



CE

**autoclave “vertical”**  
“user manual”



## 一、 Brief Introduction of The Product

This sterilizer uses pressure saturation steam as the gene to kill the bacterium. The article will be kept in airtight vessel and after heating, water will be transferred into saturation steam which will heat and damp the article quickly. After a certain period in constant temperature and pressure surrounding, the bacterium will be killed to satisfaction result.

This sterilizer is made of 0Cr18Ni9 superior stainless steel sheet and produced by advanced technology. The heating source of the sterilizer is adopted immersing electric-heating tube. This sterilizer is equipped sealed ring and power switch. It has the advantages of good outlook, standing stable and easy to control. The way of airtight between the cover and barrel of the sterilizer is by floating cover and diametrical self swelling. The features of portability, good result of sterilization, convenient airtight operation, beautiful outlook, easy to operation and better security make it the ideal sterlizer for hospital and scientific research unit to sterilize the operation instrument, dressing product, vessel and culture medium.

## 二、 Main technical parameter

1. Suitable power source: AC 220V $\pm$ 10% 50/60Hz
2. Consumption power: 2kW
3. Working temperature: 121 $\sim$ 125 $^{\circ}$ C

## 三、 Structure features

1. This sterilizer is made of 0Cr18Ni9 superior stainless steel sheet and produced by pressing extending, welding advanced technology.
2. On the cover, there are the security valve, air releasing valve and double article pressure meter. The functions of them are keeping temperature and pressure, releasing cold air and indicating pressure. The security valve is sensitive and accurate. The pressure meter indicates the numbers clearly and works stable.
3. On the bottom of the sterilizer, there are sealed ring and tip which makes it standing stable and easy to replace water. And the power switch controls heating easily.
4. By floating cover and diametrical self swelling design, the airtight can be realized when there is little pressure in the barrel.
5. The immersing electric heating tube has high efficiency. It has the advantages of power security and long life span when there is water inside.

## 99. Operation measures

### 1. Stack

Taking the storage barrel out of the sterilizer. After bundling properly, putting the article into the barrel and leaving some slot among the articles which helps the steam penetrating and gets better sterilizing result.

### 2. Infusing water

Infusing water in outer barrel (better distilled water or purity water). The water level should be over the electric heating tube 2cm, but not too much. When continuous use, the water should be made up before every operation for fear to damage the heating tube or any accident.

### 3. Covering measure

Whether the covering measure is right or not, it will influence your operation or even cause accident if you operate it improperly. Please pay full attention and operate it according to the requirements below.

Picture 1: It is the screw position before the cover completed.



Operation 1—Before cover the barrel, six screws should be back off (counterclockwise) and keep the plane of the screws equal with the barrel wall. The end of the screw should be equal with the inner wall of the barrel.

Picture 2: The measure of putting the cover on the barrel.

Operation 2—Holding the bakelite handle of the cover and making sure that the position of the nuproof ring is not changed. Putting the cover on the barrel flatly. The cover can't be put on the barrel slanting.



There is no slot between the cover and nuproof ring. The cover should be put on the barrel flatly.

Picture 4.5: It is the state when the cover is put on the barrel.



Operation 3—When put the cover on the barrel, you can put it by little force like filling the bottle stopper. It is OK when your hand feels some resistance.

The state when the cover is put on the barrel like filling the bottle stopper.

Picture 4.5.6: It is the measure of revolving screws and the screw position after revolving.



Operation 4—When finished operation 3, you can revolve screws clockwise. You should revolve one and the opposite one together. If the end of the screw touches outer ring of the cover when revolving, you can press the cover down at touching point.

The position of screws should be same after revolving and there is 1mm space between the head of screws and the wall of barrel. Then you hold the hand of the cover and lift it for test.



The position of six screws should be same after revolving.



There is 1mm space between the head of screws and the wall of barrel.

When closing the cover, put the soft pipe for air releasing into semicircle slot inside the barrel.

#### 4. Heating

The voltage of the power should be in conformity with the power requirement of the sterilizer. The socket should be installed on the power dispatch board together with knife switch (the grounding line should be connected to the earth) The plug

should be insert into related socket on the power dispatch board and put on the knife switch. Then, press the power switch on sealed ring, the indicator light will be on and it starts heating (when stop heating, you should shut off the power switch and needn't take the plug out).

