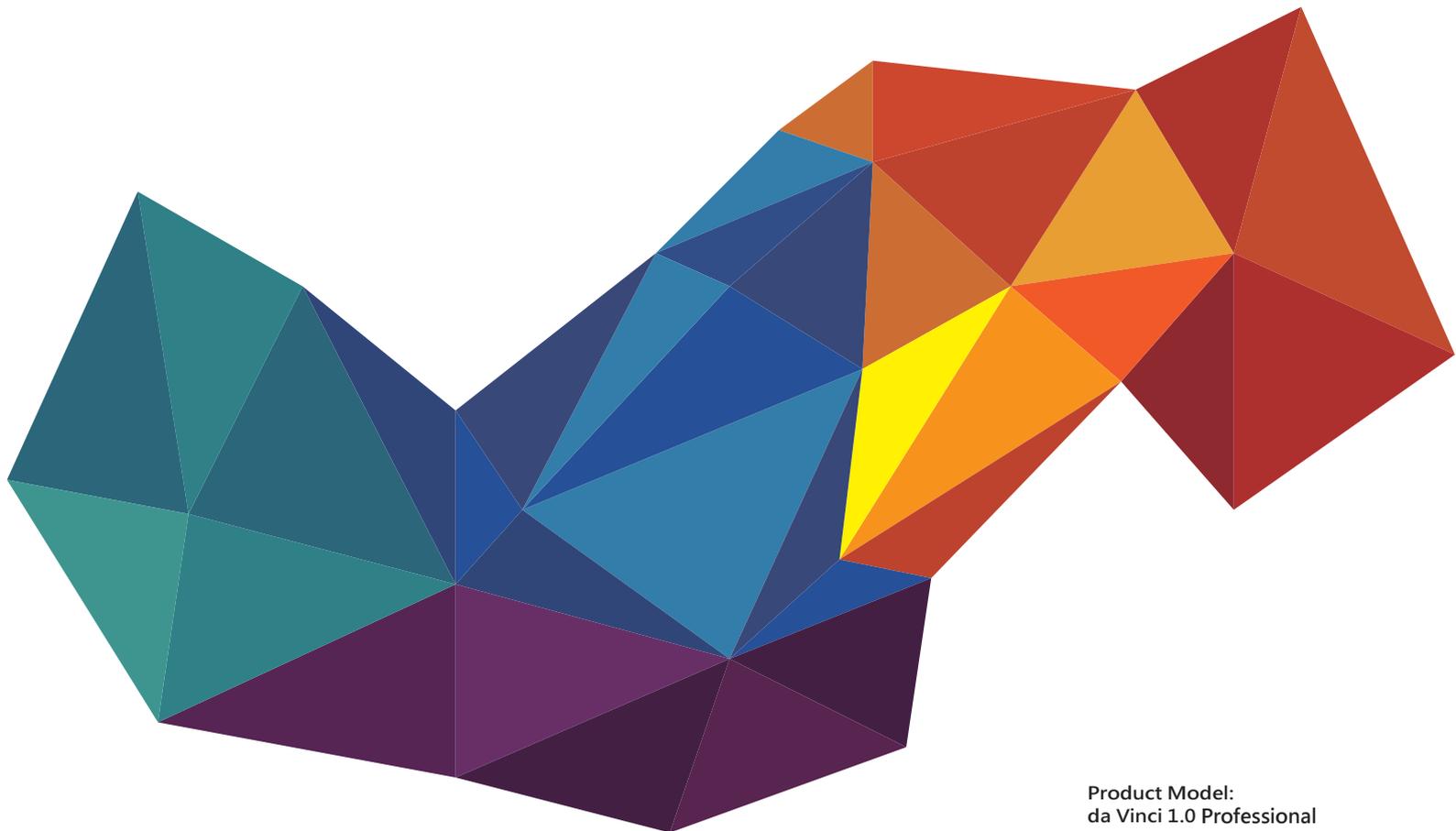




# da Vinci 1.0 Pro Laser Engraving Module User Manual

- ▶ **Product safety**
- ▶ **Introducing the laser engraver module**
- ▶ **Introducing the installation / detachment of the laser engraving module**
- ▶ **Laser engraving operations and instructions**
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The purpose of this user manual is to help users understand the means of correctly operating the laser engraver module of the da Vinci 1.0 Pro. 3D printer. This manual provides relevant information on operational knowledge, application techniques, and maintenance of the laser engraver module.

If you wish to learn more about the latest information of the da Vinci 1.0 Pro. 3D printer and the entire catalog of products offered by XYZ, you are welcome to contact your local dealer or visit the official website of XYZ-printing: <http://www.xyzprinting.com>

## Product Safety

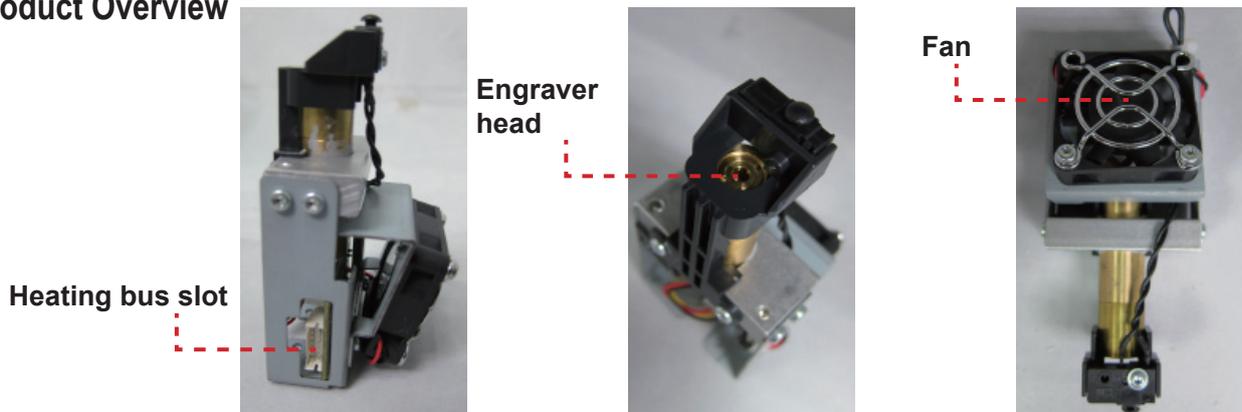
### ● Important Safety Information

Please read through this manual and all safety reminders carefully before using, operating, dismantling, replacing, or removing this product. Please also comply with relevant safety reminders and instructions.

