

O User Manual

PHOTON ZERO

www.stomshop.pro

Dear customer,

Thank you for choosing ANYCUBIC products.

Maybe you are familiar with 3D printing technology or have purchased ANYCUBIC printers before, we still highly recommend that you read this manual carefully. The installation techniques and precautions in this manual can help you avoid any unnecessary damage or frustration.

More information please refer to:

1. www.anycubic.com

ANYCUBIC website provides software, videos, models, after-sale service, etc.

Please visit our website for technical support and we are likely to answer or solve all the questions for you!

2. Facebook page and Youtube channel as shown below.



ANYCUBIC Website



Facebook page



Youtube channel

Team **ANYCUBIC**

Safety instruction

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



Please contact our customer service first if you have any issue after receiving the products.



Be cautious when using the scraper. Never direct the scraper towards your hand.



In case of emergency, please immediately cut off the power of ANYCUBIC 3D printer and contact the technical support.



ANYCUBIC 3D printer includes moving parts that can cause injury.



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



Keep the ANYCUBIC 3D printer and its accessories out of the reach of children.



Vapors or fumes may be irritating at operating temperature.

Always use the ANYCUBIC 3D printer in an open and well ventilated area.



ANYCUBIC 3D printer must not be exposed to water or rain.



ANYCUBIC 3D printer is designed to be used within ambient temperature ranging 8°C-40°C, and humidity ranging 20%-50%. Working outside those limits may result in low quality printing.



Do not disassemble **ANYCUBIC** 3D printer, please contact technical support if you have any question.

Contents

1. Technical Specification	1
2. Packing list	2
3. Product Overview	3
4. Menu Directory	4
5. Assembly and Leveling instructions	7
6. First print instructions	11
7. Introduction to slicing software	14
8. FAO and Machine Maintenance	50

Technical Specification

Printing

System ANYCUBIC Photon Zero

Operation 2.8-inch Color TFT Screen

Software **ANYCUBIC Photon Workshop**

Connectivity **USB** memory stick

Specifications

Technology LCD Shadow Masking

UV-LED (wavelength 405nm) Light source

0.1155mm 854x480 (480P) XY Resolution

Z axis Accuracy 0.01mm

Suggested Layer Thickness 0.01 ~ 0.2mm

Suggested Print Speed 20mm/h

Rated power 30W

Physical Dimensions

Dimension 180mm (L) *195mm (W) *367mm (H)

97mm (L) *54mm (W) *150mm (H) Build volume

Materials 405nm UV-resin

Net weight ~4.7kg









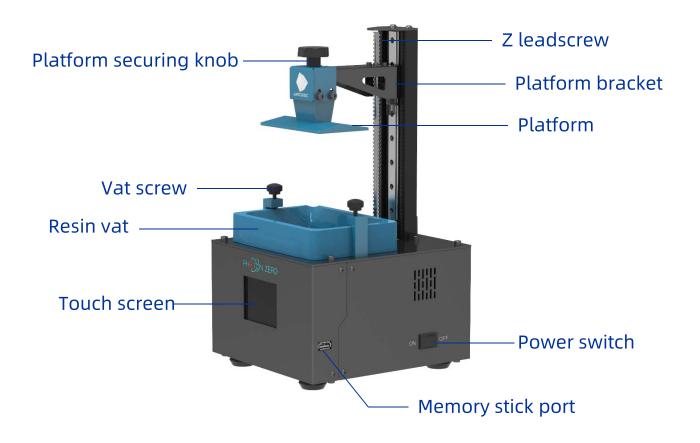


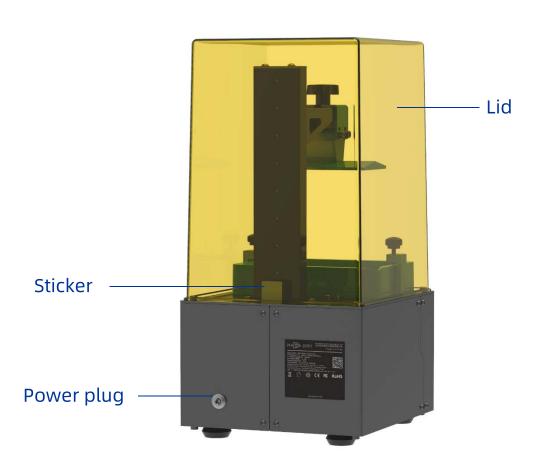


Packing list

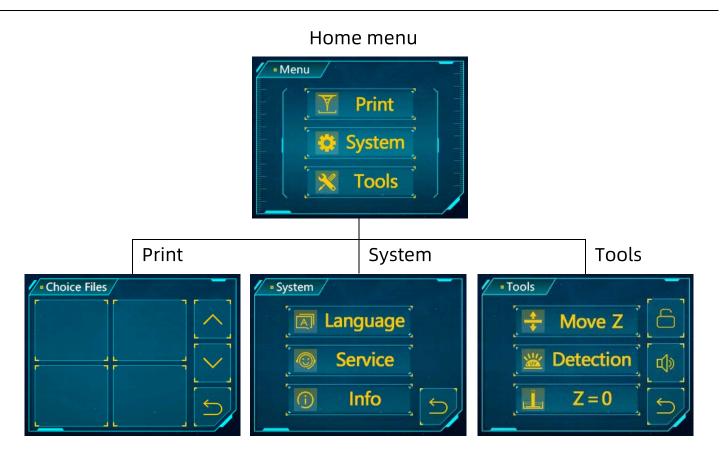
		Printing platform 1 PCS	Resin vat 1PCS
		U S B	
Photon Zero 3D Printer		Memory stick 1PCS	Scraper 1PCS
Mask 1PCS	Gloves 1Pairs	Funnel 5PCS	Assembly Instruction 1PCS
	售后服务卡		
Power cord 1 unit	After sale service card 1PCS	Tool kit 1 unit	

Product Overview

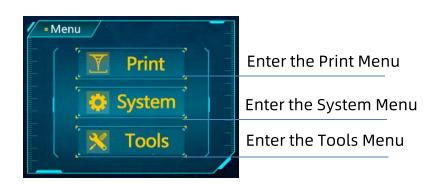




Menu Directory



Home menu

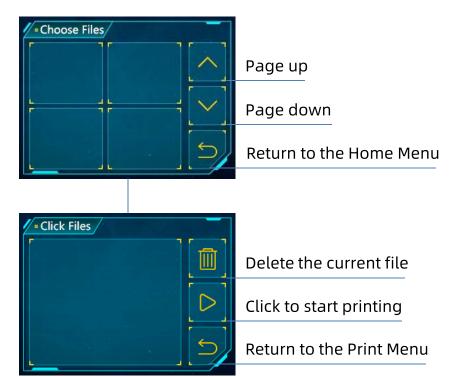


Menu Directory

Print

File List:

Click Files



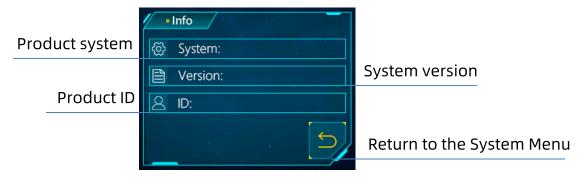
System

Language: Change language(English/Chinese)

Service:



Information:



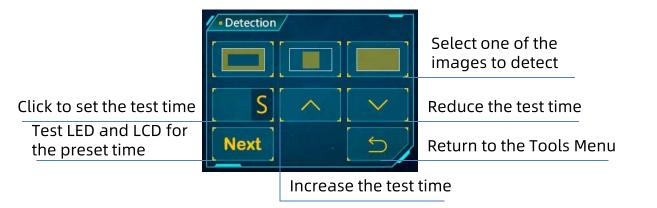
Menu Directory

Tools

Move Z:



Detection:



Z=0: Reset the zero point

Lock icon: Enable/disable the door detection function

Horn icon: Turn on/off the screen sound

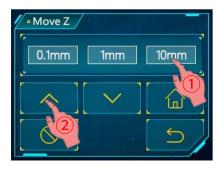
1. Unpack and remove all accessories. Then plug in the power and turn on the power switch.



