zortrax

Device User Guide

Apoller

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Introduction

Read this User Guide carefully and thoroughly before operating the Zortrax Apoller for the first time. The User Guide includes basic information about the device, safety guidelines and advice on preparing the machine for the first smoothing process and basic maintenance work. Ignorance and non-compliance with these instructions may result in property damage, injuries, device failures or lower performance. It is also necessary to ensure that every user who operates the device knows, fully understands and follows the instructions provided in this User Guide.

The Manufacturer makes every effort to ensure that the device is safe in transportation, installation, usage, storage and disposal. However, due to the lack of direct and ad hoc control as well as other conditions influencing the device and those that are beyond the Manufacturer's knowledge, the Manufacturer is not responsible for damage, injuries, failures and costs resulting from improper transportation, installation, usage, storage and disposal.

Intended Use of the Zortrax Apoller

The Zortrax Apoller is a post-processing device which smoothes down layers characteristic for items 3D printed in the LPD/FDM technology. This effect is achieved through vaporization of solvents that react with the thermoplastic used for 3D printing.

Users are responsible for qualifying and determining the intended use of smoothed models. The Manufacturer takes no responsibility for any use of the objects, especially when those objects constitute a part of safety equipment or strictly regulated medical, military or space science equipment.

Due to the size and specificity, the device is not intended for use by minors and people with reduced manual, motor and psychomotor skills. The Manufacturer recommends providing assistance and guidance to people with disabilities, minors and older adults who wish to operate the device.

General Safety Information

This User Guide contains safety guidelines that should be followed during operation of the Zortrax Apoller. It also mentions situations which require special attention and warnings against negligence and misuse which could cause damage or injuries.

It is important to read *Safety Data Sheets* for materials available at: https://zortrax.com/filaments/. To avoid any kinds of device failures, it is essential to update the firmware. Visit https://zortrax.com regularly to learn about the latest updates.

Safety signs used in the User Guide:

Symbol	Description
	A warning to strictly follow the instructions included in the User Guide to ensure safety and full functionality of the device.
	Information especially useful during installation and operation of the device.
	Information regarding explosion protection especially useful during installation and operation of the device.

The Zortrax Apoller operates at high temperatures with the use of explosive vapors and irritant chemicals, therefore, be particularly careful when handling the device.

It is extremely important to avoid situations that may lead to burns or interference in the device's proper functioning. Do not inhale vapors that remain in the chamber after opening the door.

Do not leave the machine unattended during the smoothing process - check it periodically for proper functioning to avoid potential failures. Turn off the device once the process is finished.

Monitor your device for wear and tear regularly. Contact Support Center available at: https://support.zortrax.com for assistance while replacing worn components.

Keep the device away from heat sources, flammable materials, equipment emitting radiation, fire, humidity, water and other liquids.

Keep the device out of reach of children and animals. Do not shake or drop the device as it may cause breakdowns.

The device is not intended for use in potentially explosive atmospheres.

While operating the device, wear safety gloves and glasses.

On the basis of the conducted risk assessment (including the risk of explosion), the Manufacturer concludes that the Zortrax Apoller conforms to the provisions of the Directive 2006/42/EC.

Due to the nature of the technological process, the device has been designed and produced in such a way to prevent the risk of explosion caused by the machine itself and by the vapors of flammable liquids used during its operation. The sufficient level of protection has been achieved through the adoption of the Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (ATEX).

According to the ATEX 2014/34/EU Guidelines (First edition - April 2016), all essential objectives of the Low Voltage Directive 2006/95/EC have been covered by the Directive 2014/34/EU (Annex II 1.2.7).

EN 1127-1:2009 Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology

ISO 80079-36:2016-07 Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements

ISO 80079-37:2016-07 Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety "c," control of ignition sources "b," liquid immersion "k."

The Zortrax Apoller has been marked: Ex II 1/- G Ex h IIA T2 Ga/-

The restrictions of the device's use in accordance with symbols present in the above marking and on the nameplate of the device:

Name	ATEX Marking	Explanation
Explosion protection mark		Symbol of equipment for use in explosive atmospheres. Note: Read the equipment category explanation.
Equipment group	II	Equipment intended for use in explosive atmospheres other than underground mining works.
Equipment category	1/- G	Equipment is not intended for use in potentially explosive atmospheres. Due to the nature of the technological process, the device has been designed and produced in such a way to prevent the risk of explosion caused by components in contact with the process medium or vapors of flammable liquids used for operation.
Type of protection	Ex h	Constructional safety according to normative requirements.
Group	IIA	Classification by the type of medium used for operation and by the presence of flammable gases: explosion subgroup IIA (propane).

Temperature class	T2	Equipment operates with the use of flammable liquids of auto-ignition temperature > 300° C [572° F]. Note: The restrictions of the liquid's use are included in this User Guide.

The Zortrax Apoller does not pose a threat to health and safety of people when: properly installed and maintained, and used according to its intended purpose (following this User Guide) or under foreseeable conditions.

Workplace Health and Safety

All maintenance activities as well as device operation require wearing neoprene safety gloves included in the Starter Kit. Wearing safety gloves is also advised while removing the print from the platform after the smoothing process.

Keep the workplace clean and well-lit. Disorder and lack of lighting in the workspace could lead to accidents.

The vapors released during the smoothing process do not pose a hazard - the device is tight. However, the room dedicated for operating the device should be properly and regularly ventilated.

Food and beverages should be kept away from both the device and 3D printed objects.

All measures regarding health and safety provided in this User Guide as well as in separate regulations should be implemented while operating the Zortrax Apoller.

The device should be configured according to its intended purpose. Improper configuration may cause defective operation which may lead to damage of the device or an accident.

If the device begins to operate in an unidentified way, safely unplug it from the power source and immediately contact the Manufacturer through the support form at: http://support.zortrax.com/support-form/.

Before and during each smoothing process it is extremely important to observe all safety rules. Do not disregard any of the rules included in the User Guide, even if you have carried out multiple smoothing processes. Careless use of the device may cause serious injuries in a very short time.

Electrical Safety

Use only the original power cable supplied with the device. Do not damage, cur or repair the cable. A damaged cable should be immediately replaced with a new one. The cable should be used according to its intended purpose and should be protected from heat, oils, sharp edges and moving components of the device. A damaged cable increases the risk of an electric shock.

Protect the device against rain and humidity. Be careful not to spill the liquid outside the filler. Liquids spilled into the device increase the risk of an electric shock.

To ensure the highest safety standards, including protection against short circuit, overload, over voltage and device overheating, do not attempt to modify the device and do not use replacement parts other than those recommended by the Manufacturer.

Before plugging the power cable into the outlet, make sure that the power supply voltage in the outlet matches the required value provided on the nameplate at the back of the device. Avoid overloading the outlet with too many devices.

The device must be well-grounded. Always make sure that the ground complies with local and national regulations.

Repair work can only be carried out by the Manufacturer or the Manufacturer's Authorized Service.

All maintenance activities should be carried out when the device is off and unplugged. Always follow the instructions included in this User Guide.

