



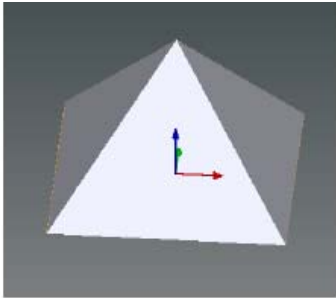
Utility V6.0.1 & Touch screen Panel User Manual

Mar. 2019 v2

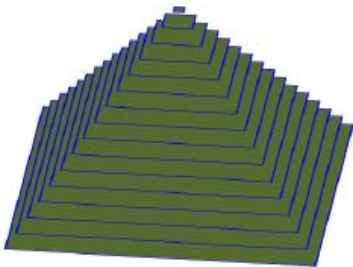
Printing work flow

This manual focus on the work flow of 3D file preparation and Printing setting

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



2. 3D file preparation
 - a. Repair 3D file
 - 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
 - c. Grinding (optional)

Main Content

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1. System requirement
2. Open Utility and Connect to printer
3. Set layer thickness
4. Import file
5. Hot key
6. Semi-Auto mode
7. Duplicate and resize model
8. Auto arrangement
9. Auto support
10. Model arrangement

Main Content

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10. Build supports
11. Build support – View mode
12. Tool bar
13. Prepare printer connection
14. Printer setting
15. Printer setting (.mps)
16. Print via computer
17. Engineering mode (computer)
18. Printing record and update firmware
19. Print via touch screen panel
20. Touch screen panel – Engineering mode

System requirements for using Utility

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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)	D-Link DWA-127 Wireless Networking Adapter



D-Link DWA-127

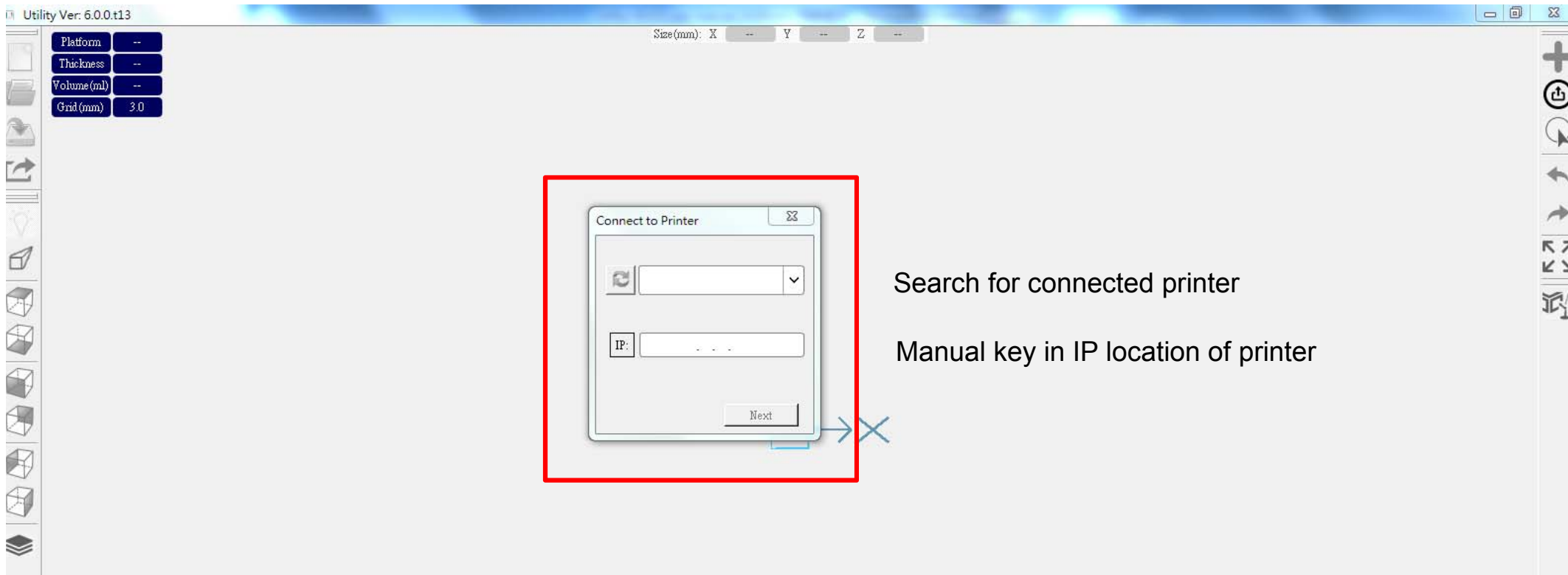


Open Utility and Connect to printer

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- 1) Unzip the installation file, and click Utility.exe
- 2) Need to connect to printer first, otherwise cannot use Utility

Utility.exe



- Printer connection method introduce in the next page

Open Utility and Connect to printer

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1) Connect your printer with laptop

- Basic** : Connect printer and laptop by RJ-45 cable (Graph1.) [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(Wifi) location shown on printer on Utility
[Initiating time a few seconds]

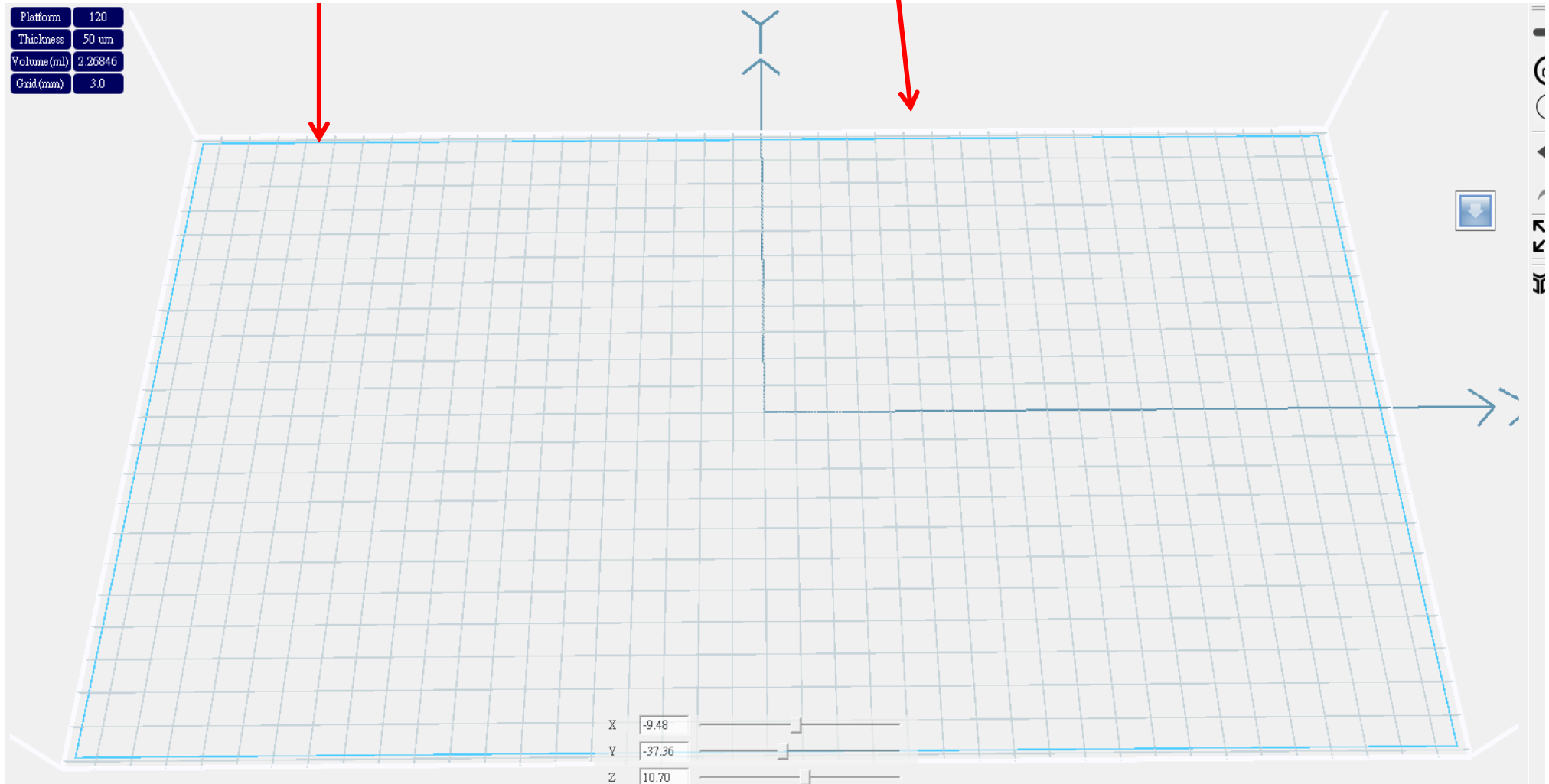


Open Utility and Connect to printer

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White frame is the largest printing boundary

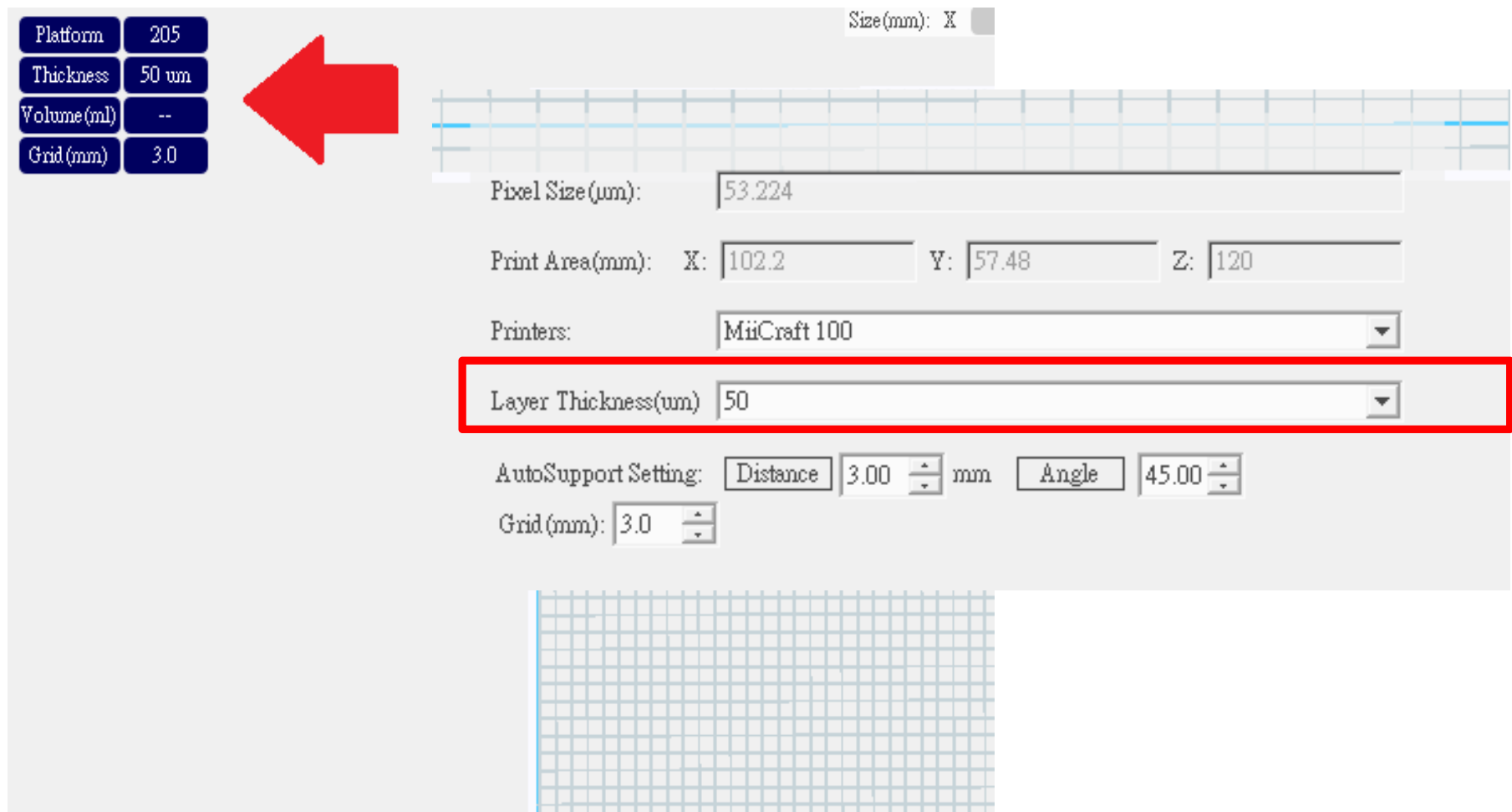
Blue frame is suggest printing boundary



Set layer thickness

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- 1) Click the upper left panel, set layer thickness
- 2) Click the upper left panel again to save and hide



Platform: 205
Thickness: 50 um
Volume(ml): --
Grid(mm): 3.0

Size(mm): X

Pixel Size(um): 53.224

Print Area(mm): X: 102.2 Y: 57.48 Z: 120

Printers: MiiCraft 100

Layer Thickness(um): 50

AutoSupport Setting: Distance 3.00 mm Angle 45.00

Grid(mm): 3.0

Import file

- 1) Two way to import .stl file
 - ① Tool bar, icon as picture on the right
 - ② Drag the .stl file from folder into Utiltiy



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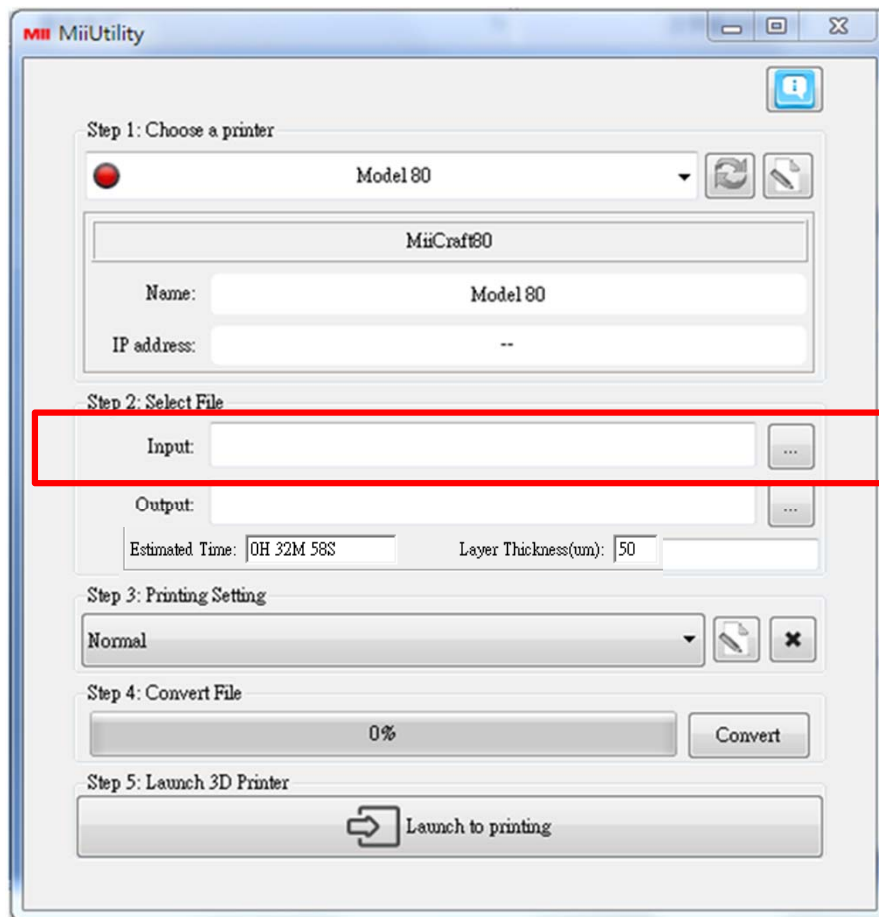


Import file

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



① Tool bar, icon as picture on the right



Select .stl or .slc file

Hot key

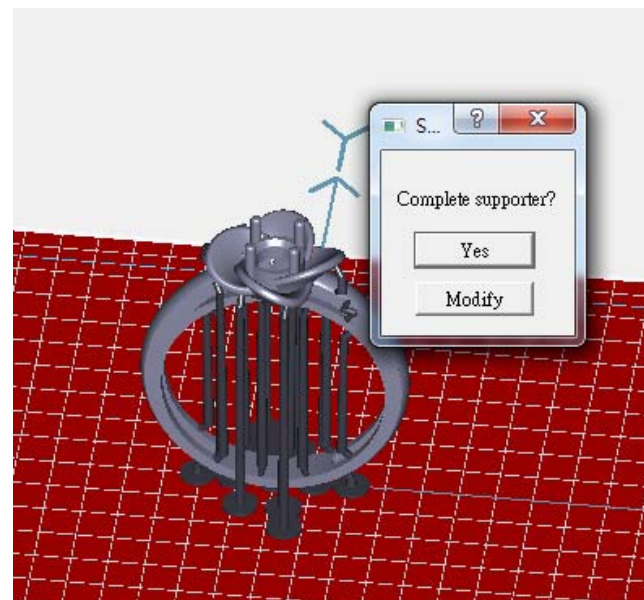
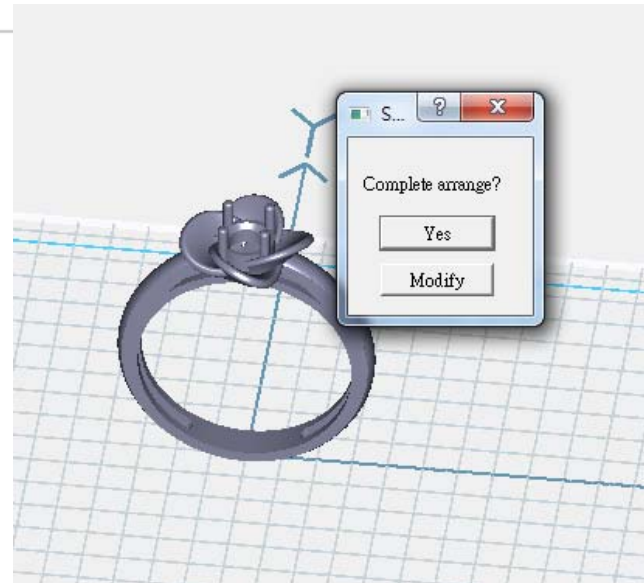
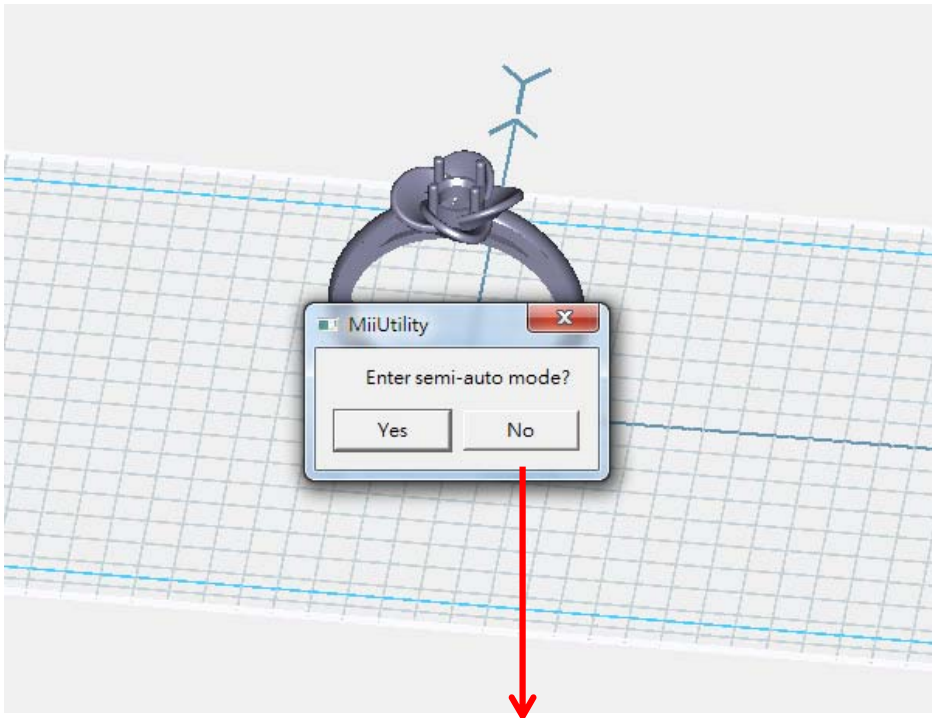
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- **Right Mouse Button** –Rotate platform
- **Middle Mouse Scroll** -Zooms in and out making the view of the build area larger or smaller
- **Middle Mouse Button** -Move platform
- **Alt+E** = Move model 
- **Alt+R** = Rotate model 

