DN-W4Zpro
Glass ceramic grinding machine operating instruction

Client is aware

Equipment ownership rights

The intellectual property rights of this manual and the corresponding equipment belong to Shenzhen Aoke Technology (Shenzhen) Co., LTD. (hereinafter referred to as Aoke).

Without the written consent of Aoke, no individual or organization shall copy, modify or translate any part of the specification. Statement

Aoke reserves the right to interpret this manual.

Aukco shall be deemed to be responsible for the safety, reliability and performance of the equipment if all the following requirements are met:

1. The grinding head is manufactured in the original factory.

2. The gas source is oil-free dry gas source, which is composed of oil-free air compressor, three-stage filtration and cold dryer to ensure that the cold dryer works normally during the gas supply process, and the filter element should be replaced at least once every six months.

3. All parts repaired and replaced are original (original) or approved by Aoke. The relevant electrical equipment complies with national standards and the requirements of this manual.

4. The relevant air circuit equipment complies with the national standards and the gas consumption meets the requirements of this manual. The operation of this equipment is carried out according to this manual.

5. The operator is fully aware of the instructions provided in this manual.

Please sign to confirm the above points _____

Catalogue

1. Overview

DN-W4Zpro glass ceramic grinding instrument is a high precision dental cutting system produced by Aoke Technology (Shenzhen) Co., LTD with independent patent, which adopts advanced grinding technology and driving system.

DN-W4Zpro glass ceramic grinding instrument, abandoned the traditional complicated process, adopts a number of new designs, one computer can be connected to 10 AIM equipment at most for cutting, giving users an easy to use and fast experience.

The data is received and transmitted in an open manner, which can be connected to any oral scanner or desktop scanner on the market that outputs in STL format.

Compared with the traditional grinding equipment, DN-W4Zpro grinding system can shorten the grinding time greatly. Generally, the standard restoration can be completed in 15-30 minutes, which greatly reduces the waiting time of patients and improves the efficiency of clinics and hospitals.

1.1 Product features

- High precision cutting control and drive system
- Data transmission: USB, direct WiFi
- One-click startup
- 4-axis (X, Y, Z, A) wet cutting
- A human-machine interface with simple touch control
- One-way clamping system for patent design

1.2 Main uses and application occasions

1·2.1 Main purpose: denture grinding

1·2.2 Usage:

1、 section for outpatients

2、 dental hospital

3、Dental prosthetics factory

4、 medical cosmetology

1.3 Model

AIM-4Z grinding machine

1.4 Operating environment conditions

1）Environmental requirements: indoor temperature 15~40 degrees Celsius; stable level of the workbench or table (can bear at least 50kg);

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

3）Pressure: dry gas source above 4kg;

4）Power supply: 220V AC 50Hz.

1.5 unpacking and water, electricity connection

1) Open the equipment box and check the number of 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;

3) Check whether the current tool number displayed on the screen is consistent with that held on the spindle after returning to the original position;

4) Configure the circulating water. Take 250ml of raw liquid and mix tap water to the standard liquid level;

5）Place the needle to the specified tool library according to the number;

1.6 Equipment parameters

unit type ：	DN-W4Zpro	**main shaft speed ：**	10000-60000r/min
device type ：	Tabletop water cooling	**Changing the blade:**	Pneumatic automatic tool change or electric automatic tool change

Processing material:	Feldspar glass ceramics; lithium based ceramics; Mixed materials;Mixed materials;PMMA	**Refill mode:**	Pneumatic button type or tool fixed
		Knife library load:	3 branches
Processing type:	Crown inlay; veneer; inner crown; full crown; bridge; dental implant crown	**cutter ：**	The handle diameter is 4mm
working temperature ：	20~40°C	**Ball head diameter:**	0.5+1.0+2.0
productiveness ：	15~26 minutes per particle	**supply voltage ：**	220V,50/60Hz
X*Y*Z travel range:	68*68*55 (unit/mm) X.Y.Z.A semi-closed loop drive system; Coding step + pre-tightening ball screw	**power ：**	The whole machine is less than 1.0KW
		weight ：	40KG
		noise ：	Noise at work ~50dB
Repositioning accuracy:	0.01mm	**outline dimension ：**	485*365*325 (unit/mm)
Main shaft power:	500W	**Requirements for blade and material changing air source pressure:**	Dry4.5~8.5kg/cm

2. Start installing

2.1 Remove the package and check the number of accessories

2.1.1 Packaging disassembly process

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

appendix	function	usage method

parvicostellae	Used for data transfer between DN-W4Zpro and computer host	Connect the DN-W4Zpro to the computer, one end is plugged into the DN-W4Zpro network interface, the other end is plugged into the computer network interface
Upper hose	Water tank grinding fluid circulation supply	Connect DN-W4Zpro to the water tank with a 6mm black hole
Water tank wires	Water tank pump power supply	Connect the DN-W4Zpro two-pin water pump power port to the two-pin round port of the water tank
air tube	DN-W4Zpro Air supply (except electric model)	Connect DN-W4Zpro to an external air source with a stable pressure of more than 4kg and dry
test block	Used for DN-W4Zpro calibration test	**See 4. The calibration chapter**
wet return	Grindstone reflux	Connect the DN-W4Zpro outlet hole to the water tank return port
power line	DN-W4Zpro mainframe power supply	Connect DN-W4Zpro to external power supply
Air filter	Filter water and air from external gas source and control input gas pressure (except electric model)	Connect the DN-W4Zpro intake to the external air source
Grind stock solution and measuring cup	Measure the amount of grinding stock added	Use 250ml of grinding fluid each time, and replace the grinding fluid every 5-7 days or 30-50 teeth
bit	Abrasive ceramic blocks	For the first time, please place it in the knife bank of the grinding machine according to the serial number
reserve pump	reserve	replace

