NCE

Energy saving circulating pumps

calpeda®

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ENERGY EFFICIENCY OF CIRCULATING PUMPS

Directive of the European Parliament COMMISSION REGULATION (EC) No 641/2009 and 622/2012

Eco-design Directive of Energy Using Products (**ErP Directive - Energy-related Products**). The European Union wants to improve the design of equipment that "consume" significant energy e.g. (televisions, refrigerators, washing machines, boilers, pumps, and motors etc.) To improve eco-design providing environmental sustainability, reduducing negative environmental impact as the consequence of production, use and disposal of products.

The objective of the Directive is to force manufacturers and importers to produce and distribute products with high energy efficiency, and carbon output.
The criteria for eco-design will be an integral part of the declaration of conformity (**CE**), which is a necessary requirement/mark for products being sold in the EU.

This Regulation shall apply to:
Stand-alone* or integrated** circulators with the motor immersed in the pumped medium, with hydraulic power from 1 up to 2500 W, designed for use in heating systems or in secondary circuits of cooling distribution systems.

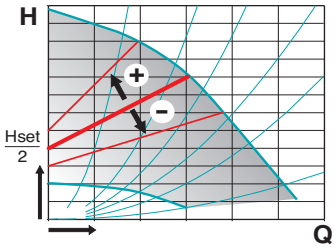
* Stand alone circulators are commonly available on the market.
** circulators integrated in products are component of a device, such as boilers, heat pumps, etc..

This Regulation shall not apply to:
a) drinking water circulators
b) circulators integrated in products and placed on the market not later than 1 January 2020 as replacement for identical circulators integrated in products and placed on the market no later than 1 August 2015. The replacement product or its packaging must clearly indicate the product(s) for which it is intended.

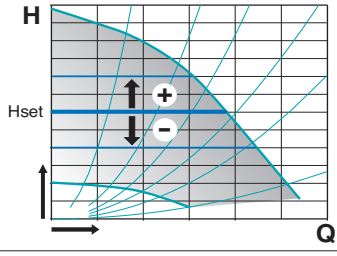
This Regulation shall apply in accordance with the following timetable:
1. from **1 January 2013**, glandless standalone circulators shall meet the efficiency level (EEI) less than 0.27, with the exception of those specifically designed for primary circuits of thermal solar systems and of heat pumps;
2. from **1 August 2015**, glandless standalone circulators and glandless circulators integrated in products shall meet the efficiency level (EEI) less than 0.23.

STANDARD OPERATING MODE IN CIRCULATING PUMPS

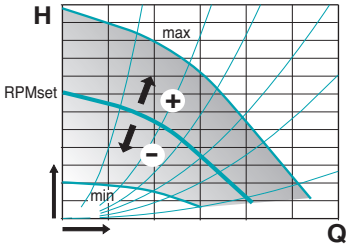
Proportional pressure curve
In the proportional pressure operating mode the pump changes the working pressure in-line with the flow demand of the system.
This operating mode is mainly used in:
- two pipe heating systems with thermostatic valves,
- systems with long pipelines;
- systems with high head losses.



Constant pressure curve
In the constant pressure operating mode, the pump, keeps the pressure constant when the demand for water changes.
This operating mode is mainly used in:
- two pipe heating systems with thermostatic valves and low head losses
- underfloor heating systems with thermostatic valves;
- one pipe heating systems with thermostatic valves.



Constant speed curve
In this operating mode the pump works as a traditional pump with a constant curve, the operating curve can be chosen by the user within a range of curves.



NCE EI

Energy saving circulating pumps

Construction

Energy saving variable speed circulating pump driven by a permanent magnet synchronous motor (pm) controlled by on board inverter.

Applications

Small domestic heating systems.
Floor heating systems.

Operating conditions

- Liquid temperature from +2 °C to +95 °C
- Ambient temperature from 0 °C to +40 °C
- Maximum permissible working pressure: 6 bar
- Storage: -20°C/+70°C max. relative humidity 95% at 40 °C
- Certifications: in conformity with CE requirements
- Sound pressure ≤ 43 dB (A).
- Minimum suction pressure: 0,3 bar at 50 °C
  1,0 bar at 95 °C
- Maximum glycol quantity: 40%
- EMC according to: EN 55014-1, EN 61000-3-2, EN 55014-2
- Connections: threaded ports ISO 228: G 1, G 1 1/2, G 2
- The benchmark for most efficient circulators is EEI ≤ 0,20.
- Minimun power: 3 W.

Motor

Synchronous motor with permanent magnet.
- Motor: variable speed
- Standard voltage: single-phase 230 V (-10%;+6%)
- Frequency: 50 Hz
- Protection: IP 44
- Insulation class: H
- Class II appliance
- Overload protection (jammed rotor):
  1) automatic protection with electronic rotor release
  2) Overload thermal protector
- Cable: phases and neutral
- Constructed in accordance with: EN 60335-1, EN 60335-2-51.

Special features on request

Brass or cast iron unions.

Designation

NCE EI 32 - 60 / 180

- Series
- Version
- DN ports in mm
- Max. head in dm
- connection size mm

Features

Compact design

The space saving **NCE EI** is a very compact circulating pump, allows inr easy installation in small domestic heating systems.

