



Laboratory Equipment Manufacturer
www.mrclab.com



Operation Manual for

Table/Floor Top Autoclave

STE-V-xx



**PLEASE READ THIS MANUAL CAREFULLY BEFORE
OPERATION**

3, Hagavish st. Israel 58817 Tel: 972 3 5595252, Fax: 972 3 5594529 mrc@mrclab.com

MRC.VER.01-4.12

CONTENT

◆ PEFACE*****	3
◆ Chapter I OVERVIEW*****	4
◆ Chapter II Brief Introduction to the Equipment *****	5
◆ Chapter III INSTALLATION*****	8
◆ Chapter IV PREPARATION BEFORE USE*****	8
◆ Chapter V OPERATION *****	10
◆ Chapter VI Maintenance *****	15
◆ Chapter VII Routine and Emergency Maintain *****	16
◆ Annex electrical diagram*****	21

PREFACE

1. The purpose of this manual

As part of the equipment, this manual provides necessary information as follows:

- Notices all the questions for customers related to the safety.
- Dispose the equipment safely.
- Install the equipment properly.
- Understanding for the operation and limits.
- Operate the equipment correctly and safely.
- Replace parts and maintain the equipment correctly and safely.

This manual is divided into several independent sections to be used by install, operation and maintenance personnel.

2. Preservation of this manual

This manual should be preserved properly; it should be kept with the equipment.

SAFETY MARK



!!! WARNING:

POSSIBLE SEVERE DAMAGE ON HUMAN OR EQUIPEMNT



!! CAUTION:

POSSIBBLE TRIVIAL DAMAGE ON HUMAN OR EQUIPMENT



! ATTENTION:

POSSIBLE OPERATION FAILURE OR UNQUUALIFIED QUESTION

Chapter I OVERVIEW

1.1 Manufacturer Information

SHANDONG XINHUA MEDICAL INSTRUMENT CO. LTD.

Address: Ha g a v i s h 3 , H o l o n , I S R A E L

(POST CODE): 58817

(TEL): 972-3-5595252

(FAX): 972-3-5594529

(Web) : www.mrclab.com

(E-mail): mrc@mrclab.com

1.2 Basic data

Manufacturer permission: 20050073

Product registration: 2004 2570057

Executive standard: YZB/ 0073-2003

ISO9001 and ISO13485 have been passed

Design pressure: 0.26MPa Design temperature: 150^oC

Rated work pressure: 0.23MPa Rated work temperature: 134^oC

Water source: Pure water

Product Model	External dimension	Diameter× Depth	Volume	Power	Voltage	Net Weight
STE-V60	476x616x990	φ316x667	50	4.2KW	220V	65Kg
STE-V80	546X688X1030	φ386x695	80	4.5KW	380V	75Kg
STE-V100	546X688X1195	φ386x860	100	4.5KW	220V	85Kg

1.3 Warranty

Your STE-V series autoclave is manufactured with high quality. The warranty period is 1 year, during which if any trouble occurs, please refer to this manual, or contact the technical service departments in our company. We will provide a solution for the maintenance. We provide

lifetime maintenance for the equipment, the service after warranty period is provided at a cost price.

1.4 Attention

The sterilizer should be used in according to the instructions described in this manual. The possible difficulties are describe as clearly as possible so that the customers can analysis and solve the problems properly. If replacement parts are needed, please provide type and quantity.

1.5 Accessories

Open the package upon the receiving of the sterilizer, check the appearance is damaged and the extent of damage. Take attention for the package before checking the equipment and keep well the package material. Inspect if there is any damage in the surface, such as panel scuffing.

All the STE-V series type vertical Autoclave have been strictly checked before the shipment. In the process of loading, in order to protect the safety of equipment, We had taken appropriate measures to prevent.

Chapter II Brief Introduction to the Equipment

2.1 Basic instructions

This digital display 、 automatic control vertical type Autoclave use saturated steam as the medium, to sterilize effectively in short time. It has simple operation, convenient, beautiful appearance, sterilization thoroughly, etc., It is suitable to be used to sterilize medical instrument, dressing package, glass utensil, etc. in hospital, laboratory and biology medical research department.