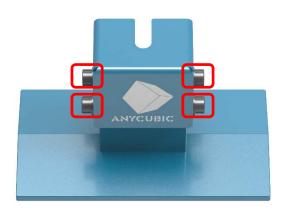
2. Rise the Z axis by 10mm.



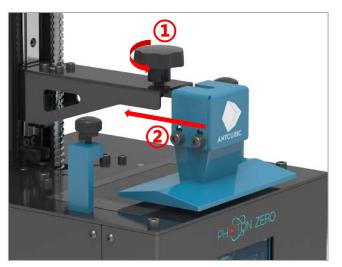


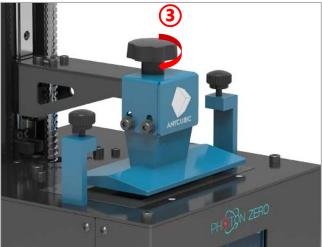


3. Loosen the four screws on the printing platform.

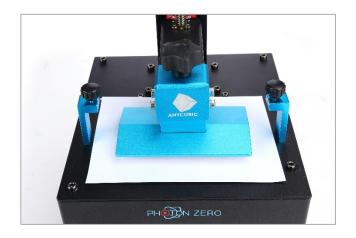


4. Install and secure the printing platform.



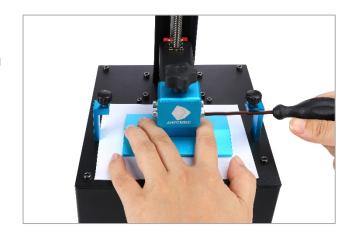


5. Place a piece of A4 paper about 0.1mm thick on the curing screen. Then click on the touch screen. Wait for Z axis to descent and then it will stop automatically.





6. Finger press on top of the platform gently, and then tighten the four screws to secure the platform.



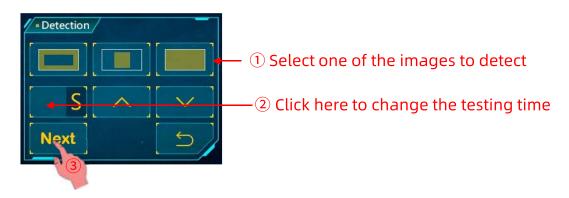
7. Lastly, return to tools menu and click "Z=0" and confirm to save the zero position. Click "Enter" one more, the printing platform will lift up for UV exposure test and resin vat installation. Till now, the leveling process is finished.

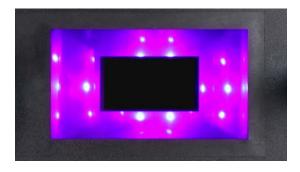






8. Take out the paper, click "Detection" on the screen, select a image and the testing time, and then click "Next" on the screen. The curing screen should display a complete image as you selected. Otherwise, the UV light is malfunction and please contact the tech support.

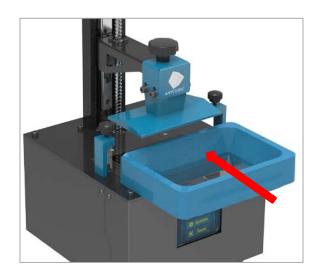


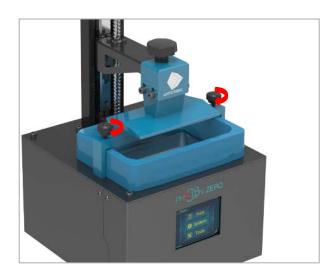


The detection result of selecting the first rectangular box.

www.stomshop.pro

9. Install resin vat.





First print instructions

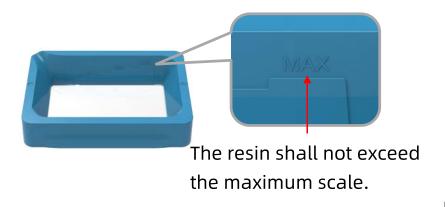
Before printing, to minimize the first time frustration, please ensure (1) Z axis is working fine; (2) the platform is well leveled; (3) the UV light is functional properly.

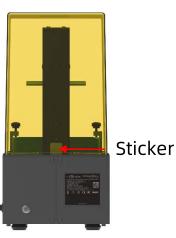
1. Print

Insert the memory stick (The test file "PHOTON.pw0" has been saved to the memory stick) into the memory stick port. **Then wear masks and gloves**, slowly pour the resin into the vat and be careful not to exceed the maximum scale of the vat.

Put on the lid, click "Print" to choose the model to print.

***Pay attention to the direction of the lid. The the sticker should be at the rear.







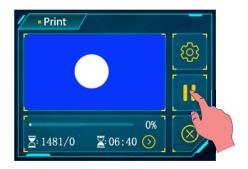


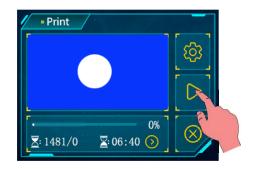


During printing, avoid direct sun light and keep the printer sitting on flat surface without shaking.

First print instructions

If you think the resin is insufficient to finish an ongoing print (or you wish to change the resin color), you can click "Pause", the platform will rise, and you can slowly pure (or change) the resin into the vat. After that, press "Start" to resume.





2. Door detection function

Door detection function is disabled by default. If this function is enabled, the printer can detect whether the lid is on or not. If the lid is removed, the printing will be paused. And the printing will resume if put back the lid.

Click the lock icon on "Tools" interface to enable/disable this function.



After click, the lock icon is locked and the function is enabled.



First print instructions

3. Handling models and residues

After printing, waiting until the resin stop dropping from the platform and then unscrew and remove the platform. As shown below, the model can be removed by scrapper carefully. The removed model should be washed with ethanol 95vol% concentration. The printed model may need post curing to achieve better hardness by direct sunlight or UV-curing box.



[IMPORTANT] In case of incomplete curing or failed prints, there might be some resin residues left in the vat. Then, please filter the resin by a funnel and store the resin in a sealed container. For the residues left in the vat or on the platform, please use paper towel or plastic scrapper to carefully get rid of that.

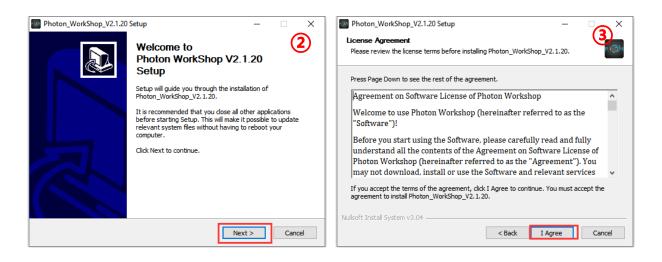
Before each prints, please ensure there is no solid residues in the vat or on the platform, otherwise the LCD curing screen may be impacted and broken during printing or leveling.

