Kalstein

Touch Screen Horizontal Pulsating Vacuum Autoclave

Model YR05646-1

Instruction Manual

Thank you very much for purchasing our Kalstein's Touch Screen Horizontal Pulsating Vacuum Autoclave Model YR05646-1

Please read the "Operating Instructions" and "Warranty" before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the "Warranty" at a hand place for future reference.

 Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

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Chapter 1 Introduction

1.1 Application

YR05646-1 series horizontal steam autoclave is the equipment that disinfects and sterilizes the objects with saturated steam, its structure is horizontal and heating way is electric heating. It is composed of sterilization room, jacket, shell, door, steam generator, pipe system, control system, vacuum system, indicating system and power-supply system.

It is widely used in CSSD, lab, scientific research institution, major hospitals, pharmaceutical, food industry and is suitable for items which are high temperature-resisting and high pressure-resisting including unwrapped or wrapped instrument, dressing, rubber, liquid, plant-in instrument, porous item, hollow instrument to be sterilized.

1.2 Normal Working Condition

Normal working condition shall comply with the following conditions:

- ✓ Environmental Temperature +5℃～+45℃;
- ✓ Relative Humidity ≤85%RH
- ✓ Atmospheric Pressure 70kPa～106 kPa;
- ✓ Water Source Pressure 0.15MPa～0.25MPa;
- ✓ Steam Source Pressure 0.22MPa～0.27MPa (when heating by connecting external steam source).
- ✓ Working Power Supply three phase AC 380V±10% 50Hz±1Hz (or based on user request)

1.3 Basic Parameters

Model	YR05643	YR05643-1	YR05644	YR05644-1	YR05645	YR05645-1	YR05646	YR05646-1
Design pressure	-0.1/0.25Mpa							
Design temperature	139℃							
Doors	Single Door	Double Door	Single Door	Double Door	Single Door	Double Door	Single Door	Double Door
Working temperature range	105℃-136℃							
Max working pressure	0.23Mpa							
Sterilization time range	0-99 min							
Drying time range	0-99 min							
Vacuum rate	-0.081Mpa							
Temperature accuracy	0.1℃							
Chamber Size(mm)	100L / Ø440*670		150L / Ø440*1000		200L / Ø515*1000		300L / Ø600*1080	
Outer Size(mm)	1400*660*1640		1400*660*1640		1400*760*1750		1520*850*1850	
Packing Size(mm)	1560*820*1820		1560*820*1820		1560*910*1880		1680*1080*2100	
G.W. / N.W.	430/340kg		440/350kg		560/470kg		680/580kg	
Power	10kw		10kw		12kw		15kw	

1.4 Architecture Feature

Structure name	Character	Remark
PT100 senor	Three lines accuracy class A	
On-off input	Non-isolation active	
Solenoid valve	Isolation active output 5A	AC220V
Cooling fan	Isolation active output 5A	AC220V
Vacuum pump	Isolation active output 5A	AC220V
Water inlet pump	Thyristor output 5A	AC220V
Electrical dry heater	Thyristor output 25A	AC220V
Steam generator electrical heating	Thyristor output 25A	AC220V

1.5 Features and Parts Function Introduction

- ✓ The sterilizer body is a closed triple-layer structure consisting of a sterilization chamber and a steam jacket. When the steam enters and fills the jacket, the walls of the sterilization chamber are also preheated. A solenoid valve is arranged between the sterilization chamber and the jacket, and the pressure steam enters the sterilization chamber through the main valve through the jacket, so that the articles are wetted and heated, and the purpose of sterilization and sterilization is achieved under the action of humidity and heat. At the same time, it can meet the requirements of preheating, drying and continuous operation of the articles to be sterilized.
- ✓ The jacket of the sterilization chamber is covered with a casing and filled with insulation wool with good thermal insulation properties, which is conducive to saving energy and avoiding excessive rise in ambient temperature.
- ✓ The opening and closing of the sterilization chamber door adopts the radiation rod rotary type, and both are equipped with two-stage self-locking and interlocking safety devices. When closing the door, firstly pull the safety tight hand wheel, the radiation rod to the fully engaged position, and then turn the hand wheel, the center turntable makes an axial entry, and the center turntable is self-locked by the positioning pin. The door of the sterilizer is equipped with a safety interlock. Under normal working conditions, steam should not enter the sterilization chamber when the door is not locked. It is ensured that the pressure of the sterilizer door in the sterilization chamber has been safely released, and the safety interlock device can be opened after being disengaged, otherwise the door should not be opened. The interlock device exits but the turntable is still locked by the positioning pin, the hand wheel can be reversed, the center turntable can only be axially withdrawn, the door seal gradually fails, and the remaining steam is released to zero, that is, the pressure is first released, and then the

