
YRC-8PRO Dental-Grade Milling Machine Product Manual

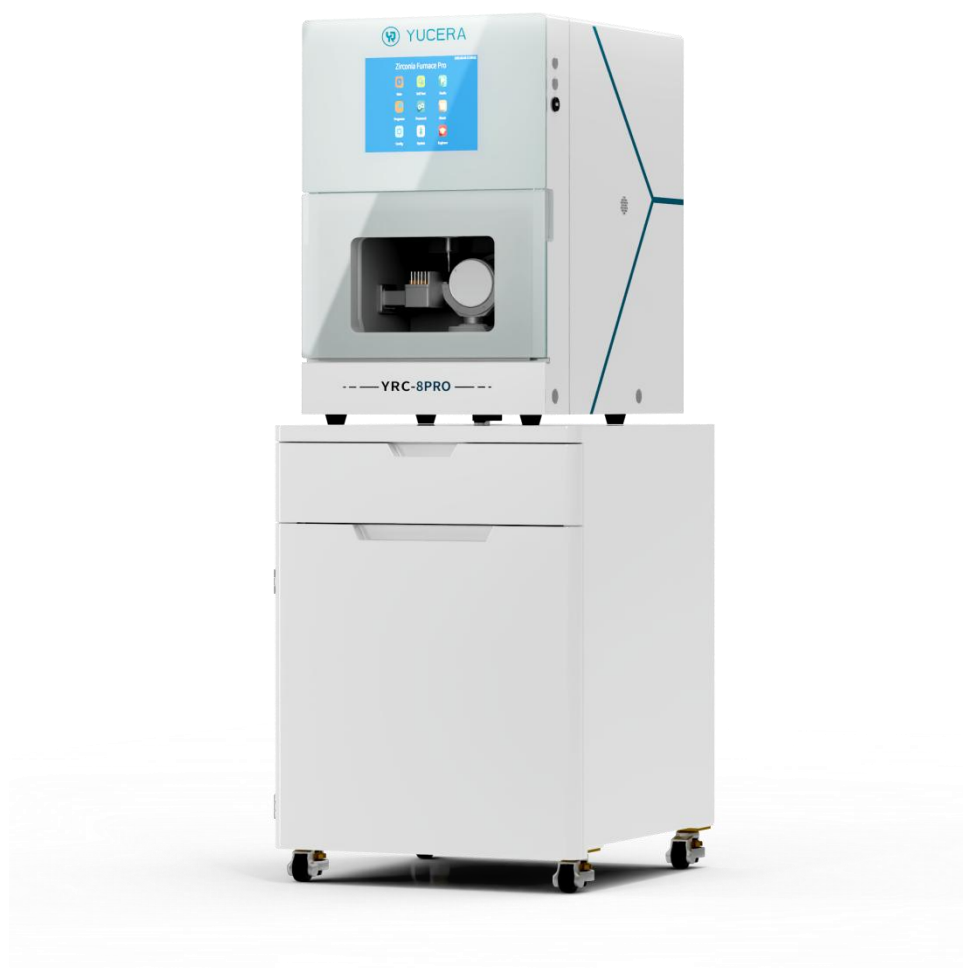


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I. BASIC INFORMATION

1.1 Manual usage instructions

This manual primarily provides detailed information and usage guidelines for the YRC-8PRO dental milling machine manufactured by YUCERA.

By reading this manual, you will learn about the construction of the YRC-8PRO dental milling machine, descriptions of each module's functions, the steps for machining products with the YRC-8PRO dental milling machine, as well as post-operation product maintenance and troubleshooting procedures in the event of malfunctions.

Machine Model: YRC-8PRO Dental Milling Machine.

This manual is divided into ten sections: Basic Information, Safety Instructions, Equipment Information, Technical Specifications, Installation and Transportation Environment, Machine Operation, Operating Instructions, Software Instructions, Maintenance, and Troubleshooting. It provides a comprehensive overview of the YRC-8PRO and its operating procedures.

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 milling 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.

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 milling 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	YRC-8PRO Dental-Grade 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 tool diameter	6mm
Number of knives	18
work pattern	Dry Milling and Wet Milling
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 milling machine air pipe should be more than 95L/min and stable.

2. Pressure requirement: the air pressure of the milling 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 milling 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, Worknc and other

typesetting software.

8PRO milling 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 milling machine until they are screwed into the bottom of the screw.
4. 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 milling 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 $\Phi 18\text{mm}$ 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:

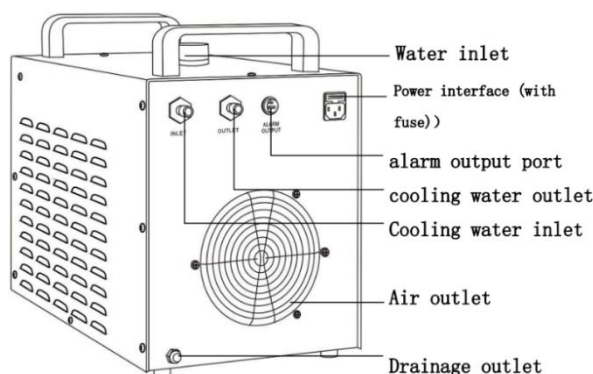
- 1、 Total power supply: The power supply used is single-phase AC 220V 50/60Hz voltage.
- 2、 LAN: Connect to the network through this network port.
- 3、 PUMP: Power interface for the pump
- 4、 FXT: Automatic start/stop signal interface for vacuum cleaner (only used for dry milling, wet milling is not connected).
- 5、 USB: WIFI receiver
- 6、 CF: milling 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 milling 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).

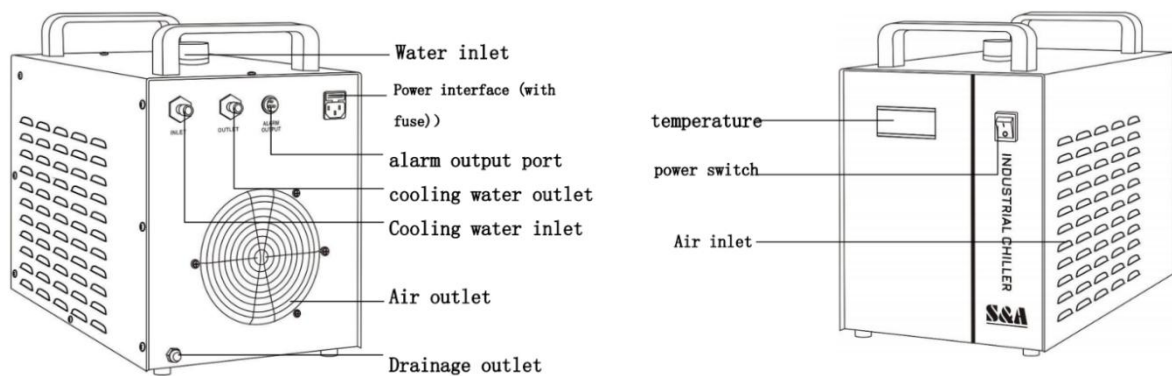


4. Connect the power plug of the spindle water cooler to the CHILLER port at the rear of the milling machine (5-core aviation plug), and connect the other end of the water cooler to the power port and alarm signal interface of the water cooler.

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 Milling fluid pipe connection (wet milling 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 milling fluid tank and drying it, fill it with water-soluble or oil-based milling fluid recommended by the manufacturer. For water-soluble milling fluid, the ratio should be approximately 1:8 (1L of milling fluid per 8L of water). When using oil-based milling 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 connector on the pump unit to the lower-left corner inside the base cabinet; in dry-milling mode, this connector can be disconnected.
- ⑥ When the equipment is used frequently, it is necessary to check the depth and temperature of the milling fluid at the time of morning and evening. If the milling fluid level is low, it is necessary to add new milling oil to the tank in time to avoid safety accidents caused by high temperature of milling oil. (Maintenance)

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

About milling fluid

Metal milling Fluids: It is recommended to use water-soluble milling 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 milling interface under high pressure to reduce tool wear and erosion.

Glass and ceramic milling 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 milling fluid.

