THE *Clifton* RANGE

Unstirred Digital Baths
NE3-DT Series

IMPORTANT: ALWAYS FILL the water bath before connecting to the power supply

Contents

About this Manual

This user Manual contains instructions which must be followed in order that the product is operated correctly.

General Notes

Please observe the following safety precautions:

1. Fill the water bath prior to connection to power supply.
2. Connect to a power supply with the corresponding voltage to that on the rating label positioned on the rear of the unit. Ensure the power supply has a safety earth (ground) terminal.
3. Ensure the mains switch and power supply connector are accessible during use.
4. The mains supply cord fitted to this products is a heat resistant type and should be replaced by an equivalent type.
5. Do not block ventilation slots during use and follow installation instructions.
6. Always follow good laboratory practice by ensuring 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.
7. Use only liquids specified in this Instruction Manual within their specified temperature range. If the alarm lamp is illuminated the liquid temperature may be above its recommended maximum.
8. Use caution when topping up or draining the tank as the liquid in the tank may be very hot or cold. Drain before moving the bath. Allow the liquid to cool to 40°C before draining.

Amendments

Issue 1	July	2010	New 2010 model. K30.
Issue 2	January	2011	P.Off instruction added.

HOT SURFACES
Paragraphs marked by this symbol indicate that a potential hazard to your personal safety exists from heated surfaces or other appendages on the outside or inside of the equipment.

CAUTION
This icon accompanies text and/or other international symbols dealing with potential damage to equipment. When present, it indicates that there is a potential danger of equipment damage may occur if information stated within the "CAUTION" paragraph is not adhered to or procedures are executed incorrectly.

PROTECTIVE EARTH OR GROUND TERMINAL
Protective earth conductor terminal.

Location
The surface on which the product is to be located should be smooth, level and sturdy. Use in a ventilated room. Ambient room temperature 5°C to 40°C. Product is designed for laboratory use.

Unpacking
Remove the product from its packaging. Any damage to the product notify your distributor immediately. Retain packaging over warranty period. Contents consist of a bath, stainless steel false base, power lead and instruction manual.

Assembly
Place the false base inside the bath. Fit the power lead into the socket at rear.

Safety

Do not touch any electrical contacts or open any closure panels
RISK OF ELECTRICAL SHOCK!

Power Supply Lead and Connection to Electrical Supply
Fit the power lead by plugging it into rear of the water bath and then to mains supply.

Before connecting the product to the electrical supply, check the information on the rating label is compatible.
IF IN DOUBT CONSULT AN ELECTRICIAN. THE PRODUCT MUST BE EARTHED! Where the mains supply or plug connection differs refer to local regulations or qualified electrician.

Liquid Level

Minimum liquid level - must cover the top of the false base by 40mm
Maximum liquid level - must not exceed the ridge in the tank.
Always ensure the product is disconnected from the electrical supply when emptying and filling.

Suitable Liquids

Operating temperatures from ambient +5°C to 99°C, for general use we recommend:

- **Distilled water.**
- **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. See accessories for the full range available].
- **Silicone oils** [up to 10 centistokes]. Silicone oils [11 to 50 centistokes, please note unit will operate outside temperature control specifications].

Above 60°C or below room temperature it is recommended that to achieve optimum performance the bath should be covered with a lid or polypropylene spheres.

Product Overview

Front View

Clifton “low” height shelf needs less water for same work saving energy and costs. Also allows tall samples to be immersed to either a greater working depth.

Red LED display of actual or set bath liquid temperature or time.

Indicators: heating, temperature alarm, timer and set temperature.
Keyboard: function, up and down arrow, run buttons.

Splash proof controls, all over smooth wipe clean surfaces.

Drain outlet for accessory tap: 22, 28 and 56 litre models.

Rear View

Mains power switch “I” ON, “O” OFF.

IEC connector, for power supply lead and plug.
Fuse draw fitted underneath.

Serial number and electrical supply details.

Operating Instructions

Switching ON and OFF

Switching ON - the unit may be turned ON (I) at the mains switch located at the rear. When ON (I) the switch is illuminated and unit performs a self test where all segments of the 3 digit LED display and indictors illuminate.

