

Laboratory Incubator

User Manual & Setup Guide

TI Benchtop Range

Omron E5CC

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Contents

General Information	4
Product Specifications	5
Operating Environment	7
Incubator Operating Environment	7
Electrical Connections	8
Setup	9
Unpacking	9
Moving and Lifting	9
Cabinet Location	10
Shelves	11
Cleaning	12
Stainless Steel	12
Door Gasket	12
Start Up Procedure	13
Loading	14
Port Hole	14
Omron User Guide	15
Display Symbols	15
Temperature Control	16
Sensor Calibration	16
Troubleshooting	17
Technical and Repair Support	17
Warranty	18



**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 the Thermoline's range of benchtop incubators. We recommend that you read this user manual the whole way through before you start using the incubator. Consider this manual as a component of the incubator and an integral part to its function. We recommend keeping it close and within easy access.

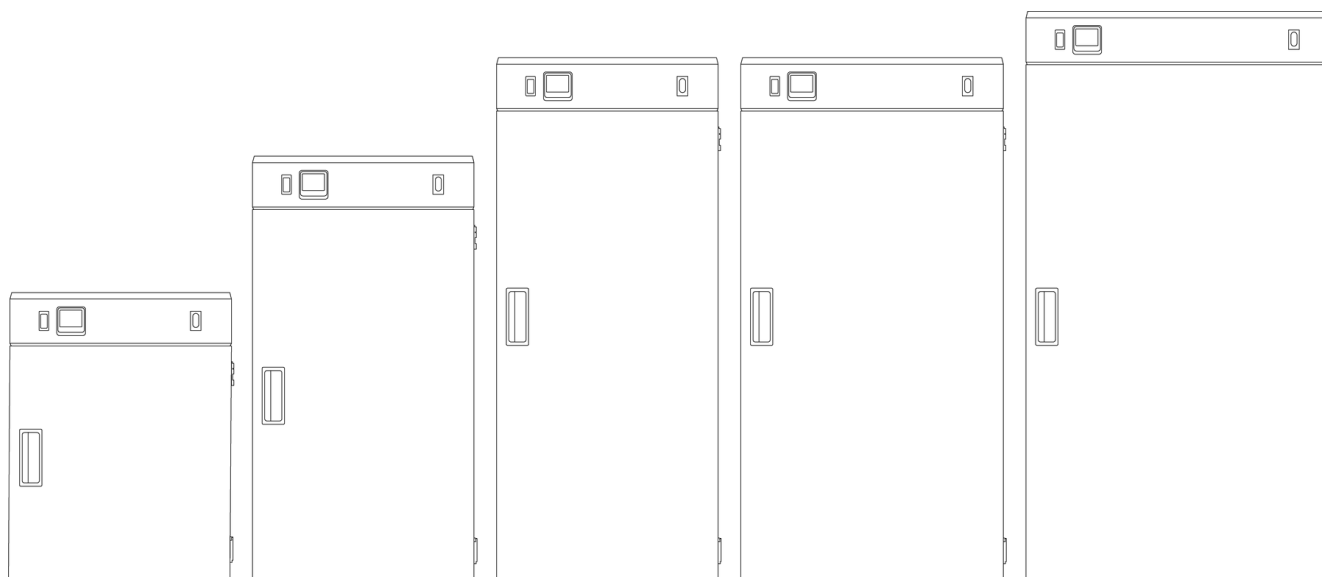
The Thermoline laboratory incubator TI models are designed and manufactured to provide safe and precise temperature conditions for the items stored inside. Designed to operate between the ranges of Ambient +5°C and +60°C with a control accuracy of +/- 0.1°C, the Thermoline laboratory incubators are perfect for inside conditions and should never be placed in environments where temperatures will exceed that of 32°C.

- Stainless steel interior
- Operating temperature from ambient +5°C to +60°C
- Fibreglass insulation
- Electronically controlled heating element
- Monitoring port hole
- Removeable stainless steel shelves
- Switchable fan forced mode
- Optional inner polycarbonate door (standard on TI-280F)

The Thermoline incubator is set to function within specific operating ranges. The optimum operating conditions will be explained further in this manual.



