embrace InsoleMaker - The user manual

Revision	Change	Date
1.0	Initial version embrace InsoleMaker - The User Manual	January 2023
1.1	Chapters 4.9 and 4.10 - filament chamber installation to match embrace InsoleMaker v1.1 mounting bracket. Chapter 4.3 - update of the content of the box Chapter 14.2 - added “cleaning with brush”	January 2023

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1 Intended use

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

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 authorised 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.

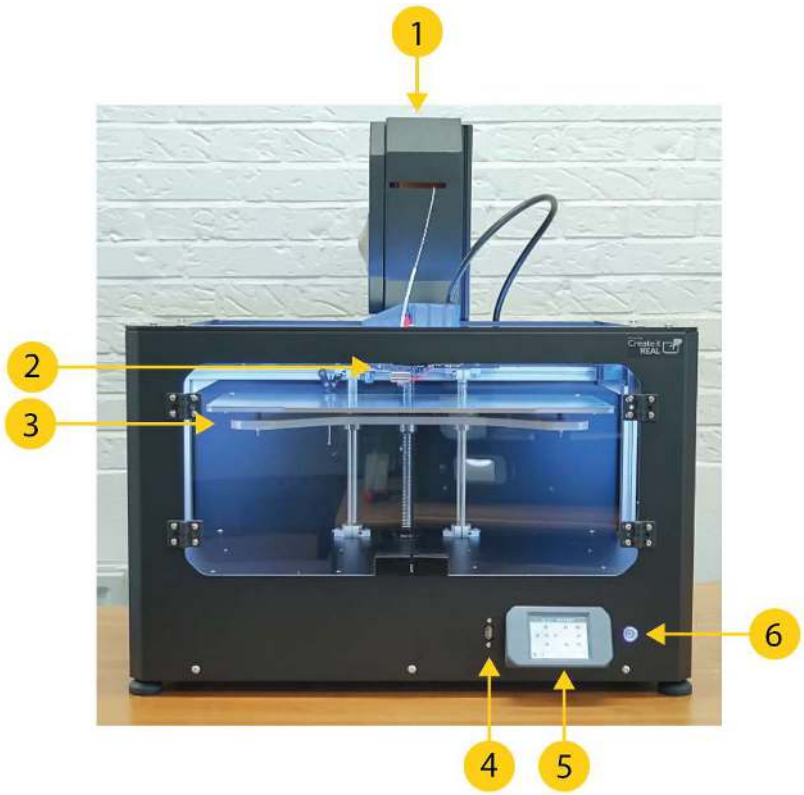
2. Print head
   The material extrusion system.

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. On/off button
   Controls printer's Stand-by mode.



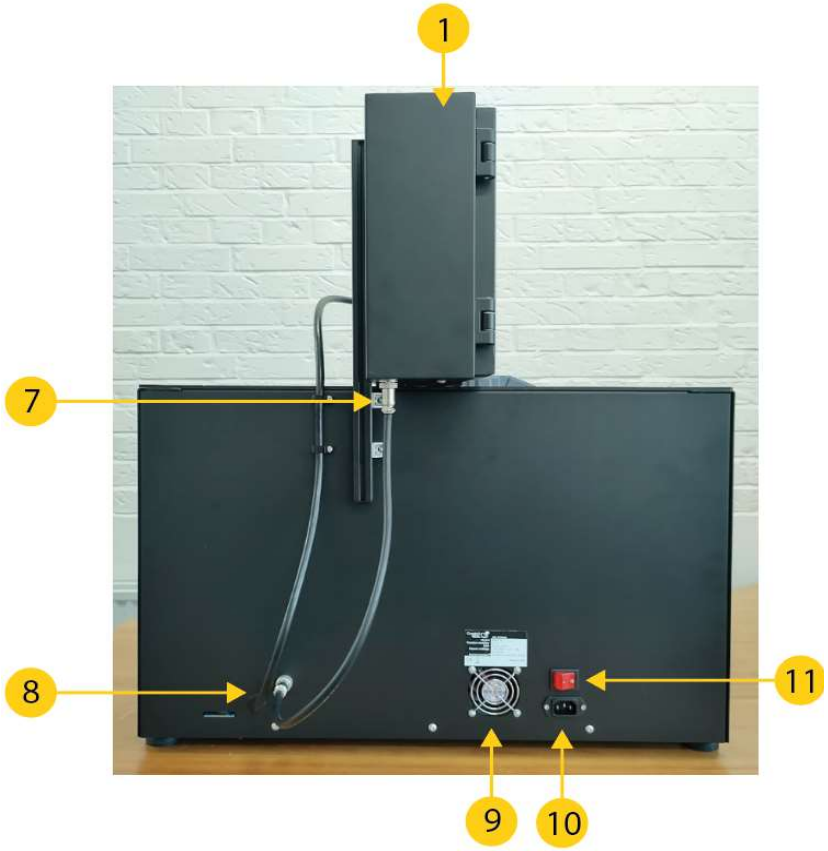
7. Filament chamber power cable
   Cable supplying power to the filament chamber.

8. Print head cable
   Power and signal cable harness for the printhead.

9. Exhaust fan
   Ventilation for electronics chamber.

10. AC power plug
    Input plug for the mains power.

11. Power switch
    For controlling the flow of power to the internal power supply and the filament chamber.



3 General Safety Information

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

Following signs are used with the Safety Instruction.

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

Warning 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 InsoleMaker 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 InsoleMaker 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 state. The safe conditions to open the front panel/door and reach inside the chamber are "Paused", "Idle" and “Print done” signalled by steady or blinking green light respectively.

All other light colours 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, 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 InsoleMaker 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 authorised 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 InsoleMaker 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 InsoleMaker 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 earth connection for power.

For optimal working position of the operator, it is recommended to place the printer on a table, desk or other surface that is elevated approximately 80-120 cm above the floor level. Please bear in mind that the machine weighs 37.5kg.

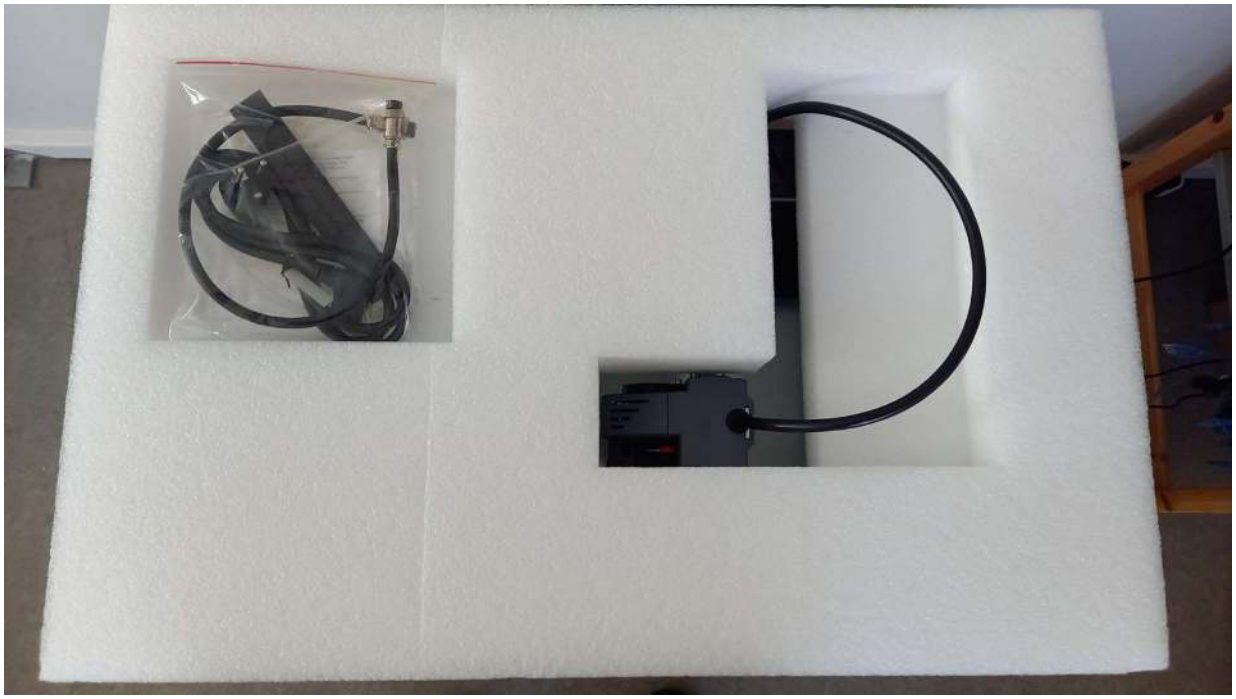
For standard operations, only access from the front side of the machine is necessary.

4.2 Opening the box

To access the printer, remove the top cardboard cover. This will reveal the printer with its protective foam.

4.3 What is inside the box

On top of the protective foam you will find a small bag with items of the printer.