The order of demolition and packaging is as follows

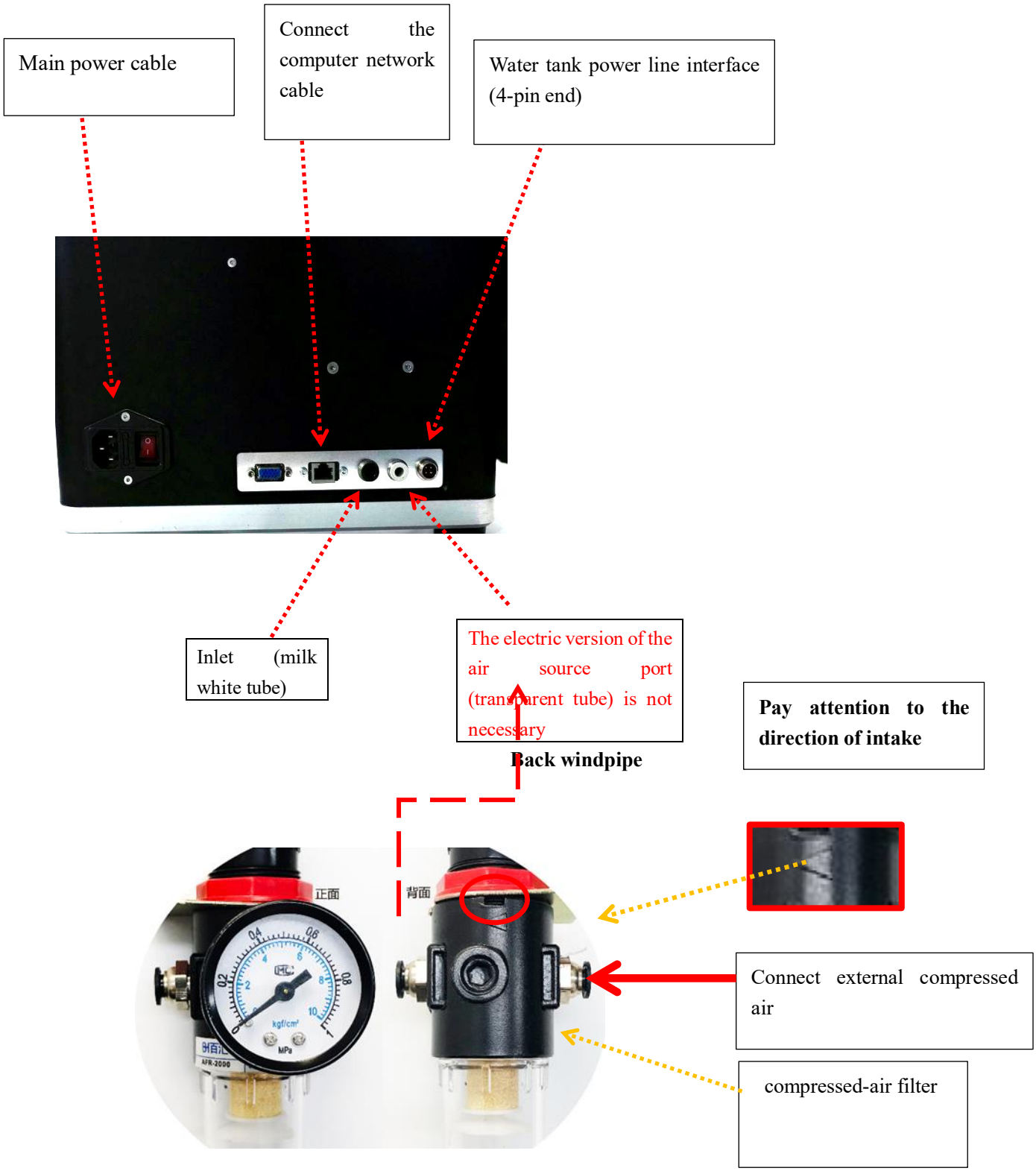
accessory box

Recirculation tank

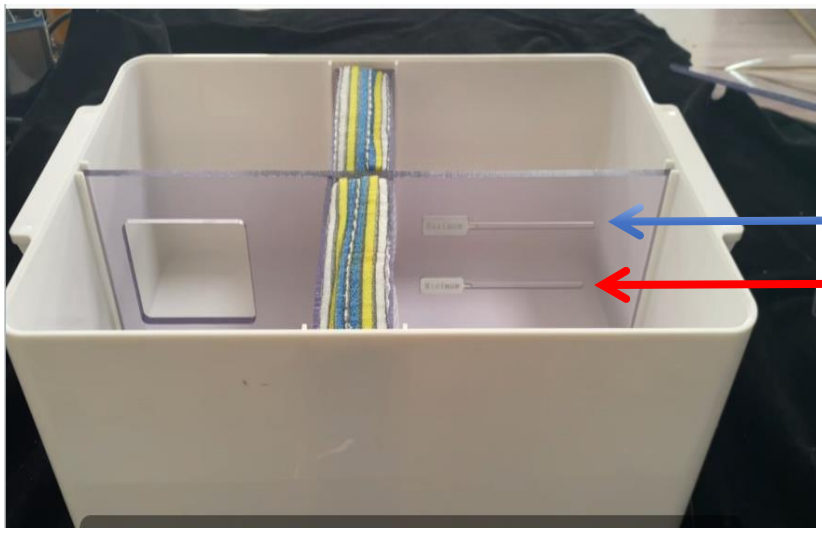
Grind original liquid

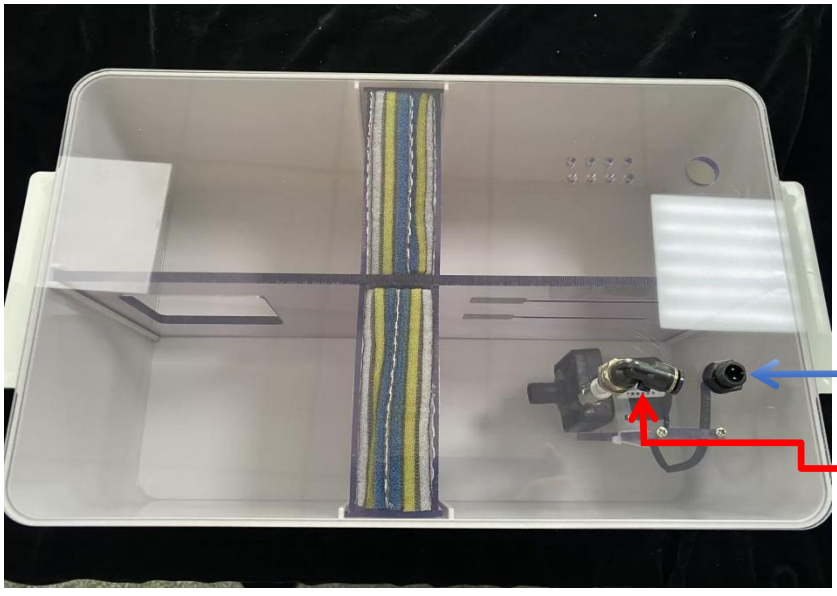
2.1.2. Equipment installation and wiring

Precautions: DN-W4Zpro should be placed on a horizontal and stable table, and the water tank should be placed under the machine. Do not put it on the same plane as the machine. The recommended height difference should be more than 50cm. The return pipe should not be bent or undulate.



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



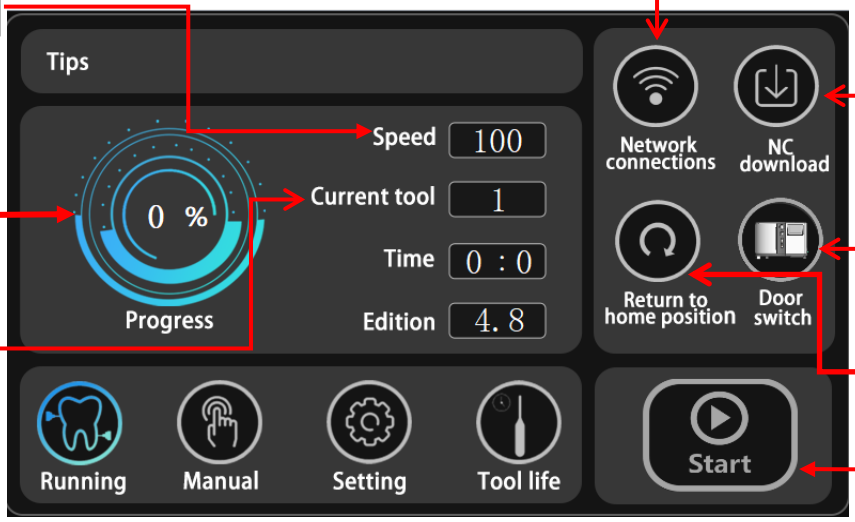


After connecting the pipeline according to the above operation, pour 250mL of grinding original liquid into the water tank, and then add tap water to the standard liquid level.

