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3D tiger APEX™

Software & Touch Screen Panel User Manual

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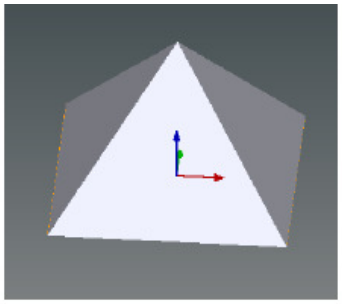
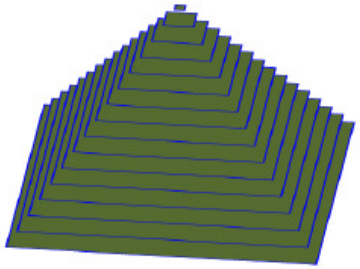
Printing work fow

This manual focuses on the work fow of 3D fle preparation and Printing setting



1. Get 3D fle (*.stl) from
   a. CAD
   b. 3D scanner



2. 3D fle preparation
   a. Repair 3D fle
   b. Build Supports
   c. Slice (Layer Thickness)

3. Printing setting
   A. Material selection
   B. Tilt speed
   C. Printing optimization

4. After printing
   A. Post curing
   B. Remove supports
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Main Content

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System requirements for using Utility

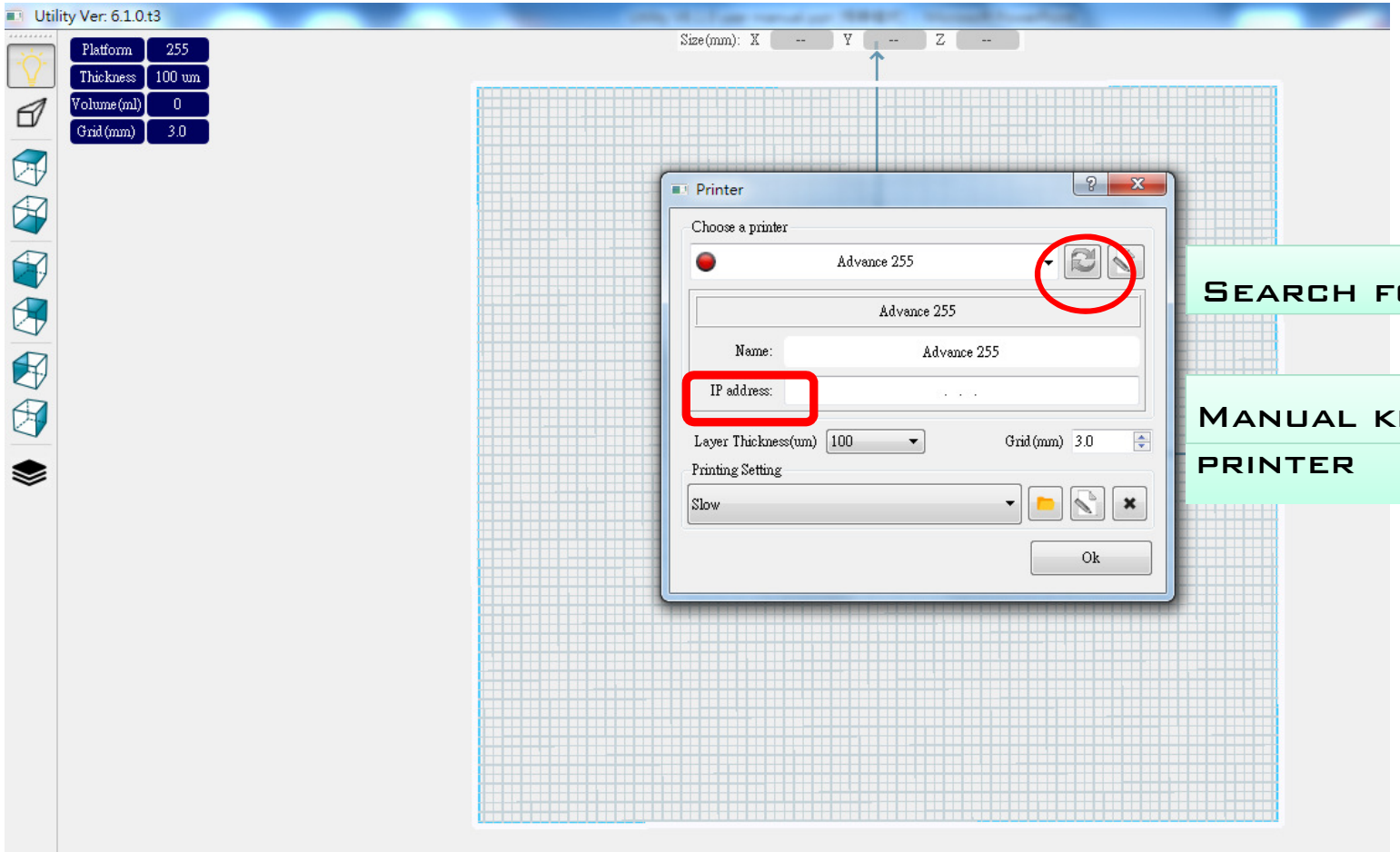
These are the basic requirements for using Utility on a PC. If your device does not meet these requirements, you can still install Utility, but may not have the greatest experience with Utility.

Operating system:	Windows 10
CPU:	Intel Core i7 or above
RAM:	8 GB or above
Hard drive space:	250 GB SSD or above
Graphic cards:	Dedicated Graphics 2GB or above ; Support Open GL 3.3 or above
Browser:	Use Google Chrome only
Wifi Dongle: (Optional)	Advance Series/ Profession Series / Prime Series / Hyper Series suggest to use with D-Link DWA-127 Wireless Networking Adapter. Ultra Series suggest to use with EW-7811Un Other brand and model of wireless network adapter may not compatible to our printer

Open Utility and Connect to printer

1. Unzip the installation fle, and click Utility.exe

2. Please be sure to connect to printer frst, otherwise you cannot use Utility



Search for connected printer

Manual key in IP location of printer

Printer connection method introduced on the next page

Open Utility and Connect to printer

1) Connect your printer with laptop

-Basic : Connect printer and laptop by RJ-45 cable [Initiating time 1 minute]

-LAN : Connect both printer and laptop to local area network [Initiating time a few seconds]

-IP sharer : Connect both printer and laptop to IP sharer [Initiating time a few seconds]

-WIFI dongle : Insert WIFI dongle into printer USB port => Panel: Engineering mode => Wifi

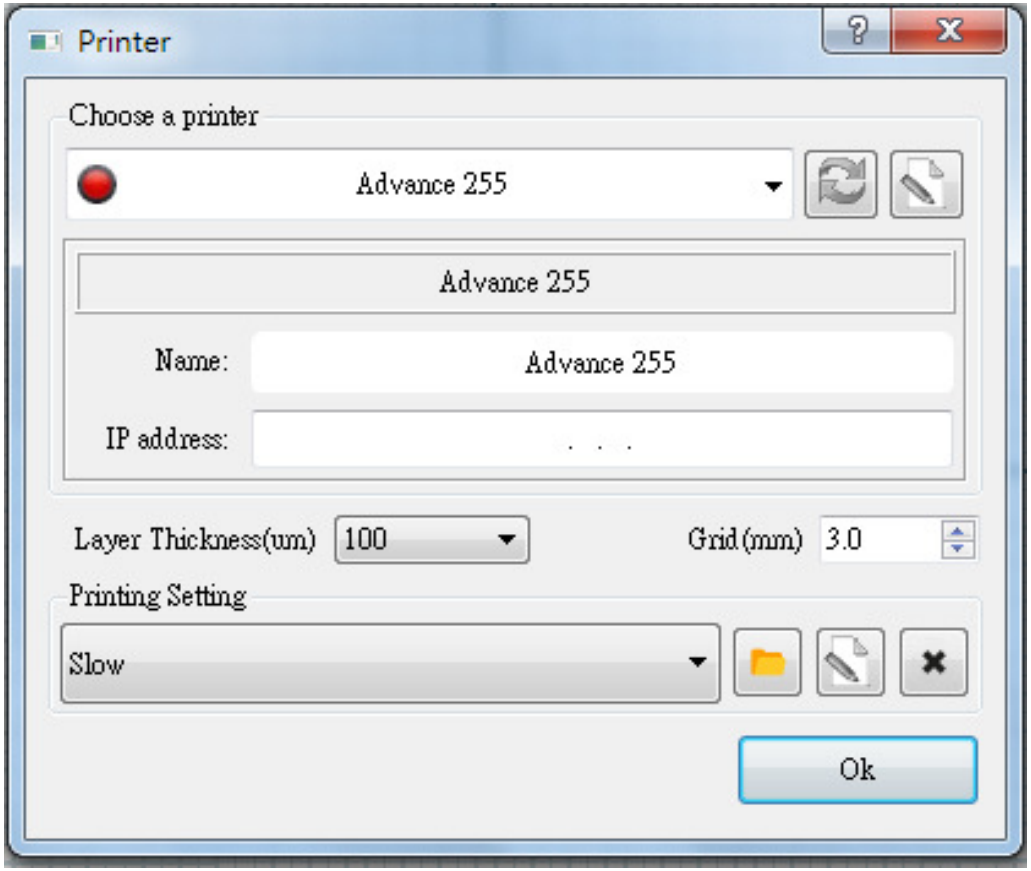
=> Connected WIFI dongle => Key in IP(Wif) location shown on printer on Utility [Initiating time a few seconds]

Choose a Printer

1. Select printer, also select building platform size.
2. Set Z layer thickness. Set building platform grid size.
3. Set printer information whenever using this panel.

Platform	255
Thickness	100 um
Volume (ml)	0
Grid (mm)	3.0

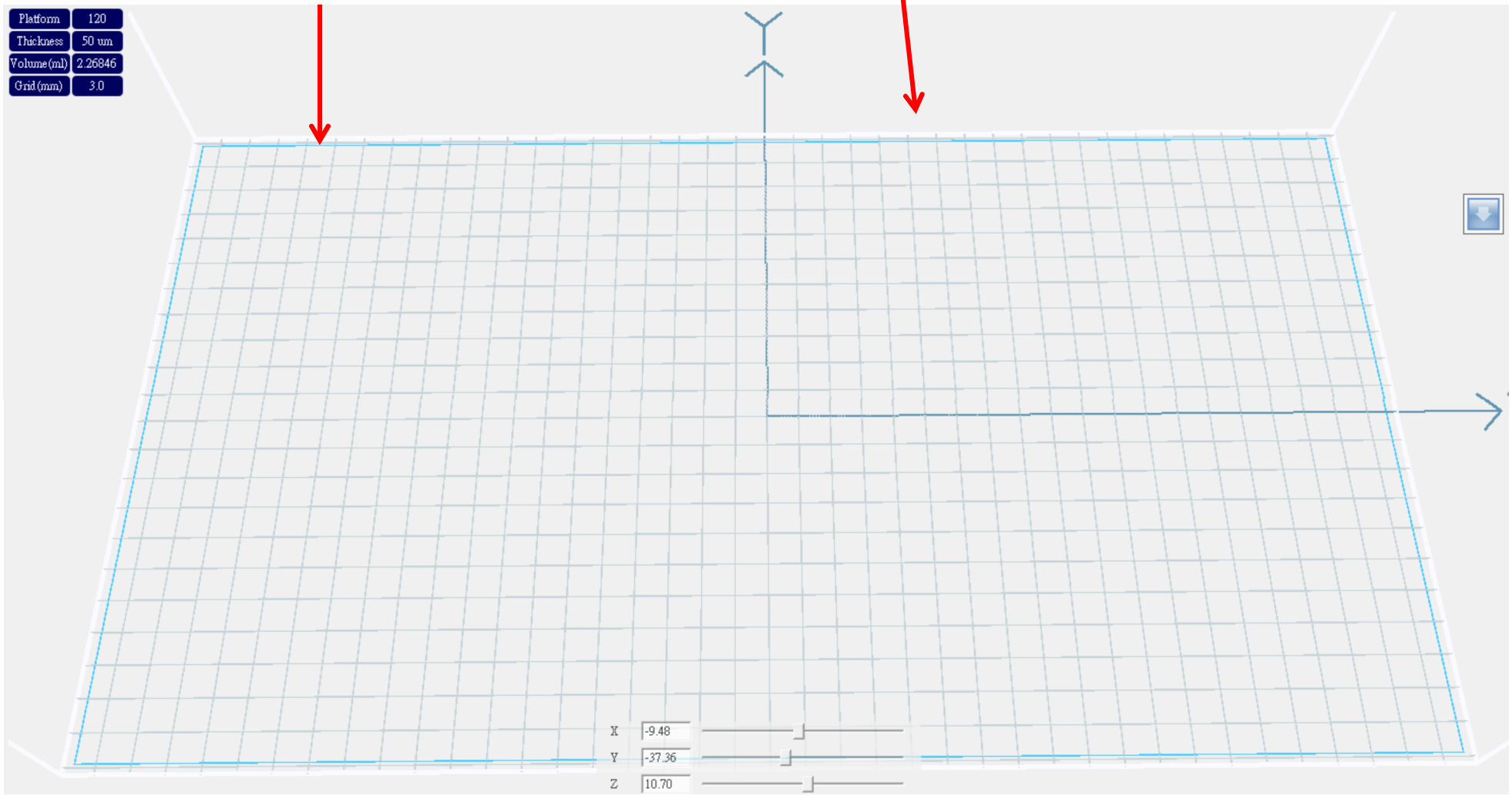
Printer Information



Open Utility and Connect to printer

White frame is the largest printing boundary

Blue frame is suggested printing boundary

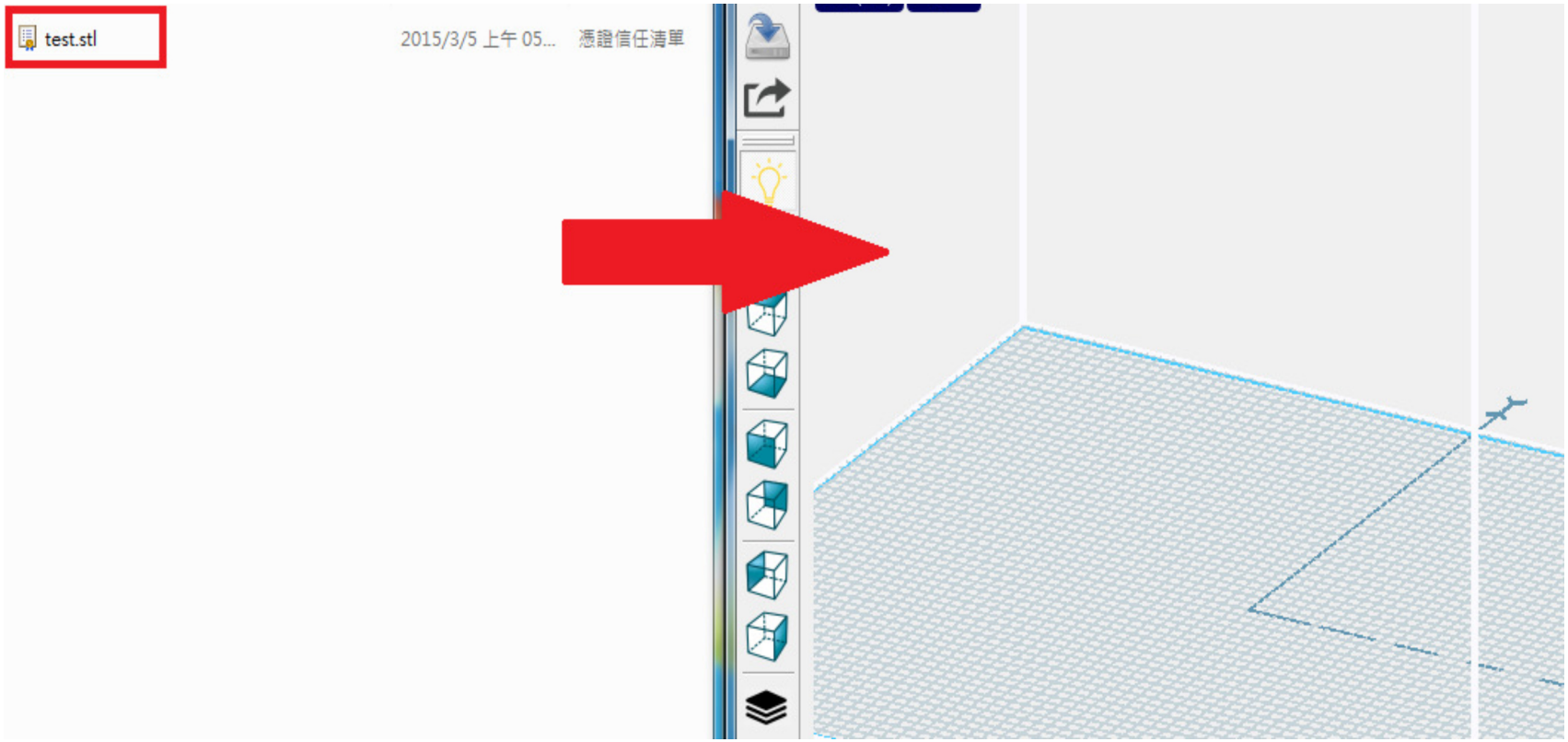


Import fle

1） There are two ways to import an .stl fle

A. Tool bar, icon as picture on the right

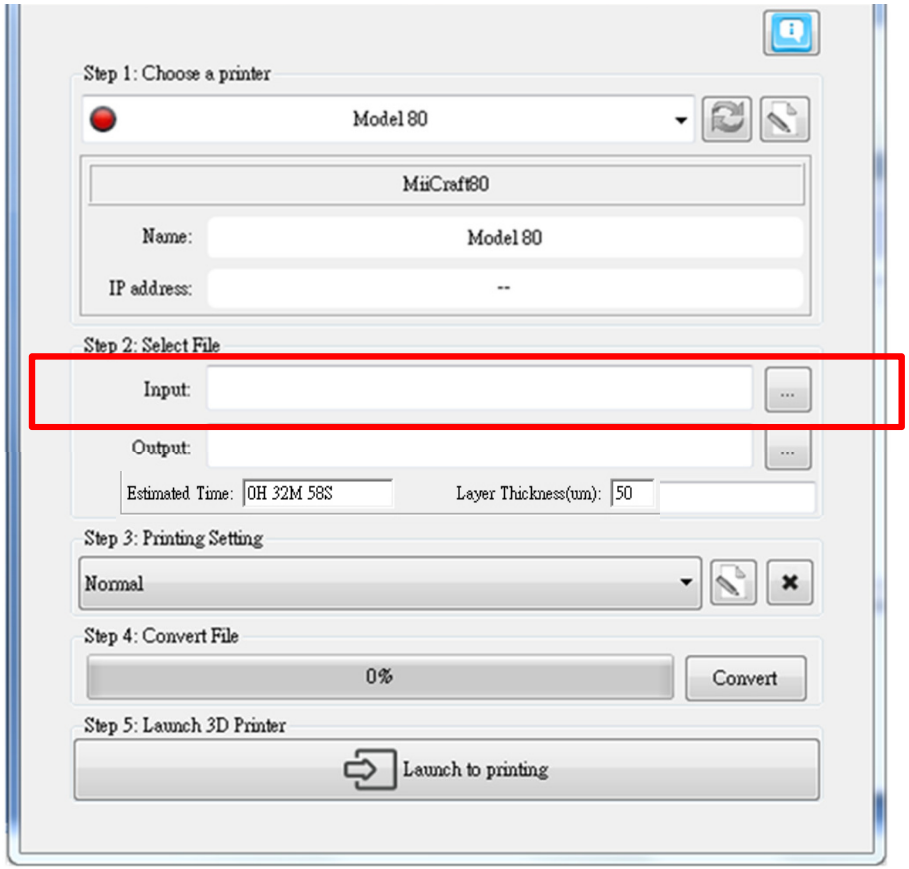
B. Drag the .stl fle from the folder into Utility



Import fle

1) How to import .slc fle (sliced fle)

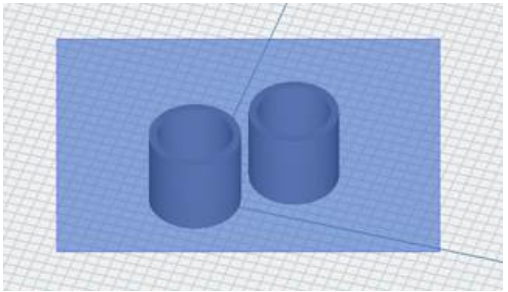
Tool bar, icon as picture on the right



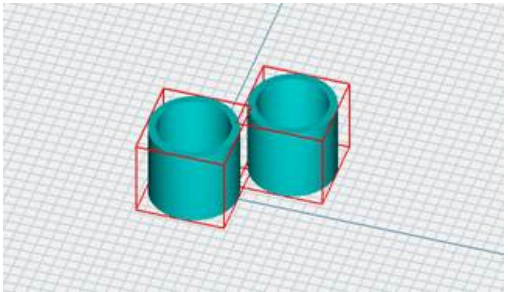
Select .slc fle

Hot key

- **Right Mouse Button** –Rotate platform
- **Middle Mouse Scroll** -Zooms in and out making the view of the build area larger or smaller
- **Middle Mouse Button** -Move platform
- **Alt+E** = Move model 
- **Alf+R** = Rotate model 
- **Ctrl + D** = Duplicate object

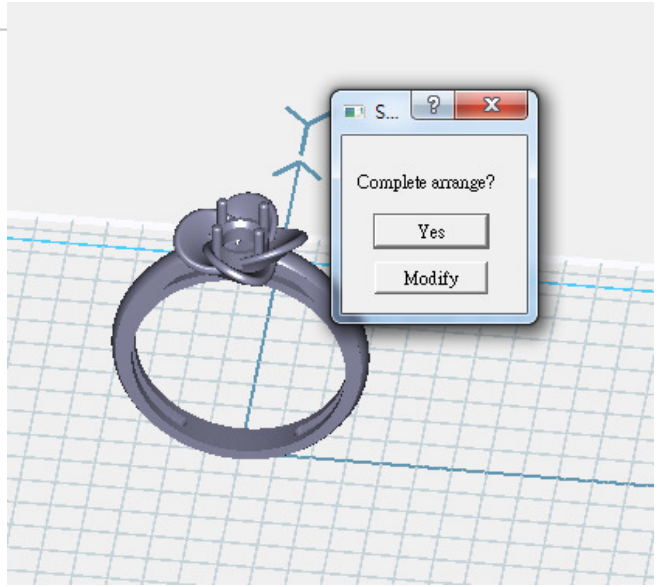


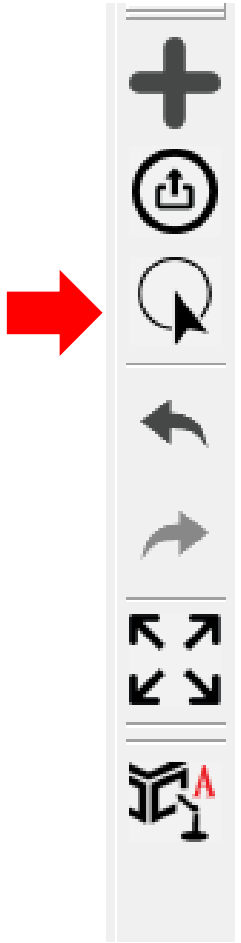
- **Ctrl + mouse click** = Multi select the object
- **Ctrl + mouse click + drag** = Move multiple object
- **Mouse click + drag area** = Box selection

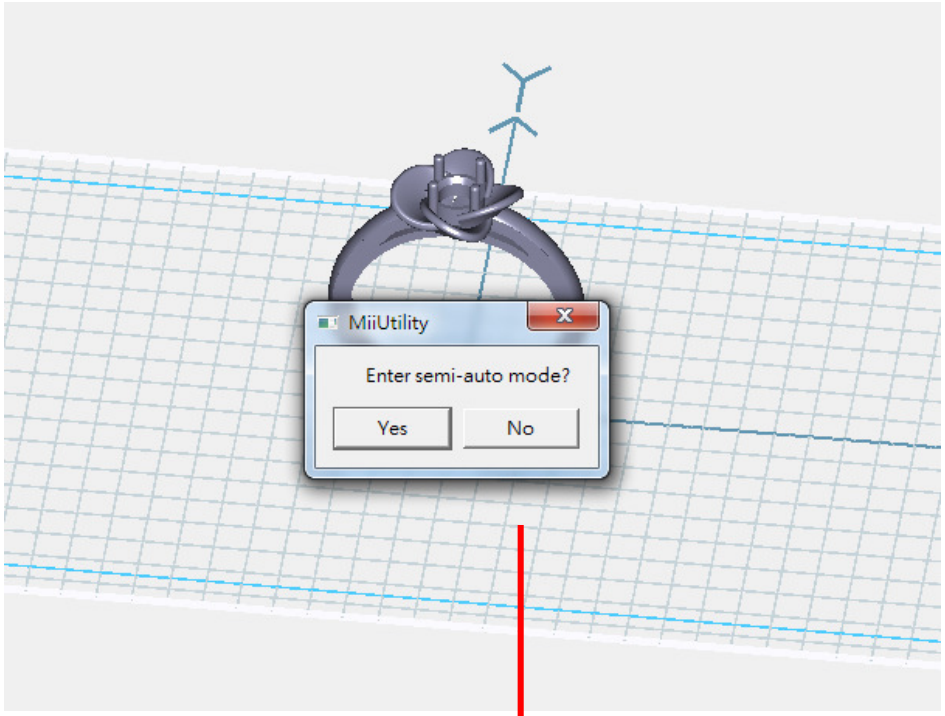


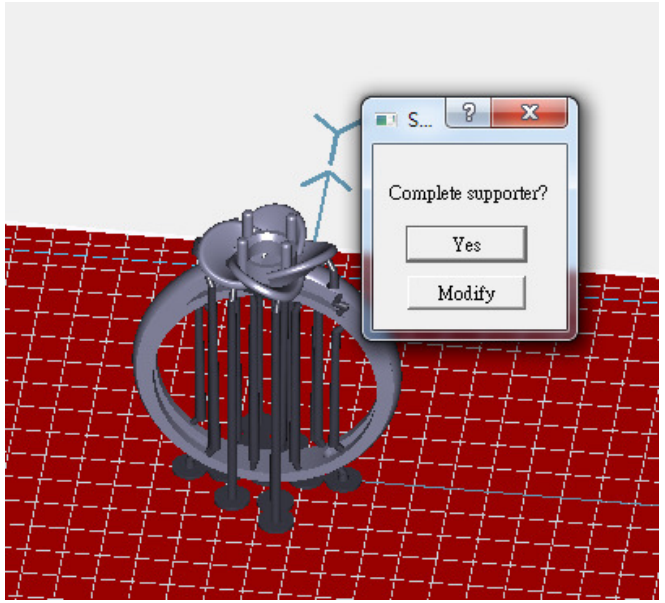
Semi-Auto Mode

1. Import model
2. Click Tool bar “Printer”
3. Enter Semi-auto mode
4. Click Yes → Auto arrangement & Auto support → slicing →convert









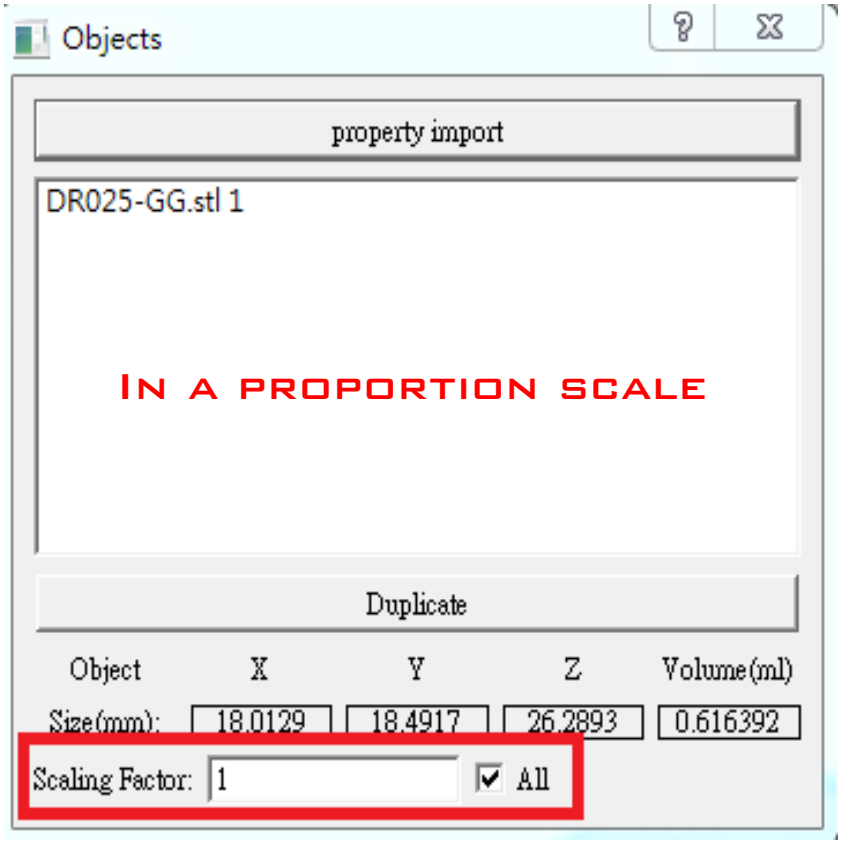
* If user already customize model arrangement and build support, click “No” to move on to slicing.

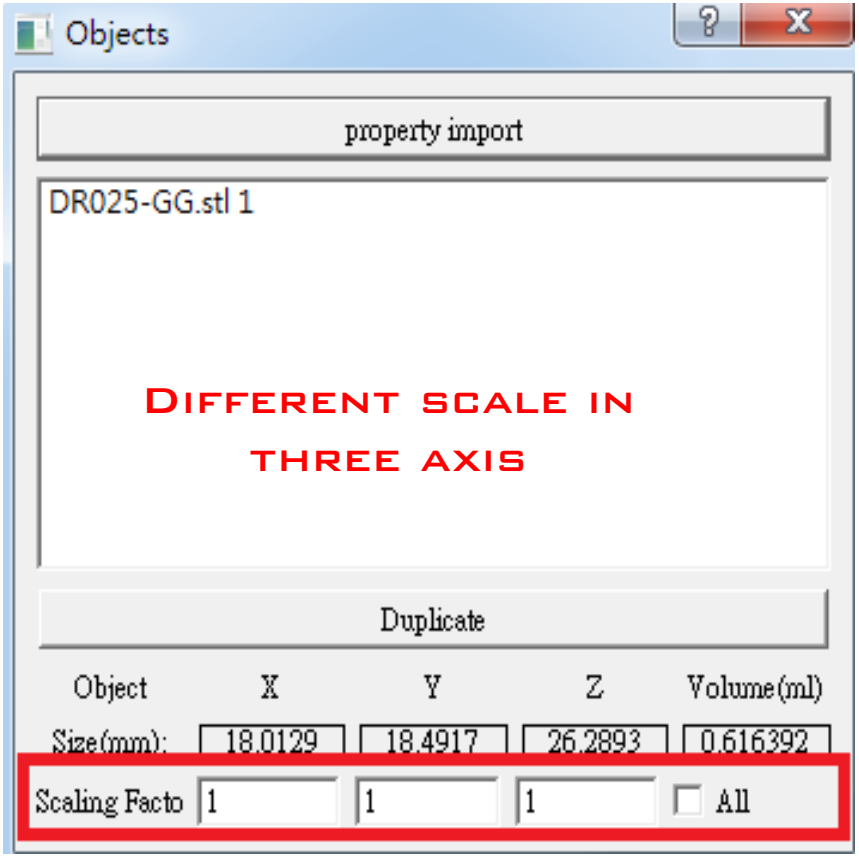
Duplicate and Resize Model

1) Tool bar, icon as picture on the right

Note: When the fle name is highlighted, it means the model has been selected. AT this point instruction is active.