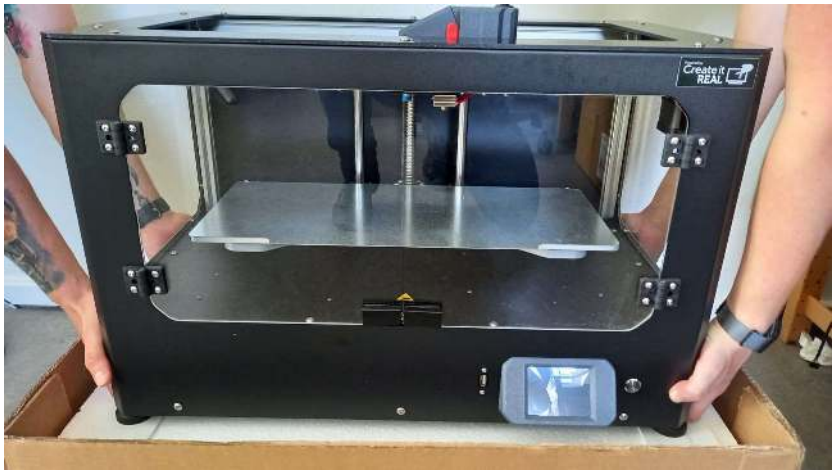
In the bag, you will find:

1. AC power cable for the printer.
2. Two small 1.5mm thick plates.
3. Filament chamber cable.
4. Filament tube.
5. Nozzle cleaning brush.
6. Cleaning filament.
7. 3mm hex key

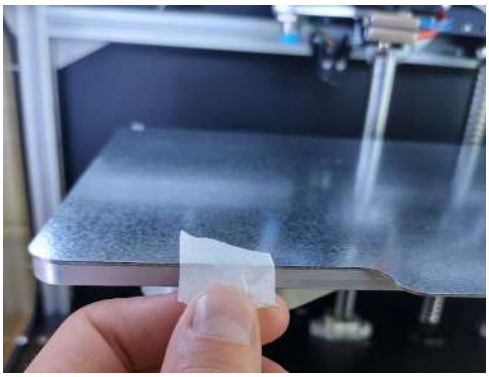
4.4 Lifting the printer

To lift the printer, grab it from the bottom.

WARNING: Since the machine weighs 37.5kg, it is highly recommended to be two people when lifting it – one from each side.



4.5 Removing transportation fasteners

1	Cut off the zip tie holding the printer moving parts in place for transport.	
2	Remove the tape holding the printing surface onto the print bed.	

4.6 Power the printer

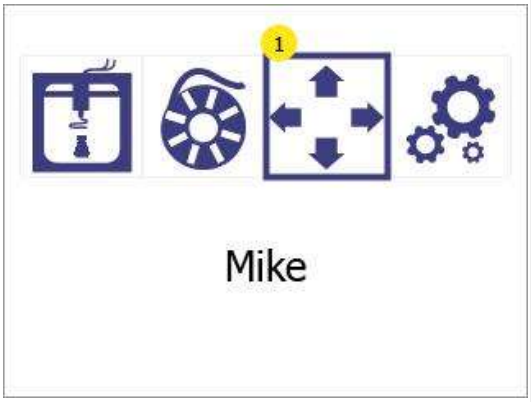
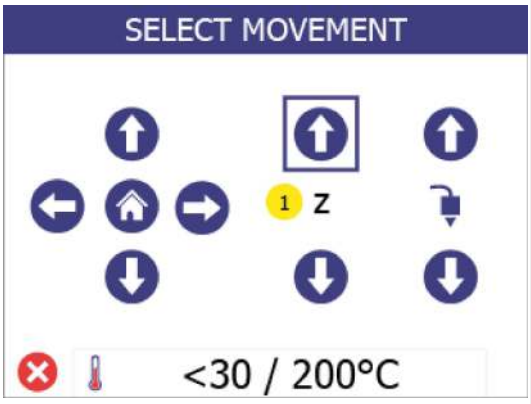
1	Plug the provided standard IEC AC cable into the connector located on the printer's rear side. Plug the other side of the cable into the power socket with earth connection. **IMPORTANT:** The red switch must be in 0 (OFF) when the power cable is being installed	
2	Turn ON the power switch on the back. This switch controls: 1. Internal power supply 2. Filament chamber heating	

3	Use the ON/OFF button on the front to get the printer out of Stand-by mode. Note: When in Stand-by, power is delivered only to the Filament chamber and the internal power supply. All other parts of the printer are OFF.	

4.7 Move print bed up

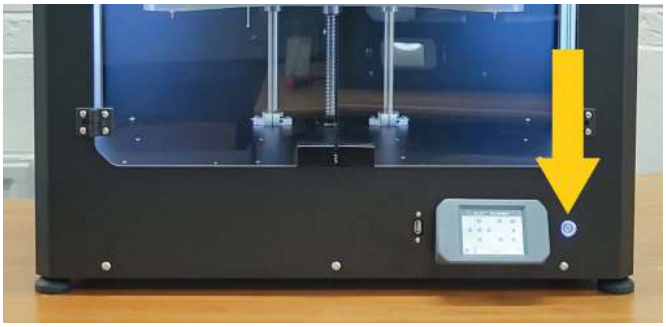
To be able to remove the large box from the printer, the print bed needs to be raised.

This is done using the manual movement menu:

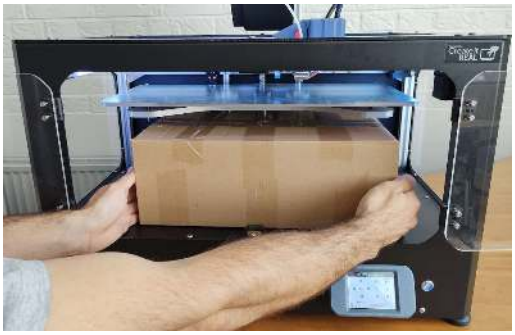
1	Enter the *manual movement* menu (1).	
2	Hold the “Z up” (1) button to move the bed all the way up (when it reaches the limit, the bed will stop moving). Note: It is safe to turn off the printer while in this menu	

4.8 Turn printer off

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

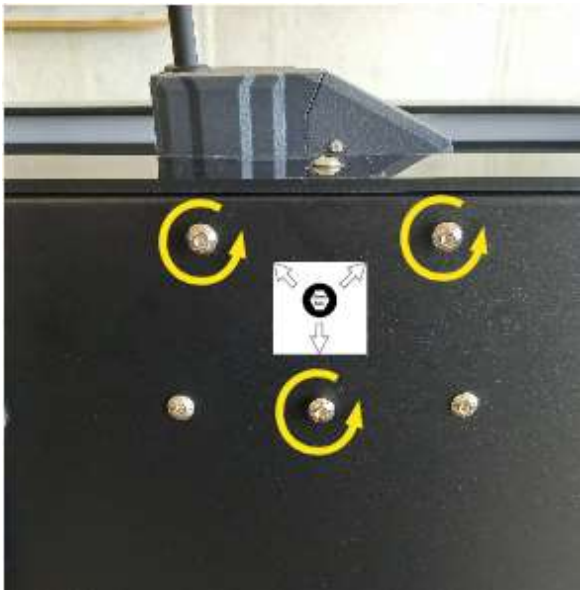
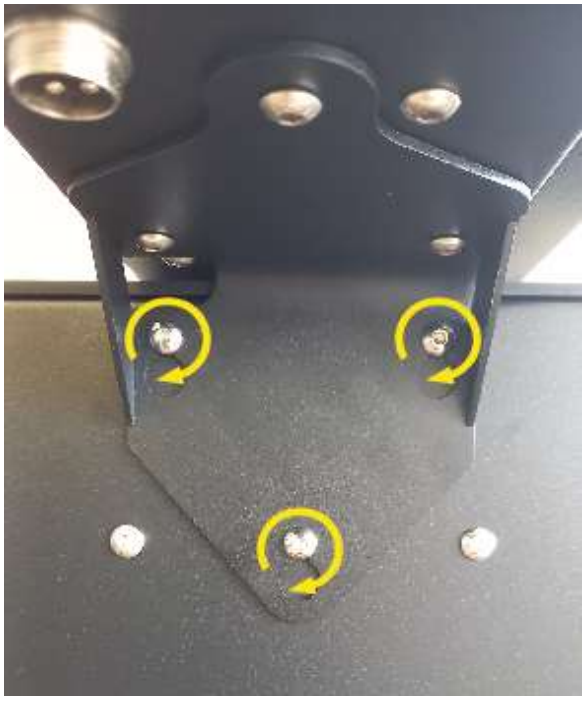
1	Turn the printer off from the front button	
2	Switch off the AC power switch	

4.9 Remove large accessory box

1	With the bed raised, the large cardboard box can now be removed from the printer	
2	Inside the box you'll find the filament chamber (1).	

4.10 Mount the filament chamber

For this operation, turn the printer such that you have access to its back.

1	Locate on the back of the printer the three filament chamber screws and loosen them about 2mm from the printer pane using the provided 3mm hex key.	
2	Slide the filament chamber onto the three bolts and tighten them.	

4.11 Connect the chamber

Connect the 4-pin connector to the filament chamber and screw it tight. Connect the other end of the cable to the printer in the same way.

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.

4.12 Filament chamber functionality

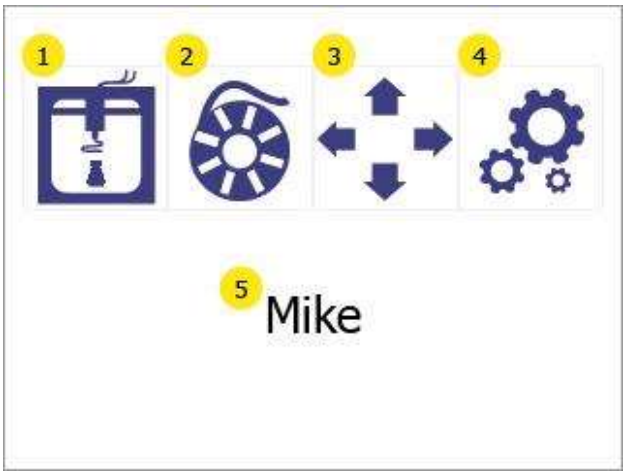
The filament chamber both holds the filament spool in place, but also keeps it in optimal conditions of temperature and humidity.

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.

