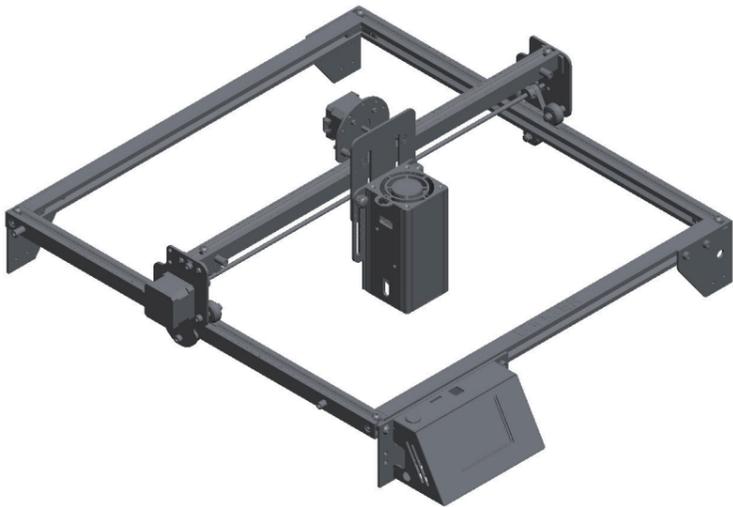


Quick Start Guide



LONGER LASER ENGRAVER RAY5 20W

Thank you for choosing our products.
Please read this manual carefully before use.

Please reference more details on digital manual in TF card about the operation of Laser Engraver and installation of LaserGRBL or LightBurn.

MORE INFORMATION

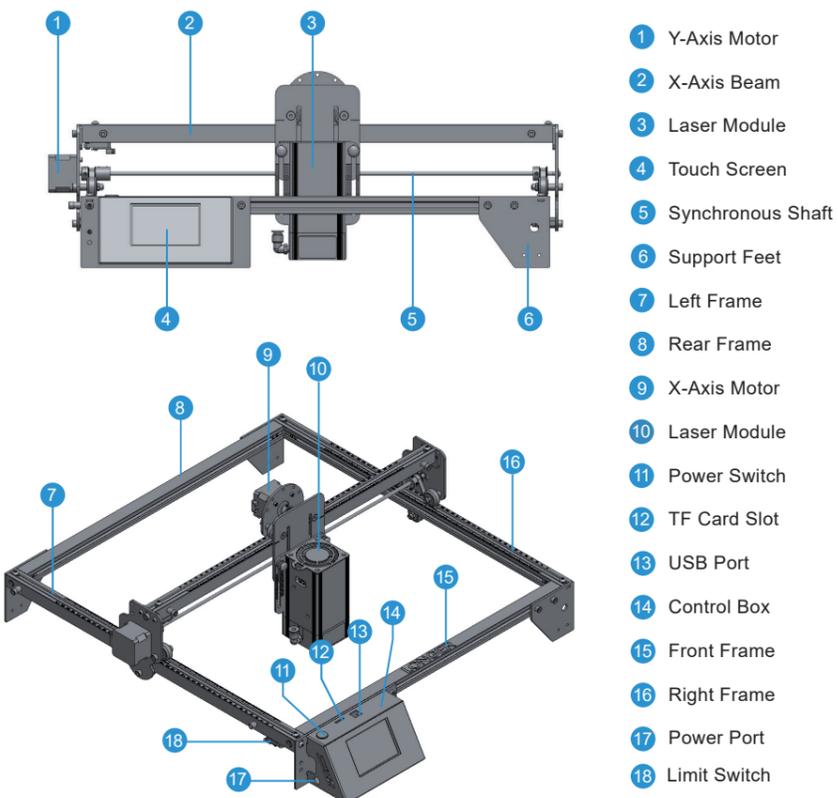
- Support Email : support@longer3d.com
- Facebook ID: longer3dprinter
- Facebook Group: Longer Laser Engraver Official Group
- Youtube channel: Longer 3D

