



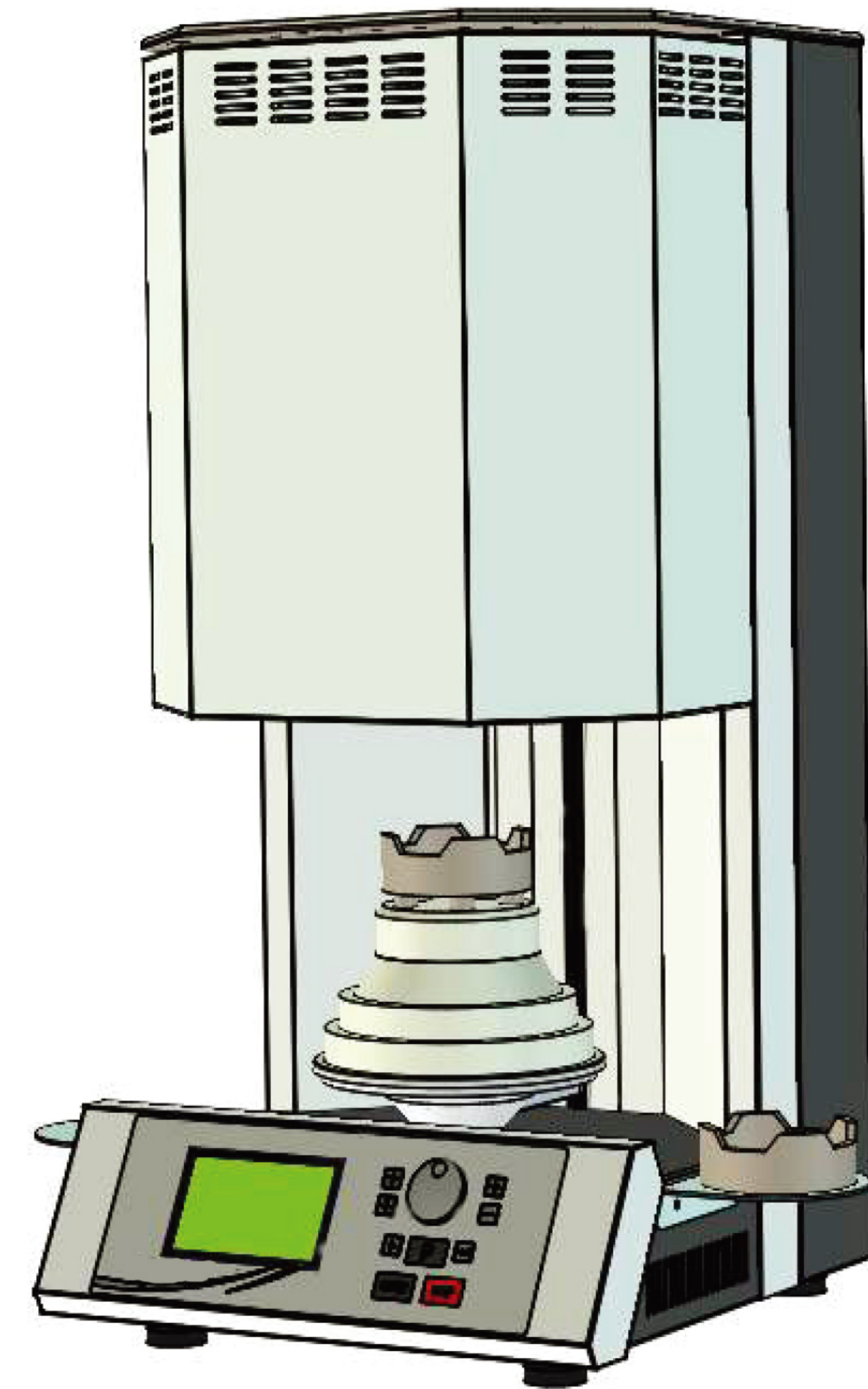
## F20 Operating Instructions



🌐 [www.up3ds.com](http://www.up3ds.com)

✉ [info@up3d.cn](mailto:info@up3d.cn)

☎ +86-755-26983202





## 01.Contraindications

In order to avoid dangerous accidents such as electric shock, burns, fire, etc., please pay much attention to the basic safety measures when using electrical equipment.

1. Read this manual and precautions carefully before enjoying working with furnace.
2. Keep the electrical equipment away from children. Never let children play with the electrical equipment, spare parts and other cables.
3. The furnace must be equipped with a power socket with reliable protective grounding.
4. The furnace is relatively heavy, it is recommended to use it directly on the flat ground or place it on the working surface. The firmness and stability of the working surface must be considered.
5. Pay attention to the influencing factors of the indicated environment, good ventilation should be maintained around the furnace because of the high working temperature.

