Operation Manual

BAVT 300 B series

VERTICAL AUTOCLAVE

Thank you for Choosing Biolab products. Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation.

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Precaution on Safe Operation

Precaution：

• 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.

01 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 220V ±22V, (50 60) Hz ±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 recommened to use up to 8 years

9. Technical specifications

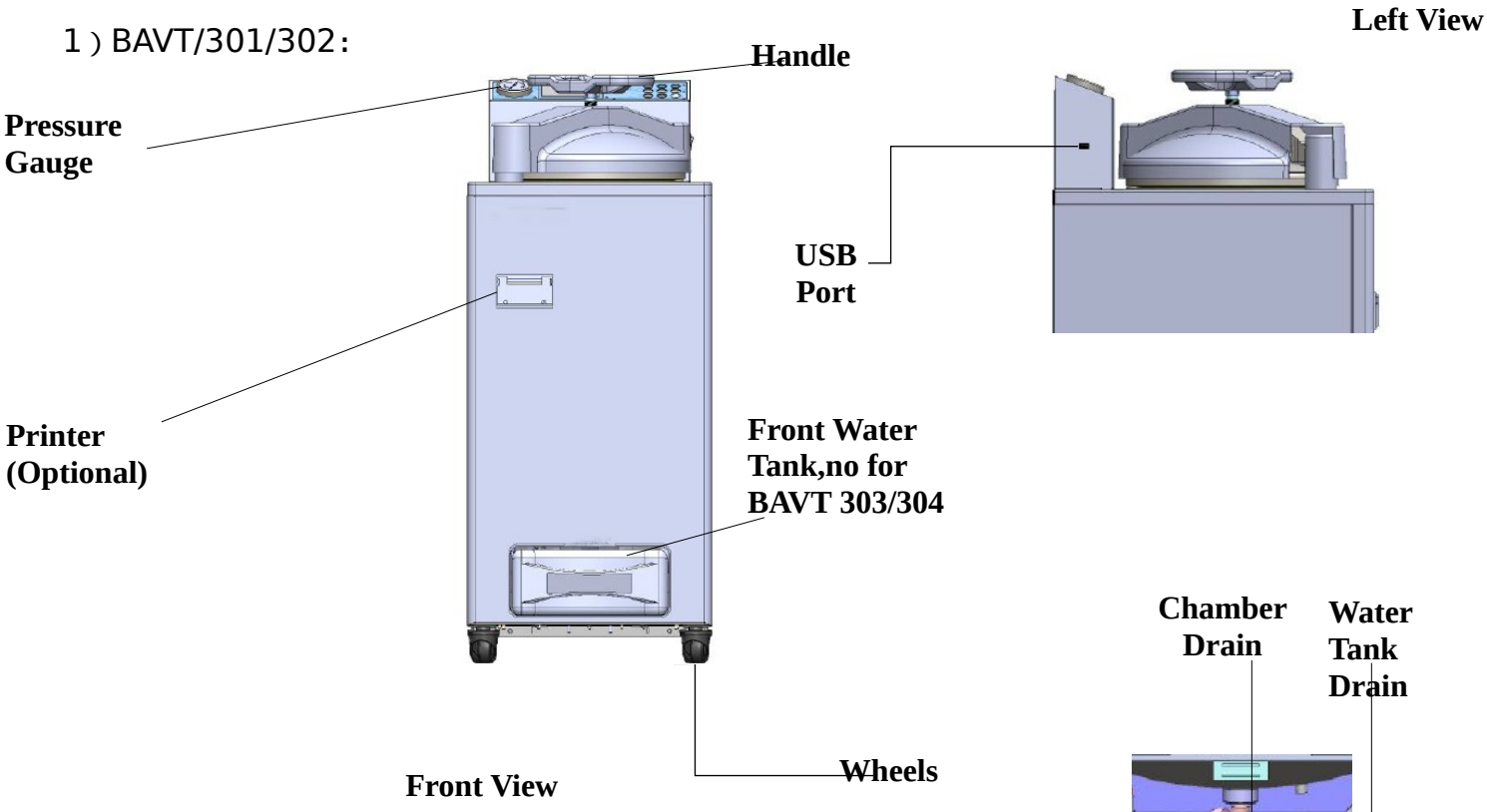
Technical Data

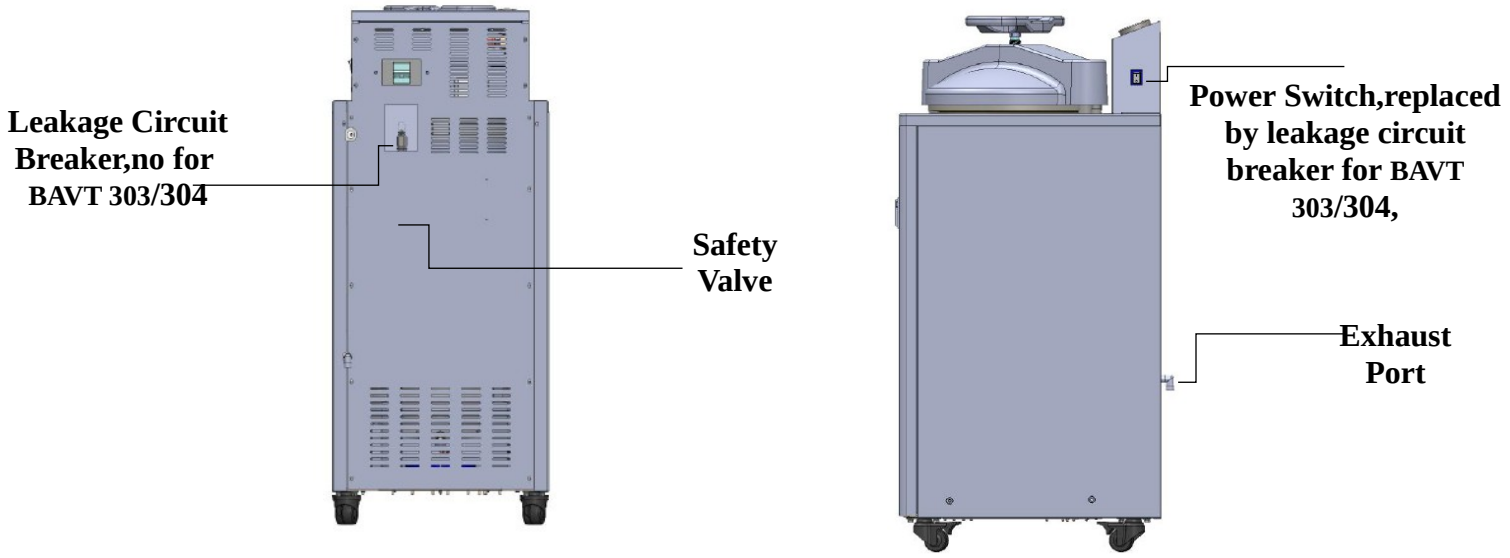
Model	BAVT-301-B	BAVT-302-B	BAVT-303-B	BAVT-304-B
Capacity(L)	36L	54L	80L	100L
Dimension(L*W*H,mm)	460x542x1070	460x542x1070	620x682x1100	620x682x1200
Chamber dimension(Dia*H, mm)	φ325 x 528	φ325 x 728	φ405x701	φ405 x801
Net weight	98kg	103kg	164kg	167kg
Rated power	2300W	2600W	4600W note1	4600W
Stainless steel basket	2	3	2	3
Water tank	Yes			
Chamber material	S30408			
Sterilizing temperature	105°C～135°C			
Sterilizing time range	1min～6000 min			
Melting temperature range	60°C～115°C			
Metling time range	1 min ～6000 min			
Warming temperature range	45°C～79°C			
Warming time range	1 min ～9999 min			
Exhaust lexel	6 levels			
Exhaust mode	Fully automatic internal arrangement			
Steam collecting bottle	Built-in			
Auto Startup Timer	1 min ～15days delay			
Pressure	0.25MPa			
