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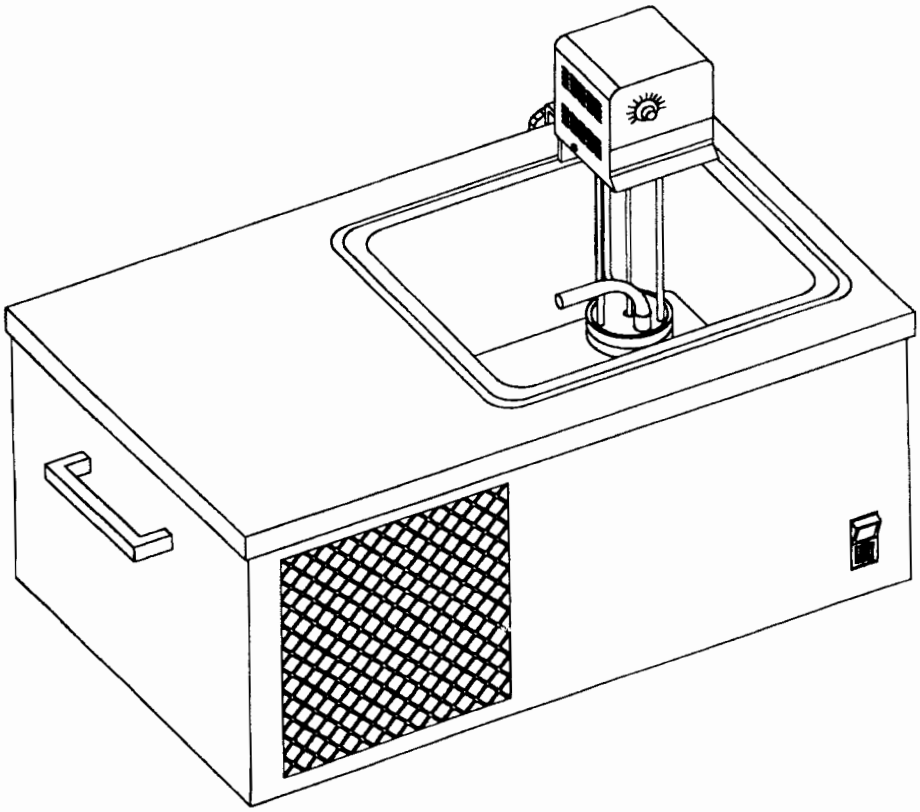
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Operators Manual

