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Роторный испаритель
RE200-Pro

руководство по эксплуатации

Please carefully read the Instructions and use the product safely under the direction of the Instructions. If any information of shapes and performance indicators changes,we will not notify this otherwise.

CE FC

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Contents

Introduction

Welcome to use the Operating Instructions of Rotary Evaporator. Users are advised to read carefully this manual before using this instrument, operate the instrument according to the instructions contained herein and be aware of all precautions

How to acquire help

If you encounter any problems or need help while installing or using this instrument, please immediately contact the After-sales Service Department of the manufacturer / supplier.

Please prepare the following information and materials:

- Product serial number (on the instrument nameplate)
- Warranty card
- Description of problem phenomenon
- The method and operating steps you have undertaken to resolve the problem
- Your contact details including telephone number, fax number and email address

Warranty

According to the manufacturer's warranty clause, the warranty period of the product is 24 months (since the purchase date) provided that it is used by the normal operation method under the normal service conditions specified in the Manual. This

warranty does not cover any performance degradation of or damage to the instrument due to incorrect installation or operation, unauthorized disassembly or repair or any other violations of the operating instructions contained herein. If any related problem described in the terms of warranty occurs, please contact the manufacturer / supplier.

1.Safety notes

- Please carefully read the Manual before operating the product, and observe the specifications on safe operation.
- Please properly keep the operating instructions for easy reference in case of need.
- Please ensure only suitably trained personnel can operate this instrument.
- Please comply with the safety rules, personal safety and accident prevention norms, especially when creating vacuum!
- According to the type of medium handled, please wear suitable protective. devices when operating the instrument; otherwise, the following dangers may occur:

- Splatter of liquids
- Fly-out of parts
- Contamination of human body, hair or clothes by splattered substances

- Warning! Inhale of contact with toxic liquids, gases, spatters, vapor, dust, biological or microbiological medium might cause damage to the operator.
- Place the instrument on a stable, clean, antiskid, dry and fireproof surface.
- Make sure there is sufficient space above the instrument and the glass assembly might exceed the height of the instrument.
- Before use, please carefully examine the instrument and accessories especially the glass assembly for any damage. Please do not use any damaged parts.
- Ensure the glass assembly is free of stress! Each of the following reasons might result in damage to the glass assembly:
  - Stress due to incorrect installation
  - Effect of external mechanical force
  - Sharp change to the ambient temperature
- Ensure the instrument will not move due to vibration when turning on the instrument.

- Note the danger caused by the following circumstances:

  - Flammable substance

  - Flammable low-boiling-point medium

  - Breakage of glass component

- Warning! Never distill or heat any substance whose ignition point is lower than the temperature set for the safety of the heating bath.
- The heating bath's safety temperature shall at least 25□ lower than the ignition point of the medium being handled.
- Please don't operate or use this instrument in an explosive environment or underwater or use this instrument to handle any dangerous substance.
- This instrument is only suitable for the medium that does not react with the energy generated in the handling process in a way that might cause danger. Meanwhile, the substance being handled may not produce danger due to energy generated in any other manner such as illumination reaction.
- The instrument must be monitored all the time when operating the instrument.
- Please don't operate this instrument under overpressure.
- To ensure the effective condensation of the motor system, please do not block the vent of the motor system.

- Only use of the accessories in the list of “optional accessories” can guarantee the operational safety.
- Please refer to the operating instructions for heating kettle.
- Please refer to the operating instructions for optional accessories.
- Please use this instrument in a closed fume hood or other suitable protective device.
- Select the distilling device according to the amount to be distilled and the distillation type. The condenser must work normally. Please monitor the flow rate of the coolant at the outlet of the cooler.
- To prevent pressure buildup, the glass assembly shall be kept vented when operating under normal pressure, such as keeping the condenser open.
- Please note that gases, vapor or other substances can pose danger through overflow from the upper opening of the condensation tube. To minimize or avoid such danger, please take suitable measures, such as connecting the cooling tube and scrubbing bottle or other effective extraction devices downwards.
- The glass evaporating flask may not be heated on one side. The rotating evaporating flask must rotate at the heating phase.