Sterilizing mode	Liquid：standby→adding water(Optional)→heating→sterilizing→exhaust→complete Liquid with warming：standby→adding water(Optional)→heating→sterilizing→exhaust→warming→complete Solid mode：Sandby→adding water(Optional)→heating→sterilizing→exhaust→drying→complete Surgical instruments packed with cloth：standby→adding water(Optional)→heating→Sterilizing→exhaust→drying→complete			

	Fabric: standby→adding water(Optional)→heating→Sterilizing→exhaust→drying→complete Rubber: standby→adding water(Optional)→heating→Sterilizing→exhaust→drying→complete Fast: standby→adding water(Optional)→heating→sterilizing→exhaust→drying→complete Waste：standby→adding water(Optional)→heating→sterilizing→exhaust→complete Agar：standby→adding water(Optional)→heating→melting→exhaust→warming→complete Self-defined：standby→ adding water(Optional)→heating→sterilizing→exhaust→warming（drying）→complete
Special function	The sterilization data note 2 can be stored in USB, and the verification package can be printed with temperature, pressure, curve and F0 value
Controller	“Smart IIII” 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,safetyvalve,over current and short circuit protection, leakage protection device,anti-scald safety protection, automatic troubleshooting system
Standard spare parts	Stainless steel baskets,waterplate,waste water bottle
Optional spare parts	Printer, printing verification kit, article thermometer, adjusting foot (GI36 / 54), external pure water pipe water inlet function, drug packaging material software NOTE 3

