Water Baths

SHEL LAB®

SWB Family

Installation - Operation Manual

SWB7s SWB15s SWB23s

Pictured on the front cover, SWB7

The SWB7, SWB15, and SWB23 water baths require 110 – 120-volt NEMA 5-15R power outlets.

The SWB7-2, SWB15-2, and SWB23-2 water baths require 220 – 240-volt power sockets compatible with CEE7/7 plugs.

Warning: This product contains chemicals, including triglycidyl isocyanurate, known to the State of California to cause cancer as well as birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

¡Advertencia! Este producto contiene sustancias químicas, incluido el triglicidil isocianurato, que el estado de California sabe que causa cáncer, así como defectos de nacimiento u otros daños `reproductivos. Para obtener más información, visite www.P65Warnings.ca.gov**.**

Avertissement! Ce produit peut vous exposer à des produits chimiques, dont l'isocyanurate de triglycidyle, reconnu par l'État de Californie pour provoquer le cancer, des anomalies congénitales ou d'autres problèmes de reproduction. Pour plus d'informations, visitez le site www.P65Warnings.ca.gov.

SWB Water Baths

110 – 120 Voltage Models: SWB7 SWB15 SWB23

220 – 240 Voltage Models: SWB7-2 SWB15-2 SWB23-2

Part Number (Manual): 4861626

Revised: September 28, 2021

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MODEL CERTIFICATIONS

Model Certification and Compliance Statements

Electromechanical Safety Testing

IEC 61010-1 and 61010-2 safety certified + Canada, US, and European national or group differences.

Electrical and mechanical hazards as well as the heating of laboratory materials.

The models in this manual are CUE listed by TÜV SÜD America as water baths for professional, industrial, or educational use in conditions in which no flammable, volatile, or combustible materials are being heated and the unit is being operated under an environmental air pressure range of 22.14 – 31.3 inHg (75 – 106 kPa).

These models have been tested to the following requirements:

CAN/CSA C22.2 No. 61010-1:2012
CAN/CSA C22.2 No. 61010-2-010/R:2009
UL 61010-1:2012
UL 61010A-2-010:2002
EN 61010-1:2010
EN 61010-2-010:2003

TÜV SÜD America, Inc. is a Standards Council of Canada accredited certification body, an OSHA-recognized NRTL, and an EU Notified Body.

CE Compliant

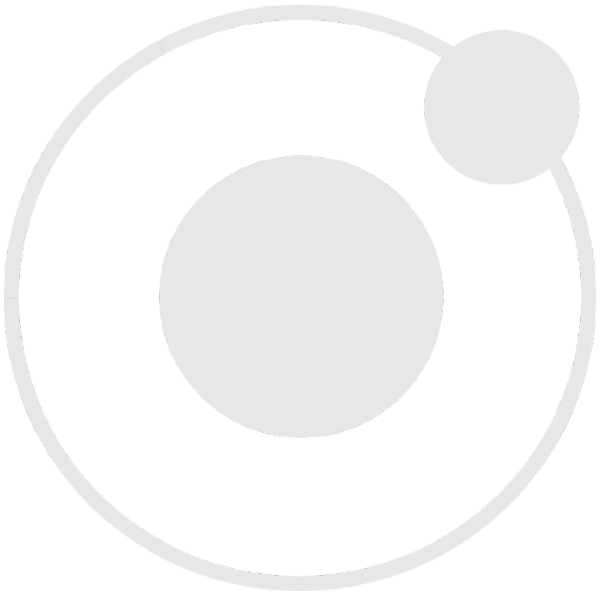
These unit models meet all required electromagnetic compatibility (EMC), EU low-voltage, and RoHS directives.

ISO Certified Manufacturer

SHELDON MANUFACTURING.INC

SHEL LAB is a brand of Sheldon Manufacturing, INC, an ISO 9001 certified manufacturer.

CERTIFICATIONS



INTRODUCTION

Thank you for purchasing a SHEL LAB water bath. We know you have many choices in today's competitive marketplace when it comes to constant temperature equipment. We appreciate you choosing ours. We stand behind our products and will be here if you need us.

READ THIS MANUAL

Failure to follow the guidelines and instructions in this user manual may create a protection impairment by disabling or interfering with the unit safety features. This can result in injury or death.

Before using the unit, read the manual in its entirety to understand how to install, operate, and maintain the unit in a safe manner. Ensure all operators are given appropriate training before the unit begins service.

Keep this manual available for use by all operators.

SAFETY CONSIDERATIONS AND REQUIREMENTS

Follow basic safety precautions, including all national laws, regulations, and local ordinances in your area regarding the use of this unit. If you have any questions about local requirements, please contact the appropriate agencies.

SOPs: Because of the range of potential applications this unit can be used for, the operator or their supervisors must draw up a site-specific standard operating procedure (SOP) covering each application and associated safety guidelines. This SOP must be written and available to all operators in a language they understand.

Intended Applications and Locations: The water baths are intended for constant temperature, non-humidified microbiological water bath applications in professional, industrial, and educational environments. The units are not intended for use at hazardous or household locations.

Power: Your unit and its recommended accessories are designed and tested to meet strict safety requirements.

- The unit is designed to connect to a power source using the specific power cord type shipped with the unit.
- Always plug the unit power cord into a protective earth grounded electrical outlet conforming to national and local electrical codes. If the unit is not grounded properly, parts such as knobs and controls can conduct electricity and cause serious injury.
- Do not bend the power cord excessively, step on it, or place heavy objects on it.
- A damaged cord can be a shock or fire hazard. Never use a power cord if it is damaged or altered in any way.
- Use only approved accessories. Do not modify system components. Any alterations or modifications to your unit not explicitly authorized by the manufacturer can be dangerous and will void your warranty.

CONTACTING ASSISTANCE

Phone hours for Sheldon Customer Support are 6 am – 4:30 pm Pacific Coast Time (west coast of the United States, UTC -8), Monday – Friday. Please have the following information ready when calling or emailing Customer Support: the **model number, serial number,** and **part number** (see page 16).

support@sheldonmfg.com
1-800-322-4897 extension 4
(503) 640-3000 extension 4
FAX: (503) 640-1366

Sheldon Manufacturing, INC.
P.O. Box 627
Cornelius, OR 97113
USA

MANUFACTURING WARRANTY

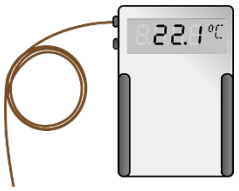
For information on your warranty and online warranty registration please visit:

sheldonmanufacturing.com/warranty

ENGINEERING IMPROVEMENTS

Sheldon Manufacturing continually improves all of its products. As a result, engineering changes and improvements are made from time to time. Therefore, some changes, modifications, and improvements may not be covered in this manual. If your unit's operating characteristics or appearance differs from those described in this manual, please contact your SHEL LAB dealer or customer service representative for assistance.

REFERENCE SENSOR DEVICE



Temperature Reference

Must be purchased separately

Temperature Calibrations

If you are not using a third-party service, a reference sensor device is required for calibrating your unit's temperature display.

- See the **Calibrating the Temperature Display** procedure on page 40 for more information.

Device Accuracy

Reference devices must meet the following standards:

- Accurate to at least 0.1°C

The device should be regularly calibrated, preferably by a third party.

Temperature Probe

Use a digital device with a wire thermocouple probe. Select a thermocouple suitable for the application temperature you will be calibrating at.

Why a Probe?

Reference readings taken from outside the bath using a wire temperature probe avoid bath lid openings. Openings disrupt the bath temperature. Each disruption requires **a minimum 1-hour wait** to allow the bath to re-stabilize before continuing.

No Alcohol or Mercury Thermometers

Alcohol thermometers do not have sufficient accuracy to conduct accurate temperature calibrations. **Never place a mercury thermometer in the unit bath.** Always use thermocouple probes.