Product Specifications



Dimensions

External

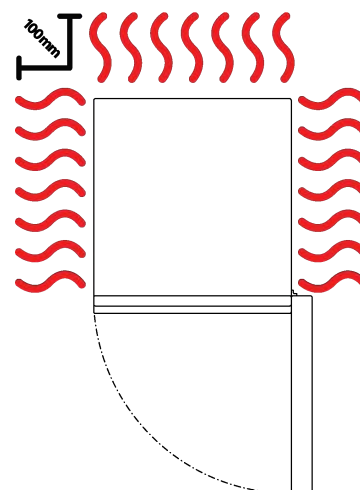
	TI-20F	TI-50F	TI-80F	TI-120F	TI-280F
WxDxH (mm)	370x380x470	370x380x720	370x380x910	465x485x985	570x595x1235

Internal

WxDxH (mm)	300x300x235	300x300x485	300x300x675	395x405x735	500x505x985
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Clearance

	TI-20F	TI-50F	TI-80F	TI-120F	TI-280F
Front (mm)		370		465	570
Back (mm)	100				
Sides (mm)	100				



Product Specifications

Technical Specification	TI-20F	TI-50F	TI-80F	TI-120F	TI-280F
Temperature Range	Ambient +5°C to +60°C				
Temperature Control Stability	+/- 0.1°C				
Temperature Uniformity	With Fan +/- 0.5°C Without Fan +/- 2.0°C				
Nominal Capacity	20L	50L	80L	120L	280L
Porthole Diameter	13mm				
Weight	15kg	18kg	30kg	50kg	80kg
Electrical	100W/230V	130W/230V	175W/230V	310W/230V	515W/230V
Features	TI-20F	TI-50F	TI-80F	TI-120F	TI-280F
Shelves (max @100mm spacing)	2 (max 2)	3 (max 4)	4 (max 6)	4 (max 6)	5 (max 7)
Adjustable Feet	X	X	X	X	✓
Internal Fan	✓	✓	✓	✓	✓
Fibreglass Insulation	✓	✓	✓	✓	✓
Omron E5CC Controller	✓	✓	✓	✓	✓
Solid Door	✓	✓	✓	✓	✓
Inner Polycarbonate Door	Optional				✓
Safety					
Over Current Protection	✓	✓	✓	✓	✓
Over Temperature Safety	✓	✓	✓	✓	✓
Options					
BMS Plug	No volt contact closure plug and socket connection to a Building Management System				
Additional Shelves	Additional Stainless Steel shelves to suit				
Door Locks	Key lockable door locks				
Customisable Port Hole	Add additional 13mm port holes or choose 50mm port holes				
Castors	Castors can be fitted to allow for easy moving of the cabinet. Not recommended for cabinets mounted on a bench.				

Incubator Operating Environment

Ensure the incubator is placed in the correct 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.

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

Extreme Operating Conditions:

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

Ideal Conditions:

- 23°C (+/- 5°C)
- 50%RH (+/- 25%RH)

Bench Top Requirements:

- Under no circumstances should any incubators be stacked on top of each other (Fig 2).

