Water Baths

User Manual & Setup Guide

TWB RANGE

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Symbol

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 bath.

Bath - Quick Start Guide

Pre Use Procedure

- Before proceeding, please ensure that all internal and external packaging has been removed from the bath and that all tape, plastic bags and foam pieces have been removed.
- Fill the bath to the appropriate level. 50 mm minimum over the internal tray and a maximum of 30mm from the top of the bath (TWB-24NE-4E minimum water level is determined by the heater circulator used) using suitable water. Remember to take into account the volume of your samples.
- Take the supplied lead and plug it into the male IEC socket on the rear of the water bath. Next, plug the 3 pin plug into a 10amp General Purpose Outlet.

Note: The TWB-24NE-4E is controlled by the installed heater circulator. Please see the appropriate manual for controls.

Start Up Procedure

- Turn the main switch at the back of the bath to 'ON' to power up the bath.
- The TWB-24CP-4E has a switch on the back to turn the circulation pump on and off.
- On start-up, the display shows OFF - Press the run/stop key to start the heating and the current temperature will be displayed.
- Using the up and down arrows, you can set the required temperature. Press the ' SET ' key once you have selected the correct temperature.

Please note: The base tray can float at temperatures greater than 90°C due to bubbles forming on the bath floor.

Operation	Display	
	OFF Current temperature	The bath is in unheated status
 →	- - - - &50.0	Press the run/stop key to start heating, it displays the current temperature, countdown is off
 →	OFF	Press the run/stop key again, heating stops, and the screen displays “OFF”

Operation	Display	
 →	50.0	Directly set the heating temperature you require
 →	37.0	Press the set key to save the value then exit, it displays the current temperature/OFF

General Information

This user manual is intended for Thermoline's range of 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 water bath and an integral part to its function. We recommend keeping it close and within easy access.

Intended Use

All of the Thermoline Water Baths are designed to operate between ambient +5°C and 99.9°C. The Thermoline water baths offer an industry standard in temperature-controlled baths.

- Temperature stability: +/- 0.3°C
- Operating Temperature up to 99.9°C

Product Specifications

External Dimensions	**TWB-5-4E**	**TWB-12-4E**	**TWB-24-4E**
WxDxH (mm)	**394x188x285 (including lids)**	**348x349x427 (including lid)**	**560x414x426 (including lids)**
Internal Dimensions			
WxDxH (mm)	**300x150x150**	**300x240x200**	**500x300x200**
Technical Specifications			
Temperature Range	**Ambient +5°C to 99°C (max temp with bath lid on)**		
Temperature Stability	**+/-0.5°C**	**+/-0.3°C**	**+/-0.3°C**
Display Accuracy	**0.1°C**	**0.1°C**	**0.1°C**
Electrical	**450W/230V**	**1000W/230V**	**1200W/230V**
Capacity	**5L**	**12L**	**24L**
Weight	**4.5kgs**	**7.4kgs**	**14.5kgs**
Features			
LED Display with timer (Programmable)	**Range 0-99H59min**	**Range 0-99H59min**	**Range 0-99H59min**
Included Lids	**2**	**1**	**2**
Dry Break Drain	✔	✔	✔
Safety			
Dry-start Protection	✔	✔	✔
Over Temperature Safety	✔	✔	✔

