

# Sinterit Lisa Pro

SHORTENED USER GUIDE



Read the instruction manual before using the device.



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The Shortened User Guide is a shortened version of the Sinterit LISA PRO user manual. For correct and trouble-free operation of the printer, please read the full user manual available at [www.sinterit.com](http://www.sinterit.com). Sinterit is not responsible for printer failures caused by not reading the full manual.

Listed below are descriptions of symbols used on the device. They constitute a warning or convey the information to protect the user, other individuals or surrounding objects and ensure correct and safe use of the device.

	<b>WARNING!</b> An inevitably dangerous situation which can result in serious injury or even death. Initiation, omission of a specific procedure or inattention can cause severe physical injury to the user.
	<b>CAUTION!</b> IR laser radiation. Looking directly into the laser beam can cause blindness and skin burns. The laser emits infrared radiation (infrared, IR), which is invisible to humans. Avoid eye or skin exposure to direct or scattered radiation. Do not stare into the beam or view with optical instruments.
	<b>CAUTION!</b> Beware of sharp edges which can cause body cuts and injury.
	<b>STOP!</b> Action prohibited.
	<b>IMPORTANT!</b> Information essential to correctly perform a specific task.
	<b>ATTENTION!</b> It is necessary to wear protective gloves. Mandatory action when working with powder.
	<b>ATTENTION!</b> It is necessary to wear protective face mask. Mandatory when working with powder.



# 1. Sinterit Lisa Pro 3D printer

## A. SHORTENED DESCRIPTION

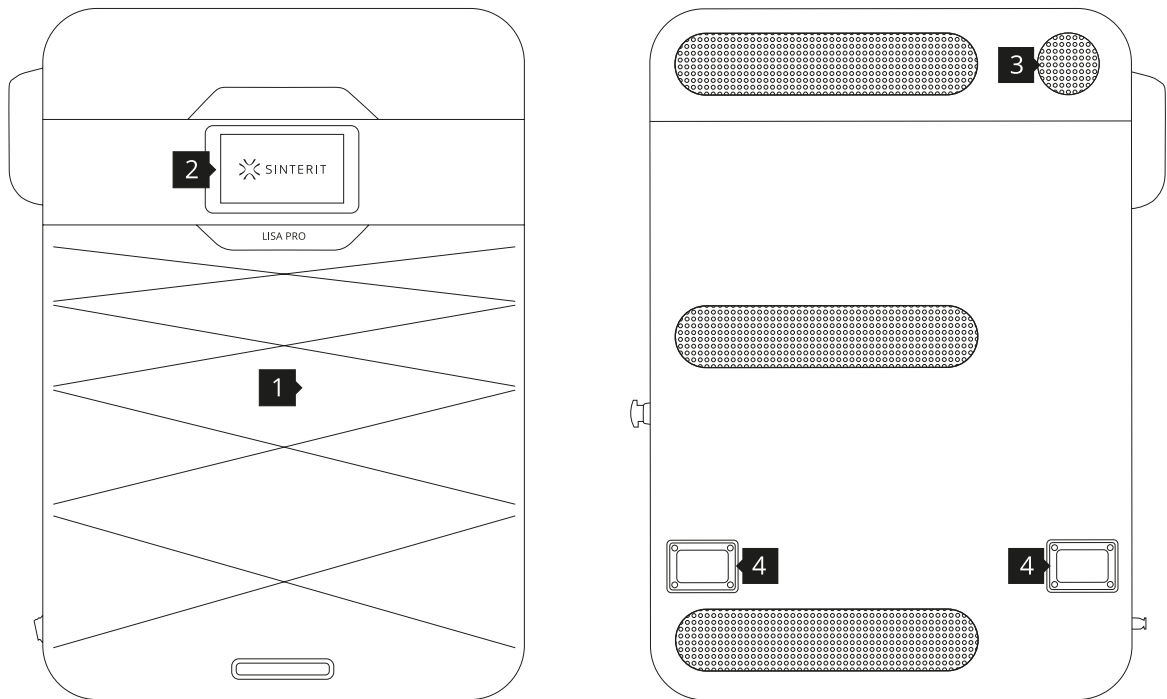


Image 1. View of the printer's front and back side.

1.Removable front panel / 2.LCD panel - camera view / 3.Fan / 4.Holders

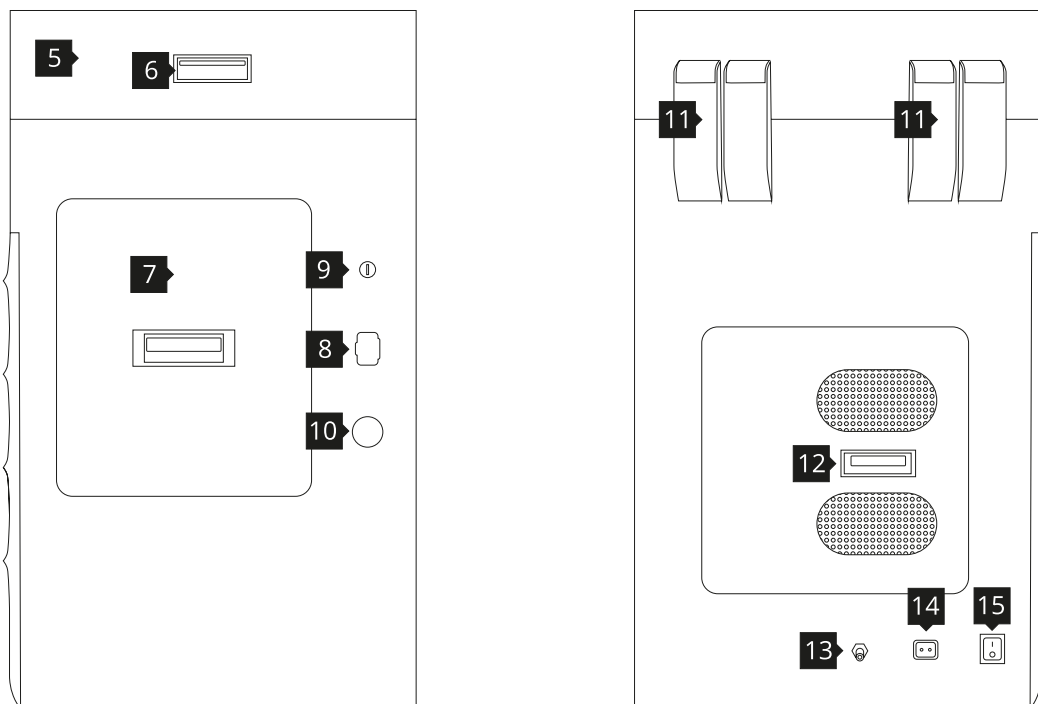


Image 2. View of the printer's right and left side.

