DW-RE-52AA Rotary Evaporator

User Manual

DRAWELL
Artist of Science

Please read operating manual before installation and operation.

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●Host: 0-150 RPM, digital speed；Manual/automatic up and down. Stable and reliable.

● Cooler: top pumping vertical, with four-way bottle and feeding tube, large condensate tube, large evaporation tube, evaporation rate is greater than similar instruments.

● Temperature: automatic control of room temperature ~99 degrees ±1 degrees Celsius digital display.

● Heating pot: stainless steel Teflon composite pot; The main metal is made of corrosion-resistant high quality stainless steel.

Ⅰ Introduction to Use:

Rotary evaporator is the use of rotary evaporation bottle (flask), increase the evaporation area in the water bath under reduced pressure while rotating, while heating the device, so that the solution in the bottle diffusion evaporation. It is the chemical industry, pharmaceutical industry, universities and scientific research laboratories and other units used for manufacturing and analytical experiments on concentration, drying, recycling and other ideal essential instruments.

Ⅱ Features of structure

①Rotation of main engine

It is composed of a stable and reliable precision reducer motor and integrated circuit. Under the action of electronic speed regulation, it can be stepless in the range of 0-150 RPM.

②Main engine lifting and lowering

Adopt micromotor speed change, press up and down switch to automatically rise/fall, improve the efficiency.

③Tilt of main engine

Loosen the cross screw, the condensation system made of heat-resistant high-quality glass is combined with the host head, which can be tilted at any Angle in the range of 0~45°. The four-way bottle is equipped with a valve-type feeding tube for continuous feeding.

④ Water bath for heating

The enclosed resistance wire heating pipe is connected to the temperature digital display, which can automatically turn on/off the power supply to automatically control the temperature in the water bath.

Equipped with transparent protective cover, stable temperature insulation, splash safety, environmental protection and reliable.

⑤ Pipe of evaporation

The sealing system of glass conduit combined with imported PTFE material can effectively maintain the vacuum degree and resist corrosion without dropping slag.

⑥ The main metal parts are made of corrosion-resistant high quality stainless steel to prolong the service life.

Ⅲ Precautions for use

①Please read this instruction and installation introduction of rotary evaporator first: the emphasis is on installation preparation, installation steps and operation.

②For rare solutions, simulation process experiments should be done first, and when the equipment can meet the experimental requirements, it should be transferred to normal use.

③The water temperature of the water bath is automatically controlled by the temperature digital display. Please use a mercury thermometer to measure the exact water temperature.

④Fuse replacement should be cut off the power before opening the fuse box to replace the fuse (fuse).

⑤ When the water bath is heated, do not touch it by hand to avoid scalding; Water is injected before electricity is applied, and dry burning is not allowed.

⑥Glass parts should be lightly handled when installed, and a layer of vacuum grease must be drawn before the installation of the grinding mouth.

Ⅳ Main Technical data

<table>
<tr><td>Rotary bottle capacity range</td><td>25~2000ml</td><td>Input power</td><td>1 kw</td><td rowspan="3">Packing size: L × W × H (mm)
570×480×555mm</td></tr>
<tr><td>Speed of rotation</td><td>0 to 150 RPM</td><td>voltage</td><td>AC220V</td></tr>
<tr><td>Lift and fall</td><td>0~150mm</td><td>frequency</td><td>50Hz</td></tr>
<tr><td rowspan="2">Water bath pot</td><td rowspan="2">Embedded sensors Automatic digital display from room temperature to 99℃</td><td>Type of security</td><td></td><td rowspan="2">Weight of instrument： 22kg</td></tr>
<tr><td>State of work</td><td>Continuous operation</td></tr>
</table>

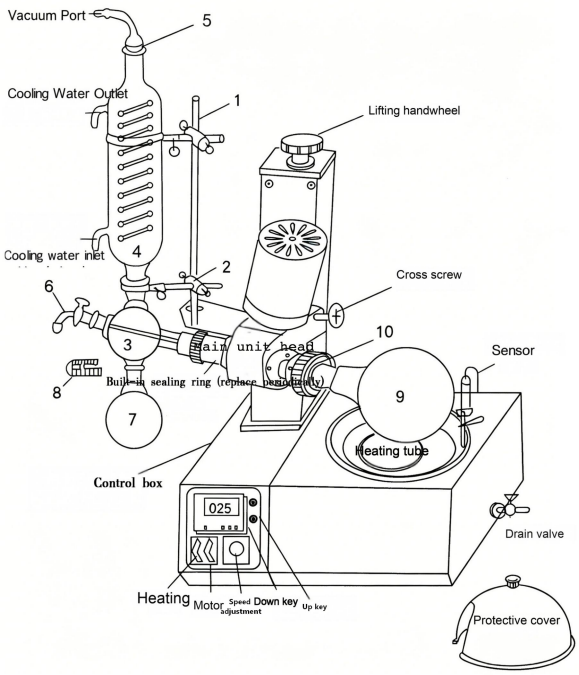
V Maintenance

① Glass: when there is serious dirt, dilute hydrochloric acid can be used to clean.

