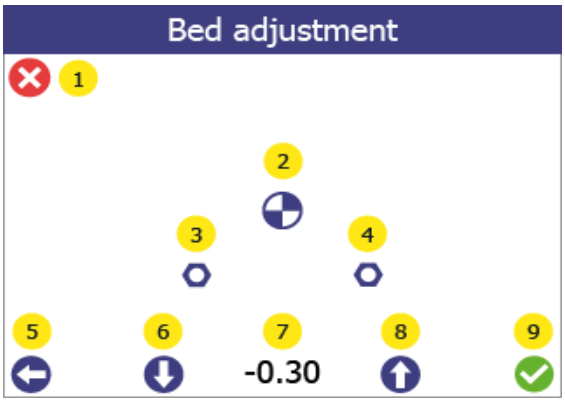
6	Test print successful - 3 connected rectangles with evenly extruded lines. - The extruded filament is clear and see-through. Test print failed - Uneven extrusion - Large parts with no extrusion - The material stuck to the print head instead of the bed. If the test print fail, do the leveling adjustment (see below)	 

9.3 Bed leveling adjustments

The *Bed adjustment* menu gives the possibility to fine-tune the bed leveling of the printer in order to achieve better adhesion (sticking) of the extruded material to the printing surface.

OBS: Before starting this procedure, make sure that the print head temperature is below 80 °C and the nozzle is clean (see Regular service)

1	Enter the *Settings* menu by pressing the settings button (1).	

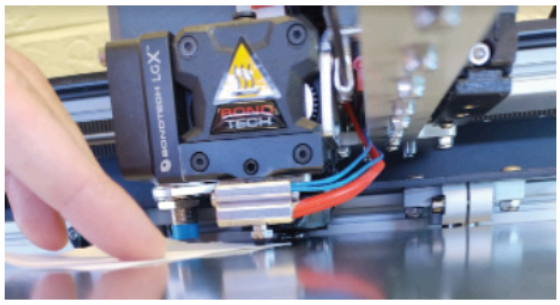
2	Enter in the *Bed leveling* menu (1) Press Back (2) to go back to the main menu.	
3	Enter in the *Bed adjustment* menu (1). **WARNING!** When you press on (1), the printer will start moving. Make sure that there are no objects or body parts inside the printing chamber. Press Back (2) to go back to the Settings menu.	
4	1. Press on the "*Reference point*" button (2). The printer head will move to the reference point, will do a measurement and then the print head and bed will move to "zero" position. Note: (3) & (4) are leveling points, used during Service procedure and should be ignored for now) 2. Take a piece of paper (for regular printer, from a notebook, etc) and try to fit between the print head and the printing surface without using force. 3. If the paper cannot fit in (distance is too short), press the *Down* arrow (6) to move the bed down until the paper can fit in.	

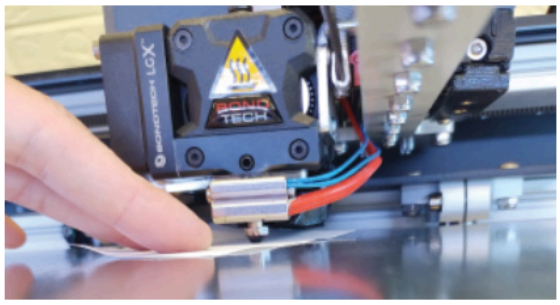
WARNING! Do not apply force with your hand to the bed, during this procedure.

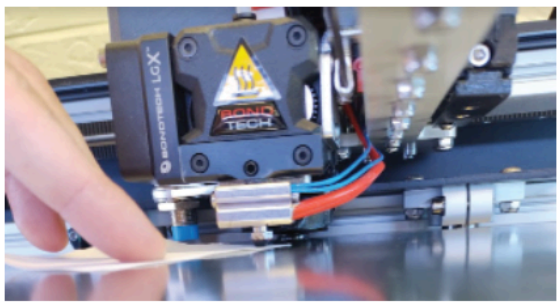
4. With the paper between the head and the printing surface, do the fine-tuning. Move the paper slightly back and forth while bringing the bed up one step at a time using the *Up* arrow (8) (each step is 0.05mm). Stop the operation when you feel that the paper cannot move smoothly anymore.
5. **Press the Down arrow (6) 3 times to lower an additional 0.15mm**.
6. Confirm the adjustment by clicking OK (9).

Click Home (1) or Back (5) to cancel everything (no changes will be saved)

After this operation, perform a test print (see How to check if the bed is properly leveled) to confirm that the leveling was successful.



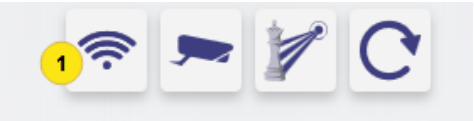
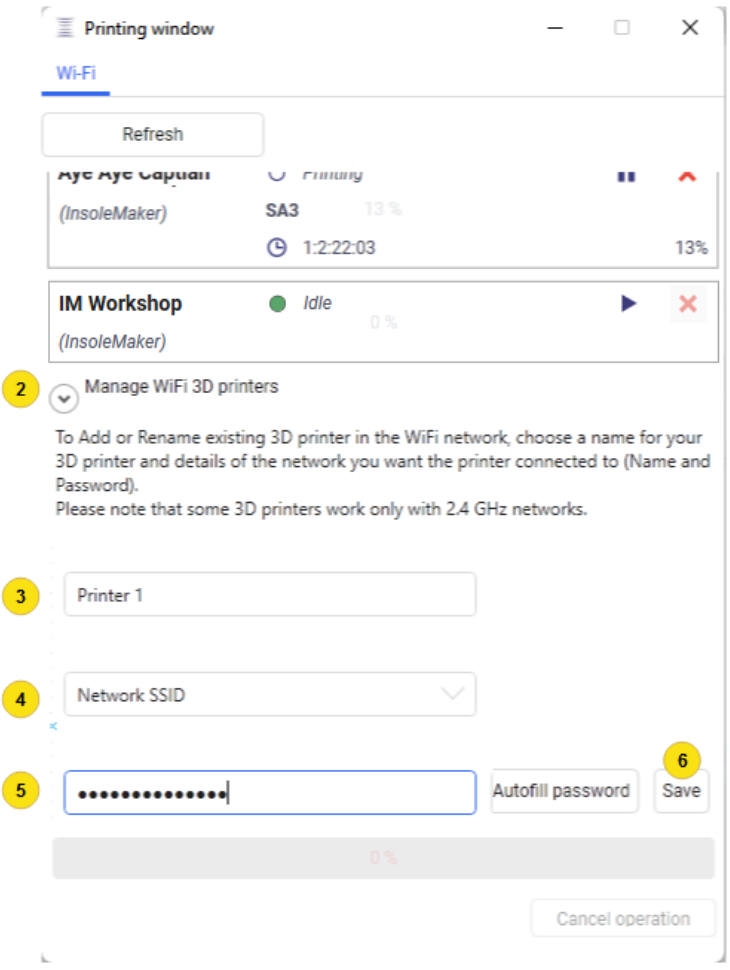