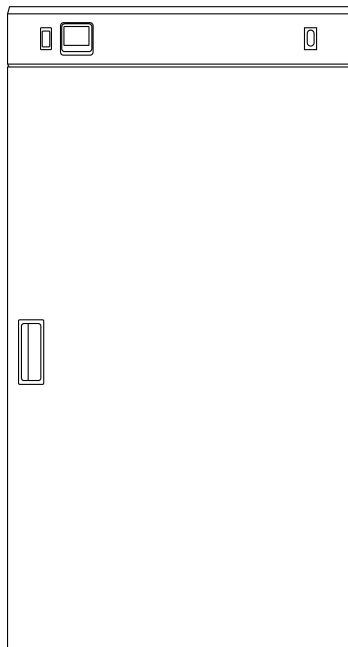


Fig 1. Suitable Environment

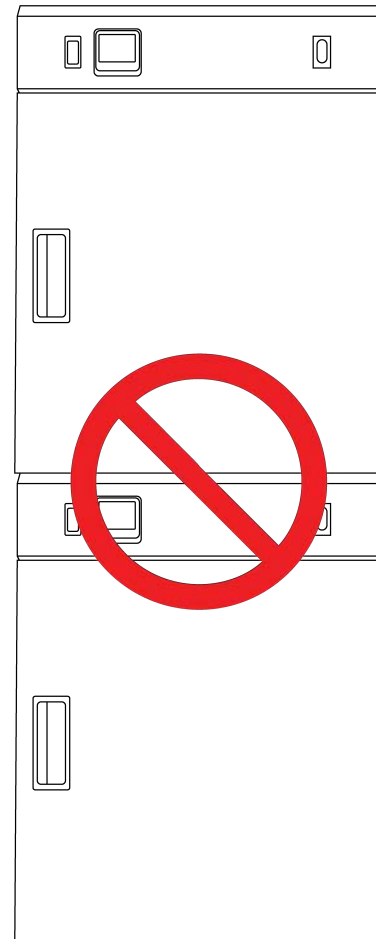


Fig 2. Do not stack

Operating Environment

Electrical Connections

The incubator 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:

- Included with the incubator 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 incubator itself is a 10 amp male IEC socket. **(Fig 2)**

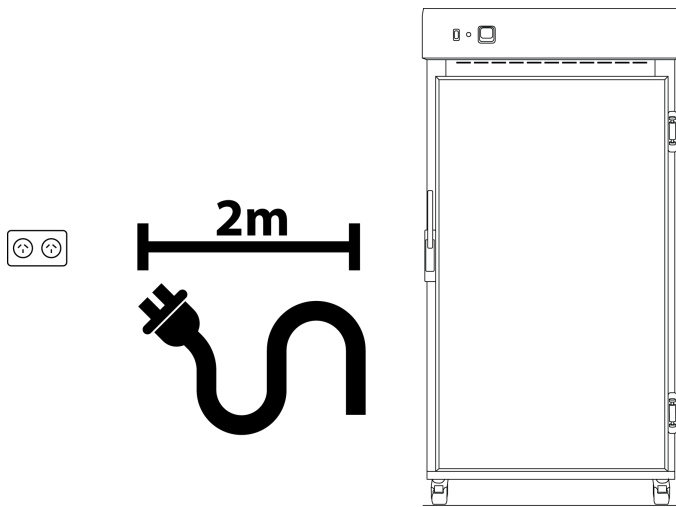


Fig 1. Suitable distance from power supply (2m)

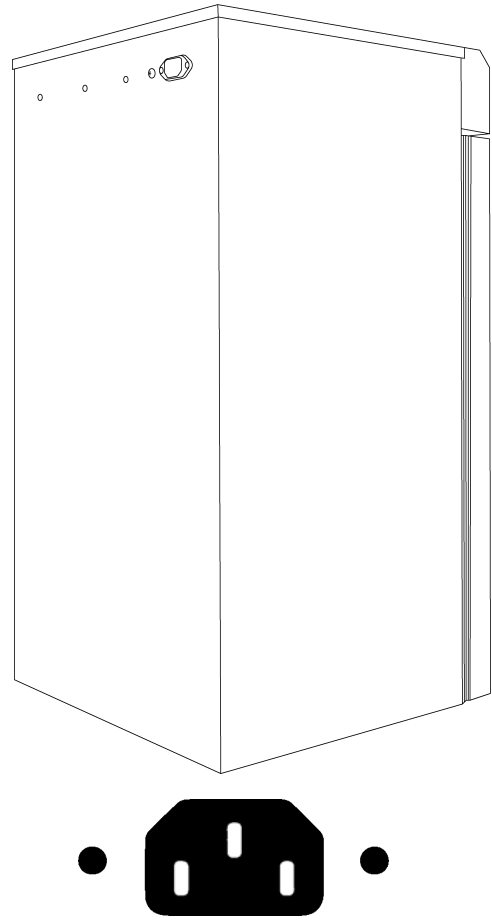


Fig 2. 10 amp male IEC socket

Operating Environment Warnings



The incubator 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.