Switching OFF - the unit may be turned OFF(O) at the mains switch located at the rear. All temperature and time values remain in memory.

Control Panel

Key Pad Description

FUNCTION
- Press once “SP1” is displayed = temperature setting.
- Press twice “t” is displayed = run back timer setting.
- Press three times “Act.t” = current time setting.
- Press four times “Str.t” = delay start setting.
- Press five times “GO” = delay start turned on/off.

DOWN ARROW
- Used to decrease a value. Hold continously to scroll.
- When pressed for more than 1.5 seconds, “SP1”, set temeprature, is displayed.

UP ARROW
- Used to increase a value. Hold continously to scroll.

RUN
- When pressed for more than 1.5 seconds will activate/deactivate timer function.
- Used to turn off buzzer.

LED Indicators

HEATING INDICATOR
When LED is illuminated Hotplate is heating.

OVER AND UNDER TEMPERATURE ALARM INDICATOR
LED is illuminated when bath temperature is either 4°C above or 4°C below set temperature.

TIMER INDICATOR
- Continous illumination indicates timer is set.
- Flashing illumination indicates timer is running back/counting down.

SET TEMPERATURE INDICATOR
- Continous illumination indicates set point is shown on display.

Temperature Control of Water bath

Switching ON and OFF: Switching ON - the unit may be turned ON (I) at the mains switch located at the rear. When ON (I) the switch is illuminated and the unit performs a self test where all the segments of the LED display illuminate.

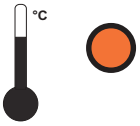
Switching OFF: the unit may be turned OFF (O) at the mains switch located at the rear. All current temperature and time values remain in memory.

This range water baths features an advanced PID temperature controller that can be used in the following ways to control water temperature:

- temperature control.
- temperature control and timer.
- delay start wake up heating at a set time in future, useful for pre-conditioning the bath before use.

Setting Temperature

1. Press and hold the down arrow for more than 1.5 seconds to display “SP1” the set temperature.

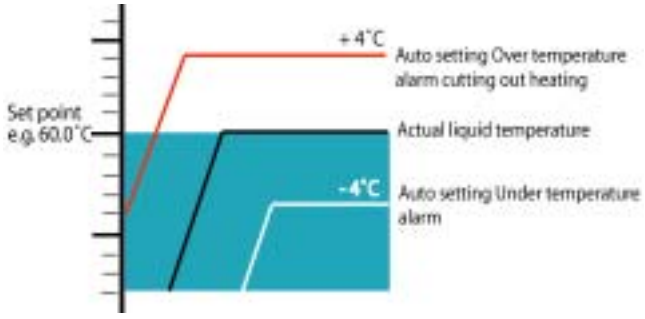


The 'set temperature' indicator will illuminate.

2. Use up and down arrow keys to select required temperature.

3. After setting temperature the display flashes between “SP1” and set temperature and will automatically revert to show actual hotplate temperature. The waterbath features an over or under temperature alarm whichis automatically set 4°C above and 4°C below set temperature. If the actual water temperature rises beyond this value then the alarm is activated and heating suspended.

Waterbath is now set and will heat and control at set temperature.



Setting Timer

1. Press FUNCTION button until "t" appears on the display. It will then alternate between showing "t" and time - displayed as hh.mm.

2. Press either up or down arrow to select desired time.
- Minimum time setting is 0 hours and 01 minutes - displayed as 00.01
- Maximum time setting is 99 hours and 59 minutes - displayed as 99.59

3. Once desired time is entered press FUNCTION button to save setting. Display reverts to actual water temperature.

Delay start, wake up

1. Press FUNCTION button until "Act.t" appears on the display. This is setting for the current time now. It will then alternate between showing "Act.t" and time - displayed as hh.mm [24 hour clock format].

2. Press either up or down arrow to select desired current time. From 0 hours and 00 minutes - displayed as 00.00 - to 23 hours and 59 minutes - displayed as 23.59.

