

Operators Manual

Heating Recirculator

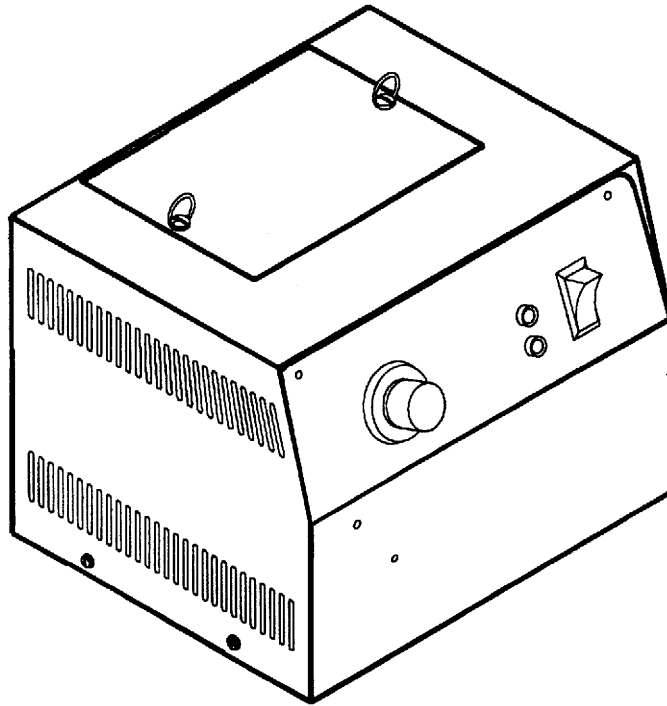


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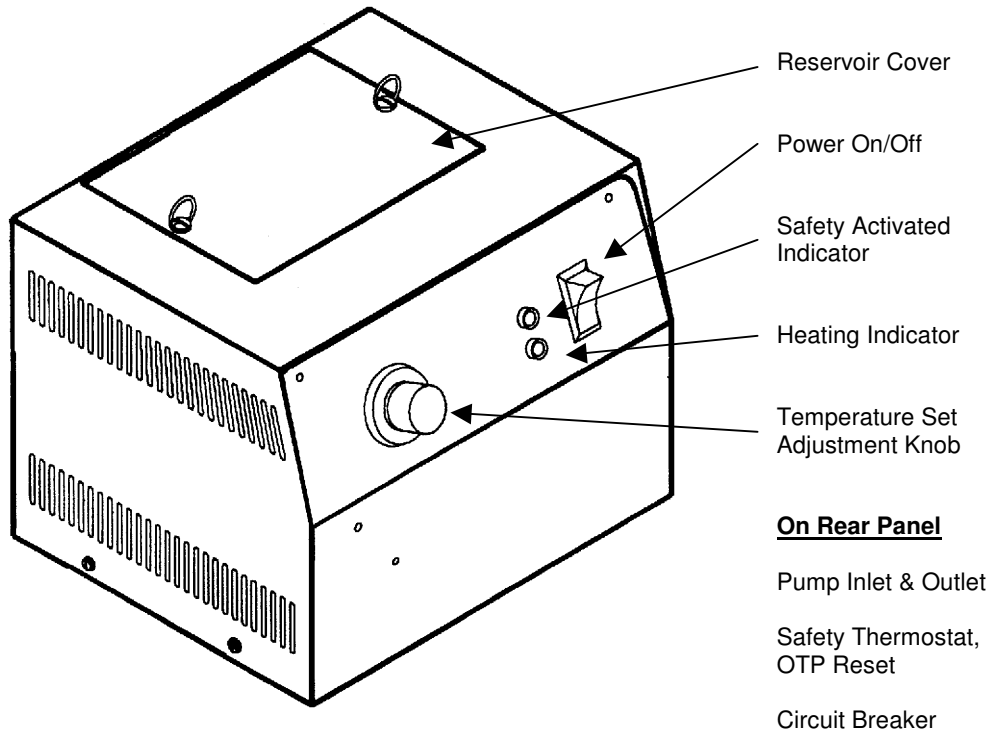
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Section 1. General Information

1.1 Warranty

Thank you for your purchase. We are confident it will serve you for a long time. Our warranty to you is as follows:

The manufacturer agrees to correct for the original user of this product, either by repair, or at the manufacturer's election, by replacement, any defect that develops after delivery of this product within the period as stated on the warranty card. In the event of replacement, the replacement unit will be warranted for 90 days or warranted for the remainder of the original unit's parts or labor warranty period, whichever is longer.