Mechanical Safety

All mechanical components in the Zortrax Apoller are covered and protected against the possibility of touching. However, you should not block the device's ventilation openings or put any objects in them.

Tools and accessories delivered with the device should be used with special care only for intended purposes. Improper use may cause serious injuries.

While following post-processing procedures, wear safety gloves and glasses to avoid injuries that may be caused by sharp edges and fragile elements of models.

If it is particularly difficult to remove a print from the platform after the smoothing process, at first take out the platform and remove the print outside the device using a spatula.

The platform is made of glass, therefore, be particularly careful during the assembly and disassembly process.

Risk of Burns

There is no risk of burns as all heating modules and components which operate at high temperatures are covered and protected against the possibility of touching.

Constructional modifications of the device's operating temperature are not permitted as it may cause serious injuries or bring damage to the device.

Service

Repairs of the device can only be carried out by the Manufacturer or the Manufacturer's Authorized Service.

Safe Storage and Transport Guide

Zortrax devices must be stores between 0 and 35° C [32 - 95° F]. The storage space should be free of moisture and other extreme conditions.

Transport Instructions:

When stacking several devices on a pallet, follow the instructions on the packaging. One device may weigh more than 30 kg [66 lb]. It is therefore advisable to provide safe pallet storage but not higher than 1.7 m [5'7"]. The packages must not project beyond the outline of the pallet. Packages stacked on the pallet should be then bound together and wrapped in foil. The pallet prepared as above can be then forwarded to the shipping company.

Pallet stacking and destacking should be carried out by two people. The package with the device should be lifted or moved using special handles. The device should not be carried by one person as it may cause injuries.

Electromagnetic Compatibility (EMC)

Each Zortrax device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference which should be removed by the user at his own expense.

Additional Safety Information

- For smoothing processes use only dedicated solvents in a concentration above 99% (acetone or butanone [MEK]).

- Do not block the ventilation openings. Keep the device 30 cm [12 in] from any objects that could block the openings.

- The solvent level must not exceed the MAX mark on the solvent level indicator.

- Keep the chamber door gasket clean. Clean gasket facilitates the device's tightness during the smoothing process.

- The filler cap must be tightly closed. The device will detect a lack of tightness and display a notification.

- Keep the solvent tray inside the device clean.

- The device must be placed on a stable surface, away from sources of fire and heat.

- The device can only operate at room temperature (15 - 30° C [59 - 86° F]). Otherwise, it will not be possible to run it.

- Do not ignore notifications displayed on the screen.

- Do not pour solvent directly into the tray inside the device.

- Only 3D printed models can be placed in the chamber.

- 3D printed models can only be placed on the glass platform or suspended on the hooks in the grid.

- All containers with solvents must be tightly closed and stored in a specially designated place, away from children and animals.

- Smoothing process can only be carried out using models 3D printed with dedicated thermoplastics.

- Do not smooth models that exceed the dimensions of the workspace as it may cause device malfunction.

- Do not pull the chamber door handle when the device is running.

- The smoothing process must be configured according to the type of solvent poured into the tank.

- The solvent tank must be filled using the specially designed set delivered with the device.

- Once the smoothing process is stopped after the solvent has been supplied to the tray, the device begins the condensation procedure.

- Serious failures, including power supply failure, block the chamber door, making it impossible to open.

- It is strictly prohibited to repair the device independently.

Learn More About the Zortrax Apoller

The Zortrax Apoller is a device which post-processes models 3D printed in the LPD/FDM technology. It operates in a system called Smart Vapor Smoothing (SVS), thanks to which vapors of a chemical substance circulate inside the chamber to smooth down the surface of 3D printed items. Depending on the material type used for printing, the device uses either acetone or butanone (MEK). Vapors of the solvent circulate in the chamber in such a way that the smoothing effect is even and at the same time the model does not get damaged. The device is capable of post-processing multiple models during one smoothing process. For environmental and safety reasons, the solvent vapors are effectively retracted and condensed in the chamber so that the liquid can be regained and used for the next smoothing processes.

How does the Zortrax Apoller work?

After the device is turned on, users gain access to the main menu where it is possible to adjust several settings for the smoothing process: smoothing mode, type of solvent, type of model's material and smoothing intensity. Once these settings are selected, the device removes air from the chamber to ensure tightness and other suitable conditions necessary for the smoothing process. Next, the device supplies the tray with the required amount of solvent which then vaporizes as a result of chamber heating and air circulation. The air circulation system enables even distribution of solvent vapors concentration in the entire working volume of the device. These vapors have influence on the models' surface for a certain period of time, and at the end of the whole process they are condensed. Once the first stage of condensation is finished, the device warms up the models and the reacted substance vaporize from their surface. Next, the device starts the final condensation procedure during which the models are cooled to room temperature. Once the smoothing process is successfully finished, the models are ready for use.

What's in the Box

Zortrax Apoller

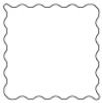
Power Cable

Spatula

Metal Grid & Hooks

Safety Gloves

Safety Glasses



Cloth

Wash Bottle

Syringe with Tube

Stirrer Fuse

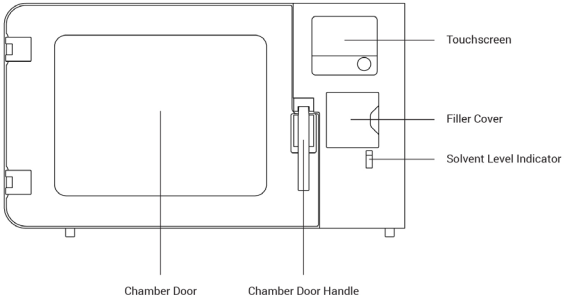
AC Fuse

Filler Cap Gasket

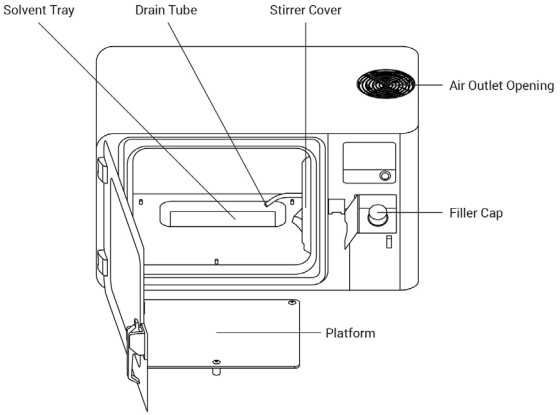
USB Drive

Main Components

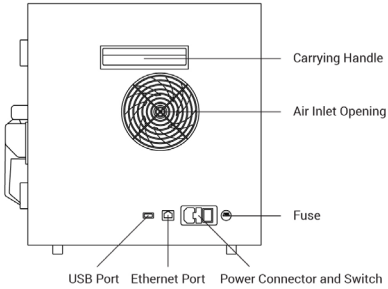
1. Front view (closed)



2. Front view (open)



3. Right-side view



Zortrax Apoller Technology Glossary

CONDENSATION

a process of solvent vapors condensation, thanks to which it is possible to regain some part of the solvent. Moreover, condensation ensures safe conditions once the smoothing process is finished.

