Blanket Warmer
User Manual & Setup Guide

TBW RANGE

Omron E5CC

Contents

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.

General Information

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

The Thermoline blanket warmer 250, 360 and 520 models are designed and manufactured to accommodate the requirements of medical centres and hospitals where blankets need to be stored in a warm environment. Designed to operate up to 60°C with an alarm set at 2°C above the setpoint, the Thermoline Blanket Warmers offer an industry standard in insulated heating equipment.

- Control Accuracy: +/- 0.1°C
- Operating Temperature up to 60°C

The Thermoline blanket warmer is set to function with specific Operating Ranges. The optimum operating conditions will be explained further in this manual.

Product Specifications
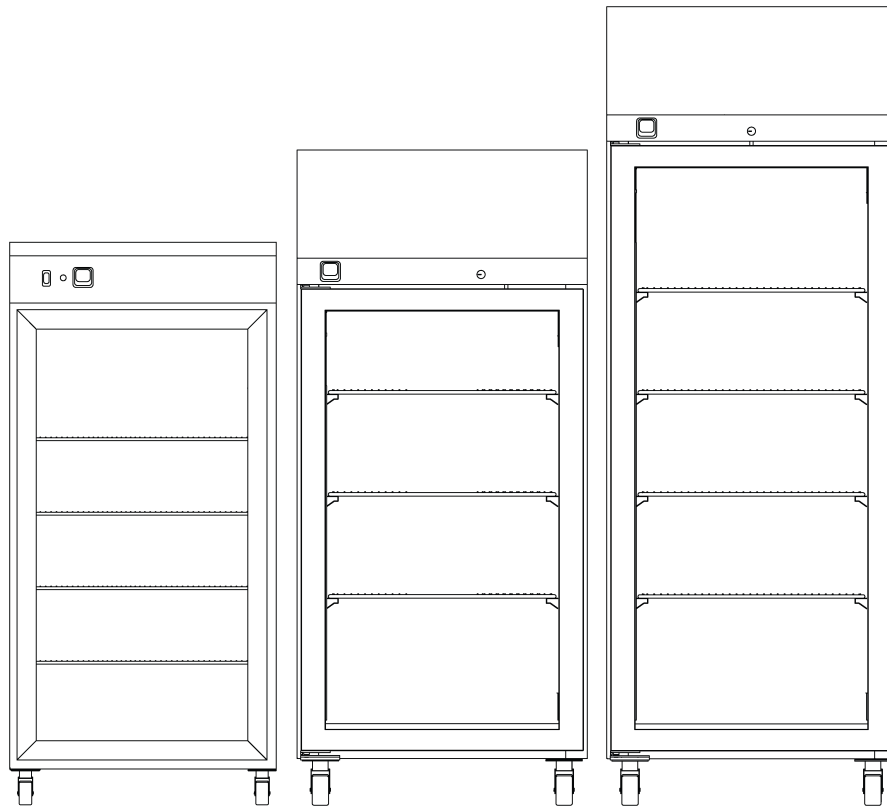
Dimensions

External	TBW-250F-1-GD	TBW-360F-1-GD	TBW-520F-1-GD
WxDxH (mm)	630x650x1360	740x840x1560	740x840x2010

Internal			
Width (mm)	500x510x950	590x530x1000	590x530x1430

Clearance	TBW-250F-1-GD	TBW-360F-1-GD	TBW-520F-1-GD
Front (mm)	630	740	
Back (mm)	100		
Sides (mm)	100		
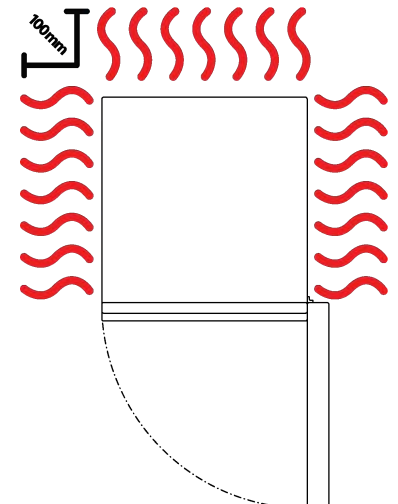
Product Specifications

Technical Specification	TBW-250F-1-GD	TBW-360F-1-GD	TBW-520F-1-GD
Temperature Range	Ambient +5°C to +60°C		
Temperature Control Stability	+/- 0.1°C		
Temperature Uniformity	+/- 1.0°C		
Nominal Capacity	250L	360L	520L
Porthole Diameter	13mm		
Weight	120kg	130kg	150kg
Electrical	1500W/230V	450W/230V	
Features			
Shelves (max @100mm spacing)	3 (max 6)	3 (max 7)	4 (max 11)
Castors	✔	✔	✔
Fan Forced Air Circulation	✔	✔	✔
Omron E5CC Controller	✔	✔	✔
Door Locks	✔	✔	✔
Insulation	*Fibreglass*	Ecofoam	Ecofoam
Safety			
Over Current Protection	✔	✔	✔
Over Temperature Safety	✔	✔	✔
Options			
Additional Shelves	Additional Stainless Steel shelves to suit		
BMS Plug	No volt contact closure plug and socket connection to a Building Management System		
Customisable Port Hole	Add additional 13mm port holes or choose 50mm port holes		
Stainless Steel Interior and Exterior	Cabinets can be manufactured with stainless steel interior and exterior finishes		

Operating Environment

Blanket Warmer Operating Environment

Ensure that the blanket warmer is placed in the correct environment, away from direct sunlight or direct heat sources such as heaters **(Fig 1)**. The product shouldn't be placed in a room where the ambient temperature exceeds that of which it was designed to operate.

