

User Manual



Please read operating manual before installation and operation.

Drawell International Technology Limited
Chongqing Drawell Instrument Co., Ltd.
Shanghai Drawell Scientific Instrument Co.,Ltd.

Chongqing Center : Floor 22, Building No.11, Shiyu Road No.1,Yuzhong District,Chongqing,China.

Homepage : www.drawell.com.cn

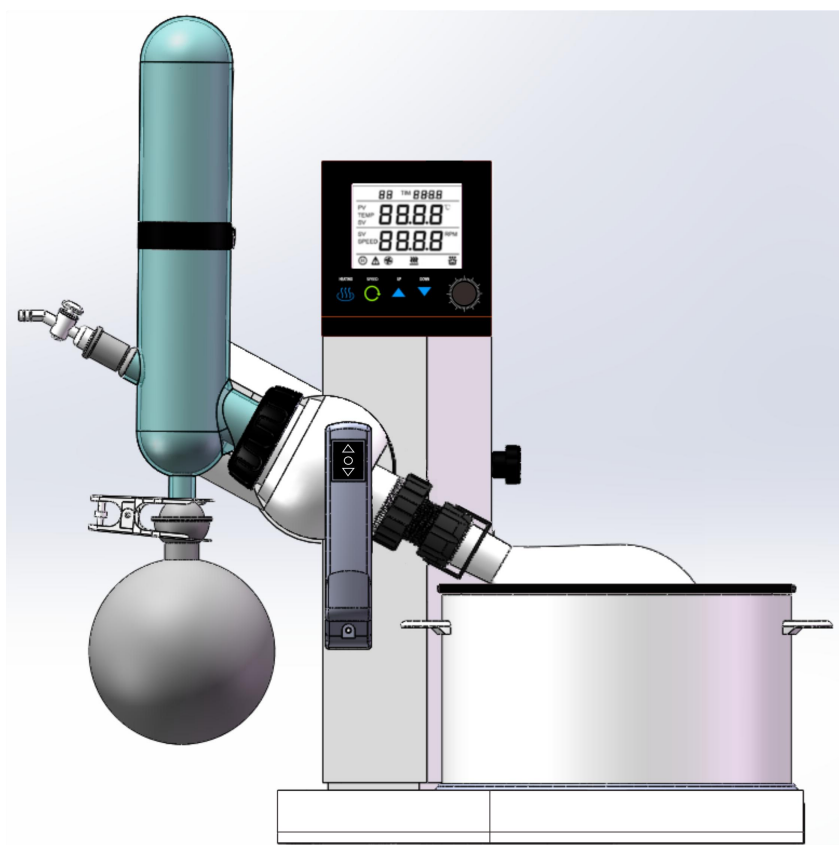
Tel : 0086-023-63268643

Email : sales05@drawell.com.cn

DW-ORE-2000A Rotary evaporator

(Control type ☐ Normal type ☒)

Instruction manual



1.Use introduction:

Rotary evaporators are designed for standard distillation, crystallization, product concentration, powder drying, and separation of one or more solvents. They can also be used for pretreatment of samples in gas, liquid, and mass spectrometry. It is an ideal basic instrument for chemical industry, medical industry, universities and research laboratories for the

manufacture and analysis of experiments, such as concentration, drying and recycling.