Model 13 R

13 Liter Refrigerated Bath



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Operators Manual

Model 13R Refrigerated Bath

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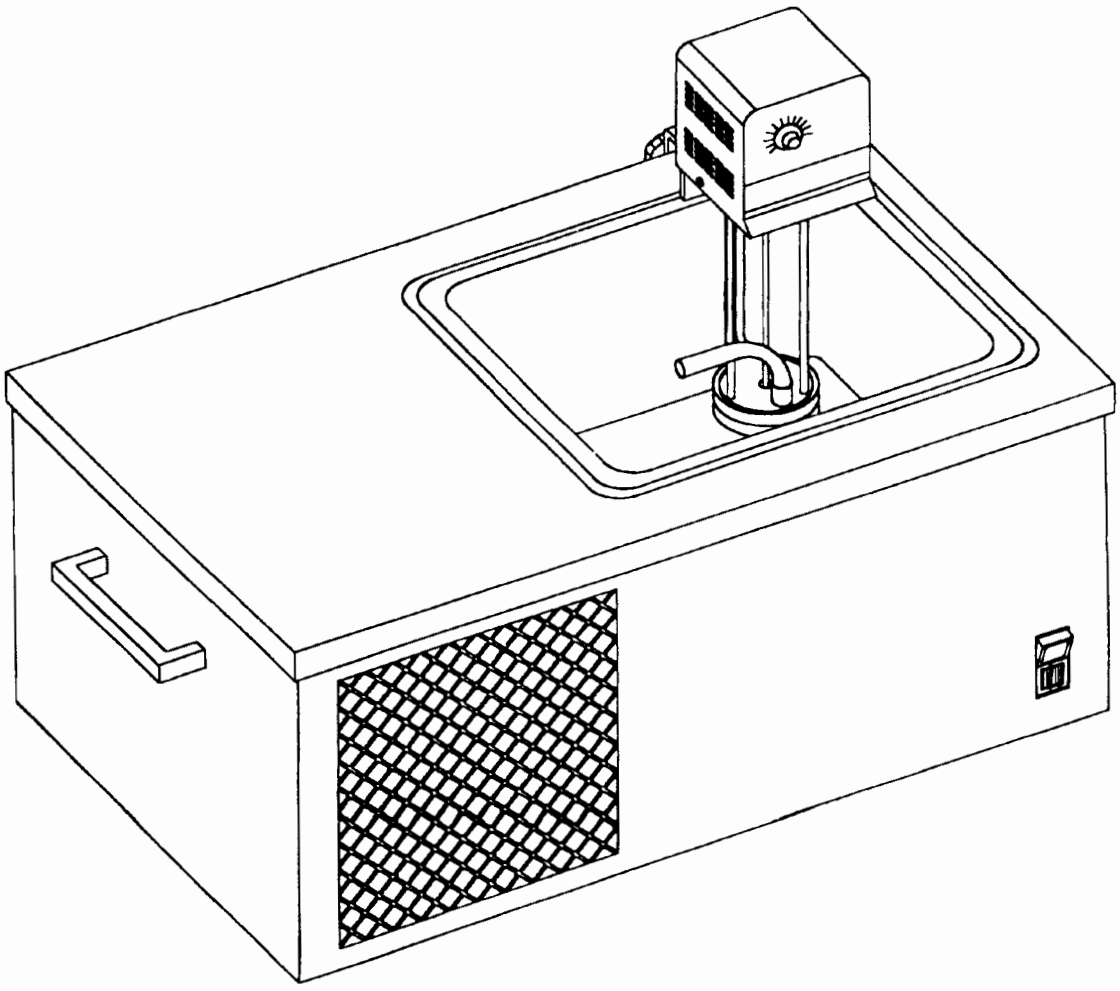
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Section 1 - General Information

Thank you for your purchase. We are confident this refrigerated bath will serve your applications with great satisfaction for a long time.

1.1 Warranty

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 in parts which develops within twenty four (24) months after delivery of this product to the original user. The warranty period for labor is twelve (12) months after delivery. In the event of replacement, the replacement unit will be warranted for ninety (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's office nearest your location for instructions (for a complete list of offices, see your manufacturer's catalog). 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 the defect or malfunction was caused by accident, neglect, unreasonable use, improper service, 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 which 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 which vary from state to state.

1.2 Unpacking

Your 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.

Before proceeding, be sure the power ON/OFF switch is in the OFF position.

1.3 Model 13R Refrigerated Bath Description

This 13 liter bath with stainless steel reservoir, is designed to work in conjunction with an immersion circulator or other source of controlled heating circulation in order to extend the useful range of the heating circulator.

The 13R is NOT a controlled cooling source. It will cool continuously to the down to the capacity of the refrigeration system. The unit can be used to 0°C, and with an immersion circulator, can also be used to maintain a constant temperature near ambient.

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Section 2 - Operation

2.1 Set Up

Place the unit on a strong, level surface that allows unobstructed air flow through the front and back screens. A space of at least four inches behind the unit is required. Try to locate the unit away from room drafts or sunlight which could interfere with bath temperature stability. Do not place it where there are corrosive fumes, excessive moisture, high room temperatures, or excessively dusty areas. Use 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.

2.2 Filling the Reservoir

Fill the reservoir with fluid before applying power. Fill the reservoir to within 2 inches of the top for best refrigeration performance. After mounting your immersion circulator, recheck the fluid level to be sure that the heater and pump are fully immersed in bath fluid. If the proper fluid level is not maintained the heater may become exposed and possible damage to the heater may result.

