



Warning

In order to use this product safely and correctly, please carefully read the safety pages listed at the beginning of this operating manual and the pages related to the functions you use, and understand their contents. Failure to observe the safety precautions and instructions in the operating instructions can result in death or injury to the operator.

Please keep this manual near the product for reference at any time.

JDM5DW

5-axis Wet and Dry Milling Machine

User Manual



JINY DENTAL CAD/CAM

This manual explains how the JDM5DW 5-axis wet and dry milling machine operates.

Warning	
Before setting up, operating, or maintaining this product, you should carefully read the safety countermeasures and understand their contents. Failure to observe safety measures and other precautions described in the operating instructions may result in death or injury to the operator.	

In order to prevent accidents caused by incorrect operation, symbols are attached before precautions in this manual. The meaning of each mark is as follows. Please read the text after fully understanding its content.	
Warning:	This indicates a potentially dangerous situation that may result in death or serious injury to the operator if incorrect operation is performed.
Notes:	This indicates a potentially dangerous situation that may cause damage to property other than this product if incorrect operation is performed.
Instruction:	This is about reminding operators not to damage the product.
Additional Instruction:	This is a reference for effective use of the product.

We have tried to describe as many situations as possible in this manual. However, it would take up a lot of space in this manual to indicate that this or that cannot be done, so we do not list them one by one in this manual. Therefore, any matter not specifically noted in this manual should be understood as "cannot be done". If you have any questions about whether this operation can be performed, please consult our company.

Preface

1. Purpose of the milling machine

The JDM5DW five-axis dry and wet milling machine is a five-axis linkage dental milling machine controlled by a CNC system. It is capable of milling materials such as titanium crowns, titanium posts, bridges, and zirconia for dental prosthetics.

Please do not use this machine for any other purposes.

2. Definition of User

In this manual, the person operating the product is referred to as the "operator."

The "operator" must read this manual and fully understand its contents. Operating the product without understanding the manual may not only pose a risk to the operator but also cause significant harm to those around them.

Additionally, the "operator" is prohibited from performing the following tasks:

- (1) Using tools to remove removable covers
- (2) Performing maintenance on the product
- (3) Modifying internal parameters of the machine

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1. Product Safety Instructions

When using this machine, any regulations related to safety, health, and environmental hygiene established by the government or local authorities must be followed.

1.1. Product Safety Features

Warning
When opening the protective door to operate the product, be careful not to touch the workbench, tool magazine and other movable parts. Otherwise, you may be injured due to being caught.
Use eye protection when switching on the blower with the protective door open. When cutting chips enter the eyes, blindness may occur.
If you get coolant and lubricants (grease, oil) on your hands, wipe them off immediately. Hands will become very slippery, making it difficult to pick up the milled products and operate the milling machine, resulting in injuries and damage to the milled products.
When opening the protective door, be ready to press

the emergency stop button at any time.

Unmilled products and milled products have sharp corners and burrs. Care should be taken, otherwise injuries may occur. Please

use protective equipment such as gloves.

When replacing some live parts, it should only be done by "maintenance personnel" and never by "operators". If this work is performed by personnel without sufficient professional knowledge, the safety device may not fully function, or the milling machine may move unexpectedly, resulting in personal injury or electric shock.

When using or replacing the tools, care should be taken to avoid injury due to their sharp parts.

When handling chips, care should be taken to avoid injury. Please use protective equipment such as gloves.

When discarding the tools, they should be disposed of in accordance with regulations for the handling of hazardous materials.

Emergency stop button: The operation of the emergency stop button should be the first action to take when a machine malfunction occurs. Always be prepared to press the button whenever necessary. Do not cover the emergency stop button with any object.

1.2. Dangers of working conditions

Warning

Use a crane when installing components that weigh significantly more than 20kg, components that cannot be lifted, or items that feel heavy when you try to lift them. If you lift it by hand, it will put more burden on your waist and cause injuries when it falls.

Before processing, ensure that the tool is properly and securely installed in the tool holder. Improper installation may cause the tool to fall off, resulting in damage to both the workpiece and the machine.

Before processing, ensure that the tool is not worn or damaged. Otherwise, fragments of the tool may fly out, causing damage to the machine.

When opening the protective door, be prepared to press the emergency stop button at any time.

Before processing, ensure that the tool holder is properly and securely installed in the tool changer's chuck as instructed. Improper installation may cause the tool holder to fall off and fly out, resulting in damage to the workpiece and the machine.

1.3. Dangers during electrical work

Warning

If the power cable or connection cables are damaged, the machine should be immediately stopped. Otherwise, it may lead to electric shock or fire. The machine should not be used until the damaged cables are replaced by qualified personnel.

When it is necessary to open the electrical cabinet door for work, always disconnect the power supply first to prevent the risk of electric shock.

Personnel who are not from the CNC system manufacturer should not perform system replacement operations. If individuals without sufficient professional knowledge carry out this task, it may result in safety devices not functioning properly or cause unexpected machine movements, leading to injury or electric shock.

Inside the electrical cabinet, some components may still retain residual voltage even after the power is disconnected, posing a risk of electric shock. Only personnel with sufficient electrical knowledge should touch the interior of the electrical cabinet.

Do not touch the electrical cabinet with wet hands, as it may cause electric shock.

Do not pour liquid on the display screen and electrical cabinet.

Otherwise, electric shock may occur.

1.4. Heat-related dangers

Warning

It should be noted that do not touch the following parts during operation and immediately after operation. Some parts of the machine tool may be in a high-heat state, which may cause burns.

Use gloves when touching hot areas.

Servo motors for each axis (X, Y, Z, additional axes)

Spindle motor

Cooler motor

1.5. Dangers of working conditions

Warning

Use a crane when installing components that weigh significantly

more than 20kg, components that cannot be lifted, or items

that

feel heavy when you try to lift them. If you lift it by hand, it will put more burden on your waist and cause injuries when it falls.

Do not install or remove workpieces in an unnatural posture away from the workbench. Such a posture may increase the burden on

the waist and cause unexpected injuries to workers due to falling of processed products. When working on the workbench, the workbench should be moved nearby in advance.

After using the emergency stop button and before releasing the emergency stop, please eliminate the cause of the abnormality. Otherwise, a dangerous situation may occur again, resulting in personal injury.

1.6. Instructions about fire

Warning

Do not use the machine tool under processing conditions where sparks are flying. Otherwise, it may cause fire. The contents of the program and various settings should be fully confirmed in

advance, and the actions should be confirmed to eliminate interference with the fixture to avoid placing excessive load on the tool.

Chips should be cleaned up. If chips accumulate inside the machine tool, the potential risk of fire increases. Cleaning should be done regularly to avoid accumulation of chips.

Appropriate tools should be used under appropriate processing conditions. When cutting with a worn tool under unsuitable processing conditions, fire may occur due to cutting heat and other reasons. In addition, the sparks emitted by the broken tool can ignite, leading to fires. Please refer to the information provided by the tool manufacturer to use appropriate tools and process under appropriate processing conditions.

Fire extinguishing devices should be prepared for machine tool accessories in case of fire.

Sufficient coolant for processing should always be maintained. Insufficient coolant may cause fire or damage to tools and workpieces due to temperature rise.

When the power cable and connecting cable are damaged, the machine tool should be stopped immediately. Otherwise, electric shock or fire may occur. Do not use the machine until maintenance personnel have replaced the damaged cable.

2. Product Overview

2.1. Product Introduction

The JDM5DW five-axis dry and wet milling machine is a five-axis linkage dental milling machine controlled by a CNC system. It is capable of milling and drilling materials such as titanium posts, titanium discs, glass ceramics, and zirconia.

This machine is easy to operate and fully enclosed for safety. It supports dry and wet mixed processing of zirconia, temporary teeth, PMMA, PEEK, wax, glass ceramics, and soft metals (with hardness similar to zirconia). It can mill long bridges (up to 14 teeth), zirconia crowns, inlays, high inlays, temporary restorations, titanium posts, titanium crowns, wax shapes, and more. It provides the best solutions for various dental restorations and materials.

Cutting capabilities may vary depending on the type of material, tools, and other factors. When using the machine, make adjustments according to the materials and tools being used.

Please do not use this machine for any other purposes.

2.2. Product Structure Overview

The castings of this machine tool undergo multiple manual aging treatments, ensuring good stability, high strength, and

reliable precision.

The spindle used in this machine is an electric spindle, consisting of a motor without an outer casing, the spindle, bearings, spindle unit housing, drive module, and cooling system. The built-in motor directly drives the spindle, achieving "zero movement" in the machine tool. It features advantages such as light weight, low noise, high speed, and high precision, while simplifying the machine structure and making spindle positioning easier.

The feed system of this machine uses precision ball screws and guide rails, paired with dedicated bearings and couplings. It uses a stepper motor for direct transmission, improving transmission efficiency and the machine's movement precision.

Equipped with a professional dental CNC system, the machine supports five-axis linkage and can display and modify various coordinate parameters and program settings. It allows for direct clamping and automatic processing, offering powerful cost-performance advantages.

2.3.Product Features Overview

(1) **Breakpoint Memory and Continuation:** The machine saves progress while processing, eliminating concerns about power outages. Upon restarting, a pop-up prompt will appear, allowing you

to resume the task with a single click.

(2) **Selective Line Processing:** You can choose to start processing from a specific line in the file, depending on your processing needs.

(3) **Multi-material Processing:** The machine supports the processing of various materials, including pure titanium, glass ceramics, zirconia, and soft metals (with hardness similar to zirconia).

(4) **90-Degree Processing Support:** To achieve better processing results, the machine supports 90-degree milling, allowing for detailed reproduction of labial and buccal side details.

(5) **Dry/Wet Switching:** One-click switching between dry and wet processing environments, making it convenient and efficient.

(6) **Automatic Calibration:** After prolonged use, the workpiece coordinates may shift. This function allows for easy and quick adjustment of processing offsets with one click.

2.4. Operating Environment

(1) The base for placing the equipment must be stable; otherwise, it may cause deviations in the processed products.

(2) Humidity should be between 35% and 80% (without condensation).

- (3) The power supply voltage should be 220V AC.
- (4) Keep the machine away from vibration sources and high-frequency emitting devices.
- (5) Avoid placing the machine near fire sources, flammable and explosive materials, or environments containing corrosive gases and liquids.
- (6) If the machine operates in an environment with temperatures above 40°C for extended periods, it may affect the reliability of the components. The equipment should be placed in a well-ventilated area or a location with air conditioning.

