

ZIRCONIA FURNACE MICROWAVE

USER MANUAL

Ref. 080114

Index

| | |
|-------------------------------------|----|
| WARNINGING | 1 |
| Precaution | 2 |
| Warranty | 2 |
| Specifications and components | 3 |
| Description | 4 |
| Placement of the elements | 5 |
| User interface | 6 |
| Programming | 7 |
| Timer | 9 |
| Schedule setting | 10 |
| Operation process | 15 |
| Errors | 19 |
| SD card | 22 |
| FAQ | 23 |

 **WARNING**

Failure to follow the warnings below can result in property damage, personal injury, and in the worst case, death.



Do not start the oven with an empty chamber. There is a risk of fire and damage to the machine.



Do not excessively bend the power cord or allow it to be crushed by heavy objects. There is a risk of fire and electric shock.



Do not place any metallic object other than dental zirconia in the chamber. There is a risk of fire and electric shock.



Do not keep flammable materials near the oven. There is a risk of fire.



Do not remove the casing of the appliance or repair it yourself. It runs on high voltage and has a very dangerous capacitor, even after disconnecting the power cord. There is a risk of electric shock. For assistance with any unit problem, contact the seller or manufacturer.



Do not touch the oven or the power cord with wet hands. There is a risk of electric shock.



Be careful with the surface of the oven. It may be hot.



Be sure to use the tool provided to remove the tray from the chamber after sintering. There is a risk of burns.



Do not allow the oven to bump or pull excessively on the door. A deformation of the unit may cause the leakage of electromagnetic waves which may damage other equipment or the unit human body.

To prevent breakdowns, we recommend placing the oven in an area that is as little exposed as possible to sources of dust (milling machines, sandblasters, plaster, dirt...).

Precautions

- Use only original components provided by the manufacturer.
- Leave a minimum space of 30 cm between the wall and the oven, to favor ventilation.
- To avoid the risk of electric shock, this equipment must only be connected to a suitable power source (23 V, 50/60 Hz with earth connection).
- Use the oven between 5-40 °C room temperature. Otherwise failures may occur.
- If there are shot residues or foreign substances in the chamber, remove them before use, as they may cause furnace failure.
- Hairline cracks may occur in the insulating walls of the muffle and door. It is not a quality problem nor does it affect the proper functioning of the oven. If in doubt, consult your dealer.
- For safety, turn off and unplug the oven when not in use.
- If in doubt or if you need help, contact your dealer.

Warranty

All MESTRA® machines are guaranteed against any manufacturing defect for one year from the day of purchase. To meet any guarantee, the purchase invoice will be required.

Failures caused by poor installation or misuse of the machine are excluded from the guarantees.

MESTRA® will not carry out any repair outside its workshop and is exempt from the transport costs that this may cause. Repairs made at the customer's home, whether or not they are under warranty, are entrusted to the technical service of the distributor that made the sale or to its contracted technicians.

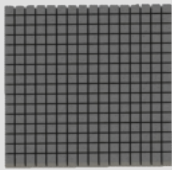
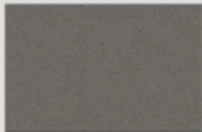







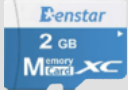


The warranty for the magnetron is 1 year or 300 cycles, although its useful life can reach 2 years or 400 cycles.

Specifications and components



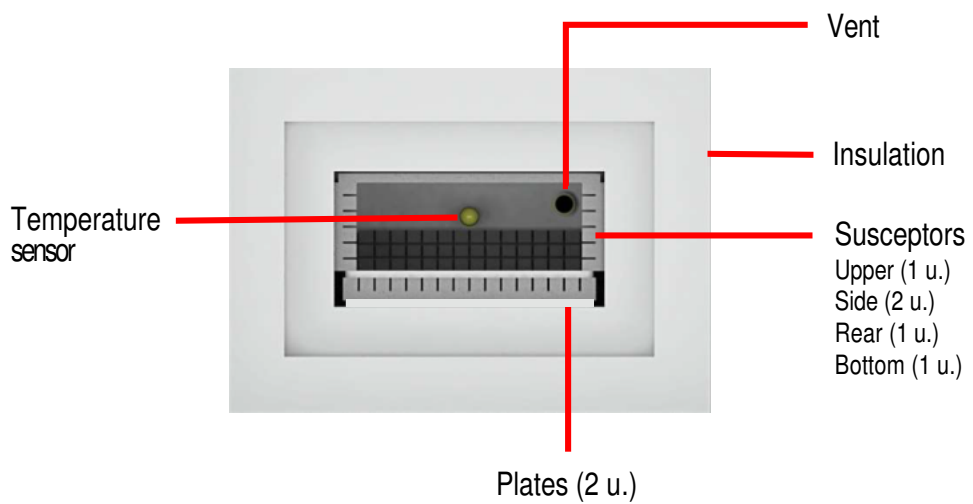
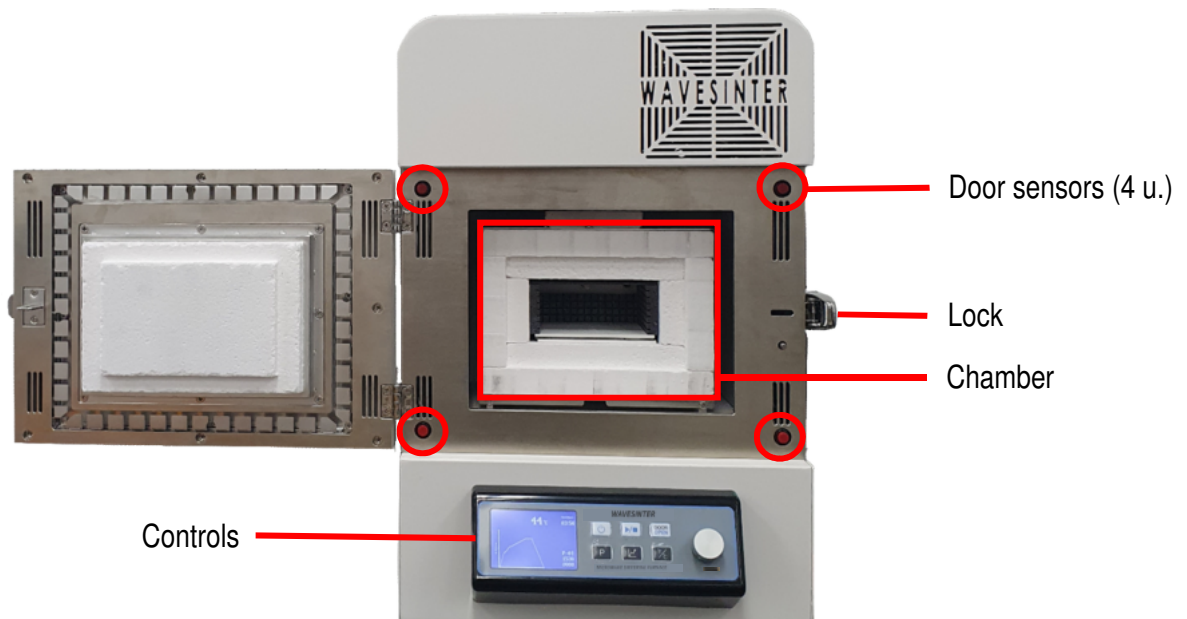
| | |
|------------------|--------------------------------|
| Dimensions | (W) 385 x (D) 440 x (H) 547 mm |
| Weight | 32 kg |
| Power supply | AC 230V, 50 Hz |
| Fuse | 10 A |
| Power | 2000 W |
| Max. temperature | 1550 °C |
| Room temperature | 5 ~ 40 °C |
| Humidity | 50 ~ 80% |