The blanket warmer 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.

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)

Bench Top Location

Bench Top Requirements:
- Currently, no suitable model can be used on a bench.
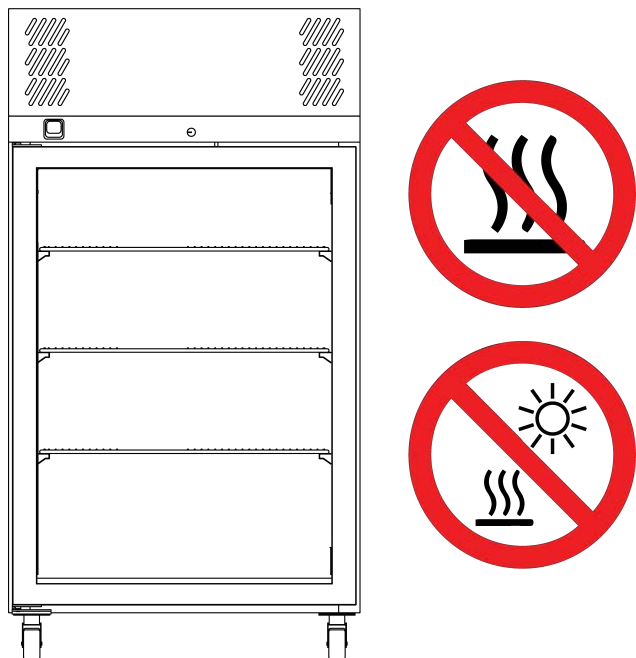- Please look out for the new TBW-300F-2D coming soon.

Fig 1. Suitable Environment

Operating Environment

Electrical Connections

The blanket warmer is suitable for connection to a standard 10 amp, 230 volt, 50Hz, supply. A dedicated outlet should be used for the supply. Do not use power boards or the like.

Electrical:
- The blanket warmer includes 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)**
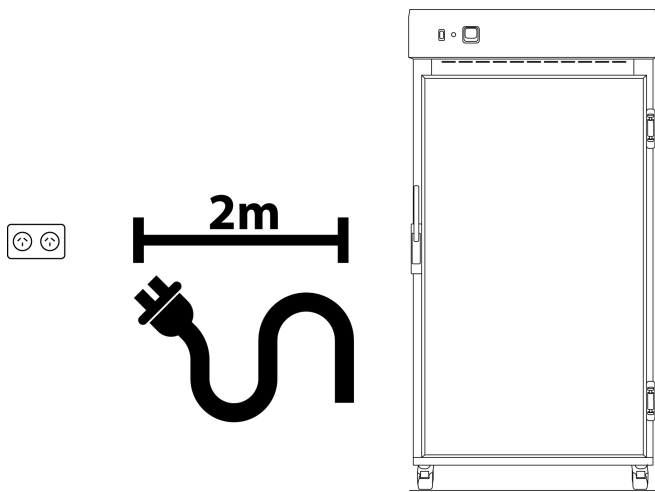- On the blanket warmer itself is a 10 amp male IEC socket. **(Fig 2)**

TBW-250F

>TBW-360F

2m

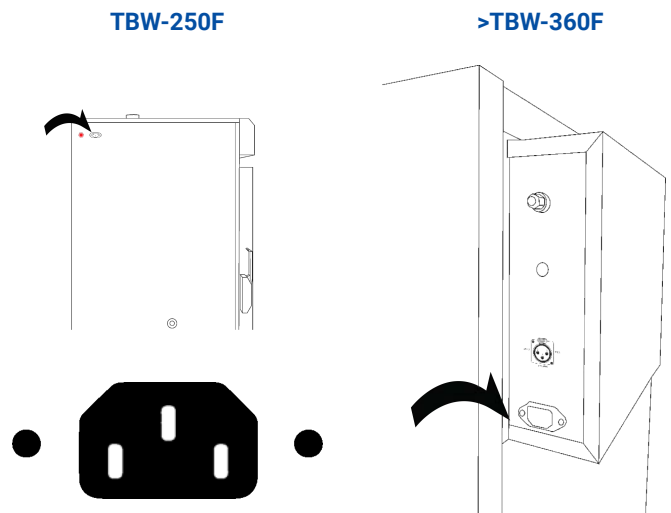**Fig 1. Suitable distance from power supply (2m)**

Fig 2. 10 amp male IEC socket

Operating Environment Warnings

The blanket warmer 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.

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

The blanket warmer will generate heat during use. As a result, the cabinet's inner liner may be hot to the touch. Proceed with caution.

Setup

Uncrating/Unpacking

Unpacking process for foam wrapped, boxed and crated:
- In most cases, the blanket warmer will be delivered foam wrapped and on its castors via sensitive freight **(Fig 1)** or in a box on a skid **(Fig 3)**.

- The blanket warmer may be delivered to remote areas in a crate. To remove the crate packaging that comes with some cabinets, unscrew both the left and right sides of the packaging. **(Fig 2)** A forklift is needed to remove the blanket warmer from the crate.

