Vacuum Drying Oven

YZG / FZG Series

Instruction manual

Changzhou Kodi Machinery Co., Ltd.

CHANGZHOU KODI MACHINERY CO., LTD
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We sincerely service for you forever!

常州考弟公司追求卓越不凡的品质，更注重良好的售后服务!

Changzhou Kodi Company pursues extraordinary quality and focuses on good after-sales service!

本说明书就该 **YZG/FZG** 热风循环烘箱的用法加以说明!

This manual specially illustrates the usage of YZG / FZG series vacuum drying oven!

操作错误会引起意外事故，缩短装置的寿命，降低其性能。

Wrong operation can cause accidents, shorten the life of the device and reduce its performance.

因此，恳请您在使用前务必仔细阅读该说明书!

Therefore, please be sure to carefully read the manual before using!

将本说明书交到最终用户手中!

The manual will be submitted to end-users!

请妥善保管好本说明书，以备需要时查阅!

Please keep this manual to prepare for inspection when required!

说明书供参考所用，具体设计外形以实物为准!

The manual is used for only reference, the specific shape design is subject to the real object.

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I. General Introduction

The so-called vacuum drying is the material to be dried in a vacuum condition, for heating and drying. It is the use of vacuum pump air and humidity, so that interior work of the formation of a vacuum to speed up the drying rate.

Vacuum drying theory suggests that:

1, when the heating temperature constant, increase the vacuum degree, can speed up the drying rate.

2, when the vacuum constant, increased heating temperature, can speed up the drying rate.

3, both to improve the vacuum degree, but also improve the heating temperature and charge, then greatly accelerate the drying rate.

Vacuum drying characteristics:

1, in the material under vacuum reduces the boiling point of solution, so that the evaporator of the heat transfer driving force increases, and therefore can save a certain quantity of heat evaporator heat transfer area.

2, evaporation operation can be used low-pressure steam heat or waste heat steam, (special requirements of customers use water or oil heating, factory specifically designed for you).

3, the evaporator heat loss can be reduced.

4, suitable for easy to decompose at high temperatures, aggregation and deterioration of the heat-sensitive materials dry.

5, in the dry can be disinfected before handling, drying process, no mix of any impurities.

6, belongs to the static vacuum dryer, it will not damage the shape of dry material.

Useage

Applies to pharmaceuticals, chemicals, food, electronics, medicine and other dry materials industry.

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II. Collocate

Item	Collocate
Steam heating, solvents are not recycling	vacuum drying steam-type vacuum drier, JZJS-70 mechanical booster pumps, water ring pump unit (or 2S-185 water-ring vacuum pump, or water spray mist), water separator, check valve, GI high vacuum manual butterfly valve, electric control boxes and so on.
Steam heating, solvent recovery	vacuum drying steam type vacuum drier, condenser, tank, 2X-70A rotary vane type vacuum pump (or W-3 reciprocating vacuum pump), GI high vacuum manual butterfly valve, electric control boxes and so on.
Steam heating hot water, hot water automatic temperature control loop, solvent is not recycling, vacuum drying	water-based vacuum drier, hot water tanks, steam solenoid valve planes, SC-Ⅱ muffler steam heating, hot water pipeline pump, hot water solenoid valve frame, JZJS-70 mechanical booster pumps water ring pump unit (or 2S-185 water-ring vacuum pump or water jet pump), check valve, GI high-vacuum manual butterfly valve, electric control box, water separator and so on.
Steam heating hot water, hot water automatic temperature control loop, solvent recovery, vacuum drying	water-based vacuum drier, hot water tanks, steam solenoid valve planes, SC-Ⅱ muffler steam heating, hot water pipeline pump, hot water solenoid valve planes , condenser, tank, 2X-70A rotary vane type vacuum pump (or W-3 reciprocating vacuum pump), GI high vacuum manual butterfly valve, electric control boxes and so on.
Electric heating, solvents are not recycling, vacuum drying	electric heating type vacuum drier, JZJS-70 mechanical booster pumps water ring pump unit (or 2S-185 water-ring vacuum pump or water jet pump), water separator, check valve, GI high vacuum manual butterfly valve, electronically controlled pumps.