Components

| | | | |
|---|---|--|---|
|  |  |  |  |
| Lower susceptor (1 u.) | Upper susceptor (1 u.) | Lateral susceptors (2 u.) | Susceptor trasero (1 u.) |
|  |  |  |  |
| Lower plates (2 u.) | Magnetron (1 u.) | Support tray (1 u.) | Tray tool (1 u.) |
|  |  |  |  |
| Tray (1u.) / Beads(100g) | SD card (1 u.) | Update kit (1 u.) | Power cord (1 u.) |

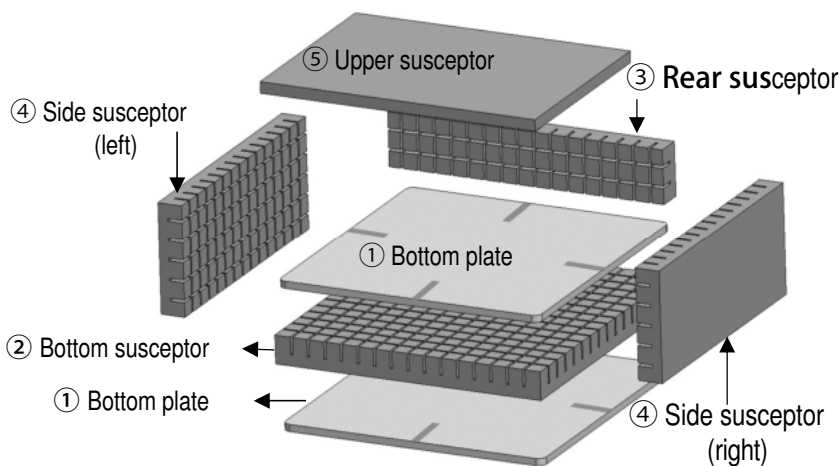
Components are consumables. Contact your dealer to order spare parts.

Description



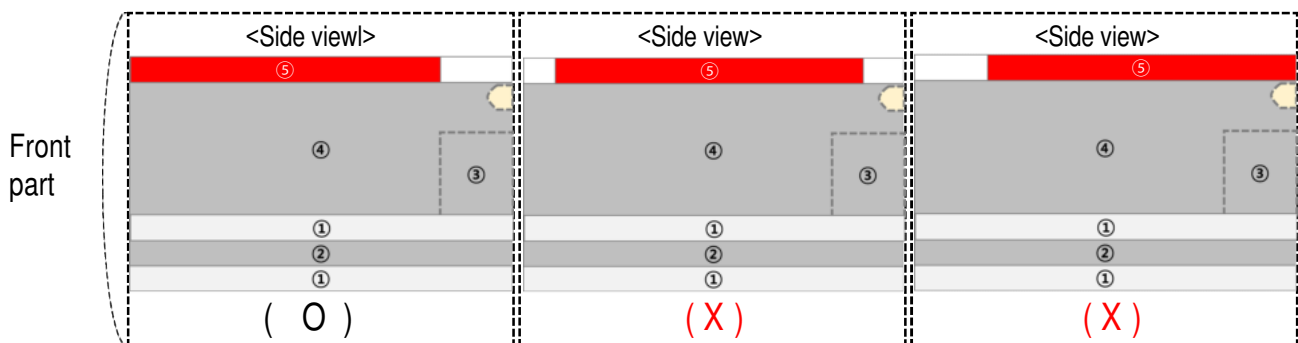
Placement of the elements

Placement procedure for susceptors:



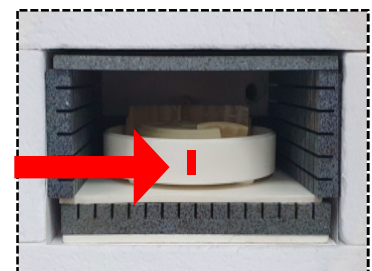
1. Place the bottom plate (1)
2. Place the bottom susceptor (2)
3. Place the second bottom plate (1)
4. Place the rear susceptor (3)
5. Place the side susceptors (4)
6. Place the upper susceptor (5)

- Attention: the susceptors are very fragile parts. Please handle them carefully and avoid dropping or hitting them.
- Push the susceptors and plates until they come to a stop with the bottom.
- However, the upper susceptor (5) should be flush with the front of the chamber as in the views below:



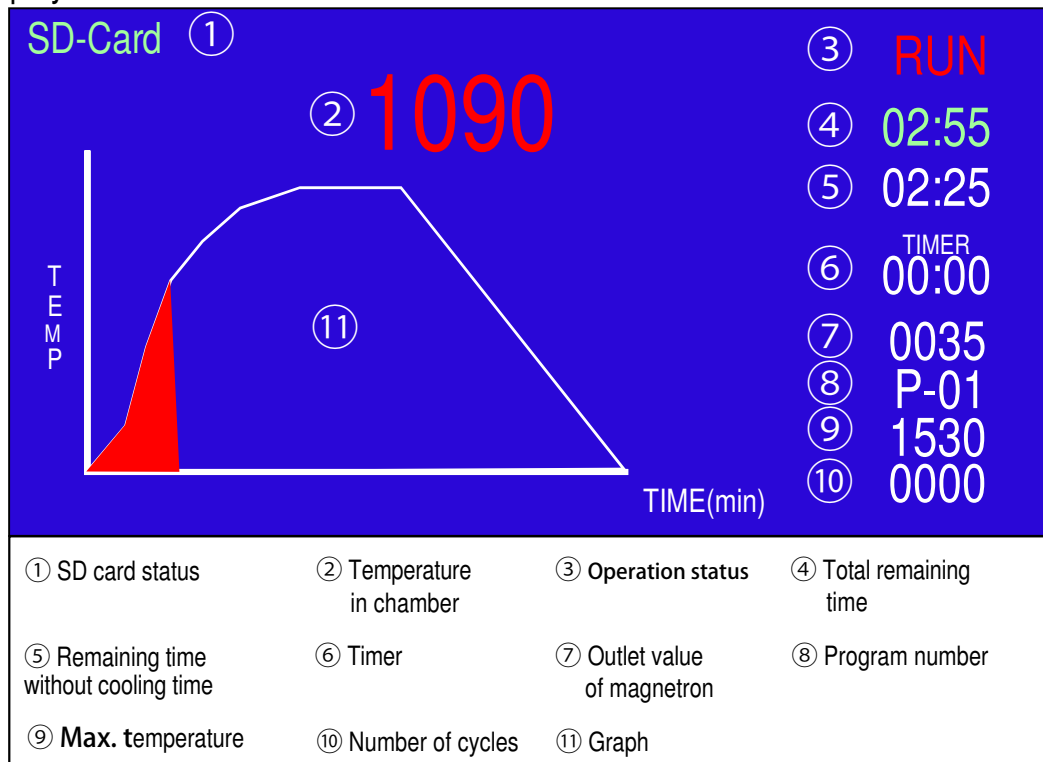
Placement of objects and tray:

- Put the beads in the tray, level the surface and then place the works on the beads.
- Be careful that there are no beads outside the tray.
- Position the indicator mark forwards to easily extract the tray with the tool.