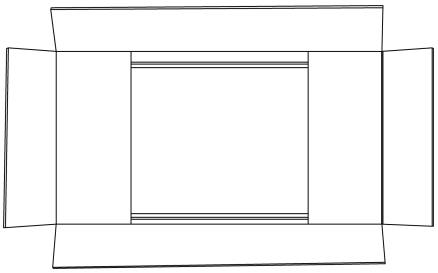
Product Specification

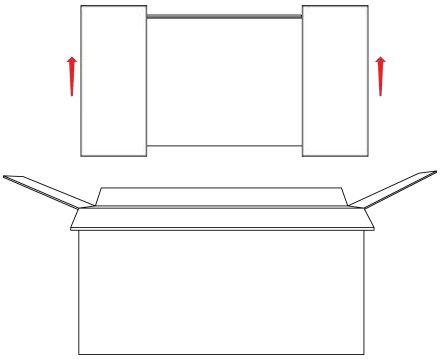
External Dimensions	TWB-24NE-4E	TWB-24CP-4E
WxDxH (mm)	560x414x426 (including lid)	560x414x426 (including lid)
Internal Dimensions		
WxDxH (mm)	500x300x200	500x300x200
Technical Specifications		
Temperature Range	N/A - See Heater Circulator Specifications	Ambient +5°C to 99°C (max temp with bath lid on)
Temperature Stability	N/A - See Heater Circulator Specifications	+/-0.3°C
Display Accuracy	N/A - See Heater Circulator Specifications	0.1°C
Electrical	N/A - See Heater Circulator Specifications	1200W/230V
Capacity	24L	24L
Weight	7.4kgs	16.5kgs
Features		
LED Display with timer Programmable	N/A - See Heater Circulator Specifications	Range 0-99H59min
Included Lids	1	2
Dry Break Drain	✔	✔
Safety		
Dry-start Protection	N/A - See Heater Circulator Specifications	✔
Over Temperature Safety	N/A - See Heater Circulator Specifications	✔

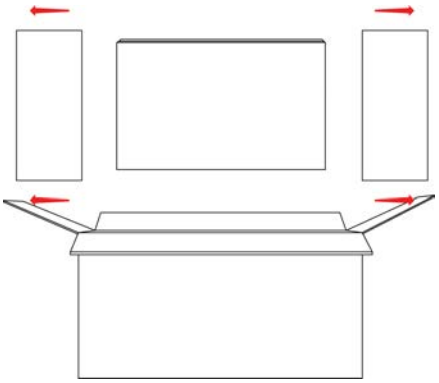
Unpacking

Unpacking Process:

- The water bath will be delivered packed in a carton.
- Please see the below diagrams for removing the bath from the carton.
- If upon opening your package damage is present, notify the detail of any damage to your supplier or to Thermoline without delay at +61 2 9604 3911 or email at service@thermoline.com.au.