A. Select “all” to amplify or minify in a proportion scale

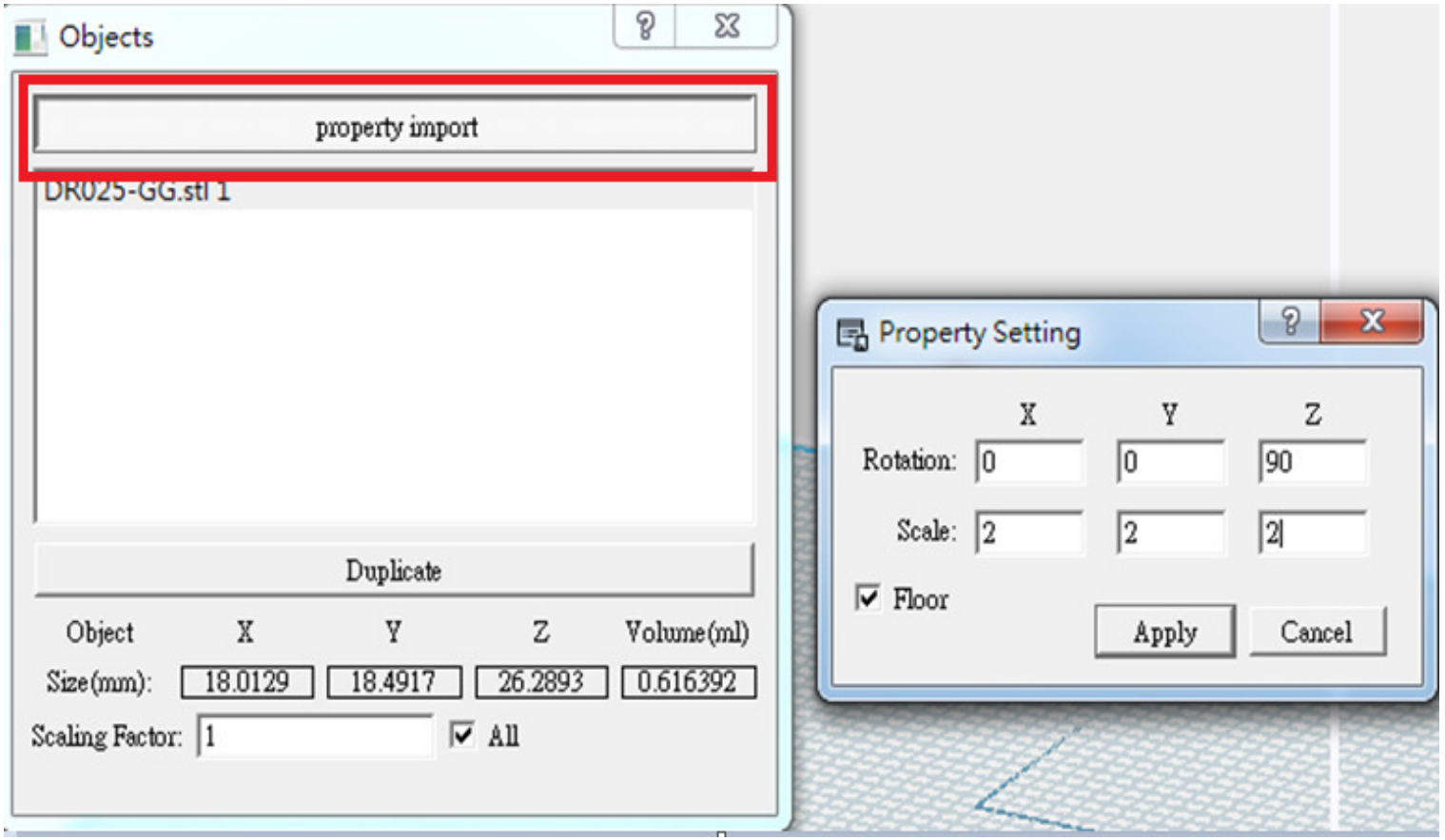




Duplicate and Resize Model

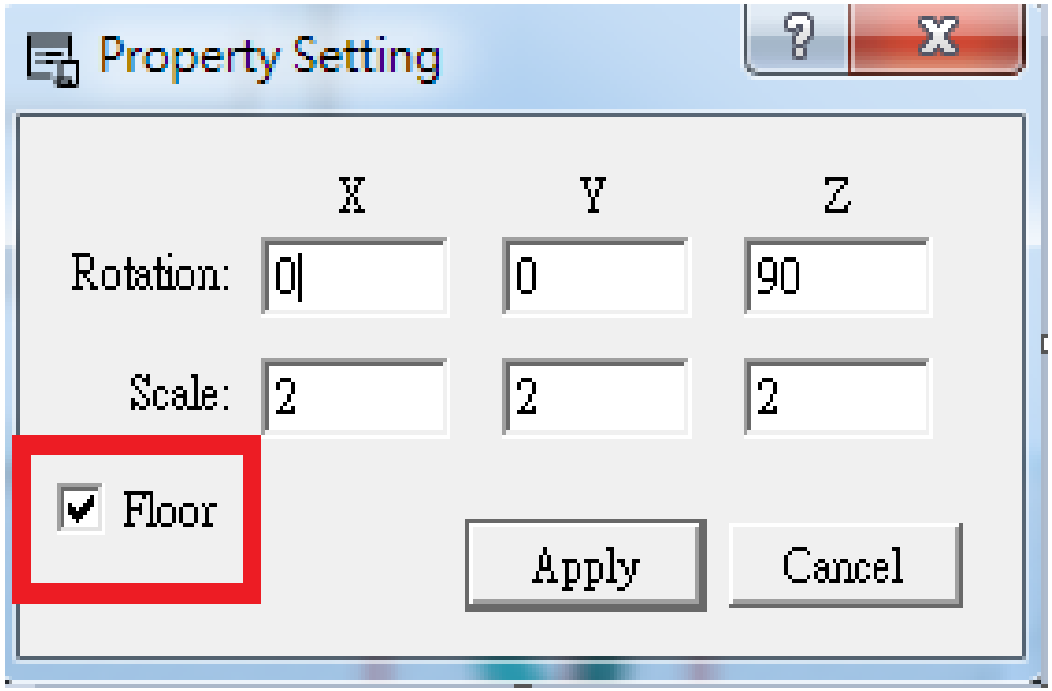
2) Property import, the setting will apply to every model import later

EX: Property import setting Z axis rotate 90 degree, X,Y,Z amplify 2 times, so the model import later will all follow this setting



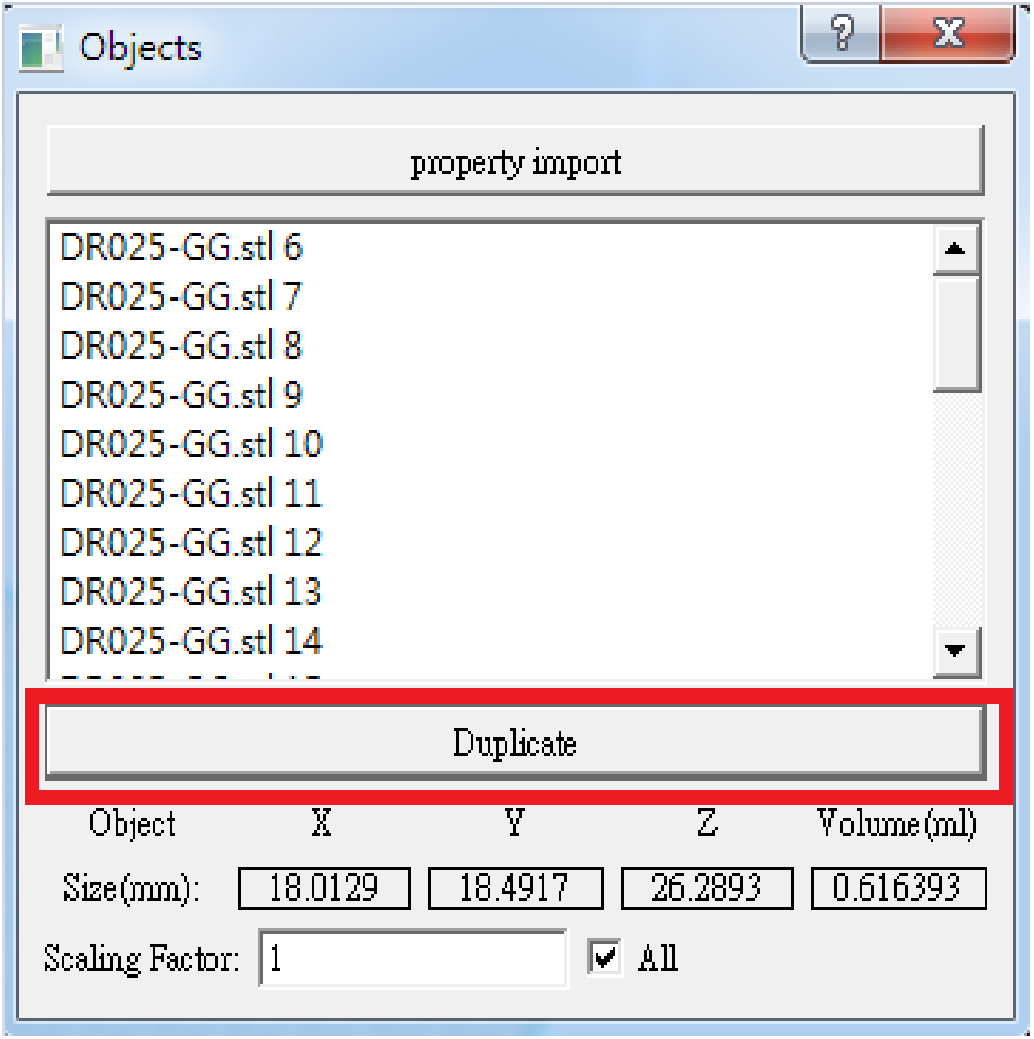
Duplicate and Resize Model

3) Property import, select "Floor" to let model import with Z coordinate zero



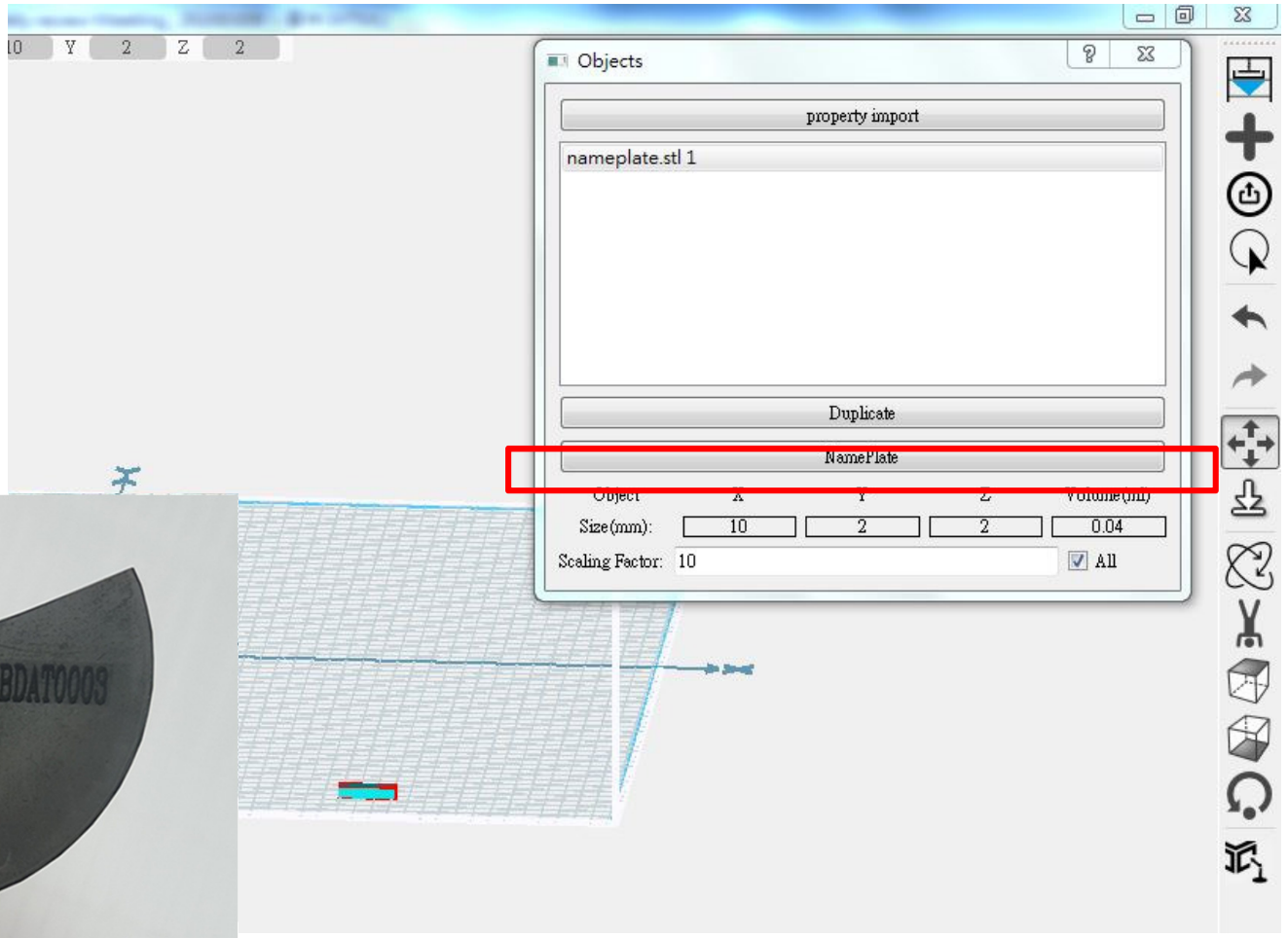
Duplicate and Resize Model

4) Duplicate selected model



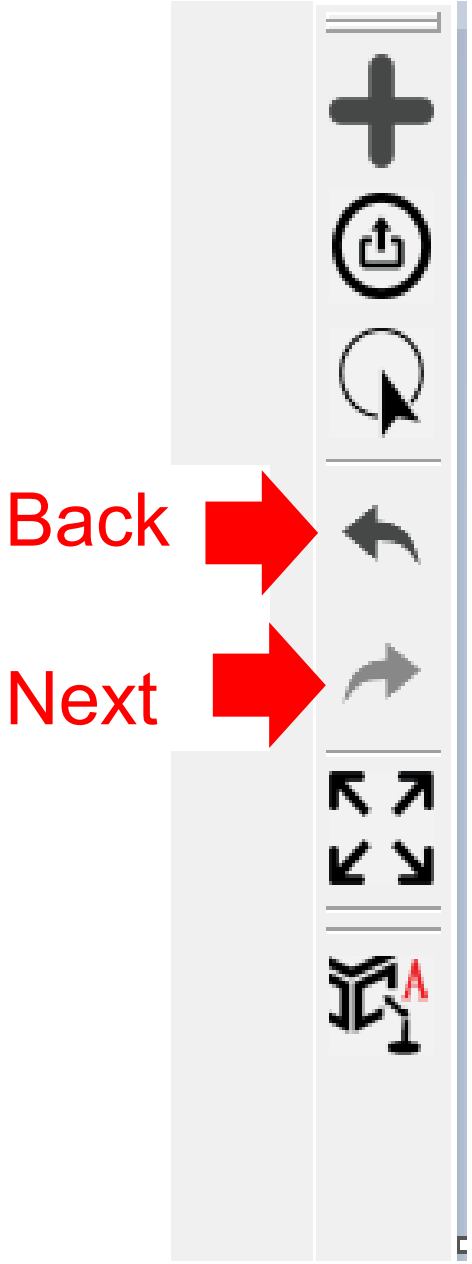
Generate Nameplate on print model

1) Nameplate is a serial number combines date, machine serial number and printing job number.



Back and Next

1) Tool bar, icon as picture

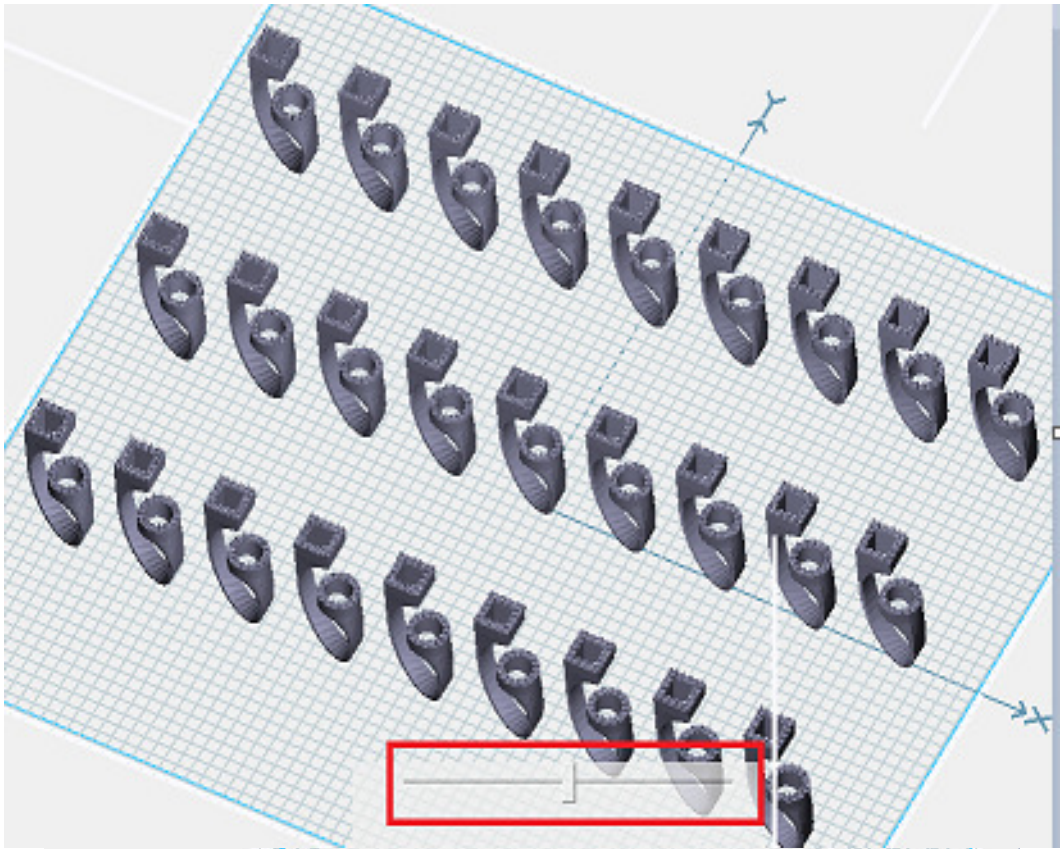


Auto Arrangement

1) Tool bar, icon as pictured on the right,

Multiple model auto arrangement can adjust

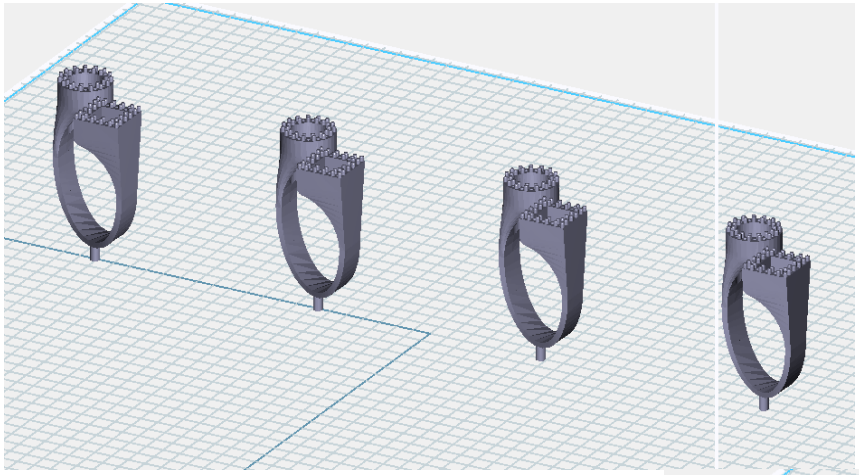
the spacing with horizontal scroll bar

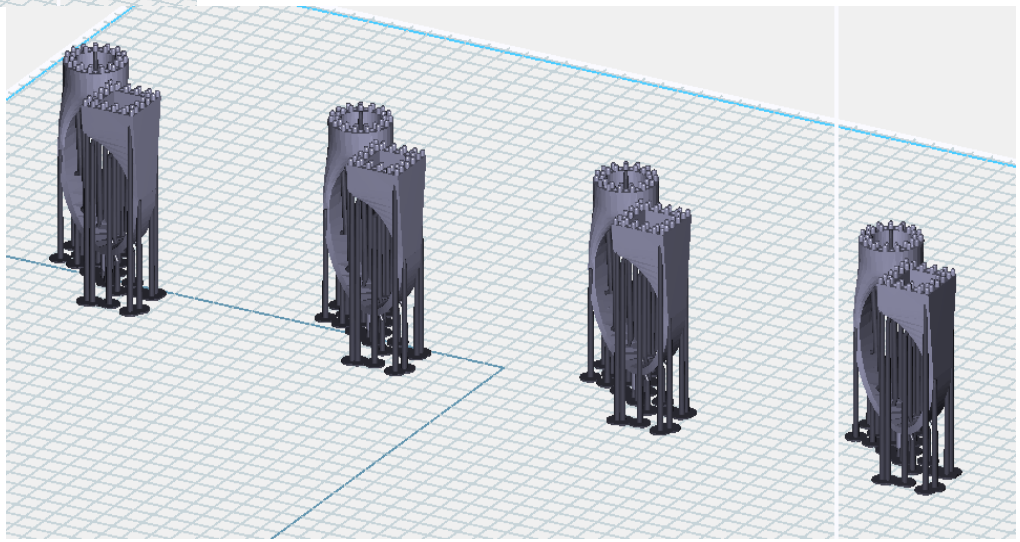


Auto support

1) Tool bar, as picture on the right

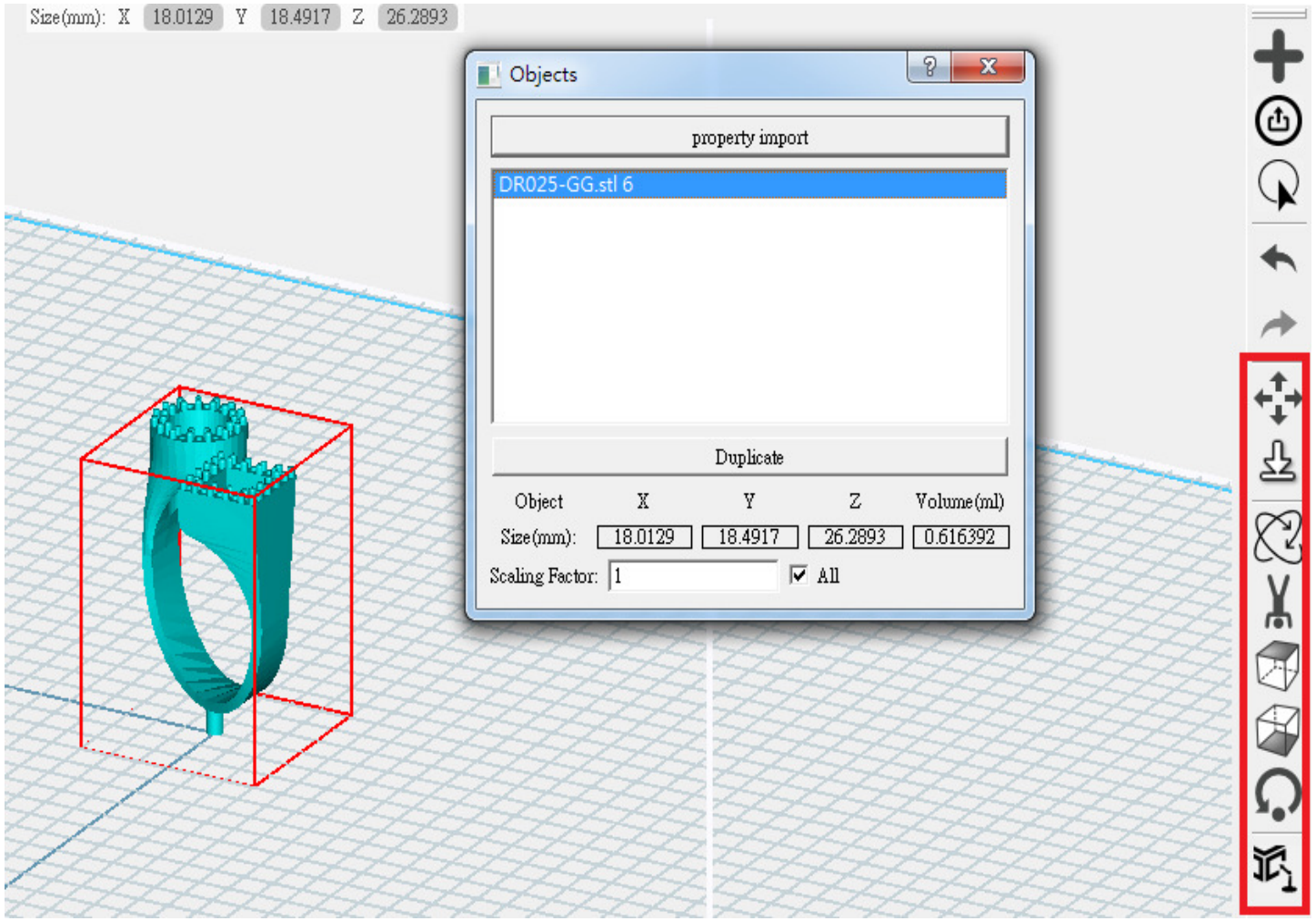
Build auto support for every model





Model arrangement

Select one model (been high light), more setting shows up in tool bar (as below red box), here you can do customize model arrange, and build customize support



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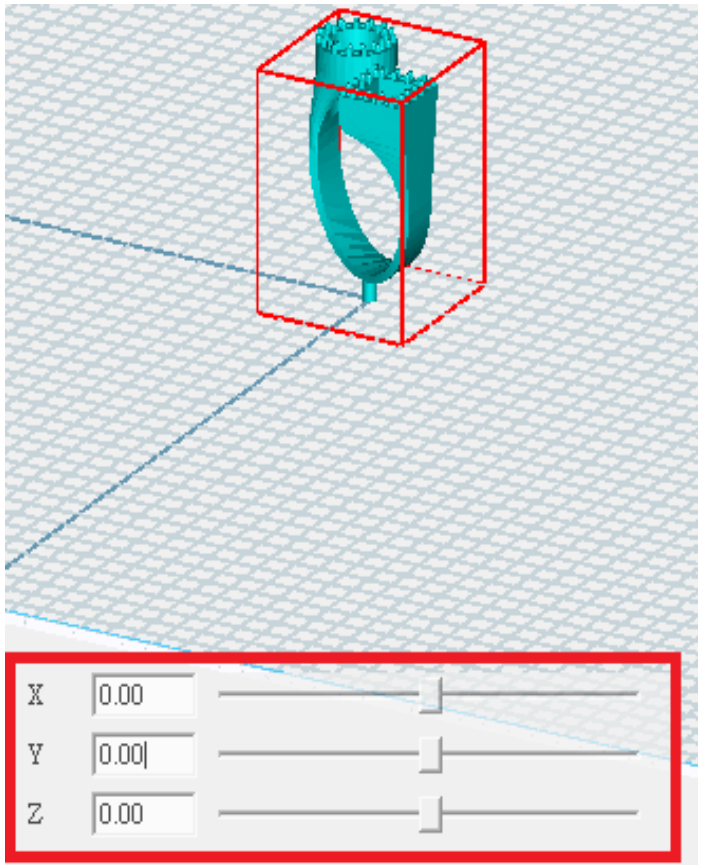
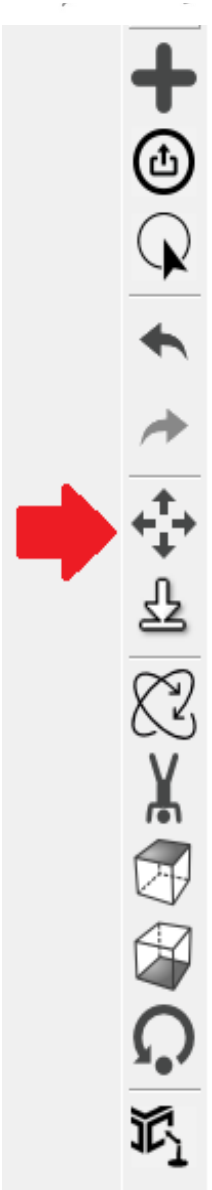
Model arrangement

