zortrax

3D Printer User Guide

Endureal

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Introduction

Read this User Guide carefully and thoroughly before operating Zortrax products for the first time. The User Guide contains basic information about the 3D printer, safety and protection 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 damage of the device which may result from defects in material and workmanship.

Intended Use of the Zortrax Endureal

The Zortrax Endureal works in the Layer Plastic Deposition Plus (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 two heating points which allow the melted materials to exit the nozzles and be deposited onto the heated platform without causing blockages.

The users are responsible for qualifying and determining the intended use of 3D printed models. The Manufacturer takes no responsibility for any use of the printed 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, Zortrax devices are not intended for use by children under the age of 14 and 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 the printers.

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General Safety Information

This User Guide contains important safety directions that should be followed during installation and operation of the Zortrax Endureal. 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. The latest updates can be downloaded from: https://support.zortrax.com/downloads.

The Zortrax Endureal is **very heavy.** The unit may weigh **more than 150 kg [331 lb]** and should be moved or lifted by at least four people. In addition, the printer operates at **very high temperatures** and has easily accessible movable components. Therefore, you must be particularly careful when handling or operating the device. It is extremely important to avoid situations that may lead to burns or interference in the device's proper functioning.

Do not leave the machine unattended during the printing. Check it periodically for proper functioning in order to avoid potential accidents or breakdowns. Once the printing and post-processing (annealing) have finished, turn the printer off.

Monitor your device for wear and tear regularly. Contact the Support Center available at: https://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. 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 platform.

The Manufacturer strongly recommends setting up a special room dedicated only to 3D printing. The room should be properly ventilated. At the same time, the Manufacturer does not recommend staying in a room where devices have been 3D printing for a long time. The vapors

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released during the printing process do not pose a direct hazard, but they can have negative effects when combined with accumulated dust particles in long-term processes.

Food and beverages should be kept away from both the 3D printer and the 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

Zortrax 3D printers have been tested for compliance with the 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.

Replace electronic units according to the instructions and be particularly careful while using the tools supplied with the printer.

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.

Most of the 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

Zortrax 3D printers have movable components such as drive belts, 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 only for intended purposes. Improper use of the tools may cause serious injuries.

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

Be particularly careful while removing prints from the platform. Always wear safety gloves and glasses.

Risk of Burns

There is a high risk of burns while operating the Zortrax Endureal as the temperature of the extruder may reach up to 480° C [896° F], whereas the temperature in the chamber may reach up to 200° C [392° F]. 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 components should not take less than 30 minutes.

The temperature of the platform can reach up to 220° C [428° F], therefore, special care should be taken while operating the printer and removing finished prints.

Do not ignore the warning labels placed on the device.

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

This table shows all warning and safety labels placed on the Zortrax Endureal. The table also indicates the exact location of each label.

	
Next to the front door	Right side of the device

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On the housing inside the chamber

On the front door

Next to the main switch

Next to the filters in the lid

Next to each grounding point

Next to the motherboard and fuses

Next to the mounting holes for handles

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Safe Storage and Transport Guidance

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

Transport Instructions

When transporting the device, follow the instructions provided on the packaging. One device may weigh more than 150 kg [331 lb] and should be transported only in the original chest integrated with a pallet.

The Zortrax Endureal should be unpacked and packed by at least four people. 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 User Guide, 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 Endureal

Zortrax Endureal is an industrial-grade device which constitutes the whole 3D printing ecosystem along with the Z-SUITE software and dedicated materials. Thanks to this device, it is possible to turn digital, three-dimensional projects into reality using the Layer Plastic Deposition Plus (LPD Plus) technology. This technology involves depositing layers of melted materials to build a predesigned shape. The device can work in the dual-extrusion mode in which a 3D object is printed using a model material and a dedicated support material. It is also possible to use the Endureal in the single-extrusion mode in which the model and support structures are printed using the same material. In addition, the printer has several hardware features that significantly help to reduce the number of failed prints, such as the material jam detection system which immediately pauses the printing process in the case of extrusion problems as

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well as the blackout response system which saves the printing progress so that the device can resume the printing from the same spot after a power outage. The filament weighing system informs users whether the amount of materials is enough to complete the printing process. The printer can perform all procedures required for processing high-temperature filaments from printing to annealing. In addition, the heated chamber helps to reduce the risk of warping when printing with styrene-based materials. The Endureal is a versatile machine that can be used in many industries when designing and prototyping structural components, mechanical parts, and conceptual models with materials of very high mechanical and thermal resistance.

How does the Zortrax Endureal 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 program created specifically for Zortrax devices. Z-SUITE prepares the model for 3D printing by slicing it into individual layers and saving it as a .zcodex 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 types to be used for the printing and adjust the necessary settings, such as the size of the model, layer thickness, the type of infill or how many support structures should be generated. The file is then ready to be printed.

To start the printing process, turn the printer on, prepare and load the materials which correspond with the ones you have chosen in Z-SUITE. The full material offer is available at: https://zortrax.com/filaments/. While working with the Endureal, you can start, stop and pause the printing process in Z-SUITE. Once your file is prepared, you can transfer it from Z-SUITE to the printer's storage in two ways. You can either save the file on a USB flash drive and plug it into the port on the right side of the printer of the printer or transfer the file from Z-SUITE over Wi-Fi/ Ethernet cable. In addition, Z-SUITE allows you to add several printers to the program's panel and create a network of devices. This solution makes it possible to produce 3D models in a small series and manage the whole process from the screen of your computer. Each printer can still be operated using the touchscreen at the front.

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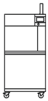
What's in the Box



Zortrax Endureal 3D Printer

Z-SUITE & Quick Start Guides

Material Spool (4 pcs)

Power Cable

Starter Kit

USB Drive & WIFI Module

Safety Glasses

Safety Gloves

Thermal Gloves

Cutting Knife & Scalpel

Allen Keys

Screwdrivers (PH1, PH2, PZ1 and flathead)

Pliers (cutting and bent-nose)

Spatula & Tweezers

Nozzle Needle

Combination Spanner (5.5, 7)

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Maintenance Kit

Material Endstop
(2 pcs.)

Extruder Filament
Gear (2 pcs.)

Extruder

Filters Set
(Carbon & HEPA)
(2 pcs.)

PEI Plate
(2 pcs.)

Endureal
Hotend Module
(2 pcs.)

Extruder Cable

Leveling Springs
(3 pcs.)

Protective grease
(2 pcs.)

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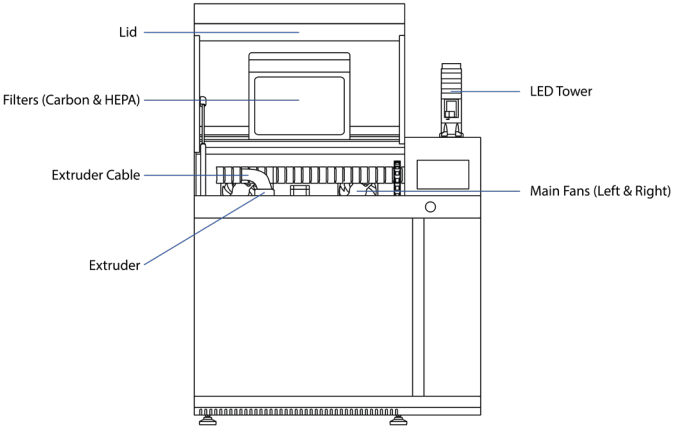
Main Components

1. Front view (Lid opened)



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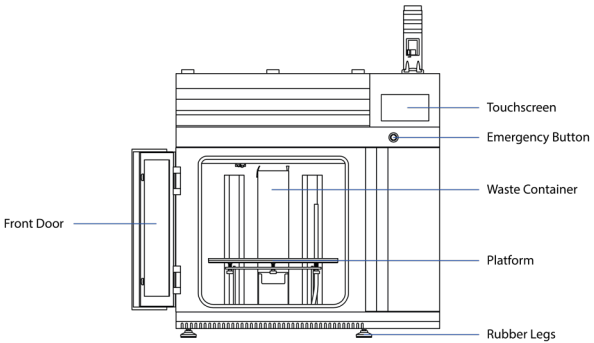
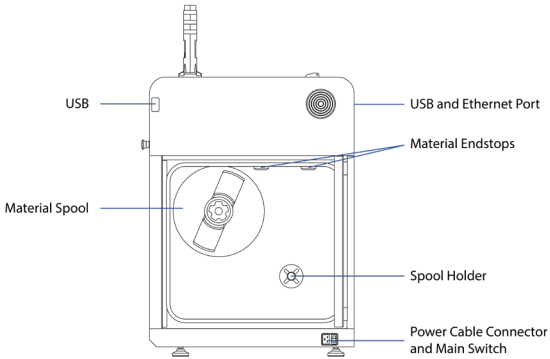
2. Front view (Front door opened)



3. Left-side view



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Zortrax 3D Printing Technology Glossary

ANNEALING

a controlled process during which finished prints are heated to their glass transition temperature (below the melting point), kept in this temperature for some time, and then slowly cooled down. Annealing dissipates stresses accumulated within models during the printing process, and significantly improves physical and mechanical properties without changing their initial shape. The whole process is performed in the main chamber and can take a few hours. Annealing must be carried out when printing with some of the high-temperature materials.