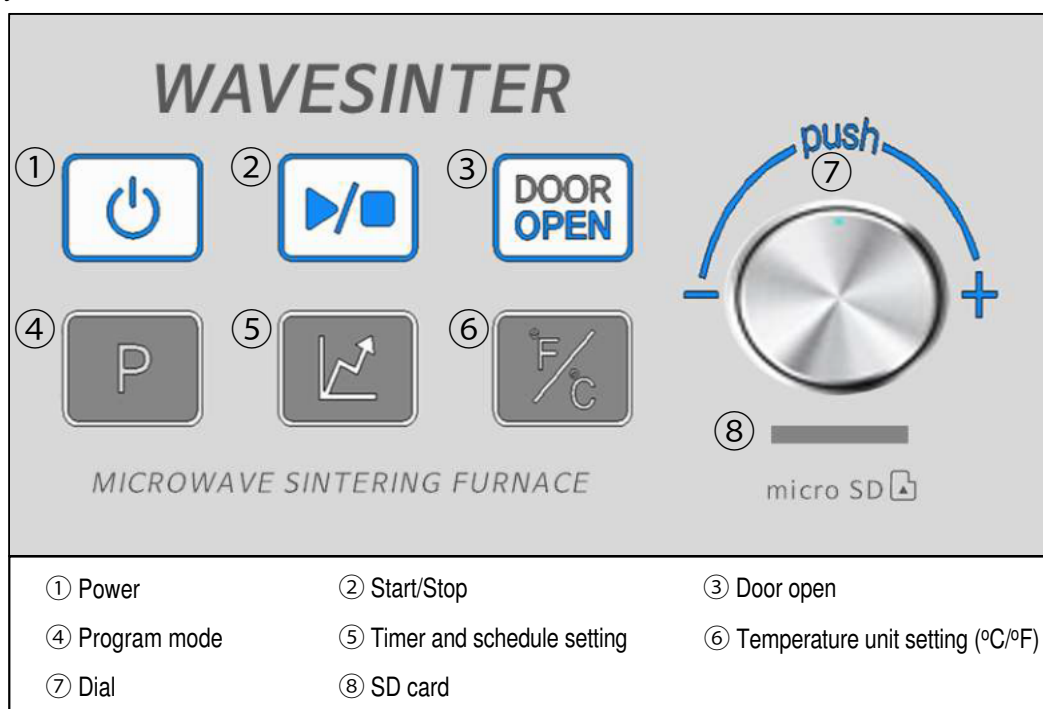


User interface

Display

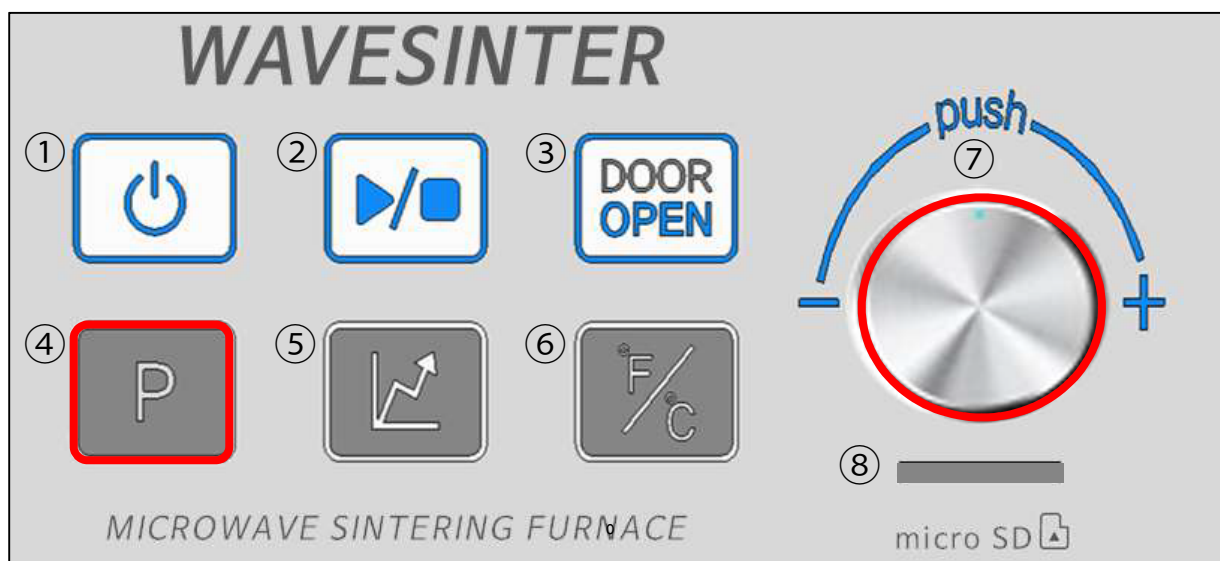


Keyboard

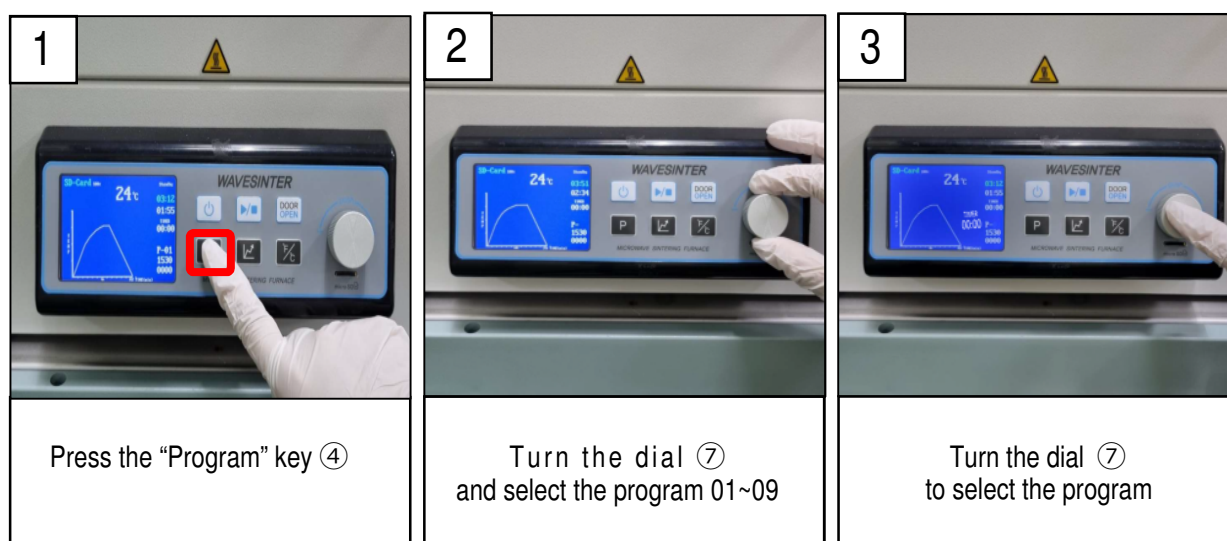


Programming

Buttons for program setting:

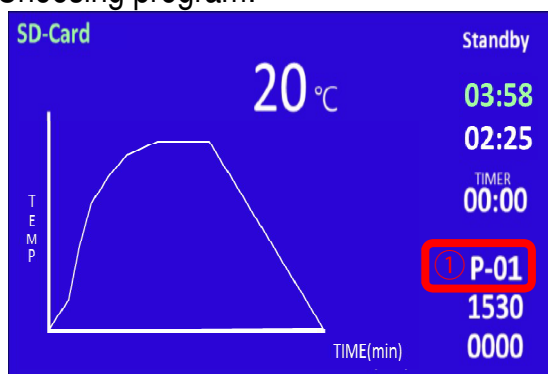


Program setting in detail:



Programming

Choosing program:



① Program number: P-01 ~ P-09

P-01 ~ P-02 : Basic programs

P-03 ~ P-09 : Extra sintering programs

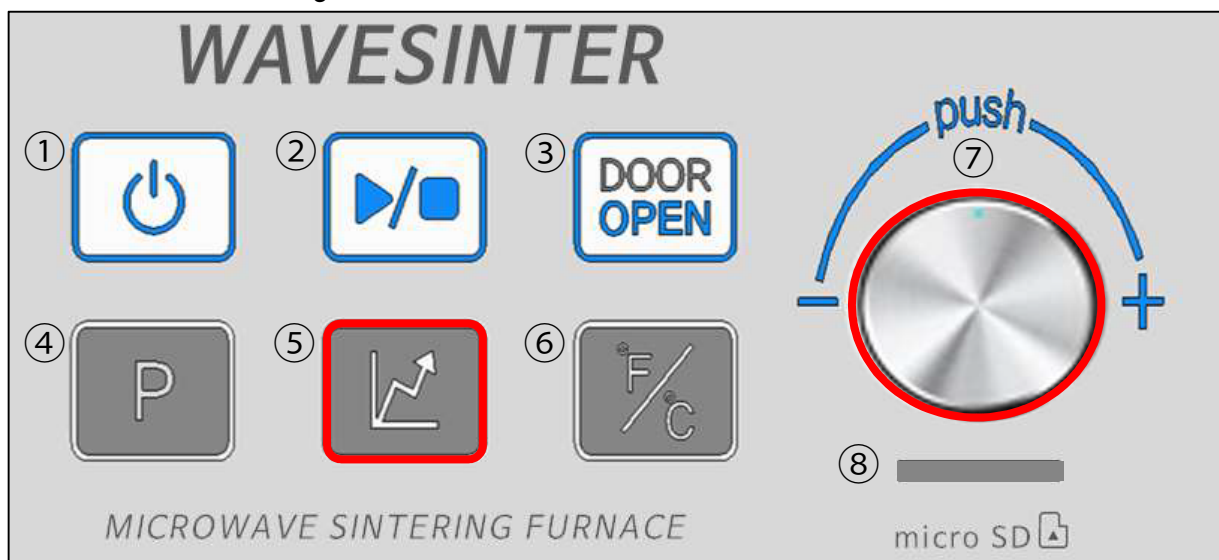
Basic programs (P-01 ~ P-02):

| | STEP | Temperature | Heating rate | Holding time | Lead time |
|------|-------|-------------|--------------|--------------|------------|
| P-01 | 1 | 800 °C | 23 °C/min | 0 min | 35 min |
| | 2 | 1000 °C | 17 °C/min | 0 min | 12 min |
| | 3 | 1200 °C | 12 °C/min | 0 min | 17 min |
| | 4 | 1300 °C | 10 °C/min | 0 min | 10 min |
| | 5 | 1400 °C | 8 °C/min | 0 min | 13 min |
| | 6 | 1500 °C | 5 °C/min | 0 min | 20 min |
| | 7 | 1530 °C | 4 °C/min | 30 min | 38 min |
| | Total | | | | 2 h 25 min |

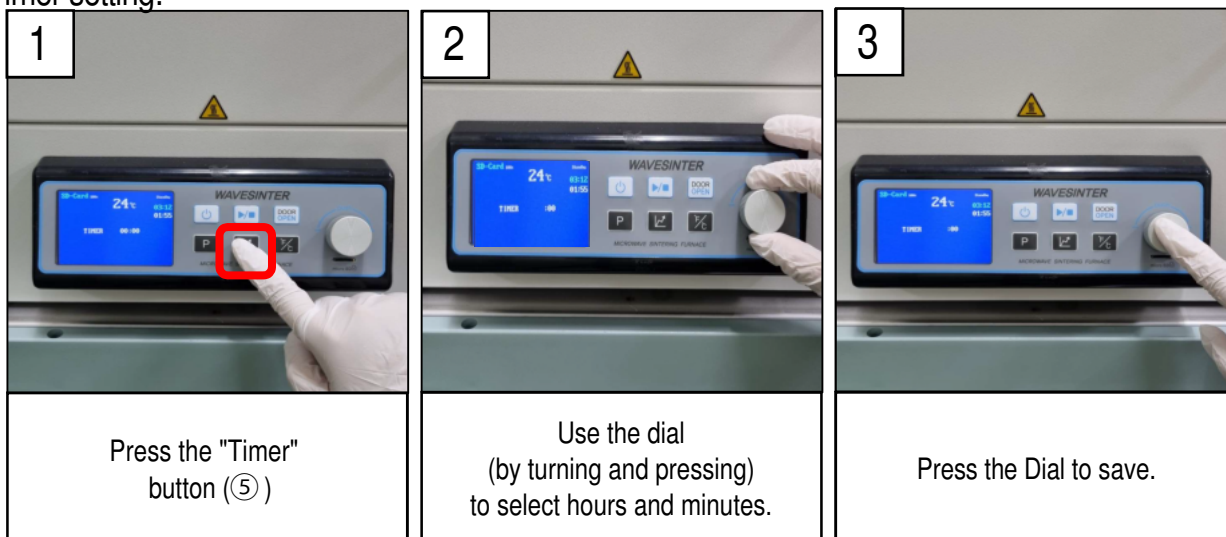
| | STEP | Temperature | Heating rate | Holding time | Lead time |
|------|-------|-------------|--------------|--------------|------------|
| P-02 | 1 | 800 °C | 18 °C/min | 0 min | 45 min |
| | 2 | 1000 °C | 16 °C/min | 0 min | 13 min |
| | 3 | 1200 °C | 11 °C/min | 0 min | 19 min |
| | 4 | 1300 °C | 9 °C/min | 0 min | 12 min |
| | 5 | 1400 °C | 7 °C/min | 0 min | 15 min |
| | 6 | 1500 °C | 4 °C/min | 0 min | 25 min |
| | 7 | 1530 °C | 3 °C/min | 30 min | 40 min |
| | Total | | | | 2 h 49 min |

Temporización

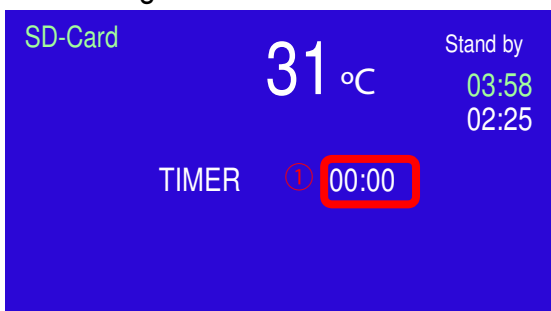
Buttons for timer setting:



Timer setting:



Timer setting in detail:

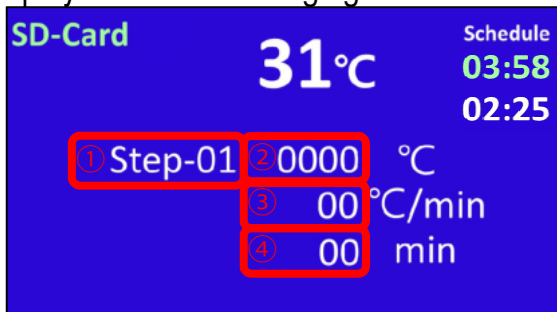


The timing function allows you to program a delay time at the start of the cycle.