10 Wi-Fi setup

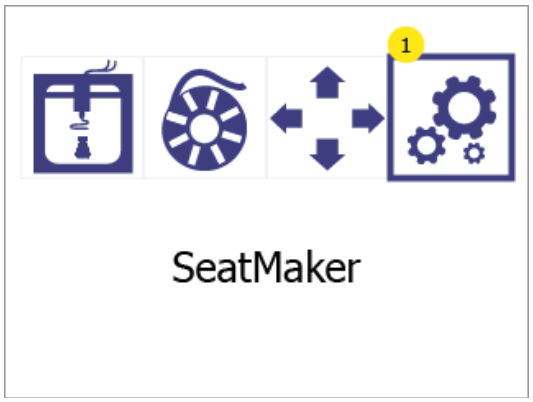
The WiFi feature gives users the ability to start, monitor, cancel or pause a print remotely to all printers in the same local network, using REALvision embrace.

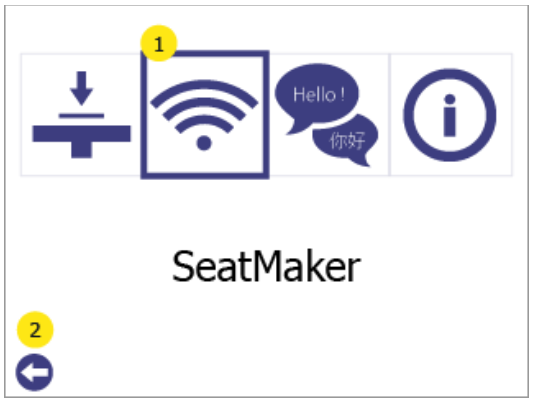
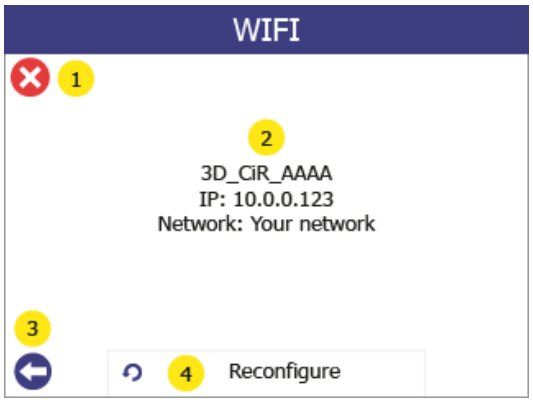
10.1 Connecting printer to the local WiFi network

1	Press on the WiFi icon from *REALvision embrace's* workspace. The WiFi printing window will appear on the screen.	
2	Expand the "*Manage WiFi 3D printers*" menu.	
3	Select a nickname which will help you to easier identify the 3D printer	
4	Write or select from a drop-down menu the name of the WiFi network you want the printer to be added to	
5	Type the password of the WiFi network or in case this network is saved on the computer press on "Autofill password"	
6	Press "Save" and put the configuration file *wifi_config.cir* on the root folder of a USB stick IMPORTANT: The USB flash drive must be a FAT32 file format.	

10.2 Connecting printer to Wi-Fi

After the USB stick with the configuration file “wifi_config.cir” is prepared, do the following steps:

1	Power up the printer	
2	Plug the USB with WiFi configuration file into the printer. IMPORTANT: The USB flash drive must be a FAT32 file format.	
3	Open the Settings menu (1)	

4	Select Network settings (1) Press Back (2) to go back to the main menu.	
5	Select Reconfigure (4) Find the configuration of the printer in the network in (2). Press Cancel (1) or Back (2) to go back to the main menu.	
6	If successful, a confirmation message “Wi-Fi connected” will appear on the screen. At this point, the printer will be connected to the selected network, and the Nickname will appear on the printer LCD.	

11 Before starting a print

Before you start a print, a few things need to be inspected:

- ☐ The printing surface is placed on the print bed
- ☐ Bed is empty

  Make sure there is nothing on the printing surface (for example another printed object)
- ☐ Bed is clean

  If the printing surface is dirty (dust, grease, etc), the extruded material will not stick to the surface. Inspect that the surface is clean. For more information, see Cleaning the bed.
- ☐ Enough filament

