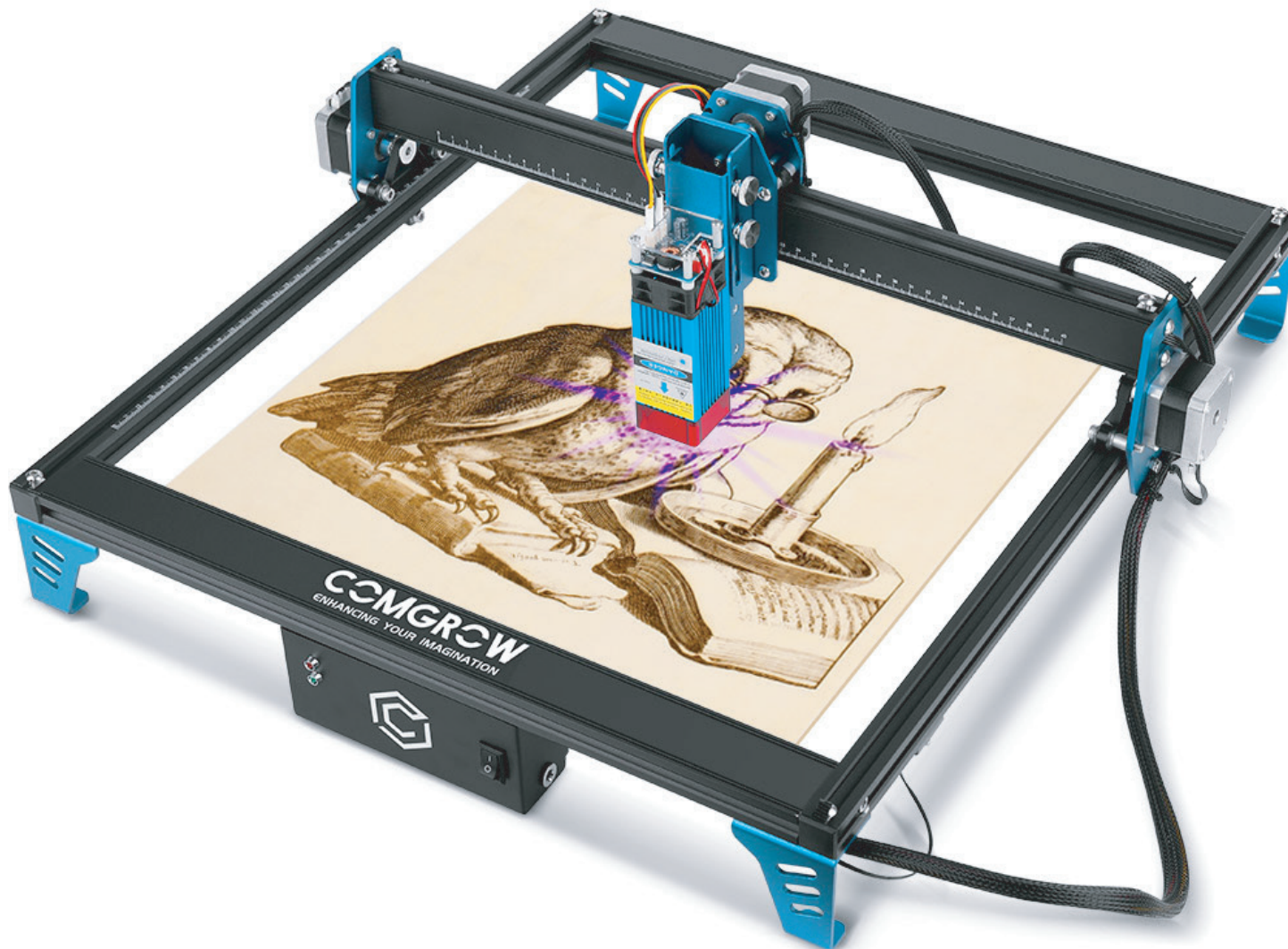


COMGO Z1 LaserGRBL Beginner's Guide

User Manual V1.1



Introduction

Dear Customers,

Thank you for choosing the COMGO Z1 Laser Engraver!

The COMGO Z1 Laser Engraver is a desktop laser engraver. Before operating the COMGO Z1 Laser Engraver, please read the manual carefully and follow the instructions for assembly and operation. If this manual does not effectively solve your problem, please contact our support team.

Comgrow was founded in 2017 by people who have a serious passion for technology that helps you make things. With this deep-rooted dedication, we wanted to make the digital manufacturing process more accessible, giving educators, engineers, manufacturers, small businesses and tinkerers the power to make anything. Headquartered in Southern China, Shenzhen, Comgrow's dedicated staff is committed to providing the kind of service that makes you go "wow."

Our amazing gals and guys in customer service are here Monday through Saturday to help with anything you may need, from finding the right material to package your specific product, to discussing which printer is best for you. Bottom line is, we're here to make 3D printing, laser cutting, and CNC milling magic happen. Contact us.