3. Structure and functions

3.1. External structure and functions

(1) 3D view

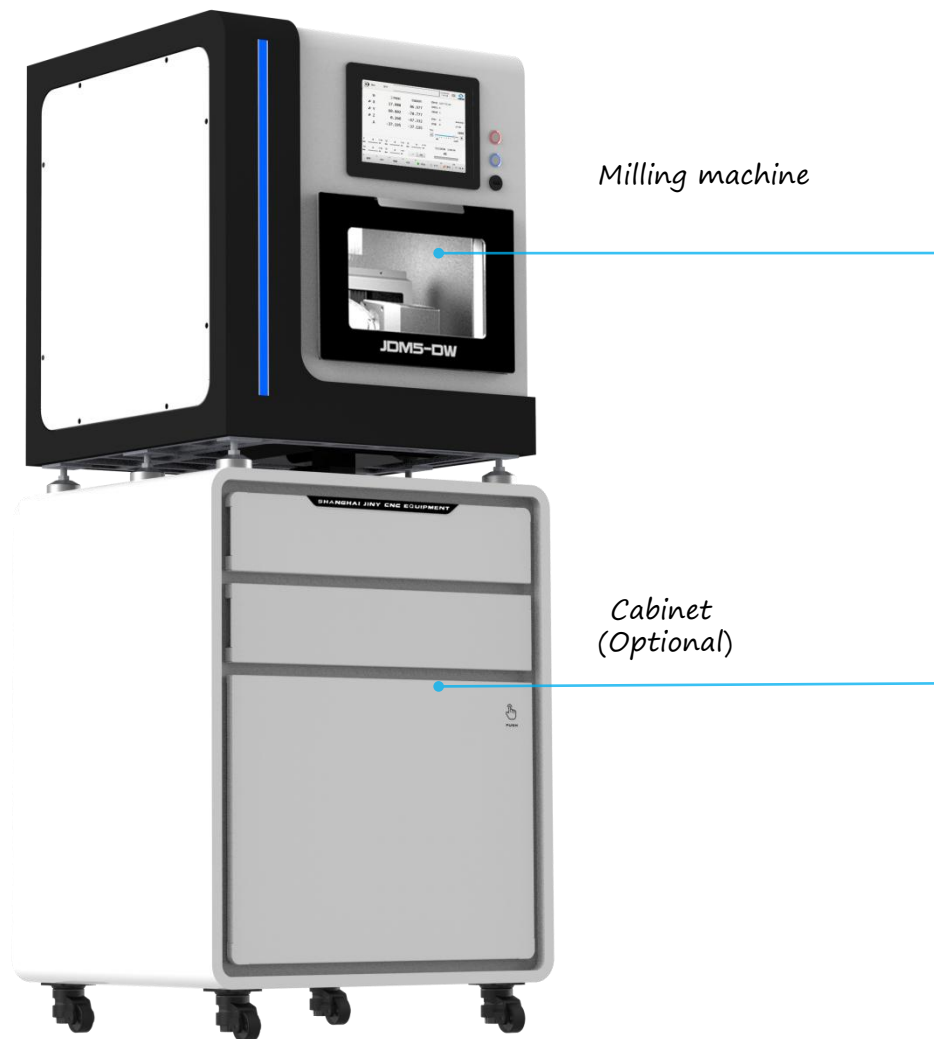


Diagram 3.1.1

(2) Front view and features

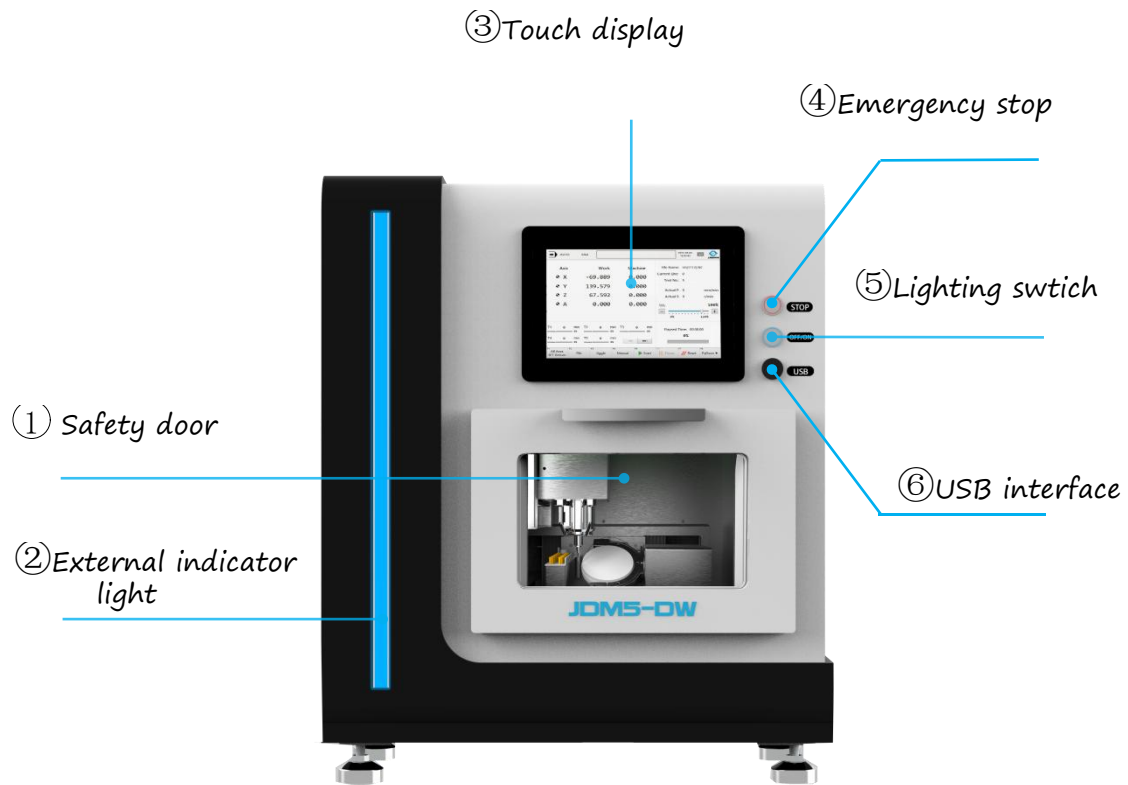


Diagram 3.1.2 front

① **Safety Door:** Prevents flying chips and cutting fluid splashes. The center of the door is made of transparent glass, allowing for real-time observation of the cutting process.

② **External Indicator Lights:** The machine's working status is displayed through an external multicolor light strip.

③ **Display:** A touch screen industrial display for basic operations and advanced settings of the machine tool.

④ **Emergency Stop:** Emergency stop button, which should not be covered by any objects.

⑤ **Lighting Switch:** The machine is equipped with internal lighting, making it convenient for nighttime processing and equipment

maintenance.

⑥ **USB interface:** Can connect external devices such as USB drives, mouse, keyboard, etc. NC programs can be imported through the USB drive.

(3) Back view and functional components

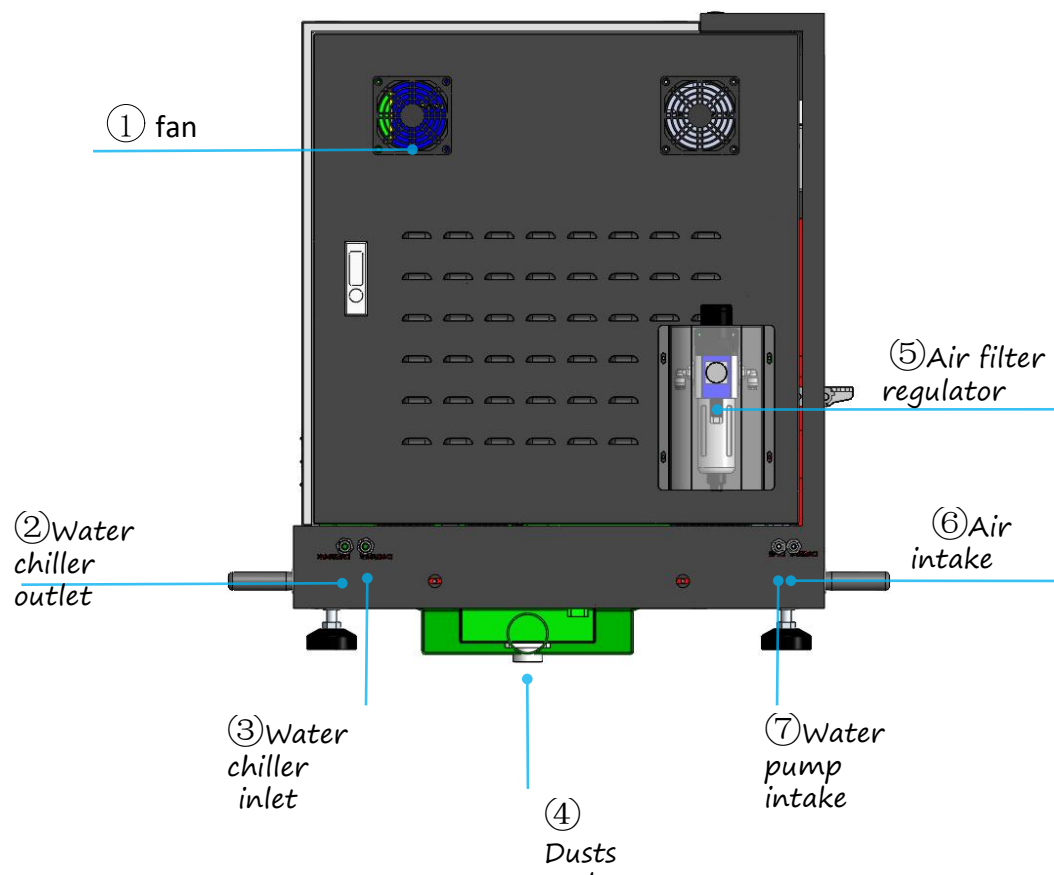


Diagram 3.1.3 back

Fan: Provides air circulation and heat dissipation, effectively lowering the temperature inside the distribution cabinet.

Cold Water Machine Outlet: Connects to the inlet of the cold water machine.

Cold Water Machine Inlet: Connects to the outlet of the cold water machine.

Chip Discharge Outlet: Chip removal outlet, can be connected to a vacuum cleaner.

Air Source Filter: Filters moisture and foreign matter in the air source to prevent malfunctions.

Equipment Air Inlet: Connects to the outlet of the air source filter.

Water Pump Inlet: Connects to the outlet of the water pump.

(4) Right view and features:

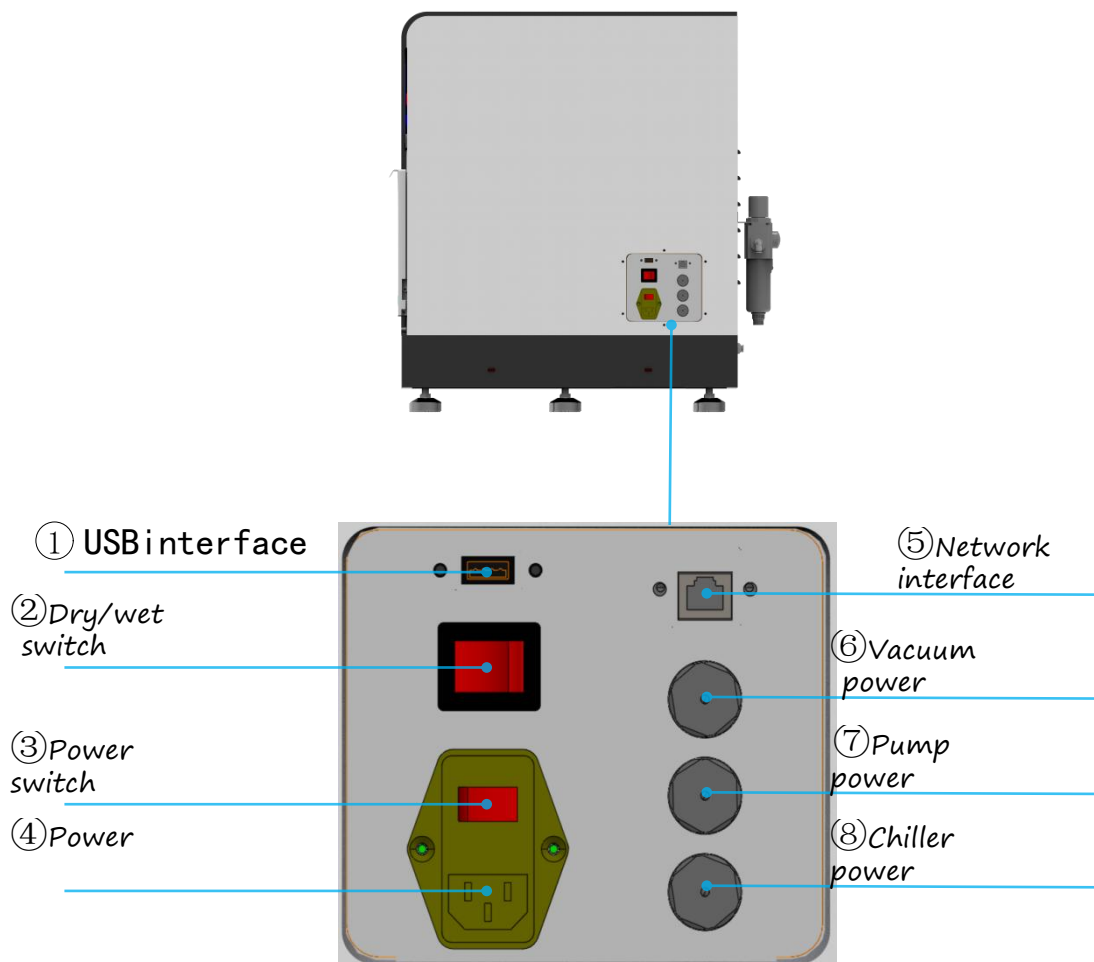


Diagram 3.1.3 right

USB Port: Can connect external devices such as USB flash drives, mouse, keyboard, etc.

Dry/Wet Switching: Used for switching between dry and wet cutting, can control the water pump and vacuum cleaner switches.

Power Switch: Used to turn the machine on and off.

Power Supply: Power cable connection interface.

Ethernet Port: Ethernet cable connection interface.

Vacuum Cleaner Power: Vacuum cleaner synchronous power interface.

Water Pump Power: Water pump synchronous power interface.

Cold Water Machine Power: Cold water machine synchronous power interface.

3.2. Cooling System.

This system uses two types of liquid cooling systems.

The spindle cooling system uses a separate coolant tank from the main body of the machine, making it easier to replace the coolant.

Figure 3.2.1 shows the appearance of the attached cold water machine.

The milling cooling system uses a separate cooling pump and water tank from the main body of the machine, making it easier to clean chips and replace the cutting fluid. Figure 3.2.2 shows the appearance of the attached pump and water tank.



Figure 3.2.1: Cold Water Machine.



Figure 3.2.2: Water Tank and Water Pump.

3.3. Tool Magazine

The tool magazine of this machine tool is made of aluminum alloy and can hold 14 tools, making it lightweight. It is equipped with a tool setter, which can automatically compensate for tool length during machining. The system is characterized by low wear, long service life, easy adjustment, and simple maintenance.

Before formal machining, the correct tool pins need to be loaded into the tool magazine.

3.4. Fixture.

(1) C-Type Fixture

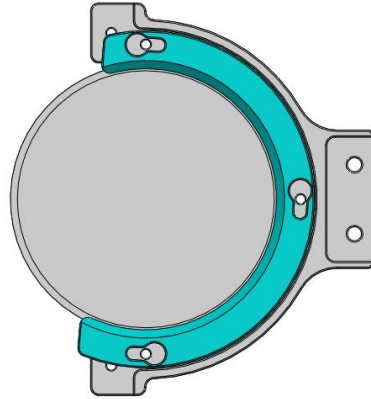


Figure 3.4.1: C-Type

(2) Glass Ceramic Fixture.

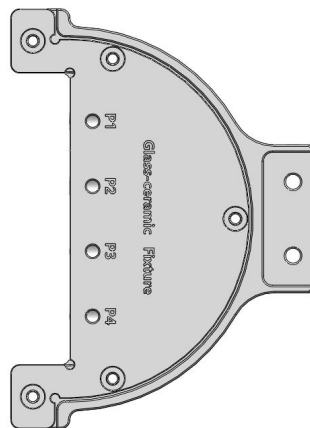


Figure 3.4.2: Glass

(3) Titanium Column Fixture.

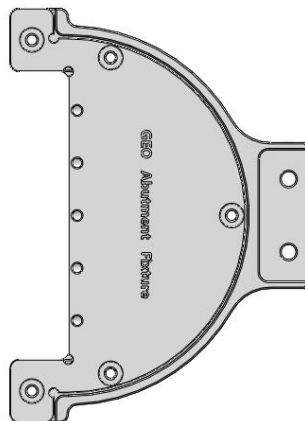


Figure 3.4.3: Titanium

(4) Melantica (Optional)

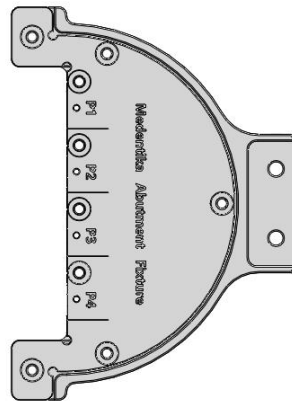


Figure 3.4.4: Melantica.

4. Product installation

4.1. Unpacking and Installation

1. The unpacking process of the machine tool must be done carefully and cautiously to avoid damaging the machine. After unpacking, carefully check if the accessories match those listed on the packing list.

2. After unpacking, place the machine tool on a stable workbench or on the supplied base cabinet. The machine tool is equipped with six foot cups to ensure stable placement. When lowering the foot cups, start with the four corners. Once the foot cups are in contact with the bottom surface, use a wrench to turn them 180°. Then place the foot cup in the middle of the machine's bottom, operating in the same way as for the corners. Open the safety door and remove the foam protection inside the machining chamber. **Note:** When removing the foam, carefully check the interior to avoid leaving any foam residues, as this could affect the machine's performance.