3. Press FUNCTION button until "Str.t" appears on the display. This is setting for the delay time before the bath comes on and starts heating. It alternates between showing "Str.t" and time - displayed as hh.mm.

4. Press either up or down arrow to select desired delay time upto maximum time delay 23 hours and 59 minutes - displayed as 23.59.

5. Press FUNCTION button until "GO" appears on the display. This is setting for starting the delay timer.

6. Press either up or down arrow to start “YES” or stop “NO” delay time. Then press FUNCTION button to acknowledge.

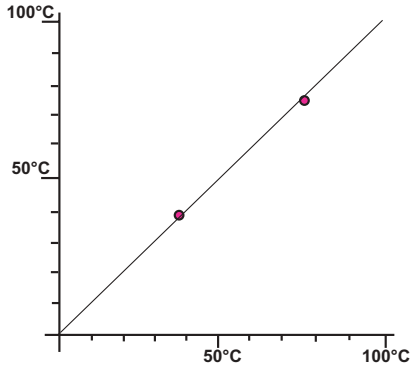
“No”
Stops delay timer. Water bath resumes heating/temperature control at set temperature.

“YES”
Delay timer running. Water bath will commence heating/temperature control at set temperature after delay time has elapsed.

If power is interrupted during Timer mode, the displays shows “P.OFF” when resumed. To clear, press and hold the RUN button until display reverts to actual temperature. Timer mode will then continue. To deactivate timer mode, press and hold RUN button.

Explanation of Temperature Control Terms

Temperature Calibration



Verify the performance of the temperature control system digital display units undergo a factory calibration procedure which calculates the temperature values over the operating range of the equipment from 2 reference calibration points.

Accuracy

We do not provide, claim or assure any form of accuracy. Accuracy is defined as "the ability of a measurement to match the actual value of the quantity being measured". For accuracy we recommend using a calibrated reference probe at the actual set point temperature and where necessary, adjust the set point accordingly.

Sensitivity

For an explanation of sensitivity consider a unstirred digital water bath, the PID temperature control system measures and displays the actual temperature of the water and then compares it with the ‘set point’ temperature. It automatically calculates and adjusts the required quantity of heat into the bath to make the measured temperature equal to the set temperature. As with any process there is a time delay between measuring the temperature and the heat entering the water, which causes minor fluctuations in the temperature of the bath.

Heat is also distributed in an unstirred bath by convection and conduction and there are heat losses from the surface of the liquid which can cause temperature losses. These losses and heat distribution produce small fluctuations in temperature across the water in the bath.

These small temperature fluctuations at any one point are defined as “sensitivity” and vary between an upper and lower limit, however occasionally a larger variation can be observed. Sensitivity as stated in DIN 58966 is the temperature difference between the upper and lower temperature level over 100 cycles after removing the largest 25% of readings.

We determine sensitivity by recording the actual upper and lower temperatures of the bath using temperature loggers and is stated as plus or minus one half of the measured value.

Uniformity

Uniformity is calculated by measuring the temperature in opposing ends of the water bath and is the difference between the mean temperatures at these two points and stated as plus or minus half this value.

Cleaning

General

Important - please follow these instructions to avoid possible damage to the unit, otherwise affecting its performance and warranty.
Always disconnect the product from the electrical supply before cleaning.

Cleaning External Painted Surfaces featuring “Anti-bacterial Paint Finish”

The water bath should be cleaned at regular intervals wiping external surfaces with a cloth or sponge soaked in warm soapy water with a mild detergent. All surfaces should be cleaned using a soft cloth or sponge.

Do not under any circumstances use strong solvents or solutions containing Chlorinated Hydocarbons, Esters, Ketones or abrasive cleaners or polish on the paint finish otherwise it damages the built in anti-bacterial properties.

All painted surfaces on Clifton range products features an “Anti-bacterial paint finish” identified with this authenticating logo on the unit.

This “Anti-bacterial paint finish” inhibits the growth of bacteria. It has been tested by independent specialist test houses such as the Law Laboratories (in the UK) using internationally recognized test methods and proven to be effective versus a wide range of bacteria species including Escherichia coli and Staphylococcus aureus (MRSA).

