

Operator's Manual

General Purpose Water Baths



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Introduction

Thank you for choosing this Water Bath. It is designed to handle a wide range of laboratory procedures including: incubation, inactivation and agglutination as well as most pharmaceutical, serological, biomedical and industrial procedures.

To ensure optimum temperature uniformity, your Water Bath features an energy-efficient, large-area heater and thermostatic control. Its PID (Proportional Integral Derivative) microprocessor control system provides proportional heat control by anticipating the approach to your set point temperature and reducing overshoot. A redundant safety thermostat is standard on all models.

General Safety Information






When installed, operated and maintained according to the directions in this manual and common safety procedures, your Water Bath should provide safe and reliable temperature control. Please ensure that all individuals involved in the installation, operation or maintenance of this Water 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 indicates that hot surfaces or liquids may be present.
	This symbol marks information that is particularly important.
	This symbol indicates alternating current.
	These symbols on the Power Switch indicate that they place the main power supply ON/OFF.
	This symbol on the Power Button 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, setup and operation. Proper operation is the user's 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:

	<p>WARNING:</p> <ul style="list-style-type: none">• Always connect the power cord on this Water 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 Water Bath with a damaged power cord.• Always turn the Water Bath off and disconnect mains power before performing any maintenance or service.
	<p>WARNING:</p> <ul style="list-style-type: none">• Never operate the Water Bath without bath fluid or acceptable media 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 media type that is already in the reservoir. Bath oil must not contain any water contaminants and should be preheated to the actual bath temperature before adding as there is an explosion hazard at high temperatures.• Use compatible bath fluids only.• Always drain all fluid from the reservoir before moving or lifting your Water Bath. Be sure to follow your organization's procedures and practices regarding the safe lifting and relocation of heavy objects.
	<p>WARNING: Always allow the bath fluid or media to cool to ambient temperature before draining.</p>
	<p>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.</p>
	<p>CAUTION: If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.</p>

Regulatory Compliance & Testing

ETL (60 Hz units)

UL 61010-1 / CSA C22.2 No. 61010-1, 3rd Edition (2012)
UL 61010-2-010 (2015) / CSA C22.2 No 61010-2-010:2015

CE (50 Hz units)

Low Voltage Directive 2014/35/EU
EN 61010-1:2010
EN 61010-2-010:2014

EMC Directive 2014/30/EC
EN 61326-1: 2013

All Units - RoHS2 2011/65/EU

EN 50581:2012

Unpacking Your Water Bath

Your Water Bath is shipped in ISTA Transit Damage Protection certified packaging. 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, then contact the company where your unit was purchased.



WARNING: Keep unit upright when moving. Be sure to follow your company's procedures and practices regarding the safe lifting and relocation of heavy objects.

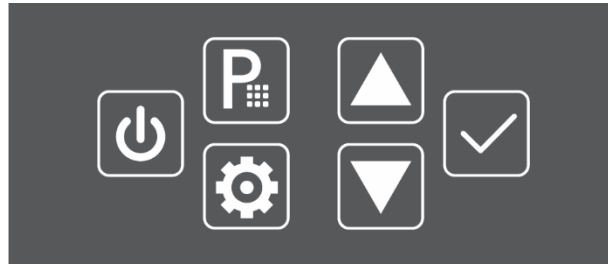
Contents







The items included with your Water Bath are:

- Water Bath
- Gabled Reservoir Cover Assembly
- Sample Tray
- Operator's Manual
- Quick-Start Guide
- Selection Guide

Navigation

Keypad Overview



-  – Press to enter or leave Standby Mode
-  – Press to enter Preset launch screen
-  – Press to enter Main Menu from Home Screen or go back to previous menu or screen.
-  – Press to move up, to raise a selected value or to raise set temperature
-  – Press to move down, to lower a selected value or to lower set temperature
-  – Select highlighted option or confirm changes. Holding this button will enter Lock Mode (see page 11)

Home Screen


The Home Screen is the default screen for your Water Bath. It contains all of the valuable operating information. A sample Home Screen with explanations is shown below.

Status Bar

Displays important icons and status information. The status bar is displayed in all screens.

Heating Icon

Indicates that the bath is actively heating. If this icon is absent, heat is not being applied. In Eco Mode, this Icon will

be replaced with . (For more information on Eco Mode, Please see Presets on page 12)

Timer Icon

Shows that the Timer is active. The number indicates remaining time, displayed in minutes.



