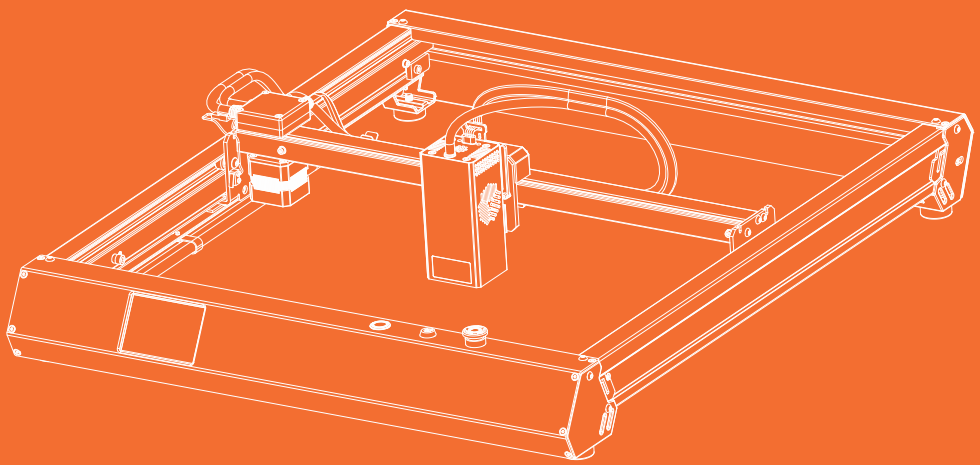
AlgoLaser Alpha MK2

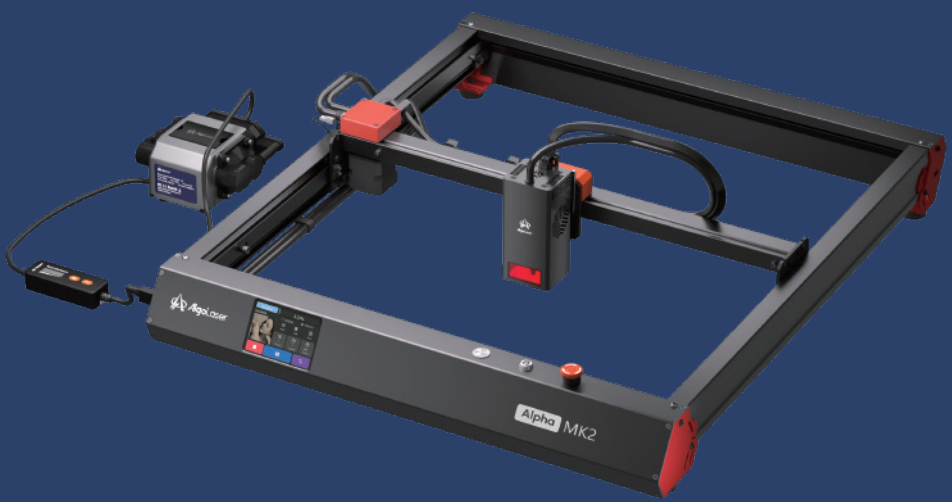
QUICK START GUIDE

Laser Engraver



Always read the instructions before you start.

CONTENTS



ENGRAVING

HAPPINESS

Thanks for choosing AlgoLaser!

We are so glad that it's you that gives it a home.

We have packed everything we have explored in laser engraving machines into the neatest form to help you harvest engraving happiness, obtain the greatest yield and realize your dream.

Tuston Tan

The Founder of AlgoLaser

Aftersale Policy

- **12-Months Limited Warranty**
  We provide 12 months warranty for every product from the date of purchase against defects in materials and workmanship. And we will offer repair or replacement service according to the product condition. Please note that this warranty does not cover damaged product caused by misuse or abuse.
- **Return or Exchange Policy**
  For detailed policy, please refer to the return and exchange policy on the platform you purchased from.
- **Misdelivery & Missing Parts**
  If you receive an incorrect product or discover missing parts after receiving the product, please contact our customer service. AlgoLaser will cover the shipping cost of the incorrect product or send the replacement parts.
- **Troubleshooting Support**
  AlgoLaser offers online troubleshooting guides that helps you to solve problems step-by-step. Please reach algolaser.com to get tutorial videos, FAQs, and tech support from professional engineers.

Aftersale Support

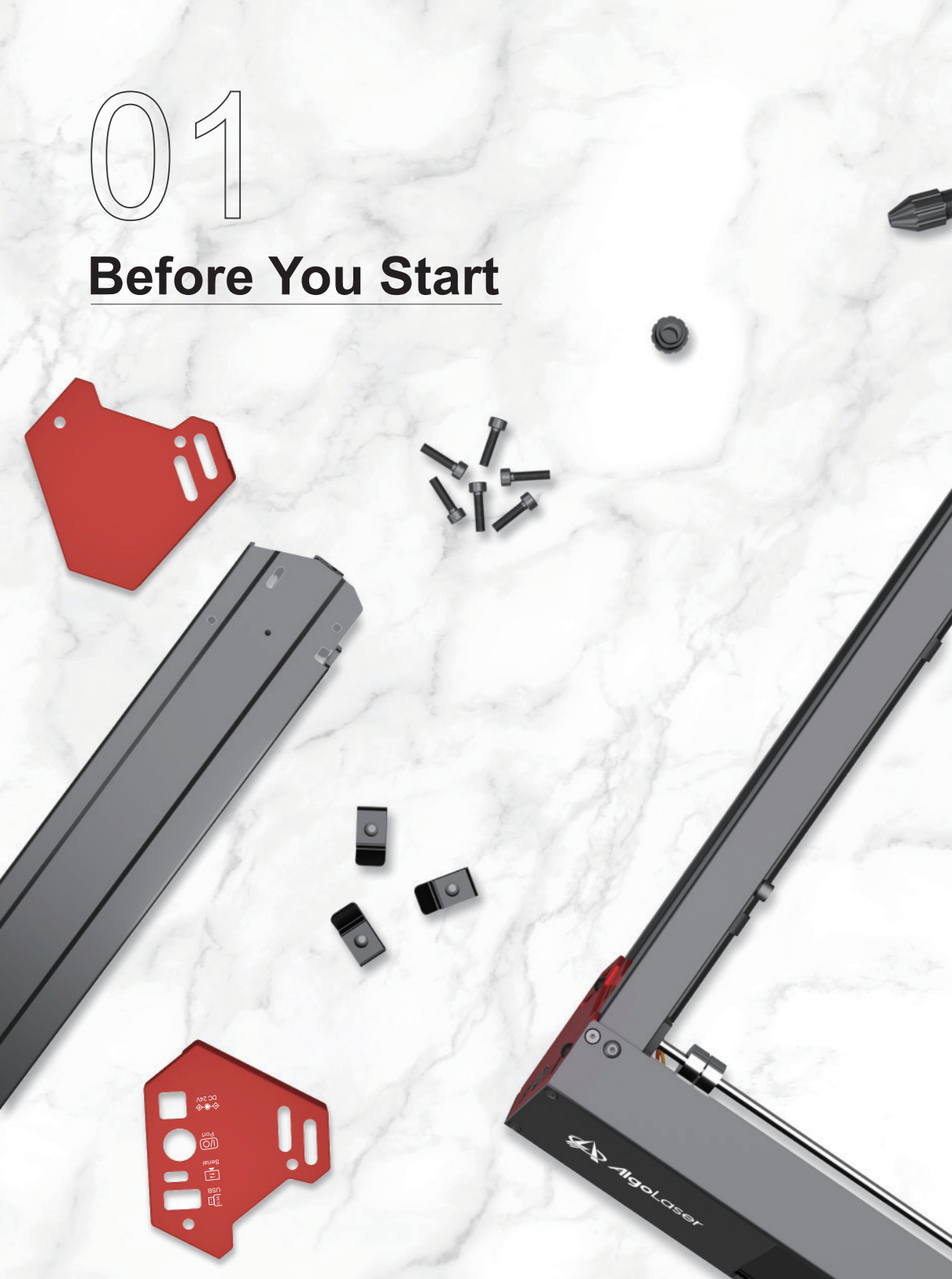
1. Please go to http://algolaser.com/support/ to submit your inquiry. To help engineer make faster judgment and provide effective solutions, please provide related pictures and videos within the inquiry.
2. Information needed:

Machine Model	Laser Module	Purchase Channel
Delivery Date	Computer System	Software
Problem Description, Video & Photo		

3. After submmitting, our engineer will reply you within 24 hours.

01

Before You Start



1.1 Disclaimer and safety Guidelines

1. The laser engraver emits laser light. Placing any living body under the laser emission port (marked with an orange warning sign) is strictly forbidden.

