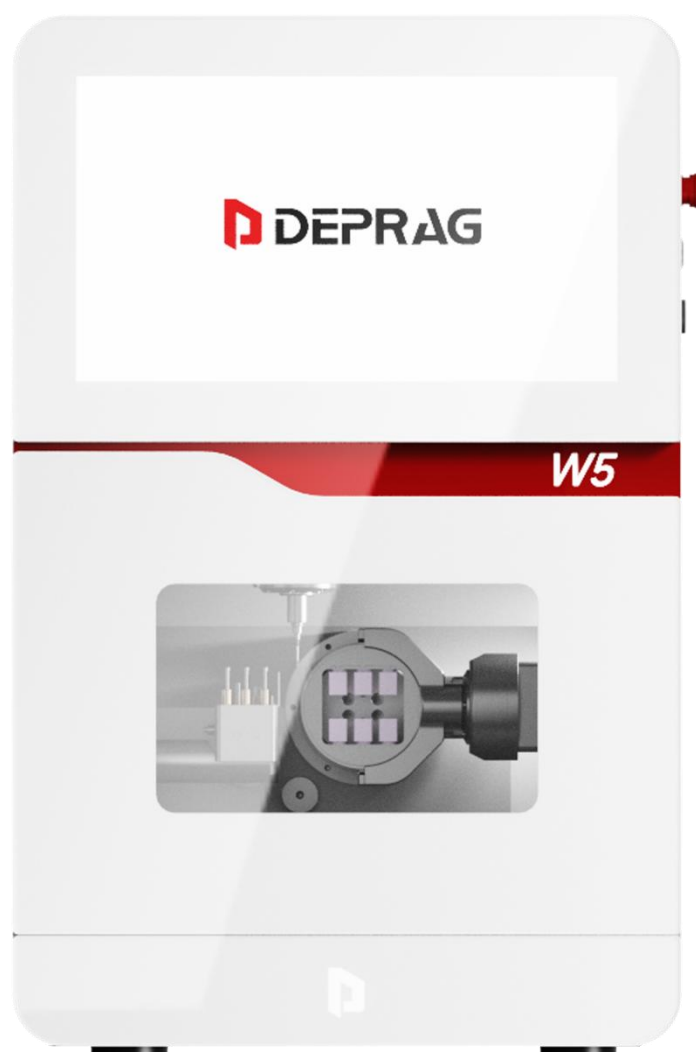


W5 Milling Machine

User Manual



DEPRAG (Zhengzhou) Technology Co., Ltd.

2025-10

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W5 Milling Machine

Preface

Dear user, thank you for choosing DEPRAG's products. Our company's products adopt modern design concepts, advanced manufacturing processes, high standard quality systems, and professional after-sales services, striving to provide you with high-quality products and the best service. This manual contains important information on the installation, operation, maintenance, and troubleshooting of the W5 milling machine. Please read the manual carefully before using the device to ensure a pleasant user experience.

DEPRAG W5 is a dry and wet integrated five axis dental milling machine that can process various materials, helping laboratories or clinics to complete the machining of zirconia, glass ceramics, premill, titanium discs and other materials.

Our company has the right to change the content of the manual without assuming any responsibility. For any machine related questions inquiries and parts ordering service, please feel free to call DEPRAG's after-sales service department. We will warmly welcome your call and guarantee to provide assistance within 24 hours. To ensure efficient communication, please prepare the following information in advance:

Product Number:

Product Model:

Product usage time:

Parts to order:

After-sales problem description:

Please read this manual carefully before use

I Environmental safety

1. The equipment should be placed in a dry and ventilated environment, and flammable and explosive materials are prohibited to be placed around the machine.
2. The working table on which the equipment is placed should be stable and solid, and should not be shaken.

II Electricity safety

1. The equipment uses a single AC 220V 50/60HZ voltage, and ensure that there is a good grounding.
2. The rated power of the interface of the power supply network should be greater than 3.2KW, the power supply needs to be stable and good contact.
3. Equipment access to the power supply cable needs to be intact, there can be no leakage, short circuit and other phenomena.

III Gas/water safety

1. The gas flow rate required for a single W5 machine needs to be more than 95L/min, and the pressure is 0.6-0.8mpa.
2. The external gas source needs to be dry and free of impurities, otherwise it will cause damage to the spindle. The total gas source is connected to the external air pressure using an 8mm diameter gas pipe.

IV Work safety

1. Use the manufacturer's tested and stable software or strategy for layout processing.
2. Use the corresponding materials in the material library for nesting and processing.
3. Use the manufacturer's tested and qualified turning pins, and put them into the tool

magazine accordingly;

4. Do not use materials that do not match the dimensions of the fixture.

5. U-disks with viruses shall not be used for file transfer, and U-disks need to be antivirus periodically.

6. During the operation of the equipment, do not put your hand into the processing bin or material bin for related operations.

7. The equipment should be calibrated regularly (recommended 3-4 weeks).

9. In case of emergency during the operation of the equipment, press the emergency stop button.

10. According to the checklist, do the maintenance regularly.

W5 Inspection Checklist

No.	Content	Frequency	1	2	3	4	6	7	8	9	10
1	Cleaning the milling chamber	daily									
2	Cleaning the tools library										
3	Cleaning the exterior of machine										
4	Cleaning AB axis										
5	Cleaning the tools setting probe										
6	Milling burs check										
7	Milling liquid check										
8	Oil tank filter cleaning										
9	Water tank filter cleaning										
10	Spindle Maintenance	Weekly									
11	Glass ceramic cutting fluid replacement										
12	Controller memory check										
13	Axis calibration (zirconia)	3-4 week									

	Axis calibration (metal)	1-2 week									
14	Metal cutting fluid replacement	quarterly									
15	Screw guide cleaning and oiling										
When the equipment cuts glass ceramics, the milling fluid should be changed once a week; when the equipment cuts metal, the cutting fluid should be changed once a quarter. The life of the burs is 600-1000 minutes, and it needs to be replaced according to the actual situation.											

Chapter I : Equipment Introduction

1. Equipment Introduction

1.1 W5

DEPRAG W5 is a dry and wet dual-purpose five-axis dental milling machine that can process materials such as zirconia, resin, glass and ceramic resin, titanium. Its desktop design is suitable for use in various scenarios including dental clinics and laboratories. W5 standard spindle diameter of 62 mm, water cooling device, 18 tools position, 6 position of glass ceramic fixture, a dry and wet two materials plate, can quickly and steadily to complete a variety of dental materials processing. The specific parameters are shown in the table below

Name	W5 milling machine
Power input	Single phase AC 220V 50/60Hz 8A 3.2KW
Air press input	≥ 6 bar
Air flow	> 90 L/min
W5 size and weight	L523×W718×H820mm 130KG
Spindle speed	60000RPM

Spindle power	2.5kw
Max. rotation axis	B axis: $-30^{\circ} \sim +91^{\circ}$, A axis: $\pm 360^{\circ}$
Max. Dia. of bur	6mm
Bur quantity	18
Work model	Wet (Primary) /Dry (Secondary)
Mill materials	Zirconia, resin, wax, glass ceramics, titanium, cobalt chromium, etc

The Perfect Balance of Design Aesthetics & Practical Functionality

No More Guesswork: Smart Lights Show Lab Status in a Flash

The overhead status light is like an attentive assistant - the color-coded system keeps you informed at a glance, ensuring you're always in control.

Ultra-HD Touchscreen: Handle Tasks with Tablet-like Ease

The HD touchscreen and Windows 10 interface make every workflow intuitive. The screen is highly responsive, saying goodbye to mis-taps, while the expansive display lets you view a full picture without constant zooming.

Effortless Access: Electromagnetic Door with Spacious Opening

W5's electromagnetic door guarantees secure, motorized functioning, with no magnetic decay over time. Its wide-opening feature offers plenty of room for changing material, maintenance, and cleaning.

Tired of Cleaning? Meet the Elegant Wipe-and-Go Design

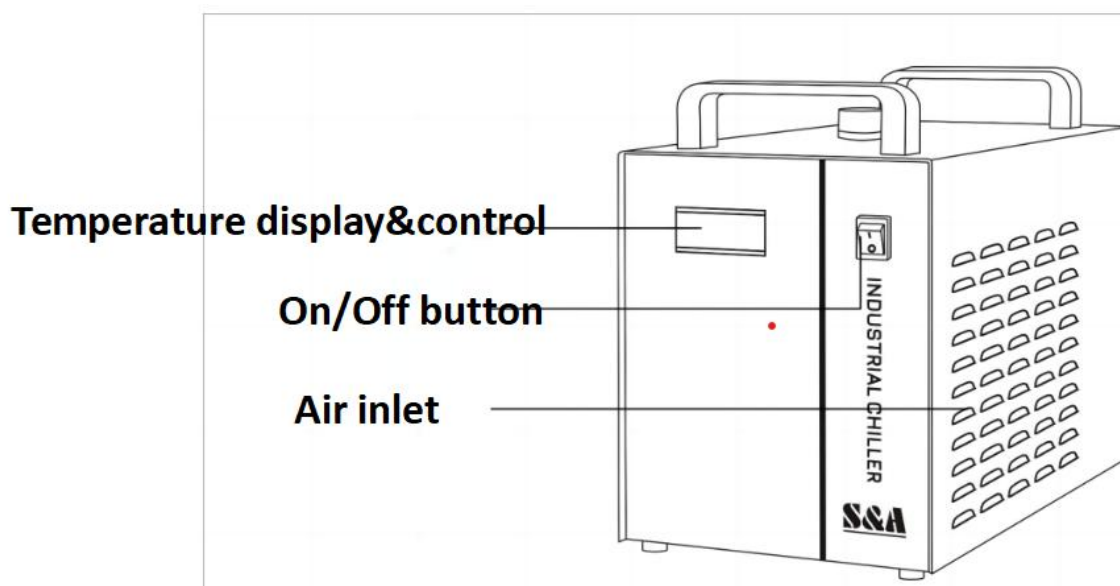
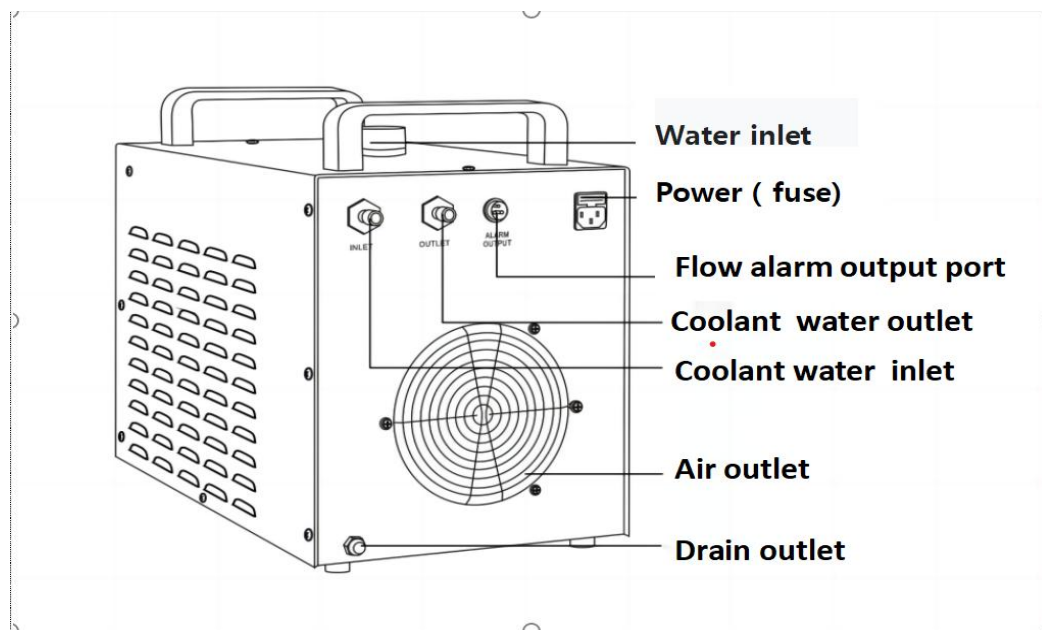
Sleek glass front and metal body deliver effortless maintenance - its dust-resistant surfaces wipe clean in seconds, keeping it looking spotless through your busiest lab days, all wrapped in a refined industrial aesthetic.



1.2 W5 Chiller

CW-3000 series is a professional cooler designed and manufactured with reference to the international advanced heat dissipation cooling system, suitable for small-scale water-cooled heat dissipation equipments, mainly used for the cooling of the main shaft

of the equipments, with the permissible working temperature of ≤ 60 degrees.



1.3 W5 Zirconia Vacuum Cleaner

Before using the product, please make sure that the voltage marked on the product matches the local supply voltage. Do not pour water into the chassis to avoid the risk of electric shock. Prolonged high speed operation of the fan may cause heat generation, please do not touch the Hoover fan area. Use the unit only when dry cut.



There are 4 system buttons, 1 status indicator light and 1 power level indicator light on the control panel. As shown below:



Start/Stop is a function switch for starting and stopping operation (The button function is invalid in external signal linkage mode,).

Increase is used to increase power.

Reduce is a power reduction button.

Clean is the recoil dust removal function button.

The power level indicator light consists of 4 LEDs, which are used to display the four levels of operating power.



- (1) Control panel (2) Aviation socket (3) Power cord socket
(4) Buckle (5) Roller (6) Air hose connector

Chapter II. Installation of equipment

2.1 Equipment unpacking inspection

1. after the equipment reaches the site, check whether the packing list is consistent, check whether the equipment is well packed and take photos for record.

2. with tools to open the wooden crate around the board, dismantle the board pay attention to safety, so as not to smash people and cutting machine.

3. appearance check: after opening the box, check the appearance of the equipment whether there is damage, collision paint phenomenon.

4. marking check: check the equipment label (name, specification model, manufacturer, series number, factory date, etc.) whether to buy demand.

5. in accordance with the terms of the contract or equipment packing list inventory of random accessories, spare parts, tools, ancillary instruments, manuals and other documents are complete, whether missing.

6. Equipment unpacking acceptance of any problem in a timely manner with the DEPRAG company contact, we will be the first time for you to solve.

7. After the acceptance of the equipment, contact DEPRAG in time to prepare for the installation of the equipment, the company will have technical personnel to dock the installation and commissioning work.

2.2 Preparations before installation

1, site requirements: cutting machine size: L523×W718×H820mm, the workshop door opening size needs to be greater than 850mm, the equipment placed in the area of the table should be able to load-bearing 130KG, and to ensure that there is enough space to operate the machine. Equipment placed on the surface of the area must be flat, clean, firm.

2, environmental requirements: cutting machine should be placed in a dry environment, cutting machine around the flammable and explosive substances are not allowed to place.

3, electricity requirements: cutting machine power supply for single-phase AC 220V 50/60HZ voltage, the power supply needs to be stable and must have a grounding wire. The rated power of the power supply must be $\geq 3.2KW$.

4, gas requirements: cutting machine gas source interface needs to be 8mm diameter gas pipe, the required gas flow must be $\geq 95L/min$; air pressure must be maintained above 0.6Mpa, the gas must be dry, the gas if it contains water and oil, will damage the spindle!

5, water requirements: the chiller is allowed to use the cooling medium: pure water, distilled water, high purity water and other softened water, the ambient temperature is below 2 °C and with water storage, the chiller tank need to add antifreeze, it is recommended to use the addition of glycol containing ethylene glycol, propylene glycol type concentration of not more than 30% antifreeze. Metal cutting requires the preparation of metal cutting fluid $\geq 12L$. Glass ceramic cutting fluid $\geq 8L$.

6, software requirements: customers need to buy publishing software, the device is an open publishing system, support Millbox, Hyperdent, Worknc.

2.3 W5 milling machine installation

2.3.1. Place machine

1. Adjust the foot bolts at the bottom of the equipment, the foot supports the equipment horizontally, and the bottom universal wheel is in a non-stressed state.
2. Check whether the 4 foot bolts are in good contact with the ground.
3. After the installation is completed, check that the equipment cannot be in a shaking state.

2.3.2 Connection Panel Introduction



- ◆ **AC 220**: The power supply to be used is single-phase AC 220V 50/60Hz voltage. The power cord is plugged in here.
- ◆ **LAN**: Plug in the network cable and use it when you need to connect to a LAN.
- ◆ **CHILLER**: Power cord connector of the chiller, insert the power plug of the chiller into this connector. (5-prong aviation plug).
- ◆ **FXT**: The vacuum cleaner automatically controls the power interface and is only used in dry cutting mode.
- ◆ **CN**: The main air inlet. Connect the external air pressure to this connection using an 8mm air hose. (The gas should be dry and should not contain moisture, otherwise it will burn the spindle)
- ◆ **INLET**: For the spindle cooling inlet, connect the water outlet of the chiller (OUTLET) to the water inlet of the cutting machine (INLET).

- ◆ **OUTLET:**For the spindle cooling outlet, connect the water inlet of the chiller (INLET) to the water outlet of the cutter (OUTLET).
- ◆ **PG:** Compressed air pressure gauge, displaying the current pressure value of the compressed air
- ◆

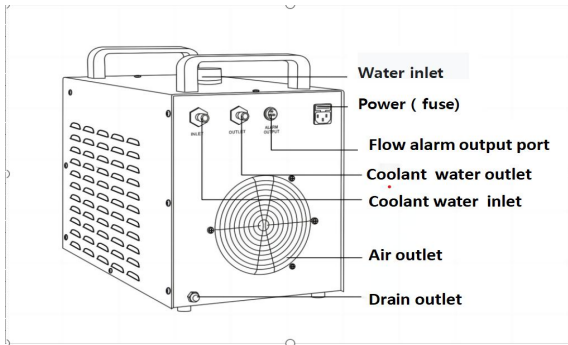


2.3.3 Water Chiller Installation

1. Water chiller add cooling water.

Cooling medium allowed for water chiller: . Pure water, distilled water, high purity water and other softened water. Prohibit the use of oily liquids, liquids containing solid particles, corrosive liquids and so on. It is recommended to add 7-9 litres for the first use. Clean the filter element and replace the cooling water regularly (about three months) to ensure the normal operation of the chiller.

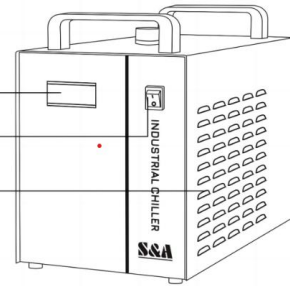
When the ambient temperature is lower than 2°C and stored with water, the water tank of the chiller needs to add antifreeze, and it is recommended to add antifreeze containing ethylene glycol and propylene glycol with a concentration of no more than 30%. After the temperature warms up, replace pure water, distilled water and other media, let the chiller run for 30 minutes to remove the residual antifreeze, and then add new circulating water for use after emptying.



Temperature display&control

On/Off button

Air inlet

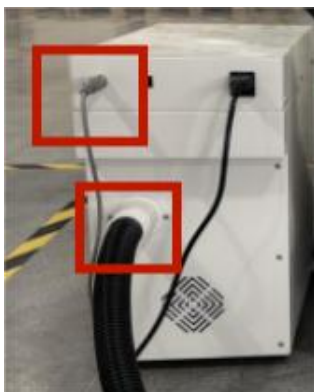


2.3.4 Connecting power cables and pipes

1. Insert the power cable of the water tank into the CHILLER interface, connect the flow signal cable to the ALAM OUTPUT of the water cooler, and connect the water inlet and outlet pipes to the spindle cooling outlet (OUTLET) and the spindle cooling inlet (INLET), and the inlet and outlet of the water pipes will not be differentiated by the direction of the water and will play the role of reflux cooling of the spindle. The power cord and water pipe are shown in the figure below



2. Connect the vacuum cleaner's start signal line to the suction pipe. Connect the start signal line of the vacuum cleaner to the FXT interface and the suction pipe to the pipe interface of the machine, as shown in the following figure



3. Connect the air hose of the air compressor

The compressed gas used in the device should be **dry and should not contain moisture**, otherwise it will burn the spindle. It is recommended to keep the air pressure above **0.6 MPa** and the gas flow rate should be more than **90L/min**, if the air pressure is too low, the device will stop moving and display the low air pressure fault waiting.

