

# ZMORPH i500

## MANUAL GUIDE

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# Manual guide

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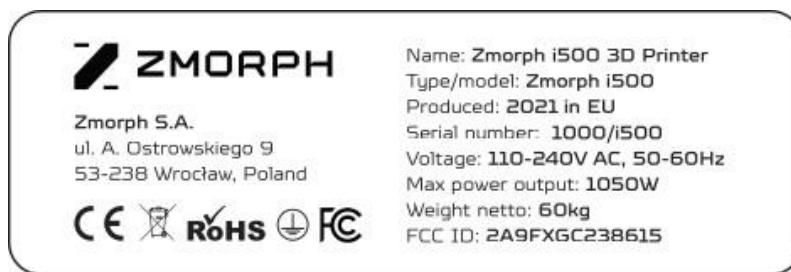
## 1. Introduction

This manual describes the basic information about Zmorph i500, safety precautions, preparation for operations and basic maintenance. Read this manual guide carefully and understandably before operating the device for the first time. Ignorance of the instructions may result in damage to the device, personal injury or reduced quality of the printed parts. Make sure that everyone who uses the device has read and followed these instructions. The manufacturer of the equipment makes every effort to ensure that the safety of use, transport, storage and disposal is at the highest level. However, the manufacturer has no direct control over the user and the use of the device, therefore he is not liable for injury, damage and costs resulting from non-compliance with these instructions.

## 2. Health and safety at work

### 2.1 Markings contained in the instructions guide and on the device

This manual contains warnings and safety information for your Zmorph i500 product. The manual also indicates situations to which special attention should be paid, and warnings about misuse or neglect of the device.



Zmorph i500 nameplate



Protective Earth (PE) terminal - An earth connection is essential before connecting to the supply.

# Health and safety



High voltage - this symbol indicates the area where the user may be electrocuted.



Hot surface - this symbol warns of high temperatures to avoid burns. Let the printer cool down before accessing internal parts.



Moving parts hazard - to avoid injury or damage to parts of the body, do not reach inside the unit or insert any foreign objects while the unit is in operation, during operation or at rest.



Moving parts hazard - pinch and crush hazard. Keep away from the moving toolhead and worktable. When printing, the carriage travels back and forth and the worktable upwards and downwards.

Read the manual - before starting the printer read and follow the safety and operating instructions



Moving parts hazard - Keep away from moving fan blades.

# Health and safety

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## 2.2 General safety information

- Regular updating of the firmware is important to prevent defects and damage. To keep track of the latest instructions and software updates, it is recommended that you visit the site [zmorph3d.com/support](http://zmorph3d.com/support) regularly.
- Place the unit on a level and clean surface.
- The device must be secured against overturning, falling from a height or being knocked down by people moving in the vicinity.
- Zmorph i500 3D Printer generates very high temperatures during operation, and has easily accessible moving parts. Caution is advised.
- When operating the printer, avoid situations that could cause burns or interfere with the proper functioning of the device.
- Due to their size and specificity, Zmorph devices are not intended for use by children under 14 years of age and persons with reduced manual, motor and psychomotor skills. If the device is operated by handicapped or elderly people, the Manufacturer recommends using assistance or supervision of appropriately trained personnel.
- Do not leave the device unattended for long periods during operation, check the work progress regularly.
- Periodically check the condition and functionality of the 3D printer to avoid potential malfunctions.
- Switch off the device after the work is finished, to reduce the energy consumption.
- Regularly check the wear and tear of parts in the machine. The list of spare parts can be found in the spare parts section.
- For assistance with technical problems and any maintenance work, please contact the Technical support at the following address: [zmorph3d.com/support](http://zmorph3d.com/support)
- Keep the unit away from heat sources, flammable materials, equipment emitting radiation, moisture, running water and other liquids.
- Before starting work, ensure that the device is out of reach for children and animals.
- Be careful not to drop, hit or shake the device.
- This device is not intended to operate in a potentially explosive atmosphere.

# Health and safety

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## 2.3 Occupational hygiene

- Special care must be taken when carrying out a repair, maintenance or servicing operations. The user is exposed to high temperatures. Protective gloves are recommended.
- Even with the HEPA and carbon filtration system it is recommended that a dedicated space with adequate ventilation is provided for the device. It is not recommended that you stay in the same room where the device is working continuously.
- The noise emitted when working with 3D printing toolheads is 45 dB but continuous presence in one room can cause discomfort to the user.
- Place the device on a stable and flat surface.
- Do not use materials that may damage the device or that are not authorized for use with the toolheads.
- When using Zmorph i500, ensure all necessary health and safety measures as described in this manual and separate regulations.
- Handle the sharp accessories and tools included with the kit with special caution.

## 2.4 Electrical safety and risk

Zmorph i500 devices have been tested to comply with the Low Voltage Directive. In order to ensure maximum safety of use, including protection against short circuits, overloads, overvoltages and overheating of the product, the following provisions must be observed:

- Do not modify the machine, toolhead and its electronic components.
- Do not use electronic substitutes other than those recommended by the manufacturer.
- Replacement of electronic components should be done in accordance with the recommendations and instructions provided by the manufacturer.
- Before connecting the 3D printer to the power outlet, make sure that the voltage required by the device corresponds to the voltage available from the power source. For power supply information, refer to the nameplate on the rear of the device.
- Avoid overloading the power outlet to which the 3D printer is connected.
- The device must be properly grounded. Always make sure that the grounding is in accordance with local and national regulations.
- Use only the original power cord or one authorized by the manufacturer. It must not be destroyed, cut or repaired. Replace a damaged cable immediately with a new one.
- Perform repair and maintenance work on the device when it is disconnected from the power supply.
- Do not expose the device to moisture or modify electronic components (e.g. soldering).

# Health and safety

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## 2.5 Safety and mechanical risks

The device includes moving parts such as toothed belts, gears, motors, toolheads and a worktable. In order to ensure maximum safety for the operator and the device follow these precautions:

- Do not reach inside the unit or insert any foreign objects while the unit is during operation.
- Use the accessories supplied with the unit for their intended purpose and take special care when handling them. Their improper use may cause personal injury.
- Special care must be taken when removing the printout from the worktable and protective glasses should be worn, as there is a risk of fragments of the material scattering towards the eyes.

## 2.6 Risk of burns

There is a high risk of burns, as the temperature of the extruder can be as high as 300°C. Do not touch the tool-head with bare hands and use caution when operating hot components. If it is necessary to hold a hot item, use specially adapted pliers and/or tweezers. The hot components should not take more than 30 minutes to cool down. The temperature of the worktable can reach even 125°C, therefore, special care should be taken during use, in particular when performing operations or removing the finished printout. Do not underestimate the risk of burns on the device. In addition, design modifications to the device with respect to changes in operating temperature are not permitted, as they may result in serious injury or permanent damage to the printer.

## 2.7 Instructions for safe storage and transport

Recommendations for storage

- Store Zmorph i500 devices at -10 to 40°C.
- The storage place should be free from moisture and extreme weather conditions.
- During storage, devices should be placed in an upright position with their top pointing in the direction marked on the box and should not be tilted or rolled:



# Health and safety

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- When stored in original packaging, a maximum of 10 kg of weight can be placed on a single package.
- The weight of one device is approximately 60 kg.
- It is recommended to safely store the devices on a pallet.
- One pallet (standard size 1200 x 800mm) can hold up to 2 devices.

Recommendations for packing:

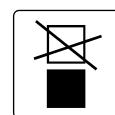
- To transport the device, it is best to protect it with original protective foams; in case of lack of original foams, the device should be protected in such a way that free movement of the device in the transport packaging is not possible.
- Secure all moving components in such a way that they cannot be moved during transport.
- In particular, the glass plate of the worktable should be kept in mind, as it can slide out of the mounting clips during transport. Make sure that it is secured against ejection.
- The device must be shipped on a pallet.
- When placing several devices on a pallet, the packaging should be marked with appropriate markings:



Protect against moisture.



Careful, fragile - a load that can easily be broken.



Do not stack.

- Remember that the edges of the packaging should not protrude beyond the outline of the pallet. Devices placed in this way on a pallet should be properly packed, bound with straps and then wrapped with foil in such a way that they cannot be moved during transport.
- At least two people must be involved in loading and unloading one machine. The packaging should be lifted by the designated handles on its sides
- After the printer has been placed on a pallet, do not attempt to move it with by hand, use a forklift or pallet jack.

## 2.8 Electromagnetic compatibility (EMC)

Every Zmorph device is electromagnetically compatible in accordance with the EMC directive. It was tested in laboratory conditions meeting the standards of the European certificate of conformity. Its operation meets the following conditions in accordance with the EMC Directive:

- This device (system) does not cause harmful interference to other devices (systems),
- This device (system) is not sensitive to interference from other devices (systems),

# Health and safety

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## 2.9 Statement of Federal Communication Commision (FCC)

### **FCC Compliance Statement**

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

### **FCC Interference Statement**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the 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.

# Warranty and liability

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## 3. Manufacturer's warranty and liability

Zmorph i500 3D Printer is designed to be reliable. In case of technical difficulty with any parts, it can be easily removed and replaced.

### 3.1 Scope of the warranty

3.1.1 Zmorph S.A. with its registered office in Wrocław, 53-238 Wrocław, ul. Aleksandra Ostrowskiego 9, Poland ("Zmorph") provides a one-year warranty for its 3D printers.

3.1.2 Guarantor is only liable for the physical defects resulting from the inherent causes in the sold product.

3.1.3 Duration of the warranty starts at the date of purchase of the product by the initial Buyer. The Date of Purchase is the date specified in the sales invoice. The warranty period of the repaired product is extended by the time which was required to repair the product (which includes the time from the delivery of the defective product with the complete warranty claim until the date of returning the repaired product to the Costumer).

3.1.4 Warranty does not cover defects resulting from other causes than indicated in clause 3.1.2, especially any defects resulting from:

- a) improper use or application of the product;
- b) improper product selection for the existing installation site conditions;
- c) improper or inconsistent with User Guide installation (including improper connection to the main power supply), maintenance, storage or transport;
- d) mechanical, chemical or thermal damages;
- e) deliberate product damages;
- f) damages ensuing as a result of non-original or inconsistent with Zmorph's recommendations or with the User Guide product use;
- g) random events;
- h) factors being result of major force, random events or any other external factors;
- i) use of non-original parts or consumables;
- j) modifications, repair attempts, interference in the product carried out by any other person than Zmorph representative or other representative authorized by Zmorph to carry out any of the above mentioned actions;
- k) continued usage of the product despite occurrences indicating an obvious defect;
- l) improper transport methods provided by the Costumer;
- m) use of filaments other than recommended by Zmorph, list of which is available at [zmorph3d.com](http://zmorph3d.com)

# Warranty and liability

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3.1.5 The warranty does not apply to the consumable parts (such as nozzle, PTFE tube, jagger, toothed belts, glass part of the table, bearing) unless failure has occurred due to a defect in materials or manufacture.

3.1.6 The warranty shall cease to apply in the event of:

- a) any product modification by any person not authorized by Zmorph;
- b) any repair attempts of product by any person not authorized by Zmorph;
- c) other interference in the product carried out by a third party.

3.1.7 The warranty service does not apply to the actions stipulated in the User Guide which the user is obligated to perform on their own and at their own expense.

3.1.8 The warranty applies without territorial restrictions.

## 3.2 Acceptance of warranty claim

3.2.1 The warranty claims shall be filed using online form available at [zmorph3d.com](http://zmorph3d.com)

3.2.2 Acceptance of warranty claim requires:

- a) registration of the product at [www.zmorph3d.com](http://www.zmorph3d.com)
- b) returning a completed warranty claim in accordance with section 1 above during a warranty period
- c) including the name of the product, the date of purchase, a detailed description of the damage, as well as the description of the defect in the warranty claim;
- d) attaching the copy (scan) of a proof of purchase to the warranty claim;
- e) act in accordance with Zmorph's recommendation included in the answer to warranty claim.

3.2.3 Zmorph's recommendations referred to in point 2 letter e above will be provided within 2 business days of submitting the warranty claim and may include:

- a) Repair of the product by the Customer in accordance with Zmorph's instructions;
- b) deliver a defective product at Customer's expense to the Zmorph registered office or a service point indicated by Zmorph, and in the case of export shipments, the Customer should first use the services of a courier company indicated by Zmorph.

# Warranty and liability

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## 3.3 Claim processing period

3.3.1 The Service Team shall repair the defective product within 14 working days from the date of delivery of the defective product with the complete warranty claim to the correct Service Center.

3.3.2 The claim processing period may be extended by the time necessary to import the required replacement parts of the product. In all cases the Costumer shall be informed on the extended claim processing period.

## 3.4 Zmorph's liability

3.4.1 Zmorph is not required to modernize or modify the existing products after launching their new versions.

3.4.2 Zmorph shall not be liable for any damages incurred by the Buyer due to the defect of the product, especially damages related to damage of other devices, loss of potential benefits or cost of replacement of the product. The clause shall not apply to the Buyer who is a Consumer.

3.4.3 The warranty does not waive, restrict or suspend any rights of the Buyer who is a Consumer due to the product being non-compliant with the contract.

# What is Zmorph i500

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## 4. What is Zmorph i500

The Zmorph i500 device is a professional 3D printer for making printouts in the Fused Filament Fabrication (FFF) technology. Equipped with a Dual Drive Dual Extruder with Nozzle Lifting System it is capable of clean single and dual material printing.

A large closed working area and a double filtration system provide a working atmosphere with a constant temperature which prevents the occurrence of adverse effects. Thanks to this, the Zmorph i500 can work with several materials, you can find full list on our website or in materials library. The machine can operate independently or cooperate with an external computer. The built-in LCD touch panel serves as a graphical interface. File delivery is available through a flash drive.

The software for the Zmorph i500 machine is available on the manufacturer's website: [zmorph3d.com](http://zmorph3d.com)

# How to use Zmorph i500

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## 5. How to use your Zmorph i500 printer

Working with Zmorph i500 starts by preparing a 3D model in a modeling software that supports files in one of the standard formats .stl, .step or delivering a finished model acquired from external sources.

Then, the model has to be opened in a software dedicated by the manufacturer called “Voxelizer Industry”. It allows you to prepare gcodes for 3D Printing. It is a unique original application for slicing 3D models into layers, creating a whole chain of processing 3D files into G-code files and sending them to the device.

After selecting the parameters and generating the G-code file, it should be saved. This file can be delivered to the device using an USB flash drive or imported to an internal memory using a Ethernet or wi-fi connection. To avoid the risk of data transfer interruption, it is recommended to use an USB flash drive.

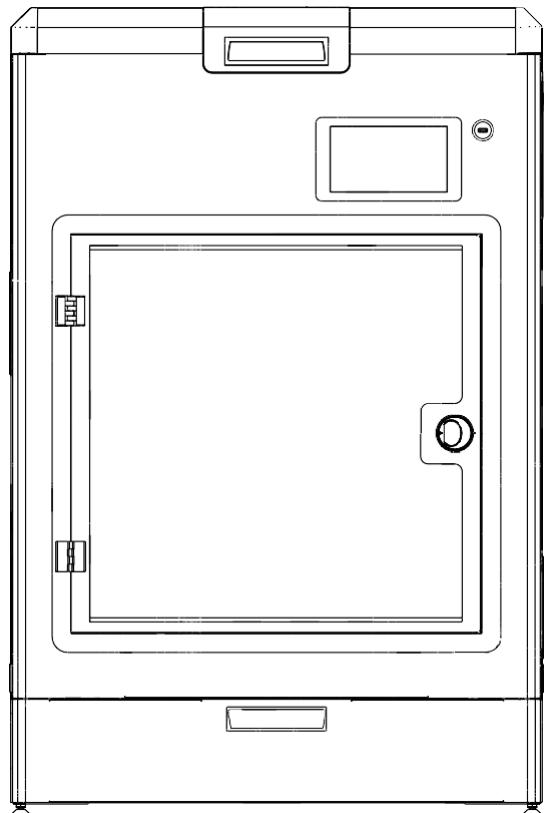
The product is intended for indoor use only. The device is not protected against moisture. Zmorph i500 is equipped in air-dust filter and HEPA/Carbon filtration.

### Unauthorised uses:

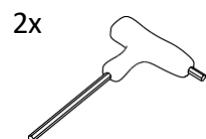
- It is forbidden to operate the device near flammable substances.
- It is forbidden to install the device outside areas which are dry and free from humidity or dust.
- It is forbidden to cover the device with any material during operation.
- It is forbidden to install or service the device by unqualified persons.
- It is forbidden to interfere with the constructional solutions of the product.
- It is forbidden to connect the machine to a faulty power supply system.
- It is forbidden to connect the device to the a power outlet without grounding.
- It is forbidden to insert hands or any body parts between moving parts.
- It is forbidden to touch heated elements during operation.
- It is forbidden to use the device without the required protective equipment.
- It is forbidden for untrained personnel to operate the device.
- It is forbidden to use a damaged device.

# Box content

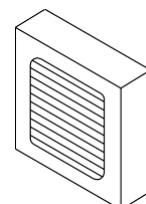
## 6. Box content



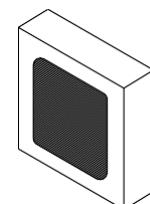
Zmorph i500

1 Kg Base filament  
0,35 Kg Support filamentL-key HEX 3.0 mm  
L-key HEX 2.5 mmPrinted pads for smaller  
filament spools

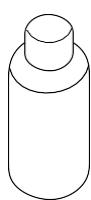
Wi-fi module



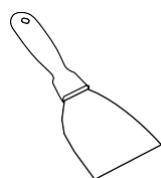
Dust filter (G4)



