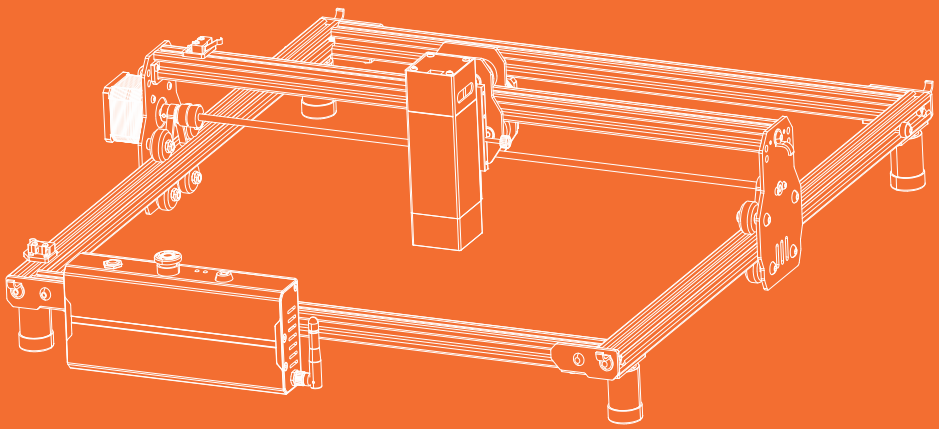
AlgoLaser DIY KIT

QUICK START GUIDE

Laser Engraver



Always read the instructions before you start.

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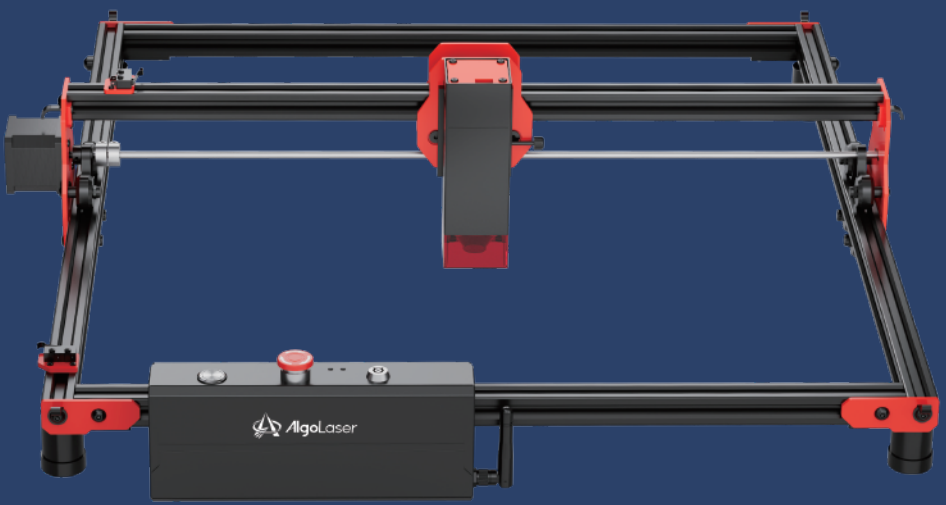
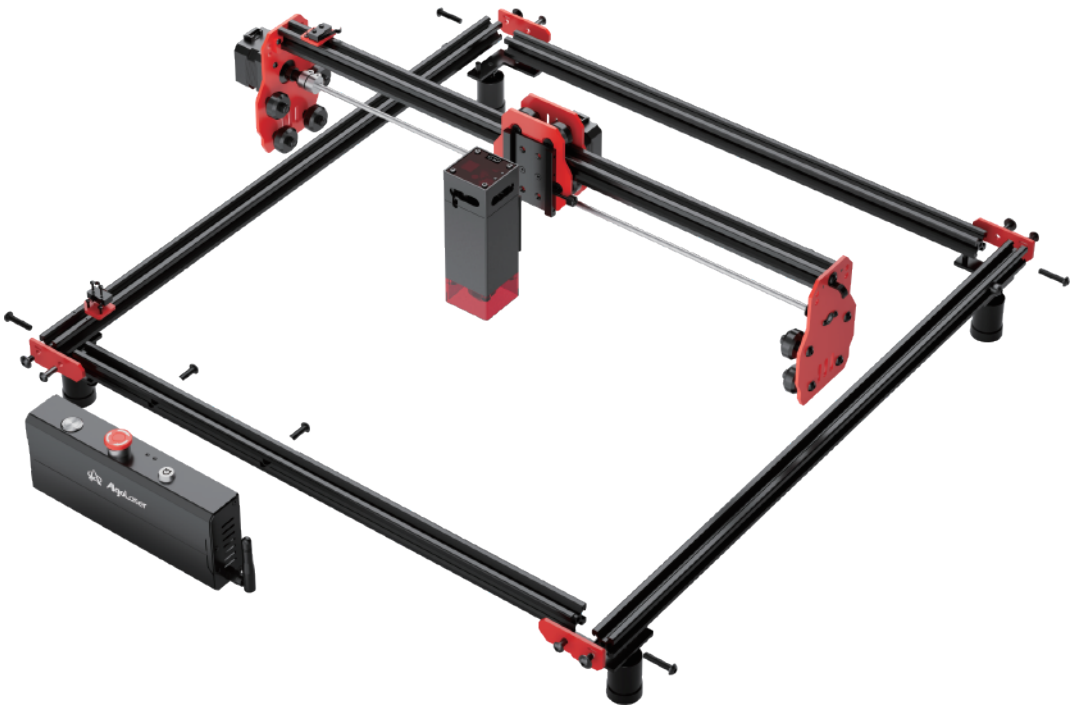


01

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 400-445m(±5m), 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

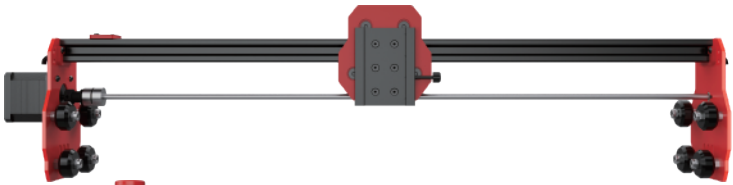
1.2.1 Machine

A
Front Frame * 1

B
Rear Frame * 1

C
Left Y-Axis Frame * 1

D
Right Y-Axis Frame * 1

E 
X-Axis Frame * 1

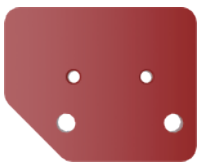
F

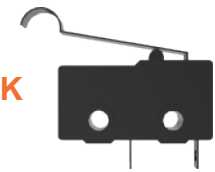
Control Box * 1

G
WiFi Aerial * 1

H
L-Bracket * 4

I
End Plate * 4

J 
Limit Switch Mounting Plate * 1

K 
Limit Switch * 2

L
Screw M5X8 * 4
Screw M5X14 * 17
Screw M5X25 * 6

M
Screw M2.5X6 * 2
Screw M2X9 * 4

N
M5X15X1 * 4 Washer

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

P
Screwdriver * 1
Wrench * 1

Q
Brush * 1

R
Laser Goggle * 1

S
Power Cable * 1

T
Support Foot * 4

U

Power Adapter*1

V

USB Cable * 1

W

Timing Belt * 2

X

Machine Key Set * 1

Y

Laser Module Cable * 1

1.2.2 Laser module

Z

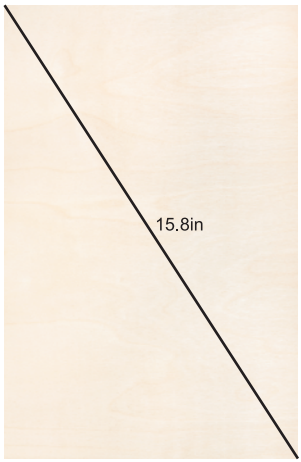
Laser Module * 1

Laser Shield * 1

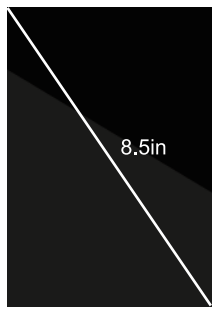
Focus Assist *1

Thumb Screw * 2

1.2.4 Consumable



Plywood * 1
(340mm*220mm*3mm)



Acrylic * 1
(175mm*122.5mm*3mm)

Metal Card * 3
(86mm*54mm*0.2mm)