- ◆ Please prevent children from coming into contact with this product on their own or play with the engraver as this may cause injuries or electric shocks.
- ◆ Do not move the machine when the power supply has been switched on.
- ◆ Do not open the front door when the machine is running to prevent interrupting the laser engraving process, as this would impact the integrity of the sculpted image.
- ◆ Do not look directly at the laser engraving process to prevent eye discomfort.
- ◆ Mild odors may be generated during the engraving process. We recommend working in a well-ventilated and open area to ensure operational comfort.
- ◆ Please turn off the electric power when dismantling / replacing the laser engraving module.
- ◆ Ensure that there are personnel around the printer during laser engraving.
- ◆ Defect repairation must be carried out according to the contents of this instruction manual. Where the defect cannot be repaired, please contact your printer dealer or the customer service center.

## Introduction to the Laser sculpting module

### ● Product Overview



### ● Specifications

Laser Wavelength	450nm+5nm/-10nm InGaN	Laser Wavelength	350mW ~500mW
Laser Power for Classification	Class 3B	Beam Diameter	≤ 1mm
Engraving area	20 x 20 cm	File Types	JPG / PNG / GIF / BMP
Mode of Operation	CW (Continuous Wave)		

### ● Recommended laser engraving material:

- ◆ Paper
- ◆ Cardboard
- ◆ Leather
- ◆ Wood
- ◆ Plastic

**Note :**

**Avoid using materials that are light colored, white, or have glossy surfaces for laser engraving. Achieve the best engraving results with gray colored or dark colored materials.**

## Introducing the installation / detachment of the laser engraving module

### ● Replace the laser engraving module:

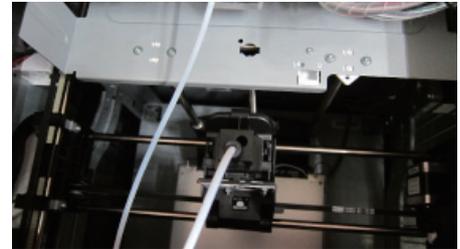
Before replacing the extruder module with the laser engraving module, check if there are remaining filaments in the nozzle and remove them accordingly.

UTILITIES  
CALIBRATE  
BUILD SAMPLE  
▶ CHANGE NOZZLE

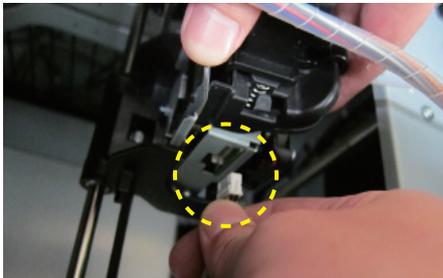
TURN OFF POWER  
AND THEN CHANGE  
NOZZLE MODULE

1 After removing the filament, please select [CHANGE NOZZLE].

2 Wait for the panel to display the message that allows you to switch off the power to replace the printing module before switching off the power.



3 Move the module manually to the center or any other position that allows easy detachment of the module.



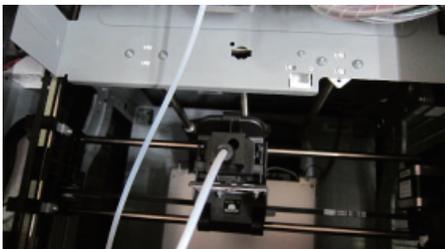
4 Unplug the heating bus at the side of the extruder module



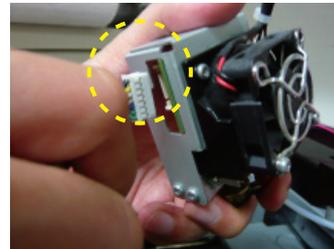
5 Pull open the quick-detachment lock to release the extruder module. Tilt the module and remove it from the slot. Provide proper safekeeping of the extruder.

(avoid touching high temperature extruders to avoid burns)

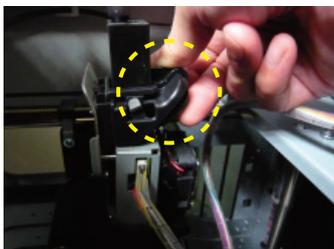
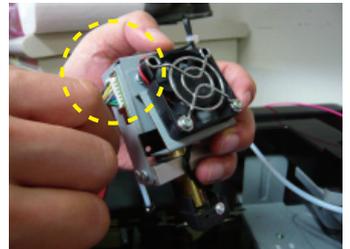
### ● Installing the laser engraving module:



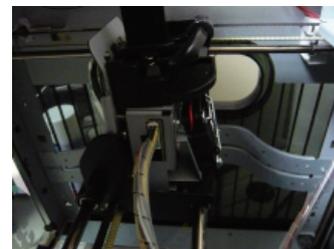
1 Move the module manually to the center position.



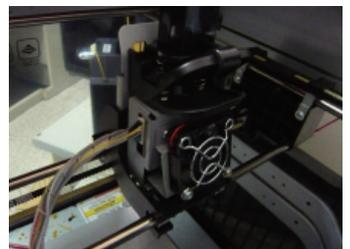
2 Install the buses, and pay special attention to the upper and lower buses.



3 Pull the quick-detachment button. Tilt the laser engraving module and insert it into the installation slot.



4 Press the quick-detachment button and ensure that the module is secured by the locking lever at the correct position to complete the installation.



### ● Dismantling the laser engraver module:

- ◆ Switch off the printer power.
  - ◆ Pull the quick-detachment button. Tilt the laser engraver module and take it out from the installation slot.
  - ◆ Detach the connected cables.
- Complete dismantling and provide proper safekeeping of the laser engraver module.

# Laser engraving operations and instructions

## ● Reminders before laser engraving

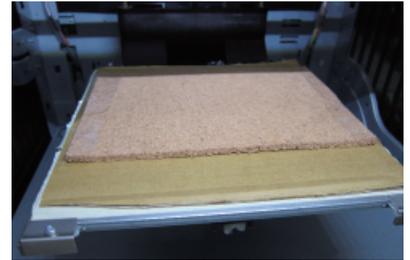
The engraving module is only capable of engraving planar objects. The target should thus be placed flatly on the panel. Avoid engraving warped or curved objects that are not completely flat. The user may use tape to secure and flatten the object on the platform or other flat surfaces.



