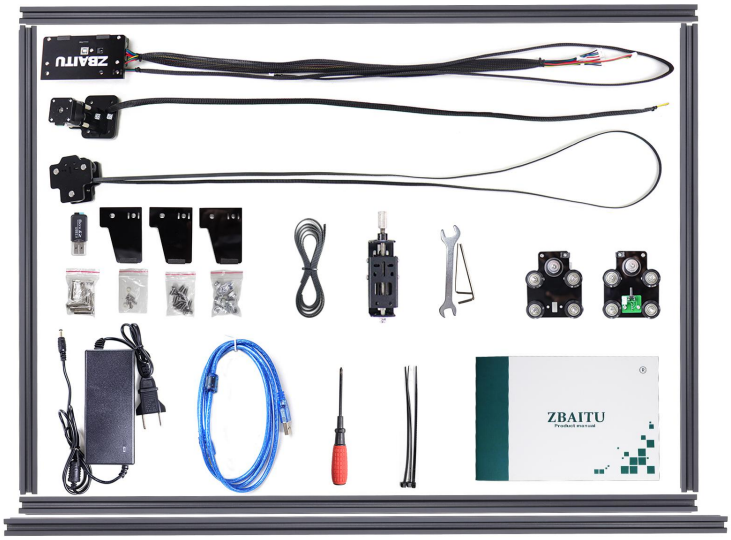
Precautions when using this product

1. When the laser engraver is working, the operator should not leave it alone, just in case the materials being carved catch fire.
2. Please set up laser engraver in the fireproofing area, with good ventilation.
3. Please keep minors (especially kids younger than 14 yours old) away from this laser engraver. Minors of any age should not use this laser without direct Adult supervision and proper eye protection
Please avoid strongly impact on the machine.
4. Please do not touch the laser beam with your hands or any other objects you do not wish to engrave/burn/cut. Serious physical harm is possible if used improperly.
5. Please do not touch the heat sink, when the laser engraver just stop working, it may scald your hands.
Use the laser engraver in a room that can be closed by a door and ensure that neither laser beams nor stray light can penetrate through the windows.
6. Please keep the lens clean to maintain its best performance, please use a soft cloth to gently wipe it.

M81 Description steps



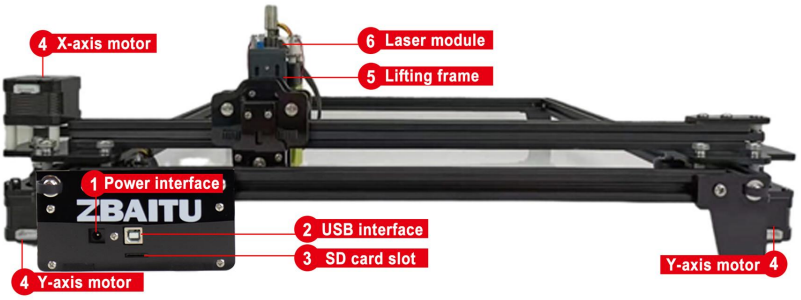
1. Accessories list

Parts	Description
	USB data cable： To connect to the machine through a computer, connect one end of the USB data cable to the USB port of the machine, and the other end to the USB port of the computer.
	12V-5A Power Adapter： To use the machine, connect the adapter to the machine's power interface, connect the plug to the adapter, and insert the adapter into an AC power outlet.
	SD card + SD card reader: used for offline engraving
	Screwdriver

2. parts list

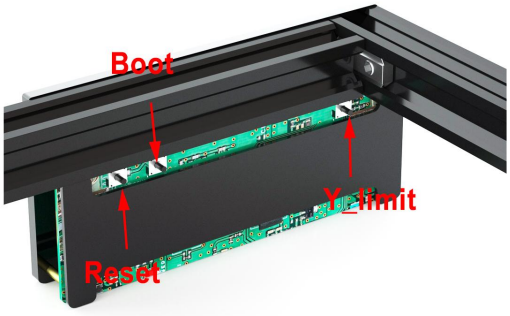
parts	name	specifications	quantity
	L-shaped corner groove		4
	Screw the nut by hand	M5	8
	screw	M5*10	10
	Stainless steel gasket	M5*14*1	4
	Corner slot nut	M5	1
	screw	M3*8	2
	screw	M3*10	2

3. Machine description

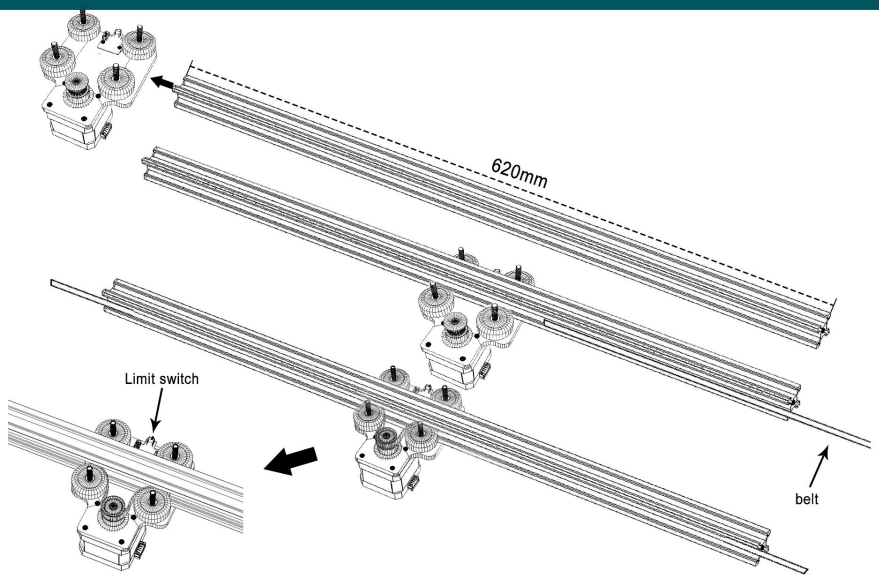


1. Power interface: connect the power supply to supply power to the machine
2. USB interface: connect the computer to transmit data and control the machine through the computer
3. SD card slot: store gcode code to complete offline engraving
4. X、Y-axis motor: control the precise movement of the laser to complete the engraving
5. Lifting frame: adjust the distance between the laser module and the carved object to achieve the best focal length
6. Laser module: emit laser for engraving or cutting