Cable Ties * 5

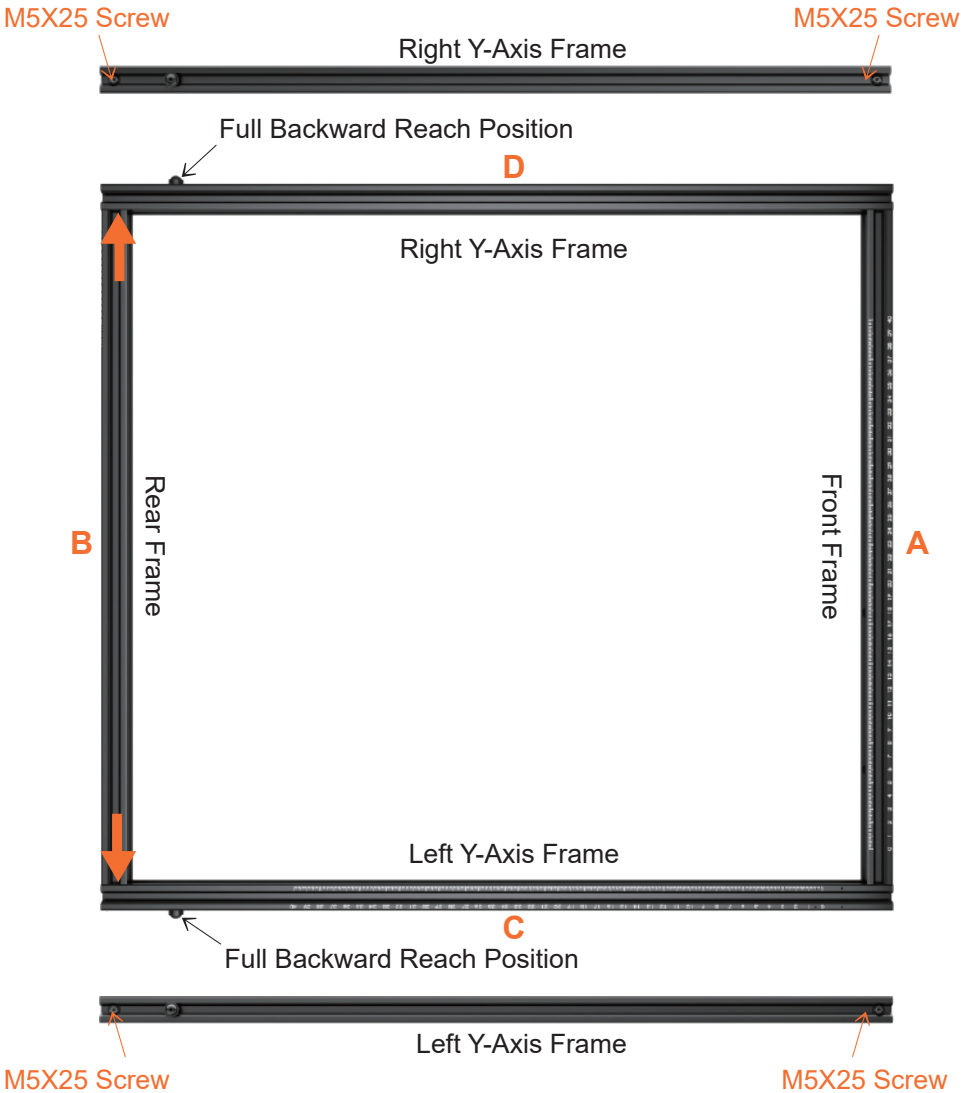
* The above images are for reference only. Please refer to the actual product.

02

Machine Assembly

01/ 18

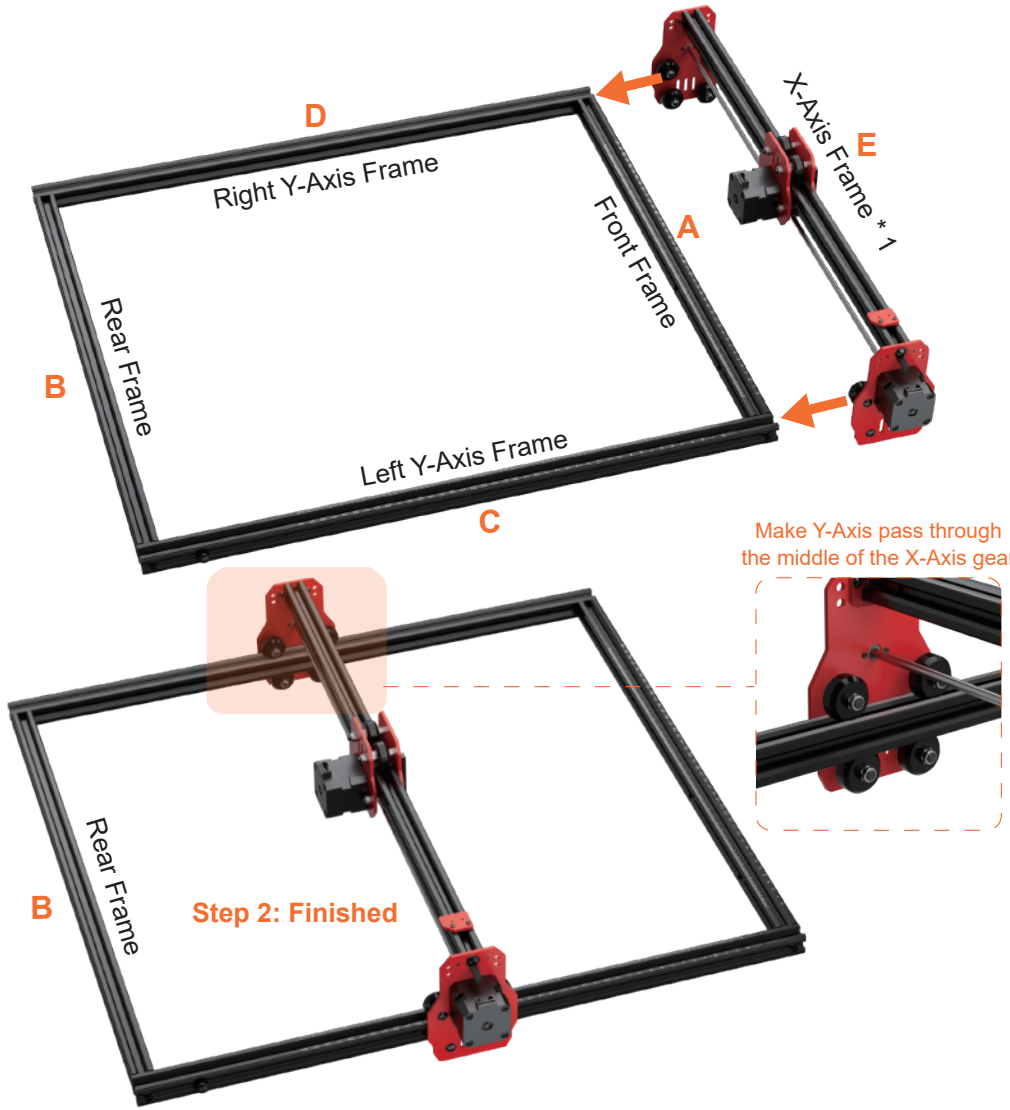
Assemble the Frame



Step 1: Place the Front Frame and Rear Frame ends flush with the sides of the Left Y-Axis Frame. and Right Y-Axis Frame.
Secure using M5X25 Screws.

02/ 18

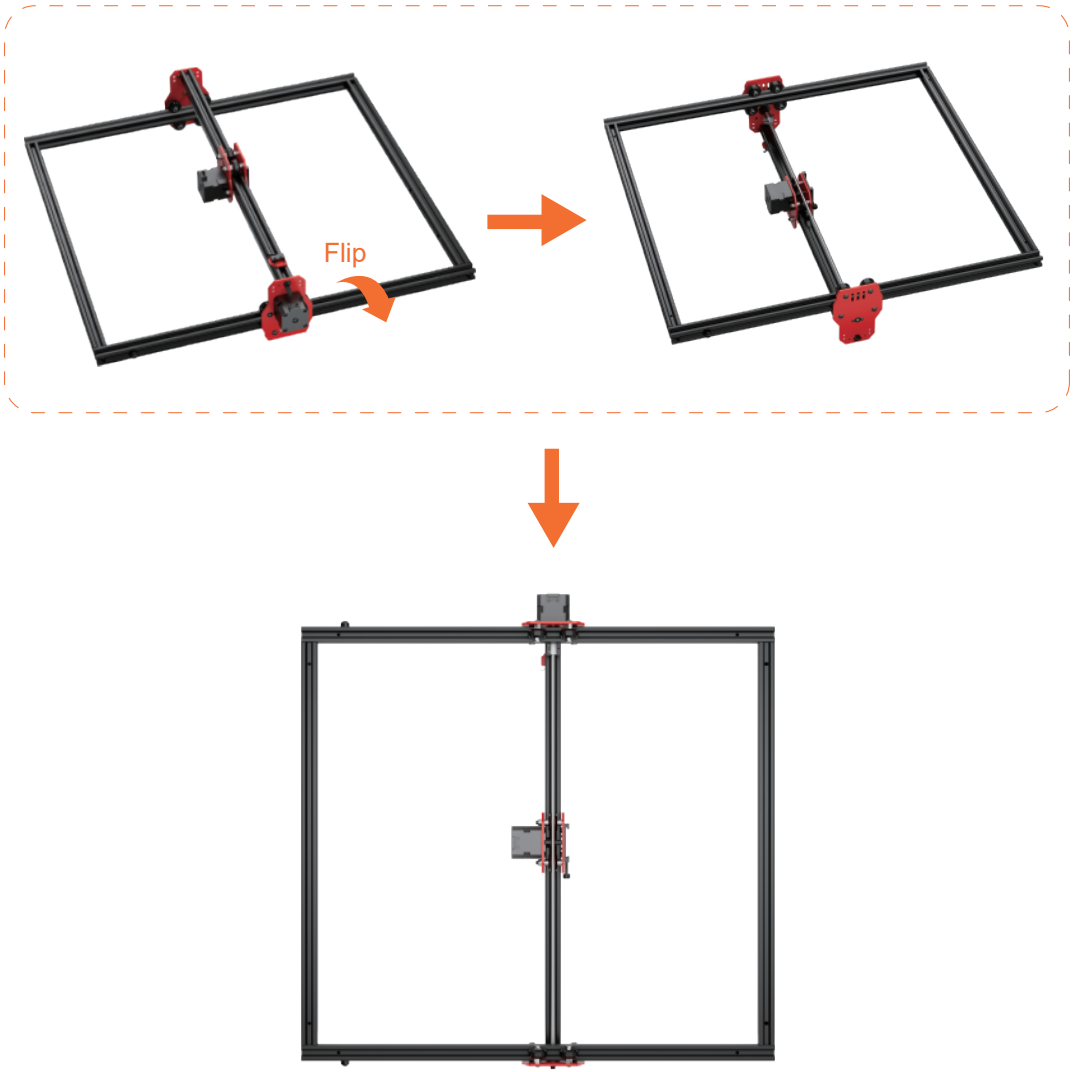
Assemble the X-Axis Component.