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 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

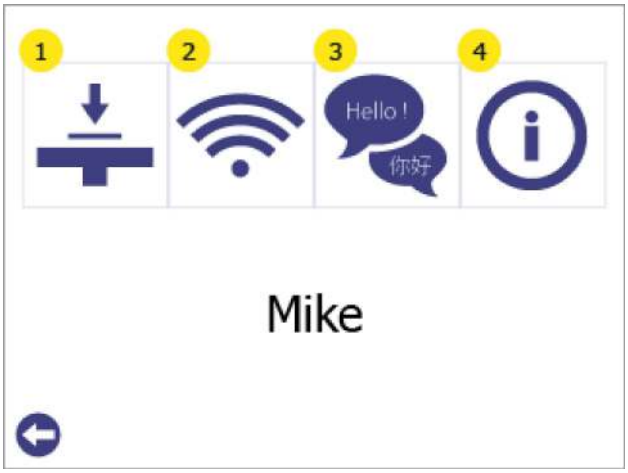
4. Settings menu
Gives access to an additional menu, where you can find:

1. Adjust the bed levelling
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 levelling
Give access to the bed levelling menu

For more information see Bed levelling

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.

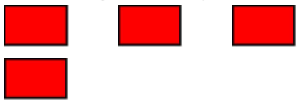
For more information see Language selection

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

For more information see Printer information and Updating printer firmware

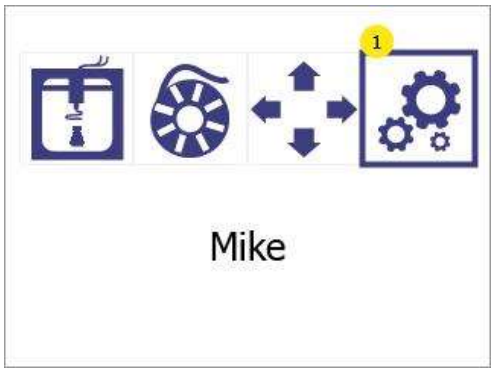
5.3 Printer lights

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

Colour 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 heating 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.

6 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 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.	

7 Filament change/load

7.1 When to do a filament change procedure

Using the filament change procedure is necessary when:

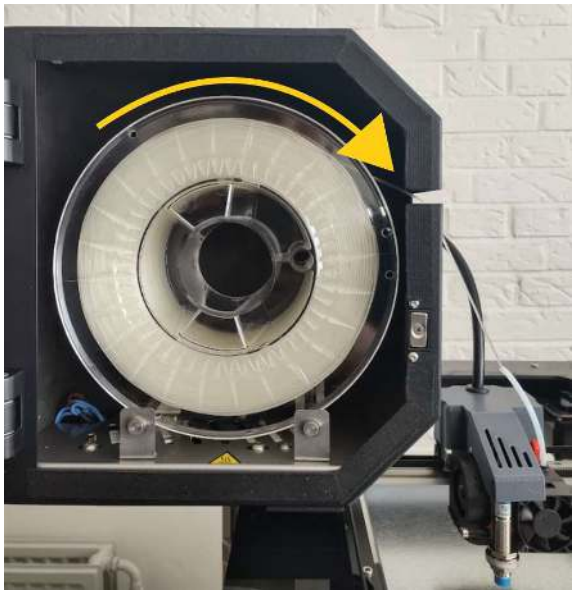
- Inserting filament for the first time
- Changing from an empty spool to a new spool
- Adding a spool to a printer with no filament
- Removing filament from a printer

7.2 Filament change preparations

7.2.1 Install filament spool

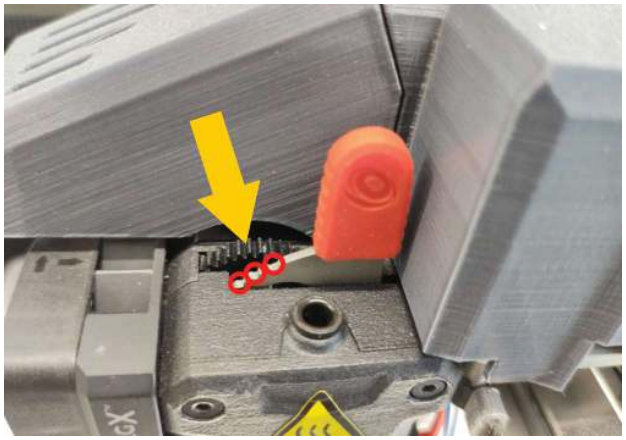
When installing a filament spool into the filament chamber, the spool must be oriented correctly to avoid issues.

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



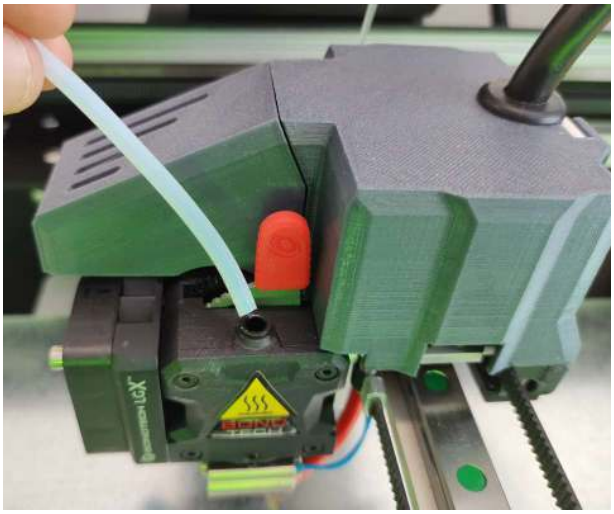
7.2.2 Check lever position

To ensure that the extruder is ready to print, the position of the lever should be on position *3*. In this position 3 indents are visible.



7.2.3 Attach the filament tube

Insert the 10cm tube in the printhead inlet.



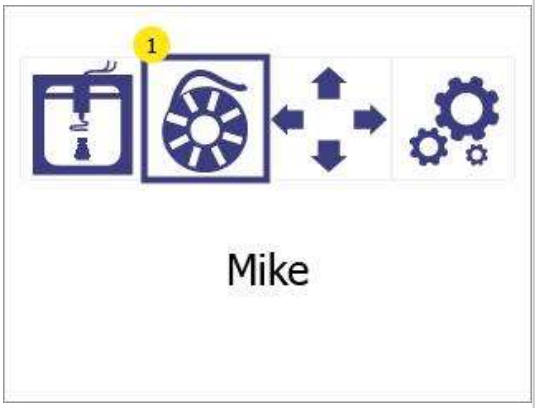
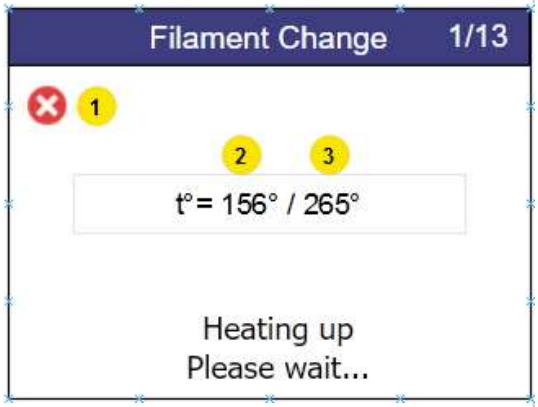
7.2.4 Inspecting the filament

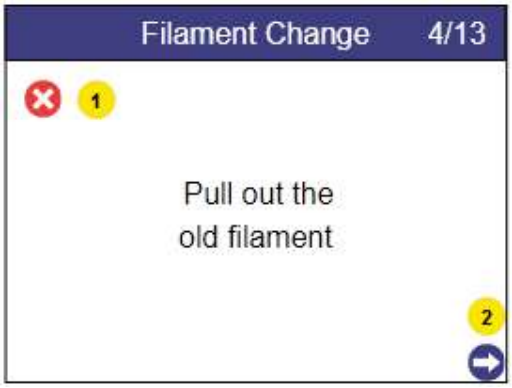
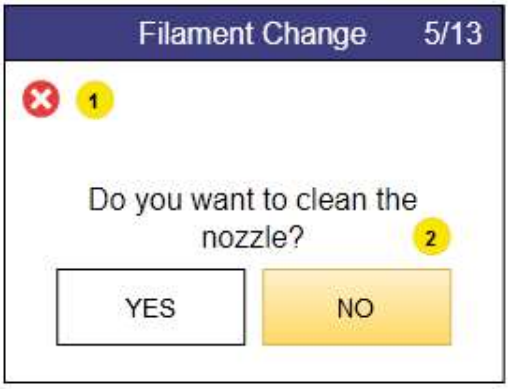
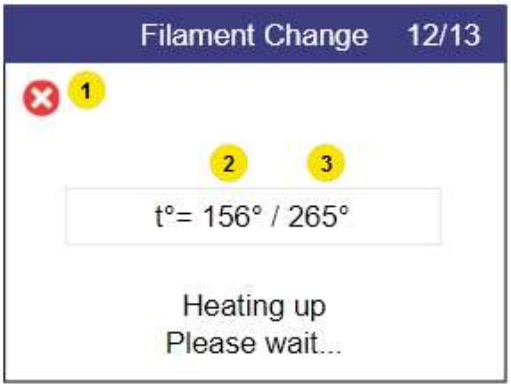
Before inserting the filament into the printhead, make sure that the end of the filament does not have any defects, as these can cause the filament to not load properly.