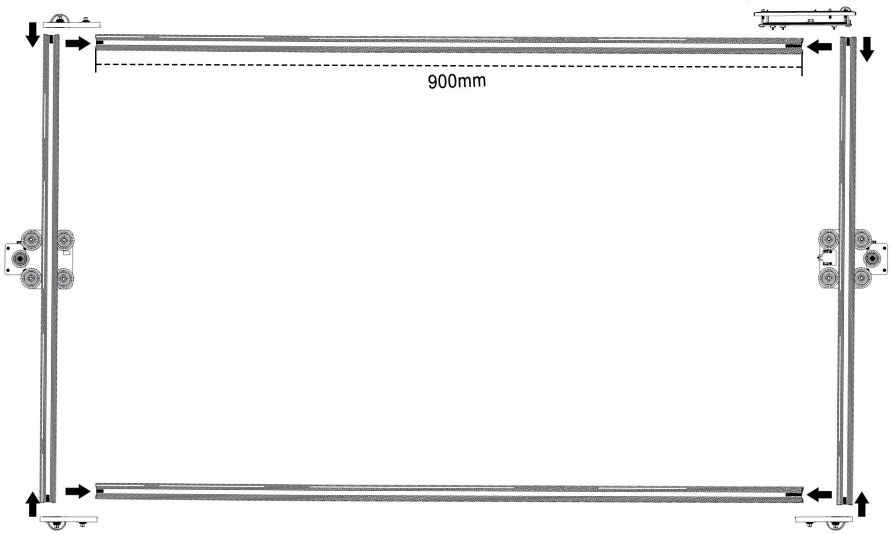
4. limit switch



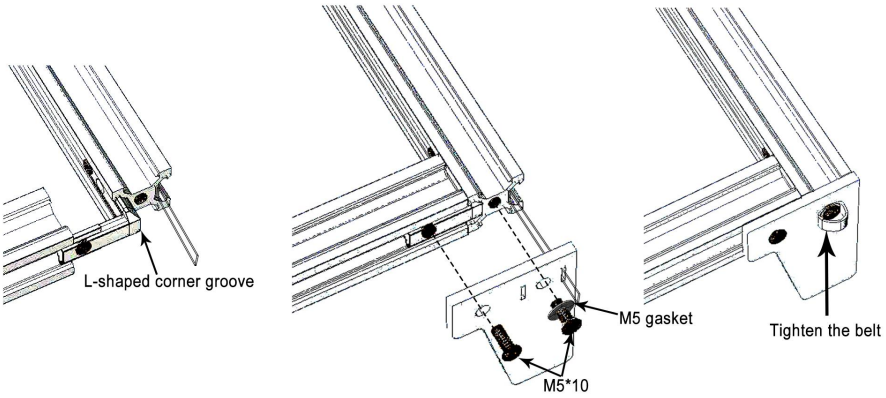
5. Assemble the X-Y axis slider



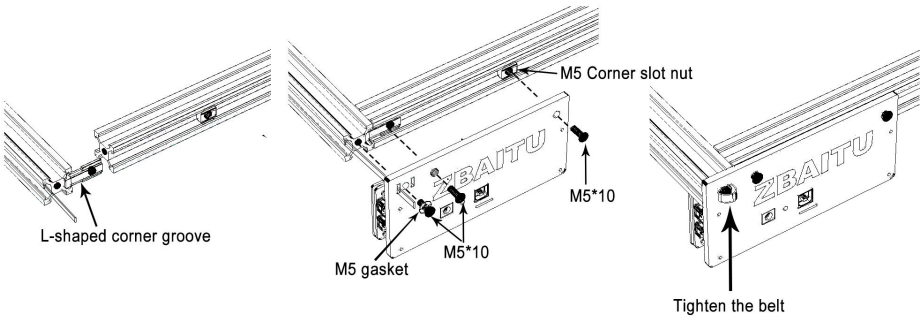
6. Frame mount



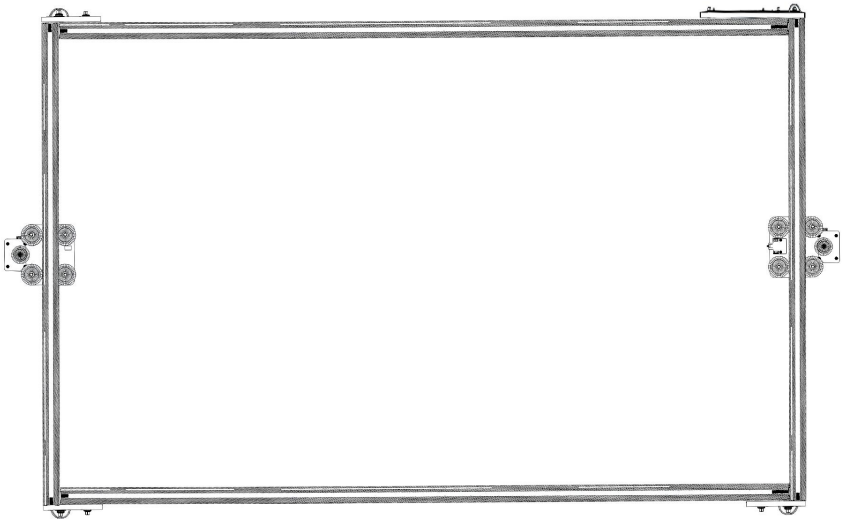
7. Support foot installation



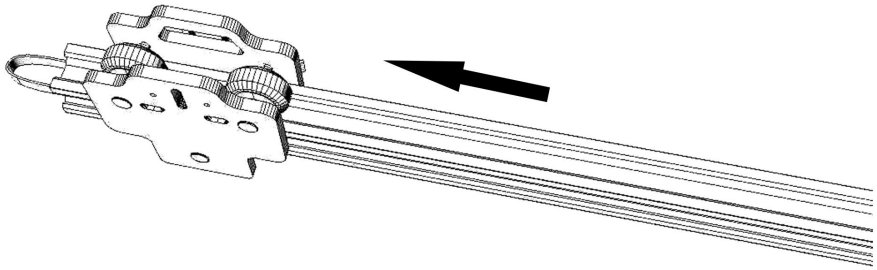
8. Motherboard installation

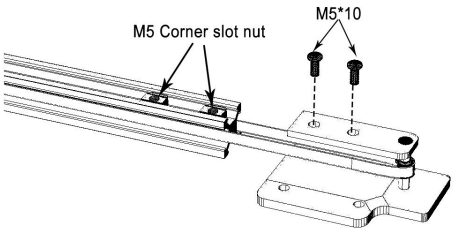


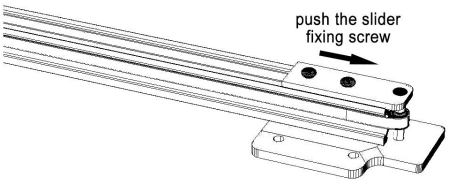
9. The overall installation of the frame is completed



