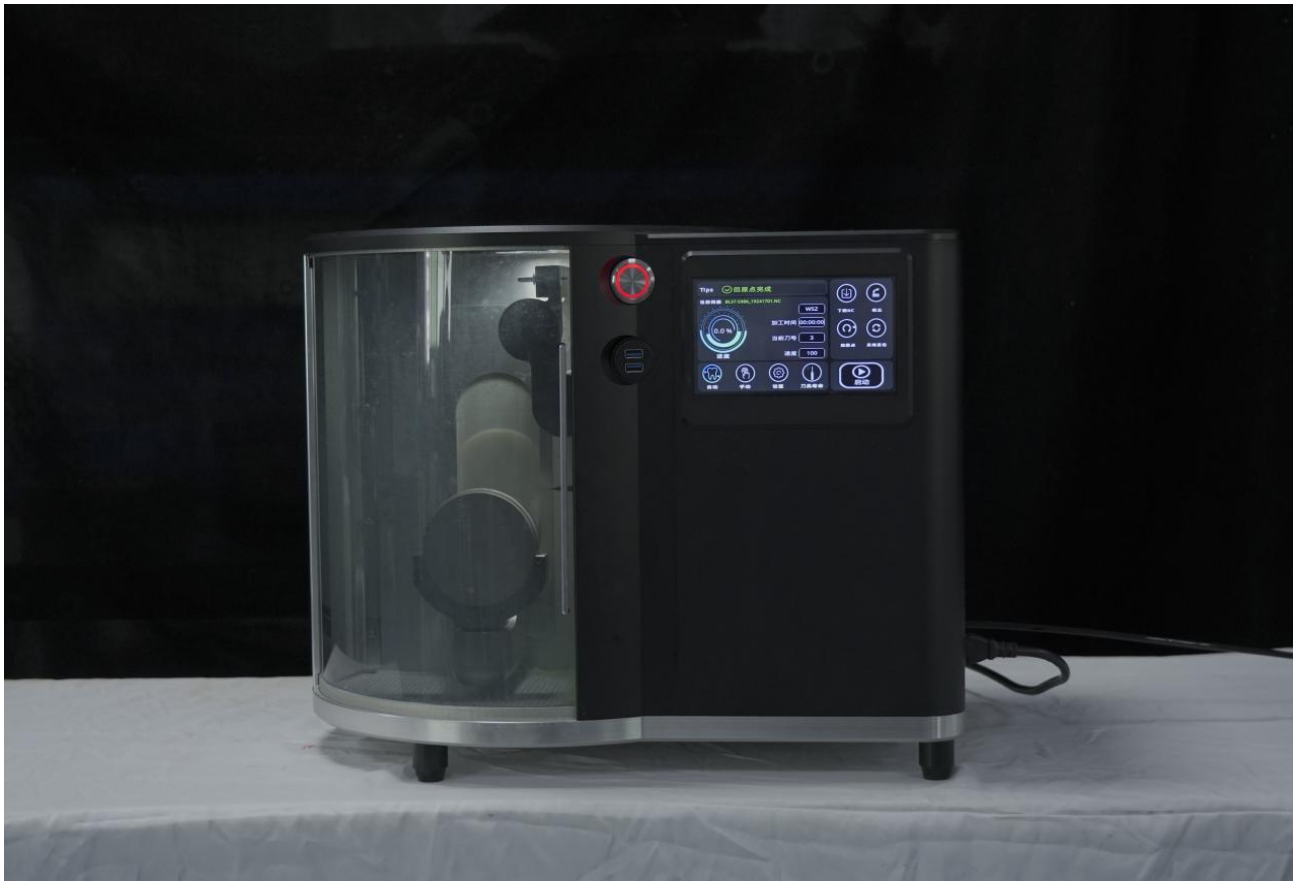
DN-H5Z
Dental Milling Machine
User Manual



Customers are aware

Equipment ownership

The intellectual property rights of this instruction manual and its corresponding equipment belong to Guangzhou DNTX Technology Co., Ltd. (hereinafter referred to as DNTX).

Without the written consent of DNTX, no individual or organization may copy, modify or translate any part of the manual.

DNTX reserves the final right of interpretation of this instruction manual.

Austech is responsible for the safety, reliability and performance of the equipment only if all the following requirements are met, namely:

1. The grinding head is original factory produced.
2. The air source is an oil-free dry air source, which consists of an oil-free air compressor, three-stage filtration, and a cold dryer. This ensures that the cold dryer works normally during the air supply process and the filter element is replaced at least once every six months.
3. All repaired and replaced parts are original or approved by Aucma. The relevant electrical equipment complies with national standards and the requirements of this instruction manual.
4. The relevant gas circuit equipment complies with national standards and the gas used complies with the requirements of this manual. The operation of this equipment shall be carried out in accordance with this instruction manual.
5. The operator is fully aware of and understands the contents of this manual.

Table of contents

1. Overview

DN-H5Z glass ceramic grinder is a high-precision dental cutting system produced by Guangzhou DNTX Technology Co., Ltd. with independent patents and uses advanced grinding technology and drive system .

DN-H5Z glass ceramic grinder abandons the traditional complicated process and adopts a number of new designs. One computer can be connected to up to 10 AIM devices for cutting at the same time, providing users with an easy-to-use , convenient and fast experience.

The data receiving and transmission method is open and can be connected to any intraoral scanner or desktop scanner on the market that outputs in STL format.

the DN-H5Z grinding system greatly shortens the grinding time. A general standard restoration can be completed in 15-30 minutes, which greatly reduces the waiting time for patients and improves the efficiency of outpatient clinics and hospitals.

1.1 Product Features

- High-precision cutting control and drive system
- Data transmission: USB flash drive , direct WiFi
- One-touch start
- 5- axis (X, Y, Z, A, B) wet and dry cutting
- Simple touch-operated human-machine interface

1.2 Main uses and occasions of use

1.2.1Main application: denture grinding

1 ·2 .2 Application occasions:

1、 Outpatient

2、 Dental Hospital

3、 Denture processing factory

4、 Medical Aesthetics

1.3 Model

DN-H5Z Grinding Machine

1.4 Environmental conditions for use

1）Environmental requirements: Indoor temperature 15 ~ 40 degrees Celsius; Stable and horizontal workbench or desktop (withstanding at least 50kg);

2）Environment: dry, no vibration, no dust, no corrosive gas, no flammable gas, no oil, no water vapor;

3）Air pressure: 4 kg or more dry air source;

4）Power supply: 220V AC 50Hz /110V AC 50Hz .

1.5 Unpacking and water, electricity and gas connections

1) Unpack the equipment and check the quantity of the equipment and corresponding accessories according to the configuration list;

2) Connect the power supply, compressed air and water circulation system correctly according to the instructions in the manual;

3) After turning on the machine and returning to the origin, check whether the current tool number displayed on the screen is consistent with that on the spindle;

4) Prepare circulating water, take 250ml of stock solution and mix it with tap water to the standard liquid level;

5）Place the needles into the designated tool magazine according to the serial number ;

Equipment Model:	DN-H5Z	**Spindle speed:**	10 0 00-60000 r/min
Device Type:	Desktop water cooling	**Tool changing method:**	Pneumatic automatic tool changer or electric automatic

			tool changer
Processing material :	Feldspar glass ceramics ; lithium-based ceramics ; zirconium oxide; wax; titanium rod; mixed materials ; PMMA	**Material change method:**	Fix with tools
		Tool magazine loading number:	8
Processing Type :	Inlay ; veneer ; inner crown ; full crown ; bridge; implant crown; abutment;	**Knife:**	Handle diameter 4mm
Operating Temperature:	20~40°C	**Ball head diameter:**	0.5+1.0+2.0
efficiency:	15~30 minutes/piece	**Supply voltage:**	220V,50/60Hz
X*Y*Z travel range:	80 * 85 * 45 (unit/mm) XYZA semi-closed loop drive system; Encoded stepper + preloaded ball screw	**power:**	machine ≤1.0KW
		weight:	40 KG
		noise:	Noise during operation ~50dB
A*B travel range	A;90/-40 B;210/-30		
Repeatability:	0.0 2 mm	**Dimensions:**	465 * 4 90 * 370 (unit/mm)
Spindle power:	700 W	**Gas source pressure requirements for tool and material change:**	Drying 4.5~8.5kg/cm'

6）Place the needles into the designated tool magazine according to the serial number ;