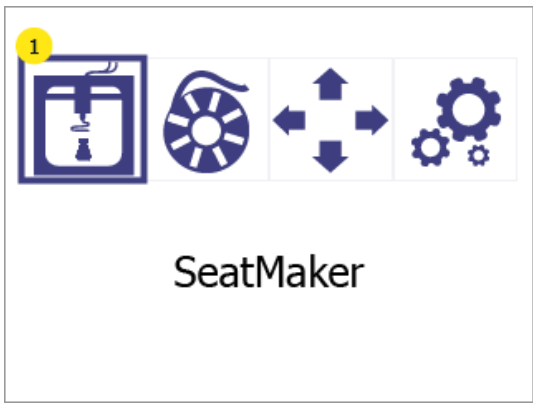
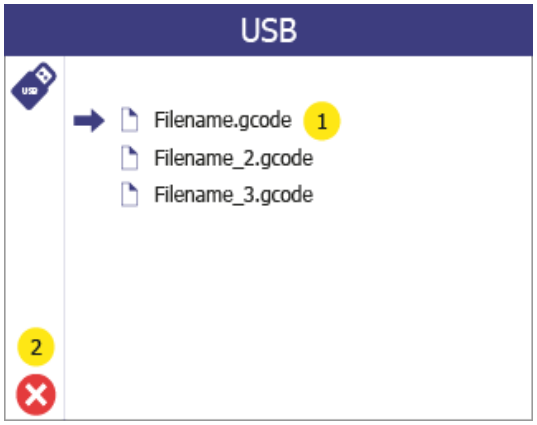
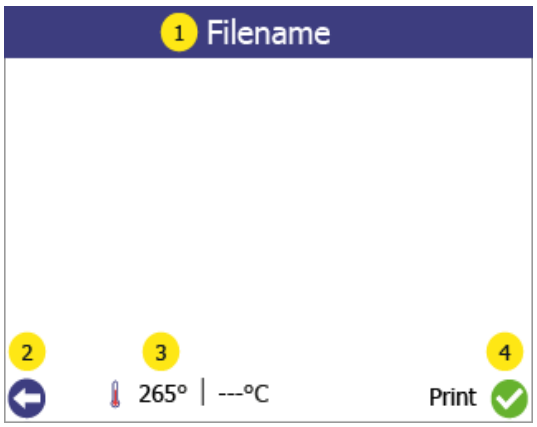
  Open the filament chamber and verify that there is enough filament left on the spool.
- ☐ Clean nozzle

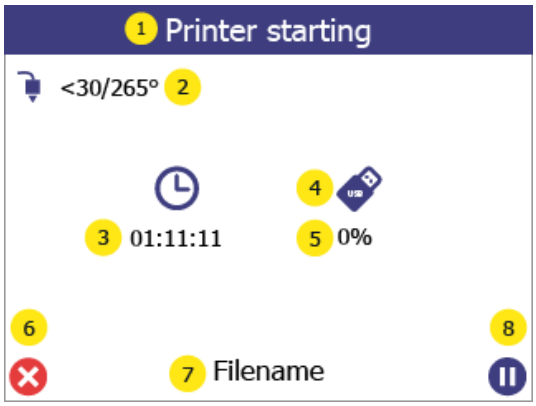
  From the previous usage, there might be material stuck to the nozzle of the print head. If this is the case, use the cleaning tool to remove it. For more information, see Cleaning the print head.

12 Starting a print

12.1 Print from USB

If the service allows for it, the printer can print directly from a USB flash drive.

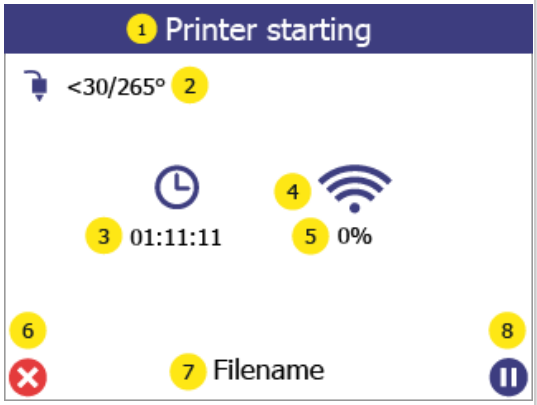
1	Enter the print menu by pressing on the print button (1).	
2	A list of all available print files will be shown (1). The arrow indicates which file is currently selected. To select a file, press on it (if not already selected) and then press on it again to accept the selection. Press the back button (2) to go back to the main menu.	
3	On the print preview screen, it is possible to see the filename of the selected file (1). If a different temperature than the one set in the print file is required it can be changed by pressing the temperature (3). To start printing press the continue button (4). Press the back button (2) to go one step back.	

4	The printing screen shows status of the printing process while printing: (1) shows the status of the printer. (2) shows the current and target temperatures. (3) shows the time remaining of the print job to be done. (4) shows if the printer is reading the print file from USB. In this case do not remove the USB flash drive from the printer, because this will stop the print job. (5) shows the progress of the printing in %. (7) shows the filename of the object being printed. To pause the print, press the pause button (8). For more information see Pause menu. To abort the print, press the cancel button (6).	

12.2 Print over Wi-Fi

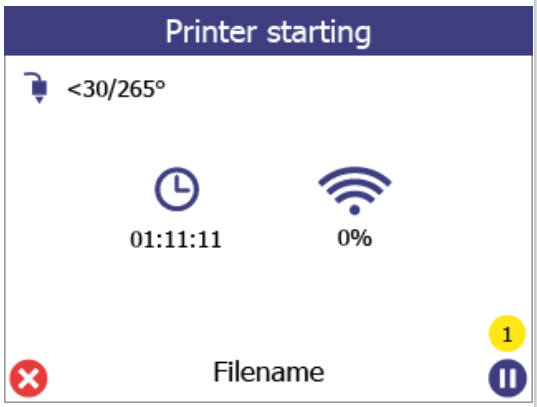
Printing over Wi-Fi is started directly from REALvision embrace, and the file is automatically transferred to the printer's internal storage

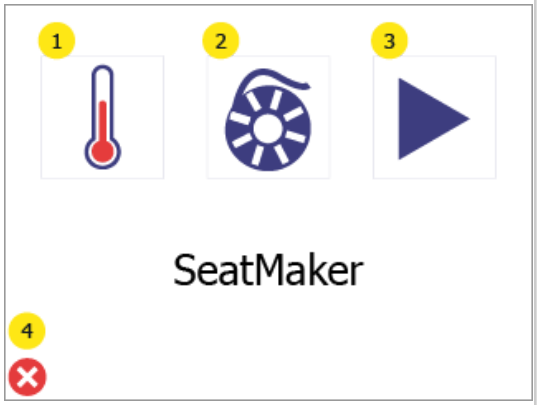
1	The printer will show that is starting a print over Wi-Fi	
2	The printing screen shows the status of the printing process while printing: (1) shows if the printer is currently heating or printing.	

