Thermoline
SCIENTIFIC
HIGHER STANDARDS IN SCIENCE

OPERATING INSTRUCTIONS FOR:

LABORATORY

REFRIGERATED IMMERSION COOLER

MODELS INCLUDE:

TIC-400

Thermoline Scientific Equipment Pty. Ltd.
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IMPORTANT INFORMATION

This manual contains operating and safety information. The operator must read and understand the contents of this manual prior to using this equipment. Incorrect operation may cause harm or damage the severity is classified by the following Alert Boxes. Ensure that this manual is saved for future reference:

Warning alerts apply when there is a Possibility of personal injury.

Caution alerts apply when there is a Possibility of damage to the Equipment .

To maintain safe operation of this equipment be aware of the **ALERT BOXES** located throughout these operating instructions.

CONTENTS

INTRODUCTION

Thank you for selecting this product from the large range of products manufactured in Australia by Thermoline L+M.

The materials incorporated in this design have been carefully selected for their durability, technical performance, and practicability, the resultant product is one we are proud of.

THE MANUAL

Please familiarise yourself with the information contained in this manual before using the equipment.

Ensure that the manual is kept safe but accessible for current and future operators to refer to.

UNPACKING

Remove the equipment from the packing material, check that it is complete. Assemble the components and inspect for damage.

Retain the packaging materials until the equipment has been thoroughly tested.

Notify the detail of any damage without delay to your supplier, or Thermoline L+M.

LOCATION

Place the equipment in a well-ventilated area on a firm surface. Ensure that the ventilation grills are not obstructed.

CAUTION: It is **critical** to maintain a minimum of **150mm** clearance at the rear air outlet grill. Failure to do so may reduce or stop the cooling and could cause premature component failure.

Confirm that the power supply is suitable for this equipment. Refer to the equipment rating plate for details. To control effectively, the equipment should be located in a stable ambient below 30°C.

INTENDED USE

This equipment is used to cool water to temperatures below ambient. It is best used in conjunction with a laboratory water bath and digital heater circulator to enable accurate control and even temperature distribution.

WARNING: Do not use flammable solvents or combustible materials as fire or explosion may occur. This equipment uses components which may be a source of ignition.

FUNCTION

To provide an accurate controlled temperature between ambient and -5°C (volume of water dependant).

PRINCIPLE OF OPERATION

The range of immersion coolers are designed to be light weight and portable. They are ideally suited for laboratory bench top applications.

The coolers consist of a hermetically sealed, air cooled refrigeration unit, cooling a remote evaporator (cooling coil) at the end of a flexible arm. Refrigerant is R134a.

The refrigeration unit is positioned close to a thermally insulated vessel (Laboratory Bath), the cooling coil is located over the edge and should be totally immersed.

The thermostat (range –30°C to +30°C) cycles, the refrigeration system to maintain the desired operating temperature set at the control knob, variation ±1.5°C.
Note: A bath with **only** an immersion cooler has very limited effect on the overall water temperature (spacial). This is due to the lack of circulation around the cooling coil. This can be overcome by introducing one of the **digital** heater circulators, model: TU3 or TU4 to agitate and circulate the water throughout the bath, at the same time accurately (variation ±0.2°C) controlling the temperature of the water by cycling heat against continuous cooling.

PERFORMANCE

The operating range for this equipment is ambient to -5°C (dependant upon fluid type volume of fluid and equipment) with a control accuracy of ±1.5 or ±0.2 when used in conjunction with a digital heater circulator.

MAXIMUM AMBIENT TEMPERATURE

For this product is 30°C.

C-TICK

The equipment referred to here complies with requirement of AS/NZS 1044:1995 electromagnetic interference (EMI).

INSTALLATION (Refer to Unpacking Page 3)

Place the equipment in a well-ventilated area, on a firm level surface and ensure that a suitable power supply is available. Allow sufficient room for ventilation.

WARNING: Ensure that the electrical outlet is earthed and is of the correct voltage and is capable of carrying the equipment stated current load (AMPS).

All models are suitable for bench top use.

MAINTENANCE

The Thermoline range of Immersion Coolers requires no routine maintenance other than normal levels of cleanliness.

The external surface PVC coated steel and may be wiped clean using a damp, soft cloth.

Note: 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. Distilled/Deionised water is particularly corrosive. To minimise, maintain a Neutral pH (7-9).
Always have in place a program of regular cleaning using a soft **damp** cloth with a mild solution of soap and water and allow to dry.

TECHNICAL ASSISTANCE

If you require additional operational or technical information regarding this equipment please contact:

Thermoline
Customer Service Division
Telephone: 61 2 9604 3911
Facsimile: 61 2 9725 1706
Email: support@thermoline.com.au

EXPLANATION OF CONTROLS

The controls are located at the front of the cooler unit.

MAIN SWITCH

This is a combination power switch and circuit breaker, when pressed this switch allows power to be supplied to the controls. Incorporated in the face of the switch is a 'MAINS ON' indicating light.

CAUTION: The equipment is fitted with a combination circuit breaker, mains switch. If the circuit breaker continues to trip, it may indicate an electrical fault exists. Switch Off the power and consult a qualified technician.

CAUTION: The compressor is fitted with an internal thermal overload. This may trip if the power supply is frequently interrupted.
If this occurs, allow sufficient time for the overload to reset.

CONTROL THERMOSTAT

This is a mechanical/hydraulic unit with a range –30 to +30 adjusted by the operator to either run continuously (set 10°C below desired water temperature) in conjunction with a heater circulator (heat cycled against cooling) **or** set at the desired operating temperature, no controlled heating.

ELECTRICAL - POWER LEAD

A removable mains power lead with a three pin plug and right angle female IEC socket is supplied for connection between the male IEC socket located at the Top left side and a Ten (10 Amp general Purpose Outlet) (G.P.O.)

OPERATION

WARNING: 1. To avoid injury do not use flammable solvents in this equipment, as fire or explosion may result. This cabinet contains components that may ignite such materials.

OPERATING THE IMMERSION COOLER

1) Ensure that the Immersion Cooler is located as previously described, refer to the index, LOCATION, Page 3.

CAUTION: It is critical to maintain a minimum of **150mm** clearance at the rear air outlet grill. Failure to do so may reduce or stop the cooling and could cause premature components failure.

Refer to the index location, Page 3.

2) Cooler Only
   i) Position the cooling coil within the bath, ensure sufficient water is available to completely immerse the coil. Set the thermostat at the cooler to the desired operating temperature.
   Note: The indicated value at the knob is approximate, therefore the water temperature should be monitored using a thermometer and adjusted at the knob as required.

CAUTION: It will be necessary to agitate the water to minimise localised cooling/frosting at the coil.

Cooler with Heater Circulator.
   ii) Position the cooling coil close to the heater circulator to increase flow around the coil. Ensure sufficient water is available to completely immerse the coil.
   Set the thermostat at the cooler to a value **10°C lower** than the desired temperature of the water.
   Set the control at the heater circulator to the desired operating temperature. Refer to the separate operating instructions for details.

3) Position the mains switch at the cooler to the **ON** position (Reset) and immediately the refrigeration system, condenser fan and compressor will run. The cooler will run continuously. The heater circulator controlling the water temperature by cycling heat against the continuous cooling effect.

   Note: The **heat** capacity should exceed the cooling capacity by at least 50% to control effectively.

Standard 12 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 12 months 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; or
- 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.