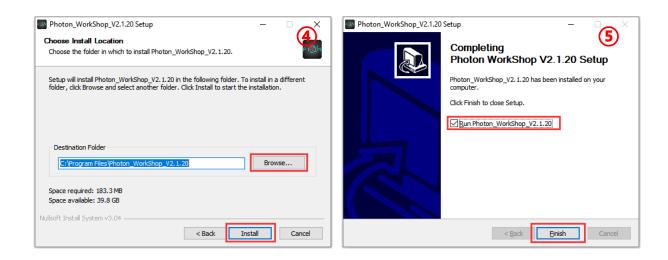
Photon Zero 3D printer reads "pw0" file and prints. It is necessary to convert 3D files (such as stl file or obj file) into pw0 files for machine to recognize. Software that convert 3D files into pw0 files is called slicing software.

1. Slicing software installation

Here Windows PC is taken for example. Slicing software is located in memory stick: "File_English_Photon Zero" → "Photon Zero slicing software". (You may have to close the anti-virus software before installing the slicing software.) Double click "Photon_WorkShop_ V2.1.20_x64.exe", and then follow the installation guide as shown below:



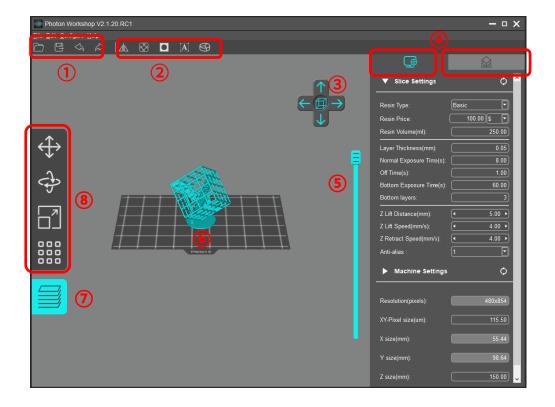




For Mac PC, double click "Photon_WorkShop_V2.1.20.dmg" to install the slicing software and follow the pop-up messages.

Note: ANYCUBIC may update the software and firmware without notification. Please visit www.anycubic.com for latest updates.

2. Photon Workshop

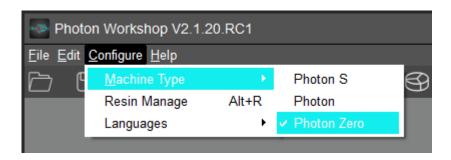


- ① Open, save, undo and redo.
- ② Model mirror, hollow and infill, punching, text paste and spilt model - explained in the following
- 3 Click to switch the preset view.
- 4 Switch between slice/machine settings and support settings.
- ⑤ Drag the slider to preview each layer of the model.
- 6 3D model preview.
- (7) Click to slice.
- ® Move, rotate, scale and layout.

3. Manipulate 3D model in Photon Workshop

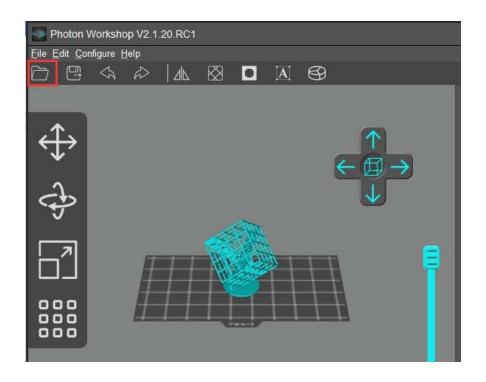
(1) Model Importing

After software has been installed, please run it for the first time. On the menu bar, Click "Configure" \rightarrow "Machine Type" \rightarrow "Photon Zero".



Note: Different machine types have different printing parameters. Users need to choose the correct machine.

On the menu bar, click "File"→ "Open file" (or click the "Open" icon at the top left (red square)) to import your own three-dimensional format model, i.e. STL file or OBJ file. Or you may input the test file (PHOTON.stl) in the memory stick.



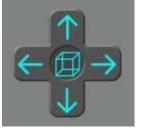
(2) View Changing

- 1 View changing by mouse
- Zoom in/out: scroll the mouse wheel.
- Position change: left click the platform, hold on and move the mouse.
- Change view angle: right click the platform, hold on and move the mouse.
- ② View changing by interface controls

Top view

Left view

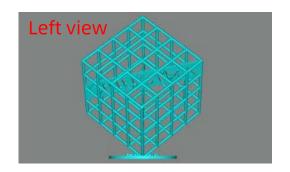
Keep clicking can change the viewing angle by 90 °

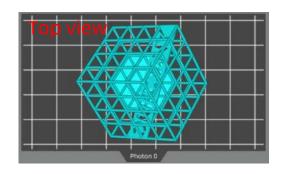


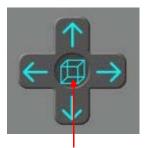
Bottom view

Right view

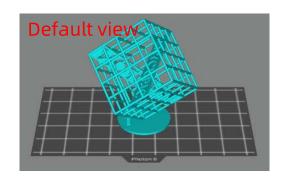
Keep clicking can change the viewing angle by 90 °







Click the center icon and the view will automatically adjust to the appropriate view. Click again to restore the default view.



(3) Model Changing



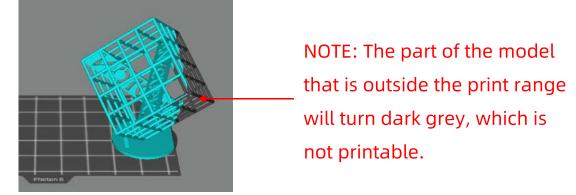
Move selected: click "move" icon, input a number or left click the model can move the model. You also can center or reset the model.

Rotate selected: click "rotate" icon, input a number can rotate the model. You also can reset the model.

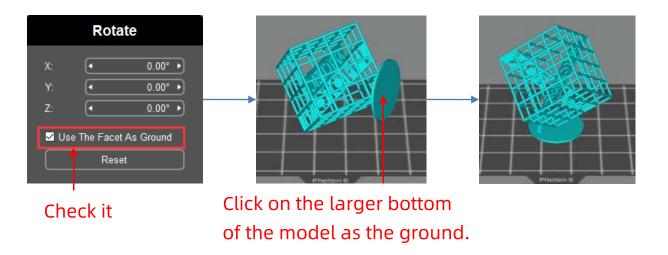
Scale selected: click "scale"icon, input a number or percentage can scale the model. You also can set the model to its maximum size.

Layout models: click "layout" icon, you can duplicate the model and arrange the models in X or Y direction.

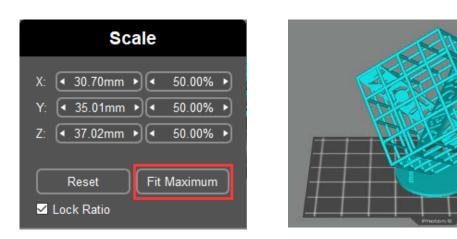
① Model moving



2 **Model rotating** - Choose a larger facet as the ground fitting platform, which can improve print success rate.

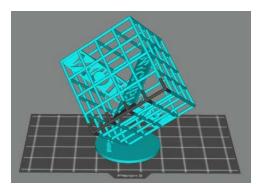


3 Model scaling

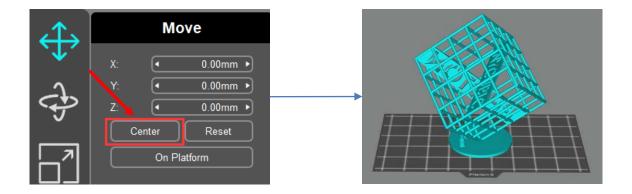


After setting the model to the maximum size, center it to avoid the model from exceeding the print range.

