SUMMARY

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1 GENERAL INFORMATION

Before using the product carefully read the information contained in this instruction manual, the manual should be kept for future reference.
Italian is the original language of this instruction manual, this language is the reference language in case of discrepancies in the translations.
This manual is part of the essential safety requirement and must be retained until the product is finally de-commissioned.
The customer, in case of loss, can request a copy of the manual by contacting Calpeda S.p.A. or their agent, specifying the type of product data shown on the label of the machine (see 2.3 Marking)
Any changes, alterations or modifications made to the product or part of it, not authorized by the manufacturer, will revoke the "CE declaration" and warranty.

This appliance should not be operated by children younger than 8 years, people with reduced physical, sensory or mental capacities, or inexperienced people who are not familiar with the product, unless they are given close supervision or instructions on how to use it safely and are made aware by a responsible person of the dangers its use might entail.
Children must not play with the appliance.
It is the user's responsibility to clean and maintain the appliance. Children should never clean or maintain it unless they are given supervision.
Do not use in ponds, tanks or swimming pools or where people may enter or come into contact with the water.
Read carefully the installation section which sets forth:
- The maximum permissible structural working pressure (chapter 3.1).

- The type and section of the power cable (chapter 6.5).
- The type of electrical protection to be installed (chapter 6.5).

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1.1 Symbols
To improve the understanding of the manual, below are indicated the symbols used with the related meaning.


Information and warnings that must be observed, otherwise there is a risk that the machine could damage or compromise personnel safety.


The failure to observe electrical information and warnings, could damage the machine or compromise personnel safety.


Notes and warnings for the correct management of the machine and its parts.


Operations that could be performed by the final user. After carefully reading of the instructions, is responsible for maintenance under normal conditions. They are authorized to affect standard maintenance operations.


Operations that must be performed by a qualified electrician. Specialized technician authorised to affect all electrical operations including maintenance. They are able to operate with in the presence of high voltages.


Operations that must be done performed by a qualified technician. Specialized technician able to install the device, under normal conditions, working during "maintenance", and allowed to do electrical and mechanical interventions for maintenance. They must be capable of executing simple electrical and mechanical operations related to the maintenance of the device.


Indicates that it is mandatory to use individual protection devices.

Operations that must be done with the device switched off and disconnected from the power supply.

Operations that must be done with the device switched on.

1.2 Manufacturer name and address
Manufacturer name: Calpeda S.p.A.
Address: Via Roggia di Mezzo, 39
36050 Montorso Vicentino - Vicenza / Italia
www.calpeda.it

1.3 Authorized operators
The product is intended for use by expert operators divided into end users and specialized technicians. (see the symbols above).


It's forbidden, for the end user, carry out operations which must be done only by specialized technicians. The manufacturer declines any liability for damage related to the non-compliance of this warning.

1.4 Warranty
For the product warranty refer to the general terms and conditions of sale.
The warranty covers only the replacement and the repair of the defective parts of the goods (recognized by the manufacturer).

The Warranty will not be considered in the following cases:
- Whenever the use of the device does not conform to the instructions and information described in this manual.
- In case of changes or variations made without authorization of the manufacturer.
- In case of technical interventions executed by a non-authorized personnel.
- In case of failing to carry out adequate maintenance.

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1.5 Technical assistance
Any further information about the documentation, technical assistance and spare parts, shall be requested from: Calpeda S.p.A. (paragraph 1.2).

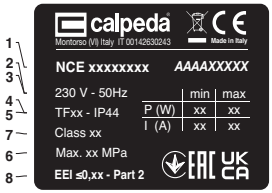
2 TECHNICAL DESCRIPTION
The pumps of NCE EI and NCE EA series are used to circulate water/fluids in domestic heating and hot water systems and floor heating modules.
The pumps of NCE EL series are used to circulate water/fluids in domestic heating and hot water systems and renewable energy systems.
The pumps of NCE ES series are used for handling drinking water or for sanitary applications.