① Select the hours and minutes.
 Maximum timing: 10 hours

Schedule settings

Display for schedule setting:

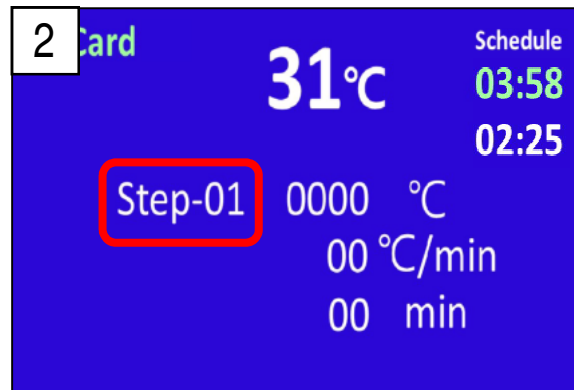


- ① 12 steps are available in each program.
- ② Target temperature of the step.
- ③ Heating rate of the step (°C/min).
- ④ Holding time of the step

Schedule setting in detail:



Press the "Schedule setting" button (⑤) after setting the timer.



Step selection



Turn the dial (⑦) to select the step number (1~12)



Press the dial (⑦) to save and move to the next section

Schedule settings

SD-Card Schedule
03:58
02:25

31°C

Step-02 **0000** °C
00 °C/min
00 min

Setting the target temperature.
Each of the four digits
must be set separately.

5 Card Schedule
03:58
02:25

31°C

Step-02 **1**000 °C
00 °C/min
00 min

Turn the dial (7) for setting the first digit.
Press the dial (7).

6 Card Schedule
03:58
02:25

31°C

Step-02 **11**00 °C
00 °C/min
00 min

Turn the dial (7) for setting the second digit.
Press the dial (7).

7 Card Schedule
03:58
02:25

31°C

Step-02 11**0** °C
00 °C/min
00 min

Turn the dial (7) for setting the third digit.
Press the dial (7).

8 Card Schedule
03:58
02:25

31°C

Step-02 111**0** °C
00 °C/min
00 min

Turn the dial (7) for setting the fourth digit.
Press the dial (7) to save
and move to the next section

SD-Card Schedule
03:58
02:25


31°C

Step-02 1111 °C
05 °C/min
00 min

Select the heating rate


Schedule settings

9



Turn the dial (⑦) for setting the heating rate (°C/min).
 Each temperature range has a heating rate range (look at the table).

10

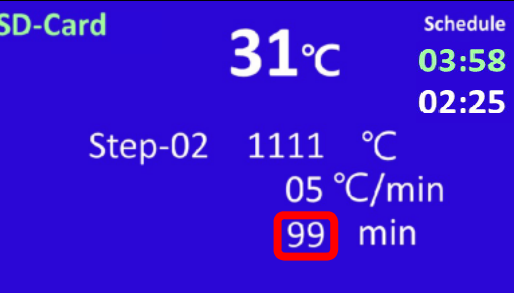


Press the dial (⑦) to save and move to the next section.

Heating rate

| Temperature range | Heating rate range | Note |
|-------------------|--------------------|--|
| 0 ~ 800 °C | ~ 23 °C/min | The sintering time is calculated after setting the heating rate. When the sintering time is longer than 4 hours, the action is canceled |
| 801 ~ 1000 °C | ~ 17 °C/min | |
| 1001 ~ 1200 °C | ~ 12 °C/min | |
| 1201 ~ 1300 °C | ~ 10 °C/min | |
| 1301 ~ 1400 °C | ~ 8 °C/min | |
| 1401 ~ 1500 °C | ~ 5 °C/min | |
| 1501 ~ 1550 °C | ~ 4 °C/min | |

Example: If the target temperature is 1400 °C, the maximum heating rate is 8 °C/min.



Setting the holding time.
 00 ~ 99 min.

11



Turn the dial (⑦) to set the holding time.

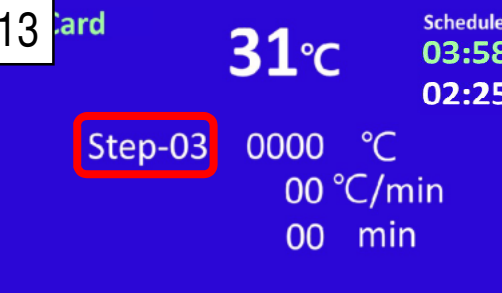
Schedule settings

12




Press the dial (7) to save and move to the next section.

13



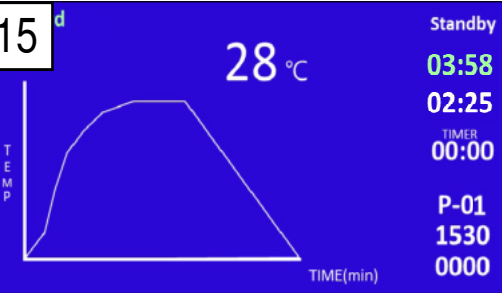
Return to the step setting again
Repeat steps 3 to 13 for each step.

14



After setting all program values, press the schedule setting button (5) to save the settings.

15



Setting complete.

Schedule settings

Precautions for schedule setting:

1. Total sintering time cannot exceed 4 hours. Be careful when programming: if you try to program a total duration of more than 4 hours, you will have to set the program from step 1, as there is no back button.
2. Editing the target temperature or heating rate value to "0", all values will be "0" for the current and next steps.
3. If you want to set a hold time greater than 99 min:
 - a. Set the same "Target Temperature" in the next step.
 - b. Set the same "Target Temperature" in the next step.
 - c. Add the waiting time you need.

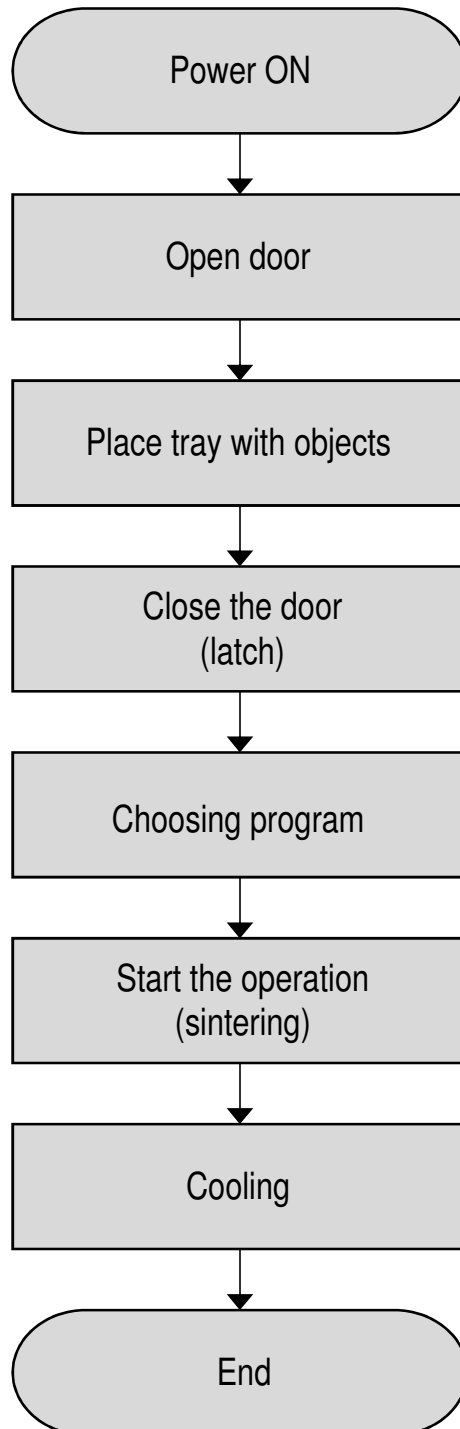
Example: If a hold time of 120 min at 1500 °C is required:

| | | |
|---------|------|--------|
| Step-05 | 1500 | °C |
| | 05 | °C/min |
| | 99 | min |

