RETORT INSTRUCTIONS

一、 Overview

Zhucheng Zhongyuan Machinery Co., Ltd. has the national pressure manufacturing qualification and self-operated import and export management rights. It is a professional company that designs, produces and develops all kinds of canned, bottled and soft-packed high-temperature sterilization equipment. High temperature sterilization is divided into three kinds of sterilization methods: water bath type, spray type and steam sterilization.
In order to allow users to improve product quality and increase production. The sterilized food can be transported, stored and sold at room temperature, reducing the cost in the circulation field, and the product has a long shelf life, and can be processed locally in large quantities by using local fresh raw materials to obtain high-quality, low-cost products. It is also possible to increase sales by means of seasonal differences and regional differences, and to obtain higher profits. We have learned the design experience of various imported retort machines, and developed a series of high-temperature sterilization equipment on the basis of the original, which filled the domestic gap and won the favor of the majority of users.

Newly developed products:


The retort produced by our company have the following characteristics:

(一)、Water bath sterilization (double-layer, parallel, multi-pot with hot water tank principle)

Water bath type retort machine products are suitable for all kinds of high temperature resistant packaging materials:

a, plastic containers: PP bottles, HDPE bottles.

b. Soft bag packaging: aluminum foil bag, transparent bag, vacuum bag, high temperature cooking bag, etc. Water bath type retort machine features:
1. Save energy. The working medium used in the sterilization process can be recycled, saving energy, time and manpower, material consumption, and reducing production costs.

2. High-temperature short-time sterilization The hot water circulation in the pot is used for sterilization. First, the water in the hot water tank is heated to the temperature required for sterilization, thereby shortening the sterilization time and improving the working efficiency.

3. The temperature inside the retort machine is very stable, the heat distribution is uniform.

In order to ensure a more even heat distribution, our company's water bath sterilizer is sufficient to achieve this requirement. Firstly, the cold water in the hot water tank is heated to the required sterilization temperature, and then injected into the retort machine to perform the water bath sterilization, and the required sterilization temperature can be reached in the retort machine in a short time, and the hot water in the retort machine is circulated through the hot water pump. The temperature inside the pot is kept very stable at all stages of the sterilization process (temperature difference $\pm 0.5^\circ$).
C in the pot), which ensures the change of the F value and avoids the occurrence of excessive cooking.

The computerized automatic (double-layer, parallel, multi-pot with hot water tank) retort machine produced by our company is essential for the sterilization of gas-containing packaging, especially in the heating or cooling stage, which requires precise pressure control. The "PACKCE" control system continuously monitors the temperature and pressure in the process tank and corrects the pressure in the pot so that it is slightly larger than the pressure inside the package. A package
containing any percentage of filled air or other gas, or a package sealed under vacuum, can be sterilized without damaging or deforming the package or its contents. This system is different from other systems in that the pressure, temperature, and time modes applicable to any product can be pre-programmed into a program input computer.

3, warm up fast

Because the hot water is injected into the retort machine, the food in the pot heats up quickly. Under normal circumstances, when the steam pressure is 0.6Mpa, the food rises to 121 ° C, about 7-10 minutes, which can retain the flavor, color and taste of the food to the greatest extent, and also reduce energy consumption.

4, constant temperature stability

The main body of the equipment is equipped with an insulation layer, which reduces heat loss and also protects the working environment. Water bath sterilization, thermometer and temperature sensor are completely immersed in hot water, and the temperature inside the pot can be observed at any
time. When the temperature in the retort machine reaches the predetermined design sterilization temperature, the temperature is automatically stopped in the pot, and the automatic timing starts. When the temperature inside the retort machine is lower than the set temperature, the automatic control system is completely, accurately and timely heated, and the temperature difference accuracy reaches ±0.5 °C, it meets international standards.

5, cool down quickly In order to better eliminate and inhibit the survival and reactivation rate of the fungus, the cargo must be quickly and rapidly reduced to the ideal temperature at high temperature, and the cooling water supply with high power, high lift and large flow rate can be cooled in a short time. Infusion of water to preserve the flavor, color and texture of its goods as perfectly as possible. The new cooling method changes the spray cooling to the flood irrigation. During the cooling process, the pressure does not fall, completely solves the problem of the separation of the packaged articles caused by the pressure drop during the cooling, and the bubble generation phenomenon, which is more effective in solving the product warranty period. Corrosion occurs inside to
ensure the success rate of product sterilization to the greatest extent.