WATER QUALITY REQUIREMENTS

The bath will need to be refilled or topped off with water during long periods of operation.

The manufacturer recommends using distilled water or filtered tap water to fill the tank. The water should have a neutral pH in the resistance range of 50K Ohm/cm to 1M Ohm/cm or a conductivity range of 20.0 uS/cm to 1.0 uS/cm. Using unfiltered tap water may create mineral buildup, corrosion, or biological contamination in the tank.

Do not use deionized water, acid, or other corrosive materials to fill the bath. These will damage the unit and **void the manufacturing warranty.**

RECEIVING YOUR UNIT

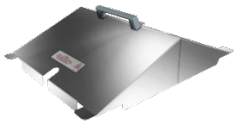
INSPECT THE SHIPMENT

Safe delivery becomes the responsibility of the carrier when a unit leaves the factory. **Damage sustained during transit is not covered by the manufacturing defect warranty**.

When you receive your unit, inspect it for concealed loss or damage to its interior and exterior. If you find any damage to the unit, **follow the carrier's procedure for claiming damage or loss**. Save the shipping carton until you are certain that the unit and its accessories function properly.

1. Carefully inspect the shipping carton for damage.
2. Report any damage to the carrier service that delivered the unit.
3. If the carton is not damaged, open the carton and remove the contents.
4. Inspect the unit for signs of damage. Use the orientation images in this chapter as references.
5. The unit should come with an Installation and Operation Manual.
6. Verify that the correct number of accessory items has been included.
7. Carefully check all packaging for accessory items before discarding.

