

# Laser cutting machine installation process

The installation and commissioning of a laser cutting machine is the core step from "factory delivery" to "stable operation." It requires strict adherence to the logic of "preparation first, installation second, commissioning third," detailing the operational standards, tool requirements, and acceptance criteria for each step to ensure cutting accuracy, equipment lifespan, and operator safety. Today, we share the JUGAO laser cutting machine installation process.

## Installation Process

### 1. Check the installation accessories

Accessories required for laser cutting machine installation.



Monitor./ main computer/ Cutting Head Accessories/ Air pipes/ Water pipes



## Voltage stabilizer



**water cooler.**

Behind the laser cutting machine cover after opening, there is the laser emitter.



**Laser emitter**

All accessories are included in JUGAO's packing list.

## **2. Installation Steps**

- 1) Install the monitor.**

**Video Cable:** Connect one end to the monitor's HDMI/DP/VGA port, and the other end to the corresponding interface on the laser machine control system host. Insert firmly and tighten the securing cable.



**Power Cable:** Connect to the monitor's power adapter, then plug it into an internal or external socket.



**USB Cable:** Connect to the keyboard/mouse/touchscreen by plugging it into the host's USB port.

**Cable Management:** Use cable ties to secure the video cable, power cable, and USB cable along the cantilever/stand, avoiding compression, bending, and proximity to the laser's high-voltage lines. Allow for some slack in cable management.



### Securing the Monitor to the Stand

Align the VESA holes on the back of the monitor with the holes on the stand's mounting plate. Tighten evenly with M4 screws (standard included), avoiding overtightening any screw.



Gently shake the monitor to ensure it is secure and not tilted.

### 2) Secure the Main Unit



Wiring (in sequence):

**Power cord** → Power supply to the main unit





**Network cable** → Connect to the laser control system (motion control card/bus box)



**USB** → Mouse, keyboard, dongle



The remote control receiver → we also need to plug it into the computer's USB port.



**This is the receiver of the remote control.**



**Cable organization:**

Bury the cables securely with cable ties

Keep away from high-voltage lines and servo lines to prevent interference

Allow room for movement; avoid pulling.

Place the main unit on the control cabinet bracket or cantilever support.

Tighten the screws to prevent loosening due to machine vibration.



Power-on test:

Power on → Check if the system starts normally.

Open the laser cutting software (e.g., CypCut, Bodor, Raycus, etc.)

Test: Check if control, simulation, and communication are normal.

### 3) Connect the main power supply to the machine



**Connect the input power (external AC power).**

**Locate the INPUT input terminal of the voltage regulator.**

Three live wires → Machine main power box

Neutral wire N → Machine neutral wire

Ground wire PE → Machine ground wire



Connect the output power (to the laser cutting machine)

Locate the voltage regulator's OUTPUT output terminal

Similarly:

Three live wires → Machine main power box

Neutral wire N → Machine neutral wire

Ground wire PE → Machine ground wire



Secure the cables.

Screws must be tightened securely to prevent loosening and sparking.

Route cables separately and do not mix them with control cables.



4) Connect the laser power supply and the power supply of the water-cooled heat sink.



5) Power is connected to the machine.



If the power supply on the machine is L1, L2, L3, N, That is to say, our machine has a voltage of 380V. Add a zero wire. Secure the cable with screws and connect the power supply.



6) Connect the air compressor to the power supply.



Before the air compressor is powered on, we first need to see if the machine has a voltage of 380V or 220V. Secure the cable with screws and connect the power supply. (The air compressor does not need to go through a regulated power supply. The air compressor is directly connected to the power supply.)



7) Connecting the laser emitter pipe



The out behind the laser corresponds to the insertion in the water cooler.





Then, insert another tube into the outlet pipe.





