

**BIOBASE**

**Vertical Autoclave  
BKQ-B50/75/100/120I  
User Manual**

**BIOBASE GROUP**

**Version 2021.11**

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## Preface

Dear users:

Thanks for purchasing BIOBASE Vertical Autoclave!

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

- Please read this manual carefully when using the pressure steam sterilizer for the first time!
- This product can only be operated by trained and authorized personnel.
- The repair of the equipment can only be done by BIOBASE or BIOBASE authorized dealers.
- If the operator encounters a problem not mentioned in this manual, please contact BIOBASE or BIOBASE authorized dealers to inquire about the correct handling method.
- The pressure steam sterilizer must be inspected and maintained within the specified time.

After reading the manual, please keep this manual in a convenient place for easy reference at any time.

## 1. Application scope

BKQ-B I series Vertical Autoclave are used for moist heat sterilization of medical equipment and sanitary materials.

## 2. Working conditions

- 1) Environmental temperature: 5°C ~40°C;
- 2) Relative humidity: ≤85%;
- 3) Atmospheric pressure: 70 kPa ~ 106 kPa;

**Note:** Manufacturers and users should consider the influence of local atmospheric pressure on the parameter settings of the sterilizer when using the sterilizer.

- 4) Power supply: AC 220 V±22V, 50Hz±1Hz;
- 5) Avoid heavy dust, oil mist, conductive particles, corrosive gas, flammable gas environment.
- 6) Avoid occasions that are prone to electric shock or vibration.
- 7) Avoid places with high temperature, high humidity or rain and moisture.
- 8) Avoid strong magnetic field environment.

## 3. Technical parameters

Model	BKQ-B50I	BKQ-B75I	BKQ-B100I	BKQ-B120I
Capacity	50L	75L	100L	120L
Power Supply	220V/50Hz			
Consumption	3.7kW	3.7kW	4.1kW	4.1kW
Net weight	60±2kg	85±2kg	105±2kg	120±2kg
Container weight	37±2kg	42±2kg	45±2kg	61±2kg
Noise	≤65dB			
Service life	5 years (Product expiration date is obtained by accelerated aging test )			
Production date	See the label for details			
Chamber Material	SUS304			
Dimensions	640*550*980	640*550*1080	640*550*1280	640*550*1380
Inner cavity size	Φ386*515	Φ386*695	Φ386*875	Φ386*1055

Software release version: MJQ-SLC-LED-BUZ-V1.

## 4. Product performance

The setting program is a sterilization cycle with a sterilization temperature of 134°C, the maintenance time is not less than 4min, and the difference between the measurement points at the same time should not exceed 2°C, the control system should control the temperature of the sterilization chamber within the range of 0°C~3°C of the preset sterilization temperature.

## 5. Prohibit

This vertical autoclave cannot sterilize items that are not suitable for moist heat sterilization.

## 6. Working principle and structure

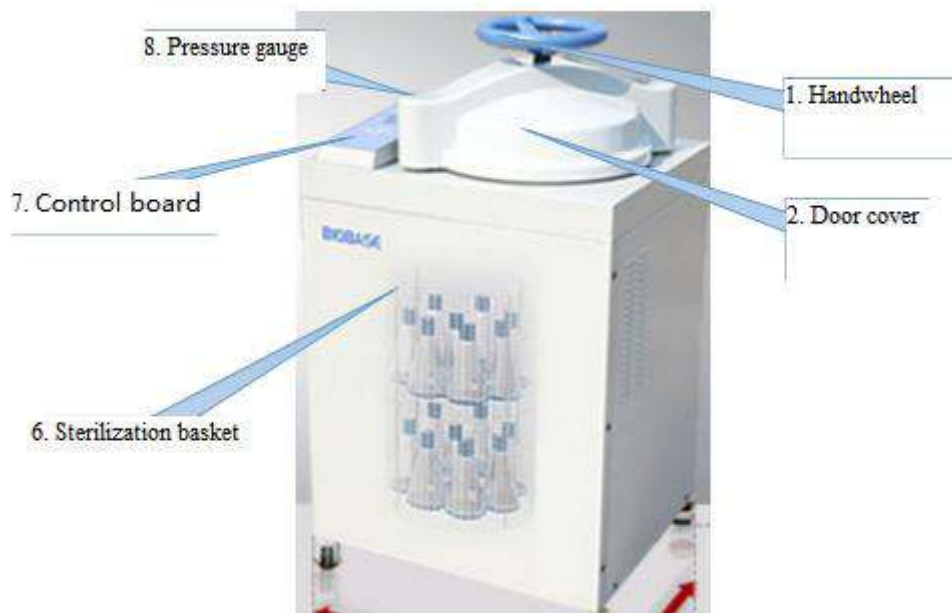
### 6.1 Working principle

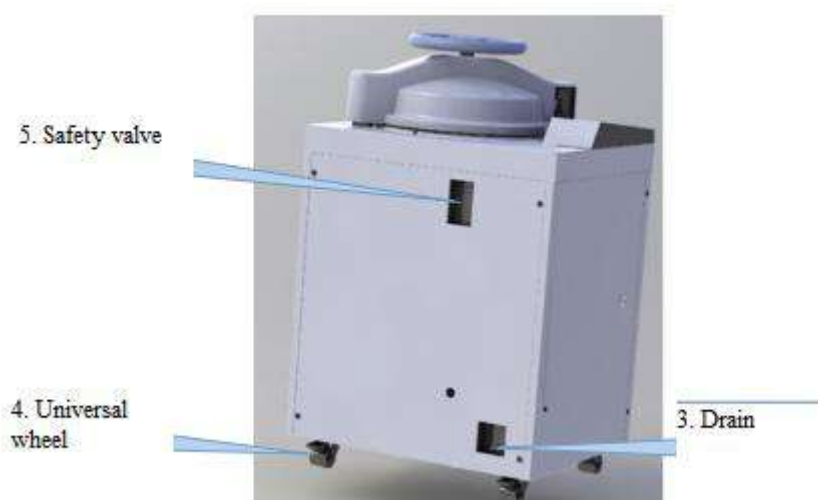
In a closed steamer, the principle of gravity displacement is used to make the hot steam exhaust the cold air in the pot through the exhaust valve, and the discharged cold air is replaced by saturated steam. When the exhaust valve is closed, the heating continues. Since the steam does not overflow during heating, the temperature in the autoclave increases with the increase of steam pressure, and reaches the sterilization cycle with the sterilization temperature of 121°C and 134°C respectively. And the maintenance time should not be less than 20min and 4min respectively, the microbial tissue is destroyed and killed, in order to achieve the purpose of sterilization.