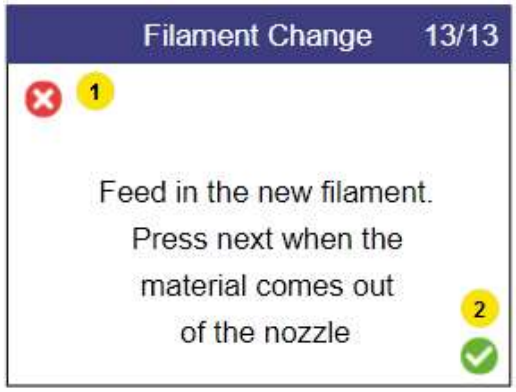
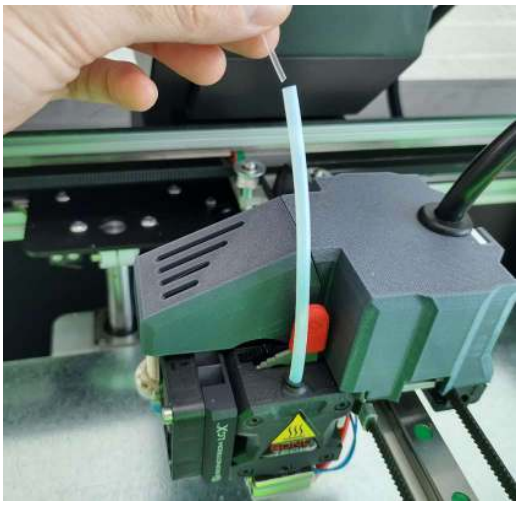
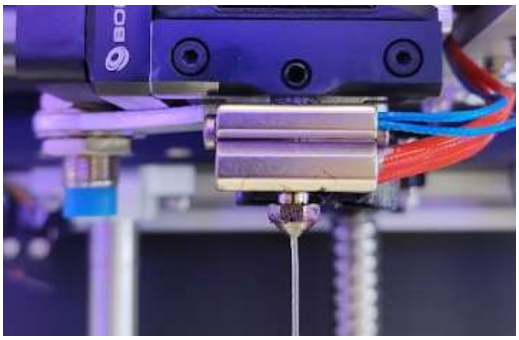
In case there is such, cut it with scissors, side cutters or another cutting tool.

7.3 Filament load/change procedure

The filament change procedure always runs in 2 stages – Remove old filament and Install 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 installed filament.

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 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).	

8 Bed levelling

8.1 What is Bed levelling

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.

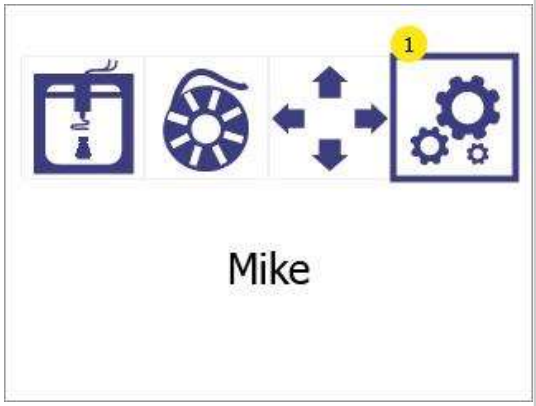
If the distance is too big, the extruded material will not stick to the printing surface and will be dragged around by the head.

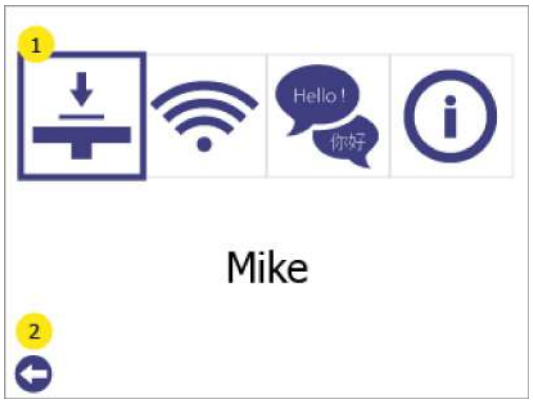
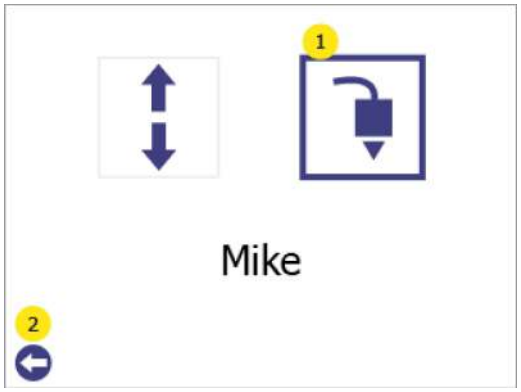
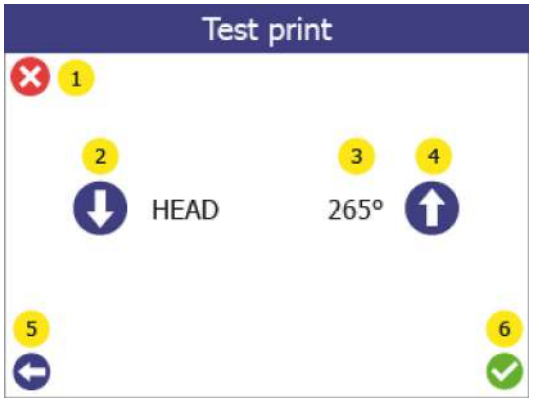
If the distance is too little (or the head and bed are touching), material will not come out of the head, which may result in clogging (the material will get stuck inside the head and additional maintenance will be required to bring the printer back in operating conditions)

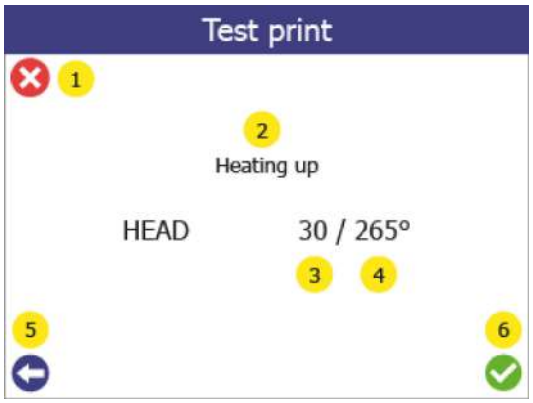
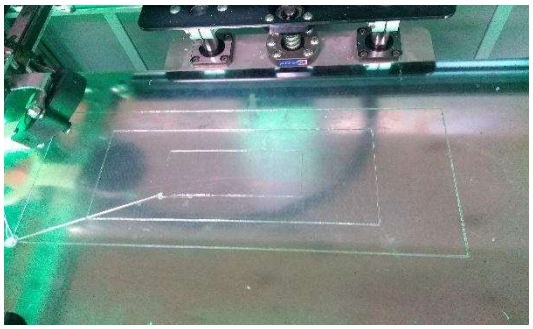
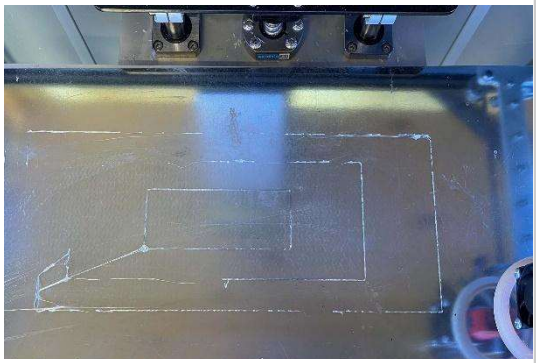
embrace InsoleMaker 3D printer features an algorithm for correcting imperfections in the bed level. However, sometimes the reference height (starting point) parameter is required to be adjusted with the help of the user.

8.2 How to check if the bed is properly levelled

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

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

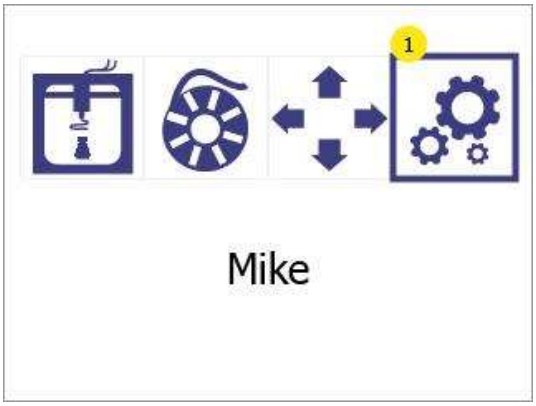
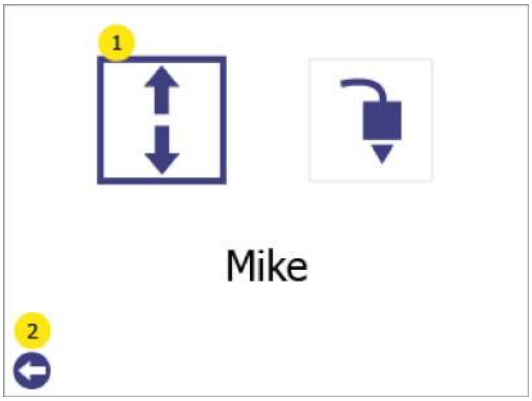
2	Enter in the *Bed levelling* menu (1) Press Back (2) to go back to the main menu.	
3	Enter in *Test print* menu (1) Press Back (2) to go back to the *Settings* menu.	
4	Choose the printing temperature of the print head for the test print. Change the target temperature (3) of the test print up (4) or 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 in the main menu Press Back (5) to go back to Bed levelling menu	

