




User Manual

Model: L6



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1. Packing List

		
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<p>Paper Funnel * 2</p>	<p>Allen Wrench * 1</p>	<p>Scrapers * 2</p>

2. Safety Instructions

Always follow the safety instructions during assembly and usage, to avoid any unnecessary damage to the 3d printer or individual injury.



- After receiving the printer, please check the packing accessories first. If any accessories are missing or damaged (non-human), please contact after-sales service within 3 days to reissue. (If you do not contact after-sales service within the specified time, the possible costs will be borne by the customer.)



- Wear gloves and mask to avoid direct skin contact when using. If resin splashes into the eyes or mouth accidentally, rinse with plenty of water.



- Always use the LCD 3D printer in an open and well ventilated area. It is recommended to use the printer indoors and avoid direct sunlight and dusty environment.



- Recommended ambient temperature is 15-40 degrees, and the ambient humidity is 20%-80%. Use outside of this range may bring poor printing results.



- In case of emergency, please immediately shut down the power of the 3D printer and contact the technical support.



- It is recommended to use protection glasses when cleaning/sanding the printed models to avoid small particles contacting eyes.



- Please keep the 3D Printer and its accessories out of the reach of children.



- Please don't disassemble the 3D Printer by yourself, which will cause your warranty to expire. Please contact the after-sales service if you have any questions.

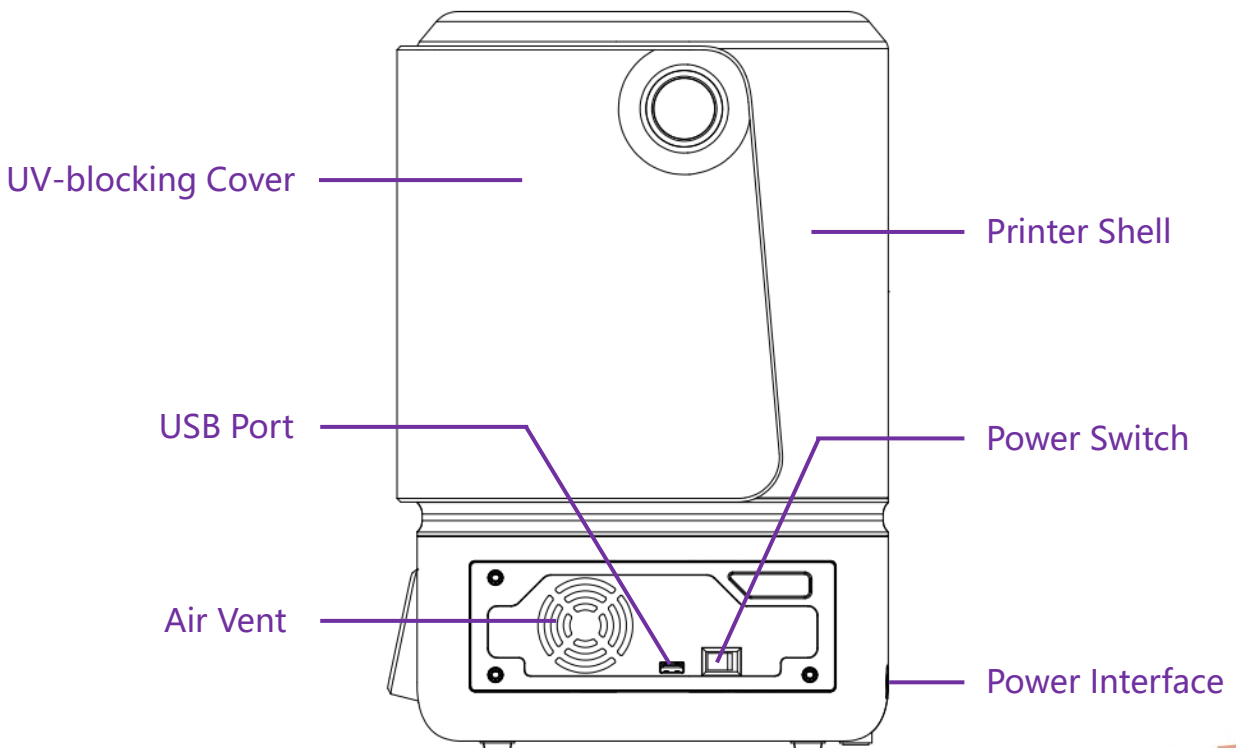
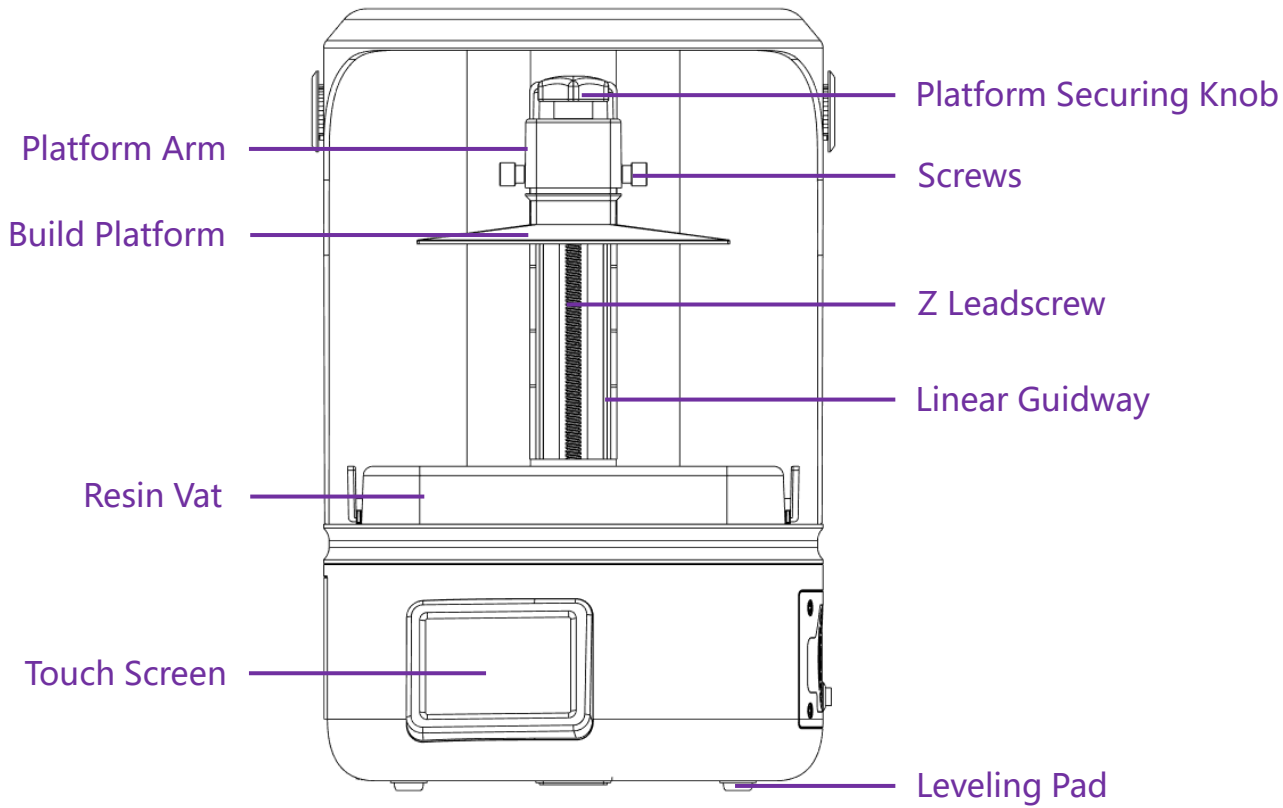


- If you do not use the machine for a long time, please pay attention to rain and moisture protection for the 3D printer.

