BIOBASE

Laboratory Sterilizer
BKQ-B50/75L
User Manual

BIOBASE GROUP

Version 2020.10

Content

Introduction

Respected user:

Welcome to buy laboratory sterilizer, would like to thank you!

Sincerely hope that our products can bring the greatest help to your work.

● The first time using this product, please read this manual carefully!

● Sterilizers should only be handled by trained and authorized personnel.

● Equipment maintenance can only be done by authorized BIOBASE or BIOBASE dealers.

● If the operator encounters problems that are not mentioned in this manual, contact the authorized BIOBASE or BIOBASE dealer and ask for correct handling.

● The laboratory sterilizer must be inspected and maintained within the specified time.

After reading the manual, in order to facilitate access at any time, please put this manual in a convenient place.

1.Application range

Laboratory sterilizer is suitable for sterilizing laboratory liquids including laboratory nutrients and media.

2. Normal working conditions

（1）Ambient Temp.: 5~40℃;
（2）Relative Humidity: Max 85%;
（3）Atmospheric Pressure: 70Kpa~106kpa;
Note: The use of sterilizers by manufacturers and users should consider the effect of local atmospheric pressure on sterilizer parameter settings.
(4) Power: AC220V, 50Hz;
(5) Avoid heavy dust, oil mist, containing conductive particles, corrosive gases, flammable gas environment;
(6) Avoid easily shock or vibration of the occasion;
(7) Avoid high temperature and humidity or easily wet place;
(8) Avoid strong magnetic environment.

3.Technical parameters

Product Name	laboratory sterilizer	
Model	BKQ-B50L	BKQ-B75L
Capacity	50L	75L
Design pressure	0.28MPa	
Rated working pressure	0.22MPa	
Rated working temperature	121℃	
Rated voltage	220V/50Hz	
Rated power	5.5kW	
Equipment net weight	115kg	127kg
Sterilization chamber weight	40.95kg	40.95kg
Sterilizer cavity size（Φ*L）	Φ386×514	Φ386×695
External Size（L*D*H）	610×700×1110	
Noise	≤65dB	
Design life	5 years	
Date of manufacture	See the label for details	
Sterilization chamber material	SUS304	

4.Product performance:

（1）At the same time the difference between the points should not exceed 2 ℃.

(2) For the sterilization temperature of 121 ℃ and 134 ℃ sterilization cycle, the maintenance time should be not less than 20 min and 4 min.

5.Contraindications

The laboratory sterilizer cannot sterilize articles or lumen loads that are not suitable for wet heat sterilization.

6.Equipment principle and the main structure

Laboratory sterilizer is the use of thermodynamic factors to kill microorganisms, in a closed container by heating the high temperature and pressure steam and use of its latent heat to achieve sterilization of the instrument equipment. The sterilizer is mainly composed of a container, a gate, a pipe system, a control system and the like. The direction of the door opening is upward, and the material of the internal chamber is pressed by a stainless steel plate of SUS304.

Laboratory sterilizer can kill all microorganisms including spores,and the bearing appliance is a stainless steel basket.

The main function of each device is as follows

NO.	Components	Function
1	Hand wheel	Used to open or close the sterilizer door
2	Door cover	Cover door components, play a role in insulation to protect the operator
3	Pressure gauge	When the equipment is working, show the main cavity pressure
4	Control panel	Macro real-time monitoring of the entire sterilization process
5	Printer	Used to record the data during the operation of the sterilizer
6	joggle	The water inlet of the coiled pipe, the water outlet of the inner chamber, the water outlet of the coil pipe, the water inlet of the evaporator, the water outlet of the evaporator, the water outlet of the water
7	Safety valve	Through the predetermined working pressure pressure relief valve, to ensure safety
8	Footmaster	Supports the equipment and enables the equipment to move on a

	caster	smooth surface
9	Air switch	A switch that automatically disconnects when the current exceeds the rated current in the circuit.
10	Cable	To the power switch

Sterilizer main components of the role simply as follows:

No.	Component	Function
1	Container	medical equipment, sanitary materials and other objects of sterilization
2	Door	closed container
3	Plumbing system	to connect all kinds of parts, conveying distilled water and steam.
4	Control system	control cvarious types of solenoid valves and testing devices to ensure that the sterilization process can be successfully completed.

7.Precautions

 The user shall carry out regular maintenance in the course of use.

 The user should check the products in use once a month and keep records.If any abnormal situation is found during the inspection and daily maintenance of the product, the user shall deal with it in time.

 The user shall regularly check and overhaul the safety accessories (safety valve, pressure gauge, etc.), safety protection devices, measuring and regulating devices and related instruments and meters of the products in use, and keep records.

