



VERTICAL AUTOCLAVE

BAVT-604-A

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1. Precaution on Safe Operation

- 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.

2. About the Instrument

2.1 Application

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

2.2 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.

2.3Types 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.

2.4 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.

2.5Normal working conditions

- Ambient temperature: 5 °C ~ 40 °C
- relative humidity not greater than 85%.
- Atmospheric pressure: 70kPa~106kPa.
- Suitable for power supply AC 220V $\pm$ 22V, (50 60) Hz $\pm$ 1Hz.

2.6 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.

2.7 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

2.8 Service life

- It is recommended to use up to 8 years

2.9 Technical specifications

Technical Data

Model	BAVT-604-A
Capacity(L)	100
Dimension(L*W*H,mm)	620x680x1200
Chamber dimension(Dia*H,mm)	φ400x800
Chamber material	SUS 30408
Rate power supply(w)	4600
Power requirement	220V,32A,50/60HZ
Working environment	5-45°C,relatively humidity 10%-85%
Stainless steel basket(Dia*H,mm)	(φ360x220)x3
Temperature accuracy	0.1°C
Working environment	5-45°C,relatively humidity 10%-85%
Sterilization temperature	105-135°C
Sterilization time range	1-999minutes
Melting temperature	60-100°C
Melting time	1-999minutes
Warming temperature	45-60°C
Warming time range	1-9999 minutes
Exhaust Level	6 Levels adjustable
Exhaust mode	Fully automatic internal exhaust
Exhaust collecting bottle	Built in
Sterilization cycle	1.Solid 2.Liquid with warming 3.Liquid 4.Agar 5.Self-defined
Exhaust	Automatic internal discharging , with a steam collecting bottle inside. Exhaust speed can be selected by 6 levels
Preset range of timer	Can be preset and auto start up to 15 days in advance
Display range of pressure gauge	-0.1-0.5Mpa
Pressure	Max working pressure:0.25Mpa,design pressure:0.29Mpa
Controller	"Smart IIII" fast speed microcomputer controller

Safety device	Self-induction pressure interlocking device, lid closing checking, over temperature protection, temperature monitor, dry scorch protection system, over pressure protection,safety valve,over current and short circuit protection, leakage protection device,anti-scald safety protection, automatic troubleshooting system
Standard spare parts	Stainless steel baskets,water plate,waste water bottle,drainage hoses
Optional spare parts	Printer, printing set,load thermometer

Table 1

Note: If there is any change to the technical specifications, no further notice will be given, subject to the material object.