BLACKOUT RESPONSE SYSTEM

a system which saves the printing progress in the device's internal storage so that it is possible to resume the printing from the same spot after a power outage.

EMERGENCY BUTTON

the red button placed under the touchscreen which cuts the power supply off and activates an emergency stop. It should be pressed in any emergency to protect the safety of the operator and the printer. As soon as the problem is resolved, the button should turned clockwise to unblock it.

EXTRUDER

the mechanism which ensures material feeding, heating and extruding as well as cooling of the print. Its main components include two hotends, each equipped with a nozzle, one for the model material and one for the support material. Each material is melted in the hotend, and then pushed through it until it exits the nozzle. The melted thermoplastic is deposited layer by layer to form a predesigned shape. Additionally, there are three fans on the extruder: two which cool the whole mechanism and one which cool the print.

EXTRUDER CABLE

the ribbon cable which connects the extruder with the motherboard. It supplies the extruder with electricity and allows the motherboard to regulate the printing process.

FILAMENT CHAMBER

the chamber placed on the right side of the printer which provides optimum conditions for storing materials. In the filament chamber, users perform all activities connected with

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material loading and unloading. To gain access to the chamber, it is required to open the side door. Once all activities are finished, the door must be closed.

FILAMENT WEIGHT SENSOR

a device which is included in the filament weighing system. The Endureal is equipped with two weight sensors installed in the filament chamber on the right side of the printer. These sensors inform users whether the amount of loaded materials is enough complete a print.

FIRMWARE

the software programmed into Zortrax printers, which controls and monitors all the data in the device. It also gives the possibility to enable/disable the printer's functions.

HOTEND

an essential heating system which consists of an aluminum block and a heater & thermocouple. The Endureal is equipped with two separate hotends, each adapted to print with a different material. The hotend is responsible for heating and melting the material as well as for ensuring proper temperature of the material during the whole printing process.

LED TOWER

the signalling unit placed on the top of the printer which informs the operator about the printer's current state. It can light up in one of the three colors: green - the unit is working correctly or it is ready for operation; yellow - the printer requires inspection; red - the printer entered the failsafe mode which is always followed by a sound signal.

LPD Plus (LAYER PLASTIC DEPOSITION Plus)

a 3D printing technology which uses standard thermoplastics and a soluble support material to build parts. It involves depositing layers of the two materials to form a predesigned shape - an accurate representation of a digital model. The Zortrax Endureal works in the LPD Plus technology, but the device can print objects in two modes: using only the model material (single extrusion) or using both the model and the support material (dual extrusion). Depending on the chosen method, you have to remove the support structures manually or dissolve them in water.

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MAIN CHAMBER

the chamber in which the printing process takes place and in which model annealing is performed. In the bottom part of the chamber, there are heaters which heat up the inside of the chamber up to 200° C [392° F]. Such temperature reduces the risk of warping in large-format prints. The chamber is thermally shielded, and the heat is not transferred to other components.

MATERIAL ENDSTOP

a device which detects the presence of material and reacts when it runs out. The Zortrax Endureal is equipped with two material endstops installed in the filament chamber on the right side of the printer. If during the printing process a spool of material is finished, the corresponding material endstop will automatically make the printer pause the printing and allow the user to load a new material.

MATERIAL GUIDE

the tube which feeds the material from the spool to the extruder at the proper angle. The Endureal is equipped with two material guides, both of which have to be attached to the extruder and to the corresponding material endstop installed in the filament chamber on the right side of the printer.

MATERIAL JAM DETECTION SYSTEM

a system thanks to which the device pauses the printing process and waits for the user's reaction every time either nozzle becomes clogged or the material gets tangled on the spool. Once extrusion problems are solved, the Endureal continues the printing. Thanks to that, the number of failed prints can be significantly lowered.

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. Zortrax offers a wide choice of materials, which are available at: https://zortrax.com/filaments/. 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.

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MOTHERBOARD

the most important part of every Zortrax printer, to which all the necessary components are connected. It is the main printed circuit board which makes it possible for other parts of the printer to communicate with each other. The motherboard is placed on the right side of the printer above the filament chamber, along with the cooling fan and the power supply unit.

NOZZLE ALIGNMENT CALIBRATION

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

NOZZLE

the narrow, brass piece attached to each of the two hotends. It is used to direct a material flow throughout the entire printing process, allowing the printer to form the desired shape of a model.

PLATFORM

an integral part of the 3D printer, on which the model is created. It consists of two parts: the heatbed and the PEI plate. The heatbed provides proper platform heating during the printing process. The plate is covered with PEI film, which after being heated, increases adhesion of the printed object to its surface. Once the platform cools down, adhesion of the PEI film decreases and enable easy removal of prints. The platform is made of ferromagnetic steel and can be easily attached and detached from the heatbed without the use of special tools. The platform is adapted for raffless 3D printing which provides a better quality of bottom surface in your models.

PLATFORM CALIBRATION

a procedure which lowers the risk of issues that may occur during the printing process. It involves checking the distance between the two nozzles and five points on the platform, and tightening/loosening the calibration screws. Platform calibration is carried out automatically. Once you start the calibration, follow the instructions displayed on the screen.

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POWER OUTLET AND MAIN SWITCH

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

SPOOL HOLDER

the element which is used to secure a spool of material in the filament chamber on the right side of the printer. There are two types of spool holders in the Endureal: one which secures the model material spool and one which secures the support material spool. Both spool holders are integrated with filament weight sensors.

STARTER KIT

several pieces of equipment which are put together in one set. Apart from the PEI plates, the set contains tools and protective equipment, tweezers or safety gloves and glasses. The Starter Kit is needed to perform maintenance and repair work of your Zortrax printer independently. Each printer is delivered with the full Starter Kit.

SUPPORT STRUCTURES

if your model has any overhanging or protruding sections, they have to be supported with additional structures so that the whole model doesn't fall down and lose its predesigned shape during the printing process. The support can be printed with the same material as the model or the special water-soluble support material. Once the printing is done, you have to remove the support structures manually or dissolve them in water.

TOUCHSCREEN

the display screen placed in the top right corner of the printer, which enables fast and intuitive navigation through the device's menu. The screen also displays information about the current printing process and other information concerning the printer.

WASTE TOWER

a simple element which is printed next to the model during the dual-extrusion printing process. Every time the printer switches from printing with the model material to the support one and vice versa, the respective nozzle has to be either emptied or filled with 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.

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Z-AXIS SCREW

the screw which is responsible for the platform's vertical motion. It is driven by the stepper motor placed under the bottom plate. The Z-axis screw constitutes an integral part of the platform moving system.

ZCODEX

a file format 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 .zcodex. The .zcodex format can be transferred to the printer directly from Z-SUITE over Wi-Fi/Ethernet cable or using a USB flash drive. This format can only be created by processing .stl, .dxf, .obj, or .3mf files in Z-SUITE.

Z-SUITE

the application created specifically for Zortrax devices. Z-SUITE prepares a model for 3D printing by generating the file in the .zcodex format. Z-SUITE allows the 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 .zcodex is generated, the print settings cannot be changed. The last step is to transfer the file to the printer's storage using Wi-Fi, Ethernet cable, or a USB flash drive.

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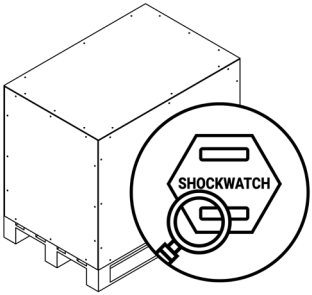
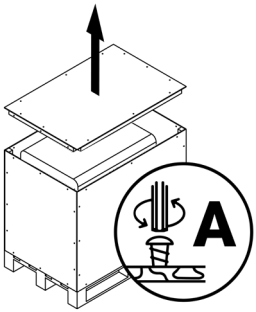
First Use Preparation

Be careful! The printer is very heavy (150kg [331lb]).