We recognise hygienic coatings are part of a controlled approach to a cleaner working environment. Within its formulation an active ingredient with proven anti-bacterial properties is bound into the paint finish. The efficacy of the paint finish applied to the Clifton range is maintained over its lifetime, as the anti-bacterial agent is integral within the paint.

In a laboratory environment it makes this one less source of contamination, contributing to essential clean working practices. A benefit of such a paint finish can lead to a reduction in cleaning schedules because surfaces are more protected and improves protection between cleaning. Unlike detergents “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, but dependent upon relative humidity, moisture in the atmosphere maintains activity. Areas where moisture is trapped are also areas that normally are difficult to clean and where bacteria proliferate but these areas are most active for the anti-bacterial coating improving the defence against bacterial growth.

Cleaning the Stainless Steel Tank

The stainless steel crevice free tank with smooth corners should provide years of valuable service and is resistant to chloride containing solutions it is however important to avoid high concentrations of halogens - especially chloride. With such a high quality and resistant tank it may show symptoms of these halogens as rust, which are deposits from external sources in the water supply.

We recommend always empty the bath of liquid after use and wipe out the internal faces of the tank with a non-abrasive cloth and allow to dry. Any deposits can be removed with nitric acid (10%) on a cloth. *WEAR PROTECTIVE EQUIPMENT!*

It is also recommended to use an accessory lid to prevent contaminates landing in bath liquids.

Descaling the Stainless Steel Tank

Descale the stainless steel tank regularly to maintain it in as new condition ensuring the corrosion resistance and normal operating conditions are maintained throughout its working life. Descale by adding 1 litre of vinegar to water and gently heating to 50°C for an hour, empty and brush the lime away. Rinse thoroughly afterwards.

Decontamination of Equipment

Clifton laboratory equipment can be decontaminated after spillage or contact with potentially HIV and Hepatitis infected blood samples during analysis using following recommended rapid disinfectants.

Virucidal Disinfectant

We recommend Virkon tablets for the safe and rapid disinfection of equipment in a wide variety of situations available from your distributor or contact Day-Impex Ltd. for more details. Telephone: 44+(0)1787 223232 or http://www.day-impex.co.uk

The ultimate high level surface disinfectant, dissolve VIRKON in water, providing a safe working solution with a faint lemon odor. It has proven efficacy against bacteria (including mycobacteria), viruses, spores and fungi in a variety of independent tests using different protocols. Presents no serious long term health risks to staff – obviating the need for costly ventilation equipment and health monitoring. Also provides high level disinfection of laboratory equipment and instruments where autoclaving is neither practical nor necessary. For more detailed information relating to how Virkon should be used with access to test reports www.relyon.dupont.com

Is Virkon solution corrosive? Virkon solution requires only 10 minutes contact time to be effective so long-term exposure is not necessary and therefore will not corrode most materials. Care should be taken with Stainless steel water bath tanks, these surfaces should not be affected however, it is important that generally you do not leave Virkon solution in contactwith metal surfaces "FOR LONGER THAN IS NECESSARY".

Virkon is Registered in accordance with the requirements of the Medical Devices Directive, (93/42/EEC) as a Medical Device.

Disinfectant/Sterilant

We recommend PeraSafe a powder product for the safe and rapid chemical sterilant of equipment in a wide variety of situations available from your distributor or contact Day-Impex Ltd for more details. Telephone: 44+(0)1787 223232 or http://www.day-impex.co.uk

PeraSafe has a proven safety profile for end-users with none of the undesirable properties of skin sensitisation, toxic fumes or unpleasant odours that are associated with aldehyde solutions.

Leading UK and USA microbiologists have proven PeraSafe to be active against viruses, mycobacteria and fungi. It is microbiologically superior to glutaraldehyde, destroying sporing bacteria in one minute. It has also been independently proven that PeraSafe sterilises in just 10 minutes. For more detailed information relating to how PeraSafe should be used with access to test reports www.relyon.dupont.com

Under or Over Temperature Alarm - Automatically Set

The under temperature alarm is automatically set 4°C below set temperature. The over temperature alarm is automatically set 4°C above set temperature. When in alarm condition the 'over and under temperature ' alarm indicator illuminates and actual bath temperature is shown. Once water temperature has risen or fallen above alarm setting then indicator clears and actual bath temperature is displayed.