Step 2: Fit the X-Axis into the left Y-Axis Frame.
Fit the X-Axis into the right Y-Axis Frame.

03/ 18

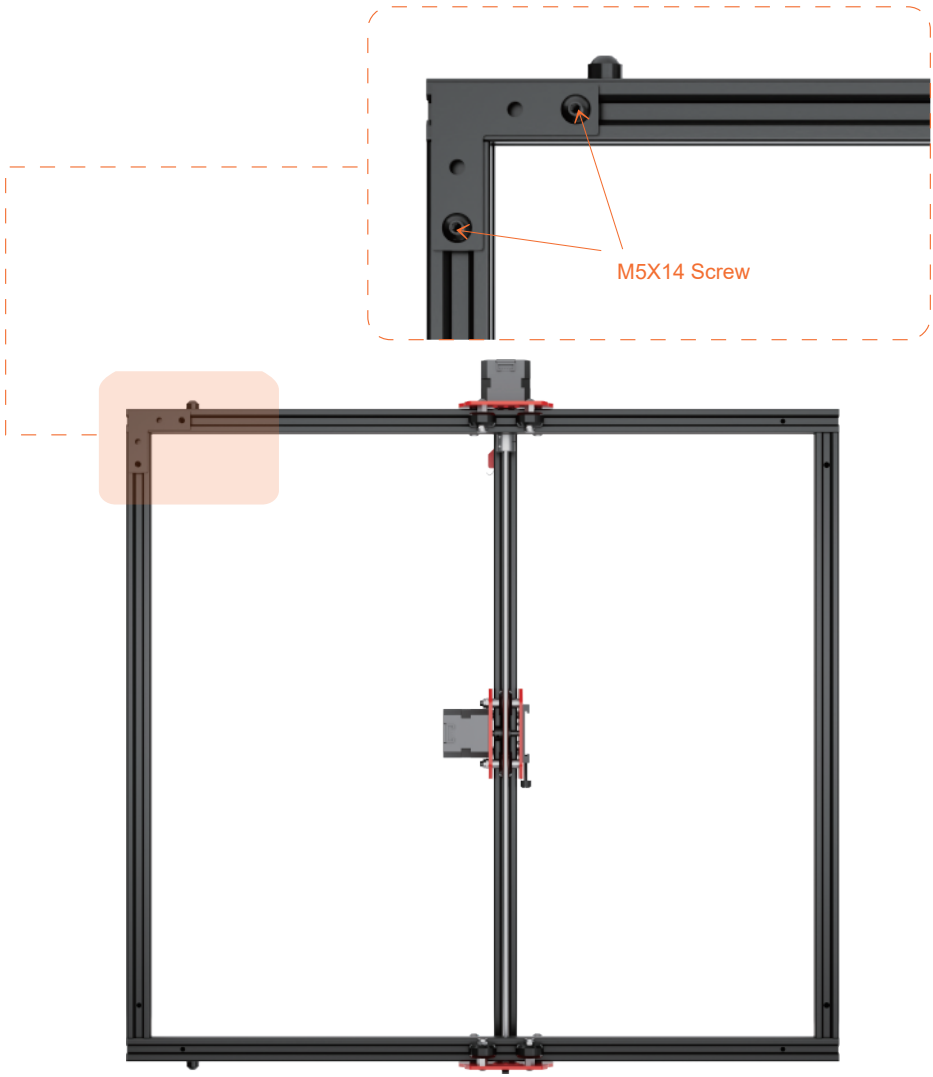
Flip the Machine



Step 3: Flip the machine upside down, with its bottom facing up.

04/ 18

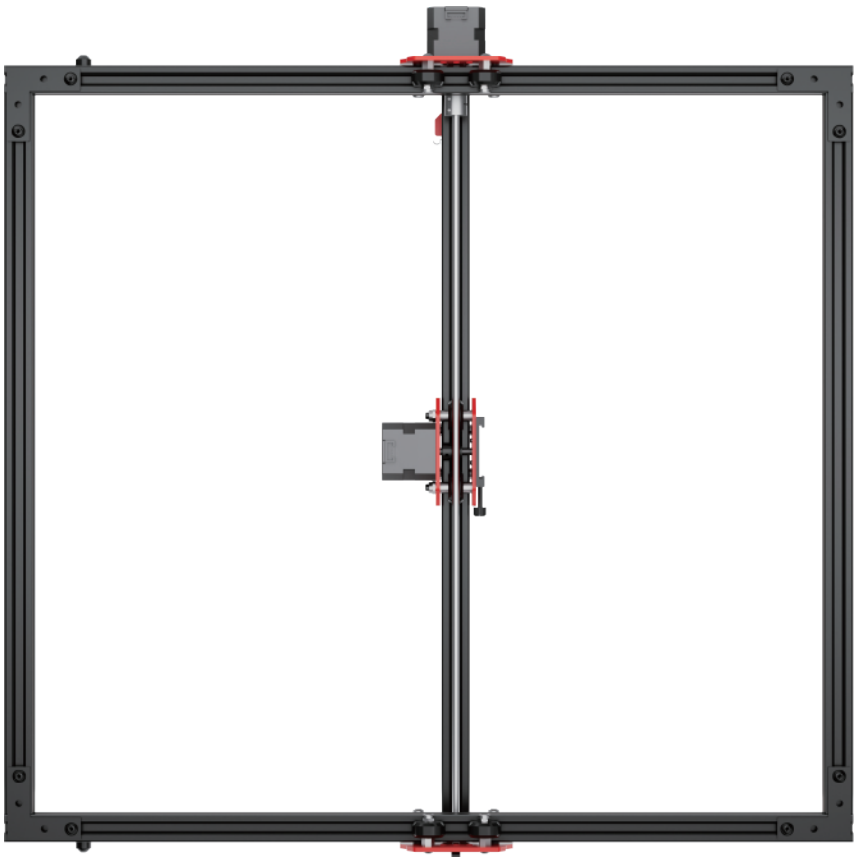
Assemble the L-Bracket.



Step 4: Align the L-Bracket with the frame mounting holes.
Secure using M5X14 Screws.

05/ 18

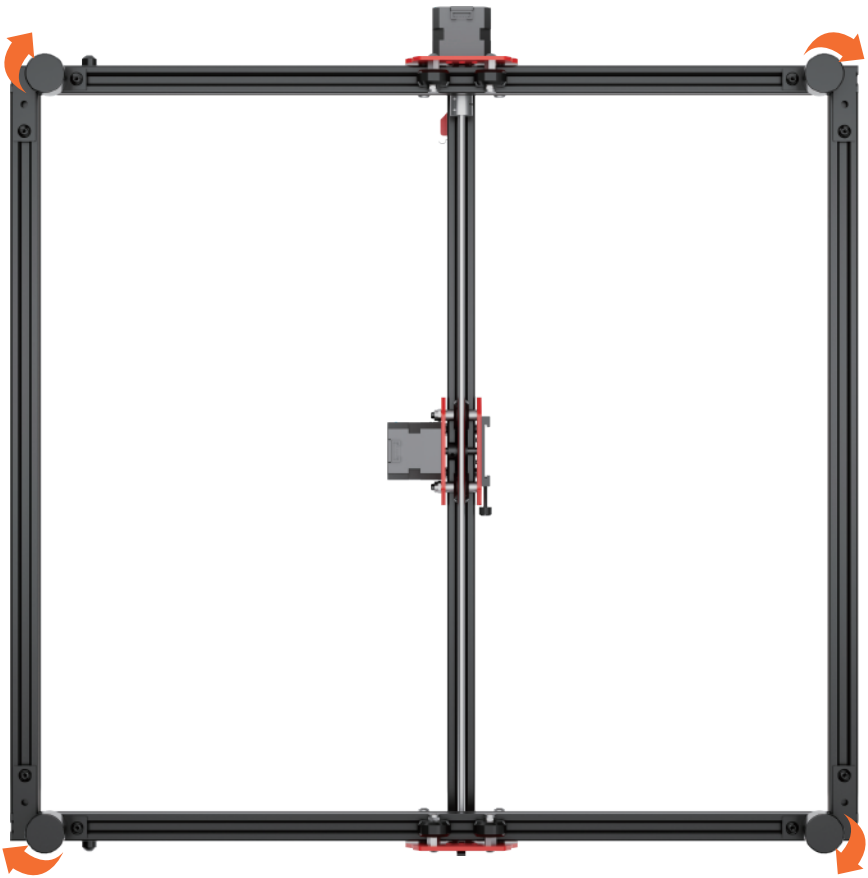
Assemble the L-Bracket.



