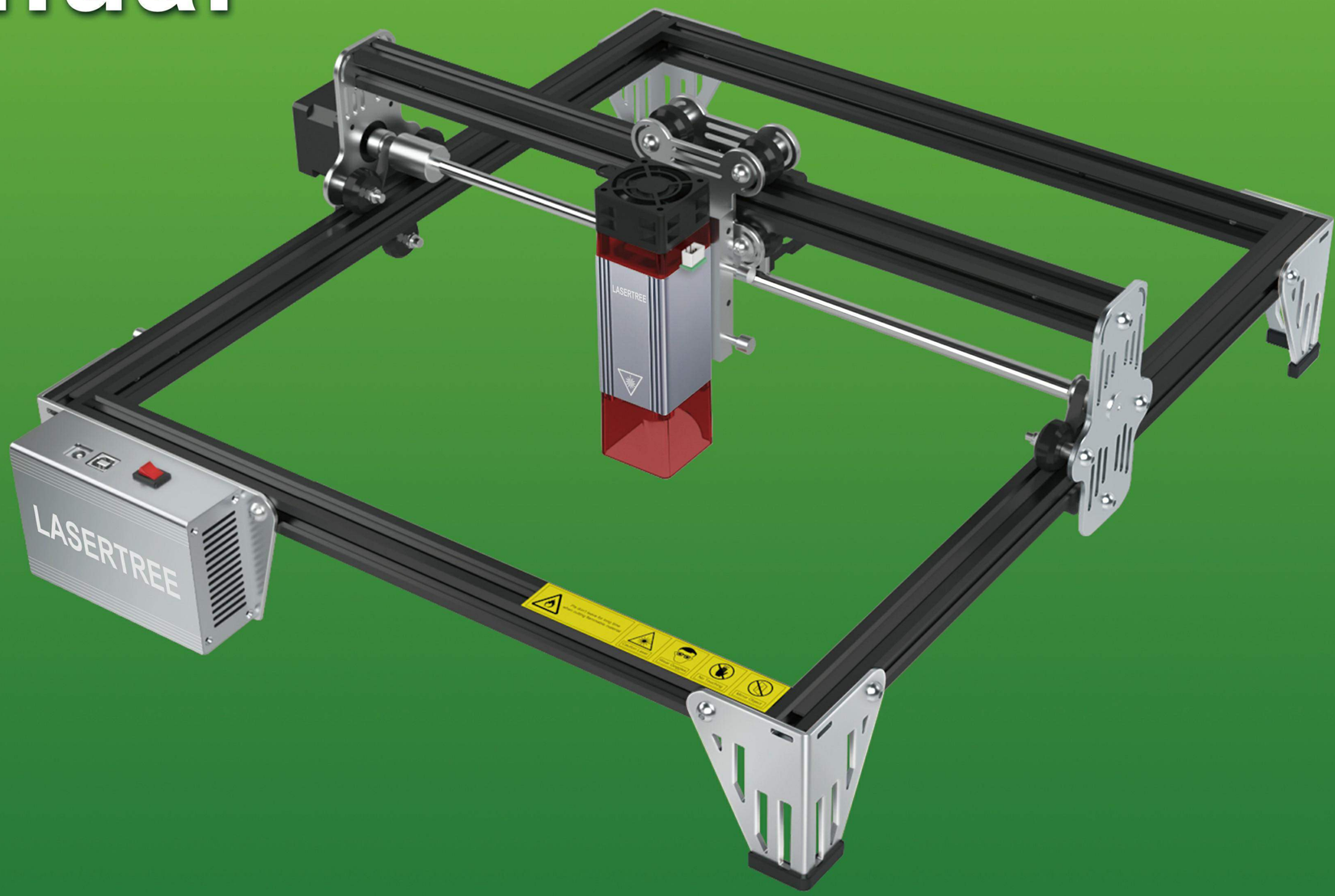
LASERTREE

K1 Mini
User Manual



CONTENT

1. SAFETY STATEMENT

Before using the laser engraving machine, please peruse this safety manual attentively to comprehend the operating protocols and potential hazards associated with the laser engraving machine.

1. Sharp edges may cut your hands when assembling the stand, gloves are recommended.
2. Laser beam have high energy and heat, direct contact with eyes or skin may cause serious injury. When the laser is working, always pay attention to the position and direction of laser beam movement.
3. Children or teenagers are strictly prohibited from using the laser engraving machine alone.
4. The laser engraver should be placed on a stable table top. Before use the laser, please clean the work area to ensure that the surrounding environment is safe and free of debris, flammable and explosive items, etc. to prevent potential safety hazards.
5. Before using the laser, carefully check the power connection of the laser engraver. Make sure that the power cord is intact and the plug is firmly connected to avoid accidents caused by power problems.
6. When the laser is working, you must wear professional protective glasses to protect your eyes from laser damage. Protective glasses can block the laser light and avoid direct exposure to the eyes.
7. When the laser is working, the engraving area should be paved with metal or non-combustible mats to prevent the laser from burning the workbench or causing fire and other safety hazards.
8. When the laser is working, please do not leave the equipment during operation. Stay focused and pay close attention to the operation of your equipment, to prevent the engraving or cutting material from catching fire.
9. When the laser is working, some materials produce smoke during laser cutting. Please keep the room well ventilated.
10. Residue and debris can accumulate during the cutting and engraving process. Please clean up the work area promptly.
11. Please ensure that a fire extinguisher is located near the laser engraving machine and that regular maintenance and inspections are conducted to promptly respond to any accidents that may occur.

2. ABOUT LASER ENGRAVING MACHINE

① X-Axis Assembly

② Y-Axis Motor

③ Y-Axis Left Frame

④ DC5521 Power Port

⑤ USB Port

⑥ Power Switch

⑦ Mainboard Assembly

⑧ 10W Laser Module

⑨ Laser protective cover

⑩ Front Frame

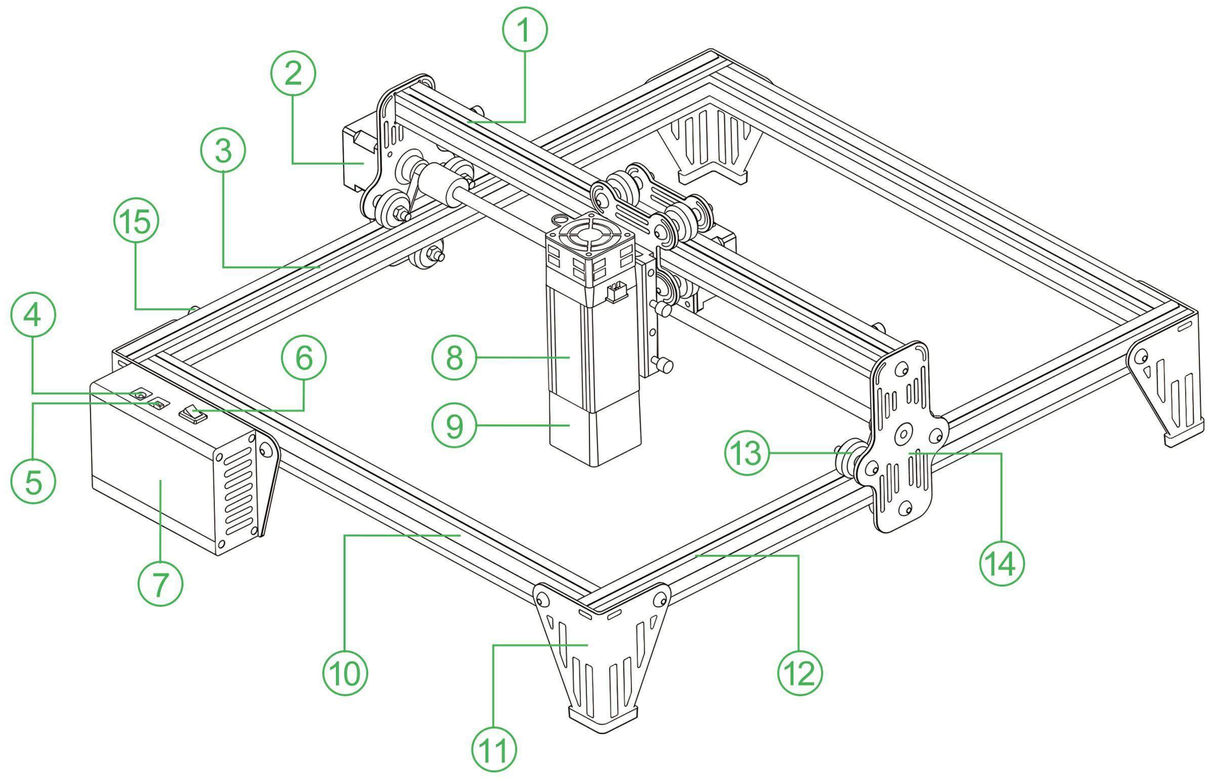
⑪ Support Feet

⑫ Y-Axis Right Frame

⑬ Pulley Assembly

⑭ Y-Axis Pulley Fixing Plate

⑮ Limiting column



⑯ Y-Axis Motor Fixing Plate

⑰ Y-Axis Timing Belt

⑱ Coupling

⑲ Drive Shafts

⑳ X-Axis Pulley Fixing Plate

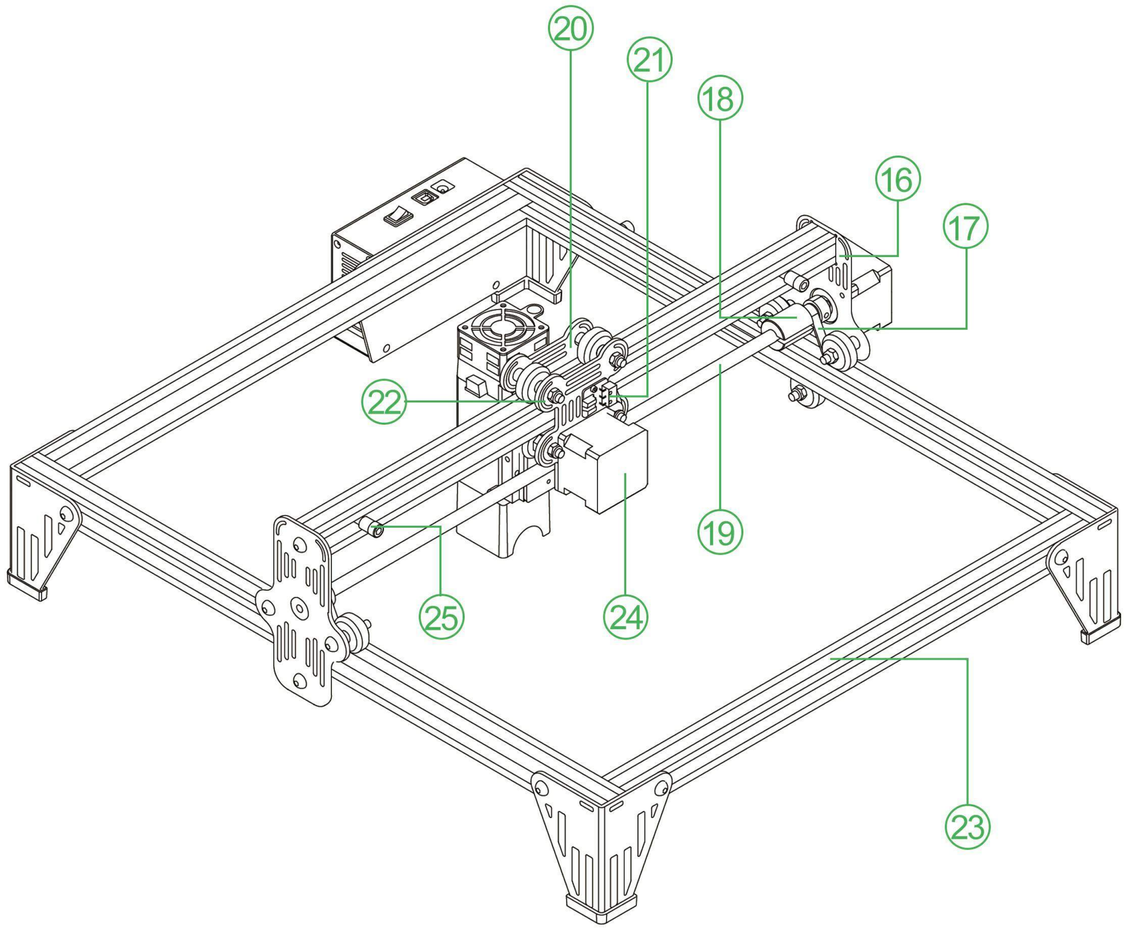
㉑ Limit Switches

㉒ X-Axis Motor Fixing Plate

㉓ Rear Frame

㉔ X-Axis Motor

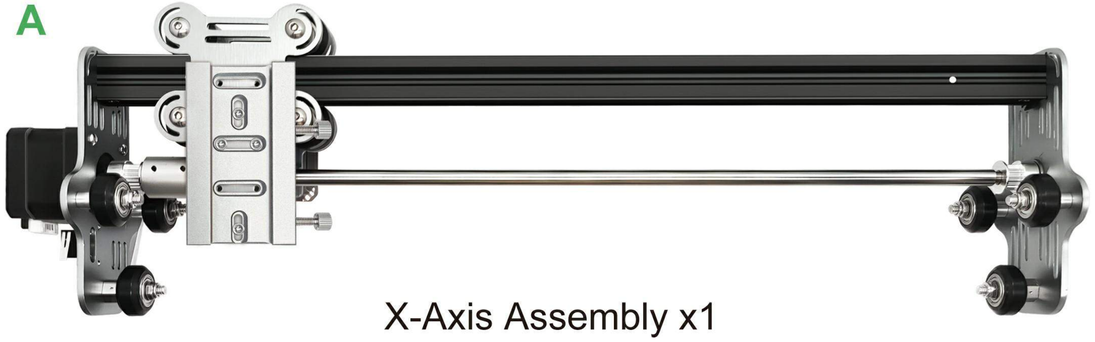
㉕ Limiting column



3. PACKING LIST

Laser Engraving Machine

A



X-Axis Assembly x1

B

Y-Axis Frame x2

C

Front Frame x1

D

Rear Frame x1

E

Support
Feet x3

F

Mainboard
Assembly x1

G

Y-Axis
Timing Belt x2

H

DC12V5A
Power Adapter x1

I

USB Cable x1

J

10W
Laser module x1

K

M5*20
Round Screw x12

L

M5*20
Flat Screw x1

M

Limiting
Column Sleeve x1

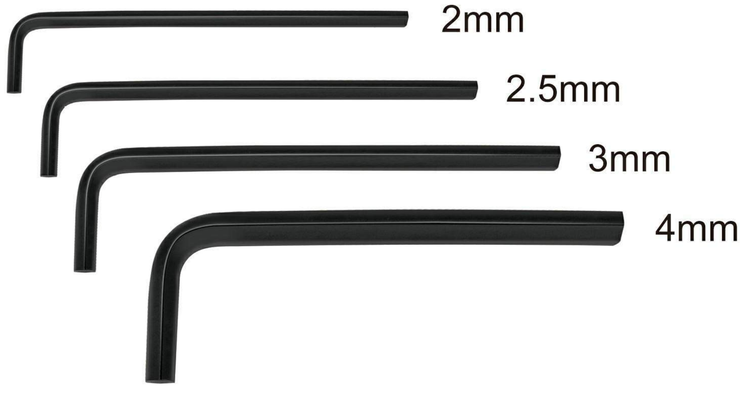
N

T-Nut x4

O

M4*5
Fasten Screw x4

Toolkit for Machine

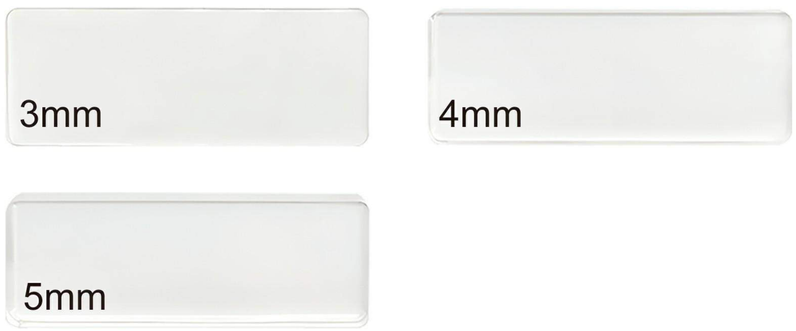


L-Allen Wrench x4

Cable Ties x3

Clean Brush x1

Toolkit for Laser Module



Fixed Focus Plate x3

1.5mm L-Allen Wrench x1

Spare Laser protective lens x1

4. SPECIFICATION PARAMETERS

Brand	LASERTREE	Laser Optical Power	10W (±1W)
Model	K1 Mini	Input	DC12V5A
Machine Size	300*300mm	Wavelength	450nm (±10nm)
Net Weight	3.65kg	Working Focus	45mm
Application	Engraving & Cutting	Engraving Precision	0.01mm
Support Software	LightBurn & LaserGRBL	Engraving Speed	6000mm/min
Support Material	Wood, paper, leather, bamboo, alumina, stainless steel, non-transparent acrylic, etc.	Operating temperature	0-60°C