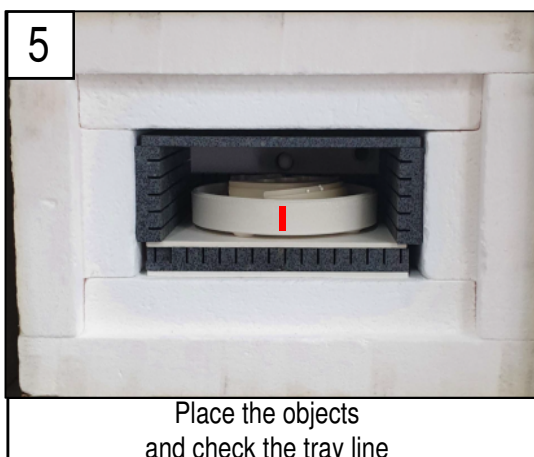
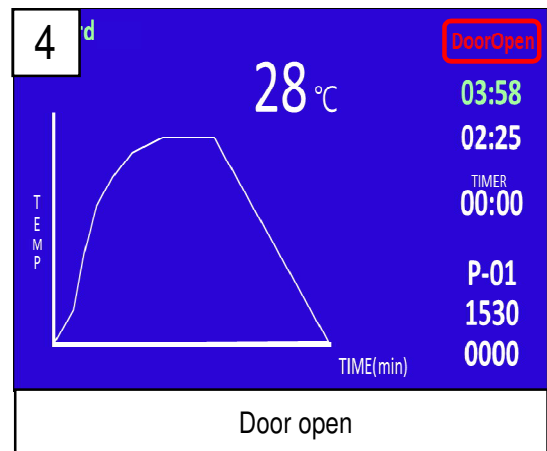
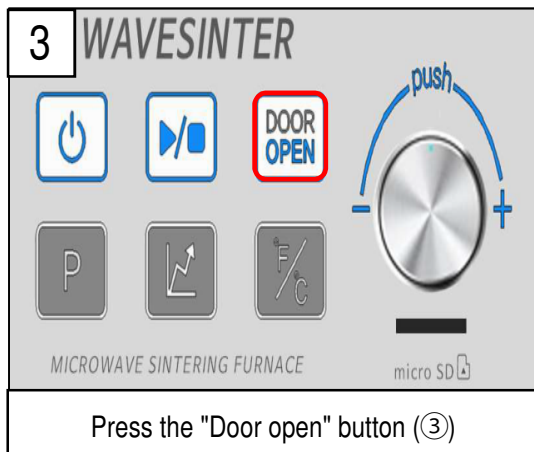
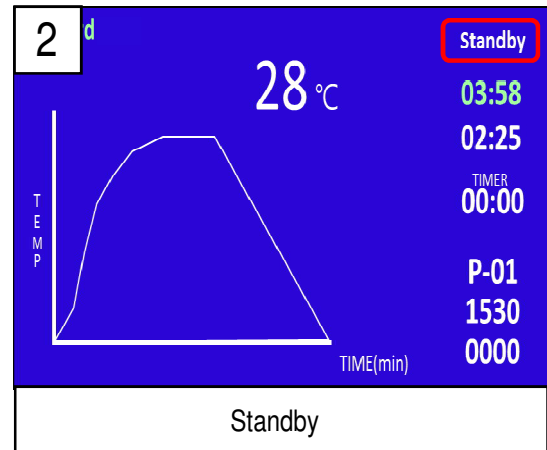
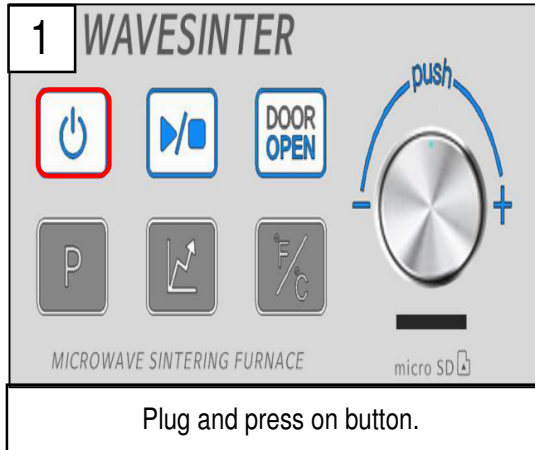
| | | |
|---------|----------|--------|
| Step-06 | (a) 1500 | °C |
| | (b) 01 | °C/min |
| | (c) 21 | min |

- (a) Same target temperature
- (b) > 0
- (c) Select 21 min to make a total of 120 min at 1500 °C

Operation process



Operation process



Operation process

7 WAVESINTER

MICROWAVE SINTERING FURNACE micro SD

Press "Start/Stop" button (②) to start operation.

8 ^d

38 °C

RUN

03:55
02:25
TIMER
00:00
0800
P-01
1530
0000

TEMP TIME(min)

RUN

9 ^d

1530 °C

Cooling

01:30
02:25
TIMER
00:00
0000
P-01
1530
0000

TEMP TIME(min)

Cooling

10 ^d

20 °C

End

00:00
02:25
TIMER
00:00
0000
P-01
1530
0000

TEMP TIME(min)

END

11

Unlock the door latch

12 WAVESINTER

MICROWAVE SINTERING FURNACE micro SD

Press the "Door open" button (③)

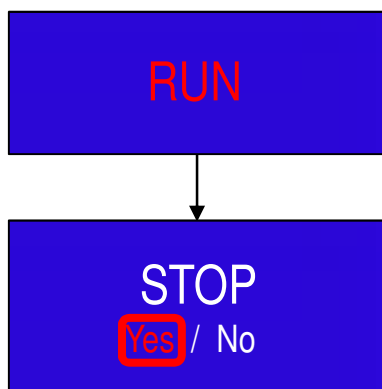
Operation process

Warning:

1. Door can be opened at below 600 °C after cooling, but it is recommended to open below 100 °C for the quality of the object.
2. When taking out the object, be careful as it may be hot the object and inside chamber.
3. When taking out the object, be careful not to let the tray fall off from the tray tool.

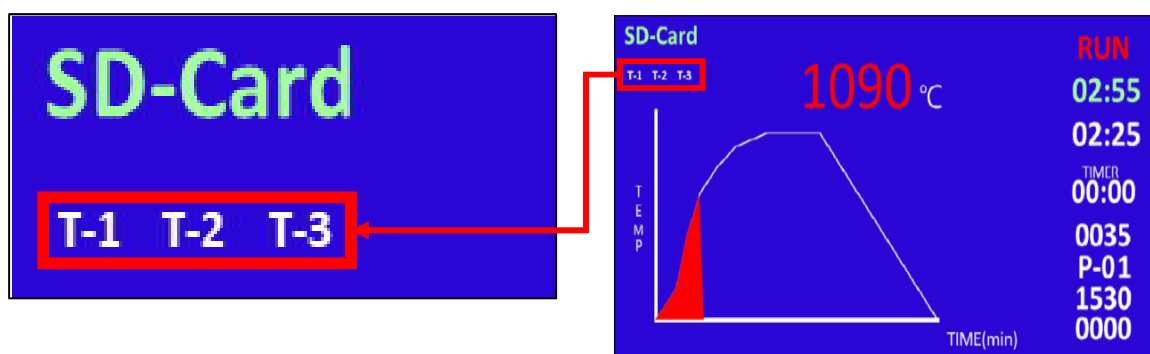
Pulse el dial (⑦) para forzar la detención del ciclo.