3. Screen interface functions and device operation procedures

3.1 Screen interface function introduction

3.1.1 Automatic mode



Connect your computer

grinding rate

Download NC from the USB drive

Polishing progress

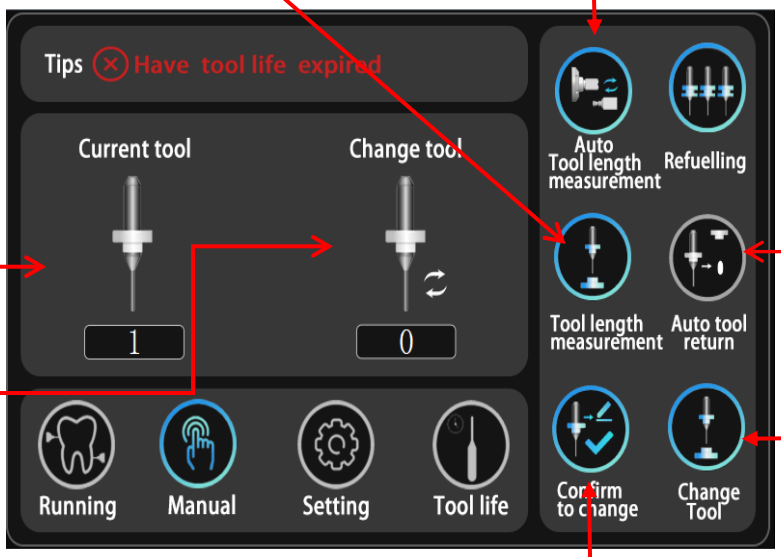
door-trip

Manually return to origin

Current tool number on spindle

Starting up

3.1.2 Manual mode



reloading

Manual alignment

One-click target lock

The knife is now returned to the knife library with one click

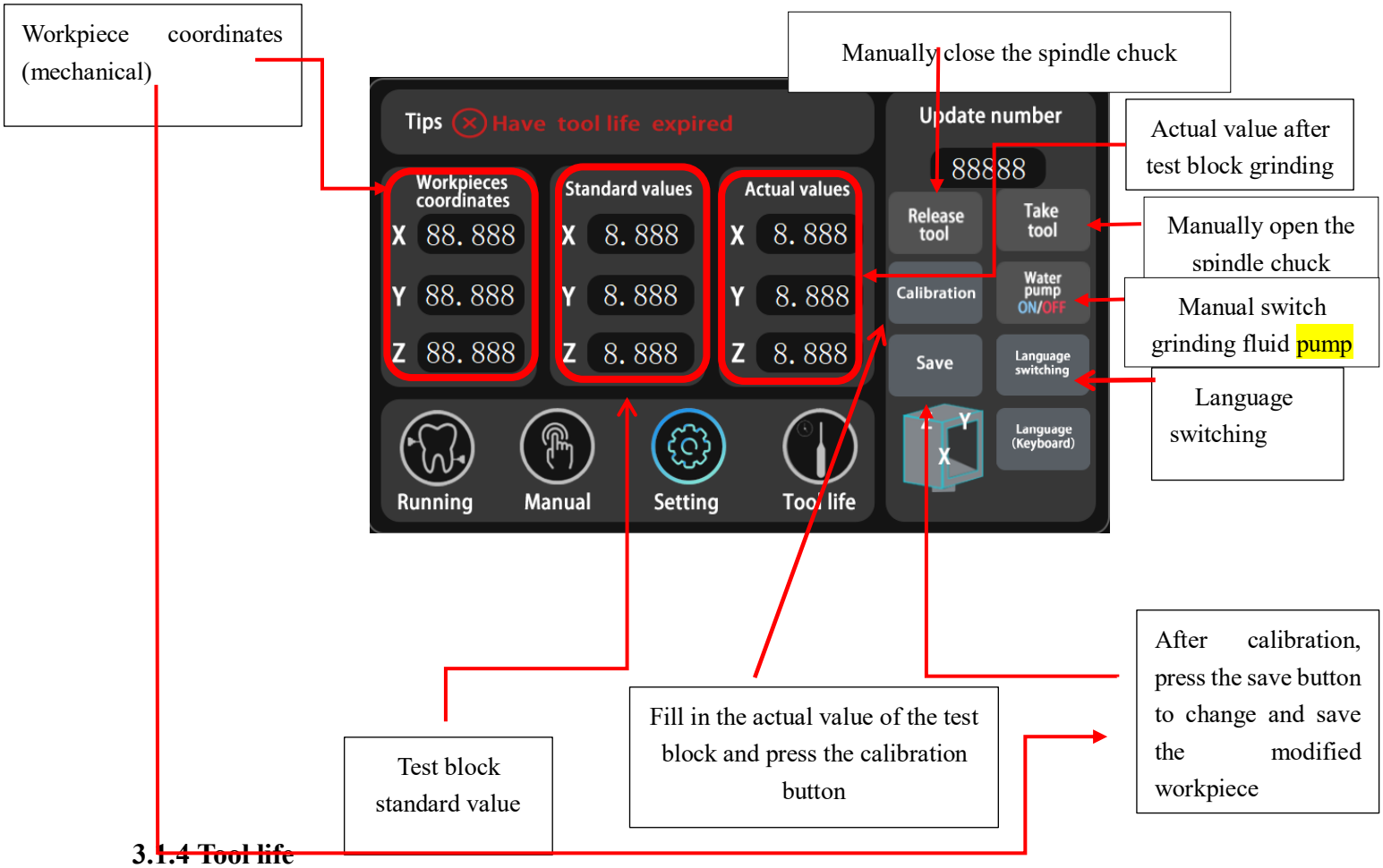
Current tool number on spindle

Wait for the blade to be replaced

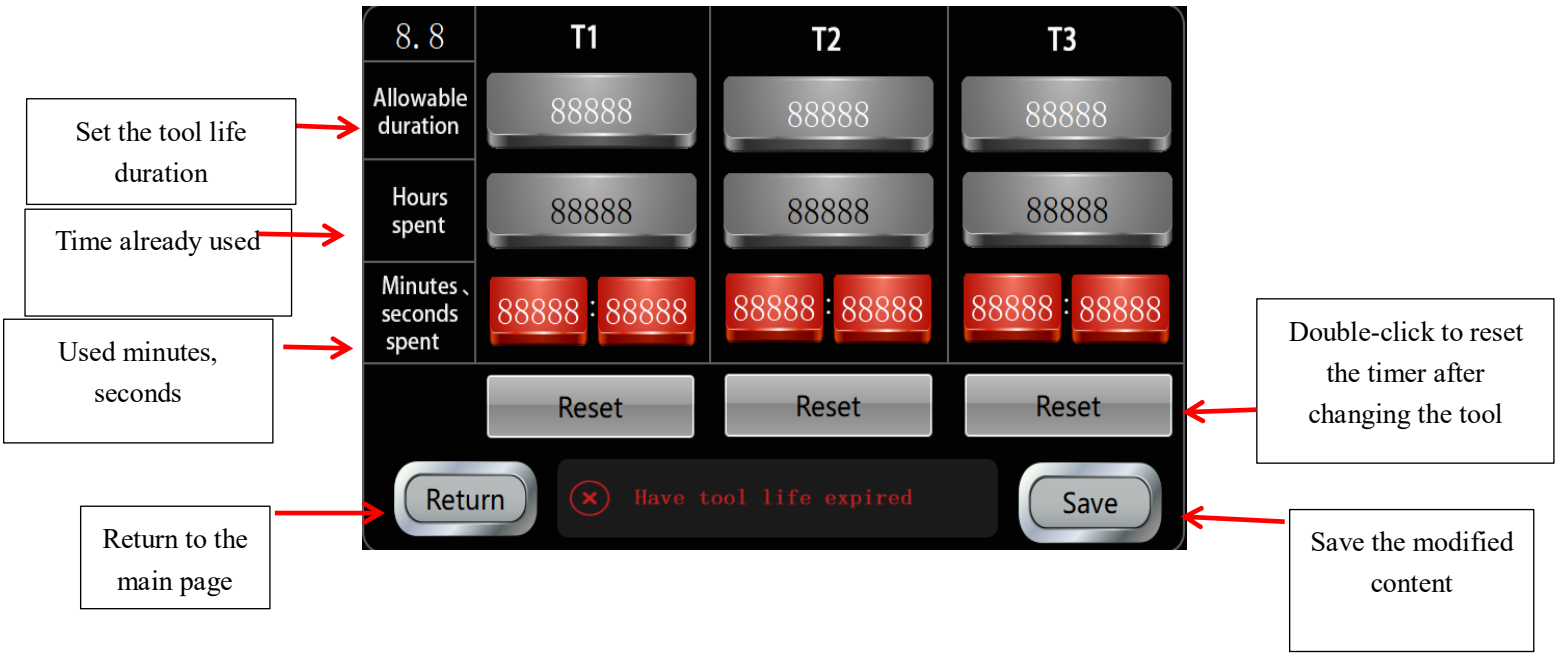
Execution of blade change

3.1.3 Setting mode (This interface is for calibration use, do not operate this interface without technical personnel or unauthorized)

After modifying "to be replaced with a knife number", click here to confirm the modification



3.1.4 Tool life



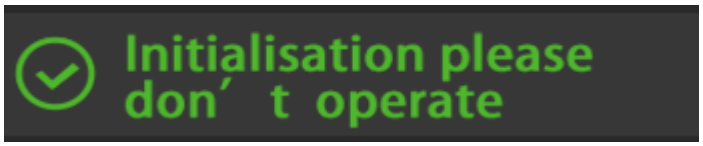
3.2 Equipment operation process

3.2.1 Starting equipment

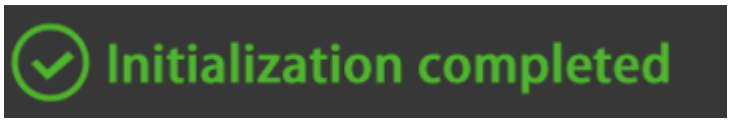
Press the  start button to start the equipment

3.2.2 Start-up equipment and clamping materials

① Turn on the power on the left rear of the machine and wait for the grinding instrument to return to the origin. Do not operate at this time.



② Turn on and return to the origin



③ Open the bin door and press the green material  button,

Open the fixture and put the porcelain block into the fixture,

After inserting the porcelain block to the bottom, press the clamping button,

