

STALWART

SGA-Series
Autoclave



Precaution on Safe Operation

△Precaution:

- This is a lab autoclave. To ensure the safe and correct use of the instrument, please read this manual carefully before use and operate according to the instructions in the manual. If it is not used according to the method specified by the manufacturer, the protection provided by the instrument may be damaged.
- In addition to sterilization, drying and agar melting, the instrument shall not be used for other purposes; it shall not be used for sterilization of inflammable, explosive, oxide prone or strong acid, alkali, salt water and other substances, or it may cause corrosion of sterilization chamber and pipeline, or even explosion.
- During installation, it is required to connect correctly according to the power requirements on the instrument nameplate; if the voltage fluctuates too much, it is required to use a regulated power supply to ensure the best performance of the instrument; if other types of voltage are used, it is required to use a transformer, otherwise the instrument will be damaged.
- The instrument must be reliably grounded. Do not connect the ground wire of the instrument to the plastic pipe, gas pipe, telephone ground wire, lightning rod, etc.
- Do not let the object block the exhaust port on the safety valve, so as to avoid that the safety valve can not exhaust and relieve the pressure in case of abnormal situation.
- Before opening the chamber cover, make sure that the reading of the pressure gauge is "0 MPa"; when the pressure in the sterilization chamber is higher than "0 MPa", do not open the chamber cover and drain valve, otherwise it will cause high-pressure steam to spray out and hurt people.
- When adding distilled water into the sterilization chamber, do not leak the water into the control circuit, so as to avoid electric shock accident or other faults.
- When using cleaning or other bags, please put the bag in the stainless steel basket first, and then put it into the sterilization chamber, otherwise the accuracy of temperature may be affected.
- Pay attention to observe the temperature in the sterilization chamber. The temperature is high at the end of operation. When opening the cover, pay attention not to put your face and hands close to the sterilization chamber to prevent scalding caused by steam spraying. When taking out the articles from the sterilization chamber, wear heat insulation gloves. Since the liquid needs to be cooled for a certain time, when the sterilized liquid material is taken out from the sterilization chamber, it is necessary to confirm that the temperature has dropped to a sufficiently low level to avoid scalding.
- Distilled water must be used as sterilization water to avoid affecting the service life of sterilizer. When the instrument works continuously, it shall be ensured that there is an interval of more than 15 minutes for the instrument to cool down. Otherwise, the instrument will not be

able to produce enough saturated steam.

- In case of any abnormal situation (such as abnormal sound, smell, smoke), turn off the power supply immediately, pay attention to observation, and contact the local dealer or our after-sales service department after the abnormal situation no longer continues.
- It is recommended to place a pressure steam sterilization chemical prompt card (hereinafter referred to as the chemical indicator card) on the sterilized substance for each sterilization. After a sterilization cycle, when the color change of the chemical indicator card coincides with the temperature and temperature duration to be represented, it indicates that the temperature and temperature duration reached have met the requirements of the sterilization Institute. If necessary, sterilization can be carried out; otherwise, sterilization requirements are not met.

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Chapter 1 About the Instrument

1. Application

- This series of products are used for sterilization of scientific research institutions, laboratory utensils, culture media and unsealed liquids or preparations.

2. Sterilization principle

- Steam is used as sterilization factor to kill loaded microorganisms. The main technical parameters of sterilization, such as pressure, temperature and time, are set and controlled by the program.

3.Types of microorganisms killed

- Using hot and humid high pressure steam as sterilization factor to kill loaded microorganisms, including spores of bacteria, spores of fungi, etc.

4. Product structure.

It is mainly composed of shell, sterilization chamber, sterilization door, built-in steam generator, pipeline system, temperature control system, pressure detection, safety interlock protection device and so on. The specification is preset and carried out automatically.

5.Normal working conditions

- Ambient temperature: 5 °C~ 40 °C
- relative humidity not greater than 85%.
- Atmospheric pressure: 70kPa~106kPa.
- Suitable for power supply AC 200-240V, (50 60) Hz \pm 1Hz.

6. Transportation requirement

Instruments are not allowed to stand upside down, overlap, below is not allowed to put items, avoid rain, carefully handle, there should be anti-movement measures.

7. Storage requirement

- Ambient temperature:-20 °C~ 55 °C.
- Relative humidity not greater than 93%.
- An indoor or sheltered place free of corrosive gas and well ventilated

8. Service life

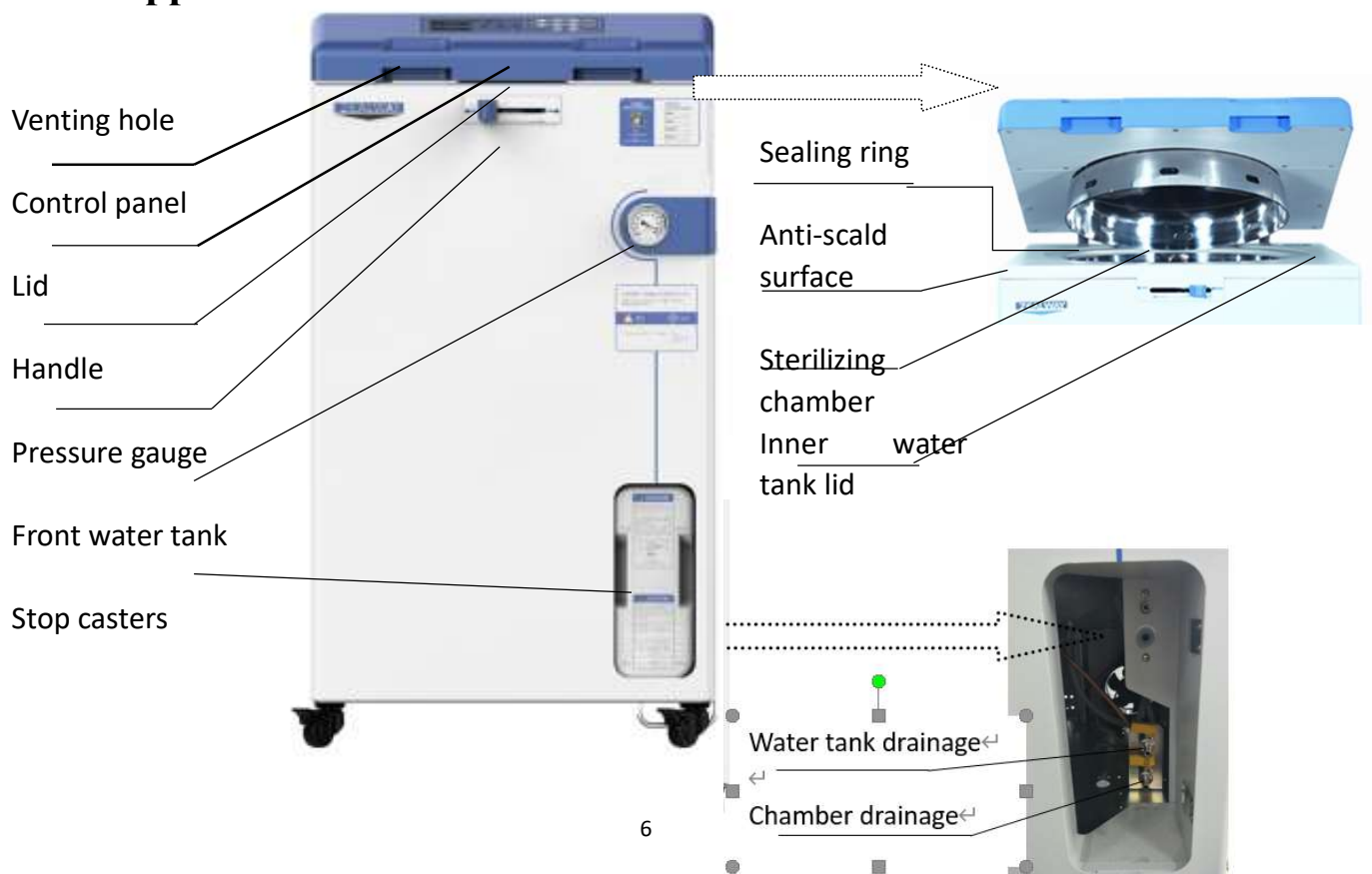
- It is recommended to use up to 8 years

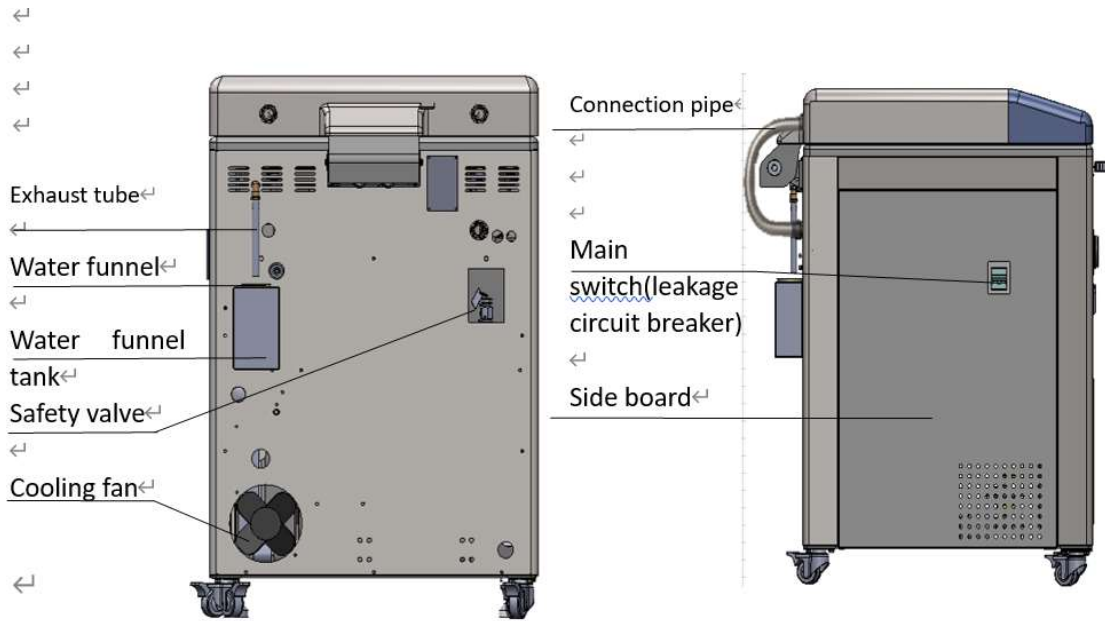
9. Technical specifications

Model	SGA-60DA	SGA-85DA	SGA-100DA	SGA-110DA
Capacity(L)	60L	85L	100L	110L
Dimension (L*W*H, mm)	644mmX660mmX980mm	644mmX660mmX980mm	644mmX660mmX1180mm	644mmX660mmX1180mm
Chamber dimension (Dia*H, mm)	φ 400mm x505mm	φ 400mm X 700mm	φ 400mmX 815mm	φ 400mmX895mm
Net weight	130kg	135kg	139kg	146kg
Rated power	2900W	4600W	4600W	4600W
Chamber material	SUS304			
Sterilizing temperature	105°C~138°C			
Sterilizing time range	1min~6000min			
Melting temperature range	60°C~100°C			
Metling time range	1min~6000min			
Warming temperature range	45°C~79°C			
Warming time range	1min~9999min			
Cooling lock open temp.range	Solid/agar 40°C~99°C, Liquid/waste 40°C~80°C (when boiling point is 100°C)			
Exhaust level	0-5 Levels adjustable			
Water tank	Yes			
Auto Startup Timer	0~15days			
Pressure	Safety valve take off pressure:0.31MPa rated working pressure:0.25MPa			

Sterilizing mode	Liquid: standby→heating→sterilizing→exhaust→end Liquid with warming: standby→heating→sterilizing→exhaust→warming→end Solid mode: Sandby→heating→sterilizing→exhaust→end Wrapped instument: standby→heating→sterilzing→exhaust→→end Fabric: standby→heating→sterilzing→exhaust→end Rubber: standby→heating→sterilzing→exhaust→end Fast: standby→heating→sterilizing→exhaust→end Waste: standby→heating→sterilizing→exhaust→end Agar: standby→heating→melting→exhaust→warming→end Self-defined: standby→heating→sterilizing→exhaust→warming→end
Controller	“Inspiration II” fast speed microcomputer controller
Safety device	Self-induction pressure interlocking device, lid closing checking, over temperature protection, temperaturemonitor, dry scorch protection system, over pressure protection, safety valve, over current and short circuit protection, leakage protection device, anti-scald safety protection, cooling lock, automatic troubleshooting system
Standard spare parts	Stainless steel baskets, water plate, waste water bottle, adjustable pin
Optional spare parts	Printer, printing set, load thermometer, automatic water feeding parts