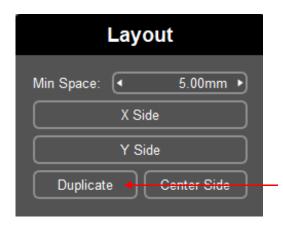
• Center the model:



Fix Maximum



4 Layout

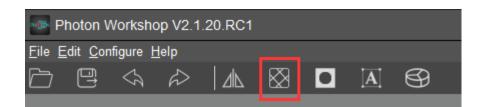


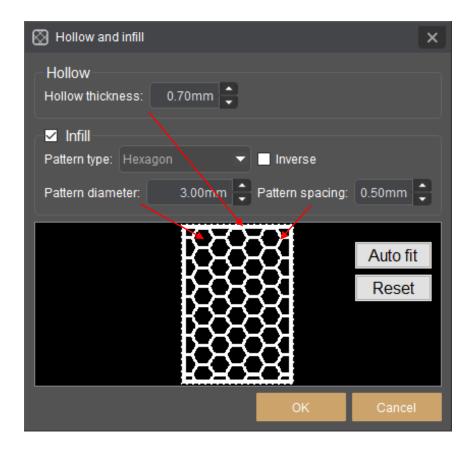
Select the model and click "Duplicate", then an identical model will be duplicated. (Those models may overlap)

For multiple models, click "X Side" or "Y Side", the models can be aligned in X or Y direction.

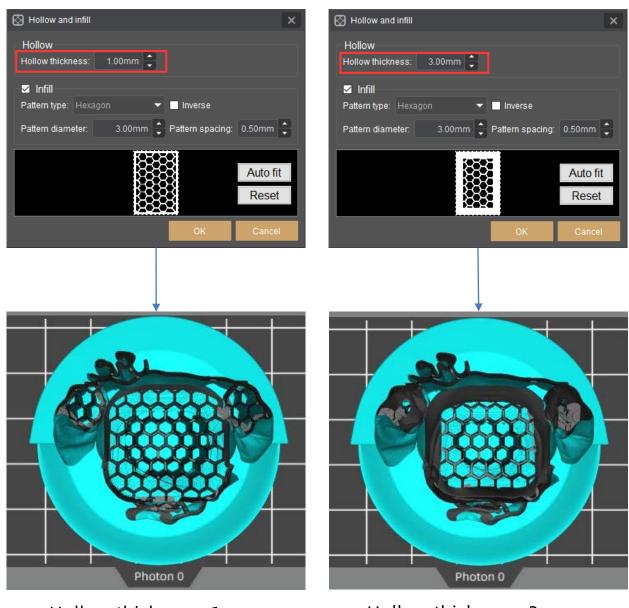
(4) Hollow And Fill

In some cases, you don't need the model to be completely solid. Before you start slicing a model, you can hollow it, so to reduce the amount of resin used.





In hollow and infill, please check and choose the most suitable parameters to suit your requirement.



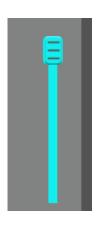
Hollow thickness: 1mm

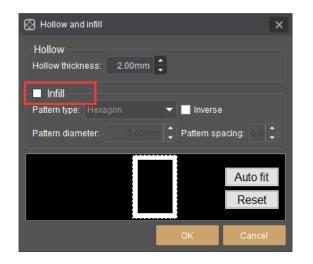
Hollow thickness: 3mm

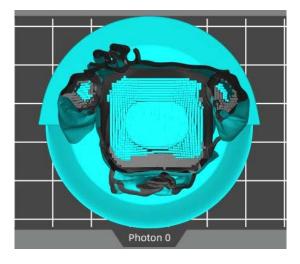
The model name: MIA

The author of the model: Fabio Nishikata

You may drag the slider to see the internal structure of the model after hollow.



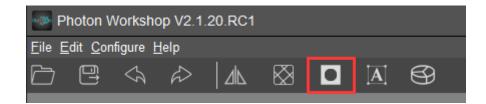


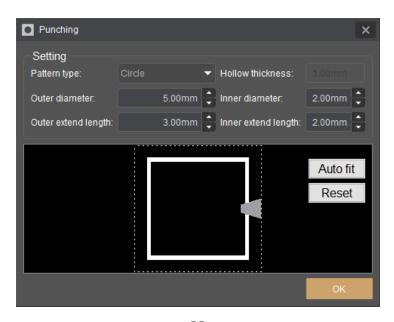


Hollow thickness: 2mm, no infill

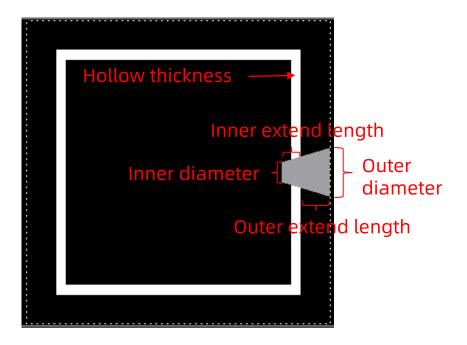
(5) Punching

After the model is hollowed, there will still be part of the resin remaining in the model after printing. By punching the model, the resin in the model can flow out, which reduces the weight of the model and the amount of resin.



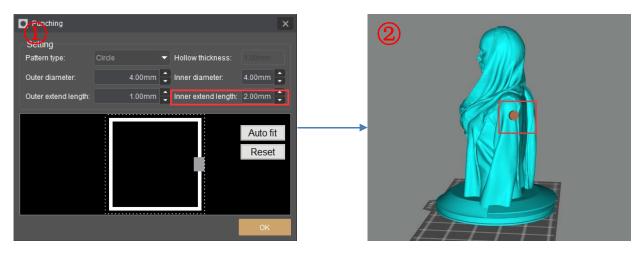


www.stomshop.pro



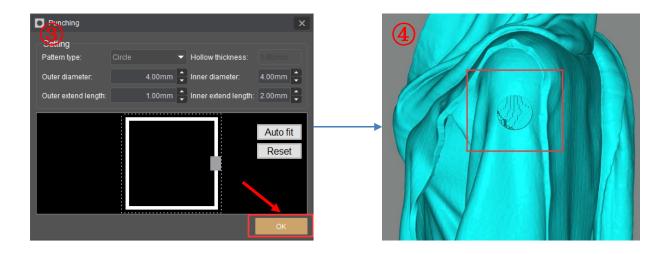
The "Inner extend length" must be greater than the "Hollow thickness", so that the model can be pierced when punching and the resin can flow out of the model.