2.1.1 operating condition

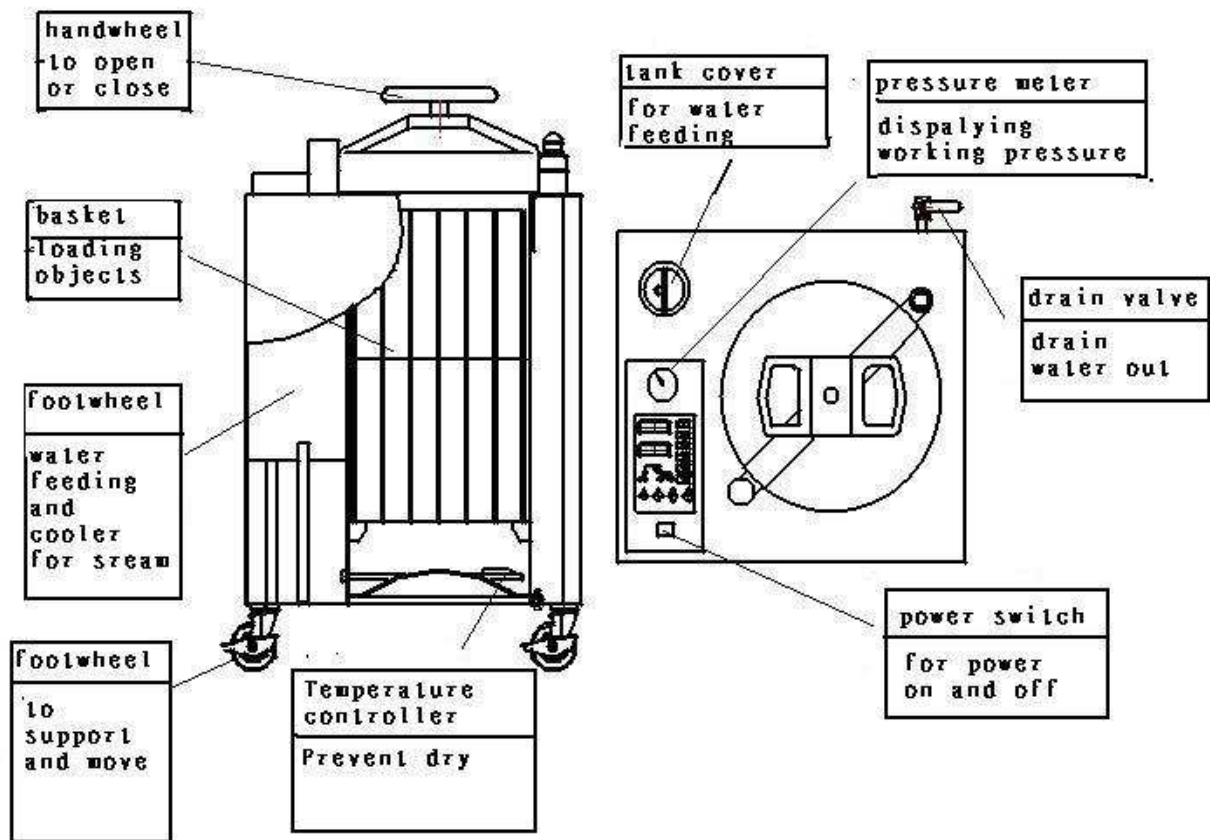
- ① Room temperature 5^oC—40^oC.