Step 5: Using the same method, install the remaining three L-Brackets.
Secure using M5X14 Screws.

06/ 18

Assemble the Support Feet.



Step 6: Screw the Support Feet into the corresponding mounting holes on the L-Brackets in a clockwise direction.

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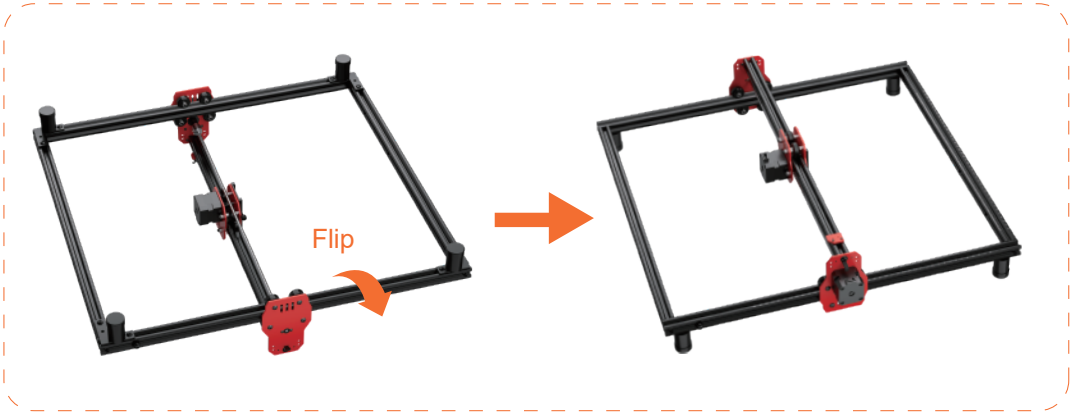
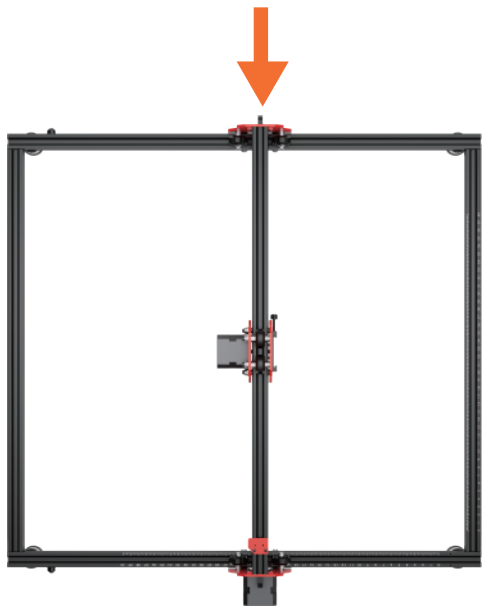
Flip the Machine Again





Step 7: Flip the machine upside down with the top side facing upwards.

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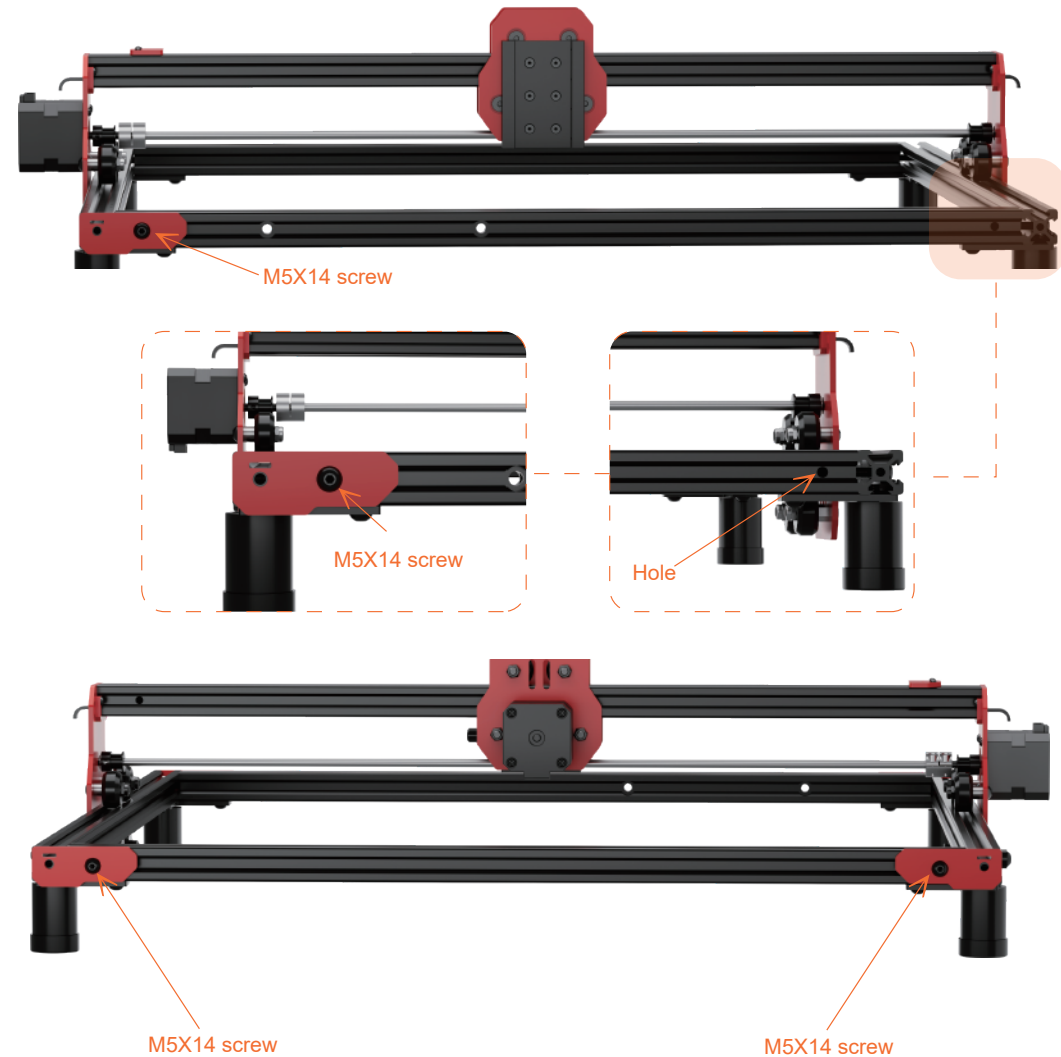
Assemble the End Plate.



Step 8: Align the End Plate with this hole.
Secure using M5X14 screws.

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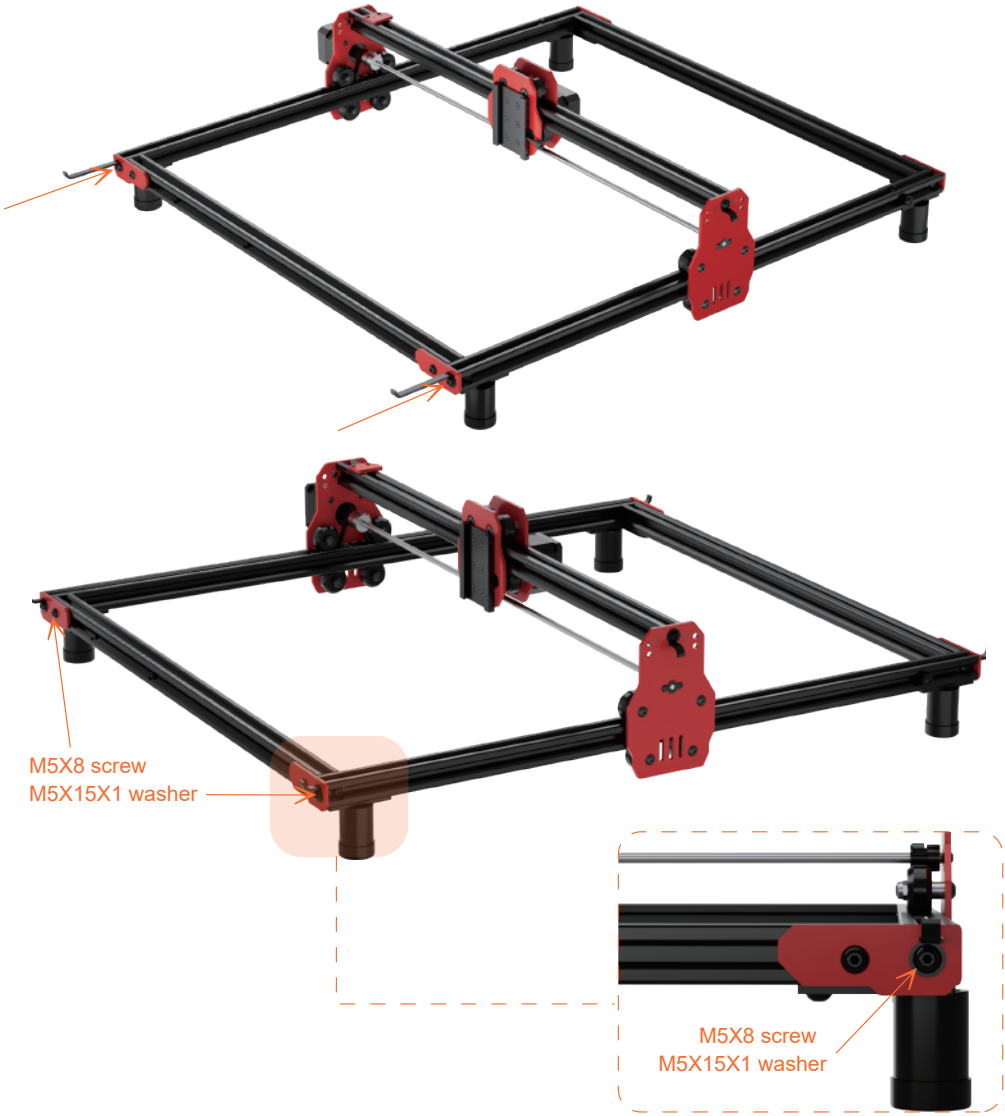
Assemble the Belt



Step 9: Thread the belt through the hole in the direction of the arrow.
Secure the belt using M5X8 screws and M5X15X1 washers.