1) Select model, and click on tool barDrag and move the model

2) Or set X, Y, Z coordinate

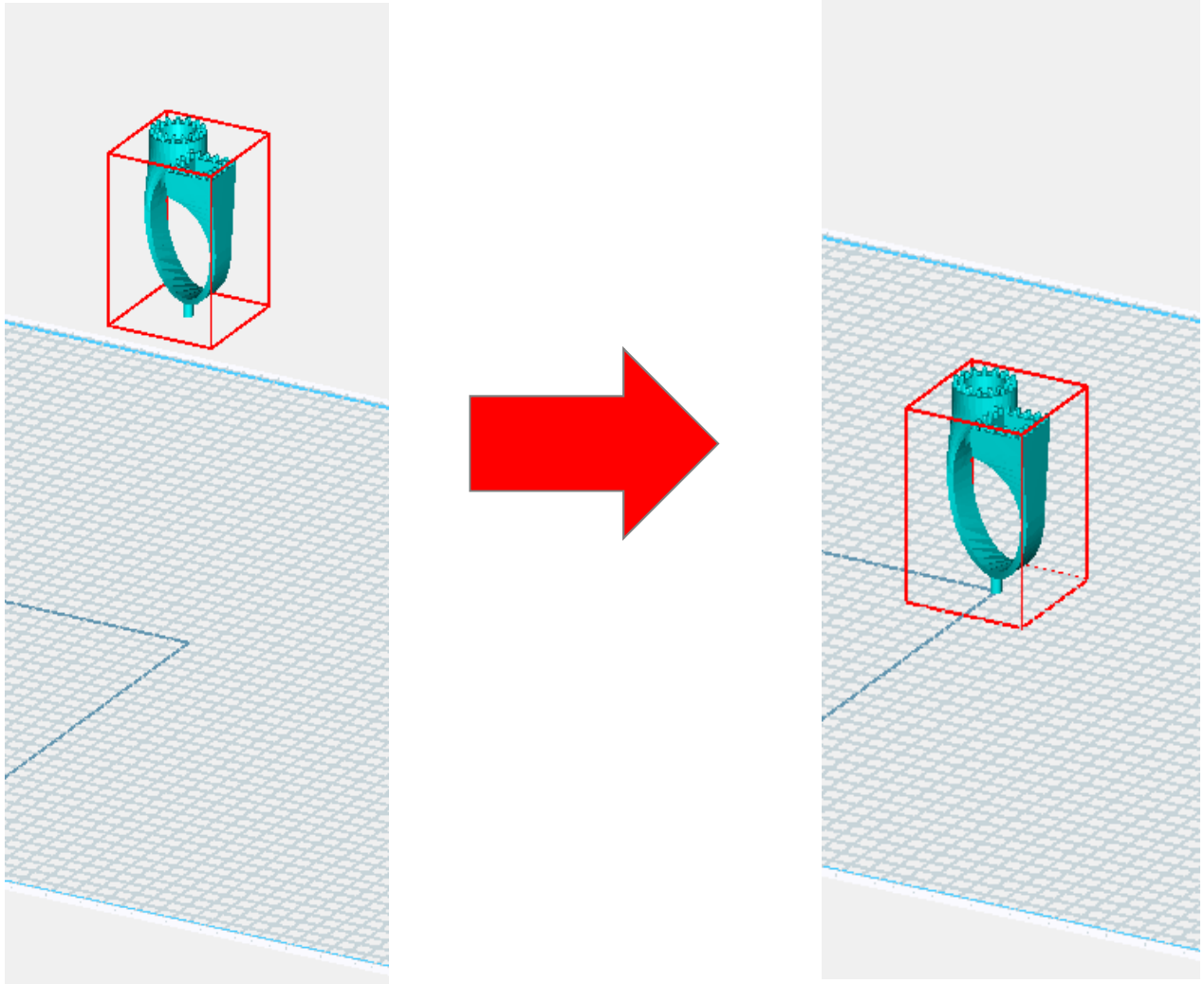


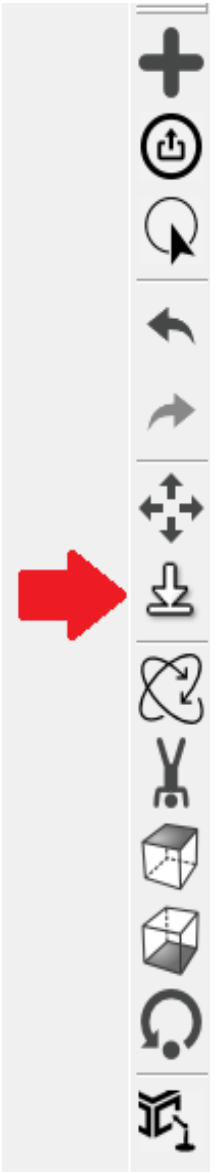


Model arrangement

2) Select model, and click on tool bar

Put model down to foor



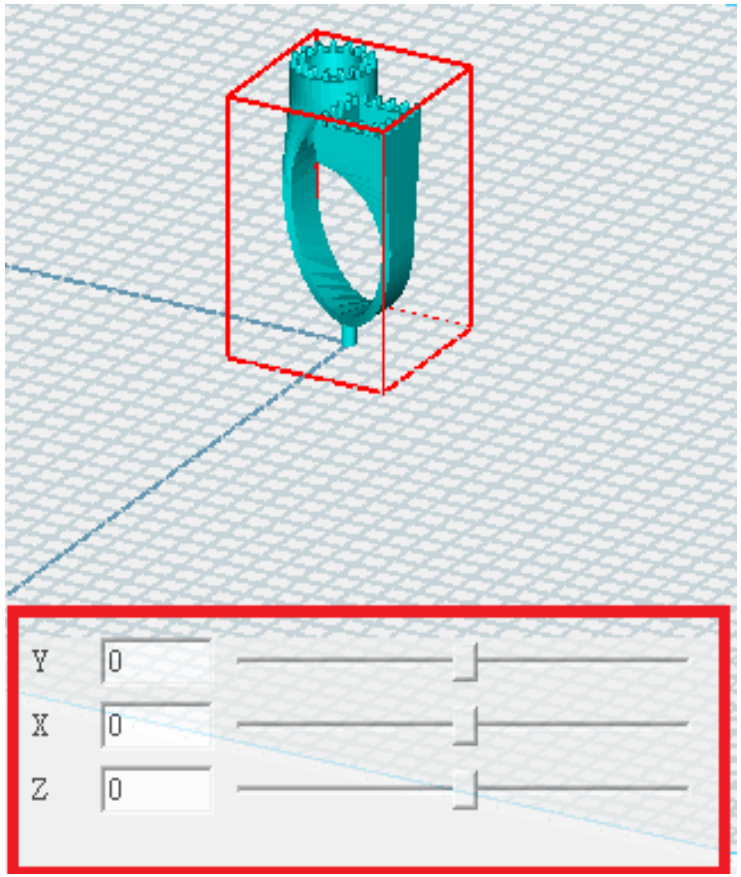


Model arrangement

3) Select model, and click on tool bar

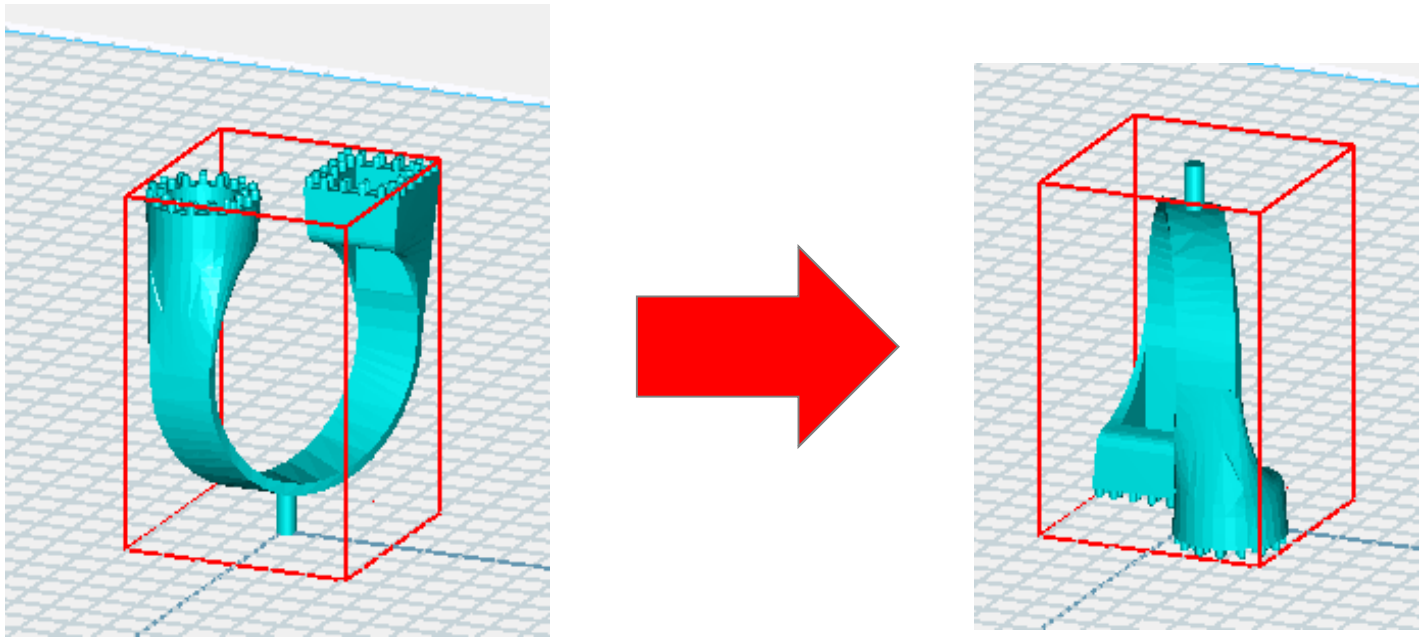
Set X, Y, Z axis rotation degree

Or use horizontal scroll bar



Model arrangement

4) Select the model, and click on the tool bar to Put the model upside down

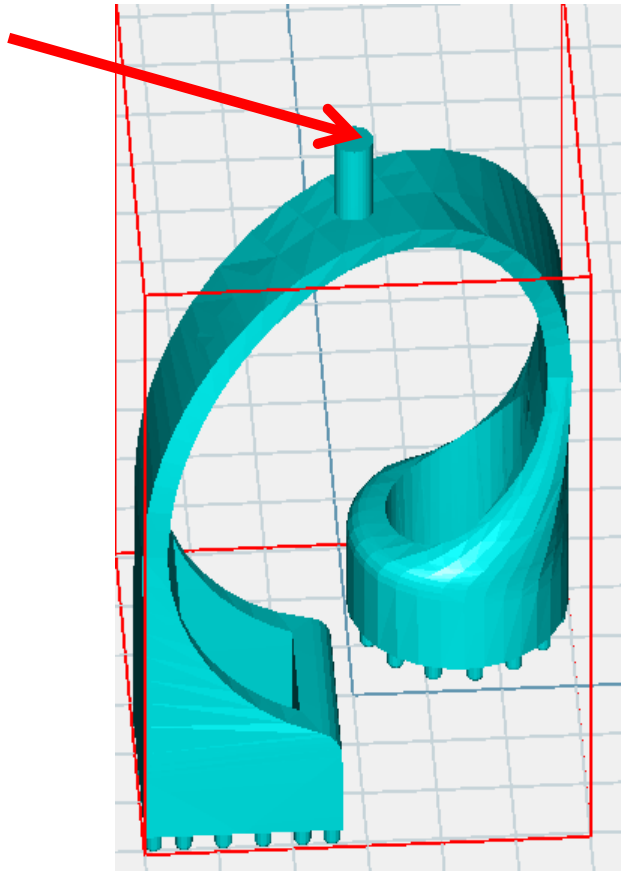


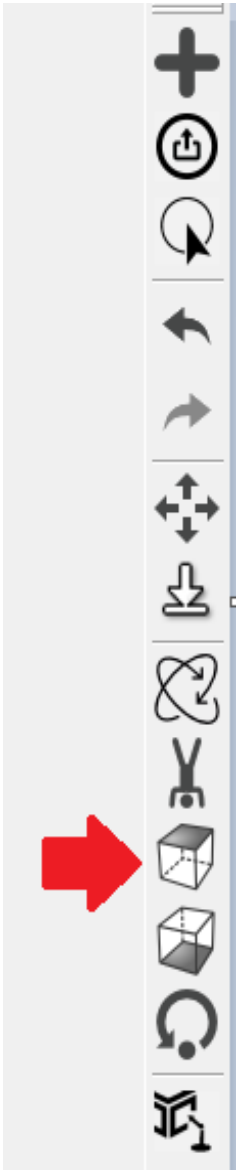
Model arrangement

5) Select model, and click on tool bar

Click on one side, face up

EX: Select this side



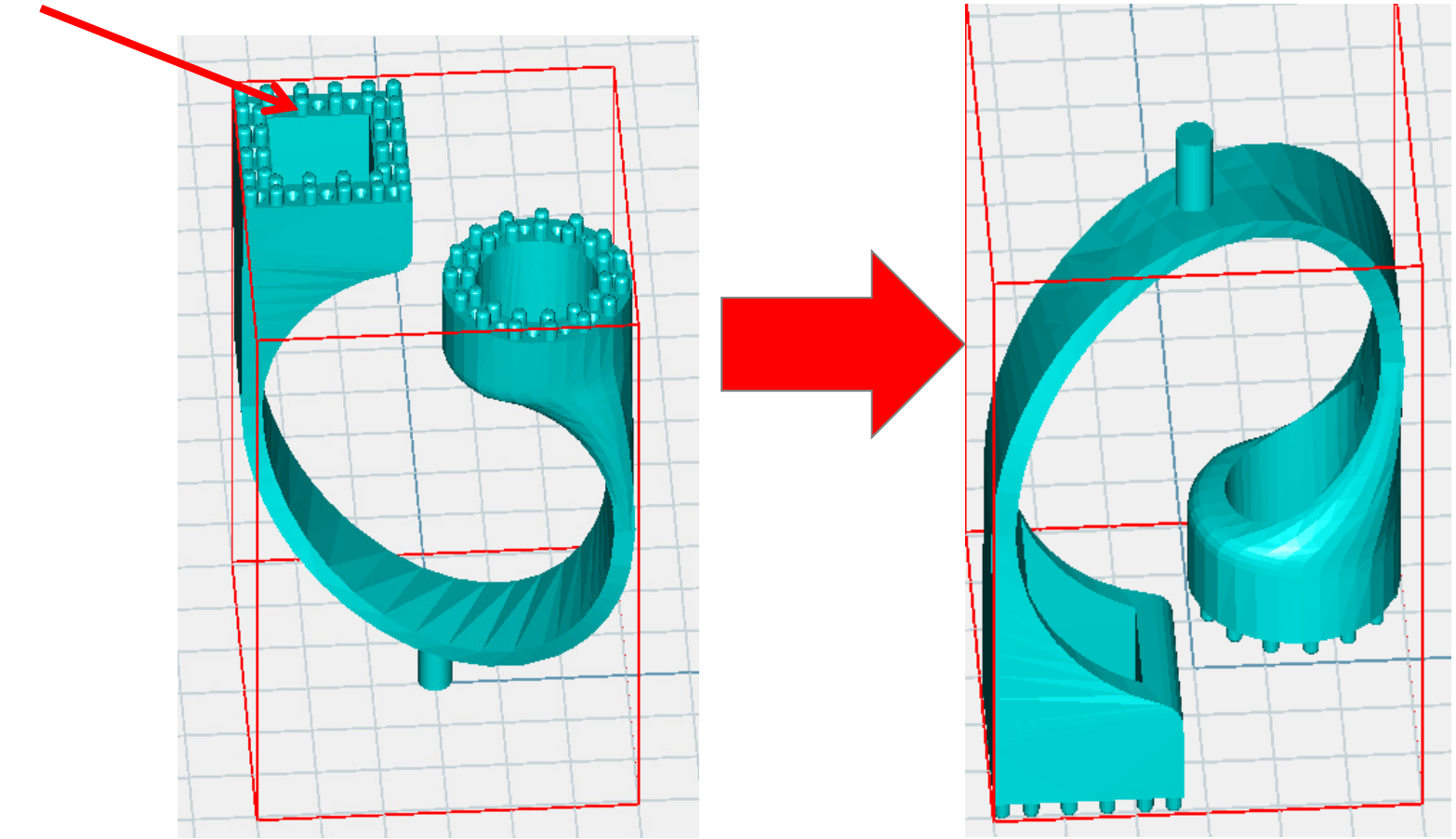


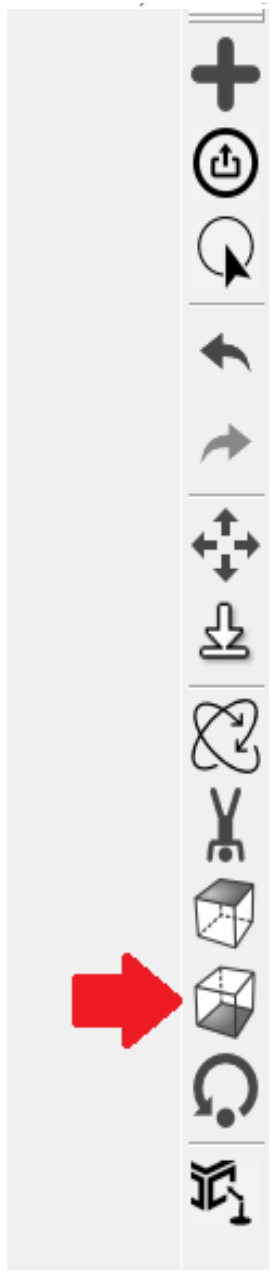
Model arrangement

6) Select model, and click on tool bar

Click on one side, face down

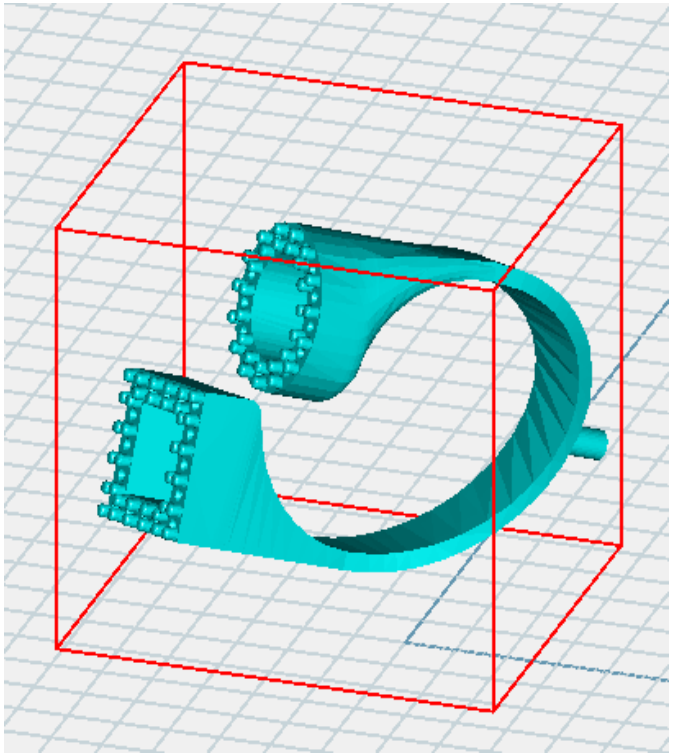
EX: Select this side

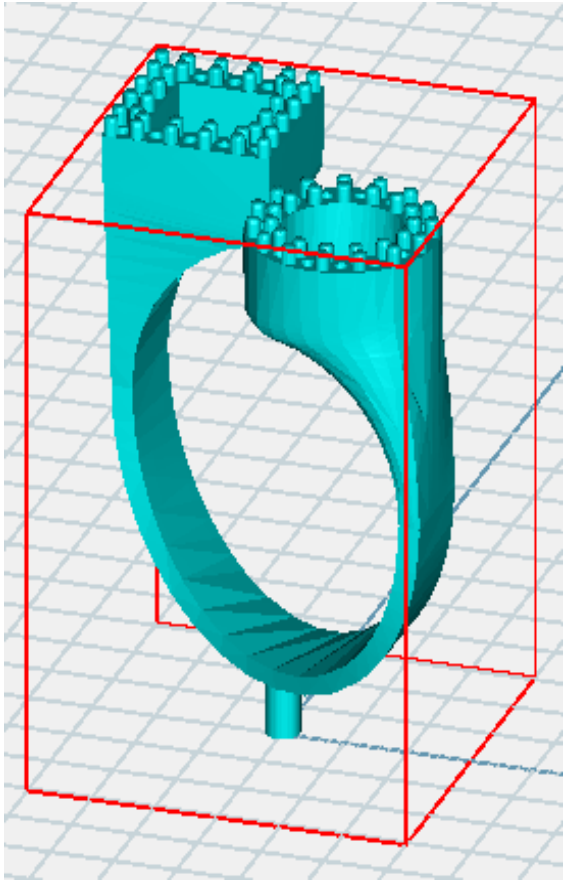




Model arrangement

7) Select model, and click on tool bar Back to the default rotation

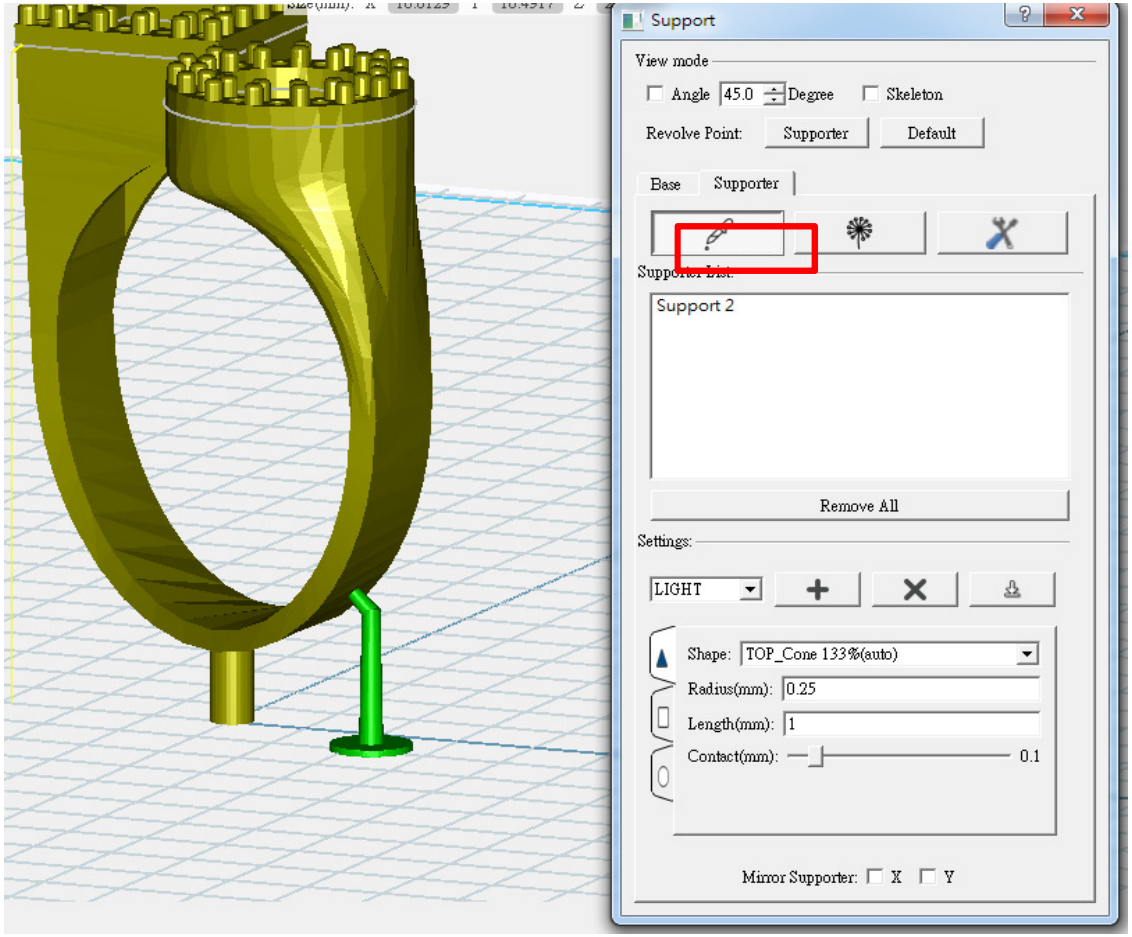


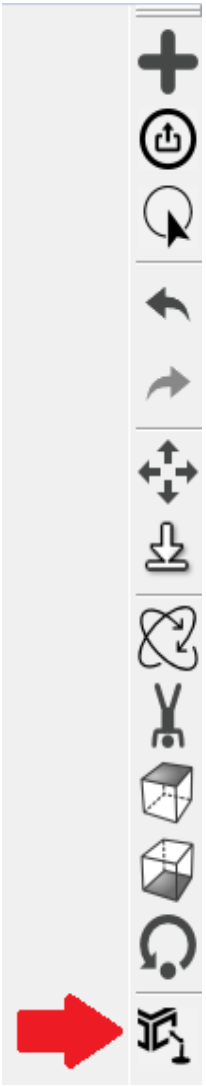


Build supports

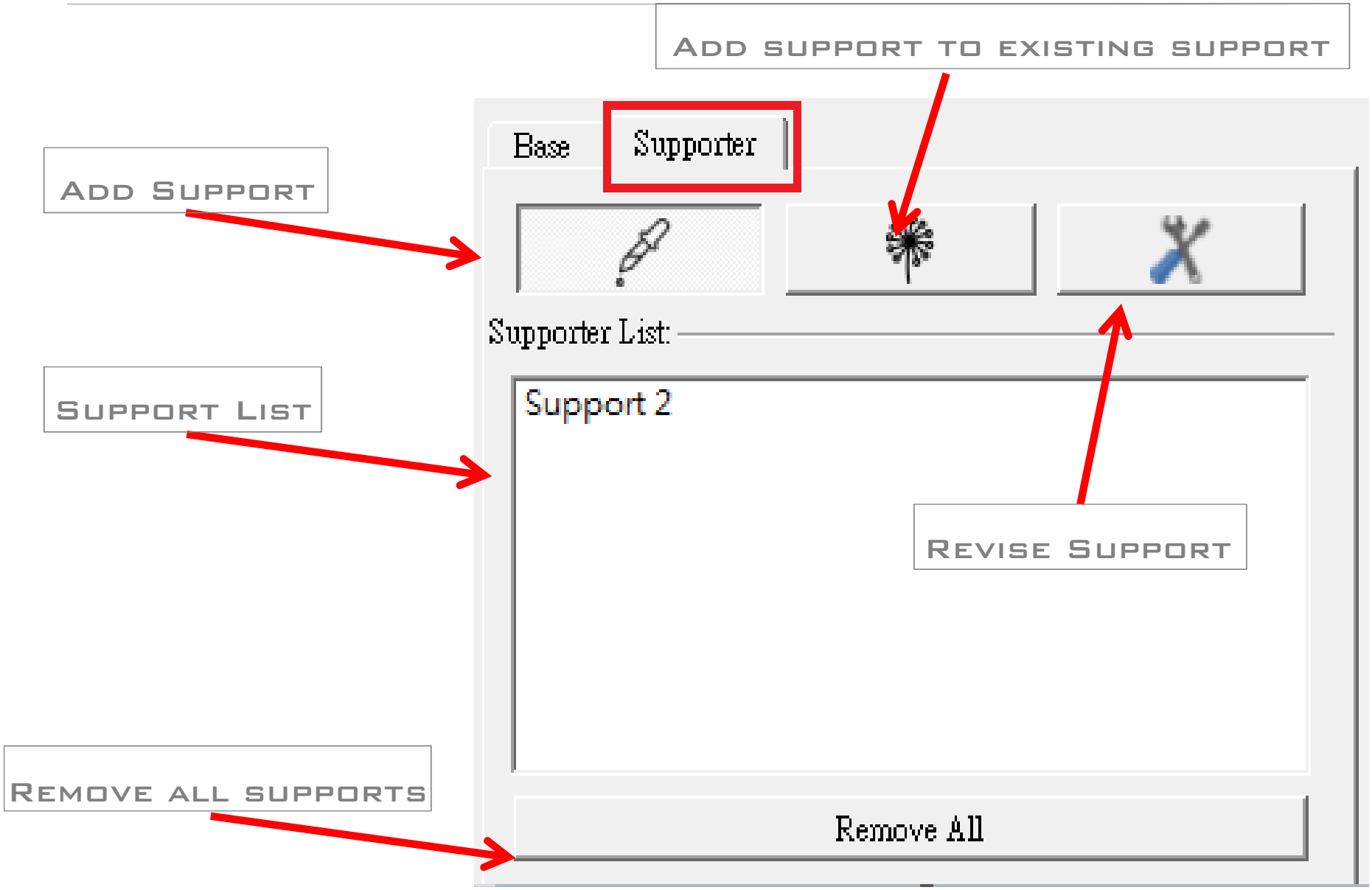
Select one model (been high light), more setting shows up in tool bar (as below red box), here you can build personalize support

to Add support, click where you'd like to add





Build supports



Build Supports

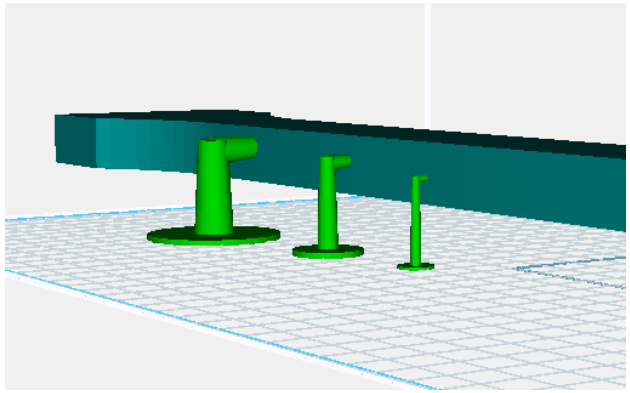
1) Support settings

(a) 3 kinds of basic support settings can be selected by user preference

light

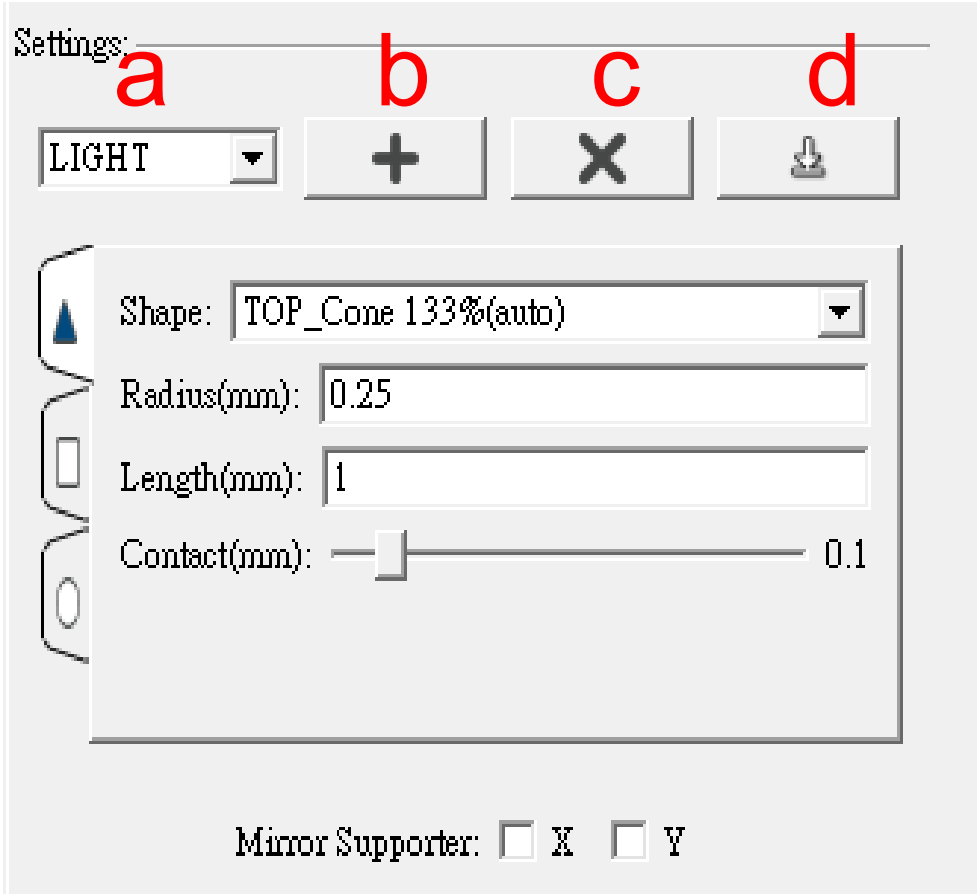
medium

heavy



Customize and save support settings

edit

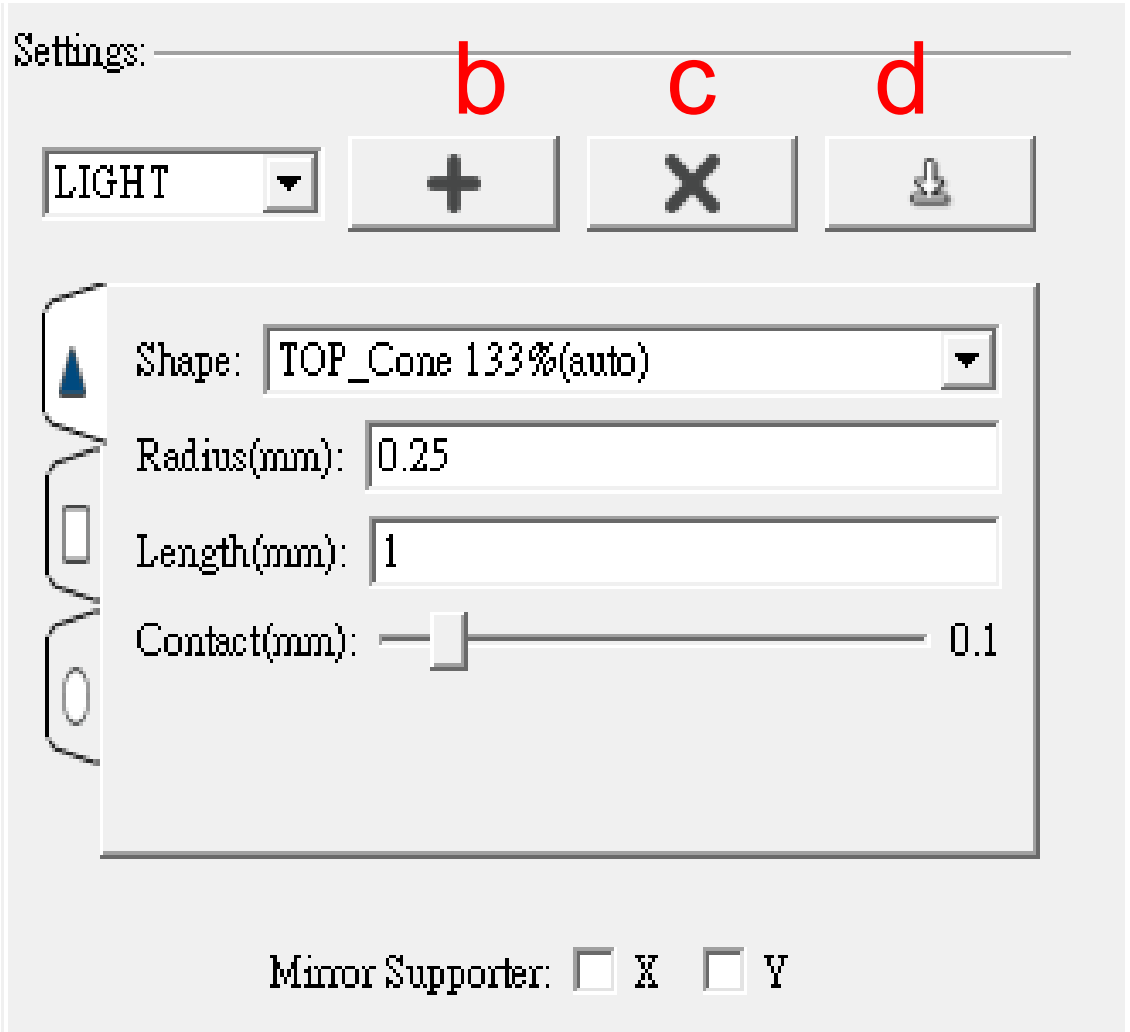


Build supports

(b) Add support settings

(c) Delete support settings

(d) Save support settings



Build supports

Customize support setting

One support can be separated into top, middle and bottom

Top support settings:

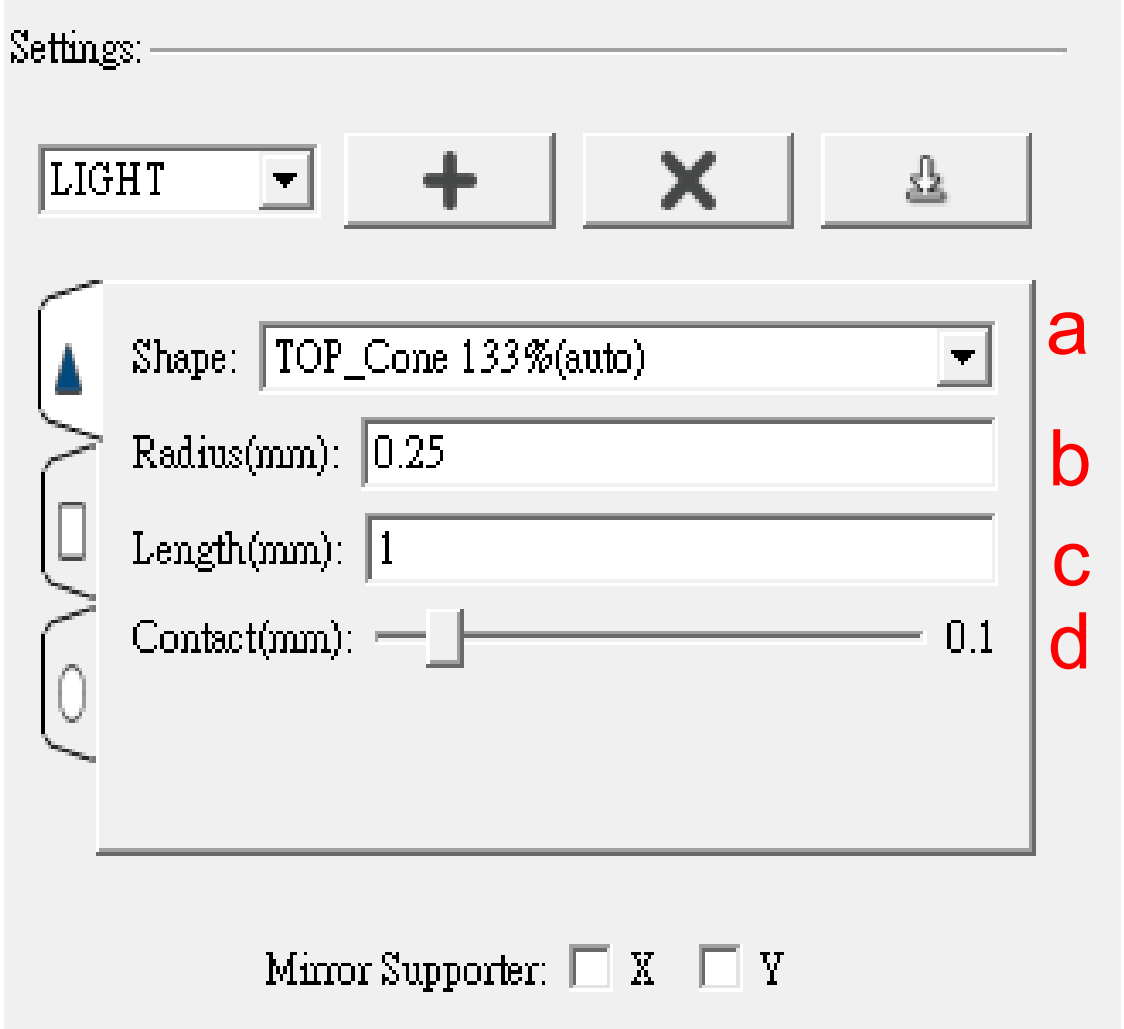
Top

A. Top support shape

B. Top support radius Middle

C. Top support length Bottom

D. Top support and model contact

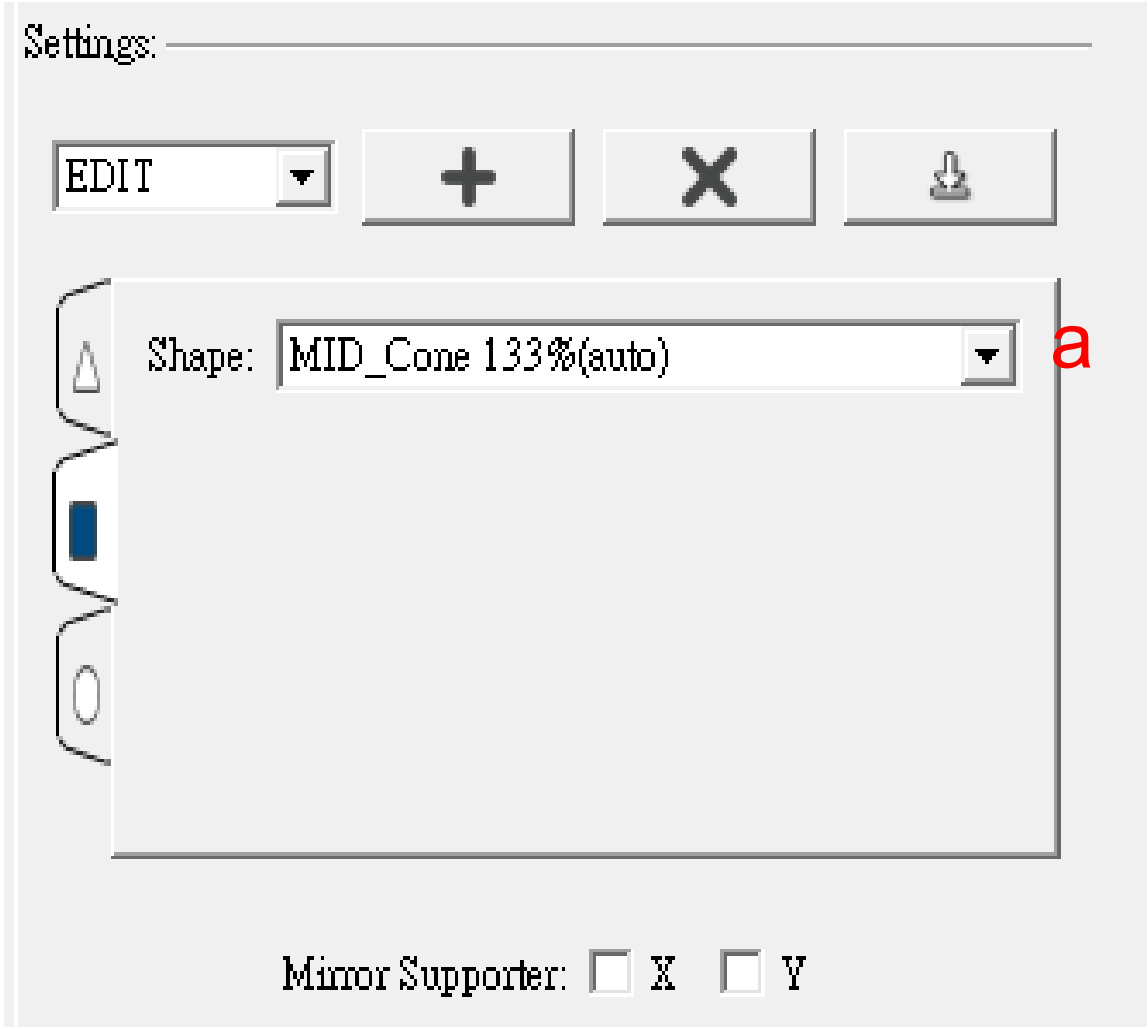


Build supports

Middle support setting

a) Middle support shape

Middle



Build supports

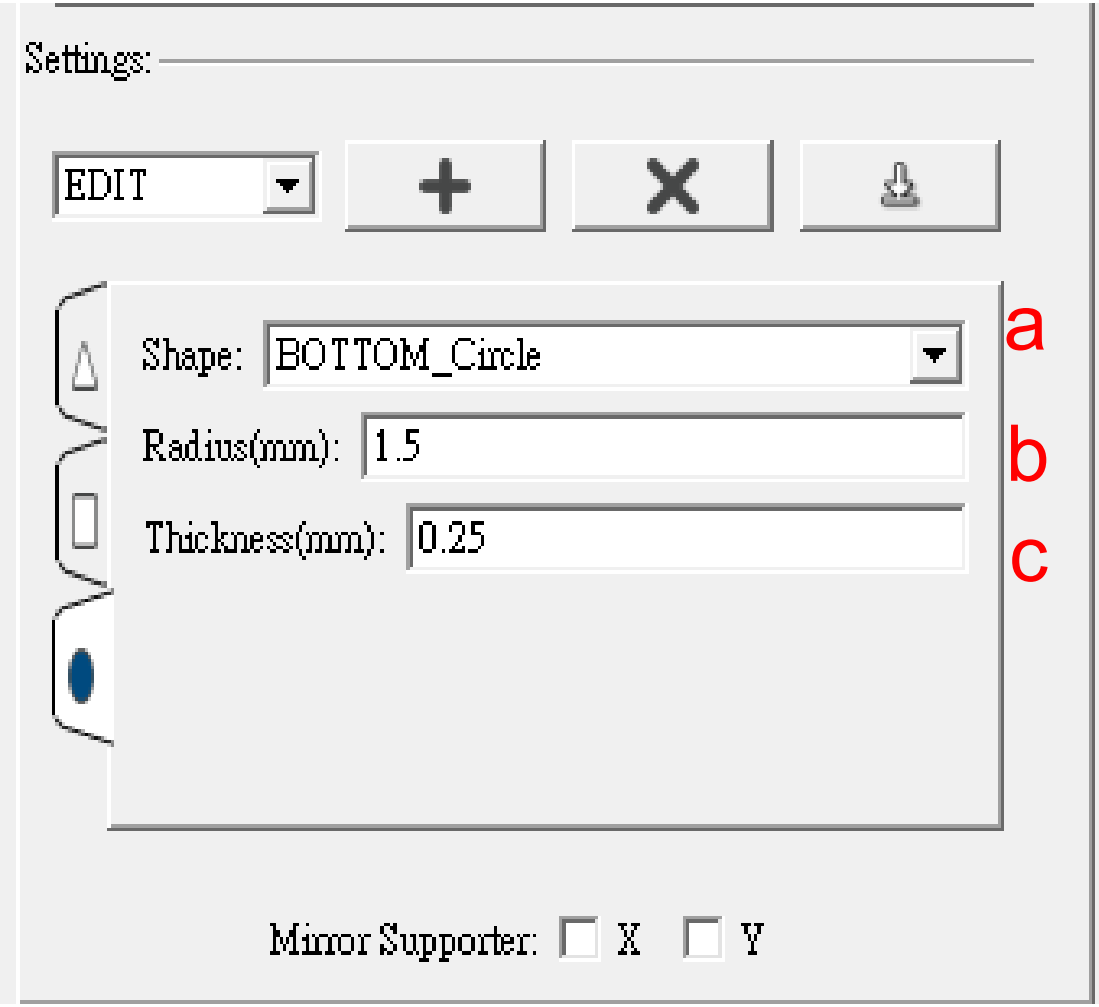
Bottom support setting

a) Bottom support shape

b) Bottom support radius

c) Bottom support thickness

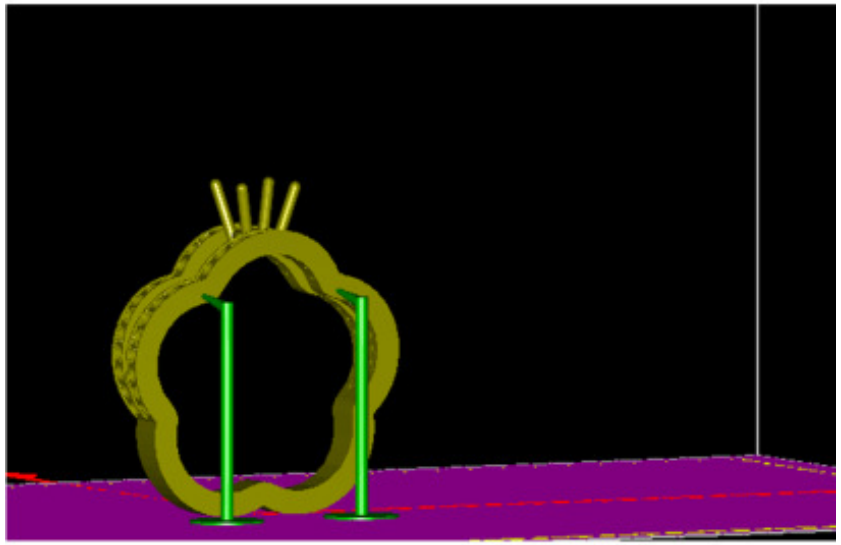
Bottom

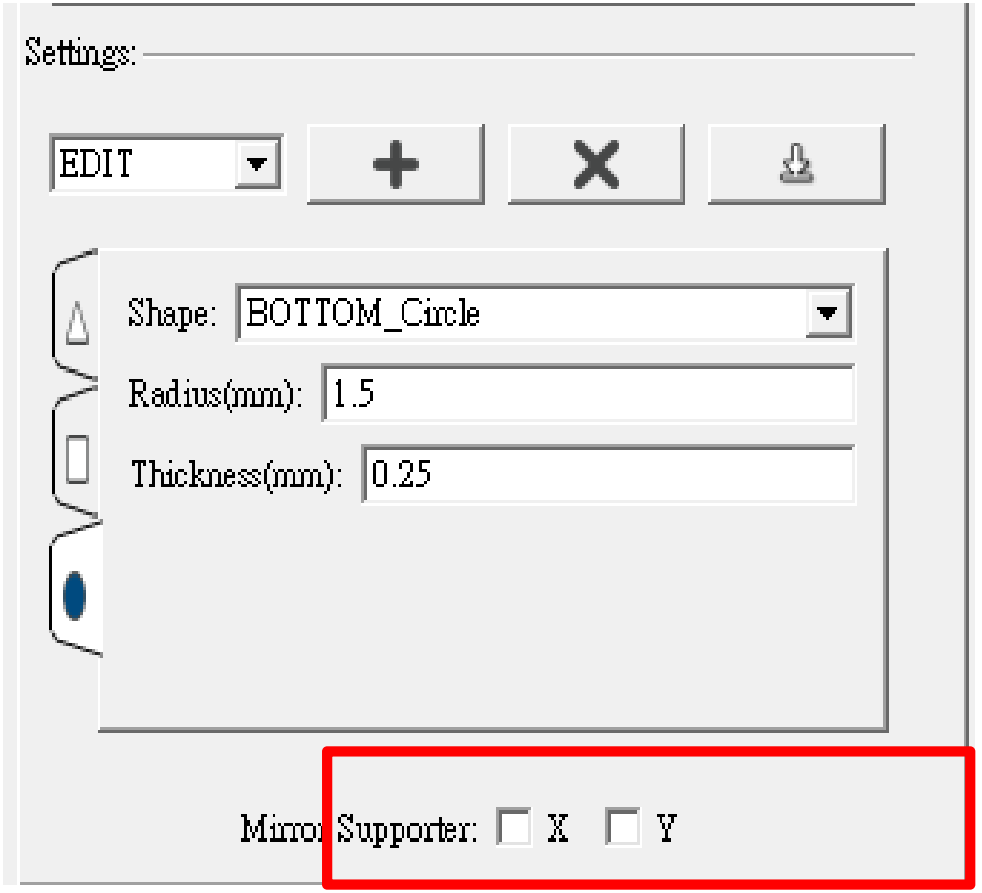


Build supports

Mirror supporter:

Build symmetrical supports according to X axis

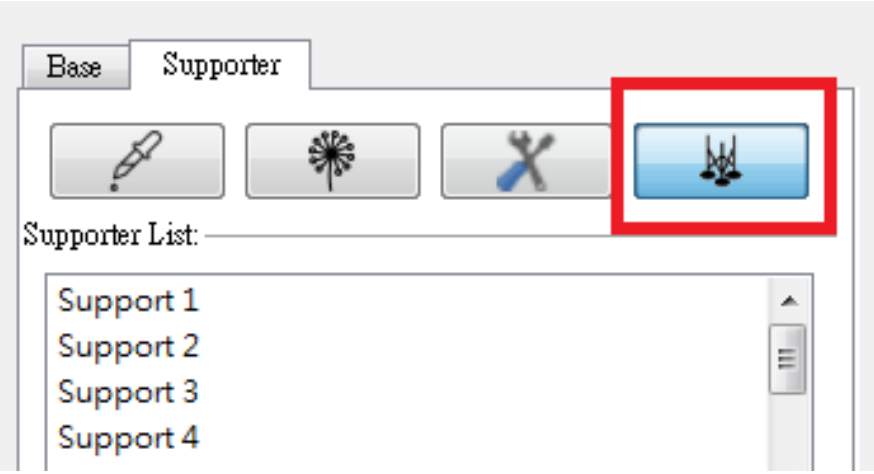


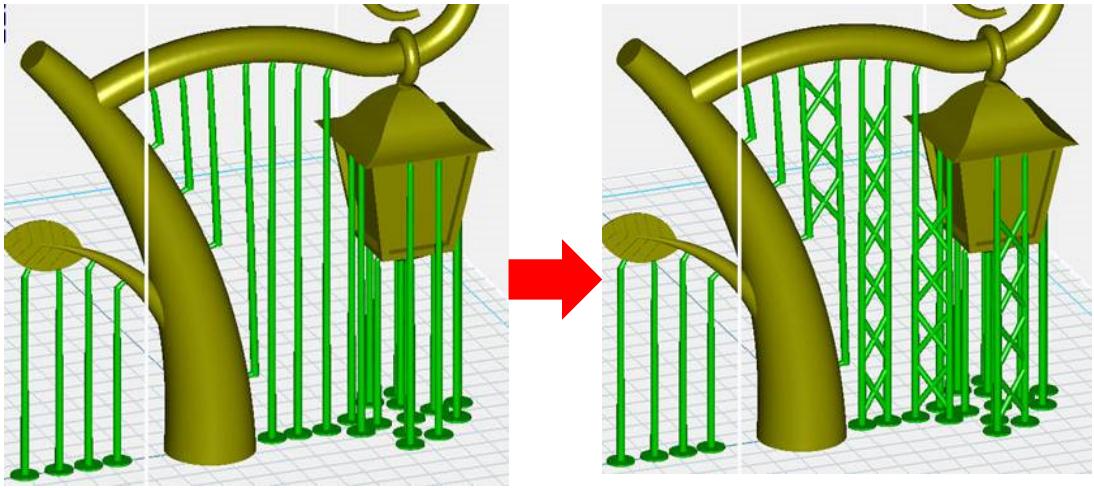


Build supports

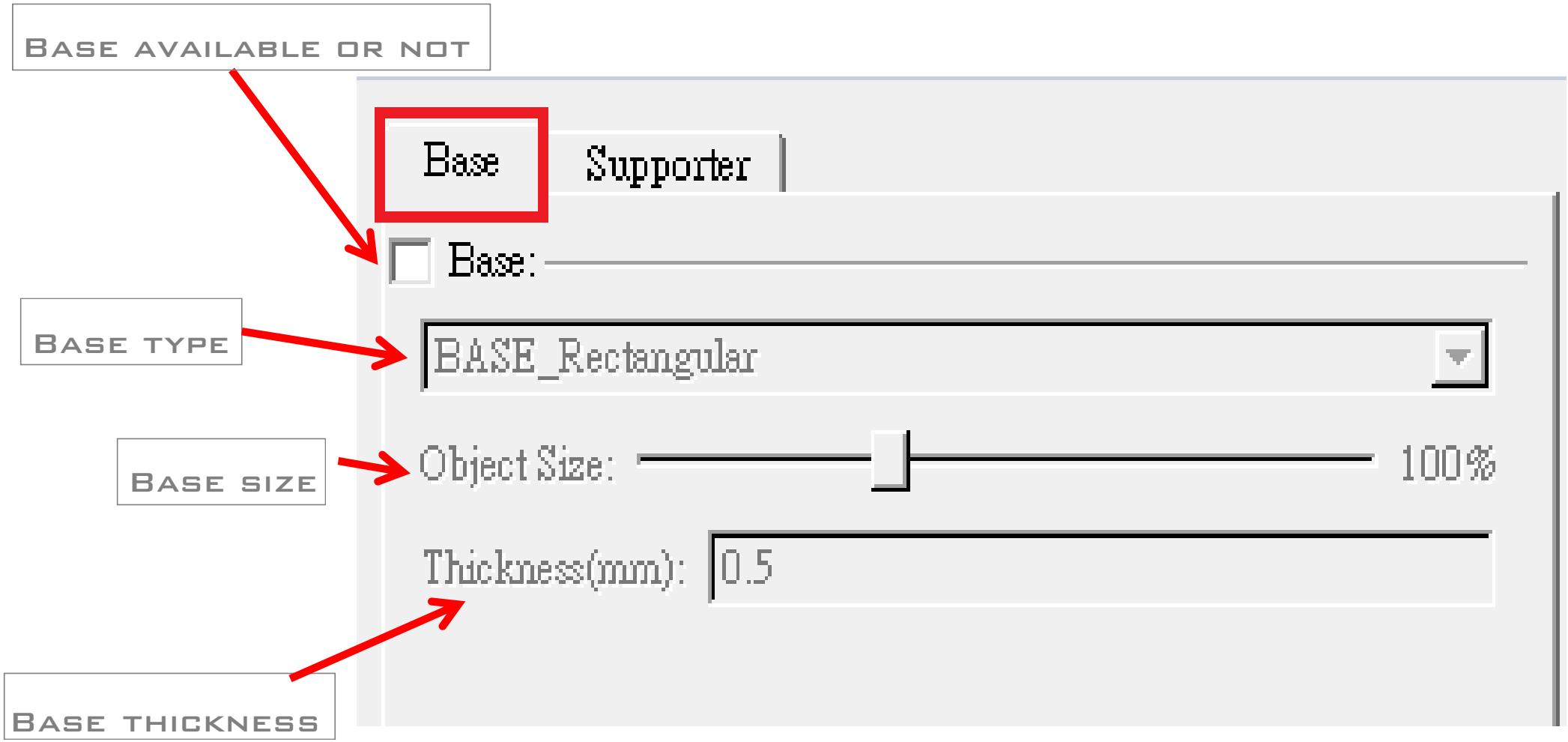
X type supporter:

1. First build at least two supports.
2. Click cross structure function
3. Click two supports which you like to have cross structure between
4. Click two supports again can cancel the cross structure





Build Base

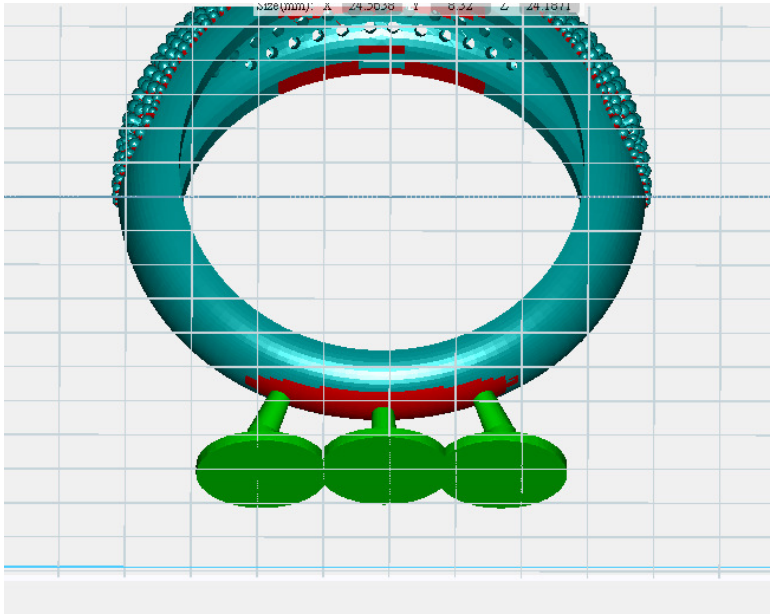

Base available or not
Base type
Base size
Base thickness
Base
Supporter
Base:
BASE_Rectangular
Object Size:
100%
Thickness(mm):
0.5

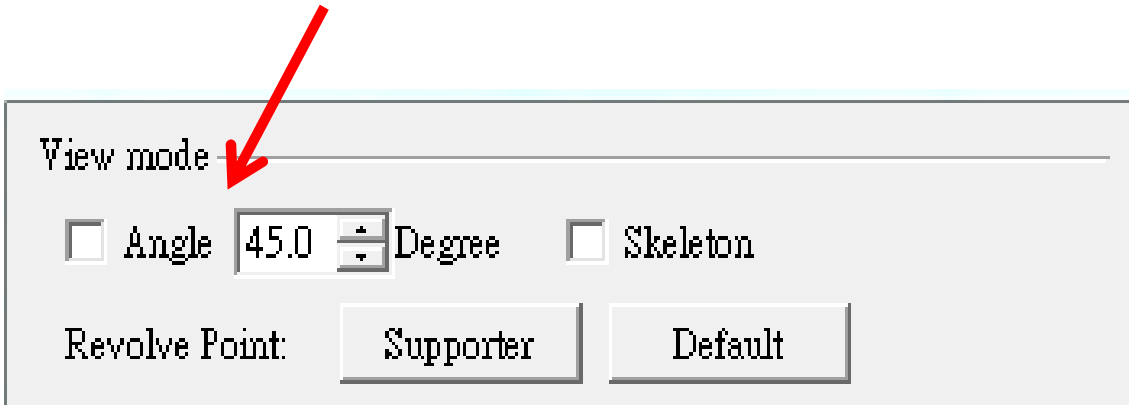
Build support – View mode

Angle Indicator will help identify the bevel angle of object surface

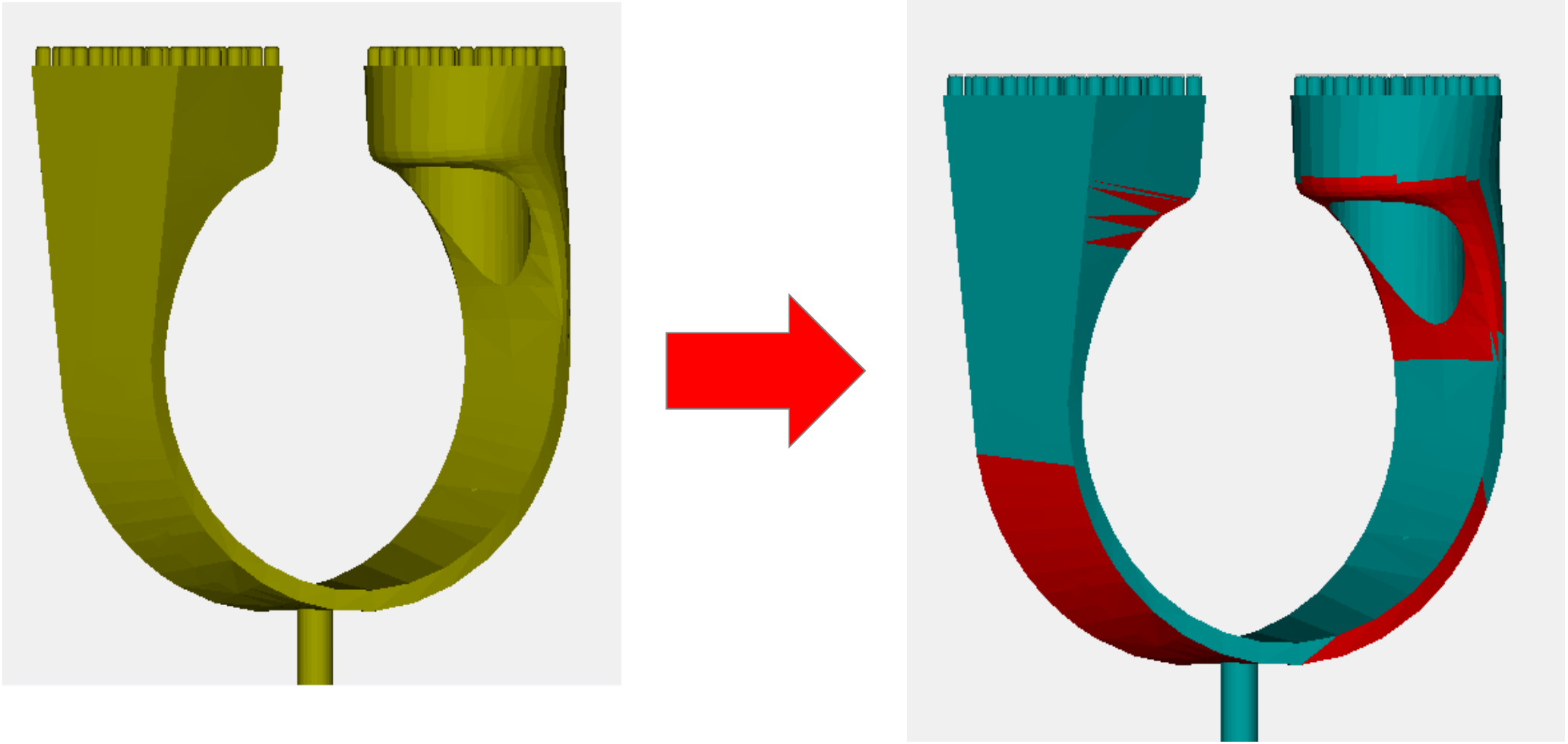
A. Below a certain angle will become red in preview