• Punch the model:



Set the parameter of the hole

Left click on the model

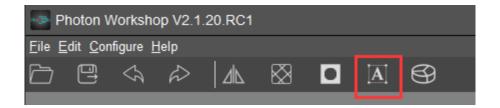


The model name: MIA

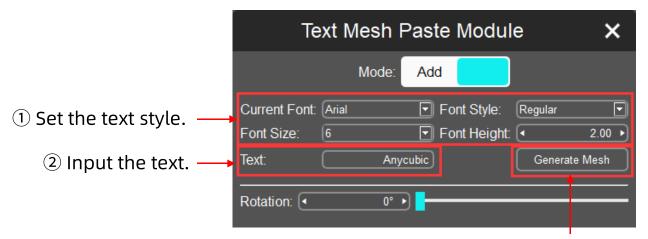
The author of the model: Fabio Nishikata

(6) Text Paste

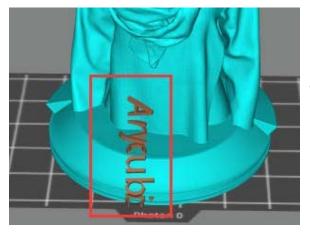
You can paste text on the model with this feature.



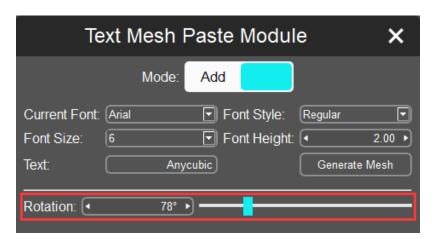
• Add mode (default mode)

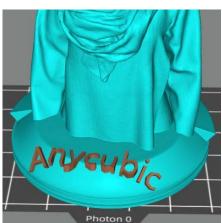


3 Click to generate mesh.



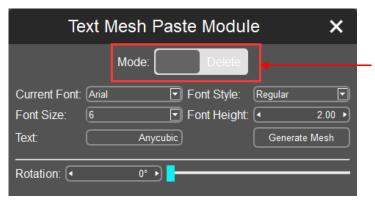
4 Left click on the model.



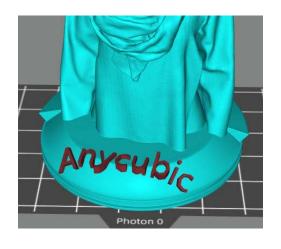


⑤ Drag the slider or input the number to rotate the text.

• Delete mode



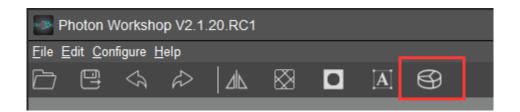
Switch to the delete mode.



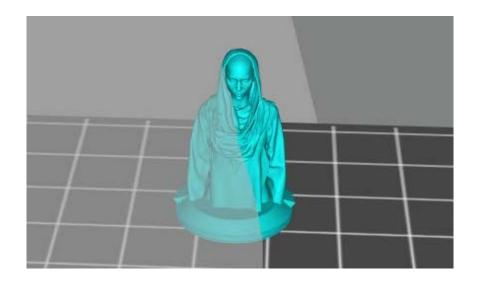
Click the text and press the "Delete" key on the keyboard. Then close the "Text Mesh Paste Module" window.

(7) Split model

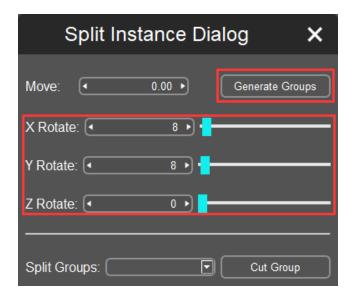
You can split the model into several parts and then cut off the unwanted parts.



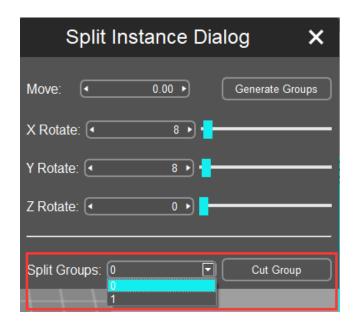
① Click the split icon, as shown in the red square above. Then make a cut across the model.



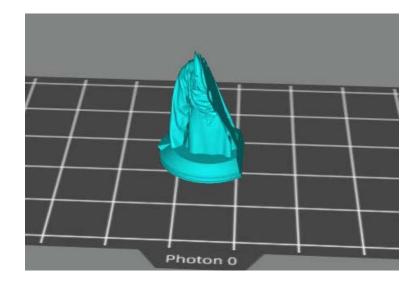
② Drag the slider to rotate the cutting surface along the XYZ axis. Then click "Generate Groups" after adjusting the cutting surface.



3 Select the unwanted group from the "Split Groups". The selected group will be shown in red in the model. Click "Cut Group" to remove it.



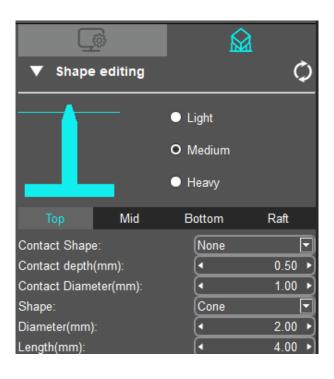
4 The effect picture after spliting the model.



(8) Support Settings

When the model has obvious suspended parts or overhang, it needs to be adding support to minimize the printing failure.

Click on the model and then click Support tab to edit the support for the model.



www.stomshop.pro

Before adding support, you can edit the shape of the support.

There are three types of support, Light, Medium and Heavy.

Light: Contact area between the support and model is small, easy to remove the support;

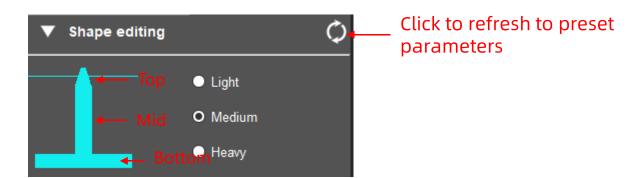
Heavy: Support contact with the model area is large, solid.

It is recommended to try the "Medium" first, and using the default settings. And you can always modify the support settings to suit your requirement.

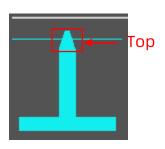
How to use supports on the model:

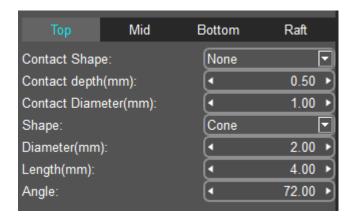
Step 1: Shape editing

Click on one of these types, such as Medium. As shown below, the support is divided into three parts, namely "top", "middle" and "bottom". The settings of those three parts are described in detail below.



1) Top: Set the parameters for the top of the support.



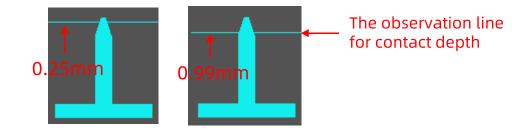


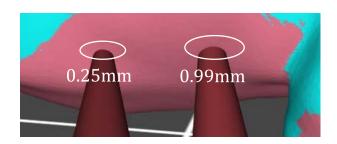
Contact Shape: Select the "Sphere" as the contact point between the top and the model can increase the contact surface between the support and the model.



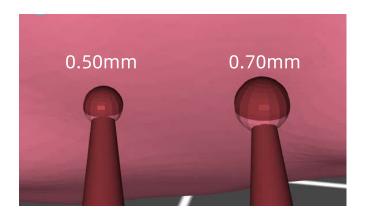
The author of the model: ZenMaster_Maker

Contact depth: The contact depth between the support top and the model.

