

zortrax

3D Printer User Guide

Inventure



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Introduction

Read this User Guide carefully and thoroughly before operating Zortrax products for the first time. The User Guide includes basic information about the 3D printer and safety guidelines, as well as advice on preparing the machine for the first printing and basic maintenance work. Ignorance and non-compliance with these instructions may result in property damage, injuries, device failures, or lower quality of 3D prints. It is also necessary to ensure that every 3D printer user knows, fully understands, and follows the instructions provided in this User Guide.

The Manufacturer makes every effort to ensure that Zortrax products are safe in transportation, installation, usage, storage, and disposal. However, given the lack of direct and indirect control over the device, and a number of other factors influencing the device, the Manufacturer is not responsible for damage, injuries, failures, and costs resulting from improper transportation, installation, usage, storage, and disposal.

Furthermore, the users should take into consideration the risk of possible faults of the device resulting from material and production defects.

Intended Use of the Zortrax Printers

The Zortrax Inventure works in the Layer Plastic Deposition (LPD Plus) technology, in which previously melted materials are deposited on a surface layer after layer in order to form a predesigned shape. The extruder is equipped with several heating points which allow the materials to exit the nozzles and be deposited onto the platform without causing blockages.

The users are responsible for qualifying and determining the intended use of the 3D printed models. The Manufacturer takes no responsibility for any use of the printed objects, especially when these objects constitute a part of safety equipment or strictly regulated medical, military, or space science equipment.

Due to the size and specificity, Zortrax devices are not intended for use by children under the age of 14 and by people with reduced manual, motor, and psychomotor skills. The Manufacturer recommends providing assistance and guidance to people with disabilities, and older adults who wish to operate Zortrax printers.

General Safety Information

This User Guide contains important safety directions that should be followed during installation and operation of the Zortrax 3D printer. It also mentions situations which require special attention and includes warnings against negligence and misuse that could cause damage or injuries.

Always read the safety data sheets available at: <https://zortrax.com/filaments/>. They are a source of basic information and safety procedures for the materials you use. It is essential to update the firmware to avoid any kind of failures. Visit <https://zortrax.com> regularly to learn about latest news and updates.

The Zortrax Inventure operates at high temperatures. That is why, the printer is equipped with electromagnetic locks that protect both the user and the device during the printing process. Once the print job has been launched, the electromagnetic locks fasten the top and front door automatically. As a result, the user is protected from accessing movable printer's components and from potential burns. However, you should still be particularly careful when handling or operating the device.

Do not leave the machine unattended during the print job - check it periodically for proper functioning in order to avoid potential accidents or breakdowns. Turn the printer off once the print job is finished. Monitor your device for wear and tear regularly. Contact our Support Center at: <http://support.zortrax.com/> for assistance while replacing worn or broken parts.

Keep the printer away from heat sources, fire, flammable materials, humidity as well as water and other liquids. Place the machine away from any equipment emitting radiation. To prevent any inadvertent use, keep the device out of reach of children and animals. It is forbidden to shake or drop the printer as it may cause breakdowns. The equipment is not intended for use in a potentially explosive environment.

Health and Safety at Work

All service and maintenance activities as well as device operation require wearing safety gloves included in the Starter Kit. Wearing safety gloves is also advised while removing finished prints from the build tray.

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

While operating Zortrax devices, all measures regarding health and safety provided in this User Guide as well as in separate regulations should be taken into account.

Electrical Safety

The Zortrax Inventure has been tested for compliance with Low Voltage Directive. In order to ensure the highest safety standards, including protection against short circuit, overload, overvoltage, and printer overheating, do not attempt to modify the printer and do not use electronic 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 printer. Avoid overloading the outlet with too many devices.

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

Use only the original power cable supplied with the printer. Do not damage, cut, or repair the cable. A damaged cable should be immediately replaced with a new one.

All maintenance and repair work should be carried out while the device is off and unplugged. Do not expose the device to moisture and liquids. Modifications such as soldering of electronic subunits are forbidden.

Mechanical Safety

The Zortrax 3D printer has movable components, such as the drive belts, Z-axis screw, extruder, or platform. Therefore, it is forbidden to reach into the printer or put anything inside the printer when it is running, about to start running, or at rest. This may lead to serious injuries or damage.

Tools and accessories from the Starter Kit box should be used with special care for intended purposes only. 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. Be particularly careful while removing prints from the platform. It is important to take the build tray out from the printer before removing the model so as not to damage the device with the blade of the spatula.

Risk of Burns

There is a high risk of burns while operating Zortrax printers as the extruder heats up to very high temperatures. Do not touch the extruder with bare hands. Be extremely careful during maintenance and repair work of heated units. If it is necessary to touch a heated component,





use the pliers which are specially adapted for this purpose. Cooling of the chamber and components should not take less than 10 minutes.

In addition, be particularly careful when operating the device, especially when removing finished prints, as the chamber reaches very high temperatures. Once the printing process has been finished, the printer starts to cool down. This process cannot be sped up or stopped by shutting off the power.

Do not ignore the warning labels placed on the devices.

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

Warning and Safety Labels on Zortrax Devices

	Wear safety gloves
	This warning symbol indicates that special care should be taken when repairing the device. Also, it points out an important step to carry out.
	Hot surface. Do not touch
	Do not reach into moving elements

Safe Storage and Transport Guidance

The Zortrax Inventure must be stored between 0 and 35° C [32 and 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 provided on the packaging. One device may weigh more than 20 kg [44 lbs]. It is therefore advisable to provide safe pallet storage but not higher than 1.7 m [5'7"]. It should be noted that 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.

Electromagnetic Compatibility (EMC)

Each Zortrax printer 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, in which case the user will be required to correct the interference at his own expense.

Learn More About the Zortrax Inventure

The Zortrax Inventure together with Z-SUITE, dedicated materials, and the DSS Station constitutes the whole 3D printing ecosystem. Thanks to this device, it is possible to turn digital, three-dimensional projects into reality using the Layer Plastic Deposition (LPD Plus) technology. This technology involves depositing layers of melted materials to build a predesigned shape. The device can work in both the dual-extrusion mode in which an object is printed using a standard thermoplastic and a water-soluble support material, and in the single-extrusion mode in which a model and support structures are printed using the same material. The Zortrax Inventure can be used in many industries while designing and prototyping intricate models and mechanisms, for instance, automotive parts, mechanical elements, conceptual models, or everyday objects.

How does the Zortrax Inventure Work?

Everything begins with preparing a model. The work on the model can be started in any program which creates 3D models and generates .stl, .obj, .3mf, or .dxf files. These are the standard file formats supported by most 3D modeling software – the model is saved as a set of three-dimensional triangles (triangle mesh).

