GEM3

User Manual

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Introduction

Read this User Manual carefully and thoroughly before operating the GEM3 for the first time.

The User Manual includes basic information about the 3D printer, safety and protection guidelines as well as advice on preparing the machine for the first printing process and basic maintenance work. Ignorance and non-compliance with these instructions may result in property damage, injuries, device failures. It is also necessary to ensure that every 3D printer user knows, fully understands and follows the instructions provided in this User Manual.

The Manufacturer makes every effort to ensure that Nova3D products are safe in transportation, installation, usage, storage and disposal. However, due to the lack of direct and ad hoc control as well as other conditions influencing the device and those that are beyond the Manufacturer's knowledge, the Manufacturer is not responsible for damage, injuries, failures and costs resulting from improper transportation, installation, usage, storage and disposal. Furthermore, the users should take into consideration the risk of possible damage of the device resulting from defects in external resins.

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

All products, technical specifications and data are subject to change without notice due to improved reliability, functionality, design or other reasons. Shenzhen Nova3d Robot Technology Co., Ltd.(Nova3D), its agents, the employees and all individuals representing the company take no responsibility for inaccuracies or incompleteness in any product-related data manual or other published information due to product update.

Whale is not intended for use by people with no capacity or with limited capacity. The Manufacturer recommends providing assistance and guidance to people with disabilities who wish to operate the printer.

Nova3D does not assume (I) the responsibility for any consequences arising from the use of any product; (II) the responsibility for including but not limited to specific, joint or collateral.

General Safety Information

This User Manual contains important safety directions that should be followed during installation and operation of the Whale. 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: http://www.nova3dp.com. There are a source of basic information and safety procedures for the materials you bought. It is essential to regularly update the firmware to avoid any kind of failures.

Visit our website: http://www.nova3dp.com to learn about the latest news and updates.

Printing process with the Whale requires using liquid photosensitive resin which in a liquid form is low toxic and may cause allergic reactions. Therefore, you must protect your skin and eyes when using the printer by wearing safety gloves and glasses. Proper ventilation is required in the print room.

It is also extremely important to avoid spilling the resin on the printer and its surroundings while operating the printer, filling the vat and removing prints from the platform. Ensure that the printer is level and keep it on a stable surface. Do not remove the UV cover during the printing process.

Do not leave the machine unattended during the printing process ,check it periodically for proper functioning in order to avoid potential accidents or breakdowns. Turn off the printer and empty the resin vat once the printing process is finished.

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

The Manufacturer strongly recommends setting up a special room dedicated only to 3D printing. The room should be as free of daylight as possible and properly ventilated. It is important to avoid situations in which liquid resin is exposed to daylight.

Workplace Health and Safety

Keep the workplace clean. Containers with resin should be tightly closed and kept in a dark place. The device should be configured according to its intended purpose. Improper configuration may cause defective operation which may lead to damage of the device. Food and beverages should be kept away from both the 3D printer and the 3D printed objects. Do not put any objects under the UV cover. While operating the Whale, all measures regarding health and safety that are provided in this User Manual as well as in separate regulations should be taken into account.

Electrical Safety

Nova 3D printers have been tested for compliance with Low Voltage Directive. In order to ensure the highest safety standards, including protection against short circuit, overload, overvoltage and printer overheating, do not attempt to modify the printer and do not use unauthorized 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 connect to the ground properly. Always make sure that the ground complies with local and national regulations. Do not expose the device to rain and humidity. While filling the vat with resin, be careful not to spill the resin outside the vat. Liquid that enters the inside of the device increases the risk of an electric shock. All maintenance and repair work should be carried out while the device is off and unplugged. Modifications such as soldering of electronic subunits are forbidden.

Mechanical Safety

The Whale has movable components, such as the build platform and the Z-axis. 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. Tools and accessories delivered with the printer should be used with special care. Improper use may cause serious injuries. While following post-processing procedures, wear safety gloves and glasses to avoid injuries that may be cause by sharp edges and fragile elements of models. A finished print must be removed from the platform outside the printer, after both the platform and the model have been cleaned from uncured resin in a liquid detergent. To avoid injuries, be particularly careful while removing prints from the platform. Always wear gloves and glasses. The FEP film that is installed in the resin vat is very thin and fragile, therefore, special care should be taken when cleaning, installing and disassembling the vat.

Burn Risks

There is no risk of burns as all components working in high temperatures are enclosed， but don't touch the inside parts. Constructional modifications of the printer's operating temperature are not permitted as it may cause serious injuries or bring damage to the device.

Nova3D devices must be stored between 18 and 35° C [64 - 95° F]. The storage space should be free of moisture and other extreme conditions.

Transport Instructions

When stacking several devices on a pallet, follow the instructions provided on the packaging. Once device may weigh more than 10 kg [22 lb]. It is therefore advisable to provide safe pallet storage but not higher than 1.7 m [5'7''']. It should be noted that the packages must not project beyond the outline of the pallet. Packages stacked on the pallet should be then bound together and wrapped in foil. The pallet prepared as above can be then forwarded to the shipping company.

Pallet stacking and destacking should be carried out by two people. The package with the device should be lifted or moved using special handles.

Electromagnetic Compatibility (EMC)

Nova3D printer complies with Part 15 of the FCC rules. Its operation is subject to the following two conditions: this device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

The printer generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the following User Manual, may cause harmful interference to radio communications.

1. Learn More About GEM3

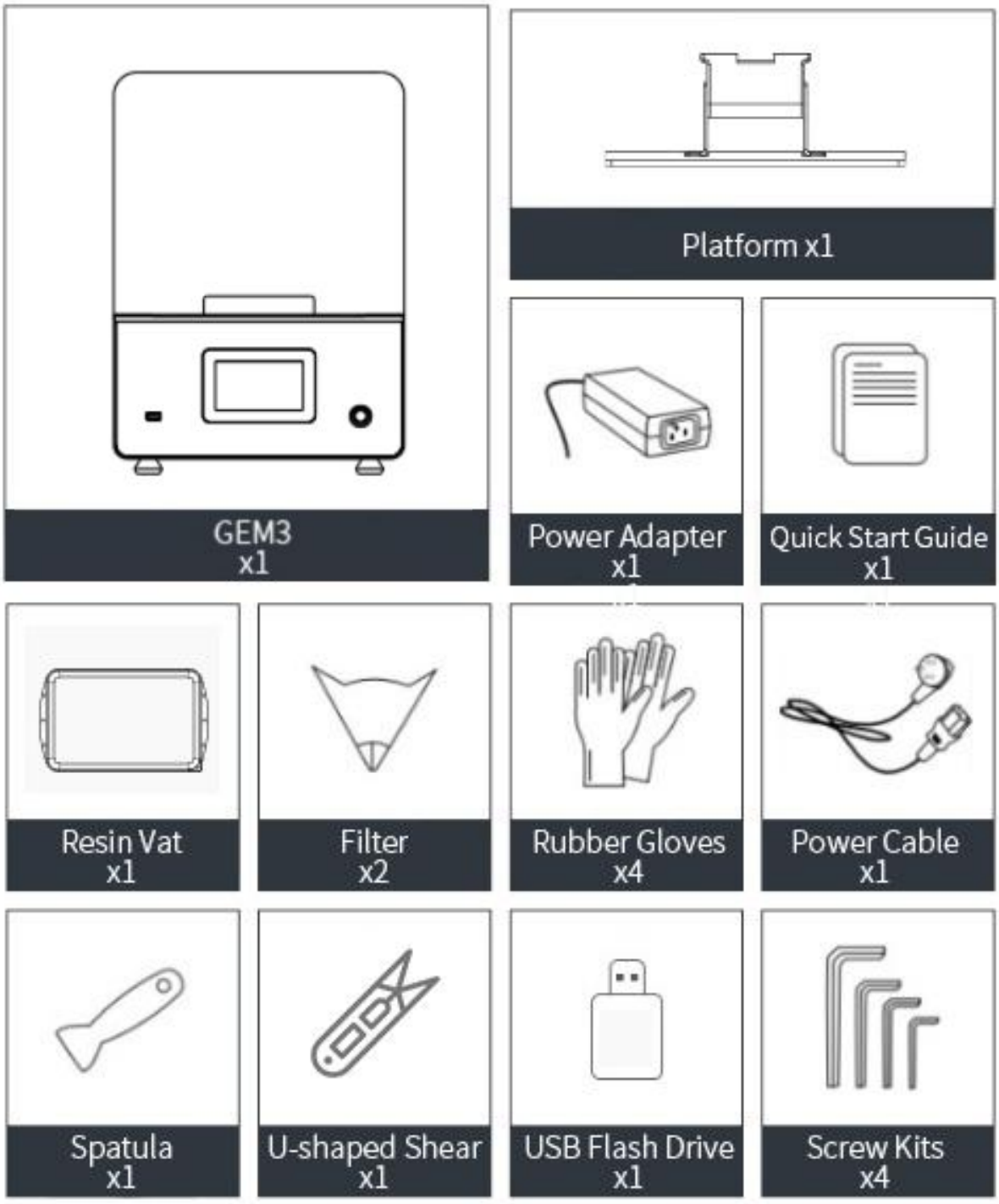
GEM3 is a 3D printer which together with NovaMaker and dedicated materials, constitutes the whole 3D printing ecosystem. This device makes it possible to turn digital, three-dimensional projects into reality using the UV LCD technology which relies on curing liquid photopolymer layer after layer. The UV LCD technology involves projecting an image of a layer on the transparent underside of the vat with liquid resin and curing the layer using backlight from a UV lamp. After each layer is cured, the lamp pauses to operate. During the pause, the layer solidifies and the platform rises and lowers itself so the resin is equally distributed in the vat. The printer is equipped with an LCD screen which is responsible for projecting successive layers and masking the UV light. Thanks to that, the resin that is outside the image of a layer is not cured and can be used to print the rest of the model. The printer allows users to print multiple parts at the same time without affecting the accuracy and printing speed. Once the printing process is finished, the model has to be post-processed in two steps. The first step involves cleaning the print from residues of uncured resin in a liquid detergent, whereas the second step involves additional UV curing so that the object acquires its intended properties.

Everything begins with preparing a model. The work on the project can start in any program which creates 3D models and generates .stl, .obj files. These are the standard file formats supported by most types of 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 .obj、.nmkfiles) in NovaMaker - the program created specifically for Nova3D devices. NovaMaker prepares the model by slicing it into individual layers and saving it as a .cws file. NovaMaker also allows you to choose the material type to be used for the model and to adjust the necessary print settings, such as layer thickness, layer exposure time, exposure off time or how many support structures should be generated. The file is then ready to be printed.

To start the printing process, turn on the printer, prepare the material which corresponds with the one you have chosen in NovaMaker and carefully fill up the vat with an appropriate amount of liquid resin. While working with the Whale, you can start, stop and pause the printing process in NovaMaker. Once your file is prepared, you can transfer it from NovaMaker 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 at the back of the device or transfer the file from NovaMaker over Wi-Fi. In addition, NovaMaker allows you to add several printers to the 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 touch screen at the front. It is also possible to change all settings related to exposure time of particular elements of the model directly during the printing process.