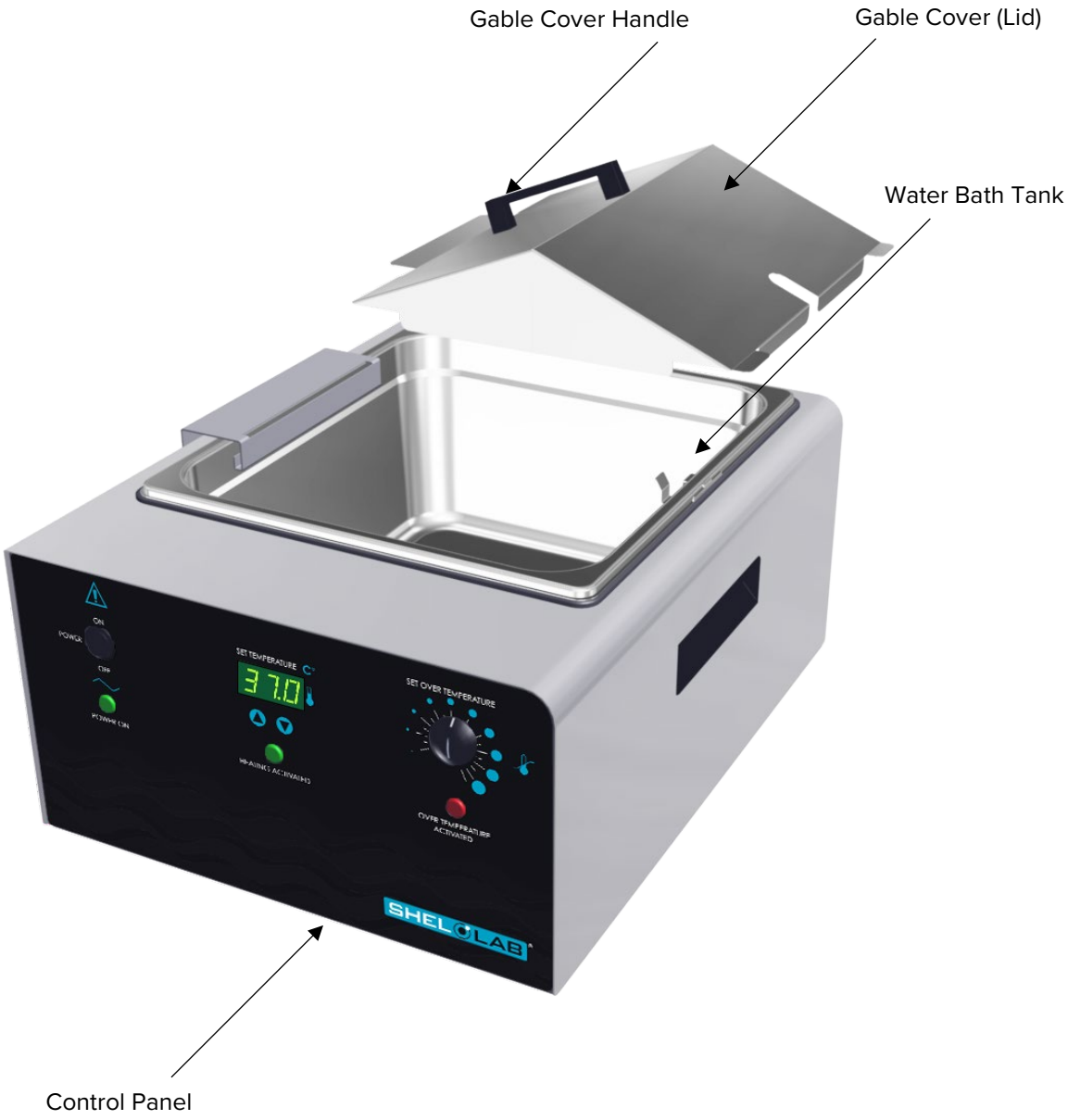
Included Accessories

Power Cord	Water Bath Gable Cover (Lid)
1	1
	

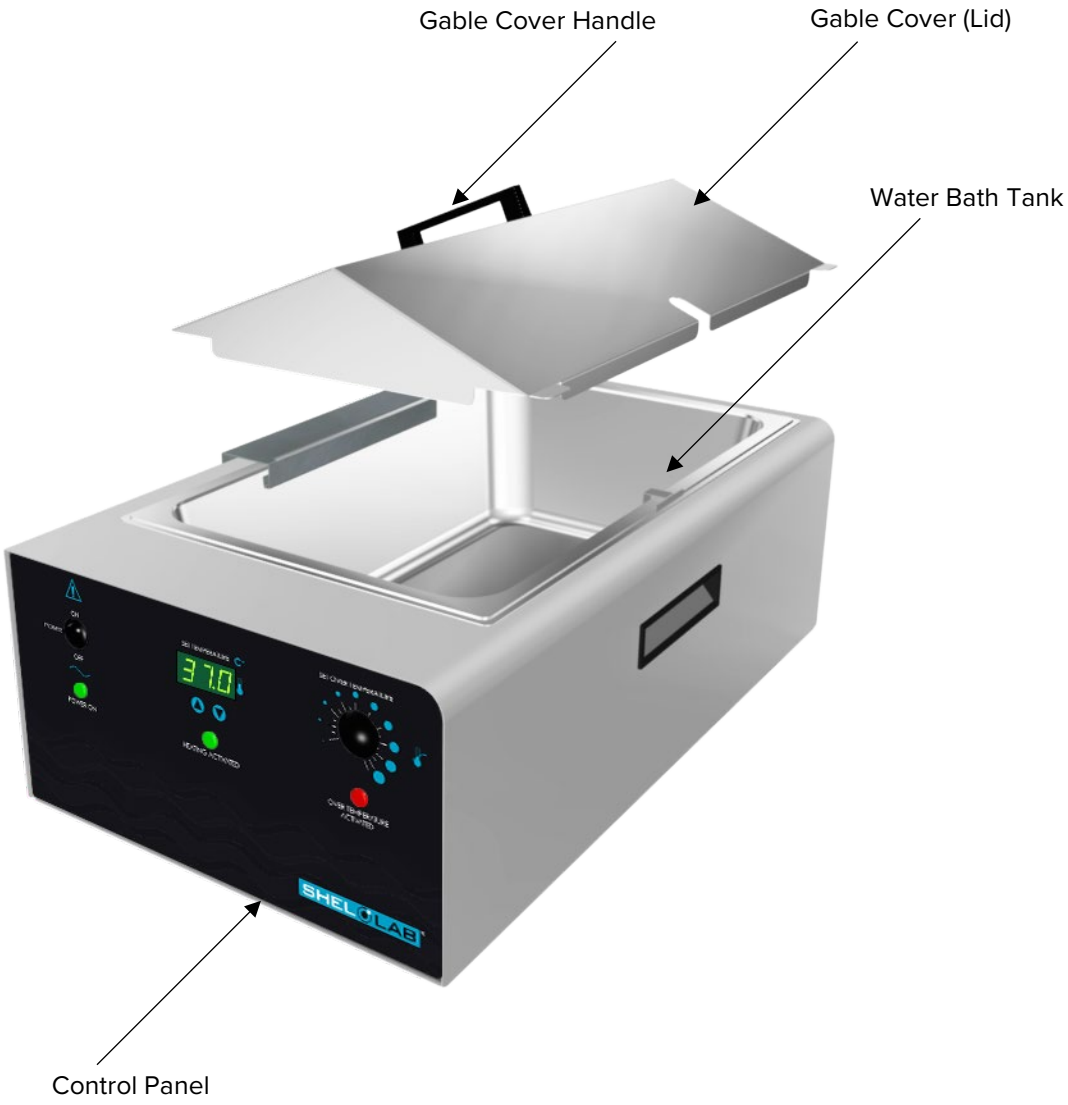
ORIENTATION IMAGES

SWB7 Water Bath

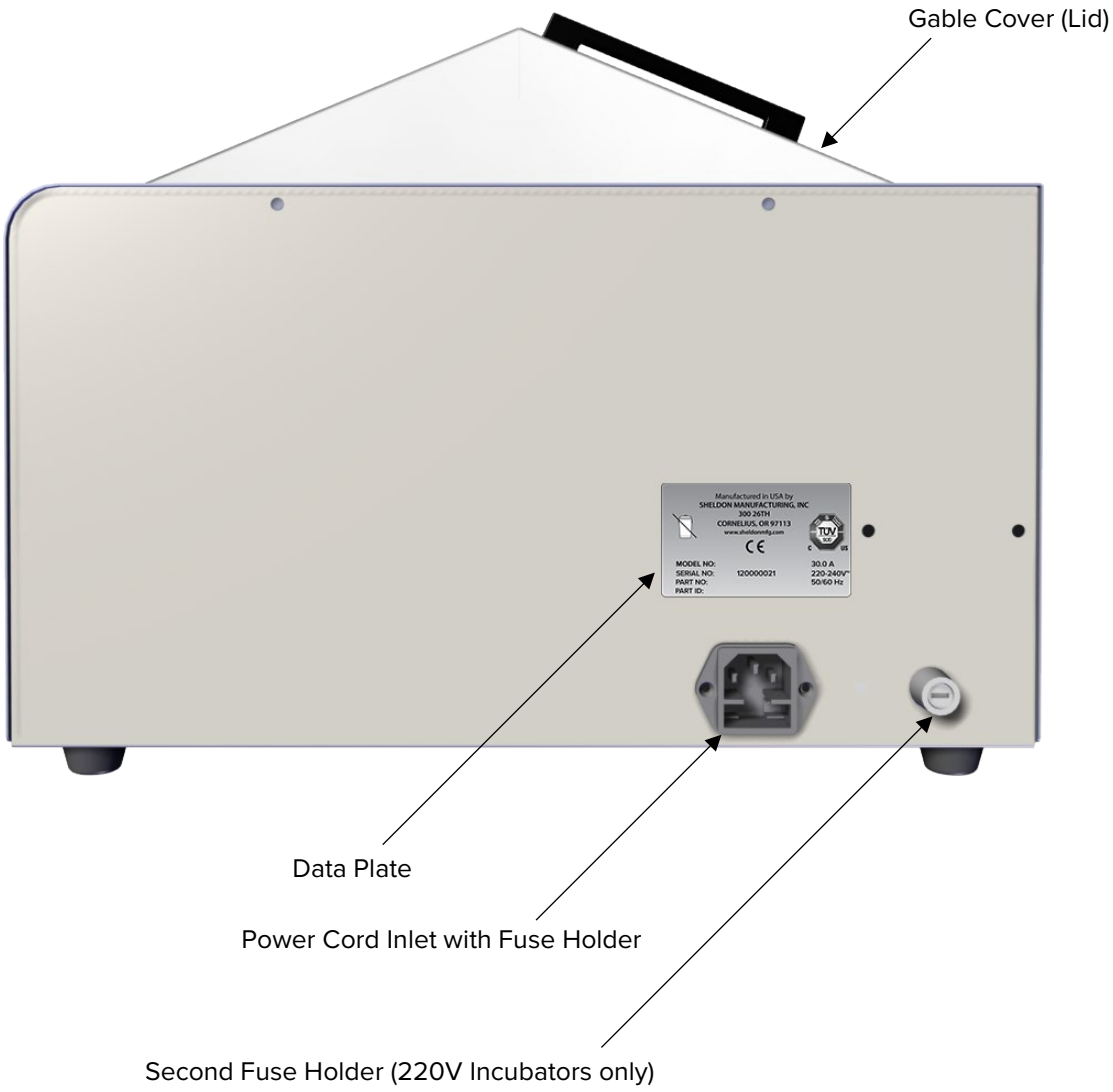
SWB15 Water Bath



SWB23 Water Bath



Back of Unit


Gable Cover (Lid)
Data Plate
Power Cord Inlet with Fuse Holder
Second Fuse Holder (220V Incubators only)

RECORDING DATA PLATE INFORMATION

Record the unit **model number**, **serial number**, and **part number** below for future reference. Tech Support needs this information to provide accurate help during support calls and emails.

- The data plate is located on the back of the unit, above the power inlet.

MODEL NO:	
SERIAL NO:	
PART NO:	

INSTALLATION PROCEDURE CHECKLIST

Pre-Installation

- ✓ Check that the required ambient conditions for the unit are met, page 18.
- ✓ Check that the spacing clearance requirements are met, page 18.
    - Unit dimensions may be found on page 37.
- ✓ Check that a suitable electrical outlet and power supply are present.
    - 100 – 120 Volt units, page 19.
    - 220 – 240 Volt units, page 20.

Install the water bath in a suitable workspace location

- ✓ Review the lifting and handling instructions, page 21.
- ✓ Verify that the unit is level, page 21.
- ✓ Install the unit in its workspace location, page 21.

Set up the water bath for use

- ✓ Clean and disinfect the unit and accessories (recommended), page 22.
- ✓ Assemble the water bath cover, page 23.

Required Ambient Conditions

These units are built for use indoors at room temperatures between **15°C and 30°C (59°F and 86°F)**, at no greater than **80% Relative Humidity** (at 25°C / 77°F). Operating outside these conditions may adversely affect the unit temperature performance.

Air Quality: The units are rated to operate in a Pollution Degree 2 environment.

Maximum Altitude: 2000 meters (6562 feet).

When selecting a location to install the unit, consider all environmental conditions that can adversely impact its temperature performance. These include:

- Proximity to ovens, autoclaves, or any other device producing significant radiant heat
- Heating and cooling vents or other sources of fast-moving air currents
- High-traffic areas
- Direct sunlight

Required Clearances

These clearances are required to provide airflows for ventilation and cooling.

4 inches (102 mm) of clearance is required on the sides and back.

12 inches (305 mm) of headspace clearance is required between the top of the unit and any overhead partitions to allow sufficient space for operators to remove the cover.

Note: See the next page for the 220-volt water baths.