The next step is to open the .stl file (or other) in Z-SUITE – the application created specifically for Zortrax devices. Z-SUITE prepares the model by slicing it into individual layers and saving it as a .zcode file. Each layer represents the movement pattern of the extruder and the platform while building the whole object. Z-SUITE also allows users to choose the material type to be used for the model, and to change and adjust the necessary print settings, such as the size of the model, layer thickness, the type of infill, or what the support structures will look like. The file is then ready to be printed.

Once your model is prepared, save the .zcode onto the hard drive and then onto an SD card. In order to transfer the model, insert the SD card into the card reader in the printer.

Next, prepare the materials which correspond with the ones you have chosen in Z-SUITE. The full material offer is available at: <https://zortrax.com/filaments/>.

To start the printing process, turn the device on, and load the material or materials. You can use either cartridges or spools. More detailed instructions are available later in this User Guide.

When the 3D printed object is ready, remove the build tray from the printer, and then remove the print carefully from the tray. Next, insert the print into the Zortrax DSS station so as to dissolve the support material in warm water. Thanks to this solution, mechanical removal of support structures is no longer needed.

What's in the Box



**Zortrax Inventure
3D Printer**



**Build Tray
5 pcs.**



Support Cartridge



Material Cartridge



Power Cable



**SD Card
& SD Card Reader**



Allen Wrench Set



**Nozzle Key &
Nozzle Needles**



**Z-SUITE & Quick Start
Guide**



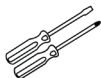
**Service
Grease**



Spatula



**Hotend Maintenance
Tool**



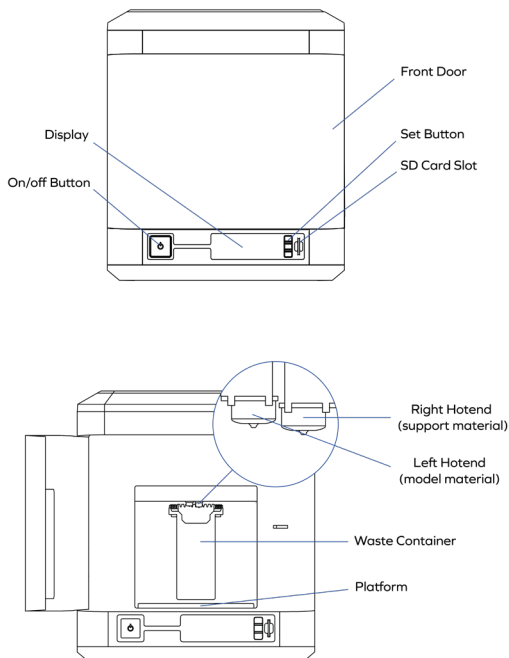
**Screwdriver Set
(flat head and
Phillips head)**



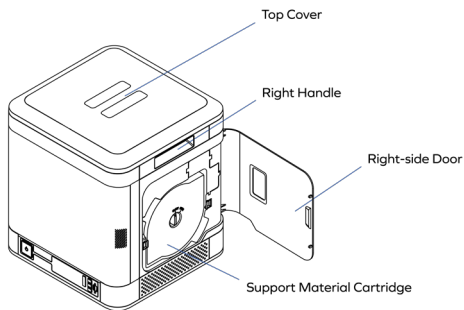
Spool Holders

Main Components

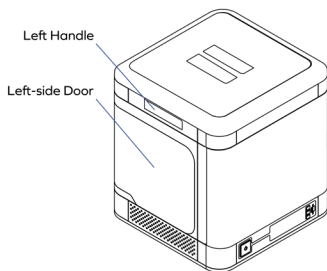
1. Front view



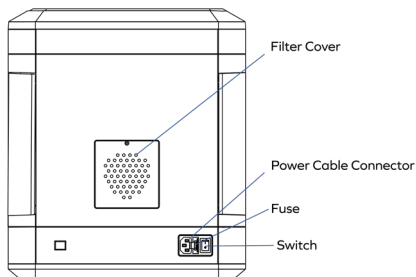
2. Right-side view



3. Left-side view



4. Back view



Zortrax 3D Printing Technology Glossary

ADVANCED MONITORING SYSTEM

an improvement which allows full control over the printing process and the printer's proper functioning. The system includes several built-in sensors which have multiple functions. They detect the temperature on the extruder and inside the chamber. They help to determine the type and color of the already loaded material, and the amount of material left in the cartridge. What's more, these sensors identify whether a given part (for example the build tray or the waste container) has been installed or not.

BUILD TRAY

a flat, square, plastic tray used as a base on which the model is created. The tray is non-heated and easily detachable, even when you are wearing gloves. It should be replaced every dozen completed prints.

CARTRIDGE

a flat, compact case containing a spool of material. The cartridge system introduced with the Inventure involves using two cartridges: the model material cartridge and the support material cartridge. Both can be easily replaced. The model material cartridge is inserted on the left side of the Inventure, the support material one on the right side. The cartridges protect the materials from external conditions, such as moisture or direct sunlight.

CHAMBER

an enclosed 3D printing workspace with automatic locks which close the front and top door during the printing process. As a result, it is possible to keep a constant temperature while printing the objects. The chamber can be heated up to 80° C [176° F] through two heaters (one on each side of the printer). Also, there is a HEPA filter at the back of the printer which cleans the air from vapors of the melted plastic. All these improvements ensure better quality of the model as well as greater safety during the printing process.

DUAL EXTRUSION SYSTEM

the system implemented in the Inventure's design. The printer is equipped with two hotends with separate nozzles and heaters, each adjusted to print with a different type of material. As a

result, the dual extrusion system allows users to 3D print with two separate materials during one printing process, the model material and the water-soluble support material. Since the support structures can be removed from the model in heated water, the dual extrusion system allows users to print intricate objects and mechanisms with supports that would be difficult to remove manually.

HEPA FILTER

a type of air filter composed of dense glass fibers. It removes vapors of the melted plastic from the air that passes through the chamber. It is easily replaceable whenever it becomes worn out.

LAYER PLASTIC DEPOSITION Plus (LPD Plus)

a 3D printing technology which uses two materials to build an object. It involves depositing layers of the two materials in order to form a predesigned shape - an accurate representation of a virtual design. The Inventure works in the LPD Plus technology, but it can print objects in two modes: using only one material (single extrusion) or using both the model and the support material (dual extrusion). Depending on the chosen method, you have to remove the supports manually or dissolve them in water.

NOZZLE ALIGNMENT CALIBRATION

one of the maintenance procedures that needs to be carried out before every longer print. It involves printing two trial models, each with thirteen lines printed with the support material on top of thirteen lines printed with the model material. The user has to check both models visually and choose the pair of lines where the support material covers the model material most precisely. Nozzle alignment calibration regulates the position of the hotends in order to achieve the best accuracy during the printing process.