The milling machine's main air supply is connected to the CN connector position of the machine using an 8mm diameter air hose. As shown in the diagram below



4. Connecting the power cable

The power supply is single-phase AC 220V 50/60Hz voltage, where the power cord is inserted. If you use a multimeter to measure the voltage, if the voltage is unstable, be sure to purchase a voltage regulator before connecting it again. The external socket must have a grounding wire, otherwise the internal components may be damaged.



2.3.5 Adding cutting fluid

1. Connect the cutting fluid pump and tube
 - A. Prepare the fittings first as follows



- B. Connect the power cord of the pump and the water pipe as shown



2. Add metal cutting fluid and glass ceramic cutting fluid

After adding the cutting fluid to the bucket, put the pump and strainer into the bucket as shown in the picture below. The filter needs to be cleaned of deposits daily.



(1) metal cutting fluid: it is recommended to use water-soluble cutting fluid, water-soluble cutting fluid needs to be mixed with water, different brands of cutting fluid mixing ratios are different, the general mixing ratio: water: metal cutting fluid = 1:10 1:15 1:20 If you do not know the specific mixing ratios, you can contact the cutting fluid manufacturers

Water-soluble metal-specific cutting fluid features:

1. Suitable for processing titanium alloy or stainless steel metal;
2. Good extreme pressure anti-wear properties, under high pressure can form a boundary oil film in the processing interface, reduce tool wear, improve machining accuracy and speed;
3. Containing synthetic lubricants and extreme pressure additives, it helps to improve the surface finish of machined parts; good cooling and lubrication and excellent chip removal performance;
4. PH value of 8.5%-9.5%, no odour and no harm to the hands, environmentally friendly

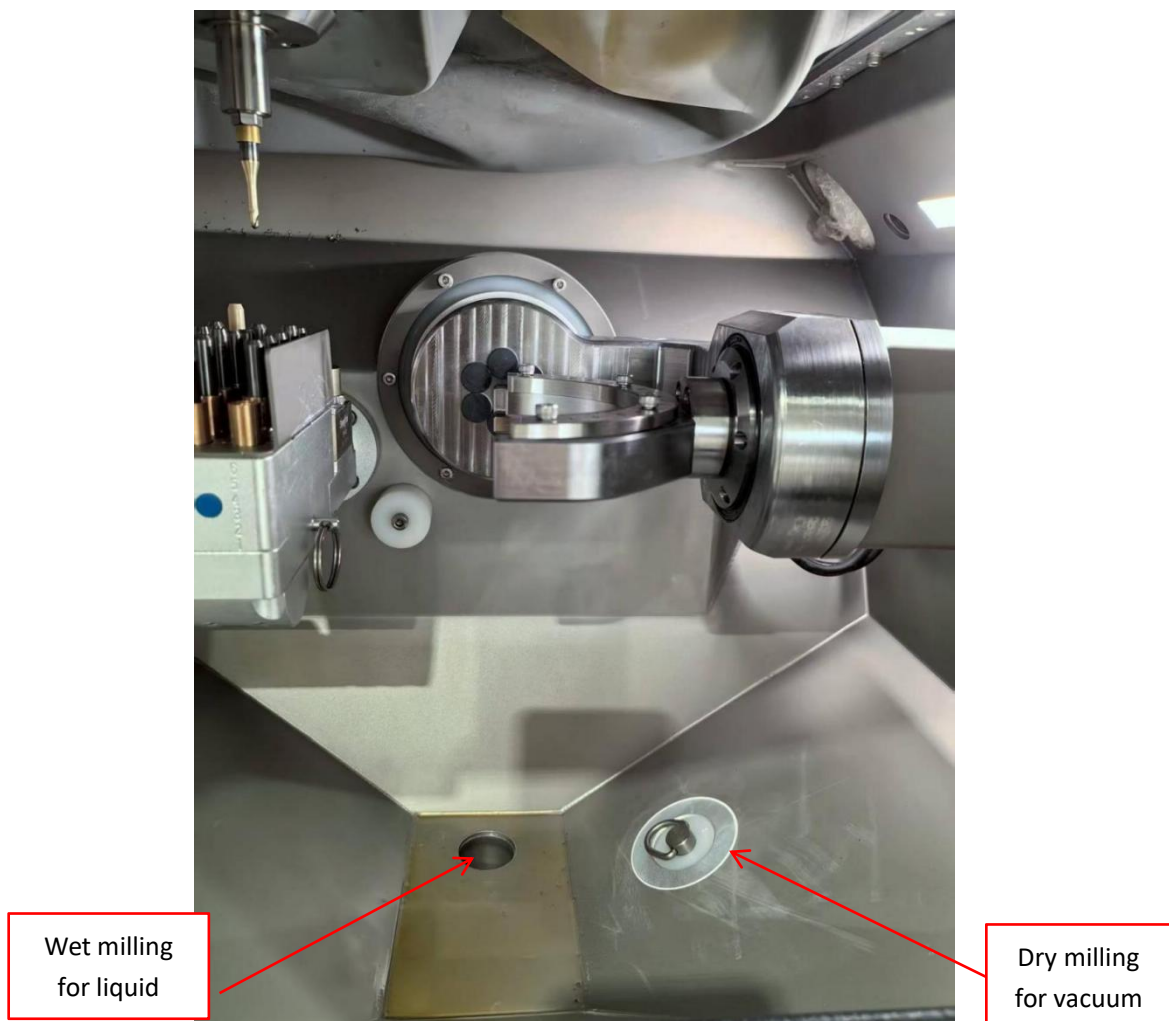
(2) glass ceramic cutting fluid, it is recommended to add 7-8 litres, different brands of cutting fluid with different mixing ratios, the general mixing ratio: water: metal cutting fluid = 1:15 1:20 1:25. If you do not know the specific mixing ratios,

you can contact the cutting fluid manufacturers

Fully synthetic water-based cutting fluid:

1. Suitable for processing glass and ceramic related products;
2. Colourless and odourless without hurting hands;
3. No foam, fast foam elimination.
4. Good settling of fine glass chips, favourable to the filtration and separation of chips;
5. Good cooling and lubricating effect, with anti-rust function;
6. PH value of 8%-9%.

2. When converting wet and dry cutting, pay attention to the plug conversion. As shown in the picture below, the one in the middle is the cutting fluid outlet, and the one on the right is the Hoover's extraction hole. If you use wet cutting, you need to remove the plug of cutting fluid outlet and plug the plug of Hoover.



Chapter III. Machine commissioning

3.1 Switch on the power

The power supply is single-phase AC 220V 50/60Hz voltage, and the permitted voltage range is 210V-240V. Insert the triangular plug of the equipment into the socket of the 220V power supply, and make sure that the connector at the end of the equipment is firmly connected.

In the environment of unstable voltage, the front end of the equipment needs to increase the voltage regulator to avoid equipment damage caused by voltage fluctuation.



3.2 Machine start-up

(1) After the machine is powered on, wait for about 30 seconds for the undervoltage protector to start, then click on the side switch on button (NO/OFF), the device will enter into the power on interface, and the power on process will wait for 3-5 minutes.

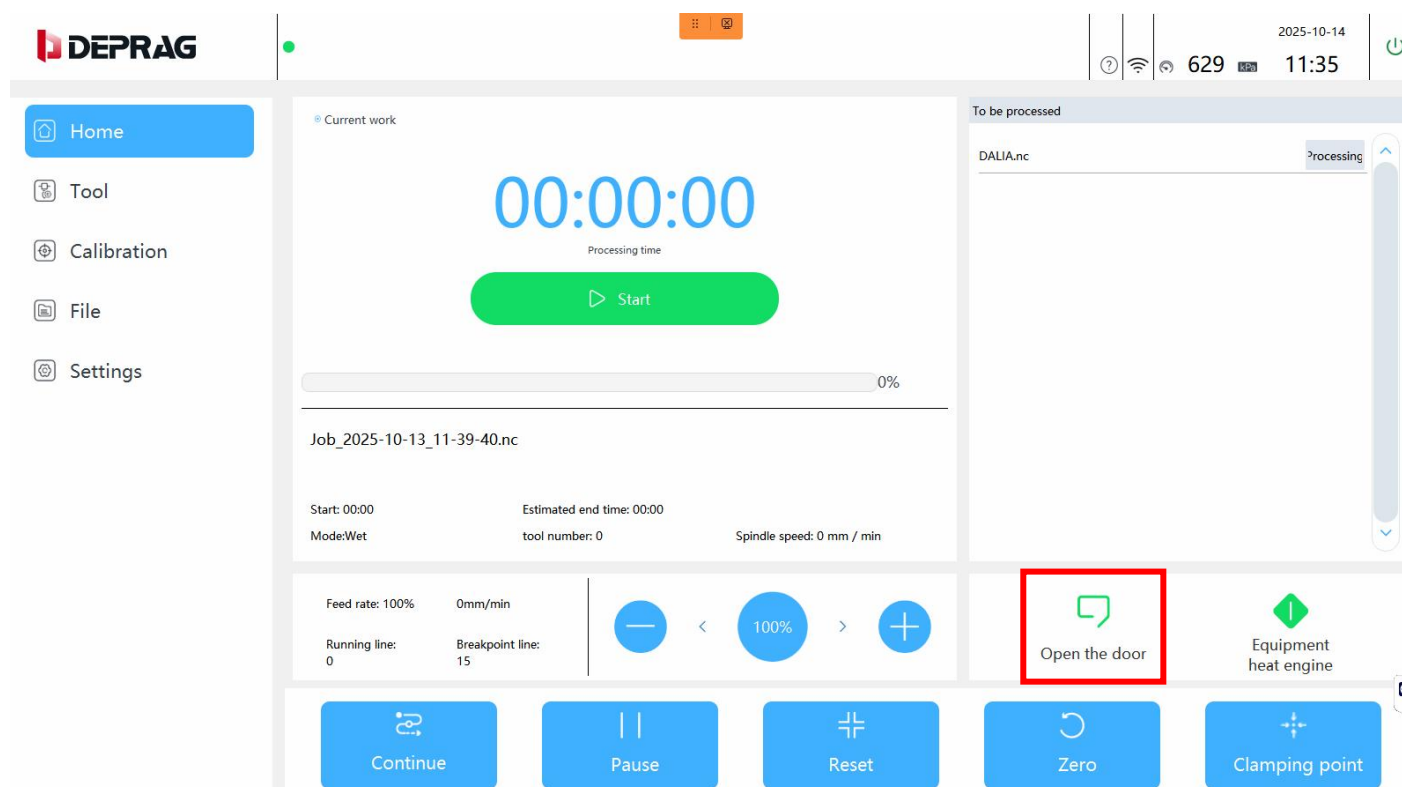
(2) Check the emergency stop button, if the side 'E-stop' button is in red state, release the 'E-stop' button, otherwise the device is in emergency stop state.

(3) USB insertion position for loading NC programme and mouse and keyboard debugging.



3.3 Check after switching on

(1) After the machine is switched on, first open the protective door (you need to click on the screen to open the protective door button, note that manually is unable to open the door), remove the sponge and other items in the processing bin, the protective door button position is as follows in the figure of the red .

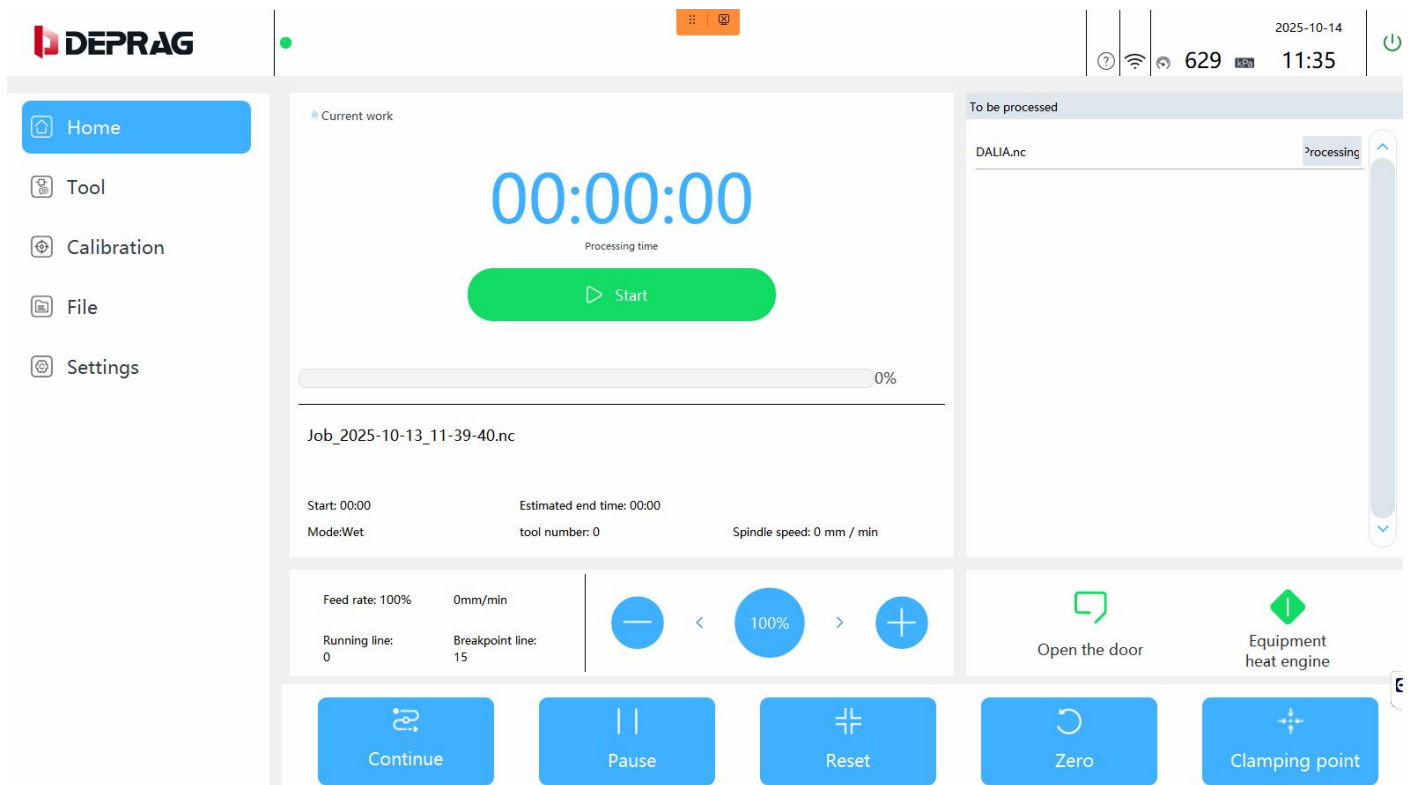


(2) Check the alarm messages on the screen, click on the alarm message bar at the top of the screen and all alarm messages will pop up. If there is a gas pressure alarm or chiller alarm, please supply gas to the machine and turn on the power of the water tank. The alarm messages are shown below



(3) If the machine does not alarm after switching on and is in normal standby state, as

shown below.



(4) Check for water leaks, if leaking re-insert the water pipe of the chiller.

(5) Click 'Zero' at the bottom of the screen to move the machine to a safe position (before clicking zero, please make sure that there are no other items in the processing bin to prevent the machine from crashing).

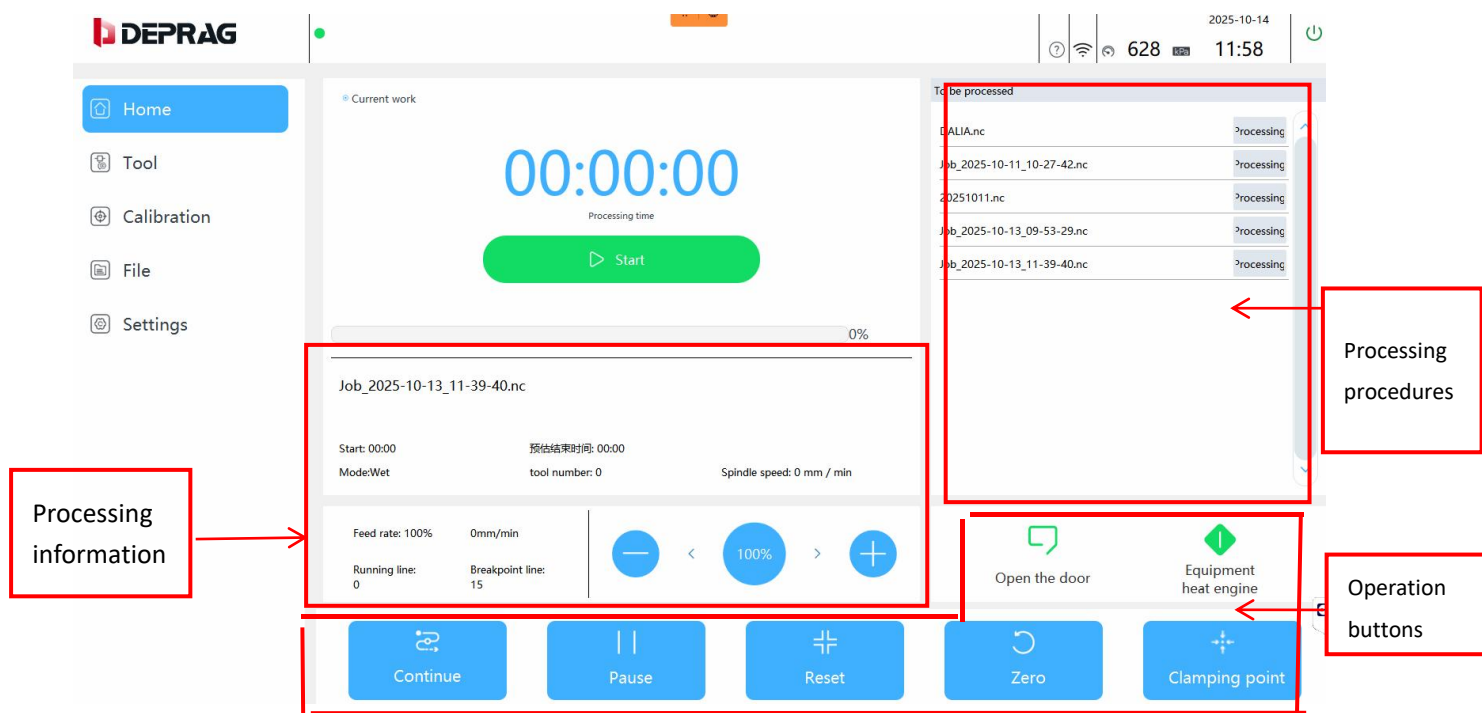


3.4 Introduction to the system interface

3.4.1 Description of the home page interface

- ◆ The homepage interface mainly displays the status of machining information, the pending machining programme, commonly used operation buttons and the execution of the programme machining buttons, as shown in the figure below.

- ◆ Machining information: the home page displays the programme name, machining time, current tool number, spindle speed, feed speed, running number and breakpoint line number.
- ◆ To be processed: the programme loaded into the machine's processing list will be displayed in the list of to be processed, click on the programme to be processed to execute processing, the programme to be processed will be displayed in the processing information and removed from the list of to be processed, the list of to be processed is to display the unprocessed programme.
- ◆ Commonly used operation buttons: open the guard door, loosen/tighten the clamps, warm up the machine, return to the fixed point, reset to zero.
- ◆ Execute programme machining keys: start, pause, breakpoint machining, reset.