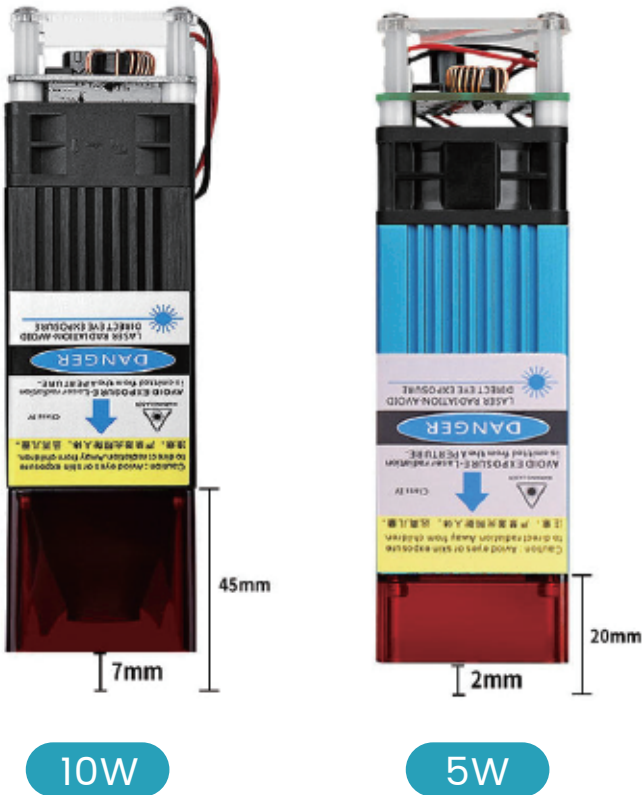
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Parameters

Machine Size	575*575*205mm/22.64*22.64*8.07inch
Working Area	400*400mm/15.75*15.75 inch
Machine Weight	5.0 KG/11lbs
Frame Material	Aluminum
Stepper Motor	42mm*42mm*34mm
Laser module type	Diode lasers
Wavelength	445nm
Compatible Software	Laser GRBL 、Lightburn
Compatible System	LaserGRBL : Windows XP 、 Windows7 、 Windows8 、 Windows10 Lightburn : Windows 、 Mac OS and Linux
Input Voltage	AC110V-230V
Laser Power	1.6W/5W/10W
Focal Length	1.6W:30-100mm 5W :23mm 10W :45mm
S-value Range	S0-S1000 （0%-100%）
Connection Method	USB
Engraving Accuracy	0.1mm

How to level the focus



NOTE: The focal length is the distance from the lower face of the laser module profile to the engraving plane.

Disclaimer



Please read the following carefully before using LaserGRBL on the Comgrow Z1

- COMGO Z1 Laser Engraver supports the most popular engraving software LaserGRBL.
- LaserGRBL is an open source, easy to use and powerful software, but LaserGRBL only supports Windows (Win XP/Win 7/Win 8/XP/ Win 10).

Obtain and install LightBurn

- The COMGO Z1 Laser Engraver receives mobile commands from the computer in real time, and the engraver needs to stay connected to the computer and cannot close the engraving software (LaserGRBL or LightBurn) during the engraving process. In addition, the configuration of the computer can affect the speed and even the quality of the engraving. The following will focus on the installation and use of LaserGRBL software.
- **Note:** It is recommended that you adjust your computer's power settings to "Never Sleep" mode.

1

Install LaserGRBL

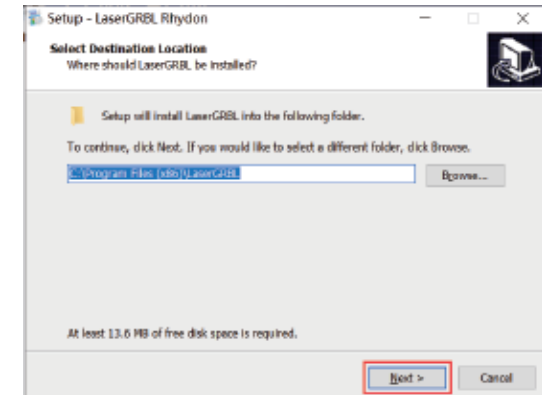
Section 1. Download LaserGRBL software (Only apply to Windows system)

- Driver Files
- Engraving Parameters
- FAQ
- Installation Guide
- LaserGRBL Control Software**
- LightBurn Control Software
- Material Library
- Video

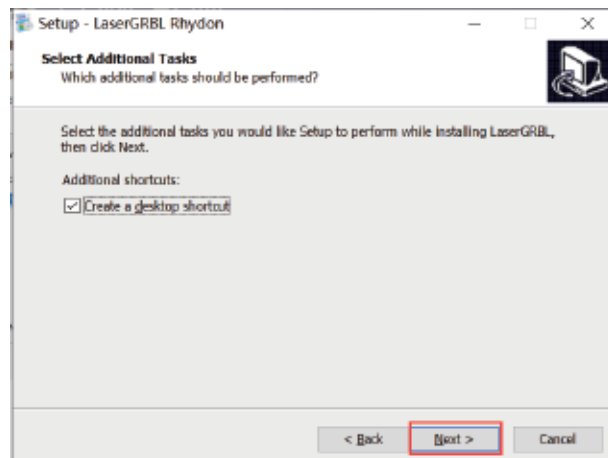
1. Open the file with the machine or from the LaserGRBL website (LaserGRBL website: <http://lasergrbl.com/download/>.) to download software installation packages.

- Drivers for Windows OS
- CustomButtons.gz
- install**
- LaserGRBL User Manual

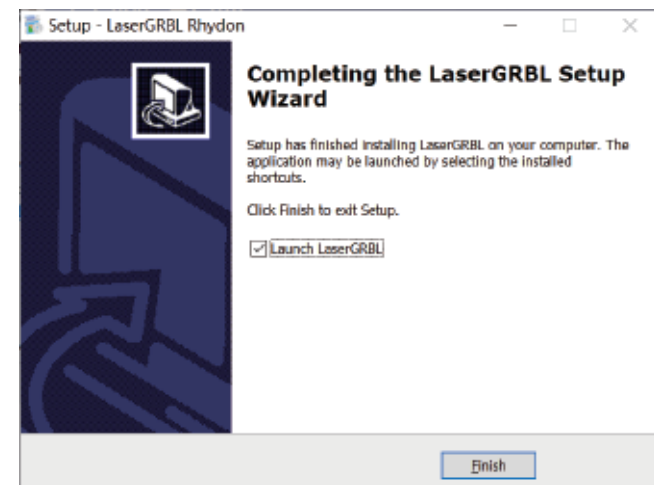
2. Double click "Install".