Preset Status

Displays the details of an active preset program. For more information on presets and their readouts, please see Presets on page 12.

Temperature Readout

Displays the current *measured* temperature of the bath.

Set Temperature Display

Displays the current desired temperature set by the user.

Installation and Startup


Your Water Bath is designed to be simple to setup and install. All that is required is a container for adding water or another suitable fluid or dry medium to the bath reservoir.


General Site Requirements

Locate your Water Bath on a level surface in an area that is free from drafts and wide ambient temperature variations, such as near heater or air conditioning vents. Do not place it where there are corrosive fumes, excessive moisture, or in excessively dusty areas.

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; extension cords increase the potential for low line voltage-related problems.

Adding Liquid to the Bath Reservoir

	<p>WARNING: Read the safety data sheet for the bath fluid being used carefully before filling reservoir.</p> <p>WARNING: See <i>Technical Information, Bath Media</i> (page 14) for a list of compatible liquids.</p> <p>WARNING: If the proper fluid level is not maintained, the unit could possibly be damaged (fluid level too low) or the bath may overflow (fluid level too high).</p>
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	<p>CAUTION: Fumes from acidic solutions may cause corrosion of the stainless steel reservoir. Care should be taken to maintain a neutral pH at all times.</p>
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Fill bath so that the liquid level is approximately one inch (2.54 cm) from top when samples are placed in the bath.


To ensure accurate reading of temperature, the fluid level should not be less than 2 inches (5.08 cm) from the bottom of the unit. Operation of the bath without fluid should not damage the heater, but may cause permanent discoloration of the tank and inaccurate temperature information.

Distilled water is preferred for temperatures from 10° to 90°C (50° to 194°F). A variety of fluids can be used with the bath depending on the application. The fluid must be compatible with 300 series stainless steel.

See *Technical Information, Bath Media* (page 14) for a list of compatible media.

If using water, a few drops of polyclean CLARIFIER (part number 004- 300040) should be used to help prevent algae formation.

	<p>WARNING: Always drain all fluid from the reservoir before moving or lifting your Water Bath. Be sure to follow your organization's procedures and practices regarding the safe lifting and relocation of heavy objects.</p>
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	<p>WARNING: To avoid the potential for burns, allow the Water Bath to cool completely before cleaning or performing any maintenance.</p>
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Electrical Power

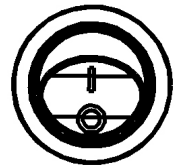


WARNING: The Water Bath's power cord must be connected to a properly grounded electrical receptacle. Make certain that this electrical outlet is the same voltage and frequency as your Water Bath. The correct voltage and frequency of your Water Bath are indicated on the identification label on the rear of the unit.






CAUTION: The use of an extension cord is not recommended. 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 unit.

Insert the power cord into a properly grounded electrical outlet. Place the Mains Switch on the rear of the unit (depicted on the right) in the ON (I) position.




Main Menu

	37.0°C
Menu	1/2
Modify Presets	»
Set Timer (HH:MM)	00:00
Temperature Unit	°C
Language	✓ English
Langue	Français
BACK: 	SELECT: 

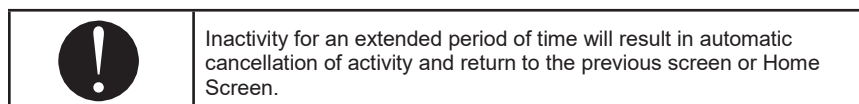
Use ▲ or ▼ to navigate through the menu options.

Use ✓ to select the option in the highlighted row.

The  button will return to the Home Screen from the Main Menu.
In all other cases it will return to the previous menu.

For ease of use, all navigation options are displayed on the bottom bar. When a button is depressed, the corresponding icon will change color.

The Menu title bar will indicate if there are multiple pages available.



Modify Presets

This menu item will open the Modify Presets menu. Refer to Presets on page 12 for information on presets and their function.

Set Timer

This menu item allows for the launch of an independent timer. For Timer use instructions, see Basic Function, Set Timer on page 11.

Selecting the Temperature Unit

1. Highlight "Temperature Unit" in the Menu and press ✓.
2. Use the ▲ or ▼ buttons to choose between °C and °F.
3. Use ✓ to confirm your selection.

