Operator's Manual

Cryoprecipitate Bath

110-276
01 November 2019

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Introduction

The Cryoprecipitate Bath is a self-contained, custom-designed Recirculating Chiller designed for the safe, reliable thawing of Fresh Frozen Plasma (FFP) for the recovery of Cryoprecipitated Antihemophilic Factor (AHF). It is capable of thawing up to 24 units of FFP or whole blood (WB) simultaneously.

Standard features include:

- 13.8 gallon (52.24 liter) reservoir
- Removable, center-hinged reservoir cover
- 4°C preset thawing temperature
- Bright temperature and elapsed time displays
- Calibration capability
- Removable, high-efficiency fluid filter
- Reservoir drain
- Over-temperature and flow alarms

The unit is designed to be used with distilled water. Wetted parts within the recirculation system are brass, stainless steel, polyethylene, EPDM rubber, and nylon. Please ensure that any fluids used with the bath are compatible with these materials.

General Safety Information

When installed, operated, and maintained according to the directions in this manual and common safety procedures, your Cryoprecipitate Bath should provide safe and reliable temperature control. Please ensure that all individuals involved in the installation, operation, or maintenance of this Cryoprecipitate Bath read this manual thoroughly prior to working with the unit.

	This symbol marks chapters and sections of this instruction manual that 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 that hazardous voltages may be present.
	This symbol marks information that is particularly important.
	This symbol indicates alternating current.
	This symbol on the Power Switch / Circuit Breaker indicates that it places the unit into a fully powered state.
	This symbol on the Power Switch / Circuit Breaker indicates that it disconnects power to the unit.
	This symbol on the Power Switch indicates that it places the unit in a standby mode. It DOES NOT fully disconnect the unit from the power supply.

	This symbol indicates a protective conductor terminal.

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

Safety Recommendations

To prevent injury to personnel and/or damage to property, always follow your workplace's safety procedures when operating this equipment. You should also comply with the following safety recommendations:

WARNING:

- Always connect the power cord on this Cryoprecipitate Bath to a grounded (3-prong) power outlet. Make certain that the outlet is the same voltage and frequency as your unit.
- Never operate the Cryoprecipitate Bath with a damaged power cord.
- Always turn the Cryoprecipitate Bath OFF and disconnect mains power before performing any maintenance or service.

WARNING:

- Never operate the Cryoprecipitate Bath without bath fluid in the reservoir. Periodically check the reservoir to ensure that the liquid depth is within acceptable levels. Always refill the reservoir using the same bath fluid type that is already in the reservoir.
- Use compatible bath fluids only.
- Always drain all fluid from the reservoir before moving or lifting your Cryoprecipitate Bath. Be sure to follow your organization's procedures and practices regarding the safe lifting and relocation of heavy objects.

WARNING: It is the user's responsibility to properly decontaminate the unit in the event hazardous materials are spilled on exterior or interior surfaces. Consult manufacturer if there is any doubt regarding the compatibility of decontamination or cleaning agents.

Regulatory Compliance & Testing

CSA UL (60Hz units)

CAN/CSA C22.2 No. 61010-1-04 — Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, Part I: General Requirements.

CAN/CSA C22.2 No. 61010-010-04 — Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 2-010: Particular Requirements for Laboratory Equipment for the Heating of Materials.

UL Std No. 61010-1 — Electrical Equipment for Laboratory Use, Part I: General Requirements.

UL Std No. 61010A-2-010 — Electrical Equipment for Laboratory Use, Part 2: Particular Requirements for Laboratory Equipment for the Heating of Materials.

