3D 切管软件用户使用文档版本更新记录

更新日期	最新版本号	更新日志	备注
2024-11-19	V1.0.0	金洲数控 3D 切管软件用户手册	

User Manual of Jinzhou CNC 3D Tube Cutting Software

Welcome

Thank you for choosing to use the Jinzhou CNC 3D tube cutting software!

Jinzhou CNC 3D tube cutting software is a set of specially used for metal tube laser cutting software, with the characteristics of high precision and high efficiency. The main functions include calibrating W axis center, automatic centering of tubes, parameter setting, custom PLC, simulation and cutting control.

Jinzhou CNC 3D cutting software must be used with the control card to carry out the actual processing control. The 3D cutting software runs on a computer without connecting control card.

Please note that this user manual is only used as operating instructions for the main program of 3D cutting software. For other tools and software installed with 3D cutting software, including Jinzhou CNC-Configuration tool, please refer to the other manual or contact us.

Due to the continuous update of the software functions, the Jinzhou CNC 3D cutting software you use may differ in some ways from the statement made in this manual. If you have any questions or suggestions in the use process, please contact us anytime!

Special attention:

- The operation of the machine tool and the laser cutting effect are directly related to the cut material, the laser used, the gas used, the air pressure and the parameters you set. Please set the parameters carefully according to your cutting process requirements!
- Inappropriate parameter setting and operation may lead to decreased cutting effect, laser head or other machine tool parts damage or even personal injury. Jinzhou CNC has tried its best to provide various protection measures, laser equipment manufacturers and end users should try to follow the operating procedures to avoid the occurrence of injury accidents.
- Jinzhou CNC shall not bear any direct, indirect, incidental or corresponding losses and responsibilities caused by the improper use of this manual or this product!

Catalogue

一、 First debugging

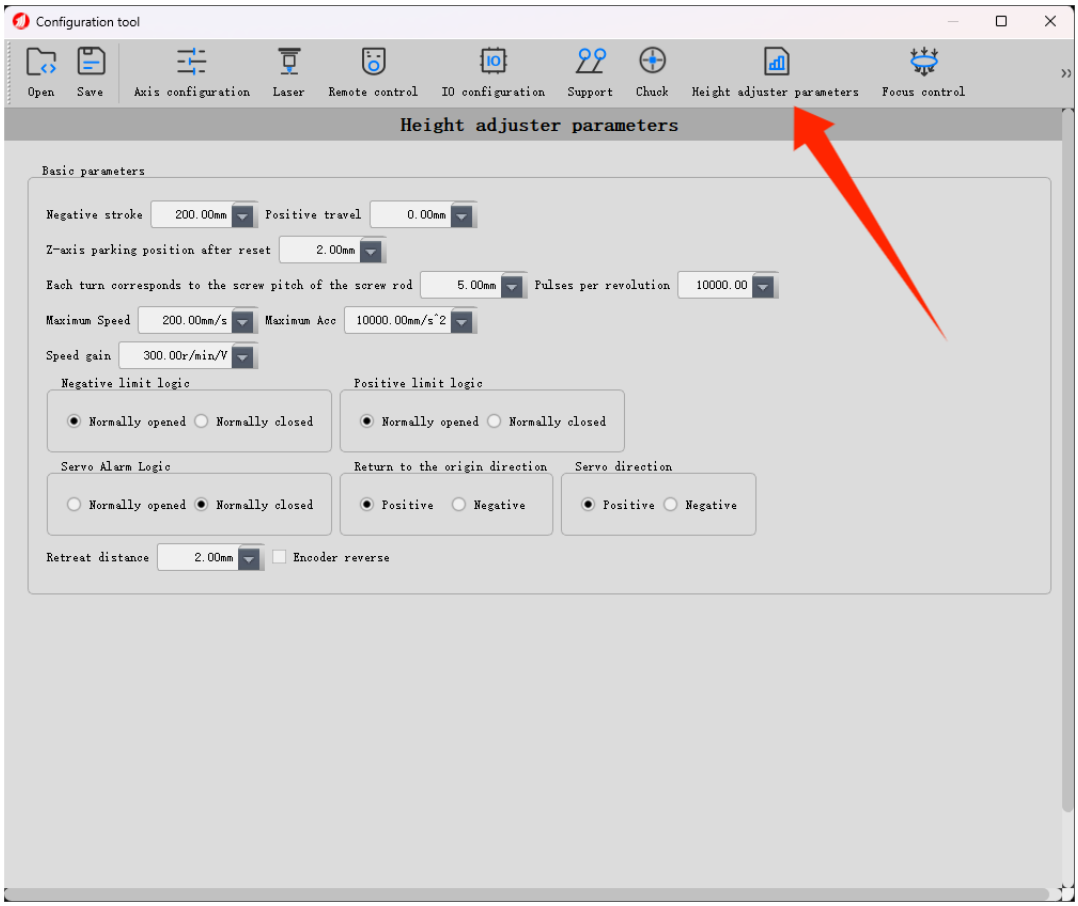
The first debugging is used for the first scene of boot debugging after the completion of mechanical assembly, aiming to achieve the purpose of returning to the origin, chuck, support and other functions can be used normally. For more specific configuration methods, please refer to the user manual of the control system.

1.1 Debugging process

1.2 Debugging steps

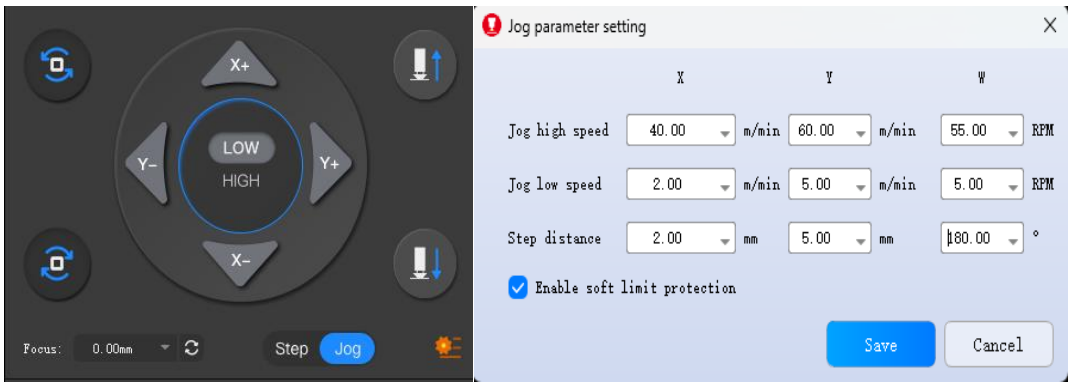
Before using Jinzhou CNC 3D tube cutting software, the basic parameters of X / Y / W / shaft configuration should be set in Jinzhou CNC software -- configuration tool -- shaft configuration. Raise the basic parameters of the Z-axis in the modulator parameters.

Each motion, corresponding pulse, travel range, limit logic, origin switch logic, servo alarm logic, back to the origin direction and back to the origin sampling signal must be set according to the actual mechanical configuration, otherwise there may be a risk of collider. The travel range and other parameters can be set about a value, and it should be set as small as possible than the actual machine travel, and then adjusted later.



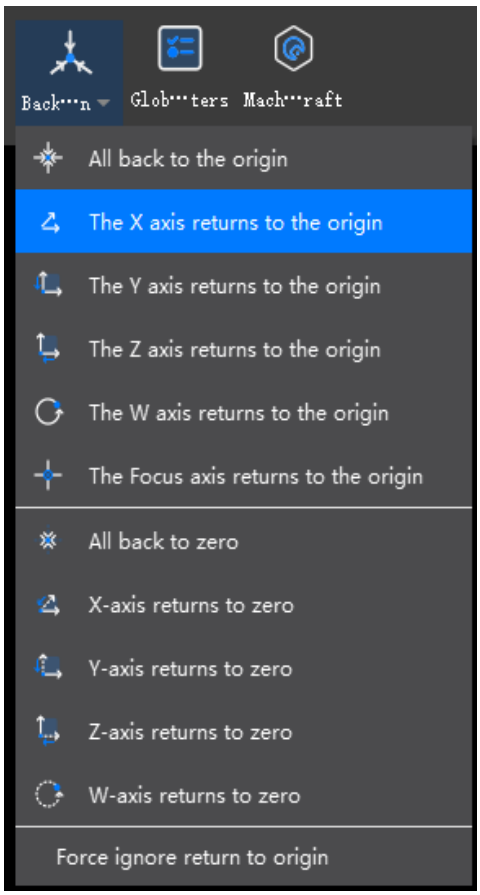
1.2.1 System returns to the origin

Open Jinzhou CNC 3D cutting software, and slowly (LOW means slow speed mode, HIGH means high speed mode) point each axis. After the dot movement is correct, trigger the origin and limit switch of each axis in turn (do not touch the axis, if the limit switch is photoelectric switch, block the photoelectric door with the block), and observe whether there is a corresponding limit signal alarm information below the software.



After checking that the origin and limit switch are correct, you can go back to the origin.

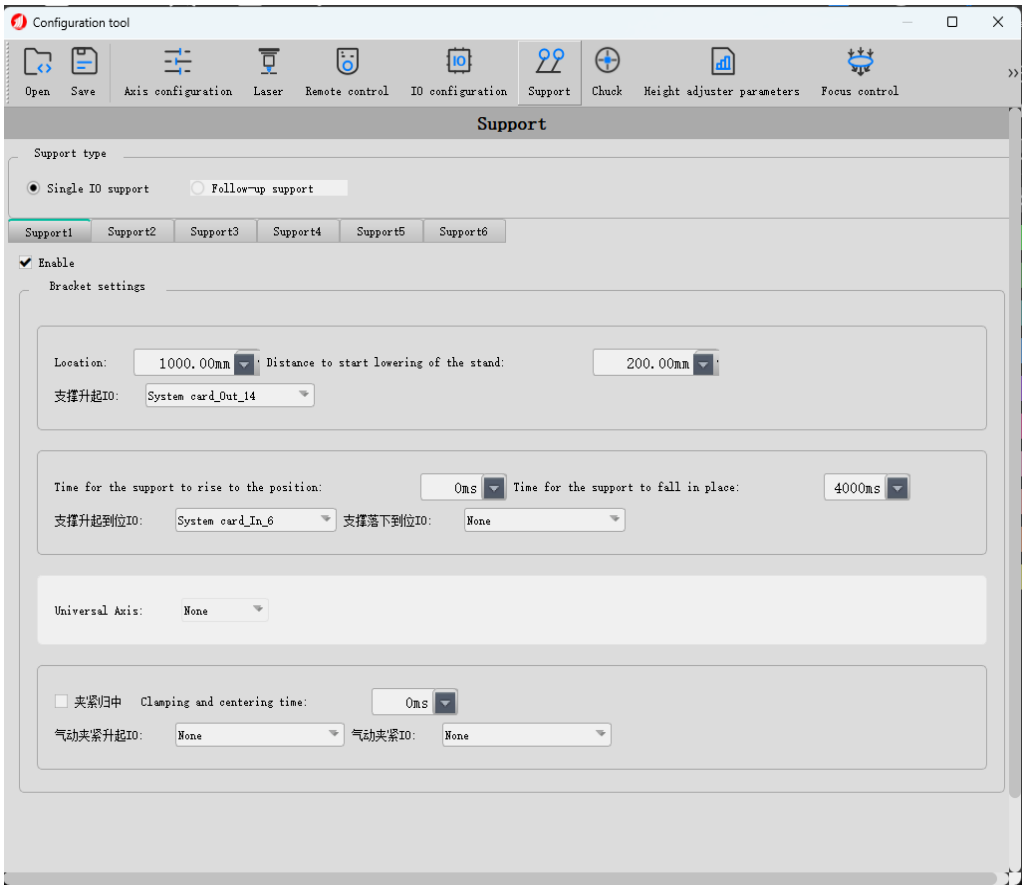
For the first debugging, please conduct the single axis origin test first. Click the pull-down button <Back to origin> and do the single axis of Z / X / Y / W axis back to the origin.



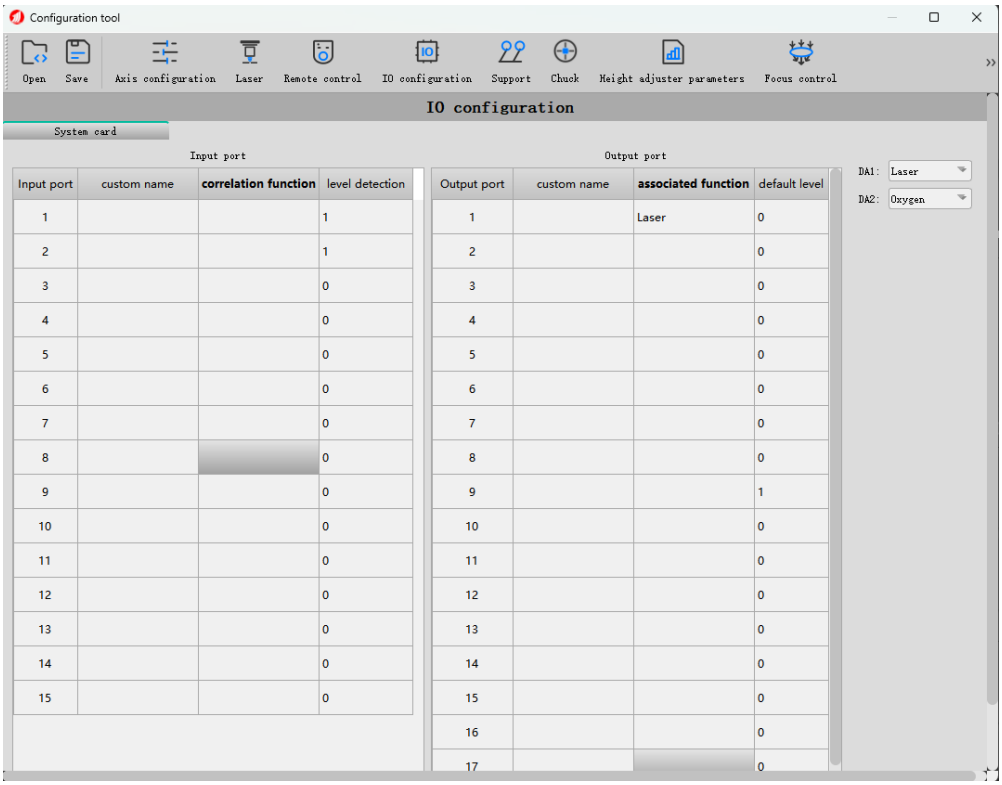
1.2.2 Support debugging

If equipped with support, in the software configuration tools to configuration before support, you can first estimate the support of Y down position parameters: after the system back to the origin, before the position of the Y axis to each support, considering support fall time and air fall speed parameters, ensure that the support up will not hit the main drive, record the current Y axis value, as a reference for the parameters of the support of the support.

After all the support is recorded, open the support page of Jinzhou CNC-configuration tool and set the parameters of the bracket.



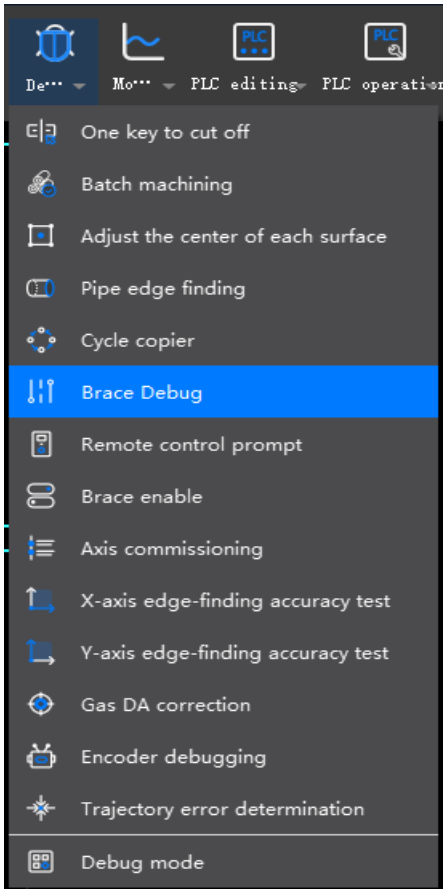
After the support function is configured in the Jinzhou CNC-configuration tool, the output port function and high and low level are set in the IO configuration. After the configuration is completed, click Save to close the configuration tool and support the debugging function in the Jinzhou CNC software. Before debugging the support function, you first need to give the Y-axis back to the origin.

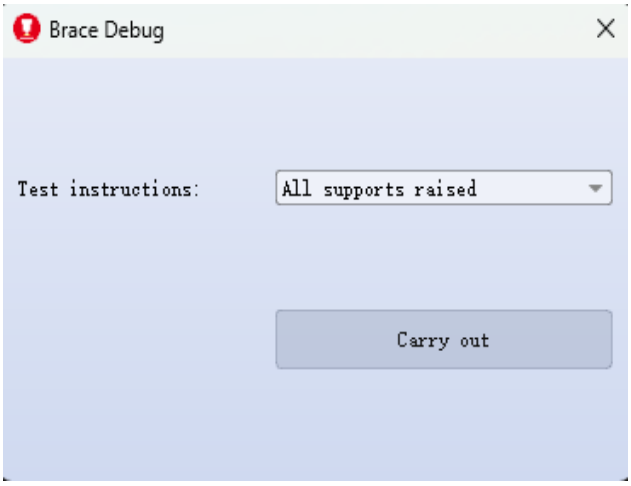


Input port	custom name	correlation function	level detection
1			1
2			1
3			0
4			0
5			0
6			0
7			0
8			0
9			0
10			0
11			0
12			0
13			0
14			0
15			0

Output port	custom name	associated function	default level
1		Laser	0
2			0
3			0
4			0
5			0
6			0
7			0
8			0
9			1
10			0
11			0
12			0
13			0
14			0
15			0
16			0
17			0

Click the menu bar <Debug> to pop up the menu <Support Debug>. Select all support to test with a single support.

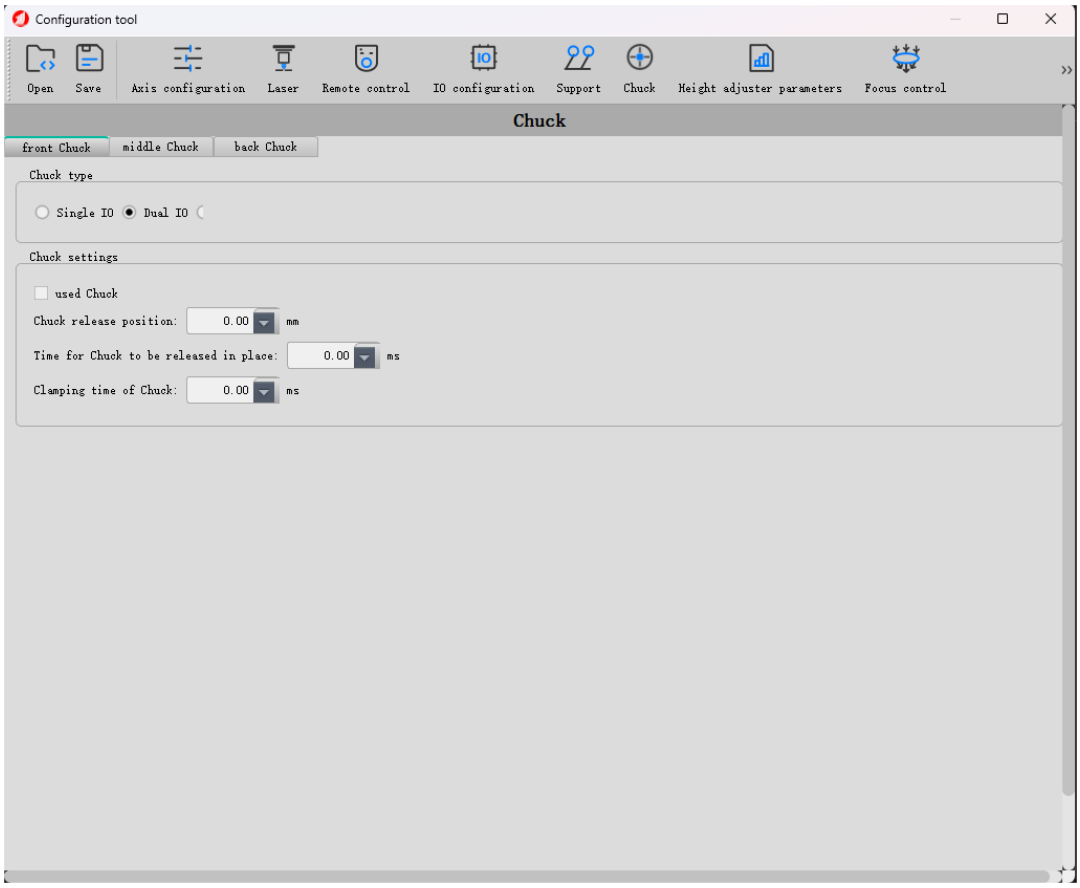




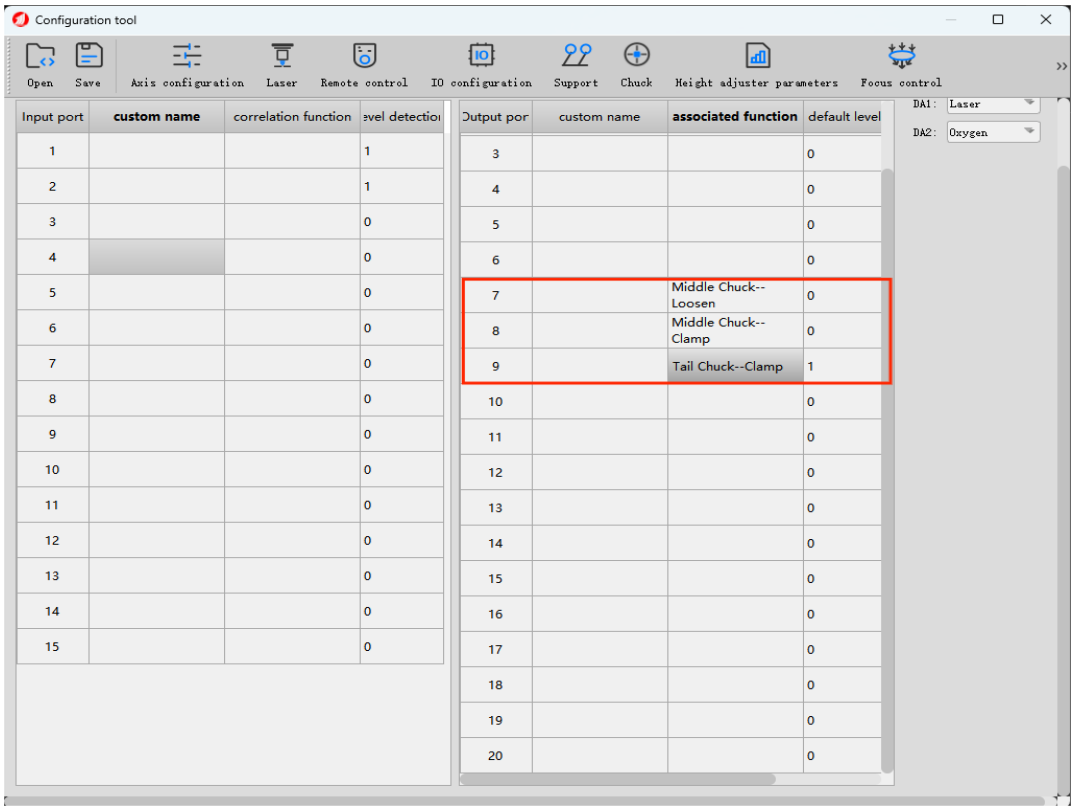
Support with the Y drop position parameter greater than the current actual Y coordinate value is considered a safe support and can be manually raised and dropped on the manual debugging page. At this point, the stopwatch can be used to measure the time of support rise and fall, and the default time and fall position parameters can be further adjusted.