1.6 Equipment parameters

2. Start Installation

2.1 Unpack and check the number of accessories

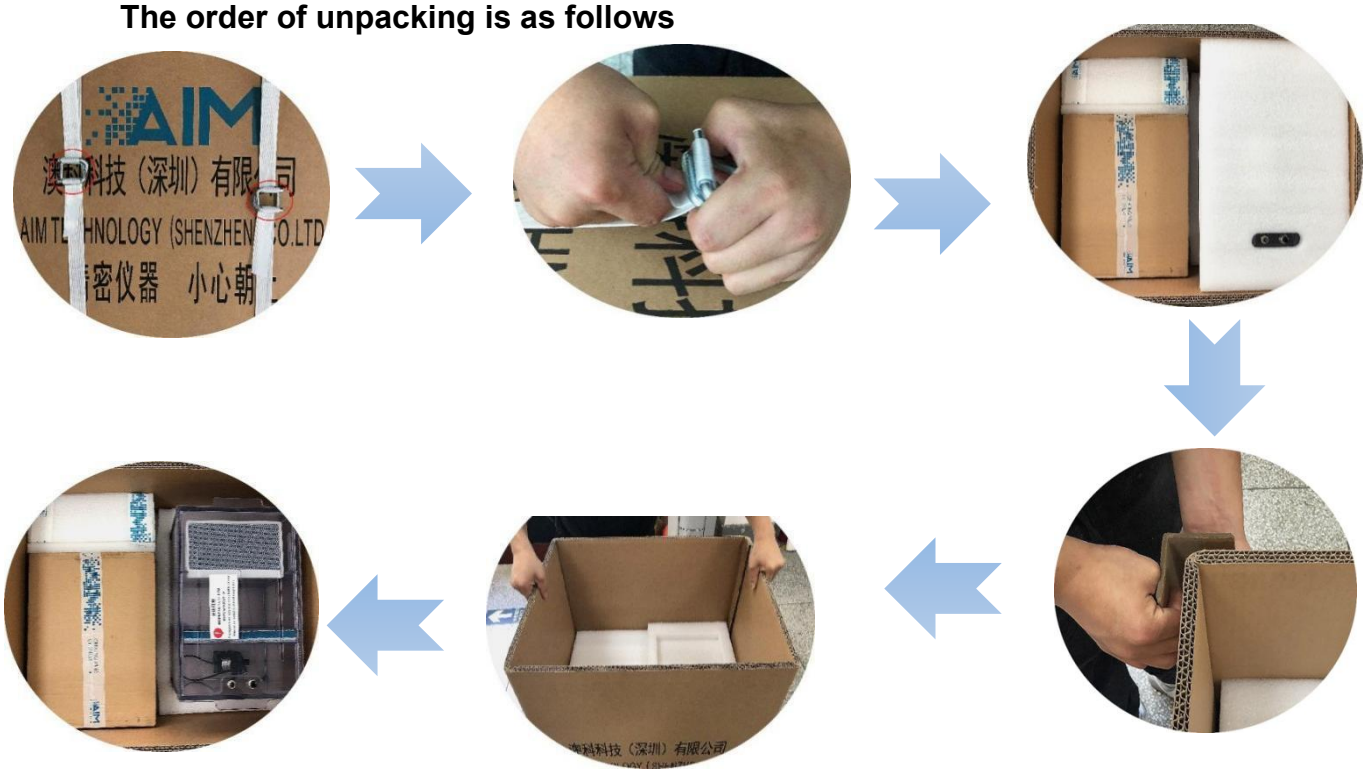
2.1.1 Packaging and disassembly process

Check whether the outer packaging is damaged, count the random accessories according to the table, and contact the manufacturer in time if any abnormality is found. **It is recommended to keep the outer packaging for at least one month** .

appendix	**Function**	**How to use**

Network cable	Used for data transmission between DN-H5Z and host computer	Connect DN-H5Z to the computer, plug one end into the DN-H5Z network cable interface, and the other end into the computer network cable interface
water pipe	Water tank grinding fluid circulation supply	Connect DN-H5Z to water tank 6mm black hole
Water tank wire	Water tank pump power supply	Connect the DN-H5Z four-pin water pump power port to the water tank two-pin round port
trachea	DN-H5Z air supply	Connect DN-H5Z to an external air source. The air source pressure must be stable above 4 Kg and dry.
Test Block	For DN-H5Z calibration test	See **4. Calibration section**
Return pipe	Grinding fluid reflux	Connect the DN-H5Z water outlet to the water tank return port
Power cord	DN-H5Z host power supply	Connecting DN-H5Z to an external power source
Air source filter	Filter moisture from external air sources and control input air pressure	Connect between the DN-H5Z air inlet and external air source
Grinding fluid and measuring cup	Measuring the amount when adding grinding stock solution	Use 250ml of grinding solution each time, and change the grinding solution every 5-7 days or 30-50 teeth.
Needle	Grinding	For first use, please place the tool in the grinder magazine according to the serial number.
Backup water pump	spare	replace