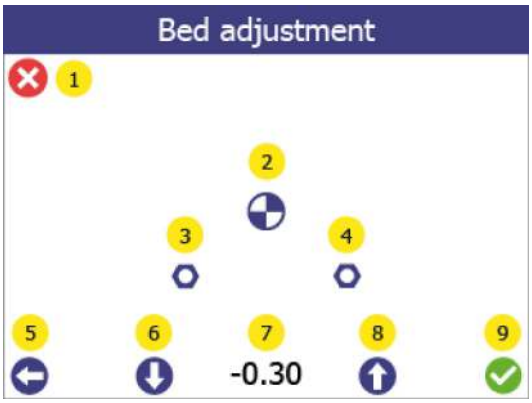
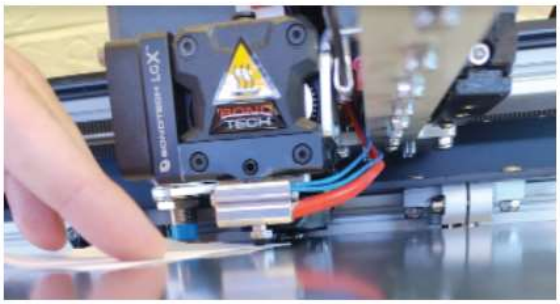
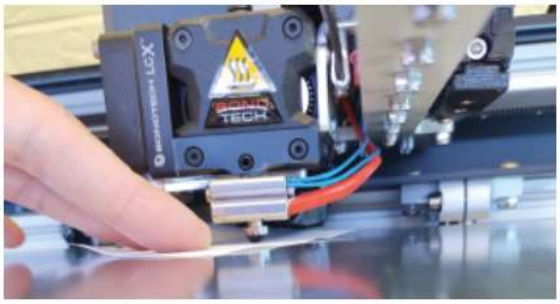
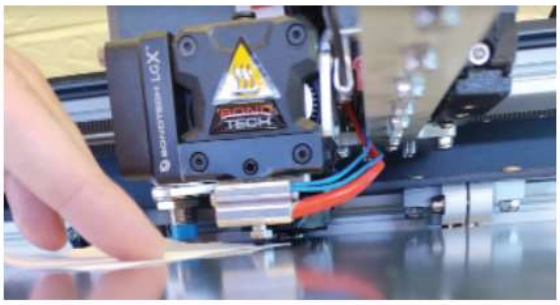
5	When test print starts, the screen will show the status of the printer (2), the current temperature (3) and the target temperature (4). Press Cancel (1) to stop the print and get back in Main menu Press Back (5) to stop the print and go back one menu.	
6	Test print successful - 3 connected rectangles with evenly extruded lines. - Extruded filament is clear and see through. Test print failed - Uneven extrusion - Large parts with no extrusion - Material stuck to the print head instead of the bed. If the test print fail, do the levelling adjustment (see below)	 

8.3 Bed levelling adjustments

The *Bed adjustment* menu gives the possibility to fine tune the bed levelling 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 levelling* 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.	

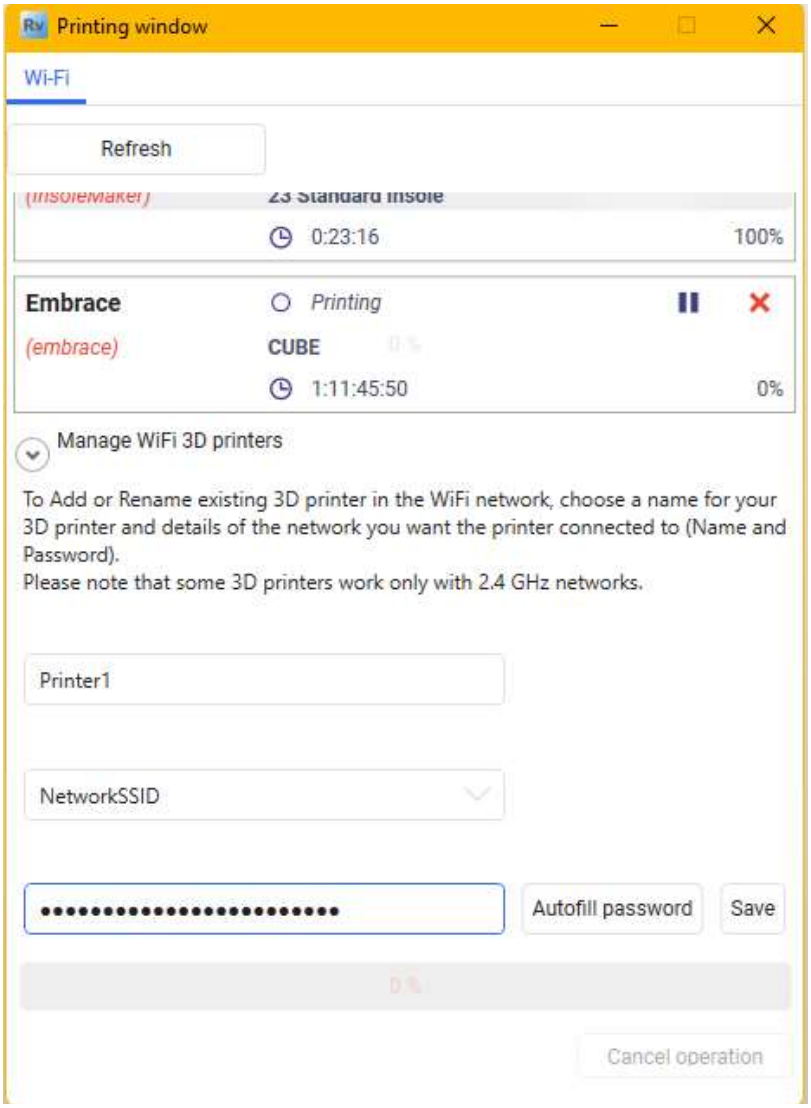
4	1. Press on the "*Reference point*" button (2). Printer head will move to the reference point, will do a measurement and then the print head and bed will move to "zero" position. Note: (3) & (4) are levelling points, used during Service procedure and should be ignored for now) 2. Take a piece of paper (for regular printer, from notebook, etc) and try to fit between the print head and the printing surface without using force. 3. If 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 Down arrow (6) once. 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 levelled) to confirm that the levelling was successful.	   

9 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.

9.1 Connecting printer to the local WiFi network

1. Press on the WiFi icon from embrace's workspace. WiFi printing window will appear on the screen.



2. Expand the "Manage WiFi 3D printer" menu.
3. Select a name 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 on a USB stick
7. Insert the USB stick in the printer you would like to configure
8. From the LCD screen go to "Maintenance" and select "WiFi". The printer will configure itself as part of the local network.

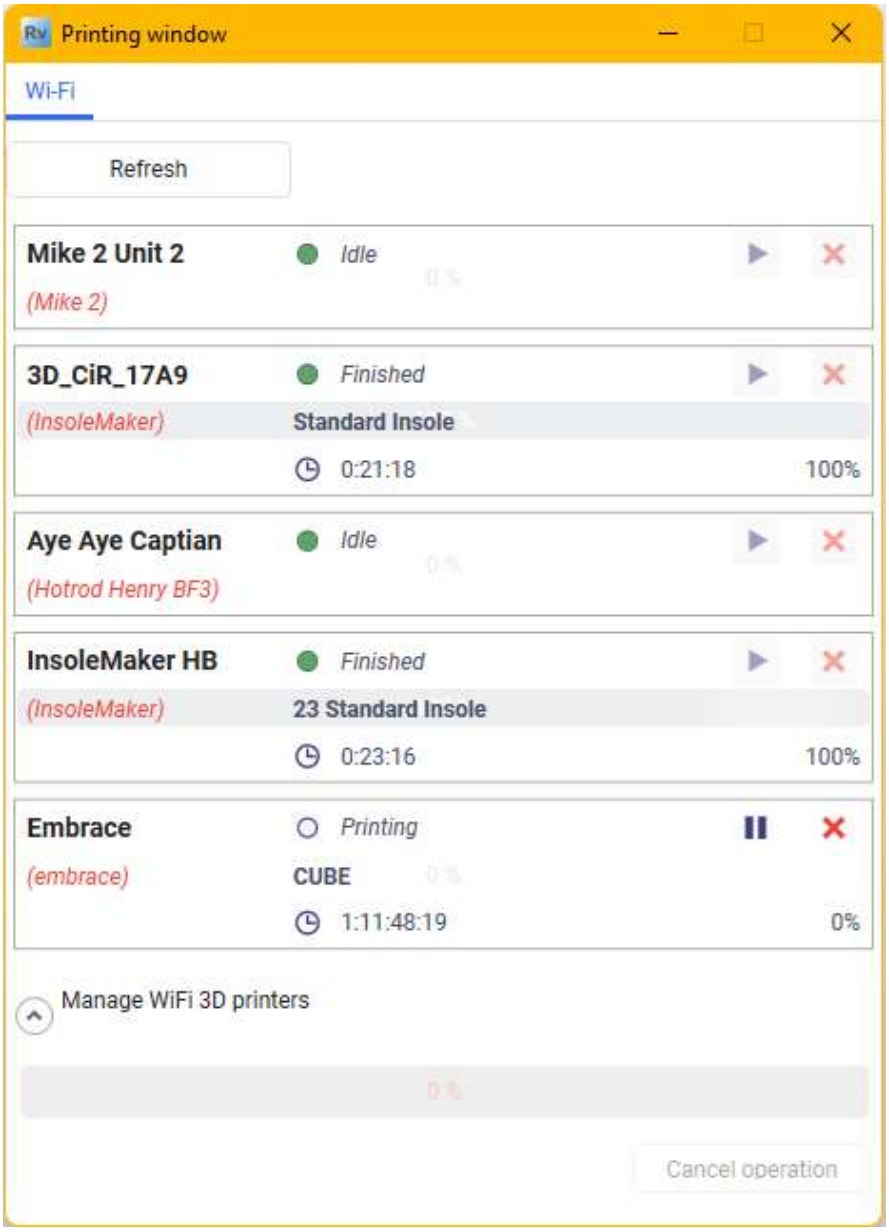
9. Return to embrace and in case the printer is not visible in the WiFi printing window, click on the Refresh button to initiate a new search for existing printers on the network.

9.2 Operate with WiFi connected 3D printers

Once part of the local network, everyone on the network will have access to the printer(s).