Types of killing microorganisms: It can kill microorganisms including spores.

### 6.2 Main structure

The vertical pressure steam sterilizer consists of a single-layer 304 stainless steel cavity, body and cover locking device, safety interlocking device, handwheel, sealing ring, heating tube, solenoid valve, safety valve, pressure gauge, water level float, temperature sensor, display panel, control panel, safety protection device, piping system and circuit control system and other main components.





The main functions of each device are as follows:

No.	Components	Functions
2	Door cover	The cover door assembly plays a role of heat insulation and protects the operator
3	Drain	It is used to drain the sewage after cleaning and sterilizing room, and shall not be drained under pressure
5	Safety valve	Ensure safety by pre-determined working pressure and pressure relief valve
6	Sterilization basket	Loading of sterilized items
7	Control board	Macro real-time monitoring of the entire sterilization process
8	Pressure gauge	When the equipment is working, the pressure in the main cavity is displayed

The function of each main device is briefly explained as follows:

No.	Components	Functions
1	Exhaust solenoid valve	Exhaust cold air when heating up, exhaust steam when pulsating exhaust steam, and quickly exhaust steam to relieve pressure when cooling down
2	Safety valve	When the pressure reaches 0.26MPa, the safety valve opens and the pressure is released
3	Escape valve	Discharge cold air, increase the saturation of water vapor, and slowly discharge vapor when liquid is sterilized
4	Sterilization thermostat	Prevent the sterilizer from drying out $\leq 145 \pm 5^{\circ}\text{C}$
5	Buzzer	Send out the end of work signal and alarm signal
6	Filter	Filter impurities and improve the reliability of solenoid valves

## 7. Safety notes



The user should perform regular maintenance during use.



The user shall inspect the products in use once a month and keep records. If the user discovers an abnormal situation during the inspection and daily maintenance of the product in use, it shall be dealt with in a timely manner.



The user shall conduct regular inspections, maintenances, and keep records of the safety accessories (safety valves, pressure gauges, etc.), safety protection devices, measurement and control devices and related instruments and meters of the products in use.



Operators and related management personnel shall obtain special equipment operator certificates in the unified format of the country in accordance with relevant national regulations before they can engage in relevant work. The user shall conduct special equipment safety education and training for the operating personnel. The operating personnel shall have the necessary special equipment safety knowledge, and shall strictly abide by the relevant laws and regulations, operating procedures and related rules and regulations of special equipment during the operation.



This equipment belongs to Type I pressure vessel. It is designed, manufactured, inspected and accepted in accordance with "Pressure Vessels", and meets the requirements of "Stationary Pressure Vessel Safety Technical Supervision Regulations".



This equipment is not suitable for the sterilization of airtight liquids.



When sterilizing glassware containing liquids, please do not quickly release the pressure, because changes in temperature and pressure during the operation may cause the liquid bottle to explode and cause harm to people and equipment.



Chloride ions are an important factor in causing corrosion damage to stainless steel. When sterilizing items containing chloride ions, the inner wall of the sterilizer must be rinsed with clean water every day to avoid corrosion of stainless steel caused by chloride ions and prolong the service life of the equipment. Otherwise, the additional damage and accelerated aging to the equipment will not be covered by our company.



This equipment is only suitable for the sterilization of high-temperature, high-humidity medical equipment, sanitary materials and other items. It cannot be used for the sterilization of petroleum jelly and other oils, powders, high volatile substances such as alcohol and gasoline, and corrosive items to copper and aluminum.



This sterilizer must not be used for cooking food.



Please use the equipment in accordance with the operating methods and precautions in the manual. If you do not use the equipment in accordance with the operating methods, it may cause damage to the equipment, affect the protective function of the equipment, and cause man-made safety hazards.



Please keep the instruction manual completely. When the use site or unit of the equipment is changed, please ensure that the instruction manual is transferred or handed over as part of the equipment.



The equipment is not allowed to be disassembled without permission. If necessary, please contact our company or the company's authorized dealer to check or replace parts.



If the equipment has been stored under damp conditions, please ventilate and dry it for a period of time. After meeting all the safety requirements specified in this manual, store or use it under normal conditions.



Do not put sterilized items in containers and bags that are impermeable to steam, otherwise they cannot be sterilized.



When opening the sterilizer door, high-temperature steam will spray out of the sterilizer cavity. Please wait for the steam to be exhausted before fully opening the door. At the same time, do not put your face close to the sterilizer.



After the equipment is sterilized, the wall of the sterilization chamber still has a certain temperature. Please pay attention to heat insulation to avoid burns. If you are burned or scalded, you can perform emergency cooling treatment on the wound to prevent the residual heat from damaging the deep tissues of the skin and relieve the pain. Please seek medical attention as soon as possible.



Monitoring method: The sterilizer can use methods such as temperature verification, sterilization test paper, and biological reagent culture to monitor the sterilization effect.



The safety valve at the rear of the equipment should not face people or other equipment to avoid steam scalding or interference.



In the following situations, the door cannot be opened due to negative pressure: the door is not opened in time after use; the sterilization door is closed when there is residual temperature; the equipment is new to the customer. When this phenomenon occurs, please open the ball valve on the back of the equipment or pull up the safety valve of the equipment. After the pressure is balanced, the door can be opened.



Safety valves, pressure gauges, etc. should be calibrated to a qualified testing institution every year. The sterilizer liner is a Class I pressure vessel, and the testing period is 3 years.



Please stay away from the equipment during the work. After the light alarm is generated after the work is completed, enter the house, turn on the equipment, and take out the objects.



The user unit shall entrust the unit engaged in the installation, modification and maintenance of the pressure vessel to perform the installation, and the pressure vessel installation unit shall submit a written notice to the local pressure vessel registration authority.