1 Avoid using engraved materials that are curved or otherwise not flat.



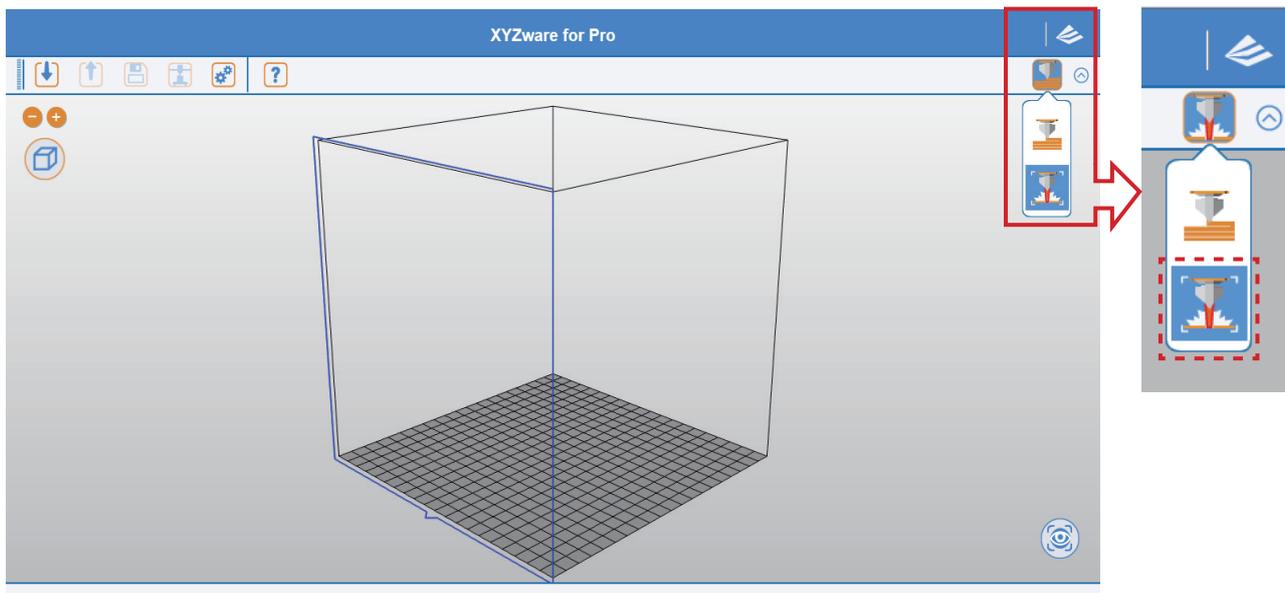
2 The user may use tape to secure and flatten the object on the platform or other flat surfaces.



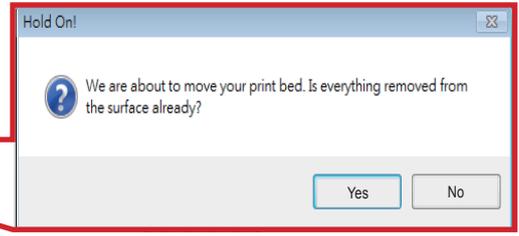
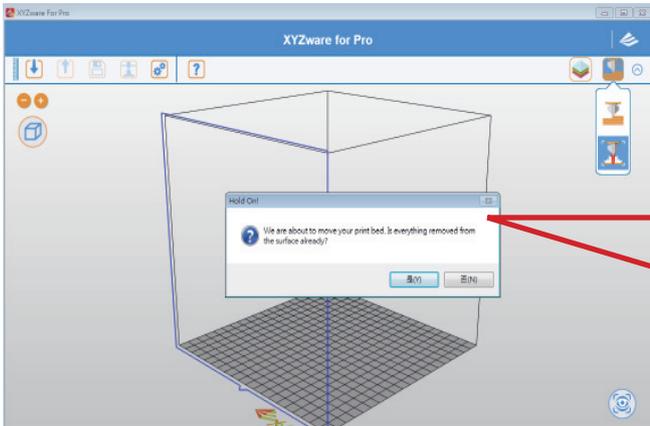
3 An example of an item placed within the platform.



- ◆ Connect the printer to the computer: Please check that the printer is already connected. After connecting, the “XYZware for Pro” screen will appear. Select the Switch to Laser Engraving function at the Tool area at the top right hand corner of the software interface.



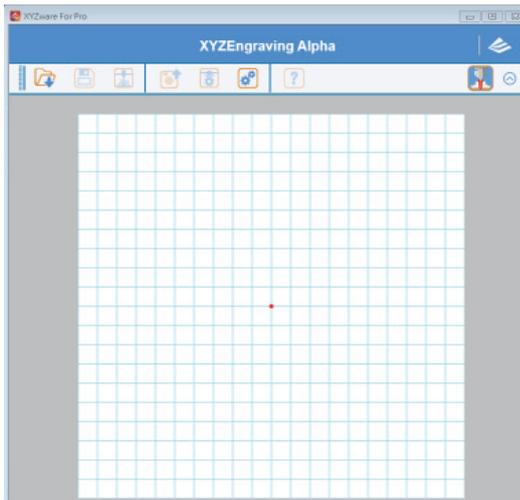
● Laser engraving process



1 A warning screen should appear. Please ensure that the item has been removed from the platform (ensuring that the platform is clear of any item).

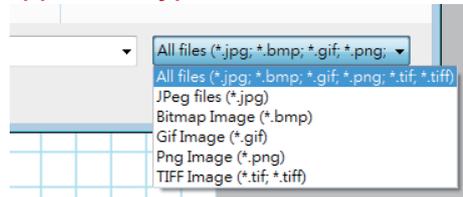
2 Select "Yes" to return the platform to its upper position. After the platform has reached its original location, lower it to a suitable position to place the item to be engraved upon the platform.