3. Choose the installation path, Default path (C:\Program Files\LightBurn). Choose "Next" to continue



4. Create a desktop icon. Choose "Next" to continue.



5. Complete setup.

2

Connect COMGO Z1 Laser Engraver

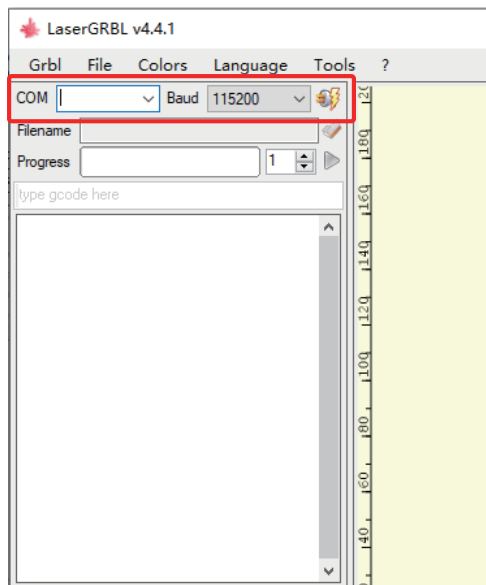


Tip: One computer can open several LightGRBL softwares to connect several engraving machines. When you operate several engraving machines, please make sure to confirm whether the COM port information corresponds to the device you are using.

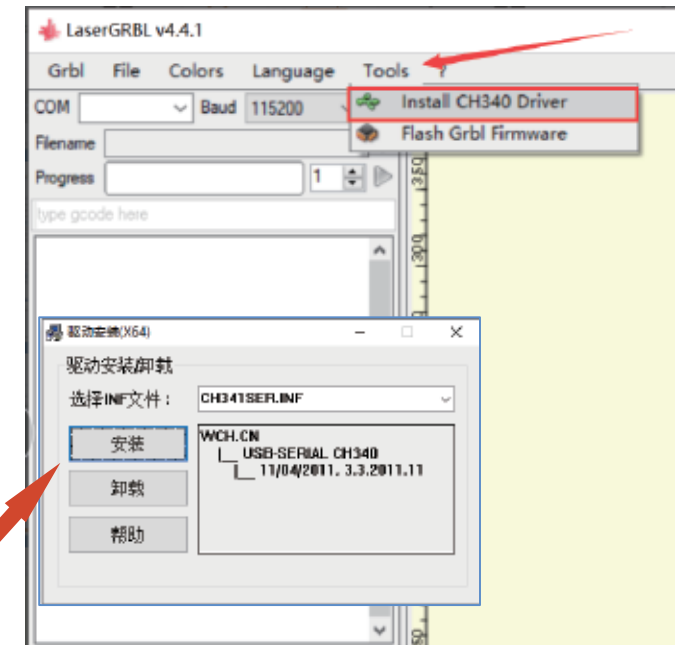
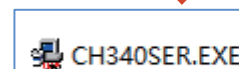
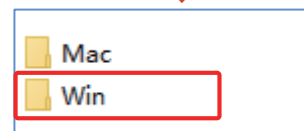
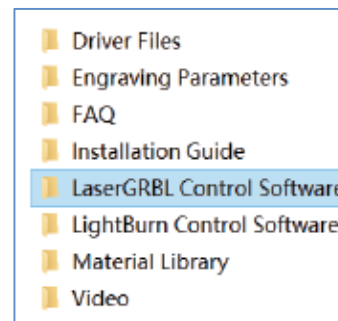
1. Connect the COMGO Z1 laser engraver to a computer with LaserGRBL software and plug in the power supply.