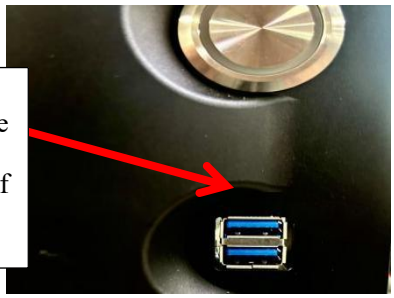
The porcelain block is locked; (the electric version does not need to be concerned)

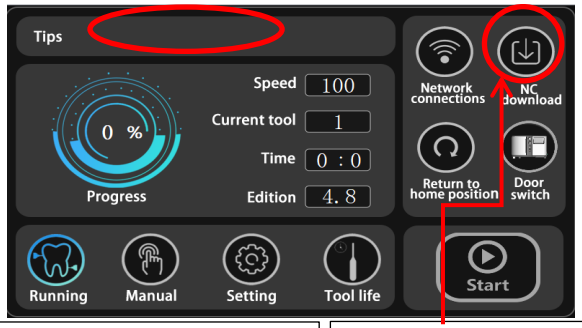
(The function is the  same as the green physical button by using the button on the display).

(When inserting the porcelain block, ensure that the fixture positioning pin is aligned with the gap of the metal base of the porcelain block, and the metal base of the porcelain block and the fixture surface are tightly attached)

3.2.3 Transmission data and automatic operation

① Insert the USB drive directly into the USB port of the grinding machine





③ Displays "Data is being transmitted"

② Click to download NC, and the icon is blue

④ Display "Data transfer complete"

Close the door, click the screen button, and the grinding machine starts to work normally.

Do not operate any button 

while the grinding machine is running

3.2.4 Tool replacement function description

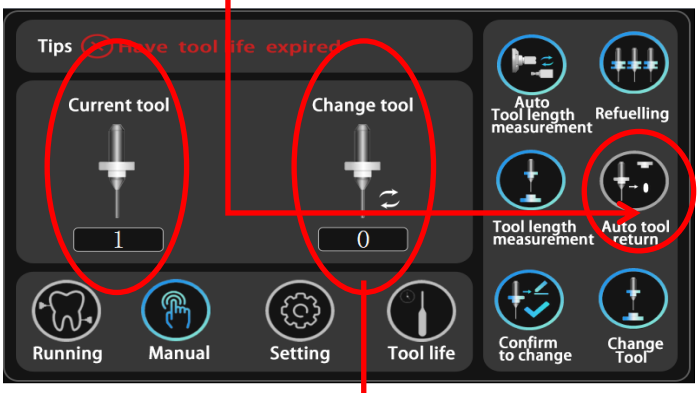
3.2.4.1 One-click return of the knife is used to replace the worn tool

① Click "Return the knife in one click"

Wait for the machine spindle to return the current tool to the tool magazine;
The current knife number will be changed to 0

② Remove the old knife from the sheath

Insert the new knife into the position of the recently removed knife.



Then follow 3.2.4.2 for manual tool

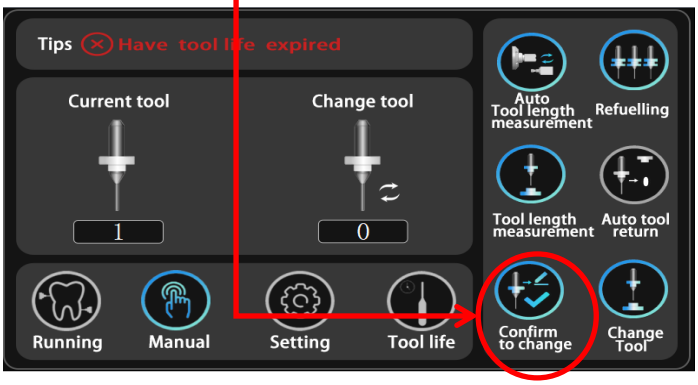
3.2.4.2 Manual tool change

① Click "Wait for blade number"

Click "Wait for a blade number"