- Please don't dispose of the packaging until the blanket warmer is inspected. If damage is present upon opening your package, notify your supplier or Thermoline Scientific without delay on +61 2 9604 3911 or email at service@thermoline.com.au.
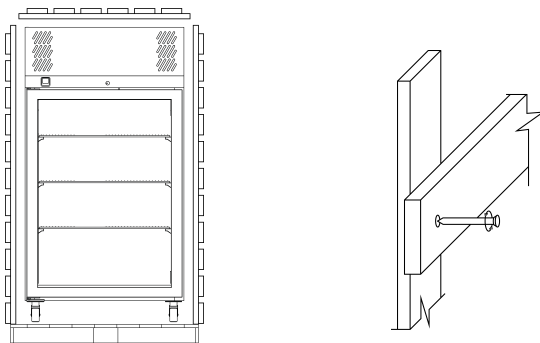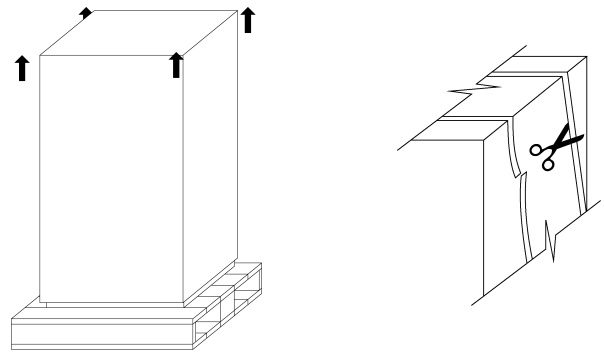

Fig 3. removal from box and skid

Moving the blanket warmer:
- Ensure that the blanket warmer is rolled on an even and flat surface. Uneven surfaces can cause the blanket warmer to fall over.

NOTE: Blanket warmers are 'Top Heavy'. Do not move the cabinet too quickly. **(Fig 4 & 5)**

Fig 1. Unpacking Process (foam wrapped)

Fig 4. Safe moving of cabinet.

Fig 2. Unpacking Process (crated)
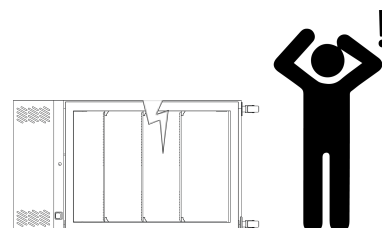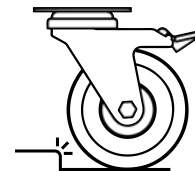

Fig 5.

Setup

Castors

The blanket warmers are equipped with lockable castors to prevent cabinet movement.

Castor Setup:

- Ensure that the blanket warmer is placed on an even and flat surface. Uneven surfaces can cause issues within the cabinet. Uneven surfaces can cause the cabinet to fall over or roll away with unlocked castors.

- Castors can be fixed in place by pushing down on the brake lever. Ensure the castors are locked to prevent unwanted movement from the blanket warmer **(Fig 1)**.

- Ensure when placing the blanket warmer into place that the castors can be accessed so they can be locked **(Fig 3)** and unlocked **(Fig 2)**. Please contact your supplier or Thermoline should there be any damage to the castors.
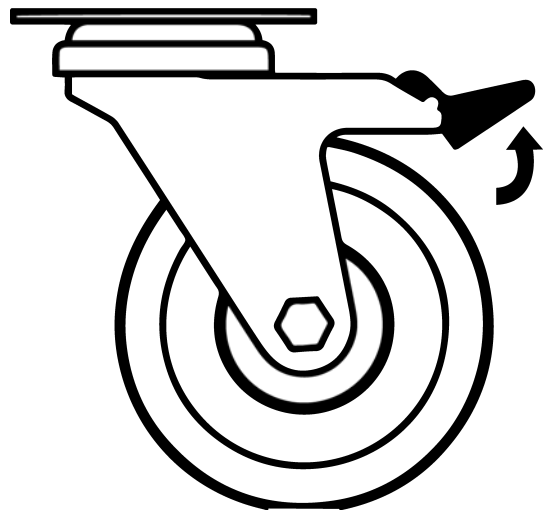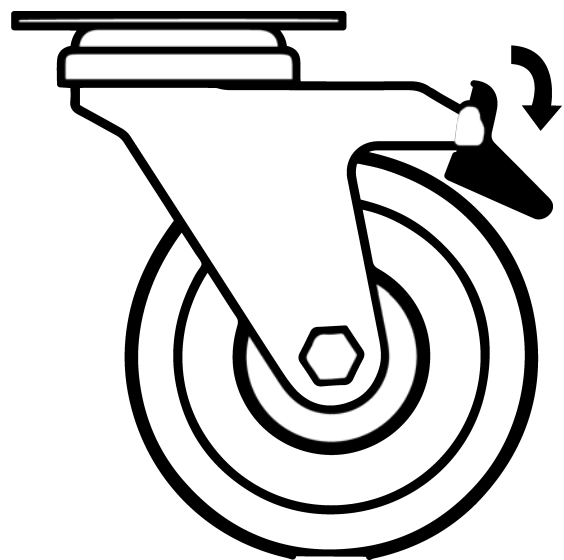

Fig 2. Castor Unlocked

Fig 1.

Fig 3. Castor Locked

Setup

Blanket Warmer Location

Location Requirements:

- The blanket warmer requires a level surface to operate correctly. **(Fig 1)**

- Do not store items on top of the blanket warmer.