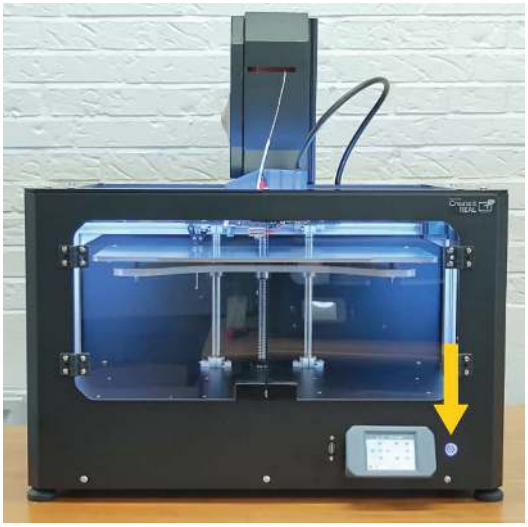
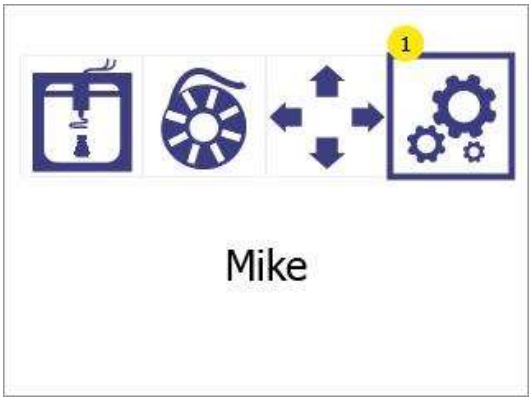
Information presented for each printer is:

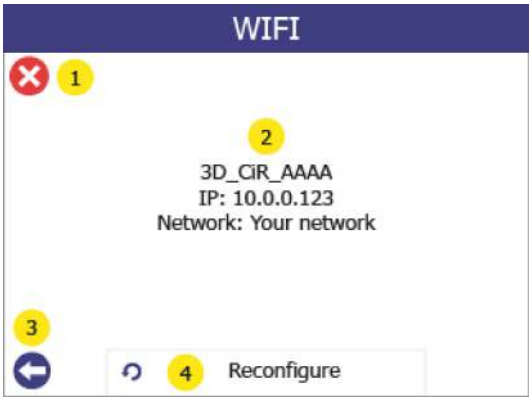
- Printer name - Name as configured by the user
- Printer model name - Name of the model for extra reference
- Printer status - defines the availability and the condition of the printer (see below)
- Print progress - The entire field of the printer is being “filled” up as the print progresses. Additionally, it shows remaining time and the progress in %.



9.3 Connecting printer to Wi-Fi

After the configuration file “wifi_config.cir” is generated, place it on the root folder of a USB flash drive and do the following steps:

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	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.	

10 Before starting a print

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

- ☐ 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

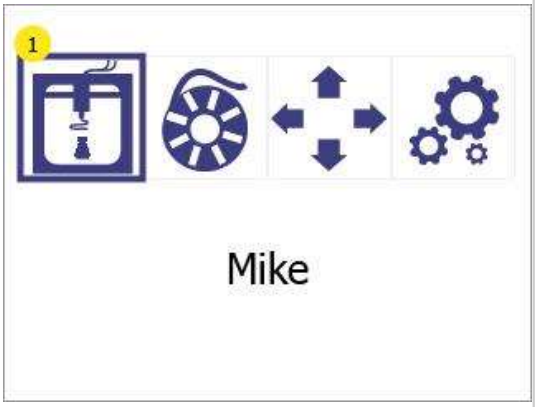
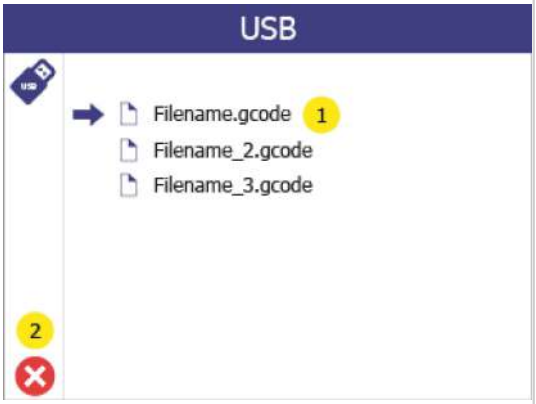
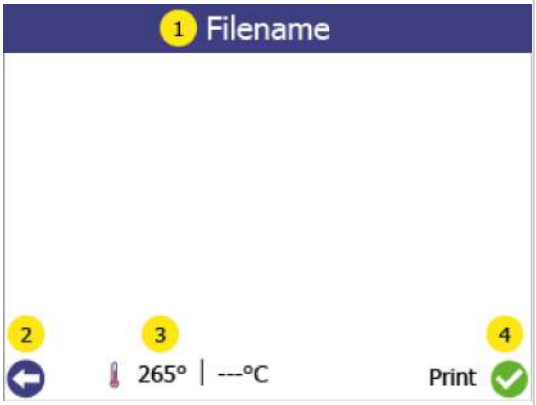
  Open the filament chamber and verify that there is enough filament left on the spool.
- ☐ Clean nozzle

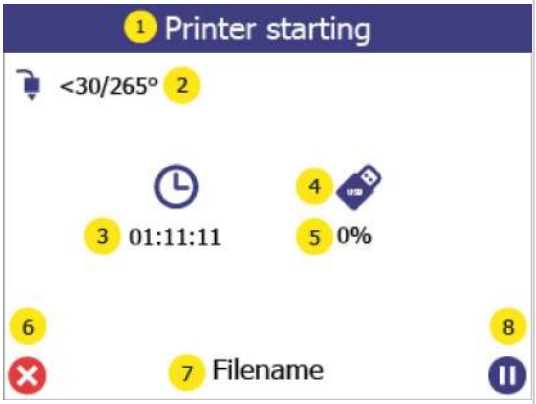
  From the previous usage, there might be material stuck to the nozzle of the print head. If this is the case, use the cleaning tool to remove it. For more information, see Cleaning the print head.

11 Starting a print

11.1 Print from USB

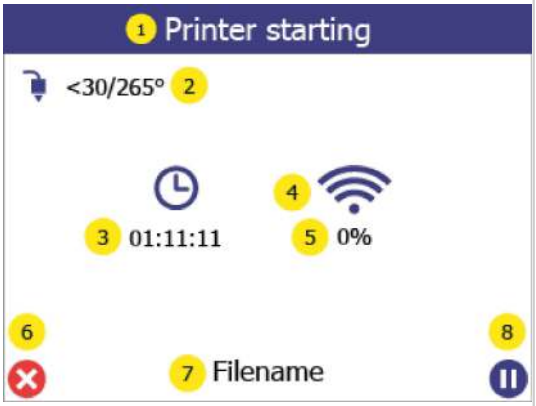
If the service allows for it, the printer can print directly from a USB flash drive.

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).	

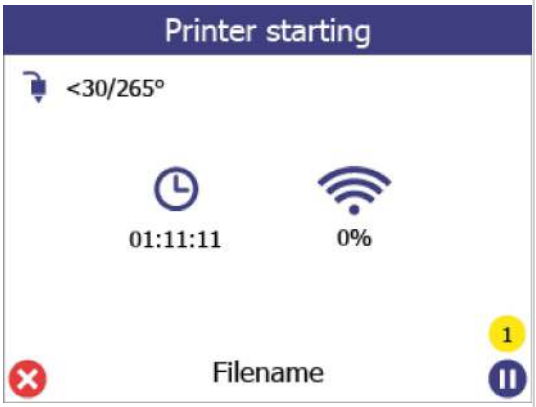
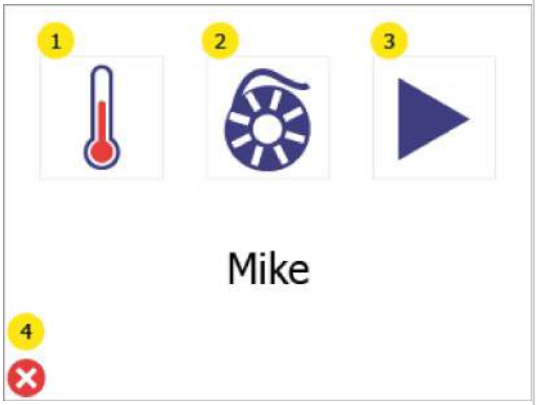
11.2 Print over Wi-Fi

Printing over Wi-Fi is started directly from the 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	###Screenshot from the CAD software here!###
2	The printing screen shows 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).	

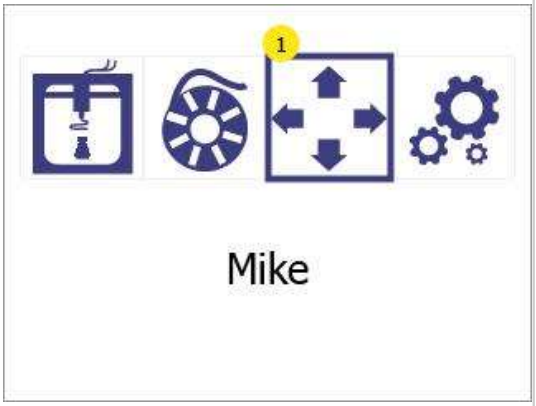
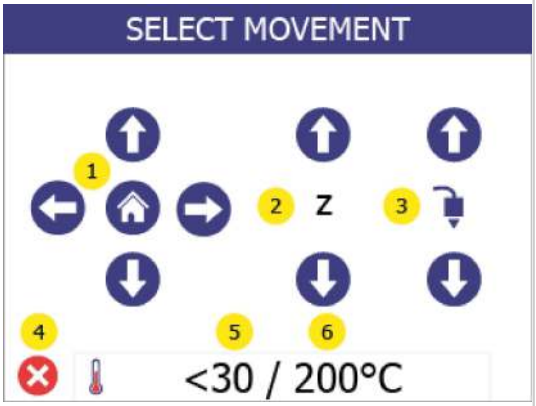
11.3 Pause menu

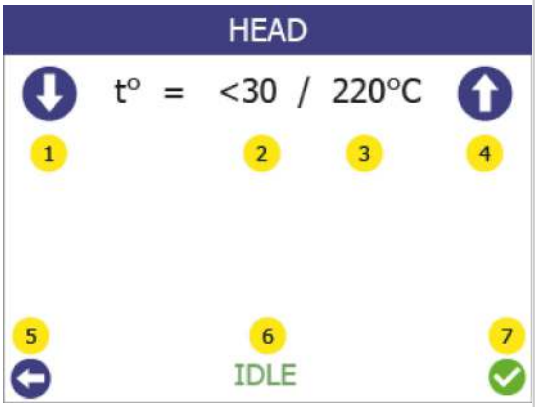
The pause menu can be accessed at any time during the print

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).	