Language Settings

For your convenience, Language selection is easily accessible from the Main Menu. The selected language is indicated by a ✓ next to the active language.

Setting the High Limit Value

This menu item allows you to enter a high temperature alarm value and can establish a temperature above which a set point temperature cannot be entered. If you try to increase the set point to a temperature higher than the High Limit value, further increases will be blocked and an alert will appear.

1. Highlight "Temperature Unit" in the Menu and press ✓.
2. Use the ▲ or ▼ buttons to set the high limit value to the desired temperature.
3. Use ✓ to confirm your selection.

User Settings

The User settings sub-menu contains a variety of options for convenience that do not directly affect bath operation.

The user settings options include:

Alarm Settings

Select between Audible and Visible, Visible only, or Audible only Alerts.

Calibration Offset

This menu item allows you to offset all bath temperature readings by -7 to +7°C. For example, if the Calibration Offset is set to +0.5° the bath will display temperature readings of 20°C, 50°C and 70°C as 20.5°C, 50.5°C and 70.5°C, respectively.

Screen Brightness

Adjust the brightness of the screen for accessibility and adjustment of power consumption.




Background Color/Theme

Change the color theme of the screens.

Version Information

View the bath's firmware information (read-only)

Resetting the Factory Default Values



1. Press  to place the Circulator in Standby.
2. Place the Mains Switch on the rear of the unit in the OFF position.
3. Return the Mains Switch to the ON position while pressing and holding either the  or  button.

The factory default values are:







Operational Parameter	Factory Default Value
Temperature Set Point	20 °C
Temperature Scale	°C
Timer	00:00 HH:MM
High Limit	100 °C
Screen Brightness	3
Timer Direction	Decreasing
Timer Alarm Indication	Visible & Audible
Current Language	English
Background Color	White
Preset 1	Set Point 37° C Timer: ∞
Preset 2	Set Point 37° C Timer: 08:00 HH:MM
Preset 3	Set Point 41.5 °C Timer: ∞
Preset 4	Set Point 44.5 °C Timer: ∞
Preset 5	Set Point 56 °C Timer: ∞

Basic Function





Setting a Fixed Temperature for the Bath.

Using the  and  buttons, adjust the temperature in the set box until it reaches the desired set point. Press and hold the button for faster speeds. The set point will change automatically.

Lock Controls

- From the home screen, press and hold the  button for 5 seconds. When prompted, select the YES option by pressing  or cancel by using  to select NO. When the controls are locked, a  icon will appear on the home screen.
- To unlock, press any button to access the unlock screen. When prompted, select YES by pressing  to unlock or press  to select NO and keep the controls locked.

Setting the Timer

Select the "SET TIMER" option from the Main Menu. Use  and  to select the desired timer duration. Press  to start the timer immediately or  to cancel.



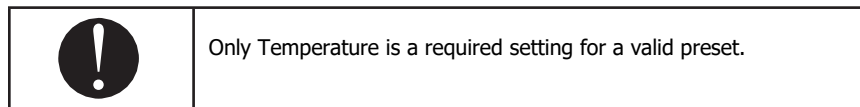
The Timer feature does not control the heater in your bath. To set a temperature for a fixed amount of time, please refer to Presets on page 12.

Presets

The preset function is a powerful feature that allows the user to design a program or setting for easy access and repeatability. A preset gives the user one-touch access to frequently used settings, allowing for quick start-up and easy use.

Presets consist of two parts:

- Temperature
The set temperature for the Preset.
- Time
The length of time the Preset Temperature will be maintained. The countdown will not begin until the correct temperature has been reached. When the time elapses, the heater will shut off and the Bath will be placed into Eco Mode. In Eco Mode, the measured temperature will be displayed for one hour. After one hour, the Bath will be placed into Standby Mode. If time is set to ∞ , the Preset Temperature will run indefinitely.



Before using a preset, it must be configured from the main menu:

1. Navigate to the "PROGRAM PRESETS" line and press ✓ to open the Program Presets menu.
2. Select the preset you wish to change.
3. Choose your desired temperature and time.
4. Exit the Program Presets menu.

To launch a Preset that has already been configured:

1. From the Home Screen, press **P** to access the Preset Launch screen.
2. Highlight the desired preset and press ✓ to launch it.
3. The Preset will launch immediately.