2. What's in the Box

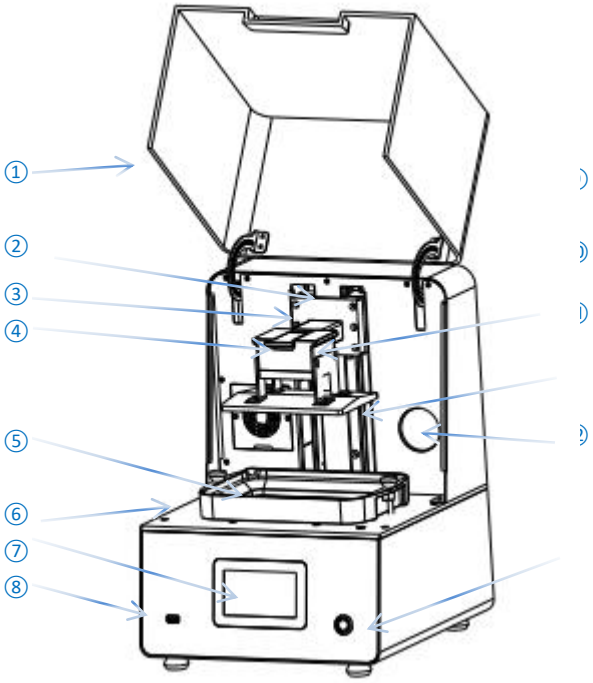


Use of Tools：

- ✧ **Platform：** The model is adhered to the platform during the printing process.
- ✧ **Power Adapter/Power Cable：** Connect to the power supply.
- ✧ **Quick User Guide:** Help you to get started quickly.
- ✧ **Resin Vat:** A container for resin material.
- ✧ **Filter :** Filter the cured remains in the used resin.
- ✧ **Rubber Gloves:** Protect hands from injury.
- ✧ **Spatula:** To check if there are residues of cured resin in the vat before each printing process.
- ✧ **U-shaped shear:** Use to cut off the model support.
- ✧ **Spare Screws:** Spare screws for securing FEP film, LCD screen and device base.
- ✧ **Screw Kits：** Disassembly tools for repair and replacement of parts.
- ✧ **USB Drive：** USB Drive for printing file transfer

3. Machine Structure

Front View

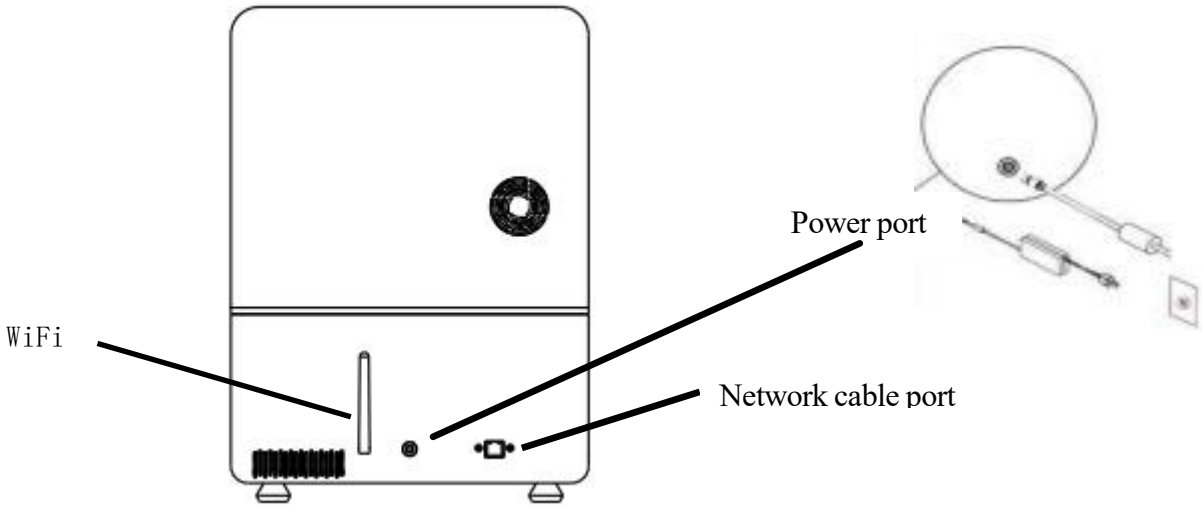


Printer Components

①Flip Cover
②Linear Guide
③Lead Screw
④Fixing Screw
⑤Printing Screen
⑥Resin Vat
⑦Touch Screen
⑧USB Port
⑨Cantilever
⑩Platform
⑪Temperature controlled Heater
⑫Power Switch

（Front structure diagram）

Rear view



（Rear Structure Diagram）

4. Nova3D Printing Technology Glossary

Nova3D Technology

A technology which relies on curing photopolymers layer after layer. The UV LCD technology involves projecting images of successive layers on the underside of the vat with liquid resin and curing them using backlight from a UV lamp.

NovaMaker

NovaMaker, an application developed by Nova3D, can slice model files into NovaMaker (cws) or chitubox (ctb) format files for printing. The printer supports NovaMaker, chitubox, LycheeSlicer, and Voxeldance Tango slicing software, allowing users to change and adjust print settings, such as model size, layer thickness, or how many support frames need to be generated; finally, transfer the file to the printer via Wi-Fi or USB flash drive.

FEP Film

A transparent foil which is installed in the rack attached to the resin vat. It creates a clean way for the UV light to quickly and precisely cure liquid resin during the whole printing process. The FEP film requires replacement once it becomes stretched or deformed.

LCD Screen

The flat-panel display essential for 3D printing in the UV LCD technology. It is responsible for projecting images of layers on the underside of the resin vat during the whole printing process. It also masks the UV light so that the resin that is outside the image of a layer is not cured and can be used to print the rest of the model.

Platform

An integral part of the printer, to which models adhere during the polymerization of resin. Also, it rises and lowers itself during the printing process so that each layer can solidify and the resin can be equally distributed in the vat. The platform is made of anodized aluminum which facilitates high adhesion of models. It can easily be removed or installed back in place.

Resin Vat

The container in which liquid resin is kept throughout the entire printing process. It consists of ABS+ glass fiber frame and a rack with FEP film. The resin vat is secured to the printer's housing directly on the LCD screen with two spherical buttons.

Post-processing Kit

Several pieces of equipment that are put together in one set and delivered with the printer. The set contains tools and protective equipment including, for example, hex wrench, funnels and spatulas. The tools from the post-processing kit are required for operating the printer as well as for performing maintenance work.

Touch Screen

The display screen placed at the front 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.

UV Cover

The cover placed on top of the printer responsible for protecting liquid resin from ambient UV light. It also helps to keep unpleasant smells of resin inside the printing chamber.

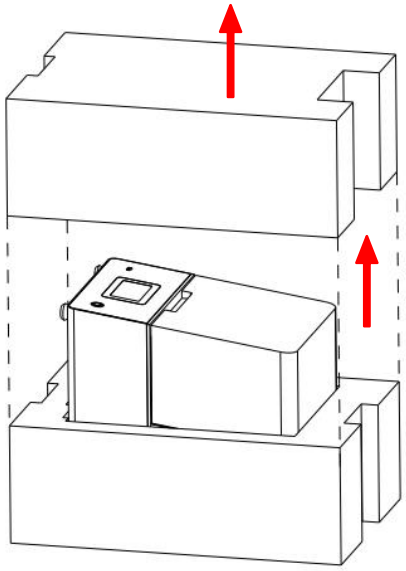
Support Structure

Special 3D printed structures in the form of pillars which ensure that the whole model adheres to the platform and doesn't fall into the resin vat during the printing process. Supports are printed with the same material as the model. Once the printing is done, supports have to be removed from the model by hand or using pliers.

5. First Use Preparations

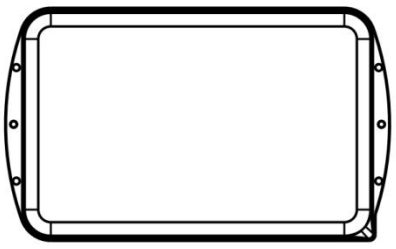
❖ Unboxing

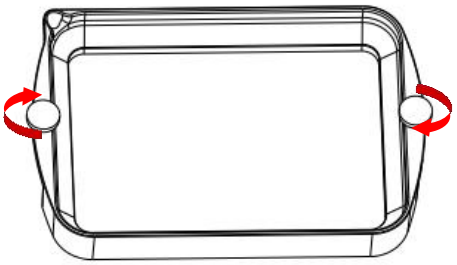
- Open the outer packaging box and remove the cushioning pads and accessory box, then take the printer out of the outer packaging box.
- Note: The original packaging can be reused for shipping the machine for repairs. Please keep the complete packaging, including all foam, for future use.）

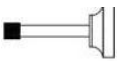


❖ Installing Resin Vat

- Take out the resin vat and fixing screws from the machine packaging for assembly(as shown below).
- Turn the two fixing screws of the resin vat clockwise to insert them into the resin vat..



