

Dental Zirconia Sintering Furnace
Operation Manual

catalogue

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Chapter 1 Overview

This series of sintering furnaces adopts an ergonomic appearance design with a novel shape and rational structural layout, which fully takes into account the operating habits and convenience of operators. Standardized production is realized by means of modern machinery manufacturing and processing equipment. Every production procedure is subject to strict quality control, ensuring the product's exquisite craftsmanship and outstanding quality. Its high-temperature furnace chamber is elaborately made of imported lightweight alumina fiber materials, which feature excellent thermal insulation performance to effectively reduce heat loss. Meanwhile, the materials are eco-friendly and pollution-free, complying with the requirements of green production. The furnace is equipped with a 7-inch high-definition true-color LCD touch control interface, which displays graphics and texts clearly and intuitively. All functions are easy to operate and accessible, enabling even first-time users to master the operation quickly. It adopts high-precision PID intelligent temperature control technology, which ensures high temperature control accuracy and stable and reliable equipment operation. This technology can guarantee precise temperature control during the sintering process, thereby securing the sintering quality of dental zirconia products.

Chapter 2 Complete equipment diagram











Chapter 3 Technical specifications

The technical parameters of the device are as follows:

specifications	parameter
temperature control accuracy	$\pm 1^{\circ}\text{C}$
Touch screen size	7-inch HD true color
power rating	$\leq 2\text{KW}$
Number of programs	20 items
Number and model of heating rods	4 pieces of 1850-type high-purity silicon-molybdenum rods
Sensor type	B/R-type biphthalide rhodium
maximum temperature	1600°C
end-use temperature	$\leq 1550^{\circ}\text{C}$
heating rate	0 to 30 degrees per minute (0 ~500°)
	0 to 20 degrees per minute (500~1200°)
	0 to 12 degrees per minute (1200~1530°)
furnace size	$\Phi 110\text{mm} * 130\text{mm}$
outline dimension	360mm long, 580mm wide, 760mm high
weight of equipment	53KG

Chapter 4 Packaging Configuration List

The following is the device packing configuration list, as shown in the table:

order number	name	quantity	unit	reference drawing
1	zirconia sintering furnace	1	tower	
2	zirconia slow-burn crucible	2	individual	
3	specialized quick-burning crucible	1	individual	
4	crucible tongs	2	One each	
5	sintered bead	1	Bao	
6	coil base	1	cover	
7	High-temperature furnace cover 1	1	individual	
8	High-temperature furnace cover 2 High-temperature furnace cover 3	2	One each	

Chapter 5 Equipment installation

5.1 Installation instructions

1、Unboxing inspection: After opening the wooden packaging box, first inspect whether the appearance and internal structure of the equipment are intact without dents or damage. Then, compare with the list of accompanying accessories to verify the completeness of quantity and variety.

2、Equipment placement: Position the furnace body on a flat platform in a dry, well-ventilated indoor area free from high dust levels. Maintain a distance of at least 25 cm between the furnace body and surrounding objects to ensure adequate ventilation and heat dissipation during operation, thereby preventing performance degradation due to poor heat dissipation.

3、Environmental impact: The device emits heat during operation. Although the heat output meets safety standards, prolonged close contact may cause discoloration of surrounding equipment casings due to thermal radiation. Please verify the heat resistance of adjacent equipment in advance and plan placement accordingly.

4、Safety Contraindications: Flammable and explosive materials are strictly prohibited from being stored around the furnace to prevent safety accidents caused by equipment heat dissipation or unexpected situations.

5.2 Precautions for Power Cord Installation and Use

1、Power Supply Compatibility: Before connecting the power cord to the device, carefully inspect the power supply markings to ensure the voltage matches the equipment's requirements. In China, the standard power supply is 220V/50Hz. Do not connect to non-compliant voltages to avoid damaging the control system. When the device is not in use, promptly turn off the power.

2、Socket requirements: This equipment is a 2KW high-power device that requires connection to a qualified dedicated socket. Additionally, the power supply cable of the socket

must meet the national standard of 2.5 square millimeters or larger to ensure stable and safe power supply, preventing issues such as line overheating caused by insufficient cable specifications.

Chapter 6 Equipment operation

6.1 Power on

In front of the device, there is a main power switch on the right side of the machine screen. Push it up to turn on the device.