**Note: The engraving module is only capable of engraving planar objects. The target should thus be placed flatly on the panel. Avoid engraving warped or curved objects that are not completely flat.**

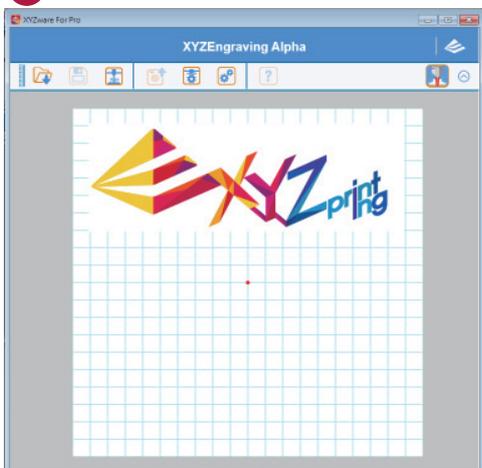


3 Enter the platform display screen.

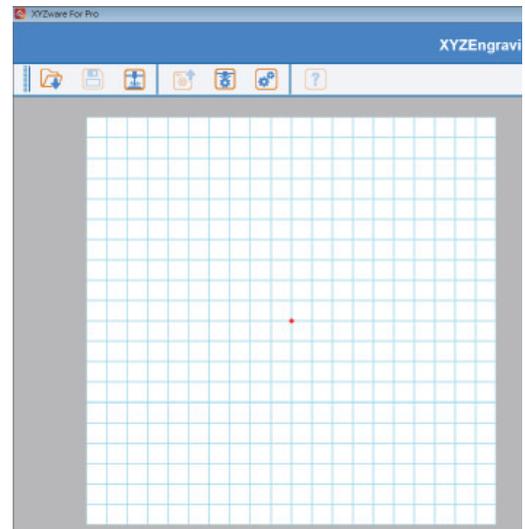
Support file type :



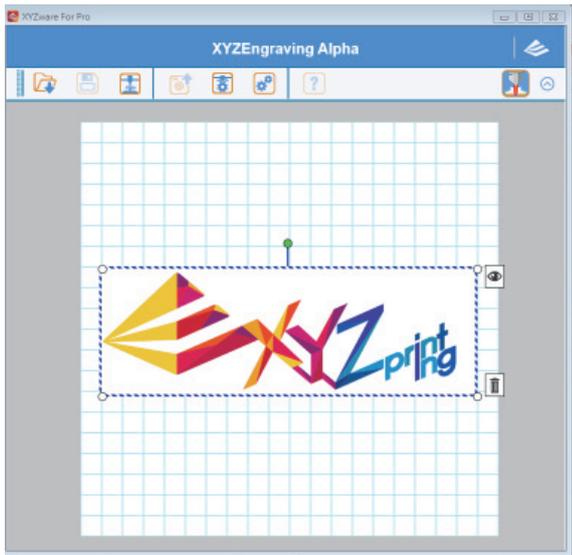
4 Select "Import" on the device to select the graphic file you wish to engrave.



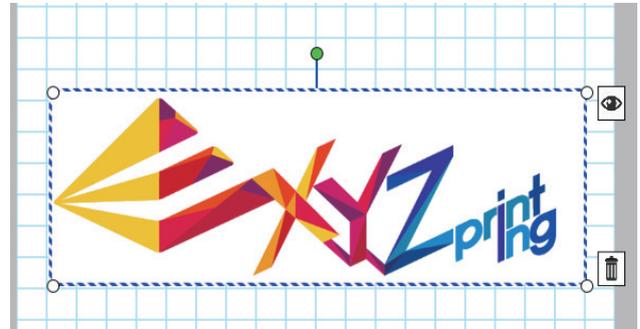
5 Once the picture file has been imported, please verify that the picture covers the center of the screen as indicated by the red round dot.



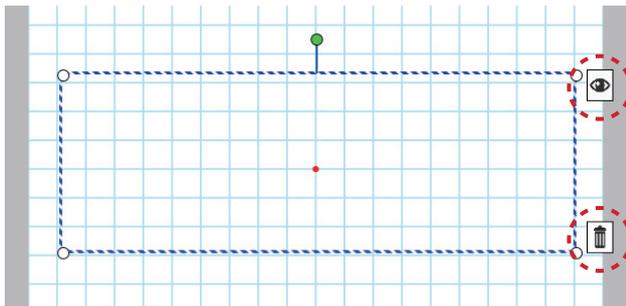
(the red round dot on the screen will be the center of the platform)



6 Move the picture over the red circular dot to cover it.



7 The user may edit the picture such as by enlarging, shrinking, or rotating it.



: Click once to hide the imported file. Click on this icon again to show it.



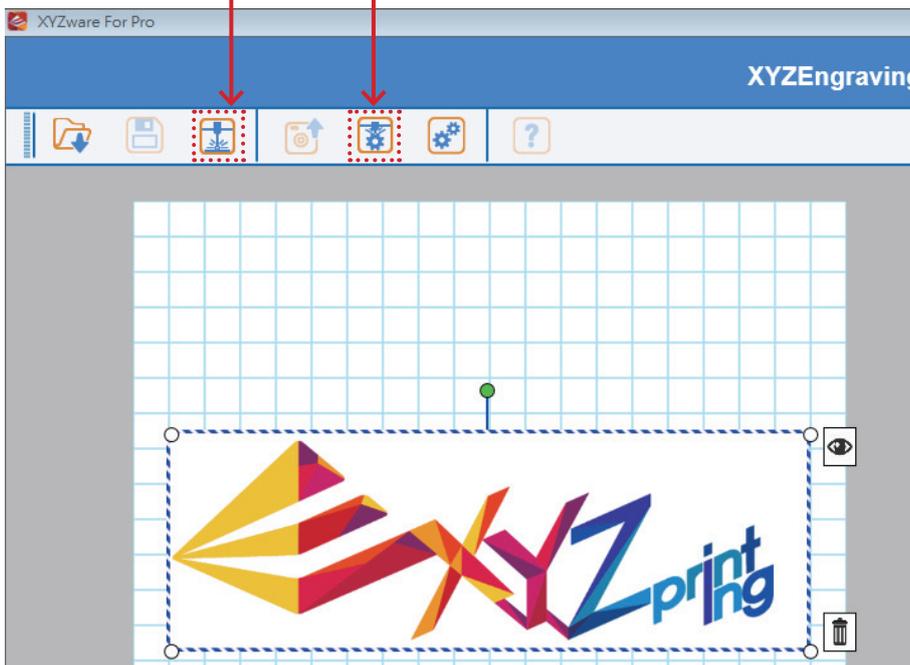
: Delete the imported file.