1.2.3 Cuck debugging

Jinzhou CNC-configuration tool -- disk function in the front drive, middle dial, tail dial disk type, disk Settings and other parameters are set.



Once configured, set the cartridge clamp / release in <IO Configuration>.



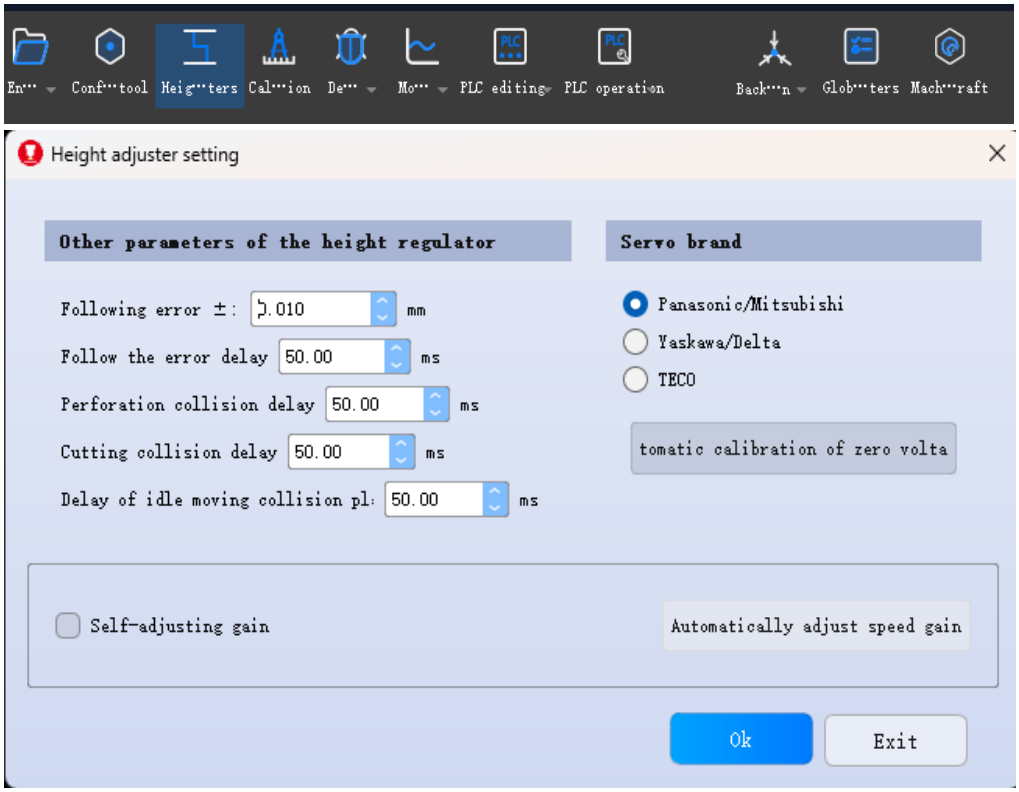
(Note: The figure above is just an example.)

Measure the time required to open and close with a stopwatch, configured as the default time for clamp and release.

After debugging, click the clamp / loosen the clamp tube of the chuck. If the support is configured, it can be used in cooperation.

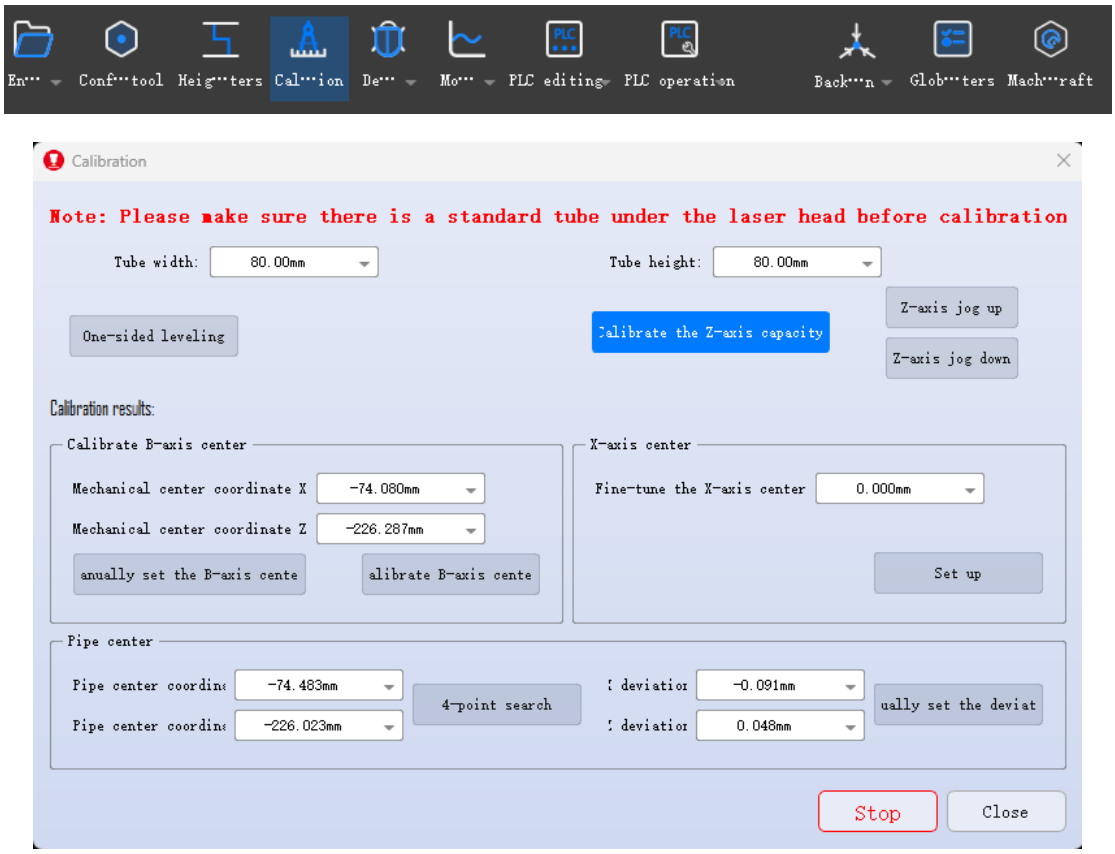
1.2.4 Calibrate the zero-point voltage

In the software, to let the laser head drop a certain distance, select "elevation parameter" in the menu bar, click "automatically calibration zero voltage" in the elevation device monitoring page, and the laser head will complete the zero voltage calibration by itself.(Note: calibration the zero voltage returns the Z axis to the origin, leaving sufficient space for movement under the laser head)



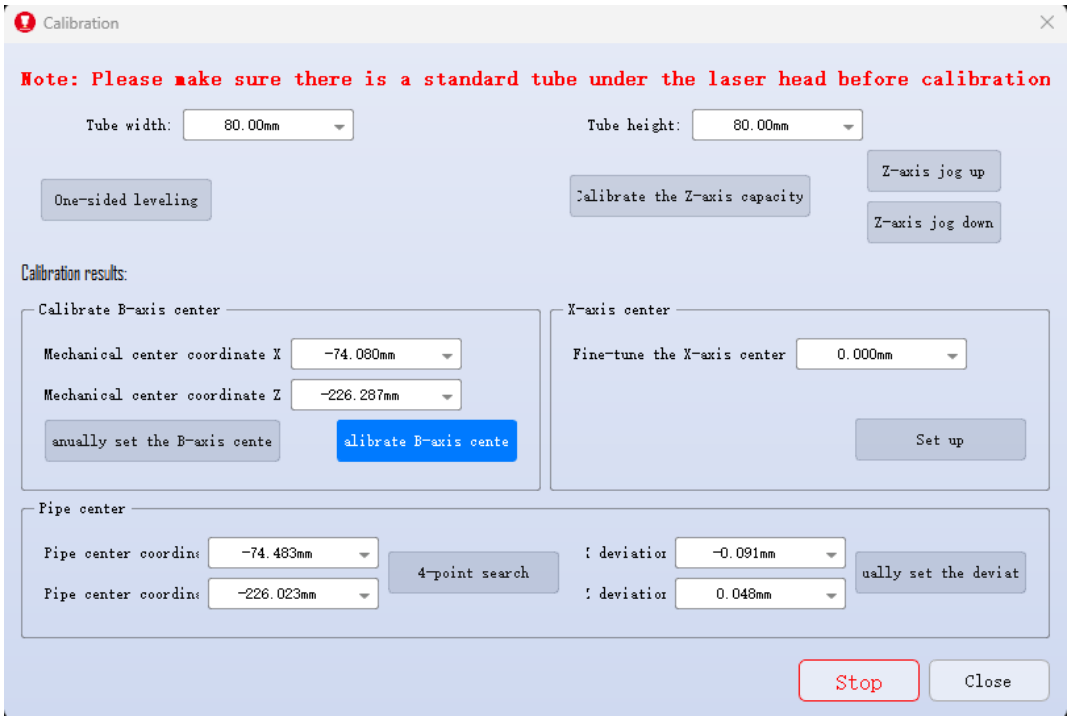
1.2.5 Capacitor calibration

Through clicking X / Y / W axis, move the rectangular tube to the cutting head, and adjust the basic level on the upper surface of the rectangular tube, and then click Z drop a distance, click back to the origin of the origin of the origin, after back to the origin, the cutting nozzle near the surface of the tube, click "calibration Z axis capacity value", the laser head will automatically complete the capacitor calibration.



1.2.6 Calibrate the center of axis B

By clicking on the X / Y / W axis, move the standard rectangular tube (recommended standard aluminum profile) with no chamfer(having a chamfer will affect the accuracy of the W axis calibration!) under the cutting head nozzle, and adjust the basic level of the upper surface of the rectangular tube. Open the "Calibration" menu, enter the "Calibration" interface, enter the standard rectangular tube size, and then click calibration, click close to complete the calibration.

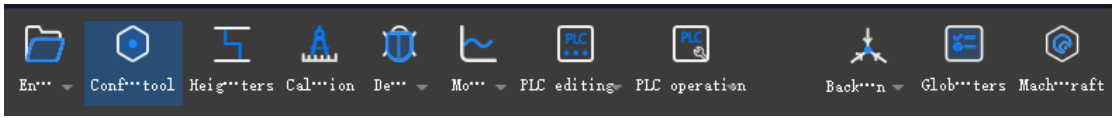


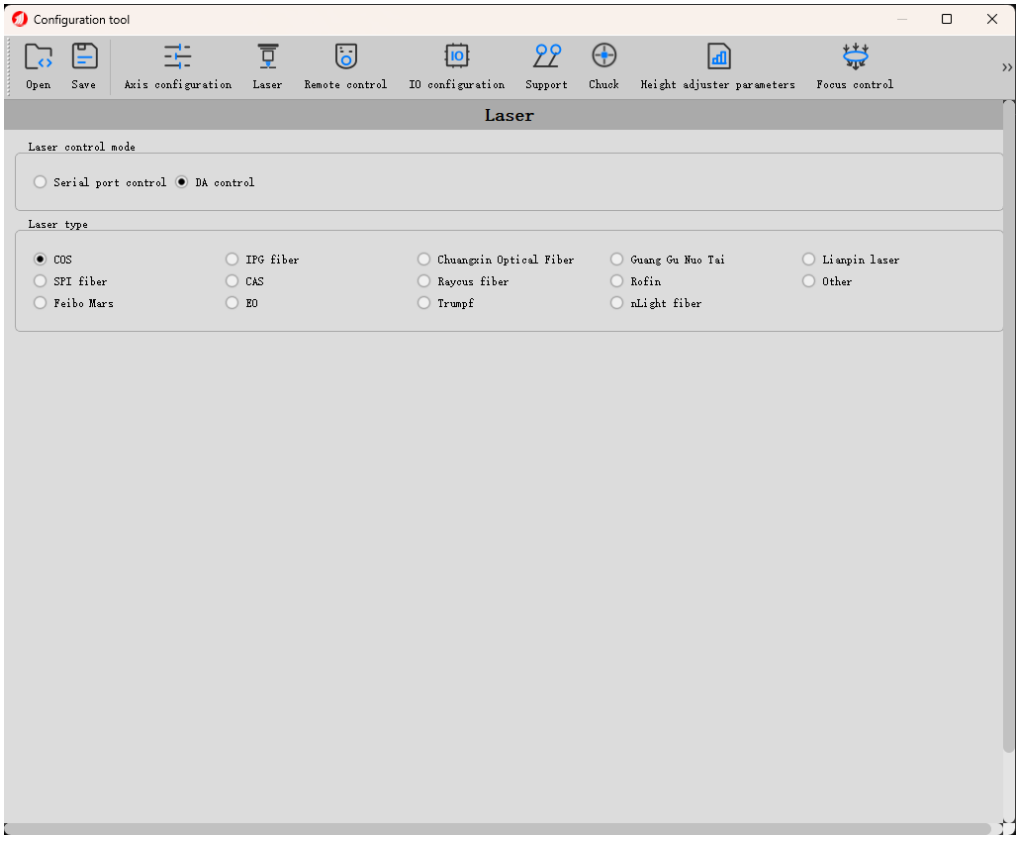
Note: Accurate and reliable coordinates of the X / Z / W axis are needed before calibrating the center of axis B; that is, before calibrating the center of axis B, all the axes of the machine should return to the origin.

Then configure laser, gas, alarm and other basic configuration, the machine has the basic processing function. Refer to the system manual for other configurations.

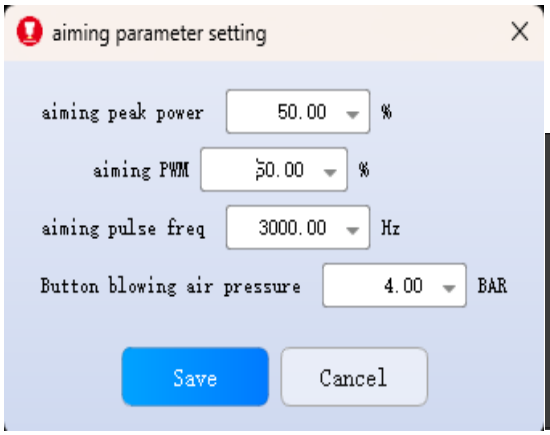
1.2.7 The laser configuration

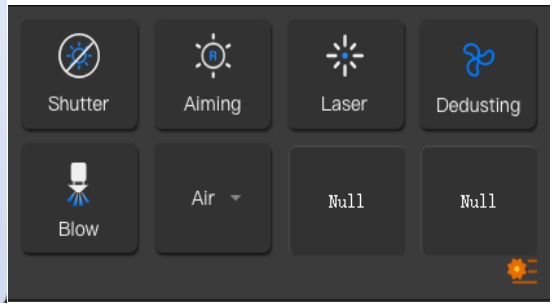
In the "Configuration tool" page, click "laser", in the laser page, select the type of laser, laser power, according to the actual laser control mode to choose the good software laser control mode. After the change, click Save Exit to complete the laser setup.





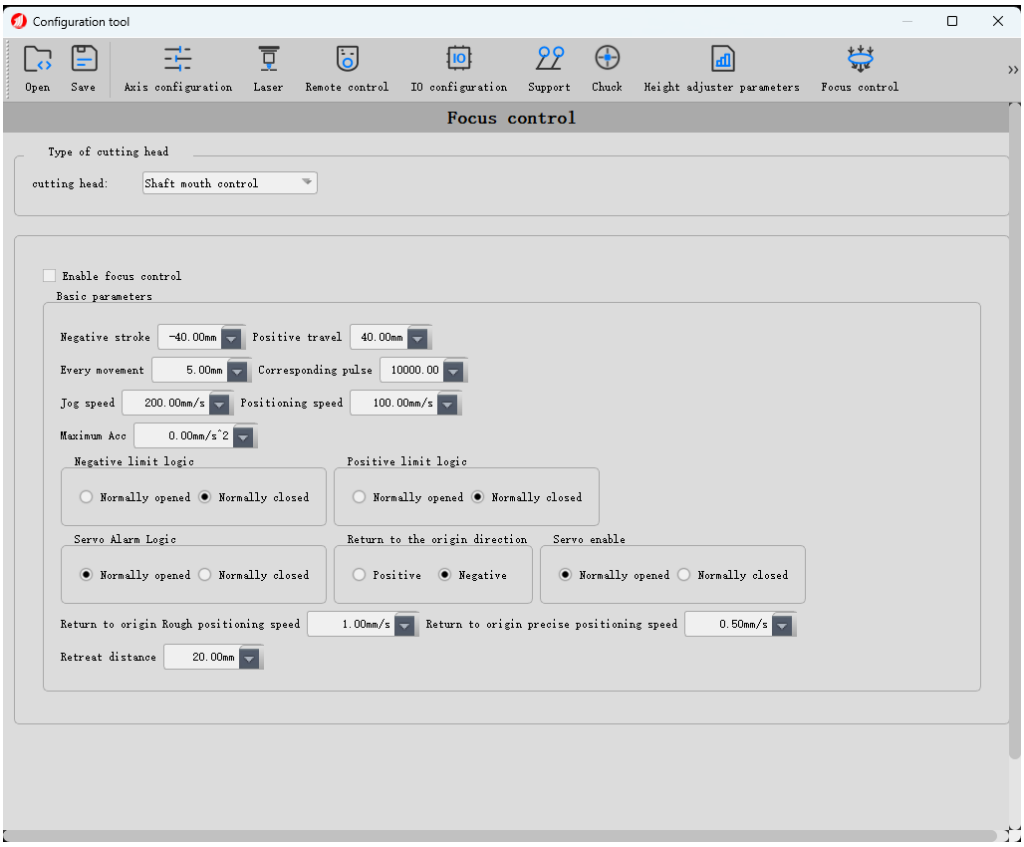
After completing the laser configuration, the power and frequency of the laser point can be set at the operating bar on the right side of the software. After setting the parameters, open the light switch and press the laser key to see if the laser is configured successfully.



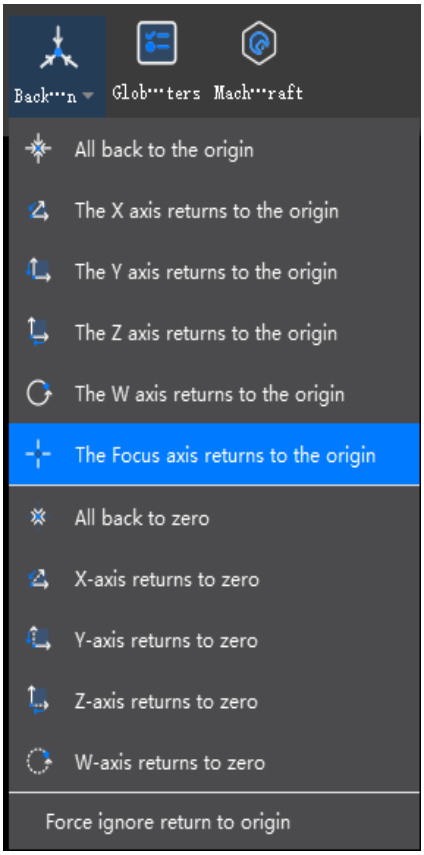


1.2.8 Focus control

Click "Focus Control" in the "Configuration Tool" page to set the laser head focus in the focus control page. If the laser head is manually focused, Enable Focus Control is not checked. If the laser head type is autofocus, it is necessary to set the positive stroke, negative stroke, reset focus setting, per movement, number of pulses, and other parameters. After the parameter setting is completed, click Save to complete the focus setting.



After setting the parameters, the laser head can be viewed from the focal length axis to the origin of the focal back to the origin.