- While the blanket warmer doesn't necessarily require ventilation, Thermoline still suggests 100mm on the sides and back to aid with accessibility. **(Fig 2)**

- The blanket warmer door should also be allowed to open and close at full range. **(Fig 3)**
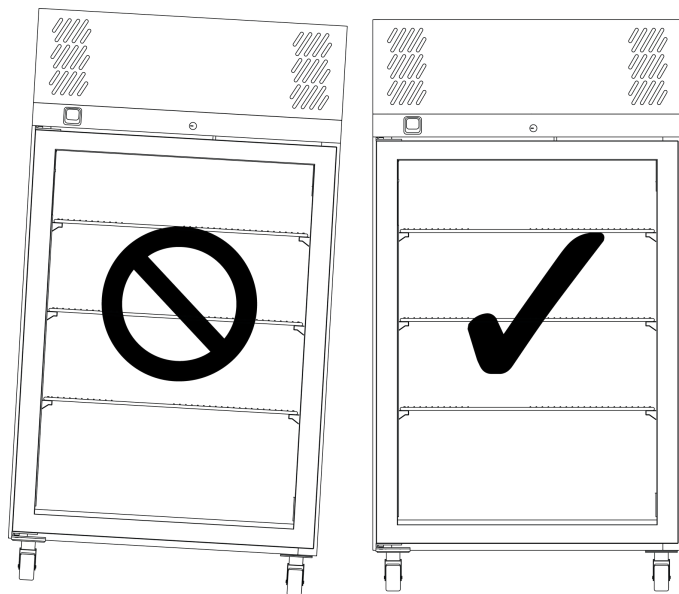
100mm   **100mm**

Fig 2.

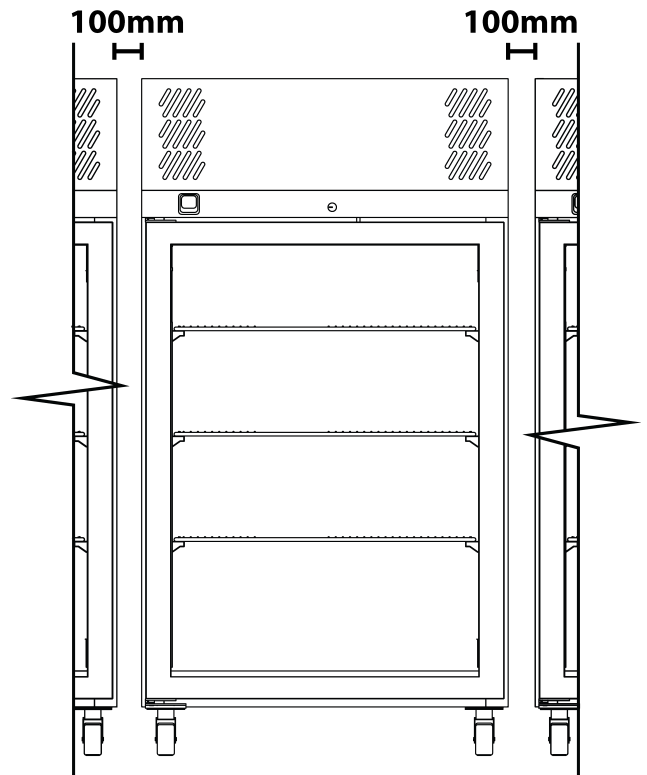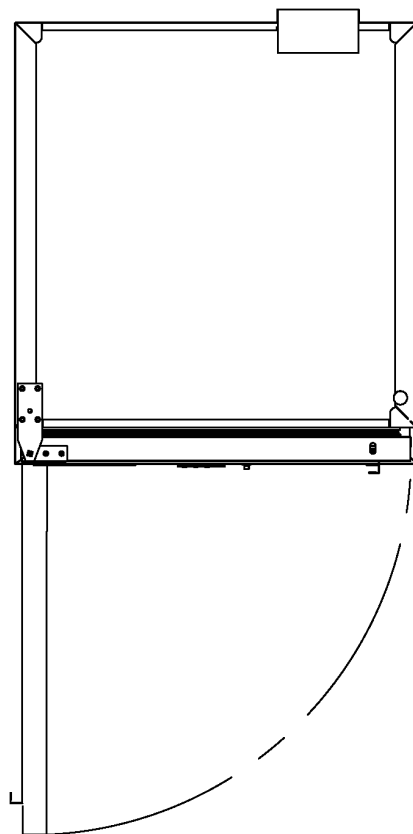**Fig 1. Correct Levelling**

Fig 3.

Setup

Shelves

The blanket warmer comes equipped with shelves used for holding multiple blankets. The shelves can be adjusted to different heights to accommodate different sized or differently folded blankets.

To adjust the shelf clips you must:

- Hook the top of the clip into the slot seen below.
- Pinch and squeeze the base of the clip
- Push base of clip into slot and release.
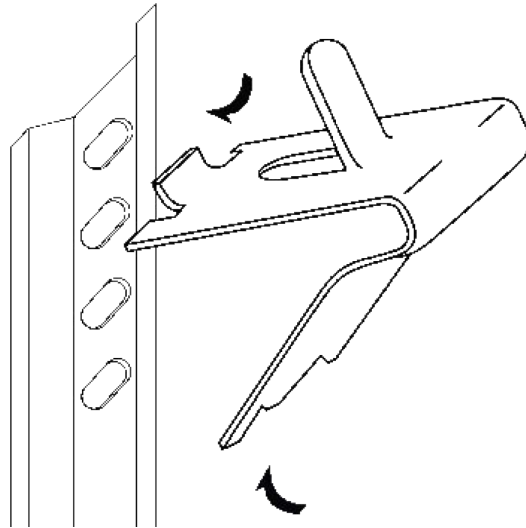
SAFETY NOTE:
- The edges of the clips can be sharp. Thermoline recommends using protective gloves while adjusting or moving the clips (e.g. leather gloves).