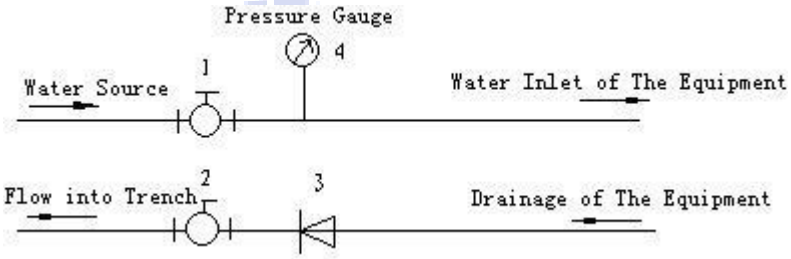
door is opened. When the hand wheel is retracted to the outermost position, the safety tightening hand wheel can be pulled out to exit the radiation rod to open the door.

- ✓ The sterilizer is provided with a program function, and the air and condensed water in the sterilizer are automatically discharged during the sterilization process, so that the sterilization temperature in the sterilization chamber tends to be balanced.
- ✓ The device equipped with a steam pressure to maintain the voltage regulation, the pressure control is set in the range of 0.05 to 0.23 MPa, and the corresponding temperature is 105 to 138 °C. The operating temperature pressure is selected via the adjustment button on the control panel.
- ✓ With a timer device, the time is set from 0 to 99 minutes, and the working time is selected by the adjustment button on the control panel.
- ✓ It is equipped with a temperature control failure protection device, and the top of the sterilizer is equipped with a micro-opening spring safety valve. When the steam pressure in the jacket exceeds the maximum allowable range, it can automatically open and release the steam. Pressurized steam: when the steam pressure in the container returns to normal, it can be automatically closed. To ensure the safe use, the working pressure range of the safety valve is 0.23 - 0.25MPa.
- ✓ With manual maintenance drain valve, when the evaporator of this equipment needs to be cleaned and drained, the manual valve at the bottom left of the equipment can be opened to drain the water tank.
- ✓ Equipped with solenoid valve:
- ✓ Inlet valve, 2 only press the start button program to automatically enter the water to the high water level and then close, the vacuum pump enters the water.
- ✓ Supply valve, the sterilization will open automatically.
- ✓ Exhaust valve, power on and press the start button program to automatically vent, automatically open and close during the sterilization process.

- ✓ Sterilization valve, which automatically opens during sterilization.
- ✓ The vacuum pump is automatically opened when the vacuum pump works.
- ✓ The sterilizer is equipped with a standard PT/TT test interface, and the test interface pipe thread meets the requirements of GB/T7307-G1/2A. There are PT/TT marks and caps.

1.6 Installation and Commissioning

- ✓ Put shock pad under the two rotation legs, rotate the support leg after universal wheels leave the ground, put shock pad under the oriented wheel.
- ✓ It shall leave some space all around when installing the sterilizer, convenient to operate and maintain; outline dimension of maximum limit is 200×100×200cm, after the steam door is opened.
- ✓ Adjust the inner drum level of the equipment through regulating the height of rotating support leg.
- ✓ Connect the pipeline of drainage, water inlet and water source to the related ones of the equipment, and meanwhile configuration power source according to the requirements.