2.1 Intended use
For clean liquids without abrasives, non-explosive, non-aggressive for the pump materials.
For water and glycol mixtures with up to 30% glycol content.
Liquid temperature from +2 °C to +95 °C for NCE EI and NCE ES.
Liquid temperature from +2 °C to +110 °C for NCE EA and NCE EL.

ATTENTION:
The pumps of NCE ES series are suitable for drinking water only.

2.2 Improper use
The device is designed and built only for the purpose described in paragraph 2.1.
Improper use of the device is forbidden, as is use under conditions other than those indicated in these instructions.
The pump must not be used for handling drinking water or for sanitary applications except for NCE ES series.
Improper use of the product reduces the safety and the efficiency of the device, Calpeda shall not be responsible for failure or accident due to improper use.

2.3 Marking
The following picture is a copy of the name-plate that is on the external case of the pump.



1 Type
2 Supply voltage
3 Frequency
4 Liquid temperature
5 Protection degree
6 Max Pressure
7 Insul. class
8 Efficiency Class
9 Certifications
10 AAAA Year of manufacture
10 XXXX Serial number
11 Power min-max
12 Current min-max

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3 TECHNICAL FEATURES

3.1 Technical data

Dimensions and weight (paragraph 12.1).
Supply voltage / Frequency 230 V 1~50/60 Hz
Protection IP 44
Insulation class H
Class II device
Sound pressure <43 dB (A).
The system's maximum permissible pressure:
- 0,6 MPa, 60 m (6 bar) for NCE EI.
- 1 MPa, 100 m (10 bar) for NCE EA, NCE EL and NCE ES.

The max. inlet water pressure: PN (Pa) - Hmax (Pa).

3.2 Operating conditions

Installation in well ventilated location protected from the weather, with ambient temperature of -10°C to +40°C. Relative humidity: from 10% to 55% non-condensing.

4 SAFETY

4.1 General provisions

Before using the product it is necessary to know all the safety indications.
Carefully read all operating instructions and the indications defined for the different steps: from transportation to disposal.
The specialized technicians must carefully comply with all applicable standards and laws, including local regulations of the country where the pump is sold.
The device has been built in conformity with the current safety laws. The improper use could damage people, animals and objects.
The manufacturer declines any liability in the event of damage due to improper use or use under conditions other than those indicated on the name-plate and in these instructions.

Follow the routine maintenance schedules and the promptly replace damaged parts, this will allows the device to work in the best conditions.
Use only original spare parts provided from Calpeda S.p.A or from an authorized distributor.

Don't remove or change the labels placed on the device.
Do not start the device in case of defects or damaged parts.

Maintenance operations, requiring full or partial disassembly of the device, must be done only after disconnection from the supply.

4.2 Safety devices

The device has an external case that prevents any contact with internal parts.

4.3 Residual risks

The appliance, designed for use, when used in-line with the design and safety rules, doesn't have residual risks.

4.4 Information and Safety signals

For this kind of product there will not be any signals on the product.

4.5 Individual protection devices

During installation, starting and maintenance it is suggested to the authorized operators to consider the use of individual protection devices suitable for described activities.
During ordinary and extraordinary maintenance interventions, safety gloves are required.

Signal	individual protection device
	HAND PROTECTION (gloves for protection against chemical, thermal and mechanical risks).

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5. TRANSPORTATION AND HANDLING
The product is packed to maintain the content intact.
During transportation avoid to stack excessive weights. Ensure that during the transportation the packed cannot move.
The transport vehicles must comply, for the weight and dimensions, with the chosen product.

5.1 Handling
Handle with care, the packages must not receive impacts.
Avoid to impact onto the package materials that could damage the pump.

5.2. Storage
The appliance must be stored in a dry place, protected from shocks and preferably in its original packaging.
Respect the following storage conditions:
- Ambient temperature from -10°C to +50°C
- Relative humidity: from 10% to 85% non-condensing.

6 INSTALLATION

6.1 Dimensions
For the dimensions of the device refer to the annex "Dimensions" (paragraph 12.1 Annexes).

6.2 Ambient requirements and installation site dimensions
The customer has to prepare the installation site in order to guarantee the right installation and in order to fulfill the device requirements (electrical supply, etc...).
The place where the device will be installed must fulfill the requirements in the paragraph 3.2.
It's Absolutely forbidden to install the machine in an environment with potentially explosive atmosphere.