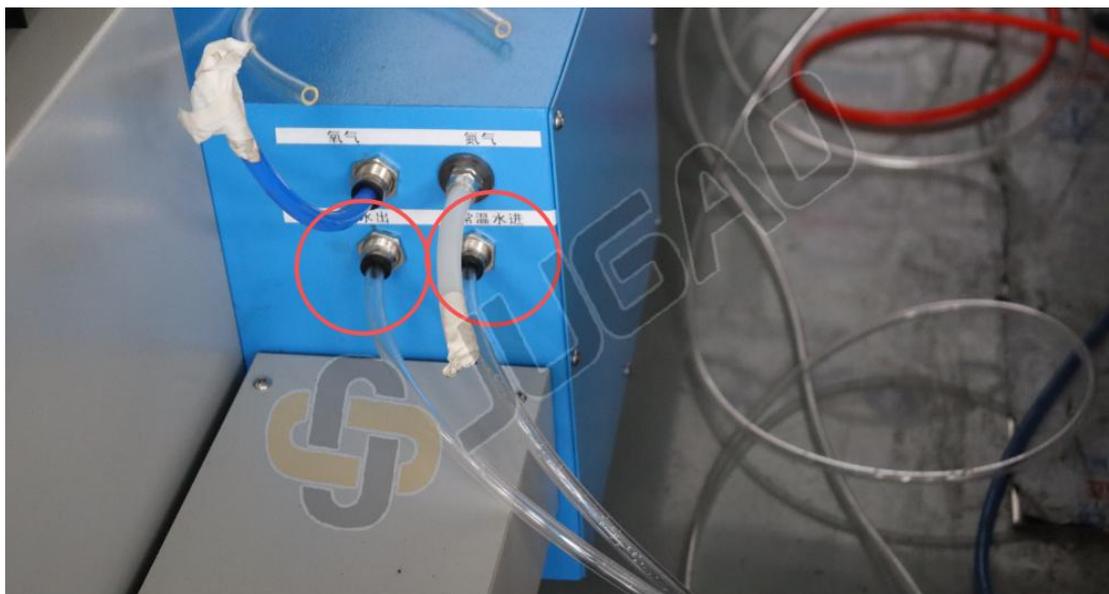
### 8) Connect water pipe

This transparent one is a water pipe. It's not like a laser. It doesn't have to distinguish between input and output.





Room temperature water inlet and room temperature water outlet inserted into the machine, These two pipes are inserted casually.



See if it's plugged in tightly.

#### 9) Connecting air pressure pipes

The white translucent pipe is the high pressure pipe.



We plug it into the air outlet of the air compressor.



10) Add purified water to the chiller



Fill the water tank with the same amount of water as indicated by the water capacity indicator. Preferably distilled water





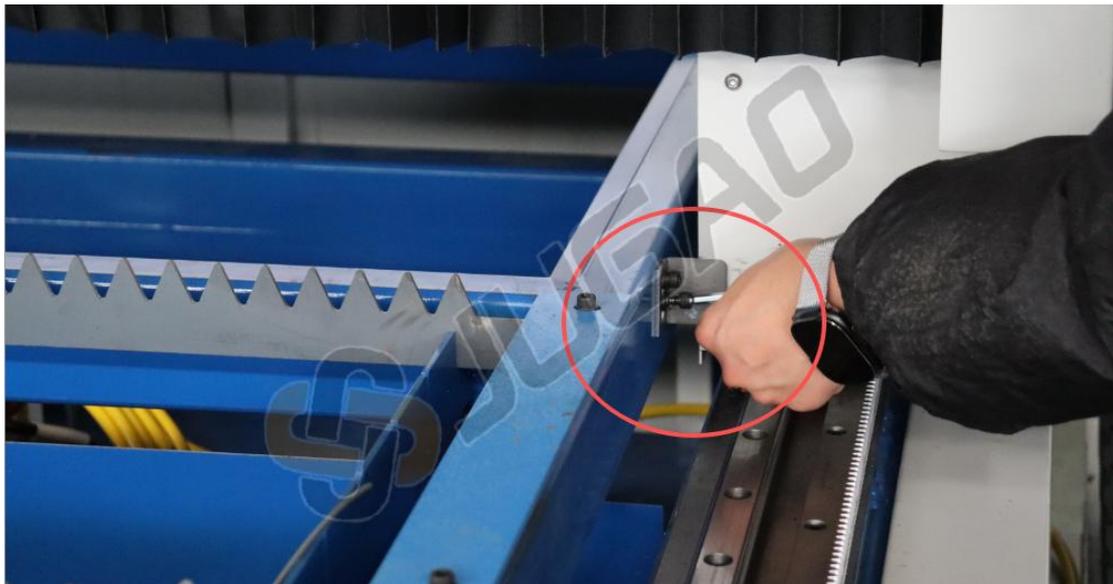
You can also observe the level gauge. We need to get into the standards zone.