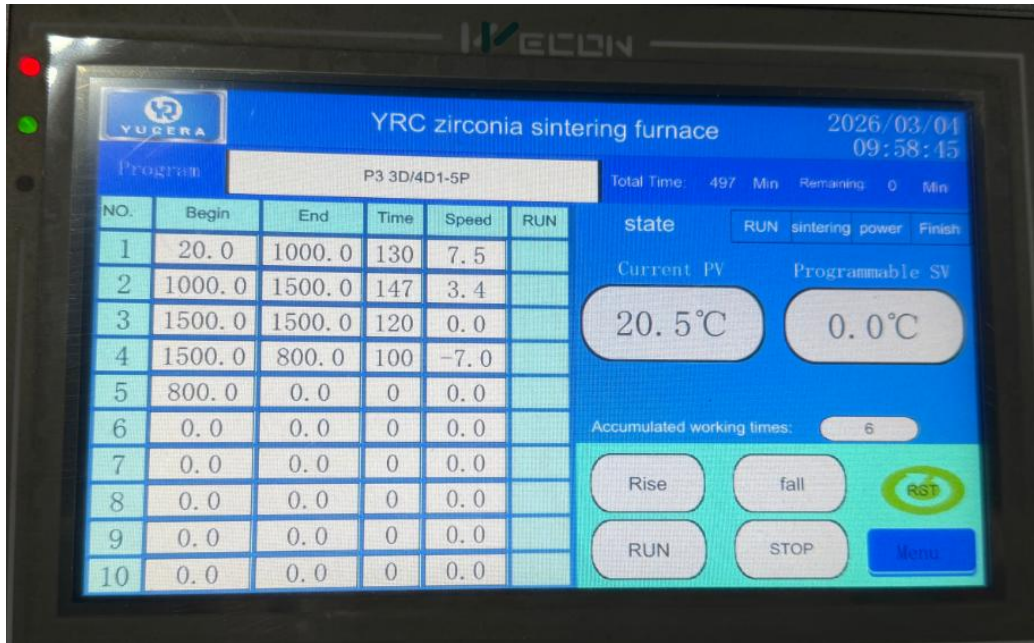
6.2 System interface operation

6.2.1 Boot screen interface

Turn on the main power switch. After a few seconds, the signal light will illuminate. Tap the LOGO on the startup screen to log in and access the system.