5. INSTALLATION GUIDE

- Assembly of frame

B

Y-Axis Frame x2

C

Front Frame x1

K

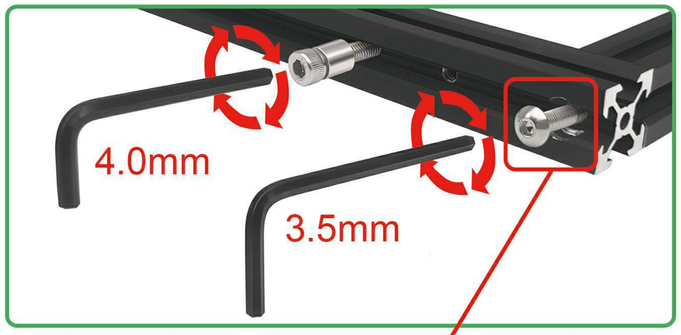
M5*20
Round Screw x2

L

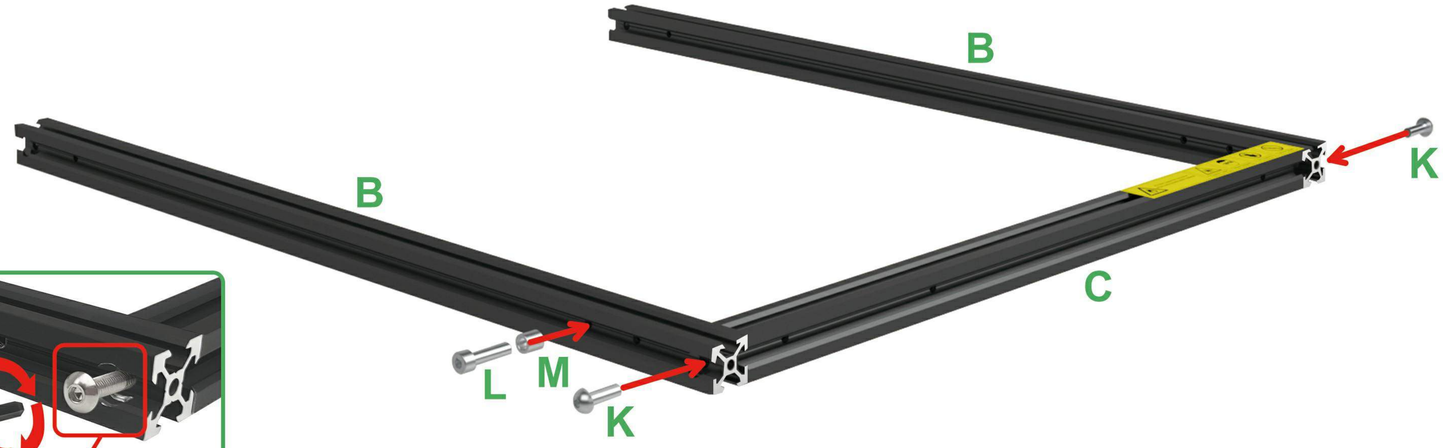
M5*20
Flat Screw x1

M

Limiting
Column Sleeve x1



Please pay attention to the Y-axis direction,
the threaded groove is facing outward.



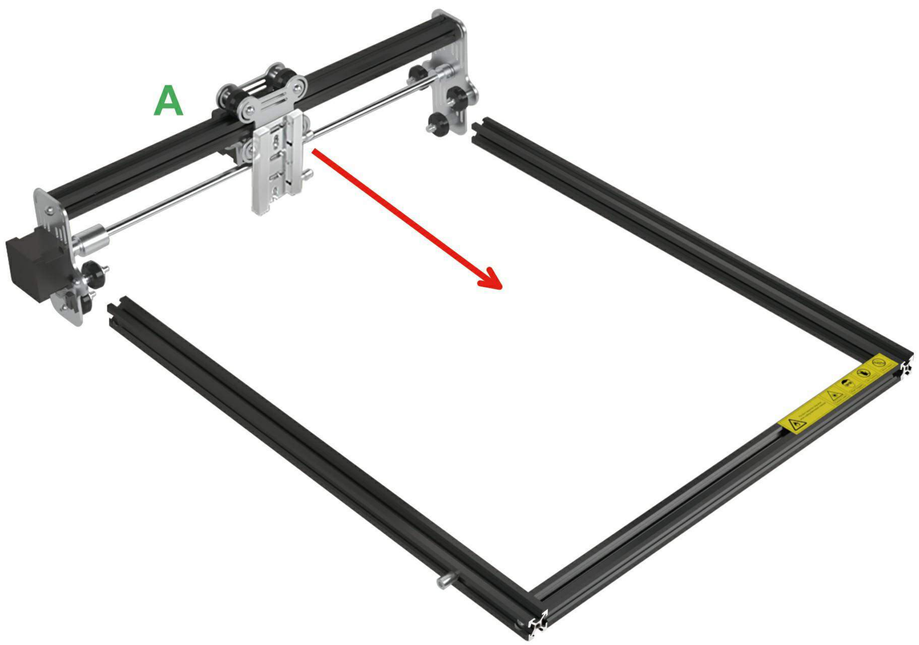
Please use the yellow warning sticker as a reference and pay attention to the position of the front frame to prevent it from being fitted backwards.

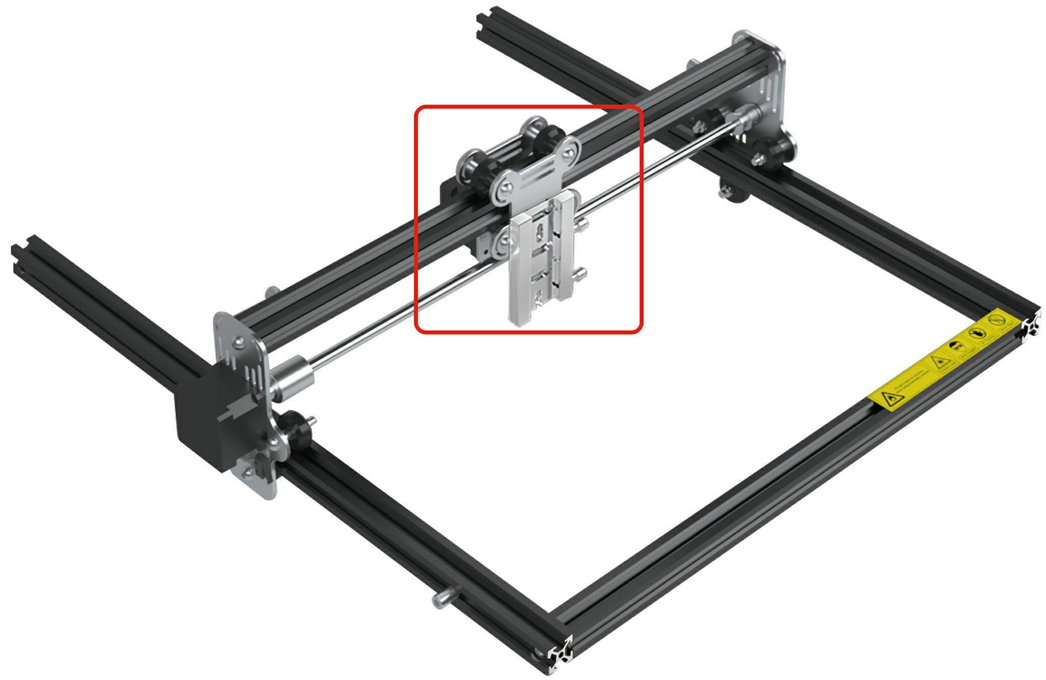
• Assembly of X-axis

A

X-Axis Assembly x1

Push the X-axis into the Y-axis grooves on both sides.
Please note that the X-axis motor should be at the rear and the module chute should be at the front.