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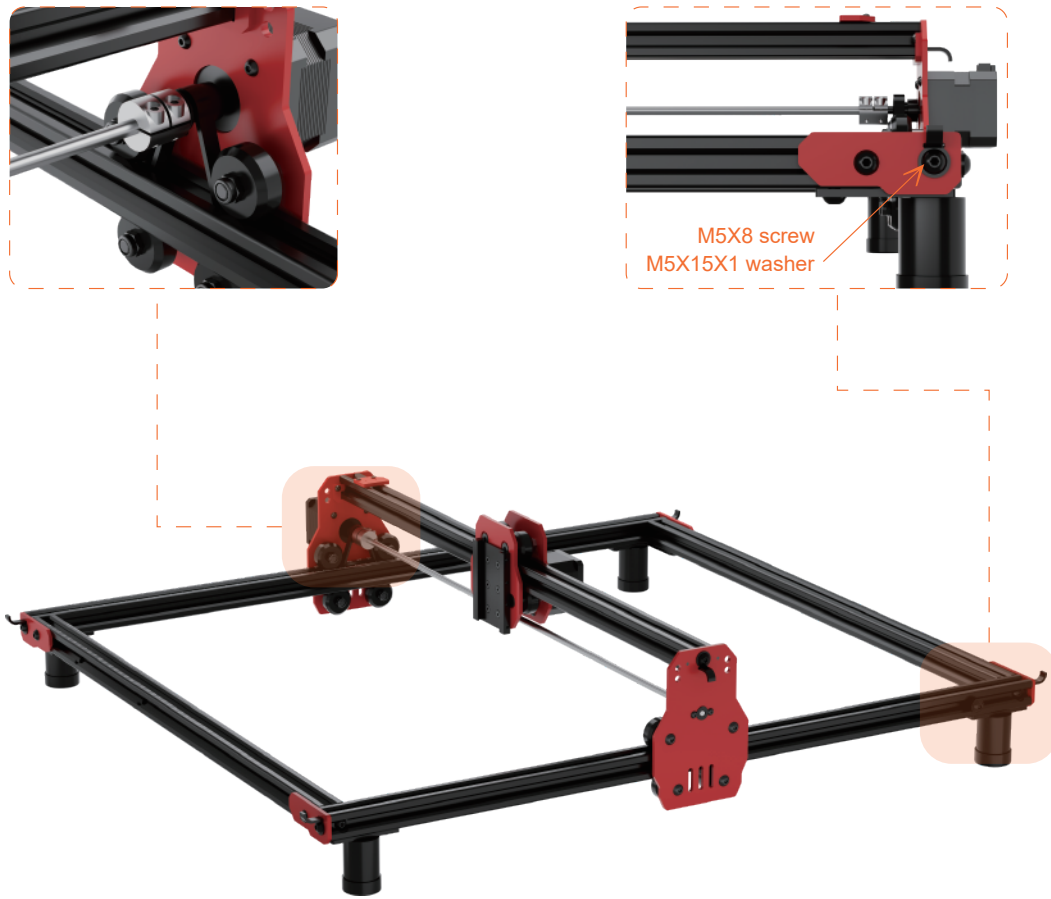
Assemble the Belt



Step 10: The belt passes through the hole at the other end along the Y-Axis. Do not twist the belt, ensure it remains flat. Secure it M5X8 screws and M5X15X1 washers.

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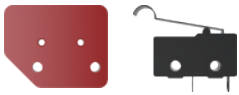
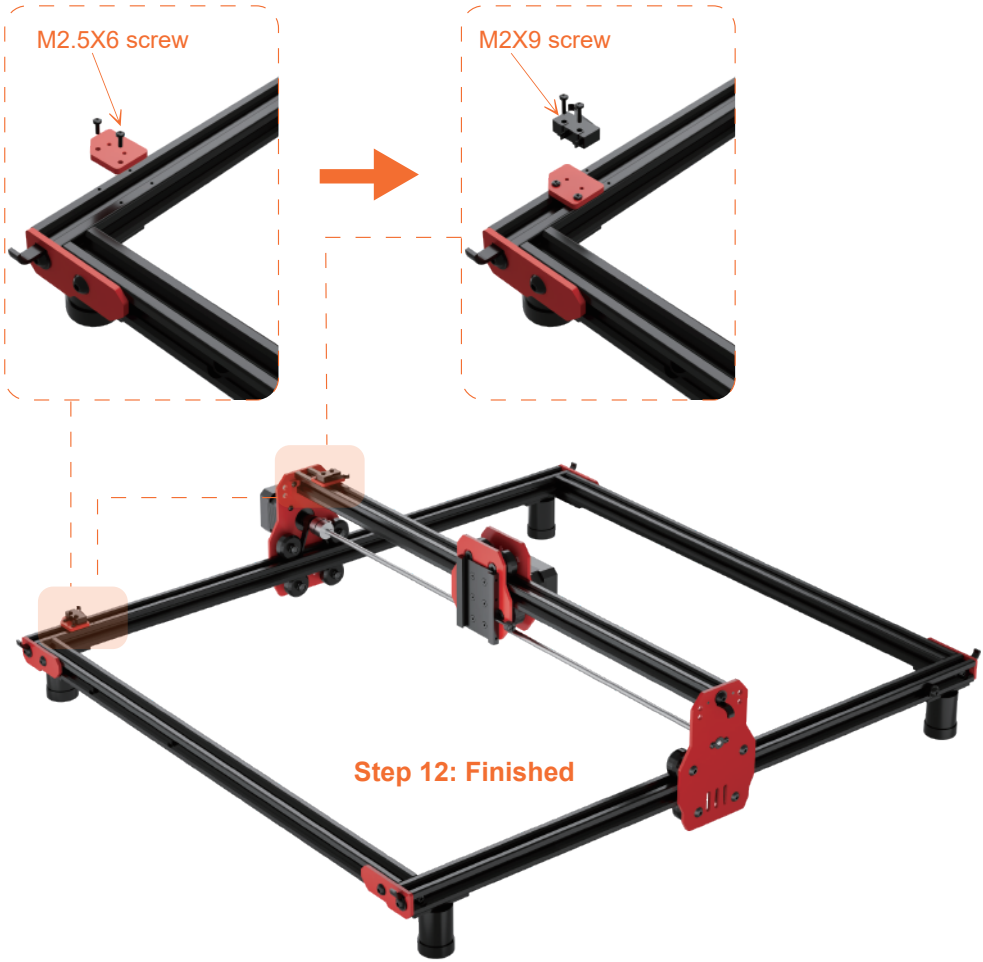
Check the tension of the belt

Step 11: Gently move the X-Axis by hand to check the belt tension. If it's too loose or tight, adjust accordingly.

12/ 18

Assemble the Limit Switch.





Step 12: Secure the Limit Switch Mounting Plate using M2.5X6 screws.
Secure the Limit Switch using M2X9 screws.