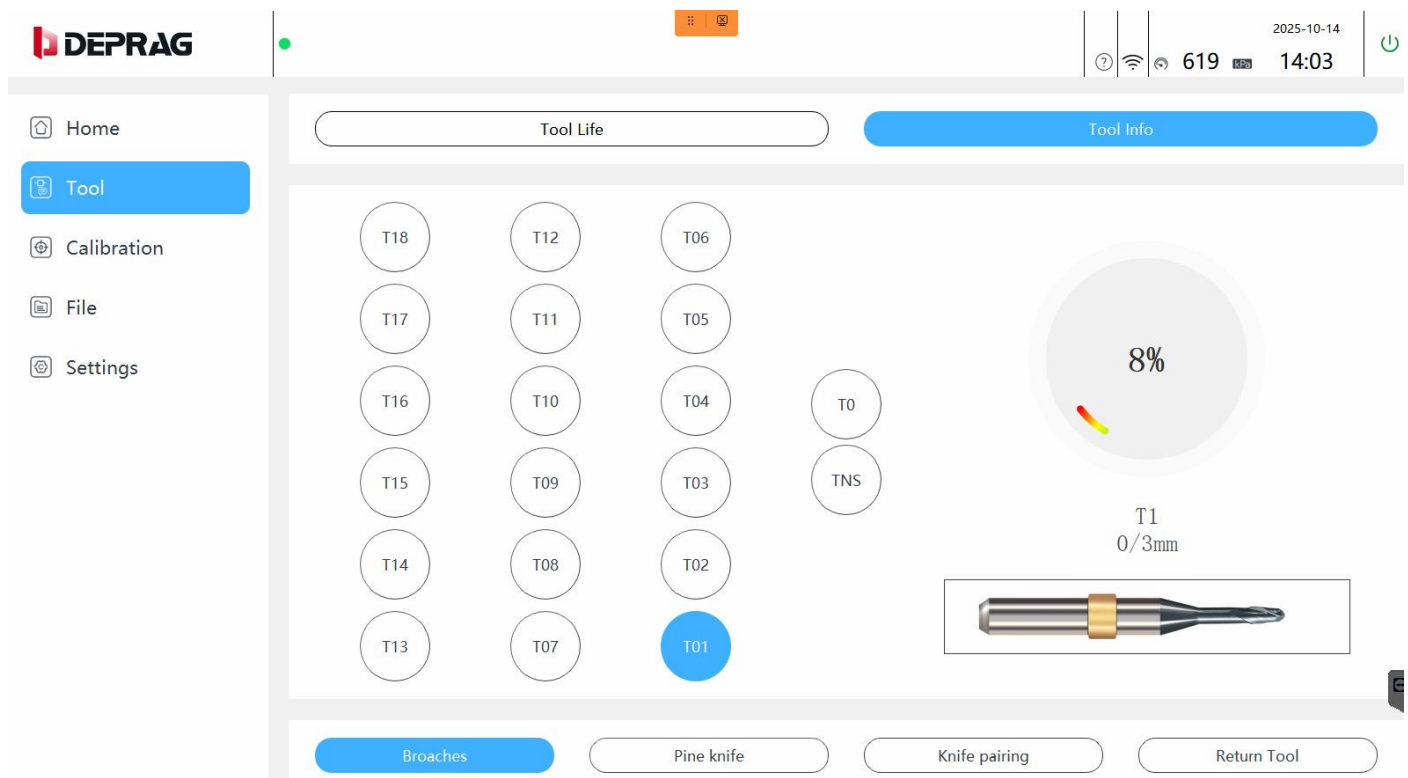
3.4.2 Tool interface description

The tool interface consists of the tool information and tool life screens as shown below

1. Tool information interface

Displays information about the current spindle tool and its position in the tool magazine. At the bottom of the page are the tool pulling, loosening and tool setting.

- ◆ In the tool information you can control the machine to change the tool. Click on the tool number to change the tool.
- ◆ Click on the tool puller and looser, you can mount and dismount the tool on the spindle.
- ◆ Click on the tool setting, touch the tool setting gauge to check the tool length.
- ◆ Click Return Tool to put the current tool of the spindle back to the corresponding tool magazine number.

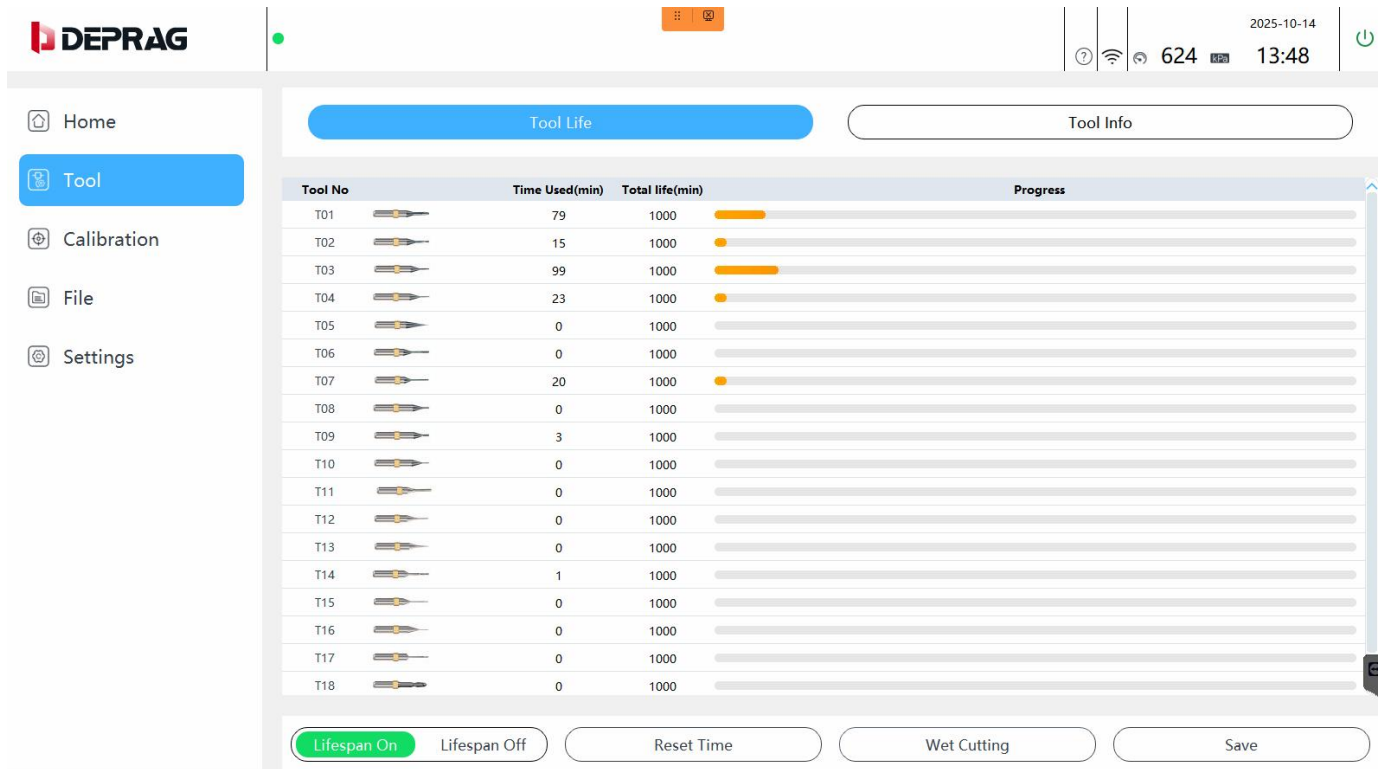


2. Tool life interface

Tool life: After setting the tool life time, the machining tool life time will be displayed after machining is performed.

- ◆ Under LIFE TIME set the use of each tool, the recommended setting is 900min.
- ◆ Tool life enable: tool life recording is activated when tool life enable is turned on, and tool life recording is not activated when tool life enable is turned off.

After setting, click save button to save the tool life setting.



Note: The main interface will alarm when the tool life is reached. If there is no special requirement for tool life, this function can be turned off. Generally metal tool life of 400-600 minutes is optimal. It can be adjusted according to the actual situation.

3.4.3 Description of the calibration interface

The calibration methods are manual calibration, automatic calibration, and titanium column calibration. As shown in the figure below

- ◆ Manual calibration: After clamping the 10mm thickness of wood, click calibration in the calibration page, execute the calibration processing procedures, process two small squares, and then measure the corresponding data input for correction, you can calibrate the G54 machining origin coordinates.

- ◆ Automatic calibration: After clamping the automatic calibration tooling, click calibration on the automatic calibration page to perform automatic calibration and calibrate the G54 machining origin coordinates.

Titanium column calibration: After clamping the titanium column, click calibration in the titanium column calibration page to carry out automatic calibration of the titanium column and calibrate the G55 machining origin coordinates.



Home

Tool

Calibration

File

Settings

Parameters

Manual

Diagnosis

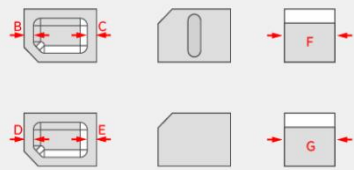
Manual calibration

Automatic calibration

Titanium column calibration

Coordinate					
Coordinate	X	Y	Z	A	B
Overall	105.667	-46.700	-20.991	0.013	-0.060
Offset	0.000	0.013	0.022	0.000	0.020
G54	105.667	-46.713	-21.013	0.013	-0.080
G55	105.707	-46.691	-20.956	-0.014	0.107
G55.1-0°	-0.103	0.024	-0.057	-0.001	0.167
G55.2-0°	0.059	0.046	-0.123	0.000	0.071
G55.3-0°	0.087	0.041	-0.101	0.000	0.060

Parameter correction	
Name	Value
B(#1830)	1
C(#1831)	1
F(#1833)	8
D(#1834)	1
E(#1835)	1
G(#1837)	8



Read

Amend

Record

Manual calibration

Save

DEPRAG

Home

Tool

Calibration

File

Settings

Parameters

Manual

Diagnosis

Manual calibration

Automatic calibration

Titanium column calibration

Automatic calibration					
Coordinate	X	Y	Z	A	B
Overall	105.667	-46.700	-20.991	0.013	-0.060
Offset	0.000	0.013	0.022	0.000	0.020
G54	105.667	-46.713	-21.013	0.013	-0.080
G55	105.707	-46.691	-20.956	-0.014	0.107
G55.1-0°	-0.103	0.024	-0.057	-0.001	0.167
G55.2-0°	0.059	0.046	-0.123	0.000	0.071
G55.3-0°	0.087	0.041	-0.101	0.000	0.060
G55.0-90°	-0.009	-0.052	0.204	-0.001	0.167
G55.1-90°	-0.105	0.173	-0.100	0.000	0.071
G55.2-90°	-0.013	0.015	-0.066	0.000	0.060

Record

Save

Automatic calibration

DEPRAG

Home

Tool

Calibration

File

Settings

Parameters

Manual

Diagnosis

Manual calibration

Automatic calibration

Titanium column calibration

Coordinate					
Coordinate	X	Y	Z	A	B
Overall	105.667	-46.700	-20.991	0.013	-0.060
Offset	0.000	0.013	0.022	0.000	0.020
G54	105.667	-46.713	-21.013	0.013	-0.080
G55	105.707	-46.691	-20.956	-0.014	0.107
G55.1-0°	-0.103	0.024	-0.057	-0.001	0.167
G55.2-0°	0.059	0.046	-0.123	0.000	0.071
G55.3-0°	0.087	0.041	-0.101	0.000	0.060

Titanium column correction	
Name	Value
B(#2660)	19
D(#2662)	9.5
E(#2663)	9.5
F(#2664)	9.5
G(#2665)	9.5

Correct Arum 1 position

Correct Arum 2 position

Correct Arum 3 position

X

Y

Z

Calibration preparation

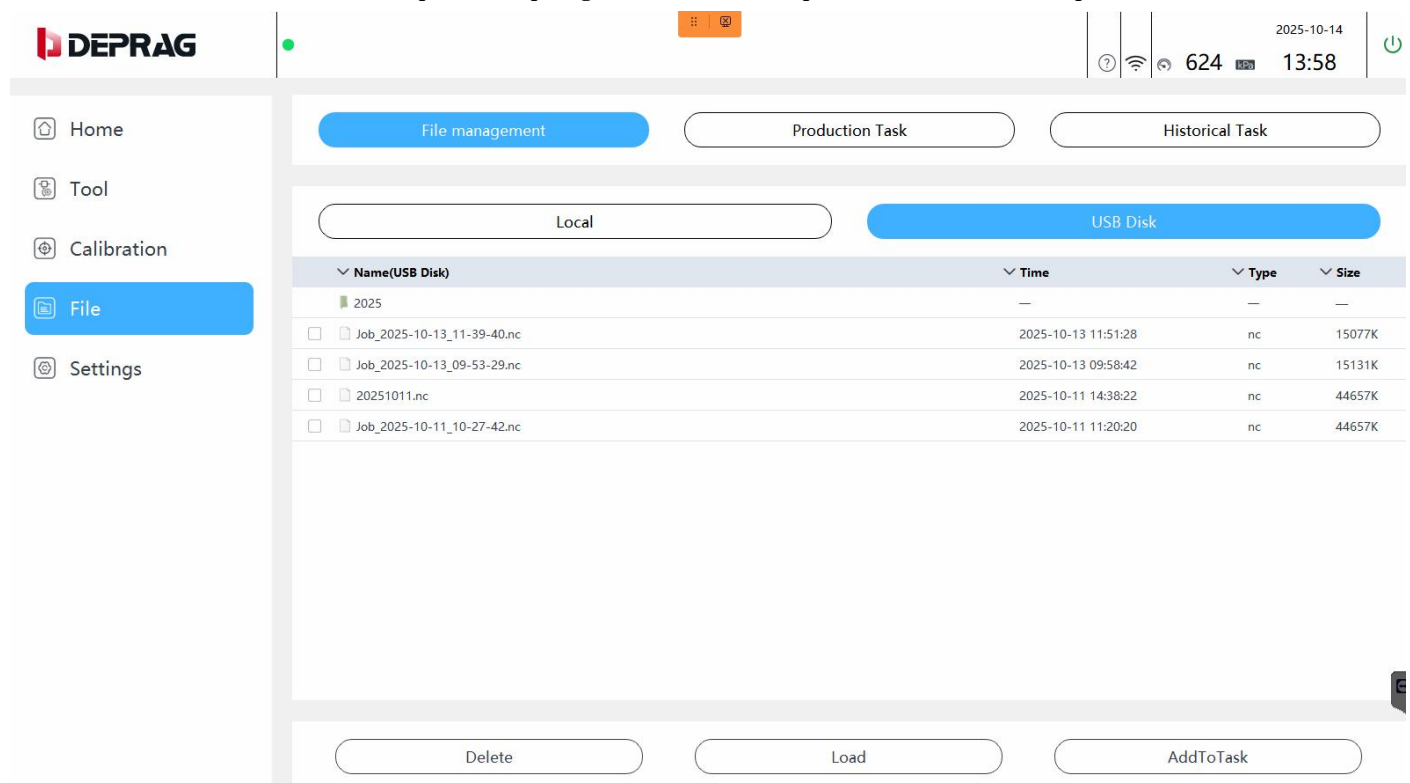
Arum/GEO Titanium Column Calibration

Medentika Titanium Column Calibration

3.4.4 Description of the document interface

The file interface is used when loading the programme, the interface is displayed as follows

- ◆ Local: NC programs stored on system hard discs
- ◆ USB stick: NC programs loaded via USB stick.
- ◆ Production Tasks: Programs to be processed that are displayed by adding them to the list.
- ◆ Historical tasks: Programs that have already been processed.
- ◆ Delete: You can delete a programme after checking it.
- ◆ Refresh: Refresh the page
- ◆ Load: After checking a programme, click Load to enter the pending machining status.
- ◆ Add to list: add multiple NC programmes to be processed to the production task.



The screenshot shows the DEPRAG file management interface. At the top, there is a header bar with the DEPRAG logo, a green status indicator, and system information including the date (2025-10-14), time (13:58), and battery level (624). Below the header, there is a sidebar on the left with navigation options: Home, Tool, Calibration, File (highlighted in blue), and Settings. The main area contains three tabs: File management (highlighted in blue), Production Task, and Historical Task. Under the File management tab, there are two sub-tabs: Local and USB Disk (highlighted in blue). The USB Disk sub-tab displays a table of files with columns for Name(USB Disk), Time, Type, and Size. The table lists four files, each with a checkbox for selection. At the bottom of the interface, there are three buttons: Delete, Load, and AddToTask.

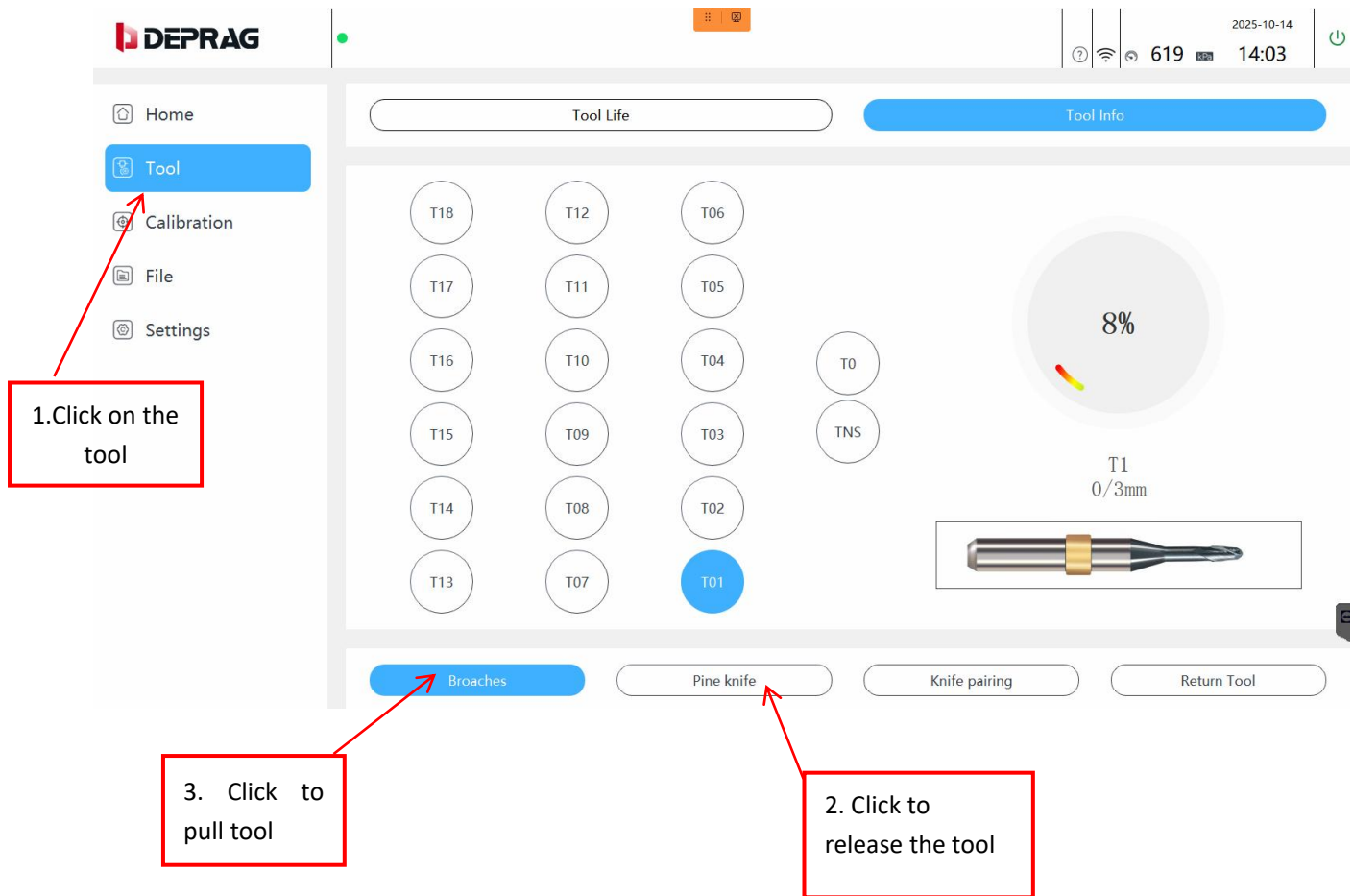
Name(USB Disk)	Time	Type	Size
2025	—	—	—
☐ Job_2025-10-13_11-39-40.nc	2025-10-13 11:51:28	nc	15077K
☐ Job_2025-10-13_09-53-29.nc	2025-10-13 09:58:42	nc	15131K
☐ 20251011.nc	2025-10-11 14:38:22	nc	44657K
☐ Job_2025-10-11_10-27-42.nc	2025-10-11 11:20:20	nc	44657K

3.5 Tool installation

Remove the metal bur from the spindle

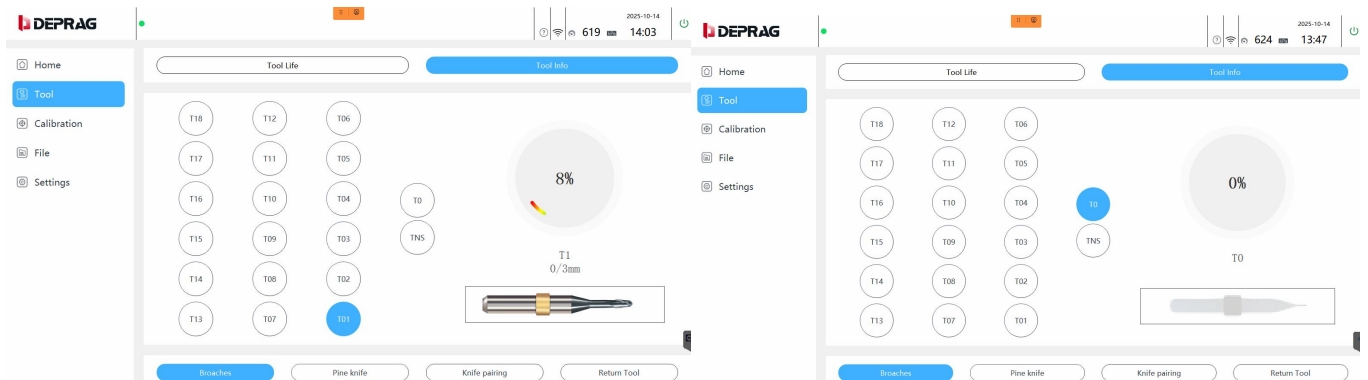
When new equipment is shipped, the spindle is fitted with a metal bar that prevents moisture from the air from entering the spindle and serves to protect the spindle. To use the machine, the metal bar needs to be removed. Click on the milling page, then grab the metal bar with one hand and click on the loose milling bur in the screen with one hand, as shown below, to remove the bar, then click on the pull milling bur.