WASTE CONTAINER

a long, vertical box placed at the back of the workspace. It is equipped with two kinds of nozzle cleaning brushes: a PTFE brush and two silicone brushes. These brushes clean the nozzles and prevent the waste material from accumulating on the surface of the print.

WASTE TOWER

a simple element which is printed next to the model during the double-material printing process. Every time the printer changes from printing with the model material to the

support one and vice versa, the respective nozzle has to be either emptied or filled with the material. That's why the waste tower is gradually built with one layer before changing the material and afterwards. As a result, the two materials do not blend on the surface of the print and at the same time there are no material deficiencies.

ZCODE

the type of file which contains a model prepared for 3D printing with previously selected print settings (such as layer thickness, infill type, etc.). All print settings can be managed in Z-SUITE before generating the .zcode. The .zcode format can only be created by saving an .stl / .dxf / .obj / .3mf file in Z-SUITE.

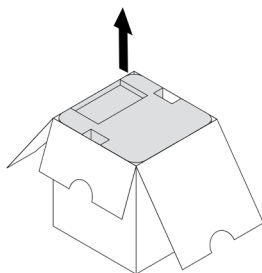
Z-SUITE

the application created specifically for Zortrax devices. Z-SUITE prepares a model for 3D printing by generating a project and saving it in the .zcode format. Z-SUITE allows users to change and adjust the print settings, such as the size of the model, layer thickness, the type of infill, or how many support structures will be generated. Once the .zcode file is generated, the print settings cannot be changed. The last step is to transfer the .zcode onto an SD card, and then the model is ready to be printed. All Z-SUITE functions have been collected in one manual available [here](#). Remember to update Z-SUITE regularly – all updates are available [here](#).

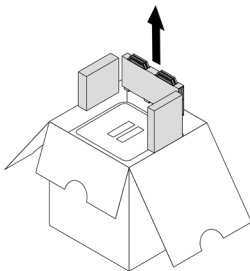
ZORTRAX DSS STATION

a unit which allows users to dissolve support structures in heated water. The Inventure uses a soluble material to print supports, therefore, a completed print needs to be put into water in the Zortrax DSS station. Within a few hours, the print will be free from support material, even in hard-to-reach areas. There is no need to remove the support mechanically anymore.

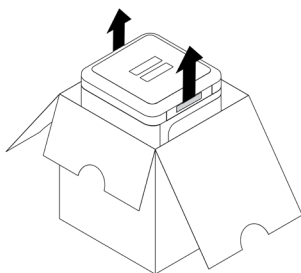
First Use Preparation



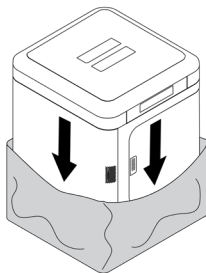
1. Open the box and remove the cushioning material.



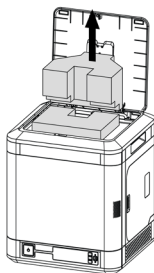
2. Remove the boxes with accessories.



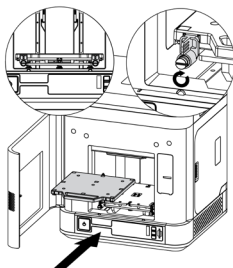
3. Use the handles to take the printer out of the box. The handles are on both sides of the housing.



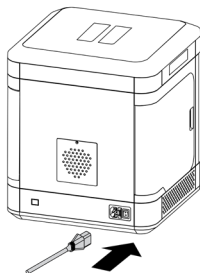
4. Remove the security foil.



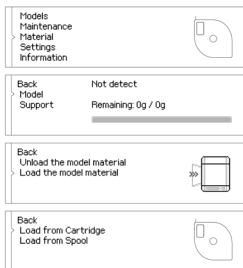
5. Open the top door and remove the plastic foams that hold the extruder.



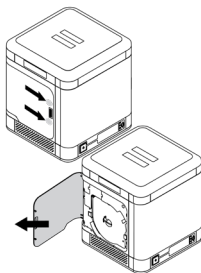
6. Install the build tray in the printer and secure it with the locks.



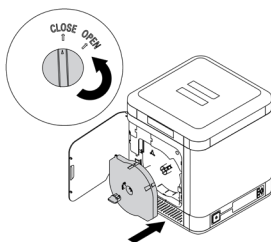
7. Plug the power cable in and turn the printer on. Next, download the latest firmware update from: <http://support.zortrax.com/downloads/> and start the installation. For detailed instructions, see section: [Firmware Installation](#).



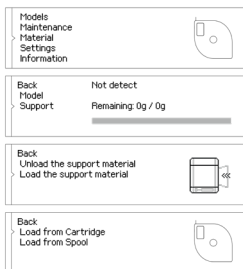
8. From the menu choose *Material*, then *Model* and *Load the model material*. Follow the instructions provided on the display.



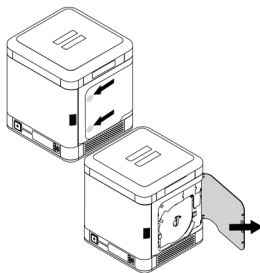
9. Open the left door by pressing the release buttons.



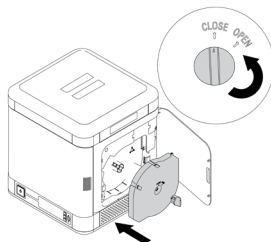
10. Insert the model material cartridge on the left side of the printer and turn the lock to CLOSE. Close the side door.



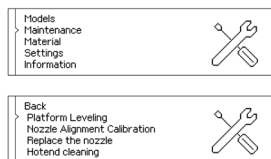
11. From the menu choose *Material*, then *Support* and *Load the support material*. Follow the instructions provided on the display.



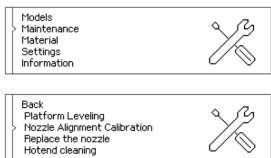
12. Open the right door by pressing the release buttons.



13. Insert the support material cartridge on the right side of the printer and turn the lock to CLOSE. Close the side door.



14. From the menu choose *Maintenance* and then *Platform Leveling*. Follow the instructions provided on the display.



15. From the menu choose *Maintenance* and then *Nozzle Alignment Calibration*. Follow the instructions provided on the display.

Firmware Installation

Download the latest firmware update from: <http://support.zortrax.com/downloads/>. To install the firmware in your printer, copy the InventureUpdate.bin to an SD card. Next, insert the card into the printer and turn on the machine. The firmware updates automatically.

BOOT LOAD v1

Memory Card Connected.

