made in ITALY

Taco® Comfort Solutions™

A Taco Family Company

HIGH EFFICIENCY CIRCULATORS

Cerbos

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CATALOGUE EN

easyuse greatperformance

SAVINGS
Up to 80% less than traditional pumps

TECHNOLOGY
Best available technology - PM Motor

ENVIRONMENT
Environment protection

INVERTER TECH
Best performance with high flexibility

Taco Italia, naturally innovators

Taco Italia's aim is to create durable, easy to install and simple to use products. For this reason, the customer plays a central role in the projects we choose.
The direct relationship between the sales network and strategic business management allows us to clearly understand the needs of both the market and users. Our technicians and engineers constantly strive to create high performance increasingly efficient products.
Has an internationally recognized in-house Research and Innovation centre that is specialized in synchronous motor technology. We develop innovative products today that already meet the needs of tomorrow.

High efficiency circulators

Our products are used for three different applications:

HEATING SYSTEMS to reduce energy consumption by up to 85%

SOLAR THERMAL SYSTEMS to take advantage of every single kWh of energy captured by panels

DOMESTIC HOT WATER to ensure maximum comfort in recirculation of sanitary hot water

Our components are installed on a wide range of boilers manufactured by the largest groups in the industry: Buderus, Junkers, Nefit and E.L.M. Leblanc by Bosch TT, Remeha by BDR Thermea, Ariston Thermo Group, Immergas and Savio Boilers are just a few companies that rely on our technology.

Taco Italia stays close to its customers

No matter where the heating or cooling system is, whatever the type, Taco Flow Solutions circulators are the perfect solution. In recent years we have significantly expanded our presence in the market with a distribution network throughout Europe.

Take a look to our products. Visit us at: **www.TacoItalia.com**

Taco Italia company with certified quality system ISO 9001:2008
Design, production and assistance of synchronous circulator pumps for heating systems and circulation in domestic hot water service systems

CONTENTS

THE ErP DIRECTIVE

European Union Objectives (EU28)

The European Union has set very stringent targets regarding environmental protection to be achieved by 2020. These targets are commonly known as the "20/20/20 Package" according to which the use of renewable energies should be increased by 20% over 1990, primary energy consumption should be reduced by 20%, and CO_2 emissions should be reduced by 20%.

20% decrease in the consumption of primary energy

20% increase in renewable energy sources

20% decrease in CO_2 emissions

To achieve this goal the EU has issued a series of laws and directives. One of which is the **ErP Directive 2009/125/EC (ErP – Energy-related Products)**.

What is the purpose of the ErP Directive?

The purpose of the ErP Directive 2009/125/EC is to require, by law, that manufacturers and importers produce and distribute only high energy-efficient products. Minimum efficiency levels have been set that must be complied with for each product category included in the directive.

How does the ErP Directive apply to circulators?

The conditions indicated in the ErP Directive 2009/125/EC for wet rotor circulators have been transposed by Commission Regulation (EC) no. 641/2009 and no. 622/2012. These regulations define the **Energy Efficiency Index (EEI)** as a parameter that identifies energy consumption.

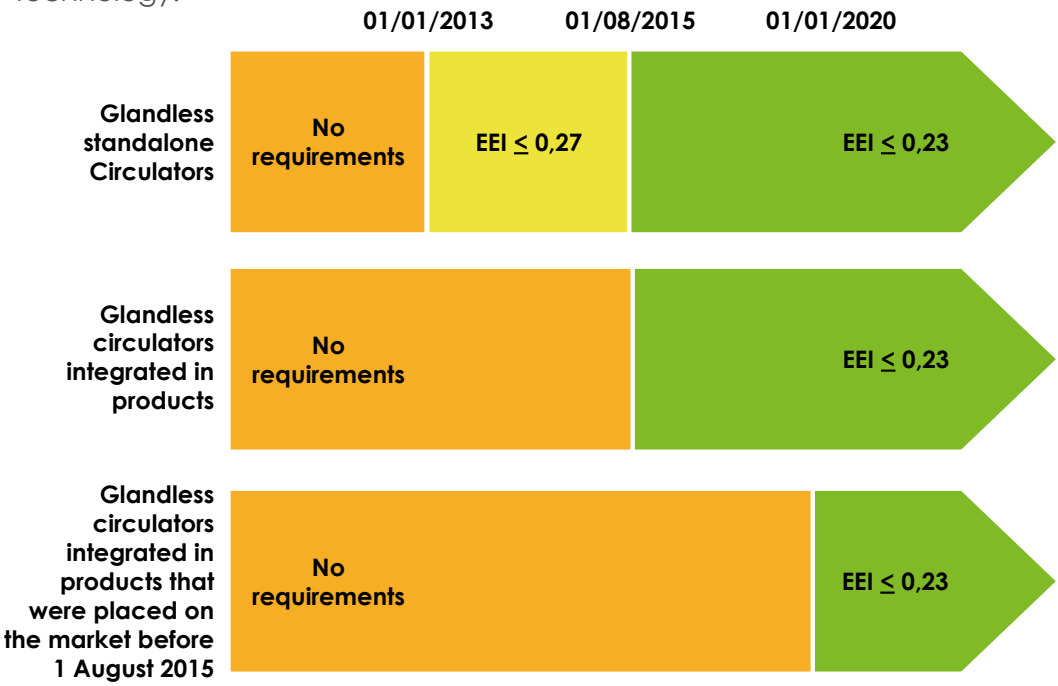
The lower the EEI, the lower the consumption and higher the efficiency.

When does the ErP Directive become effective?

The required efficiency for wet rotor circulators has been established in two stages. In the first stage, which came into effect on 1 January 2013, circulators on the market (with a few exceptions) must have an energy efficiency index (EEI) of no more than 0.27.

From 1 August 2015, circulators (including those integrated in boilers, primary circuits of thermal solar systems and heat pumps) must have an EEI of no more than 0.23. Only the most efficient models meet these requirements: Taco Flow Solutions circulators are among them.

Taco Flow Solutions high efficiency circulators already exceed the standards set by the European Commission. With an EEI below the market benchmark, our cutting-edge products lead the way in terms of technology.



Everything you need to know about ErP Ready circulators

Which circulators are affected?

From 1 August 2015 all wet rotor circulators with a power of less than 2,500 W will be affected.

Are there any exceptions?

Yes, for example circulators designed for drinking water systems and replacements for circulators integrated in boilers installed before 2015.

Do existing installations and buildings need to be adapted?

No. The ErP Directive does not require that existing installations and buildings be adapted but manufacturers have made more efficient circulators that can optimise existing installations.

How can you tell if circulators are in compliance with the ErP Directive?

The EEI is stated on the identification plate of circulators that comply with the prescribed energy efficiency index. When you see the logo ErP ready on the boxes of our products you can rest assured that you are getting the maximum efficiency and the greatest performance.

TACO FLOW SOLUTIONS PERMANENT MAGNET MOTORS

HiEff HIGH EFFICIENCY

The entire range of Taco Flow Solutions circulators are powered by high performance synchronous permanent magnet motors. These innovative motors make it possible to achieve high efficiency, with considerably lower running costs compared to conventional asynchronous motors (used in three-speed circulators).

Why permanent magnet circulators are more efficient

Low loss

Permanent magnet synchronous motors have no slip. This means that the energy dissipation is lower than induction motors.

More compact motors

The power density of synchronous permanent magnet motors is much higher than induction motors. This translates into the same amount of power in reduced dimensions.

Optimized electronics

Speed control and adjustment is handled by the electronic system. The motor and electronics are designed together to ensure optimum performance.

THE HIGH EFFICIENCY OF TACO FLOW SOLUTIONS CIRCULATORS

Wet rotor circulator

Circulators are a "wet rotor" type because all rotating parts are immersed in the fluid being pumped. The pumped fluid cools and lubricates the motor and rotating parts. These types of circulators stand out for the fact that they do not have a packing seal or mechanical seal.
This construction offers the following advantages:

- Maintenance free
- Whisper quiet
- No seals to replace
- Safe operation at all times

Motor protection

No protection against overload is required. The motor is protected against short-circuit operation, overheat and dry running. The circulator does not require any external protection of the motor.

INVERTER TECH Technology

INVERTER TECH technology allows the circulator to change rotating speed. The microcontroller built in the electronic control system contains a fully automatic speed control system able to adapt to the changing needs of the system. The circulator delivers the performance you need with minimum energy consumption.

Quality and safety labels

CE marking (all Taco Flow Solutions circulators)

VDE-GS marking (for models ES2, ES2 ADAPT, ES2 SOLAR, ES2 PURE)

Venting detection

Circulators are equipped with a special software system that detects when there is excess air in the system and enables a procedure to make it easier to vent the system.

Automatic Rotor Unlocking Program

Circulators have no screws to release the rotor shaft. Each circulator has a release routine that starts automatically if necessary.

MODELS OVERVIEW AND FIELDS OF APPLICATIONS

MODEL	HEATING	HEATING AND COOLING	SOLAR THERMAL	DOMESTIC HOT WATER
				
ES2 	✓	–	–	–
ES2 C 	✓	–	–	–
ES2 C A 	✓	–	–	–
ES2 ADAPT 	✓	–	✓	–
ES MAXI 	✓	✓	✓	–
ES2 SOLAR 	✓	–	✓	–
ES2 PURE 	–	–	–	✓

KEY: ✓Applicable; – Not applicable

THE ENERGY SAVING CIRCULATORS RANGE

Design

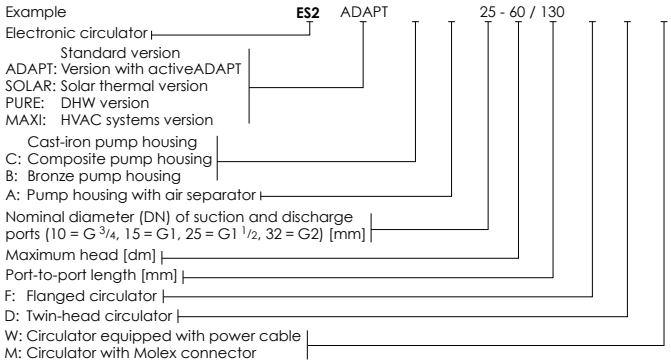
ENERGY SAVING circulators are a "wet rotor" type because all rotating parts are immersed in the fluid being pumped. The pumped fluid cools and lubricates the motor and rotating parts. These types of circulators stand out for the fact that they do not have a packing seal or mechanical seal. This construction offers the following advantages:

- **Energy saving**
- **Compact design**
- **Ideal performance**
- **Easy installation and adjustment**

Distinctive elements

- Very high degrees of efficiency due to Taco Flow Solutions permanent magnets motor
- It consumes up to 85% less electricity compared with traditional circulators with equivalent performance
- Compact design
- Easy installation
- Quick and secure-fixing electrical connection
- Intuitive interface
- The adjustment is simple and intuitive
- High starting torque
- Electronic controls allow to set advanced features and load adjustment capacity Δp-c (constant differential pressure) and Δp-v (proportional differential pressure)
- Fixed speed mode: allows to set the exact working point across the range
- Integrated motor protection
- Automatic Rotor Unlocking Program
- Reliability and comfort during installation and operation

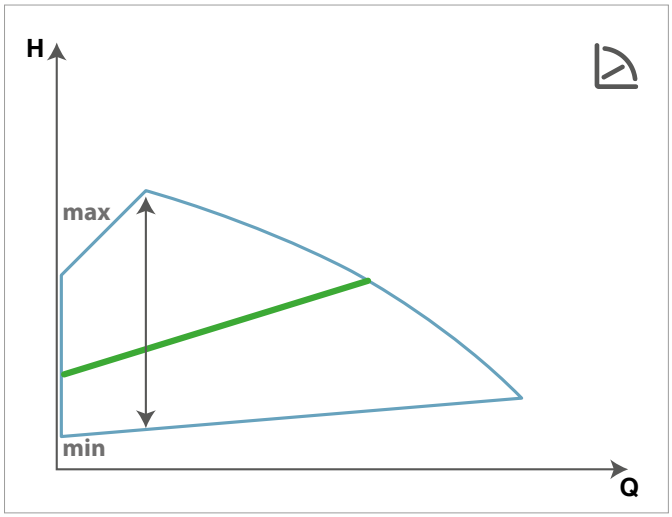
Type key



STANDARD OPERATING MODES

ENERGY SAVING circulators are the perfect solution for any type of heating system in home, business, residential and industrial environments. The electronic control system allows for setting advanced features.

P mode (Δp-v)
Proportional differential pressure



The innovative electronics of the circulator, developed in Taco Italia laboratories, proportionally reduces the pressure level (head) according to the reduction of the heat requested by the system (reduced flow). A proportional curve can be selected within the allowed flow rate range.

Vice versa, the prevalence of the circulator will increase in proportion to the capacity of the system in order to compensate for high pressure losses in the distribution pipes.
This mode is especially suited to systems of the following types:

- Heating and air-conditioning systems with **high pressure loss** (e.g., very long distribution pipes, valves with a large range of operation, differential pressure regulators, and high pressure loss in parts of the system through the total water flow passes, or low temperature differential)
- Two-pipe heating systems with thermostatic valves
- In-floor heating systems and systems with thermostatic valves and high pressure loss
- Primary circuits with high pressure loss

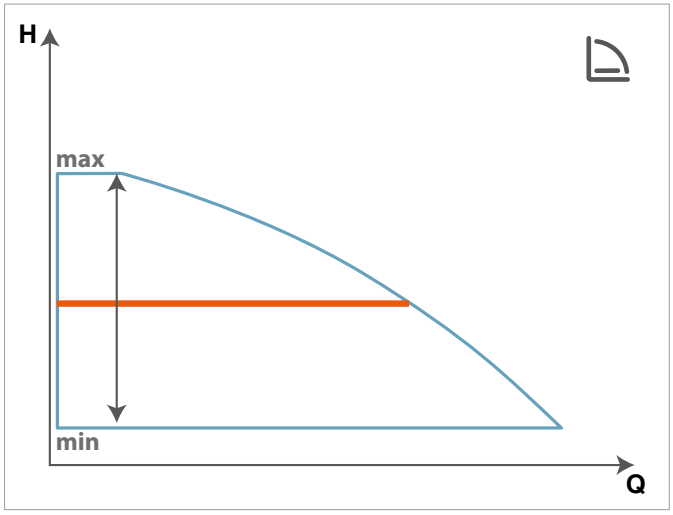
Selection of the right proportional pressure setting depends on the characteristics of the heating system in question and actual heat demand.