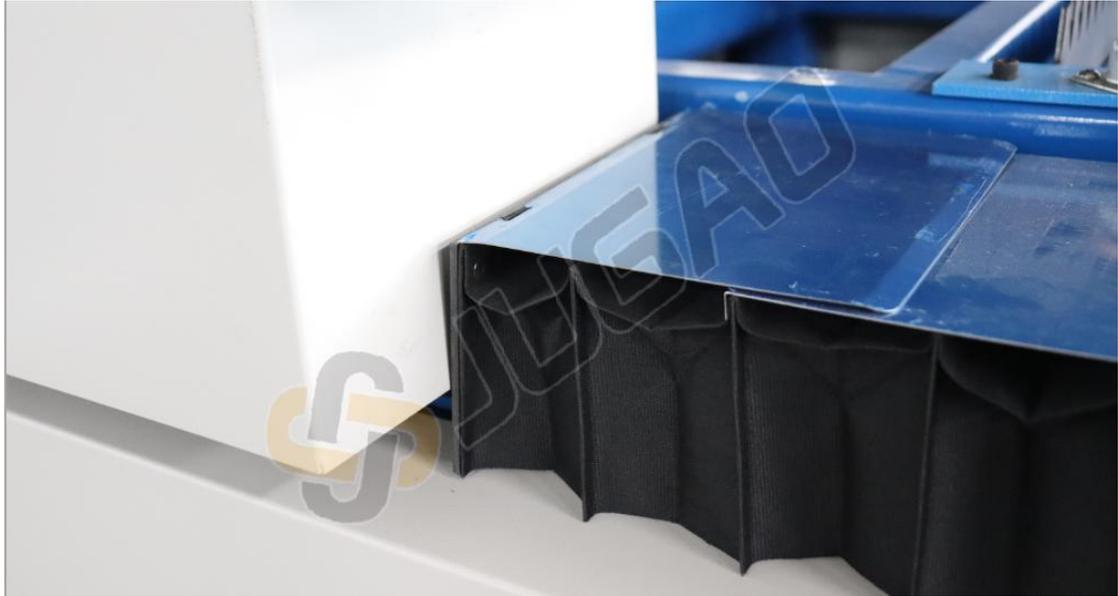




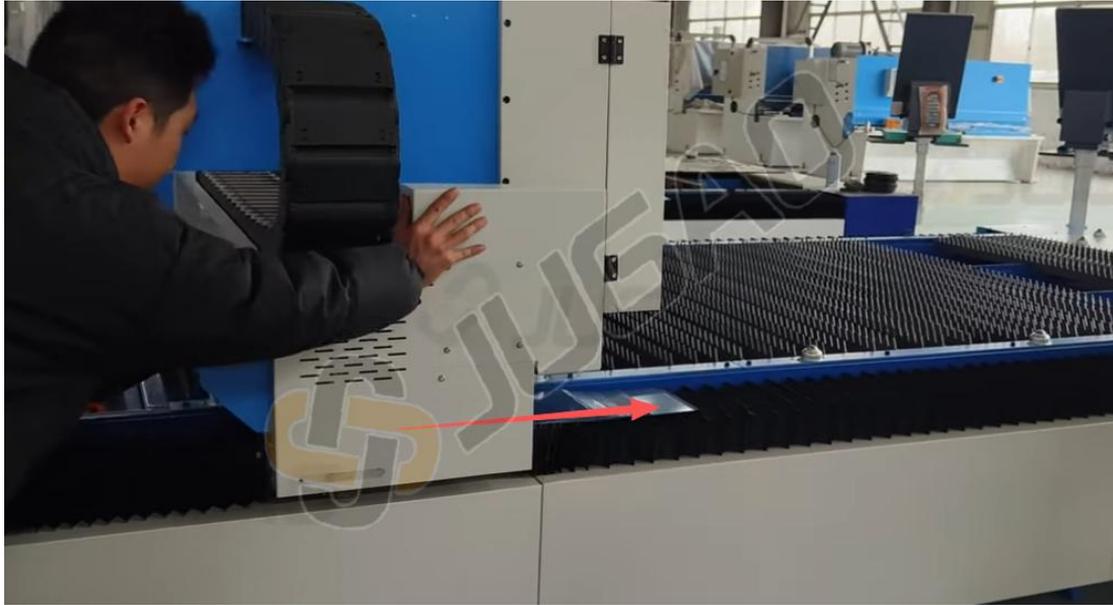
### 11) Powering On

Before powering on, remove the anti-slip pads from both sides of the machine.





Before power delivery, We need to move this beam, Push it right in the middle of the machine.



When the machine returns to the origin in a while, it will start from here.

Once all preparations are complete, connect the power supply and begin the