1. Inspect the shock watch labels after receiving the package.



2. Unscrew the screws marked "A" in the chest cover. Next, remove the top panel of the chest.

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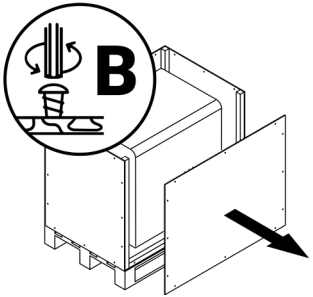
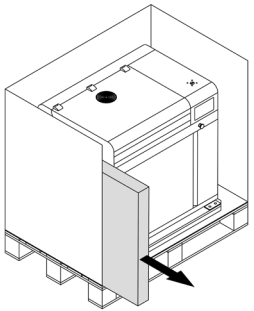


3. Unscrew the screws marked “B” in the front chest cover.



4. Remove the box with accessories placed on the left side of the chest.

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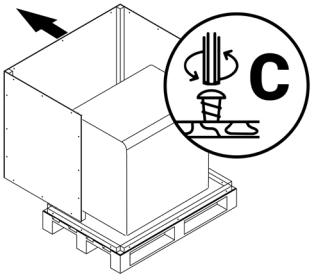
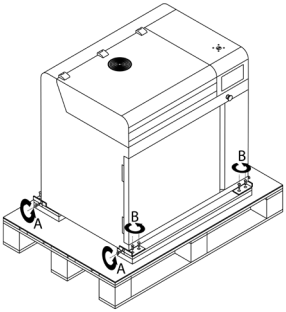


5. Unscrew the screws marked "C" to remove the remaining part of the chest.



6. Remove the four screws that secure the printer to the connecting angles (A). Next, remove the eight screws that secure the connecting angles to the pallet (B).

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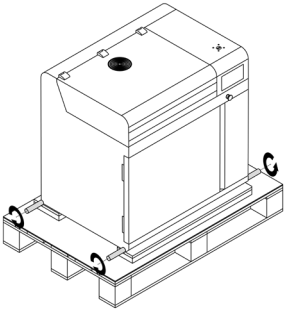
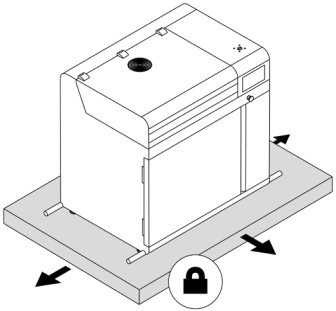


7. Unscrew the printer handles from the pallet. Install the handles on the sides of the printer. Make sure the handles are properly tightened.



8. Place the printer on a flat and stable surface that can withstand the weight of 150 kg [331 lb]. Next, remove the handles.

*The printer should be lifted or moved by at least four people.

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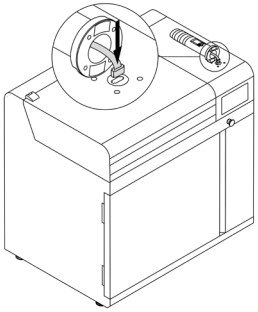
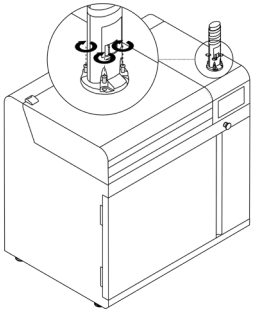


9. Unpack the signaling unit and plug its connector into the port placed in the top right corner of the housing.



10. Secure the signaling unit to the housing with the four screws.

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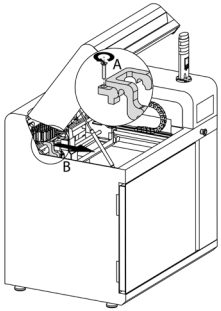
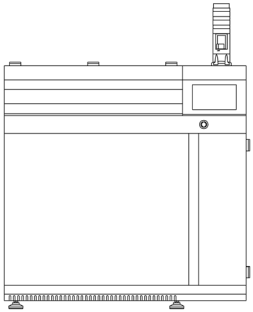


11. Open the lid and remove the screw that secures the extruder jig (A). Next, remove the jig from the printer.



12. Make sure the printer is properly leveled. If it is necessary, tighten or loosen the printer's legs as needed with a wrench.

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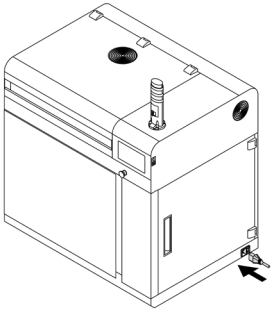
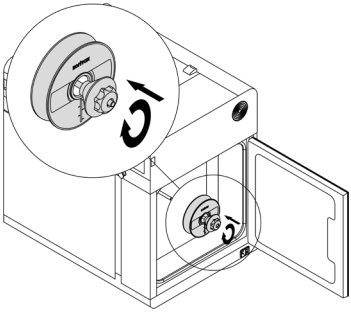


13. Plug the power cable in.



14. Open the filament chamber door and install a spool on the holder. Next, install the spool nut, press it against the spool, and tighten it clockwise. Both spools are installed in the same way.

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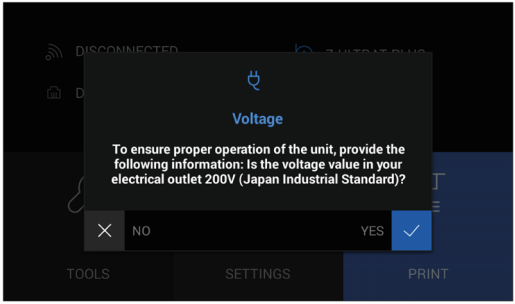
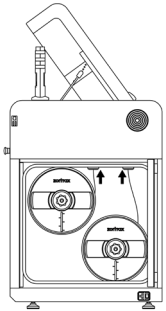


15. Turn the printer on. When you start the device for the first time, you will be asked to confirm the voltage value in your electrical outlet. If it is not 200 V (Japan), select ***No***.



Be careful! The extruder will be very hot. Wear safety gloves.

16. Feed the materials into the material endstops. Start the material loading procedure using options from the menu: ***Tools*** -> ***Materials*** -> ***Load material*** (Go to page 41 for more details on material loading).

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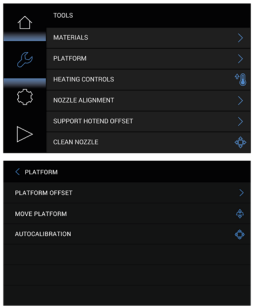

17. Calibrate the platform - select ***Tools*** -> ***Platform*** -> ***Autocalibration***. Follow the instructions displayed on the screen. Next, carry out ***Nozzle alignment*** calibration - select ***Tools*** -> ***Nozzle alignment***. Follow the instructions displayed on the screen.

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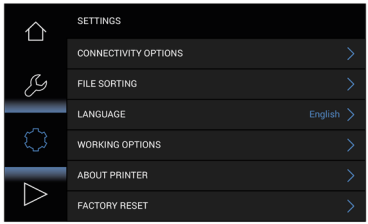
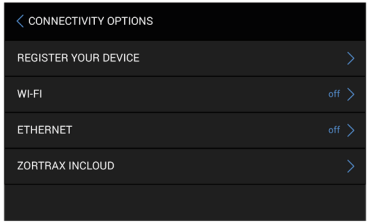
Connecting the printer to a network

The Endureal can be connected to a local network in two ways: via Wi-Fi or an Ethernet cable. Both methods allow you to manage the printer directly from Z-SUITE and make it possible to remotely transfer .zcodex files from your computer to the printer.

To connect the printer to a Wi-Fi network, open the ***Settings*** menu, next ***Connectivity options*** and select ***Wi-Fi***. From the list of available networks, choose your network and if it's required, enter the password. Select ***Connect*** to establish the connection.





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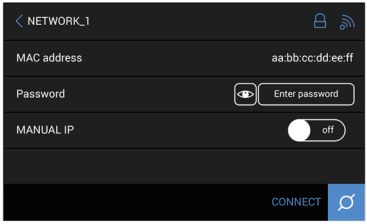
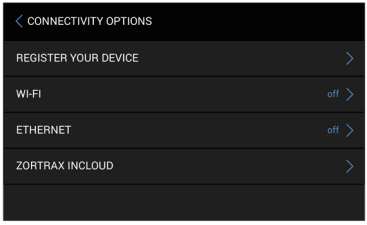
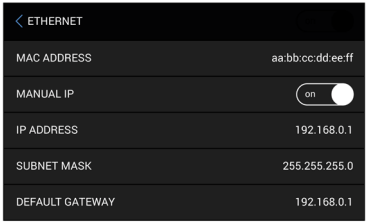


To connect the printer with an Ethernet cable, create a local network and connect the router/modem/switch to the printer. The connection will be established automatically. You can control the Ethernet connection settings in the main menu; select ***Settings, Connectivity options*** and ***Ethernet***.





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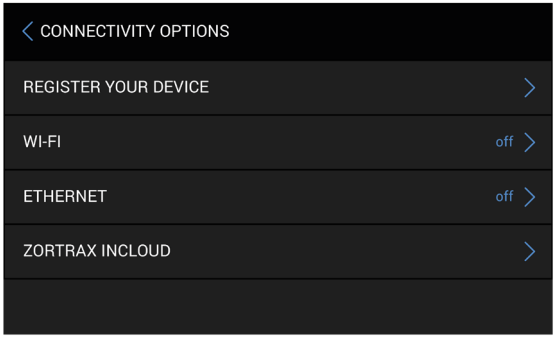
Once your printer is connected to the network, open the ***My Devices*** panel in Z-SUITE. You can search for devices available in the local network and add them to the program's panel. Select the icon with your printer's IP address and click on it to add the printer to the panel. You can also add a printer manually by typing its IP address.