② Tetrafluoride interface: general situation does not need to be dismantled and washed, if there is serious dirt can be dismantled and washed. The water in the water bath should be replaced and cleaned.

③ Seals: Always check the degree of wear (corrosion) of seals, and replace the worn seals in time to ensure the vacuum of the instrument

VI Introduction to Installation



Preparation for installation：

The user shall accept the parts and glass pieces according to the packing list. Wipe clean, let dry until used.

Note: The left side of the equipment is the control box, the right side is the water bath box; The back of the box is provided with a connecting piece, which must be fixed with a screw.

Steps for installation：

①The bracket rod 1 was fixed to the chromium plate of the host head with screws.

②Movable block 2 was set into the support rod.

③Four-way bottle 3 was inserted into the white tetrafluoride cone hole on the left side of the host head.

④Condensing tube 4 is inserted into the four-way bottle grinding port.

⑤Condensing tube 4 is inserted into the four-way bottle grinding port. The exhaust elbow 5 is inserted into the condensing tube grinding port.

⑥Take large/small trailers into the four-way bottle, condensing tube; It was fixed with a T-screw and one end was inserted into the active block 2 for fixation.

⑦Feed tube 6 is inserted into the four-way bottle grinding mouth.

⑧The collection bottle 7 was set over the four-way bottle grinding mouth and clamped securely with plastic clips 8.

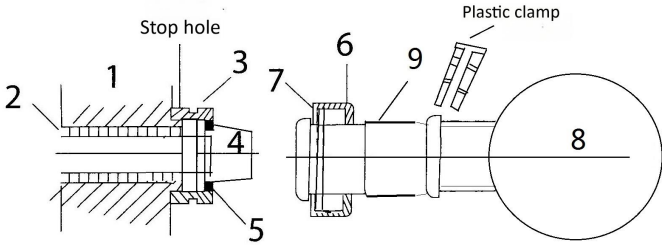
⑨Evaporation bottle 9 lock nut 10 installation see the following illustration.

⑩The grinding surface should be coated with vacuum grease, and the coating should be evenly and gently inserted, with good sealing.

Ⅶ operation

①Power on: five-core plug into the box socket, three-core plug into the ~220/50Hz socket.
②Adjust the height of the host head: first loosen the T-screw behind the control box, hold the head with the left hand, and turn the lifting hand wheel with the right hand to reach the required height, stop rotation, and tighten the T-screw.
③Press the ascending and descending key: the host head automatically rises to the appropriate height, the hand off key stops, and there is a hand wheel on the top for fine adjustment.
④Adjust the Angle of the host head: the transmission evaporation system that combines the cross screw, the host head, the glass piece and the evaporation bottle can tilt arbitrarily in the range of 0~45 degrees along the horizontal direction, and reach the required Angle to tighten the cross screw.
⑤Press the motor switch: the green light is on, the main engine starts to rotate, turn the speed regulating knob, and the main engine is adjustable within the range of 0~150 RPM.
⑥Press the electric switch water bath automatic heating, thermostatic control. Dry burning without water is strictly prohibited.
⑦At the end of the work, turn off the switch, unplug the power plug, so that the instrument power off.

Installation diagram of flask (evaporator) locking device



2 Drive shaft tube 3 Screw 4 Tetrafluoride joint
5 Seal ring 6 Nut cap 7 Ring elastic cushion
8 Evaporation bottle (flask) 9 Glass turning interface24#

234567 It has been installed in the drive body of the main engine head at the time of delivery 1
User installation: (click the left picture)
①Screw nut 6 down.
②Nut 6 nylon gasket 7 into 24# glass turn socket 9.
③The annular elastic pad 7 is stuck into the flange of the 24# glass turning interface 9.
④679 together into the TETRafluorIDE PIPE 4 gently turn nut 6 screw 3 screws, IN the (flask) 8 sets on the 24# glass interface with plastic clip fixed, installation is completed.
⑤When removing the evaporation bottle, you can use the stop hole above screw 3 and remove the reverse nut 6 one by one.