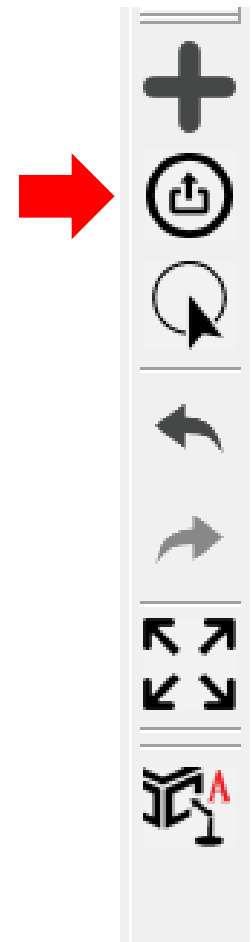


Semi-Auto mode

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



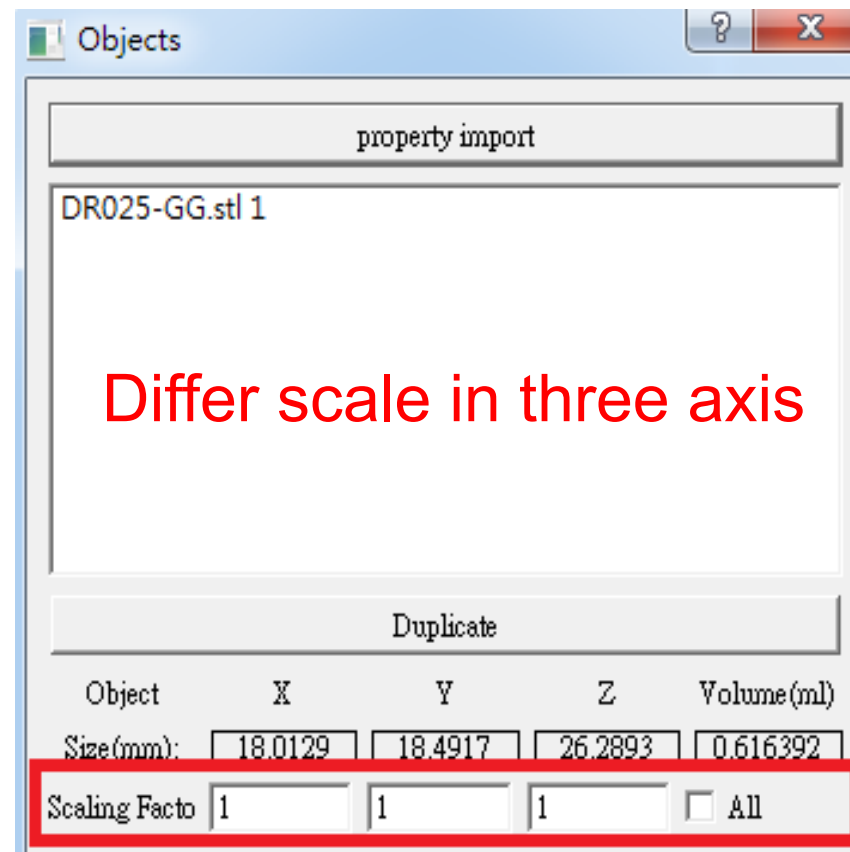
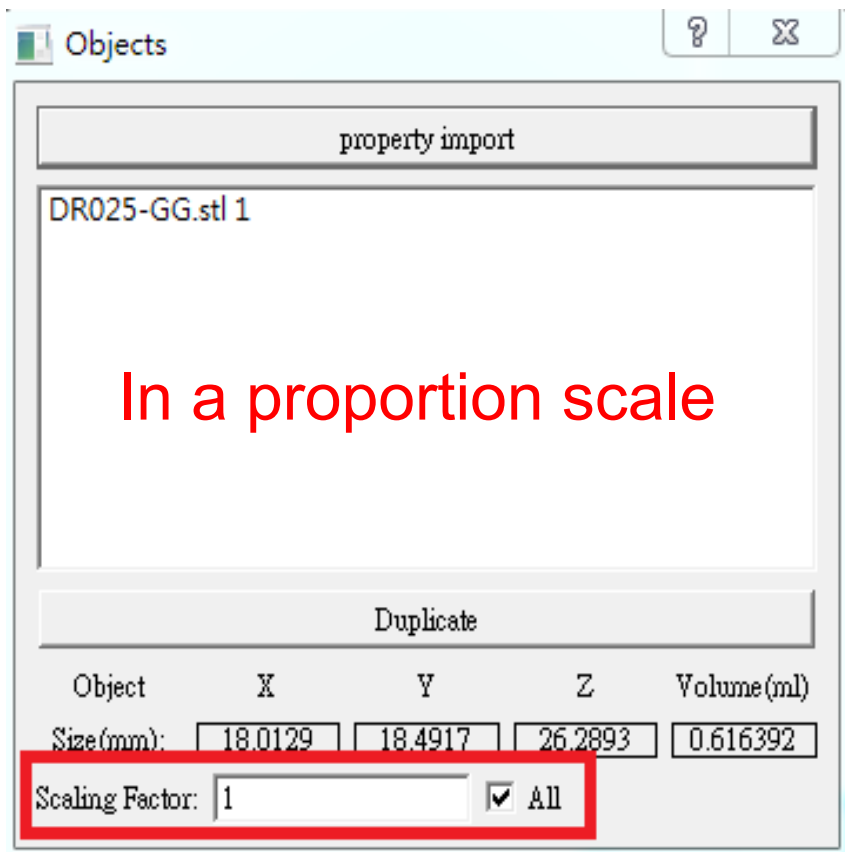
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* If user have customize model arrangement and build support, click “No” to move on to slicing.

Duplicate and Resize Model

- 1) Tool bar, icon as picture on the right
- ① Note: When the file name is high light, means the model been selected, now instruction is active.
- ② Select “all” to do amplify or minify in a proportion scale

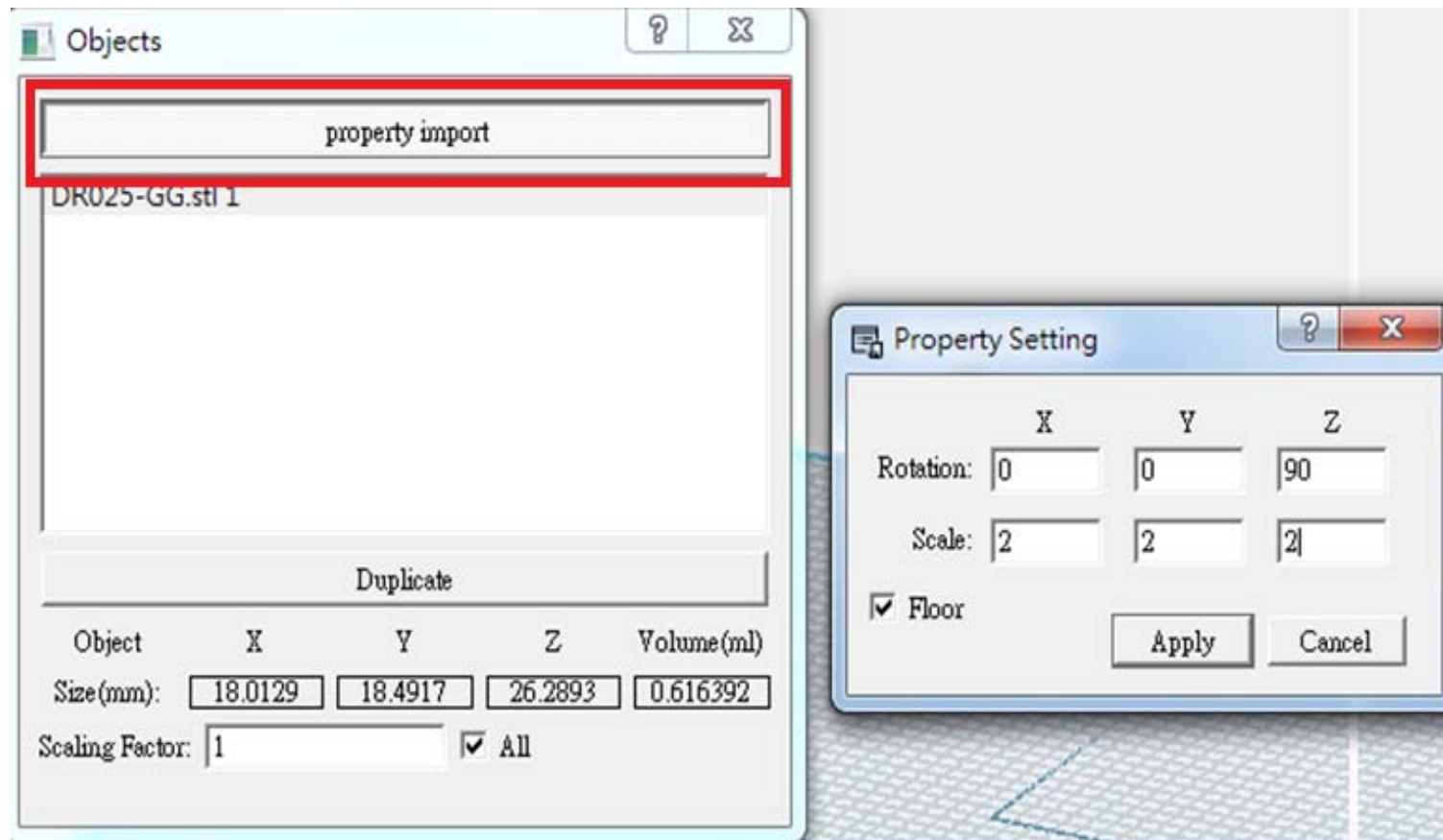


Duplicate and Resize Model

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

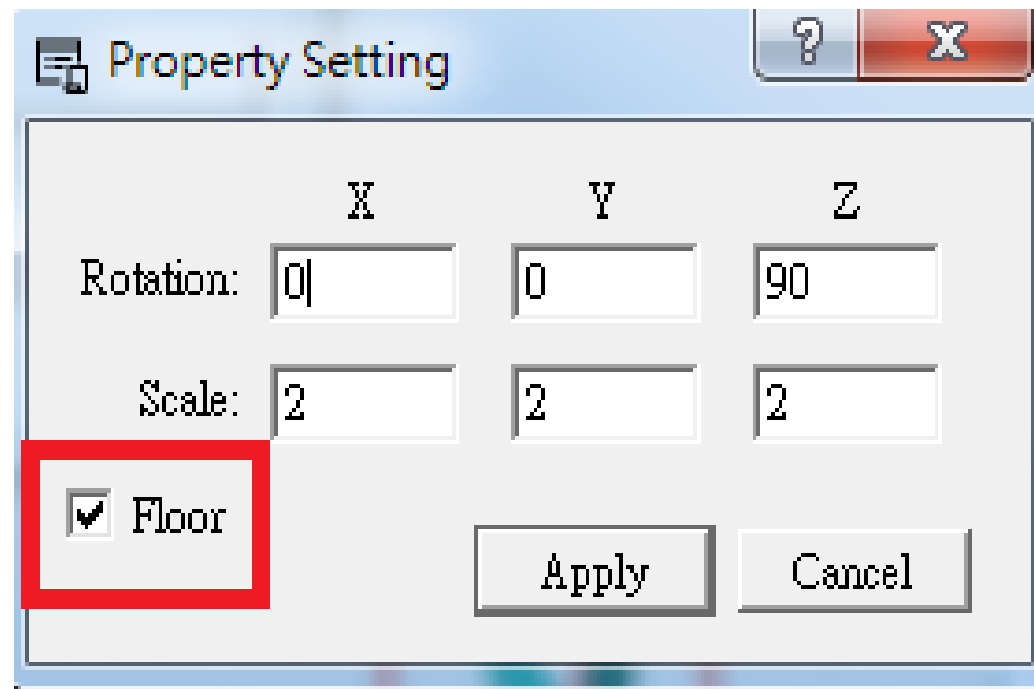
EX: Property import setting Z axis rotate 90 degree, X,Y,Z amplify 2 times, so the model import later will all follow this setting



Duplicate and Resize Model

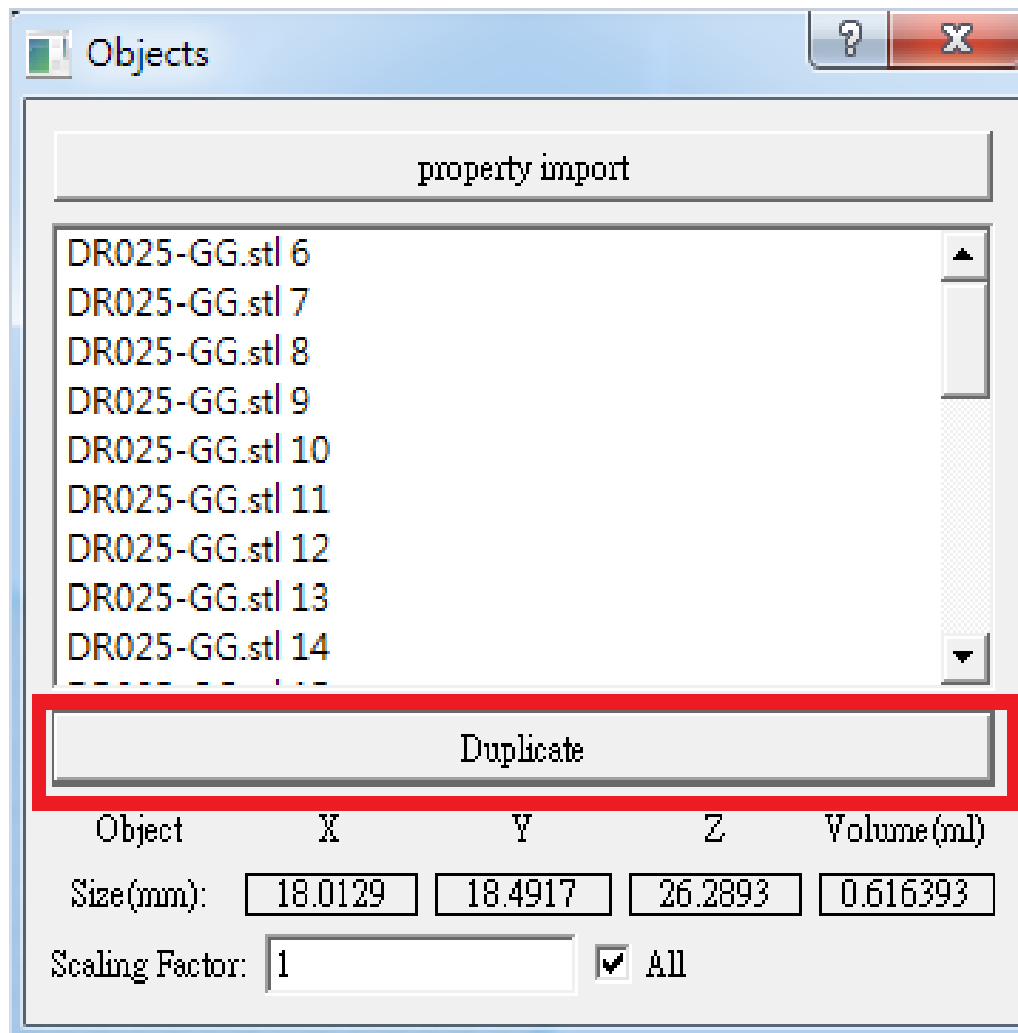
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- 3) Property import, select “Floor” to let model import with Z coordinate zero



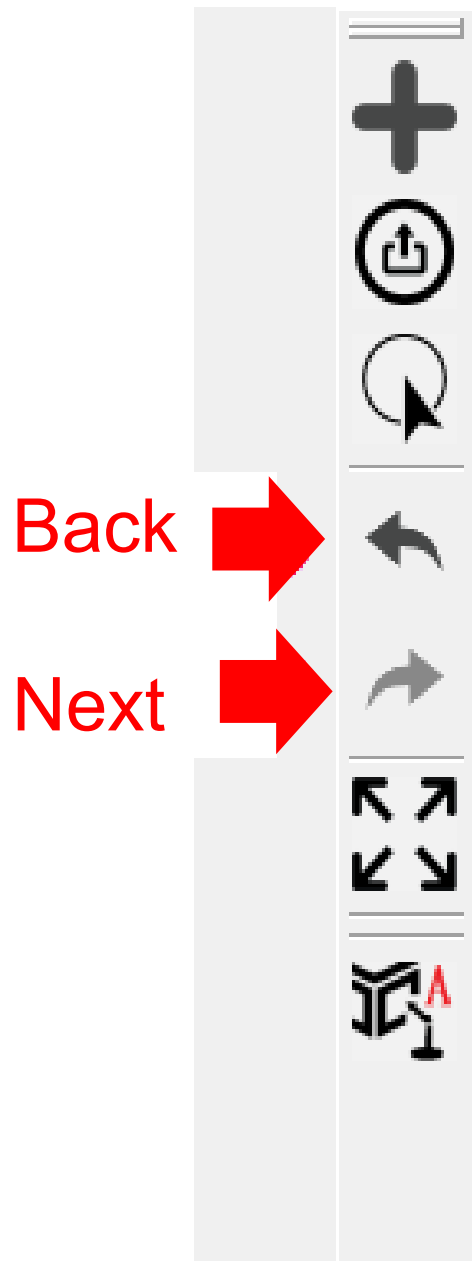
Duplicate and Resize Model

4) Duplicate selected model



Back and Next

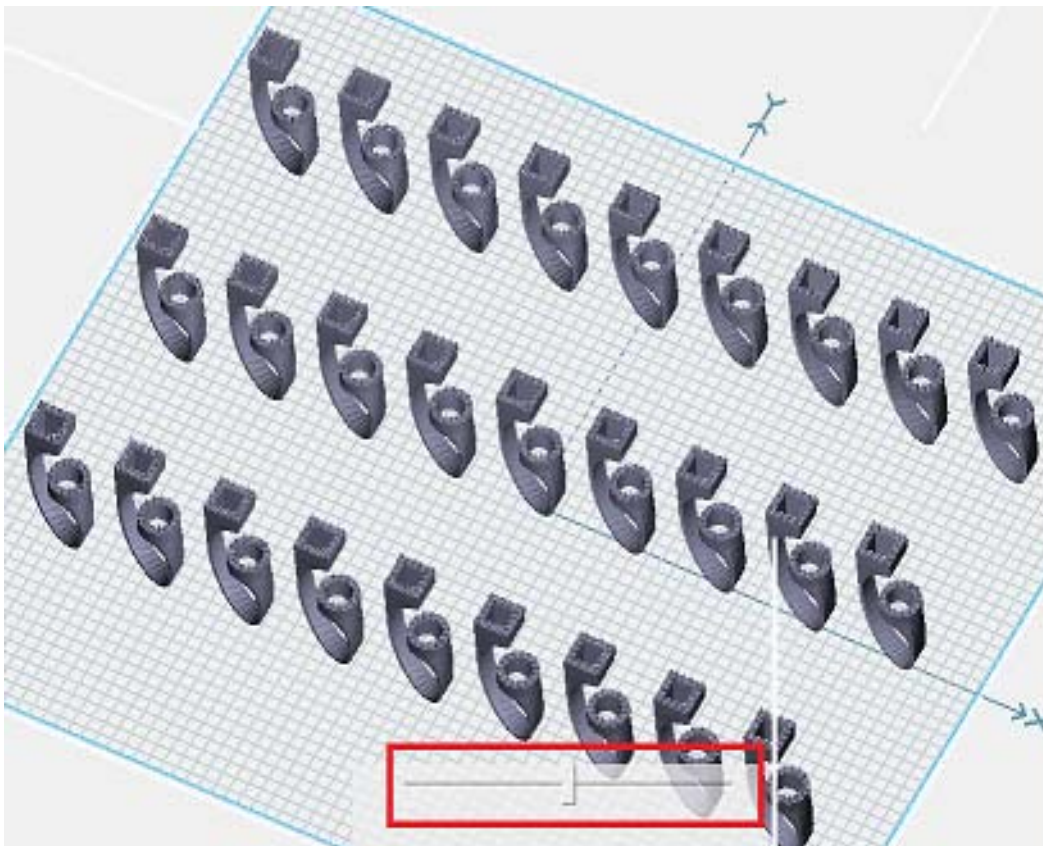
1) Tool bar, icon as picture



Auto arrangement

1) Tool bar, icon as picture on the right

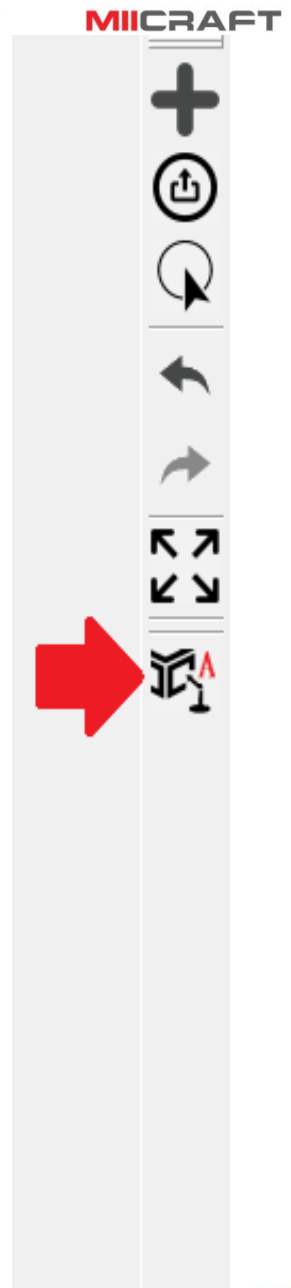
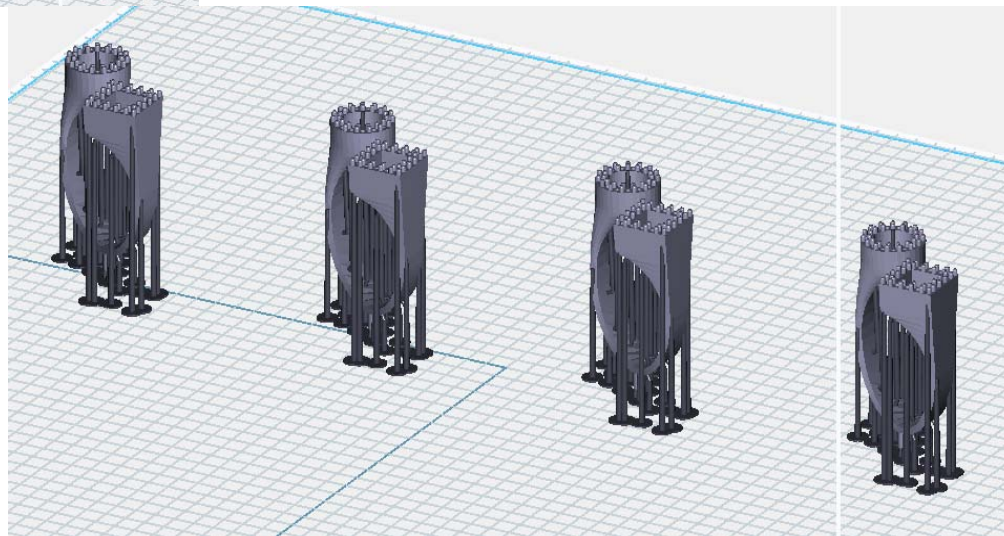
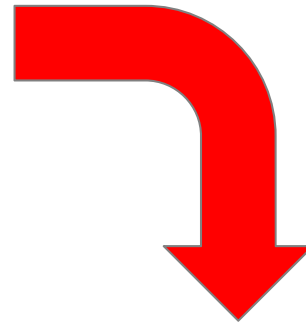
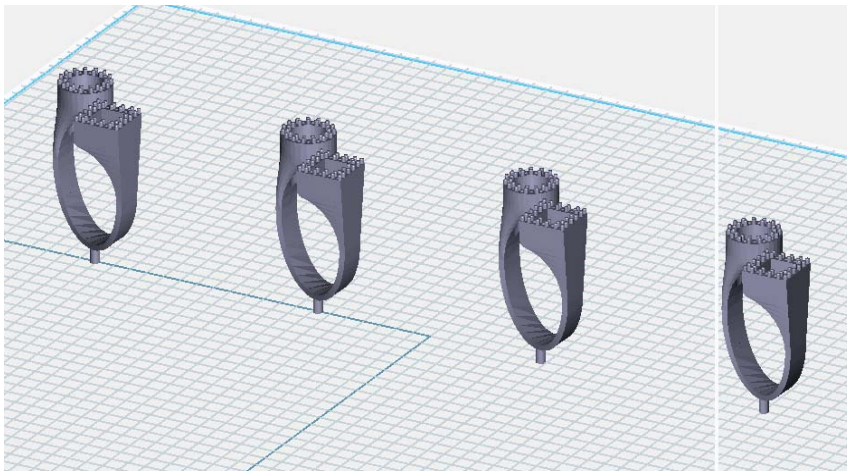
Multiple model auto arrangement, and can adjust the spacing with horizontal scroll bar