(二) Spray sterilization

Spray sterilizer, firstly inject a small amount of process water into the pot to reach the set position (can not soak the product, shown by the liquid level meter), inject water into the spray pipe or through the filter → circulation pump → high efficiency heat exchanger The nozzle sprays hot water out to the surface of the food, and the heat distribution in the pot is uniform and there is no dead angle. The water is heated and cooled by the heat exchanger, and the temperature is raised and cooled rapidly, and the product can be sterilized efficiently, comprehensively and stably.

1、 Semi-automatic series: The method of spray sterilization is to use high-power hot water circulation pump to force the hot water in the retort machine to circulate and spray, to solve the problem of dead angle in the pot, and reduce the temperature difference at each point in the pot to ±0.5 °C, to ensure that the temperature of the products in the pot is the same when sterilized. At the same time, the hot water sprayed from the spray pipe (or nozzle) drives the hot steam in the pot to flow in
the pot, which solves the problem that some products can not be sterilized by water bath and directly cooled by cold water.

2. The electric appliance controls the pressure to solve the problem that the error caused by the manual operation is large, the pressure in the pot is not balanced, and the sterilization effect is poor.

3. Electrical control temperature (temperature sensor) and sterilization time, more effective control of temperature difference, sterilization time fixed, so that the difference between product batches is minimized.

4. Fully automatic series: the temperature inside the pot is very stable and the heat distribution is even. The control system can be switched from a single sterilization process to a multi-stage sterilization process (staged temperature rise, staged temperature drop). The sterilizer can be configured with an F-value measuring instrument according to user requirements. The measuring instrument has the function of measuring the F value, and the F-value software performs the F-value calculation every 3 seconds. All sterilization data, including sterilization conditions, F values, time-temperature curves, time-pressure curves, etc. Data processing software
processes and saves or prints for production management. 
More than 100 sterilization formulas can be stored in the 
computer.

(三)、Steam sterilization

1. Steam sterilization method, when the retort machine is 
filled with the goods to be sterilized, after closing and sealing 
the pot door, first open the sterilizing pot vent valve, and then 
open the sterilizing pot heating valve to drain the cold air in 
the pot. When the temperature in the pot reaches 90-95 °C, 
close the venting valve, continue to heat up in the pot until the 
specified temperature required for sterilization, close the sterilizing 
pot heating valve, start the constant temperature recording, and open 
the temperature rising valve when the temperature in the pot is low. 
When the temperature in the pot rises and rises to the specified 
temperature to be sterilized, the temperature rise valve is closed until 
the constant temperature is over. (The condensed water generated in 
the sterilizing pot is automatically discharged through the trap when 
the temperature is raised and the temperature is constant). When the 
pressure in the pot is high, open the sterilizing pot venting valve to 
reduce the pressure in the pot to the specified sterilizing pressure; 
when the pot is under pressure, open the sterilizing pot air supply
valve to reduce the pressure in the pot to the prescribed sterilizing pressure.

3. The temperature drop after the end of the constant temperature, according to different packaging, different cooling methods, horse

The iron cans generally use the top spray to cool down; the aluminum cans use the heat exchanger to indirectly heat and cool down, and the soft packaging and plastic bottles generally use the bottom flooding to cool down.

small retort machine video

二、Application

The purpose of high temperature sterilization is to sterilize a variety of products suitable for high temperature sterilization, so that the product can be stored at a normal temperature for a longer period of time, and the user can mass produce. It is more conducive to long-distance transportation. In a certain period of time, the product will not be in contact with the
outside world, so that the product can be preserved for a long time without deterioration. The function of the rotary sterilizing pot is mainly used for the production of milk and eight-treasure porridge. In the high-temperature sterilization process, the product is rotated in the pot body to solve the various viscosities of different concentrations such as milk and rice porridge, and the cans, bowls and bottles containing solid substances. Food does not stratify or precipitate during the shelf life.