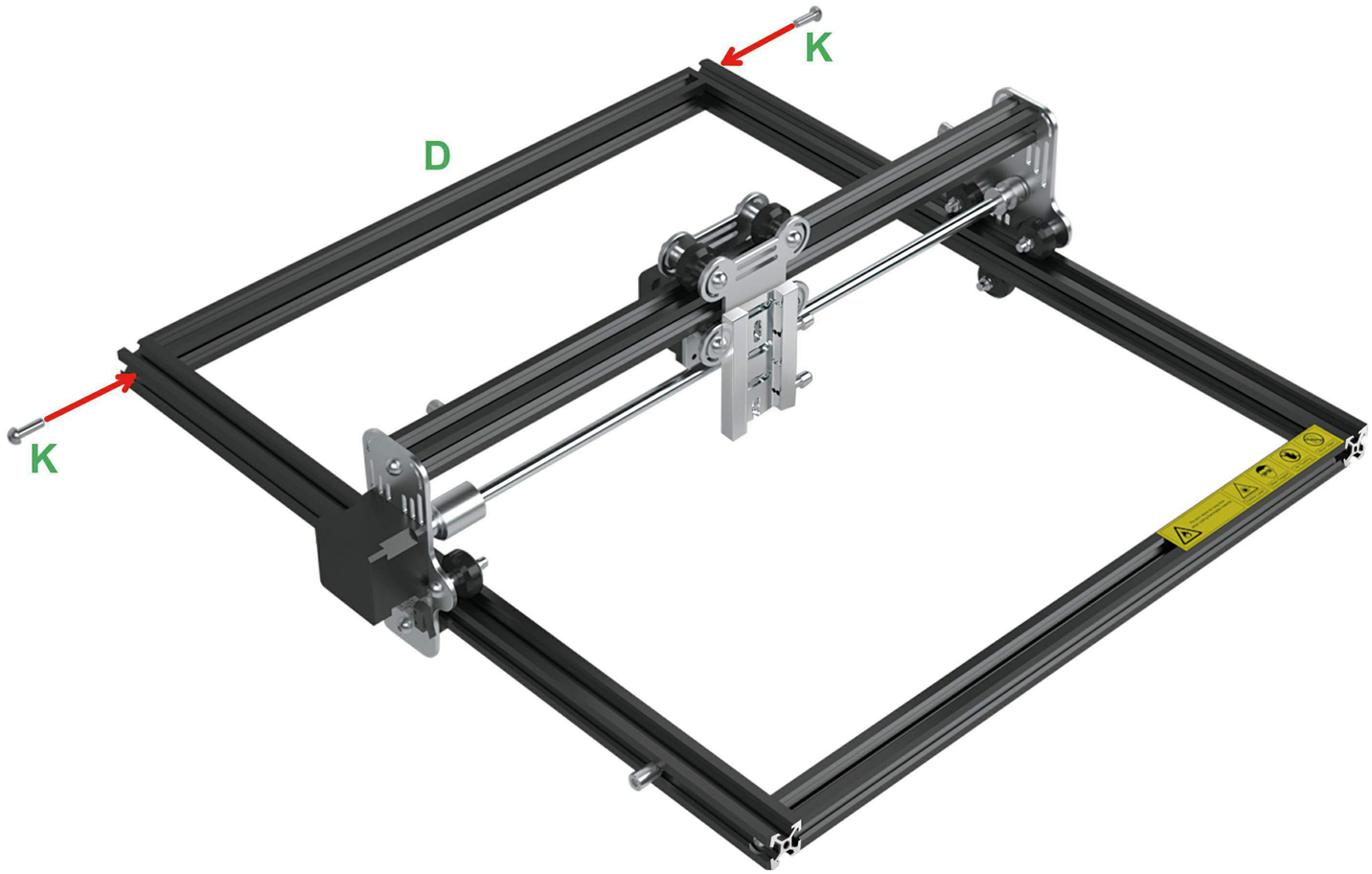
• Assembly of rear frame

D

Rear Frame x1

K

M5*20 Round Screw x2



• Assembly of Y-axis timi belt and support foot

G 

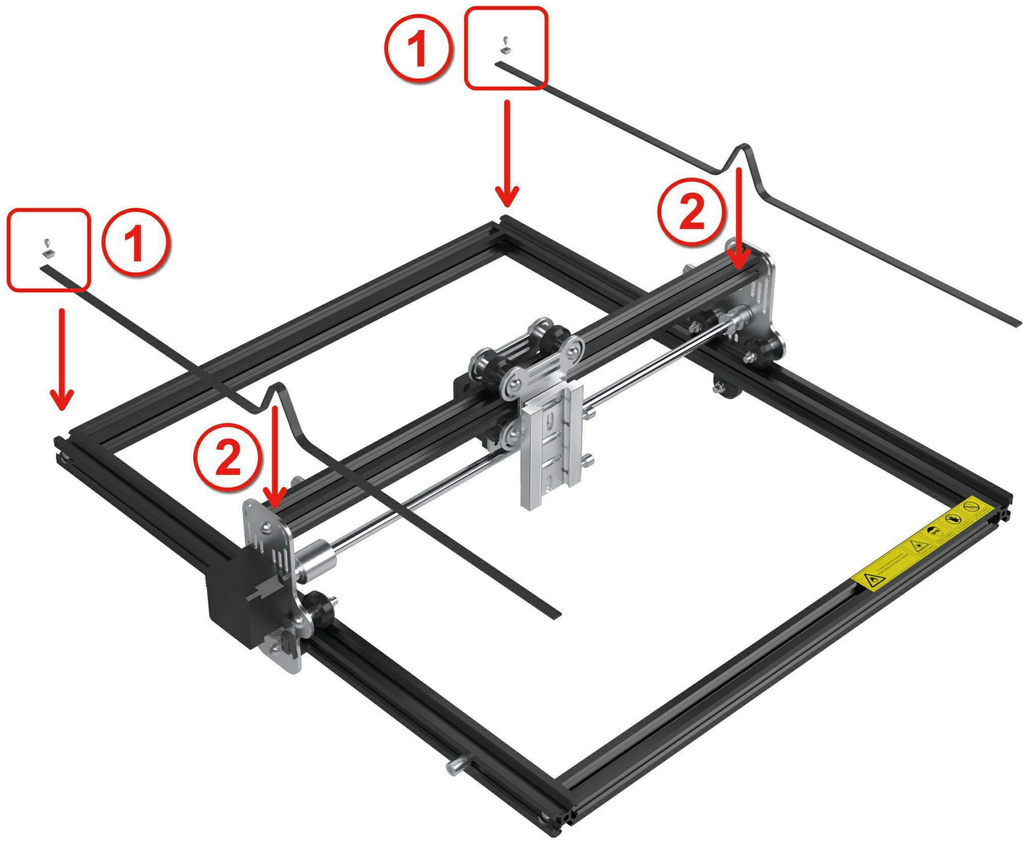
Y-Axis Timi Belt x2

N 

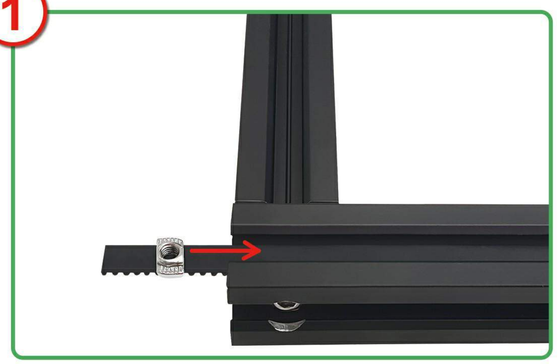
T-Nut x2

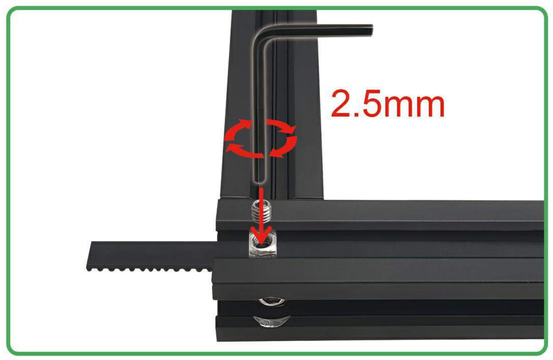
O 

M4*5 Fasten Screw x2



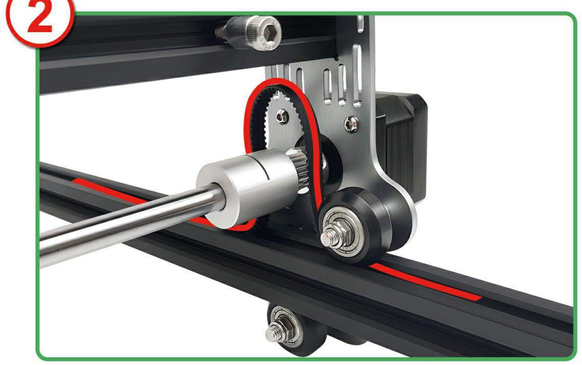
1

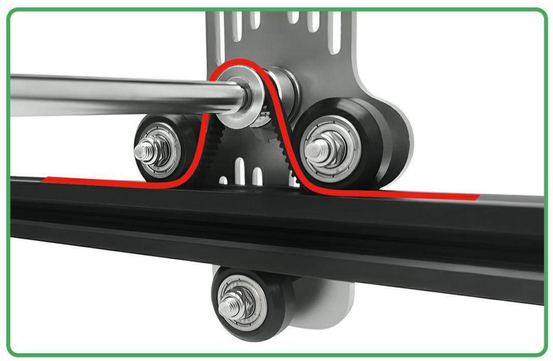




Put the timing belt tooth surface downward and use a T-nut to fix one end to the Y-axis groove of the rear cross member. Fix it with M4*5 fastening screws to prevent the timing belt from loosening or falling off during movement.

2





Pass the timing belt through the X-axis pulley manually or using appropriate tools so that it fits snugly and ensures that the timing belt moves smoothly on the pulley.

N 

T-Nut x2

E 

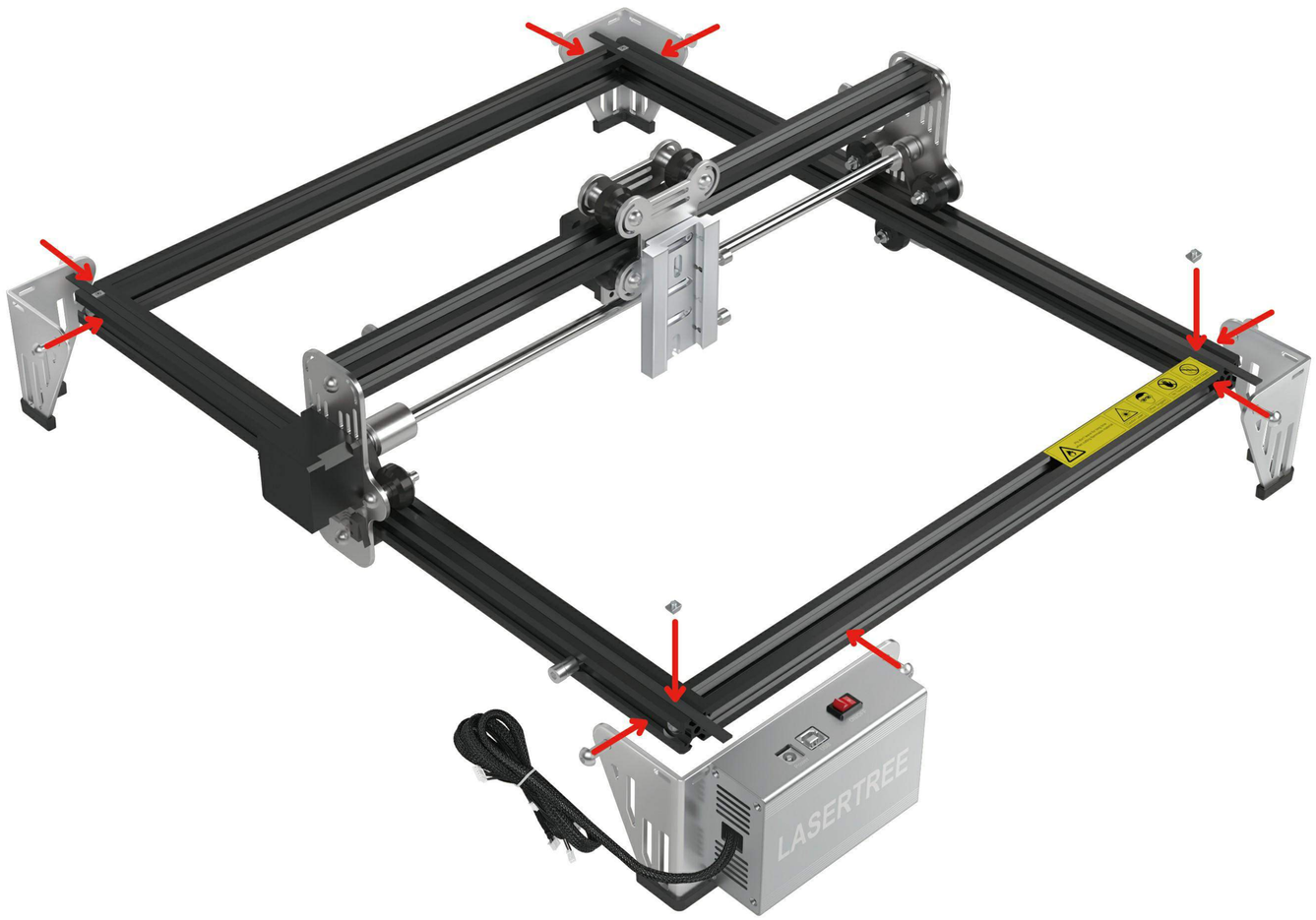
Support Feet x3

F 

Mainboard Assembly x1

K 

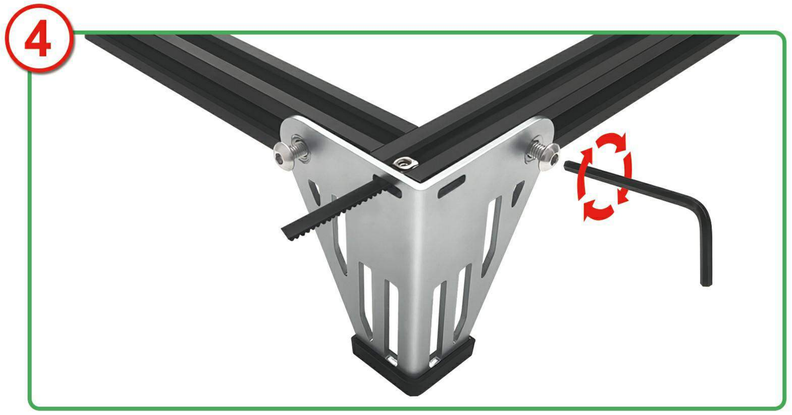
M5*20 Round Screw x8



3

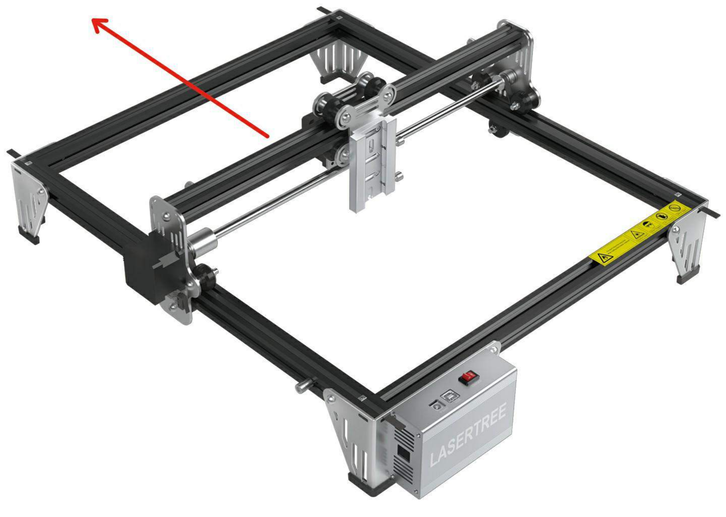
Use a T-nut to secure the other end of the timing belt into the groove of the Y-axis front beam.

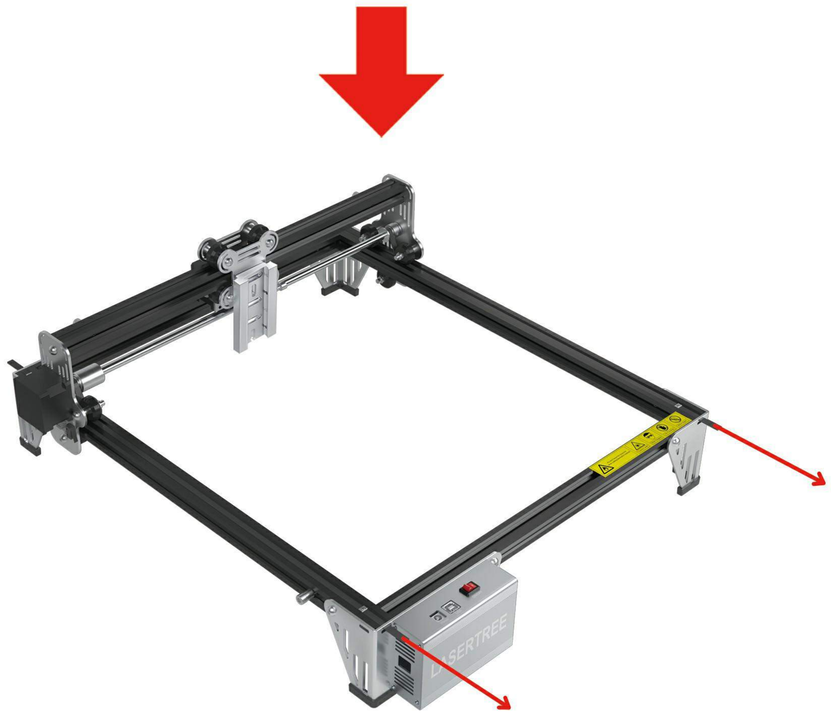
4



Use M5*20 screws to fix the four corner support feet.