Model	Shelvex Length (mm)
TBW-250F-1-GD	605
TBW-360F-1-GD	800
TBW-520F-1-GD	1219

Setup

Cleaning

The interior, exterior, and door gasket 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.
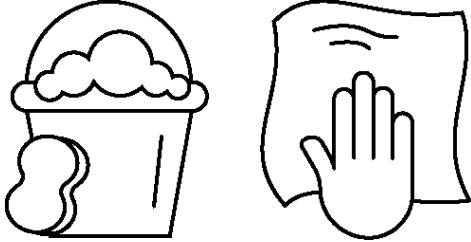
All cabinets have electrical components. These items should not be subjected to any levels of moisture.
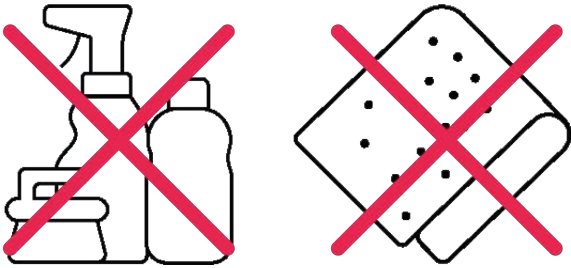
Fig 1

Lint Filter

The filter is located inside the blanket warmer and needs to be cleaned regularly. The filter prevents the fibres coming off the blankets from reaching the elements and creating a fire risk. The filter will need to be removed and cleaned regularly (Every 3 Months).

Locate the filter on the inside of the cabinet. Up at the top you would be able to see the filter in the TBW-250 **(Fig 1)** and TBW-360/520 **(Fig 2)**.
Turn the knobs clockwise and pull the filter down **(Fig 3)**.

Fig 2
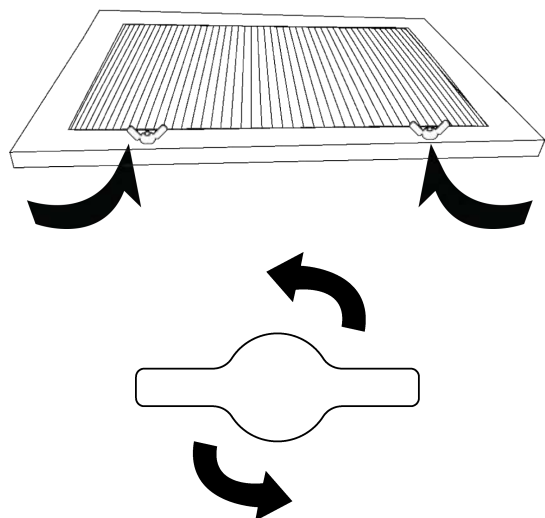
Fig 3

Setup

Door Gasket

The door gasket should be cleaned regularly with a mild soap solution. If a gasket is to be replaced, please contact Thermoline Scientific. Regular inspection is recommended.
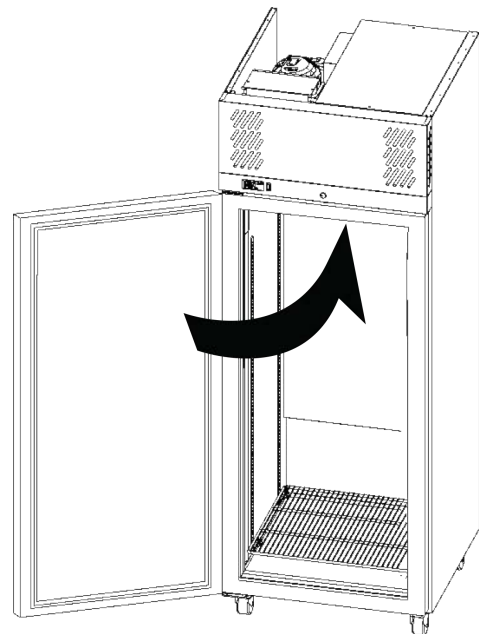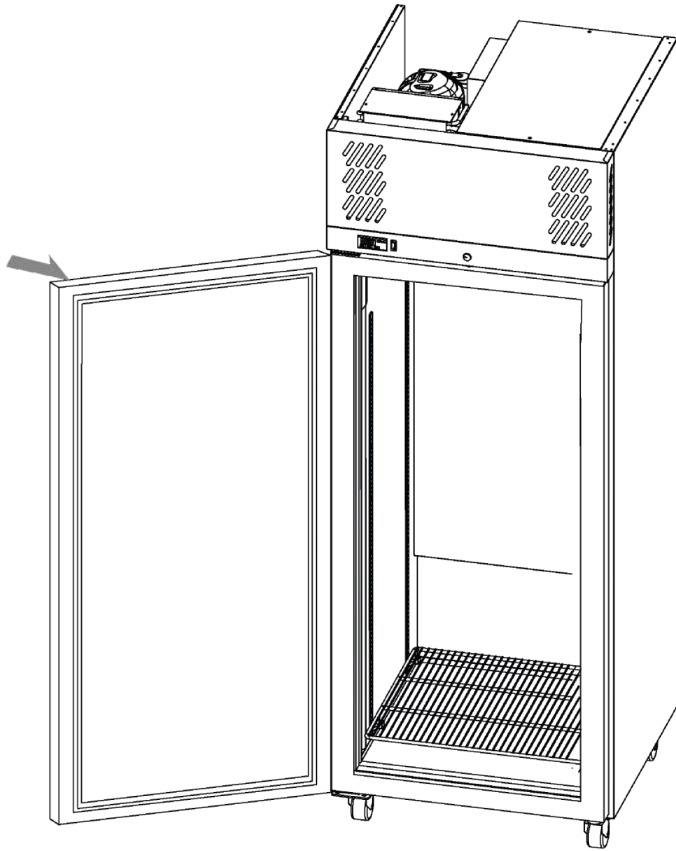

Setup Warnings

Castors can be fixed in place by pushing down on the brake lever. Ensure all castors are locked to prevent unwanted movement from the cabinet.