B. These red area indicates area more flat and possibly hang in air, where need to build supports

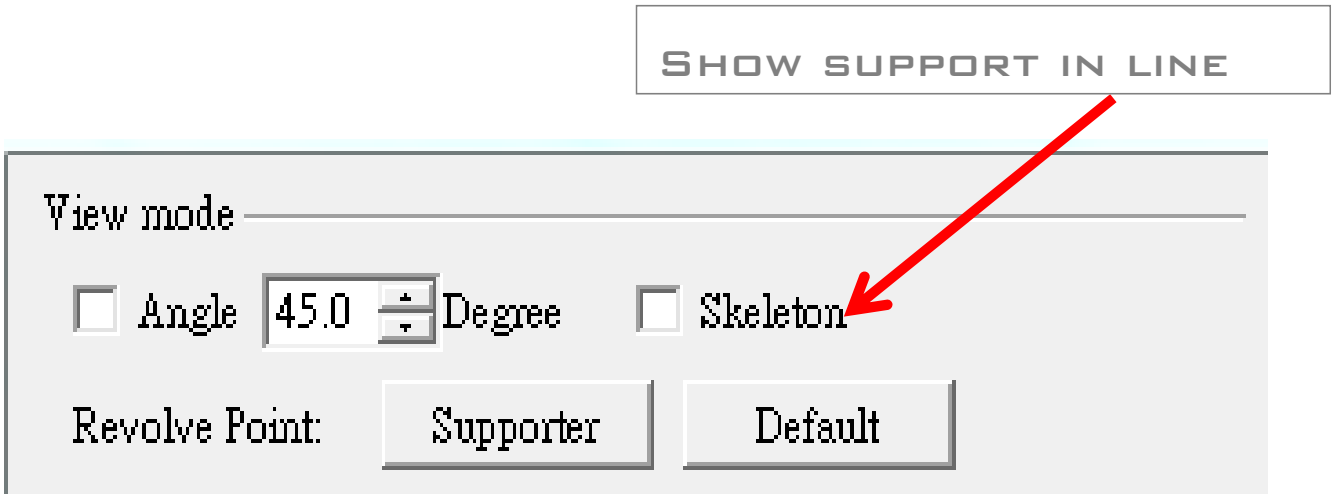


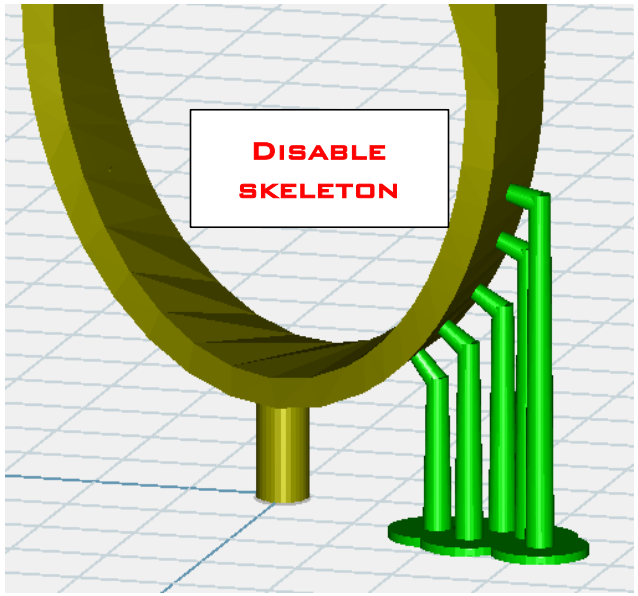


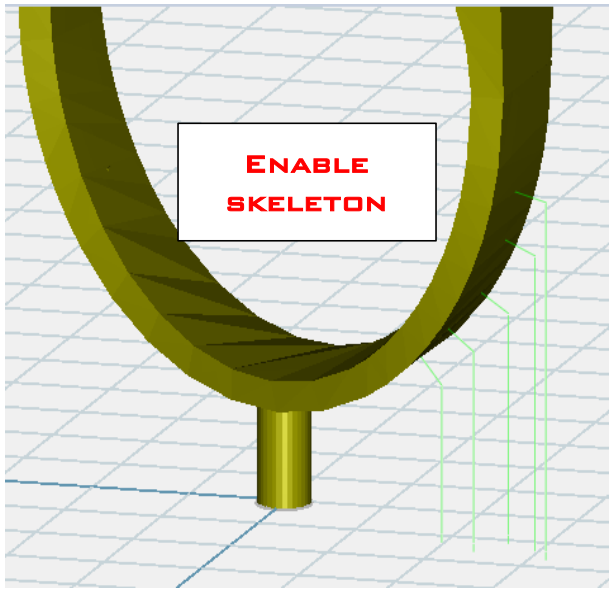
Build support – View mode



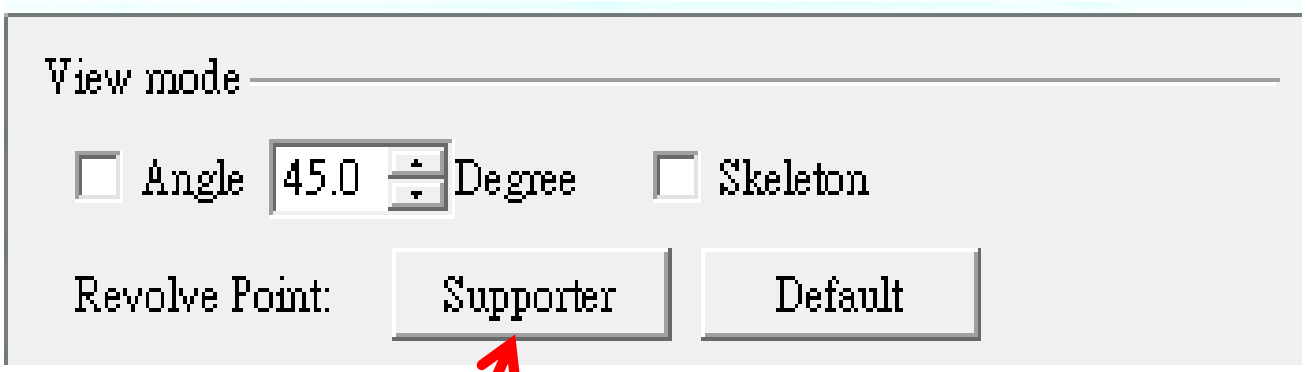
Build support – View mode







Build support – View mode



1. Select one support
2. Click Revolve point: supporter
3. Use fk support as view rotation center
4. See the 360 degree position of support

Default (Use platform as view rotation center)

Tool bar

Click and drag the tool bar, use can customize tool bar position

Create new fle

Open layout

Save layout

.mil fle is an editable format for Utility Platform, layout, supporter function, you can save your working status as .mil fle at any time, and open .mil fle to continue editing

Export as .stl

Options (General setting)

Surface polishing view

Perspective view

Tool bar

Overlook

Look up

Front view

Back view

Left side

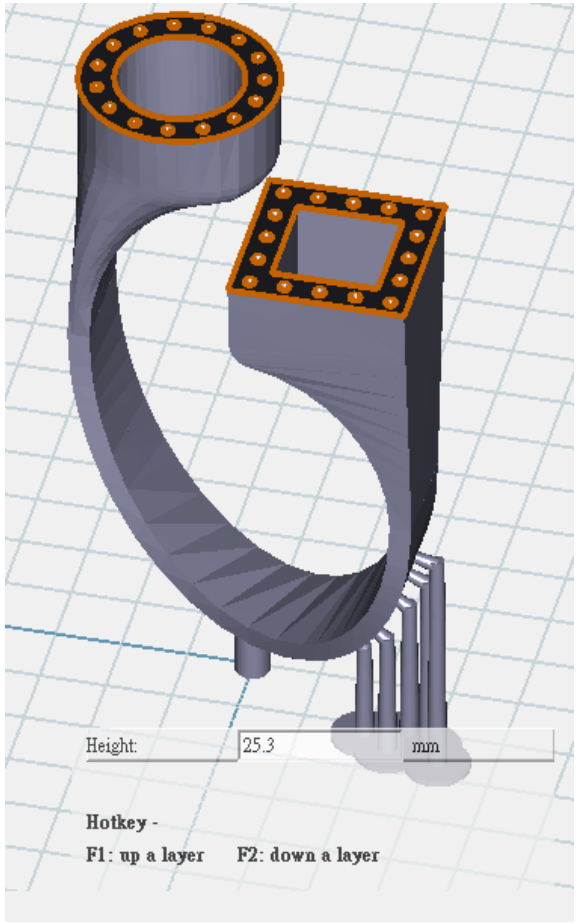
Right side

Slice view

Slice view

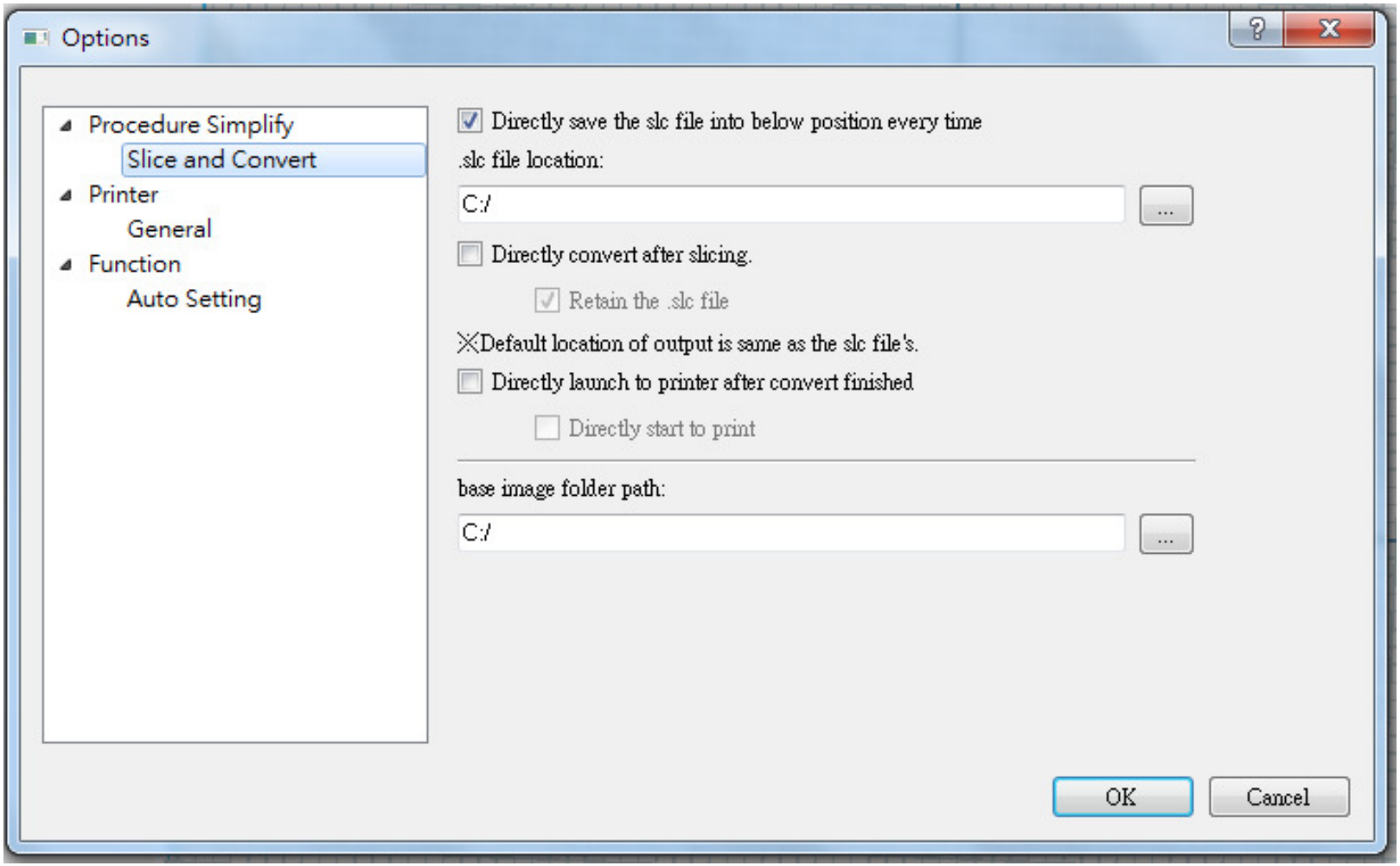
Preview each layer

(but not export .slc yet)

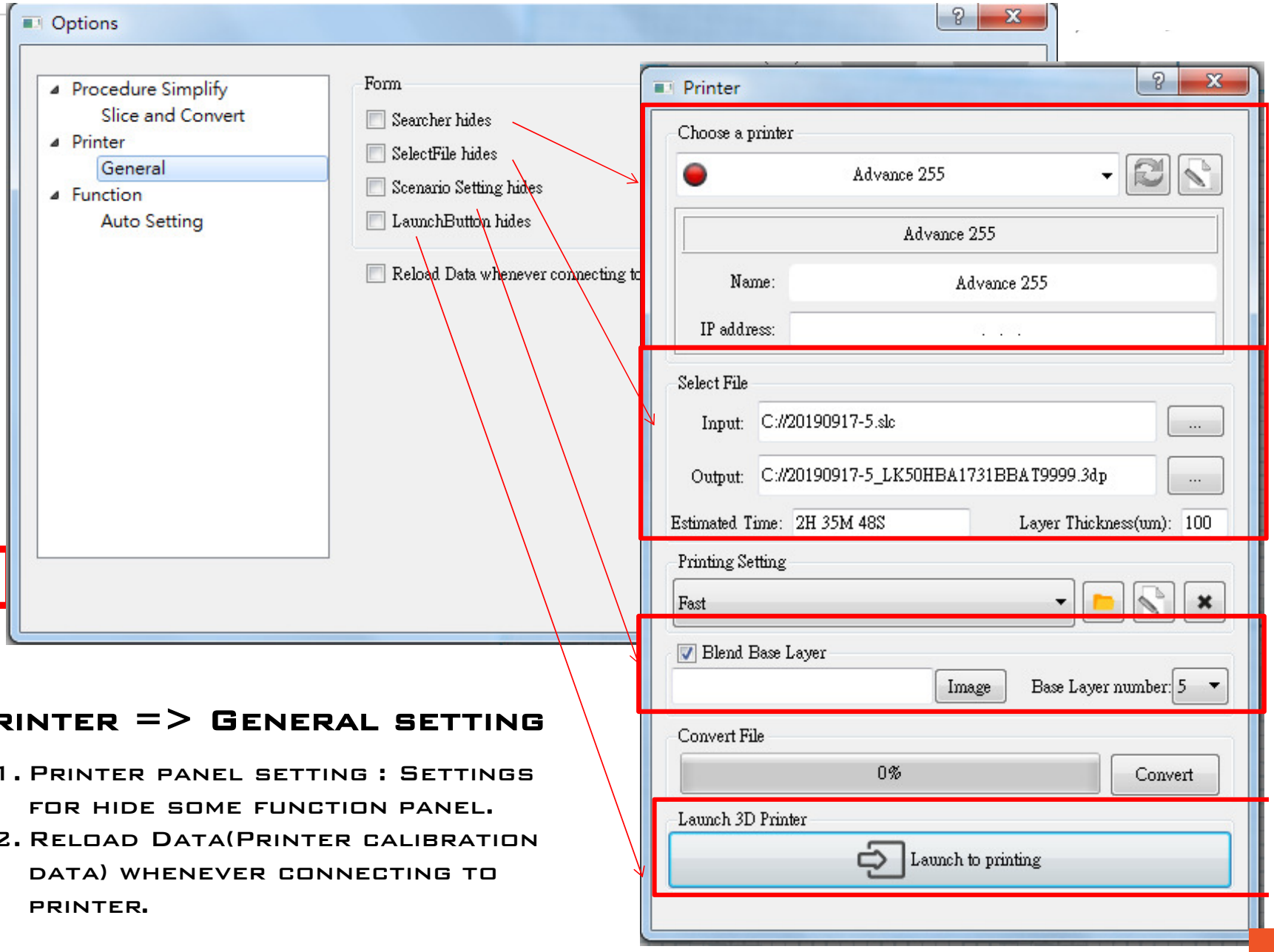


Tool bar – Options setting

1) Procedure Simplify : Settings for skip some procedure inquiry alert every time.



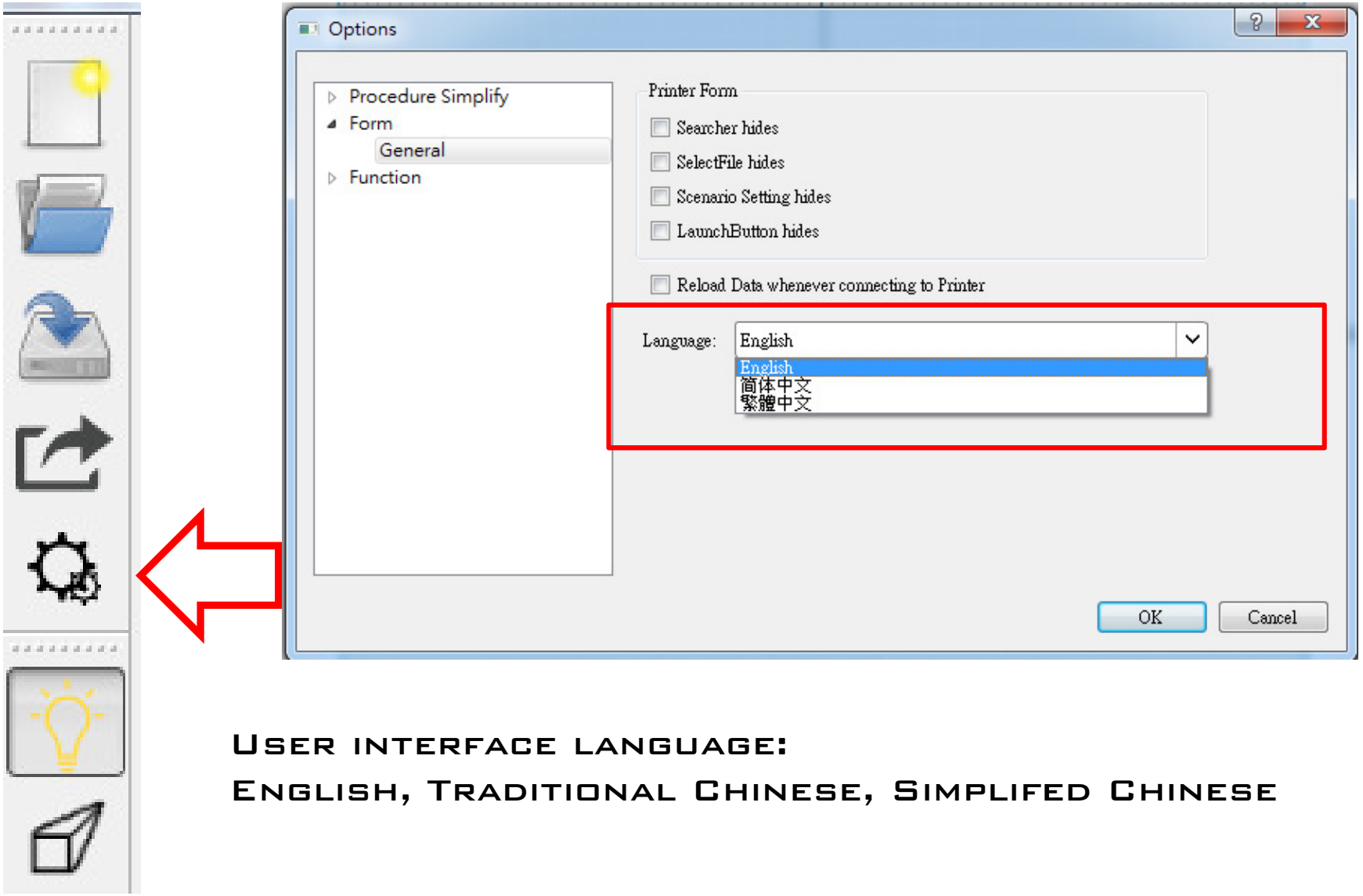
Tool bar – Options setting



Printer => General setting

1. Printer panel setting : Settings for hide some function panel.
2. Reload Data(Printer calibration data) whenever connecting to printer.

Tool bar – Options setting



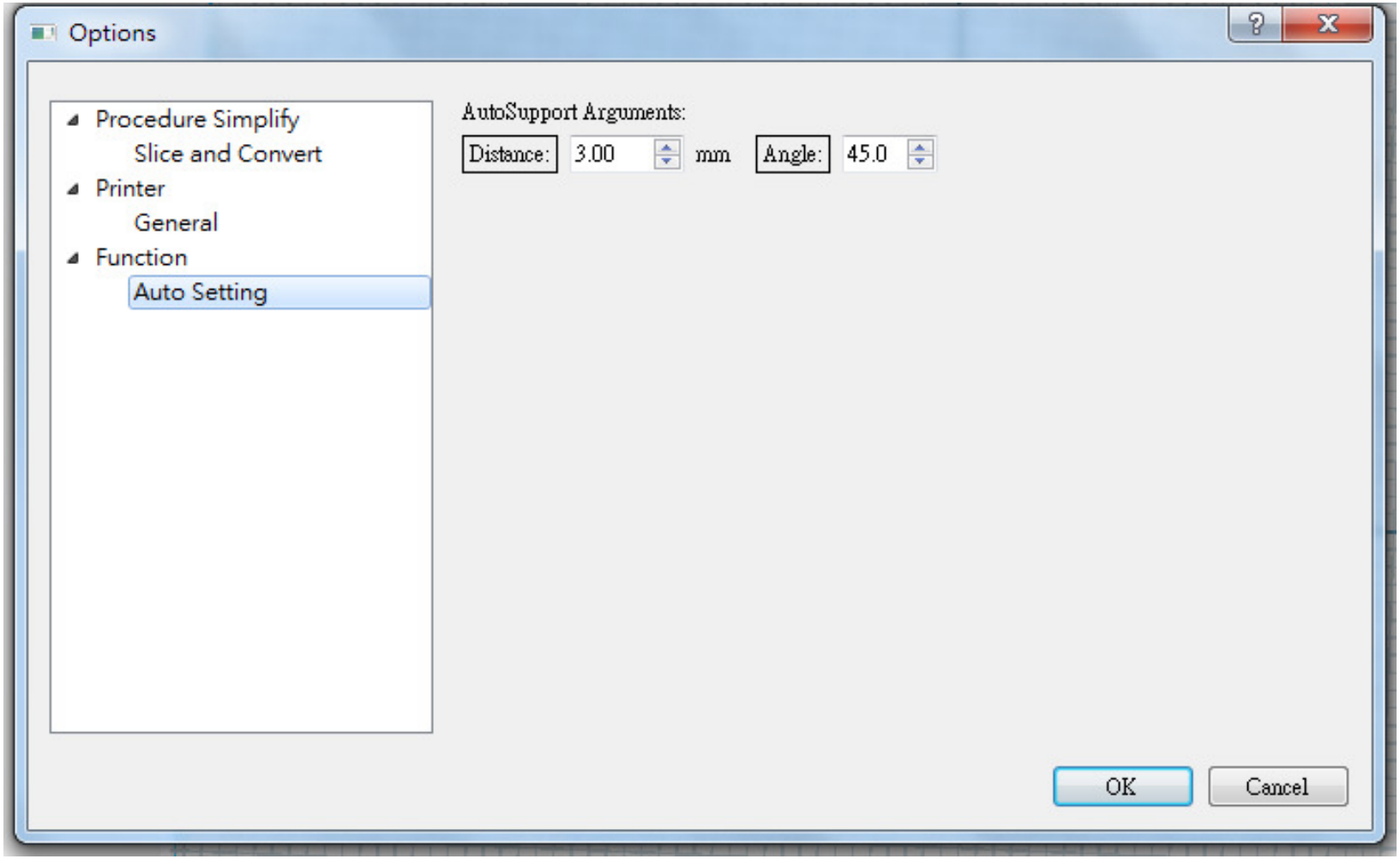
User interface language:

English, Traditional Chinese, Simplifed Chinese

Tool bar – Options setting

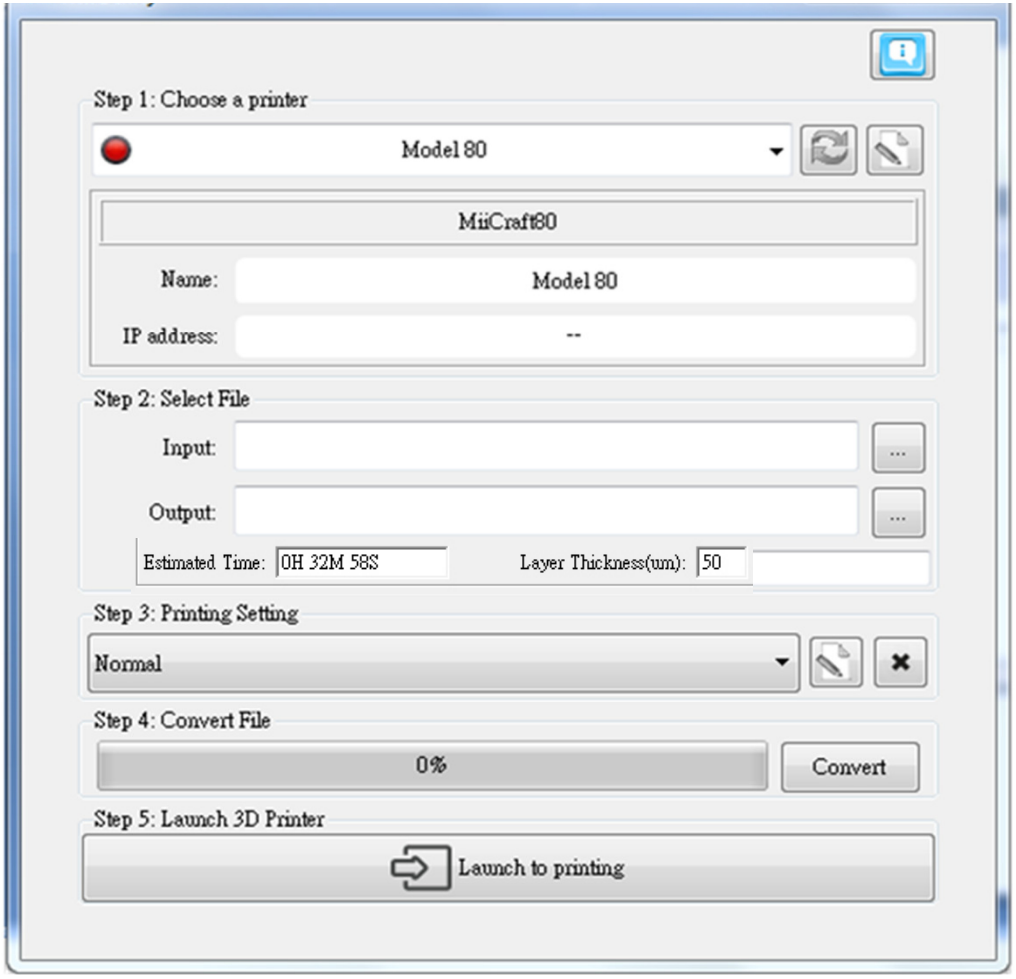
Function => Auto setting:

1. Distance: The distance of supports and supports. The density of supports.
2. Angle: The model surface below a certain angle, will automatically build supports.



Printer setting

1) Tool bar, icon as picture on the right



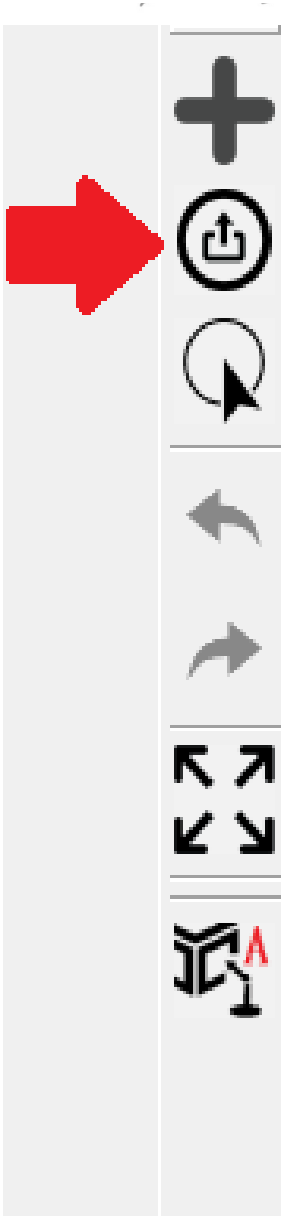
Step 1: Choose printer

Step 2: Select file
Input: .SLC

Step 3: Set printing parameter

Step 4: Convert file
Output: 3dp

Step 5: Launch to MiiController



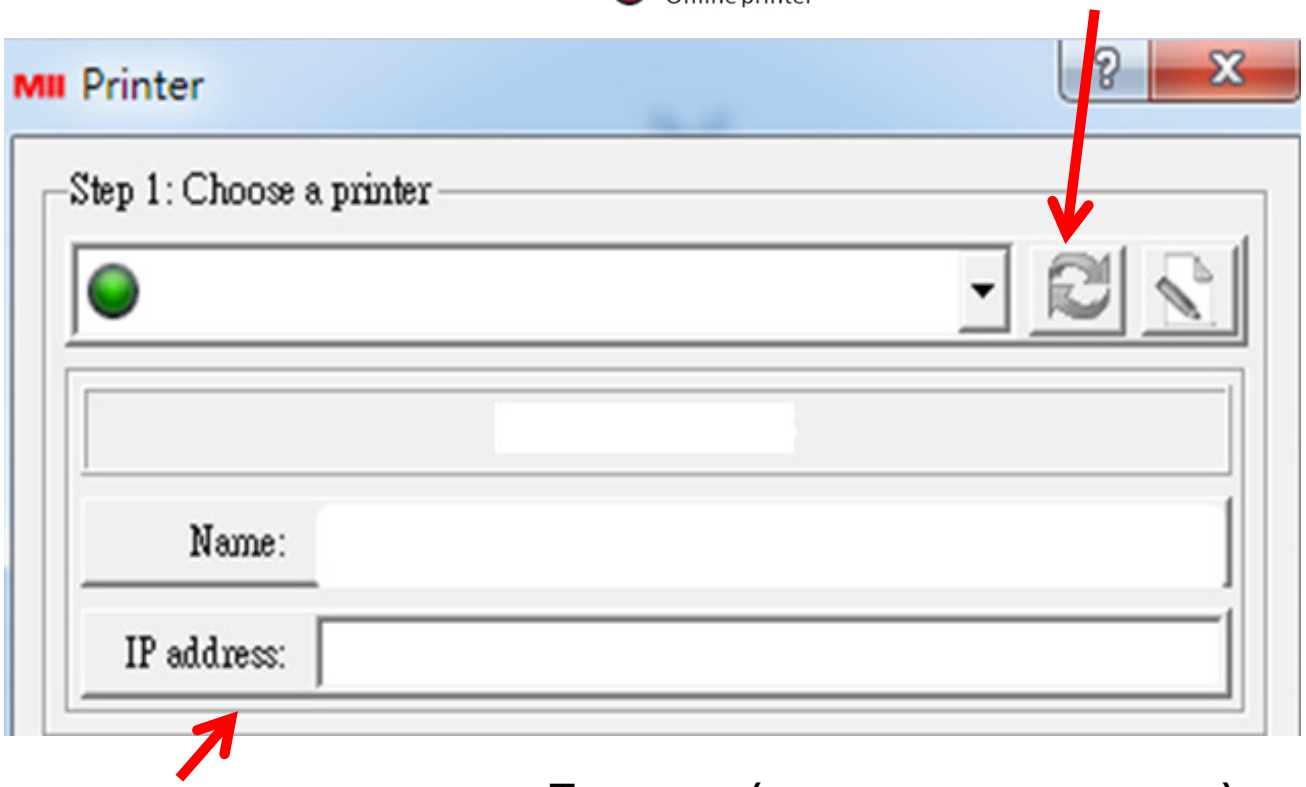
Printer setting

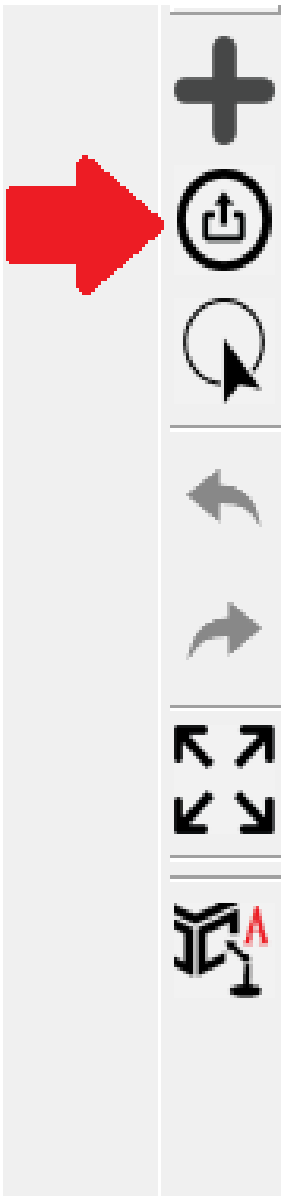
Step 1

Online printer

Offline printer

Scan online printer





Printer IP

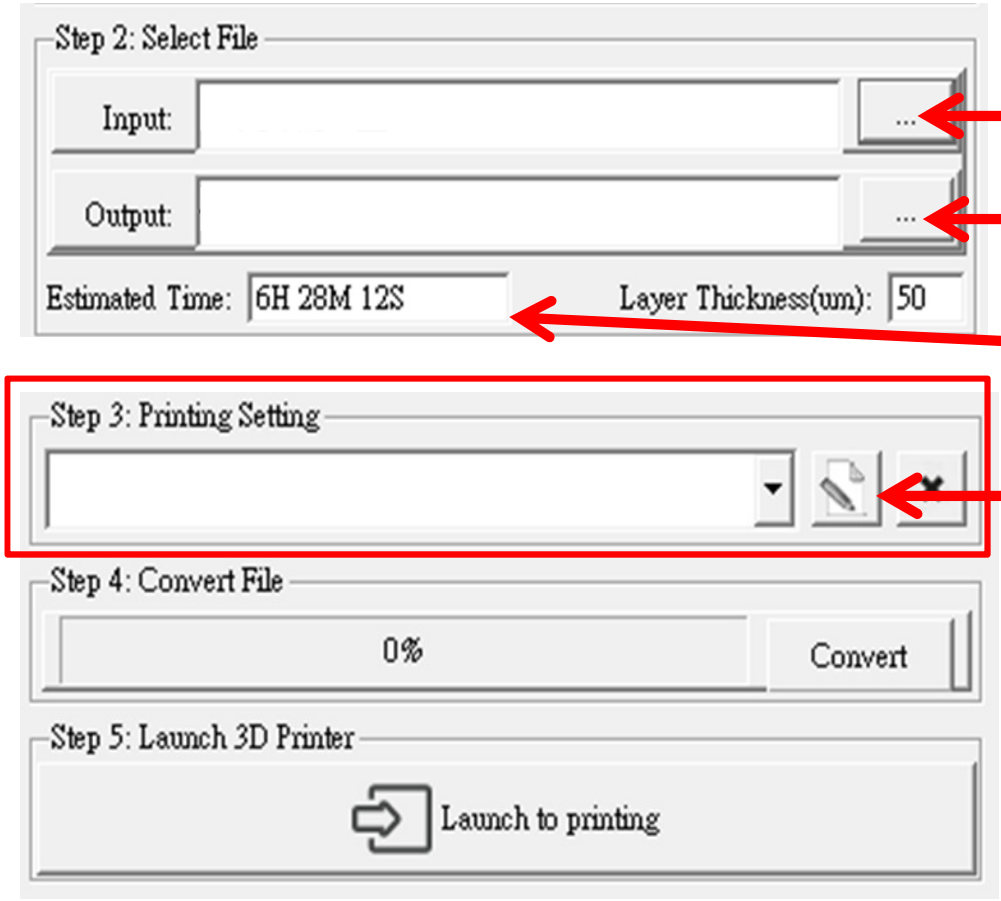
- To print (only online printer)
- To use printer calibrate information when converting fles (Both online and offline printer)

Trouble shooting

If unable to connect computer and printer, please check computer's proxy setting, it has to be close.