5 Push the X-axis backward to ensure that the X-axis is in close contact with the rear beam without any gap.

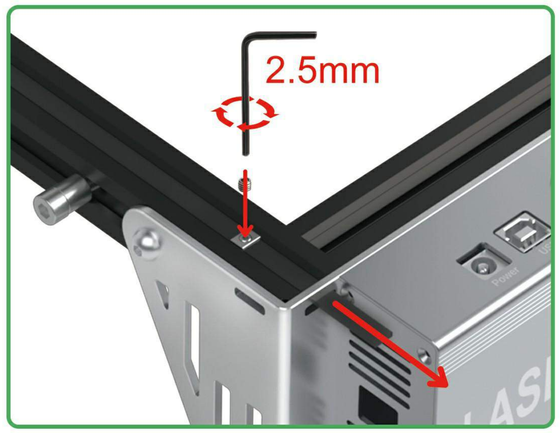


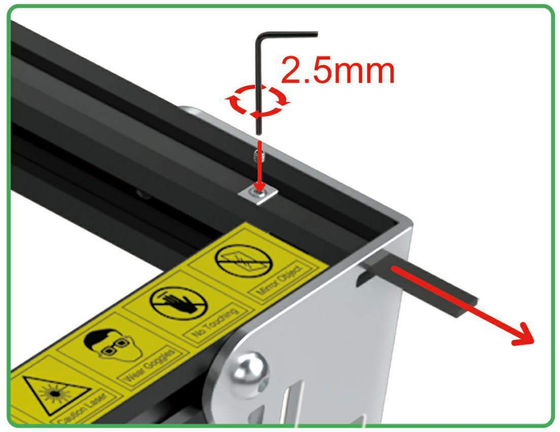


O

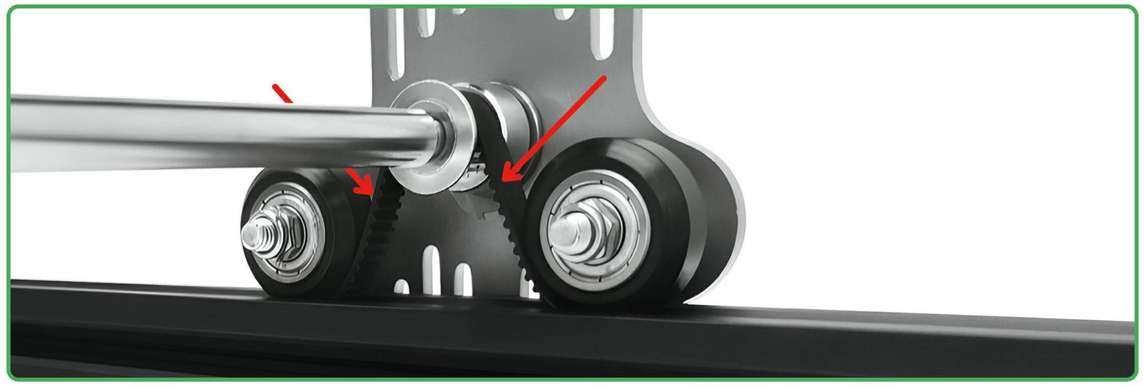
M4*5 Fasten Screw x2

6 Tighten the front beam timing belt and tighten it with M4*5 fastening screws.

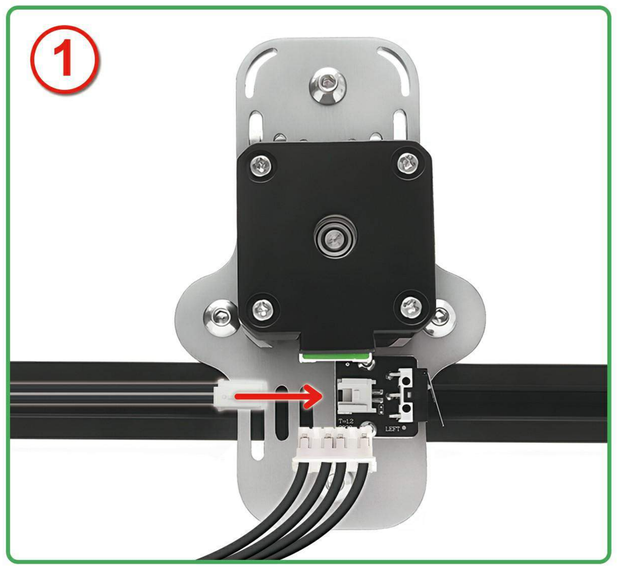




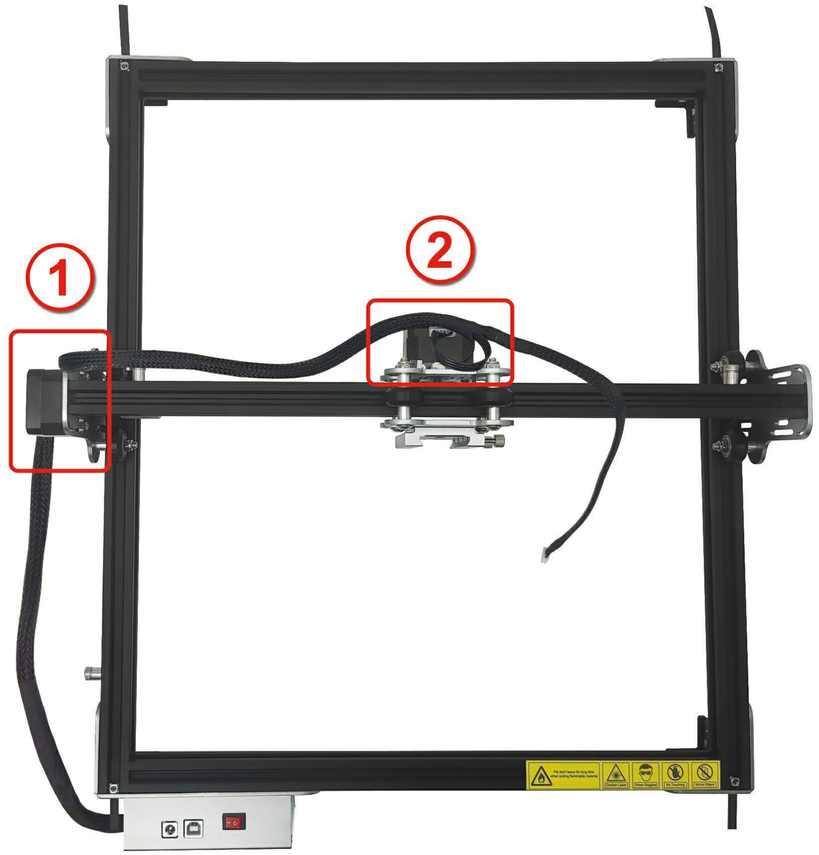
7 For a final check, press your finger on the middle span of the timing belt pulley to make sure the belt is flexible. If the belt is too loose or too tight, it will need to be adjusted.

