

# Operators Manual

## Model 9805 Large Volume Refrigerated Open Bath

Microprocessor Controller Digital Set & Read  
with High Flow Centrifugal Pump

# Table of Contents

## Section 1 - General Information

- 1.1 Warranty
- 1.2 Unpacking
- 1.3 Large Volume Refrigerated Circulating Bath
- 1.4 Package Contents
- 1.5 Description
- 1.6 Specifications

## Section 2 - Operation

- 2.1 Set Up & Location
- 2.2 Reservoir Fluids
- 2.3 Reservoir Drain
- 2.4 Power
- 2.5 Controller Temperature Setting and Adjustments
- 2.6 Selection of Celsius or Fahrenheit Readout
- 2.7 Setting the Readout High Limit
- 2.8 Safety Thermostat (OTP)
- 2.9 Controller Display Messages
- 2.10 Controller Default Settings

# 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 which 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 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 circulating bath is shipped in a special crate. Retain the crate 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, then contact the company where your unit was purchased.

## 1.3 Package Contents

- Open Refrigerated Circulating Bath
- Operators Manual
- Warranty Card

## 1.4 Description

This bath provides open bath cooling power for applications which require a large reservoir. All models have a microprocessor controller, digital set/read and readout in °C or °F. The refrigeration system has modulation capability to provide cooling as needed and thus greater temperature stability and longer compressor life. Wettable parts are brass, copper, polypropylene, PVC and stainless steel.

## 1.5

## Specifications

Refer to the serial number plate on rear of the bath for model and electrical data.

Specification		Model 9805
Compressor		1 HP
Temperature Range		-10° to 60°C
Temperature Setability		0.1°C
Temperature Stability		±0.5°C
Overall Dimensions	in.	44 x 30 <sup>1</sup> / <sub>2</sub> x 37 <sup>1</sup> / <sub>2</sub>
	cm	111.8 x 77.5 x 95.3
Reservoir Capacity		50 gal / 189 Liters
Reservoir Dimensions	in	32 x 22 x 16
	cm	81.5 x 55.8 x 44.5
Heater		2250 Watts
Cooling Capacity @	0°C	940 Watts
	10°C	1925 Watts
	20°C	2850 Watts
Pump Flow		4.3 gpm / 16.3lpm
Electrical Specifications		208-230V, 1ph, 15A

## Section 2 - Operation

Before proceeding, be sure all power controls are off.

## 2.1

## Set Up &amp; Location

Locate the bath on a strong, level surface. Position the bath for unobstructed air flow 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.

## 2.2

## Reservoir Fluids

Use a fluid in the bath that will flow freely. For most applications above +15°C, distilled water is satisfactory. Do not use hard tap water or extremely pure deionized water which may promote corrosion of the stainless steel reservoir.

Laboratory grade ethylene glycol & water (50/50) must be used for applications from +15° to -15°C. This bath, its internal components, and the fluid must be protected from freezing starting at +15°C.

To optimize temperature stability (when operating at low temperatures and high room temperature conditions, or when using the bath at elevated temperatures) it is recommended blanketing the fluid with floating polyethylene balls (Cat. No. 060301). The balls provide an insulating barrier over the surface and are easily pushed aside to access immersed samples.

Only use fluids that will satisfy safety, health and equipment compatibility requirements. Caustic, corrosive or flammable liquids must not be used.

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

You are responsible for proper selection and use of the fluids.

Extreme range operation should be avoided.

Stay within the fluid's normal range for best temperature stability, low vaporization, and safety.

FLUID DESCRIPTION	SPECIFIC HEAT @25°C	NORMAL RANGE	EXTREME RANGE
Water	1.00	10°C — 90°C	2°C — 100°C
Ethylene Glycol 30% / Water 70%	.90	0°C — 95°C	-15°C — 107°C
Ethylene Glycol 50% / Water 50%	.82	-25°C — 100°C	-35°C — 115°C
Ethylene Glycol 100%	.62	50°C — 120°C	-35°C — 125°C
Methanol 60% / Water 40%	.52	-45°C — 0°C	—
Dynalene™-HC 50	.76	-50°C — 60°C	-62°C — 60°C
DC200 5 cs Silicone Oil	.32	-35°C — 65°C	-50°C — 125°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 resistance >1 meg ohm
4. Any flammable fluids
5. Concentrations of acid or bases
6. Bleach (Sodium Hypochlorite)
7. Solutions with chromates or chromium salts
8. Solutions with halides: chlorides, fluorides, bromides, iodides or sulfur

### 2.3 Reservoir Drain

For easy cleaning, there is a reservoir drain at the rear of the unit. The drain cap has a button-like seal to prevent leakage, part # 300-235. Replace the seal if leakage occurs. The drain outlet size is standard refrigeration 1/4 inch SAE. The pipe thread is 7/16 inch diameter with 20 threads per inch.