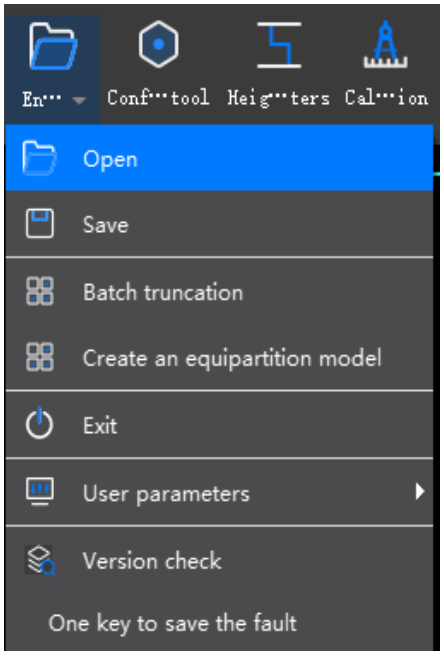
二、 Quick use

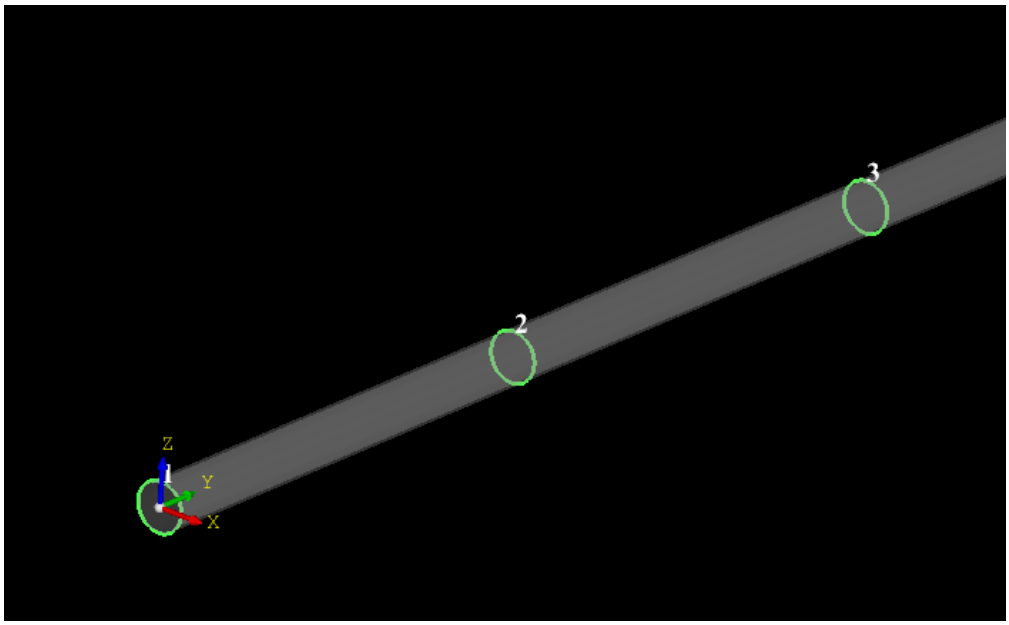
Quick use is for the processing by a commissioned machine. Before starting processing, it should be confirmed that the system has returned to the origin and made the capacitor calibration, and has an accurate B-axis center. Otherwise, perform back to the origin and capacitor calibration, and calibrate the center of axis B with the standard rectangular tube (excluding chamfer).

2.1 Processing process

2.1.1 Import the file

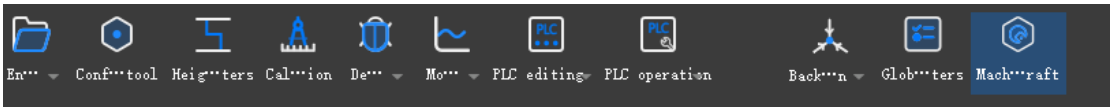
Click the menu bar "Project" to find the corresponding folder and select the .mdl2 format file to process. After clicking OK, the open file is displayed in the software.

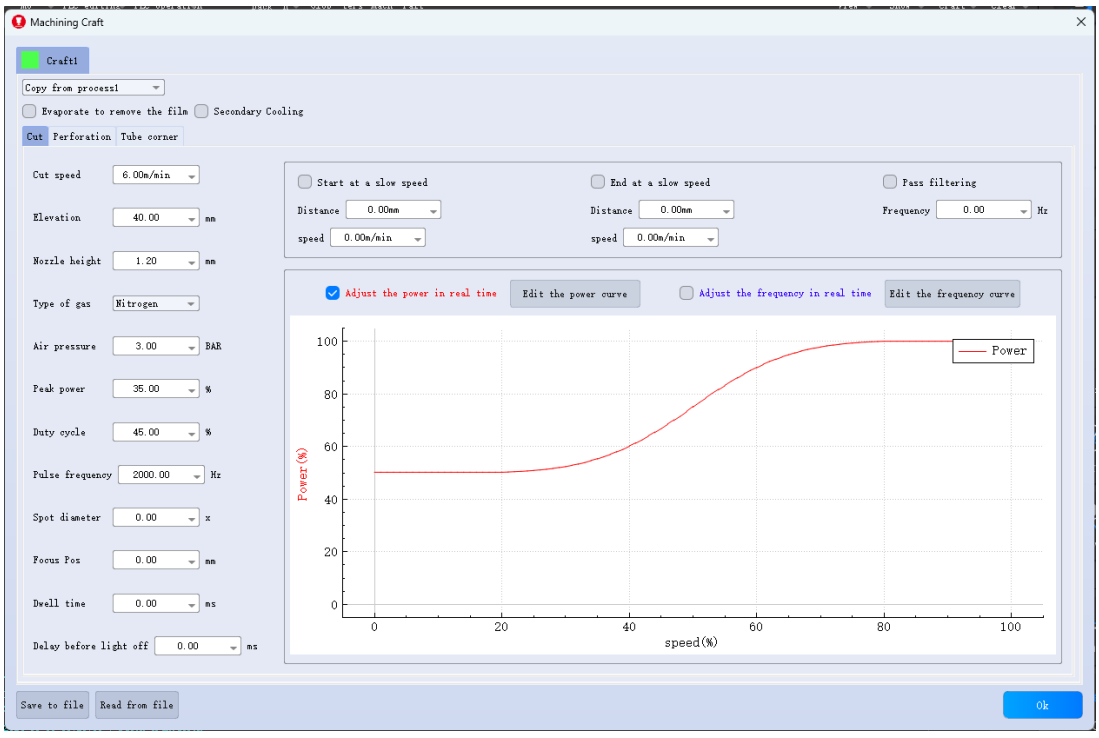




2.1.2 Set up the layer process

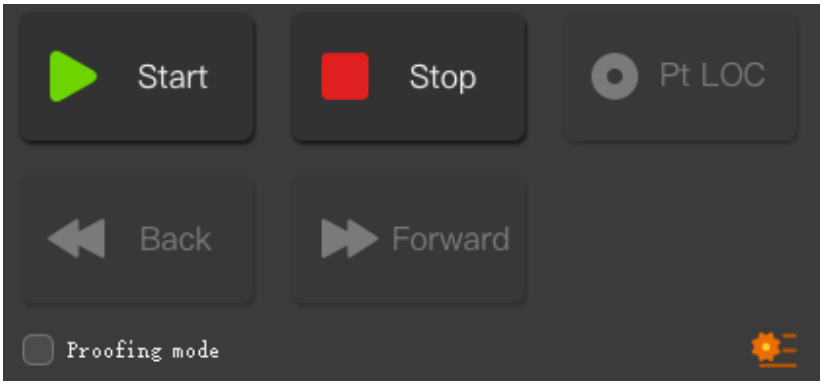
Click the menu bar "Processing Process" to set the process parameters of the layer. The parameters of cutting, perforation, tube corner power curve and duty cycle curve can be set respectively. You can also set the slow start, distance, and speed parameters. After importing the parts, the processing process can only be viewed or modified.





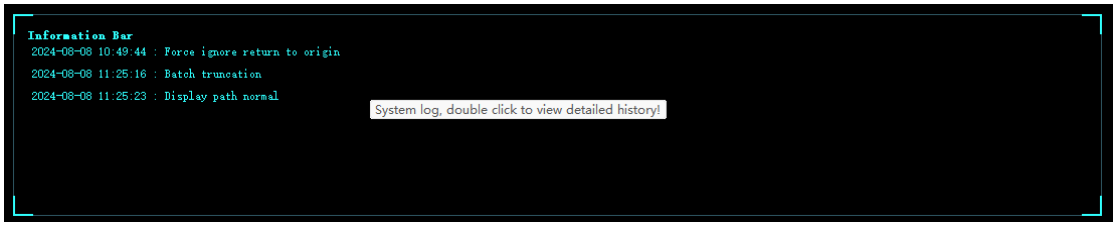
2.1.3 Start processing

Before starting processing, check for any safety risks around the equipment. Protect the personnel before processing. Check whether the cooling water is opened, whether the cutting gas is correct, and whether the laser head nozzle is replaced according to the process. Then click the <Start> button in the operation bar to process the graphics. During the machining process, you can see the machining progress of the parts in the status bar.



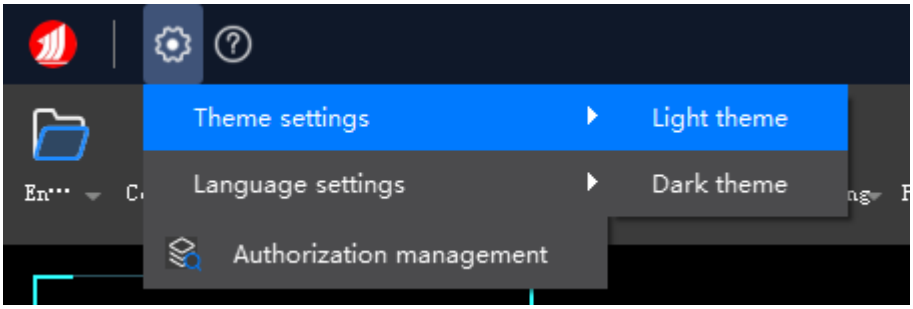
2.1.4 Alarm warning

During the operation of the system, the specific time and specific information of the machine tool alarm will be displayed in the alarm description at the bottom.

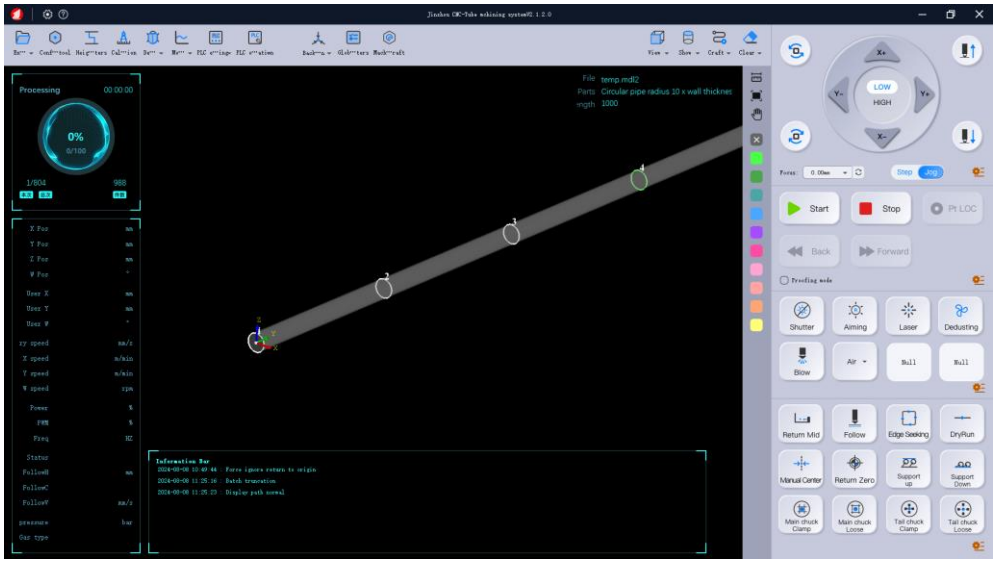


三. Detailed explain of software function

As shown in the figure, the processing software is divided into 5 parts, which include 1 machine tool control bar, 2 commonly used function bar, 3 layer bar and 4 real-time status bar. Here's a definition of each function.



The setting button on the upper left of the software is used to change the color of the page in the software, with both dark and light topics.

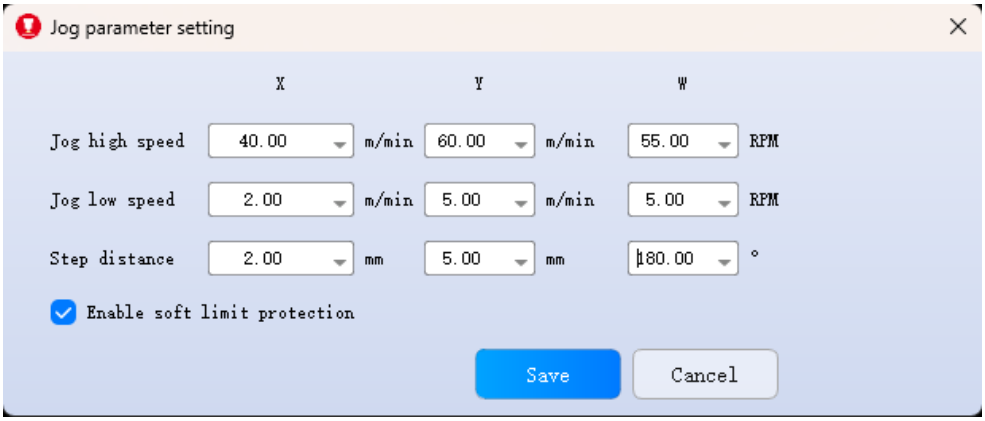


3.1 Machine tool control bar

As shown in the figure above, on the right side of the software is the machine control bar, from top to bottom is the point control bar, processing control bar, laser function bar and manual control bar.

3.1.1 touch control bar

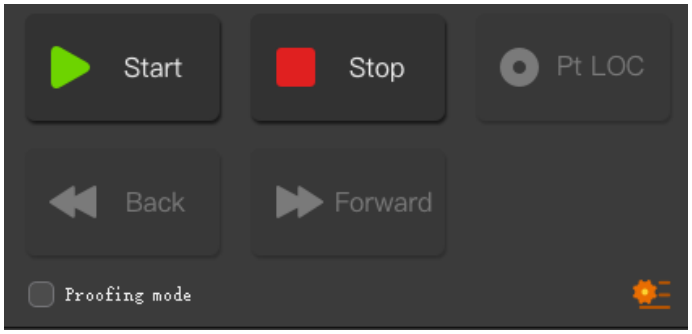
The parameter name	meaning
Point moving panel	X / Y / Z / W, axis point movement or step
LOW/HIGH	Set the low speed / high speed movement
focal point	After entering the focus, click Update and the laser head will go to the specified focus location
step-by-step	Select step-by-step, click the direction key specifies the axis to run in step mode. Do not check the click movement
crawl	Select the point move, is to close the step, click an axis, an axis will move
⚙	Point action fast setting, the specific setting is shown below



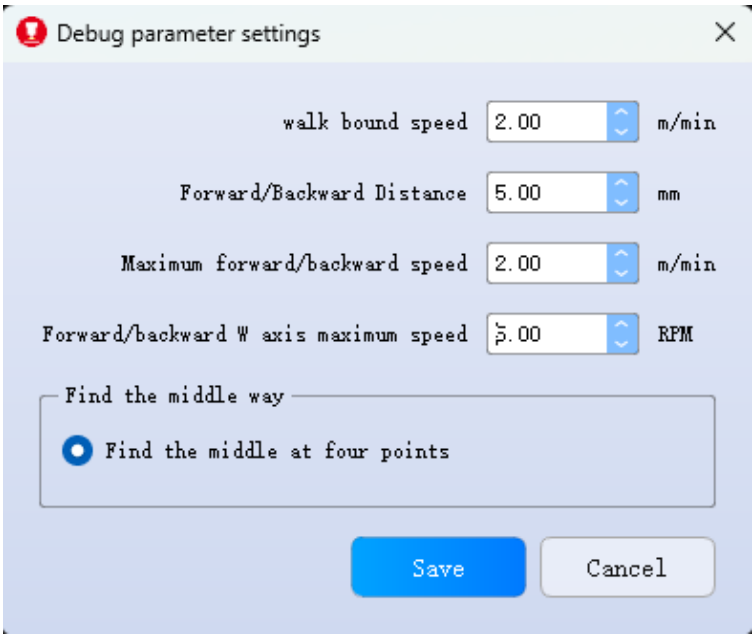
Tap the quick setting:

The parameter name	meaning
Point move high speed	Set the X / Y / W high-speed movement / step speed
Point move low speed	Set the X / Y / W low speed movement / step speed
Step distance	Set the stepping distance of X / Y / W
Enable soft limit	Set whether the system enables soft limit protection, soft limit travel is set in Jinzhou CNC-configuration tool

3.1.2 machining control bar



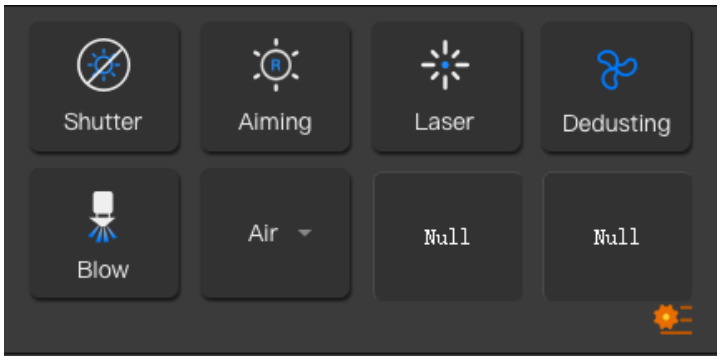
The parameter name	meaning
begin	The machine tool starts the processing
suspend	Pause the execution of the system commands
continue	Continue to execute the system instructions, if the graphic parameters set the perforation, the perforation action will be performed
cease	Stop the current system instruction
emergency stop	The machine tool stops after encountering an emergency
Forward / retreat	After performing the breakpoint positioning or pause operation, click forward / back to adjust the position of the processing point
Breakpoint positioning	During the processing, if an abnormality occurs and triggers an alarm causing a stop, the breakpoint location can be used to locate the position at which the interruption occurred, and then continue with the processing
Graphics mode	For non-whole tube processing, no automatic feeding situation. After completing the processing, stop at the end point, neither return to the zero point, nor execute the document end PLC, and other instructions
⚙	Debugging parameter settings



Debug parameter setting:

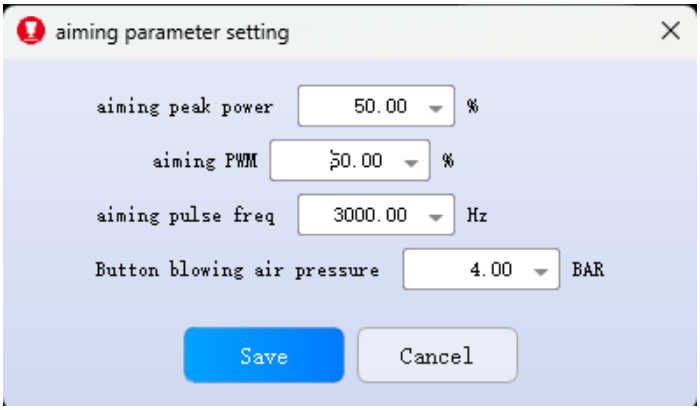
The parameter name	meaning
Walk the border speed	Set the speed value for the walking border
Forward / fallback distance	Set the forward-fallback distance. In the pause state, the forward backback can be used to locate the desired position
Forward / fallback maximum speed	Set the maximum movement speed of X and Y axes when forward / fallback
Forward / fallback W-axis maximum speed	Set the maximum speed of W axis rotation during forward / backback
At four o'clock	The way of finding center is four points to find center, loading different tube models will have different ways of finding

3.1.3 Laser control bar



The parameter name	meaning

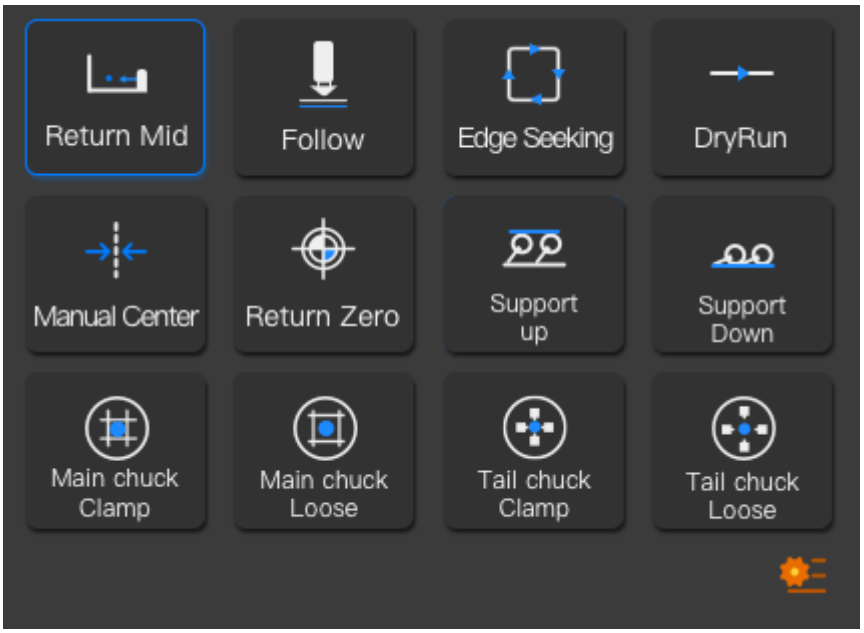
optical shutter	Laser light switch
glow	Laser red light
laser	Laser point shooting
scavenging	Press open gas
Gas selection	Select blow gas type (air, nitrogen and oxygen)
⚙	The dot shot is set quickly, as shown below