If this product should require service, contact the manufacturer/suppliers' office for instructions. When return of the product is necessary, a return authorization number will be assigned and the product should be shipped, transportation charges pre-paid, to the indicated service center. To insure prompt handling, the return authorization number should be placed on the outside of the package and a detailed explanation of the defect enclosed with the item.

This warranty shall not apply if accident, neglect, unreasonable use, improper service caused the defect or malfunction, or other causes not arising out of defects in material or workmanship. There are no warranties, expressed or implied, including, but not limited to, those of merchantability or fitness for a particular purpose that extends beyond the description and period set forth herein.

The manufacturer's sole obligation under this warranty is limited to the repair or replacement of a defective product and the manufacturer shall not, in any event, be liable for any incidental or consequential damages of any kind resulting from use or possession of this product.

Some states do not allow: (A) limitations on how long an implied warranty lasts or (B) the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights. You may also have other rights that vary from state to state.

1.2 Unpacking

Your circulator is shipped in a special carton. Retain the carton and all packing materials until the unit is completely assembled and working properly. Set up and run the unit immediately to confirm proper operation. Beyond one week, your unit may be warranty repaired, but not replaced. If the unit is damaged or does not operate properly, contact the transportation company, file a damage claim and contact the company where your unit was purchased.

1.3 Package Contents

- Circulator Unit
- Operators Manual
- Warranty card
- Tubing and Clamps

1.4 Description

The Recirculator connects to your own tank or system. The sealed reservoir is used with both open tanks and closed loop systems. Low liquid level and over temperature shutoffs are standard.


<u>Temperature Range</u>	<u>Stability</u>	<u>Pumping</u>	<u>Heater</u>	<u>Electrical Requirements</u>
20°C to 70°C	±0.2°C	100 gallons/hour	750 Watt	120V/60Hz/6.6Amps 240V/50Hz/3.3Amps

Section 2. Set Up

2.1 Location

Locate your recirculator on a level surface free from drafts and direct sunlight. Do not place it near corrosive fumes, excessive moisture, high room temperatures, or excessively dusty areas. The recirculator must be four inches minimum away from walls or vertical surfaces so airflow is not restricted. Avoid voltage drops by using properly grounded power outlets wired with 14 gauge or larger diameter wire and close to the power distribution panel. To avoid low line voltage problems, do not use an extension cord.

2.2 Reservoir Fluids

	<p>Warning: Do not use a flammable liquid as a fire hazard may result. You are responsible for proper selection and use of fluids</p>
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Use distilled water for temperatures from 10°C to 90°C or a mixture of laboratory grade ethylene glycol and water for temperatures -25°C to 100°C.

A variety of fluids can be used depending on your needs. The fluid must be chemically compatible with all wettable components of the recirculator, which are stainless steel, PVC, polypropylene, brass and nylon. The fluid must also be able to produce the temperature range desired.

For good temperature stability, the viscosity should be 50 centistokes or less at the lowest operating temperature to allow good fluid circulation and to minimize heating from the pump. Use fluids that will satisfy safety, health, and equipment compatibility requirements.

DO NOT use the following fluids:

1. Automotive antifreeze with additives*
2. Hard tap water*
3. Deionized water with a specific resistance > 1 meg ohm
4. Any flammable fluids
5. Concentrations of acid or bases
6. Solutions with halides: chlorides, fluorides, bromides, iodides or sulfur
7. Bleach (Sodium Hypochlorite)
8. Solutions with chromates or chromium salts

* At temperatures above 40°C, additives or mineral deposits can adhere to the heater. If allowed to build up, the heater may overheat and fail. Higher temperatures and higher concentrations of additives will cause a faster deposit build up.

2.3 Fluid Connections

The unit inlet and outlet connections are ½ inch barbed polypropylene fittings for use with ½ inch ID tubing. Select tubing and fittings that are compatible with both fluid and temperature range.