1.7 Detailed List of Serial Number

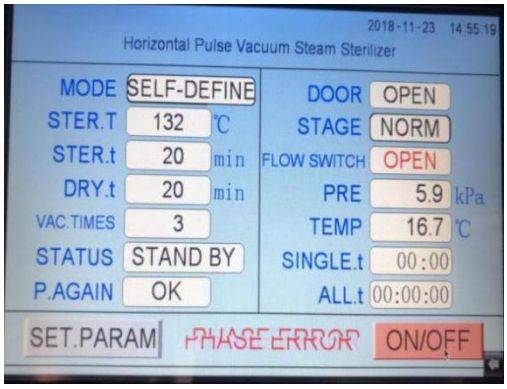
S/N	Name	Specification & Model	S/N	Name	Specification & Model
1	Manual Ball Valve	DN25	4	Pressure gauge	0/0.4Mpa
2	Manual Ball Valve	DN32	5	Pressure vacuum gauge	-0.1/0.5Mpa
3	Manual Ball Valve	DN32			

- ✓ After installing the equipment, inspect the equipment completely once again, after confirmation without fault, it can start trial run. Refer to operation method, open the manual water inlet valve, observe the state of water source pressure gauge and examine whether the pressure is in the required pressure range. Switch on power supply and operate trial run referring to operation method.
- ✓ It has been inspected by rising temperature before the products leave factory, but after it is installed and ready, the user shall perform trail run according to user' manual; if there is any problem, please inquire the reasons and solve it, it can't be put into operation until it runs normally.

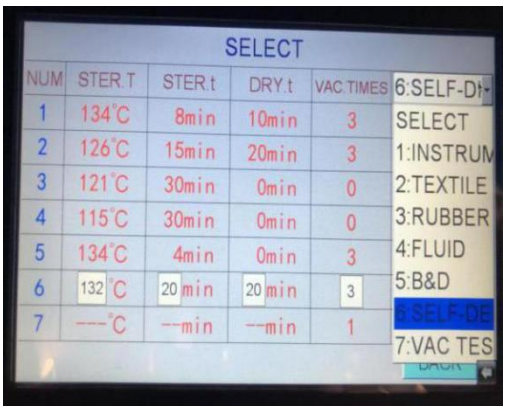
1.8 Application Method

Operation Method

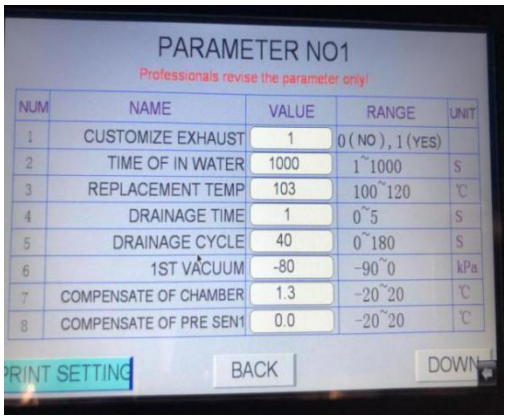
- ✓ Start the Screen



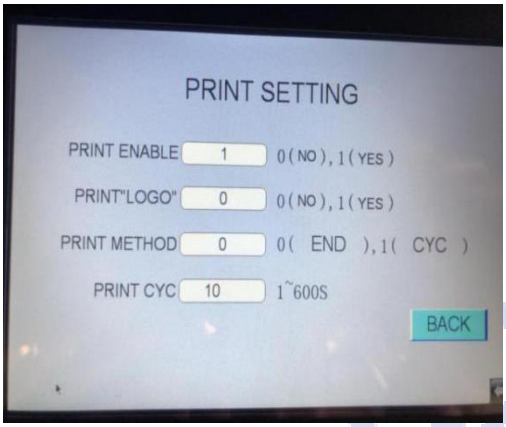
- ✓ Choose the sterilization temperature, sterilization time and drying time
- ✓ If you need users- defined, then choose 6, set temperature, sterilization time, drying time.