Easy to install and to adjust

Installing the **NCE EI** is considerably simplified by the quick setting and power installation plug.

Reliable

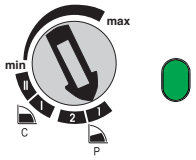
Like all our electronic circulating pumps, the **NCE EI** features the patented self-cleaning square chamber design, which eliminates any possibility of rotor blockage.
Ceramic shaft
Hydraulics components are completely painted with cataphoresis.
Program for automatic routine vent and release.

Easy use

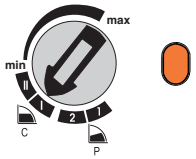
Operating range with fixed curves from 0,5 m to 7 m; possibility to choose 2 (1-2) proportional pressure curves and 2 (I-II) constant pressure curves.

Operating modes

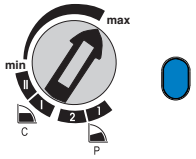
PROPORTIONAL CURVE PROGRAMMING Δp-v
(GREEN LED)
Moving the switch to 1 or 2 setting, the pump operates with the proportional curve.
This mode ensures maximum energy efficiency.



CONSTANT CURVE PROGRAMMING Δp-c
(ORANGE LED)
Moving the switch to I or II setting, the pump operates with a constant curve according to the selected flow rates.

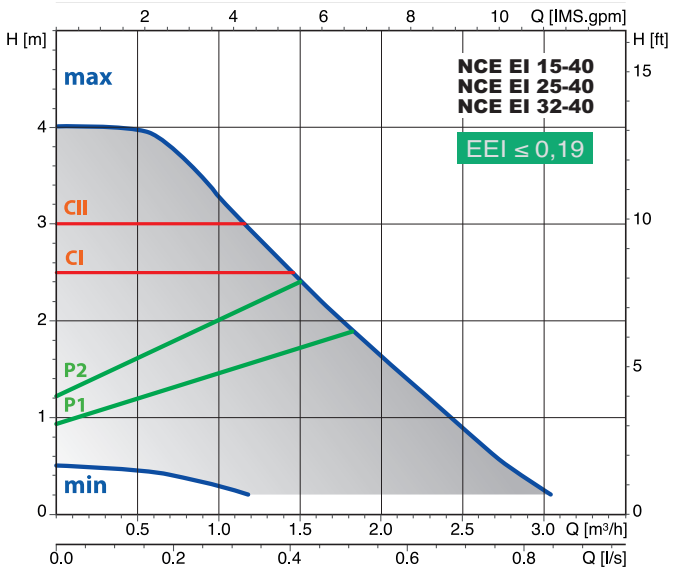


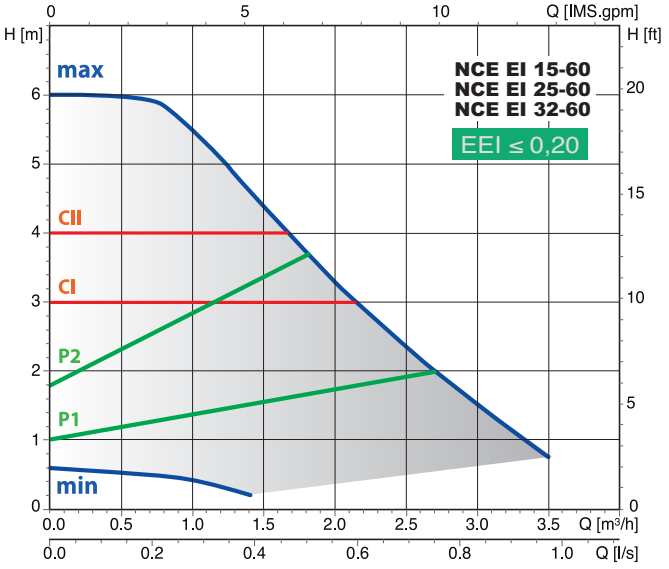
MANUAL PROGRAMMING
(BLUE LED)
Setting the switch in any position between the MIN and MAX points, the most suitable operating curve for the installation is manually selected.

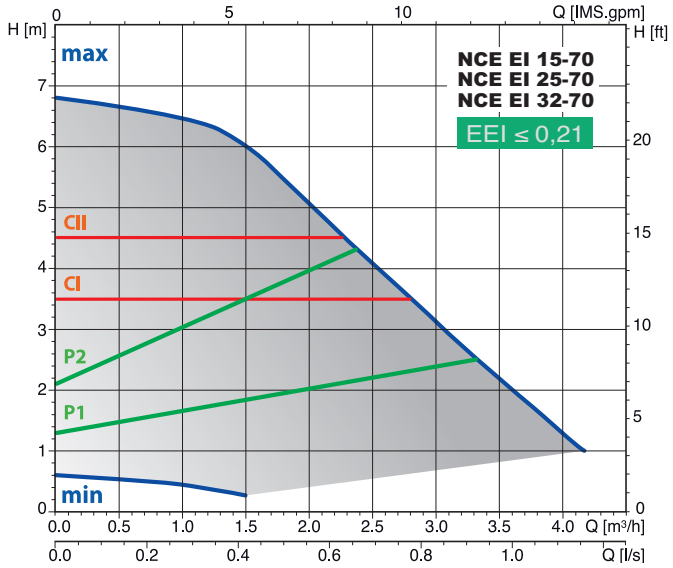


WARNING!
- The red LED indicates that the pump is not rotating but is still under tension.
- White flashing LED : plant degassing requirement, air in the system.