DRYING

a gradual process of warming up models and vaporizing a reacted substance from their surface. Next, the device starts the final evaporation procedure during which the models are cooled to room temperature.

LPD (LAYER PLASTIC DEPOSITION) / FFF

a 3D printing technology in which a melted material is deposited on a surface. This technique involves applying onel ayer of material after another in order to accurately form a computer-designed shape. The printer starts to print from the bottom and builds the object until it is fully formed. The model and the support structures are created using the same material.

MATERIALS

specially dedicated Zortrax printing materials which maximize the benefits of 3D printing. These thermoplastic materials are in the form of filaments wound on a spool. Each material has different properties and can easily be adapted to a wide range of needs and applications. Moreover, most of the materials can be mechanically or chemically post-processed.

MOTHERBOARD

the most important part of Zortrax Apoller to which all components necessary for proper device operation are connected. It is the main printed circuit board that ensures electrical flow and communication between particular components of the device. The motherboard is placed behind the screen inside the machine.

PLATFORM

integral part of Zortrax Apoller on which a user places models that will be subjected to post-processing. The platform can easily be removed as well as inserted back into the device.

POWER OUTLET AND MAIN SWITCH

the switch enables turning the device on and off. Next to the switch, there is a power outlet where you plug the power cable in.

POST-PROCESSING

all mechanical and chemical treatments that influence 3D printed objects' surface in order to make models look more interesting and attractive. These post-processing methods include, for example, smoothing, sanding, painting or gluing two or more parts together to create one model.

RAFT

the first few layers of material, which begin the whole printing process. These layers are always printed before the main object and have a larger area than that object. Once the printing is done, the raft needs to be removed from the platform together with the rest of the model. The raft enhances the adhesion of the whole print to the platform and reduces the risk of warping. Before launching the smoothing process in Zortrax Apoller, RAFT always has to be removed from the model.

SMART VAPORT SMOOTHING (SVS)

a method of smoothing the surface of 3D printed models that uses advanced algorithms controlling the concentration of solvent vapors, process temperature, pressure and intensity of vapor circulation. SVS technology helps achieve high quality and repeatability of the smoothing process, at the same time preserving model's details intact.

STARTER KIT

a set of tools and protective materials useful while working with the Zortrax Apoller. Each device is delivered with the full starter set, so that handling or maintaining the machine becomes easier and more effective.

SUPPORT STRUCTURES

if your model has any overhanging or protruding parts, they have to be supported with special structures so that they don't fall down. Without these structures, the model may lose its predesigned shape. The support is printed with the same material as the model. Once the printing is done, it is necessary to carefully remove the support by hand or using pliers. Before launching the smoothing process in Zortrax Apoller, support structures always have to be removed from the model.

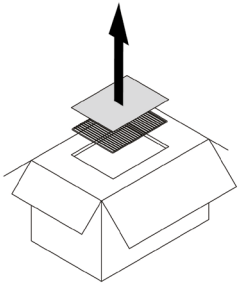
TOUCHSCREEN

the display screen placed at the front of the device, which enables fast and intuitive navigation through the menu. The screen also displays information about the current smoothing process and other information concerning the device.

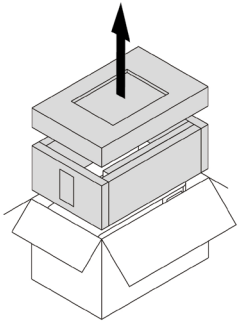
VAPORIZATION

a process of liquid transition to vapors, which will be then atomized in the chamber, and finally distributed on models.

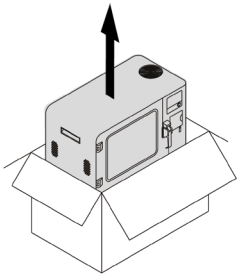
First Use Preparations



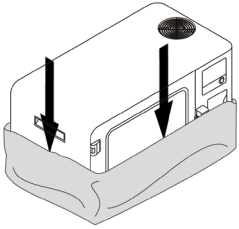
1. Open the box and remove the metal grid and brochures.



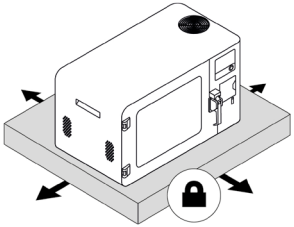
2. Remove the upper and side cushioning.



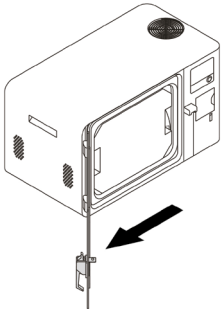
3. Take the device out of the box.



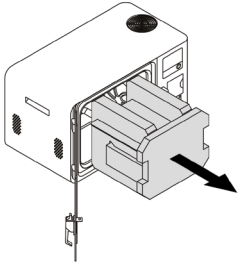
4. Remove the foil.



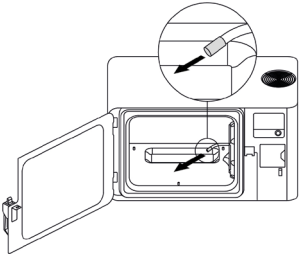
5. Place the device on a flat and stable surface. Before the first use, make sure that your work area is safe and well-ventilated. Keep the device away from heat sources, flammable materials and equipment emitting radiation.



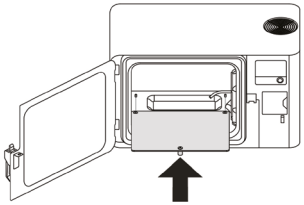
6. Open the chamber door. The door should open easily. If the door is blocked, contact the Authorized Service. Do not pull the chamber door handle or attempt to remove the the blockage.



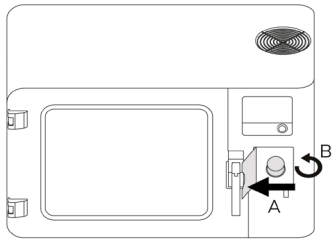
7. Remove the Starter Kit with the platform from the chamber.



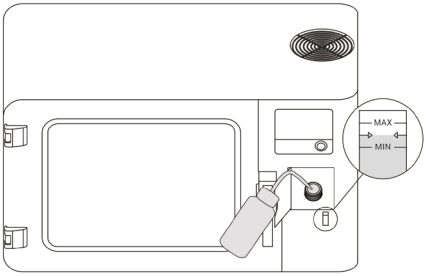
8. Remove the plug from the drain tube.



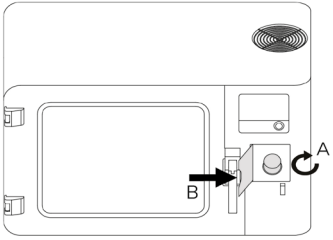
9. Remove the foil from the platform. Place the platform on pins inside the chamber.