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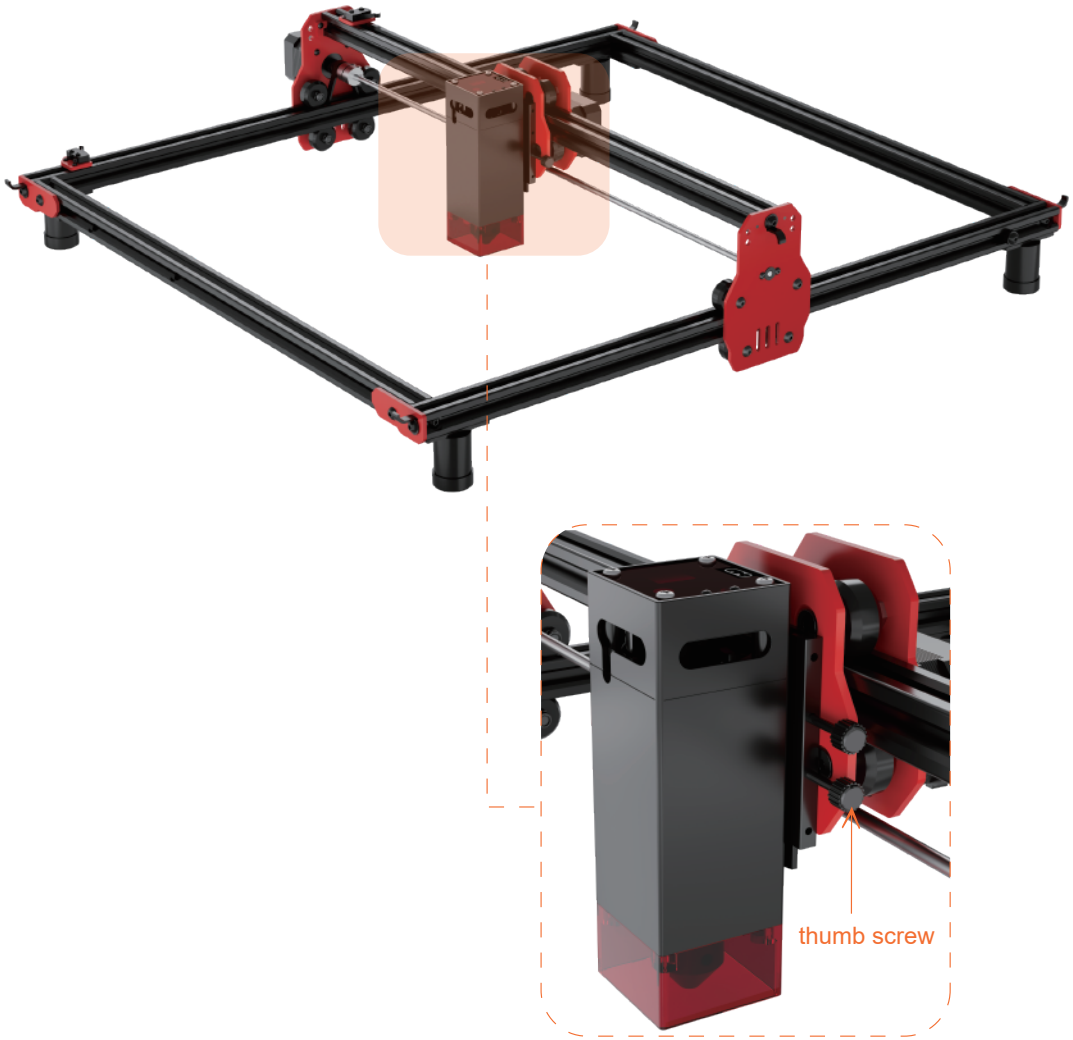
Assemble the Laser Module



Step 13: Finished

Step 13: Insert the rear dovetail groove of the Laser Module into the corresponding slot on the fixture. Tighten the screw clockwise to secure it in place.

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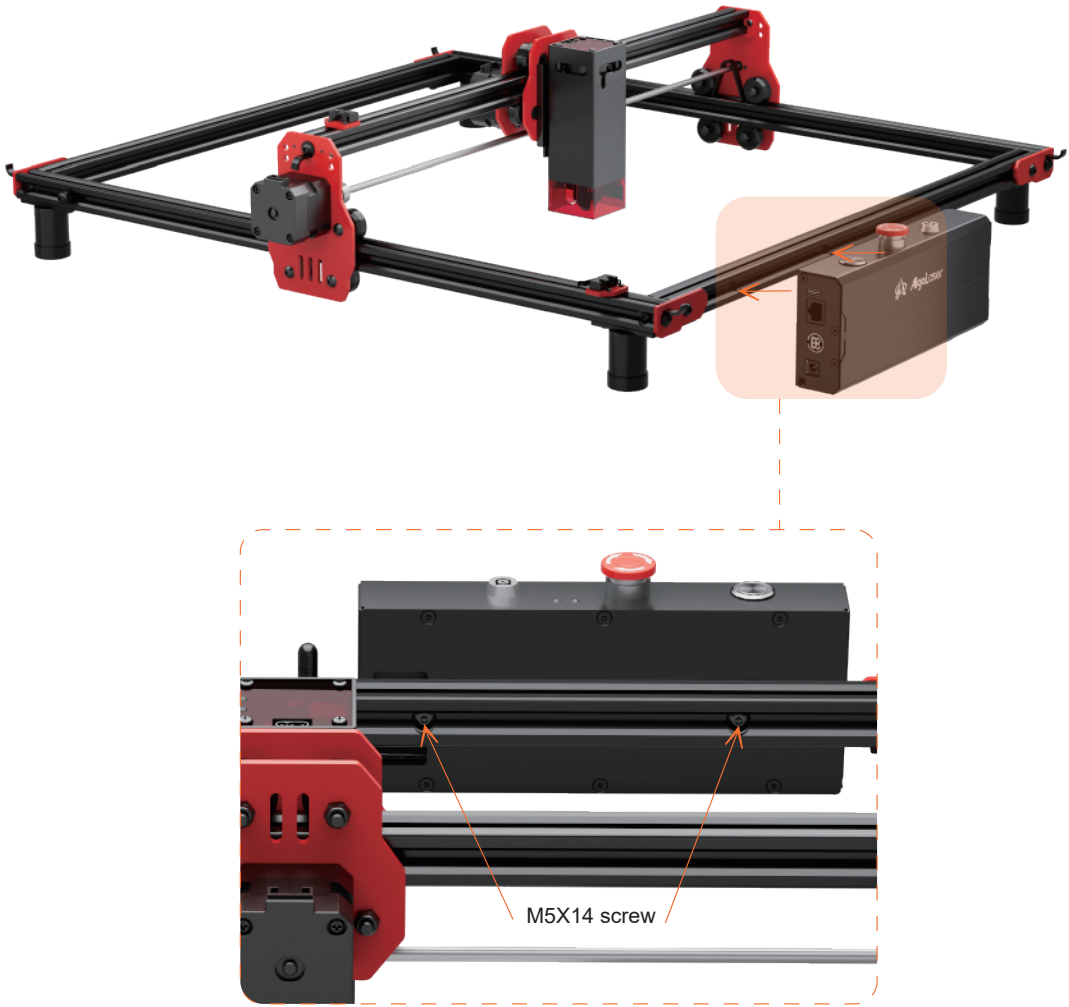
Assemble the Control Box Component



Step 14: Align the installation nut on the back of the Control Box with the mounting hole on the Front Frame. Secure it by using M5X14 screws.

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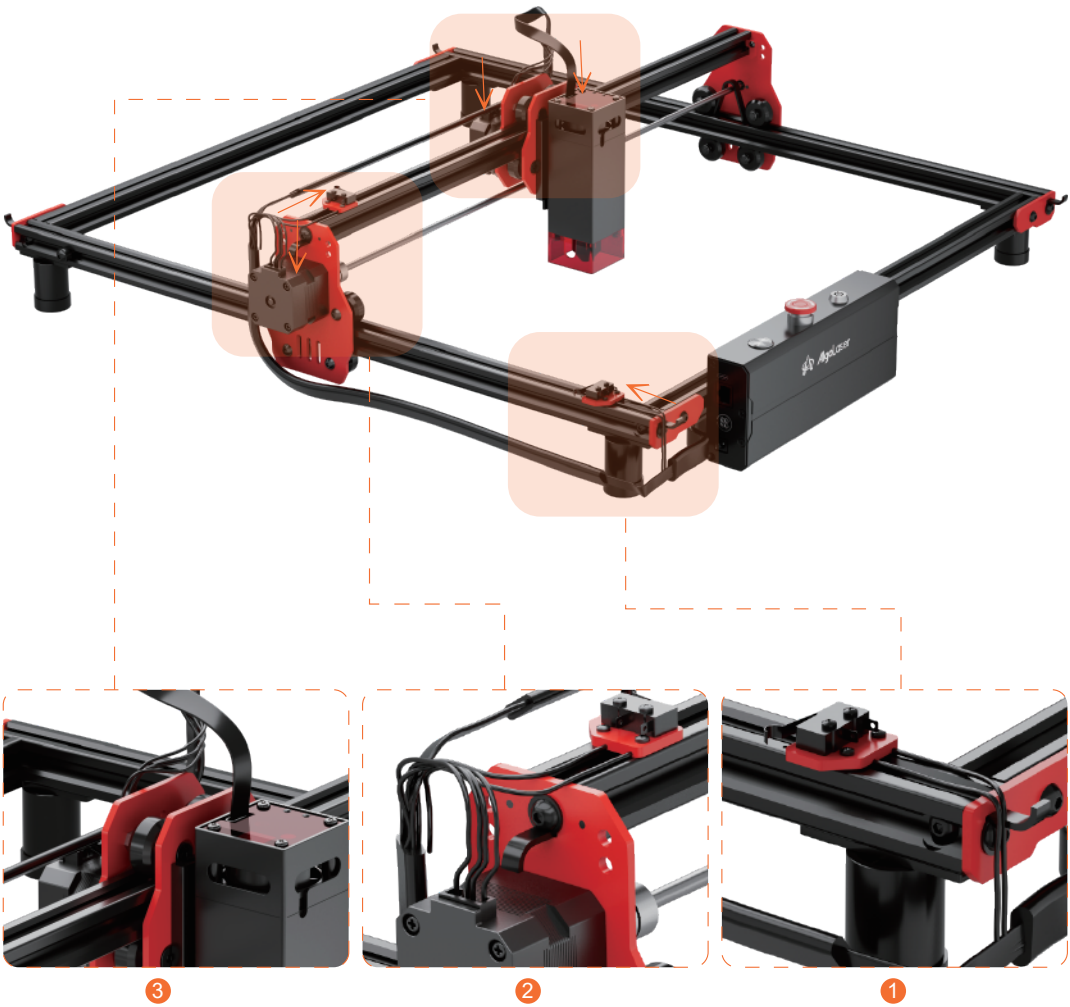
Assemble the main cable



Step 15: Insert the cable connectors into the Limit Switches, Motors, and Laser Module Sockets in the sequence shown in the picture.