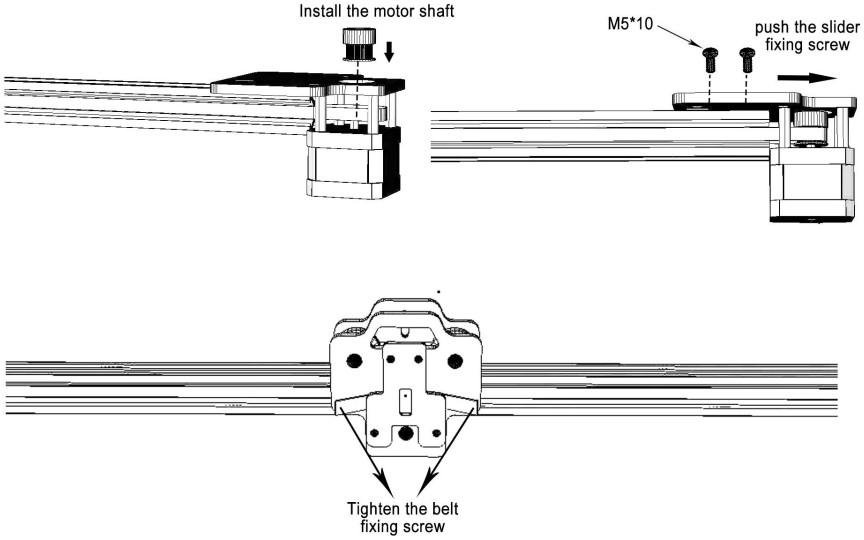
10. Beam installation



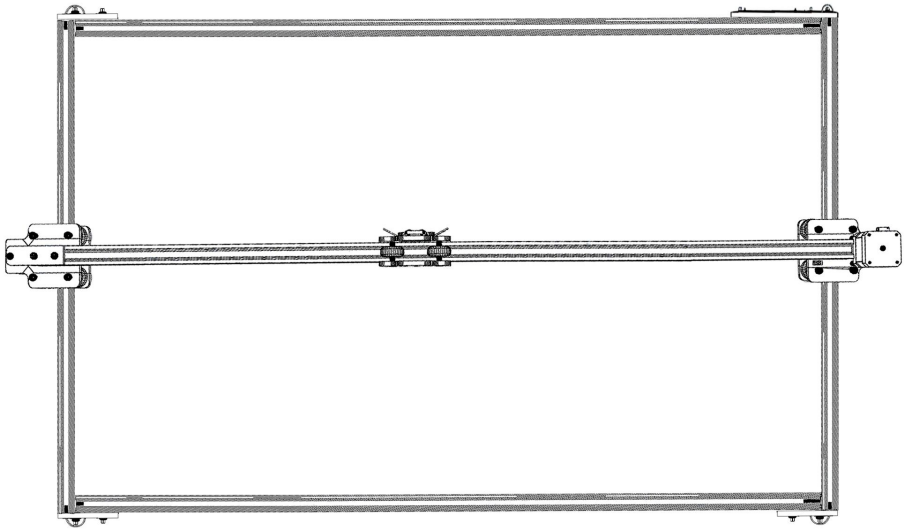




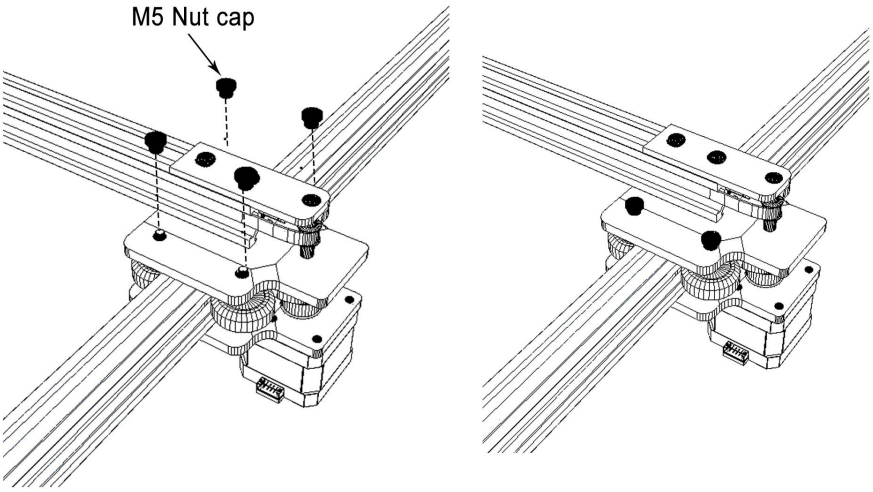
11. Cross beam motor installation



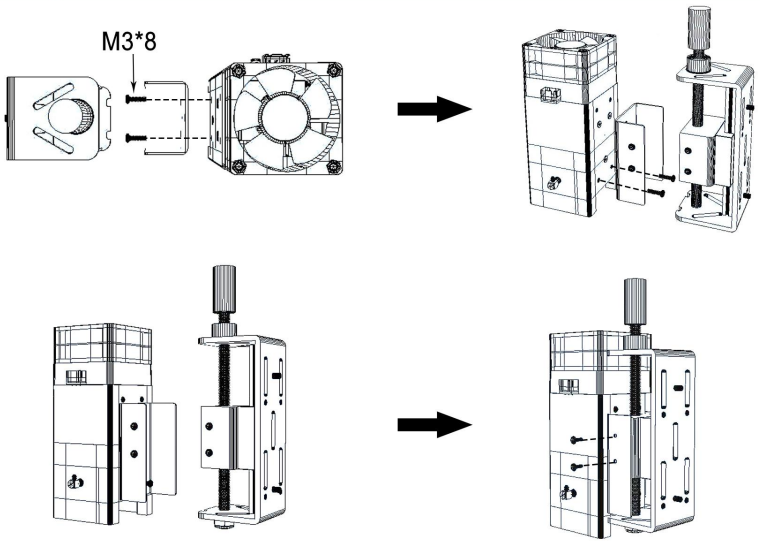
12. Beam installation completed



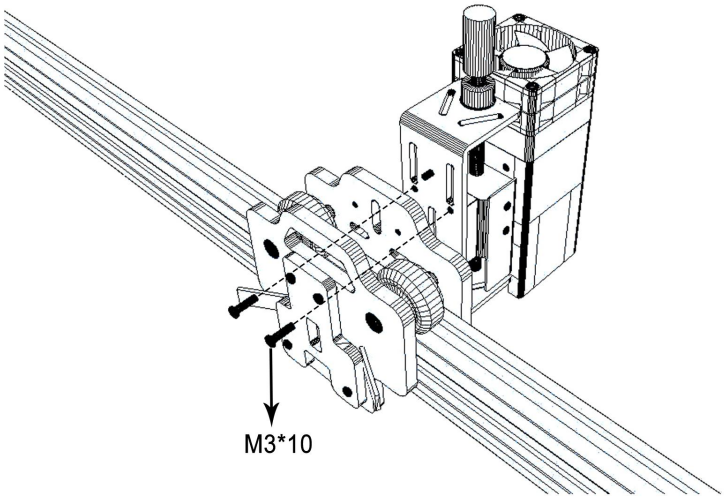
13. Fixing the screws at both ends of the beam