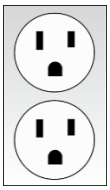
110 – 120 Volt Power Requirements

Applies to: SWB7, SWB15, SWB23

When selecting a location for the unit, verify each of the following requirements is satisfied.

Power Source: The power source must match the voltage and amperage requirements listed on the unit data plate. These units are intended for **110 – 120 volt**, **50/60 Hz** applications at the following amperages:

Model	Amperage
SWB7	3.0 Amps
SWB15	5.0 Amps
SWB23	5.0 Amps



Standard NEMA 5-15R wall socket

- The wall power source must be protective earth grounded**.**
- **The unit may be damaged if the supplied voltage varies by more than 10% from the data plate rating.**
    - The unit is safety-rated to withstand transient overvoltage levels up to Overvoltage Category II.
- Use a separate circuit to prevent loss of the unit due to overloading or circuit failure.
- **The recommended wall circuit breakers for these units are 15 amps.**
- The wall power source must conform to all national and local electrical codes.

Power Cord: The unit must be positioned so that all operators can quickly unplug the cord in the event of an emergency.

- Each unit is provided with a **125-volt, 15 amp, 9ft 5 in (2.86m) NEMA 5-15P** power cord. Always use this cord or an identical replacement.

Fuses: Each unit ships with a fuse installed in the power cord inlet.

- The fuse must be installed and intact for the unit to operate.

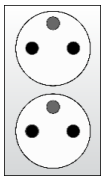
- Always find and fix the cause of a blown fuse prior to putting the unit back into operation.
- Fuse type:
    - SWB7, SWB15, SWB23: 250V T10 amp, 5x20mm

220 – 240 VOLT POWER REQUIREMENTS

Applies to: SWB7-2, SWB15-2, SWB23-2

When selecting a location for the unit, verify each of the following requirements is satisfied.

Power Source: The power source must match the voltage and amperage requirements listed on the unit data plate. These units are intended for **220 – 240 volt, 50/60 Hz** applications at the following amperages:



Compatible with CEE7/7 plugs

Model	Amperage
SWB7-2	2.0 Amps
SWB15-2	3.0 Amps
SWB23-2	3.5 Amps

- The wall power source must be protective earth grounded**.**
- **The unit may be damaged if the supplied voltage varies by more than 10% from the data plate rating.**
    - The unit is safety-rated to withstand transient overvoltage levels up to Overvoltage Category II.
- Use a separate circuit to prevent loss of the unit due to overloading or circuit failure.
- **The recommended wall circuit breakers for these units are 20 amps.**
- The wall power source must conform to all national and local electrical codes.

Power Cord: The unit must be positioned so that all operators can quickly unplug the cord in the event of an emergency.

- Each unit is provided with a **230-volt, 10 amp, EUR16P, 2.5 meters (8ft 2in**), **CEE 7/7** power cord. Always use this cord or an identical replacement.

Fuses: Each unit ships with a fuse installed in the power cord inlet and a second fuse installed in an adjacent fuse holder.

- Both fuses must be installed and intact for the unit to operate.

- Always find and fix the cause of a blown fuse prior to putting the unit back into operation.
- Fuse type:
    - 250V T6.3 amp, 5x20mm

LIFTING AND HANDLING

The unit is heavy. Use appropriate lifting devices that are sufficiently rated for these loads. Follow these guidelines when lifting the unit.

- Lift the unit from its bottom surface or with the side-mounted handles.
- Restrain the unit completely while lifting or transporting so it cannot tip.
- Remove all moving parts during transfers to prevent shifting and damage.
    - Drain the tank before moving the unit.

LEVELING

The water bath is equipped with non-adjustable rubber feet to raise it off the counter and prevent sliding. Ensure that the unit is on a flat and level surface prior to placing the unit in operation. The unit should not be used in mobile applications.

INSTALL THE WATER BATH

Place the unit in a workspace location that meets the criteria discussed in the previous entries of the Installation section.

Deionized and Distilled Water

Do not use deionized water to clean the unit or accessories, even if DI water is readily available in your laboratory.

- The use of deionized water may corrode metal surfaces and **voids the manufacturing warranty.**
- The manufacturer recommends the use of distilled water in the resistance range of 50K Ohm/cm to 1M Ohm/cm, or a conductivity range of 20.0 uS/cm to 1.0 uS/cm, for cleaning applications.

Installation Cleaning and Disinfecting

The manufacturer recommends cleaning and disinfecting the unit and accessories prior to installation.

Cleaning the Unit

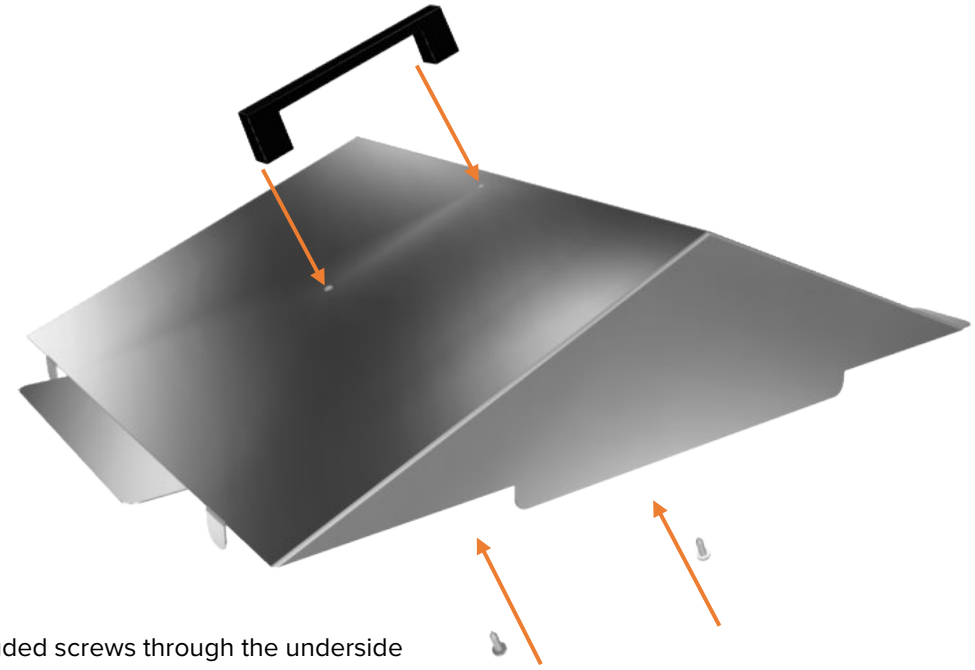
- The unit was cleaned at the factory but may have been exposed to contaminants during shipping.
- Remove all wrappings and coverings from the unit accessories prior to cleaning and assembly.
- Please see the Cleaning and Disinfection procedures on page 37 in the User Maintenance chapter for information on how to clean and disinfect without damaging the unit.

Assemble the Water Bath Cover

Note: The unit ships with the handle installed on the underside of the cover.

1. Uninstall the handle from the underside of the cover (lid).

2. Align the handle with the screw holes on the cover body.

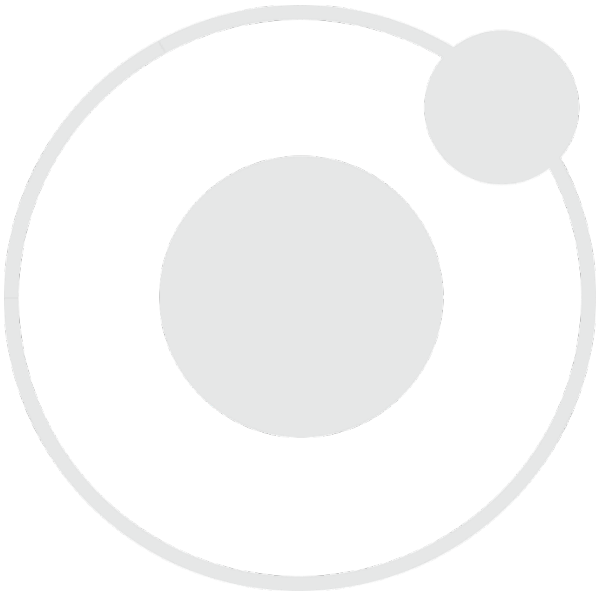


3. Insert the 2 included screws through the underside of the cover body and into the holes on the handle.

4. Use a **Phillips screwdriver** to tighten the screws until the handle is securely fastened. Do not overtighten.

Do not place the cover on the unit at this time.