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



The incubator will generate heat during use. As a result of this, the inner liner for the cabinet may be hot to touch. Proceed with caution.

Unpacking

Unpacking process for box and skid:

-
- The TI-20F and TI-50F will be packed in a carton. The TI-80F and larger will be packed in a box and on a skid.
- Removing the box from the skid requires the straps to be cut. Then expose the incubator by carefully sliding the box upwards. (**Fig 1**)
- 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.

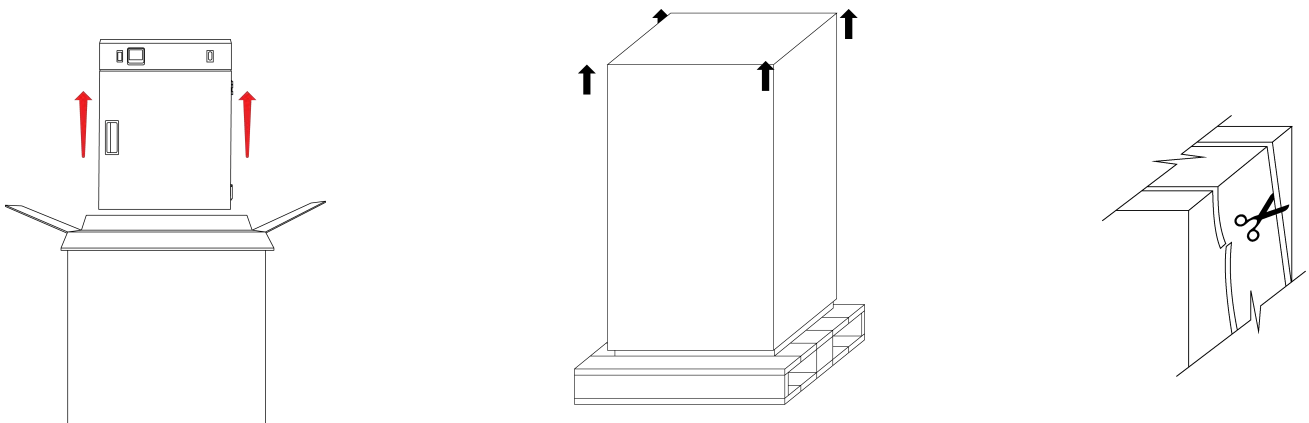
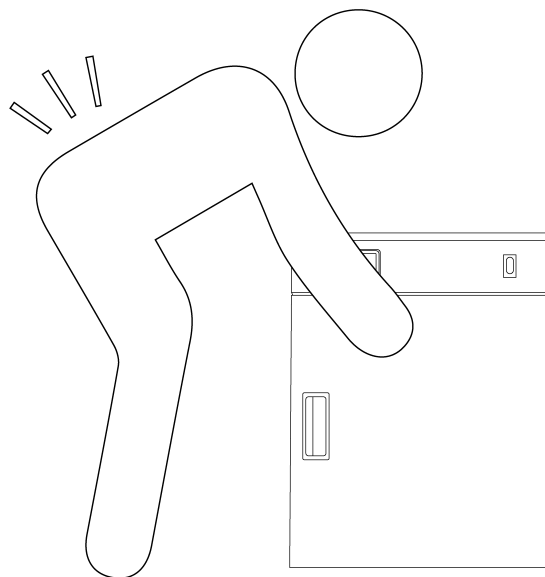


Fig 1. Unpacking Process

Moving and Lifting

The incubator may be heavy. When moving and locating the incubator please take caution due to the weight of the incubator.



Setup

Cabinet Location

Location Requirements:

- The incubator requires a level surface to operate correctly. **(Fig 1)**
- Please note that the TI-280F incubator is equipped with adjustable feet, which can be used to level it if necessary. **(Fig 2)**
- Do not store items on top of the incubator.
- While the incubator doesn't necessarily require ventilation, Thermoline still suggests 100mm on the sides and back to aid with accessibility **(Fig 3)**
- The incubator door should also be allowed to open and close at full range. **(Fig 4)**