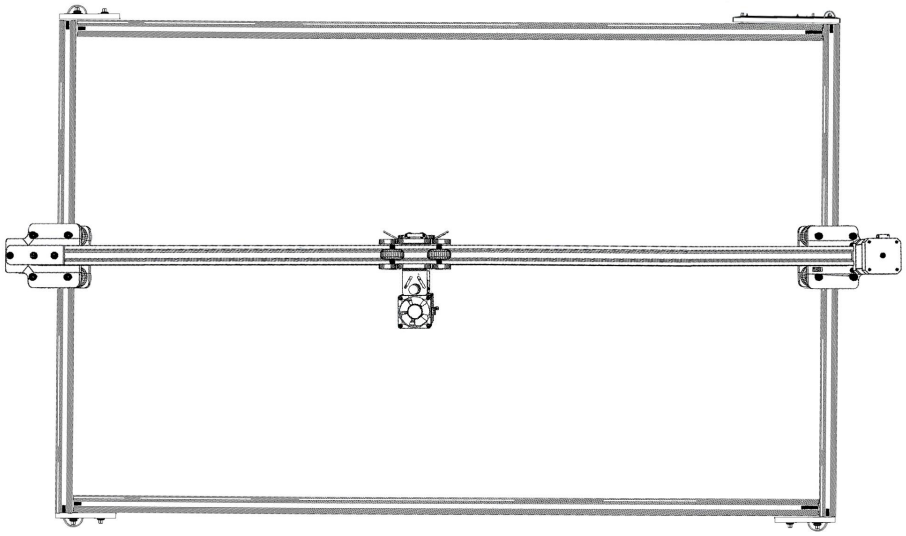
14. Lifting frame installation



15. Laser Module Installation



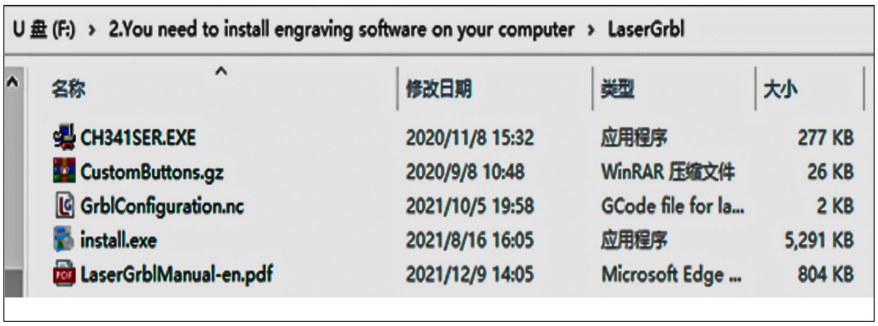
16. Machine installation is complete



17. Software Installation

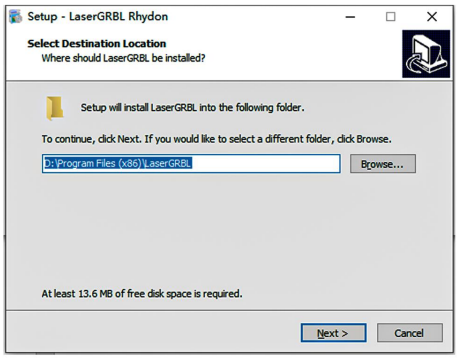
a) The Software is in the SD card, path: \2.You need to install engraving software on your computer\LaserGrbl\ install.exe.

1.Or Download the latest version LaserGrbl from https://lasergrbl.com/

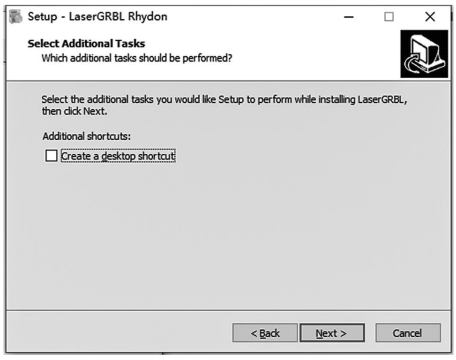


b) Software Installation

1.Double-click install.exe to start installing

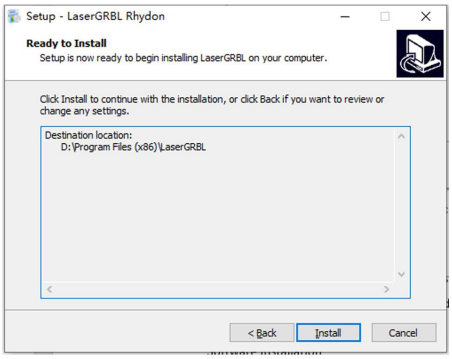


2.Choose the location you want to install and click "Next"

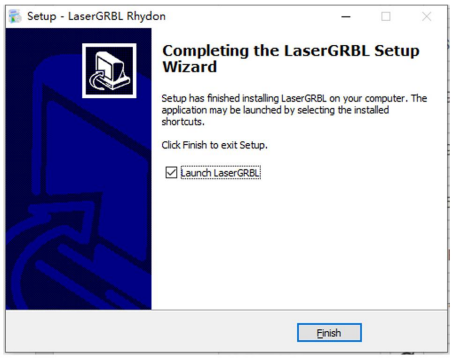


3.Click "Create a desktop shortcut" and then click "Next"

