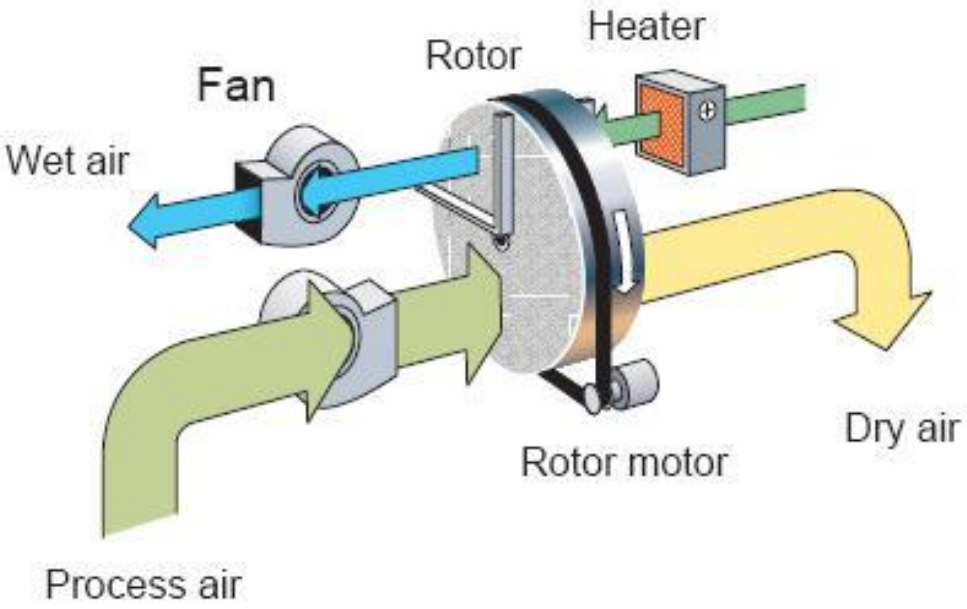
Use Manual

WKM-1500P



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Product introduction

2.1 Instruction

Rotor dehumidifiers manufactured by Wetking are normally used for different industrial manufacturing process or for dehumidification of rooms and storage areas where an environment of low relative humidity is required by humidity sensitive products or materials such as drugs, food ,candy and so on。The well approved method of drying air through adsorption offers a great flexibility in solving humidity problems. The humidity of the air can be controlled to dew points well below the limits of a condensation type of dehumidifier. Also air with a relative humidity of 100% can be dehumidified without harming the rotor material.

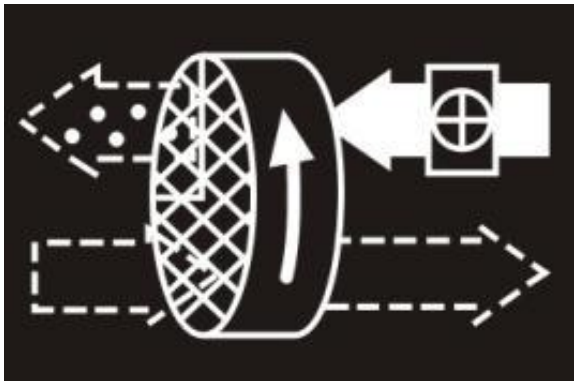
2.2 Working principle

The rotors, made of fiber glass and heat-resistant ceramic material that are used as their internal supporting body, are applied with special ultra-high performance of moisture-absorption material(e.g. high-performing silica gel)and are synthesized with multiple processing techniques, the high-efficient rotors and their special honeycomb cellular structure not only guarantee the rotors have the vast surface area to access to the air but also they improve the moisture absorption efficiency and enhance the moisture absorption capacity of the rotors. The dehumidifier is continuously working with two air volumes of different size: the process air and reactivation air. The proportions between the air volumes are normally approximately 3:1.