2. Open LaserGRBL software and select the correct port number and baud rate: software-115200



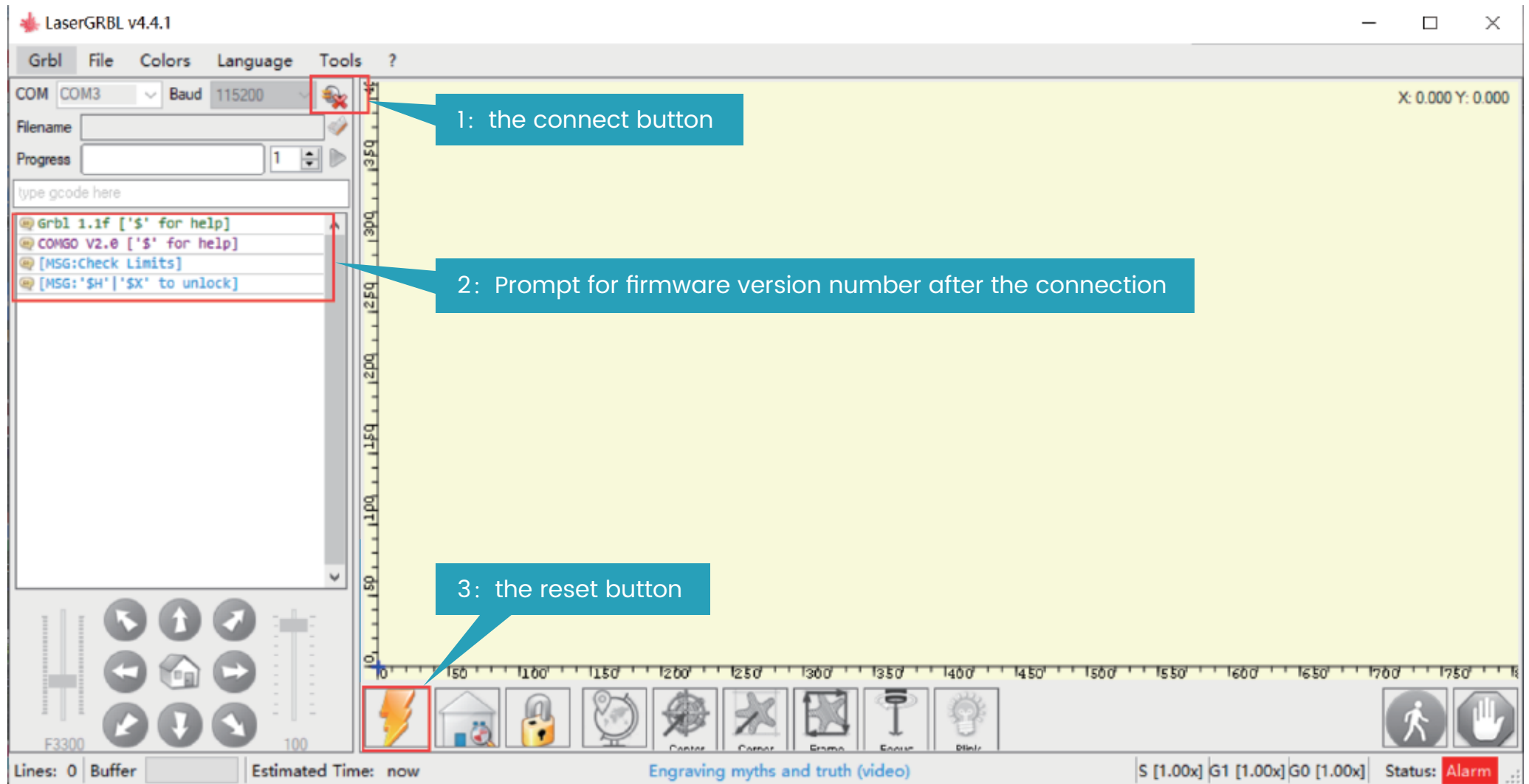
a. Generally, COM ports don't need to be selected manually. But if you have more than one serial devices connected to the computer, you need to select it manually. You can find the port of the laser engraver to create in the Device Manager of Windows system.



b. If the COM port doesn't show on the interface, please check whether the driver is installed and please install the CH340 driver.

