IRON CORE i5 PRO User Guide

Thank you for choosing our product. To ensure you can use this product correctly and safely, and to fully understand its performance, please read this operating manual carefully and keep it in a safe place to prevent loss.

The Company shall not be liable for any direct or indirect loss arising from the use of this product, whether or not the product is defective. Similarly, the Company shall not be liable for any direct or indirect loss arising from products manufactured using this product.

Summary:

UP3D is committed to continuous optimization, iteration, and product development strategies. Although we have made every effort to produce the most up-to-date product documentation, please note that this document does not constitute an absolutely reliable instruction manual for the current equipment. We reserve the right to make modifications without prior notice. If you have any queries regarding this product or the contents of this manual, or discover any misleading or omitted information, please do not hesitate to contact our company.

IRON CORE i5 PRO User Guide—Published 30 November 2025

The original version was released in Chinese.

1.Welcome

Thank you for choosing the IRON CORE i5 PRO dental smart milling machine. We take pride in and are confident about providing you with this advanced technological product. Each unit undergoes rigorous quality control to ensure it meets the highest standards upon completion of manufacture.

This operating manual is intended to provide you with a comprehensive understanding of all the functions of the IRON CORE i5 PRO. It is also designed to assist you in the correct operation and maintenance of the equipment, ensuring you can maintain a high-quality production work.

1.1 Document User

This document is intended for the following groups and individuals:
end-user
Dealers at all levels
Technical Support Staff

If you have any queries regarding this product or require further technical support, please do not hesitate to contact our customer service team.
We shall be delighted to provide you with assistance and support.

Thank you once again for choosing the IRON CORE i5 PRO dental smart milling machine!

2.General Information

2.1 Intended use

This product is specifically designed for dry or wet dental milling and is intended solely for dental applications. It must not be used for any other purpose.
This equipment is suitable for milling dental materials, including but not limited to zirconia, glass ceramics, PMMA, PEEK, composite resins, wax, and titanium metal for fabricating dental restorations such as crowns, inner crowns, bridges, inlays, onlays, and veneers.
For further information regarding this device, please visit our official website: https://www.UP3Ds.com/.

2.2 Operator requirements

Only person who have undergone professional training, possess sufficient knowledge and experience and are familiar with relevant regulations, are capable of performing assigned tasks, and can independently identify and avoid potential hazards shall operate this equipment.

Important Notice: The manufacturer shall not be held liable for any damage arising from the following causes:
➢ Disregarding or neglecting this user guide
➢ Deliberate misuse
➢ Not in accordance with the intended use
➢ Use by untrained personnel
➢ Use by non-professionals (e.g. during maintenance work)
➢ Making technical alterations to equipment without consulting the manufacturer
➢ Use of accessories not authorized by the manufacturer

2.3 Instructions for Use

- Before installing, maintaining, or operating the machine, please ensure you carefully read the equipment documentation supplied with the machine.
- If you remain uncertain about how to operate the machine, please refrain from using it and contact technical support for assistance.
- Ensure that each user has timely access to operating instructions and is guided to operate the machinery safely and correctly.

2.4 Incorrect operation of the machine

2.4.1 Avoid the risk of electric shock:

Do not remove the machine casing without authorization. Any improper handling may result in a risk of electric shock to the operator.

Contact with live components may result in electric shock; therefore, avoid operating in damp conditions to minimize this risk.

Do not allow any part of your body that is damp or wet to come into contact with the interior of the machine, to ensure personnel safety.

Inspect the machine's surroundings and all accessible internal areas daily for any leaked fluids, and remove them immediately.

Ensure that the machine's electrical circuit is fitted with a properly functioning residual current device and that the earth connection is correctly installed.

The power cord should be laid out sensibly to prevent cuts or damage.

Before connecting the machine, ensure the power cord is free from damage and switch off the main power switch before disconnecting the power cord.

Do not attempt any troubleshooting operations when the machine is in operation. Only qualified technicians may undertake disassembly and repairs.

2.4.2 External structure

Moving casing components may cause a risk of trap, for example:

- Processing room access door
- Side maintenance covers
- drawer

To ensure safety, please follow these steps:

1. When moving these housing components, use only the designated grip points.
2. During movement, ensure your hands are not caught.

2.4.3 Milling chamber

Moving machine components within the workshop pose risks of crushing, laceration, and burns. To ensure safety, please observe the following procedures:

Regularly inspect equipment for damage. The machine may only be used for processing when the working compartment door is fully closed and undamaged.

When operating machinery or handling trays/blades, please wear gloves.

Only grip the handle of the knife, as the tip is sharp and may cause cuts.

Do not touch the spindle during machining to avoid injury. Do not touch the spindle after machining to avoid burns from high temperatures.

2.4.4 Processing Noise

Significant noise may be generated during equipment operation. Prolonged exposure to this environment may result in hearing impairment or tinnitus.

Should loud noise be unavoidable, wear ear defenders during machining operations.

2.4.5 Milling Fluid Specifications

Only add the cooling lubricant "Specialized milling Fluid" to the reservoir, prepared at the appropriate concentration.

2.4.6 Maintenance and Troubleshooting

Machine malfunctions due to inadequate or incorrect maintenance/troubleshooting may pose injury risks.

Perform maintenance tasks according to the maintenance schedule to ensure the machine remains in good working order.

Never perform troubleshooting while the machine is running to prevent accidental injury.

Ensure the machine is operated only by authorized personnel to prevent unauthorized access.

Ensure the room housing the machine is equipped with an automatic fire detection system to promptly identify and respond to fire hazards.

For this machine's maintenance, use only genuine spare parts, genuine additional equipment, and genuine accessories.

2.4.7 Air System Instructions

Although the equipment is in operation, verify that pneumatic connections are secure. Loose pneumatic components may cause personal injury, particularly when disconnecting pneumatic lines without first shutting off the air supply. Loose components may move at high velocity along unpredictable trajectories, posing a risk of injury.

Before routing air hoses, shut off the compressed air supply valve. Set the air pressure to its minimum value prior to inspecting pneumatic hoses and connections. Should issues arise with machine connections or air hoses, disconnect the external compressed air supply and power source from the machine. Contact technical support for assistance.

2.5 Risk Notice Regarding Equipment Damage

2.5.1 Spindle-related

Avoid damage caused by lack of maintenance:

- Clean and replace the collets as required by maintenance specifications to ensure the machine operates correctly.

Avoid damage caused by unsuitable milling tools:

- It is recommended to use only milling tools supplied by UP3D to ensure milling tools quality and compatibility.
- Please utilize tools within the maximum tool life as indicated in the UPCNC to prevent poor restoration machining.

Avoid damage caused by impact:

- When operating within the machining chamber, never apply manual pressure to the spindle to prevent damage caused by accidental collisions.

2.5.2 UPCAM & UPCNC Software

Avoid equipment damage caused by software incompatibility, malfunctions and/or incorrect operation:
Always use the latest supported application software version to ensure system stability and compatibility.
Ensure your computer meets the software installation and usage requirements, and read the software documentation before installing or operating the machine.
Following extensive testing, UPCAM and UPCNC demonstrate high compatibility with the i5 PRO and may serve as production control software.
UP3D permits the use of third-party software as an alternative to UPCAM, but no other solutions may replace UPCNC.
Should third-party CAM software be employed, the software developer shall bear full responsibility for machining outcomes based on the calculated machining instructions.

2.5.3 Wet Milling

Wet machining without coolant or using unsuitable coolant is strictly prohibited.
Forced operation under such conditions will damage the machine, milling tools, and material tray, rendering the warranty void.
Always ensure sufficient, compliant coolant is present to guarantee adequate cooling during milling operations.

2.5.4 Dry Machining

Dry machining without an extraction system will cause machine damage, which is not covered under warranty.
Always use a suitable external extraction system during dry machining.

2.5.5 Input Voltage

Avoid damaging the electrical control system due to severe voltage fluctuations.
Connect the machine to a dedicated power circuit, or ensure no other equipment is connected to the circuit to prevent voltage fluctuations.
Should severe voltage fluctuations be unavoidable, install a voltage stabiliser to protect the machine.

2.5.6 Equipment Movement/Operating Environment

This equipment must operate on a stable workbench. Ensure the workbench is secure and reliable.
When moving the equipment, prevent it from falling, colliding, or being damaged by strong vibrations or other mechanical forces.
Do not operate the equipment in environments where temperature or pressure exceeds its specified requirements.
Do not operate the equipment in environments containing flammable or explosive materials to prevent fire or explosion.
Keep children and animals away from the machine.

3.Equipment Overview

3.1 Names and Functions of Equipment Components

Primary View of Equipment:

Emergency stop button

touchscreen

Processing bay

Water tank door

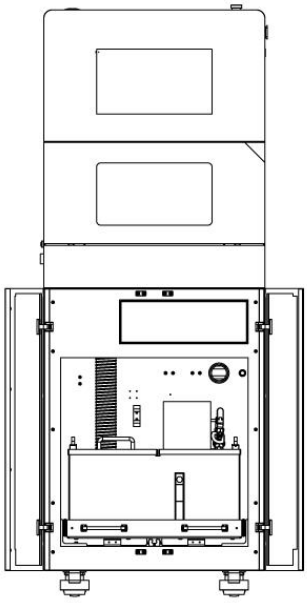
Accessories drawer

26.5-litre water tank

drainpipe

Water pump

Removable footpads



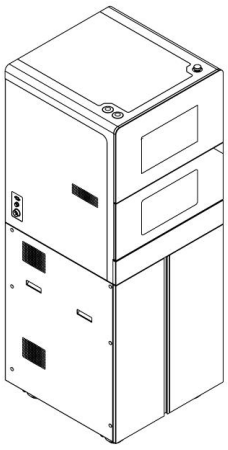
Left side of the equipment:

Wi-Fi antenna

Network cable port

Vacuum Interlock Interface

Power Bus Interface



Right side of the equipment:

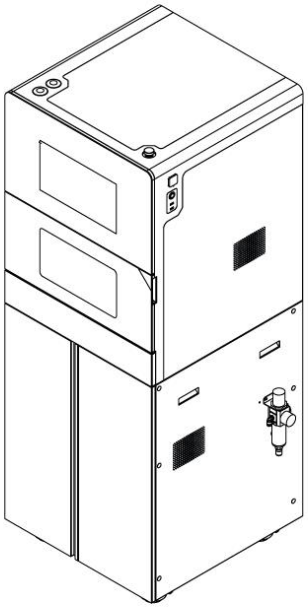
Air pressure gauge

Start-stop switch

Dual USB ports

Pressure-regulating filter

Compressed air inlet

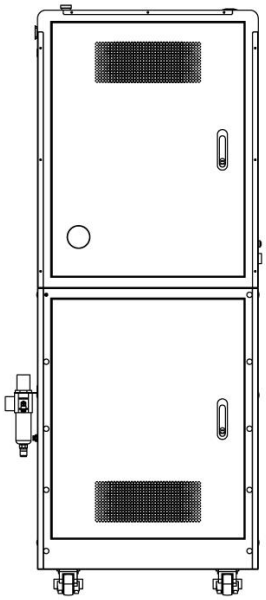


Rear panel of the equipment:

Electrical Structure Zone

Vacuum cleaner inlet

Water-cooled machine structure



Inside the processing bay:

High-definition camera

Spindle

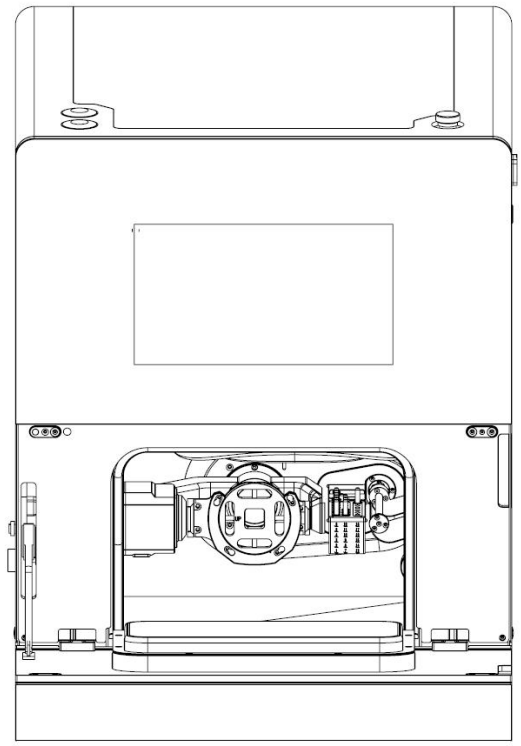
Flip-top tool holder

AB-axis structure

drain outlet

Silicone sleeve waterproof structure

Vacuum inlet



4.Equipment installation

4.1 Equipment Delivery Inspection and Relocation

Upon arrival of the equipment, please ensure you follow the steps below and inspect the outer packaging for any damage. Please observe the safety guidelines during operation and ensure you wear protective gloves.