10.Appearance and Parts

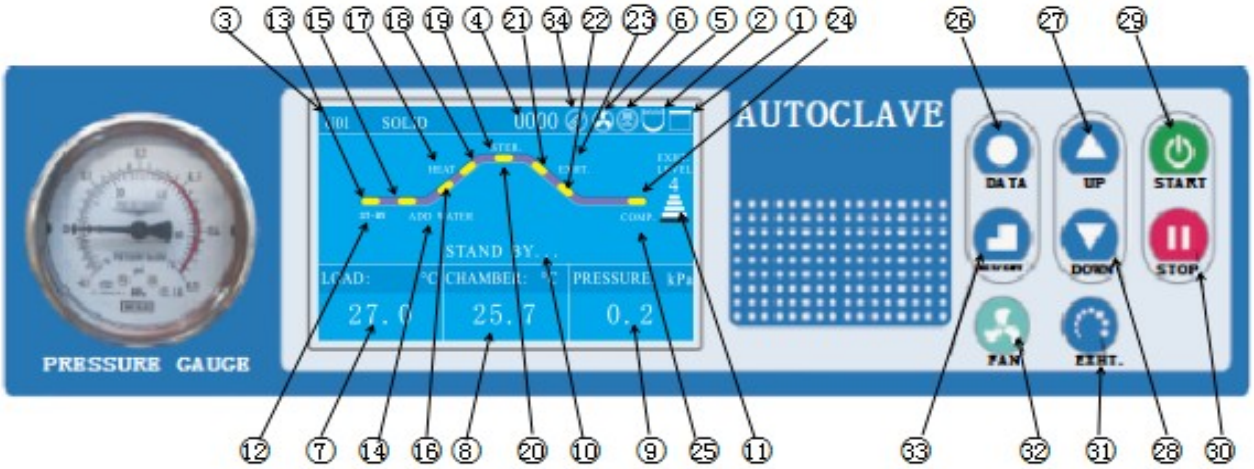
1）BAVT/301/302：





11.Parts Function

1. Display Panel Function:



1.Lid interlocking icon:White when lid closed and locked, white and blinking when lid closed but not locked,red and blinking when lid is not closed.

2.Water level indicator icon:White when there is water in the chamber,red and blinking when lack of water.

Note:Available when there is automatic water feeding parts

3.Sterilization mode:Press UP/DOWN to choose the mode.

4.Ran cycle number:each time you press START,add 1 to the number.

5. Printer icon: this icon is available when the printer is selected. For more information on printer settings, see Chapter 4, "Setting of Administrator Menu."

6.Fan icon: when this function is on and when the chamber temperature is higher than 40 degrees, the fan icon will rotate and turn off automatically when the temperature is lower than 40 degrees. This function is default to be on.

7.Object temperature display:when this function is on, this area will show object temperature, when this function is off, here will show “---“.

8.Chamber temperature display: displays chamber temperature

9.When the pressure sensor is installed and function is on, the current pressure value is displayed here, when this function is off, here will show “---“.

10.The current status of the instrument: the working status of the current instrument is displayed here.

11.Exhaust level display: press "EXHT" key to adjust different exhaust level(volumn), divided into 6 levels: Level 0 to level5, level 0 means no exhasut, level 5 means full exhaust.

12.ST-BY: ST-BY will flash under standby conditon.

13.Standby state indicator: yellow means static state, when the flow chart is blue indicates that the instrument is in the standby state, when the flow chart is red indicates the machine is in the heating state.

14.ADD WATER: when running the program, if there is water in the chamber, the flow chart between "ST-BY" and "HEAT" state is displayed in red, means the standby state goes directly to the heating state. If there is no water, the "ST-BY" state will switch to the "ADD WATER" state, and the word "ADD WATER" will blink, indicating that the instrument is adding water, and the flow chart between "ST-BY" and "ADD-WATER" is red.

15.Flow chart light of ADD WATER

16:Heating indicator 1, when this indicator is red, means machine is heating up and temperature is between room temperature and boiling point temperature.

17.HEAT:when HEAT is blinking, means instrument is in heating process

18.Heating indicator 2, when this indicator is red, means machine is heating up and temperature is between boiling point temperature and sterilization temperature.

19.Sterilization state indicator:red means machine is in sterilization process

20.STER.:When blinking and flow chart of this part in red means during sterilizing process, the tempetare is the set sterilizing temperature.

21.Exhaust indicator 1:When this indicator is red, means instrument is during exhaust process, the sterilization is finished, current temperature is cooling down, between set sterilization temperature and boiling point temperatrue.

22.Exhaust indicator 2:When this indicator is red, means instrument is during exhaust process, the sterilization is finished, current temperature is cooling down, betweenboiling point temperatrue and open lid temperature.

23.EXHT:When blinking and flow chart of this part in red means during exhaust process

24.Cycle end indicator:red means whole cycle ends

25.COMP.:blinks and whole flow chart is red, means the whole cycle completes.

26.DATA button,press DATA button can check the data of current program.When setting the parameter, you can press DATA to exit without saving the modification.

27.UP button,under standby condition,press UP button can switch from U01to U02,U03 to U03…;when modifying the parameter, press UP can increase value,long press this button, can increase the value by 10 units.

28.DWON button, under standby condition, press UP button can switch from U02to U01,U03 to U02…;when modifying the parameter, press UP can decrease value,long press this button, can decrease the value by 10 units.

29.START button,used to start the work(press over 2 seconds)

30.STOP button, used to stop the work(press over 2 seconds).When the machine is inserted with USB flash drive, and under standby condition,long press this button can remove the USB flash drive.

31.EXHT button, used to adjust the exhaust volumn,during the liquid mode, be careful to set a lower exhaust volumn to avoid liquid overlow.

32.FAN button,when this function is on, and chamber temperature is over 40°C， the cooling fan will strart working automatically, press FAN button can stop or restart.Not valid when this function if off.

33.SET/ENT button,ued to set data and confirm. 1)under standby condition,press SET/ENT to enter into administor menu;2)when input the password,press SET/ENT to input next number;3)When modifying the data, first time press SET/ENT to enter into modifying condition, second time press to save the modification.