End of Procedure

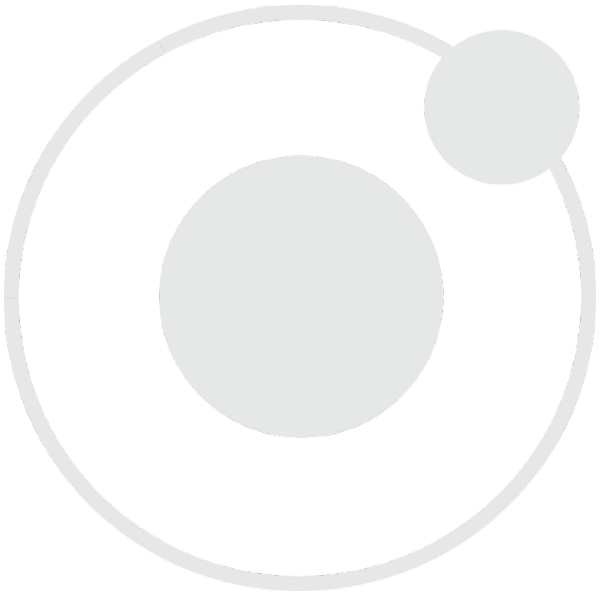


GRAPHIC SYMBOLS

The unit is provided with graphic symbols on its exterior. These identify hazards and adjustable components as well as important notes in the user manual.

Symbol	Definition
	Consult the user manual Consulter le manuel d'utilisation
	Temperature display Indique l'affichage de la température
	Over Temperature Limit system Thermostat température limite contrôle haute
	AC Power Repère le courant alternatif
	I/ON O/OFF I indique que l'interrupteur est en position marche. O indique que le commutateur est en position d'arrêt.
	Adjusts UP and DOWN Ajuster le haut et vers le bas
	Potential shock hazard Risque de choc électrique
	Recycle the unit. Do not dispose of it in a landfill. Recycler l'unité. Ne jetez pas dans une décharge
	Protective earth ground Terre électrique
	Caution hot surface Attention surface chaude

SYMBOLS



CONTROL PANEL OVERVIEW

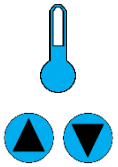
Control Panel

Power Switch

Power is supplied when the switch is in the (I) ON position.

The green Power On light illuminates when the unit is turned on.

Set Temperature Display and Controls



Shows the current bath temperature. The **Up** and **Down** arrow buttons are used to access the Temperature Setpoint (SP) or Calibration Offset (C O) display modes and input the temperature setpoint or calibration adjustment value.

Heating Activated

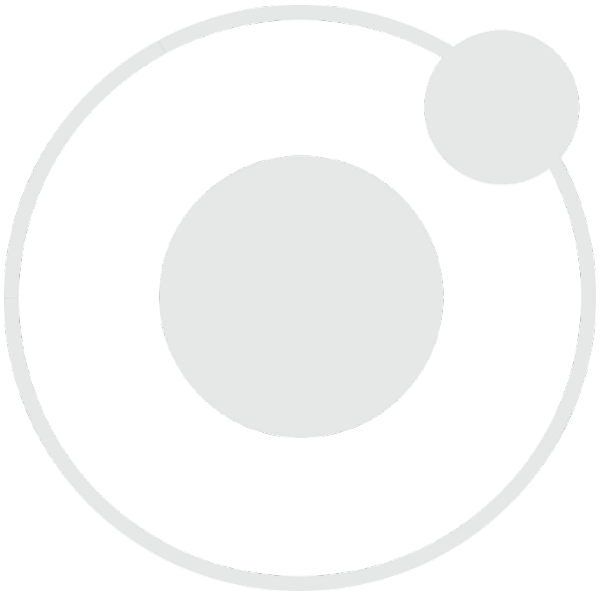
The green light illuminates when the unit is calling for power to the heating elements.

Over Temperature Limit Control (OTL)

This graduated dial sets the mechanical heating cut off for the Over Temperature Limit system (OTL). The OTL prevents unchecked heating of the tank in the event of a hardware failure or external heat spike. For more details, please see the **Over Temperature Limit System** description in the Theory of Operations (page 29).

Over Temperature Activated

The red light illuminates when the OTL system cuts off heating to the water bath tank by rerouting power away from the heating elements.



THEORY OF OPERATION

Heating

When powered, the water bath heats to and then maintains an operator-selected temperature setpoint. The unit temperature controller senses the temperature of the water via a solid-state probe located in the front wall of the tank. When the controller detects that the temperature of the water has dropped below the target setpoint, it pulses power to the heating elements below the bottom of the water bath tank.

The water bath uses Proportional – Integral – Derivative (PID) control to avoid significantly overshooting the setpoint. This means the rate of heating slows as the water temperature approaches the target temperature. If the water temperature is above the setpoint, the water bath uses minimum heating to control the rate of cooling and avoid dipping below the setpoint.

Additionally, the PID loops optimize heating rates for the temperature environment around the water bath. If the water bath is operating in a cool room, it will increase the length of heating pulses to compensate. Likewise, when operating in a warm room the water bath uses shorter pulses. If the ambient temperature conditions change significantly, there may be minor over or undershoots as the unit adapts.

SWB water baths rely on natural heat radiation for cooling. These units can achieve a low-end temperature of the ambient room temperature plus the internal waste heat of the water bath.

The Over Temperature Limit System

The OTL is an operator-set, mechanical heating cutoff. The system operates independently of the main microprocessor temperature controller and routes power away from the water bath heating elements if the tank temperature exceeds the OTL temperature cutoff setting. It will continue doing so as long as the tank temperature remains above the OTL setting. This helps safeguard the unit by preventing runaway heating in the event of electronics failures or a sudden external heat spike.

The OTL must be set by the operator in order to function. The manufacturer recommends a setting of approximately 1°C above the highest temperature setpoint of your heating application. A red indicator illuminates when the OTL is rerouting power.

Heating in a Water Bath

SWB water baths maintain the temperature of samples by surrounding them with heated water. The natural circulation of the water within the tank promotes temperature uniformity and helps to reduce temperature gradients.

END OF PROCEDURE OPERATION

PUT THE WATER BATH INTO OPERATION

Perform the following procedures and steps to put the unit into operation after installing it in a new workspace environment. **Reminder**: All procedures in the Installation chapter must be carried out before putting the unit into operation.

✓ **Plug in the Water Bath.**

- Attach the power cord that came with the unit to the inlet receptacle on the back of the water bath.
- Plug the power cord into the workspace electrical outlet.

✓ **Fill with water.**

- Fill the tank to the minimum depth requirement.
- Put the lid on the bath.
- See page 31.

✓ **Turn on the water bath.**

- See page 31.

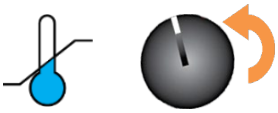
✓ **Set the temperature setpoint.**

- Set the Temperature Setpoint to your application temperature.
- See page 32.

✓ **Allow the water bath to heat for a minimum of 4 hours.**

- Run the unit for at least 4 hours (for example, overnight) with the bath lid on before setting the Over Temperature Limit or loading samples.

✓ **Perform the Set the Over Temperature Limit procedure on page 33**



- The unit must be heated and stable at your application temperature to perform this procedure.

