



IMMERSION DIP COOLER  
DC1-300

*Clifton Range*®

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High quality products at affordable prices

Dear Customer

Thank you for purchasing this piece of Clifton temperature control equipment. To get the best performance from your equipment and for your own safety please read these instructions carefully before use.

## GENERAL NOTES

1. This product is designed for laboratory use only. Always follow good laboratory practice.
2. The mains supply cord fitted to this product is heat resistant and should be replaced with an equivalent type by a qualified electrician.
3. Ensure that the power supply has a safety earth (ground) terminal.
4. Ensure that the mains switch and power supply connector are accessible during use.
5. Before using any cleaning or decontamination method please refer to the Maintenance and Cleaning section to ensure the proposed method will not damage the unit.
6. Connect only to a power supply with the corresponding voltage to that specified on the rating label positioned on the rear of the unit.
7. Do not block ventilation slots during use and always follow installation instructions.
8. Ensure substances being heated present no risk of a hazard (explosion, implosion or release of toxic or flammable gases) or that these have been addressed. When heating substances where liberation of gases occurs suitable extraction should be used.
9. Refrigerant used: R134a

## LOCATION

The product must be placed on a smooth, level and sturdy work surface. Suitable for use in ambient temperatures 5°C to 40°C with a maximum humidity 80% (temperature 31°C) decreasing to 50% (temperature 40°C).

DO NOT block or restrict ventilation slots. DO NOT place directly next to hot heat surfaces. ENSURE that there is sufficient space around the product to allow it to provide optimum temperature control.

## UNPACKING AND ASSEMBLY

Remove the product from its packaging. Contents consist of (incl power lead and instruction manual). Remove the dip cooler from its packaging by lifting carefully to ensure the unit is kept upright at all times.

### **LEAVE TO STAND UPRIGHT FOR 2 HOURS BEFORE USE!!**

The outer packaging is fitted with a TIP and TELL label. Check there is no dye in the the top of the label. DO NOT switch on but leave standing for a further 24 hours to ensure any compressor oil and refrigerants separate naturally.

## SAFETY



Do not touch any electrical contacts or open any closure panels.  
**RISK OF ELECTRIC SHOCK!!**

Motor is fitted with a safety cutout in case of overheating (Class 1 temperature protection).

## POWER LEAD AND CONNECTION TO ELECTRICAL SUPPLY



Check the electrical supply is compatible with the rating label.  
**IF IN DOUBT CONSULT AN ELECTRICIAN. THE PRODUCT MUST BE EARTHED!**

Where the mains supply or plug connection differs refer to local regulations or consult an electrician.

## SAFE OPERATION

This equipment is designed to operate in the following conditions:

1. Indoor use only.
2. In a ventilated area.
3. Ambient temperature range  $20^{\circ}\text{C}>40^{\circ}\text{C}$  for storage and transportation.
4. Ambient temperature range  $10^{\circ}\text{C}>25^{\circ}\text{C}$  for normal operating performance.
5. Ambient temperature range  $25^{\circ}\text{C}+$  (degraded cooling performance).
6. Altitude upto 2000m.
7. Relative humidity not exceeding 80%.
8. Mains voltage fluctuations not exceeding 10%.
9. Over voltage category II IEC 60364-4-443.
10. Pollution degree 2.
11. Use with a minimum distance of 40cm of free air around ventilation slots. DO NOT obstruct.
12. DO NOT use in explosive atmospheres.

To achieve optimum performance the bath should be covered with a lid or layer or polypropylene spheres.

## INSTALLATION IN A CLIFTON WATER BATH

The immersion dip cooler should only be installed with stirred, circulating and shaking water baths providing liquid movement to avoid localised freezing occurring around the immersion coil which degrades its cooling performance.

### DO NOT USE WITH UNSTIRRED WATER BATHS.

1. To install in an NE4 stirred or circulating bath, the plastic cap fitted behind the thermostirrer/circulator needs to be removed.
2. Unfasten the the thermostirrer from the tank using the four screws along the right hand side of the tank.
3. Turn the thermostirrer upside down and pop the plastic cap out.
4. Refit the thermostirrer back onto the tank and fasten into place.
5. Position the dip cooler to the right of the water bath directly alongside. The immersion cooler requires constant air cooling, ensure the ventilation slots/grills have at least 40cm of free ventilation.
6. Insert the cooling coil through the hole into the water bath until it touches the bottom of the tank.
7. The dip cooler can be installed in any water bath using the above process. DO NOT USE WITH UNSTIRRED WATER BATHS.



Keep out of direct sunlight, away from high temperatures and direct heat sources.

DO NOT place near corrosive fumes, excessive moisture, high ambient room temperatures or excessive dust.

## PORTABLE APPLIANCE TESTING

When conducting testing ensure it is conducted by a qualified person.



This equipment must not be flash tested!!

## LIQUID LEVEL

Ensure the immersion cooling coil is covered by liquid at all times for optimal performance. Disconnect the immersion cooler and the water bath before topping up the level.