三、Specification

(一)Technical Characteristics

MWP: Maximum Working Pressure  DT: Designed Temperature  MMPC: Material of Main Pressure
Component

(retort machine video)

(Automatic welder)

(二)、Technical Characteristics

MMPC: Material of Main Pressure Component The above technical parameters are some conventional products, and can also be specifically designed according to user needs.

四、Installation and commissioning

1. After the sterilization equipment is shipped to your company, our company will send after-sales service personnel and electrical engineers to your company to guide the
installation and commissioning, and conduct on-the-spot guidance training for your company’s operators; your company should first specify the location of the fixed equipment. And send a special person (refers to the equipment operation personnel in the production process, the number of personnel is determined by your company) to assist our company personnel to install and debug. During the installation process, the installation personnel sent by your company learn to install, until the end of the installation, and sterilization The basic characteristics and working principle of the equipment have been conceptualized, and the results of the commissioning test have a multiplier effect.

2, Installation requirements:

a, Sterilization equipment should be placed horizontally;

b. The area where the equipment is placed should be as spacious as possible for easy operation and maintenance;

c. The pressure of steam into the retort machine shall not be lower than 0.5MPa, and it shall be connected to the vicinity of the sterilization equipment;
d. The exhaust port of the retort machine and the hot water tank should be connected to the outside of the workshop;

e. Power supply (380V, three-phase four-wire) should be connected to the sterilization equipment;

f. The water inlet and the drain pipe are connected to the vicinity of the sterilization equipment;

g. The compressed air interface is also connected to the vicinity of the sterilization equipment, and the pressure is not less than 0.6 Mpa.

五、Maintenance and Precautions

1. In order to ensure the safety of the equipment and the stability of the sterilization quality, the safety accessories on the equipment and the equipment shall be periodically inspected according to the “Regulations for Periodic Inspection of Pressure Vessels” and relevant safety technical specifications (safety valves, pressure gauges, etc.).

2. It is strictly forbidden to hit and bump during the use of the equipment.
3. After using the pot door sealing ring for a period of time, it should be taken out and cleaned, and the oil (edible oil) should be re-loaded evenly into the flange sealing groove of the pot body. Cutting, scratching, and bruising are strictly prohibited.

4. If all the valves on the equipment are damaged, they should be replaced immediately.

5. After the equipment is installed and commissioned, the equipment should be inspected regularly, including bolt adjustment and fastening of various components. It is strictly forbidden to carry out pressure repair and fastening bolts.

6. The pump does not allow water to idling, must be injected before the water can be started. It should be kept free of oil (lubricating grease) and make the waterway unblocked.

7. The water used in the sterilization equipment should be clean, free of sand, slag, no turbidity and other impurities, so as not to damage the water pump and the valve. It is recommended that users install filters on the pipes of the water and steam sources.
8. Electrical equipment should be firmly grounded, and no grounding wire is allowed.

9. The operators of the sterilization equipment should be put into operation after passing the training, and strictly abide by the safety operation rules and the post responsibility system. Non-operators must not be close when the equipment is running, and can’t operate it.

10. When the equipment is not used for a long time, please turn off the water source, drain the residual water, and wipe the parts of the pot door and the sealing ring and the flange sealing groove of the cylinder with the sealing ring with oil (edible oil).

11. After each shift is completed, the power supply should be cut off, and the residual pressure of the retort machine, hot water tank, gas storage tank and air compressor should be discharged. The air tank of the air compressor should be drained every shift.

12. Equipment with oil-water separator should be refueled regularly.
13. In the winter, the northern part should pay attention to anti-freezing. After the work is completed, the water in the retort machine, hot water tank, water pump and connected pipes must be completely drained.

六、Safety Interlock

The safety interlocking device is an important part of the quick opening of the retort machine, and is an important guarantee for ensuring the safe operation of the retort machine and effectively preventing accidents.

(1) The main functions of the device:

1. When the pot door is closed and locked, and the safety interlock device is also locked (when the sound and light alarm prompts), the sterilizer can be boosted.

2. When the retort machine is finished running, the pressure in the pot is completely released (the sound and light are emitted at this time)

At the alarm prompt, the door can be opened after the safety interlock is disengaged.
The above functions ensure the safety of the retort machine.