Thanks to this feature, the power consumption is even smaller.

ENERGY SAVING works well and silently. With the

reduction in the head, it eliminates the possibility of annoying noise due to water flow into the pipes, valves and radiators. Optimal heat and noise conditions.

C mode (Δp-c)
Constant differential pressure

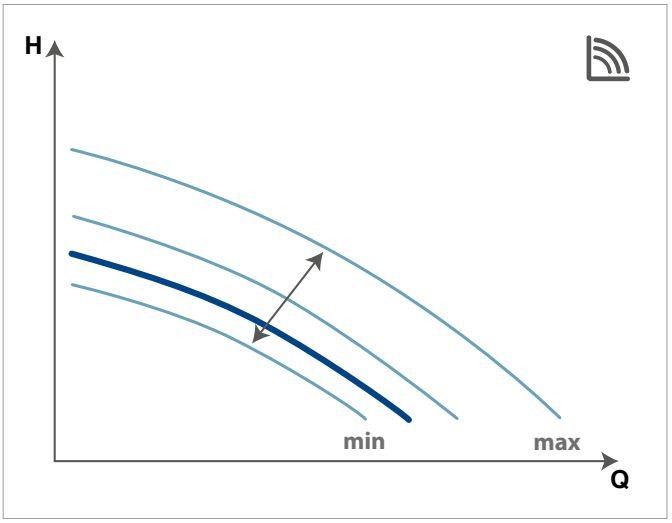


The circulator maintains a constant pressure level (head) upon the decreasing demand for heat from the system (reduced flow rate).
This mode is especially suited to systems of the following types:

- Heating and air-conditioning systems with **low pressure loss** (e.g., low pressure loss in those parts of the system through which total water flow passes, and central heating with a high temperature differential between the supply pipe and return pipe)
- Two-pipe systems with thermostatic valves
- Single-pipe systems with thermostatic valves and balancing valves
- Radiant panel systems with thermostatic valves
- Natural circulation systems
- Primary circuits with low pressure loss

Selection of the right constant pressure setting depends on the characteristics of the heating system in question and actual heat demand.

min-max mode – Fixed speed



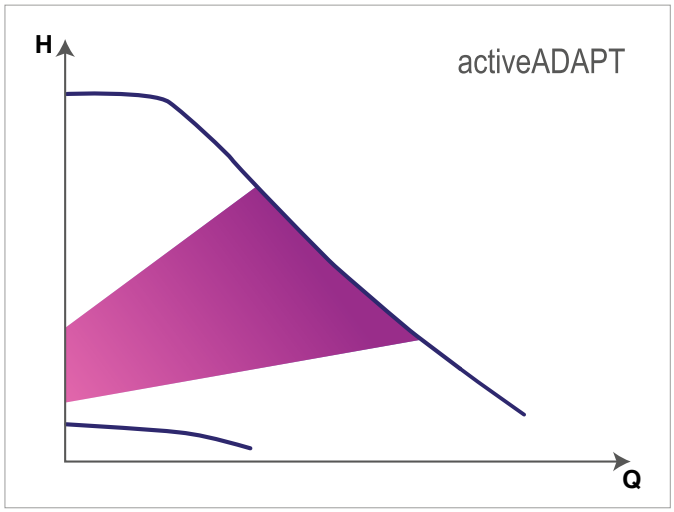
ENERGY SAVING features fixed speed adjustable operating curves by positioning the regulator at any point between the Min and Max positions; as a result it is possible to meet any installation requirements (from the single pipe, to the most modern and sophisticated systems) and ensure optimum performance.

Being able to gradually adjust the speed, it is possible to select the exact working point across the range.

This mode is especially suited to **constant-load** heating and air-conditioning systems. The max curve operating mode may be used if the maximum capacity is required. The min curve operating model may be used if the minimum capacity is required. Selection of the proper fixed-speed setting depends on the characteristics of the heating system in question.
ENERGY SAVING replaces entire ranges of traditional circulators: the warehouse management becomes much easier.

ADVANCED OPERATING MODES

activeADAPT mode

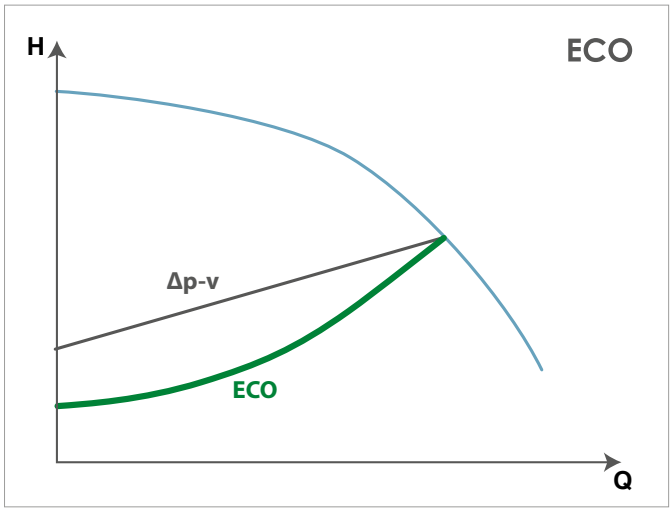


The **activeADAPT** mode enables the circulator to actively adapt its performance to the demands of the system during short control intervals inside a defined control area. If the system requirements suddenly change, the circulator will automatically find the perfect curve.
This mode is recommended for most heating systems, especially systems with high pressure loss. See Mode P - Proportional pressure difference.
We also recommend this mode in cases of the replacement of old circulators, where the point of operation is unknown. The point of operation must be within the **activeADAPT** area of operation.

- Improves the hydraulic balance of the system
- Ensures optimum performance during partial load periods
- Enables quick installation

Developed and patented by Taco Italia, **activeADAPT** mode makes installation quick and easy.

ECO mode



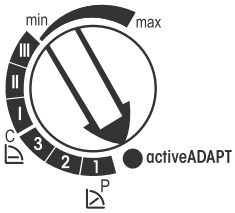
In **ECO mode** the circulator consumes even less energy, resulting in greater overall energy savings.
In **ECO mode** the circulator creates a quadratic type of adjustment curve.
Compared to P mode (Δp-v), in **ECO mode** it is possible **to reduce power absorption by an additional 20% without affecting comfort and reliability**.
This mode is particularly suited to systems with relatively high pressure loss in the distribution pipes.
See Mode P - Proportional pressure difference.

REGULATION AND CONTROL

ES2 model

Turn the regulator to select the desired operating curve.

- Nr. 2 proportional-pressure curves (P1,P2)
- Nr. 2 constant-pressure curves (CI,CII)
- min-max mode – Fixed speed



ES2 ADAPT model

Turn the regulator to select the desired operating curve.

- ActiveADAPT
- Nr. 3 proportional-pressure curves (P1,P2,P3)
- Nr. 3 constant-pressure curves (CI,CII, CIII)
- min-max mode – Fixed speed

ES2 SOLAR Model

Turn the regulator to select the desired operating curve.

- Nr. 1 proportional-pressure curve (P)
- min-max mode – Fixed speed

ES2 PURE

Turn the regulator to select the desired operating curve.

- min-max mode – Fixed speed

ES MAXI model

Use the Press&Turn dial to select the desired operating curve

- Nr. 10 ECO-Mode curves
- Nr. 10 proportional-pressure curves
- Nr. 10 constant-pressure curves
- Nr. 10 fixed-speed curves

LED, SIMBOLS AND DISPLAY

Model ES2, ES2 ADAPT, ES2 SOLAR, ES2 PURE

A LED provides information about the operation status of the circulator

LED	COLOR	Description	ES2	ES2 ADAPT	ES2 SOLAR	ES2 PURE
activeADAPT	Violet	activeADAPT mode	–	✓	–	–
P	Green	P mode (Δp-v) – Proportional differential pressure	✓	✓	✓	–
C	Orange	C mode (Δp-c) - Constant differential pressure	✓	✓	–	–
min - max	Blue	min-max mode – Fixed speed	✓	✓	✓	✓
air	Flashing white	Automatic detection of the presence of air. Proceed with the vent routine	✓	✓	✓	✓
	Red	Any fault or malfunction such as to prevent the proper functioning: • Rotor blocked • Insufficient supply voltage • Electrical fault	✓	✓	✓	✓

KEY: ✓Applicable; – Not applicable

ES MAXI model

The display alternates between the flow rate [m^3/h] and the electric power consumption [W] at 5 second intervals. Simple control using the Press&Turn dial. The relevant operating mode symbol lights up when in use.
10 LED segments are positioned around the circumference of the control dial. Once the desired operating mode has been selected, these LED segments light up in sequence based on the nominal value selected (from a minimum of 10% to a maximum of 100%).

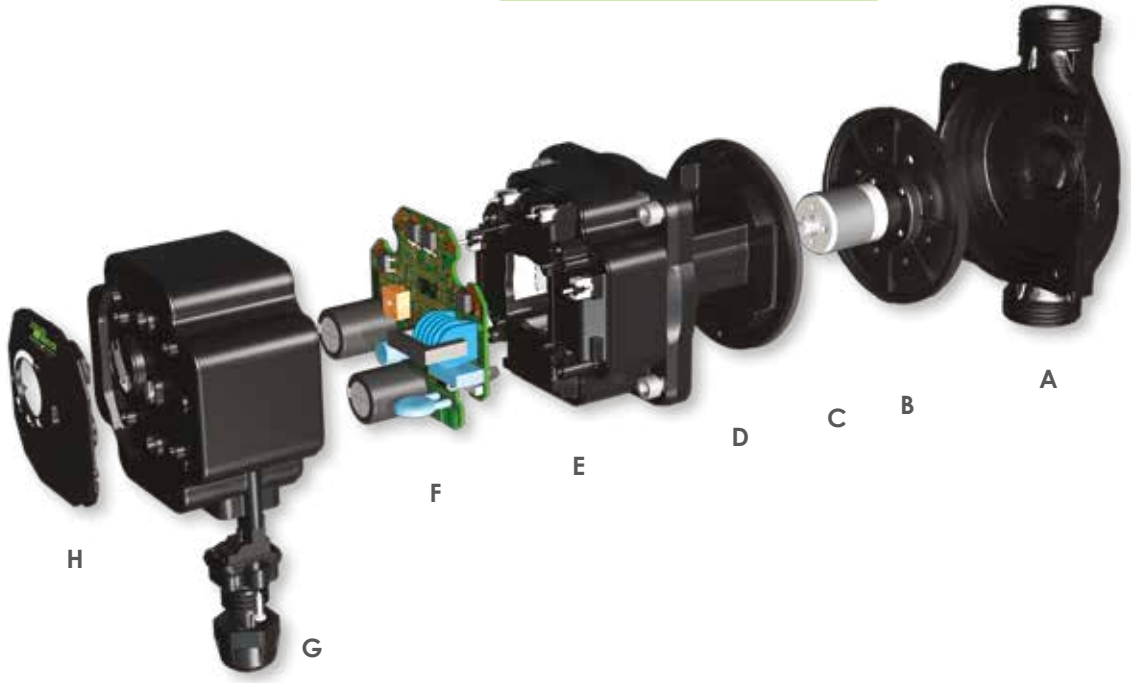
SIMBOL	Description
	P mode (Δp-v) – Proportional differential pressure
	C mode (Δp-c) - Constant differential pressure
	min-max mode – Fixed speed
ECO	ECO mode – Energy-saving Both these symbols are light when this operating mode is active.
0-10V	Operating mode 0-10V
Modbus	Operating mode Modbus
DUAL	Operating mode Dual pump
E--	The display indicates an error message (from E01 to E06)

COMPONENTS

ES2
ES2 ADAPT
ES2 SOLAR
ES2 PURE

	Description
A	Pump housing
B	Impeller and bearing plate
C	Rotor
D	Rotor can

	Description
E	Stator
F	Electronics
G	Motor housing
H	Front cover



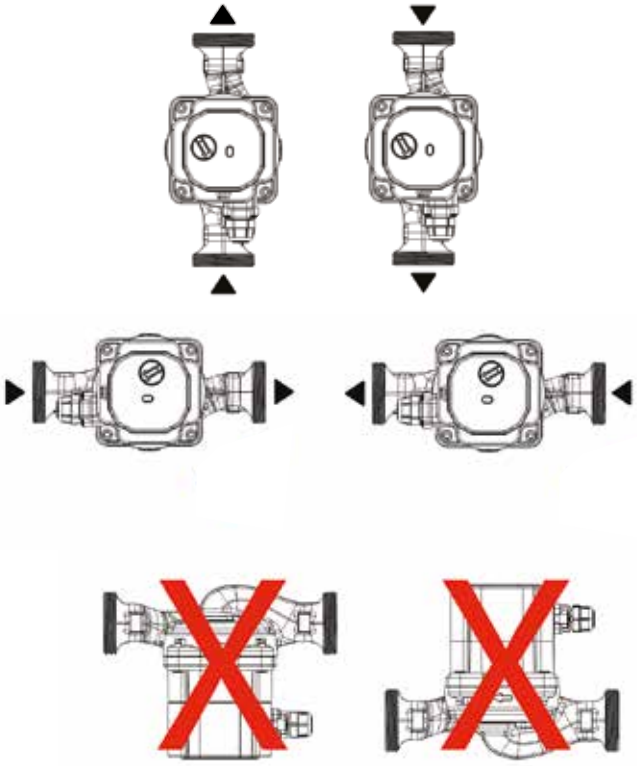
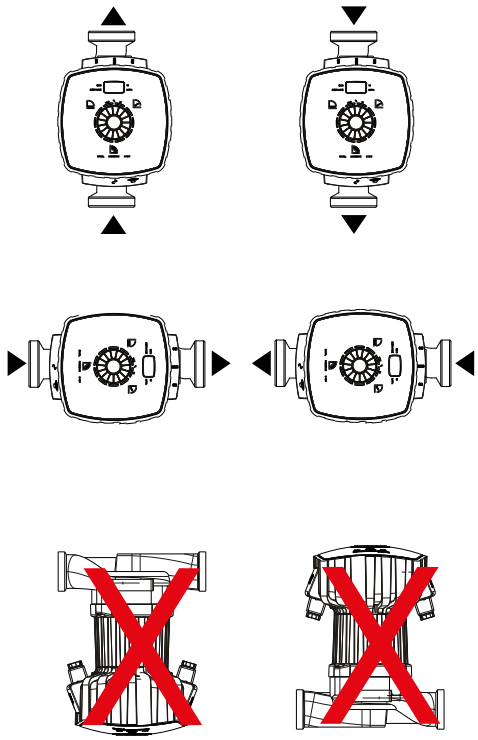
ES MAXI

	Description
A	Heat insulation
B	Pump housing
C	Impeller
D	Bearing plate
E	Rotor
F	Rotor can
G	Stator

	Description
H	Motor housing
I	Motor cover
J	Connection ring
K	Housing for connections
L	Electronics
M	Front cover

INSTALLATION

Ensure that the pressure at the inlet of the circulator is at least equal to the minimum value required. You should not start the circulator before you fill and bleed the hydraulic system. **ENERGY SAVING** circulators have to be always installed with the motor shaft horizontal.

