YRC-8PRO Product Manual

September 2025

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I. BASIC INFORMATION

1.1 Manual usage instructions

This manual mainly describes the specific information and use guide of the 8PRO cutting machine produced by the company.

By reading this manual, you can learn about the manufacturing information of the 8PRO cutting machine and the description of the functions of each module.

The steps of machining products, maintenance of products after work and solutions when products break down.

Machine model: 8PRO dry wet all function five axis cutting machine

This manual is divided into ten modules: basic information, safety instructions, equipment information, technical parameters, installation and transportation environment, machine operation, operation instructions, software instructions, maintenance, troubleshooting methods, etc., which generally describes the basic information and operation methods of 8PRO.

1.2 Safety signs and symbols

Records warnings displayed on the interface

The alarm is shown in red and yellow:

Alarm color	methods of overcoming dormancy
yellow	reset
red	To reset or restart, please refer to the specific alarm number instructions
white	reset

1.3 Liability and Legal Statement

Operator statements

Operator's Liability Statement: When operating machinery, operators must strictly follow instructions in the manual and refrain from unauthorized hazardous actions. Given the presence of numerous cutting tools within the equipment, operators must remain fully focused during operation. Should accidents or personal injuries occur directly or indirectly due to improper handling by the operator, the insurance company shall be responsible for compensation and all consequences borne by the operator. This liability does not involve the manufacturer, who bears no legal obligations nor is legally liable for compensating the operator's losses or liabilities.

Copyright and trademark protection

Copyright Notice: All design content published by our company is the result of independent intellectual creation and dedicated R&D efforts, embodying years of accumulated wisdom and hard work. We strictly protect our original rights. Without prior written authorization from us, no individual or organization may reproduce, distribute, or modify these designs in any form (including but not limited to electronic, paper, or online formats). For any infringement of our original rights, we will take all necessary legal actions to safeguard our legitimate interests and reserve the right to pursue legal liability against responsible parties.

1.4 Contact information

manufacturer

manufacturer			
		telephone	
		postbox	
		URL	

customer service

customer service			
address		telephone	
		postbox	
		URL	

II. SAFETY INSTRUMENTATION

2.1 Safety precautions

(1) Please read the following security precautions carefully before using 8PRO devices

(2) The power supply of the equipment is single-phase AC 220V 50/60Hz voltage, and ensure good grounding.

(3) The power supply network (leakage protection) used by the equipment should be stable and in good contact, otherwise the switch relay will easily attract and cause tripping.

(4) Ensure that the power supply and power cable are properly managed without damage to prevent short circuit trip.

(5) Ensure that the external air pressure is continuously input through the dryer, otherwise the spindle will burn out.

2.2 Equipment placement instructions

① The equipment placement area should be able to bear a load of 150KG and ensure enough space for the machine.

② Use tools to open the four sides of the wooden box. Pay attention to the strength when removing the wooden board, and be careful not to fall down and hit people or

equipment.

③ After the removal of the wood plate, use a forklift to move the cutting machine from the clamp to the ground.

④ After placing the equipment in place, let the foundation foot bear balanced force. See the installation video for details

III. Technical parameters

facility information

product name	8PRO milling machine
power input	Single-phase AC 220V 50/60Hz 8A 3.7KW
Air pressure input	≥6 bar
rate of flow	>90L/min
Device size and weight	525MM*700MM*784MM 150kg
main shaft speed	60000RPM
Main shaft power	2.5KW
Maximum rotation axis	B axis: -28°~+91°, A axis: ±360°
Maximum tool diameter	6mm
Number of knives	18
work pattern	Dry/fresh-cut

work material	Zirconium oxide, resin, wax, glass ceramic, titanium, soft metal, etc

IV. Transportation and Installation Environment

4.1 Transportation requirements:

Size of workshop door: the minimum opening size of workshop door should be more than 550mm after opening, otherwise the equipment can not enter the site.

Table for installing equipment:

1. Ground load requirement: more than 200KG within the range of 680mm*770mm.

2. Ground placement requirements: The surface of the table should be flat and not wobble after the table is placed on the ground.

4.2 Installation requirements:

4.2.1 Environmental requirements

1. Machine tools should not be installed in places where the sun shines directly

2. The equipment should be placed in a dry and ventilated environment, and flammable and explosive items are prohibited around the equipment.

3. Stay away from oil, dust and corrosive gas

4. Stay away from equipment with large vibration, such as punch press

5. At least one meter away from other equipment (or walls)

4.2.2 Power supply requirements

1. The equipment uses a single voltage of 220V50HZ/60HZ.

2. The rated power of the interface of the power network shall be greater than 2.5KW.

3. The power supply for device access should be stable and in good contact.

4. The power network connected to the equipment shall be properly grounded as required.

5. The cable of the power network connected to the equipment is not damaged.

4.2.3 Pressure requirements

1. Flow rate: the gas flow rate received by the cutting machine air pipe should be more than 95L/min and stable.

2. Pressure requirement: the air pressure of the cutting machine's air pipe should be kept above 0.6 MPa and stable continuously.

3. The compressed gas used by the machine should be dried, otherwise the spindle will burn out.

4. The total air source of the cutting machine is connected to the external air pressure with an 8mm diameter air pipe.

4.2.4 Networking requirements

1. The Internet connection can be directly connected to the Internet through WIFI, or network connection can be made through network cable;
2. If you need to connect to the LAN, you can connect it through the network cable. You only need to set the IP address of the device and the computer in the same network segment. It is recommended to use static network connection;
3. Users without network requirements can skip the above 1 and 2.

4. Software requirements: The customer needs to purchase the typesetting software. This equipment is an open typesetting system, which supports millbox, Workne and other typesetting software.

8PRO cutting machine unpacking notes

1. Remove the wooden box and remove the machine tool packaging bag from bottom to top; pay attention to the care of the wooden board when removing the box.

2. Remove the left and right packaging pearl cotton, remove the accessories box and box cover, and take off the plastic inner packaging bag from bottom to top;

3. Take out the lifting machine screw (four pieces) from the attachment box and screw them into the four nuts at the bottom of the cutting machine until they are screwed into the bottom of the screw.

IV. This equipment weighs 150KG. Four adult males should each use one hand to lift the machine's screw rod while assisting with support, simultaneously lifting the cutting machine from the packaging base to its designated pedestal or tabletop. After positioning it properly, remove the screw rods from the machine for storage at a designated location. Next, locate four Φ18mm black sealing plugs in the accessories section to block the four process holes on the side.

5. Put the packed foam and other materials into the packing box to prevent the equipment from being used for secondary transportation.

V. Equipment information

Equipment physical image: front area, side area, back area

List of accessories

	name	specifications	quantity	unit	remarks
1	Intelligent five-axis disc changer	8PRO	1	Taiwan	
2	calibration block	Φ98*10	1	individual	
3	Spare screws for fixtures	M4*10	20	individual	
4	tool adjustment	98.9mm	1	cover	
5	Glass ceramic clamps		1	individual	
6	Titanium column fixture		1	individual	
7	Spindle maintenance tooling	Jaw maintenance	1	cover	
8	8PRO specification		1	portion	
9	Random USB drive		1	individual	
10	2-core aviation plug		1	individual	Without vacuum cleaning equipment
11	air tube	8MM	5	individual	
12	Quick plug three-way	8MM	1	individual	
13	Screwdriver set		1	cover	
14	Internal hex set		1	cover	
15	The electrician used a one-way screwdriver	2.4*50	1	cover	
16	certificate		1	portion	

5.1 Installation of functions of each part

5.1.1 Machine interface

① Machine interface panel

The machine panel is located at the lower left side of the rear of the machine

② Interface panel description

The interface panel contains from left to right and from top to bottom:

The interface panel from left to right from top to bottom contains:

1、 Total power supply: The power supply used is single-phase AC 220V 50/60Hz voltage.

2、 LAN: Connect to the network through this network port.

3、 PUMP: Power interface for the pump

4、 FXT: Automatic start/stop signal interface for vacuum cleaner (only used for dry cutting, wet cutting is not connected).

5、 USB: WIFI receiver

6、 CF: Cutting fluid interface

7、 OUTLET: Main shaft cooling return water.

8、 INLET: Main shaft cooling water inlet.

9、 CN: Total gas source interface.

10、 PROBE: Automatic calibration interface.

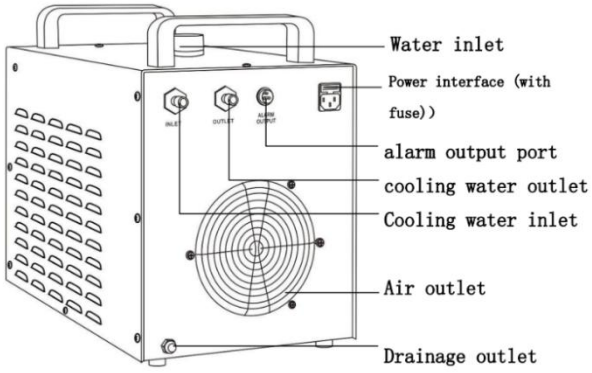
11、 CHILLER: Refrigeration interface.

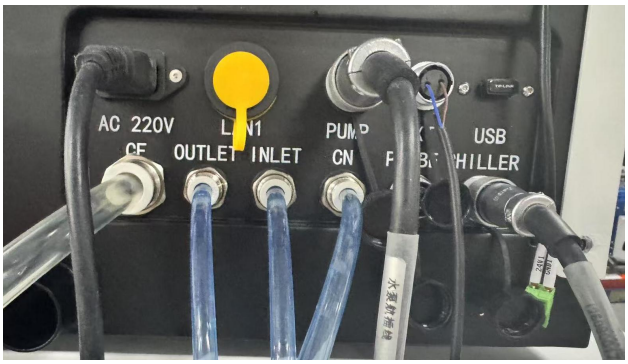
5.1.2 Connect the spindle water cooler (wet cutting mode)

1. Open the base cabinet and find the power cord of the chiller.

2. The power cord of the chiller is suitable for 5-core socket.

3. Connect the main shaft cooling inlet pipe (INLET) and outlet pipe (OUTLET) at the lower right corner of the rear of the equipment to the corresponding Cooling water inlet and Cooling water outlet interface of the chiller respectively (the leakage will occur if the connection is not tight).

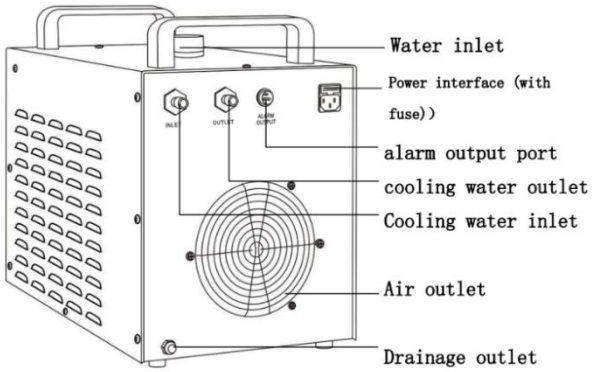


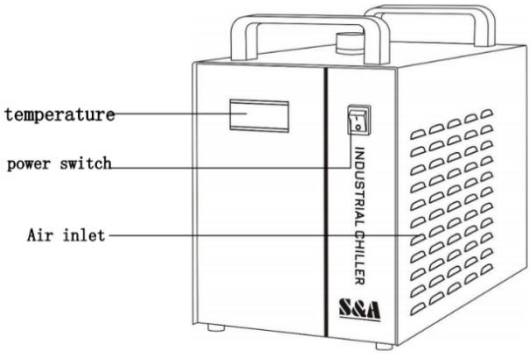


4. Connect the power plug of the spindle water cooler to the CHILLER port at the rear of the cutting machine (5-core aviation plug), and connect the other end of the water cooler to the power port and alarm signal interface of the water cooler.

Add cooling water to the chiller

1. Refrigeration Medium Requirements: The chiller must use softened water (e.g., purified, distilled, or ultrapure water). Oily liquids, water containing solid particles, or corrosive substances are strictly prohibited. During initial operation, it is recommended to add 7-9 liters of water. Perform regular filter cleaning and coolant replacement every three months to ensure proper functioning. When ambient temperatures drop below 2℃°C and water is stored with refrigerant, antifreeze containing ethylene glycol should be added to the tank. As temperatures rise, replace the antifreeze with purified water, distilled water, or other suitable medium. Allow the chiller to run for 30 minutes to flush out residual antifreeze, then empty the tank and refill with fresh circulating water.





2. Add automotive engine antifreeze and purified water to the water inlet of the chiller. Do not use tap water or other impurities-containing liquids that are prone to solidification as coolant. The mixing ratio of antifreeze to purified water should be 1:3. Note that the capacity of the chiller's water tank is 8L, and the amount of mixed liquid injected must not exceed 8L.

3. After filling the coolant, open the power button of the water cooler. The temperature display is lit and no alarm code is displayed, indicating that the opening is successful.

5.1.3 Cutting fluid pipe connection (wet cutting mode)

① Connect the return water pipeline, one end of the return water pipe is connected to the drainage pipe opening at the bottom of the 8PRO equipment, and the other end is connected to the return water port in the bottom cabinet tank.

② After thoroughly cleaning the cutting fluid tank and drying it, fill it with water-soluble or oil-based cutting fluid recommended by the manufacturer. For water-soluble cutting fluid, the ratio should be approximately 1:8 (1L of cutting fluid per 8L of water). When using oil-based cutting fluid, it is recommended to use a type with viscosity not exceeding 15.

③ Connect the white water pipe inside the bottom cabinet to the pump outlet.

④ Place the pump at the bottom of the tank.

⑤ Connect the aviation plug of the pump section to the lower left corner of the bottom cabinet. In dry cut mode, this connector can be removed

⑥ When the equipment is used frequently, it is necessary to check the depth and temperature of the cutting fluid at the time of morning and evening. If the cutting fluid level is low, it is necessary to add new cutting oil to the tank in time to avoid safety accidents caused by high temperature of cutting oil. (Maintenance)

Note: When dry/wet switching is required, refer to the dry/wet switching guide

About cutting fluid

Metal Cutting Fluids: It is recommended to use water-soluble cutting fluids that require mixing with water. The mixing ratios vary depending on the specific grade of abrasive fluid. Common ratios include: Water: Metal Abrasive Fluid = 1:10,1:15, or 1:20. For those unsure about the exact ratio, contact the abrasive fluid manufacturer. Key features of water-soluble metal abrasives: 1. Suitable for machining titanium alloys and metals; 2. Excellent extreme pressure wear resistance, forming a boundary oil film at the cutting interface under high pressure to reduce tool wear and erosion.

Glass and ceramic cutting fluid: It is recommended to add 7-8 liters. The mixing ratio of different grades of grinding fluid is different, generally the mixing ratio is: water: metal grinding fluid =1:15 1:20 1:25. If you do not know the specific mixing ratio, you can contact the manufacturer of cutting fluid.

Full synthetic water-based cutting fluid:

1. Suitable for processing glass and ceramic related products;
2. Colorless and tasteless, no harm to the hand;
3. No bubble, the bubble will soon disappear
4. Good settling ability for glass fine particles, conducive to the filtration and separation of debris;
5. Cooling and lubrication effect is good, with rust prevention function;
6. The pH value is 8% ~ 9%.

5.1.4 Connection to external pressure gas

1. The compressed gas used by the machine should be dried and should not contain moisture, otherwise the spindle will burn out.

2. The total air source of the cutting machine is connected to the external air pressure with an 8mm diameter air pipe.

3. The air pressure should be kept above 0.6 MPa, and the gas flow rate should be greater than 95L/min. If the air pressure is too low, the equipment will stop working and display the fault of low air pressure waiting.

5.1.5 Connect power supply and power supply pipeline

1. Insert the equipment triangle plug into the socket and confirm that the equipment end connector is firmly connected.

2. Press the "start" button on the side of the machine to start the equipment.

3. In the unstable voltage environment, a voltage stabilizer should be added to the front end of the equipment to avoid damage caused by voltage fluctuation.

5.1.6 Check items after power on

① The machine lighting lamp works normally, and the machine back fan runs normally.

② Confirm that no foreign body is stuck in the AB axis.

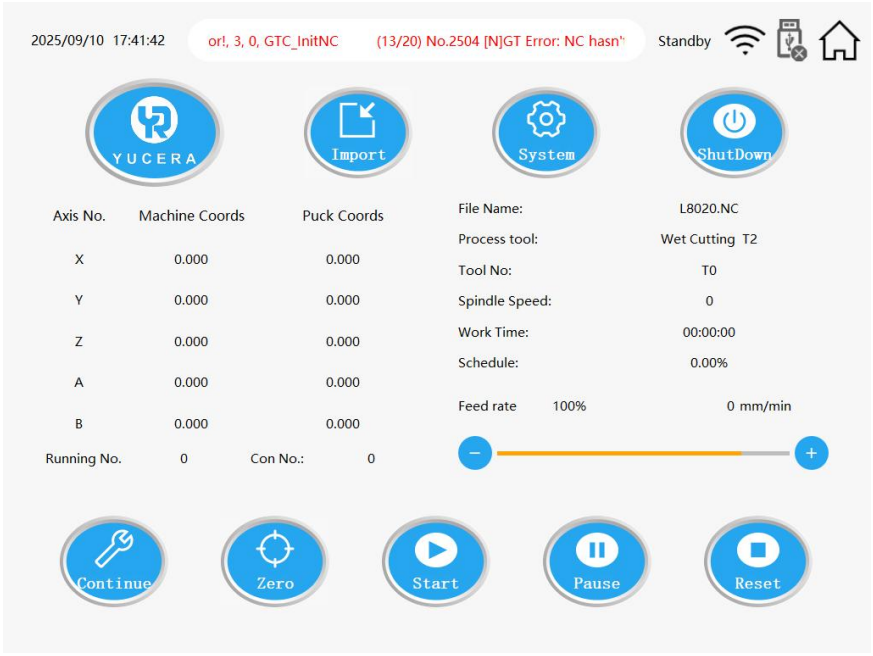
③ Click "zero" to return to zero. After the completion of returning to zero, there is no abnormal alarm on the interface and the system starts normally.