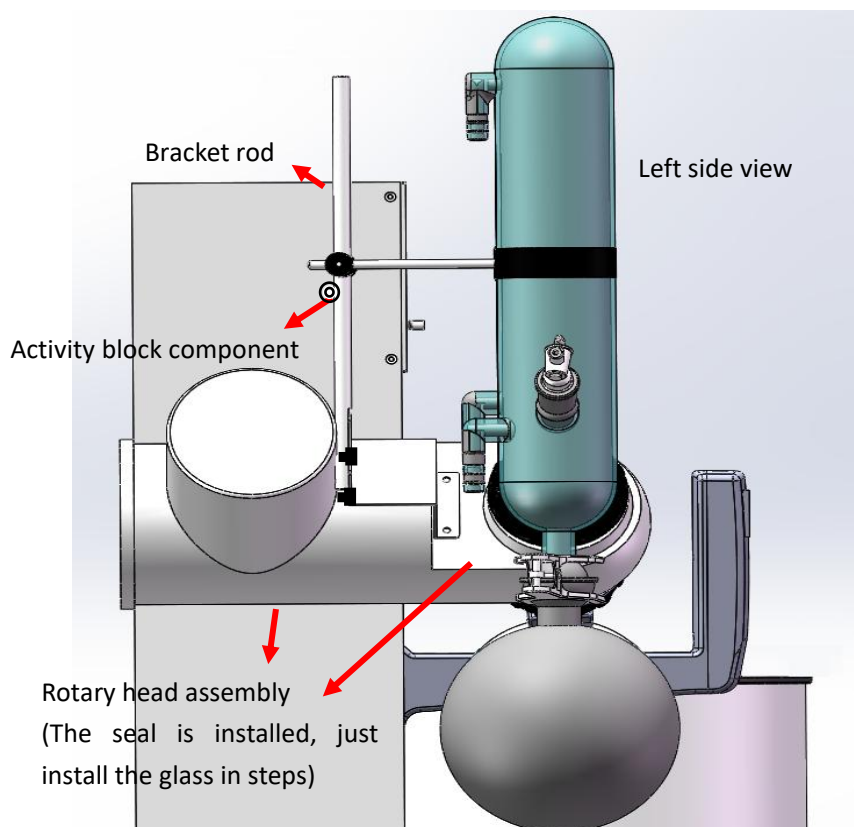
2. Structural features:

- 1). the host components: the use of anti-embroidery aluminum alloy, special engineering plastics, high temperature resistant glass. Compact, beautiful and durable.
- 2) the main drive: the use of precision geared motor, electronic speed control, gear, rack-type transmission. Increase the aperture of the drive shaft tube, so the evaporation tube is 1.5 times larger than the general instrument to improve the evaporation efficiency.
- 3). lifting structure: the use of electrical contact mechanical retracting principle, slab-type button micro-motor drive, automatic lifting, fast and convenient.
- 4). Condensing tube: The inside is equipped with a steam guiding tube with an inclined opening. The leading edge of the guiding tube is located directly below the condensing coil, and the solvent vapor is sent to the center of the condensing tube, which greatly improves the condensation efficiency and avoids the condensate. Backflow to the evaporation bottle phenomenon;
- 5). heating tank: Teflon aluminum alloy composite pot Ø26 X 15cm. The fully enclosed electric heater is mounted on the anti-embroidal aluminum alloy base, which is stable and reliable and can be moved according to the needs of evaporation.
- 6). designed as integrated large-screen liquid crystal display parameters: can easily detect heating temperature, speed, working time and real-time vacuum.
- 7). Unmanned mode safety operation function: The working time of the equipment can be set according to the amount of experimental solvent. After the experiment is over, the equipment will automatically rise and stop working and the warning function will be carried out under the condition of unsupervised.
- 8). Temperature protection monitoring function: When the temperature is abnormal and the sensor is faulty, the host will automatically raise and stop the work, and the warning will be given; the sample will be damaged by heat.
- 9). Vacuum system: The built-in vacuum control system can be selected to effectively monitor the vacuum degree. The required vacuum degree can be set according to the reagent; the stability of the experiment can be greatly improved;