Forced stop:



1. During operation, press "Start/Stop" button (②).
2. Turn the dial (⑦) to activate "Yes" (red color).
3. Press the dial (⑦) to stoop.
4. The door can be opened at below 600 °C.
5. Re-operation is available at below 300 °C.

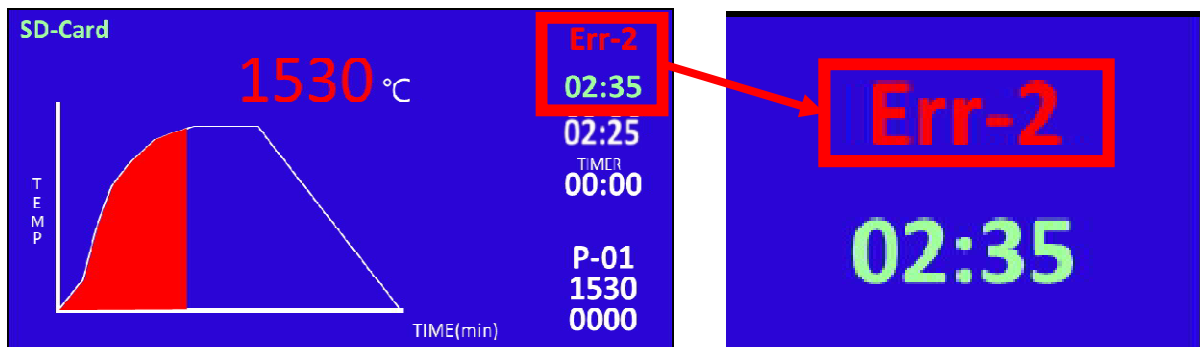
Display warning codes during the operation:



When any of the main components show signs of overheating, the corresponding notice will be displayed and it is recommended to contact the distributor to evaluate the cause.

- T-1 : When overheating of the magnetron is detected.
- T-2 : When overheating of the high voltage transformer is detected.
- T-3 : When an overheating of the temperature probe is detected.

Errores



Err-2 : Error in heating

1. Cause: The temperature in the chamber cannot follow the heating rate in the setting schedule.
2. Action:
 - Ⓐ Check the door latch
 - Ⓑ Contact distributor.
 - Ⓒ Send the data files in the SD CARD to the distributor for the prompt evaluation.

Err-3 : Overheating in chamber

1. Cause: Temperature in the chamber is over 1600 °C.
2. Action:
 - Ⓐ Contact distributor.
 - Ⓑ Send the data files in the SD CARD to the distributor for the prompt evaluation.

Err-4 : Open door

1. Cause:
 - Ⓐ Door open or defect on electric lock.
2. Action:
 - Ⓐ Contact distributor.
 - Ⓑ Send the data files in the SD CARD to the distributor for the prompt evaluation.

Err-6 : Door sensor

1. Cause:
 - Ⓐ Any problem with the locking of the door latch
 - Ⓑ Any failure of the door sensor.
2. Action:
 - Ⓐ Contact distributor.
 - Ⓑ Send the data files in the SD CARD to the distributor for the prompt evaluation.

Err-7 : Overload of the AC input current

1. Cause:

- Ⓐ AC input current overloaded due to magnetron defect.
- Ⓑ Overload in some parts, such as the high voltage transformer or high voltage diode.

2. Action:

- Ⓐ Contact distributor.
- Ⓑ Send the data files in the SD CARD to the distributor for the prompt evaluation.

Err-8 : Short circuit of the AC input current.

1. Cause:

- Ⓐ Short circuit of the AC input current due to magnetron defect.
- Ⓑ Short circuit in some parts, such as the high voltage transformer or high voltage diode.

2. Action:

- Ⓐ Contact distributor.
- Ⓑ Send the data files in the SD CARD to the distributor for the prompt evaluation.

Err-9 : Overload of the high voltage current.

1. Cause:

- Ⓐ Overload of the high voltage current due to magnetron defect.
- Ⓑ Overload in some parts, such as the high voltage diode.

2. Action:

- Ⓐ Contact distributor.
- Ⓑ Send the data files in the SD CARD to the distributor for the prompt evaluation.

Err-10 : Short circuit of the high voltage current.

1. Cause:

- Ⓐ Short circuit of the high voltage current due to magnetron defect.
- Ⓑ Overload in some parts, such as the high voltage transformer.
- Ⓒ Short circuit in some parts, such as the high voltage capacitor or high voltage diode.

2. Action:

- Ⓐ Contact distributor.
- Ⓑ Send the data files in the SD CARD to the distributor for the prompt evaluation.

Err-11 : Overload of the filament transformer.

1. Cause: Overload of the filament transformer.

2. Action:

- Ⓐ Contact distributor.
- Ⓑ Send the data files in the SD CARD to the distributor for the prompt evaluation.

Err-12 : Short circuit of the filament transformer.

1. Cause: Short circuit of the filament transformer.
2. Action:
 - Ⓐ Contact distributor.
 - Ⓑ Send the data files in the SD CARD to the distributor for the promp evaluation.

Err-17 : Overheat of the magnetron.

1. Cause: When the magnetron is over heated.
2. Action:
 - Ⓐ Contact distributor.
 - Ⓑ Send the data files in the SD CARD to the distributor for the promp evaluation.

Err-18 : Overheat of the high voltage transformer.

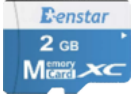
1. Cause: When the high voltage transformer is over heated.
2. Action:
 - Ⓐ Contact distributor.
 - Ⓑ Send the data files in the SD CARD to the distributor for the promp evaluation.

Err-19 : Overheat of the bimetal

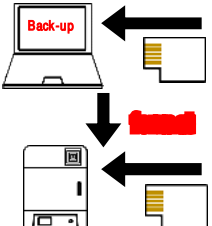
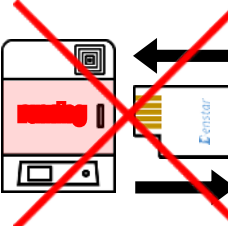
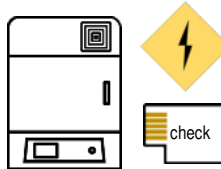

1. Cause: When the bimetal in the out side of the chamber detects the over heat.
2. Action:
 - Ⓐ Contact distributor.
 - Ⓑ Send the data files in the SD CARD to the distributor for the promp evaluation.