10. Appearance and Parts

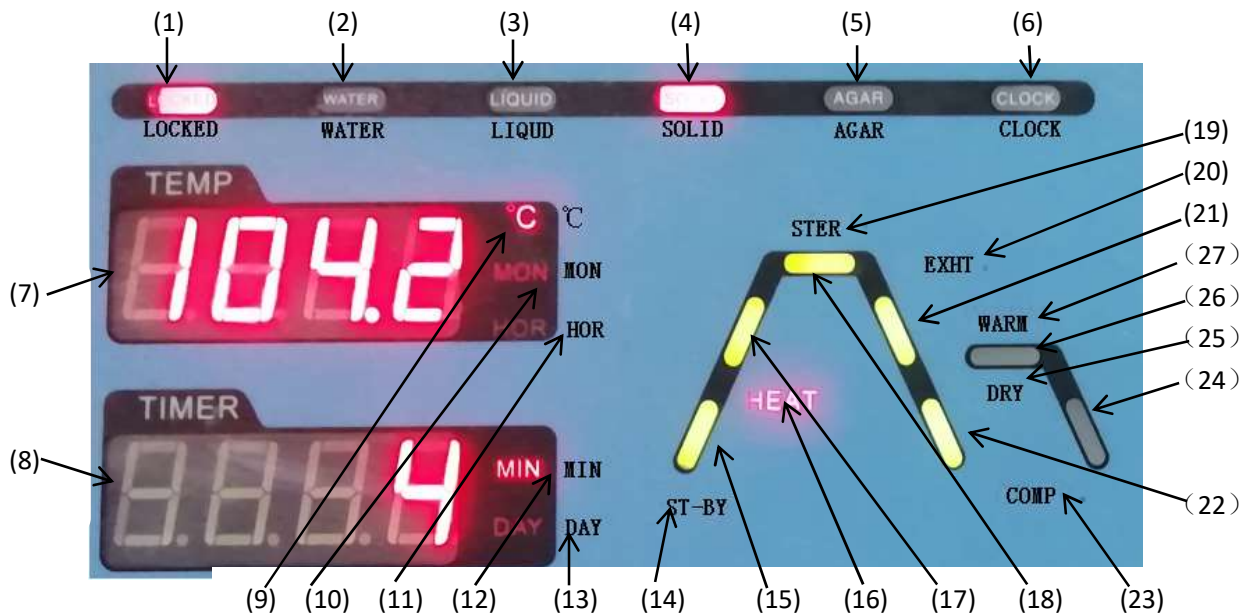




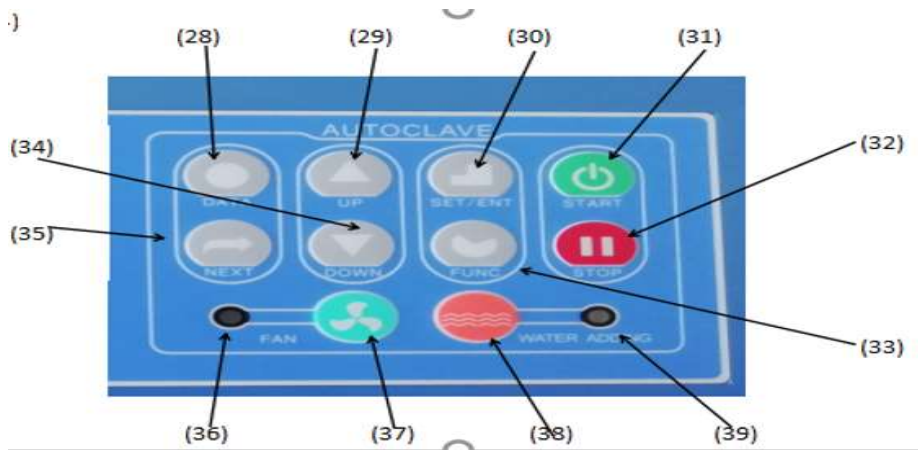
11. Parts Function

1. Display Panel Function:

(left screen)



(Right screen)



1. LOCKED: Interlocking indicator, which will be on during interlocking.
2. WATER: No this function for the current model
3. LIQUID: The light indicates the current operation mode is liquid mode
4. SOLID: The light indicates the current operation mode is solid mode
5. AGAR: The light indicates the current operation mode is agar melting mode
6. CLOCK: The light indicates the current operation mode is auto startup mode
7. Screen A: Display the set temperature, actual temperature, month and hour. It will display the year information in time checking and calibration mode, and menu code in administration mode.
8. Screen B: Display the set time, remaining time, minute, date, error number or user program No., when setting clock, will show "yEAR".
9. °C: The light indicates the current unit is °C.
10. MON: The light indicates the current unit is month
11. HOR: The light indicates the current unit is hour
12. MIN: The light indicates the current unit is minute
13. DAY: The light indicates the current unit is day
14. ST-BY: The light blinking indicates the instrument is in standby status
15. Heating status indicator 1: The light blinks from room temperature until the local boiling point
16. HEAT: *HEAT* is light and heating status indicator is blinking to indicate that the instrument is in heating stage or melting stage; if *HEAT* and heating status indicator blink together, it indicates entering the melt parameters modification status
17. Heating status indicator 2: The light blinks from the local boiling point until the set sterilizing temperature
18. Sterilizing status indicator: The light blinks in course of sterilizing
19. STER. : *STER.* is light and sterilizing status indicator is blinking to indicate that the instrument is in sterilizing stage, the temperature of this stage shall be the set sterilizing temperature. If *STER.* and sterilizing status indicator blink together, it indicates entering the sterilizing parameters modification status
20. EXHT. : *EXHT.* is light, and steam exhaust status indicator is blinking to indicate that the instrument is in steam exhaust stage. If *EXHT.* and steam exhaust status indicator blink together, it indicates entering the steam exhaust temperature modification status.
21. Exhaust indicator: The light blinks from the completion of sterilization until the temp is lower than the cooling lock OPEN temp set by the user and as for the programs with warming or drying, blinks from the completion of sterilization until the beginning of warming or drying.
22. Cooling status indicator 1: The light blinks from the temperature lower than the cooling lock OPEN temperature to 40°C in program without warming or drying.

23. COMP.: The letter blinking indicates that the running of program is finished
24. Cooling status indicator 2: The light blinks from the completion of warming or drying until you press STOP.
25. DRY: No this function for the current model
26. Warming status indicator: The light blinks in course of warming
27. WARM: *WARM* is light, and drying/warming status indicator is blinking to indicate that the instrument is in warming stage. If *WARM* and warming status indicator blink together, it indicates entering the warming parameters modification status.
28. DATA: Under standby status, you can press *DATA* button to inquire the detailed parameters of current program; When setting the parameters of program, press *DATA* button to cancel the modification and exit, unless the *SET/ENT* button has been pressed to save the modification before pressing the *DATA* button.
29. UP: Under standby status, you can press *UP* button to enter the immediate next program, i.e., the current program is U10, press *UP* button, it will enter U11, and display the detailed parameters of current program; When modifying the parameters of programs, you can press *UP* button to increase the set value, and press and hold the button to increase the display value by 10 units until the maximum value
30. SET/ENT: Setting and Entering button, press the *SET/ENT* button at the first time to enter the program parameters modification status, and press the button again to save the change.
31. START: Start button is used to start sterilization or melt; For the avoidance of misoperation, this button has delay response function so it could only work when pressed and held for over 2 seconds.
32. STOP: Stop button is used to stop sterilization or melt; For the avoidance of misoperation, this button has delay response function so it could only work when pressed and held for over 2 seconds. If under standby condition, but can not open the lid due to negative pressure inside, you can hold the button to release the pressure. If there is error number or note number shown, you can also press the STOP button very shortly (just touch and go, do not hold it) to remove the error number first before you open or close the lid.
33. FUNC: *FUNC* button must work with other buttons, press the *FUNC+STOP* button together to delete the current program, press the *FUNC+NEXT* button together to enter the auto startup mode, press the *FUNC+DATA* button together to enter the administrator menu. Under admin menu, press FUNC+DATA can enter into the engineer menu. If the machine is equipped with load thermometer, press FUNC+DOWN, screen A will show current load thermometer value, screen B will show program no. At this moment, press FUNC+DOWN, screen A will show current chamber pressure, screen B will show pressure unit: kPa, PSI or bar, then press FUNC+DOWN will go back to temp. display. During the process, press FUNC+UP can adjust the exhaust level, from level 0 to level 5, level 0 means no exhaust, level 5 means full exhaust.
34. DOWN: Under standby status, you can press *DOWN* button to enter the previous program, i.e., the current program is U10, press *DOWN* button, it will enter U09, and display the detailed parameters of current program; When modifying the parameters of programs, you can press *DOWN* button to decrease the set value, and press and hold the button to decrease the display value by 10 units until the minimum value
35. Next: Enter the next option
36. Cooling fan status indicator: The light indicates the cooling fan is working.
37. FAN: Start/Stop button for cooling fan is used to control the start and stop of fan from the completion of sterilization stage or warming stage to the temp lower than 40*, while the cooling fan indicator will be on or off with this switching. The cooling fan may shorten cooling time.
38. WATER ADD: No this function for the current model
39. Object temp indicator: When it is on, it means the load thermometer is on, and the indicator off indicates the load thermometer function is off.

2、Cooling lock function:

After sterilizing, while cooling down, normally the chamber is cooling down quicker than the articles inside (especially for liquid). So, the user may get burnt if the articles are still hot. To make sure safety, autoclave is equipped with cooling lock "OPEN" temperature function, you can set a safe lid "OPEN" temperature. The lid can be opened only when the chamber temperature is lower than the preset "OPEN" temperature. If the machine is installed with load thermometer, the lid can be opened only when the chamber temperature and the article temperature are both lower than the preset "OPEN" temperature.

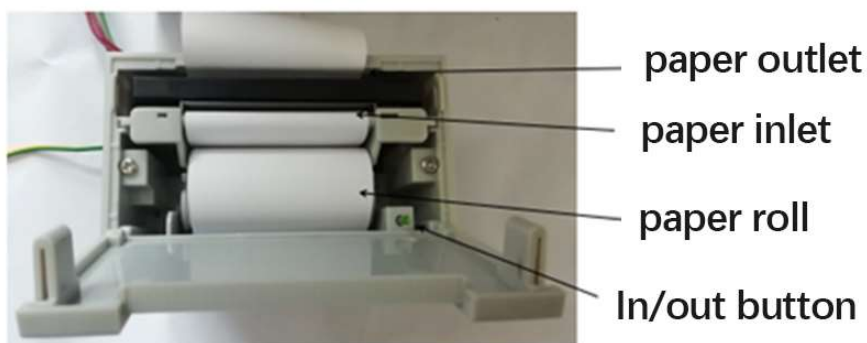
3、Optional parts:

1) Printer

If you need to record the sterilization cycle, you can add a printer. After installing the printer, you need to go into the admin menu to enable it and choose the language and the time display way. If the factory already added the printing set for you, you don't need to set above in the admin menu.

Paper roll installation:

Install the paper roll: put the paper roll into the paper inlet, press the paper in/out button, confirm that the paper roll comes out from the paper outlet, and then press the paper in/out button to stop it. Until now, the installation is complete.



★Note: The printing paper is 57x30mm, if you use a different size paper, it would damage the printer.

F0 value printing:

The printer will print out the F0 value automatically, one is F0 value in the sterilization process, one is total F0 value (including the heat up, sterilization, cool down process).

Press FUCN+FAN can print the last cycle except for sudden power of.

2) Printing set:

Printing set includes the printer and the digital pressure sensor, after installing the printing set, you can print also pressure value and temp./pressure curve out. Need to enable the pressure sensor and set the pressure unit in the admin menu. If factory already added the printing set for you, you don't need to set above in the admin menu.

3) Load thermometer / PT 100 flexible sensor

● Application

It is suitable for sterilizing articles (such as liquids) with high thermal inertia. When the chamber temperature reaches the preset temperature, the actual temperature of the articles has not reached. In order to obtain ideal sterilization effect, it is recommended to use this sensor to monitor the real temperature of articles. In this case, the sterilization timer starts counting only when the actual temperature of the article reaches the preset sterilization temperature.

After installing the load thermometer, please enter into the admin menu, set P002 to yes. If factory already added it for you, you don't need to set above in the admin menu. If you do not use it for a long time, set P002 to no.