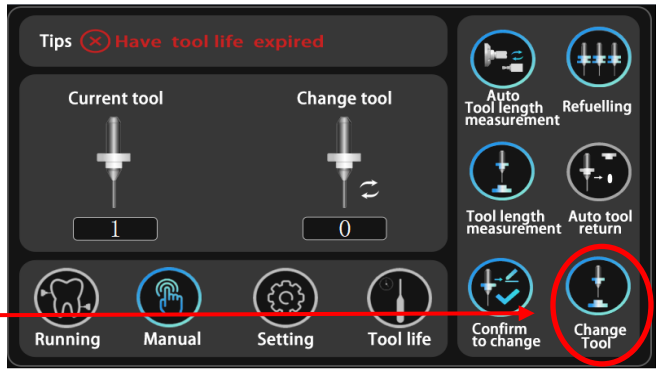
② Enter the number of the tool to be replaced (1, 2 or 3), and click "OK"

③ Click the "Modify and confirm" button

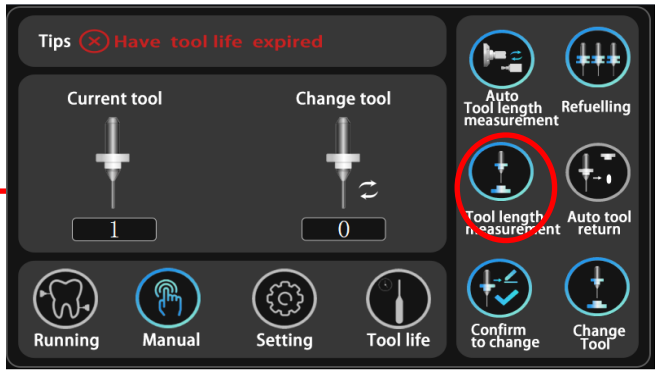


④ Display "Knife number modified successfully"

⑤ Click "Change blade" and wait for completion



⑥ Click "On the knife" and wait for completion



⑦ Manual blade change is completed

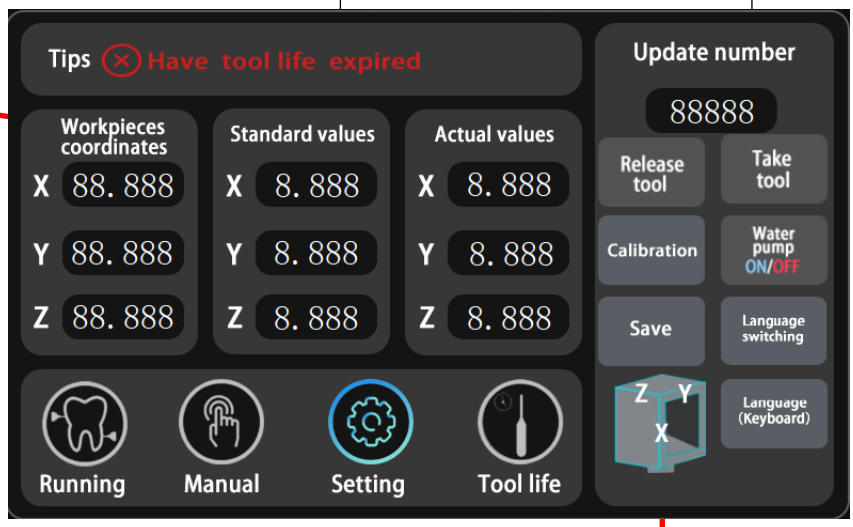
3.2.5 Equipment calibration function description

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

Click the "Setting" menu on the machine display, use the cursor caliper to measure the actual values of X Y Z as shown in the figure, and fill them into the "actual values" column of the page respectively. Click "calibrate" to prompt you to click "calibrate" again. After completion, click "save", and the equipment will be restarted to take effect.

② Fill in the "actual value" column of

③ After calibration and saving, the workpiece coordinates will be automatically updated and effective after restarting the equipment



① Use a vernier caliper to measure the actual values of X, Y and Z as shown in the figure

4. Automatic workpiece coordinate calibration

Figure 1 Figure 2

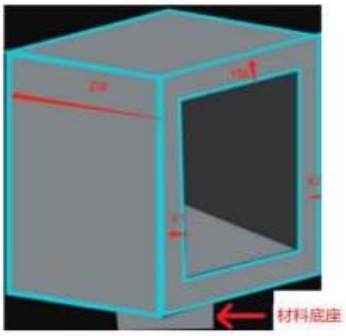


Figure 1 Figure 2

4.1 Calculation of X-axis mean value

As shown in Figure 1, the thickness of X1 and X2 is measured with calipers respectively. (X1+X2)/2=X axis

average value (denoted as X average)

4.2. Actual value writing and calculation

Calculation method: 1- (X_ flat-X_ 1) = X_ actual value (Note: The value obtained by subtraction in parentheses is positive or 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 measurement (as shown in Figure 1) Z actual value =Z axis measurement (as shown in Figure 1)

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

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

Note: After the value is written, you only need to click the two calibration button twice. Do not click more than once (it will cause the coordinate of the workpiece to be calibrated for many times). After the calibration is completed, you must click the save button (as shown in the figure)

5. Material measurement and tray addition

5.1 Support bar setting

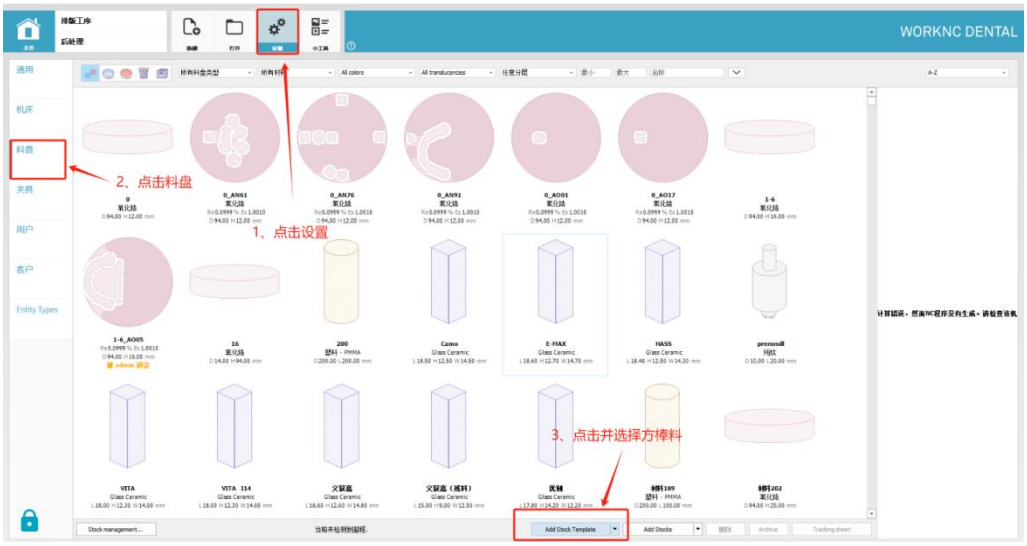
As shown in the figure above: use a caliper to measure from the material base, the reading is 20.26mm

The length of the material is: 20.26mm-2.2mm=18.06 (rounded to 18mm)