Full synthetic water-based milling 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 milling 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

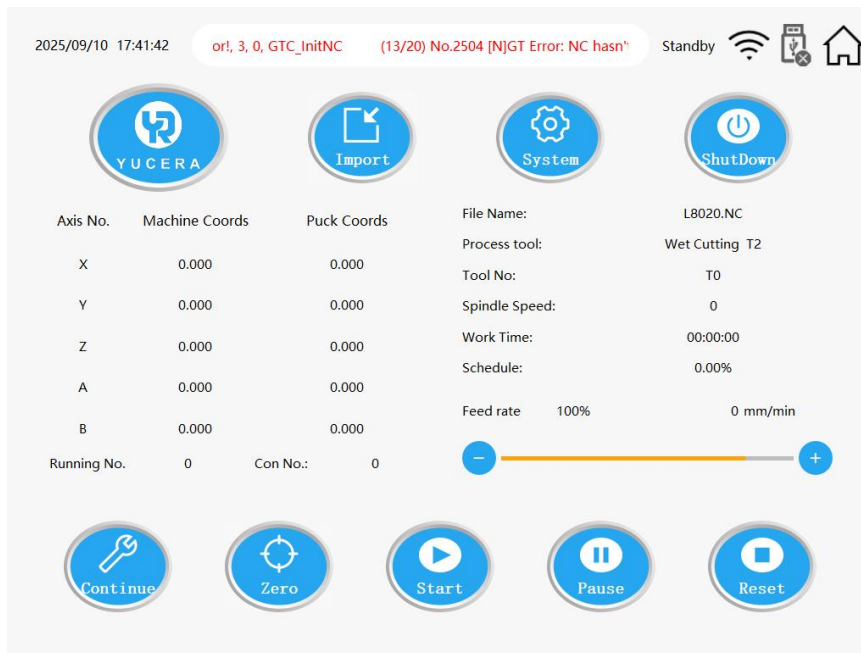
- ① The machine lighting lamp works normally, and the machine back fan runs normally.
- ② Confirm that no foreign body is stuck in the AB axis.
- ③ Click "zero" to return to zero. After the completion of returning to zero, there is no abnormal alarm on the interface and the system starts normally.

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.

2025/09/10 14:47:23

(1/1) No.1203 [p]Water cooler malfunction

Running display

Running line number and breakpoint line number are displayed

Running No.	0	Con No.:	0
-------------	---	----------	---

Process display

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

Feed rate

100%

0 mm/min

-

+

5.2.2 Set up the page introduction

Click  the button to enter the Settings page

Coordinate: Coordinate setting page

2025/09/10 14:48:47

(1/1) No.1203 [p]Water cooler malfunction

Standby

Coordinate

Device

Tool

System

Diagnosis

Manual

Coordinate	X	Y	Z	A	B
Default	94.801	-49.500	-15.686	0.017	0.014
Offset	0.000	0.000	-0.003	0.000	0.004
G54	94.801	-49.500	-15.683	0.017	0.010
G55	94.801	-49.500	-15.683	0.017	0.010

B

C

D

E

F

G

Amend setting page

Name	Value
B	1
C	1
F	8
D	1
E	1
G	8

Amend

Save

Axis alignment

Calib Titanium

MCS

X

Y

Z

A

B

78.899

-49.299

1.998

-0.002

-0.095

✘Amend: Amend button.

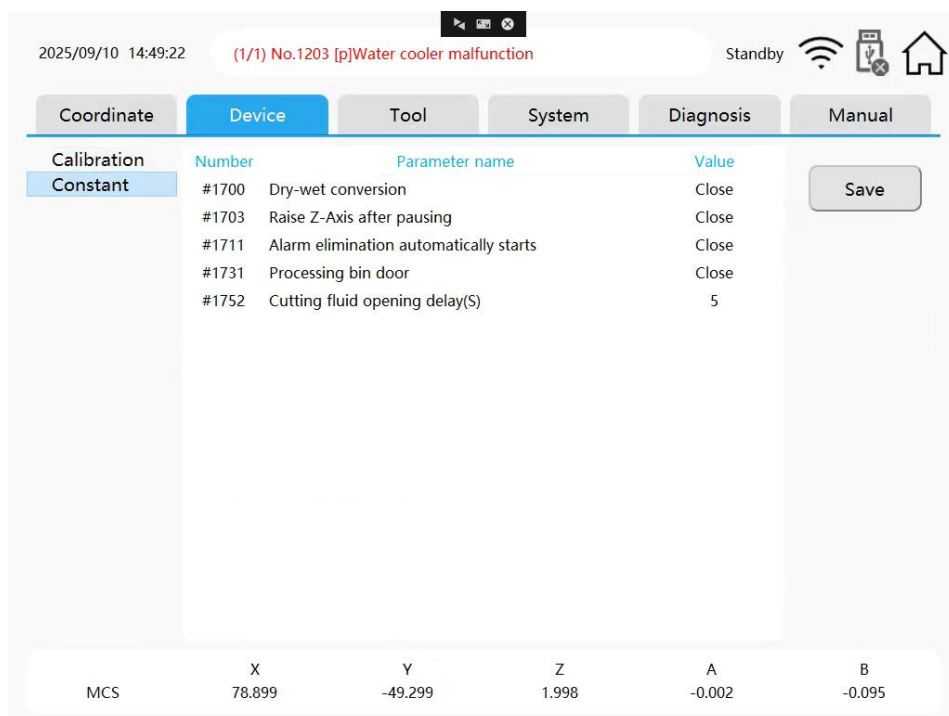
✘ Record: Record, used to view previous axis data.

✘ 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



Number	Parameter name	Value
#1700	Dry-wet conversion	Close
#1703	Raise Z-Axis after pausing	Close
#1711	Alarm elimination automatically starts	Close
#1731	Processing bin door	Close
#1752	Cutting fluid opening delay(S)	5

MCS X 78.899 Y -49.299 Z 1.998 A -0.002 B -0.095

✘ #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: milling fluid opening delay setting item.

✘ Save: Save Settings button.

Tool: Wheel pin Settings page

2025/09/10 14:49:52

(1/1) No.1203 [p]Water cooler malfunction

Standby



Coordinate

Device

Tool

System

Diagnosis

Manual

Tool Life

Tool Info

No.	Time Used(min)	Preset Lifetime(min)	Progress
1	0	1000	0%
2	0	1000	0%
3	0	1000	0%
4	0	1000	0%
5	0	1000	0%
6	0	1000	0%
7	0	1000	0%
8	0	1000	0%
9	0	1000	0%
10	0	1000	0%
11	0	1000	0%
12	0	1000	0%
13	0	1000	0%

Save

Wet Cutting

Lifespan Off

Reset Time

Tool Life: Tool life Settings page

- ✂ Save: Save the data button. (Car needle life setting)
- ✂ Wet milling: Turning pin life dry/wet milling conversion
- ✂ Lifespan Off: Enable to turn off the tool life alarm
- ✂ Reset Time: Count reset

2025/09/10 14:50:04

(1/1) No.1203 [p]Water cooler malfunction

Standby



Coordinate

Device

Tool

System

Diagnosis

Manual

Tool Life

Tool Info

T01

Ball-end cuttersD3.0-Metal

Diameter 3.0 Length 50.0 Space 12.5 Handle-D 6.0



T02

Ball-end cuttersD2.0-Metal

Diameter 2.0 Length 50.0 Space 12.5 Handle-D 6.0



T03

Ball-end cuttersD1.5-Metal

Diameter 1.5 Length 50.0 Space 8.0 Handle-D 6.0



T04

Ball-end cuttersD1.0-Metal

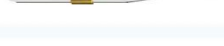
Diameter 1.0 Length 50.0 Space 8.0 Handle-D 6.0