Auto support

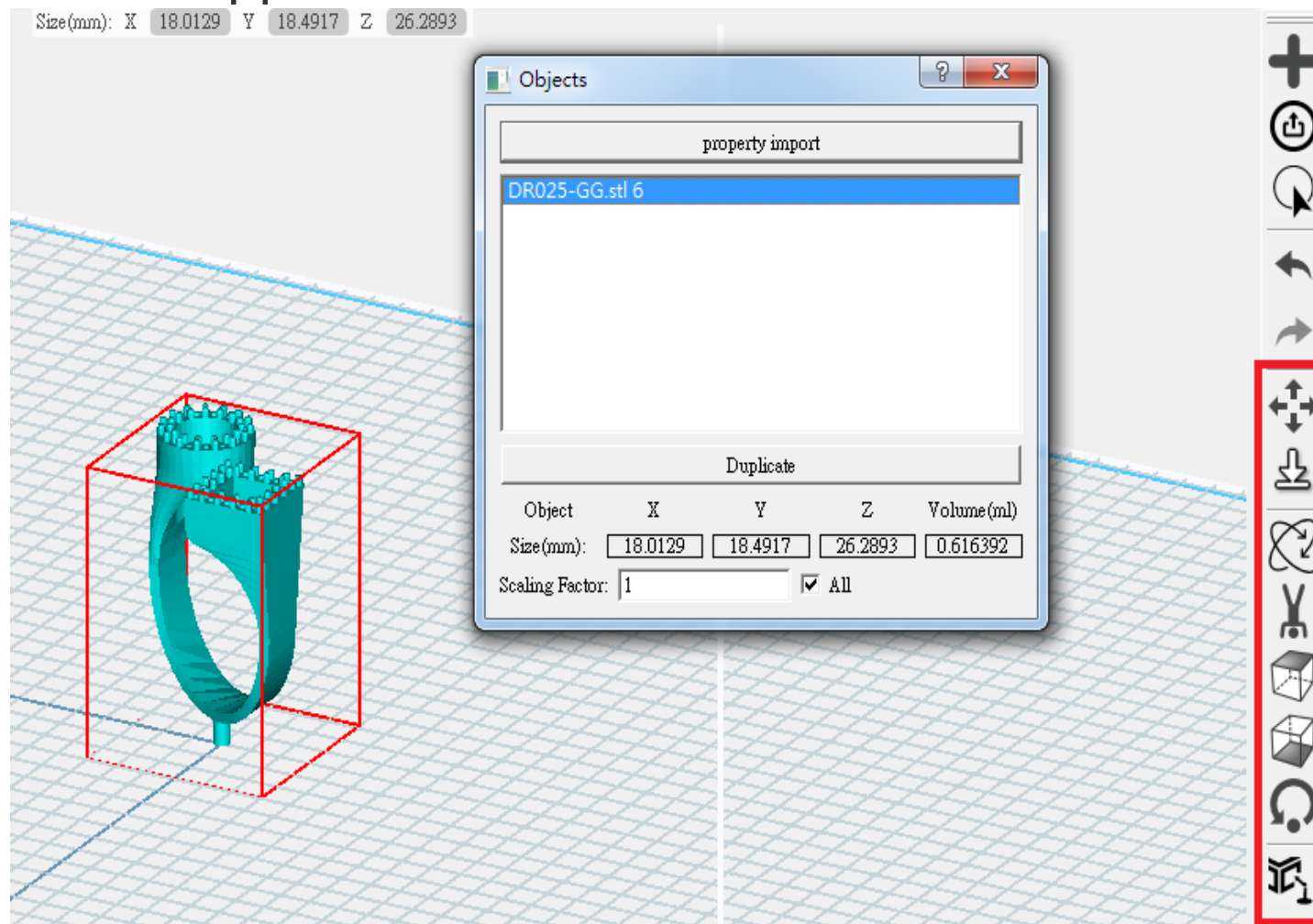
1) Tool bar, as picture on the right

Build auto support for every model



Model arrangement

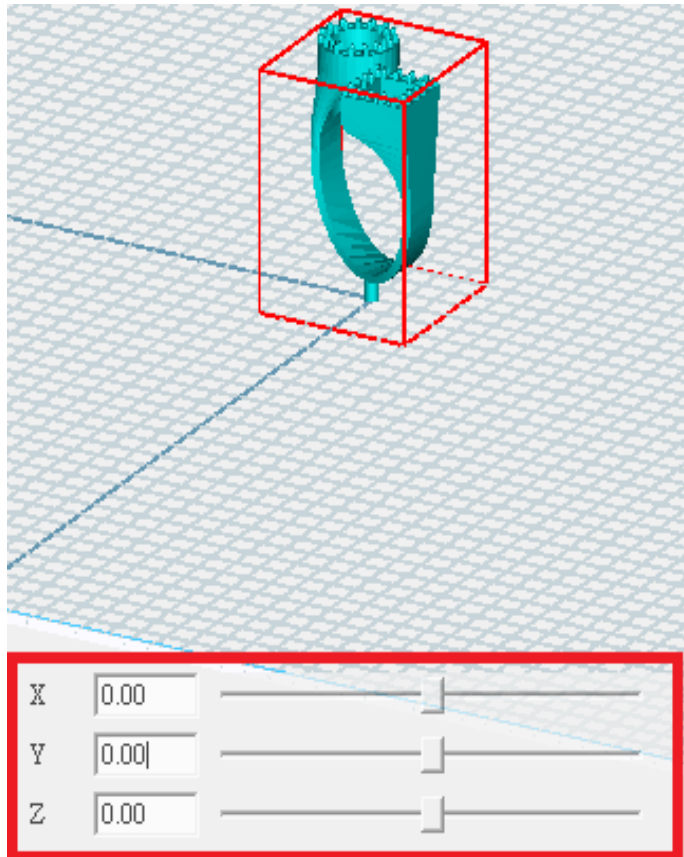
Select one model (been high light), more setting shows up in tool bar (as below red box), here you can do customize model arrange, and build customize support



Model arrangement

1) Select model, and click on tool bar

- ① Drag and move the model
- ② Or set X, Y, Z coordinate



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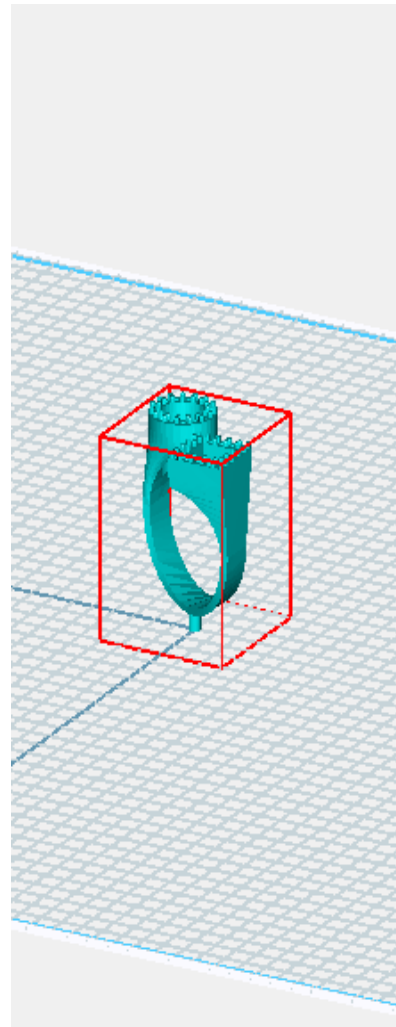
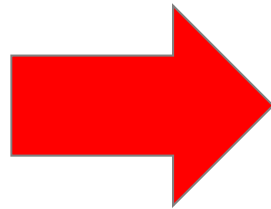
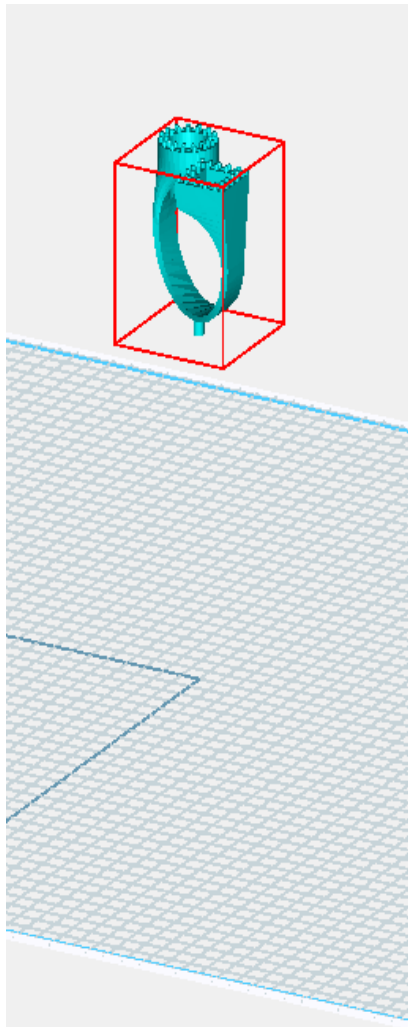


Model arrangement

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2) Select model, and click on tool bar

Put model down to floor

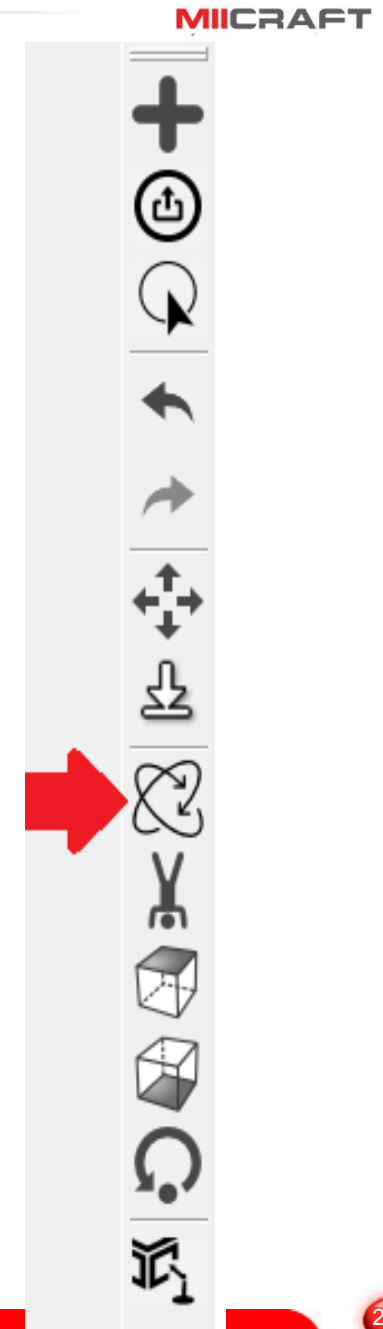
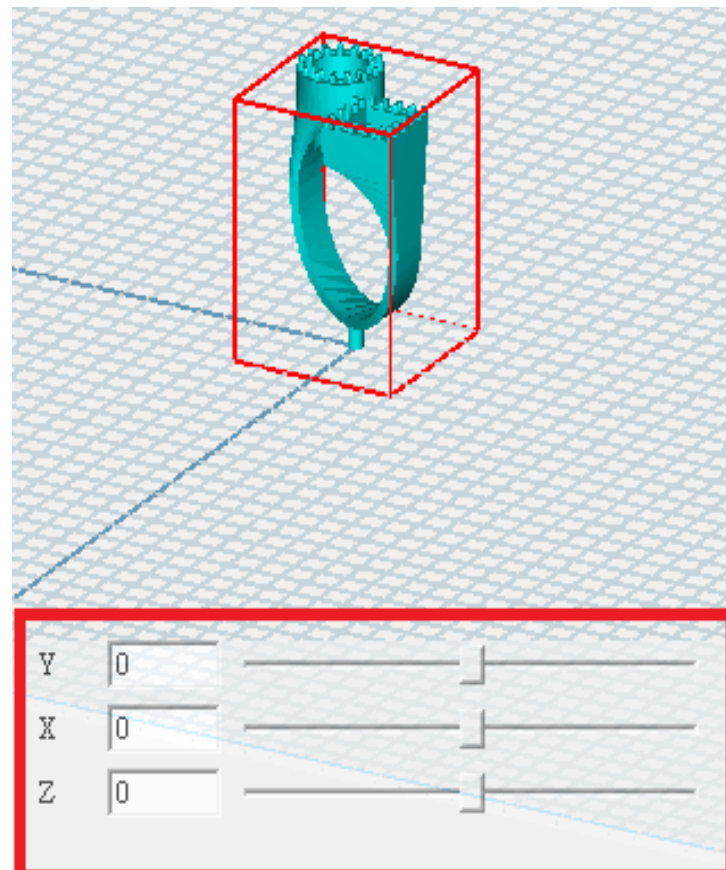


Model arrangement

3) Select model, and click on tool bar

① Set X, Y, Z axis rotation degree

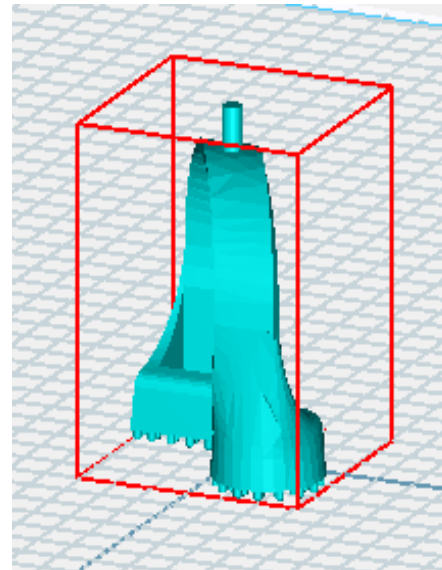
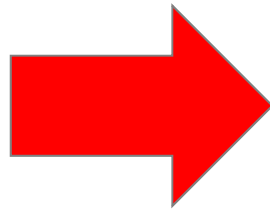
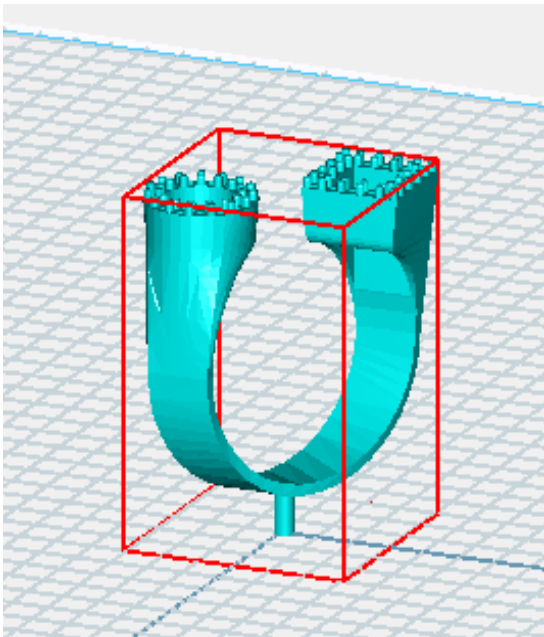
② Or use horizontal scroll bar



Model arrangement

4) Select model, and click on tool bar

Put model upside down



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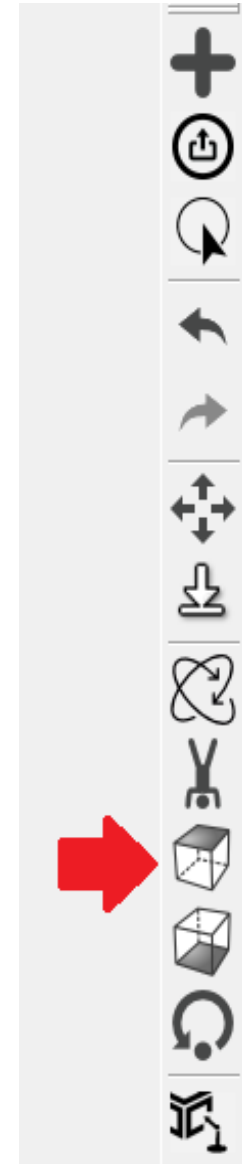
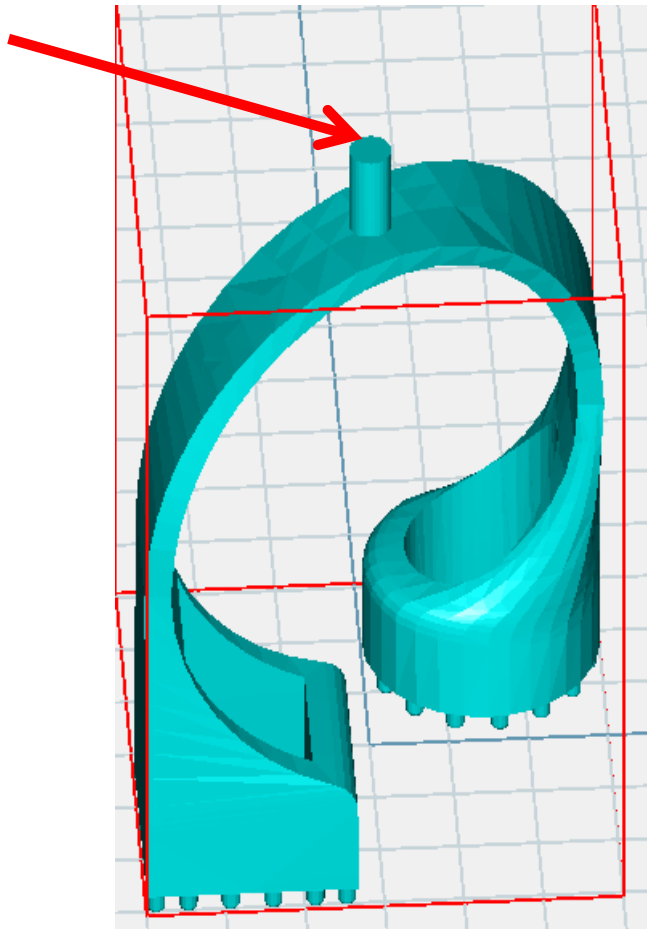
Model arrangement

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5) Select model, and click on tool bar