 The operating personnel and related management personnel shall, in accordance with the relevant provisions of the state, obtain a uniform national certificate for special equipment operating personnel before engaging in relevant work.The user unit shall provide special equipment safety education and training to the operators, who shall have the necessary knowledge of special equipment safety, and shall strictly abide by the relevant laws and regulations, operating rules and relevant rules and regulations of special equipment in the operation.

 The equipment design and manufacture in accordance with the "pressure vessel" .Comply with the provisions of safety technical supervision regulations for stationary pressure vessels。

 When using this equipment to sterilize liquid items such as glass bottles or glassware, do not quickly relieve the pressure because the changes in temperature and pressure during operation may cause the liquid bottles to explode, which may endanger people and equipment Security.

 Chloride ion is an important factor that causes corrosion damage of stainless steel. If the sterilizer sterilizes articles containing chloride ions, the inner wall of the sterilizer must be rinsed daily with clean water to prevent the deposition of chloride ions from corroding the internal stainless steel and prolong the service life of the equipment, otherwise additional damage to the equipment and Accelerated aging is not covered by our company.

 This equipment is only suitable for the sterilization of high temperature and high humidity medical equipment and articles. It can not be used for the oil and powder such as vaseline.

It contains highly volatile substances such as alcohol and gasoline, and sterilizes the corroded copper and aluminum products.

 This sterilizer shall not be used for cooking food that is not packed with high temperature resistant materials.

 Use the device according to the operation methods and precautions specified in this manual. If you do not use the device according to the specified method, the protection provided by the device may be damaged, resulting in artificial insecurity and hidden danger.

 Keep the user's manual completely within the service life of the equipment, and ensure that all the updates received can be stored in the manual. When the equipment is used or the unit of use is changed, it is necessary to ensure that the manual is transferred or delivered as a part of the equipment.

 Equipment does not allow unauthorized disassembly, if necessary, please contact our company authorized suppliers or agents of professionals to inspect or replace parts.

 Equipment that has been stored under wet conditions may not meet all the safety requirements specified in this manual and must be air-dried for a period of time and then stored under normal conditions.

 When equipment sterilization is completed, the sterilization chamber wall still a certain residual temperature, please pay attention to heat insulation, to avoid scalding, burns and burns, the injury can be cooled to prevent the heat caused by deep tissue damage to the skin, ease the pain, Please seek medical attention as soon as possible.

Monitoring method: sterilizer can be used to verify the temperature sterilization, sterilization test strips, biological reagents and other methods to monitor the sterilization effect.

 Monitoring methods: the sterilizer can monitor the sterilizing effect by means of temperature verification, sterilizing test paper and biological reagent cultivation.

 The safety valve at the back of the equipment should not be directed towards people or other instruments to avoid steam scald or interference.

 After the liquid program is completed, please turn on the equipment in time to avoid evaporation.

 In the following cases, the door may not open due to negative pressure: after use did not open the door in time;Close the sterilizing door body with residual temperature;The equipment is new to the customer.When this happens, open the ball valve on the back of the equipment or pull up the safety valve. After the pressure is balanced, the door body can be opened.

 The safety valve and pressure gauge should be measured and calibrated by qualified testing institutions every year. The inner bladder of sterilizer is class I pressure vessel, and the testing period is 3 years.

 The user shall entrust the installation, renovation and maintenance of pressure vessel to the user, and the pressure vessel installation unit shall submit a written notice to the local pressure vessel use registration authority.

 The user shall register the use of the equipment with the quality and technical supervision department of a municipality directly under the central government or a city divided into districts according to the requirements of laws and regulations before or within 30 days after the equipment is put into use.

 The door sealing ring is a lossless device. If the sterilizer is used continuously for 1.5 years or after 500 sterilizing cycles, the door sealing ring needs to be replaced.

 When sterilizing the liquid, please put the moving probe into the liquid as close as possible to the middle position of the liquid. The moving probe should not touch the cup wall to ensure the accuracy of sterilization.

8.Installation and Adjustment

8.1.Equipment unpacking Installation Preparation

8.1.1 When the sterilizer arrives, please pay special attention to its packaging, carefully check the product name, specification and model information on the packing case, and keep the packing case.
8.1.2Equipment inspection and quick unpacking
After opening the packing case, please carefully check whether the equipment and all parts are in good condition. If there is any damage or loss, please make records and contact the transportation company and our company in time.
After the equipment is unpacked, first check whether the product name, specification and model on the label on the upper left corner of the back of the equipment are consistent with the order.
Use scissors to cut open the packaging belt, take off the packaging cover, and move the packaging frame around, as shown in figure 1.