- The glass assembly' design pressure tolerance is 10mbar. The venting valve (see the part of "Testing") must be opened before heating and once again after cooling. When performing vacuum distillation, the steam must be condensed before release or released safely.

  If the residue after distillation is likely to be decomposed when exposed to oxygen, please add only gas for stress release into it.
- Warning! Please be careful be avoid the formation of peroxides, as the decomposition of peroxides accumulated in the distillation process might result in explosion.

  Please protect any liquid forming peroxides from ray of light, especially ultraviolet irradiation. Please be careful to examine formation of any peroxides before distillation and to remove the peroxides if any. Many organics are easy to form peroxides, such as methoxypyridine, diethyl ether, dioxane, tetrahydrofuran, unsaturated hydrocarbostyril, such as tetrahydronaphthalene, diene, isopropylbenzene, ketone and solutions of the aforesaid substances.
- Warning! The heating bath, heating medium, evaporating flask and glass assembly might become hot in the operation process and remain hot for a while after stop of the operation! Before further operation, please let each part

cool down.

- Note: be careful to avoid boiling delay! When the instrument is not started up and rotated, never heat the evaporating flask! Sudden appearance of foams or gases indicates that the medium inside the evaporating flask begins decomposing. Please immediately shut down the heating bath and lift the evaporating flask above the heating bath, keep the surrounding danger area well ventilated and inform surrounding personnel.
- Note! When the evaporating flask rotates, never operate the instrument. Before the motor is started up, please lower the evaporating flask down to the heating bath, otherwise the boiling heating medium might splatter.
- When operating the instrument, if necessary, please reduce the motor speed to prevent the medium in the heating bath from splattering.
- When operating the instrument, never touch any rotating parts. Due to the instrument or fabrication problems, the instrument might be unbalanced, possibly damaging the glass assembly. When imbalance or abnormal noise occurs, please immediately turn off the instrument or reduce the rotation speed.
- In case of powering on after power failure, the instrument will not automatically

be started up.

- The power supply to the instrument will be disconnected only when the instrument is turned off or the power plug is pulled off.
- The power socket must be easy to operate.
- The actual supply voltage must be consistent with the voltage specified on the instrument's nameplate.
- The power socket must be grounded.
- To prevent possible infiltration of outside liquid, moving parts must be mounted in place.
- Ensure the instrument and its accessories are protected from extrusion and collision.
- Only professional repairman may open the instrument.

2.Scope of application

This instrument is designed for such application environments as schools, labs and factories, in conjunction with the optional accessories recommended by the manufacturer, which may be used for:

- Rapid softening of distilled liquid
- Distillation of solutions or suspensions
- Crystallization, synthesis or cleaning of chemicals
- Drying of powder or particulate substances
- Recovery of solvents

This instrument is intended for use in the following environment:

- Altitude: ≤2,000m ASL;
- Ambient temperature: 0-40□;
- Voltage fluctuation: within the range of -10%~+10% of normal value (the product is designed for indoor socket);

The product is unusable in residential area or under the restrictions specified in Chapter 1.

3.Inspection

3.1 Open-package inspection

If you find any damage on the package, please specify the damage on the

receipt. If you find any internal damage after opening the package, please contact supplier or manufacturer.

	Caution: 1. If you find any visible damage on the product, please don't connect the product to power supply. 2. Loosen transportation lock before Power on.