Printer setting

Step 2



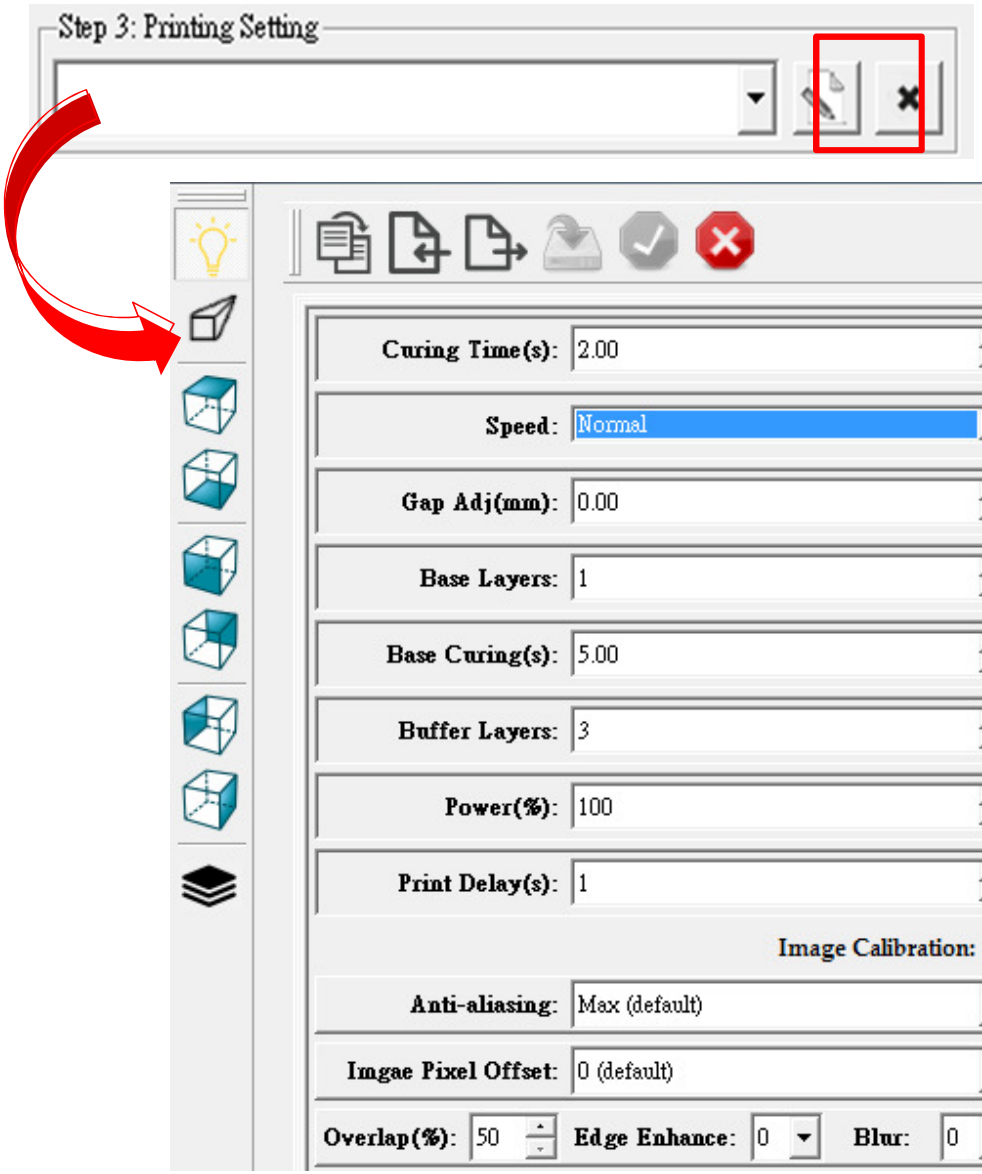
Default user edit .slc

fle Output .3dp fle

Estimated printing time

1. Select .mps fle
2. Edit .mps fle (printing parameter)

Printing setting (.mps)



The amount of time for UV curing(seconds) per layer

Slow, Normal and Fast, means different peeling speed. Recoater mode including recoater back and forth. Also user can select "advanced" to set user defned peeling

Adjust thickness of the frst layer

Defne number of base layers

Curing time for base layers

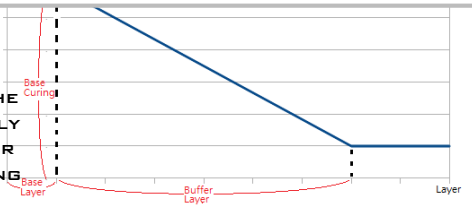
Set the Number of buffer layers

At 100% is the existing brightness of light engine. User can adjust the power in response to different

For frst layer, picker stay for at least 1 sec. then cure

Make image calibration for this printer

What is Buffer layer?
Within buffer layer, the curing time is gradually change from base layer setting to layer setting

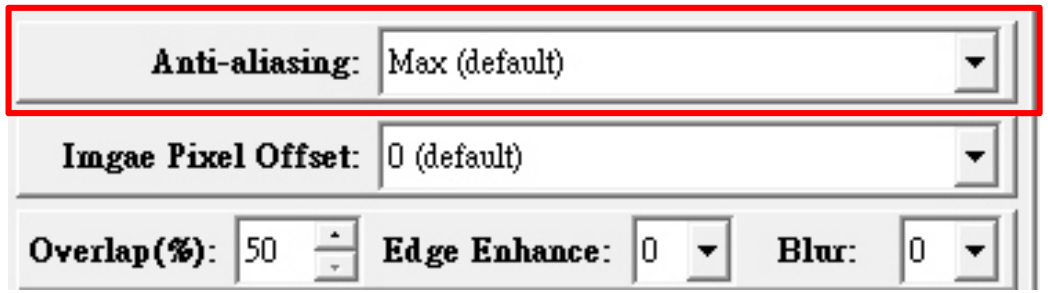


Printing setting (.mps)

● Active

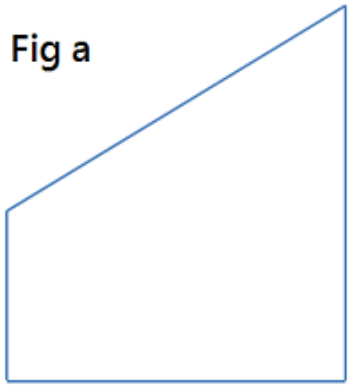
	Ultra series	Advance series	Profession series
Image Calibration	●	●	●
Anti-aliasing	●		●
Pixel offset	●		●
Edge enhance		●	●
Overlap (%)		●	
Blur		●	
Contour exposure		●	●
Resin Shrinkage compensation	●	●	●
Flip image	●	●	●

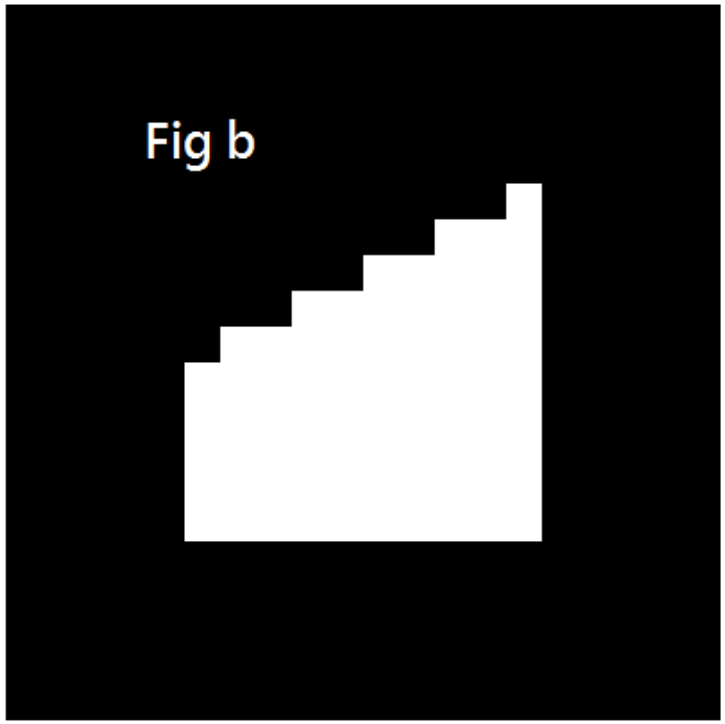
Printing setting (.mps)

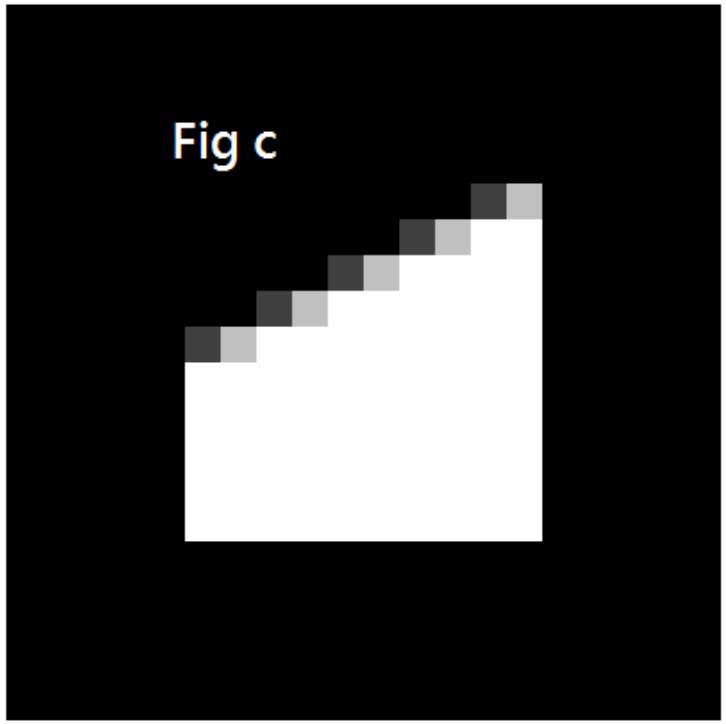


None Anti-aliasing

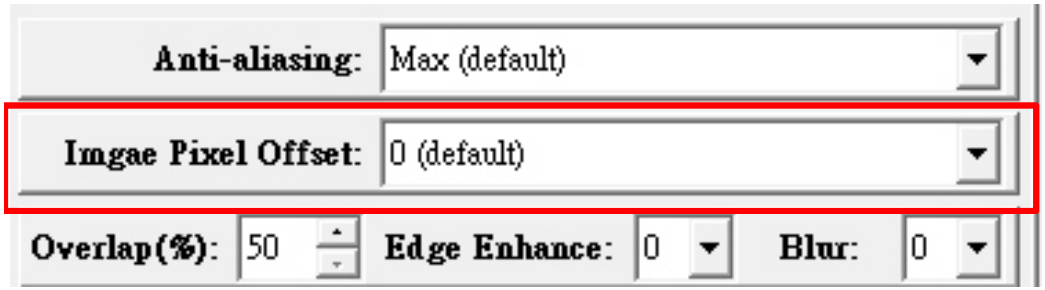
Max Anti-aliasing







Printing setting (.mps)



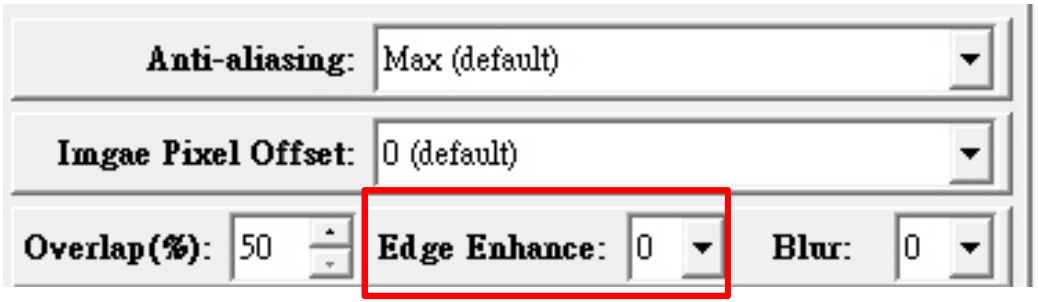
Pixel offset : Can slightly adjust edge pixel (0.5 pixel = 1)

For example:

Select -2, erode 1 pixel on the edge

Select 2, add 1 pixel on the edge

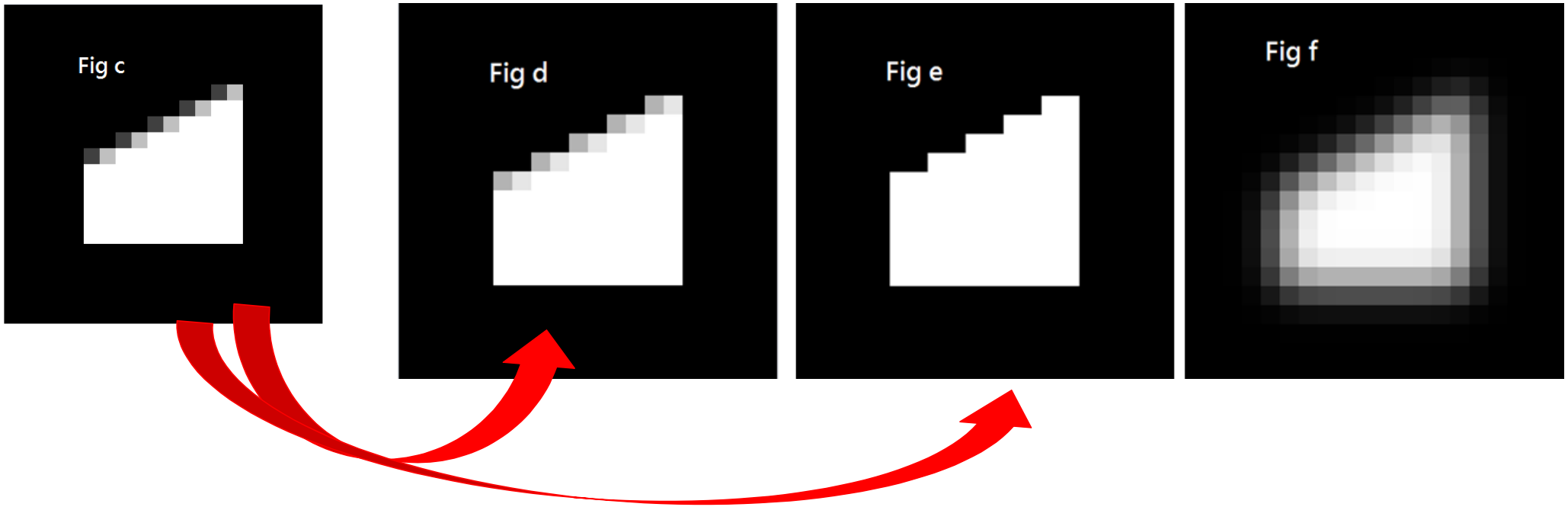
Printing setting (.mps)



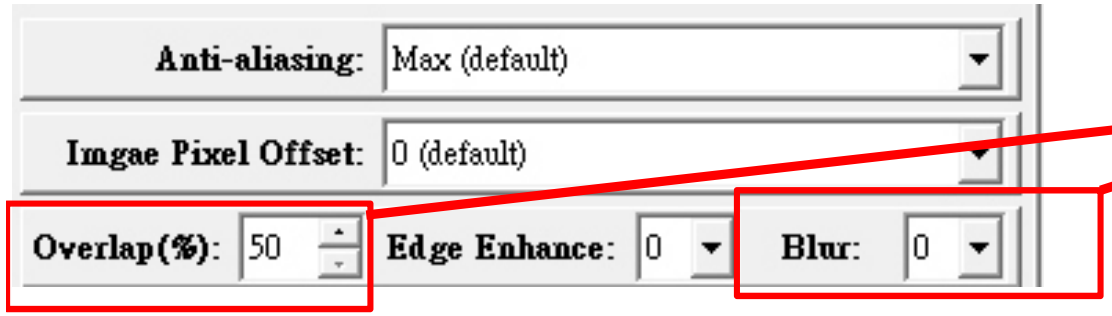
Edge Enhance level 3

Edge Enhance level 5

Blur

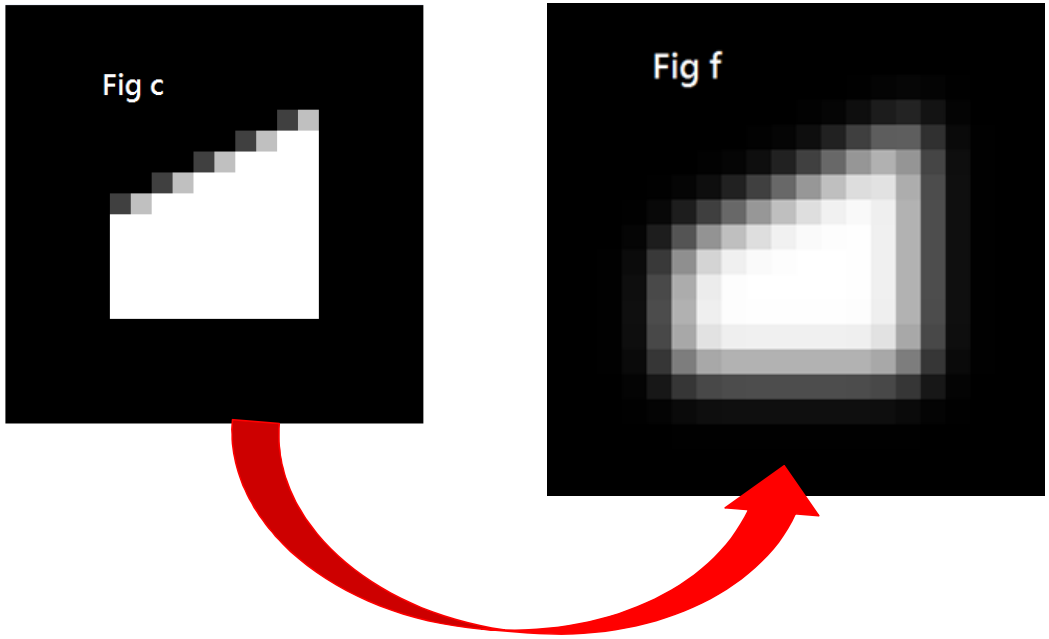


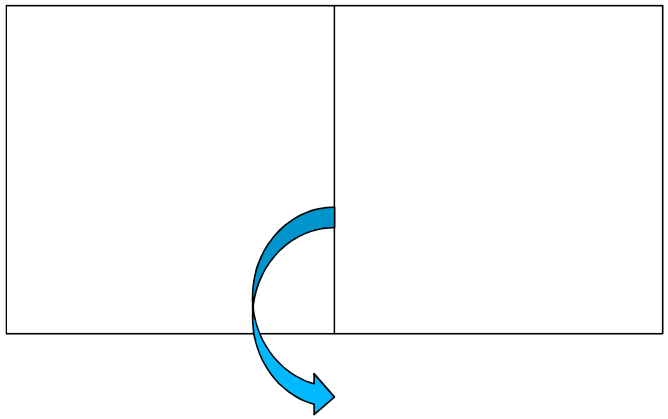
Printing setting (.mps)



Only apply to Advance series

Blur

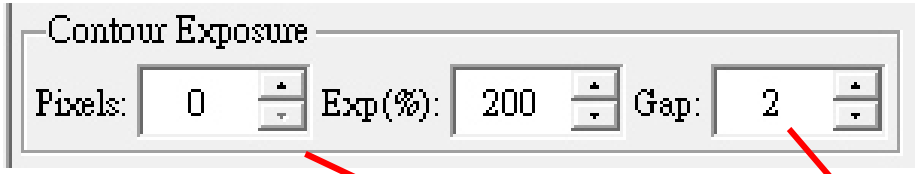




Overlap of dual light engine

Overlap % : Two light engine power percentage. Suppose both light engine have same power, the percentage is 50%

Printing setting (.mps)



Contour Exposure : User set this function to exposure contour image frst, then exposure inside image. Can prevent contour deform

Pixels : Contour pixel

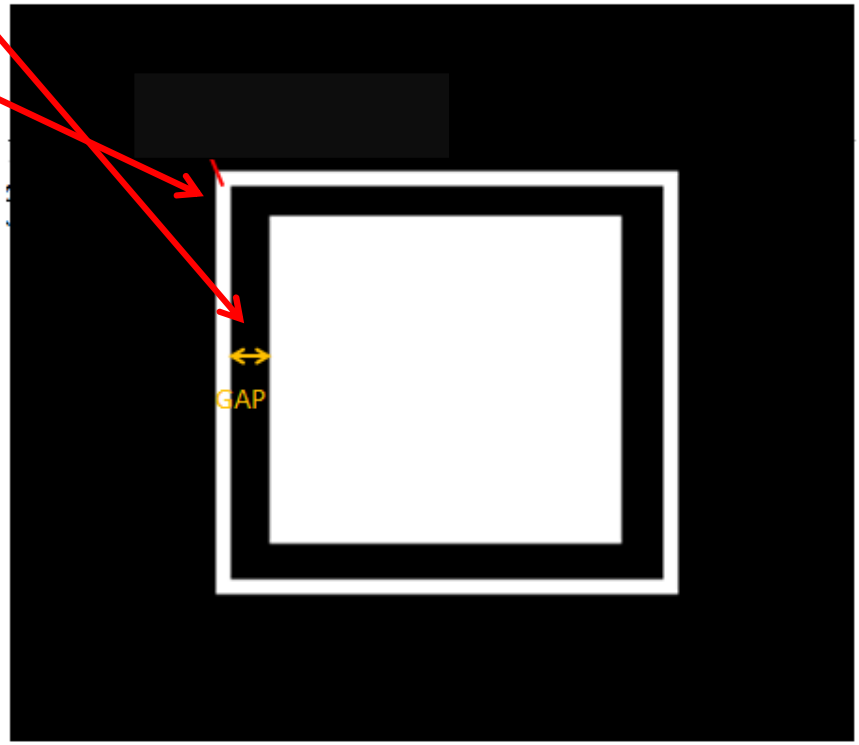
Exp (%) : Contour exposure time

The percentage is compare to curing time (Inside image exposure time is same as curing time)

For example:

Square

object

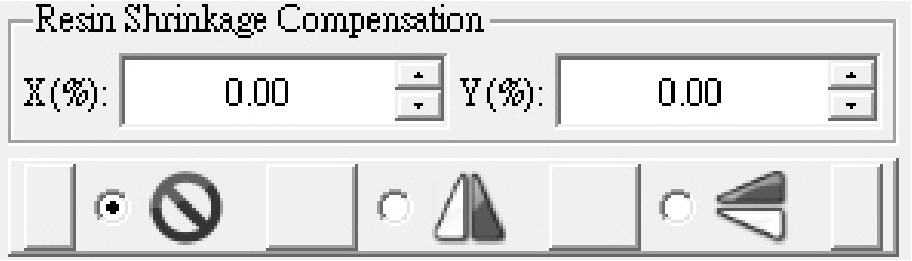


Contour image

Inside image

If user set contour pixel, one image will become 2 image, contour and inside

Printing setting (.mps)



+0% to 9.9% →Enlarge an image

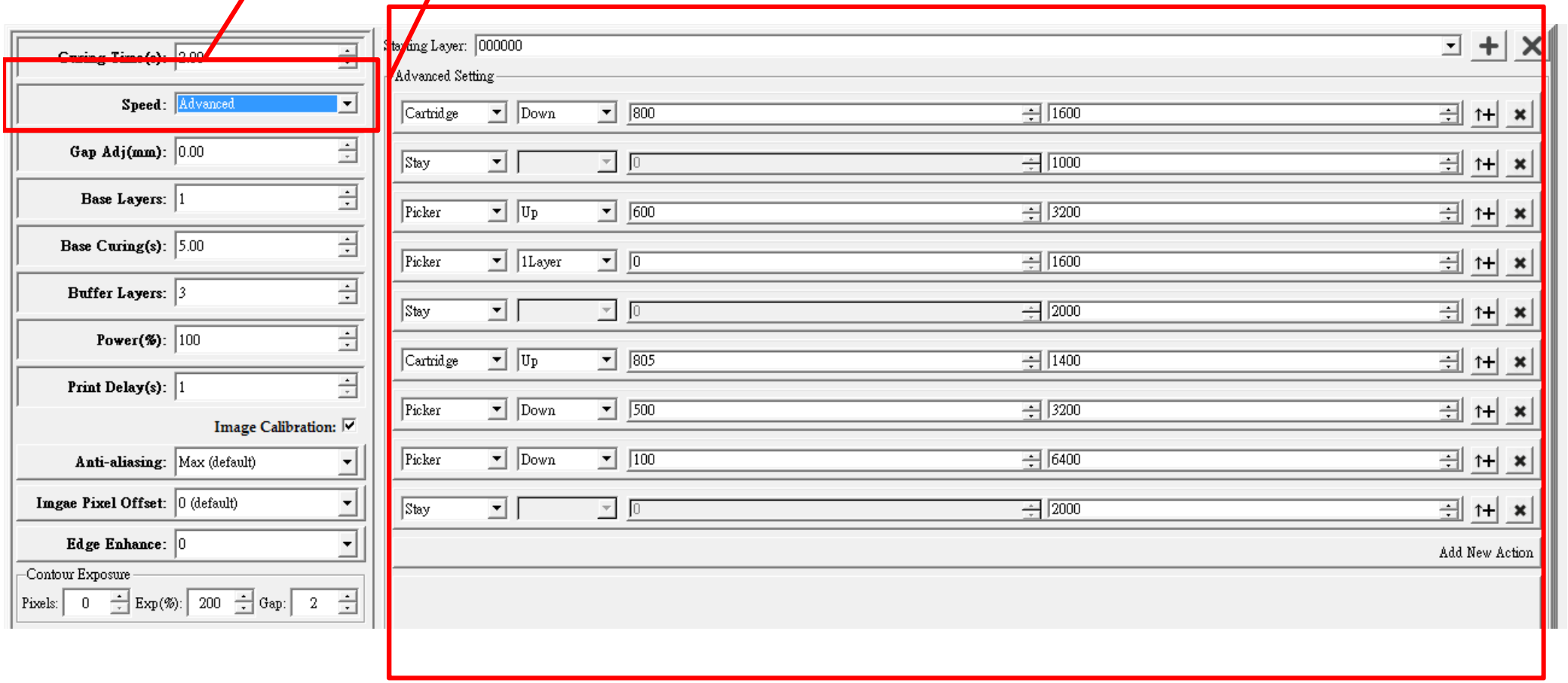
-0% to -9.9% →Shrink an image

Flip image by X axis or Y axis

Printing setting (.mps) –Advance setting

Speed : select Advance

Enable Function: Customize peeling mode



Printing setting (.mps) –Advance setting

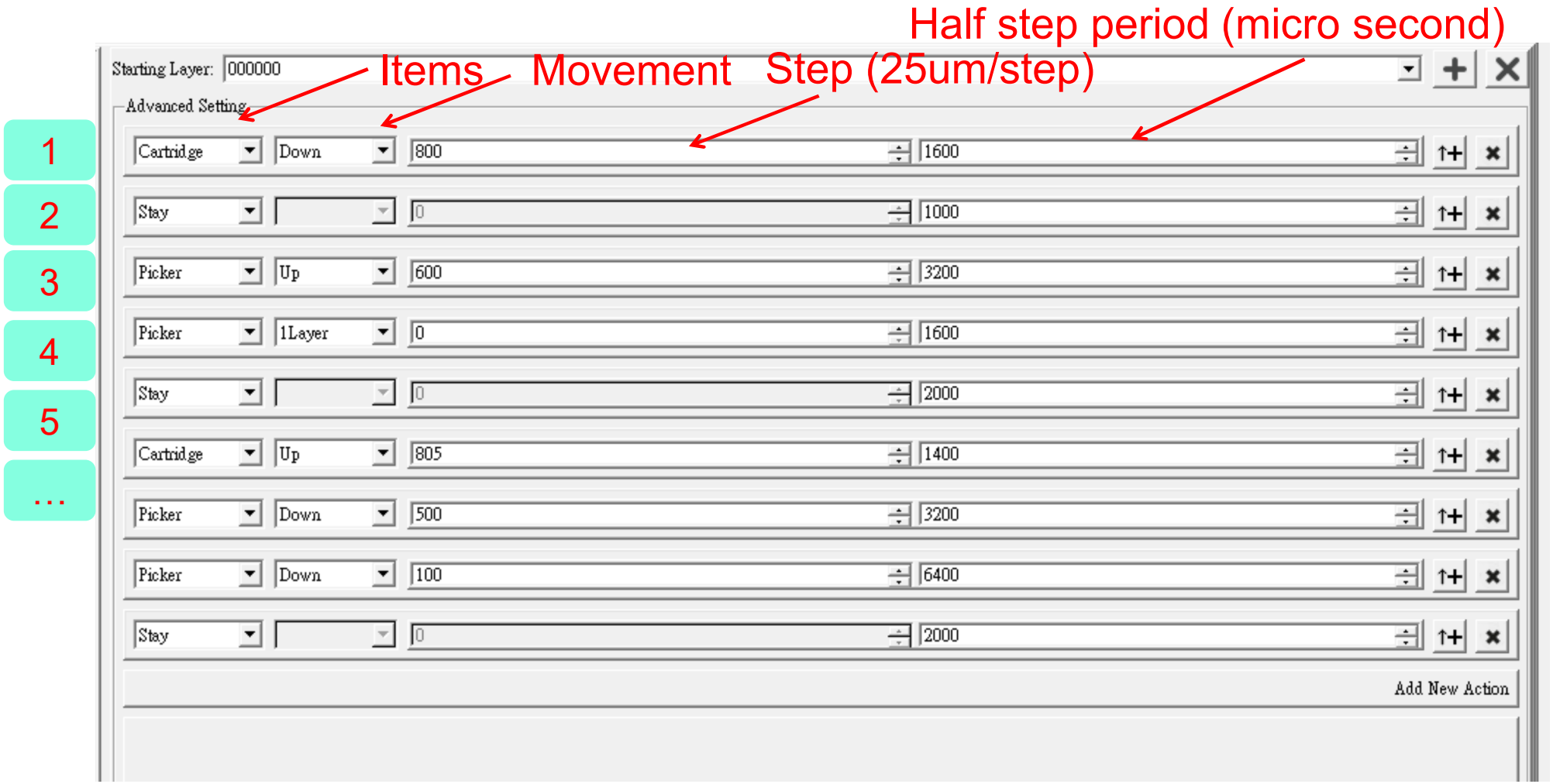
The advantage of advanced setting is you can decide peeling mode