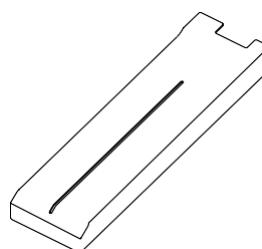
HEPA/Carbon filter



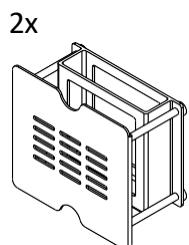
Adhesive agent



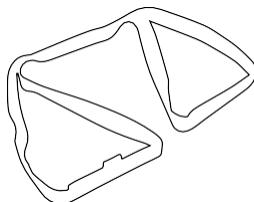
Spatula



Garbage collector



Filter socket



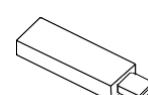
Carrying straps



Power cable



Ethernet cable

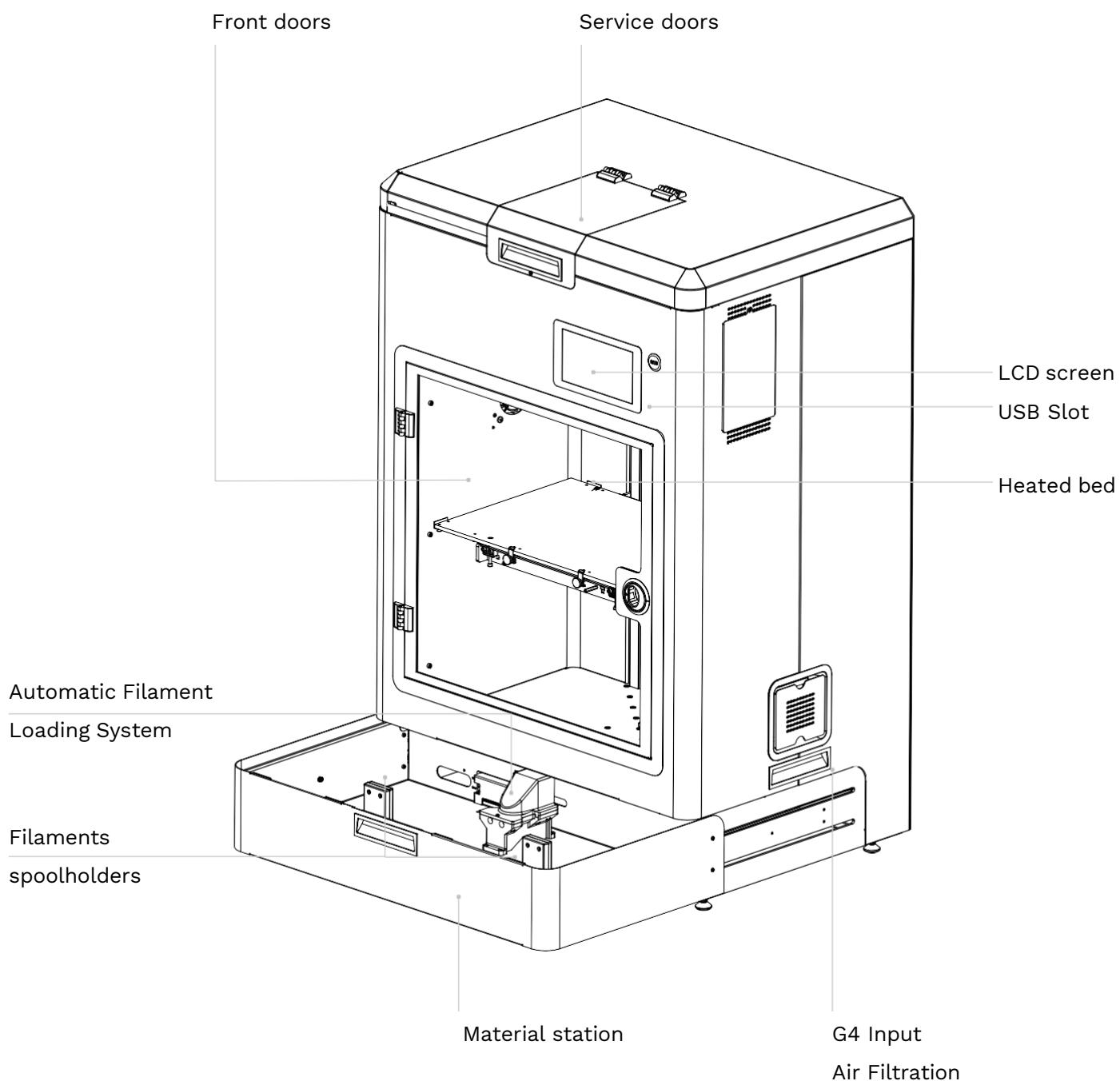


USB flash drive

# Machine specification

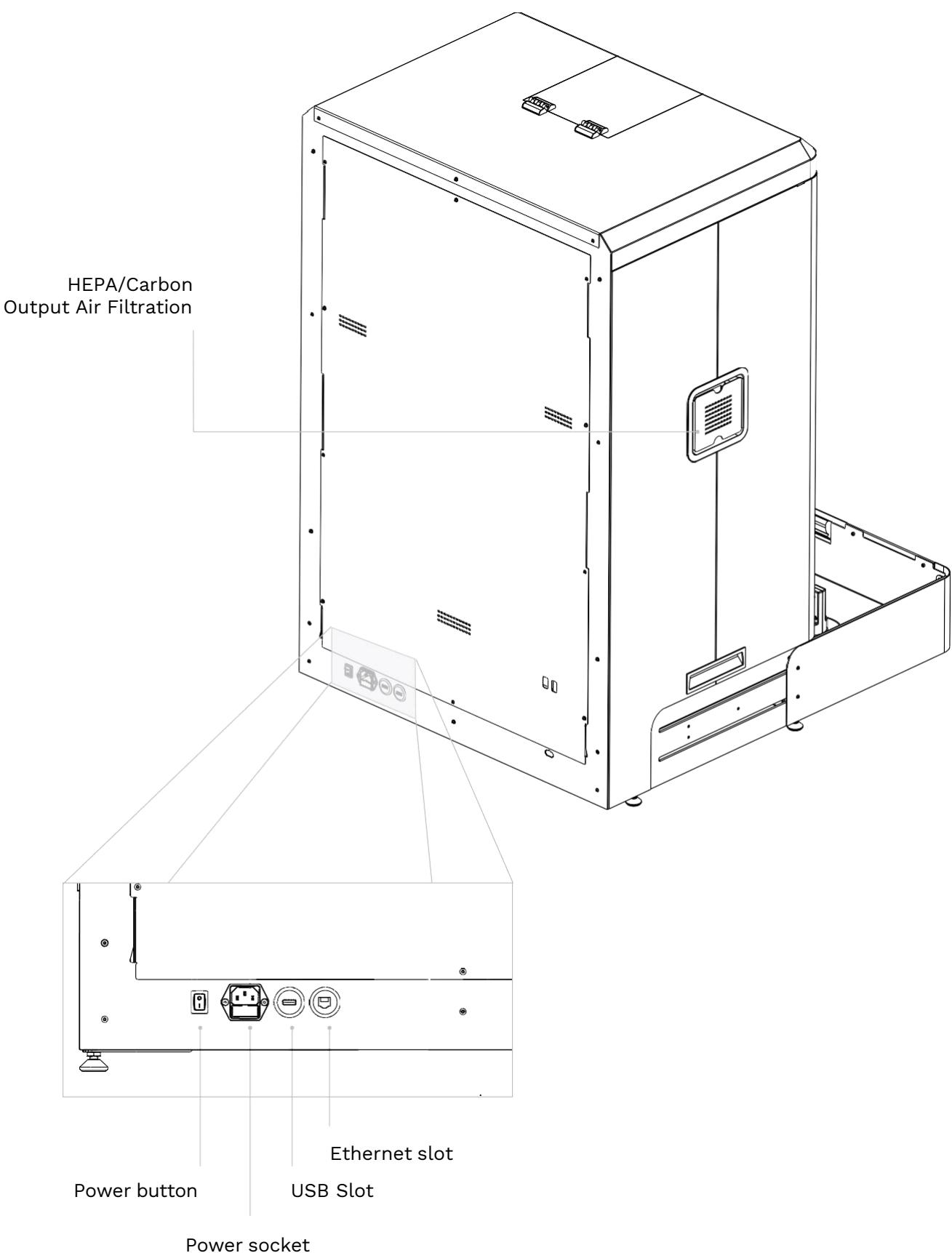
## 7. Machine specification

### 7.1 Overview



# Machine specification

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# Machine specification

## 7.2 Specification

### Weight and Physical Dimensions

3D printer	703 x 507 x 1075 [mm]
Transport package dimensions	800 x 600 x 1200 [mm]
Transport weight	~ 75 [kg] *
3D printer weight	~ 57 [kg] *

### 3D printing parameters

3D printing technology	FFF (Fused Filament Fabrication)
Toolhead	Single material 1.75 [mm], Dual material 1.75 [mm]
Layer resolution	0.05 - 0.4 [mm]
Maximum extruder temperature	280 [°C]
Work area (single material)	460 x 300 x 500 [mm]
Work area (dual material)	440 x 300 x 500 [mm]
Maximum bed temperature	130 [°C]
Minimum wall thickness	0.4 [mm]
Dimensional accuracy	+/- 0.2 [mm]
Work area leveling method	Semi-automatic
Material form	Spool, maximum Ø 300x100 [mm]
Material diameter	1.75 [mm]
Nozzle diameter	0.4, 0.6 [mm]
Support	Mechanically and chemically removed - printed with build or support material
Connectivity	USB (pendrive), Ethernet, WiFi
Available materials	PLA, ABS, PET, ASA
Third-party materials	Supported
Work speed	10 - 110 [mm/s]
Travel speed XY-axis	350 [mm/s]
Travel speed Z-axis	10 [mm/s]

### Temperature parameters

Ambient operation temperature	15 - 30 [°C]
Storage temperature	-10 -40 [°C]

# Machine specification

## Electrical parameters

Input current	110 [VAC] - 9-10 [A] 50/60 [Hz] 240 [VAC] - 5 [A] 50/60 [Hz]
Maximum power consumption	1050 [W]
RFID module operating frequency	13,56 [MHz]
Transmitter radiated H-field	200 [mW] (+23 [dBm])

## Software parameters

Type of software	Cura presetes for i500
Supported formats	STL, OBJ, 3MF

## Air filtration parameters

Output filter type	HEPA/Carbon
Input filter type	G4 (anti-dust)
Ventilation power	3.1 [W]
Filter dimensions	80 x 80 x 25 [mm]
Filtration control	Temperature

## Other

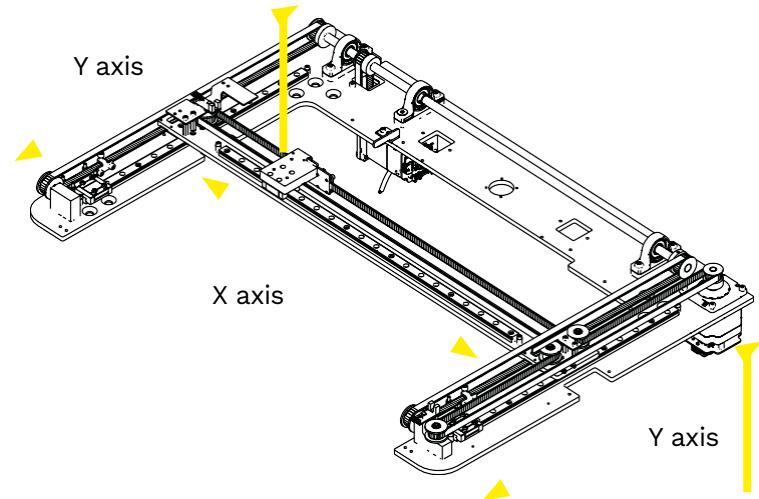
Toolhead changing system	Nozzle Lifting System
Nozzle Waste Remover	Brass brushes and PTFE scrapers
Filament loading	Automatic Filament Loading System

## 7.3 Components

### X axis

single toothed-belt system driven by a stepper motor and linear rail as guiding element.

Used for movement of Zmorph Dual Drive Dual Extruder in X-axis. Must be periodically lubricated to ensure a long life of the machine.



### Y axis

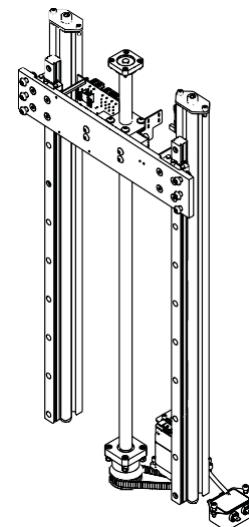
dual toothed-belt system driven by a stepper motor and linear rails as guiding elements.

Used for movement of Zmorph Dual Drive Dual Extruder in Y-axis. Must be periodically lubricated to ensure a long life of the machine.

# Machine specification

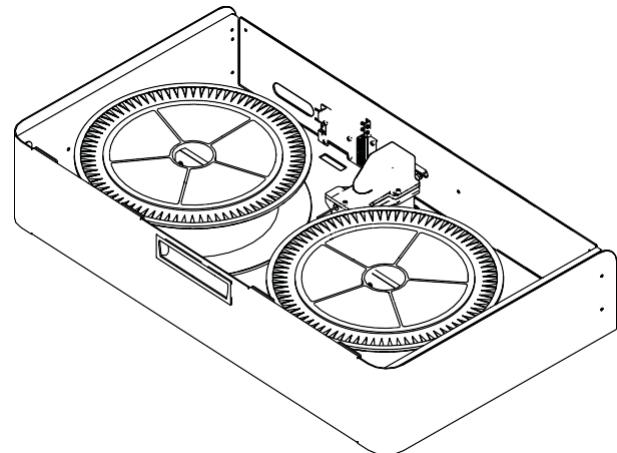
## Z axis

axis driven by single stepper motor coupled with trapezoidal screw and high-quality Iglidur® trapezoidal nut. Guiding elements are two linear rails. Used for movement of heated bed in Zmorph i500 machine. Must be periodically lubricated to ensure a long life of the machine.



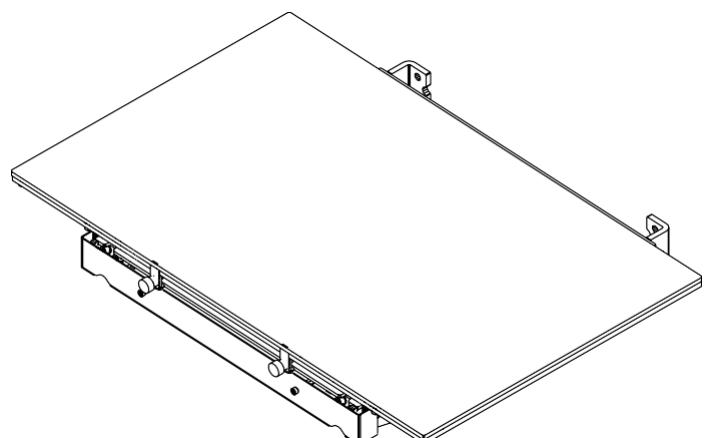
## Materials Station

Zmorph i500 is equipped in drawer, specially designed for filament storage during the prints, it contains the two spoolholders for filaments and Automatic filament loading system inside.



## Heated bed

Zmorph i500 has a Heated bed with work are up to 460 x 300 x 500 [mm], it can be preheated to 130 °C. Bed design allows exchanging the heated bed glass really easily.

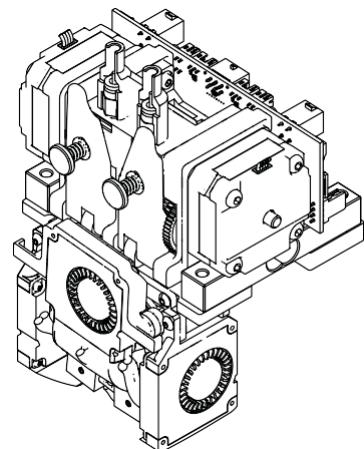


# Machine specification

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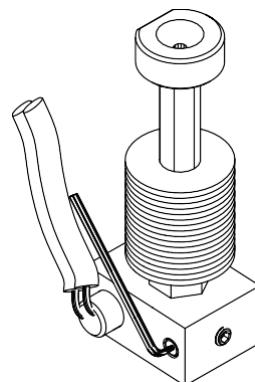
## Zmorph Dual Drive Dual Extruder

it has a build in Nozzle Lifting System which controls the change of the left and right nozzle during the work. It is equipped with two separate nozzles, Zmorph Build Hotend with 0.4 mm nozzle and Zmorph Support Hotend with 0.6 mm nozzle



## Hotend

Zmorph Dual Drive Dual Extruder has two separate hotends, it can be easily disconnected and replaced. As default we have on left Zmorph Build Hotend with 0.4 mm nozzle and on right a Zmorph Support Hotend with 0.6 mm nozzle



# Machine specification

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## 7.4 Functionalities

- Intuitive calibration process – Zmorph i500 is equipped in combined automatic and manual calibration process, to ensure the best first layer adhesion of the print and calibrate the Zmorph Dual Drive Dual Extruder properly.
- Air Flow System – Zmorph i500 is equipped in two filter systems, G4 Input Air Filtration and HEPA/Carbon Output Air Filtration.
- G4 Input Air Filtration – air input to the machine, it stops most of dust pollution from air.
- HEPA/Carbon Output Air Filtration - HEPA and Carbon filters, stops most air pollutants released during machine operation.
- AFLS (Automatic filament loading system) - system which controls the filament loading into the Zmorph Dual Drive Dual Extruder.
- Materials Station – Zmorph i500 is equipped in drawer, specially designed for filament storage during the prints, it contains the two spoolholders for filaments and Automatic filament loading system inside.
- Zmorph Dual Drive Dual Extruder - Zmorph i500 is equipped with an extruder with two separate hotends. Zmorph Build Hotend with 0.4 mm nozzle and Zmorph Support Hotend with 0.6 mm nozzle
- Nozzle Lifting System – controls the change of the left and right nozzle during the work.
- Electric Door Lock – system which controls the door locks during the machine work.

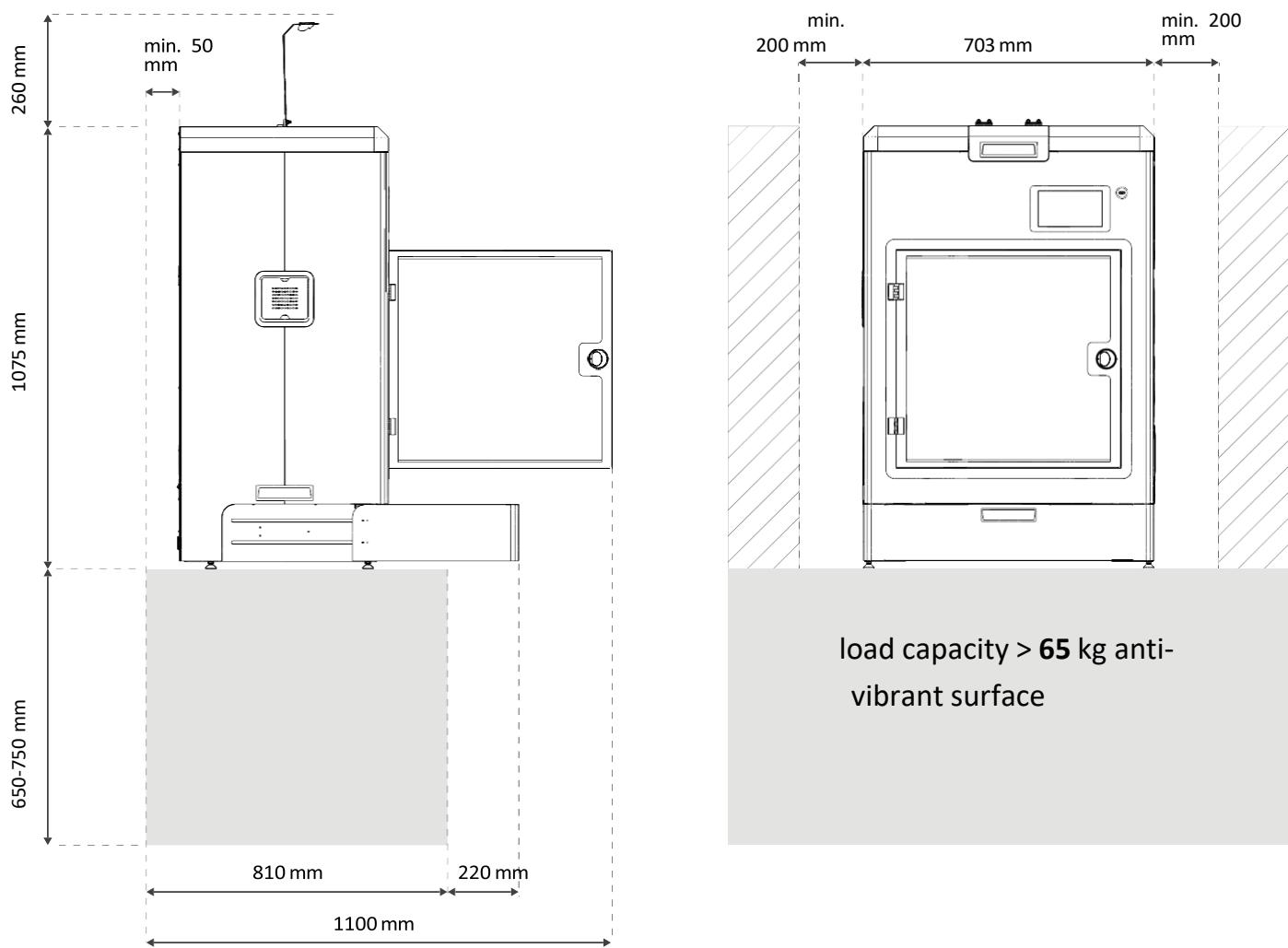
# Setting up Zmorph i500

## 8. Setting up Zmorph i500

### 8.1 Location requirements

Before unpacking, prepare a suitable location for the Zmorph i500 machine.

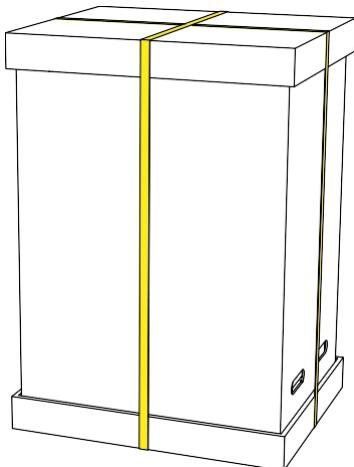
- The machine should be placed on a stable anti-vibrant, flat surface with sufficient space above the machine, and minimum weight capacity of 60kg or higher.
- The machine operation temperature is 15 °C – 30 °C, the temperature need to be read on the machine. Please note, if the temperature lower than 15 °C machine will block the heating option.
- Do not cover the machine with any materials during operation.
- The machine should not be exposed to moisture.
- The electrical installation of Zmorph i500 requires it to be connected to a grounded wall outlet.
- Do not use extension cords.
- Leave a 200 mm (minimum) space from the left and right side of the machine, for proper ventilation and easy access to filtration system.