34:USB icon:will appear when inserted with USB flash drive;will not store the data when there is power off or mis-remove the USB.

2. Optional Spare Parts：

1) Load thermometer

2) Automatic water feeding parts

3)Printer and printing set

02 Installation of Autoclave

1. Placement of Autoclave

1) This autoclave is precision instrument,during installation, place the autoclave on a falt 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-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.

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±10%，50Hz/60Hz

Requirement for current intensity:

BAVT 301/302 ·····16A
BAVT 303/304·····32A
If choose 2800W, the current intensity is 20A.

3) Connect the BAVT 303/304 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. 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.

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.

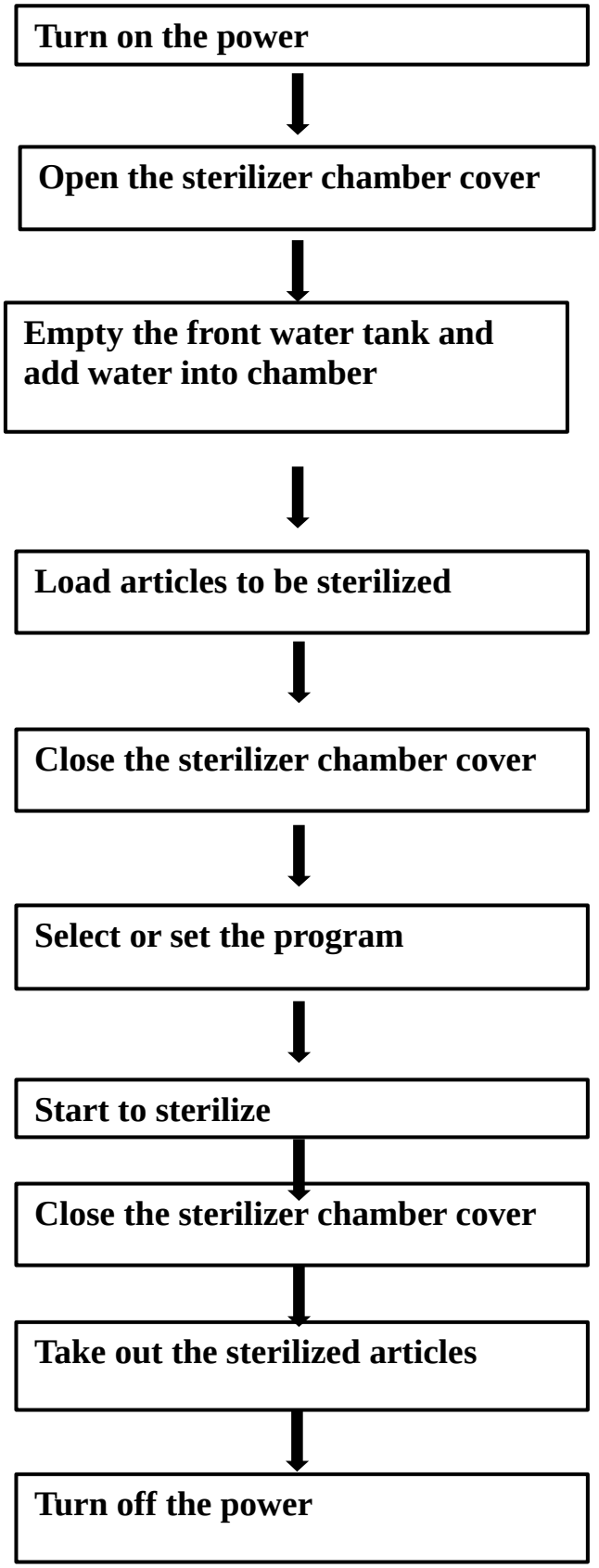
2) Clean the foam scraps inside the sterilizer chamber completely to avoid blocking the pipeline.

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 or make sure proper usage of the machine.

03 Operation Instruction

I. Basic Sterilization Illustration &Operation Instruction



1. Turn on the power

●After turn on the power, the system will do the self-checking, screen will show" Select Account", and send out long sound. After input the password, the screen will enter into the last time login interface.
●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, press any button can restore the display.

2. Open the sterilizer chamber cover

●Turn the handle counter-clockwise until the lid is loosened, need to turn the handle until you can not turn, 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 front 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 from the back of the machine(Fig2)

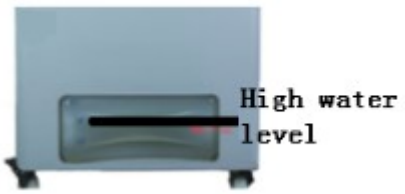


Fig1

Fig 2

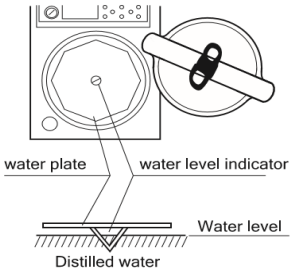


Fig 3

2) Add water into chamber manually

●Check the water level in the chamber, if you can not sea water from the hole in the water plate, you should add water in, and the water should not be higher than the water plate.

3)Add water into chamber automatically (need automatic water feeding parts)

●Change the water frequently, so as to protect the valves and pipes.

★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.
○ 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 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.