If you have any question, please feel free to contact us as above.
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3. We strongly recommend placing the machine in a well-ventilated room, and at the same time, the door of the room has a sealing effect and the windows have curtains, so as to effectively avoid looking directly at the laser beam and some smoke and steam, Particles and other highly toxic substances. At the same time, you can pay attention to the Longer products (cover) in the follow-up.
4. The high-energy diode laser beam can produce extremely high temperatures and significant amounts of heat as the substrate material is burned away while engraving and cutting. Some materials are prone to catch fire during cutting operations creating flame, fumes and smoke.
5. Although the RAY5 has a built in flame sensor, this technology should NOT be considered 100% accurate and should be seen only as a warning system.

P.S. During the working process of RAY5, if a flame is found, the machine will stop the laser and make a sound to indicate abnormal conditions. Please pay attention to the working status of the machine.
6. During operation to ensure that any flare ups/ flame are properly contained and extinguished.

LASER ENGRAVER INTRODUCTION



! ATTENTION !

1. The RAY5 engraves and cuts materials by the means of a high-energy diode laser beam. The hazards associated with a high-energy diode laser beam include the possibility of fires, generation of hazardous and/or irritating toxic fumes, but more importantly damage to eyes and skin.
2. Laser engravers are divided into several internationally valid classes based on their performance and the risk of injury. The RAY5 falls into the Class IV (Class 4 IEC standard focus on the American FDA classification).

Laser class	Class Definition.
Class I	Class I laser radiation is not considered hazardous.
Class IIa	Class IIa laser radiation is not considered hazardous if viewed for any period of time less than or equal to 1x10 ³ seconds, but is considered a chronic viewing hazard for any period of time greater than 1x10 ³ seconds.
Class IIa	Class II laser radiation is considered a chronic viewing hazard.
Class II	Class IIIa laser radiation is, depending upon the irradiance, either an acute in-trabeam viewing hazard or chronic viewing hazard. If viewed directly with optical instruments, Class IIIa laser radiation is classified as an acute viewing hazard.
Class IIIb	Direct Class IIIb laser radiation is considered an acute hazard to the skin and eyes.
Class IV	Class IV laser radiation is considered an acute hazard to the skin and eyes from both direct and scattered radiation.

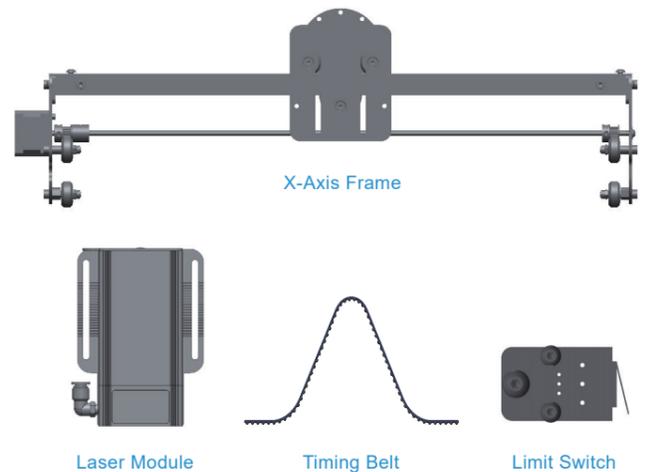
The high energy laser beam can cause severe eye damage, including blindness and serious skin burns.

Improper use of the controls and modification of the safety features may cause serious eye injury and burns.

Please wear Personal Protective Equipment (PPE, safety glasses are designed to filter specific ranges of laser wavelength. The RAY5 safety glasses provided are specific for LONGER Laser Module;) when using the engraver.