The user shall, before or within 30 days after the equipment is put into use, go to the quality and technical supervision department of a municipality directly under the Central Government or a city divided into districts to register for use in accordance with the requirements of laws and regulations.



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



After the sterilizer fails during operation, do not perform rapid pressure relief to avoid harmful substances in the container from being harmful to the human body.

## 8. Installation and debugging

### 8.1 Preparation before equipment unpacking and installation

8.1.1 When the sterilizer arrives, please pay special attention to its packaging, carefully check whether the product name, specification and model information on the packaging box is consistent, and keep the packaging box.

8.1.2 Equipment inspection and quick unpacking After opening the packing box, please carefully check whether the equipment and all parts are in good condition. If there is any damage or loss, please make a record and contact the transportation company and our company in time. After unpacking the equipment, first check whether the product name, specifications and model numbers on the label on the upper left corner of the rear of the equipment are consistent with the order form. Please refer to the packing list and check carefully whether the accessories and materials are complete.

### 8.2 Handling and moving

Note: It should be installed by professionals.

8.2.1 Please do not move the sterilizer by holding the door handle.

8.2.2 When transporting, it is forbidden to put the equipment on its side or upside down.

8.2.3 The installation and transportation should be carried out by multiple people, and should be handled with care, and it is strictly forbidden to drop and bump.

8.2.4 During the transportation, be careful not to damage or scratch the equipment.

### 8.3 Installation and commissioning

#### Installation steps:

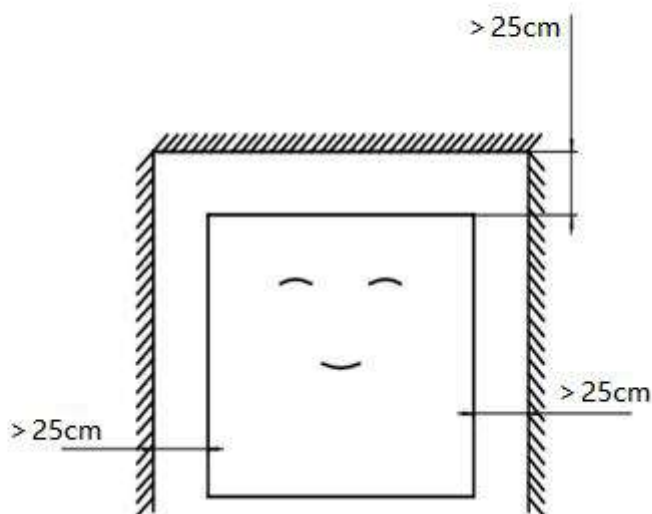
8.3.1 Placement of the sterilizer:

Place the pressure steam sterilizer on a stable, clean and spacious ground, and adjust the universal wheel of the equipment to make it parallel to the ground to ensure stability. The distance between the back and sides of the sterilizer and other objects is at least 250mm. Ensure good ventilation (the equipment is best stored separately).

Except for keeping a safe distance from other objects, the presence of other objects should not affect the operation of this equipment. When the equipment fails, the power supply should be cut off quickly!



Note: If the sterilizer is close to the wall, it may cause heat accumulation inside the sterilizer and malfunction



- 1) Open the sterilizer door, put in the sterilization indicator card or biological indicator, reset the door and close it;
- 2) Turn on the power, the digital tube will stay on the screen for two seconds, and then enter the program selection screen.
- 3) According to the altitude difference of various places, the related parameters should be modified by professionals.

### 8.3.2 Power installation

**Note:** For your safety, the equipment shell should be reliably grounded!

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

Suggest: Single-phase AC 220V (50HZ) above.

Please do not place the device in places where it is difficult to disconnect the power supply, and ensure that the power supply can be disconnected in an emergency.

The equipment adopts the two-phase three-wire connection method of direct wiring, please connect according to the wiring method of the equipment configuration.

Please do not change the wiring method at will. If you need, please contact us.

Live wire (L)-red, neutral wire (N)-blue, ground wire (PE)-yellow-green.

For installation, please connect the live, neutral, and ground wires of the equipment to the live, neutral, and ground wires of the local power supply; please be sure to entrust professional electrical construction personnel to install. In order to ensure your personal safety, the equipment must be grounded reliably.

### 8.3.3 Electromagnetic compatibility

The equipment is used for moist heat sterilization of medical equipment, sanitary materials, etc., mainly used in hospitals, disease control centers and other medical and health institutions and factory laboratories and other places, in line with the emission and immunity requirements specified in GB/T 18626.1-2010 and GB 4824-2013.

### 8.3.4 Water source requirements

The equipment does not need to be connected to a water source, you need to manually add water to the sterilization chamber. It is recommended that you use soft water or pure water, because improper water quality may shorten the service life of the equipment and cause unnecessary failures. The water quality must meet the following requirements:

- 1) Conductivity less than 15 $\mu$ S/cm
- 2) The content of bleach is less than 2mg/L
- 3) PH value 5~7
- 4) Hardness is lower than 0.02mmol/L
- 5) Water volume: add water until the water level float indicator light is on

**Note:** The exhaust port at the back of the device is connected to an exhaust pipe to avoid steam being discharged indoors.

### 8.3.5 Storage environment

The sterilizer is required to be placed in a clean, dry, dark, ventilated, and small temperature difference indoor environment.

- 1) Indoor temperature: 5°C-40°C;
- 2) The relative humidity:  $\leq$ 85%.
- 3) Atmospheric pressure: 70 kPa ~ 106 kPa.
- 4) The allowable voltage fluctuation range:  $\pm$ 10%.
- 5) There is no dust and pollution indoors.

## 9. Equipment instructions

### 9.1 Use method

**Note:**

- 1) Operate the equipment strictly in accordance with this instruction. Incorrect installation and operation will endanger human life and property safety, and invalidate the manufacturer's guarantee of equipment performance;
- 2) Keep the instructions for use completely within the service life of the equipment;
- 3) Ensure that all updates received can be stored in the manual;
- 4) When the equipment use site or the user unit is changed, it must be ensured that the instruction manual is transferred or handed over as an integral part of the equipment.

### 9.2 Equipment identification description



It means that it should be taken seriously. If there is a warning symbol, it is necessary to consult the instruction manual in order to clarify the potential hazards and the countermeasures that must be taken.