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Electric heating hot water, hot water automatic temperature control loop, solvent recovery, vacuum drying	water-based vacuum drier, hot water tank, electric heat pump water heater hot water pipes, hot water solenoid valve frame, condenser, tank, 2X - 70A rotary vane type vacuum pump (or W-3 reciprocating vacuum pump), GI high vacuum manual butterfly valve, electric control boxes and so on.
Electric heating, solvents are not recycling, vacuum drying	electric heating type vacuum drier, JZJS-70 mechanical booster pumps water ring pump unit (or 2S-185 water-ring vacuum pump or water jet pump), water separator, check valve, GI high vacuum manual butterfly valve, electronically controlled pumps.
Electric heating, solvent recovery, vacuum drying	electric heating type vacuum drier, condenser, tank, 2X-70A rotary vane type vacuum pump (or W-3 reciprocating vacuum pump), GI high vacuum manual butterfly valve, electric control boxes and so on.

Notes: the same models, respectively, are the steam heating type and electric heating type.

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III. Installation

1, handling and loading dryer should be tightened up and closed the door the whole hand wheel lifting, hoisting rope from the device body when applied at the bottom of penetration, and to rope uniform force, so as not to place the body of the dumping.

2, drying machine can be installed on the thickness of the concrete foundation for the 400MM, and with the four M24 × 300 anchor bolts fastening, may also be placed in a flat concrete ground Tsubogami no need to use anchor bolt fastening, but must be kept dry machine level placed, easy to seal the door open and close freely.

3, process piping installation:

Dryer, hot water tank, condenser, tank, vacuum pump, hot water pipeline pump, steam solenoid valve frame, such as hot water solenoid valve frame fixed, it should be on-site cleaning, and then wash off with the corresponding process piping connection (such as vacuum, cooling water, refrigerant, water, steam, hot water, sewage water, condensate piping,

etc.). Must be noted that in the vacuum tubes road all the components and piping must be greater than 3 / 1000 of slope-side tilt to the vacuum pump, easy to pipe water from the condensate, all the elbow tube road should also be easy to set up water from the condensate, water must not be. All cooling water, leakage of water, condensation water, sewage water pipes and vents should be cited to the outdoors, to keep the room clean.

4. all interfaces shall be fitted with flanges and gasket valves of corresponding size and connected with the external piping.

a. if steam sterilization is not required, the steam sterilizer valve may be closed;

b. if the vacuum pump is to be protected from the vaporization of the dry material, or if the solvent is to be recovered, a condenser and a tube press device shall be installed on the vacuum line;

c. the condenser may not be installed if the water ring vacuum pump is pumped and the solvent is not recovered.

5, in the vacuum tube road, wherever the open mode of operation of the valve must be manually selected high-vacuum valve

6, after the end of drying installation, where the drying temperature is higher than 50 ℃ or more vacuum drier, in principle, must be insulation, insulation layer thickness of 80MM, the choice of insulation material by the user. However, fruits and vegetables drying in the class except for special requests.

7, the system should have a reliable earthing device (special for electric heating vacuum drying oven), grounding resistance ≤ 10Ω.

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IV. Operation Process

(A), the preparatory phase:

1, condensate cooling water circulation pumps require working properly, cooling water temperature maintained at 18 ℃ below. If use the F-22 refrigerant for the condenser cooling fluid, then the S-2F6.5 refrigerator require working correctly.

2, vacuum pump no-load operation requested working properly, the cooling water was smooth.

3, such as steam vacuum drying oven, they are required into the stability of steam pressure. Steam trap is working properly, usually in the first attempt after 20 minutes by testing, take apart and wash steam trap, and ensure its smooth flow of condensate water.

5, such as electric heating type vacuum drying oven, then the air cut-off temperature should be consistent with material drying temperature requirements, temperature controller is working correctly.

6, hot water pipeline pump-pass running water demand is working correctly.

7, hot water tank temperature to set the temperature, require working correctly.