2. Patients with photosensitive epilepsy are prohibited from using or approaching the laser engraver.

3. When using the laser engraver, the operator and anyone near the machine must wear laser safety goggles. Operating the laser engraver without goggles' protection is not allowed. Our machine comes with a pair of safety goggles, but additional laser safety goggles need to be purchased separately. The goggles should offer wavelength protection of 400-445nm (±5nm), an outer diameter of +5, and a minimum L-level L5.

4. Avoid placing flammable materials near the laser engraver. When the laser engraver is running, closely observe it and avoid leaving it unattended to prevent the engraved objects from catching fire. Set up the laser engraver in a fireproof area and ensure proper ventilation. If possible, we recommend purchasing a fire extinguisher and keeping it nearby the machine.

5. Ensure there is enough space when operating the laser engraver. Engraving certain materials may produce smoke, so it's important to use exhaust equipment to vent the smoke out.

6. When the machine is running, avoid letting your body or other objects touch the laser-beam, as this may cause serious bodily injury or beam reflection. Do not touch the radiator, as it may still be hot even after the laser engraver has stopped working.

7. Do not allow children or teenagers to use the laser engraver alone, especially children under the age of 14.Adult supervision is required at all times.

8. The operating temperature range of the machine is -10°C to 40°C.

9. The use of the laser engraver carries a significant risk of fire. When operating the machine, please ensure that someone is available to handle any potential fire emergencies at all times.

1.2 Parts List

1.2.1 Machine

A 

Front Assembly * 1

B 
Left Y-Axis Assembly * 1

C 
Right Y-Axis Assembly * 1

D 
Rear Panel Assembly * 1

E 
X-Axis Assembly * 1

F 
Motor Extension Shaft * 1

G 
Coupling * 2

H 
M4X12 Screw * 17
M4X16 Screw * 2

I 
USB Cable * 1

J 
Power Cable * 1

K 
Power Adapter*1

L 
M2.5 Allen Key * 1
M3.0 Allen Key * 1

M 
Machine Key Set * 1

N 
Brush * 1
Wrench * 1

O 
Laser Goggle * 1

1.2.2 Laser module and Others

ALM-10BD(10W)Laser Module * 1

Air Assist Nozzle * 1

Laser Shield * 1

Air Pipe * 2

Focus Assist *1

Lens * 1

Thumb Screw * 1

ALM-20BDU(20W) Laser Module * 1

Lens *2

Lens Tool *1

Lens Finger Guard *2

AlgoLaser Air pump (AAP 1.0)

Seal Rin *2

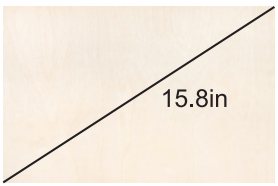
Focus Assist *1

Thumb Screw *1

Air Pipe *2

Air Pipe *1

1.2.3 Consumable



Plywood * 1

Acrylic * 1

Metal Card * 3

Cable Ties * 5

Hoop and Loop Tape * 3

* The above images are for reference only. Please refer to the actual product.

02

Machine Assembly

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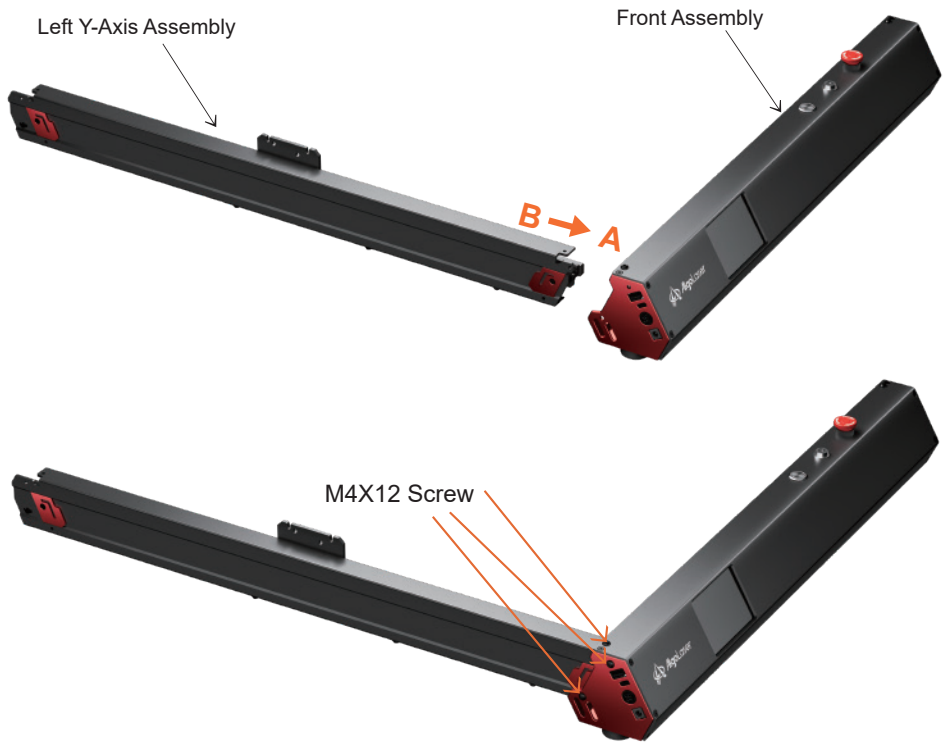
Assemble the Left Y-Axis Assembly

Precautions:
Be careful not to hit the motherboard of the front panel assembly.