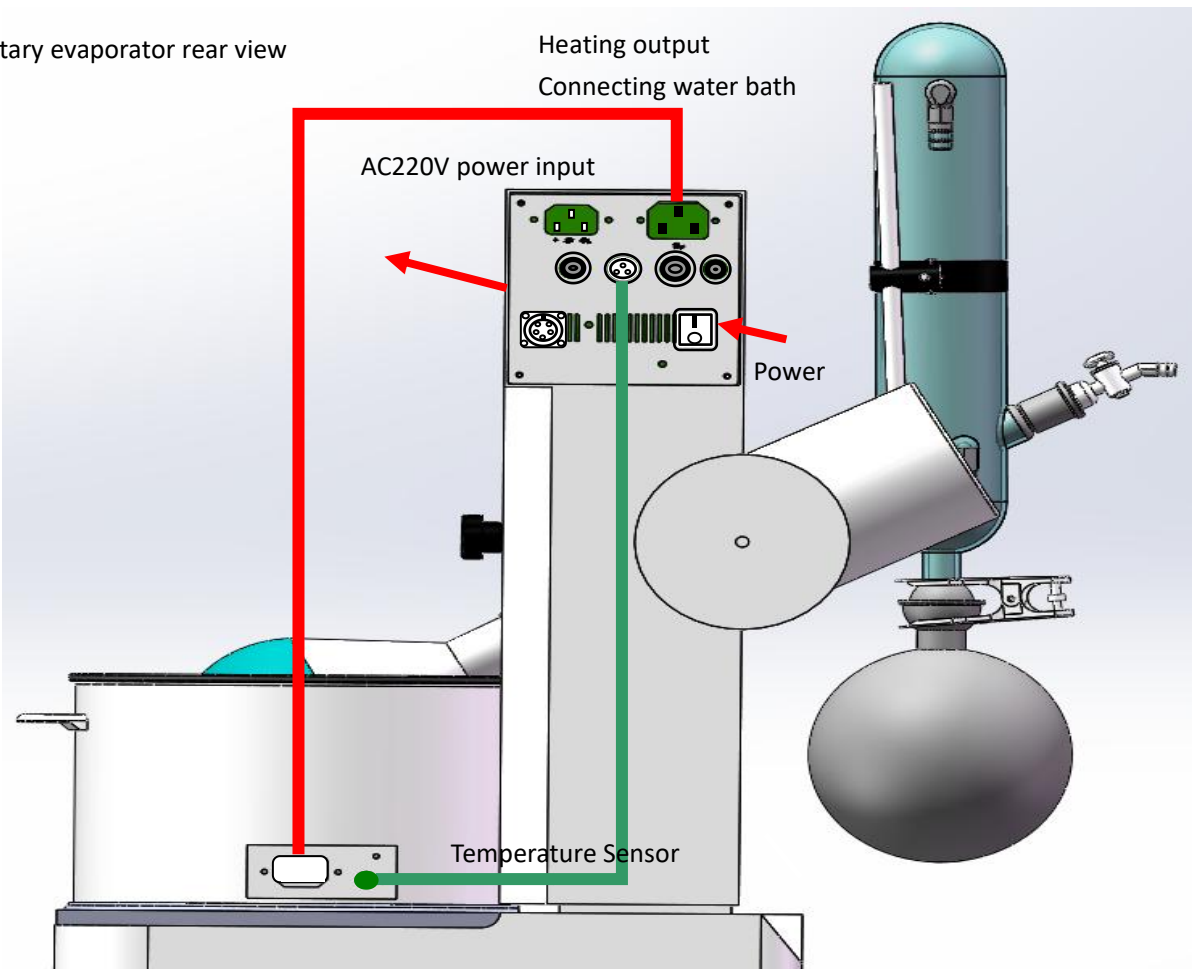
3、 Main technical data:

Model	DW-ORE-2000A
Speed	LCD color screen display 0~310rpm/min
Capacity of	Max.25ml/min (H ₂ O)

evaporation	
Temperature range	Water bath: room temperature-99°C±0.5°C, Automatic temperature control Room temperature -210 °C, temperature control accuracy: ± 2 ° C
Bath pot material	Disposable molding Teflon composite pot The heating pot with safety handle, shell heat insulation to prevent burns, moderate volume, rapid heating.
Size of bath	φ23×13cm
Test material bottle	Intermittent left and right rotation, intermittent time can be adjusted 0 ~ 60s, can be used in the drying of powder samples.
Lift and drop stroke	Touch type + handle type double automatic balance lifting (lifting stroke 150mm) Descending end point has a fixed 60mm safety distance to prevent collision.
Temperature control	Microcomputer PID controller, digital display
Temperature setting	Knob type encoder, rotary type input setting, large LCD display, convenient and quick
Safety performance	Timing function (0-999min) : when the predetermined time is reached, the device will automatically stop working and return to standby state, over-temperature warning protection.
Heating pot	The power of fully enclosed heater is 1.5KW
Test bottle capacity range	25~2000ml
Sealing element	Selection of imported PTFE and special synthetic materials, through special process technology processing mold synthesis, enhance the sealing, corrosion resistance and wear resistance.
Condensing tube	Vertical, three-layer ball mill serpentine condensate tube with large condensate area, drop point and anti-backflow design. (Effectively improve work efficiency)
Area of condensation	0.18 m²
Operating ambient temperature	5°C~40°C
configuration	29#Integrated grinding shaft *1 Test material bottle: 29#Nightshade bottle 1L*1 Recycling bottle: S35 ball mill collection bottle 1L*1
Input power supply	AC220V/50HZ
Size and weight	Dimensions of package71×64.5×51cm Dimensions of instrument66×42×83cm Gross weight: 30kg