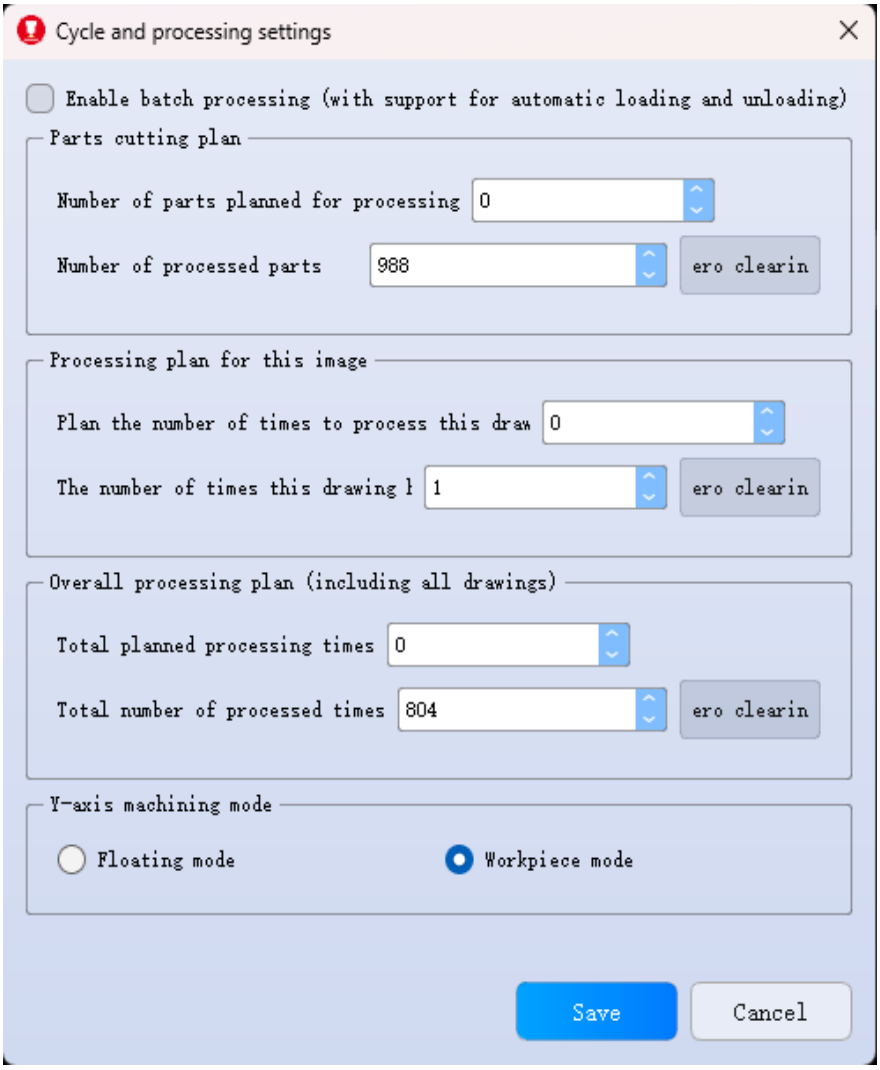
Setting of the point-shooting parameters:

The parameter name	**meaning**
Point-to-point peak power	Peak laser power during point firing
Point-shot PWM, the duty cycle	Duty cycle of the laser signal during the point emission
Point-shot pulse frequency	Laser signal frequency during point firing
Button blowing air pressure	Air pressure setting during blowing

3.1.4 Manual control bar



The parameter name	meaning
The main card clamping	The main cartridge performs the clamping action
The main card release	The main chuck performs the release action
Tail card clamping	The tail chuck performs the clamping action
The tail card loose	The tail chuck performs the release action
Support rising	All supports perform the rise action
Support landing	All supports perform the landing action
In the search	Auto search according to tube type
Back in	The X, W axis of the machine tool moves to the program zero point
Looking for edge	The laser head automatically finds the tube edge position
Empty walk	The machine tool moves according to the figure, but the machine does not emit light, does not follow, and does not vent air
Back to zero	The machine moves to the zero point of the graph, where X, Y, Z, all move
follow	The laser head follows directly to the tube surface
⚙	Machining quick parameter setting

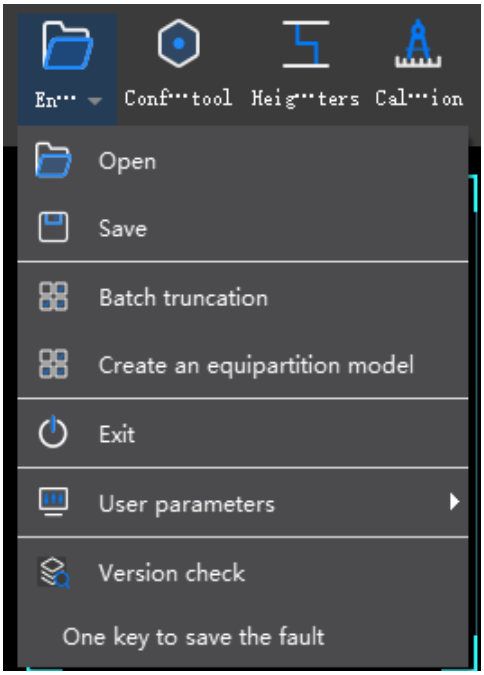


Function name	**meaning**
Number of scheduled machining parts	Set the number of scheduled machining parts
Number of machined parts	Number of parts already processed in the software
Number of planned processes of this drawing	Set the amount of this figure processing
Number of processed figures	The number of times the software has processed this side diagram
Total number of planned processing	Set the total number of processes

times	
Total number of processed	Number of times already processed
The Y-axis machining mode	Floating mode: process the current Y coordinate as the zero of the machining figure (excluding unmachining layers) Work piece mode: process the current Y coordinate as the zero point of all drawings (including figures with unprocessed layers)

3.2 Common function bar

3.2.1 Engineering

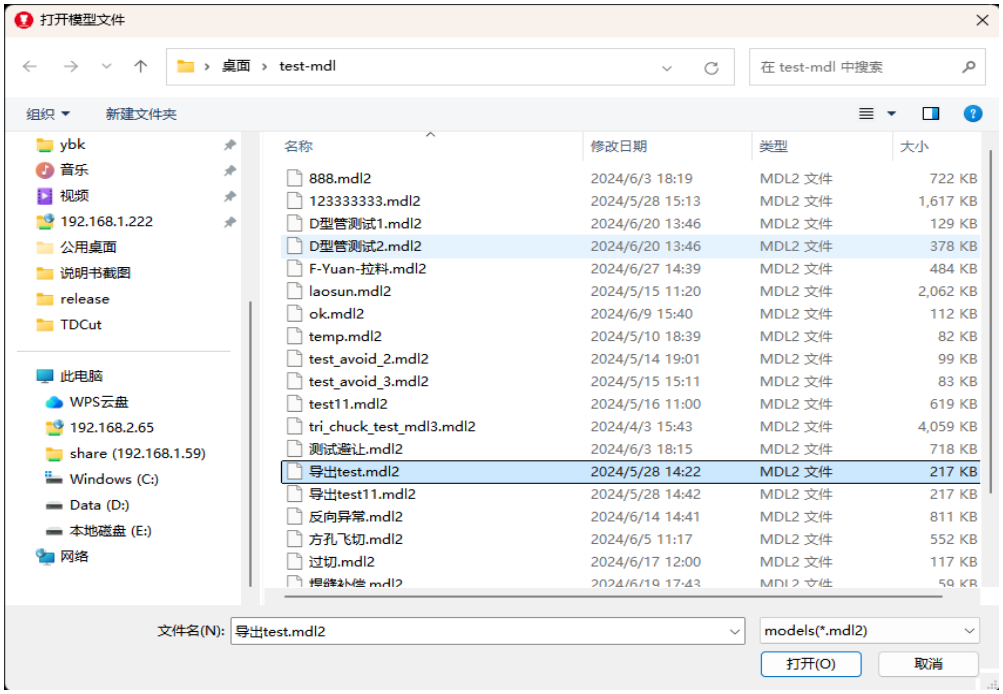


Function name	meaning
open	Open the modeling software and only files in MDI format can be opened
preserve	Save the present part
Batch truncation	Create a batch truncation model
Create a mean score model	Create a evenly split (barrier) model
withdraw from	Exit software
User parameters	User-local configuration parameter settings

Version check	Check for the new version of the software
Save the fault with one key	Error message saved when the software raises an exception

3.2.1.1 Open

After clicking "Open" in the menu bar "Project", the import file model page will pop up. After selecting the file name to be imported, click Open, and the parts will be displayed in the software.

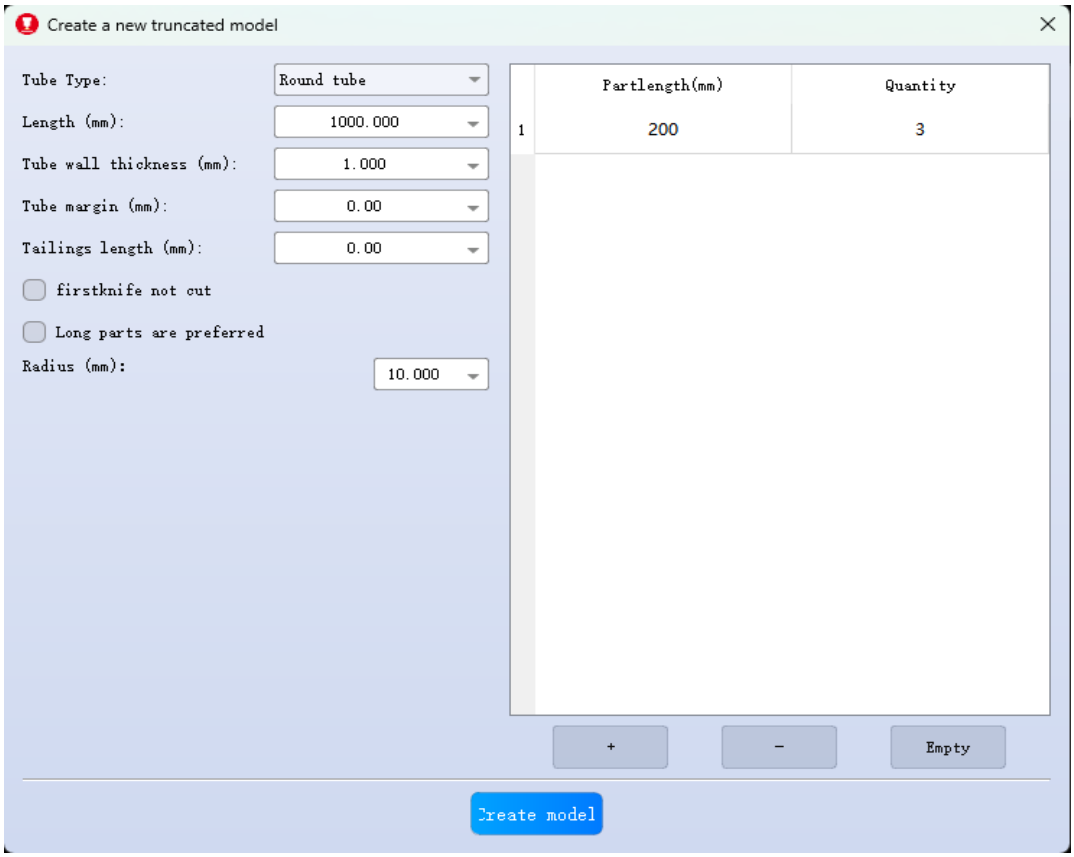


3.2.1.2 Save

Click Save in the menu bar Project to export the specified file from the current view.

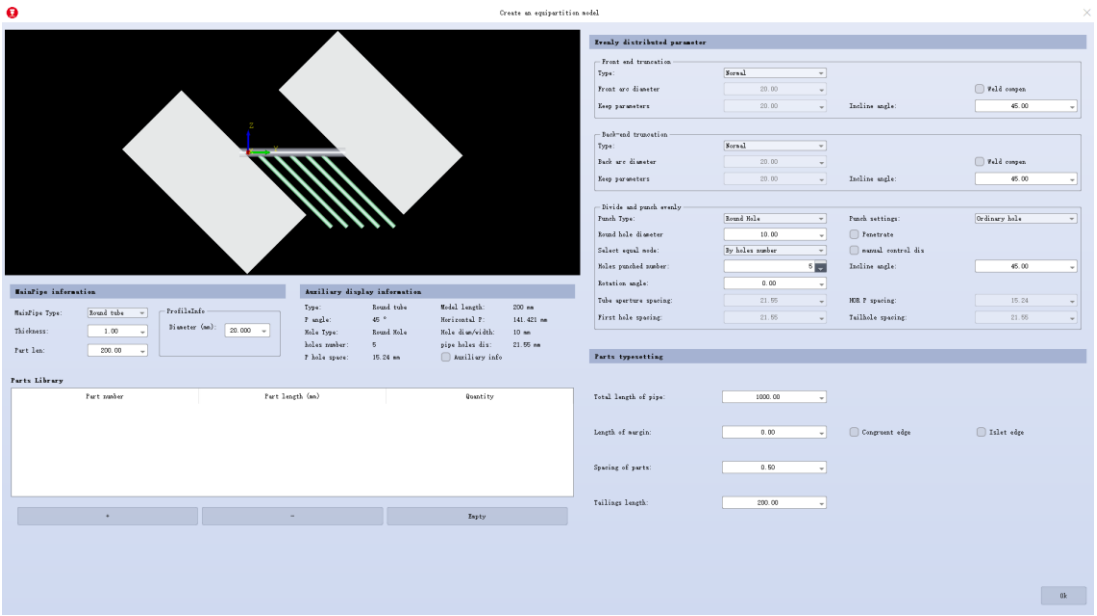
3.2.1.3 Batch cut

Click "batch cut" in the menu bar "project", first set "tube", "" length "," wall thickness", size, and other information, and then click " + " in the editing box on the right, set" part length "and" part number ", finally click" create model ", can create cut parts.



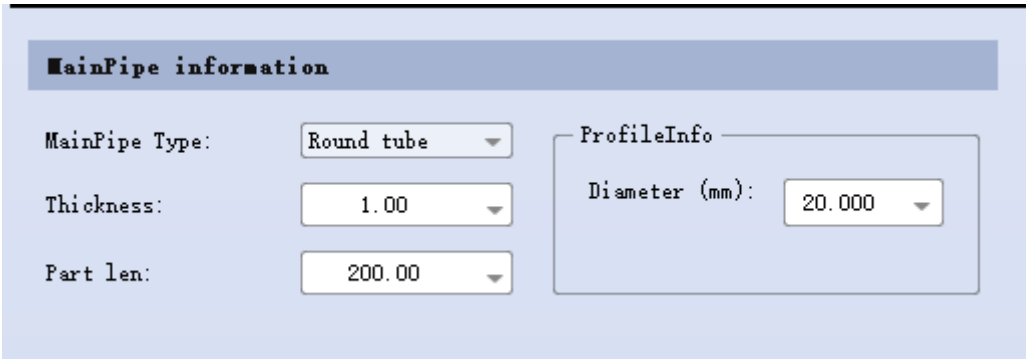
3.2.1.4 Create an equipartition model

(1) Interface overview

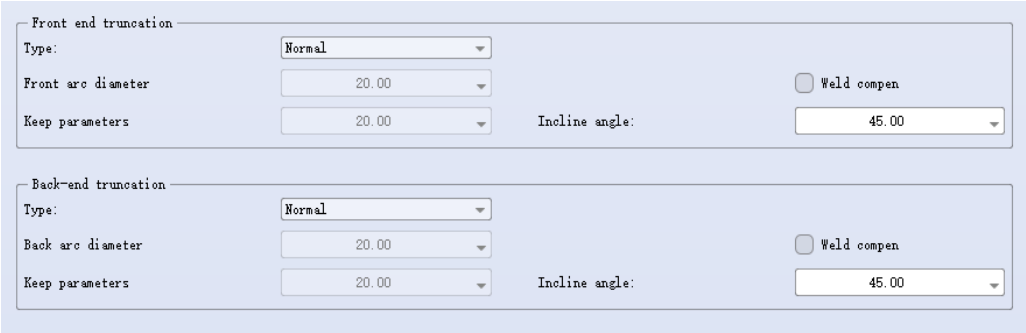


(2) Quickly create an evenly distributed model process

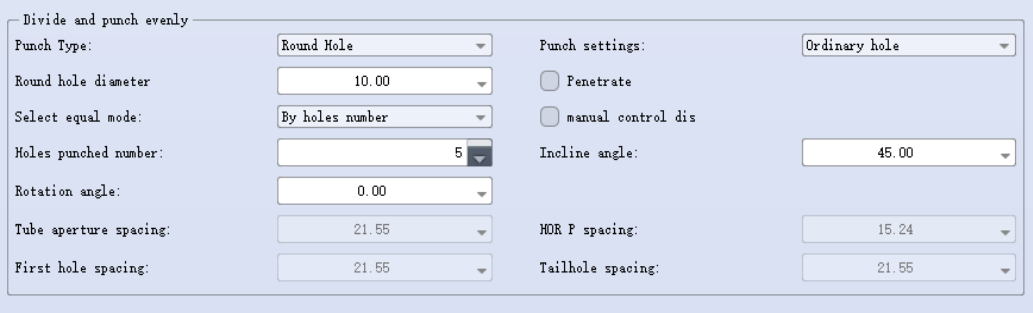
-Set up and modify the supervisor parameter information



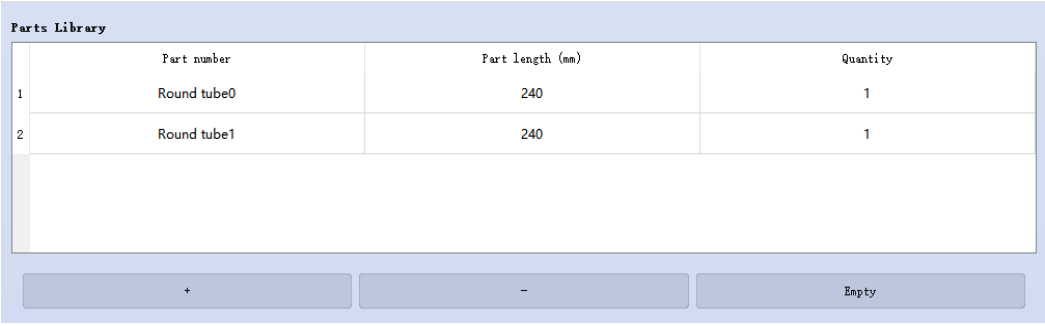
-Modify the equal split parameter to set the front and rear truncation information



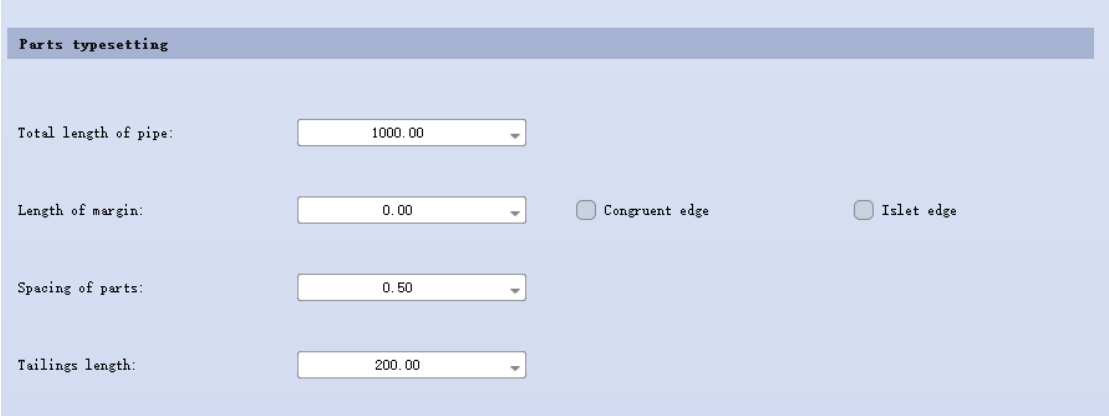
-Add equal split punch information



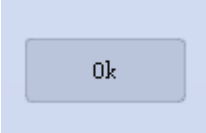
-Add fully sized parts to the parts library and modify the number of typesetting parts required



-Set up part typesetting information



-Click OK for Fig



(3) Detailed module introduction

A. Model Display module: Display the current preview part model in real time

B. Supervisor information module: used to set the supervisor drawing parameters:

Type: Currently only round, square, and rectangular tubes are supported
Wall thickness (mm)
Part length (mm): the minimum length of the part except for the front and rear ends
Section parameters: Different cross-sectional parameters need to be set for different tubes (eg: the diameter of the circular tube needs to be set)

C. Auxiliary display information module:

It is used to display the identification information of some auxiliary drawings in real time, so that you can know the reference parameters of the parameters of different modules in the real model faster.

D. Mean parameter module

① Front end truncation

Type: at present, there are 5 kinds of ordinary truncation, concave (convex) arc, concave (convex) diamond.
Different truncations correspond to the parameters you need to set
Weld compensation: whether the front end cut supports weld compensation
Tilt angle: the rotation angle of the front end

② Backend truncation

Type: at present, there are 5 kinds of ordinary truncation, concave (convex) arc, concave (convex) diamond.
Different truncations correspond to the parameters you need to set
Weld compensation: whether the rear end cut supports weld compensation
Tilt angle: the rotation angle at the rear end

③ Equally divided punch

Type of punching: at present, there are 6 kinds of round, square, rectangular, ellipse, runway and diamond.
Punching setting: a special process that can be set in the current hole track: ordinary hole, phase penetration hole, and processing internal diameter hole
Different holes correspond to the parameters they need to set
Penetration: There will be holes on both sides of the supervisor. If not, only holes on the lower tube surface of the supervisor by default
Select equal division mode: at present, there are three categories by number of holes, by tube spacing and by projection spacing.
Manual control of head and tail spacing: if selected, the distance between the front end truncation to the first hole and the distance between the rear end truncation to the last hole can be manually input, if not selected, the default two spacing is equal to the spacing between the holes and holes.
Different punch equipartition parameters corresponding to different equipartition modes
Tilting angle: the rotation angle of the perforated branch tube.