2.3 Reservoir Fluids

Use distilled water for temperatures from 10°C to 90°C or a mixture of laboratory grade ethylene glycol and water for temperatures below 10°C.

A variety of fluids can be used with the circulator depending upon your needs. The fluid must be chemically compatible with the stainless steel reservoir and with your immersion circulator pump and heater. The fluid must also be able to produce the temperature range desired. For best 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.

The chart below will help in selecting a fluid for your application. Stay within the fluid's normal range for best temperature stability and low vaporization. **You are responsible for proper selection and use of the fluids. Extreme range operation should be avoided.**

Fluid Description	Specific Heat @25°C	Normal Range	Extreme Range
Water	1.00	10°C – 90°C	2°C – 100°C
Glycol or Glycerin 30%/Water 70%	.90	0°C – 95°C	-15°C – 107°C
Glycol or Glycerin 50%/Water 50%	.82	-25°C – 100°C	-35°C – 115°C
Glycol or Glycerin 100%	.62	50°C – 125°C	25°C – 155°C*
DC200, 10 cs Silicone Oil	.34	-20°C – 80°C	-35°C – 165°C*
DC200, 20 cs Silicone Oil	.36	0°C – 100°C	-10°C – 230°C*

***WARNING - Fluid's flashpoint temperature**

DC fluids are manufactured by Dow Corning.

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



WARNING: Do not use a flammable liquid as a fire hazard may result.

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2.4 Mounting the Immersion Circulator

For best results, circulation should be on before refrigeration is activated. Clamp your immersion circulator on the side of the bath and position its flow director to obtain a circular flow in the reservoir.

The immersion circulator can be plugged into any suitable outlet. An outlet is also provided on the back of the 13R. A 120v immersion circulator can plug into a 120v unit, a 240v immersion circulator plugs into a 240v unit.

2.5 Power & Start Up

Plug the Model 13 R into a properly wired, grounded outlet with the same voltage and frequency indicated on the identification label on the back of the unit. 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.

First turn your immersion circulator ON and set the desired temperature. Then, turn the power switch (located on the front of the unit) ON to start the refrigeration system.

2.6 Operation of Refrigeration on Model 13R

For operation at reservoir temperatures below 40°C refrigeration is normally required. To start the refrigeration system, press the cooling switch to the ON position. The refrigeration switch must be turned off if the reservoir fluid is above 55°C. The Model 13 R will provide about 180 watts of cooling power at +20°C. The time it takes to arrive at your operating temperature depends on many factors and will vary.

When refrigeration is switched off or if power is interrupted, Model 13R should not be restarted for approximately ten minutes in order to allow the internal pressures to equalize. System damage could result if you do not observe this waiting period.

Section 3 - Maintenance

3.1 Condenser and Air Vents

The condenser and the front and back air vents should be kept free of dust and dirt. Dirt thermally insulates the condenser and reduces the cooling capacity of the refrigeration system. Set up a periodic schedule to clean the fins of the condenser with compressed air.

3.2 Cleaning

Use only mild detergent and water or an approved cleaner on the painted and stainless steel surfaces. Do not allow cleaning liquids or sprays to enter the controller head vents. A concentrated bath cleaner can be used to remove mineral deposits from the reservoir.