Click on one side, face up

EX: Select this side

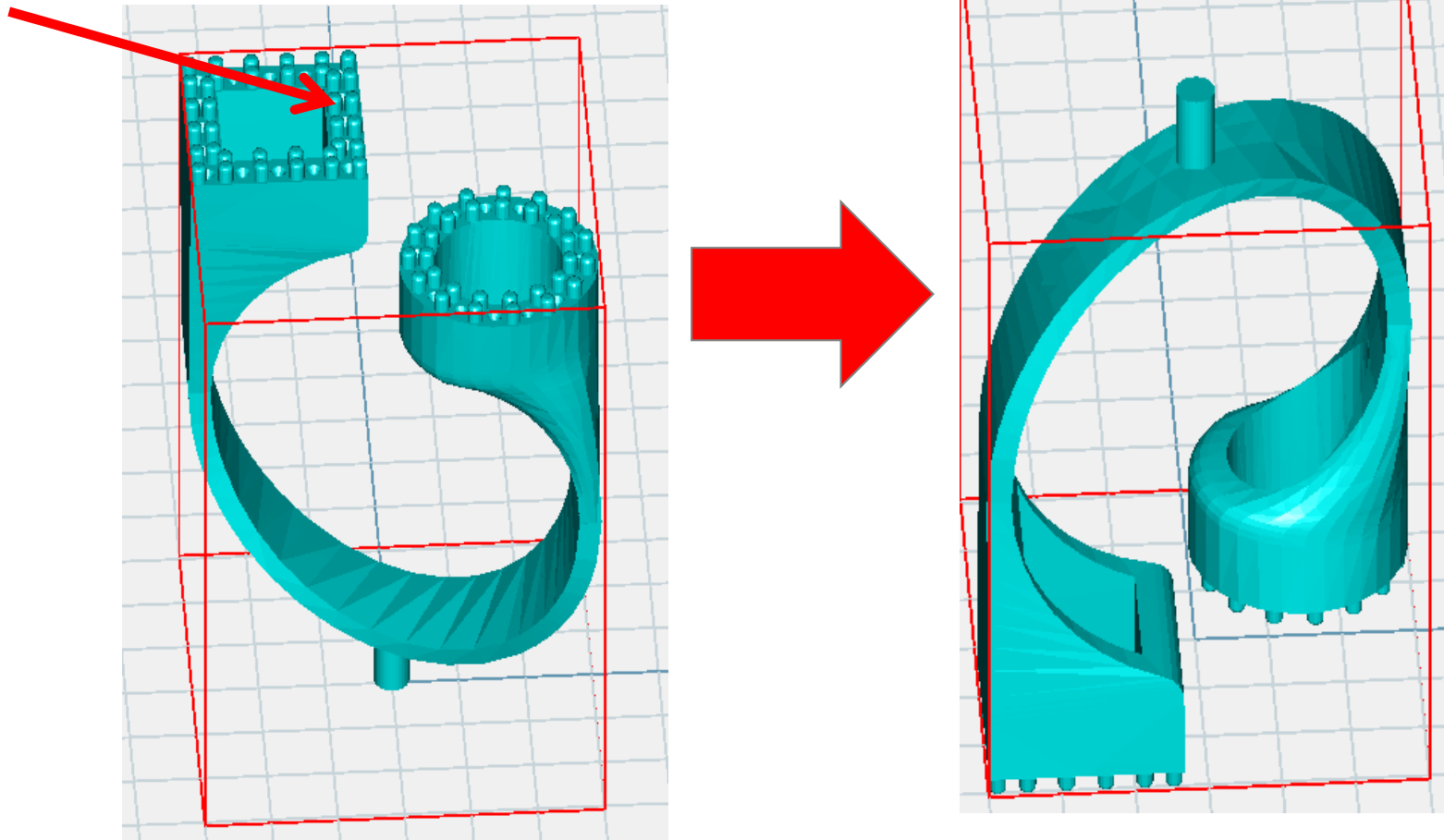


Model arrangement

6) Select model, and click on tool bar

Click on one side, face down

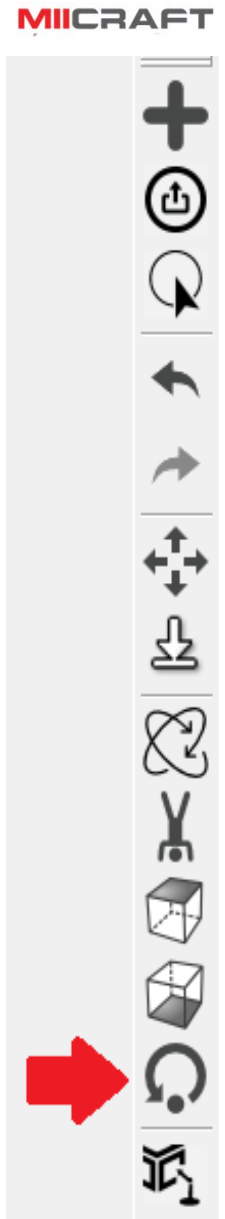
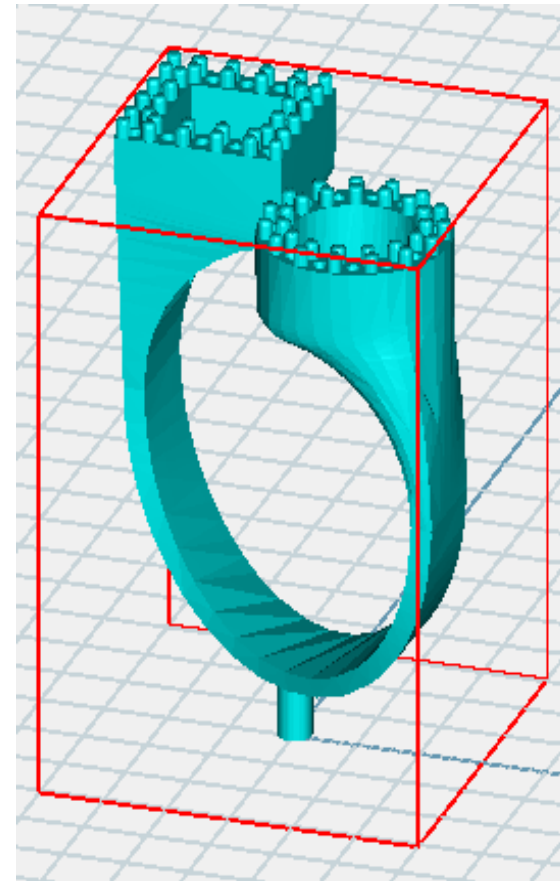
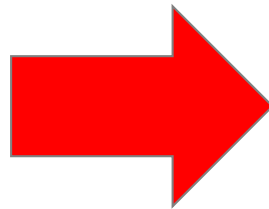
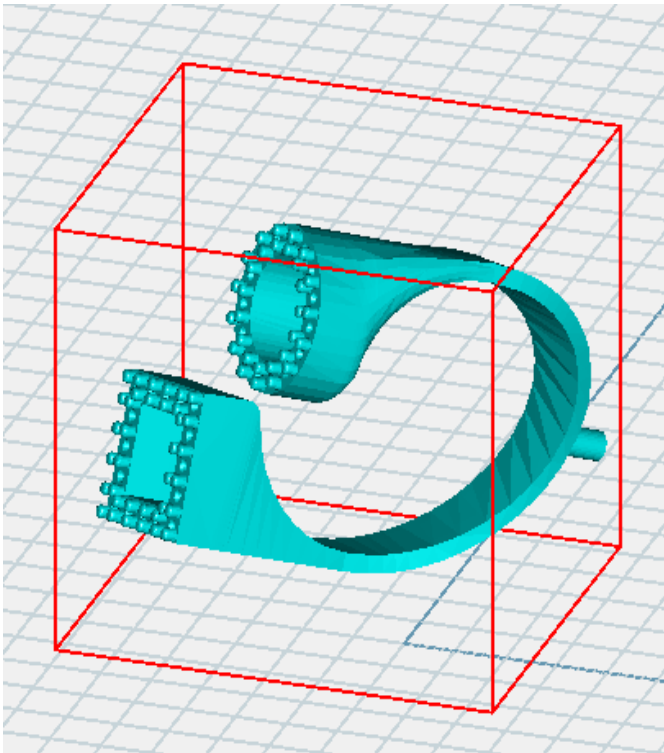
EX: Select this side



Model arrangement

7) Select model, and click on tool bar

Back to the default rotation

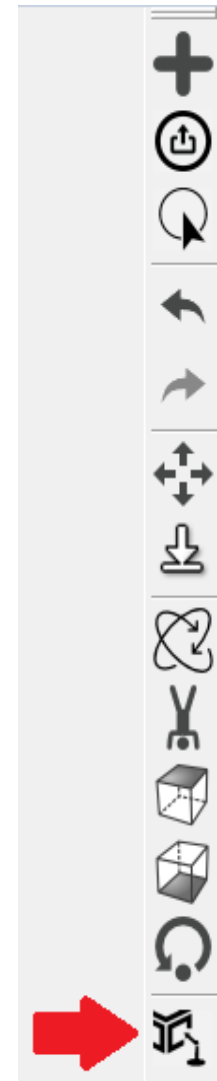
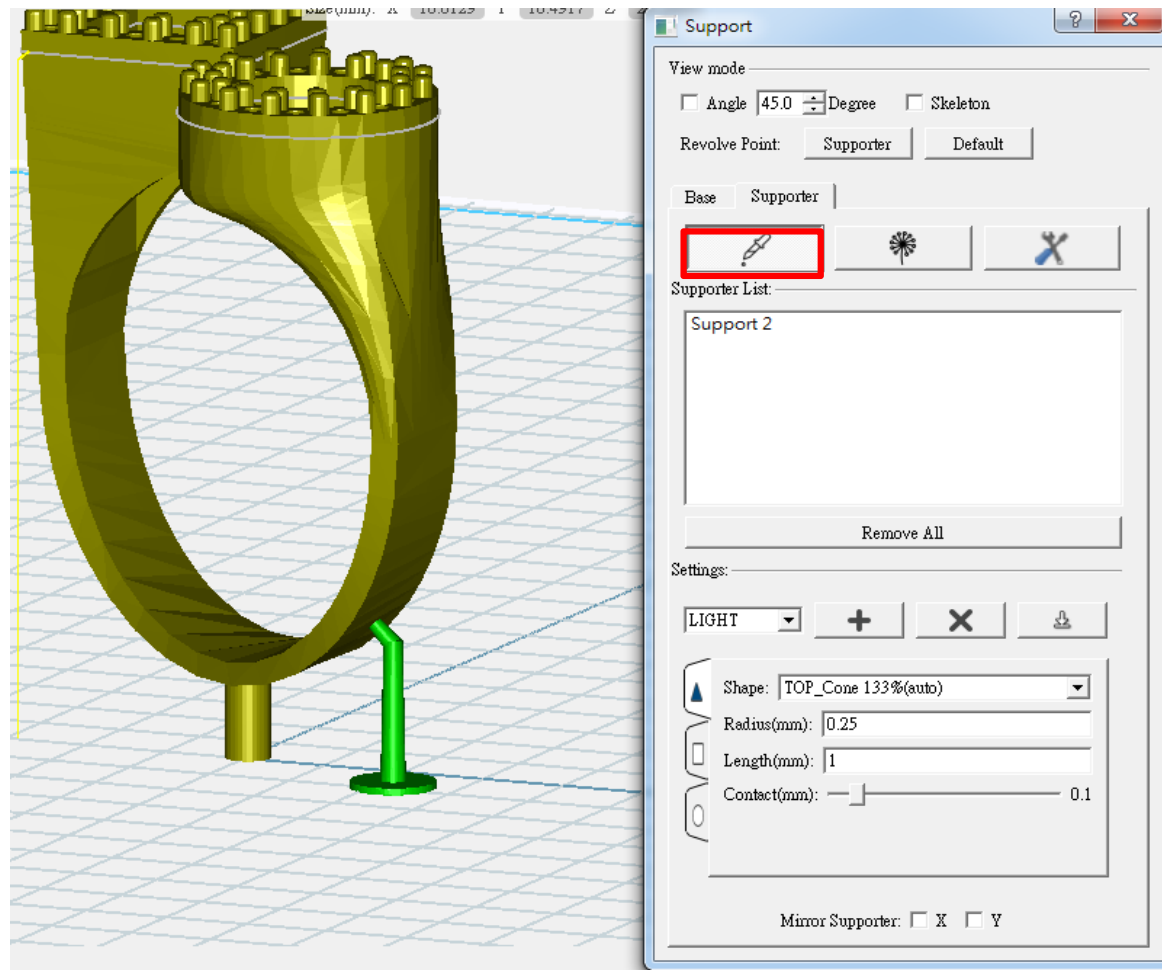


Build supports

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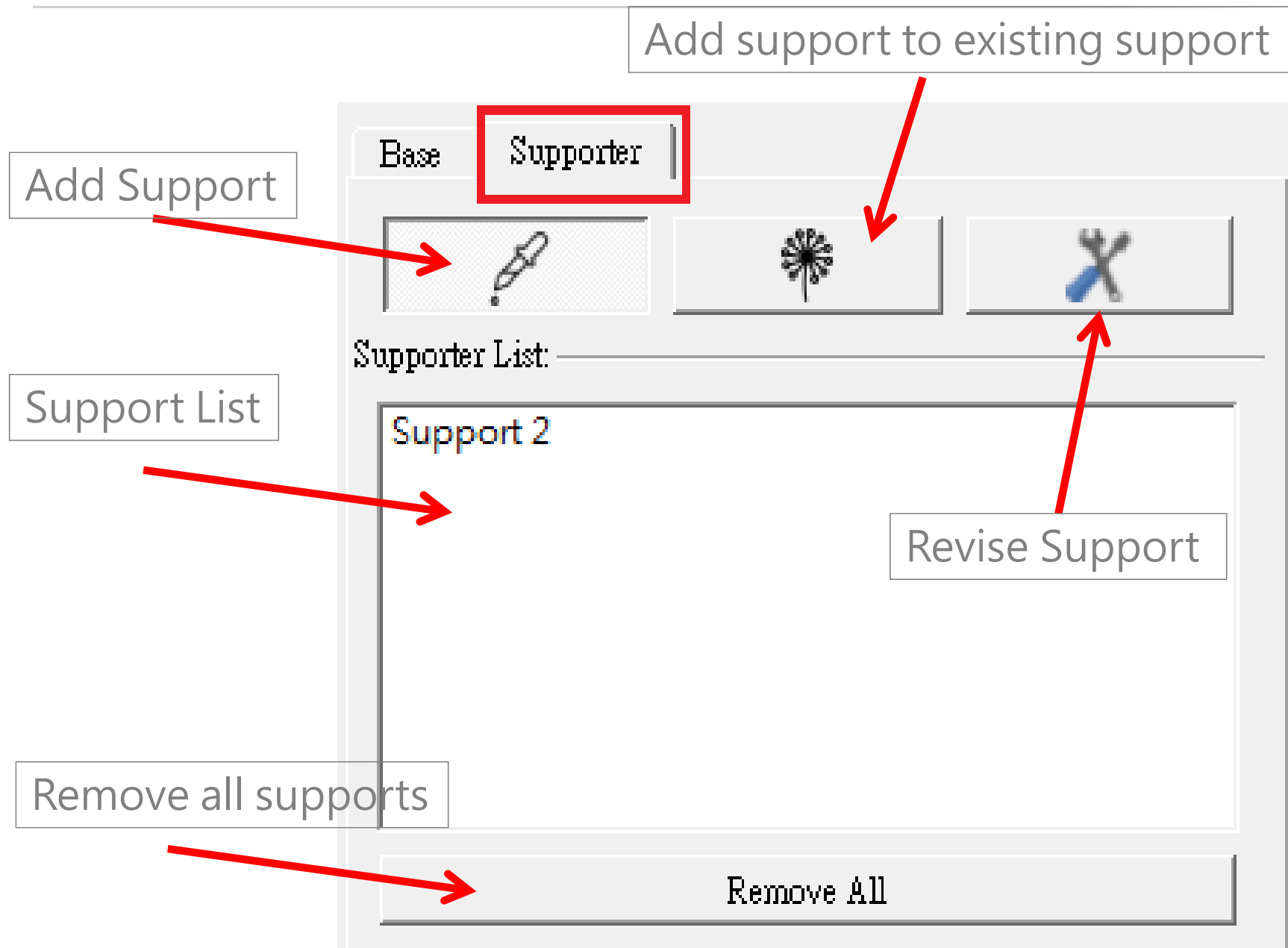
Select one model (been high light), more setting shows up in tool bar (as below red box), here you can build personalize support

① Add support, click where you'd like to add support



Build supports

MIICRAFT



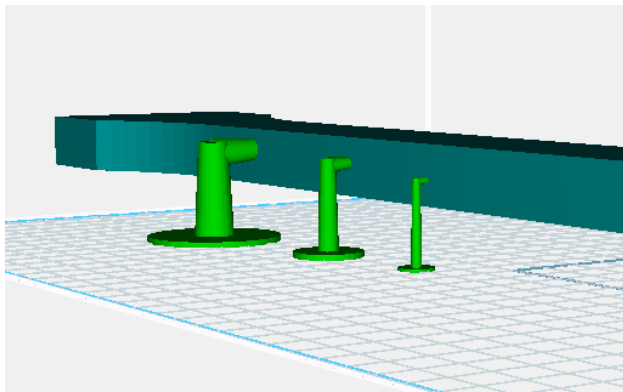
Build supports

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1) Support setting

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

- LIGHT
- MEDIUM
- HEAVY



Can customize and save support setting

- EDIT

Settings:

a **b** **c** **d**

LIGHT

Shape: TOP_Cone 133%(auto)

Radius(mm): 0.25

Length(mm): 1

Contact(mm): 0.1

Mirror Supporter: ☐ X ☐ Y

Build supports

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- (b) Add support setting
- (c) Delete support setting
- (d) Save support setting

Settings:

b **c** **d**

LIGHT

▲ Shape: TOP_Cone 133%(auto) ▼

□ Radius(mm): 0.25

□ Length(mm): 1

○ Contact(mm): 0.1

Mirror Supporter: ☐ X ☐ Y

Build supports

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Customize support setting

One support can be separate into top, middle and bottom

Top support setting:

- a) Top support shape
- b) Top support radius
- c) Top support length
- d) Top support and model contact

Top
Middle
Bottom

Settings: _____

▲

□

○

Shape:

Radius(mm):

Length(mm):

Contact(mm):

Mirror Supporter: ☐ X ☐ Y

a
b
c
d

Build supports





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Middle support setting




a) Middle support shape

Middle

Settings: _____

EDIT    

Shape: MID_Cone 133%(auto)  **a**

Mirror Supporter: ☐ X ☐ Y

Build supports

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Bottom support setting

- a) Bottom support shape
- b) Bottom support radius
- c) Bottom support thickness

Bottom

The screenshot shows a 'Settings:' dialog box for 'Bottom' support. It features a left sidebar with three icons: a triangle (top), a square (middle), and a circle (bottom, selected). The main area contains three input fields: 'Shape: BOTTOM_Circle' (with a dropdown arrow), 'Radius(mm): 1.5', and 'Thickness(mm): 0.25'. To the right of these fields are red labels 'a', 'b', and 'c' corresponding to the list items on the left. At the bottom, there are checkboxes for 'Mirror Supporter: X' and 'Y'. Above the input fields are buttons for 'EDIT' (with a dropdown), '+', 'X', and a save icon.