5. Close the sterilizer chamber cover

●Push the handle leftword slightly until the arm leans against the arm 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:

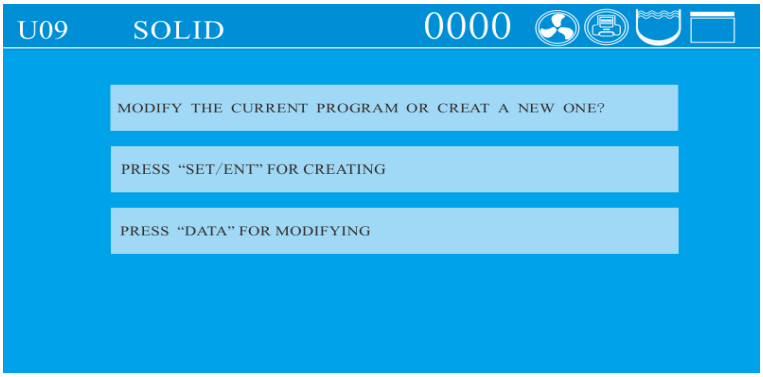
○ Before closing the cover, check if there are objects in or on the sealing ring, clean it to avoid damaging the sealing ring that may cause the steam leakage.
○ Only when the lid close icon on the screen changes to white and not blinking, the machine will start to work.

6. Select or set the program

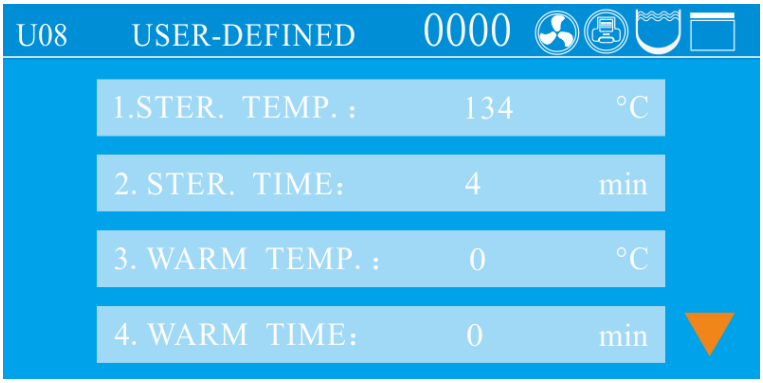
1）Set the program:

When choose the program, if the current program is default program, you can choose the items to be sterilized first like below:

If the program is not a default program, the screen will show below words:



After the above setting, the screen will dump to below screen:



Press SET/ENT button to start modification, when the words are blinking, press UP or DOWN button to change the value, press SET/ENT again to confirm the modification, then press DATA to save and exit.

2）Program Introduction：

●There are 6 default program inside
●The 6 programs can not be deleted or modified, but user can create up to 60 new programs(including default programs) based on the default programs parameter.
●Below is the 6 default programs and the parameter range:

(1). Liquid mode －U01

○Sterilizing flow：Standby→Adding water(Optional)→Heating→Sterilizing→Exhaust→Complete
○Application：Liquid sterilizing
○UO1default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Sterilizing Temp.	121°C	105°C～135°C
Sterilizing Time	30min	1～6000min
Delay Time	0min	0～10min

2）Liquid with warming mode－U02

○Sterilizing flow：Standby→Adding water(Optional)→Heating→Sterilizing→Exhaust→Warming→Complete
○Application：Liquid sterilization，automatic warming to prevent solidification, suitable for agar
○U02default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Sterilizing Temp.	121°C	105°C～135°C
Sterilizing Time	20min	1～6000min
Warming Temp.	50°C	45°C～79°C
Warming Time	600min	1～9999min
Delay Time	0min	0～10min

Note: In the heat preservation stage, the cover can be opened at any time to take out the sterilized material. If you want to keep the heat preservation, please close the chamber cover.

（3）. Solid mode－U03

○Sterilizing flow：Standby→Adding water(Optional)→Heating up→Sterilizing→Exhaust→Complete
○Application：Solid sterilizing
○U03 default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Sterilizing Temp.	121°C	105°C～135°C
Sterilizing Time	20min	1～6000min
Delay Time	0min	0～10min

（4）. Surgical instruments packed with cloth mode -U04

○Sterilizing flow：standby→Adding water(Optional)→heating→Sterilizing→exhaust→drying→Complete
○Application：Sterilization of surgical instrument sets, paper bags, paper plastic packaging instruments, etc
○UO4default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Sterilizing Temp.	134°C	105°C～135°C
Sterilizing Time	12min	1～6000min
Delay Time	0min	0～10min

（5）. Fabric mode-U05

○Sterilizing flow：Standby→Adding water(Optional)→Heating→Sterilizing→Exhaust→Drying→Complete
○Application：Textile articles, dressing bag sterilization
○UO5default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Sterilizing Temp.	121°C	105°C～135°C
Sterilizing Time	30min	1～6000min
Delay Time	0min	0～10min

（6）. Rubber mode —U06

○Sterilizing flow：Standby→Adding water(Optional)→Heating→Sterilizing→Exhaust→Drying→Complete
○Application：Sterilization of heat-resistant and moisture-resistant tubular rubber, porous rubber products, etc.
○UO6default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Sterilizing Temp.	121°C	105°C～135°C
Sterilizing Time	30min	1～6000min
Delay Time	0min	0～10min