5.2 Operation interface

5.2.1 Introduction to the Main Interface

The main interface is a display interface that enables screen-based operations for machining equipment. It provides data output, maintenance, and calibration functions while displaying machine status and error messages. The following detailed instructions outline the viewing methods and key features: (Primarily explaining Operation Level 2, which includes Operation Level 1)

After the device is started, enter the main interface shown in the figure below



※:  Click the logo button in the upper left corner and enter the corresponding permission and password to access higher levels of permission.

※:  Click the load button to access the plan list and local memory.

※:  Click the Settings button to enter the system Settings page.

※:  Click the switch button to switch the system on and off

※:  Return to the home screen button.

※:  It is used for continued processing after interruption of the program due to abnormal reasons.

※:  : Click the zero button, all the axes of the device will be zeroed.

※:  Launch the current loader.

※: 

: Used to suspend equipment processing.

※: 

: Used to reset the current device status (processing and alarm), often used for the release of the status after alarm.

Axis coordinate information is displayed

Axis No.	Machine Coords	Puck Coords
X	78.899	-15.902
Y	-49.299	0.201
Z	1.998	17.684
A	-0.002	-0.019
B	-0.095	-0.109

Current processing documents show

Display the current machining file, the number of lathe needles used, the spindle tool number, the spindle speed, the machining time of the current file, and the percentage of the machining progress of the current file

File Name:	0822.nc
Process tool:	Wet Cutting T1
Tool No:	T0
Spindle Speed:	0
Work Time:	00:00:00
Schedule:	0.00%

situation display

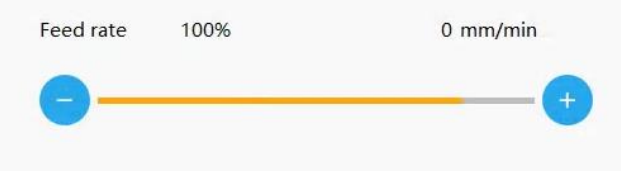
Display system status, including alarm information.

Running display

Running line number and breakpoint line number are displayed

Process display

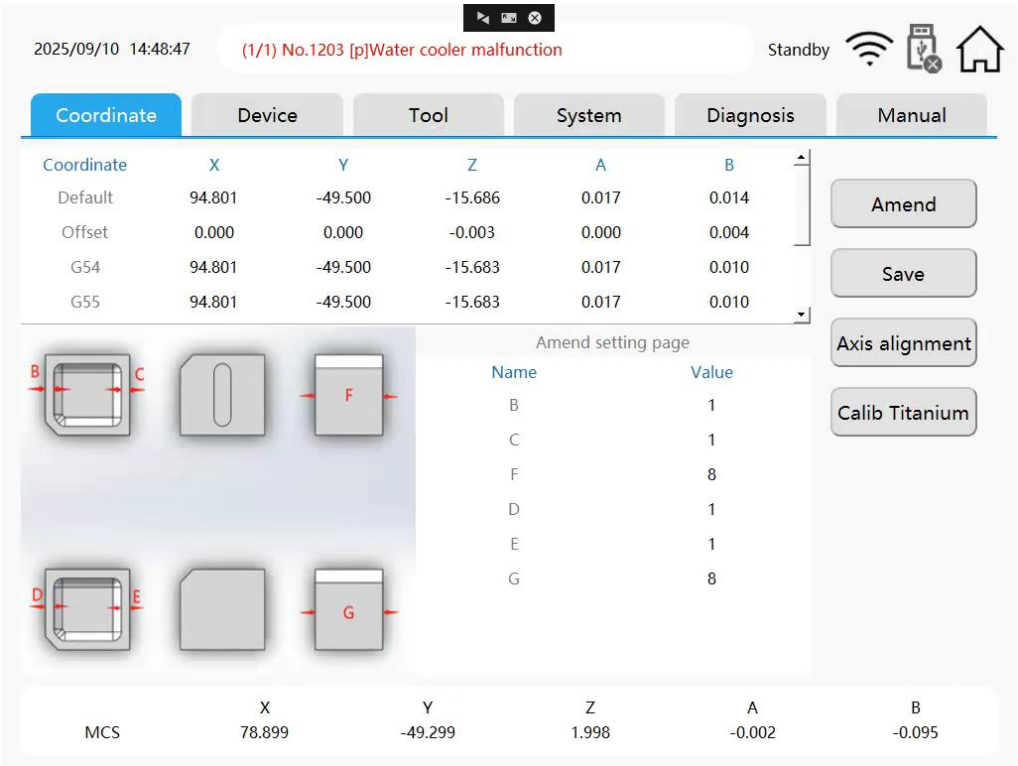
Feed speed progress bar control, through this progress bar, can be processed to accelerate or reduce the speed of processing.



5.2.2 Set up the page introduction

Click  the button to enter the Settings page

Coordinate: Coordinate setting page



※Amend: Amend button.

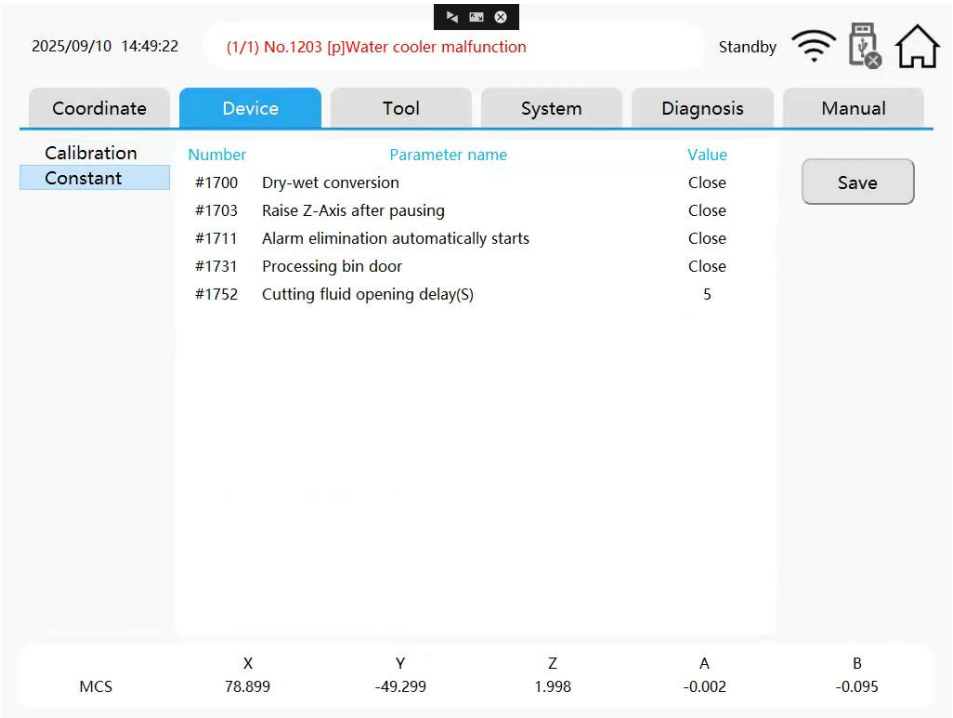
※ Record: Record, used to view previous axis data.

※ Save: The save button after axis correction.

※ Axis alignment: automatic calibration of disc axis.

※Calib Titanuim: titanium column automatic calibration.

Device: Device parameter Settings page



※ #1700: Dry wet conversion

※ # 1703: Post-halt operations

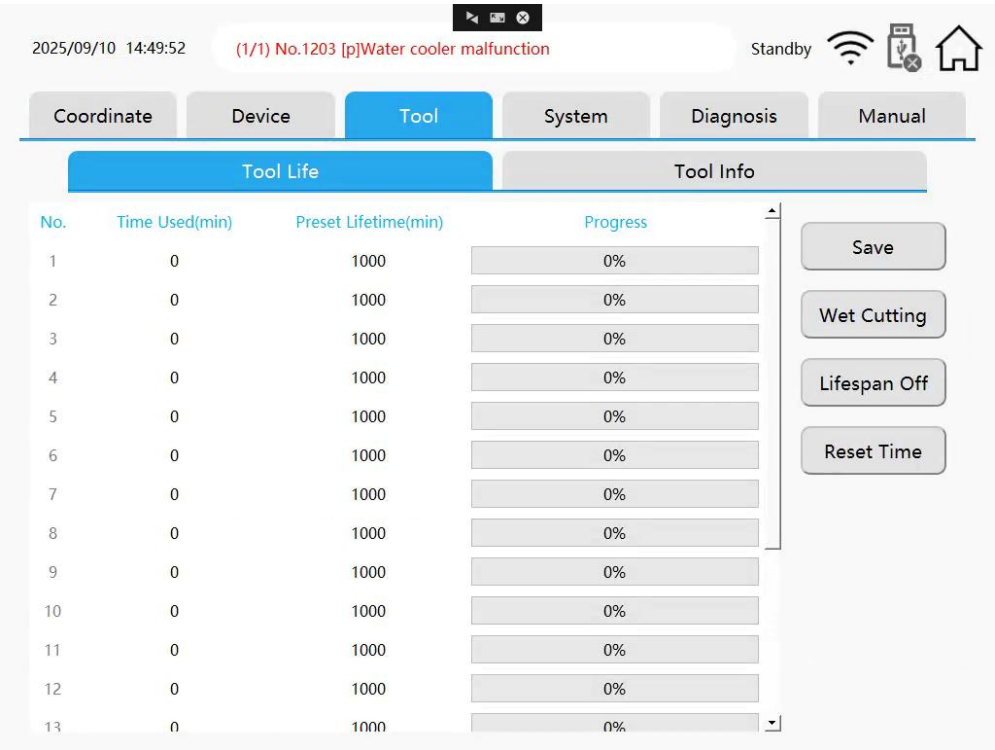
※ # 1711: Alarm cleared

※ #1731: Storage bin door detection Settings, open for detection, close for no detection.

※ #1752: Cutting fluid opening delay setting item.

※ Save: Save Settings button.

Tool: Wheel pin Settings page



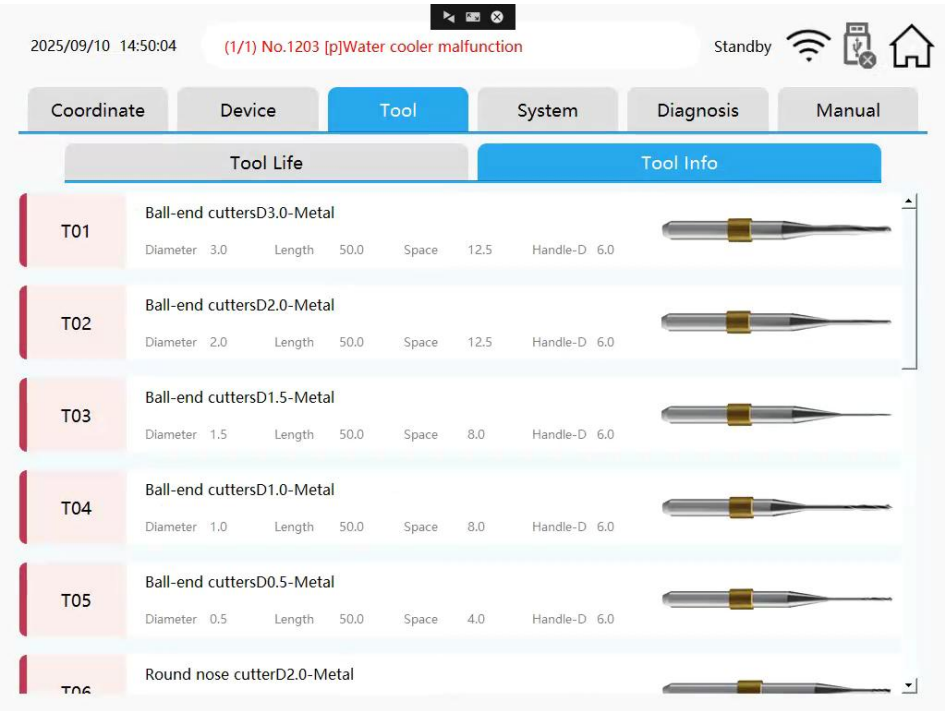
Tool Life: Tool life Settings page

※ Save: Save the data button. (Car needle life setting)

※ Wet Cutting: Turning pin life dry/wet cut conversion

※ Lifespan Off: Enable to turn off the tool life alarm

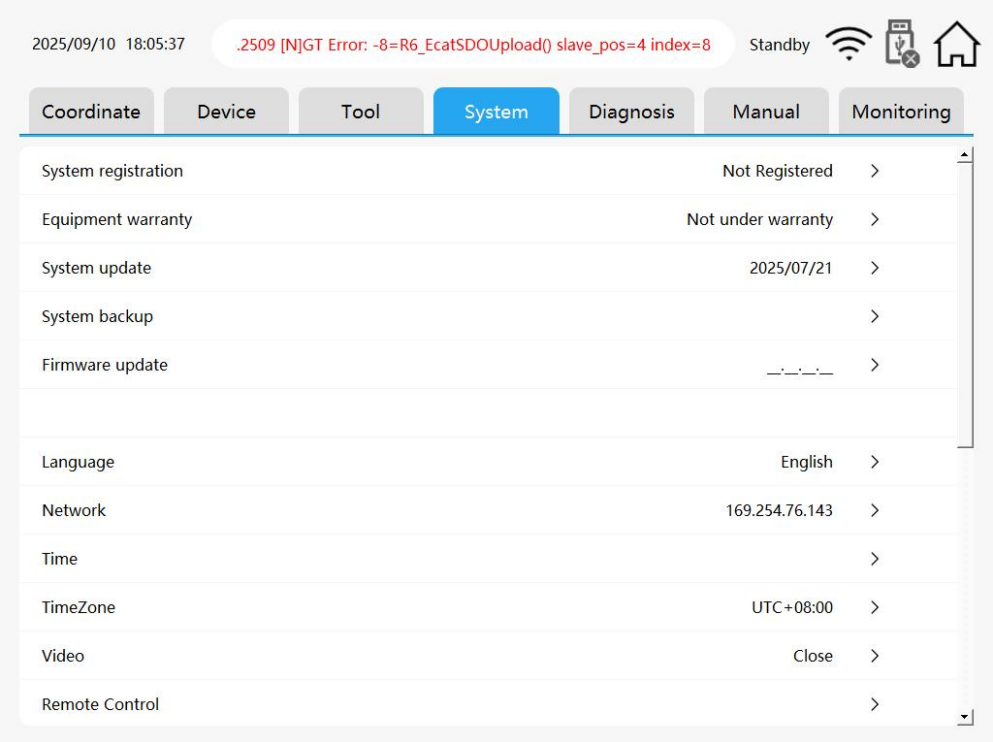
※ Reset Time: Count reset



Tool info: The wheel pin information page can be viewed to view the wheel pin information

System: System Settings page

You can carry out system registration, system backup, system update, IP setting, language selection, time and time zone setting, WIFI setting and other functions.



※ System registration: System registration

※ System Update: System update

※ System backup: System backup

※ Firmware update: firmware upgrade

※ Reset factory status: Restore factory status

※ Language: Language selection

※ Network: IP Settings

※ Time: Time setting

※ timezone: Time zone setting

※ Video: Video recording Settings

※ Remote control: Remote control

※ WIFE: Wife opens the button

※ Camera: Camera switch

※ Music: Voice prompt switch

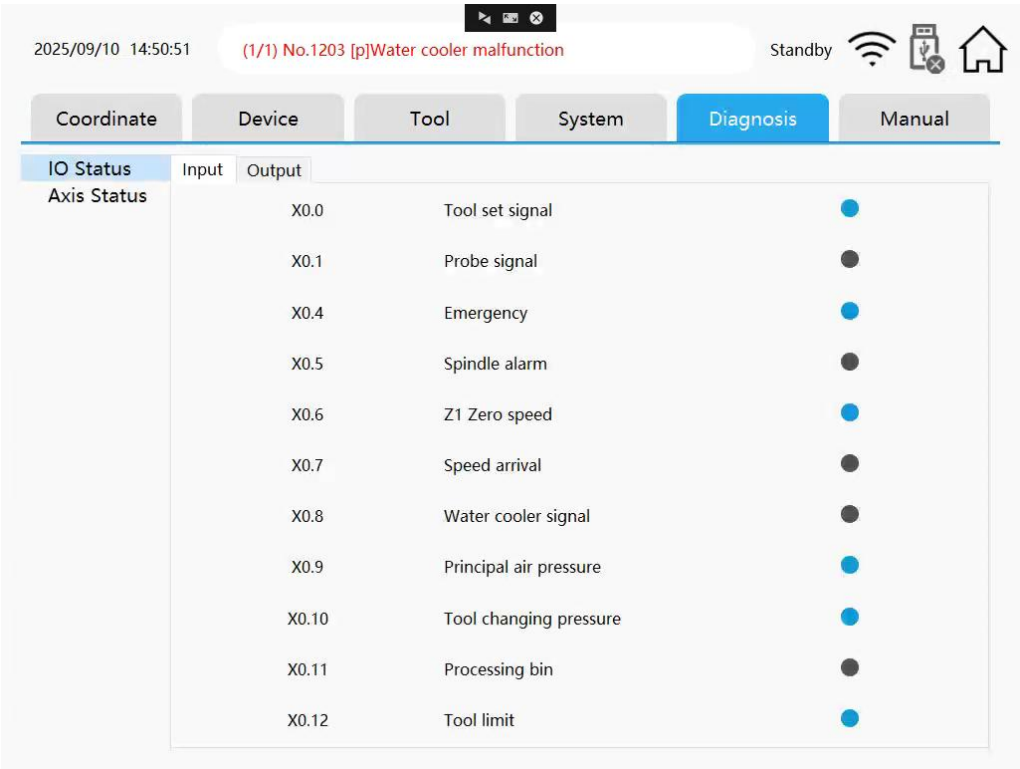
※ Cloud platform: Cloud platform switch

※ FTP: FTP switch

※ Delete file: File auto delete switch

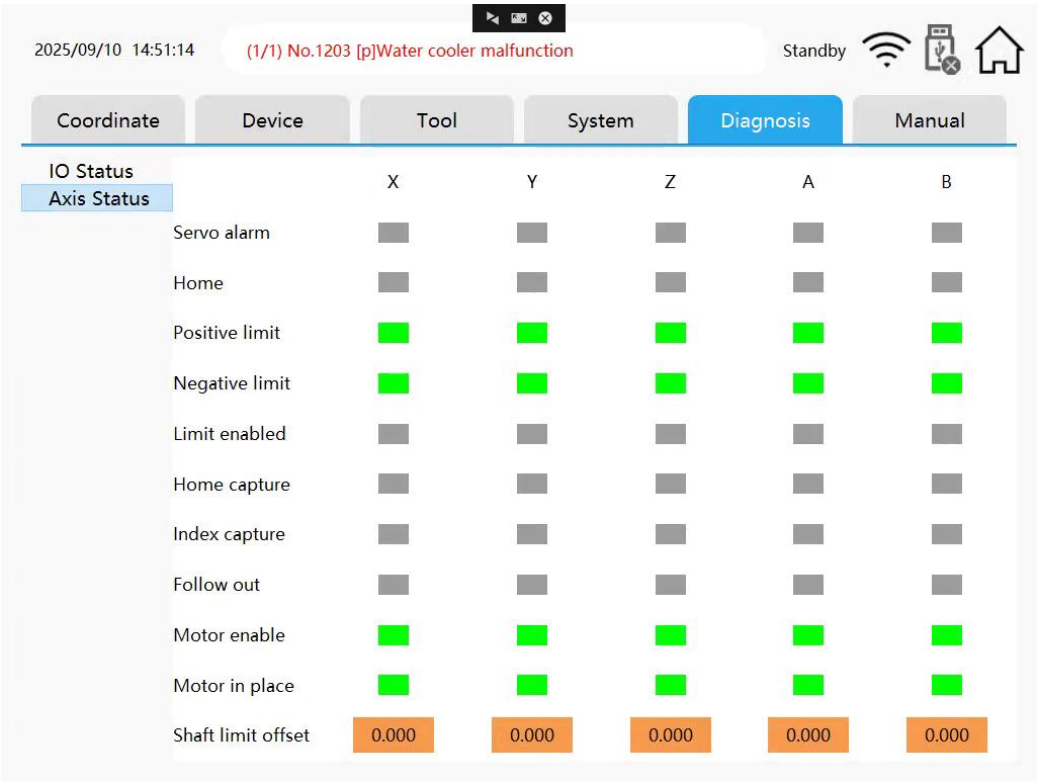
Diagnosis diagnostic page

Diagnosis: The diagnosis page can be used to view the IO status, shaft status, shaft output, and advanced manual functions.