Step 1: Mount B(Left Y-Axis Assembly) on A(Front Assembly) from the side and secure it with 3 screws in total from the top and the side.
Screw type: M4X12 Screw

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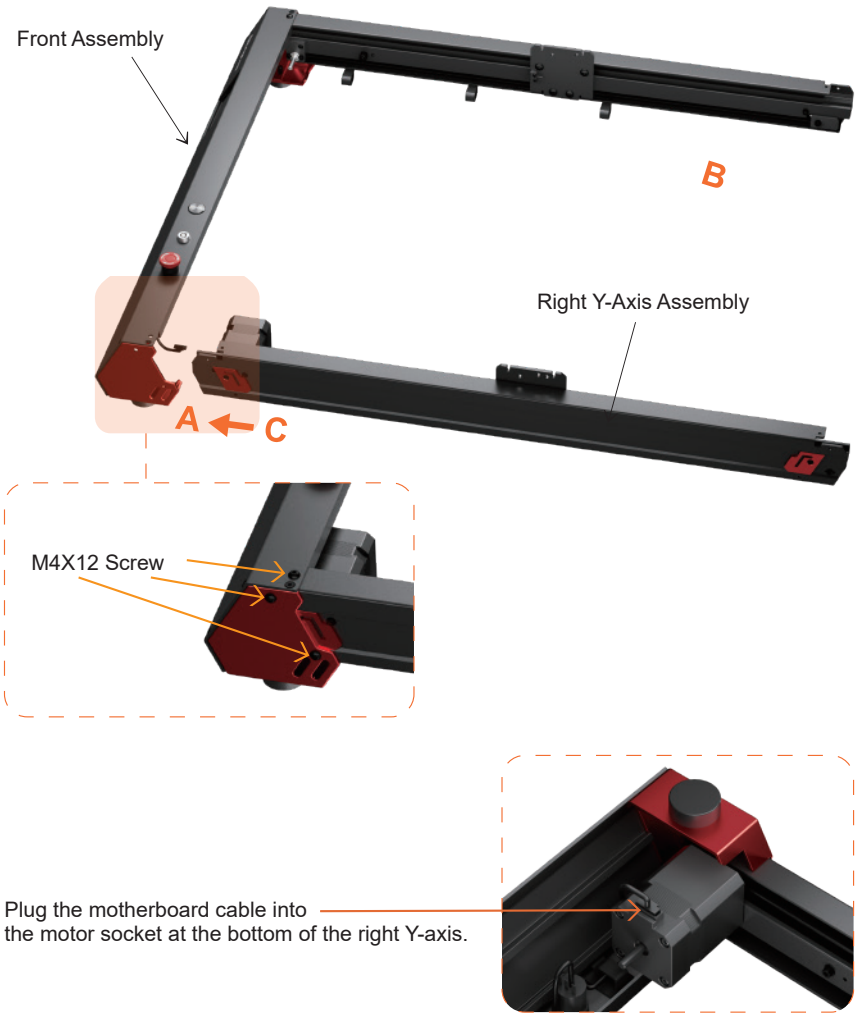
Assemble the Right Y-Axis Assembly



Step 2: Mount C(Right Y-Axis Assembly) on A(Front Assembly) from the side and secure it with 3 screws in total from the top and the side.
Screw type: M4X12 Screw

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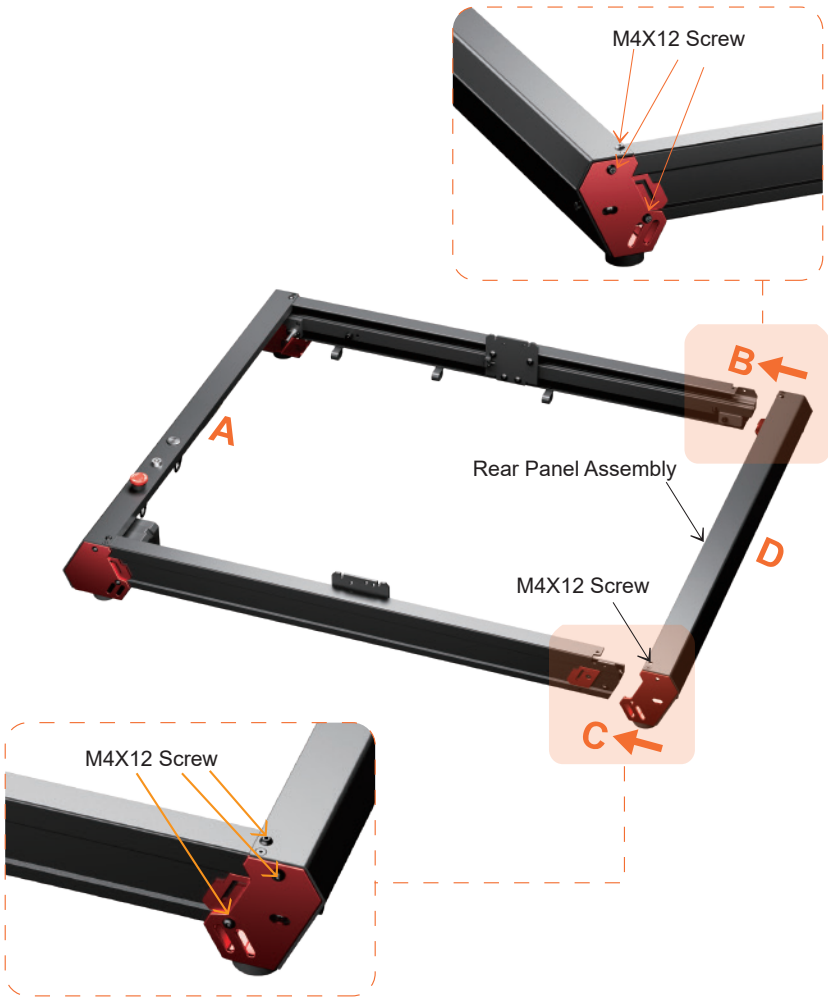
Assemble the Rear Panel Assembly



Step 3: Mount D(Rear Panel Assembly) to B(Left Y-Axis Assembly) and C(Right Y-axis Assembly) from the rear and secure them with 6 screws in total from the top and the side.
Screw type: M4X12 Screw

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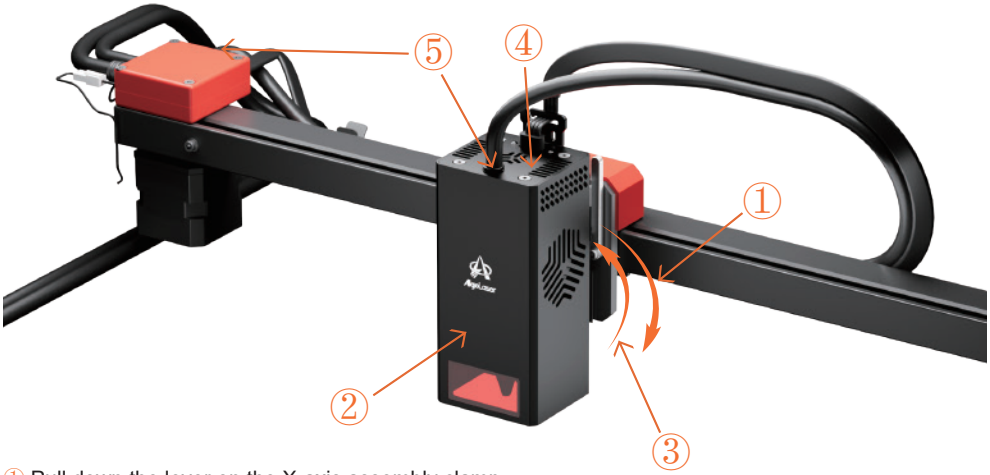
Assemble the X-Axis Assembly



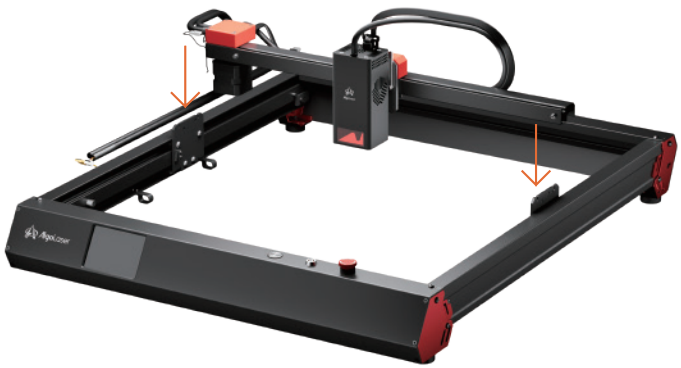
① Pull down the lever on the X-axis assembly clamp.