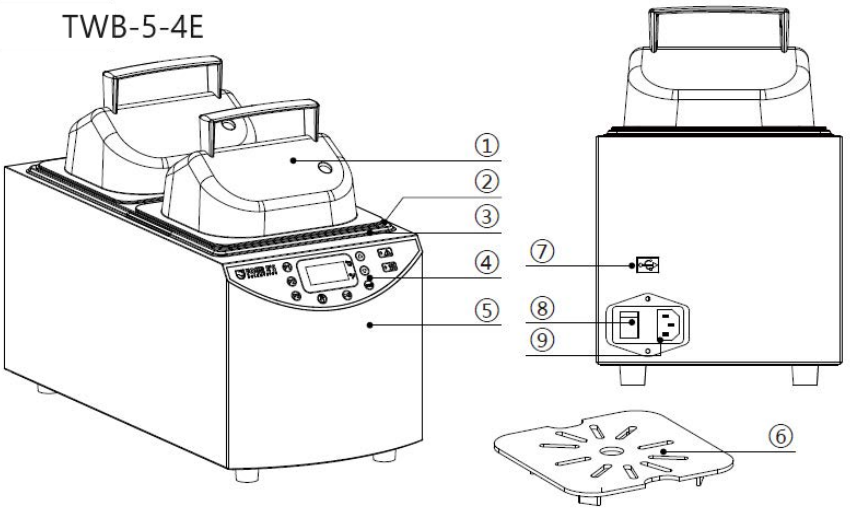


Packing List

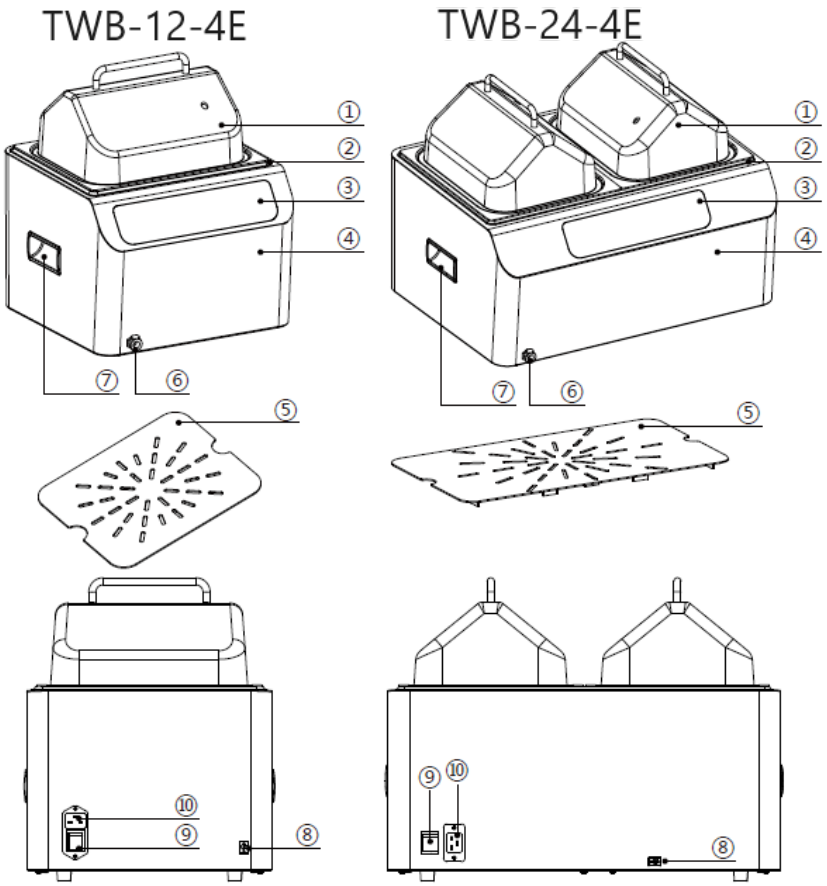
	TWB-5-4E	TWB-12-4E	TWB-24-4E
Cover board	1	N/A	N/A
Transparent lid	2	1	2
Base tray	1	1	1
Power Lead	1	1	1
Operating manual	Downloaded from the Thermoline Website		

	TWB-12NE-4E	TWB-24CP-4E
Transparent lid	1	2
Base tray	1	1
Power Lead	N/A	1
Operating manual	Downloaded from the Thermoline Website	