✓ **The water bath is now ready for use.**

- You may **Load Samples**, page 34.

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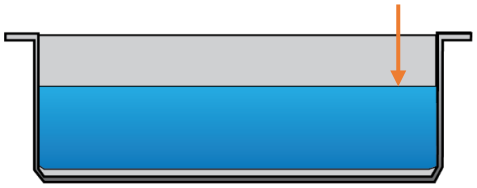
Fill With Water

Reminder: Use distilled water only. Do not fill with deionized water, tap water, acid, or other chemicals. Using the unit as an acid bath will damage the unit **and void the manufacturing warranty.**

1. Fill the tank with distilled water to a minimum depth of **2 inches (51 mm)** above the bottom of your sample container. The water level will rise when samples are loaded.

- See page 34



2. Place the gable cover on the water bath.

3. Turn on the unit.

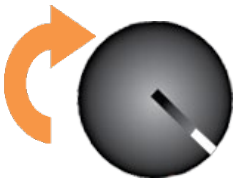
- **Do not load samples at this time.**

End of Procedure

SET THE TEMPERATURE SETPOINT

Perform the steps below to adjust the setpoint to your process or application temperature.

1. Set the OTL control to its maximum setting, if not already set to max.



- This prevents the heating cutoff system from interfering with this procedure.

2. Put the bath in Temperature Setpoint adjustment mode.

Briefly push and release either the **Up** or **Down** arrow buttons to activate the temperature setpoint adjustment mode.

- The display will briefly flash the letters “SP”, then show the flashing, adjustable temperature setpoint.

Note: The display will automatically exit the adjustment mode after 5 seconds of inactivity, with the last shown setpoint value saved.

Setpoint Adjustment Mode

Initial Setpoint

3. Set the Temperature Setpoint.

Use the **Up** and **Down** arrow buttons to change the temperature setpoint.

New Setpoint

4. Wait 5 seconds after entering the Setpoint.

Wait 5 Seconds

The display will stop flashing, and the setpoint is now saved in the controller.

- The unit will now automatically heat or passively cool to match your setpoint.
- The display will revert to showing the current water temperature in the bath.

Heating to the Setpoint

End of Procedure

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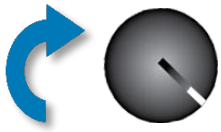
Note: Test the OTL system at least once per year to verify its functionality. **Failure to set the OTL voids the manufacturing defect warranty if over temperature damage occurs.**

SET THE OVER TEMPERATURE LIMIT (OTL)

This procedure sets the mechanical heating cutoff to approximately 1˚C above the current bath temperature. **Perform this procedure when the unit has been running with no temperature fluctuations at your application temperature for at least 4 hours.**

1. Set the OTL control dial to its maximum setting, if not already set to max.



2. Turn the dial counterclockwise until the OTL alarm light illuminates.

- There is a soft click when the OTL begins rerouting power away from the heating elements.

3. Slowly turn the dial clockwise until the OTL alarm light turns off.

- The Over Temperature Limit is now set approximately 1˚C above the current bath water temperature.

4. Leave the OTL dial set just above the activation point.

Optional: Turn the dial slightly to the left (counterclockwise).

- This sets the OTL cutoff threshold nearer to the current bath water temperature.

If the Over Temperature Limit sporadically activates after setting the control, turn the dial very slightly to the right (clockwise). If the OTL continues activating, check for ambient sources of heat or cold that may be adversely impacting the unit temperature stability. If you find no sources of external or internal temperature fluctuations, contact Tech Support or your distributor for assistance.

End of Procedure

LOAD SAMPLES

Load samples after the water bath has run for at least **4 hours**.

Note: Condensation may form under the cover. Avoid allowing condensation to drip onto surrounding surfaces when lifting the cover.

1. Load samples in the tank. Ensure that the combined volume of samples and water does not cause the tank to overfill.

- Ensure that any accessories used inside the water bath tank, such as sample racks, are suitable for your application and will not suffer damage when brought to temperature.
- Samples must be completely surrounded by water without touching the walls and floor of the tank to avoid uneven heating.

Proper Sample Loading

Tank Overflowing

2. Place the gable cover on the water bath.

- Ensure that the cover sits level.

End of Procedure

MONITOR WATER LEVEL

Caution: Heated water vapor may escape when the cover is lifted. Operators should avoid direct contact with the vapor as any waterborne contaminants may be hazardous.

Attention: de la vapeur d'eau chauffée peut s'échapper lorsque le couvercle est soulevé. Les opérateurs doivent éviter tout contact direct avec la vapeur car tout contaminant d'origine hydrique peut être dangereux.

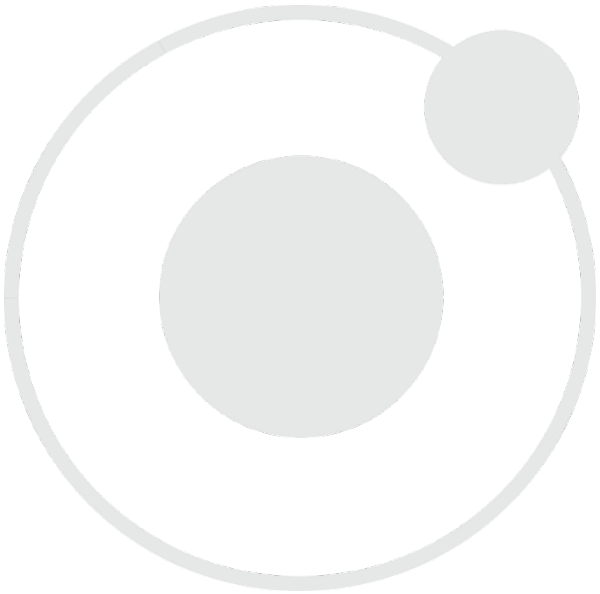
The water level in the tank must be regularly checked when in use. Minimize cover openings to reduce evaporation. Allowing the tank to run dry can melt plastic accessories or otherwise damage the tank and product. **The manufacturing defect warranty does not cover damage caused by melted or otherwise overheated accessory items in a dry tank.**

Note: Adding a significant amount of water to the bath during a heating application may impact the unit temperature stability and uniformity.

MAINTAINING WATER QUALITY

There are several manufacturer-recommended methods for helping to prevent biological contamination and prolonging times between fully emptying and disinfecting the tank:

- Thermally decontaminating the unit by operating it above 60°C for 30 minutes or more will destroy most algae, fungus, or pathogens.
- Using commercial biocides to help prevent the growth of microbes. Check with your laboratory requirements when selecting biocides to ensure they are compatible with your process.



Warning: Disconnect this unit from its power supply prior to performing maintenance or services.

Avertissement: Débranchez cet appareil de son alimentation électrique avant d'effectuer la maintenance ou les services.

CLEANING AND DISINFECTING THE BATH

If a hazardous material or substance has spilled in the tank, immediately initiate your site's Hazardous Material Spill Containment protocol. Contact your local Site Safety Officer and follow instructions per the site policy and procedures.

- Periodic cleaning and disinfection are required.
- Do not use spray-on cleaners or disinfectants on the exterior of the unit. These can leak through openings and coat electrical components.
- Consult with the manufacturer or their agent if you have any doubts about the compatibility of decontamination or cleaning agents with the parts of the equipment or with the material contained in it.
- Do not use cleaners or disinfectants that contain solvents capable of harming paint coatings or stainless-steel surfaces. **Do not use chlorine-based bleaches or abrasives; these will damage the tank.**

Warning: Exercise caution if cleaning the unit with alcohol or flammable cleaners. Always allow the unit to cool down to room temperature prior to cleaning and make sure all cleaning agents have evaporated or otherwise been completely removed prior to putting the unit back into service.