（7）. Fast mode —U07

○Sterilizing flow：Standby→Adding water(Optional)→Heating→Sterilizing→Exhaust→Drying→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.
○UO7default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Sterilizing Temp.	134°C	105°C～135°C
Sterilizing Time	12min	1～6000min
Delay Time	0min	0～10min

（8）. Wast mode —U08

○Sterilizing flow：Standby→Adding water(Optional)→Heating→Sterilizing→Exhaust→Complete
○Application：Waste sterilizing, waste can be solid, liquid, or the mixture of solid and liquid
○U08default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Sterilizing Temp.	126°C	105°C～135°C
Sterilizing Time	40min	1～6000min
Delay Time	0min	0～10min
Lid Open Time	50°C	40°C～99°C

（9）. Agar mode—U09

○Sterilizing flow：Standby→Adding water(Optional)→Melting→Heating→WarmingSterilizing→Exhaust→Complete
○Application：Agar melting
○UO9default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Melting Temp.	100°C	60°C～115°C
Melting Time	10min	1～6000min
Warming Temp.	50°C	45°C～79°C
Warming Time	600min	1～9999 min

（10）. Self-defined mode—U10

○Sterilizing flow：Standby→Adding water(Optional)→Heating→Sterilizing→Exhaust→Warming(Drying)→Complete
○Application：According to customer
○U10default parameters and the new created program parameter range

Name	Default Parameter	Parameter Range of New Program
Sterilizing Temp.	121°C	105°C～135°C
Sterilizing Time	20min	1～6000min
Warming Temp.	50°C	45°C～79°C
Warming Time	600°C	0,1～9999min
Delay Time	0min	8～15min
Lid Open Time	97°C	40°C～99°C

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".

8. Program finished & Open the cover

1) When reach the set sterilizing time, melting time or lid open temperature(only self-defined mode), the system will send out an alarm.
2) When the program is finished and the temperature is below 3 °C below the boiling point in solid mode or 20 °C below boiling point in liquid mode, the "complete" on the screen flashes, and the system will send out 5 long sound, indicating the end of sterilization. At this time, if you open the cover, you should pay attention not to get burnt.
4) when the temperature is lower than 40 °C, the system returns to the standby state and the cover can be opened safely.

★Note: ○If the handle is turned by mistake during sterilization, the handle can not be continue turned 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 direction 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.
○Be careful not get burnt by the hot steam while open the lid

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) When installed with load thermometer, be careful it will be stuck while taking baskets out

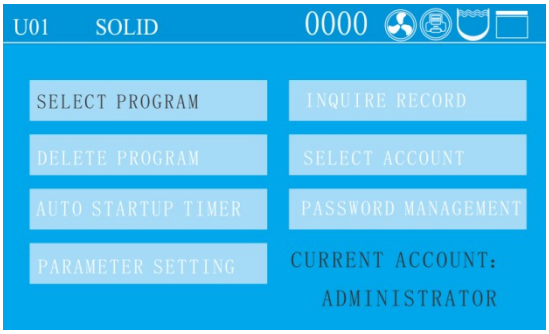
10. Turn off the power

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

In the program interface, like under U01 condition. Press SET/ENT can enter into program management screen, choose: SELECT PROGRAM, press SET/ENT to enter into new menu, press UP/DOWN to adjust, press SET/ENT to save the changes. Press DATA can also enter into new program but without saving. After all parameter setting finished, press DATA to exit, the screen will ask you if you need to save or not, if you press SET/ENT, there will be a new program created, if you press DATA, you can exit without creating a new program. (If the administrator has set the modification access limit, you should enter the password when the system asks for)



2. Deleting Program

●If you need to delete the program, press SET/ENT to enter into management menu, choose the DELETE PROGRAM, then press SET/ENT to delete.(If the administrator has set the modification access limit, you should enter the password when the system asks for)

●Default 6 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

53minute. Actual required sterilizing time(53min)=Normal sterilizing time(20min) +Delay time(33min)

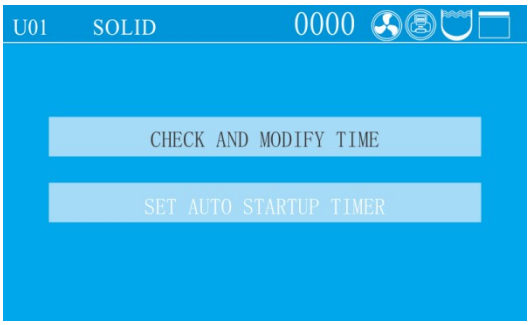
●When installed with load thermometer, the system will begin sterilization process only when the liquids reaches the set temperature.

●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.

III. Clock setting

Press SET/ENT to enter into management menu, press UP/DOWN to choose “CHECK AND MODIFY TIME”, press SET/ENT to enter into next menu. After modifying, press SET/ENT to save and exit, press DATA to exit without saving.