Always investigate the cause of the Under and Over Temperature Alarm.

3 Year Warranty

The warranty does not cover acts of god, accidents, misuse, abuse, negligence, electrical or mechanical stress outside normal limits, use with unsuitable chemicals or unauthorised product modifications, repairs or insufficient care and maintenance of equipment. Additionally voided if the product is used or stored in an environment exceeding its specification.

Our service engineers are fully trained in the assembly, calibration and servicing of all Clifton instrumentation. Products can be returned to our comprehensively equipped service centre where a fast and efficient turnaround is guaranteed:

Service Department, Nickel Electro Limited, Oldmixon Crescent, Weston-super-Mare, North Somerset BS24 9BL, UK. Tel +44 (0)1934 626691 Fax +44 (0)1934 630300.

Out of Warranty

Our Service Department has comprehensive stock of charegeable spare parts maintaining working life of equipment or units can be returned for quotation before repairs are undertaken.

End of Life

This symbol indicates that this product should not be disposed of with your waste. Instead, dispose waste electrical equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more informa tion about where you can drop off your waste equipment for recycling, in UK please contact Service Department, rest Europe contact your Distributor.

Health & Safety, unless in receipt of a Decontamination Notice or Report the unit cannot be returned or accepted for disposal.

Portable Appliance Testing

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

DO NOT PAT TEST THE BATH UNLESS IT CONTAINS WATER.

THIS EQUIPMENT MUST NOT BE FLASH TESTED!

Accessories

Stainless Steel Gable Lids

SL1-4	Stainless Steel Gable Lid to suit 4 Litre Unstirred Baths
SL1-8	Stainless Steel Gable Lid to suit 8 Litre Unstirred Baths
SL1-14	Stainless Steel Gable Lid to suit 14 Litre Unstirred Baths
SL1-22	Stainless Steel Gable Lid to suit 9, 22 and 28 Litre Unstirred Baths
SL1-22H	Stainless Steel Hinged Gable Lid to suit 22 + 28 Litre Unstirred Baths

Stainless Steel Flat Lids

LD-4	Flat One Piece Stainless Steel Lid to suit 4 Litre Capacity Bath
LD-8	Flat One Piece Stainless Steel Lid to suit 8 Litre Capacity Bath
LD-14	Flat One Piece Stainless Steel Lid to suit 14 Litre Capacity Bath
LD-22	Flat One Piece Stainless Steel Lid to suit 9, 22 & 28 Litre Capacity Bath
SA01368	Flat One Piece Stainless Steel Lid to suit 56 litre bath (two required)

Stainless Steel Flat Lids with Concentric Rings

SLR1-4	4 x 105mm Stainless Steel Ringed Lid to suit 4 Litre Unstirred Baths
SLR1-8	4 x 83mm Stainless Steel Ringed Lid to suit 8 Litre Unstirred Baths
SLR1-14	4 x 105mm Stainless Steel Ringed Lid to suit 14 Litre Unstirred Baths
SLR2-14	6 x 83mm Stainless Steel Ringed Lid to suit 14 Litre Unstirred Baths
SLR1-22	6 x 105mm Stainless Steel Ringed Lid to suit 9, 22 and 28 Litre Unstirred Baths

Stainless Steel Test Tube Racks - Dimensions 270 x 70 x 138mm (L x W x H)

6870	Stainless Steel Test Tube Rack 26 Hole x 17mm Diameter
6871	Stainless Steel Test Tube Rack 16 Holes x 26mm Diameter
6872	Stainless Steel Test Tube Rack 36 Holes x 13mm Diameter
6873	Stainless Steel Test Tube Rack 18 Holes x 19mm Diameter/suitable for 1.5ml microtubes
6900	Stainless Steel Test Tube Rack 12 Holes x 32mm Diameter