Avertissement: Soyez prudent lorsque vous nettoyez l'appareil avec de l'alcool ou des produits de nettoyage inflammables. Laissez toujours refroidir l'appareil à la température ambiante avant le nettoyage et assurez-vous que tous les produits de nettoyage se sont évaporés ou ont été complètement enlevés avant de remettre l'appareil en service.

Cleaning

1. Disconnect the unit from its power supply.
2. Remove all removable interior components and accessories.
3. Drain the water bath.
    - The manufacturer recommends draining the bath using a siphon. Clean and disinfect any siphoning equipment regularly.
    - **Always allow the bath to cool to ambient temperature before draining the tank.**
4. Clean the unit with a mild soap and water solution, including all corners.
    - **Do not use an abrasive cleaner**, these will damage metal surfaces.
    - **Do not use deionized water to rinse or clean with.**
5. Rinse with distilled water and wipe dry with a soft cloth.

Disinfecting

When disinfecting the unit, keep the following in mind:

- Always turn off and disconnect the unit to safeguard against electrical hazards.
- For maximum effectiveness, disinfection procedures are typically performed after cleaning.
- Drain the water bath.
- Disinfect the unit using commercially available disinfectants that are non-corrosive, non-abrasive, and suitable for use on stainless steel and glass surfaces. Contact your local Site Safety Officer for detailed information on which disinfectants are compatible with your applications.
- Disinfect all surfaces in the tank, making sure to thoroughly disinfect the corners.
- Left over volatile disinfecting agents can contaminate your product. Make sure that disinfecting agents have been rinsed or otherwise removed from the unit surfaces prior to refilling the tank.
- When disinfecting external surfaces, use disinfectants that will not damage painted metal, glass, and plastic.

MINIMIZING CONTAMINATION EXPOSURE

Caution: Heated water vapor may escape when the cover is lifted. Operators should avoid direct contact with the heated vapor, as any present waterborne contaminants may be hazardous to operators.

Attention: De la vapeur d'eau chauffée peut s'échapper lorsque le couvercle est soulevé. Les opérateurs doivent éviter tout contact direct avec la vapeur chauffée, car tout contaminant présent dans l'eau peut être dangereux pour les opérateurs.

Suggestions for minimizing exposure of the unit to potential contaminants.

- Maintain a high air quality in the laboratory workspaces around the water bath.
- Avoid placing the water bath near sources of air movement such as doors, air vents, or high traffic routes in the workspace.
- Minimize the number of times the tank cover is opened during normal operations.

There are several manufacturer-accepted methods for helping to prevent biological contamination and prolonging times between fully emptying and disinfecting the tank:

- Thermally decontaminating the unit by operating it above 60°C for 30 minutes or more will destroy most algae, fungus, or pathogens.
- Using commercial biocides to help prevent the growth of microbes. Check with your laboratory requirements when selecting biocides to ensure they are compatible with your process.
- Placing a copper token or section of copper wire in the tank, as copper has anti-microbial properties.

ELECTRICAL COMPONENTS

Electrical components do not require maintenance. If the unit electrical systems fail to operate as specified, please contact your distributor or Technical Support for assistance.

CALIBRATE THE TEMPERATURE DISPLAY

Note: Performing a temperature display calibration requires a temperature reference device. Please see the Reference Sensor Devices entry on page 9 for device requirements.

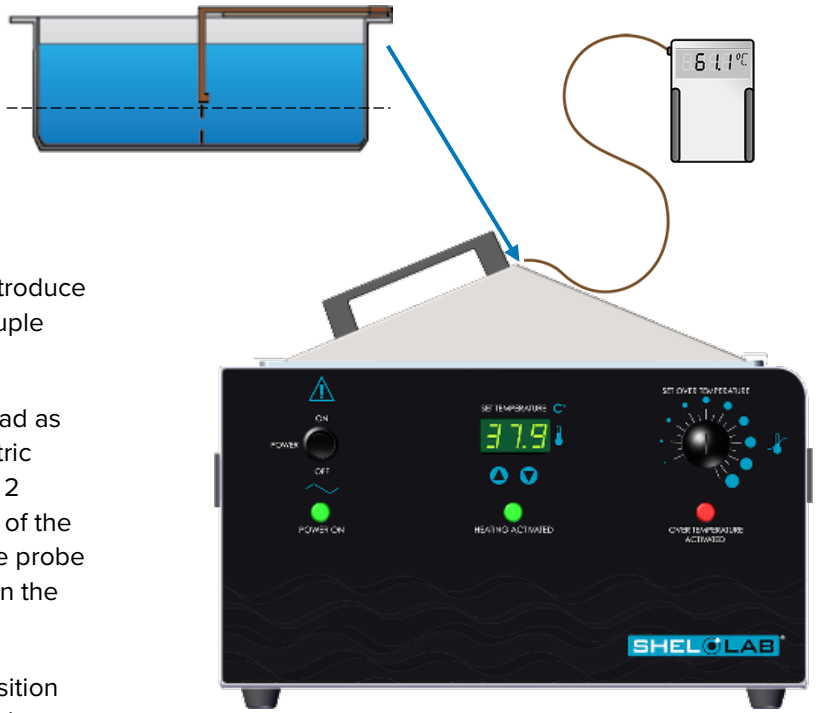
Temperature calibrations are performed to match the water bath temperature display to the actual air temperature in the water bath tank. The actual air temperature is supplied by a calibrated reference device. Calibrations compensate for long-term drifts in the microprocessor controller as well as those caused by the natural material evolution of the sensor probe in the tank. Calibrate as often as required by your laboratory or production protocol, or regulatory compliance schedule. Always calibrate to the standards and use the calibration setup required by your industry requirements or laboratory protocol.

Recommended Tools

Use non-marking, heat-resistant polyamide tape to hold the reference device thermocouple probe in place. The manufacturer recommends Kapton brand tape, 0.5 inches width (12.7 mm), 2 mil thickness.

A rigid, non-conductive item, such as a wooden tongue depressor or a plastic sample rack, may be used as a brace to help hold the probe in position.

Probe with Brace



Suggested Calibration Setup

1. Remove the cover (lid) and introduce the reference device thermocouple probe into the tank.

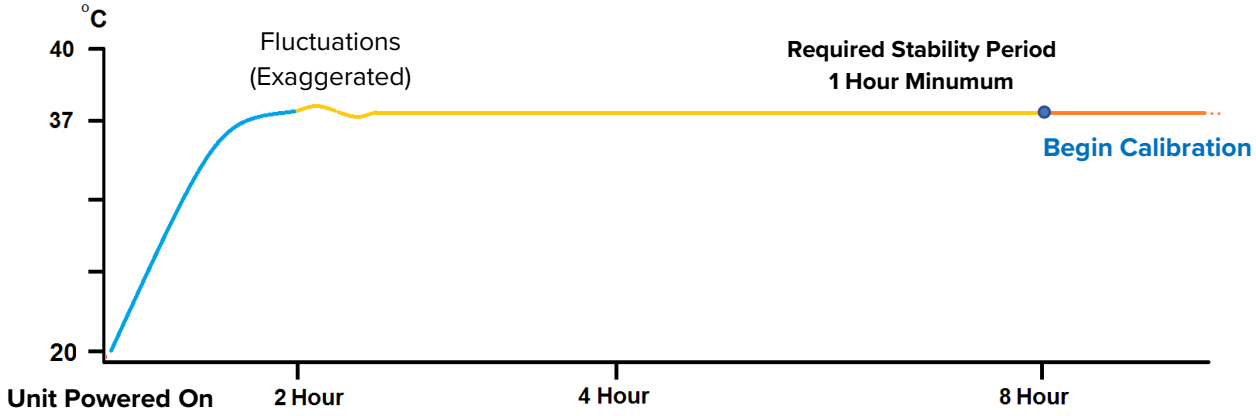
2. Position the sensor probe head as close as possible to the geometric center point of the bath at least 2 inches (51 mm) from the bottom of the tank to prevent heatsinking. The probe head must be fully submerged in the water.