InventureUpdate.bin found.

zortrax

Models
Maintenance
Material
Settings
Information



Navigating through the Zortrax Printer Menu

The printer's functions can be activated or deactivated through the main menu.

The menu, current processes, and all relevant information are shown on the display panel situated in the bottom right corner of the printer. Navigating through the menu and adjusting the basic settings is possible with the three function buttons. To select a given function, press either the upper or lower button, to confirm, press the middle button.

The main menu is divided into 5 main sub-menus: models, maintenance, material, settings, information. Each category is discussed in detail below.

Models: This menu includes all models saved on the SD card. You can store all of your files in one or several folders.

Maintenance: this menu lists all functions useful when taking actions connected with keeping the printer in good condition.

Platform leveling – the function which activates the procedure of platform leveling.

Nozzle alignment calibration – the function which involves printing two trial models, each with thirteen lines printed with the support material on top of thirteen lines printed with the model material. Nozzle alignment calibration regulates the position of the hotends in order to achieve the best accuracy during the printing process.

Hotend maintenance – the function which allows users to unscrew the nozzle and clean the hotend (either the model material hotend or the support material hotend). When carrying this maintenance activity, the hotend heats up, the extruder positions itself near the front door, and the nozzle extrudes a small amount of the material. Next, the display will show a message indicating that the nozzle can be unscrewed. Once the nozzle is unscrewed, a small amount of the material will be extruded again, this time through the hotend (extruding will take a specified period of time or until the middle button is pressed). Next, the printer will display a message indicating that the nozzle can be installed back, and the printer will again extrude a small amount of the material.

Heat the extruder – the function which heats up the extruder to operating temperatures. It is very useful while replacing nozzles and performing other hotend maintenance activities.

Move the platform up/down – this function allows users to change the position of the platform. Move up the platform if you want to access the bottom plate in order to clean it.

Material: this menu contains two options that are particularly helpful during the printing process.

Unload the material – choose this option to change the material for a different color or type.

Load the material – choose this option before starting the print or after changing the material.

Settings: this menu allows users to adapt the printer's operation to individual requirements.

Language – this option can be used to change the language of the menu and printer messages.

Door lock – this option enables/disables the door lock.

Information: this tab provides all information about the device and its current state.

Firmware version – the tab which displays currently installed firmware version.

Printer information – the tab containing information which identifies the printer model, its hardware version, serial number, and total printing time.

Help - the section providing Customer Support contact details.

The menu in Zortrax devices allows users to activate the Pause option during the printing process. In order to pause the printing, press the On/Off button for 10 seconds. The display will show the options related to the Pause mode: Resume the print (the function which continues the printing process), Change the material (the function which allows users to unload the material and load a different one) or Stop the print (the function which finishes the printing process).

Operational Modes of Zortrax Inventure

The Zortrax Inventure indicates its current mode by the LED lights as well as informative and alert sounds. When the printer enters a given mode, the color of LED lights changes into a different one. Also, while changing to some modes, the device may emit a sound. Therefore, working with Zortrax devices becomes easier and more convenient because there is no need to read the printer's current mode from the display.

Heating Mode

When the light turns red, it is a sign that the extruder is heating up.

Sleep Mode

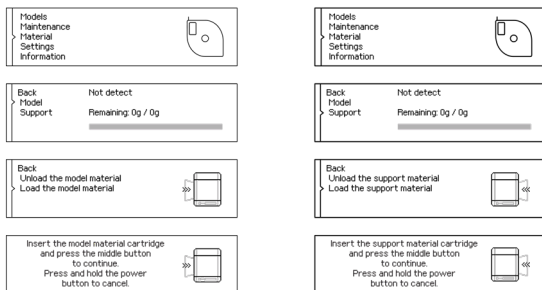
Purple light indicates the sleep mode.

This mode turns off the heating, motors, and fans every time the printer is not used for 15 minutes.

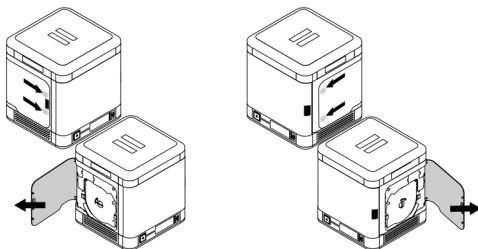
Other Modes

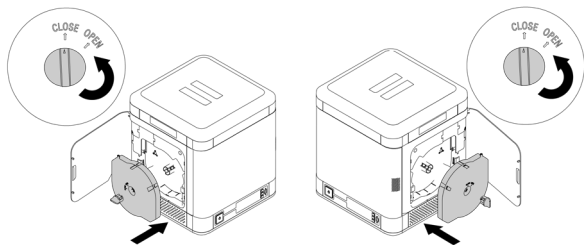
White light signifies other modes: printing mode, platform leveling mode, and stand-by mode.

Material Loading



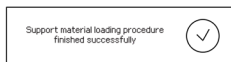
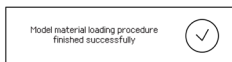
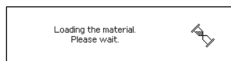
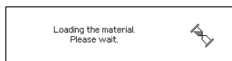
1. From the menu choose "Material," then "Model/Support," and "Load the model/support material." Open the side door by pressing the release buttons. The printer will ask you to install a cartridge with the previously chosen material. At the same time, the feeder will start to rotate to facilitate the loading process. Insert the model material cartridge on the right side of the printer or the support material cartridge on the left side.





2. Once the cartridge has been installed, turn the lock to CLOSE and close the side door. At this point the printer will start to heat up the extruder.

WARNING! The extruder will be hot. Do not touch it. Wear safety gloves.



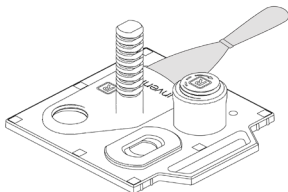
3. Once the heating process has been finished, the extruder will select the appropriate hotend and move to the front of the printer. When the hotend detects the material, it will change its position and move over the waste container and extrude a small amount of the material. When the material has been loaded, the printer is ready for work.

Spool Holder Installation

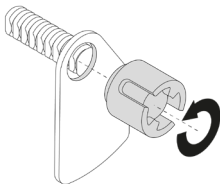
Since the 1.4.0 firmware version, it is possible to use materials either from cartridges or spools. To make material loading easier when using a spool, users have to print a special spool holder and install it on the side of the printer. It consists of three parts and requires to be assembled before the installation. The holder can be adapted to spools of both model and support materials. The stl files for the left and right spool holders are available for download at: <https://library.zortrax.com/project/spoolholders-for-inventure-3d-printer/>.

These steps show how to install the right spool holder. The left one is installed in the same way.