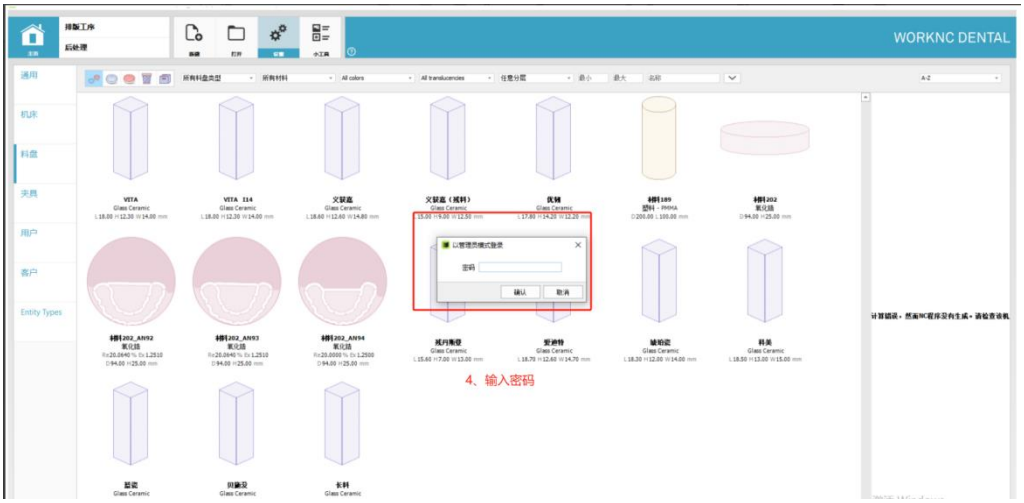
① Click Settings

② Click the material tray

③ Click and select the square bar



④ Enter password (admin)



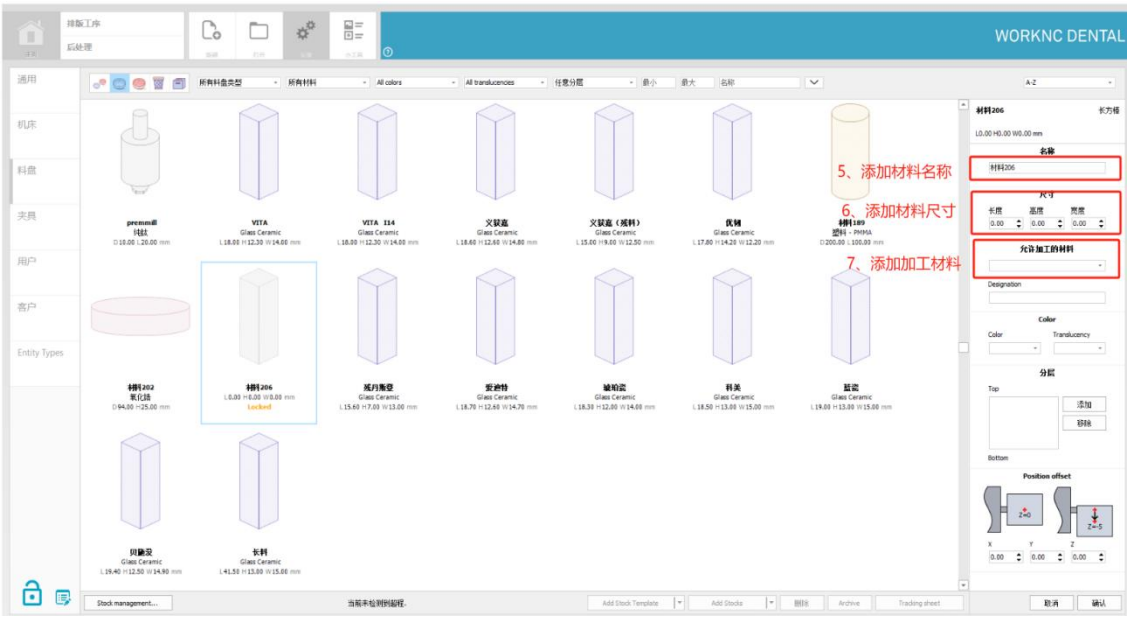
⑤ Name of added material

⑥ Add material dimensions

⑦ Add processing materials

Note: Processing material selection Glass Ceramic (material name is recommended to use

English letters)



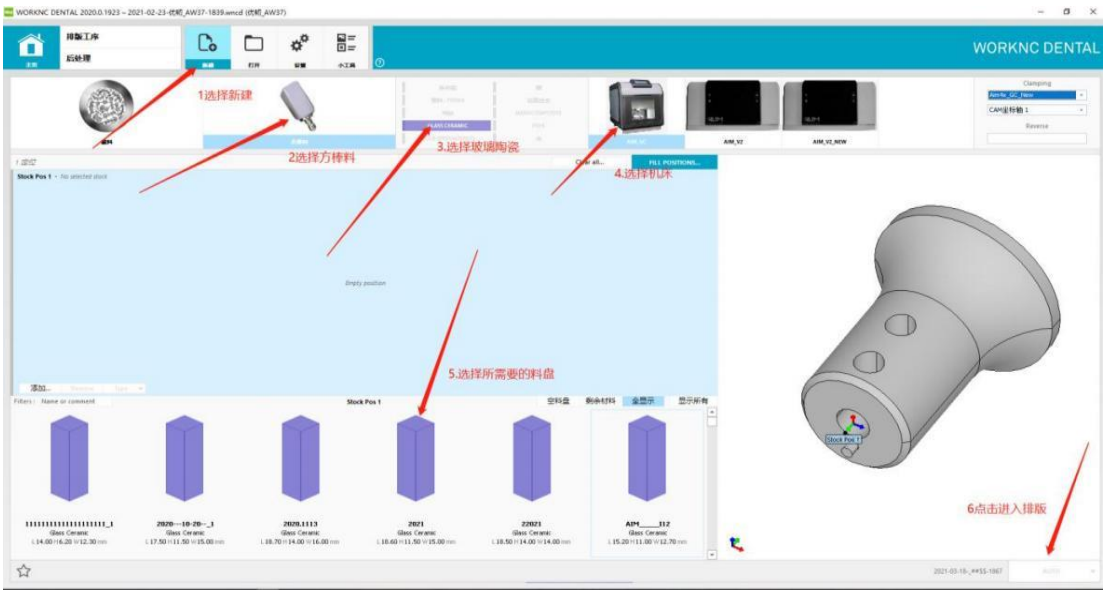
6. Layout instructions

6.1 Layout design

① Open the layout software, click new, select material, select material type, select machine tool.