3. Secure the probe head in position using the barce and the non-stick tape.

4. Place the cover on the unit.

5. Allow the water temperature to stabilize before calibrating.

- The water bath must run for at least 4 hours prior to conducting a calibration.
- The temperature is considered stabilized when the bath has operated with the lid on at your calibration temperature for at least 1 hour with no fluctuations greater than the specified stability of the unit (see page 40).



Temperature Calibration Procedure

1

Once the unit temperature has stabilized, compare the reference device and unit temperature display readings.

- If the readings are the same, or the difference between the two falls within the acceptable range of your protocol, the display is accurately showing the temperature in the tank. **The Temperature Calibration procedure is now complete**.

-Or-

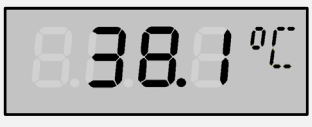
- If the difference falls outside of your protocol range, advance to step 2.

Reference Device

2

A display calibration adjustment must be entered to match the display to the reference device. See next step.

Reference Device



Continued on next page

Temperature Calibration Continued

3 Place the display in temperature calibration mode.

a. Press and hold both the **Up** and **Down** temperature arrow buttons simultaneously for approximately 5 seconds.

b. Release the buttons when the temperature display shows the letters “C O”. The display will begin flashing the **current temperature display value**.

Note: The display will automatically exit calibration mode after 5 seconds of inactivity, with the last shown temperature display value saved.

4

Use the **Up** and **Down** arrow buttons to adjust the current display temperature value until it matches the reference device temperature reading.

Reference Device

5

After matching the display to the reference device, wait 5 seconds.

- The temperature display will cease flashing and store the corrected bath display value.
- The water bath will now begin heating or passively cooling in order to reach the setpoint with the corrected display value.

Cooling to Setpoint

6

Allow the water bath to operate for at least 1 hour undisturbed to stabilize **after the unit has achieved the corrected temperature setpoint.**

- Failure to wait until the unit is fully stabilized will result in an inaccurate reading.

Setpoint Achieved

Continued on next page

Temperature Calibration Continued

7

Compare the reference device reading with the unit temperature display.

Reference Device

- If the reference device and the tank temperature display readings are the same, or the difference falls within the range of your protocol, **the water bath is now calibrated for temperature.**

-Or-

- See the next step if the readings fail to match or fall outside of your protocol range.

8

If the difference still falls outside the acceptable range of your protocol, repeat steps 3 – 7 up to two more times.

Reference Device

9

If the temperature readings of the unit temperature display and the reference device still fall outside your protocol after 3 calibration attempts, contact your distributor or **Technical Support** for assistance.

End of Procedure

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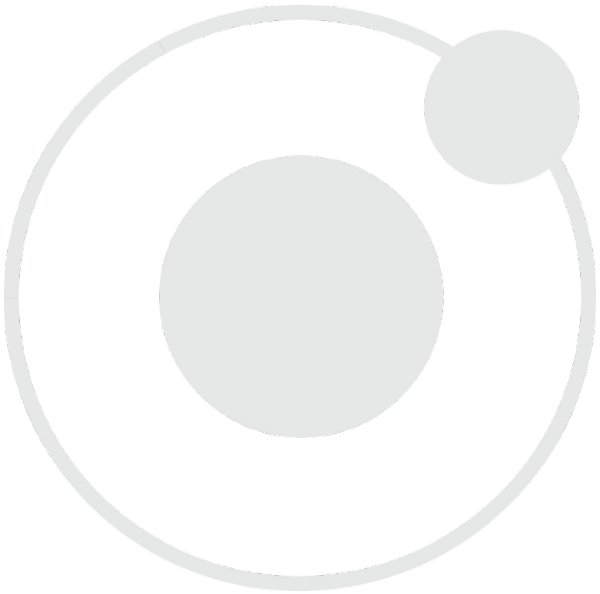


UNIT SPECIFICATIONS

Technical data specified applies to units with standard equipment at an ambient temperature of 25°C and at nominal voltage. The temperatures specified are determined in accordance with factory standards following DIN 12880 respecting the recommended wall clearances of 10% of the height, width, and depth of the inner bath. All indications are average values, typical for units produced in the series. We reserve the right to alter technical specifications at all times.

WEIGHT

Model	Shipping Weight	Unit Weight
SWB7s	21 lb / 10 kg	14 lb / 6.5 kg
SWB15s	29 lb / 14 kg	19 lb / 8.7 kg
SWB23s	34 lb / 16 kg	25 lb / 11.4 kg

DIMENSIONS

Inches

Model	Exterior W × D × H	Interior W × D × H
SWB7s	15.0 x 12.5 x 12.0 in	11.8 x 5.8 x 6.0 in
SWB15s	15.0 x 19.0 x 12.0 in	11.8 x 13.0 x 6.0 in
SWB23s	14.8 x 25.0 x 12.0 in	18.0 x 24.0 x 18.0 in

Millimeters

Model	Exterior W × D × H	Interior W × D × H
SWB7s	381 x 318 x 305 mm	300 x 174 x 152 mm
SWB15s	381 x 483 x 305 mm	300 x 330 x 152 mm
SWB23s	376 x 635 x 305 mm	292 x 495 x 152 mm

Tank Volume

Model	Cubic Feet	Liters
SWB7s	0.21	6.0
SWB15s	0.5	14.0
SWB23s	0.81	23.0

TEMPERATURE

Range and Uniformity

Model	Range	Uniformity	Stability
SWB7s	Amb +5° to 80°C	±0.2°C	±0.1°C
SWB15s	Amb +5° to 80°C	±0.2°C	±0.1°C
SWB23s	Amb +5° to 80°C	±0.2°C	±0.1°C

POWER

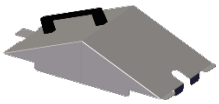
100 – 120 Volt Models

Model	AC Voltage	Amperage	Frequency
SWB7	110 – 120	3.0	50/60 Hz
SWB15	110 – 120	5.0	50/60 Hz
SWB23	110 – 120	5.0	50/60 Hz

220 – 240 Volt Models

Model	AC Voltage	Amperage	Frequency
SWB7-2	220 – 240	2.0	50/60 Hz
SWB15-2	220 – 240	3.0	50/60 Hz
SWB23-2	220 – 240	3.5	50/60 Hz

PARTS LIST

Description	Parts Number	Description	Parts Number
SWB7s, SWB15s, SWB23s Fuse, T6.3A 250V 5x20mm	 **3300515**	**SWB7s** Water Bath Gable Cover(Lid)	 **9751183**
Power Cord 110 – 120 Volt **SWB7, SWB15, SWB23:** 15 Amp, 8 ft 2 in (2.5 m) NEMA 5-15P	 **1800510**	**SWB15s** Water Bath Gable Cover(Lid)	 **9751184**
Power Cord 220 – 240 Volt **SWB7-2, SWB15-2, SWB23-2:** 10 Amp, 2.5m (8ft), Euro CEE7/7	 **1800510**	**SWB23s** Water Bath Gable Cover(Lid)	 **9751185**

Accessories and replacement parts can be ordered online at **parts.sheldonmfg.com**.

If the required item is not listed online, or if you require assistance in determining which part or accessory you need contact SHEL LAB by emailing parts@sheldonmfg.com or by calling 1-800-322-4897 ext. 3 or (503) 640-3000 ext. 3.

Please have the **model, serial,** and **part** numbers of the unit ready. Customer Support needs this information to match your unit to its correct part.

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SHELDON MANUFACTURING.INC

P.O. Box 627
Cornelius, OR 97113
USA

support@sheldonmfg.com
sheldonmanufacturing.com

1-800-322-4897
(503) 640-3000
FAX: 503 640-1366