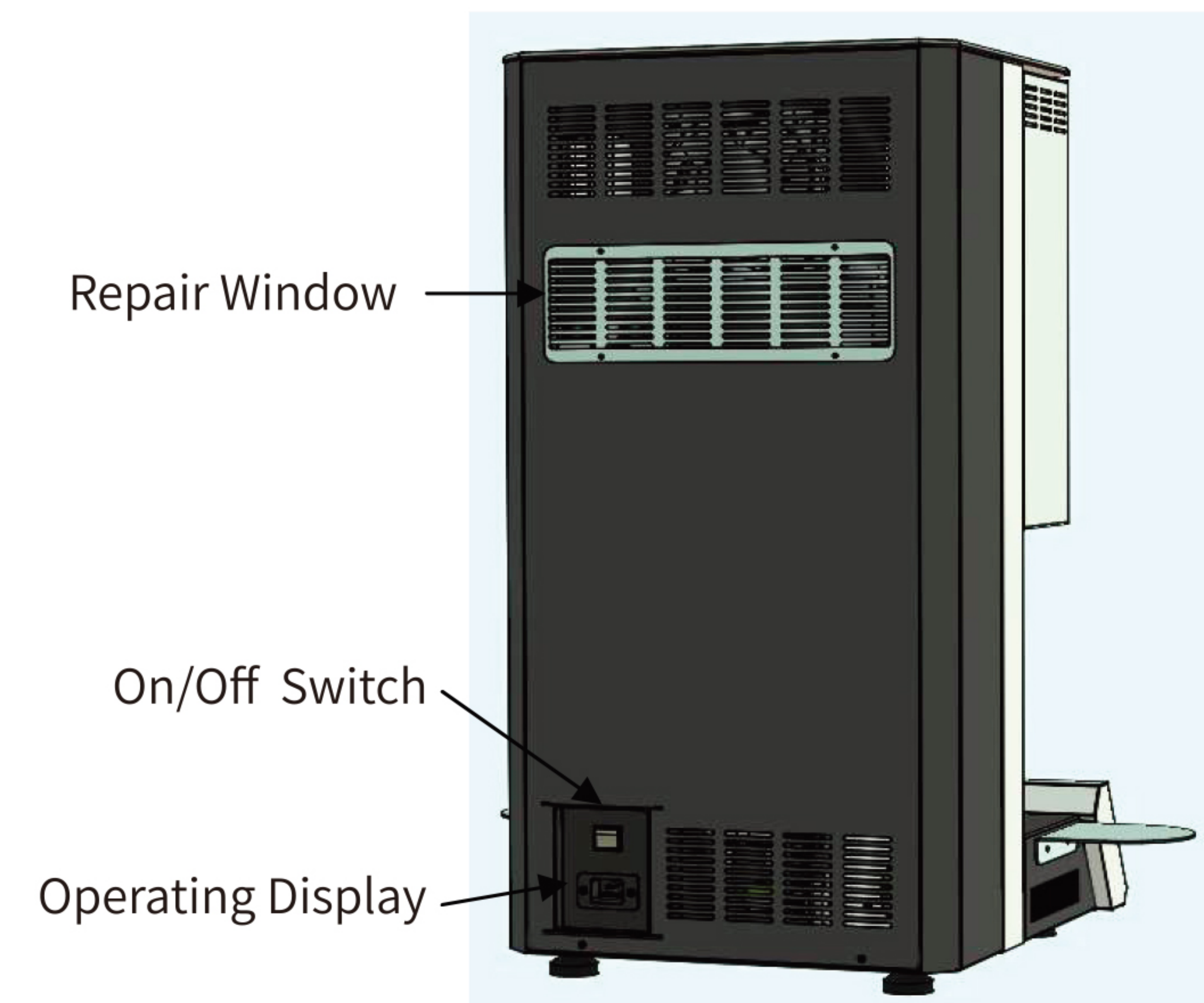
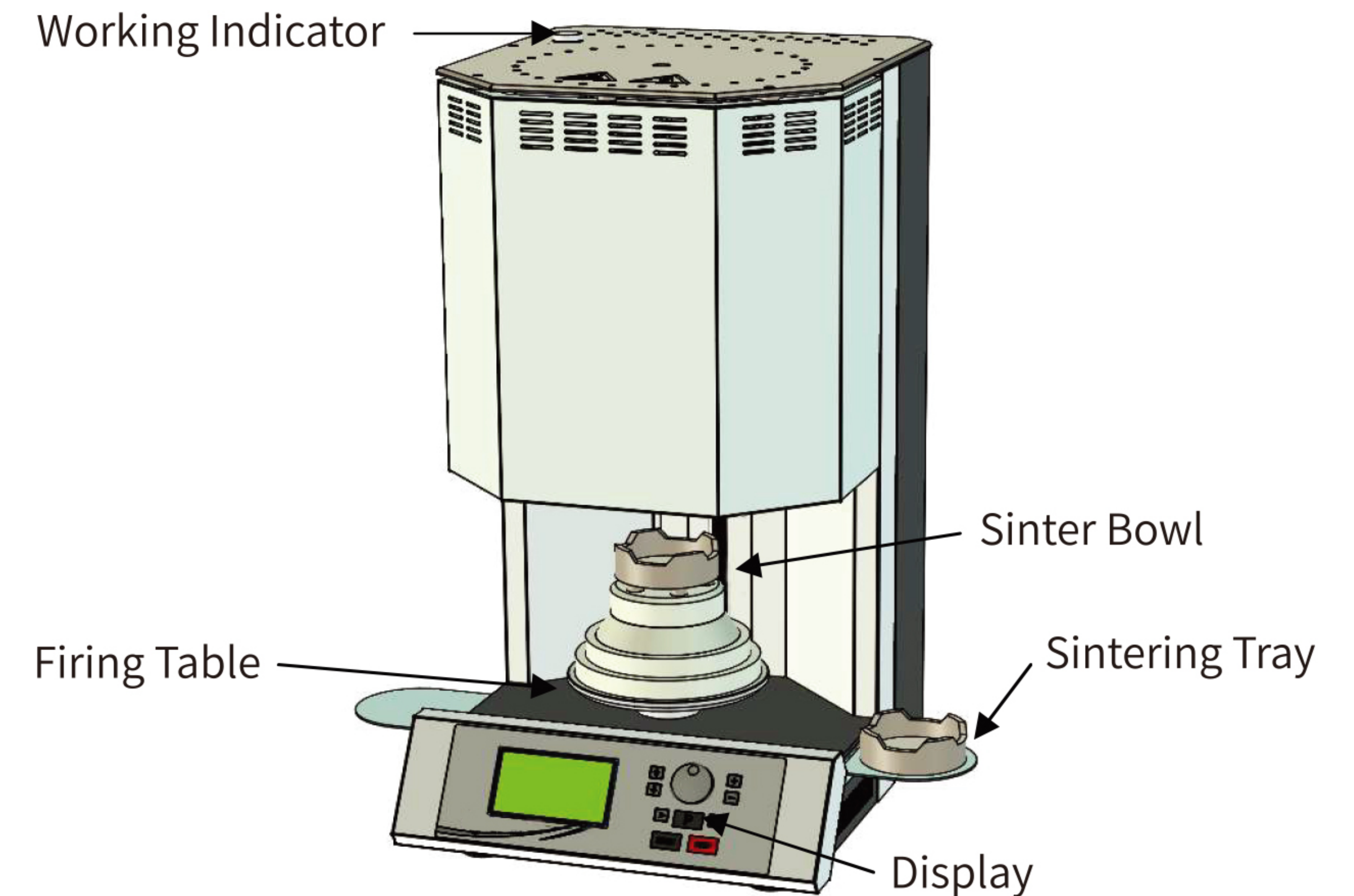
Do not work in a humid environment to avoid accidents caused by abnormal environments.

6. Never allow any liquid to enter into the inside of the furnace.
7. Do not touch the upper casing working in a high temperature state. Keep it away from other instruments or equipment which are sensitive to high temperatures.
8. There must be no objects placed on the top of the furnace.
9. The F20 furnace must be properly maintained.
  - All the components must be installed correctly, and proper operating conditions can ensure the normal and trouble-free use of the equipment.
  - Before using the furnace, be sure to carefully check whether the protection function can operate normally to ensure the normal and trouble-free use of the equipment.
  - If the equipment or the accessories are damaged, be sure to notify our company to repair or replace parts before using.

10. Do not drag the equipment with cables. The cable should be kept away from heat source, oil and other sharp objects to avoid damage to the cable.

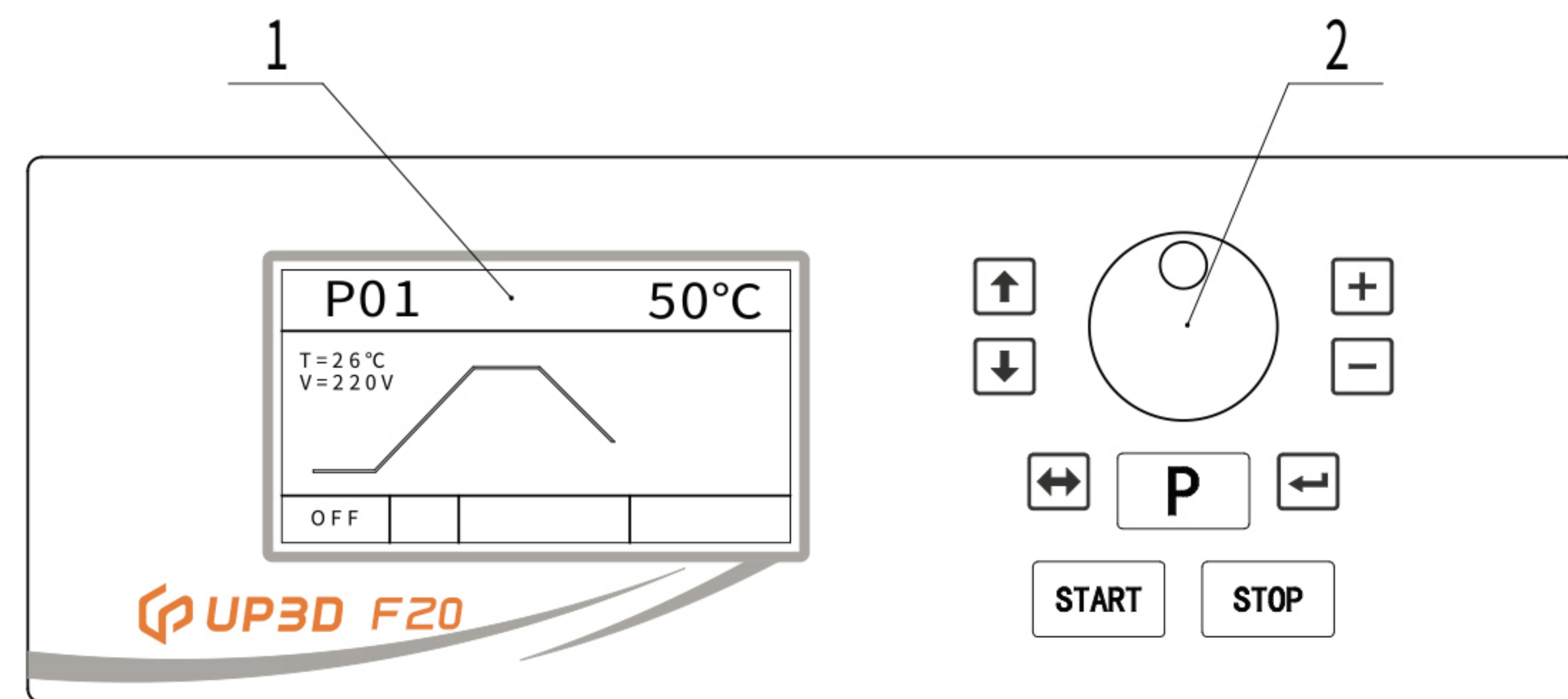
11. Before cleaning and maintaining the furnace accessories, the power supply must be completely cut off.