Each added printer can easily be managed in Z-SUITE. You can start, stop, and pause the printing process, see the printer's current state (***Ready to Print*** / ***Printing*** / ***Paused*** / ***Offline***), change the name of your printer, preview basic information about the printer, or display the preview from the printer's camera.

In the ***3D Printer Files*** tab, you can preview all .zcodex files that are stored on the printer's USB flash drive.

Registering the Printer

In order to be able to download and install firmware updates, as well as ensure safe performance of the Zortrax Endureal, you have to register your printer at: zortrax.com/register. The procedure is simple and requires following a few steps in the printer's menu and on the website. To complete the registration, you will need a Zortrax ID account. If you don't have the account, you will be able to create it during the registration.



1. Open the ***Settings*** menu, next ***Connectivity options*** and select ***Register your device***.

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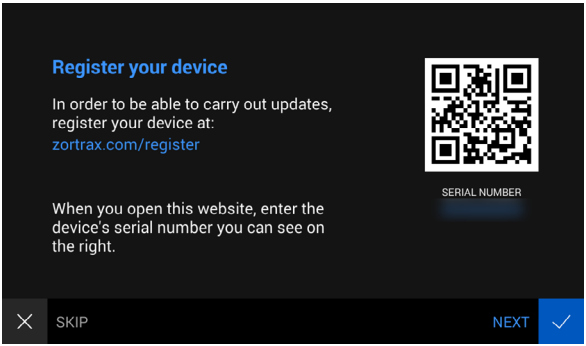
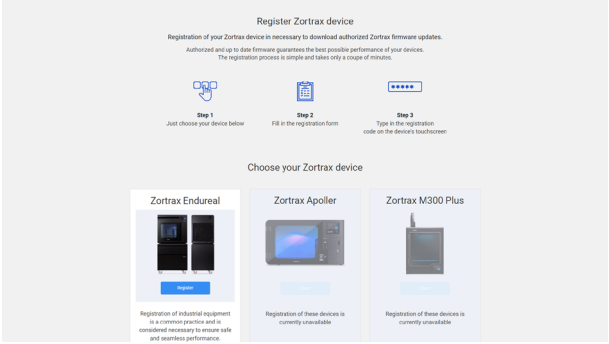


2. Go to zortrax.com/register.



2a. Select your device on the website.

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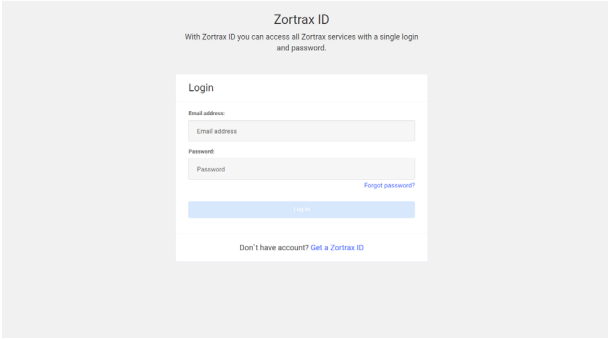
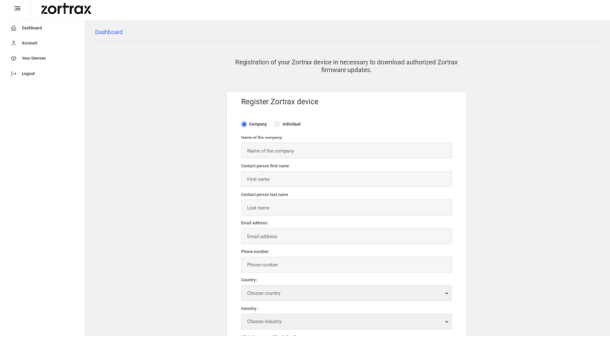


2b. Log into your Zortrax ID account. If you don't have the account, create it now.



2c. Fill in the form.

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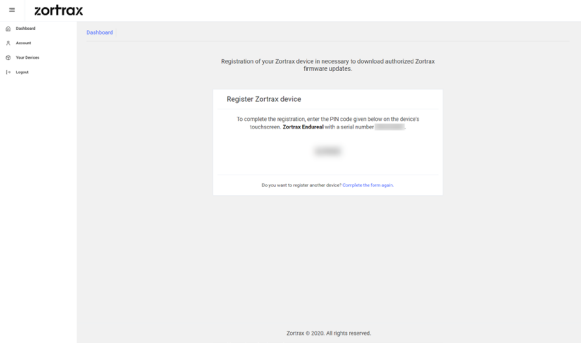
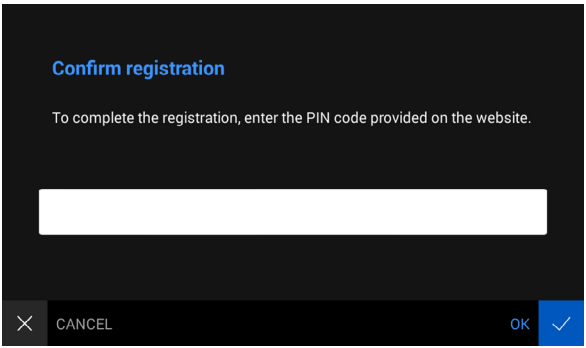


2d. Write down or memorize the PIN code you can see on the screen. You will have to enter the code on the printer's screen.



3. Enter the PIN code provided on the website and select ***OK***.

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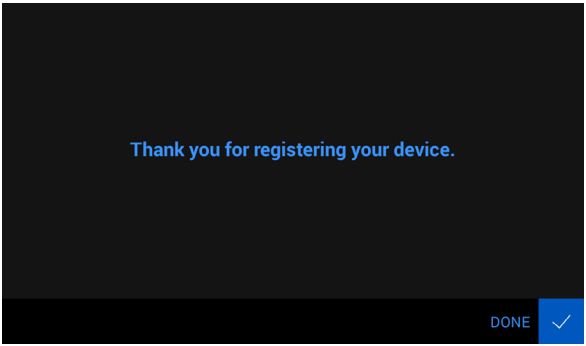
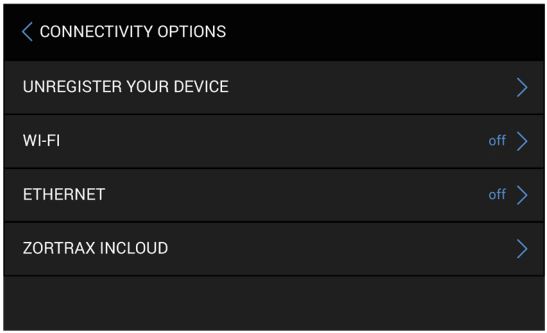


4. You device has been successfully registered.

Unregistering the Printer



1. Open the ***Settings*** menu, next ***Connectivity options*** and select ***Unregister your device***.

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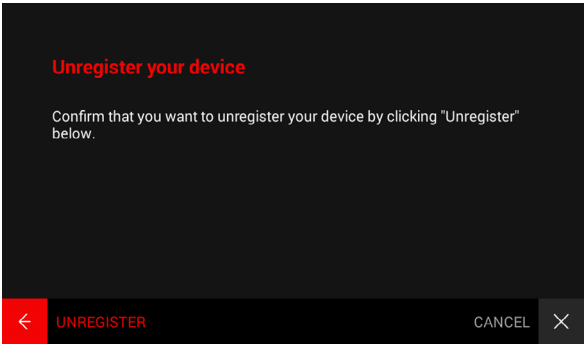
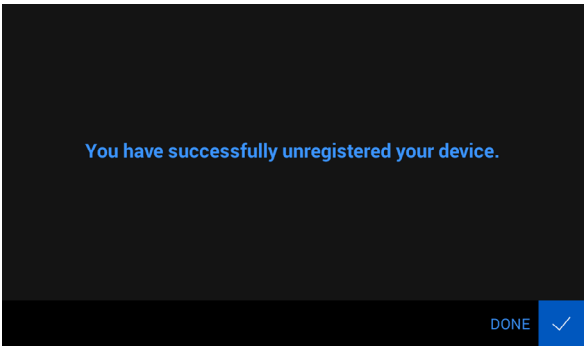


2. Confirm the action by selecting ***Unregister*** on the screen.



3. You have successfully unregistered your device.

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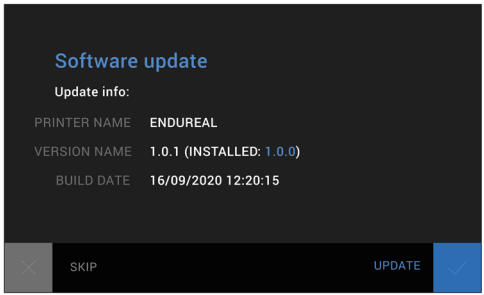
Firmware Update

If your printer is connected to the Internet using either Wi-Fi or an Ethernet cable, it automatically checks for available firmware updates. Every time you turn on the printer, you will see the launcher displaying information about the current firmware version and whether the firmware can be updated. Once you get this notification, follow the instructions displayed on the screen.