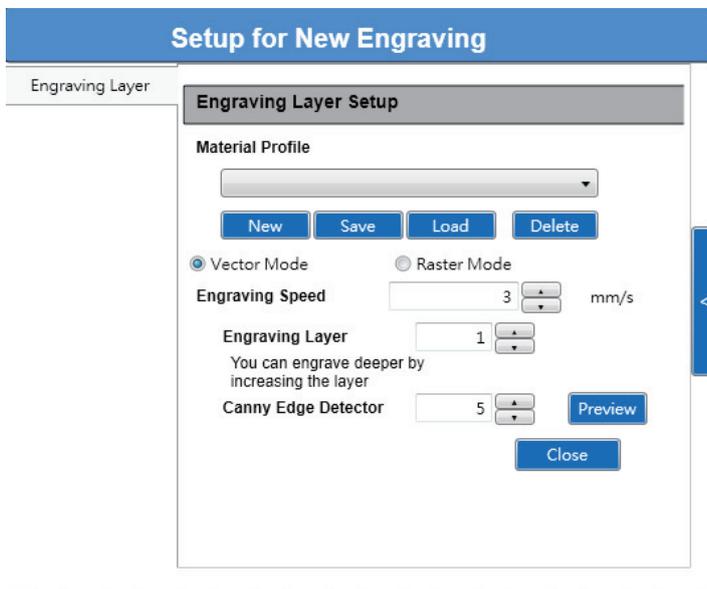
Once basic editing has been completed, select this "Engrave" icon.



Alternatively, select this "Advanced Engraving Settings" icon to complete advanced settings before engraving.



8 Select "Edit". The software screen shall display the laser engraver settings.



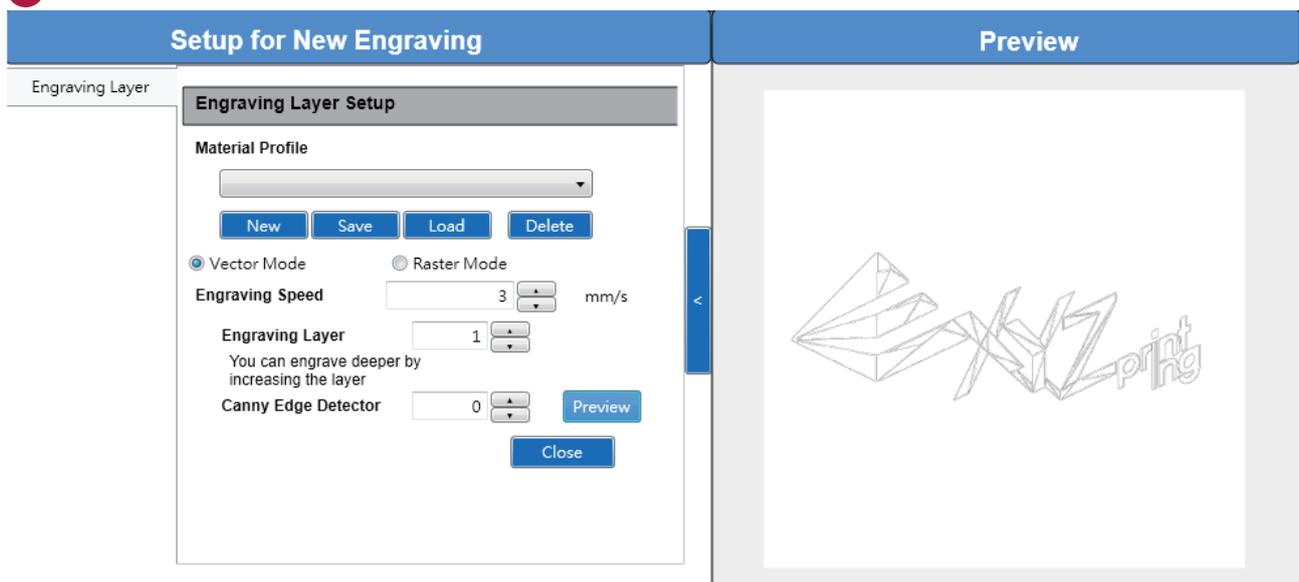
◆ The user may choose between Vector / Pixel engraving modes (default software setting is Vector mode).

Vector: The original form and clarity will be retained. The graphic will be depicted in hollow lines. No jagged edges will appear.

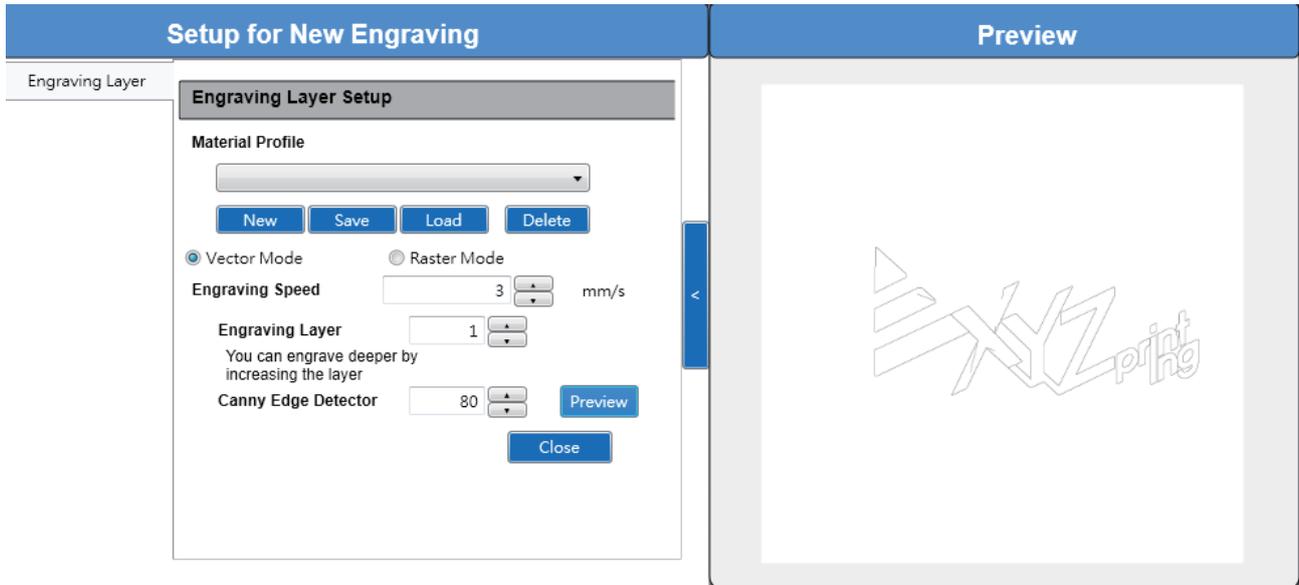
Raster: Pixel graphics may depict the original appearance and solid lines of the graphic and provides a more realistic finish.