T05

Ball-end cuttersD0.5-Metal

Diameter 0.5 Length 50.0 Space 4.0 Handle-D 6.0



T06

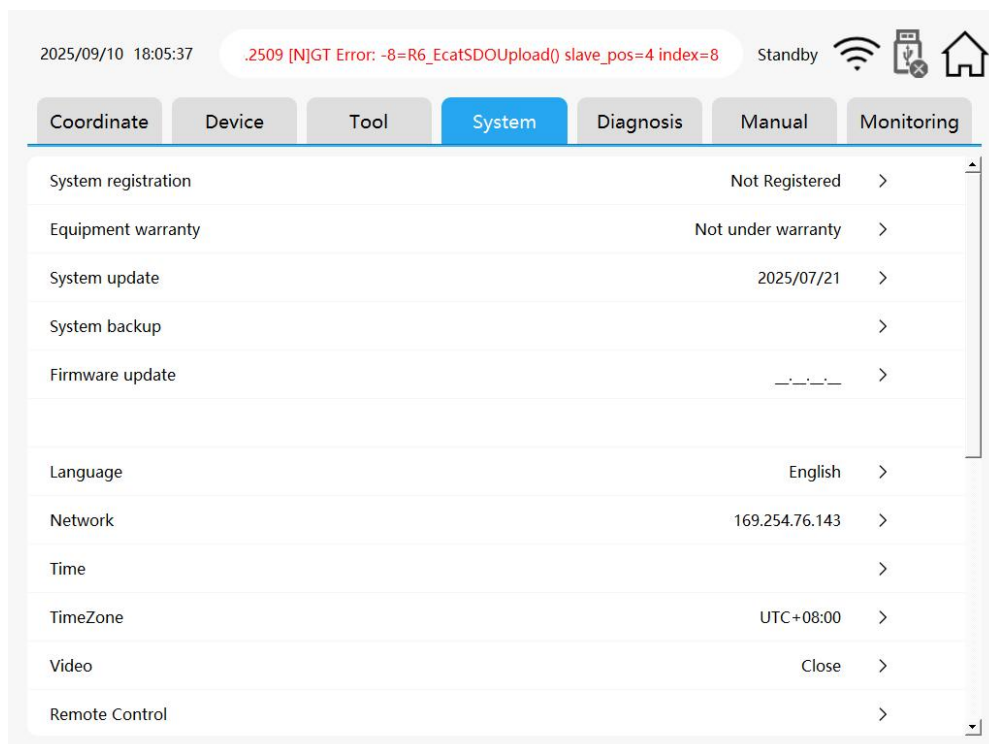
Round nose cutterD2.0-Metal



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.

2025/09/10 14:50:51

(1/1) No.1203 [p]Water cooler malfunction

Standby







Coordinate

Device

Tool

System

Diagnosis

Manual

IO Status

Axis Status

Input

Output

X0.0

Tool set signal



X0.1

Probe signal



X0.4

Emergency



X0.5

Spindle alarm



X0.6

Z1 Zero speed



X0.7

Speed arrival



X0.8

Water cooler signal



X0.9

Principal air pressure



X0.10

Tool changing pressure



X0.11

Processing bin



X0.12

Tool limit



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

Axis status display interface

2025/09/10 14:51:14

(1/1) No.1203 [p]Water cooler malfunction

Standby



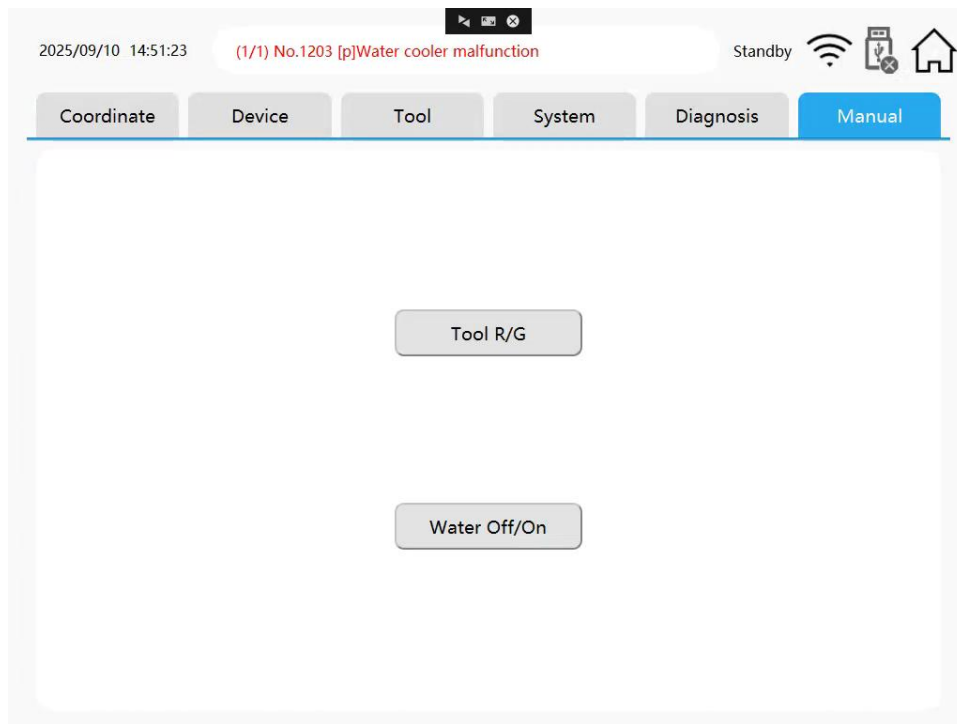
Coordinate	Device	Tool	System	Diagnosis	Manual	
IO Status						
Axis Status		X	Y	Z	A	B
Servo alarm						
Home						
Positive limit						
Negative limit						
Limit enabled						
Home capture						
Index capture						
Follow out						
Motor enable						
Motor in place						
Shaft limit offset		0.000	0.000	0.000	0.000	0.000

※ 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



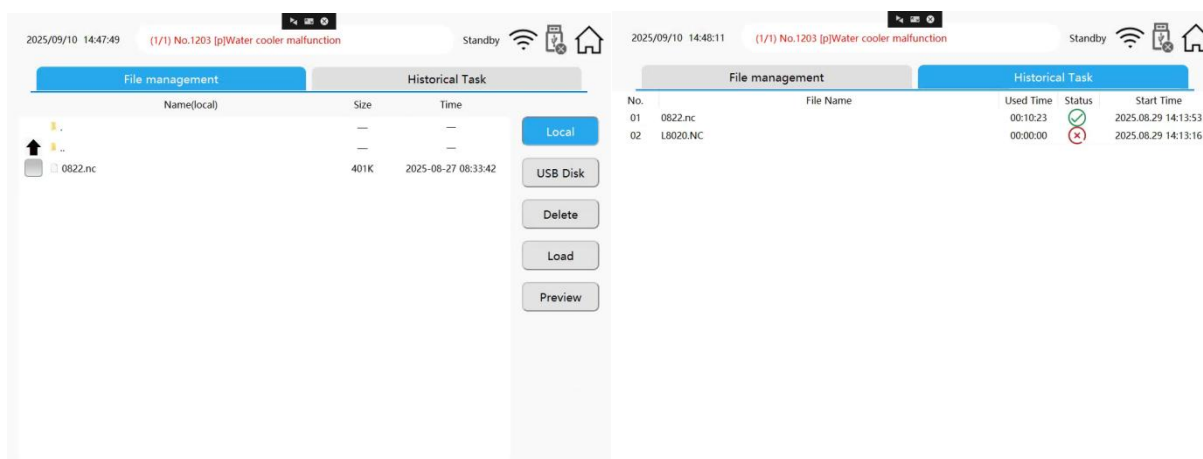
Note: Tool R/G: spindle chuck clamping and releasing function, used for spindle needle replacement and spindle maintenance.

※ Water Off/On: milling 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

MCS

X0.000

Y0.000

Z0.000

A0.000

B0.000



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.