You can also check if there is an available firmware update using options from the menu. Open the ***Settings*** menu and select ***About printer***, and then ***Check for updates***.



If you have decided not to connect the printer to the Internet, check https://support.zortrax.com/downloads/ regularly for updates. To update the firmware, transfer the Update.zar file to a USB flash drive and plug it into the port on the right side of the device. To start the installation, select ***Refresh***.

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Navigating through the Menu

The printer's functions can be activated or deactivated through the options available in the menu.

The main menu is divided into three submenus: TOOLS, SETTINGS and PRINT. The main menu also displays basic information about the printer: the printer's IP address, the type of connection to a local network (Wi-Fi or Ethernet), the materials loaded into the extruder, and storage used on the USB flash drive.

TOOLS: this menu contains options that are useful during the printing process and maintenance work connected with the printer's main components:

Materials: this menu contains options which allow you to load and unload the materials used for printing.

Platform:

• Platform offset - this option allows you to set the platform at the correct distance from the two nozzles.

• Move platform - this option allows you to change the position of the platform.

• Autocalibration - this option activates the procedure of automatic calibration.

Heating controls - this menu allows you to heat up the hotend A, hotend B, platform, or chamber.

Nozzle alignment - this option activates the procedure of nozzle alignment calibration which sets the correct position of the hotends.

Support Hotend Offset - this option allows you to set the support hotend at the correct distance from the platform.

Clean nozzle - this option allows you to heat up the nozzle A or B for easier cleaning (there are 120 seconds for the procedure).

Drying materials - this option start the procedure of material drying which is required for some of the high-temperature materials.

Fans test - these options allow you to check the extruder fans for proper operation.

Device warnings - this menu shows all warnings that have been displayed while using the printer.

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SETTINGS:

Connectivity options - this tab allows you to configure the printer's connection to the local network and Zortrax inCloud

• **Register your device** - this option allows you to begin the procedure of registering your printer.

• **Wi-Fi** - this tab shows all available Internet networks and allows you to connect the printer to the chosen network.

• **Ethernet** - this tab allows you to control the Ethernet connection settings.

• **Zortrax Incloud** - this tab allows you to complete printer's registration in Zortrax inCloud and/or this tab gives you information whether the printer is already registered in inCloud.

File sorting - this option allows you to organize saved models by the date and time of saving, or by the file size.

Language - this tab allows you to choose the language of the menu and printer messages.

Working options: this tab contains several options you can use to configure the printer's operation:

• Platform idle temperature - this option allows you to set platform temperature for the duration of idle mode.

• Chamber idle temperature - this option allows you to set chamber temperature for the duration of idle mode.

• Voltage - this option allows you to adjust the printer so that it matches the supplied voltage.

• Capsensor version - this option allows you to select the capacitive sensor version.

• Hotend switch calibration - this option activates the hotend switch calibration. The calibration involves setting the extruder's position manually in relation to the hotend switch (both model and support).

• Buzzer - this option enables/disables sounds in the device.

• Full platform preheating - when this option is enabled, the printer starts every printing process only when when the platform is fully heated up.

• Ignore endstops - this option allows you to print without having to use one or two of the material endstops.

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• Ignore material jam - when this option is enabled, the printer will not enter the pause mode in the case of blockages in the nozzles.

• Sleep mode in (minutes) - this option allows you to set the time in which the printer will revert to the sleep mode.

• Default LED color - this option allows you to set the color of LEDs for the work-ready mode.

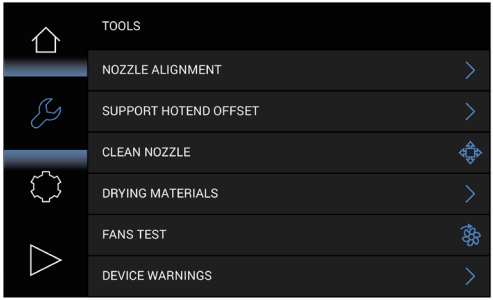
• Software autoupdate - this option allows you to enable or disable automatic firmware updates.

About printer - this tab contains information which identifies the printer model, its firmware and hardware version, serial number and total printing time.

PRINT: this tab shows all models saved on the USB flash drive. You can store all of your files in one or several folders. Here you can select a model for printing.

Material Drying

Material drying is a pre-printing treatment which is required for some of the high-temperature materials. It reduces the amount of moisture in the material which, if not removed, can have a negative impact on the printing process, and the model's thermal and mechanical properties.



1. To start material drying, select ***Tools*** and ***Drying materials***.

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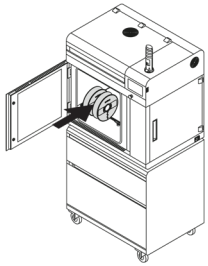
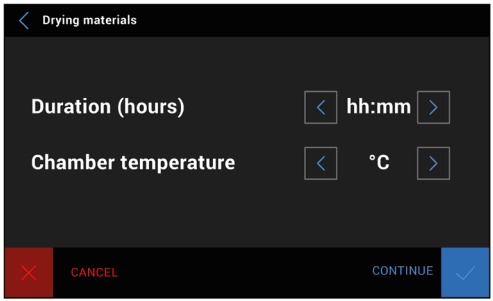


2. Next, put the spool on the platform in the chamber. For better results, leave the spool in a vertical position. You can perform drying with several spools at the same time.



3. Enter the temperature and time settings appropriate for the material you are about to dry, and start the process. Once the process has finished, the material is ready to be loaded.

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Material Loading

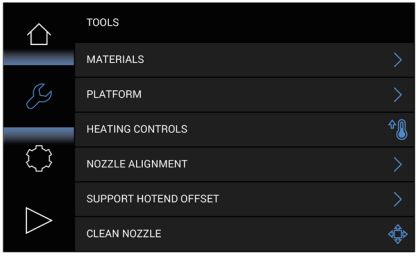
Open the filament chamber door and install a spool on the holder. Next, secure the spool with the supplied nut. Both model and support material spools are installed in the same way. Feed the materials into the material endstops.

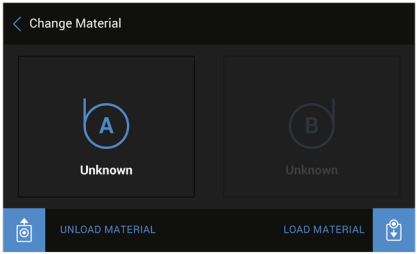
Start the material loading procedure using options from the menu. Follow the instructions displayed on the screen.

Select ***Tools*** and ***Materials***. Next, select which material you want to load first and click ***Load material***. In the pop-up window, choose the spool type you have installed: 800 g [1.76 lb], 2000 g [4.41 lb], or a custom spool. Once you have chosen the spool type, the printer will start to heat up the extruder and load the material.

Be careful! The extruder will be very hot. Do not touch it. Wear safety gloves.

Once loading is complete, the printer is ready to work.





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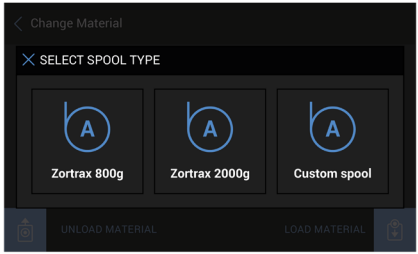

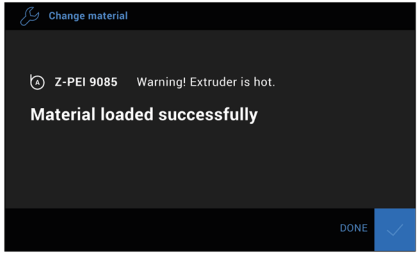

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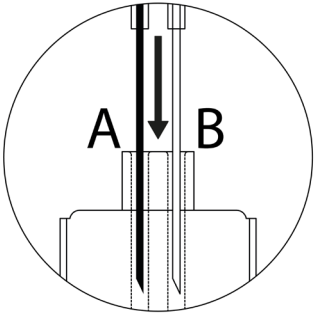

If you have difficulties feeding the material into the duct in the extruder, remove the material and the material guide from the extruder. Next, cut the end of the material at an angle of 45° and feed the material into the extruder all the way until the end of the duct. The left duct (A) is for the model material, whereas the right duct (B) is for the support material (when viewed from the front of the extruder).

Platform Calibration

Platform calibration is a procedure which lowers the risk of issues that may occur during the printing process. It involves a procedure of checking the distance between the nozzle and five points on the platform, and tightening/loosening the calibration screws. Once you start the calibration, follow the instructions displayed on the printer's screen.