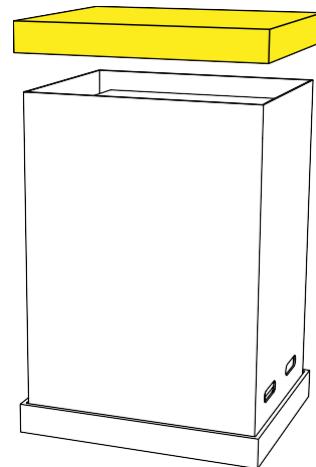
# Setting up Zmorph i500

## 8.2 Unboxing

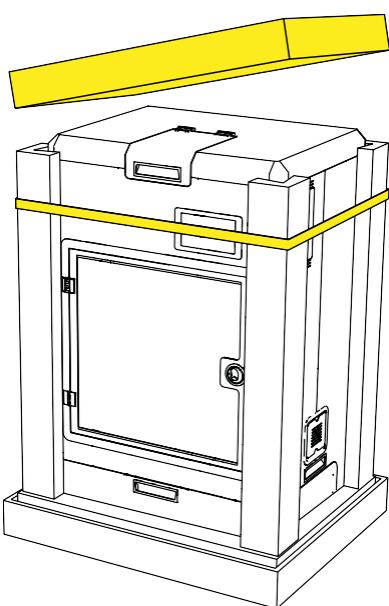
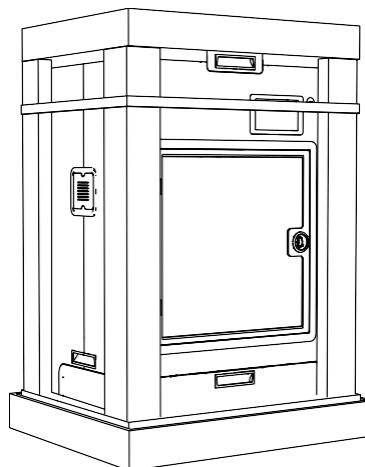
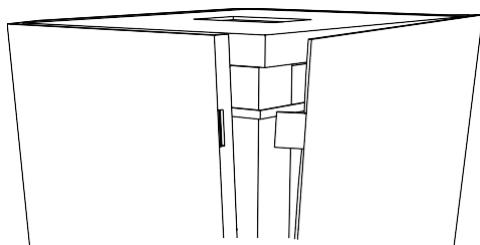
Cut the bonding straps.



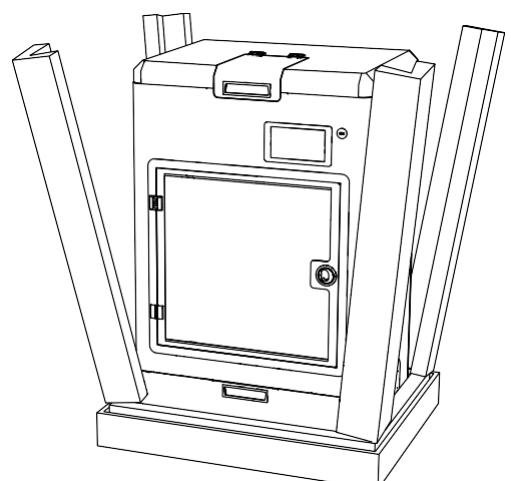
Remove the top cardboard cover.



The cardboard can be easily opened on one side, unhook it and take it off the machine.



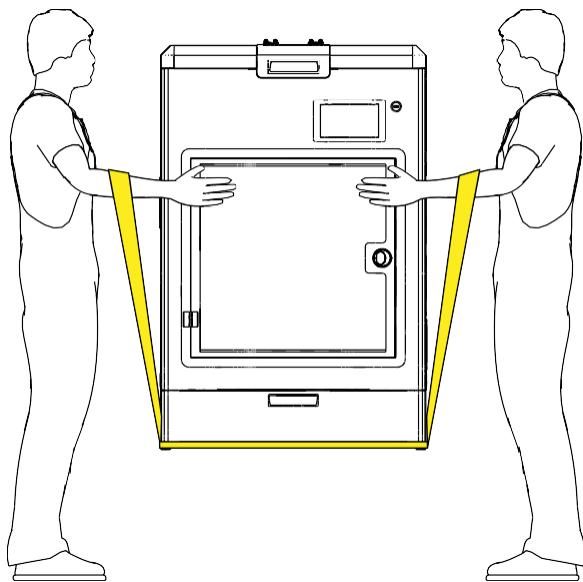
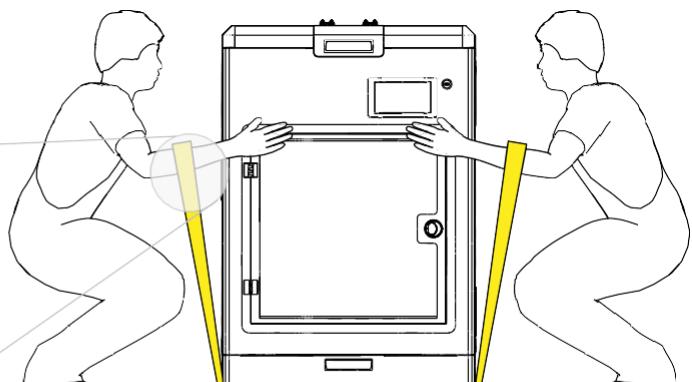
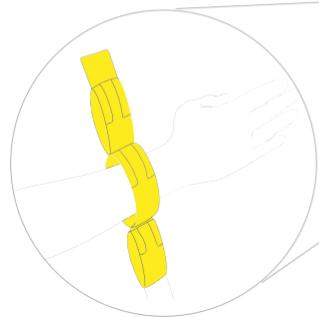
Take off the top foam tray and unfasten the Velcro band that binds the foam corners and the carrying straps.



# Setting up Zmorph i500

At least two people are required to lift the machine. Ensure that you have enough room to unbox the printer to its final location.

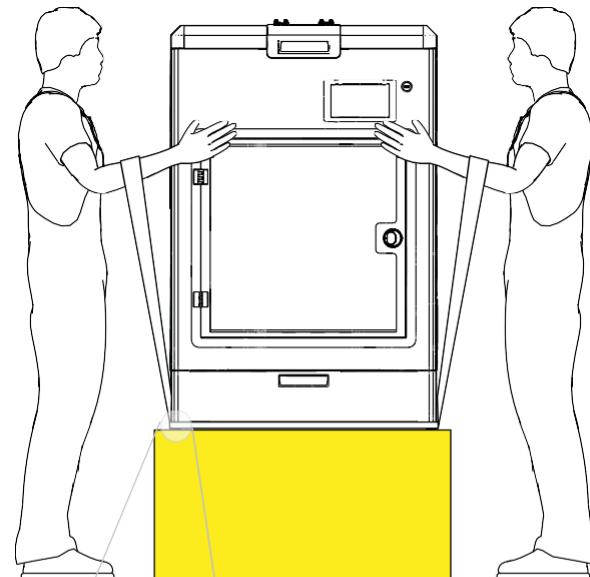
Depending on the user height the carrying straps have 3 different sleeve positions to put the forearms in them.



Firmly grab it on both sides, approximately above the middle point and lift the machine up.

## NOTE

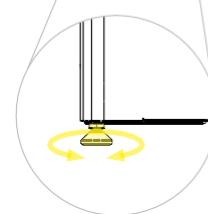
We recommend that you do not throw away the straps in the event of possible transport of the machine



Place the machine in its final location and pull out the carrying straps from underneath.

It may be necessary to allow the printer to adjust to temperature change before powering it up if it have been subjected to extended periods of cold during storage or transportation.

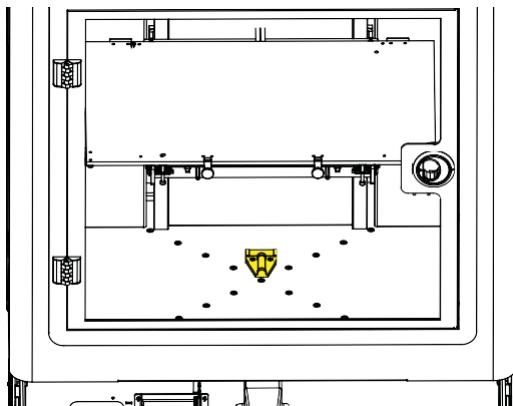
Exposure to extended periods of cold can cause condensation in the device when it is moved into warmer areas. Condensation on the printer indicates the need for an acclimation period until the condensation disappears.



The machine should be stable on the flat surface. If necessary, adjust the leveling legs.

# Setting up Zmorph i500

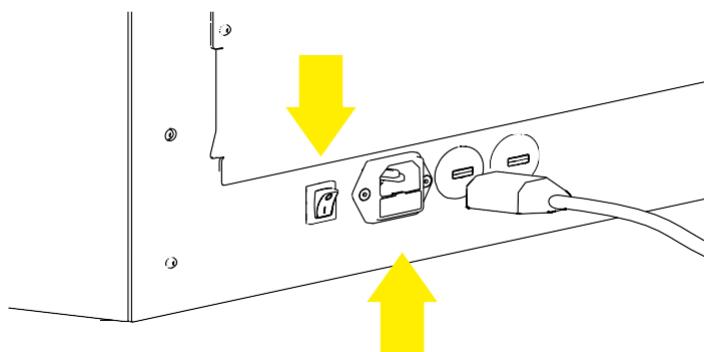
To set the proper level of the machine use the leveling device located inside of the machine.



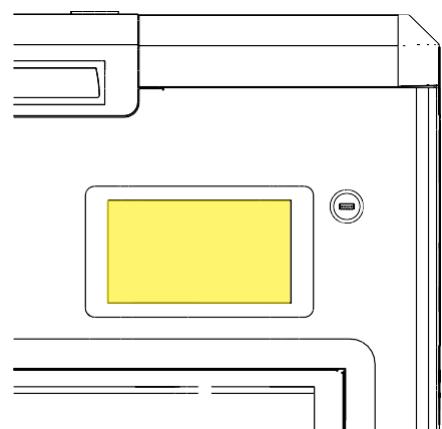
## 8.3 First use

When the machine is installed it is time to power it on. Open the front door and take out the power cable.

Connect the machine to a grounded power outlet.



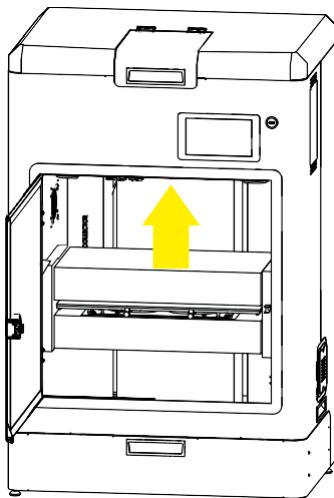
Turn on the machine by pressing the main switch on the back side and wait couple seconds for the machine to boot up.



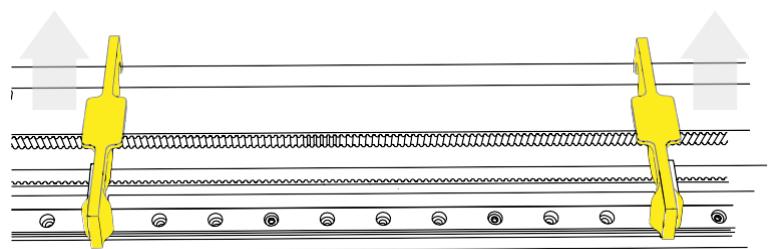
During the first run log in to the machine with the data provided in the Quick Start Guide. The Quick Start Guide is included with the machine box.

# Setting up Zmorph i500

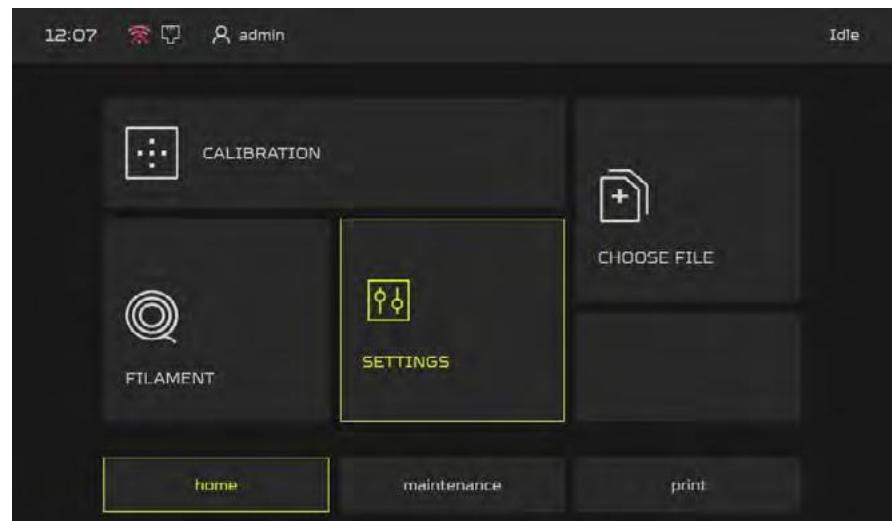
## 8.4 Safety features removal



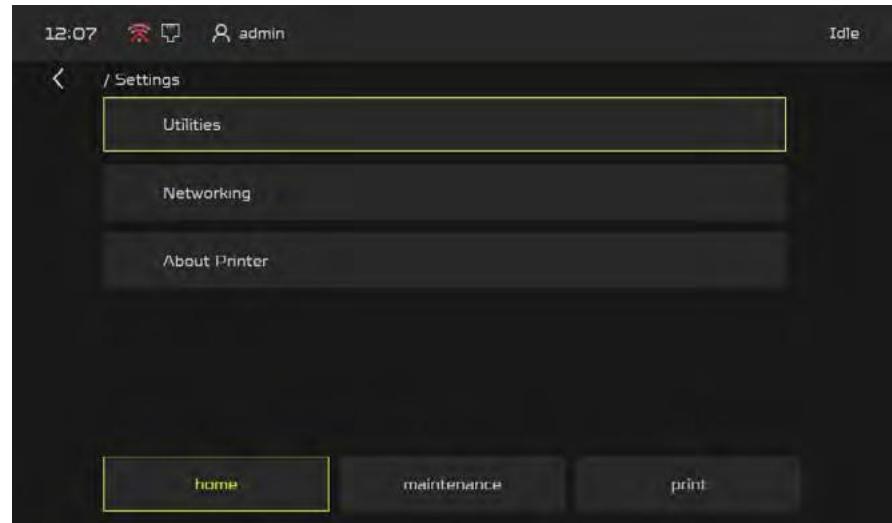
Open the front door and remove the two fasteners from inside of the machine.



Once you remove the belt fasteners go to the SETTINGS menu located on the HOME screen.



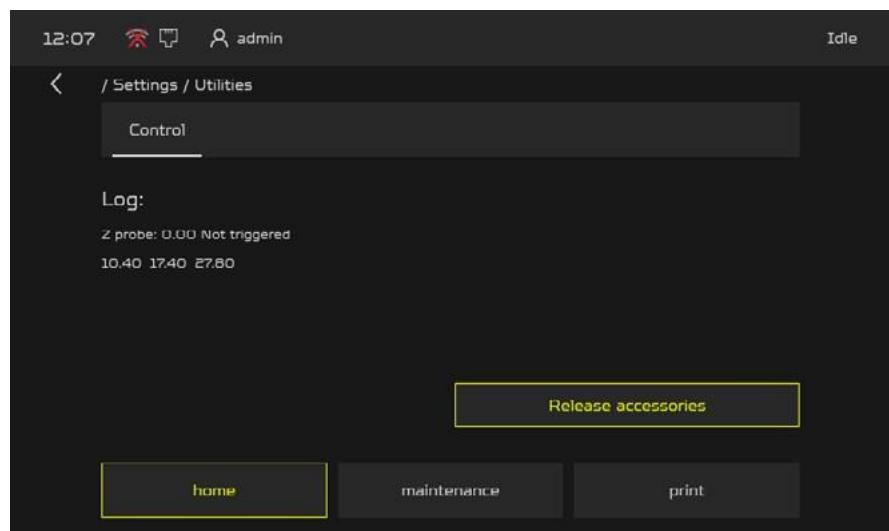
Then open the UTILITIES menu.



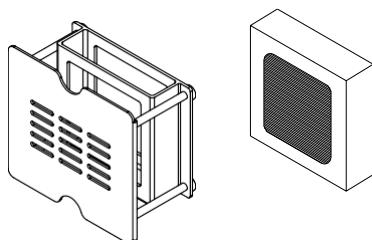
# Setting up Zmorph i500

Press the “Release accessories” button, the machine will release the accessories located inside of the machine. Open the front door and gently remove the protective foam from the heated bed. After that you can easily remove all accessories from under the bed.

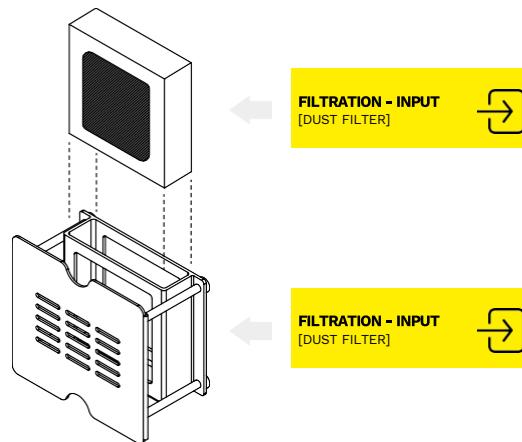
Clean out the surface of the heated bed. The protective foam might leave some dust on the glass surface.



## 8.5 Assembling air filtration system



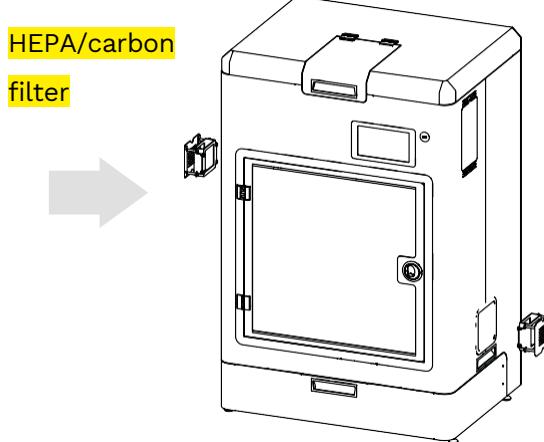
Take the Air filtration holders and the Filter inserts out from the accessories box.



Install the filters in the appropriate holders. For the HEPA/Carbon filter make sure that the Carbon filter is on the outside.

### NOTE

For more informations check the signs on the holders and the inserts wrapping.



Put the filter holders in appropriate sockets on the machine.

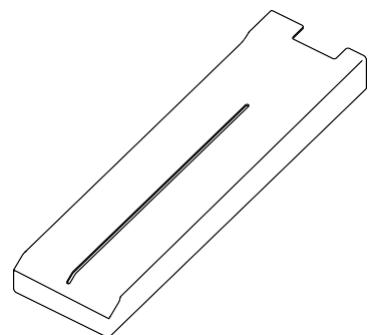
### NOTE

For more informations check the signs in the filter sockets.

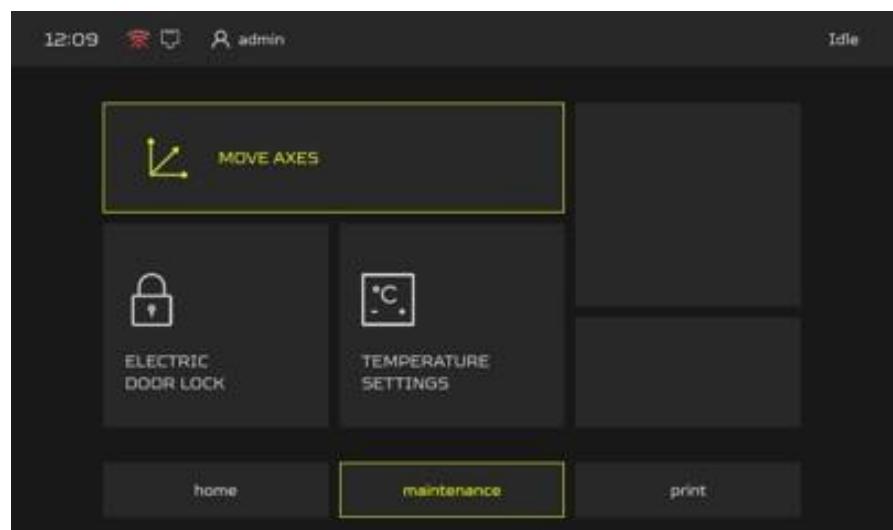
# Setting up Zmorph i500

## 8.6 Assembling the garbage collector

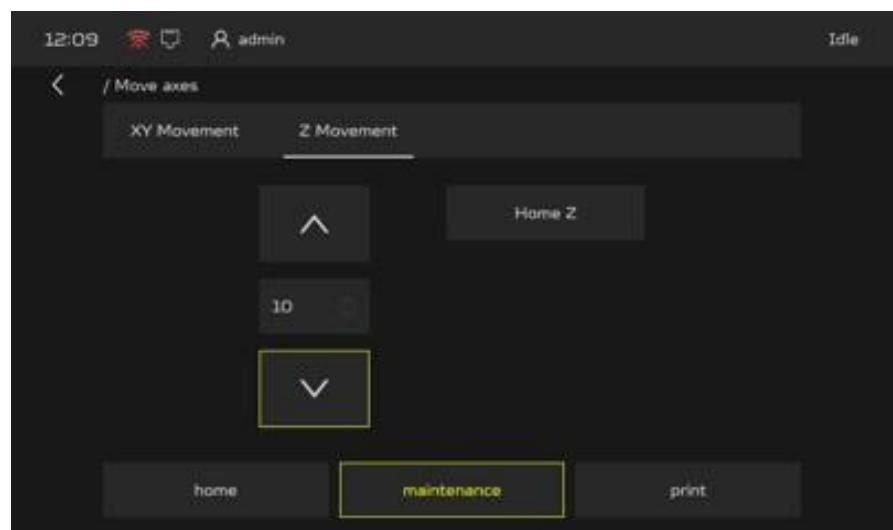
Take the Garbage collector out from the accessories box and open the front door of the machine.