4.Click "Install"

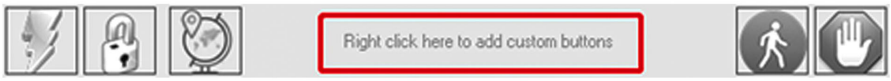


5.Wait for the installation to complete



c) Import Custom Buttons

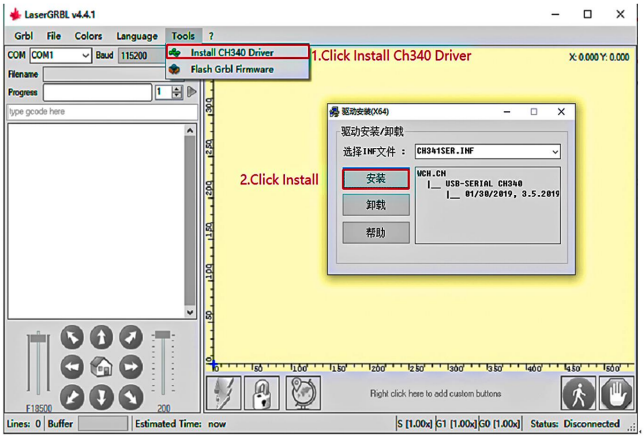
1. Open LaserGrbl
2. Right click the add Custom button in the red box area



3. Select Custom button path: \2.You need to install engraving software on your computer\LaserGrbl\ CustomButtons.gz

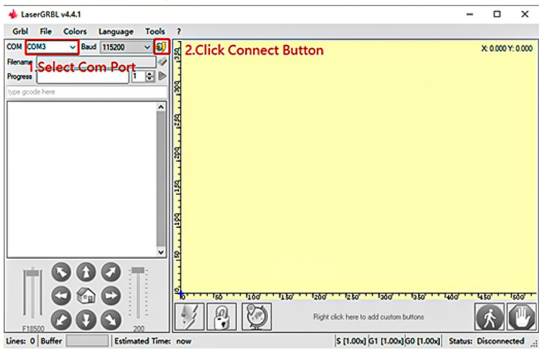
d) USB Driver Installation

1. Click Install Ch340 Driver
2. Click Install, wait for the installation to complete



18. Operation Instructions

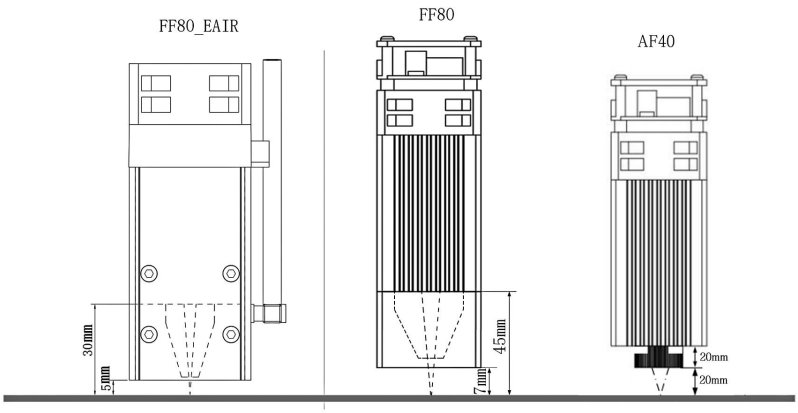
a) You can refer to the usage in the https://lasergrbl.com/. Select com (This com will be automatically recognized by the computer.) and click the connect button to connect