Rotary evaporator rear view

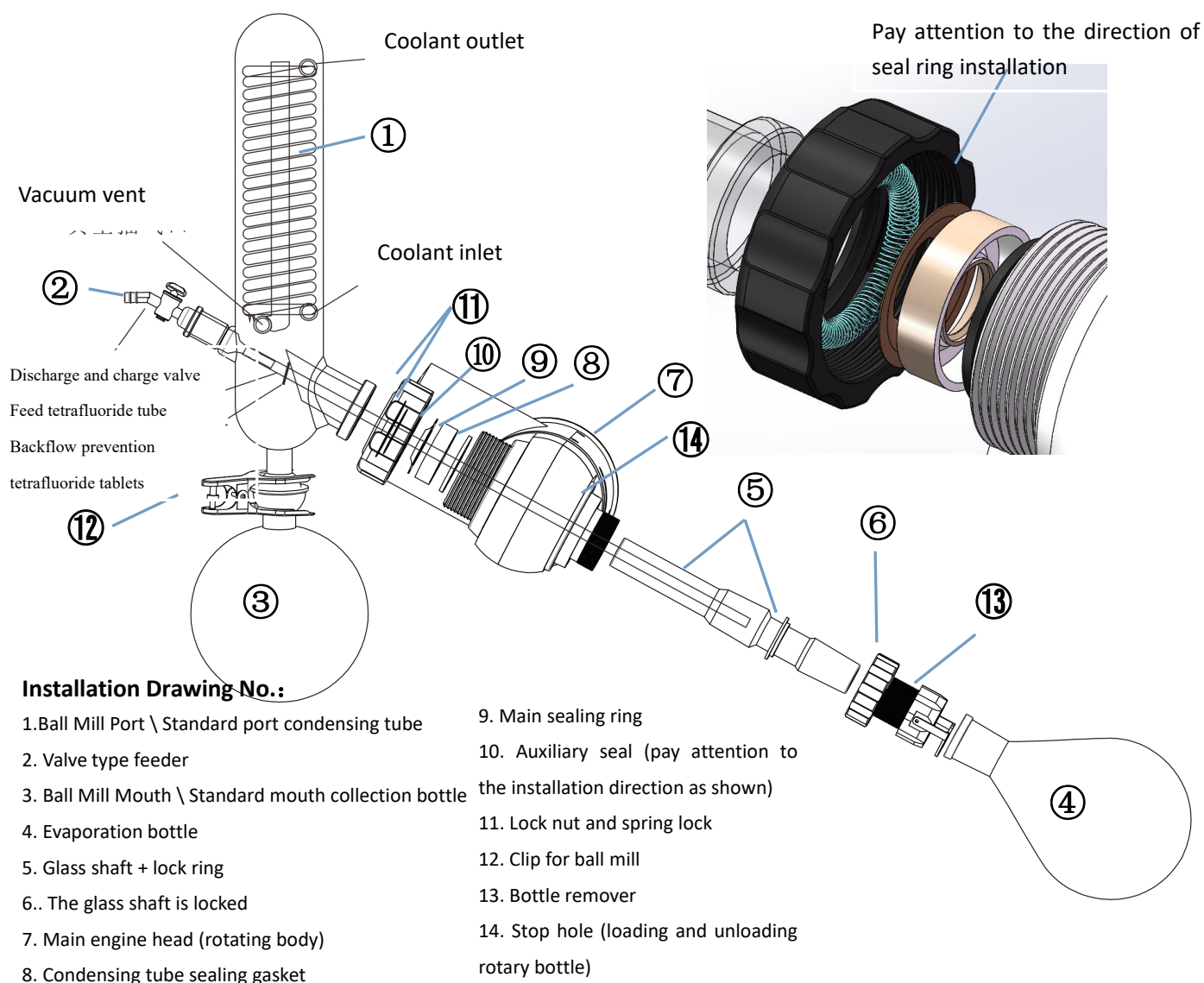


4. Precautions for use:

1. Users should read this manual first.
2. For the precious solution, the simulation process should be done first. When it is determined that the equipment can meet the experimental requirements, it will be transferred to normal use.
3. The water temperature of the sink is automatically displayed by the temperature digital display. The precise water temperature should be measured directly by a mercury thermometer.
4. Fuse replacement should be done before the power supply is turned off before the cover can be replaced.
5. When the sink pan is heated again, do not touch it with your hands to avoid burns.
6. Can not be used in flammable, explosive, anesthetic gas environment.
7. This product does not require specific requirements for disinfection under normal circumstances.

5. Installation Notes:

Preparation: The user clears the parts according to the packing list, wipes them, washes them, and dries them. The tank on the right side of the left main body. (Please refer to the legend for the product comparison chart)



Note: Type A/B/C/D condensing tubes are different, and the installation method is the same

Step 1:

A、The ⑤ glass shaft + locking card trap is set into the ⑦ head shaft hole, and the small screwdriver is used to go in and out. The ⑥ glass shaft is locked and tightened ⑤ and the screwdriver is pulled out.

B、⑧⑨⑩ install it into the machine head in the order of direction. Above the ⑤ glass shaft, pay attention to the inner opening of the

main seal and the surface of the auxiliary seal should be coated with vacuum grease and put into the condensing tube①. Screw the latching nut ⑪on the right side of the machine head to fix the condensing tube (note that the latching nut is tightened clockwise, and the spring inside will automatically shrink and fix the condensing tube).