In the main menu choose “MAINTENANCE” screen, and select “MOVE AXES”



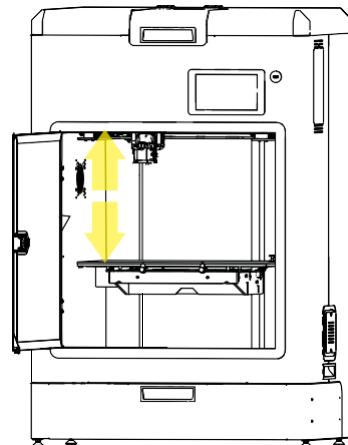
Choose “Z MOVEMENT” and move the bed down. Make sure the heated bed is not blocking the accessibility to the garbage collector holder by moving it upwards or downwards. The machine may ask you to home the Z-axis first, it will show the warning on the LCD screen.



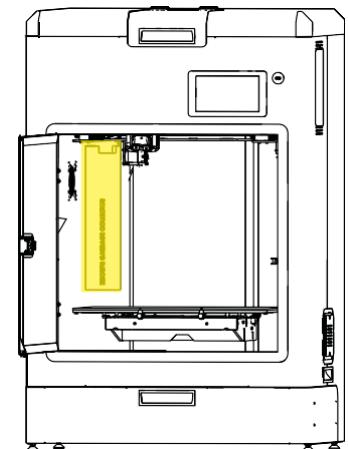
# Setting up Zmorph i500

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Make sure the worktable is not blocking the accessibility to the garbage collector holder by moving it upwards or downwards



Mount the garbage collector on the holder, the magnets should snap it on place.

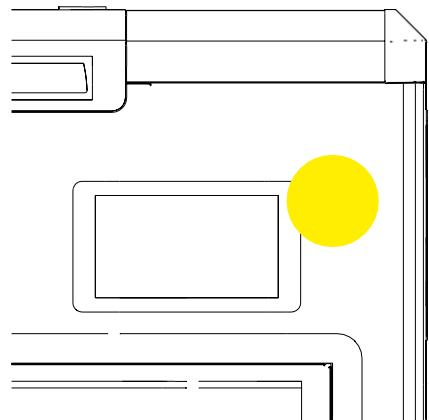
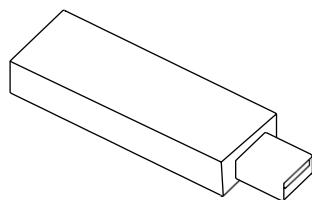


# Maintenance

## 9. Maintenance

### 9.1 Communication and File Delivery

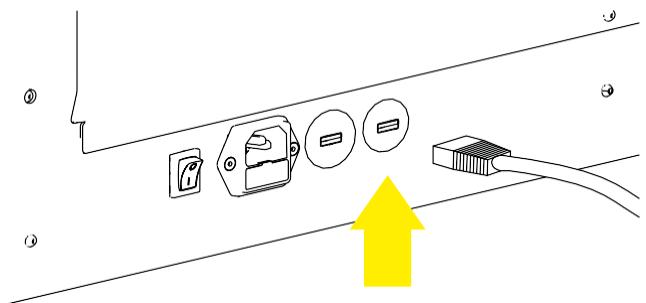
Delivery of files on USB flash drive



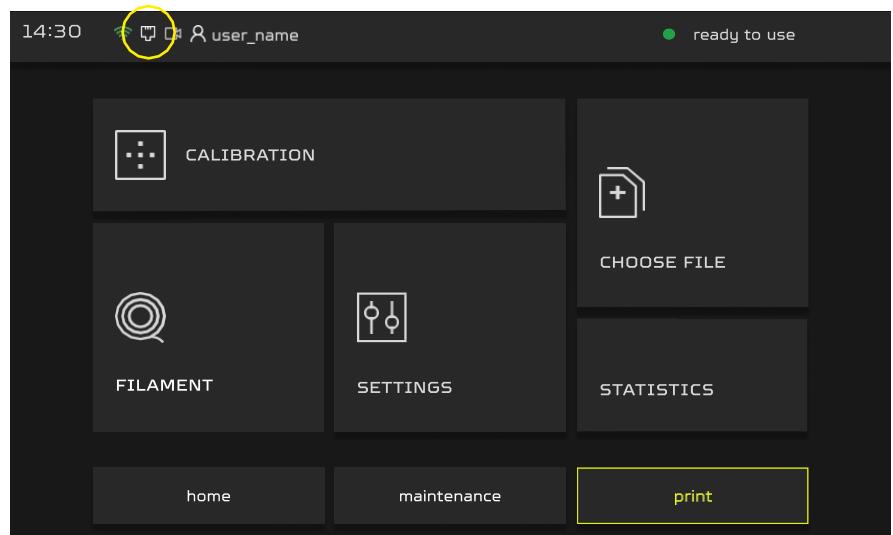
Save a file you want to print to on an USB flash drive. Insert the USB flash drive into the USB slot near the right top corner of the LCD screen.

Connecting the machine via Ethernet

Connect the Ethernet cable to the Zmorph i500.



Machine will automatically establish the connection with the network, the icon on the LCD screen will change.

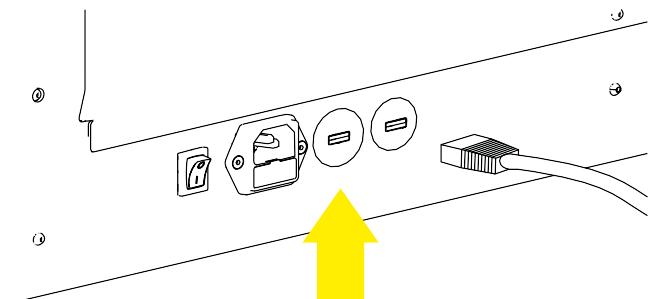


# Maintenance

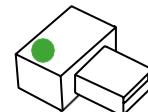
## Connecting the machine via Wi-Fi

Connect the Wi-Fi module to the rear USB port.

The Wi-Fi module is included with the Zmorph i500 accessories.

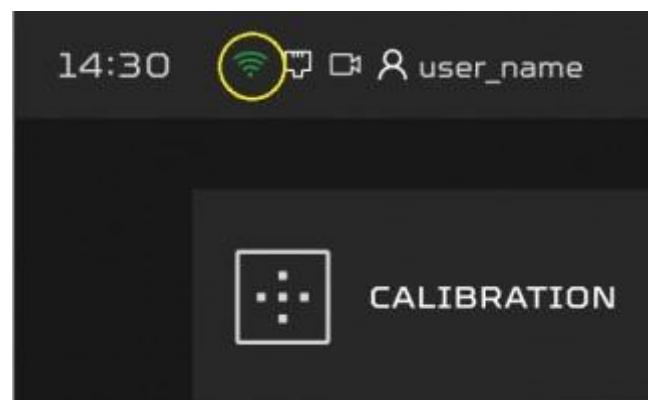


The Wi-Fi module LED will turn green when its active.



To connect the Zmorph i500 with the Wi-Fi network from the main menu go to the SETTINGS menu located on the HOME screen, then open the NETWORKING menu, the list of the available networks should be visible.

Choose the correct network and provide the password. Once it is done the machine should connect to the Wi-Fi network.



# Maintenance

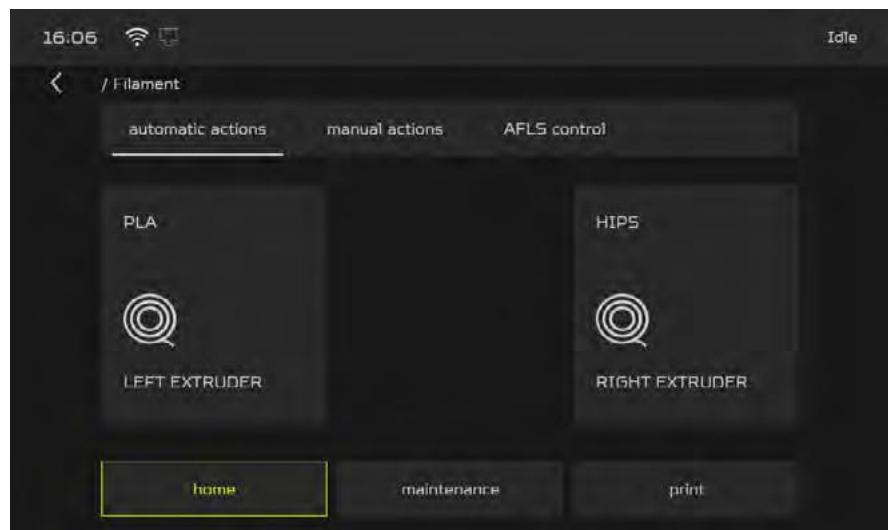
## 9.2 Loading the filament

Prepare the material. The spools are included in the package. Take out the filament roll from the plastic foil, remove the moisture absorber.

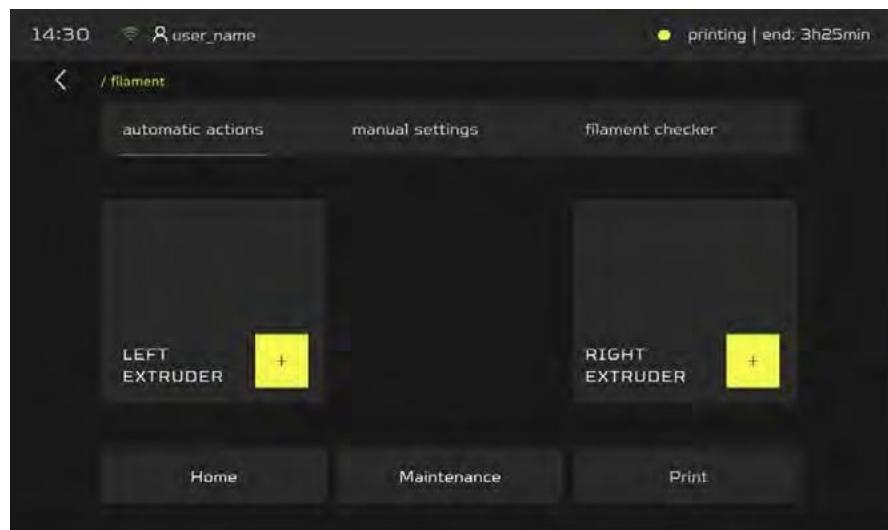
You can find out what kind of filament you own by looking at the sticker on the filament roll.

Insert the spool inside of the filament drawer. You can find there information sticker on how to properly insert and load the filament.

Choose the „FILAMENT” from the main menu on LCD screen.

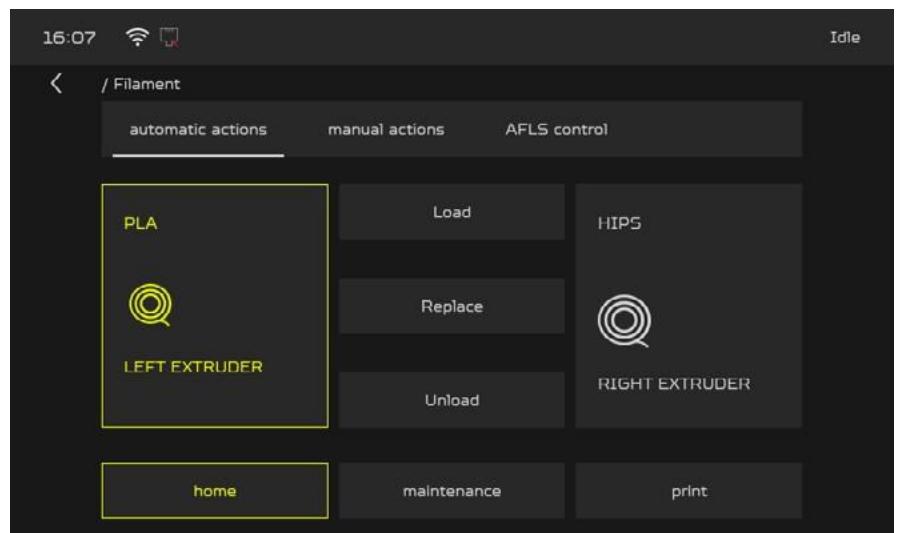


Choose the extruder you will be using “LEFT” or “RIGHT”.

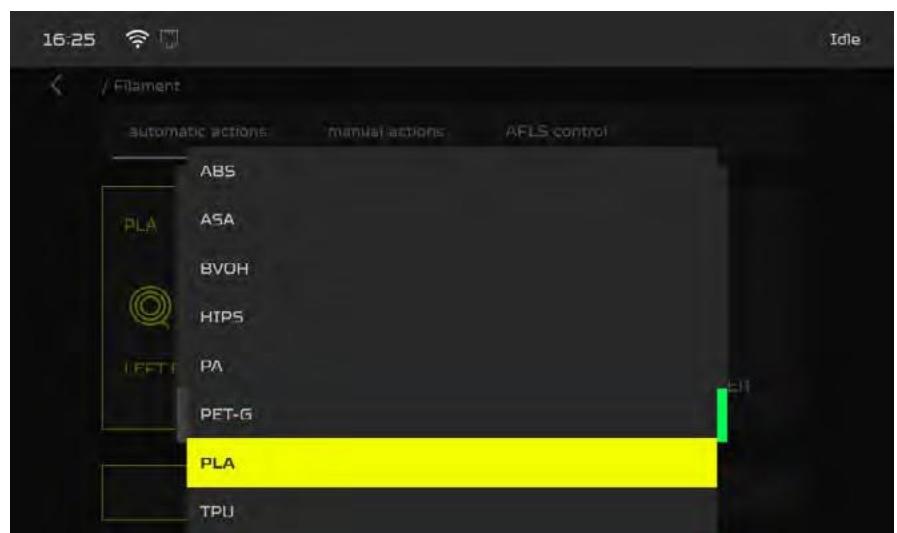


# Maintenance

After you choose the proper extruder, the three buttons will show (replace, load, unload).

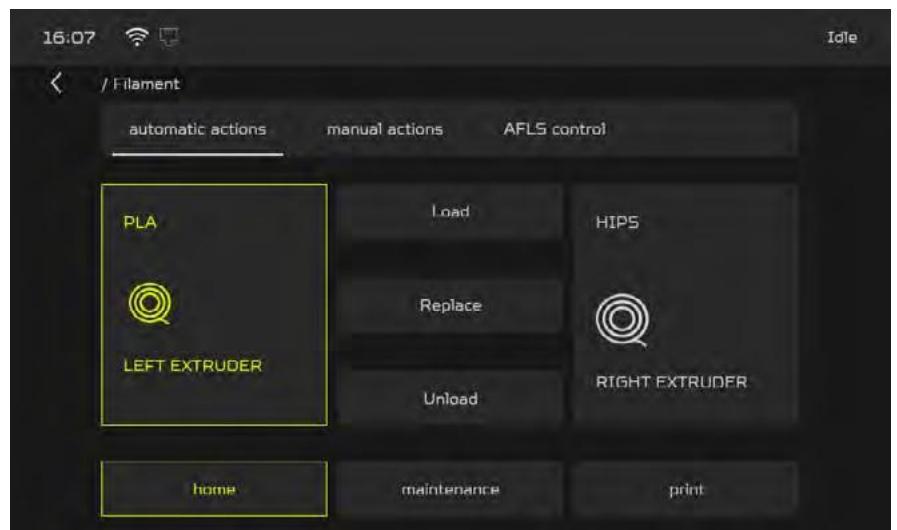


In case of loading new filament remember to choose correct filament follow the instructions on the LCD screen, machine will guide you in next steps.



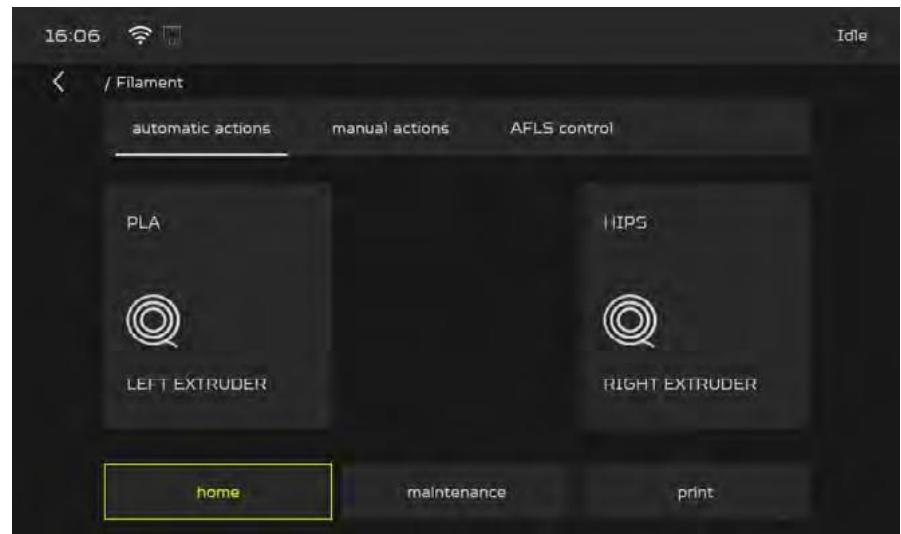
## 9.3 Removing the filament

Choose the „FILAMENT” from the main menu on LCD screen.

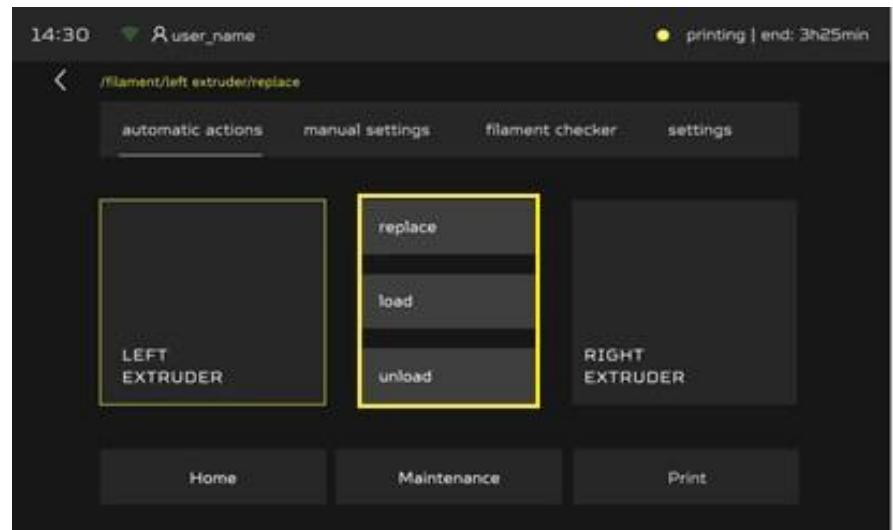


# Maintenance

Choose the extruder you will be using “LEFT” or “RIGHT”.



After you choose the proper extruder, the three buttons will show (replace, load, unload).



Choose load button and follow the instructions on the LCD screen, machine will guide you in next steps.