8, system-wide no-load test shall not leak, to comply with the corresponding vacuum requirements. Warming should meet the requirements. Instruments, meters, electric control box, all kinds of pumps, valves should be working correctly. Various channels and out of water, liquid, vapor should be smooth.

(B), the official start of work, parking phases:

1, close all system valves.

2, open the steam about two cut-off valve solenoid valve, open the steam solenoid valve or electric heating water heater electricity, hot water tank temperature to the required digital temperature.(usually with hot water tank, heating to 70-80 ℃ is ok)

3, drying machine, baking tray shall be subject to cleaning treatment, then put into a baking dish with the material closing the sealed doors, tighten hand wheel. (After vacuum sealing device gate closely aligns body, tighten the hand wheel will be loose, do not tighten it into the hand wheel so as to avoid the vacuum removed, the sealed door damaged hand wheel and screw rebound).

4, drying racks which leads to pump steam or hot water pipeline to start, open the hot water about two cut-off valve solenoid valve, open the hot water solenoid valve or electric heating tube drying rack power, heated to the required drying temperature.

5, start condenser cooling pumps require cooling water temperature is less than 18 ℃, or start S-2F6.5 refrigerator, so that the condenser temperature of -20 ℃ below (1 to 2 hours in advance to start).

7, open vacuum pump cooling water valve to start the vacuum pump, open the high-vacuum manual butterfly valve, allowing the system to achieve with the choice of vacuum pumps

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vacuum compatible, this time for dry materials. (Note: As in vacuum conditions, the gas molecules are not very active in sports, Vacuum Dryer on the thermometer can not show the actual material temperature, material can only express the relative temperature, experience has shown that about a difference of 20 ℃ or so, we must correctly measure the temperature of materials may choose to leave some glass rod or platinum RTD thermometer chip temperature measurement, please note the user when ordering).

8, in meeting the heating temperature, cooling water temperature, vacuum conditions, the user presses the drying process of materials related to experience or reference to determine the amount of solvent recovery drying cycle.

9, parking steps: ①heating system, full-stop, ②close high-vacuum manual butterfly valve, ③ stop vacuum pumps, off cooling water valve, ④open the venting valve, ⑤open the tank valve solvent emissions, let the Department of solution completely out, ⑥open the venting valve, ⑦ vacuum table pointer to be restored to "0" value, open the sealed door of vacuum drying oven, ⑧remove the dry material, ⑨stop condenser cooling water pump, or stop refrigerator.

Such steps can solve the vacuum drying in the common "inverted irrigation" phenomenon.

This is similar to other vacuum drying system operating requirements.

(C) finishing stages:

1, cut off electric power supply control box.

2, cleaning vacuum dryers, condenser, tank, vacuum pipe inside the empty water. If sterilization requirements of the distillation

Crevice between the water rinse and then sterilization processing (such as parking for a long time in the next batch of materials to be dried once again before sterilization), check the air filter and steam filters media.

3, close all system valves.

V. Maintain & Attentions

1, vacuum drying systems such as the long-term non-use, should ensure that all containers, caught between the valve and the discharge of residual materials, and rinse with water, drying

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rack row to make the condensate water and heat within the tank of water.

2, Drier sealing door twisted oil cup and ball end chain (YZG round type vacuum oven) to join composite calcium-based grease.

3, the sealing rubber body dryer please do rag rub the dirt, in order to prevent the sealing rubber aging, is strictly prohibited to use banana oil, gasoline and other scrub, sealing rubber coated talcum powder should always be protected from sealing rubber off.

4, empty tables, thermometers, and valves should be regularly tested at least once a year

5, regular maintenance of vacuum pumps, and other operating equipment.

6, regular check electrical equipment, system grounding resistance should be ≤ 10Ω.

7, during operation of any valve opening and closing force should be appropriate, and to note the meter indication shall be of materials to control and adjust the drying process, when the dryer is in a state of positive pressure and negative pressure, is strictly prohibited to open sealed doors in order to avoid accidents.

8, all the baking tray and dry cleaning using an auxiliary tool.

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