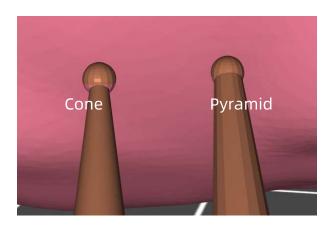




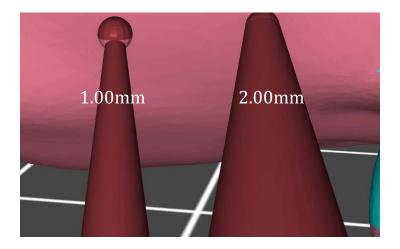
Contact Diameter: The contact diameter is valid when the contact shape is "Sphere".



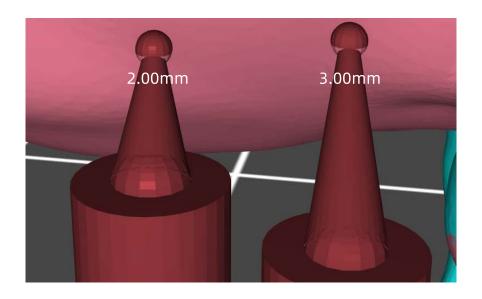
Shape: There are 2 options for the top shape, "Cone" and "Pyramid".



Diameter: You can input the number to change the top diameter.

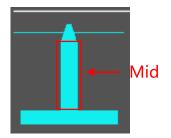


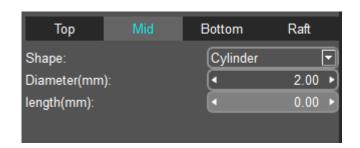
Length: You can input the number to change the top length.



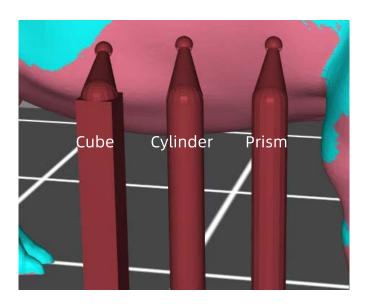
Angle: Use the default parameter.

② Mid: Set the parameters on the mid of the support.

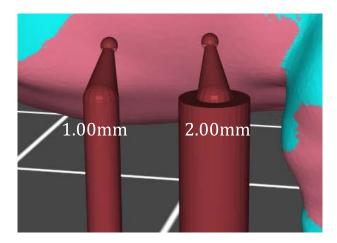




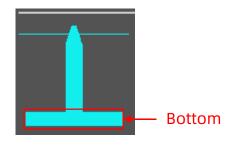
Shape: There are 3 options for the mid shape, "Cube", "Cylinder" and "Prism".



Diameter: You can input the number to change the mid diameter.

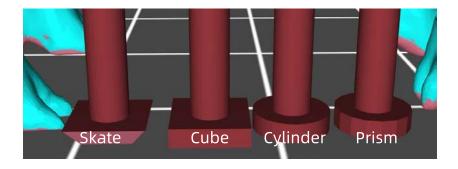


3 Bottom: Set the parameters on the bottom of the support.

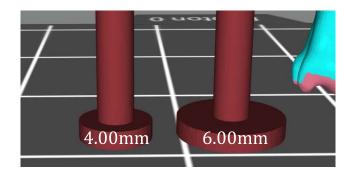




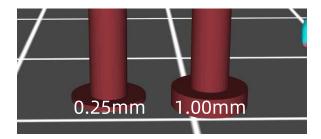
Shape: There are 4 options for the top shape, "Skate", "Cube", "Cylinder" and "Prism".



Diameter: You can input the number to change the bottom diameter.



Length: You can input the number to change the bottom length.



Contact Depth: The depth of contact between the bottom of the support and the model when the support is added inside the model.

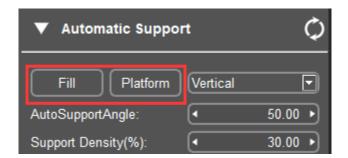
Angle: Use the default parameter.

4 Raft

In addition to the three types of support set by software, raft can be added to the model. Adding raft will increase the adhesion between model and build platform, thereby minimizing the print failure or warping risk.

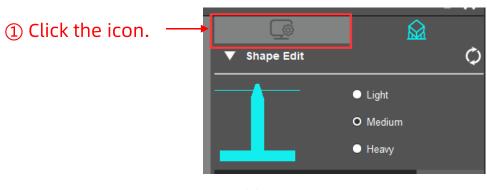


Select the shape of the raft as "Skate" and click "Fill" or "Platform" to add the raft and support.

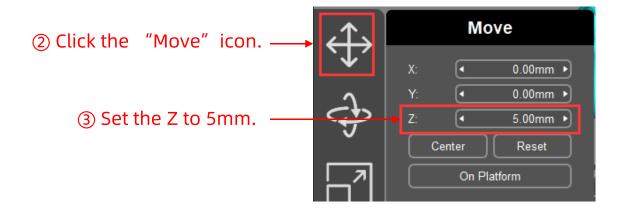


Note: before adding the raft, you need to lift the model up a certain height in the z-axis direction.

• Lift the model up 5mm (suggested) in the z-axis direction:



www.stomshop.pro



After lifting the model up, click the " icon to add support.

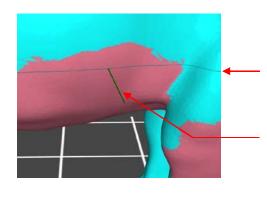
Step 2: Support adding

You can add the support to the model manually or automatically after setting up the shape of the support.

Note: The automatic support will override all the previously set supports.

Manual Support

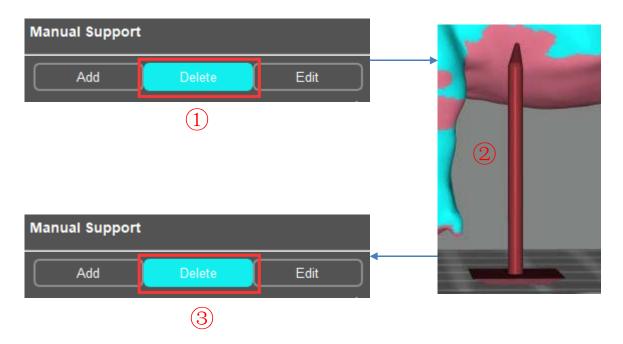
Add: Only after click the "Add" button then you can add the support to the model.



contour line, it can be used as reference line when adding support

When the mouse moves on the model, the green short line can be clicked to add support; the red short line means can not be clicked to add support

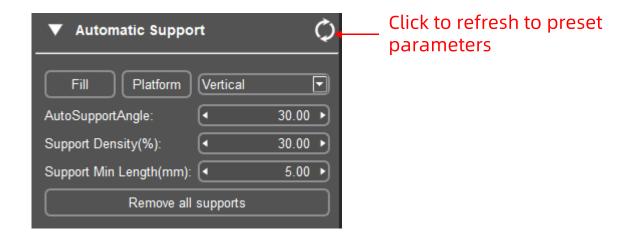
Delete: Click the "Delete" button firstly, and then click the support on the model and click "Delete" button to remove the support.



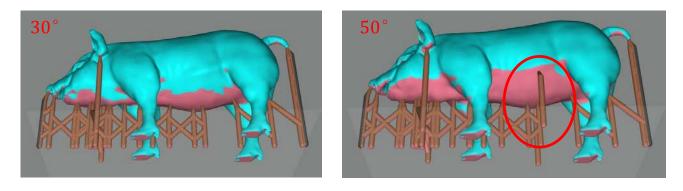
Edit: The support can be edited after clicking the "Edit" button. Click on the support, it will become red. Its shape can be changed through editing the top, mid and bottom parameters. Besides, left click the model, hold on and move the mouse can change the position of the support.