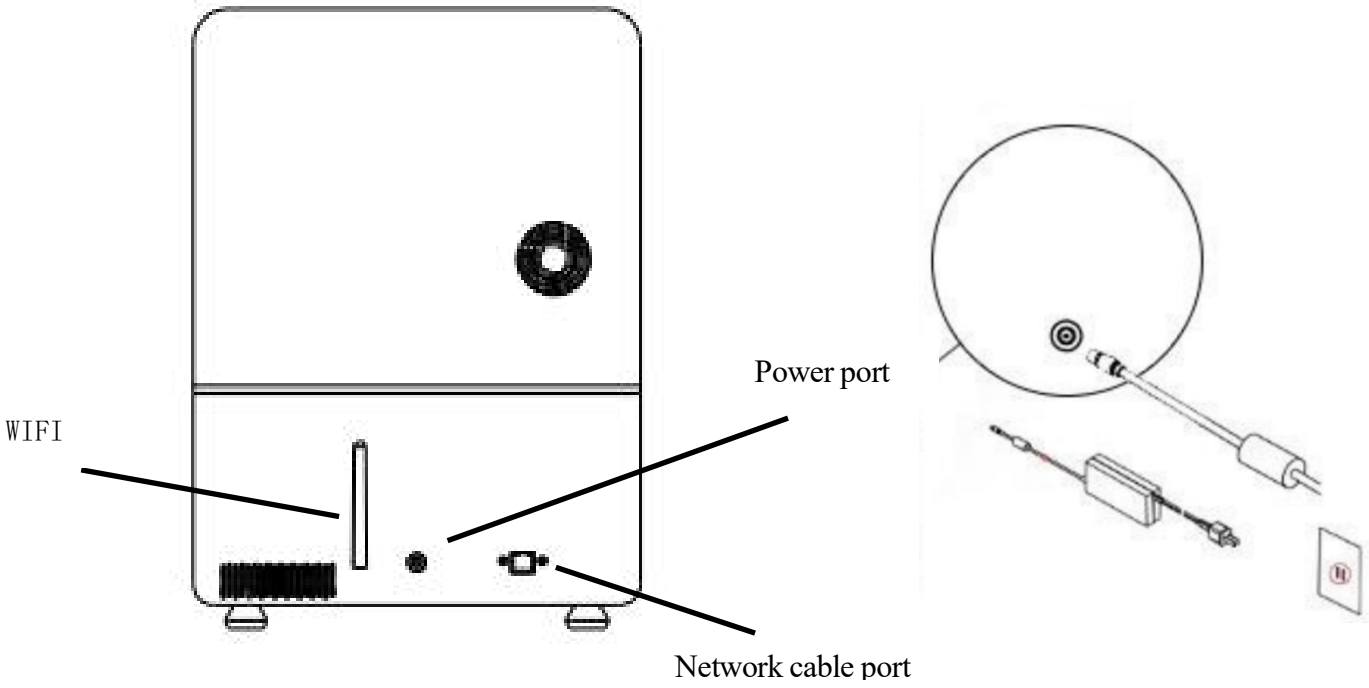




Fixing Screws x2

❖ Connecting Power

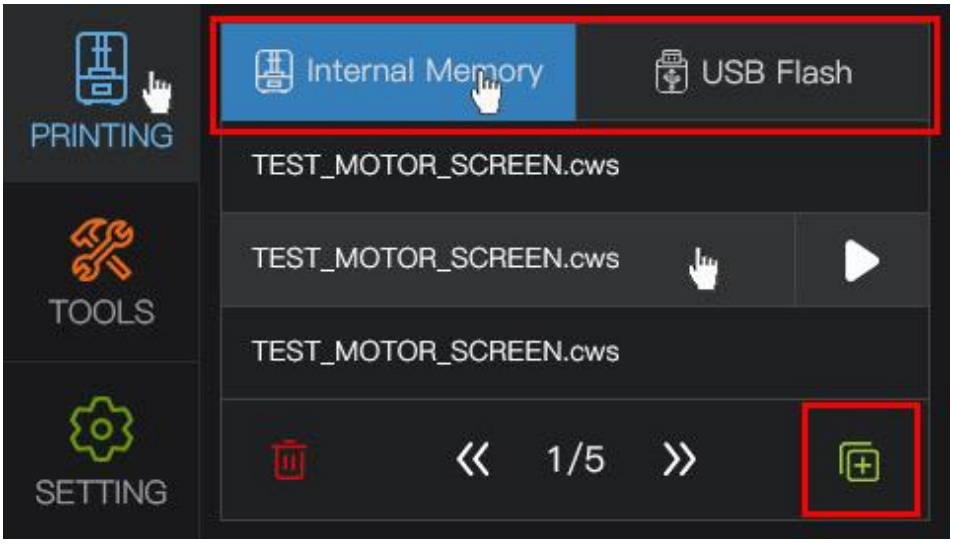
- Place the printer on a flat and stable surface, then adjust the four feet on the bottom of the machine to ensure it is level.
- Remove the protective film from the resin tank and the print screen, and wipe both clean.
- Plug in the power adapter (as shown below).
- Press the power switch on the front of the printer to turn it on.



（Rear View）

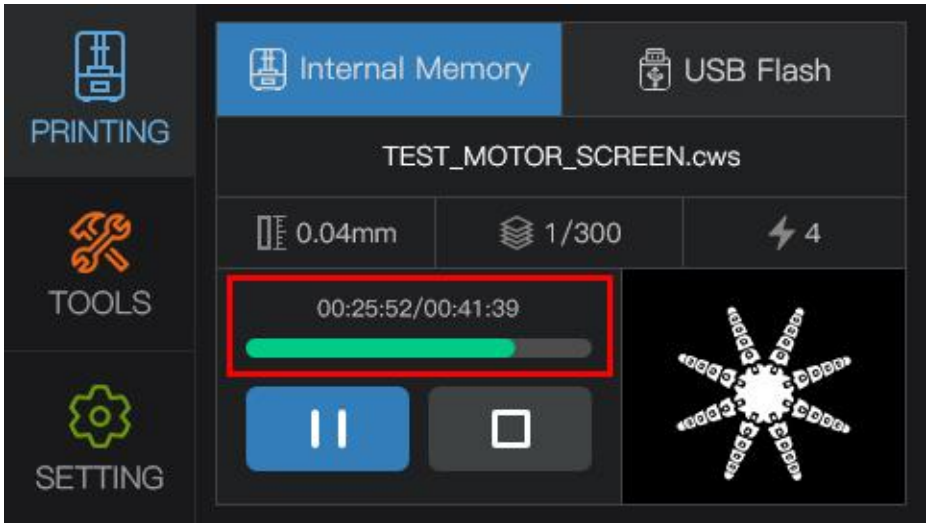
6. UI Introduction

The new UI is divided into three sections: Printing, Tools, and Setting.



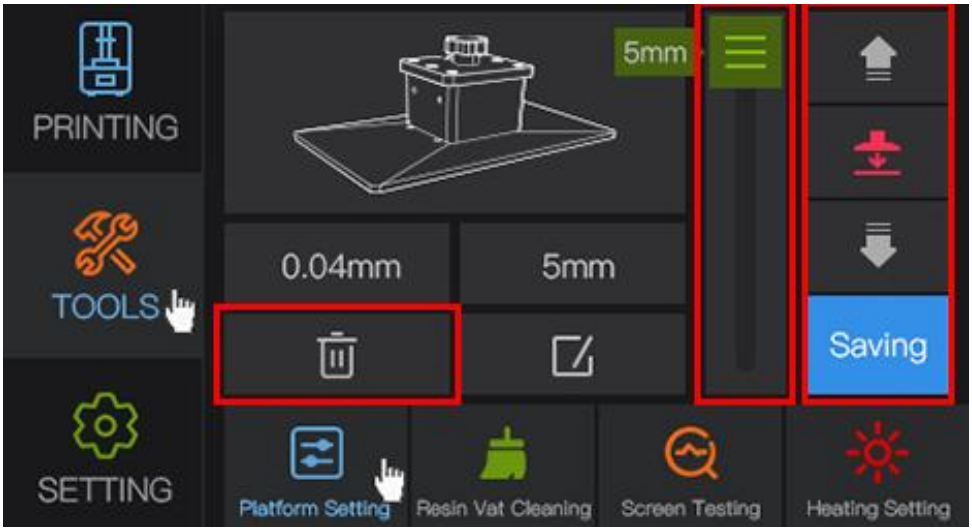
❖ PRINTING

- In the printing interface, you can select files from the “Internal Memory” or “USB Flash” and long press the print file to copy or delete.
- Once printing starts, the page will display the print file’s info (file name, slice layer thickness, current layer number, total layers, elapsed time, total time, and print progress) along with a current image of the print.
- Print controls include "Start," "Pause," and “End.".

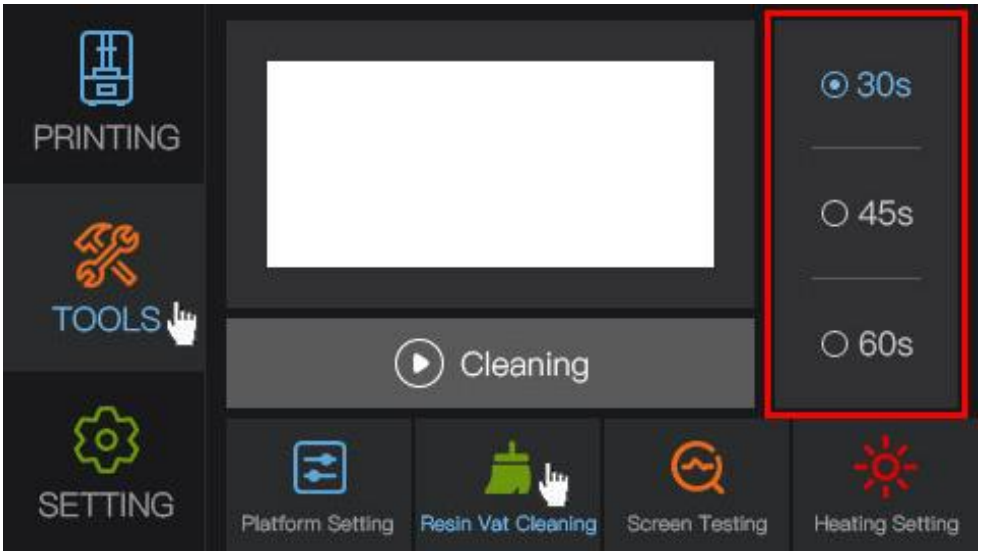


❖ TOOLS

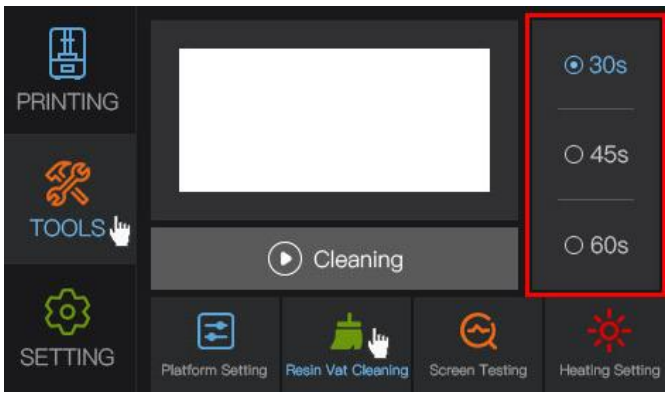
- **Platform Setting：** You can manually control the printing platform by raising(↑) or lowering(↓) to adjust the original starting point of the printing platform.

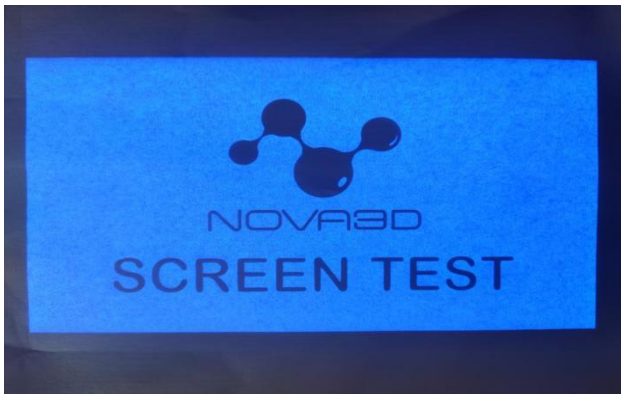


- **Resin Vat Cleaning：** The right option bar corresponds to curing times of 30s, 45s, and 60s. After selecting the exposure time, click "Cleaning" (recommended exposure time is 30s) to cure the residual model in the resin vat, forming a thin sheet.



➢ **Screen Testing：** The options correspond to exposure times of 30s, 45s, and 60s. Select the exposure time and click ▶ to check if the print screen is normal.



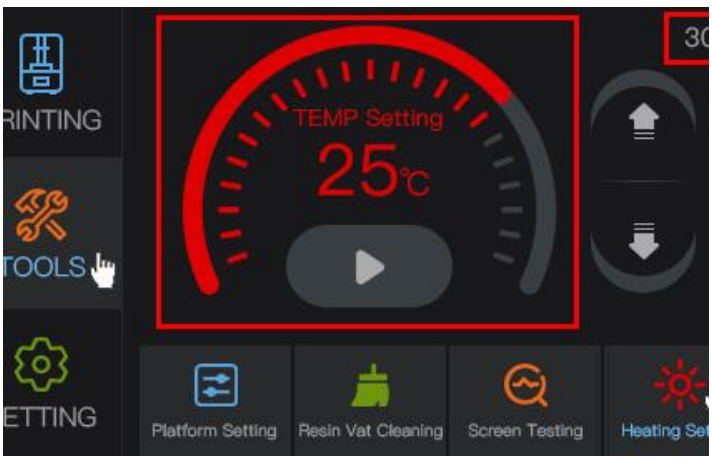


（Sceen Test）

➢ **Heating Setting**

✧ The printer's heating function is typically used in low-temperature environments. This function is not required at normal ambient temperatures. The heating temperature can be set between 20 and 40℃, with 30℃ being the ideal option. Users can set the appropriate heating temperature based on the current ambient temperature.