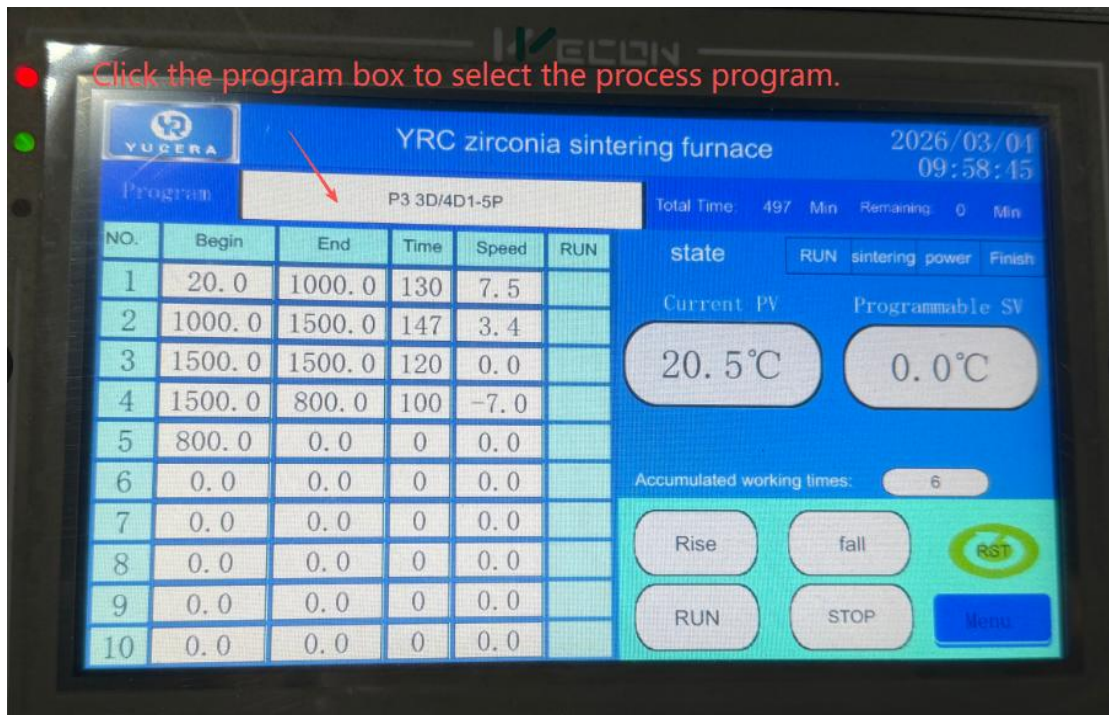
oot screen



Main display interface

6.2.2 Routine operational steps

- 1、 Select the program curve and confirm it



- The P1-P16 of the machine is slow burning curve.
- P17-20 is a preset fast-burning curve. Always use a dedicated fast-burning crucible.

- Four fast-burn reference curves are pre-configured for customers to choose from.
 - The fast burning process may cause a brief temperature difference alarm due to the short time required to transition from room temperature to high temperature, which is a normal phenomenon.
- 2、 Check whether the crucible is centered on the furnace platform.



3、 Run

After completing the preparations, select the process program and click the "Run" button to initiate the sintering operation. During sintering, if you need to stop the equipment or perform other operations, you must first execute the stop operation. If you need to lower the furnace platform, be sure to check the current temperature to avoid burns.



6.2.3 Program settings page

1、Set page introduction



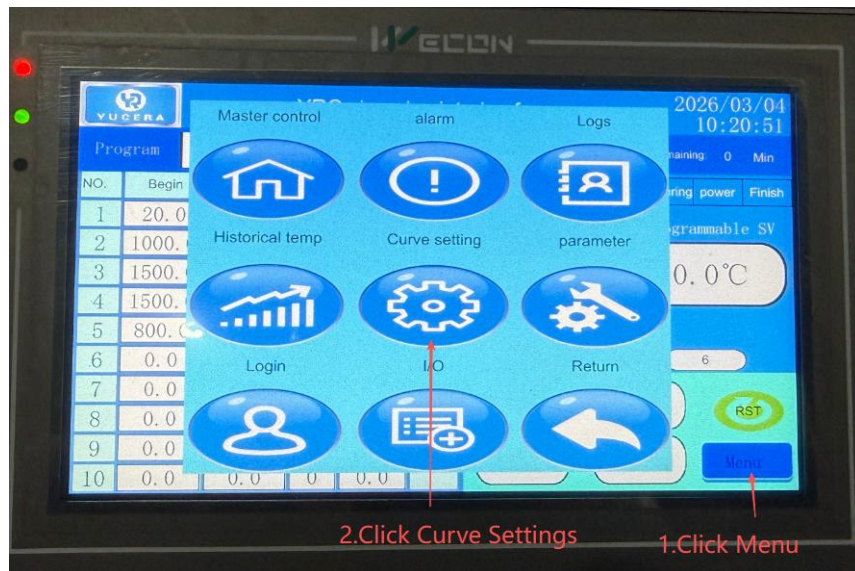
- Process program selection: Users can choose the process program to modify or input data.
- Program naming: Users can name the program based on process characteristics or custom input for easy search and selection.
- Temperature curve settings: Enter the target temperature and time to complete the

settings.

- Pre-drying function: When ambient humidity is high, this feature is recommended to evaporate moisture from the furnace air before the furnace rises.
- Furnace platform descent setting: The furnace platform descends in segments according to preset temperature and time for rapid cooling. If this function is not enabled, the furnace platform will descend by default at 100°C.

2、 Program curve setup steps

1. Click the Menu button to open the second page.
2. Select the Curve Settings button to configure.



3、 Modify curve manually



Chapter 7 Product highlights

7.1 Product description

The Zirconia Sintering Furnace has been newly launched, featuring an insulated furnace chamber constructed with imported raw materials and equipped with high-specification 1850-type silicon-molybdenum rods to ensure superior sintering quality for each dental crown. The maximum operating power of the equipment is only 2 kW, with a single sintering process (approximately 15 crowns) taking as little as 90 minutes and consuming about 2.3 kWh of electricity. To address the requirements of traditional slow sintering, a 100mm diameter crucible is stacked in two layers, requiring only 8.5 kWh of electricity to complete a 10-hour slow sintering process.

This versatile equipment combines rapid and slow sintering capabilities, ideal for both factory-scale production and on-the-spot processing. With energy-efficient performance and a one-year warranty, it stands as your go-to solution for business growth.