Characteristic curves



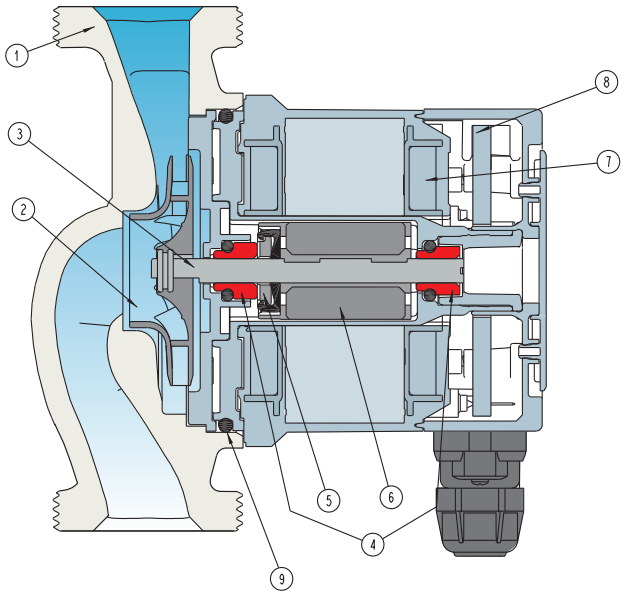




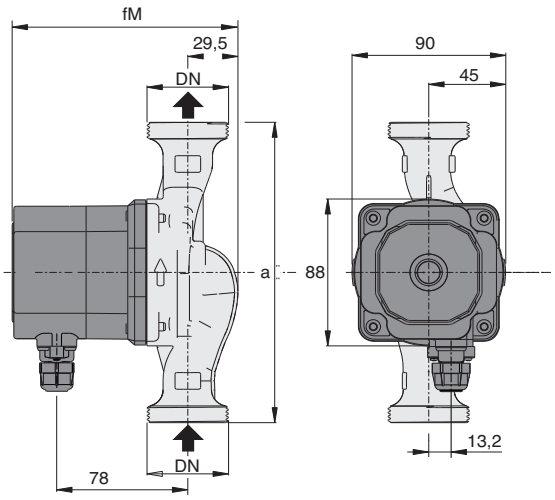
CI-CII constant curve
P1-P2 proportional curve
min-max n fixed curves

Materials

Component	Pos.	Material
Pump casing	1	Cast iron GJL 200 EN 1561
Impeller	2	Composite
Shaft	3	Ceramic
Bearings	4	Carbon
Thrust bearing	5	Ceramic
Rotor	6	Composite / Ferrite
Winding	7	Copper wire
Electronic card	8	-
Gasket	9	EPDM

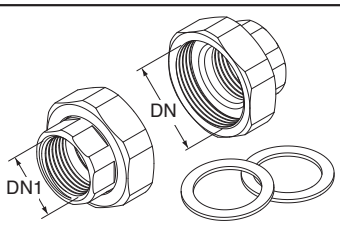


Dimensions and weights



TYPE	DN	230V A max	230V A min	P1 W max	P1 W min	mm fm	mm a	kg
NCE EI 15-40/130	G 1	0,17	0,03	22	3	134	130	1,67
NCE EI 25-40/130	G 1 1/2							1,81
NCE EI 25-40/180	G 1 1/2	0,17	0,03	22	3	134	180	1,96
NCE EI 32-40/180	G 2							2,10
NCE EI 15-60/130	G 1	0,33	0,03	42	3	134	130	1,67
NCE EI 25-60/130	G 1 1/2							1,81
NCE EI 25-60/180	G 1 1/2	0,33	0,03	42	3	134	180	1,96
NCE EI 32-60/180	G 2							2,10
NCE EI 15-70/130	G 1	0,44	0,03	56	3	144	130	1,91
NCE EI 25-70/130	G 1 1/2							2,05
NCE EI 25-70/180	G 1 1/2	0,44	0,03	56	3	144	180	2,20
NCE EI 32-70/180	G 2							2,34

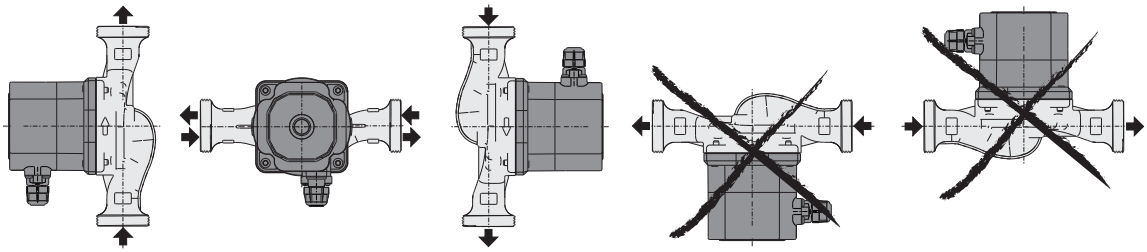
Unions (on request)