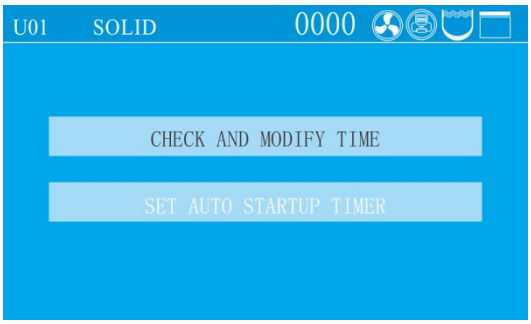
● Adjustable Time Range

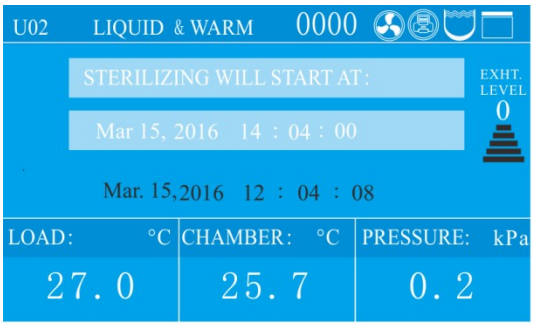
Name	Adjustable Range
Year	2000~2099
Month	1~12
Date	1~31
Hour	0~23
Minute	0~59
Second	0~59

● Please make sure you set reasonable date, if not, the system will switch back to the correct date. For example, If you set Feb.30,2018, system will switch to Mar.1,2018 after 23:59:59, Feb.30,2018.

IV. Set auto startup timer

Press SET/ENT to enter into management menu, press UP/DOWN to choose “SET AUTO STARTUP TIMER”, press SET/ENT to enter into next menu. After modifying, press SET/ENT to save and exit, press DATA to exit without saving.

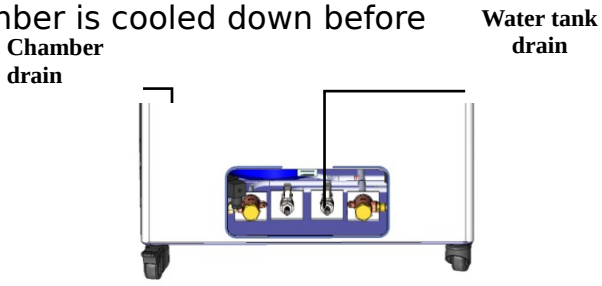




★Note：○Please recheck the time setting, if the time is not set correctly, the auto start timer will follow the wrong setting.

04 Maintain & Management

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



I. Cleaning

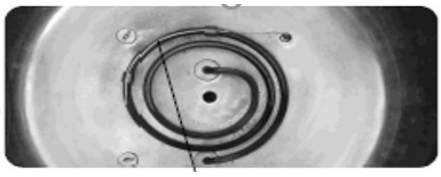
1. Water change and chamber cleaning

1) Water change
●If the water in the chamber is not changed for a longtime, the dirt inside will cause damage to solenoid valve.
●Connect the drainage to the chamber drain port, then open it counterclockwise.

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

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

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

II. Maintenance

1. Check of Leakage Circuit Breaker

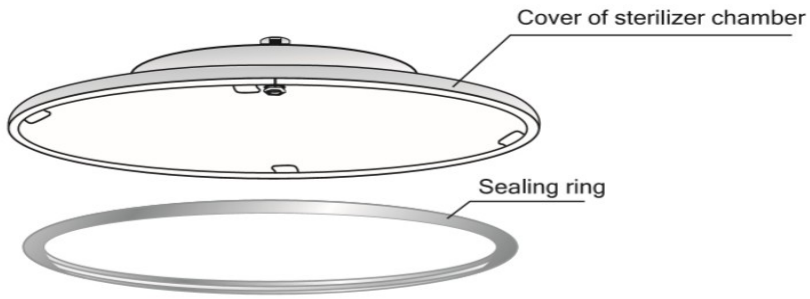
●Press the T button at the back of leakage circuit breaker, if it dumps off, means normal, if no, please turn off and contact the dealer
●Press the power switch, pull up the leakage circuit breaker, can connect the power again
●Check once half year

2. Safety valve test

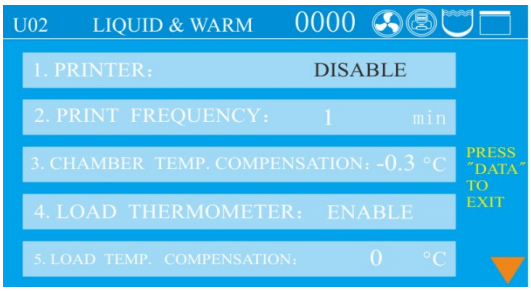
●Enter into the administer menu(Refer to Setting of Administrator Menu), then press DOWN to choose the safety valve test, choose ENABLE, press SET/ENT to save and exit.
●The instrument will start to do safety valve test, you can press STOP to stop it.
●If the temperature goes over the max temperature 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.