E. Part Library Module

Part library part information includes: part serial number, part length (actual length of the part), quantity (number of parts during typesetting, which can be modified)
+: Add the parts from the current model preview panel to the Part Library
-: Delete the part in the part library
Empty: empty all the parts in the parts library

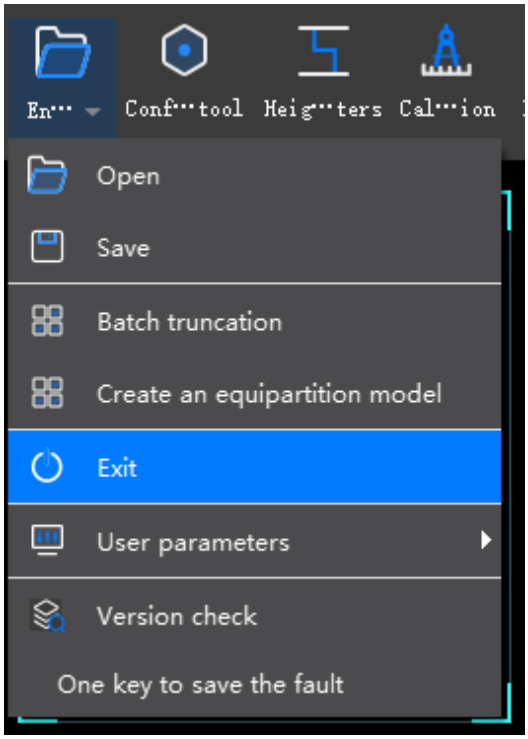
F. Part typesetting module (placing parts in the part library on one tube)

Total tube length: the total length of the typesetting tube
Eddge length: the length reserved at the beginning of the tube.
Common side: at present support both equality and island common sides.

Part spacing: the spacing between each two parts that does not take effect if commoralding is checked and possible between parts.
Tail length: the length reserved at the end of the tube.

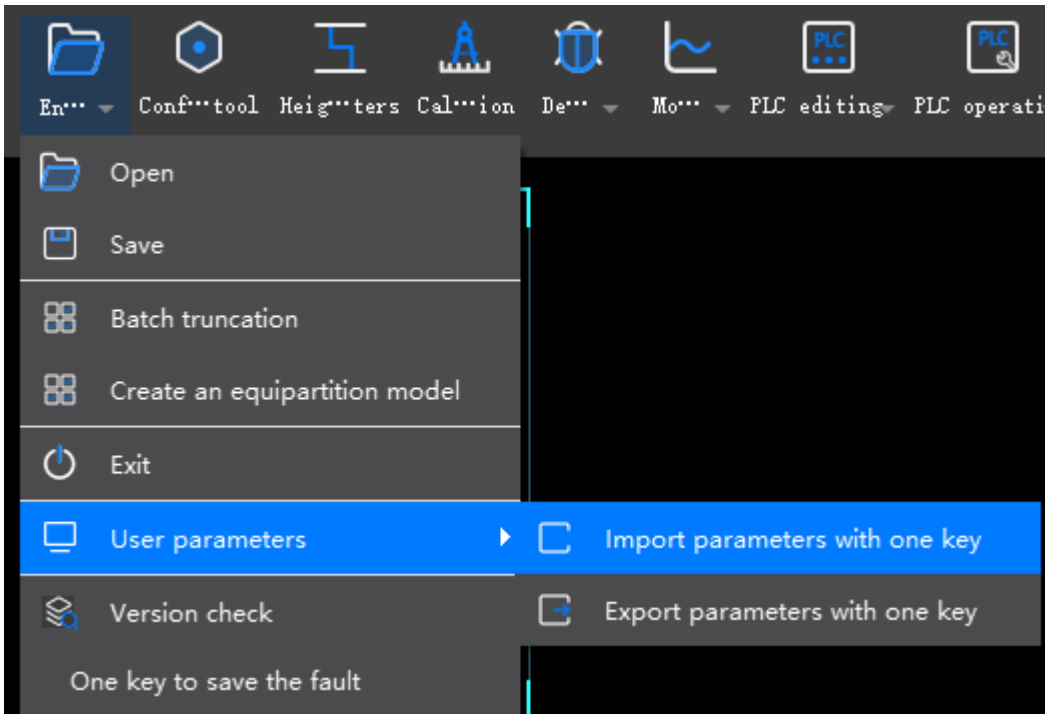
3.2.1.5 Exit

Click the menu bar "Project" and "Exit" to close the software.



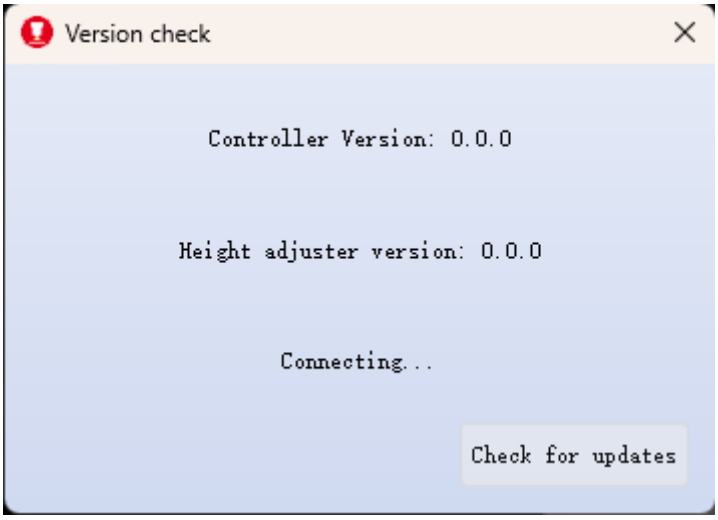
3.2.1.6 User parameters

Click "User Parameters" under the menu bar "Project", and select "One-click Import Parameters" or "One-click Export Parameters" to quickly import and export the configured parameters.



3.2.1.7 version inspection

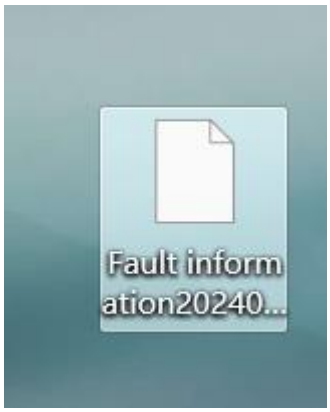
Click "Version Check" under the menu bar "Project", open the version check window, and click "Check Update". The program will automatically check whether the program in the board is the latest version. If not automatically upgraded, the program "is the latest version" will be prompted after the upgrade is completed.



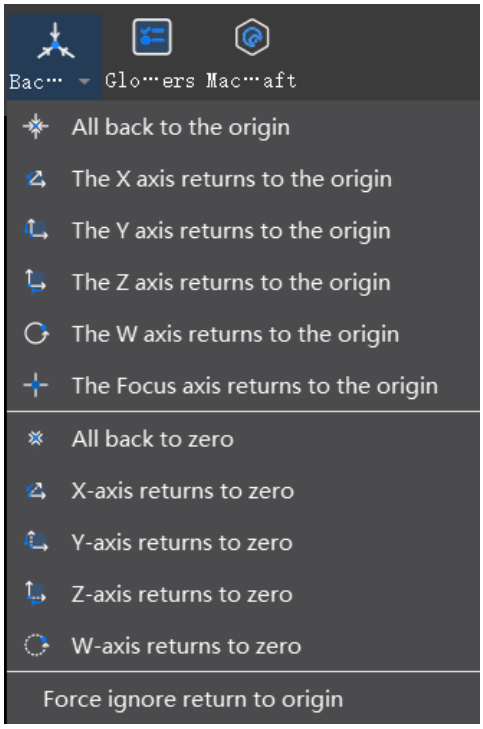
3.2.1.8 One-key to save the fault

If there is an unknown alarm or other abnormal problem in the processing process, click "Project" under "one key save fault", and a fault information file will be generated on the desktop for the

manufacturer or after-sales troubleshooting.



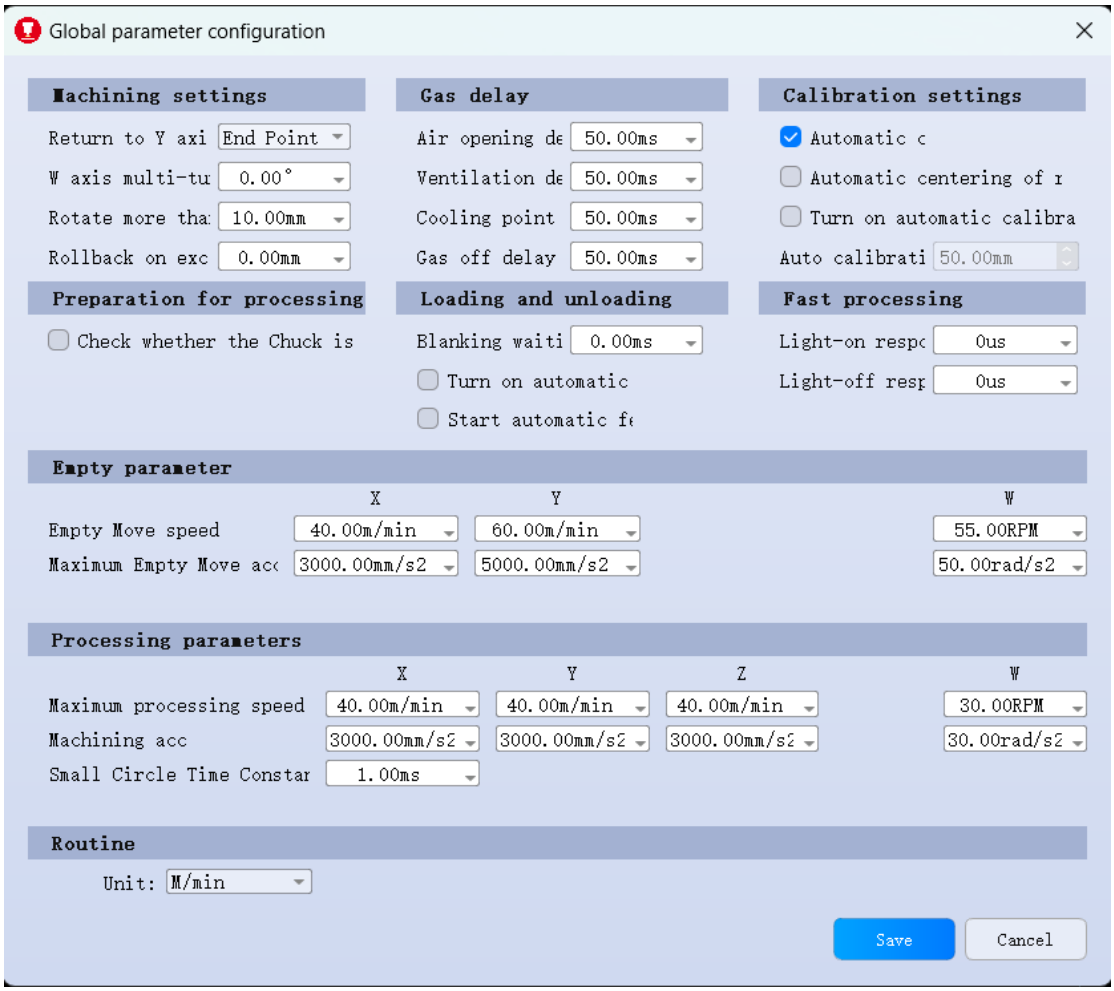
3.2.2 Back to the origin



The drop-down menu of "back to the origin" contains all back to the origin, X axis back to the origin, Y axis back to the origin, Z axis (raise) back to the origin, W axis back to the origin and focal axis back to the origin, and all zero, X, Y, Z, W axis back to zero.

3.2.3 Global Parameters

The global parameters include provided processing settings, air shift parameters, trajectory interpolation, and conventional units.



① Processing Settings

The parameter name	meaning
The Y-axis returns after machining	Optional zero / proximal / distal / endpoint.
The W axis rotates after machining	For special models, after processing, the W axis turns an Angle to facilitate feeding
The raising absolute height during rotating over 10 degrees	The height of the Z axis during face cutting without air shift optimization; open the air shift This parameter does not take effect after optimized
Auto calibrate Y-axis intervals	Set the value of Y axis, when processing, the software will automatically make the calibration of the center of B axis according to the value of Y axis interval.
Open the automatic calibration tube center	After checking, the software will automatically calibrate the tube center according to the value of the Y-axis interval.
Open gas delay	After opening the air path, ensure that the air pressure at the cutting head is stable at the set value

Air change delay	When the gas is replaced, all the original gas is discharged to the new gas reaches the stable pressure at the cutting head delayed. In addition, the first blow after processing will add an additional ventilation delay as the first opening delay after the opening delay
Cooling point delay	The time of blow-air cooling at the cooling point
Turn off the gas delay	Gas off delay after cutting. Can reduce the opening action of short distance processing
Go back when continue	Click pause during processing, then return a certain distance before resuming processing when clicking continue processing
Turn on the automatic feed	Click to start processing, the file begins the PLC execution before the need to perform the feeding PLC action
Turn on the automatic feeding	The feeding PLC action after the file PLC action
Check whether the chuck is clamped before processing	Check the chuck status before starting machining, and pop-up if not in clamped state

② null shift parameters

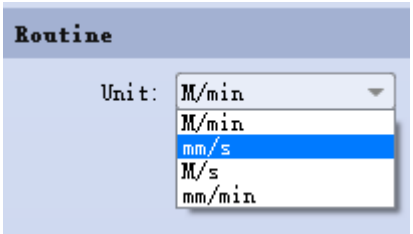
The parameter name	**meaning**
The X / Y / W airshift speed	Set the single-axis maximum airshift speed
X / Y / W, airshift acceleration	Set the single-axis maximum airshift acceleration

③ Locus interpolation parameters

The parameter name	**meaning**
X / Y / Z / W maximum processing speed	Confinement on the uniaxial machining speed
X / Y / Z / W processing acceleration	Constraining on the uniaxial processing acceleration
Small circle time constant	The minimum time parameter for processing small circles can ensure their accuracy; The larger the setting, the higher the precision of machining small circles
Corner coefficient	When cutting, adjust the speed of cutting the corner. Here is setting the maximum corner coefficient, the larger the coefficient, the faster the cutting speed at the corner.

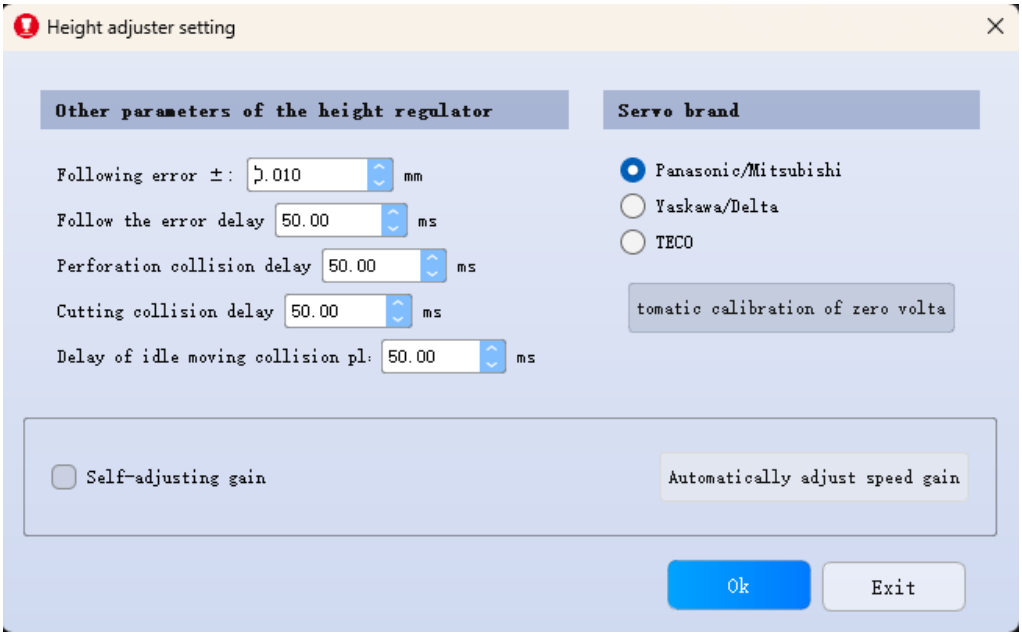
④ Regular Unit

According to the need to switch the required units: m / minute, mm / second, m / second.



3.2.4 Elevation parameters

Used to set the parameters of the height adjuster



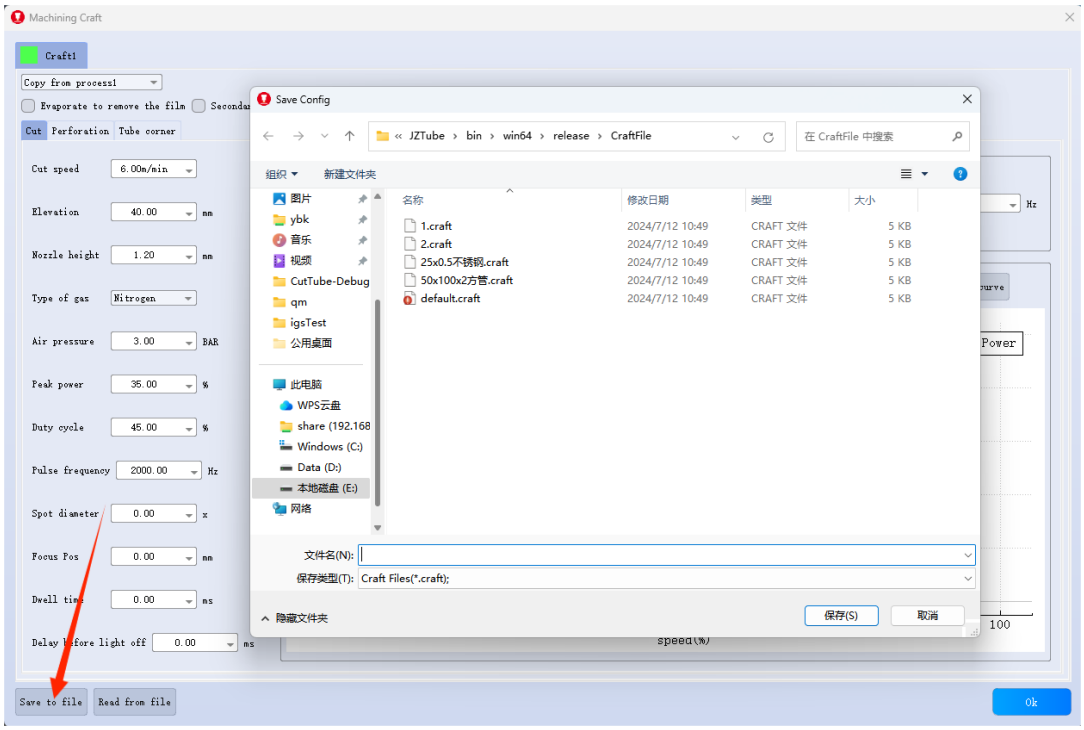
Function name	meaning
Follow error	The error value of the laser head to the tube surface
Follow error delay	The laser head follows to the tube surface error time value
The perforated plate is delayed	Time delay during laser head perforation
Cut the plate delay	Laser head touch plate detection time value during cutting
Scavitation plate delay	Detection time value of the laser head touch plate during the air shift process
Test error	Error value when following the test
Servo brand	Z axis uses servo drive brand
Auto calibration zero voltage	The laser head drops for a certain distance, and the laser head back automatically moves up and down to automatically calibrate the voltage at

	the zero of the Z axis. Please refer to 1.2.4 zero voltage.
Auto-adjust the speed gain	When the low speed of the Z-axis point is not 20 mm/s and the error is large, the "self-adjusted gain" is opened, the laser head drops by a certain distance, and the "Automatic adjusted speed gain" is clicked.

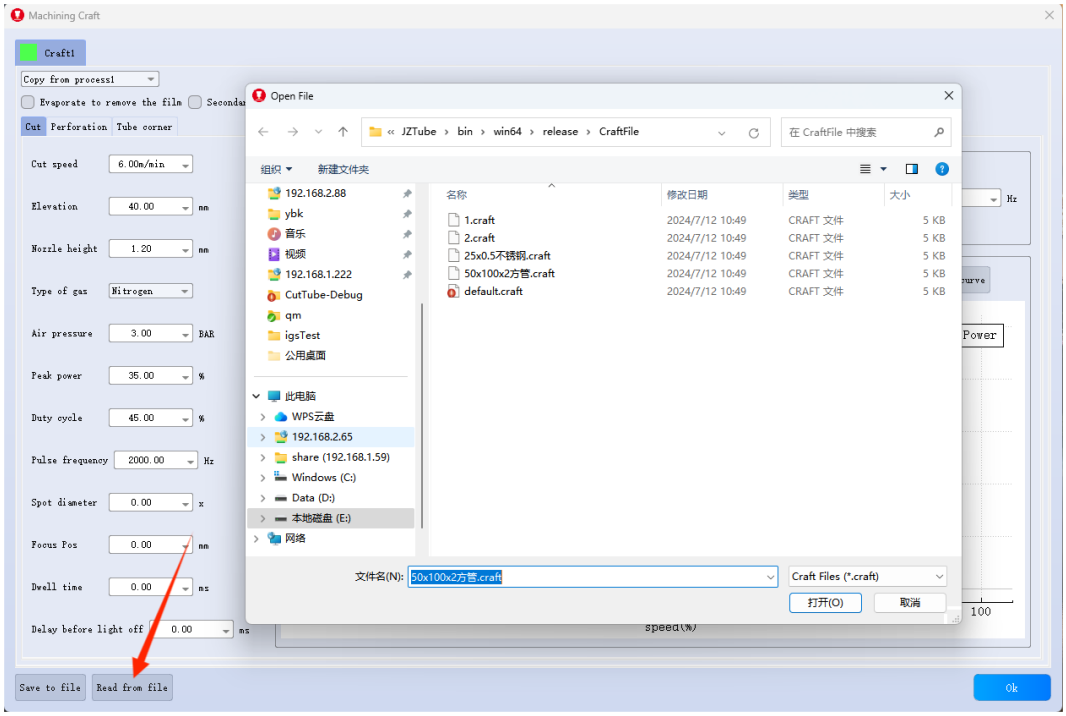
3.2.5 Processing technology

The cutting process can set the corresponding layer processing speed, pressure, power, delay and other parameters. It can also save the good debugging process, used for later cutting, and can also save the good cutting process can be read out for processing.