	(2) shows the current and target temperature. (3) shows the time remaining of the print job to be done. (4) shows if the print was started over WiFi. (5) shows the progress of the printing in %. (7) shows the filename of the object being printed. To pause the print, press the pause button (8). For more information see section 11.3. To abort the print, press the cancel button (6).	

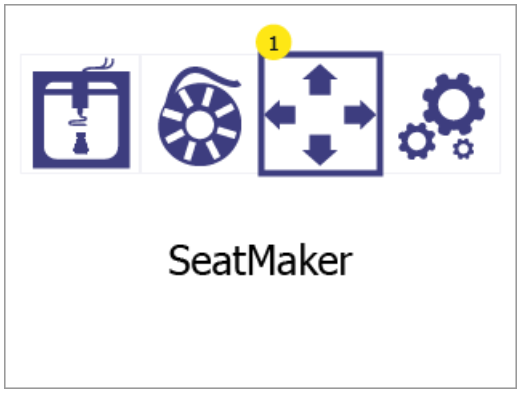
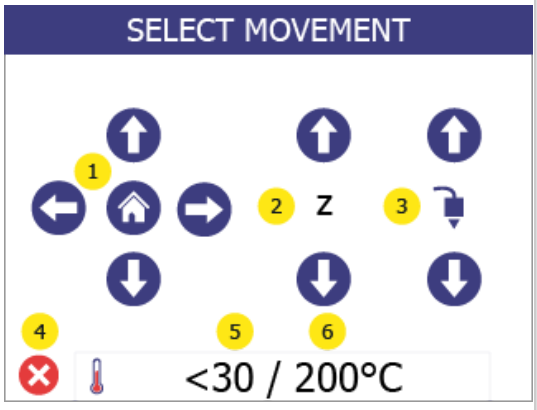
12.3 Pause menu

The pause menu can be accessed at any time during the print

1	During a print, access the pause menu by pressing the pause button (1).	
2	From the pause menu it is possible to: Change the target temperature (1). Change filament (2) (refer to Filament change/load) Resume printing (3).	

	To abort the print, press the cancel button (4).	

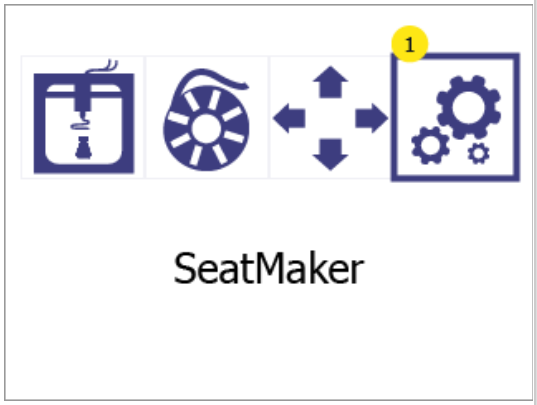
13 When the print is finished

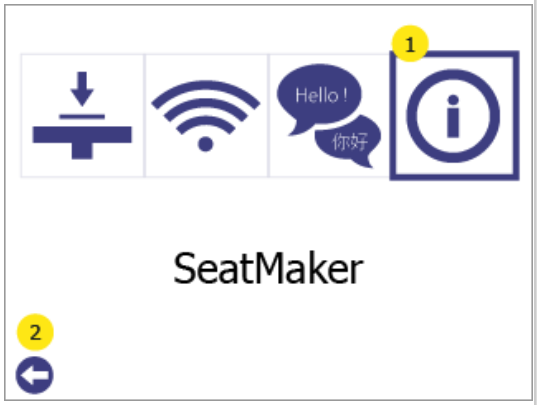
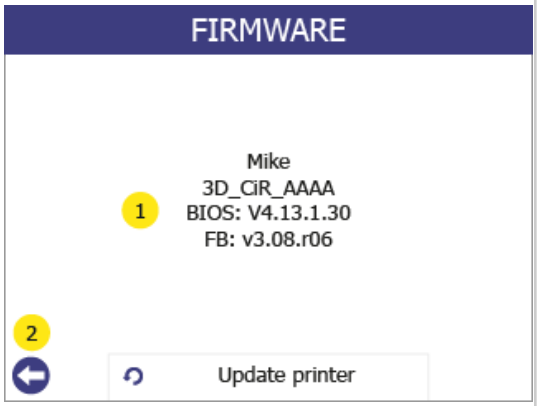
1	Enter the manual movement menu by pressing the manual movement button (1).	
2	Move the bed down by using the Z-axis arrow (2).	

3	Take the upper layer of the print bed out of the printer together with the print.	
4	Remove the print off slowly from the print bed	

14 Printer information and Updating printer firmware

14.1 Info menu overview

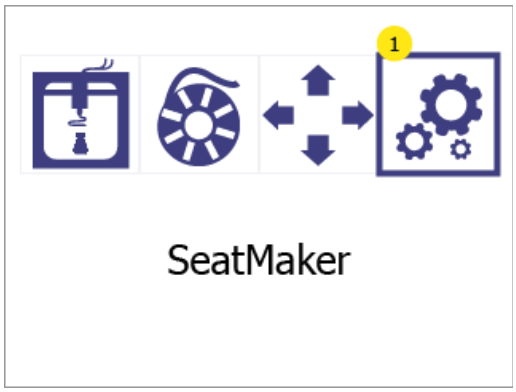
1	Enter the settings menu by pressing the settings button (1).	