✧ Click "TOOLS" on the printer, select "Heating Setting", and use the up and down keys to adjust the desired temperature value, then click the ▶ button to start heating. The temperature sensing system will detect the set temperature, and then start printing.

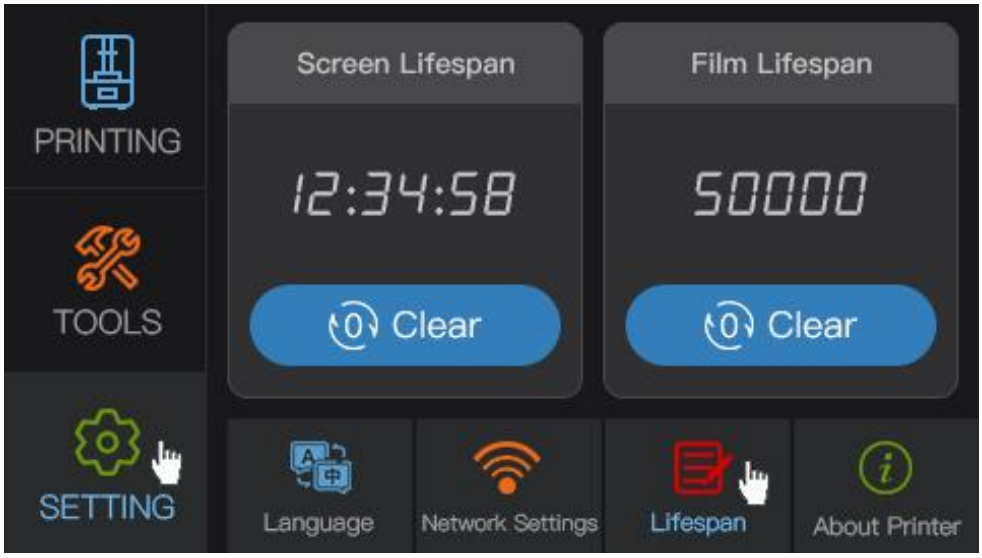


❖ SETTING

- **Language：** There are three languages to choose from: Chinese, English, Japanese.

- **Network Settings：** Click on “WiFi”, select the corresponding WiFi signal (Note: The printer's WiFi signal and the computer control connection must be on the same router to form a local area network), enter the corresponding WiFi password, and click “connection”. When the touch screen displays the IP address, it indicates a successful connection.

- **Lifespan：** You can observe the usage duration of the screen and the number of uses of the release film.



- **About Printer：** You can view the software and hardware versions.

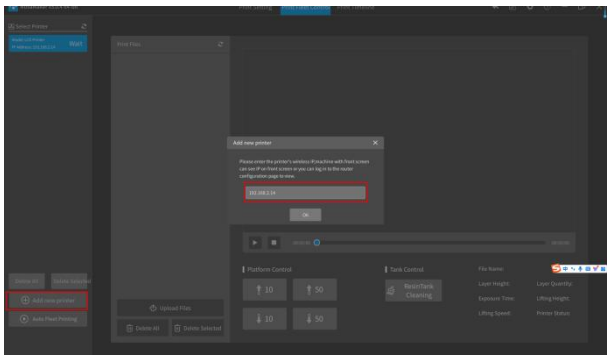
7. Printer File Transfer

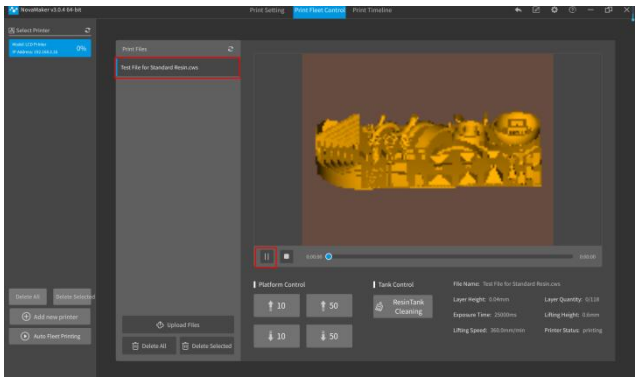
You can connect to the local network via a USB drive or a 'Wi-Fi connection' to transfer files to the printer.

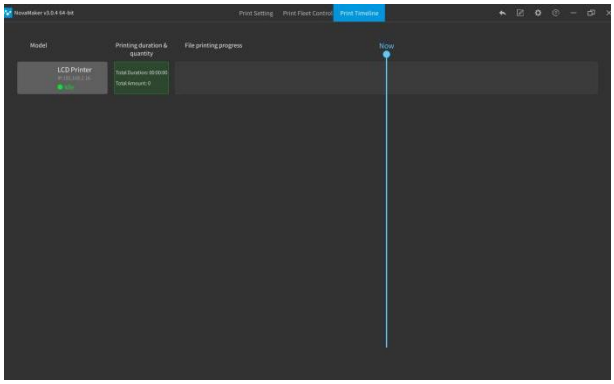
❖ Wi-Fi Connection Steps

Wi-Fi Connection steps as below:

- In UI Interface, Click"SETTING" => WIFI => connection => Run the NovaMaker on your computer => Click"Print Fleet Control"=> Add new printer => Enter the printer's IP => Click "Upload Files" => Start printing







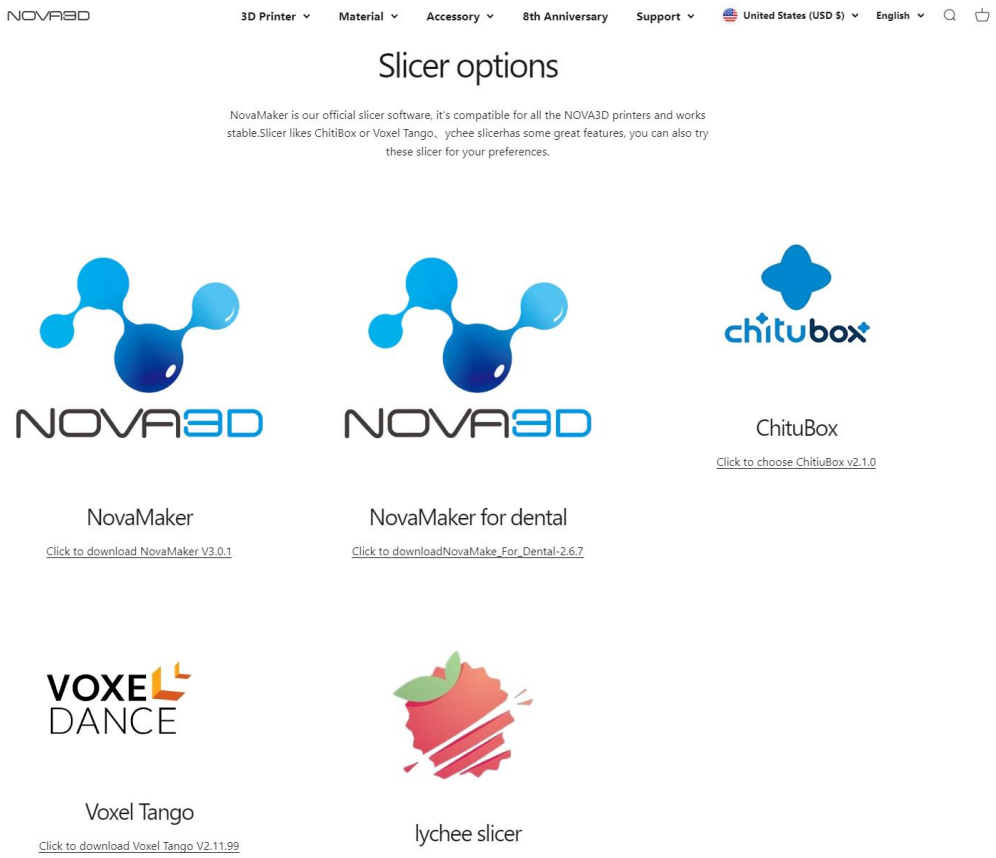
WiFi Network Setting

8. Slicing Software

Nova3D GEM3 can use the NovaMaker slicing software developed by our company. It is also compatible with the mainstream slicing software on the market, such as CHITUBOX, Tango, and Lychee slicer. The following is a preliminary tutorial on how to use our NovaMaker. For more detailed tutorials, please contact customers or search for NovaMaker tutorials on video websites.

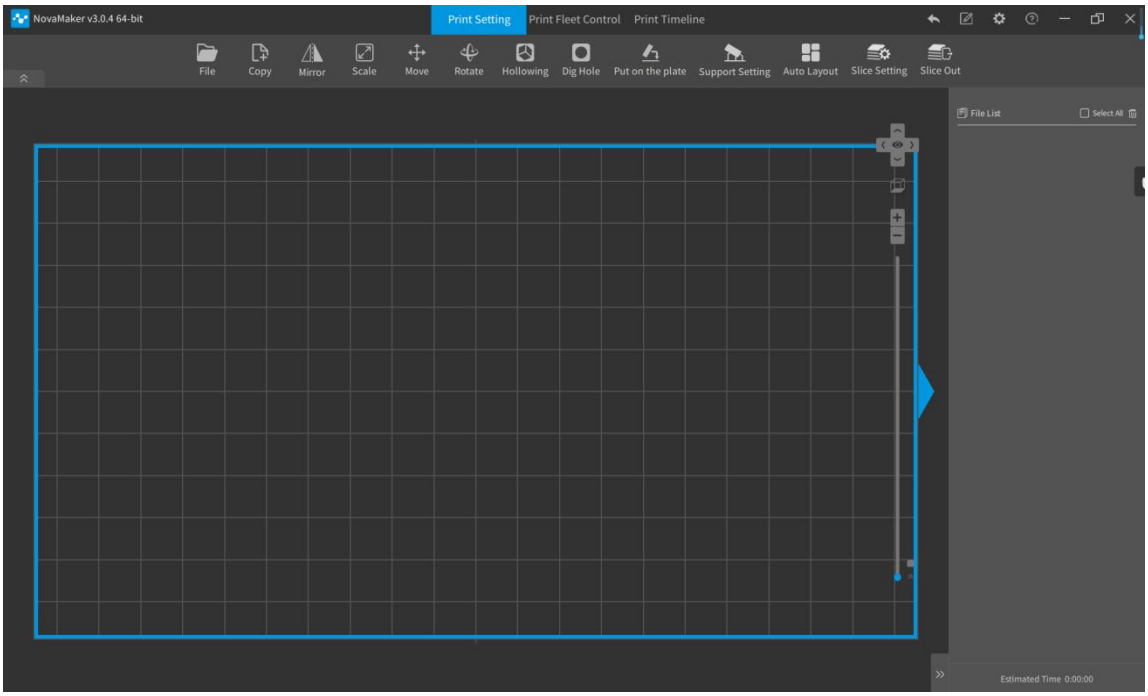
Please download and install NovaMaker software from the Nova3D official website or contact Email:service@nova3dp.com to obtain package.

After downloading and installing, select the correct model to use.