2.10 Parts & Appearance

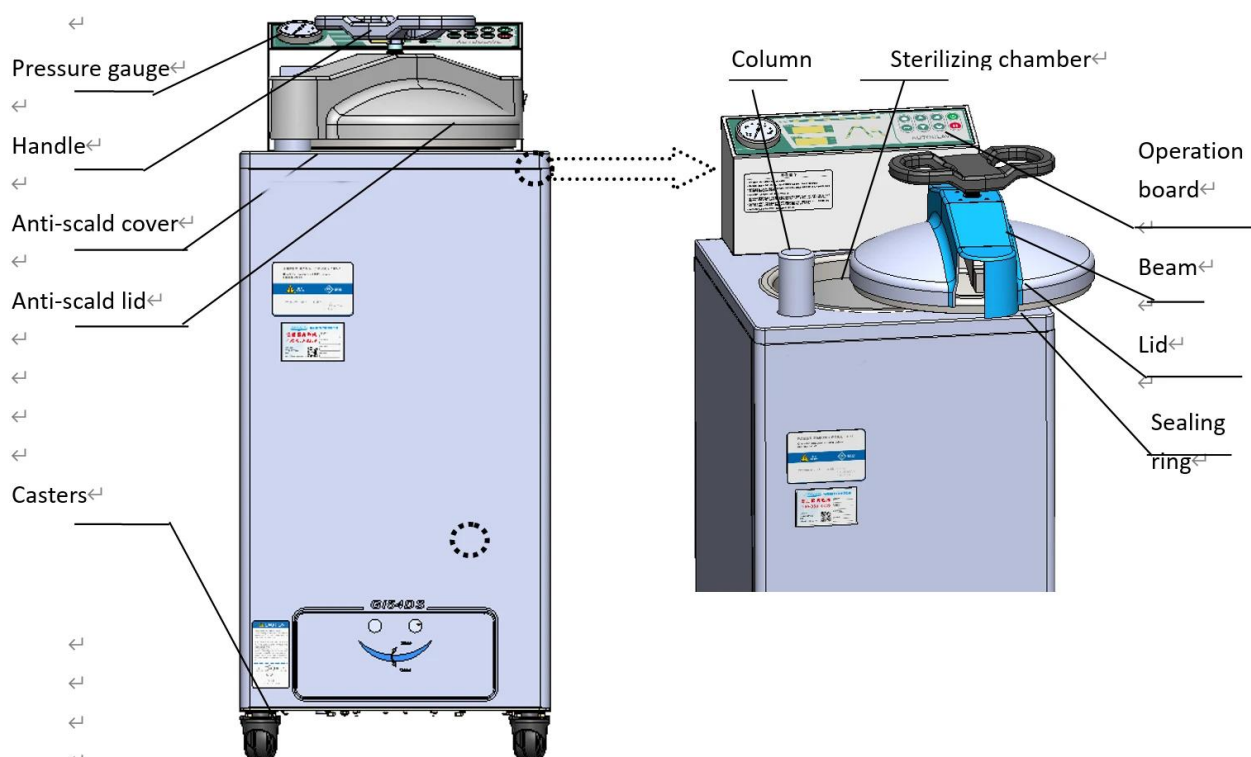


Figure 1

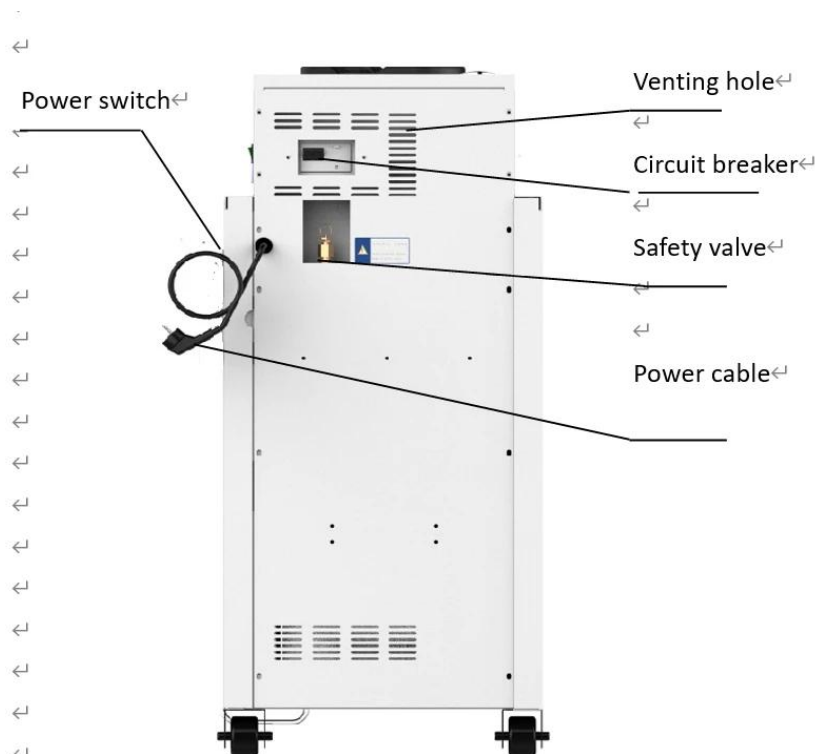


Figure 2

2.11 Parts Function

1. Display Panel Function:

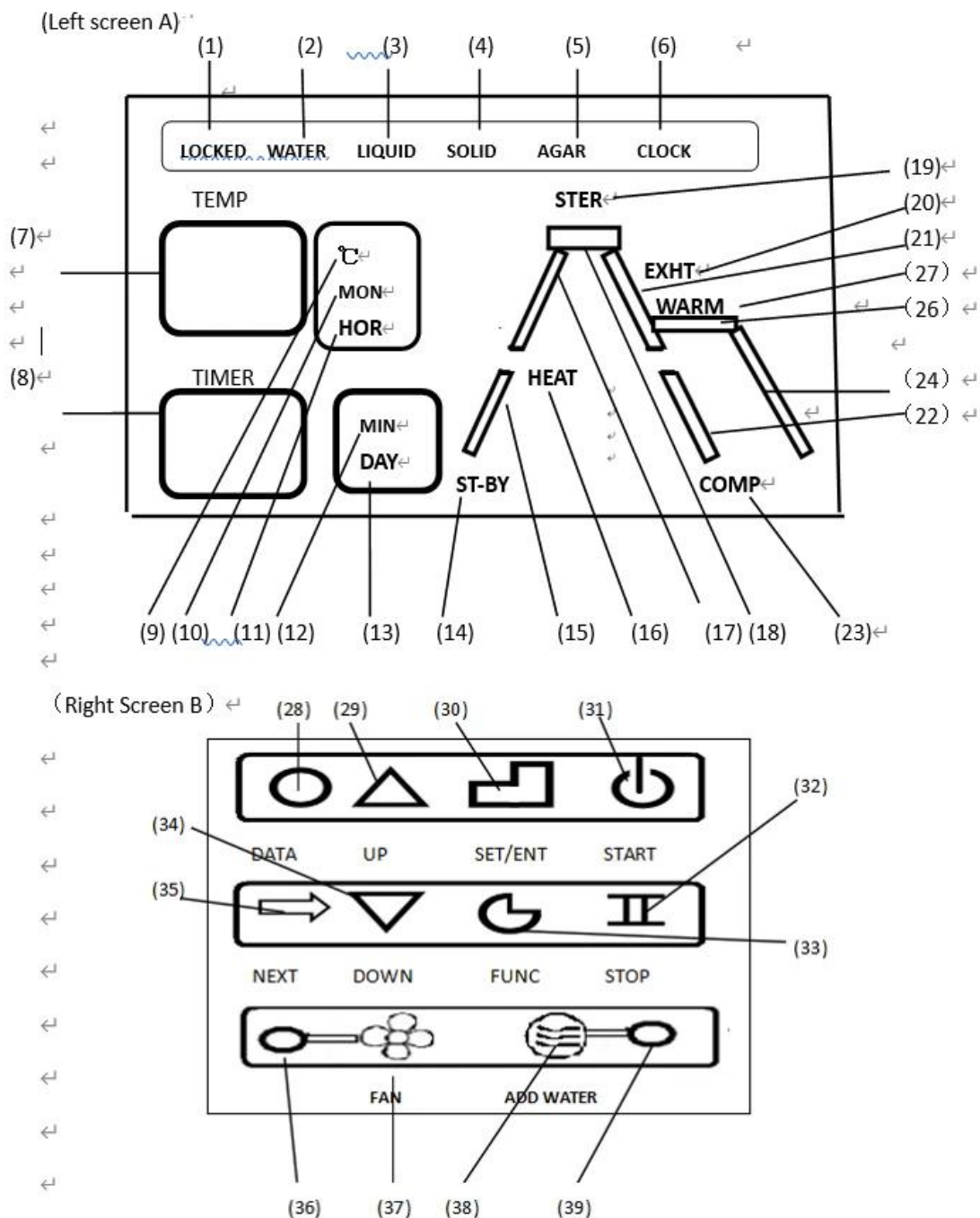


Figure 3

1. LOCKED: Interlocking indicator, which will be on during interlocking.
2. WATER: no available for this model
3. LIQUID: liquid mode indicator light
4. SOLID: solid mode indicator light
5. AGAR: agar mode indicator light
6. CLOCK: auto start up timer
7. Screen A(left screen): shows set temperature, real temperature, month, hour, shows year when setting timer, shows menu code in administrator mode
8. Screen B(right screen): shows set time, rest time, min, date, error code or soft no., when setting timer, show "YEAR", means year.
9. °C: The light indicates the current unit is °C
10. MON: means month