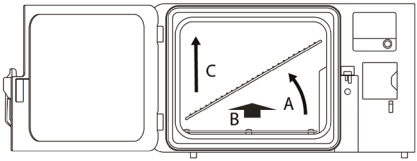
10. Open the filler cover (A) and unscrew the filler cap (B). Wear safety glasses and gloves.



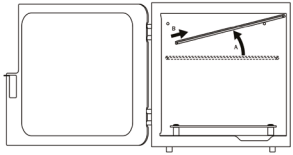
11. Pour solvent into the wash bottle. Fill the tank with liquid up to the line marked with arrows (the most optimum level). Tightly close the solvent container and put it in a safe place. For the smoothing process use only dedicated solvents: either acetone or butanone (MEK). Do not use other solvents.



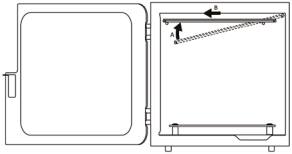
12. Tightly screw the filler cap. Make sure the cap is properly attached, and then tightened (A). Close the filler cover (B).



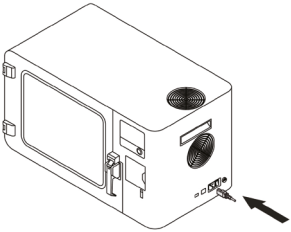
13. Tilt the metal grid (A) to place it in the chamber (B). Next, adjust the grid so that it is in the upper part of the chamber (C).*



14. Slide the grid on the back pins (A) and move it back (B)*.

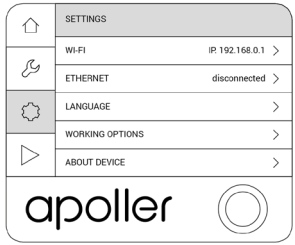


15. Move the grid forward (A) so that it is on the front pins (B)*.

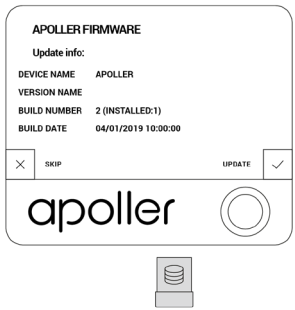


16. Plug in the power cable and turn on the device. Connect it to a network via Wi-Fi or Ethernet. Go to *Settings* and configure the connection using options from the menu.

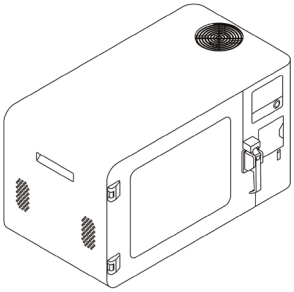
*The steps with grid installation are optional. Use only the original grid and hooks.



17. If the device is connected to a network, select *Settings -> About Device -> Check for updates* to check if there is a newer firmware version available. If so, follow the instructions displayed on the screen.



18. If the device isn't connected to a network, go to https://support.zortrax.com/downloads/ and check if there is a firmware update available. If so, download the file and save it on the USB drive. Plug the USB drive into the port at the side of the device to start the installation.

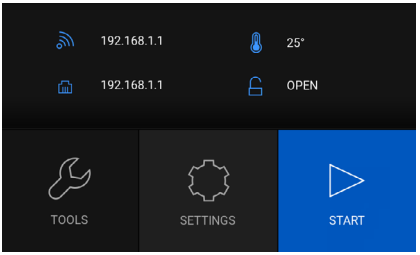


19. You have finished the set-up. Your device is ready to work.

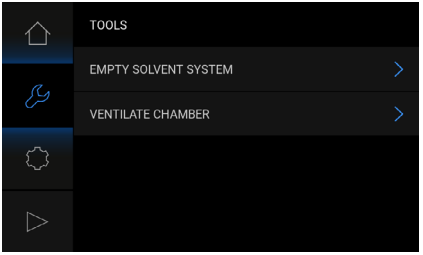
Navigating through the Menu

The main menu is divided into four submenus: *HOME*, *TOOLS*, *SETTINGS*, *START*. Navigating through the menus and activating or deactivating the device's functions and settings is possible through the touchscreen.

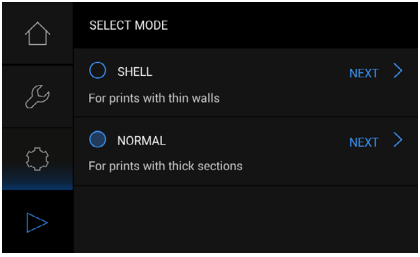
The *HOME* screen displays all relevant information about the device and its current state: IP address, the type of connection to a local network: Wi-Fi or Ethernet, ambient temperature, information whether the chamber door is closed/open.



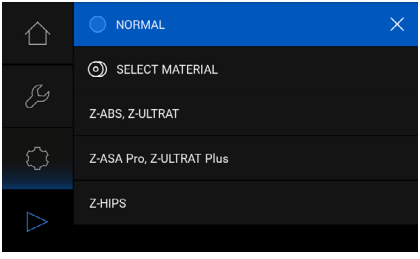
The *HOME* screen gives access to the *TOOLS* menu where you can find two useful options while working with the device: *EMPTY SOLVENT SYSTEM* and *VENTILATE CHAMBER*. Follow the instructions displayed on the screen during these procedures.

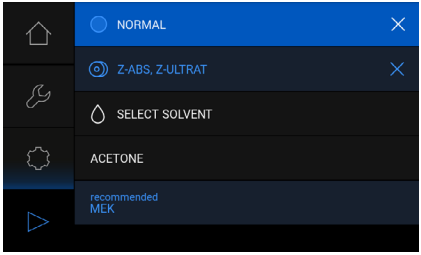


To start the smoothing process, select START in the main menu. In the first step you have to specify the type of the 3D print which is going to be smoothed. There are two options available: *SHELL* - for prints with thin walls and NORMAL - for prints with thick sections.

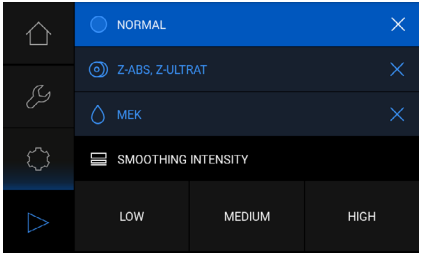


In the next step you have to choose the material type which has been used to print the model. The materials compatible with the device are: Z-ABS, Z-ULTRAT, Z-ASA Pro, Z-ULTRAT Plus and Z-HIPS. Then select the solvent type which is going to be used for smoothing: either acetone or butanone (MEK), depending on the material used for printing. The device will mark the solvent type recommended for the previously selected material.





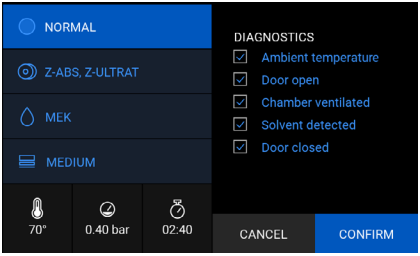
The last step is to choose the smoothing intensity. There are three options available: *LOW*, *MEDIUM* and *HIGH*.