# Maintenance

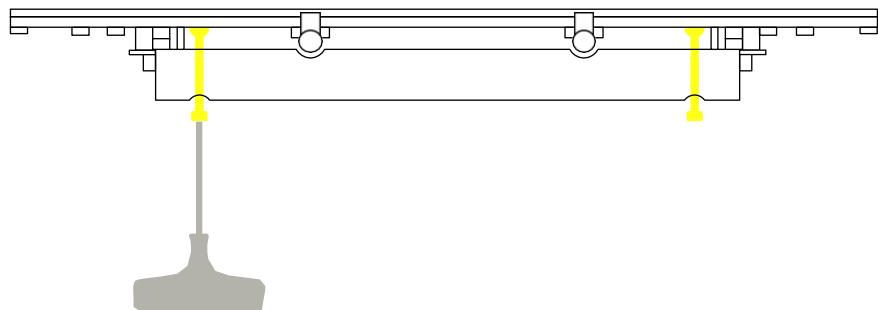
## 9.4 Calibration

### 9.4.1 Platform Calibration

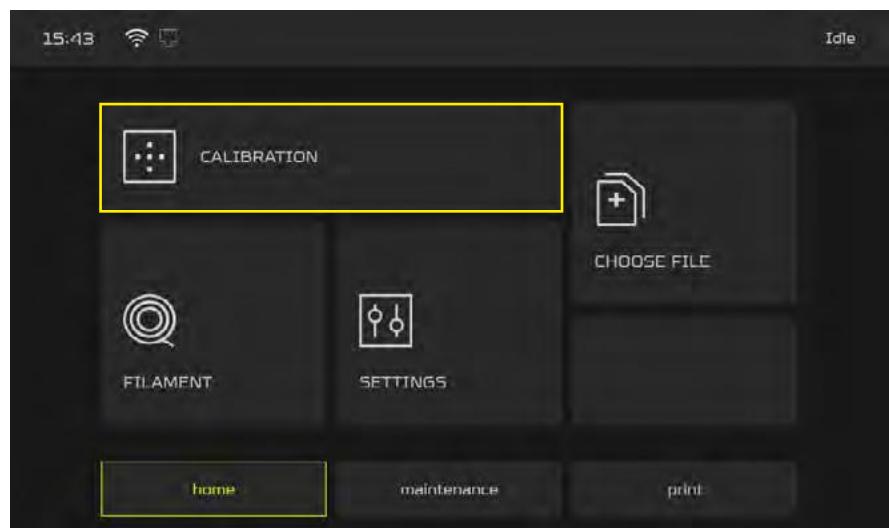
Platform Calibration allows to set proper level of the heated bed surface.

To perform the platform calibration:

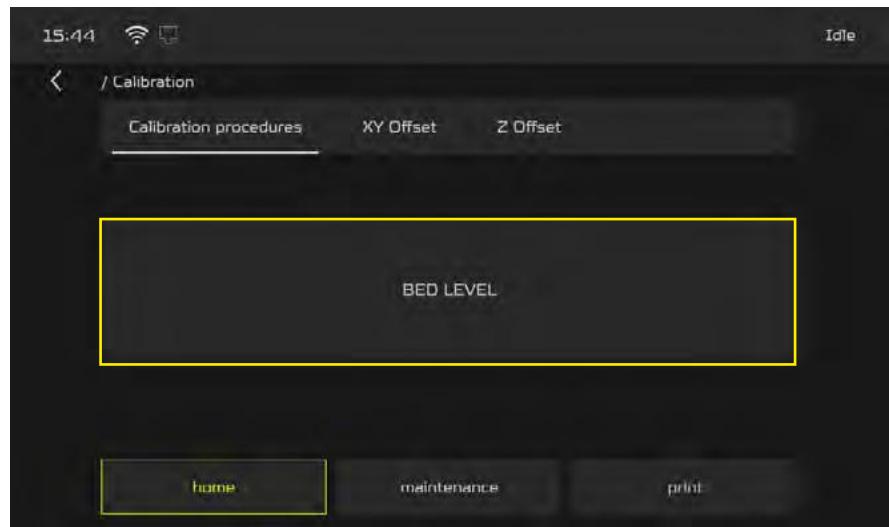
1. During the bed leveling adjust the bed screws with the 3mm Allen Key. There are 4 adjusting screws. The right rear screw shouldn't be adjusted.



2. Choose the „CALIBRATION” from the main menu on LCD screen.



3. In „CALIBRATION” menu choose „BED LEVEL”



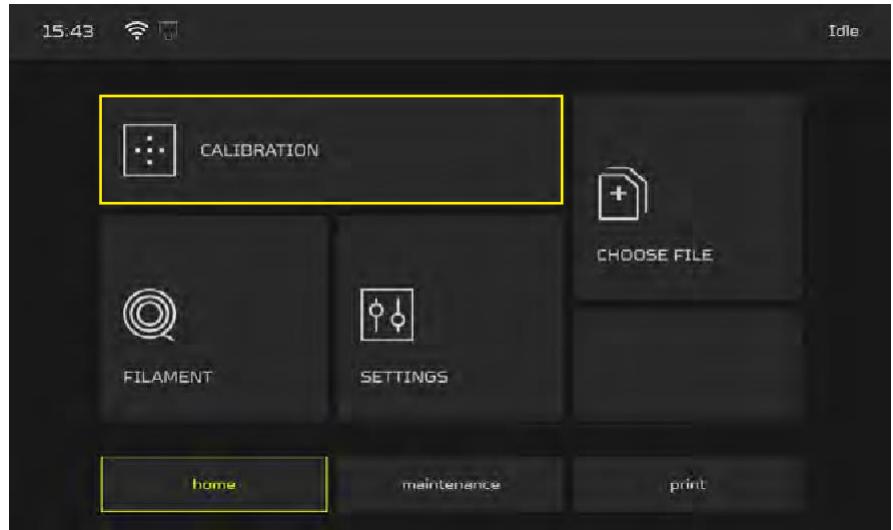
4. In next steps machine will start the BED LEVELING procedure. Machine will guide thru next steps. Make sure the working area is empty and the doors are closed.

# Maintenance

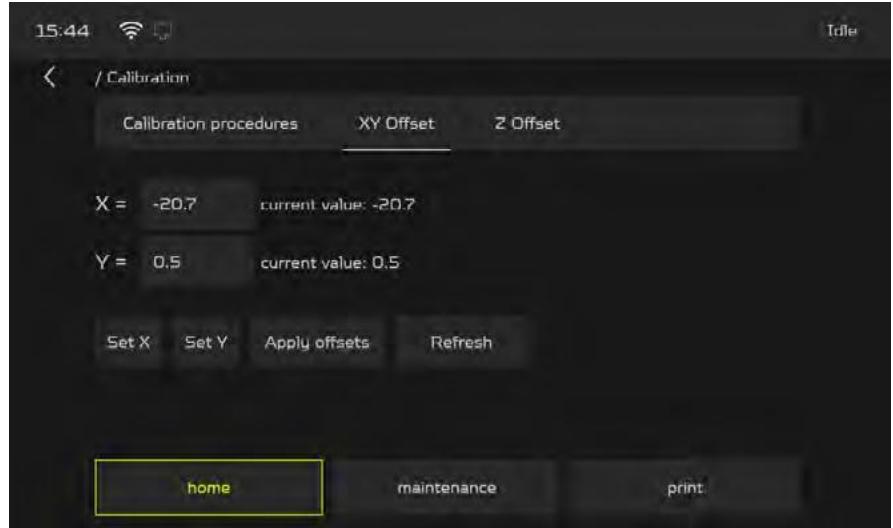
## 9.4.2 Nozzle Calibration

Nozzle Calibration allows to set the offset of the nozzles in X and Y axes.

1. The calibration begin with providing the X and Y offset into the machine. From main menu go to the CALIBRATION menu.



2. select “XY Offset”. Set X offset at -20 and Y offset to 0, next press the Set X and Set Y buttons, once done press Apply Offsets.



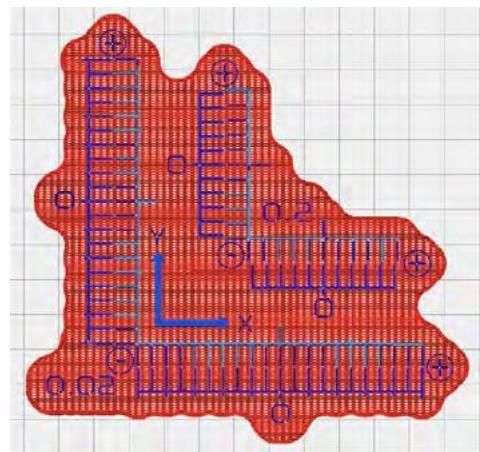
3. Once done connect the USB flash drive (included with the machine) to the front USB slot. Before the operation please make sure the bed is empty and the nozzle is clean.

4. From main menu go to the “choose file” tab and select “USB memory”. Go to the Calibration folder and select the “XY calibration.gcode” file. At next start the gcode (the XY calibration procedure will start). Please note, the XY calibration require both filaments loaded.

# Maintenance

5. After machine finish the print you can now adjust the offsets using the print result.

You need to find the matching lines. At first match the lines in 0.02 range (the external scale), each line represent  $\pm 0.02\text{mm}$ . For example if you find that in X-axis the matching line is the 3rd line from “0” to the right it means that you need to add the  $0.06\text{mm}$  to X offset value, if it’s the 3rd line to the left it means you need to subtract  $0.06\text{mm}$  from X offset value. Similar for the Y-axis.



6. If you don’t find the right value on the external scale, look for it on the inner scale (0.2 range).

7. Once you set the range you need to print the calibration pattern again

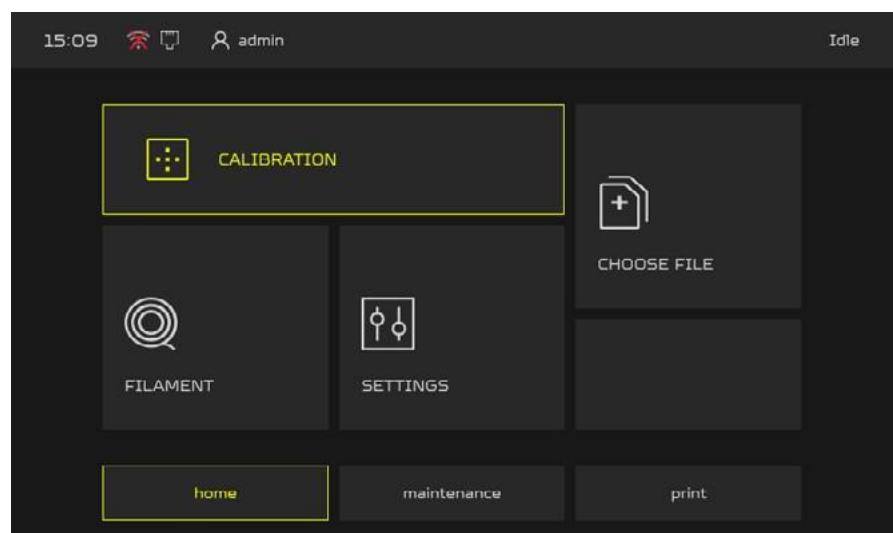
8. If all lines are matching at “0” the XY offset is calibrated.

## 9.4.3 Z Offset Calibration

Z offset calibration allows to set the offset between nozzles in Z-axis.

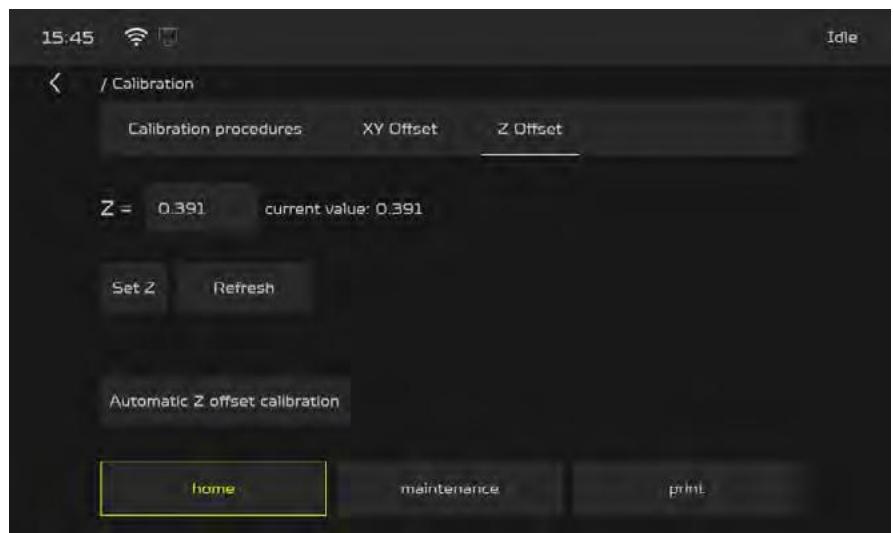
To perform the Z axis calibration:

1. From main menu go to the CALIBRATION menu.



# Maintenance

## 2. Press “Z Offset”



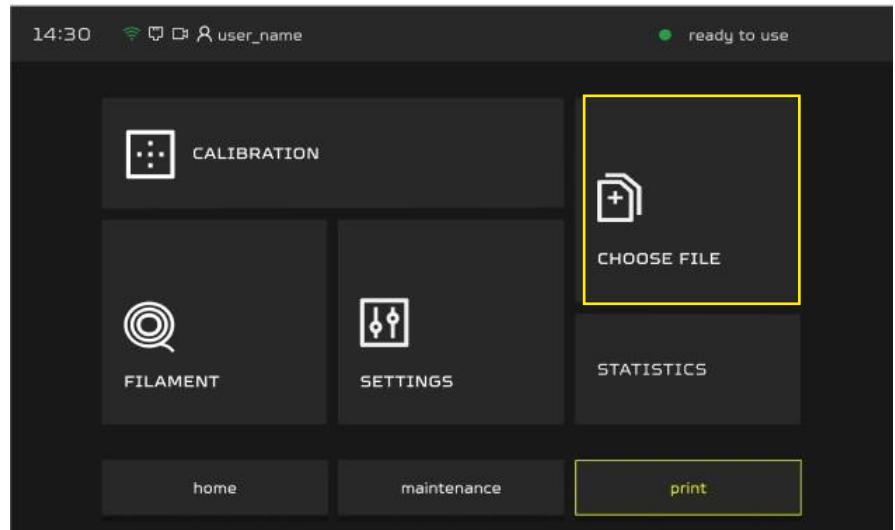
3. To start the calibration press the “Automatic Z offset calibration” button. Before that make sure the nozzles are clean and the heated bed is empty.

4. The extruder will go to the left rear corner to perform the Z offset calibration, once done press the “Refresh” button and apply the z offset value with by pressing “Set Z”.

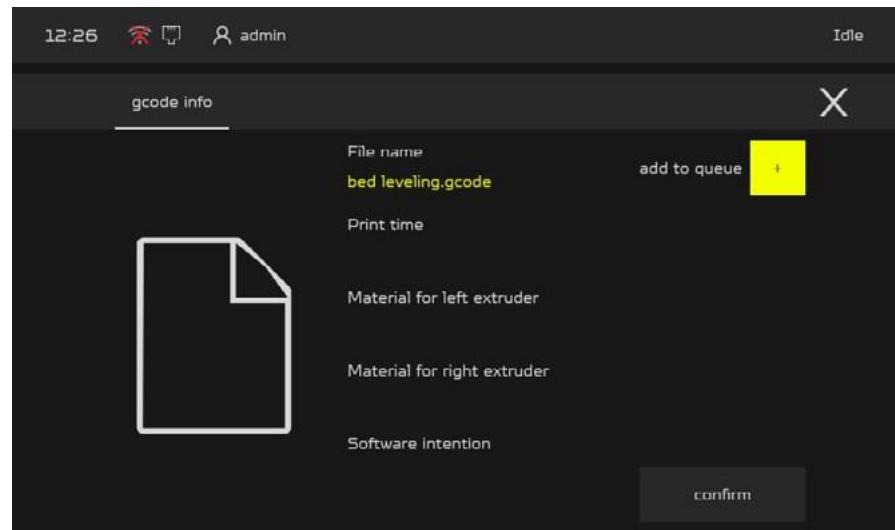
# Maintenance

## 9.5 Starting the print

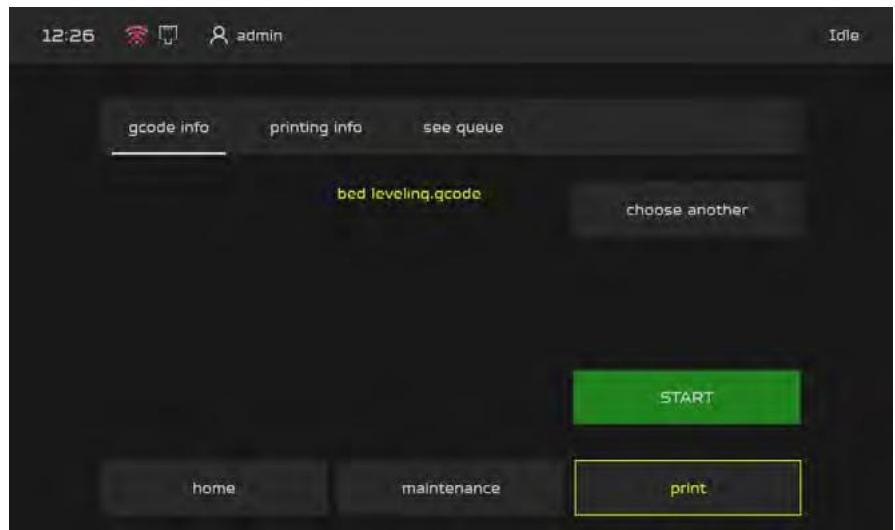
Select „Choose file” in the main menu and select the file.



Machine will show general information about gcode file. To Begin select the „CONFIRM” button



To start the print choose green „START” button nad the print will begin.



# Maintenance

## 9.6 Removing a printout from the platform

After finished work machine will park the extruder and heated bed in safe position.

Wait until the temperature of the table drops before removing the printout from the table. This will allow you to remove the printouts without damaging them.

If the printout could not be removed despite the low temperature of the table, gently lift the printout with a spatula.

### NOTE

The spatula has sharp edges that may cause the table to be scratched. When taking off the printout, lay it as parallel as possible to the table and be careful.

## 9.7 Support material removal

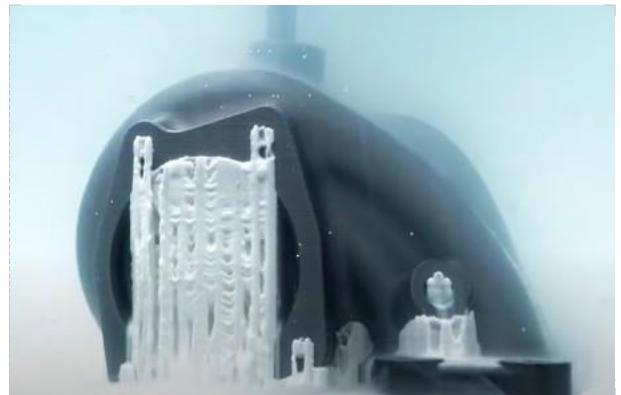
To be able to print models with more complex geometry, additional support is printed, which is not a part of the model. When the printout is complete, remove them carefully. Pliers are best suited for this purpose. In case of problems with removing the support, you can use a knife to help you.

Some of the models can be printed with soluble supports, like BVOH, PVA or HIPS. For those prints instead of removing supports mechanically put the print into required liquid, you can an ultrasonic washer as well. To check in which liquid our support will dissolve refer to the materials library

[zmorph3d.com](http://zmorph3d.com)

### NOTE

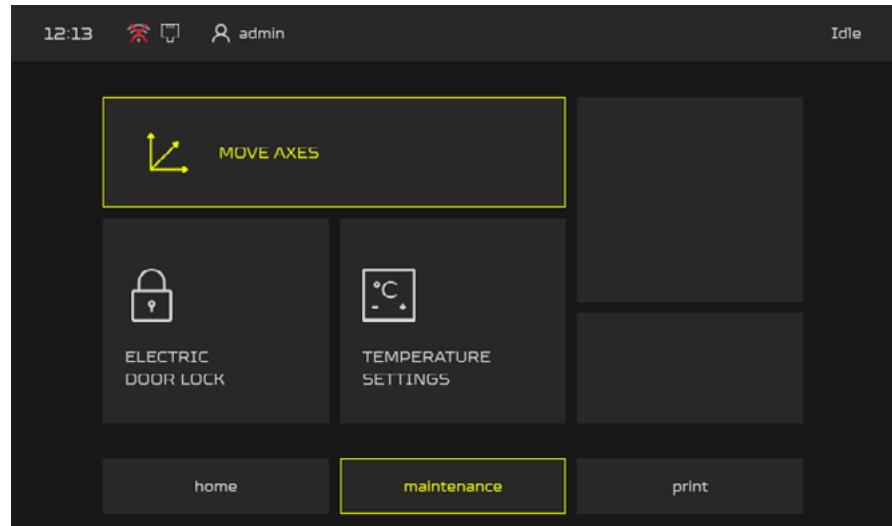
Use safety goggles when removing the support material, small pieces may suddenly break and scratch your eyes.