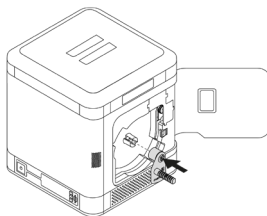
1. Download and print the three pieces of the holder. The .stl files are available at: <https://library.zortrax.com/project/spoolholders-for-inventure-3d-printer/>.



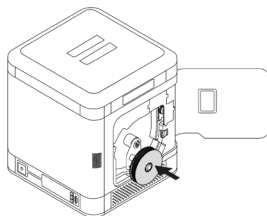
2. Screw the mount piece into the holder (see the arrow on the mount piece for directions).



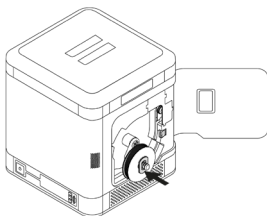
3. Open the right door by pressing the release buttons. Insert the holder into the slot.



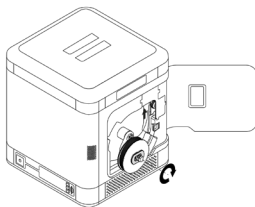
4. Place the spool on the holder. The spool should rotate anti-clockwise.



5. Insert the stopper onto the holder.



6. Turn the stopper to the right to secure the spool.



Next, insert the material into the feeder and start the loading process using options from the menu.

Platform Leveling

Platform leveling is a procedure which lowers the risk of issues that may occur during the printing process. It involves checking the distance between the nozzle and five points on the platform, and tightening/loosening the calibration screws.

Open the *Maintenance* menu, and select the *Platform Leveling* option. At this point the printer will begin to prepare for the calibration and heat the extruder.

Once the extruder heating is done, press the middle button to continue.

Follow the instructions displayed on the screen.

At this moment the printer will lift the platform up again and check the distance between the nozzle and the center point of the build tray. Next, the display will show a message indicating that the three calibration screws placed under the platform need to be tightened. Once you've tightened the screws, press the middle button to continue.

The printer will begin to check the distance between the nozzle and five silver points on the build tray: two points at the front of the platform, two points at the back and the center point.


If the printer detects an incorrect distance in any of these points, the display will show instructions on what adjustments should be made. Follow the instructions and tighten or loosen the screw indicated in the message. Turn the screw slightly, only by a few degrees. Once you finish, press the middle button and the printer will recheck a given point on the platform.

If the distance between the nozzle and five points is set within the acceptable limits, the printer will finish the calibration procedure. Additionally, the display will show the calibration results.


Models
Maintenance
Material
Settings
Information




Back
Platform Leveling
Nozzle Alignment Calibration
Replace the nozzle
Hotend cleaning




Heating the extruder.
Please wait.


8%


Please tighten
the three calibration knobs
under the platform and
press the middle button.



Checking the front points.
Please wait.



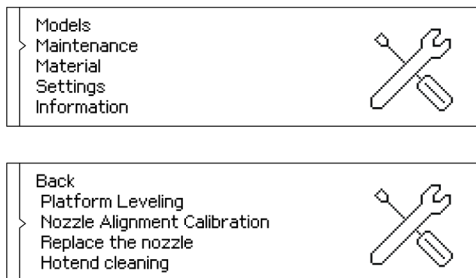
Calibration done.
Press the middle button to continue.



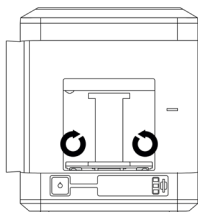
Nozzle Alignment Calibration

Nozzle alignment calibration is one of the maintenance procedures that needs to be carried out before using the printer for the first time, in case of imperfections showing up on the models, and after each nozzle or hotend module replacement. The procedure involves printing two trial models, each with thirteen lines printed with the support material on top of thirteen lines printed with the model material. The user has to check both models visually and choose the pair of lines where the support material covers the model material most precisely. Nozzle alignment calibration regulates the position of the hotends in order to achieve the best accuracy during the printing process.

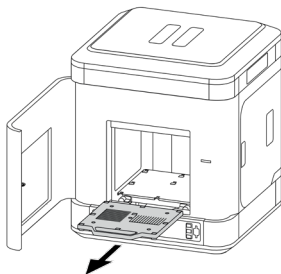
Carry out platform calibration before carrying out nozzle alignment calibration.



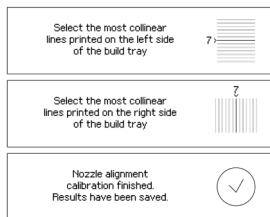
1. From the menu select “Maintenance,” and “Nozzle Alignment Calibration.” The printer will start to heat up the extruder and then print two calibration models.



2. Open the front door and turn the safety locks by 90°.

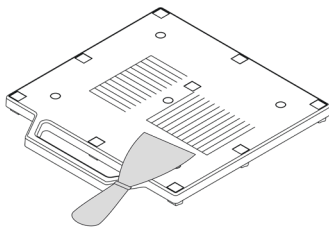


3. Pull the tray towards you using the handle.

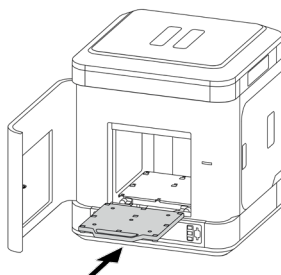


4. Follow the instructions displayed on the screen. Inspect both trial prints visually and from each print select the pair of lines in which the support material covers the model material most precisely. Finish the calibration.

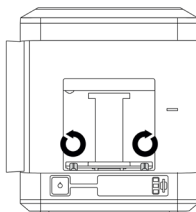
NOTE! IF THE BEST PAIR OF LINES IS THE ONE PLACED AT THE EDGE OF THE PRINT, SELECT IT AND CARRY OUT THE NOZZLE ALIGNMENT CALIBRATION ONCE AGAIN.



5. Remove the prints from the build tray using a spatula.



6. Install the tray back in the printer.



7. Secure it with the locks.

Z-SUITE Installation

Download the latest Z-SUITE update from: <http://support.zortrax.com/downloads/>. To download and install Z-SUITE, you can enter the serial number of your printer or your email address. The serial number can be found in the printer's menu in "Information" section and on the nameplate on the back of the printer.

Remember to update Z-SUITE regularly. All updates are available at: <http://support.zortrax.com/downloads/>.

Starting and Removing a Print

Once your model has been prepared for 3D printing in Z-SUITE, you have to save it on your hard drive, and then on an SD card. Next, insert the card into the card reader in the printer.

Use the *Models* option from the main menu to choose the model you want to print. From all models saved on the SD card select the one you want to print and press the middle button.

At this point the printer will begin to heat up the extruder.

WARNING! The extruder will be hot. Don't touch it. Wear safety gloves.