Once all settings are chosen, the device starts the diagnostic procedure of the surrounding conditions and the degree of preparation for the smoothing process. At first, the device has to check the ambient temperature, whereas the user has to ventilate the chamber, fill the tank with solvent and close the chamber door. Each step is indicated on the list in the right side of the screen.

While carrying out these procedures, observe all safety rules and follow the instructions displayed on the screen.

After all diagnostic activities have been performed, select *CONFIRM* to begin the smoothing process. All information related to the process and the current state of the device will be displayed on the screen.



Light Signals and Operating Modes

The Zortrax Apoller indicates its current mode using notifications displayed on the screen. Every time the device changes its operating mode, the LED backlight inside the chamber changes its color into a different one as well.

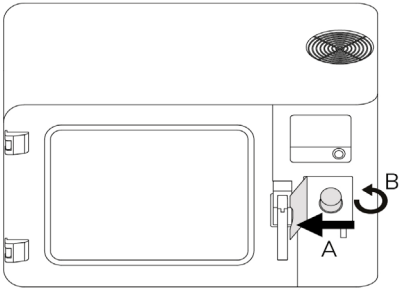
Light signals:

- Blue - ready for operation
- White - smoothing process
- Green - the end of the process
- Red - error

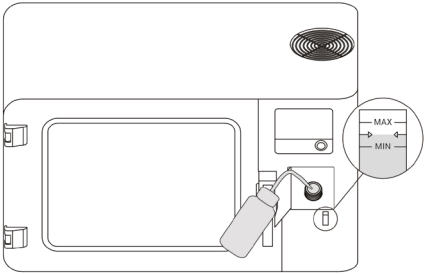
Adding the Solvent

Use only solvents approved by the Manufacturer (acetone or MEK).

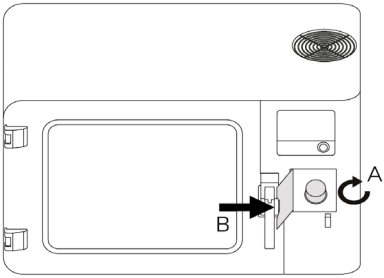
Wear protective gloves and glasses during all procedures.



1. Open the filler cover (A) and unscrew the cap (B).



2. Pour solvent into the wash bottle. Fill the tank with liquid up to the line marked with arrows (the most optimum level). Tightly close the solvent container and put it in a safe place.

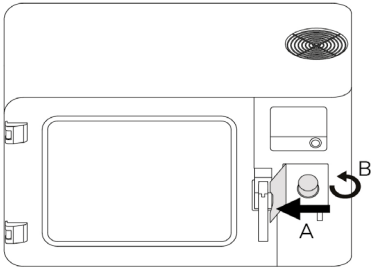


3. Tightly screw the filler cap. Make sure the cap is properly attached, and then tightened (A). Close the filler cover (B).

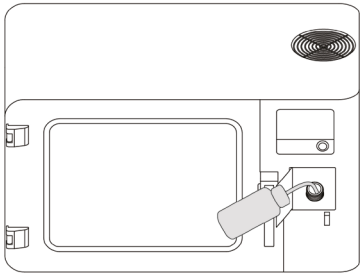
Changing the Solvent

Use only solvents approved by the Manufacturer (acetone or MEK).

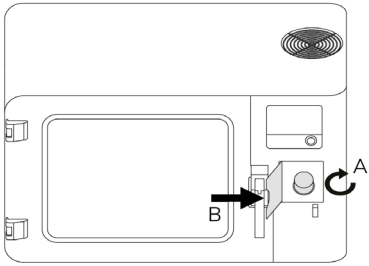
Wear protective gloves and glasses during all procedures.



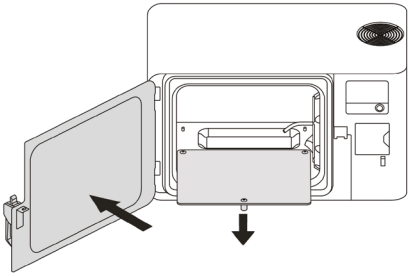
1. Open the filler cover (A) and unscrew the cap (B).



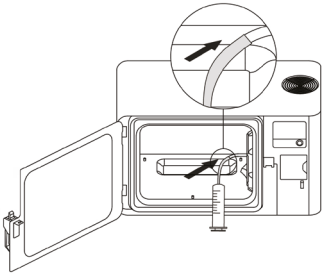
2. Prepare the wash bottle delivered with the device. Squeeze it and put its nozzle in the solvent tank. Release the bottle to retract as much solvent as possible.



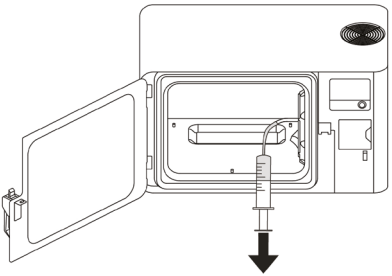
3. Tightly screw the filler cap. Make sure the cap is properly attached, and then tightened (A). Close the filler cover (B).



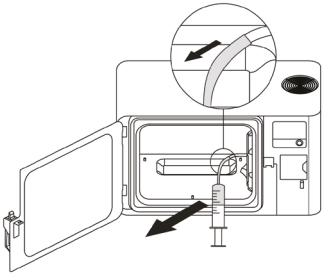
4. Open the chamber door (A) and remove the platform (B).



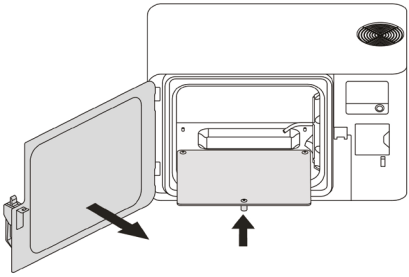
5. Put the syringe tube on the drain tube inside the device and start the procedure of emptying the tank. Select *Tools* and *Empty solvent system*.



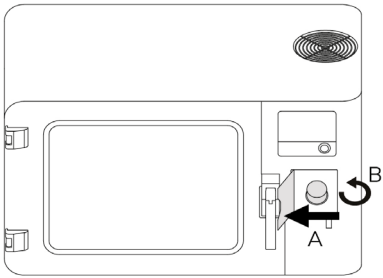
6. Retract as much solvent as possible and select *Done* on the touchscreen.



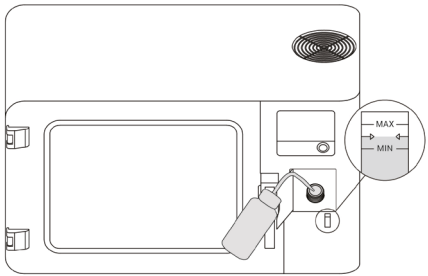
7. Remove the syringe from the device and pour the liquid into the container with solvent.



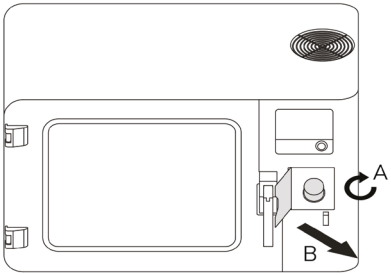
8. Place the platform back on the pins inside the chamber (A). Close the chamber door (B).