5.Printer's lid / 6.Lid's handle / 7.Overflow Bin / 8.USB port / 9.Safety key switch / 10.Safety button (E-STOP) / 11.Hinges / 12.Access to gas installation / 13.Gas input / 14.Power socket / 15.Power switch

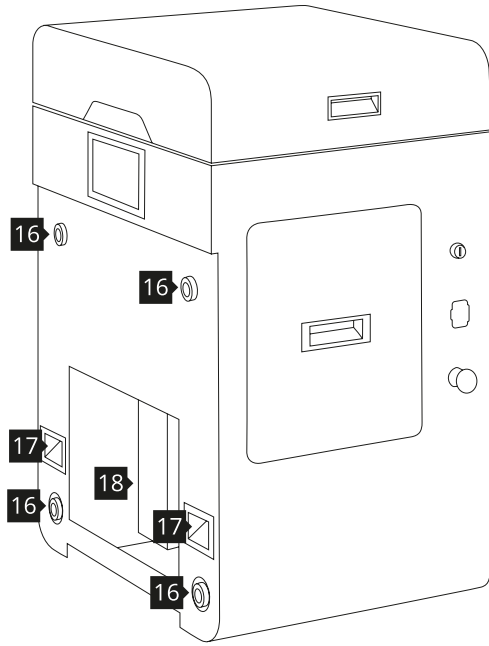


Image 3. View of the printer without front panel.  
**16.Magnetic fasteners / 17.Handles / 18.Easy access to the space under Beds**

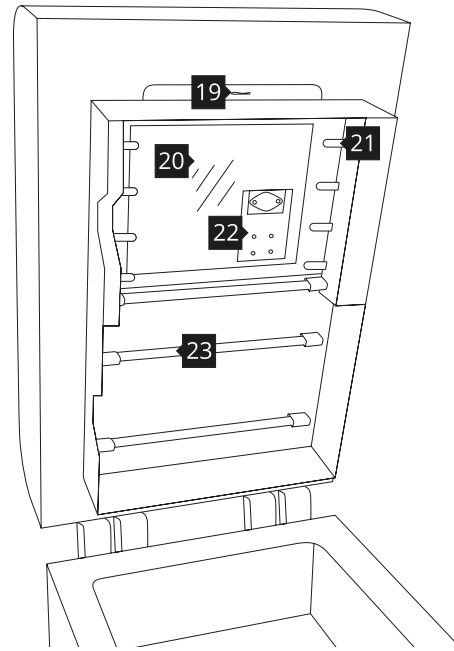


Image 4. View of the printer's heater module.  
**19.Split pin / 20.Laser protective glass / 21.Infrared heaters (short, white) four psc. on each side / 22.Laser system / 23.Infrared heaters (long, red)**

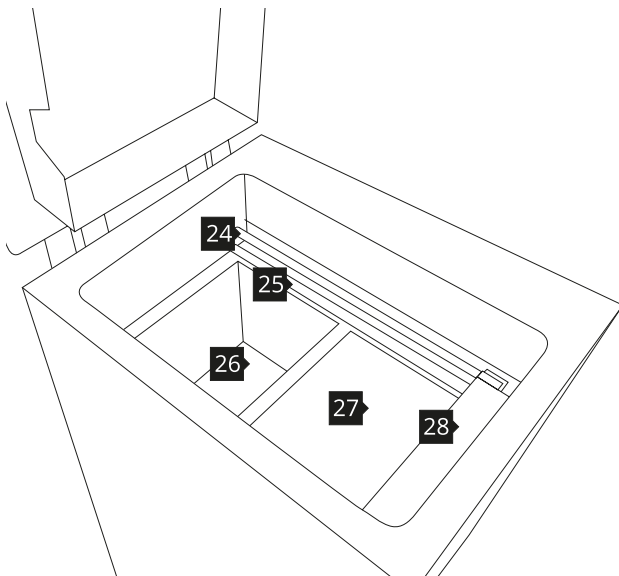


Image 5. Front view of the printer's inner chamber.  
**24.Recoater's slide guide / 25.Recoater's transmission cables: short (replaceable) and long / 26.Feed Bed / 27.Print Bed / 28.Recoater**

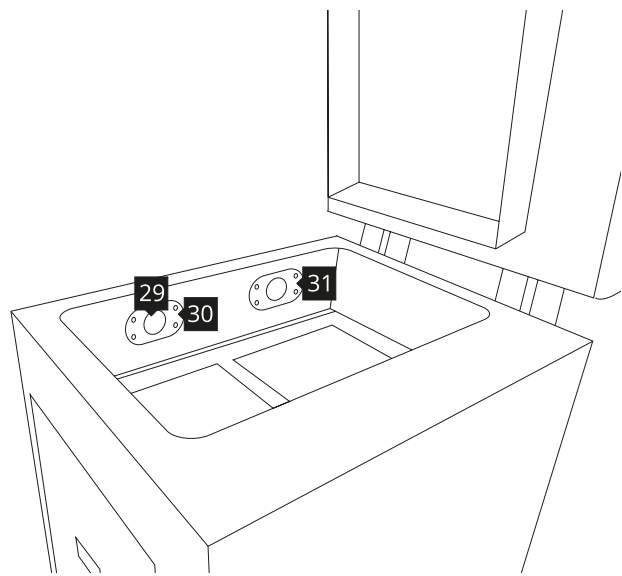


Image 6. Back view of the printer's inner chamber.  
**29.Embedded camera (captures image from the PRINT BED) / 30.Print Bed pyrometer / 31.Feed Bed pyrometer**



## 2. Preparing the machine to print

### A. INSTALLING / CLEANING THE LASER PROTECTIVE GLASS



#### CAUTION!

Beware of sharp edges. Put on the safety gloves in order to protect yourself from injuring the hand against the edge of the heating module.

1. Turn of the safety key **9** switch and turn off the power switch **15**.
2. While holding the heater module (Image 4 and 7), take out the split pin **19** positioned on the top of the inner part of the lid **5**.
3. Lower the heating module to get access to the place dedicated for the LASER PROTECTIVE GLASS **20** (Image 8).
4. Unscrew two knurled nuts **32** from the LASER PROTECTIVE GLASS module (Image 9).
5. Remove the module from the locking holders **33** located in the middle of the lid.

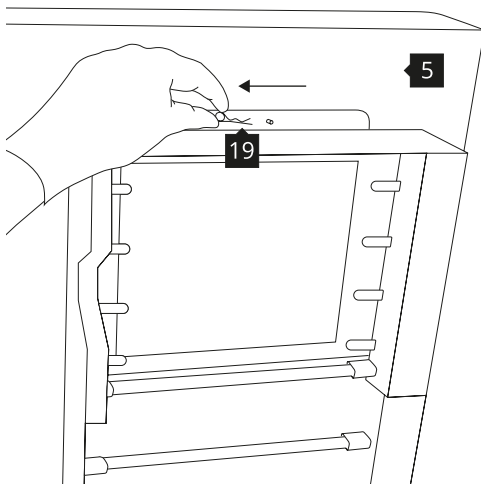


Image 7. Heater module - split pin system.

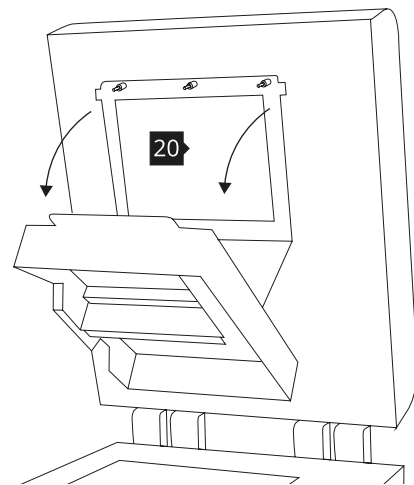


Image 8. Heater module - opening.