- 11.HOR:means hour
- 12.MIN:means minute
- 13.DAY:means day
- 14:ST-BY:means standby
- 15:Heating up indicator 1:blinking means machine is heating up from room temperature to local boiling point
- 16.HEAT:on means machine is heating up
- 17.Heating up indicator 2:blinking means machine is heating up from local boiling point to set sterilization temperature
- 18.Sterilization indicator:on and blinking means machine is during sterilization,when press SET/ENT, this indicator will blinking with STER,means can modify data.
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.
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 in screen A blink together, it indicates entering the steam exhaust level can be modified.
- 21.Exhaust indicator:blinking from end of sterilization until temperature lower than local boiling point or until warming starts for cycles with warming.
- 22.Cooling indicator:blinking while cooling down
23. COMP.: blinking indicates that the running of program is finished
- 24.Cooling indicator 2: from warming end until temperature lower than 40°C
- 26.Warming indicator:blinking means during 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 drying/warming status indicator blink together, it indicates entering the warming parameter can be modified.
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.
33. FUNC: *FUNC* button must work with other buttons, press the *FUNC* +*STOP* button together to delete the current program,press the *FUNC* +
DATA together to enter the administrator menu,press FUNC +NEXT to enter into auto start up,press FUNC + UP together, can change the exhaust level,level 0 means no exhaust, level 5 means full exhaust.
- 34.DOWN: Under standby status, you can press *DOWN* button to enter the immediate 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: to enter into next option

36. Cooling fan indicator:on means cooling fan is working(if there is)

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 drying/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 the waiting time for sterilized articles cooling.

38.ADD WATER:not available for this model

39.Object temp indicator: When it is on, it means the load thermometer is enabled, and the indicator off indicates the load thermometer is disabled.

2. Optional Spare Parts:

1)Load thermometer

2)Printer and printing set

3. Installation of Autoclave

3.1 Placement of Autoclave

1) This autoclave is precision instrument,during installation, place the autoclave on a flat ground and fix the wheels by pressing the breaker down.(If the ground is not flat, we can provide 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-alarming 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.

3.2 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 AC220V $\pm$ 10%,50Hz/60Hz

If choose 2800W, the current intensity is 20A.

3) Connect the GI80/100 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.

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 cause fire or electric shock.

3.3 Checking Package

Check the package before opening, take a picture if there is any damage. Open the box from the bottom(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.

3.4 Cleaning

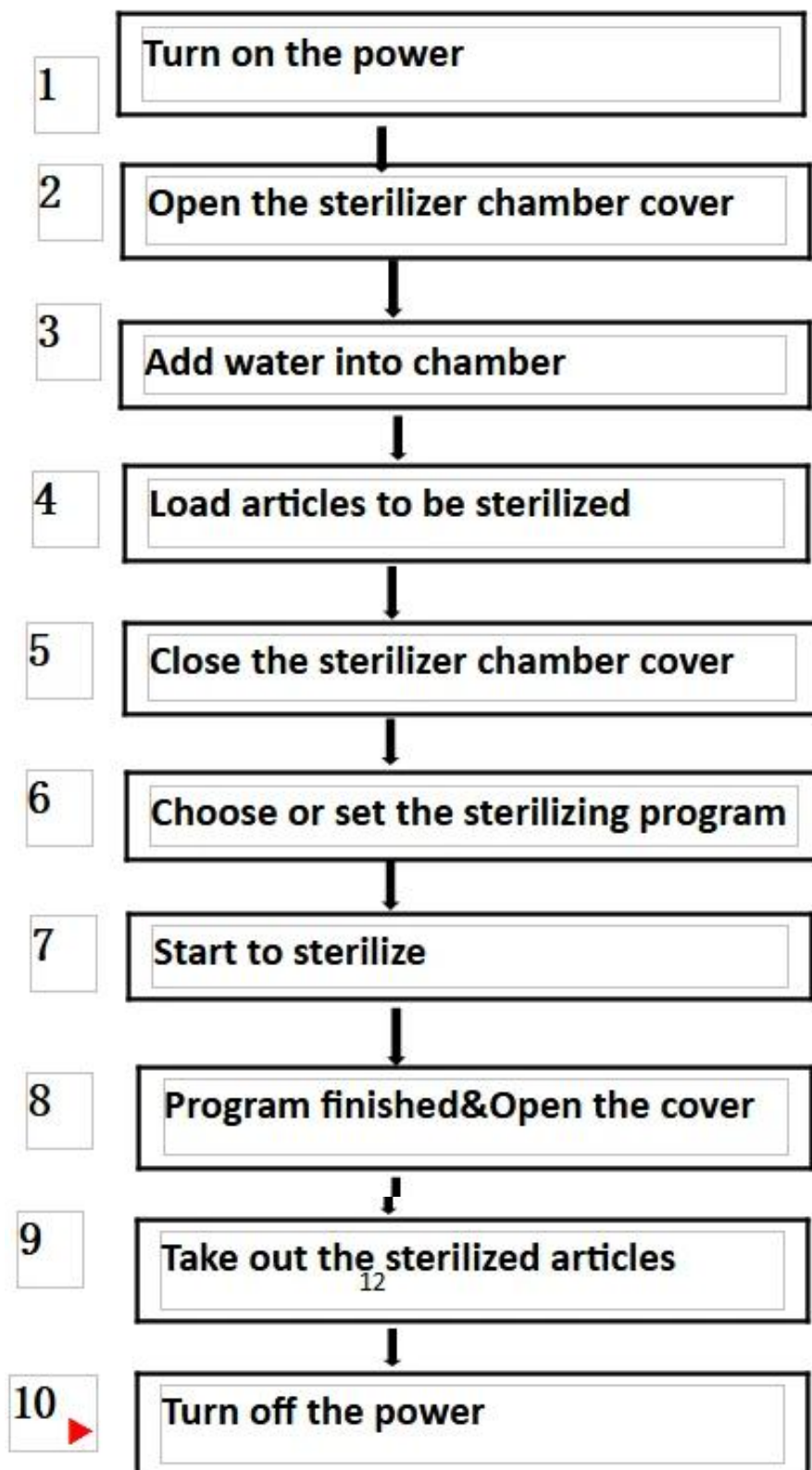
- 1) Switch on the leakage protection switch and turn on the power, and then open the cover of sterilizer chamber, and take out the protective foams from the chamber. Clean the chamber and put the water plate and stainless steel baskets in.
- 2) Clean the foam scraps inside the sterilizer chamber completely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