9. Open the filler cover (A) and unscrew the cap (B).



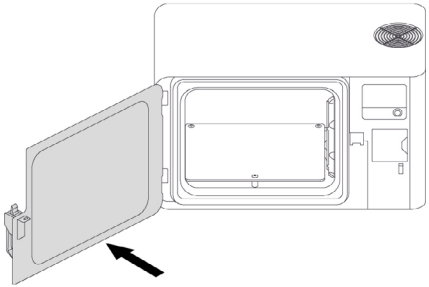
10. Pour solvent into the wash bottle. Fill the tank with liquid up to the line marked with arrows (the most optimum level). Tightly close the solvent container and put it in a safe place.



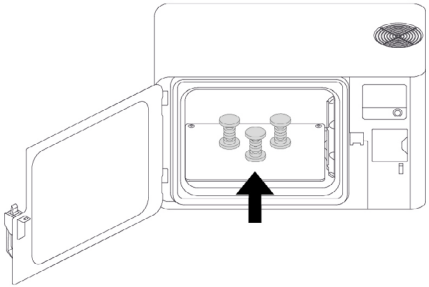
11. Tightly screw the filler cap. Make sure the cap is properly attached, and then tightened (A). Close the filler cover (B).

Starting the Process

Preparing:

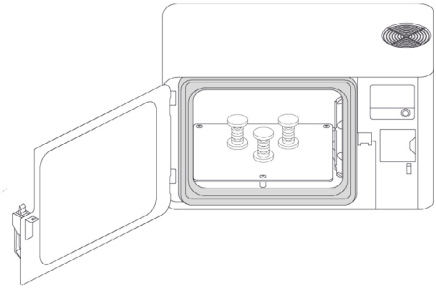


a. Open the chamber door.

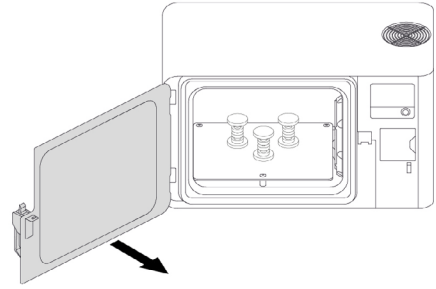


b. Put a model on the platform. If you smooth more than one model, keep appropriate distance between them (2-5 cm [0.8-2 in]).

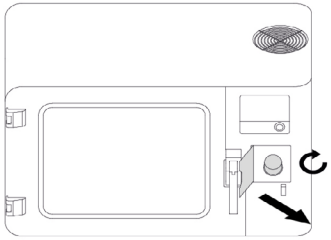
You can also suspend the models on the metal grid using hooks delivered with the device.



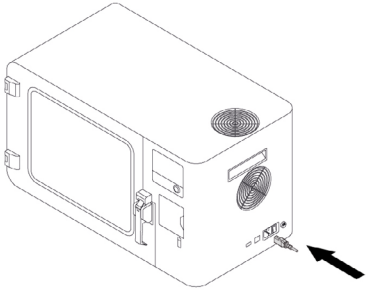
c. Inspect the chamber door gasket. If it's necessary, clean it.



d. Close the door.



e. If it's necessary, add more solvent. Tightly screw the filler cap. Make sure the cap is properly attached, and then tightened. Close the filler cover.



f. Plug in the power cable.

Starting:

a. Turn on the device.

b. Select settings: mode, solvent type, material type, smoothing intensity.

Stages:

1. Once the smoothing is started, the chamber door remains blocked until the end of the process.

2. Procedure of creating negative pressure in the chamber.

3. Chamber heating.

4. Solvent supplying.

5. Smoothing.

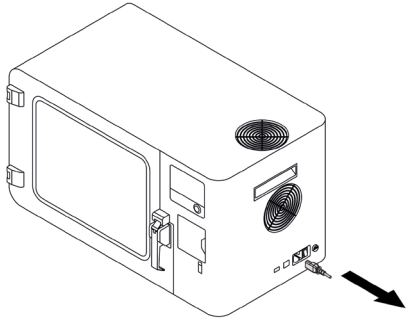
6. Initial condensation.

7. Warming up/vaporization.

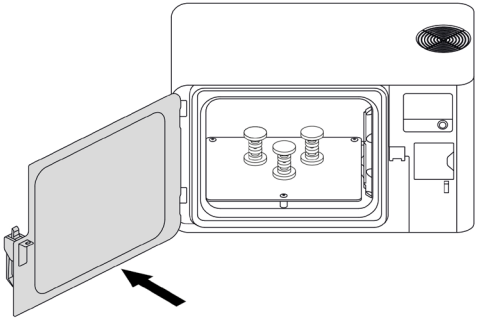
8. Main condensation.

9. Completing the process, unblocking the chamber door, venting the chamber.

Completing:

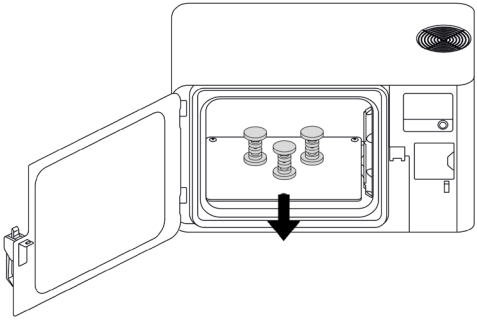


a. Turn off the device and unplug the power cable.

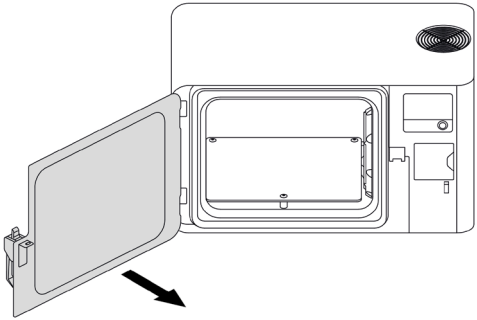


b. Open the chamber door.

Open the door in such a way to avoid inhaling vapors from the chamber.



c. Remove the model(s) from the platform.

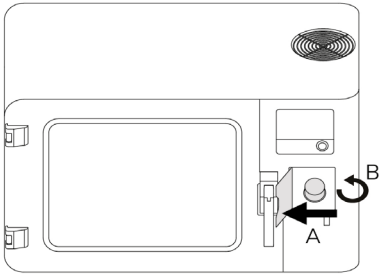


d. Close the door.

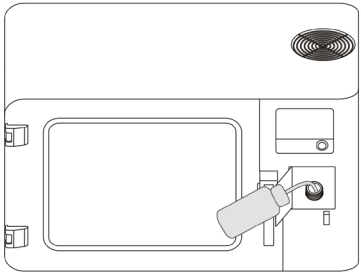
The device cannot start the next smoothing process until its components are cooled to room temperature.