ES2 - ES2 ADAPT - ES2 SOLAR - ES2 PURE	ES MAXI
	

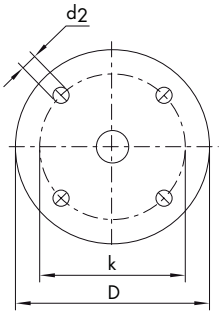
APPROVED FLUIDS

	ES2	ES2 C	ES C A ES2 C A	ES2 ADAPT	ES MAXI	ES2 SOLAR	ES2 PURE
Clean liquids, not aggressive and not explosive, not containing solid particles, fibers or mineral oils.	✓	✓	✓	✓	✓	✓	✓
Heating water in accordance with VDI 2035	✓	✓	✓	✓	✓	✓	–
Mixtures of water and glycol with glycol percentages not greater than 30% (for higher percentages verify the hydraulic performances)	✓	✓	✓	✓	✓	✓	–
Domestic hot water and for handling drinkable water or food related liquids	–	–	–	–	–	–	✓

KEY: ✓Applicable; – Not applicable

FLANGE DIMENSIONS

Combination flanges (according to DIN EN 1092)



	PN 6			PN 10			PN 16		
	ØD [mm]	Øk [mm]	n x d_2 [mm]	ØD [mm]	Øk [mm]	n x d_2 [mm]	ØD [mm]	Øk [mm]	n x d_2 [mm]
DN 40	130	100	4 x Ø14	150	110	4 x Ø18	150	110	4 x Ø18
DN 50	140	110	4 x Ø14	165	125	4 x Ø18	165	125	4 x Ø18

CONNECTIONS FOR COMBINATION FLANGE-END PUMPS

Flanged pumps fitted with an adapter (slotted bolt hole) flange can be connected to PN 6 and PN 16 mating flanges to DIN or DIN EN up to and including nominal diameters of DN 65. Adapter flanges of this type cannot be mated with other adapter flanges. Use bolts of property class 4.6 or higher for the flange connections. Washers must be fitted between the bolt/nut head and the adapter flange.

Recommended screw lengths

Flange connection	Thread	Tightening torque	Minimum screw length	
			DN 40	DN 50
PN 6	M12	40 Nm	55 mm	60 mm
PN 10	M16	95 Nm	60 mm	65 mm

SCOPE OF DELIVERY

	ES2	ES2 C	ES C A ES2 C A	ES2 ADAPT	ES MAXI	ES2 SOLAR	ES2 PURE
High-efficiency electronic circulator	✓	✓	✓	✓	✓	✓	✓
Gaskets	✓	–	–	✓	✓	✓	–
Installation and operation instructions included	✓	✓	✓	✓	✓	✓	✓
Thermal insulation shells	–	–	–	✓	✓	–	–

KEY: ✓ Applicable; – Not Applicable

HEATING

Heating bills are one of the most expensive expenditure: 80% of the annual household energy consumption is primarily due to heating living spaces, followed by domestic water heating.
In this context it is crucial to **"think greener"**: in order to contain costs and to reduce the quantity of harmful emissions released into the atmosphere, it is extremely important that high efficiency systems are installed in houses so as to cut down on unnecessary consumption.
Taco Flow Solutions circulators are designed with **innovative technology which are able to reduce power consumption and optimize system performance** by promptly responding to its demands, thus preventing unnecessary waste.

ENERGY SAVING

ES2 60

ErP ready

easy

air

autounlock

The adjustment is simple and intuitive: simply turn the regulator to select the desired program

Pull-out resistant cable gland with integrated sealing lip

Flat surfaces on the pump housing provide a secure hold when tightening

APPLICATION

Hot-water heating systems of all kinds, in domestic and commercial buildings.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,20 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P_1)	Min. 3W, Max. 42W
Input current (I_1)	Min. 0.03A, Max. 0.33A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1 and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2 and EN 61000-3-3, EN 55014-1 and EN 55014-2
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1 and EN 16297-2

TYPE KEY

Example **ES2** 25 - 60 / 180

Electronic circulator

Standard version
ADAPT: Version with activeADAPT
SOLAR: Solar thermal version
PURE: DHW version
MAXI: HVAC systems version

Cast-iron pump housing
C: Composite pump housing
B: Bronze pump housing

A: Pump housing with air separator

Nominal diameter (DN) of suction and discharge ports [mm]

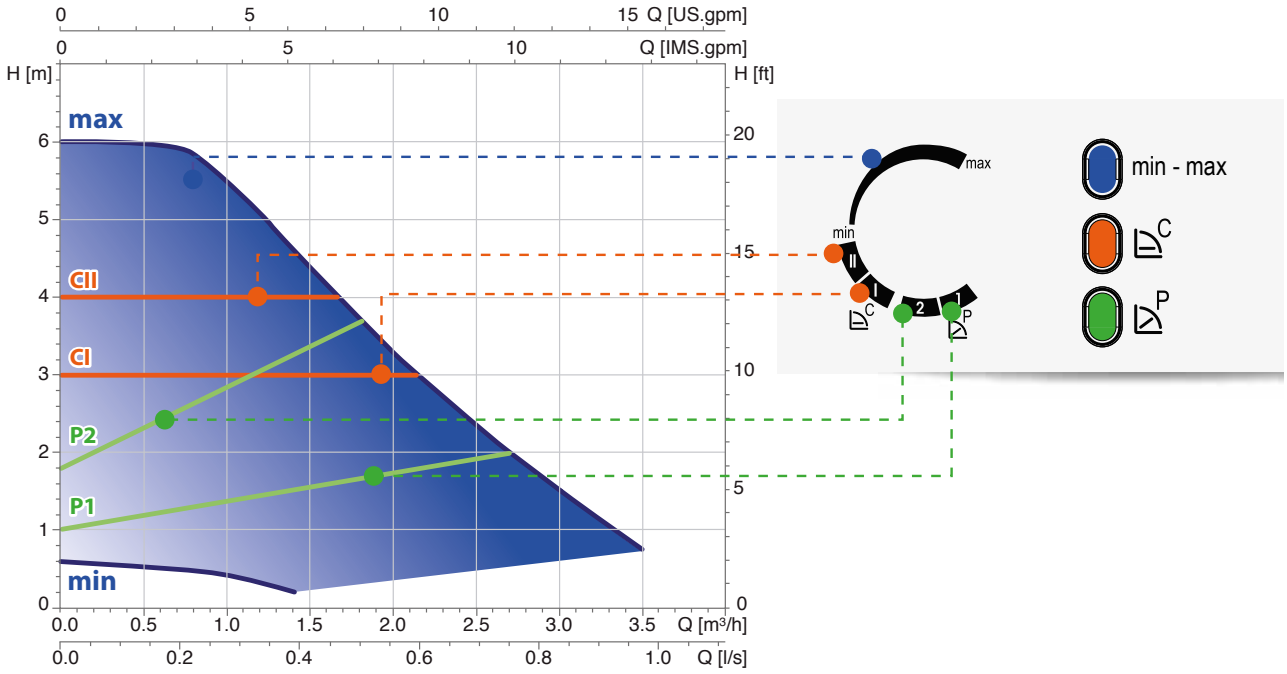
Maximum head [dm]

Port-to-port length [mm]

* The benchmark for most efficient circulators is EEI ≤ 0,20.

** To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

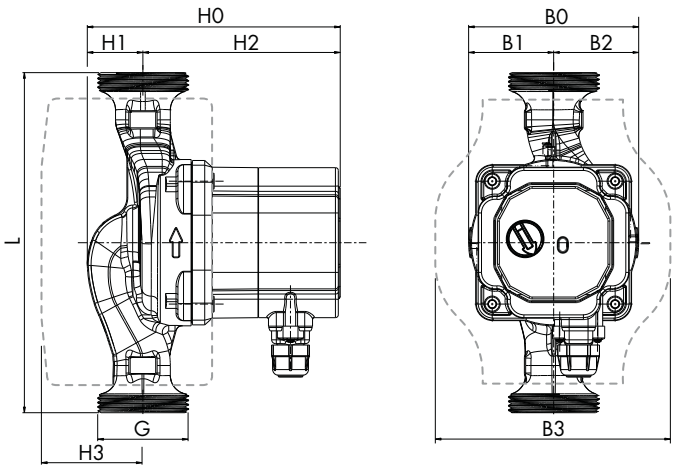
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 60	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [Kg]	
	G	L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES2 15-60/130	G 1	130	90	45	45	124	133,8	29,4	104,4	49	1,67	1,87
ES2 25-60/130	G 1 ½	130	90	45	45	124	133,8	29,4	104,4	49	1,81	2,01
ES2 25-60/180	G 1 ½	180	90	45	45	124	133,8	29,4	104,4	49	1,96	2,6
ES2 32-60/180	G 2	180	90	45	45	124	133,8	29,4	104,4	49	2,10	2,30

ENERGY SAVING

ES2 70

ErP ready

easy

air

autounlock

The adjustment is simple and intuitive: simply turn the regulator to select the desired program

Pull-out resistant cable gland with integrated sealing lip

Flat surfaces on the pump housing provide a secure hold when tightening

APPLICATION

Hot-water heating systems of all kinds, in domestic and commercial buildings.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,21 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P_1)	Min. 3W, Max. 56W
Input current (I_1)	Min. 0.03A, Max. 0.44A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1 and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2 and EN 61000-3-3, EN 55014-1 and EN 55014-2
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1 and EN 16297-2

TYPE KEY

Example **ES2** 25 - 70 / 180

Electronic circulator

Standard version
ADAPT: Version with activeADAPT
SOLAR: Solar thermal version
PURE: DHW version
MAXI: HVAC systems version

Cast-iron pump housing
C: Composite pump housing
B: Bronze pump housing

A: Pump housing with air separator

Nominal diameter (DN) of suction and discharge ports [mm]

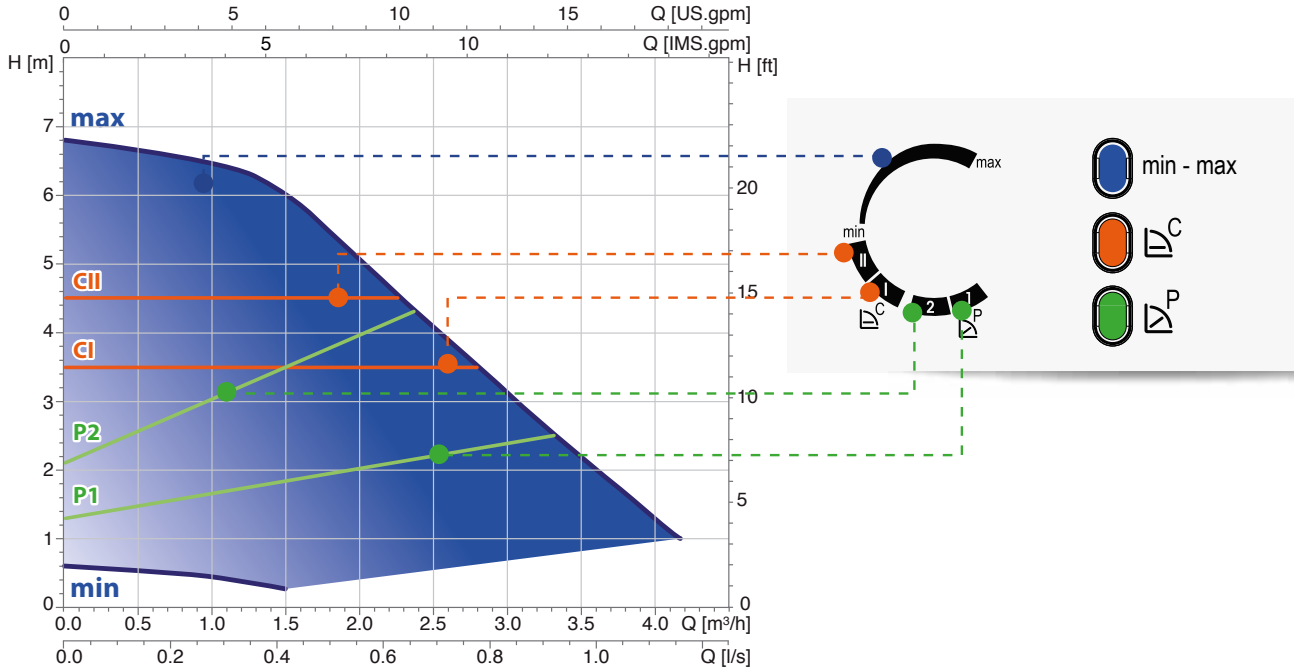
Maximum head [dm]

Port-to-port length [mm]

* The benchmark for most efficient circulators is EEI ≤ 0,20.