(二) The structural performance of the device:

The device consists of a manual device, a pneumatic device and an electric control box. The pneumatic device and the manual device are located at the top and the front of the sterilizing pot near the flange of the cylinder, and the two become double interlocking, and the safety is fully guaranteed. The electric control box is equipped with a power switch and indicator lights and alarm lights (acoustic and optical alarms) such as power supply, lock, pressure, no pressure and alarm.

The locking block of the manual device can close or disengage the interlocking device, which in turn is a valve switch for the pressure relief tube in the pot. When the pot door is not locked, the pot door rotates in the state of not turning to the position. At this time, the locking block of the interlocking device cannot be locked, the valve of the pressure releasing tube is in the open state, and the pot cannot be operated in the booster because even if steam is allowed into the pot, also released from the pressure release tube; when the pot door is locked, the interlock device is locked, thereby
catching the pot door, so that the pot door can not be opened; at the same time, the valve of the pressure release tube is closed, this When the pot can be boosted.

The structure of the pneumatic device is mainly a valve core communicating with the inside of the pot. When there is pressure in the pot, the valve core is pressed and raised, and the elliptical limiting hole fastened to the bracket plate of the cylinder flange is inserted to rotate The pot door is stuck, so the pot door can't be opened when there is pressure, until the pressure in the pot is completely released, the spool is reset, the stroke switch is also reset, and the alarm light flashes and the alarm sounds.

( 三 ) 、 Operation method and alarm function of the sterilization interlock safety device:

1. Open the power switch of the electric control box, the power indicator light is on; at this time, the pot is in a no-pressure state, the no-voltage indicator light is on, and the screen shows no pressure in the pot;

2, close the pot door, the display shows that the pot door has been locked, the manual interlock device is closed, the
display shows that the manual interlock device is in place, that is, the safety measures have been put in place, can be boosted,

At the same time, the sound and light alarm prompt; close the gasket exhaust valve, open the inflation valve, the gasket is inflated, can be boosted;

3. When the pressure in the pot rises to 0.04Mpa, the valve plug of the automatic interlocking device is inserted into the locking shaft hole, and the pressure indicator light is bright, accompanied by an audible and visual alarm. The display shows that there is pressure in the pot, and the automatic interlocking Has been in place, indicating that the sterilizer is in a pressurized state;

4. In the state of pressure in the pot, if the locking block of the manual interlocking device is mistakenly dialed (the steam is released from the pressure releasing pipe at this time), there is an audible and visual alarm, the display prompts - operation Violation of the rules, must be corrected immediately;

5. When the sterilization stage is over and the cooling and cooling are completed, the pressure of the automatic
interlocking device will drop when the pressure drops to 0.03Mpa. When the pressure drops to 0.01Mpa, the display shows no pressure in the pot, the work is completed, and accompanied by sound and light. Alarm, indicating - the safety interlock can be disengaged, the gasket inflation valve is closed, the gasket exhaust valve is opened, and the manual interlock valve is opened.

Note: When the equipment is working or there is pressure display, it is forbidden to close the valve sealing valve inflation valve and the opening of the pot door sealing ring exhaust valve to avoid accidents (the automatic alarm system is equipped according to the automation degree of the equipment and user requirements).

七、Customer Notice

（一）、After the equipment is installed and debugged, the user cannot change it privately. If there is any change, an accident occurs and the responsibility is at your own risk.

（二）、The warranty period is one year from the date of purchase of the equipment. The warranty is only applicable
during the warranty period, and it is a failure caused by quality under normal use.

（三）、It is considered a paid service, although it is under warranty.

a, failure due to improper use;

b. Failure caused by maintenance or modification of designated personnel of the company;

c. Failure caused by improper storage after purchase;

d. Damage caused by natural disasters such as earthquakes, fires, etc.

（四）、When the warranty is issued, please show the warranty card (in the manual) to the warranty personnel. If it is lost, the service fee will be charged even during the warranty period. Please keep it safe.

八、Warranty Card

Zhucheng Zhongyuan Machinery Co., Ltd.

Warranty Card
Service complaint call: 0536-6359768 Signature of the installer

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