3. Take the power cable and connect it to the power interface.



Figure 4.1.1 Foot Cup and
Power interface

4.2. Installation of the Cooling System.

(1) Installation of the Chiller

Connect the outlet of the chiller to the water inlet of the machine tool, and connect the water inlet of the chiller to the outlet of the machine tool.

Connect the power cable of the chiller to the chiller power supply of the machine tool.

Inject coolant into the chiller and turn on the power switch.

Please use distilled water or purified water as the coolant.

Keep the water level at the green line, not exceeding the yellow .

Figure 4.2.1 illustrates two types of chiller structures, with one randomly selected for sending.

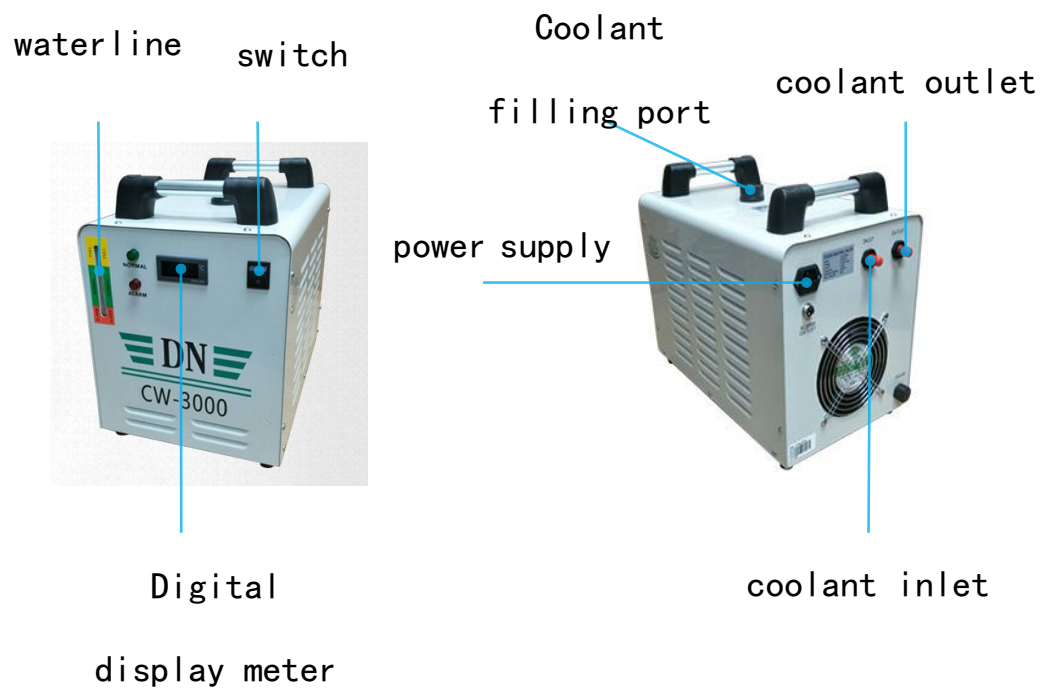


Figure 4.2.1 Chiller

Figure 4.2.2 chiller circuit connection.

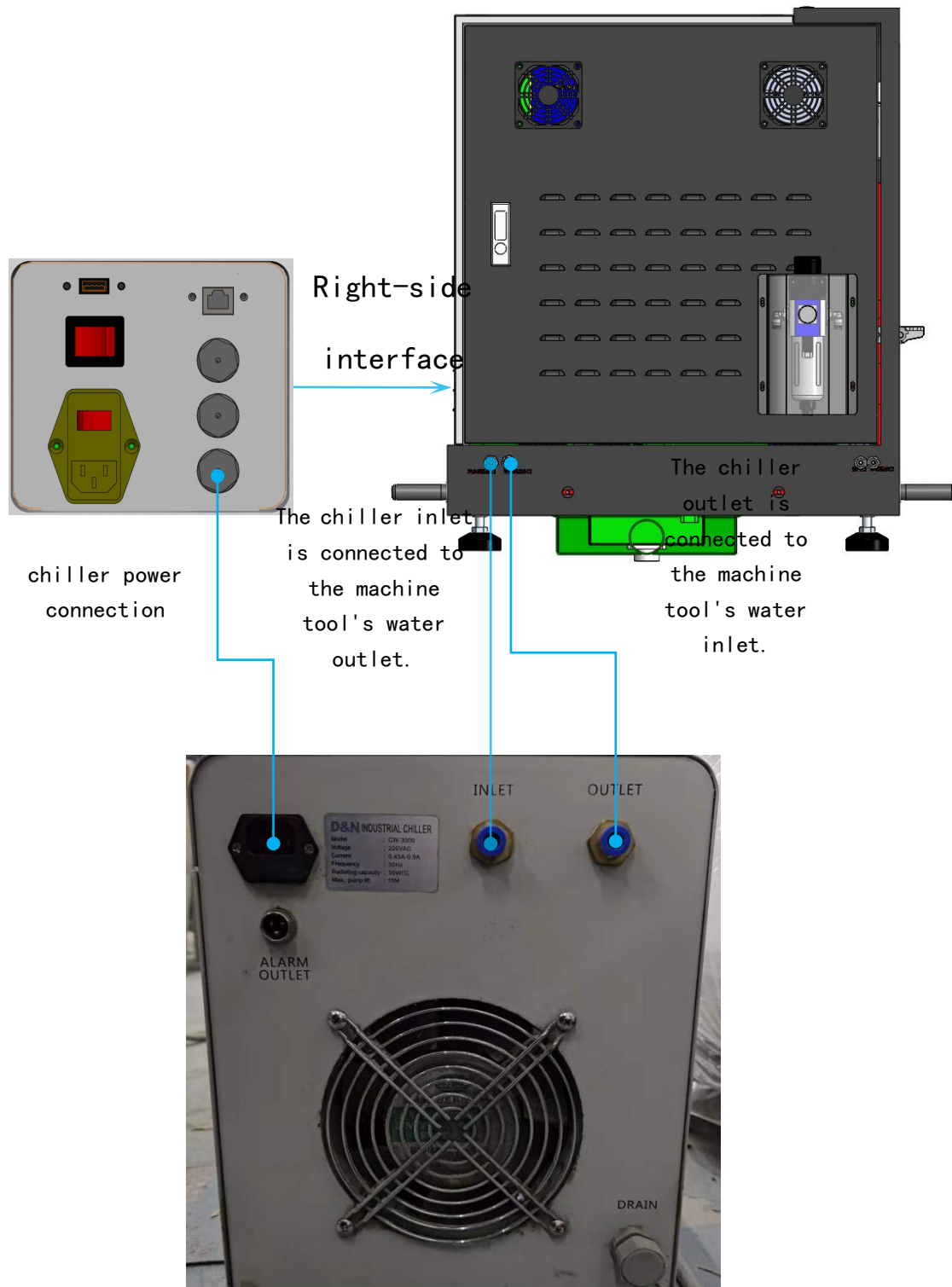


Figure 4.2.2 Chiller and Machine Tool Connection Diagram

(2) Installation of the Water Pump and Water Tank

Connect the power cable of the water pump to the machine tool's water pump power supply.

Connect a 10mm water pipe between the water pump outlet and the machine tool's water pump inlet.

Insert the chip removal pipe into the chip removal port of the machine tool, ensuring the other end is aligned with the water tank's filter slot.

Use a mixture of coolant and water in the water tank for cooling, maintaining the water level at two-thirds full. The coolant-to-water mixing ratio is 1:8.

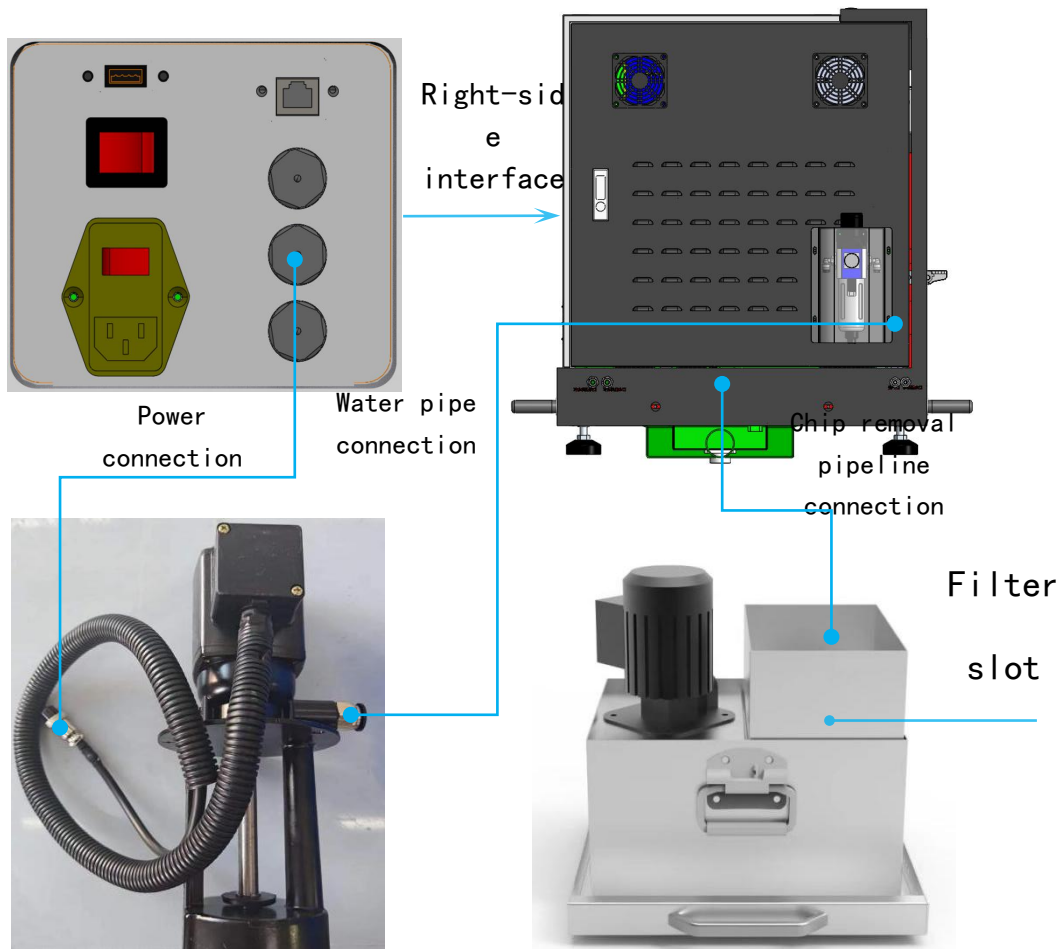


Figure 4.2.3 Water Pump and Machine
Tool Connection Diagram

4.3. Air circuit connection

Remove the air pipe. Connect the air pipe from the self-supplied air compressor to the left-side position of the air source filter. At the same time, cut a section of air pipe and connect it from the air source filter's air outlet to the machine tool's air inlet. The left-side air inlet of the air source filter is an 8mm pipe interface, while the right-side air outlet is a 6mm pipe interface.

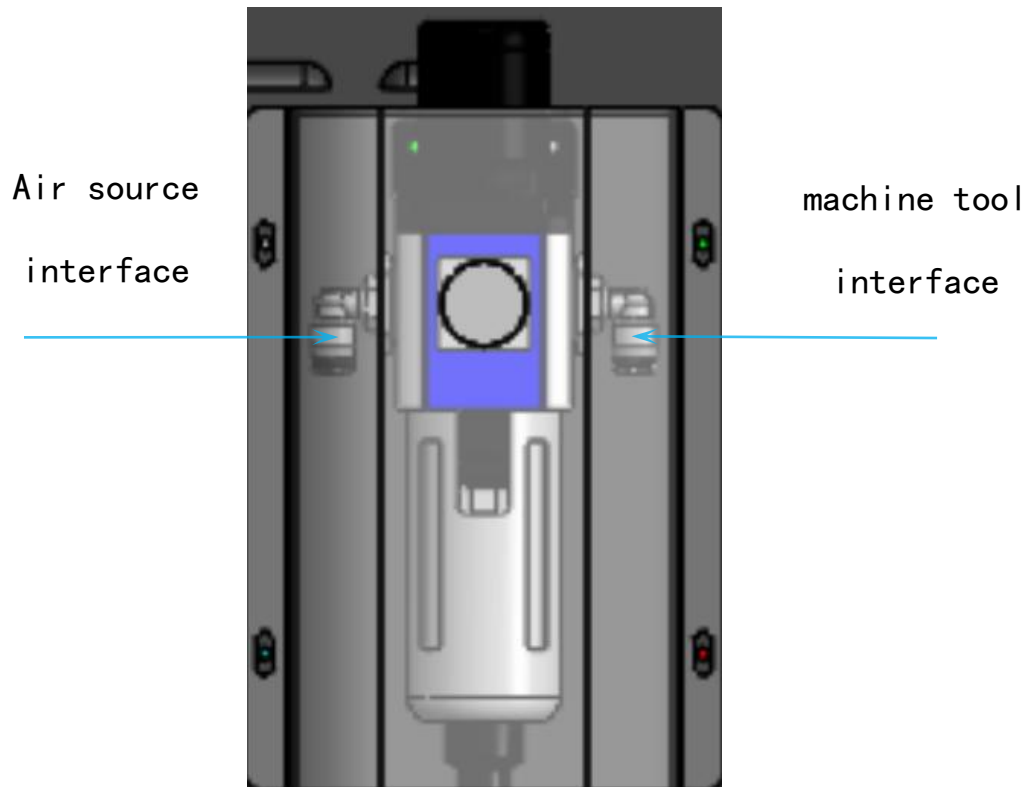


Figure 4.3.1 Filter Connection

4.4. Tool Installation

Turn on the power and wait for the system to boot up. Once powered on, ensure the foam inside the machining chamber is cleaned. Click "Manual" to enter the interface shown in Figure 4.4.1. Hold down "Release Clamp" to remove the spindle plug.