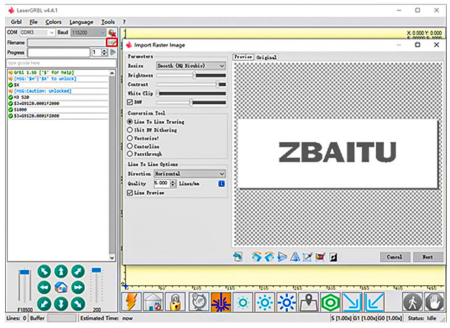
1. Turn on the machine power
2. Connect one end of the data cable provided by us to the USB port of the machine and the other end to the USB port of the computer
3. Open the computer operating software and click the connect button to connect

b) Engraving Picture

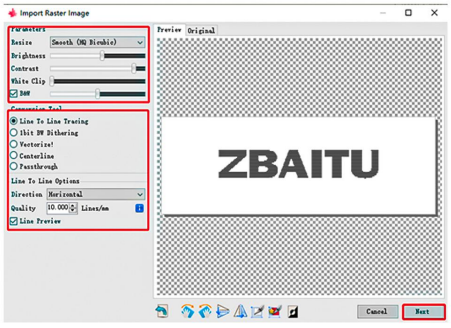
1. Adjust the focal length to the best, see [3. Adjust the laser focal length] in the SD card for details. Operation method, adjust the focus according to the following figure.

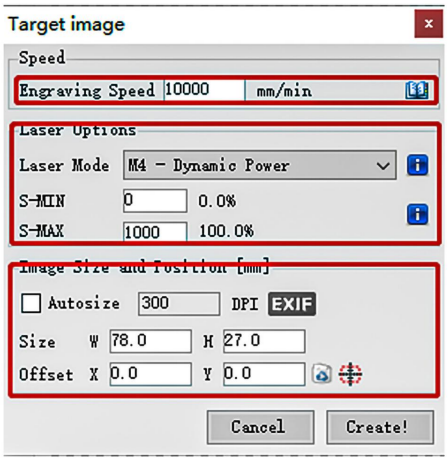


2. Click to open the file or drag in the picture / gcode file



3. Set picture conversion parameters





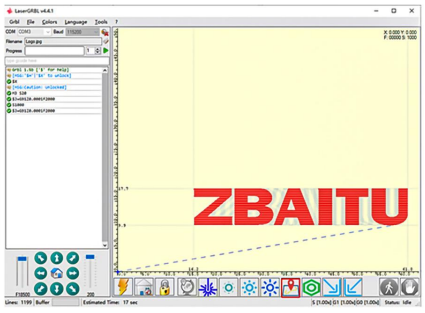
4. Set engraving parameters

Speed setting:

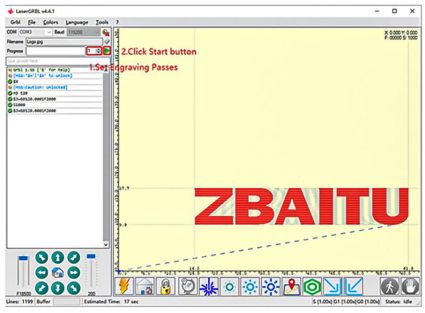
Plywood engraving: 10000mm / min

Stainless steel engraving: 600mm / min

5. Trace the Boundary, determine engraving position

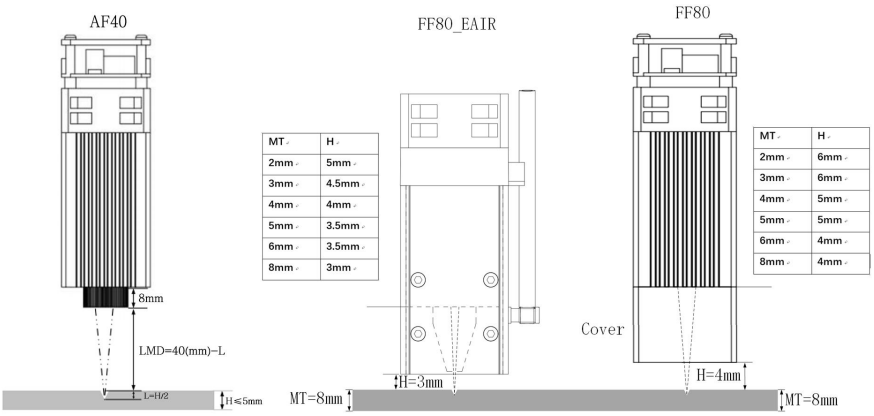


6. Set Engraving Passes Click the start button to start engraving



c) Outline Cutting

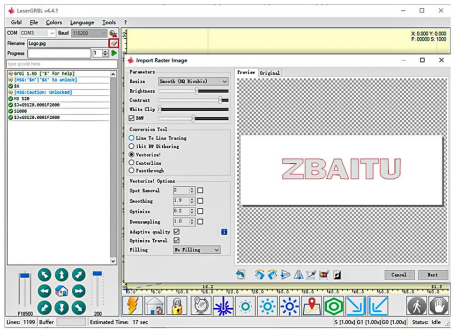
1. Adjust the focal length to the best, see (3.Adjusting Laser focus Length) in the SD card for specific operation methods. For example, 80W module, adjust the focal length according to the following figure.



