

Refrigerated Water Bath

User Manual & Setup Guide

TWBRC-12

TWBRC-24

Omron E5CC

Thermoline Scientific Equipment Pty. Ltd.

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Symbols



General
Warning Sign

Warning sign: signifies a general warning, and indicates a risk to people specified by the supplementary sign that if not avoided, may result in death or serious injury.



Warning;
Flammable

Warning; Flammable: signifies a flammable warning, and indicates a risk of flammable content as specified by the supplementary sign that if not avoided, may result in a fire by igniting flammable material.



Warning;
Electricity

Warning; Electricity: signifies a electricity warning, and indicates a risk of contact with electricity as specified by the supplementary sign that if not avoided, could result in injury.



Warning; Hot
Surface

Warning; Hot Surface: signifies hot surface warning, and indicates a risk to people specified by the supplementary sign that if not avoided, will result in contact with hot surface.



General
Prohibition Sign

General Prohibition: signifies a prohibited action, indicates a risk to people specified by the supplementary sign that if not avoided, will result in death or serious injury.



Do Not Expose
Outside

Do Not Expose Outside: signifies prohibiting the exposure to direct sunlight, and indicates a raised temperature due to sunlight or placement on hot surface can cause harmful damage to cabinet.

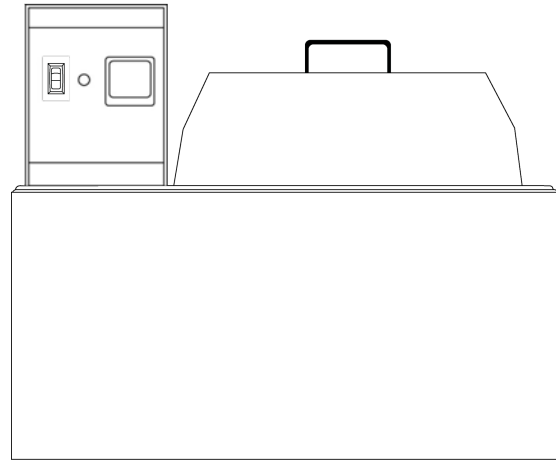
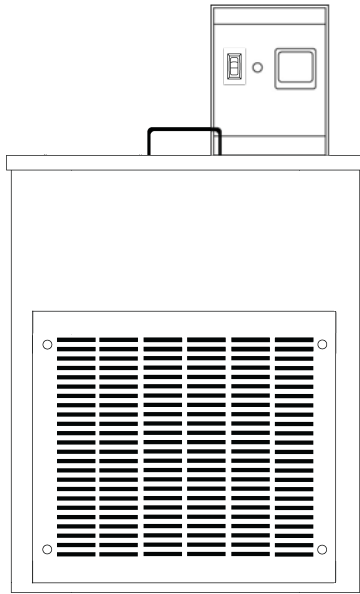
This user manual is intended for Thermoline's range of refrigerated water baths. We recommend that you read this user manual the whole way through before you start using the bath. Consider this manual as a part of the bath and an integral part to its function. We recommend keeping it close and within easy access.

The Thermoline refrigerated water baths TWBRC-12 and TWBRC-24 models are designed and manufactured in Australia. Designed to operate between ambient -5°C and $+80^{\circ}\text{C}$. The Thermoline refrigerated water bath offers an industry standard in temperature control.

The Thermoline range of refrigerated water baths are set to function with specific operating ranges. The optimum operating conditions will be explained further in this manual.



Product Specifications



Dimensions

External

	TWBRC-12	TWBRC-24
WxDxH (mm) Including heater circulator	440x350x630	560x550x440

Internal

WxDxH (mm)	160x230x200	360x280x190
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Spacing

	TWBRC-12	TWBRC-24
Front (mm)	100	
Back (mm)	100	
Sides (mm)	100	



Product Specifications

Technical Specifications

	TWBRC-12	TWBRC-24
Temperature Range	-5°C to 80°C (max temp with bath lid on)	-5°C to 80°C (max temp with bath lid on)
Temperature Stability	+/-0.2°C	+/-0.2°C
Heating Power	1000 watts	1000 watts
Electrical	7.5 Amps/ 230V	7.5 Amps/ 230V
Capacity	12L	24L
Refrigeration Capacity @ 5°C	300 watts (with lid on)	300 watts (with lid on)
Weight	35kgs	40kgs

Features

Omron E5CC Controller	✓	✓
Whisper Quiet Operation	✓	✓
Incoloy Heating Element	✓	✓
Built in circulator pump	✓	✓
Included Lid	Stainless Steel Flat Lid	Polycarbonate Gable Lid

Safety

Over Current Protection	✓	✓
Over Temperature Safety	✓	✓
Fibreglass Insulation	✓	✓

Options

Programmable Controller	Omron-MSP	Omron-MSP
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Water Bath Location

Ensure the water bath is placed in a suitable environment, away from direct sunlight or direct heat sources (Fig 1). The product shouldn't be placed in a room where the ambient temperature exceeds that of which it was designed to operate.