Chapter 2 Installation of Autoclave

1. Placement of Autoclave

- 1) This autoclave is precision instrument,during installation, place the autoclave on a flat ground and fix the wheels by prssing the breaker down.(If the ground is not flat, we can provie special wheels before purchasing) Do not place the autoclave in an environment with high humidity, direct sunlight and temperature less than 5°C over 40°C.
- 2) Leave a certain space between the autoclave and the wall,it is suggested to keep 10cm between back and wall, and 20cm between sides and wall, to dissipate heat more fully.
- 3) Do not place the instrument under the fire alarm probe to prevent mis-alarmed caused by the hot steam.
- 4) The exhaust port of the safety valve should not be close to the power supply outlet and should not be blocked.

2. Power Supply Connection

- 1) The instrument must be grounded reliably,if the power socket does not have the ground terminal, it is required to ground the instrument with independent ground wire before powered on.
- 2) Power supply:single -phase AC200-240V, 50Hz/60Hz

Requirement for current intensity:

- GR60 $\geq 15A$
- GR85 $\geq 25A$
- GR110 $\geq 25A$

3) Connect the GR85/110 power cord to air switch with power pack ,of which, the red/brown wire connecting to live wire,green/blue wire to zero wire,yellow/green wire to earth wire.If it is installed with one plug/socket, connecct it with 32A cable.

Note:The specification of power supply supply should comply with the requirement on nameplate of the machine.No heavy article is allowed to place on power cord and the damage or exposure of power cord or loosening output lead may cuase fire or electric shock.

3. Checking Package

Check the package before opening, take a picture if there is any damage. Open the box from the buttom(do not open the top), take out like a hat(shaken by two people from two

sides). After opening the package, check if there is any damage of the machine, report to distributor or manufacturer.

4. Cleaning

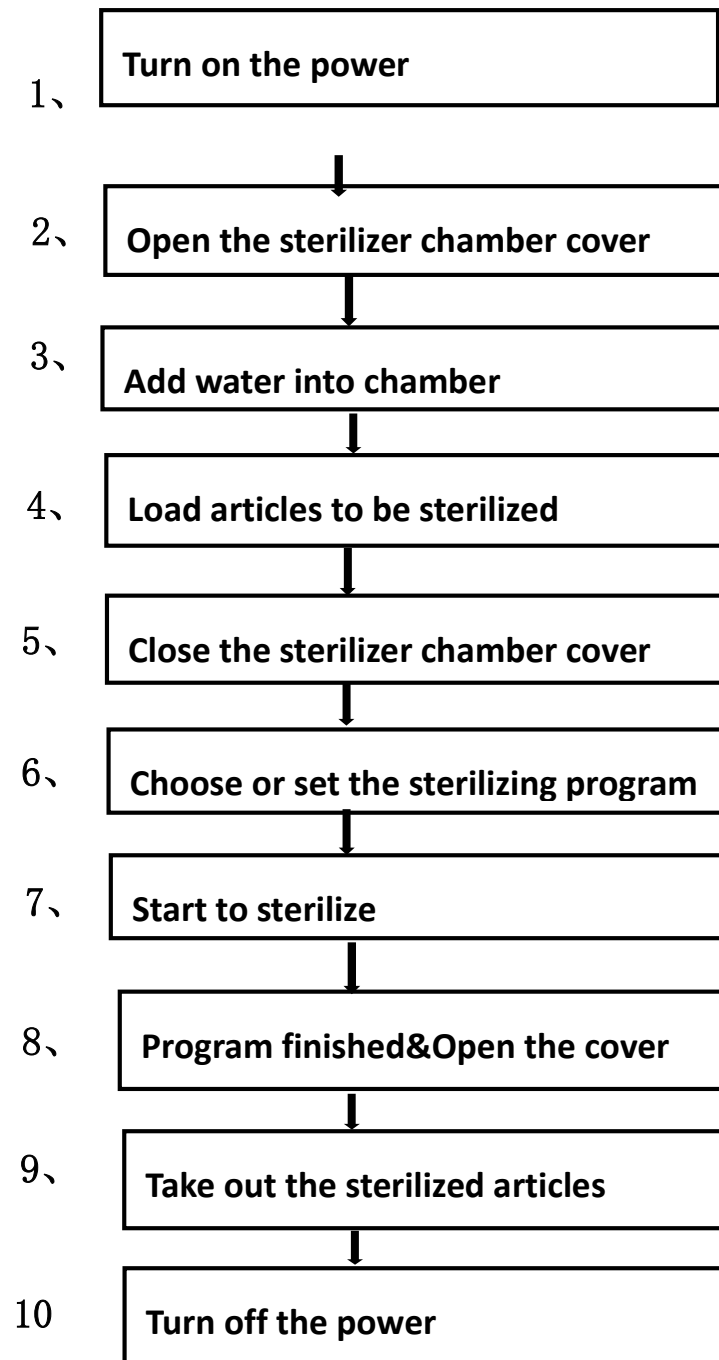
- 1) Switch on the leakage protection switch and turn on the power, and then open the cover of sterilizer chamber, and take out the protective foams from the chamber. Clean the chamber and put the water plate and stainless steel baskets in.
- 2) Clean the foam scraps inside the sterilizer chamber completely to avoid blocking the pipeline.

5. Setting of Local Altitude

Before shipping, the machine has been set for an elevation between 0-300m, if the local elevation is over 300m, please reset the altitude to make sure proper usage of the machine.

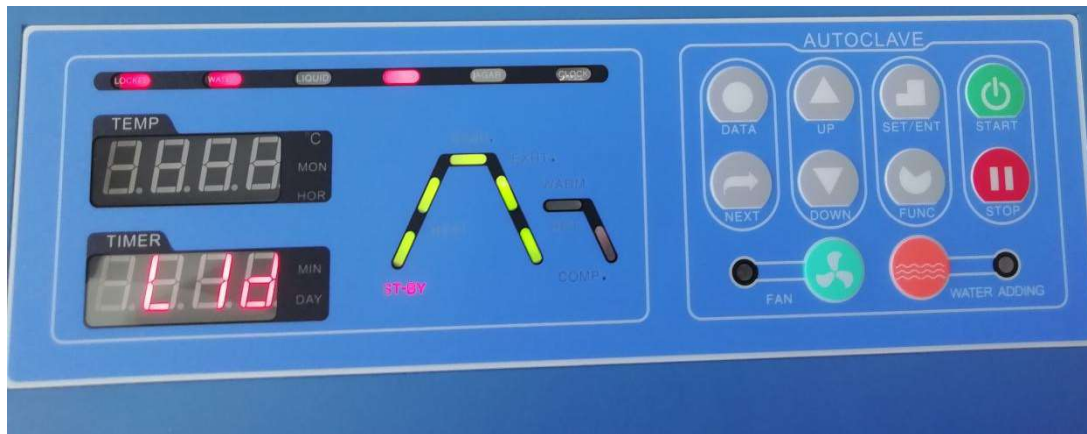
Chapter 3 Operation Instruction

I、 Basic Sterilization Illustration & Operation Instruction



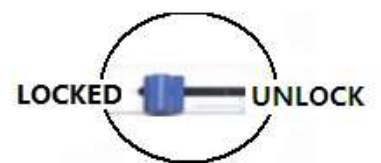
1、 Turn on the power

- Turn on the main switch on the left side of the machine.
- After turn on the power, the system will do the self-checking: “ST-BY” will blink, when the handle is at “locked” position, screen A will show current temperature, screen B will show newly saved program no. and panel will show corresponding flow chart and “locked” light will be on. When the handle is at “unlocked” position, Locked light will be off, screen B will flash LID.
- If the instrument is under standby condition, and no any operation within 30 minutes, the machine will enter into electricity-saving mode, and screen will go dark except for LOCKED light, press any button can restore the display.



2、 Open the sterilizer chamber cover

- While opening the lid, lightly press the middle of front end of chamber cover, and turn the lock lever to the right to UNLOCK position. At this time, the LOCKED light will be off. Grab the handle and open the chamber cover.



- Note:**
- 1) Do not open the chamber cover rudely to prevent seal ring from damage. During the LOCK lever operation, it is necessary to make sure the instrument has been powered on and power switch is also on.
 - 2) After sterilization, the sample should be taken away in time. If the sample is not taken for a long time, it may cause negative pressure, resulting in the lid can not be opened.
 - (3) Check whether the sealing rings are sticky: If so, separate them so as not to affect

the sealing.

3、 Add water in

● Check the front water tank , (Figure 1) ,keep the water level near the LOW position, if the water is over HIGH level, pour it out,If the water is not poured out in time, it will come out from the back.

Figure 1



● Pour water into the chamber manually, observe the water level from the water plate hole, make sure you can see the water, but the water is lower than the water plate.

Note: ○ Do not open the drainage valve of chamber or drainage valve of inside steam collecting tank to avoid injury from the high temperature steam.

○ The water level inside the chamber may decrease after each cycle, please add new water on time. Lack of water for a long time may cause damage to the heater. But need to drain water after each day work.

○ It is recommended to use distilled water with a electricity conductivity between 10~15us/cm, do not use well water, salt water or hard water, so as to prevent the chamber and heater.

4、 Load articles to be sterilized

● Take the baskets out, and put the articles to be sterilized into the baskets

● Put the water plate first, then put the baskets on the waterplate, do not put the basket directly on the heater.

Notes: VERY IMPORTANT

1. Clean the articles to be put in thoroughly by cleaning agent and water
2. While putting the articles into the baskets, make sure the articles is placed well (overlap may cause inadequate sterilization). Put carbon steel devices and stainless

steel device in different baskets and put several layer of Kapok paper under the carbon steel devices so as to protect the stainless baksets. Do not overload the articles, suggest to put 70% loading, and do not block the sensor and the exhaust hole.

3. Sterile equipment should be packed with breathable packaging materials such as sterilization bags, sterile paper, gauze bags, etc.
4. When the sterilizer is loaded with plastic bags, the sterilization bags should be placed in the basket first and then in the sterilization chamber, otherwise the temperature control will be affected.
5. When the sterilizer is loaded with a cleaning bag, it shall be opened, and it shall be confirmed that the bag does not touch the inner wall of the sterilization chamber. During sterilization, if the bag mouth is sealed, the sterilization will be insufficient. If the bag is jammed into the sterilization chamber and the steam cannot fill every corner, the sterilization will be incomplete.
6. When sterilizing glassware such as beakers, conical bottles and test tubes, the glassware shall be placed upside down or horizontally. If the vessel can only be placed directly, a small amount of distilled water or purified water can be put into the sterilized vessel.
7. When sterilizing the liquid, such as chemical reagent or solvent, pay attention to the rationality of the liquid in the container (the volume of the flask shall not exceed $3/4$, and the volume of the test tube shall not exceed $1/2$), so as to avoid the liquid overflowing from the container during the process of heating or cooling. Before sterilizing, the cover of the container shall be loosened so as to ventilate, otherwise the container will be broken.
8. When agar is dissolved, the volume of the container should be less than 2 L, otherwise the dissolution will be insufficient. (Note: the Durham test tube with a diameter of more than 6mm shall be used as the sample tube. When the diameter of the sample tube is less than 6 mm, bubbles will remain in the tube, which will affect the sterilization effect).
9. If equipped with load thermometer, please put it in a place not easy to get damaged and take care of the lift of the baskets, avoid touching the sensor.

5、Close the sterilizer chamber cover

- Press the middle part of the front end of the chamber cover gently, push the cover opening / closing handle to the left to the locked position, the system will give a sound, and the indicator light "locked" on the display panel will be on.

Note:

- Before closing the cover, check if there are objects in or on the sealing ring, clean it to avoid damaging the sealing ring that may cause the steam leakage.
- Only when the lid LOCKED light is on, the machine can start to work.

6、Select or set the program

● There are nine basic working modes, one user-defined mode. The ten working modes have been saved as: u01, u02, u03, u04, u05, u06, u07, u08, u09, and one user-defined mode U10.

● The parameters of the ten basic modes can not be modified or deleted, users can select the ten basic modes according to their needs. And can modify based on the 10 modes to create a new program, which can save up to 20 programs (including basic programs).

● Selecting the sterilizing program: Press the "UP" and "DOWN" button to choose the sterilizing program. The screen will show the U01 to U10, this is the pre set programs. If you want to sterilize under those programs. You just need to press the start for 3 seconds to start. If you want to create the new programs, you can press "SET/ENT" button to enter into the setting menu, press the "UP" and "DOWN" to set the temperature, then press the "NEXT" to enter into time setting. Then pressure "SET/ENT" again to save the new program, the new programs will be U11 to U20. Do not press STOP randomly during the process. Do not open chamber or water tank drainage valve during process.