② Place the dovetail groove on the back of the laser module into the corresponding chute of the clamp.

③ Lift up the lever to clamp the laser module.

④ Insert the plug of the laser cable into the corresponding position of the laser module.

⑤ Connect one end of the air pipe to laser module and another end to the control box.



Place the X -axis component+laser component into the corresponding position of the left and right Y axis

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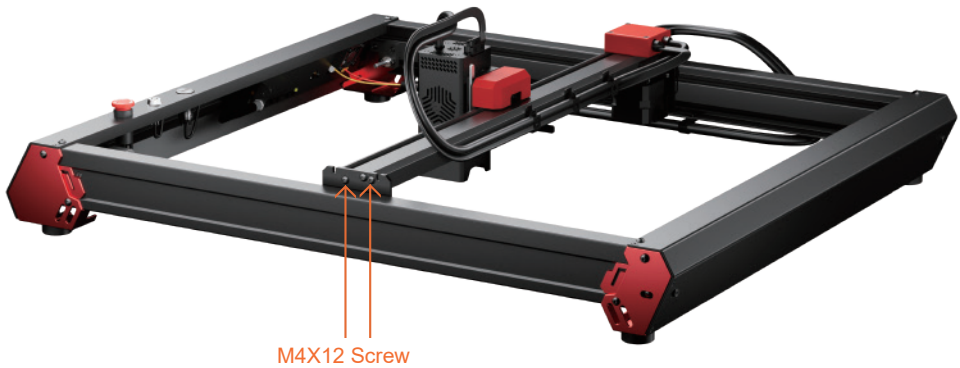
Assemble the X-Axis Assembly



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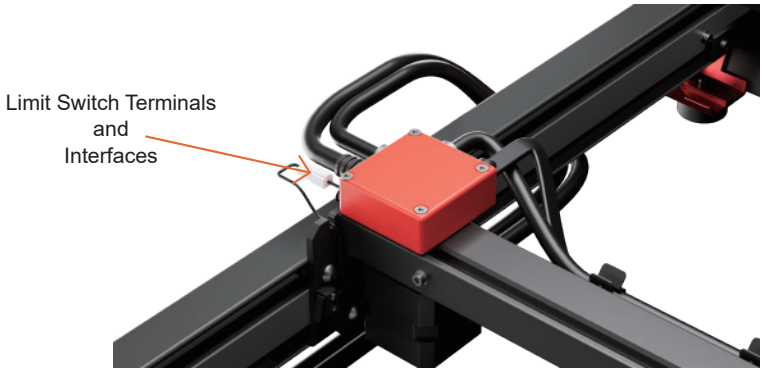
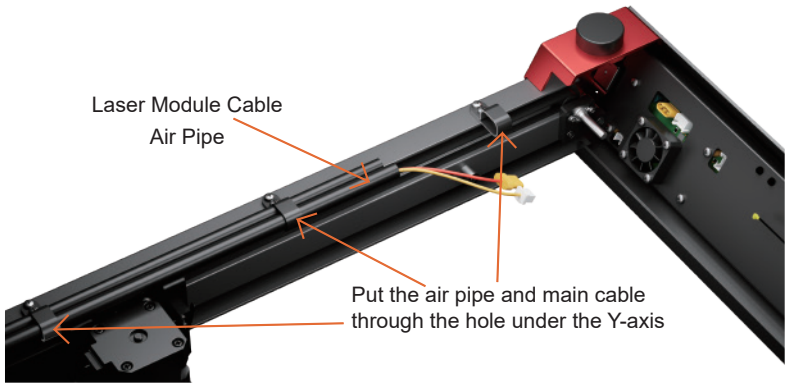
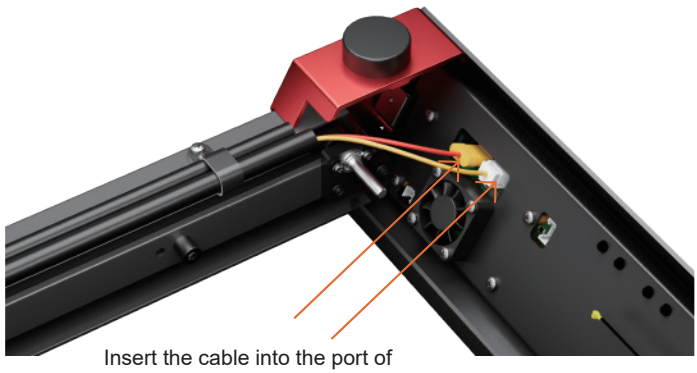
Assemble the X-Axis Assembly







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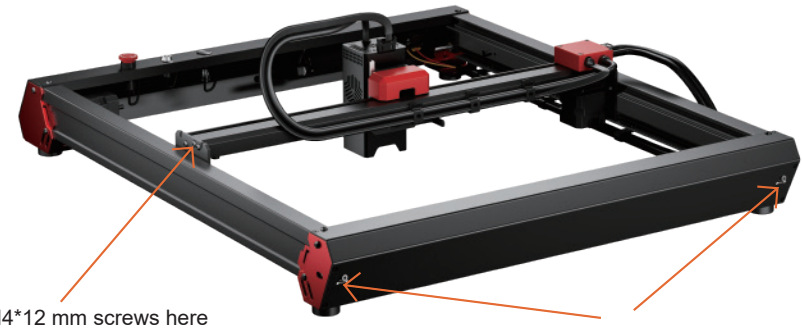
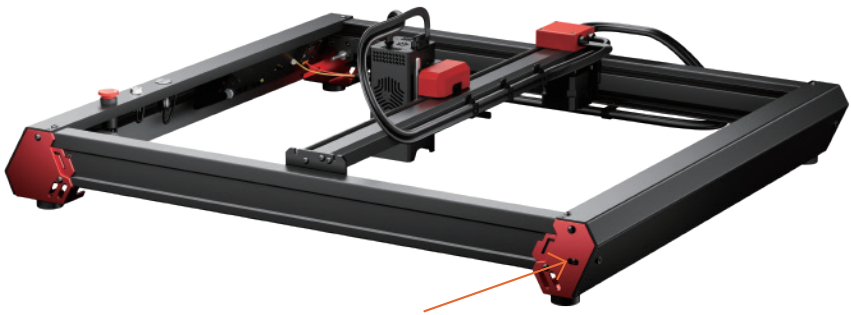
Fasten the belt locking screws



Use M4*12 mm screws here
in conjunction with the X-axis tensioner
to adjust the X-axis belt.

Use two M4*16 mm screws here
in conjunction with the left and right X-axis
tensioners to adjust the Y-axis belt.

Here use the left Y-axis tensioner fixing screw for locking.



Here use the right Y-axis tensioner fixing screw for locking.