Preparing for Transport

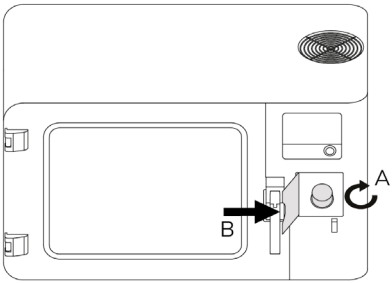
Wear protective gloves and glasses during all procedures.



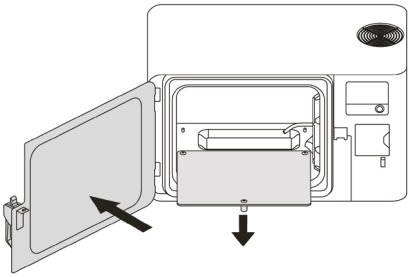
1. Open the filler cover (A) and unscrew the cap (B).



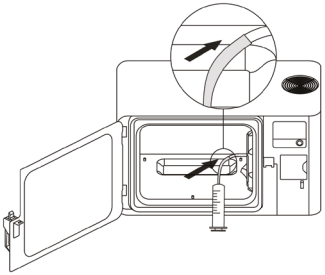
2. Prepare the wash bottle delivered with the device. Squeeze it and put its nozzle in the solvent tank. Release the bottle to retract as much solvent as possible.



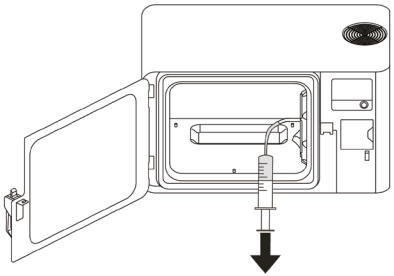
3. Tightly screw the filler cap. Make sure the cap is properly attached, and then tightened (A). Close the filler cover (B).



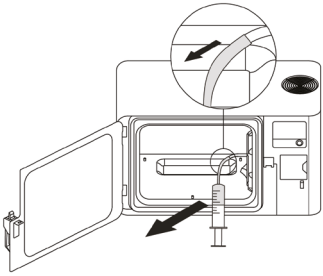
4. Open the chamber door (A) and remove the platform (B). Place the platform in the protective foam.



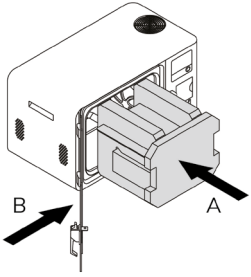
5. Put the syringe tube on the drain tube inside the device and start the procedure of emptying the tank. Select *Tools* and *Empty solvent system*.



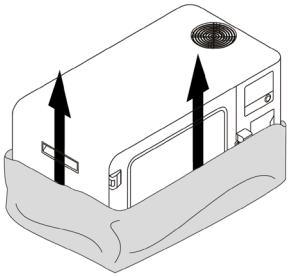
6. Retract as much solvent as possible and select *Done* on the touchscreen.



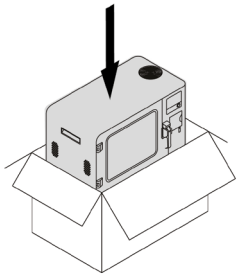
7. Remove the syringe from the device and pour the liquid into the container with solvent.



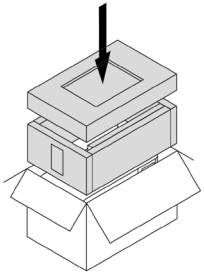
8. Place the protective foam with the platform inside the chamber (A). Close the door (B).



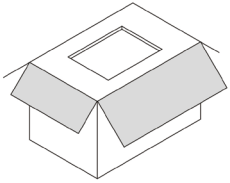
9. Wrap the device in foil.



10. Put the device in the box.



11. Place the side and upper cushioning.



12. Close and tape the box.

Materials Prone to Smoothing Process in the Zortrax Apoller

The following table specifies Zortrax materials that are prone to the smoothing process in the Zortrax Apoller device, compatible solvents and final effects of the surface finish.

	ACETONE	MEK
Z-ABS	Glossy finish, layers on vertical surfaces are invisible	Glossy finish, layers on vertical surfaces are invisible
Z-ASA Pro	Semi-matte finish, layers on vertical surfaces are invisible	Semi-matte finish, layers on vertical surfaces are invisible
Z-ULTRAT	Glossy finish, layers on vertical surfaces are invisible	Glossy finish, layers on vertical surfaces are invisible
Z-ULTRAT Plus	Semi-matte finish, layers on vertical surfaces are invisible	Semi-matte finish, layers on vertical surfaces are invisible
Z-HIPS	No reaction	Glossy finish, layers on vertical surfaces are invisible

Basic Maintenance

Maintenance work should be regular in order to keep the device in good condition and achieve high quality of the smoothing process each and every time. Some parts require maintenance before each process and some every few hundred working hours. Basic maintenance of the Zortrax Apoller device is not complicated and does not take too much time.

Before commencing any maintenance, it is extremely important to turn off the device and let it cool down. Remember to always wear safety gloves and glasses.

Zortrax Apoller is delivered with a full set of tools needed to carry out maintenance.

The following table presents maintenance guidelines connected with each section of the device together with specific check points, necessary activities and their frequency.

Activity	Frequency	Solutions to the problem	Necessary accessories
Cleaning the solvent tank	After each smoothing process	Soak a piece of cloth in isopropyl alcohol, acetone or butanone (MEK), and thoroughly clean the residue left in the solvent tank	- gloves, - a piece of cloth, - chemical or degreasing substance, - safety glasses
Cleaning the chamber	After a few smoothing processes or when visible residue accumulates in the chamber	Soak a piece of cloth in isopropyl alcohol, acetone or butanone (MEK), and thoroughly clean the sides of the chamber	- gloves, - a piece of cloth, - chemical or degreasing substance, - safety glasses
Cleaning the platform	After each smoothing process or when needed	Soak a piece of cloth in isopropyl alcohol, acetone or butanone (MEK), and thoroughly clean the platform	- spatula, - gloves, - a piece of cloth, - chemical or degreasing substance, - safety glasses

Cleaning the door	After each smoothing process or when needed	Soak a piece of cloth in isopropyl alcohol, acetone or butanone (MEK), and thoroughly clean the door. Focus on the point of contact between the door and the gasket	- gloves, - a piece of cloth, - chemical or degreasing substance, - safety glasses
Cleaning the gasket	Before each smoothing process	Soak a piece of cloth in isopropyl alcohol, acetone or butanone (MEK), and thoroughly clean the gasket, directing the cloth along the gasket's profile. The gasket should not be cleaned with the use of sharp tools.	- gloves, - a piece of cloth, - chemical or degreasing substance, - safety glasses
Adding the solvent	Right after receiving a notification	Follow the procedure of adding the solvent (page 31)	- gloves, - a bottle with a tube, - acetone or butanone (MEK), - safety glasses
Changing the solvent	When needed or once a month	Follow the procedure of changing the solvent (page 33)	- gloves, - a bottle for the remaining solvent, - safety glasses
Cleaning the drain tube	After each smoothing process	After cleaning the solvent tank, use a brush to clean the tip of the drain tube to avoid any blockage	- gloves, - a piece of cloth, - a brush, - chemical or degreasing substance, - safety glasses

Risk of Fire/Explosion

All maintenance activities must be carried out in a well-ventilated area.