3.2 Package list

Name	Qty.
Main unit	1
Vertical glass assembly	1
Operating manual	1

Table 1

4.Control and display

4.1 Control

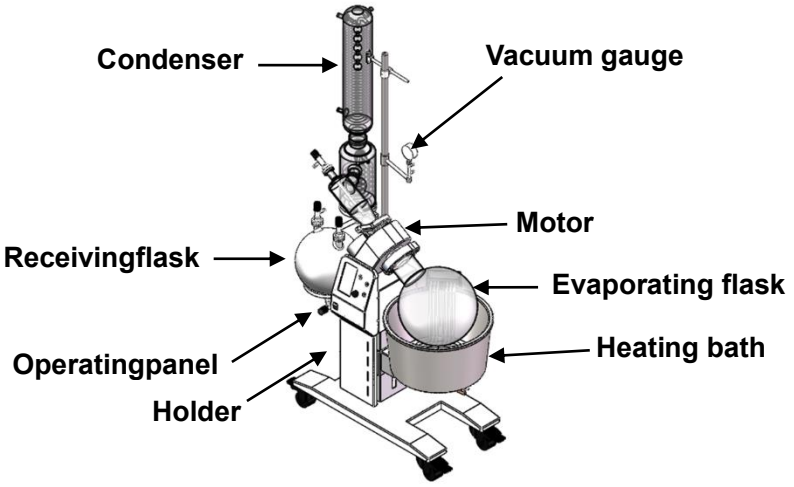

Fig. 1

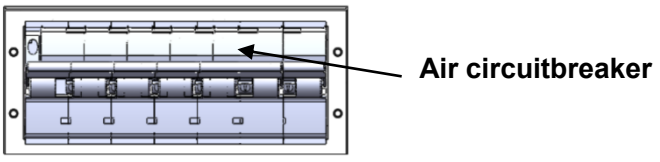

Fig. 2

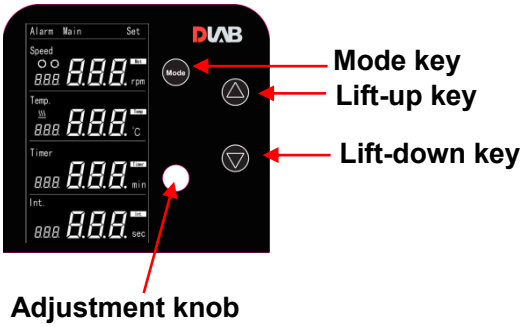

Fig. 3

Icon	Name	Description
	Mode key	Switch between modes, the mode adjustment sequence is speed adjustment → temperature adjustment → timing adjustment → forward and reverse rotation time adjustment.
	Adjustment knob	Press the knob to run, and press it again to stop. While in the adjustment mode, turn the knob clockwise to increase the parameter and turn the knob counterclockwise to decrease the parameter.
	Lift-up key	Press this key to raise the heating kettle.
	Lift-down key	Press this key to lower the heating kettle.

Table 2

4.2Display

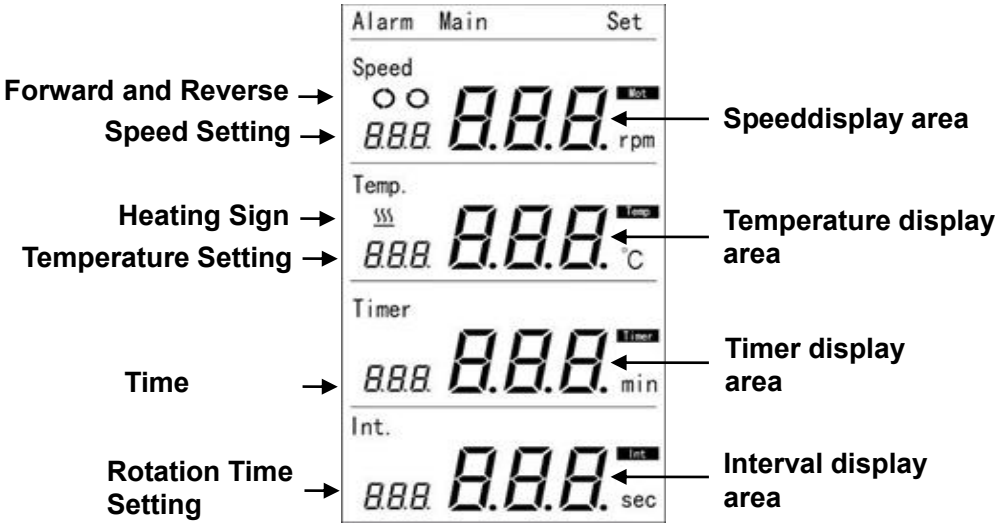

Fig. 1

Name	Description
Speed display area	Realtime rotation speed
Temperature display area	Realtime temperature
Timer display area	Count down time
Interval display area	Count down time before reverse

Table 3

5.Installation and Operation

5.1 Installation

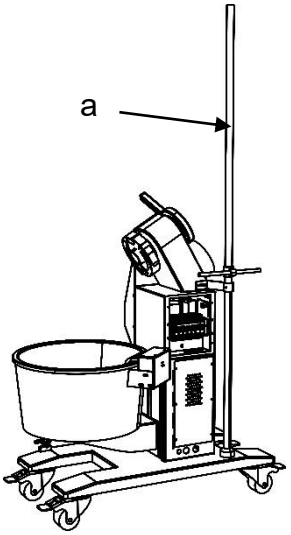

Fig. 5

- Mount the glass mounting stem (a) to the corresponding position and tighten the screws on the fixing metal plate.