## 02.Lists of Parts





### 03. Operating Display Introductions



Turn on the power switch to display the standby screen

1. LCD display: Indicate all working information, setting information, etc.

2. Button control area: one knob, nine buttons and the function description of each button

**Knob:** Turn on the cursor clockwise in the editing interface to increase the value of the indicated position; rotate the cursor counterclockwise to decrease the value of the indicated position, then the value changes cyclically. Press the knob to move the cursor down.

**+ Button:** Press this button on the standby interface to increase the work number of P; press this button on the editing interface to increase the value before the cursor, and each time you press it increases a value to locate, and the value changes cyclically.

**—Button:** Press this button in the standby interface to reduce the work number of P; in the editing interface, press this button to reduce the value before the cursor. Each time you press it, the value will decrease by one value, and the value will be changed cyclically.

**↑ Button:** Press this button in the locked screen to raise the sintering tray, and simultaneously press this key to stop when the tray is lifting; when the furnace temperature is 500~800°C, the tray rises step by step, and the button will be invalid when the temperature is higher than 800°C. In the editing interface, press this key to move the cursor upwards and change cyclical status.

**↓ Button:** Press this button in the lock screen to lower the sintering tray, and press this button to stop when the tray is running. When the furnace temperature is 500~800°C, the tray drops step by step, and the button is invalid if it is higher than 800°C. In the editing interface, press this button to move the cursor down and change in a loop.

**P button:** In the standby interface, press this button to enter the editing interface, and press this button to quit the editing interface without saving the editing data.

**↔ :** Press this button in the editing interface to move the cursor left and right.

**← :** Press this button in the editing interface to save the edited data and return to the standby interface.

**START button:** Press this button in the standby interface to start the sintering furnace, and processing according to the displayed P work sequence number.

**STOP button:** Press this key when the sintering furnace is working, and the sintering furnace will stop working and return to the locked screen.

### 04. User Instructions

#### 1. Preparation before using the furnace

Before unpacking the new machine, firstly check whether the outer packing box is intact. If the packing box is damaged or collapsed, it should be reported to the transportation and seller in time, and check whether the furnace is in good condition with the seller. If there is any problem, solve it in time.

Place the furnace on a firm and stable workbench.

There should be enough space around the furnace, and items that are not resistant to high temperatures should be kept away from the furnace.

The furnace must be equipped with a stabilized power supply above 5.0KVA to meet the power consumption of the furnace.

To ensure safety, please use a power supply with a reliable ground wire.

Connect the power cord. The power cord connection location is at the back of the machine.

Open the accessory box and take out the accessories in the box for backup.

Turn on the power and press the inner ↓ button to lower the sinter tray to the bottom to take out the filling from the furnace chamber.

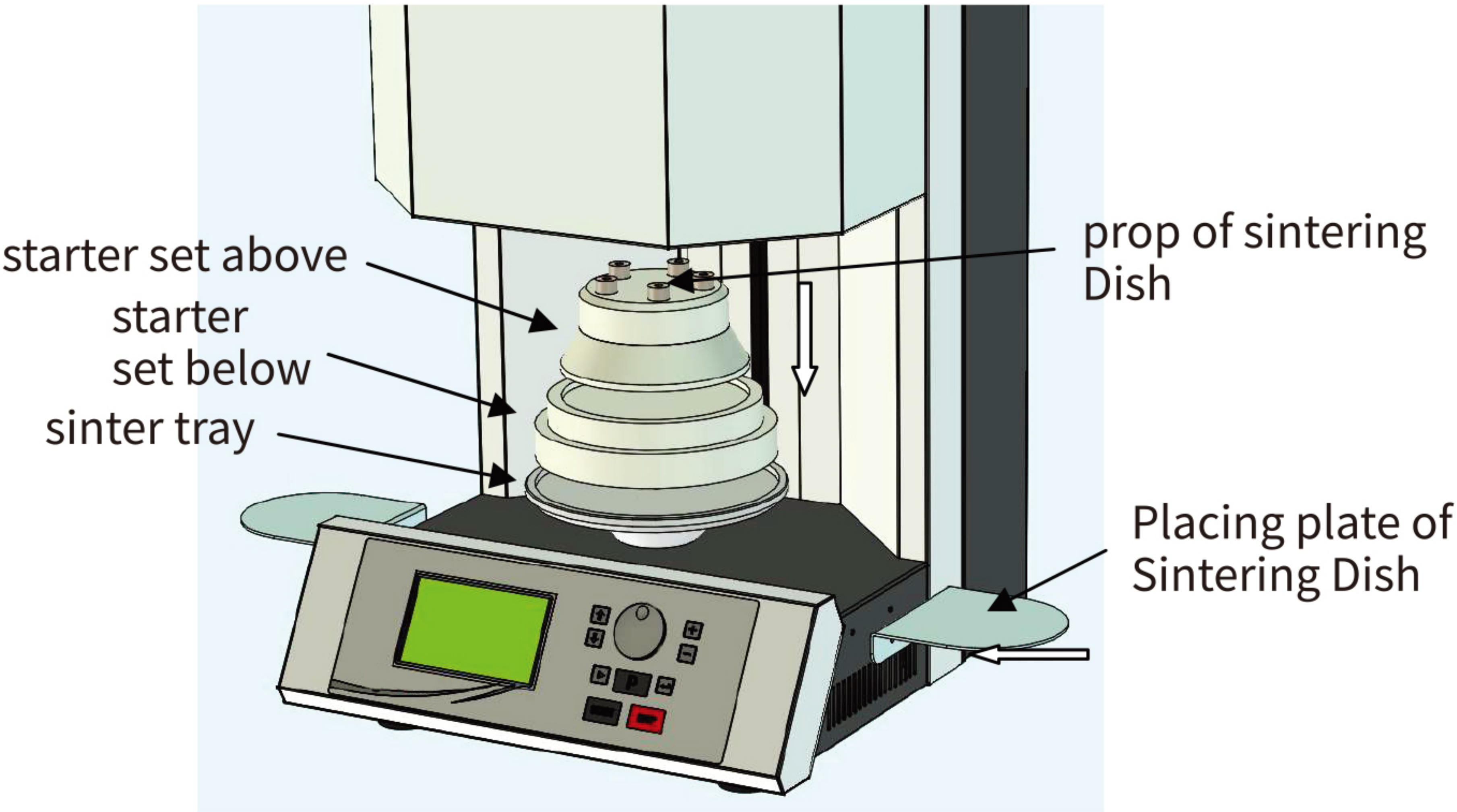
Place the upper and lower firing table on the sinter tray in sequence



as shown in the figure.