● The basic program parameters corresponding to basic working mode and user-defined mode are as follows:

Note: The exhaust level is 0-5, 0 is no exhaust, and 5 is full exhaust. Every increase of 1 level will increase the exhaust volume.

Delay Time (DELY) : is delay time for cold air purging before sterilization, in order to make a pure steam environment. But if the delay time is too long, may cause lack of water during the sterilization.

The max cooling lock open temperature and exhaust temperature is related to the local boiling point, the maximum value of cooling lock open temp. for solid and agar mode is

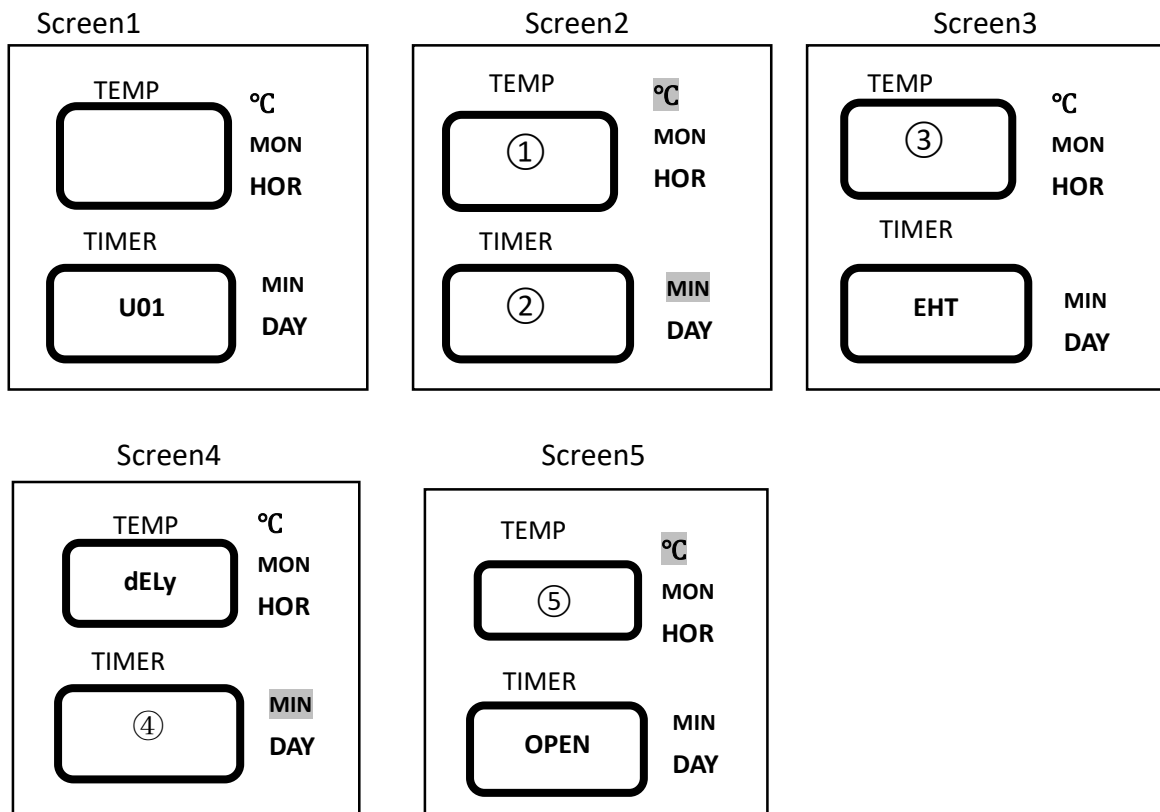
3°C lower than the local boiling point, 20°C lower for the liquid and waste mode, the max exhaust temp. is 4 °C higher than the local boiling point.

1) U01—Liquid

○ Sterilizing flow: Water adding → heating → sterilizing → exhaust → cooling lock release

○ Application: Liquid sterilizing, no warming after sterilizing (water, solvent, reagent and liquid medicine)

○ Press DATA button, the digital displayer A and B will display the detailed parameters once by five screens



U01 default parameters and the parameters scope of its newly created program

Name	No.	Default Parameter	Parameters Range of New Program
Sterilizing Temp.	①	121 °C	105°C~138°C
Sterilizing Time	②	20min	1~6000min
Exhaust Level(EHT)	③	0	0~5level
Delay Time (DELY)	④	0min	0~10min
Lid Open Temp (OPEN)	⑤	80°C	40°C~80°C

Note: If machine added with load thermometer, the lid open temp. range can be

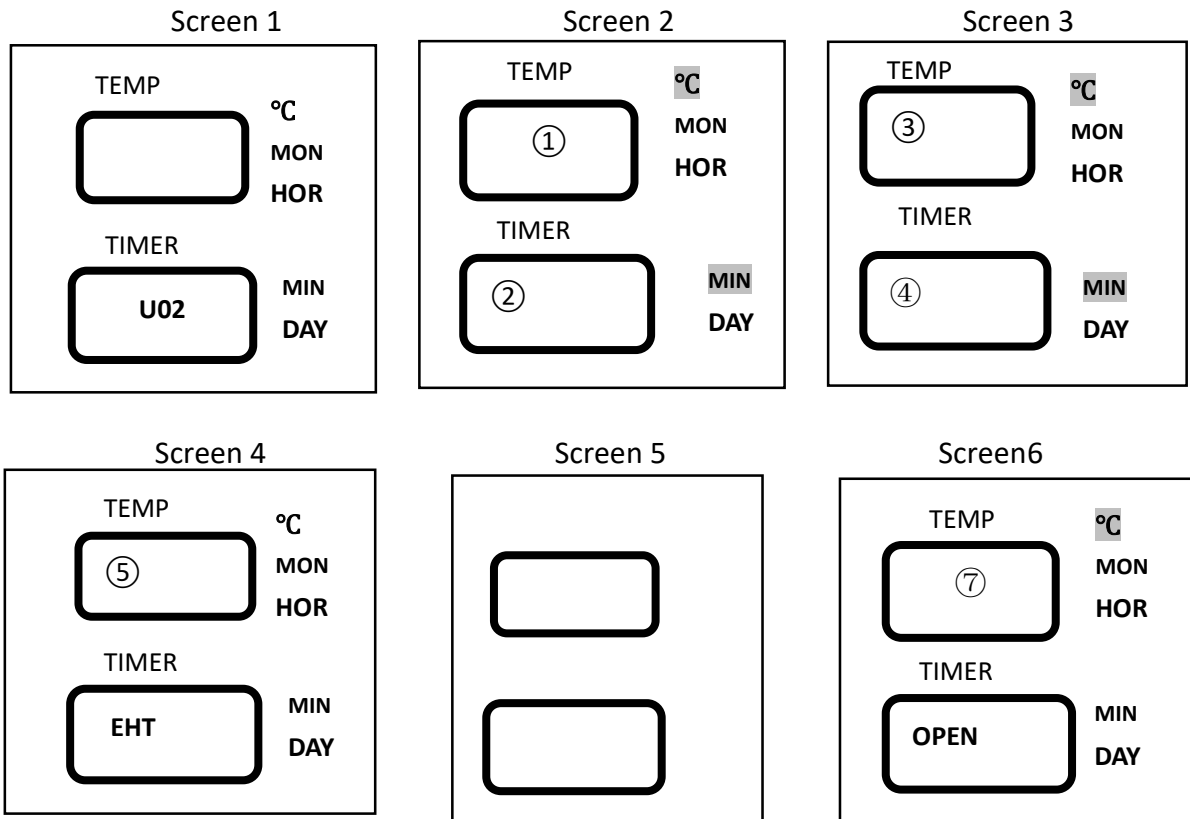
changed to 40-95°C.

2) U02—Liquid with warming

○Sterilizing flow: water adding → heating → sterilizing → exhaust → warming → cooling lock release

○Application: Liquid sterilizing, automatic warming after sterilizing (Agarose medium)

○Press DATA button, the digital displayer A and B will display the detailed parameters once by six screens:



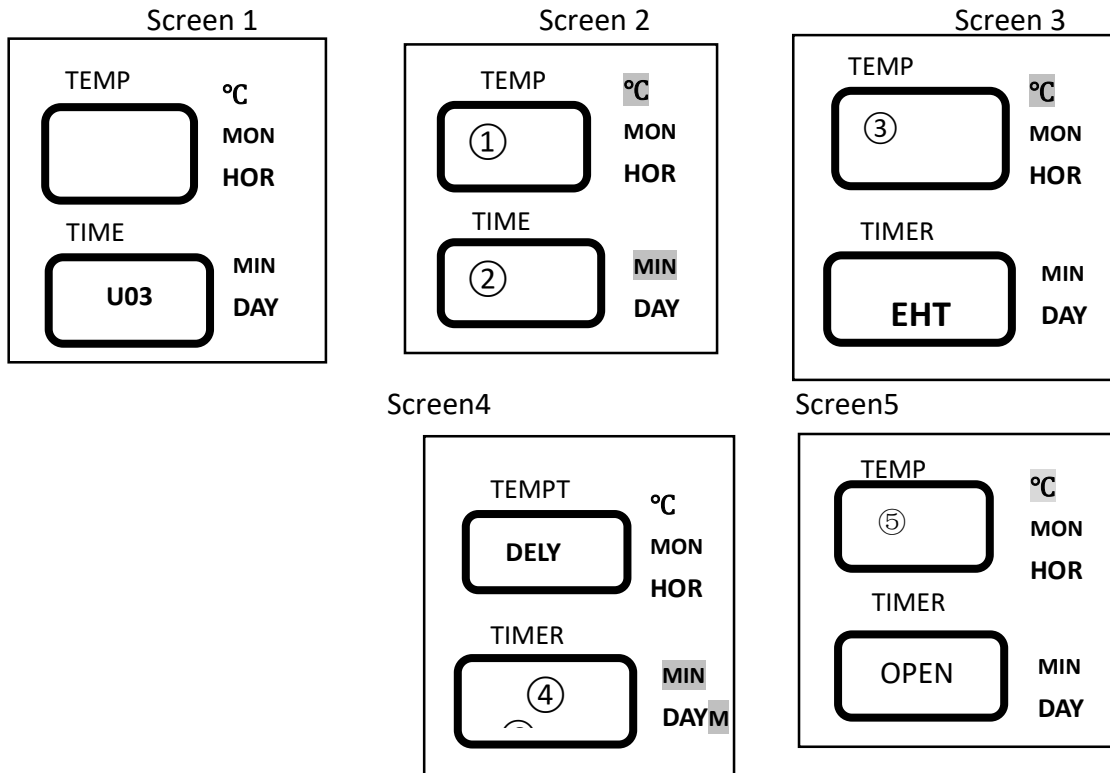
U02 default parameters and the parameters scope of its newly created program

Name	No.	Default Parameter	Parameters Range of New Program
Sterilizing Temp.	①	121°C	105°C~138°C
Sterilizing Time	②	20min	1~6000min
Warming Temp.	③	50 °C	45°C~79°C
Warming Time	④	600min	1~9999min
Exhaust Level(EHT)	⑤	0	0~5 level
Delay Time (DELY)	⑥	0min	0~10min
Lid Open Temp. (OPEN)	⑦	80°C	40°C~80°C

Note: If machine added with load thermometer, the lid open temp. range can be changed to 40-95°C.