3

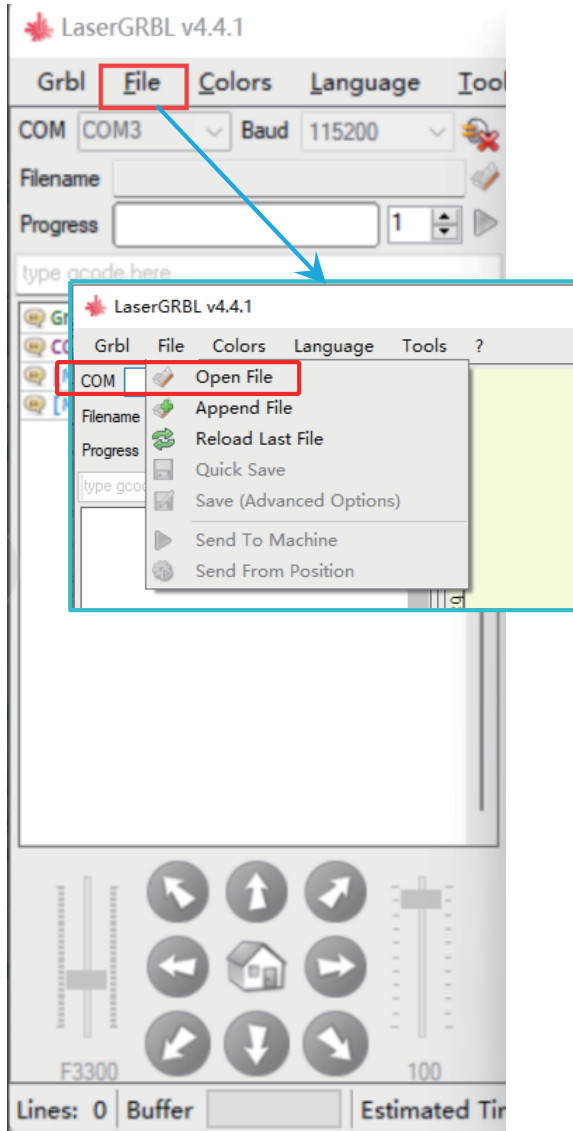
Reset



4

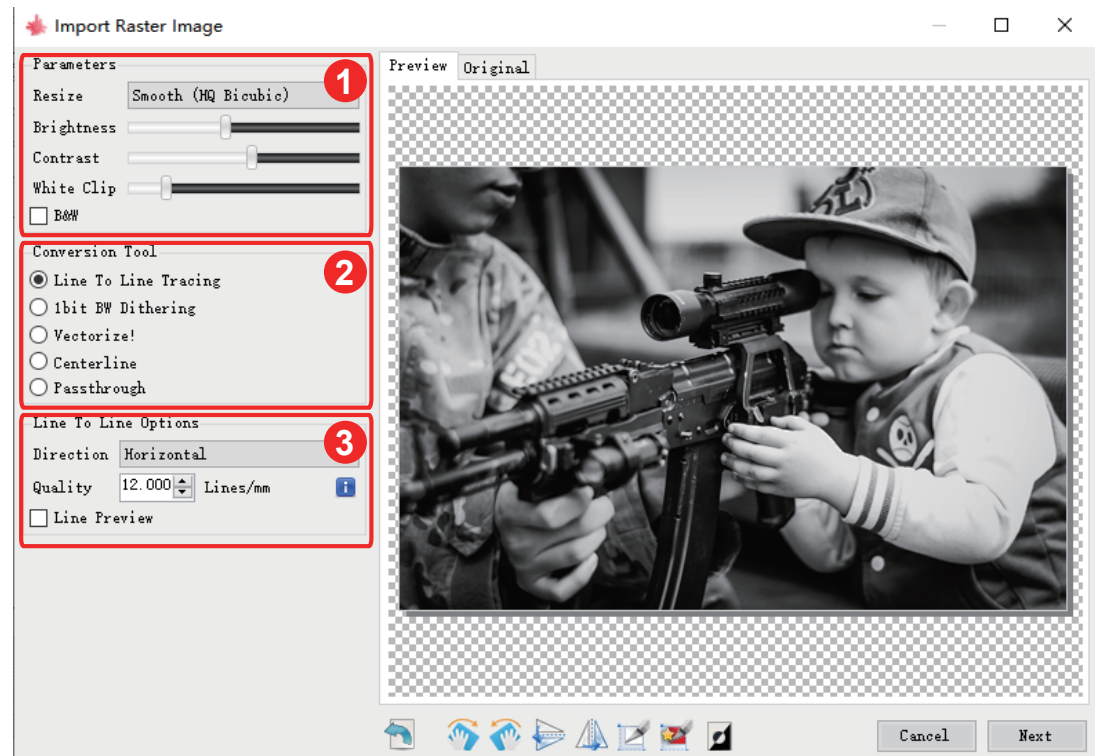
Import images

1. Open File and add the image to be engraved



2. Set engraving parameters (please see the next page for details)

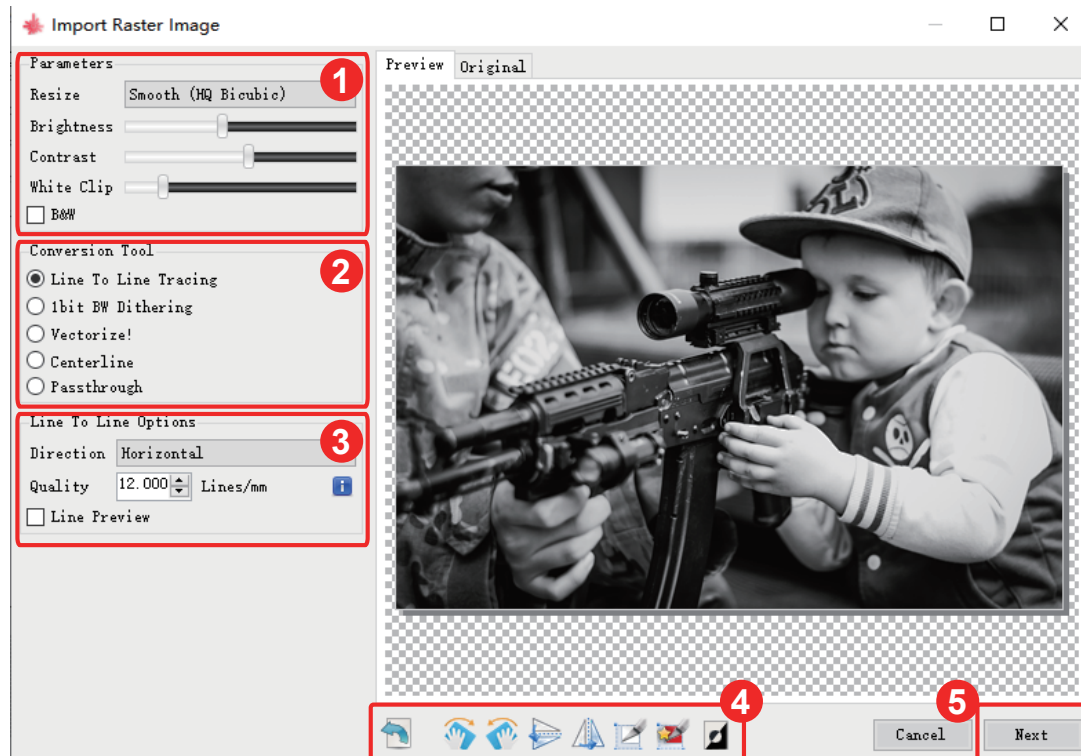
- 1 Adjust the brightness and contrast of the picture according to the set mode; (if you wanna use the cut mode, please select vector image and no fill)
- 2 Set up conversion tools (e.g. grayscale mode, dot matrix mode, vector graphics, etc.)
- 3 The higher the quality of the picture, the better the engraving effect will be;



5

Setting parameters 1

1. Please carefully set the engraving parameters



1 LaserGRBL can adjust the brightness, contrast, and other attributes of the target image. When the parameters are adjusted, you can see the actual effect in the preview window on the right and can try to adjust it to what you think is satisfactory.

2 The engraving mode is usually selected as "progressive tracking" and "1bit jitter". 1-bit jitter is more suitable for engraving grayscale images. If you want to cut, please select vector or centerline engraving mode and choose no fill.