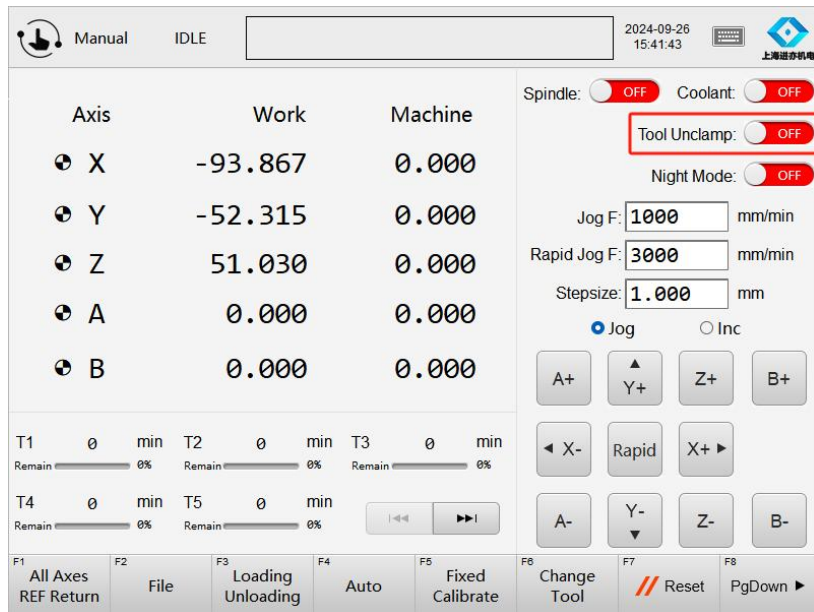
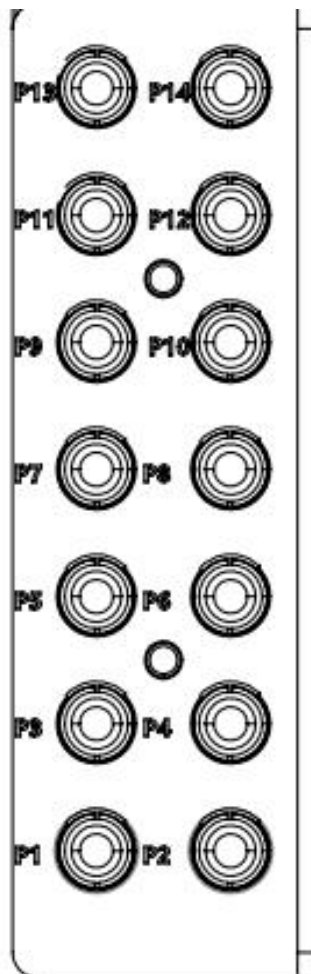


Figure 4.4.1 Release Clamp

Place the tool in the corresponding tool library slot.



Zirconia bur installation position				
Tool number	Name	Shank diameter/mm	Cutting diameter/mm	Cutting length/mm
T1	Ball nose cutter	ø6	2.0	16
T2	Ball nose cutter	ø6	1.0	16
T3	Ball nose cutter	ø6	0.6	16

Glass-ceramic bur installation position				
Tool number	Name	Shank diameter/mm	Cutting diameter/mm	Cutting length/mm
T12	Glass-ceramic bur	ø6	2.0	13
T13	Glass-ceramic	ø6	1.0	10

	bur			
T14	Glass-ceramic bur	ø6	0.6	8

Titanium disc bur installation position

Tool number	Name	Shank diameter/mm	Cutting diameter/mm	Cutting length /mm
T1	Ball-end mill	ø6	3.0	16
T2	Ball-end mill	ø6	2.0	12
T3	Ball-end mill	ø6	1.0	8
T4	Drill bit	ø6	2.2	20
T5	Drill bit	ø6	1.5	15
T6	Flat-end mill	ø6	2.0	10

T7	Ball-end mill	Ø6	1.5	12
T8	Round nose cutter	Ø6	2.0 R0.2	12
T9	Round nose cutter	Ø6	1.5 R0.1	16
T10	Round nose cutter	Ø6	1.5 R0.1	12
T11	NA	NA	NA	NA

Figure 4.4.2 Tool Library and Tool Installation Table

Click "Tool Change" again to enter the interface shown in Figure 4.4.3. Select the tool library slot with the installed tool to perform the automatic tool change.

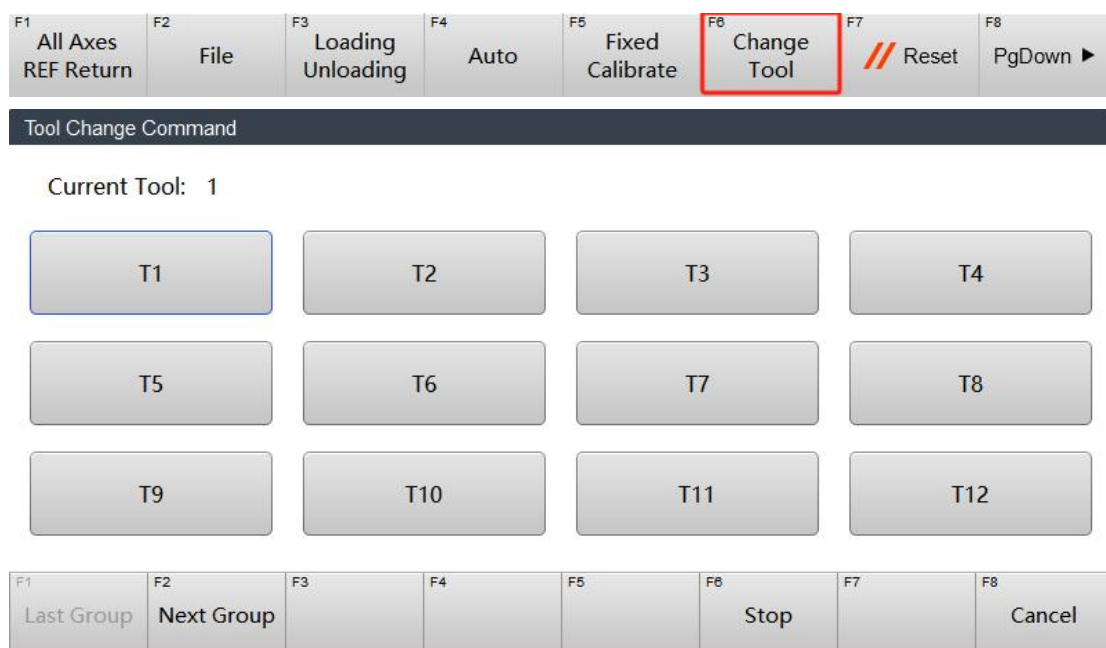


Figure 4.4.3 Tool Change Interface

5. Product Operating Instructions

5.1. Precautions Before Use

Before starting the machine, the following steps must be performed to avoid damage to the machine tool:

1. Ensure that the equipment base is placed with sufficient rigidity, otherwise, it will affect the equipment's performance.
2. Connect the grounding wire at the rear to reduce static electricity.
3. Connect the air pipe and ensure sufficient compressed air supply. Check if the pressure gauge on the air source filter reads above 0.60 MPa. If the air pressure is below 0.60 MPa, check if the air compressor is functioning properly or replace it with a larger air tank. Otherwise, the system will trigger an alarm and stop operating.
4. Connect the chiller. Failure to connect the chiller may cause spindle burnout, and in severe cases, may result in a fire.
5. Connect the water pump. Failure to connect the water pump may cause excessive milling temperatures, affecting tool lifespan and damaging materials.

5.2.Operation Panel and Function Introduction

Figure 5.2.1 shows the touchable LCD display operation panel. The front panel is divided into three main areas.

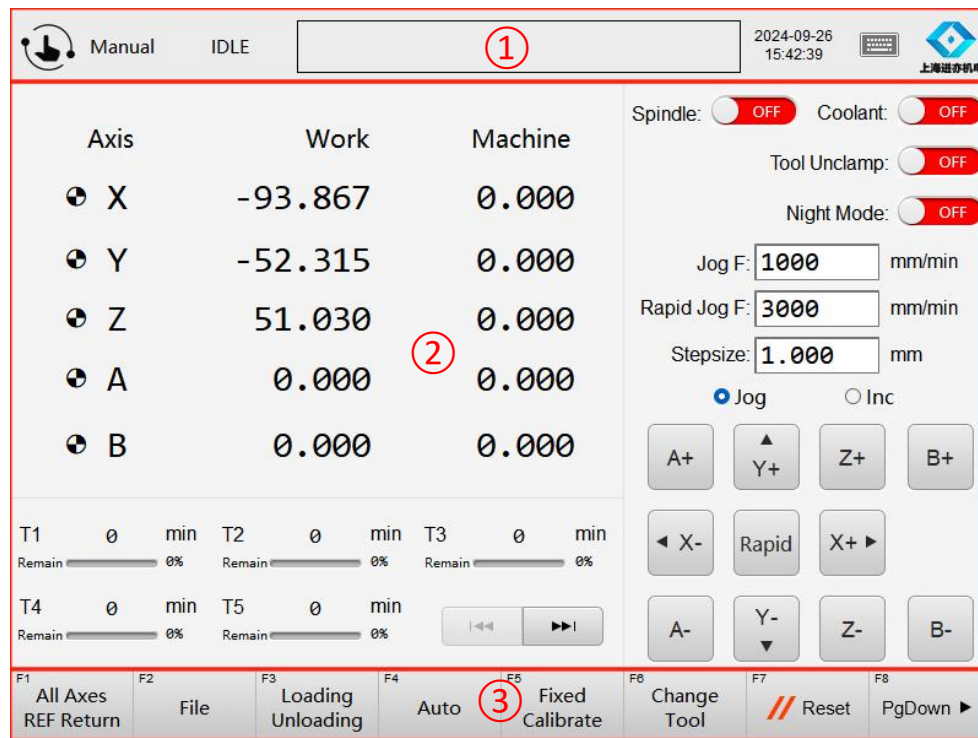


Figure 5.2.1 Operation

- ① : CNC Status Bar
- ② : Function Area
- ③ : Operation Button Bar

(1) System Status Display Area

Includes the following information:

Current function area display: Auto, Manual.

Current system status: Idle, Running, or Emergency Stop, etc.

System prompts or alarm messages:

- When an alarm occurs, clicking will show the current alarm.
- When no alarm is active, clicking the blank area will show historical alarm information.

Current date and time.

Soft keyboard activation.

Name and Logo: Clicking allows for permission switching, software upgrades, public file upgrades, and system maintenance operations.

(2) Function Area

The function area can be switched between "Auto" and "Manual" via the operation button bar.

The manual interface is shown below:

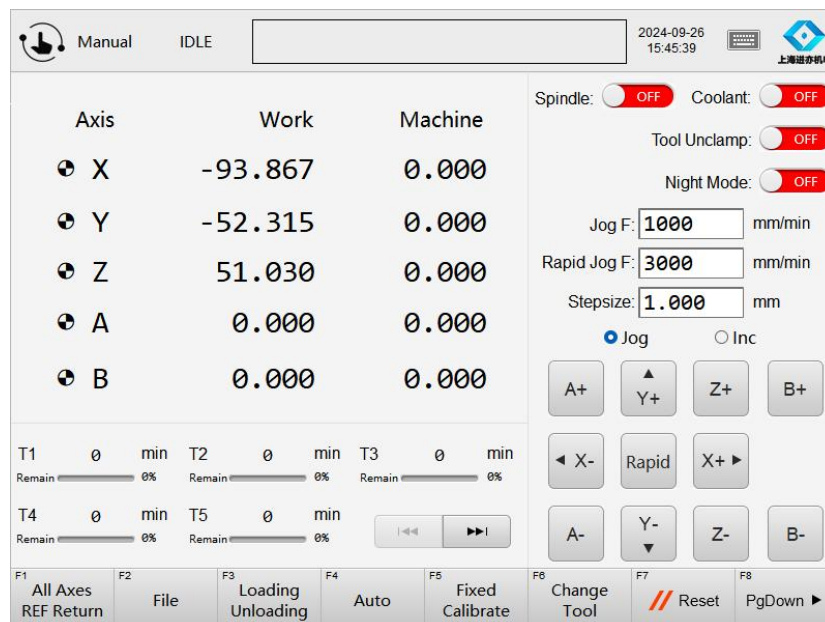


Figure 5.2.2 Manual Interface

Spindle: Switches spindle rotation on or off.

- **Release Clamp:** Switches spindle tool release on or off.

- **Cooling:** Turns the coolant on or off.
- **Night Mode:** When enabled, the machine automatically shuts down after completing the processing task.
- **Manual Low Speed:** Moves all axes at low speed.
- **Manual High Speed:** Moves all axes at high speed.
- **Step Distance:** In step mode, each axis moves a fixed distance before stopping.
- **"Continuous", "Step":** Switches between continuous and step mode.
- **"X+", "X-", "Y+", "Y-", "Z+", "Z-", "A+", "A-", "B+", "B-":** Control buttons for each axis.
- **High Speed:** Enables manual high-speed movement.

The automatic interface is shown below:

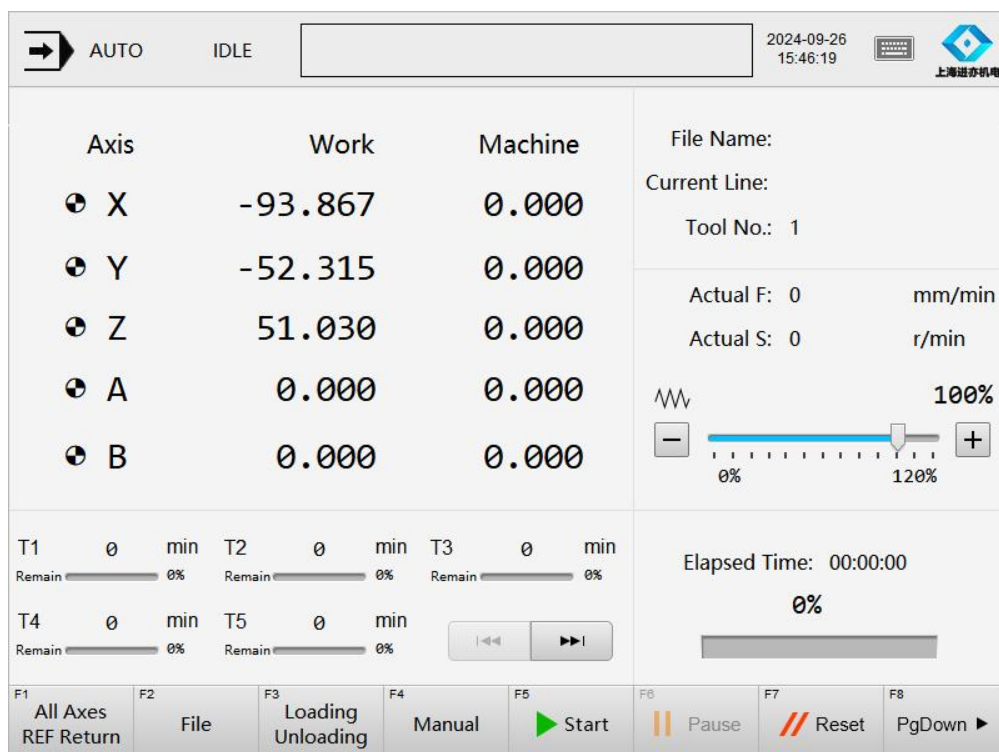


Figure 5.2.3 Automatic Interface

The top-left corner displays "Auto".