3)U03-Solid Mode

- Sterilizing flow: water adding → heating → sterilizing → exhaust → cooling lock release
- Application: Solid sterilizing
- Press DATA button, the digital displayer A and B will display the detailed parameters once by five screens:



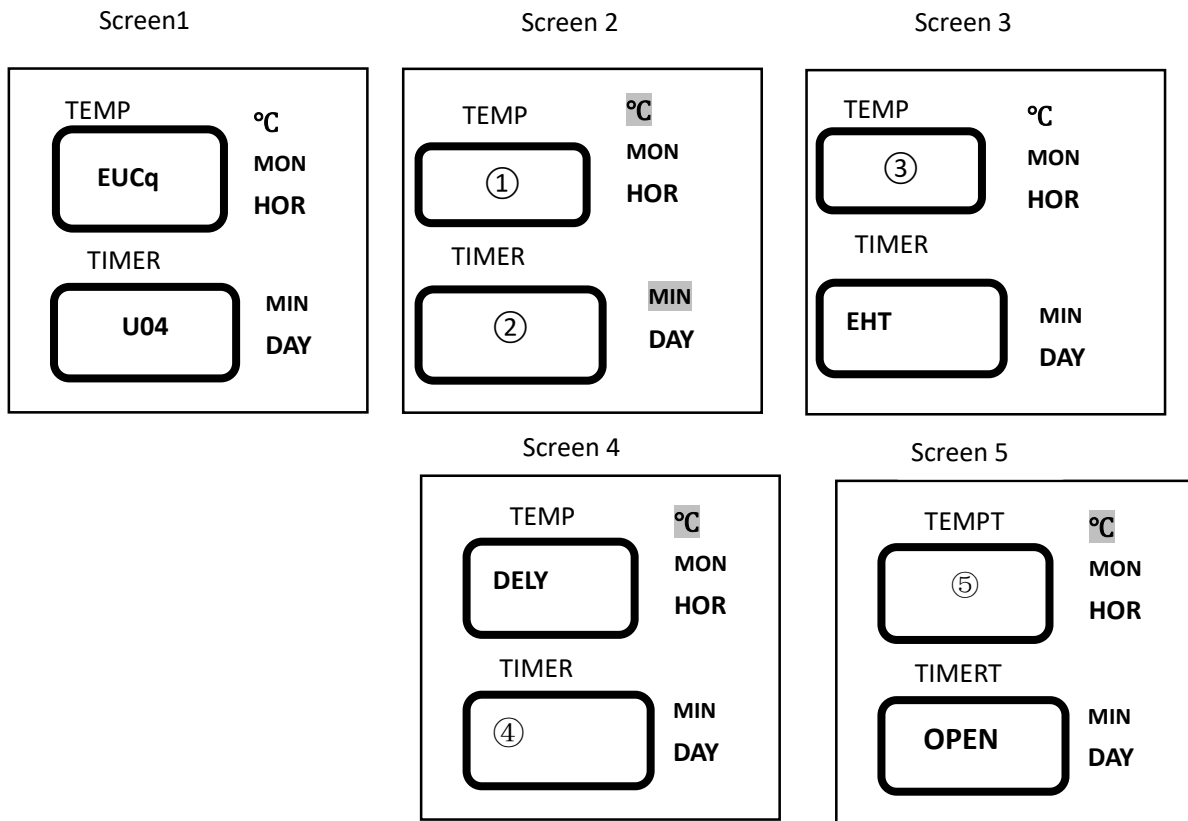
U03 default parameters and the parameters scope of its newly created program

Name	No.	Default Parameter	Parameters Range of New Program
Sterilizing Temp.	①	121℃	105℃~138℃
Sterilizing Time	②	20 min	1~6000min
Exhaust Level(EHT)	③	4	0~5 level
Delay Time (dELY)	④	0min	0~10min
Lid Open Temp. (OPEN)	⑤	97℃	40℃~99℃

4) U04— wrapped instruments(instruments wrapped not sealed)

- Sterilizing flow: water adding—heating(delay time)— sterilizing → exhaust → water outlet → cooling lock release
- Application: Sterilization of instrument sets, paper bags, paper or plastic packaging instruments, etc
- Press DATA button, the digital displayer A and B will display the detailed parameters

once by five screens:

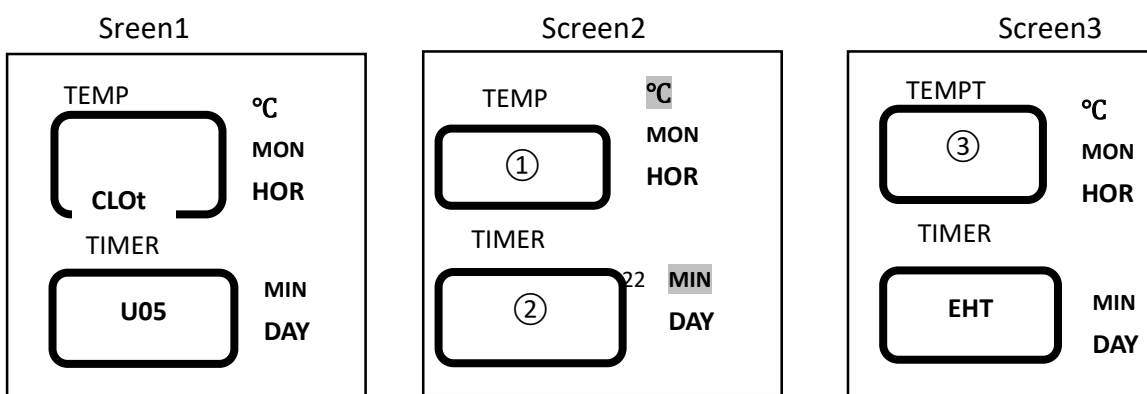


U04 default parameters and the parameters scope of its newly created program

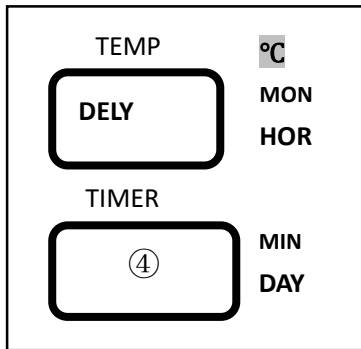
Name	No.	Default Parameter	Parameters Range of New Program
Sterilizing Temp.	①	121℃	105℃~138℃
Sterilizing Time	②	30min	1~6000min
Exhaust Level(EHT)	③	4	0~5level
Delay Time (DELY)	④	0min	0~10min
Lid Open Temp. (OPEN)	⑤	97℃	40℃~99℃

5) U05—Fabric/Cloth mode

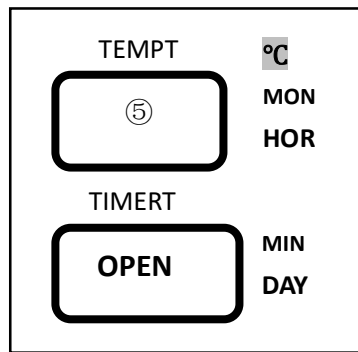
- Sterilizing flow: Standby→Heating→Sterilizing→Exhaust→Complete
- Application: Textile articles, dressing bag sterilization
- Press "data" key, digital display screen a and B display specific parameters in five screens once.



Screen 4



Screen 5



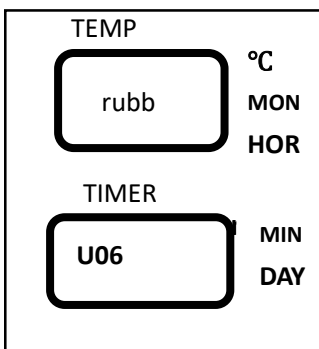
U05 default parameters and the range of new program parameters generated by u05:

Name	No.	Default Parameter	Parameters Range of New Program
Sterilizing Temp.	①	121 °C	105 °C~138 °C
Sterilizing Time	②	30min	1~6000min
Exhaust Level(EHT)	③	4	0~5level
Delay Time (DELY)	④	0min	0~10min
Lid Open Temp. (OPEN)	⑤	97 °C	40 °C~99 °C

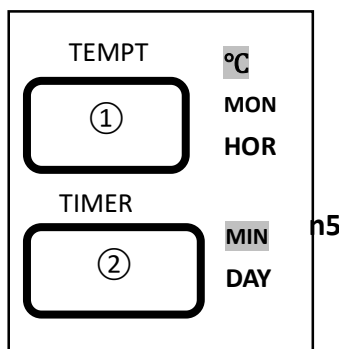
6) U06—Rubber

- Sterilizing flow: Standby→Heating→Sterilizing→Exhaust→Complete
- Application: Sterilization of heat-resistant and moisture-resistant tubular rubber, porous rubber products, etc.
- Press DATA button, the digital displayer A and B will display the detailed parameters once by 5 screens:

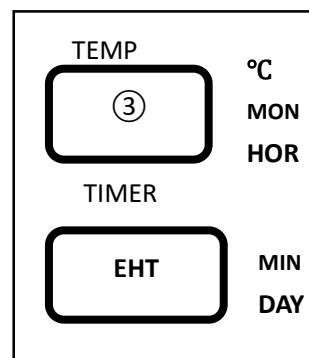
Screen1



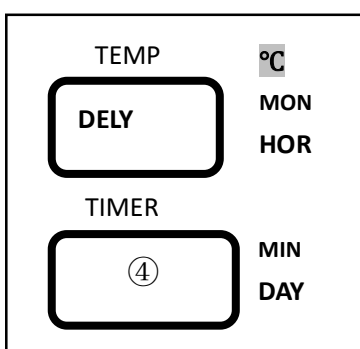
Screen2



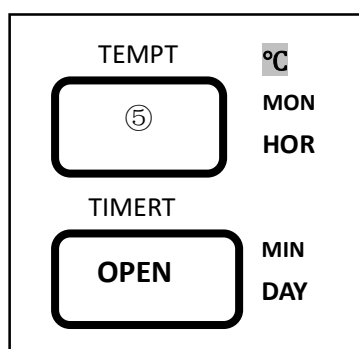
Screen3



Screen 4



Screen 5



U06 default parameters and the parameters scope of its newly created program

Name	No.	Default Parameter	Parameters Range of New Program
Sterilizing Temp	①	121 °C	105°C~138°C
Sterilizing Time	②	30min	1~6000min
Exhaust Level(EHT)	③	4	0~5level
Delay Time (DELY)	④	0min	0~10min
Lid Open Temp. (OPEN)	⑤	97°C	40°C~99°C

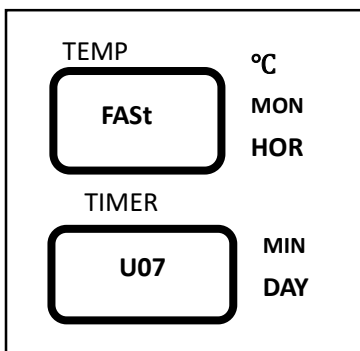
7) U07—Fast

○Sterilizing flow: Standby→Heating(delay time)→Sterilizing→Exhaust→Complete

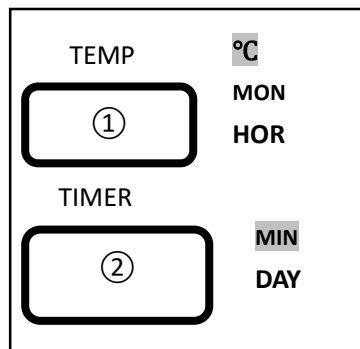
○Application: In case of emergency use, it is only applicable to sterilize the exposed articles, and put them in the special sterilization container of cassette box. Sterilized articles should be used as soon as possible. It should not be stored and has no expiration date.

○Press DATA button, the digital displayer A and B will display the detailed parameters once by 5 screens:

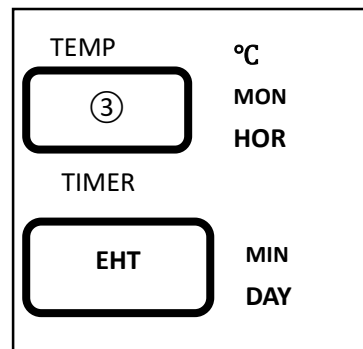
Screen1



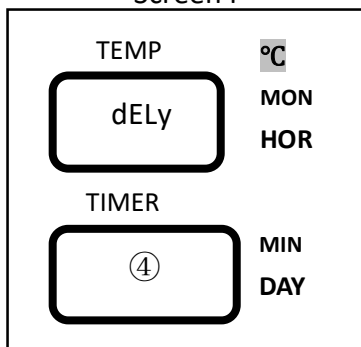
Screen2



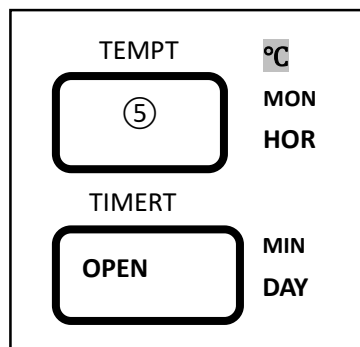
Screen3



Screen4



Screen5

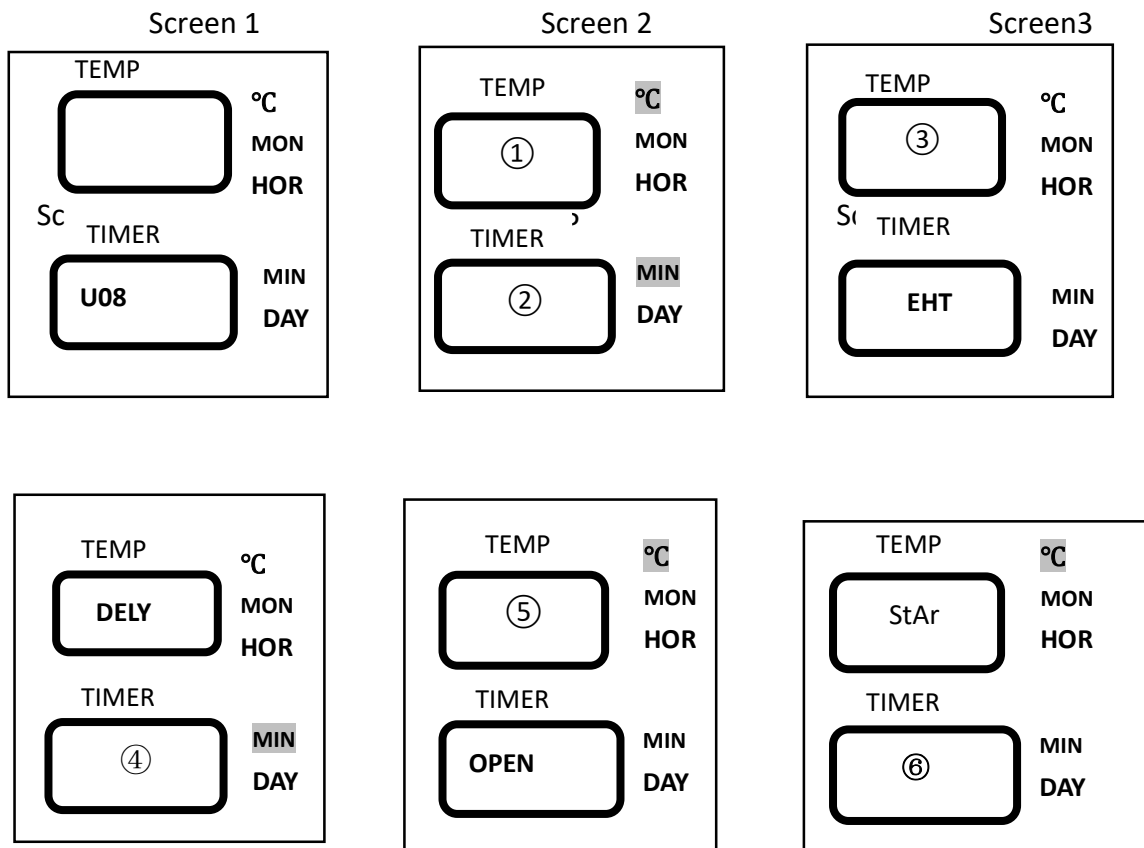


U07 default parameters and the parameters scope of its newly created program

Name	No.	Default Parameter	Parameters Range of New Program
Sterilizing Temp	①	134℃	105℃~138℃
Sterilizing Time	②	12min	1~6000min
Exhaust Level(EHT)	③	4	0~5 level
Delay Time (DELY)	④	0 min	0~10mmin
Lid Open Temp. (OPEN)	⑤	97℃	40℃~99℃

8) U08—Waste

- Sterilizing flow: water adding → heating → sterilizing → exhaust → cooling lock release
- Application: waste sterilizing, waste could be solid, liquid or both
- Press DATA button, the digital displayer A and B will display the detailed parameters once by 5 screens



U08 default parameters and the parameters scope of its newly created program

Name	No.	Default Parameter	Parameters Range of New Program
Sterilizing Temp	①	126℃	105℃~138℃
Sterilizing Time	②	40min	1~6000min

Exhaust Level(EHT)	③	0level	0~5level
Delay Time (DELY)	④	0min	0~10min
Lid Open Temp. (OPEN)	⑤	80℃	40℃~99℃
Hot air holding time (StAr)	⑥	0min	0~250min

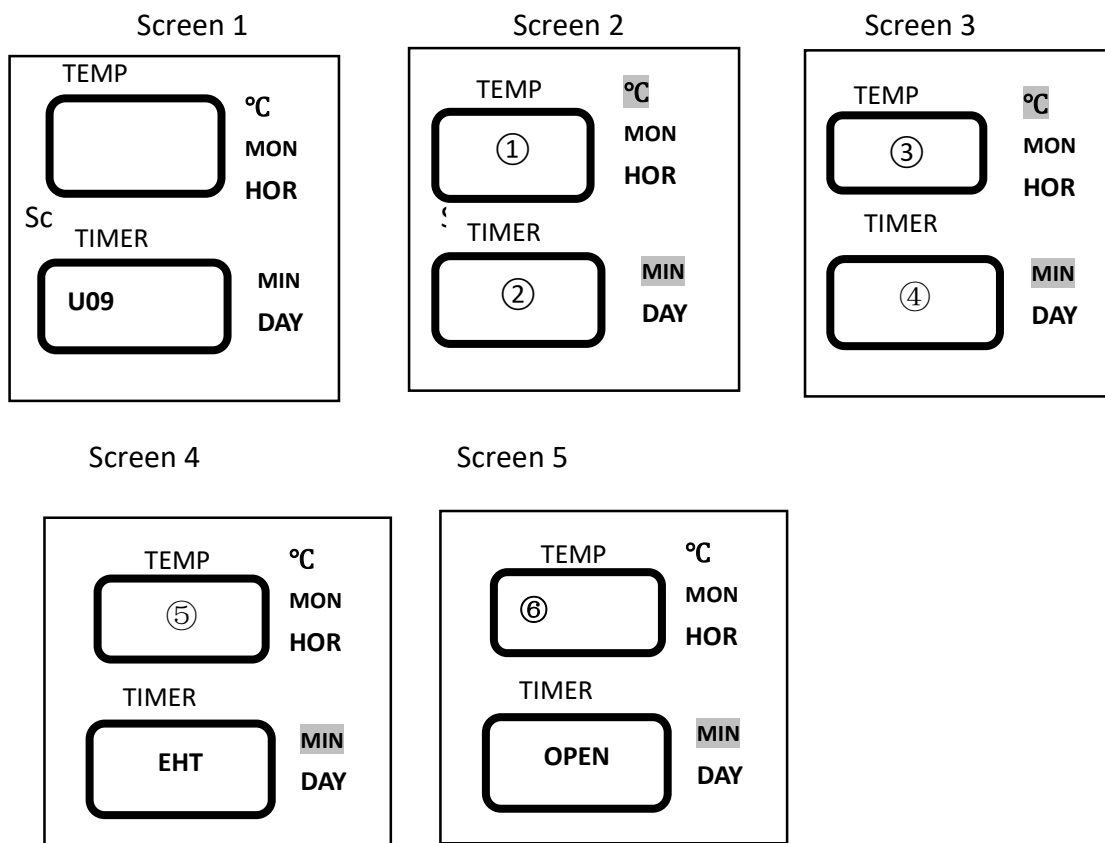
Note: Hot air holding time(StAr): is time to hold the hot air(when temperature reaching local boiling point), so as to increase the steam perviousness. When the hot air holding time is 0, means after you press START, the exhaust valve will be open, purge the cold air out then close and heat up. If the hot air holding time is 5, means after you press START, the exhaust valve will close for 5 min after the temp reached local boiling point, then open to purge the cold air out then close and heat up.

9) U09—Agar melting

○Sterilizing flow: water adding → heating → melting → warming → cooling lock release

○Application: Agar melting and warming

○Press DATA button, the digital displayer A and B will display the detailed parameters once by five screens



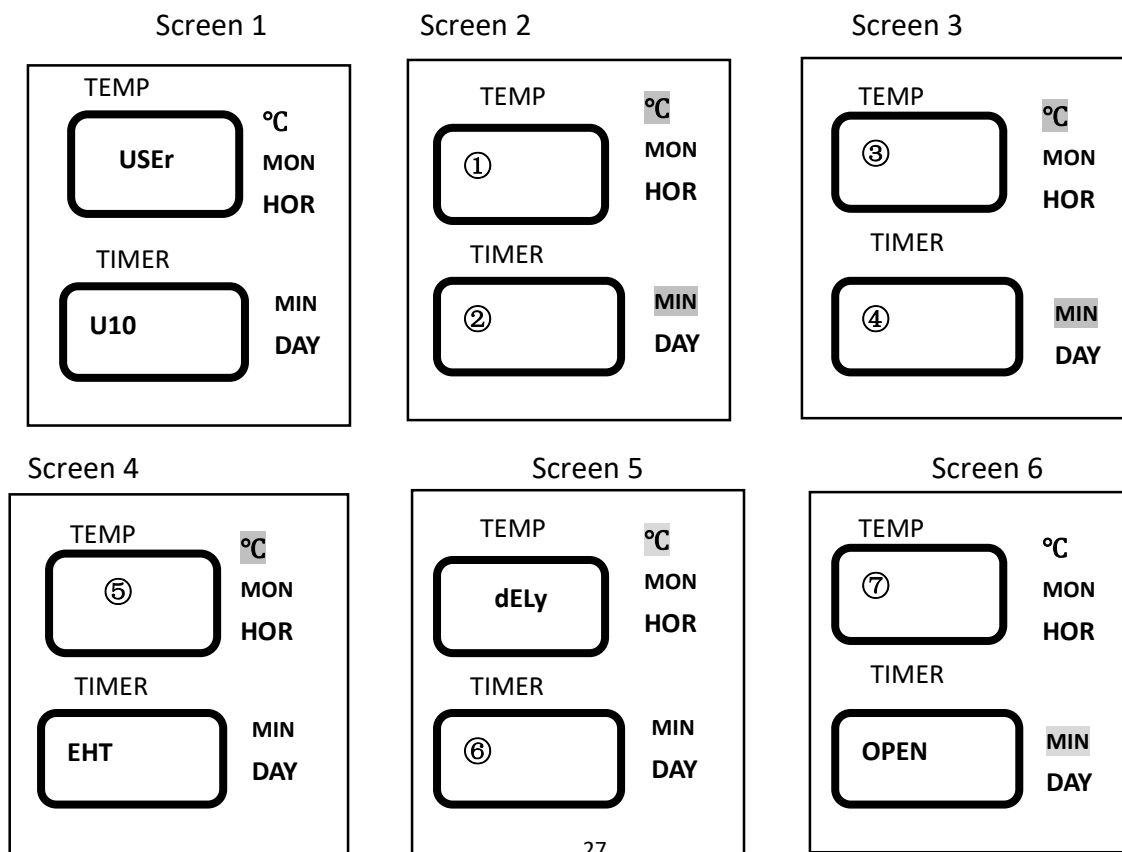
U09 default parameters and the parameters scope of its newly created program

Name	No.	Default Parameter	Parameters Range of New Program
Melting Temp.	①	100 °C	60°C~115°C
Melting Time	②	10min	1~6000min
Warming Temp.	③	50°C	45°C~79°C
Warming Time	④	600min	1~9999min
Exhaust Level(EHT)	⑤	5	0~5level
Lid Open Temp. (OPEN)	⑥	97°C	40°C~99°C

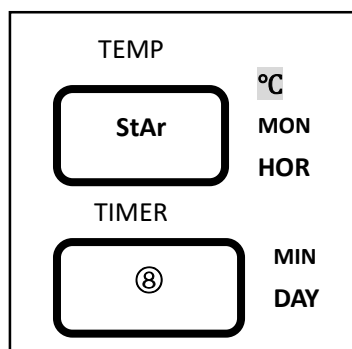
Note: To make sure safety, the lid can be open only when the temperature is lower than the set OPEN temperature. If the machine is added with load thermometer, the lid can be open only when both the chamber temperature and thermometer temperature are lower than the OPEN temperature.

10) U10—Self defined

- Sterilizing flow: water adding→heating→sterilizing→exhaust→warming→complete
- Application: according to customer
- Press DATA button, the digital displayer A and B will display the detailed parameters once by seven screens



Screen 7



U10 default parameters and the parameters scope of its newly created program

Name	No.	Default Parameter	Parameters Range of New Program	Note
Sterilizing Temp.	①	121℃	105℃~138℃	
Sterilizing Time	②	20min	1~6000min	
Warming Temp.	③	50℃	45℃~60℃	
Warming Time	④	600min	0, 1~9999min	0means no warming
Exhaust Level (EHT)	⑤	4	0~5 level	
Delay Time (DELY)	⑥	0min	0~15min	
Lid Open Temp. (OPEN)	⑦	97℃	40℃~99℃	
Hot air holding time (StAr)	⑧	0min	0~250min	

Note: To make sure safety, the lid can be open only when the temperature is lower than the set OPEN temperature. If the machine is added with load thermometer, the lid can be open only when both the chamber temperature and thermometer temperature are lower than the OPEN temperature.