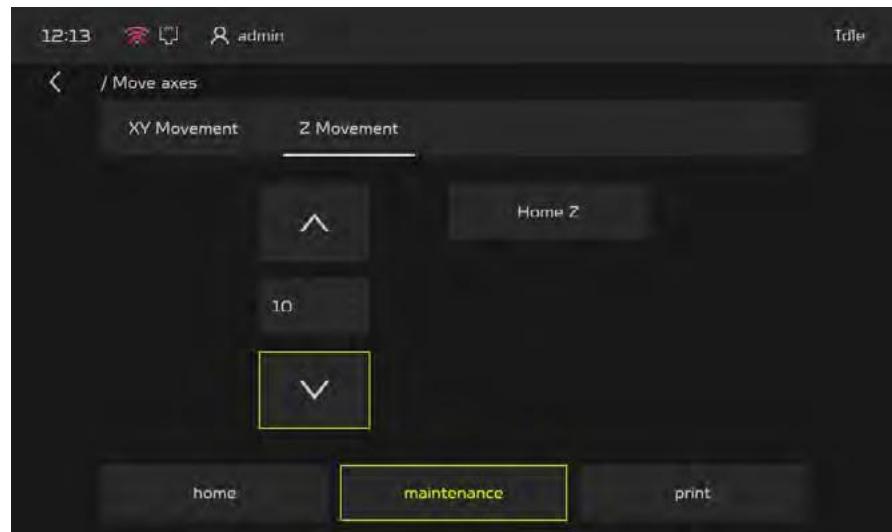
# Maintenance

## 9.8 Cleaning garbage collector

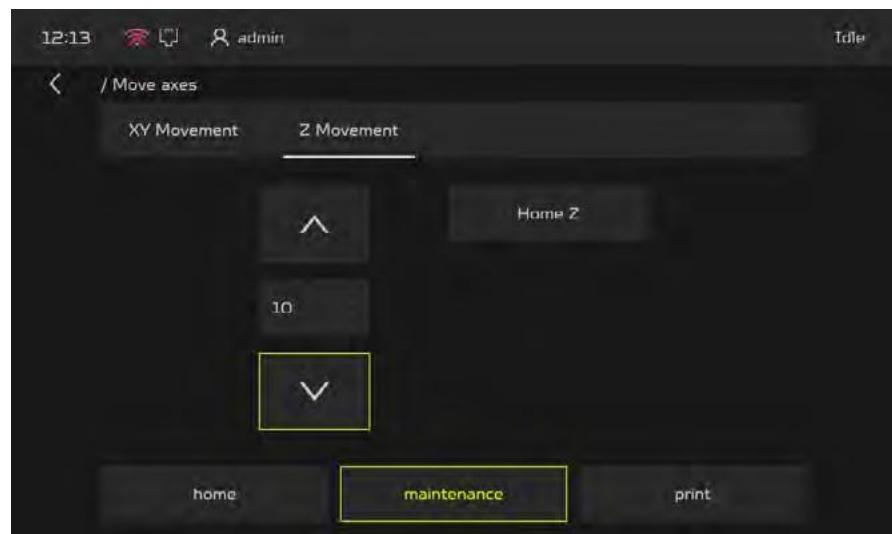
From main menu go to  
“MAINTENANCE” screen and  
choose “MOVE AXES” menu



Choose ”Z Movement”, and the  
heated bed at the bottom of  
the machine.



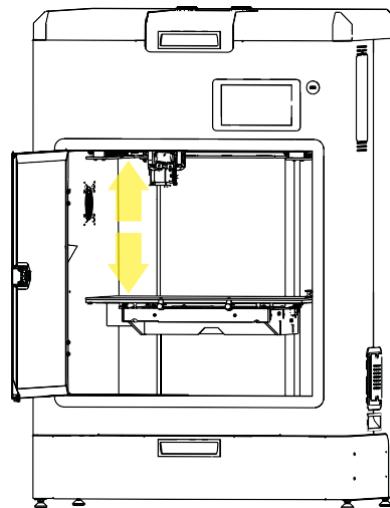
Park the heated bed at the  
bottom of the machine.



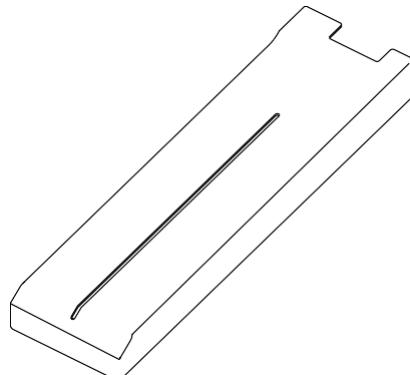
# Maintenance

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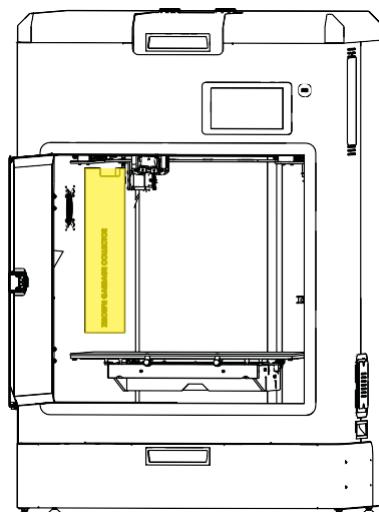
Open the machine front door and disconnect the garbage collector.



Utilize the material leftover.



Insert the garbage collector back to the machine.



# Service instructions

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## 10. Service instructions

### 10.1 Basic maintenance

Maintenance work should be carried out regularly to keep the machine in good condition and to achieve a high-quality printed object every time. Some parts of the machine require maintenance before each job and some only periodically. Maintenance is not complicated or time-consuming. During the maintenance process, the machine should be cooled down (preheat only if necessary) and disconnected from the power source (turn on only if necessary).

It is recommended to equip yourself with additional protective equipment such as thermal insulation gloves and safety goggles. The machine is supplied with a basic set of tools for maintenance and service.

The following tables summarize the maintenance and repair guidelines for the main components of the machine, the tables are divided by place of inspection, necessary tools, and their frequency.

### 10.2 General procedures

To Do	Tools	Frequency	Solution
Cleaning the work area from model residues and adhesive.	<ul style="list-style-type: none"> <li>■ vacuum cleaner,</li> <li>■ paper towel,</li> <li>■ cleaners (containing alcohol),</li> <li>■ spatula,</li> </ul>	Before each job	
Cradle System replacement	<ul style="list-style-type: none"> <li>■ Sending to service center</li> </ul>	Every 200 000 changing cycles or each 1 year	
Cleaning the interior of the machine and the power supply from dust	<ul style="list-style-type: none"> <li>■ compressed air</li> <li>■ vacuum cleaner</li> </ul>	Every 10,000 working hours	
Changing the filter cartridge		Every 1000 working hours or each 6 months	
Checking the surface of the glass worktable for any damage		Before each job	
Changing the Waste Remover Tip	<ul style="list-style-type: none"> <li>■ 2.5mm Allen Key</li> </ul>	when noticeable wear	Cleaning garbage collector

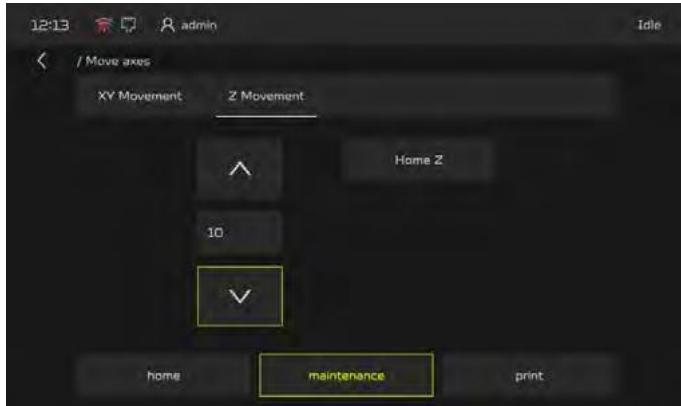
# Service instructions

To Do	Tools	Frequency	Solution
Calibrating (leveling) the worktable		when noticeable problems with layer adhesion	
Cleaning the nozzle surface from dirt and material residues	<ul style="list-style-type: none"> <li>■ Tweezers,</li> <li>■ brush</li> </ul>	Before each job	Remove any residual material from the heated nozzle with tweezers. If the leftover material cannot be removed with tweezers, a wire brush can also be used.
Nozzle (interior) cleaning	<ul style="list-style-type: none"> <li>■ drill 0.4mm or 0.6mm</li> </ul>	After each material spool	<p>After using the whole spool of material, burnt material may begin to settle on the internal walls of the nozzle. To avoid clogging clean the nozzle with a drill pushing it inside the nozzle from below in a few moves. Then, pass through the nozzle a few centimeters of material.</p>
Checking the friction on the X and Y axis		Every 1500 working hours	<p>This is done while the machine is switched off. Manually move the toolhead left/right and front/back to determine if something is hindering their movement.</p>
Cleaning the X, Y and Z axis rails from dirt and lubricating them	<ul style="list-style-type: none"> <li>■ lubricating oil,</li> <li>■ PTFE grease,</li> <li>■ dry cloth,</li> <li>■ paper towel</li> </ul>	Every 1500 working hours	
Checking the tension of the timing belts of the X and Y axis		Every 1500 working hours	

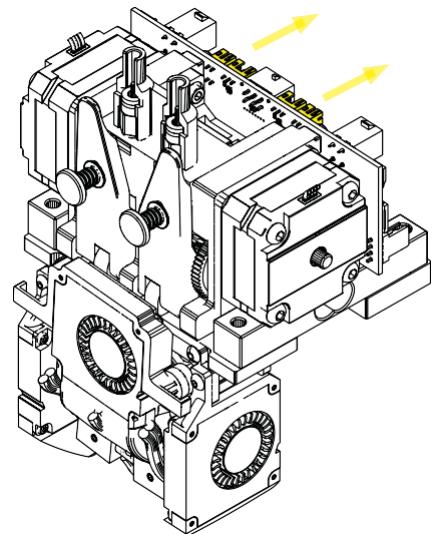
# Service instructions

## 10.3 Service instructions

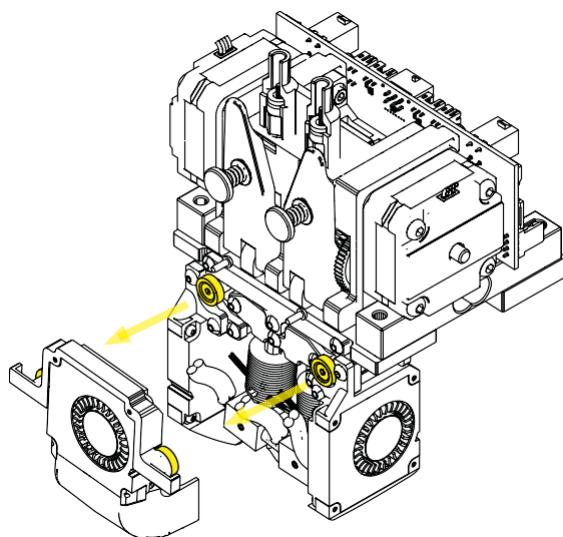
### 10.3.1 Replacing the Extruder hotend



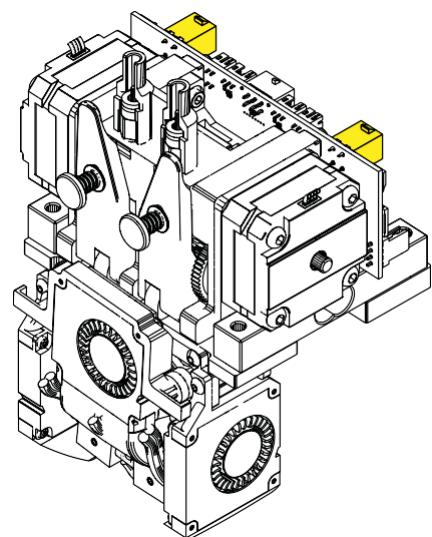
From the main menu go to the MAINTENANCE screen, choose MOVE AXES menu and press “Z Movement”, park the heated bed at bottom position and then turn off the machine.



Disconnect the cooling fan wires from extruder module.

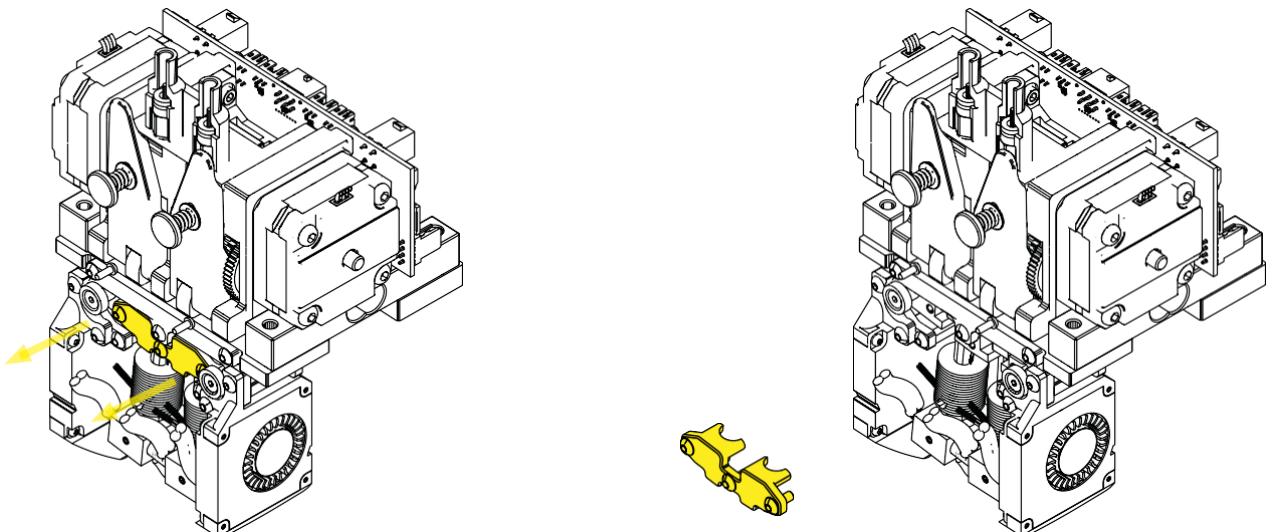


Detach the front cooling fan by pulling it out (it is mounted by magnets).

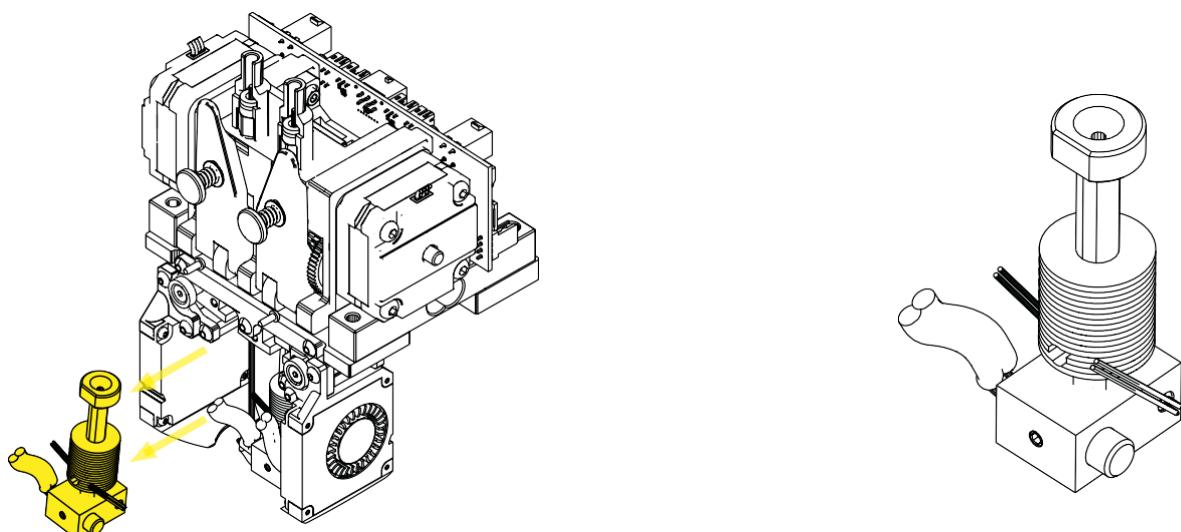


Disconnect the hotend thermistor and heater wires.

# Service instructions



Unscrew the hotend holder and pull it out.



Remove the hotend part from extruder.

Insert a new hotend part and install hotend holder.  
Remember to connect the hotend wires.

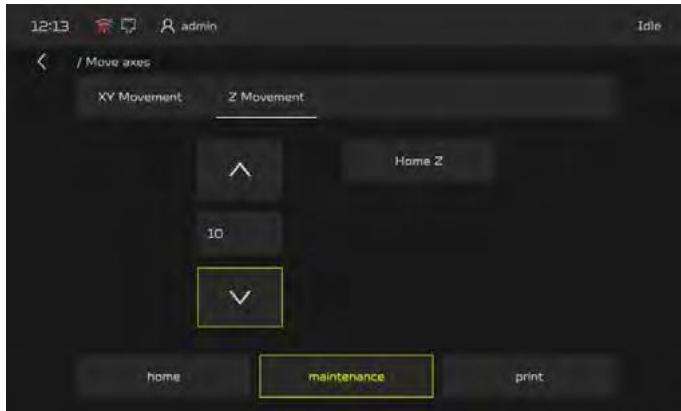
Connect the cooling fan and connect the fan wires.

## NOTE

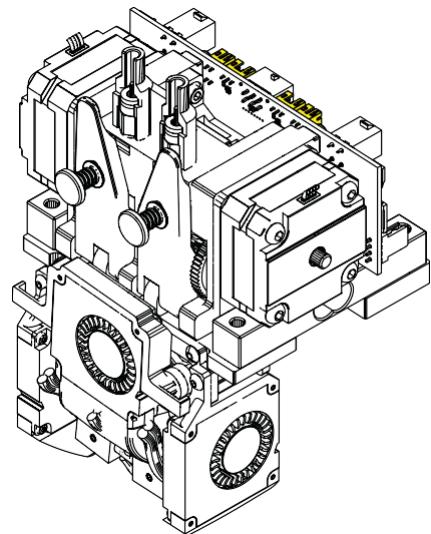
After replacing the hotend part remember to perform XY and Z offset calibration for the new hotend.

# Service instructions

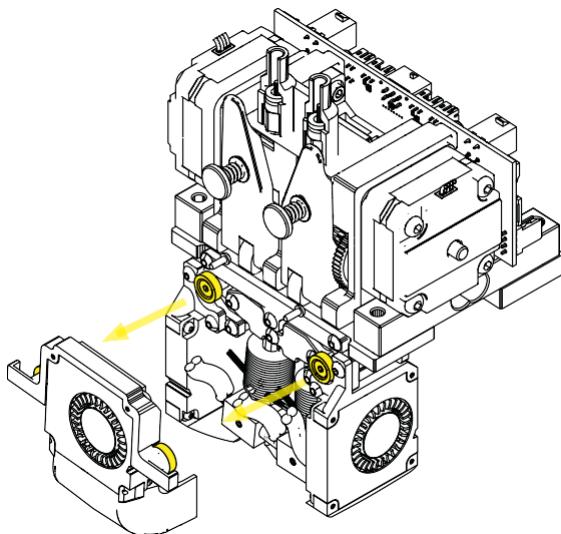
## 10.3.2 Cooling fans replacement



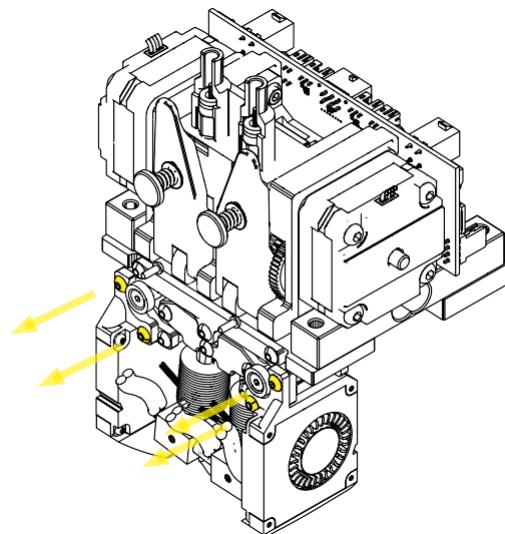
From the main menu go to the MAINTENANCE screen, choose MOVE AXES menu and press “Z movement”, park the heated bed at bottom position and then turn off the machine.