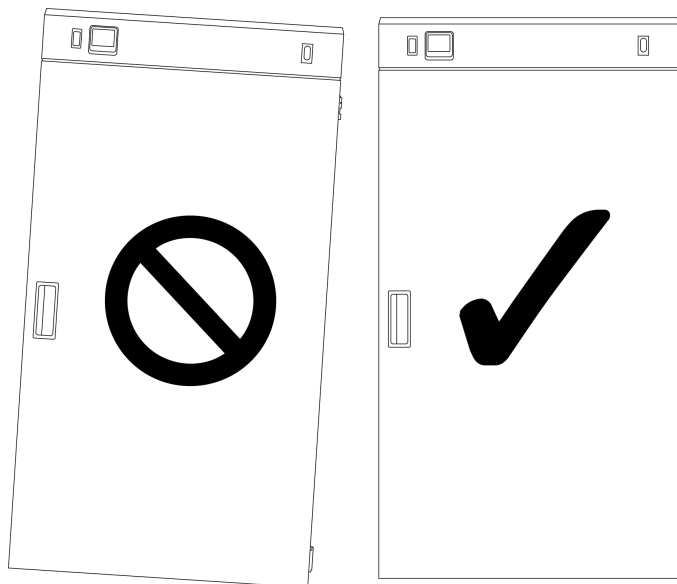


Fig 1. Correct Levelling



Fig 2 .Adjustable Feet

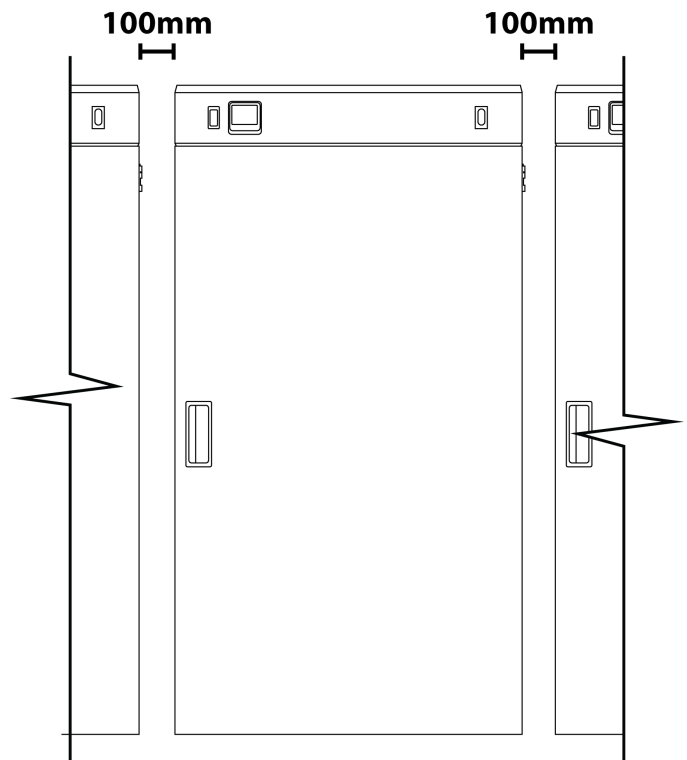


Fig 3.

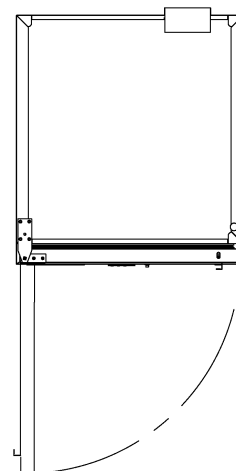


Fig 4.

Setup

Shelves

The incubator comes equipped with shelves used for holding items while in operation. The shelves can be adjusted to different heights to accommodate different size items.

To adjust the shelf clips you must:

- Hook the top of the clip into the slot (**Fig 1**).
- Pinch and squeeze the base of the clip
- Push base of clip into slot and release.