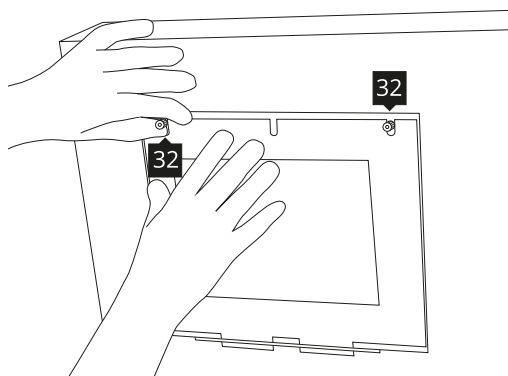
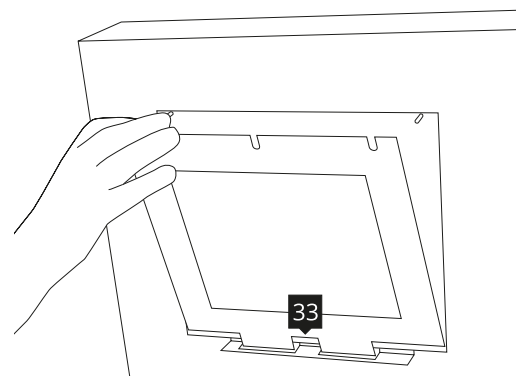


Image 9. Correct unmounting of the LASER PROTECTIVE GLASS.



6. Rub the surface of glass carefully with a cotton cloth soaked with 2% salicylic acid (ethanol solution) or any other ethanol-based solution. Do not use isopropyl alcohol! Pay attention to any fibers left on the surface. Clean both sides (Image 10).

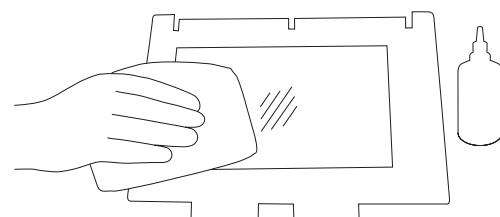


Image 10. Correct unmounting of the LASER PROTECTIVE GLASS.



7. Mount the glass: slide the metal tabs of the LASER PROTECTIVE GLASS module into the holders located in the middle of the lid. Press gasket gently. After obtaining the perfect fit, screw the knurled nuts on to the visible screws (Image 11).

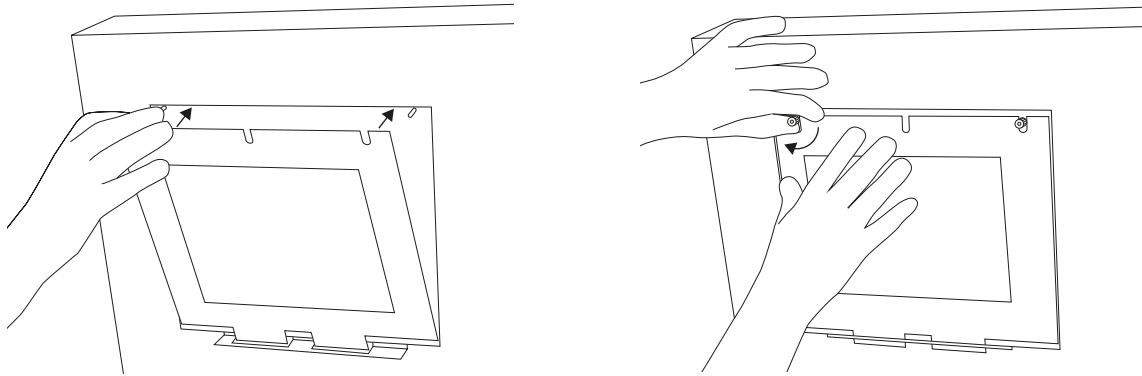


Image 11. Correct placement of the LASER PROTECTIVE GLASS on the heater module.

8. Join the heating module with the lid – using the metal split pin (Image 12).  
9. Clean the glass one more time from any finger marks or stains if present.

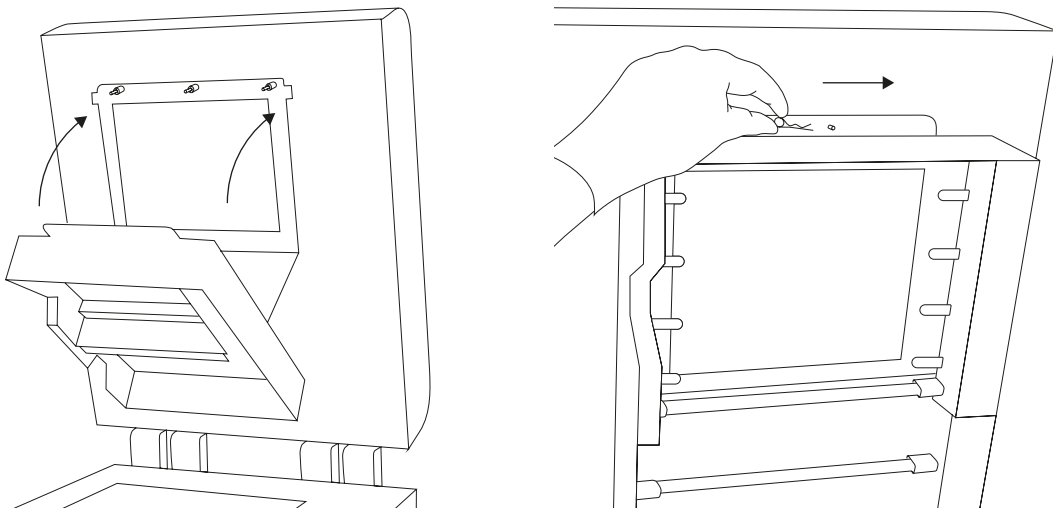
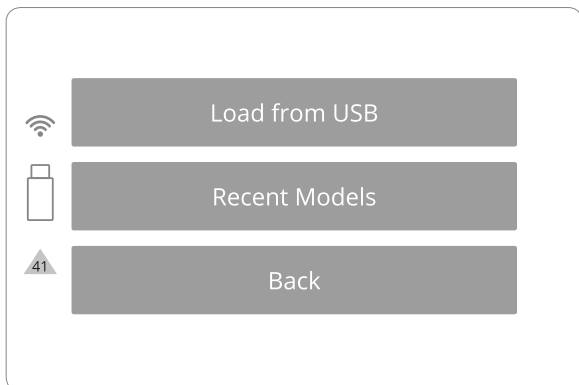


Image 12. Correct closing of the heating module.

10. After carrying out all of these steps, the printer may once again be connected to the power source, turned on and prepared for work.



**IMPORTANT!**

Yellow triangle displayed on the side of the screen informs about a malfunction.

Please contact the Support Team (section 7, page 15) by referring to the code displayed inside the warning triangle and providing the serial number of the device.



### 3. Printing – STANDARD MODE

1. Load the file for printing:
  - save the file prepared using the Sinterit STUDIO 2019 to a USB carrier (USB flash drive recommended),
  - connect the carrier to the printer's USB port **8**, with its power turned on.
2. After mounting the flash drive into LISA PRO USB port, LOAD FROM USB section will be displayed and a flash drive icon will appear on the left side of sections (Image 13).

