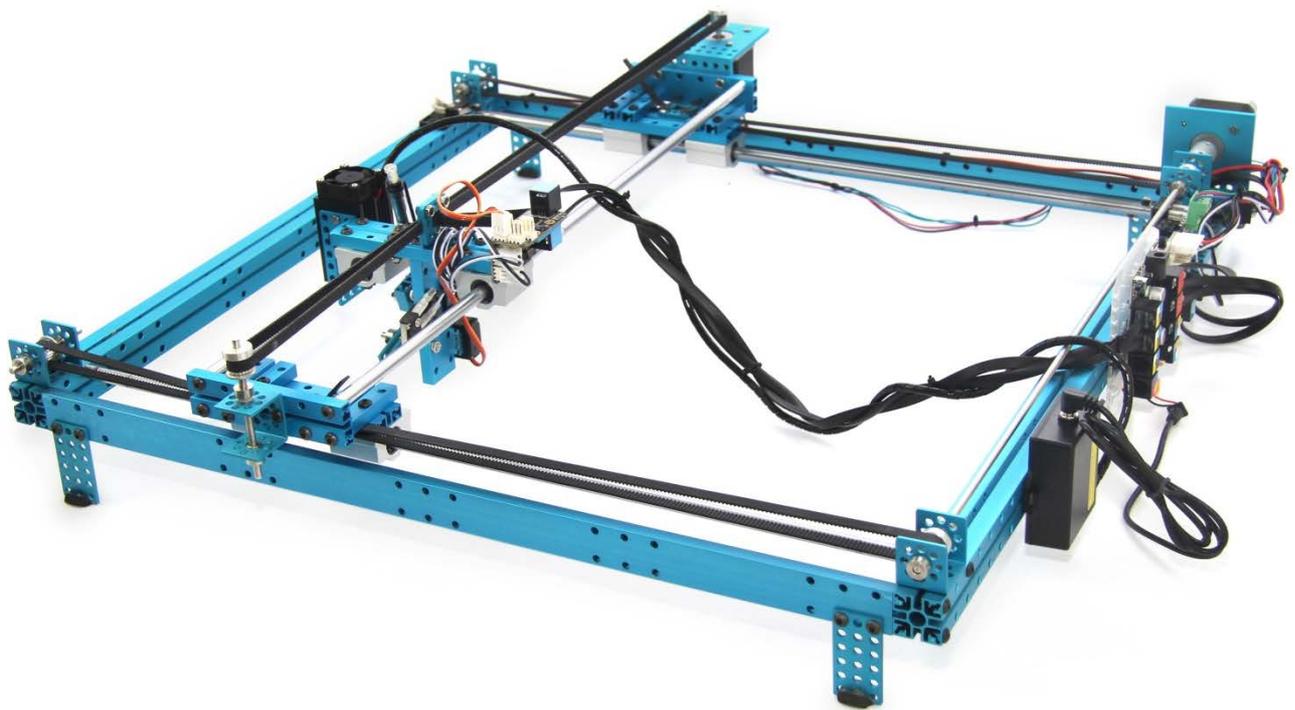


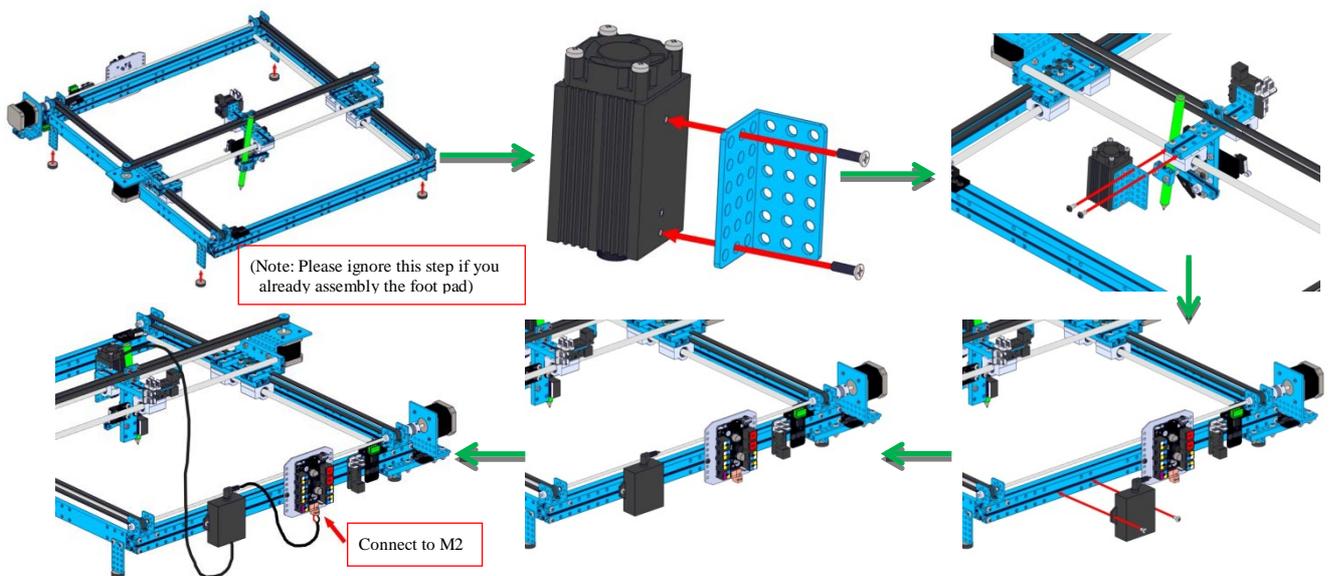
Laser Engraver Upgrade Pack for XY Plotter Robot Kit V2.0 User Guide



What is Laser Engraver Upgrade Pack?

Laser Engraver Upgrade Pack is for XY Plotter Robot Kit V2.0, it can engrave by laser. It uses 405nm blue-violet laser as semiconductor laser. The max work area is 300mmx350mm, engrave accuracy could be 0.1mm. We would like to recommend wood board, colorful paper cards, dark opaque acrylic, etc as engrave/cutting material.