Technical Information

Performance Specifications

Working Temperature: Ambient +5°C to 100°C
(ambient +10° to 212°F) 60°C
(140°F) without cover

Temperature Uniformity: ±0.2°C @ 37°C (±0.4°F @ 98.6°F)

Temperature Stability: ±0.1°C (±0.2°F)


Reservoir Size	Reservoir Dimensions (L x W x D)	Heater Wattage	Electrical Requirements	
			120 V, 60 Hz	220-240 V, 50/60 Hz
2 liter	3.9 x 4.3 x 6" 9.9 x 10.9 x 15.2 cm	120	WBE02, WBE02**1* 1.1 A	WBE02, WBE02**2* 0.5 A
5 liter	5 x 10.8 x 6" 12.7 x 27.4 x 15.2 cm	360	WBE05, WBE05**1* 3.3 A	WBE05, WBE05**2* 1.6 A
10 liter	10.6 x 11.6 x 6" 26.9 x 29.5 x 15.2 cm	1000	WBE10, WBE10**1* 8.6 A	WBE10, WBE10**2* 4.5 A
20 liter	9.5 x 17 x 6" 24.1 x 43.2 x 15.2 cm	1400	WBE20, WBE20**1* 12.0 A	WBE20, WBE20**2* 6.0 A
28 liter	9.5 x 17 x 8" 24.1 x 43.2 x 20.3 cm	1400	WBE28, WBE28**1* 12.0 A	WBE28, WBE28**2* 6.0 A

Environmental Conditions Indoor use only
Maximum Altitude: Operating 2000 meters
Ambient: Relative Humidity: 5° to 40°C (41° to 104°F)
80%, non-condensing


Installation Category: II
Pollution Degree 2


Bath Media


Your Water Bath is compatible with a wide range of media including fluids and dry media. Always check the specifications for any fluid, beads, or other media before using with your bath.

	<p>WARNING: Do not operate unit with any potentially flammable materials, as a fire hazard may result.</p>
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Medium Type	Specific Heat		Normal Temperature Range	Extreme Temperature Range	
	@Fluid Temperature	BTU/lb °F			KJ/Kg °C
Distilled Water	50°C	1.00	4.18	10° to 90°C	2° to 100°C
polyclear MIX 30	50°C	1.00	4.18	15° to 90°C	2° to 100°C
polycool HC-50	-30°C	0.62	2.59	-50° to 100°C	-62° to 118°C
polycool EG-25 (50/50 mix with distilled H ₂ O)	-20°C	0.78	3.26	-25° to 100°C	-30° to 115°C
polycool EG-25 (30/70 mix with distilled H ₂ O)	0°C	0.89	3.72	0° to 95°C	-15° to 107°C
polycool PG-20 (50/50 mix with distilled H ₂ O)	-10°C	0.83	3.47	-20° to 100°C	-30° to 115°C
polycool PG-20 (30/70 mix with distilled H ₂ O)	5°C	0.92	3.85	5° to 90°C	-10° to 107°C
polycool MIX-25 (50/50 mix with distilled H ₂ O)	-20°C	0.78	3.26	-25° to 100°C	-30° to 115°C
polycool MIX-25 (30/70 mix with distilled H ₂ O)	0°C	0.89	3.72	0° to 95°C	-15° to 107°C

	<p>Use of dry media above 40°C is not recommended. For optimal performance with beads or other compatible dry media, do not exceed temperatures of 40°C.</p>
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	<p>WARNING: DO NOT USE THE FOLLOWING LIQUIDS:</p> <ul style="list-style-type: none"> • Automotive antifreeze with additives** • Hard tap water** • Treated water that has been deionized or ultra-purified with a specific resistance of >1 meg ohm (including but not limited to deionized water, MQ water, ultrapure water) • Any flammable fluids • Concentrations of acids or bases • Solutions with halides: chlorides, fluorides, bromides, iodides or sulfur • Bleach (Sodium Hypochlorite) • Solutions with chromates or chromium salts • Glycerine • Syltherm fluids <p>** At temperatures above 40°C, additives or mineral deposits can adhere to the stainless steel reservoir. If deposits are allowed to build up, the heater may overheat and fail. Higher temperatures and higher concentrations of additives will hasten deposit build up.</p>
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	<p>CAUTION: Fumes from acidic solutions may cause corrosion of the stainless steel reservoir. Care should be taken to maintain a neutral pH at all times.</p>
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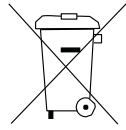
Stay within the fluid's normal range for best temperature stability and low vaporization. At fluid's high temperature extreme:

- A fume hood may be required to prevent the buildup of vapors inside the room.
- Fluid loss from vapor will have to be frequently replenished.
- Caution must be taken to stay well below the fluid's flashpoint.