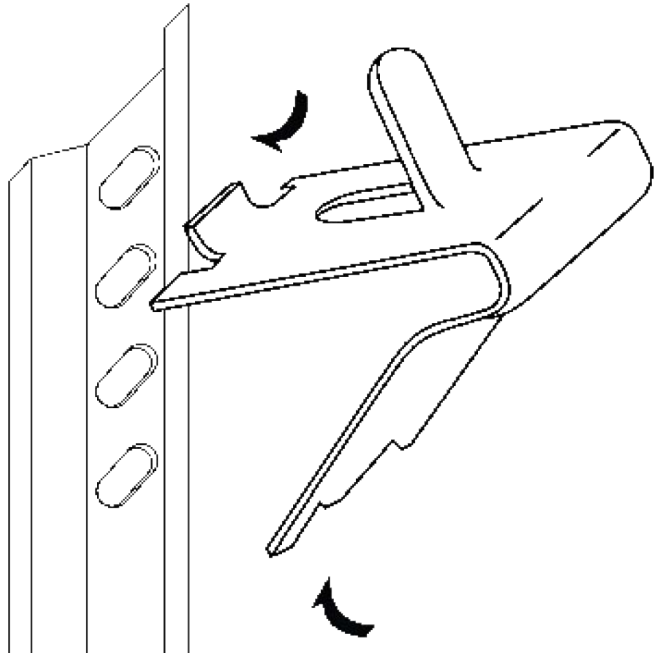


Fig 1.

Model

Shelvex Length (mm)

TI-20F

200

TI-50F

420

TI-80F

605

TI-120F

605

TI-280F

760



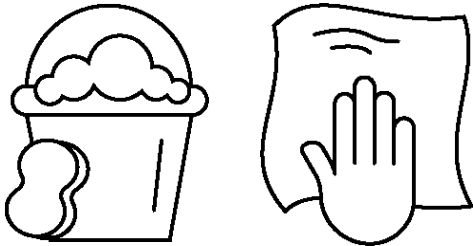
SAFETY NOTE:

- The edges of the clips can be sharp. Thermoline recommends using protective gloves while adjusting or moving the clips (e.g. leather gloves).

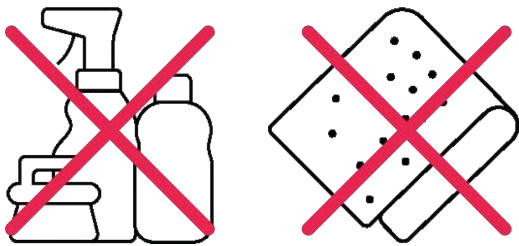
Setup

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.



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. Several chemicals will attack the surface of stainless steel, and the lack of oxygen at the surface will cause rusting, corrosion and pitting.

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



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

Before proceeding make sure that all internal and external packaging has been removed from the incubator and that all tape, plastic bags and pieces of foam have been removed.