Displays the mechanical coordinates and workpiece coordinates for each axis.

After returning to the mechanical origin, a "zero return" indicator will appear.

Tool number and tool life display.

Program name, current program line, current tool number, feed speed, spindle speed display, and spindle speed adjustment.

Displays processing time and processing progress percentage.

(3) Operation Button Bar

The manual mode operation buttons display:



Figure 5.2.4 Manual Mode Operation Button



Figure 5.2.5 Next Page Interface

Zero Return: Return each axis to the mechanical origin.

File: Load program file.

Load/Unload: Button for loading and unloading materials.

Auto: Switch to automatic mode operation buttons.

Fixed Tool Setting: Measure the tool length.

Tool Change: Manually change to the target tool.

Reset: Reset the device status.

Next Page: Switch to the next page function button.

Return to Workpiece Origin: Quickly locate to the workpiece origin position.

Return to Fixed Point: Quickly locate to a specified coordinate position.

Fine Adjustment: Modify the coordinate offset.

User Command: Enter and execute simple commands, up to seven commands.

Shutdown: Shut down the system.

Previous Page: Switch to the previous page function button.

Automatic mode operation buttons display:



Figure 5.2.6 Automatic Mode Operation

Button Interface



Figure 5.2.7 Next Page Interface

Manual: Switch to manual mode.

Start: Start the machining process.

Pause: Pause the machining process.

Select Line for Machining: Custom program line machining.

Continue from Breakpoint: Resume machining from the point where the program was interrupted.

Weihong Cloud: Connect to Weihong Cloud for data monitoring and management.

Safety Door Open, Safety Door Closed: Not in use.

5.3. Daily Operation

Pre-Startup Inspection

To ensure the safety of the operator and the machine, please perform the following checks before starting the machine to ensure its safety and longevity:

1. Check if external wiring, pipes, and connections are free from damage.

2. Ensure that all control switches are not obstructed or interfered with.

3. Check that there are no obstacles around the internal spindle.

After powering on, the display will appear as shown in Figure 5.3.1. Click "Zero Return." When the mechanical coordinates of the five axes show zero, the indicator will appear in front of each axis.

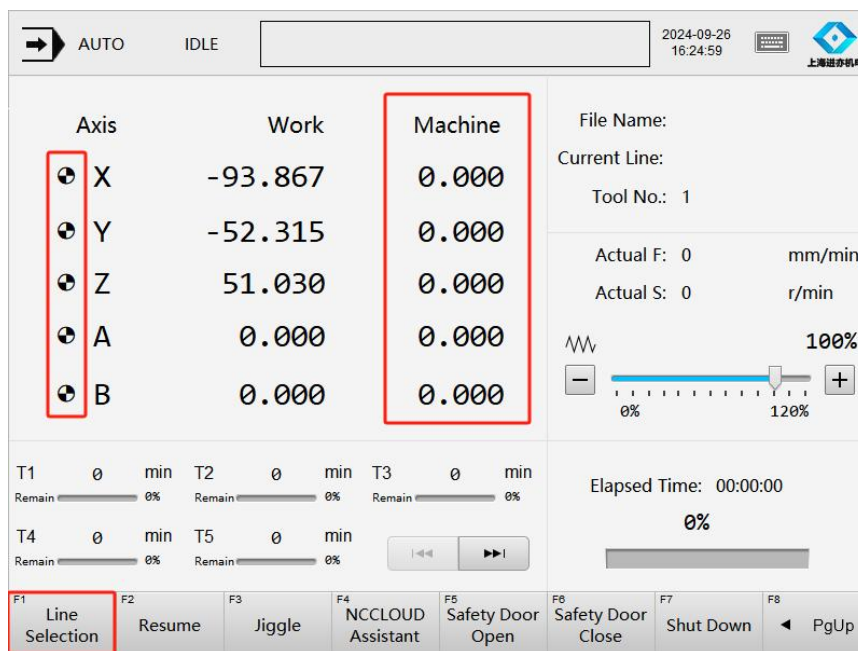


Figure 5.3.1. Zero Return

5.4. Program Operation

(1) Prepare the Program

Store the program onto a USB drive, connect the device via

the USB interface, and import the program into the device as shown in Figure 5.4.1.

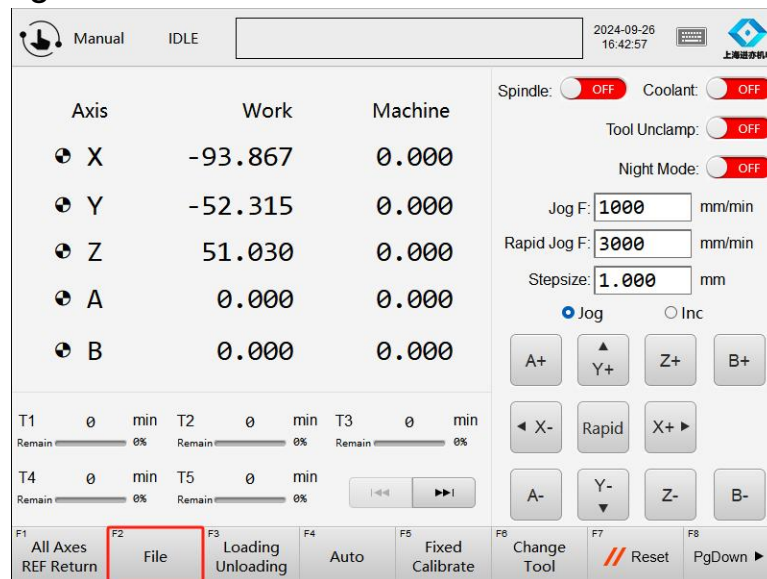


Figure 5.4.1.file

Click "File" to open the dialog box shown in Figure 5.4.2. Click "USB Program," select the program to be processed, and click "Copy to Local Machine" to complete the preparation before machining. The copied program can be viewed by clicking "Local Program."

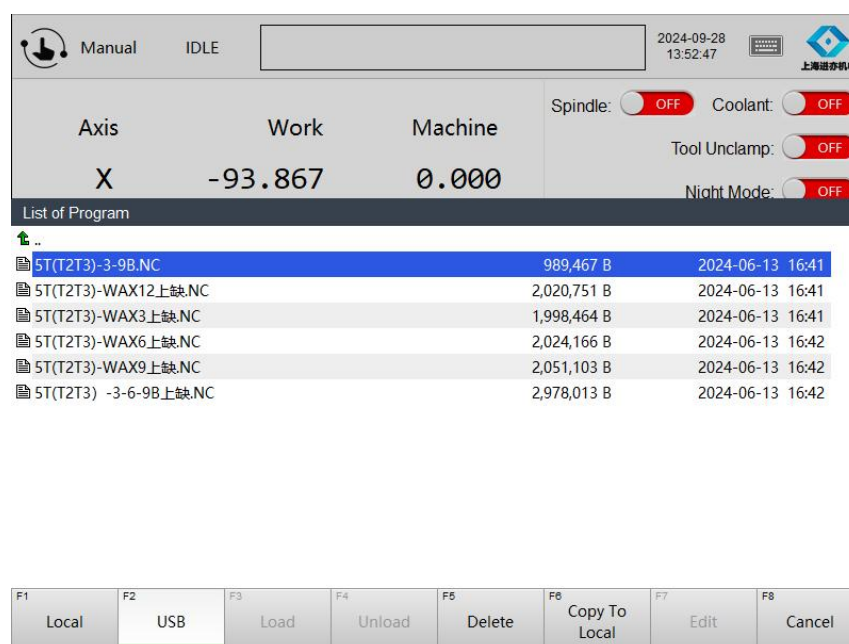


Figure 5.4.2 Program Import

(2) Automatic Program Operation

Click "Local Program" as shown in Figure 5.4.3, select the program to be processed, and click "Load."

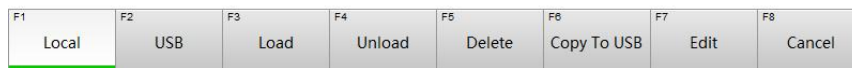
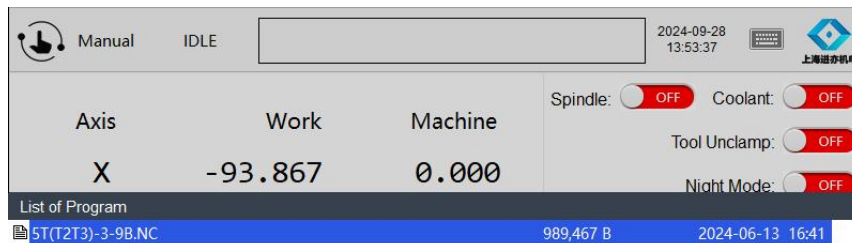


Figure 5.4.3 Program Loading

Enter the automatic machining interface shown in Figure 5.4.4, check if the program name matches the program to be processed. After confirmation, click "Start" to begin the dental processing.

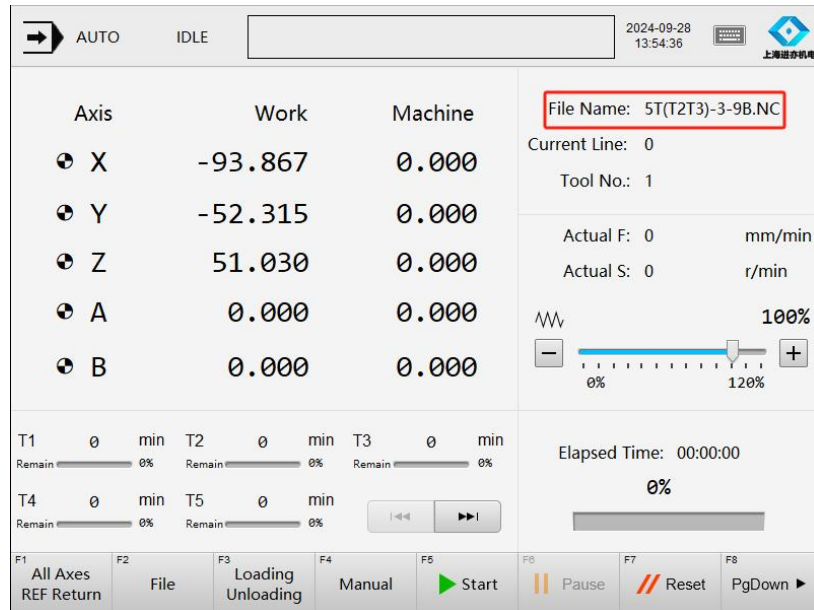


Figure 5.4.4 Program Name Confirmation

5.5. Dry/Wet Switching

(1) Before switching between dry and wet cutting, ensure the machining cavity is cleaned of any chips, and remove all tools. The chip removal pipe should be connected to the vacuum during dry cutting and to the filter tank during wet cutting.

(2) To switch from wet cutting to dry cutting, press the switch to the right, turn off the water pump output, and turn on the vacuum cleaner.

(3) To switch from dry cutting to wet cutting, press the switch to the left, turn on the water pump output, and turn off the vacuum cleaner.

Warning: Failing to remove the tool may cause a machine crash or tool breakage.

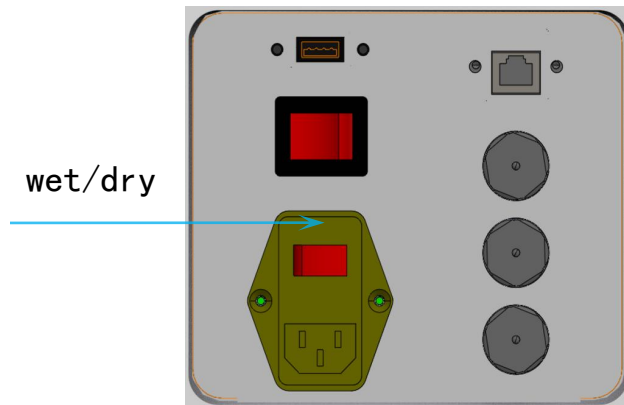


Figure 5.5.1 Dry/Wet Switching

5.6. Automatic Calibration Function

The device may experience deviations after long-term use. When the product's cutting effect is unsatisfactory, use this function.

(1) Prepare Tools

Calibration rod (6 to 4), calibration disk, and a 3mm hex wrench.



Figure 5.6.1 Calibration Rod

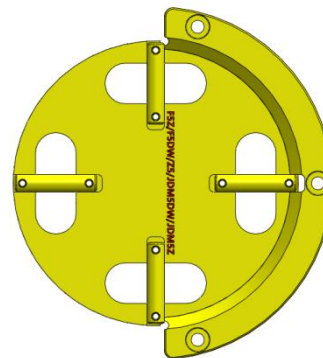


Figure 5.6.2 Calibration Disc

(2) Install the calibration disc and calibration rod.

Attach the calibration disc to the C-type fixture; install the calibration rod onto the spindle, with the other end inserted into the interface on the upper right side of the spindle.