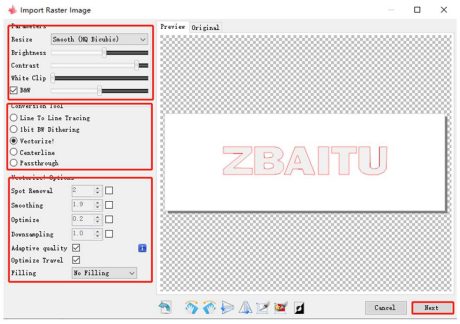
MT	H
2mm	5mm
3mm	4.5mm
4mm	4mm
5mm	3.5mm
6mm	3.5mm
8mm	3mm

MT	H
2mm	6mm
3mm	6mm
4mm	5mm
5mm	5mm
6mm	4mm
8mm	4mm

2. Click to open the file or drag in the picture / gcode file

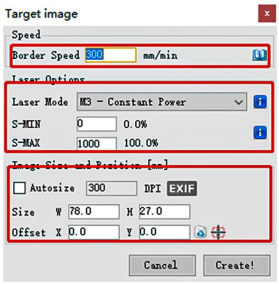


3. Set picture conversion parameters



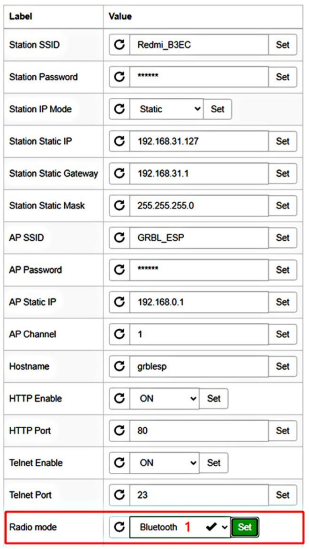
4. 4. Cutting parameter settings:

Material	Cutting Speed	
	AF40	AF80
Plywood 2mm	160mm/min, S1000,1Pass	480mm/min, S1000,1Pass
Plywood 3mm	120mm/min, S1000,1Pass	480mm/min, S1000,1Pass
Plywood 4mm	100mm/min, S1000,1Pass	480mm/min, S1000,1Pass
Plywood 5mm	120mm/min, S1000,2Pass	480mm/min, S1000,1Pass
Plywood 8mm	120mm/min, S1000,3Pass	480mm/min, S1000,1Pass
Plywood 18mm	120mm/min, S1000,8Pass	480mm/min, S1000,3Pass
Bitch ply 3mm	240mm/min, S1000,1Pass	480mm/min, S1000,1Pass
MDF board 3mm	120mm/min, S1000,2Pass	480mm/min, S1000,1Pass
MDF board 5mm	120mm/min, S1000,4Pass	120mm/min, S1000,2Pass
MDF board 8mm	120mm/min, S1000,5Pass	120mm/min, S1000,3Pass
Black acrylic plate 3mm	120mm/min, S1000,2Pass	120mm/min, S1000,1Pass
Black acrylic plate 3mm	120mm/min, S1000,4Pass	120mm/min, S1000,2Pass



d) Offline Engraving

ESP3D-WEBUI connects to your engraving machine through WIFI_AP or WIFI_STA, and operates the engraving machine to complete the engraving operations you need through visual operations. And provides a variety of engraving and printing modes to add more elements and beauty to your work.
*ESP3D-WEBUI need micro SD store the gcode.



Connection mode 1 (wired):

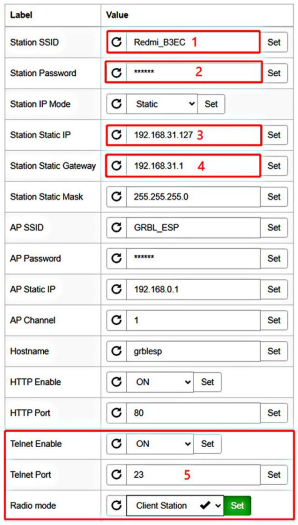
1. Turn on the machine power
2. Connect one end of the data cable provided by us to the USB port of the machine and the other end to the USB port of the computer
3. Open the computer operating software and click the connect button to connect

Connection mode 2 (Bluetooth):

1. Turn on the machine power
2. Open the WIFI connection list of mobile phone or computer
3. Select the network "GRBL_ESP", password: 12345678 . (please disconnect the wired network for PC), and wait for the network connection
4. Then open the browser and enter the IP address of the controller ("192.168.0.1" in the example) in the address bar to open the Web control interface
5. Set the parameters as shown below

(Set the broadcast mode bit -Bluetooth)

4. After the setup is completed, restart
5. Turn on the computer, look for bluetooth 【btgrblesp】, and connect.
6. Open the operating software, select the corresponding serial port and click the connect button to connect



Connection mode 3(WIFI_AP mode):

1. Turn on the machine power
2. Open the WIFI connection list of mobile phone or computer
3. Select the network "GRBL_ESP", password: 12345678. (please disconnect the wired network for PC), and wait for the network connection
4. Then open the browser and enter the IP address of the controller ("192.168.0.1" in the example) in the address bar to open the Web control interface

Link mode 4(WIFI_STA mode):

1. Turn on the machine power
2. Open the WIFI connection list of mobile phone or computer
3. Select the network "GRBL_ESP", password: 12345678. (please disconnect the wired network for PC), and wait for the network connection
4. Then open the browser and enter the IP address of the controller ("192.168.0.1" in the example) in the address bar to open the Web control interface
5. Set the parameters as shown below

a) Set WiFi name
b) Set WiFi password
c) Set that address of the control panel in the same segment of the route
d) Set Telnet parameters