Door opening sign



Power sign



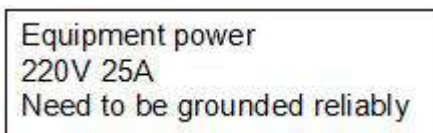
Grounding sign



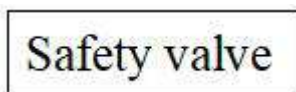
Drainage sign



High temperature sign



Power sign

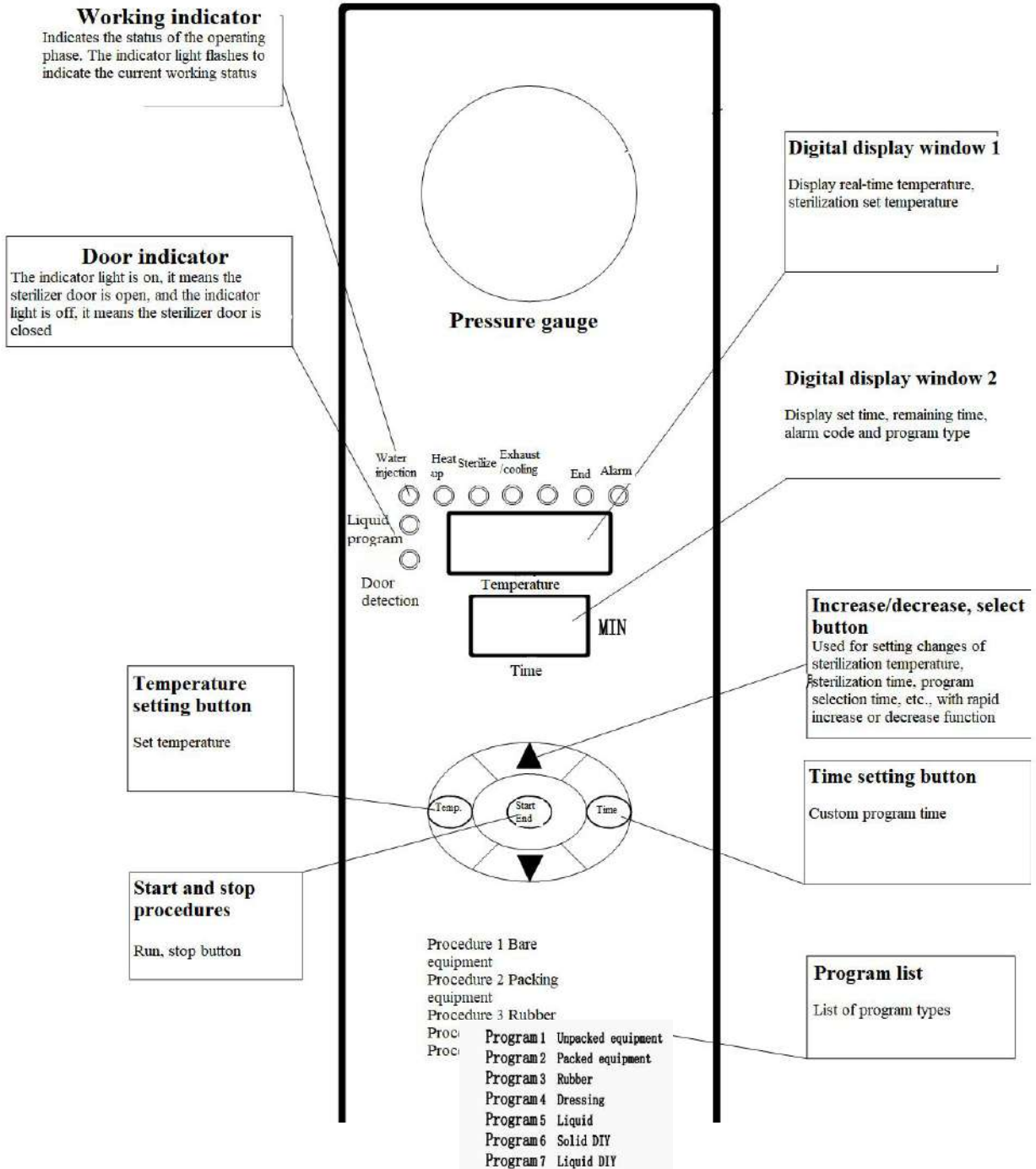


Safety valve sign

**Note:** The user manual must be kept carefully to prevent loss or damage. It must be ventilated and dry to avoid humidity and high temperature. No one can tear off or take out any content in the instruction manual under any circumstances.

The operator is obliged to technically repair and complete the missing, damaged or no longer applicable part of the content, catalog and related chapters in the manual.

**9.3 Control board**



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There are 5 sterilization procedures in this sterilizer:

Program type	Pulse exhaust times	Type interpretation	Sterilization temperature°C	Sterilization time (min)
1#Bare equipment	1	Sterilization of exposed objects such as conventional metals and glassware	134	4
2#Equipment package	2	Sterilize conventional metals, glassware, etc.	134	8
3#Rubber	2	Sterilize rubber products and heat-resistant plastic items, such as petri dishes, etc.	121	25
4#Dressing	3	Sterilize dressing items such as cotton cloth and masks	134	12
5#Liquid	0	—	—	121
6#Solid DIY	0-9	Sterilizing temp. -2.5	The temp.at which pulse exhaust starts-5	105~136 ( 134 )
7#Liquid DIY	0	—		105~136 ( 134 )
Drain valve closed setting	Local atmospheric pressure -2°C (default 98°C); setting range (80-110°C)			Description: a. In addition to the fixed parameters, the fixed program can be set with parameters; the drainage process has a time limit of 4 minutes .
Drainage selection settings	After the sterilization is completed, the drain (close/open) can be set; the drain temperature (the default is to drain when cooled to 105°C), the setting range: solid custom (105~134°C); liquid custom (105-110°C)			

Prompt:	The upper limit of exhaust steam and the upper limit of drain temperature shall not be higher than the sterilization temperature
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### Operation interface introduction:

There are 5 buttons of "Temperature", "Time", "▲", "▼", "Start/End", "Add water", "Heat up", "Sterilize", "Exhaust", and "End", "Alarm", "Door Open" 7 status indicators, and "temperature display window", "time display window".