SD card

Purpose of the tarjeta SD card:

| | |
|---|---|
|  | <p>When an error case is occurred, user can send the stored log records in the SD card to the distributor to find the cause of the problem.</p> |
|---|---|

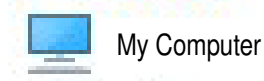

Precautions for use of the SD card:

| | | | |
|--|---|---|---|
|  |  |  |  |
| <p>If you back up the files saved in the SD card to your computer, then you should format the SD card.</p> | <p>Do not remove or insert the SD card during operation.</p> | <p>A power failure during oven operation could damage the SD card. Please check the SD card after power recovery.</p> | <p>It is recommended to use the supplied SD card.</p> |

Display of the SD card:

| | | |
|---|--|--|
| <p style="color: red; font-size: 24px; text-align: center;">SD-Card</p> | <p style="color: green; font-size: 24px; text-align: center;">SD-Card</p> | <p style="color: red; font-size: 24px; text-align: center;">SD-Format</p> |
| <p>When you insert the SD card, the text will appear in red (check takes 3-5 minutes)</p> | <p>Green: Undamaged SD card.</p> | <p>Red: Damaged SD card. Format.</p> |

How to format the Sd card (1):

| | | | | | | | | |
|---|---|--|-------------|-----|----------------|------------|--------------------|-----------|
|  |  | <table border="1"> <tr><td>capacity(P)</td><td>2GB</td></tr> <tr><td>file system(F)</td><td>FAT32(기본값)</td></tr> <tr><td>Allocation unit(A)</td><td>4096 byte</td></tr> </table> | capacity(P) | 2GB | file system(F) | FAT32(기본값) | Allocation unit(A) | 4096 byte |
| capacity(P) | 2GB | | | | | | | |
| file system(F) | FAT32(기본값) | | | | | | | |
| Allocation unit(A) | 4096 byte | | | | | | | |
| <p>Connect the SD card to the computer and click on My Computer</p> | <p>Select SD card right-click and select "Format"</p> | <p>Select the values shown above and start formatting</p> | | | | | | |

The SD card might not be included in the unit and would have to be purchased separately.
 Formatting is only possible in Windows 10.

Schedule setting

Q. During the schedule settings, it doesn't move on to the next step

- A. When the sintering time is over 4 hours, It discontinues the action. Please re-adjust the "Rising temperature per minute" and "holding time" to meet the sintering time, less than 4 hours.
- B. If it doesn't work, remove all program values in the set program and set again the desire schedule.

Q. The "Rising temperature per minute" cannot be set the desire values.

- A. Every "Target temp." has its specific range of "rising temp. per min.". See the page 12 for more details.

Q. Can I set the "Holding time" over 99 minutes?

- A. The maximum holding time for each step is 99 minutes. To program a longer hold time, program the same target temperature in the next step and adjust the remaining hold time. In this case, the heating rate must be greater than 0 °C/min.
- B. But please note that the sintering time cannot exceed 4 hours.
- C. See page 14 for details.

Objets

Q. How many objects can be put on tray?

- A. Fits approximately 20~25 anterior and molar units.

Stop

Q. I would like to stop the unit, during the operation.

- A. Please refer 18 page on manual for detail.

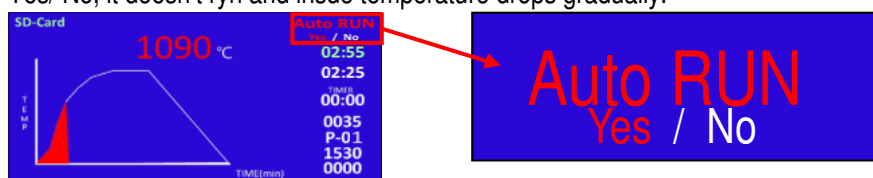
Preguntas frecuentes

Auto RUN

P. When the power is suddenly cut off during the operation, like as a blackout can I restart the unit?

- A. When the electricity comes back, you can see the "Auto run" on display and it is re-operated automatically.
- B. If you select "Yes", it start the operation from the current status.
If you select "No", it will return to "Standby" status.

The Auto RUN may be displayed by over heat on outside of chamber. If you don't select Yes/ No, it doesn't ryn and insde temperature drops gradually.



End of the operation

Q. Sintering is completed and I would like to open door.

- A. Door can be opened at below 600 °C, after operation, but it is recommended to open below 300 °C. It is recommended to open the door below 100 °C for the quality of the work.

Q. The fitting of the sintered zirconia results are not good.

- A. The fitting does not only depend on the furnace but also depend on the scanning, designing and milling process. It is necessary to review all processes.

P. After finishing the operation, the color of the sintered result is bad.

- A. It may need to adjust the schedule after contact the seller or manufacturer.

Display of warning sign during the operation

Q. During the operation, a warning sign like as T-1 or T-2 or T-3 is displayed on the display panel.

- A. It is a kind of warning sign when a main inner part detects a sign of the overheat. Please, refer to the manual and contact the distributor.

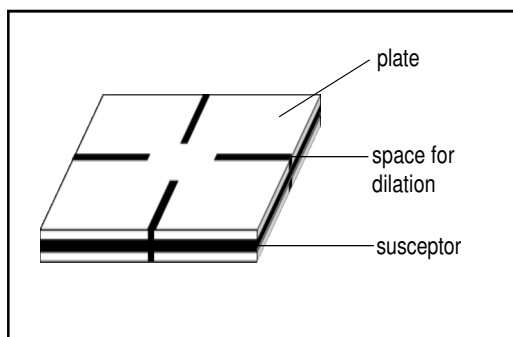
Maintenance

Q. One of Its Plates, Susceptors or Tray are bent or broken.

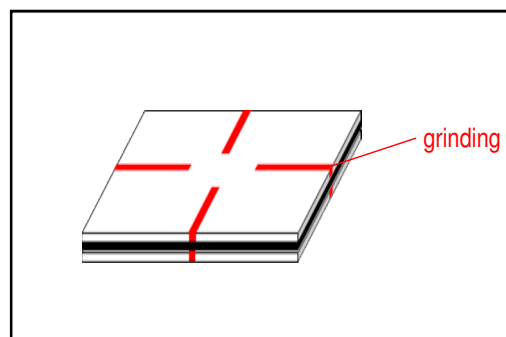
- A. Plates, Susceptors and Tray are consumable parts so it maybe deformed by using long
- B. If you need to purchase these parts, contact distributor.

Q. The plates seems expanding.

- A. Plates may expand by continuous heating and cooling.
- B. To prevent any deformation by an expansion of the cutting parts in the plate, we recommend to grind the parts regularly with the handpiece. Sometimes the oxidized susceptor may stick to the plate, in this case, do not separate the plate from the susceptor, just grind plate with the bonding status.



<Normal state>



<Expanded state

Q. There are fine crack and discoloration on insulation.

- A. Small cracks or discoloration may occur in the insulation of the chamber. This is not a quality problem and does not affect the proper functioning of the oven.

Q. There's a bubble on the surface of the susceptors.

- A. Especially in the first uses, some bubbles may appear on the surface of the susceptors. This is not a defect and the susceptors can continue to be used after the bubble is removed.

Errors

Q. An “error” sign appears on the display window during operation.

A. Refer to pages 19-21 of the manual.

Replacement of the SD CARD

Q. Can I operate this unit without the SD CARD?

A. The oven can work perfectly without the SD card. But in case an error appears, it will be more difficult to evaluate it by the technical service. Therefore, we recommend that the oven always work with an SD card installed.

Q. Can I use other brand's SD CARD?

A. We recommend using the supplied SD card. In case of need, a third-party SD card can be used. In this case, the capacity of the SD card must be 2 Gb and it must be formatted before use. Please refer to page 22 of the manual.



MESTRA®

Rev. 07/12/2022

Talleres Mestraitua S.L.
(+34) 944 530 388
info@mestra.es
www.mestra.es



Sistema de
Gestión
ISO 9001:2015

www.tuv.com
ID 1100018003