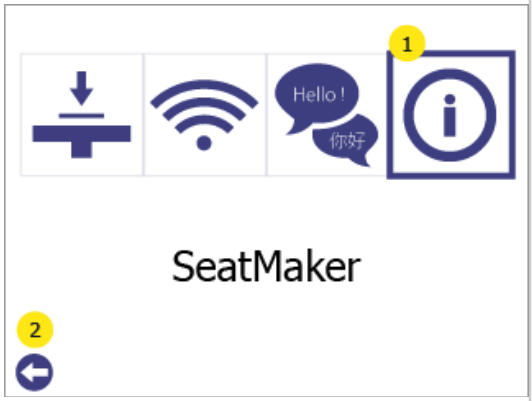
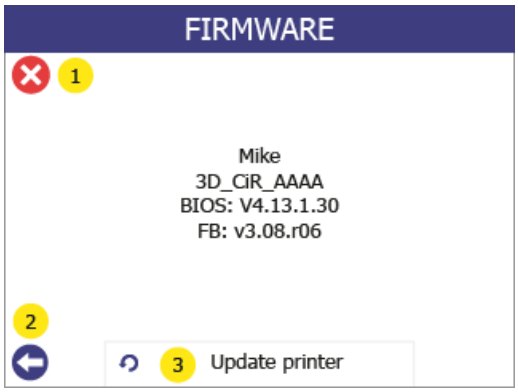
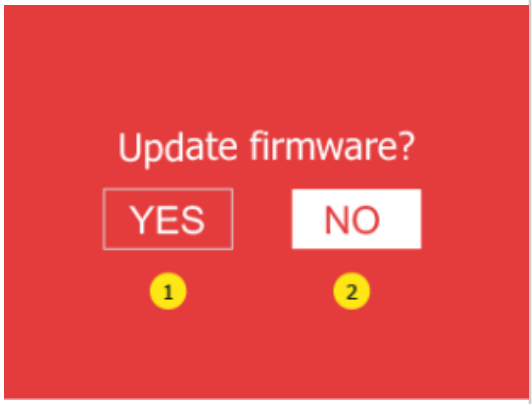
2	Enter the information menu by pressing the information button (1). Press the back button (2) to go back to the main menu.	
3	On the information screen, the following can be seen (1): • The printer model • The unique name of the printer. • Printer's BIOS version. • Printer firmware version. Press the back button (2) to go back to the settings menu.	

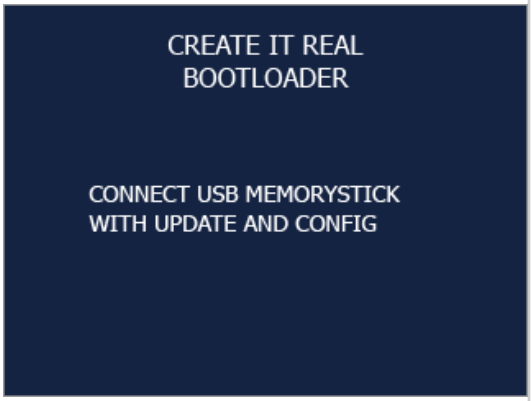
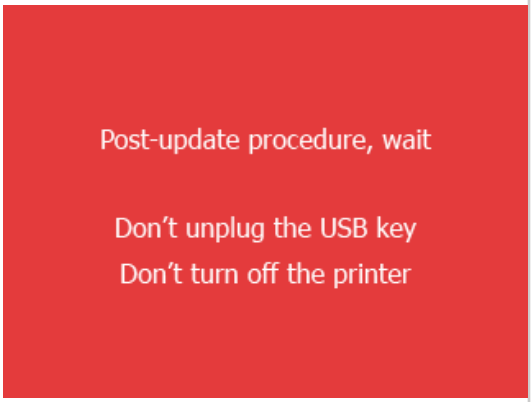
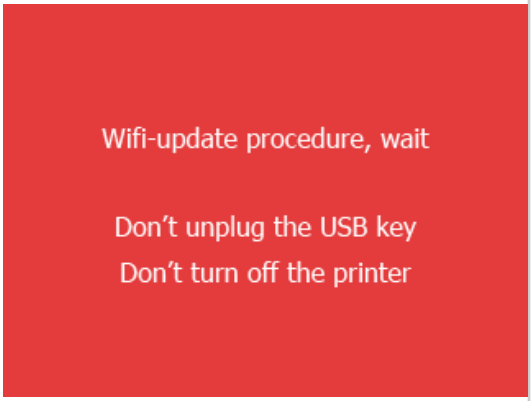
14.2 Firmware update procedure

For updating firmware, a USB key is necessary. Transfer the update files that are provided by Create it REAL to the root folder of a USB key, unplug the USB key, and then follow the steps below:

1	Power up the printer.	

		
2	Plug the USB into the printer. **IMPORTANT:** The USB flash drive must be a FAT32 file format.	
3	Open the *settings* menu (1).	
4	Go to the info menu (1). Press Back (2) to go back to the main menu.	

		
5	Select Update printer (3). Press Back (2) or Cancel (1) to go back to the main menu	
6	Click on “Yes” (1) to confirm. Press “No” (2) to go back to the main menu.	

7	Wait for the update to be installed.	 
8	Let the printer start without removing the USB from the printer.	 

9	Wait until a green screen with confirmation for the successful update and an OK button appears. Note that some update procedures may take up to 1 min.	

15 Regular service

To ensure the printer keeps printing as expected, regular cleaning is recommended. Both the print bed and the print head require cleaning.

15.1 Cleaning the bed

Every print will leave some oil residue from the printed material that over time will cause printed objects to stick less to the surface. It is recommended to thoroughly wipe clean the printing surface with isopropyl alcohol to remove any oil residue.