Settings:

EDIT + X [Save Icon]

Shape: BOTTOM_Circle

Radius(mm): 1.5

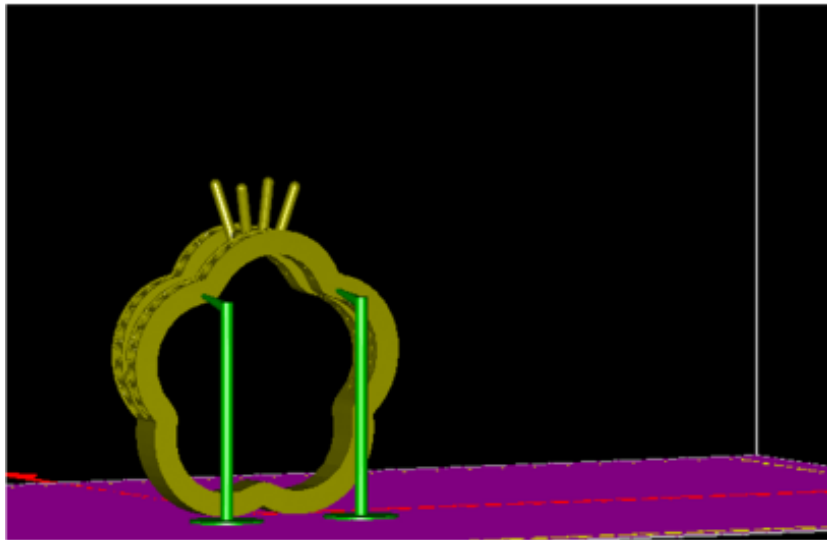
Thickness(mm): 0.25

Mirror Supporter: ☐ X ☐ Y


Build supports

Mirror supporter:

Build symmetrical supports according to X axis or Y axis



Settings:

EDIT + X 

Shape: BOTTOM_Circle

Radius(mm): 1.5

Thickness(mm): 0.25

Mirror Supporter: ☐ X ☐ Y

Build Base

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Base available or not

Base

Supporter

☐

Base:

Base type

BASE_Rectangular

Base size

Object Size:

100%

Thickness(mm):

0.5

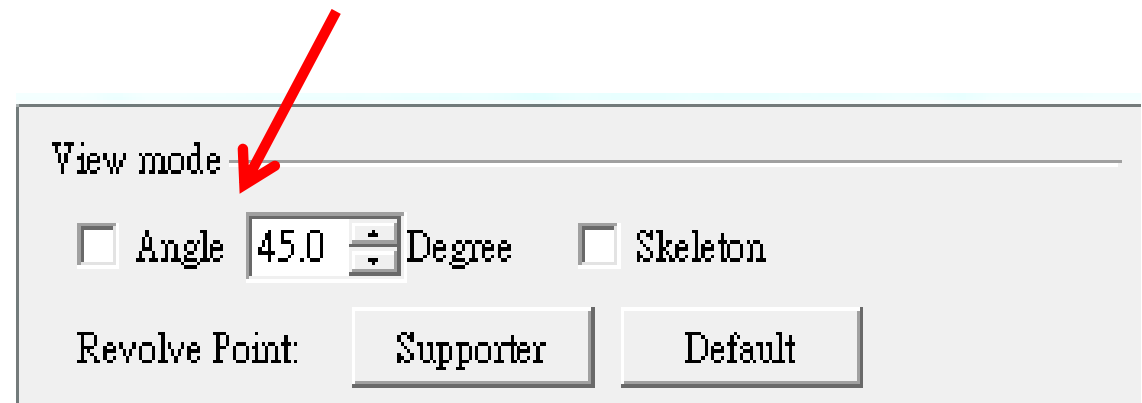
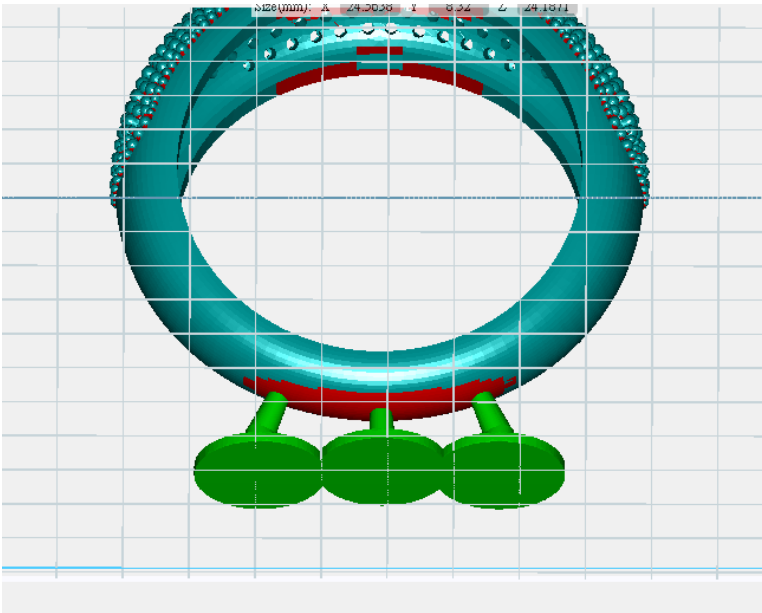
Base thickness

Build support – View mode

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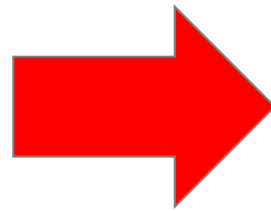
Angle Indicator will help identify the bevel angle of object surface

- 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

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Build support – View mode

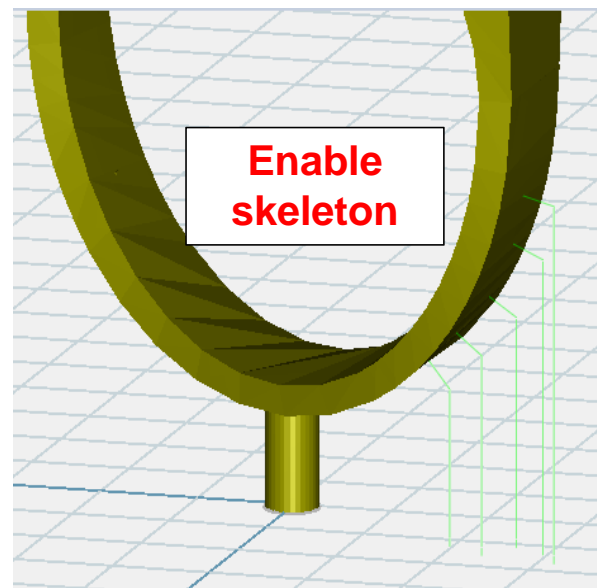
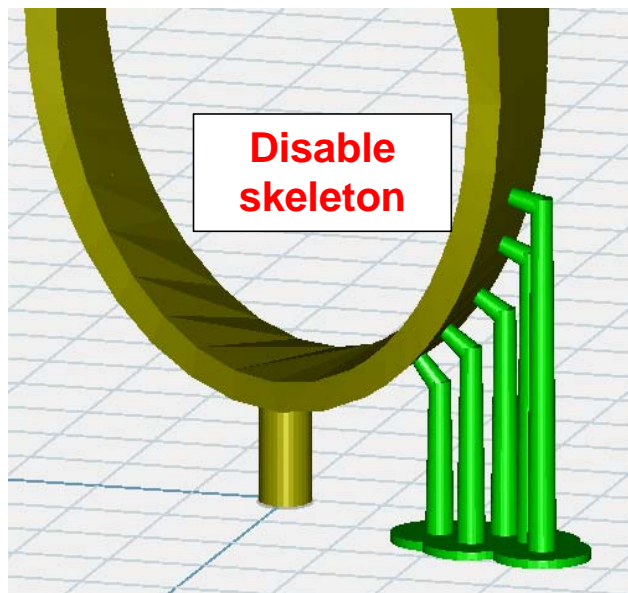
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Show support in line

View mode _____

☐ Angle Degree ☐ Skeleton

Revolve Point:



Build support – View mode

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View mode _____

☐ Angle Degree ☐ Skeleton

Revolve Point:

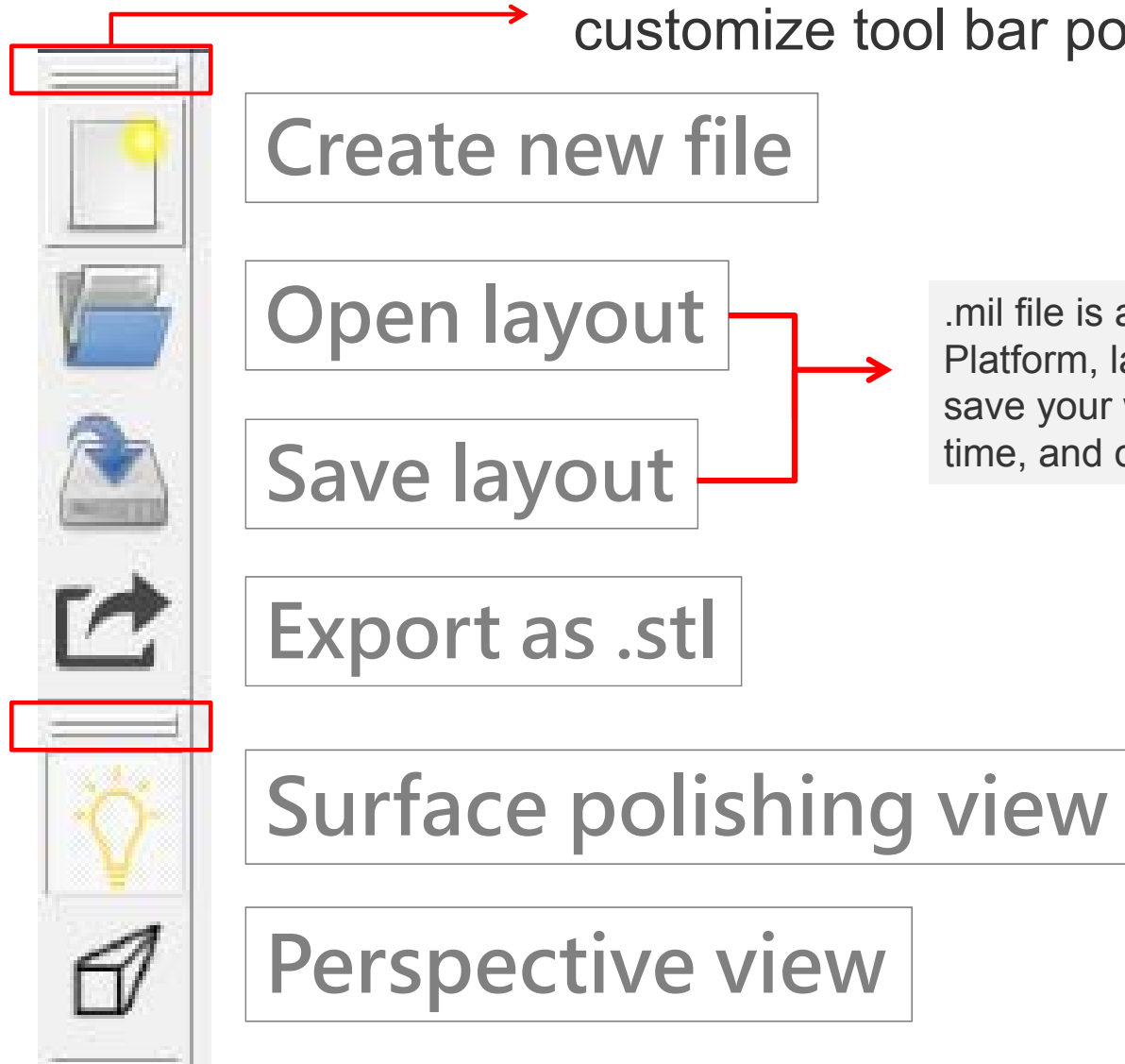
- a) Select one support
- b) Click Revolve point: supporter
- c) Use fix support as view rotation center
- d) See the 360 degree position of support

Default (Use platform as view rotation center)

Tool bar

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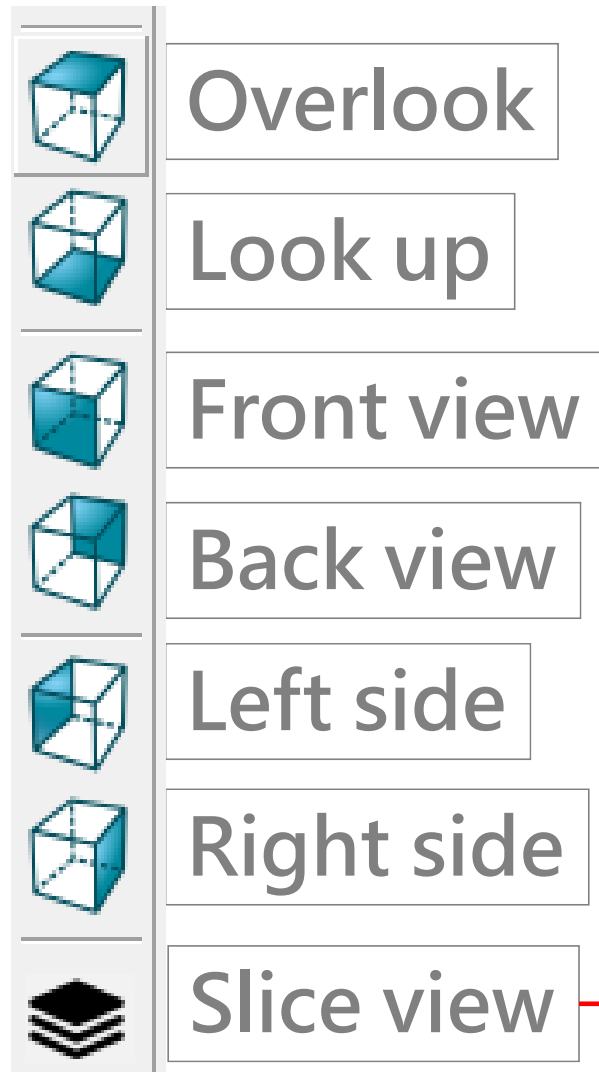
Click and drag the tool bar, use can customize tool bar position



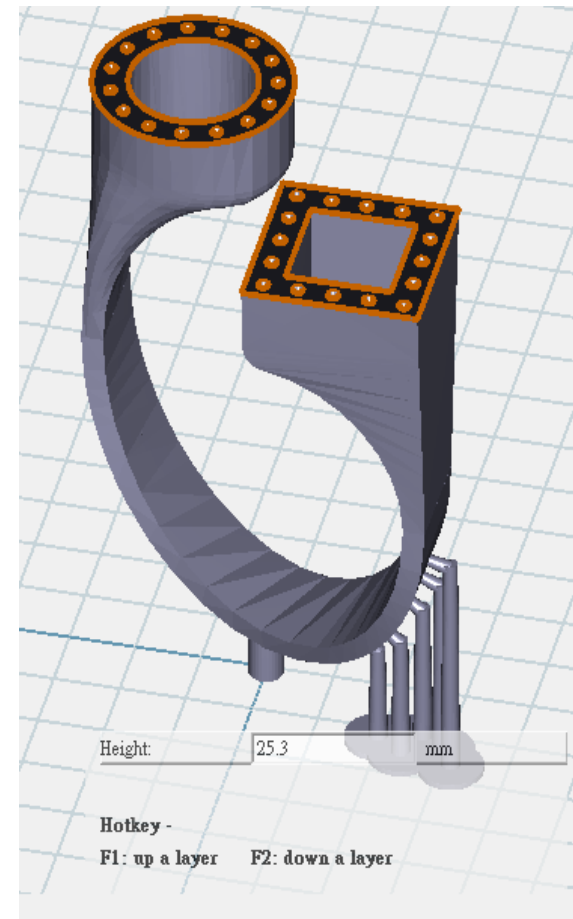
.mil file is an editable format for Utility Platform, layout, supporter function, you can save your working status as .mil file at any time, and open .mil file to continue editing

Tool bar

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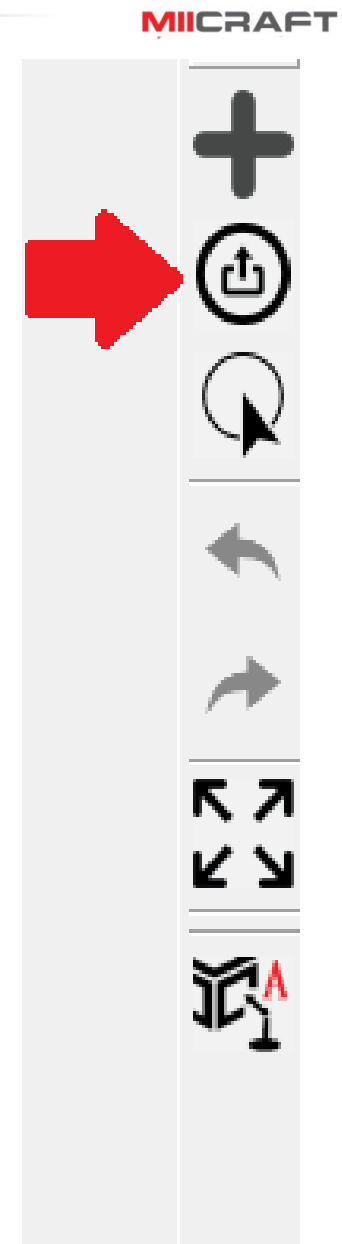
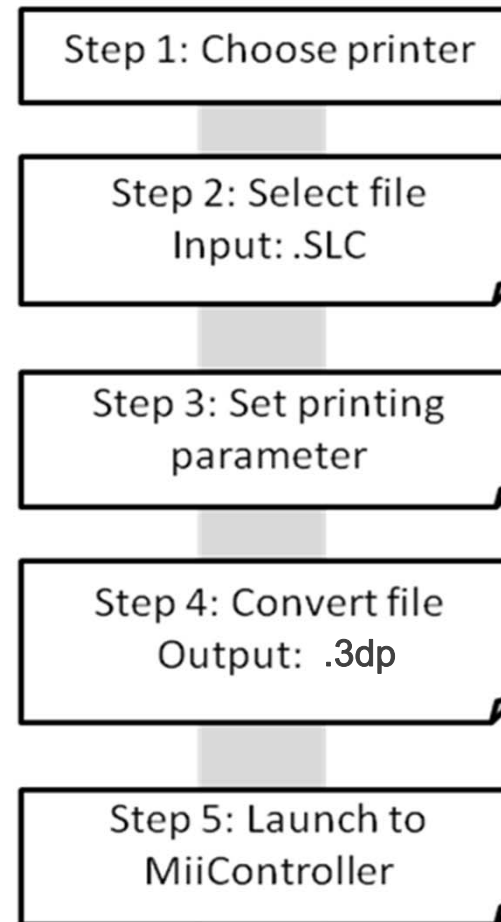
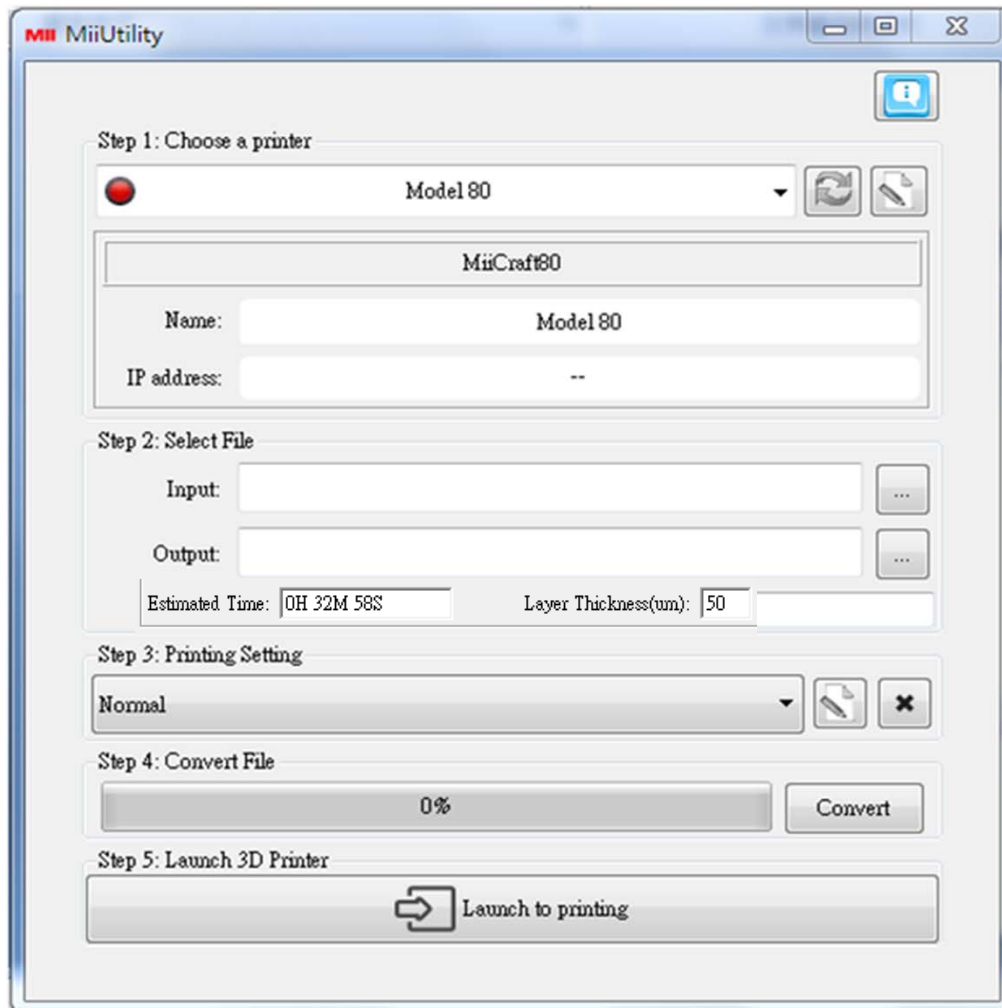


Slice view
Preview each layer
(but not export .slc yet)



Printer setting

1) Tool bar, icon as picture on the right



Printer setting

Step 1

- Online printer
- Offline printer

Scan online printer

MIi Printer

Step 1: Choose a printer

Name:

IP address:

Printer IP

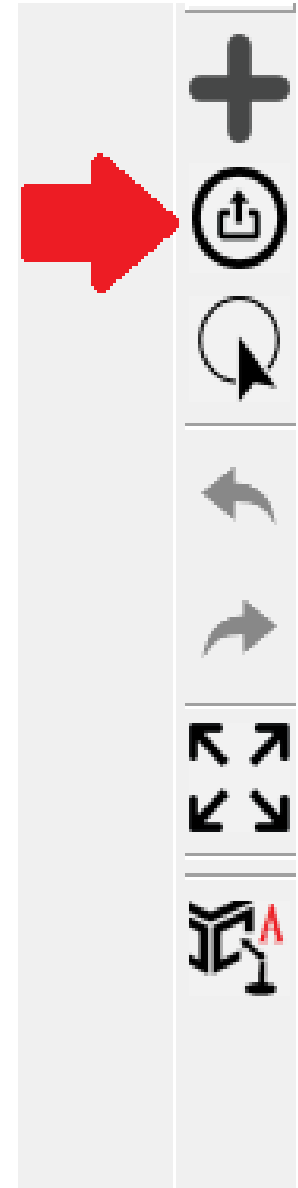
- To print (only online printer)
- To use printer calibrate information when converting files (Both online and offline printer)



Trouble shooting

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

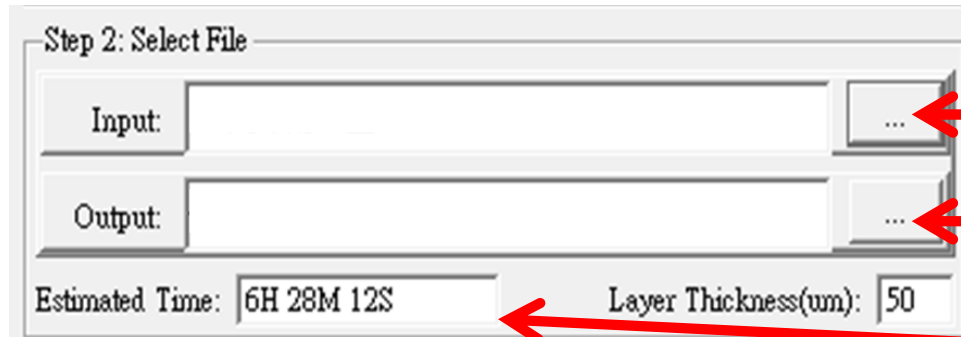
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Printer setting

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Step 2



Step 2: Select File

Input: ...