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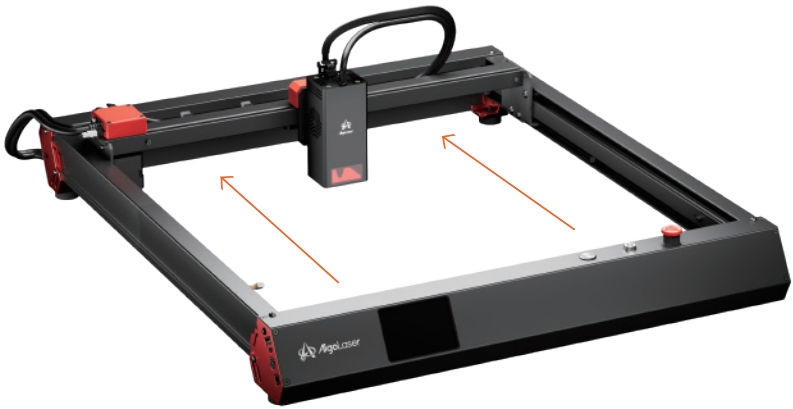
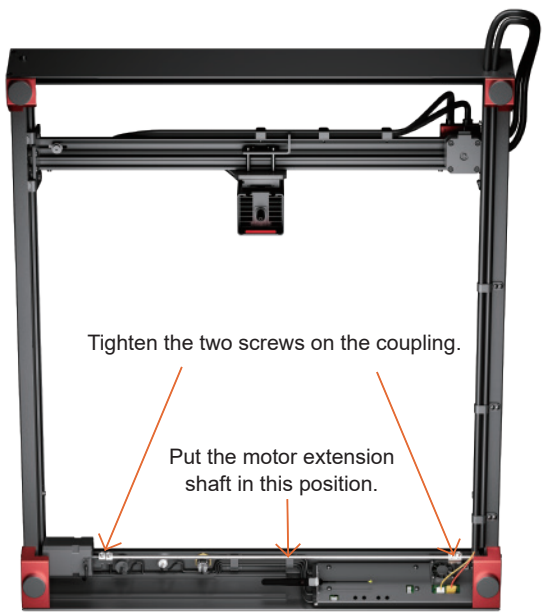
Install a motor extension shaft



Slide the X-axis assembly + laser module to the rearmost end until they cannot move further.



How to Focus

Focus Assist

Step 22: Place the Focus Assist on the engraving material, ensuring it is positioned beneath the laser module. Gently slide the laser module downward until its edge lightly touches the circular disc on the bottom of the Focus Assist. Once in this position, tighten the Thumb Screw of the laser module to secure it.
Finally, remove the Focus Assist from underneath the laser module.

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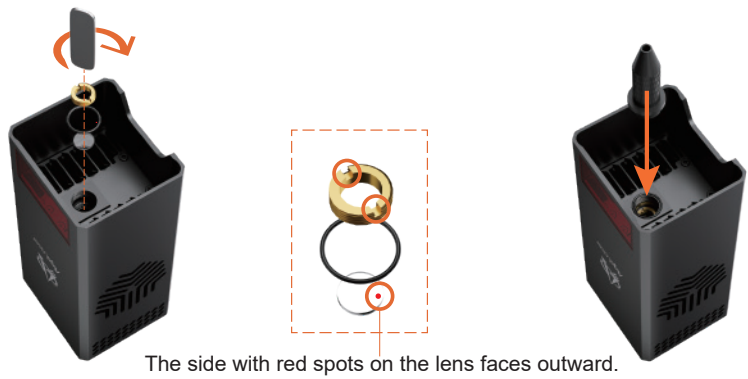
How to Replace the Lens

8.1 Remove

Remove the Air Assist Nozzle first, then loosen the Brass Lense Nut with a Lens Tool, pay attention to the rotation direction of the wrench, and take out the old seal ring and lens.

8.2 Install

The notched side of the Brass Lense Nut faces up. Pay attention to the order in which you put it in. Then tighten it with a Lens Tool, but do not use too much force, or the lens may be damaged.

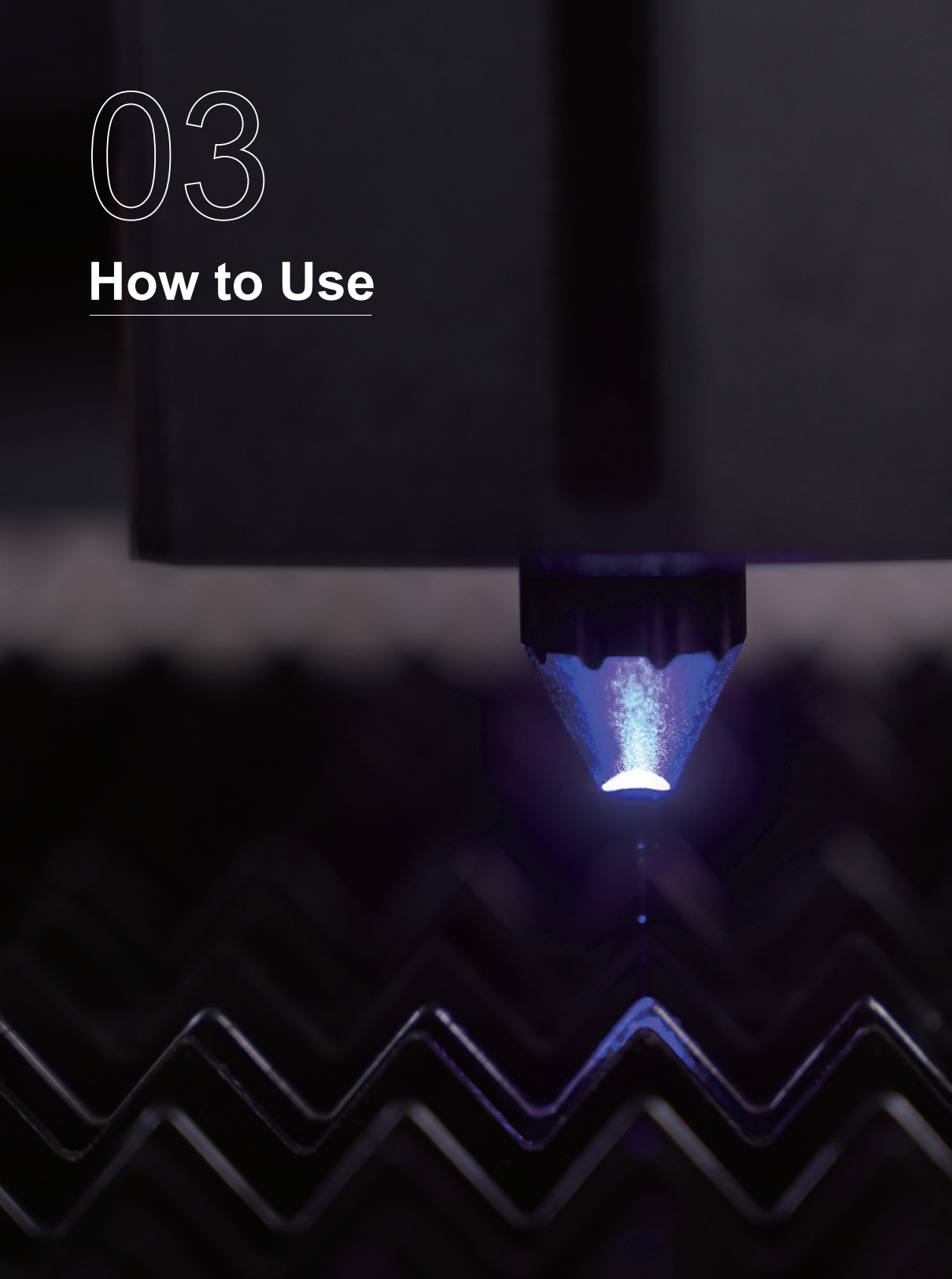


The side with red spots on the lens faces outward.

These three parts can only be tightened after they are placed flat, otherwise the lens will be broken!