Water baths should be stored inside at all times. Failure to adhere to this could cause significant drops in water bath performance and damage to items stored inside.

Extreme Operating Conditions:

- **Temperature:** 10°C to 32°C
- **Humidity:** Up to 85%RH

Ideal Conditions:

- **Temperature:** 23°C (+/- 5°C)
- **Humidity:** 50%RH (+/- 25%RH)

Ensure the water bath is placed on a level surface (Fig 2).

The refrigerated water bath requires ventilation. Thermoline suggests at least 100mm on the sides and back (Fig 3).

Note: If multiple TWBRC-24 baths are used side by side the heat from one can be blown into the back of the next. A minimum of 300mm between them would be required in this instance.

Ensure the bath is placed on a level surface.

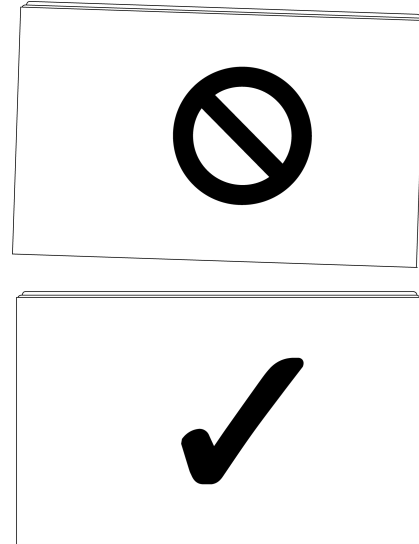


Fig 2. Level surface

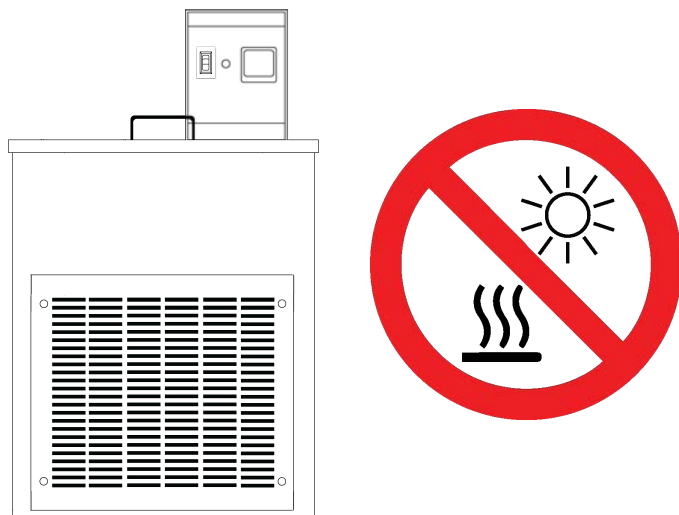


Fig 1. Suitable operating environment.

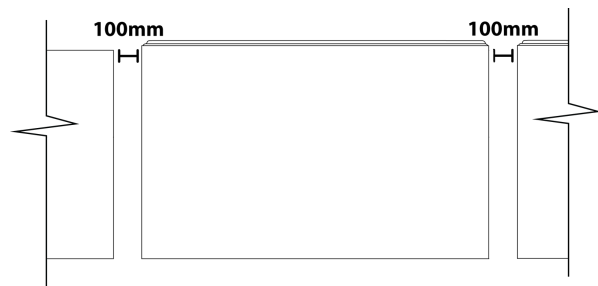


Fig 3. Adequate Spacing (note the exception with multiple TWBRC-24 baths)

Operating Environment

Electrical Connections

The refrigerated water bath requires a 10ap 230V 50hz power supply.

A dedicated outlet should be used for all water baths. Do not use power boards or the like. A 3-pin moulded plug is supplied as standard.

Electrical:

- Included with the refrigerated water bath is a 2.5m removable mains power lead with a three pin plug and right angle female IEC plug. Ensure the product is reasonably distanced from the power supply. **(Fig 1)**
- On the refrigerated water bath itself is a 10 amp male IEC socket. **(Fig 2 & 3)**
- The power and control cable needs to be plugged into the back of the heater circulator and also into the bath prior to start up. **(Fig 2 & 3)**