※IO Status: IO status page: Input is input status monitoring, Out is output status monitoring.

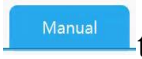
Axis status display interface



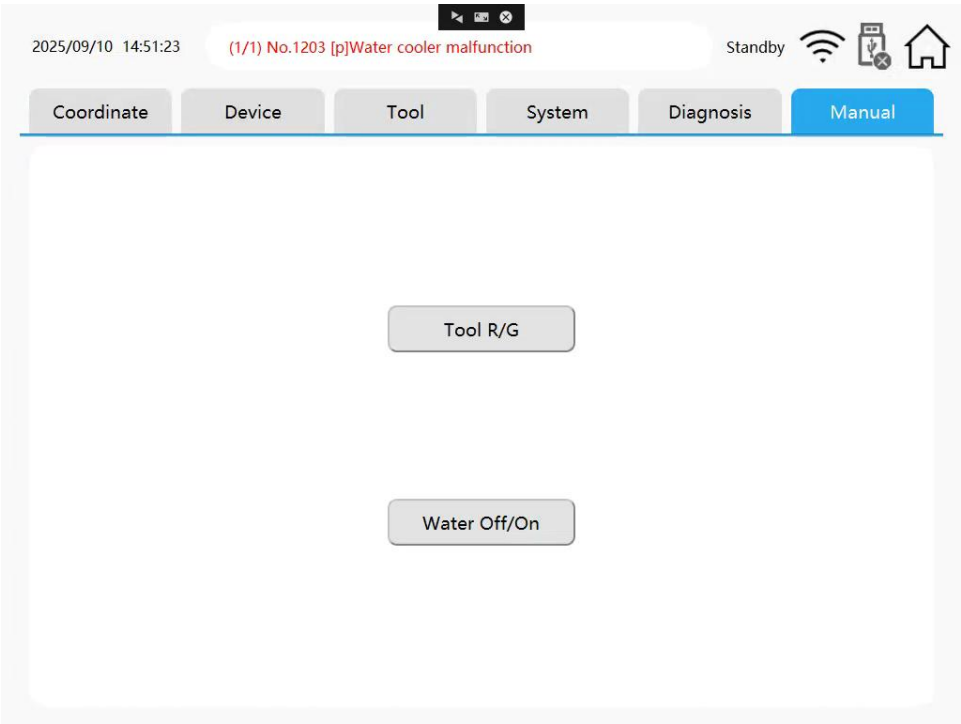
※ Axis status: Used to monitor the status of each axis. Use it when a fault occurs.

5.2.3 Manual page function introduction

Manual pull and push the knife switch, pump switch, hot engine, each shaft movement

Click the button to enter 

the manual page



Note: Tool R/G: spindle chuck clamping and releasing function, used for spindle needle replacement and spindle maintenance.

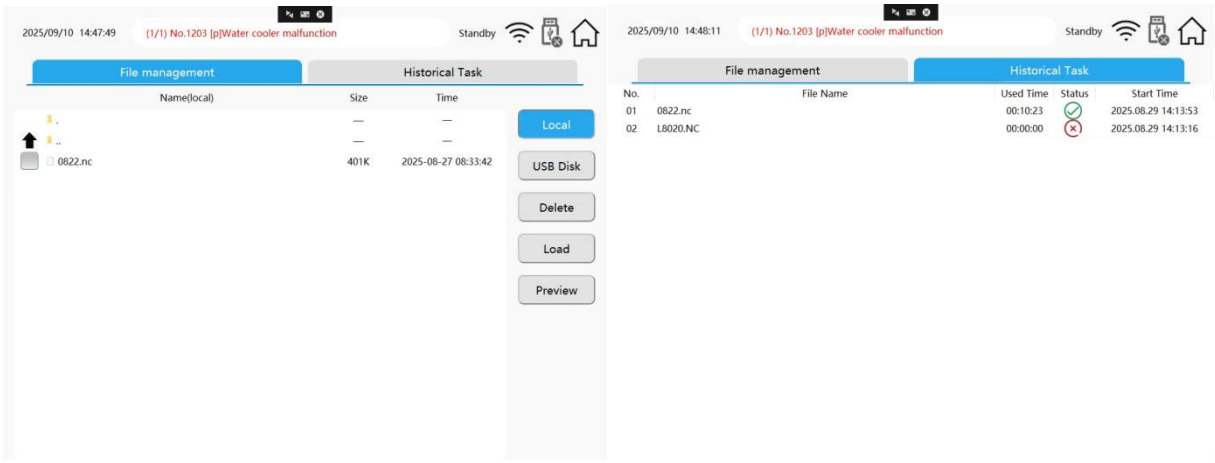
※ Water Off/On: Cutting fluid pump switch button, used to open and close the water pump.

5.2.4 File Management Page Introduction

Click the 

button to enter the file management page to manage U disk and local files, and view the processing history.

File management page



※ File management: file list.

※Historical Task: List of processed document information.

※Local: Local memory.

※USB Disk: USB memory.

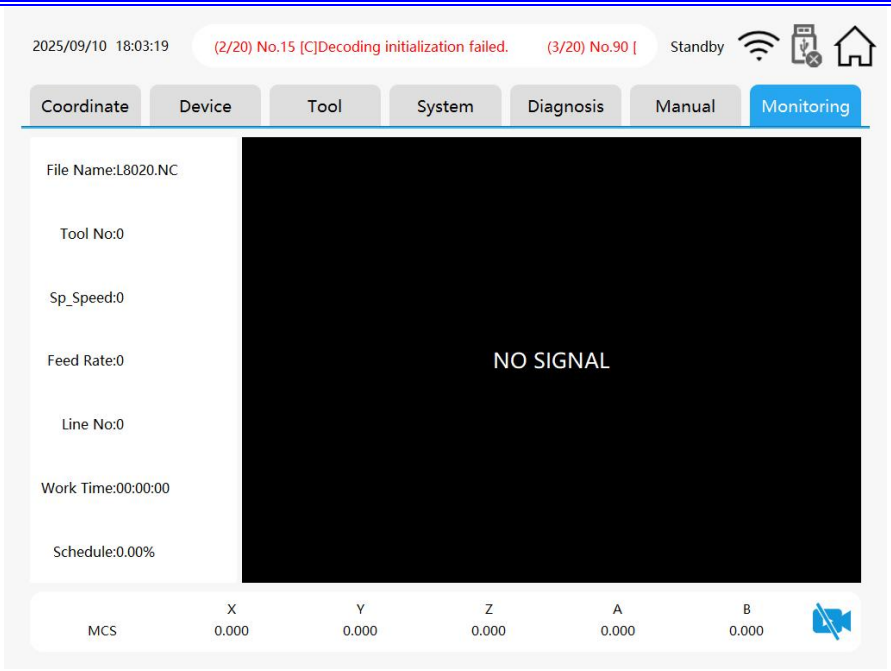
※Delete: Delete the selected file.

※Load: Load the selected file.

※ Preview: Preview the selected file.

5.2.5 Camera page

System Settings Page If the camera function is enabled, a camera button will appear on the left main interface to enter the camera page with one click.


2025/09/10 18:03:19
(2/20) No.15 [C]Decoding initialization failed.
(3/20) No.90 [
Standby
Coordinate
Device
Tool
System
Diagnosis
Manual
Monitoring
File Name:L8020.NC
Tool No:0
Sp_Speed:0
Feed Rate:0
Line No:0
Work Time:00:00:00
Schedule:0.00%
NO SIGNAL
X
Y
Z
A
B
MCS
0.000
0.000
0.000
0.000
0.000

VI. Instructions for first installation

6.1 Turn on

(1) Insert the triangle plug of the device into the socket and confirm that the connector at the end of the device is firmly connected

(2) The power supply is single-phase AC 220V 50/60Hz voltage, the allowable voltage range is 210V-230V

(3) In the unstable voltage environment, a voltage stabilizer should be added in front of the equipment to avoid damage caused by voltage fluctuations.

Figure 6-1-1 Check voltage diagram

6.2 Turn on the spindle cooler (see the cooler manual for details)

(1)Check whether the main spindle inlet and outlet water pipes are correctly connected with the milling machine inlet and outlet water pipes

(2)Connect the spindle chiller power plug to the CHILLER interface at the rear of the equipment

(3)Check whether the chiller level is correct.

(4)Turn on the water cooler, the temperature of the water cooler is 25-35 degrees, and the water level of the water cooler is normal.

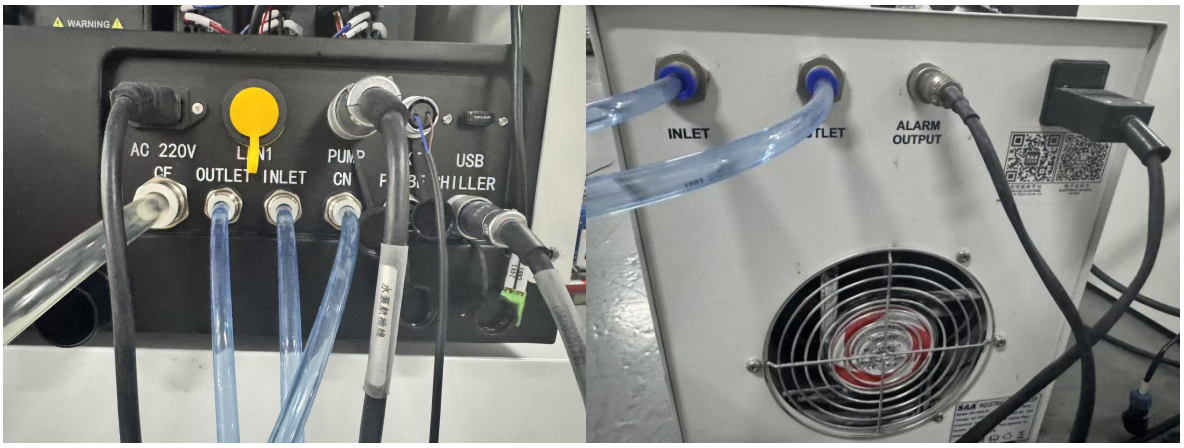
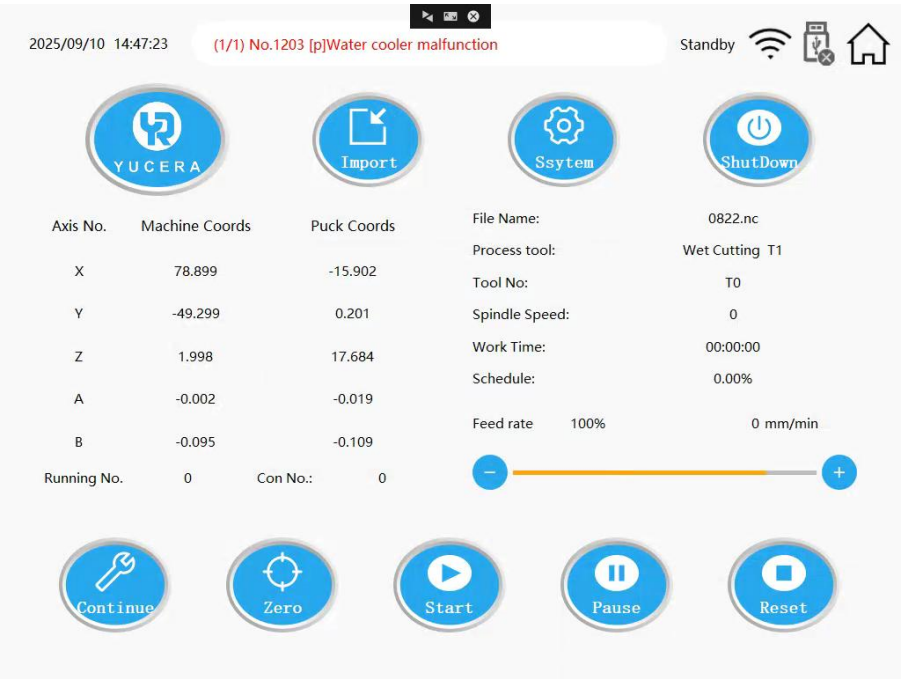


Figure 6-1-2 Water cooling machine connection diagram

6.4 Power on the equipment

1. Confirm the status of the emergency stop button. If the side emergency stop button is in red state, release the emergency stop button, otherwise the equipment is in emergency stop state.

2. If the emergency stop button is not pressed, skip this step; if the emergency stop button is pressed, release the emergency stop button and click the "reset" button at the bottom right corner of the "automatic" mode to reset the system.



3. Automatic zero return: Enter the "automatic" mode and click the "zero return" button. The device will automatically return to zero in the order of Z1XYAB. Do not operate the functional buttons in manual mode until the device is completed.

4. When installing equipment or changing cutting fluid, access the manual page-Other Settings section. Manually click the corresponding cutting fluid button to check if the sprayed coolant reaches the lathe needle cutting edge at the spindle end. Due to factors like manufacturer specifications, model differences, and operating environments, the spray force may vary. Customers should adjust the nozzle angle based on actual site conditions before processing. If necessary, extend the nozzle length using the included 8mm air hose.

5. Check and confirm that there is no abnormality, and then calibrate the equipment axis.

6.5 Axis calibration

6.5.1 Tool information confirmation

The Blade	work material	Type of blade	Diameter of handle	length	Clear space	tool specification	remarks
T1	titanium	bulb	6	50	12.5	T*R1.5*12.5H*6D*50L	
T2	titanium	bulb	6	50	12.5	T*R1.0*12.5H*6D*50L	

T3	titanium	bulb	6	50	8	T*R0.75*8H*6D*50L	
T4	titanium	bulb	6	50	8	T*R0.5*8H*6D*50L	
T5	titanium	bulb	6	50	4	T*R0.25*4H*6D*50L	
T6	titanium	Round nose knife	6	50	16	T*D2.0*R0.2*16H*6D*50L	
T7	titanium	Round nose knife	6	50	16	T*D1.5*R0.1*16H*6D*50L	
T8	titanium	Round nose knife	6	50	6	T*D1.5*R0.1*6H*6D*50L	
T9	titanium	boring crown	6	50	16	T*DR2.5*16H*6D*50L	
T10	titanium	boring crown	6	50	16	T*DR1.5*16H*6D*50L	
T11	titanium	Flat-bottom knife	6	50	6	T*D2.0*6H*6D*50L	
T12	titanium	Flat-bottom knife	6	50	5	T*D1.0*6H*6D*50L	
T13							reserve
T14							reserve
T15	glass ceramics	bulb	6	50	16	G*R1.25*16H*6D*50L	
T16	glass ceramics	bulb	6	50	10	G*R0.5*10H*6D*50L	
T17	glass ceramics	bulb	6	50	10	G*R0.3*10H*6D*50L	
T18							reserve

1.1 T1-T14 are the tool positions for titanium plates, while T15-T18 correspond to glass-ceramic tool positions. Specifically, T14 serves as a backup tool position for titanium plates, and T18 acts as a backup tool position for glass-ceramics. The tool information mentioned above undergoes minor adjustments in tool numbering and parameters according

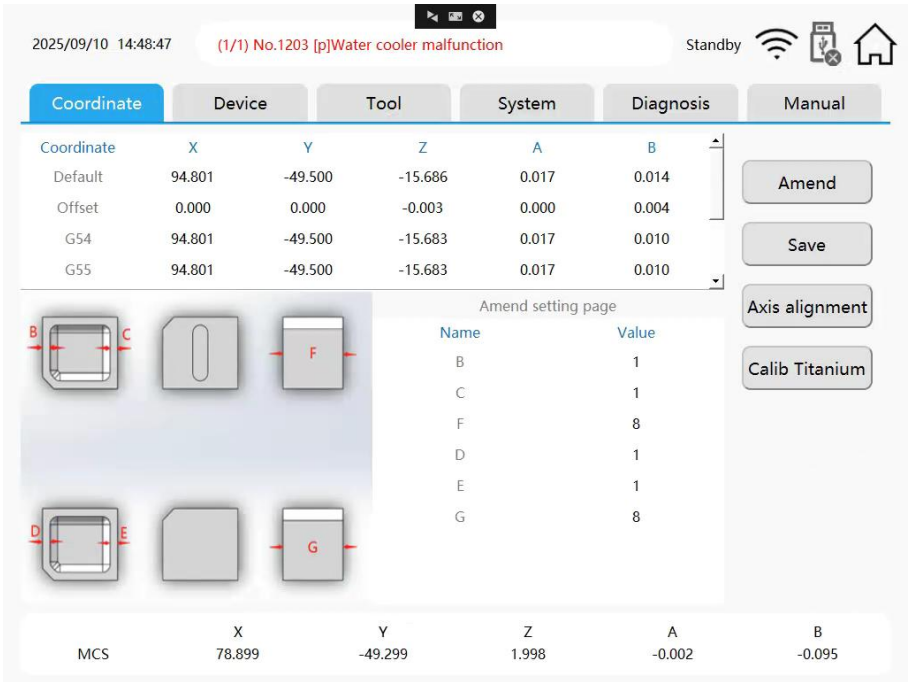
to process variations, with final specifications determined by the equipment manufacturer's technical specifications.