3 Engraving quality essentially refers to the line width of the laser scan. This parameter depends primarily on the size of the laser spot of the engraver. The Z1 engraver applies a square spot of .08mm. Therefore, the recommended engraving quality range is 8-20 (commonly 12).

4 At the bottom of the preview window, you can also rotate, mirror, and cut the image.

5 After completing the above settings, click next to enter the engraving speed, engraving energy, engraving speed to set the size of the engraving

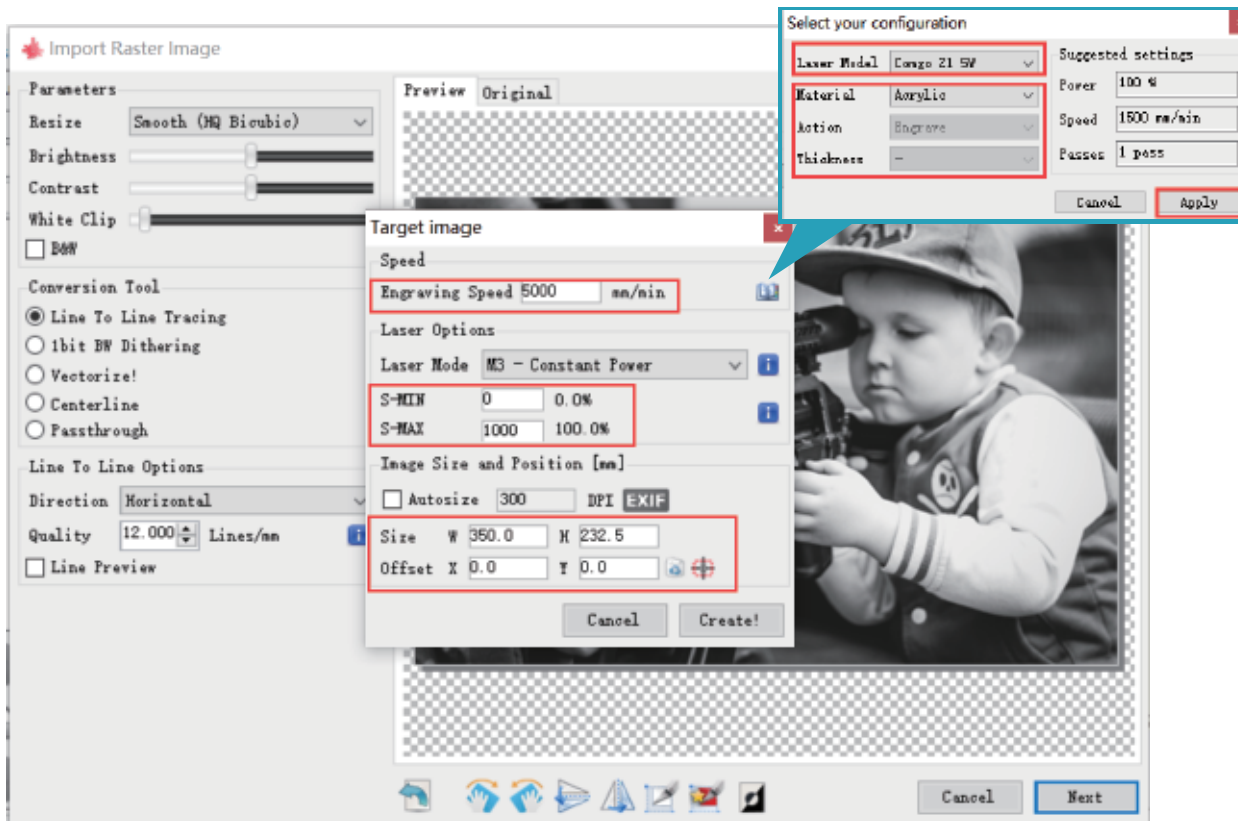
5

Setting parameters 2

2. After completing the previous step of setting, then select the carving speed, carving power, and the carving size (The carving power can be set according to the recommended parameters)



Tip: Please make sure the size of the graphics you need to engrave and cut does not exceed 400*400



1: The engraving speed is recommended to use 100-5000. This is the best value engraving after our repeated experiments. Different materials correspond to different engraving speeds; Of course, you can increase or decrease this speed preference according to your needs. A faster speed will save engraving time, but a slower speed may bring about the opposite effect of reduced engraving results.

2: In the laser mode selection, there are two commands M3 and M4 for laser on. It is recommended to use the case where the M4 command is recommended for engraving in 1bit jitter mode, and the M3 command is recommended for other modes. If your laser only has M3 command, please check if the laser mode configuration is turned on in GRBL. For the description of GRBL configuration, please refer to the official description of LaserGRBL.