Keep the device away from sources of heat, flammable materials, equipment emitting radiation, humidity, water and other liquids. Use cleaning liquids only in very small amounts. Do not spray them and avoid spillage.

After maintenance, wait at least one hour before running the device.

Service work can only be carried out by the Manufacturer or the Manufacturer's Authorized Service.

The device requires inspection and service conducted by the Manufacturer at least once a year.

The service include:

- regular inspection of pressure and electrical bonding,

- necessary periodic replacement of the bearing and lip seal of the stirrer drive shaft,

- regular inspection of the stirrer,

- compulsory test of the whole liquid and vapor circulation system's tightness.

Support and Troubleshooting

In order to ensure safety of every Zortrax Apoller device's user, the Manufacturer provides various support while identifying and solving technical problems independently.

In case of difficulties with operating the device, at first you should seek guidance in this User Guide, check the manuals available at: http://support.zortrax.com/, or consult our technical specialists through the Support Form available at: http://support.zortrax.com/support-form/.

The most common problems are listed below along with the list of possible solutions.

Lack of tightness of the vacuum system or too fast pressure drop

- Make sure the gasket of the chamber door is not dirty. If it is, clean the gasket following the suggestions included in this User Guide (page 53),

The device does not supply the solvent or the solvent does not flow through the drain tube

- Make sure the solvent tank and the tip of the drain tube are not dirty. If they are, clean the solvent tank and the tip of the drain tube following the suggestions included in this User Guide (pages 52 - 53),

Smoothed print is sticking to the platform

- Make sure the platform is not too cold when launching the smoothing process. Restart the process.

Smoothed print cracks after a few days or weeks

- The problem arises from inadequate settings when preparing a model for 3D printing.

Error Messages

Whenever there is a technical issue caused by a hardware failure, negligence or inappropriate use of the Zortrax Apoller device, the firmware immediately displays an error message on the screen. The following list explains all error messages and provides potential causes and suggested solutions.

Error message	Potential cause	Suggested solution
#002 STIRRER_RPM_ERROR	Rotational speed of the stirrer is not sufficient. The stirrer has worn off or the sensor of the stirrer speed has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#003 STIRRER_FUSE_BURN	Stirrer fuse has got damaged.	Replace the stirrer fuse. If the problem reoccurs, contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#005 PRESSURE_DROP_ERROR	Pressure in the chamber is too high. The gasket might be dirty, filler cap might not be tightened, or the vacuum system has failed.	Clean the door gasket and make sure the filler cap is properly tightened. If the problem reoccurs, contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#007 PRESSURE_LEVEL_ERROR	Pressure during the smoothing process has reached too high value. Either pressure measurement or solvent supply system has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#009 UPPER_FAN_FAIL	Speed of the upper fan is not sufficient.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#011 SIDE_FAN_FAIL	Speed of the side fan is not sufficient.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.

#012 NTC1_ERROR	Thermistor no. 1 has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#013 NTC2_ERROR	Thermistor no. 2 has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#014 NTC3_ERROR	Thermistor no. 3 has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#015 NTC4_ERROR	Thermistor no. 4 has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#016 NTC5_ERROR	Thermistor no. 5 has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#017 NTC6_ERROR	Thermistor no. 6 has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#019 OVERHEAT_ERROR	Chamber has reached critical temperature. Heating control board has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#020 HC_DISCONNECT	Heating control board has failed.	Contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.

#021 TO_CHAMBER_UNDERHEAT	Temperature in the chamber is too low.	Make sure that the room temperature exceeds 15° C (59° F). If the problem reoccurs, contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#022 TO_PELTIER_HOTSIDE	Cooling system radiator has not been cooled down in due time. Room temperature may be too high or cooling system has failed.	Make sure that room temperature does not exceed 30° C (86° F). If the problem reoccurs, contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#023 TO_PELTIER_COLDSIDE	Cooling system has not been cooled down in due time. Room temperature may be too high or cooling system has failed.	Make sure that room temperature does not exceed 30° C (86° F). If the problem reoccurs, contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.
#025 TO_REPRESSURIZATION	Pressure in the chamber has not been compensated in due time. Repressurization system might have failed.	Unscrew the filler cap to repressurize the chamber and to open the chamber door. If the problem reoccurs, contact Zortrax Support Center through the support form: https://support.zortrax.com/support-form/.

Specification

Weight and physical dimensions	
External dimensions (W x D x H)	671 x 396 x 388 mm (26.4 x 15.6 x 15.3 in)
Internal dimensions	340 x 270 x 260 mm (13.4 x 10.6 x 10.2 in)
Device weight	30 kg (66 lb)
Device	
Build volume	300 x 250 x 250 mm (11.8 x 9.8 x 9.8 in)
Connectivity	Wi-Fi, Ethernet, USB
Operating system	Android
Processor	Quad Core
Touchscreen	4" IPS 800 x 480
Solvent compatibility	Acetone, MEK
Available materials	Z-ABS, Z-ULTRAT, Z-ULTRAT Plus, Z-ASA Pro, Z-HIPS
External materials	ABS, ASA, HIPS

Process	
Maximum working temperature	90° C (194° F)
Minimum working temperature	-20° C (-4° F)
Minimum absolute working pressure	0.4 bar
Ambient operation temperature	15 – 30° C (59 – 86° F)
Storage temperature	0 - 35° C (32 - 95° F)
Electrical	
AC input	110 V ~ 13.6 A 50/60 Hz; 240 V ~ 6.3 A 50/60 Hz
Power supply parameters	24 V DC @ 14 A, 500 W
Maximum power consumption	1500 W

Recycling

Disposal of paper and plastic packaging

To protect the environment, the Manufacturer recommends placing used paper and plastic packaging in specially designed containers, according to your local recycling guidelines.

Waste electrical and electronic equipment

This symbol indicates that it is electrical and electronic equipment which must not be disposed of with household waste. Substances contained in the equipment may be harmful to natural environment. Waste electrical and electronic equipment cannot be disposed of in landfills and must be recycled. For information on where to dispose of waste equipment, contact the reseller, the Manufacturer, or the importer of the device. Disposing of waste electrical and electronic equipment along with other waste is prohibited by the Directive 2012/19/UE.

Certification

The device is equipped with appropriate technical measures that prevent explosive atmospheres from occurring during operation. The Manufacturer provided basic organizational and technical measures that have to be taken to ensure the highest safety level.

The device has been labelled with respective conformity markings, and the Manufacturer has issued a written declaration of conformity.

In case of questions, contact the Manufacturer through the support form available at: http://support.zortrax.com/support-form/.

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office: office@zortrax.com

technical support: support@zortrax.com

more information: zortrax.com