6.5.2 Automatic calibration process

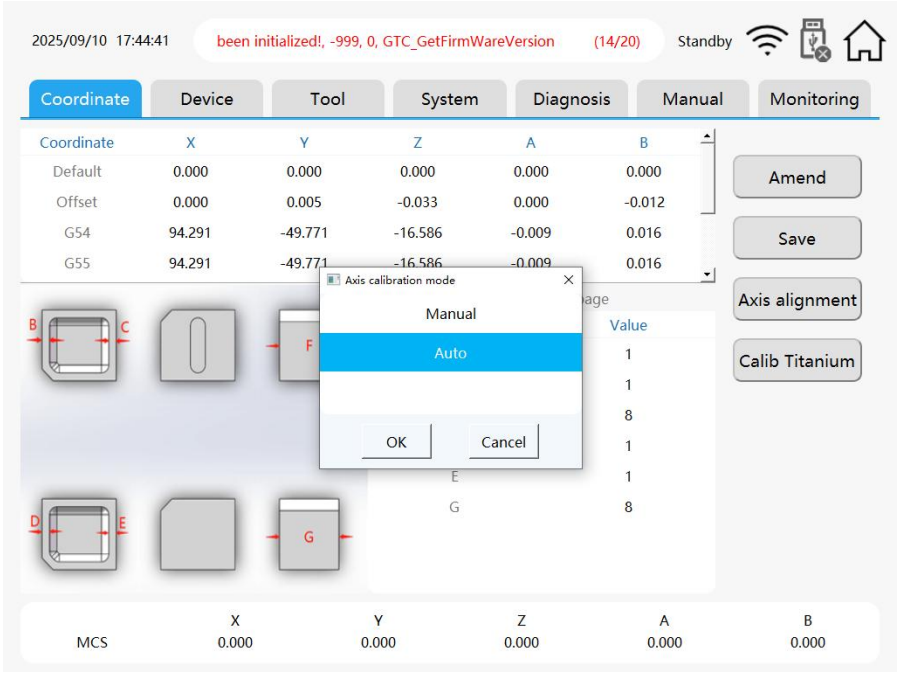
① The auto-calibration module is taken out from the device drawer

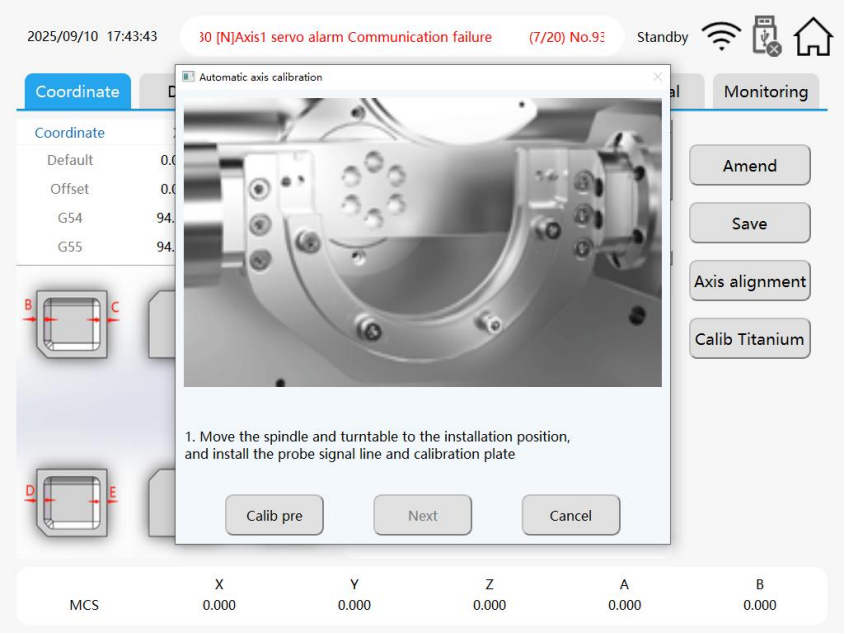
② In 

the interface state, click the "Axis alignment" button to enter the axis alignment guide page



Click the Auto button to enter automatic calibration

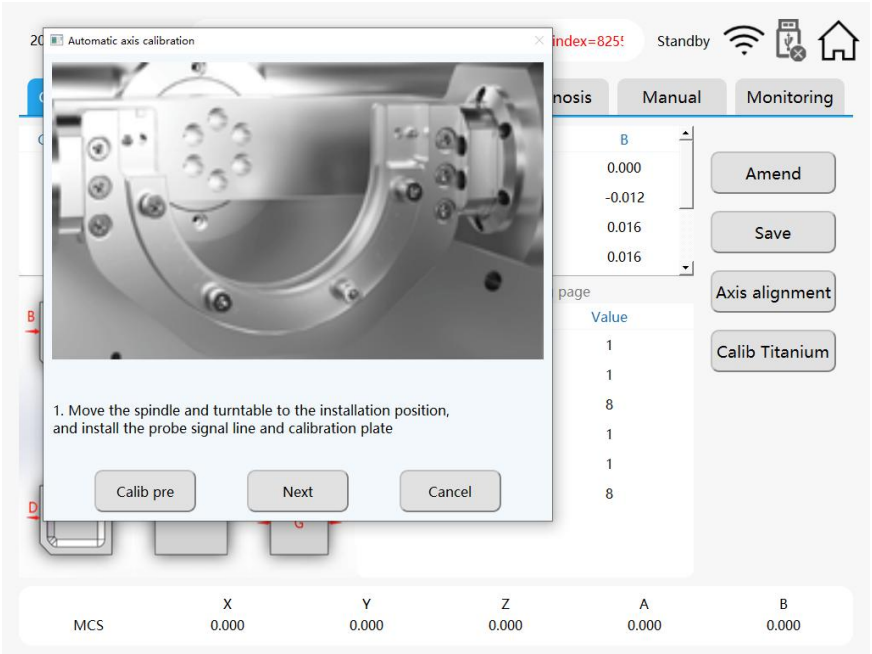


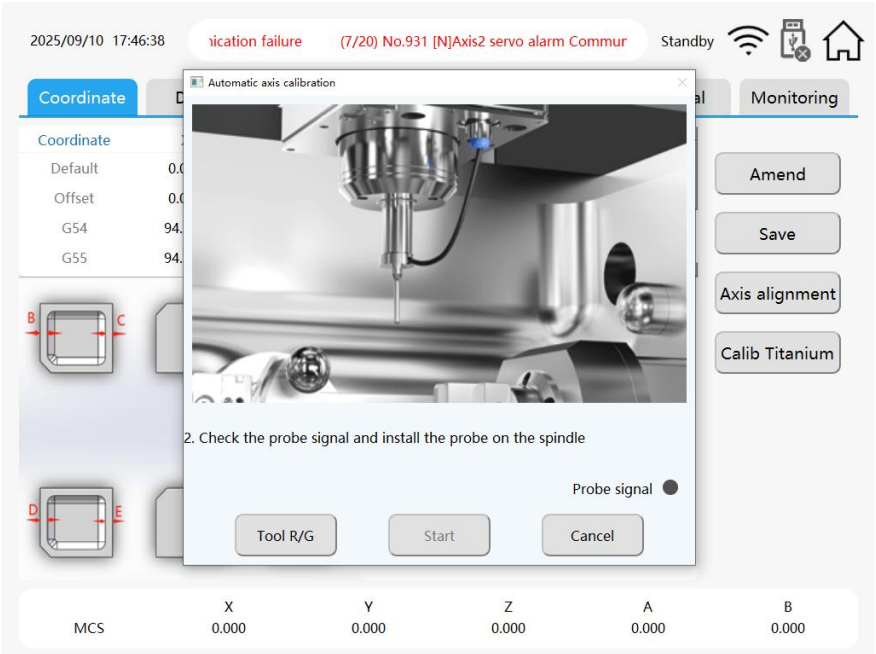


③ Click the "Calib pre" button on the interface to enter the calibration preparation page. Follow the page prompts to install the ball calibration fixture onto the A-axis bracket. Note that you must click the "Calib pre" button first; otherwise, other buttons cannot be released.

After the ④ installation is completed, click the "Next" button to enter the next step.

According to the prompts on the interface, use the "Tool R/G" button to install the calibration tool holder on the spindle and connect the communication connector.





⑤ Click the "start" button to calibrate the axis ball. After the calibration is completed, remove the ball calibration fixture and calibration handle according to the guidance, and put them in the tool box.

Note: ⑥ After the initial installation, manual square cutting calibration is required after automatic calibration.

6.5.3 Preparations for manual calibration

① Calibration material: wood disc material.

② Disc size: diameter 98.5mm/114.4mm, thickness 10mm/14mm (depending on the fixture specification to confirm the disc size).

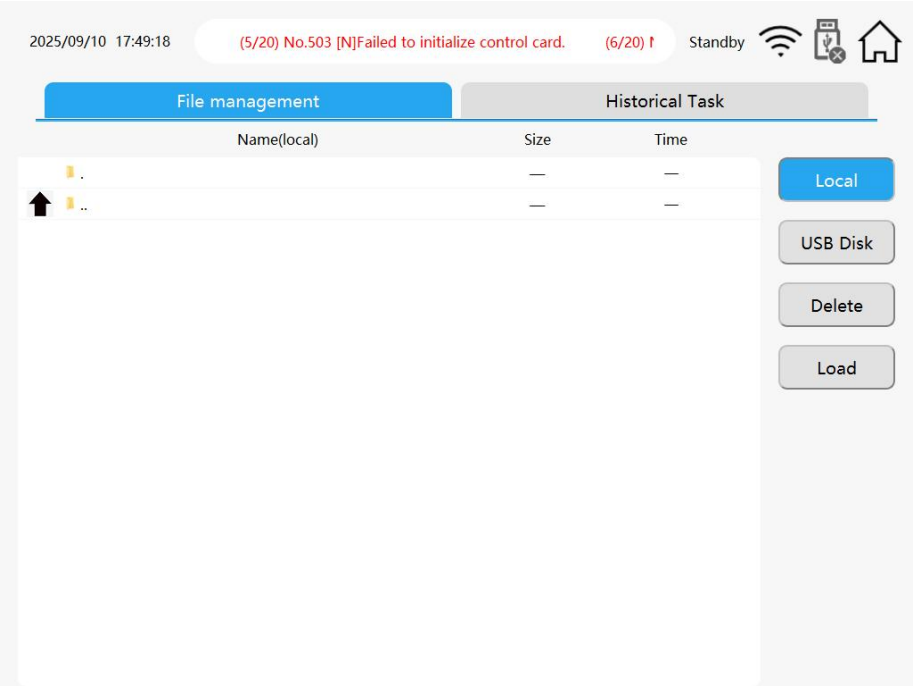
③ Correcting the needle: No.2 ball head 2.0mm

④ Calibration program: "8PRO calibration program" file.

⑤ Manually clamp the substitute wood plate to the AB axis and tighten the screws.

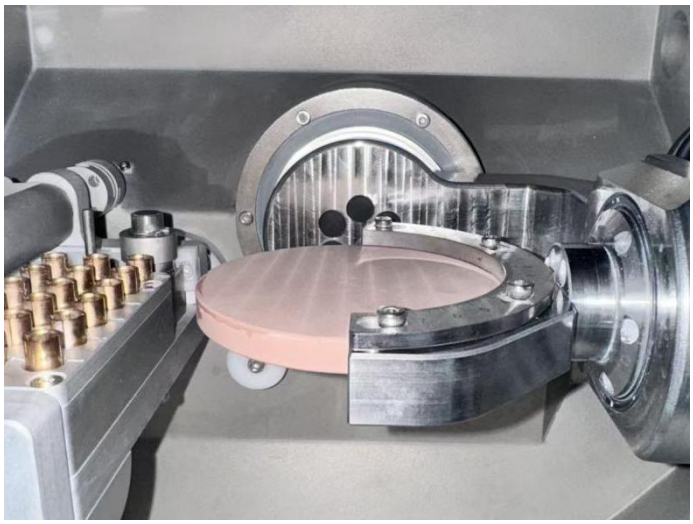
6.5.4 Calibration block processing

1. Import calibration file: put the "8PRO calibration program" into the USB drive, insert the USB drive into the USB port of the machine, click the "refresh" button, and the processing file in the plan list will be displayed (or send the processing file directly to the plan list through network transmission software).



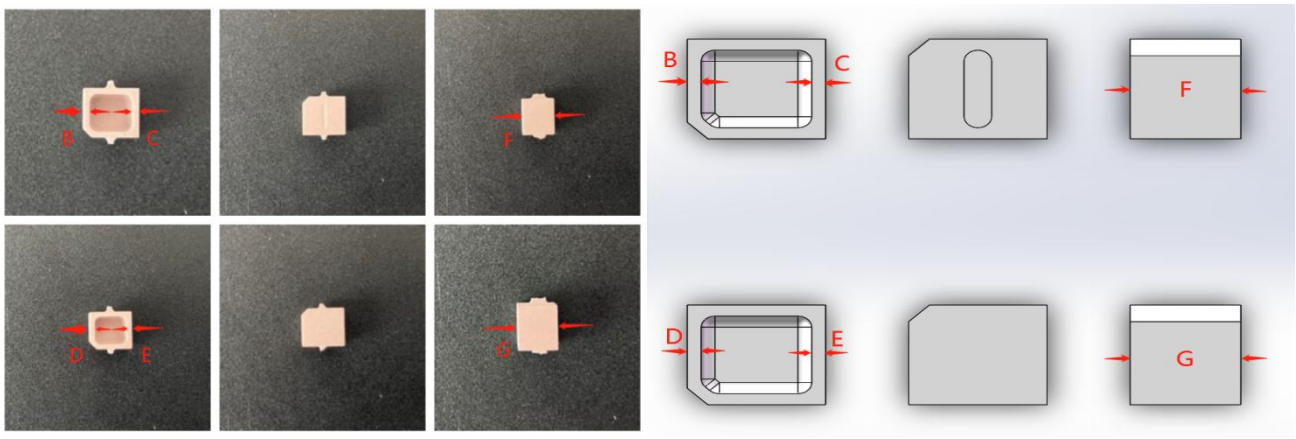
2. Find the calibration file "8PRO Calibration Program", click and select this file, click the "Loading" button, then return to the automatic interface and click the "Start up" button on the main interface, and the equipment will start the calibration processing.

3. After the cutting is completed, remove the calibration plate and use the grinding tool to polish down the two processed blocks



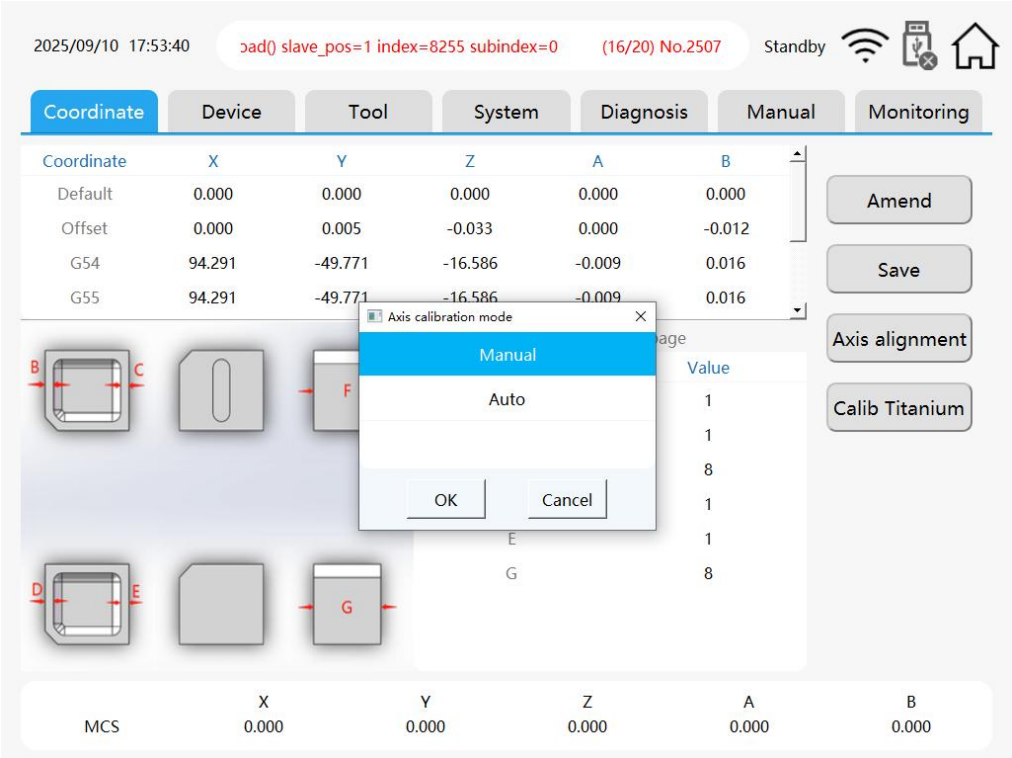
6.5.5 Calibration block measurements

1. Prepare a digital caliper and measure and record the values of B, C, F, D, E and G in turn.



2. Enter the coordinate setting interface and input the recorded value.

① Click the "Manual" button, and then click the "Coordinate" button to enter the correction interface.



② Fill the measured values B, C, F, D, E, G into the corresponding dialog box on the parameter page respectively.

③ After the input is completed, click the "Amend" button, and then click the "Save" button to complete the correction action.