Bath Components

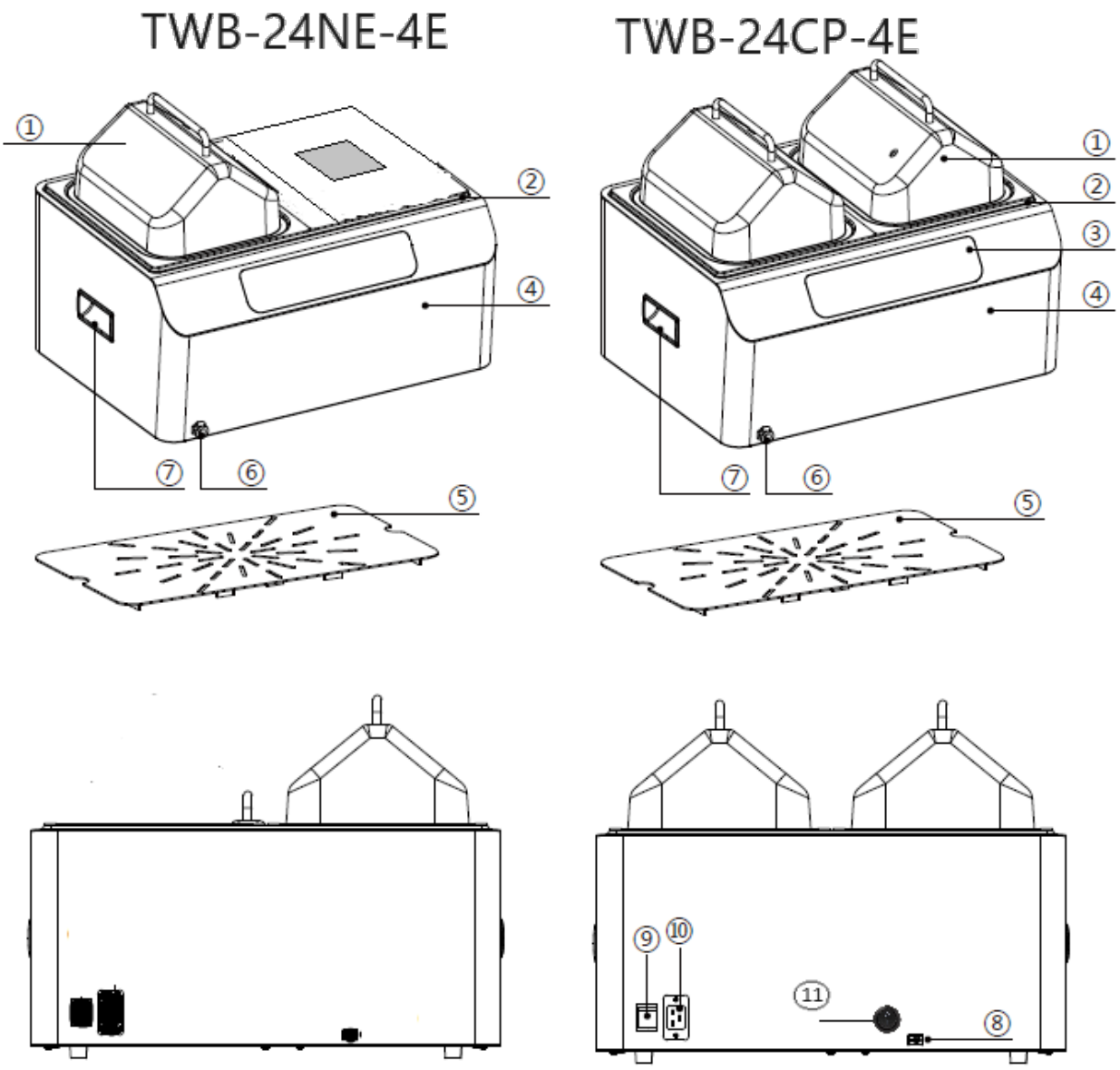


① Transparent lid ② Cover board ③ Stainless-steel chamber
④ LED display ⑤ Water bath ⑥ Base tray ⑦ USB port
⑧ Power switch ⑨ Power socket



① Transparent lid ② Stainless-steel chamber ③ LED display
④ Water bath ⑤ Base tray ⑥ Drain port ⑦ Handle
⑧ USB port ⑨ Power switch ⑩ Power socket

Bath Components



① Transparent lid ② Stainless-steel chamber ③ LED display
④ Water bath ⑤ Base tray ⑥ Drain port ⑦ Handle
⑧ USB port ⑨ Power switch ⑩ Power socket
⑪ Pump switch

Installation

The water bath has three main components: the bath, the lid and the base tray. The base tray fits into the bath with the feet downward, creating a gap between the bottom of the tank and the tray. The purpose of this tray is to prevent anything sitting in the bath from direct contact with the floor. The heater is directly under the tank's floor and, therefore, may be hot to the touch.

Note: The following instructions will only apply to the TWB-24NE-4E regarding emptying and cleaning, as the heating and stirring are controlled by the TU3 circulator (separate manual available for download).

For optimum temperature stability, avoid allowing the base tray and sample container to touch the sides of the chamber while operating.
The lid should only be lifted by the handle, as other parts can become hot during use. It has a vent/thermometer hole. This hole should not be sealed as pressure could build up inside the bath.

Water Bath Location

Ensure the water bath is placed in a sutiable environment, away from direct sunlight or direct heat sources. 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.
Extreme Operating Conditions:

- **Temperature:** *10°C to 32°C*
- **Humidity:** *Up to 80%RH*

Ideal Conditions:

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

Ensure the water bath is placed on a level surface and that the mains plug and the switch are easily accessible.

While the bath doesn't necessarily require ventilation, Thermoline still suggests 100mm on the sides and back to aid with accessibility.

Water Quality

The water quality parameters in the table below should be adhered to to get the best out of your Thermoline equipment. Due to the extensive use of stainless steel in Thermoline products, deionised water should not be used. It can cause corrosion (due to leaching over time) that may not be covered under warranty.

Thermoline suggests avoiding using tap water if possible. Using tap water may significantly increase the required frequency of cleaning and maintenance of the equipment. Unacceptable water can cause excess scale build-up and mineral deposits, particularly in humidity systems. This, in turn, can cause heater failure and issues with float switches. In water baths, corrosion due to insufficient cleaning is the primary concern, with heater circulators and circulation pumps being the most significant issue.

Note: All Thermoline equipment using water requires regular maintenance, inspection and cleaning. Six monthly for Humiditherm, Envirotherm and Climatron cabinets. Water baths will require much more frequent cleaning due to the ease of contamination in the water. Water should be changed for any signs of contamination.

Descaling may be required if the water used is continuously topped up to compensate for evaporation as this concentrates the mineral deposits in the water. The bath should be completely drained regularly and filled with fresh, clean water.

Parameter	Range
Resistivity	**0.1 - 0.5 MΩ**
Conductivity	**2-10 µs/cm**
Total Dissolved Solids	**<10 mg/L**
Acidity	**6-7 pH**

Electrical Connections

The water baths require a 10amp 230V 50hz power supply.

