# Rotary Evaporator Manual

**Model: RE-200AA**

2L Rotary Evaporator Automatic Lift

# Index



## 1 Safety Instructions and Features

### 1.1 Safety Instructions

**ONLY USE DISTILLED WATER IN THE WATER BATH. Any elements, sensors or switches damaged due to not using distilled water, WILL NOT BE COVERED UNDER WARRANTY.**

The use of Personal Protection Equipment (PPE) is REQUIRED.

Follow all state, local and municipal laws, codes and ordinances.

Please make sure the power connection is correct and well-grounded. (see the technical parameters for details)

Cooling water line and vacuum line should be unobstructed without any hard bends in the run. Rotate and push forward to install water and vacuum lines.

If flammable or organic solvent is used, please make sure to clean any solvent immediately and take all fire safety precautions.

Apply a rag to wipe the glass parts clean after washing away stains; do not use hard objects against the glass.

# Safety Precautions and Explanations

At USA Lab, safety is our number one priority. The following information provides guidelines for safety when using USA Lab equipment. Any piece of machinery can become dangerous to personnel when improperly operated or poorly maintained. ALL employees operating and maintaining USA Lab equipment should be familiar with its operation, thoroughly trained, and Instructed on the best safety practices. Most industry accidents are preventable through safety awareness.

## Training

It is the responsibility of the customer to ensure that all personnel who will be expected to operate or maintain the equipment. Participate in training and instruction sessions to become trained operators. All personnel operating, inspecting, servicing, or cleaning this equipment must be properly trained in the operation and machine safety. **BEFORE** operating this equipment, read the operating instructions in this equipment manual. Become thoroughly familiar with the machinery and its controls.

# Safety

- Never leave the equipment running unattended and use this equipment only for its intended purpose.
- Ensure that all power sources are turned off when the machine is not in use. This encompasses electrical and pneumatic power.
- Read the manual for any special operational instructions for each piece of equipment. All USA Lab authored manuals are typically included with each device as well as posted online.
- Know how the equipment functions and understand the operating and halting processes.
- Wear the appropriate personal protective equipment for the task.
- When working on or around all equipment, avoid wearing loose clothing, jewelry, unrestrained long hair, loose ties, belts, scarves, or articles that may be caught in moving parts. Keep all extremities away from moving parts. Entanglement can cause death or severe injury.
- For new equipment, check input voltage and compare with the equipment voltage rating. DO NOT supply the incorrect power to any equipment for any reason whatsoever. Electrical specifications for your machine are printed on the machine tag. A properly grounded receptacle is required for safe operation regardless of voltage requirements.
- Keep the equipment operating zone free of obstacles that could cause a person to trip or fall toward an operating machine. Keep fingers, hands, or any part of the body out of the machine and away from moving parts when the machine is operating.
- Any machine with moving parts and/or electrical components can be potentially dangerous no matter how many safety features it contains. Stay alert and think clearly while operating or servicing the equipment. Be aware of operations and personnel in your surroundings. Be attentive to indicator lights, warning lights, and/or operator interface screens displayed on the machine and know how to respond.
- Do not operate machinery if you are fatigued, emotionally distressed, or under the influence of drugs or alcohol.
- Know where the FIRST AID SAFETY STATION is located.
- Know where the FIRE EXTINGUISHING EQUIPMENT is located.
- Never sit or stand on the machine or on anything that might cause you to fall against the machine.
- Rotating and moving parts are dangerous. Keep clear of the operating area. Never put any foreign object into the operating area.
- Use proper lifting and transporting devices for heavy equipment. Some types of equipment can be extremely heavy. An appropriate lifting device should be used.
- Use caution when moving portable equipment. In some cases, the machinery can be heavy and/or may be top heavy. Portable equipment can gain momentum during transporting and must always be controlled.

# Symbols and Warnings

Below are examples of commonly used symbols and what they mean.
Understand them and their potential consequences.


**1.2 Purposes and features**

RE-200AA rotary evaporators are mainly used in the small-scale test and production of biological, pharmaceutical, chemical, food and other extractions. With 2L capacity and large-diameter rotary evaporating flasks. When it is placed in a water bath, it allows the solution to spread and evaporate rapidly. What's more, the product may be fitted with a multi-purpose water circulating vacuum pump, diaphragm vacuum pump, or low-temperature circulating vacuum pump, circulating cooler, constant-temperature

circulator, low-temperature circulating pump to form a complete system. Teflon (PTFE) and rubber dual spin seals are included to ensure the highest vacuum pressure. Accurate and reliable temperature control system do not affect the vacuum and solution distillation.