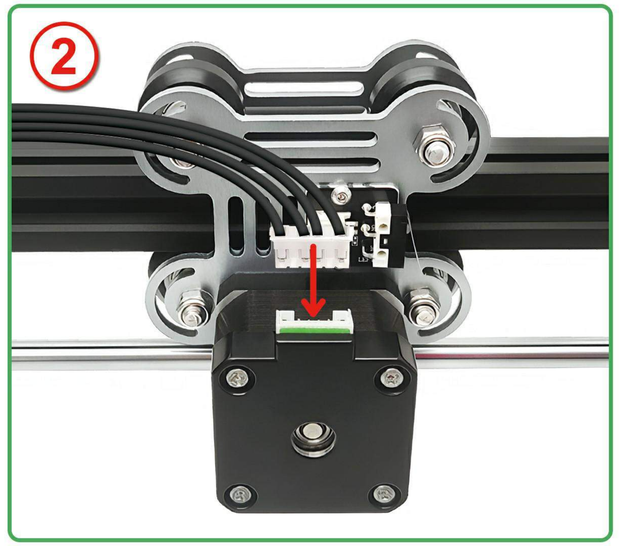


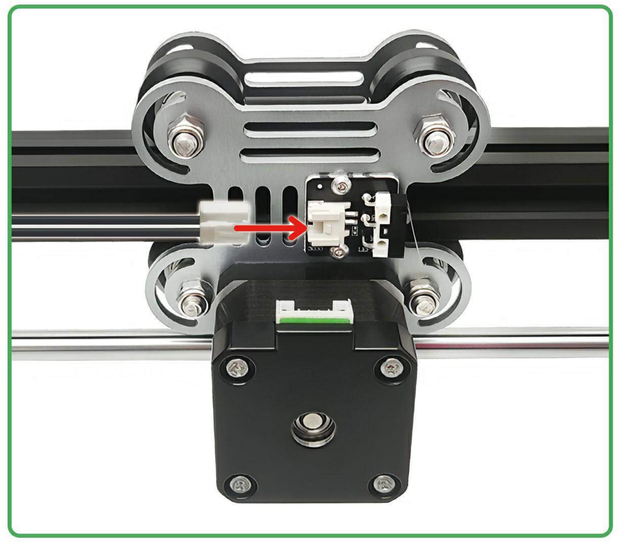
- Connecting cables



Connect Y-axis motor







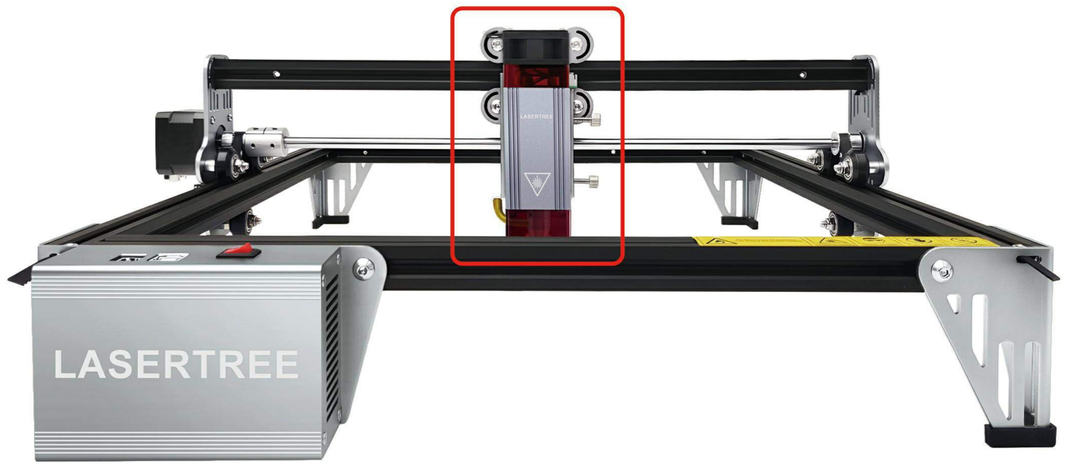
Connect X-axis motor

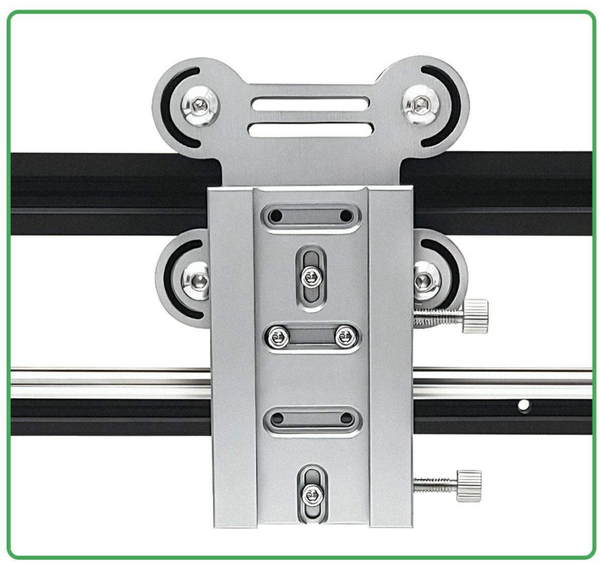
• Assembly of laser module

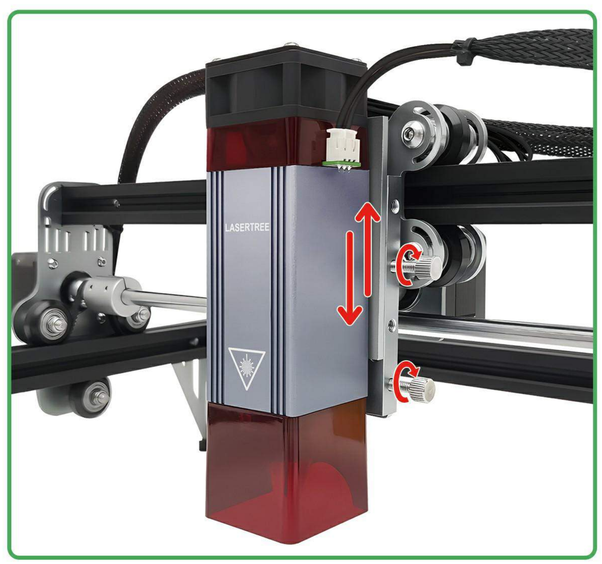
J

10W Laser module x1

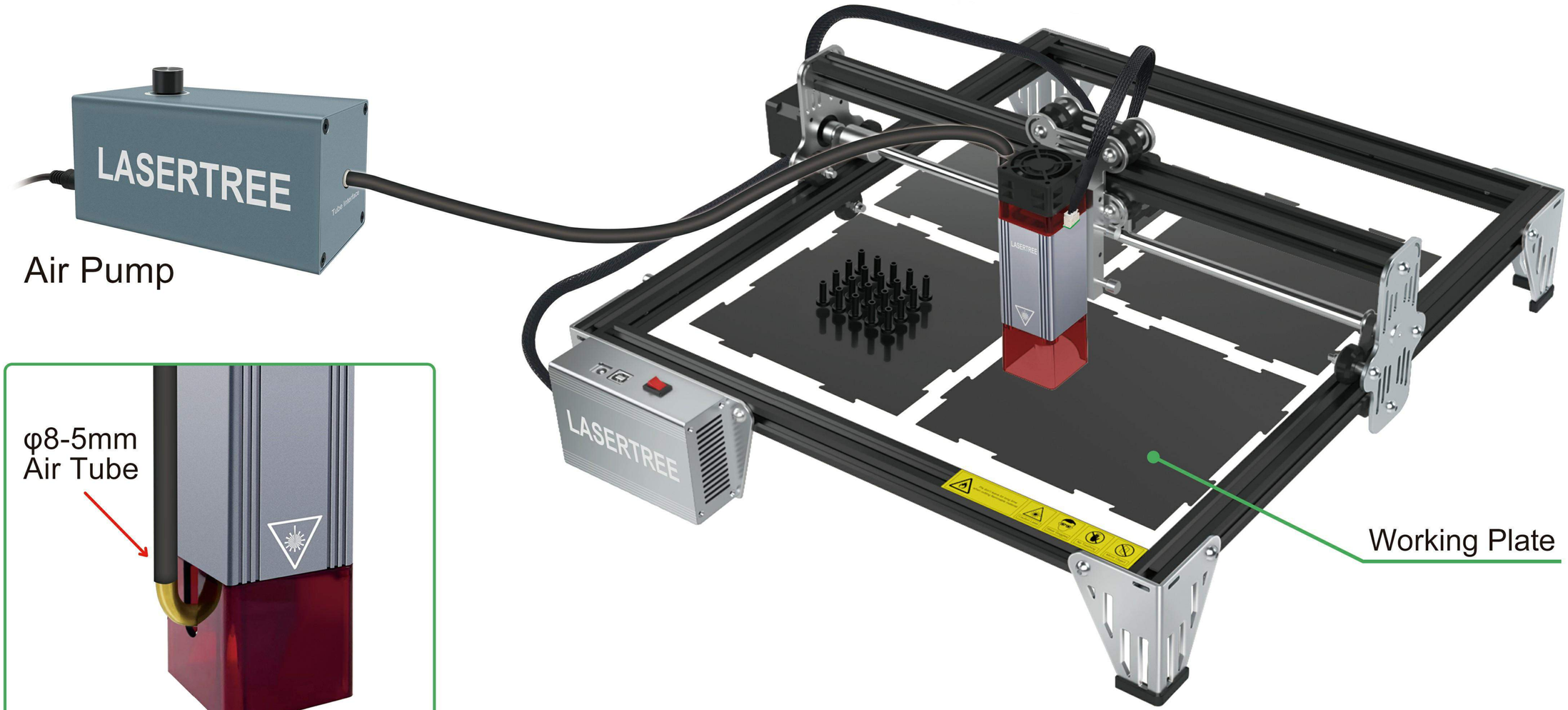
8

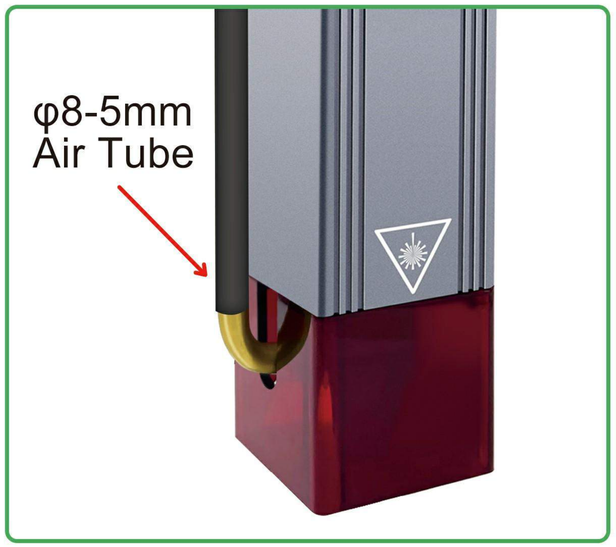






- Assembly of engraving machine completed





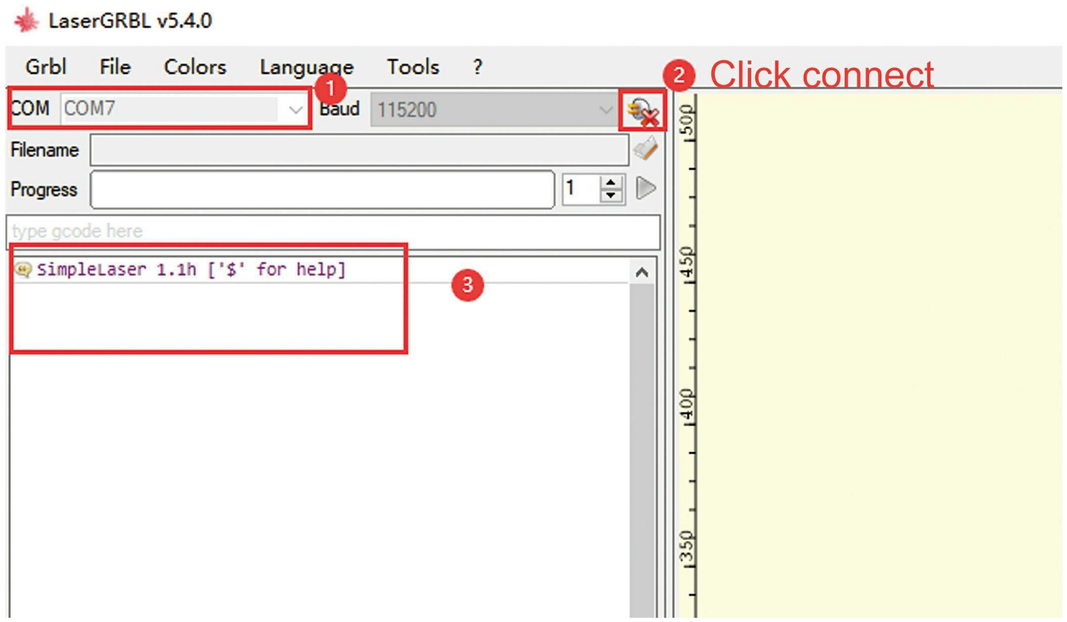
6. SOFTWARE CONNECTION GUIDE

The K1 Mini supports LaserGRBL and LightBurn engraving software.

6.1 LaserGRBL

LaserGRBL download address: https://lasergrbl.com/download/
(You can refer to the usage in the https://lasergrbl.com/.)

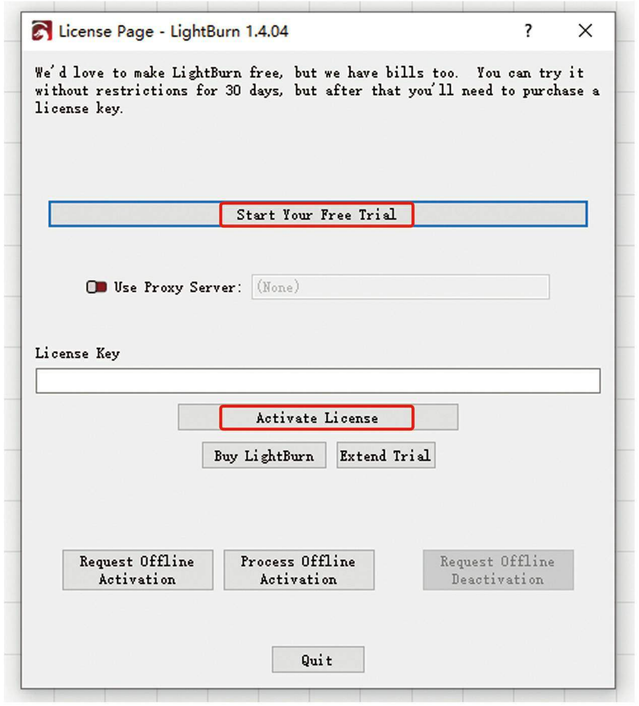
1) Connect one end of the USB data cable to the engraving machine and the other end to the USB port of the computer with LaserGRBL software installed.
2) Connect the power port of the engraving machine through the DC12V5A adapter and turn on the power switch.
3) Open the LaserGRBL software on the computer, select the correct COM port and click connect. If the status bar displays "SimpleLaser 1.1h", the connection is successful.



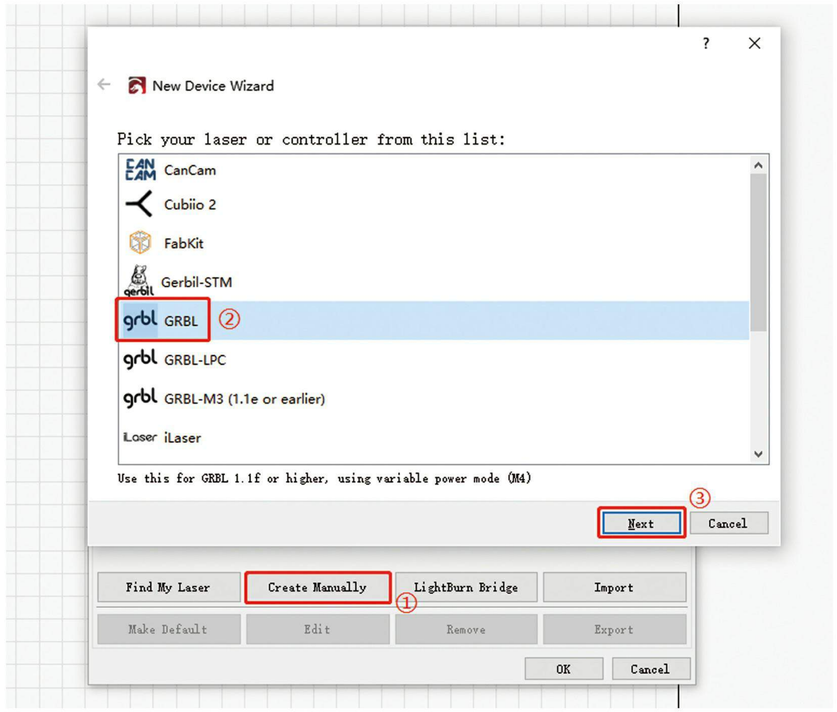
6.2 LightBurn

LightBurn download address: https://lightburnsoftware.com/pages/download-trial
(Please be aware that you will need to buy lightBurn yourself as it is not available for free. You can refer to the usage in the https://lightburnsoftware.com/.)

1) Connect one end of the USB data cable to the engraving machine and the other end to the USB port of the computer with LightBurn software installed.
2) Connect the power port of the engraving machine through the DC12V5A adapter and turn on the power switch.
3) Open the LightBurn software, select “Start Your Free Trial” or “Actirate License”. (Figure 1)
4) Create a new device, select "GRBL". (Figure 2)



(Figure 1)



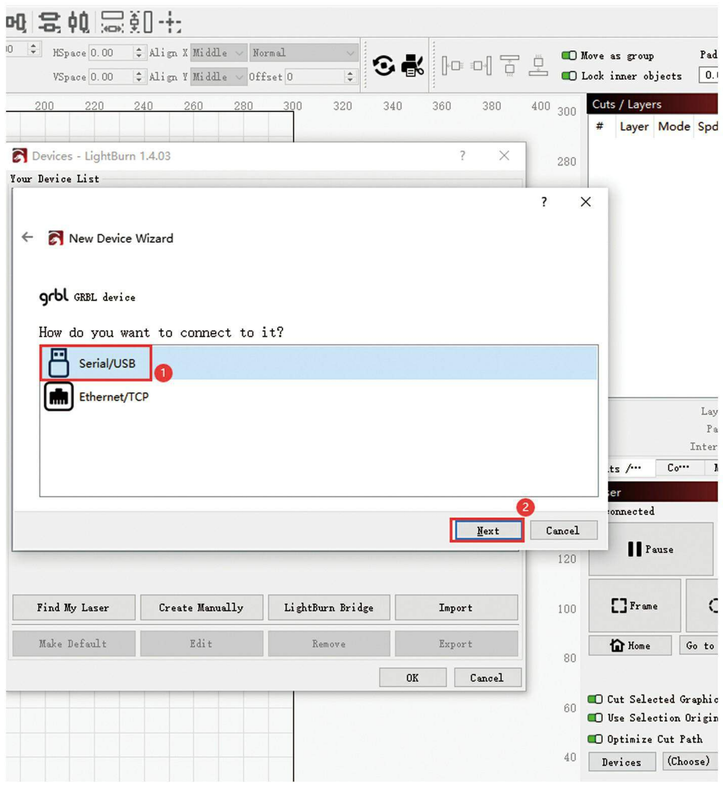
(Figure 2)

5) Select USB connection. (Figure 3)

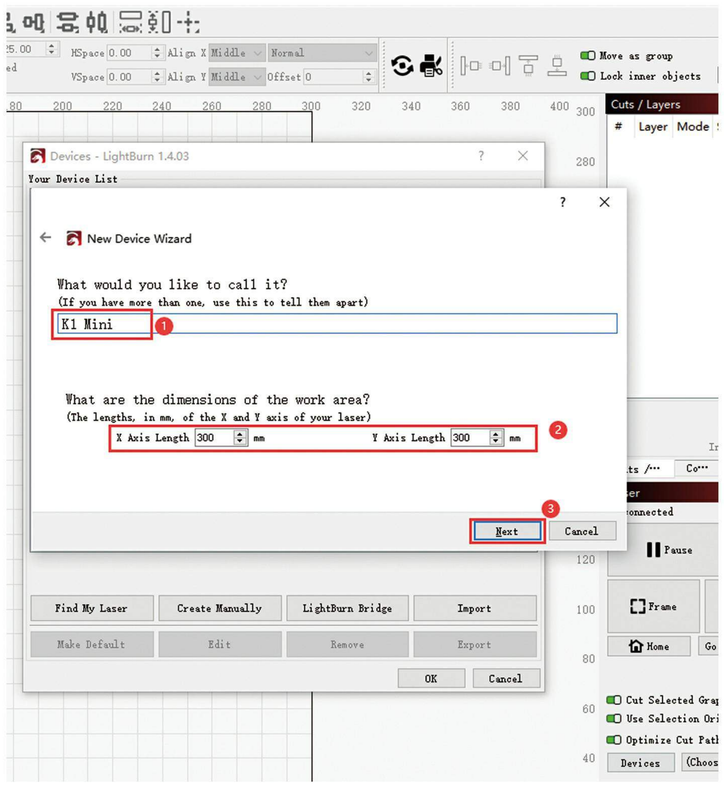
6) Set the engraving size to 300*300mm and modify the device name "K1 Mini". (Figure 4)

7) Set the origin position of the machine and turn off automatic reset on power-on. (Figure 5)

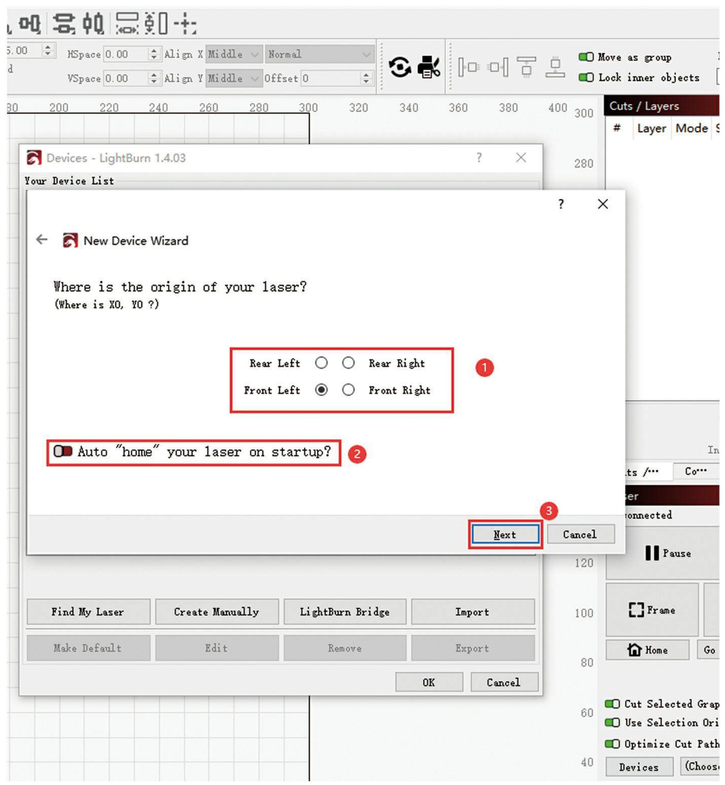
(If you need to automatically reset every time you turn on the computer, please tick step 2 of the attached diagram.)