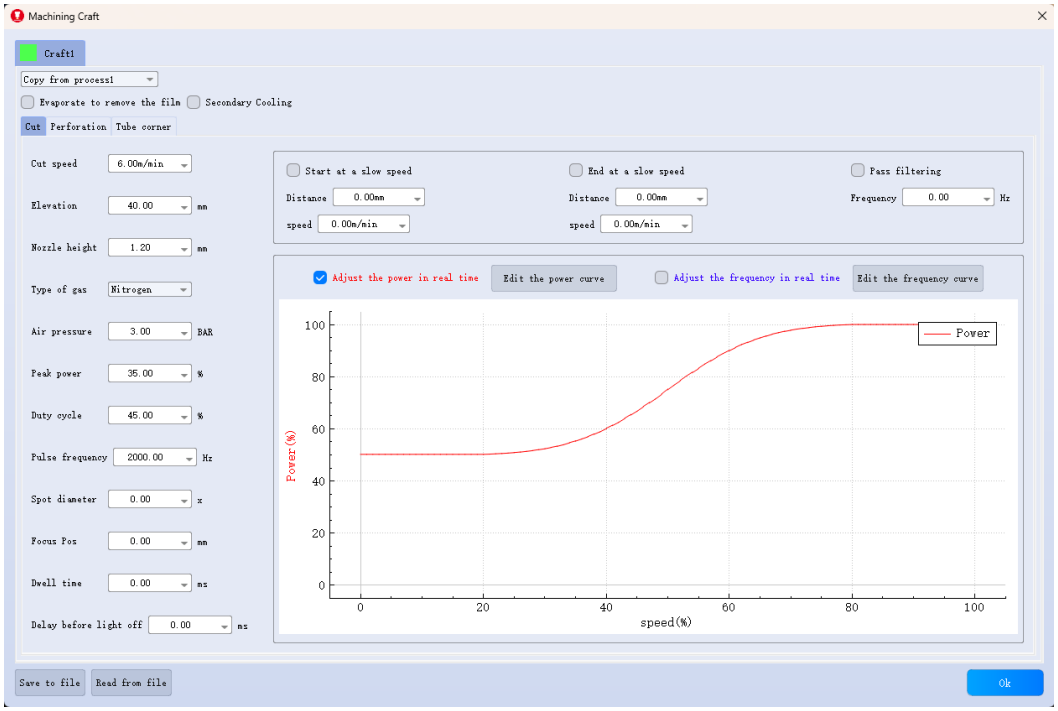
A. Save the process



B. Read the process



① cutting process

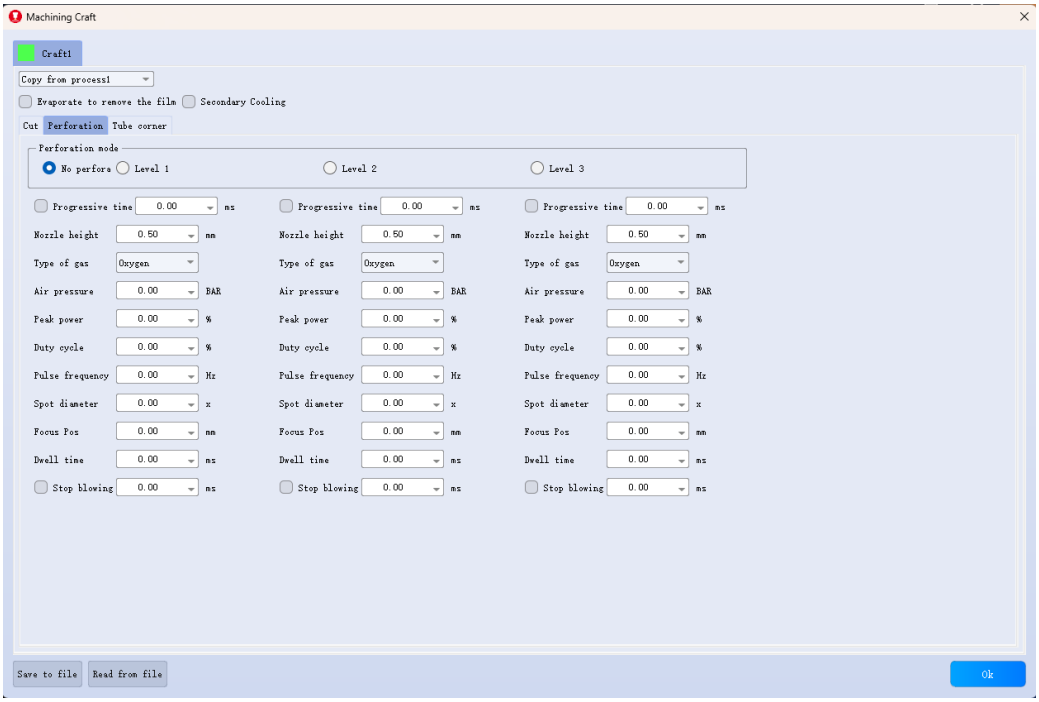


The parameter name	meaning
Cutting speed	Speed when cutting

Raising height	During the normal machining process, the height of Z-axis lifting during the empty movement from cutting one trajectory to another trajectory
Nozzle height	When machining, the laser head follows the height of the nozzle to the tube surface
Spot / Focus	If the autofocus cut head is used, the spot / focus parameters can be configured
Residence time	The delay of cutting to moving along the trajectory ensures that the laser can burn the tube
Delay before turning off the light	Time from the end of the trajectory to the light-off
Slow start distance	The distance started by each trajectory was considered as the starting segment
Slow start speed	After checking the slow start, the start section of the trajectory will be processed at the set speed of the slow start
Low-pass filtering frequency	If enabled, a separate low-pass filter can be set for this layer; If not enabled, this layer uses the processing low-pass filter in the global parameters
Adjust the power / frequency in real-time	Set the relationship between the power / frequency of the trajectory machining laser and the trajectory speed
Curve editing	Specific edit power / frequency corresponding to the speed of the curve

② perforation process

- The perforation process can be set to choose no perforation, primary perforation, secondary perforation, tertiary perforation and other four ways;
- Each level of perforation can be set separately with separate parameters;
- If the choice of perforation mode is secondary perforation, the second perforation and then the first perforation;
- If it is a tertiary perforation, the first to perform a tertiary perforation, then to perform a secondary perforation, and then to perform a primary perforation.

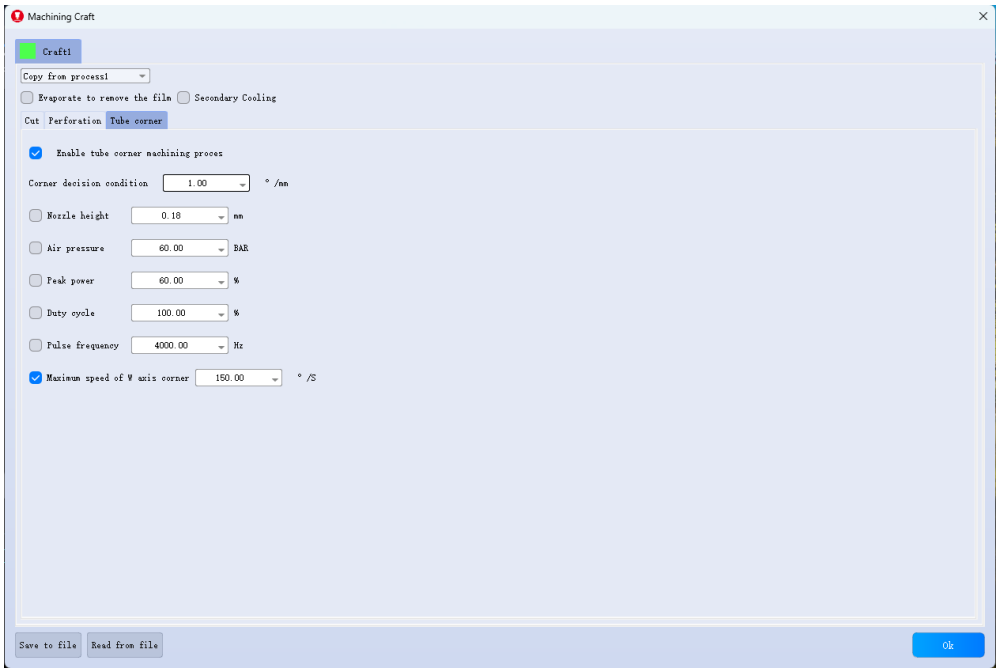


The parameter name	meaning
Progressive time	The time that the cutting head moves down the first height at the current height
Nozzle height	Nozzle height during the perforation process
Gas type	Set up the gas type for the perforation process
Pressure	Set the air pressure for the perforation process
Peak power	Set the peak laser power for the perforation process
Duty cycle	Set the laser duty cycle for the perforation process
Impulse frequency	Set the laser frequency for the perforation process
Spot diameter	If a focus shaft is configured, you can set the perforation spot diameter
Focal position	If you have a focus shaft, you can set the perforation focus position
Residence time	The time when the cutting head stays perforation at the current height
Stop the light blowing	The time when the perforation ends without blowing air
Pre-punching	First, perforate all the positions in a workpiece, and then cut the track in turn

③ tube corner process

Enabling corner technology can improve the cutting effect of tube corners. In the corner process, it is possible to set the control function, corner air pressure, peak power,

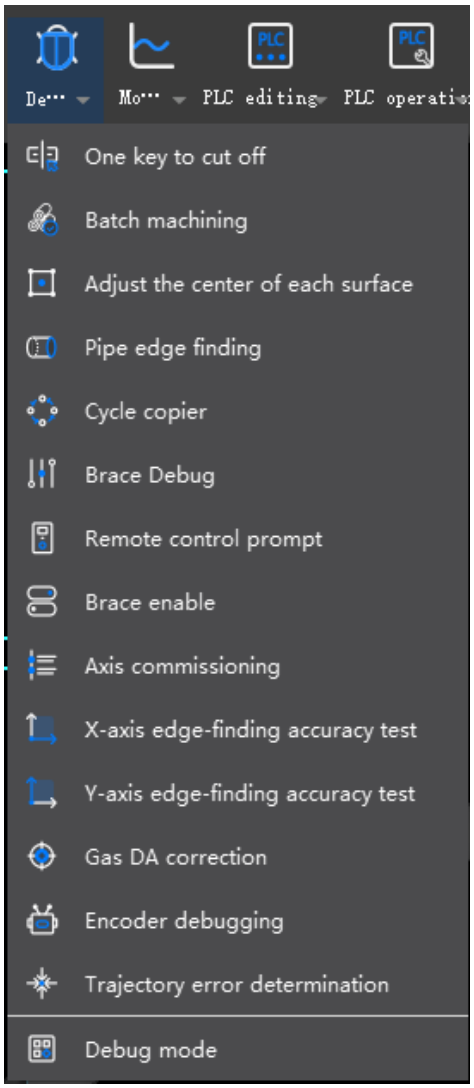
duty cycle, pulse frequency, and also constrain the speed and acceleration of the W-axis.



parameter	meaning
Start the tube corner processing process	Use the tube corner cutting process to make the cutting effect even better
Corner judgment criteria	If the B axis is set for every 1 mm in the X direction, it has entered the corner section.
Nozzle height	Set the height of the nozzle from the corner surface when cutting the corner
Pressure	Set the air pressure at the cutting corner
Peak power	If the laser used in the machine is controlled by DA for peak power, the peak power for cutting corners can be configured separately
Duty cycle	The duty cycle can be appropriately reduced at the corner to avoid burn parts
Impulse frequency	Set the pulse frequency when cutting the corner
W-axis corner maximum speed	When cutting tubes of different sizes, the speed and acceleration of the W axis often affect the cutting quality of the whole cutting surface. Using an individual corner W axis speed can improve the cutting quality without affecting the overall machining efficiency
Corner coefficient	Set the coefficient of the cutting corner, the larger the coefficient, the faster the cutting corner is.

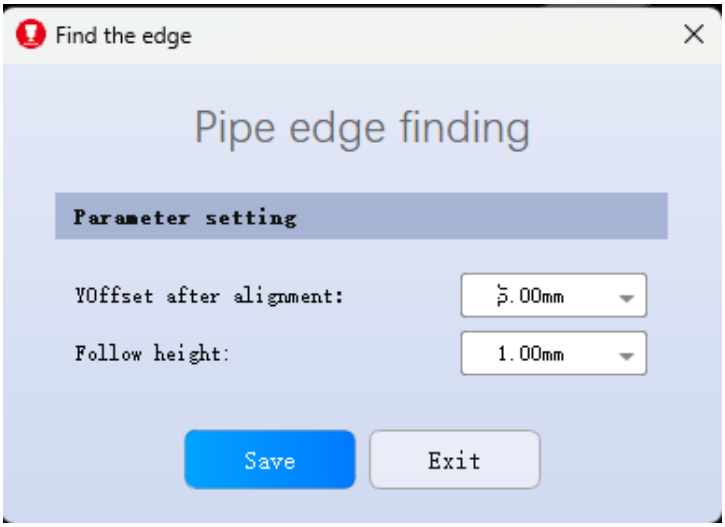
3.2.6 debugging

Debugging is divided into one-key truncation, mass processing, adjustment of the surface center, tube edge finding, remote control prompt, cycle copy machine, support enabling, support debugging, axis debugging, X axis edge finding accuracy test, Y axis edge finding accuracy test, gas DA correction, encoder debugging, track error determination, debugging mode.



① tube edge searching

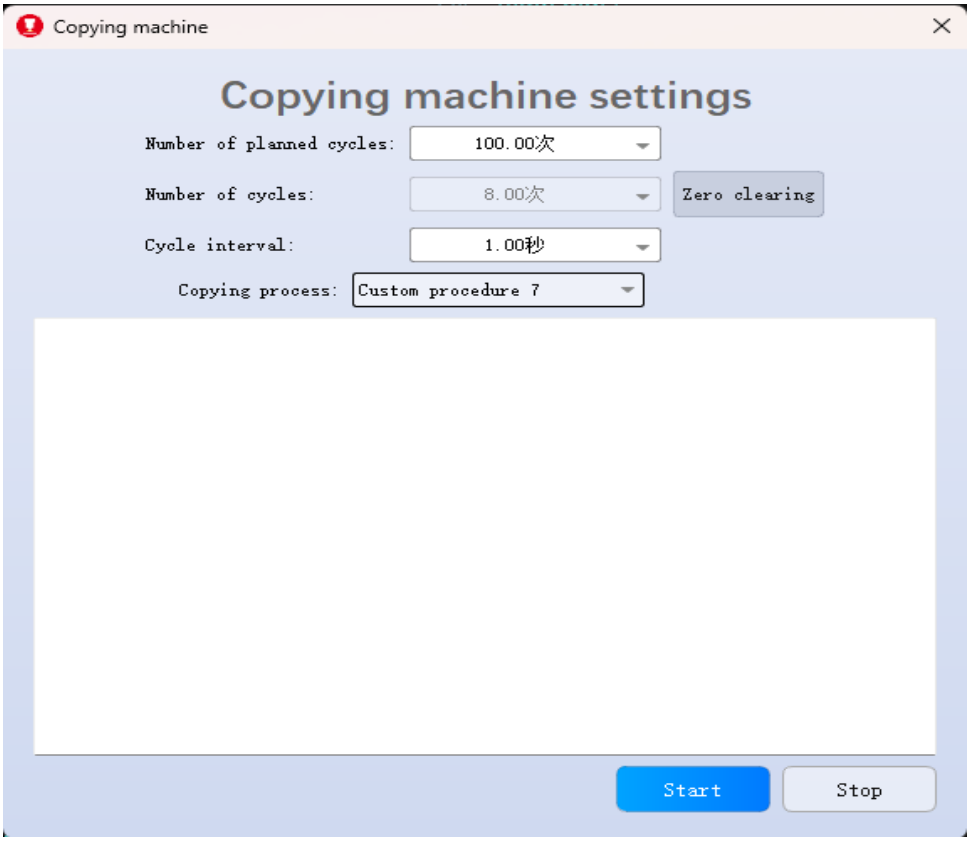
tube edge searching. This function enables the software to automatically find the tube head, and causes the cutting head to finally stop at a certain distance from the tube head.



② Cyclic copying machine

This function is used to ask the machine to move back and forth after the installation of the device, and check whether the parameter setting is correct.

The parameter name	meaning
Y-axis offset after alignment	After the cutting head finds the tube head to the outside edge, the Y-axis will move forward with an offset distance to avoid the shaking caused by the cutting head processing at the edge of the tube.
Follow the height	The distance of the concentrating nozzle to the surface of the tube when the drop follows



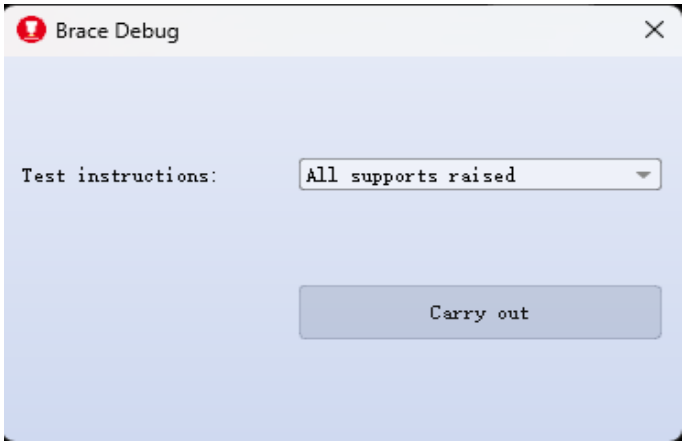
The parameter name	meaning
Plan the number of cycles	Sets the number of loop copy machines
Number of cycles	The number of copies already made
Cycle interval time	Time of last copy machine and next copy machine
Copy process	You can set the action of the copy machine, the loading and unloading action, back to the origin action, and you can also copy the machine according to your own set PLC.

③ Support enabling

The support enabling signal can be set up to enable the support before it can rise

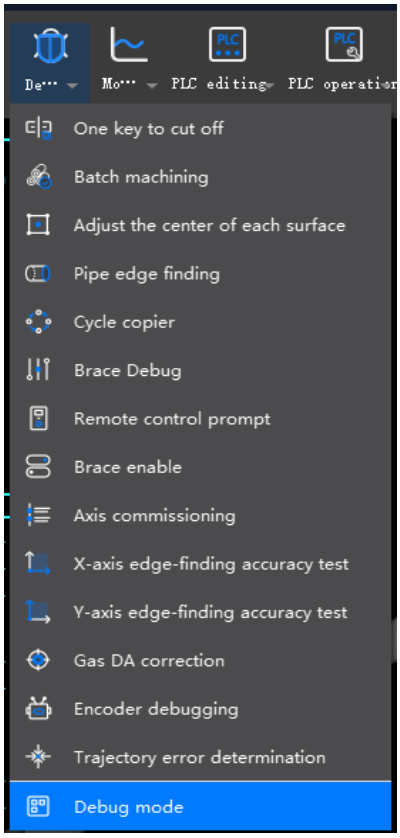
④ Support debugging

This function allows all supports to be raised, or a specific support to be raised or lowered separately.



⑤ Debugging mode

After using the debugging mode, the software will prompt the debugging mode, and the software can be debugged.

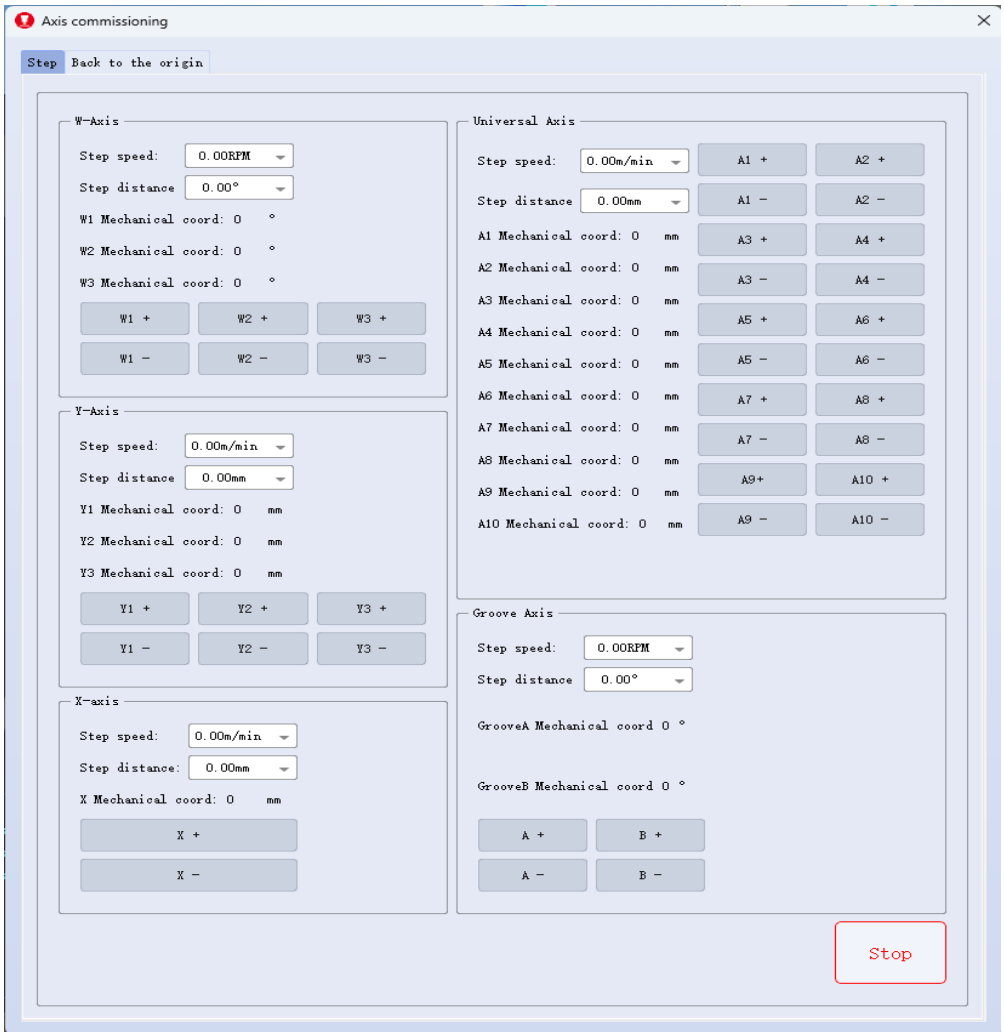


⑥ Remote control prompt

Click the "Remote Control prompt box" to pop up the remote control prompt interface to show the current remote control button configuration.