3. Printer Parameters

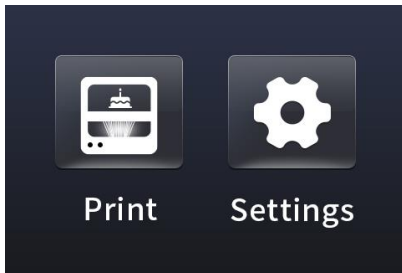
Model	L6
Operation	3.5 Inch Touch Screen
Slicer Software	CHITUBOX
Connectivity	WIFI, USB
Technology	UV Photocuring LCD
Light Source	405nm UV Matrix Parallel Light Source
XY Resolution	0.047mm(2560*1620)
Z Axis Accuracy	0.00125mm
Layer Thickness	0.025-0.1mm
Print Speed	20~60mm/h
Rated Power	48W
Offline Printing	Support
Operate System	Windows
Build Volume	130.56(L)x82.62(W)x150(H)mm
Print Materials	405nm Photopolymer Resin
Net Weight	4.7kg
Gross Weight	6.6kg
Printer Dimensions	270(L)x275(W)x405(H)mm
Package Size	340(L)x340(W)x490(H)mm

4. Printer Overview

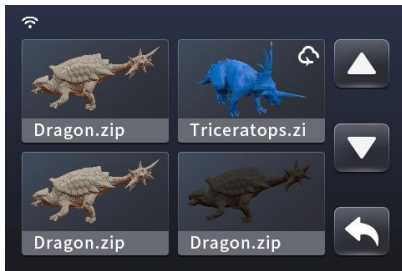


5. Screen Functions

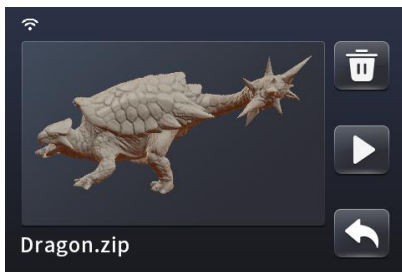
Menu



Print



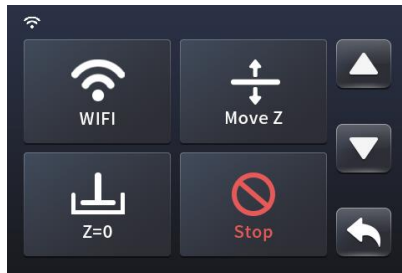
Choose files



Start



Settings 1



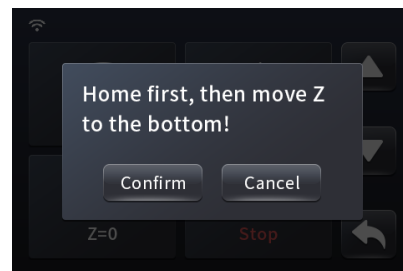
WiFi



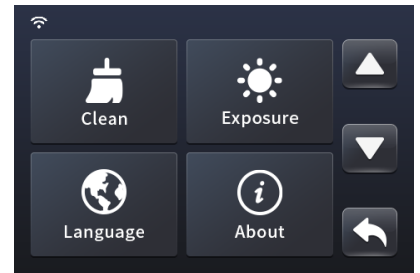
Move Z



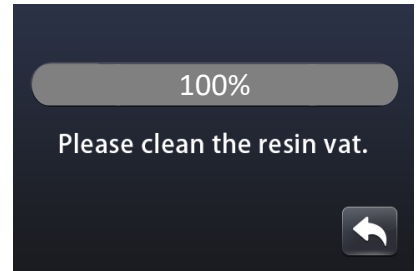
Z=0



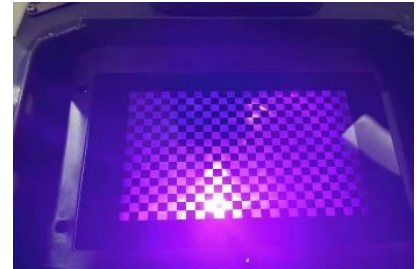
Settings 2



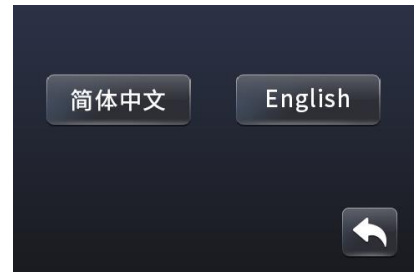
Clean the vat



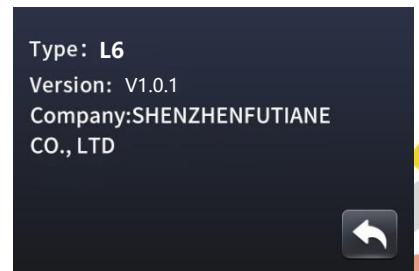
Exposure test



Language

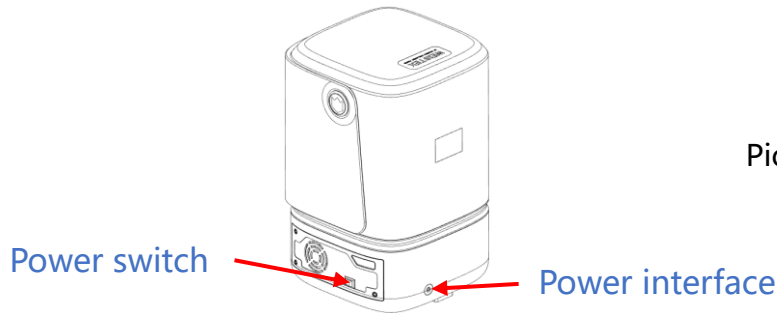


Info



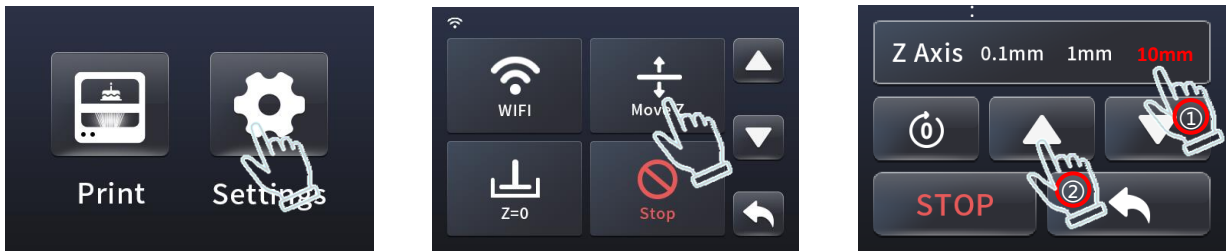
6. Assembly and Leveling Instructions

6.1 Connect power cable to printer and power supply; as shown in picture (6.1)



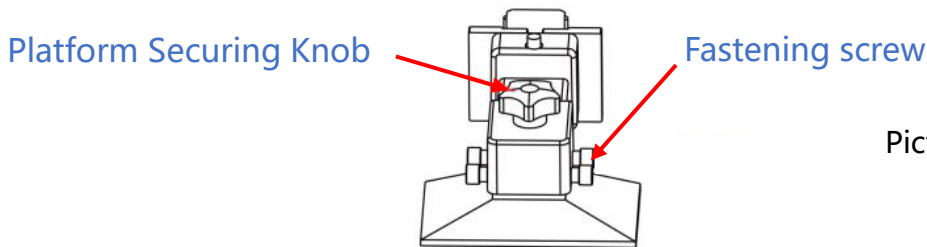
Picture (6.1)

6.2 Click on the operation screen <Settings> -<Move Z>, select <10mm> travel and click to rise the Z axis. Check and keep the LCD screen and the platform clean and free of debris; as shown in picture (6.2)