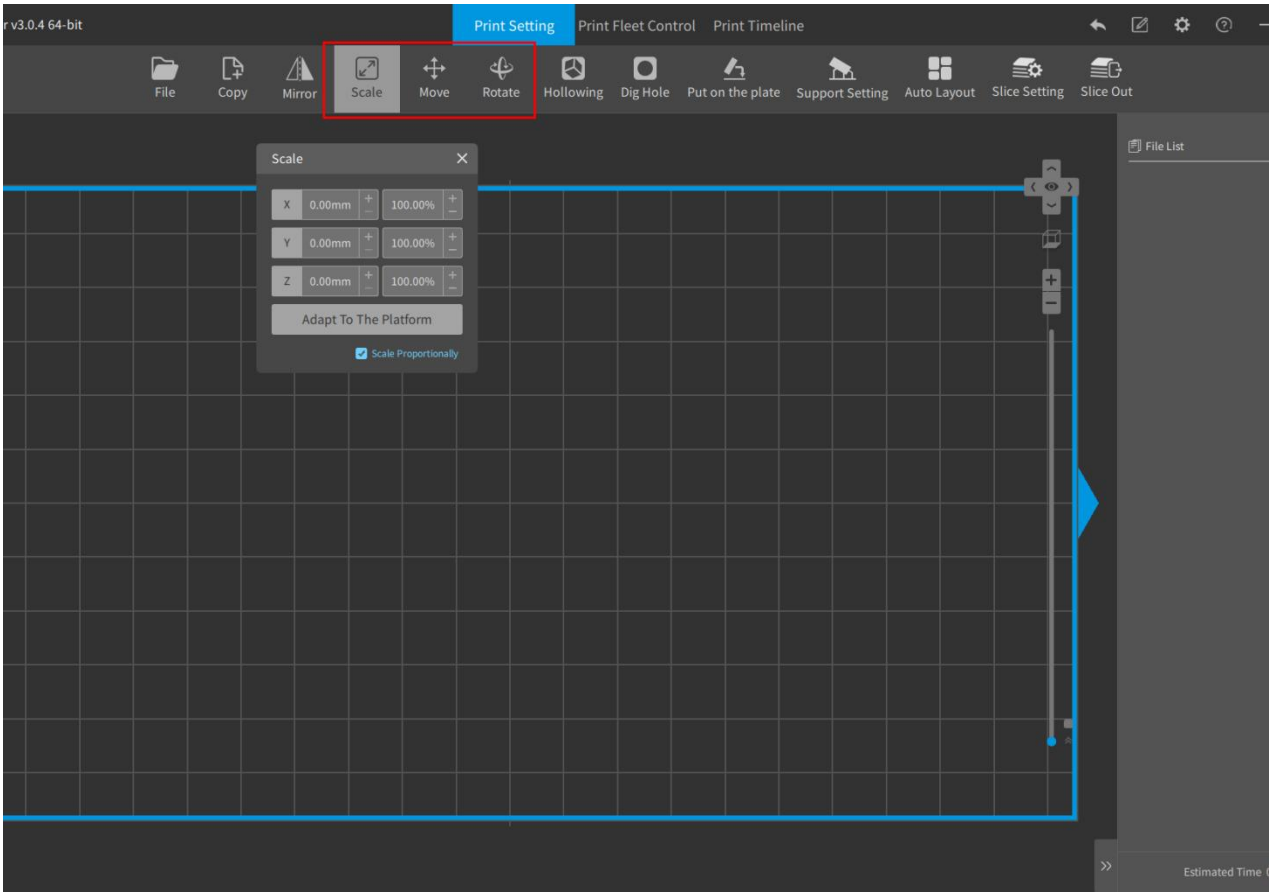


❖ User Interface

- The NovaMaker3.0 is divided into three sections: Print Setting, Print Fleet Control, Print Timeline
- Print Setting section allows you to move, scale, copy, place, and slice 3D model files;
- Print Fleet Control section allows you to connect to printers, manage printing devices, modify connected device parameters, upload slice files, and more;
- Print Timeline section allows you to view the status of connected printers and print tasks.



❖ 3D Slicing Section



➢ Slicing operations are mainly concentrated in three areas: scale, move, and rotate.

✧ Scale can scale the model to a specified size.

✧ Move can place the model in a reasonable position on the platform.

✧ Rotation can adjust the rotation and placement of the model in the X, Y, and Z directions.

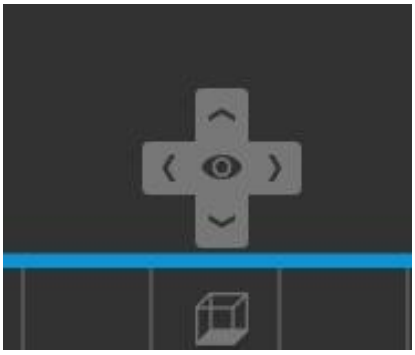
✧ Hollowing can be changed from solid to hollow out to save resin.

✧ Dig Hole is necessary for hollow and sealed cavity models to avoid printing failures!

❖ Model Control Menu Navigation Bar

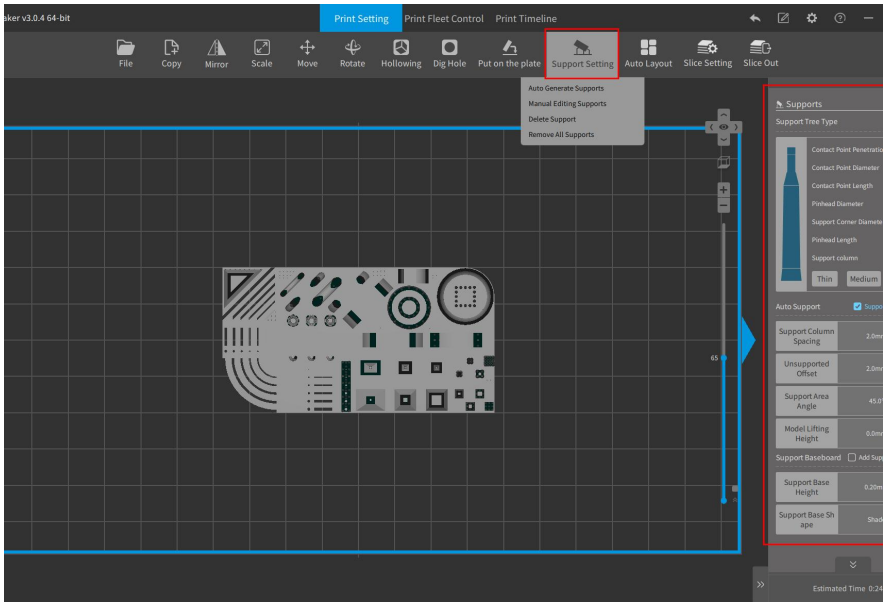
➢ View and View Operation Area

The view operation area in the upper right corner of the software corresponds to the switching and zooming of views. Including: left view, right view, bottom view, top view, and front view.



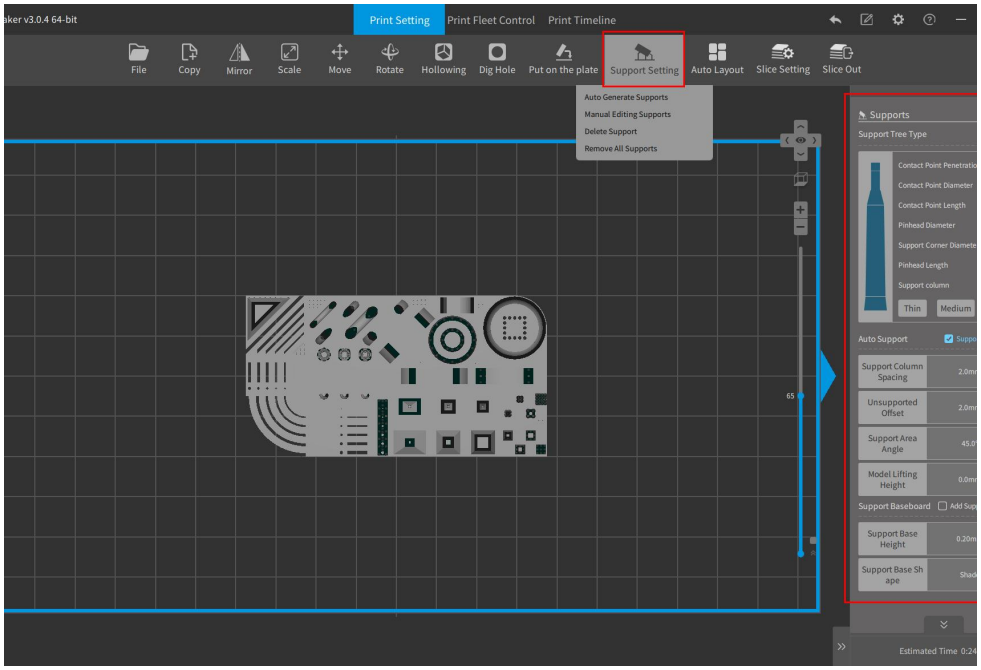
❖ Cross-section View

➢ After loading the model, you can drag the scroll bar on the right to view the cross-sections and internal details of the model corresponding to different Z-values.



❖ Adding Support

Beginners are advised to use coarse support. After successful printing, switch to medium and fine support. Once proficient, you can customize the support parameters.



➢ Auto Generate Supports

The software provides an intelligent support algorithm. When the model has a complex structure, you can choose to enable automatic support generation. The automatically generated supports can meet most printing needs. The algorithm adds supports to the lowest points of the model to ensure a high success rate for printing. You may consider increasing the density of supports at these low points as needed.

➢ Manual Editing Supports

For simpler model structures, you can opt for manual supports to add them at the lowest points of the model. Adjusting the model's position and angle before adding supports is crucial for successful printing. Generally, it’s best to follow the principle of placing the larger part downwards, as printing occurs layer by layer from bottom to top, providing better support against gravity.

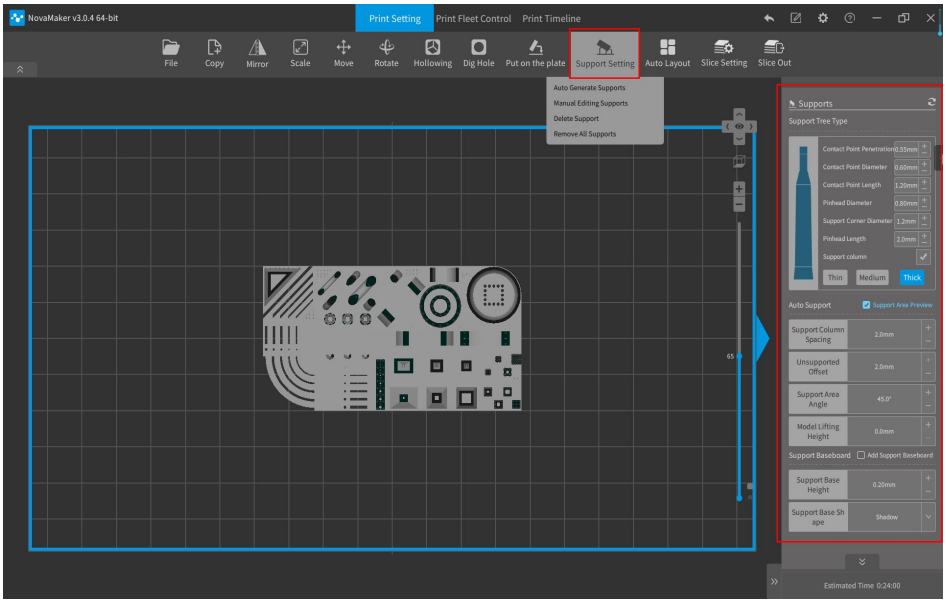
➢ **Basic Rules for Adding Supports**

✧ **Theory One:** In theory, any angle of model placement can succeed with added supports.
✧ **Theory Two:** Choose the optimal placement direction and angle.
✧ **Theory Three:** In some cases, supports may not be necessary.
✧ **Theory Four:** Supports must be added at the lowest points of the model.
✧ **Theory Five:** If the upper part is continuous and has a steep slope, supports need only be added at the lowest point; the upper part does not require additional supports.
✧ **Theory Six:** The amount of support should consider the overall stress on the model.