7.2 Core advantage

1、Function integration for cost reduction and efficiency improvement: The device combines fast and slow firing functions, eliminating the need for separate purchases and significantly lowering factory equipment procurement costs.

2、Rapid sintering for increased production capacity: The fastest sintering time for single crowns on front teeth is 90 minutes, with delivery and polishing completed within 2 hours; under normal working conditions, sintering is completed in 5-7 hours, resulting in transparent crown coloration with minimal deformation. Immediate nighttime sintering can be initiated without affecting the next day's polishing process, significantly enhancing factory production efficiency.

3、Extensive program library with intuitive operation: The device features 20 integrated sintering programs, including 8 manufacturer-provided preset temperature curves for direct reference.

4、 High-load operation with stable and reliable performance: For factories with large tooth quantities, the equipment can perform sintering operations three times daily without affecting normal shipments. During the sintering process, the crown color remains accurate and free from contaminants, eliminating the need for additional blank firing operations.

Chapter 8 Precautions

8.1 Operation Notes

1、 When the equipment is first used or left idle for an extended period, perform a blank burn-in procedure as per standard protocols. During the blank burn-in, the furnace temperature must not exceed the rated temperature to prevent damage to heating elements and the furnace lining.

2、 After the process program runs, the equipment will automatically stop.

3、 When the equipment is idle, the lifting platform should be raised to the top position to keep the furnace chamber dry.

8.2 Maintenance and Care Precautions

1、 High-temperature safety precautions: During high-temperature sintering, it is strictly prohibited to open the furnace chamber. This practice not only poses safety risks but may also lead to bending deformation of heating elements and cracking of the furnace chamber due to thermal stress, resulting in equipment damage.

2、 Shut-down temperature requirement: After sintering operation is completed, first confirm whether the furnace temperature is below 300°C. If the furnace temperature exceeds 300°C, power supply must not be cut off, otherwise the cooling fan will stop working, causing the temperature inside the furnace body to rise and potentially damaging the furnace.

3、 Furnace Preconditioning and Cleaning: For equipment during its first use or after prolonged inactivity, perform the following procedure: bake at approximately 120°C for 1 hour, followed by 2 hours at 300°C. This prevents furnace cracking during operation. The temperature must not exceed the rated limit to avoid damaging heating elements or the lining. Direct pouring of liquids or molten metals into the furnace is strictly prohibited. Maintain cleanliness throughout the furnace.

4、 Protection of heating element: The furnace body uses silicon-molybdenum rod as heating element, which is brittle at room temperature. Therefore, after installation, the heating

element must not be disassembled or moved arbitrarily.

5、 Cold furnace temperature control: During cold furnace startup, the initial low temperature of the furnace requires significant heat absorption. Therefore, the heating rate in the low-temperature zone should not be too rapid, and the heating rate differences across temperature zones should not be excessive. When setting the heating rate, the chemical properties of the sintering material must be fully considered to prevent material spraying that could contaminate the furnace.

6、 Electrical system inspection: Regularly check the contact condition of electrical connections in the temperature control system, with special attention to the fastening status of all connection points of heating elements to ensure reliable connections.

7、 Operating limitations of silicon-molybdenum rod: When used as a heating element, silicon-molybdenum rod should not operate for extended periods at temperatures between 400-700 °C, as this may lead to low-temperature oxidation, thereby reducing the element's service life.

8、 Explanation of normal phenomena in silicon-molybdenum rods: During initial operation, surface peeling of the rods is a normal occurrence. The rods feature an anti-oxidation protective layer that forms crystalline flakes during sintering. This phenomenon will resolve naturally after prolonged use.

9、 Operating Environment: This furnace must operate under the following conditions:

- ◆ ambient temperature: -10 to 75°C;
- ◆ Relative humidity: not exceeding 85%;
- ◆ Environmental conditions: No conductive dust, explosive gases, or gases that can severely corrode metals and insulating materials.
- ◆ Installation environment: No obvious tilting, vibration, or bumping

10、 Warranty and Maintenance Services: If users strictly comply with the equipment's storage, usage, installation, and transportation guidelines, the company will provide full-unit warranty coverage (excluding human-induced damage) for equipment malfunction caused by product quality issues within 12 months of shipment. Upon warranty expiration, the company will offer paid lifetime maintenance services based on user requirements.

If you encounter any issues during the use of the device, please contact our company

promptly.