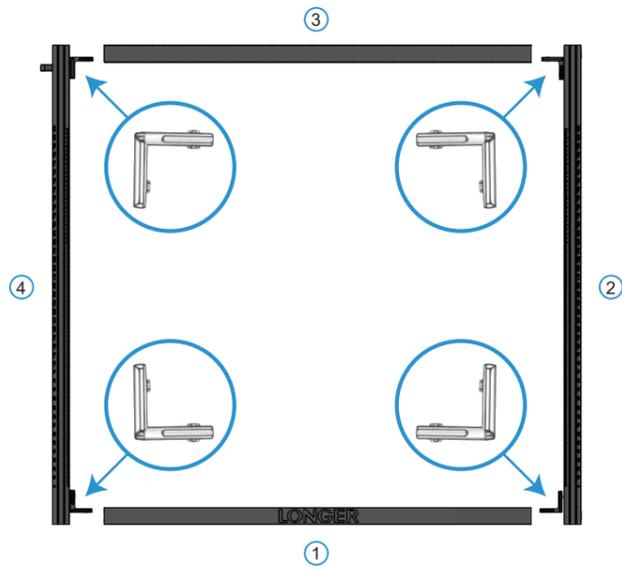
- DO NOT look directly into the laser beam;**
- DO NOT aim the laser beam at reflective surfaces;**
- DO NOT operate the laser without PPE protection for all persons nearby in the proximity of the RAY5;**
- DO NOT allow unsupervised access to the RAY5 to children;**
- DO NOT allow access near the RAY5 to pets;**
- DO NOT modify or disable any safety features of the laser system;**
- DO NOT touch the high energy laser beam;**

PACKING LIST

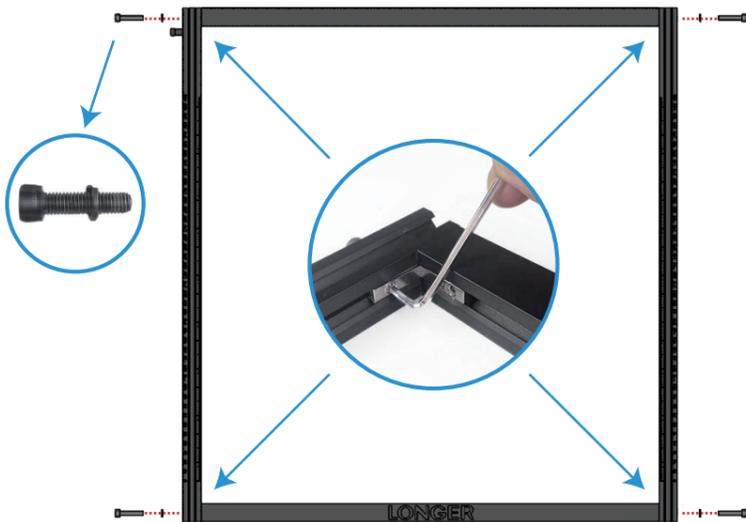


INSTALLATION STEPS

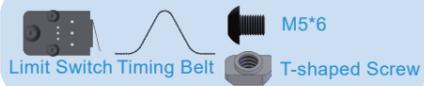
- 1 Place the profiles on a flat table in order, and place four corner grooves into the profiles referring to diagram. ▼



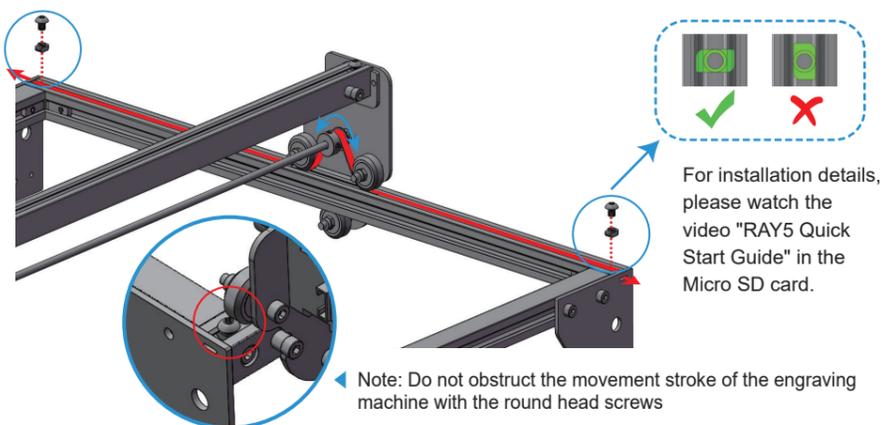
- ▼ Tighten the M5*25 screw with M5 washer into frames.
Tighten the M5 screws on the corner grooves.