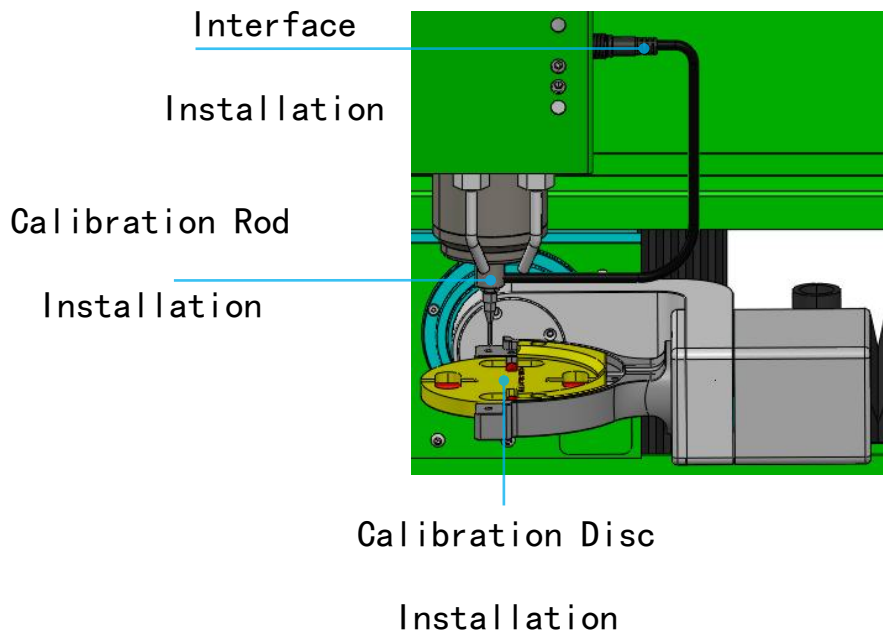


Figure 5.6.3 Tool Installation

(3) Click the "Next Page" button on the function bar; click the "Fine Adjustment" button; then click "Auto Calibration."

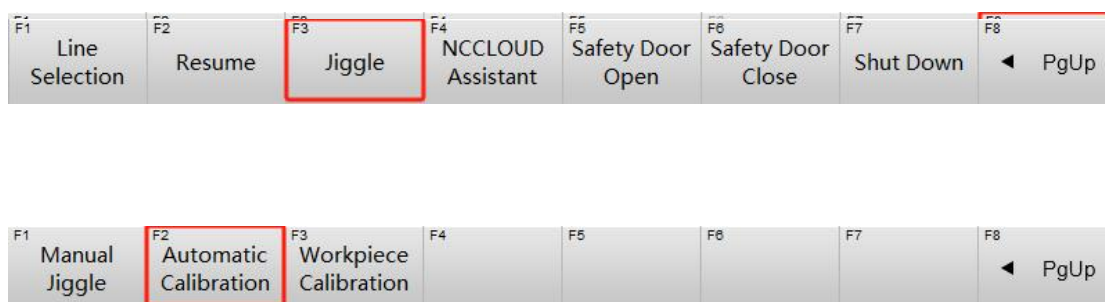
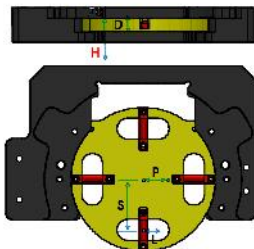


Figure 5.6.4 Automatic Calibration

(4) After entering the password "123456," you will access the automatic calibration page, as shown in Figure 5.6.5. Click "Execute" to initiate the automatic calibration process.

Automatic Calibration			
Center Coor X		93.867	
Center Coor Y		52.315	
Detection Start Z		-40.000	
Levelling Pos. P		20.000	
Part Thickness D		10.000	
Centering Pos. S		35.000	
Detection DIST L		10.000	
Detection Height H		-10.000	
Center X Offset		0.000	
Datum Detect	X:	93.871	
	Y:	52.297	
	Z:	-32.356	
	A:	0.022	
	B:	-0.018	
Public Offset	X:	0.000	Y: 0.000 Z: 0.000
	A:	0.000	B: 0.000



Note:
 XY: Standard part CTR mechanical coor.
 Z: Z coor. of detection start Pos.
 P: X/Y DIST from levelling Pos. to CTR.
 D: Thickness of standard part.
 S: X/Y DIST from centering Pos. to CTR.
 L: DIST from start to theoretical Pos.
 H: Work coor. of detection start Pos.

F1	F2	F3	F4	F5	F6	F7	F8
Execute							Cancel

Figure 5.6.5 Automatic Calibration

5.7 Auxiliary Functions

(1) Below the manual control panel, click the "Next Page" button in the function key operation area to navigate to the page shown in Figure 5.7.1.

Manual IDLE

2024-09-26 17:18:54

上海进亦机电

Spindle: ☐ OFF Coolant: ☐ OFF

Tool Unclamp: ☐ OFF

Night Mode: ☐ OFF

Jog F: mm/min

Rapid Jog F: mm/min

Stepsize: mm

☒ Jog ☐ Inc

Axis	Work	Machine
X	-93.867	0.000
Y	-52.315	0.000
Z	51.030	0.000
A	0.000	0.000
B	0.000	0.000

T1 0 min T2 0 min T3 0 min

Remain 0% Remain 0% Remain 0%

T4 0 min T5 0 min

Remain 0% Remain 0%

Navigation buttons: X-, Rapid, X+, Y+, Z+, B+, A-, Y-, Z-, B-

F1 To Work Zero	F2 To Fixed Point	F3 Jiggle	F4 MDI	F5	F6 Shut Down	F7	F8 PgUp
-----------------	-------------------	-----------	--------	----	--------------	----	---------

Figure 5.7.1.

•**Return to Workpiece Origin**": Returns to the center

point of the machining position.

- **"Return to Fixed Point"**: Returns to a pre-set position.

This function can be used before or after machining to facilitate the removal of the material tray and glass ceramics.

- **"Fine Adjustment"**: Performs manual calibration and automatic calibration.

- **"User Commands"**: Executes up to seven simple commands. Select one of the commands, and the system will automatically execute the input instruction.

(2) Below the automatic control panel, click the "Next Page" button in the function operation area to navigate to the page shown in Figure 5.7.2.



Figure 5.7.2.

- **"Selective Line Machining"**: Allows selecting the starting

and ending lines of an NC file for independent machining.

- **"Resume from Breakpoint"**: This function enables resuming machining from the paused progress after a program halt or abnormal power outage. A prompt will appear upon startup; press "Confirm" to resume the machining task.

Warning: Do not use this function after a tool break.

- **"Weihong Cloud"**: Connects to the Weihong Cloud for remote equipment monitoring.
- **"Safety Door Open", "Safety Door Close"**: These are safety door control switches. This model is not equipped with safety door control switches.
- **"Shutdown"**: System shutdown button. After completing machining, shut down the machine tool by selecting this option first, then turn off the machine tool's power supply.

6. Product Maintenance

6.1. Precautions

- (1) Ensure the equipment is properly grounded. A failure in grounding protection could pose an electric shock hazard.
- (2) The dust extraction pipe must be connected to the outside to prevent indoor air contamination, protect human health, and prolong the equipment's service life.
- (3) Clean the equipment's processing chamber thoroughly before changing cutting materials.
- (4) Ensure correct connections for the water cooling system, air supply system, and dust extraction system to avoid misalignment, which could severely damage key components. If there are abnormal water flow issues, stop using the equipment and contact us.
- (5) The air source must be clean and filtered. Otherwise, it could affect the surface quality of processed products and shorten the lifespan of equipment components. The air pressure must be above 0.60 MPa to avoid abnormal alarms.
- (6) When operating manually, always monitor the position of each axis. A collision between the spindle and the fixture will cause severe damage to key components. In case of an emergency, press the emergency stop button immediately.
- (7) The equipment's dedicated computer is exclusively for this

machine. Do not modify system settings or install/uninstall software.

(8) To ensure stable operation, use a dedicated USB drive. Do not use USB drives for personal or study purposes to avoid unnecessary issues such as viruses.

(9) Follow the standard procedure for shutting down and starting the computer to prevent system file loss, which may result in boot-up failure or slower system response.

(10) If you notice abnormal sounds or actions during operation, stop using the equipment and record the issue before contacting us.

(11) Regularly check the state of the cutting bur to ensure the cutting tip is sharp enough.

(12) When cleaning the machine, leave the tool holder in the spindle taper to prevent chips and debris from entering the spindle.

(13) Once the equipment is installed, it should not be moved. During any movement, apply force only to the base plate, not the casing, to avoid deformation or potential falls that could lead to serious accidents.

6.2. Main Maintenance Items and Checklist

Inspection and Maintenance Items		Inspection Interval			
		A	B	C	D
1	Remove dust from the equipment's processing chamber	✓			
2	Clean dust and oil stains from the screen	✓			
3	Check if the pressure of the pneumatic system is within the normal operating range	✓			
4	Check if the chiller is working properly and if there is sufficient water flow	✓			
5	Check if the exhaust fan is working properly	✓			
6	Check the coolant level in the tank and remove any debris from the tank filter	✓			
7	Wipe the spindle collet with a clean, soft cloth		✓		

8	Check if the guide rails move smoothly and listen for any unusual sounds			✓	
9	Check the machine's precision and calibrate if necessary			✓	
10	Replace the coolant in the tank and chiller				✓
A - Once daily B - Once weekly C - Once monthly D - Once every three months					

7. Concept of Scene Integration

Understanding user habits, we are committed to tailoring our solutions to match the unique needs and usage patterns of different users across various application scenarios. By minimizing unnecessary movements and time wastage, we aim to enhance efficiency and user satisfaction. Your minor inconveniences are the driving force behind our continuous improvement and innovation.

7.1. Diverse application scenarios

(1) The computer is directly connected to the machining machine via an Ethernet cable for control, while the industrial computer is connected to WiFi to enable remote technical support services.

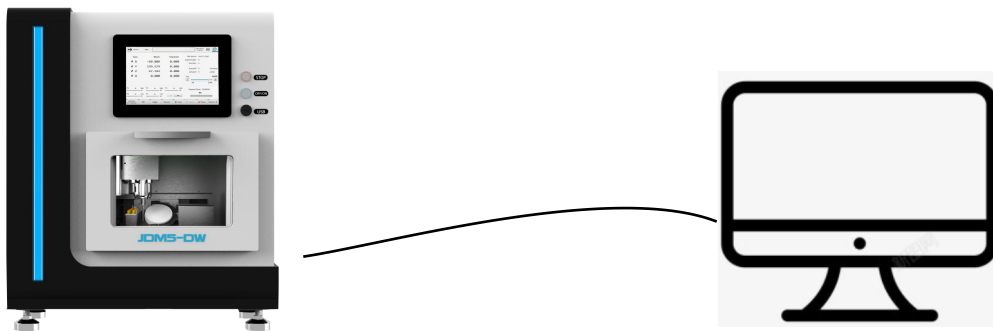


Figure 7.1.1 Direct connection with
network cable

(2) The router establishes a local area network (LAN), allowing the industrial control computer to connect to all processing machines within the LAN. The router is connected to the Ethernet for remote technical support services.

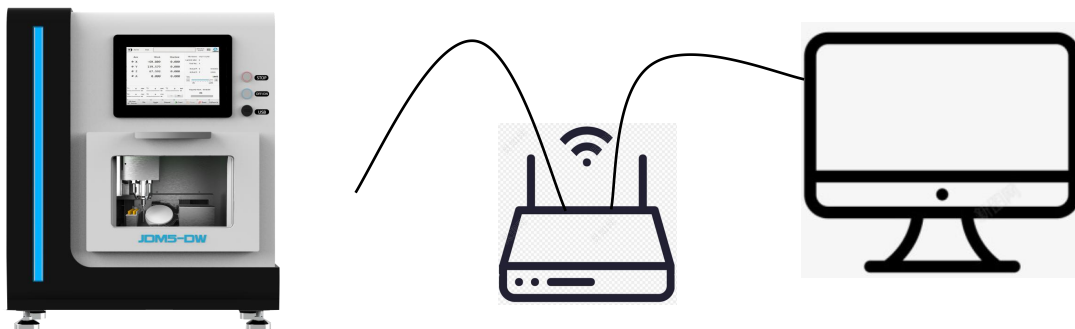


Figure 7.1.2 LAN Connection

(3) The processing machine connects to the switch to expand network ports, allowing the PC to connect to all processing machines within the expanded network. The PC can optionally connect to the Ethernet for remote technical service support.

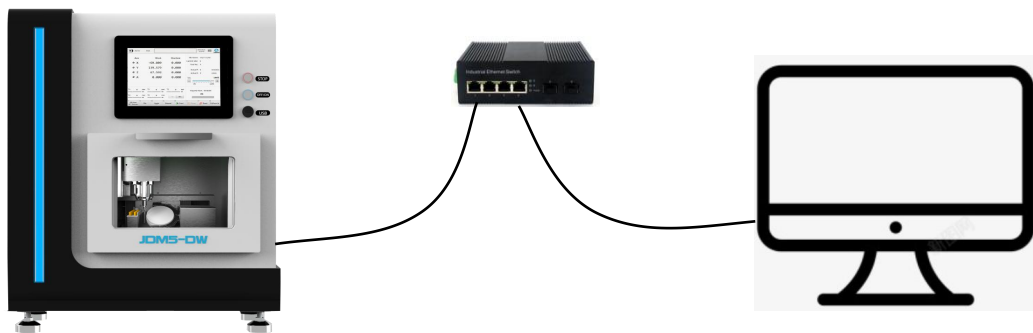


Figure 7.1.3 Switch Connection

(4) The processing machine is connected to the router via a network cable. The industrial control computer can connect to the processing machine through the router's Wi-Fi. The router is externally connected to the Ethernet for remote technical service support.

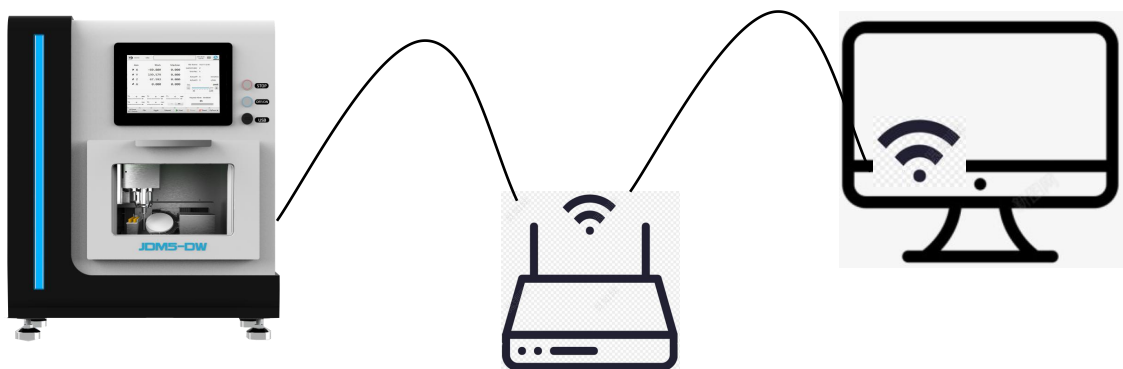


Figure 7.1.4 Wifi Connection

7.2. Establishment of Network Connection between Industrial Control Computer and Machine Tool

7.2.1. Precautions:

This feature requires the device to be connected to a network or local area network (LAN).