official power-on process. Turn on the power of the regulated power supply. The output power supply can use a distribution cabinet onsite.

Turn on the power to the chiller here.



Press start to open.



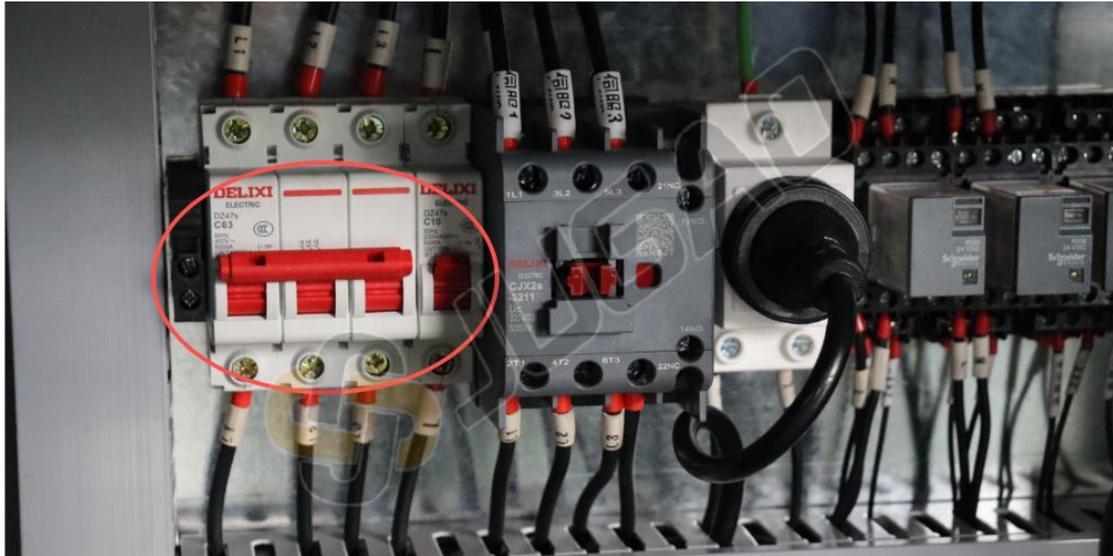
Turn on the air compressor



Also, there is a drain valve like this below the air compressor; we need to discharge pollutants daily. You need to drain all this water before closing this valve.