** To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

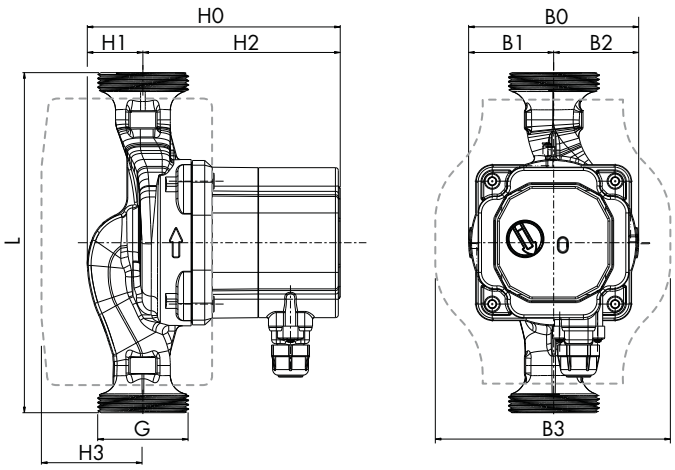
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 70	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [Kg]	
	G	L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES2 15-70/130	G 1	130	90	45	45	124	143,8	29,4	114,4	49	1,91	2,11
ES2 25-70/130	G 1 ½	130	90	45	45	124	143,8	29,4	114,4	49	2,05	2,25
ES2 25-70/180	G 1 ½	180	90	45	45	124	143,8	29,4	114,4	49	2,20	2,40
ES2 32-70/180	G 2	180	90	45	45	124	143,8	29,4	114,4	49	2,34	2,54

ENERGY SAVING

ES2 C 60

The adjustment is simple and intuitive: simply turn the regulator to select the desired program

Pull-out resistant cable gland with integrated sealing lip

Pump housing realized in composite plastic material

APPLICATION

Hot-water heating systems of all kinds, in domestic and commercial buildings.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,21 - Part 2*

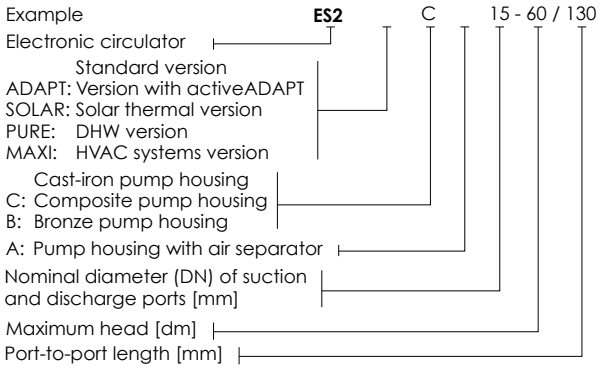
MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P1)	Min. 3W, Max. 42W
Input current (I1)	Min. 0.03A, Max. 0.33A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1 and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2, EN 61000-3-3, EN 55014-1 and EN 55014-2
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1 and EN 16297-2

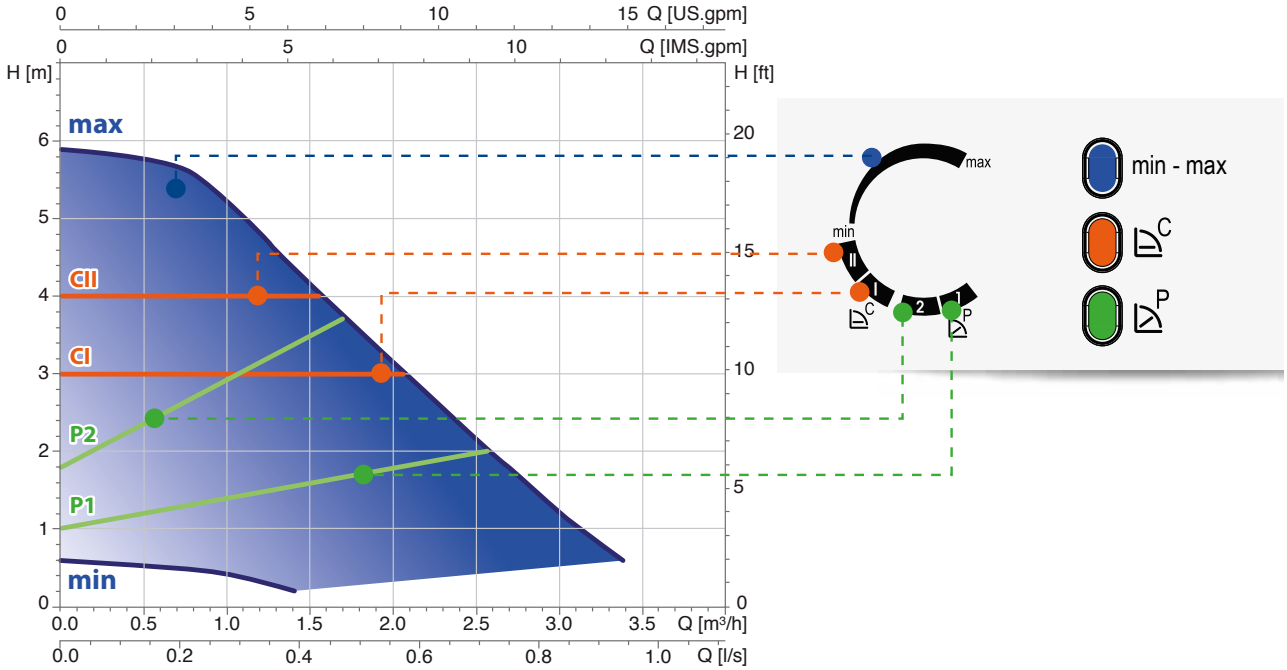
TYPE KEY



* The benchmark for most efficient circulators is EEI ≤ 0,20.

** To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

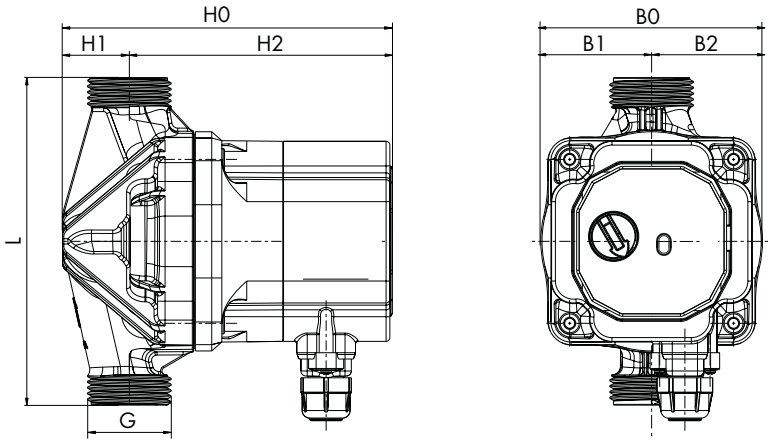
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 C 60	PA 66 GF Composite	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]							WEIGHTS [Kg]	
	G	L	B0	B1	B2	H0	H1	H2	Net	Gross
ES2 C 15-60/130	G 1	130	87,8	43,9	43,9	130,9	26,5	104,4	1,13	1,33

ENERGY SAVING

ES2 C 70

The adjustment is simple and intuitive: simply turn the regulator to select the desired program

Pull-out resistant cable gland with integrated sealing lip

Pump housing realized in composite plastic material

APPLICATION

Hot-water heating systems of all kinds, in domestic and commercial buildings.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,21 - Part 2*

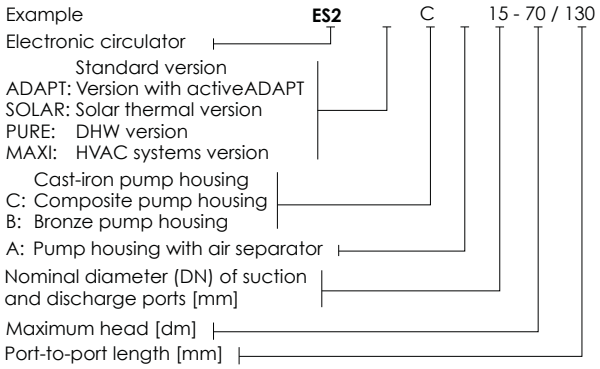
MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P1)	Min. 3W, Max. 56W
Input current (I1)	Min. 0.03A, Max. 0.44A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1 and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2, EN 61000-3-3, EN 55014-1 and EN 55014-2
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1 and EN 16297-2

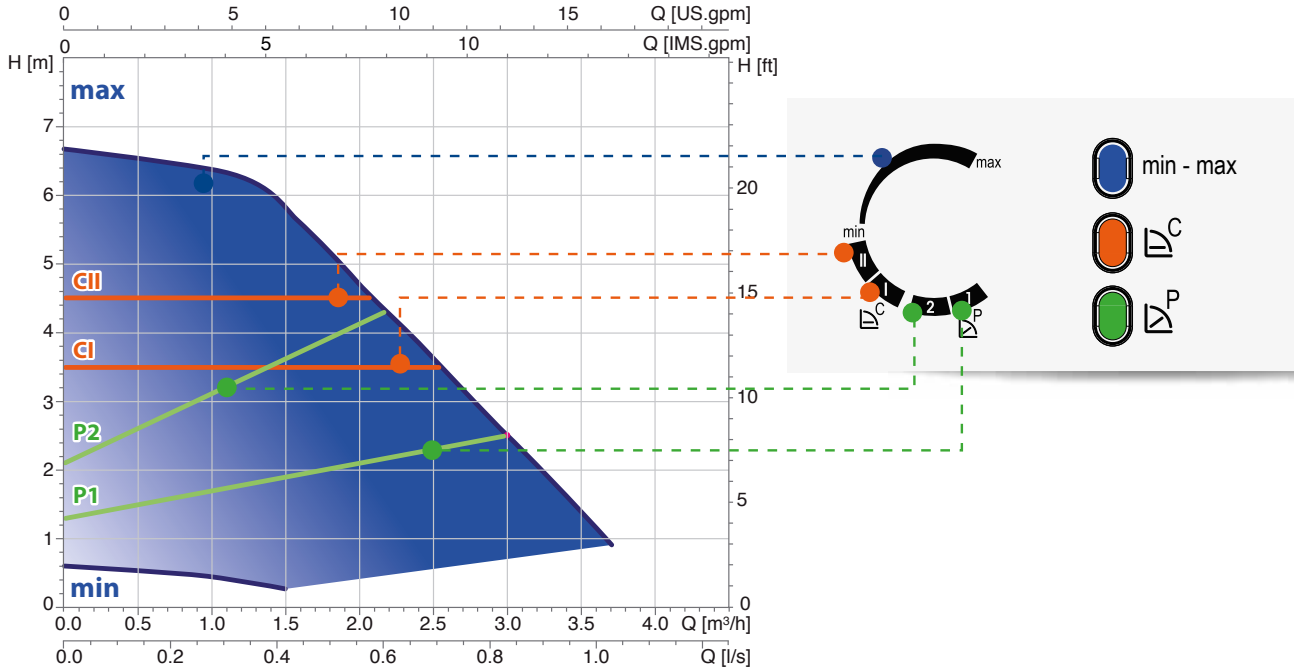
TYPE KEY



* The benchmark for most efficient circulators is EEI ≤ 0,20.

** To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

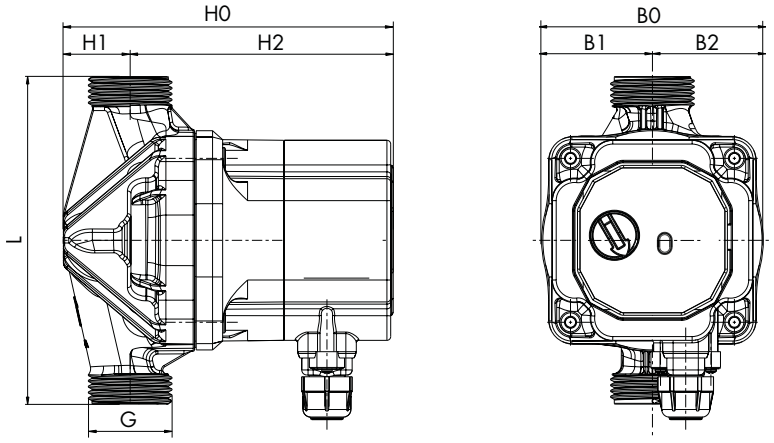
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 C 70	PA 66 GF Composite	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]							WEIGHTS [Kg]	
	G	L	B0	B1	B2	H0	H1	H2	Net	Gross
ES2 C 15-70/130	G 1	130	87,8	43,9	43,9	140,9	26,5	114,4	1,37	1,57

ENERGY SAVING

ES2 C A 60

Compact design and easy installation

Pull-out resistant cable gland with integrated sealing lip

Pump housing realized in composite plastic material with air separator

APPLICATION

Hot-water heating systems of all kinds, in domestic and commercial buildings.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

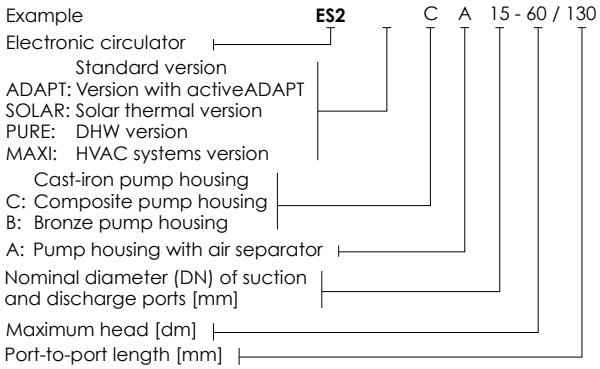
MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P1)	Min. 3W, Max. 42W
Input current (I1)	Min. 0.03A, Max. 0.33A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1 and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2, EN 61000-3-3, EN 55014-1 and EN 55014-2
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1 and EN 16297-2