## SUITABLE LIQUIDS

For operating temperatures from -20°C to ambient, we recommend either:

- 100% heat transfer liquid: the LB range is formulated for temperatures from -45°C to 90°C and provides complete protection from freezing and algae growth and safeguards against corrosion.
- 100% ethylene glycol (car antifreeze).

## OPERATING INSTRUCTIONS

1. Ensure the bath is filled with the correct liquid type for the operating temperature required and filled to the correct level.
2. Fit the lid. To achieve optimum performance the bath should always be covered by either a lid or a layer of polypropylene spheres. This reduces 70% of heat from ambient room temperatures transferring into the bath being cooled. By doubling this layer of polypropylene spheres or using both a lid and layer of spheres this improves to 90%.
3. Start by switching the immersion cooler ON using the mains switch. When the switch is illuminated the refrigeration compressor is now operating and after 5-10

- minutes will start cooling the bath liquid.
4. Switch the thermostirrer/thermocirculator ON using the mains switch located on the rear. The unit will perform a self test.
  5. Set the thermostirrer/thermocirculator using the instructions provided. The thermostirrer/thermocirculator provides temperature control of the bath liquid working against the constant cooling of the immersion dip cooler.
  6. Where no cooling is required or where the set temperature is above ambient switch the immersion cooler off to save energy and running costs.

## RETURNS

Should the dip cooler need to be returned please ensure it is carefully packed upright at all times. We advise marking the outside of the carton clearly showing the correct way up and fragile. Please ask our Service Dept for a TIP N TELL label. Immersion cooler contains refrigerant R134a. Please do not return without first contacting our Service Department for advice and guidance.

## CARE AND MAINTENANCE



Please ensure that the washing agent and sanitizing agent are BSI accredited and approved by the H&S department for use on laboratory equipment and stainless steel within your laboratory.

**DISCONNECT THE DIP COOLER FROM THE POWER SUPPLY PRIOR TO CLEANING**

## BASIC CLEANING

### EXTERIOR ANTI BACTERIAL PAINTED SURFACES

The dip cooler should be cleaned at regular intervals by wiping external surfaces with a cloth or sponge soaked in warm water with a mild detergent. **DO NOT USE STRONG SOLVENTS OR SOLUTIONS CONTAINING CHLORINATED HYDROCARBONS, ESTERS, KETONES OR ABRASIVE CLEANERS AS THIS MAY DAMAGE THE BUILT IN ANTI BACTERIAL PROPERTIES.**

The “anti-bacterial” paint finish inhibits the growth of bacteria. It has been tested by independent specialist houses using internationally recognised test methods and proven to be effective against a wide range of bacteria including Escherichia Coli and Staphylococcus Aureus (MRSA).

We recognise hygienic coatings are part of a controlled approach to a cleaner working environment. Within the paint formulation is an active ingredient with proven anti-bacterial properties which is maintained throughout its life span. In a laboratory environment this is one less source of contamination. Unlike detergents the anti-bacterial paint finish does not offer an instantaneous action, but is intended for long term general protection against bacterial growth.

Moisture on the painted surface is necessary for the bacterium to absorb the agent and be affected by it. The coating is therefore less active in very dry conditions although moisture in the atmosphere will maintain some activity. Areas where moisture is trapped are difficult to clean and allow bacteria to proliferate but these areas are most active for the anti-bacterial coating improving defence against bacterial growth.

#### DECONTAMINATION OF EQUIPMENT

Clifton laboratory equipment can be decontaminated after spillage or contact with HIV or hepatitis infected blood samples by using rapid disinfectants.

We recommend VIRKON tablets for the safe and rapid disinfection of equipment. Please follow the User Instructions carefully. Virkon solution only requires 10 minutes contact time to be effective. Care should be taken with stainless steel tanks and it is important that virkon solution is not left in contact with metal surfaces “for longer than is necessary”.

We recommend PERASAFE powder for the safe and rapid chemical sterilant of equipment. Please follow the User Instructions carefully.

Please contact your distributor or Day-Impex Ltd for further information relating to these products.

TROUBLESHOOTING GUIDE FOR DC1-300 COOLING SYSTEM

SYMPTON	POSSIBLE CAUSE	ACTION REQUIRED
<p>1. Cooler does not operate/no power to the cooler. - illuminated on/off switch does not light</p>	<p>A. Cooler is not switched on. B. Unit not plugged into power supply. C. Fuse in power inlet has failed. D. Fuse in mains lead has failed. E. Power supply failure.</p>	<p>A. Switch the cooler on using the main switch. B. Plug cooler in and switch on. C. Replace the power inlet fuse. D. Replace fuse in mains lead or use a new mains lead. E. Check any other electrical items on the same circuit are working. Check distribution board for a triggered circuit breaker or blown fuse.</p>
<p>2. Power is supplied to the cooler but the cooler does not cool.</p>	<p>A. Compressor radiator and air intakes are blocked. B. Self resetting thermal cutout has triggered - inlet grill near a heat source. C. Temperature of water bath is not set low enough. D. Cooling system has failed.</p>	<p>A. Check for a build up of dust or debris on the air intake and compressor radiator and clean if required. Check for any obstructions to airflow or too close proximity of a wall or other instruments. B. Remove all heat sources and allow the temperature to drop allowing the cutout to reset. C. Ensure the water bath temperature is set to below ambient temperature. D. Instrument should be checked by a competent person.</p>