Be careful! The extruder will be very hot during calibration. Do not touch it. Wear safety gloves.

Open the ***Tools*** menu and select ***Platform***, and ***Autocalibration***.

The printer will lift up the platform and display a message indicating that the three calibration screws placed under the platform need to be tightened. Once you've tightened the screws, select ***Done*** to continue.

Next, the printer will start to check the distance between the nozzle and five points on the platform: two at the front, two at the back, and one in the center of the platform.

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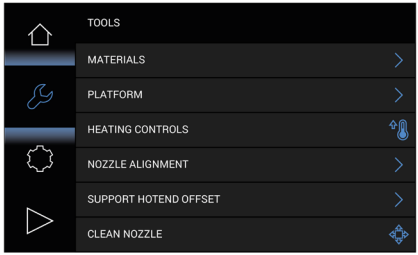
If the printer detects an incorrect distance in any of these points, the display will show instructions on what adjustments should be made. Follow the instructions and tighten or loosen the screw indicated in the message. Once you finish, select ***Done*** and the printer will recheck a given point on 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. Select ***Done*** to finish the calibration.

Nozzle Alignment Calibration

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

You have to calibrate the platform before carrying out the nozzle alignment calibration.



1. From the main menu, select ***Tools*** and ***Nozzle Alignment***.

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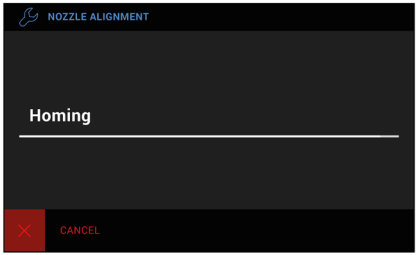

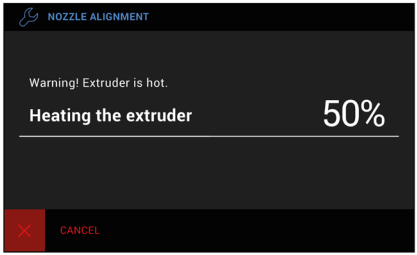

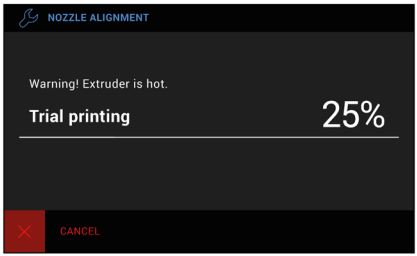

2. At this point, the printer will start to heat up the hotends, and then print two trial models.

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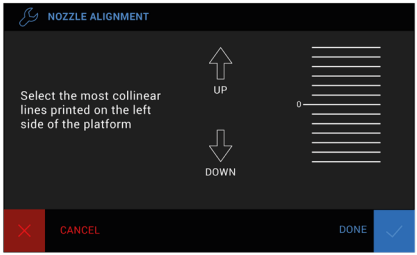

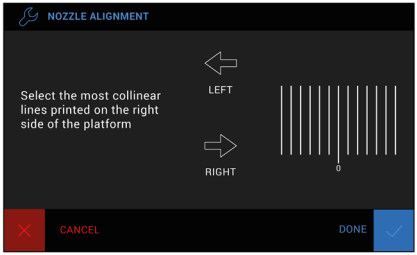

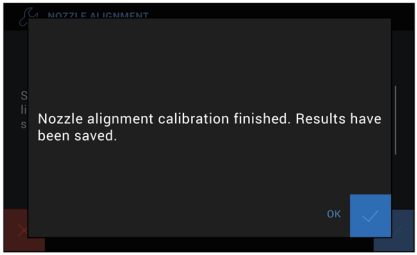

3. Inspect both models visually. From each model, select the most collinear lines printed (the lines where the support material covers the model material most precisely). Select ***Done*** to finish the calibration.

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Z-SUITE Installation

The latest Z-SUITE update can be found in the ***Downloads*** section at: https://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: ***Settings*** -> ***About Printer***, and on the nameplate at the back of the printer. Remember to update Z-SUITE regularly. All updates are available at the same site.

Printing, Annealing and Removing Models

Once you have saved your model as a .zcodex file, you need to transfer it to the printer's storage. There are two ways to do it: you can either save the file on the USB flash drive and plug it into the port at the front of the printer, or you can transfer the file directly from Z-SUITE over Wi-Fi/Ethernet cable.

Calibrate the platform using options from the menu: ***Tools*** -> ***Platform*** -> ***Autocalibration***. Follow the instructions displayed on the screen.

To start the printing process, open the ***My Devices*** tab in Z-SUITE and select the printer you want to work with. Next, open the ***3D Printer Files*** and from all models saved in the printer's storage select the one you want to print and click the ***Print*** button.

You can also use the options from the main menu to print your model. Open the ***Print*** tab and from all models select the one you want to print and tap ***Print***.

At this point, the printer will start to heat up the extruder.

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

The printing process will start automatically.

If you used a high-temperature material, do not remove your model immediately when the printing has finished. Your print has to undergo annealing (if you selected this option when preparing the model). During this procedure, the printer will cool the chamber down to room temperature, and next, it will begin to gradually heat it up. After heating, the printer will again cool the chamber to room temperature. The whole procedure consists of 7 steps and can take up to several hours. As soon as annealing has finished, your model is ready to be removed from the platform.

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 platform.

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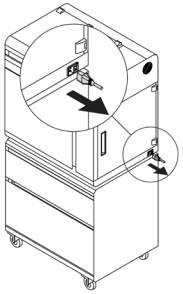
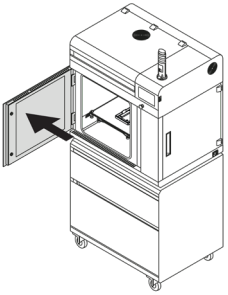


1. Turn the printer off and unplug the power cable.

WARNING! WAIT UNTIL THE PLATFORM AND THE PRINT COOL DOWN.



2. Open the front door.

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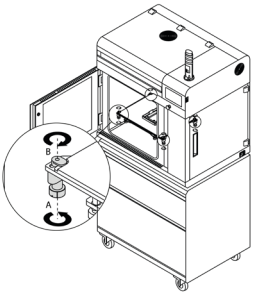
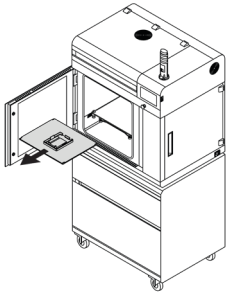


3. Loosen the four screws that secure the platform (A), and turn the corner locks (B).



4. Remove the PEI plate with the print.

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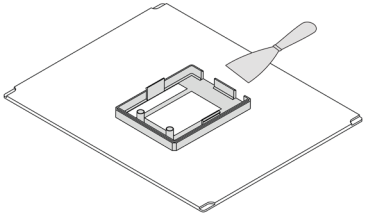
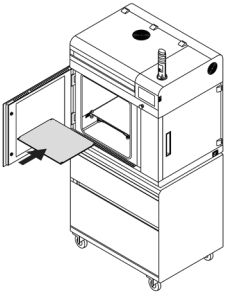


5. Use a spatula to remove the print.
WARNING! REMOVE THE PRINT VERY CAREFULLY. WEAR SAFETY GLOVES.



6. Put the PEI plate back in the printer.

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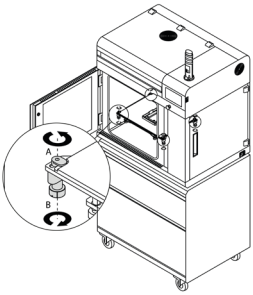
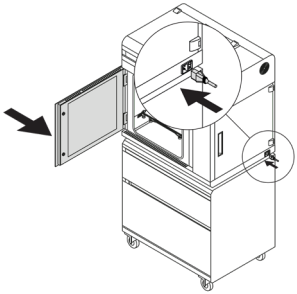


7. Lubricate the screw threads with protective grease. Turn the corner locks (A) and tighten the four platform screws (B).



8. Close the front door and plug the power cable in. Next, carry out Platform autocalibration.

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Available Materials

The complete offer of materials is available at: https://zortrax.com/filaments/. ***Material Technical Data Sheets*** and ***Safety Data Sheets*** can be found on the same website.

When 3D printing with Zortrax devices, the Manufacturer recommends using Zortrax certified materials to acquire the best possible quality of prints.

Material Storage

High-temperature materials should be stored at room temperature in a dry container with silica gel moisture absorbers, preferably in vacuum packaging. Every time you use a high-temp material, make sure you have dried it before the printing. Follow the manufacturer's guidelines or perform the procedure using options from the menu. See page 39 for details.