Figure 1.Packing case for laboratory sterilizer

8.2 Carry and move

It should be installed by professionals.
8.2.1 Please do not hold the door handle and move the sterilizer.
8.2.2 When handling, do not put the equipment side and upside down.
8.2.3 Installation and handling should be carried out by more than one person, should be handled lightly, do not violently touch.
8.2.4 In the process of handling, pay attention not to damage or scratch the equipment.

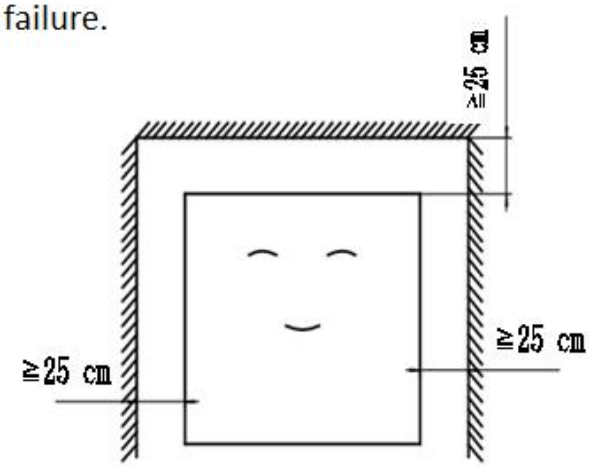
8.3 Installation and debugging

8.3.1Placement of sterilizer:

Place the sterilizer on a smooth, clean and spacious floor, and adjust the universal wheel of the equipment to be parallel to the floor to ensure firm and reliable.The distance between the back and side of the sterilizer and other objects shall be at least 250mm.Ensure good ventilation (equipment should be stored separately).

The presence of other objects shall not affect the operation of the equipment except at a safe distance from other objects.When the equipment malfunction, should quickly cut off the power!

Attention: If the sterilizer is clingy wall, may cause internal heat agglomeration of sterilizer and cause failure.



1) Open the sterilizer door, put sterilizing indicator card or biological indicator, reset and close the door;

2) Switch on the power and enter the program selection screen.

3) According to the altitude difference of different places, the related parameters shall be modified by professionals.

8.3.2The power supply installation

Attention: Pls let the equipment grounding for your safety.

Be sure to install a special connection device suitable for wiring at a height of 1 meter on the building near the equipment (the load capacity of the power supply and power cord should be greater than the rated load of the equipment).Advice:

Above 220V (50HZ).

Please do not put the equipment in a place where it is difficult to disconnect the power. Make sure the power can be disconnected in case of emergency.

The equipment adopts the direct connection mode of two-phase three-wire system. Please connect according to the connection mode configured by the equipment.

Please do not change the wiring mode arbitrarily.If you need, please contact us.

Live line (L) -- red, Neutral wire (N) -- blue, Earth wire (PE) -- yellow-green.

Please connect the live wire, zero wire and ground wire of the equipment to the local power supply.Please be sure to entrust professional electrical construction personnel to install.To ensure your personal safety, the equipment must be grounded reliably.

8.3.3Electromagnetic compatibility

The equipment is used for the hot and humid sterilization of medical instruments and sanitary materials, mainly used in hospitals, centers for disease control and prevention and other medical institutions and factory laboratories, meeting the requirements of emission and disturbance immunity stipulated in GB/T 18626.1-2010 and GB 4824-2013.

8.3.4Water requirements

It is recommended that you use soft or pure water, as improper water quality may shorten the service life of the equipment and cause unnecessary failures.

Water quality must meet the following requirements:

Electrical conductivity is below 15 μ S/cm

The bleach content was less than 2mg/L

PH 5～7

Hardness is lower than 0.02mmol/L

Water quantity: external pure water bucket, automatically replenish water source

Note: the exhaust port on the side of the equipment is connected with the exhaust pipe to avoid steam exhaust indoors.

8.3.5 Storage environment

The sterilizer should be placed in a clean, dry, light-proof, ventilated indoor environment with small temperature difference.

1) indoor temperature: 5℃-40℃.

2) relative humidity is no more than 85%.

3) atmospheric pressure is 70 kPa ~ 106 kPa.

4) the permissible voltage fluctuation range is ±10%.

5) no dust and pollution in the room.

9.Equipment instructions

9.1 Directions for use

Operate the equipment in strict accordance with this instruction, the wrong installation and operation will endanger the safety of human life and property, and make the manufacturer's guarantee of equipment performance invalid;Keep the instruction manual completely within the service life of the equipment.

Before the use of the equipment, an external air compressor shall be provided. The specification of the air compressor is gas production volume, 100 liters per minute, and oil-free silent air compressor with 30 liters of air storage tank

In case of any change of the use site or unit of the equipment, the operation manual must be transferred or handed over as part of the whole equipment.