The order of unpacking is as follows



Accessories Box

Grinding fluid

回水管

气源过滤器

网线

水泵

量杯

水泵线

气管

电源线

蜡块

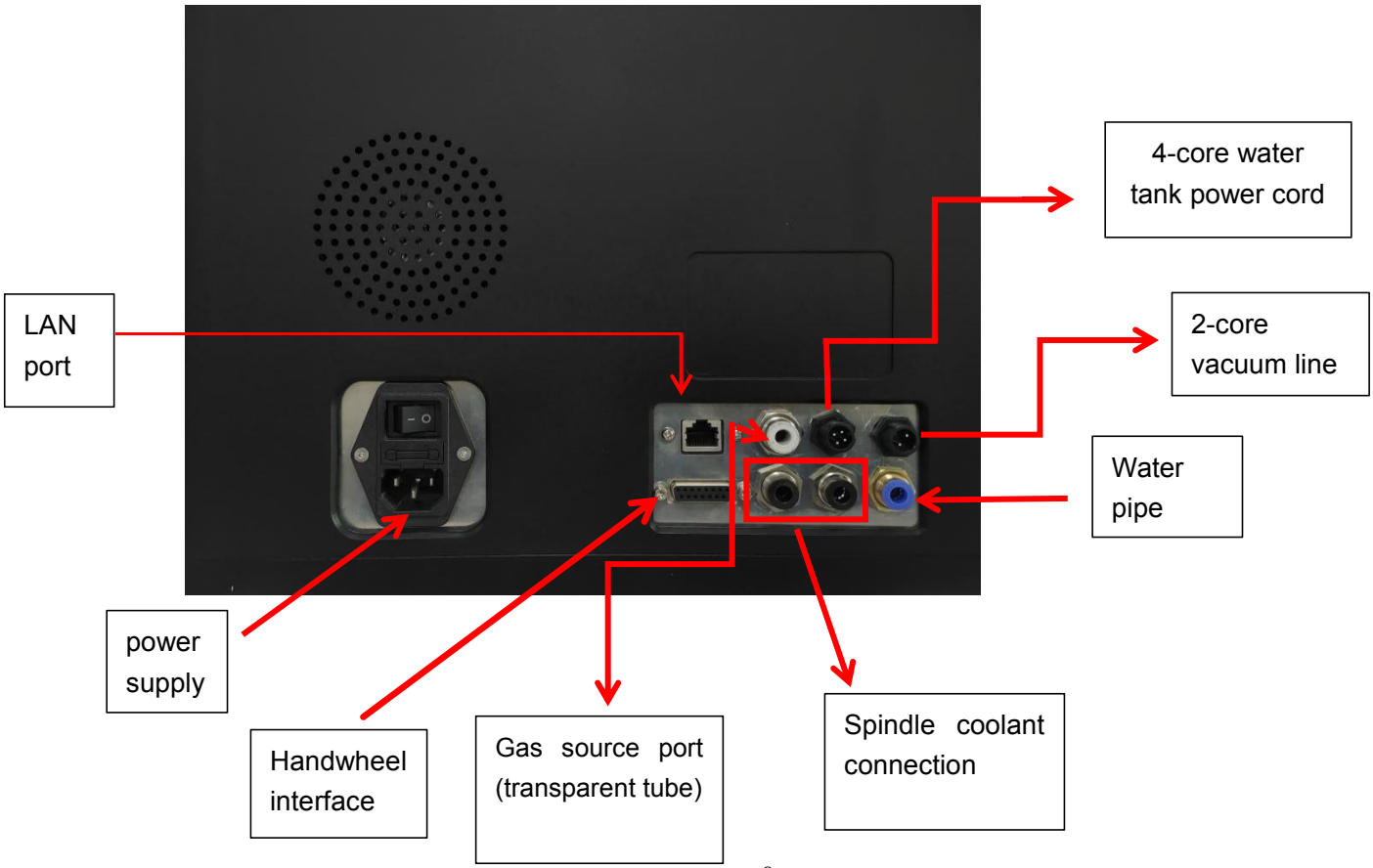
测试块

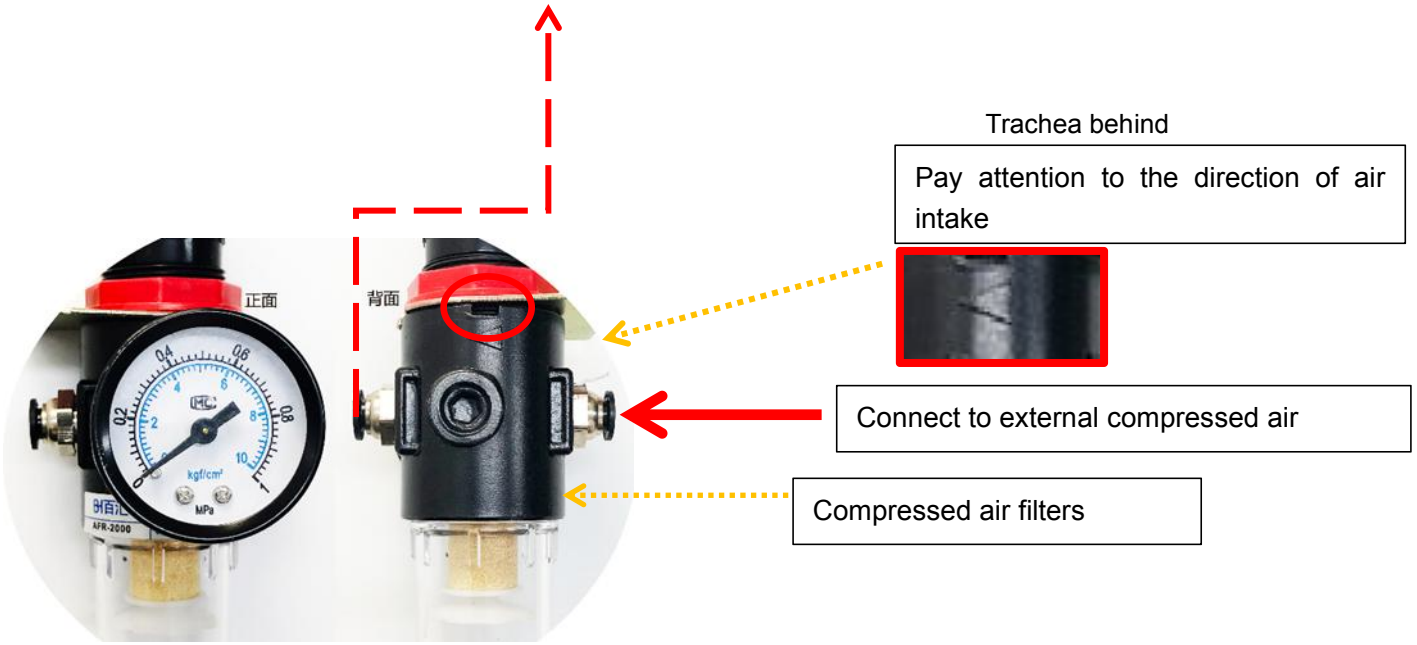
研磨车针

吸尘线

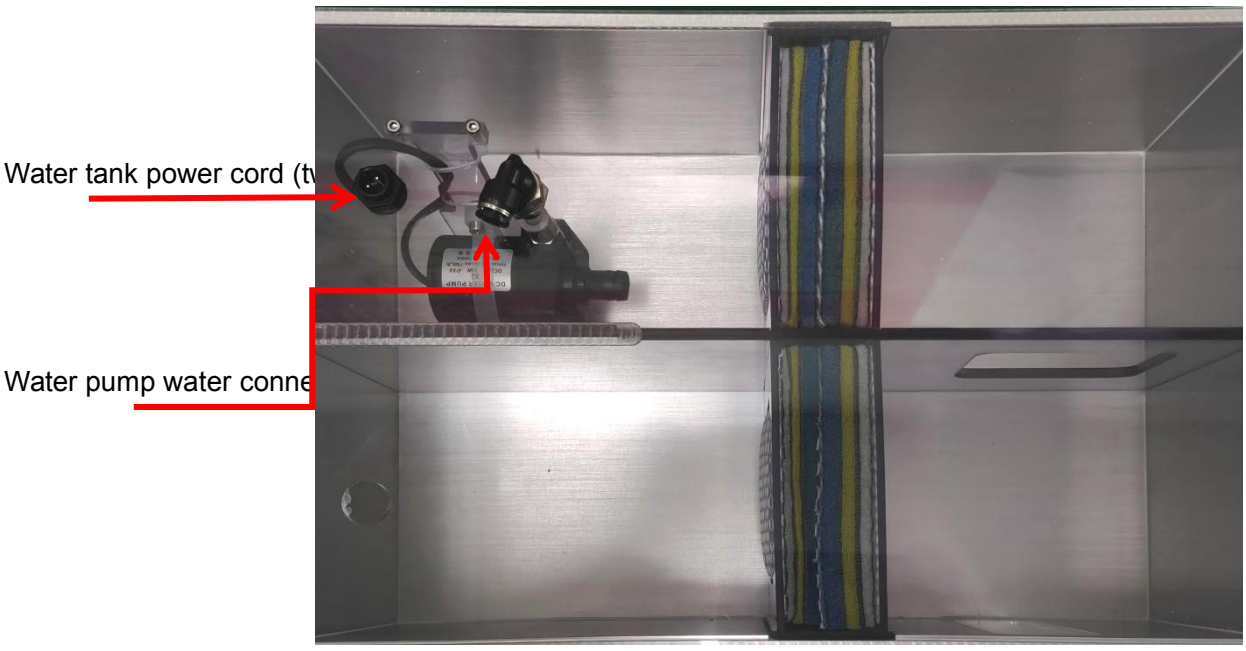
2.1.2. Equipment installation and wiring

Note: DN-H5Z **should be placed on a level and stable table, and the water tank should be placed under the machine. Do not place it on the same plane as the machine. The recommended height difference is greater than 50cm. The return pipe cannot be bent or up and down.**





Note: The air flow direction of the air source filter is as shown in the figure. Do not connect it in reverse.

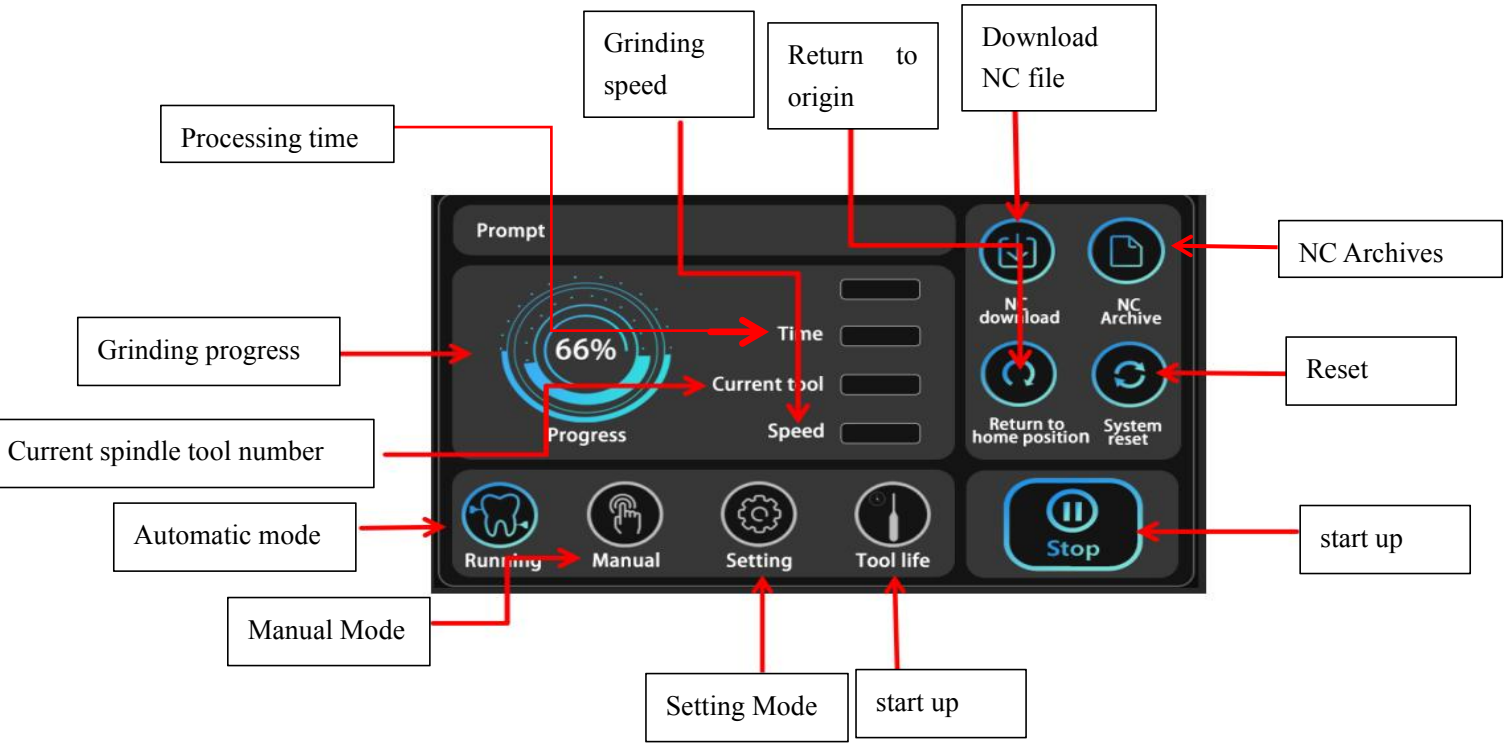


Water tank installation After connecting the pipelines as described above, pour 250mL of grinding stock solution into the water tank, and then add tap water to the standard liquid level.