Picture (6.2)

6.3 Loosen the set screw on the printing platform with an Allen wrench so the platform can be rotated freely. Install the platform onto the platform bracket and push it to the end. Lastly tighten the platform securing knob on the top; as shown in picture (6.3)



Picture (6.3)

6.4 Click "HOME", wait for the Z axis to descend and then it will stop automatically; as shown in picture (6.4&6.5)



Picture (6.4)



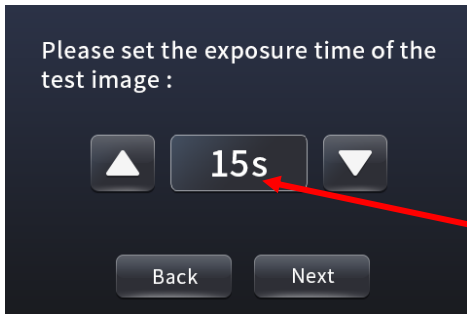
Picture (6.5)

6.5 After the Z-axis descends and stops, gently press on top of the platform with your hand, to let it fit evenly on the 2K LCD screen and ensure that the printing platform is parallel to the LCD screen. Then fix the set screw as tight as possible; as shown in picture (6.6)



Picture (6.6)

6.6 The platform rises about 120mm, click on the operation screen <Return>-<Next>-<Exposure>-<Next> to check whether the light source is working normally, as shown in picture (6.7); The 2K screen should display the same as the picture below the image indicates that the UV lights work perfectly; as shown in picture (6.8)



Picture (6.7)

Click here to change the detection exposure time



Picture (6.8)

6.7 Before putting it in the resin vat, please make sure the release film is tight. If the release film is not tight, please tighten the screw on the bottom of the resin vat to fix the release film; then follow the steps in the figure below to install it. Put the resin vat back and fasten the press buckles on both sides to complete the leveling. (as shown in picture 6.9&6.10)



Picture (6.9)



Picture (6.10)

7. Use of Slicing Software

The 3D printer reads the slice file and cascades out three-dimensional objects. Therefore, users need to convert 3D format files (such as stl format or obj format) into machinereadable slice files (such as ZIP format). This process is commonly known as "slicing", that is, "cutting" the 3D model into many Floor. Software that can convert 3D format files into slice files is called slice software.

7.1 Installation of CHITUBOX

Open the slicing software installation package in the included U disk, select the installation program (such as 32-bit or 64-bit) suitable for the current computer operating system type, and then start the installation; as shown in figure (7.1)

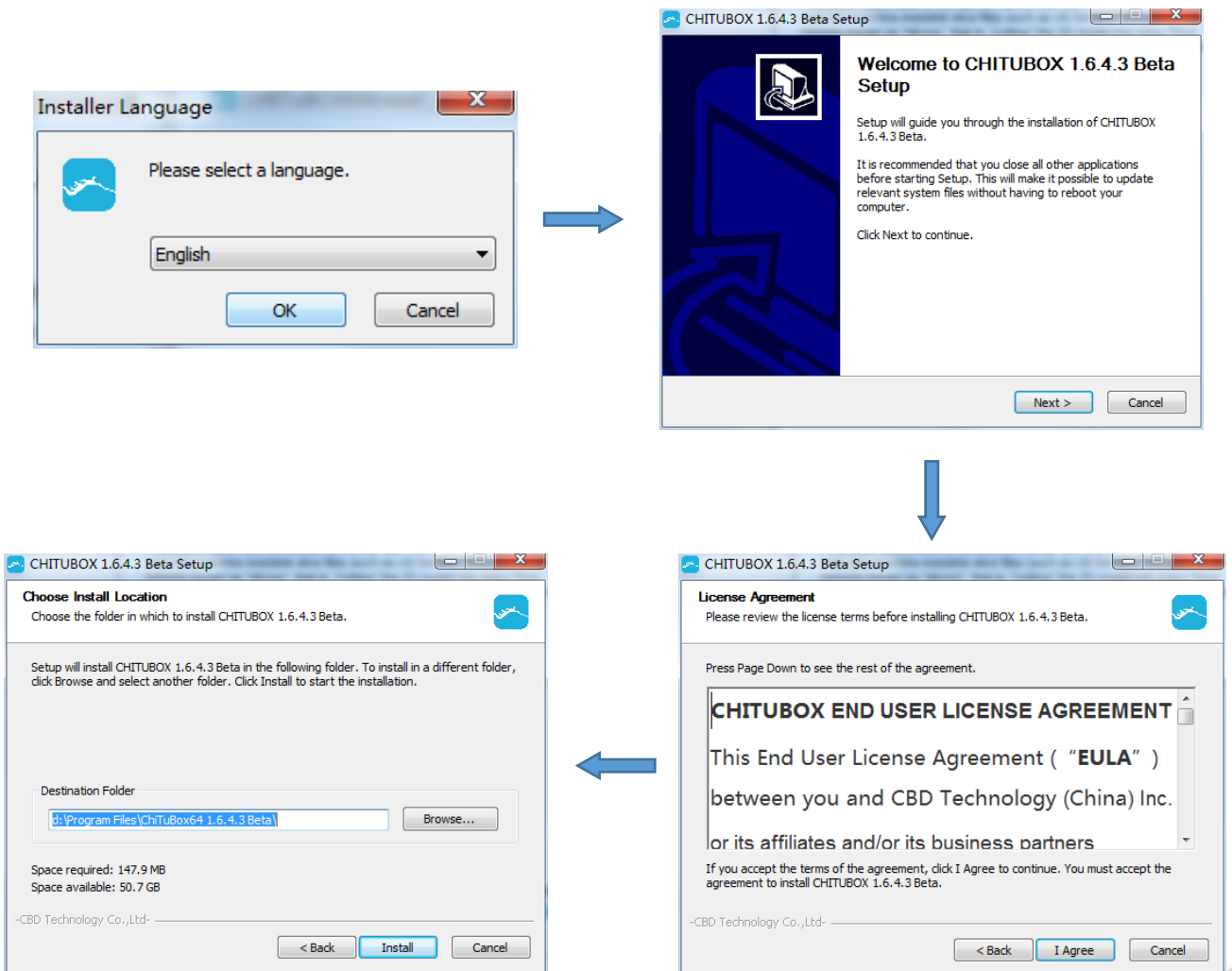


Figure (7.1)

7.2 Software startup

Use the icon on the desktop or the shortcut in the start menu to start the software. When you open the software for the first time, a model selection box will pop up, you can choose the list model according to your needs. Select the model only for the first login, and do not need to set again when logging in later. (The software has no corresponding parameters for this machine, please choose other-default and set the parameters yourself.)