4.1.1 Inspect the transport packaging

Before opening the box, please conduct a thorough inspection of the outer packaging:
Confirm that the wooden crate exhibits no external damage, signs of moisture ingress, or visible impact marks.
Inspect the wooden crate strapping to ensure it is intact and free from breaks;
Should any irregularities be detected, please photograph the evidence prior to opening the package and immediately notify our company or the logistics provider.

4.1.2 Open the packing case

Please unpack the equipment near its final installation location to minimize the risk of secondary handling.

Step ①: Unpacking procedure

- Cut the straps securing the wooden crate externally, ensuring there is no risk of rebound;
- Release the locking clips securing the ramp to the vertical panel and lower the ramp gently to the ground;
- Release the locking clips on the other three vertical panels, carefully remove them and place them securely;
- Cut the straps securing the equipment;
- Rotate the nuts on the four retaining feet clockwise to adjust the feet to their highest position, rendering the equipment movable.
- Slowly push the equipment down the wooden ramp to the ground level, ensuring at least four personnel are present to support the ramp end. This prevents the wooden base from shifting during descent, thereby avoiding damage to the equipment or injury to personnel.

Note: When moving equipment down a slope, ensure the wooden base is secured at the bottom of the slope by personnel using their feet or tools to prevent slippage.
Given the substantial weight of the equipment, ensure at least four persons operate it collectively to avoid crushing injuries and other unnecessary risks.

Step ②: Move to the installation location and perform internal cleaning

- Slowly manoeuvre the equipment into its designated installation position, ensuring it is securely positioned, level, and that the surrounding area is clear.
- Remove the stretch film and foam protective materials from the exterior of the equipment;
- Open the following components and remove the internal protective foam: Processing compartment door, lower

cabinet door, rear water-cooled cabinet door;

- After confirming that no packaging materials remain inside the equipment;

Note: To facilitate subsequent relocation or return to factory for servicing, it is strongly recommended that the original wooden crates and packaging materials be retained in good condition.
Using the original packaging minimizes the risk of transport damage and ensures the safety of the equipment during transit.

4.2 Confirm attachments

The accessories have been placed inside the equipment. Please check the contents against the packing list to ensure the completeness of the supply.
Additionally, verify whether any damage has occurred during transit or if any accessories are missing.

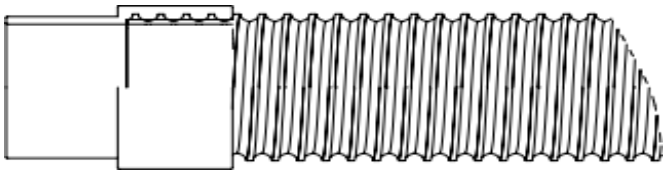
Note: Should any issues arise, please contact the UP3D Technical Support Department immediately to obtain assistance and avoid unnecessary complications arising from delayed communication.

4.3 Accessories must be procured separately.

Dry-milling operations on equipment must be equipped with a dust extractor. This device collects and removes dust, waste material, and particulate matter generated during machining operations, thereby maintaining a clean working environment. It minimizes the health impact of dust on operators, prevents fire or explosion hazards, and avoids dust ingress into the equipment that could cause component damage.

Please ensure that the vacuum cleaner meets the following requirements:

- Static pressure: 4 kPa and above
- Airflow: 2 cubic metres per minute or more
- Vacuum hose outer diameter: 48mm



4.4 Installation Environment Selection

Equipment handling: Given the unit's weight of 480kg, installation requires a minimum of four personnel. Ensure each individual possesses sufficient strength to participate in the installation.
When moving the equipment, deploy the four sets of castors located at the base. Assist in manoeuvring the unit by pushing from all four sides, ensuring a firm grip to prevent tipping or collision, thereby guaranteeing a safe and smooth relocation process.
The installation location must satisfy the following conditions:

Equipment weight: 480 kg

- The equipment must be placed on a solid, level surface capable of supporting the weight of the machine.

Equipment dimensions: Length 660 mm × Width 680 mm × Height 1750 mm

- The dimensions of the installation area should exceed the actual dimensions of the equipment to ensure its secure mounting.

Equipment power supply: AC 220V, 50–60Hz

- The equipment power supply connection must incorporate an earth wire, with voltage stability ensured and wiring maintained in good condition.
- Please install it in a location where the power plug can be readily accessed at all times, so that it can be quickly disconnected in an emergency.

Note: Do not install in the following environments.

- Environments with significant fluctuations in temperature and humidity
- Environments subject to shaking or vibration
- Environments with high levels of electromagnetic interference, such as electromagnetic waves

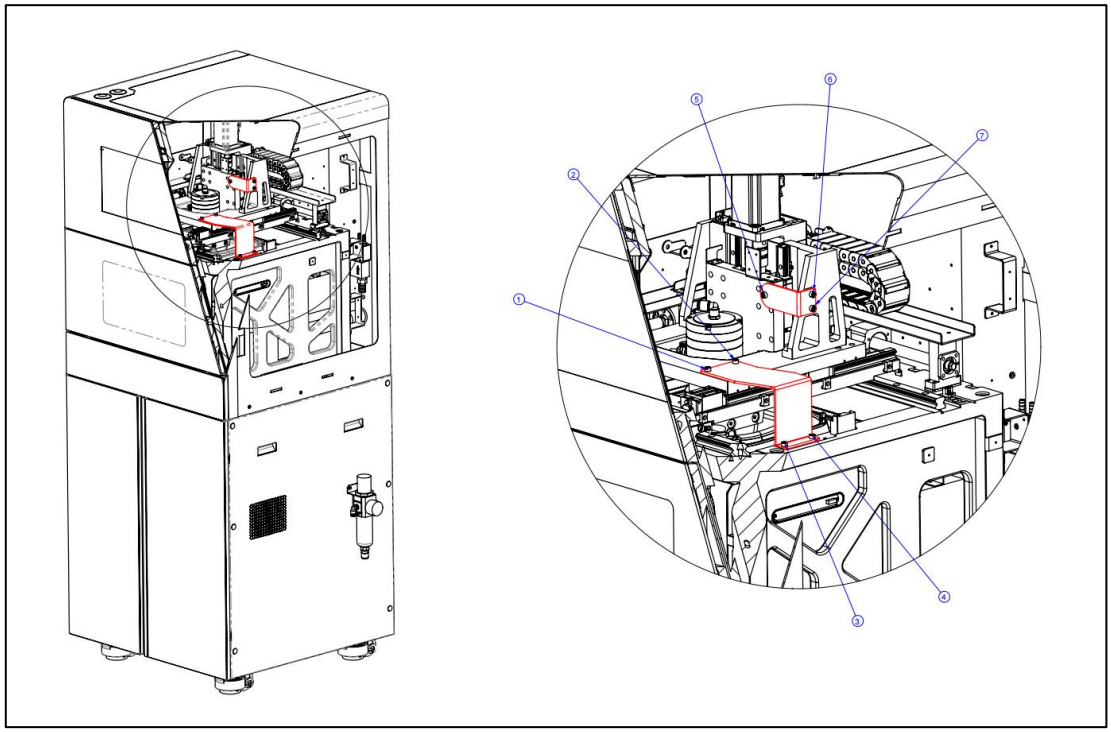
4.5 Remove transport locks

To protect the equipment from transport vibrations, transport locks have been fitted inside the unit. Once the equipment's final position has been confirmed, please ensure these transport locks are removed and stored securely.

Note: Please perform this operation before connecting the power cable to prevent malfunctions caused by erroneous actions during device operation.

Please follow the steps below:

1. Using a Phillips screwdriver, unscrew the retaining screw on the right-hand side panel;
2. Support the side panels with both hands and gently remove them, taking care to avoid knocks or pinching during the operation.
3. Using a hex key of the appropriate size, unscrew the retaining screw of the transport lock and remove the transport lock.
4. Reinstall the side panels in their respective positions and tighten the securing screws, taking care to avoid knocks or pinching during the operation.



Note: Transport locks are essential accessories for equipment during transportation and long-distance movement. Please store them securely to prevent loss.

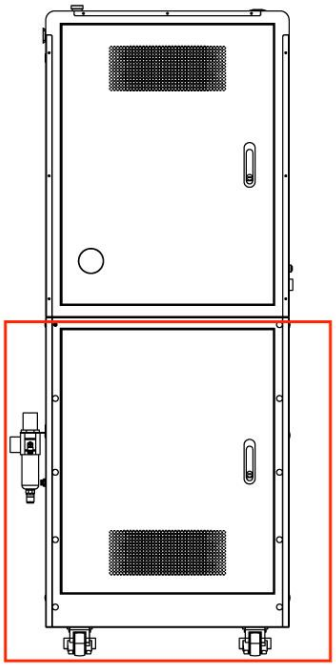
5.Device connection

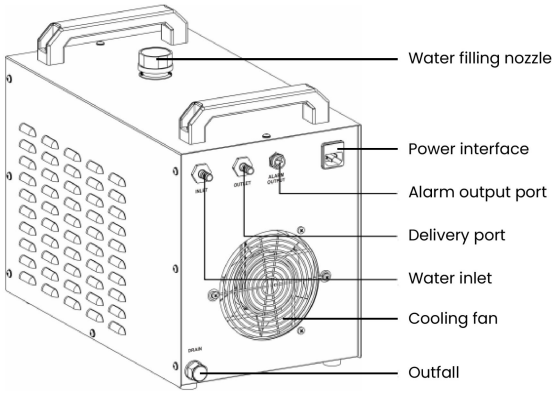
5.1 Spindle Water Cooling Unit Connection

The i5 Pro spindle employs a water-cooled circulation system. Before restarting after initial use or maintenance;

Ensure the water cooling system operates correctly by following these steps:

1. Open the access door at the rear bottom of the unit and remove the water-cooled unit.
2. Fill the water tank of the water-cooled unit with purified water or soft water.
3. Where conditions permit, it is advisable to incorporate antifreeze coolant, which enhances cooling efficiency and extends the service life of the water-cooled unit.
4. Switch on the water-cooled machine.
5. Return the water-cooled unit to its original position and close the operating door.





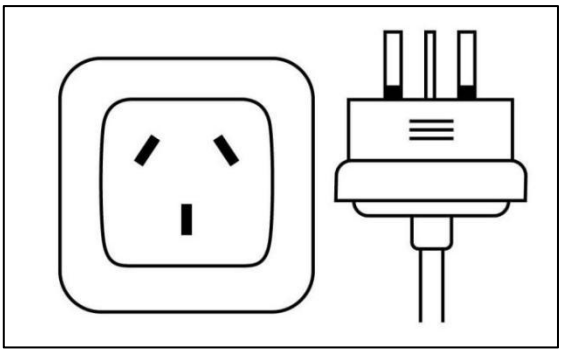
Note: Hard water must not be used, as it will cause pipe scaling, reduce heat dissipation efficiency, and consequently affect spindle lifespan.

It is recommended to regularly check the coolant level; if the level is too low, top up promptly.

5.2 Establish power supply

The machine requires a continuous power supply to operate correctly:

- Insert the power cable supplied in the accessories box into the power socket on the machine's connection panel.
- Insert the cable plug into a socket protected by an earth leakage circuit breaker/earth fault circuit breaker.
- A dedicated power socket or power supply input must be used; extension leads and power strips are not permitted.
- The equipment requires an independent power supply: power plug specification 16A.
- Ensure the voltage remains stable. Should a power failure occur during operation, the sewing needle and materials may be damaged.



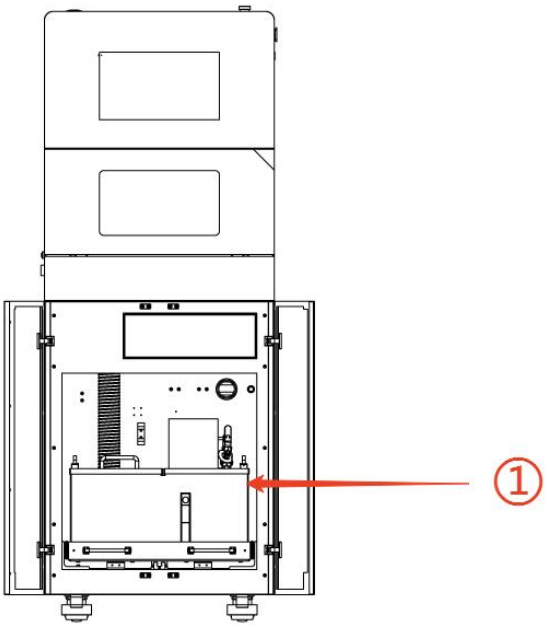
Note: Should a power interruption occur during machining, it may result in damage to both the milling tool and the workpiece.
Power cables and network cables must not be bundled together to prevent electromagnetic interference, which could cause abnormal equipment operation.

5.3 Establish a water-liquid circulation system

i5 Pro Wet Milling Processing requires establishing a complete water-fluid circulation system. Please follow these steps:

Open the access door beneath the unit, pull out the water tank, and fill it with purified or softened water.
Inject purified water and milling fluid to a level that submerges the partition plate, approaching the 26.5L mark on the gauge.
Add the specialized milling fluid in the specified proportion and mix thoroughly.