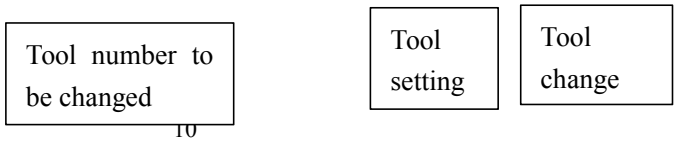
3. Screen interface functions and equipment operation process

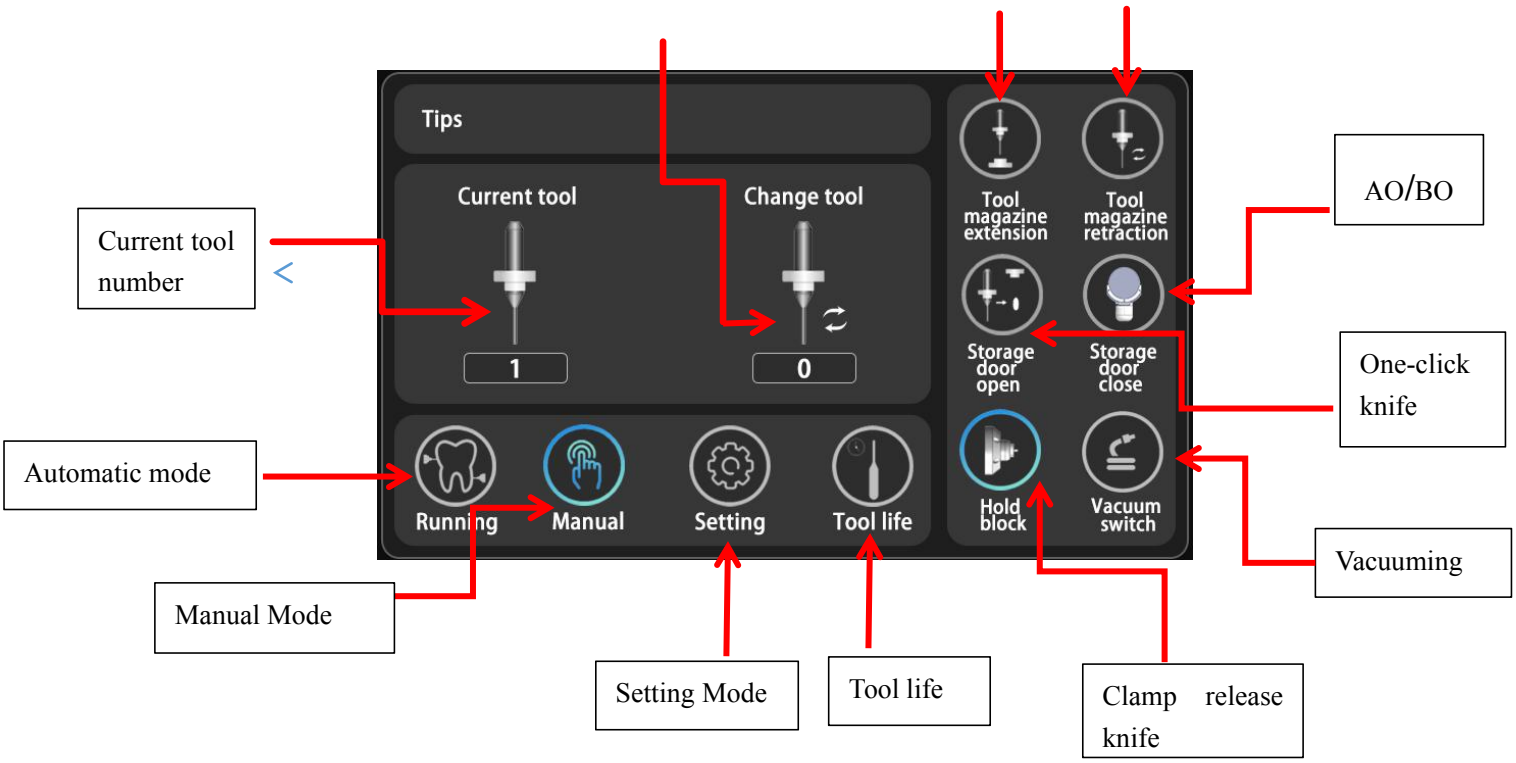
3.1 Screen interface function introduction

3.1.1 Automatic Mode

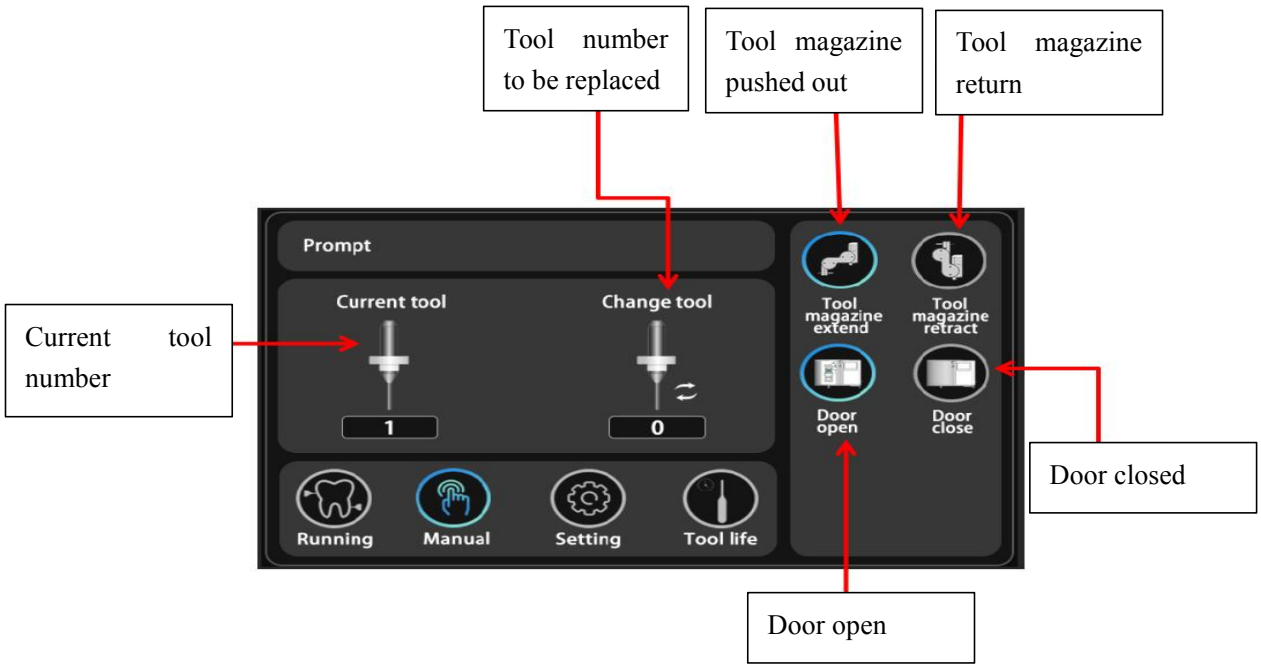


3.1.2 Manual Mode





Note : In manual mode, you need to click manual mode again to see the second screen with the tool magazine/door operation buttons.