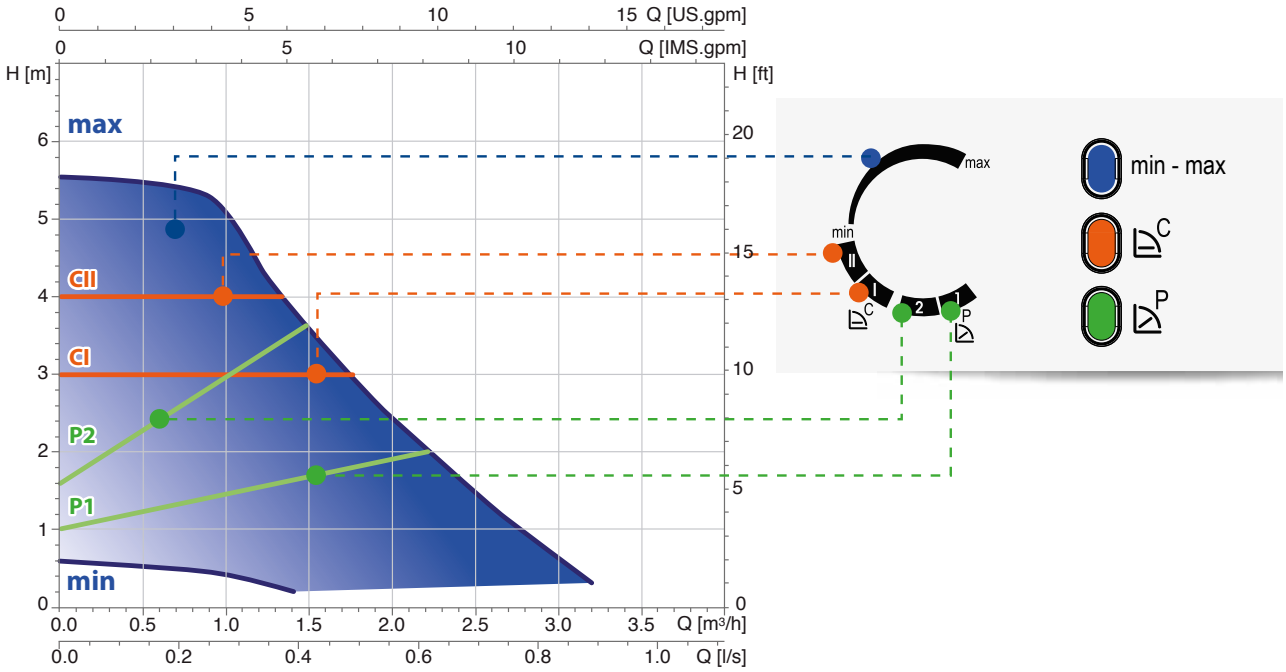
TYPE KEY



* The benchmark for most efficient circulators is EEI ≤ 0,20.

** To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

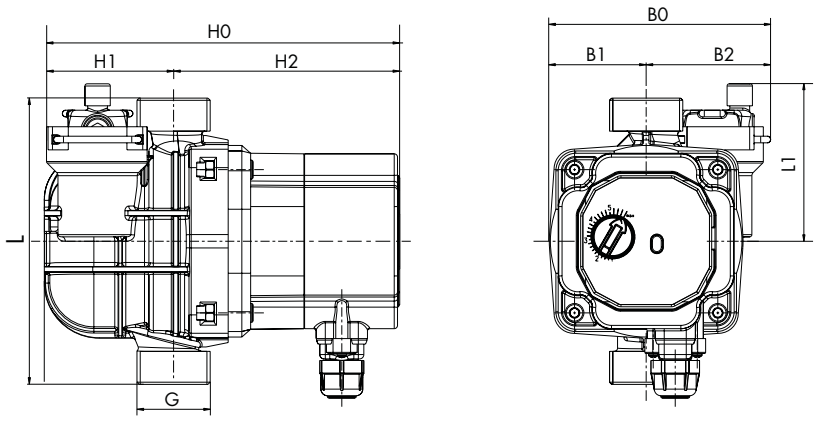
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 C A 60	PA 66 GF Composite	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]								WEIGHTS [Kg]	
	G	L	L1	B0	B1	B2	H0	H1	H2	Net	Gross
ES2 C A 15-60/130	G 1	130	71,5	100,5	44	56,5	161,4	58,7	102,7	1,25	1,45

ENERGY SAVING

ES2 ADAPT 60

activeADAPT mode for easier and faster installations

Effective performance tuning in constant differential pressure (Δp-c), proportional differential pressure (Δp-v) or fixed speed (min-max)

Wide range of temperature from +2°C to +110°C

Thermal insulation shell included

APPLICATION

Hot-water heating systems of all kinds, in domestic and commercial buildings.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,20 - Part 2*

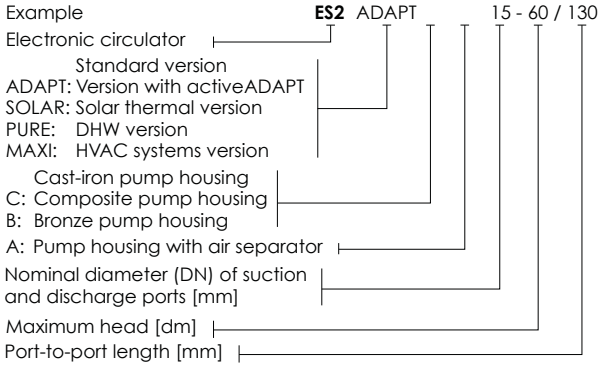
MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P_1)	Min. 3W, Max. 42W
Input current (I_1)	Min. 0.03A, Max. 0.33A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +110°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C 0.15 MPa (1.5 bar) at 110°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1 and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2, EN 61000-3-3, EN 55014-1 and EN 55014-2
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1 and EN 16297-2

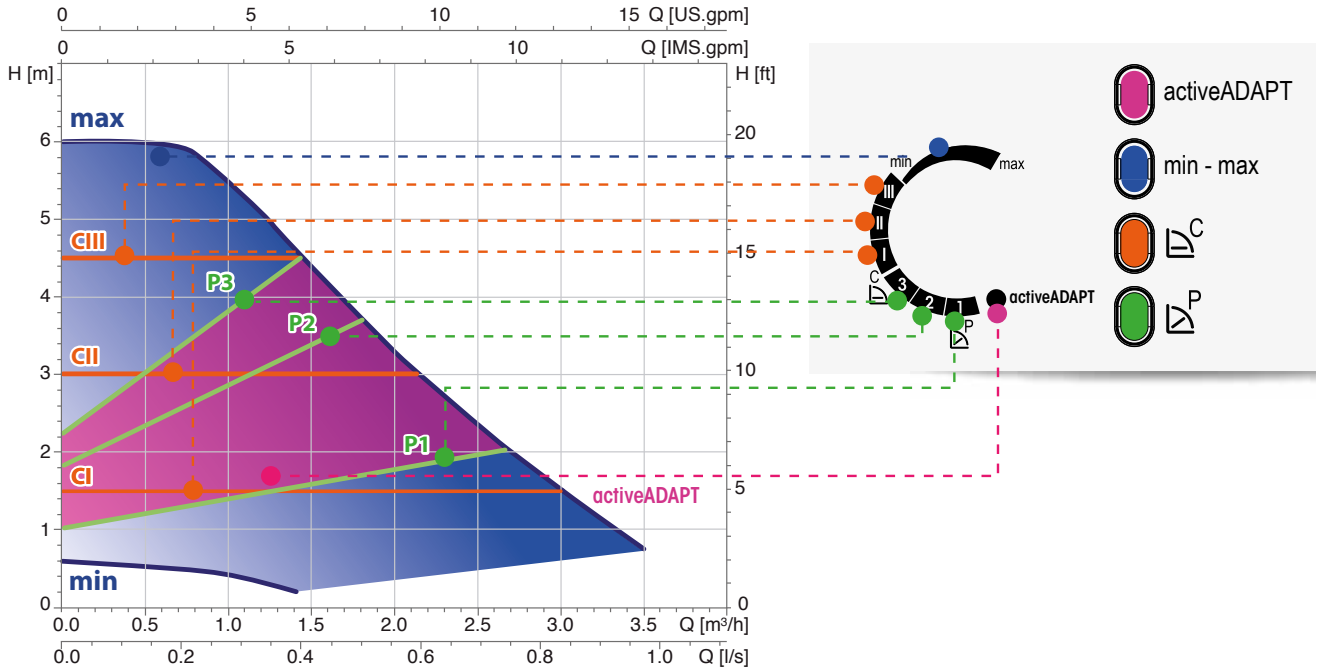
TYPE KEY



* The benchmark for most efficient circulators is EEI ≤ 0,20.

** To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

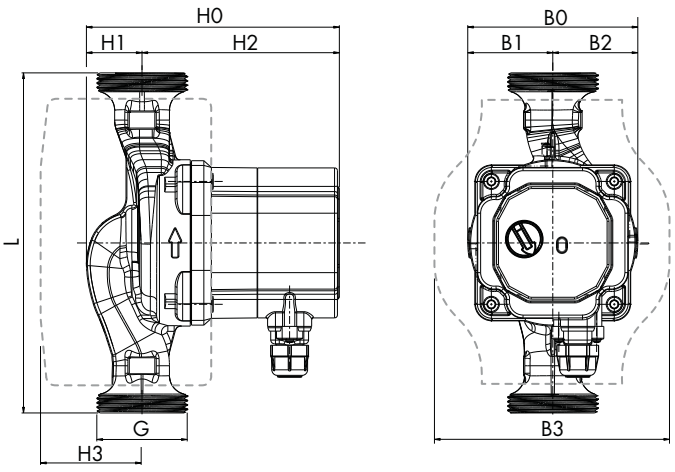
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 ADAPT 60	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [Kg]	
	G	L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES2 ADAPT 15-60/130	G 1	130	90	45	45	124	133,8	29,4	104,4	49	1,67	2,02
ES2 ADAPT 25-60/130	G 1 ½	130	90	45	45	124	133,8	29,4	104,4	49	1,81	2,16
ES2 ADAPT 25-60/180	G 1 ½	180	90	45	45	124	133,8	29,4	104,4	49	1,96	2,31
ES2 ADAPT 32-60/180	G 2	180	90	45	45	124	133,8	29,4	104,4	49	2,10	2,45

ENERGY SAVING

ES2 ADAPT 70

activeADAPT mode for easier and faster installations

Effective performance tuning in constant differential pressure (Δp-c), proportional differential pressure (Δp-v) or fixed speed (min-max)

Wide range of temperature from +2°C to +110°C

Thermal insulation shell included

APPLICATION

Hot-water heating systems of all kinds, in domestic and commercial buildings.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,21 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P1)	Min. 3W, Max. 56W
Input current (I1)	Min. 0.03A, Max. 0.44A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +110°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C 0.15 MPa (1.5 bar) at 110°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1 and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2, EN 61000-3-3, EN 55014-1 and EN 55014-2
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1 and EN 16297-2

TYPE KEY

Example **ES2** ADAPT 15 - 70 / 130

Electronic circulator

Standard version
ADAPT: Version with activeADAPT
SOLAR: Solar thermal version
PURE: DHW version
MAXI: HVAC systems version

Cast-iron pump housing
C: Composite pump housing
B: Bronze pump housing

A: Pump housing with air separator

Nominal diameter (DN) of suction and discharge ports [mm]

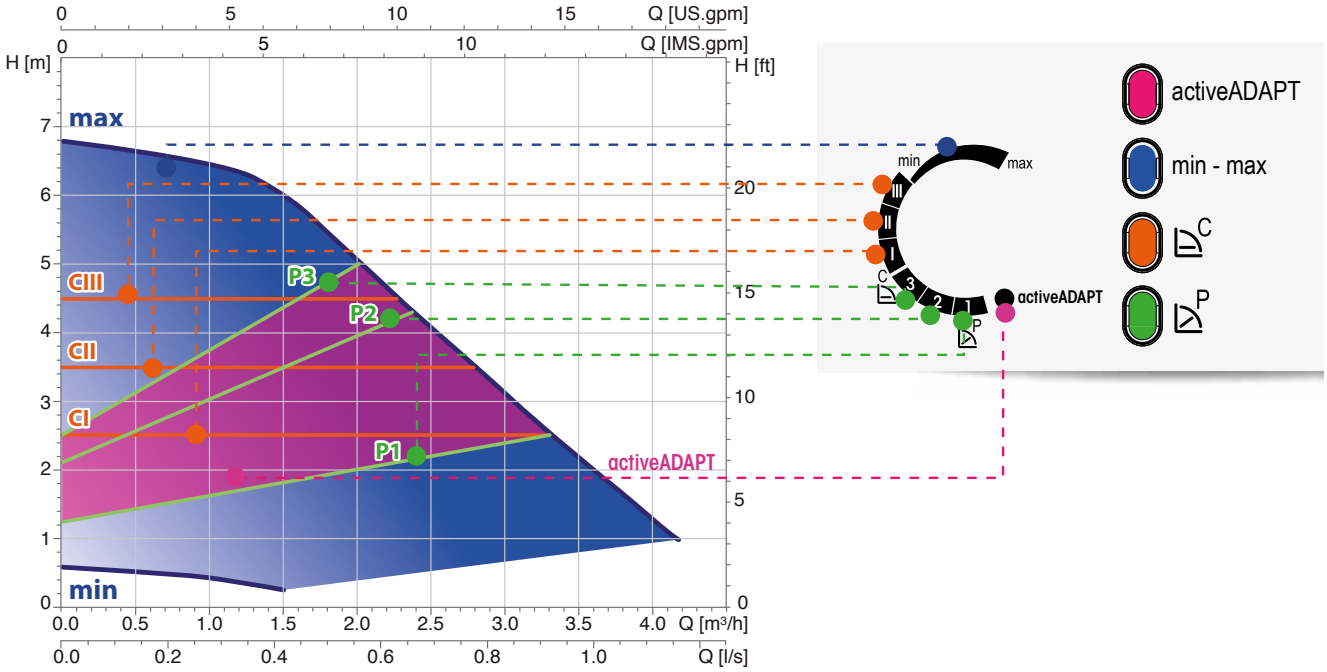
Maximum head [dm]

Port-to-port length [mm]

* The benchmark for most efficient circulators is EEI ≤ 0,20.