1 Mechanical part assembly Guide

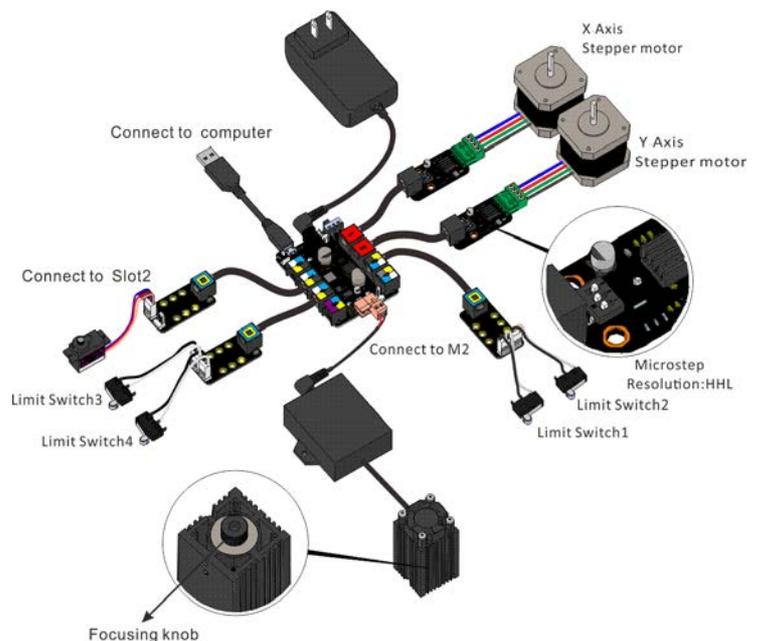


<https://grabcad.com/library/laser-version-for-xy-plotter-robot-kit-v2-0-1>

2 Wiring and firmware upgrade guide

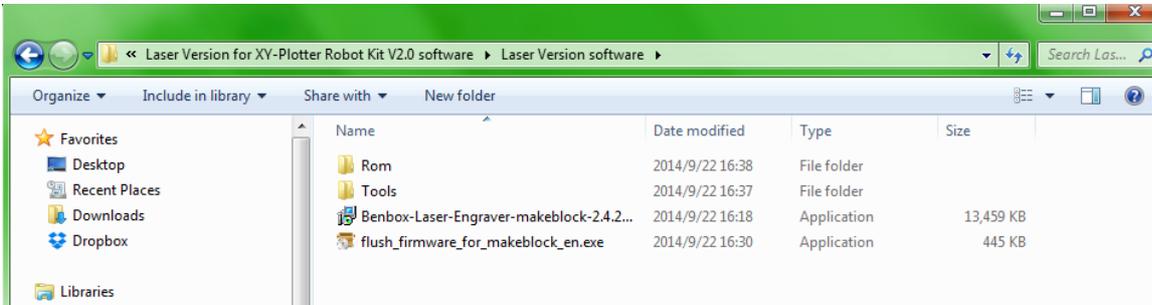
Please wiring the electronic parts (pictured right) first.

Connect the Main control board (for example: Me Baseboard) with computer by USB and unpack the download files (Download here: <http://learn.makeblock.cc/laserxy2/>)

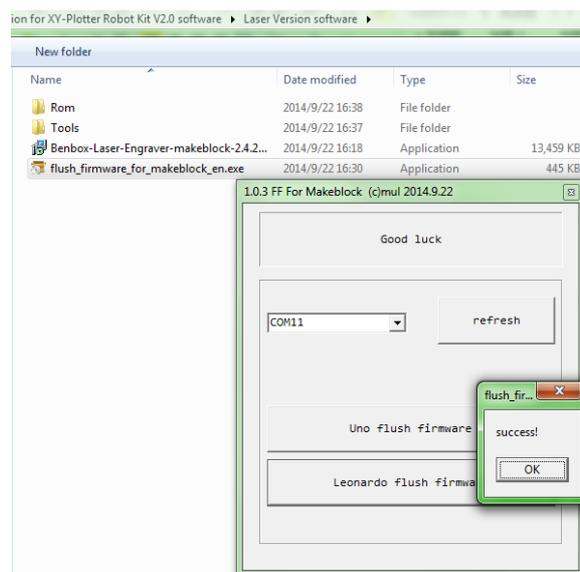


2.1 Update the corresponding firmware according the mainboard type and run flush_firmware_for_makeblock_en.exe in the admin mode.

Note: How to identify your main control board type? Check the back of mainboard to confirm the model. (For example we use Me Baseboard V1.0 here.)

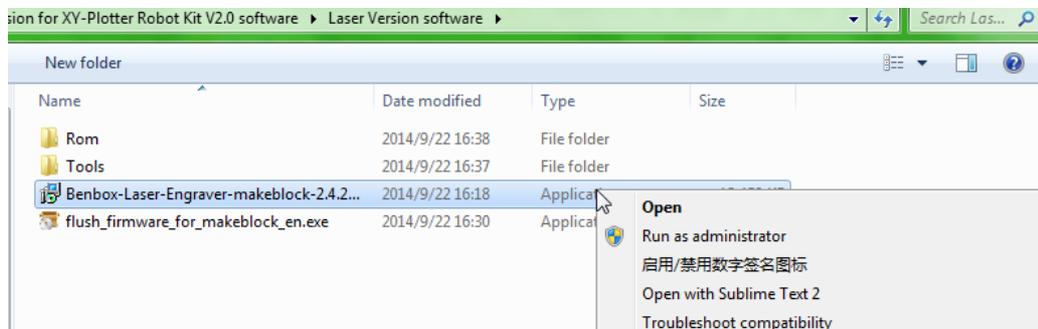


2.2 Click “Refresh” button, select the port number and upgrade the firmware according your mainboard type. (We take Me Baseboard as example here, the same function as Leonardo, and click Leonardo flush firmware.)