6.5.6 Correct calibration instructions (important)

① To verify that the machine's coordinates have been recalibrated within the standard range, the correction block needs to be re-cut, and measurements of B, C, F, D, E, and G values should be taken. The standard range is: B, C, D, E = 1±0.05mm F, G = 8± 0.02mm, where the values of F and G are

② If the value after correction is not within the standard range, the correction procedure needs to be performed again.

Calibration cycle:

① When the machine is in place or other abnormal phenomena or serious contact marks, the correction program can be carried out at any time.

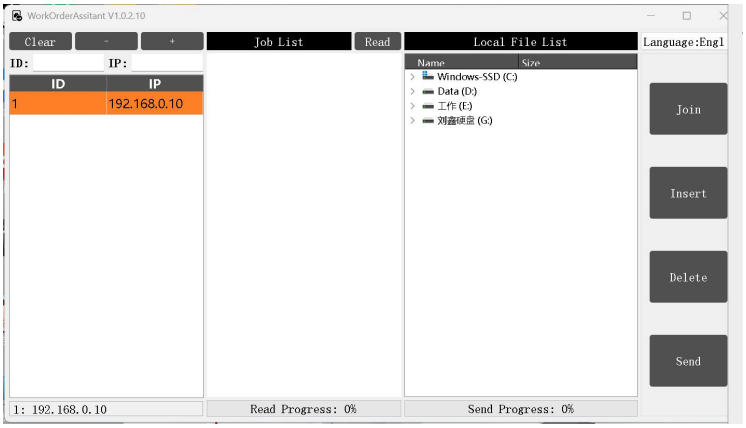
② It is recommended that periodic calibration operation be performed once a week when the frequency of use is high.

6.6 Network description

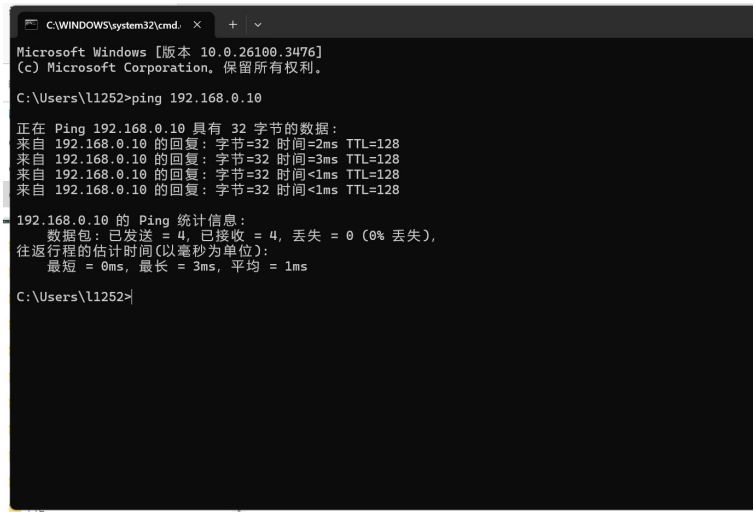
LAN FTP connection:

1. Connect the network cable directly, or the device is in the same LAN segment as the computer

2. Set the device IP address to the unused IP address in the current company's local area network



3. After the connection is complete, ping the device's IP address

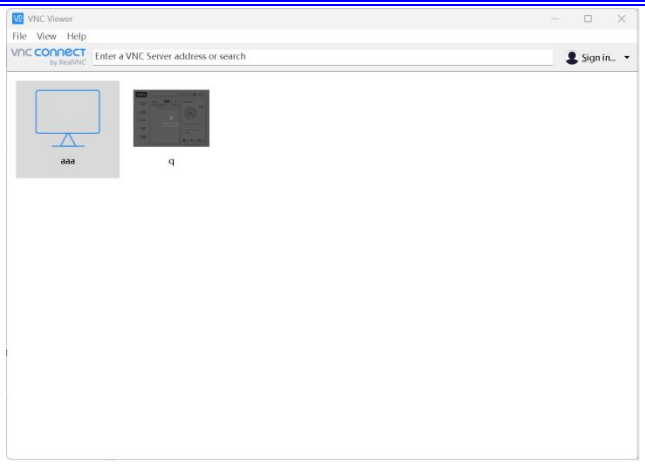


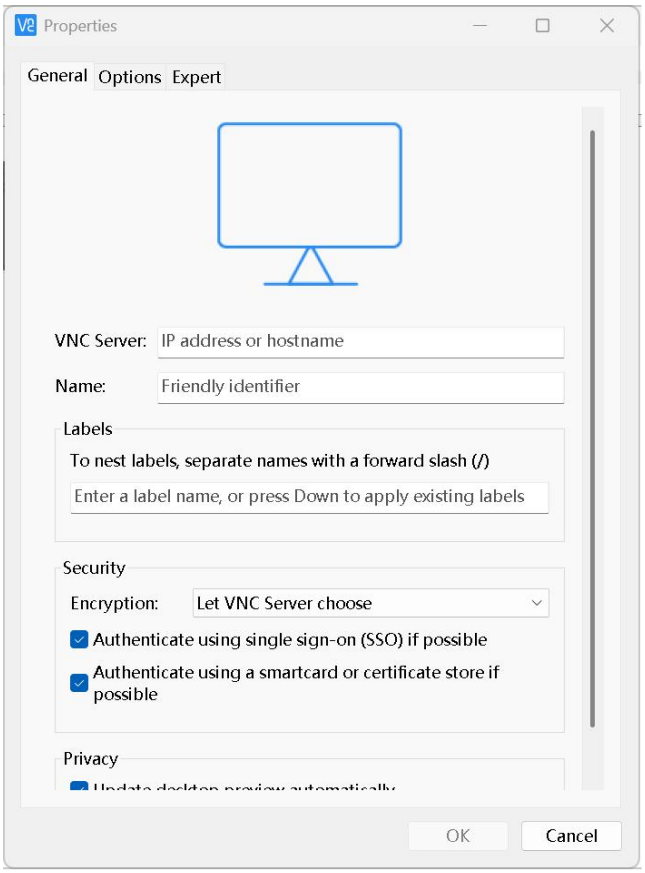
4. Connect through TCP and read the input device corresponding IP address via FTP

5. VNV connection, input device IP address, and naming. Enter the password "Const0.0" to enable remote control of devices through the local network.

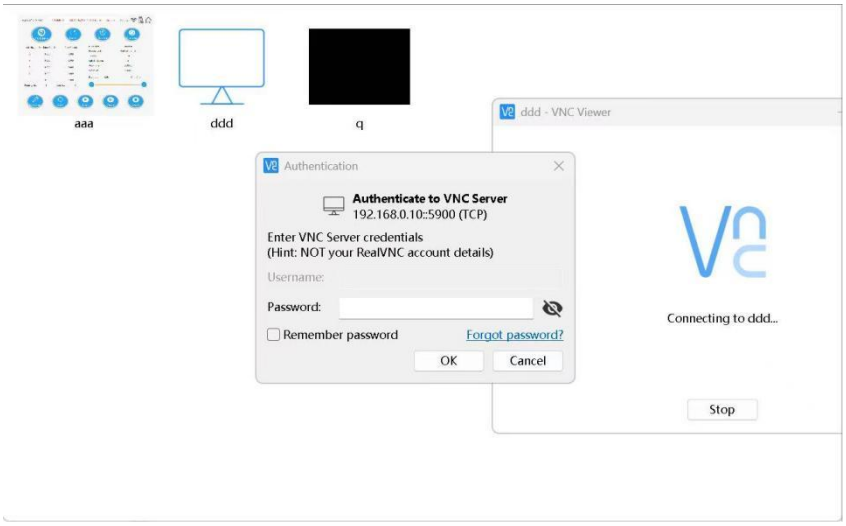
click vnc

get into

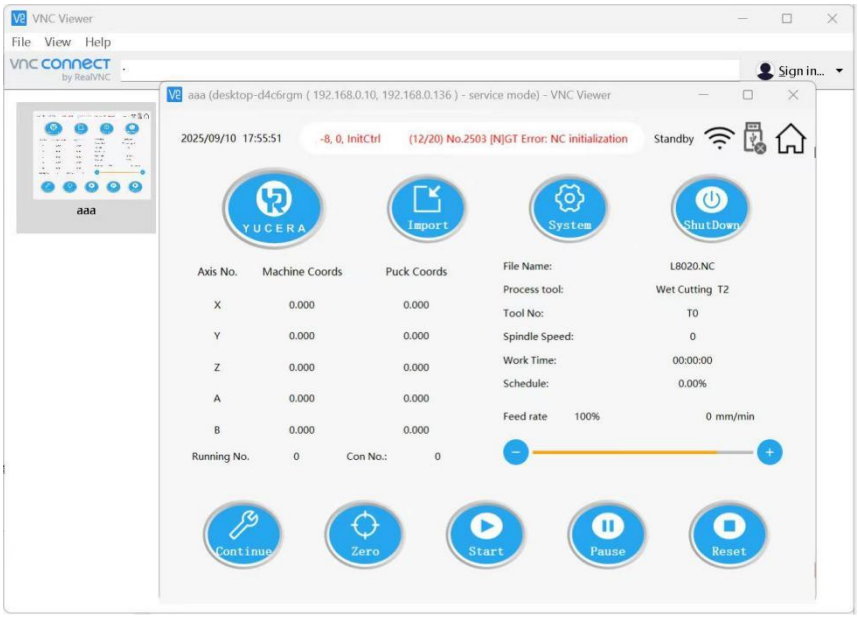




enter password



Enter the control interface



7、Software note

Customers need to purchase layout software. This equipment is an open layout system, supporting millbox, Worknc and other layout software.

Worknc operation instructions: please refer to

https://www.youtube.com/@HaoWANG-WorkNC

Millbox operation instructions: please refer to https://help.cimsystem.com/

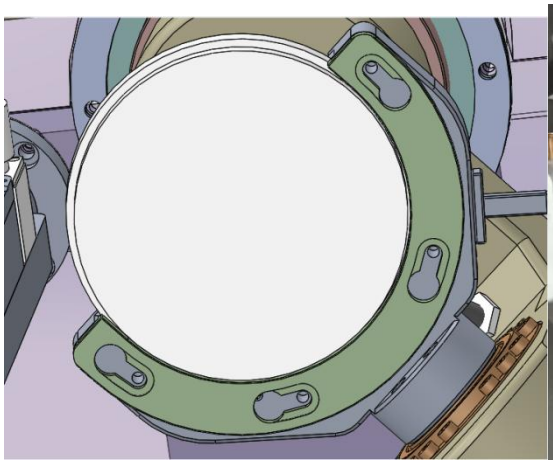
VIII. OPERATIONAL INSTRUCTIONS

8.1 Use process

8.1.1 Clamps installation

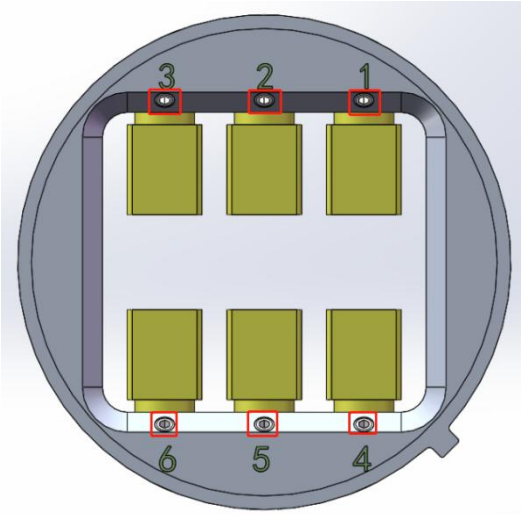
1. Disc fixture installation

Mount the zirconia disc or titanium disc material on the B-axis bracket. Note that different materials have different locking forces.

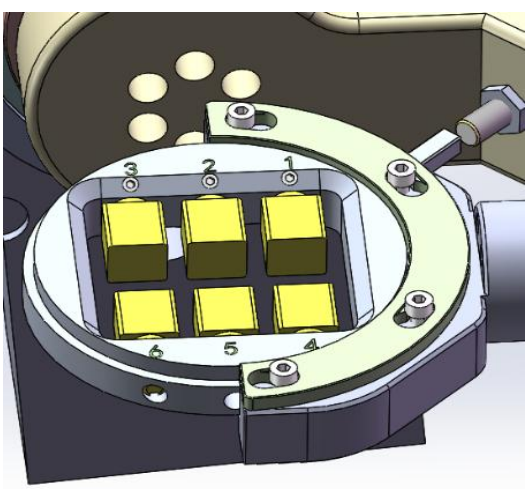


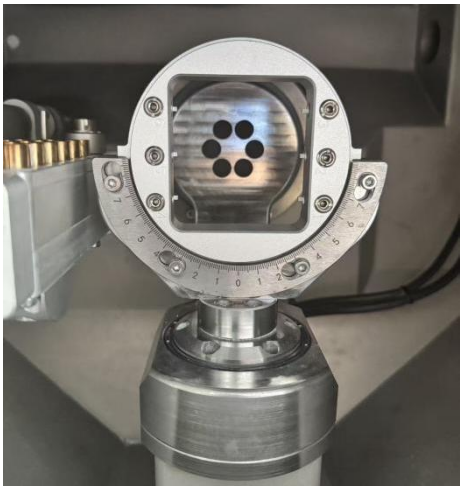
2. Processing glass ceramic block installation

① After clamping the glass ceramic block to the glass ceramic special fixture plate, use the 2.0 hexagon to tighten the screw marked in the figure



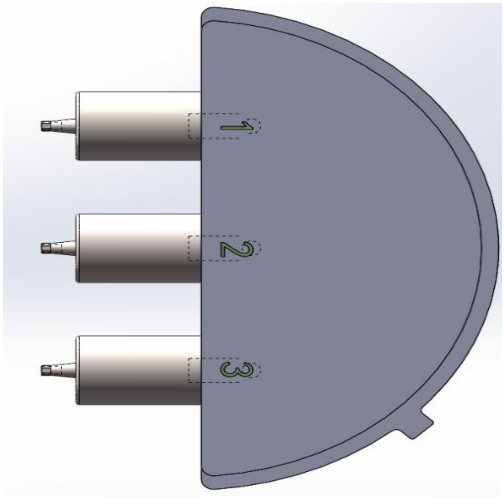
② Install the glass ceramic special fixture to the A-axis bracket of the cutting machine, and lock the fixing screw of the material tray.



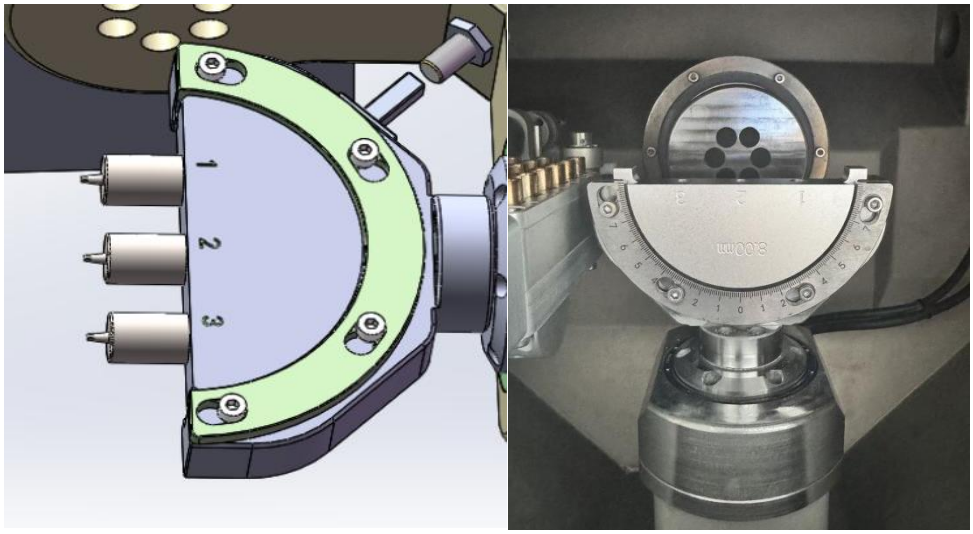


3. Installation of titanium columns

① Mount the titanium column on a titanium column fixture and use the random M5 screw to lock the titanium column tail from the side round hole.



② Install the fixture with titanium column to the A axis of the cutting machine, and lock the fixing screw of the material tray.



8.1.2 Tool replacement

The first case: the tool to be replaced is on the tool seat of the tool bank, you can directly plug and pull the tool for replacement!

Solid model of the tool

The second case: the tool to be replaced is located on the spindle. Take no. 3 tool as an example, and other tools are the same.

① In manual mode, confirm that the red display of the tool number button is the tool to be replaced, such as the T3 button in this example.

② In manual mode, hold the tool on the spindle with your left hand and click the "Release Tool/Pull Tool" button on the touch screen with your right hand to release the

spindle chuck, remove the old or broken tool, replace the new tool, and click "Release Tool/Pull Tool" again to clamp the spindle chuck.

③ Manual-In other Settings mode, click "Tool Alignment" and the machine will automatically measure the tool length of the new tool.

④ If an abnormal tool alarm occurs, the system will enter auto-return mode. Click the "Reset" button to clear and adjust the tool alarm (there are three types of abnormal situations: 1. Tool breakage; 2. Incorrect tool clamping position; 3. Tool mismatch). If no alarm is detected, skip this step.

8.1.3 Precautions for processing

Precautions for using electric spindles

Electric spindle is the basic guarantee of precision machining, its manufacturing precision is very high, such as the conical surface precision of the rotor end is within 0.003mm. Due to its high precision, it has become the most fragile link in the use of cutting machine!However, this is not to say that the service life of the electric spindle of the cutting machine is short. In fact, as long as the operator does it according to the specifications, the electric spindle of the cutting machine is relatively durable.

The following specifications must be observed when using the cutting machine:

1. The operator of the cutting machine must be trained and approved, and it is strictly prohibited for the untrained operator to use the cutting machine.

2. Before starting up, first ensure that the cooling circulation system of the electric spindle works normally, and then open the electric spindle. It is strictly prohibited to use the electric spindle without cooling.

When using a cooler to force cool the electric spindle, you must follow the instructions for the electric spindle cooler.

The electric spindle cooling uses a specific coolant, the coolant must be clean, timely replenishment of coolant, to ensure that the electric spindle cooling machine works normally, the cooling pipeline is kept smooth, so that the electric spindle can be cooled normally.