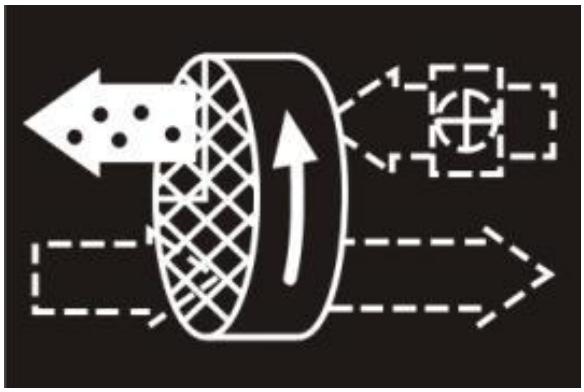
When the process air passes through the area the rotors process, the water vapor it contains is absorbed by the absorption medium attached to the rotors, the water vapor is

driven to start phase transition and releases latent heat, whiles the rotors then become gradually saturated with absorption of certain amount of the moisture; at this time, the process air, with its constant reduction of moisture and release of latent heat, becomes dry and hot air. Meantime, the other flow of air in the reactivation area becomes the air of high temperature(in general, the temperature is as high as 100-140.C) after it firstly passes through the reactivation heater and then it flows through the saturated rotors with moisture absorption, making the moisture absorbed into the rotors evaporated and therefore recovering the dehumidification of the rotors; meanwhile, because the moisture, contained in the reactivation air, gets evaporated and it becomes the humid air; after which, it discharges the humid air through the reactivation fan out of the room.

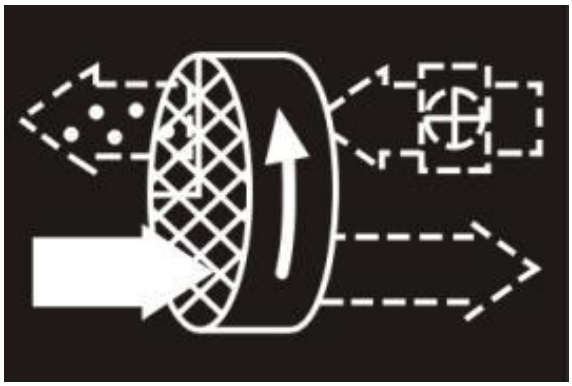
2.3 Logo



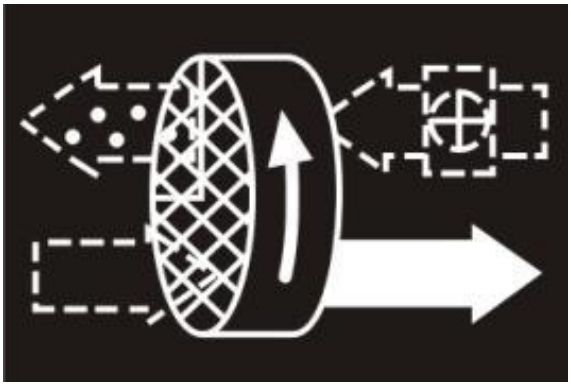
Reg air in



Wet air out



Process air in



Dry air out

Installation

3.1 Overview

WKM-200P applies for indoor installation. Before installation, the units should be stored for some time. Note the following:

• Physical damage is not allowed。

• There should be a shade to keep away from dust, frost and rain.

3.2 Safety operation

⚠ **Warning！If the dehumidifier is over 50kg, hoisting equipment is suggested to use in order to avoid injury of personnel and damage of machine.**

⚠**Warning！ Electrical connections must be performed by professional stuff and be in accordance with the local electric standard of voltage and frequency.**

⚠**Warning！ The dehumidifier is designed according to the specific air volume, so it can not be connected to the air conditioning system.**

3.3 Placement Requirements

The dehumidifier applies for indoor installation, for the convenience of the cleaning and maintenance, the necessary and compact space reserved is required. In order to prevent the dehumidifier from inner condensation, it should not be exposed in the environment with temperature under the dew point of the process air. Moreover, proper measures shall be taken against any access by the rains and snow if it is placed outdoor.

3.4 Foundation

The dehumidifier shall be installed on the horizontal ground or the platform which shall be strong enough to bear the load of the unit. When the installation is completed, inspection shall be made to check the unit. In the event the unit is required to install at the fixed placement, mounting holes shall be made on the part of steel basis attached to the unit.

3.5 Air pipe Connection

The dimensions of the air pipes used for the process air and the reactivation air shall accord with the values recommended under the ISO7807. When connecting the flange pipes to the winding pipes and the air pipes, the length of the bolts shall be less than 20mm.