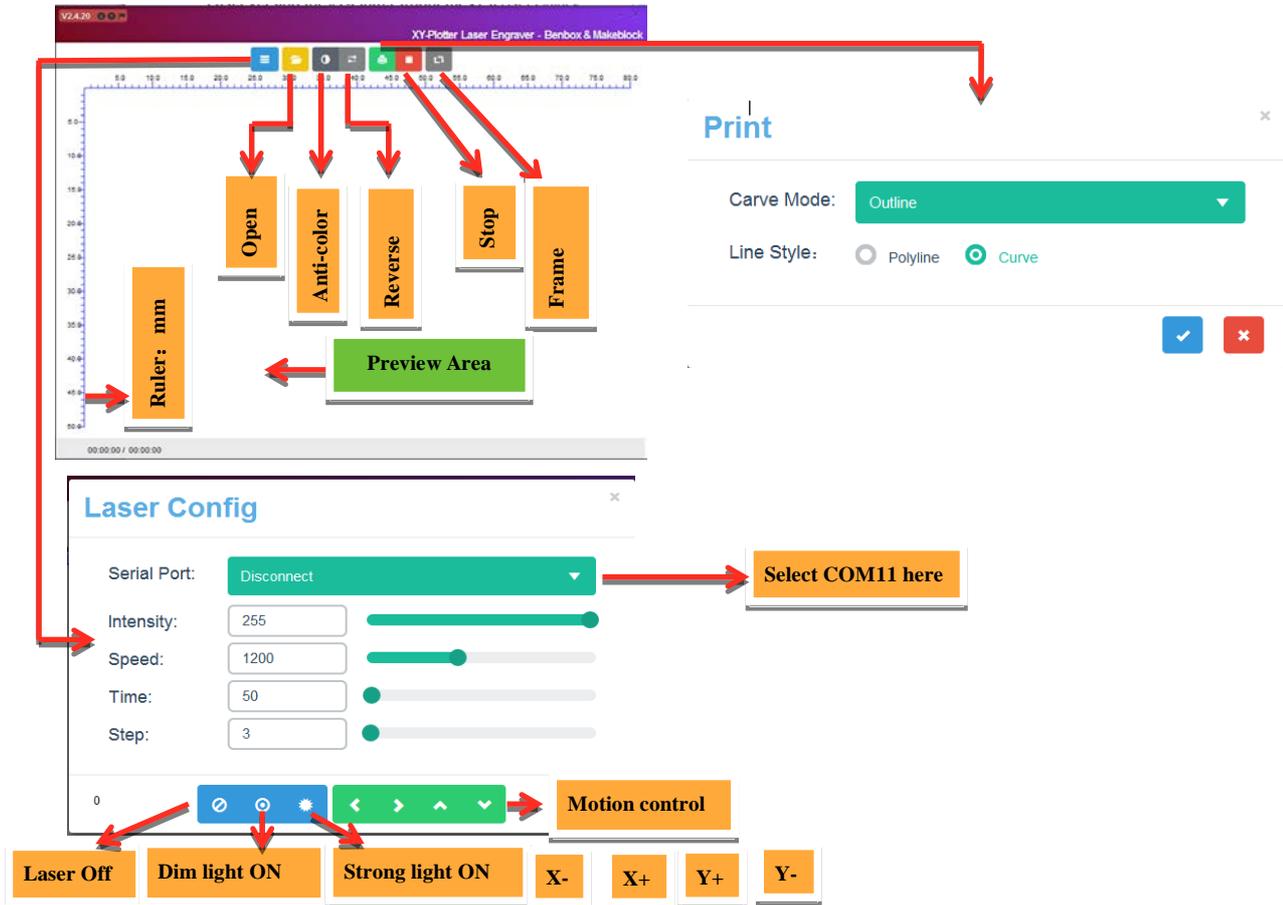
3 Install the control software Benbox

Install the control software Benbox as shown below, follow the prompts to install, to complete the installation.



4 Function introduction of Benbox

4.1 The main interface of Benbox



4.2 Laser configuration specification

Intensity: Laser power range (0~255), in general the default value is 255.

Speed(mm/min): Step speed range (0~3000)

(Note: Kindly advise you can setup the higher speed if you're using raster and slower speed while using vector.)

Time(ms): Unit carving time

The higher value, the longer engrave time each step and the deeper it will engrave.

Step: Setup the engrave precision

The higher value, the rougher picture will engrave.