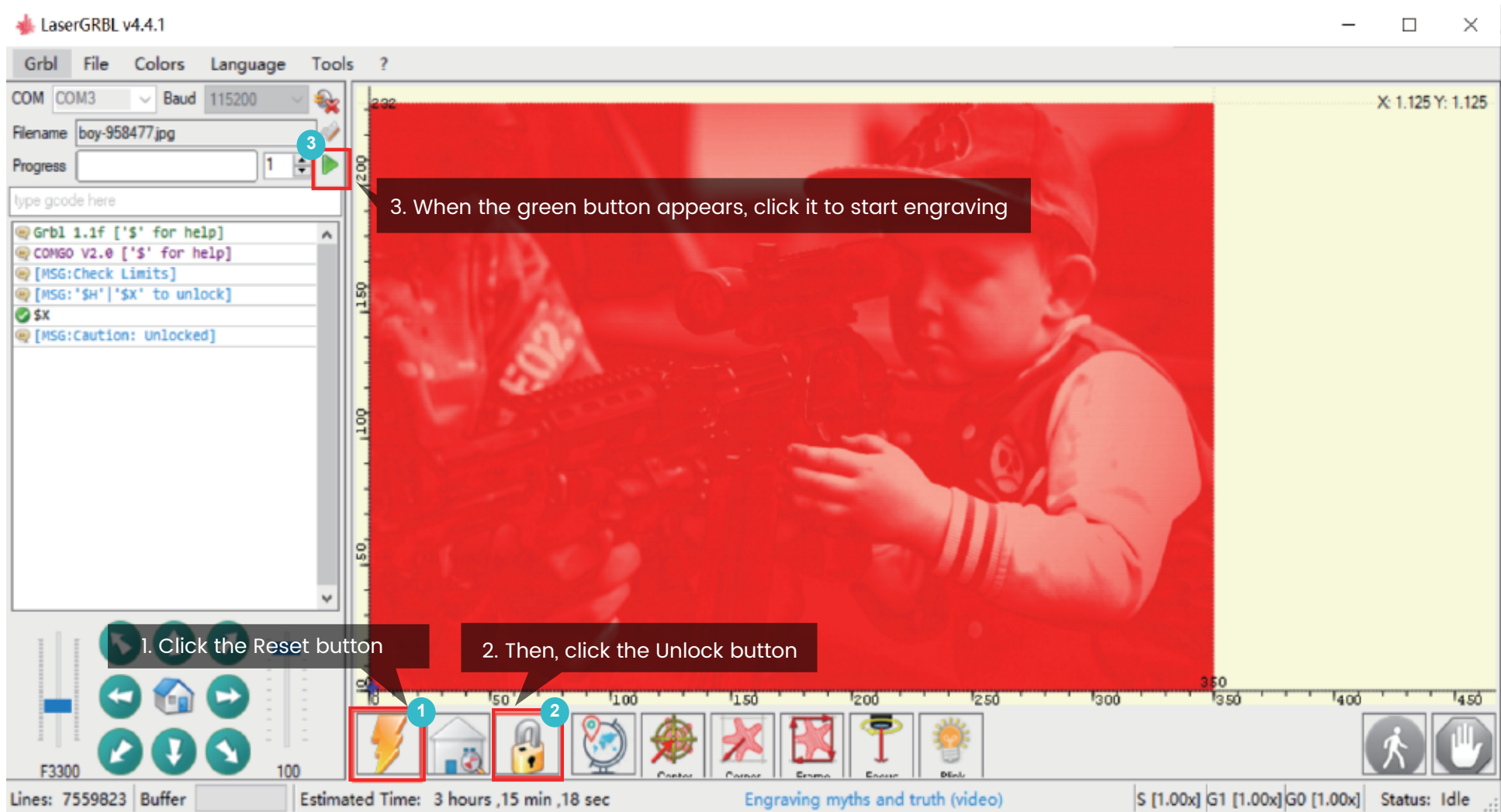
3: The choice of engraving energy depends on the different materials. We have attached the common material parameters at the end of the engraving and cutting manual for reference; you can also select our product model as shown in Figure 3, choose engraving or cutting, and in selecting the material, the system will provide us with the default parameters.

4: Finally set the size to be engraved, click the "Create" button to complete all the settings of the engraving parameters

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Start engraving 1

Manually move the laser head of the machine to the engraving position, click the reset button, then click the unlock button. When the green button appears, please click to start engraving



5

Start engraving 2

1. Click to start engraving, please fill in the box with the number of repeat engravings



to start engraving, please fill in the box with the number of

Start engraving and control

Resume Job

LaserGRBL detected last job was not completed!
Cause: **ManualReset**

LaserGRBL can start this job again from beginning or try to resume from last known position. As it is not always possible to determine the best restart position we let you to take the final decision. Last speed, power and laser state are recovered automatically.

Options	Line #
☐ Start again from beginning [safe]	1
☒ Resume some lines before the stop	221602
☐ Resume from last command sent	221630
☐ Resume from specific line	221630

☐ Redo Homing [H]

Cancel OK

2. Emergency stop: Priority recommended to use the reset button. If you wanna continue engraving, please click the reset button, unlock button and then the start button to start again. Or you can also choose to start from the stop position (When it stops during carving, it is better not to change the position of the carving machine)

Power [1.00x] Linear [1.00x] Rapid [1.00x]

Lines: 7559823 Buffer Projected Time: 4 hours, 53 min, 49 sec Status: Run

3. The laser energy adjustment, line width adjustment and speed adjustment during the engraving process are shown in the picture

6

Engraving Parameters

5W laser module engraving parameters

Mode	Materials	Power (%)	Speed (mm/min)	NOTE
Engraving	Wood board	100	2500	
	Bamboo	100	2500	
	Solid wood	100	2500	
	Leather	100	2000	
	Glass	100	700	Te surface needs to be painted black or heat transfer paper applied.
	Geramic	100	700	The surface needs to be heat transfer paper applied.
	Acrylic	100	1500	For transparent surface need to be painted black.
	Stainless steel	100	300	
	Anodized metal	100	800	
	Fabric	40	5000	
Cutting	2mm thick board	100	180	
	3mm thick board	100	120	
	4mm thick board	100	90	Cutting thick boards can reduce the focal length appropriately.
	Cardboard	100	1500	
	Leather	100	100	
	Fabric	100	1500	

6

Engraving Parameters

10W laser module engraving parameters

Mode	Materials	Power (%)	Speed (mm/min)	NOTE
Engraving	Wood board	100	5000	
	Bamboo	100	5000	
	Solid wood	100	5000	
	Leather	100	4500	
	Glass	100	1200	Te surface needs to be painted black or heat transfer paper applied.
	Geramic	100	1200	The surface needs to be heat transfer paper applied.
	Acrylic	100	2500	For transparent surface need to be painted black.
	Stainless steel	100	600	
	Anodized metal	100	1500	
	Fabric	20	5000	
Cutting	2mm thick board	100	300	
	3mm thick board	100	250	
	4mm thick board	100	200	
	7mm thick board	100	90	Cutting thick boards can reduce the focal length appropriately.
	Cardboard	100	2500	
	Leather	100	2000	
	Fabric	100	2500	

7

Introduction of LaserGRBL



Reset button: You can click the reset button when need to pause the engraving or when there is an abnormal situation.