3.1.3 Setting mode (This interface is for calibration, non-technical personnel or unauthorized personnel are not allowed to operate this interface)

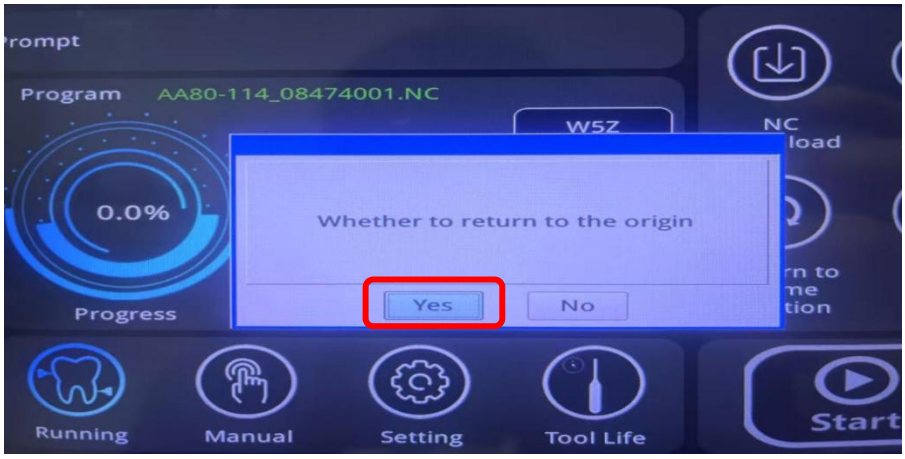
3.2 Equipment operation process

3.2.1 Start the device

After connecting to the power supply, press the start button to start the device

Press the start button  to start the device

① Turn on the power switch on the right side of the machine. After turning on the power switch, wait for the device to prompt whether to return to the mechanical origin. Click yes to return to the mechanical origin.

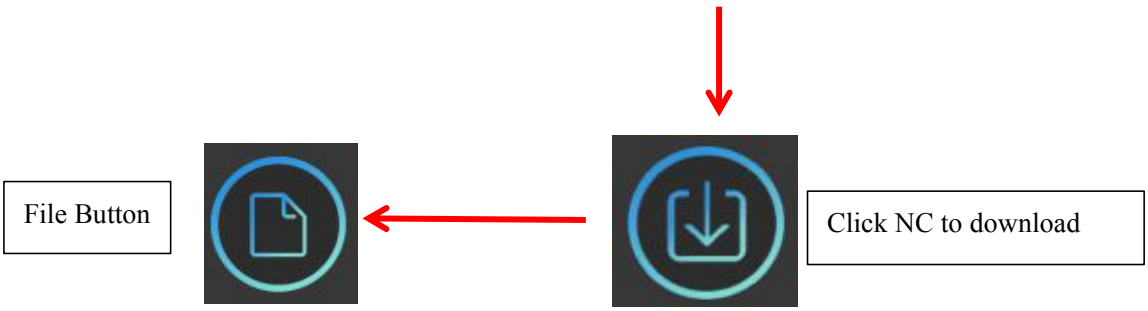


Turn on the power on the right rear side of the machine and wait for the grinder to return to its origin. Do not operate at this time.

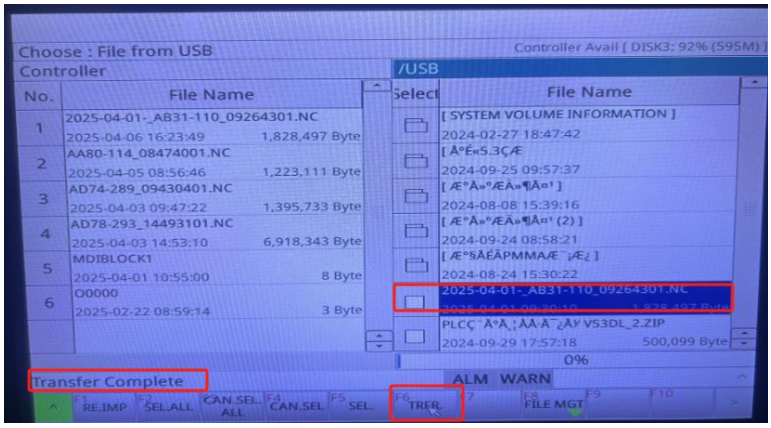
Start up and return to origin completed

Insert the USB drive directly into the grinder's USB port

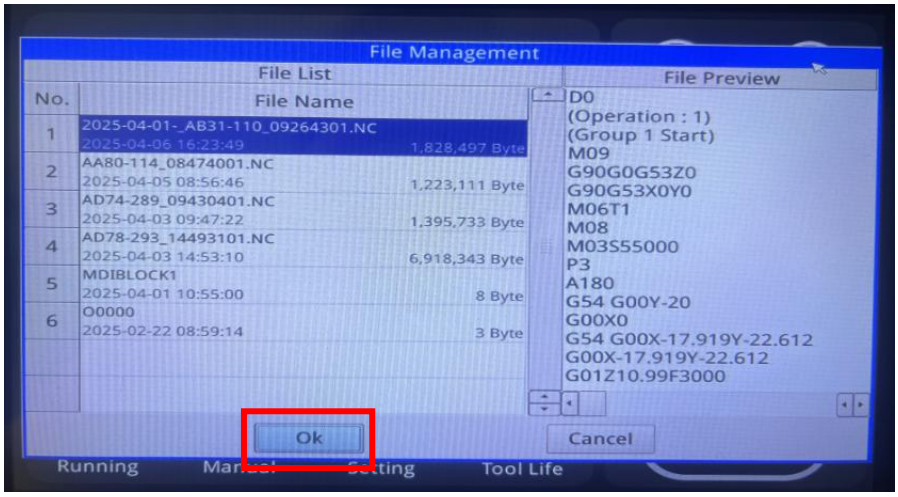
Download data using USB flash drive



NC file in the USB to the NC file



③ To use the data in the downloaded NC file, click NC , select the file to be processed and click OK , then you can start processing.



Close the door, click the 

button on the screen, and the grinder will start working normally.

Do not press any buttons while the grinder is running.

3.2.2 Tool replacement function description

① Click Manual mode to change the tool ; click the release tool  button to remove the tool from the spindle. 

②Insert the tool of the same color into the tool magazine position; **Note : Red is tool magazine position No. 1, count from right to left**

Note: When performing manual tool change operation, you must ensure that the tool number displayed by the current tool number is consistent with the tool number of the tool currently clamped by the spindle before you can manually change the tool!!!

③ Click the tool number to be replaced and enter the tool number to be replaced , click the tool change  button, and wait for the tool change to be completed.

Display "Tool number modified successfully"

Precautions

• Before the equipment is running, make sure that the tool number of the tool currently clamped by the spindle is consistent with the current tool number on the display screen, and that the tools in the tool magazine are placed correctly and without missing

•Do not open the door during operation!!!

• In case of emergency, press the red emergency stop button on the front of the equipment to stop the equipment

•After replacing the new tool, the new tool must be "set" before the equipment can be operated

• In manual mode, you can change the current tool number of the device. If you need to change it, you must ensure that the changed current tool number is consistent with

the tool number of the tool currently clamped by the spindle.
•After the device is shut down or restarted, data needs to be re-transmitted before it can run
• If the grinding process is interrupted due to unexpected circumstances, the data can be retransmitted and the grinding can be restarted without removing the ceramic block

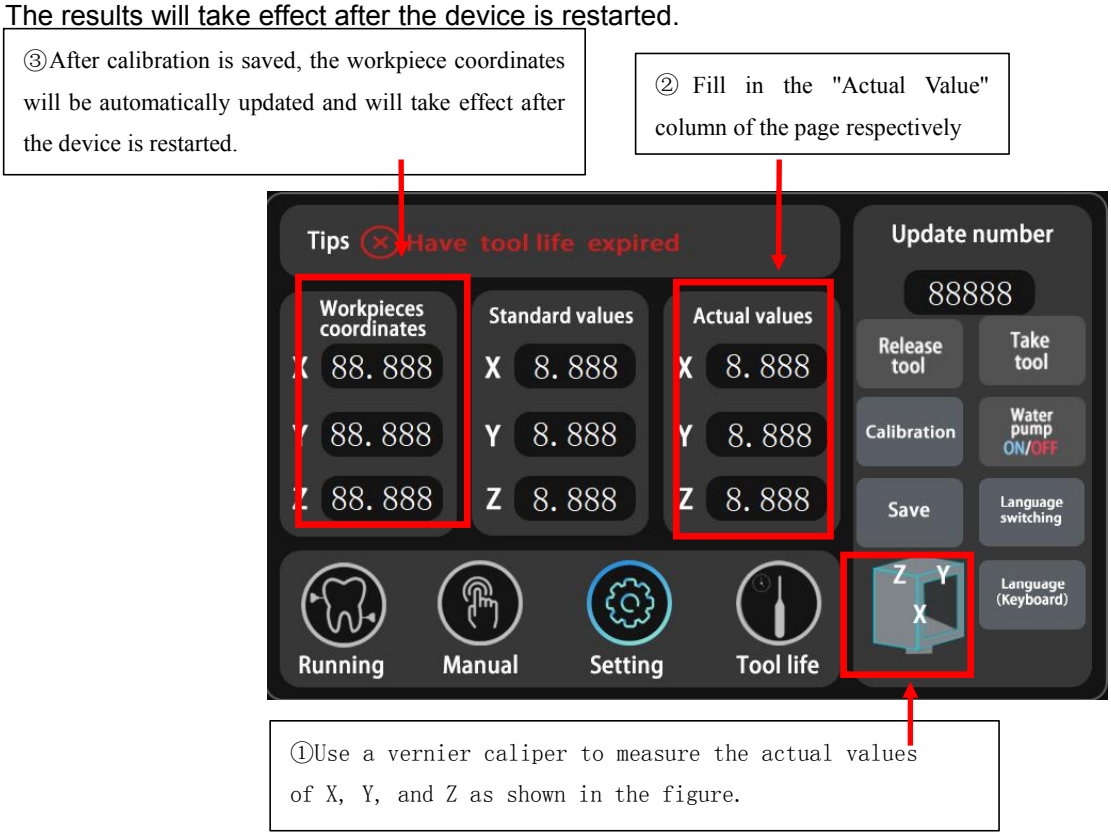
3.3 Equipment calibration function description

Use a new No. 1 (2.0 mm) grinding head and select a transparent test block (the block needs to be set) or an I12 ceramic block to grind out a calibration block;

Click the "Settings" menu on the machine display, use a vernier caliper to measure the actual values of XYZ as shown in the figure, and fill in the "Actual Value" column on the page respectively.