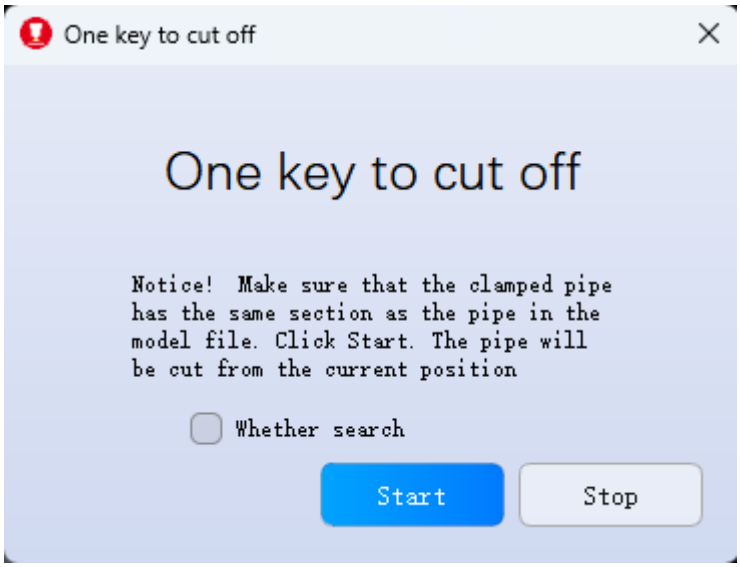
⑦ Axis debugging

Axis debugging can test the distance, direction, and return of each axis to the origin of the movement.



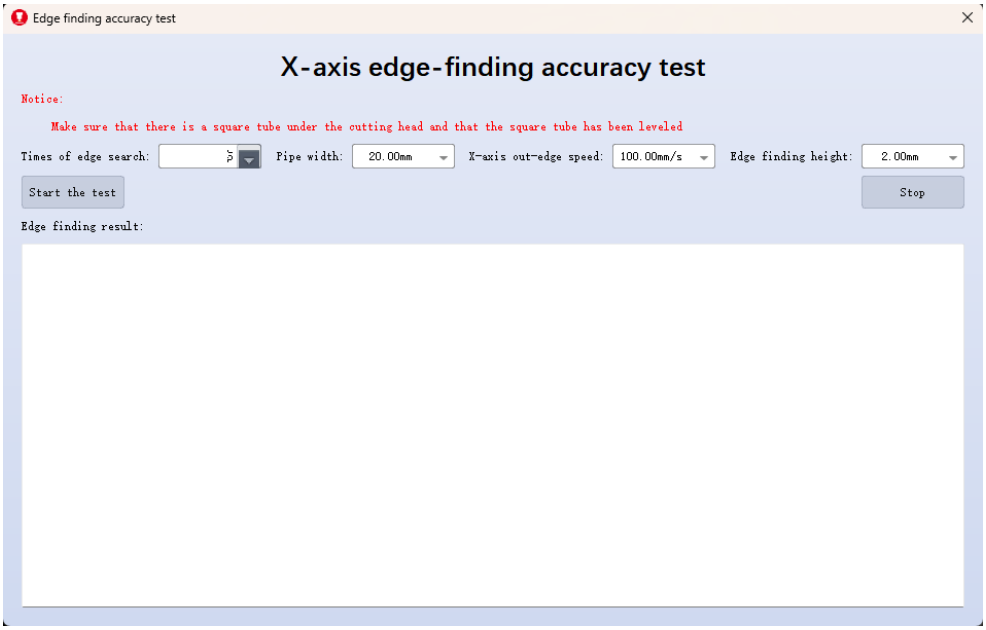
⑧ One key cut off

After one-button cut, import the drawing into the software, put the tube corresponding to the drawing on the equipment. After clicking the cut, the equipment will truncate the tube at the current position. Can also check the search, the software back to the advanced search, in the tube cut.



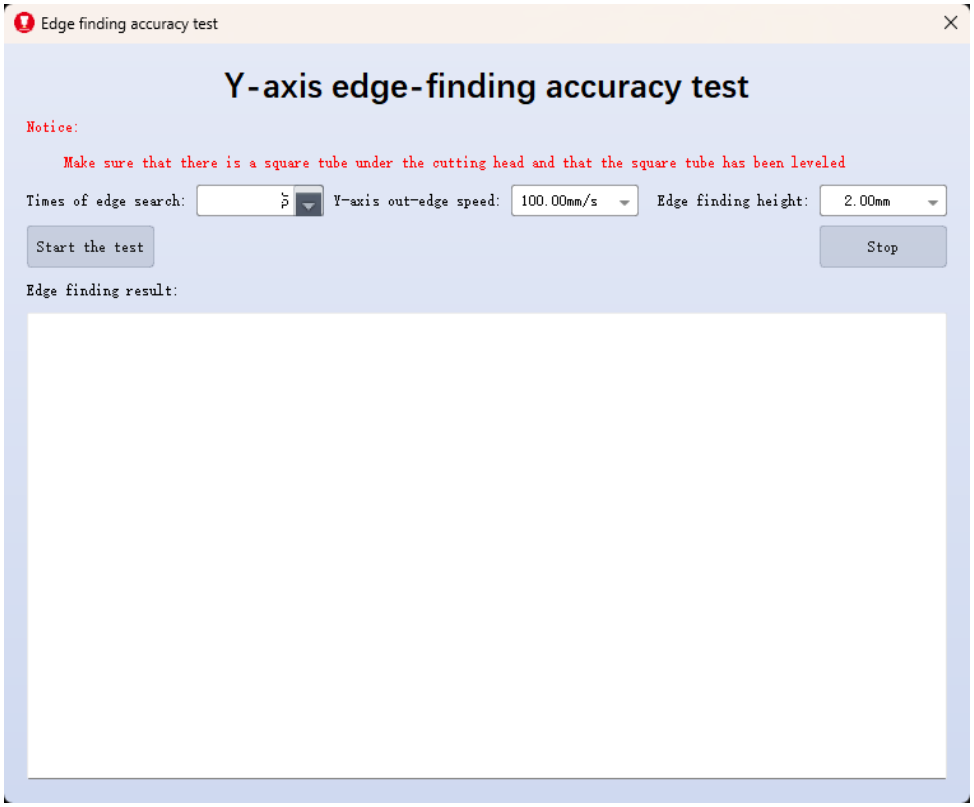
⑨ The X-axis edge-finding accuracy test

When the calibration of B axis center is not accurate, X axis edge finding accuracy can be tested by X axis edge finding accuracy test.



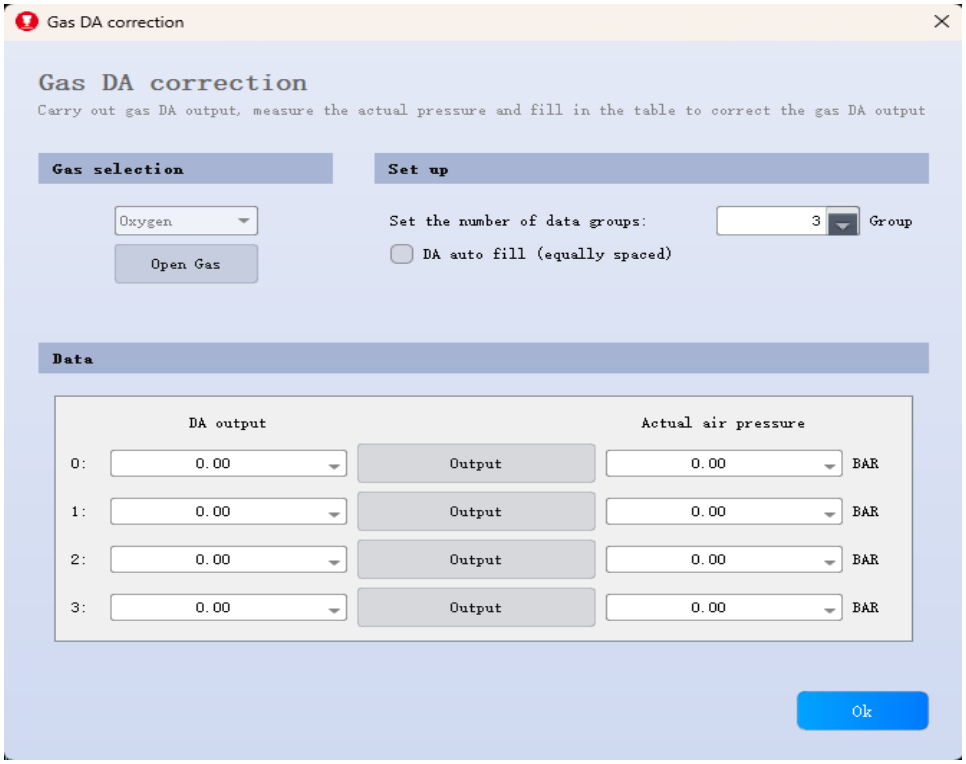
⑩ The Y-axis edge-finding accuracy test

The Y-axis edge finding accuracy test is mainly used for the edge finding operation, and the results of multiple edge finding differ greatly. At this time, the Y-axis edge finding accuracy test can be adjusted to achieve more appropriate edge finding speed and edge finding height.



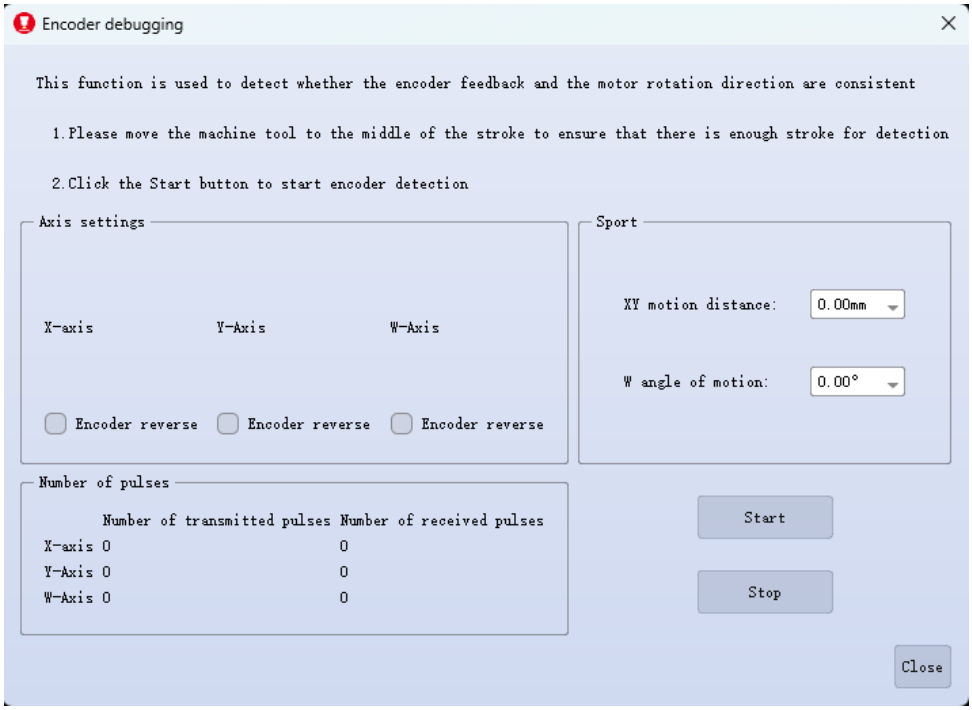
11 Gas DA correction

When using oxygen DA output and actual output pressure is not linear relationship, can be completed by DA correction to air pressure correction, click "open", set the corrected data groups, set the DA output voltage value, click "output", fill in the actual test pressure value, all groups set after complete, click "sure", complete the "gas DA correction".



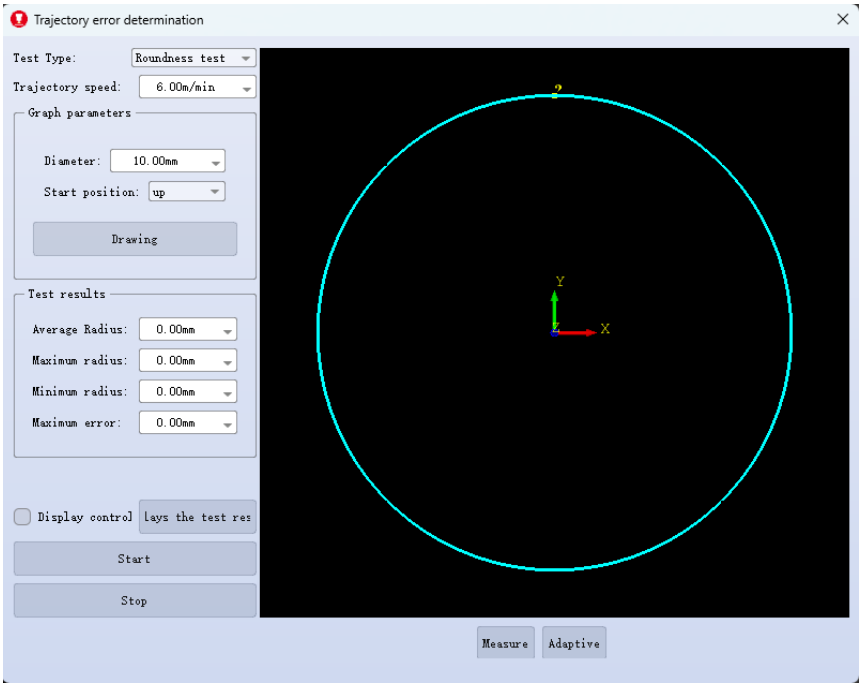
12 Encoder debugging

Set "XY motion distance" and "W motion Angle", click "Start". After the movement, check whether the number of sending and receiving pulses are in the same direction, and check the "encoder reverse" of the corresponding axis, and then test again.



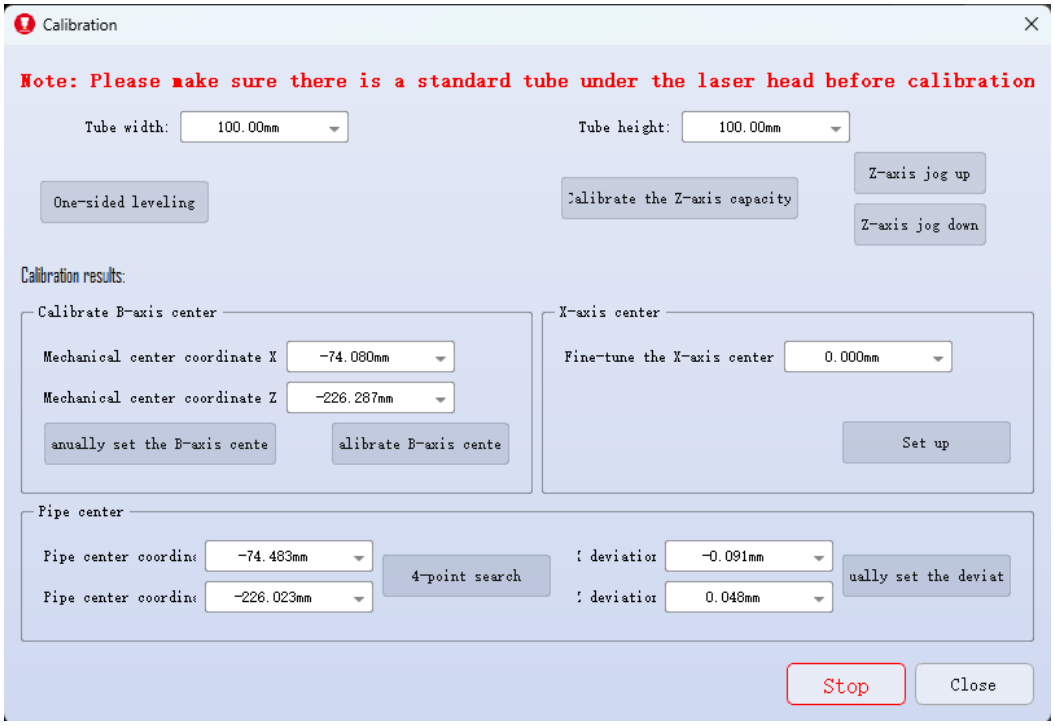
13 Track error determination

Set "Test Type" and "Track Speed", input the drawing parameters, click "Drawing", After the drawing, click "Start" (note: X and Y axes should have a certain stroke in the positive and negative direction). After the exercise, click "Test Results" to measure the error of the test results.



3.2.7 Calibration

The calibration page mainly includes calibration of Z capacity value, single-sided leveling, calibration of B-axis center, fine-tuning of X-axis center, and tube center setting. When using the calibration function, the value of the tube should be input first (note; tube width, tube height are 10 units smaller than the actual tube value).



① calibrates Z capacities

When cutting, the laser head follows down to the tube surface. The height of follow will be determined according to the capacitance. Please refer to 1.2.5 above for specific use.

② single-sided calibration

The single leveling can correct a flat surface of the tube to a horizontal state,

③ Calibrate the B-axis center

The calibration of the B axis center can determine the deviation between the supplementary tube center and the rotating center, so as to ensure the trajectory accuracy during machining. When searching, set the width and height of the upper tube. Click the center of axis B, and the laser head will follow on the four sides of the tube. To determine the center of the B axis.

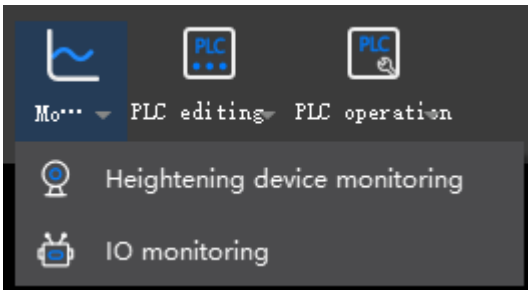
④ Fine tune the X-axis center

When there is a slight error in the calibrated X-axis center, the "Fine Adjust X-axis Center" can be manually set to compensate for the X-axis center.

⑤ tube Center

After the software finds the tube at four points, the value of tube X and Z will be displayed. You can also manually set the center of the tube after finding in the four points.

3.2.8 Monitoring



The monitoring tools include the elevation regulator monitoring and IO monitoring.