Disconnect the cooling fan wires from extruder module.



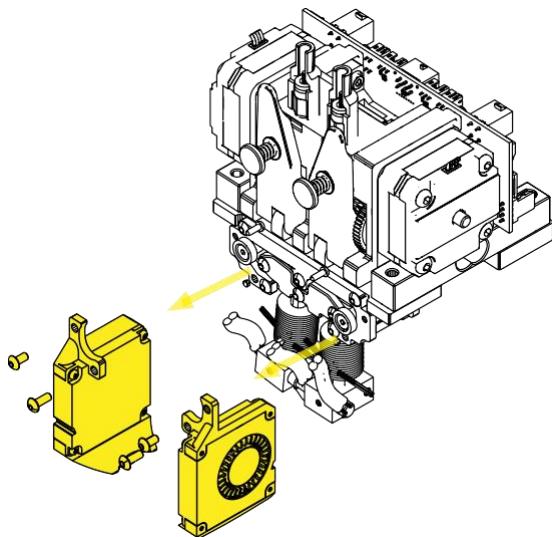
Detach the front cooling fan by pulling it out (it is mounted by magnets).



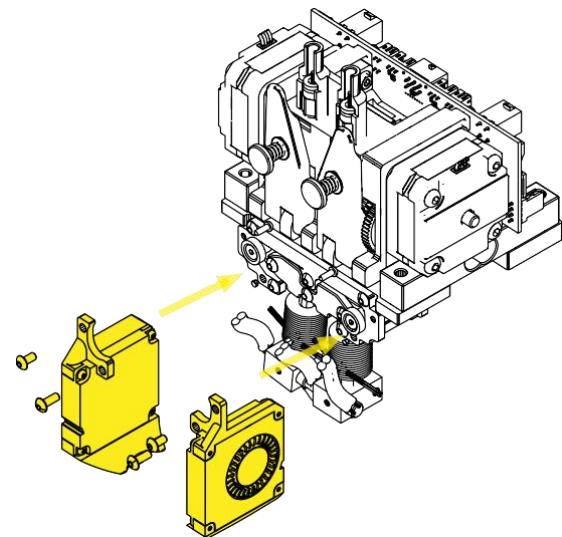
Unscrew the left and right fan mounting.

# Service instructions

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Pull out the left and right cooling fans.

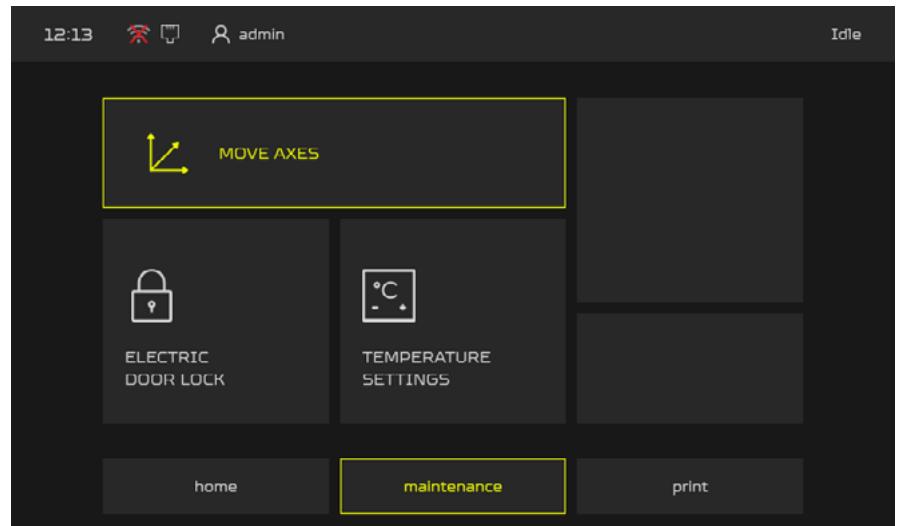


Insert the new cooling fans and connect the wires.

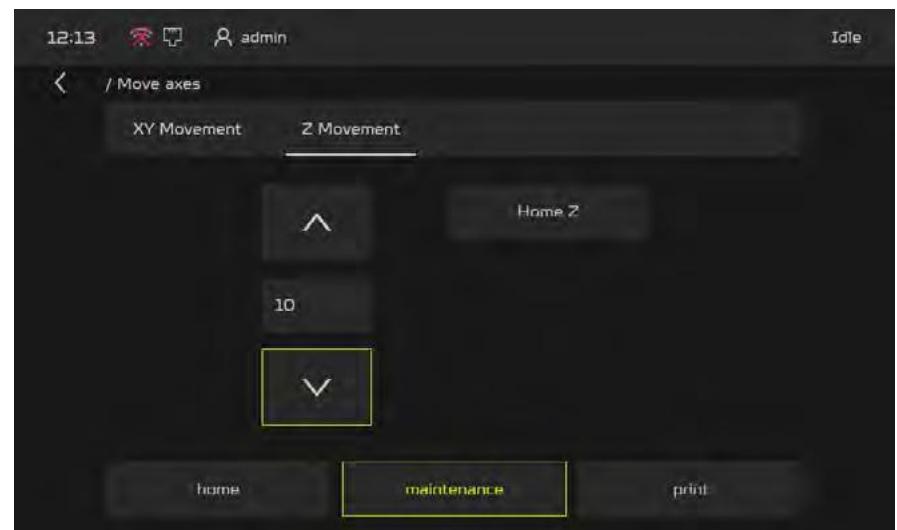
# Service instructions

## 10.3.3 Exchanging the waste remover tip

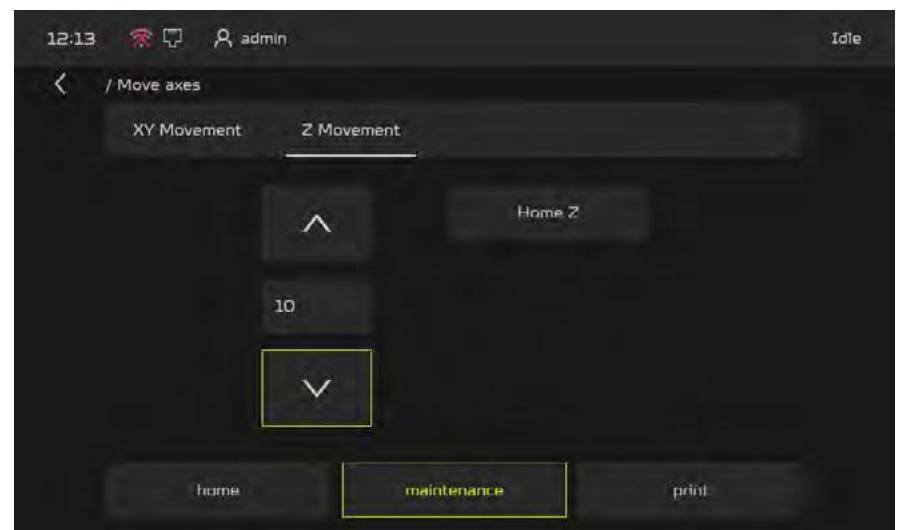
From the main menu go to the "MAINTENANCE" screen and choose "MOVE AXES" menu



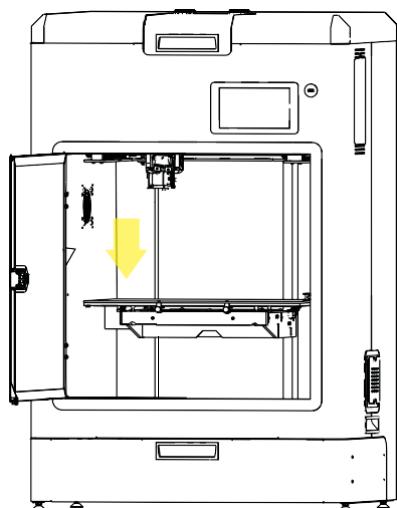
Press "Z movement" and park the heated bed at the bottom of the machine.



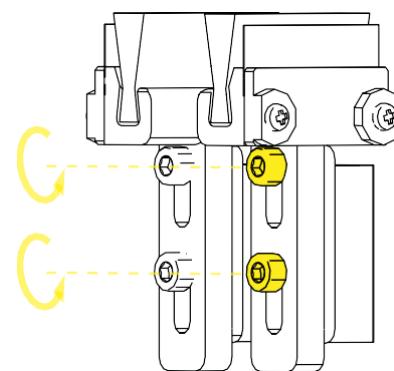
Park the heated bed at the bottom of the machine.



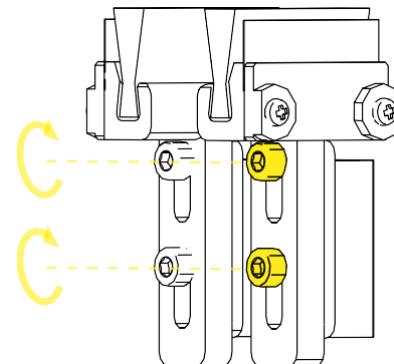
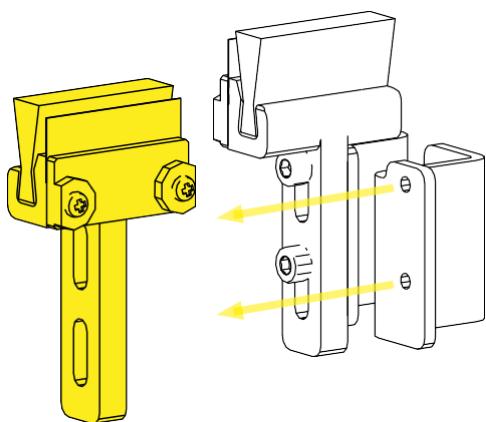
# Service instructions



Open the machine front door and disconnect the garbage collectorto get easier access to waste remover tip.



Unscrew the waste remover tip holding screws.



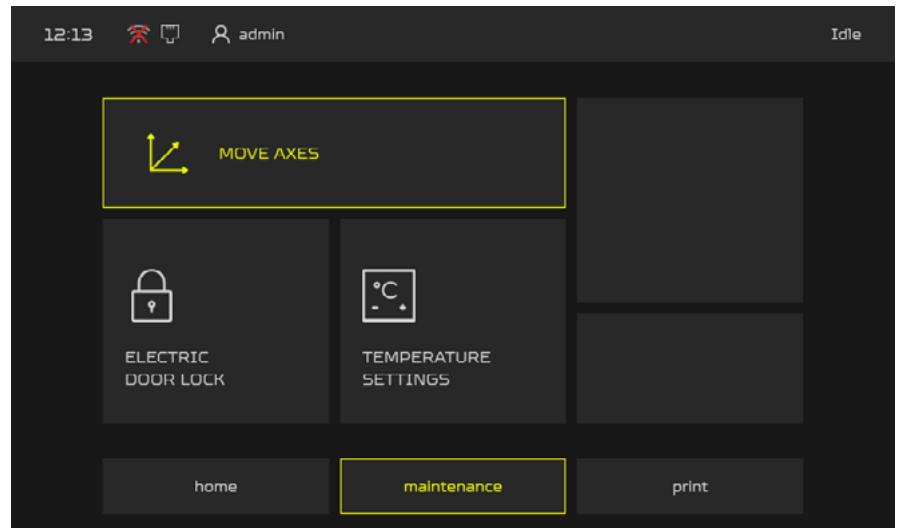
Remove the old waste remover tip and slide a new one.

Tighten the waste remover tip holding screws.

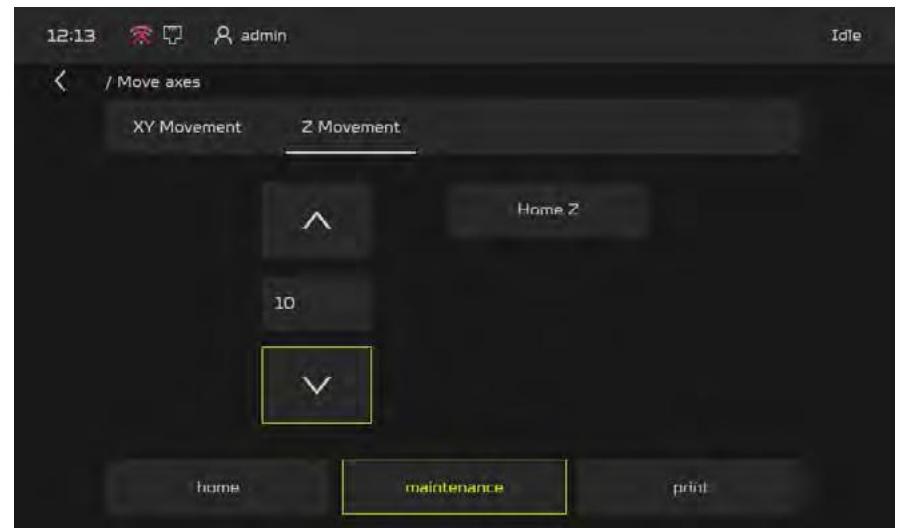
# Service instructions

## 10.3.4 Heating table glass exchange

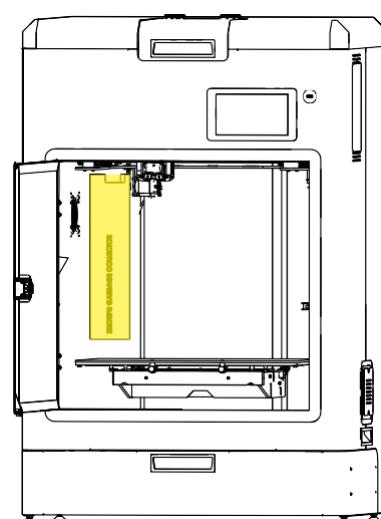
From the main menu go to the "MAINTENANCE" screen and choose "MOVE AXES" menu



Press "Z movement" and park the heated bed at the bottom of the machine.



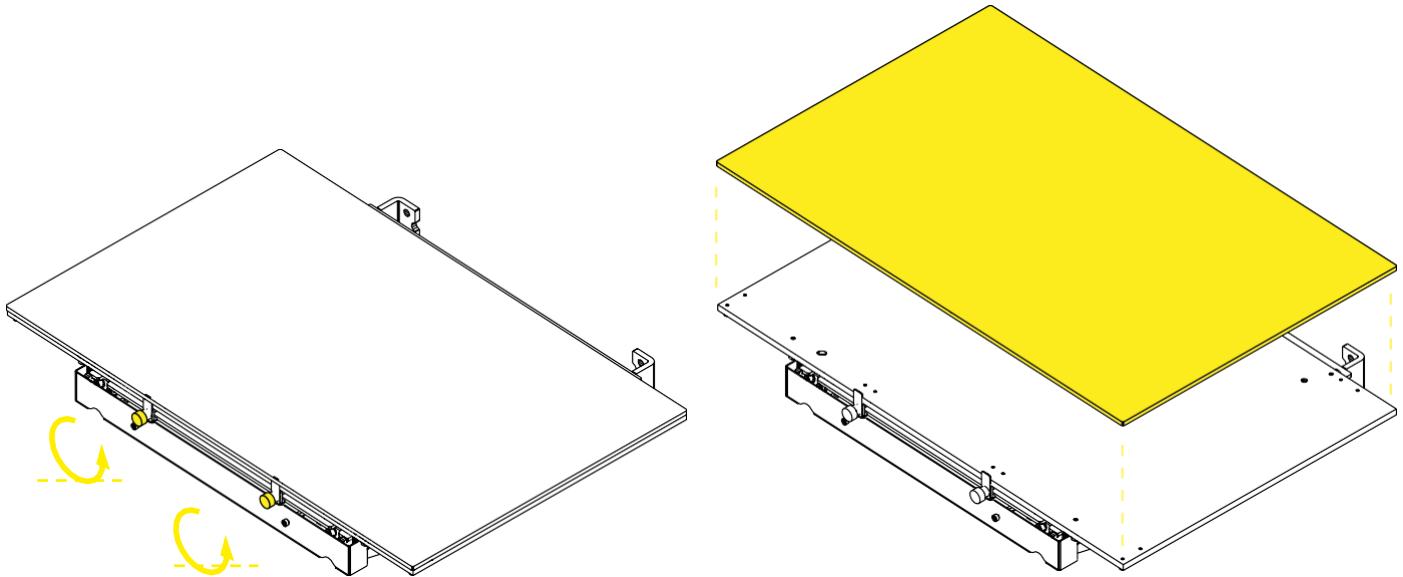
Park the heated bed at the bottom of the machine.



# Service instructions

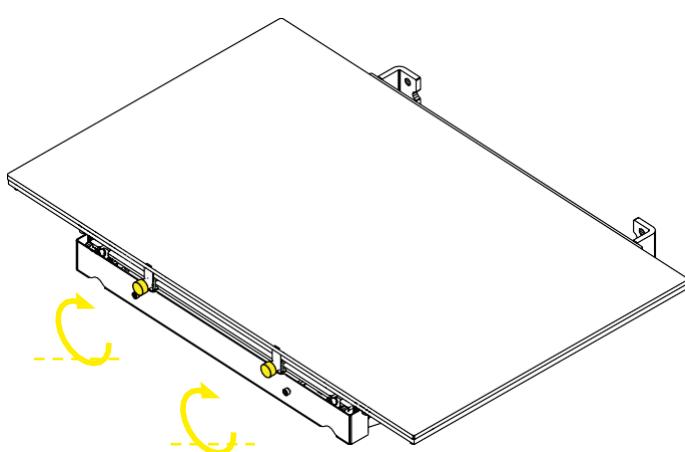
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## 10.3.4 Heating table glass exchange



Open the machine front door to get access to the heated bed. Loosen the heated bed glass clips.

After the clips are loosened remove the glass plate from heated bed surface.

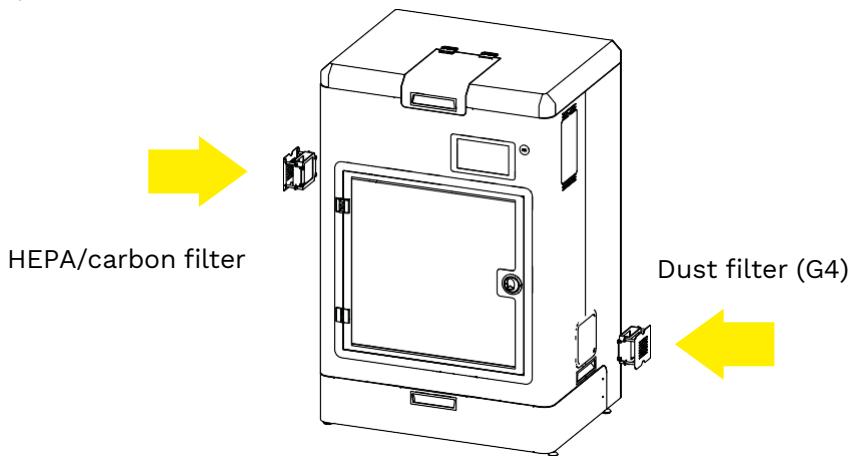


Put the new glass into heated bed surface and tighten the heated bed clips.

# Service instructions

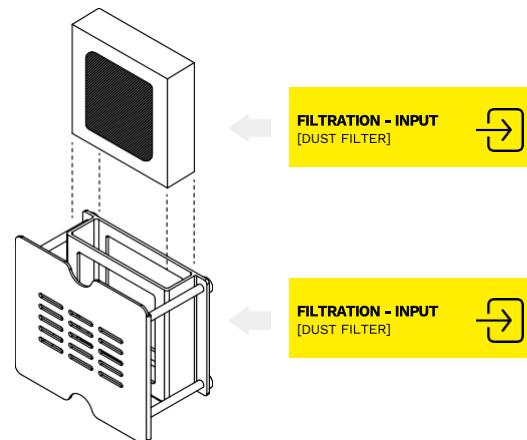
## 10.3.5 HEPA/Carbon and Dust filter replacement

Remove the left HEPA/Carbon filter and left G4 filter from the machine.