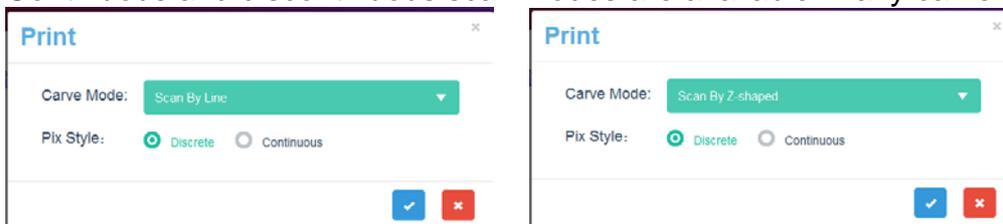
4.3 The introduction of Benbox main interface

(Open, Anti-color, Reverse, Stop, Frame away)

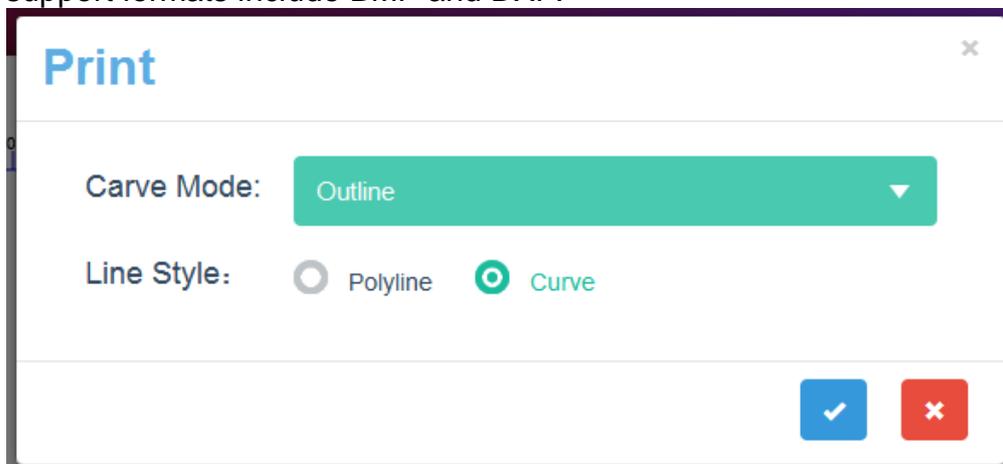
1. OPEN: Fully support raster (Format: JPG, PNG,BMP) and vector (Format: DXF)
2. ANTI-COLOR: It can be anti-color photographs to engrave the Negative effects.
3. REVERSE: Processing the images reversely.
4. STOP: Stop the engraving
5. FRAME AWAY: Locate the engrave image position
6. PREVIEW ARED: You can check the pictured status while engrave processing. You can scroll the wheels to scales the images. Left-click at any position of the image can locate the engraving origin. The default engraving origin is located at top of left corner. The machine origin will be the laser stopping position when you turn on the mainboard power. If you don't edit the engraving origin, then machine origin will be the same as engraving origin.

4.4 Introduction of Print function

1. There are two carve modes: Scan By Line and Scan By Z-shaped. Continuous and discontinuous scan modes are available in any carve mode.



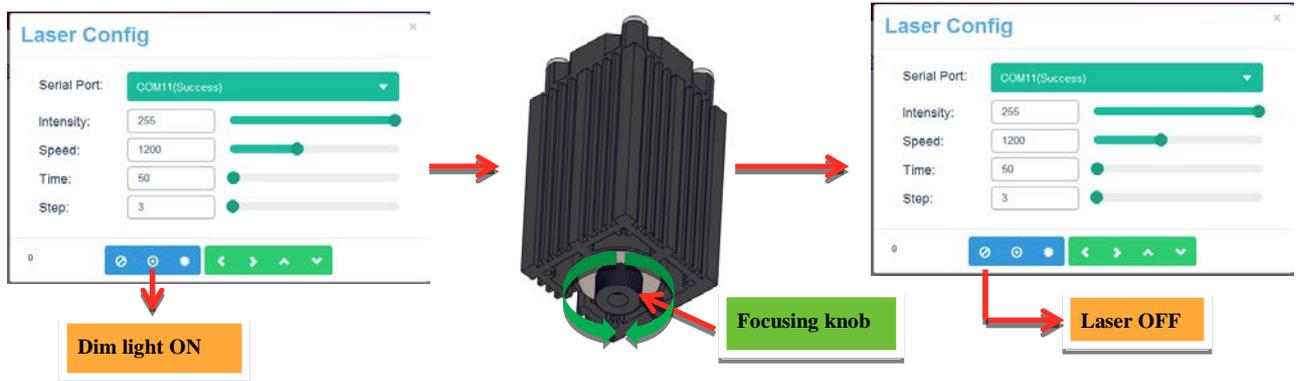
2. Vector outline function provides two line styles: Polyline and Curve. Both of them support formats include BMP and DXF.