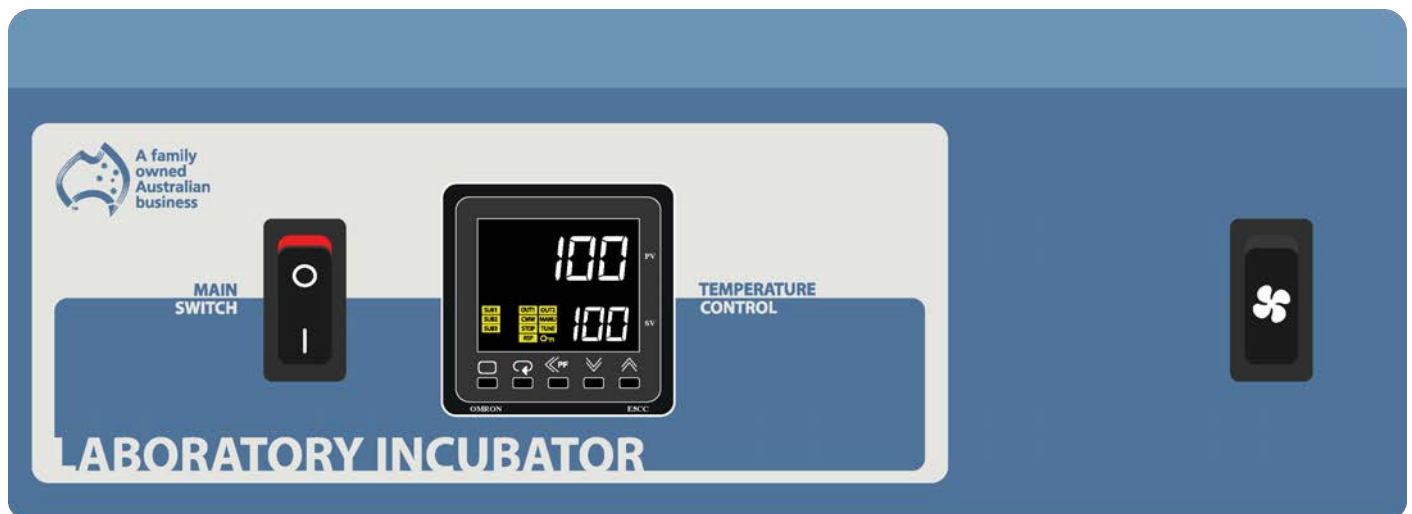
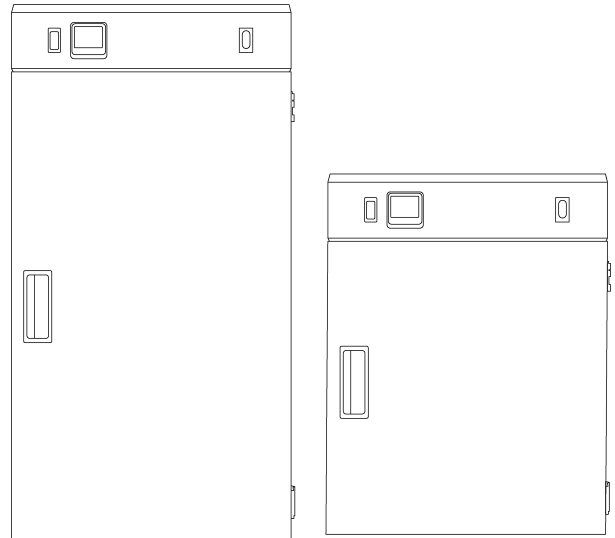


When you remove packaging from the incubator, you should be careful when using knives to cut tape and cardboard.

Start Up Procedure

Start Up process for the Laboratory Incubator:

- 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 incubator. Next, plug the 3 pin plug into a 10amp General Purpose Outlet.
- Turn the main switch adjacent to the temperature control to 'ON' to start the incubator.
- 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 incubator actual temperature (PV) on the top display.
- The fan ON/OFF switch allows you to switch between fan forced or natural convection modes.



Main Switch —┐

Temperature Controller —┐

Fan ON/OFF —┐

Start Up Procedure

Loading

The incubator requires air movement throughout the incubator (both fan forced and via natural convection) to hold temperature and to bring new samples to temperature. Correct loading will ensure the most efficient cabinet performance.

Loading Requirements:

- Do not let samples touch the walls as the incubator heats through heater pads embedded behind the walls and under the floor. Keep samples 50mm from the walls if possible. **(Fig 1)**
- Distribute the load evenly over all of the shelves rather than stacking everything on one shelf. Do not load samples on the floor of the incubator (heater under the floor).
- The range of incubators described here are not to be used in conjunction with large quantities of water (open trays to try and increase humidity). The introduction of water and the resultant vapour could result in premature component failure.