② Maximal relative humidity 85%

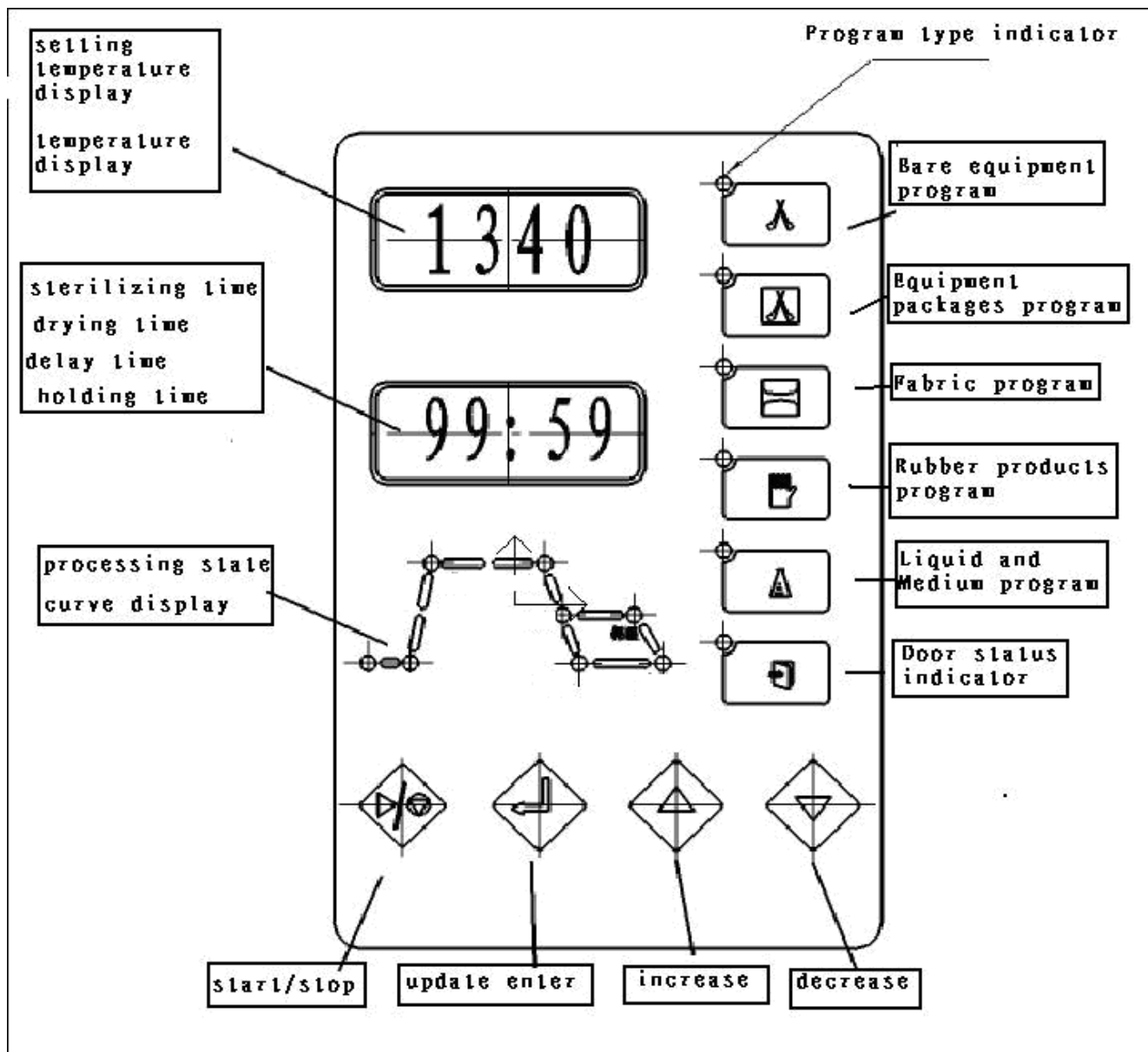
2.1.2 Storage environment

Indoor storage

Attention: Avoid damp



Equipments appearance



The control panel

Chapter III Installation

3.1 Circuit

Choose the wire and socket according to the power of the equipment. Local rules and regulations on installation and safety should be abided. The voltage vibration is $\pm 10\%$.

3.2 Location and Site requirements: Locate the autoclave should be horizontally.

In order to obtain good effect, adopting appropriate water is indispensable. Ensure that to feed water over the electric heat 10mm. The distance between the backside and other items is no less than 25cm, and make sure good ventilation.



!!! Warning: The power supply must be grounded!

Chapter IV PREPARATION BEFORE USE

4.1 Instrument and utensil sterilization preparation:

Before sterilization, clear the instrument to avoid the damage to the autoclave and instrument itself caused by the residue on the instrument. For example: blood and other impurity.

After the instrument is used, the residue on the instrument should be washed cleaned immediately.

The Ultrasonic cleaner , distilled water and purificant are recommended to clear the instrument.

After cleaning, washing equipment in 30 seconds

Put different items into different lifting baskets. For example: stainless steel, carbon steel. And gap between instruments should be left.



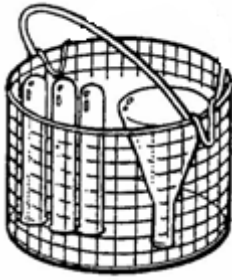
! Attention:

Before every sterilization, carefully prepared as follows:

1. If there is carbon steel instrument, before put it into the stainless steel basket, put several layers of disinfecting paper or disinfected towel into the basket to avoided the direct contact between the carbon steel and stainless steel.
2. And gap between instruments should be left.
3. Put one piece of indicator card in each basket
4. Monthly once, put biological spore indicator into the loads to inspect the sterilization result.