**1.3 Technical Parameters**

| | |
|---|---|
| Model | RE-200A |
| Optimum Ambient Temperature (°C) | 5 - 25°C |
| Power (Phase / V / A) | Single / 110V / 15A |
| Motor Type | Digital DC Stepless |
| Min - Max Rotation Speed (RPM) | 0 - 120 RPM |
| Motor Wattage (W) | 40W |
| Temperature Control | PID Digital Temperature Control |
| Max Vacuum Pressure | 3.99 Millibar / 3 Torr / 29.98 inHg |
| Boiling Flask Size (L) | 2L |
| Boiling Flask Flange | 24/40 |
| Receiving Flask Size (L) | 1L |
| Condenser Style | Single Column, Dual Coil |
| Minimum Evaporative Capacity (L/hr) | Alcohol ≥ 1L/hr |
| Heating Bath Material | PTFE Coated Aluminum |
| Heating Bath Size (mm) | 238 mm x 128mm |
| Heating Bath Lift Style | Stationary, Lifting Rotovap |
| Lift Stroke (mm) | 0-130mm |
| Total Current Draw (kW) | 1.6kW |

## 2 Diagram

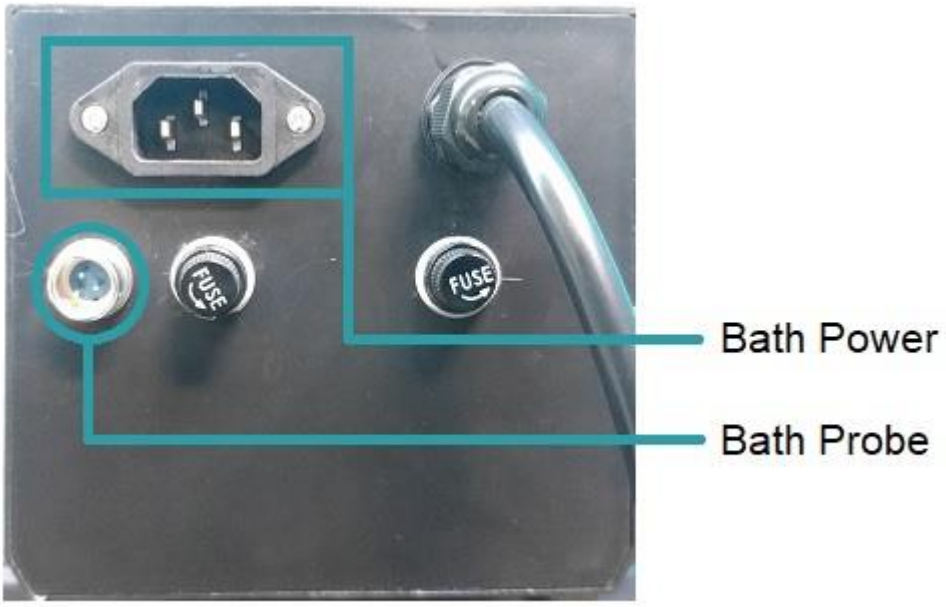

MAIN CONDENSER
FEED PORT
S35 CLAMP
RECEIVING FLASK
LCD CONTROLLER
AUTOMATIC LIFT
BOILING FLASK
WATER BATH
Rotary Evaporator
Rotary Evaporator RE-200AA
USALAB EQUIPMENT

## 3 Control Panel Operation


Temperature: To set the temperature of the bath. Press the SET button and then use the UP or Down arrows until the Set Value is reached. You can use the left arrow for large changes. Press SET again to finalize the changes.

Speed:
To set the RPM of the motor, simply turn the motor speed adjustment knob to the desired RPM.

Raise or Lower Bath:
Use the Up/Down switch on the arm in front of the motor. See diagram in section 2.



## 4 Preparing for Installation

| *RE-200A PACKING LIST* | |
|---|---|
| USA Lab RE-200A Base | 1 set |
| USA Lab RE-200A Waterbath | 1 set |
| Main Condenser | 1 pc |
| 2L Boiling Flask | 1 pc |
| 1L Receiving Flask | 1 pc |
| Vapor Duct with Seal (Pre-Installed) | 1 set |
| PTFE Vacuum Sealing Kit (Pre-Installed) | 1 set |
| Glass Feeding Tube with PTFE Valve | 1 sets |
| PTFE Feeding Tube Extension Hose | 1 pc |
| 5-15P Plug | 1 pc |
| 15A Fuse | 1 pc |
| S35 Clamp | 1 pcs |
| 3 gram Packet of Vacuum Grease | 3 pcs |