3、 The use of a cutting machine must use a stable voltage to ensure the reliability of the work.

4、 When the temperature difference is large and the precision of the workpiece is required, the electric spindle should be gradually accelerated and preheated according to the principle from low speed to high speed (see the preheating program). When the electric spindle reaches the required speed and runs smoothly and the temperature is stable, then the machining is carried out. In this way, good machining accuracy can be guaranteed.

5、 The cutting should be carried out according to the principle of using the knife provided by the company's technical service personnel. When planning the tool path, ensure that the electric spindle is under reasonable force, avoid vertical cutting, and prohibit the electric spindle from working under overload, so as to ensure the normal service life of the electric spindle.

6、 It is strictly prohibited to use the tool with worn blade for processing. If the tool is still used after wear, it will increase the force of the electric spindle, resulting in the loss of the bearing, and also affect the machining accuracy and surface effect.

7、 During operation, strictly avoid striking or colliding with the spindle rotor end. Operators must carefully verify the Z-axis starting point (workpiece origin) when performing tool setting, ensuring accurate input of this critical parameter to prevent operational errors.

Prevent damage to the spindle's bearings by avoiding impacts or tool penetration during operation. If tool penetration occurs, immediately shut down the machine to avoid further bearing damage from high-speed rotation. Start with low-speed running-in at a slightly longer duration than standard procedures until the spindle operates smoothly and normally before proceeding with regular work.

8、 If the chuck is improperly clamped onto the electric spindle rotor end, never attempt to remove it by striking the rotor. When handling such a situation, use tools like pliers to remove the chuck without damaging the rotor's threads. Note that both the chuck and retaining cap will have completely lost their precision after this incident. They must be replaced immediately as continued use would damage the electric spindle rotor.

9、 Tools are clamped using spring collets (except for special models). To ensure clamping accuracy and machining quality while preventing damage to the pressure cap and rotor, the pressure cap collet must be removed before each tool clamping or replacement. Direct insertion or removal of tools is strictly prohibited! Before tool installation, thoroughly clean the collet and pressure cap with gasoline or WD40 cleaner. Regular inspections are required. Remove debris from collet gaps and clean both the inner bore and outer surfaces (including conical surfaces and end faces) of the collet. After cleaning the mating surfaces between the rotor and collet, including conical holes, proceed with tool installation.

10、 The tool should be up and down in the correct way, and the tool should not be used with brute force to prevent the rotor and pressure cap from slipping.

11、 The electric spindle should be maintained according to the maintenance system.

12、 要按正确的方法上下刀具，不能使用蛮力上下刀，防止转子和压帽滑扣。

13、 **8.2 Processing flow**

8.2.1 Importing processing procedures

Cutting tools information

The Blade

work material

Type of blade	Diameter of handle	length	Clear space	tool specification	Clear space	tool specification	remarks
T1	titanium	bulb	6	50	12.5	T*R1.5*12.5H*6D*50L	
T2	titanium	bulb	6	50	12.5	T*R1.0*12.5H*6D*50L	
T3	titanium	bulb	6	50	8	T*R0.75*8H*6D*50L	
T4	titanium	bulb	6	50	8	T*R0.5*8H*6D*50L	
T5	titanium	bulb	6	50	4	T*R0.25*4H*6D*50L	
T6	titanium	Round nose knife	6	50	16	T*D2.0*R0.2*16H*6D*50L	
T7	titanium	Round nose knife	6	50	16	T*D1.5*R0.1*16H*6D*50L	
T8	titanium	Round nose knife	6	50	6	T*D1.5*R0.1*6H*6D*50L	
T9	titanium	boring crown	6	50	16	T*DR2.5*16H*6D*50L	
T10	titanium	boring crown	6	50	16	T*DR1.5*16H*6D*50L	
T11	titanium	Flat-bottom knife	6	50	6	T*D2.0*6H*6D*50L	
T12	titanium	Flat-bottom knife	6	50	5	T*D1.0*6H*6D*50L	
T13	titanium	Flat-bottom knife	6	50	6	T*D2.0*6H*6D*50L	reser

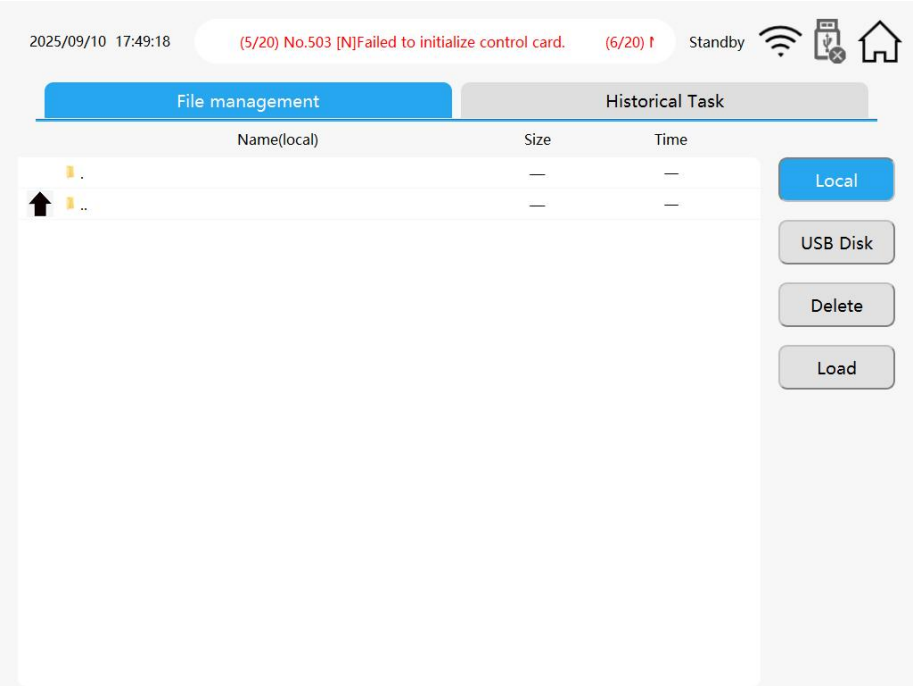
							ve
T14							reser ve
T15	glass ceramics	bulb	6	50	16	G*R1.25*16H*6D*50L	
T16	glass ceramics	bulb	6	50	10	G*R0.5*10H*6D*50L	
T17	glass ceramics	bulb	6	50	10	G*R0.3*10H*6D*50L	
T18							reser ve

1.1 T1-T14 are the tool positions for titanium plates, while T15-T18 correspond to glass ceramic tool positions. Specifically, T14 serves as a backup tool position for titanium plates and T18 as a backup tool position for glass ceramics. The above lathe needle information undergoes minor adjustments in numbering and parameters according to process variations, with final specifications determined by the equipment manufacturer's technical specifications.

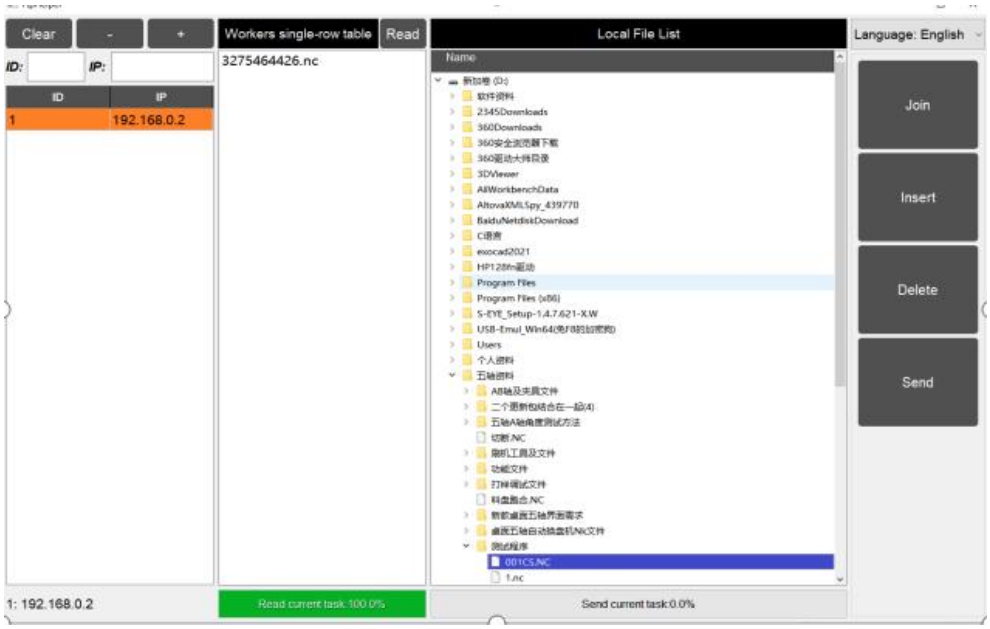
1. According to the template of the layout software, check whether the turning needle corresponding to the tool number is correct, complete and intact.

2. Insert a USB drive or self-developed software into the interface, and the corresponding interface will pop up automatically on the screen.

In the  mode, select the corresponding file to be processed and click "Loading" to enter the NC file loading page.



Please note: When using the USB transfer program, the system will automatically detect and display all NC files in the root directory of the USB drive. Alternatively, you can directly upload NC files to the production plan list through the company-developed FTP software. For detailed instructions, please refer to the machine networking manual. The interface is shown below:



3. Return to the auto interface and click the "Start up" button to start the program.

4. If any problem occurs during the processing, click "Pause" or "Reset" button first. If a red alarm appears, perform "Reset" operation first. After the abnormal alarm is

removed, click "Breakpoint process". When clicking "Breakpoint process" button, the system will pop up the following options:

1. from current line number: execute from the breakpoint;

2. from the last Tool Change: from the previous tool at the breakpoint position;

3. Restart processing: start processing from the program head; select different breakpoint methods according to the actual processing status.

5. Machine shutdown: Press the "shutdown" button directly on the touch screen to cut off power.

8.2.2 Processing steps:

1. Check the position of the vehicle and check the position of the tray

2. Mount the corresponding material to the fixture

3. After the CAM software checks that the tools corresponding to the tool library are completely correct

4. Use U disk or machine corresponding ftp software to import the program to run

8.2.3 Start of processing

Use the CAM software provided by this machine to output the machining data:

The steps are as follows: 1. Check the processing data Settings

2. Display the "USB Disk" interface in the main interface

3. Click the corresponding program for processing

The processing is complete. Remove the material tray

Display of completed processing:

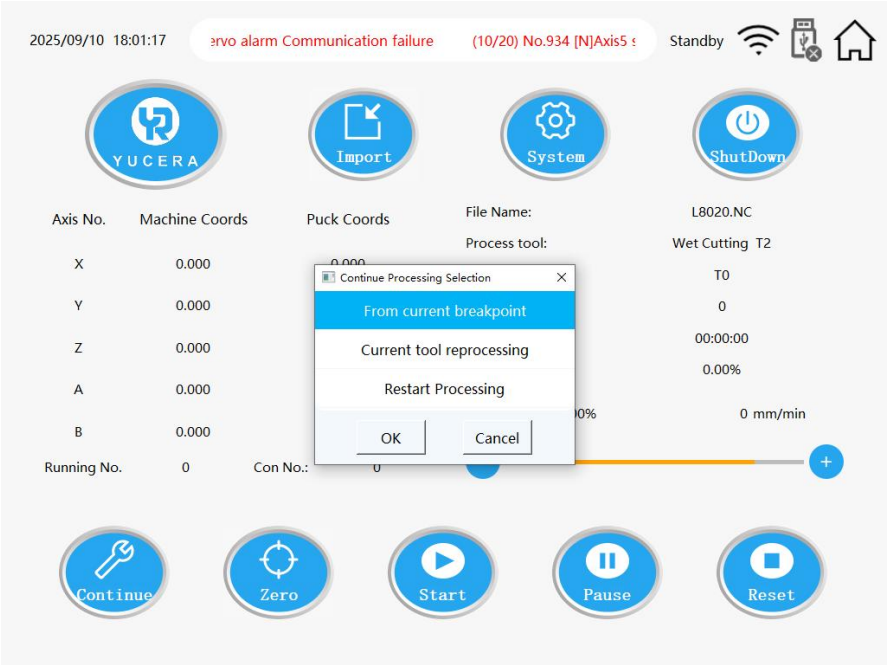
8.2.4 Suspend/Cancel Processing

Reasons for stopping/Canceling processing: power failure of equipment or insufficient compressed gas in equipment

The method to stop or cancel the processing is to press the reset button or pause button

8.2.5 Notch machining

Break point processing: Continue processing from the last line where it stopped



Need for breakpoint processing:(for sudden shutdown, no air pressure alarm, blade break)

1. from current line number: execute from the breakpoint;

2. from the last Tool Change: from the previous tool at the breakpoint position;

3. Restart processing: start processing from the program head; select different breakpoint methods according to the actual processing state.

IX. Maintenance and upkeep

9.1 Precautions

1. Pulling and inserting cables, boards and electrical appliances will cause damage to components and even cause personal injury. Therefore, it is prohibited to pull and insert cables, boards and electrical appliances with power on.

2. Avoid water or any liquid into the control cabinet, otherwise it will cause damage to electrical components.

3. Do not use ordinary vacuum cleaner to absorb processing dust, which may cause fire or explosion

4. Do not touch the spindle unit and surrounding parts immediately after processing

5. The processing tool is sharp and sharp. Broken tools are also dangerous, please avoid injury.

8PRO cutting machine is a computer-controlled precision production equipment, its processing movement is completed by precision mechanical motion mechanism, in order to ensure the normal use of the cutting machine, it must be regularly maintained, the specific requirements are as follows:

9.2 Daily maintenance

The following work should be done daily

Ensure daily cleaning of the work area and maintain machine tool cleanliness. When using cutting fluid, promptly drain it to prevent unnecessary weight on the bed that could compromise equipment precision and lifespan. Avoid debris clogging discharge ports, as this may cause fluid leakage and trigger malfunctions in other machine components.

Check the storage of the electric spindle coolant before use every day, open the coolant machine to ensure smooth circulation of coolant.

Clean the spindle cone hole, press head and press cap every day.

Processing warehouse cleaning: use a vacuum cleaner to suck the dust in the warehouse, and use a brush to clean all parts of the processing warehouse until the surface is clean and tidy

Clean the knife seat: use a vacuum cleaner to suck up the dust around and inside the knife seat, and clean the dust on the surface of the knife seat with a brush until the surface is clean and tidy

Cleaning of equipment appearance:

Clean the BCS: After the vacuum cleaner sucks up the surface dust, clean the surface with a brush until it is clean and tidy

Cleaning of knife instrument: After the vacuum cleaner sucks up the surface dust, clean the surface with a brush until it is clean and tidy

Car needle confirmation: After the vacuum cleaner absorbs the surface dust, use a

brush to clean the surface until it is clean and tidy

Cutting fluid level check: After the vacuum cleaner sucks up the surface dust, clean the surface with a brush until it is clean and tidy

The above cleaning only needs to use a vacuum cleaner to wash away the dust in the cavity, and then use a brush to clean the surface until the surface is clean and tidy.

Tools needed: Vacuum cleaner, brush

Cleanliness of processing areas

1. Spindle cleaning

After a long time of processing the glass ceramic block, it is necessary to stick alcohol on the main shaft and chuck position with a dust-free cloth, because the glass ceramic powder will solidify after drying, which will affect the life of the main shaft.

9.3 Regular maintenance

Weekly maintenance: 1. Spindle maintenance

2. Glass ceramic cutting fluid replacement

3. Controller memory check

Monthly maintenance:

Axis calibration: see page 41-47 for details

Maintenance per season: 1. Metal cutting fluid: check the remaining amount

2. Cleaning and oiling of screw rail: Clean the chips and dirt on the screw and rail. Use silk cloth first when cleaning, do not use cotton yarn, so as not to cause

contamination. Clean the rail and screw with kerosene or gasoline as far as possible to wash out powder and dirt.

(Replacement of parts) Replacement of tools: see 8.1.2 for details

X. Fault alarm handling method

10.1 Handling steps when alarm occurs:

When the system is alarm, in order to restore normal production more quickly, it is recommended to follow the following steps for fault confirmation:

1. Record the time when the alarm occurs:

- The date and time of occurrence, such as: 9:50:38 on xx/xx/xx, xx year, an emergency stop alarm occurred;
- In what state does the machine tool occur? Idle, processing?
- How often are the alarms occurring?
- How soon will the alarm go off?

2. Detailed content of the alarm:

- Main screen alarm information;
- Carefully check all the current alarm contents in the alarm detail page, is there any auxiliary information?
- Check the processing instructions of the alarm number. If the relevant alarm number is not listed in subsequent chapters, please contact the supplier in time;

3. Confirm what was done before the alarm was raised:

- The current working mode of the system, such as mode, coordinate, mode, etc., can be photographed and recorded;
- If it occurs in automatic processing, confirm the program number, program name, line number, etc.;
- If it occurs in manual operation, what operations are performed? Pointing, continuous movement, spindle rotation? What is the speed and ratio at that time?
- For example, if it occurs in interface operation, switch interface? Modify parameters?
- Will the same operation be repeated?
- Check the operation log to see if the operation steps are properly recorded?
- Are there any other external operations? Such as starting high-power equipment? Power grid interference? Voltage instability?
- What is the ambient temperature?
- Is there large vibration on the machine, controller, etc.?

4. Confirm the machine configuration information:

- Mechanical structure: machine model, nameplate information;
- System version information, enter the version information page, record the version number;

10.2 Alarm content and handling method

10.2.1 Software issues

If the above alarm number appears on the interface, just contact the supplier directly:

0001 0002 0004 0005 0006 0008 0009 0010 0011 0013 0015 0016 0018 0020 0021 0022 0038 0039 0040 0041 0042 0043 0044 0045 0046 0047 0048 0049 0050 0051 0052 0053 0055 0056 0063 0064 0065 0066 0067 0068 0070 0071 0072 0073 0074 0081 0088 0089 0090 0091 0096 0098 0099 502 503 504 505 506 507 508 509 510 511 527 528 530 594 620 622 623 624 625 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1029 1106 1170 1171 1172 1173 1174 1175 1176 1177 1178 4501

Alarm number	0028			
Alert content	The system upgrade was successful. Please restart the system.			
processing method	Power off and restart the system.			