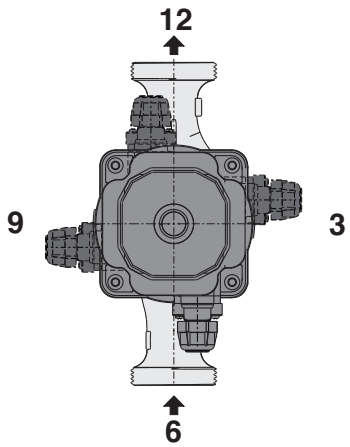
	DN	DN1
KIT G 1 - G 1/2 (NCE . 15..)	G 1	G 1/2
KIT G 1 1/2 - G 1 (NCE . 25..)	G 1 1/2	G 1
KIT G 2 - G 1 1/4 (NCE . 32..)	G 2	G 1 1/4

Examples of installations

Installation



Terminal box arrangement (on request)



NCE EA

Self-adapt energy saving circulating pumps

Construction

Energy saving variable speed circulating pump self-adapt driven by a permanent magnet synchronous motor (pm) controlled by on board inverter.

Applications

Small domestic heating systems.
Floor heating systems.

Operating conditions

- Liquid temperature from +2 °C to +110 °C
- Ambient temperature from 0 °C to +40 °C
- Maximum permissible working pressure: 10 bar
- Storage: -20°C/+70°C max. relative humidity 95% at 40 °C
- Certifications: in conformity with CE requirements
- Sound pressure ≤ 43 dB (A).
- Minimum suction pressure: 0,3 bar at 50 °C
  1,0 bar at 95 °C
  1,5 bar at 110 °C
- Maximum glycol quantity: 40%
- EMC according to: EN 55014-1, EN 61000-3-2, EN 55014-2
- Connections: threaded ports ISO 228: G 1, G 1 1/2, G 2
- The benchmark for most efficient circulators is EEI ≤ 0,20.
- Minimun power: 3 W.

Designation

NCE EA 32 - 60 / 180

- Series
- Version
- DN ports in mm
- Max. head in dm
- connection size mm

Motor

Synchronous motor with permanent magnet.
- Motor: variable speed
- Standard voltage: single-phase 230 V (-10%;+6%)
- Frequency: 50 Hz
- Protection: IP 44
- Insulation class: H
- Class II appliance
- Overload protection (jammed rotor):
  1) automatic protection with electronic rotor release
  2) Overload thermal protector
- Cable: phases and neutral
- Constructed in accordance with: EN 60335-1, EN 60335-2-51.

Special features on request

Brass or cast iron unions.

Features

Compact design

The space saving **NCE EA** is a very compact circulating pump, allows inr easy installation in small domestic heating systems.

Easy to install and to adjust

Installing the **NCE EA** is considerably simplified by the quick setting and power installation plug.

Reliable

Like all our electronic circulating pumps, the **NCE EA** features the patented self-cleaning square chamber design, which eliminates any possibility of rotor blockage.
Ceramic shaft
Hydraulics components are completely painted with cataphoresis.
Program for automatic routine vent and release.

Easy use

Operating range with fixed curves from 0,5 m to 7 m; possibility to choose 3 (1-2-3) proportional pressure curves and 3 (I-II-III) constant pressure curves.

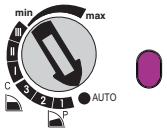
NCE EA

Self-adapt energy saving circulating pumps

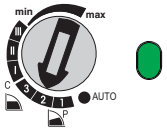
calpeda®

Operating modes

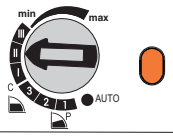
AUTO CURVE PROGRAMMING Automatic mode
(VIOLET LED)
Moving the switch to the AUTO setting, the pump finds the best working point and it controls it at any time.



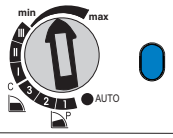
PROPORTIONAL CURVE PROGRAMMING Δp-v
(GREEN LED)
Moving the switch to the 1,2 or 3 setting, the pump operates with the proportional curve.
This mode ensures maximum energy efficiency.



CONSTANT CURVE PROGRAMMING Δp-c
(ORANGE LED)
Moving the switch to the I,II or III setting, the pump operates with a constant curve according to the selected flow rates.