This operation requires access to the advanced settings page. Please avoid clicking any actions outside of this step to prevent machine tool or system malfunction.

(1) Click the top-right corner of the machine tool's operation interface, as shown in Figure 7.2.1, and then click the "Manufacturer" option.

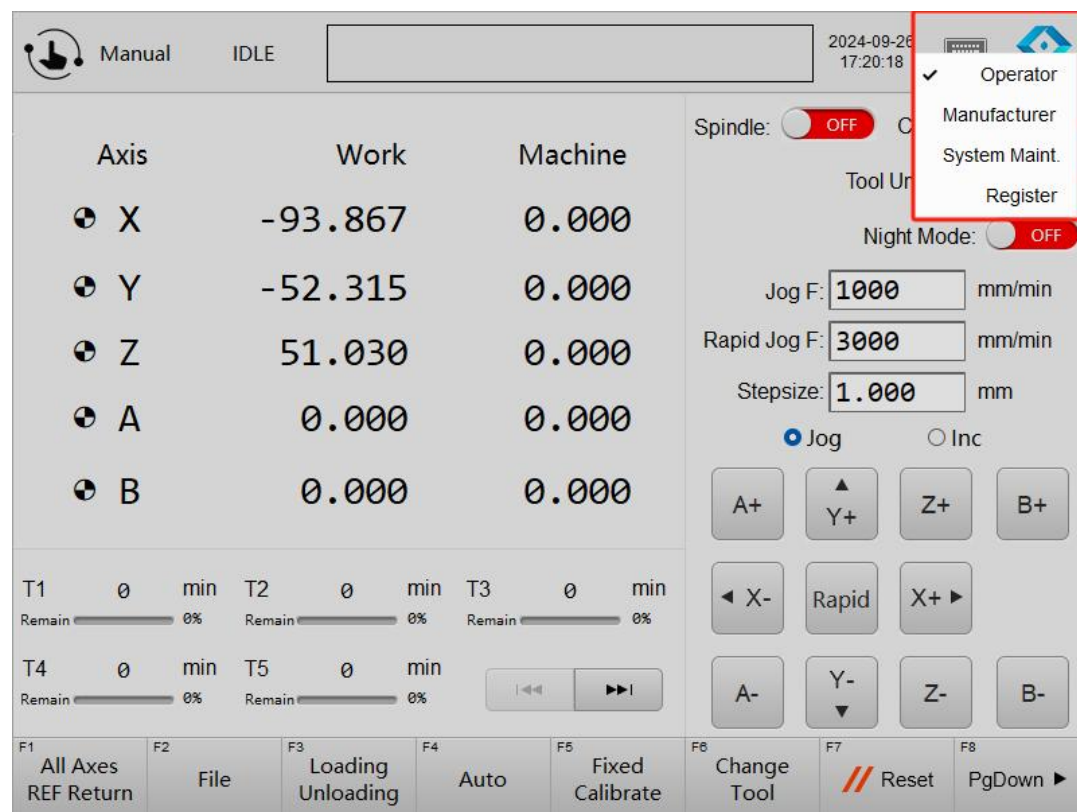


Figure 7.2.1 Switch Permissions

(2) A password input dialog box will pop up. As shown in Figure 7.2.2, enter the password "123456".

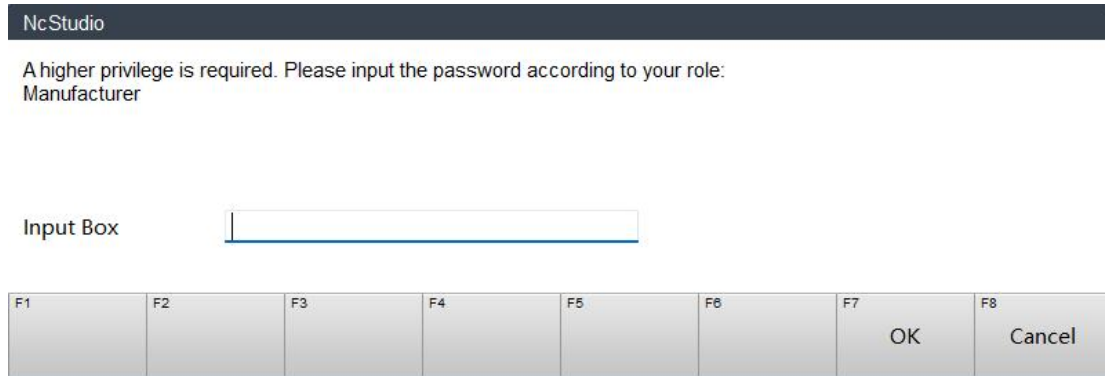


Figure 7.2.2 Enter Password

(3) Enter the manufacturer interface, as shown in Figure 7.2.3. Click "System Information," then click "Show Desktop."

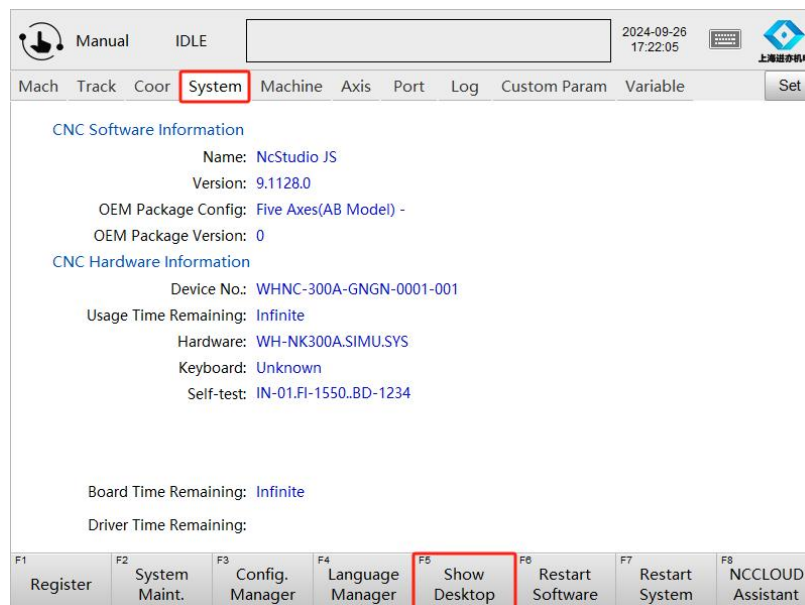


Figure 7.2.3 Show Desktop

(4) The software system desktop will be displayed, as shown in Figure 7.2.4. Double-click "This PC."

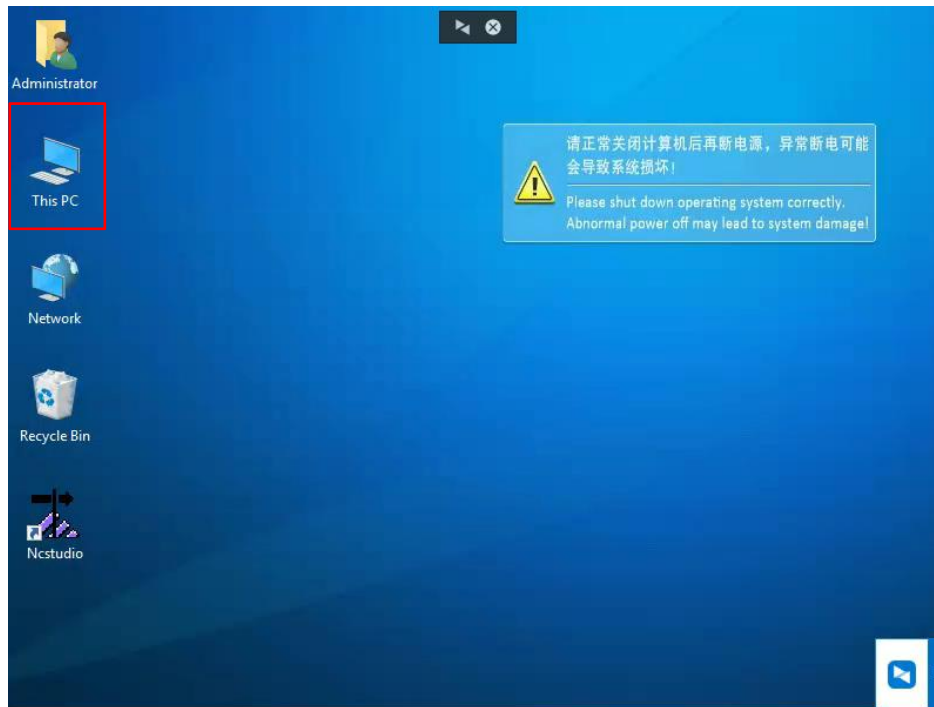


Figure 7.2.4 This PC

(5) A dialog will pop up as shown in Figure 7.2.5. Press and hold on the blank area of the "Devices and Drives" section.。

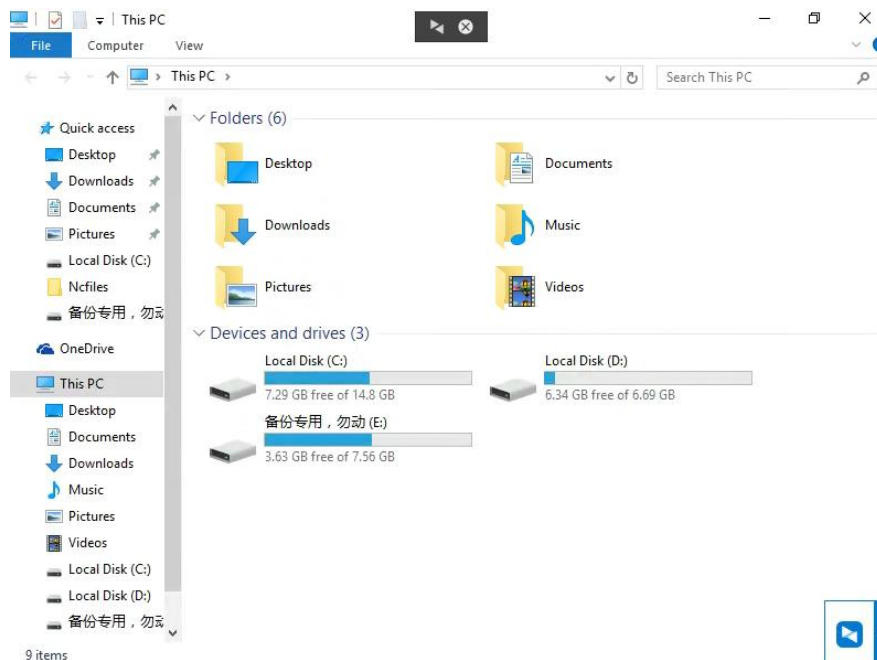


Figure 7.2.5

(6) A menu bar will pop up as shown in Figure 7.2.6; click "Properties."

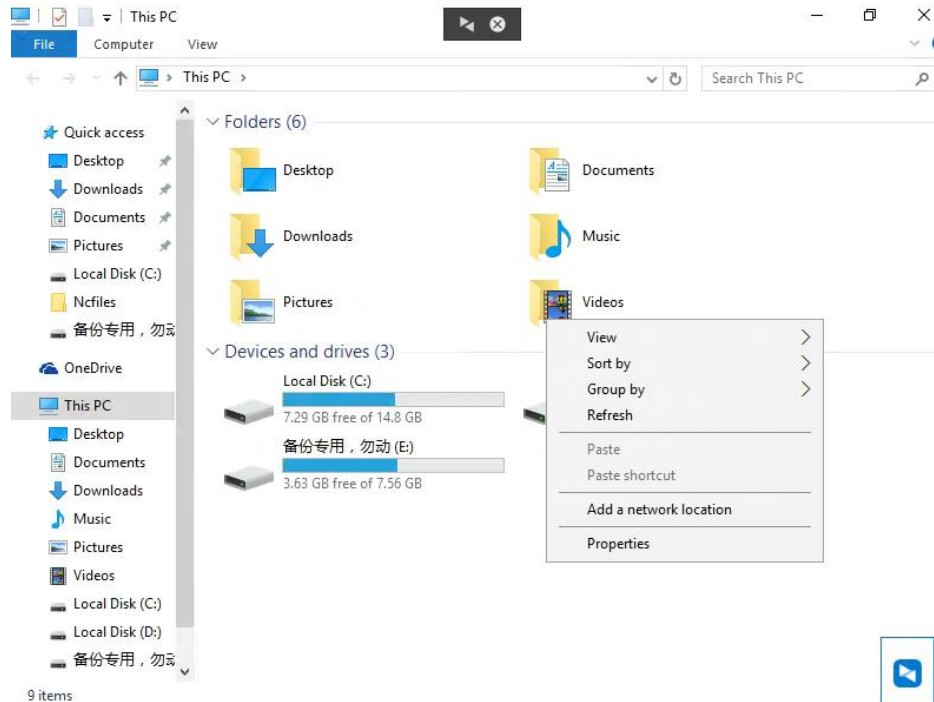


Figure 7.2.6

(7) A dialog will pop up as shown in Figure 7.2.7; record the full computer name "68EDA47216F8".

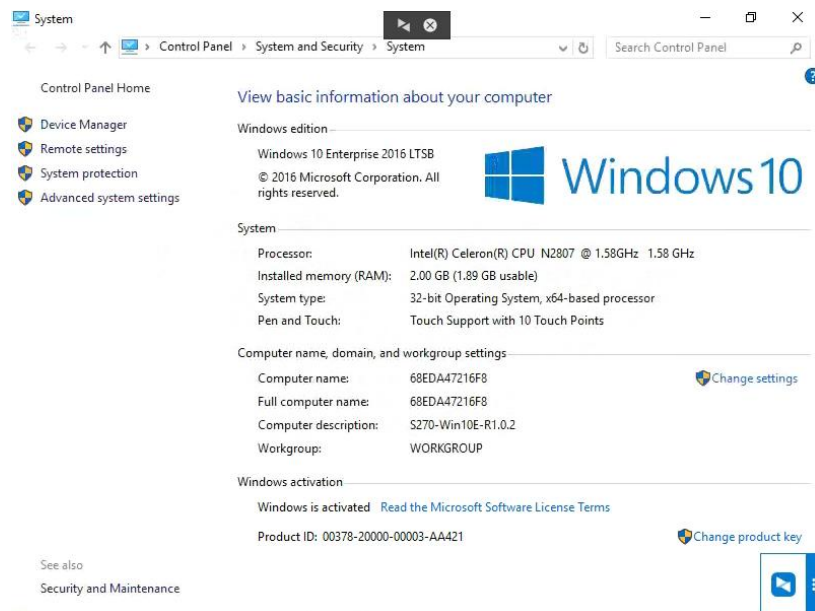


Figure 7.2.7

(8) Then, go to the desktop of the industrial control computer that needs to be connected to the machine tool, as shown in Figure

"JDM5DW." Click "Finish" to complete the creation.