9.2 Equipment identification description

To show should pay great attention

The sign of opening the door

The sign of air circuit breaker

The sign of ground connection

The sign of high temperature

The sign of the power input

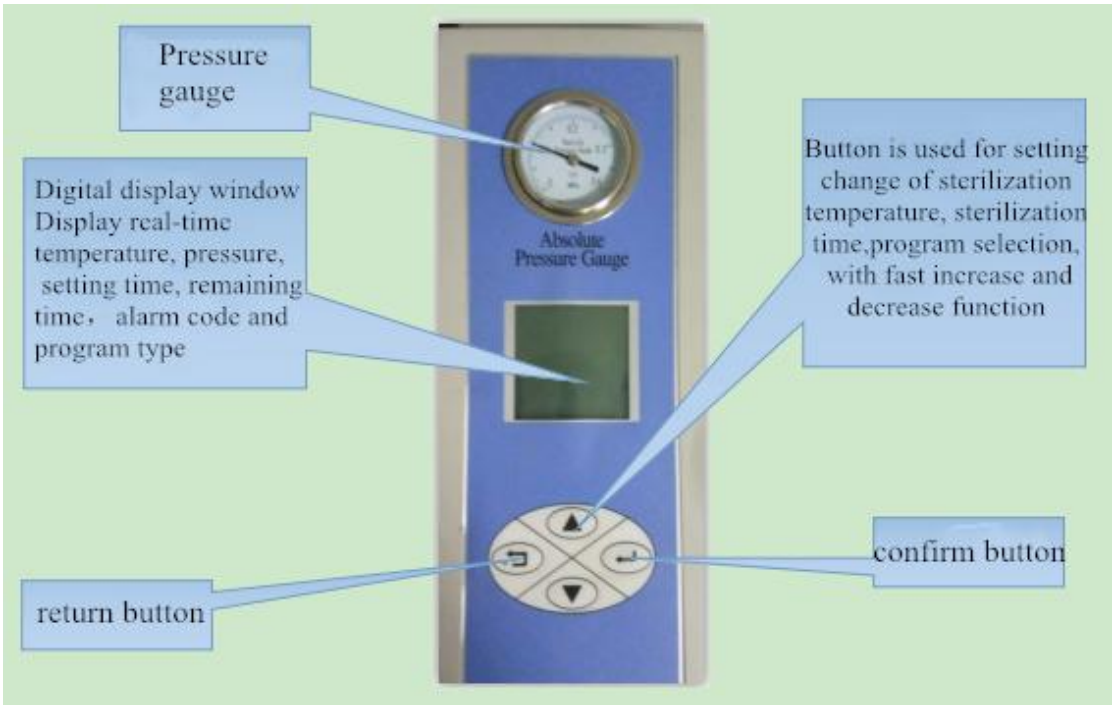
The sign of the power input

Device interface connection:

1)The inlet of coil pipe shall be connected with the usually open source water, and the outlet of coil pipe shall discharge the clean source water to the sewer and other places

2)The drain outlet of the inner chamber and water tank is used to discharge residual water inside the cavity. After fixing the pipe, it can be directly discharged into the sewer and other places
3)The water inlet of the evaporator shall be connected with distilled water or pure water source to ensure sufficient and timely water supply to the equipment;The evaporator drain port is used to discharge excess water from the evaporator.
4)Air port of air compressor should be connected with small air compressor, which is used to add pressure in the cavity

9.3 The control panel



Operation interface:

Have “↵”、“⮌”、“▲”、“▼”four buttons, respectively" confirm button "," return button"," up button "and" down button" and "digital display window".
button description:

1）return button ⮌

Press this button to return the screen to the previous screen.

2）confirm button ↵

- press this button to select the icon where the cursor is.
- used to move cursor when setting parameters

3）up button ▲

- press this button to move the cursor up or right
- used as the minus button when setting parameters

4）down button ▼

- press this button to move the cursor down or left

- used as the add button when setting parameters

5) the cursor

When the cursor moves to the selected icon or parameter name, the color of this section will be reversed:

For example, when the cursor is not on an icon

When the cursor moves over the icon

There are two sterilization procedures in this sterilizer:

Program number	Program type	Sterilization temperature /℃	Sterilization time/s	drying time/s
1	Sterilization program	Refer to recommended temperature and time for different sterilization loads		
2	Auxiliary class program			

Operation process:

The operation procedure of sterilizer includes sterilizing preparation, sterilizing item loading, sterilizing operation, sterilizing item unloading and so on.

Sterilizing preparation: please clean the sterilizing instrument before putting it into the sterilizer, so as to prevent the residue on the sterilizing instrument from harming the sterilizer and sterilizing instrument.Examples: blood stains and other impurities.We have formulated a specific cleaning plan for your reference:

1) for sterilizing instruments after use, you should immediately clean the residue attached to the sterilizing instruments.It is recommended that you use cleaning agent, purifier and distilled water to clean sterilizing instruments.