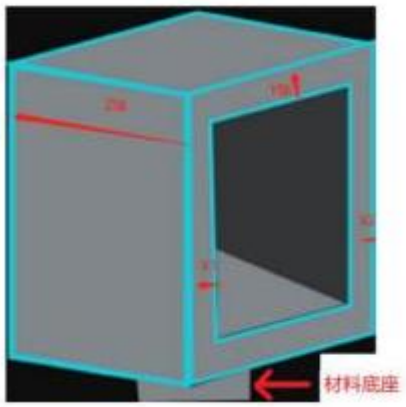
After clicking Calibrate, you will be prompted to click Calibrate again. After completion, click Save.

The results will take effect after the device is restarted.



4. Automatic calibration of workpiece coordinates

Figure 1 **Figure 2**



4.1 Calculation of X-axis average value

As shown in Figure 1, use a caliper to measure the thickness of X1 and X2 respectively, (X1+X2)/2=X-axis average value (recorded as X-axis)

4.2 Actual value writing and calculation

Calculation method: 1-(X level - X1) = X actual value (Note: the values obtained by subtracting in brackets are positive and negative)
Example: 1-(1-1.2) =1-(-0.2) =1.2 = X Actual value 1-(1.2-1) =1-(0.2) =0.8 = X Actual value
Y actual value = Y axis measured value (as shown in Figure 1) Z actual value = Z axis measured value (as shown in Figure 1)

4.3 Workpiece coordinate calibration (z-axis thickness error range is +0.03)

After all values are entered, click the Calibrate button (as shown in Figure 2). After the calibration is completed, click Save (as shown in Figure 2). The workpiece coordinates are calibrated.

Note: After the value is written, just click the secondary calibration button. Do not click multiple times (which will cause the workpiece coordinates to be calibrated multiple times). After the calibration is completed, be sure to click the Save button (as shown in the figure)

5. Material measurement and tray addition

5.1 Material Addition Settings

As shown in the figure above : The specifications of zirconium blocks can be found on the outer packaging

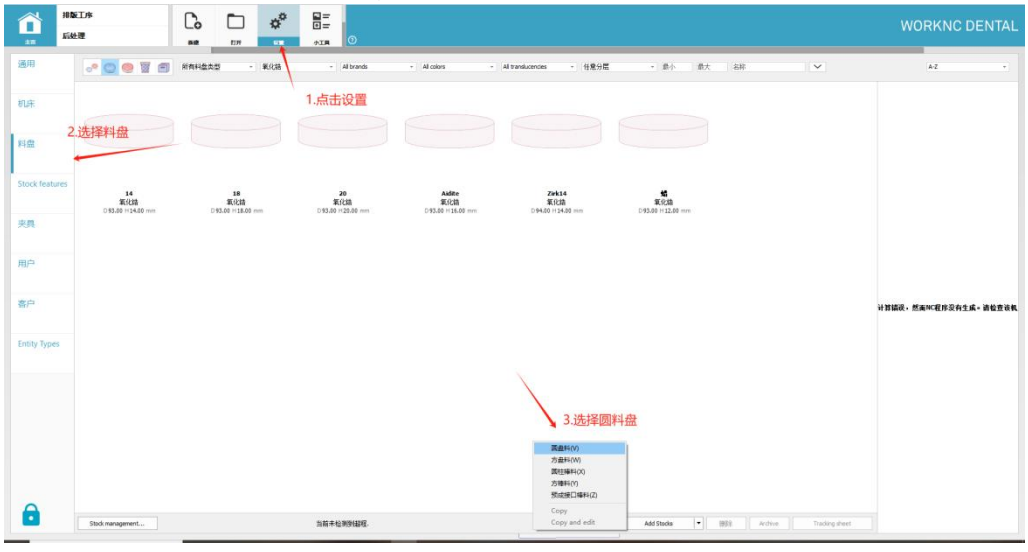
Zirconia specifications are : D98mm*L12mm

Open the software

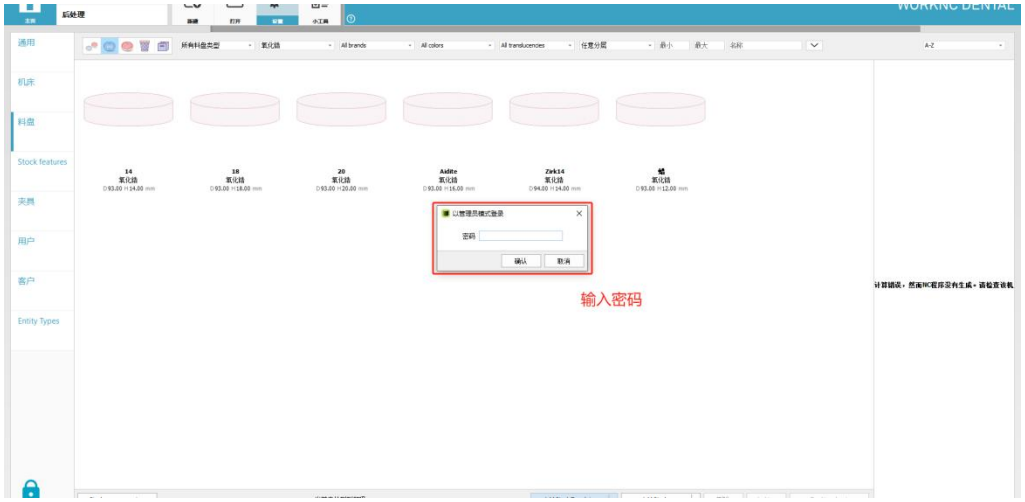
① Click Settings

② Click on the tray

③ Click and select round tray



④ Enter password (admin)

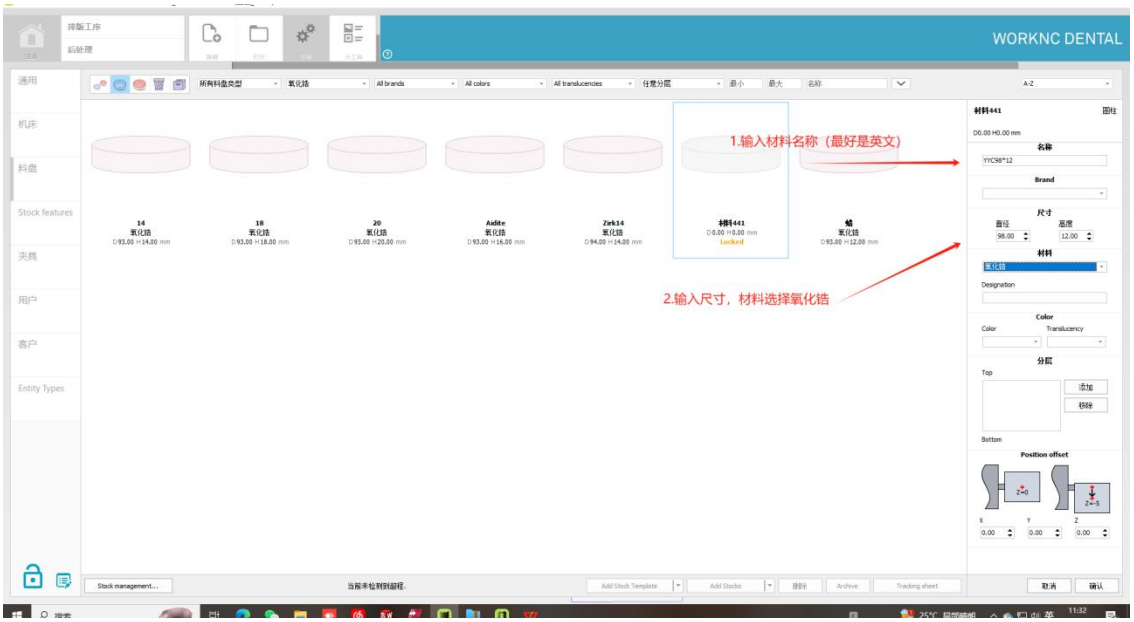


⑤ Add material name

⑥ Add Material Size

⑦ Add processing materials

Note：The processing material is zirconia (English letters are recommended for material names)