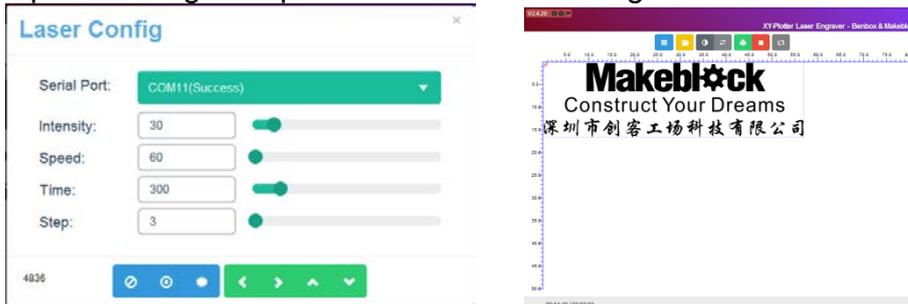
5 Benbox sample programs and recommendation settings

5.1 Sample 1- Engrave as vector-based Makeblock LOGO

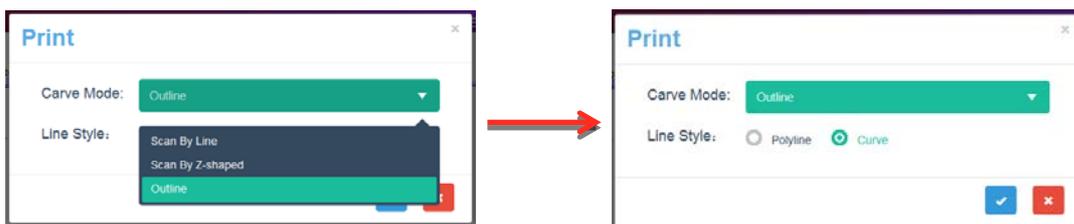
Notice: Please make sure the wiring and software settings are correct before you begin to engrave. Turn on the Benbox, adjust the settings to let least-spot fallen onto the wood.



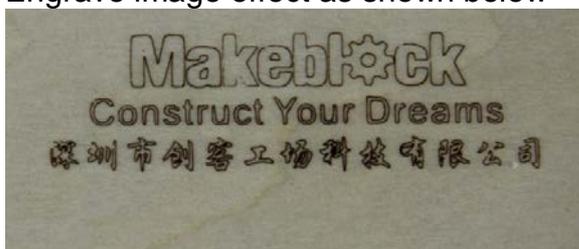
1. Connect the serial port and setup the config as shown below
2. Open the Logo. bmp file as shown in Left Figure



3. Position the wood you want to engrave, select Outline as line style. Click *Print* button after location, select *Curve* option and click *Tick* button to start engraving.