Alarm number	0030			
Alert content	Do not power off during firmware upgrade.			
processing method	The system clears itself.			

Alarm number	0031			
Alert content	The firmware upgrade was successful. Please restart the system.			
processing method	Power off and restart the system.			

Alarm number	0032			
Alert content	The firmware upgrade failed and cannot be reset. You need to restart the system.			
processing method	Please contact the supplier to confirm whether the firmware version is correct, whether the firmware file is intact, and confirm that no other operation is performed during the upgrade process. After eliminating the above situation, please power off and restart the system, and upgrade again. If it fails again, contact the supplier.			

Alarm number	0033			
Alert content	The firmware file is incorrect. Please restart the system.			

processing method	Contact the supplier to obtain the correct upgrade file and perform the upgrade again.

Alarm number	0054			
Alert content	Error reading the loop runtime.			
processing method	Release the alarm according to the reset.			

Alarm number	512			
Alert content	Acceleration and deceleration are too small			
processing method	Check whether the value of cutting acceleration and fast moving acceleration in the motion parameters is 0, and whether the cutting speed is less than 3.			

Alarm number	513			
Alert content	The processing speed is 0			
processing method	Check whether the NC code does not specify F or the F value is 0.			

Alarm number	514			
Alert content	System reset axis absolute encoder zero bit in...			
processing method	Wait for the reset of the absolute encoder zero bit to be completed, then press reset to clear the alarm			

Alarm number	515			
Alert content	Axis n target position is out of bounds, line number n			
processing method	Check the shaft position corresponding to the line number and set a reasonable target position.			

Alarm number	518			
Alert content	The manual multiplier is 0.			
processing method	Change the manual feed ratio. When the manual speed ratio is not 0, the system will automatically remove the alarm prompt. If not removed, press reset.			

Alarm number	519			

Alert content	The automatic multiplier is 0.
processing method	Change manual feed ratio. When the automatic speed ratio is not 0, the system will automatically remove the alarm prompt. If not removed, press reset.

Alarm number	520			
Alert content	Macro program execution error.			
processing method	Shut down and restart.			

Alarm number	700-710			
Alert content	Axis 1 to 11 servo alarm.			
processing method	Please follow the following steps: 1. Check whether the emergency stop signal is triggered. If it is triggered, the alarm will be automatically cleared after the emergency stop is released; 2. Check whether the driver is in the disabled state or has a fault alarm. 1. Check whether the emergency stop signal is triggered. If it is triggered, the alarm will be automatically cleared			

	after the emergency stop is released; 2. Check whether the driver is in the disabled state or has a fault alarm.

Alarm number	720-730			
Alert content	Axis 1 to 11 servo is not enabled.			
processing method	Check whether the driver is disabled or has a fault alarm.			

Alarm number	740-750			
Alert content	Axis 1 to 11 servo enable failure.			
processing method	Check whether the driver is disabled or a fault alarm occurs.			

Alarm number	760-770			
Alert content	Negative hard limit for shaft 1 to 1.			
processing	Move the alarm shaft in the positive direction away from			

method	the negative hard limit, and the alarm will be automatically cleared.

Alarm number	780-790			
Alert content	Axis 1 to 11 is hard limit forward.			
processing method	Move the alarm shaft in the negative direction, away from the positive hard limit, and the alarm will be automatically cleared.			

Alarm number	880-884			
Alert content	The absolute encoder failed to read shaft 1 to 5.			
processing method	Please check whether the relevant parameter Settings in the "Encoder Parameters" section of "Parameter Settings" -> "Machine Tool Parameters" are reasonable.			

Alarm	930-934			

number				
Alert content	Axis 1 to 5 servo alarm.			
processing method	Check whether the driver is disabled or a fault alarm is present.			

Alarm number	1020			
Alert content	[%d] The main program failed to load.			
processing method	Please follow the following steps: 1、Please check whether the processing program exists in the controller; 2、Please check whether the processing procedure is damaged; 3、Please check whether the processing program is in NC format; 4、If the file exists and the format is correct, please reset and clear the alarm, then try to reload again; 5、If the reload fails, contact the supplier.			

Alarm number	1021			
Alert content	[%d] subroutine load failed.			
processing method	Please follow the following steps: 1、Check that the path of the subroutine call is correct; 2、Please check whether the processing program exists in the controller; 3、Please check whether the processing procedure is damaged; 4、Please check whether the processing program is in NC format; 5、If the file exists and the format is correct, please reset and clear the alarm, then try to reload again; 6、If the reload fails, contact the supplier.			

Alarm number	1023			
Alert content	[%d] Error reading code.			
processing method	Please follow the following steps: 1、Please check whether the processing procedure is damaged; 2、Please check whether the processing program is in NC			

	format; 3、If the file exists and the format is correct, reset and clear the alarm, then try again; 4、If it still fails, please contact the supplier.

Alarm number	1025			
Alert content	[%d] program is in a loop or exceeds the maximum number of lines allowed.			
processing method	Please follow the following steps: 1、Confirm the number of lines in the NC file 2、If you cannot log in to the highest authority, please contact the supplier.			

Alarm number	1040			
Alert content	[%d] Illegal character, L%d.			
processing	Confirm whether there are unsupported characters in the			

method	line referred to by the alarm. If yes, please delete it and continue. If no, contact the supplier.

Alarm number	1047			
Alert content	[%d] keyword count overflow (program segment is too long), L%d.			
processing method	Please optimize the number of keywords in the alarm line to ensure that it does not exceed the maximum value of 40 supported by the system.			

Alarm number	1102			
Alert content	[%d] axis position%d is out of the forward stroke, L%d.			
processing method	Check whether the axis coordinate of the alarm signal code exceeds the maximum travel set on that axis.			

Alarm number	1103			
Alert content	[%d] axis position%d exceeds the negative stroke, L%d.			
processing	Check whether the axis coordinate of the alarm signal			

method	code exceeds the minimum travel set for that axis.

Alarm number	1104			
Alert content	[%d]T value is abnormal, L%d.			
processing method	Check whether the alarm code T instruction is set reasonably and within the valid range [1,100].			

Alarm number	1108			
Alert content	The [%d]H value is abnormal, L%d.			
processing method	Check whether the H value of the alarm code is reasonable and within the effective range [1,100].			

Alarm number	1109			
Alert content	The [d]S value is abnormal, L%d.			
processing method	Check whether the S value of the alarm code is reasonable. The S value should be greater than 0.			

Alarm	1110			

number				
Alert content	[%d] D value is abnormal, L%d.			
processing method	Check whether the D value of the alarm code is reasonable and within the valid range [1,100].			

Alarm number	1111			
Alert content	[%d] F value is abnormal, L%d.			
processing method	Check whether the F value of the alarm code is reasonable. The F value should be greater than 0.			

Alarm number	1112			
Alert content	[%d]M value is abnormal, L%d.			
processing method	Check whether the M value of the alarm code is reasonable and within the valid range [0,1599].			

Alarm number	1115			
Alert content	The [%d] arc instruction is wrong, L%d.			
processing method	Please follow the following steps: 1. If there are other alarms related to the arc, please deal			

	with the relevant alarms first. 2. If there is no other arc-related alarm, check whether the two interpolation axes that make up the interpolation plane are missing; if so, the plane does not support the arc command. 3. If the above can not be solved, please contact the supplier.

Alarm number	1201			
Alert content	Lead axis alarm.			
processing method	Please follow the following steps: 1、Please check whether the spindle frequency converter shows an alarm. If there is an alarm, please refer to the user manual of the frequency converter for processing; 2、If the spindle frequency converter does not display an alarm, please check whether the signal cable between the controller and the frequency converter is connected reliably; 3、If the above investigation has not been resolved,			

	please contact the supplier. If the problem is resolved, power on the system again according to the formal startup steps.

Alarm number	1202			
Alert content	Zero return failure alarm.			
processing method	Please follow the following steps: 1. Check whether the origin switch signal is normal; 2. Check whether the parameters related to zero return are set correctly; 3. If the above troubleshooting is not resolved, please contact the supplier. If the problem is solved, reset and return to zero.			

Alarm number	1203			
Alert content	Water cooling electrical alarm.			
processing method	Reset after troubleshooting.			

Alarm number	1204			
Alert content	Low air pressure alarm.			
processing method	Please follow the following steps: 1、Please check whether the compressed air input switch is normally open; 2、Please check whether the compressed gas supply is normal? Is the air compressor normally opened? 3、Check whether the gas reaches the set pressure; 4、Please check whether the pressure gauge is normal? If it is damaged, please contact the after-sales service for maintenance; 5、Check whether the pressure output signal of the pressure gauge is correctly connected to the input end of the controller; 6、Please check whether there is a blockage in the internal airway of the equipment; 7、If the above investigation has not been resolved, please contact the supplier. If the problem is solved, please reset to remove the alarm.			

Alarm	1212			

number				
Alert content	Probe up not in place alarm.			
processing method	Please follow the following steps: 1、Check whether there is interference or cylinder pressure is normal when the probe rises; 2、Please check whether the signal status of the probe rising to the right position is abnormal. If damaged, please contact the after-sales maintenance for treatment. After the treatment, proceed to the next step; 3、Please check whether the probe rising signal is correctly connected to the controller input and the controller can receive the signal correctly; 4、Go to "device parameters" -> "constant parameters" and check the "probe rise timeout" parameter 5、If the above investigation has not been resolved, please contact the supplier. If the problem is solved, please reset to remove the alarm.			

Alarm number	1213			

Alert content	Probe down not in place alarm.
processing method	Please follow the following steps: 1. Please check whether there is interference or cylinder pressure is normal when the probe drops; 2. Please check whether the signal status of probe dropping in place is abnormal. If damaged, please contact after-sales maintenance. After processing, proceed to the next step; 3. Please check whether the probe down position signal is correctly connected to the input end of the controller, and the controller can receive the signal correctly; 4. Go to "Device Parameters" -> "Constant Parameters", and check the "Probe Down Time Out" parameter 5. If the above troubleshooting is not resolved, please contact the supplier. If the problem is solved, please reset to remove the alarm.

Alarm number	1218			

Alert content	Overtravel alarm for knife instrument.
processing method	Please follow the following steps: 1、Check whether the overtravel signal of the knife tester is correctly connected to the control input, and whether the controller can receive the signal correctly; 2、Check whether the signal of the knife tester is correctly connected to the input end of the controller, and whether the controller can receive the signal correctly; 3、If the above signal is not properly connected, please contact the equipment after-sales maintenance personnel to assist in handling; 4、If the above investigation has not been resolved, please contact the supplier. If the problem is solved, please reset to remove the alarm.

Alarm number	1240			
Alert content	Z1 inverter alarm.			
processing method	Please follow the following steps: 4、Please check whether the Z1 inverter shows an			

	alarm. If there is an alarm, please refer to the user manual of the inverter for processing; 5、If the Z1 inverter does not display an alarm, please check whether the signal cable between the controller and the inverter is connected reliably; 6、If the above investigation has not been resolved, please contact the supplier. If the problem is resolved, power on the system again according to the formal startup steps.

Alarm number	1331			
Alert content	The spindle speed has not reached the alarm for a long time.			
processing method	Please follow the following steps: 1、Please check whether the spindle acceleration meets the requirements, if not, please contact the supplier technical personnel to readjust the spindle acceleration and deceleration performance parameters; 2、Please check whether the spindle is blocked. If so, solve the relevant mechanical problems before proceeding			

	to the next step; 3、Check whether the speed arrival signal is correctly connected to the controller input and that the controller can receive the signal correctly; 4、If the above investigation has not been resolved, please contact the supplier. If the problem is solved, please reset to remove the alarm.

Alarm number	1350			
Alert content	Please go back to zero and determine the reference point.			
processing method	Perform a zero return operation.			

Alarm number	1400			
Alert content	The isolation door closed out of time.			
processing method	Please follow the following steps: 1. Check whether there is interference when the isolation door is closed or whether the cylinder pressure is normal;			

	2. Please check whether the signal status of the isolation door is abnormal. If damaged, please contact the after-sales maintenance for treatment. After the treatment, proceed to the next step; 3. Please check whether the isolation door closed properly signal is correctly connected to the input end of the controller, and the controller can receive the signal correctly; 4. Go to the "device parameters" -> "constant parameters" page and check whether the "isolation door shutdown timeout" parameter is set too small 5. If the above troubleshooting is not resolved, please contact the supplier. If the problem is solved, please reset to remove the alarm.

Alarm number	1401			
Alert content	The isolation door opened out of time.			
processing method	Please follow the following steps: 1. Check whether there is interference when the isolation door is open or whether the cylinder pressure is normal;			

	2. Please check whether the status of the signal that the isolation door is open in place is abnormal. If damaged, please contact the after-sales maintenance for treatment. After the treatment, proceed to the next step; 3. Please check whether the signal of the isolation door is properly connected to the input end of the controller, and whether the controller can receive the signal correctly; 4. Enter the "device parameters" -> "constant parameters" page, check whether the "isolation door open timeout" parameter is set too small; 5. If the above troubleshooting is not resolved, please contact the supplier. If the problem is solved, please reset to remove the alarm.

Alarm number	1499			
Alert content	System emergency stop			
processing method	Please follow the following steps: 1、Check whether the emergency stop switch is pressed; 2、Please check whether the emergency stop signal status is abnormal, if damaged, please contact after-sales			

	maintenance; 3、Check whether the emergency stop signal is correctly connected to the controller input, and the controller can receive the signal correctly;

Alarm number	1520			
Alert content	Target knife is not in the tool library, exit to change the tool.			
processing method	Please follow the following steps: 1. Check whether the target knife number is set correctly; 2. Enter the "Equipment Parameters" -> "Tool library parameters" page, check whether the "tool library capacity" parameter is set correctly;			

Alarm number	1521			
Alert content	At present, the knife is not in the scope of the tool library. Exit and change the tool.			
processing	Please follow the following steps:			

method	1. Please check whether the current knife number is set correctly; 2. Enter the "Equipment Parameters" -> "Tool library parameters" page, check whether the "tool library capacity" parameter is set correctly;

Alarm number	1524			
Alert content	If the knife fails, check whether the knife is damaged.			
processing method	Please follow the following steps: 1. Check whether the tool is damaged; 2. Go to the "Tool Settings" -> "Tool Life" page, and check whether the "wear value" parameter is set too small;			

Alarm number	1525			
Alert content	If the blade value exceeds the error, check whether the tool is damaged.			
processing method	Please follow the following steps: 1. Check whether the tool is damaged; 2. Go to the "Tool Settings" -> "Tool Life" page, and check whether the "break value" parameter is set too			

	small;

Alarm number	1526			
Alert content	The current number of cuts is 0, but the spindle detects a cut.			
processing method	Please follow the following steps: 1. Check whether there is a blade on the spindle, if there is a blade, remove the blade or change the blade number; 2. Check whether the parameters related to knife cutting are set correctly;			

Alarm number	1528			
Alert content	The target tray was not found.			
processing method	Please follow the following steps: 1. Check whether there is a target material tray in the silo; 2. Check whether the RFID tag of the target tray is damaged; 3. Please check whether the scanning gun is aimed at the			

	RFID tag position of the material tray when scanning the code. If not, enter the "Equipment Parameters" -> "Bin Parameters" page and modify the material tray position parameters;

Alarm number	1529			
Alert content	The warehouse is full and there is no place to drop the material.			
processing method	Please follow the following steps: 1. Check whether the material bin is full; 2. Check whether the RFID tag of the target tray is damaged; 3. Please check whether the scanning gun is aimed at the RFID tag position of the material tray when scanning the code. If not, enter the "Equipment Parameters" -> "Bin Parameters" page and modify the material tray position parameters;			

Alarm number	1530			
Alert content	Target material number is greater than the capacity of the			

	silo.
processing method	Please follow the following steps: 1. Please check whether the target material number is correct; 2. Enter the "Equipment Parameters" -> "Bin Parameters" page, and check whether the "Bin capacity" parameter is set too small;

Alarm number	1531			
Alert content	The target material number is 0 or less than 0.			
processing method	Please check whether the target material number is correct;			

Alarm number	1532			
Alert content	The blade failed and there was still a tool on the spindle.			
processing method	Please follow the following steps: 1. Check whether the gas reaches the set pressure; 2. Check whether there is interference when the spindle			

	chuck is opened;

Alarm number	1533			
Alert content	There is a material tray at the material warehouse. Do not discharge materials.			
processing method	Please follow the following steps: 1. Please check whether there is a material tray in the feeding position of the silo, and take it out if there is one; 2. Please check whether the signal status of "product detection" is abnormal. If damaged, please contact after-sales maintenance; 3. Check whether the "product detection" signal is correctly connected to the input end of the controller, and the controller can receive the signal correctly;			

Alarm number	1534			

Alert content	The turntable has a material tray. Do not put in material.
processing method	Please follow the following steps: 1. Please check whether there is a material tray in the turntable, if so, take it out; 2. Please check whether the signal status of "product detection" is abnormal. If damaged, please contact after-sales maintenance; 3. Check whether the "product detection" signal is correctly connected to the input end of the controller, and the controller can receive the signal correctly;

Alarm number	1540			
Alert content	Z2 did not grab the tray.			
processing method	Please follow the following steps: 1. If the material tray has been picked up on Z2 axis, please check whether the "product detection" switch is abnormal; 2. If the material tray is not picked up on Z2 axis, please			

	check whether the position of the material tray is correct when picking up the material tray on Z2 axis. If not, enter the "Equipment Parameters" -> "Material Tray Parameters" page and modify the material tray position parameters;

Alarm number	1541			
Alert content	Z2 is not removed to the tray.			
processing method	Please follow the following steps: 1. If the material tray is removed from the Z2 axis, check whether the "product detection" switch is abnormal; 2. If the Z2 material tray is not removed, please check whether the position of the Z2 material tray is correct. If not, enter the "Equipment Parameters" -> "Bin Parameters" page and modify the position parameters of the material tray;			

Alarm number	1550			
Alert content	The scan failed. Check the scanner.			

processing method	Please follow the following steps: 1. Check whether the serial port of the code scanning gun is connected to the controller, or whether the line is loose; 2. Enter the Windows device management page to check whether there is a COM port for the scanner; 3. Please check whether the scanning code communication parameters are set correctly.