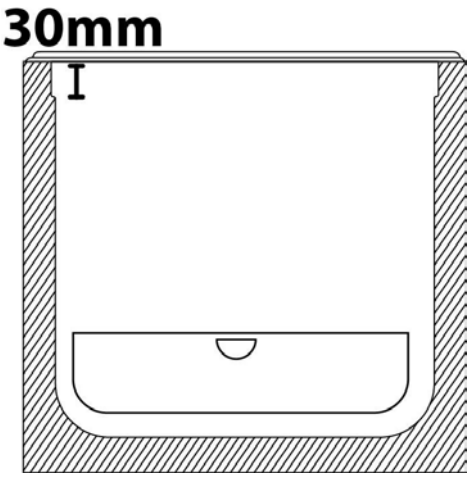
A dedicated outlet should be used for all water baths. Do not use power boards or the like. Included with the water bath is a removable mains power lead with a three pin plug and straight female IEC plug.

On the water bath itself is a 10 amp male IEC socket (power port). Ensure that the mains plug and the switch are easily accessible.

Filling

Please always make sure that the bath is filled to at least 50mm over the base tray. Thermoline recommends a maximum fill level of approximately 30mm from the top of the bath. This level can be seen by the lip at the top of the bath, approximately 30mm from the top .

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



Note: Please ensure the water used meets the water quality parameters listed.

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.

Note: The filling requirements for the TWB-24NE-4E are determined by the requirements of the heater circulator. Please see the appropriate manual for this.

Cleaning

The interior and exterior 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 water baths have electrical components such as the temperature control. These items should not be subjected to any levels of moisture.
Note: Always switch the bath off and unplug it from the power before cleaning.

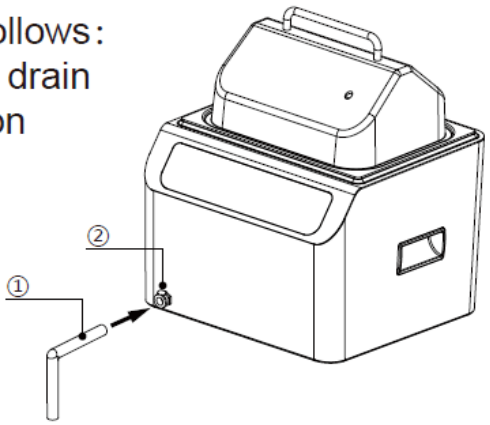
Cleaning Stainless Steel

Stainless steel is under most conditions extremely resistant to corrosion. This is in part due to the addition of chromium and nickel to the steel and the formation of a durable chromium oxide at the surface during the manufacturing process. There are several chemicals which will attack the surface of stainless steel, plus the lack of oxygen at the surface will cause rusting, corrosion and pitting. When cleaning tap water is usually suitable but for ordinary running of the bath Thermoline suggests water meeting the parameters mentioned in the water quality section manual.

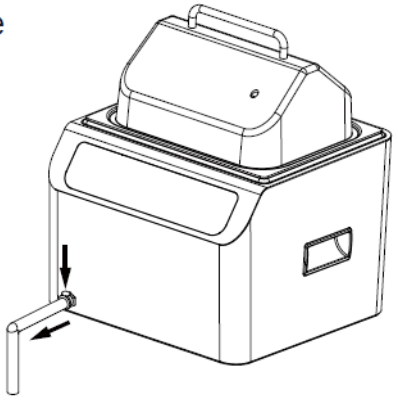
Drain

The bath has a built in dry break drain. Before emptying any bath, disconnect the device from the power supply and pull out the plug. Then allow the water temperature to fall to a safe level and take reasonable precautions to prevent accidental spillage.

The drainage operation is as follows:
1. Insert the drain pipe into the drain port according to the direction shown in the figure.
① Drain pipe
② Drain port



2. After draining, loosen the lock of the drain port in the direction of the arrow as shown in the figure, and then quickly pull out the drain pipe.