6. After the setting is completed, restart, then open the browser and enter the IP address of the controller in the address bar ("192.168.31.127" in the example) to open the Web control interface

a)Set WiFi name
b)Set WiFi password
c)Set that address of the control panel in the same segment of the route
d)Set Telnet parameters
6.After the setting is completed, restart, then open the browser and enter the IP address of the controller in the address bar ("192.168.31.127" in the example) to open the Web control interface

1. safety matters

1.It is forbidden to directly irradiate the eyes of human beings or animals, otherwise it will cause harm to the eyes!
2.Do not irradiate human body, animals, clothes, valuables, etc., otherwise it will cause injury or damage!
3.It is forbidden to be used by children or people who have no ability to operate!
4.It is forbidden to use in places with inflammable and explosive articles or combustible gases, so as to avoid fire or explosion!
5.It is forbidden to look directly at the laser focus when engraving the machine. If you need to observe, please wear protective glasses!
6.Never look at the laser focus for a long time, otherwise it will affect your eyesight!
7.Please turn off the power when not using the machine.

2.Carving instructions

1.Pay attention to the accuracy of focal length before carving!
a)30W, 40W-PRO adjustable focus module, the distance between the lens and the sculpture is 20-40 mm.
b)The distance between the 40W-PRO fixed-focus 20mm lens and the carving object is 20mm, so this module can be carved well
c)The distance between 40W-PRO fixed-focus 40mm lens and engraving is 40mm, so this module can cut well
d)The distance between 80W fixed-focus 45mm lens and engraving is 45mm, and this module is the best for cutting
2.In theory, the machine can work for a long time, but in order to better protect the laser head and prolong its service life, it is recommended to work for 2 hours and rest for 2 minutes

3. If you have any questions, you can contact customer service (), or you can contact us by email on the website "" .Contact informationcontact us

3.Maintenance

1. Do not use the machine in damp/hot places.
2. Do not touch and operate the machine with wet hands.
3. Please wipe the lens of the machine regularly with a cotton swab dipped in alcohol to protect the lens.

4.Contact us

1. Enterprise name: ZBAITU
2. Address: Room 501, Building C, Boxing Industrial Zone, Gongye West Road, Minzhi Street, Longhua District, Shenzhen
3. Email： zbaitu@zbaitu-tech.com

19. AF40 cutting parameters

AF40	
Material	Cutting Speed
2mm Plywood	480mm/min,S1000,1Pass
3mm Plywood	420mm/min,S1000,1Pass
4mm Plywood	360mm/min,S1000,1Pass
5mm Plywood	240mm/min,S1000,1Pass
8mm Plywood	120mm/min,S1000,1Pass
18mm Plywood	120mm/min,S1000,8Pass
3mm Bitch ply	240mm/min,S1000,1Pass
3mm MDF board	120mm/min,S1000,1Pass
5mm MDF board	120mm/min,S1000,2Pass
8mm MDF board	120mm/min,S1000,3Pass
3mm Black acrylic plate	120mm/min,S1000,1Pass
5mm Black acrylic plate	120mm/min,S1000,2Pass

20. FF80 cutting parameters

FF80	
Material	Cuttaing Speed
2mm Plywood	480mm/min,S1000,1Pass
3mm Plywood	420mm/min,S1000,1Pass
4mm Plywood	360mm/min,S1000,1Pass
5mm Plywood	240mm/min,S1000,1Pass
8mm Plywood	120mm/min,S1000,1Pass
3mm MDF board	120mm/min,S1000,1Pass
5mm MDF board	120mm/min,S1000,2Pass
8mm MDF board	120mm/min,S1000,3Pass
10mm Pine board	180mm/min,S1000,2Pass
15mm Pine board	180mm/min,S1000,4Pass
20mm Pine board	180mm/min,S1000,10Pass
3mm Black acrylic plate	120mm/min,S1000,1Pass
5mm Black acrylic plate	120mm/min,S1000,2Pass
15mm Black acrylic plate	180mm/min,S1000,20Pass
Note: Due to the different hardness of wood used for plywood, this parameter is for reference only.	

21. FF80 EAIR cutting parameters

FF80 EAIR		
Material	Cutting Speed	Cutting Height
2mm Plywood	600mm/min,S1000,1Pass	5mm
	1800mm/min,S1000,3Pass	5mm
3mm Plywood	450mm/min,S1000,1Pass	4.5mm
	1200mm/min,S1000,3Pass	4.5mm
5mm Plywood	240mm/min,S1000,1Pass	4.5mm
	500mm/min,S1000,3Pass	4.5mm
8mm Plywood	120mm/min,S1000,1Pass	3.5mm
	360mm/min,S1000,3Pass	3.5mm
10mm Plywood	120mm/min,S1000,2Pass	2.5mm
10mm Pine board	90mm/min,S1000,1Pass	2.5mm
	270mm/min,S1000,3Pass	2.5mm
15mm Pine board	180mm/min,S1000,4Pass	2.5mm
20mm Pine board	180mm/min,S1000,10Pass	0.5mm
3mm MDF board	180mm/min,S1000,1Pass	4.5mm
	360mm/min,S1000,2Pass	4.5mm
	450mm/min,S1000,3Pass	4.5mm
5mm MDF board	120mm/min,S1000,2Pass	2.5mm
	200mm/min,S1000,3Pass	2.5mm
	360mm/min,S1000,4Pass	2.5mm
6mm Black acrylic plate	70mm/min,S1000,1Pass	4.5mm
15mm Black acrylic plate	180mm/min,S1000,18Pass	2.5mm
Note: It is more effective to add air-assisted cutting to the above cutting		