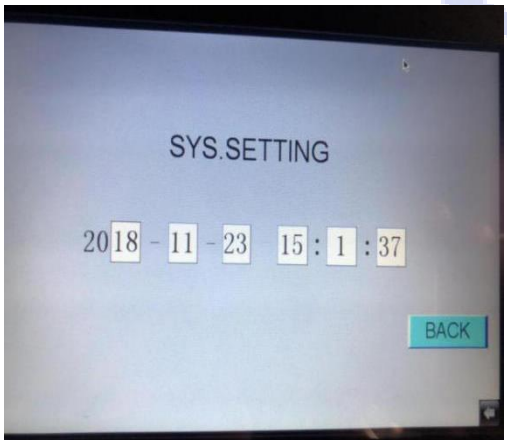
✓ Parameter Settings



✓ Print Setting



✓ System clock setting: click the clock, then you can see the below screen: then press the start button, the machine will enter the working status.



1.9 Operation of the Door

Because the device is a pressure vessel, it is important to operate the door exactly, please read the following items carefully before operating the door.

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Close the door

Before closing the door, make sure there are no cracks, damage and dirt on the sealing material of the door and make sure there is no damage and dirt on the contact face between the main body and the sealing material of the door damage and dirt.

First turn the handle counterclockwise to limit position when closing the door, so as to make all the radiation bars of the door in contraction position. Then get the door close to the main body, turn the handle clockwise, at the beginning, turn a bit, after the door indicator light gives out signal, continue to turn the handle for 1/4-1/2 cycle. Strictly prohibit rotating the door counterclockwise after the door is closed.

Open the door

The door can be opened only when the inner drum pressure is equal to the ambient atmospheric pressure.

Note: The temperature of the door body is higher when sterilizing; prohibited to touch to avoid being burned.

Warning sign:  caution to be scalded!

- ✓ It must confirm the following items before opening the door:
- ✓ The stroke is in preparation or exhaust steam is finished or drying is finished.
- ✓ Inner pressure displays “0”Mpa.
- ✓ It is in normal operation and the buzzer has alarmed.
- ✓ The self-lock device of the door is relieved.

Warning sign:

- ✓ Turn the handle counterclockwise
- ✓ Turn to limit position counterclockwise to have the radiation bar contracted completely.
- ✓ Take notice if it cannot rotate counterclockwise, please check whether the self-lock on handle seat has been relieved.
- ✓ Open the door
- ✓ When exhaust steam is finished, open the door, a great deal of steam will let out, pay attention not to be scalded, please open the door a moment later.
- ✓ About door lock structure
- ✓ According to the stipulation of pressure vessel safety performance by the country, the device is set with safety interlock, the door will be self-locked when the inner chamber pressure exceeds 0.027MPa, and it cannot be opened at the time.

Chapter 2 Proper Method for Letting Sterilization Objects

- ✓ Pay attention to the uniformity of sterilization
- ✓ The package of sterilization articles needs to be small and be inlet in loosen space.
- ✓ Package dimension of textile sterilization shall be less than 50×30×30cm, the weight does not exceed 10Kg. Do not put the bottle covered tightly and disinfectant solution in the vessel.

Warning:

If to operate improperly, the bottle will explode, the liquid attachment will damage the inner surface of drum body and door.

- ✓ When sterilizing the injection syringe, don't put injection syringe and cast parts together directly to sterilize, it needs single package or fixed package, otherwise:
- ✓ Castings of injection syringe influences drying effect
- ✓ Unused products will be polluted during application period after germicidal treatment.
- ✓ It is easy to mix for using used products and unused products after sterilization
- ✓ Cover of castings is easy to attach water drops.
- ✓ When using retort pouch, it is suggested to inquire the factory for its performance whether it has heat resisting property and air permeability.

- ✓ Please do not put moisture sterilization articles in it so as to easily dry.

2.1 Attentions in Use

Precautions prior To Use

Horizontal pressure steam sterilizer is an equipment, which takes advantage of saturated steam to sterilize the dressing packages and various medical appliances. Please pay attention to the following:

- ✓ Sterilization articles of this device are the ones with the characteristics of high temperature resistance and high humidity resistance.
- ✓ Sterilization articles of this device shall be washed prior to use. Otherwise, the dirt attached will affect the sterilization effect.
- ✓ Under normal circumstances, it is different from the drying degree of the sterilization articles.
- ✓ Security
- ✓ Since the device belongs to Class I pressure vessel, please confirm the responsible person in order to ensure the proper and safe way to use this device.
- ✓ Horizontal pressure steam sterilizer in normal use will produce sound pressure ≤85 dB, please be relaxed to use.