2) after cleaning, it is recommended to rinse it again with water to ensure its cleanliness.

3) when you put the instrument into the sterilization basket, please place different types of instruments in different baskets, such as stainless steel, carbon steel, etc., and leave appropriate gaps between the instruments.If the carbon steel instrument is placed in the basket, the basket should be covered with several layers of sterilizing paper or kapok paper before being placed to avoid direct contact between carbon steel and stainless steel.

4) sterilization of test tubes and glass bottles should be placed vertically with the opening downward to facilitate the replacement of cold air and the entry of saturated steam.

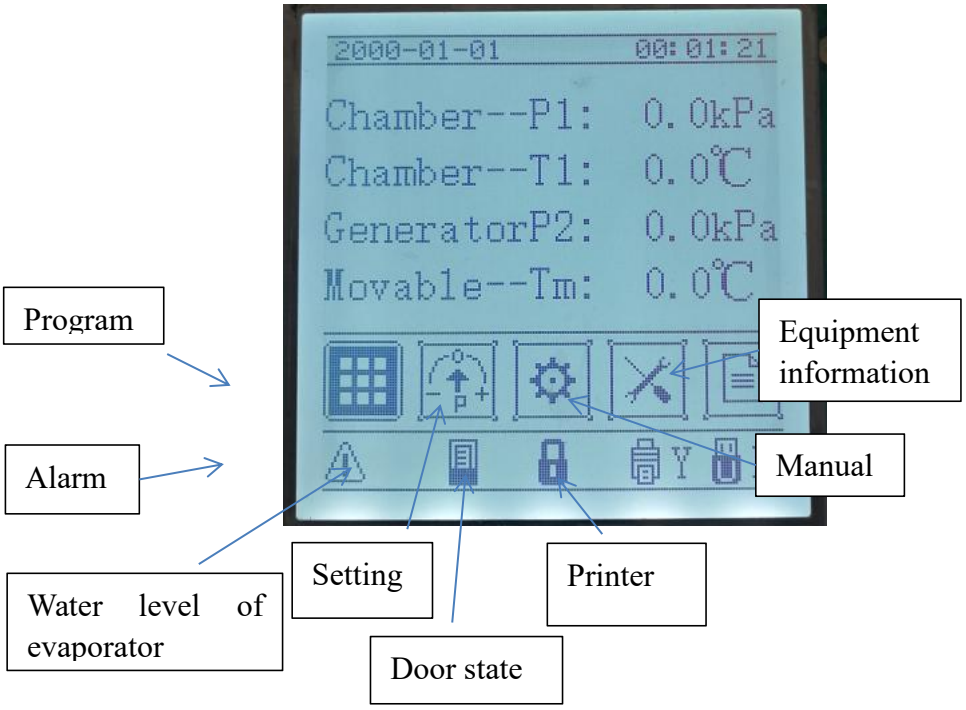
5) place a sterilization indicator card in each basket.

6) place biological indicators in the load once a month to test the sterilization effect.

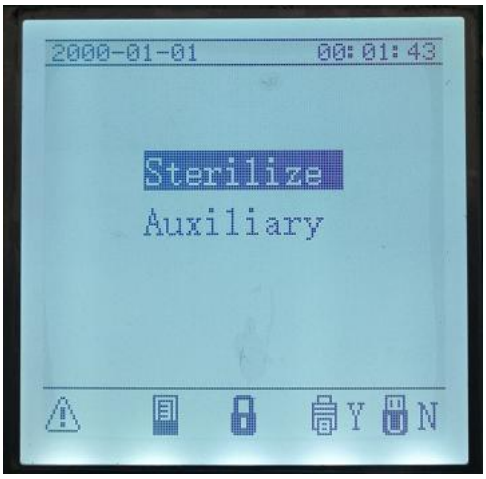
7) plates, basins, bowls and other utensils should be packaged individually, and the cover should be opened when packaging.Surgical instruments should be placed in a basket or a perforated tray for

supporting packaging.It is not easy for the articles to be tightly tied, the weight of the instrument package should not exceed 5kg, and the volume of the sterilizing package should not exceed the volume of the sterilizing basket.Otherwise it will cause inadequate sterilization.
8) packaging materials with good air permeability should be selected for sterilizing instruments, such as sterilizing bag, sterilizing paper, gauze fabric, etc.