CE (50Hz units)

EC Low Voltage Directive 2006/95/EC

EC Electromagnetic Compatibility Directive 2004/108/EC

IEC 61010-1-2001

IEC 61326:2005 / EN 61326 : 2006

Highly Accelerated Life Test (HALT) and Vibration Tests per ASTM D4169-8 (All units)

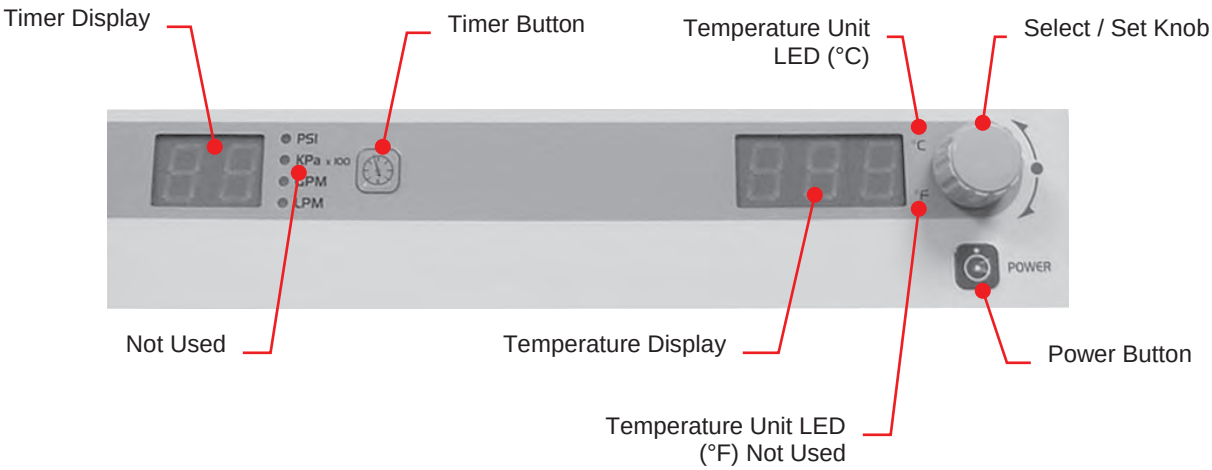
Unpacking

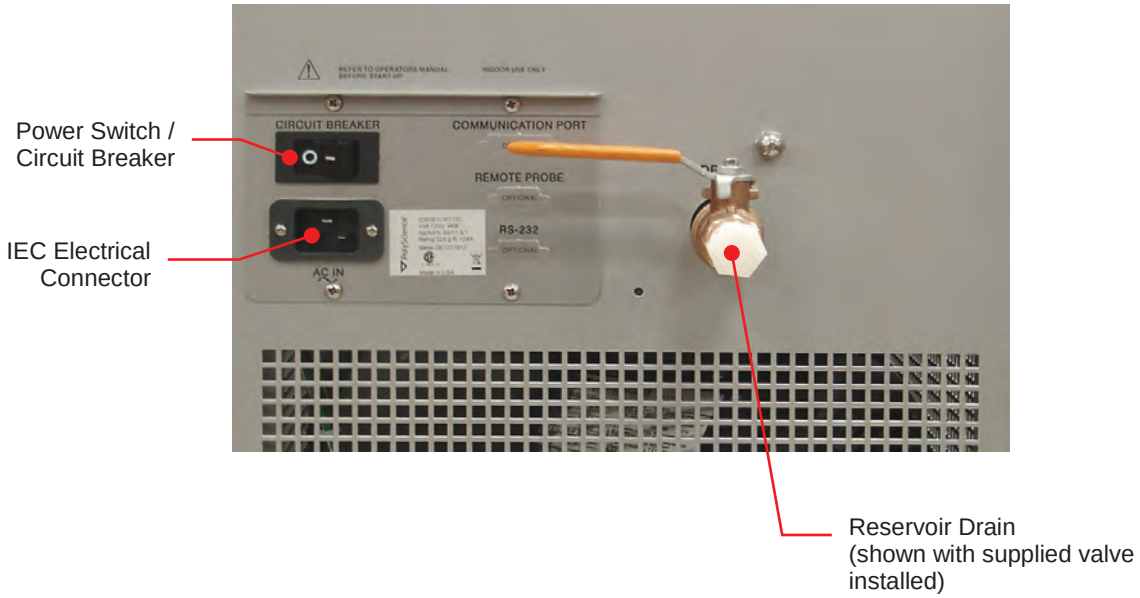
Your Cryoprecipitate Bath is shipped in a special carton. Retain the carton and all packing materials until the unit is completely assembled and working properly. Set up and run the unit immediately to confirm proper operation. Beyond one week, your unit may be warranty repaired, but not replaced. If 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 immediately.