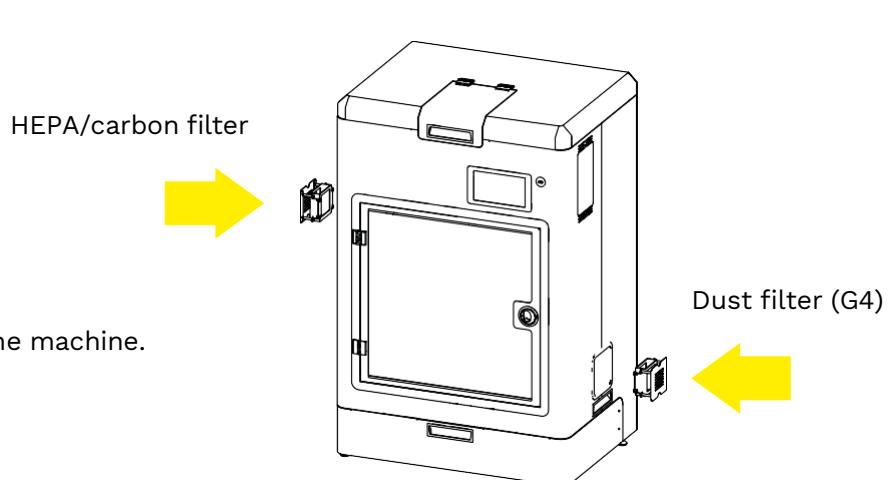


Remove the old HEPA/Carbon or G4 filters. Install the filters in appropriate holders. For more information check the signs on the holders and the inserts wrapping.

For the HEPA/Carbon filter make sure that the Carbon filter is on the outside.



Attach the filtration system back to the machine.



## 11. Spare parts

List of consumable parts:

- Extruder gear
- Extruder Hotend module
- HEPA/Carbon filter
- G4 dust-filter
- Borosilicate glass
- Extruder Cradle

In case of physical damage or failure one of the machine parts, do not install spare parts other than the ones recommended by the Manufacturer. Please contact Technical Support to receive the list of available spare parts or their replacements.

# Firmware upgrades

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## 12. Firmware upgrades

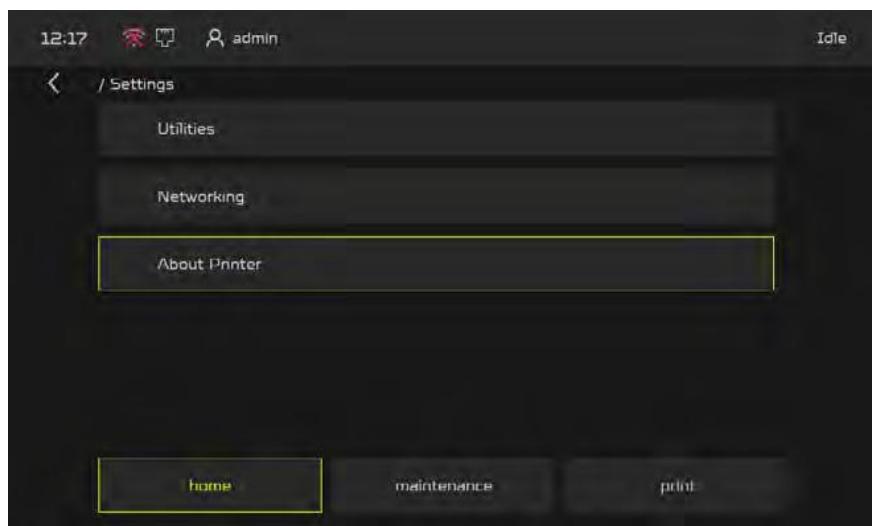
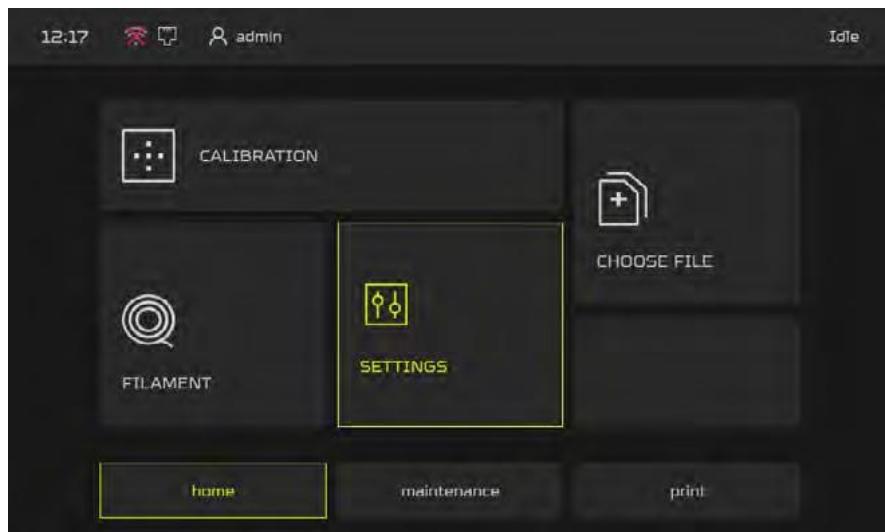
### 12.1 General informations

Once in a while Zmorph releases a firmware update for its i500 model.

The current firmware version is available to download at the Zmorph Knowledge Base:

[zmorph3d.com/support](http://zmorph3d.com/support)

To check the firmware version of the machine on the main screen from the main menu go to the SETTINGS menu and choose “About Printer”.



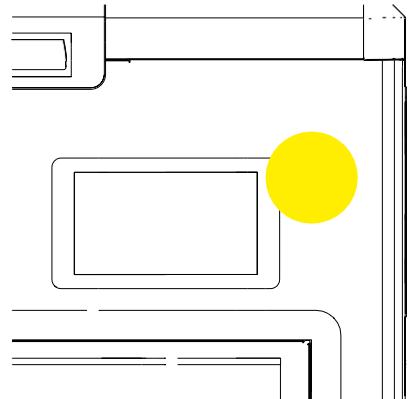
# Firmware upgrades

## 12.2 Updating firmware

How to update the firmware on Zmorph i500:

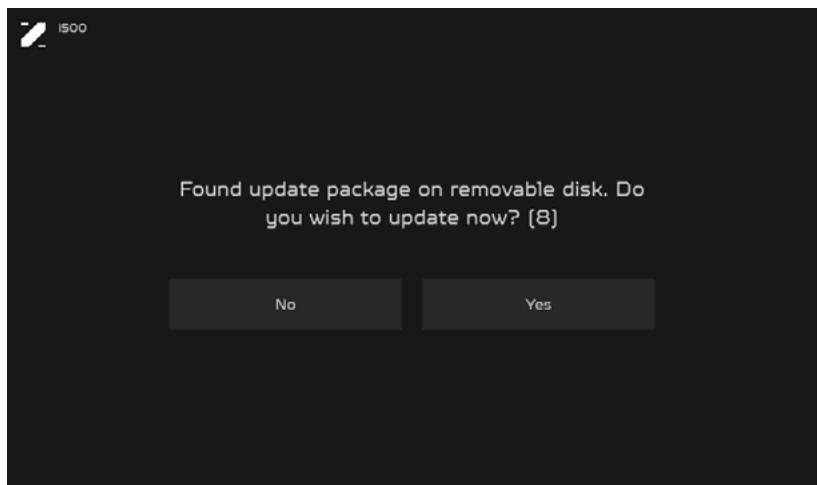
1. Create a catalog “updates” on a USB flash drive and drag the Zmorph update file (.raucb format) into it. You can download the update file at the Zmorph Knowledge Base: [zmorph3d.com/support](http://zmorph3d.com/support) .

2. The machine should be turned off. Insert the USB flash drive into the USB slot (near the right top corner of the LCD screen).

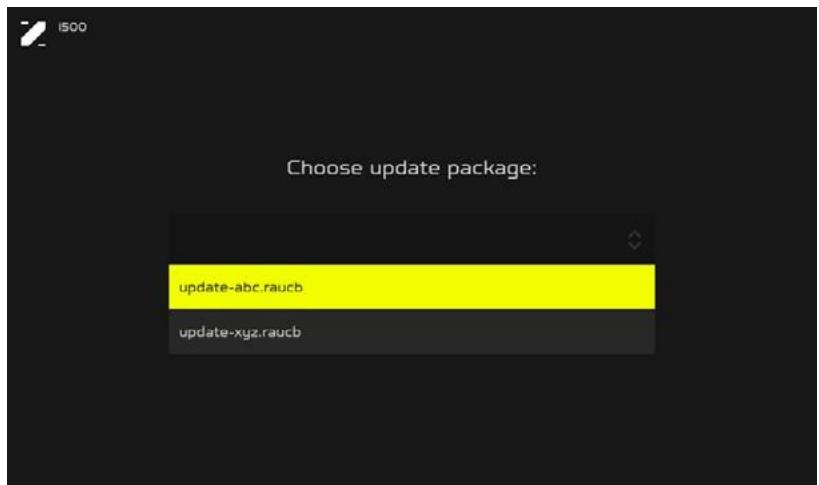


3. Turn on the machine, after that an update screen will pop up.

Select “Yes” to proceed with the update procedure (if you don’t manage to do it in 10 seconds, the machine will skip the update menu, in this case, reboot the machine to repeat the update procedure).



4. Select the update file from the list and press “OK” to confirm the update.

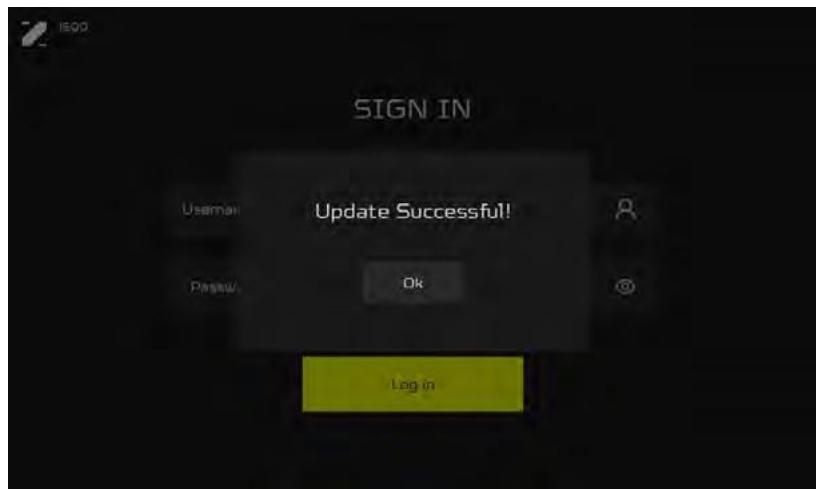


# Firmware upgrades

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5. The update will take a few minutes.

After a while, the machine will turn on and inform about the successful update procedure.



# 13. Help and support

## 13.1 Support request

In concern for Zmorph Fab customers, our company provides technical support to solve the problems. In case of problems with the machine, review the troubleshooting suggestions in this instruction. If the information provided with the instruction is insufficient you should contact your local supplier from which you bought the machine or contact directly Zmorph Technical Support by submitting the request on the website:

[zmorph3d.com/support](http://zmorph3d.com/support)

Before you submit the request please prepare all of the required information:

- Machine serial number.
- Firmware version of the machine.
- Error name if it occur in front LCD screen.
- Video or photo which shows the problem is not required but it will help us to solve your problem faster.

If you have a print-quality problem, please provide information like:

- type of material,
- material producent,
- used toolhead,
- attached .gcode file,
- slicer you used for preparing the .gcode file.

# Help and support

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## 13.2 Troubleshooting

Symptom	Probable cause	Solution
Filament is not going through the nozzle	<ul style="list-style-type: none"> <li>■ The material is tangled</li> <li>■ The material is blocking in loading channel</li> <li>■ The material is defective</li> <li>■ The hotend is clogged</li> </ul>	<ul style="list-style-type: none"> <li>■ Check if the material is not tangled and the spool is properly installed</li> <li>■ Check if the material is properly inserted inside of the filament channel</li> <li>■ Check if the used material is not defective (no bubbles, the diameter is constant)</li> <li>■ Check if the end of the material is cut at a right angle</li> </ul>
Print doesn't stick to the worktable	<ul style="list-style-type: none"> <li>■ Work table is not clean</li> <li>■ There is no adhesive</li> <li>■ Incorrect temperature of work table</li> <li>■ Nozzle is too high above the work table</li> </ul>	<ul style="list-style-type: none"> <li>■ Clean the work table</li> <li>■ Apply the adhesive</li> <li>■ Adjust the bed temperature to the used material</li> <li>■ Perform the bed calibration</li> </ul>
The Print is warping	<ul style="list-style-type: none"> <li>■ There is no adhesive</li> <li>■ Nozzle is too high above the work table</li> <li>■ Work table is not clean</li> </ul>	<ul style="list-style-type: none"> <li>■ Clean the work table</li> <li>■ Apply the adhesive</li> <li>■ Perform the bed calibration</li> </ul>
The print is cracked	<ul style="list-style-type: none"> <li>■ Improper print temperature.</li> </ul>	<ul style="list-style-type: none"> <li>■ Make sure the print temperature is right according to the material manufacturer's specifications.</li> <li>■ Make sure that the .gcode file is designed correctly</li> </ul>
The print is melted	<ul style="list-style-type: none"> <li>■ The print temperature is too high.</li> <li>■ The cooling fan is not working.</li> </ul>	<ul style="list-style-type: none"> <li>■ Adjust the print temperature according to the material manufacturer's specifications</li> <li>■ Make sure that the .gcode file is designed correctly</li> <li>■ Make sure the cooling fan is working during the print</li> </ul>

# Help and support

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Symptom	Probable cause	Solution
Right print doesn't stick to the left print	<ul style="list-style-type: none"> <li>■ Incorrect Z offset calibration</li> <li>■ LEFT or RIGHT nozzle is loosen</li> <li>■ nozzle change system is not switching correctly</li> </ul>	<ul style="list-style-type: none"> <li>■ perform new Z offset calibration</li> <li>■ check if there are any loose on the right and left nozzle (make sure the nozzles are cooled down)</li> <li>■ check if the left nozzle change to the right nozzle correctly</li> </ul>
LEFT and RIGHT materials are shifted from each other	<ul style="list-style-type: none"> <li>■ Incorrect XY offset calibration</li> <li>■ LEFT or RIGHT nozzle is loosen</li> <li>■ nozzle change system is not switching correctly</li> </ul>	<ul style="list-style-type: none"> <li>■ Perform new XY offset calibration</li> <li>■ check if there are any loose on the right and left nozzle (make sure the nozzles are cooled down)</li> <li>■ check if the left nozzle change to the right nozzle correctly</li> </ul>
Extruder or heating bed doesn't heat up	<ul style="list-style-type: none"> <li>■ the ambient temperature is too low (&lt;15°C)</li> <li>■ the thermistor wire is disconnected or broken</li> </ul>	<ul style="list-style-type: none"> <li>■ check the temperature reading of the extruder and bed</li> <li>■ check the current temperature reading, 0°C will indicate that thermistor is disconnected or broken</li> </ul>

### 13.2 Handy resources

- Zmorph Knowledge Base [zmorph3d.com/support](http://zmorph3d.com/support)

Knowledge Base gathers all technical wisdom of Zmorph products, like information about printers maintenance and quick tips on Fabrication methods.

- Voxelizer Software [voxelizer.com/](http://voxelizer.com/)

Zmorph's original Voxelizer software is the intelligence behind the machine. It allows you to control all Fabrication methods of Zmorph Fab and gives you access to the most advanced 3D printing capabilities.

- Zmorph Blog [blog.Zmorph3d.com](http://blog.Zmorph3d.com)

Zmorph Blog presents news and stories from the Zmorph world: articles on all fabrication methods, use cases, special offers and many others.

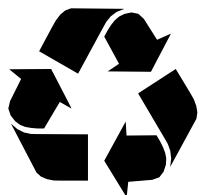
- Zmorph Materials Library [zmorph3d.com/product/materials](http://zmorph3d.com/product/materials)

Zmorph Materials Library is an essential resource that gives a comprehensive outlook on a wide range of manufacturing materials supported by Zmorph Fab Multitool 3D Printers. The document provides detailed information about almost 50 materials including easy-to-read data, technical information, working parameters, features, and applications.

# Waste disposal

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## Disposal of the packaging



All packaging elements are 100% recyclable, in order to protect the environment, we recommend placing used paper and plastic packaging in specially designated containers, according to local regulations.

## Waste electrical and electronic equipment

The EU Directive 2012/19/UE on waste electrical and electronic equipment (WEEE) describes the way how to minimise the environmental impact of WEEE and to encourage its separate collection, subsequent treatment, reuse, recovery, recycling and environmentally sound disposal.



Electrical and electronic equipment at the end of its life should never be disposed with general waste collections but must be separately collected for their proper treatment and recovery. Substances contained in the equipment may be harmful to the natural environment. Consumers can drop off their used electrical appliances at no cost at one of the local collection points or contact the seller, the Manufacturer or the importer of the product for more information on where to dispose the waste equipment.

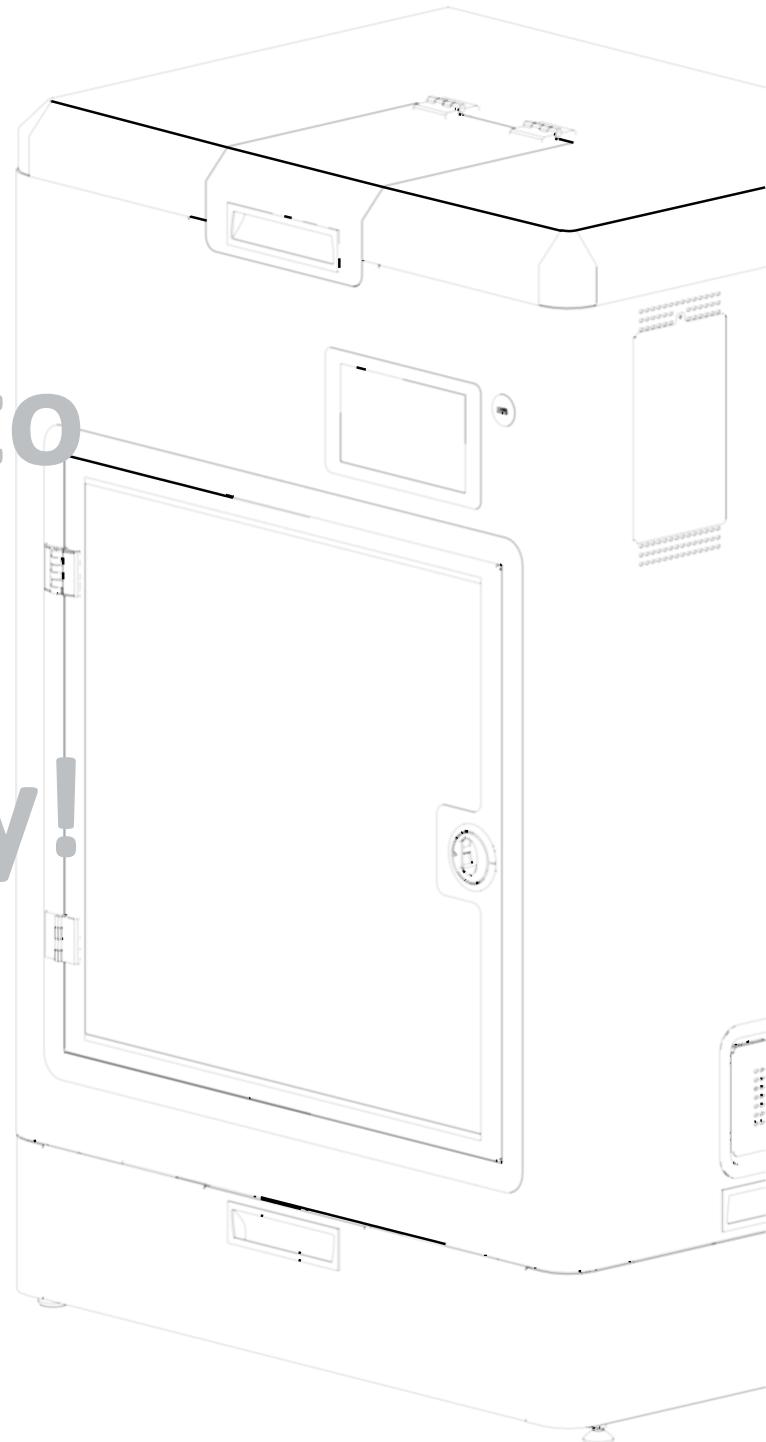


# Welcome to the ZMORPH community!

Additional instructions available  
[zmorph3d.com/support](http://zmorph3d.com/support)

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[zmorph3d.com](http://zmorph3d.com)



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