3.5 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.

4. Operation Instruction

4.1 Basic Sterilization Illustration & Operation Instruction



1. Turn on the power

- After turn on the power, the system will do the self-checking, screen A will show current temperature, screen B will show the latest saved program,and shows the according flow chart.

- 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 drak except for LOCKED light, press any button can restore the display.

2. Open the sterilizer chamber cover

- Turn the handle wheel counter-clockwise until the lid is loosened, need to turn the handle wheel until the end(rotate the handel until you can not rotate more), so to protect the sealing ring from dropping off.
- Push the handle rightward slightly to move the lid to one side

3. Empty the front water tank and add water into chamber

1) Check the water tank of the instrument(Fig1), make sure the water level is under the high water level line, empty it if too high. If you don't empty it, the water will come out. Put the exhaust tube into this exhaust water tank.



Figure 4

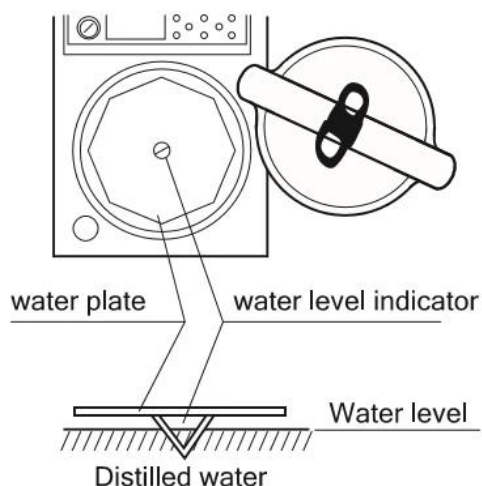


Figure 5

2) Add water into chamber manually

- Check the water level in the chamber, if you can not see water from the hole in the water plate, you should add water in, and the water should not be higher than the water plate. (fig 2)
- Change the water frequently, so as to protect the valves and pipes.

Note:

Do not open the drainage valve of the chamber or drainage valve of the 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.

It is recommended to use distilled water with an electricity conductivity between 10~15us/cm, do not use well water, salt water or hard water, so as to prevent the chamber from corrosion, fouling and shortening the life of the 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 are placed well (overlap may cause inadequate sterilization). Put carbon steel devices and stainless steel device in different baskets and put several layers of Kapok paper under the carbon steel devices so as to protect the stainless baskets.
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, the opening of the cleaning bag shall be opened, and it shall be confirmed that the bag does not contact 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).

5. Close the sterilizer chamber cover

- Push the handle leftward slightly until the arm leans against the column stopper
- Turn the handle until it is secured and at the same time the door lock icon is white and not blinking. The handle must end in a position either horizontally or vertically, you can even loosen it a little bit to make it positioned horizontally or vertically.

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 close icon on the screen changes to white and not blinking, the machine will start to work.

6. Select or set the program

- Selecting the sterilizing program: Press the "UP" and "DOWN" button to choose the sterilizing program. The screen will show the U01 to U05, this is the 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 press "SET/ENT" again to save the new program, the new programs will be U04 to U20. Do not press STOP randomly during the process. Do not open chamber or water tank drainage valve during process.

- U01-U05 can not be deleted, but can be created and saved as new programs, below is the detailed specification of U01-U03.

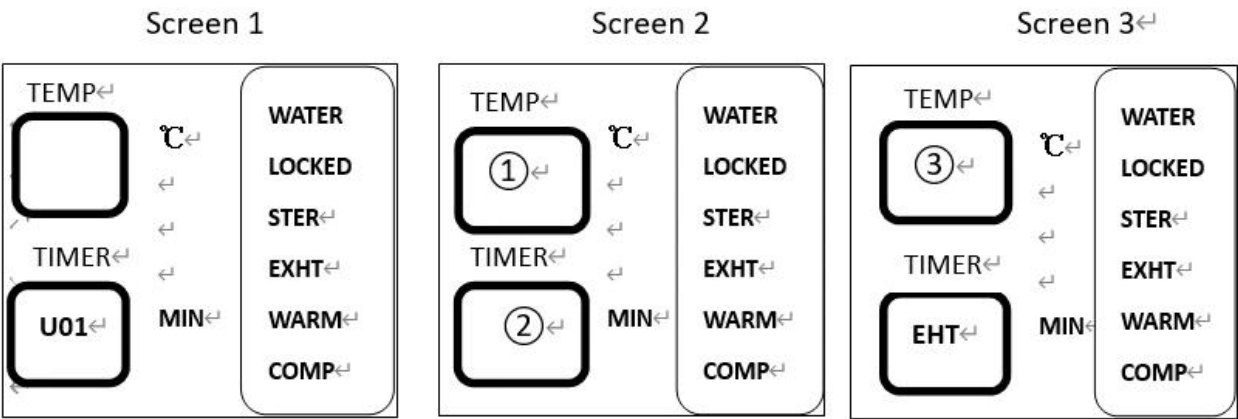
U01 Solid mode U02 Liquid with warming U03 Liquid U04 Agar mode U05 Self-defined
There are 5 levels of exhaust, level 0 is no exhaust,level 5 is full exhaust.