Place the filter screen inside the water tank and secure it in position together with the drain pipe;
Then close the tank and shut the drawer firmly.
Ensure no liquid is leaking from beneath the machine. Should any liquid be present, promptly wipe it clean.
Open the equipment maintenance interface and press the water spray button. Once you have confirmed that the water spray is functioning correctly, you may proceed.

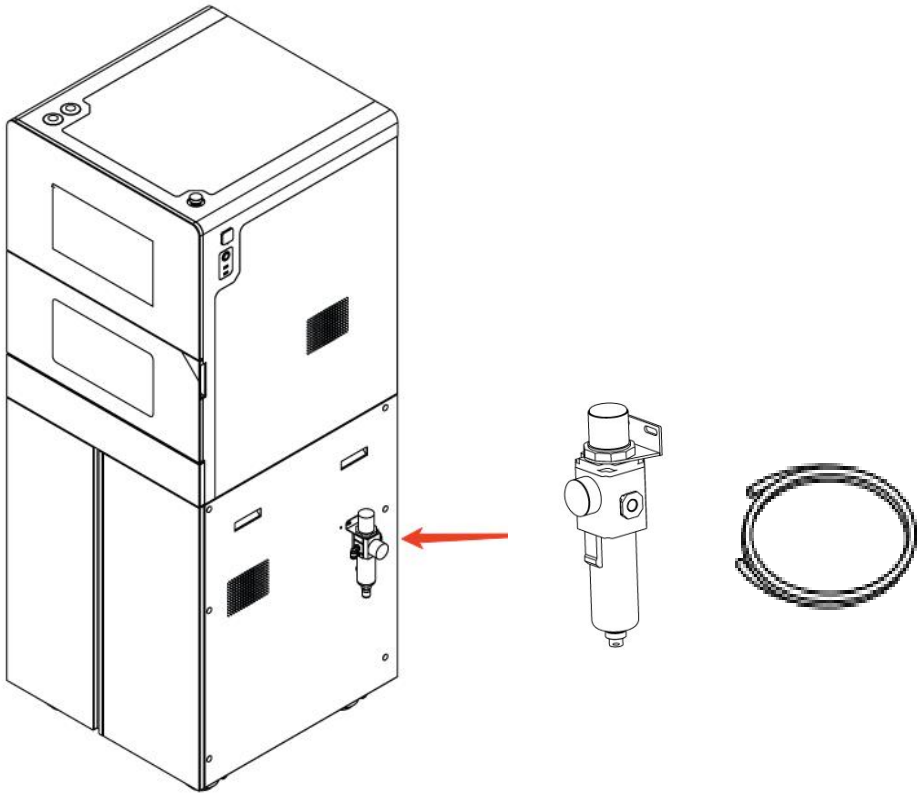


Note: The use of hard water may shorten tool life and reduce machining quality.
It is advisable to replace the milling fluid regularly and clean the filter screen to ensure the circulation system remains stable and efficient.

5.4 Establish pneumatic connection

The i5 Pro requires a continuous supply of stable, clean compressed air to ensure proper machining cooling and pneumatic operation.
Please connect as follows:

1. Install the pressure-regulating filter in the designated position on the right-hand side of the equipment.
2. Convert the air compressor's output hose to an 8mm hose and insert it into the filter's air inlet.
3. Connect the filter's exhaust port to the pneumatic input port at the rear of the equipment.



Note: Precautions for the Pneumatic System (Mandatory Compliance)

1. Compressed air must comply with the ISO 8573-1 air purity standard.
2. A refrigerated dryer must be fitted; otherwise, moisture will ingress into the equipment, causing corrosion or failure of the spindle.
3. Equipment damage resulting from failure to use the refrigerated dryer shall be deemed as damage caused by human error and shall be subject to repair charges.
4. Regularly inspect whether the filter has accumulated water and whether the pressure gauge readings are normal.

6.Equipment operation

6.1 Equipment start-up

Upon initial start-up, there is a risk of short-circuiting if the equipment is in a supercooled state.
If the machine is transported from a cold environment to a warmer one, short-circuiting may occur due to condensation.

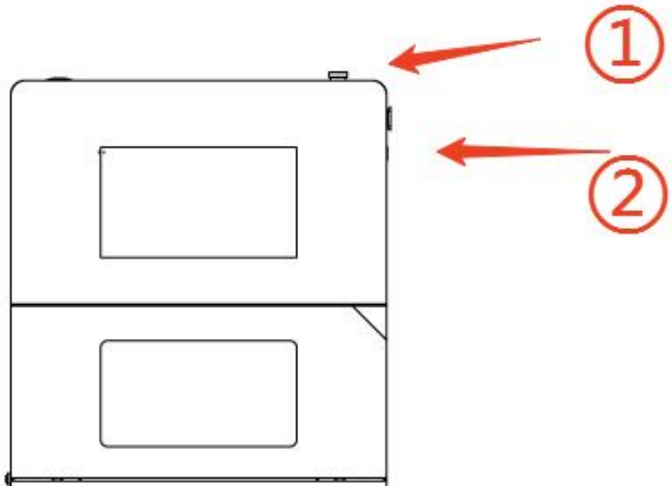
Once the preliminary preparations have been completed, please ensure the following:

- Ensure that the ambient temperature of the equipment complies with its operational requirements.
- Before connecting the equipment to the power supply, ensure that the machine's temperature is the same as the ambient air temperature.
- Ensure the interior of the machine is completely dry to prevent the risk of short circuits caused by moisture.

⚠ **Pre-startup checks: Ensure transport locks have been removed and the equipment is correctly connected to the power supply.**

After completing the above checks, start the equipment by following these steps:

1. Ensure the equipment access door is closed and the equipment is in a sealed state.
2. Turn the emergency brake lock above the equipment to the open position.
3. Press the power button on the right side of the device.
4. The front panel display illuminates, indicating the device has booted successfully.



6.2 Remove the fixing rod

To ensure the chuck remains stable during transport, the spindle is fitted with a retaining rod.
Upon initial machine start-up, this must be manually removed.

⚠ **If the fixing rod is not removed, it may collide with machine components, posing a risk of damage to the spindle.**

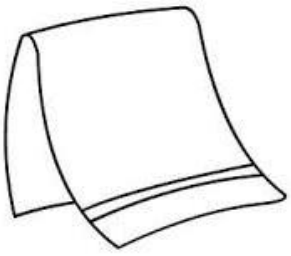
Please follow these steps to remove the fixing rod:
1. Open the equipment access door.
2. ⚠ Caution! Please wear gloves and position your hand below the spindle.
3. Within the UPCNC interface, click the 'Release Tool' button under Tool Operations. The fixing rod will drop into your hand; simply remove it.

6.3 Equipment calibration

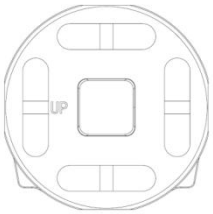
The IRON CORE i5 PRO device features intelligent automatic calibration, enabling effortless one-touch precision correction and compensation.
To ensure the device consistently produces high-quality restorations over the long term, regular calibration is recommended.
Situations requiring equipment calibration include:
1. After the equipment is first powered up and run, to eliminate any potential effects of transportation;
2. After prolonged high-intensity operation of the equipment (following three months of intensive work);
3. When abnormal conditions occur during machining (such as chipping, tool marks, or tooth breakage);
4. The equipment has undergone substantial relocation or movement;

Before calibrating the equipment, you will need to prepare the following tools:

Calibration rod



dust-free cloth



Calibration disk;

6.3.1 Install the calibration rod

Before proceeding with calibration, please ensure the following preparatory steps are completed:
1. Cleaning the processing chamber: Employ the automatic cleaning function to perform an automated wash of the

processing chamber.

2. Wipe critical components: Use a lint-free cloth to wipe the periphery of the tool holder and fixture, ensuring surfaces are clean and free from water or liquid stains.

3. Spindle cleaning: Use a soft brush and lint-free cloth to clean the bottom surface of the airflow guide sleeve, ensuring no water, liquid or dust particles remain.

4. Spindle chuck cleaning: The spindle chuck must be loosened and removed, then wiped clean.

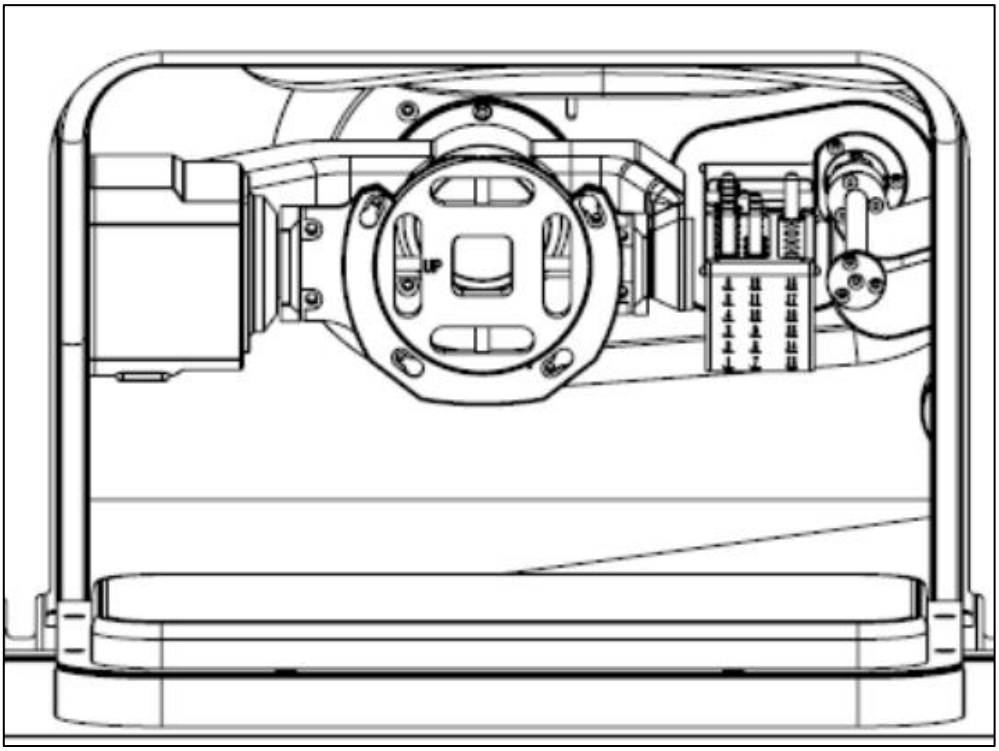
5. Install the calibration rod into tool magazine 18, ensuring it is fully inserted to guarantee accuracy.

6.3.2 Install the calibration disk

1. Click the material removal position within the CNC. Insert the auto-calibration disk into the fixture of the i5 PRO, ensuring the UP letter faces upwards during installation.

2. Retrieve the torque wrench, secure the clamp body in position, and gently tug on the self-calibrating disk to verify it remains firmly attached.

3. Close the equipment access door.



6.3.3 Initiate automatic calibration

1. Access the equipment maintenance interface and locate the calibration function.
Click the calibration icon, follow the on-screen instructions, and confirm that all preparatory steps have been completed.

1. Press the calibration button to perform automatic calibration.
2. Upon completion of calibration, the device will display relevant prompt information. Click 'Confirm' to resume normal operation.
After concluding automatic calibration, loosen the retaining screw on the clamp body, remove the calibration disk from the clamp body, and store it securely.

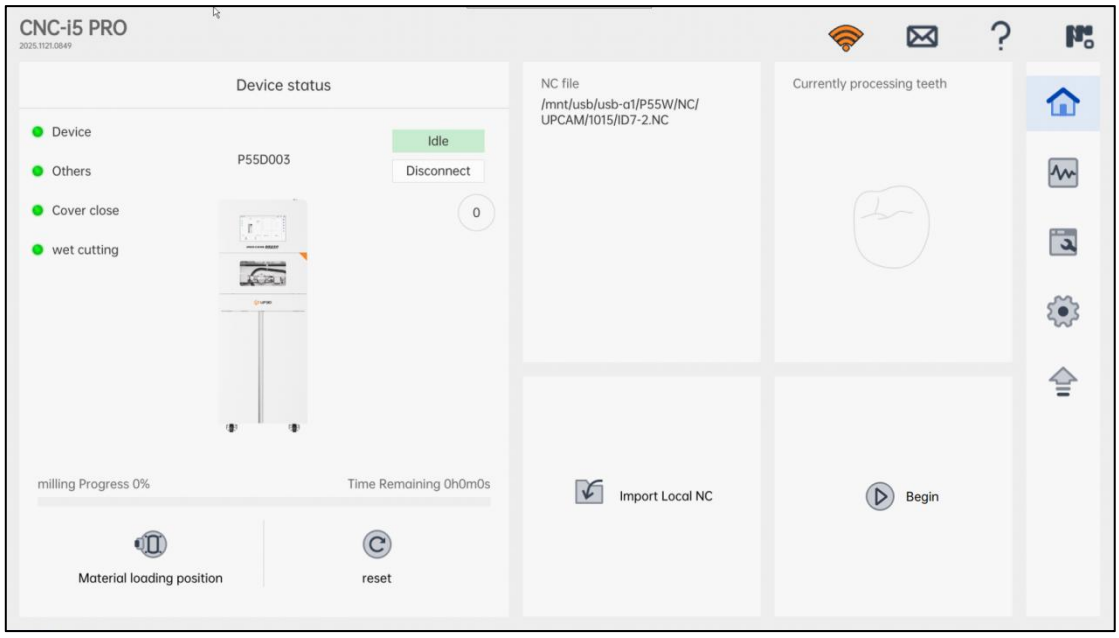
7.CNC3 Control Software Operation

7.1 What is CNC3

CNC3 is an intelligent control programme independently developed by UP3D, enabling operation of the machining centre itself via computer software. Through CNC3, you can conveniently monitor and manage the machining centre's operational status, ensuring both machining efficiency and quality.