### Vector mode preview screen

9 Once settings have been completed, click on "Preview". A window will be opened on the right side to display the effects:

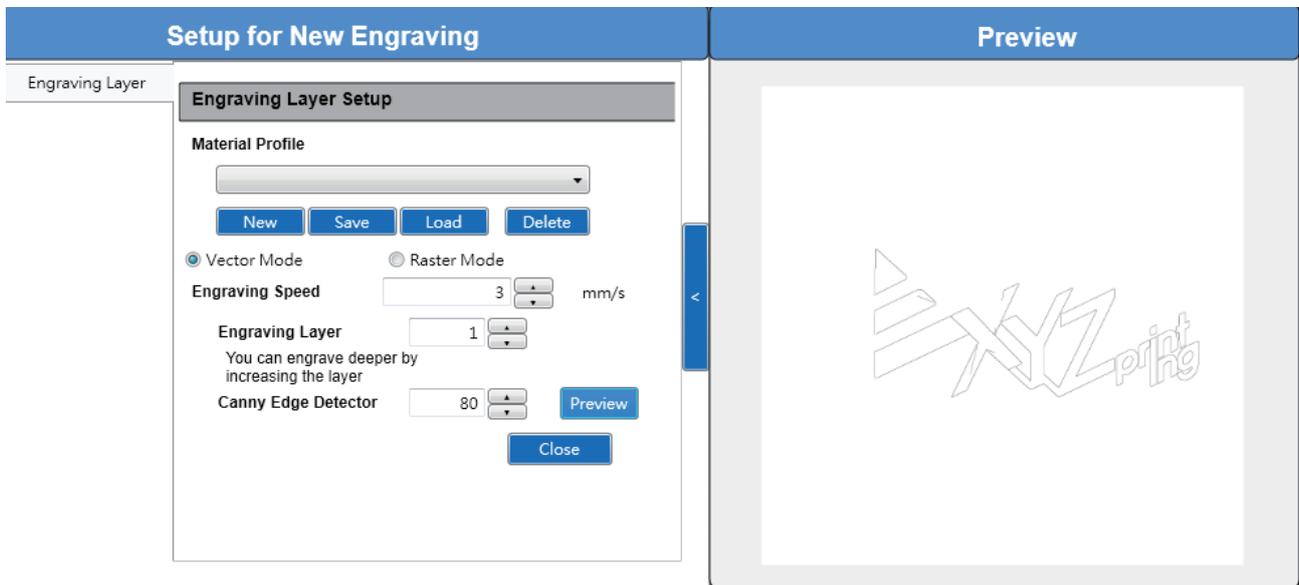


✘ A preview when Canny Edge Detector (sensitivity for contour detection) has been set to 0.

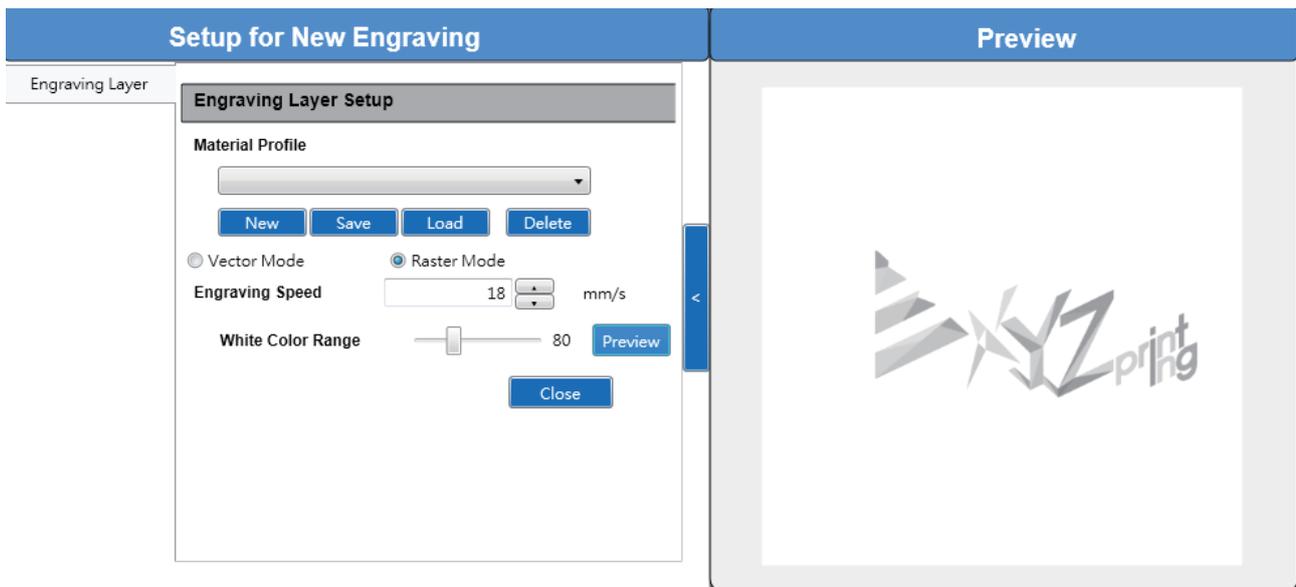


※ A preview when Canny Edge Detector (sensitivity for contour detection) has been set to 80.

### Raster mode preview screen



※ A preview when White Color Range (sensitivity for color darkness) has been set to 0.

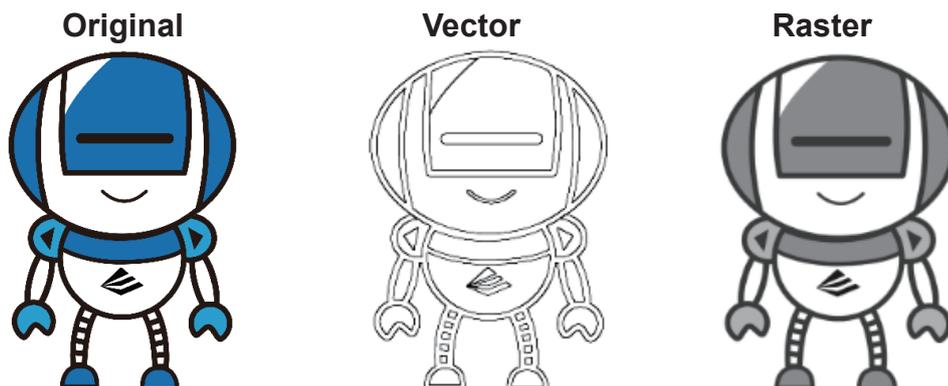


※ A preview when White Color Range (sensitivity for color darkness) has been set to 80.