Water Bath Warnings

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

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

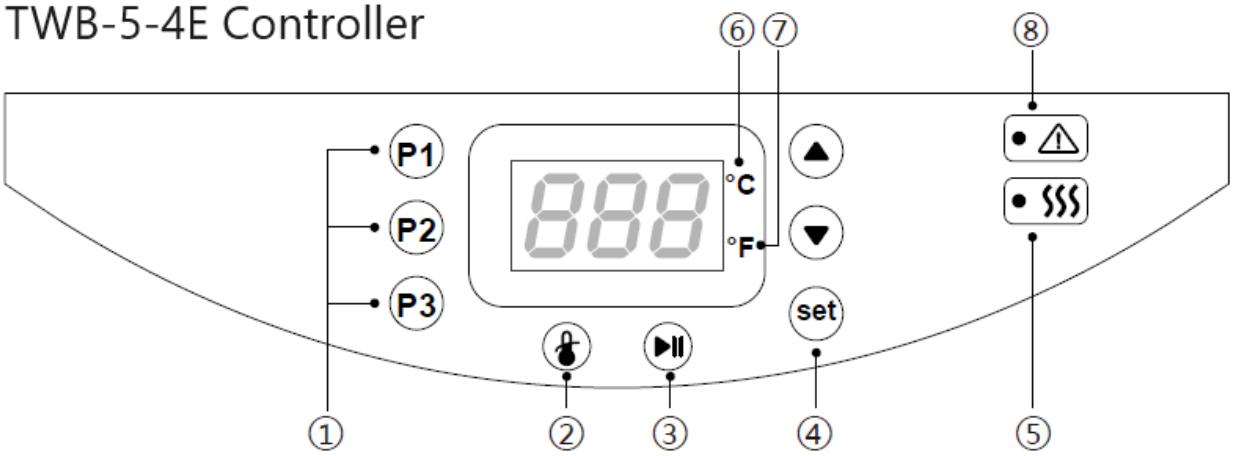
Water baths heat water up to 100^{o}C and can become hot. This includes the optional lids.

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

General Controls

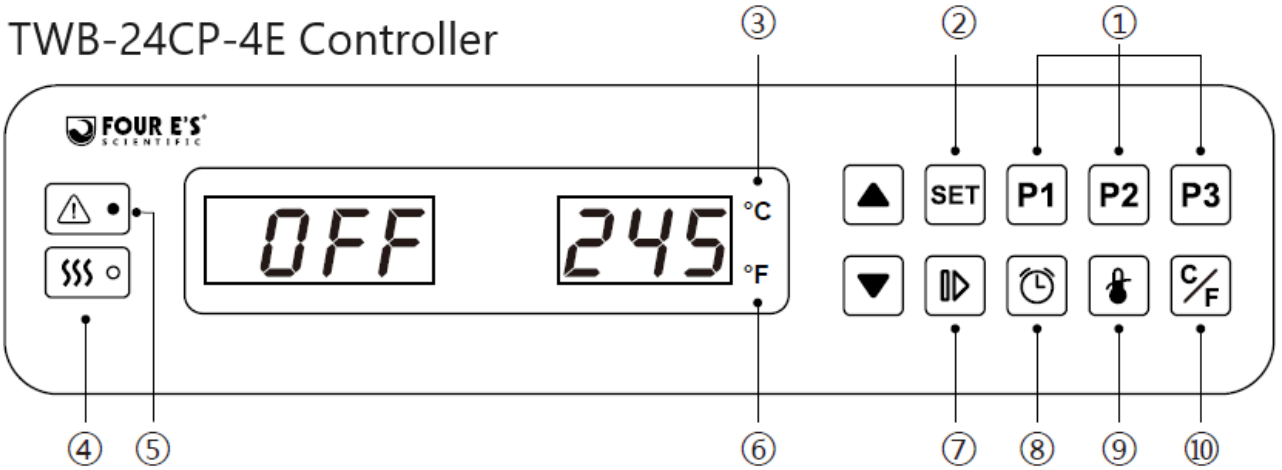
Bath Controllers

TWB-5-4E Controller



① Preset program ② Over-temperature alarm key ③ Run/Stop
④ Set ⑤ Heating indicator ⑥ ℃ indicator ⑦ ℉ indicator
⑧ Alarm indicator

TWB-12-4E TWB-24-4E
TWB-24CP-4E Controller



① Preset program ② Set ③ ℃ indicator ④ Heating indicator
⑤ Alarm indicator ⑥ ℉ indicator ⑦ Run/Stop
⑧ Countdown ⑨ Over-temperature alarm key ⑩ ℃/℉ switch

Run/Stop

When first turned on, the display shows OFF (the water bath heater is off).
When the temperature is displayed, the water bath is controlling temperature (the heating indicator will flash).
To start the temperature control, press the switch to run/stop.