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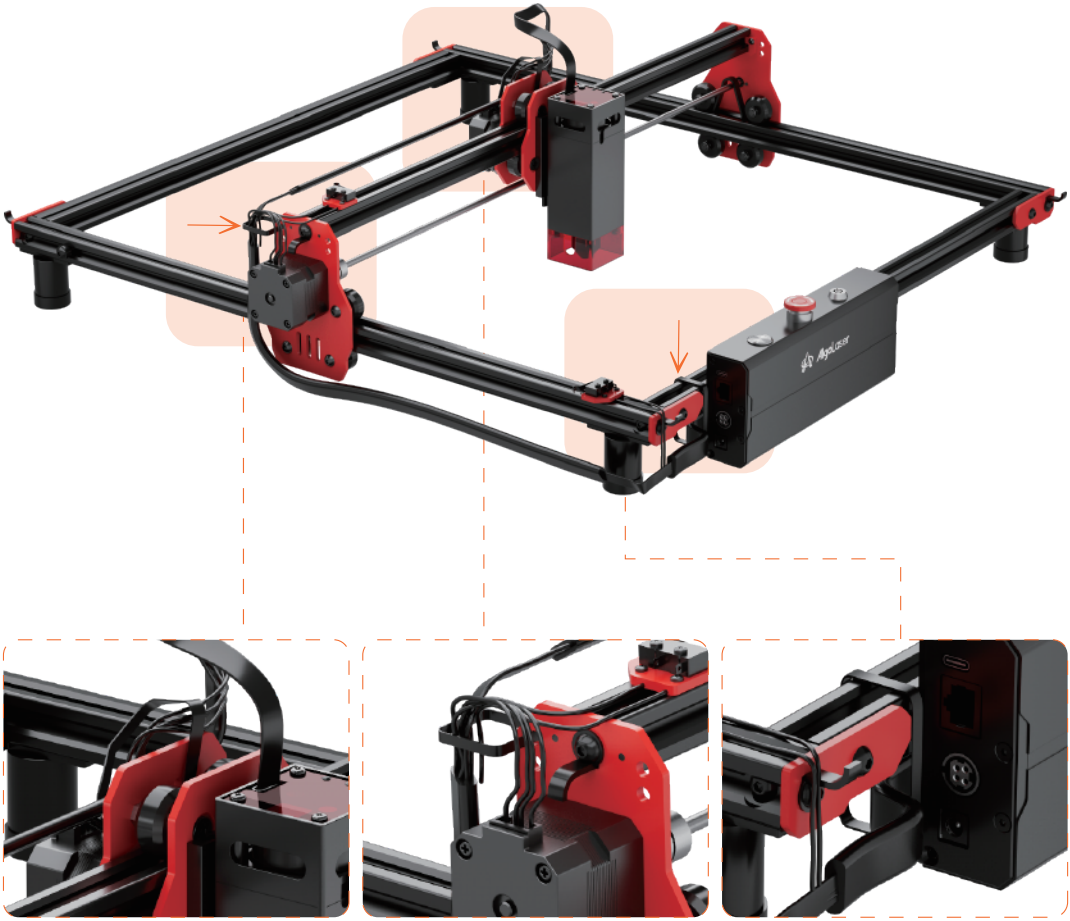
Assemble the main cable



Step 16: Secure the cables in the appropriate positions using zip ties.

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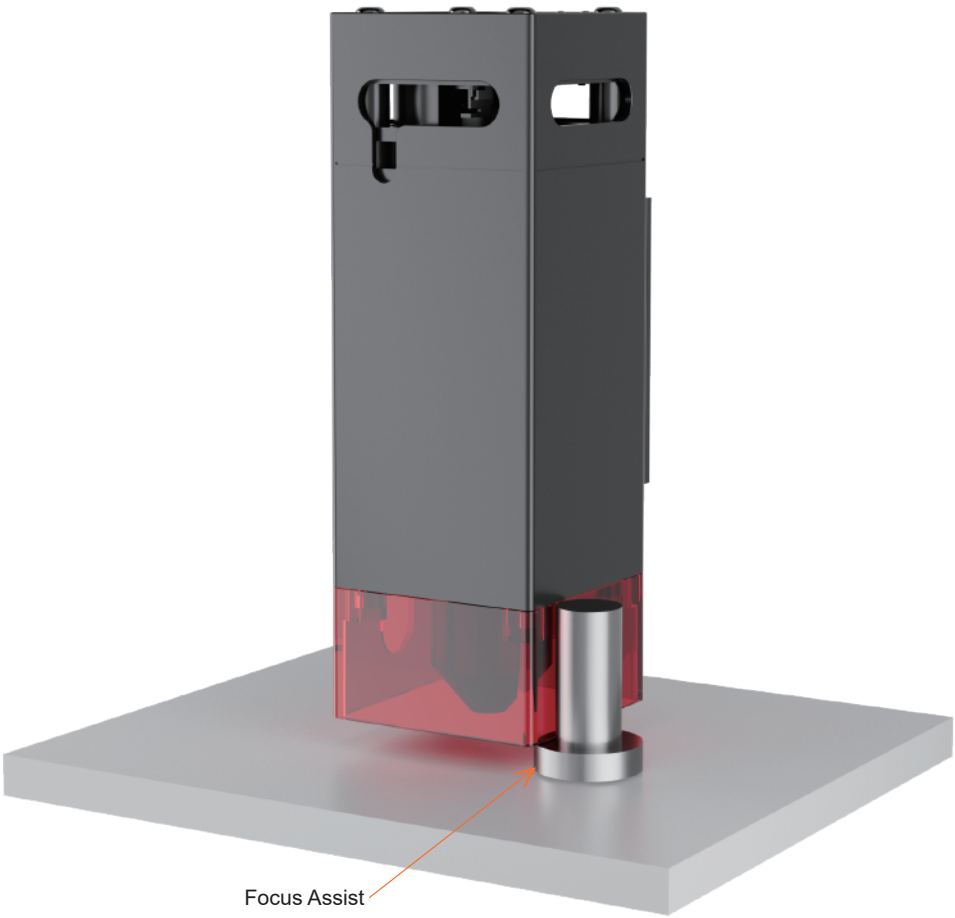
How to Focus



Step 17: First, 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 laser module's Thumbscrew to secure it. Finally, remove the Focus Assist from underneath the laser module.

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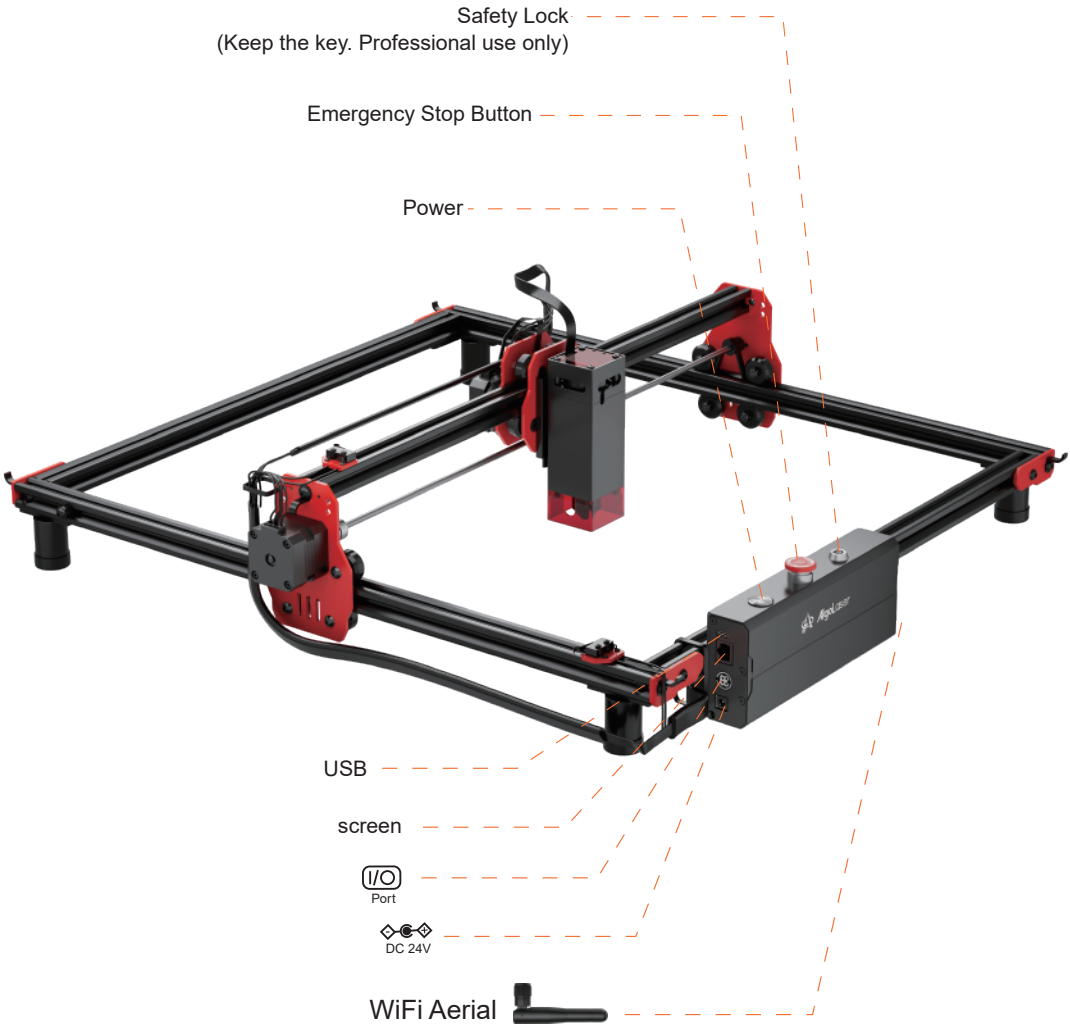
Complete



Step 18: The type-C to USB cable is used to connect the computer and machine. Ensure that the type-C end is plugged into the laser machine, while the USB end is plugged into the computer.