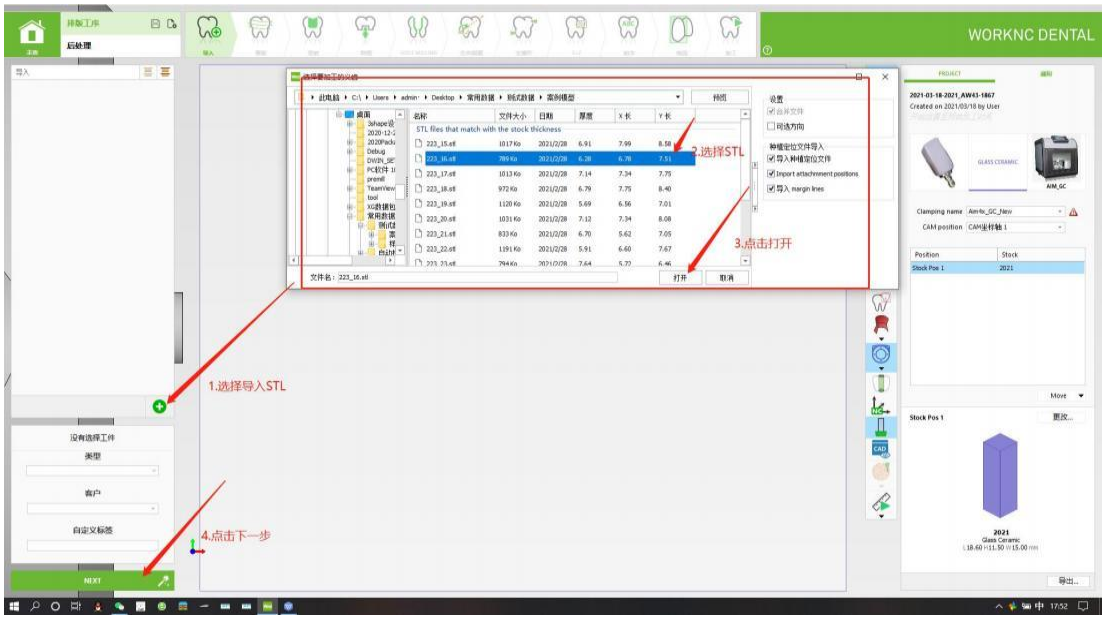
② Select the required tray

③ Click AUTO to enter the layout interface



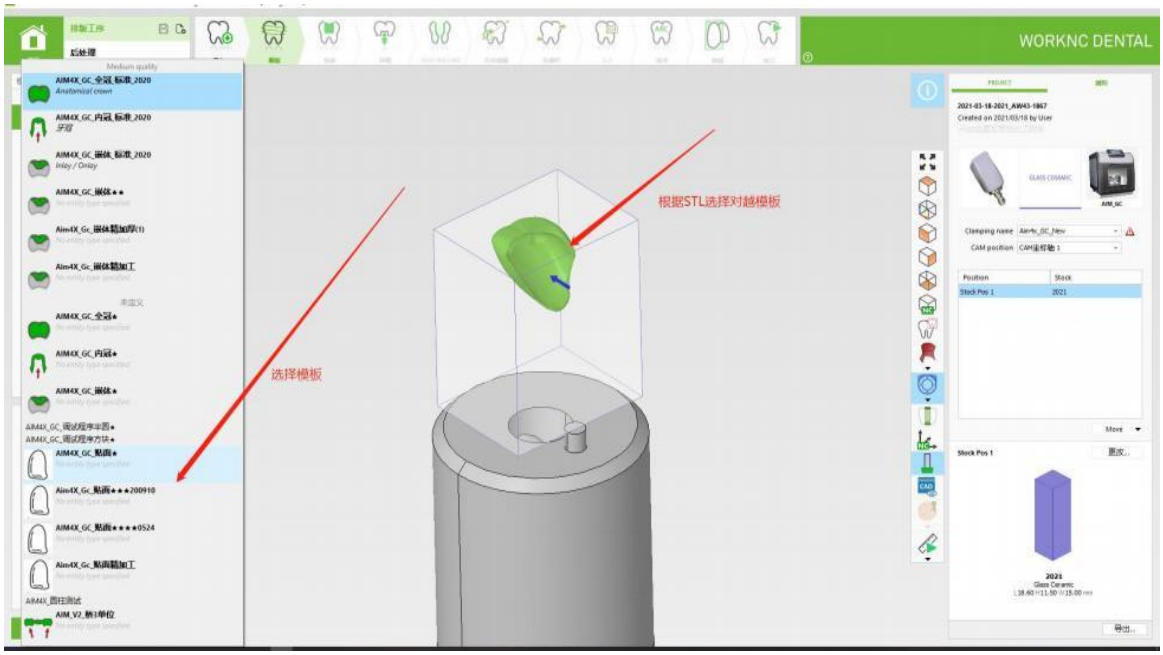
6.2 Importing STL data

- Click the "+" sign to add the required STL data for layout
- Click NEXT to proceed



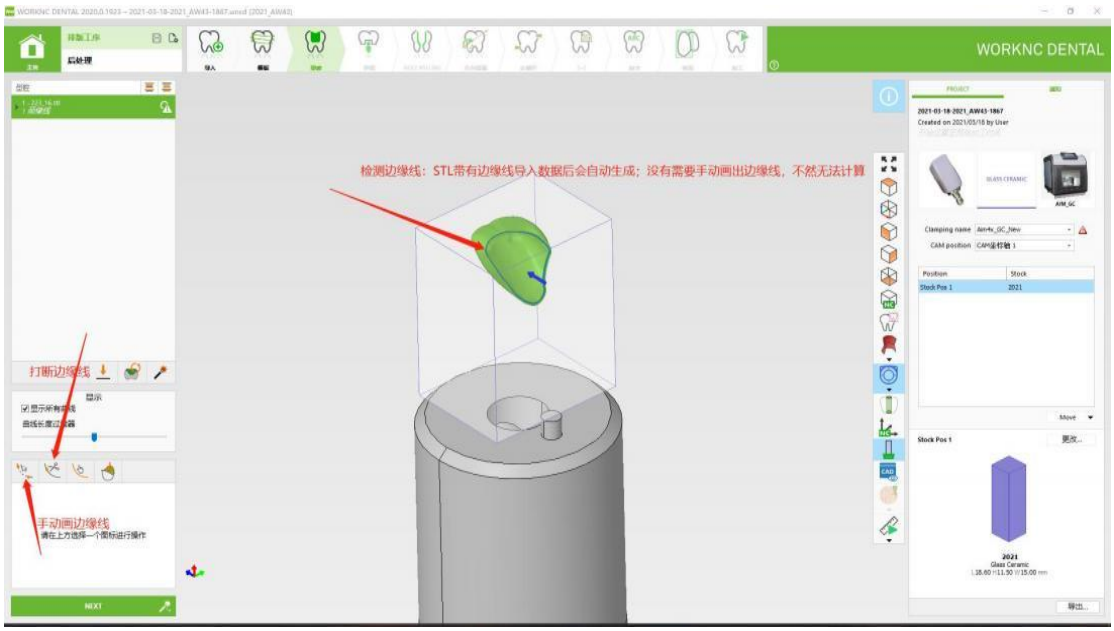
6.3 Selecting templates

- Double-click the material, and when the material turns green, right-click and select the corresponding template
- Click NEXT to proceed



