Steam retort machine operation

Steam sterilization is the main form of kettle-type high temperature sterilization. The steam retort machine is the earliest retort machine. It is simple in equipment and easy to operate. Other types of retorts are technically improved on the basis of it. Familiar with the operation of the steam retort machine, it has practical guidance for understanding the automatic control method of the retort machine.

The basic operating principle of the steam retort machine is as follows:

1. start sterilization
   After all the exhaust valves and the vent valve are fully opened, steam is introduced. All bleed valves should always be open during the entire sterilization period. Open to make the steam flow, the high temperature gas continues to heat the food to ensure the sterilization effect.

2. exhaust
   After steaming, the exhaust valve must be opened until the specified time and temperature are reached to ensure that all air in the sterilizer is drained. If the exhaust is not complete; the air in the sterilizing pot will still have air remaining in each area, forming a cold air mass, and the pressure will form a false pressure, which will not reach the actual temperature, which will result in insufficient sterilization.

   During the venting process, the drain valve at the bottom of the sterilizing pot should be opened from time to time in order to discharge the condensed water accumulated in the initial stage of the exhaust gas or the remaining cold water. The purpose of opening the drain valve is not to vent. Unless there is a special regulation in the exhaust method, the drain valve at the bottom of the pot should be closed after the water is discharged, without obstructing the exhaust.

   The exhaust must use an accurate timepiece or timer to calculate the exhaust time, but not the recorder’s chart. The exhaust temperature should be measured in accordance with the glass mercury thermometer display. When the exhaust temperature and exhaust time both meet or exceed the specified limits, the exhaust valve can be closed and the temperature and time must be recorded.

3. heating time
   The temperature rise time refers to the stage from the entry of the steam until the sterilization temperature is reached, and can be maintained until the start of sterilization, including the exhaust time. If a steam bypass is used, the bypass valve should be gradually closed after the sterilization temperature is reached to prevent a sudden drop in temperature.

   The proofreading temperature recorder is the same as the glass mercury thermometer. When the sterilization temperature is stable, these readings must be recorded.

   The heating time is generally 10-20 minutes.
4, sterilization timing

The sterilization time can only be calculated after the retort machine has been fully vented and the mercury thermometer has reached and stabilized at the sterilization temperature. The sterilization temperature can only be represented by a mercury thermometer, not a pressure gauge. Sterilization time should be timed with an accurate clock or timer, and no watch or other recorder chart can be used.

The sterilization time is generally 5 to 60 minutes, which is controlled according to the sterilization process requirements of the food.

5, the end of sterilization

Check the following items before turning off the steam:
(1) Check with a clock or an accurate timer to determine if the specified sterilization time has been reached.
(2) Check the recorder chart to see if the specified sterilization time is recorded.
(3) Check the recorder chart to see if there is any temperature fluctuation below the specified sterilization temperature.
(4) Check the mercury thermometer to see if it indicates the specified sterilization temperature.

If any dissatisfaction is found in the above inspection, appropriate measures should be taken to ensure complete sterilization.

If you are satisfied with the above checks, you can turn off the steam.

6, cooling and storage

Water cooling

This cooling method is to pass steam to the top of the sterilizing pot to maintain the pressure, and let the cold water slowly flow from under the hot water layer to the bottom of the sterilizing pot, thus preventing the steam from being condensed into condensed water. Back pressure cooling can prevent the bag from breaking. The cooling procedure can be carried out as follows:

(1) After the sterilization is finished, close the vent valve, close the inlet valve at the bottom, and open the inlet valve at the top to make the pressure in the sterilizer exceed the pressure at the time of sterilization by about 0.14kg/cm2 (0.014Mpa).

(2) Open the inlet valve connected to the bottom inlet pipe, and then slowly open the inlet valve at the bottom so that hot water can be injected into the retort machine.

(3) Continue to pass steam and water until about one quarter of the sterilizer is filled with hot water, then turn off the steam and pass cold water under the hot water layer.

(4) When injecting cold water into the retort machine, slowly turn off the inlet valve at the top, but keep the pressure in the retort machine stable.
(5) The pressure in the sterilizing pot is maintained at or slightly greater than the pressure during sterilization until the sterilizing pot is almost filled with water and the food is immersed.

(6) It is best to install a small faucet near the top of the sterilizer to know when to reach the water level. When the water level is close to the top, slowly open the overflow valve or drain valve and start to close the small inlet valve, taking care to keep the pressure in the sterilizer on the specified standard. If the sterilizing pot is filled with water at a high inlet pressure and is not drained and drained in time, the pressure of the sterilizing pot will quickly rise to the pressure of the water pipe, which may cause damage to the food pot and the sterilizing pot.

(7) The bottom water inlet and the upper overflow drain are appropriately balanced to maintain the sterilizer at a prescribed pressure until all the food is sufficiently cooled to avoid deformation and lobes of the can lid.

(8) Continue to open the large overflow drain valve and gradually reduce the pressure.

(9) Then enter the cold water from the bottom and drain through the overflow pipe; after a few minutes, in turn, the water is poured from the top and drained from the lower drain pipe. At this time, the sterilizer is filled with water, and this countercurrent can be used for food. Cooling more evenly.

?Air cooling
Air cooling is used when sterilizing unsealed items such as edible fungi. The food is stacked in a single row, allowing the air to circulate freely between rows and rows. The arrangement of each stack of food should be in the ventilation section of the warehouse, and carefully eliminate some of the factors affecting the circulation of air, which will help prevent food from heating and hobby. Hot bacteria are spoiled. When using air cooling, food must be protected from contact with contaminated ground.