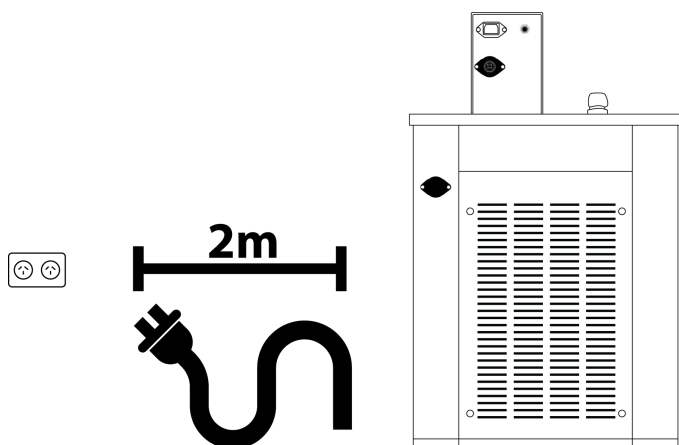


Fig 1. Suitable distance from power supply (2m)

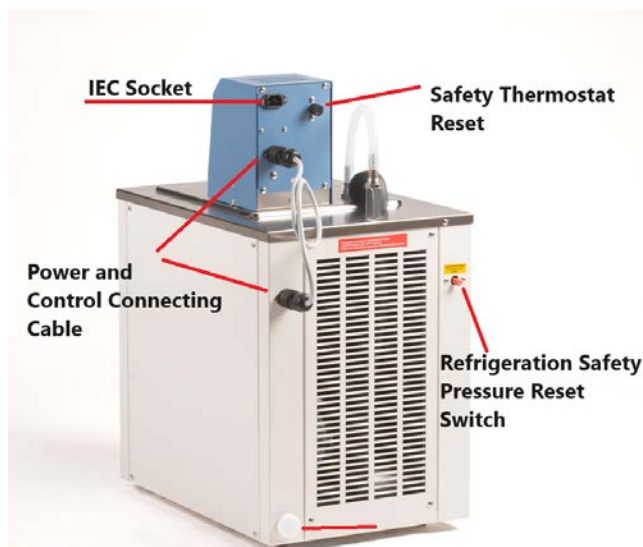


Fig 2. TWBRC-12 connections



Fig 3. TWBRC-24 connections

Operating Environment

Operating Environment Warnings



Water baths should be stored inside at all times. Failure to adhere to this could cause significant drops in cabinet performance and damage to items stored inside.

CAUTION: When installing more than one unit in the same location, ensure that they are positioned in such a way that warm air exhausted from one product is not drawn directly into the other product.



Water Baths are not suitable for use with flammable solvents! They are fitted with components that may be the source of ignition.



Water baths heat water up to 100°C and can become hot. This includes the optional lids.

Unpacking

Unpacking process for box and skid:

- The refrigerated water bath is packed on a timber skid with a lift-off carton placed over the top. This is then strapped to the skid before skid prior to dispatch.
- To unpack the refrigerated water bath, firstly cut the straps, then the box can be carefully slid upwards. (**Fig 1**)
- If damage is present upon opening your package, please notify the detail of any damage to your supplier or Thermoline Scientific without delay at +61 2 9604 3911 or email service@thermoline.com.au.

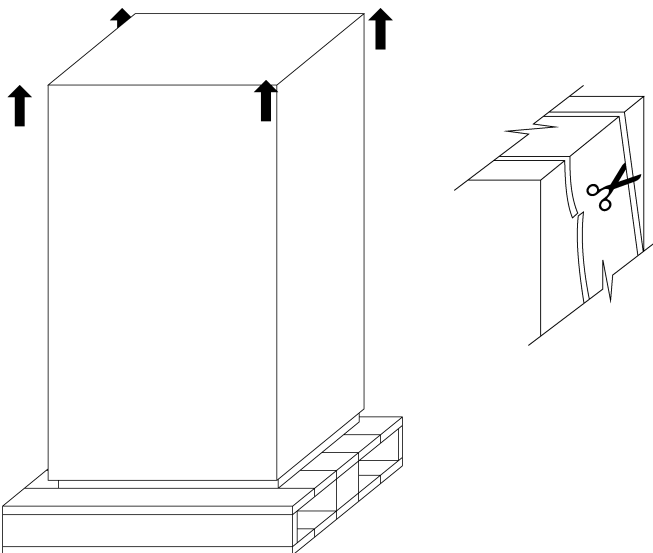


Fig 1 . Unpacking Process

Moving and Lifting

When moving and locating the refrigerated water bath please take caution due to the weight of the unit (even when empty). The TWBRC-12 and TWBRC-24 are 35kg and 40kg respectively.