03

How to Use



3.1 Machine Status Explanation

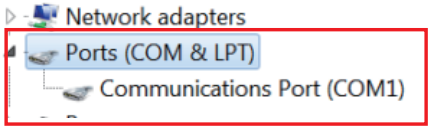
Status	Action	LED Indicator Descriptions	Result
Power on	Power button short press <0.5s	The white LED gradually brightens	Power on Machine quickly seeks Machine powers on and for machine zero point
Power off	Power button long press >1.5s	The white LED gradually dims	Power off Machine shuts down Machine powers off and stops all operations
Enter upgrade mode	Press and hold the power button while simultaneously pressing the RESET button on the control board when the machine is in the power-off state	The red, green, and blue LEDS flash alternately	Updating: red, green and blue blink rapidly;The upgrade is successful: the green is always on and the machine is restarted; Upgrade failed: steady red and the upgrade is turned off
Enter network configuration	Power button continuous short press 5 times	The lights transition into a colorful gradient	The machine can configure network information through the APP
Control board reset	Press the RESET button briefly	The LED immediately turns off, and the machine stops moving	The machine shuts down and the whole machine stops running
Standby	When the machine is powered on and idle	The white light breathes in and out	The machine is in idle standby state
Working	When the machine is powered on and in operation	The cyan-blue light remains steady	The machine is in motion processing state
Fault indicator	When the machine encounters a malfunction and cannot perform engraving movemen	The yellow light slowly flashes and accompanied by a “di, du” sound	The machine cannot engrave there is a malfunction

3.2 How to connect the machine to a PC

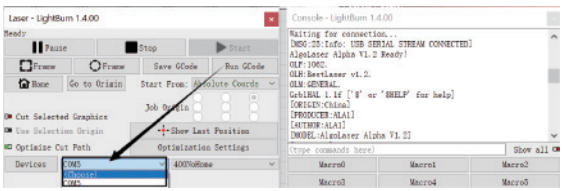
- Install the driver: Before installing the computer driver, please power on the machine and connect it to the PC using a USB cable.
  Then, choose the appropriate driver file based on your computer system and proceed with the installation.

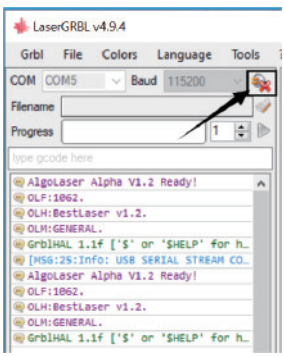
Operating System	Operation	Phenomenon
WIN 7/WIN 8	 zadig-2.8.exe	To install the driver, make sure the machine is powered on and connected to the computer via USB. The installation process can only be carried out when the machine is in the powered-on state and connected to the computer.
WIN 10/WIN 11	No installation required	
Mac	No installation required	

- To check the driver installation, follow these steps:
  ① Find the Device Manager on your computer.
  ② Navigate to the Ports section.
  ③ Disconnect the USB cable from the computer.
  ④ Observe that the new serial port disappears from the Ports section.
  ⑤ Reconnect the USB cable.
  ⑥ Verify that a new serial port appears, indicating successful driver installation.



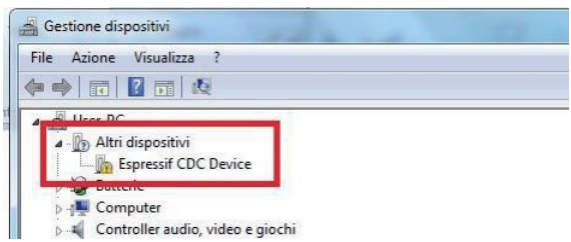
- Connecting the machine
  ① Launch the LaserGRBL / LightBurn software.
  ② Select the COM port that corresponds to the one identified in step two of the installation process.
  ③ Click on the “Connect” button.
  ④ If a welcome message appears in the command box, it indicates a successful connection.



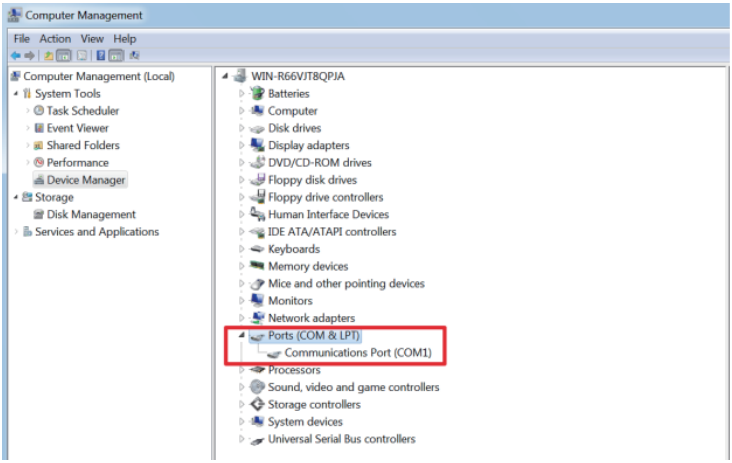


Win7 & Win8 Driver Installation Tutorial

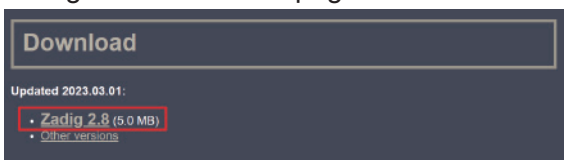
Resolution for Driver issues on ESP MCU Espressif CDC Device Error



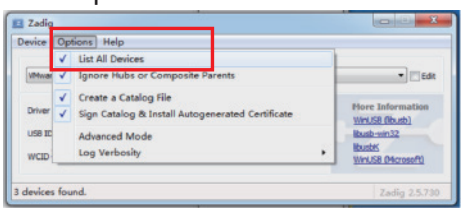
Or the corresponding driver cannot be detected



- Visit **https://zadig.akeo.ie/**
  Navigate lower on the page and click The download button

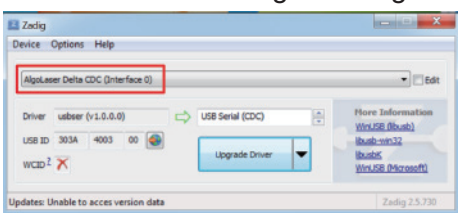


- Once download is complete,
  please run the application with Administrator Rights.
- Once open select List All Devices from the menu Options.

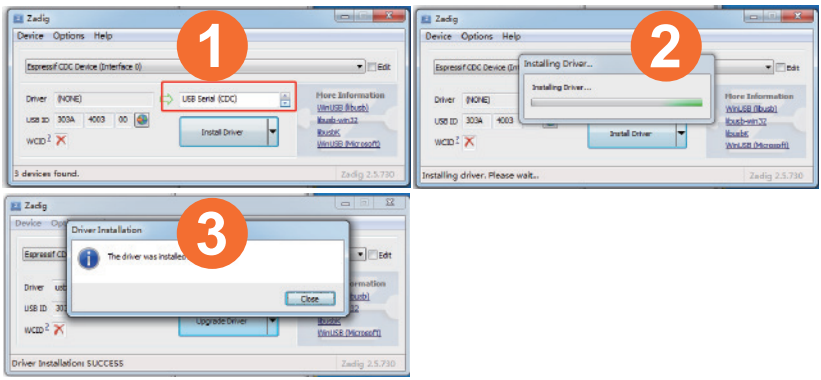


Wait for the refresh

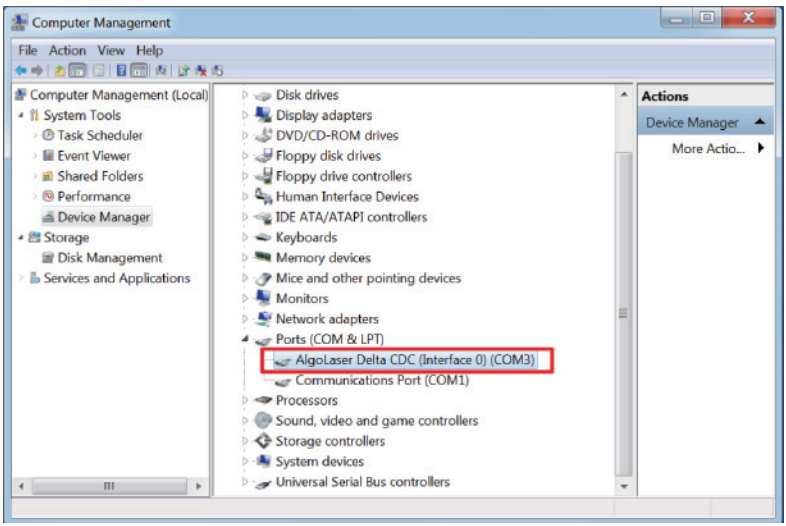
- Select devices starting with “Algo” from the drop-down list .