Section 4 - Trouble Shooting

4.1 No Cooling or Insufficient Cooling

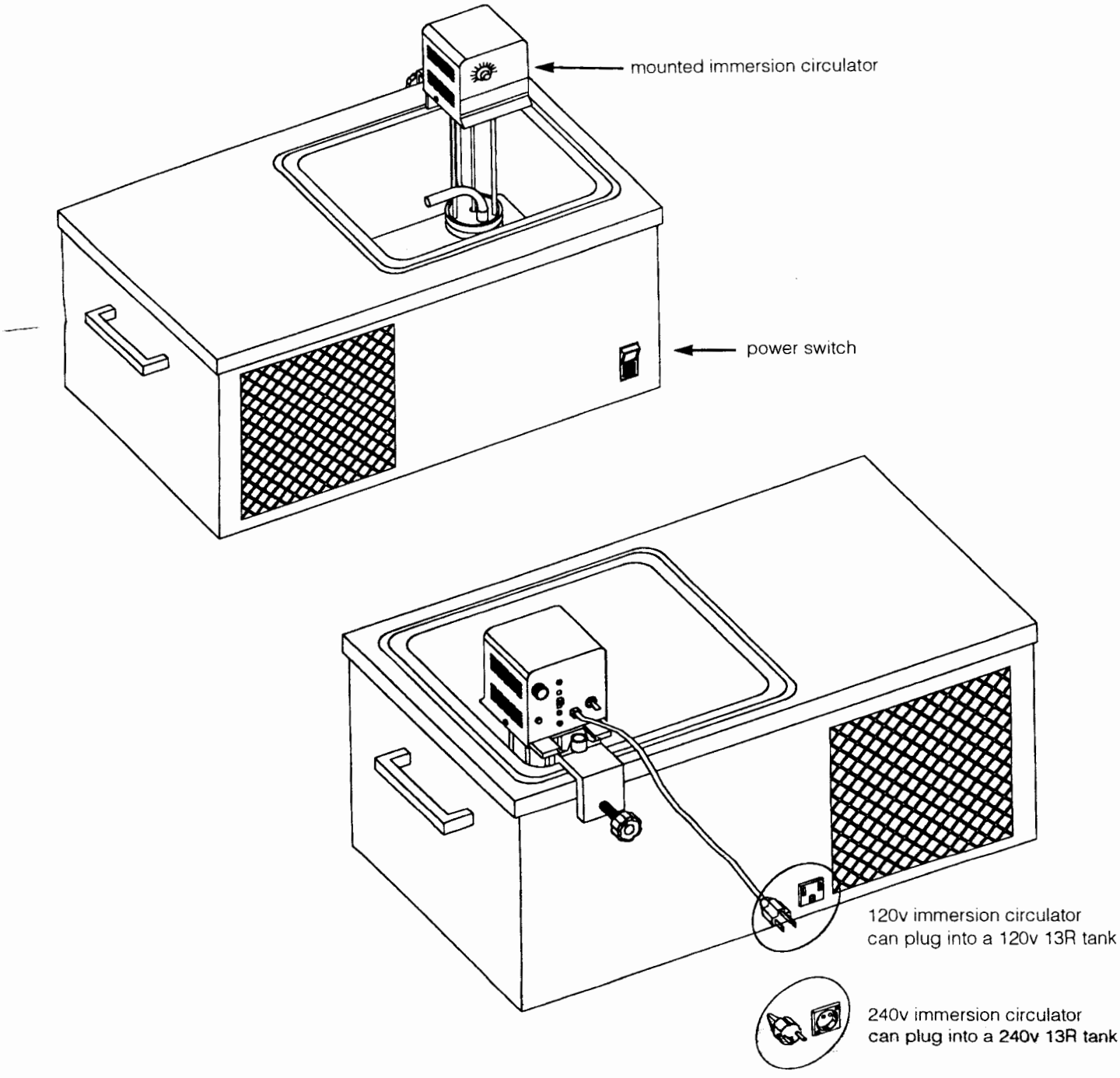
- Check if the cooling switch is ON.
- Check for low or high line voltage.
- Check for blocked airflow through ventilation screens.
- Refrigeration unit should not be operated above 32°C ambient temperature.
  Such a condition may cause the refrigeration compressor to temporarily shut down.
- Check if heat is being added to the fluid in excess of the refrigeration system's capacity.

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Section 5 - Service and Technical Support

If you have followed the troubleshooting steps and your circulator fails to operate properly, contact the company where 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



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