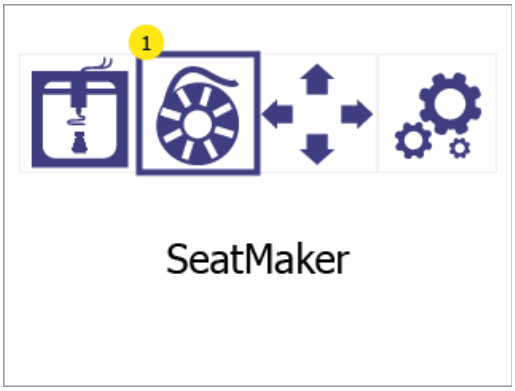
15.2 Cleaning the print head

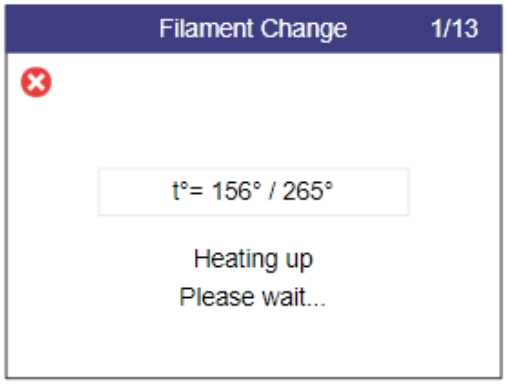
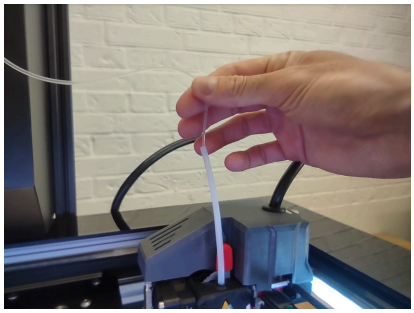
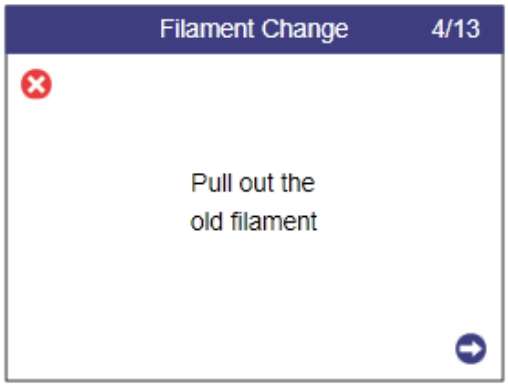
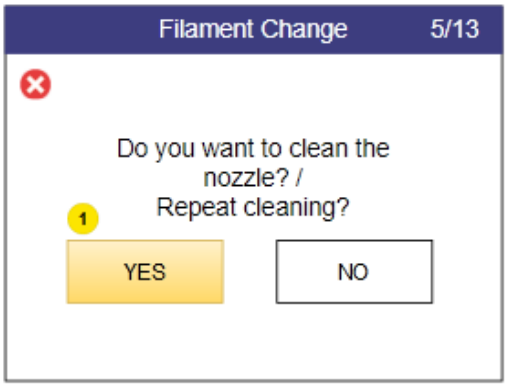
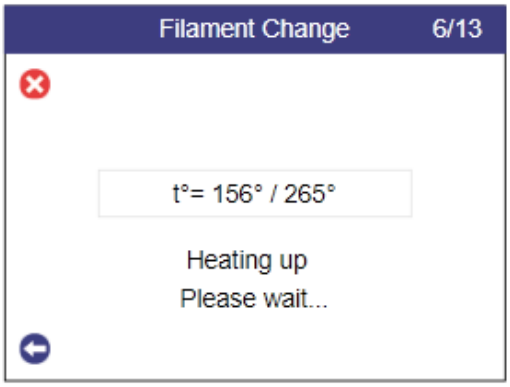
Cleaning the print head is a vital procedure that contributes to the quality of the printed objects by reducing the risk of clogging and maintaining consistent extrusion of filament.

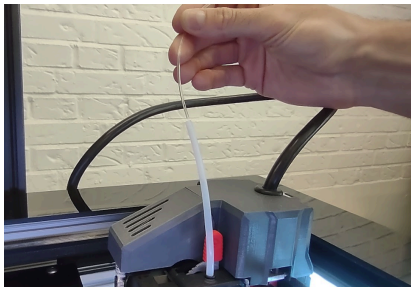
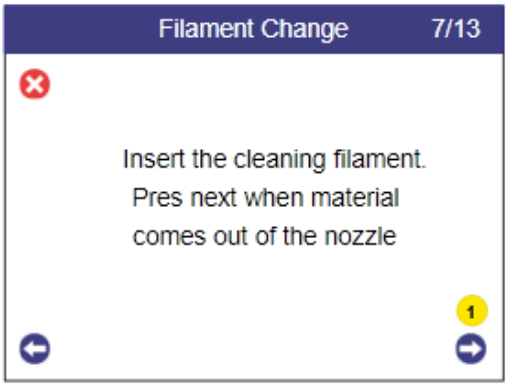
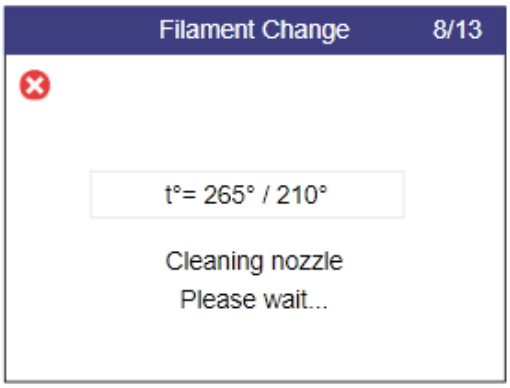
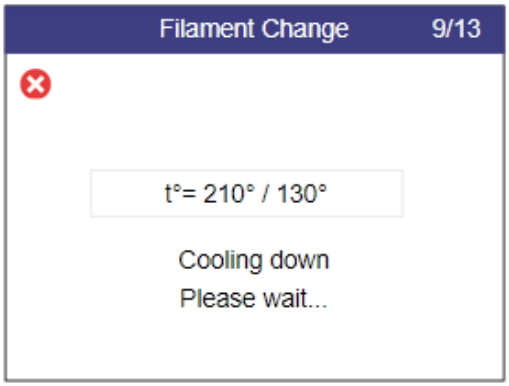
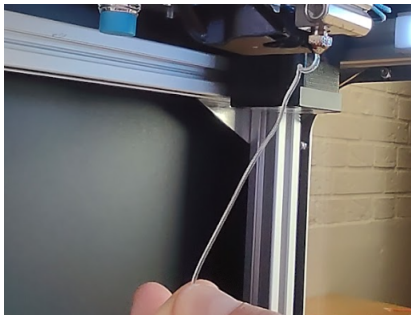
- We recommend cleaning the exterior tip of the printhead (the nozzle) on a daily basis, by using the cleaning tool included in the accessory box.