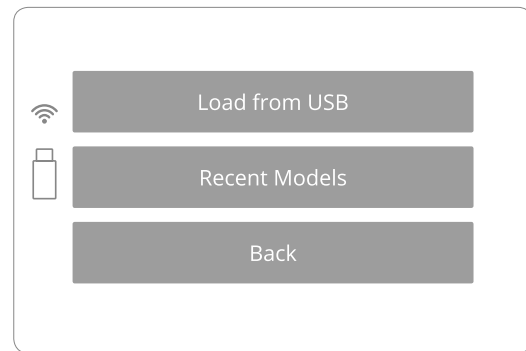


Image 13. Connecting a USB flash drive to the LISA PRO printer screen.



#### IMPORTANT!

After uploading the model on the printer's internal storage, printed projects can be chosen from RECENT MODELS.

3. Choose source. Titles of project files will be displayed. Displayed arrows will help to navigate through folders and files.
4. After choosing a file, it will be loaded into the device's memory.

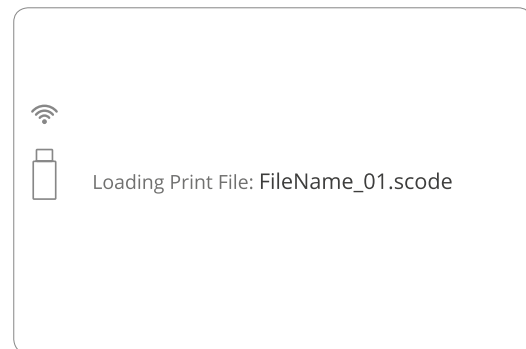
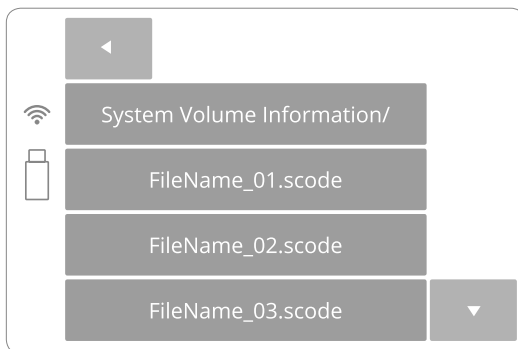


Image 14. Loading the print file screens.

5. After loading the file, the display will show basic informations such as: the file's name, material and expected printing time. The flash drive can be then safely removed (Image 15).
6. The software will allow return to previous section or proceed to the next. After choosing the next section, Sinterit LISA PRO will check whether it is ready to print.

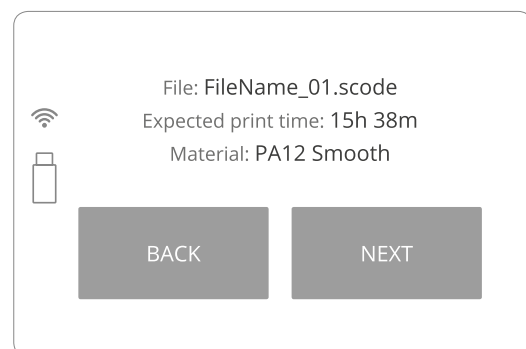


Image 15. Basic information after loading the file to the printer screen.



#### WARNING!

Carefully read all messages displayed on the screen while preparing the machine for printing. Skipping the described operations may result in incorrect printing or machine failure.



### First use of the printer

- If the machine is filled with powder for the first time, after loading the file, a message will appear that the LASER PROTECTIVE GLASS **20** needs to be cleaned.
- After confirming that the previous content (printouts and unsintered powder) of the PRINT BED has been removed and that the work space of the RECOATER **28** is not obstructed, the printer will be ready for printing – it will start the printing process by repositioning the BEDs **26** **27** and the RECOATER.

### Subsequent use of the printer

- After confirming that the previous content (printouts and unsintered powder) of the PRINT BED has been removed and that the work space of the RECOATER **28** is not obstructed, the printer will be ready for printing – it will start the printing process by repositioning the BEDs **26** **27** and the RECOATER.

7. By clicking DONE the RECOATER and the BEDs will be repositioned (Image 16). During this operation, the height of both BEDs is set in accordance with the currently selected printing process (Image 17).

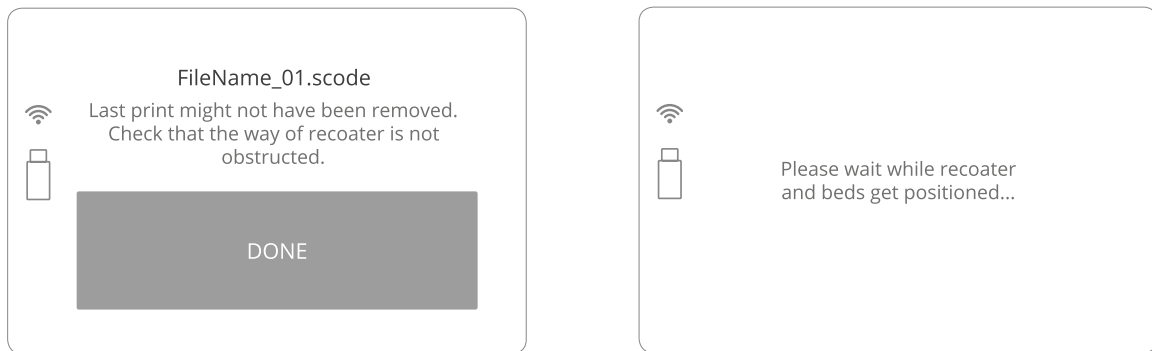


Image 16. Positioning of the BEDs and the RECOATER screens.

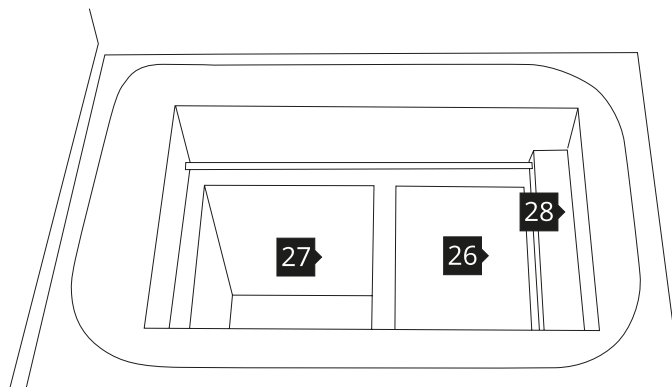


Image 17. Repositioned BEDs: PRINT BED **26** and ready to be filled with powder FEED BED **27** and the base position for the RECOATER **28**.



#### IMPORTANT!

- When working with powders always wear protective clothing (glasses, mask, gloves).
- For the first use of the Sinterit LISA PRO Printer use only the powder (for PA12 SMOOTH and PA11 ONYX) from the container labeled PRINT READY POWDER.
- Always pay attention to the messages displayed on the LCD screen of the Sinterit LISA PRO Printer.