Ⅷ Fault analysis and troubleshooting

phenomenon	Check up	Method of treatment
Power supply (indicator light is not on)	① The power plug is loose ② Check whether the fuse is broken	①Plug the power supply tightly ② Replace the fuse
The main engine does not turn The main engine does not rise or fall	Same method as above	Same method as above
The water bath is not heated	① Check the 10A fuse ② Whether the heating plug is loose	① Replace 10A fuse ② Tighten the heating plug
Vacuum does not go up	①①Whether the seal is worn ② Check the performance of the vacuum pump to see whether the joints are tight (Plug the vacuum pump outlet; Observe vacuum gauge index) ③ Check whether the glassware is damaged and cold explosion phenomenon. ④ Check whether the glassware interface is coated with vacuum grease.	① Replace the seal ② Tighten the joint / Replace the vacuum pump ③ Replace bad glassware ④ Reapply vacuum grease

If the above methods can not be troubleshootted, it is not appropriate to disassemble privately, please contact our technical customer service in time

Ⅸ Storage and transportation

The packaged instrument should be stored in a room with temperature of -10~40℃, relative humidity of no more than 90%, no corrosive gas and dry ventilation. Keep away from moisture and handle with care when transporting.

Ⅹ After sale service

After the equipment is packed, under the condition of abiding by the storage and use specifications, the company is responsible for the free repair of the product failure due to manufacturing quality within 12 months from the date of delivery (glass/easily worn parts are not covered by the warranty), and the company will charge the repair cost for the damage caused by improper use.

If the product has been improved, the physical object shall prevail, and this description will not be changed.

Ⅺ 装箱清单

	name	quantity		name	quantity
1	Control box, lifting column assembly	1	8	T-screw + connecting plate (installed on the control box)	1
2	Host assembly (mounted on control box)	1	9	Plastic clip24#	2
3	Flask interface seal assembly + fluoro rubber washer + nylon washer(mounted on the head)	1set	10	Vertical top exhaust condensing pipe + exhaust elbow (according to model)	1set
	Glass shaft seal assembly (mounted on the head)	1			
	Four-way sealing interface assembly (mounted on the head)	1	11	Feed pipe + stop reflux tetrafluorotablet	1set
	Locking nut (left/right) (mounted on the head)	1set	12	Four-way bottle	1
4	Water bath components	1	13	Collecting bottle24#/500ml	1
5	Stainless steel bracket	1	14	Rotary bottle (flask) 24# (Eggplant shape) 250ml	1
6	Movable block 1+ T-screw *2	2set	15	Glass adapter 24# to 24#	1
7	Large ring bracket 1+ T-screw 1	1set	16	Warranty card/Certificate of qualification	1
	Small ring bracket 1+ T-screw 1	1set	17	Instruction manual (with Phillips screwdriver *1)	1

JTE-6000 **Intelligent digital LED temperature controller Instruction manual**

Before using this product, please read the instructions carefully for correct use, and keep it properly for reference at any time.

Operational attention

Do not touch the internal devices when powered on to prevent electric shock; The controller can be cleaned after power failure.

Please use a soft cloth or cotton paper to remove stains from the monitor.

Monitor is easy to scratch, do not use hard objects to wipe or touch.

Do not use hard objects such as a screwdriver or writing pen to operate panel keys. Otherwise, keys may be damaged or scratched.

1. Panel layout instructions

JTE6000 Panel drawing

1.PV display

Displays the measured temperature or various prompts based on controller status.

2.SV display

Display set temperature or display timing time according to controller status; Various parameters.

3.SET Function key

Set value modification; Parameter call, parameter modification confirmation.

4. Shift key

Used to set values, control parameter shifts, and view running times.

5. ≫Decrease key

Used to set values, modify control parameters, or enter a self-tuning state.

6. ≪Multiply key

Used to set values, modify control parameters, or enter a self-tuning state.

Operation

2.1The order of each function

The controller is powered on：

After the controller is powered on, SY is displayed in the upper row, and the index number is displayed in the lower row, indicating the input type. After another 2 seconds, the upper row shows the upper limit of the range, and the lower row shows the lower limit of the range, indicating the measurement range. After another 2 seconds, the measured value is displayed in the upper row, the set value is displayed in the lower row, and the standard display mode is entered.

Setting of temperature：

Press the SET key to display SP in the upper row. Press ≫or≪Key to display the desired value in the lower row. Press the function key to display ST (unit: minute) in the upper bar. Press≫ or≪ Key to display the desired value in the lower bar. Then press the function key to return the controller to standard mode.