7.3 Introduction to the software interface, as shown in figure (7.2)

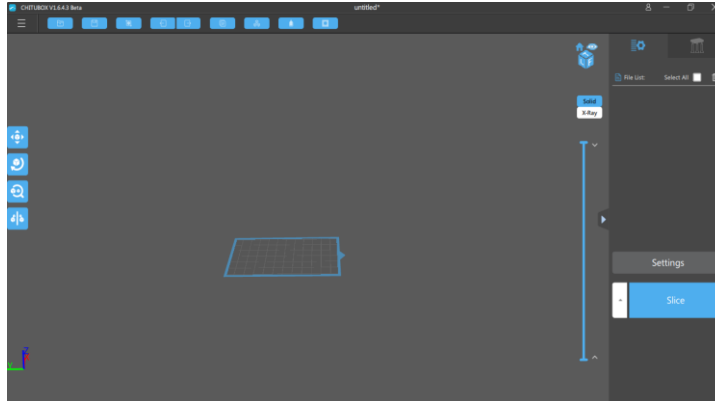


Figure (7.2)

3.1 drop-down list, as shown in figure (7.3)

3.1.1 Open project: open the project that needs to be operated;

3.1.2 Save project: store the operated model to the specified directory path;

3.1.3 Open...: Open the model (the system default value will directly save the directory path of the previous model);

3.1.4 Save as...: save to computer;

3.1.5 Recently opened: the recently opened model file record;

3.1.6 Account: login and authorization;

3.1.7 Language: Users can choose the language according to their needs (English, Simplified Chinese, Traditional Chinese, German, French, Russian, Korean, Italian, Portuguese, Spanish, etc.);

3.1.8 Help: Check for updates: The user can check or uncheck when starting CHITUBOX

Check the latest version automatically;

3.1.9 Example: A cube model and a cylinder model are given in the system;

3.1.10 Exit: Click to close and exit CHITUBOX.

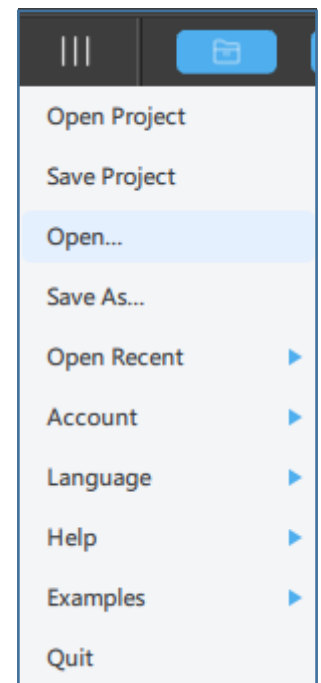



Figure (7.3)


3.2 Introduction to the menu bar, the menu bar interface is shown in figure (7.4)



Figure (7.4)

3.2.1  Open file: open the file that needs to be operated;

3.2.2  Save file: store the operation files that have been carried out;

3.2.3  Screenshot/recording: watermark, screen record, and screenshot of the screen; as shown in figure (7.5)

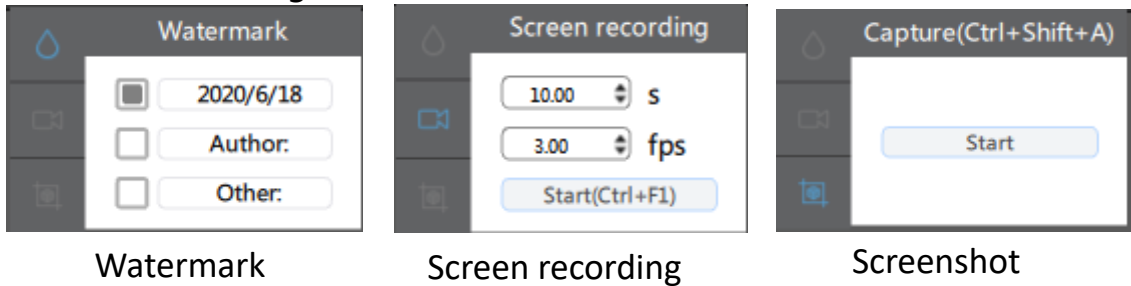



Figure (7.5)

(1) Watermark: tick mark date (real-time date), author & others (files can be edited) on the watermark;

(2) Screen recording: You can set the time (/s) and frame rate (/fps) yourself, and then click Start;

(3) Screenshot: Click the "Start" button to start the screenshot.

3.2.4  Restore & Redo (Undo forward, undo backward);

3.2.5  Clone and copy the current model (click to copy the model on the current platform);

3.2.6  Automatic layout: center, X side, Y side placed on the platform;

as shown in figure (7.6)

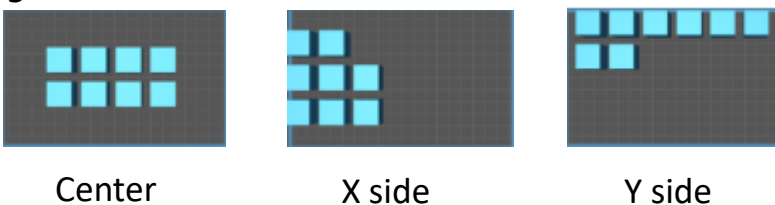



Figure (7.6)

3.2.7  hollowing: internal hollowing or external hollowing, the wall thickness and accuracy need to be set; as shown in figure (7.7)

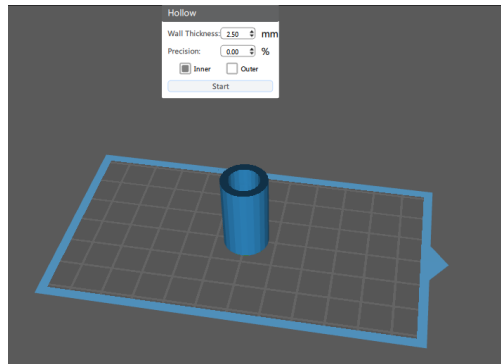



Figure (7.7)

3.2.8  Dig hole: need to set shape and size, choose whether to keep the hole, add a hole; as shown in figure (7.8)

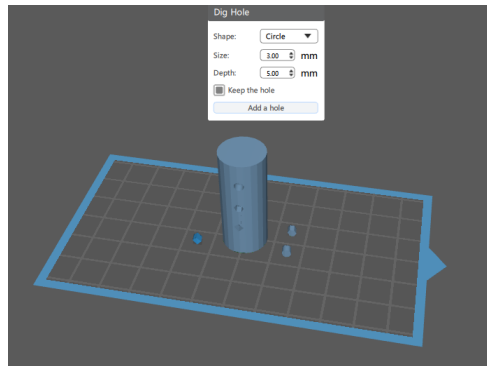


Figure (7.8)

3.3 Editing the model

3.3.1 Mobile model operation, as shown in figure (7.9)



Figure (7.9)

- (1) Move on the X, Y, and Z axes: place the cursor directly in the number box and roll the mouse;
- (2) The model can be directly placed on the bottom plate, centered, and reset;

3.3.2 Rotating model operation, as shown in figure (7.10)

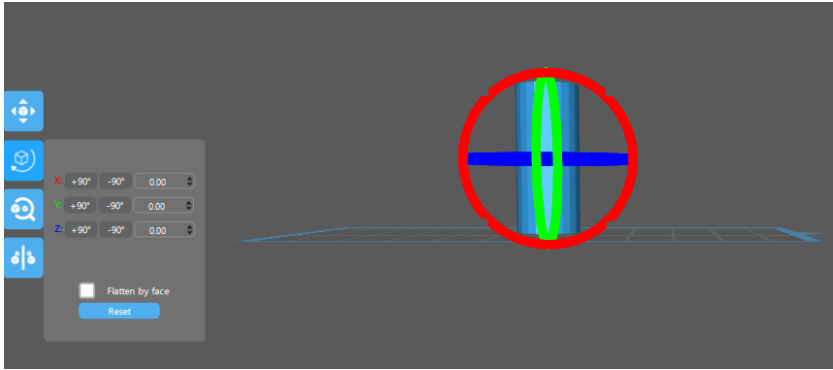


Figure (7.10)

(1) Rotate on the X, Y, and Z axes:

Click to rotate 15° in the positive direction of X/Y/Z;

Click to rotate 15° in the negative direction of X/Y/Z;

The cursor rolls the mouse on the number box, and rotates every +5°/ -5°;

(2) Place the cursor directly on the color bar on the model and hold down the left mouse button to move (red-X, green-Y, blue-Z);

3.3.3 Zoom model operation, as shown in figure (7.11)



Figure (7.11)

Zoom on the X, Y, and Z axes respectively:

(1) The cursor can be zoomed by rolling the mouse on the number box;

(2) When the scale is locked, no matter which axis is placed on the scale, the other two axes will become larger and smaller in proportion;