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	Power off Machine shuts down Machine powers off and stops all operations
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 lights transition into a colorful gradient	The machine can configure network information through the APP
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

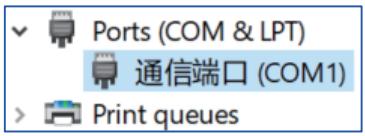
3.2 How to connect the machine to a PC

- 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-2.5.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	

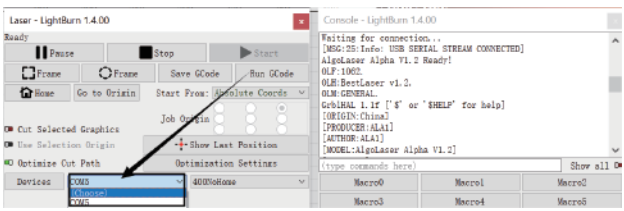
- To check the driver installation, follow these steps:

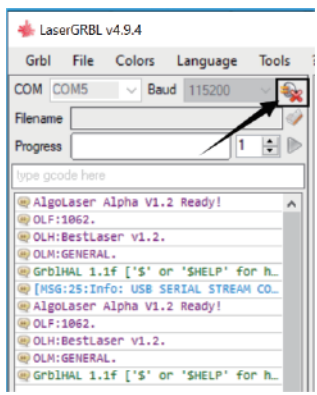
  ① Find the Device Manager on your computer.
  ② Navigate to the Ports section.
  ③ Disconnect the USB cable from the computer.
  ④ Observe that the new serial port disappears from the Ports section.
  ⑤ Reconnect the USB cable.
  ⑥ Verify that a new serial port appears, indicating successful driver installation.



- Connecting the machine

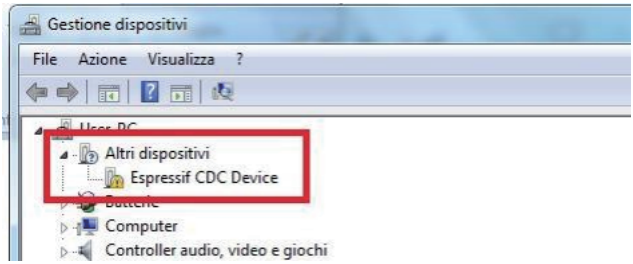
  ① Launch the LaserGRBL / LightBurn software.
  ② Select the COM port that corresponds to the one identified in step two of the installation process.
  ③ Click on the “Connect” button.
  ④ If a welcome message appears in the command box, it indicates a successful connection.





For resolving driver issues on Windows 7/8, you can follow these steps

Resolution for Driver issues on ESP MCU Espressif CDC Device Error (Applicable to WINDOWS 7/8)

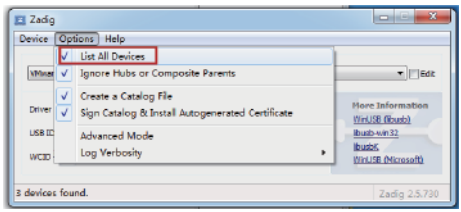


- Click on the download link to download the file: Zadig-2.5.exe

Download:https://zadig .akeo.ie/

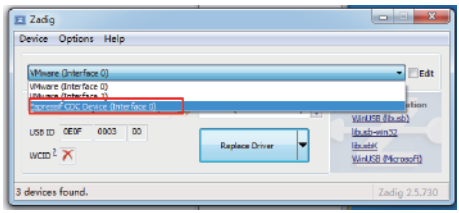
- Once download is complete,
  please run the application with Administrator Rights.

- Once open select List All Devices from the menu Options.

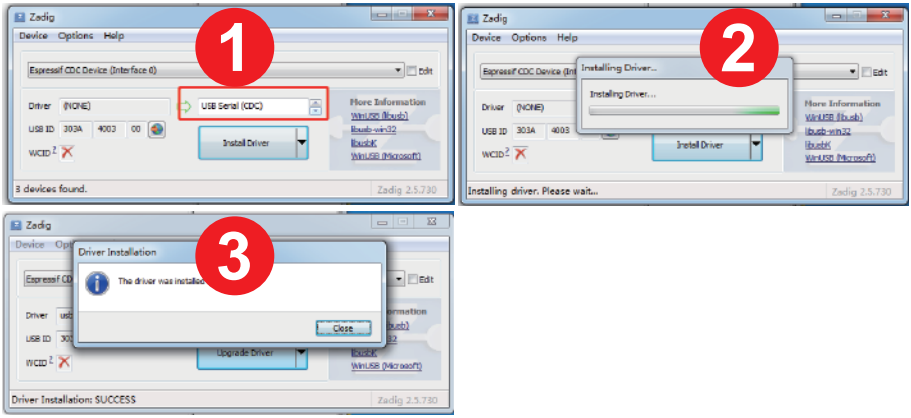


Wait for the refresh

- Select Espressif CDC Device (Interface 0) 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.

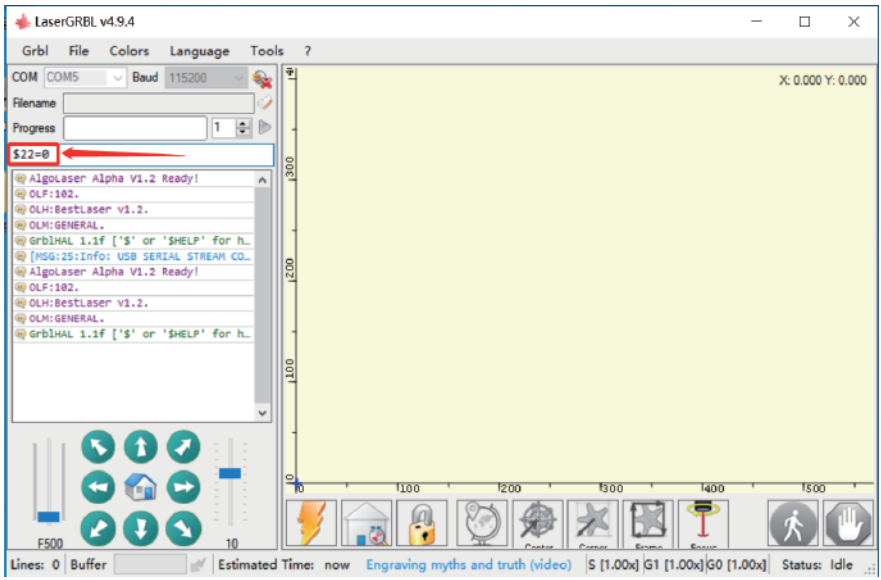


- When you're done, you can close the Zadig software.

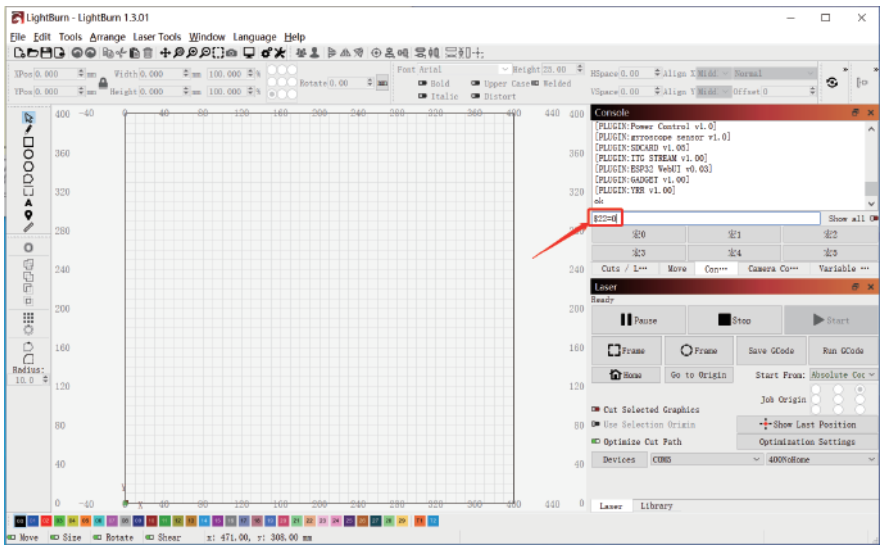
- The New Espressif CDC Device (Interface 0)(COM X) port in Device Manager. Note the COM number might be different in your machine.

3.3 YRR/YRC Connection -- Operation description

- Connection: Unplug the Y-axis motor wire from the Y-axis motor and connect it to the corresponding motor jack of YRR/YRC.
- 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 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 ha 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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