### Operating procedures:

Turn on the power of the equipment, turn on the air switch on the left, and then turn on the rocker switch on the control panel, the display board becomes bright, the sterilizer is in standby state, the display temperature window displays Prog, and the time window displays number X (One of 1-7), indicating that the X# sterilization program is selected, and then the current temperature and sterilization setting time are displayed, and the two screens are displayed alternately.

Different sterilization programs can be selected through the "▲" and "▼" buttons. After the sterilization is completed, the "End" light will be on, and the buzzer will beep once every 10 seconds. After the "End" light is on, the sterilization is over. After confirming that the pointer of the pressure gauge returns to 0, turn the hand wheel on the pot cover counterclockwise to open the pot cover and take out the items.



**Note:** If you want to terminate the sterilization during the sterilization process, you can long press the "Start/End" button to terminate the sterilization process.

### Parameter modification settings:

1. After power on, use "▲", "▼" to select the sterilization program to be run and display

Prog;

2. Press the "START/STOP" and "TEMP" buttons simultaneously for 5 seconds to enter the menu;

3. After entering the menu, 00:00 is displayed, which is the water filling timeout time. The default is 10 minutes. When it is set to 0, it will directly heat without water filling;

4. Press "▼", 107.0 will be displayed, which is the end temperature of the exhaust air, the default is 107.0°C;


5. Press "▼", 00:00 will be displayed, which is the timeout time for air-conditioning, the default is 30 minutes;


6. Press "▼", 00:00 will be displayed, which is the drainage time, the default is 5 minutes;


7. Press "▼", 0000 will be displayed, which is the number of pulses, only program 5 can be set, the default is 0;

8. Press "▼", 00:00 will be displayed, it is the cooling time, only program 5 can be set, the

default value is 10 minutes;


9. Press "▼" to display , which is the holding temperature, only program 5 can be set, the default is 50°C;


10. Press "▼" to display , which is the holding time, only program 5 can be set, the default is 0 hour;

11. Press "▼" to display , which is the drainage time, only program 5 can be set, the default is 3;

12. Press "▼" to display , which is to restore factory settings;

13. Press the "START/STOP", "TEMP", "TIME" and "UP" buttons at the same time for 5 seconds to enter the menu;

14. After entering the menu,  is displayed, which is the temperature calibration coefficient, do not adjust;

15. Press "▼",  is displayed, it is temperature deviation correction, please do not adjust;

## 9.4 Operation

The operating procedure of the sterilizer includes steps such as preparation for sterilization, loading of sterilized items, sterilization operation, and unloading of sterile items.

### 9.4.1 Preparation for sterilization

Before putting the sterilized instruments into the sterilizer, please clean them first to avoid the residual substances on the sterilized instruments from harming the sterilizer itself and the sterilized instruments. For example: blood stains and other impurities. We have developed a specific cleaning plan for your reference:

- 1) For instruments that need to be sterilized after use, you should immediately clean the residue attached to the sterilized instruments. It is recommended that you use cleaning agents, decontamination agents and distilled water to clean sterile instruments.
- 2) After cleaning, it is recommended to rinse it again with clean water to ensure its cleanliness.
- 3) When you put the instruments in the sterilization cylinder, please put different types of instruments in different cylinders, such as stainless steel, carbon steel, etc., and there should be a proper gap between the instruments. If you put carbon steel instruments in the tube, you should put several layers of sterilizing paper or kapok paper on the tube before placing them to avoid direct contact between carbon steel and stainless steel.
- 4) Sterilization of test tubes, glass bottles, etc. should be placed vertically with the opening down to facilitate the replacement of cold air and saturated steam.
- 5) Place a sterilization indicator card in each basket.
- 6) Once a month, place a biological indicator in the load to check the sterilization effect.
- 7) Plates, basins, bowls and other utensils should be packed individually as much as possible, and the lid should be opened when packing. Surgical instruments should be placed in baskets or

perforated trays for matching packaging. The items should not be too tight. The weight of the equipment bag should not exceed 5 kg, the fabric bag should not exceed 3 kg, and the volume of the sterilization bag should not exceed the volume of the sterilization basket. Otherwise it will cause insufficient sterilization.

8) The instruments that need to be wrapped during sterilization should use packaging materials with good air permeability, such as sterilization bags, sterilization paper, and tissue fabrics.

9) Sterilization of test tubes, glass bottles, etc., should be placed vertically with the opening down to facilitate the discharge of air and the entry of steam.

#### 9.4.2 Preparations before rubber sterilization

Please clean the rubber tube with warm water first, and then place it on a clean sterilization tray. At the same time, make sure that the tube is a hollow pipe with two openings, without any sharp bends, twists, kinks, etc.

#### 9.4.3 Preparation before sterilization of the dressing package

Place the dressing pack vertically on the tray to avoid contact with the inner wall of the sterilizer.

#### 9.4.4 Preparation before sterilization of culture medium

Only use the culture medium basket, and the loading volume should not exceed 2/3 of the volume to avoid medium overflow.



Packaging materials include rigid containers, disposable medical crepe paper, paper-plastic bags, paper bags, textiles, non-woven fabrics, etc., which should meet the requirements of GB/T 19633. Textiles should also meet the following requirements: It is a non-bleached fabric; the wrapping cloth should not have stitches or mending except for the four sides; it should be washed at high temperature before the first use, degreased, desizing, and decolorized; there should be a record of the number of times of use. Customers can use test kits and other test tools to monitor the sterilization effect.

## 10. Maintenance



Before starting maintenance, make sure 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, therefore, the operations described in this chapter must be followed.

1. Wipe the door rubber ring with a piece of soft cloth or a piece of gauze after daily work.
2. Take out the sterilization basket and wipe the inner wall of the sterilization container with gauze with detergent and water. Do not use steel slag wool or steel brushes to avoid damage to the interior of the sterilization chamber.
3. Clean and remove the scale in the sterilization container, and drain the water in the sterilizer.
4. Regular inspection

Once every three months, the tightening of the joints and checking the on-off status should be done by a professional electrician. Once a year, due to extreme wear and tear, the door lock device must be inspected. Instructions for use: This type of maintenance manual is provided for professional use. Unless you are a professional, when the equipment fails, you must consult the instructions and repair them according to the instructions. The manual has provided maintenance methods to professionals as much as possible.