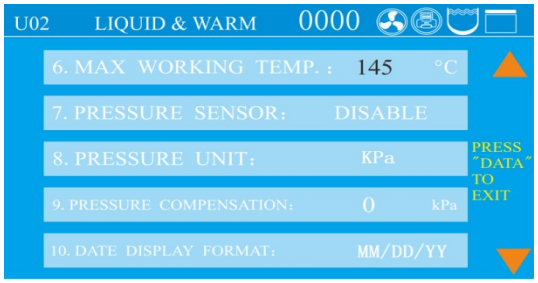
3. Cleaning & Replacement of Sealing ring

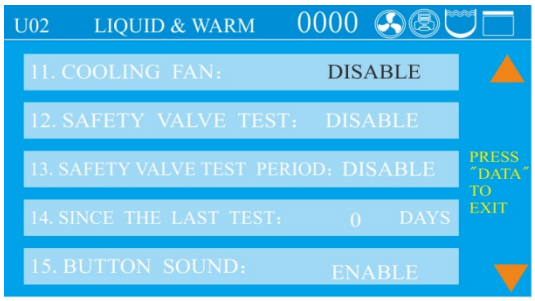
1）Wipe the surface of the sealing ring and it is contact parts with soft and clean cloth at least once a week to avoid steam leakage resulted from damage by dirt
2) If the edge of the sealing ring of cover becomes white or hardened, it may lead to steam leakage, and must be changed.
3）Sealing ring change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

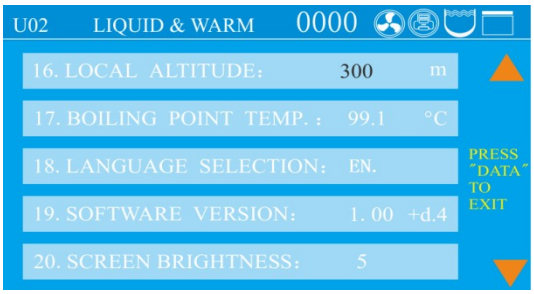


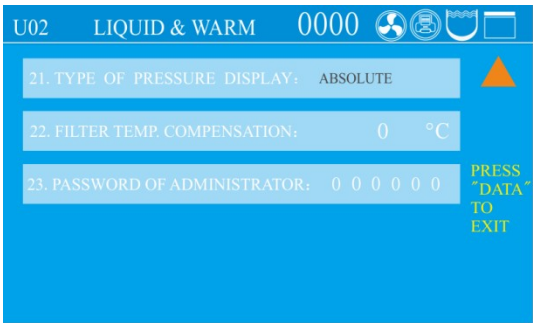
III. Setting of Administrator Menu











●Under standby condition, press SET/ENT to enter into administer menu, press UP or DOWN to choose PARAMETER SETTING, press SET/ENT to enter into, then input password.
●After enter into the menu, press UP or DOWN to choose the item you want to modify, press SET/ENT to enter into and after modification, press SET/ENT again to save and exit.
●The default password is 667788,you can modify if you want, if you forget your modification, please contact distributor.
●When doing administrator setting, press STOP will go back to standby screen, press DATA to go back to the previous screen.

●Administrator Menu:

1. PRINTER: You can choose to print only data or “data & curve”
2. PRINT FREQUENCY: Can choose 1-10 minutes
3. CHAMBER TEMP. COMPENSATION: Range from -5°C to 5°C.

4. LOAD THERMOMETER：Enable and disable, if you choose Enable, screen will show Object temperature value.
5. LOAD TEMP. COMPENSATION：Range from -5°C to 5°C。
6. MAX WORKING TEMP.：Range from 138°C to 145°C，used for safety valve test
7. PRESSURE SENSOR：If pressure sensor is installed and enabled, the screen will display the value, if no, screen will show “---"
8. PRESSURE UNIT：You can choose from kpa. psi. bar。
9. PRESSURE COMPENSATION：Range from -5kPa to 5kPa。
10. DATE DISPLAY FORMAT：Year/Month/Date or Date/Month/Year
11. COOLING FAN：Enable and disable
12. SAFETY VALVE TEST：Choose Enable can start the safety valve test
13. SAFETY VALVE TEST PERIOD：You can choose how often to remind you to do test ,30. 60. 90. 120. 150. 180. 210. 240. 270. 300. 330. 360 day or off.
14. SINCE THE LAST TEST：How many days since the last safety valve test
15. BUTTON SOUND：Enable and disable
16. LOCAL ALTITUDE：Range 0～3000
17. BOILING POINT TEMP.：Local boiling point
18. LANGUAGE SELECTION：Chinese and English
19. SOFTWARE VERSION：Can not be modified
20. SCREEN BRIGHTNESS：Range 0～32，default is 30
Note：If you set it too dark to see, you can turn off the machine, then press UP and DOWN together to wait for the screen to wake up again. The brightness will go back to 30 for instant, now you need to enter into administrator menu to set the value back to normal and save it.
21.TYPE OF PRESSURE DISPLAY：Gauge and absolute
22.FILTER TEMP COMPENSATION：Range -5°Cto 5°C
23.PASSWORD OF ADMINISTRATOR：Modified range 000000~999999

05 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 model, 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 between198V-242V
E-06	Chamber temperature sensor drop off from main-board	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 chamberpressure sensor	Contact local dealer or change pressure sensor
	Press the white T button didn’t pressed in	Press the white T button
	E-leakage or short circuit or overcurrent	Contact local dealer

- 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

Display Content	Suggested Solution
Over temperature in chamber!	Wait until the temperature cooling down
The safety valve test hasn’t been done for too long!	Do the safety valve test
The lid is not locked!	Secure the lid again

● 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 articels sterilized, picture or video if have

4) How long you use the machine

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