Section 3. Operation

3.1 Power Supply

Review section 3.2 Operation. After all plumbing connections have been secured and the reservoir has been filled, plug the unit into a properly wired, grounded outlet with the same voltage and frequency indicated on the identification label on the back of the unit. Be sure the circuit breaker at the rear of the unit is in the ON position. Use of an extension cord is not recommended, but if necessary, use one that is properly grounded and will handle the total wattage of the unit. The extension cord must not cause more than a 10% voltage drop to the circulator.

3.2 Operation

1. Connect tubing to the inlet and outlet fittings for closed loop or open bath application.
2. Remove unit's top cover to access the reservoir cap. Remove the cap and fill reservoir with fluid. (See section 2.2 Reservoir Fluids to check fluid's compatibility)

In a **closed loop**, the cap is left off, allowing more fluid to be added after unit is running. Cap should be replaced after the air has been purged from the system.

To an **open bath**, replace reservoir cap after filling and before switching unit on.

Note: Lubricate the reservoir cap O-ring with petroleum jelly. It will help in sealing and removing the cap.

3. Switch the power on. If the pump does not run, check the circuit breaker on the read panel and check the power source. Refer to section 4 Troubleshooting.

Note: The circuit breaker normally protrudes approx. 3/16th inch. When tripped, it extends to 5/16th inch.

4. Adjust the Temperature Set until bath temperature reaches the desired temperature, as indicated by a thermometer.

When the bath has stabilized at the desired temperature, the Heat light will cycle on and off as the internal thermostat calls for heat to maintain the temperature.

<p>Caution: This unit has not been approved for use with any flammable liquids.</p>
<p>Warning: Exposed voltage when cover is removed.</p>

3.3 The Safety Thermostat, OTP

This recirculator is equipped with a Safety Thermostat-OTP (Over Temperature Protection) that will shut off the unit if the heater reaches an excessive temperature due to thermostat failure or low liquid level. The light on the front panel will indicate if the safety is activated. If activated, check and correct the liquid level, wait approximately 10 minutes, then reset the Safety on the rear panel by depressing the red button.

Section 4. Troubleshooting

4.1 No Pumping

Check the power to the unit. Be sure the circuit breaker located at the bottom of the rear panel is on. Check fluid level in the whole system to be sure the pump is receiving fluid. Check for blockage within the circulating system.

4.2 Insufficient Pumping

Check for low line voltage. Hose diameter may be too small. Fluid viscosity may be high. Check for restrictions in connection tubing.

4.3 No Heating

Check if unit is pumping properly. If heat light is not on, check the setting of the setpoint temperature and bath temperature. Check fluid level of the system.

4.4 Insufficient Heating

Check if unit is pumping properly. Check for proper line voltage. Check for excessive external cooling load on unit. Variance of heat load on the system may exceed the heating capability of the unit. Changes in heat load or setpoint will require some time to settle to a stable temperature.

Section 5. Maintenance

5.1 Service

If this unit should require service, contact the point of purchase for instructions. When returning a unit, a return authorization number will be assigned and the unit should be shipped, transportation charges prepaid, to the indicated service center. To insure prompt handling, the return authorization number should be placed on the outside of the package and a detailed explanation of the defect enclosed with the unit.

5.2 Pump motor

The bearings are permanently lubricated and should not require lubrication.

5.3 Cleaning

To clean the recirculator's exterior, use only mild soap and water or a mild general-purpose spray cleaner. Be careful to prevent cleaning liquids from entering the inside of the recirculator.

Section 6. Replacement Parts

<u>Description</u>	<u>Part #</u>
On/Off Switch	235-022
Integrated Circuit UAA1016B.....	200-061
Circuit Breaker	215-086
Indicator (neon heater lamp) green, 120V	215-145
Indicator (neon heater lamp) green, 240V	215-146
Indicator (neon OTP lamp) green, 120V	215-147
Indicator (neon OTP lamp) green, 240V	215-148
Triac-Tab Mount Heat Sink	200-058
Temperature Sensing Probe.....	200-098
Printed Circuit Board 120V	500-094
Printed Circuit Board 240V	500-095
Pump 120V	215-143
Pump 240V	215-144
Reservoir Assembly 120V without Sensing Probe.....	590-054
Reservoir Assembly 240V without Sensing Probe.....	590-055
Reservoir Cap	300-106
Inlet/Outlet Fittings	330-041