8. After the BEDs repositioning process is finished, you will be asked to fill the FEED BED with powder. Compress the powder with a dedicated tool provided in the Accessory Box. To do this:

- add chosen powder (PA12/ PA11 PRINT READY POWDER or one from the TPU group) to the FEED BED, 10[l] of powder maximum. Fill the FEED BED with the powder and press it slowly, but decisively (using a trowel f.ex). Act carefully in order for the powder not to go airborne (it is recommended to use a spatula for adding the powder) (Image 18).
- It is also recommended to add a little bit of the chosen powder on the surface of the PRINT BED. This will make creating the first layer during positioning faster.

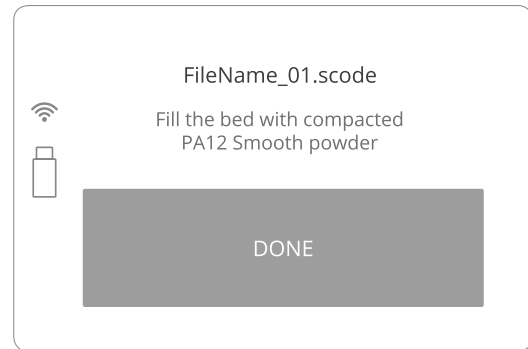


Image 18. Fill the FEED BED screen.

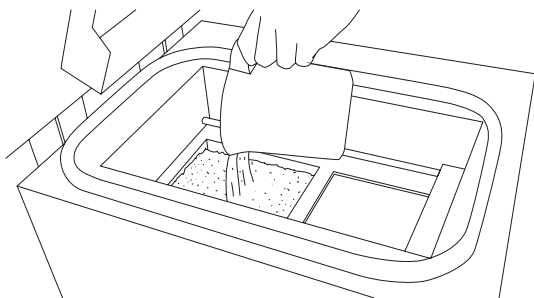


Image 19. Step 1. Adding powder to the FEED BED.

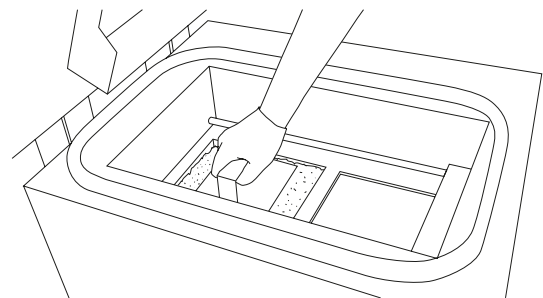


Image 20. Step 2. Compacting powder by gently pressing it.

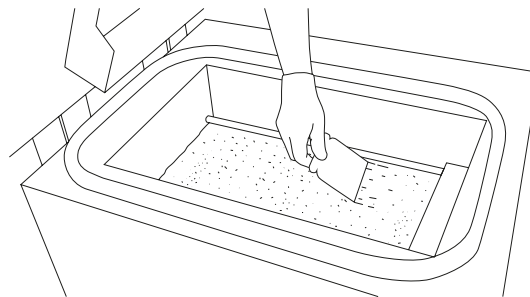


Image 21. Step 3. Equal distribution of powder on both BEDs.

9. Once both BEDs are covered with a smooth layer of powder, press LEVELING DONE on the LCD screen.

10. The RECOATER will return to its default position.

The operation may complete quicker: whenever the powder uniformly covers the PRINT BED surface you can press STOPPING.

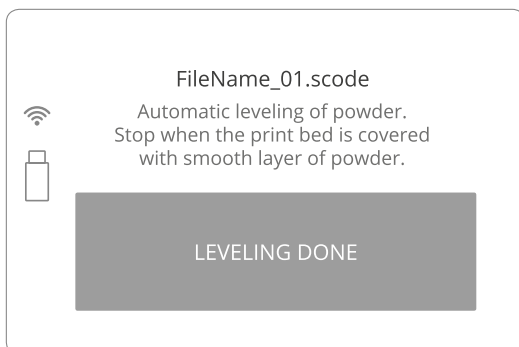


Image 22. LEVELING DONE screen.

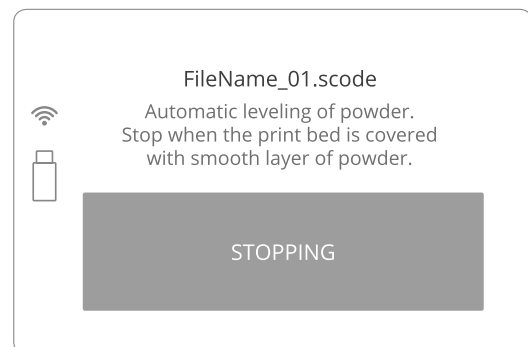


Image 23. Stopping the leveling process manually screen.



- When the levelling is done and the RECOATER has returned to its default position, the cleaning process must be initiated.
  - Use a wipe soaked with alcohol (ethanol or salicylic alcohol 2%) to very carefully clean the vision windows of the camera and pyrometers.
  - Clean the infrared heaters (white and red ones) by gently blowing on them with clean compressed air.

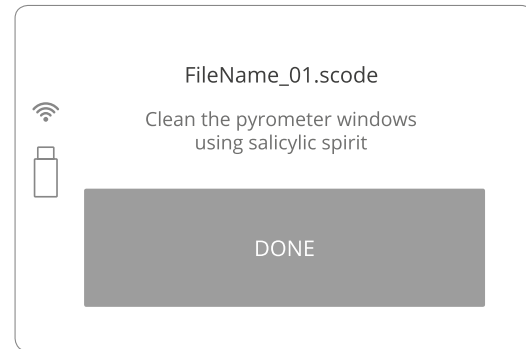


Image 24. Clean the pyrometer screen.

- Ensure that no tools or previous printouts are left in the printing chamber.
- Clean any excess powder from the area around the BEDs, the guide bar and the cables of the RECOATER, using a paintbrush.
- Lubricate the plain bearing of the RECOATER with the included silicone grease, by lubricating the slide guide rail [24](#).
- Press DONE and gently close the Lid.
- If necessary, connect the nitrogen supply to the gas input (for more information on this in the full operating instructions; chapter 9, part B).

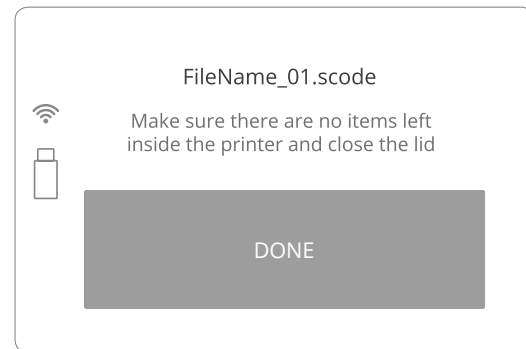



Image 25. Finalizing preparations for printing screen.



**IMPORTANT!**  
If the quality of the distributed powder is unsatisfying, close the lid and press BACK button on the LCD screen. Unlock Lid and start the Leveling process again.

- Press START PRINTING button on the LISA PRO display and the printing process will start.
- Upon confirmation, the progress of printing process will appear on the screen.