Then turn on the power of the machine



## 12) Power On

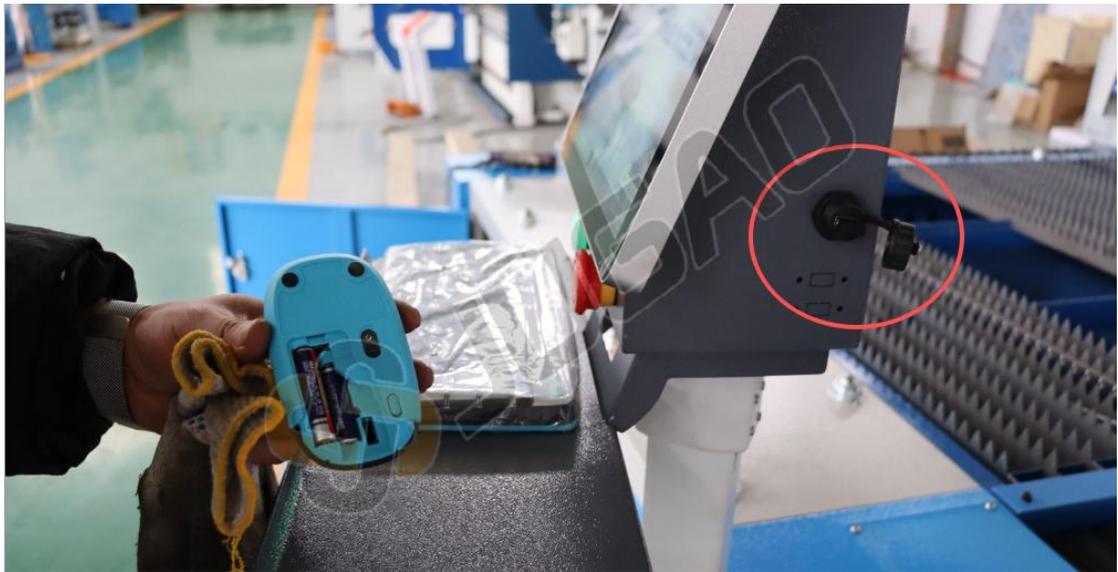
Turn on this button to control the computer.



The front is the servo button, which controlsthe motor.



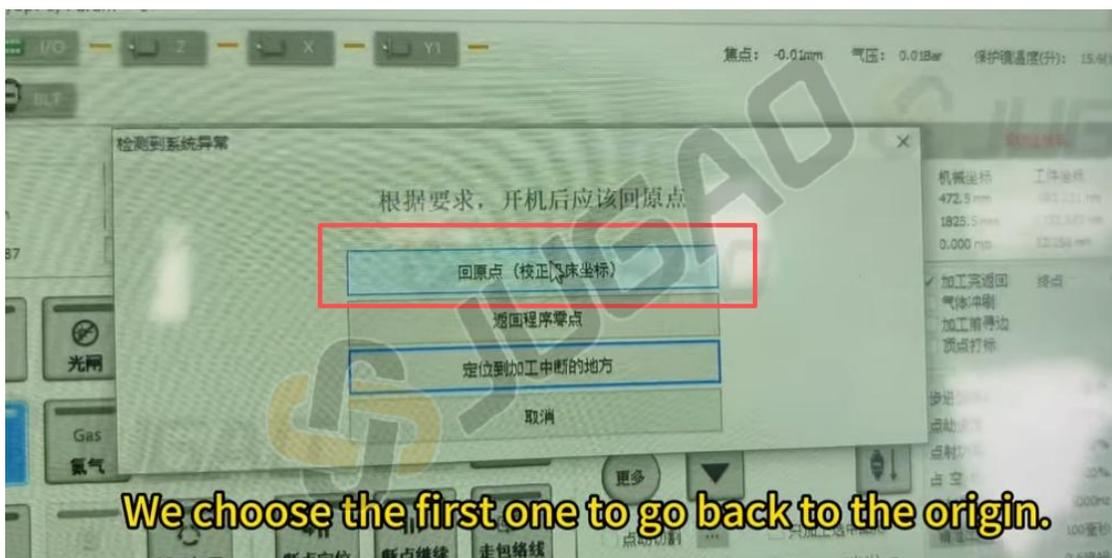
Insert the battery into the mouse and plug the mouse receiver into the USB port.



The computer is on. This is our cutting software.



After the system comes in, And he'll come up with a status bar like this. We choose the first one to go back to the origin. This return to the origin must be carried out once a day when it is turned on.



Now click back to the origin.

After clicking to return to the origin, the machine will be parked in the bottom left corner of the machine tool.



### 13) Cutting test

Before actually cutting the material, the core components of the equipment need to be precisely calibrated.