After placing the tray, press the ↑ and ↓ buttons to move the tray up and down. Pay attention to check that there should be no friction or contact between the frame plate and the furnace chamber.

You can quickly process on an empty program to dry and clean the furnace.



2. Furnace Setting

(1). Parameters’ sheet of program setting

CODE	IMPLICATION	PARAMETER RANGE	PRECISIONP	UNITS
P	Program curve number	1 ~ 18		
T1	Target Temperature	300 ~ 1550	10	°C
T1	Temperature increas- ing rate	2 ~ 30	1	°C/mins
TH1	Holding time	0 ~ 240	5	Mins
T2	Target Temperature	400 ~ 1550	10	°C
T2	Temperature increas- ing rate	2 ~ 30	1	°C/mins
TH2	Holding time	0 ~ 240	5	Mins
T3	Target Temperature	500 ~ 1550	10	°C
T3	Temperature Increas- ing rate	2 ~ 30	1	°C/mins
TH3	Holding time	0 ~ 240	5	Mins
T4	Target Temperature	600 ~ 1550	10	°C
T4	Temperature Increas- ing rate	2 ~ 30	1	°C/mins
TH4	Holding time	0 ~ 240	5	Mins
T5	Target temperature	1450 ~ 1550	10	°C
T5	Temperature increas- ing rate	2 ~ 30	1	°C/mins
TH5	Holding time	0 ~ 240	5	Mins
T6	Target Temperature	800 ~ 1000	100	°C
T6	Temperature Decreasing rate	6 ~ 10	1	°C/mins

Note: When the target temperature T is set to (-) closed, it means that the program is closed, and the t and TH values of this section are no longer displayed;

If the target temperature of the previous section is closed, the target temperature of the subsequent sections must all be closed.



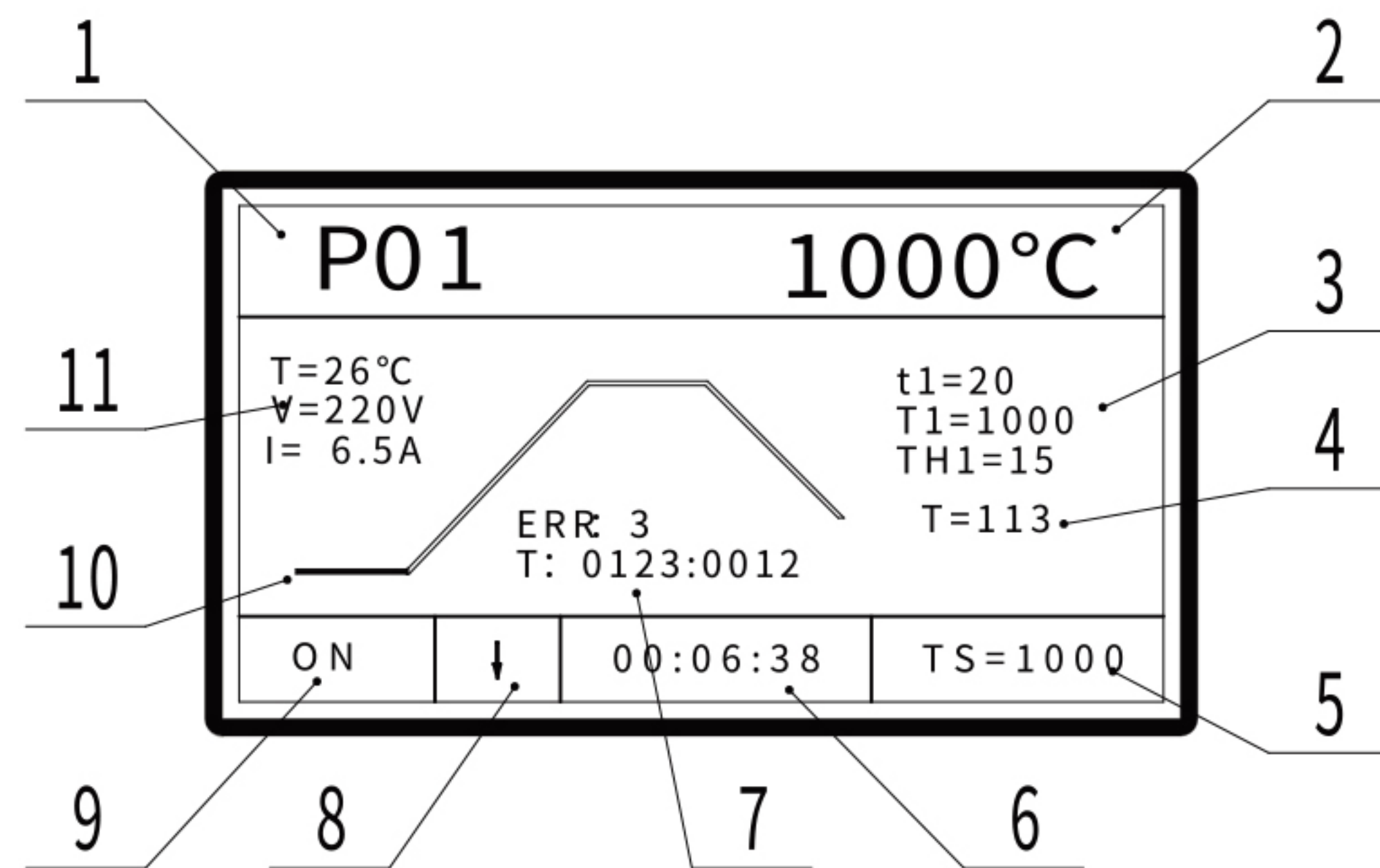
The starting temperature of each working section should be set above 100°C.

The final temperature at the end of the program should be set at 1450~1550°C.

The holding temperature time of each middle section can be 0, and the next work program is executed directly during operation.

If the target temperature section is the final temperature, the constant temperature time of this section cannot be set to 0.