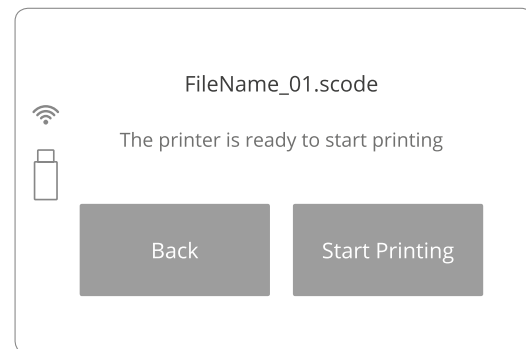


Image 26. Start printing screen.

## 4. Information and tasks while printing

- The main screen of the graphical user interface displays in real time: the status of the print, current temperature of the PRINT BED, warming and cooling states, and the remaining time of laser sintering.
- Clicking on the CAMERA button activates the internal camera view, which will be displayed for 10 seconds. After that the display will return to the main screen.
- During printing, if visible problems appear, observed by means of the internal camera or the top vision window, the user can fine tune the temperature (TEMP +/- 5 [°C]).

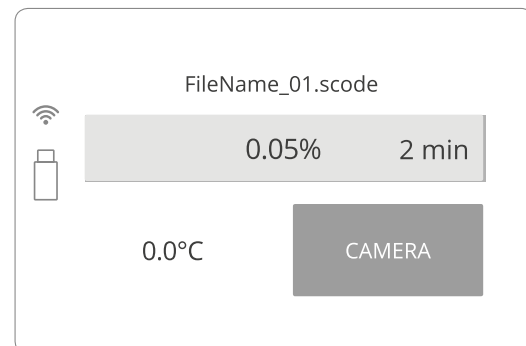


Image 27. The main screen during printing.



## 5. Finishing the print

When the printing process will end, the information of removing the printout will be displayed.

- By clicking REMOVE PRINT the PRINT BED will raise, enabling the printout to be taken out from the chamber.
- By clicking BACK the system will return to the first screen.

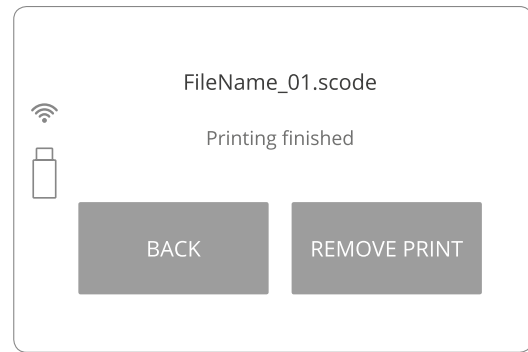


Image 28. Printing finished screen.

1. When the printing is complete and the printer has cooled down, YOU CAN NOW REMOVE THE PRINT FROM PRINTER message will appear on the screen. Click DONE to complete the printing process and open the printer.

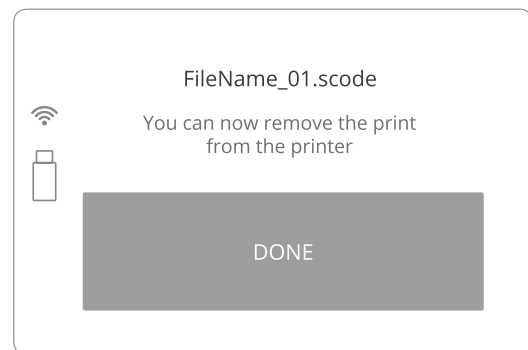


Image 29. Printing finished screen.



### IMPORTANT!

The lid's lock will stay active until the internal chamber temperature will not drop below 50 [°C].

There is no possibility to open the lid before the temperature drops below acceptable value.

Remember that the content of the PRINT BED may still be hot, despite the fact that the printer has cooled down!

2. In order to open the printer, unlock the magnetic lock of the lid (press UNLOCK LID button on the LCD screen). The lock deactivates for 10 seconds. After 10 seconds the lock will become active again.
3. Softly press the lid and then lift it.



### IMPORTANT!

Put on the safety clothing included in the set (mask, glasses, gloves).

4. Using the provided tools, carefully transfer the entire content of the PRINT BED to the plate for carrying the printouts. Transfer it to the mold included in the set. Leave the content with the printouts to cool down, for at least one hour (see image below).

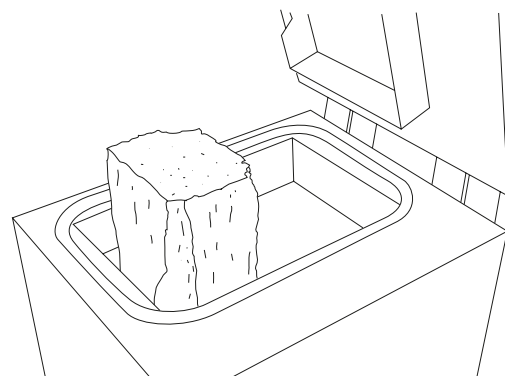


Image 30. Correct condition of the BEDs content after printing (visible cracks on the surface).