(Figure 3)



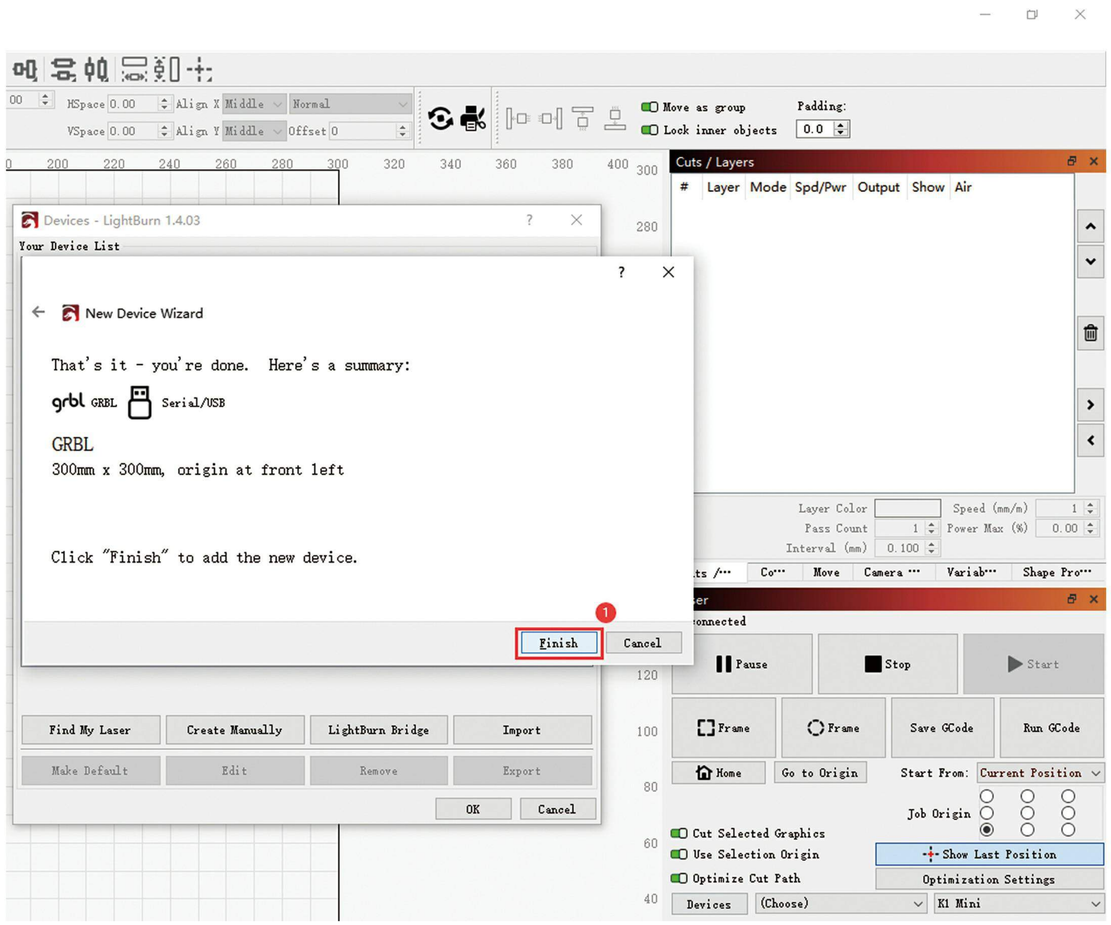
(Figure 4)



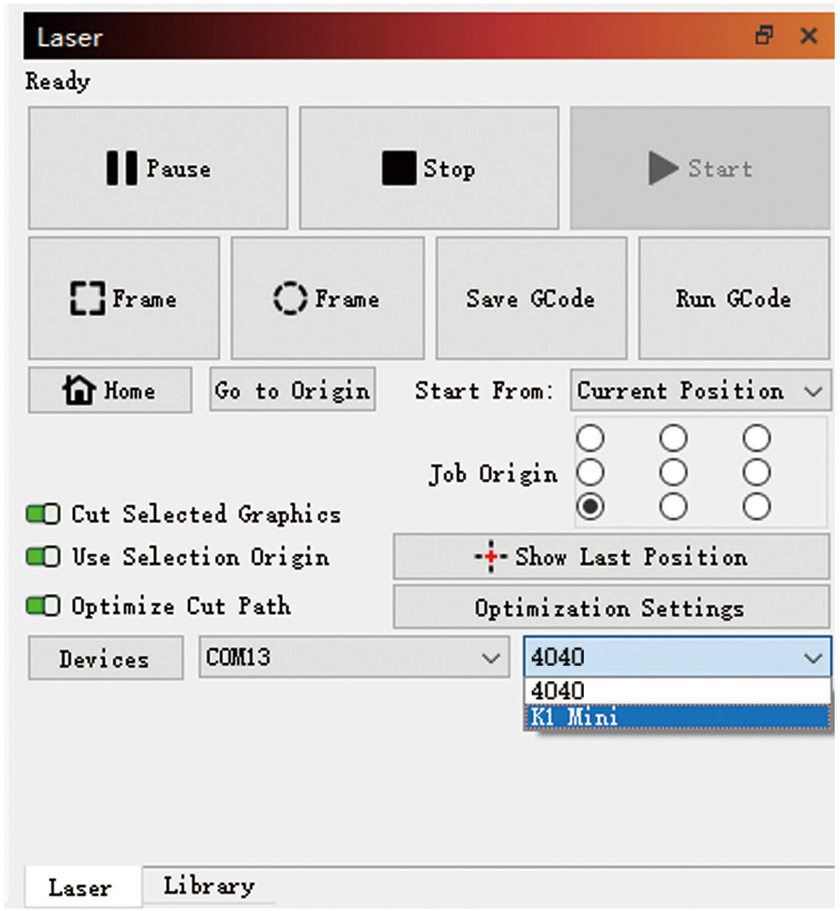
(Figure 5)

8) Complete software setup. (Figure 6)

9) Select the "K1 Mini" device and the correct COM port. When the status bar displays Ready, the device is successfully connected. (Figure 7)



(Figure 6)

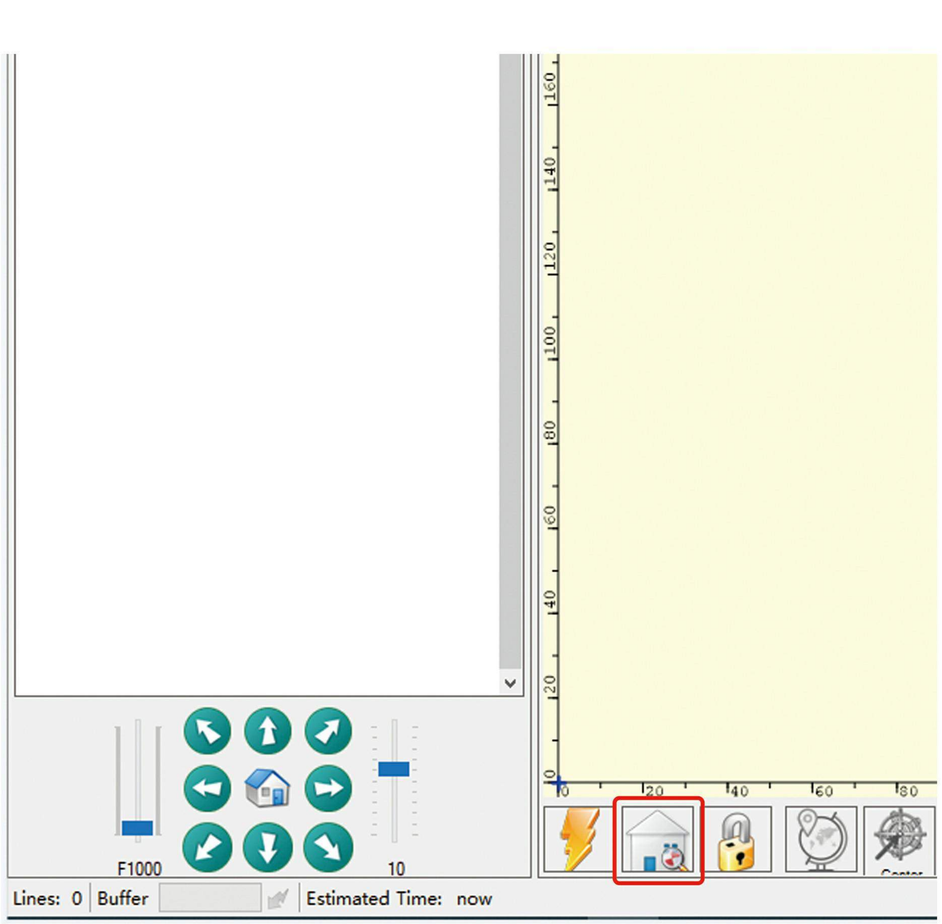


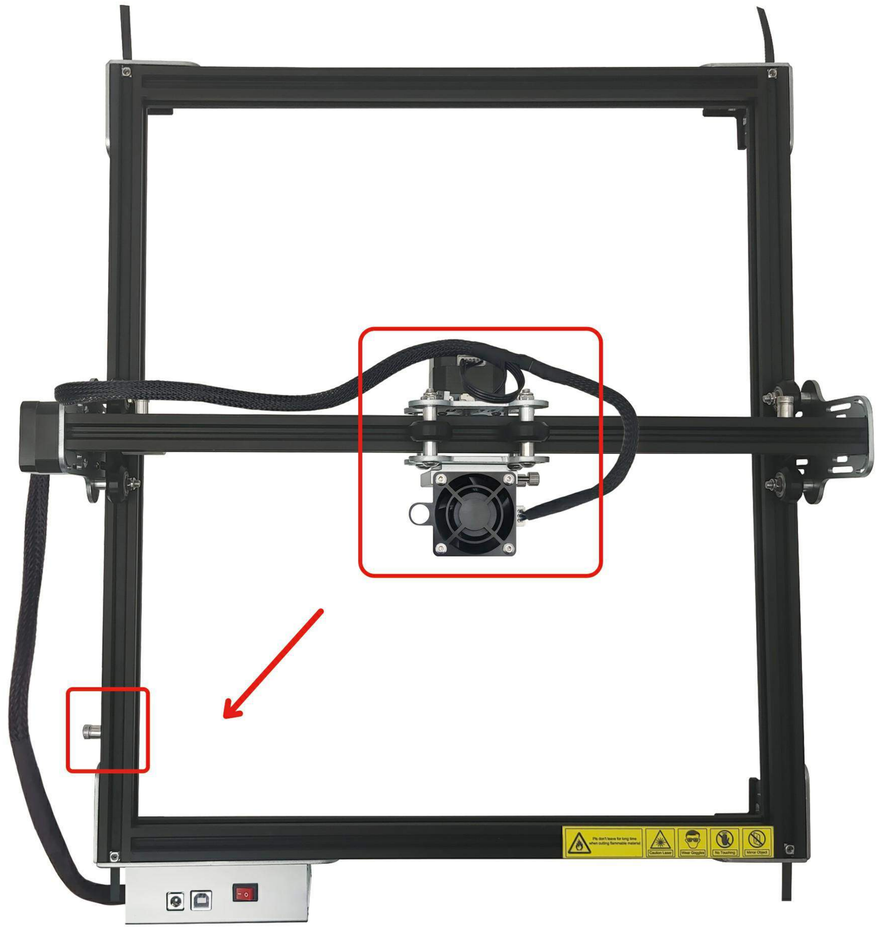
(Figure 7)

7. MACHINE TEST GUIDE

7.1 LaserGRBL

1) Engraving machine reset test: Find the reset button on the default interface of LaserGRBL and click it. Under correct operation, Under correct operation, the laser module should be moved to the side of the control box and stopped moving when it hits the limit column.



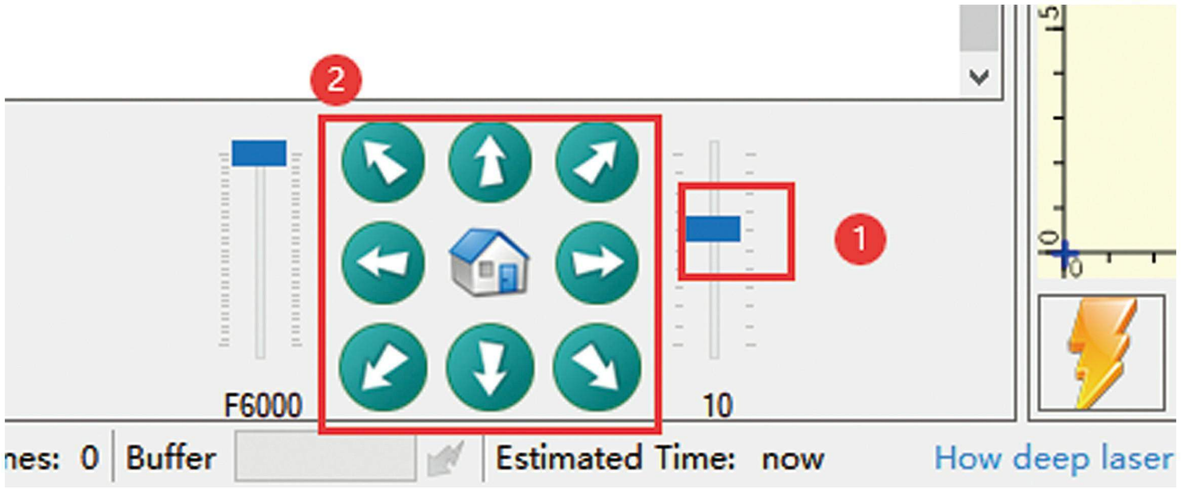


2) Engraving machine movement test:

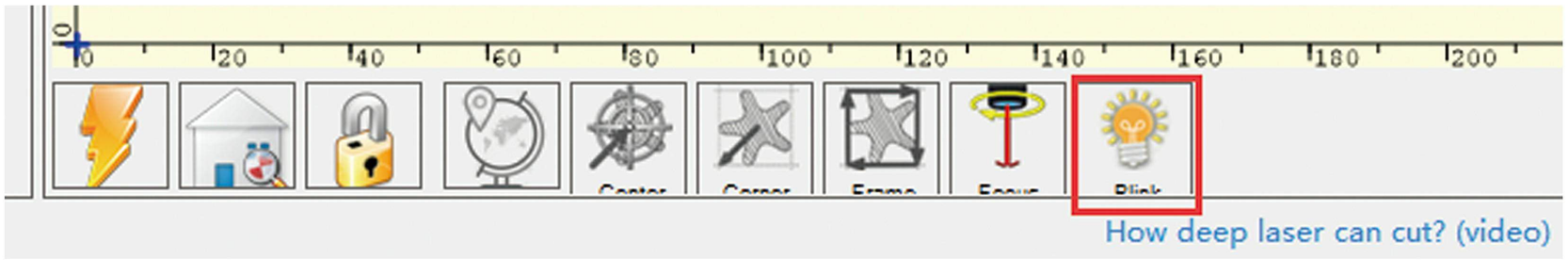
① Find the direction button on the default interface of LaserGRBL and set the moving distance and speed.

(The recommended moving distance is 10mm.)

② Click in any direction. Under correct operation, the laser module should move in the direction shown by the arrow.