● Laser engraving parameters and ranges

Item	Settings	Contents	Numerical range
Vector / Raster	Engraving Speed	Smaller values will lead to slower engraving speed but more in-depth engraving effects.	1~30 mm/s
Vector / Raster	Engraving Layer	Set the number of engraving lines. Selecting more lines will lead to more in-depth engraving effects.	1~20
Vector	Canny Edge Detector	Setting for the contour of lines detected. Smaller values will lead to more contours detected. Higher values will cause lines to appear clearer and simpler.	0~100
Raster	White Color Range	Higher values would ignore more color grades. Automatic filtering and removal of light colored portions, retaining parts that have darker shades.	0~255

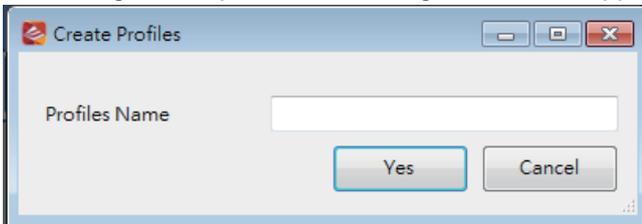
● An example of laser engraving



## Profile Settings

### ● Save settings:

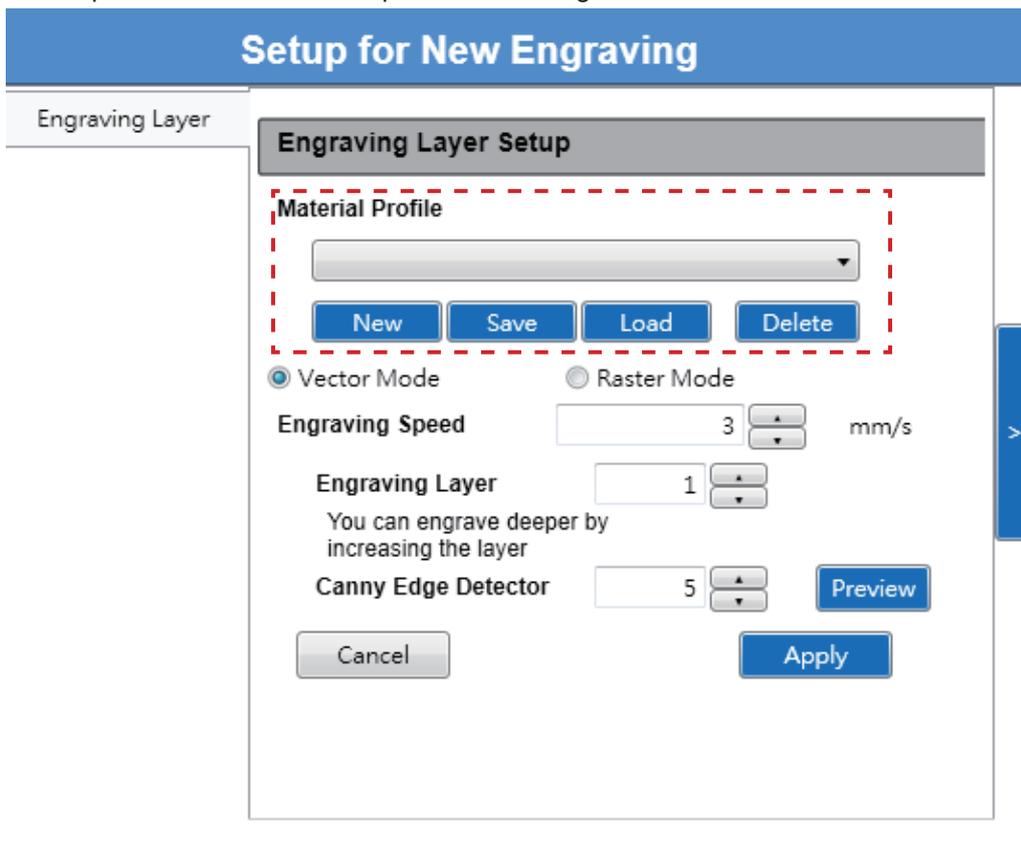
Once engraving speed and engraving layer parameters have been set, click on “Save” to save the settings. A file preference settings screen will appear.



Enter the filename:

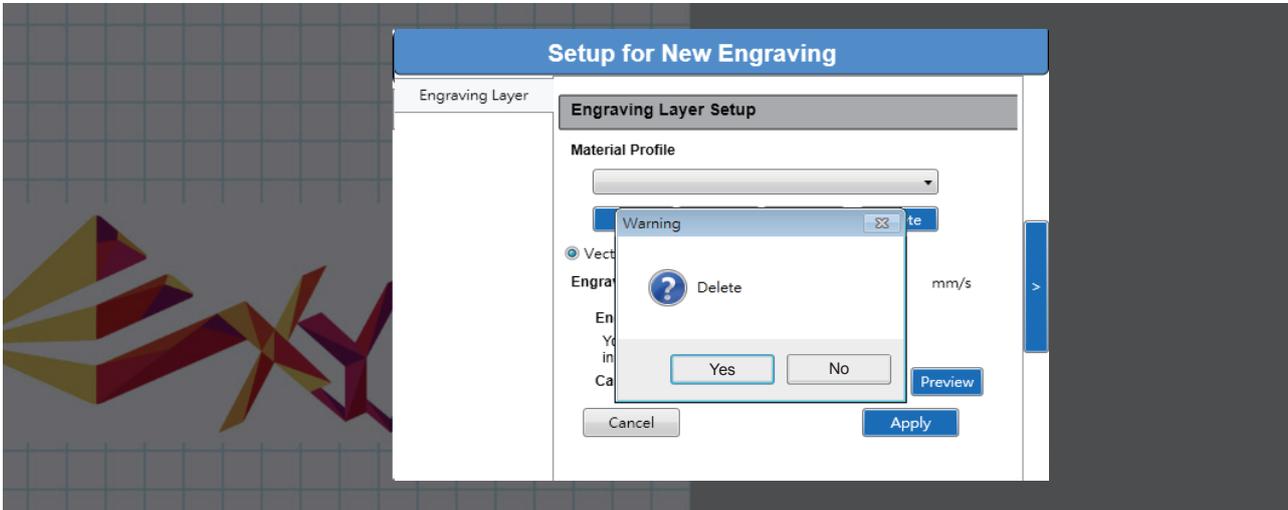
Use only English alphabets and number (for example, the file can be named as 1). When complete, click on “Yes” to add this as a new set of preferences. You may use the pull-down menu in the Preferences interface to select the saved preferences.

