

Operators Manual

Recirculating Chiller

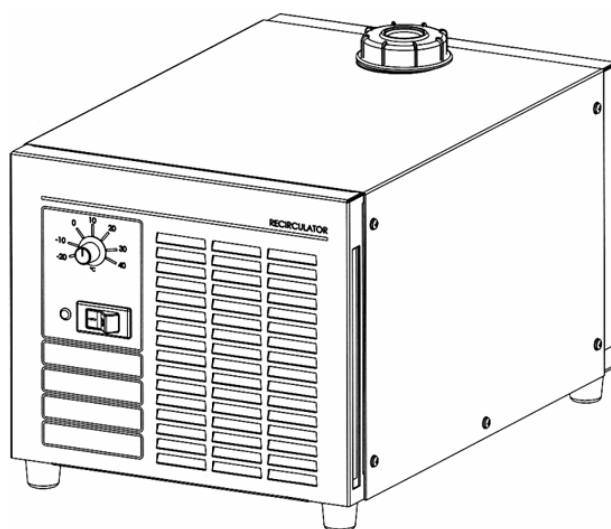


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This symbol marks chapters and sections of this instruction manual which are particularly relevant to safety. When attached to the unit, this symbol draws attention to the relevant section of the instruction manual



This symbol indicates hazardous voltages may be present.

**Read all instructions pertaining to safety, set up and operation.
Proper operation is the users' responsibility.**

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 a replacement unit is sent, the defective unit must be returned to the manufacturer within 30 days of receipt of the replacement unit. If the defective unit is not received within 30 days, the manufacturer reserves the right to bill for the replacement unit.

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 the product.

Some states do not allow: (1) limitations on how long an implied warranty lasts or (2) exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific rights, and you may also have other rights that vary from state to state.

1.2 Unpacking

The Recirculating Chiller 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

- Recirculating Chiller
- Operators Manual
- Warranty Card

1.4 Description of the Recirculating Chiller

The Recirculating Chiller provides cooling down to -10°C and heating up to 40°C for small-scale applications. It is equipped with an analog controller that provides economical and accurate control with a $\pm 0.2^\circ$ temperature stability. A magnetic drive centrifugal pump provides flow of coolants to external apparatus.

1.5 Specification Chart

Temperature range	: -10°C to 40°C
Temperature stability	: $\pm 0.2^{\circ}\text{C}$
Controller	: Analog Controller
Readout	: Via thermometer
Readout Accuracy	: $\pm 0.2^{\circ}\text{C}$
Cooling Capacity	: @20°C 190 Watts / 648 BTUs/hr @10°C 140 Watts / 478 BTUs/hr @ 0°C 90 Watts / 307 BTUs/hr @-10°C 45 Watts / 154 BTUs/hr
Flow rate @ 0 psi	: 1.43 gpm, 5.4 lpm
Maximum Pressure	: 5 psi
Overall dimensions	: 12 x 11 x 18 in., 30.5 x 28 x 46 cm
Shipping weight	: 45 lbs, 20.4 kg
Catalog number	: 120V 082550, 240V 082551
Voltage, Frequency, Current	: 120V, 60 Hz, 7 A, 240V, 50 Hz, 3.5 A
Circuit Breaker rating	: 12 amps

Environmental Conditions

Environmental Conditions:

- Indoor Use Only
- Maximum Altitude: 2000 meters
- Relative Humidity: 80% for temperatures to 30°C
- Class 1: Residential, Commercial, Light Industrial
- Over Voltage: Category II
- Operating Ambient: 5° to 30°C
- Pollution Degree: 2
- Class 2: Heavy Industrial

Section 2. Set Up

2.1 Location

Locate the recirculating chiller on a level surface. Insure easy access to the top cover and position the chiller for unobstructed airflow through the front and rear screens. Avoid voltage drops by using properly grounded power outlets wired with 14 gauge or larger diameter wire. If possible, be close to the power distribution panel. Minimize low line voltage problems by eliminating the use of extension cords.

When moving, disconnect from main voltage. Drain liquid from the unit and remove all tubing. Lift and carry by grasping the underside edges of the unit.