7.2 CNC3 Main Interface

Main interface information display



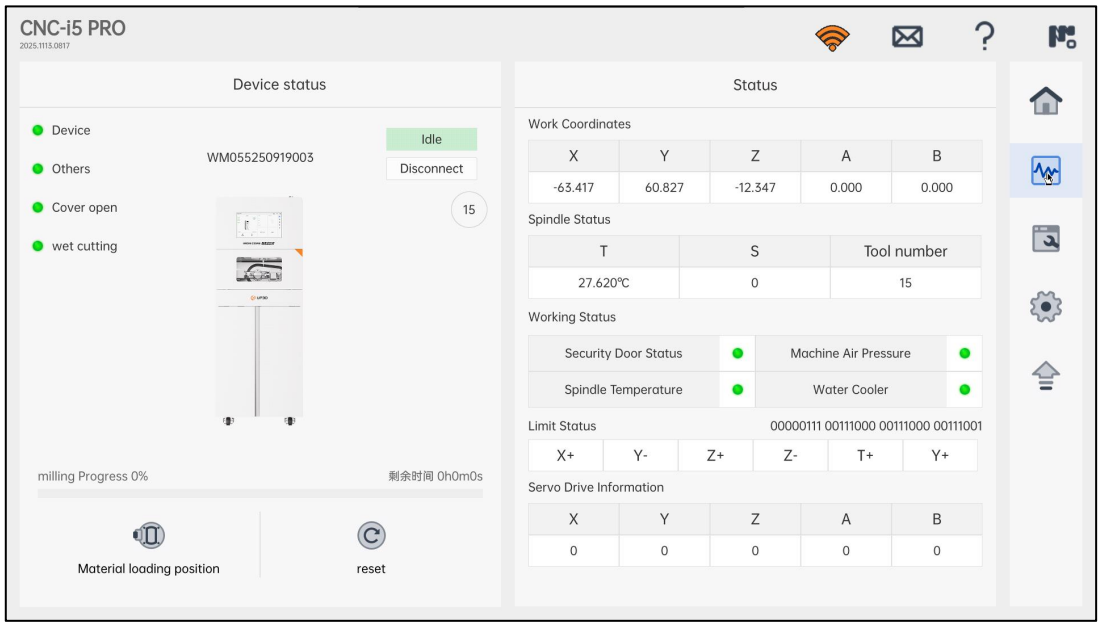
Interface Analysis:

- Material removal position: Move the equipment fixture to a position convenient for removing and installing materials;
- Import local NC: Open the local folder to import the NC file requiring machining;
- Start: After successfully importing the NC file, click Start to execute the machining commands for the current NC file;
- Reset: Clears all current machining status, returning the equipment to standby mode;
- Version Information: Displays the current CNC3 version details;
- Support Functions: Prompt messages, Help, Keyboard settings, Minimize, Close;
- Primary functions: Home screen, machining mode, equipment maintenance, settings, upgrades;
- Machine list: Displays the list of machines currently successfully connected to CNC3;

- Machine status: Click to expand the device list and perform operations such as disconnecting/connecting machines;
- NC Machining File Information: Displays detailed information about the current machining NC program;

7.3 CNC Equipment Status Page

Machine Status Page Displays the current coordinates of each axis on the machining centre, axis temperatures, spindle speed, and whether limit switches have been triggered.



7.4 CNC Equipment Maintenance Page

Equipment Maintenance Page, primarily used for routine maintenance and servicing.

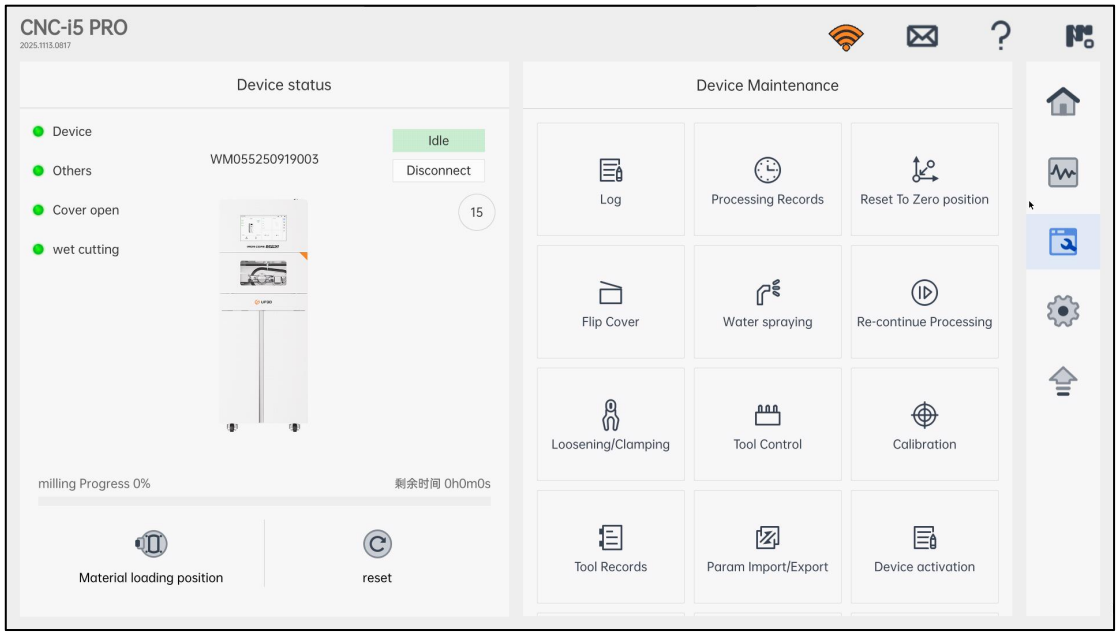
- Return to zero: Automatically moves all machining axes back to the mechanical zero position, ensuring the equipment is in its standard initial state.

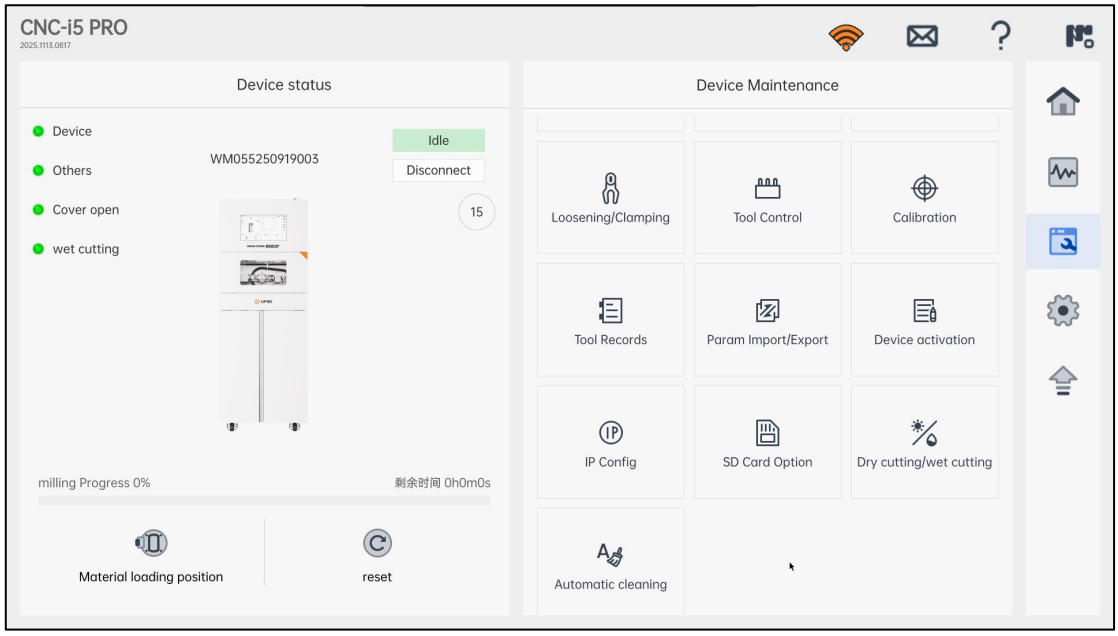
- Process Resumption: Used for recovery processing following a machining interruption.

- Calibration: Execute the full machine calibration procedure to re-establish the machine tool's precision compensation, ensuring machining accuracy is restored to its optimal state.

- Automatic cleaning: Initiate the machine's built-in automatic cleaning programme to perform internal cleaning of the machining chamber via pre-set NC commands.

- Water spray: Manually activate the water spray function to inspect the spray status or clean specific areas within the processing chamber.
- Tool control: Any tool number may be manually selected to execute tool clamping/unclamping operations, commonly used during tool debugging or maintenance.
- Tool release: Directly controls the spindle to execute the tool release action, used for tool changes or fault clearance.
- Processing History Log: View all processing task records for the equipment, including processing times, material types, and other relevant information.
- Device Activation: Perform operations related to device activation or trial mode for new device delivery and authorization procedures.
- Flip cover: Manually operated tool magazine cover for opening and closing, facilitating tool changes or maintenance of the tool magazine.
- Dry/Wet Milling Switch: Select the device's current processing mode
- Log: When an anomaly occurs in the device, logs may be exported for technical support or fault diagnosis analysis.
- Tool Log: Records the service life and cumulative machining duration of each tool for automatic assessment of tool condition.





7.4.1 Tooling Records

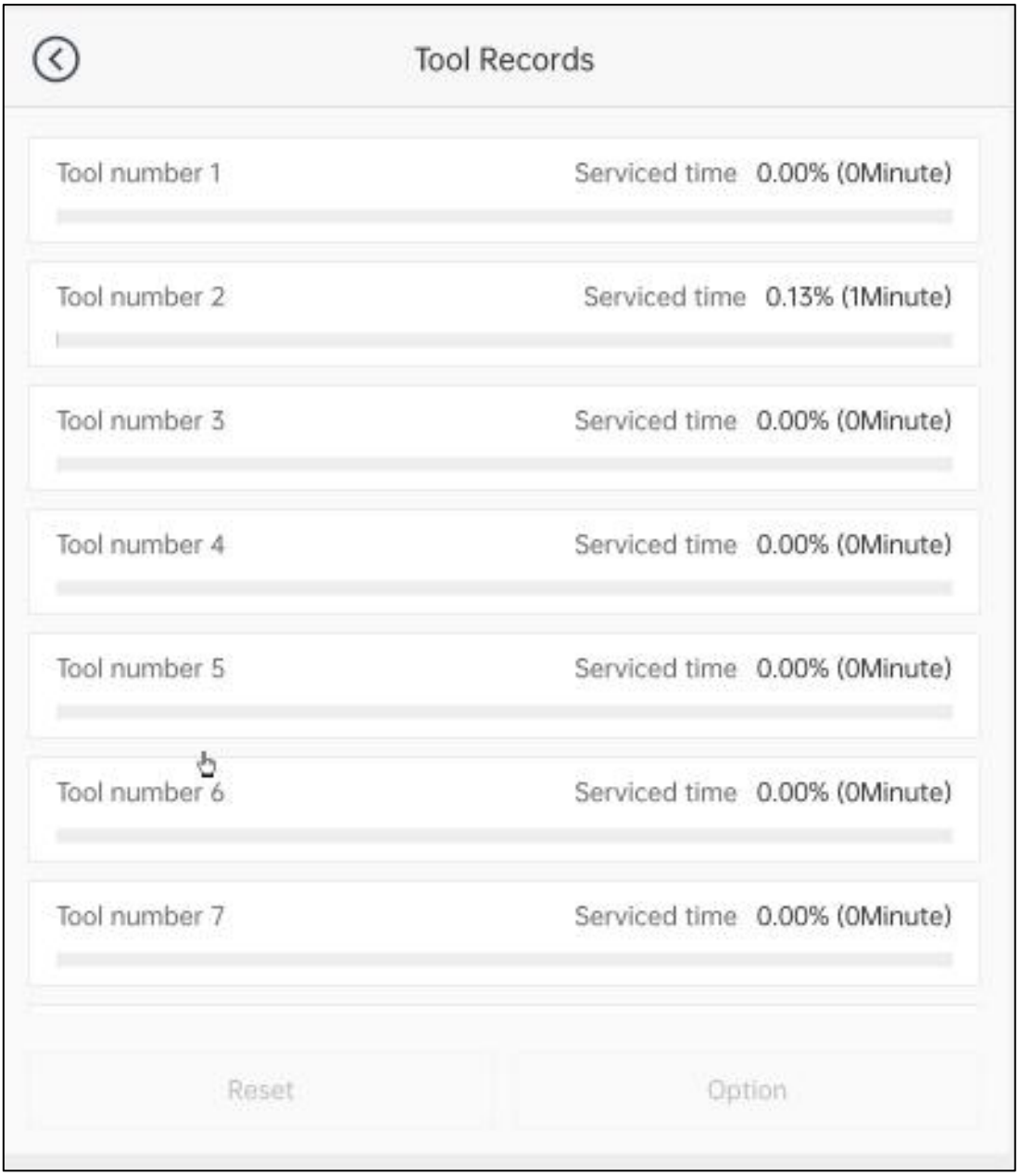
Tool Record Page: The usage status of each tool on the current machining centre is recorded and displayed on this page.