U01-Solid Mode

Sterilizing flow:standby—heating—sterilizing—exhaust—complete

Application:Solid sterilizing

Press DATA button, the digital displayer A and B will display the detailed parameters once by three 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	127 °C	105°C~135°C
Sterilizing Time	②	15min	1~999min
Exhaust Level(EHT)	③	4	0~5 level

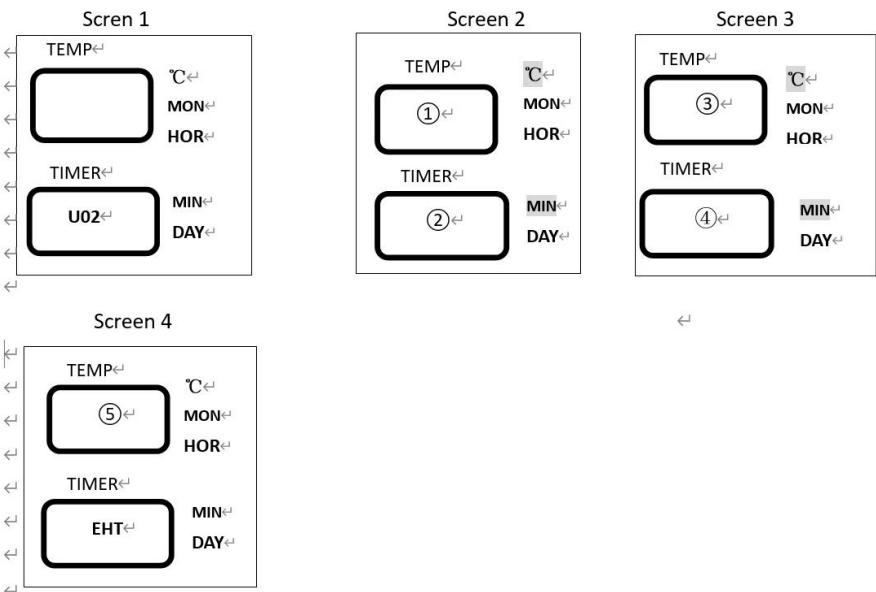
Table 2

U02-Liquid mode with warming

Sterilizing flow:standby—heating—sterilizing—exhaust—warming—complete

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

Press DATA button, the digital displayer A and B will display the detailed parameters once by four 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~135°C
Sterilizing Time	②	20min	1~999min
Warming Temp.	③	50°C	45°C~60°C
Warming Time	④	600min	1~9999min
Exhaust Level(EHT)		0	0~5 level

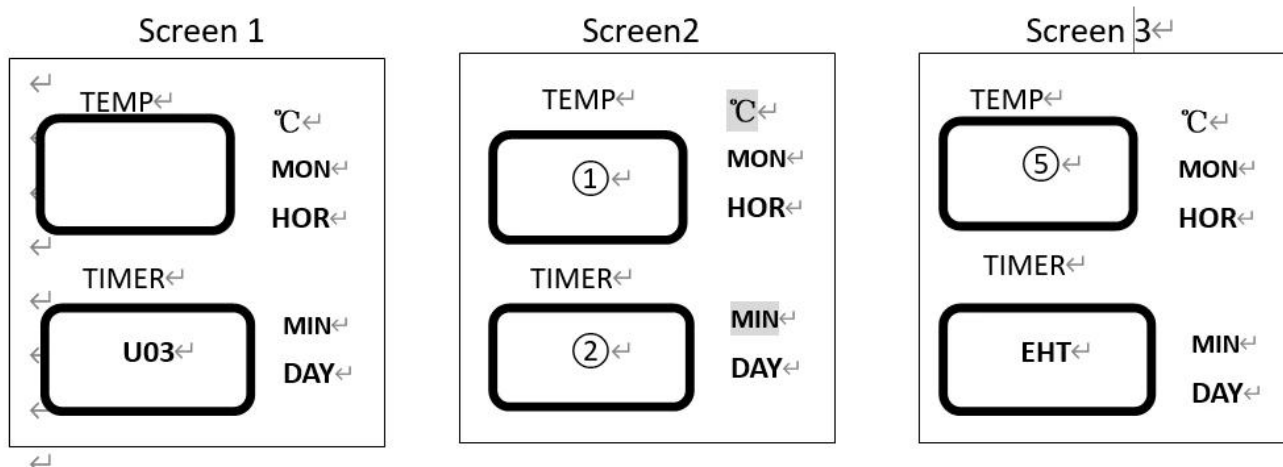
Table 3

U03-Liquid mode

Sterilizing flow:standby→heating→sterilizing→exhaust→complete

Application:Liquid sterilizing,no warming after sterilizing(suitable for Water, solvent, reagent and liquid medicine)

Press DATA button, the digital displayer A and B will display the detailed parameters once by three 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	126°C	105°C~135°C
Sterilizing Time	②	15min	1~999min
Exhaust Level(EHT)	③	0	0~5 level