Note the following suggestions:

- **To shorten the length of the air pipe in order to reduce the loss of static pressure of the air system.**
- **All of the connected pieces for the rigid pipes (galvanized material) shall be of air tightness in order to ensure the performance.**
- **Heat preservation shall be made to the air pipe to avoid condensation when the inside air current is below the outside, which may result in the corrosion to the pipes.**
- **In order to reduce noise and vibration, there should be flexible connections with high-quality installation and superior air tightness between the reactive fan and reactive air duct.**
- **Regulating valve is to be installed at the outlet duct of process air and reactivation air.**
- **The overall resistance of the process air pipe and the reactivation air pipes shall not be in excess of the pressure provided by the fan configured inside of the unit.**
- **When the fresh air is led indoor from outdoor, air inlet shall be high enough from the ground to prevent it from absorbing dusts and pieces. The access shall be far enough from the pollution sources including waste gas, steam and harmful gas. To prevent the humid air from humidifying the process air (at the inlet); the outdoor process air intake shall be at least 2 meters from the outlet of humid air Furthermore, considerations shall be made to prevent the intrusion by rains and snow when designing.**
- **Because of the high moisture content in the wet air there could be condensation inside the wet air duct. It is therefore important that the wet air duct is slanting away from the dehumidifier so that the condensate water does not run into the dehumidifier. If the wet air duct for practical reasons must go upwards from the dehumidifier the wet air duct should insulated and a hole should be drilled at the lowest point of the wet air duct.**

3.6 Air Volume Adjustment

- Start the dehumidifier and let it run continually for 10 minutes.
- Adjust the valves attached to the various air pipes according to the requirements of the design and of the techniques, check, adjust and process the reactivation blast volume and the bypass one via the air volume testing instrument.Lock the air valve to the position as the blast volume is adjusted.

3.7 Electrical Connection

- **The dehumidifier cannot be operated beyond the manufactured extent of the voltage and frequency.**
- **Before power on , check the power supply to ensure the fluctuation of voltage and frequency is within ±10% and such inspection is especially critical under such occasions in which the high load (owing to conversion to the large electrical equipment) involved that may cause voltage fluctuation.**
- **The unit should be grounded with power isolating switch to ensure that the unit can be cut off when inspection and service is required. The main switch should be connected to main power.**
- **The fusing power of the fuse plug shall be consistent to the type and power of the dehumidifier .The fuse plug shall be installed close to the dehumidifier. The selection and matching of power supply cable and the main fuse plug shall be according to the power of the dehumidifier.**

3.8.External Control Components Connection

Pre-laid wiring to the dehumidifier is to provide the wire connecting terminals for connecting the external control components. Note the following instructions for humiture detecting elements:

- **Humiture detecting elements shall be installed 1-1.5m higher above the ground level to detect the typical levels in the controlled area or are laid on the monitoring point in accordance with the design requirements.**
- **Humidity controller shall be installed without being affected by the dry air or humid air. Nor should it be exposed to the direct sunlight, because the changes in the temperature will affect the actually test values.**

3.9 Pre-start Inspection:

Before starting the dehumidifier for the first time, cut the power off, and do the following checkings:

• Check if the switch is “OFF” or not

• Check if the filter at the air inlet is good or not, and if the inside is clean.

• Check if the air ducts and connections are damaged or not, make sure it is unblocked.

Ensure that the dehumidifier is wired up and the unit is set in stand-by state, and the power indication light attached to the control cabinet is on. If the unit is equipped with an automatic control, please set the system shifted to the manual mode (non-automatic or long-range control).