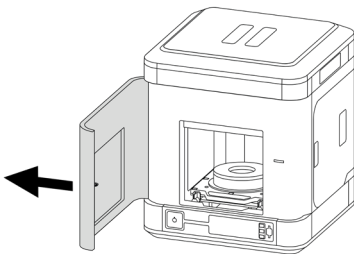
The printing process will start automatically.

Remove the print very carefully because there are some elements of the printer that can get damaged during the process. The following instructions show the correct procedure of removing the print from the build tray.

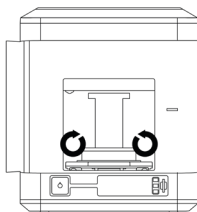


1. Turn the printer off and unplug the power cable.

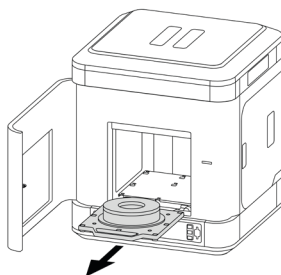
WARNING! WAIT ABOUT 10 MINUTES UNTIL THE CHAMBER AND THE PRINT COOL DOWN.



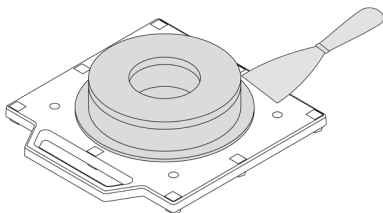
2. Open the front door.



3. Turn the safety locks that secure the build tray by 90°.

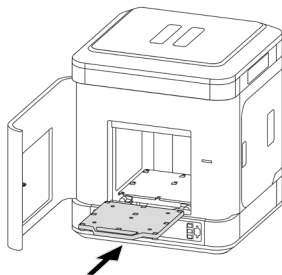


4. Carefully remove the build tray from the printer.

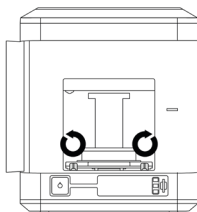


5. Use the spatula to remove the print.

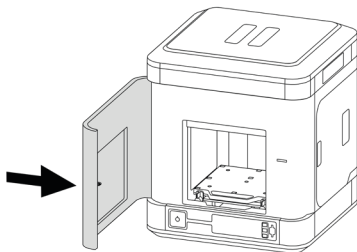
WARNING! REMOVE THE PRINT VERY CAREFULLY. WEAR SAFETY GLOVES.



6. Put the build tray back in the printer.



7. Secure the build tray using the safety locks.



8. Close the front door and plug the power cable in.

Available Materials

Zortrax certified materials increase the benefits of 3D printing with Zortrax devices. The complete offer of materials is available at: <https://zortrax.com/filaments/>. *Material Technical Data Sheet* and *Safety Data Sheets* can be found at the same website.

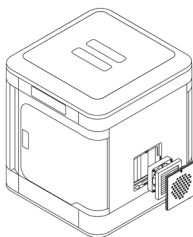
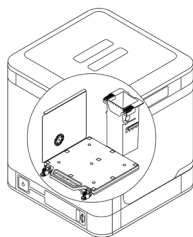
When 3D printing with Zortrax devices, it is recommended to use Zortrax certified materials to acquire the best possible quality of prints.

Basic Maintenance and Service Work

Maintenance work should be regular in order to keep the printer in good condition and achieve high quality prints every time. Some parts require maintenance before each print and some every few hundred working hours. All maintenance activities do not take much time and are not complicated. Before commencing any repair, it is extremely important to turn the printer off and let it cool down. Remember to always wear safety gloves and glasses. The printer is delivered with a full set of tools needed to carry out maintenance and service work.

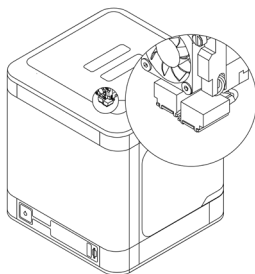
The following tables show maintenance and repair guidelines connected with each section of Zortrax 3D printer, together with specific check points, necessary activities, and their frequency.

1. Main



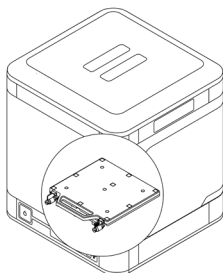
Activity	Frequency	Solutions to the problems	Necessary accessories
Cleaning the interior of the device (the chamber) and its surroundings, especially the bottom plate under the platform	Before each print	The user is responsible for keeping the device clean. To remove material remains from the interior of the device, use a vacuum cleaner or compressed air	<ul style="list-style-type: none"> - a vacuum cleaner, - cleaning products with a high evaporation rate
Checking the degree of wear of the HEPA filter, and if it's necessary, cleaning it	Every 500 working hours	Unscrew the HEPA filter cover placed at the back of the printer. If the filter is considerably dirty, clean it using a vacuum cleaner or compressed air	<ul style="list-style-type: none"> - a vacuum cleaner, - compressed air, - a 2 mm Allen key
Replacing the HEPA filter	Every 3000 working hours	Unscrew the HEPA filter cover placed at the back of the printer and remove the filter	<ul style="list-style-type: none"> - a 2 mm Allen key
Lubricating the Z-axis	Every 500 working hours	Unscrew the HEPA filter cover placed at the back of the printer and remove the filter. The Z axis can be now easily accessed	<ul style="list-style-type: none"> - a 2 mm Allen key, - service grease
Replacing the waste container silicone brushes	Every 300 working hours	Make sure that the platform is moved all the way down, remove the waste container by pressing on the handles on both sides and pulling it towards you	-

2. Hotend



Activity	Frequency	Solutions to the problems	Necessary accessories
Checking if the hotends are free from material residues	Before each print	To remove material residues accumulated on the hotends, between them, and on their covers, use a spatula	- a spatula
Replacing the hotend and the nozzle covers	Every 500 working hours	Replace the hotend and the nozzle covers with a flathead screwdriver	- a flathead screwdriver
Nozzle alignment calibration	After each hotend cleaning/replacement	See section: Nozzle Alignment Calibration	- a spatula

3. Platform



Activity	Frequency	Solutions to the problems	Necessary accessories
Cleaning the build tray	Before each print	To remove material remains from the surface of the build tray, use a spatula	- a spatula
Platform leveling	After each build tray replacement	See section: Platform Leveling	-

Support and Troubleshooting

In order to ensure safety of every 3D printer user, the Manufacturer provides various support while identifying and solving technical problems independently.

In case of difficulties with operating a Zortrax 3D printer, 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.

Support/model material is blocked within the cartridge

The material may get blocked within the cartridge if the material's thread has not been properly cut or if the cartridge has been incorrectly installed. In such case, the printer will display information about a material loading failure. To solve this issue, follow the instructions listed below:

Remove the cartridge from the printer.