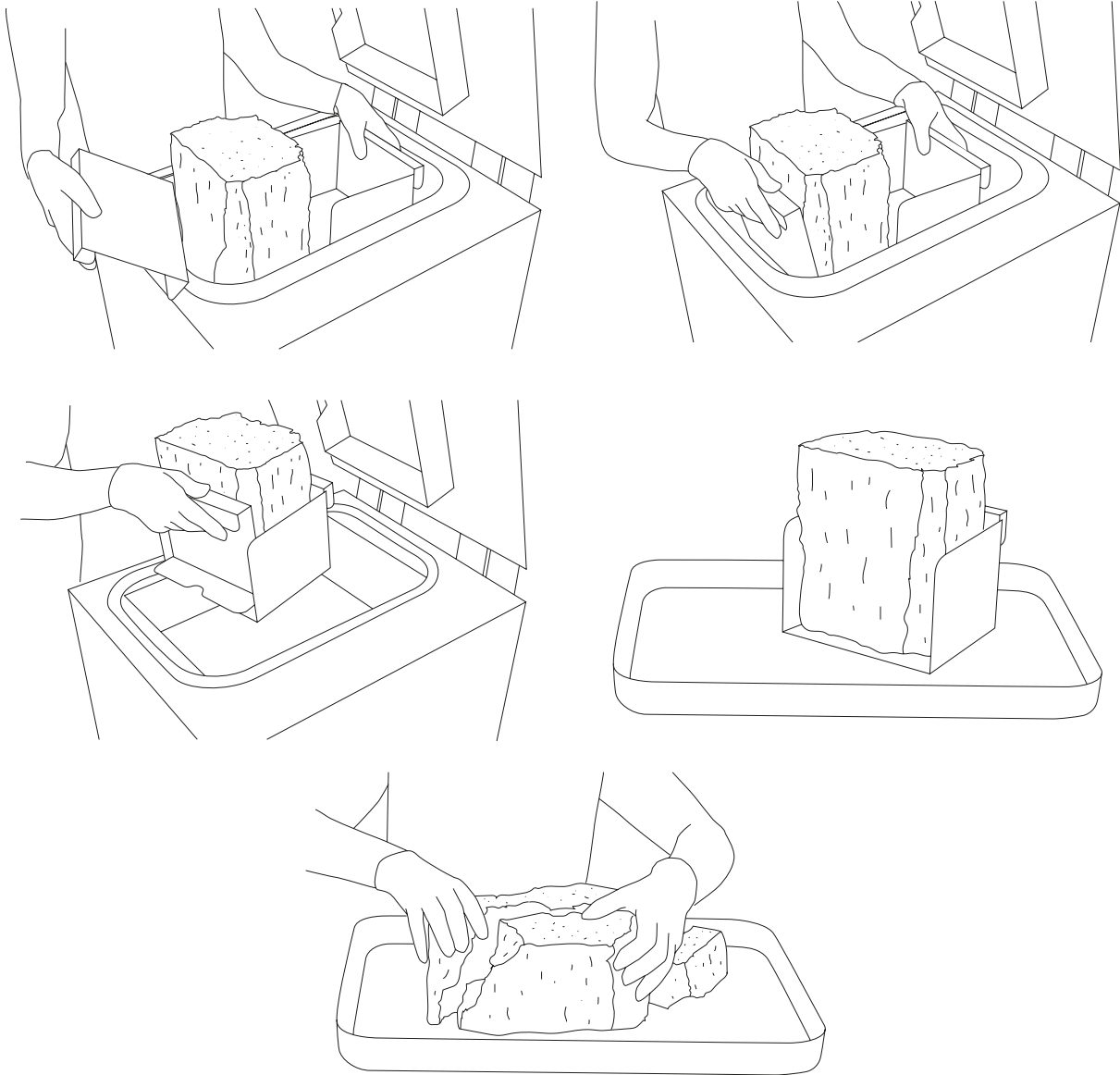


Image 31. Correct way of taking out the PRINT BED content (printouts and unsintered powder).

5. Remove the unsintered powder from the OVERFLOW BIN. Press Unlock Overflow Bin button on the LCD screen. The lock deactivates for 10 seconds. After 10 seconds the lock will become active again.
6. Transfer it to the container in which it will be mixed, with the FRESH POWDER (to refresh the used powder and prepare it for the next print).
7. Place the OVERFLOW BIN back in its place.

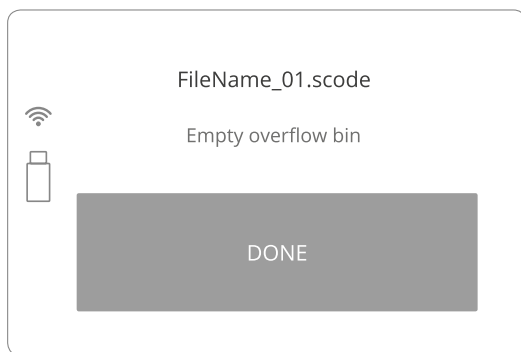


Image 32. OVERFLOW BIN cleaning screen.

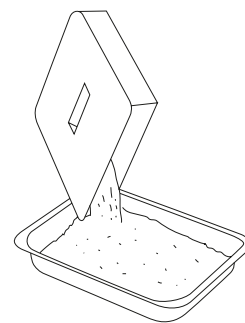


Image 33. Correct cleaning of the OVERFLOW BIN.



8. After the PRINT BED is ready to remove its content, the information about refreshing the remaining unsintered powder will appear. The quantity of FRESH POWDER (for PA11, PA12) needed to be added for the next print will be displayed on the screen.
9. Next, the system will guide you through printer cleaning process. It will allow to recover all of the remaining unsintered powder.



#### IMPORTANT!

- Always pay attention to the messages displayed on the LCD panel. Not acting according to the messages may result in the following print being incorrect.
- The Sinterit STUDIO 2019 software calculates the amount of FRESH POWDER, which needs to be added to that recovered from the printer.
- Even if you do not intend to make a following print right after the previous one, mix both powders immediately after recovering the unsintered powder from the printer in the proportions given by the Sinterit STUDIO 2019 software. Store it in a container for the PRINT READY POWDER.

## 6. Cleaning the printer

The system will guide you through the process of cleaning the printer right after printing. You can also do it later, by using CLEAN PRINTER option displayed in main menu. All actions should be confirmed by pressing the DONE button.

1. Remove the unsintered powder from the OVERFLOW BIN. Place the OVERFLOW BIN back in its place.
2. Transfer it to the container in which it will be mixed with the FRESH POWDER (to refresh the used powder and prepare it for the next print).
3. Remove and clean the LASER PROTECTIVE GLASS. It is recommended to clean the glass before and after each print. In order to clean the glass, follow the instructions in the "Maintenance and service of the Sinterit LISA PRO Printer", section 11 – available in the full version of the manual.
4. Place the glass back in its place and then confirm all actions by pressing the DONE button.

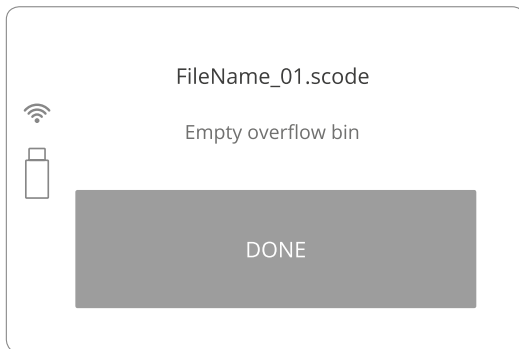


Image 34. OVERFLOW BIN cleaning screen. Step 1.

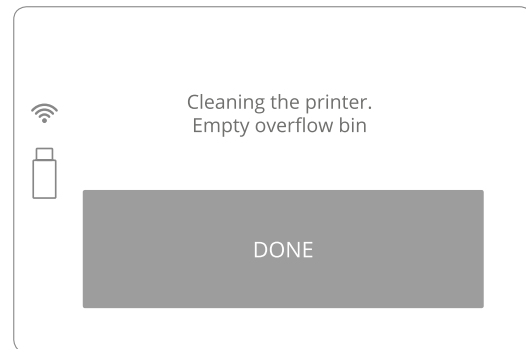


Image 35. OVERFLOW BIN cleaning screen. Step 2.



#### STOP!

- Watch out for the elements of the heating system of the machine.
- Do not clean the glass under running water.
- The cleaning process should be carried out outside of the machine.

5. FEED BED MIGHT NOT HAVE BEEN CLEANED AFTER LAST PRINT message will appear.
6. After cleaning the FEED BED confirm it by pressing CLEAN FEED BED button. The FEED BED will be raised and the PRINT BED will be lowered.



- All remaining unsintered powder from the FEED BED should be placed into the PRINT BED. Precisely clean the FEED BED from the remaining unsintered powder including the BEDs surroundings. This can be done with the use of a spatula. SKIP button can be pressed if cleaning process had been already done.
- Ensure that the workspace of the RECOATER is not obstructed and remove all objects from the printer chamber.
- Check if all elements are at their default positions (RECOATER, LASER). Check the tension and condition of the RECOATER's CABLES. Confirm by clicking DONE button.
- PRINT BED MIGHT NOT HAVE BEEN CLEANED AFTER LAST PRINT message will appear. All remaining unsintered powder from print chamber should be removed (Image 39).
- All remaining powder from the PRINT BED should be placed into the OVERFLOW BIN, by directing the powder through a gap located on the right side of the printer's inner chamber. Thoroughly clean the PRINT BED from the remaining unsintered powder including the BEDs surroundings. This can be done with the use of a spatula (Image 40).