Contents

- Cryoprecipitate Bath
- Removable reservoir lid
- Operator's manual
- IEC Power Cord
- ½" NPT (12.7 mm) reservoir drain valve

Controls and Components





Installation

	WARNING: Be sure all power is off before proceeding.

Site Requirements

Ambient Temperature and Relative Humidity

The Cryoprecipitate Bath is designed for indoor installation in ambient temperatures between 5° and 35°C (41° and 95°F); relative humidity should not exceed 80% (non-condensing).

Location

The Cryoprecipitate Bath should be installed on a strong, level surface. It should not be installed closer than 4 feet (1.4 meters) to a heat-generating source, such as heating pipes, boilers, etc. Do not place it where corrosive fumes, excessive moisture, excessive dust, or high room temperatures are present.

For ease of positioning and maneuverability, the Cryoprecipitate Bath is supplied with casters. The front wheels can be locked to keep the Cryoprecipitate Bath in place while in use.

To help prevent voltage drops, position the Cryoprecipitate Bath as close as possible to the power distribution panel. Avoid voltage drops by using a properly grounded power outlet wired with 14 gauge or larger diameter wire. The use of an extension cord is not recommended.

Clearance

Adequate clearance should be allowed on the front, sides, and rear of the Cryoprecipitate Bath for access to connections and components. The front and rear vents of the Cryoprecipitate Bath must be a minimum of 24 inches (61 cm) away from walls or vertical surfaces so air flow is not restricted.

Reservoir Cover

The reservoir cover for the unit is packaged separately. To attached the reservoir cover to the unit, position the cover's hinge holes over the studs on the Cryobath's chassis and secure with the provided nuts.

Electrical Power

An IEC power cord is provided with the Cryoprecipitate Bath. It should be attached to the receptacle on the rear of the enclosure. Make sure that the power outlet used for the Cryoprecipitate Bath is properly grounded and matches the voltage and frequency indicated on the identification label on the back of the Cryoprecipitate Bath.

The use of an extension cord is not recommended. However, if one is necessary, it must be properly grounded and capable of handling the total wattage of the unit. The extension cord must not cause more than a 10% drop in voltage to the Cryoprecipitate Bath.

	WARNING: DO NOT plug the Cryoprecipitate Bath into the electrical outlet until the unit is ready for operation.

Reservoir Drain

A ½ inch NPT valve is provided for the reservoir's gravity drain (shown in the closed position). It should be attached to the Cryoprecipitate Bath before operation. The drain valve can be piped to a plumbing system or a receptacle may placed below the bottom of the reservoir. If a receptacle is used, be sure it is of sufficient volume to hold all the water in the reservoir. Be sure to place the reservoir valve in the closed position before adding fluid to the reservoir.

Suitable Reservoir Fluids

The Cryoprecipitate Bath is designed to be used with distilled water. The reservoir can hold up to 13.8 gallons (52.24 liters) of fluid. Be sure to compensate for fluid displacement when placing objects in the reservoir.

	**WARNING:** Only use fluids that will satisfy safety, health, and equipment compatibility requirements. Caustic, corrosive, or flammable fluids must never be used.

	**CAUTION:** The unit will not run without fluid in the reservoir.

Normal Operation

Turning the Cryoprecipitate Bath ON

Plug the Cryoprecipitate Bath's power cord into an appropriate electrical outlet.

Place the Power Switch / Circuit Breaker on the rear of the instrument enclosure in the ON position. Three decimal points will appear on the Timer display and two decimal points will appear on the Temperature display. The Cryoprecipitate Bath is now in the Standby Mode.

Press the Power Button on the Controller. The unit will begin to cool the reservoir fluid to 4ºC and the actual fluid temperature will appear on the Temperature display.

Using the Timer

The Timer displays how long the bath has been running, in minutes. To view hours of use, press and hold the Timer Button for approximately four seconds. The timer resets to 0 after 99 hours and 59 minutes. The timer is not active in Standby mode and resets when electrical power is lost or turned OFF at either the Power Button or Power Switch / Circuit Breaker.

Calibration Offset (°C)

This menu item allows you to adjust the Cryoprecipitate Bath's displayed temperature reading to match that of a traceable standard. It allows you to offset the displayed temperature value by as much as ±3.0°C.