(2)LCD Main Display Description



1. Working curve number, 1-18.
2. The actual temperature in the furnace, 50-1550°C.
3. The parameters of the current working curve.  
T1~5: target temperature; t1~5: heating rate; TH1~5: Holding temperature time.
4. The total theoretical running time, in minutes.
5. Set temperature during operation, °C.
6. When working at holding temperature, count down the hour, hour: minute: second.
7. The indication of malfunction and times of use. ERR: (Refer to the fault code sheet)

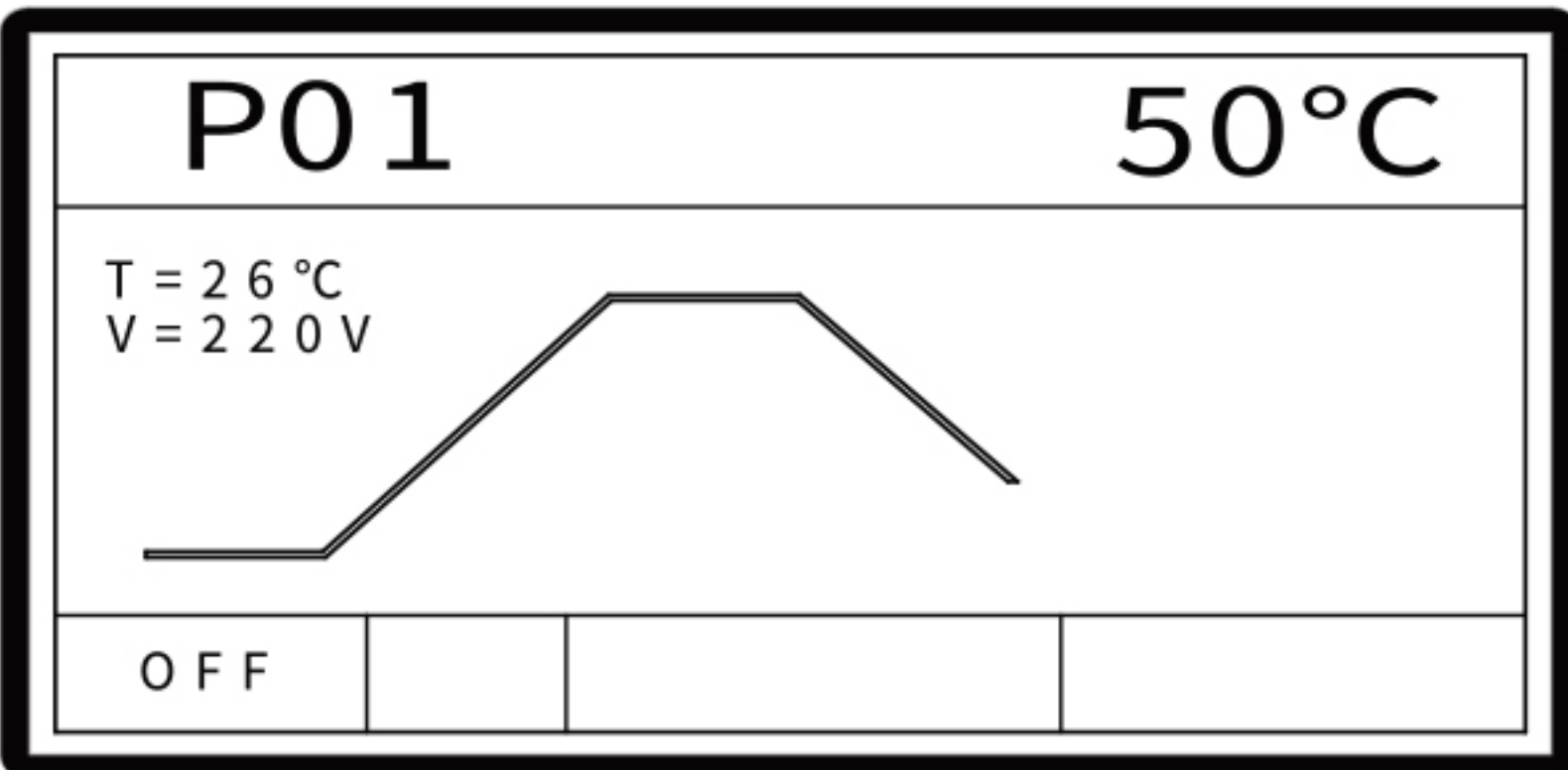
T: Total usage times of the first four digits: UHT usage times of the last four digits.

8. The sinter tray operation instructions for up and down.
9. Status indication: OFF shutdown status, ON operation status.
10. The working curve indicates that the thin line segment is the un-worked segment, and the thick line segment is the working segment.

11. Electrical instructions for operation, TR ambient temperature °C; V is the grid input voltage; I is the working current of the heating elements (direct reference). The picture on the right is the editing/viewing interface, which displays all the information; when you enter in standby, you can edit and modify parameters; when you enter during working hours, you can view the parameters of the current program and refer to the parameter table for the meaning of each position. ERR flashing prompts will appear for editing errors, and the value indicates the position.

PARAMETER LIST			
T1	300	T4	900
t1	20	t4	12
TH1	10	TH4	30
T2	500	T5	1450
t2	18	t5	10
TH2	15	TH5	120
T3	700	T6	1000
t3	16	t6	8
TH3	20	ERR	25

3 Selection, setting and confirmation of program.



Turn on the power switch, LCD displays the standby interface, press + or - button to select the program number.

Press the P button to enter the editing interface. The LCD displays the editing interface. At this time, a cursor behind the value is flashing. Turn the knob or press the + or - button to adjust the value in front of the cursor. Each time you press the button, you can adjust a numerical unit.

PARAMETER LIST			
T1	300	T4	1000
t1	20	t4	18
TH1	5	TH4	0
T2	500	T5	1530
t2	18	t5	10
TH2	10	TH5	120
T3	700	T6	1000
t3	20	t6	8
TH3	0		

After the value is determined, press the knob to move the cursor down or press the ↑ and ↓ button to move the cursor up or down, and press the button to move the cursor left and right to the position where the value needs to be set.



If the target temperature or holding temperature time is adjusted to (-) or (0), adjust the value of the position to the minimum one, and press the "-" button to close the value of the position.

You can set the target temperature "T" values of the following curves to (-) if you do not need to process on all the curves. The "t" and "TH" values of this segment are not displayed.

After all adjustments are completed, press the key to save and confirm, and the LCD will display the standby interface to complete a program setting. Remember the number of P, and just transfer to the program number the next time you use the program.

In the editing interface, press the P key to exit the editing and restore the standby interface. The edited value is not saved, and the previously adjusted value is invalid.

PARAMETER LIST			
T1	1000	T4	-
t1	20	t4	
TH1	15	TH4	
T2	1480	T5	-
t2	12	t5	
TH2	120	TH5	
T3	-	T6	800
t3		t6	8
TH3			

The edited value is not saved, and the previously adjusted value is invalid. The editing interface on the right is to set two-stage heating operation curves and one cooling control curve. The first target temperature is 1000°C, and the first

stage should be chosen 20°C/min heating rate, holding temperature for 15 minutes; the second stage target temperature is 1480°C, the second stage should be chosen 12°C /min heating rate, the holding temperature time 120 minutes; 8°C/min cooling rate, after dropped to 800°C, natural cooling is fine .

Explanation of error setting code

If there is an obvious logical error in the parameter setting performed

PARAMETER LIST			
T1	900	T4	1000
t1	18	t4	8
TH1	20	TH4	15
T2	1500	T5	-
t2	10	t5	
TH2	120	TH5	
T3	-	T6	1000
t3		t6	8
TH3		ERR	25

by the user, press the "" button to confirm, and the control program will be given an error code, as shown in the right figure, "ERR" flashes, and the number indicates the error alarm location. 25 means that the target temperature of T3 in the previous stage has been closed, but T4 is open.

Afterseeing the error code, re-modify the correct parameters and confirm before use.