5. Calibrate the safety valve and pressure gauge every year.



How to safely remove the load after the equipment fails: Use a tool to pull the pull ring on the safety valve to release the pressure. After the pressure gauge indicates zero, the door can be opened and the load can be taken out.

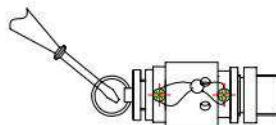
1. Check the safety valve The safety valve is located above the rear of the equipment. In order to prevent the safety valve from being blocked, in normal use, let the steam pressure be released through the safety valve once every two months.
  - 1) Carry out the sterilization operation according to the manual.
  - 2) A pressure of 0.21 MPa is generated in the sterilization container.
  - 3) Push the handle of the safety valve with a screwdriver to make it open for about 2 seconds.
  - 4) Turn off the main switch and terminate the operation. At the same time, the water vapor in the sterilization container is discharged.
  - 5) Wait until the pressure drops to 0MPa before opening the door.



## 2. How to replace the safety valve

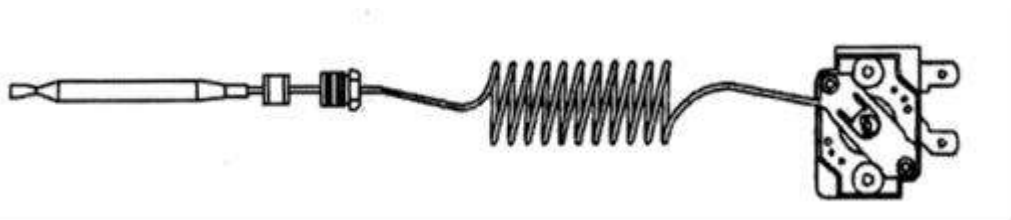
Instructions for use: These repair methods can only be used by professionals. Unless you are a professional person, in order to avoid electric shock and equipment failure, you must consult the manual and repair it according to the manual. At the same time, the manual has provided maintenance methods to professionals as much as possible.

- 1) Located above the rear of the device.
- 2) Disassemble the rear cover of the equipment first, then remove the safety valve fixing screws, and remove the safety valve from the safety valve base.
- 3) Replace it with a qualified safety valve. Test the sterilization process.



## 3. Thermostat

The sterilizer is equipped with a thermostat located inside the equipment. During the heating and sterilization stage, it can maintain a constant temperature by turning on and off the power supply. Usually used as a temperature alarm device. If the temperature of the pot body exceeds the allowable value, the thermostat will automatically cut off the heater power.



## 4. How to increase the working temperature of the thermostat

This operation is limited to professionals using a screwdriver to slightly rotate the center screw clockwise to increase the temperature (note: the equipment has been adjusted before leaving the factory, and the customer does not need to adjust).

## 5. Steps to replace the heater

Before this operation, cut off the power supply and make sure that there is no pressure in the interior of the sterilizer.

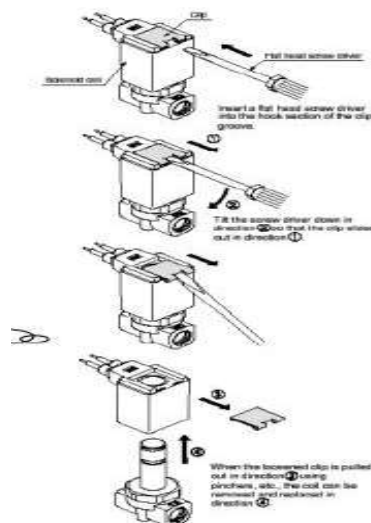
- 1) Disassemble the outer cover of the sterilizer.

- 2) Remove the wiring on the heater.
- 3) Loosen the fixing screws on the heater.
- 4) Replace the damaged heater with a new heater. The position of the new heater should match the position of the replaced heater, and connect the wires.
- 5) Install the sterilizer cover.
- 6) Test all work processes.
6. Door safety interlock device

A safety device that prevents the door from opening when the sterilization container is under pressure. This system is established on the basis of the pressure generated in the inner chamber of the sterilizer. The pressure generated in the inner chamber of the sterilizer will push the movable clutch to move up and the fixed clutch to engage tightly. It will prevent the operator from opening the door by mistake. When the water vapor is released, the device returns to its original position so that the door can be opened.

### 7. Solenoid valve cleaning steps

- 1) Disassemble the outer cover of the sterilizer.
- 2) Use a screwdriver to open the solenoid valve stainless steel pressure piece.
- 3) Lift the solenoid valve coil.
- 4) Open the valve body with a wrench.
- 5) Rinse the debris on the valve core with clean water.
- 6) Reinstall the solenoid valve.



### 8. How to replace the fuse

Firstly power off the device. The fuse is located at the bottom right of the circuit board of the device. Use a flat-blade screwdriver to gently pry to remove it. After removing it, replace with a new fuse. You can complete the replacement by pressing with your finger. Maintenance work should be carried out by professionals, and non-professionals should not replace it by themselves.

Fuse specification model: F3AL250V

## 11. Troubleshooting

1. This manual provides you with the repair methods of known faults as much as possible. The following are some common fault information.

<b>Trouble</b>	<b>Possible Causes</b>	<b>Method</b>
Turn on the power switch but the power indicator does not light up	<ol style="list-style-type: none"> <li>1. The circuit breaker is not closed</li> <li>2. The main power switch is damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. Close the circuit breaker</li> <li>2. Replace the power switch according to the specific situation</li> </ol>
Door detection indicator does not light up	<ol style="list-style-type: none"> <li>1. The door is not in place</li> <li>2. The door micro switch is loose or misplaced</li> </ol>	<ol style="list-style-type: none"> <li>1. Close the door and try again</li> <li>2. Adjust the door position switch</li> </ol>
Heating state, pressure and temperature do not rise or rise slowly	<ol style="list-style-type: none"> <li>1. The heater's control circuit is short-circuited or burned out</li> <li>2. Severe leakage at pipe joints or safety valves</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and replace damaged devices</li> <li>2. Check and tighten pipe joints, safety valves, etc.</li> </ol>
Drainage state, pressure and temperature do not drop or drop slowly	Drain filter is clogged	Clear the debris on the filter spool
Can not reach the sterilization temperature	Is it determined by the boiling point of the altitude? Please check to confirm the set temperature of the boiling point	For reasons other than the altitude, please contact us or our agent
Safety valve open	<ol style="list-style-type: none"> <li>1. Is the pressure too high?</li> <li>2. Is the safety valve malfunctioning?</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the temperature deviation</li> <li>2. Correction and replacement of the safety valve</li> </ol>
Door leak	<ol style="list-style-type: none"> <li>1. Is the door rubber ring hard and aging?</li> <li>2. Is the door rubber strip cracked?</li> <li>3. Does the door rubber ring fall off?</li> </ol>	<ol style="list-style-type: none"> <li>1. The door rubber ring must be replaced</li> <li>2. The door rubber ring must be replaced</li> <li>3. Reinstall the door rubber ring</li> </ol>