Tilt mode : Set cartridge(tank) up and down for bigger area peeling

Direct mode : Only set picker's movement, cartridge stay, to let peeling speed faster

Sweep: Set recoater movement

Starting layer: from starting layer start to use advance setting peeling mode



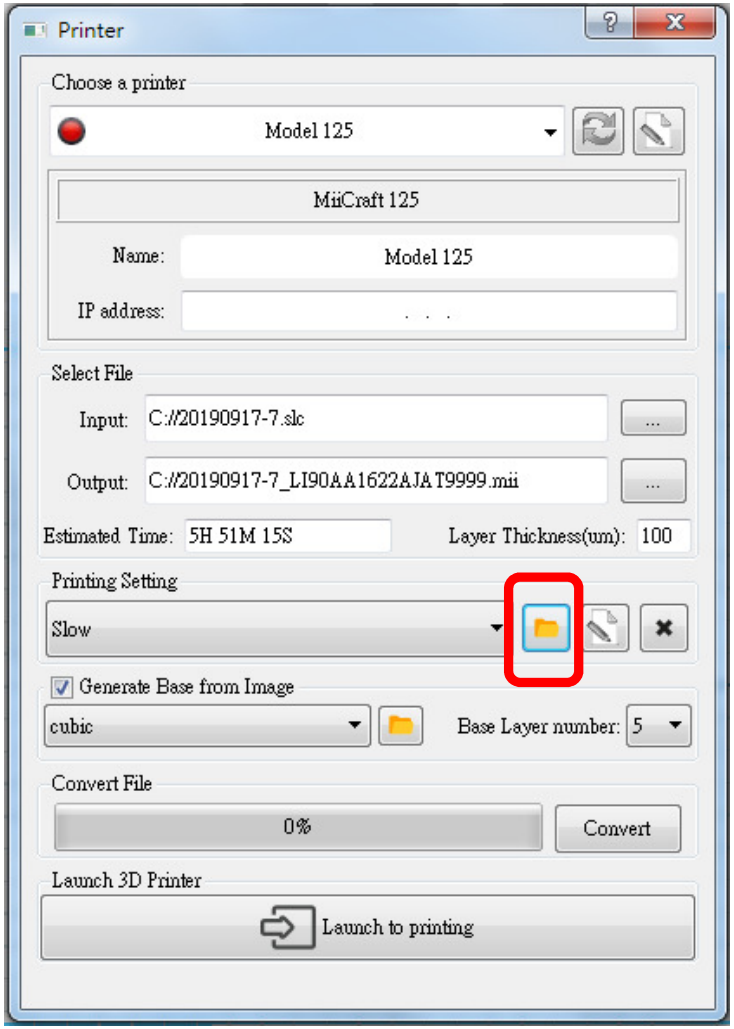
.MPS FLE USER MANAGEMENT

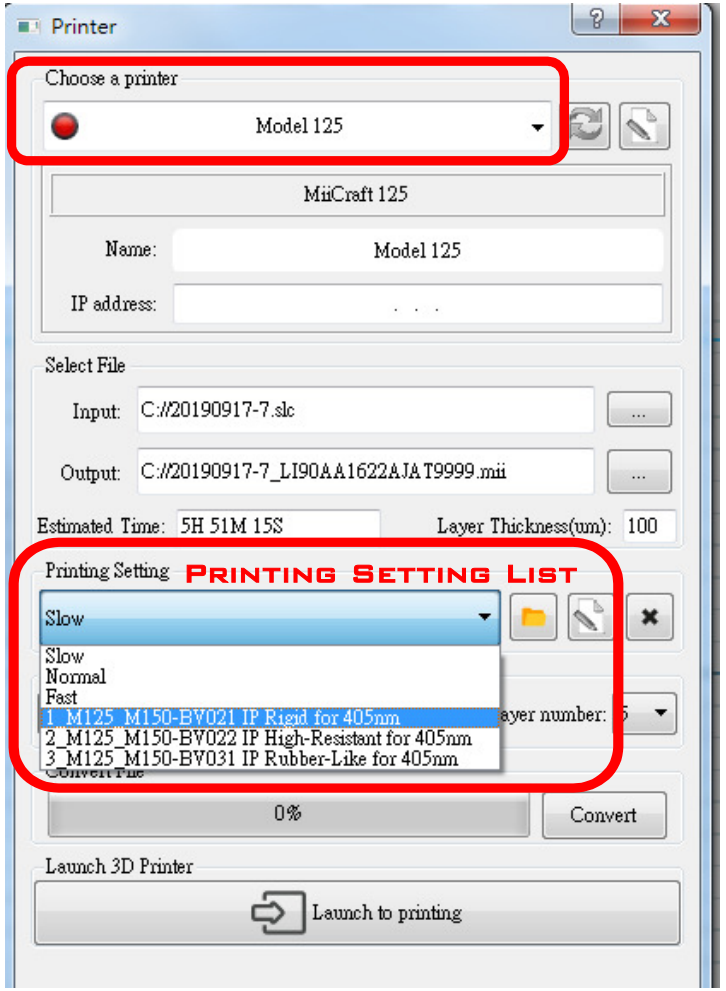
(1) Assign .mps user management fle

The printer you choose will affect the .mps you can see.

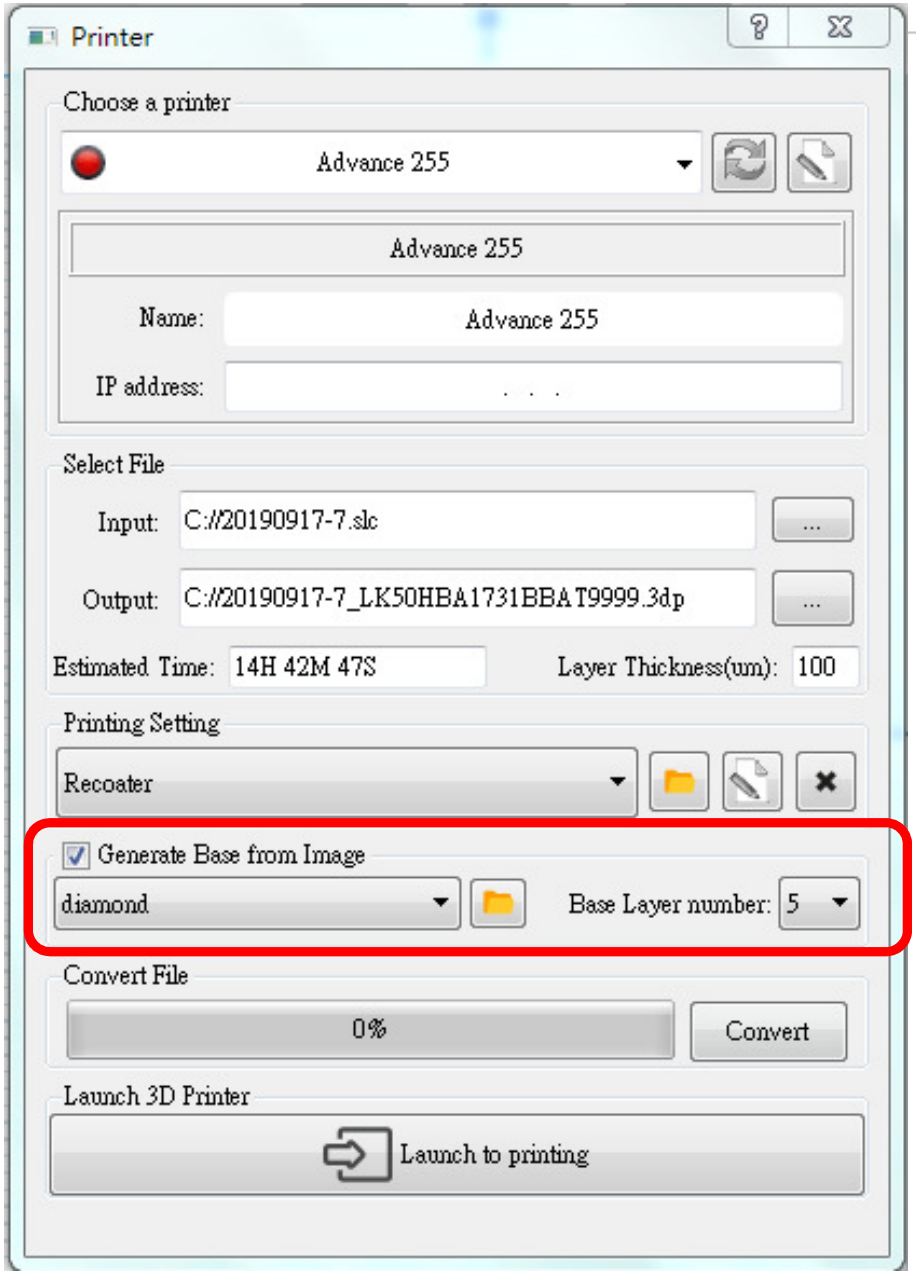
ex: Choose MiiCraft Profession Printer, can only select .mps fle for MiiCraft Profession Printer

(2) Put .mps into user assigned fle, the .mps will show up in the printing setting list as below picture.





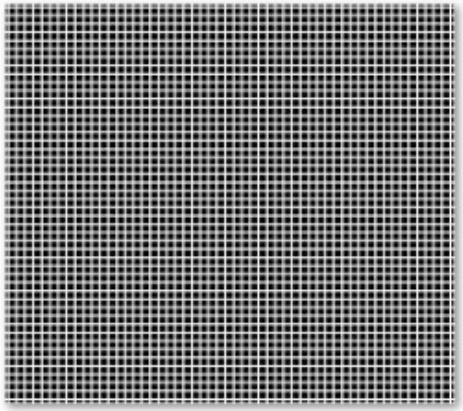
Generate Base from Image



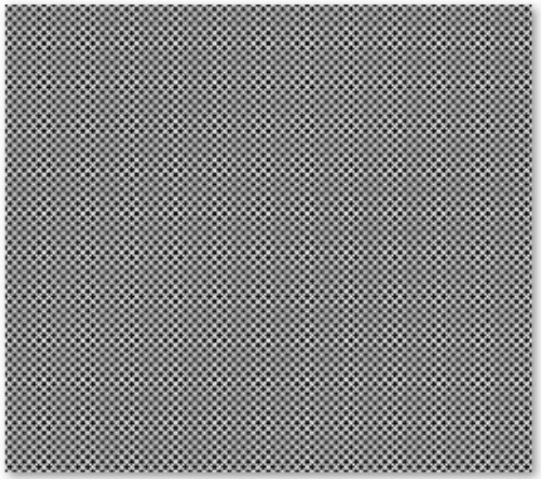
Step 3: Printing setting

1. Select image
   - Cubic
   - Diamond
   - Hexagon
2. Or DIY image for Base

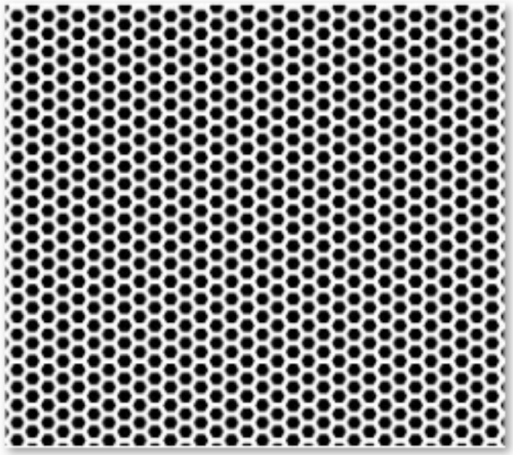
Set Base layer thickness (for image base)



cubic.png



diamond.png



hexagon.png

Print via Computer

Step 5: Launch to printer

Printing parameter

Engineering mode

Printing history

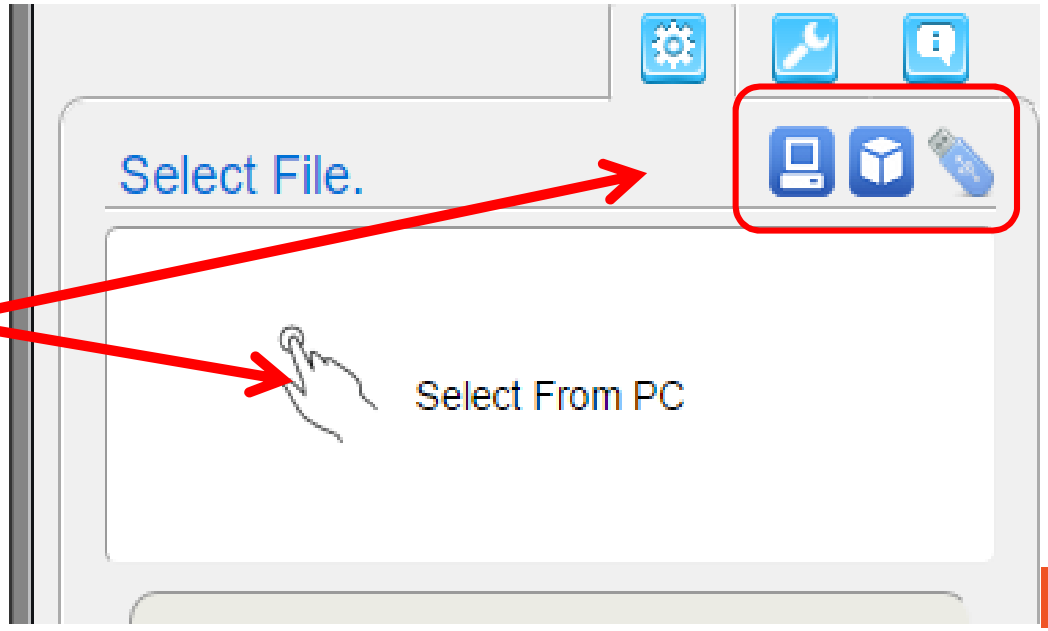
Select .3dp fle

From PC

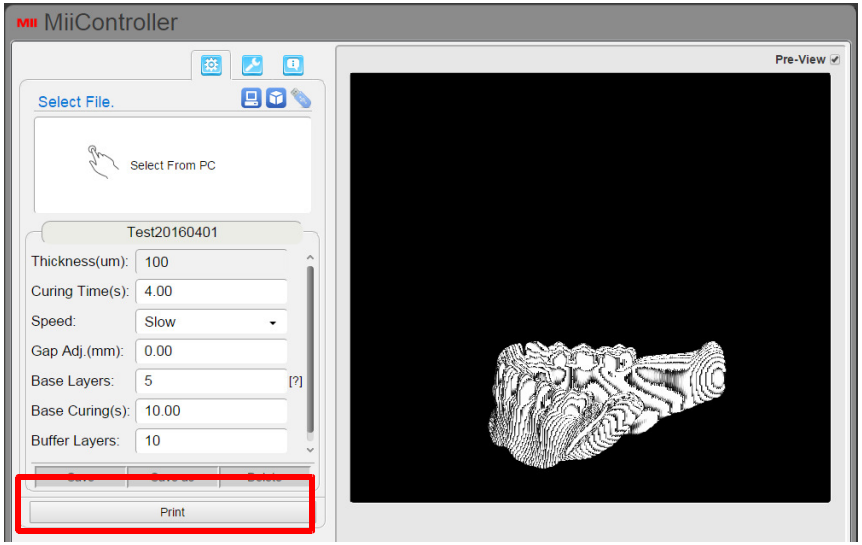
From machine (fle saved in printer) From USB (USB insert into Printer)

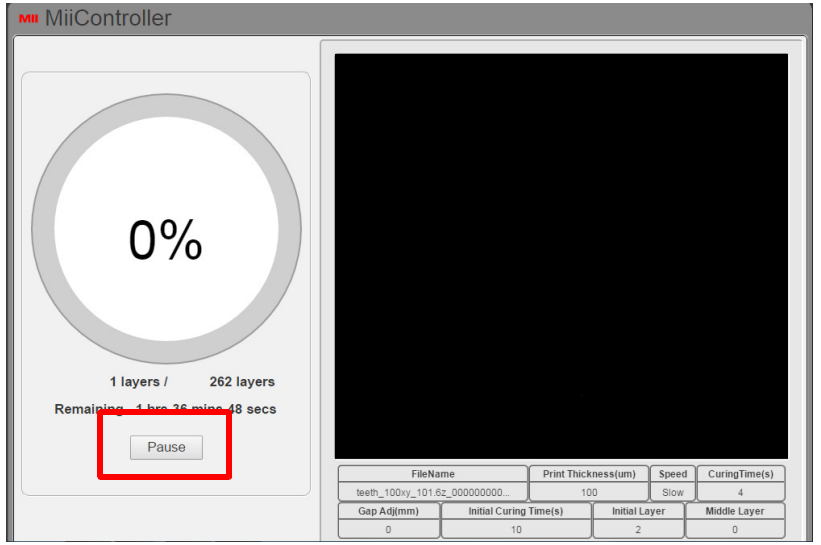
File input size limitation:

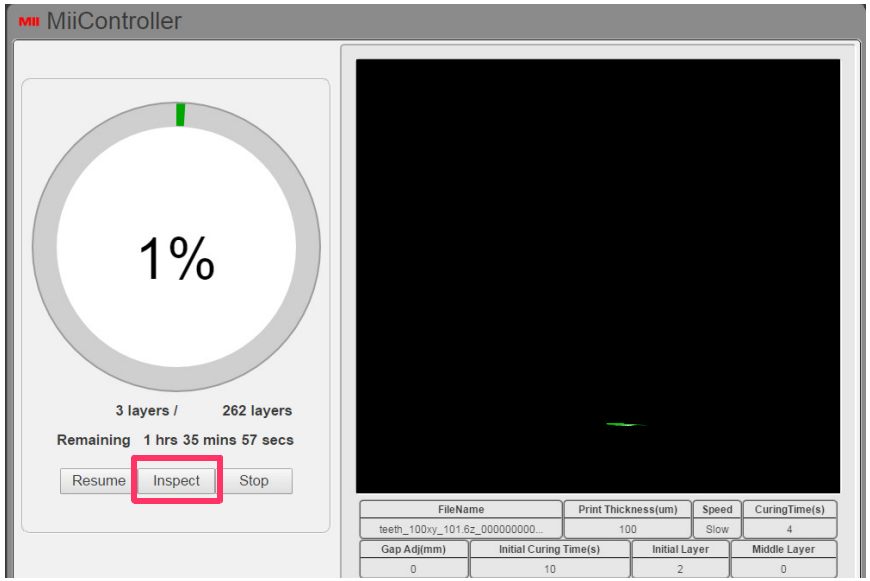
1. Upload fle from Computer, fle limitation 500MB
2. Upload fle from USB, fle limitation 1G

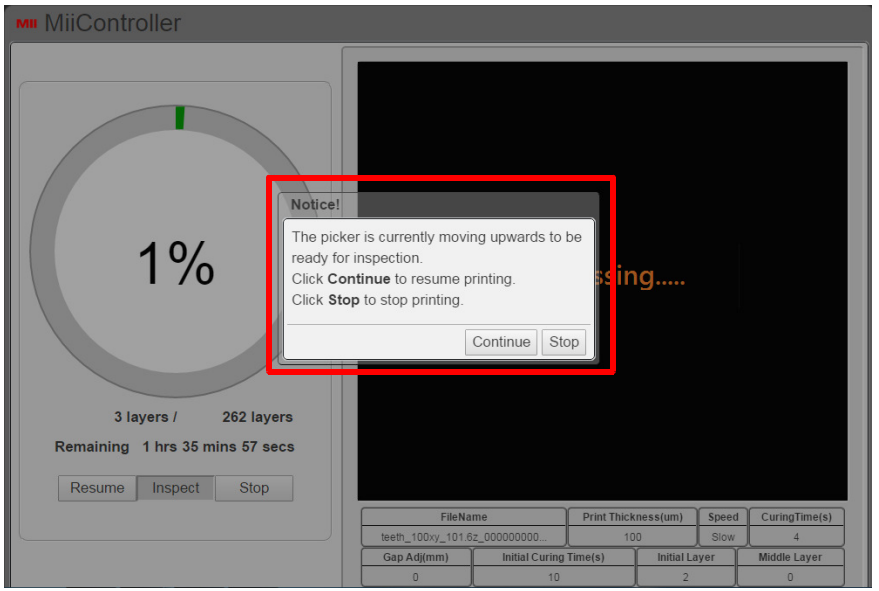


Print via Computer

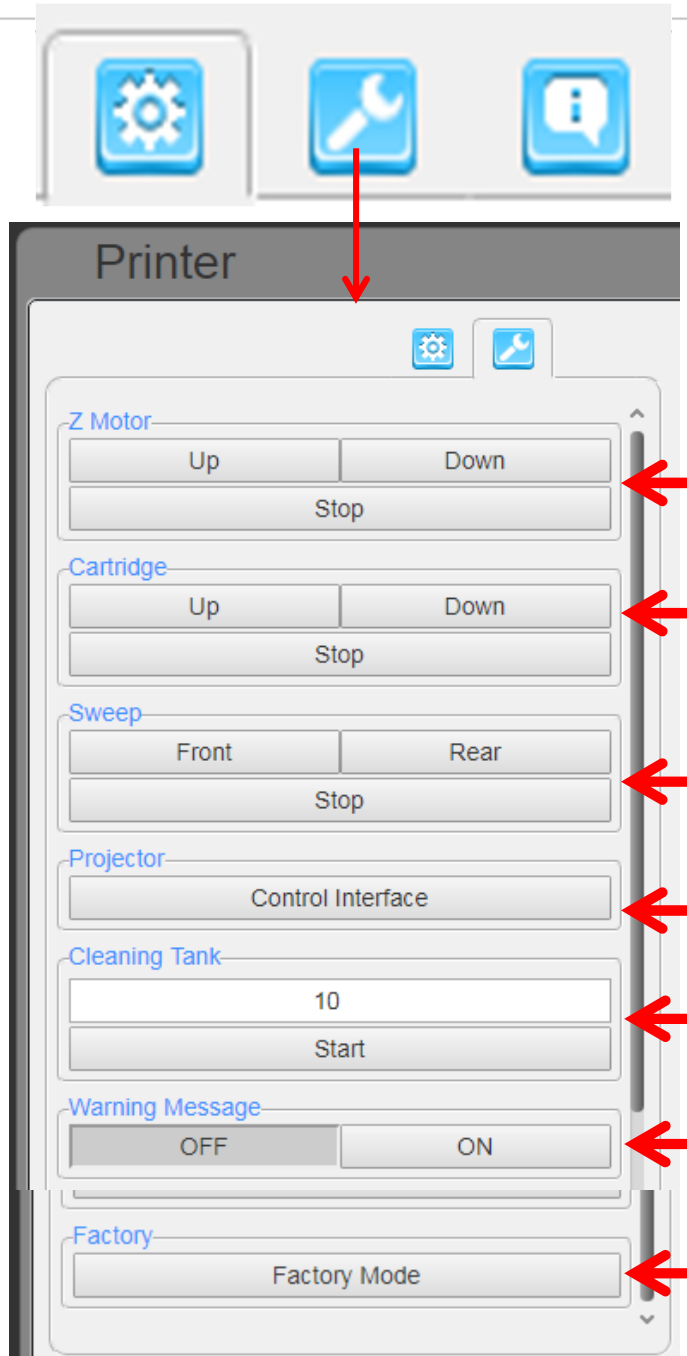








Engineering mode (Computer)



Control Z-platform (Build platform)

Control tefon module

Control recoater blade

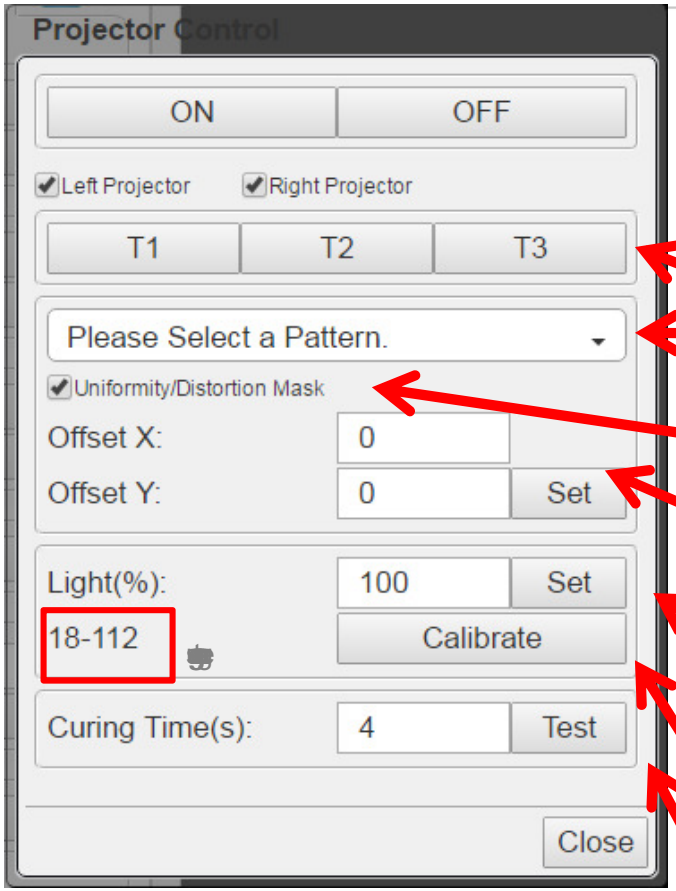
Introduce in the next page

Project a complete patter, the residual will be transformed into a solid layer

On/off of warning message shows before print

Key in password to use Factory mode (For distributer use)

Engineering mode (Computer)



Control the projector

If Machine is Advance series, you can choose left or right projector to control.

T1/T2/T3 : Use test pattern inside the projector, or select a pattern from menu

Tick this option to apply printer calibration function

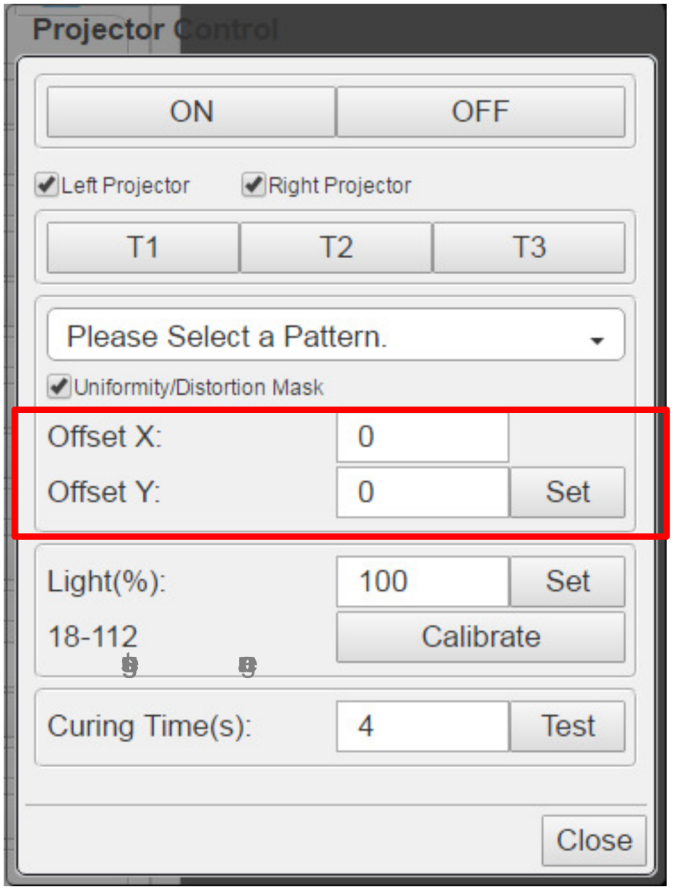
Fix the left projector, and move right projector through X axis or Y axis.

Light(%): At 100% is the existing brightness of light engine. The suggest range is base on the printer's condition, user can only set the % within the suggest range.

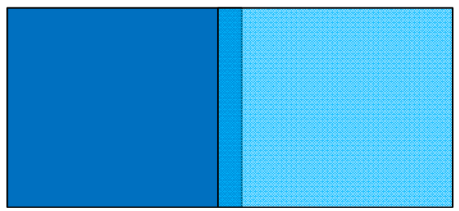
Calibrate: Return to default setting of brightness

Curing Time(s): Test print curing time.

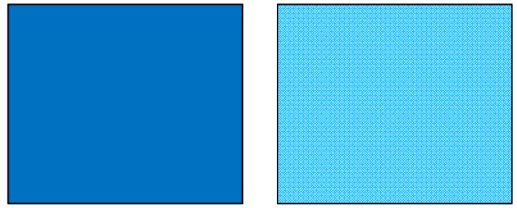
Engineering mode (Computer)



Fix the left projector image, and move right projector image through X axis.