7、Start to sterilize

- 1) After power turned on, screen displays the latest saved program. If you continue to use the program, long press "START" to start the work directly.
- 2) Call the saved program: in standby mode, press the "up" or "down" key once, and the displayed program number will be increased or subtracted by 1 based on the current program number. If the current program number is U10, Press the "up" key once, the display program number is U11; if the "down" key is pressed once,

the program number is displayed as u09; when the "up" or "down" button is continuously pressed, the displayed program number increases or decreases in 10 units. When the button is stopped, the specific parameters of the current program will be displayed on the two screens in turn. Select the appropriate program and press "start" to start the operation.

3) Modify or set up a new program and start:

For the specific modification method, please refer to Chapter 3 operation instructions (2), creating, modifying and deleting procedures.

4) Clock check and calibration:

For details, please refer to the third part chapter 3 ,and for setting the timing start, see the fourth part of the chapter 3.

5) Program printing function: if the printer is installed and set in the administrator menu, enable it. Set up the print function before running the program. For details, please refer to P001 set by user administrator in Chapter 4, maintenance and management of instruments (3).

6) Exhaust setting:

During the process of sterilization, if the default exhaust level is not suitable, you can press the FUNC" +UP keys at the same time for manual adjustment. Each time you press the FUNC+UP button, the exhaust level will increase by one level. If you press it again at the fifth level, it will be adjusted to level 0 and cycle up and down.

8、 Program finished&Open the cover

- When reach the set sterilizing temp.,melting temp, the system will give a indicating sound.
- When all the program finished and temperature is lower than the cooling lock open temp., the COMP. will blink,system will send out 5 long sound,indicating the finish of the sterilization. You can open, pay attention not to get burnt.
- When the temperature is lower than 40 °C, the "COMP." will no longer flash, and the "ST-BY" will flash. The system will return to the standby state, and the cover can be opened safely.

Note:Do not press STOP randomly during the process. Do not open chamber or water

tank drainage valve during process.

9、 Take out the sterilized articles

- 1) Always wear the heat insulation gloves when taking articles out after sterilization, and wait until the steam disappears before reaching into the sterilizer chamber.
- 2) When sterilize the liquids, make sure taking articles out with enough low temperature, due to slow cooling speed of liquid.
- 3) Press the "FUNC" + "DOWN" key at the same time to check the actual temperature of the load thermometer when the load thermometer is installed. When taking out the basket, pay attention that the thermometer is not stuck before taking it out.

10、 Turn off the power

- 1) The power switch should be turned off at the end of the day's sterilization work or when it is not in use for a long time.
- 2) At the end of the day's work, it is recommended to drain out all water in the sterilization chamber.

II、 Creating, Modifying, Deleting the Program

1、 Creating and modifying the program

Find the required sterilization mode by pressing the "UP" or "DOWN" key, and then press the "SET/ ENT" key to enter the parameter modification interface. If there is a function of setting and enabling password in the background, the administrator password should be input. In the setting process, if you press the "DATA" key, the parameter settings will not be saved and return to the standby state; if you press the "SET/ ENT" key during the setting process, the parameter settings will be saved and a new sterilization mode will be created. Press "START" again to run the program.

Example: modify U01 program

- 1) When the "SET/ ENT" key is pressed, the sterilization temperature, the "ster." character and the sterilization status light on the digital display screen a flash, indicating that the sterilization temperature can be modified. Press the "UP" or "DOWN" key to modify the parameters. Then press the "NEXT" key, the sterilization time, "ster." character and sterilization status light on the digital display screen B will flash, indicating that the sterilization time can be modified. Press the "UP" or "DOWN" key to modify the parameters.
- 2) Then press the next key, the exhaust level parameter displayed on the digital display screen a flashes, indicating that it can be modified.
- 3) Then press the next key, the digital display screen B shows "OPEN", and the digital display screen a shows that the opening temperature parameter flashes, indicating that it can be modified.

4) Then press the next key to modify the sterilization temperature.

At this time, to save the parameters, press the "SET / ENT" key to exit and generate a new program U011

At this time, if you do not want to save the parameters, press the "data" key to directly exit and return to the program U01.

Note: the program parameters can only be modified in standby mode. If the parameters cannot be set during the sterilization process of the instrument, you can only press the "data" key to view the sterilization parameters.

2、Deleting Program

- If you need to delete the program, press FUNC+STOP to delete.
- Default programs can not be deleted

3、Setting the sterilizing time

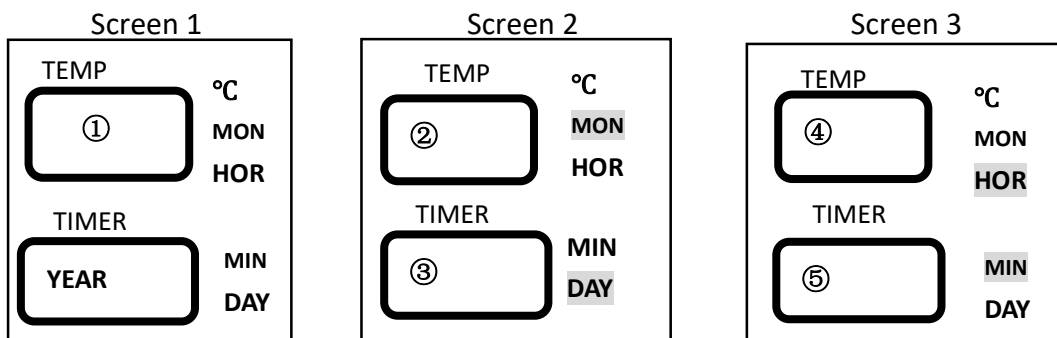
- Some items (such as liquid) have high thermal inertia, in order to obtain the ideal sterilization effect, it is recommended to use the load thermometer; if no, set a longer sterilization time.

For example, for 3L water in a flask, when the chamber temperature reaches set temperature after 20 minutes, but the liquid in the bottle hasn't reach yet, it needs 33 minutes more to reach. So, the sterilization time should set to be 53 minutes. Actual required sterilizing time(53min)=Normal sterilizing time(20min)+Delay time(33min)

- When installed with load thermometer, the system will begin sterilization process only when the sensor put in the liquids reaches the set temperature.
- When sterilize waste processing bags, 300-500ml water will help to shorten the heating up time.
- A delay time is also needed for plastic products.

III、Clock Checking and Calibration

- Under standby status, press FUNC+NEXT together to enter the clock checking and calibration mode (F05), with screen A and B showing the current parameters like below:



● F05 default parameter¶meter adjustable range

Name	NO.	Default Parameter	Adjustable Range
YEAR	①	2011	2000--2099
MONTH	②	1	1-12
DATE	③	1	1-31
HOUR	④	1	0-23
MINUTE	⑤	1	0-59

- 1) If the time setting is correct, press the "data" key to exit.
- 2) If the time setting is not correct, press the "set / ENT" key to enter the parameter modification interface: the time displayed on the digital display screen a flashes, and the digital display screen B displays "year", indicating that the year can be modified. Press the "up" or "down" key to set.
- 3) Press the "next" key, and the time and month indicator lights on the digital display screen a will flash, indicating that it can be modified; press the "up" or "down" key to increase or decrease the display value accordingly. Each time you press the "up" or "down" key, the display value will increase or decrease by 1 month. If the value is over 12 months (or the minimum value of 1 month), it will stop in December (or January) if it exceeds the maximum value of 12 months (or the minimum value of 1 month) Press this key to display January.
- 4) Press the "next" key, the time and date indicator lights on the digital display screen B will flash, indicating that it can be modified; press the "up" or "down" key to increase or decrease the display value accordingly. Each time you press the key, the display value will increase or decrease by 1 day. If you press this key continuously, the display value will increase or decrease by 10 units, exceeding the maximum value After 31 days (or the minimum value of 1 day), it will stop on 31 days (or 1 day). If it stops on 31 days, press this key again to display 1 day.
- 5) Press the "next" key, and the time and hour indicator lights on the digital display screen a will flash, indicating that it can be modified; press the "up" or "down" key to increase or decrease the display value accordingly. Each time you press the key, the display value will increase or decrease for 1 hour. If you press the key continuously, the display value will increase or decrease in 10 units. If the maximum value exceeds 23

hours (or the minimum value of 0 hours), it will stop at 23 hours (or 0 hours), if it stops In 23 hours, press the key again, the display is 0 hours.

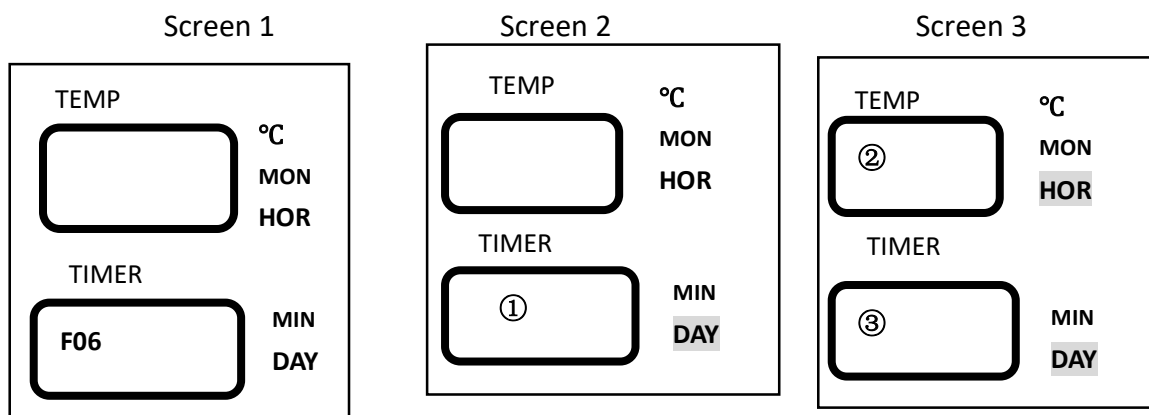
6) Press the "next" key, and the time and minute indicator lights on the digital display screen B will flash, indicating that it can be modified; press the "up" or "down" key to increase or decrease the display value accordingly. Each time you press the key, the display value will increase or decrease for 1 minute. If you press this key continuously, the display value will increase or decrease in 10 units. If the maximum value exceeds 59 minutes (or the minimum value is 0 minutes), it will stop at 59 minutes (or 0 minutes). If it stops for 59 minutes, press the key again, and the display is 0 minutes.

7) When all parameters are modified, and then press "set / ENT" key, the modified parameters will be permanently saved, even if power failure will not be eliminated. If you do not want to save your changes, you can press the "data" key to return to standby mode.

● Please make sure the date to be modified is reasonable. If you set an unreasonable date, it will affect the real time of printing content and the accuracy of timing startup.

IV、 Setting Auto Startup Timer(F06)

1. Under clock checking and calibration mode(F05), press FUNC+NEXT to enter the auto startup timer mode(F06), with the screen A and B showing the current parameters like below:



● F06 default parameter¶meter adjustable range

Name	NO.	Default Parameter	Adjustable Range
------	-----	-------------------	------------------

Delay Day	①	0	0-15
Startup Time	②	0	0-23
Startup Time	③	0	0-59

2. After setting the correct delay time, press DATA to exit.
 3. If the delay time is not set correctly, press the "set / ENT" key to enter the parameter modification state: digital display B (delay days), flashing, indicating that it can be modified. Press the "up" or "down" key to increase or decrease the display value accordingly. Each time you press it, the display value will increase or decrease by 1 day, with a maximum delay of 15 days and a minimum of 0 days.
 4. Press the "next" key, the digital display screen a (hour) flashes, indicating that it can be modified;
 5. Press "next" to change the display;
 6. For example:
 - (1) Plan to start at 6:30 pm, set date to 0, hour to 18, minute to 30
 - (2) Plan to start at 6:00 pm tomorrow, set date to 1, hour to 18, minute to 30
 7. Press SET/NET to save the change, CLOCK light will be on. Press DATA and check the current setting.
 8. Press START button, the auto startup timer begins to work, CLOCK and ST-BY will blink. If you don't press START, even you set auto startup timer, machine will not start automatically.
 9. Cancel the auto startup timer: follow the step 1 to enter into F06, change all the time setting to 0.
- Make sure you set a correct time, auto startup function is based on the correct time setting.

Chapter 4 Maintain&Management

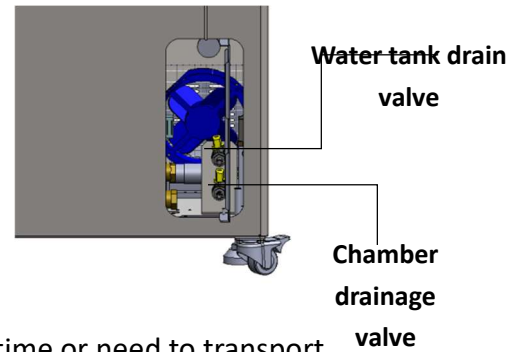
★Note: Turn off the power, make sure the chamber is cooled down before maintain or fix.