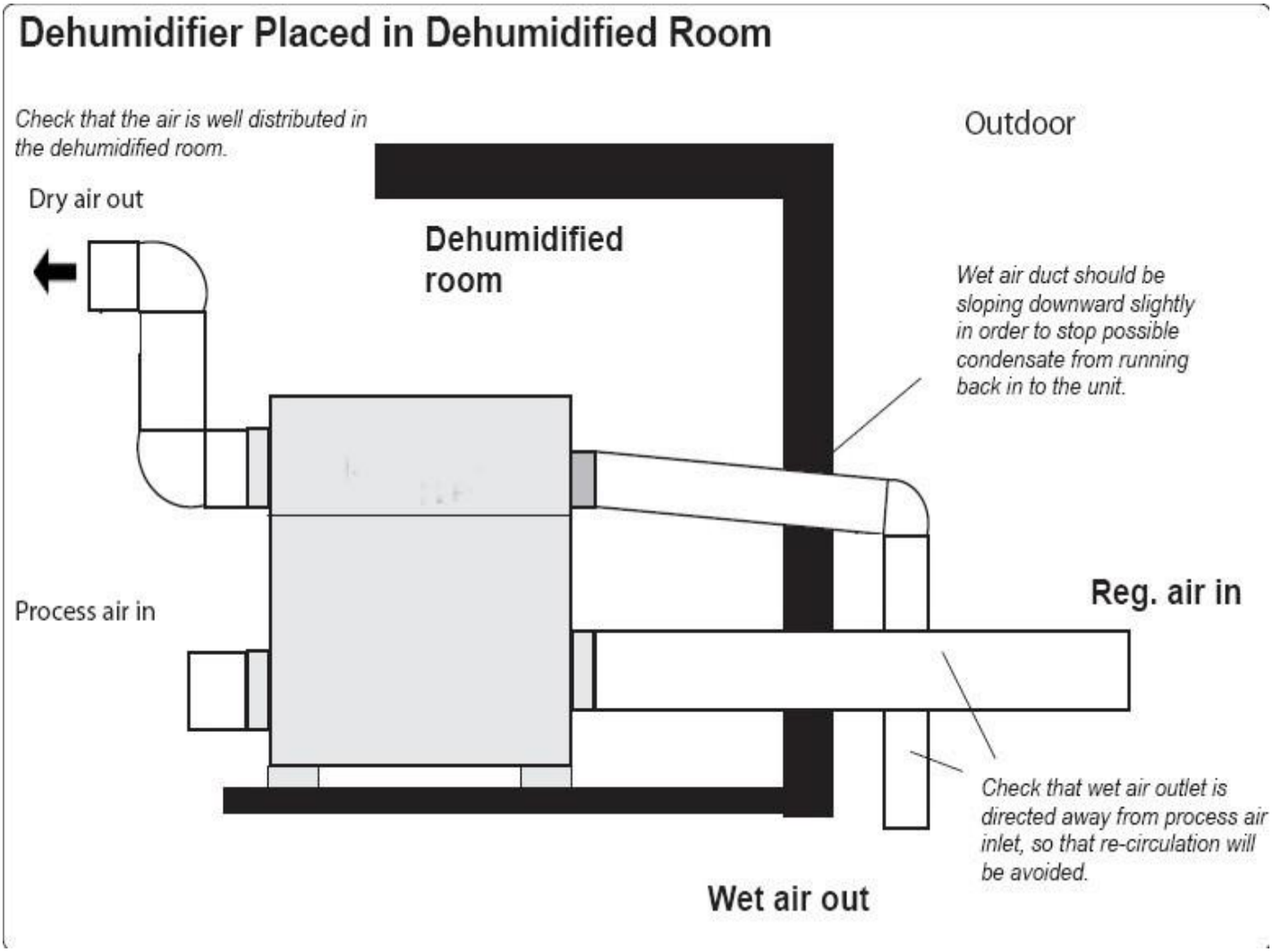
• Set the switch to the position of “MAN” and the indication light will be on.

•Inspect that reactivation fan and process fan are running in the correct direction, the correct direction shall be accorded with the arrow direction marked on the surface of the fans.

• Inspect that the rotor are rotated in the same direction with the marked arrow points, check that no skidding incurred between the drive belt and the rotors.

• The unit shall shut down when the switch is set to the position of “OFF”, while the reactivation fan may be still running for a while before it is stopped, after which, the unit goes back to the stand-by state.

3.10 Installation diagram



Dehumidifier placed inside the dehumidified room

The duct of reactive air inlet and outlet should be connected outdoor, To have a good result it is important that the dry air is spread throughout the room. It is not necessary to connect the process air inlet.

Dehumidifier placed at the factory

The process air inlet and outlet should be ducted to the dehumidified room. If the Ventilation in the factory is not good, the reactivation inlet and outlet can be connected to the surrounding environment.

Dehumidifier placed outdoor

The process air inlet and outlet should be ducted to the dehumidified room. The wet air and the reactivation air can be left without any ducting.

Operation

4.1 Warnings

⚠**Warning！** Before you operate the unit, please refer to the following operation manual. We will not be responsible for any damage caused due to the ignorance of this manual.

⚠**Warning！** When the control system is broken down，please turn off the main switch before checking and maintenance.

⚠**Warning!** We will not be responsible for any damage by the change of electrical circuit, control program or parameter settings for uncertain reason.

⚠**Warning！** We will not be responsible for any damage caused by improper operation.

4.2 LED Control Panel

Main Switch "ON/OFF"： Press once to turn the unit on; press twice to turn the heater, drying wheel and process air fan off, but the regeneration air fan will keep on running until the internal temperature goes below 50℃

Minus "-": turn down the set point of the regeneration air outlet temperature and the set point of process air humidity.

Plus "+": turn up the set point of the regeneration air outlet temperature and the set point of process air humidity.