When there is no tool installed in the spindle, you need to set the current tool number of the spindle to 0 (important, to prevent the collision of the tool), first

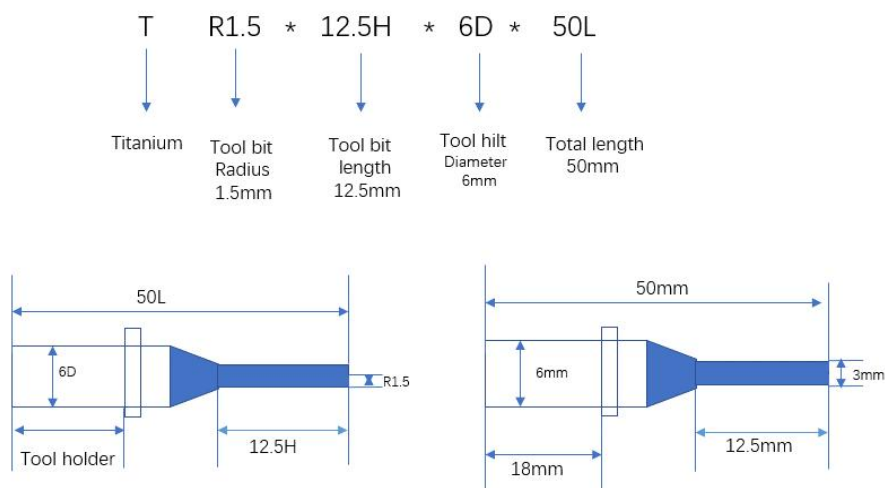
click on the picture of the TNS , then click on the T0 , then click on the TNS , you have completed the T0 tool setting.



Wet Milling Tool

No	Specification	Diameter	Total length	keep-space	Diameter of handle	Type	Material	Raw material
T1	T*R1.5*12.5H*6D*50L	3	50	12.5	6	Ball Head	Tungsten steel	Titanium
T2	T*R1.0*12.5H*6D*50L	2	50	12.5	6	Ball Head	Tungsten steel	Titanium
T3	T*R0.75*8H*6D*50L	1.5	50	8	6	Ball Head	Tungsten steel	Titanium
T4	T*R0.5*8H*6D*50L	1	50	8	6	Ball Head	Tungsten steel	Titanium
T5	T*R0.25*4H*6D*50L	0.5	50	4	6	Ball Head	Tungsten steel	Titanium
T6	T*D2.0*R0.2*16H*6D*50L	2	50	16	6	Round nose bur	Tungsten steel	Titanium
T7	T*D1.5*R0.1*16H*6D*50L	1.5	50	16	6	Round nose bur	Tungsten steel	Titanium
T8	T*D1.5*R0.1*6H*6D*50L	1.5	50	6	6	Round nose bur	Tungsten steel	Titanium
T9	T*D2.0*6H*6D*50L	2	50	6	6	Flat-bottomed bur	Tungsten steel	Titanium
T10	T*D1.0*6H*6D*50L	1	50	5	6	Flat-bottomed bur	Tungsten steel	Titanium
T11	G*R1.25*16H*6D*50L	2.5	50	16	6	Ball Head	Tungsten steel	Glass ceramic
T12	G*R0.5*10H*6D*50L	1	50	10	6	Ball Head	Tungsten steel	Glass ceramic
T13	G*R0.3*10H*6D*50L	0.6	50	10	6	Driller	Tungsten steel	Glass ceramic
T14	P*R1.0*19H*6D*50L	2.0	50.0	19	6	Ball Head	Tungsten steel	Resin
T15	P*R0.5*19H*6D*50L	1.0	50.0	19	6	Ball Head	Tungsten steel	Resin
T16	P*R0.3*10H*6D*50L	0.6	50.0	10	6	Ball Head	Tungsten steel	Resin
T17	P*D1.5*16H*6D*50L	1.5	50.0	16	6	Flat-bottomed bur	Tungsten steel	Resin
T18	P*D5.0*22H*6D*50L	5.0	50.0	22	6	Flat-bottomed bur	Tungsten steel	Resin
T19	M2.0*P0.40*6D*50L	1.55	50	6	6	Thread milling bur	Tungsten steel	Titanium
T20	D1.9*0.6H*d0.8*10L*6D*50L	1.9	50	10	6	T-head	Tungsten steel	Titanium
T21	D1.5*0.6H*d0.6*10L*6D*50L	1.5	50	10	6	T-head	Tungsten steel	Titanium

3. Confirm the zirconia needle (in dry cutting mode)



4. Tools number

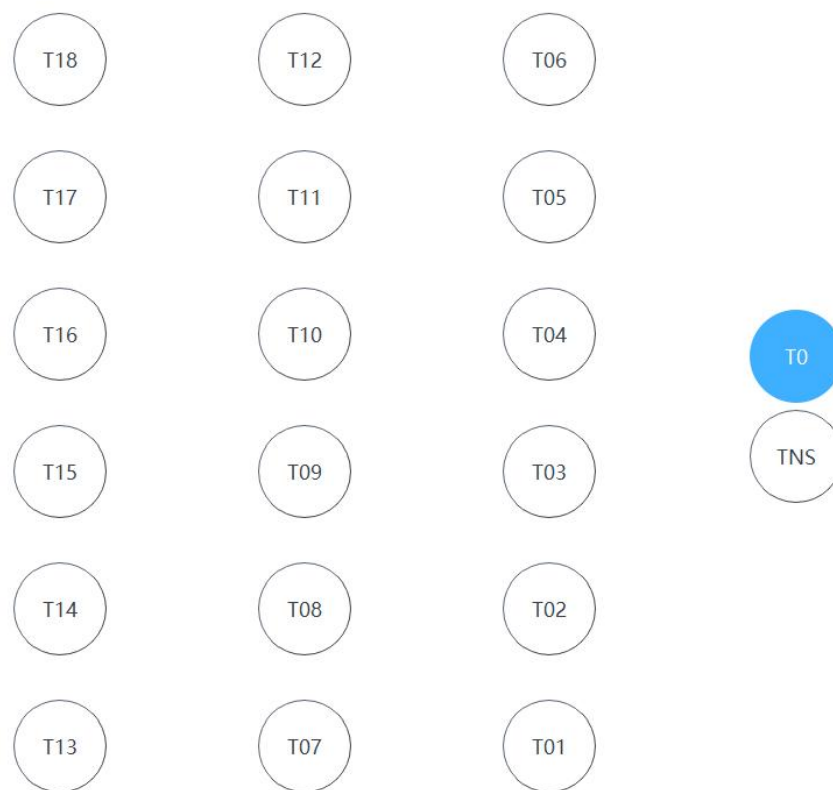


Dry Milling Tools

No	Specification	Diameter	Total length	keep-space	Diameter of handle	Type	Material	Raw material
T1	Z*R1.0*16*6D*50L	2.0	50.0	19	6	Ball Head	Tungsten steel	Zirconia
T2	Z*R0.5*16*6D*50L	1.0	50.0	19	6	Ball Head	Tungsten steel	Zirconia
T3	Z*R0.3*8*6D*50L	0.6	50.0	10	6	Ball Head	Tungsten steel	Zirconia
T4	Z*D1.5*20*6D*50L	1.5	50.0	20	6	Flat-bottomed bur	Tungsten steel	Zirconia
T5	Z*R0.15*3*6D*50L	0.3	50.0	3	6	Ball Head	Tungsten steel	Zirconia
T14	P*R1.0*19H*6D*50L	2.0	50.0	19	6	Ball Head	Tungsten steel	Resin
T15	P*R0.5*19H*6D*50L	1.0	50.0	19	6	Ball Head	Tungsten steel	Resin
T16	P*R0.3*10H*6D*50L	0.6	50.0	10	6	Ball Head	Tungsten steel	Resin
T17	P*D1.5*16H*6D*50L	1.5	50.0	16	6	Flat-bottomed bur	Tungsten steel	Resin
T18	P*D5.0*22H*6D*50L	5.0	50.0	22	6	Flat-bottomed bur	Tungsten steel	Resin

B. Tool Mounting Placement

The Tool magazine of the magazine are shown in the following diagram. According to the machining requirements, the tools for wet and dry milling are placed in the corresponding tool number positions.



3.6. Calibration equipment

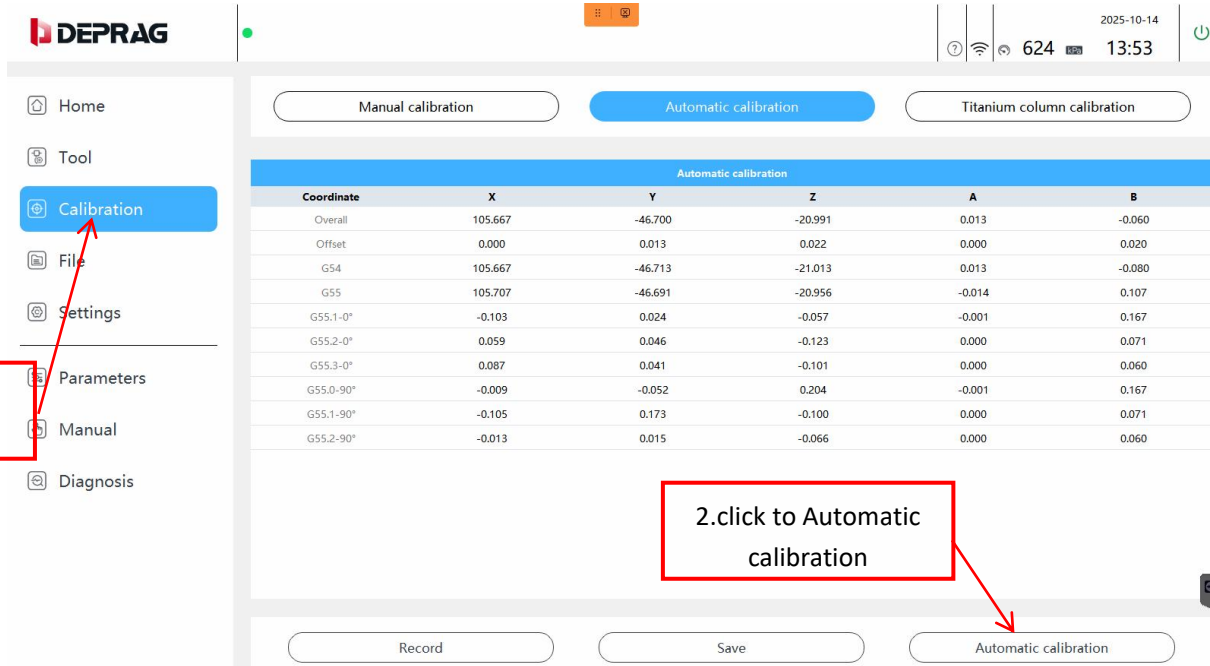
3.6.1. Automatic calibration

A. The processing chamber is clean and hygienic to prevent dust from falling during the calibration process.

B. Clamp the calibration fixture. Click the clamping tray button on the home page to clamp the fixture, as shown below.



C. Clicking on the "Automatic Calibration" option on the calibration page will automatically retrieve the probe and perform the automatic calibration. As shown in the figure below



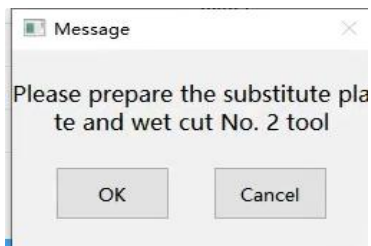
D. After automatic calibration, click Save. Finally, take down the fixture.

E. When installing a new machine, after automatic calibration, manual calibration is required to check the automatic calibration results and correct any deviations.

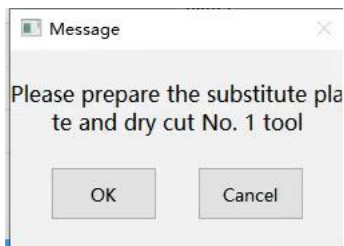
3.6.2 Manual calibration

(1) Prepare calibration wood blocks, disc size: 98.5mm diameter, 10mm thickness. (Confirm the size of the wood disc according to the fixture specifications). Wood blocks are consumables, and 2-3 pieces are required. If there are no 10mm thick wood blocks on site, 10mm wax discs can be used instead, and the processing speed is adjusted to 80%.

(2) If you are in wet cutting mode, click Calibrate and a prompt box will pop



up. , The calibration needle is a wet cutting T2 tool with specifications of $R1.0 \times 12.5H \times 6D \times 50L$. Install the needle in position 2 of the tool magazine. If it is in dry cutting mode, click Calibrate and a prompt box will pop

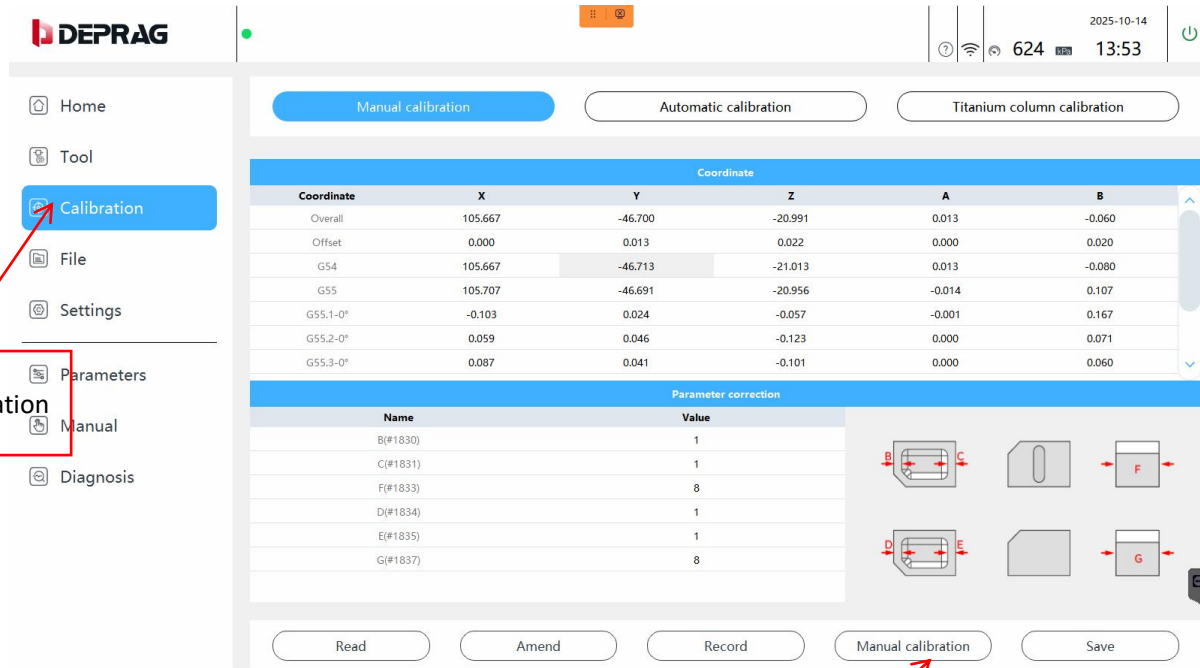


up. , The calibration needle is a dry cutting T1 tool with specifications of $R1.0 \times 16H \times 6D \times 50L$. Install the needle in position 1 of the tool magazine.

(3) Manually install the calibration block into the fixture. Pay attention to whether the cutting position is correct during installation. The tray needs to be installed with uniform force and the bolts must be completely locked.

(4) Click Manual Calibration on the calibration page to perform the calibration process.