Reset: After selecting any tool, click Reset to clear the current usage record.

Configuration: After selecting any tool, click 'Configure' to enter the tool configuration page and edit the record information.

Time elapsed (minutes): Record the duration of use for the sewing machine needle;

Estimated duration (minutes): The maximum duration for which the current tool is suitable for use;

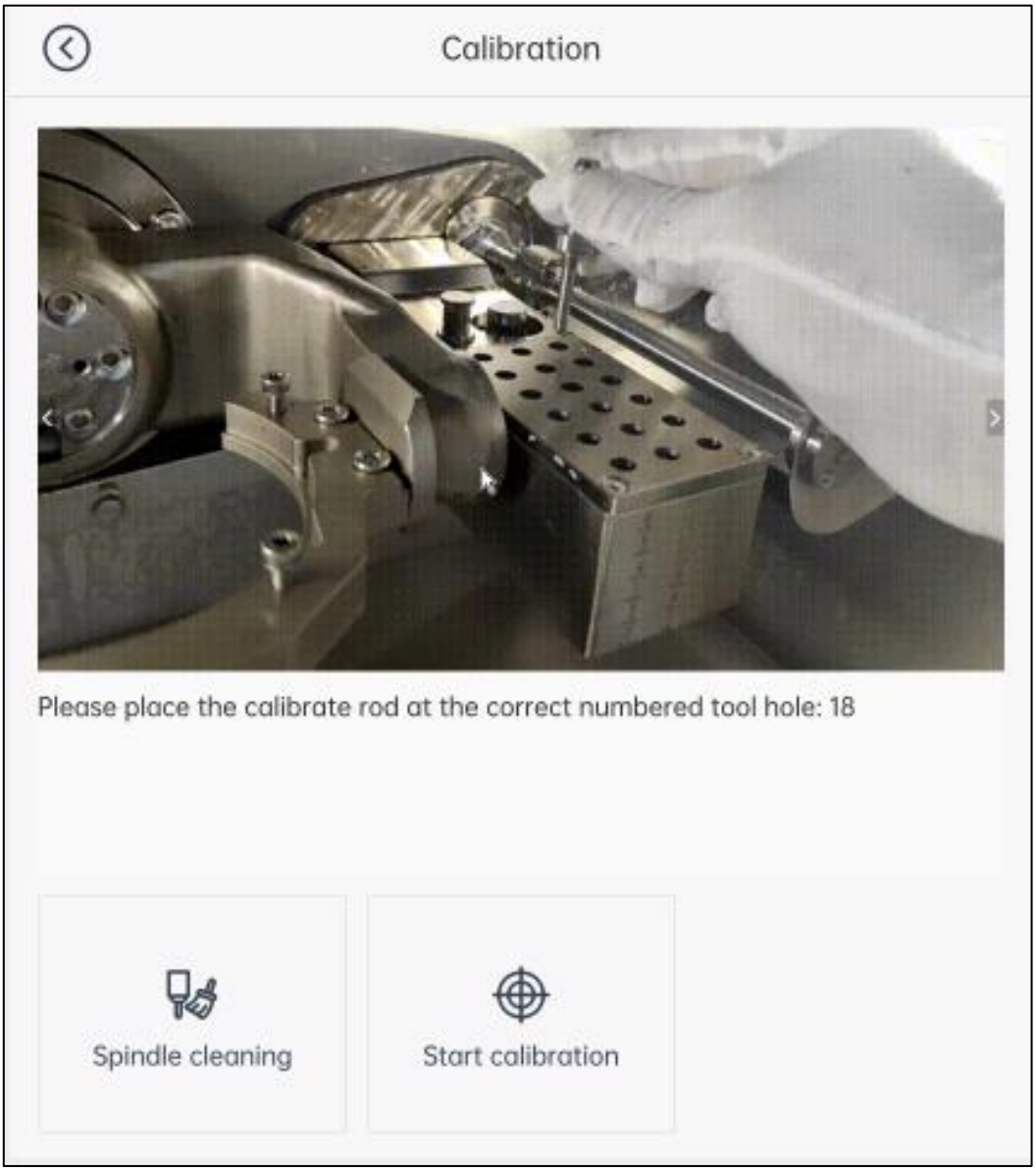


Note:

1. The tool usage duration setting must not exceed the estimated duration.
2. When the current tool reaches 90% of its estimated service life during operation, CNC3 will issue a life warning and the tool's remaining life indicator will turn red.

7.4.2 Calibration Interface

Calibration: Upon entering the calibration page, the current calibration bar holder number and calibration disk installation status will be displayed.



Spindle cleaning: Click Spindle Clearance. The current machining centre will move to the designated position and open the chuck.

Commencing calibration: Click Start Calibration. The CNC3 will return to the main interface, and the machining centre will commence the calibration process.

7.4.3 Processing to be continued

Historical Processing NC:① Automatically reads the interrupted line in the current machining NC file. ② Historical NC files may be selected manually.

Historical Processing Workshop: Automatically retrieve operational data from historical machining NC files.

Continue processing: Click Continue Machining to read the interrupted line number and proceed with machining.

7.4.4 Parameter Import/Export

Parameter Export: Click to select the file path. After selecting the path, click 'Export Parameters' to export the current machining centre's parameters to the specified directory.

Parameter import: Click to select the file path, choose the corresponding parameter file, then click Import. This will replace the current machine tool parameters with those from the imported parameter file.

7.4.5 History Processing Log

Start time and end time: Start and end times for historical machining operations. Click to open the dropdown menu and select the historical machining time and start time.

Search: After selecting the start and end times, click Search to display all processing records within that timeframe, including file name, start time, processing duration, and number of lines processed.

Output file:After retrieving the historical processing records for the specified time period, click the output file, select the export path, and the historical processing records will be exported to your local device.

7.4.6 Tool control

Clamp knife: Select any tool number, click the tool clamp, and the machining centre will clamp the tool corresponding to the selected tool number.

Return the sword: Click 'Return Tool' and the machining centre will return the currently clamped tool to its corresponding tool magazine.

7.4.7 SD Card Settings

Note: This function is designed to verify whether the SD card is reading and writing correctly.

Clearing logs: Clear the logs from the lower-level machine of the processing machine.

SD formatting: Format the SD card.

Write: Select a local document, then click Write to save the file to the SD card.

Read: Select the local file path. After selecting the path, click 'Read' to load the document written in the previous step into the corresponding selected file path.

7.4.8 Log

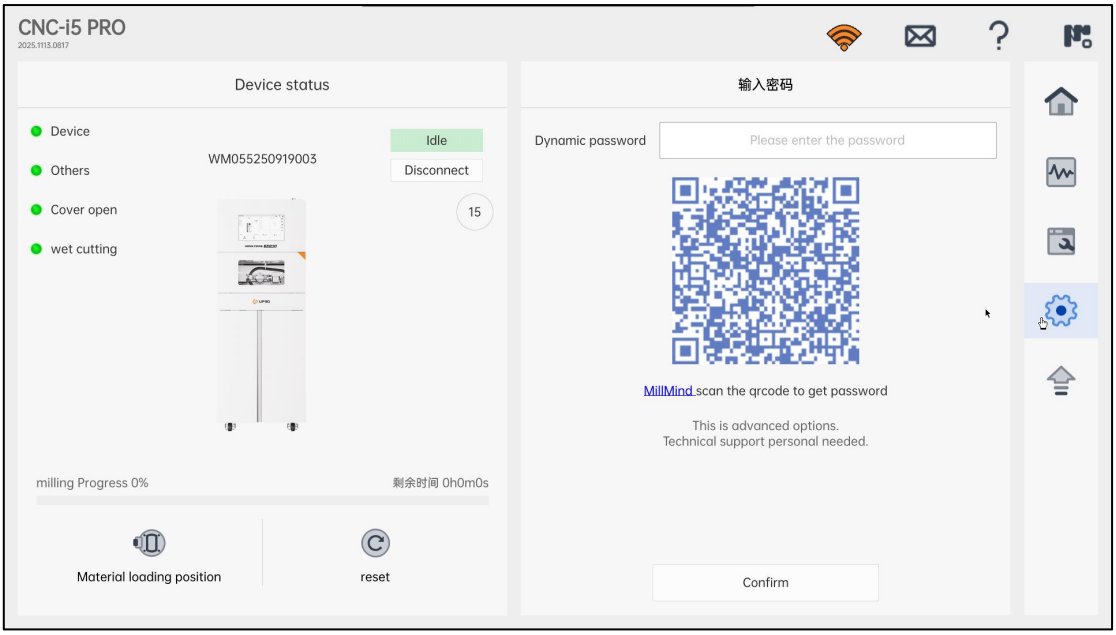
Log Export: Click Log Export, select the export path, then click One-Click Export to export all log information for the current machining centre: lower-level machine logs, equipment information, operating environment, Link information, current NC file, machining centre parameters, and upper-level machine logs.

7.5 CNC3 Settings Interface

7.5.1 Advanced Settings

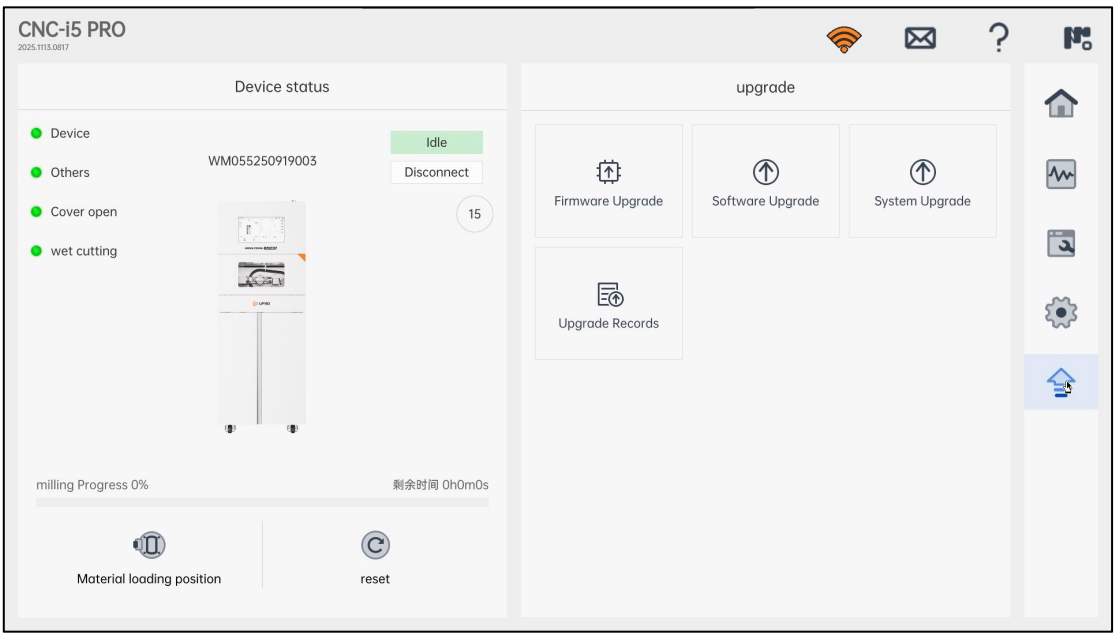
Enter your password: Tap the Settings page to open a dialogue box and use the app to scan the QR code for login.

Note: This function is intended for use in after-sales maintenance and is therefore password-protected.



7.6 CNC3 Upgrade Interface

For upgrades, please contact technical support for assistance.



7.7 CNC3 Help Interface

Language interface: You may select different languages to switch between; once switched, the selected language will be displayed globally.