❖ Printing Parameter Settings

➢ Before slicing, parameter configuration is essential. Even for the same model, different resins require different settings. In the software, click on the slicing settings:

✧ **Layer Thickness:** Affects printing precision and speed.
✧ **Exposure Time:** The exposure time and bottom layer exposure parameters are the two most critical settings.
✧ **Rest Time:** Varies by resin; a minimum of 3s is required, 5s is moderate, and 8s is optimal.
✧ **Lift and Lower Speed:** Choose different parameters based on resin; the optimal speed is 120mm/min.
✧ **Bottom Layer Count:** Correlates with the model's size and weight.
✧ **Transition Layers:** Directly related to whether the model is in contact with the build platform.

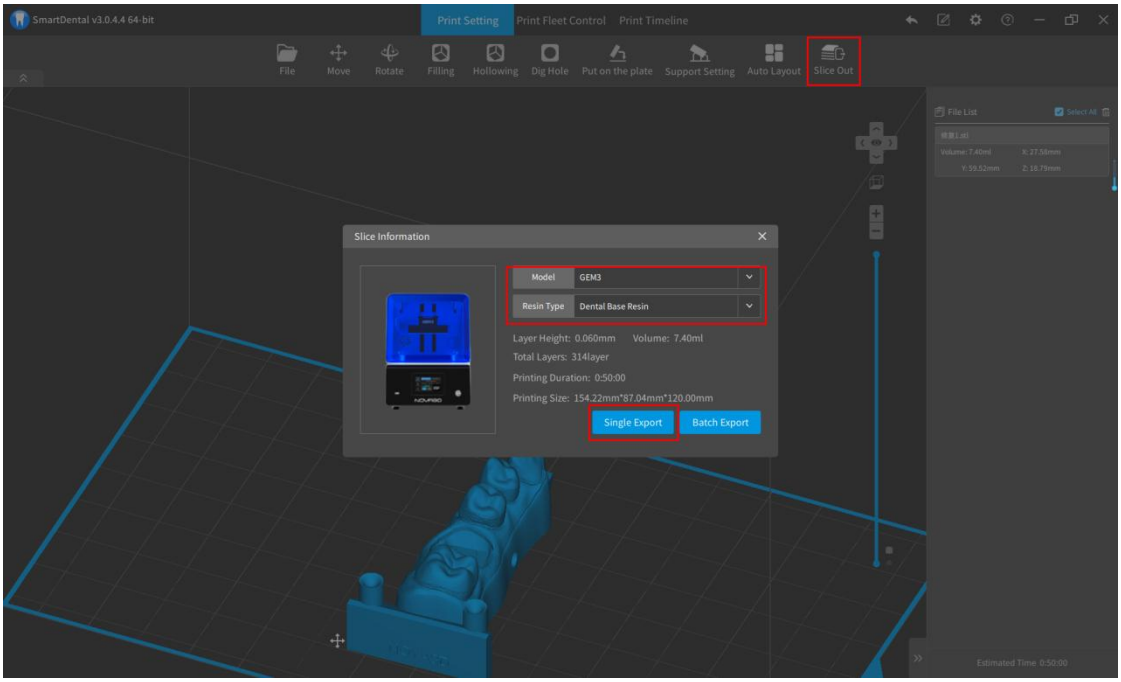


❖ Precautions for parameter settings

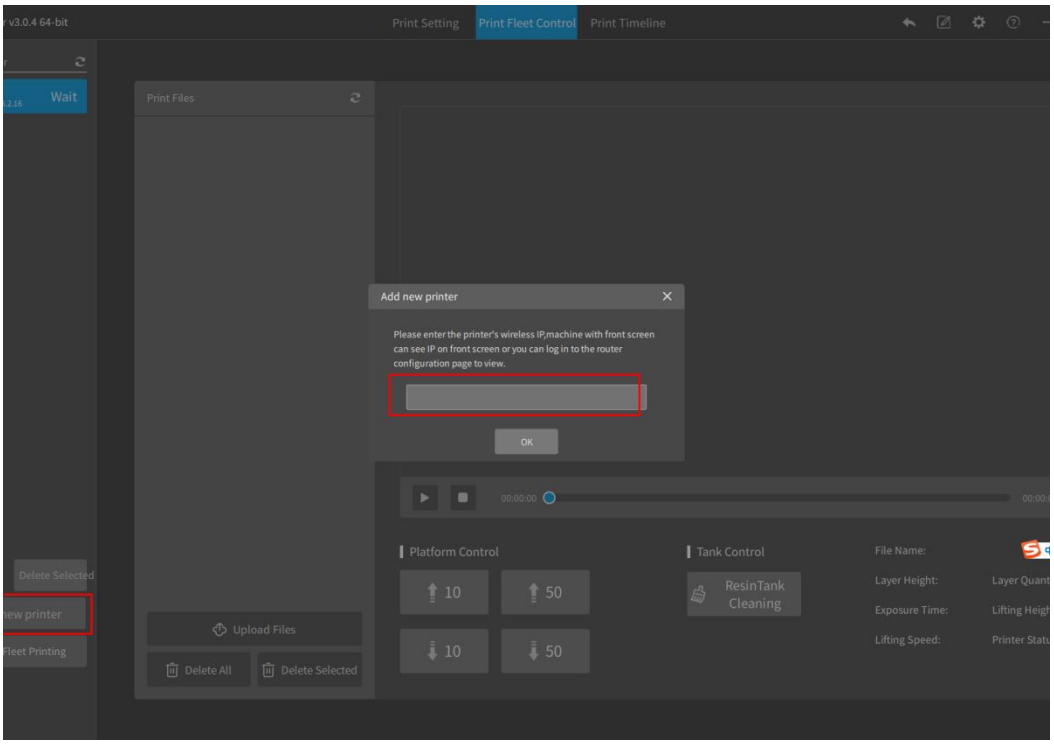
- **Layer Thickness:** Typically, a layer thickness of 0.06 mm is chosen. Considering precision, printing time, and hardware characteristics, 0.04 mm is a reasonable option.
- **Exposure Time:** Each layer's exposure time and bottom layer exposure time depend on the resin used. The default values are optimal based on testing, but users can adjust them according to actual results.
- **Coloring Resin:** When adding a significant amount of pigment, you should increase both the layer exposure time and bottom exposure time. Note that the normal ratio of pigment to resin is 1:100. Shake or stir well before use to prevent pigment settling.

❖ Slicing Output

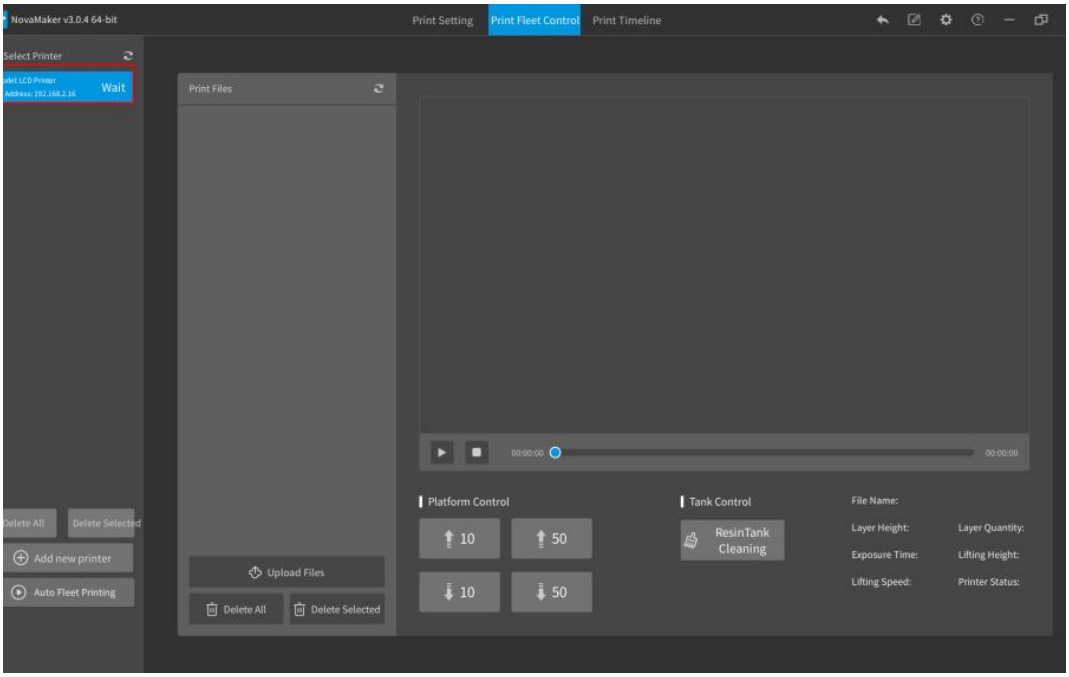
- Click “Slice Out”, a prompt will pop up, check again whether the parameters are correct.
- Click “Slice”, select a file directory, select the print format as CWS, enter the name of the saved file, click "Save" and wait for the progress bar to finish, and the slicing is completed (it is not advisable to operate the computer at this time, the saving speed is affected by the computer configuration and model complexity)



❖ Print Control

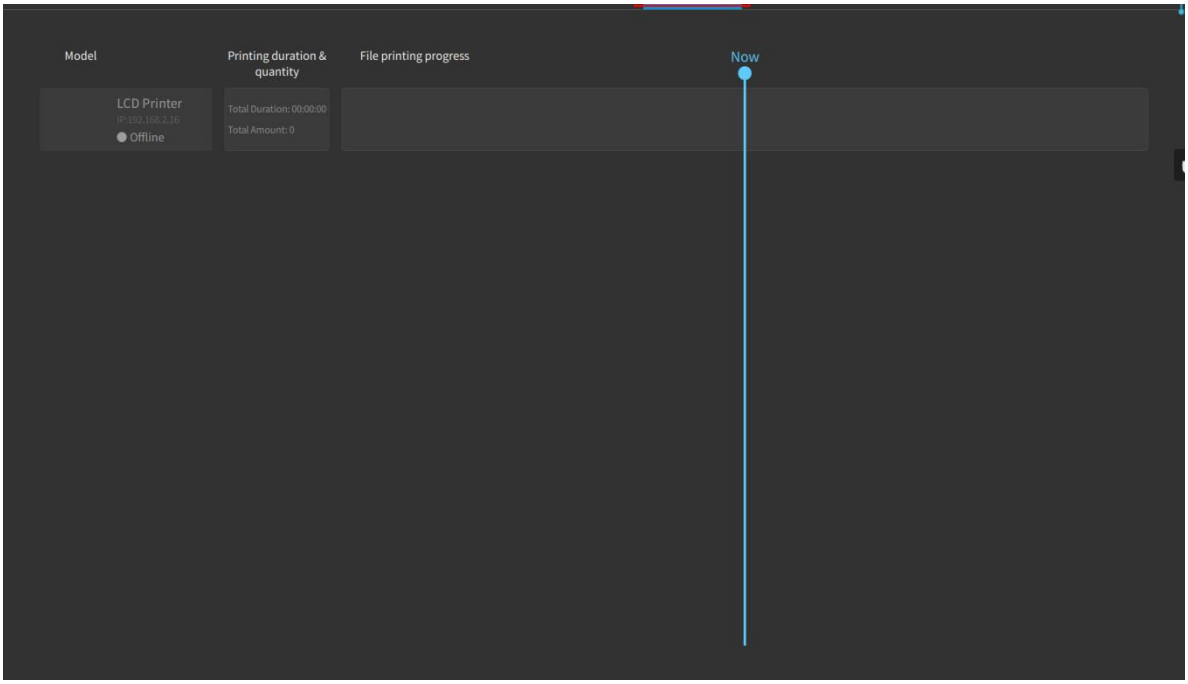


- After the printer is turned on, you can use the network to connect to WIFI.
- Open the network settings interface, check the printer IP, enter the IP address into the address box of the software and click OK.
- After connecting to the printer, you can upload and view files, control the printer to print and build the platform up and down, etc.;