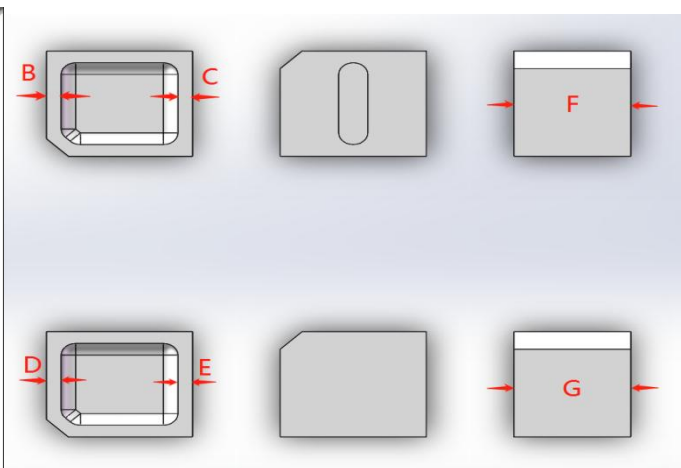




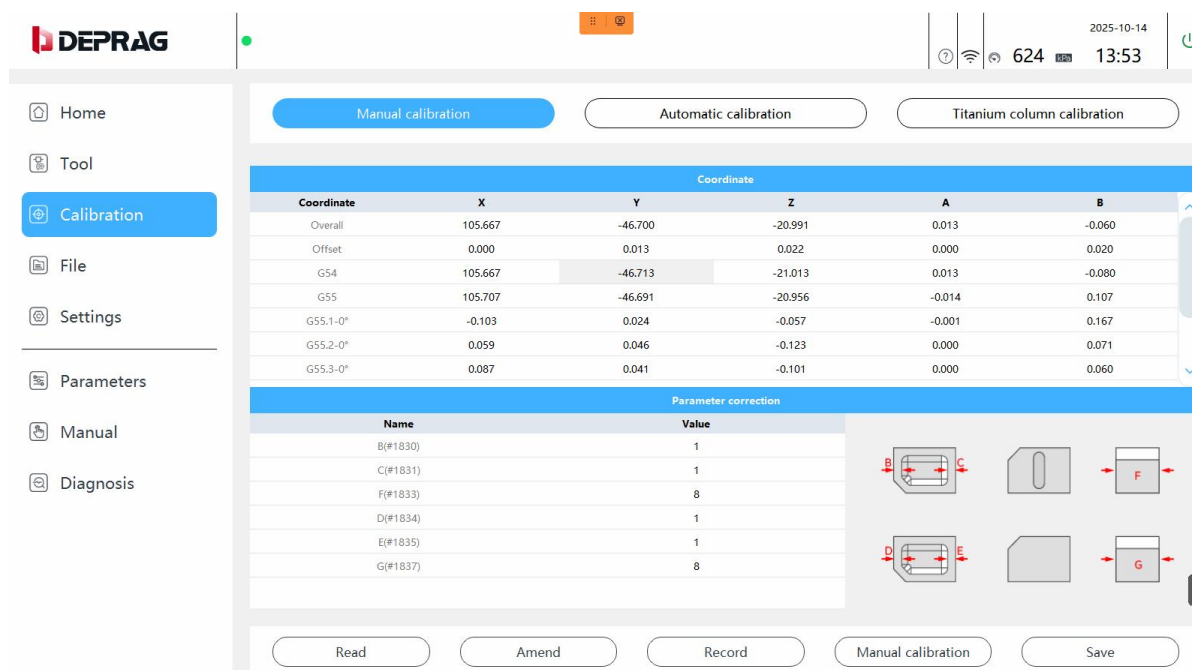
(5) Wait for the program to be processed. After cutting is completed, remove the calibration disc and use the grinding tool to grind down the two processed blocks.



(6) Calibrate the block, prepare a digital vernier caliper (accuracy 0.000mm), and prepare to measure and record the values of B, C, F, D, E, and G.



(7) Click the calibration interface to enter the coordinate system calibration interface.



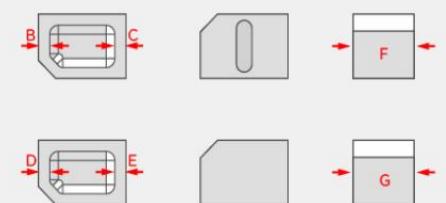
Coordinate	X	Y	Z	A	B
Overall	105.667	-46.700	-20.991	0.013	-0.060
Offset	0.000	0.013	0.022	0.000	0.020
G54	105.667	-46.713	-21.013	0.013	-0.080
G55	105.707	-46.691	-20.956	-0.014	0.107
G55.1-0°	-0.103	0.024	-0.057	-0.001	0.167
G55.2-0°	0.059	0.046	-0.123	0.000	0.071
G55.3-0°	0.087	0.041	-0.101	0.000	0.060

Name	Value
B(#1830)	1
C(#1831)	1
F(#1833)	8
D(#1834)	1
E(#1835)	1
G(#1837)	8

(8) Measure the cut block, and measure and record the values of B, C, F, D, E, and G according to the position shown in the figure. Each data must be measured more than 3 times to ensure the accuracy of the measurement. This is the most important step in manual calibration (when measuring the thickness, select the middle position of the wood block to measure, do not measure the edge position). If you are not sure about the measurement position, be sure to contact the factory engineer for help.

(9) Click the number box behind B C D F D E G, and enter the measured data into the number box in sequence. In order to ensure the accuracy of the measurement, it is necessary to measure more than 3 times and record the data. If the data of the 3 measurements are the same, it means that the measured data is valid.

Parameter correction	
Name	Value
B(#1830)	1
C(#1831)	1
F(#1833)	8
D(#1834)	1
E(#1835)	1
G(#1837)	8

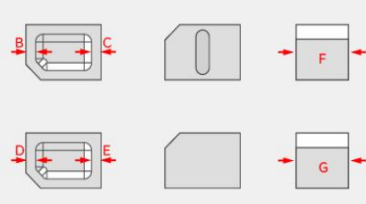


(10) After the measurement is completed, compare the measured data to see if it is accurate. In the original data, B=1 C=1 F=8 D=1 E=1 G=8. In theory, the measured data will be close to these values. If the measured data deviates too much, the measurement may be inaccurate and needs to be re-measured for confirmation.

(11) Click the data in the correction box, a data keyboard pops up, enter the measured number, and click enter. Enter the measured data into the correction box one by one.

(12) After the data input is completed, click **Amend**, a confirmation box pops up, click OK. The data correction is completed. Click **Save** again, and the manual calibration is completed.

Parameter correction	
Name	Value
B(#1830)	1
C(#1831)	1
F(#1833)	8
D(#1834)	1
E(#1835)	1
G(#1837)	8



(13) Calibration Notes

*Confirm that the coordinates of the machine have been calibrated back to the standard value range. You need to cut the calibration block again and measure the values of B, C, F, D, E, and G. Standard range: **B, C, D, E = $1 \pm 0.05\text{mm}$** **F, G = $8 \pm 0.02\text{mm}$** . If the values after calibration are not within the standard range, you need to perform the calibration procedure again.

*Calibration period:

①Correction procedures can be carried out at any time when there are abnormalities in the machine such as seating, or when there are serious marks on the joints.

②For more frequent use it is recommended that the periodic calibration operation should be carried out every 2 weeks and that the customer should have enough 10 mm calibration blocks or wax discs. It is recommended that the customer has at least 5.

3.6.3Premill calibration

First, click the logo on the top right corner to enter the user-level four interface. The password is: DEPRAG. Then, select the fixture you are using, clamp the titanium column at position P1, and click on the titanium column calibration interface. Choose P1, P2, P3, P4's P1 workstation for calibration. The titanium column calibration is performed using the T1 tool in the wet cutting mode, with specifications of T*R1.5*12.5H*6D*50L. After the titanium column calibration is completed, the probe calibration will be executed, and a standard block will be milled.



Manual calibration

Automatic calibration

Titanium column calibration

Coordinate					
Coordinate	X	Y	Z	A	B
Overall	105.667	-46.700	-20.991	0.013	-0.060
Offset	0.000	0.013	0.022	0.000	0.020
G54	105.667	-46.713	-21.013	0.013	-0.080
G55	105.707	-46.691	-20.956	-0.014	0.107
G55.1-0°	-0.103	0.024	-0.057	-0.001	0.167
G55.2-0°	0.059	0.046	-0.123	0.000	0.071
G55.3-0°	0.087	0.041	-0.101	0.000	0.050

Titanium column correction

Name	Value
B(#2660)	19
D(#2662)	9.5
E(#2663)	9.5
F(#2664)	9.5
G(#2665)	9.5

Correct Arum 1 position

Correct Arum 2 position

Correct Arum 3 position

X

Y

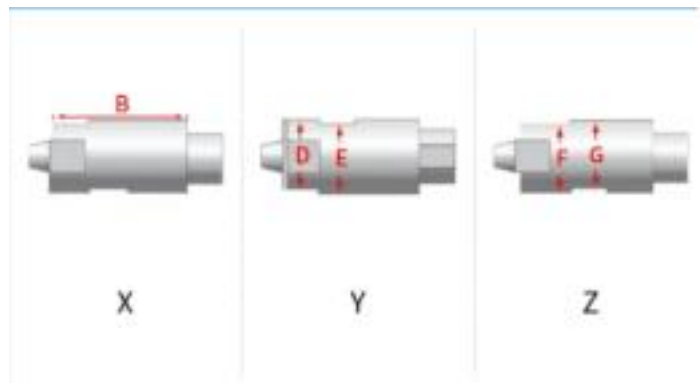
Z

Calibration preparation

Arum/GEO Titanium Column Calibration

Medentika Titanium Column Calibration

(1)Premill measurement. Prepare a digital vernier caliper (with an accuracy of 0.000mm), and be ready to measure and record the values of B,C,F,D,E, and G. Each piece of data must be measured more than three times to ensure the accuracy of the measurement.



(2)Click the number boxes behind B, C, D, F, D, E and G, and input the measured data into the number boxes in sequence. To ensure the accuracy of the measurement, it is essential to measure more than three times and record the data. If the data from the three measurements are the same, it indicates that the measured data is valid.

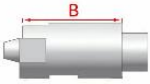
Titanium column correction

Name	Value
B(#2660)	19
D(#2662)	9.5
E(#2663)	9.5
F(#2664)	9.5
G(#2665)	9.5

Correct Arum
1 position

Correct Arum
2 position

Correct Arum
3 position





Calibration preparation

Arum/GEO Titanium Column Calibration

Medentika Titanium Column Calibration

(3)After inputting the measured data into the corresponding B, C, D, F, D, E and G digital boxes in sequence, click to correct the Arum position 1.

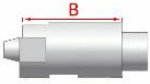
Titanium column correction

Name	Value
B(#2660)	19
D(#2662)	9.5
E(#2663)	9.5
F(#2664)	9.5
G(#2665)	9.5

Correct Arum
1 position

Correct Arum
2 position

Correct Arum
3 position





Calibration preparation

Arum/GEO Titanium Column Calibration

Medentika Titanium Column Calibration

(4)Click on the calibration parameters of the device parameters. Find the offset of 0° X at Station 1, find the offset of 0° Y at Station 1, and find the offset of 0° Z at Station 1 to check if there are any updated data. As shown in the following figure:

- Home
- Tool
- Calibration
- File
- Settings
- Parameters
- Manual
- Diagnosis

Tool
Calibration
Constant

Calibration settings

Number	Parameter name	Value
GEO/Arum Related		
#2830	Station 1 offset 0° X(mm)	0.020
#2831	Station 1 offset 0° Y(mm)	-0.050
#2832	Station 1 offset 0° Z(mm)	0.050
#2833	Station 1 offset 0° A(mm)	0.000
#2834	Station 1 offset 0° B(mm)	0.000
#2835	Station 2 offset 0° X(mm)	0.030
#2836	Station 2 offset 0° Y(mm)	-0.030
#2837	Station 2 offset 0° Z(mm)	0.040
#2838	Station 2 offset 0° A(mm)	0.000
#2839	Station 2 offset 0° B(mm)	0.000
#2840	Station 3 offset 0° X(mm)	0.030
#2841	Station 3 offset 0° Y(mm)	-0.030
#2842	Station 3 offset 0° Z(mm)	0.040

Read
Save

MCS

X

28.898

Y

-2.301

Z

-0.007

A

0.004

B

0.009

3.7 Machining NC programme operation

3.7.1 Dry cutting operation

A. Perform dry cutting tool clamping (ignore this step if already clamped)

Firstly, remove the spindle clamped tool, and then set the spindle to tool number 0. When there is no tool installed in the spindle, you need to set the current tool number of the spindle to 0 (important, to prevent collision), firstly, click on the picture of

the TNS , then click on TO , then click on TNS , That completes the T0 tool setup.

- Home
- Tool
- Calibration
- File
- Settings

Tool Life

Tool Info

T18 T12 T06
T17 T11 T05
T16 T10 T04
T15 T09 T03
T14 T08 T02
T13 T07 T01

T0
TNS

8%

T1

0/3mm

Touchscreen

Pipe knife

Knife peeling

Return Tool

- Home
- Tool
- Calibration
- File
- Settings

Tool Life

Tool Info

T18 T12 T06
T17 T11 T05
T16 T10 T04
T15 T09 T03
T14 T08 T02
T13 T07 T01

TNS
T0

0%

T0

Touchscreen

Pipe knife

Knife peeling

Return Tool

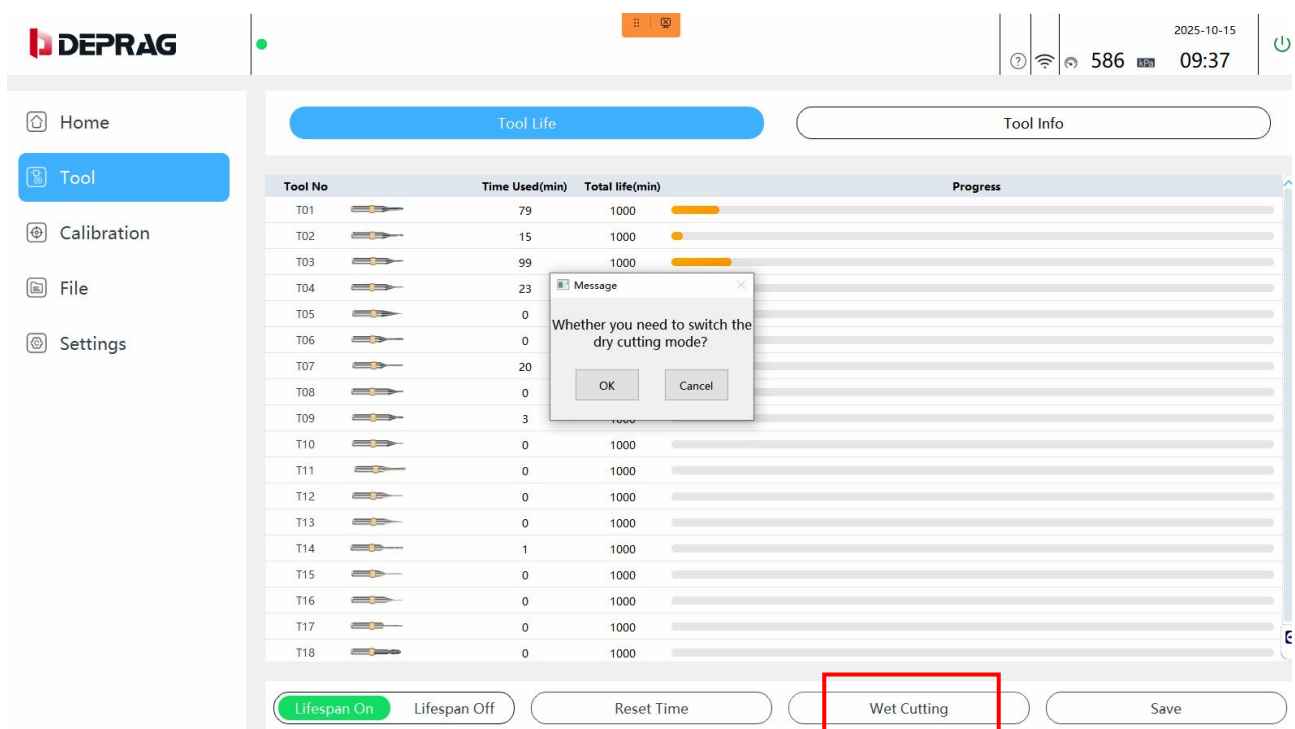
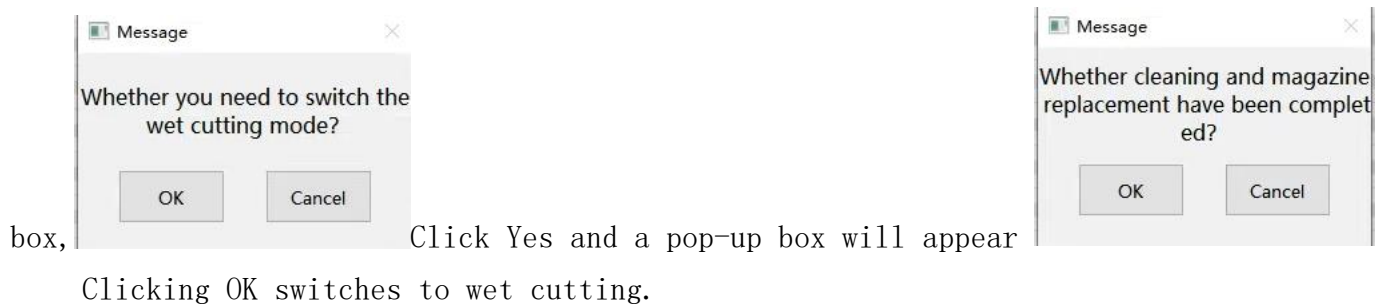
Install the tool in the corresponding magazine position as shown in the tool table below.

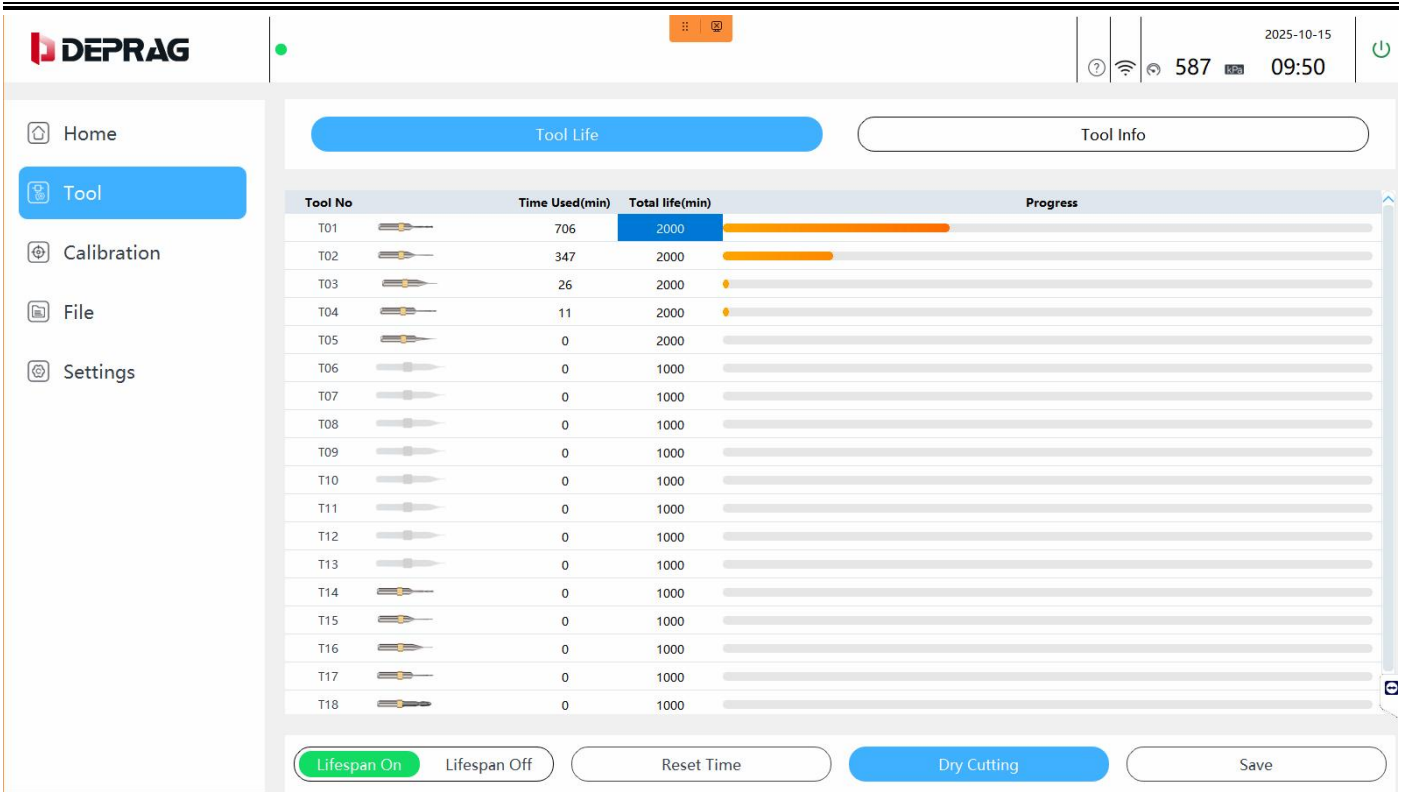
Dry Milling Tools

No	Specification	Diameter	Total length	keep-space	Diameter of handle	Type	Material	Raw material
T1	Z*R1.0*16*6D*50L	2.0	50.0	19	6	Ball Head	Tungsten steel	Zirconia
T2	Z*R0.5*16*6D*50L	1.0	50.0	19	6	Ball Head	Tungsten steel	Zirconia
T3	Z*R0.3*8*6D*50L	0.6	50.0	10	6	Ball Head	Tungsten steel	Zirconia
T4	Z*D1.5*20*6D*50L	1.5	50.0	20	6	Flat-bottomed bur	Tungsten steel	Zirconia
T5	Z*R0.15*3*6D*50L	0.3	50.0	3	6	Ball Head	Tungsten steel	Zirconia
T14	P*R1.0*19H*6D*50L	2.0	50.0	19	6	Ball Head	Tungsten steel	Resin
T15	P*R0.5*19H*6D*50L	1.0	50.0	19	6	Ball Head	Tungsten steel	Resin
T16	P*R0.3*10H*6D*50L	0.6	50.0	10	6	Ball Head	Tungsten steel	Resin
T17	P*D1.5*16H*6D*50L	1.5	50.0	16	6	Flat-bottomed bur	Tungsten steel	Resin
T18	P*D5.0*22H*6D*50L	5.0	50.0	22	6	Flat-bottomed bur	Tungsten steel	Resin