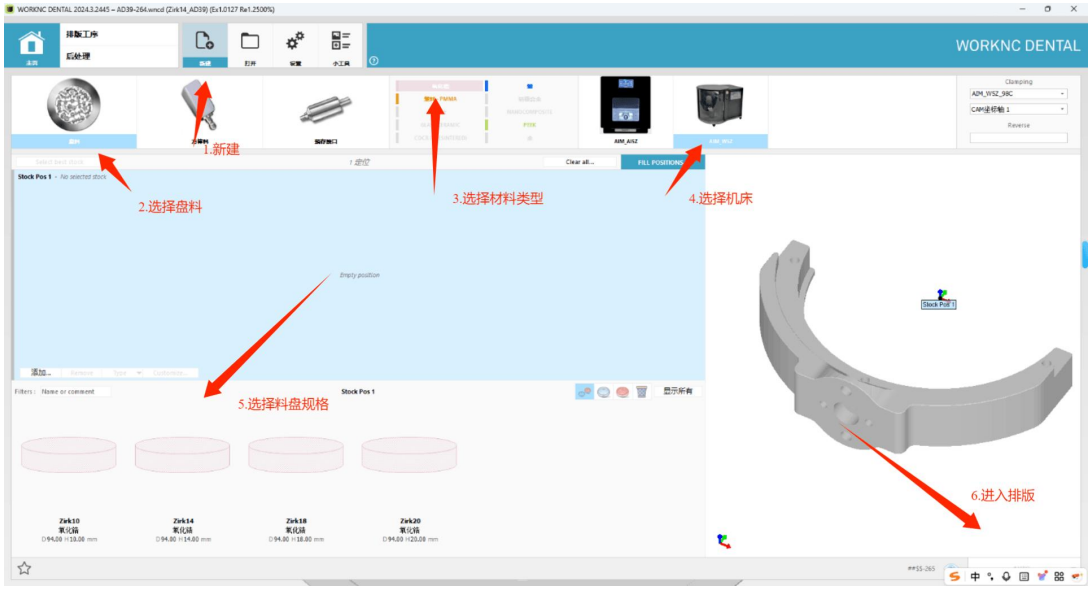
6. Instructions for typesetting

6.1 Layout design

① Open the typesetting software, click New, select Material, select Material Type, and select Machine Tool.

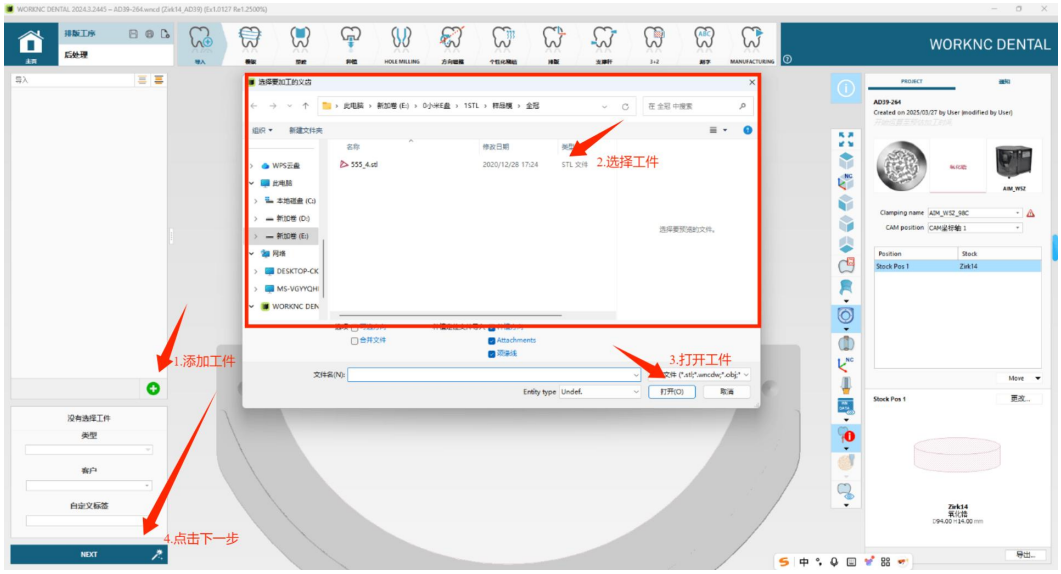
② Select the required tray

③ Click AUTO to enter the typesetting interface



6.2 Import STL data

- Click the "+" sign to add the STL data you want to layout.
- Click NEXT to proceed to the next step

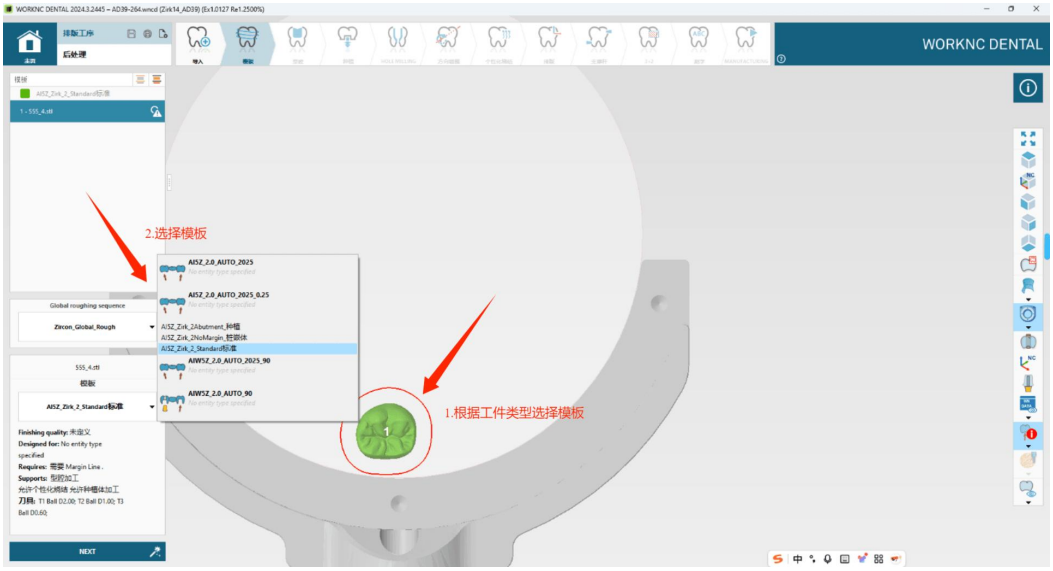


6.3 Select a template

- Double-click the material, wait for it to turn green, right-click and select the corresponding