6.3 Unpacking
Inspect the device in order to check any damages which may have occurred during transportation.
Package material, once removed, must be discarded/recycled according to local laws of the destination country.

6.4. Installing the pump
Ensure the inside of pipes are clean before connection.
Mount pump in an easily accessible position.
To avoid draining and refilling of the whole pipe system when dismantling the pump, it is recommended to provide gate valves on the suction and delivery sides.
The pump must be installed with the shaft axis horizontal (cap. “12.2 fig. 1).
In order to obtain a correct terminal box position, the motor housing must be turned once the screws have been loosened (cap. “12.2 fig. 2). Change the terminal box positions as shown (cap. “12.2 fig. 3).
ATTENTION: Take care not to damage the casing gasket. The pipes connected to the pump should be secured to rest clamps so that they do not transmit stress, strain or vibrations to the pump.
The arrow on the pump casing indicates the direction of water flow (cap. “12.2 fig. 4).

6.4.1. Insulating the pump
The loss of heat from the pump can be limited using thermo-insulating shells (standard supplied with model NCE EA). Shells for the other pumps can be ordered separately.

6.5 Electrical connection

Electrical connection must be carried out only by a qualified electrician in accordance with local regulations.
Follow all safety standards.

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To connect the main electric line it is not necessary to open the terminal motor cover.
Follow all safety standards.
The pump is in class II and therefore it does not need to be earthed.
Compare the frequency and mains voltage with the name-plate data and connect the supply conductors to the terminals in accordance with the appropriate diagram (cap. “12.2 fig. 5).
Insert the terminal board 1) in the proper seat (2), connecting the red wire with letter N and the blue wire with letter L. Screw the two screws (3) and tighten the sealing nuts (4) to the fairlead.
For use in swimming pools (not when persons are in the pool), garden ponds and similar places, a residual current device with IΔN not exceeding 30 mA must be installed in the supply circuit.
Install a device for disconnection from the mains (switch) with a contact separation of at least 3 mm on all poles.
No external motor protection is required.
All wires must be positioned so that they do not, in any manner, touch the tubing or the body of the circulator.

7 STARTUP AND OPERATION

7.1 Preliminary checks before start-up of the pump
Do not start-up the device in case of damaged parts.

7.2 First starting

ATTENTION: never run the pump dry.
Start the pump after filling the plant completely with liquid.
Bleeding the hydraulic system.
Due to its particular structure, the pump does not need the bleed valve.

Burn hazard. Due to high temperature of the fluid, the pump casing and the motor may reach temperatures higher than 50°C.

DO NOT TOUCH these parts unless with suitable protective devices or wait and make sure they have completely cooled.

7.3 Operation LEDs
LEDs of different colours indicate the operation mode.
- Violet LED: auto operation mode (NCE EA only)
- Green LED: operation mode with proportion curve.
- Orange LED: operation mode with constant curve.
- Blue LED: operation at set speed mode.
- White LED: shows the presence of air in the system; the pipes must be bled (see paragraph 7.4)
- Red LED: pump blocked (see paragraph 22 “Troubleshooting”).

7.4. Bleed process
The pump is equipped with a system that identifies the presence of too much air in the system. The white LED indicator informs of the presence of air in the circuit by flashing.
To bleed the system:
- open the air escape valve in the hydraulic circuit;
- set the pump at MAX;
- allow the pump to work at this setting for a short period;
- the LED indicator stops flashing when the system has been bled.

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7.5 Setting the pump performance.
Modify pump performance according to need by rotating the selector potentiometer with a slotted screwdriver.