2.2 Daily use and Maintance

Since the device is Class II pressure vessel, in order to use properly and safely every day, please pay attention to the following while repairing and maintaining.

- ✓ Please refer to “Operation of the door" when opening the door, and check whether the sealing materials of the door have been cracked and damaged.
- ✓ Please refer to "Repair and Maintenance" for sealing material of door.
- ✓ Please be careful not to be burnt when adding or taking out the sterilization articles.
- ✓ Please confirm the indications of the pressure gauges during the use of this device. Be sure to cut off power supply and check the control system when the pressure exceeds 0.25 Mpa.
- ✓ Please check whether the inner chamber and exhaust steam port has sundries before use every day. If there are sundries piled up on the filter net, it will cause incomplete or bad sterilization.
- ✓ Please be sure to maintain the performance of device, please self-check at regular time.

2.3 Maintance and Repair

Please refer to this chapter for the maintenance of the equipment

- ✓ Do not reconstruct the equipment.
- ✓ Replacement method of sealing materials
- ✓ Sealing materials of the door are the main parts to seal between the doors and drum body. It must be checked regularly and have timely replacement when finding breakages.
- ✓ Get the right size and complete sealing materials prepared.
- ✓ Take out the aging or damaged sealing materials with wooden tools.
- ✓ Wipe off the sundries on the sealing materials of the installed door with an alcohol-attached wipes and insert new materials.
- ✓ Press the sealing material tightly with wooden tools; close the door 1 / 2 circle after the door switch is in working process.
- ✓ Test the machine; Shut the door tightly (No steam leakage occurs when sterilization).
- ✓ Inspect every part of the door comprehensively.
- ✓ Replacement for Interlocking Apparatus Sealing Element of the Door
- ✓ Open the door and disassemble round copper cover or stainless steel cover.
- ✓ Remove the old cup packer and clean the installing position with wipes.
- ✓ Replace new parts.
- ✓ Test the machine (No steam leakage in the position of the door handle during sterilization)
- ✓ Filling up Grease Lubricant to the Door Mechanism

Door mechanism is the part needed to be opened and closed frequently, it is always under high temperature, so it needs to fill up grease lubricant regularly (it is usually about 2 months), and the method of filling up grease lubricant is as follows:

Preparation Parts:

- ✓ Prepare No.4 high-temperature grease （ZBE36009—88） ZN6—4
- ✓ Gauze glove
- ✓ Wipes
- ✓ Necessary tools

Order of filling up grease lubricant is as follows:

- ✓ Disassemble the ball-end part of fixed radiation bar.
- ✓ Clean up the aging grease lubricant in screw thread and the ball-end part of fixed radiation bar.
- ✓ Re-install the disassembled parts in original order.
- ✓ Rotate the door several times repeatedly to have it smeared evenly.

Don't make the door rotate in the open position in order to avoid the radiation bar extending to damage the external appearance of the equipment.

Maintenance for Other Components

- ✓ Safety valve: pull up the draw rod of safety valve every other month, exhaust steam several times repeatedly to avoid failure.
- ✓ Pressure gauge: inspect it regularly, check every year.
- ✓ Breaker: inspect it regularly, if there is any fault, please replace it in time.
- ✓ The replaced fuse specification shall comply with the regulation in the user' manual and it is the same with the original fuse specification.
- ✓ Make sure the grounding connection of sterilizer and electric outlet is in good state.

2.4 Sign Instruction

Caution to be scalded!!

Warning sign of scald

Steam in, stop opening!