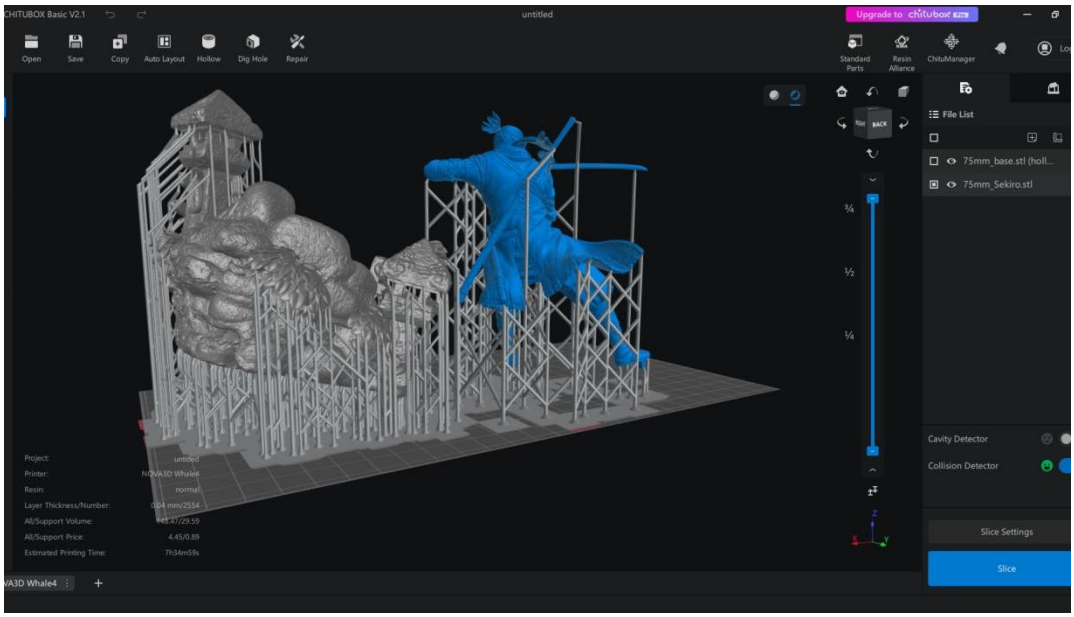
❖ Print Monitoring

➢ The printing status can be checked on the printing monitoring page.

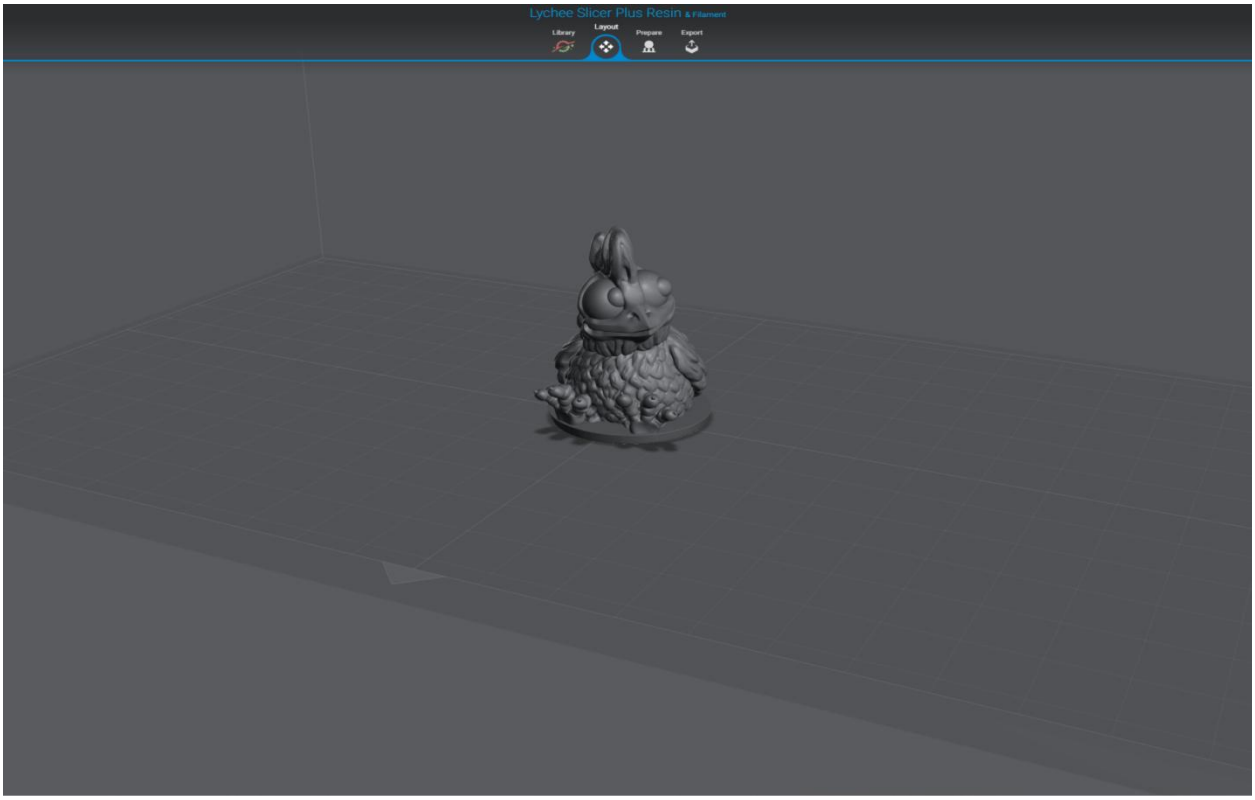


➢ Nova3D Whale4Ultra-16K is compatible with the mainstream slicer software CHITUBOX and Lychee slicer. The operation methods are not much different. The following are the interface screenshots of the two softwares.

✧ CHITUBOX



✧ LycheeSlicer



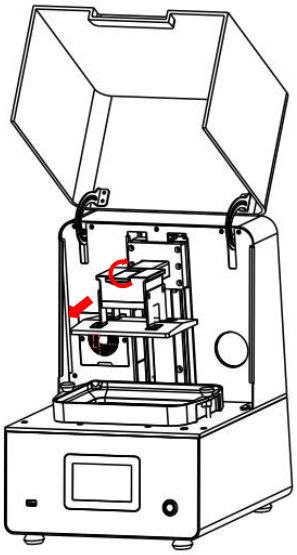
9. Preparation and Maintenance Before Printing

Notice!

- Throughout the entire process, it is essential to wear gloves and protective eyewear.
- During printing and post-processing, waste materials—including empty bottles, failed prints, support residues, bases, and paper towels with resin residue—should be cured in a post-curing chamber or any area with a UV light source before disposal. Uncured resin must be handled and disposed of according to national and local regulations regarding hazardous waste.

❖ Preparation Before Printing

- **Check if the print screen is normal**
- Open the clamping handle on the top of the printing platform upwards, hold the top of the printing platform with your hand and pull the platform outwards (as shown below).

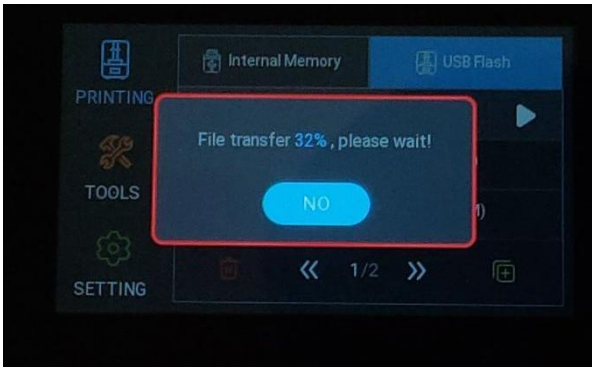


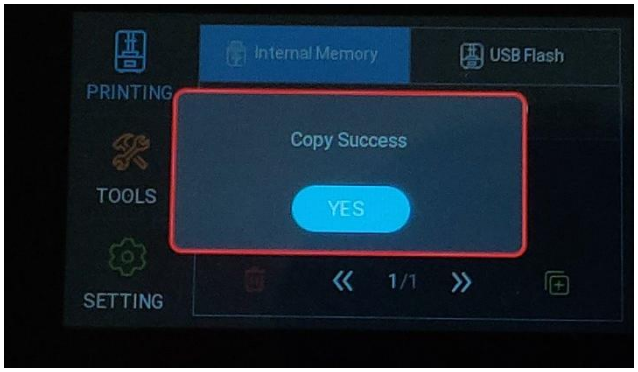
- Maintenance work should be regular in order to keep the printer in good condition and achieve high-quality prints every time. Some parts require maintenance before each print and some every few hundred working hours. All maintenance activities do not take much time and are not complicated. Before commencing any repair, remember to always wear gloves and glasses. The printer is delivered with a full set of tools needed to carry out maintenance service work. The following tables present maintenance and repair guidelines connected with each section of the Nova3D Whale4Ultra-16K, together with specific checkpoints, necessary activities, and their frequency.

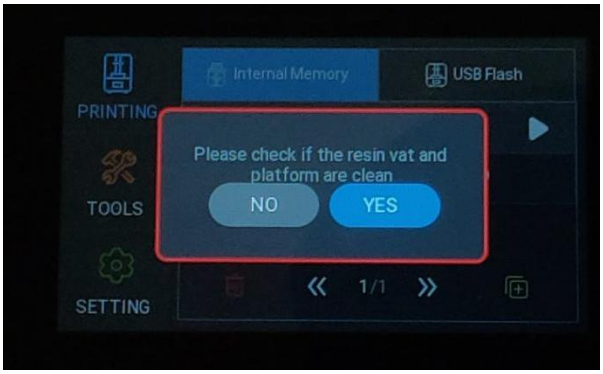
Task	Frequency	Solution	Required Items
Clean machine and surroundings	Before each print	Use a paper towel to remove dust and resin residue. Use alcohol if necessary.	Lint-free cloth, rubber gloves, cleaner/alcohol
Clean LCD screen	After removing the resin vat	Soak a paper towel in alcohol and clean the LCD screen.	Paper towel, cleaner
Clean UV cover	Once a week	Use a lint-free cloth to wipe off dust on the cover.	Lint-free cloth, rubber gloves, cleaner
Clean the bottom of the release film	After removing the resin vat	Soak a paper towel in alcohol and clean the underside of the release film.	Paper towel, alcohol, rubber gloves
Check for cured resin residue in the vat	Before each print	Use a spatula to gently stir the resin and check for any residue.	Spatula, rubber gloves
Empty and clean the resin vat	When changing resin type or color	Insert the resin filter into a funnel and pour the remaining resin into a bottle. Follow the manual instructions.	Filter, funnel, spatula, paper towel, cleaner
Replace release film	Once the release film is wrinkled, deformed or perforated.	Follow the replacement instructions for the release film.	New release film, hex screwdriver
Check printing platform for cured material	Before each use	Clean the platform surface with a lint-free cloth soaked in alcohol.	Lint-free cloth, alcohol
Check if the printing platform is tightly sealed with the screen	When there is a print failure	After removing the resin tank, place a folded A4 paper on the printing screen, then select “Platform Lift ” - Reset" to check if the paper can be pulled out with slight resistance at the corners.	A4 paper
Check if the printing screen is functioning properly (Screen Testing)	Before each use	Click on " Setting" on the main page and select the “screen testing” option.	Visual inspection on a solid color background for black spots.