6.4 Edge detection

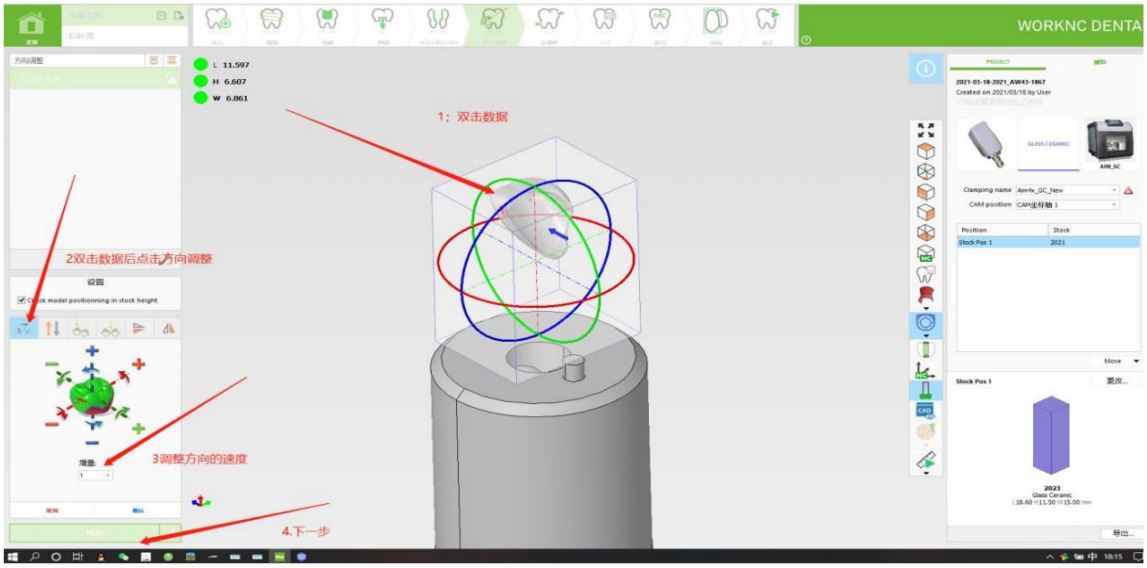
- Double-click the material and the edge line will be automatically detected and imported
- If the edge line is not complete or overlapping, you need to manually connect or break the edge line
- Note: If the material shows multiple edge lines, select any one of them. Do not select more than one
- 4. Click NEXT to proceed



6.5 Directional adjustments

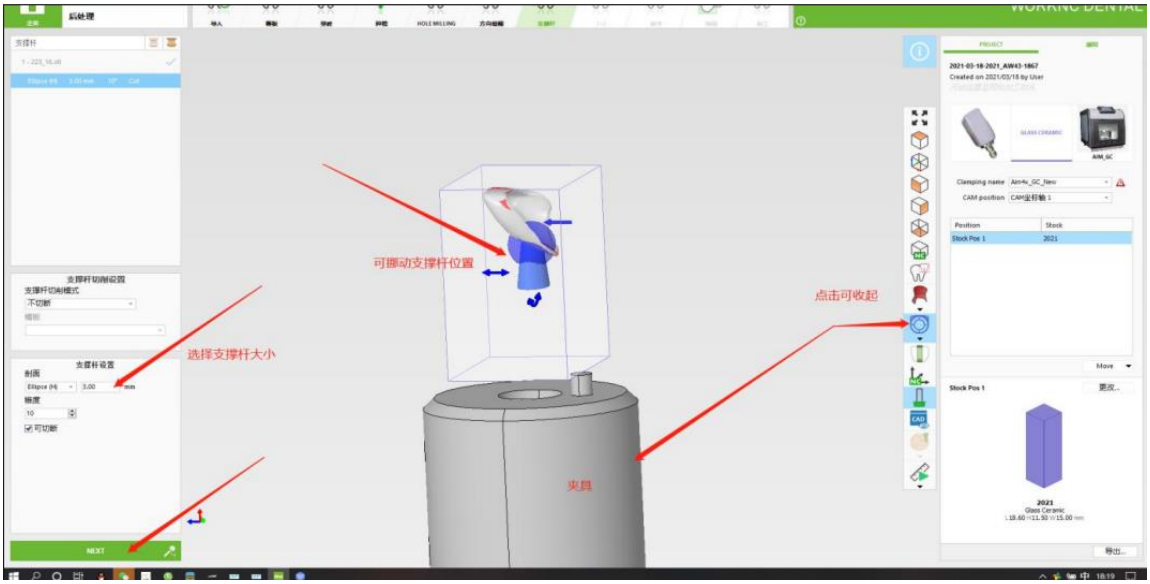
- Double-click the material and the edge will be automatically detected and imported

- If the edge line is not complete or overlapping, you need to manually connect or break the edge line
- Note: If the material shows multiple edge lines, select any one of them. Do not select more than one
- Click NEXT to proceed



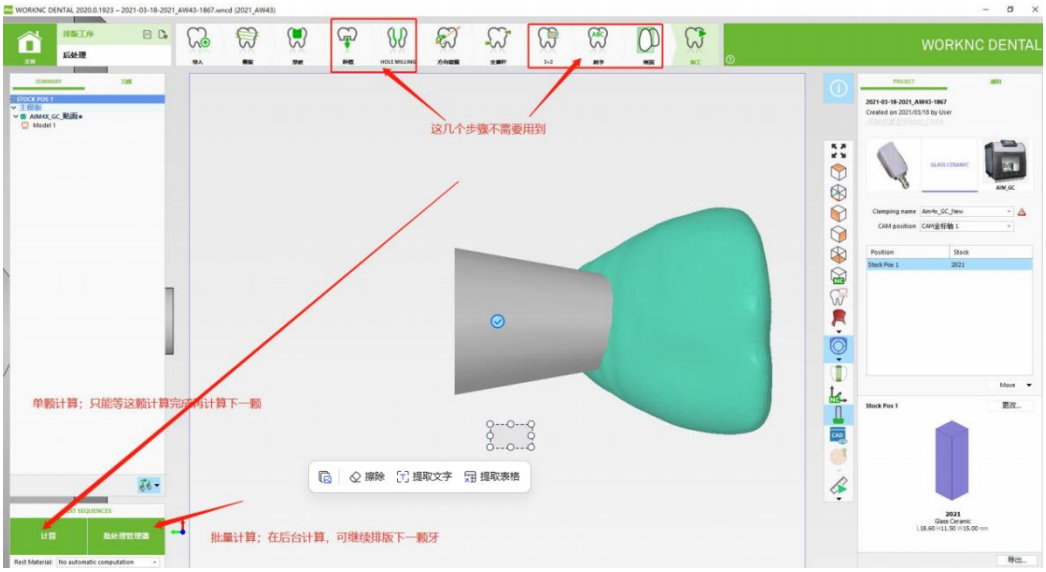
6.6 Support rod setting

- 1. Select the required support rod size (default 3mm)
- 2. Drag the arrow to place the support rod in the right position
- 3. Click NEXT to proceed



6.7 Settings

- 1. Click calculate and wait for NC file generation
- 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. Operational precautions

① Before the machine runs, ensure that the tool number on the spindle is the same as that on the control screen

The "current knife number" is consistent, and the tools in the tool bank are arranged correctly and neatly in order;

② Check the water level in the tank and whether the return pipe is out of place or blocked by bending, or higher than the horizontal surface of the machine;

③ After manual tool change, you must click "tool alignment";

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

⑤ During operation, the warehouse door can not be opened, otherwise it will stop urgently;

⑥ After power failure, the data needs to be transmitted again before running;

⑦ After the grinding process is interrupted for various reasons, avoid removing the porcelain block. You can re-import the same data and run it again.

debugging

8. Maintenance and repair services

Please note that even within the warranty period, if the product requires repair due to the following reasons, Aoke will implement the standard warranty period of one year. During the warranty period, all products can enjoy free after-sales service. For artificial damage, repair service fees will be charged, and you will need to pay the repair fee and parts cost:

1. Misuse
2. Force majeure natural disasters
3. Replace or use parts or grinding heads that are not approved by Aoke or repair them by non-Aoke professionals
4. Other faults not caused by the product itself

(Note: After the warranty expires, we will provide paid maintenance service)

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telephone ：+8619926035851

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sales@globaldentex.com