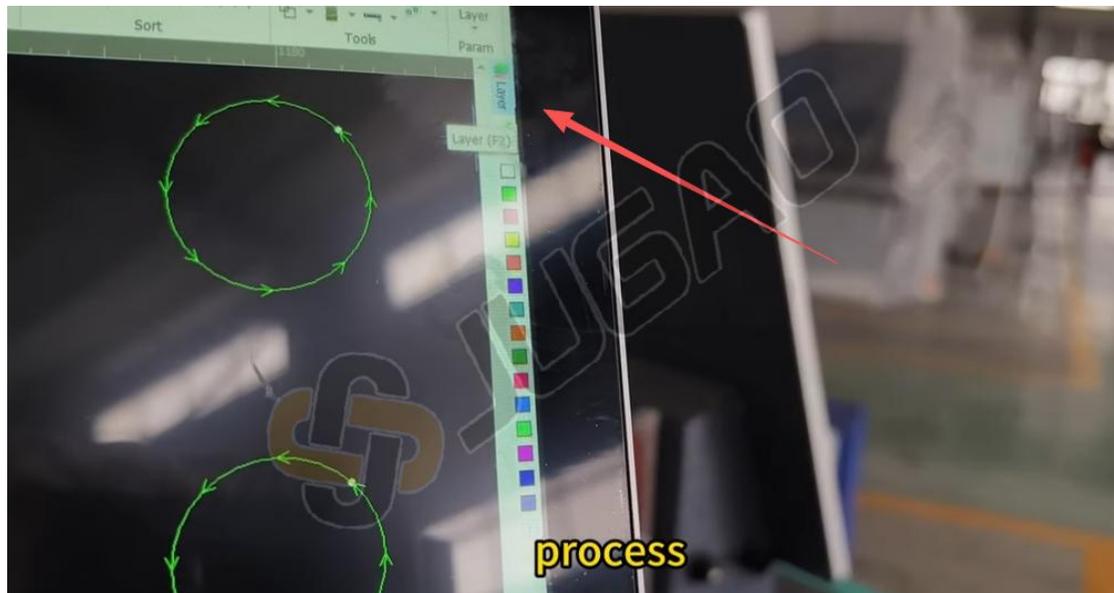
**Focus Position Adjustment:** This is the most critical step to ensure cutting quality. You can use calibration paper or scrap workpiece to perform spot firing, observing the change in spot size by moving the laser head up and down. The position where the spot is smallest and most concentrated is the optimal processing focal length.

**Optical Path Calibration:** It is necessary to ensure that the entire optical path transmission of the laser from the generator to the cutting head is precise and stable. Ultimately, the diameter of the focused spot must be controlled within the range of 0.1-0.3mm, which is the foundation for achieving precision cutting.