Return button: Click the button, the X, Y-axis will run to the mechanical origin. It is recommended that when in large size carving, you could click the button to return to zero before the engraving.



Unlock button: After resetting, you need to click the unlock button;



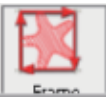
Origin button: When the button is clicked, the current position is taken as the origin.



Unlock button: After resetting, you need to click the unlock button;



Origin button: When the button is clicked, the current position is taken as the origin.



Preview button: When the button is clicked, the X and Y axes will be moved to the maximum square size of the engraving pattern.



Open Light button: Click the button and the laser will open. If there is no light, please select the light button, right-click the edit button and adjust the power F value

Lines: 7559823 | Buffer | Estimated Time: 3 hours ,15 min ,18 sec

Lines: The total number of lines of G code. The more lines, the longer the engraving time will be;

7

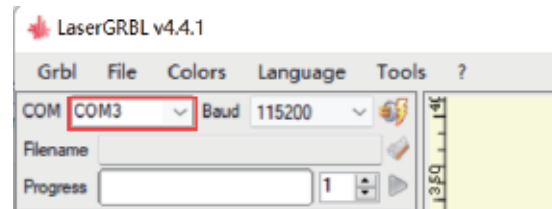
Troubleshooting



1: The product can't connect to GRBL;

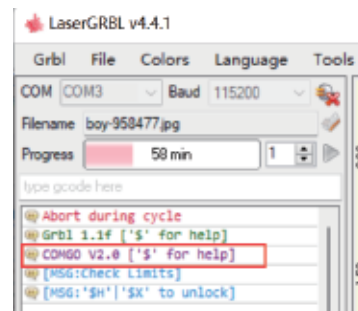
Solutions:

1: Confirm whether the driver (CH340) has been installed, and reinstall the driver; successful installation, USB connection products in GRBL is displayed COM port, you can also choose other ports to try to connect, as shown in the figure.



2: Confirm whether the baud rate in the setting parameter is 115200;

3: If it is the first time to install GRBL software, the above operations are unable to connect or disconnect immediately after connection, you can use Lightburn software to connect with check the product firmware version number, if it is COMGO V1.0, you only need to refresh the firmware (we recommend updating our latest firmware) https://drive.google.com/drive/folders/1YP-jvHf4-4DqBkkCXpYm6Bc9hpi_QqQI1?usp=sharing;



4: If, during use, you find that Lightburn/GRBL and other software cannot be connected under normal operation, replace the USB cable;

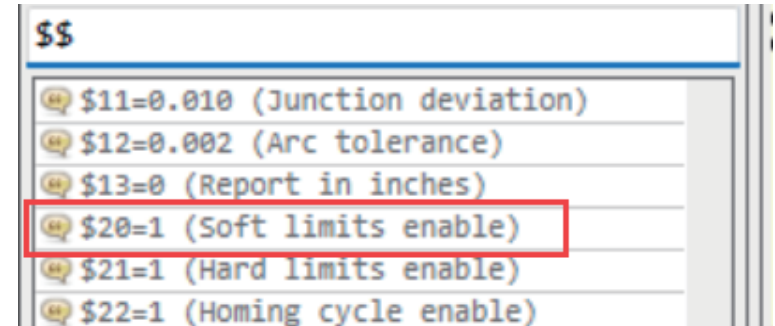
7

Troubleshooting

- 2: When grayscale engraving and the zero return engraving is used as the starting point, the X-axis keeps hitting the edge of the product after a period of normal engraving

Solutions:

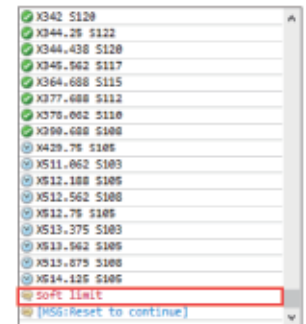
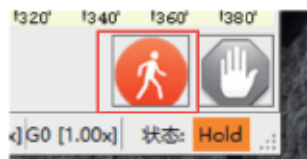
- 1: Please check whether the setting size of the engraving image is more than 400*400;
- 2: Enter \$\$ and check whether it is \$20=1. If not, then modify \$20=1 to start the soft limit switch, which can prevent the carving range from exceeding 400 when set by human or other abnormal conditions;



- 3: If the machine does not move during the engraving process;

Solutions:

- 1: Please check whether GRBL is connected to the machine;
- 2: Please check whether the product power supply has power supply, check the red indicator;
- 3: If there are no problem with the above operations, please check whether there is a red alarm in the lower right corner of GRBL software. If so, it means the gyro alarm has been triggered, please enter \$\$ value to check \$140 value. It is recommended to set it to 16 after clicking the start button to lift the alarm.



- 4: If none of the above operations reveal a problem, check whether the progress meter triggers a soft limit. If so, please click the reset button, the unlock button and click start engraving.