When the heating begins, you should raise the little switch of the releasing valve to vertical position and let the air and condensation water out along with heating. When steam erupts rapidly, put the little switch to original position and the cover will have the phenomenon of floating up, the finger of the pressure meter will be ascending to indicate the inner pressure of the sterilizer.

#### 5. Keeping temperature and pressure

By intermittence releasing of security valve, the temperature and pressure in the barrel can be kept in required level for killing bacteria. Sterilizing time begins from first releasing (releasing pressure of the security valve is 0.165MPa and closing pressure is  $\geq 0.14$ MPa). When sterilizing by 126°C, the switch of the security valve can keep constant temperature inside. If you need lower temperature to sterilize, you can install single-phase booster in the upside of the power. After heating and when the pressure reaches required level, you can adjust the voltage down and keep the temperature you need. At this time, the security valve will not release and sterilizing can be conducted at certain temperature.

#### 6. Drying

If you want to dry the articles like medical instrument, dressing, utensil and so on quickly after sterilizing, you can open the releasing valve and release the steam out quickly when the time is finished. When the finger of the pressure meter goes back to zero, open the cover, take out the articles and the articles will be dried along with cooling. Or keep heating a certain period after opening the cover and waiting the articles drying (pay attention that the electric heating tube can't work without water).

#### 7. Cooling

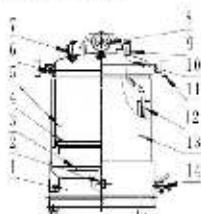
When sterilizing liquid, the steam can't be released immediately after sterilizing finished. Otherwise, the liquid will be boiling to cause effusion or even explosion of the container since the temperature of the liquid is high while the pressure of the sterilizer is down. The right way is that you wait the liquid cool by natural, the finger of the valve goes back to zero, open the releasing valve to remove pressure and open the cover.

### Parameter for sterilizing:

Classification of the articles	Temperature keeping for sterilizing (min)	Steam pressure (Mpa)	Relative temperature of saturation (°C)
Rubber	15	0.1~0.11	121
Plastic vessel	30~45	0.1~0.14	121~128
Instrument	15	0.1~0.14	121~126
Bottled liquid	10	0.1~0.14	121~128
	30~40	0.1~0.14	121~128

Remarks: The parameter is only for reference. Please operate according to actual situation to satisfied result.

### Ⅹ. Product sketch map



- |                    |                        |
|--------------------|------------------------|
| 1. Sealed ring     | 2. Power switch        |
| 3. Heating tube    | 4. Bearing board       |
| 5. Storage barrel  | 6. Amperage ring       |
| 7. Security valve  | 8. Pressure meter      |
| 9. Releasing valve | 10. Cover              |
| 11. Screen         | 12. Air sending pipe   |
| 13. Standby        | 14. Water releasing up |

### Control Panel

Sterilizer control panel consists of digital display windows, indicator light, Operating buttons. Indicators and operating buttons have text or symbols to indicate their effect. Digital display window will display numbers or letters after power on.

“Water Level”: When power is on, the lamp will light when there is no water in the bucket (or when the water level is below the protection level), the light is red and machine buzzer tweets at the same time. When the water level in the bucket is above the low water level, the indicator turns green and can enter the heating stage. However, this does not mean that the amount of water in the barrel can meet the needs of the entire sterilization process.

“Heat Sigh”: When the water level is higher than the low water level and after dialing the “operation switch” the lamp will light when the heating pipe starts to heat up. Near the sterilization temperature and the implementation of insulation, this light flashes. The light is yellow.

“Heat Done”: The lamp lights up when it reaches the design temperature specified in the barrel after heating. The light is off when the timer expires. The light is white.

"Temp Set": This lamp will light only when the temperature is set and the "Run Switch" is not turned on. The light is red.

"Time Set": This lamp will light only when the time is set and the "Run Switch" is not turned on. The light is red.

When the sterilization power is turned on and did not open the "run switch", the digital display will rotate two numbers flashed. At the same time, the "Temperature set" and "Time set" indicators will rotate and flashed with the number of rotation flashes. The number displayed when the "Temp Set" indicator is on indicates the sterilization temperature set by the last sterilization. The number displayed when the "Time Set" indicator is on indicates the holding time value of the last sterilization setting.