** To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

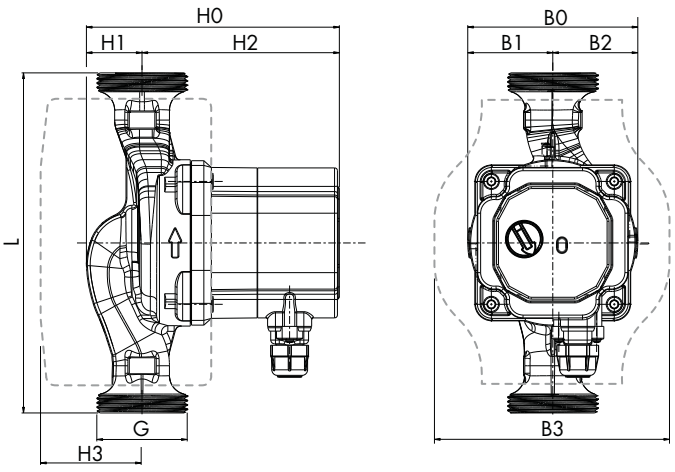
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 ADAPT 70	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [Kg]	
	G	L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES2 ADAPT 15-70/130	G 1	130	90	45	45	124	143,8	29,4	114,4	49	1,91	2,26
ES2 ADAPT 25-70/130	G 1 ½	130	90	45	45	124	143,8	29,4	114,4	49	2,05	2,40
ES2 ADAPT 25-70/180	G 1 ½	180	90	45	45	124	143,8	29,4	114,4	49	2,20	2,55
ES2 ADAPT 32-70/180	G 2	180	90	45	45	124	143,8	29,4	114,4	49	2,34	2,69

HEATING AND COOLING

HVAC is an acronym that stands for "Heating, Ventilation and Air Conditioning". Therefore, HVAC encompasses all heating, ventilation and air conditioning systems.
An HVAC system is a complex installation that makes it possible to have a comfortable environment in residential, business or industrial spaces. It goes without saying that no matter how small the system may be it still consumes a lot of energy and needs to be properly designed, built and calibrated. But above all, it must work with **superior quality components**.
Over the years there has been a steady tendency to improve technical solutions in order to increase capacity and reliability as well as to reduce energy consumption. These improvements have been achieved by making changes in components such as the use of high efficiency circulators.
However, this may not be enough. **The key to saving energy is control and management.** To ensure a comfortable environment, minimise energy consumption and operating costs, climate control systems must be able to communicate with each component in the system.
Taco Flow Solutions offers everything needed to be able to interact with the latest control systems in just one circulator.

"The building sector has the largest potential for significantly reducing greenhouse gas emissions, incurring minimal costs thanks to commercially available technologies"
(United Nations Environment Programme)

ENERGY SAVING

ES MAXI 60

Display alternates pump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

All the necessary inputs for the remote monitoring and control of the pump are included

APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 8W, Max. 100W
Input current (I_1)	Min. 0.10A, Max. 0.80A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5 bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

TYPE KEY

Example **ES** MAXI 25 - 60 / 180

Electronic circulator

Standard version
ADAPT: Version with activeADAPT
SOLAR: Solar thermal version
PURE: DHW version
MAXI: HVAC systems version

Cast-iron pump housing
C: Composite pump housing
B: Bronze pump housing

A: Pump housing with air separator

Nominal diameter (DN) of suction and discharge ports [mm]

Maximum head [dm]

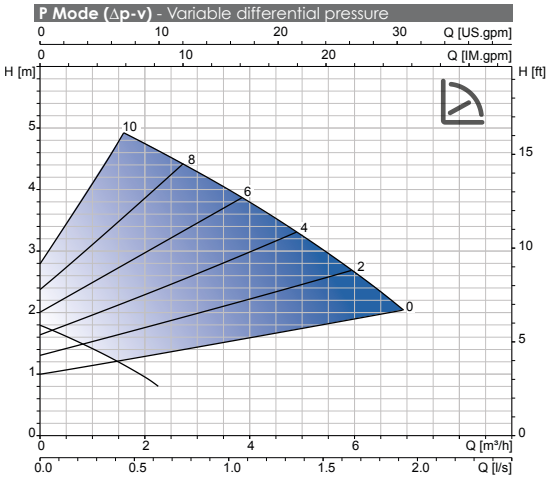
Port-to-port length [mm]

F: Flanged circulator

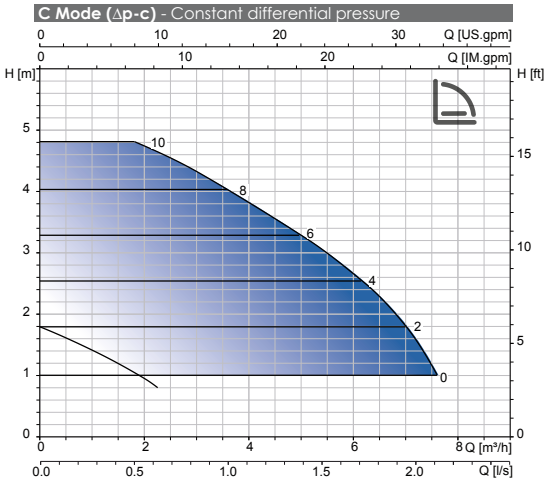
* The benchmark for most efficient circulators is EEI ≤ 0,20.

PERFORMANCE CURVES AND PUMP SETTINGS

P Mode (Δp-v) - Variable differential pressure

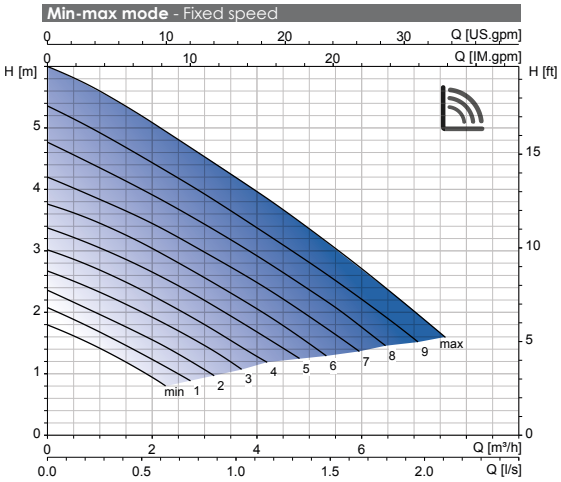


C Mode (Δp-c) - Constant differential pressure

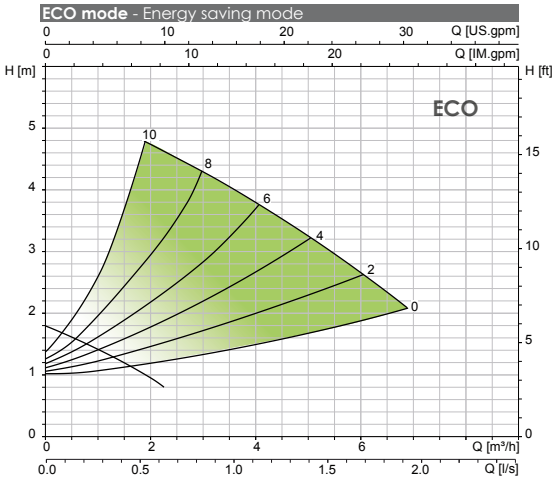


Select program items and confirm parameters by pressing the button

Min-max mode - Fixed speed



ECO mode - Energy saving mode

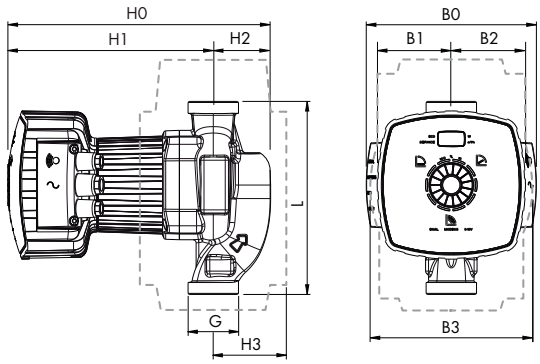


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 60	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [Kg]	
	G	L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 25-60/180	G 1 ½	180	160	70	70	165	245	204	41	81	4,60	5,80
ES MAXI 32-60/180	G 2	180	160	70	70	165	245	204	41	81	4,80	6,00

ENERGY SAVING

ES MAXI 80

Display alternates pump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

All the necessary inputs for the remote monitoring and control of the pump are included

APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

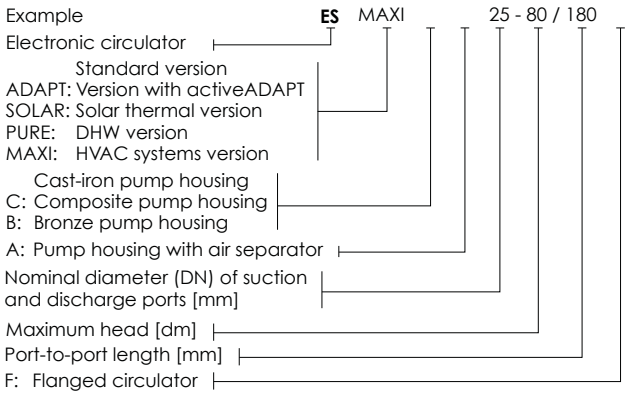
MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 8W, Max. 140W
Input current (I_1)	Min. 0.10A, Max. 1.15A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

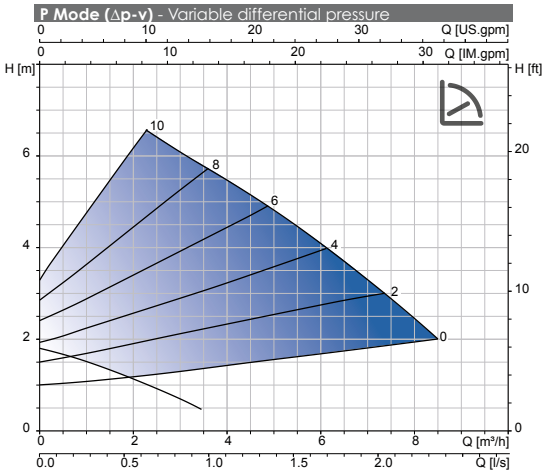
Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5 bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

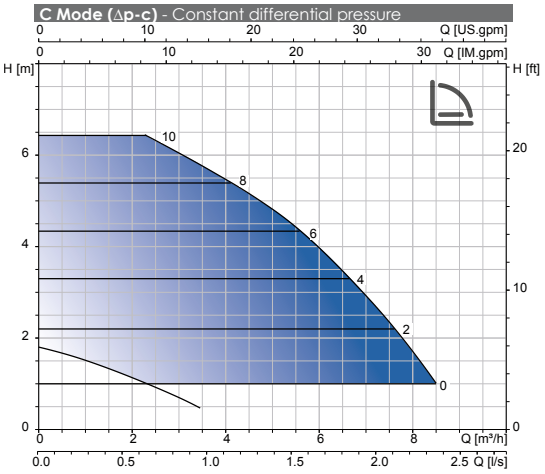
TYPE KEY



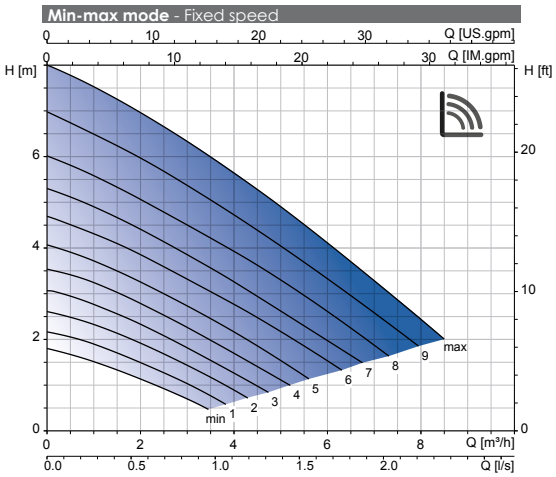
* The benchmark for most efficient circulators is EEI ≤ 0,20.