Note: 4 Litre = 1 Rack, 8 Litre = 2 Racks, 14 Litre = 4 Racks, 22 and 28 Litre = 6 Racks

Miscellaneous

LB-2.5	2.5 Litres - Lab Bath 4590 - Heat transfer fluid - Temperature range -15° to +90°C
LB-5.0	5 Litres - Lab Bath 4590 - Heat transfer fluid - Temperature range -15° to +90°C
TC-1	Thermometer Clip Complete With Bent Stem Spirit Filled Thermometer
BX0616	Draining Syphon
BX0688	Drain Tap
BP0368	Polypropylene Spheres

For more information on Accessories www.nickel-electro.co.uk

Fitting Accessories

Stainless Steel Gable Lids
Position the lid over the bath and lower into place.
These lids have bo drip points, provide full working height across the bath when fitted and have a ventilation gap.

For “H” suffix lids place the lid onto the bath with the hinges hanging over the rear of the water bath aliigning with threaded bushes. Insert two screws provided into each hinge and tighten screws. The lid can be raised and lowered using the handle on the side.

Stainless Steel Flat Lids
Position the lid over the bath and lower into place.

Stainless Steel Flat Lids with Concentric Rings
Position the lid over the bath and lower into place. Each set of rings can be used to vary the diameter of aperture to accommodate different sizes of vessels of evaporating dishes and glass-ware, including round-bottom flasks.

Stainless Steel Test Tube Racks
Place the loaded test tube rack into the bath on top of either the stainless steel perforated shelf or the raised shelf.
Note: 4 Litre = 1 Rack, 8 Litre = 2 Racks, 14 Litre = 4 Racks, 22 and 28 Litre = 6 Racks

Heat Transfer Fluid
Use as a ‘neat’ liquid solution for best results.

Thermometer Clip
This can be positioned anywhere on the perimeter of the bath by cliping over the edge. The thermometer then lies flush with the top edge of the bath to prevent accidental damage.

Draining Syphon
Allows the easy and quick emptying of any water bath. Water temperature must be below 45°C before emptying can commence.

Drain Tap
A drain tap outlet is featured on the 22, 28 and 56 litre sizes. Make sure the bath is empty, hold the outer nut, then using a socket/allen key undo the threaded insert. Once removed and still holding the outer nut, screw in the accessory drain tap into position and pinch tight.

Polypropylene Spheres
Place on top of the water/oil to provide a floating lid reducing evaporation and insulating the bath reducing heat losses. The range of Unstirred water baths: 4 litre bath requires 1 pack; 8 litre bath requires 2 pack; 14 litre 2 packs and 9, 22 and 28 litre requires 4 packs.

EC Declaration of Conformity

We herewith confirm the following product

NE3DT Unstirred Waterbath Range

Conforms with the requirements outlined by following European Directives.

Low Voltage Directive (73/23/EEC)
EMC Directive (89/336/EEC)

We confirm the declaration

NICKEL-ELECTRO LTD
Manufacturers of laboratory, medical and clinical equipment.
Oldmixon Crescent, Weston-super-Mare,
North Somerset, BS24 9BL, United Kingdom.
Tel: +44 (0)1934 626691
Fax: +44 (0)1934 630300
Email: clifton@nickel-electro.co.uk
www.nickel-electro.co.uk

Conforms with the requirements of following Standards
BS EN 61010:1
BS EN 61010:2.010
Safety requirements for electrical equipment for measurement, control and laboratory use.
BS EN 61326
Electrical equipment for measurement control and laboratory use - EMC requirements.

Nickel-Electro Ltd is also registered ISO9001
reference No. Q09820

Certificate No. Q09820

NICKEL-ELECTRO Ltd.
Manufacturers of laboratory, medical and clinical equipment.

Oldmixon Crescent, Weston-super-Mare,
North Somerset, BS24 9BL, United Kingdom.

Tel: +44 (0)1934 626691
Fax: +44 (0)1934 630300

Email: clifton@nickel-electro.co.uk
www.nickel-electro.co.uk