To select the saved preferences, select Engraving Preferences, click on the pull down menu, find and select the specified file name, and click on “Read”. Engraving speed and layers will be based upon the parameter values provided in the selected parameter settings.



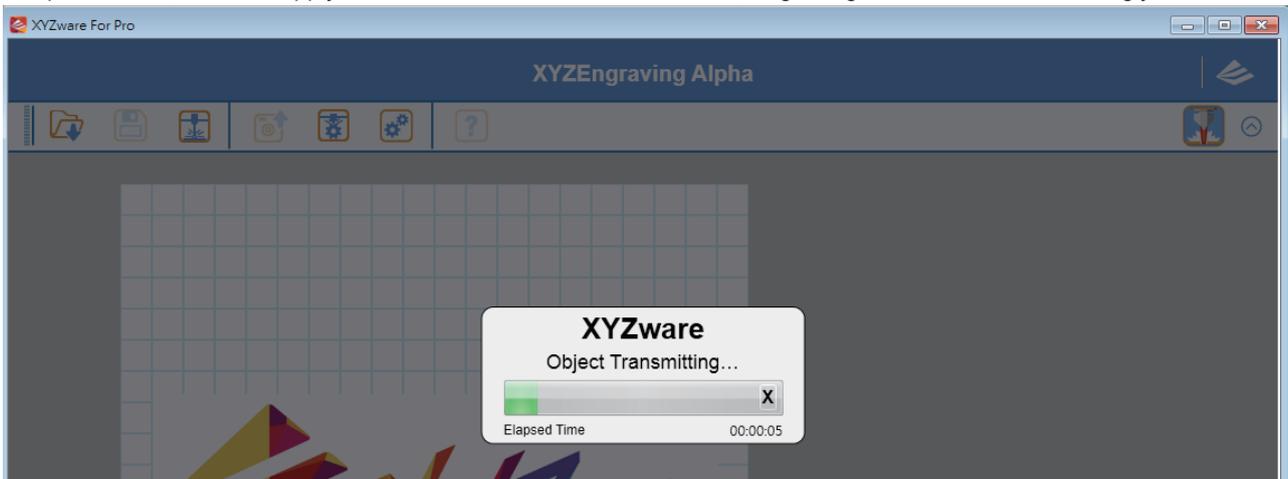
● **Removing the settings:**

To delete a set of saved preferences, click on the engraving Preferences, click on the pull down menu, find and select the specified file name, and click on “Delete”. Click on “Yes” to confirm the deletion of the selected settings combination.

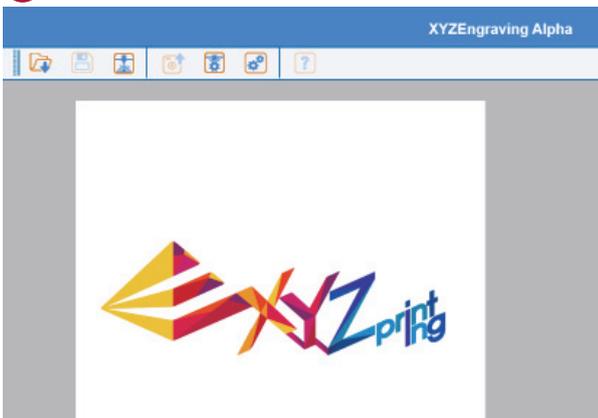


● **To restore default preferences and settings:**

- 1 Click on “Add” to return to the default software settings and combinations. After setting or selecting the laser engraving parameters, click on “Apply”. Once the item has been transferred, engraving will commence accordingly.



- 2 Once the engraving file has been delivered, it will be displayed on the software screen.



ENGRAVING  
INITIALIZING  
PLEASE WAIT

ENGRAVIN ▶ 021%  
TIME PASS 00h02m  
ESTIMATED 00h09m  
ACTIVE MENU [OK]

ENGRAVING  
COMPLETE  
REMOVE OBJECT  
[OK] TO RETURN

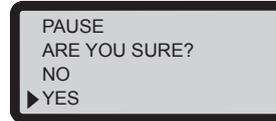
- 3 When the item has been transferred, the platform will be raised to its upper position to measure the engraving distance. The platform will then be lowered accordingly. The machine interface will display, “Engraving Initializing.”
- 4 During engraving, the machine interface will display the expected time required for the process and the percentage progress.
- 5 The machine interface will display this screen once engraving is complete.

## Pause and cancel the laser sculpting

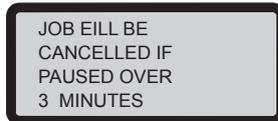
### ● PAUSE



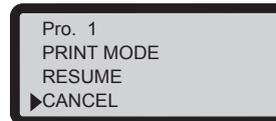
- 1 Select "PAUSE" to pause the laser engraving process.



- 2 Select [YES].

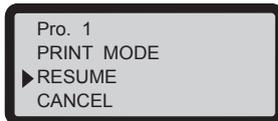


- 3 The screen will display "JOB WILL BE CANCELLED IF PAUSED OVER 3 MINUTES" (after about 5 seconds).

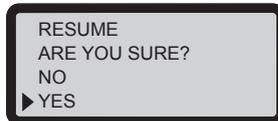


- 4 This screen will appear after about 5 seconds. Select "CANCEL" to cancel the task, or "RESUME" to continue.

### ● RESUME

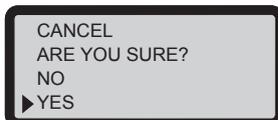


- 1 To cancel the pause and resume the printing, select "RESUME". A screen will appear to confirm whether to resume the engraving process. Select "YES" to continue the laser engraving process.

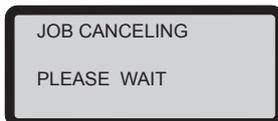


- 2 Select [YES].

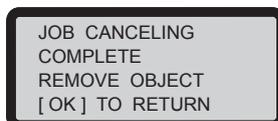
### ● CANCEL:



- 1 To cancel the laser engraving job, select "CANCEL". A screen will appear to confirm whether to cancel the engraving process. Select "YES" to cancel the laser engraving process.



- 2 Wait for the cancellation of the laser engraving process.



- 3 Successful cancellation will stop the laser engraving process. The platform will then be automatically lowered.