Operation "SET" is Set/Enter key. If you need to change the original setting temperature or holding time or enter the interval difference modification, you should press this key. After the setup is completed, press the key again, and then confirm the change.

Operation key "▲" is Up key. Press this key to set the mantissa upward 1, if you hold down the key, the value can be continuously progressive until the release button to stop. If during the heating process (without pressing the "SET" key), press and hold the key, the decimal point of the display window value will flash, then the control system will enter the function of "auto tuning".

Operation key "▼" is Down key. When setting parameters, press this key to decrease the mantissa of the set value by 1. If you press and hold this key, the value can be continuously decremented until the key is released.

The display window in the middle of the panel consists of four LED digital tubes. During normal operation, the device enters the working program and displays the current key elements. Such as: when the heating is displayed inside the temperature value; when entering the insulation, the display is the cumulative holding time value; when the end of the insulation shows "END", said the sterilization program has been completed.

When the temperature is displayed in the display window, one decimal place is retained; only the accumulated minute integer is displayed when the time is displayed.



## 六、Attention points and maintenance

**Attention!** The surface temperature of this sterilizer is higher when working. The human body should keep distance to the sterilizer.

1. The voltage of the power should be in conformity with the requirement of the sterilizer and the grounding should be connected well. Please equipped over load control device and power dispatch board with outside socket. The dispatch should be prepared by electric technician.

2. Before operation, Check the water level in the main barrel and water level should be over the electric heating tube 2cm. For some situation like longer period sterilizing, drying operation or heating outside, there should be more water for free damaging the electric heating tube without water.

3. Please pay attention to the head position of the screw when put on or off the cover and meet the demand specified before. When revolving screws, the head of the screw can't squeeze the sport face of the cover.

4. If the body is hot (continuously use), you should raise the little switch of the releasing valve to vertical position for fear the temperature influence the cover position and the screw head squeeze the sport face of the cover to damage it.

5. When the heating begins, you should raise the little switch of the releasing valve to vertical position and recover it after the cold air and condensation water goes out along with the water boiling and the steam erupts rapidly. (If there is too much condensation water, please put a cloth near the valve to dry the water).

6. When sterilizing liquid, you should put the liquid into rigid heat-resisting glass bottle and it's better to contain the bottle below 3/4. The bottle mouth can be sealed by cotton seal gauze with a yarn binding around the bottle neck. It is not allowed to use rubber or cork with no hole on to seal the bottle. It's better to put the bottle in an enamelware or a metal tray and in case of the bottle explosion, the liquid won't flow away and the inner wall of the sterilizer won't be damaged. It is not allowed to release the pressure immediately after sterilizing finished for fear any accident occurs.

7、 There will be negative pressure in the barrel when you reduce the temperature by natural way. You should raise the little switch of the releasing valve to vertical position (do it as soon as the finger of the pressure meter goes to zero). It is not allowed to reduce the temperature to the level of room temperature by natural way otherwise, the negative pressure inside may change the shape of the barrel.

8、 The circle of the cover and barrel can't be changed by any force outside. Otherwise the airproof can't be realized.

9、 It's better to use distilled water or purity water which will reduce the chemical dreg when heating, get better heating result and prolong the life span of electric heating tube.

10、 Pressure indicator is not correct or the finger can't go back to zero after a certain period use, the relative parts need to repair or replace.

11、 As security part, the security valve can control the pressure inside automatically. But the operator should be on duty to check the pressure value right or not (especially check the start pressure). If the pressure is higher than regulated level and there is no releasing, the power should be cut off and the security valve needs to repair or replace.

12、 According to the government regulation, the user should establish examine system of the pressure meter and valve regularly.

13、 In order to obtain better result of sterilizing, the bottom thermometer, sterilizing indicating card and bacterial culture method should be used often.

14、 The sterilizer should be kept dry and clean all the time, ethyl alcohol can be used

15、 When it is working, please don't move the sterilizer.

## **七、 Packing**

1. Main body (including storage barrel, bearing board, airproof ring) 1set
2. Manual (including Eligible Product Certificate) 1copy
3. Quality feedback card 1copy





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