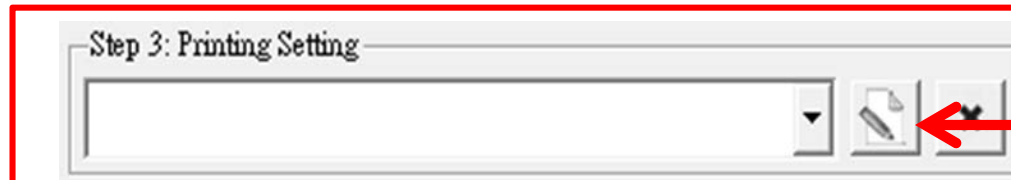
Output: ...

Estimated Time: 6H 28M 12S Layer Thickness(um): 50

Default user edit .slc file

Output .3dp file

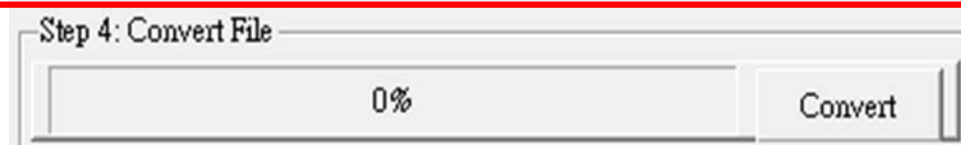
Estimated printing time



Step 3: Printing Setting

[Dropdown] [Edit Icon] [Launch Icon]

- 1) Select .mps file
- 2) Edit .mps file (printing parameter)



Step 4: Convert File

0% Convert




Step 5: Launch 3D Printer

 Launch to printing

Printing setting (.mps)

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Step 3: Printing Setting



Curing Time(s): 2.00

Speed: Normal

Gap Adj(mm): 0.00

Base Layers: 1

Base Curing(s): 5.00

Buffer Layers: 3

Power(%): 100

Print Delay(s): 1

Image Calibration: ☒

Anti-aliasing: Max (default)

Image Pixel Offset: 0 (default)

Overlap(%): 50 **Edge Enhance:** 0 **Blur:** 0

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

Slow, Normal and Fast, means different peeling speed. Also user can select "advanced" to set user defined peeling mode

Adjust thickness of the first layer

Define number of base layers

Curing time for base layers

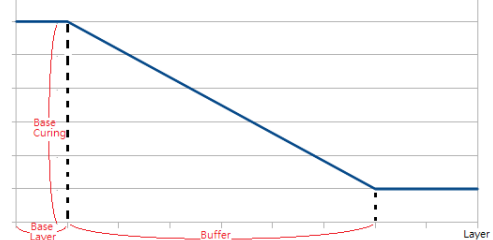
Set the Number of buffer layers

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

For first 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

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	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)

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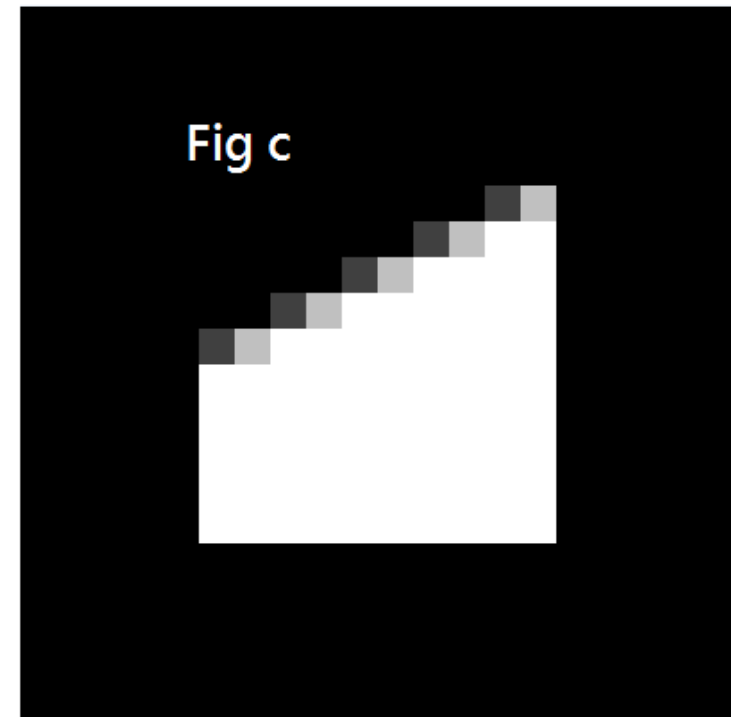
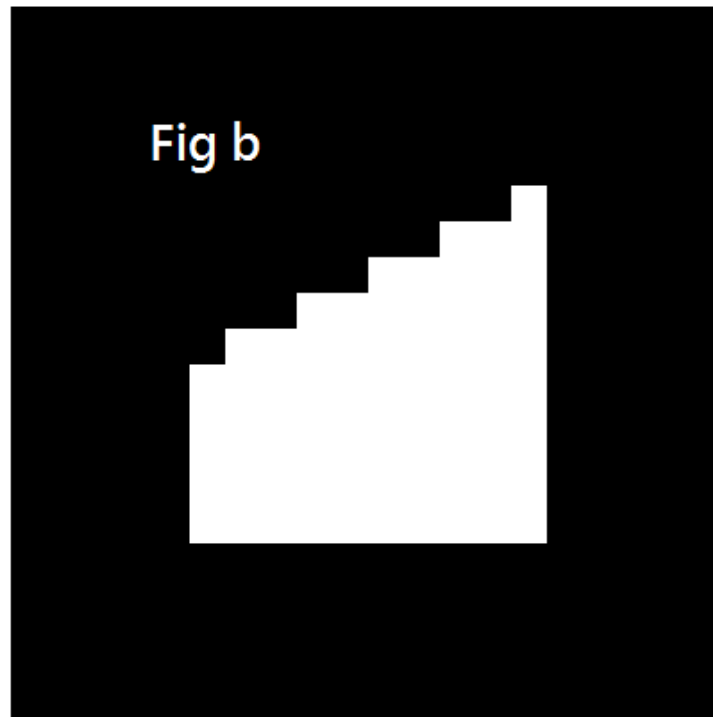
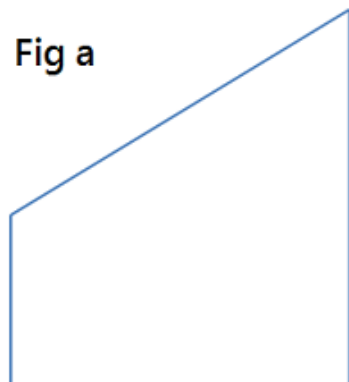
Anti-aliasing: Max (default) ▼

Image Pixel Offset: 0 (default) ▼

Overlap(%): 50 ▲ ▼ Edge Enhance: 0 ▼ Blur: 0 ▼

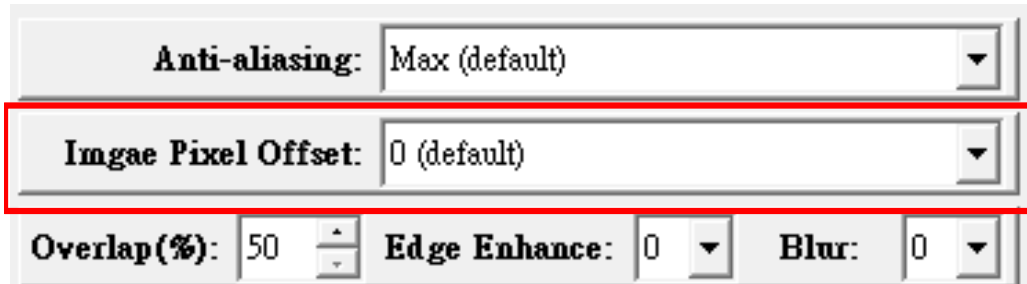
None Anti-aliasing

Max Anti-aliasing



Printing setting (.mps)

MIICRAFT



Anti-aliasing:	Max (default)
Image Pixel Offset:	0 (default)
Overlap(%):	50
Edge Enhance:	0
Blur:	0

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

For example:

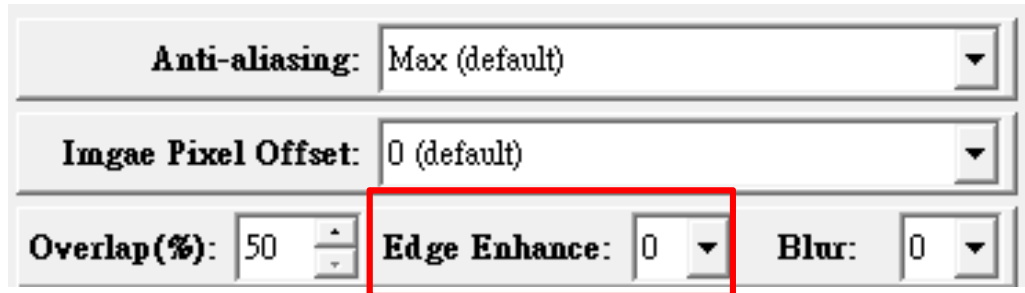
Select -2, erode 1 pixel on the edge

Select 2, add 1 pixel on the edge



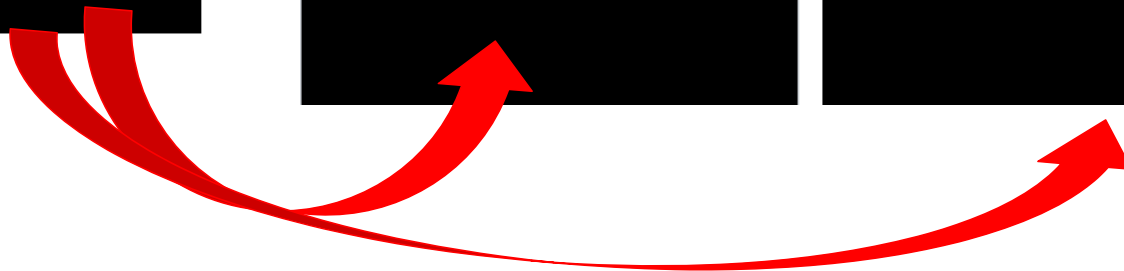
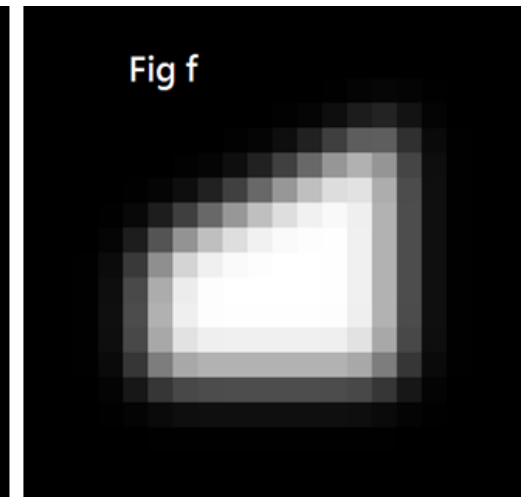
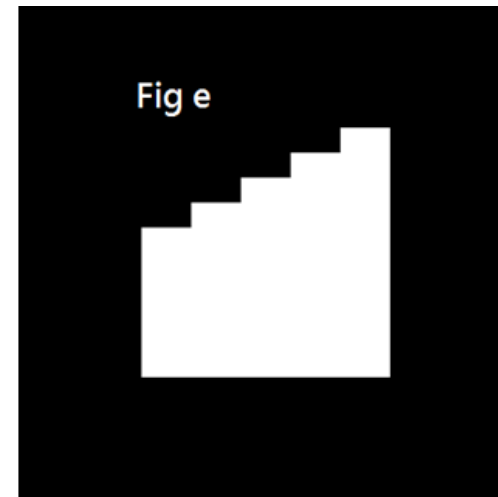
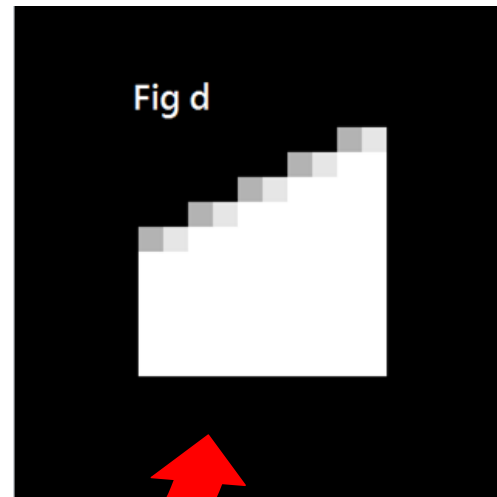
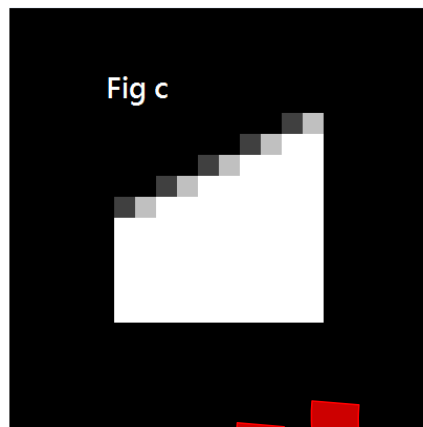
Printing setting (.mps)

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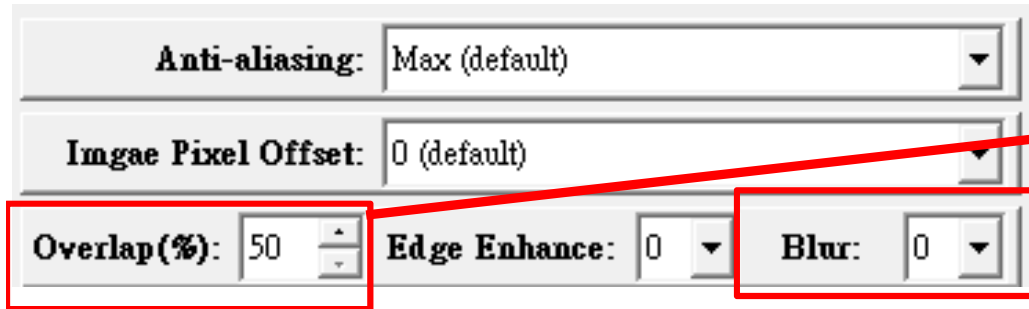
Edge Enhance level 3 Edge Enhance level 5

Blur



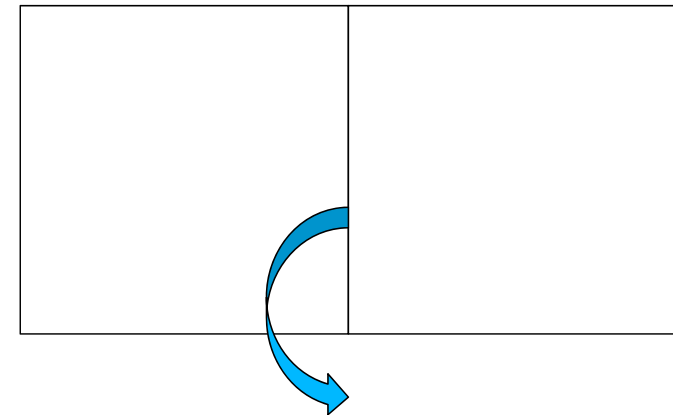
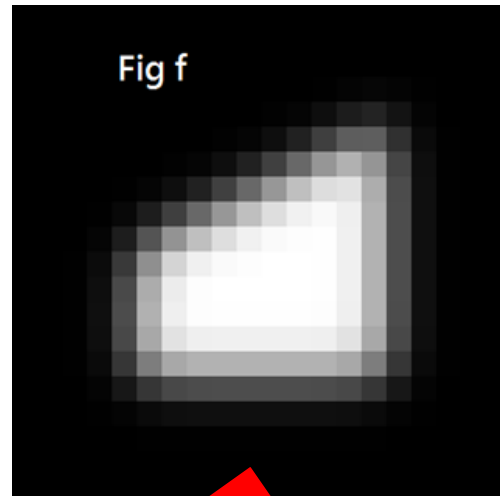
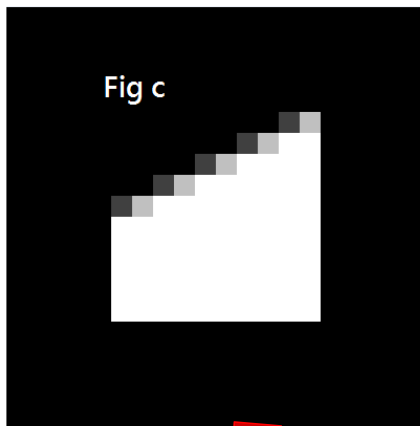
Printing setting (.mps)

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Only apply to Advance series

Blur

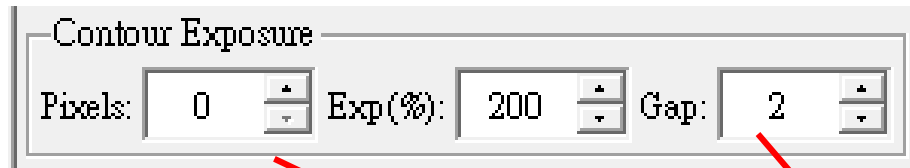


Overlap of dual light engine

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

Printing setting (.mps)

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

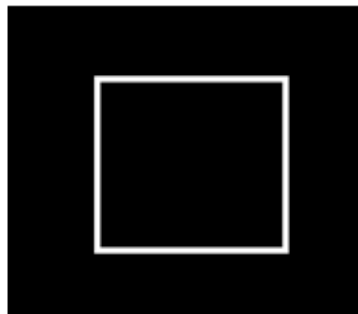
Pixels : Contour pixel

Exp (%) : Contour exposure time

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

For example:

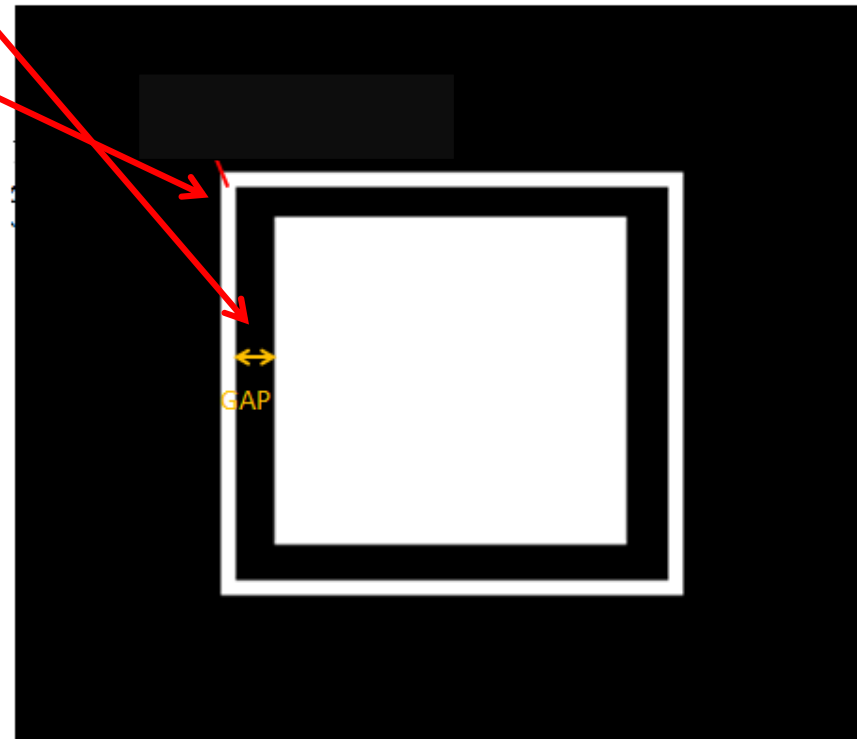
Square object



Contour image



Inside image

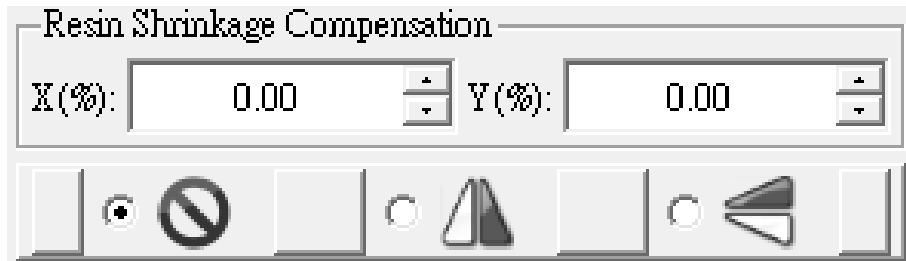


If user set contour pixel, one image will become 2 image, contour and inside



Printing setting (.mps)

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+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