Please see the below table.
Current temperature: Set to 50.0℃；
Press the run/stop key to start heating, and it displays - - - - and the current temperature.

Operation	Display	
	OFF Current temperature	The bath is in unheated status
 →	- - - - &50.0	Press the run/stop key to start heating, it displays the current temperature, countdown is off
 →	OFF	Press the run/stop key again, heating stops, and the screen displays “OFF”

Temperature Setting

There are a number of methods for setting the temperature.

Method 1:
Directly adjust the temperature setting as shown below.

With a current temperature of 37.0°C, set the temperature to 50.0°C

Operation	Display	
 →	50.0	Directly set the heating temperature you require
 →	37.0	Press the set key to save the value then exit, it displays the current temperature/OFF

Temperature Setting

Method 2:
Press to enter the temperature setting sub-menu to adjust the temperature as shown below:
For example:
With a current temperature of 37.0°C, set the temperature to 50.0°C

Operation	Display	
SET →	°C	Press set key to enter the first level menu
▲ ▼ →	TEP	Enter the temperature setting submenu
SET →	50.0	Press set key again to enter the temperature setting menu option
▲ ▼ →	55.0	Set the temperature you require
SET →	37.0	Press the set key to save the setting then exit, it displays the current temperature/OFF.

Method 3: Run the preset temperatures. P1 P2 P3.

Temperature Presets

The bath has three presets. Temperature presets allow you to conveniently store or run bath temperature settings that you routinely use.

To program the preset, please see below：

Configuring the preset P1. With a current temperature of 37.0°C the preset Pr1 is set to 50°C.

Operation	Display	
P1 →	Pr1	Select the preset you wish to set;
▲ ▼ →	50.0	Set the value you wish to use;
P1 →	37.0	Press the preset again to store the value and the bath with automatically return to displaying the current temperature/OFF

Temperature Presets

To run the preset please see below：

Operation	Display	
P1 →	Pr 1	Press the preset you want to use;
SET →	50.0	Press “set” to confirm the preset, it displays the current temperature/OFF.

Temperature Units

To switch between Fahrenheit (°F) and Celsius (°C) please see the below instructions.

For TWB-12-4E, TWB-24-4E and TWB-24CP-4E use:

Operation	Display
°C/°F →	°F indicator is on

For TWB-5-4E use:

Operation	Display	
set →	oC	Select the menu option;
▲ ▼ →	CFU	Navigate to the switching °C/ °F selection menu option
set →	C	Press the set key to enter °C/ °F switching
▲ ▼ →	F	Switch to °F; C stands for °C, and F stands for°F
set →	37.0	Press the set key to save the setting, it displays the current temperature/OFF.

Setting the over temperature alarm

If the water temperature in the bath exceeds the OtP parameter (over-temperature), the water bath will stop heating, display OtA, and an alarm will sound (five beeps).
To turn off the alarm:
• Turn off the power and restart the bath after the water has cooled to below the over-temperature alarm setting.
• Add cold water until the temperature drops below the over-temperature alarm setting.
• Change the over-temperature alarm to above the water temperature, and the alarm will be turned off.

To adjust the over-temperature alarm, please see below:

Operation	Display	
	OtP	Press the over-temperature alarm key to enter the setting menu.
	90.0	Set the over-temperature alarm limit you require
	37.0	Press the over-temperature alarm key again to save the setting, it displays the current temperature/OFF.

Dry start protection alarm

This alarm can be disabled on the TWB-5-4E. ***Thermoline suggests that this is not turned off.***
On the TWB-12-4E, TWB-24-4E and TWB-24CP-4E this is always on and can't be disabled.

Operation	Display	
	°C	Select the menu option
	dPA	Select the dry start protection alarm setting menu option
	On	Press set key to enter the dry start protection alarm setting. The default setting is “ON”
	OFF	Select to turn off the dry start protection alarm
	37.0	Press set key to save the setting The setting will exit automatically after 5S without operation It displays the current temperature/OFF

Setting the countdown timer

The countdown timer can be set in the range of 0~99H59min.
After the countdown is over, an alarm will sound three times, and the heating will stop. “OFF” is displayed.