② Automatic Support

After set "Auto Support Angle", "Support Min Length" and "Support Density", click "Fill" or "Platform" can automatically add support for the model.

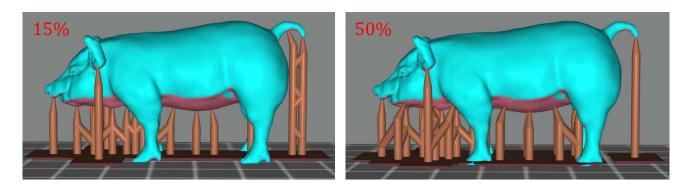


Auto Support Angle: The tangent angle between the model (small triangular facets) and the printing platform.



With the same "Support Density", the larger "Auto Support Angle" is, the more supports can be added.

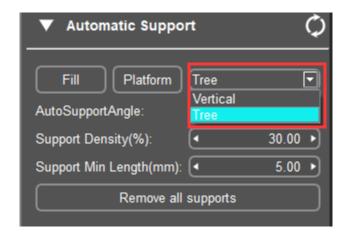
Support Density:



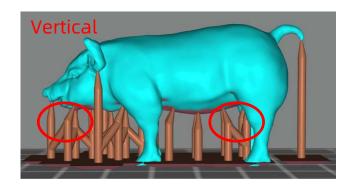
The author of the model: ZenMaster_Maker

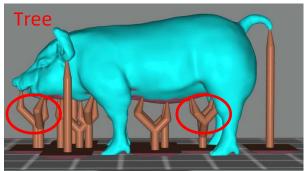
Support Min Length: Use the default parameter.

There are two types of support added automatically, "Vertical" and "Tree".



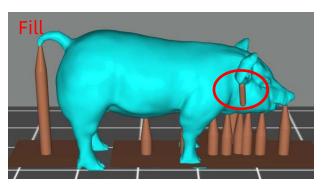
Choosing the "Tree" type, the supports can be combined and interlocked, making the support more concise and saving material.

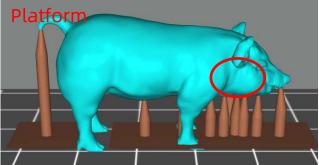




After setting each parameter, click the "Fill" or "Platform" button to automatically add support.

- "Fill": The support can be added between the platform and the model, and between the model and the model.
- "Platform": The support only can be added between the platform and the model.

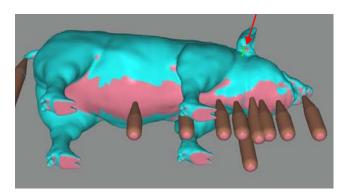




3 Automatic support adding skills (improve print success rate)

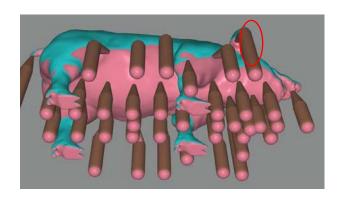
Tip 1: Properly increasing the support angle and density can optimize the support results and deliver better print quality.

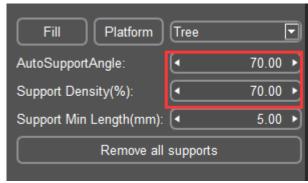
As shown below, when browsing on the model, observing the contour circle, it can be found that the model still has some weak points that has not been adding supports properly (highlighted by red arrows).



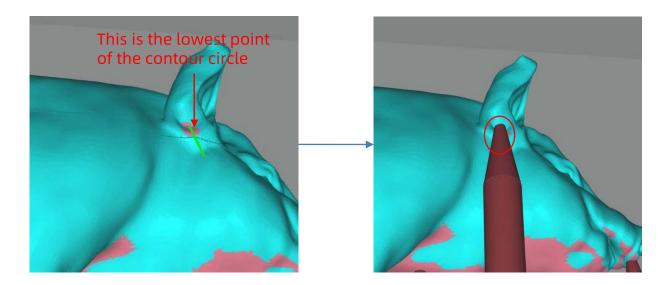


If we increasing the automatic support angle and support density (highlighted by red square), we can see from the picture below that more supports have been added to some of the weak points.





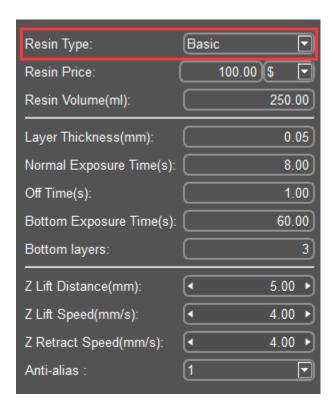
Tip 2: **Manual support after Auto support** (use the contour to find the weak points, add support to the local lowest point by check on the contour circle)



(9) Parameter Settings

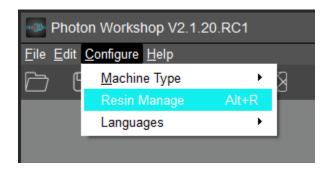
Slice Settings

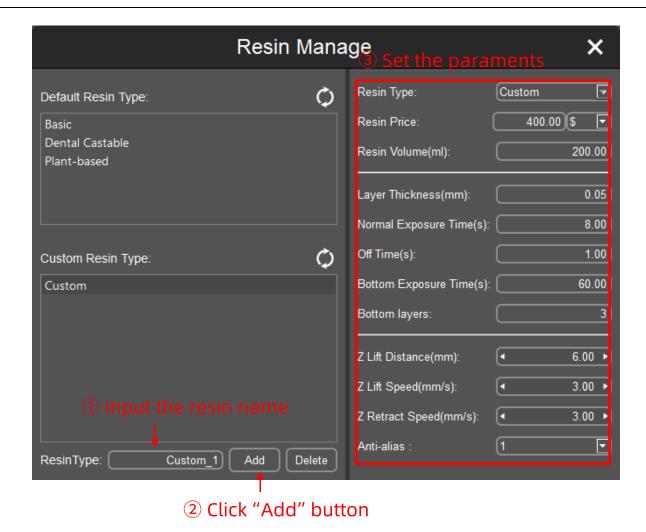
In the slice settings, 4 resin types are preset-"Basic, "Plant-based", "Dental Castable" and "Custom". Different Resin Types have different printing parameters. You can directly select the "Resin Type" according to which Anycubic Resin you are using.



You can always modify the parameters.

And, you can add custom resin type. Click "Configure" \rightarrow "Resin Manage".





Note: Click refresh icon can restore the default parameters of the resin.

Slice parameters:

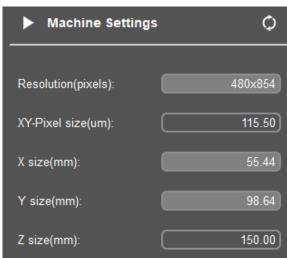
- 1 Resin Price: Set the price according to the purchased resin.
- 2 Resin Volume: Set according to the volume of the purchased bottle of resin. When slicing, it will automatically calculate how much resin and price the model uses in total.
- 3 Layer thickness: The thicker the layer thickness, the longer the exposure time per layer needed.
- Normal exposure time: Setting range: 6~20s, the exposure time is set according to the thickness of each layer, the details complexity of the model and the resin materials.