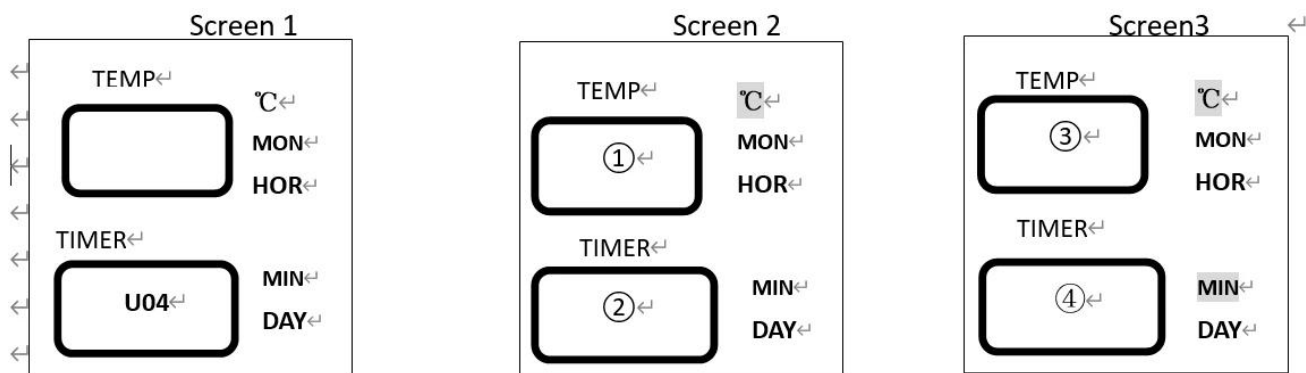
Table 4

U04-Agar Mode

Sterilizing flow:standby→heating→melting→exhaust →warming→complete

Application:Agar melting and warming

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



U04 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~100°C
Melting Time	②	10min	1~999min
Warming Temp.	③	50°C	45°C~60°C
Warming Time	④	600min	1~9999min

Table 5

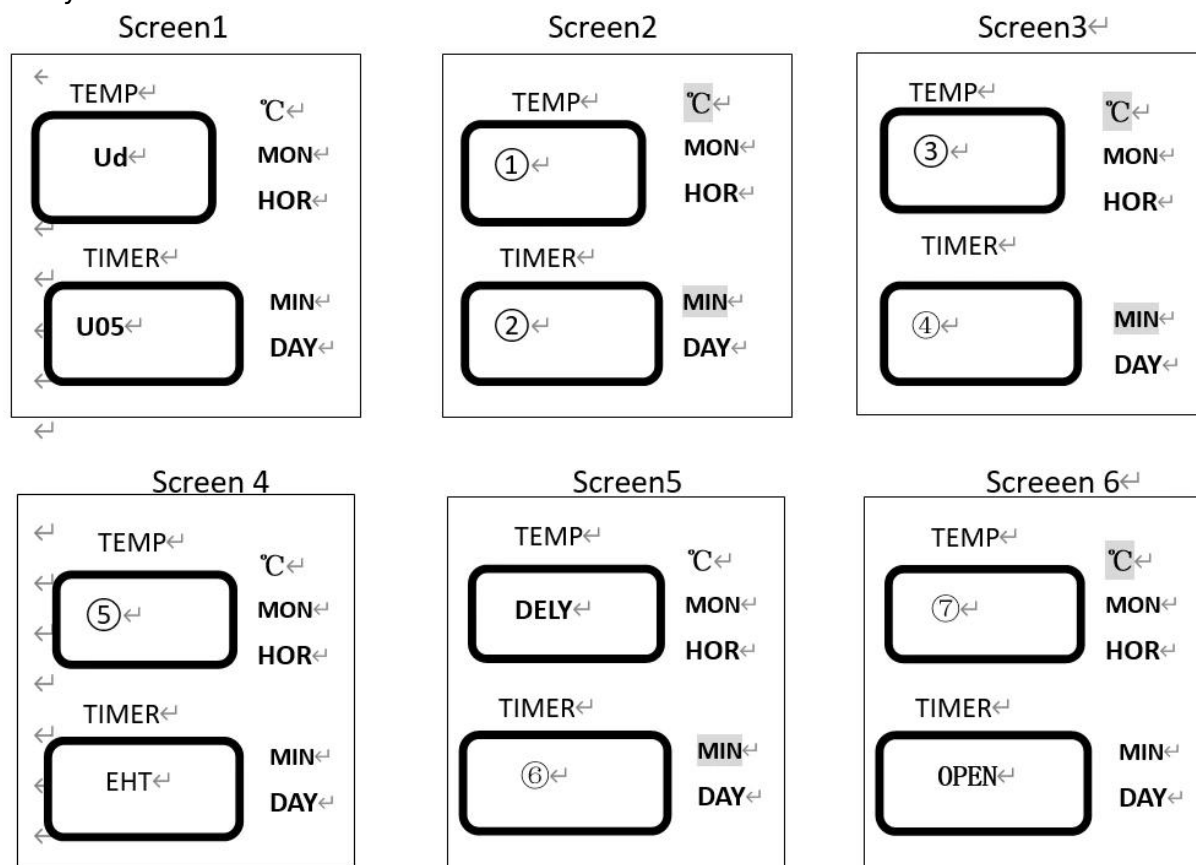
U05-Self Defined Mode

Sterilizing flow:standby→(delay the time of purging cold air)

→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 six screens



U05 default parameters and the parameters scope of its newly created program

Name	No.	Default Parameter	Parameters Range of New Program	Note
Sterilizing Temp.	①	Last cycle	105°C~135°C	
Sterilizing Time	②	Last cycle	1~999min	
Warming Temp.	③	Last cycle	45°C~60°C	
Warming Time	④	Last cycle	0,1~9999min	0 means no warming
Exhaust Level(EHT)	⑤	Last cycle	0~5 level	
Delay Time(DELY)		Last cycle	1~15min	
Lid Open Temp.(OPEN)		Last cycle	40°C~99°C	

Table 6

Note: You can set a longer delay time to purge more cold air out, but make sure the water inside chamber is enough.