Set of marked codes meaning

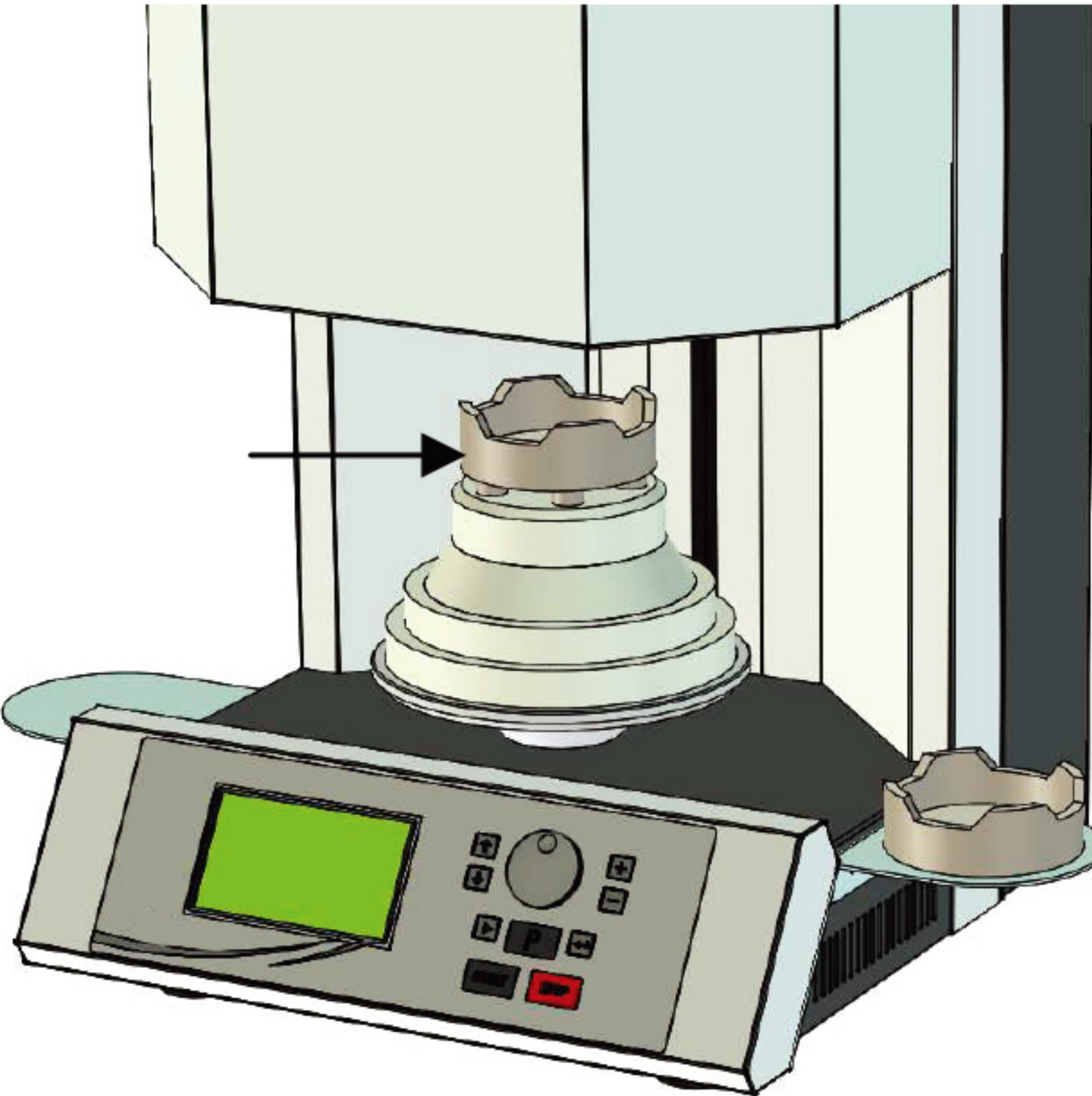
ERR	THE WRONG PART	CORRECT
11	T2 set to — , T1<1450°C	T1≥1450°C
12	T2 set to — , TH1=0	TH1≠0
13	T2 temperature<T1 temperature+100°C	T2≥T1, 100°C
14	T3 set to — , T2<1450°C	T2≥1450°C
15	T3 set to — , TH2=0	TH2≠0
16	T3 temperature <T2 temperature+100°C	T3≥T2, 100°C
17	T4 set to — , T3<1450°C	T3≥1450°C
18	T4 set to — , TH3=0	TH3≠0
19	T4 temperature<T3 temperature+100°C	T4≥T3, 100°C
20	T5 set to — , T4<1450°C	T4≥1450°C
21	T5 set to — , TH4=0	TH4≠0
22	T5 set with temperature value, TH5=0	TH5≠0
23		
24		
25	The value of T in the front section is set to -, and the back one T has the temperature value	The back T all set to —

3.Preparation of restoration

4.Sintering Process

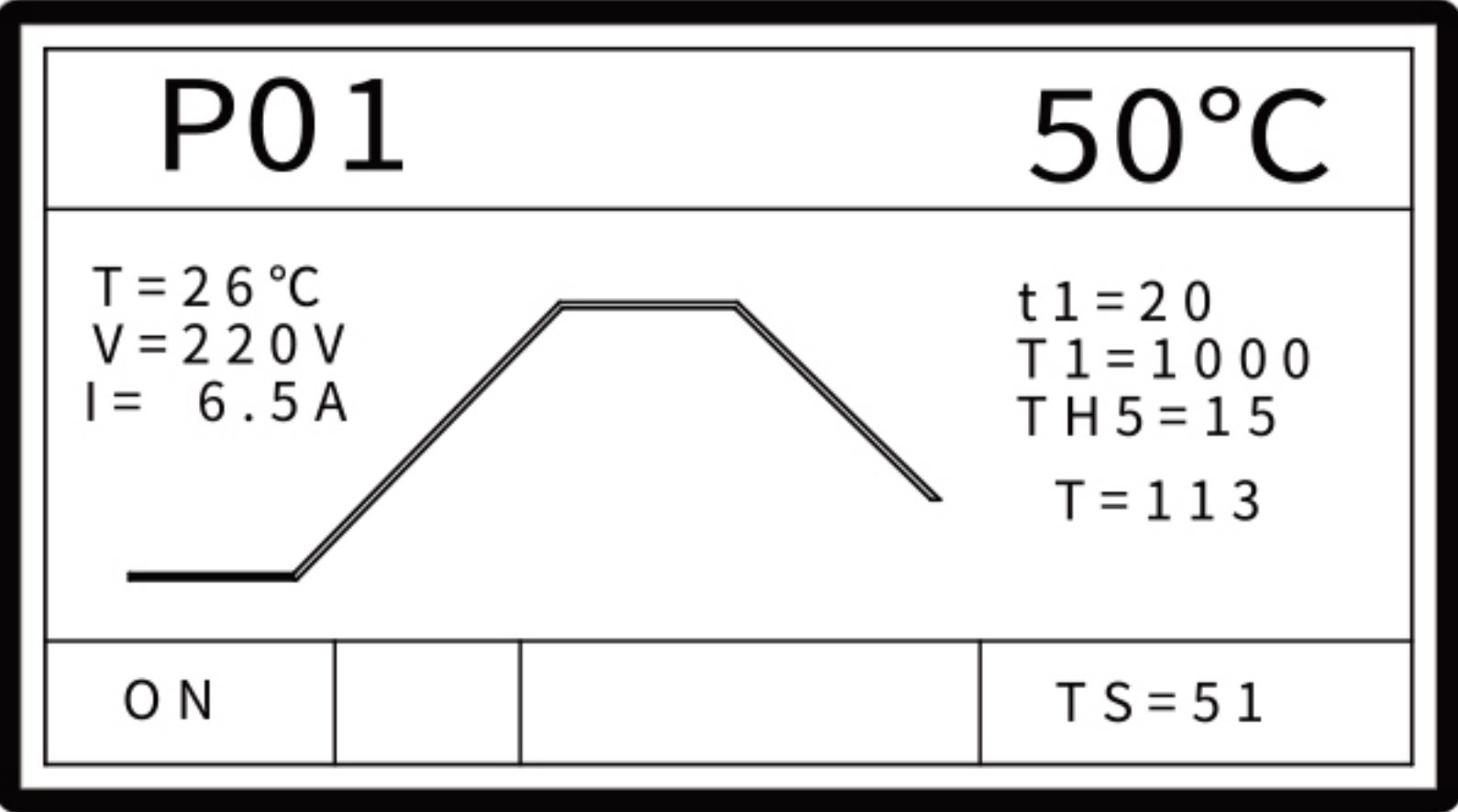
Turn on the power and confirm that the sinter tray is at the bottom. Place the sinter box with the crowns on the five cylinders on the top of the furnace. Try to place it concentrically with the furnace chamber. The outside of the sinter box should not be outside of the circle on the furnace. Two layers of sinter boxes can be placed up and down.