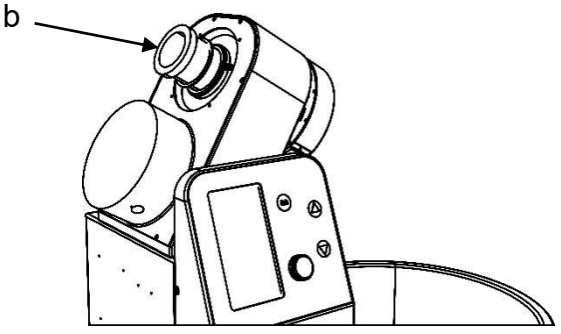

Fig. 6

- Place the glass axle (b) with the PTFE washer into the corresponding position.

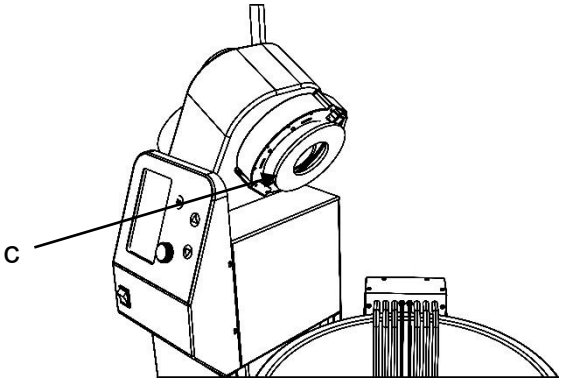

Fig.7

- Insert the sealing gasket (c) into the corresponding position and apply silicon grease lubricant.

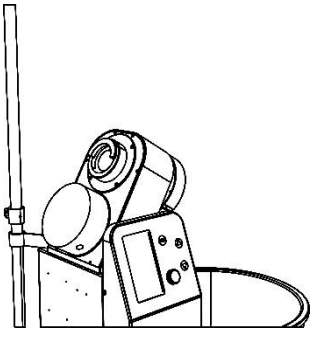

Fig.8

- Place in sealing ring of corresponding size.

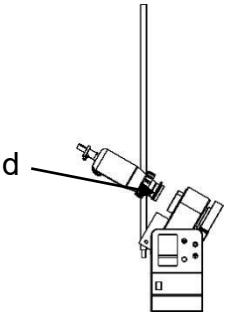

Fig.9

- Mount the adaptor bottle with locknut (d) in conjunction with the glass fastener. (Be sure to tighten it securely)

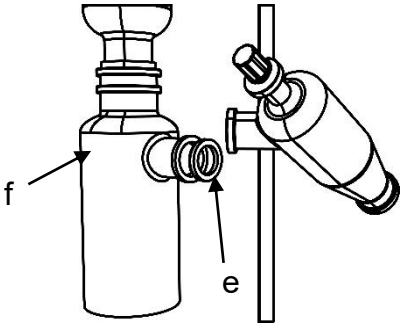

Fig.10

- Add a sealing ring (e) of corresponding size and fix the small condenser (f) to the corresponding interface. (Please adjust the condenser to upright position)

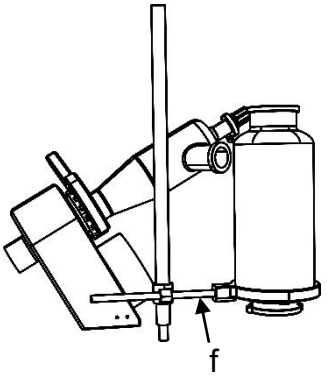

Fig.11

- Properly adjust the position of the small condenser, move the corresponding bracket ring to the corresponding position and tighten the two screws in turn (be sure to have the bracket ring fit into the bottom of the small condenser).