Ensure that the blanket warmer is rolled on an even and flat surface. Uneven or bumpy surfaces can cause issues within the movement. Uneven surfaces can cause the cabinet to fall over and damage the product.

Ensure that the blanket warmer is placed on an even and flat surface. Uneven surfaces can cause the cabinet to fall over and damage the product.

Caution must be taken when removing the crate or using knifes to cut tape and cardboard.

Start Up Procedure

Start Up Procedure

Start Up process:
- 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.

- Take the supplied lead and plug it into the male IEC socket on the rear of the blanket warmer. Next, plug the 3 pin plug into a 10amp General Purpose Outlet and turn the power on at the outlet.

- Turn the main switch adjacent to the temperature control to 'ON' to start the blanket warmer (Only applicable to the TBW-250F-1-GD)

- 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 blanket warmer actual temperature (PV) on the top display.
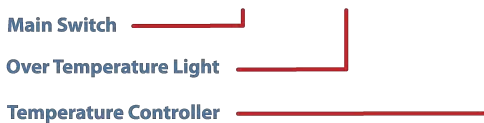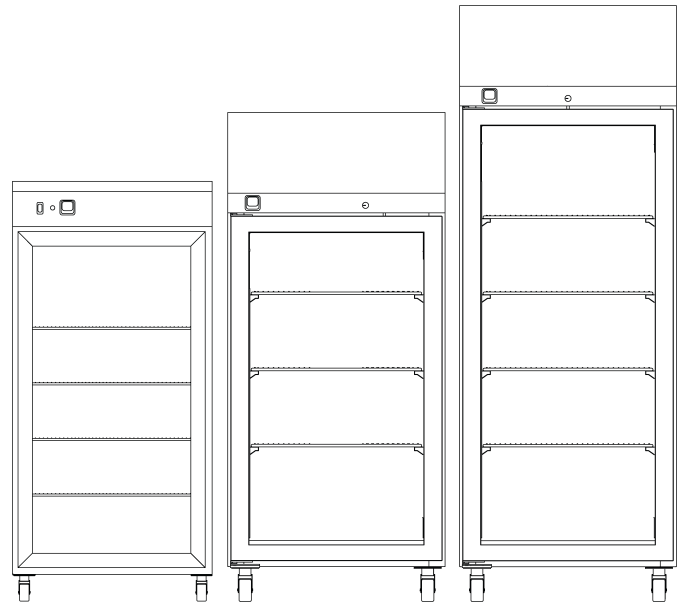
Controller layout on TBW-250 cabinets

Controller layout on TBW-360/520 cabinets

Start Up Procedure

Loading

The blanket warmer requires air movement throughout the chamber to hold temperature and to bring blankets to temperature. Correct loading will ensure the most efficient cabinet performance.

Loading Requirements:

- Distribute the load evenly over all the shelves rather than stacking everything on one shelf. This is to ensure unobstructed airflow throughout the chamber.

- Do not load blankets on the floor of the blanket warmer.
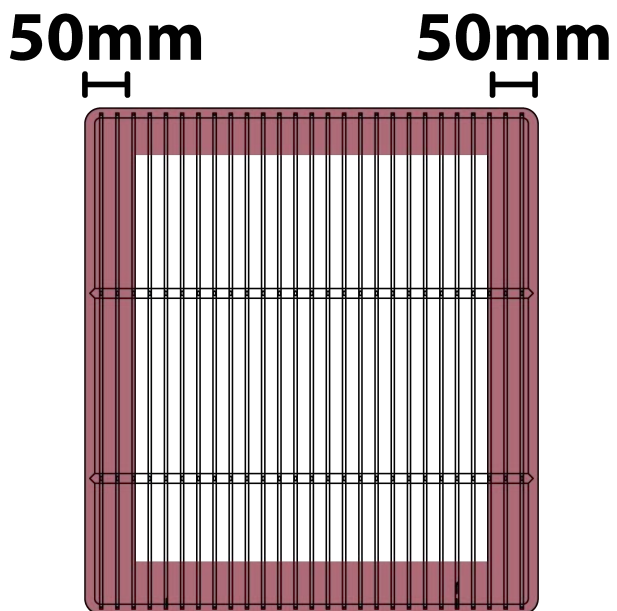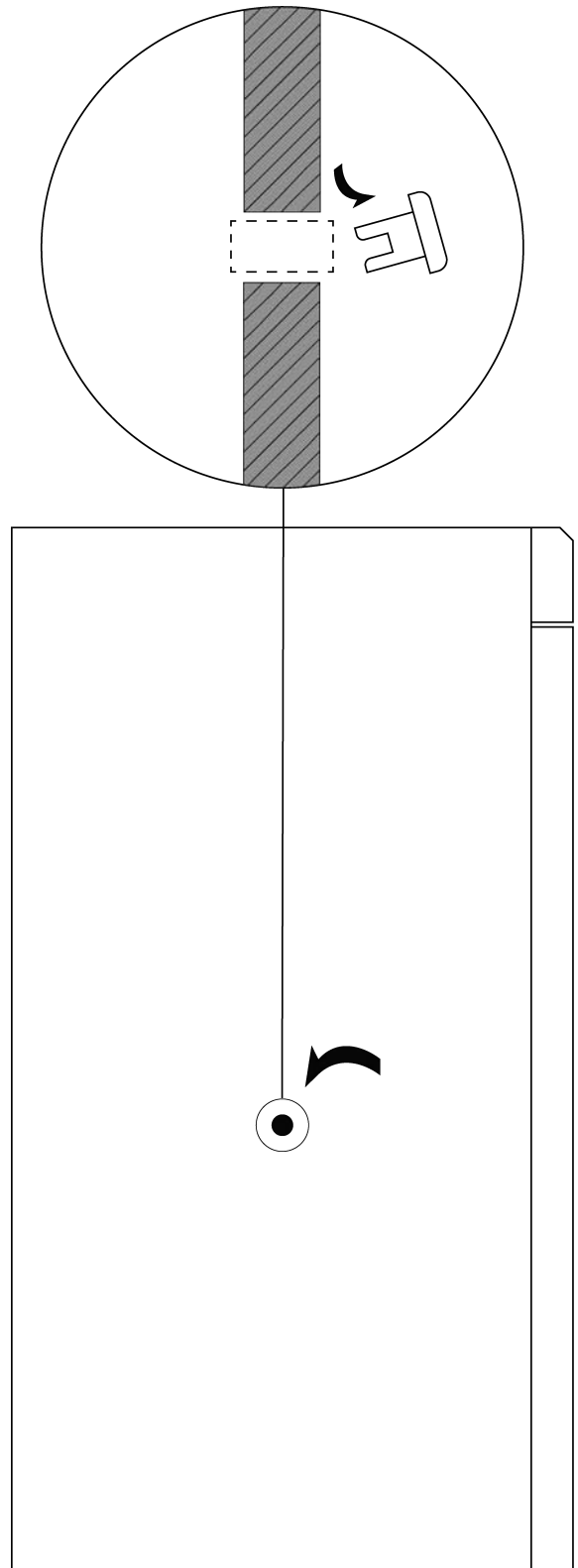
50mm   50mm