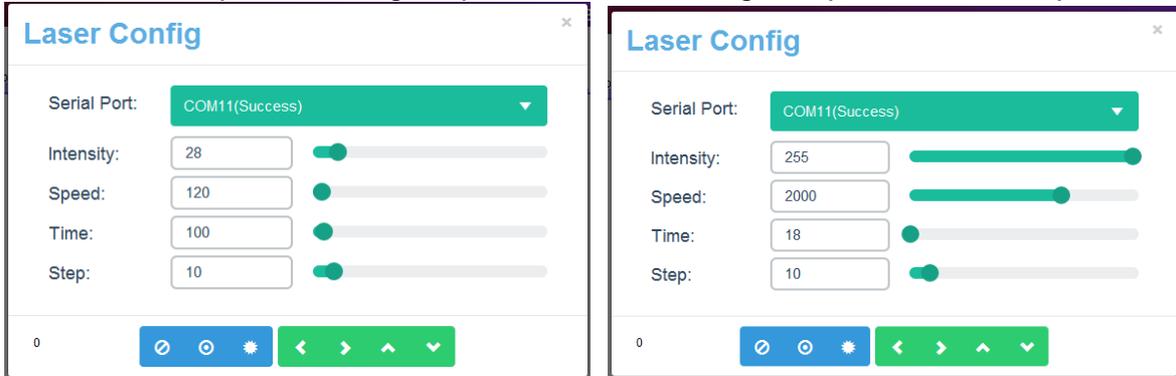
4. Engrave image effect as shown below



5.2 Sample 2- Engrave as raster-based Horse or scanning cartoon avatar

1. Connect with serial port and setup the config as shown below: (Note: The bigger size of graphic or higher pixels it has, the longer time it will take)

①The slower speed, the higher precision ②The higher speed, the lower precision



2. Open the horse.bmp file as shown below



3. Position the wood to engrave and select *Outline* carve mode. Select *Scan by Z-shaped* option, choose Curve line style and click Tick button to start engraving.

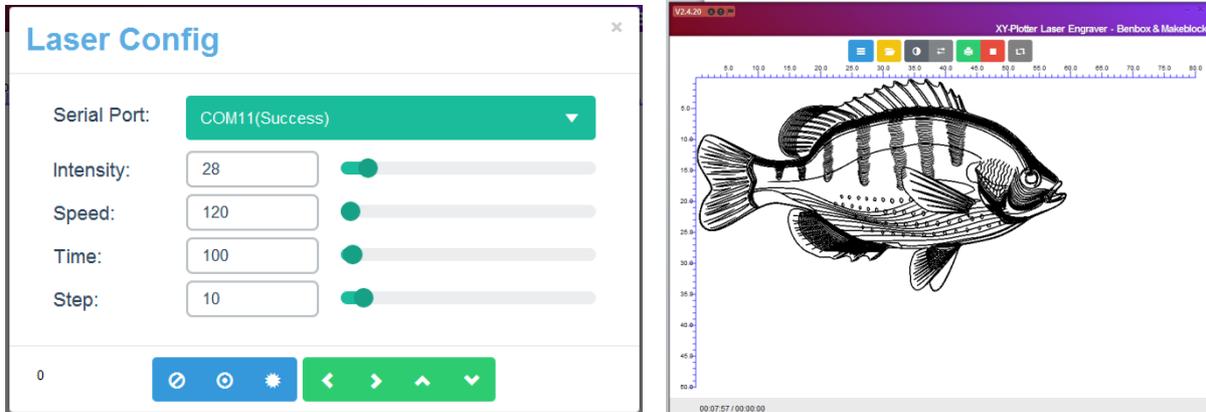


4. Engrave effect image

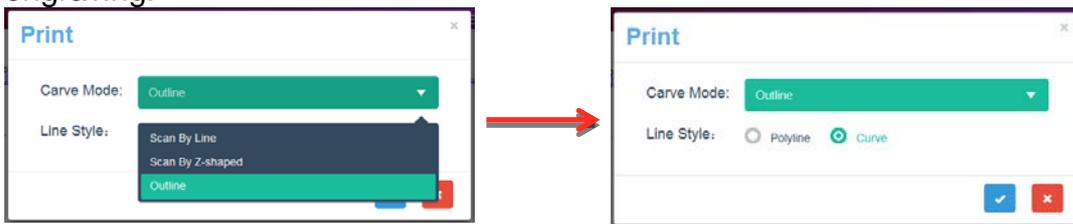


5.3 Sample 3- Engrave as vector-based – Engrave the fish

1. Setup the vector engrave config as shown below
2. Open the fish.dxf file belongs to Examples of material catalog. Please check the effect image blow. (Note: DXF preview don't support zooming.)



3. Position the wood and select the Outline (Carve Mode) and Scan by Line (Line Style). Continue to select *Print* Button, select *Outline* (Carve Mode) option and *Curve* (Line Style). When all the configs are selected, click Tick button get started engraving.



4. Engrave image effect as shown below



5.4 More engraved samples