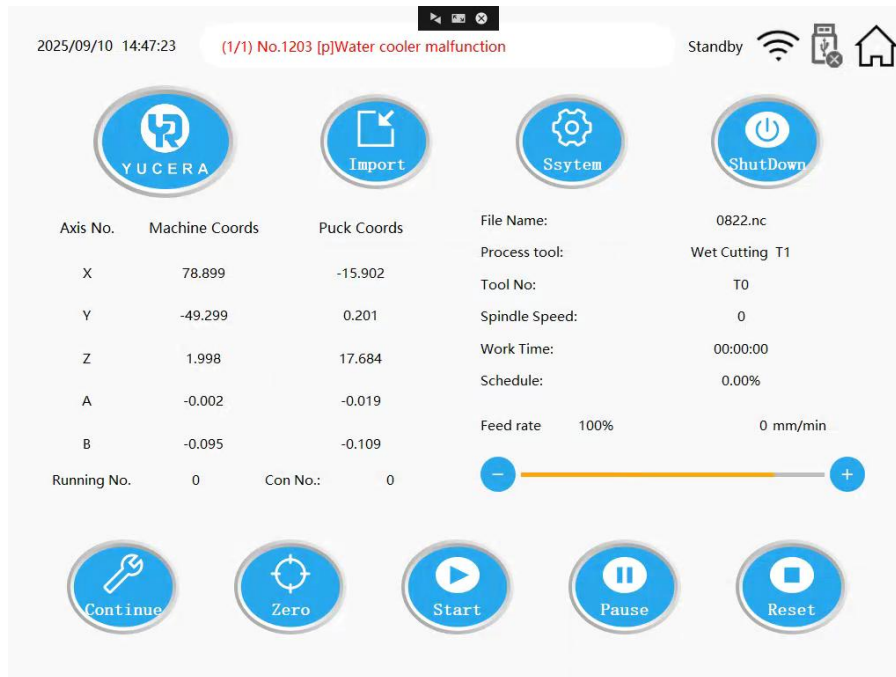
Figure 6-1-2 Water cooling machine connection diagram

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 milling fluid, access the manual page-Other Settings section. Manually click the corresponding milling fluid button to check if the sprayed coolant reaches the lathe needle milling 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

2025/09/10 14:48:47 (1/1) No.1203 [p]Water cooler malfunction Standby

Coordinate

Device

Tool

System

Diagnosis

Manual

Coordinate	X	Y	Z	A	B
Default	94.801	-49.500	-15.686	0.017	0.014
Offset	0.000	0.000	-0.003	0.000	0.004
G54	94.801	-49.500	-15.683	0.017	0.010
G55	94.801	-49.500	-15.683	0.017	0.010

B

C

F

D

E

G

Amend setting page

Name	Value
B	1
C	1
F	8
D	1
E	1
G	8

Amend

Save

Axis alignment

Calib Titanium

MCS

X78.899

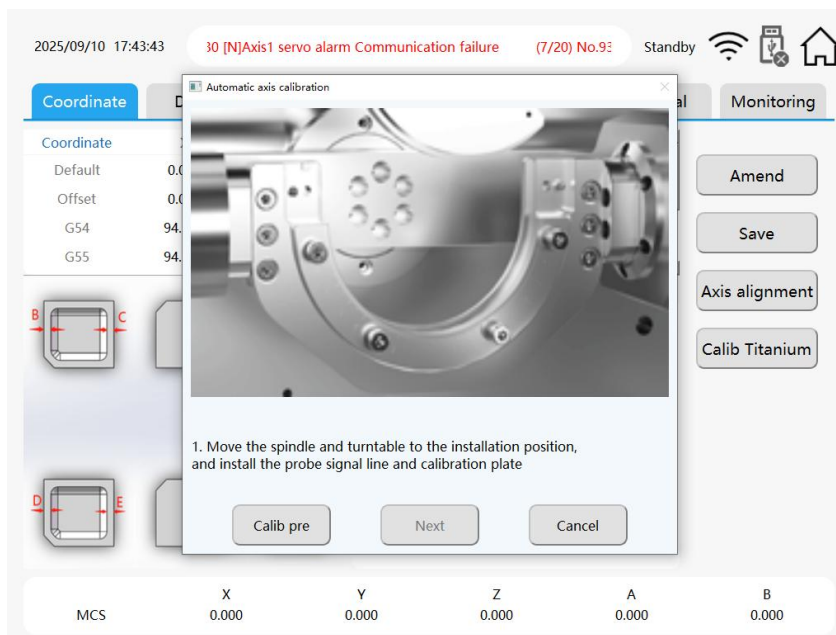
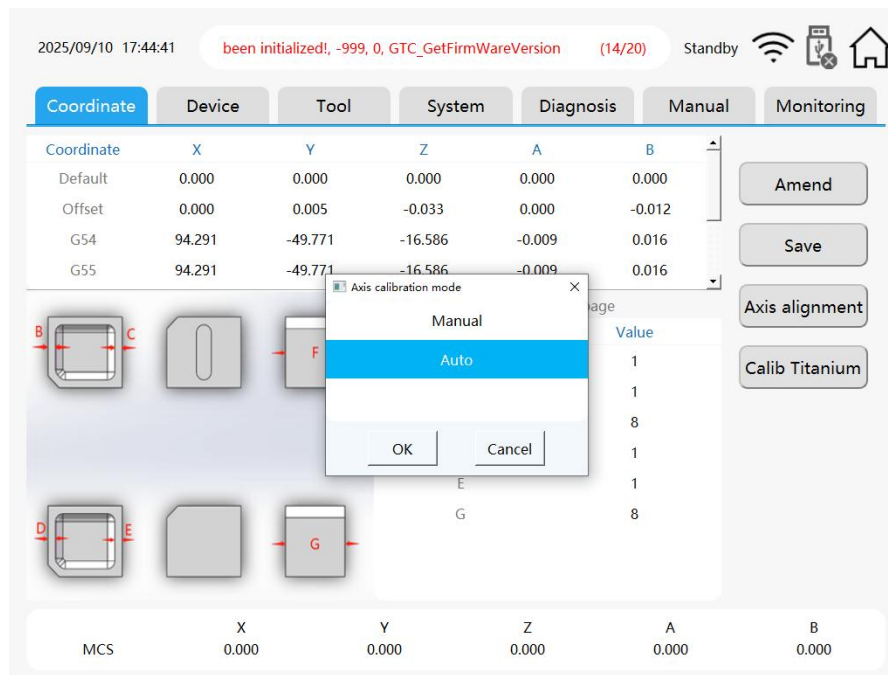
Y-49.299

Z1.998

A-0.002

B-0.095

Click the Auto button to enter automatic calibration

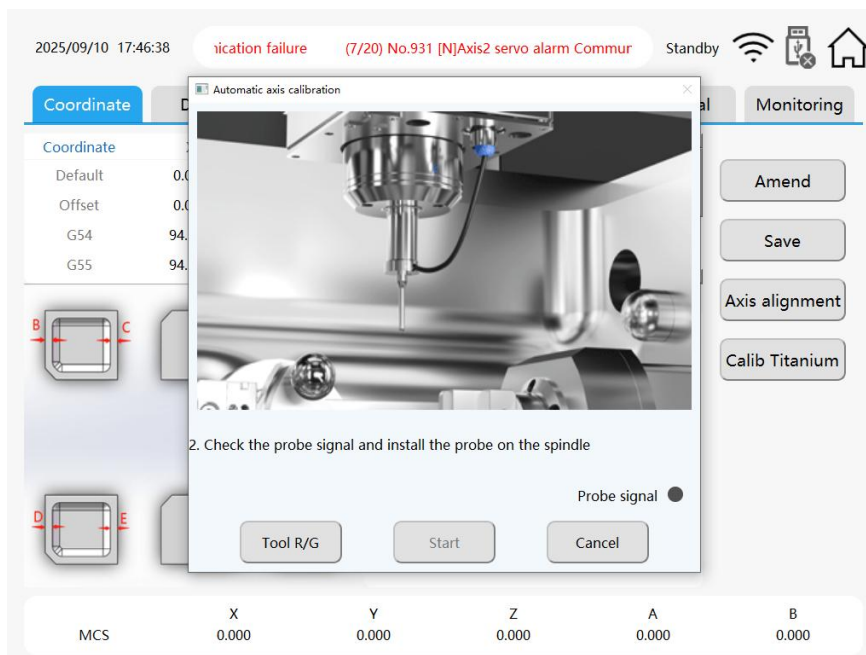
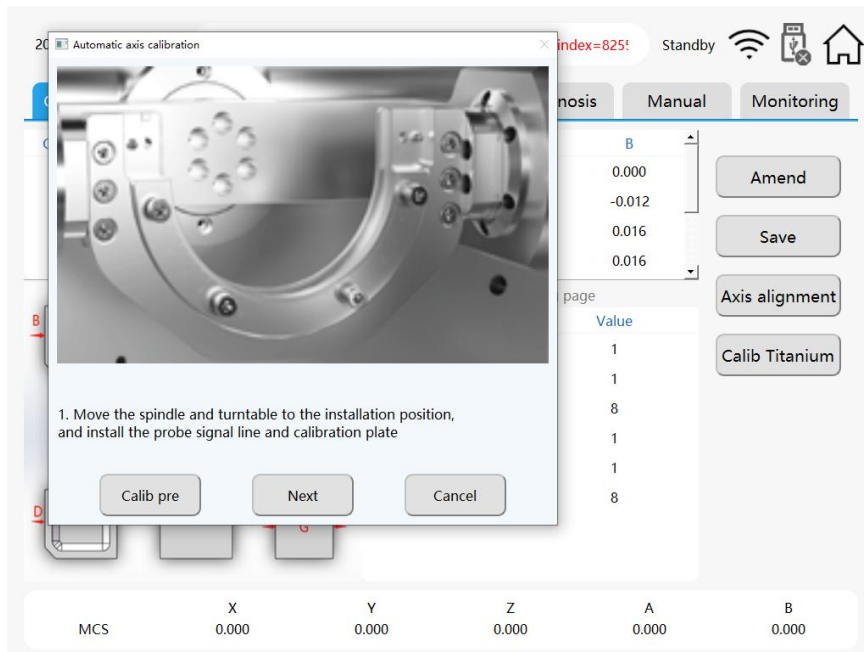