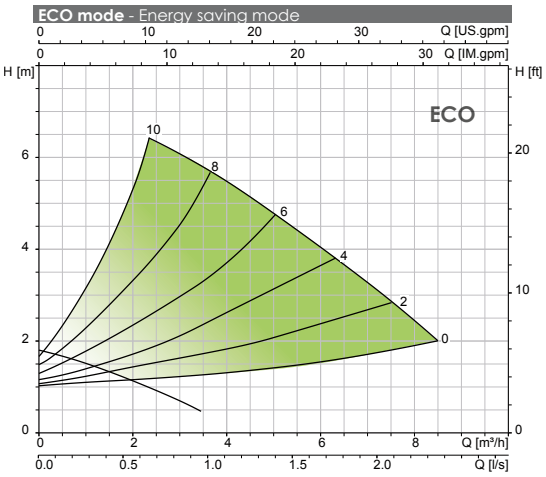
PERFORMANCE CURVES AND PUMP SETTINGS





Select program items and confirm parameters by pressing the button



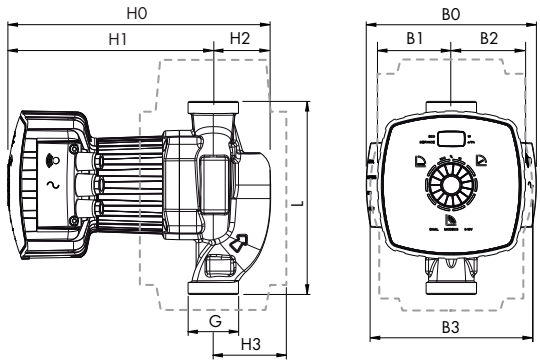


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 80	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [Kg]	
	G	L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 25-80/180	G 1 ½	180	160	70	70	165	245	204	41	81	4,60	5,80
ES MAXI 32-80/180	G 2	180	160	70	70	165	245	204	41	81	4,80	6,00

ENERGY SAVING

ES MAXI 100

Display alternates pump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

All the necessary inputs for the remote monitoring and control of the pump are included

APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

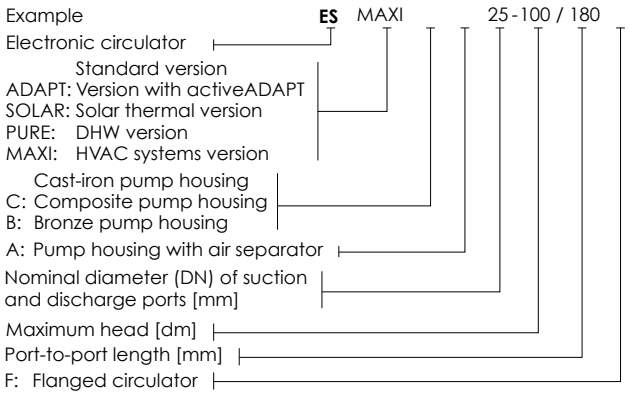
MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 8W, Max. 175W
Input current (I_1)	Min. 0.10A, Max. 1.40A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

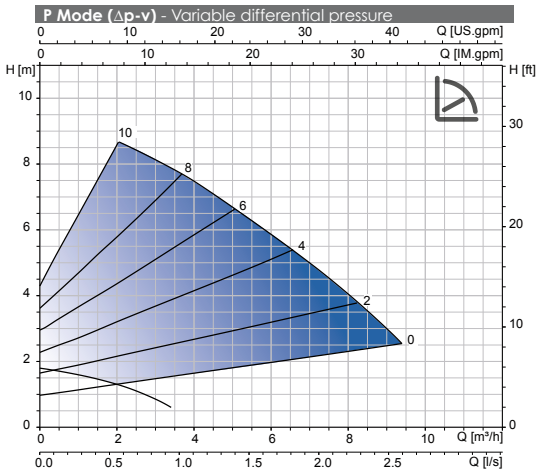
Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

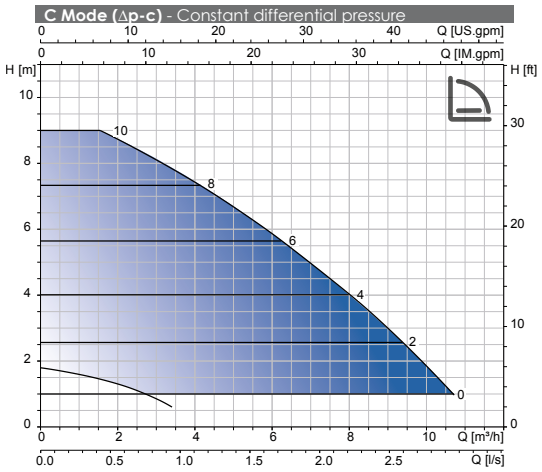
TYPE KEY



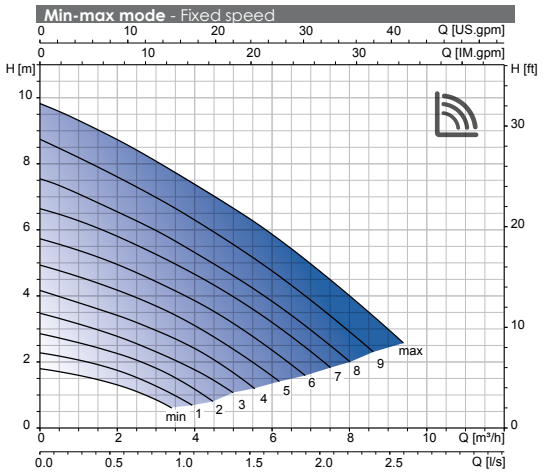
* The benchmark for most efficient circulators is EEI ≤ 0,20.

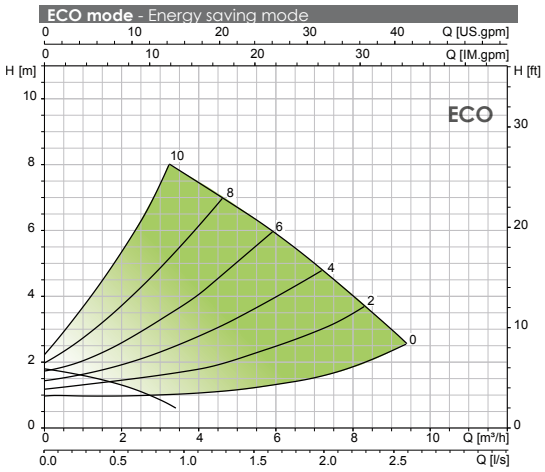
PERFORMANCE CURVES AND PUMP SETTINGS





Select program items and confirm parameters by pressing the button



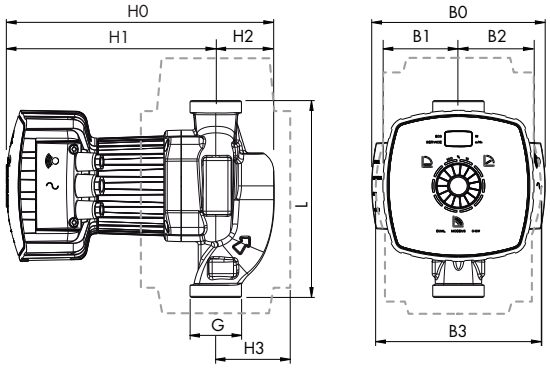


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 100	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [Kg]	
	G	L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 25-100/180	G 1 ½	180	160	70	70	165	245	204	41	81	4,60	5,80
ES MAXI 32-100/180	G 2	180	160	70	70	165	245	204	41	81	4,80	6,00

ENERGY SAVING

ES MAXI 80 | DN 40

Display alternates pump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

All the necessary inputs for the remote monitoring and control of the pump are included

APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 15W, Max. 280W
Input current (I_1)	Min. 0.20A, Max. 1.90A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5 bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

TYPE KEY

Example **ES** MAXI 40 - 80 / 220 F

Electronic circulator

Standard version
ADAPT: Version with activeADAPT
SOLAR: Solar thermal version
PURE: DHW version
MAXI: HVAC systems version

Cast-iron pump housing
C: Composite pump housing
B: Bronze pump housing

A: Pump housing with air separator

Nominal diameter (DN) of suction and discharge ports [mm]

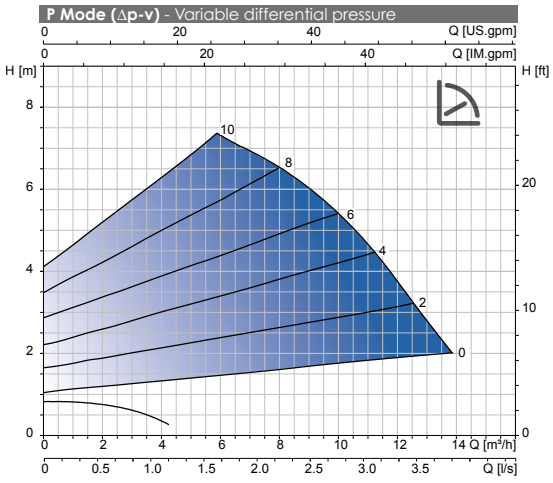
Maximum head [dm]

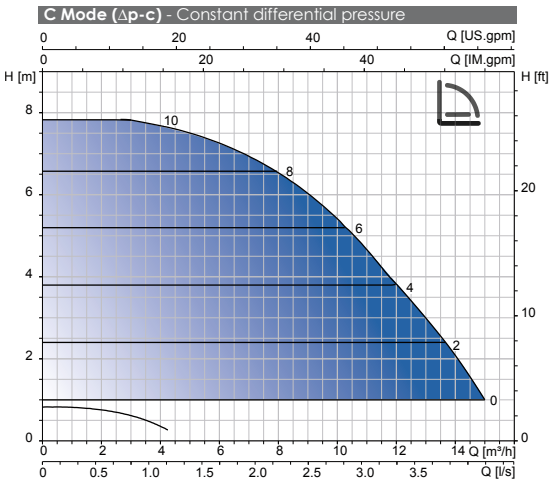
Port-to-port length [mm]

F: Flanged circulator

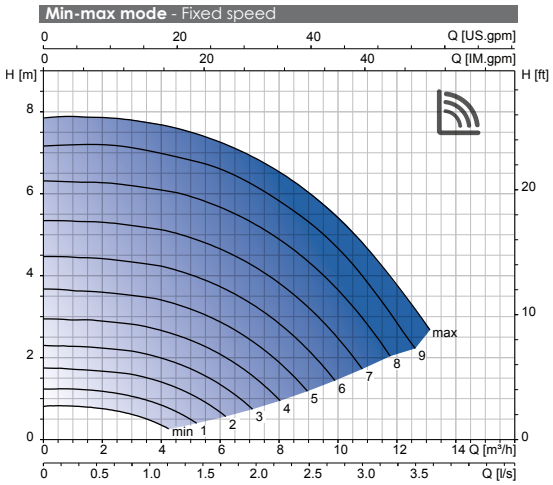
* The benchmark for most efficient circulators is EEI ≤ 0,20.

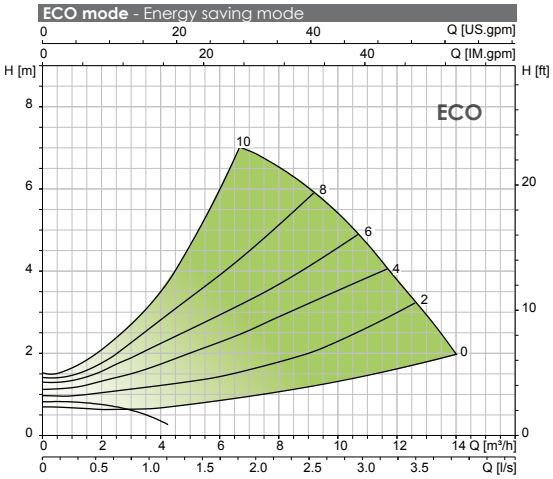
PERFORMANCE CURVES AND PUMP SETTINGS





Select program items and confirm parameters by pressing the button



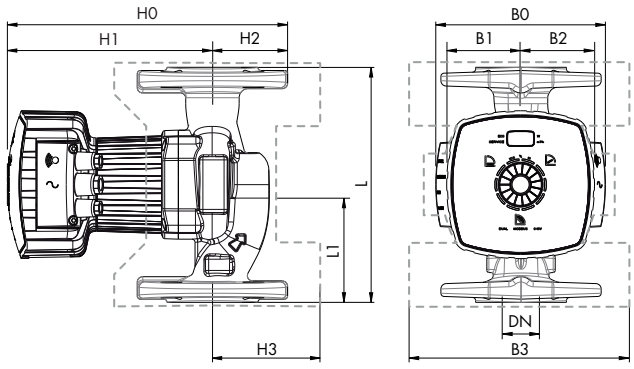


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 80	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	CONNECTION	DIMENSIONS [mm]										WEIGHTS [Kg]	
	DN	L	L1	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 40-80/220 F	40	220	120	160	70	70	231	325	255	70	111	11,08	14,20

ENERGY SAVING

ES MAXI 100 | DN 40

ErP ready

easy

air

autounlock

Display alternates pump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

All the necessary inputs for the remote monitoring and control of the pump are included

APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 15W, Max. 350W
Input current (I_1)	Min. 0.20A, Max. 2.20A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

TYPE KEY

Example **ES** MAXI 40-100 / 220 F

Electronic circulator

Standard version
ADAPT: Version with activeADAPT
SOLAR: Solar thermal version
PURE: DHW version
MAXI: HVAC systems version

Cast-iron pump housing
C: Composite pump housing
B: Bronze pump housing

A: Pump housing with air separator

Nominal diameter (DN) of suction and discharge ports [mm]

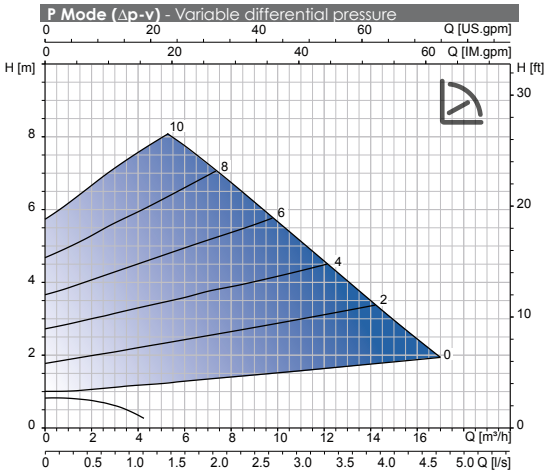
Maximum head [dm]

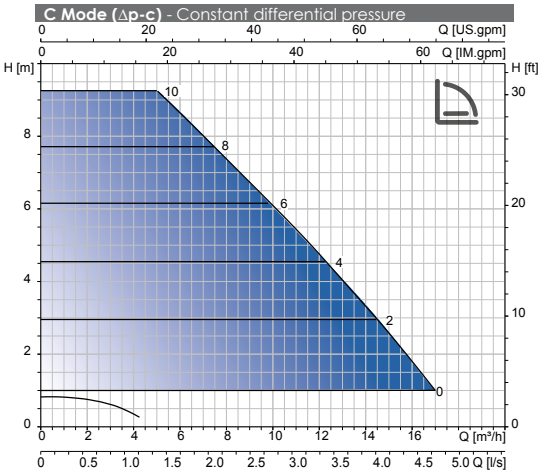
Port-to-port length [mm]

F: Flanged circulator

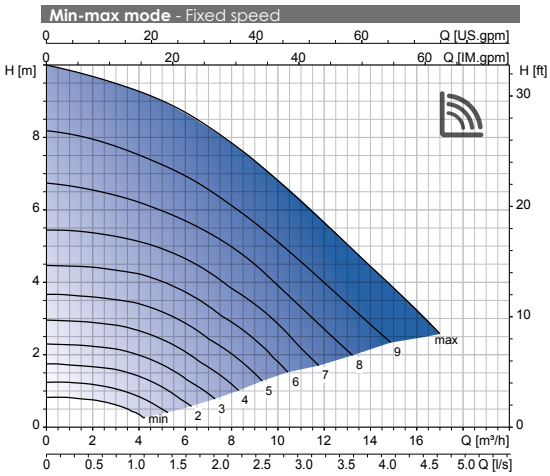
* The benchmark for most efficient circulators is EEI ≤ 0,20.