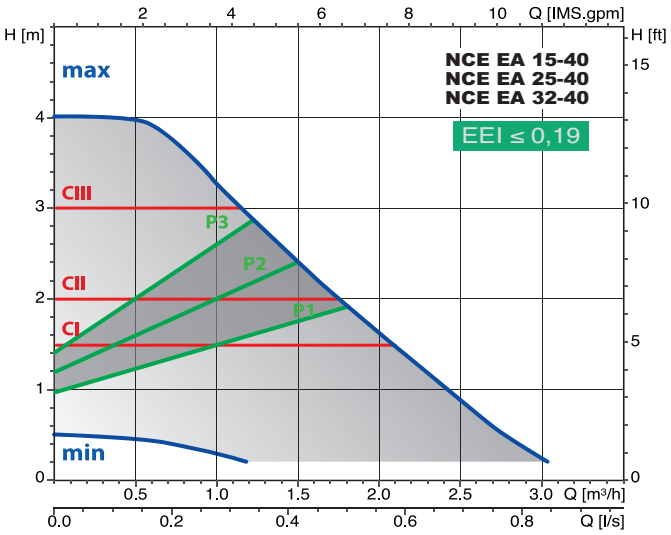


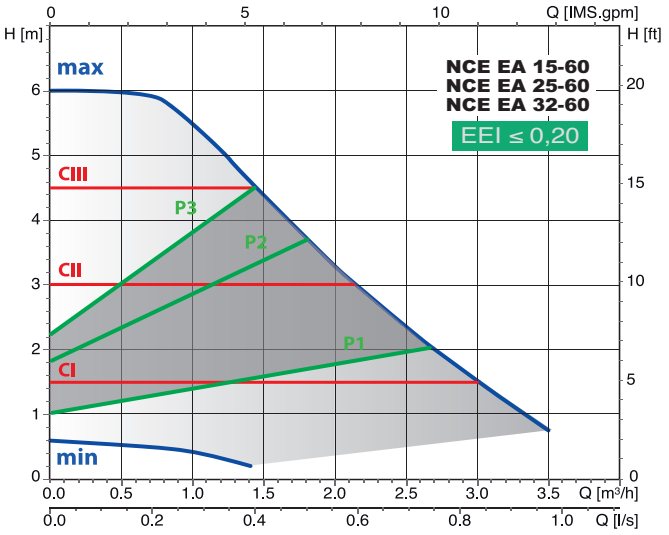
MANUAL PROGRAMMING
(BLUE LED)
Setting the switch in any position between the MIN and MAX points, the most suitable operating curve for the installation is manually selected.

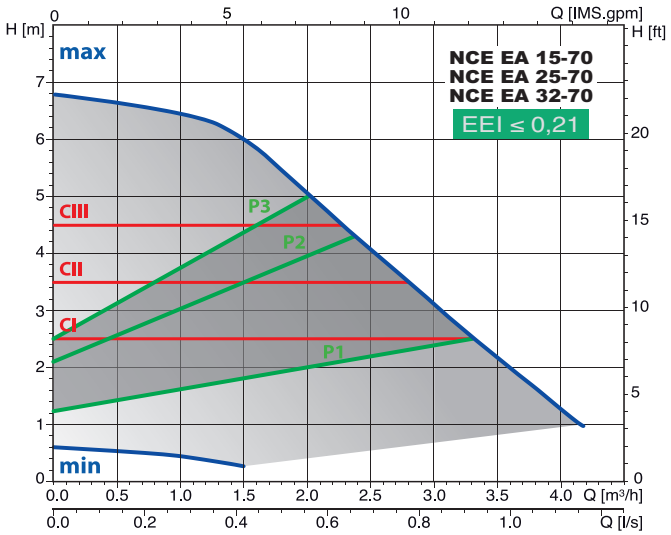


WARNING!
- The red LED indicates that the pump is not rotating but is still under tension.
- White flashing LED : plant degassing requirement, air in the system.

Characteristic curves







CI-CII-CIII constant curve
P1-P2-P3 proportional curve
min-max n fixed curves

NCE EA

Self-adapt energy saving circulating pumps

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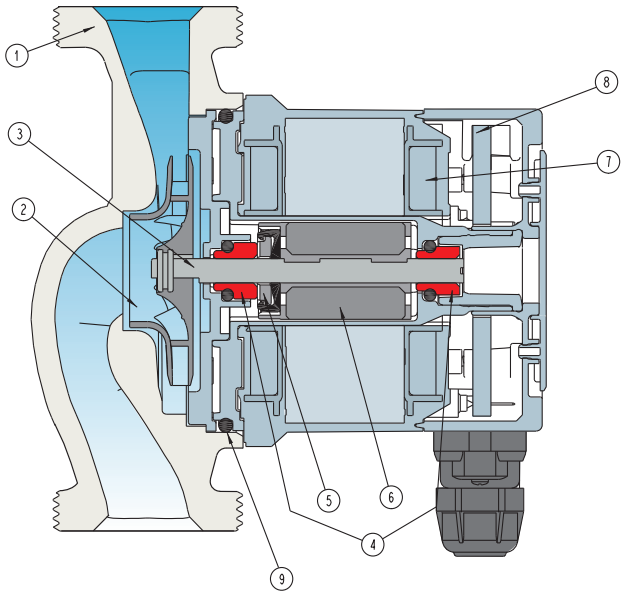
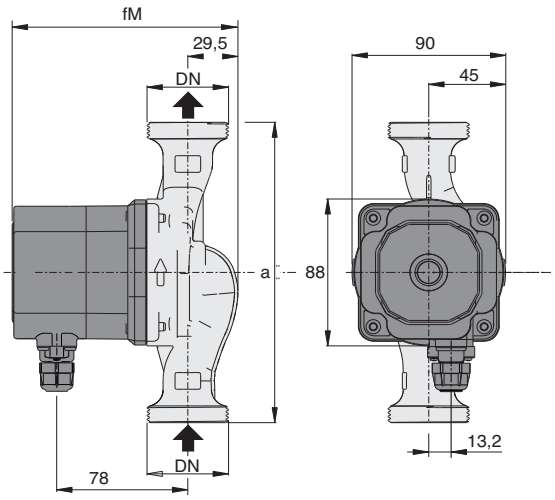
Materials