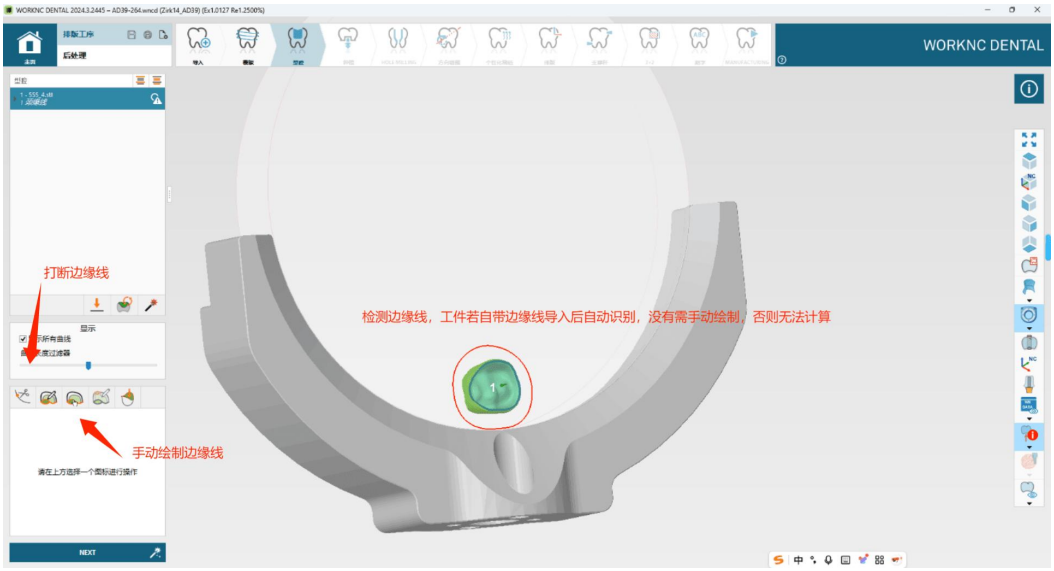
template

- Click NEXT to proceed to the next step



6.4 Edge line detection

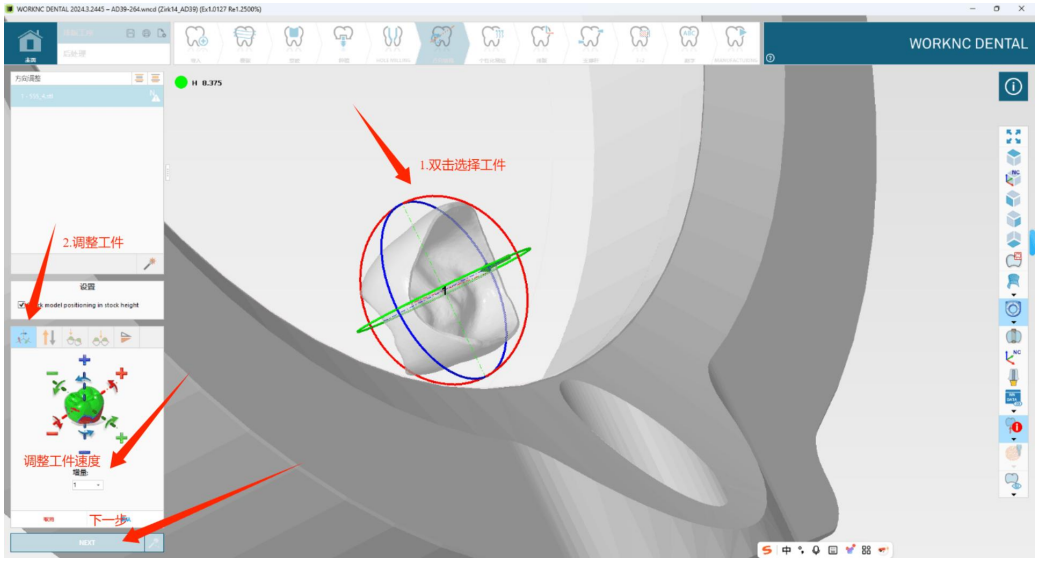
- Double-click the material, the edge line will be automatically detected and imported
- If the edge line is incomplete or has overlapping parts, you need to manually connect or disconnect the edge line.
- Note: If the material shows multiple edge lines, select any one of them. Multiple selections are not allowed.
- 4. Click NEXT to proceed to the next step



6.5 Direction adjustment

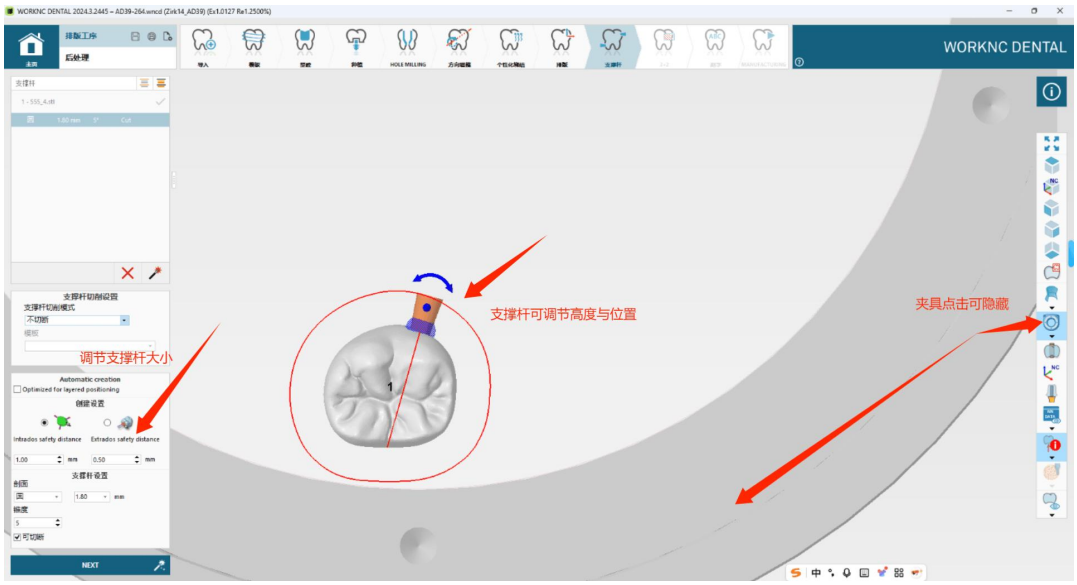
- Double click the material to manually adjust the workpiece
- Adjust the workpiece to the ideal position

- Note: It is best not to have red undercuts in the tooth cavity of the workpiece, which will lead to unclean processing.
- Click NEXT to proceed to the next step



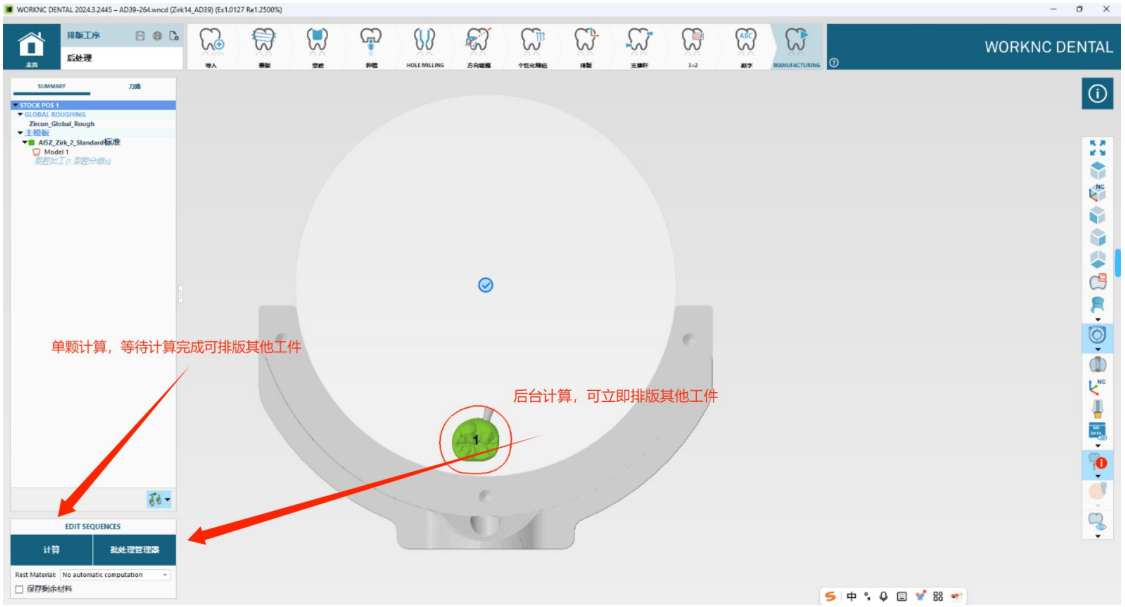
6.6 Support rod setting

- 1. Select the required support rod size (default 3mm)
- 2. Drag the arrow to place the support rod in the appropriate position; try to keep it away from adjacent parts.
- 3. Click NEXT to proceed to the next step



6.7 Settings

- 1. Click Calculate and wait for the NC file to be generated.
- 2. After the calculation is completed, click Post-Processing and NC Document to see the NC file generated by the calculation and the location of the file.



7. Operation precautions

① Before the machine is running, make sure that the tool number on the spindle matches the tool number on the control panel.

The "current tool number" is consistent with that of the tool magazine, and the tools in the tool magazine are arranged correctly and neatly according to the serial number;

② Before running the machine, check the water level in the water tank and whether the return pipe is out of place or blocked from draining due to bends, or is higher than the horizontal surface of the machine;

③After changing the tool manually, you must click "Tool Setting";

④ In manual mode, the current tool number can be changed, and it must be consistent with the actual tool number of the spindle;

⑤During operation, the door cannot be opened, otherwise it will stop in an emergency;

⑥After power failure, data needs to be retransmitted before operation;

⑦ When the grinding process is interrupted by various reasons, in order to avoid the ceramic block being taken out, the same data can be re-imported and re-run.

troubleshooting

8. Maintenance and repair services

Please note that even within the warranty period, if the product needs to be repaired due to the following reasons, Austech will implement a standard warranty period of one year for this product. During the warranty period, the product can enjoy free after-sales service. Repair service fees will be charged for man-made damage, and you need to pay for the repair fee and accessories:

1. Improper use
2. Forced natural disasters
3. Replacement or use of accessories or grinding heads not approved by AoTech or repair by non-AoTech professionals
4. Other faults not caused by the product itself

(Note: After the warranty period expires, paid maintenance services are provided)

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