If a piece of material sticks out of the cartridge, cut the material's end flat.

If a piece of material does not stick out of the cartridge, pull the material out using the feeder and cut its end flat.

Now you can load the material again. If the loading process is successful, the printer will display information about a completed loading process.

For further help, visit our Support Center at: <http://support.zortrax.com/>.

Error Messages

Whenever there is a technical issue caused by a hardware failure, negligence or inappropriate use of Zortrax printers, 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
#101 No models on the SD card	The card is unreadable or damaged; There are no models on the SD card	-Save the file again on the SD card -Safely remove the card and use another one
#102 SD card reading error	The SD card is unreadable or damaged	-Save the file again on the SD card, -Safely remove the card and use another one
#103 File error. Please prepare your model again	The file cannot be read or the SD card is damaged	-Save the file again on the SD card, -Safely remove the card and use another one
#104 SD card timeout. Check the SD card contacts or format/replace your card	The SD card is unreadable or damaged	-Save the file again on the SD card -Safely remove the card and use another one
#105 Please update the Firmware to print	Z-SUITE blocks the printing process for previous versions of the Firmware due to safety reasons	-Update the Firmware
#106 Please prepare the file using a newer Z-SUITE version	Z-SUITE is not up to date	-Update Z-SUITE to the latest version and prepare the file again
#107 This .zcode file was exported for a different printer model	The model has been prepared for a different printer model	-Choose the proper printer model while exporting the file in Z-SUITE

#110 Left hotend thermistor connection error	The left hotend thermistor has been disconnected or damaged	-Replace the hotend module
#111 Right hotend connection error	The right hotend thermistor has been disconnected or damaged	-Replace the hotend module
#112 Chamber thermistor connection error. Ensure that the cable under the platform is properly connected	Either the cable or the thermistor of the platform has been disconnected or damaged	-Check if the cable under the platform is correctly installed -Replace the platform cable
#113 Left chamber thermistor connection error	The left chamber thermistor has been disconnected or damaged	-Contact your Reseller/Distributor
#114 Right chamber thermistor connection error	The right chamber thermistor has been disconnected or damaged	-Contact your Reseller/Distributor
#115 Left hotend heating error (timeout)	Either the heater or the thermistor of the left hotend has been disconnected or damaged	-Check if the heater and thermistor are properly installed in the left hotend -Replace the hotend module
#116 Right hotend heating error (timeout)	Either the heater or the thermistor of the right hotend has been disconnected or damaged	-Check if the heater and thermistor are properly installed in the right hotend -Replace the hotend module
#117 Left heating unit error (timeout)	Either the heater or the thermistor of the left heating unit has been disconnected or damaged	-Contact your Reseller/Distributor
#118 Right heating unit error (timeout)	Either the heater or the thermistor of the right heating unit has been disconnected or damaged	-Contact your Reseller/Distributor
#120 Too high left hotend temperature	Short circuit in the left hotend	-Replace the hotend module



#121 Too high right hotend temperature	Short circuit in the right hotend	-Replace the hotend module
#122 Too high left heating unit temperature	Short circuit in the left heating unit	-Contact your Reseller/Distributor
#123 Too high right heating unit temperature	Short circuit in the right heating unit	-Contact your Reseller/Distributor
#124 Unexpected left hotend temperature drop	Either the heater or the thermistor of the left heating unit has been disconnected or damaged. Possible extruder cable failure	-Check if the extruder cable is properly connected -Check if the heater and thermistor are properly installed in the left hotend -Replace the extruder cable -Replace the extruder
#125 Unexpected right hotend temperature drop	Either the heater or the thermistor of the right heating unit has been disconnected or damaged. Possible extruder cable failure	-Check if the extruder cable is properly connected -Check if the heater and thermistor are properly installed in the right hotend -Replace the extruder cable -Replace the extruder
#126 Unexpected left heating unit temperature drop	The cable of the left heating unit has been damaged. Possible failure of the heater and thermistor during the print job	-Contact your Reseller/Distributor
#127 Unexpected right heating unit temperature drop	The cable of the right heating unit has been damaged. Possible failure of the heater and thermistor during the print job	-Contact your Reseller/Distributor
#130 X endstop error	The X-axis endstop has been disconnected or damaged	-Contact your Reseller/Distributor
#131 Y endstop error	The Y-axis endstop has been disconnected or damaged	-Contact your Reseller/Distributor
#132 Z endstop error	The Z-axis endstop has been disconnected or damaged	-Contact your Reseller/Distributor

#133 Check the build tray contacts and restart the printer	<ul style="list-style-type: none"> -The model material nozzle is dirty -The build tray is dirty -The platform cable is damaged 	<ul style="list-style-type: none"> -Clean the nozzle -Clean the build tray -Check if the platform cable is properly connected / replace the platform cable
#137 Build tray missing or not seated properly	The build tray is missing or has been incorrectly installed. Possible platform cable failure or lack of one of calibration points	<ul style="list-style-type: none"> -Remove and reinstall the build tray -Check if there are five calibration points on the build tray -Replace the cable under the platform
#138 Extruder cable disconnected	The extruder cable is disconnected or has been incorrectly installed. Possible extruder cable damage	<ul style="list-style-type: none"> -Check if the extruder cable is properly connected -Replace the extruder cable
#139 Extruder electrical failure detected	Short circuit in the platform cable	-Replace the platform cable
#140 Extruder Upper fan failure	The extruder upper fan is disconnected or has been incorrectly installed	<ul style="list-style-type: none"> -Check if the upper extruder fan is properly installed -Replace the upper extruder fan
#141 Extruder Lower fan failure	The extruder lower fan is disconnected or has been incorrectly installed	<ul style="list-style-type: none"> -Check if the lower extruder fan is properly installed -Replace the lower extruder fan
#142 Left fan failure	Left heating unit fan is disconnected or has been incorrectly installed	-Contact your Reseller/Distributor
#143 Right fan failure	Right heating unit fan is disconnected or has been incorrectly installed	-Contact your Reseller/Distributor
#152 Model material cartridge not loaded	Model material cartridge is missing or has not been properly seated	<ul style="list-style-type: none"> -Check if the proper model material cartridge is installed in the right place -Install a different model material cartridge
#153 Support material cartridge not loaded	Support material cartridge is missing or has not been properly seated	<ul style="list-style-type: none"> -Check if the proper support material cartridge is installed in the right place -Install a different support material cartridge