(3) Reset: clear the previous zoom operation and re-zoom again;

3.3.4 Model mirror operation, as shown in figure (7.12)

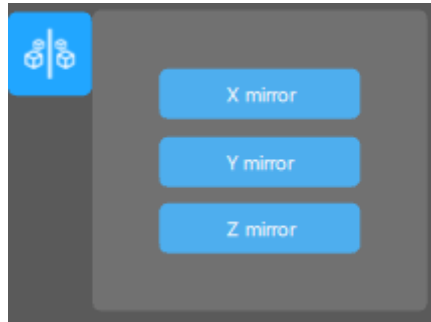


Figure (7.12)

- (1) X mirror image: mirror the current model with the X axis as the axis of symmetry;
- (2) Y mirror image: mirror the current model with the Y axis as the axis of symmetry;
- (3) Z mirror image: mirror the current model with the Z axis as the axis of symmetry;

3.4 Mouse operation (operation in the middle panel); as shown in figure (7.13)

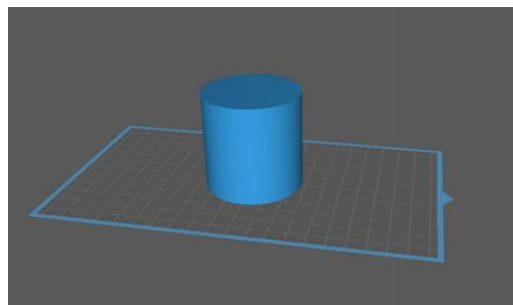


Figure (7.13)

3.4.1 Left-click: Click on the model to select the model for operation, click on the platform or blank space;

3.4.2 Left key press

- (1) Long-press the model with the left button to move the model on the current horizontal plane;
- (2) Long press the platform or blank space with the left button to drag the platform and model in all directions;

3.4.3 Right-click long press: Right-click long press can rotate the platform;

3.4.4 Mouse scroll wheel: zoom the whole platform and model in proportion;

3.5 scene interface; as shown in figure (7.14)

3.5.1 Drag scene: long press the left mouse button;

3.5.2 rotation scene: long press the right button

3.5.3 Zoom scene: Roll the mouse wheel;

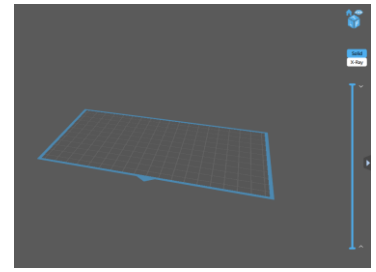





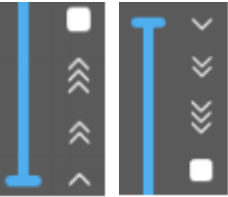
Figure (7.14)


3.5.4  Front view: click to make the scene and the model front right view facing the user;


3.5.5  Front view/perspective view: the current model can be switched between front view and perspective view;

3.5.6  Top view/left view/front view: T-top view; L-left view; F-front view;

3.5.7  Entity/Perspective: Click to allow the model to switch between entity and perspective;

3.5.8  model bar: take the entire model as a scale to view the corresponding cross-section of the model in real time; there are up and down, right and right sides of the one-, two-, and three-speed progress of the slice playback and pause;

3.5.9  Expand/Hide: Click to expand and hide the content on the right, making the scene more empty;

3.6 Common settings 

3.6.1 File list: all the models on the platform will be arranged in the file list, and you can edit or delete them in the full/single selection model; as shown in figure (7.15)

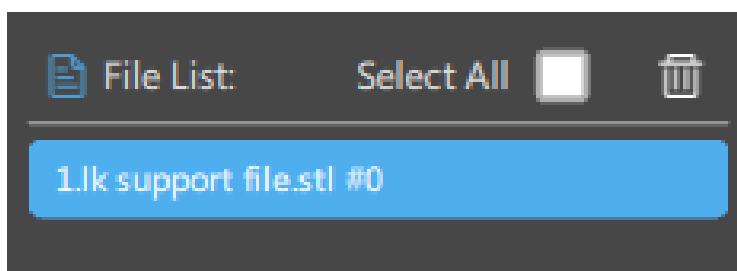


Figure (7.15)

3.6.2 Slice setting;

Settings

as shown in figure (7.16)

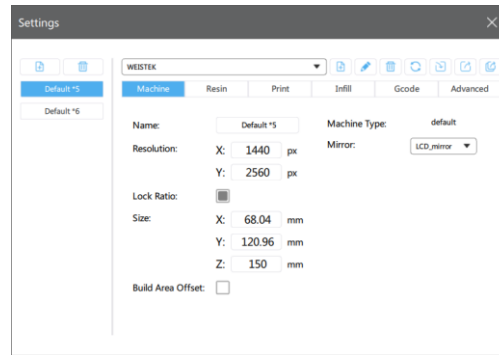


Figure (7.16)

You can add your own machine type, and then set the relevant data;

<Import>: Import the saved machine configuration parameters; (The attached U disk has the recommended parameter configuration file of the machine. When slicing, directly click "Import Configuration File" in "Slice Settings" to import the parameters.)

<Export>: Export the configured machine parameters;

(1) Machine setting interface; as shown in figure (7.17)

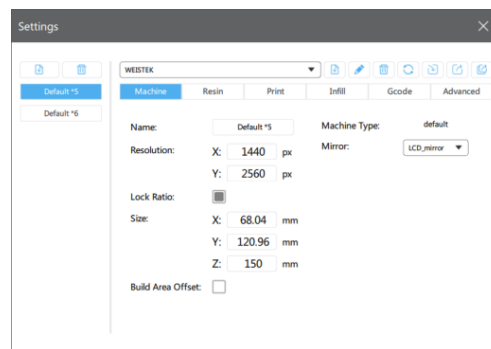


Figure (7.17)

<Name>: machine name, you can directly enter text for custom naming;

<Resolution>: the resolution of the projector or LCD screen, this parameter directly affects the dimensional accuracy of printing;

<Locking ratio>: Under normal circumstances, the ratio of the forming size $XY = \text{resolution ratio}$, that is, the locking ratio; in some cases, such as DLP projectors, due to accuracy or machine design reasons, the XY size is slightly different, and it may not be maintained Proportion, fill in the actual projection size;

<Size>: The maximum forming size of the machine;

(2) Resin setting interface; as shown in figure (7.18)

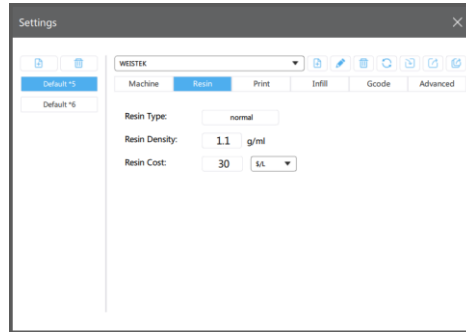


Figure (7.18)

<Resin type>: Different resin types have different parameters, some resins recommended by integrated companies and corresponding parameters;

<Resin density>: Density of resin, used to calculate mass;

<Resin price>: The cost of resin, used to calculate the cost;

(3) Print setting interface; as shown in figure (7.19)

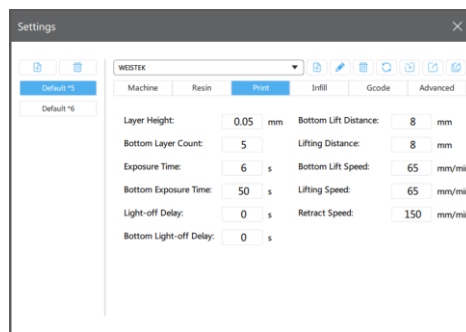


Figure (7.19)