Remote control:

1. Soreal: Launch the Soreal client, select the desired IP address within the Soreal window, then click the Connect button to initiate remote control. Click the Disconnect button to terminate remote control and switch to local operation.
2. DentalHouse: Within the DentalHouse window, select the desired IP address to connect to. Once selected, click the Connect button to initiate remote control via DentalHouse. Clicking the Disconnect button will terminate remote control and switch back to local operation.

System Expansion:

1. Screen calibration: Tap to calibrate the touchscreen for more accurate touch operations.
2. Restart VNC: Restart the VNC remote connection

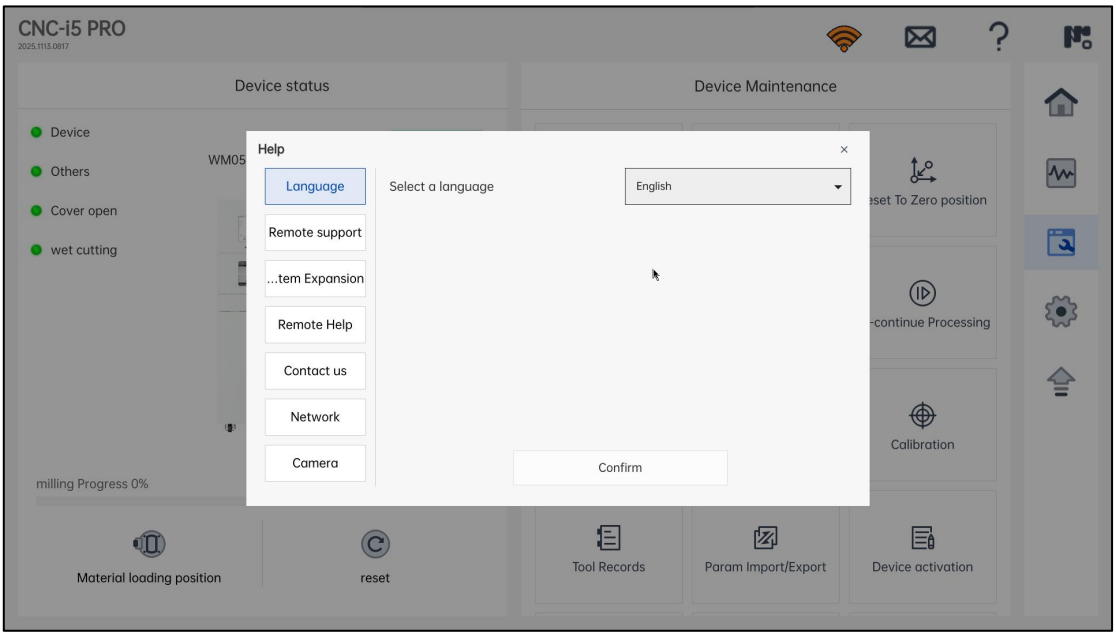
Remote assistance: When connected to the network, the remote assistance feature can be activated.

Contact Customer Service: Scan the corresponding QR code to contact customer service.

Network Settings:

1. Wired Network: Once the machine tool is connected via a wired network, this page will display the relevant address data for the wired network.
2. Wireless network: Connecting to the network via Wi-Fi

Camera: After activation, observe the processing chamber via the camera interface. Pressing the button allows switching between different viewing angles.



8.Equipment processing

8.1 Pre-processing preparations

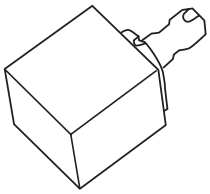
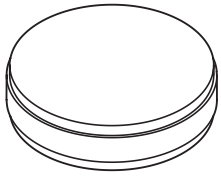
Incorrect usage may result in damage to milling tools and materials or compromise grinding performance. Please ensure the correct material type and dimensional specifications are being machined, and use genuine manufacturer-supplied grinding pins. To prevent material displacement and vibration during grinding, ensure the workpiece is securely clamped to the turret.

8.1.1 Support for milling materials

The materials that can be processed by this machine are as follows. To prevent machine malfunctions, please ensure the suitability of the material before processing.

- Glass ceramics
- PMMA
- PEEK
- Composite resin
- Wax
- Zirconia
- Titanium disk
- Titanium rod

8.1.2 Supported material dimensions

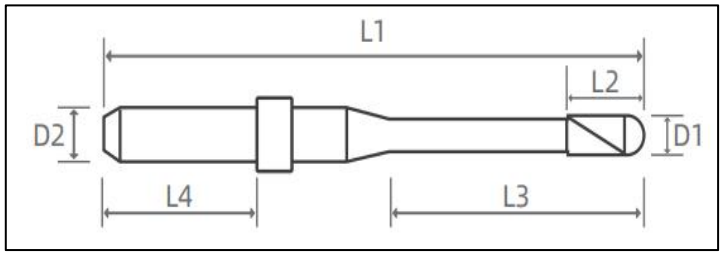
	Supported material types	Block
	Supported handle specifications	6 mm
	Maximum material dimensions	40*20*20 mm (max)
	Supported material types	Disk
	Support material diameter	98.5 mm (max)
	Maximum material thickness	10~30 mm (max)

Caution:

Please note that when machining block materials, a separate block clamping fixture must be configured.

When machining titanium rod material, an additional abutment clamping fixture is required.

8.1.3 Support for tool information



Length: 50~55 mm Handle diameter: 6 mm Tool specifications are for reference only

8.2 Equipment start-up

8.2.1 Start the machine

- Ensure that the equipment access door is closed.
- Press the power button on the front panel of the device.
- The device's front screen displays the start-up page, indicating successful boot-up.

8.2.2 Pre-processing inspection confirmation

1. Check whether there is water in the filter on the side of the machine. If water is present, cease operation immediately and verify that the refrigerated dryer is functioning correctly.
2. Check that the air pressure is between 0.6 and 0.9 MPa.
3. Check whether the equipment's input voltage is 220V.
4. Check that the tool setting gauge, lathe tool, and tool holder have been thoroughly cleaned.
5. Check that the sewing needles are correctly positioned in their respective slots.
6. Check whether the spindle water-cooling unit is functioning correctly.

Note: The above procedures must be strictly adhered to. Should any malfunction occur and the equipment be forced into operation, resulting in damage, such instances shall not be covered under warranty.

8.3 Material installation

Open the equipment access door: Fully open the equipment access door to facilitate subsequent operations.

Install the workpiece: Insert the workpiece to be processed into the fixture.

Tighten the securing screws: Use a torque wrench to tighten the securing screws, ensuring the workpiece is securely mounted.

Note:

1. Standard 4.0 N·m torque wrench, primarily used for tightening titanium disks, material fixtures and similar applications;
2. Standard 0.6N torque wrench, primarily used for tightening soft materials such as zirconia, resin, and wax;

8.4 Tool installation

8.4.1 Tool holder position

When machining different materials using tool path files, distinct milling tools must be employed to execute machining instructions. It is imperative that you install the turning tool in the designated position. The use of an incorrect tool may result in damage to the spindle or the workpiece material. To ensure optimal machining results, it is recommended that you utilise genuine manufacturer-supplied turning tools.

Dry milling mode: Suitable for machining zirconia materials

Applicable materials	Specifications	diameter	Tool magazine position
Zirconia	R1.0*16*6*50 (Ball knife)	Diameter: 2.0mm (50mm)	No. 13
Zirconia	R0.5*16*6*50 (Ball knife)	Diameter: 1.0mm (50mm)	No. 14
Zirconia	R0.3*14*6*50 (Ball knife)	Diameter: 0.6mm (50mm)	No. 15

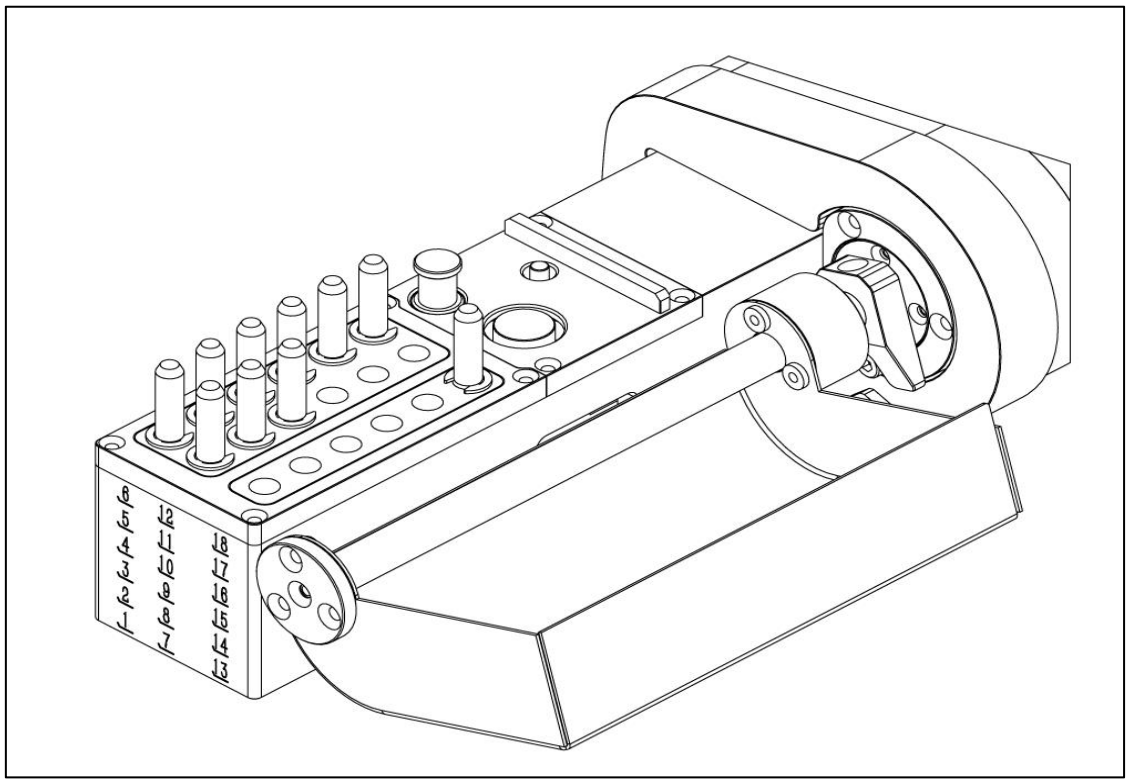
Wet milling mode: Suitable for processing titanium metal, resin, wax, glass ceramics, composite resin, etc.

Applicable materials	Specifications	diameter	Tool magazine position
Titanium	R1.5*16*6*50 (Ball knife)	Diameter: 3.0mm (50mm)	No. 1

Titanium	R1*12*6*50 (Ball knife)	Diameter: 2.0mm (50mm)	No. 2
Titanium	R0.75*12*6*50 (Ball knife)	Diameter: 1.5mm (50mm)	No. 3
Titanium	R0.5*8*6*50 (Ball knife)	Diameter: 1.0mm (50mm)	No. 4
Titanium	D1.5 R0.1*16*6*50 (Round-nose cutter)	Diameter: 1.5mm (50mm)	No. 5
Titanium	D1.5 R0.1*8*6*50 (Round-nose cutter)	Diameter: 1.5mm (50mm)	No. 6
Titanium	D2.0 R0.2*12*6*50 (Round-nose cutter)	Diameter: 2.0mm (50mm)	No. 7
Titanium	R0.75*12*6*50 (Flat-bladed knife)	Diameter:1.5mm (50mm)	No. 8
Titanium	R1.0*10*6*50 (Flat-bladed knife)	Diameter: 2.0mm (50mm)	No. 9
Titanium	R0.5*6*6*50 (Flat-bladed knife)	Diameter:1.0mm (50mm)	No. 10
Titanium	R0.25*4*6*50 (Flat-bladed knife)	Diameter: 0.5mm (50mm)	No. 11
Titanium	R0.25*4*6*50 (Ball knife)	Diameter: 0.5mm (50mm)	No. 12
Resins/Waxes	R1.0*16*6*50	Diameter: 2.0mm (50mm)	No. 13
Resins/Waxes	R0.5*16*6*50	Diameter: 1.0mm (50mm)	No. 14
Resins/Waxes	R0.3*14*6*50	Diameter: 0.6mm (50mm)	No. 15
Glass-ceramic/composite resin block	R1.25*16*6*50	Diameter: 2.5mm (50mm)	No. 16
Glass-ceramic/composite resin block	R0.5*10*6*50	Diameter: 1.0mm (50mm)	No. 17
Glass-ceramic/composite resin block	R0.3*8*6*50	Diameter: 0.6mm (50mm)	No. 18
Calibration rod	Size: 4*50（For calibration）		No. 18

Note: The following milling tools support machining of multiple materials.

1. Resin-based carving needles and wax carving needles are interchangeable;
2. Glass-ceramic needles are compatible with composite resin blocks;



8.4.2 Automatic or manual tool change

Tool replacement may be performed within the CNC system. This applies when the tool has reached the end of its service life while still clamped in the spindle, necessitating automatic or manual tool change to remove the milling tool for replacement.