Warning sign

Safety Valve

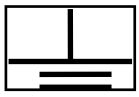
Safety valve

Exhaust

External steam exhaust port

AC380V 50Hz 10KW

Requirement of external power supply



Grounding sign

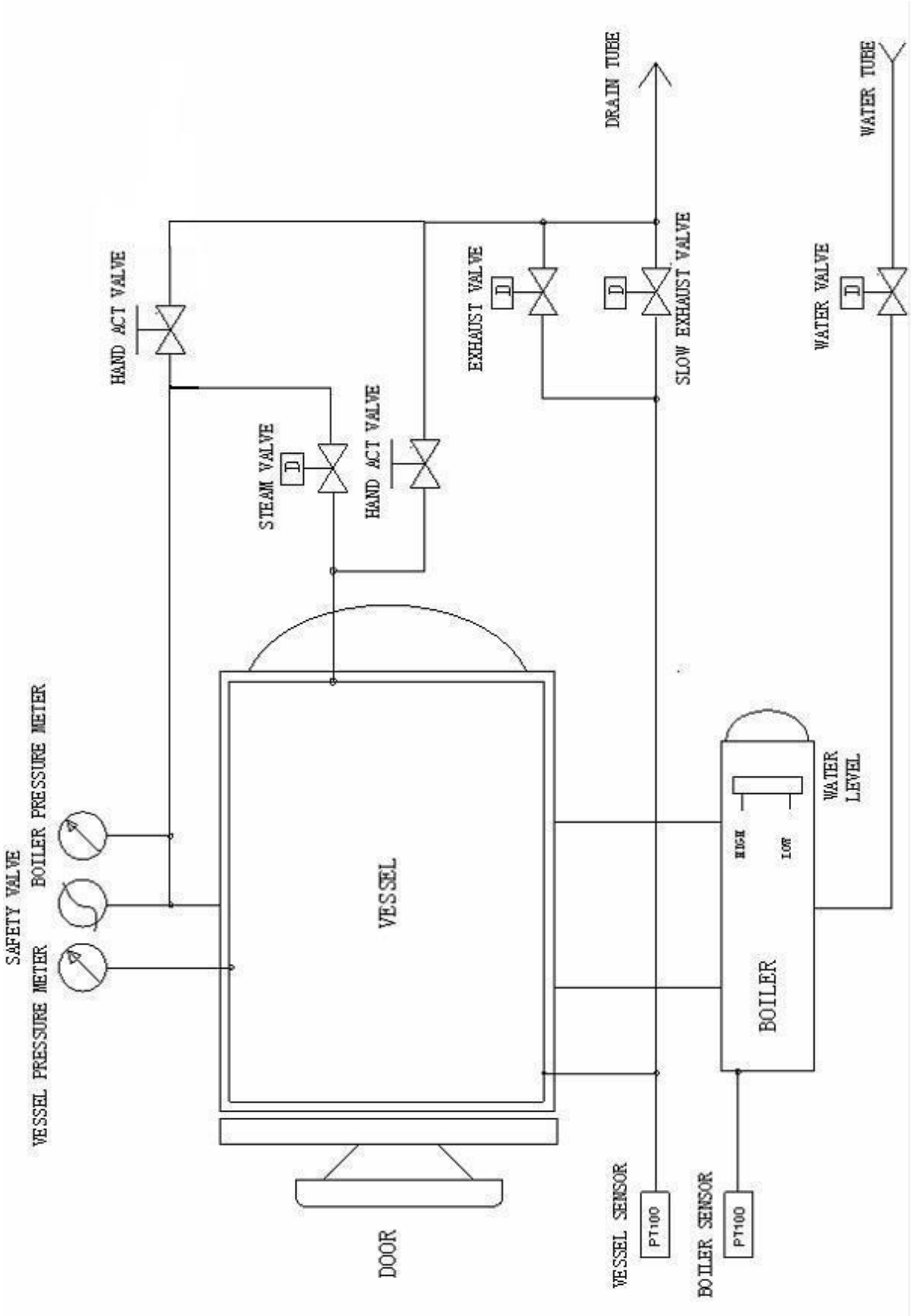
Door-Lock indication sign

Instruction of Circuit Breaker and Fuse Capacity

With three-phase circuit breaker.

The fuse is 250V/2A φ5×20mm.

2.5 Principle Schematic Diagram of Pipeline



2.6 Electric Wiring Diagram