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Speed : select Advance

Enable Function: Customize peeling mode

Curing Time(s): 2.00

Speed: **Advanced**

Gap Adj(mm): 0.00

Base Layers: 1

Base Curing(s): 5.00

Buffer Layers: 3

Power(%): 100

Print Delay(s): 1

Image Calibration: ☒

Anti-aliasing: Max (default)

Image Pixel Offset: 0 (default)

Edge Enhance: 0

Contour Exposure

Pixels: 0 Exp(%): 200 Gap: 2

Starting Layer: 000000

Advanced Setting

Cartridge	Down	800	1600	1+	x
Stay		0	1000	1+	x
Picker	Up	600	3200	1+	x
Picker	1Layer	0	1600	1+	x
Stay		0	2000	1+	x
Cartridge	Up	805	1400	1+	x
Picker	Down	500	3200	1+	x
Picker	Down	100	6400	1+	x
Stay		0	2000	1+	x

Add New Action

Printing setting (.mps) –Advance setting

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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

Half step period (micro second)

Starting Layer: 000000

Advanced Setting

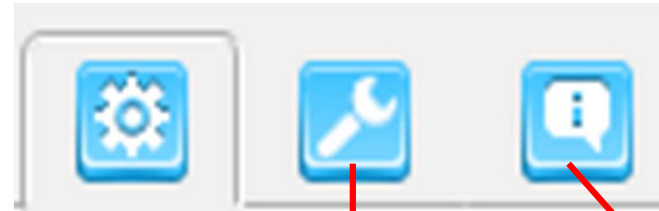
	Items	Movement	Step (25um/step)	Half step period (micro second)
1	Cartridge	Down	800	1600
2	Stay		0	1000
3	Picker	Up	600	3200
4	Picker	1Layer	0	1600
5	Stay		0	2000
...	Cartridge	Up	805	1400
	Picker	Down	500	3200
	Picker	Down	100	6400
	Stay		0	2000

Add New Action

Print via Computer

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Step 5



Printing
parameter

Engineering
mode

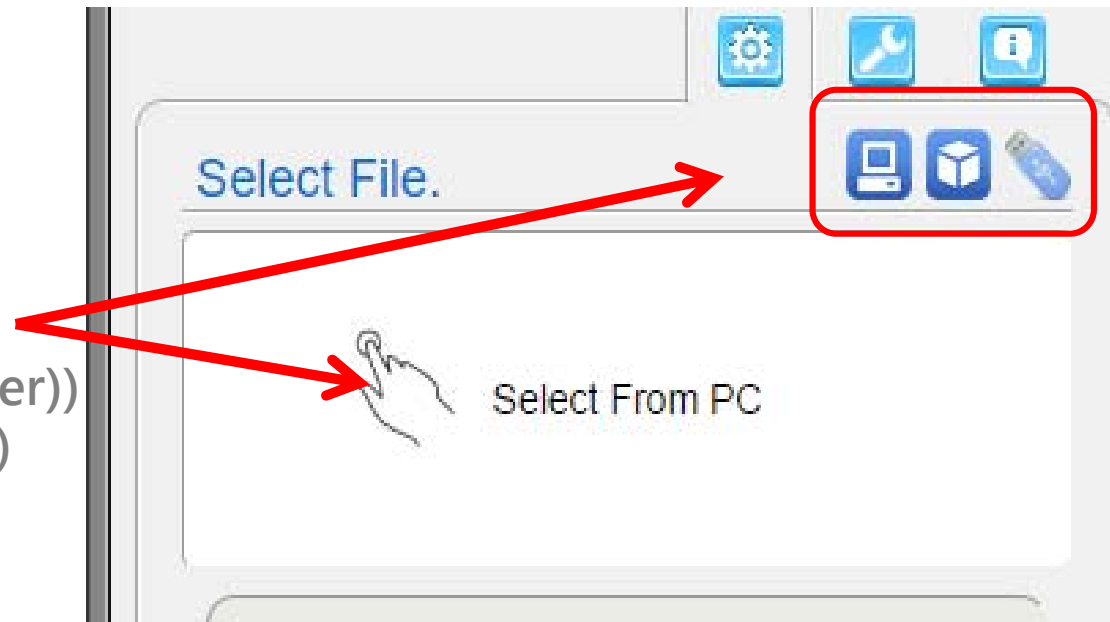
Printing history

Select .3dp file

From PC

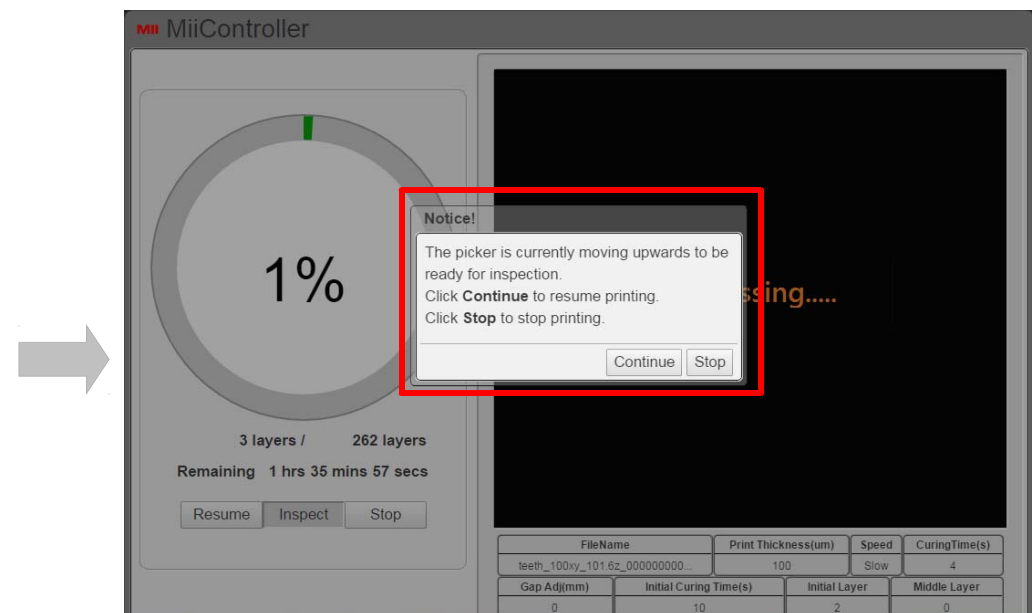
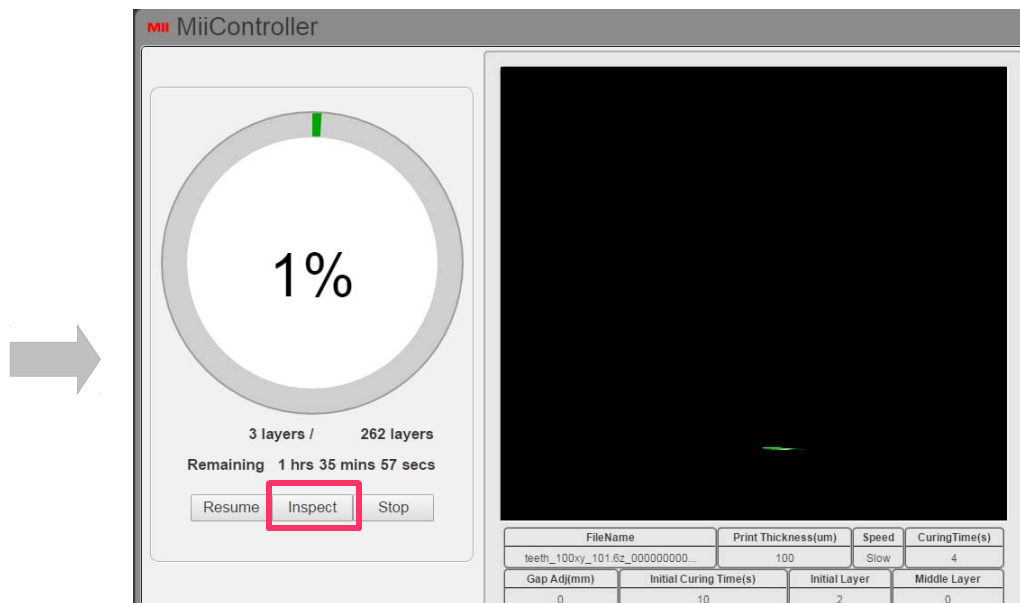
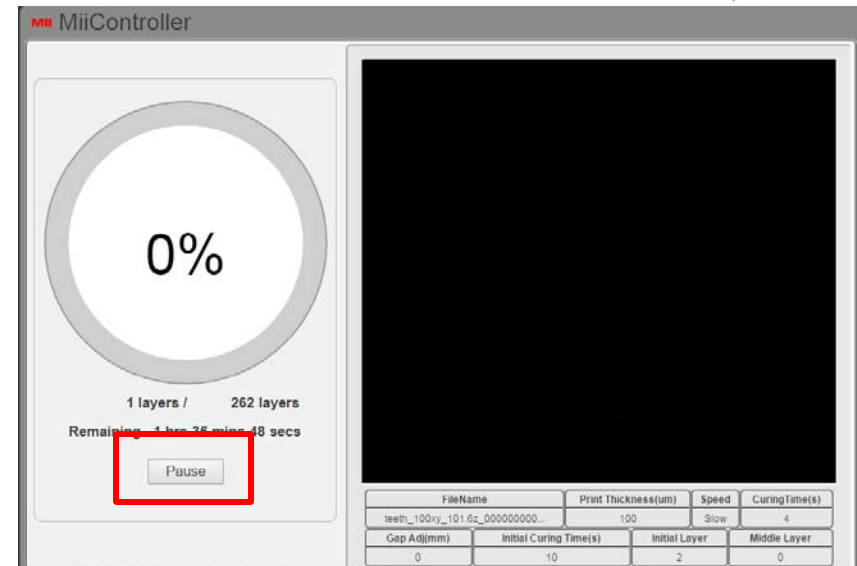
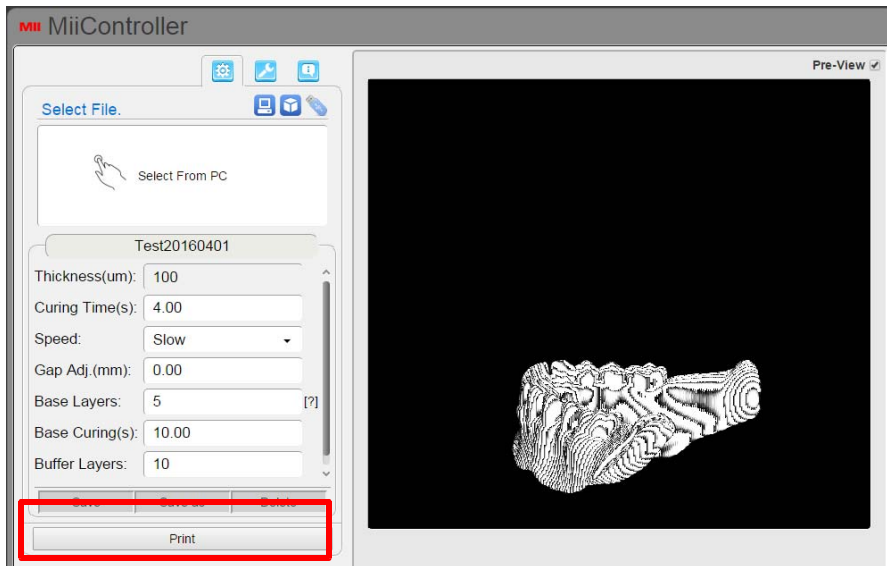
From machine ((file saved in printer))

From USB (USB insert into Printer)



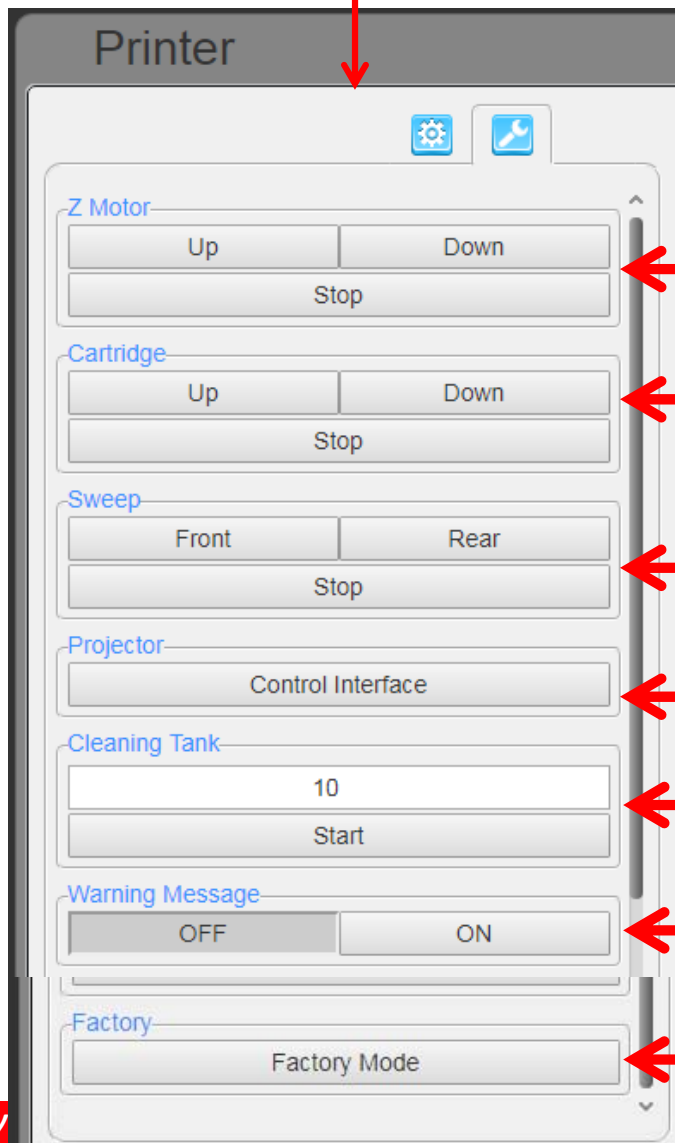
Print via Computer

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Engineering mode (Computer)

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Control Z-platform (Build platform)

Control teflon module

Control recoater blade

Introduce in the next page

Project a complete patten, 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 distributor use)

Engineering mode (Computer)

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The screenshot shows the 'Projector Control' window. At the top are 'ON' and 'OFF' buttons. Below are checkboxes for 'Left Projector' and 'Right Projector'. A row of buttons labeled 'T1', 'T2', and 'T3' is present. A dropdown menu is labeled 'Please Select a Pattern.'. Below that is a checked checkbox for 'Uniformity/Distortion Mask'. The 'Light(%)' section has a value of '100' and a 'Set' button; below it, a red box highlights '12-100' with the text 'suggest range' and a 'Calibrate' button. The 'Curing Time(s)' section has a value of '4' and a 'Test' button. A 'Close' button is at the bottom right. Red arrows point from the text on the right to these specific UI elements.

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

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.

Printing record and update firmware

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Printing history

Printer

Printer.

Advance 205

Name: Test#1

SN: LK50HAA1800BAAT0001

FW: 2.0.3.t17

Upgrade FW

Interval: 2019/04/18 ~ 2019/05/18 Reload

Total Printed Layers : 101997

Total Printed Time : 288h-29m-45s

File Name	Print Thickness(um)	Curing Time(s)
DUAL_RUNIN	50	1.50
Gap Adj.(mm)	Base Curing Time(s)	Base Layers
0.000	5.00	1
Speed	Print Delay(s)	Start Time
file	1	2019/05/17 19:55:10
End Time		Power Ratio
2019/05/18 05:19:38		1.00(L:810,R:761)
Total Layer		
3788		

File Name	Print Thickness(um)	Curing Time(s)
DUAL_RUNIN	50	1.50
Gap Adj.(mm)	Base Curing Time(s)	Base Layers
0.000	5.00	1
Speed	Print Delay(s)	Start Time
file	1	2019/05/17 09:17:02
Stop Time		Power Ratio
2019/05/17 17:37:22		1.00(L:810,R:767)
Total Layer		
3392(3788)		