Component	Pos.	Material
Pump casing	1	Cast iron GJL 200 EN 1561
Impeller	2	Composite
Shaft	3	Ceramic
Bearings	4	Carbon
Thrust bearing	5	Ceramic
Rotor	6	Composite / Ferrite
Winding	7	Copper wire
Electronic card	8	-
Gasket	9	EPDM

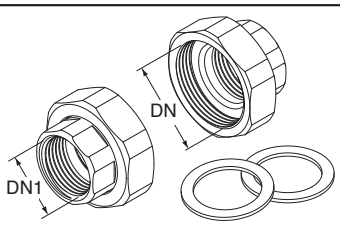


Dimensions and weights



TYPE	DN	230V A max	230V A min	P1 W max	P1 W min	mm fm	mm a	kg
NCE EA 15-40/130	G 1	0,17	0,03	22	3	134	130	1,67
NCE EA 25-40/130	G 1 1/2							1,81
NCE EA 25-40/180	G 1 1/2	0,17	0,03	22	3	134	180	1,96
NCE EA 32-40/180	G 2							2,10
NCE EA 15-60/130	G 1	0,33	0,03	42	3	134	130	1,67
NCE EA 25-60/130	G 1 1/2							1,81
NCE EA 25-60/180	G 1 1/2	0,33	0,03	42	3	134	180	1,96
NCE EA 32-60/180	G 2							2,10
NCE EA 15-70/130	G 1	0,44	0,03	56	3	144	130	1,91
NCE EA 25-70/130	G 1 1/2							2,05
NCE EA 25-70/180	G 1 1/2	0,44	0,03	56	3	144	180	2,20
NCE EA 32-70/180	G 2							2,34

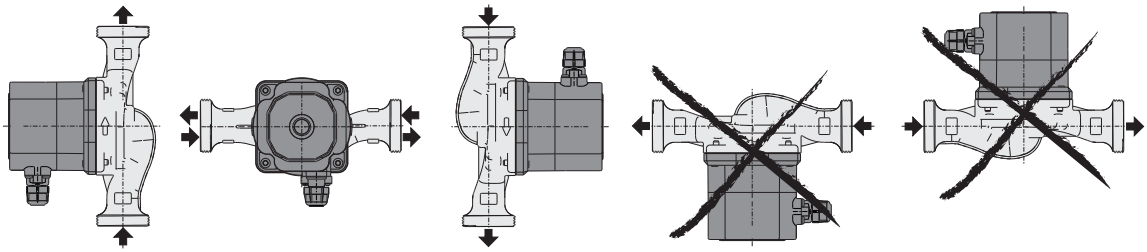
Unions (on request)



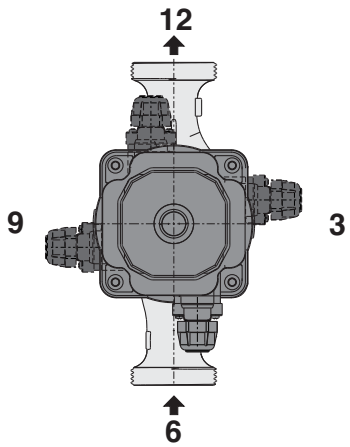
	DN	DN1
KIT G 1 - G 1/2 (NCE . 15..)	G 1	G 1/2
KIT G 1 1/2 - G 1 (NCE . 25..)	G 1 1/2	G 1
KIT G 2 - G 1 1/4 (NCE . 32..)	G 2	G 1 1/4

Examples of installations

Installation



Terminal box arrangement (on request)



NCE EL

Energy saving circulating pumps for solar systems

Construction

Energy saving variable speed circulating pump driven by a permanent magnet synchronous motor (pm) controlled by on board inverter.

Applications

Solar thermal systems.

Operating conditions

- Liquid temperature from +2 °C to +110 °C
- Ambient temperature from 0 °C to +40 °C
- Maximum permissible working pressure: 10 bar
- Storage: -20°C/+70°C max. relative humidity 95% at 40 °C
- Certifications: in conformity with CE requirements
- Sound pressure ≤ 43 dB (A).
- Minimum suction pressure: 0,3 bar at 50 °C
  1,0 bar at 95 °C
  1,5 bar at 110 °C
- Maximum glycol quantity: 40%
- EMC according to: EN 55014-1, EN 61000-3-2, EN 55014-2
- Connections: threaded ports ISO 228: G 1, G 1 1/2.
- The benchmark for most efficient circulators is EEI ≤ 0,20.
- Minimun power: 3 W.