Fig 1.

Port Hole

The port hole can be found on the left side of the blanket warmer. The cabinet comes equipped with a plug that may be removed by simply pulling it out. Keep the plug safe in case the port hole needs to be closed again.

Omron User Guide

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.

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

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.

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	Auxiliary Output 1	N/A
SUB2	Auxiliary Output 2	N/A
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
⚷	Setting Change Protection	N/A

A	B	C	D	E	F	G	H	I	J

K	L	M	N	O	P	Q	R	S	T

U	V	W	X	Y	Z

Blanket Warmer 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

A number of factors will affect the accuracy of the temperature displayed in relation to the actual temperature inside the blanket warmer. These could include the following:

- Sample load inside the cabinet (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 blanket warmer because it could be damage.

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 sensor can be affixed to the centre of the middle shelf.

Once the blanket warmer 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.

BMS Output

This blanket warmer is fitted with a 3-pin socket to allow for connection to a building monitoring system or phone dialler. A plug is also supplied separately to connect the socket to your system. **Note:** Optional extra on the TBW-250F-1-GD.

The alarm contacts have no voltage present but we recommend that the wiring is connected by a suitably qualified technician.
An alarm can be triggered by the following:
- Loss of power
- High temperature inside cabinet (2°C above setpoint)
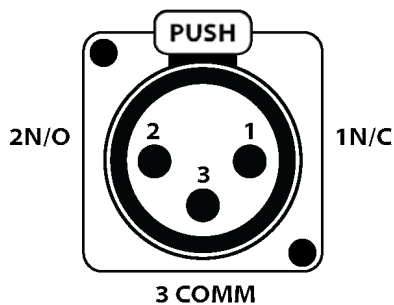
1N/C: Will open loop upon alarm situation. This is the optimal option as any break in the loop is detected.
2N/O: Will close loop upon alarm situation.
3COMM: At least one wire in connected to this pin.
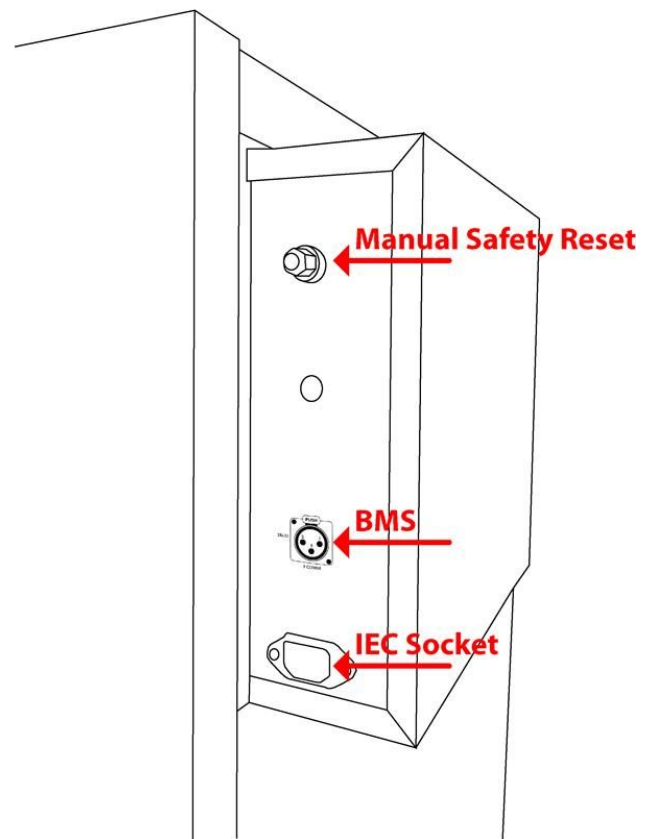
Location of BMS plug

Manual Reset Safety Thermostat

This safety thermostat is not operator adjustable. It will electrically isolate the heating elements in the event of an over-temperature situation. The main aim of this safety is to protect from over-heating, in the event that there is no air flow through the cabinet. This could be a failure of the air circulating fans or the cabinet being over-stocked.