"SET": Change setting button. Press once, Humidity figure will flash on LCD and then can be reset by pressing "+" or "-" button. After the figure is changed, wait until it flashes for 5 times which means the new setting has been saved. Press the "SET" twice, heater sign and temperature figure on LCD will flash and then can be reset by pressing "+" or "-" button. After the figure is changed, wait until it flashes for 5 times which means the new setting has been saved.

4.3 Mechanical Control Panel

Calculagragh: Accumulate the running time of the unit

Amperemeter: Indicate the current of the heater

Main Switch (ON/OFF)

Operation Mode Switch

MAN (Manual): In this mode, the fans, drying wheel and heater will keep on working when the unit is on.

AUTO (Automatic): In this mode, the fans and drying wheel will keep on working while the heater will be turned on/off automatically when the current humidity reaches the corresponding set point of the remote controller.

Notice！ After the unit is switched on, the Calculagragh starts to time when the amperemeter is stable. When the unit is switched off, the process air fan, drying wheel and heater will be off immediately; while the regeneration air fan will keep on running until the heater is cooled down to secure the components from burnt.

5.1 Warnings

WKM-200P is able to work for long time before maintenance. Regular maintenance is very important for long term running of the unit. The frequency of maintenance depends on the operation condition and environment. For instance, if the dust content in the air is very high, the unit requires a relatively higher maintenance frequency.

⚠ **Warning !** The unit shall be cut off before proceeding any maintenance.

⚠ **Warning !** Ensure the unit is completely cooled down before proceeding any maintenance.

⚠ **Warning !** Any maintenance or adjustment shall be conducted by qualified technician. Personnel that involved should definitely know the high voltage and high temperature in the unit.

5.2 Maintenance Procedure

Components	Maintenance procedure	
	3—6 months	12 months
Process air & Regeneration air filters	Clean the filters or replace filter if it is too dirty.	Clean the filter cases or replace the filters。
Process air & Regeneration air fan	Check if any mechanical damage; clean the fans.	Clean the fans; check the wire connections in case an loose. Fill more lubrication to motor shaft. Check the blades of fan, replace them if an corrosion. Check the air volume & adjust the damper
wheel drive motor assembly	Check the belt in case any damage or off position	Check the wire connection in case any loose，mak sure no damage or over heat.
Circuit board & Wire connections	Check the electrical components and wire connections in case any damage or over heat.	Check the electrical components and wire connectior in case any damage or over heat. Under norma operation conditions, if the coil of one componer always or never work, reset it for a few times t activate the coil and contactor.
	Make sure the wire connections are firm enough	Make sure all wire connections are firm enough, clea dirt and dust off the circuit board
Heater	Clean the heater	Check the wire connections in case any loose
Drying wheel	Check the wheel in case any blockage or over heat. Clean the dust on the surface.	Check the wheel in case any blockage or over hea Clean the dust on the surface. Use vacuum cleaner t clean the dust; do not use compressed air.
Sealing sponge	Check the sealing in case any damage or displacement. Replace them when necessary.	Check the sealing in case any damage o displacement. Replace them when necessary.
Ducting connections	Check the ducts in case any air leak	Check the ducts in case any air leak Check inside in case any dust or damage.
Controller	Not necessary	Check the working conditions of all humidity an temperature sensors and calibrate them.

Trouble shooting

6.1 Descriptions

The chapter introduces the mainly malfunctions and ways of trouble shooting.

⚠ **Warning !** Cut off the power before troubleshooting, due to the high voltage in the dehumidifier.

⚠ **Warning !** No maintenance is allowed until the unit and pipes are all cooled down, due to high-temperature areas (reactivation heating) in the dehumidifier.

6.2 Process of troubleshooting

Refer to the following table for troubleshooting:

Problem	Possible Causes	Measures
Power off	**Power Supply Fault**	**Inspection of Power Supply Available to the Unit**
No running of rotor	**Motor is blocked**	**Take out the block**
No running of reactive fan	**The unit is to shifted to the automatic operating mode**	**Unit shifted to the manual operating mode.**
No working of heating pipe	**Burnt fuse**	**Change the fuse**
Unit Shutdown	**Wrong setting of humidity controller** **Overheating**	**Reset the humidity lever** **Let out the heat**
Dehumidifying capacity decline	**Insufficient regenerating heating capacity. Rotor-driven system failure. Abnormal operation of humidity controller**	**Inspect the heater** **Inspect rotor-driven belt and the drive motor.** **Inspect the humidity controller**