C、 Before the condensing tube is formally connected, the vacuum fat is coated on the surface of the grinding mouth for a circle to improve the tightness.

D、 When operating, carefully insert gently tighten, do not force too much.

Step 2:

E、 Rotating bottle installation: the bottle withdrawal device⑬ is installed on ⑥; Then the ④ evaporation bottle is set into the ⑤ gently tighten the bottle withdrawal device to fix the ④ evaporation bottle (before the connection, the vacuum grease is coated on the surface of the grinding mouth for a circle to improve the tightness).

Step 3:

F、 Installation of the discharge/feeding valve: the tetrafluoride feeding tube② is inserted into the discharge/feeding valve. Before the formal insertion, the grinding mouth is coated with vacuum grease and is inserted into the condensing pipe interface to adjust the position of the anti-backflow tetrafluoride (as shown in the above picture).

G、 Installation of collecting bottle: before the formal insertion, apply vacuum grease to the Yin and Yang grinding mouth for a circle to improve the sealing; The collection bottle is ③ set in the condensing tube of the ball mill mouth①, clamped by the clip of the ball mill mouth, and fixed in the middle of the handle by gently twisting the clip of the ball mill mouth.

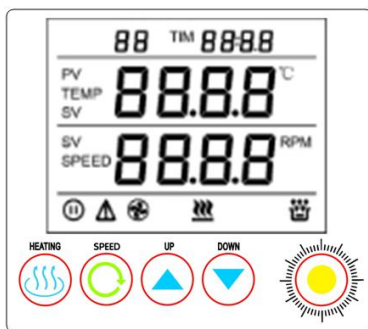
Step 4:

J、 The connection between the rotary evaporator and the low temperature cooling device is shown above

K、 Rotary evaporator and vacuum pump connection see above, can choose to buy our products SHZ-III circulating water vacuum pump and XDGM-20 series corrosion resistant diaphragm vacuum pump.