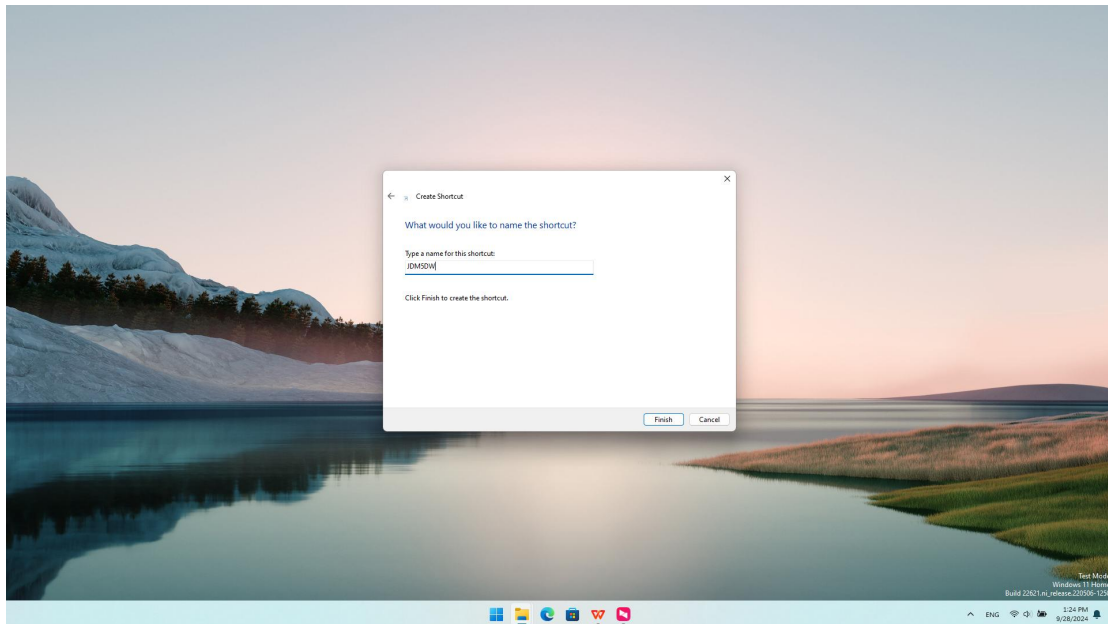


Figure 7.2.10

(11) After creation is complete, you can find the device connection icon on the desktop, as shown in Figure 7.2.11. Double-click the icon to open it.

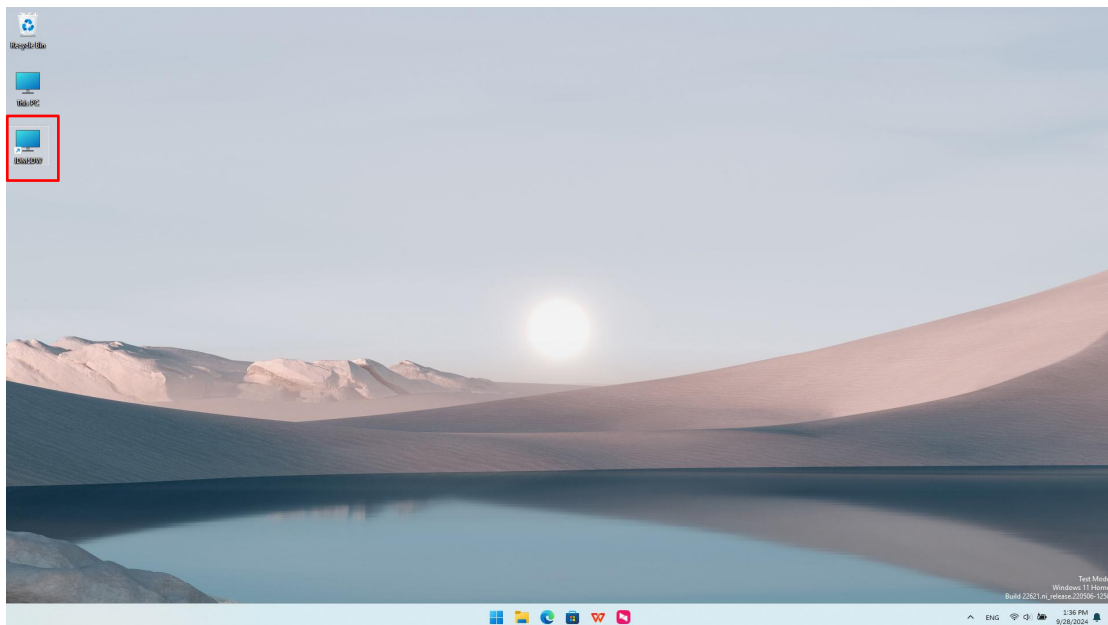


Figure 7.2.11

(12) The shared folder of the connected device will pop up, as

shown in Figure 7.2.12. Double-click to open the folder.

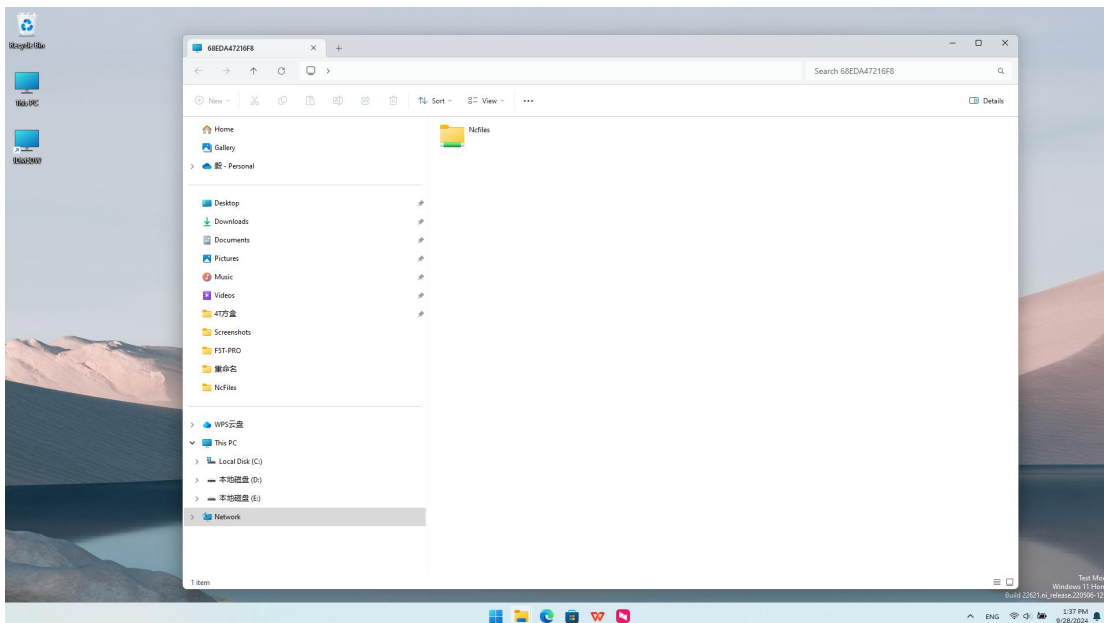


Figure 7.2.12

(13) As shown in Figure 7.2.13, you can view the NC files inside the machine tool through the industrial control computer. You can also remotely copy, transfer, or delete the NC files.

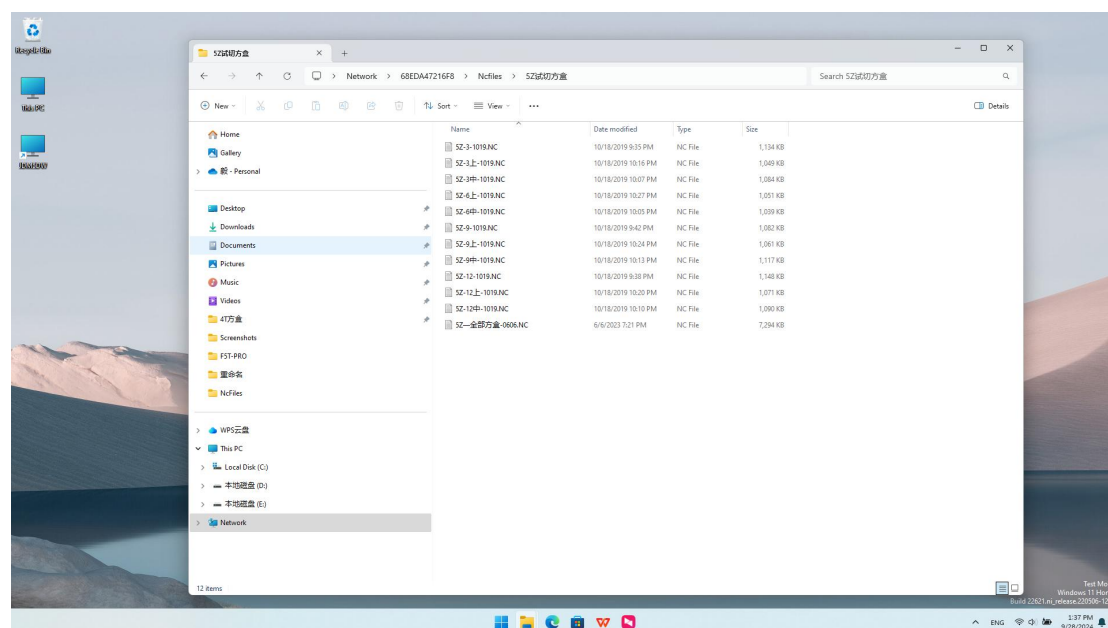


Figure 7.2.13

7.3.Product Software Support

This manual only provides technical support related to the product's hardware functions. For any issues regarding product software installation, please contact after-sales customer service.

The following are the recommended software configurations.

System:	Windows7/Windows10 64 bit
Memory	16GB
CPU	Intel i7-10700K/AMD R7-5800
Graphics Card	GTX2060
Solid State Drive	512G
Reserved Space for C Drive	10G
Reserved Space for Hard Drive	20G

8.Common Faults and Troubleshooting Table

No.	Fault Phenomenon	Troubleshooting Items	Solution
1	Program cannot	Encryption period	Please contact

	run, prompts machine is locked, please contact the agent	expired	customer service
2	System air pressure warning, processing interrupted	① Check if air pipes are leaking	Replace the air pipe
		② Check if the supply air pressure is below 0.60 MPa	Check if the air compressor is working properly
3	Tool breakage during processing	① Tool has reached its service life	Replace with a new tool
		② Software layout error	Correct the layout error position
4	Abnormal sound during processing	① Check the lubrication condition of the lead screw and rail	Improve lubrication conditions, ensuring sufficient lubricant
		② Check the lead screw bearing	Replace the bearing if damaged
		③ Check if the motor shaft and lead screw bearing are loose	Tighten the coupling lock screws if loose
5	Touch screen not responding	① System crash	Restart the system
		② Loose USB connection of the touch screen	Replug the USB connection
6	Inverter alarm: -1	Communication line fault	Open the side cover and replug the inverter's bottom network cable interface
7	Inverter alarm: 34, spindle temperature too high	① Low cooling water pump water level	Add or replace cooling water
		② Cooling loop blockage	Clean the chip in the water tank and replace the

			cooling water
8	Alarm prompts limit switch or motion exceeds travel	① Check if X, Y, Z axes are at limit	Turn off the machine, wait for ten seconds, and restart
		② Motion limit	Stop the device and revise the NC file
9	Alarm "Tool change failed"	Check if the tool magazine has the required tool	Place the required tool in the position where the tool is missing
10	Alarm "Tool broken"	① Tool has reached its service life	Replace with a new tool
		② Tool fracture	
11	Alarm "Communication error"	Check the wiring	If no contact issue, turn off for more than ten seconds, then restart

If the phenomenon is not listed in the table above, please contact after-sales customer service.

9. Product Technical Specifications

Name	JDM5DW Five-Axis Dry and Wet Cutting Milling Machine
Tool Magazine Capacity	14 tools
Size (mm)	642*642*780
Weight	Approximately 233 kg
Input Voltage	Single-phase AC 220V
Spindle Power	1.8 kw (optional 2.5 kw)
Total Machine Power	3.5 kw (optional 4.0 kw with 2.5 kw spindle)
Number of Axes for Processing	Five-axis linkage

Processing Materials		Glass ceramics, prefabricated rods, zirconia, titanium and other metals or non-metals, wax, HPP resin, etc.
Needle Model		Shank 6
Spindle:	Type	Oil cutting (optional water cutting)
	Speed	60000rpm
	Maximum Feed Rate	3000mm/min
	Cooling	Water cooling
Stroke Range	A-axis	360°
	B-axis	+ 23° - 90°
Average Processing Time	Rod fixture/bridge	3-7hours
	Glass ceramics	10-20min
	Titanium abutments	7-25min
	Titanium crowns	15-22min
	Wax	2-5min
	Soft metals like PMMA	6-12min

10. Configuration list

specifications	name	quantity	unit
The host machine and its ancillary equipment	JDM5DW denture engraving machine	1	A
	power line	1	root

Random accessories	air tube	1	root
	inner hexagon spanner	1	A
	M4 * 20 screws	1	wrap
	paraffin block	1	A
	50 Vacuum tube, throat hoop, plastic rotating joint	1	cover
	Handle 4 zirconia truck needle: 0.6; 1.0; 1.5; 2.0	4	branch
	Spindle wrench	1	A
	softdog	1	A
delivery attached documentation	instructions	1	portion
	Factory inspection report	1	portion
	Factory installation report	1	portion
	Equipment certificate	1	portion

	softdog	1	A
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