You can press the ↑ button to raise the tray to the highest point. Otherwise, the START key is invalid.





Press + or - to confirm the program number, and the LCD displays on the standby interface. Press the START button to start the sintering furnace. When the temperature of the furnace does not reach 50°C, the furnace temperature TS is displayed as 51°C. When the temperature of the furnace rises above 51°C, the furnace works according to the program and the LCD displays the corresponding screen.◦



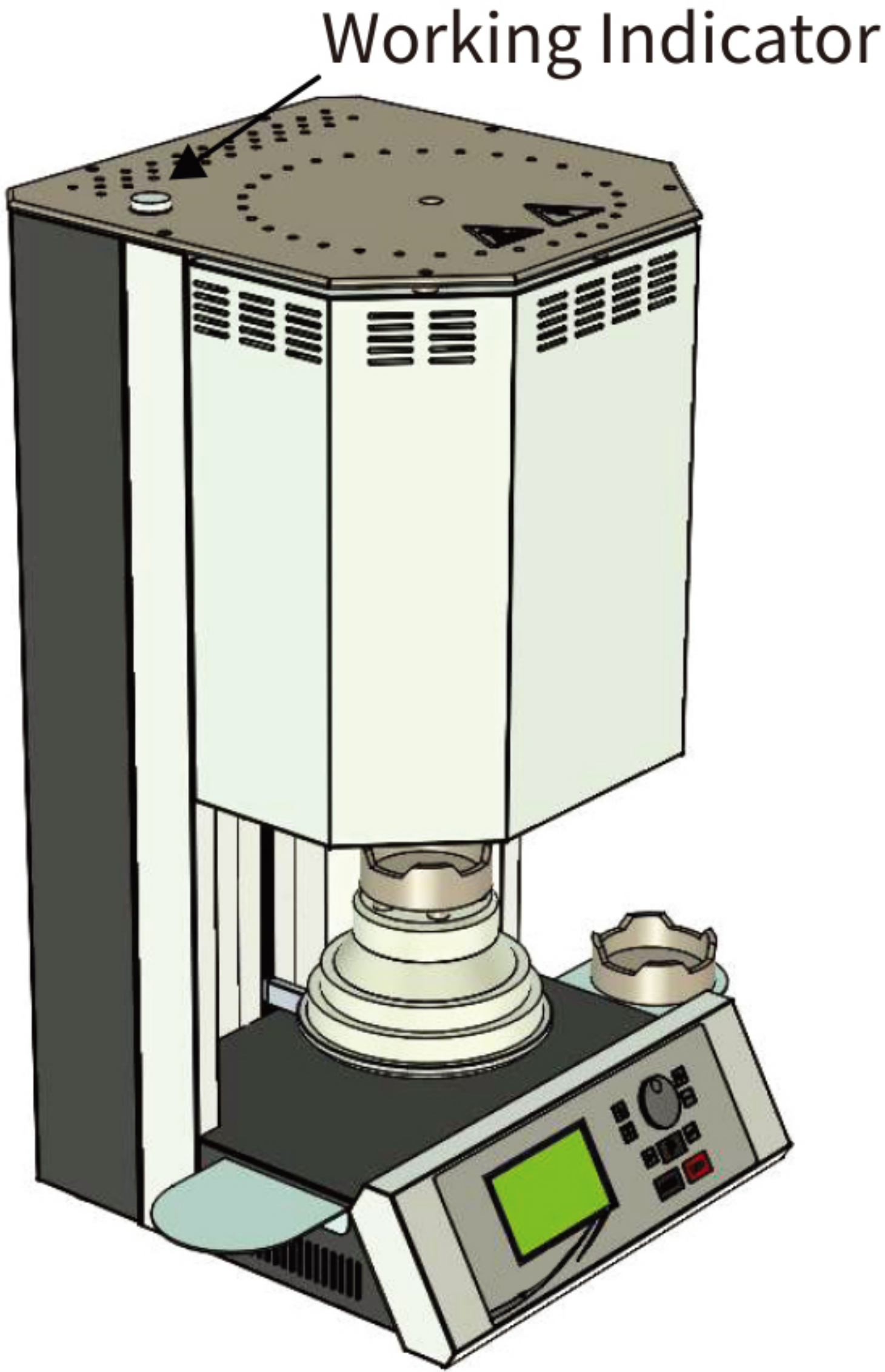
**Special attention:** To check whether the voltage reaches 220V, it may not work properly if the working voltage is not as requested.

If you need to stop while the furnace is working, press the STOP button to terminate the work program, and the LCD will return to the standby screen. Please do not turn off the power switch directly to avoid the furnace mistakenly thinking of a power outage. Restart the furnace, and drop the temperature below 800°C and press the start button. Perform subsequent procedures in accordance with the current temperature range.

When the furnace is working, there is an indicator light on the top of the furnace to indicate the operating status, which is convenient for remote observation of the current status of the furnace.

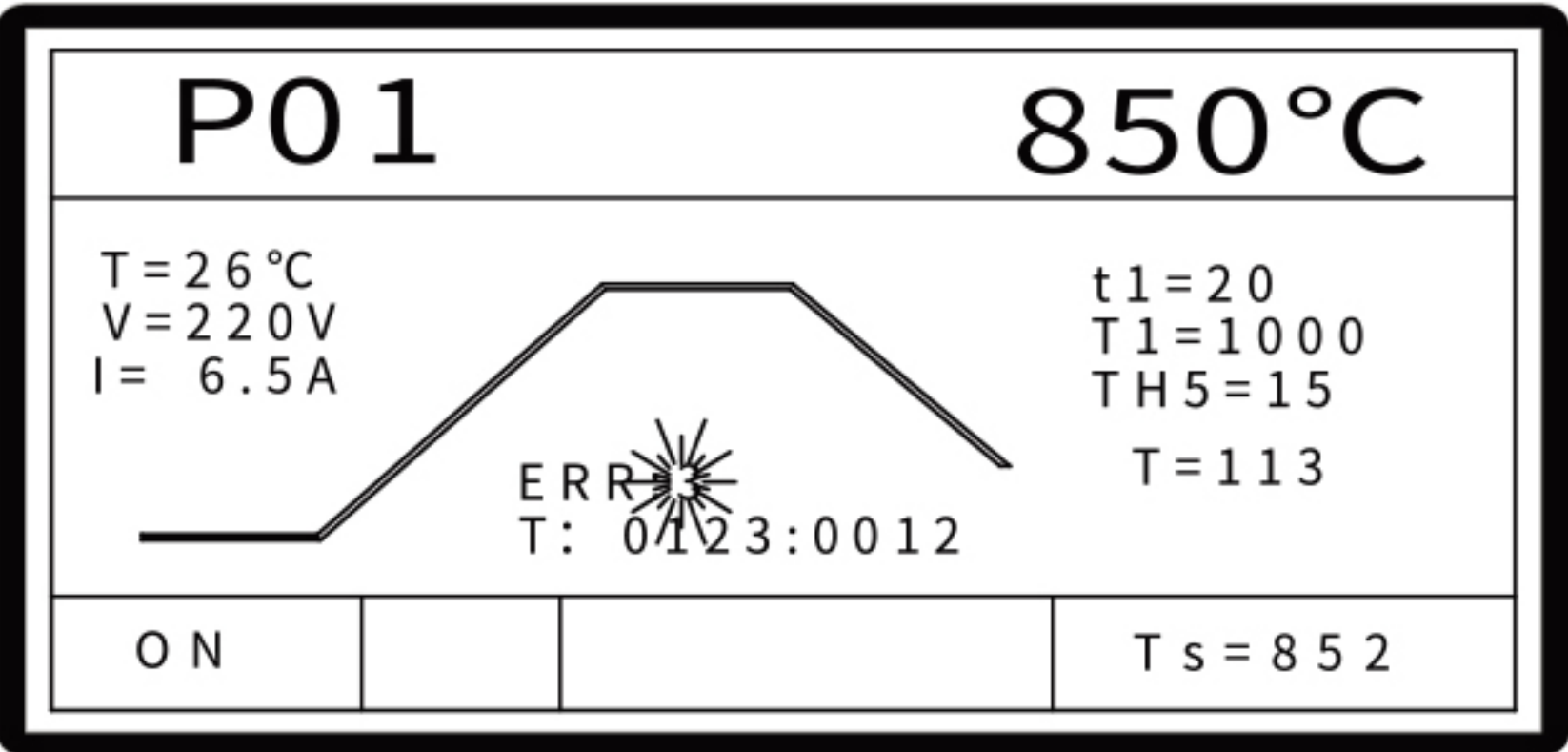
The standby state is blue, the heating operation state is in green flashing, the holding temperature operation state is green,