Note:

- The countdown can only run with the heaters on. The countdown will stop once the heating is stopped.
- With the heating enabled once you save the setting value of timer, the countdown will start immediately.
- With the heater turned off you will need to press the “Run/Stop” button (enable the heating) to start the countdown.
- The countdown settings are independent of the temperaturesettings. When setting the countdown, take into account the time required to achieve the set temperature.

To run the preset please see below example to set the countdown time from 0 to 1 hour 10 minutes.

Operation	Display
 →	---- current temperature	When the countdown is 0, it displays ---- and the current temperature, and the countdown is off; when the countdown is not 0, it displays the length of the countdown and the current temperature.
 →	00:00 current temperature	The first two digits are flashing; enter the state of setting countdown hours
 →	01:00 current temperature	Set countdown hours
 →	01:00 current temperature	The last two digits are flashing; enter the state of setting countdown minutes
 →	01:10 current temperature	Set countdown minutes
 →	01:10 current temperature	Press the SET to save the setting, or the setting is invalid. The countdown timer will begin once you save the setting. The setting will exit automatically after 10S without operation

Dual Point Calibration

The baths offer a dual point calibration .
To ensure the best calibration results the following conditions are required.

- The accuracy of the thermometer should be be sufficient and calibrated as a standard thermometer.
- Stable ambient temperature (+/-1°C) with minimal air movement.
- Wait for the water to reach the calibration setting temperature and stabilise for 30 minutes before calibrating.
- Add water to the water bath to 50 mm above the tray, and place the reference thermometer in the center of the water bath, 40 mm away from the tray with the lid on.
- Low temperature point (LCP): 5-50°C
- High temperature point(HCP): Above 55°C
- It is recommended that 40°C is used for low temperature calibration point and 80°C for high temperature calibration point.

Low temperature point calibration example
Before calibration, the screen displays 40.0 °C but the actual water temperature is 42.0°C
After calibration, the screen displays 41.8 °C and the actual water temperature is 42.0°C

Operation	Display	
SET →	°C	Select the menu option
▲ ▼ →	LCP	Select the low temperature point calibration setting menu option
SET →	40.0	Press SET to enter the calibration value
▲ ▼ →	42.0	Enter the reference thermometer value
SET →	SEt	Press to store the calibration value, or the setting is invalid. The setting will exit automatically after 10S without operation
⌛ →	41.8	

Dual Point Calibration

High temperature point calibration example

Before calibration, the screen displays 95°C but the actual water temperature is 98.0°C;
After calibration, the screen displays 97.7°C and the actual water temperature is 98.0°C;

Operation	Display	
SET →	°C	Select the menu option
▲ ▼ →	HCP	Select the high temperature point calibration setting menu option
SET →	95.0	Press set to enter the calibration value
▲ ▼ →	98.0	Enter the reference thermometer value
SET →	SEt	Press to store the calibration value, or the setting is invalid. The setting will exit automatically after 10S without operation
→	97.7	

Restart the bath after running a high or low temperature points calibration.
Leave the bath temperature to stabilise and check the calibration.

Troubleshooting

Below are the possible error codes for the baths (other than the TWB-24NE-4E).

Error code	Cause	Solution
Err 1 Sht	Temperature sensor 1 short-circuit	Check the temperature sensor 1 or motherboard for a short circuit fault.
Err2 OPn	Temperature sensor 1 open-circuit	Check if the sensor 1 is well connected.
Err3 Sht	Temperature sensor 2 short-circuit	Check the temperature sensor 2 or motherboard for a short circuit fault.
Err4 OPn	Temperature sensor 2 open-circuit	Check if the sensor 2 is well connected.
Err5 dry	Dry-start alarm, no water in the chamber or the water level is below the min.	Switch the bath off and refill the bath with water
Err6 OtP	Over-temperature Alarm 1. The initial water temperature is above the OtP value 2.The OtP setting value is too low	1. Let water cool. 2.Reset the OtP value
Err7 rOn	Temperature sensors malfunction	Contact supplier or manufacturer.
Err8 Out	Calibration temperature not within the required range	1. Check if the low calibration point or high calibration point is within the required range. 2. Check if the temperature difference between the one measured by a thermometer and the one measured on the water bath is more than 10°C (If it is, there is issue on the temperature probe on the water bath)

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 white sticker, usually located near the power IEC socket.

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

Thermoline

Model:
Serial No:
Watts/Amps:
Volts:

Phone: +61 2 9604 3911
Email: hello@thermoline.com.au

2 Years Warranty

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 bath 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.