B. Switching dry cutting tool mode

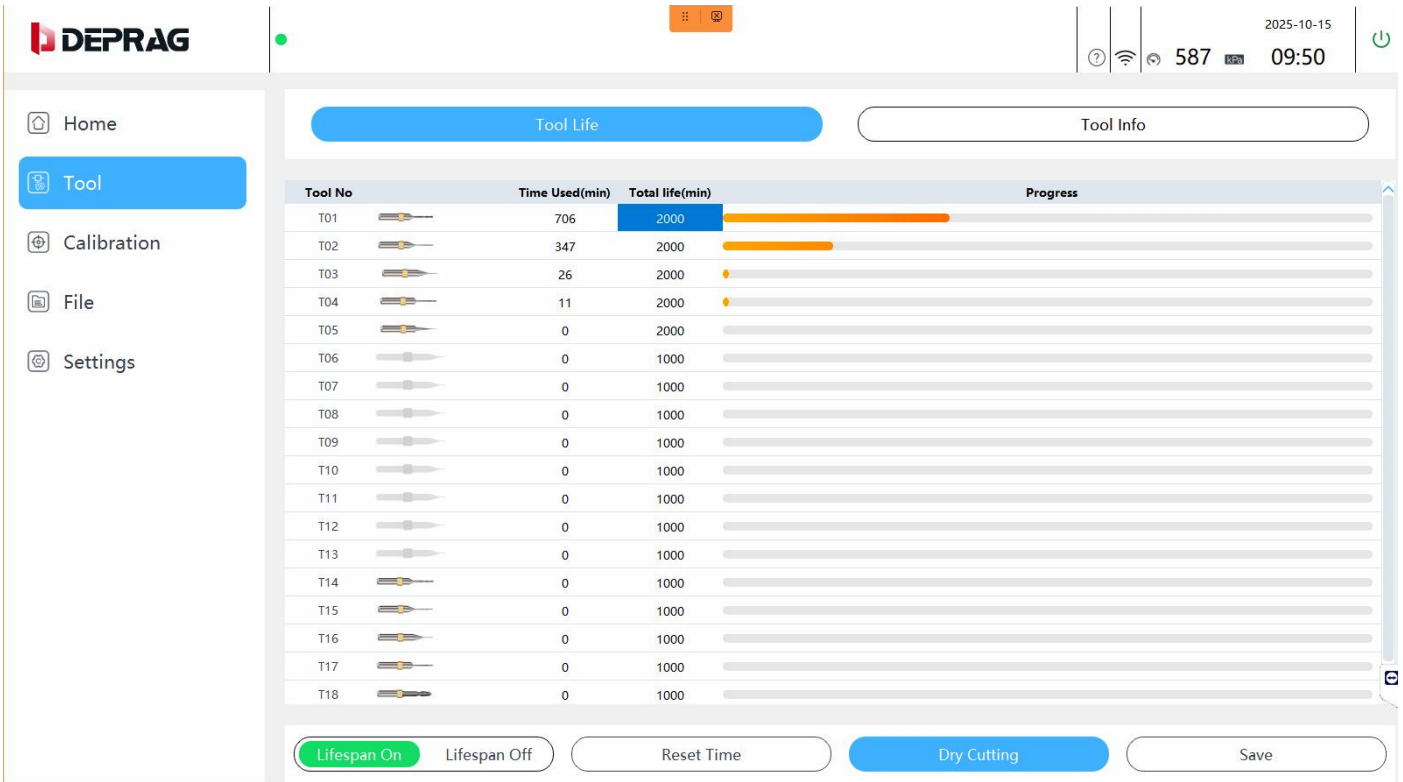
Click on the tool - tool life interface, the following figure red box, now is the wet cutting mode, click on the wet cutting, will pop up a prompt





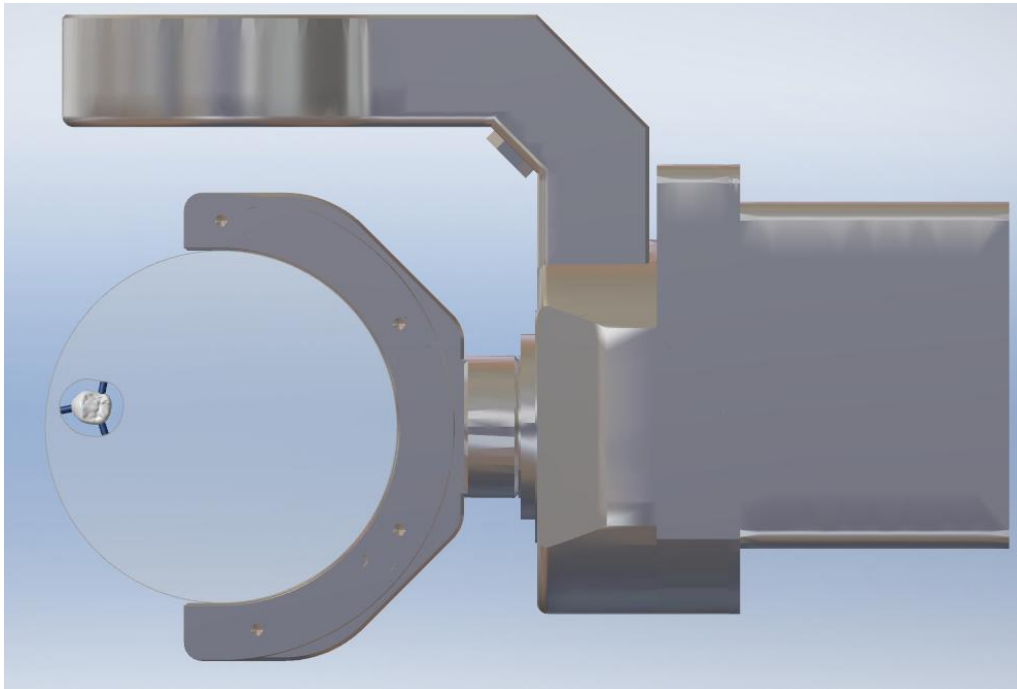
C. Tool life setting

Click the tool - tool life interface, set the tool life time, machining zirconium oxide, zirconium oxide tool life time can be set to 2000min, set the tool life enable on, the following figure of the green button



D. Clamping discs

When clamping the material, the occlusal surface is in the A0° position, as shown below

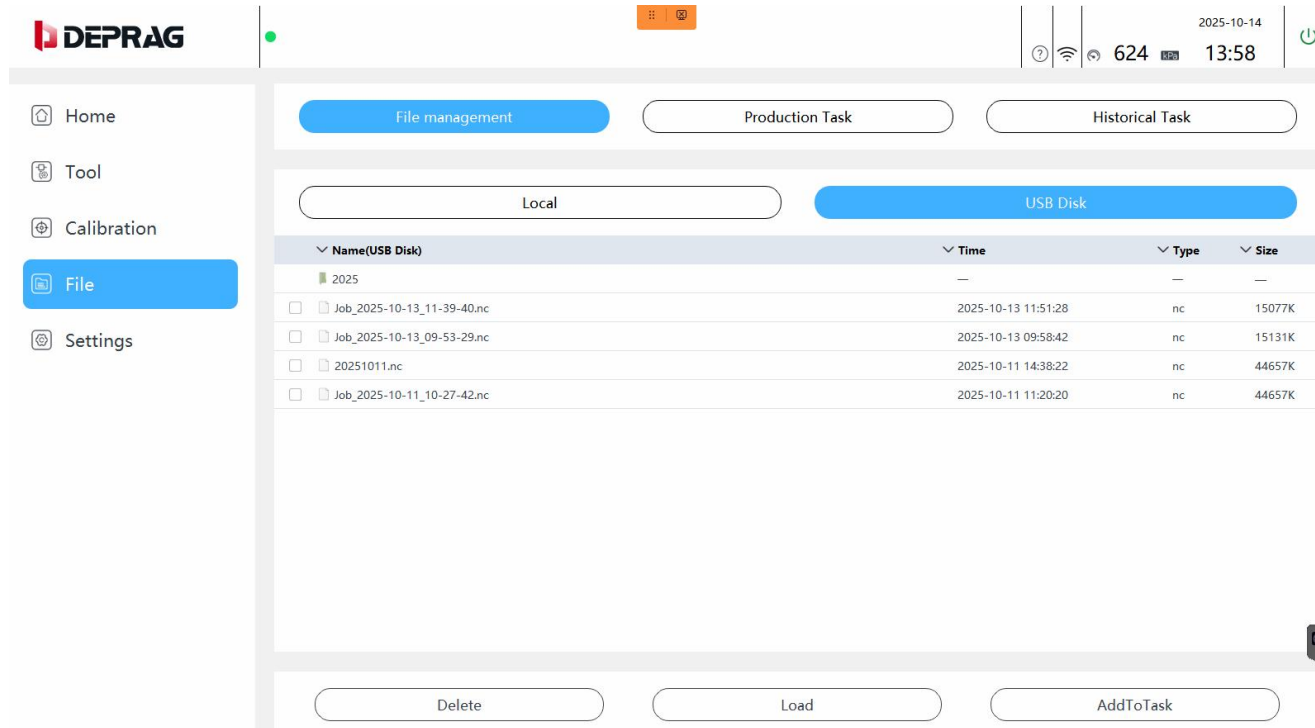


E. Load procedure

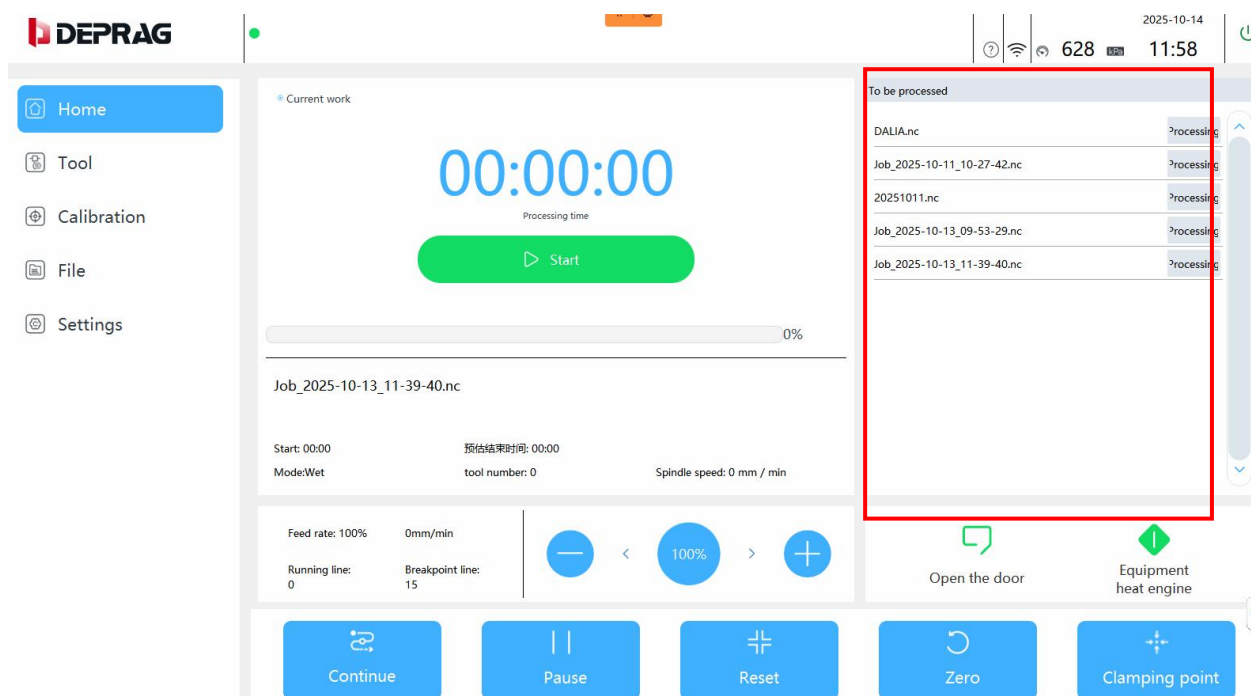
To import the programme using a USB stick, insert the stick into the machine's USB port.



Click on the file-U disk interface, tick the file to be processed, if you want to process only one program, tick one, and then click on the load to complete the import of the program.

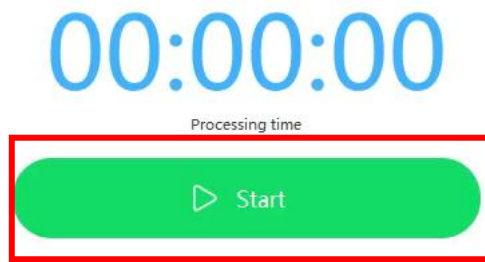


If you have more than one programme to be processed, you can tick more than one, click Add to list, and the programmes to be processed will be arranged in the pending programmes on the home screen. Then select the programme to be machined in the pending programmes and click Machining.



F. Start processing

Click Start on the home page interface to perform automatic processing.

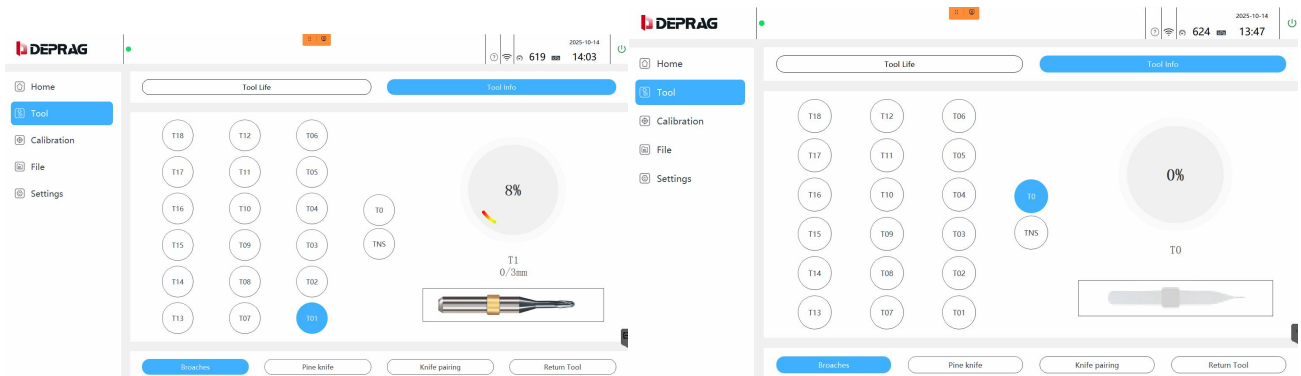


3.7.2 Wet milling operation

A. Perform wet milling tool clamping (ignore this step if already clamped)

Firstly, remove the spindle clamped tool, and then set the spindle to tool number 0. When there is no tool installed in the spindle, you need to set the current tool number of the spindle to 0 (important, to prevent collision), firstly, click on the picture of

the TNS , then click T0 , then click TNS , the T0 tool setting is completed. .



According to the tool table below, install the tool in the corresponding tool magazine position.

Wet Milling Tool								
No	Specification	Diameter	Total length	keep-space	Diameter of handle	Type	Material	Raw material
T1	T*R1.5*12.5H*6D*50L	3	50	12.5	6	Ball Head	Tungsten steel	Titanium
T2	T*R1.0*12.5H*6D*50L	2	50	12.5	6	Ball Head	Tungsten steel	Titanium
T3	T*R0.75*8H*6D*50L	1.5	50	8	6	Ball Head	Tungsten steel	Titanium
T4	T*R0.5*8H*6D*50L	1	50	8	6	Ball Head	Tungsten steel	Titanium
T5	T*R0.25*4H*6D*50L	0.5	50	4	6	Ball Head	Tungsten steel	Titanium
T6	T*D2.0*R0.2*16H*6D*50L	2	50	16	6	Round nose bur	Tungsten steel	Titanium
T7	T*D1.5*R0.1*16H*6D*50L	1.5	50	16	6	Round nose bur	Tungsten steel	Titanium
T8	T*D1.5*R0.1*6H*6D*50L	1.5	50	6	6	Round nose bur	Tungsten steel	Titanium
T9	T*D2.0*6H*6D*50L	2	50	6	6	Flat-bottomed bur	Tungsten steel	Titanium
T10	T*D1.0*6H*6D*50L	1	50	5	6	Flat-bottomed bur	Tungsten steel	Titanium
T11	G*R1.25*16H*6D*50L	2.5	50	16	6	Ball Head	Tungsten steel	Glass ceramic
T12	G*R0.5*10H*6D*50L	1	50	10	6	Ball Head	Tungsten steel	Glass ceramic
T13	G*R0.3*10H*6D*50L	0.6	50	10	6	Driller	Tungsten steel	Glass ceramic
T14	P*R1.0*19H*6D*50L	2.0	50.0	19	6	Ball Head	Tungsten steel	Resin
T15	P*R0.5*19H*6D*50L	1.0	50.0	19	6	Ball Head	Tungsten steel	Resin
T16	P*R0.3*10H*6D*50L	0.6	50.0	10	6	Ball Head	Tungsten steel	Resin
T17	P*D1.5*16H*6D*50L	1.5	50.0	16	6	Flat-bottomed bur	Tungsten steel	Resin
T18	P*D5.0*22H*6D*50L	5.0	50.0	22	6	Flat-bottomed bur	Tungsten steel	Resin
T19	M2.0*P0.40*6D*50L	1.55	50	6	6	Thread milling bur	Tungsten steel	Titanium
T20	D1.9*0.6H*d0.8*10L*6D*50L	1.9	50	10	6	T-head	Tungsten steel	Titanium
T21	D1.5*0.6H*d0.6*10L*6D*50L	1.5	50	10	6	T-head	Tungsten steel	Titanium

B. Switching wet cutting tool mode

Click on the tool – tool life interface, as shown below in the red box, it is now dry cutting mode, click on the dry cutting, it will pop up a prompt



box Click Yes and a pop-up box will appear

Click OK to switch to wet cutting.



Home

Tool

Calibration

File

Settings

Tool Life

Tool Info

Tool No		Time Used(min)	Total life(min)	Progress
T01		706	2000	
T02		347	2000	
T03		26	2000	
T04		11	2000	
T05		0	2000	
T06		0	1000	
T07		0	1000	
T08		0	1000	
T09		0	1000	
T10		0	1000	
T11		0	1000	
T12		0	1000	
T13		0	1000	
T14		0	1000	
T15		0	1000	
T16		0	1000	
T17		0	1000	
T18		0	1000	

Lifespan On Lifespan Off

Reset Time

Dry Cutting

Save

C. The bur' s service life Settings

Click tools - the bur service life interface, set the bur' service life long, titanium plate processing, can set the processing titanium plate of the tool life time of 600 min, setting the knives' service life can open, green button below.