- Select USB Serial (CDC) from the list of drivers available, click the Install Driver button, and wait for the installation to complete.

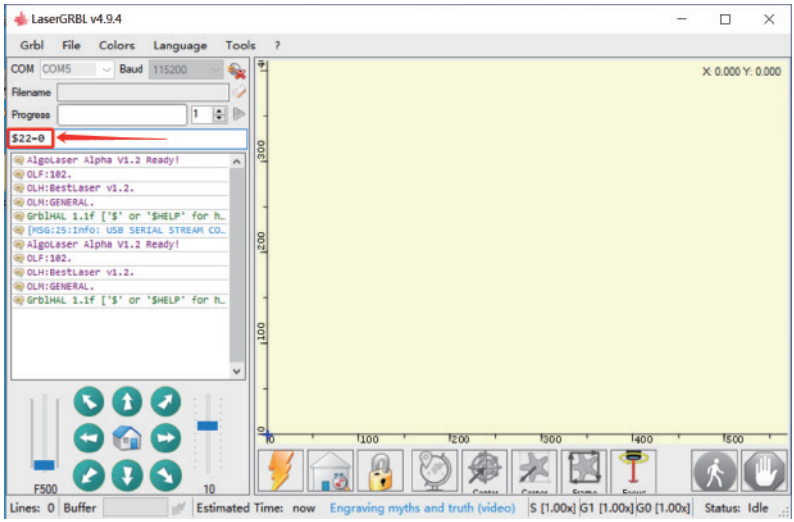


- When you're done, you can close the Zadig software.
- The New AlgoLaser X CDC (Interface 0) (COMX) port in Device Manager. Note the COM number might be different in your machine

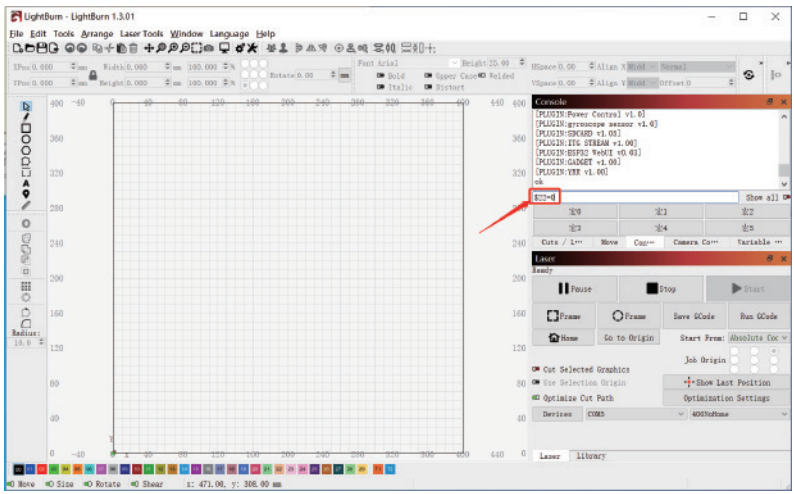


3.3 RR2/ARC Connection -- Operation Description

- Connection: Unplug the Y-axis motor wire from the Y-axis motor and connect it to the corresponding motor jack of RR2/ARC.
- Connect the control terminal: Use USB or other methods to connect the computer.
- LaserGRBL: Send "$22=0" in the “Type gcode here ”field.



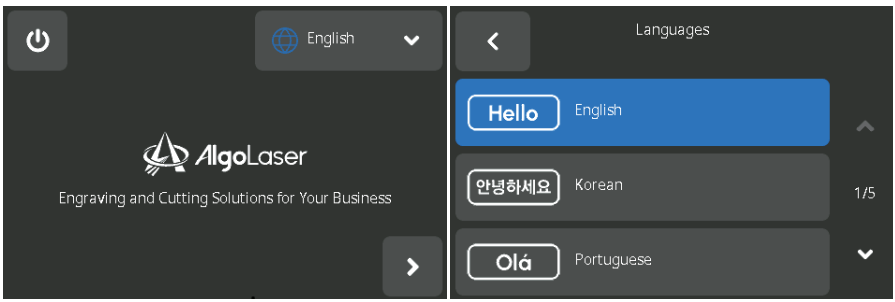
- LightBurn: Send the command "$22=0" in the "(Type Commands here)" field.



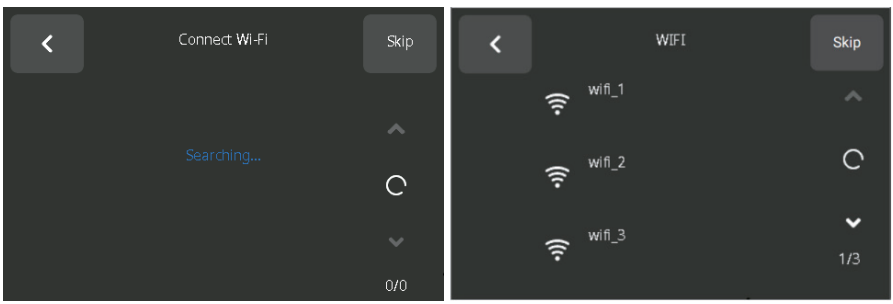
3.4 First-time screen usage instructions:

- Screen Switch:The screen will automatically power on and off with the machine.

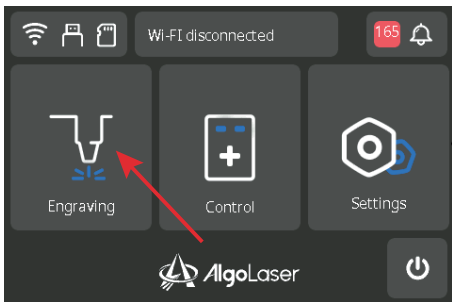
- First-time Use Guide:
  A. Language Selection: Choose your preferred language to proceed.
  If you skip this step, you can refer to the user manual to set a new language.



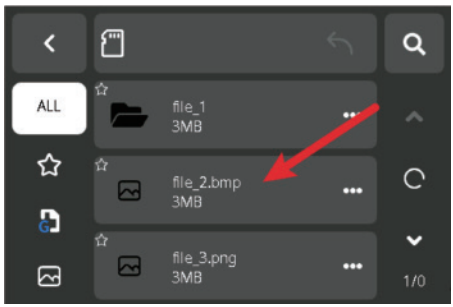
B. Network Connection: Choose the detected WiFi network and connect. Alternatively, you can click "Skip" to bypass the connection setup and proceed to use the device.