1. Press and release the Select / Set Knob; 4ºC will be displayed.
2. Press the Select / Set Knob again and hold until the decimal point begins to flash (about 4 seconds). The current calibration offset and bath temperature will be displayed alternately.
3. Rotate the Select / Set Knob to the desired offset. Press the Select / Set Knob or wait for the menu to time out to accept the new calibration offset value.

Display, Alarm, and Error Messages

When certain conditions are detected, a message code flashes on the display and the local audio alarm sounds. Depending on the nature of the condition, power to various systems components, such as the compressor, heater, fan, and pump, is removed. When the condition causing the alarm or fault is rectified, clear the error code by turning the unit OFF and then back ON by using either the Power Button or Power Switch / Circuit Breaker.

Message Code	Description	Action Required
E-C	External remote control active, Cryoprecipitate Bath in standby (for units with remote on/off option)	**Normal** — Unit idle until remotely activated
EFL	Low fluid flow warning / alarm	**Warning / Alarm** — Fluid flow is too low. An alarm will sound 5 times, once every 2 seconds. If the fluid flow has not been raised 2 seconds after the fifth alarm, the unit will shut down and fault code 05 will be displayed. Add fluid to the reservoir, check that drain is closed
EHA	Front panel high ambient temperature warning.	**Warning** - The ambient temperature is higher than 45ºC. If ambient temperature reaches 50ºC, the unit will shut down and fault code 16 will be displayed. Lower ambient temperature
03	High limit temperature alarm	**Alarm** — Fluid temperature has reached high temperature limit value (50.0ºC). Compressor, heater, fan, and pump turned off. Contact supplier.
04	Over-temperature protection alarm	**Alarm** — Fluid temperature is above Cryoprecipitate Bath's factory set high temperature safety cutoff. Power to condenser, heater, and fan turned off; pump remains on. Contact supplier.
05	No Flow	**Alarm** — Activated when the liquid level in the reservoir falls below an acceptable level for 10 seconds or longer. Compressor, heater, fan, and pump turned off. Add fluid to reservoir.
10	Triac fault	**Fault** — Power to compressor, heater, fan, and pump turned off. Contact supplier.
11	Internal probe fault	**Fault** — Faulty temperature probe. Power to compressor, heater, fan, and pump turned off. Contact supplier.
16	High ambient temperature alarm	**Alarm** — Ambient temperature at front panel is higher than high ambient temperature limit. Compressor, heater, fan, and pump turned off. Occurs when the ambient temperature exceeds the set ambient limit by 5ºC or more. Lower temperature in area in which Cryoprecipitate Bath is located.

Routine Maintenance and Troubleshooting

The Cryoprecipitate Bath is designed to require a minimum of periodic maintenance.

Condenser, Air Vents, and Reusable Filter

To keep the system operating at optimum cooling capacity, the condenser, the air vents, and reusable filter should be kept free of dust and dirt. They should be checked on a scheduled basis and cleaned as required.

The reusable filter is easily accessed from either the left or right side of the unit. Use a mild detergent and water solution to wash off any accumulated dust and dirt and then rinse and dry thoroughly before reinstalling.

Fluid Filter

A removable, highly efficient fluid filter is integrated into the fluid reservoir. To clean the filter, simply unscrew the filter (located at the bottom rear of the reservoir) rinse and reinstall. The filter should be checked regularly to ensure maximum efficiency and product life.

Troubleshooting Chart

	**WARNING:** Refer servicing to qualified service personnel.

	**WARNING:** When electrical power is ON, dangerous voltages exist within chassis components. Use extreme care when measuring voltages on live circuits.

Problem	Possible Causes	Corrective Action
Unit does not run (digital displays blank)	No power to unit	Check that the electrical cord is secure and connected to an operating electrical outlet. Check that Power Switch / Circuit Breaker on rear of unit is ON.
Unit does not run (three decimal points appear on temperature display, two decimal points on timer display)	Unit in Standby mode	Press Power Button on front panel.
No or insufficient fluid circulation	Insufficient fluid in reservoir	Add fluid to reservoir.
	Fluid filter plugged	Clean fluid filter.
	Pump is not operating	Replace pump.
Unit does not cool or cooling is insufficient	Dust build up on air filter or condenser	Clean air filter and/or condenser as required.
	Blocked air ventilation screens	Remove blockages as required.
	Ambient air temperature too high	Decrease ambient air temperature.
	Low or high line voltage	Check and correct as required.