Home

Tool

Calibration

File

Settings

Parameters

Manual

Diagnosis

Tool Life

Tool Info

Tool No		Time Used(min)	Total life(min)	Progress	Blade length(mm)	Ref. tool length(mm)	Wear tolerances	ireakage tolerance	Spare
T01		79	1000		-37.029	-37.239	2.000	6.000	0
T02		15	1000		-37.166	-38.266	2.000	5.000	0
T03		99	1000		-37.270	-34.023	2.000	5.000	0
T04		23	1000		-37.176	-36.935	2.000	5.000	0
T05		0	1000		-35.558	-36.194	2.000	5.000	0
T06		0	1000		-37.078	-37.163	2.000	10.000	0
T07		20	1000		-37.304	-37.072	2.000	5.000	0
T08		0	1000		-36.033	-36.484	2.000	5.000	0
T09		3	1000		-37.346	-36.253	2.000	5.000	0
T10		0	1000		-34.668	-35.081	2.000	5.000	0
T11		0	1000		-37.319	-38.602	2.000	5.000	0
T12		0	1000		-36.889	-36.005	2.000	5.000	0
T13		0	1000		-37.310	-36.126	2.000	5.000	0
T14		1	1000		-37.039	-36.889	2.000	5.000	0
T15		0	1000		-36.761	-33.973	5.000	10.000	0
T16		0	1000		-36.670	-36.969	5.000	10.000	0
T17		0	1000		-34.066	-34.098	5.000	10.000	0
T18		0	1000		-36.348	-35.539	2.000	5.000	0

Lifespan On Lifespan Off

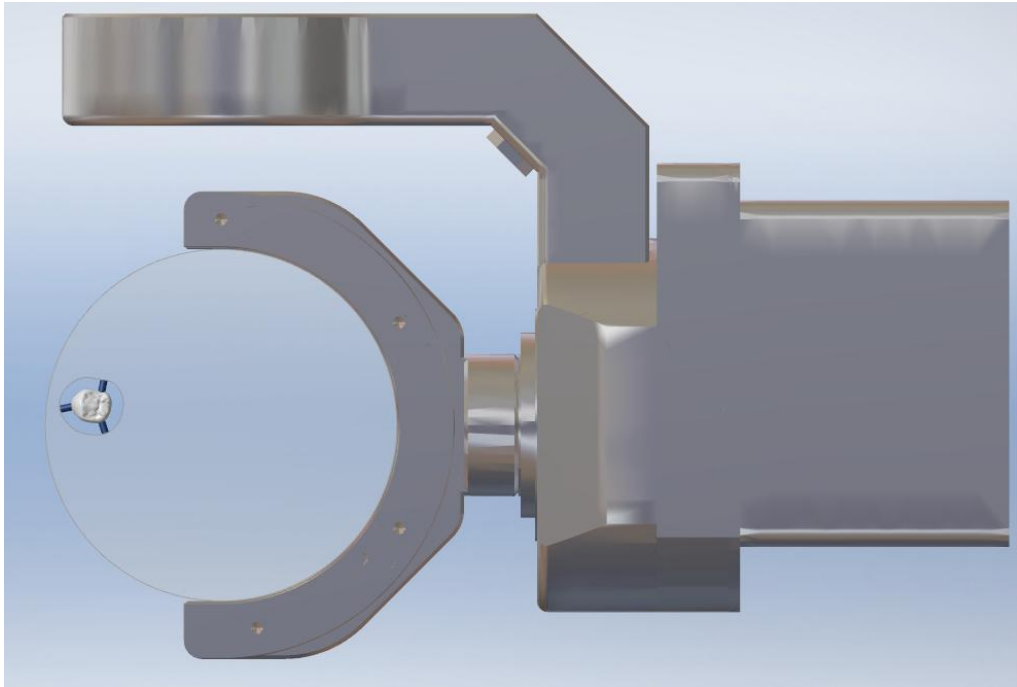
Reset Time

Wet Cutting

Save

D. Clamping discs

When clamping the material, the occlusal surface is in the A0° position, as shown below



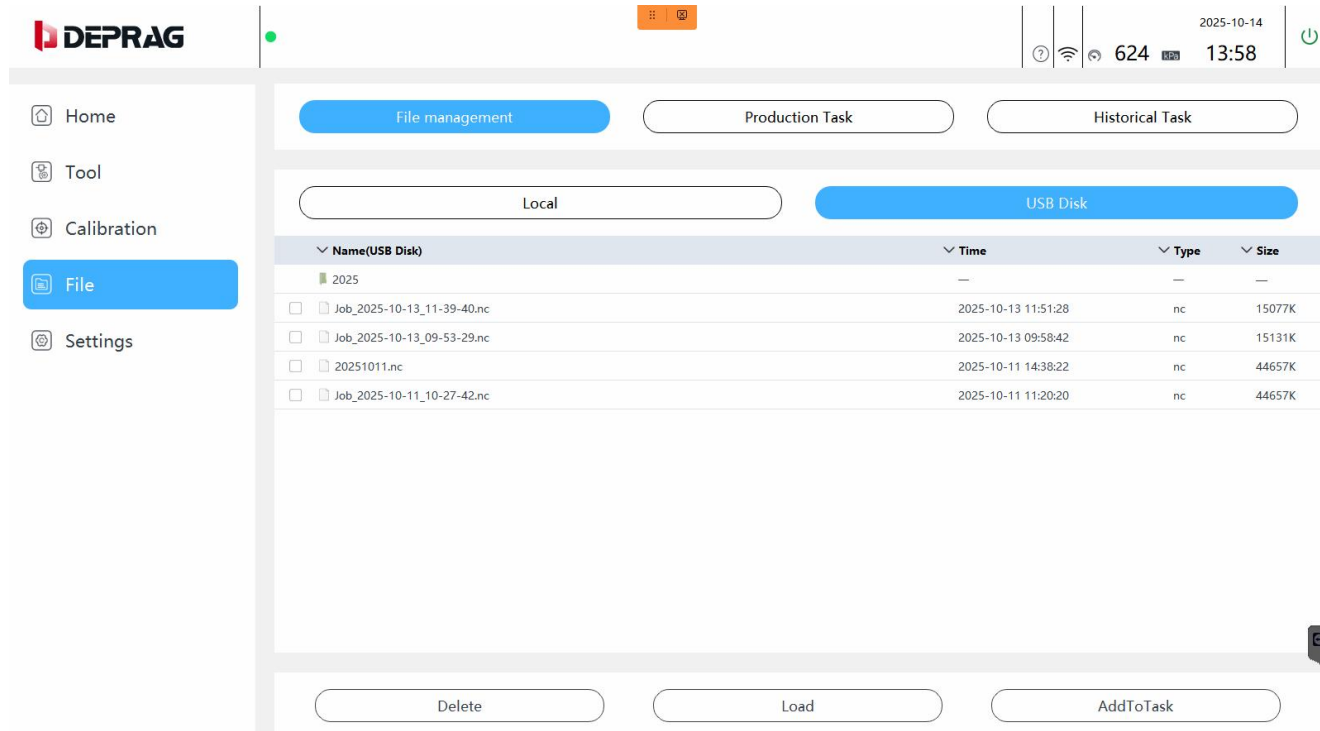
E. Load procedure

To import the programme using a USB stick, insert the stick into the machine's USB

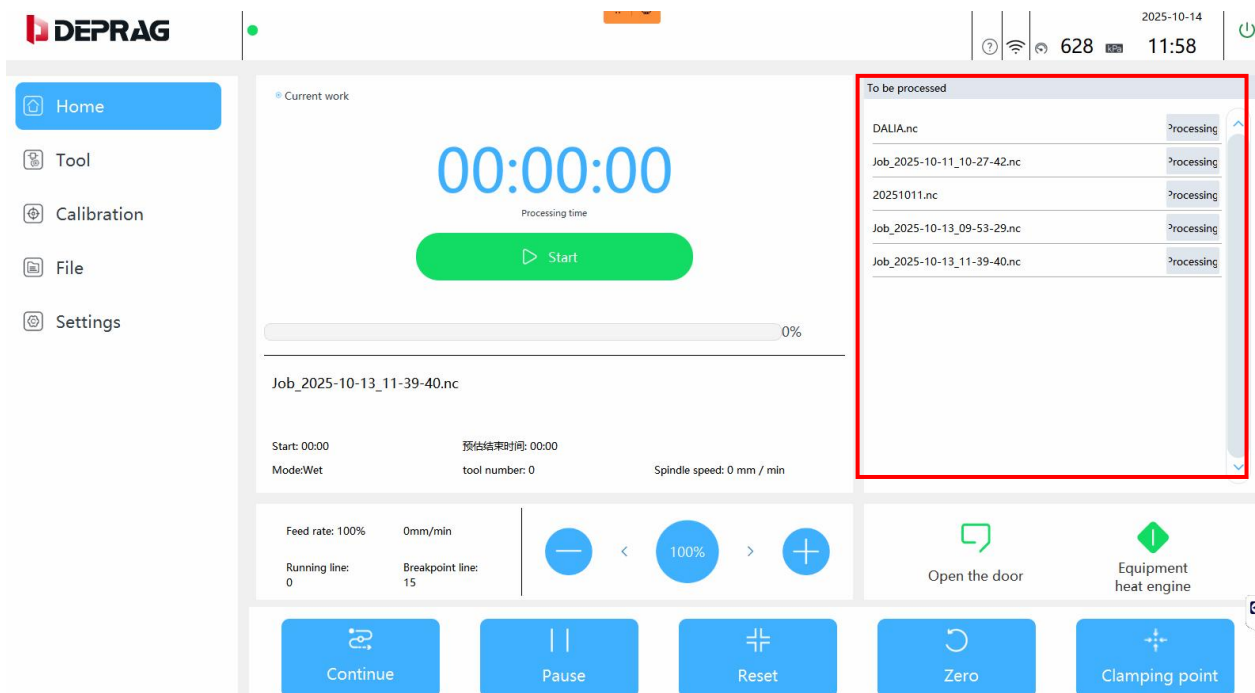


port.

Click on the file-U disk interface, tick the file to be processed, if you want to process only one program, tick one, and then click on the load to complete the import of the program.

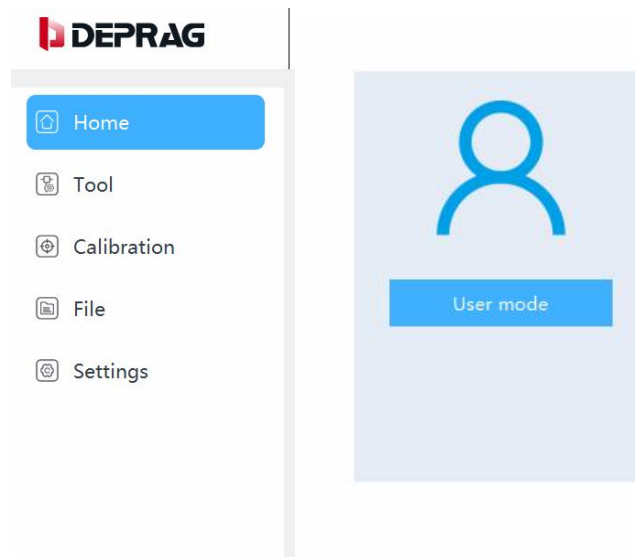


If you have more than one programme to be processed, you can tick more than one, click Add to list, and the programmes to be processed will be arranged in the pending programmes on the home screen. Then select the programme to be machined in the pending programmes and click Machining.

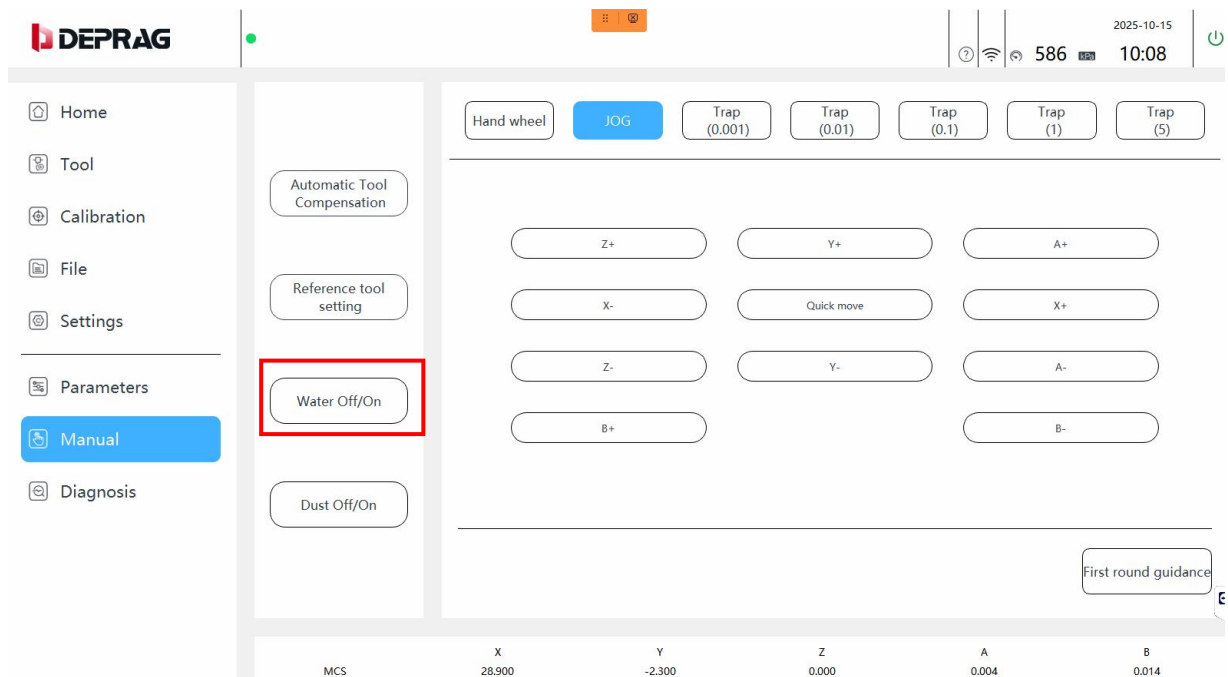


F. Adjusting the water spray position

Click on the Deprag logo, click on User Mode, enter the password 333 and log in.



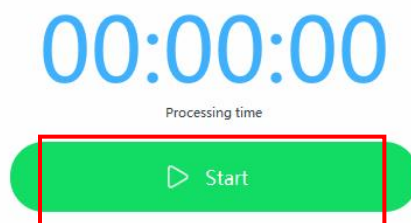
Click on the manual operation interface, then click on the water pump on, adjust the position of the water outlet, so that the water jet is aimed at the bur





G. Start processing

Click Start on the home page interface to start automatic processing.



3.8 Disposal of broken burs

When there is a broken tool during machining, as follows



First, click back to the fixed point on the home screen, and the Z-axis will be raised automatically. Then tool removal is possible.



Home

Tool

Calibration

File

Settings

Current work

00:00:00

Processing time

Start

0%

Job_2025-10-13_11-39-40.nc

Start: 00:00 Estimated end time: 00:00

Mode:Wet tool number: 0 Spindle speed: 0 mm / min

Feed rate: 100% 0mm/min

Running line: 0 Breakpoint line: 15

-

<

100%

>

+

Open the door

Equipment heat engine

Continue

Pause

Reset

Zero

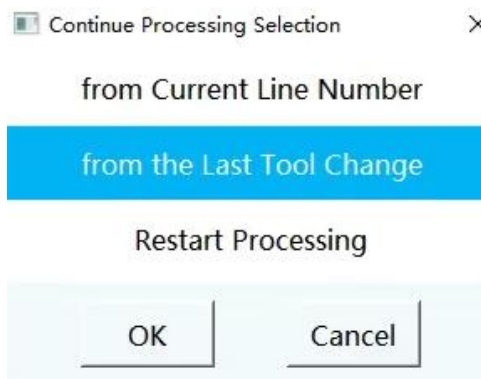
Clamping point

To be processed

DALIA.nc	Processing
Job_2025-10-11_10-27-42.nc	Processing
20251011.nc	Processing
Job_2025-10-13_09-53-29.nc	Processing
Job_2025-10-13_11-39-40.nc	Processing



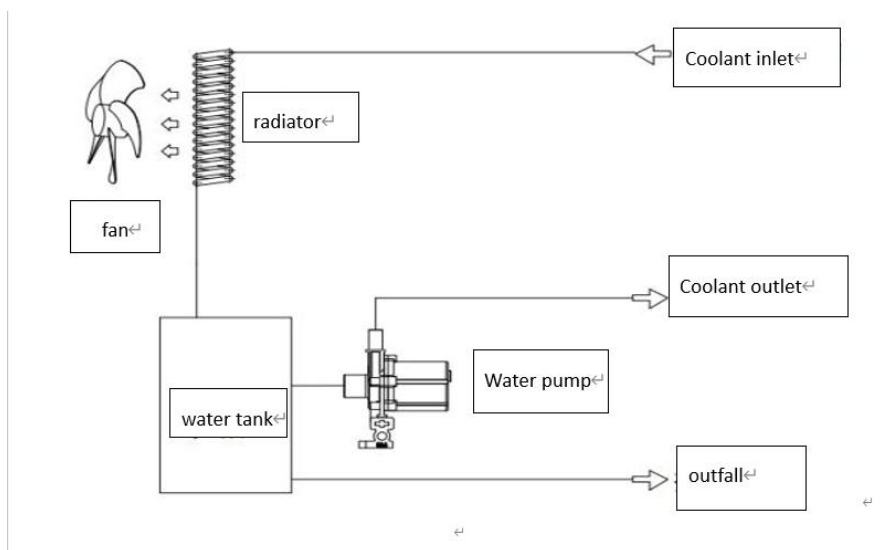
After mounting the new tool on the spindle, click on , Then select Continue from last tool change from the pop-up window and click Yes.



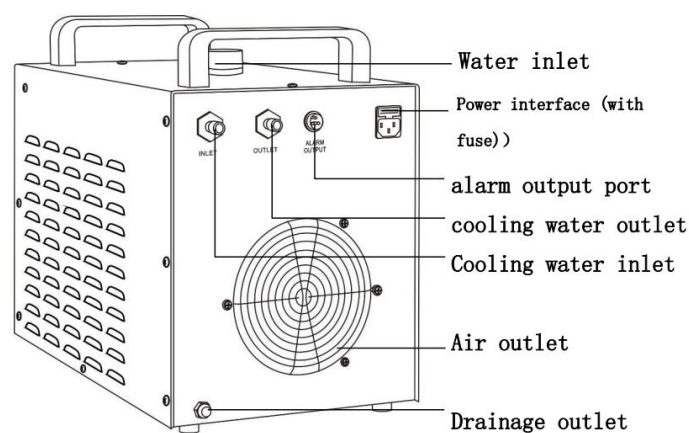
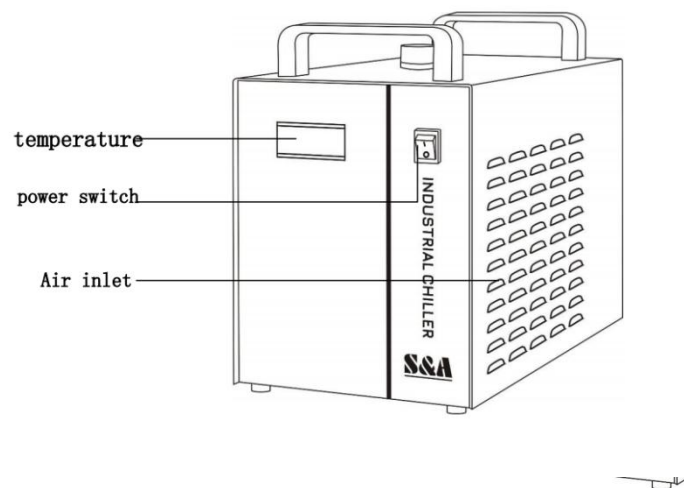
Then wait for the automatic jump and continue processing.