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)Choose the saved program, use UP or DOWN to choose the program you want, long press START to start work directly.

3)Modify or create the new program and start: press the "SET/ENT" to enter the program setting interface, press the "UP" or "DOWN" to select the sterilization mode to be modified, and then press the "SET/ENT" to modify or delete the parameters; If you need to save the changes, press the "SET/ENT" key again, and then press the "START" key to start the work; if you do not save the changes, press the "DATA" key, and then long press the "START".

4) You can change the exhaust level by pressing FUNC+UP together to change,each press will increase one level.

8. Program finished&Open the cover

When the program is finished and the temperature is below 3 °C below the boiling point the system will send out long sound, indicating the end of sterilization. Loosen the handle to the end before push the lid to open, you should pay attention not to get burnt.

Note:If the handle is truned by mistake during sterilization, the handle can not be continue truned due to locked, but there might be a little steam release.In this case, press STOP button to stop the instrument immediately. When open the lid,turn the handle slightly toward the opposite dirction that it is wrongly operated, and then turn the handle in counter-clockwise until the cover is released.

Never press STOP button casually to stop the running program during sterilizing of liquids to avoid the liquid overflowing into the sterilizer chamber and even blocking the valve and pipelines.

When reach the set temp. and time,the system will send out sound to indicate.

When whole cycle finished, and temp. is 3°C lower than the local boiling point under solid mode or 20°C lower than the local boiling point,the COMP will blinking,system will send out 5 long sound, indicating the end of cycle.

Be carefull not get burnt by the hot steam while open the lid

When the temperature is lower than 40°C, system will go back to standby status.

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.
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.

4.2 Creating, Modifying, Deleting the Program

1. Creating and modifying the program

In the program interface, like under U01 condition. Press the "SET/ENT" to enter the program setting interface, press the "UP" or "DOWN" to select the sterilization mode to be modified, and then press the "SET/ENT" to modify or delete the parameters; If you need to save the changes, press the "SET/ENT" key again, and then press the "START" key to start the work; if you do not save the changes, press the "DATA" key to exit.

2. Deleting Program

- If you need to delete the program, press FUNC+STOP to delete.
- Default U01-U05 programs can not be deleted

3. Setting the sterilizing time

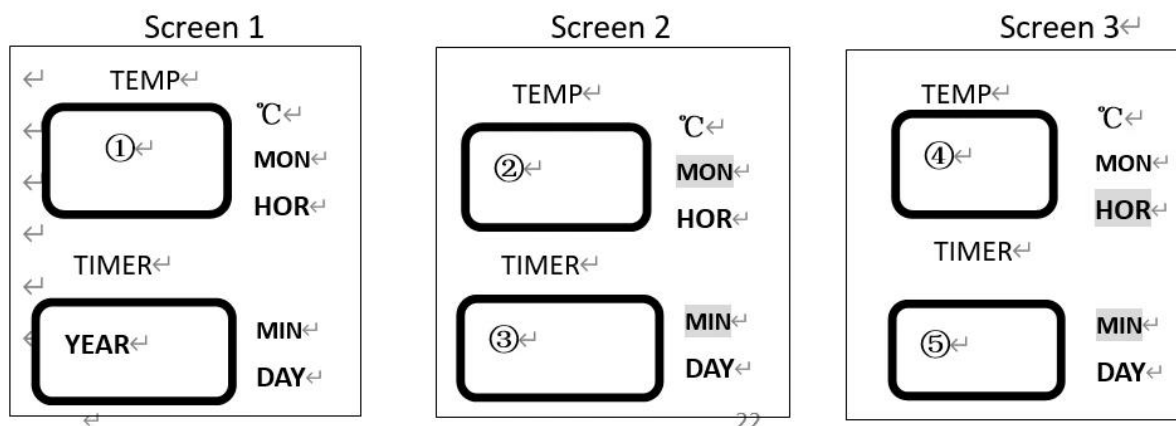
• Some items (such as liquid) have high thermal inertia, in order to obtain the ideal sterilization effect, it is recommended to use the load thermometer; if no, set a longer sterilization time.

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 liquids reaches the set temperature.
- When sterilize waste processing bags, 300-500ml water will help to shorten the delay time while heating up.
- A delay time is also needed for plastic products.

4.3 Clock Checking and Calibration (F05)

- 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 & parameter 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

Table 7

1. After setting the time, press DATA to exit
 2. If the time is set properly, press SET/ENT to enter into the parameter modification status: the number on the screen A and the month indicator will blink, means it is ready to modify the month. Press UP or DOWN to increase or decrease the value by 1 month at one press. Press and hold the button to increase or decrease the value by 10 units.
 3. Press NEXT button, the number on the display B and the day indicator will blink, means it is ready to modify the date. Modify it like above and press NEXT button again to modify the hour and minute.
 4. After you finish modification, press SET/ENT button to save the change permanently, which will not be lost even in case of power off. If you don't want to save the change, just press DATA to return to the standby status.
- Make sure you set a correct time, the printing time and auto startup function is based on this setting.

4.4 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:

Screen 1

Screen 2

Screen 3

•F06 default parameter¶meter adjustable range

Name	NO.	Default Parameter	Adjustable Range
Delay Day		0	0-15
Startup Time		0	0-23
Startup Time		0	0-59

Table 8

2. After setting the correct delay time, press DATA to exit.

3. If you want to change the current setting, press SET/ENT button to enter the parameter modification status.Press UP and DOWN to change the date. Press NEXT button to change the hour and minute accordingly.