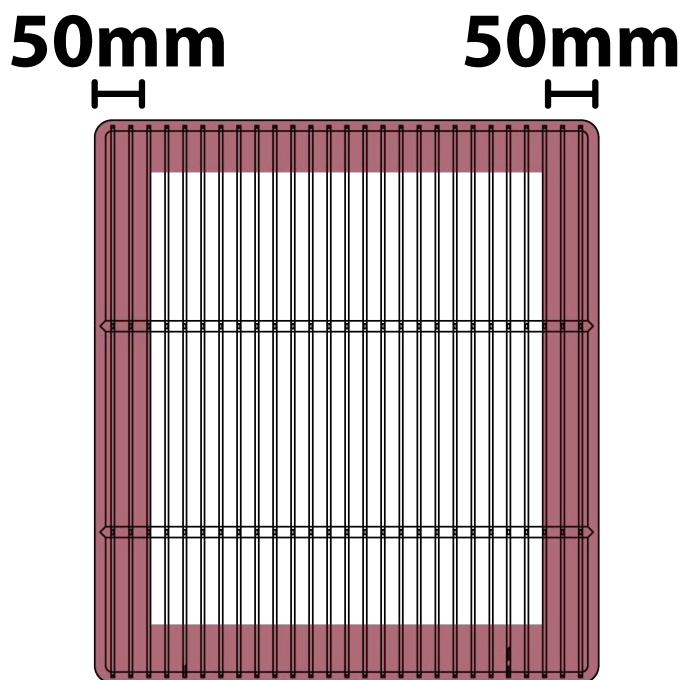
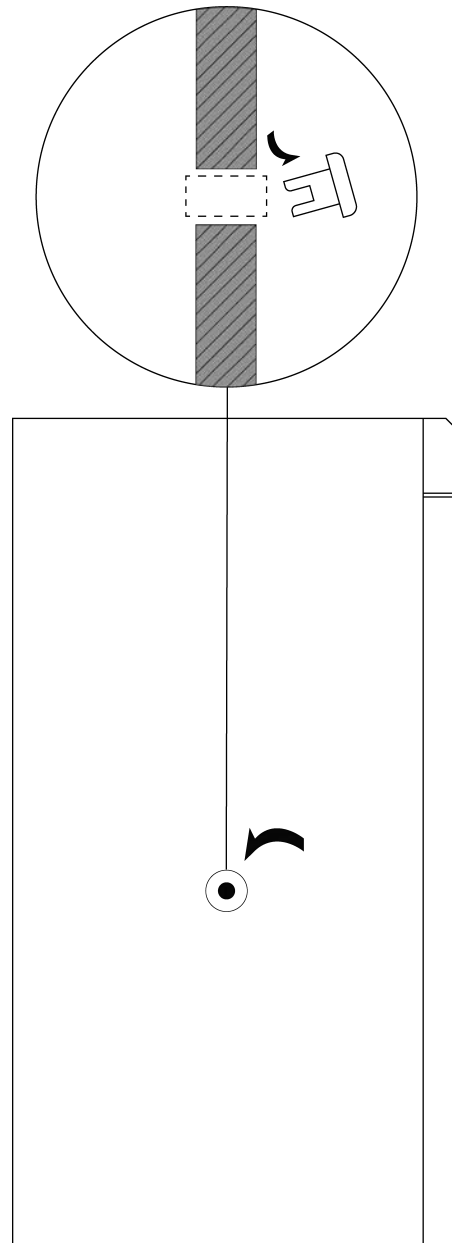


Fig 1.

Port Hole

The port hole can be found on the left side of the incubator. 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.



The controller used in the Incubator is an Omron E5CC microprocessor based instrument with digital indication of set temperature and operating temperature.



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 Buttons: Used to increase and decrease the parameter settings.



Side Arrow: Used to move the flashing digit.

PV

Process Value: Current temperature of the Incubator.


SV

Set Value: Set temperature of the Incubator.

Note: There is limited access to the controller's parameters. The operator can alter the temperature set point and has access to parameters used for calibration purposes.

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	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
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	v	W	X	Y	Z
U	V	W	X	Y	Z

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

Once the incubator 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.

Problem

Fix

The word "Stop" is showing on the controller

1. Press the 'PAGE' button and the 'SCROLL' button simultaneously until 'oAPt' appears on the screen.
2. Press 'SCROLL' button until you see the parameter 'PMSK' on the screen.
3. Press the 'DOWN' button to turn off.
4. Press the 'PAGE' button and the 'SCROLL' button simultaneously to take you back to the main menu.
5. Press 'SCROLL' until you see 'R-S' on the screen.
6. Press the 'DOWN' button to turn 'STOP' to 'RUN'
7. Press the 'PAGE' and the 'SCROLL' button simultaneously until 'oAPt' appears on the screen
8. Press 'SCROLL' until you see the parameter 'PMSK' on the screen
9. Press the 'DOWN' button to turn on
10. 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 and the PV is reading far higher than usual.

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



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.