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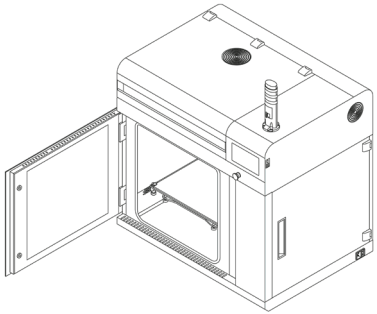
Basic Maintenance and Service Work

Maintenance work should be carried out regularly 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. Turn the printer off and let it cool down before you start most of the activities mentioned in this section. 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 guidelines connected with each section of the Zortrax Endureal, along with specific check points, necessary activities and their frequency.

1. Main



Activity	Frequency	Solution	Necessary accessories
Cleaning the machine, its interior and surroundings, especially the bottom plate under the platform	Before each printing process	To remove material remains from the interior of the unit, use a vacuum cleaner	- a vacuum cleaner, - cleaning products with a high evaporation rate

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Activity	Frequency	Solution	Necessary accessories
Emptying the waste container	Before each printing process	The waste container is placed at the back of the main chamber. Pull the container towards you and remove material remains. The container may be hot, wear safety gloves	- safety gloves
Replacing the filters	Every three months	The filters are installed in the lid. Open the lid and remove the filters	- new filters
Checking the HEPA fan	Every 500 working hours	The HEPA fan is installed in the lid. Check if the blades of the fan are spinning when the device is on	-

Lack of proper care of the machine can cause inevident damage or improper operation of the drive units

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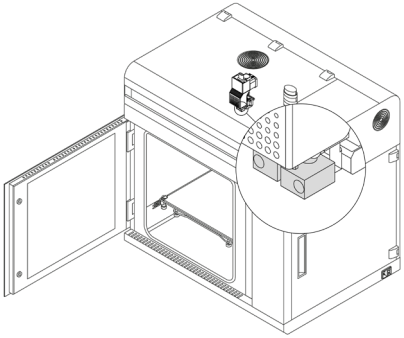
2. Hotends



Activity	Frequency	Solution	Necessary accessories
Checking if the hotends and nozzles are not clogged	Before each printing process	Make sure that each nozzle extrudes material during the material loading procedure	-
Cleaning the nozzles	After finishing one spool of material	Heat up the extruder and unclog each nozzle using a needle	-
Checking if the screws that secure the heater and thermocouple are tightened (in both hotends)	Every 100 working hours	Use an Allen key to make sure the screws are tightened	- an Allen key
Checking if the hotend switcher works properly	Before each printing process	Turn the printer off and wait until it cools down. Move the hotend switcher manually from left to right and check if both hotends switch easily	-

ⓘ Lack of proper care of the machine can cause inevident damage or improper operation of the drive units

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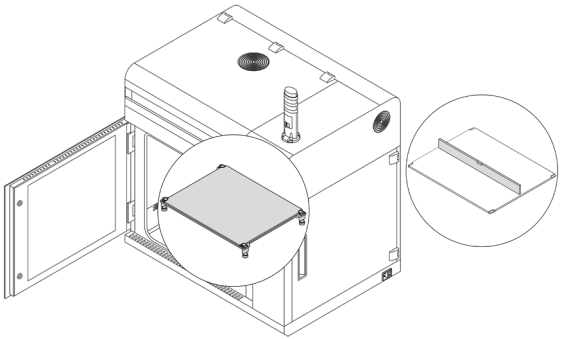
3. Platform



Activity	Frequency	Solution	Necessary accessories
Cleaning the PEI plate	Before each printing process	Remove material remains from the PEI plate using a spatula	- a spatula
Checking the PEI plate for deformation	Before each printing process	Prepare a straight object (e.g. a ruler) and place it on the PEI plate to make sure the plate's surface is even (see the graphic above)	-
Calibration	Every 200 working hours or every time you remove or change the PEI plate	Follow the instructions displayed on the screen. If the calibration fails, move on to the next step indicated in this table	-
Cleaning the heatbed and the underside of the PEI plate	Every 300 working hours	Loosen the four screws that secure the PEI plate, turn the corner locks, and remove the plate. Clean the heatbed and the underside of the of the plate using a spatula of a piece of cloth	- a spatula, - a piece of cloth
Checking if the PEI plate is properly installed on the heatbed and if the screws are tightened	Before each printing process	Make sure that the four platform screws are tightened. Be careful, wear safety gloves	- safety gloves

ⓘ Lack of proper care of the machine can cause inevident damage or improper operation of the drive units

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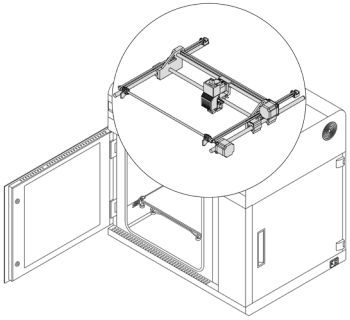
4. X/Y axes



Activity	Frequency	Solution	Necessary accessories
Checking if the axes are clean from material remains and dust	Before each printing process	It is possible to feel slight resistance while checking if the extruder moves freely. In such case, you should check if the X/Y axes are not covered with black grime. Clean the axes with a cloth damped in acetone and then lubricate these components with grease supplied in the Starter Kit	-
Checking if the screws on the X/Y axes and the motor pulleys are tightened	Every 300 working hours	-	-
Checking if the extruder moves freely when the printer is off	Every 300 working hours	-	-
Lubricating the X/Y axes	Every 1000 working hours	-	- silicone grease

Lack of proper maintenance of the X/Y axes can influence the final look of the print and cause the effect of shifted layers. Cleaning and lubricating the axes can help you save the material used for 3D printing as well as the time for preparing the device for printing

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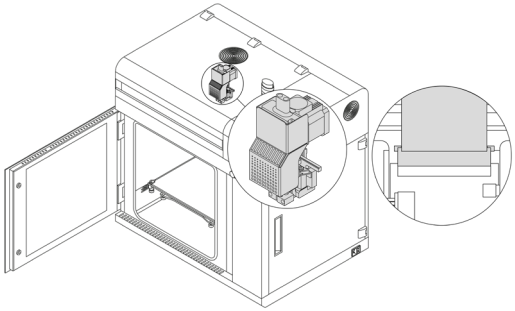
5. Extruder



Activity	Frequency
Checking if the material guides are properly installed in the extruder	Before each start-up of the printer
Checking if both material guides and the extruder cable are properly secured in the main guide	Before each start-up of the printer
Checking if the extruder cable is properly plugged into the extruder PCB. The graphic above shows the correct way of connection - the cable must be firmly clipped into the PCB to reduce the risk of unplugging.	Every 300 working hours
Removing material remains and lumps from the extruder	Every 300 working hours
Checking if the extruder fans are working	Every 300 working hours
Inspecting the extruder motor gear condition. If it is necessary, replacing the gear.	Every 50* working hours (*this period highly depends on the type of material you use most often)

Lack of proper care of the machine can cause inevident damage or improper operation of the drive units

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Support and Troubleshooting

In order to ensure safety of every 3D printer's 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.

The printer does not load the material into the extruder or the material is not extruded from the nozzle (applies to both materials and nozzles):

1. Check if the material is not tangled on the spool or blocked near the inlet of the material endstop. If so, unload the material using options from the menu. Cut off the tangled or blocked fragment of the material. Reload the material and restart the printing process.
2. Check if the spool is properly secured on the spool holder. The spool may not be able to rotate if it has been installed incorrectly.
3. Make sure that the material is not faulty or irregular, that is, it does not have swells on its surface. If so, unload the material using options from the menu. Use a different spool.
4. Make sure that the end of the material loaded into the extruder has been cut at the right angle. Cut the end of the material at an angle of 45° to make material loading easier.
5. For further help, visit our Support Center at: http://support.zortrax.com/.

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The print does not adhere to the platform (it warps):

1. If the print does not adhere to the platform:

• carry out platform calibration again,

• make sure that the model is correctly designed and arranged in the workspace,

• try adjusting the print settings differently by changing the level of infill and the model's arrangement in the workspace,

• make sure that the platform is sufficiently clean,

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

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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 Number	Potential Cause	Suggested Solution
#1	Upper fan: Not working	-Select the ***Run upper fan*** option from the menu and check if the fan is working - If the fan is not working: 1) ensure that the fan's blades are not mechanically blocked, 2) check if the fan is properly connected to the extruder PCB 3) upper fan replacement
#2	Bottom fan: Not working	-Select the ***Run bottom fan*** option from the menu and check if the fan is working - If the fan is not working: 1) ensure that the fan's blades are not mechanically blocked, 2) check if the fan is properly connected to the extruder PCB 3) bottom fan replacement
#2:1	Left Hotend: Critical temperature	-Check if the heater&thermocouple are properly installed and secured in the hotend -Check if the extruder cable is properly connected -Heater&thermocouple replacement -Extruder cable replacement -Extruder PCB replacement
#2:2	Left Hotend: Temperature drop	-Check if the heater&thermocouple are properly installed and secured in the hotend -Check if the extruder cable is properly connected -Heater&thermocouple replacement -Extruder cable replacement -Extruder PCB replacement
#2:3	Left Hotend: Sensor Failure	-Check if the heater&thermocouple are properly installed and secured in the hotend, -Check if the extruder cable is properly connected, -Heater&thermocouple replacement, -Extruder cable replacement, -Extruder PCB replacement