## 2. Alarm code:

In the course of use, when an error occurs, the error code will be displayed and the buzzer will sound to indicate an alarm. The sterilizer will automatically stop running. Please find the following conditions and deal with it. And in the event of a fault, please wait for the device to drop in pressure before touching the device.

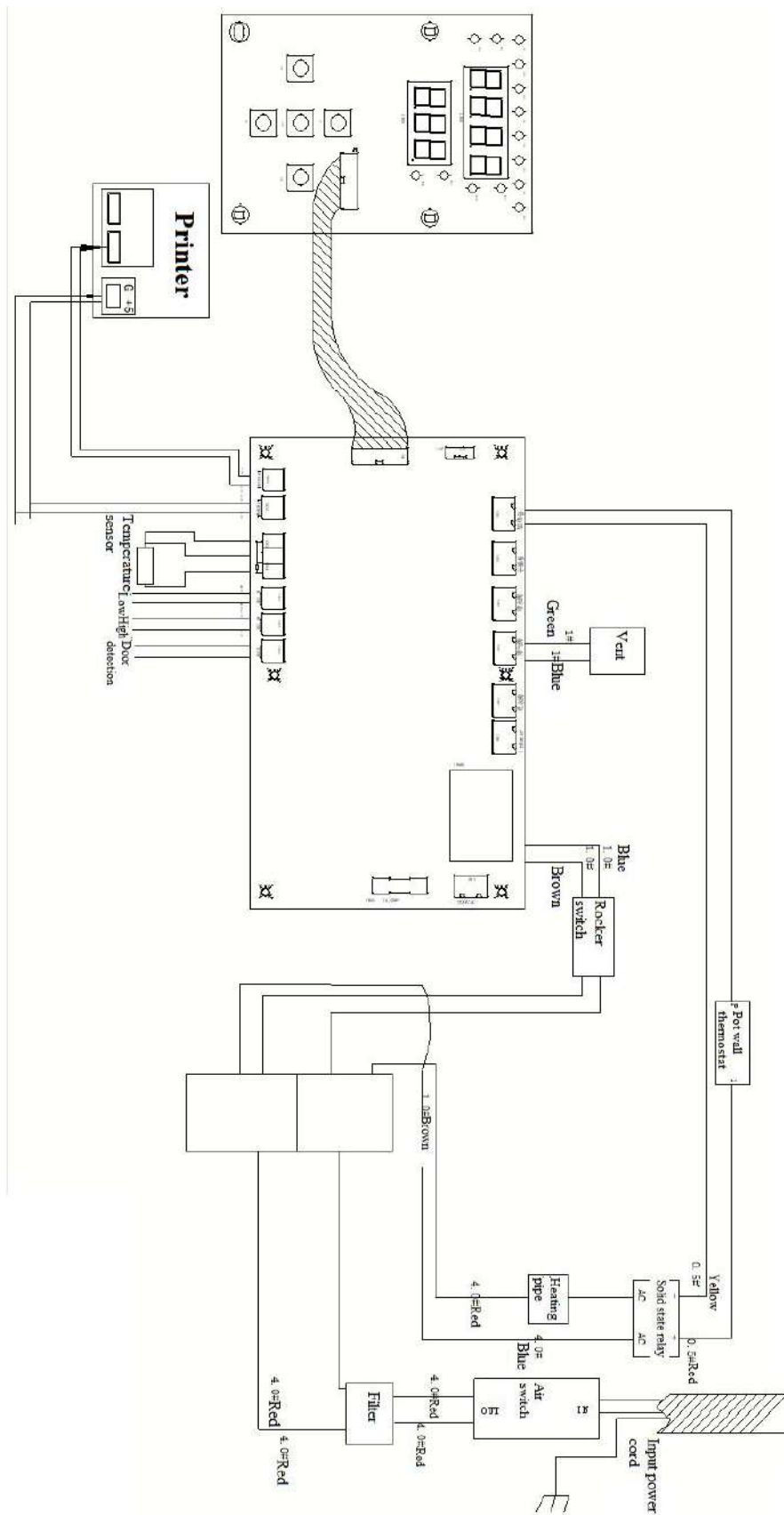
Alarm code list			
Alarm code	Failure phenomenon	Cause of failure	Checking and approach
Err 001	The set temperature is not reached 30 minutes after the pulsating air-conditioning is discharged	There is air leakage	Under the positive pressure state of the pressure gauge, check whether there is any leakage at the connection of each pipeline and seal of the equipment, confirm the position, and contact the manufacturer
Err 002	The set temperature is not reached during the cooling time or the pulsating exhaust fails	The heating tube is broken and the set parameters are unreasonable	Check whether the heating tube has dry heating and blackening, or the setting of the air-conditioning time parameter is unreasonable
Err 04	Excessive temperature fluctuation during sterilization	There is air leakage	Under the positive pressure state of the pressure gauge, check whether there is any leakage at the connections of the pipelines and seals of the equipment, confirm the position, and contact the manufacturer. The equipment is in a humid environment, causing the circuit board to malfunction
Err 008	The sensor is not connected well or damaged, and the temperature in the pot is lower than 10°C	Sensor failure or ambient temperature is too low	1. Please confirm whether the ambient temperature is below 10 degrees Celsius 2. Pinch the bottom temperature probe with your hand and observe whether the temperature displayed on the control panel is normal. If the display is not normal, it means the sensor is faulty, please contact the manufacturer
Err 016	Circuit board	Replace the control	