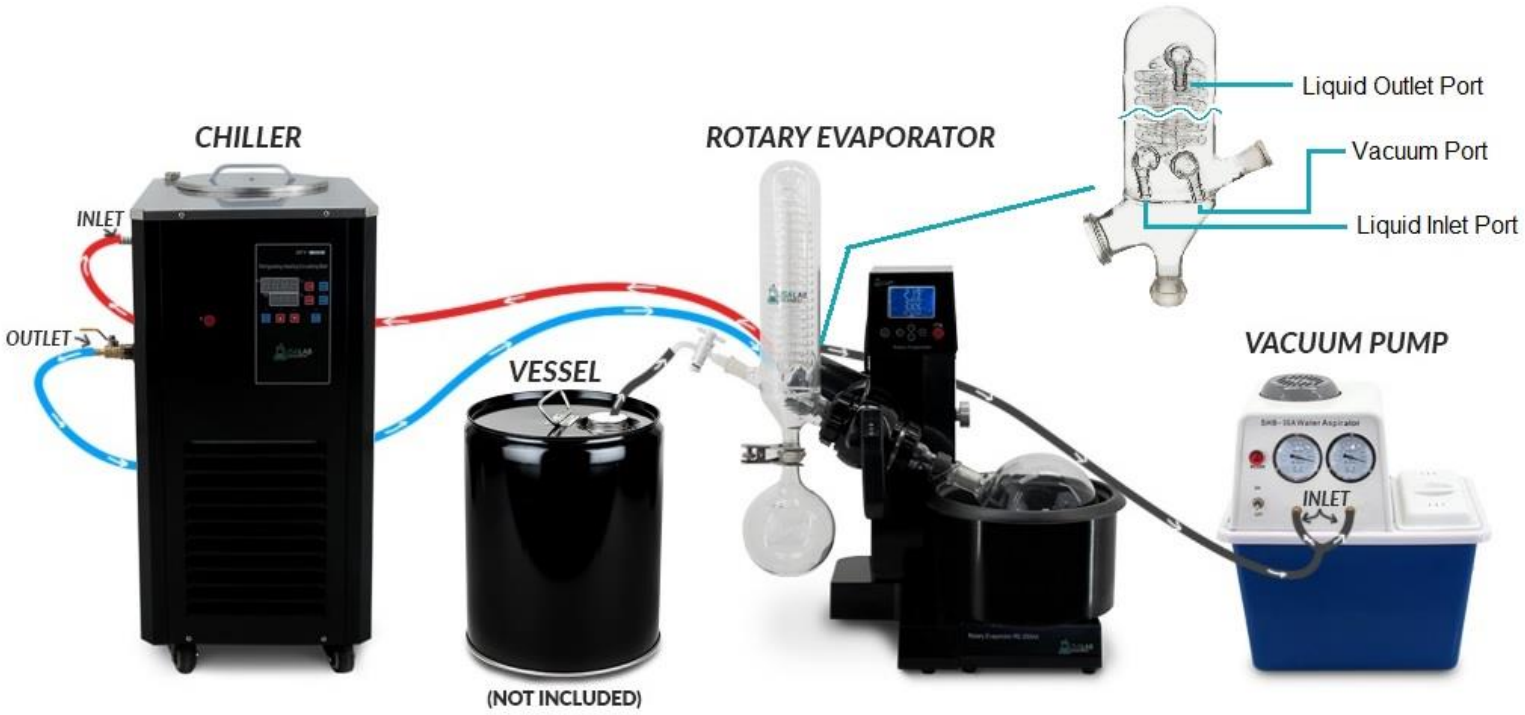
1. Please refer to the packing list above to check whether the components and parts are included. If there are any missing parts, please contact us immediately.
2. Remove any residue on the glass parts before assembly and keep the glass flange surfaces clean; apply vacuum grease to both sides of the seal ring gaskets, ground joints and PTFE gaskets before the installation.
3. Tools that might be needed in the installation include: metric Allen wrenches and a screwdriver.
4. A professionally installed 5-15 receptacle. (115V 15A 50/60Hz)

## 5 Installation

**Precautions:** Apply vacuum grease to all seals and ground joints. A properly greased ground joint should appear transparent. Refer to the diagram in section 2 for accurate installation.