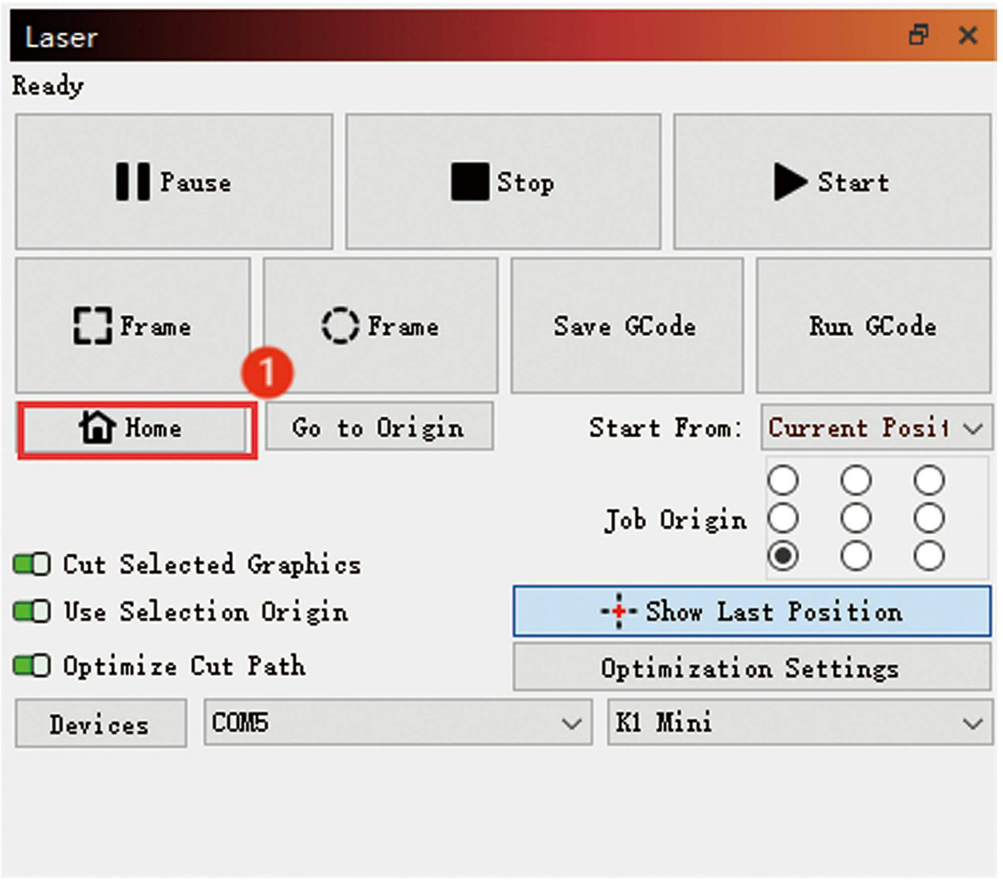


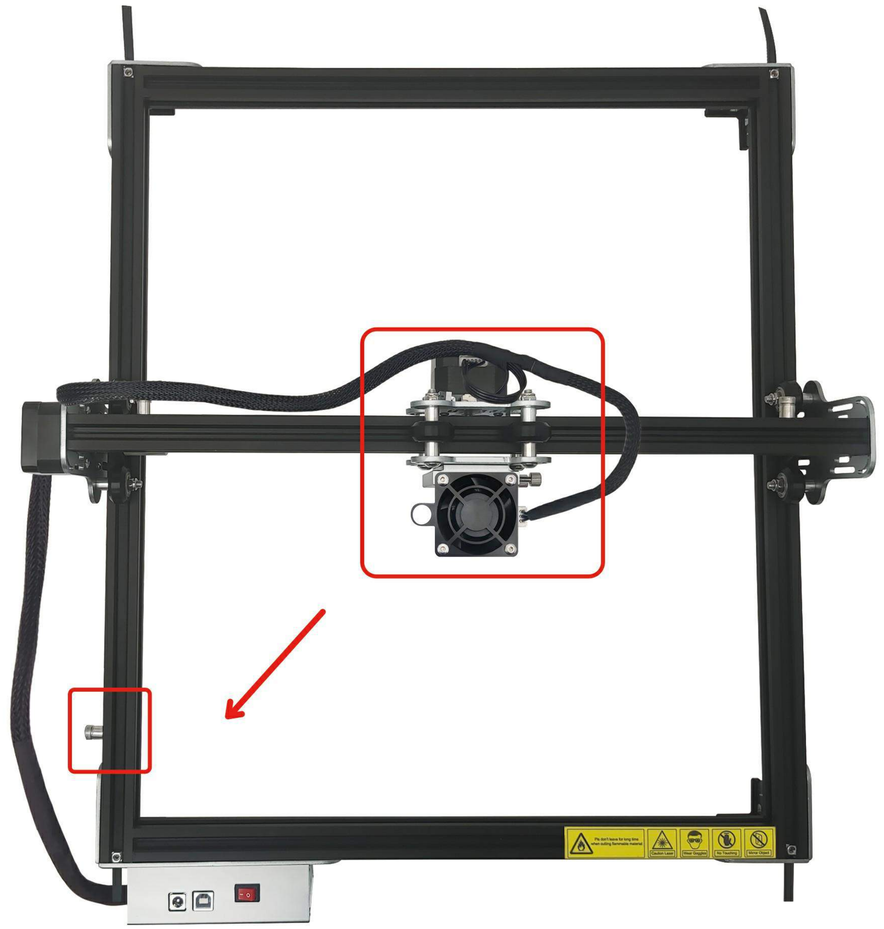
③ Engraving machine laser module light test: Find the light button on the LaserGRBL default interface and press and hold it. Under correct operation, the laser module should emit blue light normally.



7.2 LightBurn

1) Engraving machine reset test: Find "Home" in the lower right corner of LightBurn default interface and click on it. Under correct operation, the laser module should be moved to the side of the control box and stopped moving when it hits the limit column.



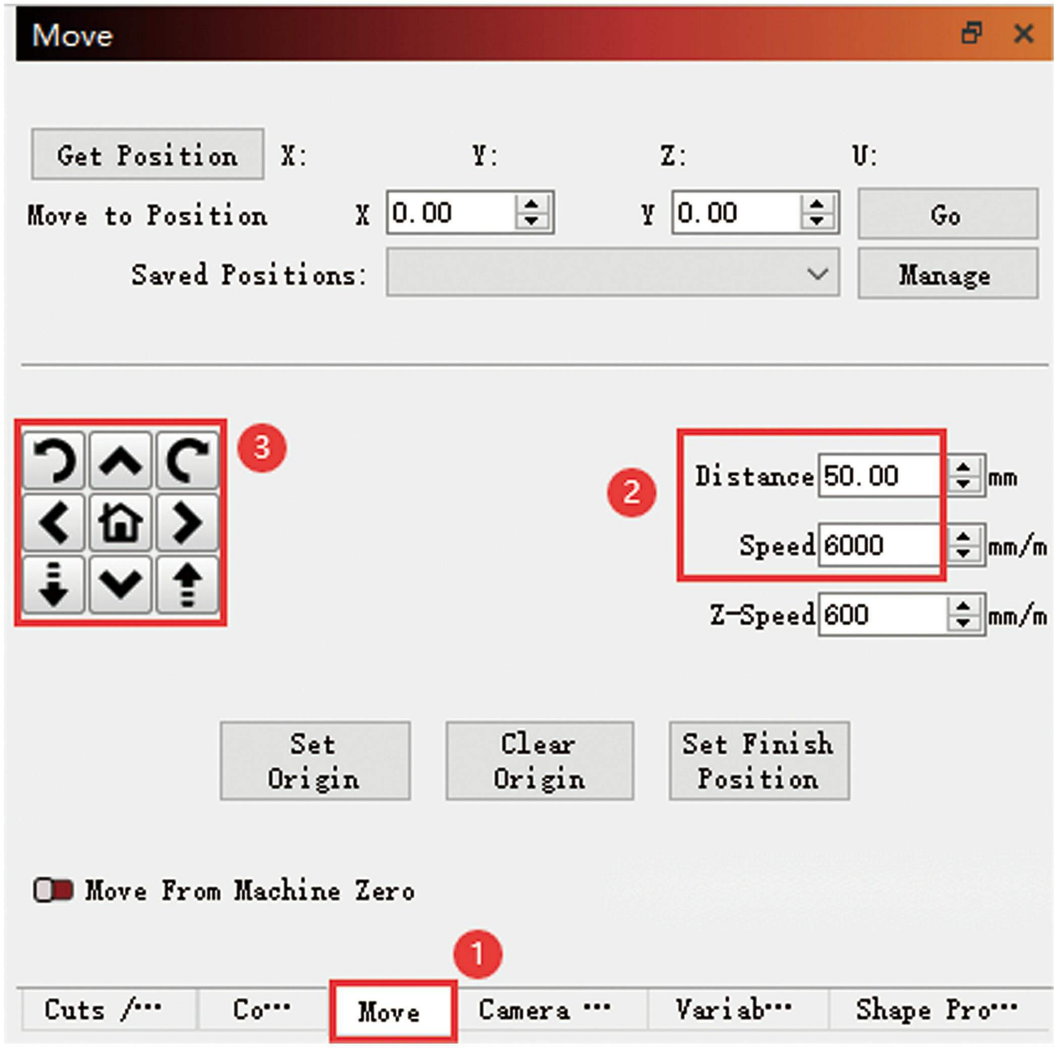


2) Engraving machine movement test:

① Find "Move" in the lower right corner of LightBurn default interface and open it.

② Set the moving distance and speed. (The recommended moving distance is 50mm.)

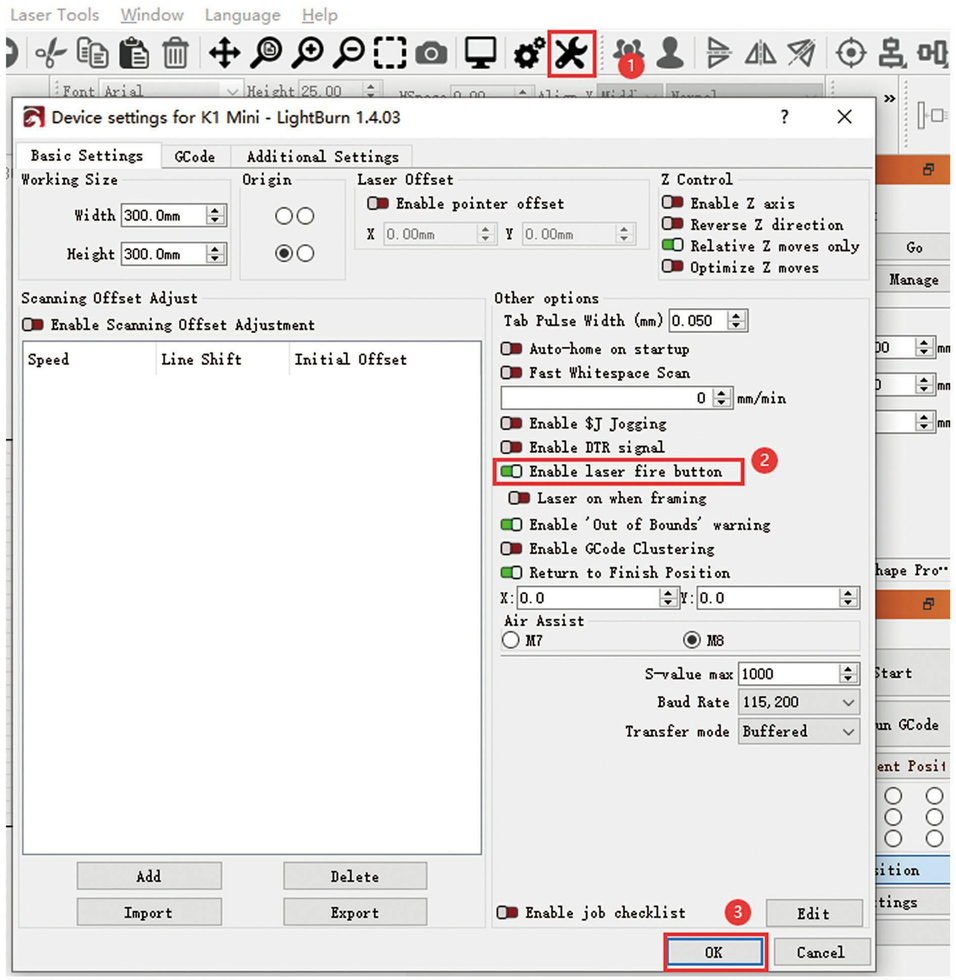
③ Click in any direction. Under correct operation, the laser module should move in the direction indicated by the arrow.

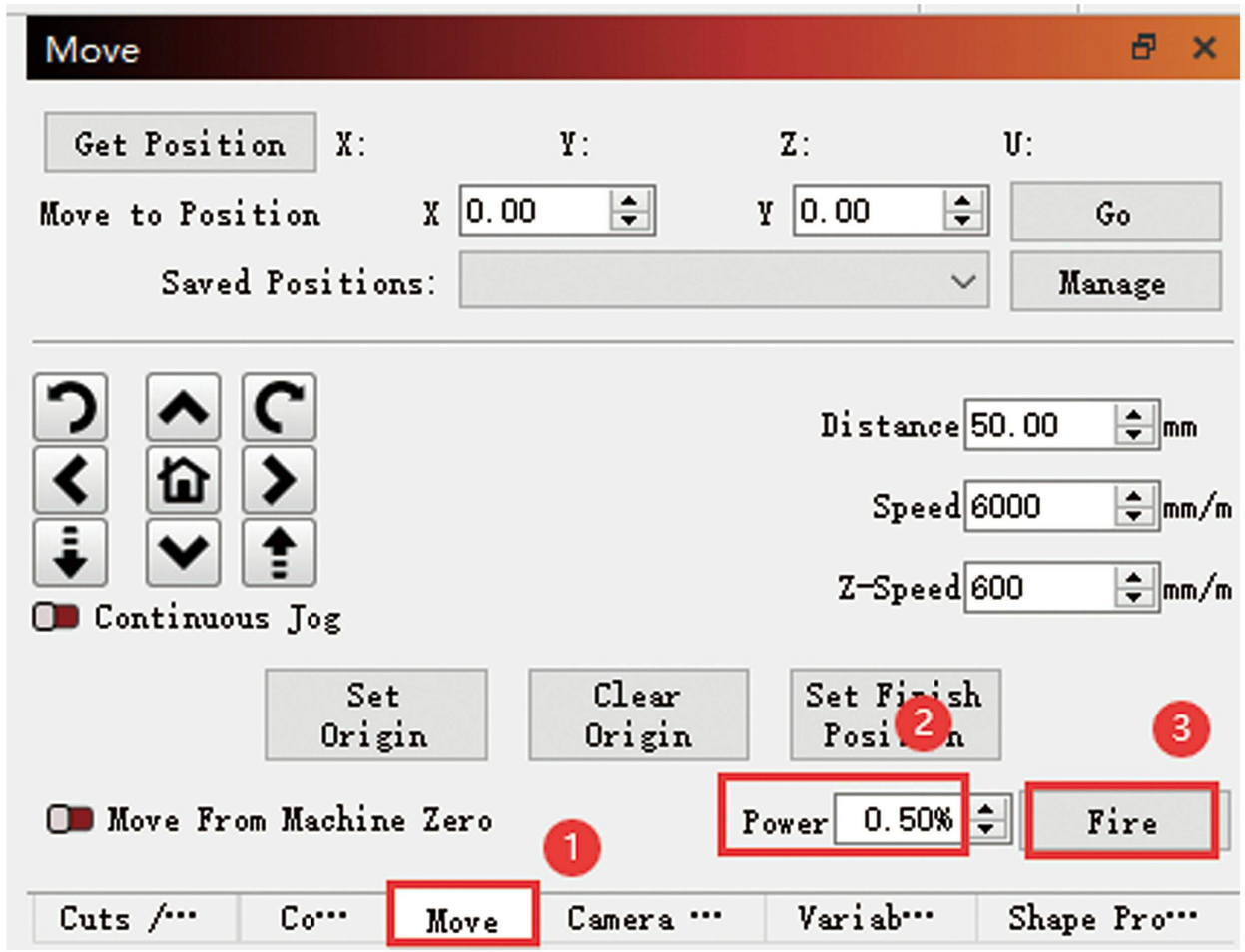


3) Engraving machine laser module light test:

① Open the device settings and turn on the laser ignition option.

② Find "Move" in the lower right corner of the LightBurn default interface, set the optical power to 0.5% and click "Fire". Under correct operation, the laser module should emit blue light.