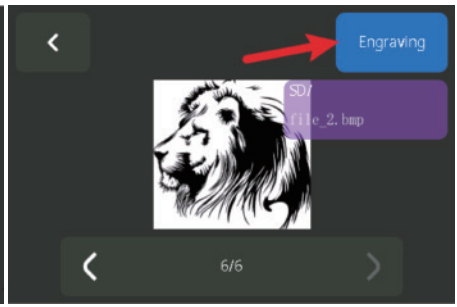


- Engraving via Screen:
  A. After powering on the machine, click on "Engrave" on the home page to enter the "Engraving Source" page.Select the desired engraving file source, which can be either from the SD card or USB. If using USB, make sure to insert the USB drive to access the data.

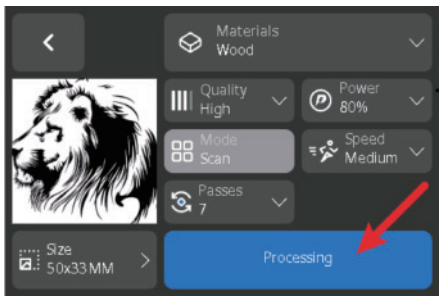


  B. Select the file from the USB or SD card (ipg, png, bmp, or Gcode format), preview it, and click "Engrave" to start engraving.



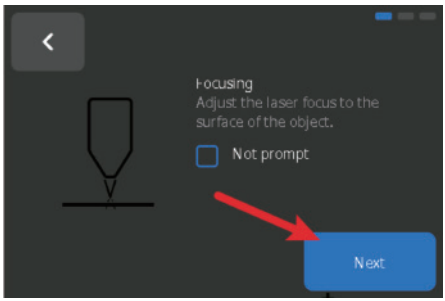


  C. On the parameter page, you can choose the size, quality, power, mode, speed, number of passes, and other parameters, and when you confirm that the parameters are correct (If an ALM-20BD is used for engraving wood, the recommended speed is 20000 mm/min, and the recommended power is 80%. For cutting wood, the recommended speed is 200 mm/min, and the recommended power is 100% and ensure that the cutting is thorough in case of cutting multiple passes. For details about other parameters, see the published cutting data.), click "Processing" to enter the engraving preparation page.

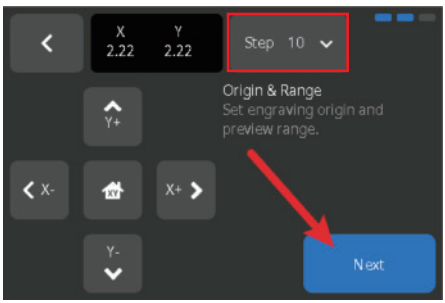


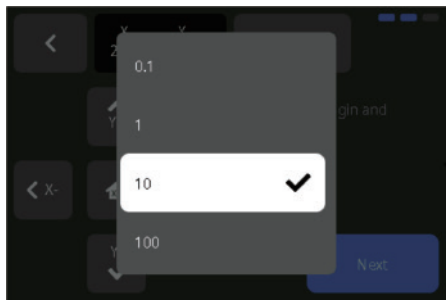
D. Engraving Preparation Page:

A. Focus Verification: Make sure that the laser is focusing at the correct focal length before clicking "Next".

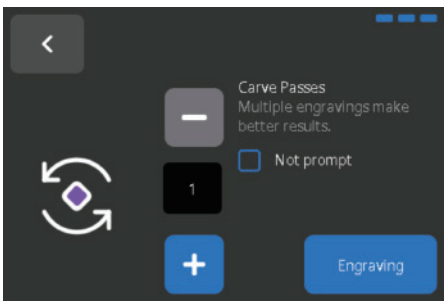


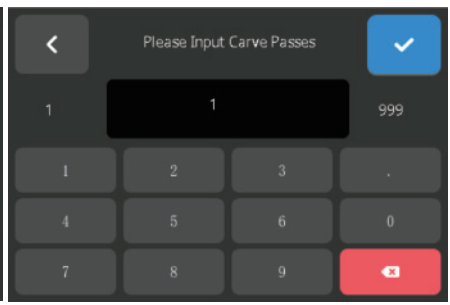
B. Engraving Range: Move the laser with the button. Click "Step" to adjust the moving distance. Observe whether the starting position meets the engraving requirements and whether the range covers the engraved object. Make sure that there is no error before clicking "Next".



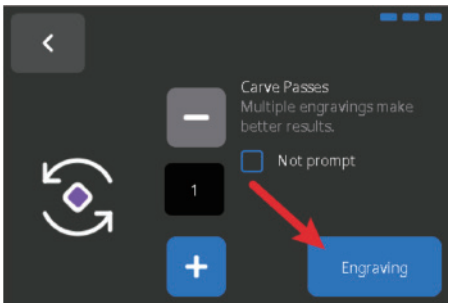


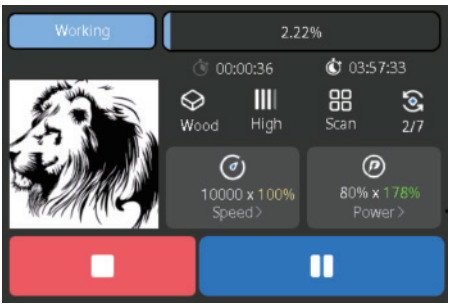
C. Multiple Engraving: If you want to engrave repeatedly, you can adjust the number of engraving by "+" and "-", or by clicking on the numeric area to enter the value on the keyboard popped up.





E.Once everything is verified, click "Engrave," and the laser engraving machine will start the process. Wait for the progress to reach 100% to complete the engraving.





3.6 FAQ

No response from the machine when being powered on.

- No power supply: Please check the socket and switch as well as the machine power socket to ensure that they have been correctly plugged with normal power supply.

It cannot be connected to computer.

- USB cable not connected: Please check the USB data cable interface on the machine and computer to ensure it's correctly plugged.The USB interface on the front panel of some desktop computers is invalid, it's better to connect to the interface on the back.
- Driver not properly installed: Install the driver according to the instructions. After the installation is done, the computer will recognize the device as a serial port,which means the hardware connection is OK.
- Other special problems:Pull out the USB data cable and power cable, keep the machine power off for 5 seconds and then try the connection once again.

No response from the phone APP when being connected to the machine.

- Wrong Bluetooth connection: Make sure it's connected to the Bluetooth released by the machine. Please read “App Connection” in the User Manual for details.
- Incompatibility: In the case of abnormal connection due to incompatibility of newly-released phone or upgraded system, please contact our customer service with the screenshot of phone configuration so as to get technical support as soon as possible.

Shallow engraving effect or no traces.

- Inaccurate focus: Refer to the "Focus Adjustment" in the User Manual to make the correct focus.
- Engraving speed: Too fast speed is due to short burning time.Please read the“Engraving Parameters" in the Manual to readjust the parameters.
- Photo color is too light: The photo added should be clear. If the line is too thin or the color is too light, the engraving effect will be directly influenced.
- Position of object to be engraved: If the object is placed obliquely, the focal length of laser is fixed,so the object should be placed horizontally in parallel to the machine; otherwise, the inaccurate focal length will result in bad engraving effect.

Offline engraving unexpectedly stops

- The photo is not completely downloaded when being connected to computer, please download the photo once again.

FCC Compliance Statements

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

ISED Compliance Statements

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference.
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) L'appareil ne doit pas produire de brouillage;
(2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
Cet équipement est conforme aux limites d'exposition aux radiations IC CNR-102 établies pour un environnement non contrôlé.

RF Exposure Compliance

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
Cet équipement est conforme aux limites d'exposition aux radiations IC CNR-102 établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20cm entre le radiateur et votre corps. Cet émetteur ne doit pas être colocalisé ou fonctionner en conjonction avec une autre antenne ou un autre émetteur.

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