5. Select sterilization bag or paper, or muslin etc. which is helpful to dry as package for the instrument needed to be packed
6. The glass tube should be sterilized in an open position and down to ground vertically to convenient the gas discharge and steam in.



4.2 Rubber Tubing sterilization preparation

Clean tubing and rinse with warm water. Ensure that both ends of the tubing are open, without any sharp bends, twists or kinks.

4.3 Liquid sterilization preparation

Only for the glass bottle and test tube that can stand high temperature. The load quantity should not exceed the 2/3 of container to avoid out. The ventilating cap should be used to seal the container, or loosen the cap totally.

4.4 Dressing sterilization preparation

Put dressing package into the tray vertically, avoid touching with the inner wall of the sterilizer.

Chapter V OPERATION

5.1 Operating process

1. Make sure the water level between the lowest and highest.

Water quality:

- Conductivity less than 15 μ S/cm
- Bleacher content is less than 2mg/l
- PH value 5—7

□ hardness is less than 0.02mmol/l

2. **Power on**, wait the LED shows “0000”(the value shows the completely cycle times of sterilization, After an operation sterilization cycle completed the value added automatically), enter the program choose status after few minutes. Open the door. Put the stuff in the sterilize basket and then into the chamber.

3. **Program choices**: When the light of bare equipment lit, sterilization temperature on screen is showed 134℃、sterilization time is showed 00 hour 04 minutes, at the same time the state indicator of this program will be lighted, If choose other program please press upward or downward, the corresponding program will appear.

programs	sterilization temperature (°C)	Sterilization time (min)	Dry time (min)
Bare equipment	134	4	2
Equipment packages	134	6	10
Fabric	134	8	18
Rubber products	121	25	5
Liquid	121	30	/

Parameters and mode Settings: According to needs, can be set delay time、liquid holding time、preheat mode、print mode (optional), calendar clock (optional) and the boiling point temperature parameters

All the parameters can be set to modify. When the parameters are not suitable, parameters can be set by person has authority password.

□key, Used to heat preservation function (liquid), dry function (liquid) switch.

□key, Used to water feeding function switch.

To dissolve medium , please set the sterilization temperature for

liquid(dissolving temperature), usually use as 80 °C. According to the weight and sort to set the holding time, and please open the heat preservation function. The amend range for heat preservation temperature is 40-60 °C. The amend range for heat preservation time is 0~99 hours 59 minutes.

Delay time: The amend range is 0~99 hours 59 minutes. After the end of the time delay, sterilization is just started operation, the default is 00 hour 00 minute. Method to set up: Press “Set”, “delay” will be showed in Upper Digital Display, in lower digital Display, delay time hour flashes, now press “▲”and “▼”to amend hour, after amend hour press “set” again then the Delay time minute flashes, now press “▲”and “▼”to amend minute. After amend minute, if no other parameters will be set, can press the stop button to exit. If want to set liquid holding time, press “set” again.

Liquid holding time : The amend range is 0~99 hours 59 minutes, when choose No.5 “Liquid program”, after the end of the sterilization time, automatically turn to holding stage, after the holding stage, the whole process is over. Method to set up: Press “Set”, wait the “hold” showed in Upper Digital Display, in lower digital Display, holding time hour flashes. after set up press “stop” to quit. If set preheating mode, then press “set” again.

Preheat mode: has “On/Off” two states. “On” state, autoclave will preheat first. “Off” state, there is no preheating. Method to set up: Press “Set”, wait the “preh” showed in Upper Digital Display, in lower digital Display, “On/Off” shows. Now press “▲”and “▼”to amend state, after set up press “stop” to quit. If set print mode (optional), then press “set” again.

Print mode (only suite for the equipment with the tiny printer): has “On/Off” two states. “On” state, autoclave will print the parameters during the sterilization process. “Off” state, autoclave will not print. Method to set up: Press “Set”, wait the “pret” showed in Upper Digital Display, in lower digital Display, “On/Off” shows. Now press “▲”and “▼”to amend state, after set up press “stop” to quit. If set calendar mode, then press “set” again.