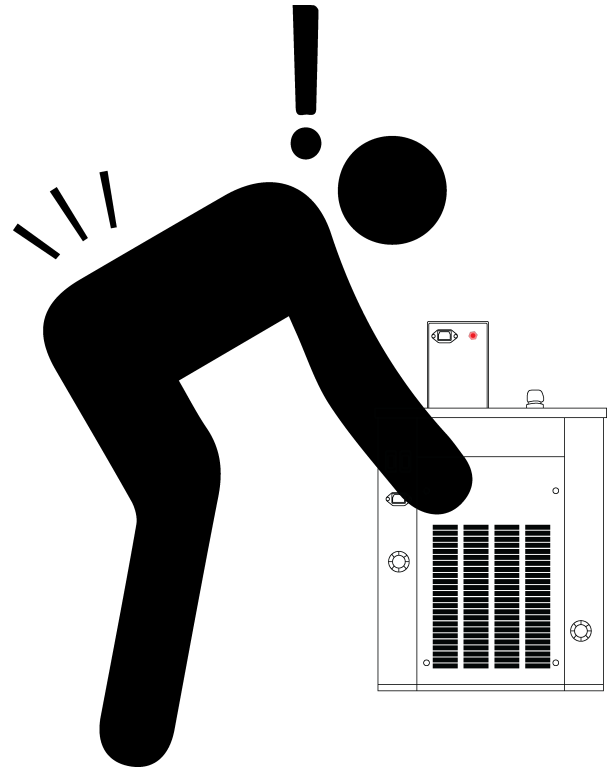


Fig 2 . Safe moving of therefrigerated water bath.

Setup

Filling

Please always ensure the bath is filled to at least the minimum required by the heater circulator being used (**Fig 1**). The maximum level can be seen by the lip at the top of the bath, approximately 30mm from the top (**Fig 2**).

When filling, please consider the samples to go into the bath to ensure their displacement does not cause an overflow.

Note: Never use deionised water in the water bath. It will corrode the stainless steel and not be covered by warranty.

Note: If the temperature required is below 5°C, then a mixture such as 50:50 water/ Ethylene glycol will be required to prevent freezing.

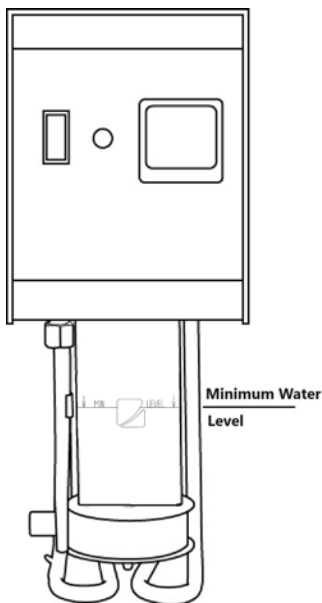


Fig 1. Minimum fill level.

30mm

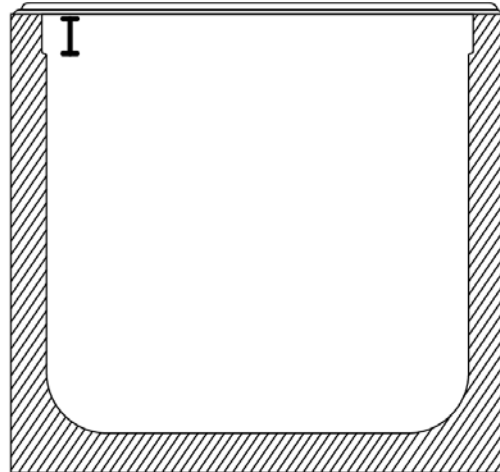
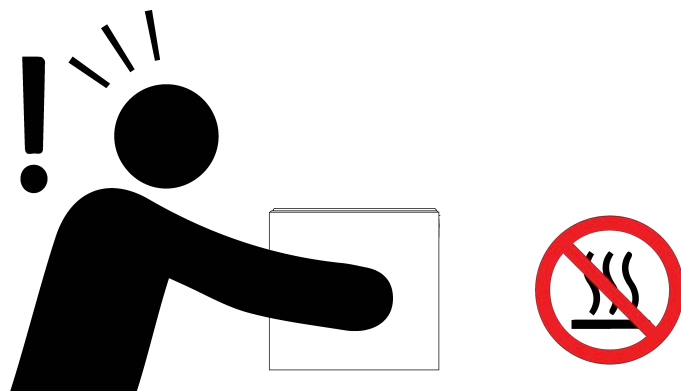


Fig 2. Maximum fill level.

Note: Never fill the bath using oil. The introduction of oil into the bath will result in pyrolysis (chemical decomposition by heat).



Note: The water in the bath and the bath itself including the lid, can become very hot.



Setup

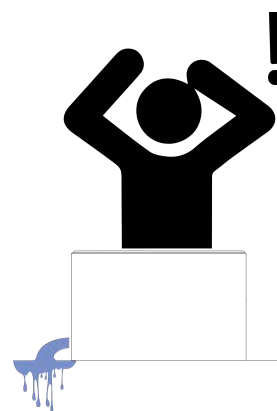
Hose Connections

The water outlet and water inlet are both located on the top of the bath. The water outlet is identified by the ball valve. Both outlet and inlet have a 12mm barbed fitting attached. These barbed fittings can be removed and standard 12mm airline hose can be used.