I.Cleaning

1、 Water inlet tank cleaning

- Connect the drainage to the drain port, then open it counterclockwisely.

★Note: Drain the water if machine is not used for a long time or need to transport.



2、 Chamber water change and cleaning

1) Water change of chamber

- If the water in the chamber is not changed for a long time, the dirt inside will cause damage to solenoid valve and lead to abnormal noises.
- Connect the drainage to the chamber drain port, then open it counterclockwisely, after cleaning, close the valve.

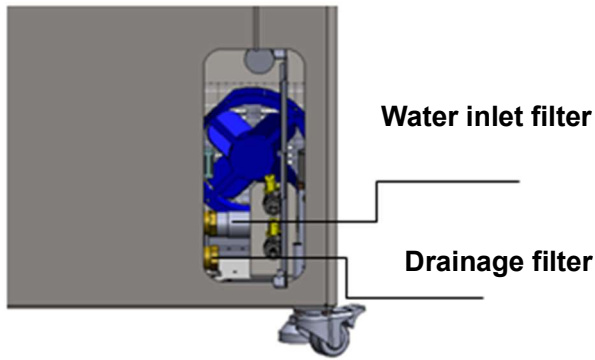
2) Cleaning of chamber

- Although the water tank and pipeline are equipped with mesh filter, the debris may cause failure, block the pipeline or attach to the heating pipe, reduce the service life of the heating pipe, please clean the sterilization chamber regularly, and remove scale and debris.
- Use the brush with handle to clean the bottom of the sterilization chamber. Pay attention not to use too much force to damage the electric heating pipe and temperature switch.
- Clean the sterilization chamber with a soft cloth, and then wash it with hot water (do not add any detergent).
- Clean the chamber once a week.



3、 Cleaning of drainage and inlet filters

- The drainage and water inlet filters are located at the back and near bottom of the instrument



- Screw off the plug by the angle wrench, take out the filter element, and then wash it with clean water
- Return to the original position and lock the plug.
- The filter screen inside the filter can be taken out and cleaned, and then install back.
- clean at least once a week.

4、 Heater cleaning

- Take out the water plate and check whether the surface Of heater is clean or not. Otherwise,wash with soft brush, And then empty the dirty water
- Do not move or damage the temperature control switch on the heater.
- Suggest to clean once a month



Water level sensor

Temp control switch

5、 Clean of water level sensor

- Pay attention to keep the water level sensor clean, such as dirt attached to the surface of the sensor, which is easy to cause false alarm or even stop working.
- It is recommended to wipe with a soft cloth once a week to remove the dirt on the sensor surface.

6、 Clean the instrument surface

- The surface of instrument may be cleaned slightly by using the soft cloth with little neutral detergent solution, and then dried with cloth
- Do not use phenol or oil thinner to clean the surface of the instrument to avoid

damaging the surface of the instrument or causing the paint to fall off

7、 Maintain of sealing ring

- Change the sealing ring if there is any broken。 If the edge of the sealing ring of cover becomes white or hardened, it may lead to steam leakage, and must be changed.
- The sealing ring surface should be cleaned regularly to remove dirt. When cleaning, add a little detergent and wipe with a wet cloth.

II.Maintenance

1、 Check of Main Switch/Leakage Circuit Breaker

- Press the T button of the switch,if it dumps off,means normal,if no, please turn off and contact the dealer



- Check once a month

2、 Safety valve test

- Enter into the administer menu(Refer to Setting of Administor Menu), then press DOWN to choose P006, the safety valve test,choose ENABLE,press SET/ENT to save and exit.
- The instrument will start to do safety valve test, you can press STOP to stop it.The normal situation is safety valve should jump up and release the steam when temperature rise up to 143℃-148℃, and pressure rise up to 0.29Mpa-0.32Mpa.
- If the temperature goes over the max temperature 148℃ and safety valve is not jump up and release, means there is problem with the safety valve, please stop the test and contact distributor.
- Press STOP very shortly can put an end to the testing,screen will show E03,this is normal, you can press STOP button again after the temperature goes down to 105℃ or pressure goes below 0.1Mpa to return to standby screen.

3、 Replacement of sealing ring

- Open the cover.
- Insert the lower part of the fixing ring with a slotted screwdriver, gently pry upwards, take out the old sealing ring, and then take out the fixing ring of the sealing ring from the old sealing ring.
- Clean the dirt on the fixing ring of the sealing ring and the contact part between the chamber and the sealing ring with a cloth.
- There are two rings, one is sealing ring, one is stainless steel fixing ring. Place the fixing ring on the bottom of the groove on the new seal ring, and slowly press the seal ring into the outer edge of the sterilization chamber until it is completely inserted. If the retaining ring slips out, it can be pressed back into the fixing groove with a soft ham. When the sealing ring is fully in place, the inner part of the upper edge is slightly lower than the outer edge of the sterilization chamber, and the lower edge touches the metal surface of the base. Press the surface of the sealing ring lightly by hand to make it flat. If the sealing ring surface is not flat, the cover will be difficult to close.
- Run the cycle and observe the leaking situation of the sealing ring.

4、 Uninstall the left and right side panels

- The left and right side plates of the instrument are designed to be taken off for convenient maintenance.
- The bolts for locking the side plate are located at the bottom of the instrument and can be unscrewed by hand or tool.
- The printer (optional) is fixed on the front vertical plate. When removing the printer, pay attention to unplugging the cable to avoid damage.

III、 Setting of Administrator Menu

Under standby by screen, press FUNC+DATA together, enter into pass code :667788 by press UP and DOWN button, press SET/ENT button to enter into the administrator menu. You will see P001 to P023. You can modify the password, if you forget, contact the distributor/manufacturer. Do not change the original setting randomly.

● Administrator Menu:

P001 PRINTER switch: 0 means off, 1 means on, 1 means printing out the cycle data. When P001 is 1, only print data. When P003 is on, P001 can be set to 2, 2 means printing data and curve. When P003 is off, P001 will change to 1 automatically.
P002 Load thermometer: yes means on, no means off

P003 Setting of pressure unit: 1: Kpa; 2: bar; 3: psi; 4: no means no this optional accessory or pressure sensor is off. Do not choose 1-3 if you didn't add a pressure sensor on.

P004 Display of printing date: 0: DDMMYY; 1: YYMMDD

P005 Printing language: 0: English; 1: Chinese

P006 Safety valve test: yes for on; no for off

P007 Chamber temp sensor's temp compensation: the temp compensation scope is -5--+5; screen B will show temp compensation value and press of UP or DOWN button may adjust the value.

P008 Load thermometer's temp compensation: the temp compensation scope is -5--+5; screen B will show temp compensation value and press of UP or DOWN button may adjust the value.

P009 Setting of max working temp: The temp range is 135-145°C and press of UP or DOWN button may adjust the max temp for safety valve test.

P010 Setting of local altitude: the UP or DOWN button may be used for adjusting the altitude and every press of this button will increase or decrease one unit and pressing and holding it will be 10 units increase or decrease between 0-3000(m)

P011 Boiling point temp change automatically according to P010: after setting of altitude, press NEXT button and local boiling point will be shown automatically.

P012 Cooling fan: yes means on, no means off. Will be on when temp. is over 40°C, if you don't want to use, can press FAN button to switch off. Completely off is in P012.

P013 Button sound, yes means on, no means off

P014 Software version

P016 Do you need a password to create, modify and delete the program, yes means on, no means off, pass word is same to the administrator menu password

P017 Administrator menu password, press UP/DOWN and NEXT to modify if you want. Need to press SET/ENT to save the change, the screen will go back to standby condition.

P018 Total cycle number, each press of START will increase one to this number, user can not modify.

P019 Pressure sensor pressure value compensation, pressure compensation range is -5-5kPa, screen B will show compensation value, if the value is -0.3kPa, means the value to compensate is -0.3kPa.

P020 Safety valve testing cycle reminder, range is 30-360 days or off, press UP or DOWN to adjust.

P021 Time not to test the safety valve, user can not modify

P023 The printing temperature can be adjusted 0-2; 0: chamber temperature 1: load thermometer/ floating PT 100 sensor temperature 2: chamber temperature and load thermometer/ floating PT 100 sensor temperature

P027 Printing frequency: you can adjust from 10s, 20s, 30s, 1min-10min. When the second decimal point is flashing, means the unit is second, otherwise it is minute.

Chapter 5 Troubleshooting

- The automatic control system of the sterilizer monitors the real time operation of the instrument. Whenever any failure occurs, the system may send out alarm and display the error code, take a record of the temperature/time/loading article, or video of the situation, then please press STOP button very shortly (touch and go) to return standby status, then turn off the power, check the error code and handle on time.
- To make sure safety, only open the lid when there is no pressure inside and temperature is lower than boiling point. For liquid mode, do not press STOP before temperature is lower than the boiling point, so as to avoid liquid overflowing.

Error Code	Possible Causes	Suggested Solution
E-01	Lid not secured	Check if the handle is placed well
E-02	Local altitude not set	Set the local altitude
	Temp. sensor is blocked by the articles	Reload the articles in a correct way
	Heating system problem	Check the heater, wires
E-03	Lack of water lead to heater dry heat	Add enough water in
	Water level sensor is dirty	Clean the water level sensor
	Pressure gauge value doesn't match the current temperature	1. Check if the solenoid and pipe is blocked 2. Check temperature sensor and wires 3. Check pressure switch and wires
	Temperature control switch is abnormal	Change the temp. control switch
E-04	Abnormal temperature fluctuation caused by abnormal power supply	Check pressure of power supply is between 198V-242V
	Cold air not purged out completely	Check if the pipe is blocked, the articles are placed correctly
E-06	Chamber temperature sensor drop off from mainboard	Plug the temperature sensor well
	Chamber temperature sensor problem	Change temperature sensor
E-07	Short circuit in plug or wiring of chamber temperature sensor	Change the temperature sensor
E-10	Sudden power off during sterilization	Press STOP shortly, then restart again
E-12	Chamber temp. sensor doesn't match the pressure gauge value	Calibrate or change the chamber temp. sensor
	Blue membrane switch problem	Change the membrane switch
E-15	Low water in the chamber	Add water into chamber
	Water conductivity is lower than 10us/cm ²	Add some salt, make the conductivity to 10-15us/cm ²
	Exhaust solenoid valve is dirty	Clean the solenoid valve
E-16	Load thermometer didn't plug well	Plug the load thermometer well

	Load thermometer failure	Change load thermometer
	Equipment not installed with load thermometer, but P002 is on	Turn off P002
E-18	Solenoid valve, pipe is blocked	Clean the solenoid valve and pipes
	Temp. sensor/Pressure sensor and wires problem	Plug out and plug in the sensors again
E-19	Water level sensor is dirty	Clean the water level sensor
E-20	Safety valve test circuit failure	Contact local dealer
E-24	Block of safety valve pipe	Clean safety valve pipe
	Safety valve failure	Change safety valve
E-26	Pressure sensor drop off from mainboard	Plug the pressure sensor well
	Pressure sensor failure	Change the pressure sensor
E-27	Short circuit in plug or wiring of chamber pressure sensor	Contact local dealer or change pressure sensor
E-36	Over temp. protection sensor problem	Plug out and plug in the sensor again
E-37	No enough water in the chamber	Add water to the chamber
	Water level sensor is dirty	Clean the water level sensor
	Water level sensor failure	Contact local dealer
E38	Lid locking problem while stand by	Check the lid electromagnet is up or down
Main switch trip	Electricity leak or short circuit of instrument	Contact local dealer

Below is note content, press STOP back to standby then follow below steps to deal with

Note no.	Meaning	Suggested Solution
N02	Chamber temp. is higher than the local boiling point	Wait until the temperature cooling down
N03	Incorrect system time	Reset timer
N04	Auto start up time is earlier than current time	Reset auto startup timer
N05	The safety valve test hasn't been done for too long	Do the safety valve test
N10	Micro pressure in the chamber	Please wait until the pressure is released
N11	Water level sensor is dirty	Please clean the water level sensor, heater and chamber, then drain the dirty water

● The above table only covers the simple problem, if you can not deal with, please record the below information and report to the dealer:

- 1) Instrument model and serial No. 2) Error code 3) how long you use the machine
- 4) At what temperature it occurs, what articles sterilized, picture or video