Calendar clock (only suite for the equipment with the tiny printer), Method to set up year: Press “Set”, wait the “date” showed in Upper Digital Display, in lower digital Display, “2008” shows. Now press “▲”and “▼”to amend state. After amend hour press “set” again then enter to the month setting. According to this method can also set day, hour and minute, etc. After set up press “stop” to quit. If set Boiling temperature, then press “set” again.



!! Attention: Boiling temperatures 90~105 °C, because of the different sea dials and pressure, all the boiling point of water is different too. If the autoclave is used in the high sea dials area, the user need to set the local water boiling point value. Note: If the boiling point temperature set inaccurately, the autoclave can not operate normally!

4. Method to set up **Boiling temperature**: Press “Set”, wait the “boil” showed in Upper Digital Display, the boiling value flashes. Now press “▲”and “▼”to amend state, after set up preheating mode press “stop” to quit.

After selected proper program, close the door, press “On/Off” button, the “prepare” light flashes, then start water feeding. When the water reach

to high water level, feeding water stop automatically; “heating up” light flashes and displays the current temperature, start heating.

5. The process of temperature, “heating up” light flashes, electric heat pipe heats, temperature rises. The non-liquid sterilization program starts pulsing and exhausting. When the temperature reached to the setting temperature, and enter the first positive pressure pulsation stage, the electric heat pipe stopped heating. When the temperature dropped to set temperature, electric heat pipe continues to work. When the temperature reached to the setting temperature second time, and enter the second positive pressure pulsation stage, the electric heat pipe stopped heating, exhaust steam valve opened, exhaust steam valve closed. When the temperature dropped to set temperature, electric heat pipe continues to work. The steam exhausting times are set by inner system, according to the different loads, will changes.

6 When the temperature reached to the setting temperature, enter to sterilization stage, “sterilization” light flashed, sterilization time starts counting down. Through the temperature controller to keep the pressure constant, during the process of sterilization, air trap jet valve exhausts steam in order to ensure the steam saturation.

7 . When the sterilization time is 0, sterilization lamp lights. If the selection process is non-liquid program, drain valves opened, drains water and releases pressure automatically.

8. After the exhaust steam, "dry" lights flashes, “exhaust steam” lamp lights. Dry timing begins, when drying time is 0 buzzer alarms. If the selection process is liquid program, there is no pulsed exhaust, and reached to the setting temperature, after the end of sterilization the natural cooling stage begins. After cooling, if heat preservation function

had set, then enter into this stage. Automatically stop when the time up and the buzzer alarms.

9. Confirm that the pressure meter count to zero, then open the door and take out the items.

10. **Shut off the power or start the next operation.**



Attention:

According to actual needs, set the temperature of exhaust steam (water), in order to realize the quick exhaust steam or slow exhaust steam. This setting, only for professional .

Chapter VI Maintenance

The operations described in this chapter must be followed to keep the sterilizer in good condition and to reduce the breakdown time to a minimum.

Something must know

Before maintenance, make sure the equipment is cut off. At the same time, there is no pressure in the chamber.

Daily

Clean the door gasket with a soft cloth or a sponge.

Weekly

1、 Take out the trays. Clean the chamber, tray holder and trays with gauze with detergent and water. Do not use steel wool or steel brush as this can damage the chamber.

2. Clean out and remove scale in the chamber.
3. Use a soft cloth to clear the cover of the autoclave.
4. Check the safety valve.
5. Check the air trap jet valve.
6. Change the water of the tank regularly

Periodical test

Once a year, tighten the electrical connections and test the whether is available. It should be done by an authorized electrician.

Once a year, check the wear pattern screw drive, and daub lubricant.

Chapter VII Routine and Emergency Maintain

CAUTION:

Instructions in this chapter are provided to professionals. When trouble occurs, look up the instruction manual first, check and maintain the equipment follow the instructions. The maintain methods have been described as clearly as possible.

7.1 Lifting and carrying



Attention: before to move the autoclave, make sure the equipment is cut off. At the same time, there is no pressure in the chamber.