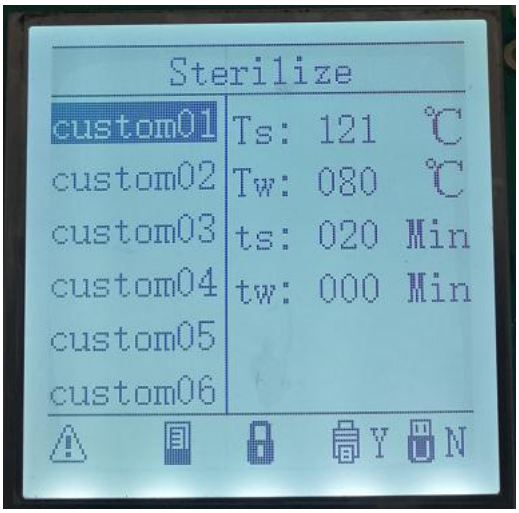
Preparation of culture medium before sterilization
Only medium basket with loading capacity less than 2/3 volume to avoid medium overflow.
Switch on the power supply of the equipment, turn on the air switch at the back, and then turn on the ship-shape switch on the control panel, the display plate becomes bright, the sterilizer is in the initial standby state, and the temperature window of the display screen displays chamber pressure -p1, chamber temperature -t1, evaporator P--P2, and mobile probe -tm.Door status: door open.



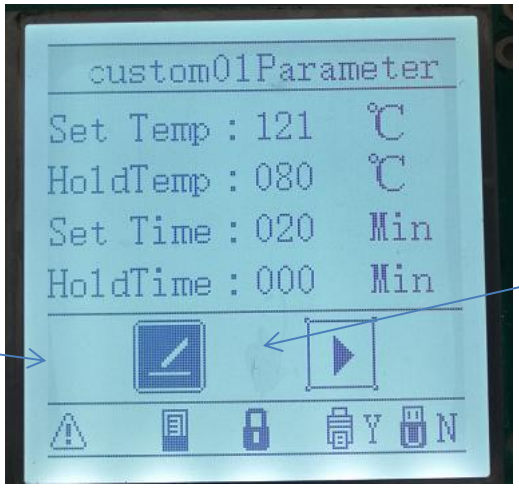
Can choose different sterilization procedures by putting“ ”、“ ”、“▲”、“▼”.
After sterilization, the "finished" light will be on, and the buzzer will beep every 10 seconds. After the "finished" light is on, the sterilization will be completed. Make sure that the pointer of the pressure gauge returns to 0, turn the hand wheel on the lid counterclockwise, open the lid, and take out the items.
Program type:



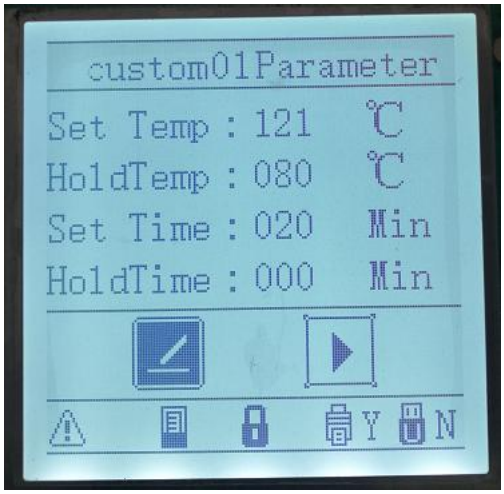
Move the cursor to the program type button, which is displayed in black, enter the program type interface, and select the sterilization program according to the load to be sterilized.
For example, if the object to be sterilized is liquid, select sterilizing program and enter the program interface according to the confirmation



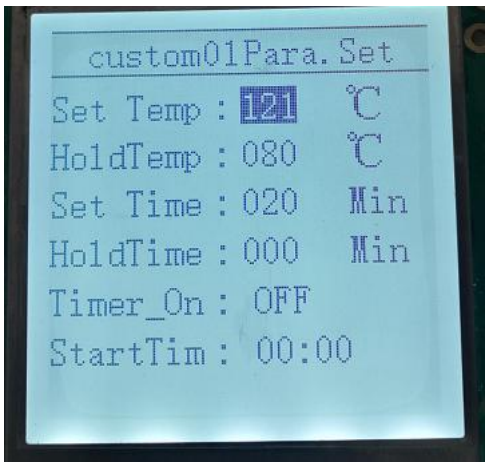
● Select “自定义 01” program and enter the program temperature and time setting interface according to the confirmation



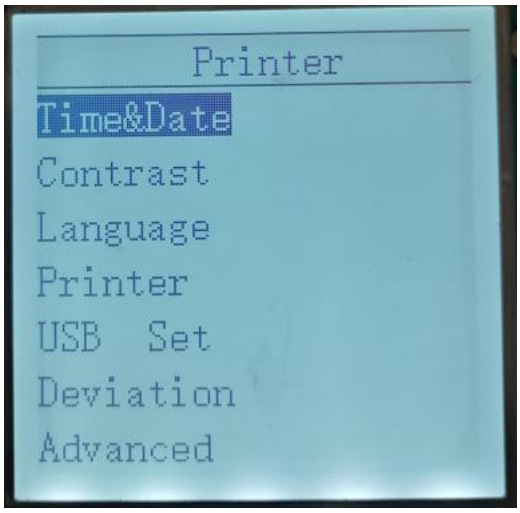
● Press the confirm button to set the required temperature and time according to the load to be sterilized.