the cooling control operation state is in blue flashing, the natural cooling operation state is blue, and the malfunctional state is in red flashing.



5.Self-Diagnosis

Press the START button to start working. If the LCD displays an ERR code, it means that the furnace is malfunctional. At the same time, there are five buzzers, and the top indicator of the oven will be flashing red.



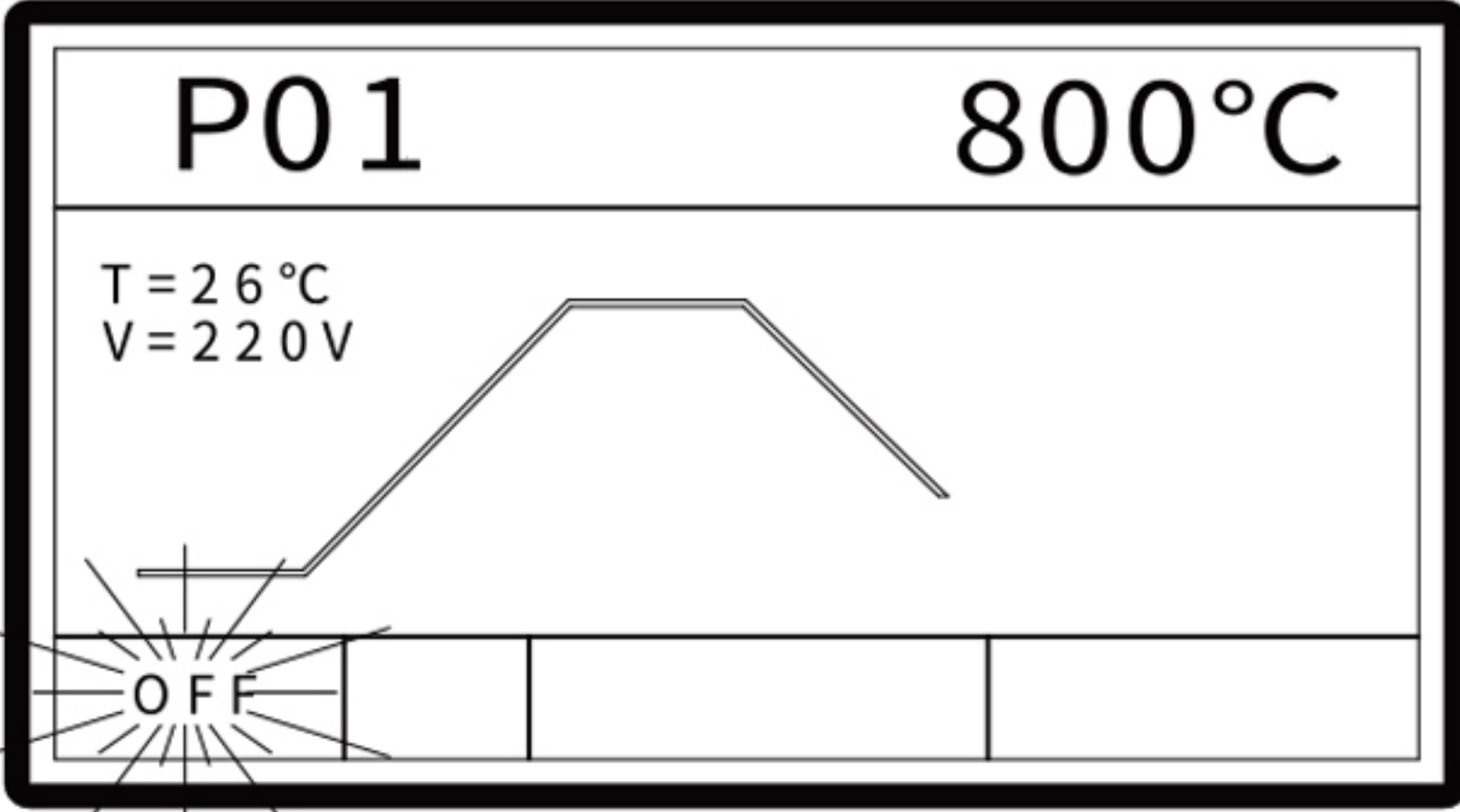
Malfunction code table

Code	Cause of issue	Solutions
ERR 1	Damaged temperature sensor	Replace temperature sensor or connecting wire
ERR 2	Wrong polarity of temperature sensor	Adjust the temperature sensor wiring
ERR 3	Heating elements error	Check the corresponding line or replace
ERR 4	The furnace chamber is poorly sealed, the temperature leakage is too large, and the heating capacity is weakened	Replace the furnace chamber, check whether there is oxidation in the connecting links of the heating elements
ERR 6	Sinter tray rising malfunction	Check the up limit switch or drive motor.
ERR 7	Sinter tray falling malfunction	Check the lower limit switch or drive motor.



04.Power Prompt

A power malfunction occurs during the program operation of the furnace. After the power is re-applied, the LCD display OFF will flash. It indicates that the power has been interrupted during the firing process, and the sintering has not been completed. Press any button to eliminate the flashing prompt.



To restart the furnace, the temperature needs to drop below 800°C and press the start button. Execute subsequent procedures according to the current temperature range.

05.Electrical parameters

Table of furnace electrical parameters			
Rated voltage	220V±10%	Fuse 1	2×~380V 16A
Rated Frequency	50Hz	Fuse 2	~250V 0.5A
Rated Power	2500 W	Fuse 3	250V 1A
Protection Level	IP21	Fast insurance tube	~500V 32A
Dimentions cm	42×46.5×80	Net Weight	44 Kg
Package Dimensions cm	59×56×93	Gross Weight	61 Kg

Electrical wiring diagram