6、 Operation step:

1. Plug the power cord into the main body control box and plug it into the mains 220V/50Hz.
2. Press the power switch light (the lower side of the power cable); the LCD screen of the control panel is on.
3. Operation of the control panel:



 heating

 Motor



Temperature control on



Heating or motor operation

Button definition:

“Knob”: press  Key to enter settings and modify data; "heat button": press  Key, start/stop heating; "motor":

press  Key, start/stop rotary motor;

"rise": press  Key, rise motor running; "down": press  key, the falling motor runs.

1). The controller is powered on, the temperature display window displays the upper temperature limit, and the speed display window displays the lower temperature limit. After about 3 seconds, it enters the running state.

2). Press the knob under the standard interface to set the temperature, rotation speed and running time in sequence (the characters flash, you can rotate the rotation to set the required parameters).

3). In the temperature setting state, if there is no operation within 1 minute, the controller will automatically return to the normal display state.

- 4). When there is temperature and speed alarm, the identifier lights up, the fault code is displayed in the upper left corner, the buzzer sounds, and the buzzer can be silenced by pressing any key.
- 5). If the controller temperature display shows “oooo”, it means the temperature sensor or the controller itself is faulty. Please check the temperature sensor and its wiring carefully.
- 6). The stop status speed box displays “End”, the temperature control running motor stop speed box displays “OFF”, and the motor speed displays when the motor is running.
1. The handle sill-type button (for the convenience of the user's operation, the handle-type lifting style is reserved), the user can operate the handle button, the upper part of the upper part presses the upper part, and vice versa, or the control panel: press the $\triangle/\nabla$ key to raise the main unit. Press the ∇ key to lower the main unit to the appropriate height, and the hand will stop when it is out of position.
2. After installing the glassware, fill the water tank, insert the heating wire, set the temperature number, and automatically control the heating according to the heating switch. (not allowed to dry)
3. Adjust the host angle. First loosen the knob on the right side of the column, turn the main head to reach the appropriate angle, and tighten it.
4. After completing the test run, turn off the power and unplug the power cord.

7.maintenance:

1. Regularly clean according to the production needs, replace the sealing ring (see the installation instructions for the operation method)
2. Glassware: When severe dirt is used, it can be cleaned with dilute hydrochloric acid.
- 3, the main road tube: regular cleaning plus vacuum grease.
- 4, the water in the sink pot should be frequently exchanged and cleaned.

8.System self-tuning

System self-tuning can be performed when the temperature control effect is not ideal. During the self-tuning process, the temperature will have a large overshoot. Please fully consider this factor before the user performs the system self-tuning.

Press and hold the knob to enter the internal parameter 1, set the AT to 1 to enter the auto-tuning state, the running indicator flashes, and the positive end stops flashing.

If there is an over-temperature over-temperature alarm during the system self-tuning process, the alarm identifier will not light and the buzzer will not beep.

9.System internal parameter setting

In the non-setting state, long press the “knob” button for 3 seconds, the temperature measurement display window displays the password prompt “Lk”, the temperature setting display window displays the password value, and the knob is used to modify the required password value. Click the “knob” button. If the password value is incorrect, the controller will automatically return to the normal display state. If the password value is correct, it will enter the internal parameter setting state, and then click the “Set” button to modify each parameter in turn. Press and hold the “Set” button for 3 seconds to exit this state and the parameter values are automatically saved.

10.Motor forward and reverse setting

When the factory is set to a single cycle forward rotation, enter the parameter setting Lk-0, set the forward and reverse time is not 0 to open the forward and reverse function. The parameter dIF sets the starting direction. When the forward/reverse function is turned off, dIF sets the motor running direction. (Example: cycle turn; forward 60 seconds - stop 3 seconds - reverse 60 seconds, set the parameter cct = 60; nct = 60; sot = 3)