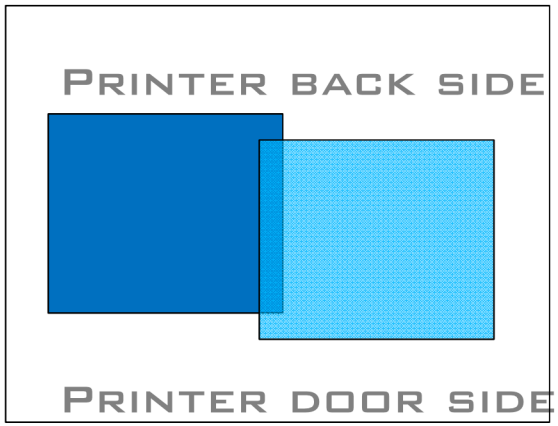


Offset X : -9

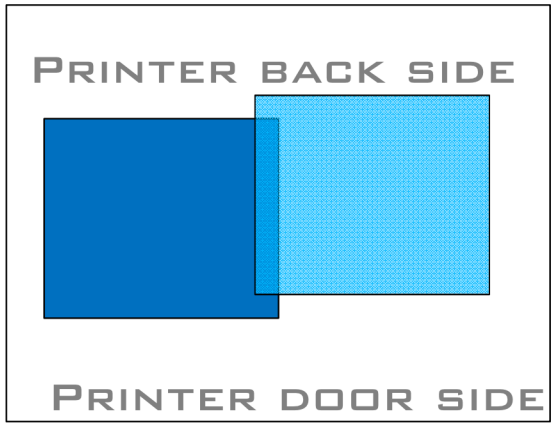


Offset X : 9

Fix the left projector image, and move right projector image through Y axis.



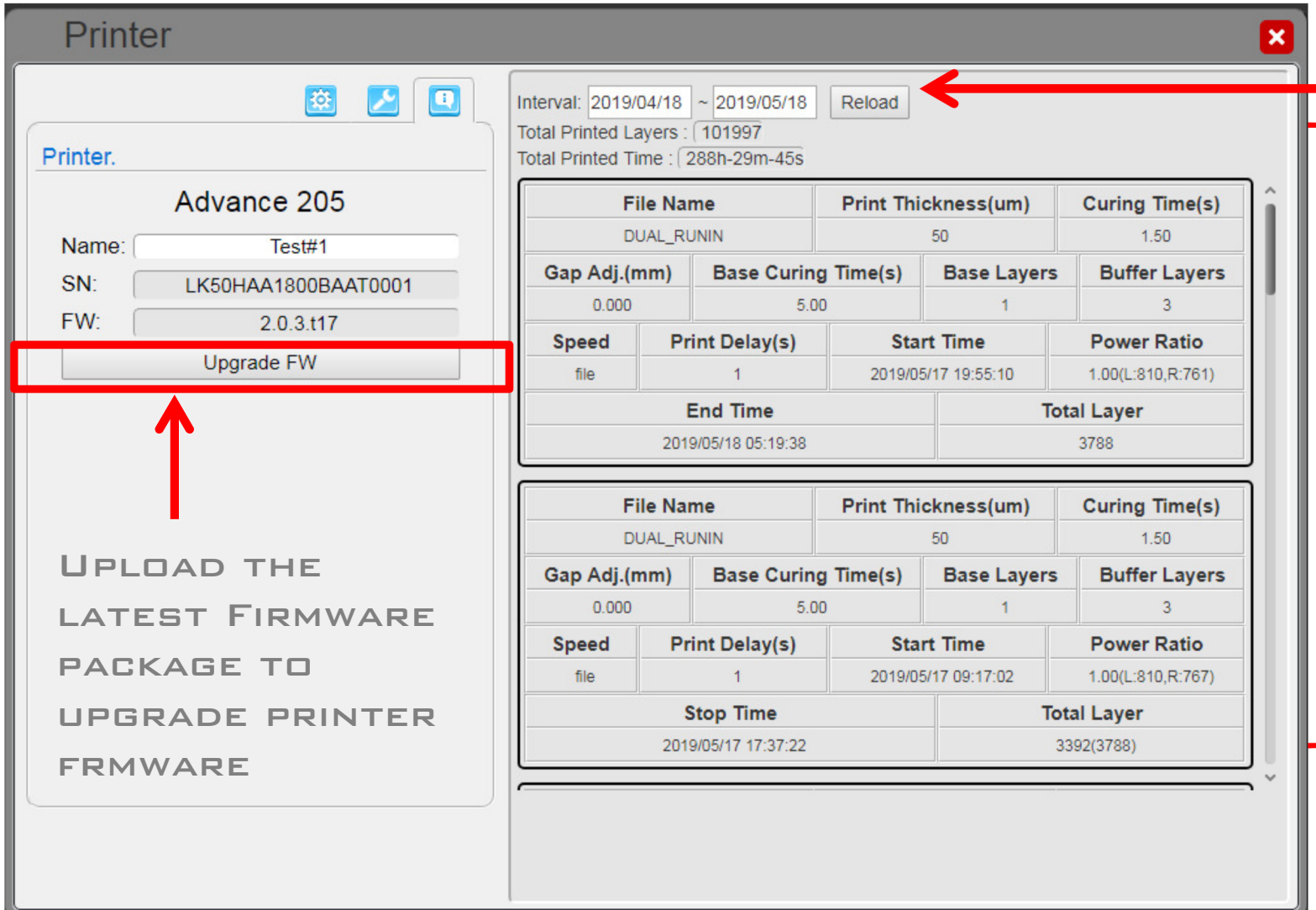
Offset Y : -9



Offset Y : 9

Printing record and update frmware

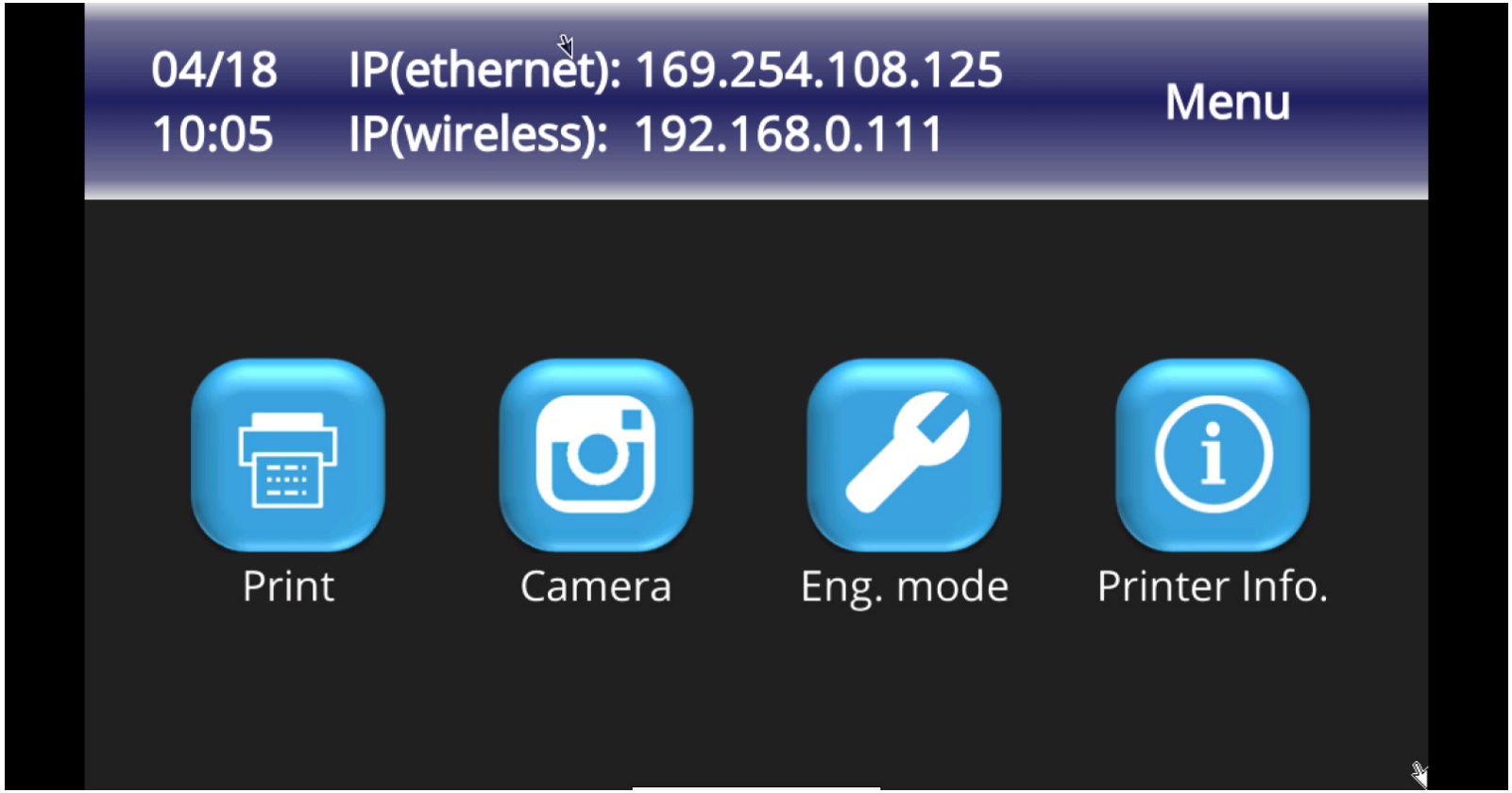
Printing history



Search interval

Record

Print via touch screen panel



Print Via Touch Screen Panel

To print:

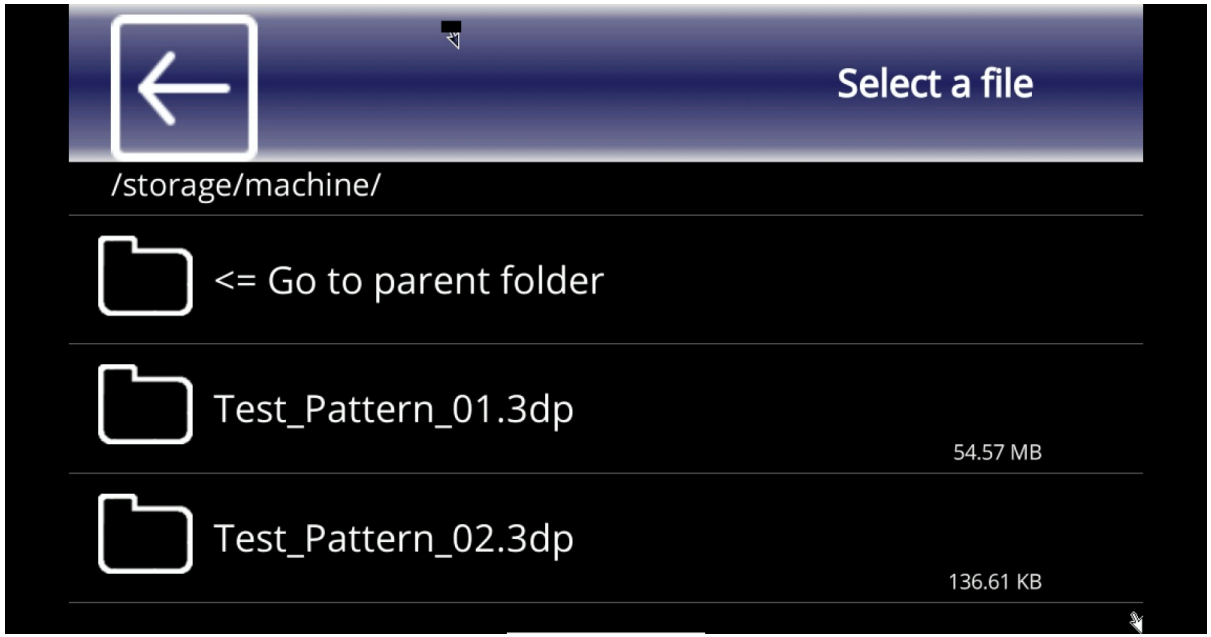
Select .3dp file from

1. machine (file saved in printer) or
2. USB (insert into printer)

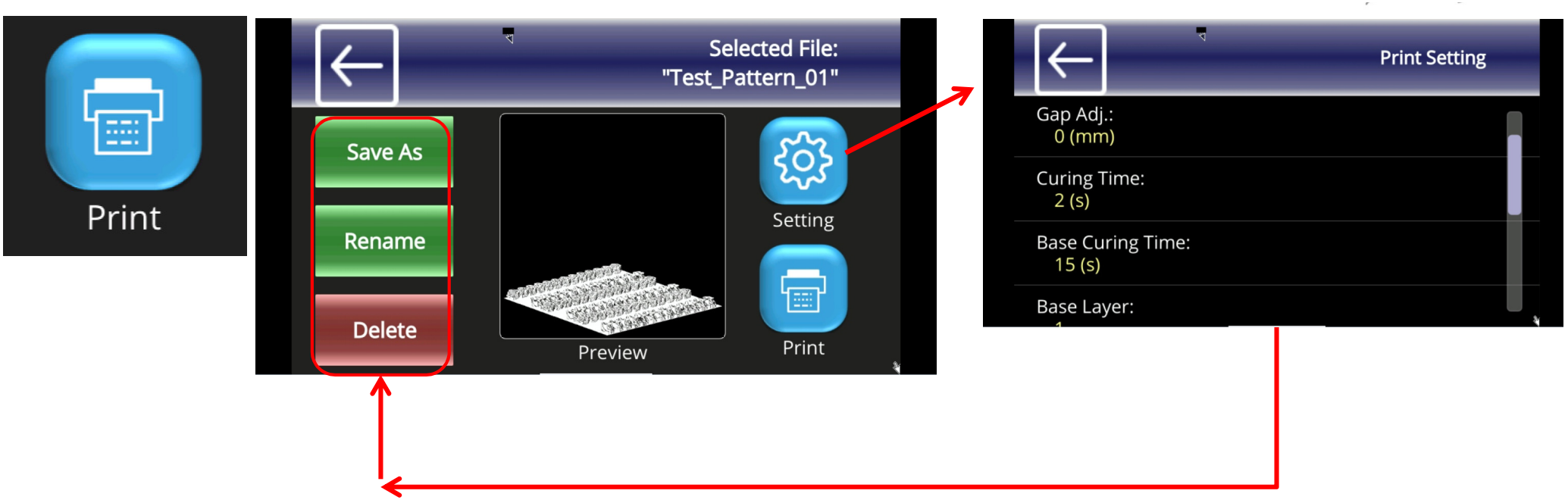
File input size limitation:

a. Upload file from Computer, file limitation 500MB

b. Upload file from USB, file limitation 1G



Print via Touch Screen Panel



.3DP fle

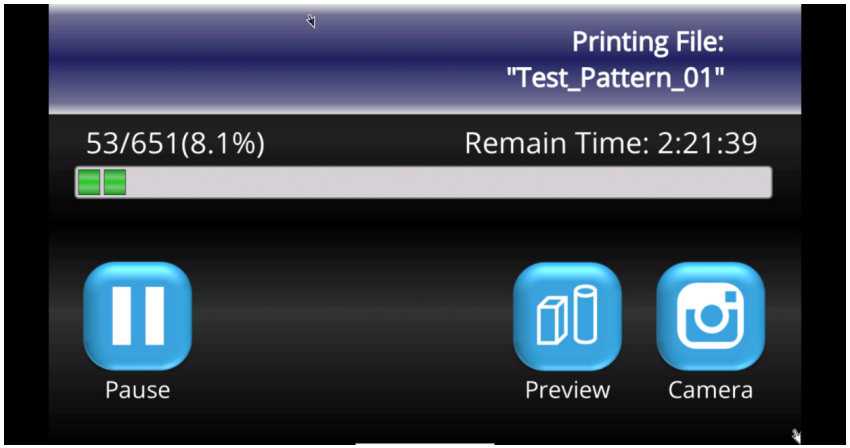
A. Save as : Save printing setting as another .3DP fle

B. Rename : Rename .3DP fle

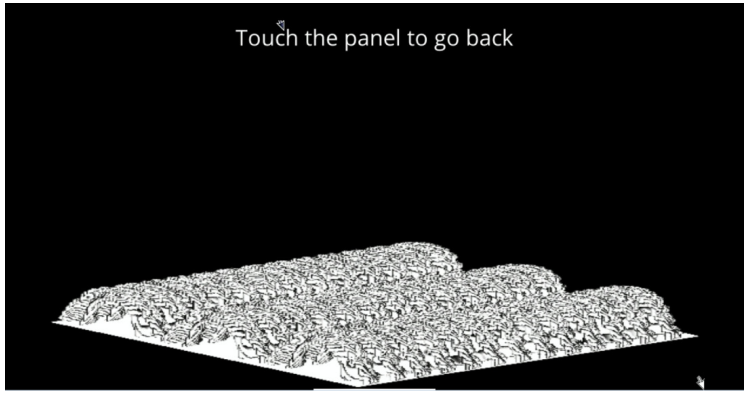
C. Delete : Delete .3DP fle

Print Via Touch Screen Panel

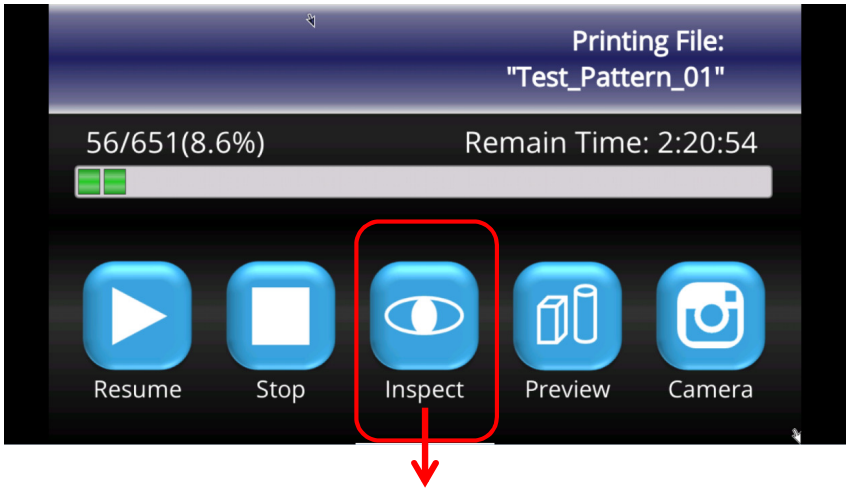
Printing



Preview

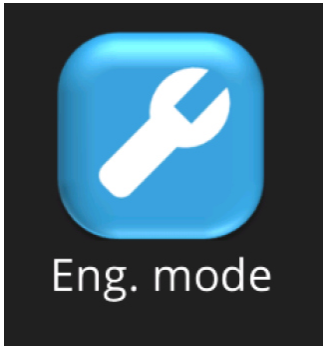


Pause



Let build platform moving upwards for inspect

Touch Screen Panel- Engineering Mode

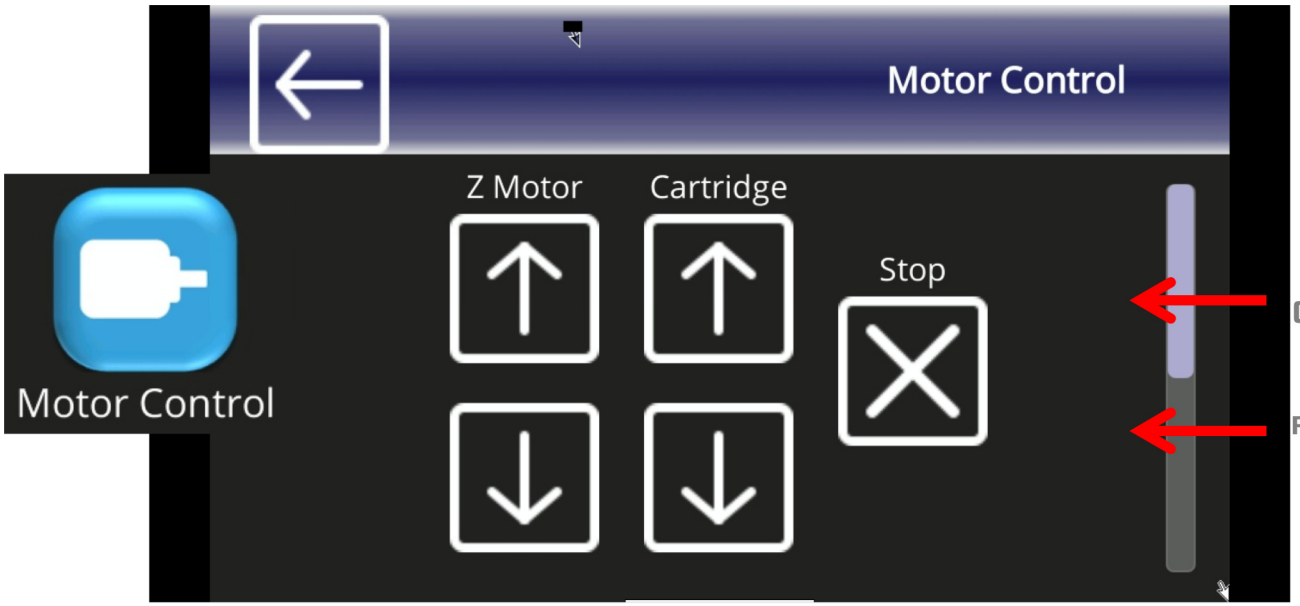


Printing record

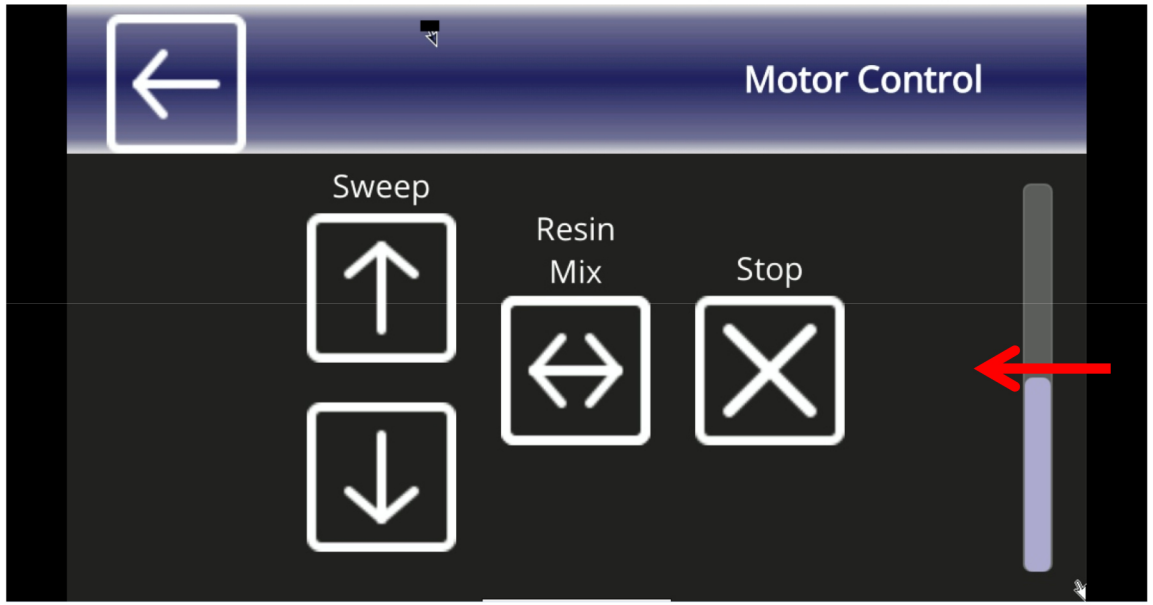
Search WiFi
Printer connect to
WiFi

Upload the
latest Firmware
package to
upgrade printer
frmware

Touch screen panel -Engineering mode



Control Z-platform (Build platform) Control tefon module

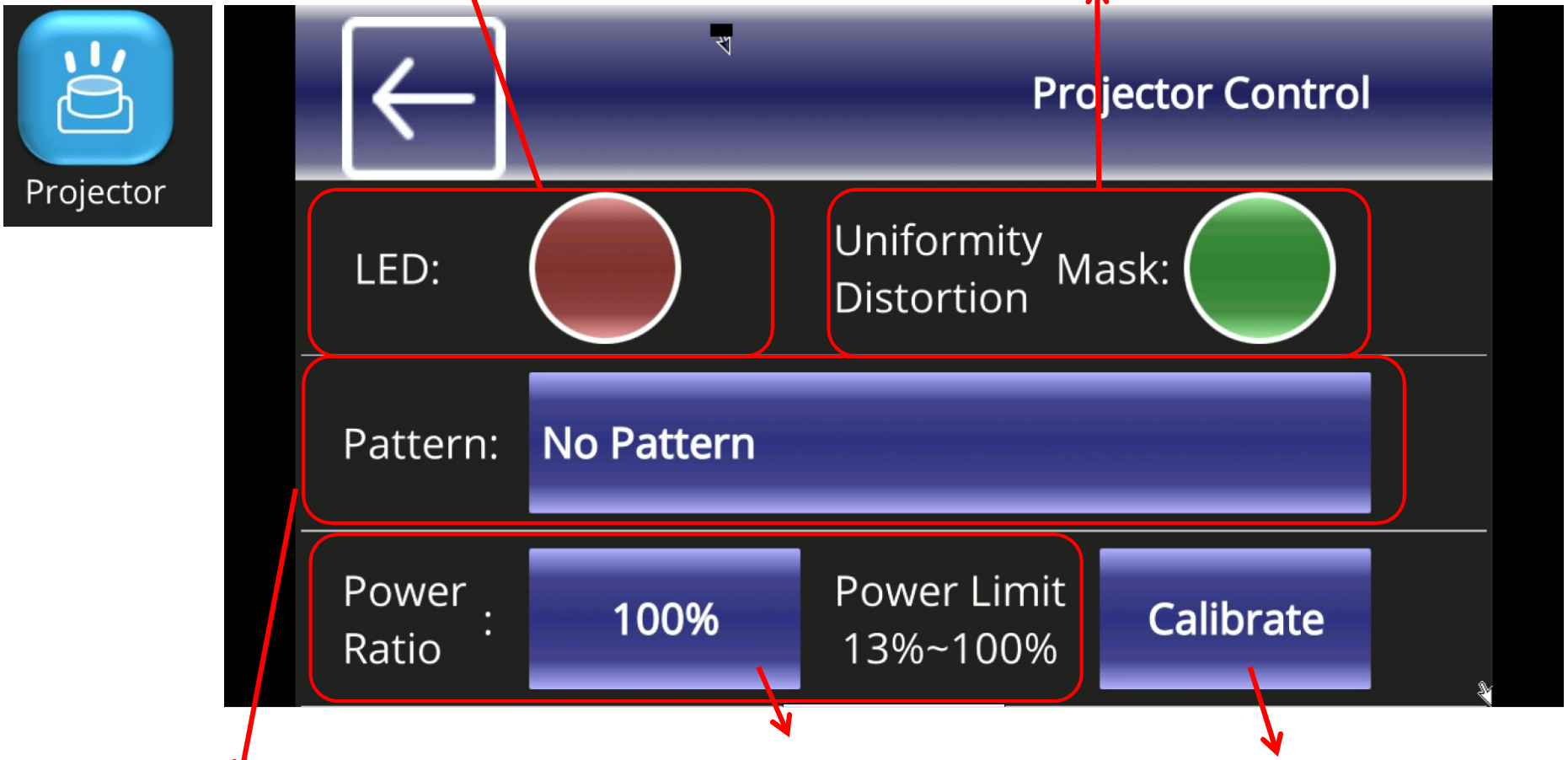


Control recoater blade

Touch Screen Panel -Engineering Mode

Control the projector

Tick this option to apply printer calibration function

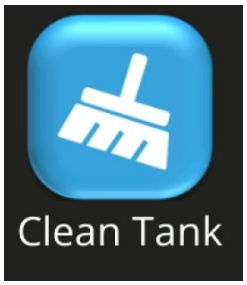


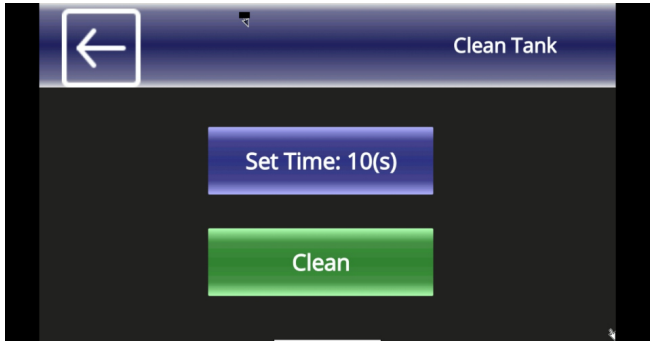
Select a pattern to project

Light(%): At 100% is the existing brightness of light engine. The suggest range is base on the printer's condition, user can only set the % within the suggest range.

Reset to default setting of brightness

Touch screen panel -Engineering mode



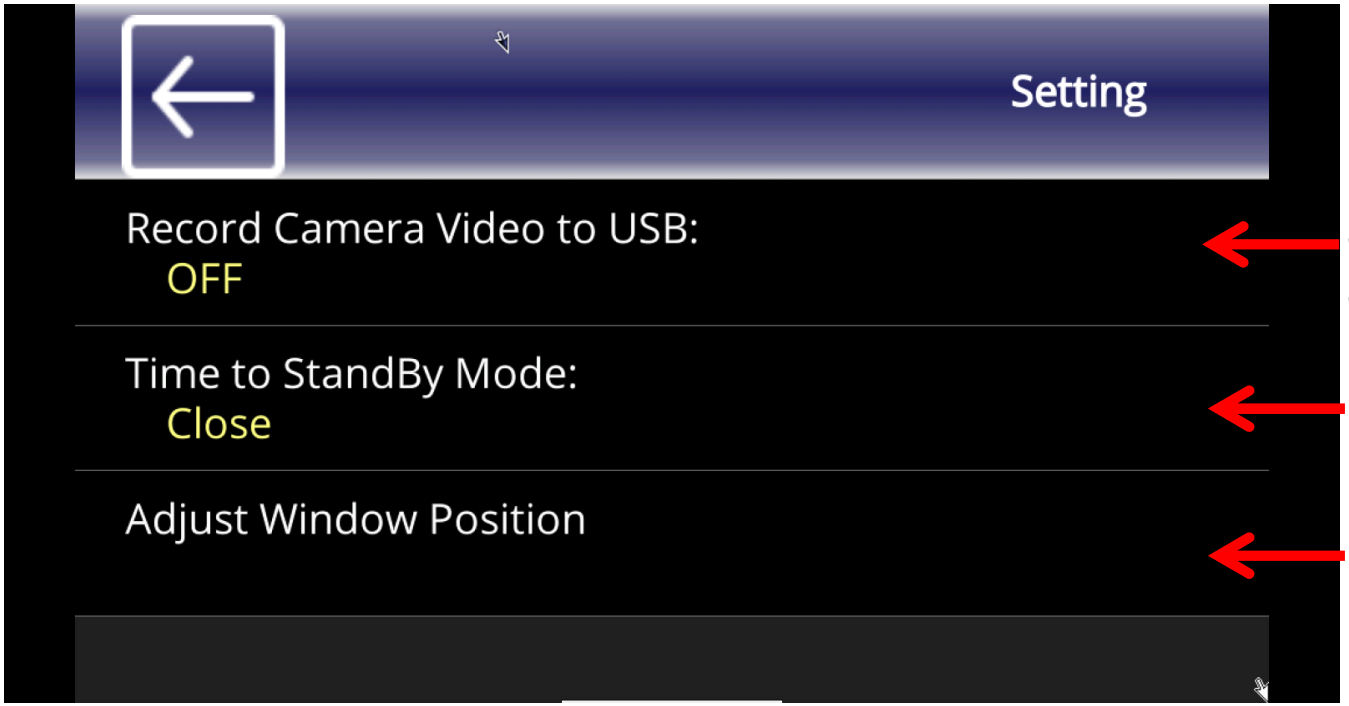


When printing failure happen, there may have some printing residual left and stick on tefon module.

Before to start another printing job, be sure to clean the printed residual out of tefon module.

1. Use “Clean tank” function via touch panel, it project a complete patter, the residual will be transformed into a solid layer. Using the scrape, scoop up one side of the layer.
2. Then carefully lift to remove solid layer from the tefon module.

Touch screen panel -Engineering mode



Save video or not
Save in which device

Enable Stand by mode
or not Duration

Adjust panel's window
position

3D tiger APEX™

For Further Support, Contact us via the methods Below!

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