Resetting the over-temperature safety thermostat:

- Allow the cabinet to cool down before resetting the thermostat.

- Locate the safety reset at the back of the TBW-360/520F models **(Fig 2)** or on the side of the TBW-250F **(Fig 1)**. It is displayed as a red or black knob.

- Once the cabinet has cooled down, turn the knob anti-clockwise **(Fig 3)**.

- Once the knob is off, press the red button firmly until you feel a "click". This will restart the circulating fan and turn the digital display on 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.
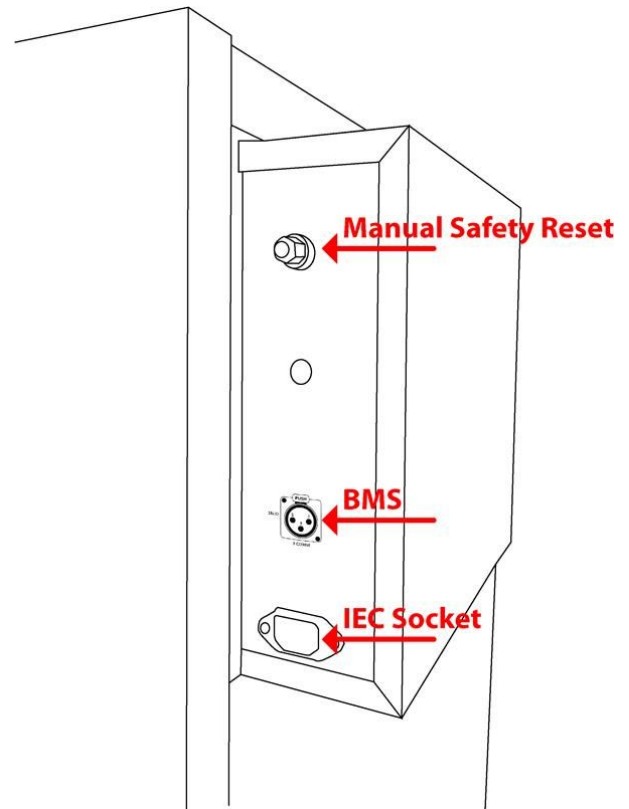

Manual Safety Reset
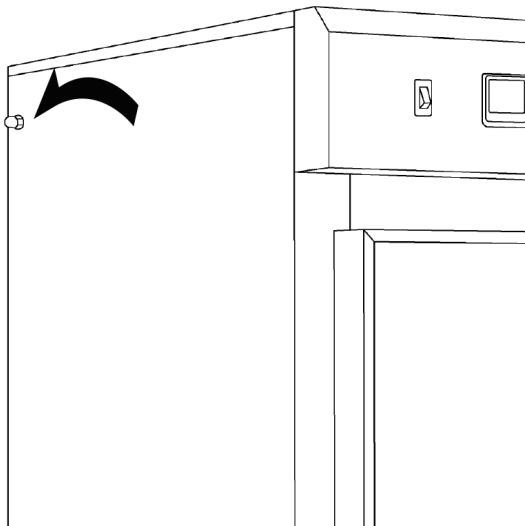
BMS

IEC Socket

Fig 2. TBW-360F - 520F

Fig 1. TBW-250F-1-GD

Fig 3.

Troubleshooting

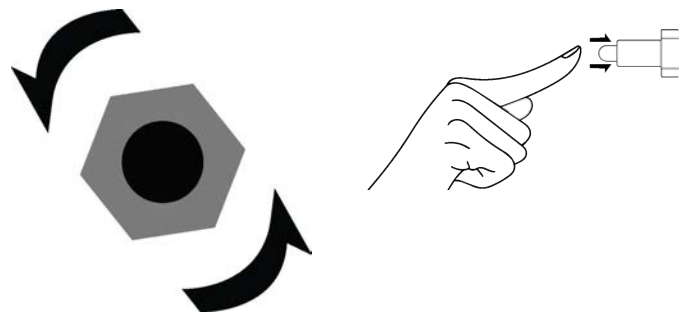| Problem	Fix
Condensation appearing on the inside the glass doors of the blanket warmer.	Blanket warmers are self contained and contain no external water sources. Any condensation is a result of blankets that are not completely dry.
The word "Stop" is showing on the Omron Controller	Press the 'PAGE' button and the "SCROLL" button simultaneously until 'oAPt' appears on the screen. 1. Press 'SCROLL' button until you see the parameter 'PMSK' on the screen. 2. Press the 'DOWN' button to turn off. 3. Press the 'PAGE' button and the 'SCROLL' button simultaneously to take you back to the main menu. 4. Press 'SCROLL' until you see 'R-S' on the screen. 5. Press the 'DOWN' button to turn 'STOP' to 'RUN' 6. Press the 'PAGE' and the 'SCROLL' button simultaneously until 'oAPt' appears on the screen 7. Press 'SCROLL' until you see the parameter 'PMSK' on the screen 8. Press the 'DOWN' button to turn on 9. Press the 'PAGE' and the 'SCROLL' button simultaneously to take you back to the main menu. **Please note if other parameters are changed by mistake further issues may occur.**
The "ALM" light is illuminated on the controller, yet the temperature shown is not yet at the set point.	It is likely that the temperature offset has been inadvertently adjusted. Please follow the sensor calibration instructions to bring the " **iNS** " (Input Shift) value back to zero.

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.

Thermoline
S C I E N T I F I C
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 cabinet 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.