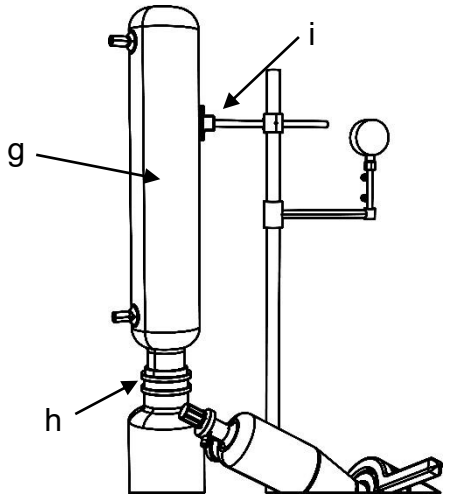

Fig.12

- Mount the sealing ring (h) of corresponding caliber, fix the large condenser (g) to the top of the small condenser, properly adjust the position of the bandage (i) and then tighten the screws.

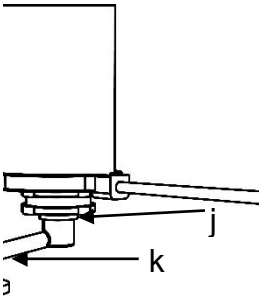

Fig. 13

- Mount the sealing ring (j) of corresponding caliber and fix the valve (k) of the receiving flask to the corresponding position.

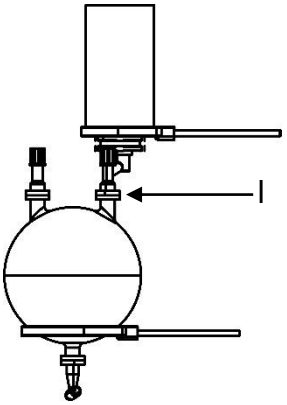

Fig.14

- Mount the sealing ring (l) of corresponding caliber, fix the collecting bottle to the corresponding position and then properly adjust the position of the strut before tightening it securely.

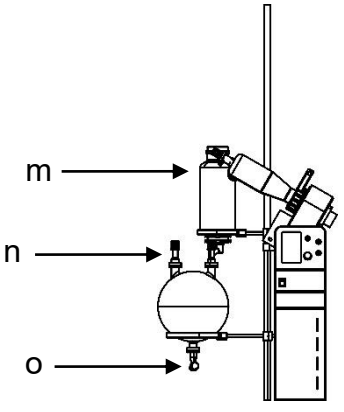

Fig.15

- Mount the sealing ring of corresponding caliber and mount three valve ports (m/n/o) to the corresponding positions.

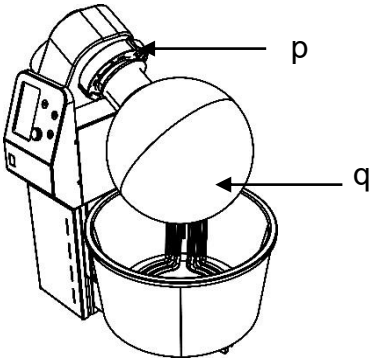

Fig.16

- Mount the sealing ring of corresponding caliber and then fix the evaporating flask (q) to the corresponding position with the clamping mechanism (p) .