4. For example:

(1) Plan to start at 6:30 tonight,set date to 0,hour to 18,minute to 30

(2) Plan to start at 6:00 pm tomorrow night,set date to 1,hour to 18,minute to 30

5. Press SET/NET to sve the change,CLOCK light will be on.Press DATA and check the current setting.

6. 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.

7. 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.

5. Maintain&Management

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

5.1 Cleaning

1. Water change and chamber cleaning

1)Water change

- If the water in the chamber is not changed for a long time,the dirt inside will cause damage to solenoid valve.

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

2)Chamber cleaning

- Clean the chamber once a week

Note:Make sure the water inside is not hot before draining out

Drain the water completely when the machine is not used for a long time

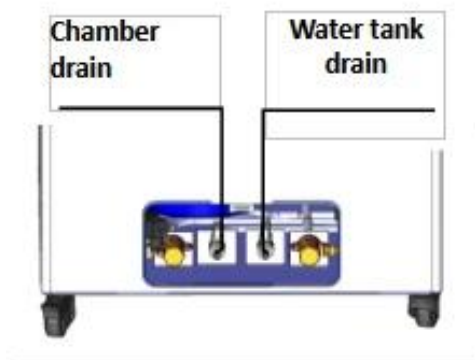


Figure 6

2. 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



Figure 7

3. 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

5.2 Maintenance

1. Check of Leakage Circuit Breaker

- Press the T button at the back of leakage circuit breaker, if it dumps off, means normal, if no, please turn off and contact the dealer
- Press the power switch, pull up the leakage circuit breaker, can connect the power again
- Check once half year

2. Safety valve test

- Enter into the administer menu (Refer to Setting of Administor Menu), then press DOWN to choose 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.
- If the temperature goes over the max temperature and safety valve is not releasing, means there is problem with the safety valve, please stop the test and contact distributor.
- Press STOP can put an end to the testing, screen will show E03, this is normal, you can press STOP button after the temperature goes down to 105°C to return to standby condition.

3. Cleaning&Replacement of Sealing ring

- 1) Wipe the surface of the sealing ring and it is contact parts with soft and clean cloth at least once a week to avoid steam leakage resulted from damage by dirt
- 2) If the edge of the sealing ring of cover becomes white or hardened, it may lead to steam leakage, and must be changed.
- 3) Sealing ring change way: Pull one corner of the sealing ring to take off, when installing, press the sealing ring in part by part.

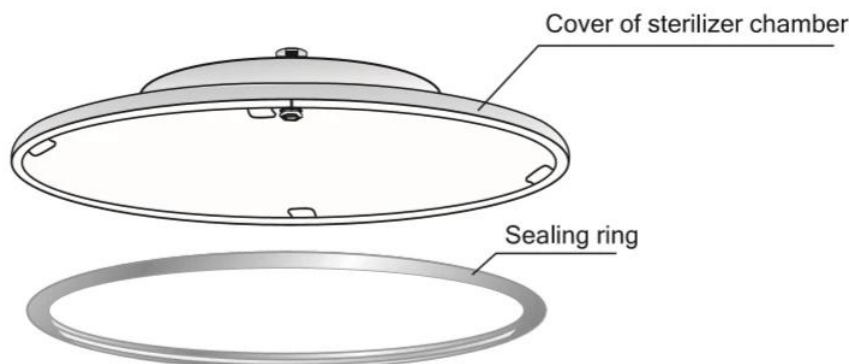


Figure 8

5.3 Setting of Administrator Menu

Under standby by condition, press FUNC+DATA together, enter into secret code: 667788, press SET/ENT button to enter into the administrator menu. You will see P001 to P019.

•Administrator Menu:

P001 PRINTER switch: 0 means off, 1 means on

P002 Button sound, 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 disabled.

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

P005 Printing language: 0: English; 1: Chinese

P006 Safety valve test: yes for enabled; no for disabled

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 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.

P009 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 until the upper limit of 3000m or lower limit of 0.

P010 Boiling point temp corresponding to altitude: after setting of altitude, press NEXT button and local boiling point will be shown, and the value of 99.8 on the screen represents the boiling point 99.8°C.

P011 Software version

P013 Load thermometer, yes means on, no means off

P014 Load 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.

P015 Cooling fan, yes means on, no means off

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

P017 Administrator menu password, press UP/DOWN and NEXT to modify if you want

P018 Total cycle number, each press of START will increase one to this number

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.

P021 Time not

6. 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, then please press STOP button to return standby status, and 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 the handle is secured well or not, make sure it is placed either vertically or horizontally
E-02	Local altitude not set	Set the local altitude
	Dirt in exhaust solenoid valve	Open the valve filter to check

E-03	Lack of water lead to heater dry heat	Add enough water in
	Safety valve or pressure switch is not working	Change safety valve or pressure switch
	Over temperature lead to over pressure	Check main board or temperature sensor
E-04	Abnormal temperature fluctuation caused by abnormal power supply fluctuation	Check pressure of power supply is between 198V-242V
E-06 5151	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-16	Load thermometer drop off or short circuit	Plug the load thermometer well
	Load thermometer failure	Change load thermometer
E-18	Over pressure in chamber	Stop work and contact distributor
E-20	Safety valve test circuit faulty	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
5351	Press the white T button didn't pressed in	Press the white T button
	E-leakage or short circuit or over current	Contact local dealer

Table 9

In liquid mode, press STOP, the exhaust valve will not open until the temperature goes down to the set exhaust temperature, so as to avoid liquid overflowing.

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
N06	The lid is not locked!	Secure the lid again

Table 10

•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) At what temperature it occurs, what articles sterilized, picture or video if have

4)How long you use the machine



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