#158 Wrong material type for this model. Change the material or select a different file	Wrong model material has been installed in the printer or the file has been prepared for a different type of model material	-Replace the model material for the right one -Prepare the file for the proper model material type -Install a different model material cartridge
#159 Model material cartridge communication error	Either the RFID module or its cable has been damaged. Possible failure of RFID tag of the model material cartridge	-Use a different model material cartridge -Contact your Reseller/Distributor
#160 Support material cartridge communication error	Either the RFID module or its cable has been damaged. Possible failure of RFID tag of the support material cartridge	-Use a different support material cartridge -Contact your Reseller/Distributor
#161 The model material cartridge is empty. Press any button when ready to load a new cartridge	The material in the model material cartridge has run out	-Use a different model material cartridge -Use a new model material cartridge
#162 The support material cartridge is empty. Press any button when ready to load a new cartridge	The material in the support material cartridge has run out	-Use a different model material cartridge -Use a new model material cartridge
#163 Model cartridge error	The model material has run out too quickly	-Use a new model material cartridge
#164 Support cartridge error	The support material has run out too quickly	-Use a new support material cartridge
#165 Model RFID module not working	Either the RFID module or its cable has been damaged	-Contact your Reseller/Distributor
#166 Support RFID module not working	Either the RFID module or its cable has been damaged	-Contact your Reseller/Distributor
#172 Model material loading procedure failed	Model material has been blocked either in the cartridge, material duct, or extruder itself. Possible damage of the model material feeder or RFID tag	-Remove the model material cartridge and cut the material's end flat -Check if there are any material remains in the material duct -Contact your Reseller/Distributor

#173 Support material loading procedure failed	Support material has been blocked either in the cartridge, material duct, or extruder itself. Possible damage of the support material feeder or RFID tag	<ul style="list-style-type: none"> -Remove the support material cartridge and cut the material's end flat -Check if there are any material remains in the material duct -Contact your Reseller/Distributor
#174 Model material jam error. Extruder failure. Press the middle button to continue	The model material has been blocked in the extruder	<ul style="list-style-type: none"> -Unload and reload the model material -Prepare the file in the latest Z-SUITE version -Replace the model material nozzle -Contact your Reseller/Distributor
#175 Support material jam error. Extruder failure. Press the middle button to continue	The support material has been blocked in the extruder	<ul style="list-style-type: none"> -Unload and reload the support material -Prepare the file in the latest Z-SUITE version -Replace the support material nozzle -Contact your Reseller/Distributor
#176 Model material jam error. Cartridge failure. Press the middle button to continue	The model material has been blocked in the material duct or the model material has been tangled within the cartridge	<ul style="list-style-type: none"> -Unload the model material and check if it can be easily slid out of the cartridge -Load a new model material
#177 Support material jam error. Cartridge failure. Press the middle button to continue	The support material has been blocked in the material duct or the support material has been tangled within the cartridge	<ul style="list-style-type: none"> -Unload the support material and check if it can be easily slid out of the cartridge -Load a new support material
#178 Support material jam error. Extruder failure due to overheating. Press the middle button to continue	The ambient temperature around the printer is too high or the support material has been blocked in the extruder	<ul style="list-style-type: none"> -Ensure proper temperature in the print room (below 40° C/104° F) and wait until the printer cools down -Unload and reload the support material
#190 Power supply thermistor failure	The motherboard thermistor is disconnected or has been damaged	<ul style="list-style-type: none"> -Contact your Reseller/Distributor
#191 Critical power supply temperature. Turn off the printer immediately	Critical temperature on the power supply unit	<ul style="list-style-type: none"> -Unplug the printer -Contact your Reseller/Distributor

#192 Motherboard thermistor failure	The motherboard thermistor has been damaged	-Contact your Reseller/Distributor
#193 Critical motherboard temperature. Turn off the printer immediately	Critical temperature on the motherboard	-Unplug the printer -Contact your Reseller/Distributor
#196 Insufficient cooling of the printer. Printing problems may occur	The room temperature is too high	-Ensure proper temperature in the print room (below 40° C/104° F)
#197 Insufficient cooling of the printer. Ensure proper cooling and try again	The room temperature is too high	-Ensure proper room temperature (below 40° C)

	If the device begins to operate in an unidentified way, safely unplug the printer from the power supply and immediately contact the Support Center specialists via the support form at: http://support.zortrax.com/support-form/ .
	While shipping the device to the Manufacturer's technical service, it is important to properly prepare a package. Use the original packaging. Detailed instructions on how to pack the device are available at: http://support.zortrax.com/packing-Inventure/ .

More manuals and tips & tricks articles are available at our Support Center.

www.zortrax.com

Specification

Device	
Build volume	135 x 135 x 130 mm (5.3 x 5.3 x 5.1 in)
Nozzle Diameter	0.4 mm (0.016 in)
HEPA filter	Yes
Material detection sensor	Yes (for filaments in cartridges only)
Chip with information about material (type, color, consumption)	Yes (for filaments in cartridges only)
Extruder	Dual, printing with the model and support material
Extrusion	Dual/single
Hotend	Dual
Connectivity	SD card (included)
Printing	
Technology	LPD Plus (Layer Plastic Deposition Plus) – advanced technology with the system of Dissolvable Support Structures
Layer Resolution	150 - 300 microns
Minimal Wall Thickness	450 microns
Platform levelling	Automatic measurement of platform points' height
Filaments	
Available Materials	Full offer is available at: https://zortrax.com/filaments/

External filaments	Applicable
Support	Water-soluble - printed with a different material than the model Mechanically removed - printed with the same material as the model
Material container	Cartridge or spool
Material Diameter	1.75 mm (0.069 in)
Temperature	
Heated Chamber	Yes
Ambient Operating Temperature	15 - 30° C (59 - 86° F)
Storage Temperature	0 - 35° C (32 - 95° F)
Electrical	
AC Input	110 V ~ 4 A 50/60 Hz 240 V ~ 1.7 A 50/60 Hz
Maximum Power Consumption	300 W
Software	
Software Package	Z-SUITE®
Supported File Formats	.stl, .obj, .dxf, .3mf
Supported Operating Systems	Mac OS X up to Mojave version / Windows 7 and newer versions
Additional information	
Each delivered printer may have worked up to 50 hours during the quality control test prints.	

Recycling

Disposal of paper and plastic packaging

In order to protect the environment, we recommend placing used paper and plastic packaging in specially designated containers, according to your local recycling guidelines.

Waste electrical and electronic equipment



This symbol placed on the device 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 the 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 seller, the Manufacturer or the importer of the product. Disposing of waste electrical and electronic equipment along with other waste is prohibited by the EU Directive 2012/19/UE.

Certification



The Manufacturer ensures that the equipment complies with all relevant standards. In case of questions and problems, contact the Manufacturer through the support form: <http://support.zortrax.com/support-form/>.

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update: 12.03.2020

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