Designation

NCE EL 32 - 60 / 180

- Series
- Version
- DN ports in mm
- Max. head in dm
- connection size mm

Motor

Synchronous motor with permanent magnet.

- Motor: variable speed
- Standard voltage: single-phase 230 V (-10%;+6%)
- Frequency: 50 Hz
- Protection: IP 44
- Insulation class: H
- Class II appliance
- Overload protection (jammed rotor):
  1) automatic protection with electronic rotor release
  2) Overload thermal protector
- Cable: phases and neutral
- Constructed in accordance with: EN 60335-1, EN 60335-2-51.

Special features on request

Brass or cast iron unions.

Features

Compact design

The space saving **NCE EL** is a very compact circulating pump, allows inr easy installation in small domestic heating systems.

Easy to install and to adjust

Installing the **NCE EL** is considerably simplified by the quick setting and power installation plug.

Reliable

Like all our electronic circulating pumps, the **NCE EL** features the patented self-cleaning square chamber design, which eliminates any possibility of rotor blockage.
Ceramic shaft.
Hydraulics components are completely painted with cataphoresis.
Program for automatic routine vent and release.

Easy use

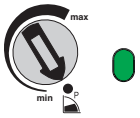
Operating range with fixed curves from 0,6 m to 7 m; possibility to choose proportional pressure curve or selection of the optimum working point.

NCE EL

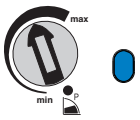
Energy saving circulating pumps for solar systems

Operating modes

PROPORTIONAL CURVE PROGRAMMING Δp-v
(GREEN LED)
Moving the switch to the 'P' setting will allow the pump to operate against a proportional performance curve. This feature ensures maximum energy efficiency.

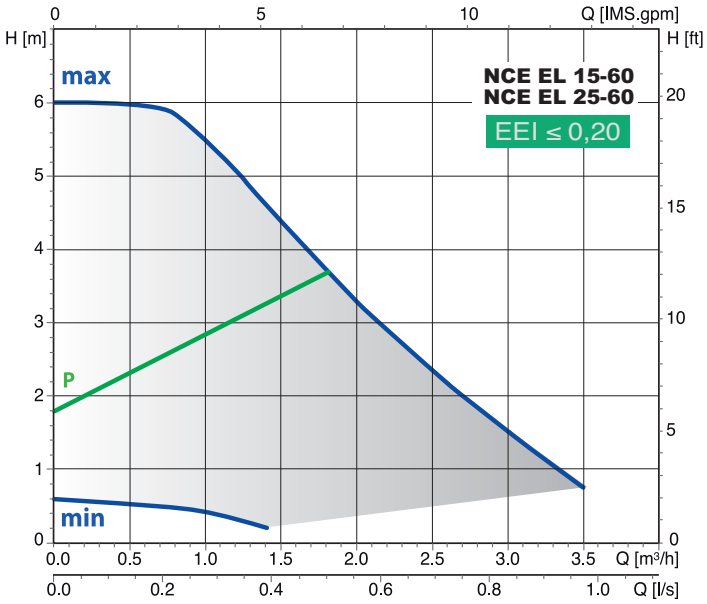


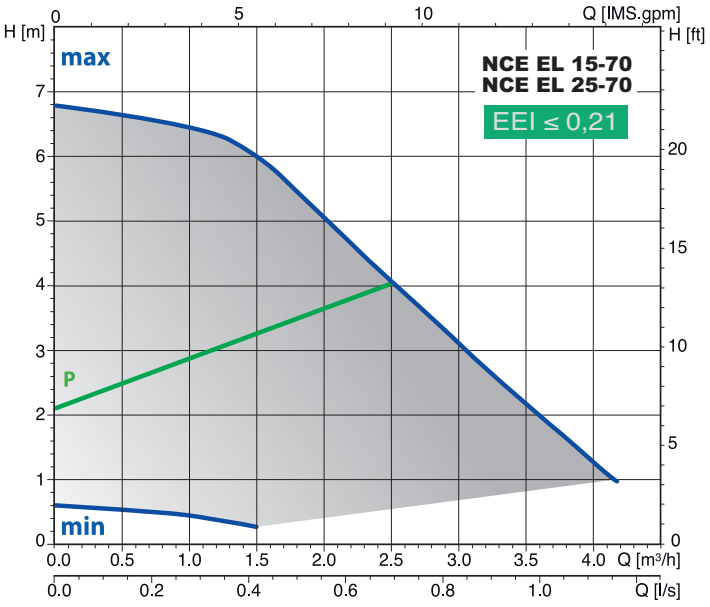
MANUAL PROGRAMMING
(BLUE LED)
Setting the switch in any position between the MIN and MAX points, the most suitable operating curve for the installation is manually selected.



WARNING!
- The red LED indicates that the pump is not rotating but is still under tension.
- White flashing LED : plant degassing requirement, air in the system.