③ Click the "Calib pre" button on the interface to enter the calibration preparation page.

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.

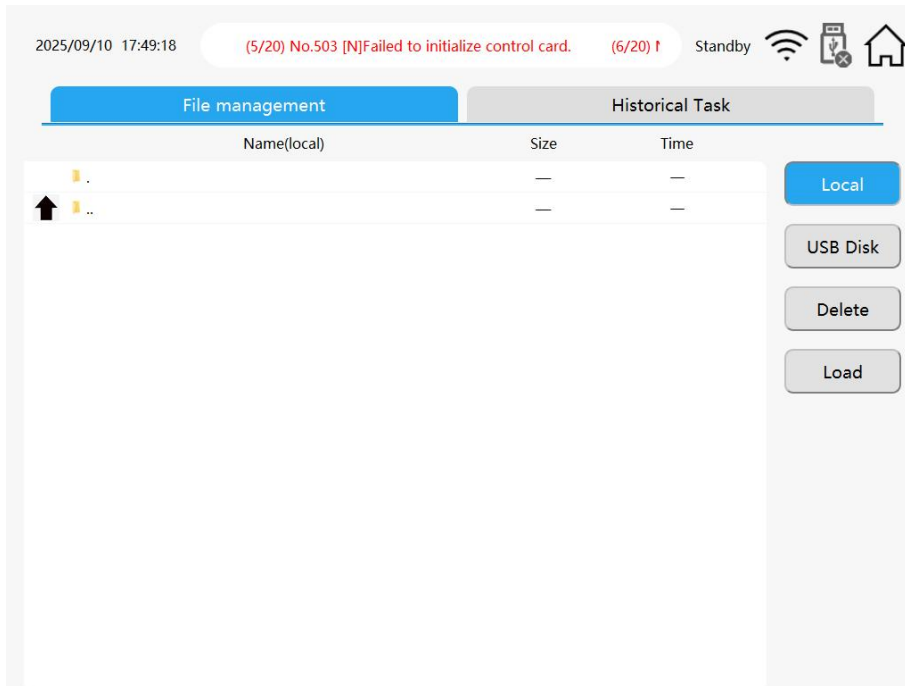
Note: ⑥ After the initial installation, manual square milling calibration is required after automatic calibration.

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.

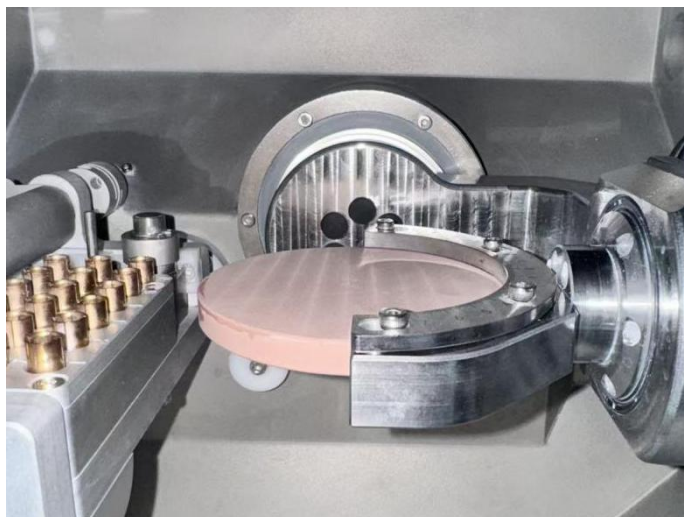
6.5.4 Calibration block processing

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).



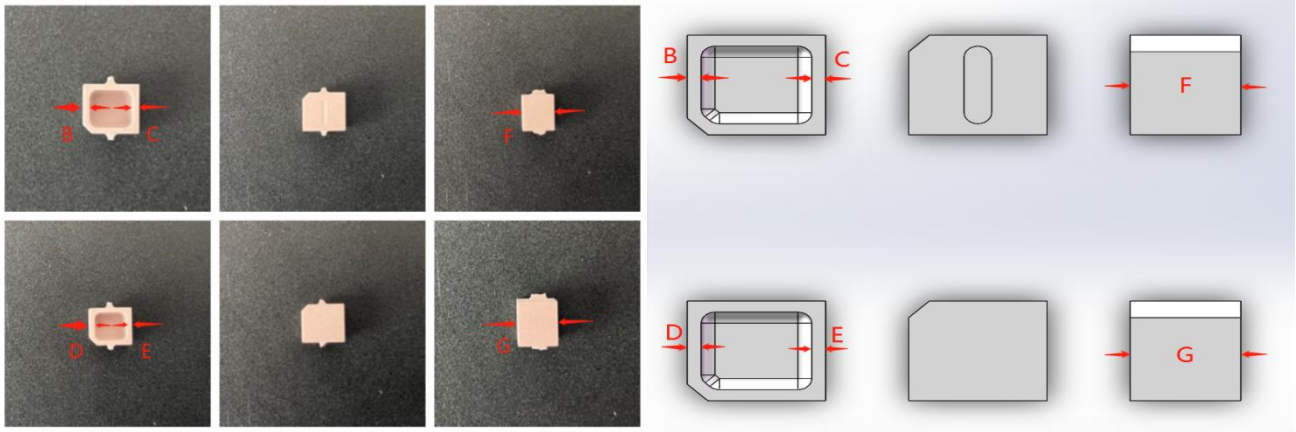
2. Find the calibration file "8PRO Calibration Program", click and select this file, click the "Loading" button, then return to the automatic interface and click the "Start up" button on the main interface, and the equipment will start the calibration processing.