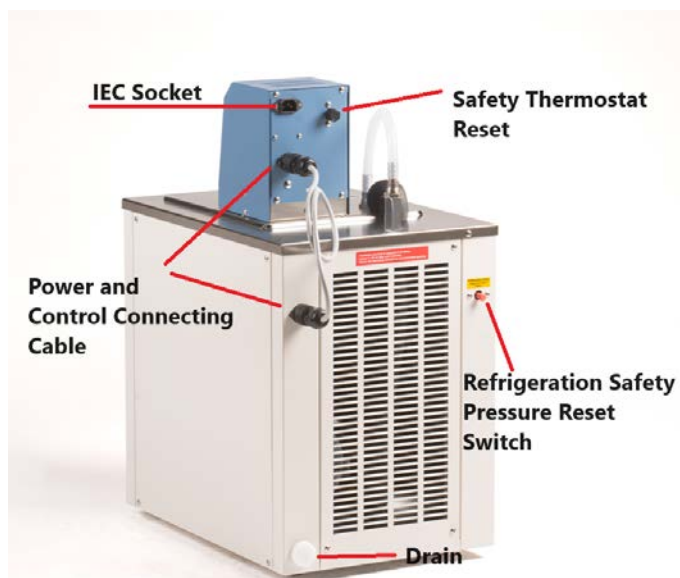


Drain

Prior to cleaning or storage, the water bath will need to be drained. The Thermoline water bath has a drain feature located on the left side of the cabinet. Simply pull on the white part to let the water drain from the bath.



Note: Please ensure the the end of the hose is placed into a sink or some other suitable drain before removing the plug as there is no tap.

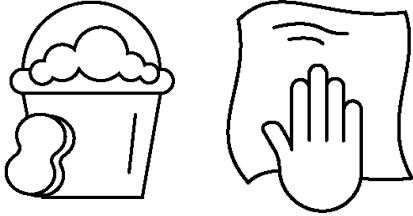


To drain the bath, simply find the drain located on the side or the rear of the bath and pull it out (exposing the hose). You can then remove the plug to drain the water.

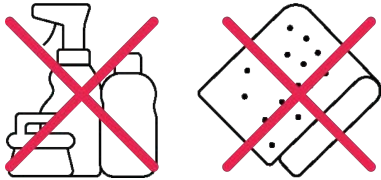
Setup

Cleaning

The external surface can be cleaned as often as required using a soft cloth and soapy water. Never use abrasive cleaners or scouring pads, as these will scratch the surface and may result in corrosion. Never use caustic type cleaning agents.



All refrigerated water baths have electrical components such as the temperature control and internal light. These items should not be subjected to any levels of moisture.



General inspection of the bath should be made at regular periodic intervals (generally every 6 months).



Location of removable panel on TWBRC-12

Apart from normal levels of cleanliness, it is important that the condenser is kept clean and free from dust. A clean condenser is critical to keeping the refrigerated water bath operating correctly. The interior should be cleaned at least every six months; this may need to be more frequent in some dusty locations. By monitoring the amount of "clogging" due to dust, the frequency of cleaning can be adjusted to keep it clean. The manufacturer's warranty does not cover the failure of the refrigerated water bath due to a blocked condenser.

Cleaning the Condenser:

- Turn off power at the power point before cleaning the condenser.
- The condenser is located on the front of the TWBRC-12 behind a removable grill. On the TWBRC-24, the removable grill is on the right of the unit as you face it. To remove the grill, simply unscrew the screws in the corners and lift the grill off. At this point, you will have full access to the condenser and can clean it.
- **NOTE:** Take caution around any sharp edges exposed by removing the vent cover.
- **NOTE:** Use a soft brush and/or vacuum with a soft brush attachment to remove any build-up of lint and/or dust. Taking extreme care not to damage the aluminium fins on the condenser face. Don't blow air into the condenser.



Location of removable panel on TWBRC-24

Setup Warnings



The refrigerated water bath requires ventilation for optimal usage. Keep the sides and top clear of any obstructions.

Failure to adhere to the requirements can lead to improper ventilation. Failure to observe these guidelines may void the manufacturer's warranty.

Ensure there are no blockages around the exhaust, as this will affect proper ventilation.

Keeping the exhaust clear of any obstructions will also ensure that the refrigerated water bath does not encounter any issues throughout use.

Before proceeding, make sure that all packaging has been removed from the refrigerated water bath and that all tape, plastic bags and pieces of foam have been removed.