Characteristic curves

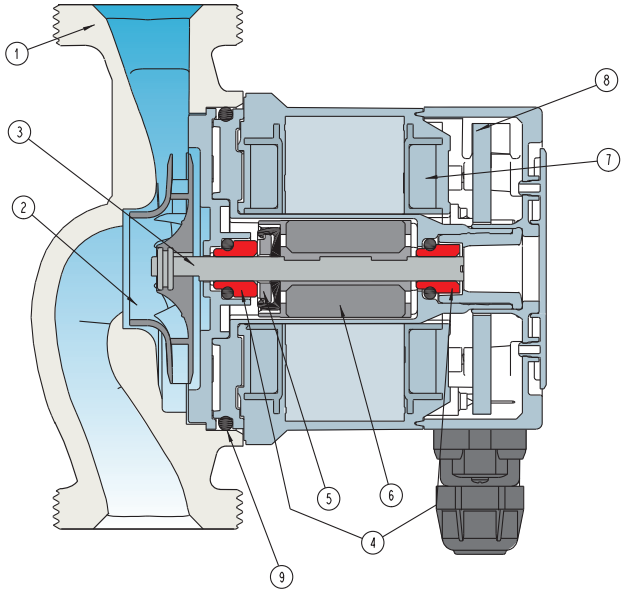




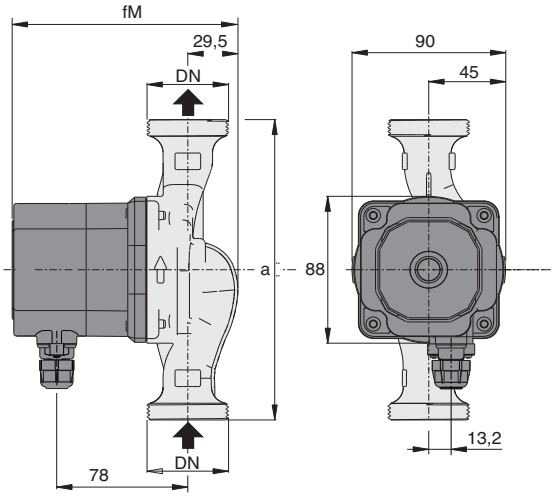
P proportional curve
min-max n fixed curves

Materials

Component	Pos.	Material
Pump casing	1	Cast iron GJL 200 EN 1561
Impeller	2	Composite
Shaft	3	Ceramic
Bearings	4	Carbon
Thrust bearing	5	Ceramic
Rotor	6	Composite / Ferrite
Winding	7	Copper wire
Electronic card	8	-
Gasket	9	EPDM

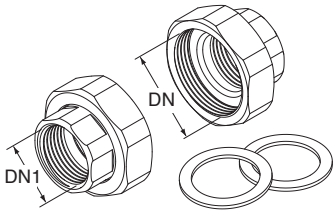


Dimensions and weights



TYPE	DN	230V A max	230V A min	P1 W max	P1 W min	mm fm	mm a	kg
NCE EL 15-60/130	G 1	0,33	0,03	42	3	134	130	1,67
NCE EL 25-60/130	G 1 1/2							1,81
NCE EL 25-60/180	G 1 1/2	0,33	0,03	42	3	134	180	1,96
NCE EL 15-70/130	G 1	0,44	0,03	56	3	144	130	1,91
NCE EL 25-70/130	G 1 1/2							2,05
NCE EL 25-70/180	G 1 1/2	0,44	0,03	56	3	144	180	2,20

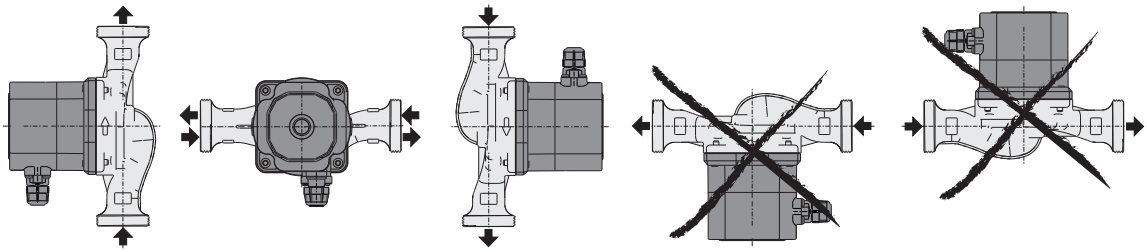
Unions (on request)



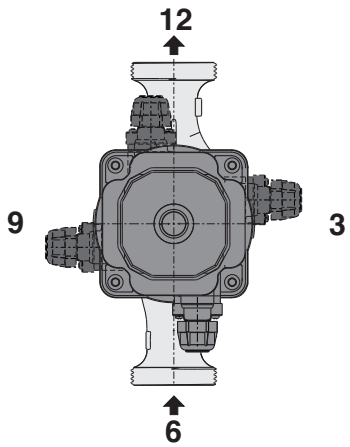
	DN	DN1
KIT G 1 - G 1/2 (NCE . 15..)	G 1	G 1/2
KIT G 1 1/2 - G 1 (NCE . 25..)	G 1 1/2	G 1
KIT G 2 - G 1 1/4 (NCE . 32..)	G 2	G 1 1/4

Examples of installations

Installation



Terminal box arrangement (on request)



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