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



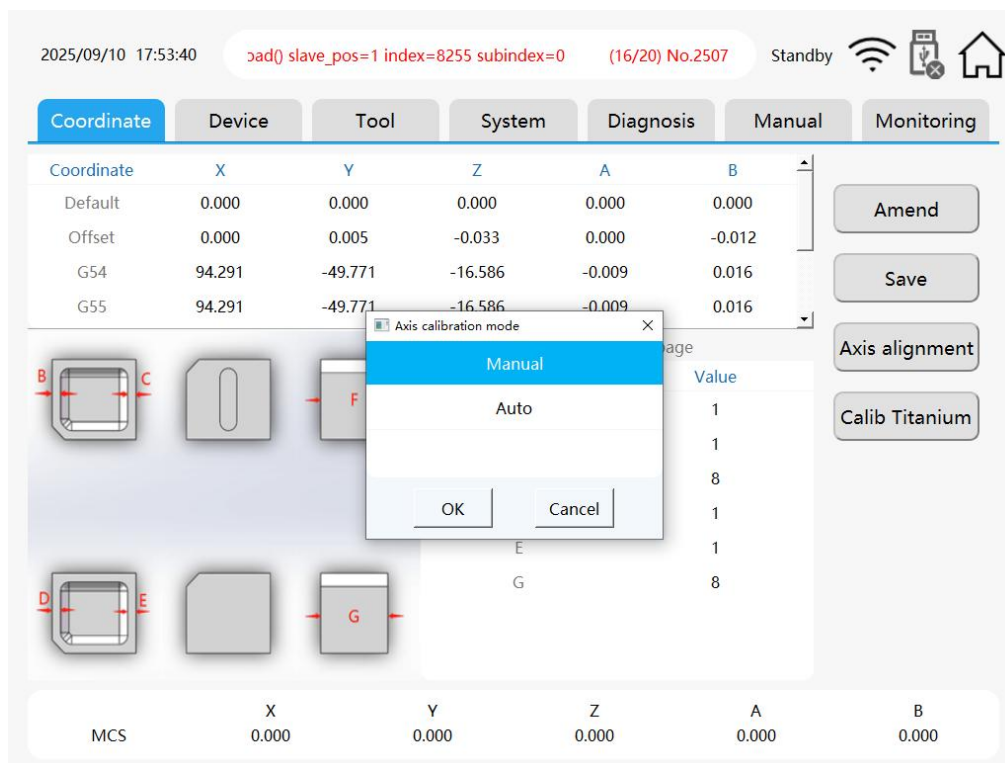
6.5.5 Calibration block measurements

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-milling, and measurements of B, C, F, D, E, and G values should be taken. The standard range is: B, C, D, E = $1 \pm 0.05\text{mm}$ F, G = $8 \pm 0.02\text{mm}$, 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.

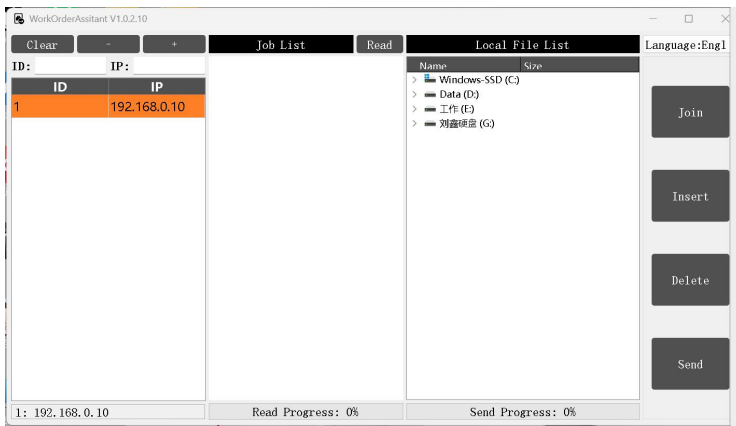
② It is recommended that periodic calibration operation be performed once a week when the frequency of use is high.

6.6 Network description

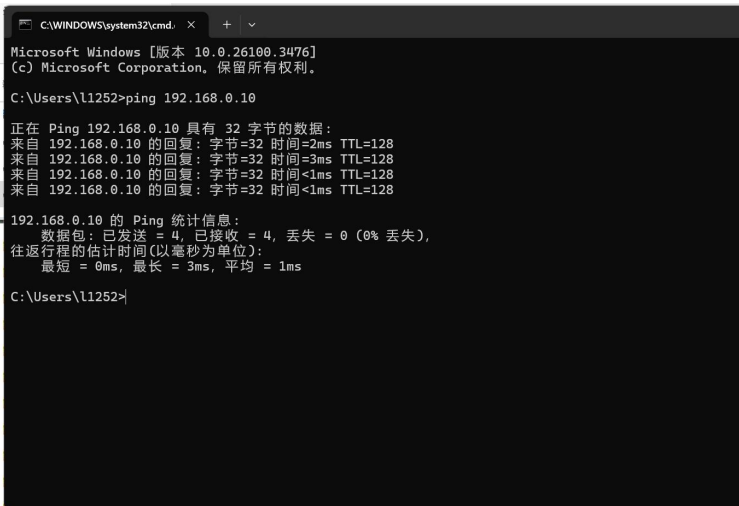
LAN FTP connection:

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

编辑 IP 设置

手动

IPv4

开

IP 地址

192.168.0.20

子网掩码

255.255.255.0

网关

首选 DNS

DNS over HTTPS

关

备用 DNS

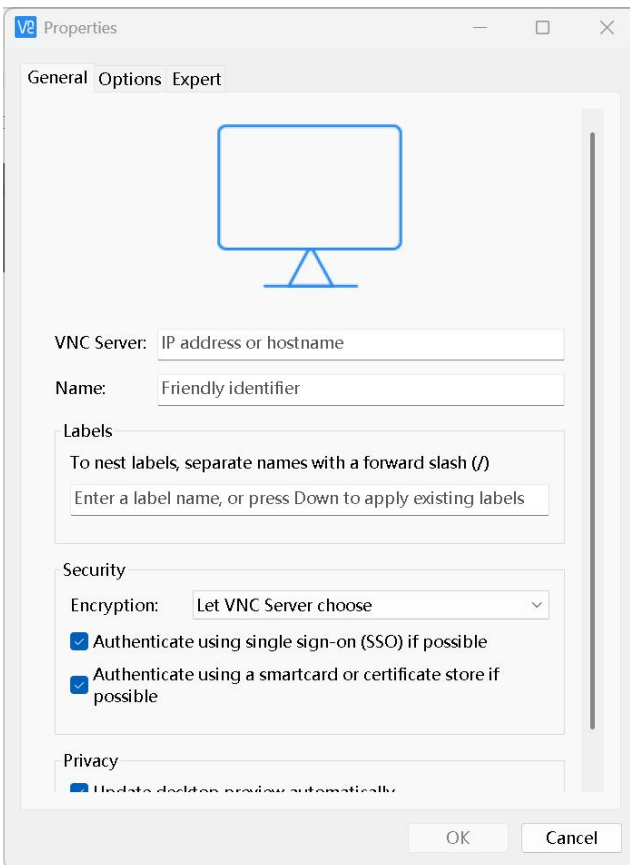
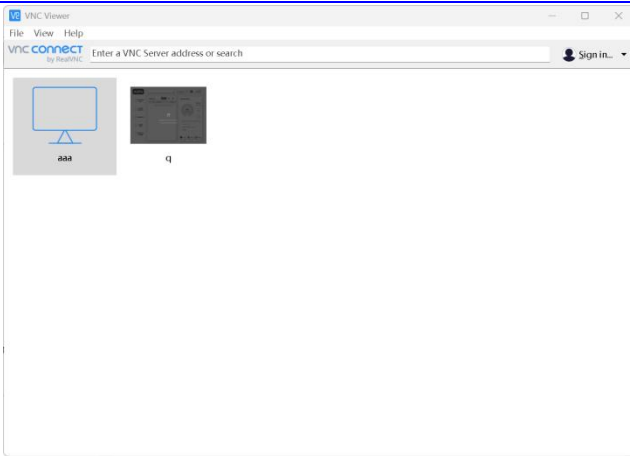
保存 取消