- Put the main body on a table.
- Insert the vapor duct (glass cylinder) into the center of the motor.
- Insert the glass condenser in left flange of motor head and tighten the collar. (Do not over tighten)
- Put the feed valve into condenser after connecting the PTFE tube. (Heating may be required)
- Put the receiving flask on to the bottom of the condenser using the S35 ground joint and clamp.
- Add the boiling flask adapter to the right of motor using the collar to tighten it. (Do not over tighten)
- Add boiling flask to the end of the 24/40 flask adapter. Put the metal clip against the lip of the boiling flask and tighten the plastic screw on the adapter toward the motor.
- Put the water bath under boiling flask, and fill with distilled water 2/3 of the total volume.
- Add the vacuum hose to the vacuum port on the back of the condenser.
- Add the water lines from your chiller to the condenser coil connections on the back of the condenser.
- Connect the bath temperature probe and power cord to the back panel of the controller.

## 6 Water and vacuum tubing connections




## 7 Operation

### 7.1 Operating method

Set your chiller for the rated lowest temperature. Always run the loop. Allow the chiller to cool the entire loop until it is close to the set temperature. Raise the bath until the water covers half of the outside of the flask. Turn on the bath heating and set between 50C – 75C. Turn on the rotation for as fast as possible, while stable. If the glass wiggles, slow the rotation down. Place the cover over the boiling flask onto the edges of the bath. The vacuum should be started. Add a tube that runs from the feed port down to your vessel. Start the run when the chiller reaches 29C, when set for 30C. Open the feed port to begin filling the boiling flask. Do not fill the flask more than half-way. The evaporation will begin at this point. Evaporation can be boosted with pre heated solution. 40-45C. It will be necessary to refill the boiling flask over time. When the receiving flask is full. Turn off the vacuum and vent the vacuum in the system. Empty the receiving flask. Then close any valves used to vent the vacuum. Turn the vacuum on again and continue to evaporate.

### 7.2 Storage

For long periods, please shut off the power switch and disconnect the power. Empty the water bath, boiling flask, receiving flask and condenser coil(s) Allowing time to dry completely. Cover while in storage.

## 8 Maintenance

1. Please shut off the power switch and disconnect the power cord before any maintenance.
2. Please use damp soft cloth to wipe clean. Stubborn stains should be cleaned by neutral detergents.
3. The maintenance of internal electrical and heating parts must be performed by professionals or trained electricians.
4. Do not directly splash water over the product or use abrasive powder, diluent, oil, kerosene, acidic material and similar substances during cleaning, or else shock or other accidents will occur.

## 9 Service

Our company provides limited warranty for any product with failures due to manufacturing quality within 12 months after the date of delivery on the premise of normal operation by users. Reasonable repair costs will be charged for damage caused by improper use. After-sales service Tel : (734) 855-4890 or sales@usalab.com

USA Lab reserves the right of ultimate interpretation of the instruction manual. Additionally, USA Lab is not responsible for damages or injuries caused by improper use; knowingly or unknowingly. Glassware is not covered under warranty. We ship all glassware products with additional care, but sometimes they arrive broken. If glassware arrives broken, please contact us within 3 days of receiving your product and we will either send you a brand new piece or send you a refund. Any glassware broken 3 days after or later will not be covered by warranty. Maintenance items such as seals and gaskets are not covered under the warranty. Thank you for understanding!

**Return Policy:**

We offer a 30-day return policy from when your package is delivered to your shipping address. By placing an order with USA Lab, you express that you have read and agreed to the following return policies.

• We do not accept returns for customized items. When purchasing a customized item, you agree that there are no returns due to the nature of the item(s) being specific to your needs.

• By default, a 15% restocking fee is applied on all items that are in original packaging and unused with no damage. This applies to all items returned within 30 days. No exceptions. You will be responsible for the return shipment unless deemed defective by USA Lab. In that case, we will pay for return shipment and replacement shipment costs.

• The item(s) must be returned in original packaging and in undamaged condition. The item(s) must have no signs of usage or wear including stickers, scratches, dents, resins, non-standard fluids, plant matter, or any other wear not representing a new, unused item. Products deemed defective with any signs of usage or wear will result in a 25% restocking fee.

• Once the returned item is received, tested, inspected, and processed, a refund will be issued. If your item(s) are in original packaging and unused, you will be refunded the initial purchase price with the 15% restocking fee deducted. If your item(s) are deemed damaged or used, you will be refunded the initial purchase price with the 25% restocking fee deducted.

• If an item has been deemed to be severely misused, modified resulting in catastrophic failure, operated anywhere but inside of a climate-controlled facility. A minimum of 25% restocking fee will be deducted from the refund.