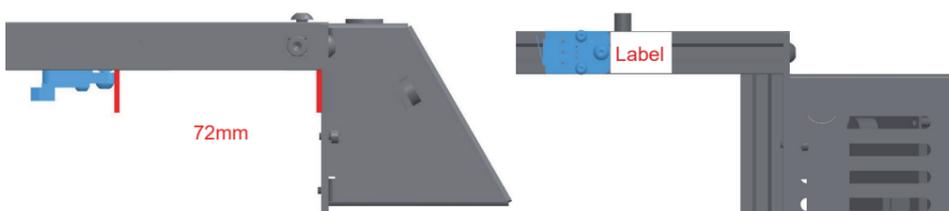
- 4 Preparation:
Limit switch x2, Timing belt x2, M5 T-shaped nut x4, M5*6 round head screw x4.



- Place a timing belt along the red arrow with the tooth face down.
- Put the T-shaped nut on one end of the belt, use an L-shaped screwdriver to rotate the T-shaped nut, then screw in the M5*6 screw to fix one end of belt.
- Tighten the belt by hand, then fix another end of belt in the manner of previous step.
- Fix another belt on left frame in the same way.



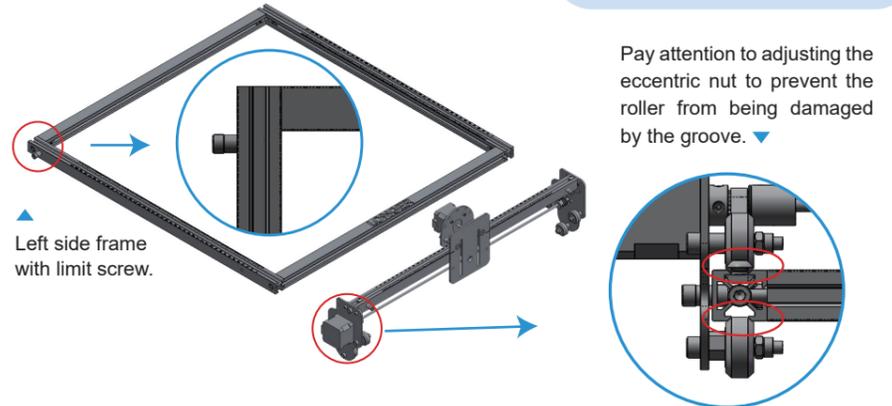
5. Turn the RAY5 engraver over, attach the X limit switch to the edge of the label, and fasten it with a hex key allen wrench, then limit switch is about 33mm from the left sheet metal.



6. Attach the Y limit switch to the edge of the label, and fasten it with a hex key allen wrench, then limit switch is about 72mm from the right sheet metal.

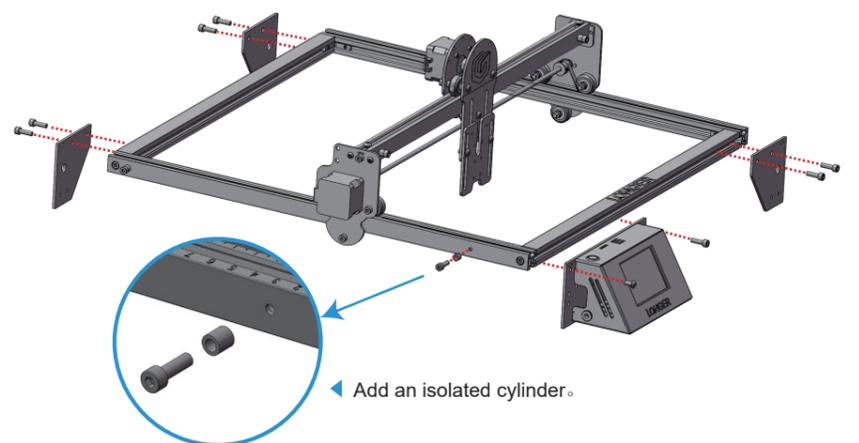
Note: Please install the limit switch attached with label, otherwise it will affect the engraving size or cause the laser head module to collide with the profile when homing.