12 Manual control

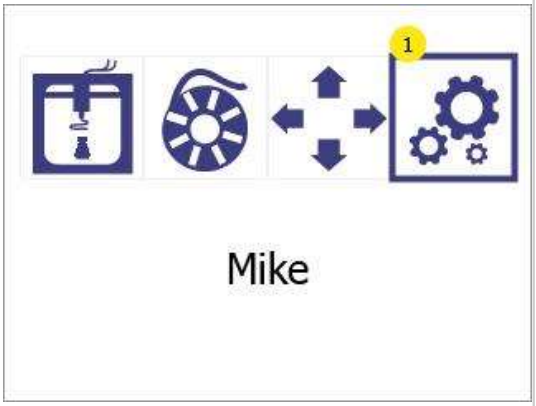
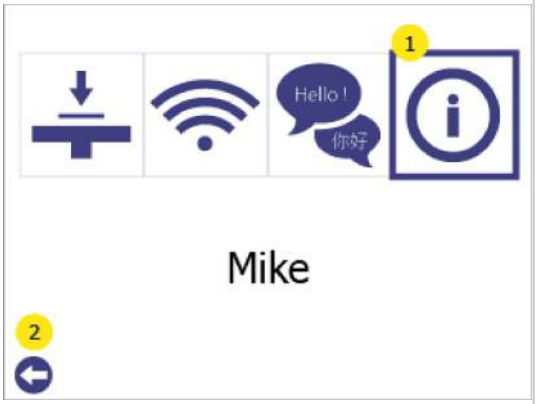
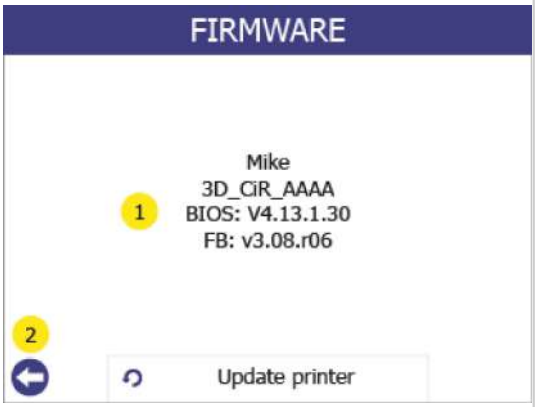
If needed, it is possible to manually control the movement and heating of the printer

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 center (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.	

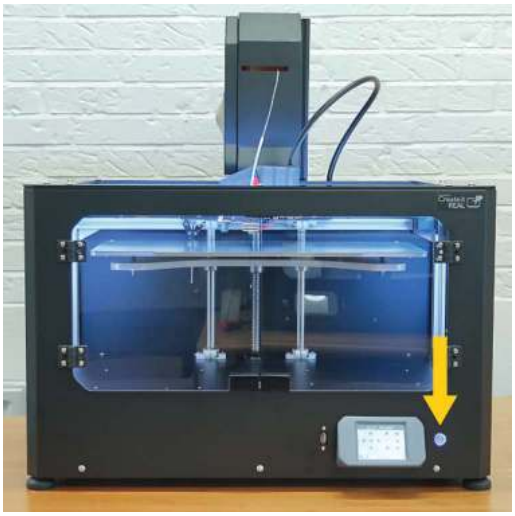
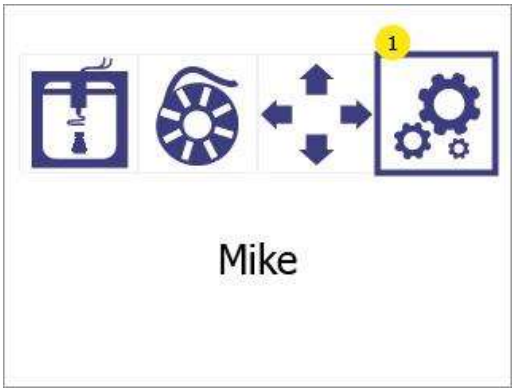
13 Printer information and Updating printer firmware

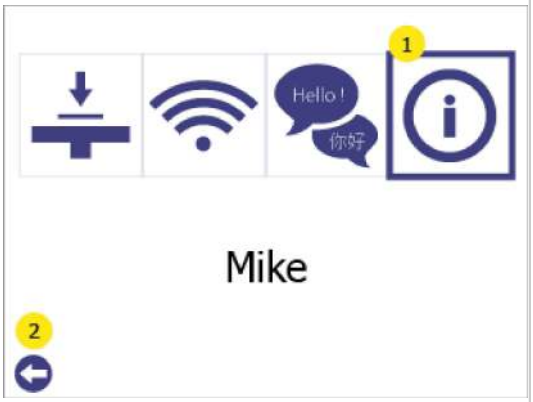
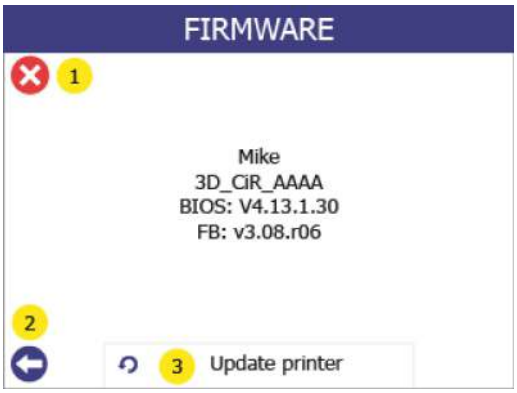
13.1 Info menu overview

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.	

13.2 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 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. Not that some update procedures may take up to 1 min.	

14 Regular service

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

14.1 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.

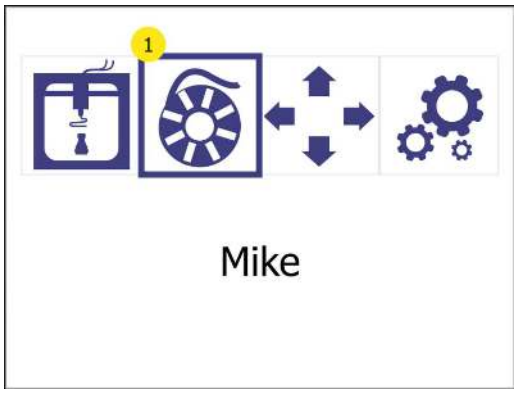
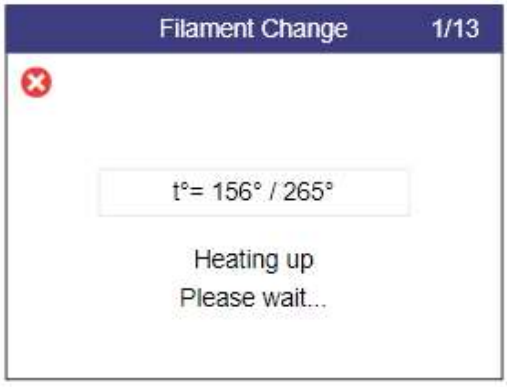
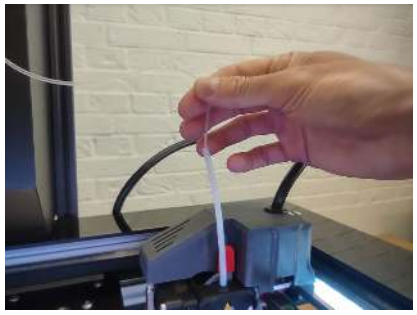
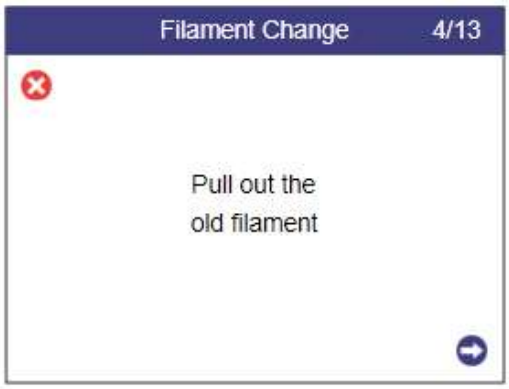
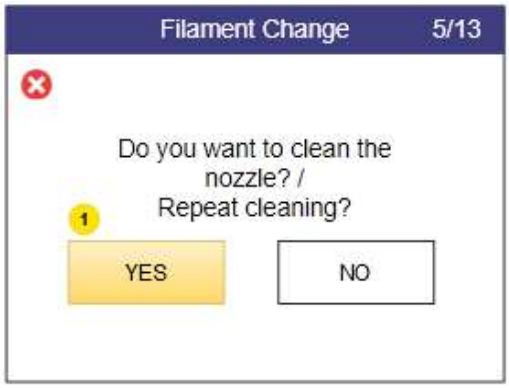
14.2 Cleaning the print head

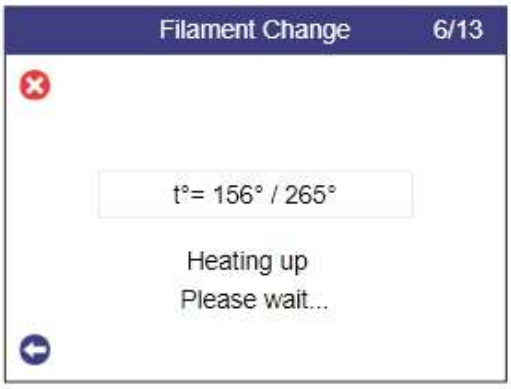
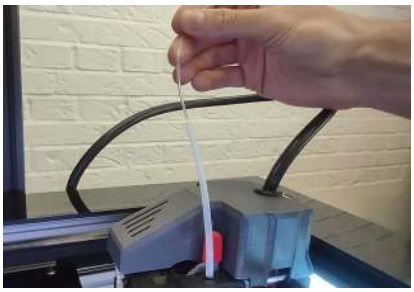
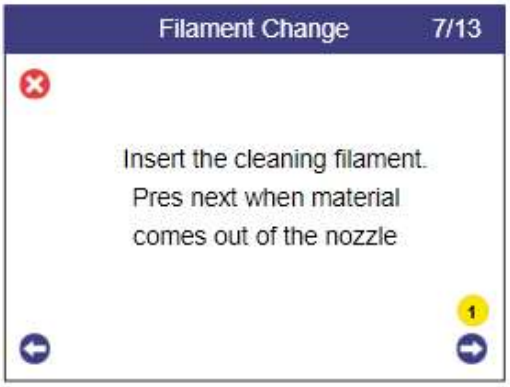
Cleaning the print head is a vital procedure that contributes to the quality of the printed objects by reducing the risk of clogging and maintaining consistent extrusion of filament.