If damage is present upon opening your package, notify the detail of any damage to your supplier or to Thermoline Scientific without delay at +61 2 9604 3911 or service@thermoline.com.au

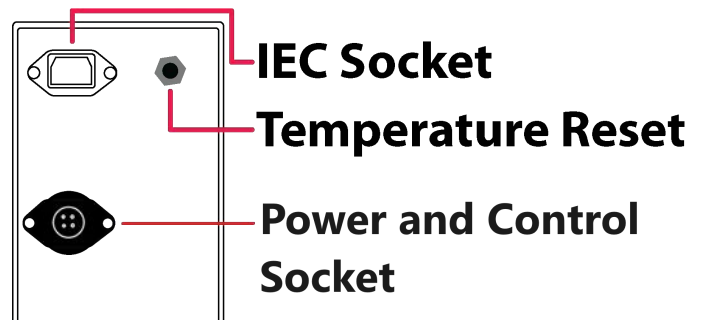
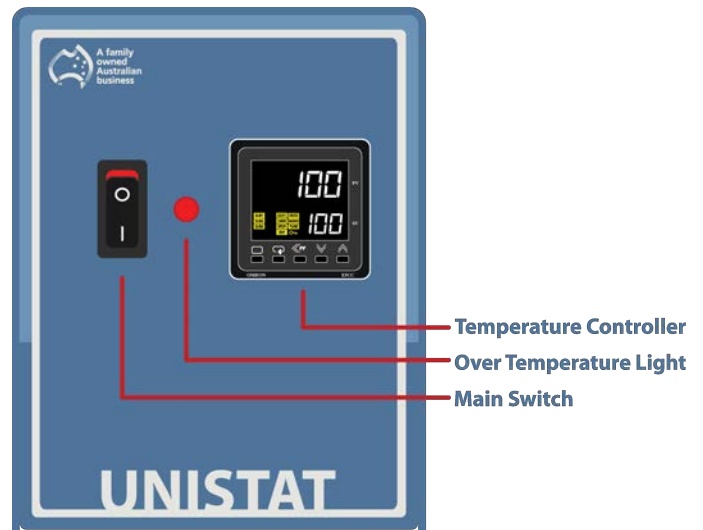


When you remove packaging from the refrigerated water bath, you should be careful when using knives to cut tape and cardboard.

Start Up Procedure

Start Up process for the refrigerated water bath:

- Before proceeding, please make sure that all internal and external packaging has been removed from the appliance and that all tape, plastic bags and foam pieces have been removed.
- Ensure that the heater circulator is placed in the bath appropriately and the bath filled.
- Take the supplied lead and plug it into the male IEC socket on the rear of the heater circulator. Next, plug the 3 pin plug into a 10amp General Purpose Outlet.
- Ensure the power and control lead is connected to both the heater circulator and the bath.
- Turn the main switch on the front of the heater circulator to 'ON'.
- The controller will go through a warm up period where all segments of the display will be on, before indicating the set temperature (SV) on the lower display and the water bath's actual temperature (PV) on the top display.



The controller is an Omron E5CC microprocessor based instrument with digital indication of set temperature and operating temperature. The instrument has been factory configured for range, sensor type, and engineering parameters for optimum control.



Note: Limited access to the controller is available. The operator has access to alter the temperature set point and parameters used for calibration purposes only.



Scroll Button: Used to view the set temperature target and start/reset the ramp/dwell function.



Page Button: Used to view calibration offset parameter and the ramp/dwell control parameters.



Increase/Decrease Button: Used to increase and decrease the parameter settings.



Side Arrow: Used to move the cursor when changing temperature

PV

Process Value: Current temperature within the cabinet

SV

Set Value: Set temperature within the cabinet.

Display Symbols

The Omron E5CC controller comes with an array of functions. The table below is an overview of the LED indicators displayed throughout use. Familiarise yourself with them so you are able to recognise problems or faults easily.

LED	Name	Meaning
SUB1	Auxillary Output 1	Cool Output ON
SUB2	Auxiliary Output 2	Low Alarm
SUB3	Auxiliary Output 3	High Alarm
OUT1	Control Output 1	Heat Output ON
OUT2	Control Output 2	N/A
CMW	Communications Wiring	N/A
STOP	Stop	N/A
RSP	Remote SP	N/A
MANU	Manual	N/A
TUNE	AT/ST	N/A
Key	Setting Change Protection	N/A

A	b	C	d	E	F	G	H	I	J
A	B	C	D	E	F	G	H	I	J
K	L	M	N	o	P	Q	R	S	t
K	L	M	N	O	P	Q	R	S	T
K	U	W	X	Y	Z				
U	V	W	X	Y	Z				

General Controls

Temperature Control

How to

Use the “<<PF” button to move the cursor. The digits in **SV** will flash, indicating that it can be changed.

Change the temperature by using the “UP” or “DOWN” arrows. When the desired temperature is set, leave for a few seconds and the digits will stop flashing to confirm entry.