<layer thickness>: The thickness of each layer of the model is generally 0.025/0.05/0.1mm;

<Number of bottom layers>: The number of layers to be solidified at the bottom of the model. In order to better stick to the platform, the parameters of the bottom layer need to be set separately;

<exposure time>: exposure time of normal layer;

<Bottom layer exposure time>: the exposure time of the bottom layers, the general time will be longer than the normal layer exposure time, let the resin cure as completely as possible, to ensure that it sticks to the molding platform;

<Light-off delay>: Calculated from the end of the exposure of the previous layer, the final light-off time = maximum (the total time of the Z axis moving up and down, the configured light-off delay)

For example, the period of the Z axis moving up and down is 6 seconds:

If the "light-off delay" is set to 10 seconds, the final turn-off time is 10 seconds;

If the "light-off delay" is set to 1 second, the final light-off time is 6 seconds;

<Bottom light-off delay>: The light-off delay time of the bottom layers is calculated in the same way as above;

<Bottom layer lifting distance>: the distance the molding platform is lifted when printing the bottom layers;

<Lifting distance>: the distance the forming platform is lifted during normal layer printing;

<Bottom lifting speed>: the speed at which the forming platform lifts when printing the bottom layers;

<Lifting speed>: the speed at which the forming platform is raised during normal layer printing;

<Return speed>: the speed at which the forming platform descends;

(4) Fill the setting interface; as shown in figure (7.20)

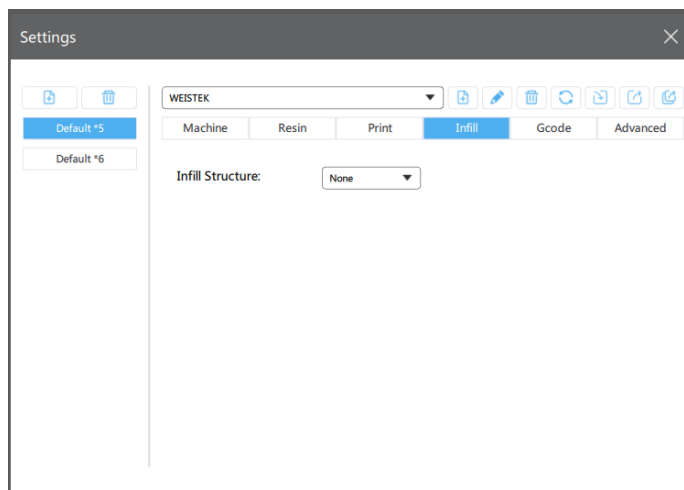


Figure (7.20)

<Filling structure>: Selection of filling type inside the model, such as mesh structure, etc.;

(5) Gcode setting interface; as shown in figure (7.21)

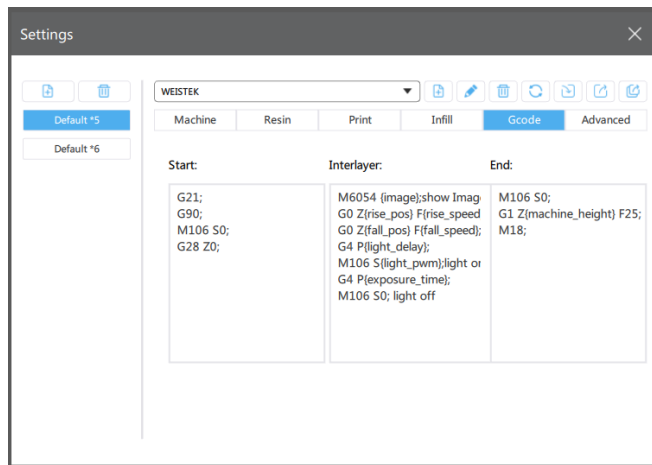


Figure (7.21)

<Start>: preprocessing command executed at the start of printing (can be customized);

<Interlayer>: Processing commands executed by each layer during printing (can be customized);

{image} The name of the exposure image generated;

{raise_pos} corresponds to the lifted position, it is an absolute coordinate value, value = exposure position + lifted height;

{raise_speed} is the lifting speed, lifting speed = bottom lifting speed or lifting speed;

{fall_pos} corresponds to the position of fall, it is an absolute coordinate, value = exposure position;

{fall_speed} is the falling speed, the falling speed = the bottom falling speed or the falling speed;

{exposure_time} corresponds to the bottom exposure time or exposure time, the unit is ms;

<End>: Processing command executed at the end of printing (can be customized);

{machine_height} corresponds to the height of the machine size;

(6) Advanced setting interface; as shown in figure (7.22)

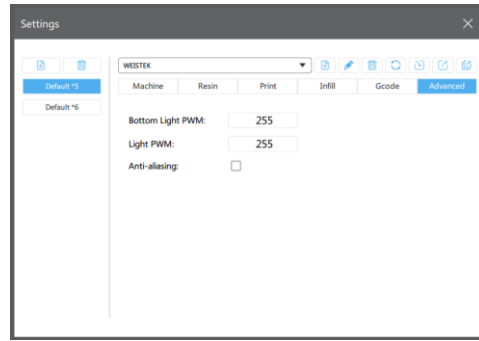


Figure (7.22)

<Bottom light intensity PWM>: the intensity of the light source when printing the bottom layers (some printers support this command);

<Light intensity PWM>: the intensity of the light source during normal layer printing (some printers support this command);

<Anti-aliasing>: Anti-aliasing the sliced image to reduce the surface texture and improve the fineness of the model surface;

Without anti-aliasing and with anti-aliasing enabled; see figure (7.23)

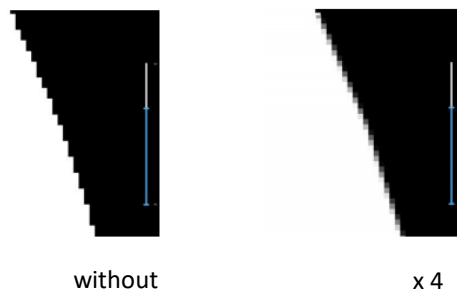


Figure (7.23)

3.6.3 Slicing: Click on the slicing to start the model slicing process (you can choose the corresponding parameters to slice);see figure (7.24)

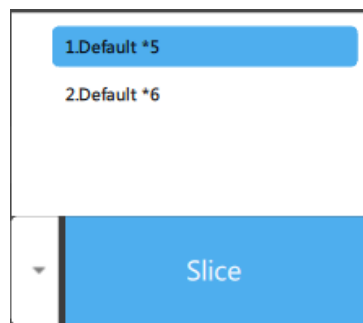


Figure (7.24)

3.6.4 Slice preview: support simultaneous preview of cross-section and solid model (click to automatically jump to slice preview); as shown in figure (7.25)

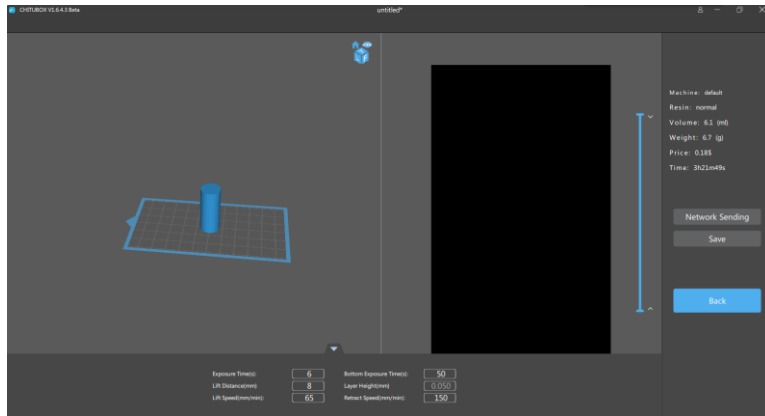



Figure (7.25)