3.9 Water Cooler Instructions

1. CW-3000 series is a professional cooling machine designed and manufactured with reference to the international advanced cooling system, suitable for small water cooling equipment.



2, Appearance and component names



3, Installation

- 1、Open the package and check whether the machine is intact and the accessories are complete.
- 2、Please ensure that the working voltage of the chiller is stable and normal.

Since refrigeration compressors are sensitive to power supply voltage, the normal operating voltage of our company's standard products is 210~240V (100~120V for 110V models). If a wider operating voltage range is required, it needs to be customized separately.

3、Equipment installation conditions and requirements.

- (1) Must be installed horizontally, not tilted.
- (2) The air outlet of the chiller should be at least 1.5m away from obstacles, and the air inlet should be at least 1m away from obstacles (as shown in the figure below).
- (3) It must not be installed in harsh environments such as those with corrosive gases, flammable gases, dust, oil mist, conductive dust, high temperature and humidity, strong magnetic fields, direct sunlight, etc.
- (4) Environmental requirements

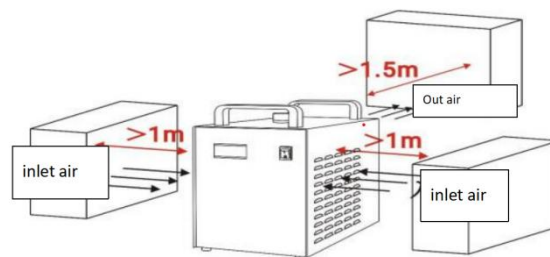
Ambient temperature	Ambient humidity	Altitude
---------------------	------------------	----------

0~45℃	≤90%RH	≤3000m
-------	--------	--------

(5) Media Requirements

Cooling medium allowed to use the chiller: pure water, distilled water, high purity water and other softened water. Prohibit the use of oily liquids, liquids containing solid particles, corrosive liquids and so on. Clean the filter element and replace the cooling water regularly (about three months is recommended) to ensure the normal operation of the chiller.

When the ambient temperature is lower than 2℃ and stored with water, it is necessary to add antifreeze to the water tank of the chiller, and it is recommended to add antifreeze containing ethylene glycol and propylene glycol with a concentration of not more than 30%. After the temperature warms up, replace pure water, distilled water and other media, let the chiller run for 30 minutes to remove the residual antifreeze, and then add new circulating water for use after emptying.



4、According to the equipment import and export signs to determine the piping layout direction, to ensure that the water pipeline is clean and free of impurities, in order to avoid impurities into the water line leading to clogging or pump failure.

5、Plug in the power cord and turn on the power switch (no water is allowed).

(1) After turning on the power switch, the chiller circulating pump will start to work. The first time a new machine is switched on there will be more air bubbles in the pipeline resulting in occasional flow alarms, which will return to normal after a few minutes of operation.

(2) Immediately after the first switch-on, the plumbing lines must be checked for leaks.

(3) After switching on the power, if the water temperature is lower than the set temperature, the fan and other devices do not work is a normal phenomenon. The thermostat will automatically control the compressor, solenoid valve, fan and other devices according to the set control parameters.

6、Electrical Connections.

(1) When wiring, please follow the maximum rated current on the chiller label.

(2) Recommended reference standards for power cord diameter selection.

rated current / A	≤5	≤10	≤15	≤25	≤35	≤50
Power cord diameter	1.0	1.5	2.5	4.0	6.0	10.0

(copper) / mm ²						
----------------------------	--	--	--	--	--	--

Note: This data is provided in accordance with IEC 60204-1 and is for reference only. Standard cables must be used for power cords.

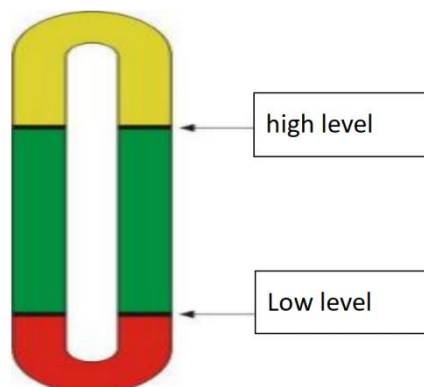
(3) The main circuit of the power supply must be installed with suitable leakage and overload protection devices, and ensure that the chiller is well grounded.

(4) The permissible fluctuation of power supply voltage is less than $\pm 10\%$, frequency fluctuation is less than $\pm 1\text{Hz}$, and it is far away from the source of electromagnetic interference.

7、Add water to vent.

(1) Add water

After the new chiller is switched on and the air in the water pipe is emptied, the water level of the water tank will drop slightly, in order to keep the water level in the green area, you can add water again in the right amount. Observe and make a note of the current water level, and then observe the water level meter again after the chiller has been running for some time. If the water level drops significantly, check the water pipes again for any leakage.



(2) Vent

After the first filling and replacement of new water, exhaust the air in the pump before starting to use, otherwise the equipment will be damaged. The air venting method is as follows:

Method 1: Turn off the machine, add water, remove the outlet connection hose, drain for 2 minutes, and then install it firmly.

Method 2: Open the water filling port, after switching on the machine (water flow), repeatedly fold the water pipe a few times, you can exhaust the air inside the pipeline.

8、Pre-test check.

(1) Check that the pipework is connected correctly and that there is no bubbling or leaking;

(2) Check that the drain is closed;

(3) Check the water tank level;

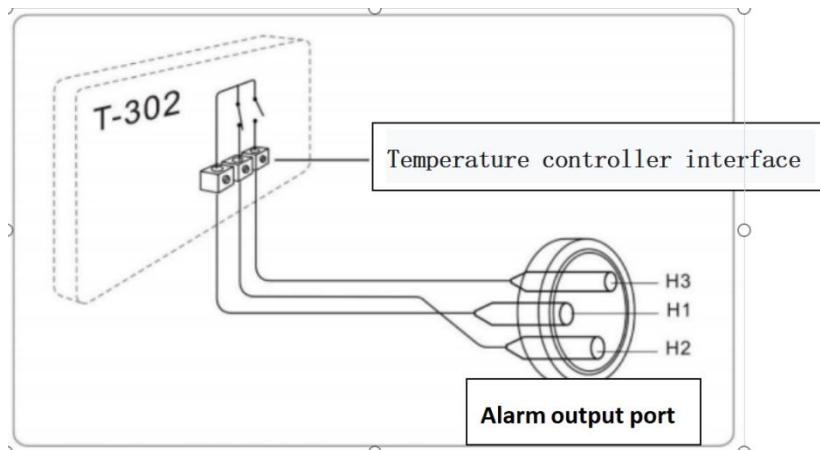
(4) Verify that the unit's electrical wiring is properly connected;

(5) Verify that the equipment is grounded

9、Alarm and Output Ports

In order to ensure that the safety of the equipment is not affected in the event of abnormalities in the cooling water circulation, the chiller is equipped with an alarm protection function.

1、Alarm output port and wiring diagram



Note: The alarm output port is connected to a set of normally open and normally closed contacts of the relay in the machine. The working current is less than 3A and the working voltage is less than 300V.

2、Alarm display

E0	E1	HH	LL
Flow Alarm Input	Water temperature is too high	Shorted water temperature probe	Water temperature probe open circuit

3、Table of alarm causes and operating status

System Indication Operating status	Beeper	Output port H1、H2	Output port H1、H3
The system is working fine.	not give voice	circuit breaker	conduction
Cooling water temperature over 60 degrees	give voice	conduction	circuit breaker
Flow Alarms	give voice	conduction	circuit breaker
Circuit failure		conduction	circuit breaker
Power supply interruption		conduction	circuit breaker

Note: The alarm output port is connected to a set of normally open and normally closed contacts of the relay in the machine. The working current is less than 3A and the

working voltage is less than 300V.

fault phenomenon	Reason for failure	Treatment
No power on	The power cord is not plugged in.	Plug the power cord into place.
	Fuse fuse	Replace the power supply at the back of the machine Fuse in connector
Flow alarm, direct hose connection to outlet, inlet, no water flow	Water level in storage tank too low	Fill with water and check for line leaks
When connected to the equipment, the flow rate alarm, but with a water pipe directly connected to the outlet and inlet, the water flow does not alarm. water inlet and outlet directly connected with a water pipe, the flow does not alarm.	Clogged circulating water lines	Check circulating water lines
Water temperature is too high	Poorly ventilated chiller	Improved ventilation
	Excessive heat load	Reduce the heat load or choose another model
Fan does not turn on after switching on the computer	Water temperature below 20 degrees	Normal, no treatment required.
Alarm on switching on after adding or changing water	Water in the circuit	Dry naturally or open the lid and blow dry
	Pump dry rotation damage	Replacement or repair of water pumps, strictly prohibit the start-up of no water
Slow drainage from outfalls	The water filler is not open.	Open the water filler

3.10 Vacuum Cleaner Instruction Manual



Product Parameters

Model	V9
Voltage	220 V
Electric current	0.7A
Power	150 W
Weight	15 Kg
Size	295*395*420mm
Max Pressure	2.8 kPa (Ø39mm)
Max flow	190 m ³ /h (Ø39mm)
Noise	≤ 63 dB

Human-Machine Interface

There are 4 system buttons, 1 status indicator light and 1 power level indicator light on the control panel. As shown below:



The button is a function switching button for starting and stopping operation (in external signal online mode, this button function is invalid).



The button is for reducing wind speed.



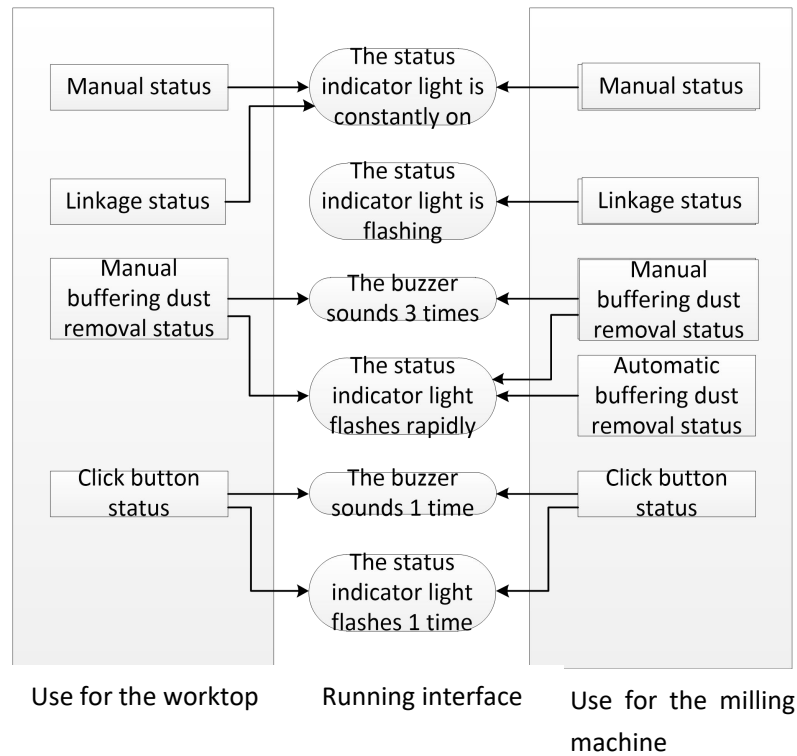
The button is for reducing wind speed.



The button is for the backwash dust removal function.

The power level indicator light consists of 4 LEDs, which are used to display the operating power of the four levels.

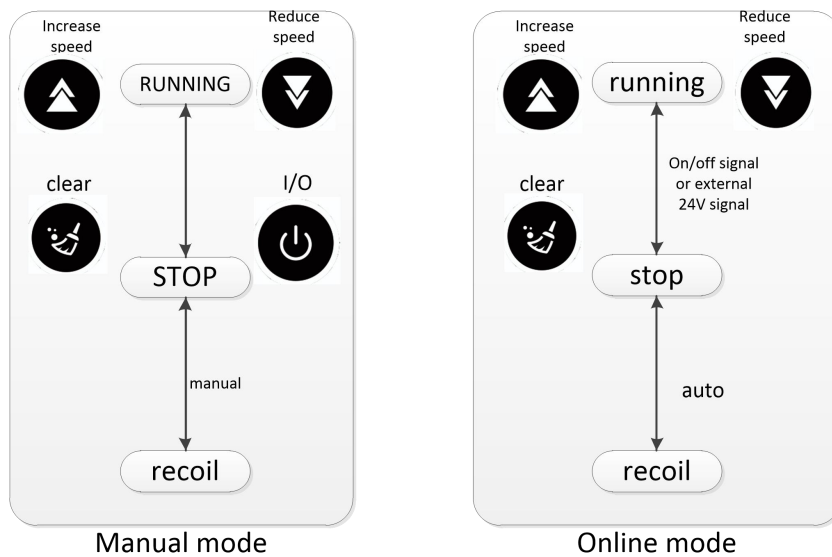
The human-machine interface for single station mode and Milling machine is shown in the following figure.



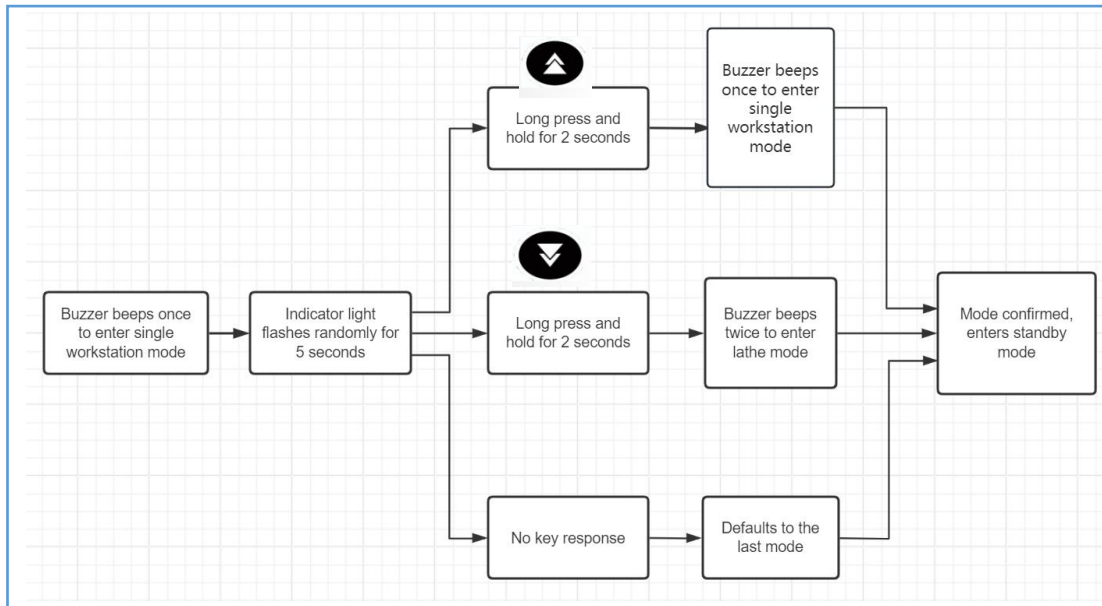
When the device is running, the status indicator light remains on in manual mode; When a button is triggered, the status indicator light flashes once. In online mode, the status indicator light keeps flashing. When backwashing for dust removal, the status indicator light flashes rapidly.

The wind speed gear indicator light is composed of four LEDs, which are used to display the operating power of the four gears.

After startup, the system executes the running gear before shutdown. The following diagram shows the workflow of manual mode and online mode:



The figure below shows how to switch between single-station mode and lathe mode:



Equipment interface



(1) Control panel (2) Aviation socket (3) Power cord socket

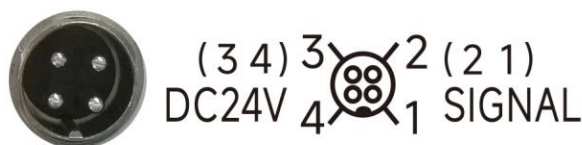
(4) Buckle (5) Roller (6) Air hose connector

The main control panel of this vacuum cleaner is shown in the figure. It has a main control panel. The above diagrams show the external interface and control interface of the device in sequence.

When the customer wants operate this vacuum cleaner in conjunction with a matching machine, the customer needs connect the vacuum cleaner to the matching machine through the aviation plug, and the vacuum cleaner will operate in conjunction with the matching machine.

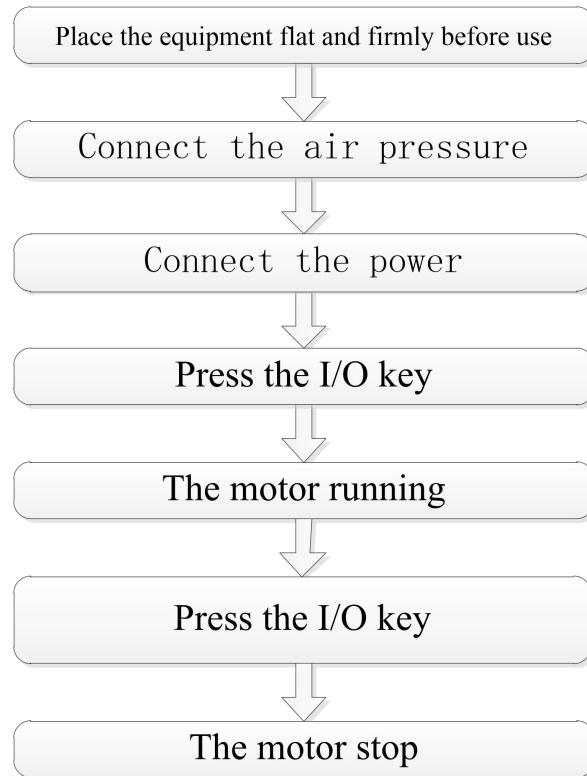
The linkage signal has two modes: on/off signal and DC12V to DC24V level signal. Pins 1 and 2 of the 4-pin aviation socket (in either order) receive the on/off signal to control the device's linkage start and stop. Pins 3 and 4 of the 4-pin aviation plug (in either positive or negative) receive the DC12V to DC24V signal to control the device's linkage start and stop.

Special attention: the silk screen next to the aviation plug.



Note: To ensure optimal vacuuming performance, the side air inlet of the device must be tightly sealed when connected to an external ventilation to prevent air leakage.

Use process



Safety Information

Warning: It is strictly forbidden to dismantle the box of this device or change the circuit of this device without permission!

Frequently Asked Questions

1. Poor dust removal performance

If the filter is not replaced and dust is not cleaned for an extended period while the vacuum cleaner is extracting dust, it can easily become clogged, affecting dust collection performance. Please clean the dust collection box according to usage.

2. Touch button malfunction

① Before powering on, do not touch the buttons. If the problem persists,

② Unplug the power cord, wait 10 seconds, then power on again and restart the control board to resolve the button malfunction.

3. After manual dust removal, the status indicator will flash rapidly. It will take 7 seconds to trigger the next dust removal cycle.

4. When the device is first powered on, the power level indicator and status indicator will flash randomly. The flashing will stop after the device completes the self-test. This condition does not affect the device's functionality.

Dust Removal Instructions

This vacuum cleaner uses compressed air to backflush the filter element and automatically removes dust. Please clean the dust regularly during use. The dust box at the bottom of the device should be cleaned regularly based on actual usage.

Note: Due to different user usage, the cleaning requirements cannot be uniformly stipulated. Please formulate a maintenance plan for the vacuum cleaner according to the operating frequency of the equipment. To avoid long-term use causing filter clogging and motor damage!

The maximum service life of each filter element is 9 months.

Tips: Please use a dry and clean external air source.

Parameter Description

The filter element of this equipment uses polyester long fiber hot-rolled non-woven fabric with a specification of $\varnothing 200*155\text{mm}$. The rated air volume is $80\text{m}^3/\text{h}$ and it can effectively filter dust larger than $5\text{ }\mu\text{m}$. The filtration efficiency reaches 99.9%.