2.2 Fluids

For most applications above 15°C distilled water is satisfactory. For operation below 15°C the chiller should be protected with an antifreeze solution. Ethylene Glycol (laboratory grade) and water in a 50/50 mixture is satisfactory. Wettable parts are brass, copper, nylon, polypropylene, PVC and Buna N. Only use fluids that satisfy safety, health and equipment compatibility requirements. Caustic, corrosive or flammable fluids must never be used.

2.3 Hosing

To maintain a safe work place and avoid leaks, special care should be taken when choosing hoses and connectors for the chiller.

1. Pressure ratings – Tubing should be able to withstand the largest pressure that it will encounter. Choose connecting tubing accordingly.
2. Flexible Tubing – Avoid tubing that will expand and take up fluid volume when operating at the desired pressure.

Section 3. Operation

3.1 Power

Plug the unit into a properly grounded outlet with the same voltage and frequency indicated on the identification label (rear of unit). Avoid voltage drops by using properly grounded power outlets wired with 14 gauge or larger diameter wire and if possible, be close to the power distribution panel. The use of extension cords is not recommended; this will avoid low line voltage problems.

3.2 Operation

1. Connection to the chiller can be made with either hoses or pipe. The direction of the flow through the system is controlled by the way the hoses or pipes are connected to the chiller. The inlet draws liquid to the chiller; outlet pumps liquid out to the system.
2. Turn the reservoir cap, on the top of the chiller, counterclockwise and lift up to remove it. Use a funnel to fill the system, but do not replace the cap at this time. Check all hoses and fittings for tightness and be sure there are no bends or crimps in connecting hoses.
3. Plug the chiller into the proper AC outlet. Press the power switch ON. The chiller begins to pump fluid through your system. Check for any possible leaks. Set your desired temperature
4. With the pump running, the fluid level in the reservoir decreases as the closed system begins to fill. Add fluid as needed until the level in the reservoir stops going down. This means that your system is filled and the air has been purged from it. Replace the reservoir cap and turn it clockwise to lock it.

3.3 Safety Overload Warning

The compressor in this unit is equipped with an internal safety overload switch. If the unit is turned off, wait 5 minutes before restarting, allowing internal pressure and temperature to stabilize. If the unit is turned on before stabilization, the compressor may not operate. If this happens, turn the unit off again and wait 5 minutes before restarting.

Section 4. Maintenance



CAUTION: Disconnect power before servicing.

4.1 Cleaning

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

4.2 Air Vents (Required Maintenance)

The refrigeration condenser fins are located just behind the front grill panel. Dust that accumulates reduces the amount of cooling power available. The dust should be blown out periodically with compressed air. All other items are permanently lubricated and need no attention.

Section 5. Troubleshooting

5.1 Unit Disabled

Check the power to the unit. Be sure the circuit breaker is on. If the unit continues to be disabled request service.

5.2 No pumping

Check if the motor is running. Check the fluid level in the whole system to be sure the pump is receiving fluid. Check for blockage within the circulating system.

5.3 Insufficient pumping

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

5.4 Insufficient Cooling

Check for low or high line voltage. Check for blocked airflow through ventilation screens. Refrigeration unit should not be operated above 32 °C ambient temperature. Such a condition may cause the refrigeration compressor to shut down. Wait 5 minutes between stopping and starting the chiller. Check to see that heat load does not exceed refrigeration capacity.

Section 6. Service and Technical Support

If you have followed the troubleshooting steps and your chiller fails to operate properly, contact the distributor or manufacturer from whom the unit was purchased. Have the following information available for the customer service person:

- Model and Serial Number
- Voltage (from back panel label)
- Date of purchase and your purchase order number
- Suppliers' order number or invoice number

A summary of your problem

Section 7. Replacement Parts

<u>PCB 120V</u>	<u>500-197</u>
<u>PCB 240V</u>	<u>500-213</u>
<u>Heater Assembly 120V</u>	<u>525-448</u>
<u>Heater Assembly 240V</u>	<u>525-464</u>
<u>Fan 120V</u>	<u>215-196</u>
<u>Fan 240V</u>	<u>215-197</u>
<u>Pump 120V</u>	<u>215-265</u>
<u>Pump 240V</u>	<u>215-269</u>