① Elevator Monitoring

Elevator monitoring is mainly divided into curve type, curve setting, state display, focus, Z axis and control parts.

a. Curve type

Check the function in the curve type, the corresponding curve is displayed in the coordinate chart in the middle of the raise monitoring page.

b. Curve setting

In the curve setting, the number of points displayed, the number of points updated.

c. Status display

Display some status information such as mechanical coordinates, clearance, speed, capacitance, etc. in the height adjuster

d. Focal point

Controls the back-origin of the laser head focus, setting the position of the focus and the distance of relative movement

e. Z axle

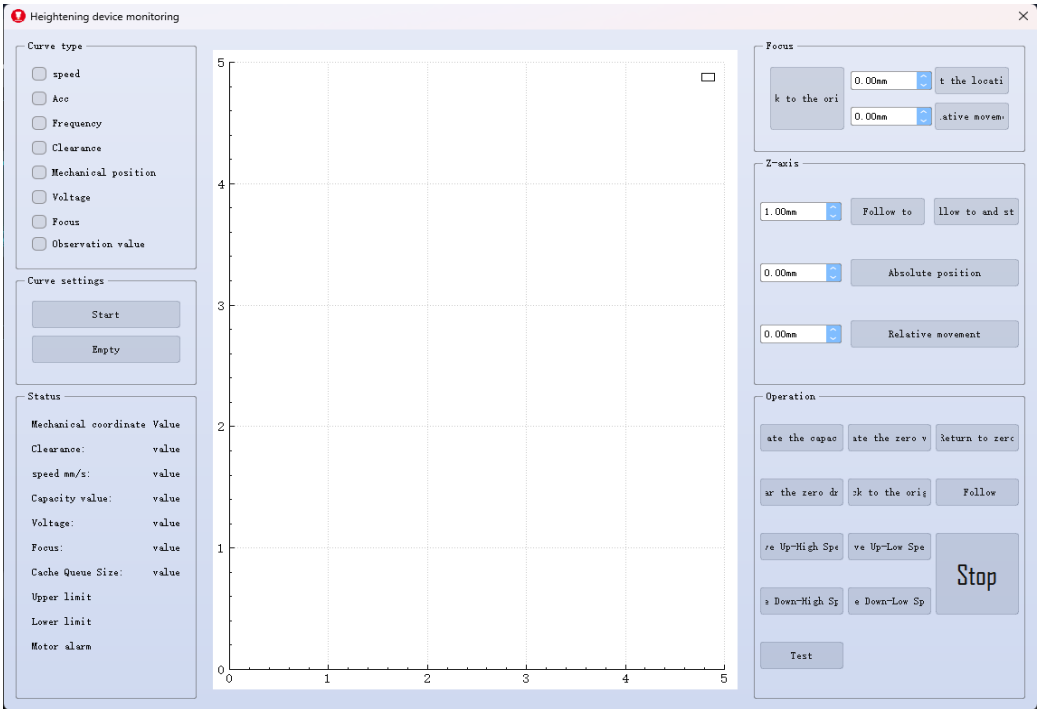
Set the distance between the Z axis and the tube surface, the relative and absolute movement of the Z axis, the value of the Z axis frog jump,

f. Control

Control of the movement of the Z-axis

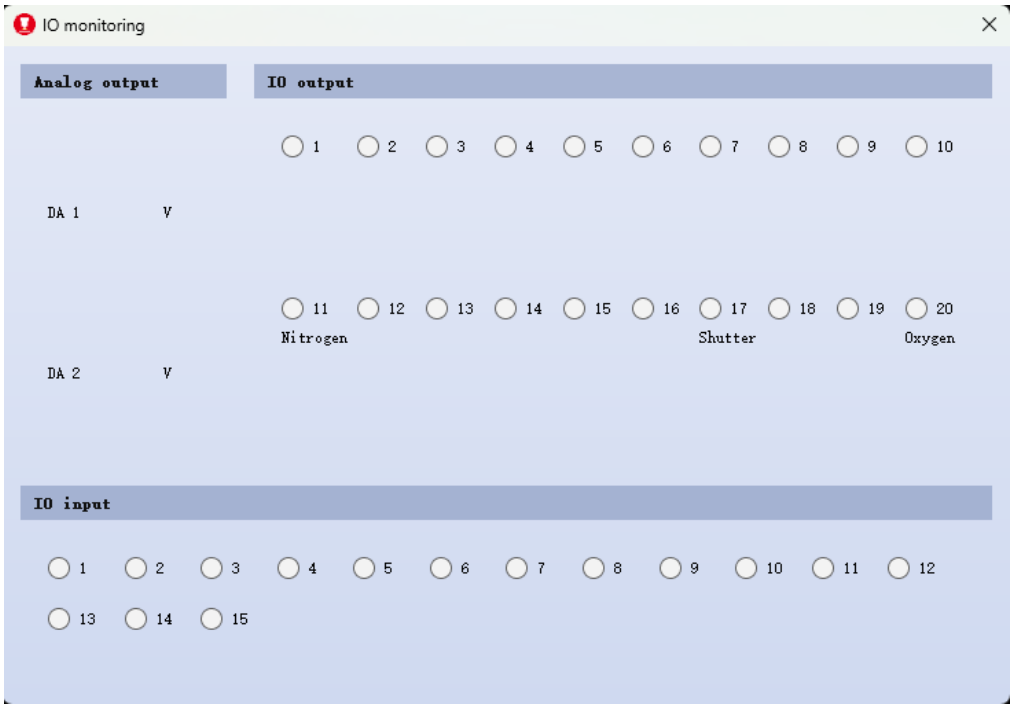
Function name	meaning
Calibration capacity value	When cutting, the laser head follows down to the tube surface. The height of follow will be determined according to the capacitance. Please refer to 1.2.5 above for specific use.
Calibrate zero voltage	Refer to the 1.2.4 calibration zero voltage above

Back to zero	The Z axis will be zero
Clear zero drift	Clear zero drift
Back to the origin	Z-axis return to zero point
Follow	The laser head drops follows
Moving Up - High Speed	The Z-axis moves upward at a high speed
Moving Up - Low speed	The Z-axis moves upward at a low speed
Moving Down - High Speed	The Z-axis moves downward at a low speed
Moving Down - Low Speed	The Z-axis moves downward at a low speed



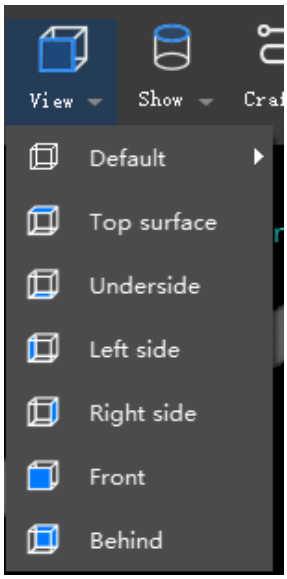
②IO monitor

Used for viewing input/output port switches, debugging and testing monitoring of DA port.

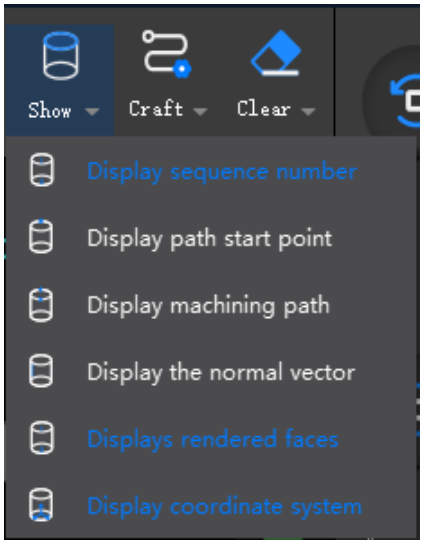


3.2.11 Views

The view function is in the software after importing files that can be in different



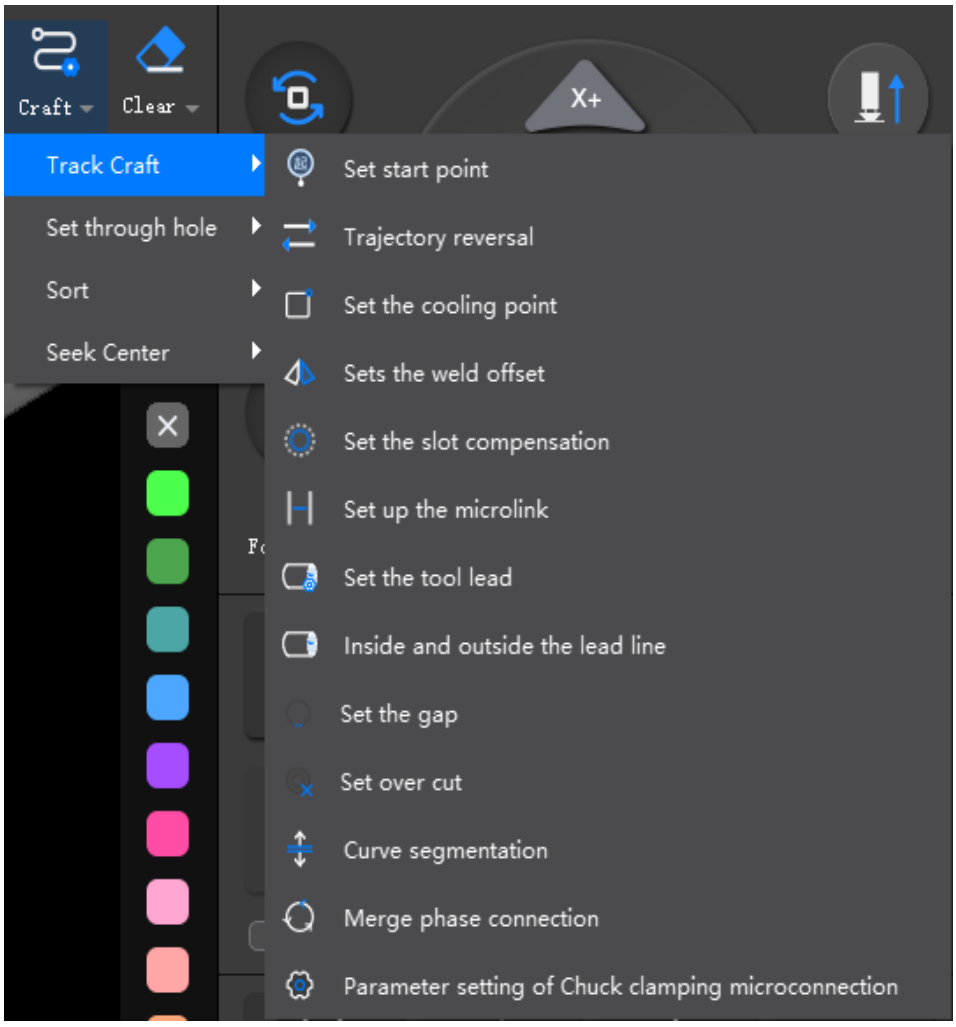
3.2.12 Display



Function	meaning
Display serial number	Displays the sequence number for each path order in the part
Displays path starting point	Show the expected you for each path in the part
Displays machining path	Displays the machining direction of the path in the part, whether it is processed clockwise or counterclockwise
Displays the normal vector	Show the normal vector for each path
Displays the rendering faces	Displays the rendering surface of the tube material

3.2.13 Process

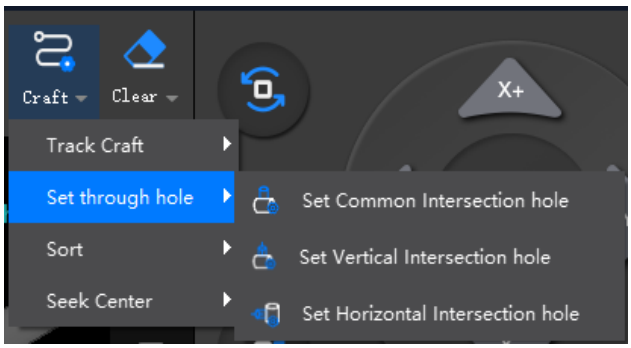
① Track Craft



Function name	meaning
Change the path starting point	Set the starting point position for each path
Set the horizontal hole	Set the fear into horizontal coherent holes
Set cutting compensation	Because the laser cutting will produce cutting, which affects the accuracy of the workpiece, the path of the accuracy impact can be compensated for or cut as compensation. You can compensate for the selected paths or all paths selected
Set the cooling point	Due to the high temperature during cutting, the temperature accumulation of the thicker material causes the surrounding temperature to affect the cutting effect, so cooling points can be manually added to the path.
Set the microlink	Insert a non-cut micro connection in the path, you can manually add micro connection to the path, or automatically add micro connection instructions to set the number of micro links and length automatically add micro connection.

Set the lead wire	For the selected drawing or all drawings, you can set the type length and location of the lead.
Lead inside and outside the knife line	Setting the drawing to Yin or Yang cut affects whether the lead is inside or outside the drawing.
Set the gap	Leave a section at the tail of the cut path (will be used in type C)
Set over cut	The cutting path will an more segments
Curve segmentation	The selected cut path is split into two tracks
Merge connected lines	The selected multiple successive cut paths are merged into a single trajectory
Chuck clamp microconnection parameter setting	After opening the middle card avoidance, the automatic micro-connection setting of the track after the avoidance point

② Set the coherence hole

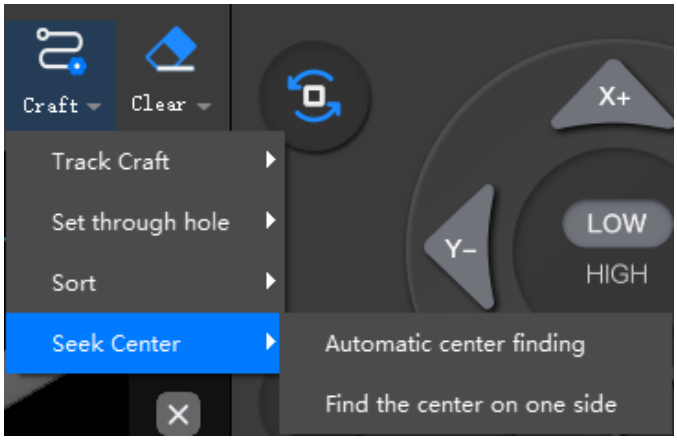


Function name	meaning
Set up the common Intersection hole	Set the hole to a common Intersection hole
Set vertical Intersection hole	Set the holes into vertical Intersection hole
Set the horizontal Intersection hole	Set the holes into horizontal Intersection hole

③ sort

Function name	meaning
Automatic sorting by Y from small to large	Auto sorting from the trajectory start Y value in a single part
Automatic sorting by the empty shift path from small to large	In a single part automatically the the the path from small to large
Sort manually	Manually set a part serial number in a single part
Sort by face	The acks are sorted by surface in a single part

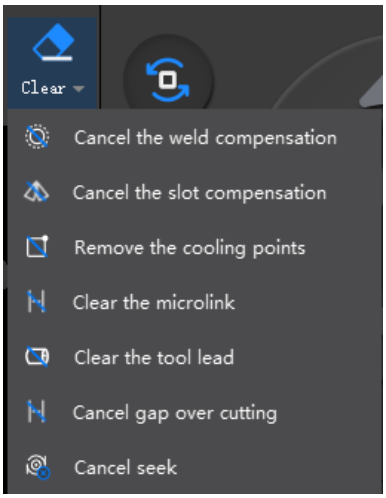
④ Find the center



Function name	meaning
Automatic center finding	Sets the starting point of the drawing to the auto finding midpoint
Find the center on one side	Set the starting point of the drawing to a single-sided midpoint

3.2.14 Clear

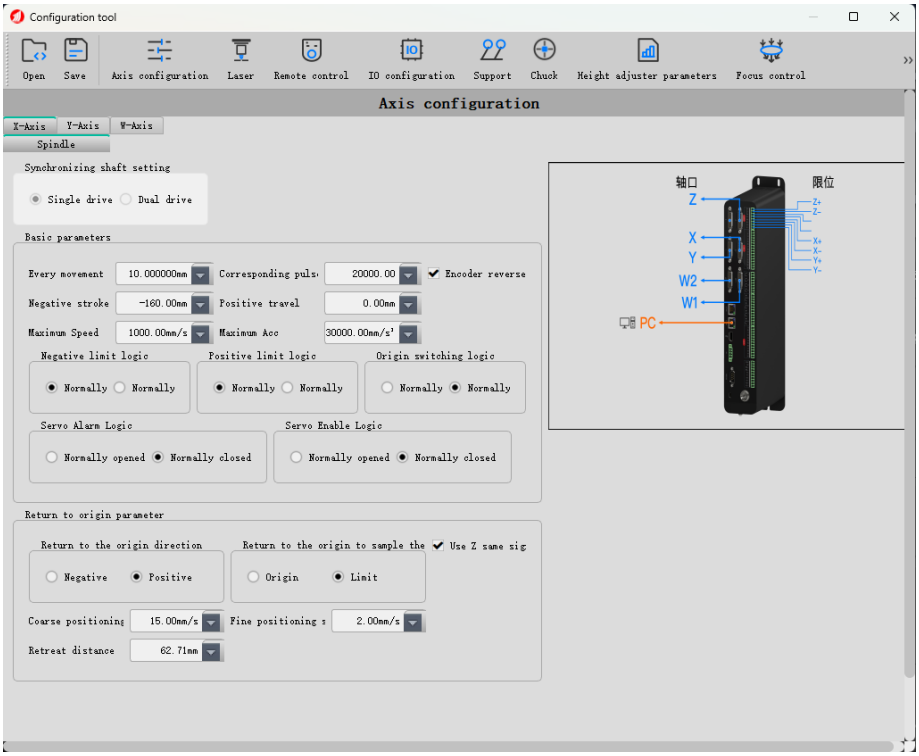
The clear function is to be added to the path and the process function.



Function name	meaning
Cancel the weld compensation	Cancel the function of path penetration
Cancel the slot compensation	Cancel the weld compensation added to the path
Cancel slit compensation	Cancel the cut joint compensation function added to the path
Clear the cooling point	Clear the added cooling points on the path
Clear the microlink	Clear the microlink function added by the pathway
Remove the lead wire	Clear the lead function added by the path
Cancel the gap over cut	Cancel the notch or overcut of the path setting
Cancel seek	Undo and navigate to the path setting

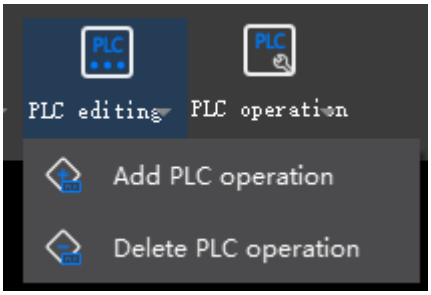
3.2.9 Configuration tools

Mainly set the basic parameters of the governor and machine X / Y / B / Z axis, stroke range and other parameters, laser setting, IO configuration, chuck, support, governor parameters, focus control and other parameters. Mainly used for debugging the equipment for use.

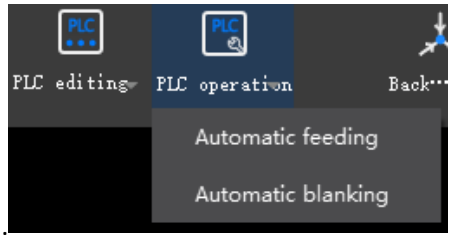


3.2.10 PLC Edit / PLC Operation

It is divided into PLC editing and PLC operation, and PLC editing is divided into increase PLC operation and delete PLC operation.



Adding PLC operations will display the required PLC actions on this page. After adding an action, the added PLC action will be displayed in the PLC operation.



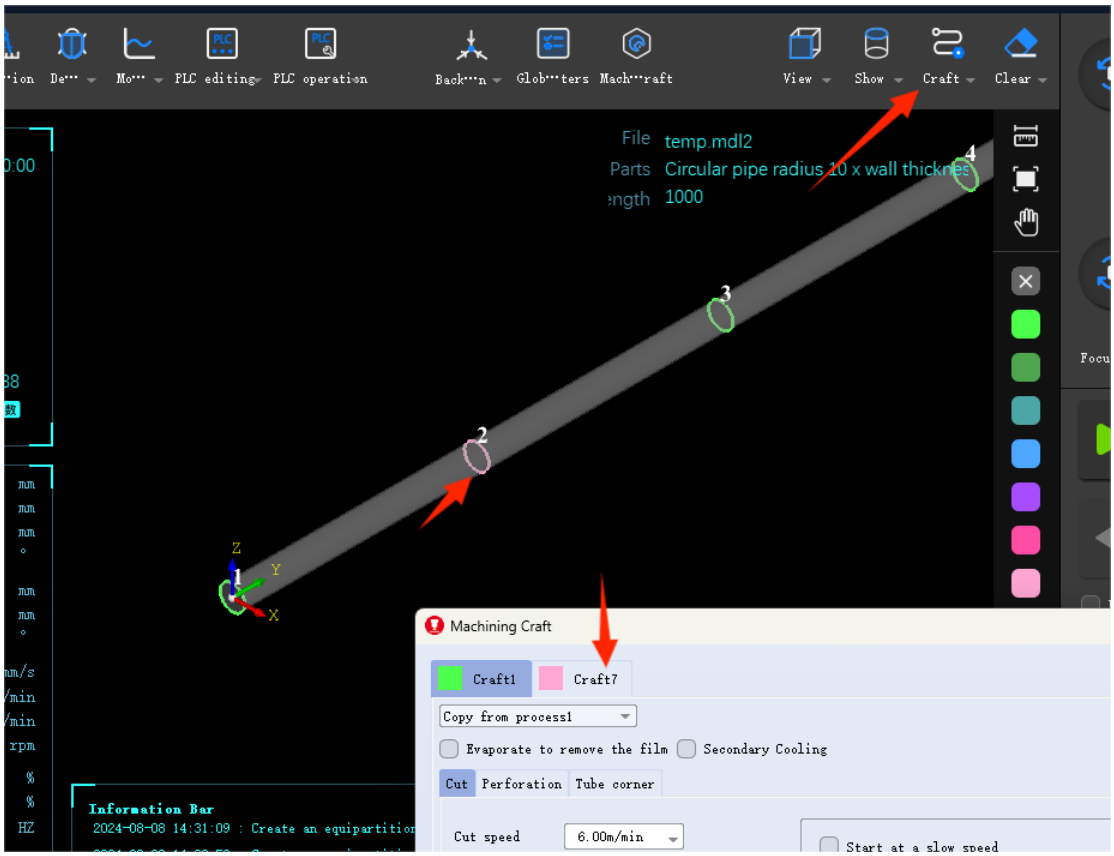
Delete the PLC operation, and click on the added PLC action to cancel.

3.3 Layer bar

This is the measurement function for the measurement software where the drawings need to be measured. This bit is the adaptive button, zoom in or out and click adaptive, the rendering will automatically return to the original state.

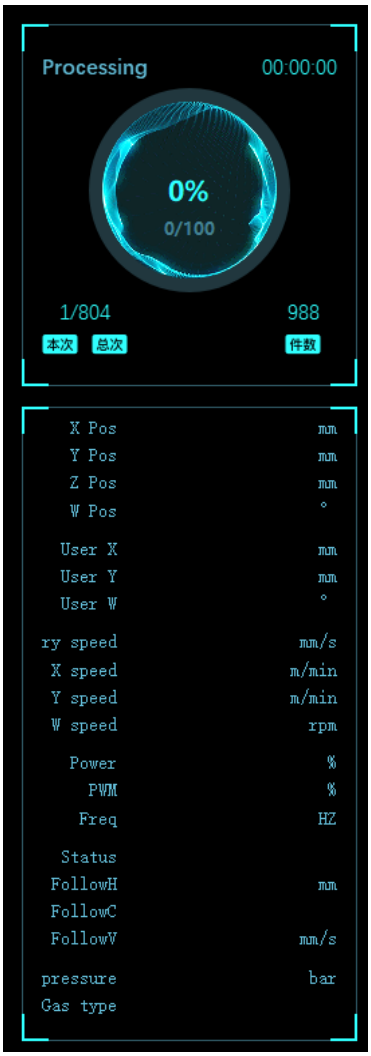
✕: After selecting the graph and clicking ✕, the path will become white and the software will not process it

If multiple layers are included in the drawing, each layer can set up the process separately. As shown below, different layers for a path can be viewed in the process.



3.4 Real-time status bar

Real-time status shows the current position of each axis of the software during processing, coordinate value, real-time processing speed, state of elevator, and gas state. Will be displayed below the software. Convenient observation.


Processing
00:00:00
0%
0/100
1/804
本次
总次
988
件数
X Pos
Y Pos
Z Pos
W Pos
User X
User Y
User W
ry speed
X speed
Y speed
W speed
Power
PWM
Freq
Status
FollowH
FollowC
FollowV
pressure
Gas type
mm
mm
mm
°
mm
mm
°
mm/s
m/min
m/min
rpm
%
%
HZ
mm
mm/s
bar