Problem	Possible Causes	Corrective Action
Fault code 11 on display	Internal probe failure	Contact supplier
Fault code 05 on display	Interference on electrical power line	Check and correct as required.
	Triac failure	Contact supplier.

Technical Information

Performance Specifications

Operating Temperature:	Fixed at 4°C (other factory-set operating temperatures available)
Temperature Stability:	±0.1°C
Temperature Units:	°C
Reservoir Capacity:	13.8 gallons / 52.24 liters
Compressor:	¼ HP
Working Access:	20.6 x 13 x 12” / 52.4 x 33 x 30.5 cm (L x W x D)
Overall Dimensions:	28 x 14.5 x 36.6” / 71.1 x 37 x 93 cm (L x W x H)
Shipping Weight:	200 lbs / 90.6 kg
Electrical Requirements:	120V, 60Hz, 11.25A 240V, 50Hz, 9.0A

Specifications subject to change without notice

Environmental Conditions

Indoor use only
Maximum Altitude: 2000 meters
Operating Ambient: 5° to 35°C
Relative Humidity: 80% for temperatures to 35°C
Pollution Degree: 2
Class 1: Residential, Commercial, Light Industrial
Class 2: Heavy Industrial

Equipment Disposal (WEEE Directive)

or

This equipment is marked with the crossed out wheeled bin symbol to indicate it is covered by the Waste Electrical and Electronic Equipment (WEEE) Directive and is not to be disposed of as unsorted municipal waste. **Any products marked with this symbol must be collected separately, according to the regulatory guidelines in your area.**

It is your responsibility to correctly dispose of this equipment at lifecycle-end by handing it over to an authorized facility for separate collection and recycling. It is also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect the persons involved in the disposal and recycling of the equipment from health hazards. By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Requirements for waste collection, reuse, recycling, and recovery programs vary by regulatory authority at your location. Contact your local responsible body (e.g., your laboratory manager) or authorized representative for information regarding applicable disposal regulations.

Replacement Parts

Description	Part Number
Operator's Manual	110-276
Air Filter	750-855
Fluid Filter	300-465
Reservoir Lid	510-447

Service and Technical Support

If you have followed the troubleshooting steps outlined previously and your Cryoprecipitate Bath still fails to operate properly, contact the supplier from whom the unit was purchased. Have the following information available for the customer service person:

- Model, Serial Number, and Voltage (from back panel label)
- Date of purchase and purchase order number
- Supplier's order number or invoice number
- A summary of the problem

Warranty

The manufacturer agrees to correct for the original user of the product, either by repair (using new or refurbished parts), or at the manufacturer's election, by replacement (with a new or refurbished product), any defects in material or workmanship which develop during the warranty period. The standard warranty is twenty-four (24) months after delivery of the product. In the event of replacement, the replacement unit will be warranted for the remainder of the original warranty period or ninety (90) days, whichever is longer. For purposes of this limited warranty, "refurbished" means a product or part that has been returned to its original specifications. In the event of a defect, these are your exclusive remedies.

If the product should require service, contact the manufacturer's/supplier's office for instructions. When return of the product is necessary, a return authorization number is assigned and the product should be shipped, transportation charges pre-paid, in either its original packaging or packaging affording an equal degree of protection to the indicated service center. To insure prompt handling, the return authorization number must be placed on the outside of the package. A detailed explanation of the defect should be enclosed with the item.

The warranty shall not apply if the defect or malfunction was caused by accident, neglect, unreasonable use, improper service, acts of God, modification by any party other than the manufacturer, or other causes not arising out of defects in material or workmanship.