Tool life: The CNC will record tool life information. When the tool reaches its service life limit, it must be replaced promptly. After replacing the tool, reset the recorded information within the CNC. For details, please refer to the CNC manual.

Automatic tool change: By pressing the "Return Tool" button within the CNC, the equipment will return the tool currently clamped in the spindle to its corresponding position in the tool magazine. For specific details, please refer to the CNC manual.

Manual tool change: By pressing the "Release Tool" button within the CNC system, the tool currently clamped in the spindle will automatically drop. Ensure gloves are worn beforehand to catch the falling tool. For further details, please refer to the CNC manual.

8.5 Start, pause, cancel processing

Please ensure the following items are prepared before commencing machining.

- Arrange the restoration files via UPCAM and generate NC files (toolpath files).
- The material has been installed into the fixture, ensuring it is correctly clamped and securely locked in place.
- The turning tools suitable for the current milling material have been installed in the tool magazine at their designated positions, and tool life is normal.
- The water circulation system is operating normally with no abnormal water spray.

8.5.1 Commencing machining

1. After verification, close the machining chamber door and insert the USB drive containing the NC file into the USB port.
2. Within CNC 3, click the 'Import File' button to select the required NC file for machining and successfully import it;
3. Press the "Begin" button within CNC 3, and the equipment commences execution of the milling operation instructions.

8.5.2 Pause and resume milling

Processing suspended: During the milling process, pressing the 'Pause' button will interrupt the milling operation.

Continue processing: After the machine has interrupted cutting, should further machining be required, press the "Start" button once more to resume milling operation.

8.5.3 Cancel processing

1. During the milling process, pressing the 'Pause' button will interrupt the milling operation.
2. Following a milling interruption, pressing the 'Reset' button returns the equipment to standby mode, clearing all status indicators and commands.
3. Then continue pressing the 'Return to Zero' button, and the device's axes will move to their origin positions.

8.6 Shut down the equipment

- Ensure the processing room is kept clean;
- Close the processing room door;
- Switch off the power button on the front panel of the device;
- Switch off the main power switch of the machine;

8.7 Equipment dry-wet switching

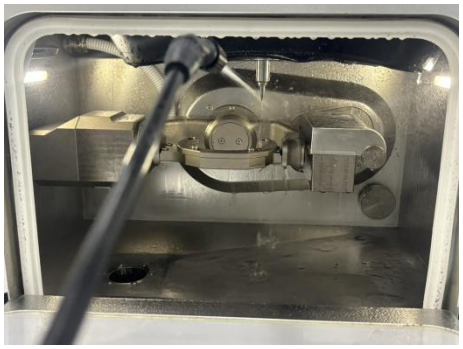
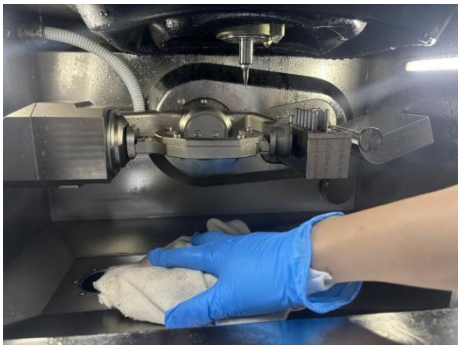
8.7.1 Switch from wet milling mode to dry milling mode

1. Preparation for flushing

Fill the pressurised spray bottle with clean water. Open the tank cabinet door and route the drain pipe outside the equipment. Prepare a bucket to collect the cleaning wastewater (to prevent contamination of the milling fluid tank).


2. In-bay washing

Thoroughly rinse the processing chamber walls, worktop, and spindle housing using a pressurised spray bottle. After rinsing, wipe away large water droplets from the surfaces with a clean cloth.

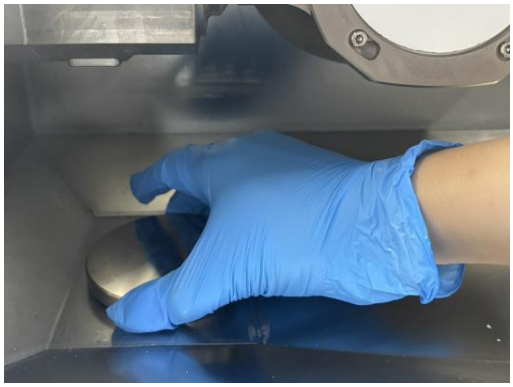



3. Air-drying

Open the processing chamber door and allow to air dry at room temperature for at least one hour.

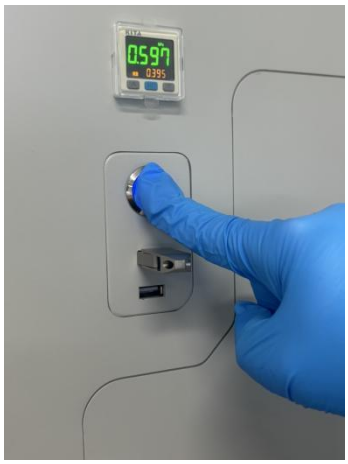
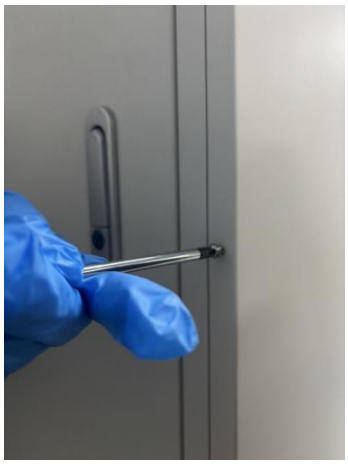
4. Vacuum system switchover

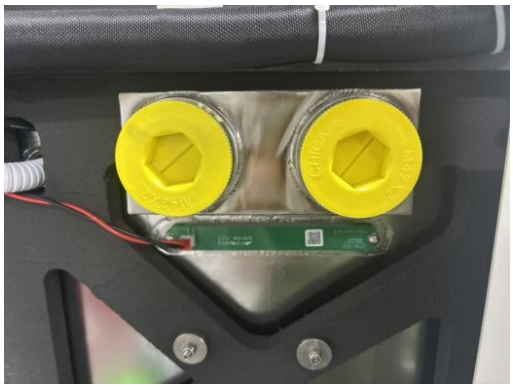
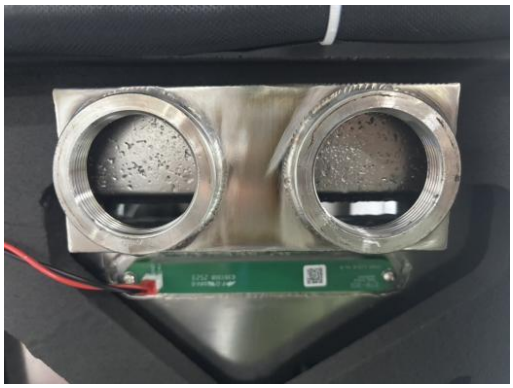
Remove the dust extraction port cap and connect the vacuum cleaner to the rear dust extraction port of the equipment via the adapter tube.

5. Drainage System Switchover

Fit the drain outlet plug, disconnect the power supply, pull out and remove the right-hand cover plate, remove the two sets of wet-cut duct rotary valves to maintain unobstructed flow in dry-cut mode, refit the side cover and restore power.

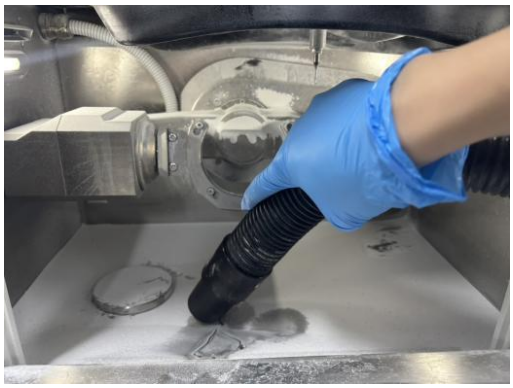
6. Software switching

In the CNC software, select Dry Milling Mode in the Dry/Wet Mode → Complete the switch from wet to dry milling.

8.7.1Switch from dry milling mode to wet milling mode

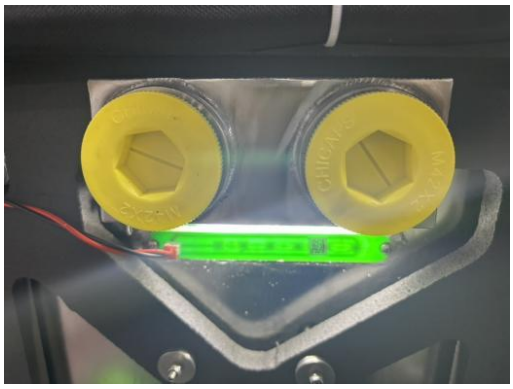
1. Dust removal

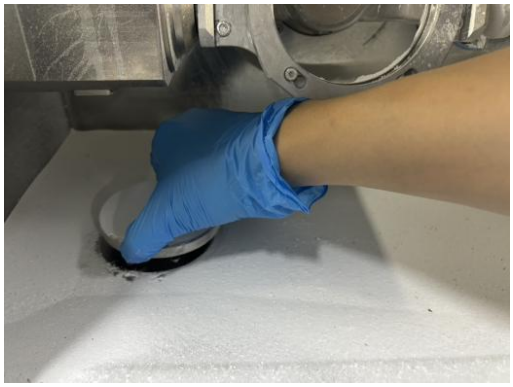
Remove the suction tube and thoroughly clear any residual dust from the processing chamber using a vacuum cleaner.



2. Drain and reset

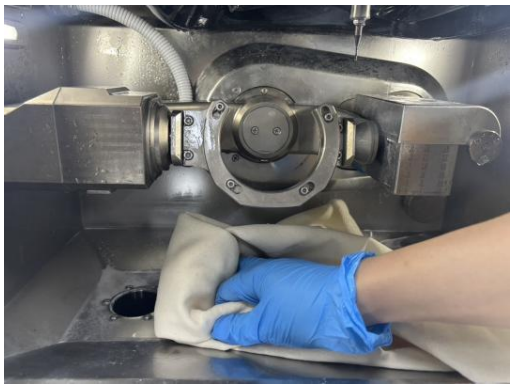
Replace the dust inlet cover, remove the drain plug cover, disconnect the power supply and detach the right-hand side panel. Install the two sets of duct rotary valves required for wet-milling mode, refit the side panel and restore power.





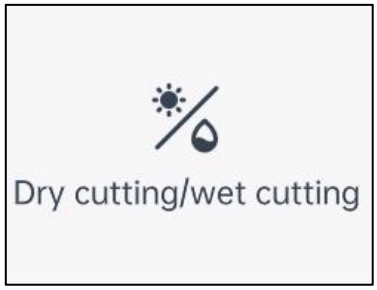
3. Rinse and clean

Perform a thorough re-rinse using a pressurised spray bottle, then wipe the processing chamber dry with a clean cloth to remove any residual water and impurities.



4. Software switching

In the CNC software, select Wet Milling Mode under Dry/Wet Modes → Complete the switch from dry to wet cutting.



9.Equipment maintenance

9.1Routine maintenance

Please note that routine maintenance ensures your equipment executes machining instructions effectively and achieves satisfactory results. Therefore, your commitment to daily upkeep is of paramount importance.
Please carry out the relevant maintenance in accordance with the equipment maintenance requirements. The following maintenance tasks require only simple manual operations on your part. Should you be unclear about any maintenance procedures, please contact technical support for guidance.