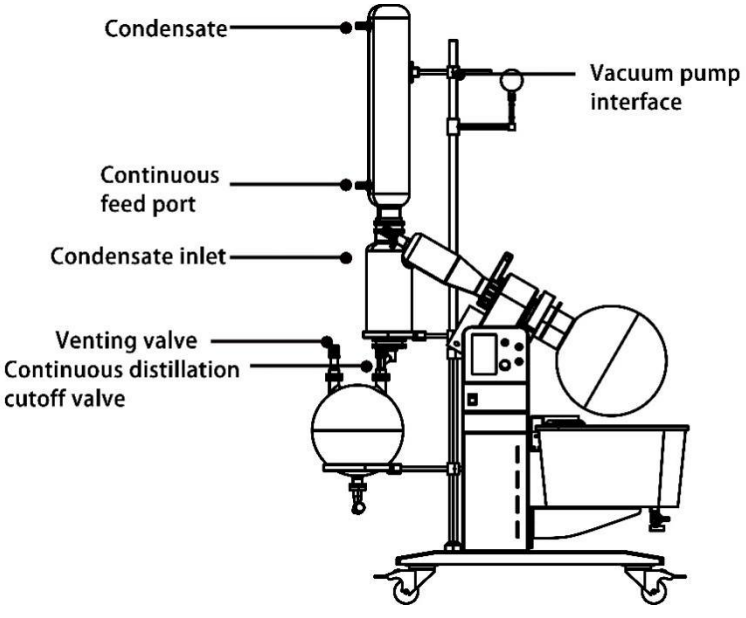

Fig. 17

	Note: To ensure good sealing performance, each glass ground joint may be coated with a layer of sealing grease.

5.2 Operation

When turning on the power switch, the display is lit and the last operating parameters are displayed after the instrument completes self-test.

1) Set the operating parameters

Set the rotation speed

- Briefly press the Mode key. When the speed character is flashing, the current mode is the speed adjustment mode. Turn the knob clockwise to increase the speed and turn the knob counterclockwise to reduce the speed. The speed setting range is 10rpm-150rpm; when the speed is set to 0rpm, the rotation function is deactivated.
- After adjusting the parameter, the parameter will be saved automatically without further operation.
- This instrument supports speed parameter adjustment during operation in the same manner as described above.

- When the speed is set above 100rpm, note that the liquid in the heating kettle might be brought out by the evaporation flask.

Set the temperature

- After adjusting the speed parameter, briefly press the Mode key again. When the Temp character is flashing, the current mode is the temperature adjustment mode, in which turning the knob clockwise increases the temperature and turning the knob counterclockwise decreases the temperature. The temperature setting range is 20□-180□; when the temperature is set at 0□, the heating function is deactivated.
- After adjusting the parameter, the parameter will be saved automatically without further operation;
- This instrument supports temperature parameter adjustment during operation in the same manner as described above;
- When the liquid inside the heating kettle is water, the set temperature may not exceed 90□.

Set the time

- After adjusting the temperature parameter, briefly press the Mode key again. When the Timer character is flashing, the current mode is the timing

adjustment mode, in which turning the knob clockwise increases the set time and turning the knob counterclockwise decreases the set time. The timing setting range is 0min-999min; when the time is set to 0min, the timing function is deactivated.

- After adjusting the parameter, the parameter will be saved automatically without further operation.
- This instrument supports timing parameter adjustment during operation in the same manner as described above.

Set the time interval between forward and reverse rotation

- After adjusting the timing parameter, briefly press the set Mode again. When the Int character is flashing, the current mode is the forward/reverse rotation timing adjustment mode, in which turning the knob clockwise increases the forward/reverse rotation interval and turning the knob counterclockwise decreases the forward/reverse rotation interval. The forward/reverse rotation interval setting range is 0s - 999s; when the forward/reverse rotation interval is set at 0s, the forward/reverse rotation function is deactivated
- After adjusting the parameter, the parameter will be saved automatically without further operation;

- This instrument supports forward/reverse rotation interval adjustment during operation in the same manner as described above.

Heating kettle height adjustment

- Press the  key without release to start raising heating kettle. When the heating kettle rises to the top position, it will not further rise.
- Hold the  key to lower the heating kettle until it reaches the lowest position.
- The height of the heating pot cannot be adjusted during the operation of the machine.

2) Operation

Press the knob to start the operation

- Press the  key or  key to adjust the heating kettle up to a suitable position (the liquid level in the heating kettle should be on the same level as the liquid level in the evaporating flask).
- Start timing after startup. The time display shows the remaining running time. When the remaining time is 0min, the instrument stops running.

Error display

- The instrument will automatically stop when any failure occurs during the operation and the time display window will show the error code and alarm. By

checking the Table 2, the user can identify the cause of failure and deal with it accordingly.

3) End the operation

- The instrument stops when the set time ends.
- The instrument stops when the knob is pressed.
- The instrument stops when any error is displayed.
- After the end of operation, the program will automatically save the set parameters of the current operation. When starting the instrument again, the program will automatically load the set parameters of the last operation.