●After setting, press the return button to return, select the program start button, and start running the program.

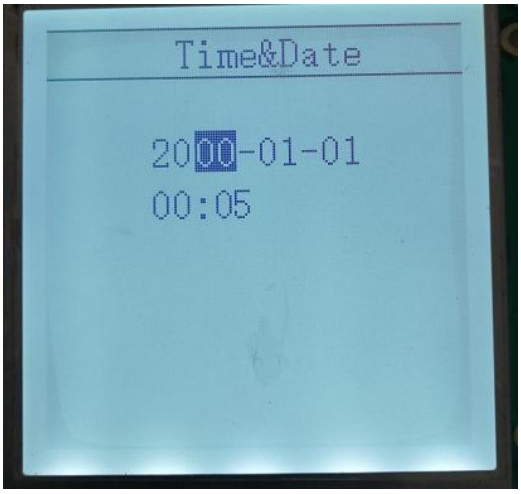


●Parameter Settings：

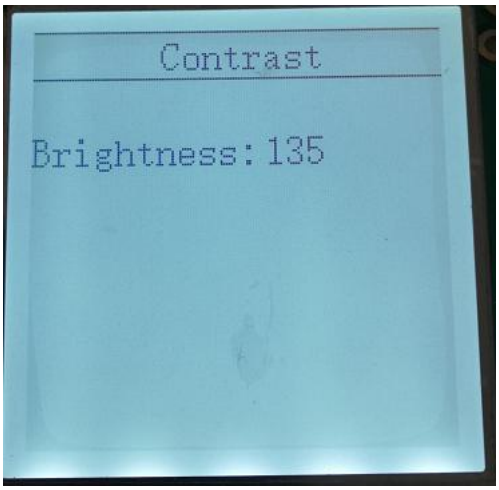


In the parameter setting interface, program parameters can be set.(parameter setting can only be done by BIOBASE or BIOBASE authorized dealer)

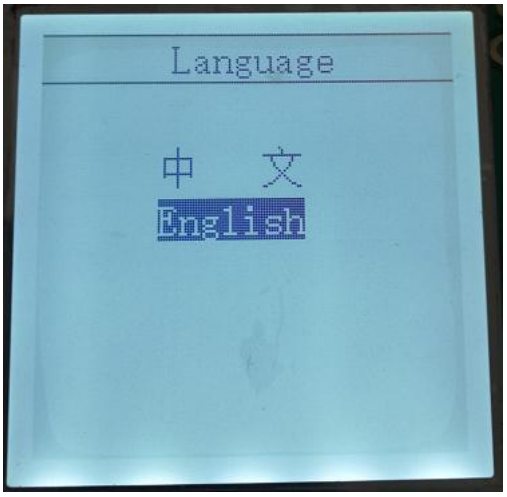
●Time Setting:



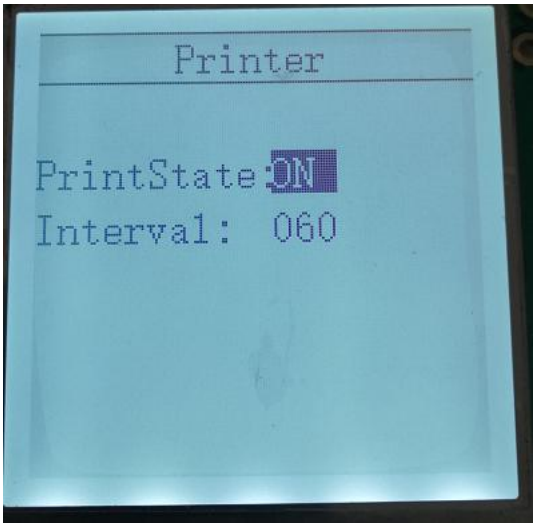
● LCD parameter



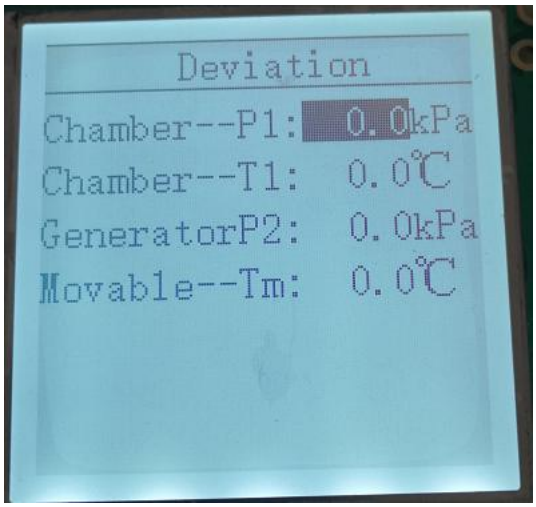
● Language selection



● Print setup



● Deviation correction



10.Maintenance and maintenance

Before starting maintenance, ensure that the equipment is powered off and that there is no pressure in the container.

In order to ensure that the sterilizer is in good working condition and minimize the number of failures, the operations described in this chapter must be followed.

1) Clean the door apron with a soft cloth or gauze after daily work.

2) Take out the sterilizing basket and clean the inner wall of the sterilizing container with gauze with detergent and water.Do not use steel slag or brush to avoid damaging the walls of the sterilization chamber.

3) Check regularly

Every three months, the fastening and testing of the on-off state of the joint should be done by a professional electrician.Once a year, door locks must be tested due to extreme wear and tear.

Instructions for use: this type of maintenance manual is for professional use.Unless you are a professional, be sure to consult the instructions and follow them when the equipment fails.Instructions have been provided to professionals as far as possible.

4) Calibrate safety valve and pressure gauge annually.

 After the failure of the equipment, how to safely remove the load:

(1) in the drainage ball valve on the silicone tube, open the switch to release pressure, pressure gauge indicator zero, open the door, take out the load.

(2) use a tool to pull the safety valve on the ring, release pressure, pressure gauge indicator zero, can open the door, take out the load.

10.1 Evaporator drainage

1) the sterilizer will not be used for a long time or the use cycle is too long. Open the drain ball valve to drain until the water in the evaporator is completely drained.

10.2 Check safety valve

It's at the back of the device.To prevent the relief valve from being blocked, allow steam pressure to be released through it every two months during normal use.

1) sterilize according to the instructions.

2) push the relief valve handle open with a screwdriver for about 2 seconds.

3) close the main switch and terminate the operation.At the same time, the steam in sterilizing vessel is discharged.

4) open the door only when the pressure drops to 0MPa.

10.3 How to replace safety valve

Instructions: these maintenance methods can only be used by professionals.In order to avoid electric shock, equipment failure, must consult the manual, and according to the requirements of the manual maintenance, at the same time, the manual has been as far as possible to provide professional maintenance methods.

1) safety valve is located above the front left side of the equipment.

2) remove the safety valve fixing screw and remove the safety valve from the base of the safety valve.

3) replace it with a qualified safety valve.Test sterilization process.

10.4 The thermostat

Located in the inside of the evaporator, it can maintain a constant temperature by switching on and off the power during heating and sterilization.

10.5 How to increase the operating temperature of thermostat

Thermostat is a liquid expansion thermostat, clockwise rotation to increase the temperature control range.(note: the equipment has been adjusted when leaving the factory, the customer does not need to adjust).

11 Common failure and solution

Failure code	The fault types	Failure reason	The solution
Err 001	door opening	The door is not closed in place or the door switch is not pressed	Check that the door body is pressed to open or close the door in place
Err 002	Dry burning of heating pipe	The water level is too low	Check to see if the water source is adequate
Err 003	In-pot pressure sensor error	The program data is lost or the sensor is not plugged in.	Check that the connections of each sensor connector are in good condition
Err 004	Evaporator pressure sensor error		
Err 005	In-pot temperature sensor error		
Err 006	Mobile temperature sensor error		
Err 007	Manual exit		

12 Warranty commitment

Dear customer: any product may have malfunction, please monitor the operation condition of the equipment in real time during use. If there is any abnormality, please refer to the manual for treatment. If you cannot solve the problem, please inform the service center of the company in time, so as to avoid any loss to you.

After-sales service

1) From the date of sale of the equipment (subject to the invoice) the whole machine is guaranteed for one year free, and enjoy lifelong service.

2) Warranty certificate: when you need normal consultation or maintenance, please contact our local after-sales service center with the warranty certificate and purchase invoice and keep the warranty certificate properly.

Equipment parts can only be purchased through the manufacturer.

13 Packing list

No.	Description	Quantity
1	Main machine of laboratory sterilizer	1
2	Operating instruction	1
3	Pressure vessel quality certificate	1
4	Warranty card	1
5	Conformity certificate	1
6	Maintenance door key	1
7	Connect hose	6(2m)
8	The trachea	1(1m)
9	clamp	12
10	Quick plug connector 8-02	2

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