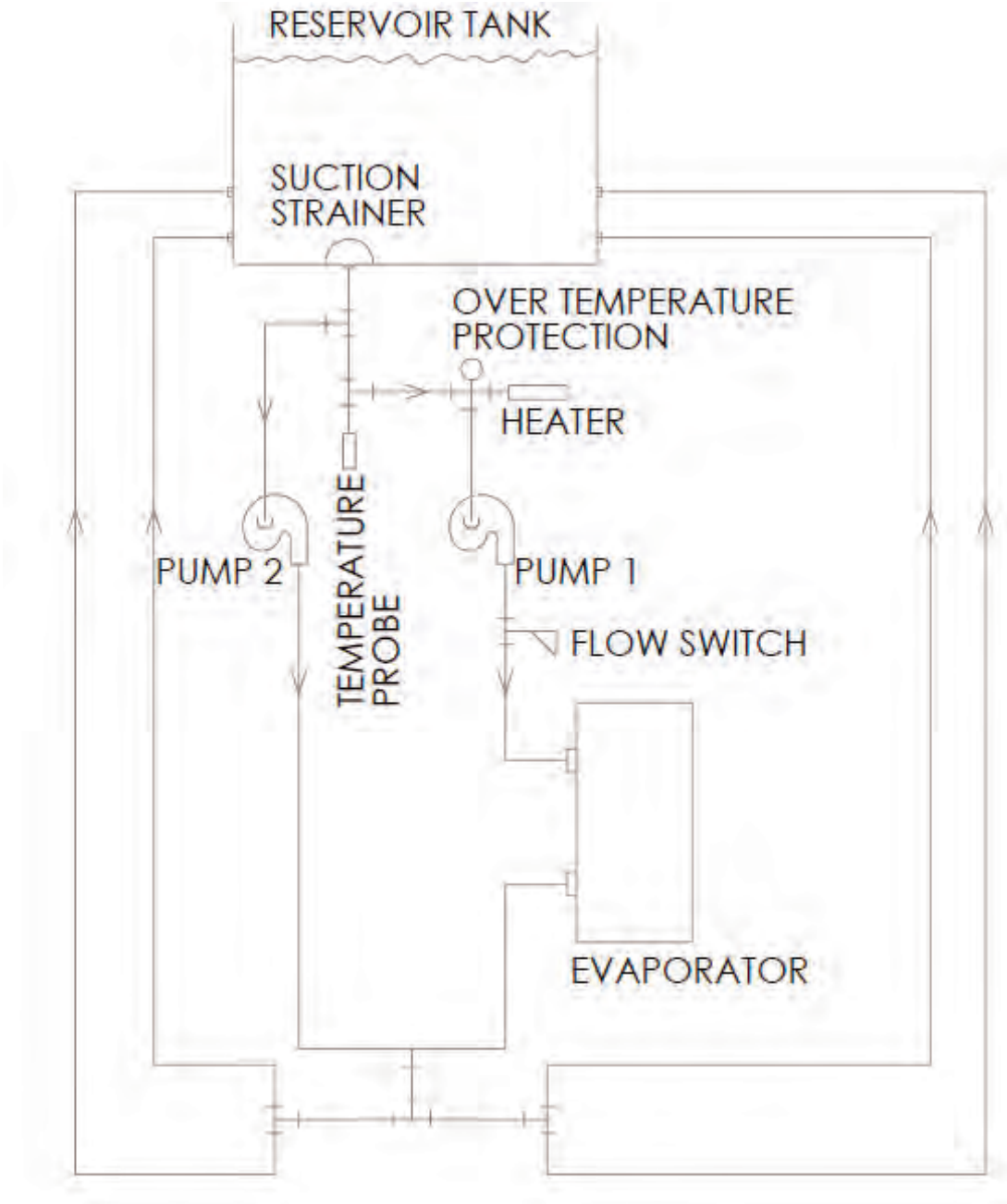
EXCLUSION OF IMPLIED WARRANTIES. THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHICH EXTEND BEYOND THE DESCRIPTION AND PERIOD AS STATED IN THE OPERATOR'S MANUAL INCLUDED WITH EACH PRODUCT.

LIMITATION ON DAMAGES. THE MANUFACTURER'S SOLE OBLIGATION UNDER THE 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 and you may have other rights that vary from state to state.

Appendix

Flow Diagram



Wiring Diagram