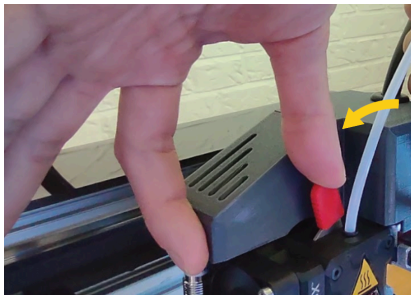
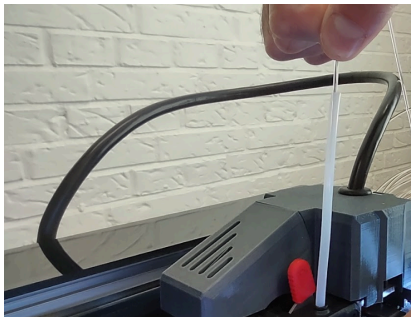
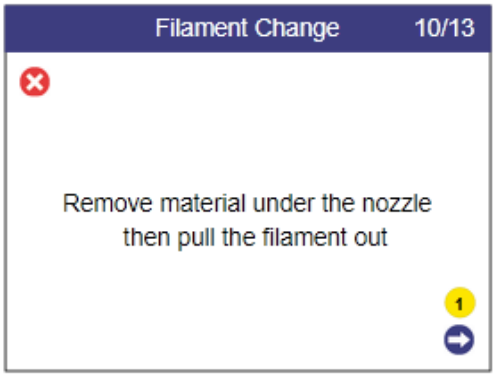
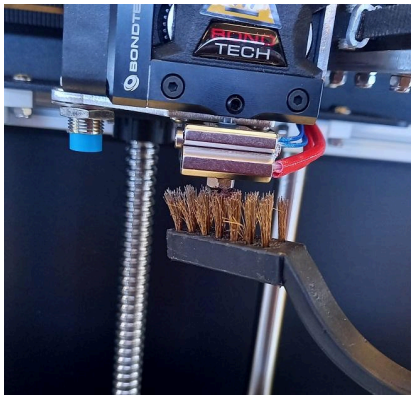
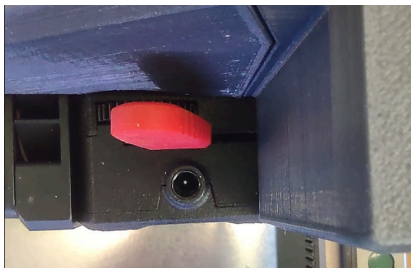
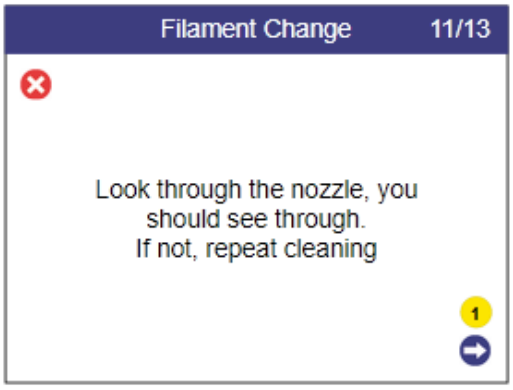
  Let the print head cool down first. Scrape off the nozzle until the tip is free from residue filament.

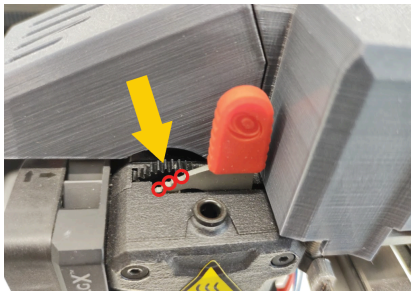
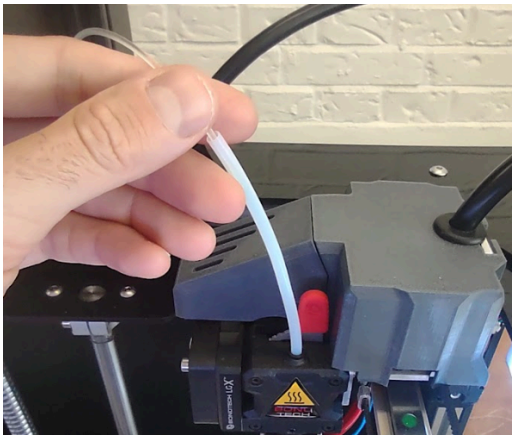
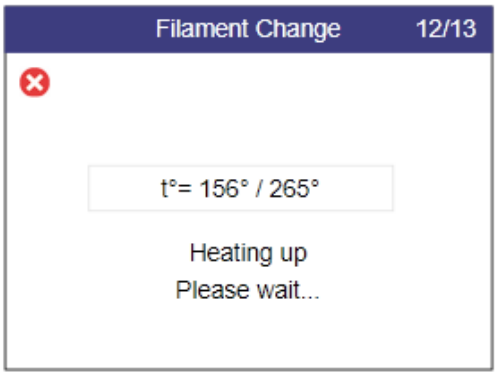
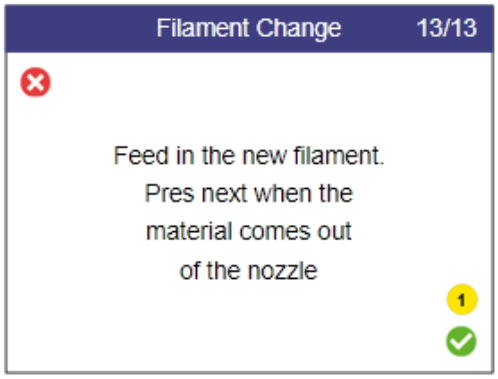
- We recommend to clean the interior of the nozzle every time a new filament spool is loaded. Use only approved cleaning filament during this process.
  To do this:

1	Go to the *filament change* menu.		

2	Wait for the heat up.		
3	Pull out the old filament and press *next* (2).		
4	Select *YES* (1)		
5	Wait for heat-up		

6	Insert the cleaning filament. When you see it coming out from the nozzle, press *next* (1)		
7	In this automatic step the temperature will start falling down while the material is being extruded. Note: You might hear some clicking noise. It is normal.		
8	In this automatic step the extrusion is off and the print head will cool down		
9	Remove the extruded material from the nozzle.		