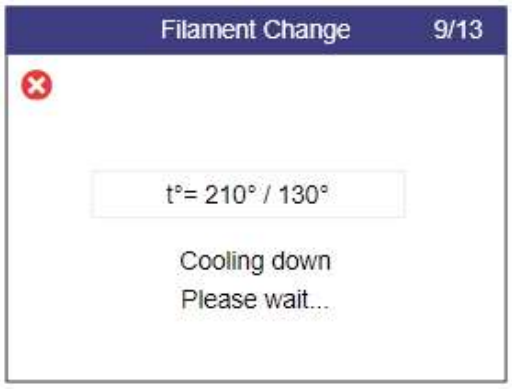
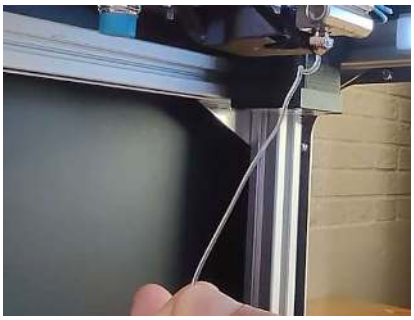
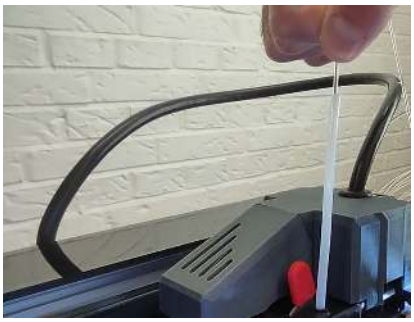
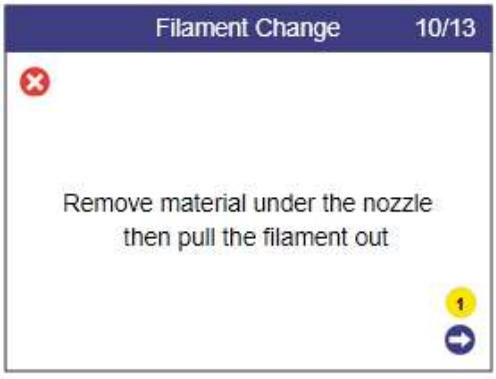
- We recommend cleaning the exterior tip of the printhead (the nozzle) on a daily basis, by using the cleaning tool included in the accessory box.

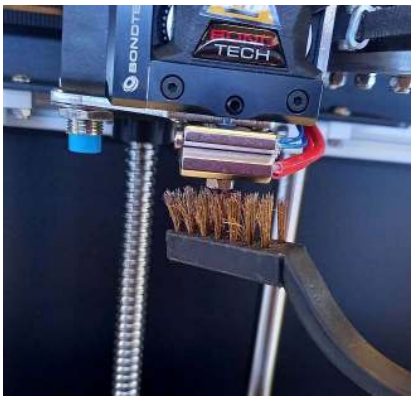
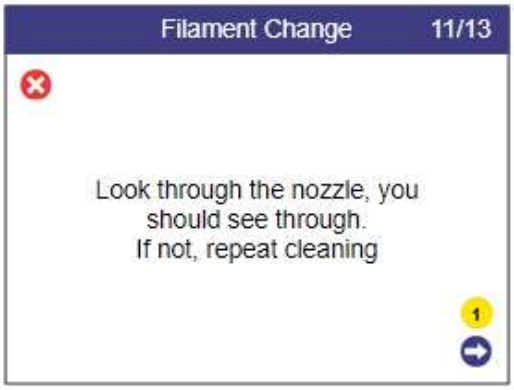
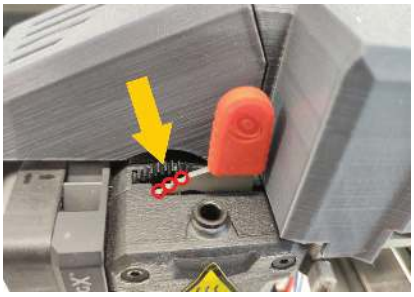
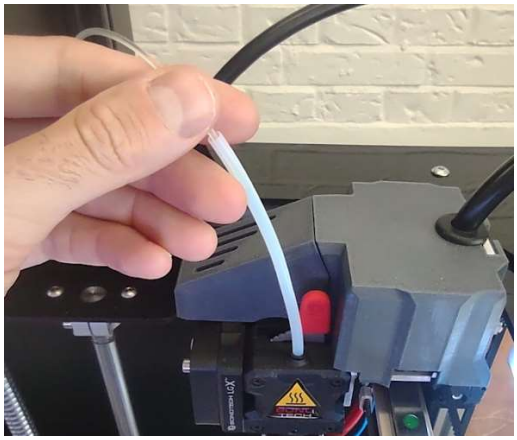
  Let the print head cool down first. Scrape off the nozzle until the tip is free from residue filament.

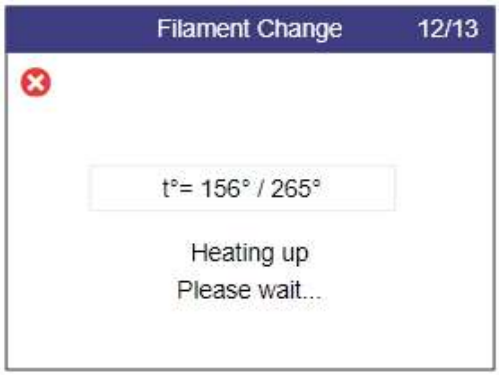
- We recommend to clean the interior of the nozzle every time a new filament spool is loaded. Use only approved cleaning filament during this process.
  To do this:

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 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 the 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.		

15 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

15.1 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 levelling procedure (see Bed levelling).

15.2 Printer not extruding properly

- Print bed is too close to the print head on the first layer. Calibrate the height by following the bed levelling procedure (see Bed levelling).
- 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.

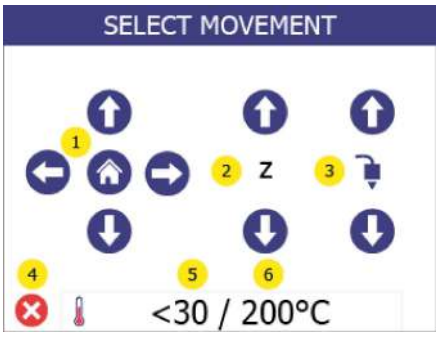
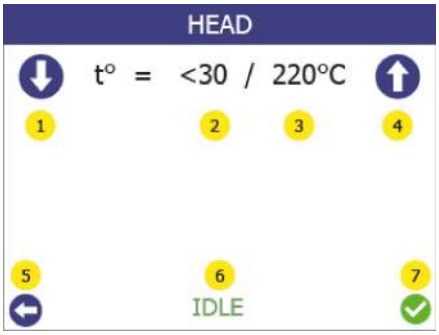
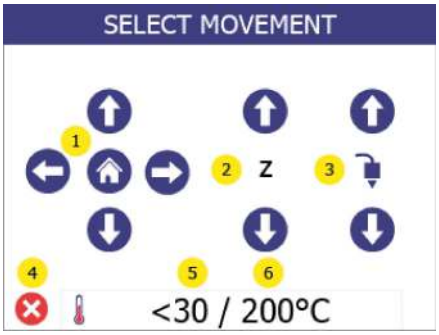
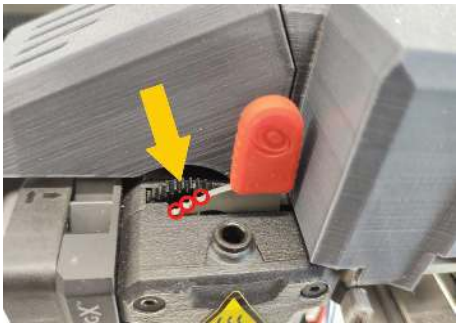
15.3 Object not completed or not printed properly

- 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.

15.4 Print head does not extrude and I hear 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 attempt 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

16 Technical specifications

Power requirements	230V AC 50 Hz (1.5A); 120V AC 60 Hz (3A)
Power consumption	Normal operations: < 100W Idle: < 50W Stand by: < 40W
Operating room temperature	5–35°C (40-95° F)
Print head temperature	Operating: 240-260° C (464-500° F); Maximum: 285° C (545° F)
Filament chamber temperature	Operating: 35-45° C (95-113° F) Maximum: 80° C (176° F)
Printer working area size (Biggest printable object)	W / D / H 39 / 14.5 / 14.5 cm (15.4 / 5.7 / 5.7 inch)
Printer size (Cables and filament chamber installed)	W / D / H 66 / 57 / 70 cm (26 / 22.4 / 27.6 inch)
Printer weight	37.5 kg (86 lbs)