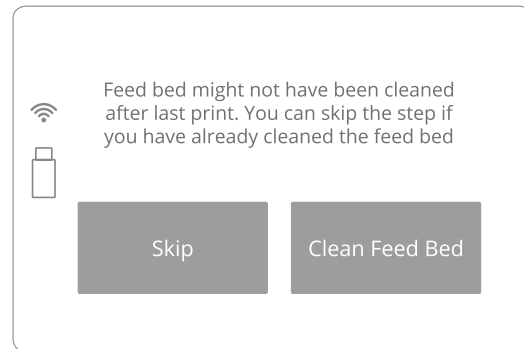


Image 36. Clean FEED BED screen.

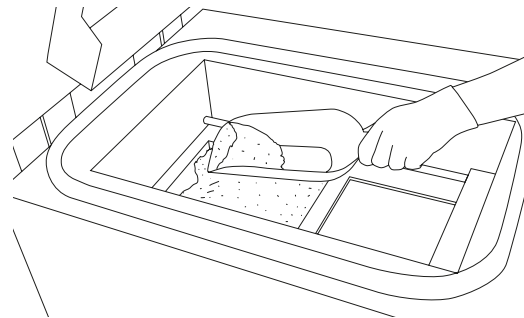


Image 37. Removing the powder from the FEED BED.

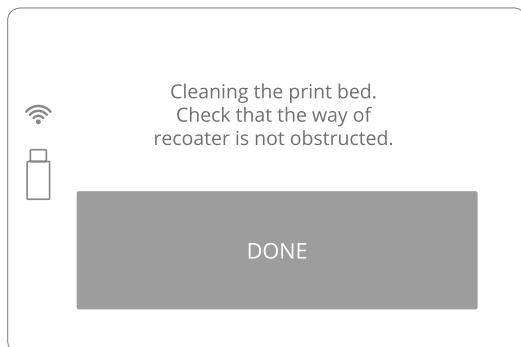


Image 38. Clean PRINT BED screen 1.

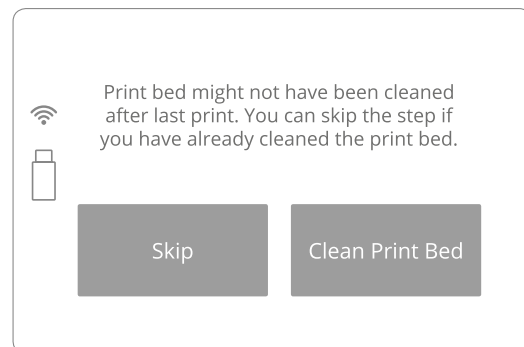


Image 39. Clean PRINT BED screen 2.



### STOP!

For cleaning the guide bar of the RECOATER, it is recommended to use a paintbrush with a soft bristle (included in the set), or compressed air (when there is no powder inside the printer). After cleaning, the guide bar of the RECOATER should be lubricated with silicone oil (included in the accessory kit).

- Remove all objects from the print chamber and ensure no obstructions are present within the RECOATER's workspace. Confirm by clicking DONE button. After finishing the cleaning process, confirm by clicking DONE (Image 41).
- Thoroughly clean all the remaining unsintered powder from the surroundings. All remaining powder should be placed into the OVERFLOW BIN through the gap. Confirm by clicking DONE (Image 42).

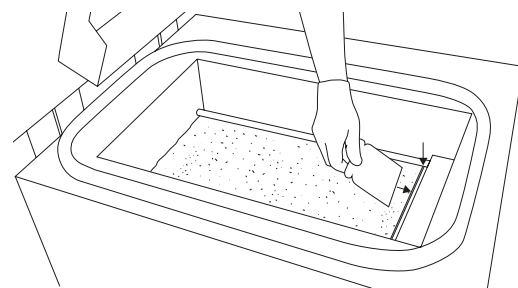


Image 40. Removing powder from PRINT BED to OVERFLOW BIN.



14. Remove the powder from the OVERFLOW BIN. Transfer it to the container in which you will mix the unsintered powder from the printer, with the FRESH POWDER (to refresh the used powder and prepare it for the next print).
15. Place the OVERFLOW BIN back in its place.
16. Once the OVERFLOW BIN has been emptied, confirm by clicking DONE and close the lid (Image 43).

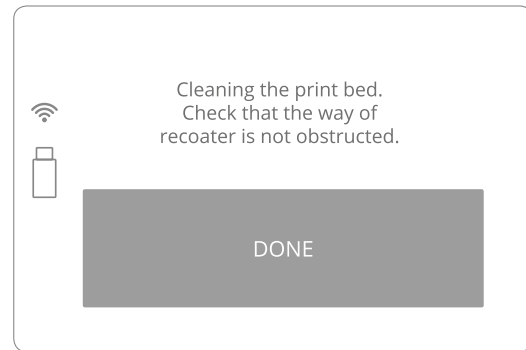


Image 41. Clean PRINT BED screen 3.

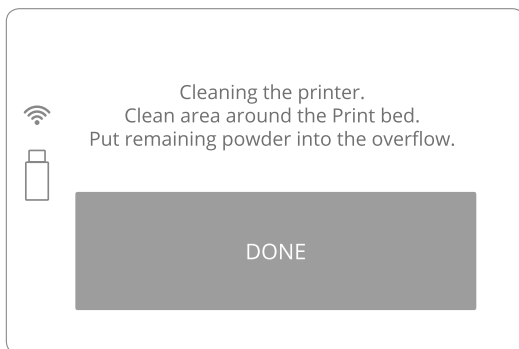


Image 42. Clean the PRINT BED screen 4.

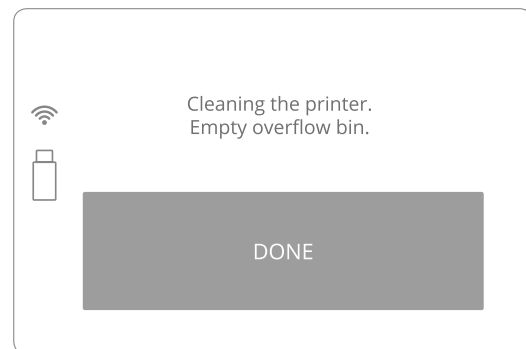


Image 43. Clean the OVERFLOW BIN screen.



**CAUTION!**  
Beware of sharp edges.



**IMPORTANT!**  
If any of the heaters was touched by hand, remove it, clean it and install one more time, using gloves or a clean cloth.

## 7. Technical support

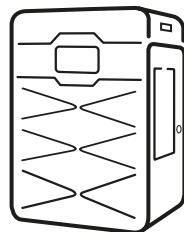
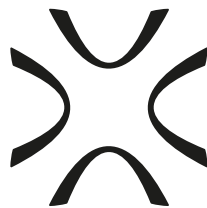
The latest information, technical support, and different versions of the manuals are available in the Support tab at the Sinterit Sp.z.o.o. website or by contacting through:

- email: [contact@sinterit.com](mailto:contact@sinterit.com)
- phone: +48 570 967 860

The list of distributors and technical support in specific countries can be found at [www.sinterit.com](http://www.sinterit.com)



**IMPORTANT!**  
More informations, f.ex. about nitrogen chamber, working with powders, etc. you can find in the full version of LISA PRO USER MANUAL. It is strongly recommend to read the full version before taking any action.



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