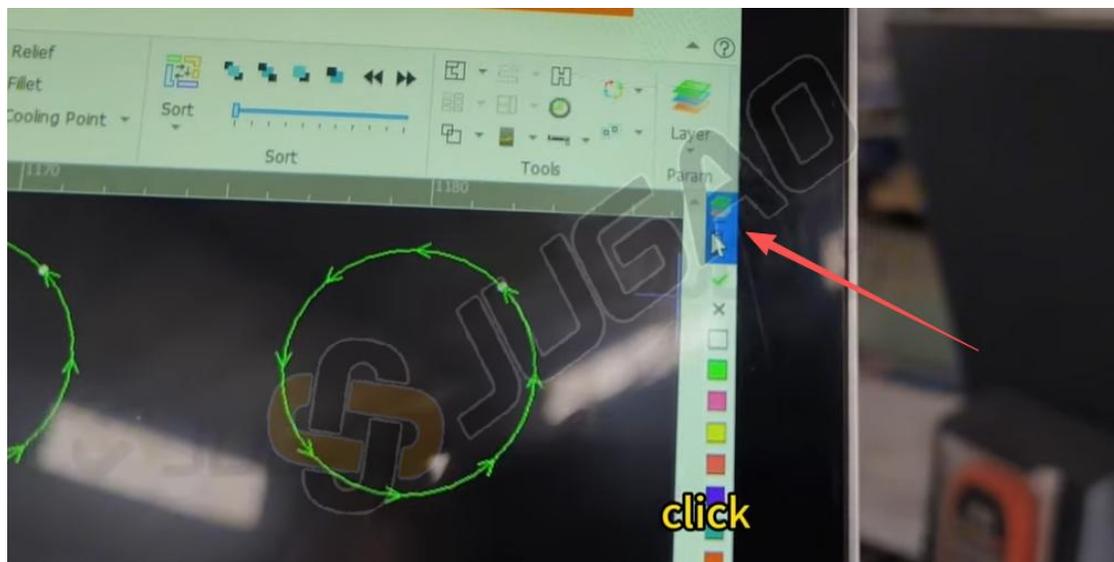


After basic calibration, the machine tool's motion accuracy needs to be verified by drawing diagrams. A common method is to install a scribing device to simulate cutting a standard geometric shape.

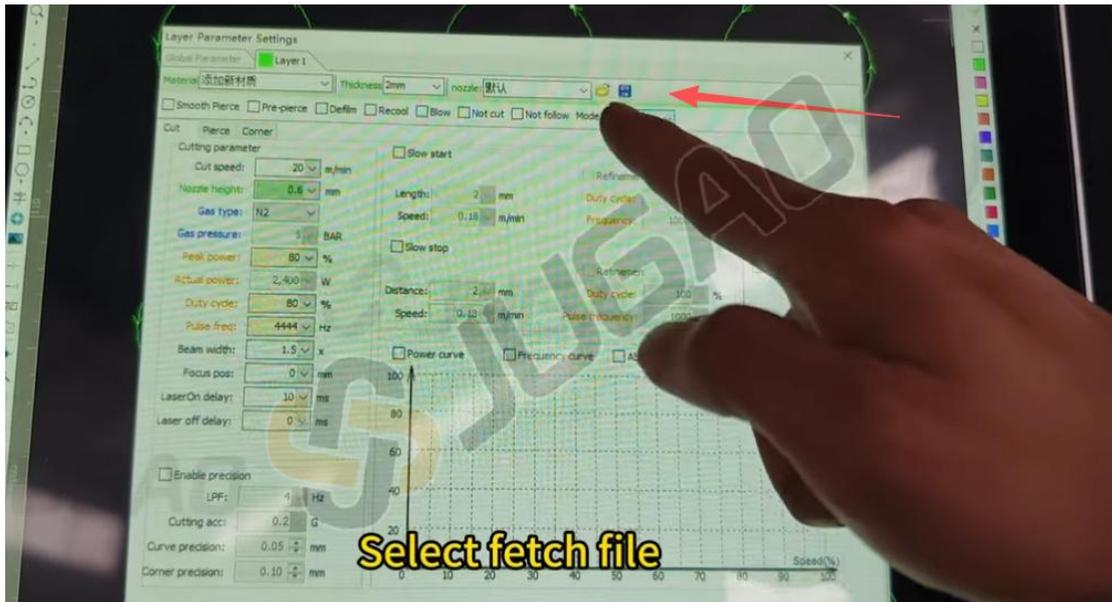
We must first retrieve the corresponding parameters.