Alarm number	1762-1779			
Alert content	The tool life of No.1 to No.18 has been cut.			
processing method	Please follow the following steps: 1. Replace the new tool; 2. Go to the "Tool Settings" -> "Tool Life" page and reset the current time;			

Alarm number	3002			
Alert content	The feed rate is 0 and it can not move			
processing method	Please follow the following steps: 1、Check whether the feed ratio knob (or button) on the control panel is set to 0. If so, adjust the appropriate ratio;			

	2、If the panel is not set to 0, please check the PLC related ratio control module to confirm whether the panel signal is normal; 3、If the above investigation has not been resolved, please contact the supplier.

Alarm number	3011			
Alert content	In the engine			
processing method	Resume stop or wait for action to complete.			

Alarm number	3013			
Alert content	The knife is in the process of being sharpened			
processing method	Resume stop or wait for action to complete.			

Alarm number	3016			
Alert content	Back to the origin of the workpiece			
processing	Resume stop or wait for action to complete.			

method	

Alarm number	3017			
Alert content	Back to the fixed point			
processing method	Resume stop or wait for action to complete.			

Alarm number	3040			
Alert content	The security door has been opened.			
processing method	Please follow the following steps: 1、Check whether the safety door is not closed properly due to interference or foreign matter; 2、Please check whether the security door closure signal is abnormal, if damaged, please contact after-sales maintenance; 3、Check whether the safety door close signal is correctly connected to the controller input, and the controller can receive the signal correctly; 4、If the above investigation has not been resolved, please contact the supplier.			

	If the problem is solved, please reset to remove the alarm.

Alarm number	3100			
Alert content	One-click material cut			
processing method	Resume stop or wait for action to complete.			

Alarm number	3101			
Alert content	Benchmarking the knife			
processing method	Resume stop or wait for action to complete.			

Alarm number	3102			
Alert content	In the process of manually changing the blade			
processing method	Resume stop or wait for action to complete.			

Alarm number	3103			
Alert content	During material pan inspection			
processing method	Resume stop or wait for action to complete.			

Alarm number	3104			
3104				
Alert content	Calibration preparations in progress			
processing method	Resume stop or wait for action to complete.			

Alarm number	3105			
Alert content	Calibration in progress			
processing method	Resume stop or wait for action to complete.			

Alarm number	3106			
Alert content	In square calibration			

processing method	Resume stop or wait for action to complete.

Alarm number	3107			
Alert content	Titanium column calibration in progress			
processing method	Resume stop or wait for action to complete.			

Alarm number	3120			
Alert content	Looking for vacancies			
processing method	Resume stop or wait for action to complete.			

Alarm number	3122			
Alert content	Standard ball calibration in progress			
processing method	Resume stop or wait for action to complete.			

Alarm number	3123			
Alert content	Standard ball calibration in progress			
processing method	Resume stop or wait for action to complete.			

Alarm number	3124			
Alert content	In the calibration interval			
processing method	Resume stop or wait for action to complete.			

Alarm number	3125			
Alert content	Titanium column calibration			
processing method	Resume stop or wait for action to complete.			

Alarm number	3300-3311			
Alert	Negative soft limit for shaft 1 to 12.			

content	
processing method	When the alarm shaft is far away from the negative soft limit, the system will automatically release the alarm prompt. If not released, please press reset.

Alarm number	3320-3331			
Alert content	Positive soft limit for shaft 1 to 12.			
processing method	When the alarm shaft is far away from the soft limit, the system will automatically release the alarm prompt. If not released, please press reset.			

Alarm number	3340			
Alert content	The target position of shaft n is beyond limit.			
processing method	The alarm axis is set at a reasonable target position. When the positive and negative limits are within, the system will automatically release the alarm prompt. If not, press reset.			

10.2.2 Hardware issues

fault phenomenon	failure cause	Method of exclusion
Electric spindle heating	Heat caused by excessive load: 1. Improper processing parameters 2. Severe tool wear	1. Modify process parameters 2. Replace the tool in time
	Cooling failure: 1. The ambient temperature is too high 2. Improper cooling medium Coolant algaecide Cooling pipe blockage 5. Cooling machine failure 6. Spindle coolant channel blockage	1、 Add air conditioning to improve ambient temperature 2、 Replace the cooling oil with cooling water (add rust and algae additives) to eliminate the cooling machine fault 3、 Change the coolant regularly and clean the cooling system 4、 Clearing the pipeline 5、Notify the manufacturer to process 6. Notify the manufacturer to deal with it

	Poor lubrication condition of bearing: 1. Initial installation and use of new spindle or electric spindle after maintenance 2. Restore an electric spindle that has not been used for a long time 3. Failure of bearing oil (loss, contamination and deterioration) 4. Bearing wear	1~ 2 The two cases belong to the first use of the electric spindle, which should be used after running-in according to the requirements. 3~ 4 The two cases need to be notified to the manufacturer for treatment.
fault phenomenon	failure cause	Method of exclusion
Rotor jam or running belt stiff	1、 The bearing is severely worn or the bearing is blocked by dust and debris. 2、 The electric spindle is stored in a humid environment for a long time and the protection is not proper, resulting in the internal parts of the electric spindle rust and jam. 3、 The front rotating part of the electric spindle is deformed by collision and stuck. Or rotation due to loosening or foreign matter affecting and flying rotating parts cause jamming. 4、 The electric spindle with the loose tool cutting mechanism is in the loose tool cutting state, and the cylinder piston rod is pressed	This type of fault is generally not handled by the customer and should be notified to the manufacturer.

	together with the rotor pull rod 5、 The electric spindle with the screw and pull knife mechanism is in the clamping state of the tool, but the cylinder can not be reset normally.	
The rotor can be rotated normally by hand, but the electric spindle does not turn after opening the speed	1，The connecting wire of the electric spindle is loose or disconnected 2. Abnormal electrical performance of the electric spindle (insulation decrease, three-phase resistance unevenness) 3. Short circuit or open circuit in the connecting line of the electric spindle 4. Inverter fault or abnormal communication of inverter	1. Check whether the connecting line of the electric spindle is loose and whether the joint is oxidized. Clean it up and replug it 2. If the frequency converter has an alarm, notify the manufacturer for treatment 3. Disconnect the two ends of the electric spindle connection wire, and use a multimeter to measure whether the two ends of the spindle connection wire are connected, and determine

		whether there is short circuit between different phases 4. Notify the manufacturer to deal with it Note: This type of electrical related fault is best Dealing with it by professionals
fault phenomenon	failure cause	Method of exclusion
The electric spindle runs with loud noise	Accidental noise: 1. The bearing is slightly worn or there is foreign matter in the bearing or the bearing lubrication is poor 1. The bearing is slightly worn or there is foreign matter in the bearing or the bearing lubrication is poor 2. Friction between bearing cage and inner and outer rings 3. The bearing is subjected to impact (such as cutting and colliding with the blade), resulting in damage to the bearing	Accidental noise: Accidental noise mostly occurs in the early stage of bearing wear. The problem can be solved through reasonable running-in, and the spindle can continue to be used. If the problem is not solved blindly, the bearing wear of the spindle will be aggravated and the service life will be greatly shortened. Accidental noise: Accidental noise mostly occurs in the early stage of bearing wear. The problem can be

		solved through reasonable running-in, and the spindle can continue to be used. If the problem is not solved blindly, the bearing wear of the spindle will be aggravated and the service life will be greatly shortened.
	Persistent noise: 1、 The bearing is severely worn or a large number of foreign matter enters the bearing 2. The rotating part and non-rotating part of the electric spindle are rubbed or foreign matter is introduced Create friction in the gap between them 3. The electric spindle has large vibration and poor dynamic balance 4. Bearing pre-tension failure and radial movement of rotor 5. The continuous high temperature operation of the electric spindle causes poor bearing lubrication	When the electric spindle produces continuous noise, it is basically impossible to deal with it in the field of use. It needs to be judged by the technical staff of the cutting machine on site. If necessary, it should be returned to the factory for maintenance in time. Otherwise, it will cause the coil burnout of the electric spindle or other serious consequences.

Tool runout is large	1、 Rotor bore, spring chuck, pressure cap and other parts are added Debris not cleared 2、 The tool holder is too short 3、 The tool was clamped incorrectly 4. Rotor cone hole, spring chuck, pressure cap and so on after long-term use The precision is lost due to part wear or spring collet deformation	1、Clean and maintain the electric spindle as required to ensure the cleanliness of the tool clamping parts 2、Do not use a tool that is not long enough to ensure that the tool has sufficient clamping length into the chuck 3、Follow the correct method to re-clamp the tool 4、Wear of the pressure cap and chuck should be replaced in time, and the wear of the rotor should also be returned to the factory for maintenance
fault phenomenon	failure cause	Method of exclusion
Turn the nut thread or press cap thread slip	1、Forcing the rotor thread or pressure cap when it is not clean Removing and installing the pressure cap 2、The pressure cap is not placed correctly and installed forcibly when installing the pressure cap	1、 Clean the rotor, pressure cap, etc. as required when installing and removing the tool to prevent damage Bad pressure caps or rotors should be replaced in time 2、 When installing the cap, it should be placed in the right position, and then add force to tighten when the hand is smooth. Damaged parts should

		be replaced in time
When the tool is removed, the tool and chuck cannot be separated from the rotor along with the pressure cap	1. The groove on the pressure cap is worn out and cannot normally hold the chuck 2. The chuck is stuck in the conical hole due to improper installation of the tool	pliers to remove the tool and chuck, and dispose of damaged products as waste. 1、 1. Replace the worn parts 2、 Correctly attach the tool
When the tool is removed from the electric spindle with a loose tool cutting mechanism, the tool holder cannot be removed	1、 Cutting or colliding the handle with the rotor cone during processing Bolted joints, or the handle is clamped to the spindle for a long time without moving 2、 The air pressure of the machine tool is insufficient 3、 Fault of solenoid valve controlling screwdriver 4、 Internal fault of screw mechanism	1、 In the knife state, use copper and aluminum blocks and rods Alternatively, the rubber hammer is struck radially with an appropriate force on the handle. If it cannot be removed, notify the manufacturer 2、 Check the air pressure of the machine tool and ensure the machine tool The gas supply pressure is normal (the general machine tool requires the gas source pressure between 0.52~0.7MPa, and the machine tool

		with a 62mm diameter spindle with loose pull function requires the gas source pressure above 0.6MPa) 3、 3~4 In both cases, notify the manufacturer for processing
fault phenomenon	failure cause	Method of exclusion
The electric spindle with the pine and pull knife mechanism indicates that "the spindle gripper does not detect the clamping	1、 The handle is not properly loaded, resulting in the pull claw clamping the handle position Inappropriate 2、 Tool clamp sensor fault or signal line fault 3、 Mechanical failure of slalom blade mechanism	1、Release the handle and grab the knife again 2、2~3 need to notify the manufacturer for solution

state"		
The electric spindle with the loose tool mechanism indicates that "the spindle is not detected to be loose"	1. No loose knife intake 2 Tool release sensor fault or signal line fault 3. Mechanical failure of loosening and pulling mechanism	Notify the manufacturer to resolve the problem
The electric spindle with a loose knife mechanism has poor tool change accuracy or large tool holder jump	1. The spindle conical hole and end face are dirty or rusty 2. The main shaft cone hole and end face have scratches	1. Clean and remove rust 2. Notify the manufacturer to deal with it

Some causes and solutions of machine tool failure

As mechanical equipment, the cutting machine can not be fault-free in the process of use! Some faults

must be handled by the manufacturer, and some faults can be handled by the user. The following can be listed as a reference for the faults that can be handled by the operator and the handling methods.

The best way to avoid failure is to operate the machine according to the operation specifications and maintain the machine carefully.

fault phenomenon	failure cause	Method of exclusion
The machine tool cannot be powered on	1、 The "Emergency stop" on the control cabinet operation panel or the machine "Emergency "Stop" is pressed down (some machine tools) 2、 The door is open in the control cabinet and is not closed 3. Poor connection of 37-core cable 4. The I/O converter is abnormal	1.弹起 "急停" 按钮 2. Close the door 3. Reconnect the 37-core cable 4. Replace the I/O converter
The external circuit trips after the engine is powered on	1、Whether the line load can meet the requirements of the cutting machine. Especially when multiple cutting machines are used at the same time 2、Whether the rated current of the air switch in the circuit can meet the requirements of the cutting machine 3、The safety ground is on the neutral line	1、The electrician should redistribute the three-phase circuit load to balance the load so that the circuit can be used safely 2、Change the air switch to suit your needs 3、Redone proper grounding

When the origin is set, the X and Y axes of the machine tool move in the positive direction or the Z axis moves downward	1. Check whether the light is damaged 2. The spring of the travel switch does not bounce up 3. Whether the machine tool transfer plate is short circuit due to water	1. Replace the light check 2. Replace the travel switch 3. Blow dry or replace the machine tool connector
fault phenomenon	failure cause	Method of exclusion
A shaft of the machine tool does not move	1. Poor contact of control card 2. Poor contact between 37-core wire and I/O converter 3. The electric spindle cable is not connected or in poor contact	1、 Redeploy control card 2、 Replug the 37-core wire 3、 Replug the main shaft cable
A shaft is out of alignment during processing	1. Loose coupling 2. Press the bearing end cover loose 3. The circuit connection is not firm (especially the misaligned shaft drive part)	1、Tighten the hex screw on the coupling or replace the coupling 2、Turn the end cap clockwise and then tighten it with a screw 3、Reconnect all the connecting wires
Multi-axis misalignment	1、Multi-axis misalignment caused by mechanical reasons is rare, and most of them	1、Reconnect the control card, or replace the control computer, or add a

occurs during processing	are related to control computer, control card plug-in and power grid stability 2、Check whether the cable lines and other control routes are firmly connected	voltage regulator, or perform grid phase balance 2、Reconnect the cables
A one-way movement occurs in one of the shafts during processing	1、 Check if the control card is properly inserted 2. Check whether the 37-core wire is connected firmly	1、Plug the control card and install it securely 2、Connect the 37-core wire firmly
The Z axis is cut during processing	ile and processing path error he Z-axis coupling is loose here are excesses blocking the Z-axis light inspection 4. The Z-axis light detection signal is unstable , the electric spindle clamp is loose	1、Redesign the machining path 2、Tightening coupling 3、Remove excess material from Z-axis light inspection 4、Replug cable 5、Tighten the electric spindle clamp
fault phenomenon	failure cause	Method of exclusion
The electric spindle does not turn after the spindle speed is turned on	1、The main shaft cable is not connected or the cable is abnormal 2、Inverter abnormality 3、Electrical spindle failure	1、Reconnect the spindle or check the cable 2、Change the frequency converter 3、Change the electric spindle
After entering	Whether the feed ratio is set to 0	Rotate the feed rate switch to the

the automatic machining interface, the machine tool does not move (manual, handwheel can move)		appropriate value
Abnormal sound of Z-axis movement, or "overload" alarm of servo driver during processing	The Z-axis brake is not open	1、Check brake cable connections 2、Check brake power supply (24VDC)
After the machine is powered on, the inverter has a display and the servo driver does not have a display	1、Total power supply is out of phase 2、Servo transformer fault	1、Check the three-phase voltage at the power supply line of the machine tool 2、Replace servo transformer

10.2.3 Processing quality issues

1. Cutting edge collapse

Cause of problem:

1. The needle is worn and damaged, and the edge of the tooth design data is too thin.

2. Cutting equipment is not calibrated or the calibration is not accurate.

3. Improper processing strategy and material selection.

4. The depth of reverse groove in denture design is too large.

5. The device software is wrong.

6. Too much vibration during machining process of machine tool.

Rx ：

1. Check the tooth design data, replace the worn or damaged needle, and perform cutting test.

2. Use a new knife to recalibrate the cutting equipment and check the relevant data.

3. Confirm the processing strategy and processing materials to ensure that they are consistent with the equipment processing and correspond one by one

4. Adjust the design of denture to avoid excessive depth of reverse groove.

5. Check and repair the CAM software and control system software of the cutting equipment.

6. Check whether the machine tool is unstable or not, if not, the processing parameters should be reduced.

2. Common processing has obvious knife marks

Cause of problem:

1. Tool wear or unsharp edge.

2. Improper setting of processing parameters (feed speed, cutting depth and rotation speed are not matched).

3. Machine tool vibration or spindle radial jump is too large.

4. Workpiece displacement caused by loose fixture.

5. The tool path planning is unreasonable (the step size is too large and the cutting direction is wrong).

6. Long time cutting machine cooling lubrication is insufficient to cause cutting heat deformation.

7. The hardness of the material is too high or there are uneven impurities.

8. CAD/CAM programming residual height is set too high.

9. Tool geometry Angle and material mismatch.

10. The wear of machine tool guide rail or screw rod causes the decrease of motion accuracy.

Rx ：

1、Change the tool.

2、Adjust the processing parameter setting.

3、Check whether the machine is shifted and reduce the cutting parameters appropriately.

4、Strengthen staff training.

5、Optimize the processing strategy.

6、The cutting machine should be placed at room temperature.

7、Verify tests and replace materials.

8、Optimize the CAM path.

9、Change the needle.

10、The warranty period can be refurbished free of charge.

3. Large error between processed products and models

Cause of problem:

1、The model has a large concave, and the design parameters are not reasonable, including the adhesive gap parameter and needle compensation parameter.

2、The material shrinkage ratio is inconsistent with the input value of the build plate during layout.

3、 sintering warpage 。

4、Model deformation.

5、The processing strategy is abnormal.

6、The machine tool is not regularly calibrated or the calibration operation is incorrect.

7、Machine tool shaft offset.

8、The effective length of the needle does not meet the actual length of the restored body being processed.

9、There was a slight human collision with the machine tool, but the field personnel ignored it, so the machine was not calibrated and tested before processing.

Rx ：

1、Redesign and adjust parameters reasonably.

2、Strengthen personnel management training and assessment.

3、Test the temperature curve of the crystallization furnace, change the sintering placement position, or replace the sintering beads.

4、Strengthen the training of model placement conditions and molding process operation. The 3D printing technology of model printing requires strict training on printer accuracy, printing material, printing parameters, model cleaning, light curing time, etc.

5、Optimize the processing test before use.

6、Strengthen personnel management training and maintain equipment maintenance awareness regularly.

7、Contact the after-sales engineer to connect with the equipment.

8、Change the length of the needle and test it. Use it after passing the test.

9、Strengthen personnel management training system and assessment.