UP



DOWN



SCROLL



SIDE ARROW



PAGE

Sensor Calibration

There are a number of factors that will affect the accuracy of the temperature displayed in relation to the actual temperature inside the bath. These could include the following:

- Sample load inside the bath (the load should be distributed evenly).
- Product temperature (at higher temperatures the heat loss from the product will be greater).
- Location of the sensor (the temperature sensor can never be placed in the centre of the bath because it could be damaged).

The Omron temperature control has a parameter that can correct the temperature displayed. This sensor correction parameter is displayed as “INS” (Input Shift).

In simple terms, this parameter adds or subtracts a correction value to the displayed temperature to make it read the correct temperature.

The calibration needs to be when the heater circulator is in a bath, with a lid on and allowed to stabilise. The sensor can be placed to the centre of the bath.

Once the bath has stabilised, any difference in the temperature reading can be offset using the sensor correction parameter.

The calibration parameter can be accessed as follows:

How to

Press **PAGE** to display sensor correction parameter.



Use the **UP** or **DOWN** button to adjust the sensor correction.

After this, allow the digit to stop flashing and the screen will display the adjusted value.

General Controls

Manual Safety Thermostat

This safety thermostat is not operator-adjustable. It will electrically isolate the heating element in the event of an over-temperature situation.

Fixing the Manual Safety Reset:

- Allow the bath to cool down before resetting the thermostat.
- Also check the water level in the bath as low water may have been the cause.
- Locate the safety reset on the back of the heater circulator. It is either a black or red knob (**Fig 1**).
- Once the bath has cooled down, twist the red or black knob anti-clockwise.
- Once the knob is off, simply press the internal red button firmly until you feel a “click”, this will restart the circulating fan and turn on the digital display again. **NOTE:** This will allow the heaters to operate again. If this keeps tripping contact a qualified service technician to investigate possible causes of fault.

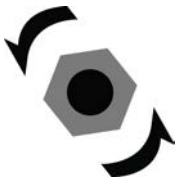


Fig 1. Remove Screwcap

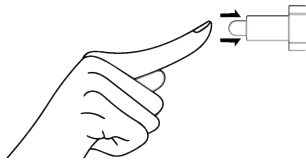
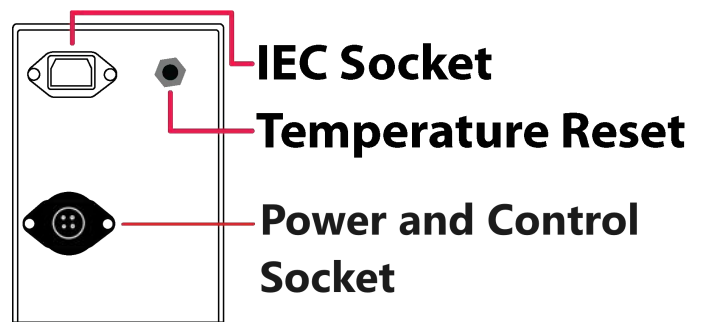


Fig 2.



General Controls

Refrigeration Safety Pressure Switch

This Pressure Switch is designed to protect the refrigeration compressor in the event of the following:

- **Failed condenser fan.**
- **Ambient temperature is too high.**

The pressure switch will trip if the high side pressure of the refrigeration system exceeds a set value.

Please note: Contact Thermoline's service team if the pressure switch trips more than twice.

How to Reset:

- To reset, simply press the red button (**Fig 1**) at the rear or the side of the refrigerated water bath (**Fig 2**). If the Compressor does not start after pressing the red button, wait 30 minutes to allow the pressure in the system to drop to a safe level. Then try again. The pressure in the system needs to drop to 1800kpa before it will reset.