<p>3. Cooler cools but does not cool down to the required temperature.</p>	<p>A. Ambient temperature in the lab is too high. B. Restricted airflow to the instrument.</p>	<p>A. Make sure that the room temperature is between 18-25°C. B. Check for any obstructions to airflow such as proximity to walls or other instruments. The cooler should be at least 15cm from another instrument.</p>
<p>4. Temperature of the cooling system seems to be fluctuating more than expected.</p>	<p>A. Temperature control circuit fault.</p>	<p>A. Instrument should be checked by a competent person.</p>
<p>5. Temperature of the cooling system shown on the controller is different to the temperature of the liquid as measured by a temperature probe.</p>	<p>A. External temperature probe being used is not suitable for liquid temperature measurements and is not calibrated. B. Position of the external probe is not at the calibration point.</p>	<p>A. Check correct probe is being used for measurement and that the probe is calibrated. B. Measure temperature at the position where the instrument is calibrated (contact your distributor if further info req) using a calibrated probe. If the temperature reading differs significantly the system may need to be re-calibrated.</p>
<p>6. Temperature of the cooling system continues to drop when not expected.</p>	<p>A. Slight lag in compressor turning off and cooling system continuing to operate. B. Actual instrument temperature is lower than the set temperature. C. Temperature control circuit fault.</p>	<p>A. After the compressor switches off the temperature may be observed to drop below the set temperature, this is normal and should not cause concern. B. Check the set temperature. C. Instrument should be checked by a competent person.</p>

## WARRANTY TERMS AND CONDITIONS

1. Nickel Electro Ltd warrants to the Customer that the product purchased is free from defects in materials and workmanship.
2. Provided the terms of payment are duly complied with, Nickel Electro Ltd undertakes to remedy any original defects arising from faulty materials or workmanship, in any goods manufactured/supplied by Nickel Electro Ltd, which under proper and normal conditions of use, may develop within a period of three years from the date of delivery.
3. In the case of components which by their nature of application have an unpredictable life, this guarantee shall only be to the extent of the guarantee given by the manufacturers of these articles.
4. Nickel Electro Ltd will accept no liability, where in the opinion of the company the defect has been caused by damage due to the Customers failure to follow operating instructions, correct installation, wear and tear, or damage due to the use of spare parts other than those spare parts of Nickel Electro Ltd or which are recommended by Nickel Electro Ltd, the defect has been caused by alterations or repairs being undertaken by a person(s) other than an authorised representative of Nickel Electro Ltd.
5. Any damage claim must be in writing, and give the serial number and description of the goods, order number and date of delivery, and will not apply where any names or serial numbers or other information which may be attached to or inscribed upon the goods have been removed, covered up or defaced in any way.
6. Any goods or parts thereof, which may require repair or replacement, shall be repaired or replaced (at the discretion of Nickel Electro Ltd) at the works of Nickel Electro Ltd. The product to be repaired shall be delivered carriage paid back to Nickel Electro Ltd by the customer at the Customer's risk and expense. Any such goods or parts will be delivered by Nickel Electro Ltd to the Customer free within the United Kingdom but if required to be borne by the Customer. All faulty parts removed from the equipment will become Nickel Electro Ltd's property. Any other repairs or work by Nickel Electro Ltd will be carried out under the terms and conditions for specialist engineers currently in force.
7. In the event of replacement with a new or reconditioned model, the replacement unit will continue the warranty period of the original equipment.
8. If any goods or parts thereof are returned unnecessarily all cost involved, including a charge for inspection, handling and the return carriage must be paid by the sender. In no circumstances shall any of the goods be returned to Nickel Electro Ltd without its prior written consent.
9. Please retain the original packaging over the warranty period.
10. If returning the immersion cooler, ensure it remains upright in transit. Mark the outside of the case accordingly and mark as fragile. Please request a tip and tell label from our Service Department. Contains refrigerant R134a.



### DECLARATION OF CONFORMITY

We herewith confirm the following product:  
DC1-300 Dip Cooler

Conforms with the requirements outlined by the following European Directives:

Low Voltage Directive 2014/35/EU

EMC Directive 2014/30/EU

RoHS Directive 2012/65/EU

Conforms with the requirements outlined in the following United Kingdom Directives:

Electromagnetic Compatibility Regulations 2016

Electrical Equipment (Safety) Regulations 2016

RoHS Directive 2012/65/EU

Conforms with the requirements of the following standards:

BS EN 61010-1: 2010

BS EN 61010-2-010: 2014

BS EN 61326-1: 2013

Safety requirements for electrical equipment for measurement, control and laboratory use

Electrical equipment for measurement, control and laboratory use - EMC requirements

Designed and manufactured in the United Kingdom by:



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# FINAL INSPECTION AND ELECTRICAL SAFETY TEST REPORT

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