Application Notes

- For optimum results, maintain fluid level throughout the operating period, adding fluid as needed. Attempt to refill fluid at same temperature as bath.
- Use the bath lid and/or hollow plastic floating balls (part number 060301) to help prevent heat and vapor loss.
- This unit is designed for indoor use only with an allowable ambient temperature between +5°C to 40°C (41° to 104°F) and relative humidity not greater than 80%.

Equipment Disposal (WEEE Directive)



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.

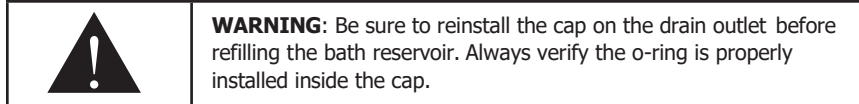
It is your responsibility to correctly dispose of this equipment at lifecycle-end by handing it over to an authorized facility for separate collection and recycling. It is also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect the persons involved in the disposal and recycling or 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.

Maintenance and Troubleshooting

Draining the Bath Reservoir Water Baths with 10, 20 and 28 liter reservoirs have a drain port located on the rear of the unit. To drain fluid from the bath reservoir, place a suitable container beneath the drain port and remove the cap and o-ring.



Drain

Cleaning the Bath

Thoroughly clean the bath before each use. Use only mild soap and water when cleaning. Do not use steel wool as damage to the unit may result. Non-steel scouring pads are acceptable. The entire unit is housed in a tough, well-insulated powder-coated steel casing that is corrosion and chemical resistant.

Fault Screens

Fault screens will appear when the unit is not operating within normal parameters. All fault screens will clearly indicate the issue. The fault screen will remain until the issue is resolved. The Main Menu is accessible from the fault screen, if any adjustments are necessary.



Example fault screen



Loss of Power Restart

In the event that electrical power is lost while your Water Bath is in use, it will begin operating automatically at the set point temperature once power is restored. A notification will appear on the display to alert you that there was a power disruption. To clear the message, press ✓.

Resetting the Over-Temperature / Low Liquid Level Safety

For optimal protection, your Water Bath incorporates redundant over-temperature safeties. These over-temperature / low liquid level safeties automatically removes power from the heater in the event that the bath temperature exceeds their factory set temperature settings.

While these safeties are designed to automatically reset when the bath returns to a temperature below the factory set safety settings, we recommend that you take the following actions when the over-temperature / low liquid level warning is activated:

1. Press  to place the Water Bath in the Standby mode.
2. Allow the liquid in the Water Bath to return to ambient temperature.
3. If the liquid level in the bath is too low, add liquid as required.
4. Press .

If the problem persists, contact the factory.

Troubleshooting Chart

Problem	Cause	Corrective Action
No display/Blank display	No power to unit Mains Switch in Off position	Check that power cord is plugged into an operating electrical outlet. Check that Mains Switch on the rear of the unit is in the On position. Place mains switch on back of unit in off position, then place mains switch on back of unit in on position.
No heating	Set point lower than bath temperature Bath temperature above High Limit temperature Liquid level in bath is too low	Check set point temperature; increase as required. Verify that High Limit temperature is higher than current set point temperature; adjust as required (see page 9). Check that liquid level is at least 2 inches (5.08 cm) above bottom of tank; add fluid as required.
Insufficient Heating	Improper line voltage Recent change in set point or heat load Bath cover not in place	Check that line voltage meets specifications. Allow sufficient time for bath temperature to stabilize when changes in heat load or set point are made. Check that bath cover is in place.
Inaccurate bath temperature	Incorrect calibration	Adjust Calibration Offset as required (see page 10).

Service and Technical Support

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

- 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 and modification by any part other than PolyScience 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 POLYSCIENCE 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.

Manufactured by:

PolyScience

6600 W. Touhy Avenue Niles, IL 60714 USA

1-800-229-7569 • 1-847-647-0611

www.polyscience.com