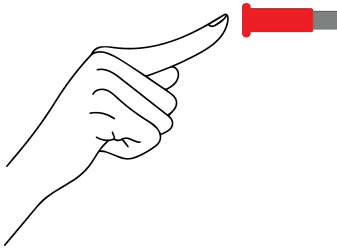


Fig 1. Press the red switch to reset

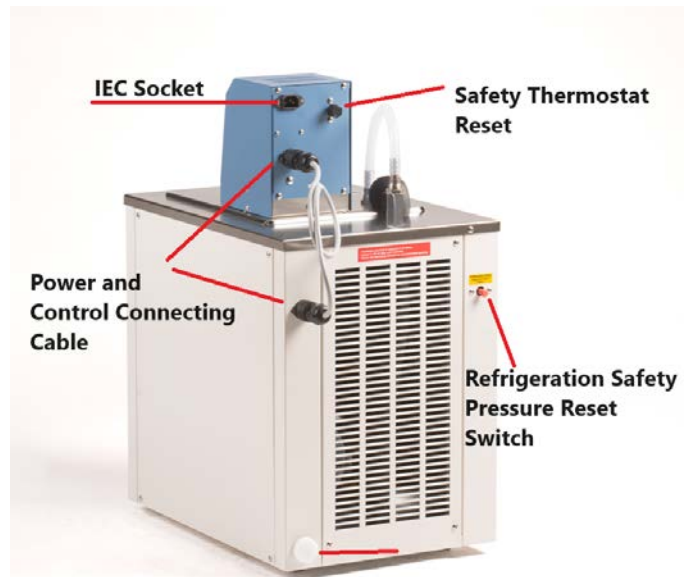


Fig 2. Refrigeration safety pressure switch location

Troubleshooting Information

Problem	Fix
The bath is not cooling on startup	<p>Pressure Switch The pressure switch may have tripped.</p> <p>To reset, simply press the red button at the rear of the refrigerated water bath. If the compressor does not start after pressing the red button, wait 30 minutes to allow the pressure in the system to drop to a safe level. Then try again. The pressure in the system needs to drop to 1800kpa before it will reset.</p> <p>Please note: Contact Thermoline's service team if the pressure switch trips more than twice.</p>
Controller is off, but switch is illuminated	<p>Safety Thermostat Please check the safety thermostat. It is the red or black button on the back of the cabinet. Unscrew the red cap and then push the button in. For further information refer to the Safety Information Chapter.</p> <p>If this does not rectify the issue. You will need to contact your preferred electrician/technician to diagnose the issue.</p>
The bath is not reaching the set point.	<p>Air Flow There may not be enough air flow around the refrigerated water bath. Please space the refrigerated water bath so there is enough air circulation around the product.</p> <p>Outlet Please ensure that the outlet of any adjacent product does not face the inlet of the refrigerated water bath.</p> <p>Operation Make sure you operate the refrigerated water bath for only a maximum of 12 hours and clean up any residual ice build up between operation.</p>

Technical and Repair Support

When contacting Thermoline regarding information about the product, it is important to have the Serial Number and other related information with you. The serial number is on a silver sticker, usually located near the power IEC socket.

Contact Thermoline service on +61 2 9604 3911 or email at service@thermoline.com.au



ABN 80 000 859 129
SALES AND MANUFACTURING
10-12 Ross Place, Wetherill Park NSW 2164 Australia
Phone: +61 2 9604 3911 Email: sales@thermoline.com.au



Model:
Serial No:
Watts/Amps:
Volts:

Have the following information available when you contact the service department. Model number and serial number. This is generally found on the exterior of the unit in the form of a stick-on label. The company name, address, contact name, contact phone number. A brief description of the problem. All warranty claims must be reported to, and agreed to by a Thermoline representative prior to any work being carried out.

Standard 24 Month Warranty

Thermoline Scientific Equipment Pty Ltd ABN 80 000 859 129 ('Thermoline')

Thermoline warrants to the original purchaser that this product will perform to its product specification for a period of 2 years from date of purchase, provided that the installation of the product has been carried out in accordance with the latest version of the manufacturer's instructions and further provided that the use of the product complies with that specified in the relevant specification. Thermoline is not responsible for any loss or damage arising from incorrect usage, usage outside the suitability of the product as stipulated in the manufacturer's instruction, damage caused by accident, fire, flood, act of God or failure to properly install, operate or maintain the goods in accordance with the printed instructions provided.

The following statement applies only to product sales that fall within the definition of a Consumer Sale set out in the Australian Consumer Law contained within the Competition and Consumer Act (Cth) 2012:

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. Notwithstanding the preceding clause and to the extent permissible by law, the liability of Thermoline is limited, in relation to the warranted product and at the option of Thermoline to:

Replacing the product or the supply of equivalent product;
The repair of the product;
The payment of the cost of replacing the product or of acquiring equivalent product; or
The payment of the cost of having the product repaired.

To the extent permitted by law, all other warranties whether implied or otherwise, not set out in this Warranty are excluded and Thermoline is not liable in contract, tort (including, without limitation, negligence or breach of statutory duty) or otherwise to compensate the Purchaser for:

- Any increased costs or expenses calibration/certification services;
- Any loss of profit, revenue, business, contracts or anticipated savings;
- Any loss or expense resulting from a claim by a third party.
- Any special, indirect or consequential loss or damage of any nature whatsoever caused by Thermoline's failure in complying with its obligations or the purchaser's failure due to accident damage, impact, misuse or negligence.

The benefits given to the purchaser in this Warranty are in addition to other rights and remedies under a law in relation to the products or services to which this warranty applies. This warranty applies only to products purchased and installed in Australia and does not cover any consumable items e.g. filters, light globes, ultrasonic nebulizers. The warranty does not extend to labour and freight costs where the warranted product is located outside Australia.

To make a warranty claim, contact Thermoline on 02 9604 3911 or service@thermoline.com.au.

We are proudly Australian owned

We will continue to invest in Australian
manufacturing.