2.2 Detailed description of each function

hPV display：

f the upper window displays the upper half of "□□□□" he sensor is open or the input signal exceeds the upper limit of the measurement. If the upper window displays the lower half of" □□□□", he sensor is short circuit or the input signal is lower than the lower limit of the range. When the input signal of the controller is not within the range, the buzzer will sound and press any key to silence.

h time query:

When the controller works in the standard mode, as long as the shift key is pressed, the upper row will display the timing time, the lower row will display the controller setting time, and then press the 5 key, the controller will return to the standard mode.

H Timing function：

When ST is set to 0, the controller cancelates the timing function, and the controller runs all the time. When ST is not set to 0, the controller has timing function. When the running time of the controller reaches, the lower row displays END, the buzzer sounds, and the controller stops working. Press any key to silence the sound, and press the 5 key and 6 key at the same time for 4 seconds to restart. When the timing function is started, the RUN indicator will flash. If the timing function is not started or the timing has not been started, the RUN indicator will be long.

3.3Self-tuning function of the controller (set the setting time to 0, cancel the timing, after self-tuning, set the timing time again)

If the temperature control effect is not ideal, please start the self-tuning function, press the 6 key for 4 seconds, then the RUN indicator will flicker, and the controller will start self-tuning. After the self-tuning automatically ends, the RUN indicator will turn on. At this point, the control effect will be greatly improved.

In the process of self-tuning, press the 6 key for 4 seconds and the running indicator light will turn on long, the self-tuning will stop, and the controller will control according to the original PID parameters.

Press the SET key for more than 4 seconds to display LK, adjust LCK to 18, then press the SET key to display the prompt of the control parameters (see the list of control parameters), press≪ or≪key, so that the lower row shows the required value. Press and hold SET to return to standard mode. (No key press 1 minute after automatically return to standard mode)

The functional parameters are shown in the following table：

prompt	name	Set range	Instructions	Initial value
Pb	Zero adjustment (intercept)	-100～999 -100.0～999.9	When the zero error of the controller is large and the full error is small, adjust the value. Generally, Pt100 rarely adjusts the value.	0
PK	Full adjustment (Slope)	-1000～2000	When the zero error of the controller is small and the full error is large, the value is adjusted. PK=4000×(mercury thermometer reading value - current temperature measurement value)/ current temperature measurement value, generally Pt100 first adjust the value.	0
rH	Upper range setting	0～400℃ 0.0～400.0	By adjusting rH, the measuring range of the instrument can be 0～rH(℃).	As per user request
AL	Alarm setting	0～full-scale 0.0～full-scale	When the temperature exceeds the SP+AL value, the alarm light is on and the alarm is output.	6
P	Proportional band	0～full-scale 0.0～full-scale	The larger P is, the smaller the proportional action will be, and the lower the system gain will be. P=0 is bit-based control, and the insensitive zone is 0.4.	15
I	Integration time (Rescheduling)	10～3600s	The greater the I, the weaker the integral action.	300
d	Differential time (Preset time)	0～3600s	Differential action time constant, the larger d, the stronger the differential action, and can overcome overshoot.	100
Ar	Overshoot suppression	0～200%	The smaller the XF value, the stronger the controller's ability to suppress temperature overshoot	100

T	Heating period	1～100s	The relay outputs the 20s, the SSR and the thyristor switch the 2s, which only act on the heating side	3
dp	Decimal point Settings	0；1	DP=0 Display resolution is 1℃; DP=1 Display resolution is 0.1℃,	1
CE	Time unit	0-1	0 is the timing unit of minutes; 1 is measured in hours.	0
Ct	Refrigeration control delay	0～3600s	If the delay time is required for starting the compressor twice, Ct=0 disables the compressor function.	0
CH	Refrigeration control upper deviation setting	0～full-scale 0.0～full-scale	When the temperature exceeds the CH value and meets the compressor refrigeration control delay, the refrigeration light is on, the refrigeration contact is connected, and the compressor starts. That is, SP+CH > Set value	0.5
CL	Deviation setting under refrigeration control	0～full-scale 0.0～full-scale	When the compressor is turned on, when the measured temperature is less than or equal to the set temperature +CH-CL value, the cooling contact is disconnected and the compressor is turned off.	0.3
drt	Open door detection	0-50.0	If the temperature drops within 10s, the drt is regarded as the door opening detection. If the value is set to 0, this function is not available.	1

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