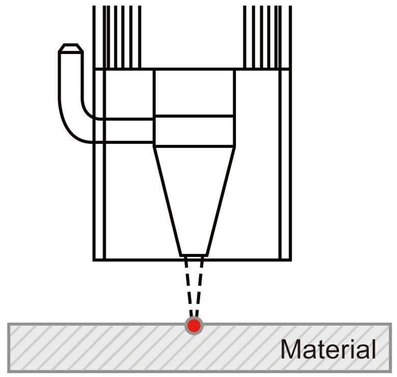


8. LASER MODULE FOCUS GUIDE

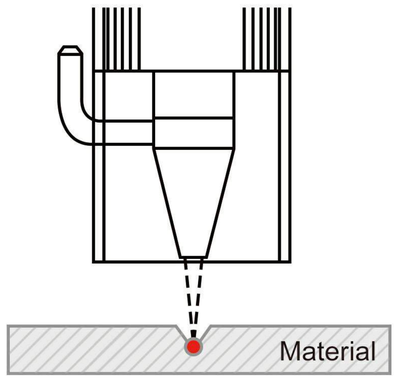
8.1 Focus description

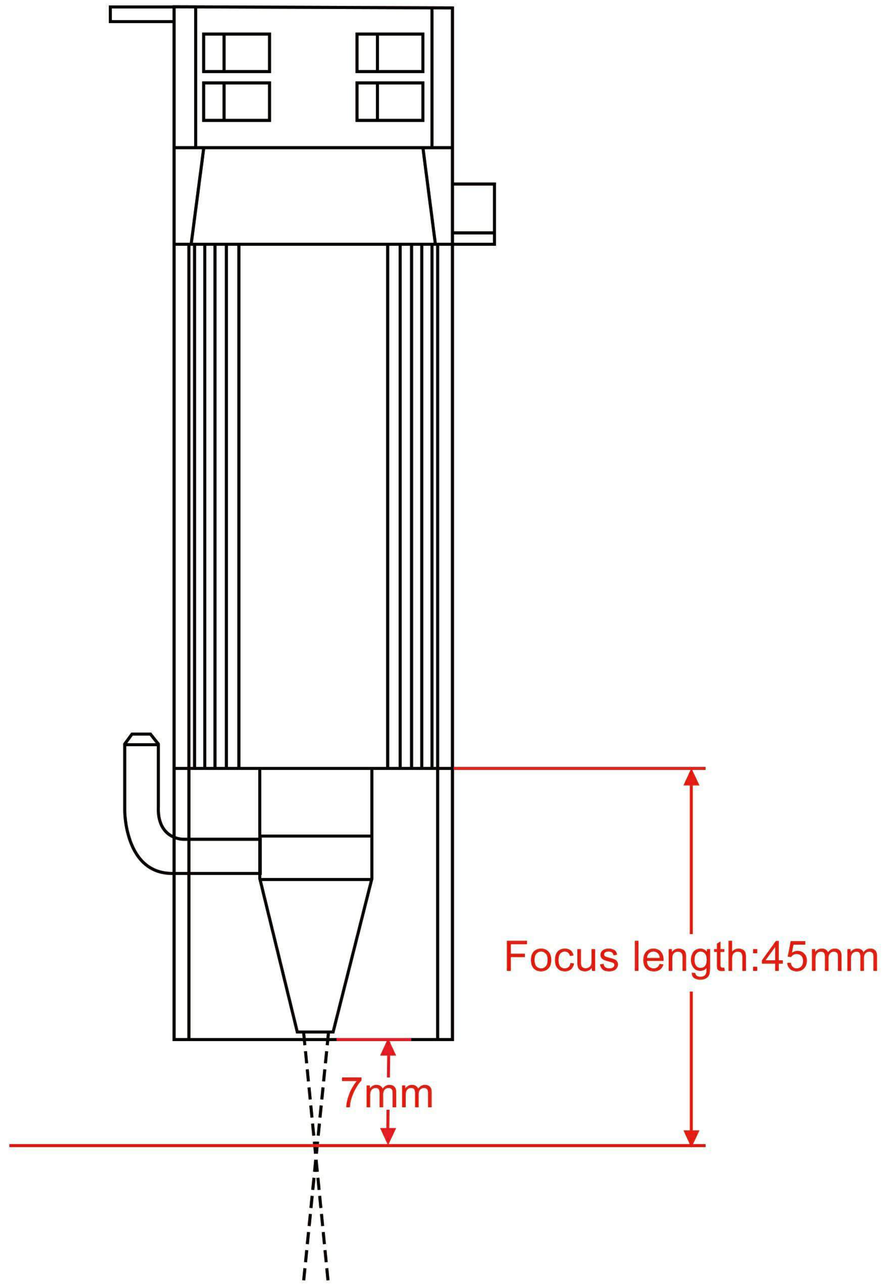
K1 MINI 10W laser module focal length is 45mm.

When engraving, please ensure that the focus is located on the material surface.

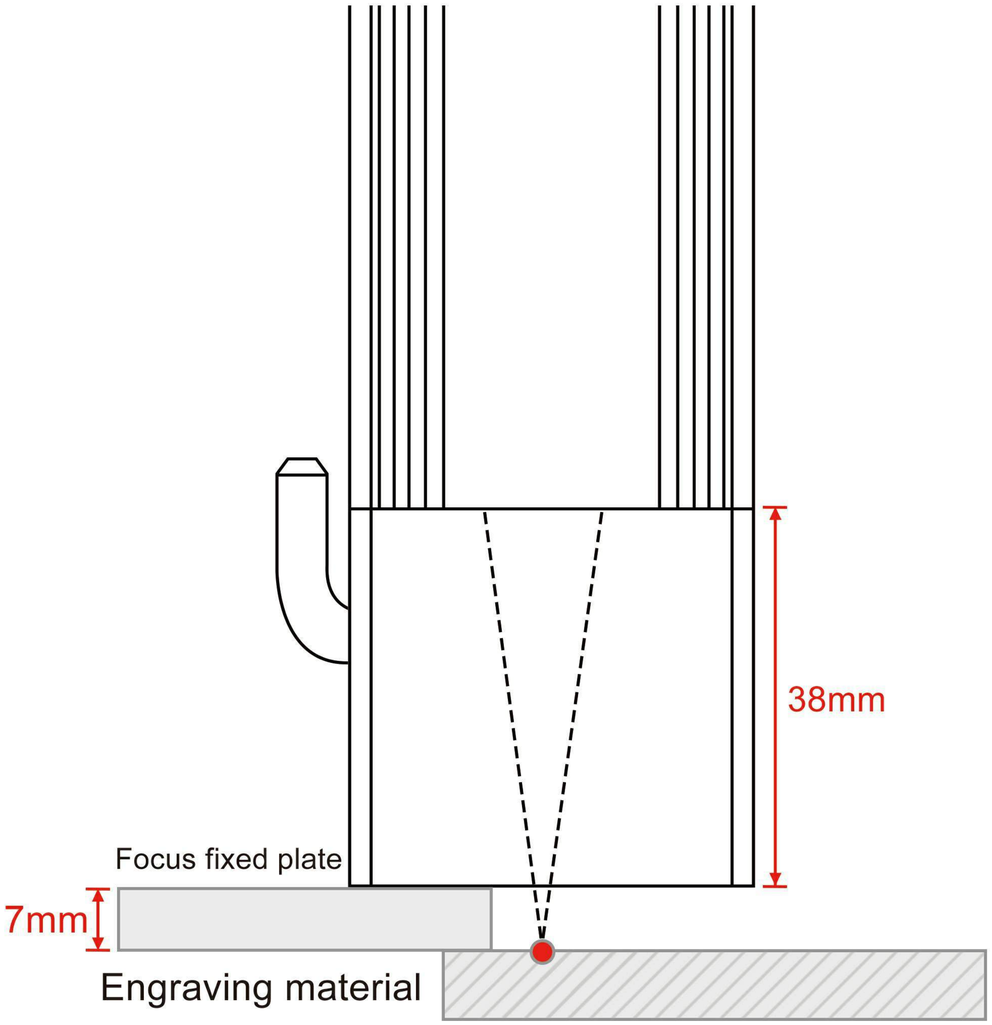


When cutting, you only need to make the focus locate a bit lower than the surface of materials.





8.2 Engraving reference settings

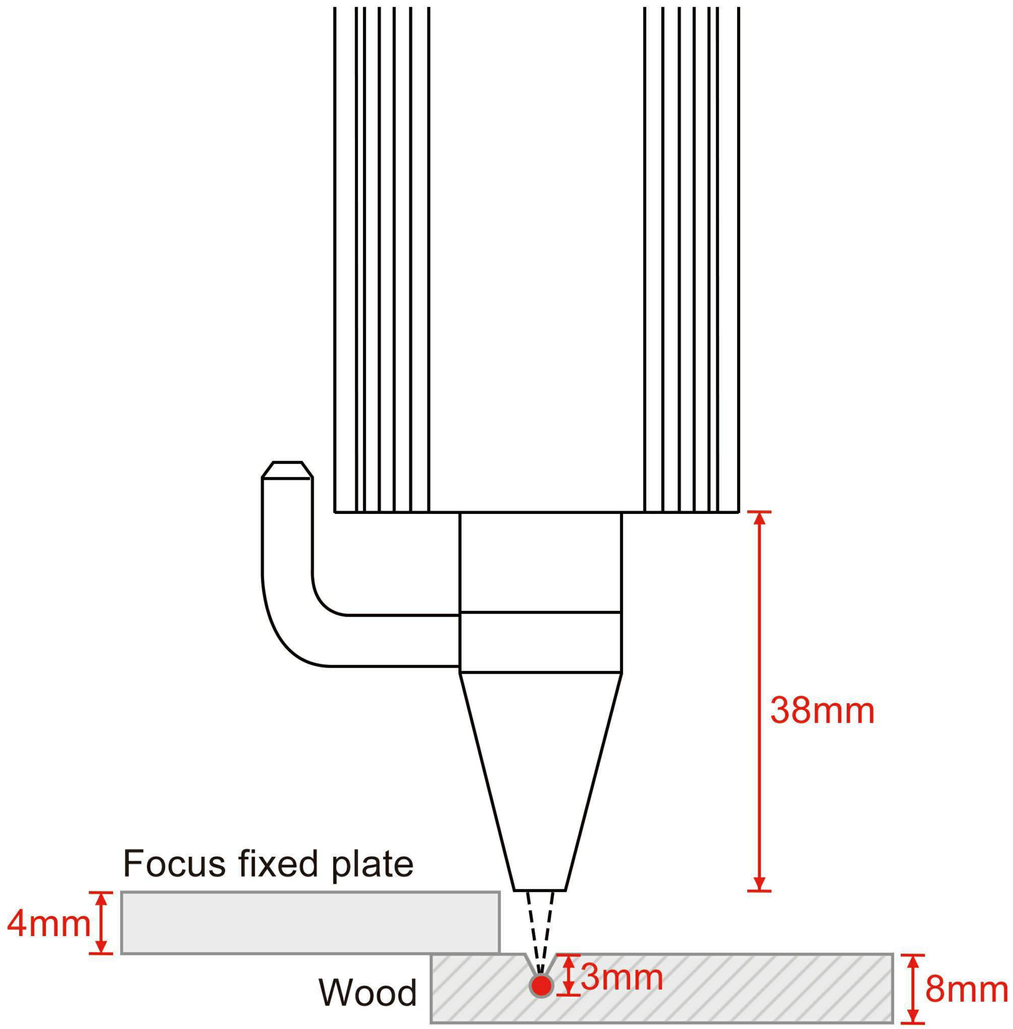


For example, please use a 7mm focus fixing plate if you want to engrave.

Engraving material	Focus fixed plate(mm)	Recommended speed(mm/min)	power(%)	Interval(mm) / Quality(Lines/mm)
Plywood	7	6000	75	0.1 / 10
MDF	7	6000	80	0.1 / 10
Pine board	7	6000	100	0.1 / 10
Acrylic	7	6000	60	0.1 / 10
Leather	7	6000	10	0.1 / 10
Anodic alumina	7	6000	60	0.1 / 10
Stainless steel	7	1500	100	0.1 / 10
Bamboo	7	6000	50	0.1 / 10

Note: When engraving on reflective materials such as mirrors and stainless steel, please paint the surface black to prevent damage to the laser module from reflected light.

8.3 Cutting reference settings



For example, if you want to cut 8mm plywood, the focus fixing plate should be 4mm.

Cutting material	Focus fixed plate(mm)	Recommended speed(mm/min)	power(%)	Cutting passes
Plywood 3mm	7	520	100	1
Plywood 8mm	4	170	100	1
Plywood 15mm	1	200	100	7~10
MDF 3mm	7	240	100	1
MDF 9mm	2	240	100	8~10
Pine wood 12mm	1	200	100	3~4
Pine wood 20mm	1	100	100	5~6
Black Acrylic 3mm	7	200	100	1
Black Acrylic 30mm	1	100	100	20~22

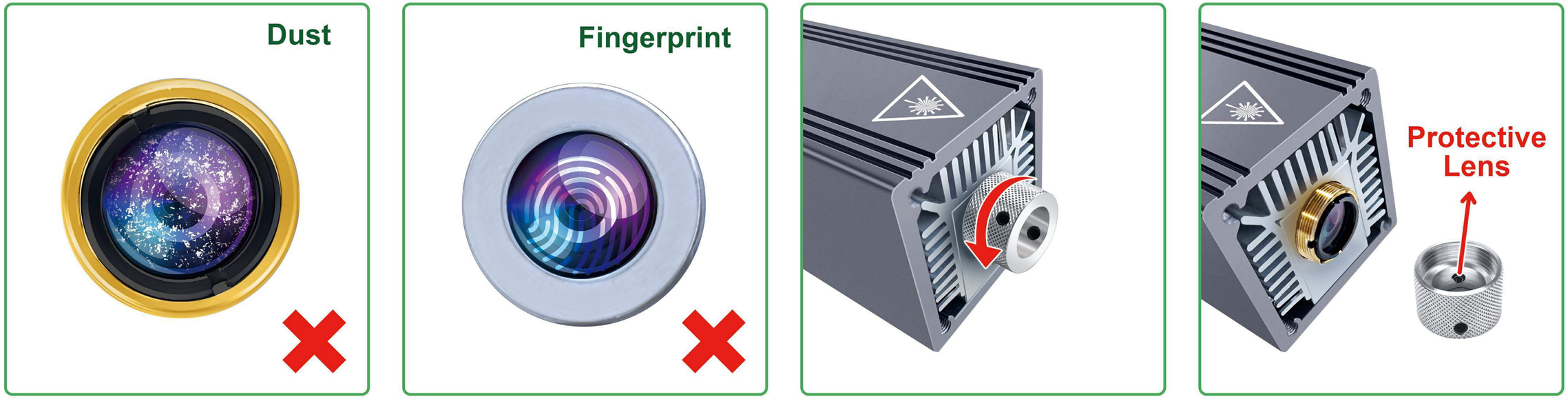
9. MAINTENANCE

1. When the laser module is used for a long time, you need to use an alcohol swab to wipe the laser protective lens to ensure the best cutting and engraving performance.

⚠ Caution for lens cleaning:

- Before wiping the lens, make sure the power is turned off and the laser module is disconnected from the engraving machine.
- After wiping, allow the lenses to dry naturally for 3 to 5 minutes before use.

2. When the laser module is not used for a long time, please ensure that the lens is not polluted by dust.



Use the alcohol swab to clean or replace with a spare protective lens.

APPENDIX

lasertree.com

K1 Mini User Guide

YouTube

* For more information about video instructions, please scan the QR code "K1 Mini User Guide".
* For more information about maintenance, please contact us at lasertree@micost-optotech.com.

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