1. Cut off the power
2. The lifting and carrying should be done by several peoples.

7.2 Failure Shooting

Symptom	Possible Cause	Correction
1.The power supply is switched on, but the power supply indication lamp does not light	1.1The breaker is not close or broken 1.2 Main power switch is broken	1.1Close or change the breaker 1.2Change power switch
2 .Heat status, the main switch is on,heating light lit, but pressure, temperature don't go up or go up slowly	2.1 The heater is broken	2.1 Check and change the heater
3.screen shows E0	Man –made Midway exits	3.1 change PT100
4. screen shows E1	The door has been opened and alarms	4.1 adjust the door position switch
5. screen shows E2	Inside dry burn alarm	5.1 feed enough distilled water and try again 5.2 Exist leak inside the autoclave
6.screen shows E3	Inside PT100 over heating	6.1 feed enough distilled water and try again 6.2 Exist leak inside the autoclave
7.screen shows E4	Inside PT100 wire broken	7.1 Change PT100
8. screen shows E5	Outside wall dry burn	8.1 check the outside temperature controller 8.2Check whether auxiliary heater control is normal
9 screen shows E6	Outside PT100 over heating	9.1 check the outside temperature controller 9.2Check whether auxiliary heater control is normal
10. screen shows E7	Outside PT100 wire broken	10.1 change outside PT100
11 screen shows E8	Low temperature in sterilization stage	11.1 Check whether exist leak 11.2 Check whether the heating is normal

7.3 How to replace the cover

Attention : before to remove the cover, make sure the equipment is cut

off. At the same time, there is no pressure in the chamber.

Steps as the follows:

1. Remove the screws on the cover
2. Remove the cover

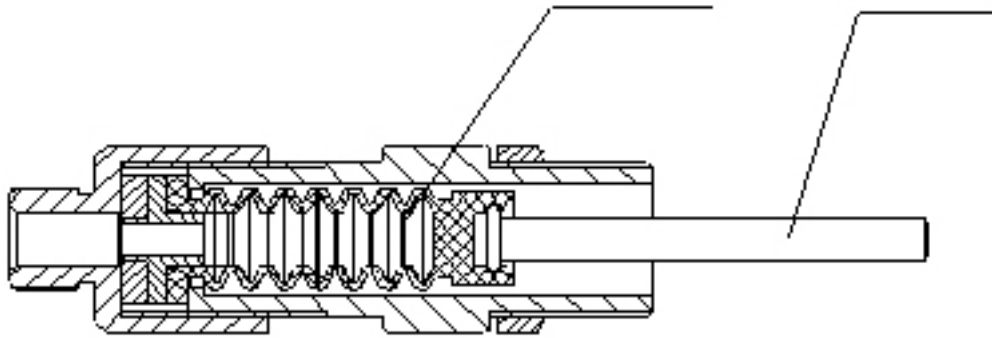
7.4 Steps for changing the heater

Attention : before to remove the heater, make sure the equipment is cut off. At the same time, there is no pressure in the chamber.

1. Remove the cover
2. Release the terminal wires from the heating element
3. Remove the heater tightening bolts
4. Replace the damaged heating element with a new one and reconnect the terminal wires.
5. Fit on the cover
6. Test all the sterilizer cycles

7.5 Door safety device

It is a safety device that prevents the door being opened when there is pressure in the chamber. It is set up on the base of pressure formed in the chamber. The pressure in chamber pushes the active clutch moving upward closes and joggles with the fixed clutch. It can prevent operators open the door by mistake. When the steam is discharged, this device comes back to original position, and the door can be opened.



In normal situation, if there is no pressure in the chamber, but the door safety pin can't return and the door can't be opened.

Then operate as the follows:

Connected the vacuum pump with the Steam exhausted tube(diameter 1/4")

Through the vacuum pump make the chamber vacuum forming, then the door mechanical devices will be released.

7.6 Steps for changing Door lock safety system

1. Loosen the screw, take off the handle wheel, take off the door cover
2. Uninstall and open the fuse holder.
3. Draw the safety pin from the fuse holder.
4. Insert it into the new corrugated pipe
5. If the gasket damage, input pressure air through the steam inlet, the gasket can be piled out.
6. Put the corrugated pipe and safety pin back into the conductor pipe (14) and install the cushion
7. Put above-mentioned components to the door
8. Fasten the fuse holder again
9. Test all the sterilization procedures.

7.7 Cleaning the magnetic valve.

1. Remove the cover.

2. Poke the pressing disc with screwdriver.
3. Take out the loop of valve
4. Open the valve with spanner
5. Clean the valve with water
6. Assemble the valve

Dissemble:

According to the procedures in the left, use spanner to rotate the hexa-copper-nut to open the valve core.