LED	NCE EA	NCE EI	NCE EL	NCE ES
PURPLE AUTO	self-adapt*			
GREEN P	Proportion curve (Lower) P1	Proportion curve (Lower) P1*	Proportion curve P	
	Proportion curve (Intermediate) P2	Proportion curve (Upper) P2		
	Proportion curve (Upper) P3			
ORANGE C	Constant curve (Lower) CI	Constant curve (Lower) CI		
	Constant curve (Intermediate) CII	Constant curve (Upper) CII		
	Constant curve (Upper) CIII			
BLUE min - max	Fixed speed curve (from min to max)	Fixed speed curve (from min to max)	Fixed speed curve (from min to max*)	Fixed speed curve (from min to max*)

* factory setting

7.6 Switch off of the pump

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The appliance must be switch off every time there are faults. (see troubleshooting).

The product is designed for a continuous duty, the switch off is performed by disconnecting the power supply by means the expected disconnecting devices. (see paragraph "6.5 Electrical connection").

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8 MAINTENANCE

Before any operations it's necessary to disconnect the power supply.
If required ask to an electrician or to an expert technician.

Every maintenance operations, cleaning or reparation executed with the electrical system under voltage, it could cause serious injuries to people.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

In case of extraordinary maintenance, or maintenance operations that require part-removing, the operator must be a qualified technician able to read schemes and drawings.
It is suggest to register all maintenance operation executed.

During maintenance keep particular attention in order to avoid the introduction of small external parts, that could compromise the device safety.

It is forbidden to execute any operations with the direct use of hands. Use water-resistant, anti-cut gloves to disassemble and clean.

During maintenance operations external personnel is not allowed.

Maintenance operations that are not described in this manual must be made only by special personnel authorized by Calpeda S.p.A.
For further technical information regarding the use or the maintenance of the device, contact Calpeda S.p.A.

8.1 Routine maintenance

Before every maintenance operations disconnect the power supply and make sure that the device could not accidentally operate.

The pumps are made to function for many years in normal conditions with no need for maintenance.
At the start of every heating period, or after an extended period of non-use, make sure the red Pump blocked LED is not lit.
If the red light is lit, rotate the selector to MAX, disconnect and then reconnect the power to start the automatic release process – the indicator (LED) flashes, signalling each attempt made to start the pump.
If the block is not released by the automatic release process (the light returns to red), dismantle the pump and check for foreign bodies that may be blocking it.

9. DISPOSAL

European Directive
2012/19/EU (WEEE)

The final disposal of the device must be done by specialized company.
Make sure the specialized company follows the classification of the material parts for the separation.
Observe the local regulations and dispose the device accordingly with the international rules for environment protection.

10 SPARE PARTS

10.1 Spare-parts request

When ordering spare parts, please quote the data stamped on the name-plate (type, date and serial number).

The spare parts request shall be sent to CALPEDA S.p.A. by phone, fax, e-mail.

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11. Troubleshooting

WARNING: Turn off the power supply before performing any operations.
Do not allow the pump or motor to run when dry even for a short period

Strictly follow the user instructions and if necessary contact an authorised service centre.

PROBLEM	LED SIGNAL	PROBABLE CAUSES	POSSIBLE SOLUTIONS
(1) The pump is noisy and vibrating.	LED lit	Suction pressure insufficient, cavitation.	Increase the suction pressure.
	LED lit	Deposits or solids in the internal passages of the impeller.	Dismantle the motor and clean the impeller.
(2) The liquid is circulating noisily	White LED flashing	Air in the system	See paragraph 7.4 “Bleed process”.
	LED lit	Delivery too high	Reduce the rotation speed (see paragraph 7.5 “Setting the pump performance”).
(3) The circulator does not start while being powered	LED off	Unsuitable power supply	Make sure the mains frequency and voltage are suitable for the electrical characteristics given on the plate.
		Incorrect electrical connections	Correctly connect the power supply cable to the terminal block
		Fuses burnt or faulty	Replace the fuses, check the electric power.
		Faulty pump	Replace the pump
		Overheating	Cool the pump and make sure it starts again. Make sure the liquid temperature and the surrounding temperature are within the indicated limits.
	Red LED	Rotor blocked	If the release procedure did not work, remove the motor and clean the rotor.
		Insufficient power supply voltage.	Make sure the mains frequency and voltage are suitable for the electrical characteristics indicated on the plate.

Changes reserved.