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

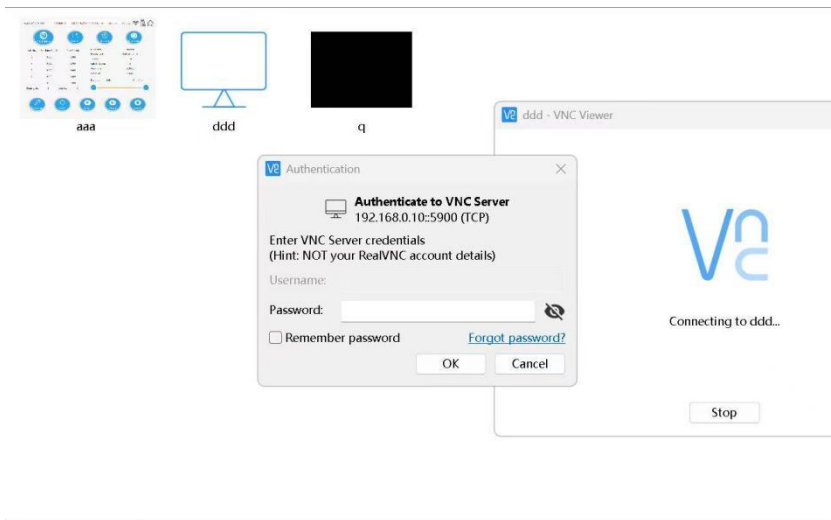
click vnc

 vncviewer - 快捷方式

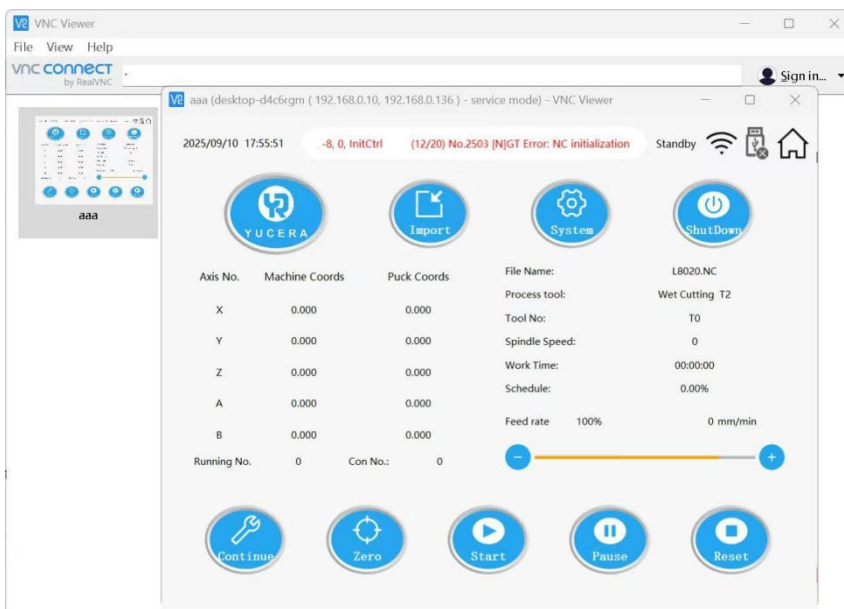
get into



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.cimssystem.com/>

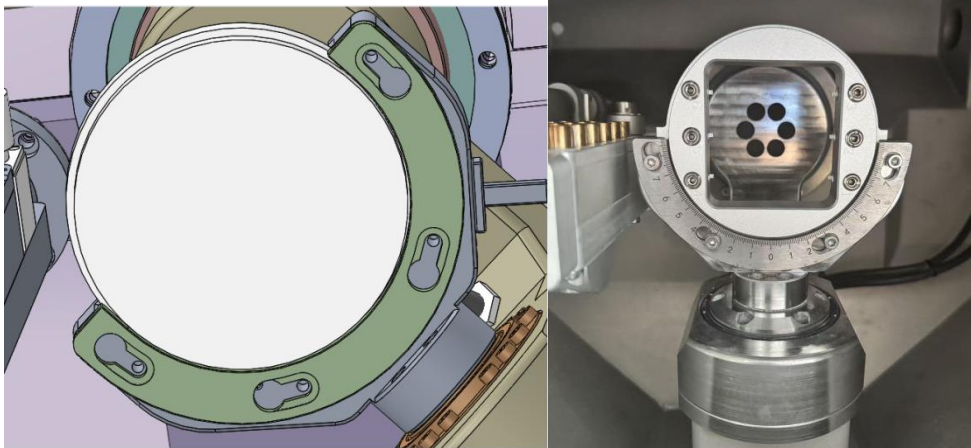
VIII. OPERATIONAL INSTRUCTIONS

8.1 Use process

8.1.1 Clamps installation

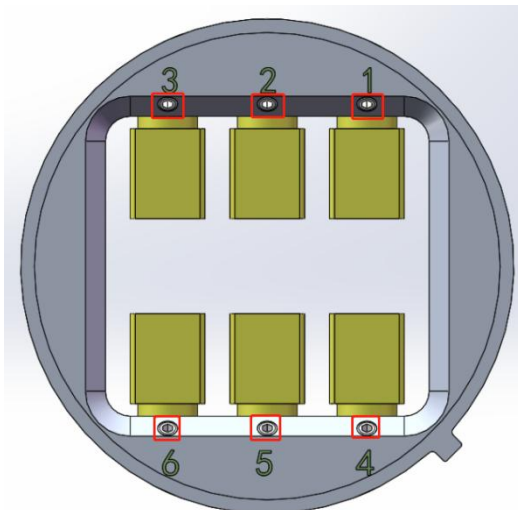
1. Disc fixture installation

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

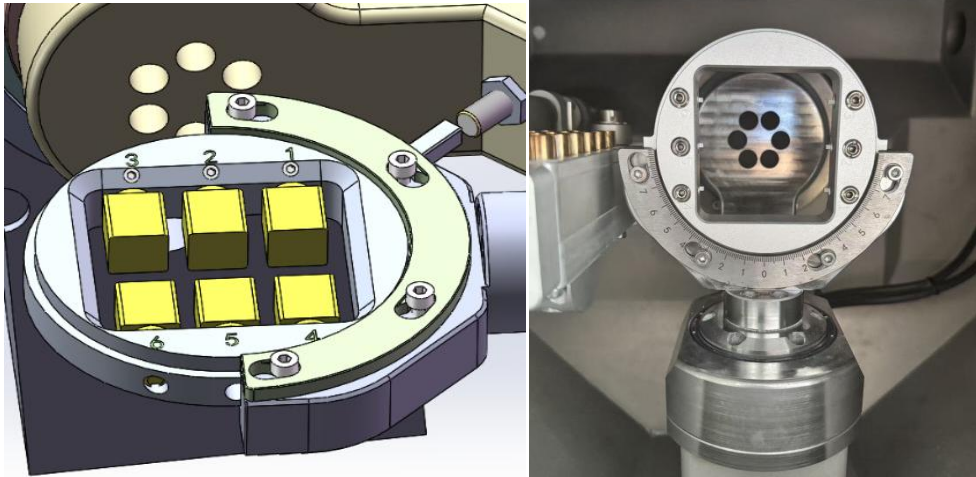


2. Processing glass ceramic block installation

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

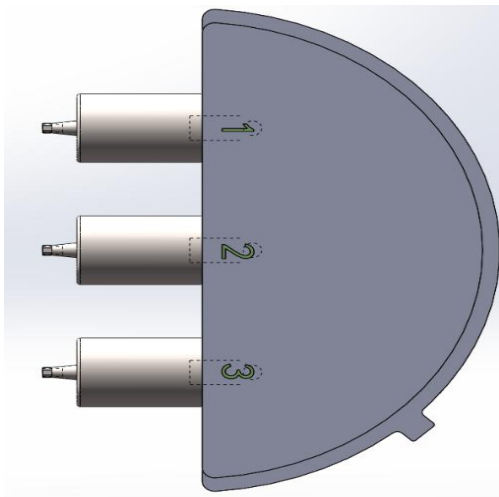


-
- ② Install the glass ceramic special fixture to the A-axis bracket of the milling machine, and lock the fixing screw of the material tray.