10、Motor forward and reverse setting

When the factory is set to a single cycle forward rotation, enter the parameter setting Lk-0, set the forward and reverse time is not 0 to open the forward and reverse function. The parameter dIF sets the starting direction. When the forward/reverse function is turned off, dIF sets the motor running direction. (Example: cycle turn; forward 60 seconds - stop 3 seconds - reverse 60 seconds, set the parameter cct = 60; nct = 60; sot = 3)

Internal parameter table -0

Parameter indication	parameter name	Parameter function description	(range) factory value
Lk	password	The parameter values can be viewed	0
cct	Forward time	Forward rotation time, set to 0 to cancel the forward and reverse function	(0-9999)s 0
nct	Reverse time	Forward rotation time, set to 0 to cancel the forward and reverse function	(0-9999)s 0
sot	Stop time	Stop time. Positive and negative switching stop time.	(0-9999)s 0
dIF	Starting	The motor starts in the starting	(0-1)1

11.Vacuum controller setting(1mbar = 100 Pa = 1 hPa = 0.1 kPa=0.0001Mpa)

The factory setting is: PL=-98KPa(-0.098MPa); PH=-90KPa(-0.09MPa); the upper/lower limit of vacuum needs to be set.

When the standard interface is rotated () Knob enters the vacuum interface, press  Rotate when the flashing character "PL" is rotated  Knob sets the upper limit; press again  Rotate when the flashing character "PH" is rotated  Set the lower limit of the knob and press to exit the setting. (Note: Internal parameter unit: KPa; 1 kPa = 0.001 MPa (MPa))

12.Fault analysis and elimination :

phenomenon	Inspection (cause)	Approach
No power (the indicator is off)	1、 1, the power plug is loose 2、 Check if the fuse is open	1、 1. Plug in the power plug 2、 Replace the fuse
Host does not turn	Ibid.	Ibid.
The host will not lift	1, the same method check 2. Check if the hanging wire in the lower part of the base of the main body is too loose.	1、 1, the same method as above 2、 Tighten the screws by hand
The sink is not heated	1. Check the 15A fuse 2. Is the heating plug loose?	1, replace the 15A fuse 2, plug the heating plug
Not going on the vacuum	1. Is the seal worn? 2. Check the performance of the vacuum pump, whether the joints are tight (block the vacuum pump outlet, observe the indication of the vacuum gauge) 3. Check if the glassware is damaged or cold. 4.Check if the glassware interface is coated with vacuum grease.	1, replace the seal 2, tighten the joint or change the vacuum pump 3. Replace damaged equipment 4, recoating the vacuum grease

13.Storage and transportation :

The packaged instrument should be stored at a temperature of -10 ~ 40 °C, relative humidity of less than 90%, no corrosive gas and well ventilated indoors, moisture-proof during transportation, be careful.

14.After sales service:

After the equipment has been packaged, it will not work properly within one and a half years from the date of manufacture or one year from the date of purchase of the equipment, subject to the conditions of storage and use. The company will repair or replace the user for free.

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

15、List of packing:

No.	Name	Quantity
1	Main body (including: control box, main head, column, base)	1
2	Sink box (including: Teflon compound pot, fully enclosed electric heater, housing, base)	1
3	Power supply cable	1
4	Condensing tube Condensing pipe with ball grinding	1
5	Collecting bottle S35#Ball grinding edge 1000ml	1
6	Evaporating flask 29#Eggplant shaped flask 1000ml	1
7	Integrated glass shaft + locking ring	1
8	Pivot lock + lock/bottle extractor	1
9	Ball grinding clamp	1
10	Condensing tube lock + lock spring (installed on the head)	1
11	Main seal ring + secondary seal plate + nylon gasket (installed on the machine head)	1
12	Support lever	1
13	Active block	1
14	Condensing tube bracket	1
15	Manual, warranty card, certificate of qualification	1
16	One Phillips screwdriver and one 15A and one 10A fuse	1

Drawell International Technology Limited
Shanghai Drawell Scientific Instrument Co.,Ltd.
Chongqing Drawell Instrument Co.,Ltd.



Add: Floor 22, Building No.11, Shiyou Road No.1,Yuzhong District,Chongqing,China.

Tel: 0086-023-63268643

Web : www.drawell.com.cn

Email : sales05@drawell.com.cn