- ⑤ Off time: The UV light interval between each layers is ranged 1~6s.
- 6 Bottom Exposure Time: Setting range: 30~80s, the longer the bottom exposure time, the more easier for the bottom layer of the model to stick onto the build platform.
- ⑦ Bottom layers: Setting range: 3~6.
- Z Lift Distance: It is suggested to set it to 6mm.
- ② Z Lift Speed: It is suggested to set it to 3mm/s.
- ② Z Retract Speed: It is suggested to set it to 3mm/s.
- (11) Anti-alias: A higher grade of anti-alias value could enhance the ability to smooth the edges for each layer during printing, thereby resulting better surface finishing of the printed objects. A higher grade of anti-alias also means longer slicing time and larger files. The suggested value is 8.

② Machine Settings

These parameter does not need modification usually. But if the printed model shows big dimensional error along a particular axis (X,Y or Z), you can modify the corresponding values for that axis proportionally.

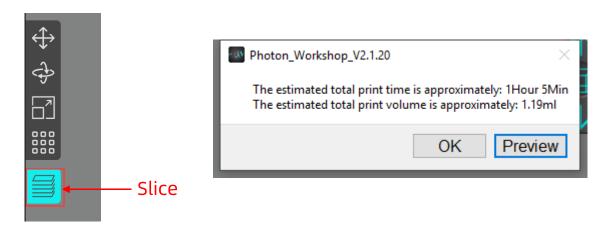




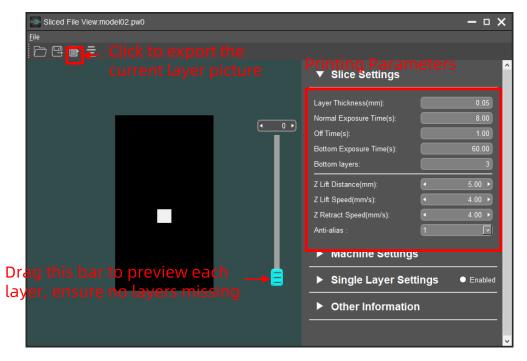
(10) Slicing

After confirm the slice settings, click the "Slice" icon at the top left (red square). You need to save the sliced file as ".pw0" so the Photon Zero would recognize the file.

Choose the file directory and save the ".pw0" file in the memory stick and then start slicing, and click OK to complete. You may click "Preview" to check each layers and the corresponding parameters.

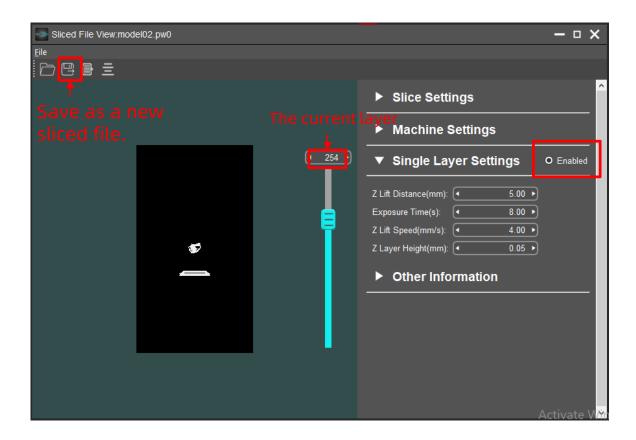


In the slice file view interface, you can preview related slice settings, machine settings, single layer settings and other information.



www.stomshop.pro

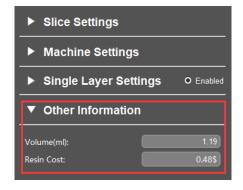
In the Sliced File View interface, after checking "Enabled", you can set the exposure time, Z Lift distance, Z Lift speed and Z Layer Height of the current layer according to personal requirements. Upon finished, click the upper left corner to save as a new sliced file.



Note:

- 1. This function is invalid for the bottom layers. Do not use this function to bottom layers.
- 2. After changing the individual layer settings, the exposure parameters of the new file cannot be modified again via the printer touch screen during printing. Even if it has been modified, the change would only be valid for the current layer.

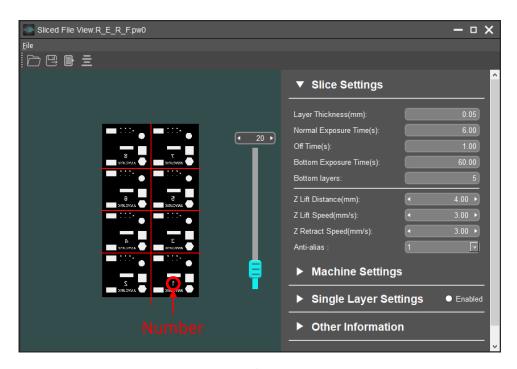
Other Information: You can check the total volumn and resin cost of the model.



$(11) R_E_R_F$

"R_E_R_F" is an abbreviation for "Resin Exposure Range Finder". This function is used to find out the optimal exposure parameters for different resins.

Import the "R_E_R_F.pw0" file into the slicing software (The file has been saved into the memory stick). Specifically, in the R_E_R_F mode, the curing screen will be divided into 8 areas and each area is numbered, as shown in the picture.



www.stomshop.pro

- The exposure time for Area No.1 is equal to "normal exposure time (s)" in the slicer settings (exclude Bottom Exposure Time), and the exposure time for other areas will be increased by an increment of "1s" subsequently.
- For example, when "Normal Exposure Time (s)" is set to 3s in the slicer, the exposure time for Area No.1 is 3s, the exposure time for Area No.2 will be 4s, and so on, and the exposure time of Area 8 will be 10s.
- You can modify the exposure time of Area No.1 by modifying the "Normal Exposure Time (s)" parameter, and this action is also valid during printing.

The normal exposure parameter of "R_E_R_F.pw0" file attached to memory stick is 6, and users can print this file directly for testing.

After printing, take down the model, wash it with ethanol 95vol% concentration, and then observe it. The exposure parameters of the model with the best printing effect are the best exposure parameters of the resin.

Note:

DO NOT change the file name of " $R_E_R_F$ ", because the Photon Zero can only recognize THIS file name to run this function. Also, do not name other unrelated file as " $R_E_R_F$ ".

FAQ and Machine Maintenance

1. FAQ

(1) Model not sticking to platform

- Bottom exposure time is insufficient, increase the exposure time.
- Contact area between the model and platform is small, please add raft.
- > Bad leveling

(2) Layer separation or splitting

- > The machine is not stable during printing
- FEP film in the vat is not tight enough or it need a change for new one
- The printing platform or vat is not tightened

2. Machine maintenance



(1) If Z axis make noisy sound, please apply lubricant to Z lead screw.



(2) Do not use sharp objects to scrape off the residues on the FEP film.

FAQ and Machine Maintenance



(3) Be careful when remove the platform, do not let it fall onto the curing screen.



(4) Do not left the resin in the vat for over two days if not using it. Please filter and store the resin properly.



(5)The FEP film may lose the tension over time and usage. Please adjust the tension by tightening the screws at the bottom of the resin vat.

- (6) After printing, please clean up the platform (wipe clean with paper towels or wash with alcohol), and ensure no residue left before next print (filter the residue with funnel).
- (7) If the outside of printer is stained with resin, use alcohol to wipe clean.
- (8) To switch the resin colors, please clean the original resin vat first.

Thank you for purchasing ANYCUBIC products! Under normal usage and service, the products have a warranty period up to one year. Please visit ANYCUBIC official website(www.anycubic.com) to report any issues with ANYCUBIC products. Our professional after-sale service team would response within 24 hours and solve the issue.