10	Rotate the lever to idle / position 0 (anti-clockwise).		
11	Grab the cleaning filament and pull it out from the extruder.		
12	Using the provided brush, clean the nozzle from burned residues. **Warning**: The nozzle temperature is 110 degrees!		
13	Look through the nozzle. You should be able to see through the hole.		

14	Rotate the lever clockwise to position 3 and then insert new filament.		
15	Wait for the printhead to heat up.		
16	Insert the regular filament and when material starts to come out of the nozzle, press *confirm* (1) to finish the procedure.		

16 Troubleshooting

Each problem is presented with possible causes and their solution. Go through the list in the order presented. If a problem cannot be solved and described below, contact customer support: support@createitreal.com

16.1 Printed object not sticking to the printing surface

- The print surface is not clean. Wipe the printing surface with isopropyl alcohol (see Regular service).

- The printer height is wrong. Calibrate the height by following the bed leveling procedure (see Bed leveling).

16.2 Printer not extruding properly

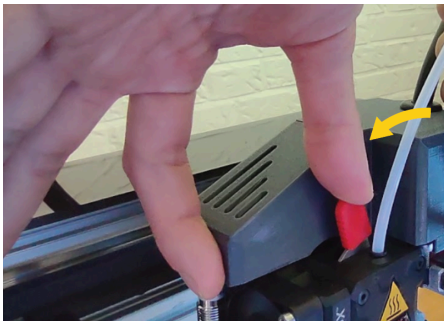
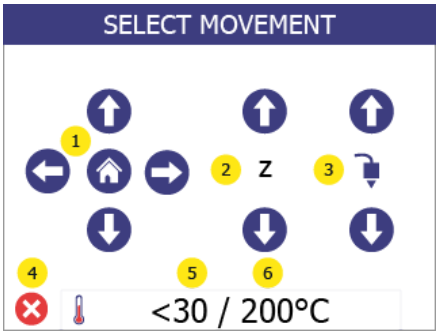
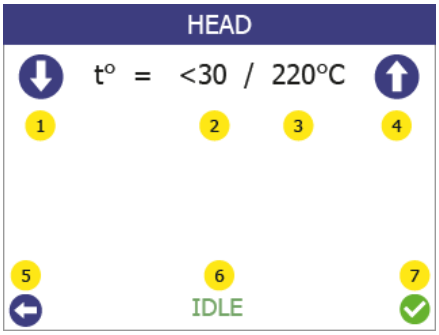
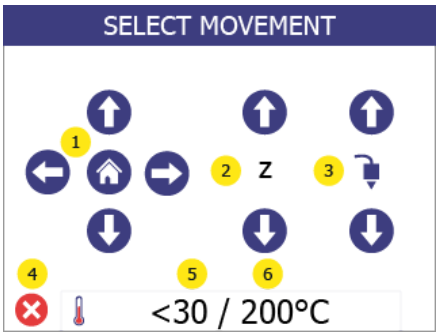
- Print bed is too close to the print head on the first layer. Calibrate the height by following the bed leveling procedure (see Bed leveling).
- Printer has run out of filament.
- Filament is tangled inside the filament chamber. Inspect the filament spool.
- The filament is stuck inside the print head. Using the filament change procedure, remove the filament, cut a piece off it and re-insert it.
- The printer is clogged, and the print head needs cleaning. Perform a nozzle cleaning procedure (inside & outside).
- The printed part is rough on the surface with small bubbles. This may happen if the filament is moist because the filament chamber is OFF, or it has been stored in a non-controlled environment.
    - Check if the filament chamber is disconnected.
    - Change the filament with one that has been stored in a controlled environment.
    - Leave the moist filament in the (powered) filament chamber without printing for a day to dry out.

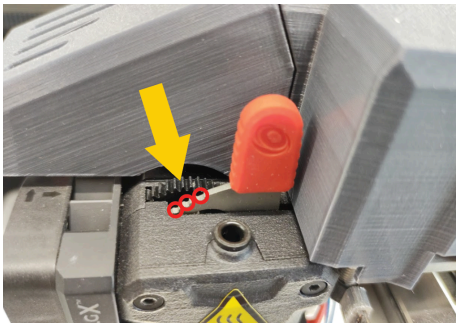
16.3 Object not completed or not printed properly

- The filament ran out before the print could finish. Check if the filament needs to be changed.
- Printer firmware error. Check the printer screen for error messages.
- Something was inside the workspace during print, blocking the printer. Check the workspace for foreign objects.
- The power to the printer is cut out during printing. Check that the printer is ON.

16.4 The print head does not extrude and I hear a clicking noise

In some cases, filament could get stuck inside the gears. If the regular filament change procedure does not help apply the following:

1	Rotate the lever to idle / position 0 (anti-clockwise).	
2	Go in Manual control and enter the heating menu (5) or (6)	
3	With the arrows (1 and 4) set the target temperature to **265°C** and press *confirm* (7). Then go back to the Movement menu by pressing *back* (5)	
4	When the temperature reaches 265°C (the purple lights in the printer will start blinking), grab the filament with one of your hands and start pulling. While pulling press and hold the extruder *Up* arrow (3) for 5 seconds. After, while still pulling, press and hold the extruder *Down* arrow (3). After 5-10 seconds the filament should come out.	

5.	Cut the deformed piece of filament; Put back the lever to position “3”; Go to the Filament change menu and follow the instructions to install the filament.	

If the filament comes out, but after further attempts to install it gets clogged again, perform a Print head cleaning procedure.

If the solution does not help and the filament is still stuck, contact customer support: support@createitreal.com

17 Technical specifications

Printer dimensions and weight (WxDxH)	930 x 1060 x 1450 (1900) mm 100 kg
Print area (WxDxH)	600 x 600 x 640 mm
Enclosure	Fully enclosed
Resolution (Z)	0.1 - 0.6mm
Power requirements	230V AC 50 Hz (1.5A); 120V AC 60 Hz (3A)
Power consumption	Normal operations: < 150 W Idle: < 20W Peak usage: max 1.5kW (only few minutes for warm-up object release)
Operating room temperature	5–40 °C
Operating conditions	In an environment protected from excessive dust
Transportation package (WxDxH, kg)	1100 x 1200 x 1800 mm 130 kg