- 2 Preparation:
X-Axis Frame, and the frame to complete the assembly.
Install the X-Axis Frame in the V-groove of the left and right Frames along the direction of the arrow.



- 3 Preparation:
Support feet x3, engraving machine control box, M5*16 hexagon socket cup head screw x8, M5*8 hexagon socket round head screw x1, nylon isolation column (7*5*6) x1.

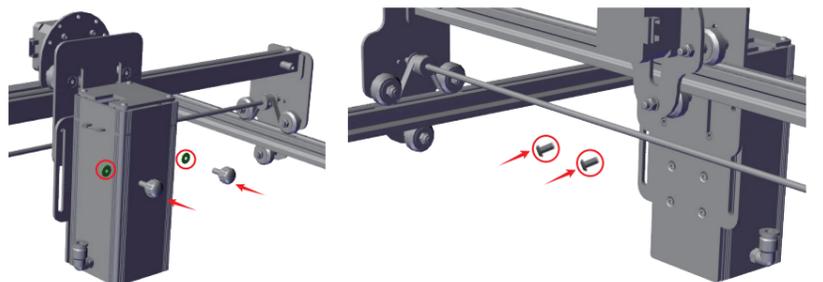
According to the figure, install the supporting foot, the control box of the engraving machine, and the left profile limit screw in the corresponding position.



- 5 Preparation:
Laser module, M5X8 thumb screw x2, M5 flat washer x2, M3x6 round head screw x2.

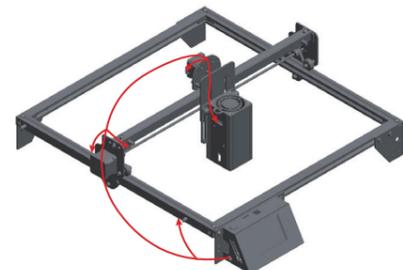


Put the M5 flat washer on the thumb screw, use thumb screw to fix the laser module.
Note: The thumb screw of RAY5 20W is M5*8, while the screw of RAY5 5W or 10W is M5*10, so the screw of RAY5 5W or 10W cannot be used on RAY5 20W, and it needs to be installed with M5 flat washer, otherwise the screw will interfere with the X-axis limit switch.



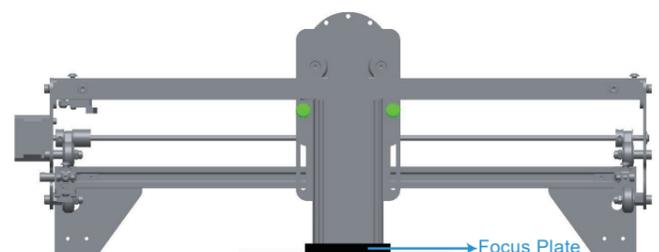
Use a wrench to fix the M3*6 round head screw, please be careful not to lock the screw, otherwise the laser module cannot be moved up and down.

- 6 Connect the cable to the motor, limit switch and the laser head as shown in the figure.



Note: Fix the cable to the sheet metal with cable ties where there is tape, and then move the laser head to the upper right corner to confirm that the cable has sufficient length.

- 7 Focusing:
Place the engraver or cutting material under the engraving head, and put the focus plate on the material, then loosen the thumb screw to let the laser module touching the focus plate, tighten the thumb screw to lock the laser module.



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