3.7 Support setting interface;  as shown in figure (7.26)

3.7.1 Z axis lifting height (default is 5mm), can be customized;

3.7.2 Support settings (refresh data , fold , expand )

(1) Choose the size of the support, there are three options: thin, medium and thick;

(2) Top: Set the top of the support, there is a default value, the user can according to their own preference changes;

(3) Central: Set the central support, there is a default value, the user can according to their own preference changes;

(4) Bottom: Set the bottom of the support, there is a default value, the user can bias make changes

(5) Bottom raft: Set the bottom raft, there is a default value, the user can enter according to their preferences change

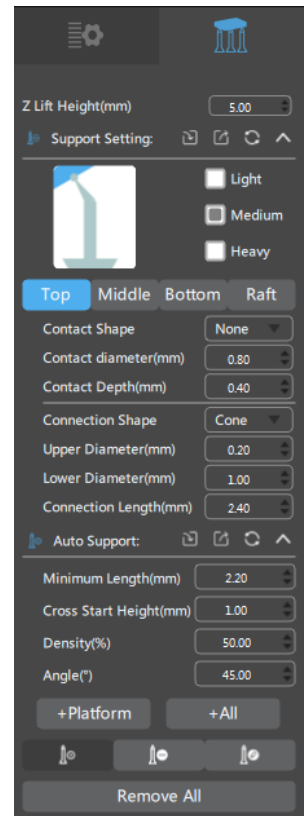




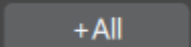


Figure (7.26)

3.7.3 Automatic support ( refresh data,  collapse,  expand): Set the data of automatic support, there is a default value, and the user can change it according to his preference.as shown in figure (7.27)

- (1)  can automatically add support to the model (support is not generated on the model, as shown below);
- (2)  can automatically add support to the model (support is also generated on the model, as shown below);

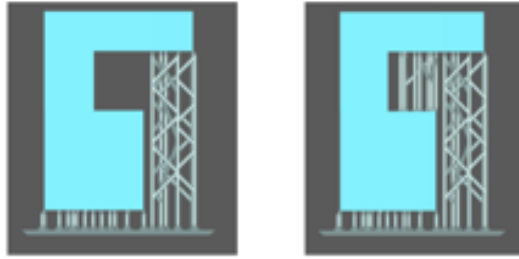


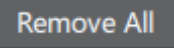


Figure (7.27)

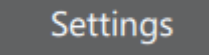
3.7.4  Add support: manually add support at any position on the model;

3.7.5  Delete support: manually delete the existing support at any position on the model;

3.7.6  Edit support: manually edit the existing support at any position on the model;

3.7.7  Remove all: remove all existing supports;

3.8 printing process

3.8.1 Model selection:  In the slice setting, click to pop up; (If your machine is not in the list, you can select Default and set the parameters yourself.)as shown in figure (7.28)

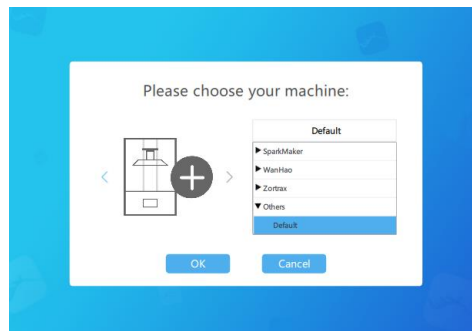


Figure (7.28)

3.8.2 Slicing: After setting all parameters, click slicing to slice the model, or you can interrupt; as shown in figure (7.29)

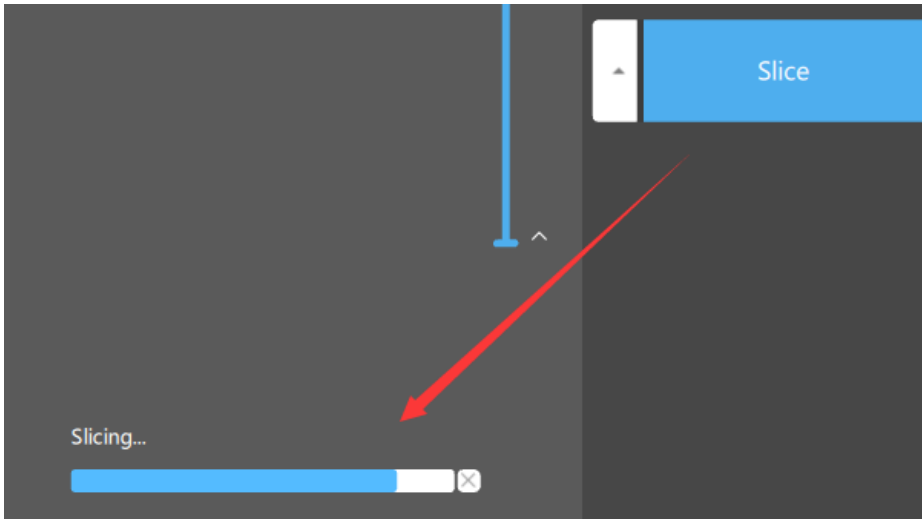


Figure (7.29)

3.8.3 Preview and export: After the slice is completed, it will automatically enter the preview mode (drag the slider at the upper or lower end to preview the layer), after confirming that it is correct, you can export the slice file or return to re-edit; as shown in figure (7.30)

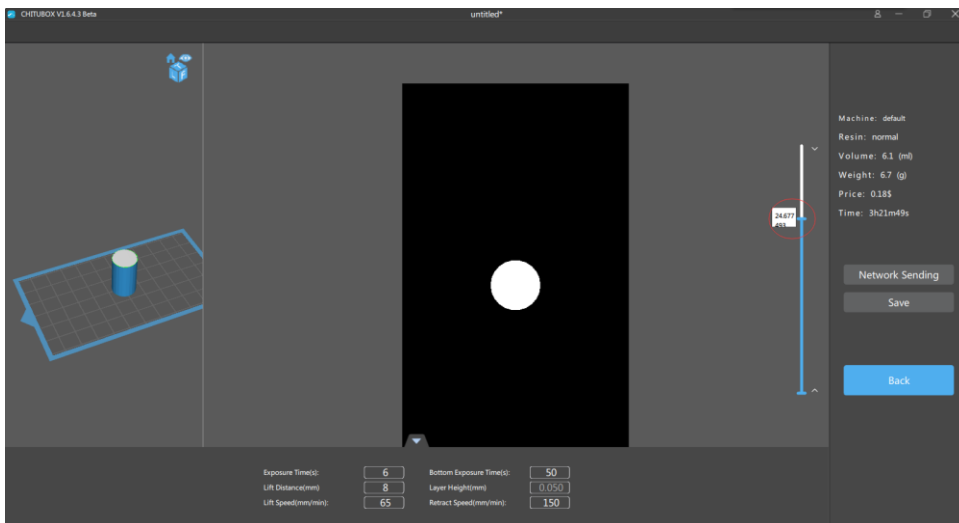


Figure (7.30)

3.8.4 Save the file to the U disk or the specified folder and then copy it into the U disk, the slicing is completed.

(This machine recognizes *. ZIP format file, please save it as this format file)

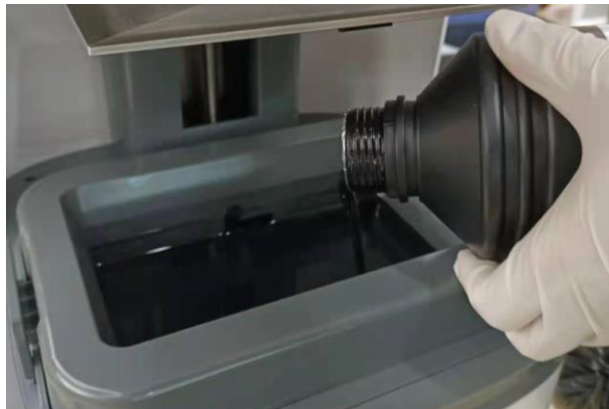
8. First printing instructions

In order to avoid the first printing failure, please check steps below again before printing:

- (1) Whether the Z axis works normally;
- (2) Whether the print platform is attached enough to the LCD screen;
- (3) Whether the UV light source is displayed normally;

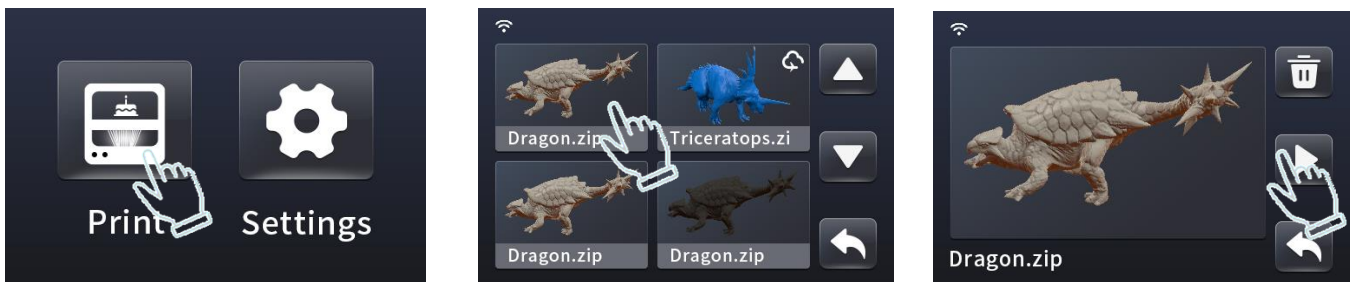
8.1 Print model

8.1.1 Wear a mask and gloves, slowly pour resin into the resin vat to about 1/3 of the height of the resin vat (Kinkly note that the resin cannot directly touch the skin, and the maximum position pf resin does not exceed 1/2 of the resin vat depth); as shown in picture (37)



Picture (37)

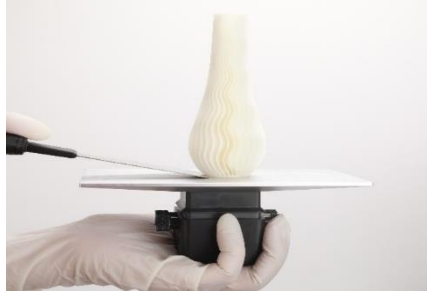
8.1.2 Select <Print>-<Select File>-<Start Printing>; as shown in picture (38)



Picture (38)

8.2 Disposal model and residue

8.2.1 After printing is completed, wait for the residual resin on the print platform to stop dripping, loosen the print platform fixing knob, and remove the print platform. Then use a spatula to shovel the model down and clean it with 95% ethanol; as shown in picture (39)



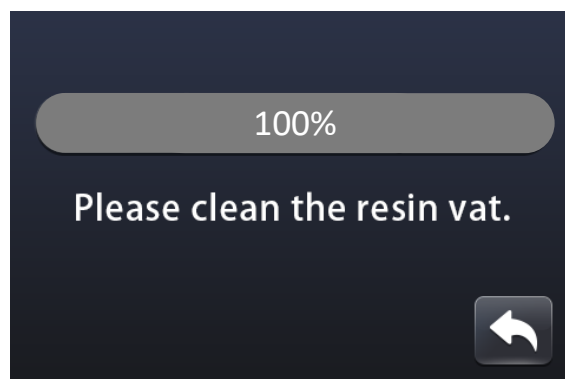
Picture (39)

In the case of incomplete curing or printing failure, there may be solid residues in the resin vat mixed into the resin. It is recommended that the resin vat be "Vat cleaned" if printing failure, then shovel out the residual solid resin with a shovel at the bottom of the resin vat. Otherwise, the FEP film and LCD screen may be crushed and damaged when the print platform is lowered during the next printing process.

For the remaining resin on the edge of the print platform and the resin vat, please wipe it clean with a dust-free cloth before the resin is cured.

If you find that the resin is not enough to print the model during the printing process, you can click <Pause>, slowly add an appropriate amount of resin to the resin vat after the Z axis rises, then click <Print>, and continue printing after the Z axis descends.

8.2.2 After taking out the model, if there is solid resin residue in the resin vat, click <Settings>-<Next Page>-<Resin Vat Cleaning>-<Next> to perform full-screen exposure. After the exposure is over, use a plastic spatula shovel out the solid resin residue at the bottom of the resin vat; as shown in picture (40)



Picture (40)

9. Common problems and maintenance

9.1 Q & A

9.1.1 Why does the model not stick to the platform?

- (1) The release film is loose or damaged. Just tighten the fastening screw at the bottom of the trough to loosen the release film would be fine. If the release film is scratched, bulged, or has stains that cannot be removed, then the release film needs to be replaced;
- (2) The contact area between the bottom of the printed model and the release film is too small. At this time, it is necessary to add a bottom raft when slicing;
- (3) The exposure time of the bottom layer is not enough. Generally, the exposure time of the bottom layer should be 8-12 times of the normal exposure time;
- (4) The leveling is not adjusted properly. This situation will cause the print platform to be high while the other is low or the first layer of printing is too high, so the resin cannot be cured completely within the normal exposure time, resulting in the model not sticking, and it needs to be re-leveled at this time;
- (5) The cross-sectional area of the printed model is too large. After curing a layer with a larger cross-sectional area, since the resin cannot reflow to the middle area in time, there may be missing features in the middle part of the model. At this time, the lifting distance should be increased when slicing;
- (6) The LCD screen is damaged. The LCD screen is dark or not on, In this case, check the circuit first. If it is confirmed that the LCD screen is broken, please replace the LCD screen.

9.1.2 Why does the model have faults or cracks?

- (1) The machine shakes during printing. The machine needs to be placed in a relatively flat place;

(2) The release film is loose or damaged. just tighten the fastening screw at the bottom of the resin vat to loosen the release film would be fine. If the release film is scratched, bulged, or has stains that cannot be removed, the release film needs to be replaced;

(3) The printing platform is not tightened or the resin vat is not tightened. Check and tighten(fastening) would be fine;

(4) The strength of the support is not enough. The support is too thin or too little to pull up the model. At this time, it is necessary to increase the support density or thicken the support when slicing.

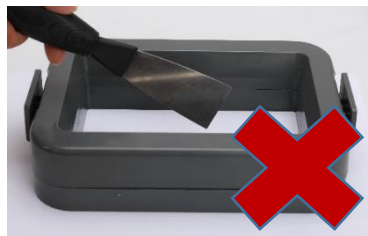
9.2 Machine maintenance

9.2.1 Be careful not to slide down when taking the print platform, so as to crush the LCD screen; (The LCD screen is a vulnerable part, please pay attention to protect it) as shown in picture (41)



Picture (41)

9.2.2 Please do not scrape the release film with sharp objects to avoid damage; as shown in picture (42)



Picture (42)

9.2.3 After printing several times, if the release film is loose or damaged, please replace it with a new release film in time;

9.2.4 Clean up the print platform after finishing printing(wipe it with paper towels or alcohol) and the residue in the resin vat (filter the residue with filter paper);

9.2.5 When changing to a different resin, the original resin should be cleaned up first.

Caution:

This device complies with Part 15 of the FCC rules and Industry Canada license-exempt RSS standard(s). 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.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or change to this equipment. Such modifications or change could void the user's authority to operate the equipment.

This radio transmitter (identify the device by certification number or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement.

To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.