❖ Starting the Print

- Open the UV light shield and pour the resin into the vat, adjusting the amount based on the size of the model. Close the UV light shield.
- To upload files from a USB drive, insert the USB drive and select the desired file. Click "Copy to Local meomory" to transfer the file. Once the copying is complete, click on "Internal Memory," and the file will appear in the local file list.
- (Note: The uploaded file must be in either CWS or CTB format, and it should only be readable from the root directory of the USB drive.) After the file is uploaded, click on "Internal Memory," select the file you want to print, click the ▶ button, and then confirm to start printing.





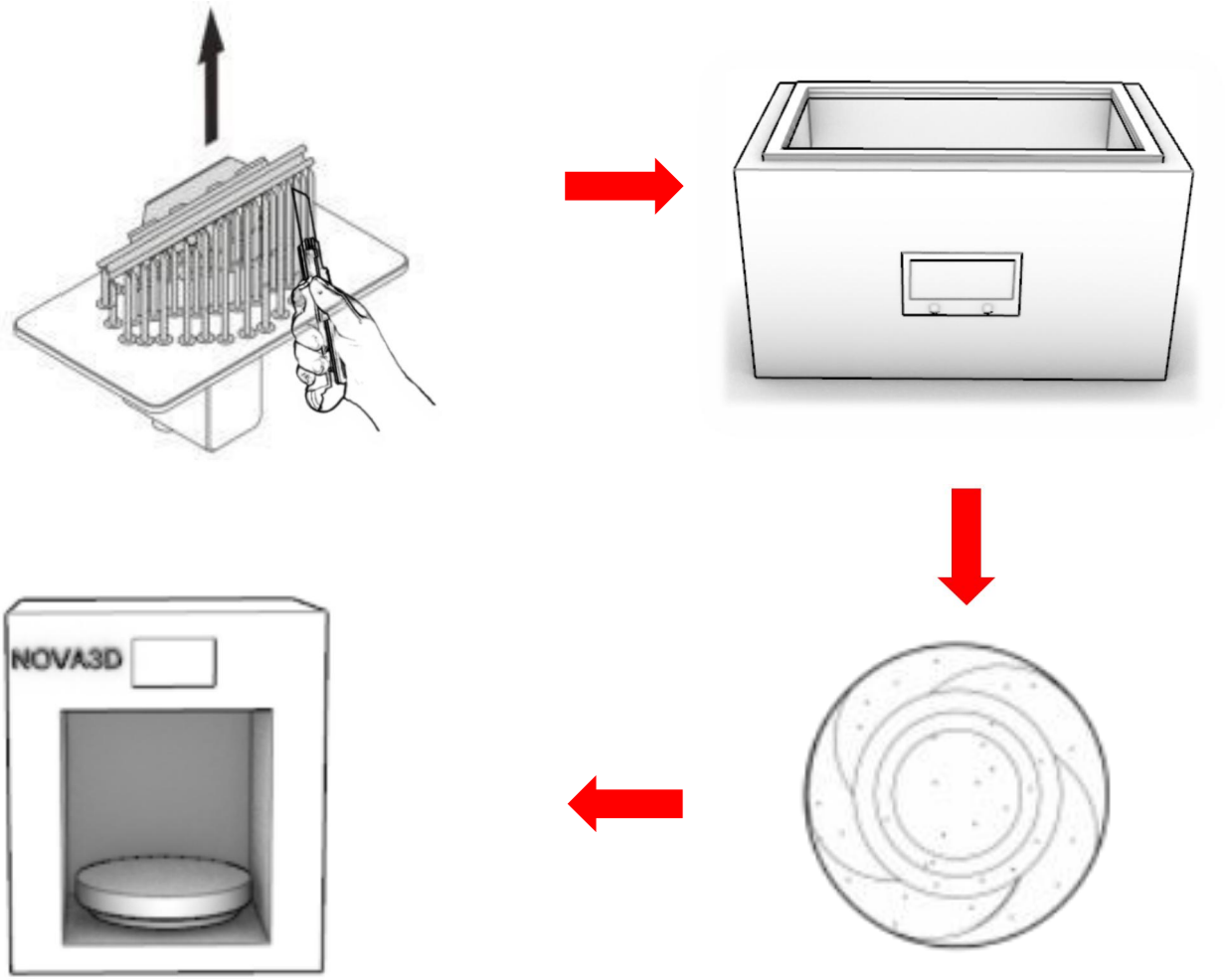


❖ Waiting for the Print to Finish

- After printing is complete, open the UV light shield. Use a paper towel to wipe the top and edges of the build platform. Unscrew the platform and remove it, then close the UV light shield to prevent any other UV light from curing the resin in the vat.
- Note: Avoid splashing liquid resin on or around the printer. If any resin spills occur, immediately wipe them clean with a paper towel.

❖ Post-Processing of Printed Parts

- Remove the Model: Please wear gloves, carefully remove the printing platform, and place it on a flat surface. Use a utility knife to carefully cut around the model and remove the model.
- Clean the Model: Use alcohol with a concentration greater than 95% (use water to clean if it is a water-washable resin). After cleaning, use a hair dryer to blow dry, air dry, or drain any alcohol from the model's surface. When the model's surface is dry and non-reflective, it has been fully cleaned.
- Secondary Curing: Place the cleaned and dried model in the curing box for secondary curing. (Note: Do not expose the model to ultraviolet light before cleaning is completed to avoid unnecessary curing due to incomplete surface cleaning, which will affect the surface effect of the model.)



- Place the model in a curing box or any UV light source (such as direct sunlight). This step is optional and depends on the type of resin used and the application requirements.

Remove the resin vat and pour the remaining resin in the vat into the resin bottle through the filter and funnel. If necessary, use a plastic spatula to assist. After completion, clean the resin filter. You can also use the same liquid to clean the resin tank. Use a paper towel to clean the resin tank liquid. You can also use resin detergent or 95% alcohol to clean the resin tank. Clean the printing platform, print screen, and resin vat. After it is clean, reinstall it into the printer and fasten the tank to fix it. Install the printing platform back to the printing platform cantilever, tighten the fixing screws, and cover the UV light shield on the printer.

10. Material Selection

For more information on the materials, please visit:http://www.nova3dp.com.. The material technical data sheet and safety data sheet can be found on the same website.

When using the Nova3D GEM3 for 3D printing, the manufacturer recommends using materials certified by NOVA3D, ensuring that the resin packaging is intact, and checking that the resin is within the shelf life to obtain the best print quality.

11. Technical Support and Troubleshooting

To ensure the safety of every 3D printer user, the manufacturer provides a variety of technical support to discover and solve technical problems. If you have difficulty operating the Nova3D printer, you should first seek guidance in this user guide, contact the purchase platform after-sales service or contact the official website customer service.

The most common problems and solutions are listed below.

❖ Model Not Adhering to the Platform During Printing：

- Make sure that the model has been designed properly and its mesh does not contain any errors. Make sure that while preparing the file in NovaMaker you chose an appropriate printing profile, that is, the print settings match the type of used resin. If the profile is correct, increase the *Layer Exposure Time* in NovaMaker or in the printer's menu during the printing process.
- Make sure that both the platform and the FEP film are clean, that is, there are no residues of cured resin on them. Filter the already used resin and mix it with the fresh resin to make sure that there are no cured remains in the liquid.
- Prepare a sheet of sandpaper (grit >160) and put it on a flat surface. Place the platform on the paper and smooth its surface in a circular motion.
- Check if the FEP film is not bent, deformed, or perforated. Replace the FEP film if you notice such defects.
- Make sure that the platform properly adheres and parallel to the LCD screen. If not, please readjust the platform to be placed at the correct distance from the LCD screen.
- Contact the Support Center at: http://www.nova3dp.com / support@nova3dp.com

❖ Layer Separation or Not Adhering to the Print Platform:

- Make sure that the model has been designed properly and its mesh does not contain any errors.
- If the support structures have been generated in a different program than NovaMaker, make sure that the model's mesh is fixed and the raft properly adheres to the platform.
- Make sure that the print has been properly prepared in NovaMaker, that is, its size and plane dimension are within the print range. Each layer that should be parallel to the platform, proper support size not too small to ensure successful printing.
- Make sure that while preparing the file in NovaMaker you chose an appropriate printing profile, that is, the print settings match the type of used resin. If the profile is correct, enable Additional support exposure time option and decrease the Platform lift speed in the Parameter setting menu.
- Check if the FEP film is not bent, deformed, or perforated. Replace the FEP film if you notice such defects.
- Contact the Support Center at: http://www.nova3dp.com / support@nova3dp.com

12. Machine Specifications and Parameters

Weight and Physical Dimensions	
Device (W x D x H)	315*332*437mm(约)
Shipping box	436*416*608mm(约)
Device net weight	20kg(约)
Device gross weight	22kg(约)
Printer	
Technology	MSLA/UV LCD
Layer thickness	20–200 μm (20 μm increments)
Print speed	70mm /h
Machine	
Build volume	154*87*120mm
Support	Automatic/Manual
Light source	#6 Generation Crystal Light Source Engine, wavelength 405nm
Connectivity	Wi-Fi, USB flash drive
Operating system	Linux
Touch screen	4.3"Capacitive Touch Screen
Heating control	Manual control (20–40°C), optional
Available materials	Whole series of Nova3d resin
External materials	Applicable

Temperature	
Operating ambient temperature	20 - 40° C (68 - 104° F)
Storage temperature	18 - 35° C (64- 95° F)
Electrical power	
Ac Adapter	Input 100-240V～ 50/60Hz 2A
	Output DC 24V /6.25A
Maximum power consumption	150W
Software	
Slicing Software	NovaMake,, CHITUBOX
Novamaker Supported 3D file types	.stl, .obj,
Supported formats	.ctb, .cws
Supported operating systems	Mac OS X / Windows 7 and newer versions
Additional information	
All information contained in this User Manual and specification is subject to change without notice.	

13. 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.

❖ Disposal of resin

Printing and post-processing waste, including empty bottles, failed prints, supports, rafts as well as paper towels with resin residues should be put in the UV Station or in any source of UV light before disposal. Uncured resin has to be disposed of in accordance with national and local regulations concerning hazardous waste.

❖ Disposal of Electronic and Electrical Equipment Waste

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.