### 2.4 Power

After attaching the removable line cord to the back of the unit, plug the cord into a properly wired, grounded outlet with the same voltage and frequency indicated on the identification label on the back of the unit.

The power supply must be single phase, 208-230V. The circuit breaker on the rear of the unit must be ON. With the power button on the control panel OFF, but with the bath plugged in, the display responds by showing standby (....). If there is no response, verify the circuit breaker on the rear of the unit is in the ON position.

Use of an extension cord is not recommended. If necessary, use an extension cord that is properly grounded and will handle the total wattage of the unit. The extension cord should not cause a voltage drop to the bath.

Warning! When refrigeration is switched off, it should not be restarted for approximately 10 minutes in order to allow the internal pressures to equalize.

System damage could result if you do not observe this waiting period.

## 2.5 Controller Temperature Setting and Adjustments

After filling the bath reservoir, set the desired temperature as follows:

1. Press the control panel POWER button ON, the pump starts to operate. The LED display indicates (8888), the power up self test. Upon completion of the self test, the actual fluid temperature is displayed. The operating temperature can now be set.
2. Press the SET/MENU button. The degree light flashes indicating the temperature can be changed. Turn the INCREASE/DECREASE knob to the desired setting. This setting is accepted after pressing the SET/MENU button or is automatically accepted after a few seconds of keypad inactivity. The degree light stops flashing and the display indicates the actual temperature.
3. The set temperature may be checked at any time by pressing the SET/MENU button. Because you are dealing with a large volume of fluid, allow sufficient time for the bath to stabilize at the desired temperature.

## 2.6 Selection of Celsius or Fahrenheit Readout

To change the readout to °C or °F do the following:

1. Press and hold the SET/MENU button until the display reads "UNITS".
2. Press SET/MENU again then turn the INCREASE/DECREASE knob and select °C or °F.
3. Press SET/MENU or the setting is accepted after a few seconds.

## 2.7 Setting the Readout High Limit

This feature is to limit the setting range of the readout so the set temperature cannot exceed the high limit you select. Set the readout high limit as follows:

1. Press and hold the SET/MENU button until the display reads "UNITS".
2. Turn the INCREASE/DECREASE knob until the display reads "HI-L".
3. Press the SET/MENU button, enter the desired value using the INCREASE/DECREASE knob.
4. Press SET/MENU and the display again reads HI-L. When the value is accepted, the degree light stops flashing and the fluid temperature is displayed.

## 2.8 The Safety Thermostat, OTP

Your recirculator is equipped with a Safety Thermostat - OTP (OverTemperature Protection) that shuts off the unit if the heater reaches an excessive temperature (due to low liquid level or thermostat failure). If this safety has been activated, indicated by the front panel safety light, check and correct the liquid level, wait approximately 10 minutes, then reset the Safety thermostat. The Safety reset is found by removing the black cap on the right side of the unit and pressing the recessed red reset button. If the liquid level was adequate and not the cause of the safety's activation, turn off unit and call for service.

## 2.9 Controller Display Messages

	Display	Message
Normal Screens	....	Standby mode. Unit plugged in. Power switch OFF, rear circuit breaker on.
	8888	Power up self test displayed when power is first ON.
Menu Screen	Unit	Change to °F or °C
	Unit/Hi-L	Limits operating temperature setability
Error Screens	E-tF	Triac (alternistor) failure
	dEF	Displayed when controller is reset to factory default setting
	E-oP	Over temperature fault
	E-sF	Sensor Failure
	AL-M	High temperature alarm

## 2.10

### Controller Default Settings

Should the need arise, the following steps return all settings to the factory default values.

1. With unit powered on, unplug the power cord. (Or turn off circuit breaker.)
2. Hold the SET/MENU button while plugging the power cord back in. (Or turning circuit breaker back on.)
3. The controller will display "dEF" and go to the standby mode.
4. The control point and other settings will have to be reset.