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Error Number	Potential Cause	Suggested Solution
#2:4	Left Hotend: Heater failure	-Check if the heater&thermocouple are properly installed and secured in the hotend -Check if the extruder cable is properly connected -Heater&thermocouple replacement -Extruder cable replacement -Extruder PCB replacement
#2:10	Left Hotend: Temperature fluctuation	-Check if the heater&thermocouple are properly installed and secured in the hotend -Check if the extruder cable is properly connected -Heater&thermocouple replacement -Extruder cable replacement -Extruder PCB replacement
#3:1	Right Hotend: Critical temperature	-Check if the heater&thermocouple are properly installed and secured in the hotend -Check if the extruder cable is properly connected -Heater&thermocouple replacement -Extruder cable replacement -Extruder PCB replacement
#3:2	Right Hotend: Temperature drop	-Check if the heater&thermocouple are properly installed and secured in the hotend -Check if the extruder cable is properly connected -Heater&thermocouple replacement -Extruder cable replacement -Extruder PCB replacement
#3:3	Right Hotend: Sensor Failure	-Check if the heater&thermocouple are properly installed and secured in the hotend, -Check if the extruder cable is properly connected, -Heater&thermocouple replacement, -Extruder cable replacement, -Extruder PCB replacement
#3:4	Right Hotend: Heater failure	-Check if the heatbed cable is properly connected to the heatbed -Check if the heated cable is properly connected to the motherboard -Heatbed cable replacement -Heatbed cable adapter replacement
#3:10	Right Hotend: Temperature fluctuation	-Check if the heater&thermocouple are properly installed and secured in the hotend -Check if the extruder cable is properly connected -Heater&thermocouple replacement -Extruder cable replacement -Extruder PCB replacement
#4:1	Platform Heating Plate: Critical temperature	-Check if the heatbed cable is properly connected to the heatbed -Check if the heatbed cable is properly connected to the motherboard -Heatbed cable replacement -Heatbed cable adapter replacement

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Error Number	Potential Cause	Suggested Solution
#4:2	Platform Heating Plate: Temperature drop	-Check if the heatbed cable is properly connected to the heatbed -Check if the heatbed cable is properly connected to the motherboard -Heatbed cable replacement -Heatbed cable adapter replacement
#4:4	Platform Heating Plate: Heater failure	-Check if the heatbed cable is properly connected to the heatbed -Check if the heatbed cable is properly connected to the motherboard -Heatbed cable replacement -Heatbed cable adapter replacement
#4:10	Platform Heating Plate: Temperature fluctuation	-Check if the heatbed cable is properly connected to the heatbed -Check if the heatbed cable is properly connected to the motherboard -Heatbed cable replacement -Heatbed cable adapter replacement
#5:5	Endstop X: Homing failure	-Check if the X-axis endstop is properly connected -Make sure that the metal strip installed on the axis block enters the endstop -Carry out X/Y axis maintenance -X-axis endstop replacement
#6:5	Endstop Y: Homing failure	-Check if the Y-axis endstop is properly connected -Make sure that the metal strip installed on the axis block enters the endstop -Carry out X/Y axis maintenance -Y-axis endstop replacement
#7:5	Bottom Endstop Z: Homing failure	-Ensure that nothing is blocking the platform while it is moving to the very bottom -Check if the Z-axis endstop is properly connected -Z-axis endstop replacement
#8	Unable to communicate with the control board	-Check the connection between the Android board and the motherboard -Contact your Reseller/Distributor
#11:3	Cap Sensor: Sensor failure	-Check if the capacitive sensor is properly connected to the extruder PCB and installed in the fan shroud
#15:8	Extruder PCB: No connection	-Check if the extruder cable is properly connected -Extruder cable replacement -Extruder PCB replacement

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Error Number	Potential Cause	Suggested Solution
#15:11	Extruder PCB: Overheating	-Check if the ambient temperature does not exceed 30° C [86° F] -If the ambient temperature is higher than 30° C [86° F], turn the printer off and unplug the power cable. Wait until the temperature falls below the recommended value. -Extruder PCB replacement -Contact your Reseller/Distributor
#16:12	Power Supply: Overheating	-Turn the printer off and unplug the power cable -Contact your Reseller/Distributor
#17:13	Motherboard: Overheating	-Turn the printer off and unplug the power cable -Contact your Reseller/Distributor
#24:19	Fuse temperature: Overheating	-Check if the temperature sensors are properly installed -Check if the heatbed cable's small connector is not disconnected or damaged
#36:1	Left chamber heater: Critical temperature	-Check if the left heater sensor is properly installed -Check if the left heater sensor has not been damaged
#36:2	Left chamber heater: Temperature drop	-Check if the roller blinds are properly installed and do not allow the air from the extruder chamber to pass through -Check if the left heater sensor is properly installed -Check if the left heater sensor has not been damaged
#36:3	Left chamber heater: Sensor failure	-Check if the left heater sensor is properly installed -Check if the left heater sensor has not been damaged
#36:4	Left chamber heater: Heater failure	-Contact your Reseller/Distributor
#36:10	Left chamber heater: Temperature fluctuation	-Check if the roller blinds are properly installed and do not allow the air from the extruder chamber to pass through -Check if the left heater sensor is properly installed -Check if the left heater sensor has not been damaged
#37:1	Right chamber heater: Critical temperature	-Check if the right heater sensor is properly installed -Check if the right heater sensor has not been damaged

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Error Number	Potential Cause	Suggested Solution
#37:2	Right chamber heater: Temperature drop	-Check if the roller blinds are properly installed and do not allow the air from the extruder chamber to pass through -Check if the right heater sensor is properly installed -Check if the right heater sensor has not been damaged
#37:3	Right chamber heater: Sensor failure	-Check if the right heater sensor is properly installed -Check if the right heater sensor has not been damaged
#37:4	Right chamber heater: Heater failure	-Contact your Reseller/Distributor
#37:10	Right chamber heater: Temperature fluctuation	-Check if the roller blinds are properly installed and do not allow the air from the extruder chamber to pass through -Check if the right heater sensor is properly installed -Check if the right heater sensor has not been damaged
In the case of other error messages, contact Zortrax Customer Support through the Support Form and provide details and pictures.		

	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: https://support.zortrax.com/endureal-packing/.

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

www.zortrax.com

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Specification

Device	
Build volume*	400 x 300 x 300 mm [15.7 x 11.8 x 11.8 in]
Nozzle diameter	0.4 mm [0.016 in]
Extruder	Dual material
Extruder cooling system	Two fans cooling the extruder block; radial fan cooling the print
Hotend	High-temperature dual hotend
Platform	Heated, aluminum coated with PEI
Material Sensor	2x Mechanical endstop, 2x Material weight sensor
Connectivity	Wi-Fi, Ethernet, USB
Operating system	Android
Processor	Quad Core
Touchscreen	7" IPS 1024 x 600
Camera	Yes
Printing	
Technology	LPD Plus (Layer Plastic Deposition Plus) – advanced technology depositing melted thermoplastics with break-away or dissolvable support structures
Layer resolution	200 microns [0.4 mm/0.016 in nozzle]
Minimal wall thickness	450 microns [0.4 mm/0.016 in nozzle]

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Platform levelling	Automatic measurement of platform points' height
Filaments	
Available materials	Full offer is available at: https://zortrax.com/filaments
Support	Mechanically removed - printed with the same material as the model; Break-away – printed with a different material than the model; Soluble - printed with a different material than the model
Filament Container	Spool
Filament Diameter	1.75 mm [0.069 in]
Temperature	
Maximum printing temperature (extruder)	480° C [896° F]
Maximum platform temperature	220° C [428° F]
Maximum build chamber temperature	200° C [392° F]
Ambient operation temperature	17 - 30° C [63 - 86° F]
Storage temperature	0 - 35° C [32 - 95° F]
Electrical	
AC input	120 V ~ 13 A 50/60 Hz; 200 - 240 V ~ 9.5 A 50/60 Hz
Maximum power consumption	120 V - 1600 W; 200 - 240 V - 2300 W

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Software	
Software bundle	Z-SUITE
Supported input file types	.stl, .obj, .dxf, .3mf
Supported operating systems	Windows 10 and newer versions
In The Box	
3D printer, Z-SUITE, Starter Kit, Maintenance Kit, spool of model material, spool of support material, spool of high-temperature model material, spool of high-temperature support material, USB memory stick	

*In dual-extrusion mode project's dimensions cannot exceed 390 mm [15.35 in] in the X axis and/or 290 mm [11.40 in] in the Y axis.

Recycling

Disposal of paper and plastic packaging

To protect the environment, the Manufacturer recommends placing used paper and plastic packaging in specially designated 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.

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