	Caution: Don’t move or lean against the instrument while the instrument is running. Before running the instrument, ensure the cleanliness inside the heating kettle and be sure to remove any foreign objects from the heating kettle, such as plastic bags. When any strange noise or any other abnormality occurs during the operation, please stop the instrument immediately and contact our service center. It is not possible to move the heating kettle up or down during operation.

6.Fault diagnosis

This instrument is capable of self diagnosis such that the temperature display window will show the error code when the instrument cannot operate due to any failure. The cause of failure can be determined according to the error code.

Phenomenon	Possible Causes	Solutions
Er1	Too high temperature inside the heating kettle.	Contact the service center.
	Sensor disconnected	Check the temperature sensor for proper connection.
Er2	Heating kettle without liquid inside.	Add water or silicone oil into the kettle.
	Sensor disconnected	Check the temperature sensor for proper connection.
Er3	Er1 and Er2 displayed at the same time.	Same as Er1 and Er2
Er4	Heating kettle without liquid inside.	Add water or silicone oil into the kettle.
	Sensor disconnected	Check the temperature sensor for proper connection.
Er5	Er1 and Er4 displayed at the same time.	Same as Er1 and Er4

Er6	Er2 and Er4 displayed at the same time.	Same as Er2 and Er4
Er7	Er1, Er2 and Er4 displayed at the same time.	Same as Er1, Er2 and Er4

Table 4

Note: Error 2 and 4 are of similar phenomenon detected by different mechanisms.

If the above faults can not be cleared, please contact the manufacturer/supplier.

7.Maintenance and cleaning

Operate and maintain the product properly, so that it is in a good working state, which can extend the service life of the product. In routine service, keep the product dry and clean, remove the spilled liquid quickly, clean the outer surface with a non-grinding cleaner, and do not connect the power supply until all surfaces are dry. If liquid or moist solid enters the product, please disconnect the power supply quickly and leave off, and contact the manufacturer / supplier for more advice.

- Keep the product clean, and the cleaning solution is not allowed to flow into the machine.

- Power must be disconnected before maintenance and cleaning, and please use our recommended methods to clean the product. The method to clean:

Dye	Isopropanol
Building materials	Aqueous solution /isopropanol with active agent
Cosmetic	Aqueous solution /isopropanol with active agent
Food	Aqueous solution with active agent
Fuel oil	Aqueous solution with active agent

- You can consult the manufacturer about the materials that are not listed in the above table. Before using other cleaning methods, the user must confirm with the manufacturer / supplier that the method will not damage the instrument. When cleaning the product, please wear suitable protective gloves.

Cautions:

- The electronic device cannot be cleaned with detergent.
- The instrument to be repaired must be cleaned while the contamination of hazardous substances must be avoided, and the instrument must be put back to the original packaging box for sending.
- When the product is not used for a long time, please store the

	product with power off and place it in a dry, clean and smooth place in normal temperature.

8.Relevant standards

The product structure conforms to the following safety standard:
EN 61010-1 UL 3101-1 CAN/CSA C22.2(1010-1) EN 61010-2-10
The product structure conforms to the following EMC standard:
EN 61326-1
Conforming to the following EU standards:
EMC standard: 89/336/EWG Mechanical design standard: 73/023/EWG

9.Technical parameters

Temperature range	Room temp. ~180□(both water and oil)

Control Accuracy	Water: ±1□ Oil: ±3□
Rotation Speed	10~150rpm
Evaporation capacity	Max.4.0L/h (water vapor volume)
Ultimate vacuum	Less 2.6hpa
Temperature control method	Microprocesser PID control
Display	LCD (temperature/speed/clockwise and Anti-clockwise/time)
Stroke Displacement	Automatic 180mm
Safety features	Motor over-current protection, Residual Current Device, Lifting overload protection, Boil-dry protection, Over-temperature protection
Sampleflask/Receiving flask	Round flask 20L/Round flask 10L with drain valve
Condenser	Two-section vertical triple serpentine condenser, cooling surface 1.2m^2
Heating bath size	Φ450*240mm
Takeover caliber	Cooling/suction nozzle outer diameter 16mm, vacuum pump nozzle outer diameter 16mm

Dimension[D×W×H]	1160mm×600mm×1860mm

Контактная информация сервисных центров

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