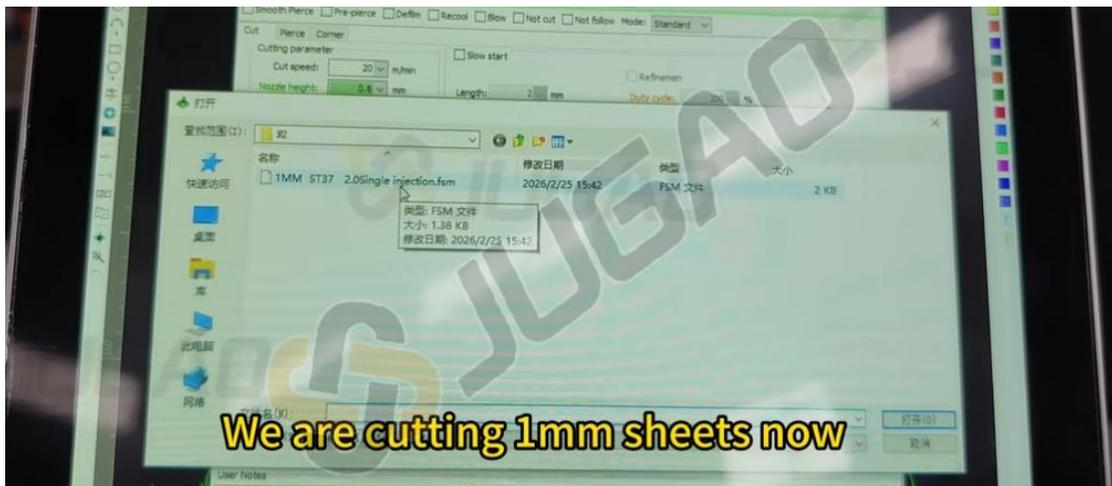
Click



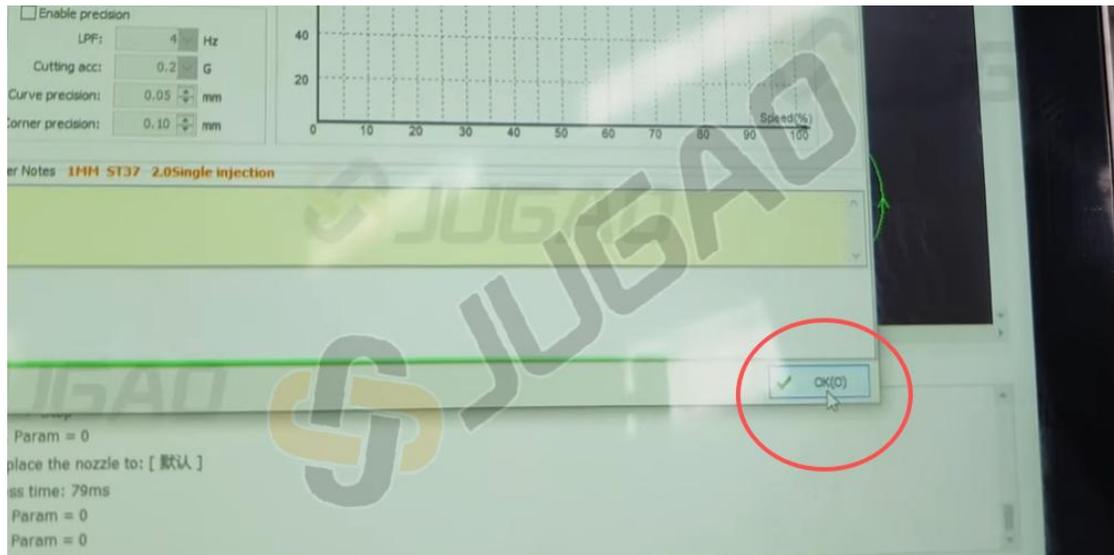
Select fetch file



We are cutting 1mm sheets now



So call the 1 mm cutting parameter. When opened, it will automatically enter all the parameters. Click OK.



Finally, actual cutting tests were conducted using the same materials as in production to optimize the specific combination of process parameters.

The entire testing process is essentially about adjusting the focus, setting the accuracy, and configuring parameters to ultimately bring the machine to its optimal working state.

## Conclusion

This installation manual details the entire operation process of the laser cutting machine, from unpacking and inspection, hardware assembly, electrical connection, and software configuration. Please strictly adhere to each step, as precise installation is the solid foundation for stable operation and optimal cutting performance.

Installation is not the end, but the starting point for meticulous debugging and production. Before commencing production, it is strongly recommended that you patiently complete the optical path calibration, focus position setting, and process parameter optimization according to the "Post-Installation Debugging and Trial Cutting" section to ensure the equipment achieves the expected processing accuracy and efficiency.

Always remember that safety is the top priority during operation. In subsequent daily use, please regularly check the optical path system, cooling system, and fume extraction system, and establish a comprehensive maintenance system. Only by combining standardized installation, correct operation, and meticulous maintenance can you maximize the equipment's lifespan, ensure operator safety, and create lasting and stable value for you. For any questions, please contact the JUGAO CNC MACHINE technical team.