	temperature measurement component failure	board	
Err 032	Did not add enough water within the set water addition time	Lack of water in the cavity, broken water level float, blocked water inlet pipe, malfunction of solenoid valve	Manually press and hold the door detection switch, run the program, and visually check whether there is water entering the sterilization chamber. If the water flow does not pass the float and still does not turn to the heating process, it is judged that the float is damaged. Clean the filter.
Err 064	The lack of water in the pot causes the heating tube to burn dry	Floating ball fails, after the heating tube cools, add enough water to the pot	After the device is powered on, manually flip the float switch up and down in the cold pot state to observe whether the corresponding light on the circuit board is on or off. If it is on or off normally, please confirm whether the device is overloaded.
Err 128	After starting the sterilization, the lid is opened	The pressure is too high, the lid is shifted, and the lid detection fails	Please manually press the door detection switch to confirm whether the door detection light is on and off. If there is no problem with the door detection, please make sure to close the door and turn the handwheel to the end before running the program. If the 128 alarm still occurs, please remove the door cover and observe whether the nuts of the components are loose.

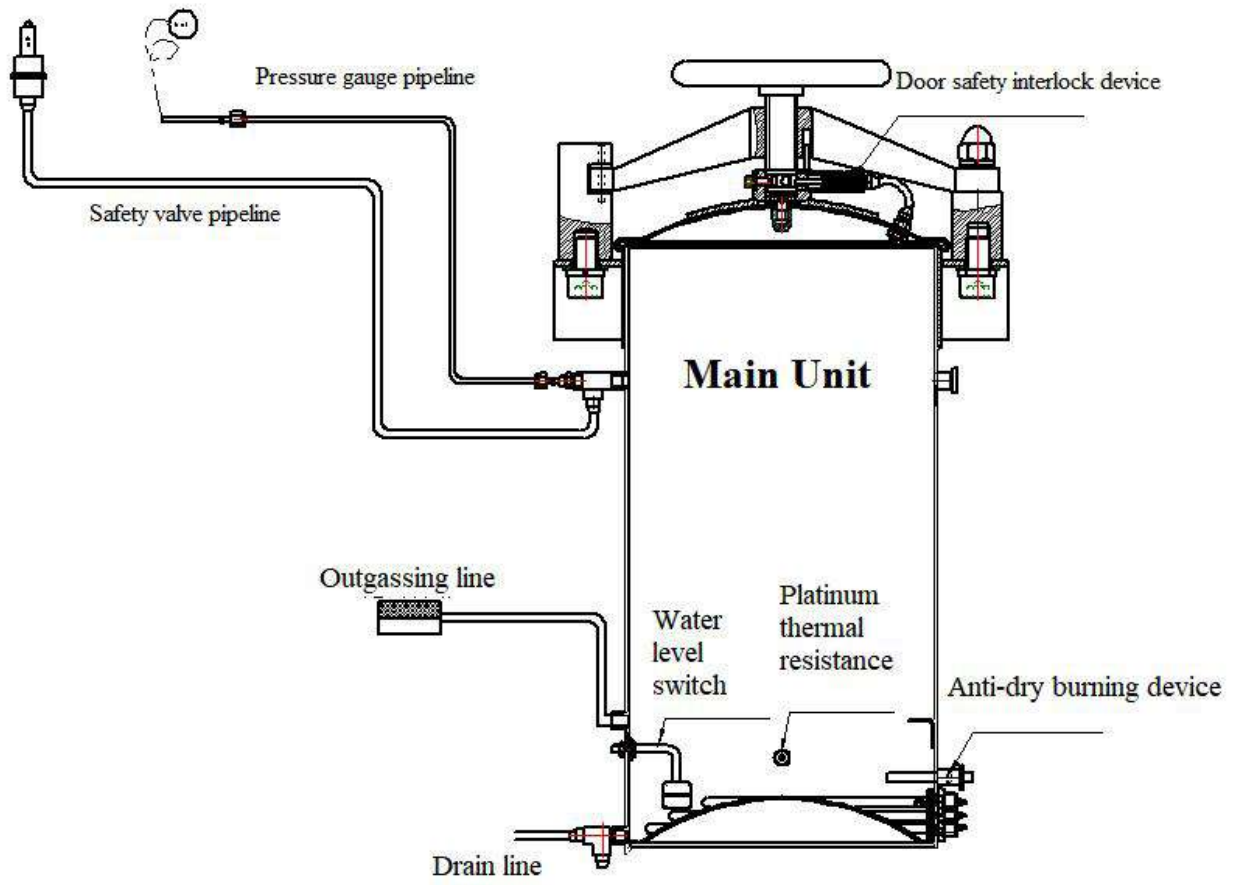
**Note:** The device has set permissions for the fault code, and you need to press and hold the left button and the middle button at the same time to release it before the device can operate normally.

## 12. Schematic diagram of circuit and pipeline

### Circuit schematic



## Schematic diagram of PID pipeline



### 13. Warranty

Dear customer: Any product may malfunction during use. Please monitor the operating status of the equipment in real time during use. If there is any abnormality, please deal with it according to the manual first. If you still can't solve it, you should notify the company's service center in time to avoid causing losses to you.

After-sales service matters

1. The whole machine is guaranteed for one year free of charge from the date of equipment sale (subject to the invoice) and enjoys lifetime service.
2. Warranty certificate: When you need normal consultation or maintenance, please contact our company's local after-sales service center with the warranty certificate and purchase invoice and keep the warranty certificate properly. The following parts can only be purchased through the manufacturer Heating pipe The electromagnetic valve Circuit board.

### 14. Packing list

No.	Name	Qty.	Position
1	Vertical autoclave main unit	1	In the box
2	User manual	1	File bag (top of main unit)
3	Pressure Vessel Quality Certificate	1	File bag (top of main unit)
4	Warranty card	1	File bag (top of main unit)
5	Certificate of conformity	1	File bag (top of main unit)
6	Inspection Report	1	File bag (top of main unit)
7	Key (to open the access door)	1	File bag (top of main unit)
8	Drain pipe	1	In the main unit

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