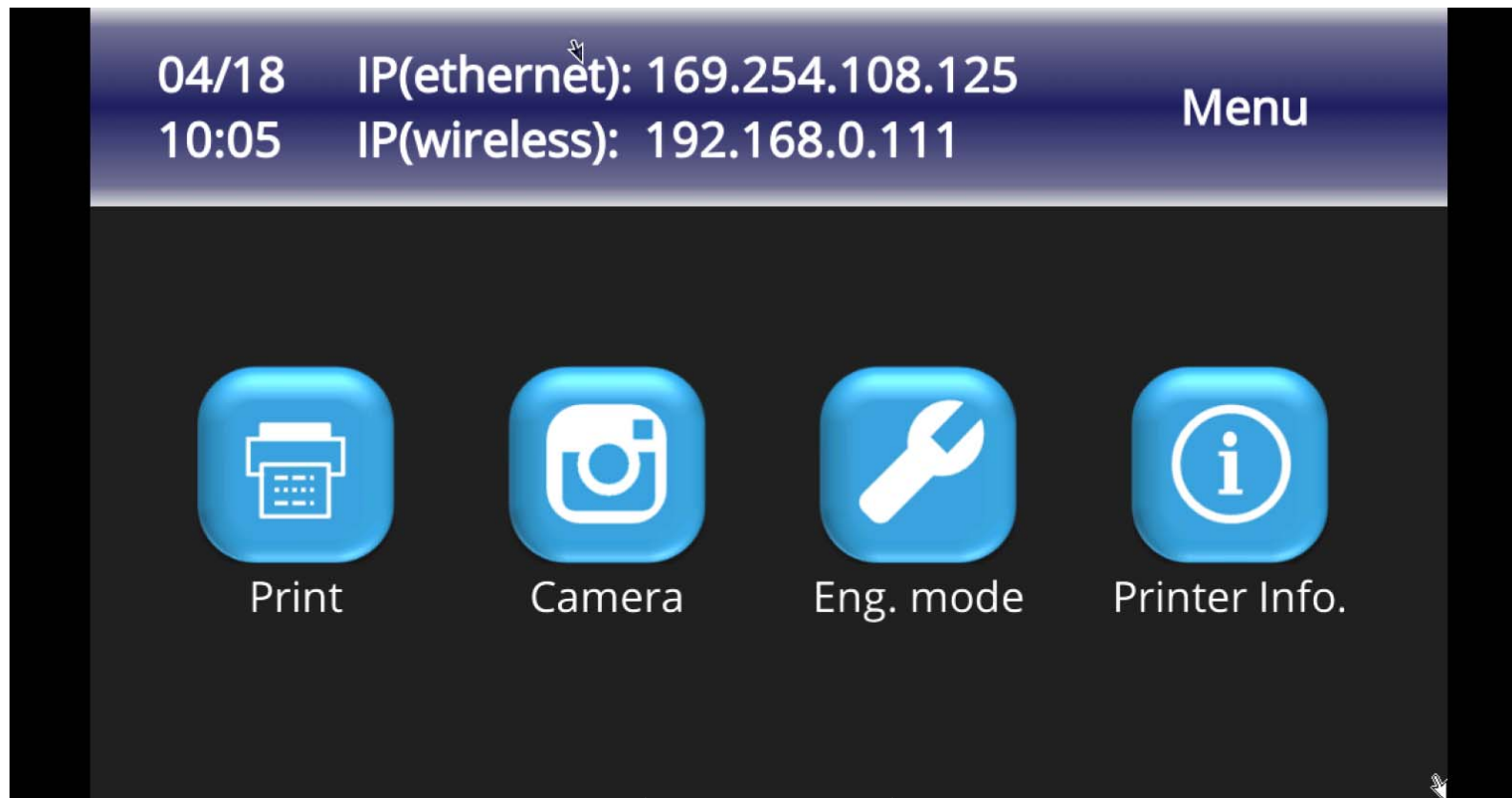
Search interval

Record

Upload the latest
Firmware package
to upgrade printer
firmware

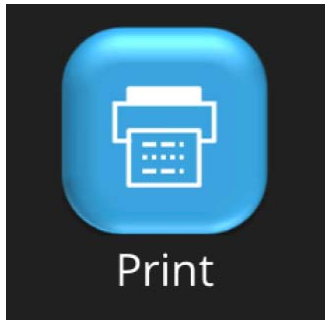
Print via touch screen panel

MIIICRAFT

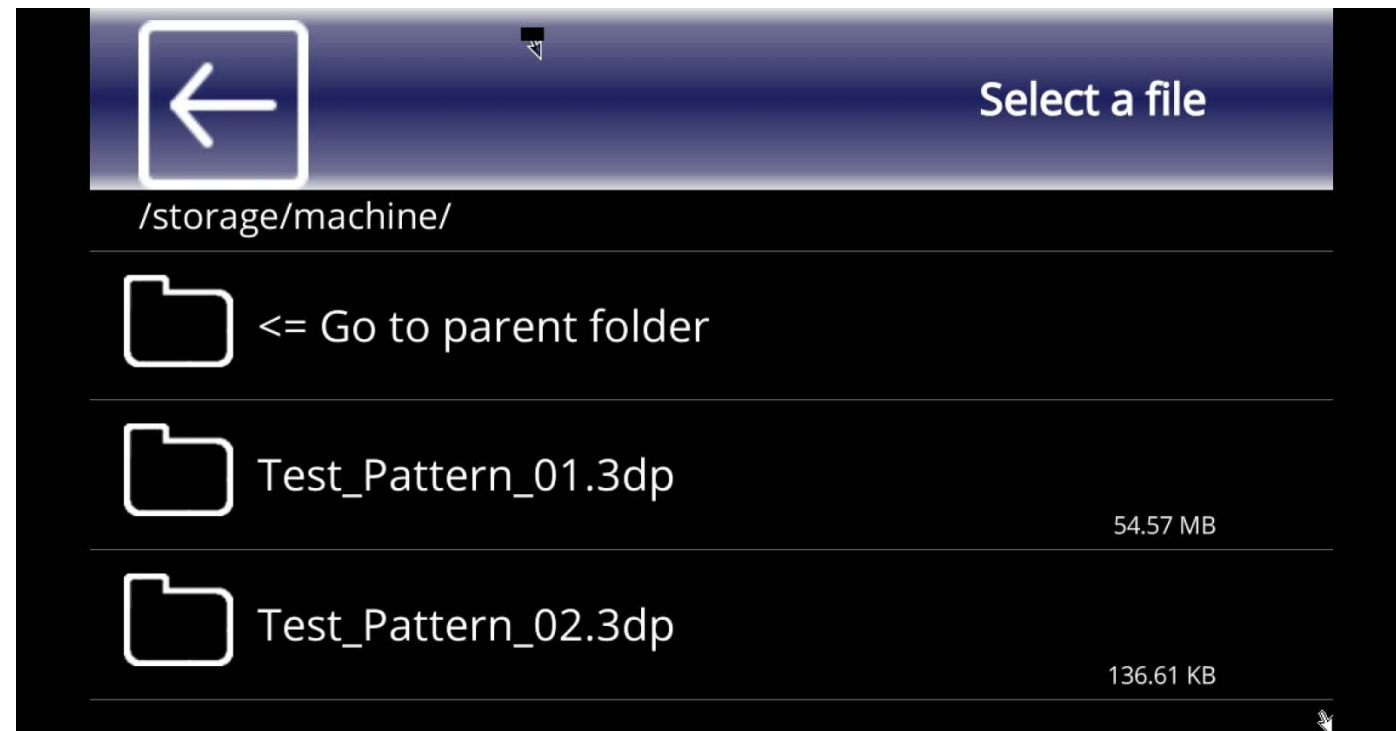


Print via touch screen panel

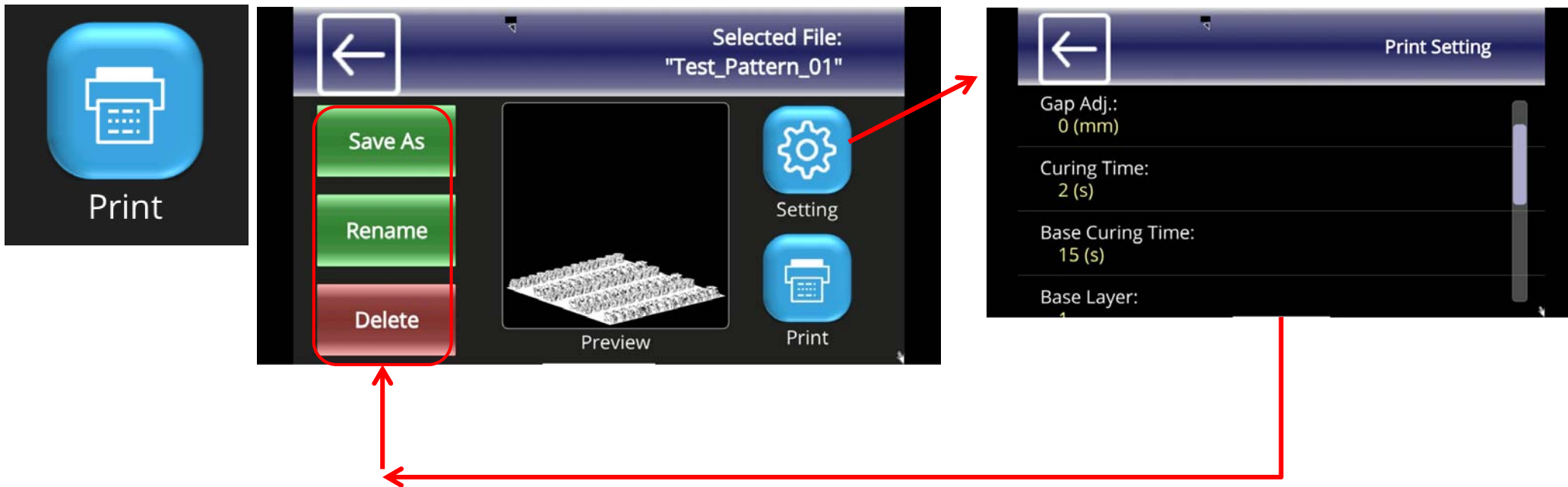
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To print:
Select .3DP file from
(1) machine (file saved in printer) or
(2) USB (insert into printer)



Print via touch screen panel

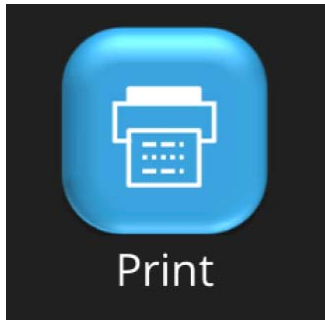


.3DP file

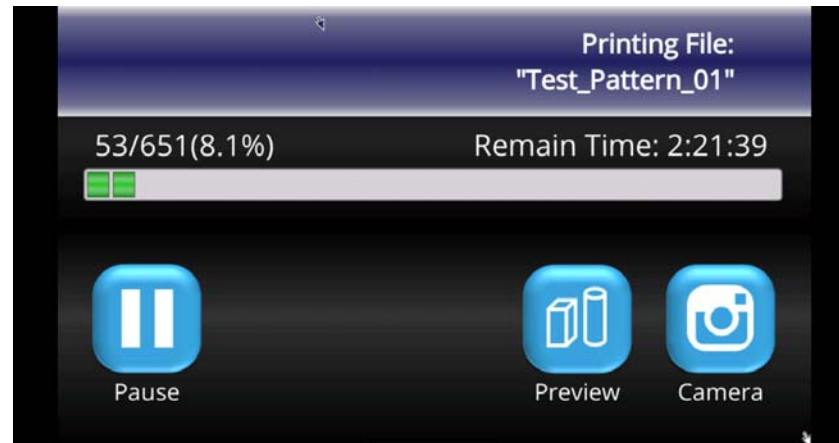
- (1) Save as : Save printing setting as another .3DP file
- (2) Rename : Rename .3DP file
- (3) Delete : Delete .3DP file

Print via touch screen panel

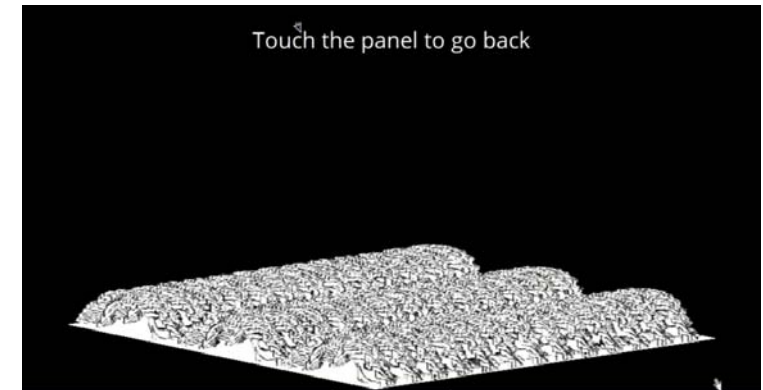
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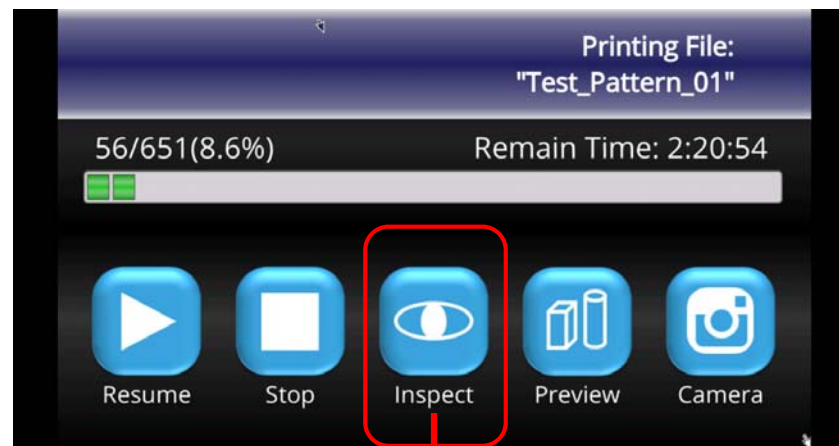
Printing



Preview



Pause

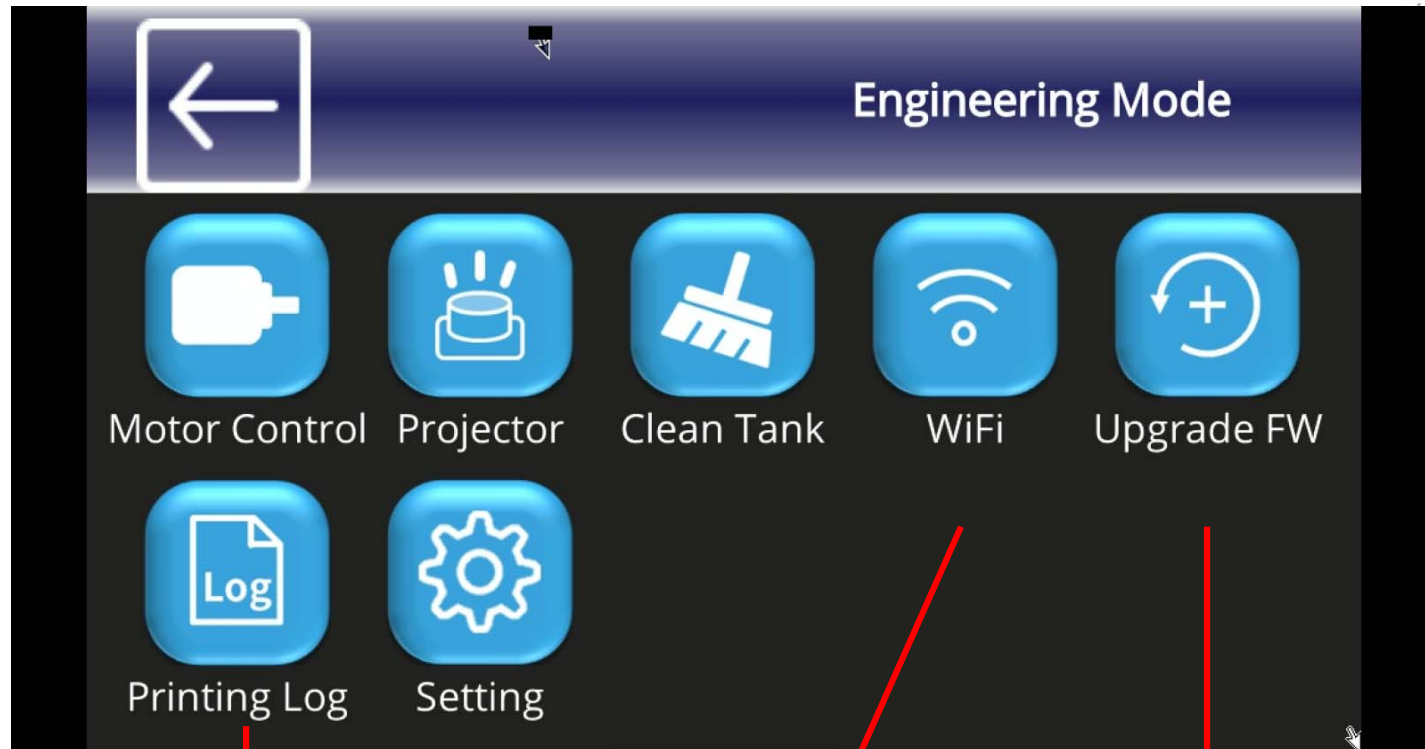
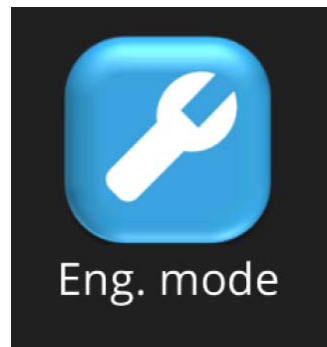


Let build platform
moving upwards for
inspect



Touch screen panel -Engineering mode

MIICRAFT



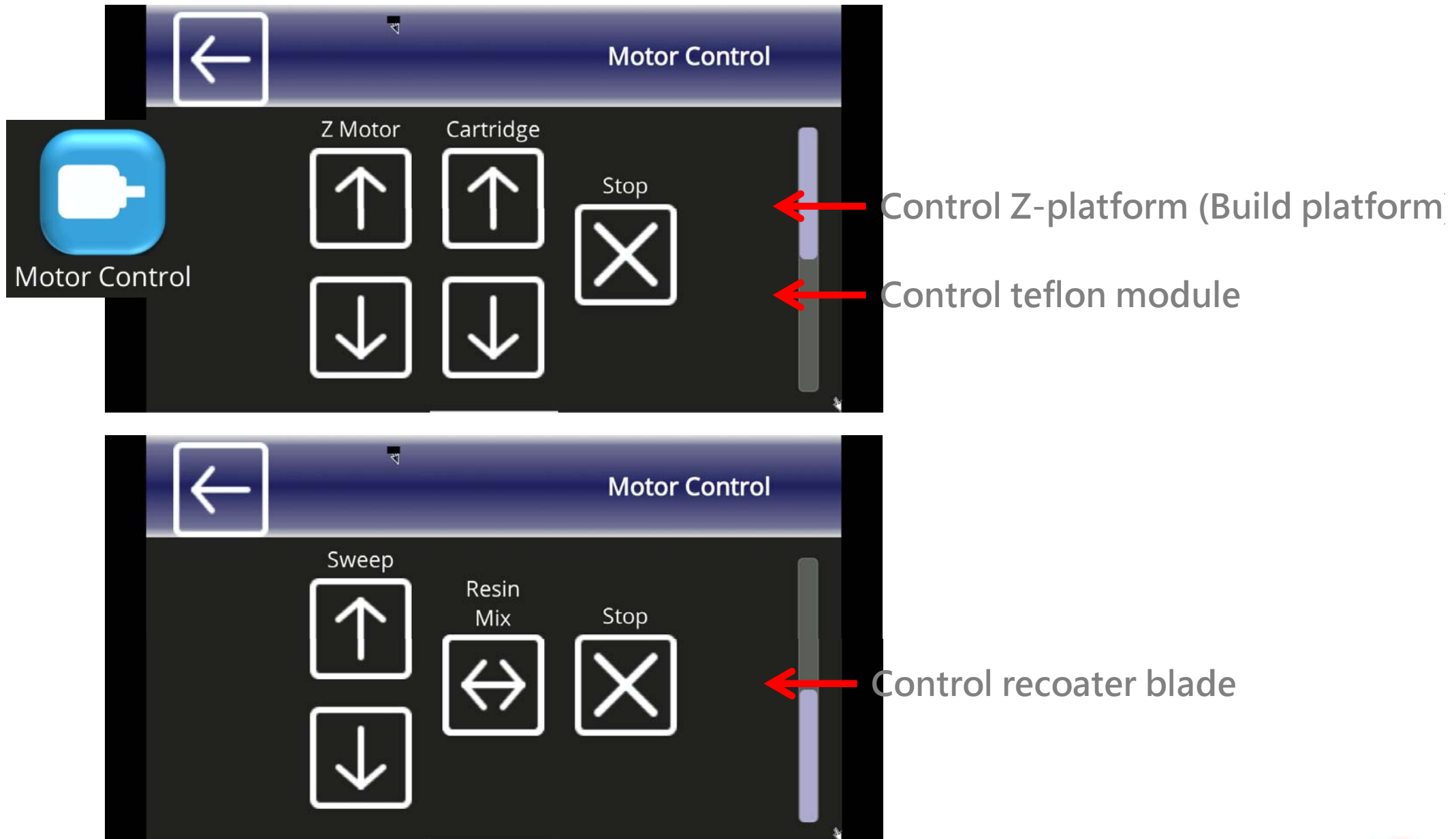
Printing record

Search WiFi
Printer connect to Wifi

Upload the latest
Firmware package
to upgrade printer
firmware

Touch screen panel -Engineering mode

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Touch screen panel -Engineering mode


Projector

Control the projector

Tick this option to apply printer calibration function

Projector Control

LED: 

Uniformity Distortion Mask: 

Pattern: **No Pattern**

Power Ratio : **100%** Power Limit 13%~100%

Calibrate

Select a pattern to project

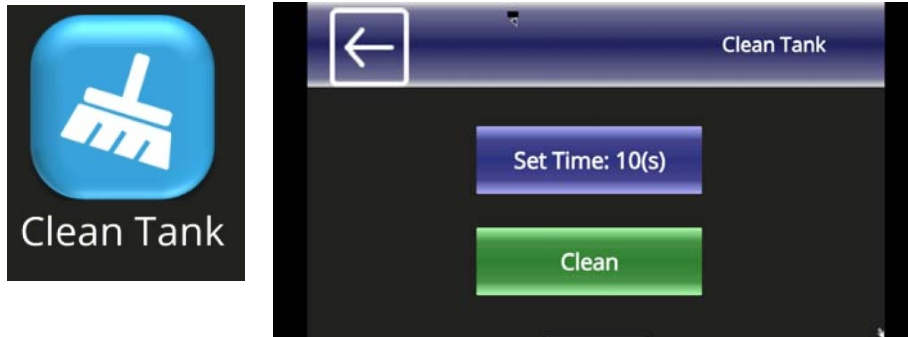
Light(%): At 100% is the existing brightness of light engine. The suggest range is base on the printer' s condition, user can only set the % within the suggest range.

Reset to default setting of brightness

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Touch screen panel -Engineering mode

MIICRAFT



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

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

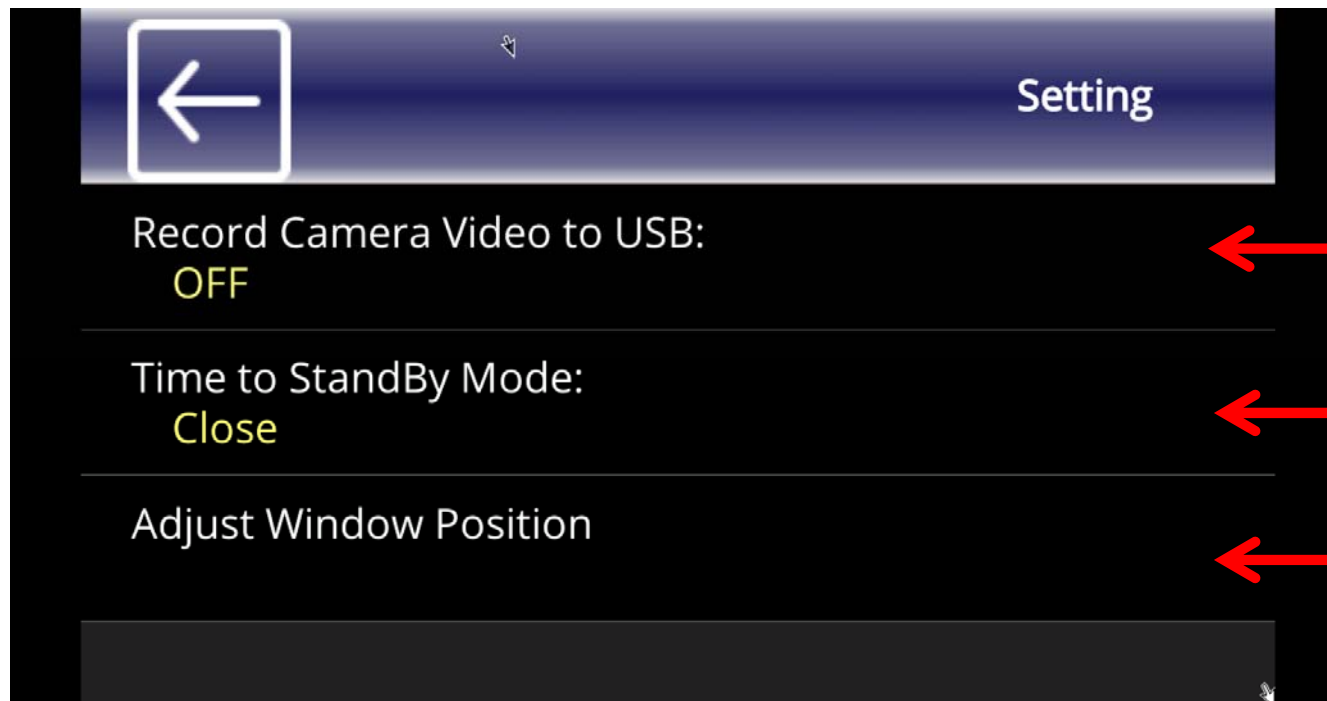
(1)Use “Clean tank” function via touch panel, it project a complete patter, the residual will be transformed into a solid layer.

(2)Using the scrape, scoop up one side of the layer. Then carefully lift to remove solid layer from the teflon module.



Touch screen panel -Engineering mode

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Save video or not
Save in which device

Enable Stand by mode or not
Duration

Adjust panel' s window
position



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Thank you