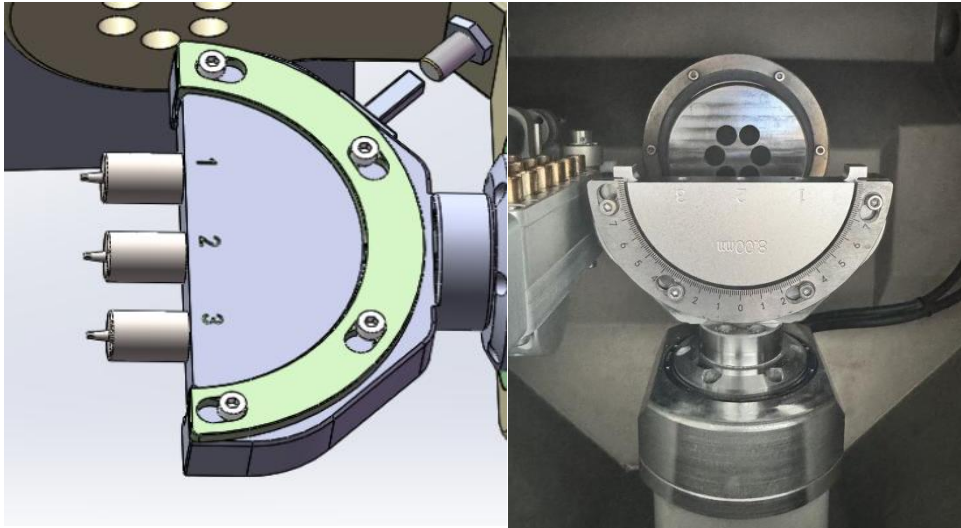


3. Installation of titanium columns

- 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 milling 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 milling machine! However, this is not to say that the service life of the electric spindle of the milling machine is short. In fact, as long as the operator does it according to the specifications, the electric spindle of the milling machine is relatively durable.

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

1. The operator of the milling machine must be trained and approved, and it is strictly prohibited for the untrained operator to use the milling 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 milling 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 milling 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 milling, 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、 Insert and remove the milling tool using the correct method; do not use excessive force, to prevent the rotor and clamping cap from slipping out of alignment.

8.2 Processing flow

8.2.1 Importing processing procedures

milling tools information

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	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

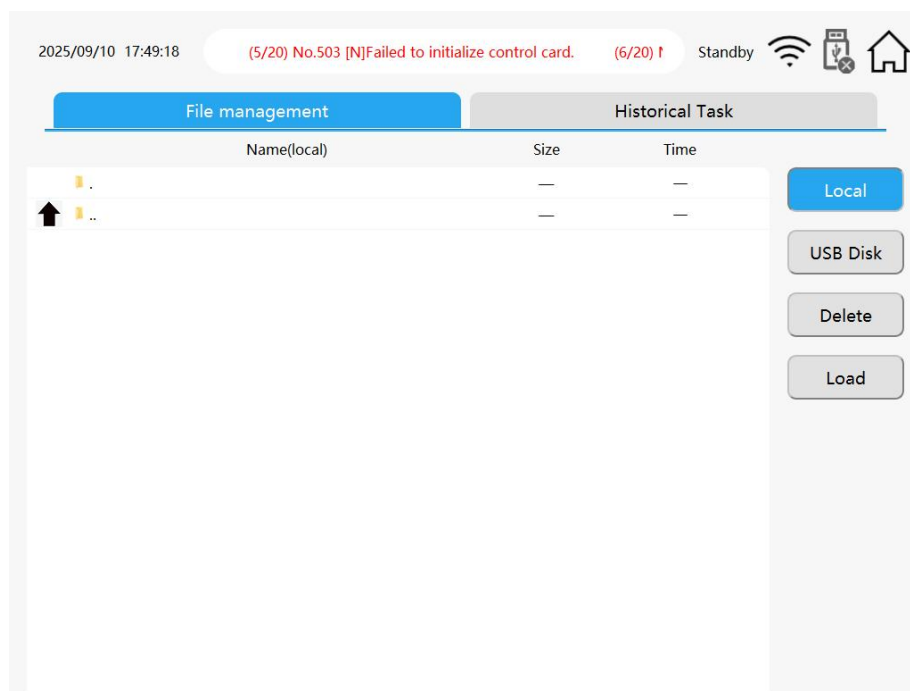
1.1 T1-T14 are the tool positions for titanium plates, while T15-T18 correspond to glass ceramic tool positions. Specifically, T14 serves as a backup tool position for titanium plates and T18 as a backup tool position for glass ceramics. The above lathe needle information undergoes minor adjustments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

with final specifications determined by the equipment manufacturer's technical specifications.

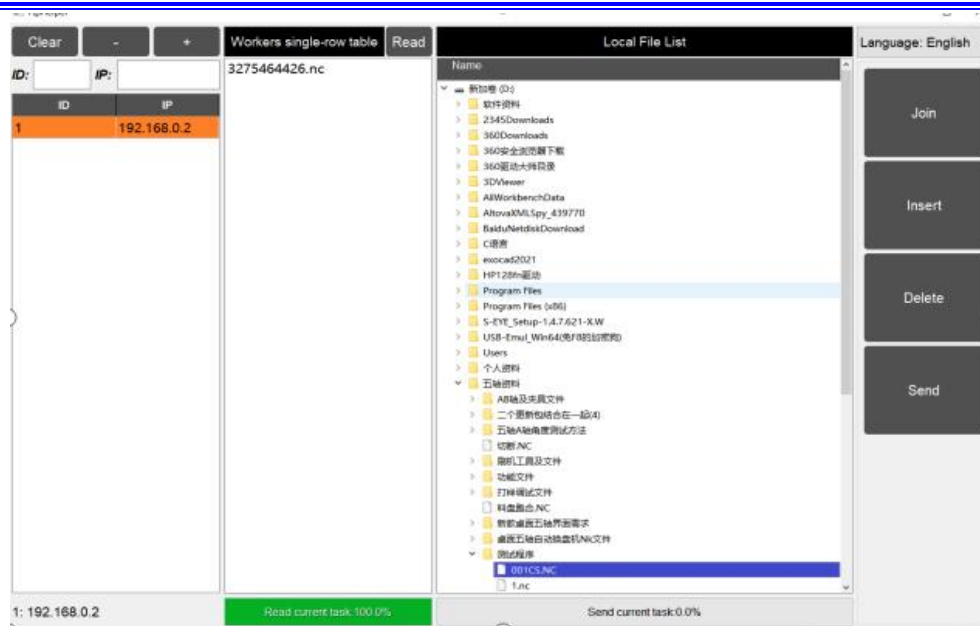
1. According to the template of the layout software, check whether the turning needle corresponding to the tool number is correct, complete and intact.

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.

4. 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

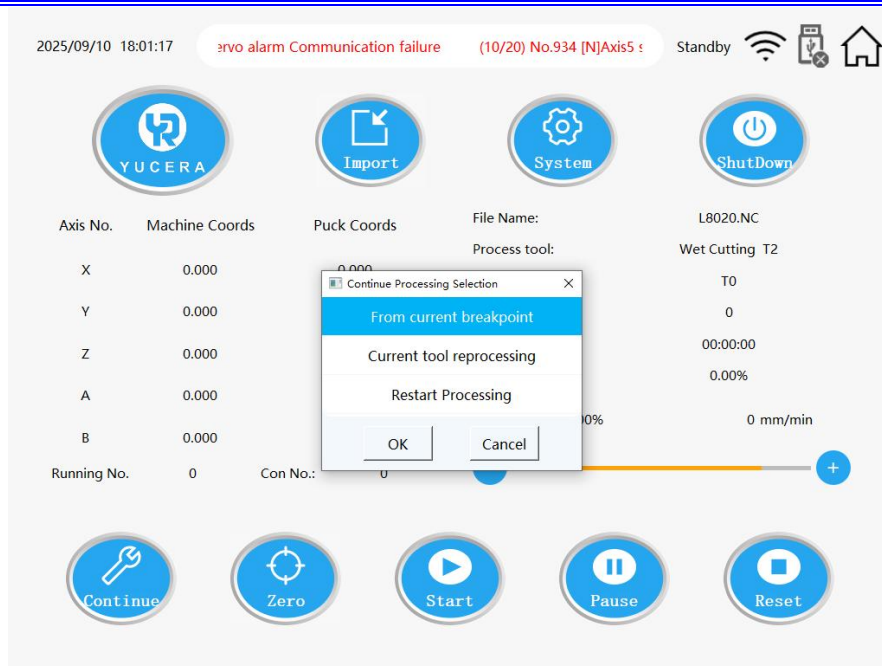
8.2.4 Suspend/Cancel Processing

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 milling 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 milling 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 milling 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

milling 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 milling fluid replacement
3. Controller memory check

Monthly maintenance:

Axis calibration: see page 41-47 for details

Maintenance per season:

1. Metal milling 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