Cleaning location	Use tools	Key Cleaning Points	Cleaning cycle
Work bay	1. Clean lint-free cloth 2. Double-ended cleaning brush	1. Cleaning the machine's internal chamber: Use a cleaning brush to remove debris, then wipe with a lint-free cloth. ① Tool setting device ② Material clamping fixture ③ Inspection window ④ Network camera ⑤ Tool magazine ⑥ Calibration ring ⑦ Tool holder	**Clean once a week**

Spindle and chuck	1. Double-ended cleaning brush 2. Cleaning brush 3. Knurled nut 4. Cleaning cone 5. Chuck grease	1. Navigate to the Equipment Maintenance interface -Calibration - Spindle Cleaning 2. Position the spindle at the chuck removal station and clean the spindle area using a double-ended brush 3. Select 'Release Tool Clamp', remove the spindle chuck removal sleeve, and insert it into the spindle port 4. Securely position the spindle chuck sleeve, then use a 0.6Nm torque wrench to unscrew and remove the spindle chuck counterclockwise 5. Insert the cleaning cone into the spindle port and rotate to clean. 6. Insert the cleaning brush into the chuck and rapidly rotate to clean. 7. Upon completion, apply lubricant to the chuck's side walls (avoid gaps; use original manufacturer's grease). 8. Clean all remaining areas with a clean, lint-free cloth. 9. Reinstall the spindle chuck following disassembly procedure. Tighten clockwise using a 0.6Nm torque wrench to ensure secure locking. 10. After clamping the tool, the equipment will return to zero position and be ready for normal operation.	**Clean once a week**
Nozzle/Spray outlet	1、Cleaning brush	1. Navigate to the Equipment Maintenance interface → Calibration → Spindle Cleaning 2. Position the spindle at the chuck removal location 3. Insert the cleaning brushes into each of the two water spray ports 4. Rotate the cleaning brushes within the orifices 5. Return to the Equipment Maintenance interface and click Reset to Zero before resuming normal operation	**Clean once a week or when abnormal water spray occurs**

Material fixture	1. Cleaning brush	1. Press the material loading/unloading position button. 2. After rotating and tilting the fixture, remove the fixture cover plate and use a brush to clean residual chips from the fixture body and cover plate. 3. Rotate the cleaning aperture. 4. Press the equipment maintenance interface to return to zero position before resuming normal operation.	**Clean once a week or when materials become jammed**
Water tank	1. Clean the scraper blade 2. Fresh water	1. Open the lower cabinet door, remove the drain pipe, pull out the tank drawer, extract the pump and place it inside the equipment, then remove the tank. 2. Position the tank within the cleaning basin, remove the filter funnel and filter bag. 3. Pour the milling fluid into the drain. 4. Scrape away any residual chips from the tank using a scraper. 5. Place the cleaned tank in the sink and rinse until no residue remains. 6. Reinsert the filter funnel and fit two new filter bags. 7. Fill the tank to 24.5 litres, then add 2 litres of milling fluid. 8. Return the tank to the equipment drawer, reinsert the pump, and push the drawer fully into place. 9. Press the water spray button on the maintenance interface. Once normal spray function is confirmed, the equipment may resume operation.	**Process 4 titanium disks for maintenance or clean when water spray is abnormal**

Water circulation system	1. Clear water	1. Fill the water tank with clean water. 2. Select the water spray command within the equipment maintenance interface. 3. Allow the water spray command to run for 30 minutes. 4. Deactivate the water spray command, then replace the purified water with milling fluid at the appropriate concentration. 5. After selecting the water spray command in the equipment maintenance interface and confirming normal operation, the machine may resume use.	**Clean every four weeks or when abnormal water spray occurs**
Outer casing	1. Clean lint-free cloth 2. Alcohol	1. Switch off the power supply and unplug the power cord before cleaning the equipment. 2. Dampen a clean, lint-free cloth with alcohol. 3. Gently wipe the exterior casing of the equipment. 4. Allow the casing to dry completely after wiping. 5. Resume normal operation.	**Clean according to your actual requirements.**
Equipment calibration	1. Calibration disk 2. Calibration rod 3. Clean, lint-free cloth	1. For specific details, please refer to the calibration steps outlined earlier.	**Calibrate every six months Please contact technical support for assistance prior to calibrating the equipment**
Update software and firmware	Contact technical support for remote updates	1. Regularly updated to deliver the best possible experience	**We shall contact you in good time prior to the update.**
Liquid	visual inspection	1. Verify that the fluid level meets processing requirements. Should the water level be insufficient, promptly top up with milling fluid or neat oil. 2. Inspect the equipment for any spillage or residual liquid. Clean promptly and maintain dryness.	**Check once daily**

Equipment has not been used for an extended period.	Contact Technical Support for Equipment Maintenance	1. The equipment has not been used for four weeks; prior to use, please contact technical support for remote maintenance.	**Not used for 4 weeks Contact technical support for remote maintenance**

9.2 Maintenance work

For all matters relating to repairs, please contact the UP3D Technical Support Department for assistance.
They will provide you with spare parts and maintenance advice, and will carry out preventive maintenance according to your requirements.
Upon delivery or installation of the machinery, please consult the service personnel for the detailed contact information of the customer service team.

9.3 Warranty Service

The warranty period for the equipment is 12 months or 2,000 operating hours, whichever reaches first. During this period, we provide complimentary after-sales service. However, please note that even within the warranty period, should the product require repair due to the following reasons, UP3D shall charge for repair services in accordance with the stipulations below, including labour costs and parts expenses:

- Damage caused by human factors;
- Improper use of equipment;
- Natural disasters constituting force majeure;
- Replacing or using components or needles not approved by UP3D;
- Disassembly and repair must not be carried out by non-UP3D authorized personnel.
- Other faults not caused by the equipment itself;
- Following the expiry of the warranty period, UP3D shall provide paid repair services.

These terms are intended to ensure the provision of complimentary after-sales service under normal usage and maintenance conditions, excluding issues arising from improper user operation, external factors, or unauthorized repairs not conducted by UP3D. Should servicing be required either within or after the warranty period, please do not hesitate to contact UP3D for detailed information and support.

10.Troubleshooting

Should the device fail to operate correctly or encounter an anomaly at any time, please consult the troubleshooting guide below.

Please be advised that, Incorrect troubleshooting or improper operation may cause damage to the equipment. Should you encounter difficulties in resolving the issue yourself, or if the problem persists or cannot be identified, please contact technical support promptly for assistance.

10.1 Tool change issue

When this fault occurs, the software interface displays the alert box shown above, indicating that the tool change failed during the tool-changing process.

Analysis of Causes:

- **g status:**Should this prompt appear during machining, it may indicate tool damage during processing or a failed tool change during machining. This alert will interrupt the machining operation; once the error is rectified, the machining must be restarted.

- **Unprocessed state:**In this state, tool clamping primarily occurs during the tool change process, where tool inspection fails. This includes tool breakage or the absence of a tool in the tool magazine.

Resolution: Pressing the 'Release Tool/Clamp Tool' button will cause the spindle chuck to open, enabling cleaning and maintenance of the chuck to ensure it remains clean.

10.2 Limit switch issue

When this fault occurs, the software interface displays the prompt shown above, indicating that the device has encountered a limit switch or exceeded its travel range during operation.
Cause analysis: Limit switch issues fall into two categories: motion limit switches and mechanical limit switches.

- **Mechanical stop:**

Should a hard limit be encountered along the X, Y, or Z axis, this constitutes a machine limit. Such limits occur when a moving axis collides with a limit switch under abnormal conditions, resulting in machine malfunction.
Resolution: Click "OK" to dismiss this alert. Within the software interface, press the "Reset" button, followed by the "Return to Zero" button to restore the device to normal operation.

➢ **Movement limit:**

When this prompt appears, it may indicate that the next movement in the machining programme exceeds the defined travel limits, causing the machine to reach its limit. This constitutes a motion limit, and the prompt serves as a warning indication.

Resolution: Click "OK" to close this prompt box, then press the "Stop" button. Revise the NC file or regenerate the NC before proceeding to the next step.

10.3 Unsatisfactory machining results/Broken tool

➢ **Check the service life of the sewing needles:**

The condition of the coating on the sewing needles is crucial. Once the needles reach the end of their service life, this significantly impacts the quality of the sewing results. Please inspect and replace them promptly.

Inspection and resolution:

1. Visually inspect all sewing needles.
2. Check the needle life value via the touchscreen.
3. Replace worn needles with new ones.

➢ **Check whether the materials have been installed correctly:**

If the material is not positioned correctly during installation, it will affect the machining results.

Inspection and resolution:

1. Remove the blank and reinstall it.
2. The groove on the blank block must be correctly positioned over the corresponding locating pin.
3. Ensure the blank fits snugly against the clamping fixture before tightening the retaining screws.

➢ **Verify the information within the layout software corresponding to the equipment processing:**

Verify that relevant information matches and is suitable for the machining type.

Check and resolve:

1. Material type: Ensure it corresponds to the material type
2. Blank dimensions: Confirm that the blank dimensions selected within the software match the actual dimensions used
3. Restoration type: Select the restoration type corresponding to the actual restoration being machined

➢ **The quality of processed files requires inspection:**

Verify that prosthesis data and layout data meet machining requirements.

Check and resolve:

1. Inspect prosthesis files within CAD design software or STL viewers to ensure prosthesis quality. Pay particular attention to manufacturer specifications regarding wall thickness and edge thickness. Should edges prove excessively thin or razor-sharp, modify design files before resuming machining.
2. Verify the CAM software's layout for errors, confirming the orientation and restoration type are correct. Simulate the

data and resume processing upon confirmation.
3. If necessary, investigate the accuracy of the scanning equipment and scanning software.

➢ **Spindle Chuck Cleaning Inspection:**

Whether contaminated or loose
Inspection and resolution:
1. Clean the chuck using the supplied spindle maintenance kit.
2. When inserting the chuck into the spindle, ensure it is correctly positioned.

10.4 Poor water spray effect from the equipment

➢ **Water circulation system inspection:**

Is there insufficient coolant or a blockage present?
Inspection and resolution:
1. Check the coolant level in the reservoir. Top up with coolant at the correct concentration if low.
2. If a blockage is present, clean the filter, reservoir, and nozzles. Refill with fresh coolant at the correct concentration.

10.5 For other faults, please contact technical support.

➢ **Please note:**

The composition of milling fluids varies between brands and must not be mixed concurrently. When changing fluids, ensure the drawer is thoroughly cleaned. Avoid frequent changes of milling fluid during machining operations.

11.Equipment disposal

11.1 Discarded coolant/machining residues

When handling processing residues, comply with relevant regional regulations.
1. Prevent hazardous processing residues from entering soil, water, or drainage systems.
2. Always adhere to national and local laws at the disposal site.
3. Where disposal by an authorized treatment provider is necessary, retain reference samples of the disposed product for at least six months.

If you are disposing of coolant/machining residues yourself, please follow these instructions:
1. Thoroughly filter the machining residues from the used coolant.
2. Drain the liquid into a drain that meets disposal requirements.
3. Dispose of solid machining residues according to the material manufacturer's instructions. Retain reference samples of the disposed products for at least six months.

11.2 Discarded machinery

Please contact technical support before disposing of the equipment.
Should you dispose of the machine yourself, please comply with the national and local laws of the disposal location.
If necessary, arrange for disposal by an approved waste management company.

12.Storage and Transport

12.1 Storage

Avoid direct sunlight.
Do not expose to rain.
The equipment must be used in the following environment:
① Temperature: 10 °C to 35 °C
② Humidity: Below 80% (relative), no condensation

12.2 Transport

Place the machine flat, preferably in its original packaging for transport.
Avoid subjecting it to violent vibrations.
Should the equipment be transported in cold or humid conditions, upon arrival at the client's premises, it must be allowed to acclimatize indoors at room temperature before use.
Otherwise, excessive cold or humidity may cause short circuits.

13.Product Technical Specifications

The basic specifications of the UP3D Intelligent Four-Axis Dental Prosthesis Milling Machine IRON CORE i5 PRO are as follows:

IRON CORE i5 PRO Technical Specifications	
Equipment Routine	
Fields of application:	Dry or wet machining
Materials that can be machined:	Glass ceramics, PMMA, PEEK, Composite resin, Wax, Titanium disk, Titanium rod, Zirconia
Material Specifications	Block: 40*20*20mm (Max) Disk: 98.5mm 10~30mm
Indications:	Dissection of the tooth crown,Anatomy Bridge,Planting an open-crowned tree,Inlay,High inlay,Veneers, etc.
Basic Construction	
Construction:	Machine bed made of solid cast iron body
Number of shafts:	5-axis
Rotary shaft:	A-axis: ±360° B-axis: ±30°
Lighting apparatus:	LED lighting inside the working chamber
Equipment power:	5.5 KW
Spindle-related	
Standard:	High-frequency electric spindle, pneumatic tool change
Rotational speed:	60,000 rpm (max)
Tool holder diameter:	Φ6.0 mm
Power:	2.5 KW
Automatic function	
Tool change	Tool magazine for 18 tools, length measurement and tool breakage monitoring via precision measuring key
Connect and run	
voltage	220 VAC 50～60Hz
compressed air	0.6-0.9MPa 80L/min
Data	Wi-fi, USB, Ethernet port
Environmental conditions	
Operating temperature range	10 °C ~ 35 °C
Working air humidity	Below 80% (relative), non-condensing
Dimensions and weight	
Dimensions	Length × Width × Height = 660 × 680 × 1750 (mm)
Weight	480 kg
Device compatibility	
CAM software	UPCAM、Millbox

Dear Customer,

Upon receipt of the product, kindly allow time to review this document thoroughly. If you have any queries, concerns, or require further assistance, please contact us immediately. We shall endeavour to provide prompt support. Once you acknowledge the above terms, please sign below to confirm receipt and return this acknowledgement to us. We also warmly welcome any feedback or comments you may wish to share.

The purpose of this acknowledgement is to establish mutual understanding and provide documentation confirming that the delivered product/service meets your expectations.

Thank you for choosing UP3D. We look forward to continuing to provide you with exceptional products/services.

With warmest regards,

[Customer Signature] Date: _____

Should you require technical support, please scan the QR code below. We shall provide you with professional guidance and technical assistance.

Data acquisition

Technical Support