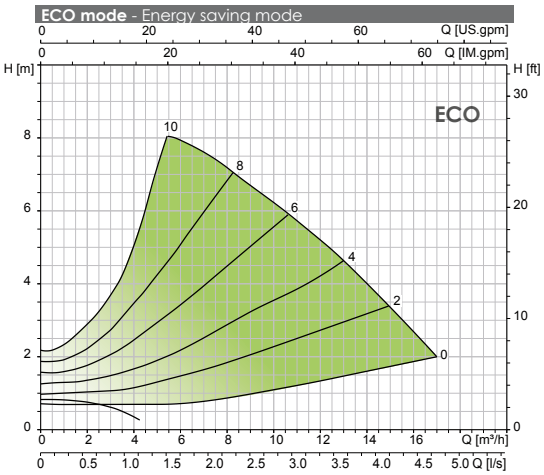
PERFORMANCE CURVES AND PUMP SETTINGS





Select program items and confirm parameters by pressing the button



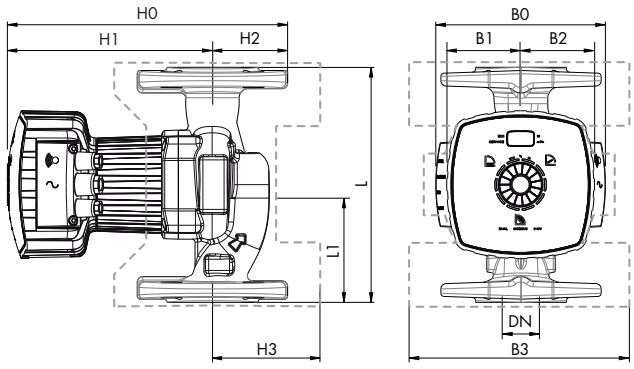


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 100	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	CONNECTION	DIMENSIONS [mm]										WEIGHTS [Kg]	
	DN	L	L1	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 40-100/220 F	40	220	120	160	70	70	231	325	255	70	111	11,08	14,20

ENERGY SAVING

ES MAXI 120 | DN 40

ErP ready

easy

air

autounlock

Display alternates pump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

All the necessary inputs for the remote monitoring and control of the pump are included

APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 20W, Max. 480W
Input current (I_1)	Min. 0.10A, Max. 2.10A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

TYPE KEY

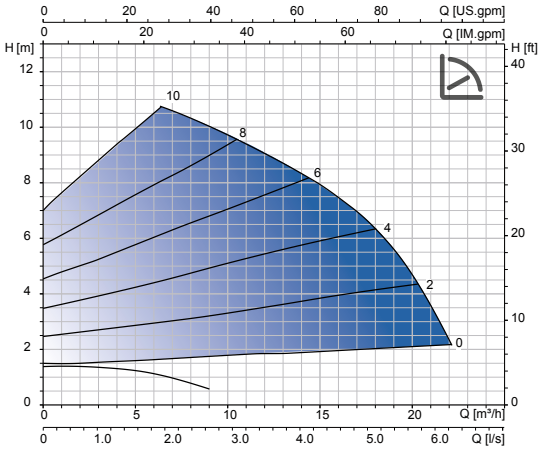
Example: **ES** MAXI 40-120 / 250 F

- Electronic circulator
  - Standard version
  - ADAPT: Version with activeADAPT
  - SOLAR: Solar thermal version
  - PURE: DHW version
  - MAXI: HVAC systems version
- Cast-iron pump housing
  - C: Composite pump housing
  - B: Bronze pump housing
- A: Pump housing with air separator
- Nominal diameter (DN) of suction and discharge ports [mm]
- Maximum head [dm]
- Port-to-port length [mm]
- F: Flanged circulator

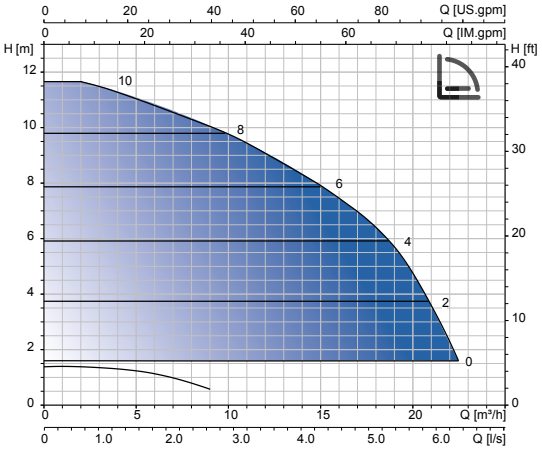
* The benchmark for most efficient circulators is EEI ≤ 0,20.

PERFORMANCE CURVES AND PUMP SETTINGS

P Mode (Δp-v) - Variable differential pressure

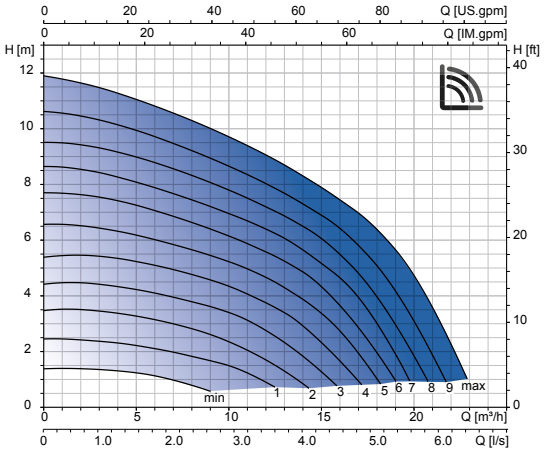


C Mode (Δp-c) - Constant differential pressure

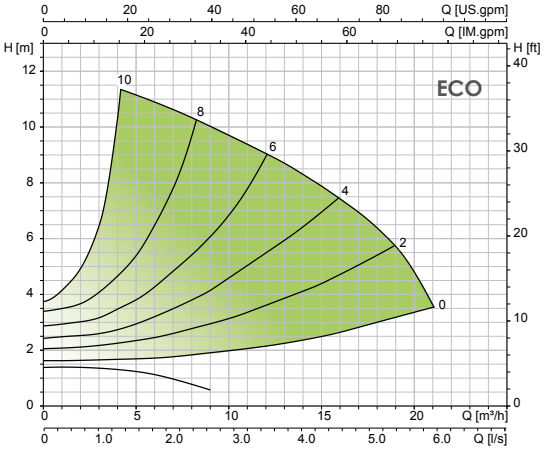


Select program items and confirm parameters by pressing the button

Min-max mode - Fixed speed



ECO mode - Energy saving mode

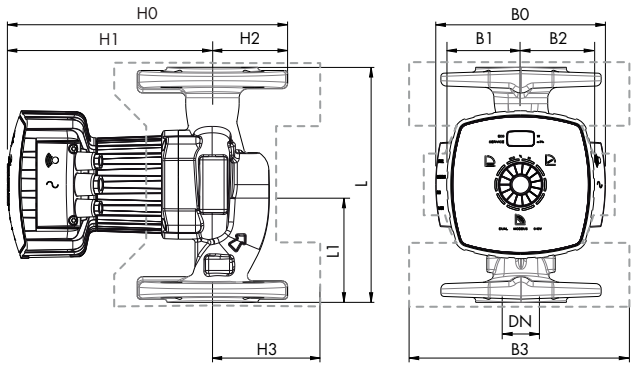


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 120	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	CONNECTION	DIMENSIONS [mm]										WEIGHTS [Kg]	
	DN	L	L1	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 40-120/250 F	40	250	135	240	103	103	229	458	382	76	115	20,30	26,30

ENERGY SAVING

ES MAXI 180 | DN 40

ErP ready

easy

air

autounlock

Display alternates pump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

All the necessary inputs for the remote monitoring and control of the pump are included

APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 20W, Max. 800W
Input current (I_1)	Min. 0.10A, Max. 3.50A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

TYPE KEY

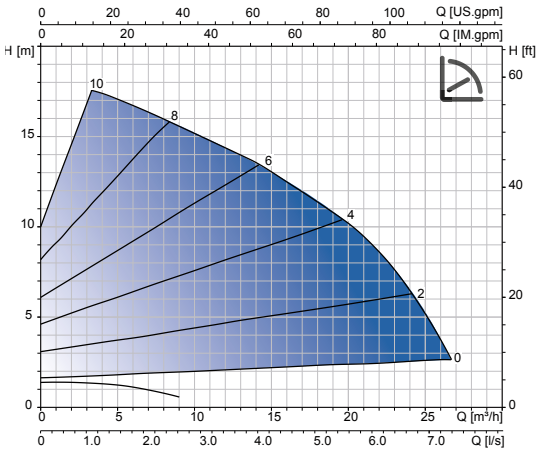
Example: **ES** MAXI 40-180 / 250 F

- **ES** — Electronic circulator
- MAXI — Standard version
  - ADAPT: Version with activeADAPT
  - SOLAR: Solar thermal version
  - PURE: DHW version
  - MAXI: HVAC systems version
- Cast-iron pump housing
  - C: Composite pump housing
  - B: Bronze pump housing
- A: Pump housing with air separator
- Nominal diameter (DN) of suction and discharge ports [mm]
- Maximum head [dm]
- Port-to-port length [mm]
- F: Flanged circulator

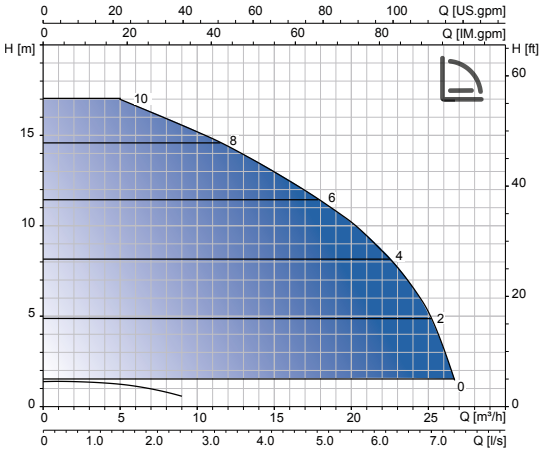
* The benchmark for most efficient circulators is EEI ≤ 0,20.

PERFORMANCE CURVES AND PUMP SETTINGS

P Mode (Δp-v) - Variable differential pressure

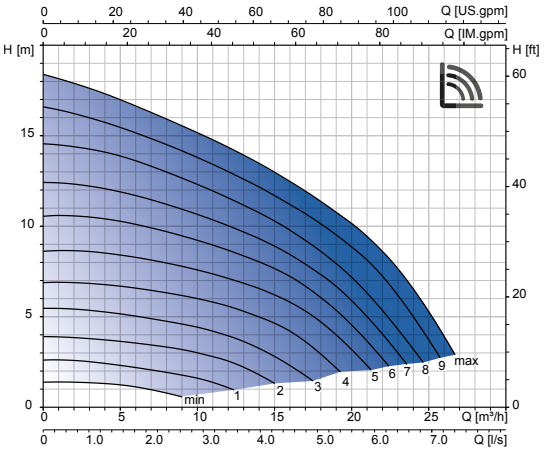


C Mode (Δp-c) - Constant differential pressure

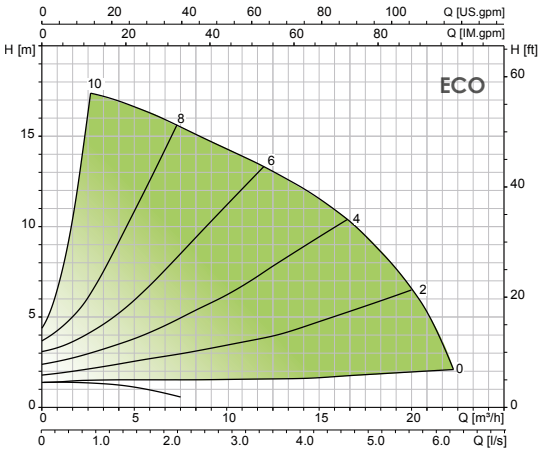


Select program items and confirm parameters by pressing the button

Min-max mode - Fixed speed



ECO mode - Energy saving mode

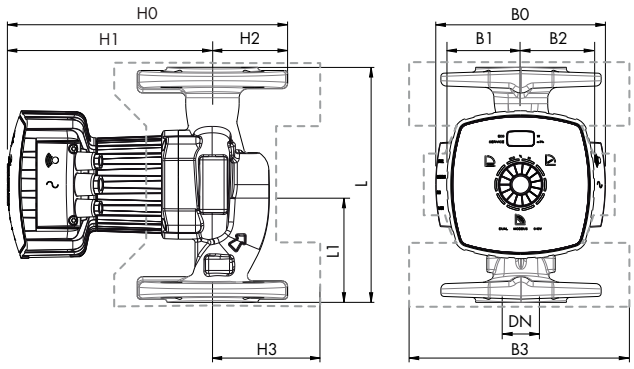


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 180	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	CONNECTION	DIMENSIONS [mm]										WEIGHTS [Kg]	
	DN	L	L1	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 40-180/250 F	40	250	135	240	103	103	229	458	382	76	115	20,30	26,30

ENERGY SAVING

ES MAXI 80 | DN 50

ErP ready

easy

air

autounlock

Display alternates pump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

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APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 15W, Max. 350W
Input current (I_1)	Min. 0.20A, Max. 2.20A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5 bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

TYPE KEY

Example **ES** MAXI 50 - 80 / 240 F

Electronic circulator

Standard version
ADAPT: Version with activeADAPT
SOLAR: Solar thermal version
PURE: DHW version
MAXI: HVAC systems version

Cast-iron pump housing
C: Composite pump housing
B: Bronze pump housing

A: Pump housing with air separator

Nominal diameter (DN) of suction and discharge ports [mm]

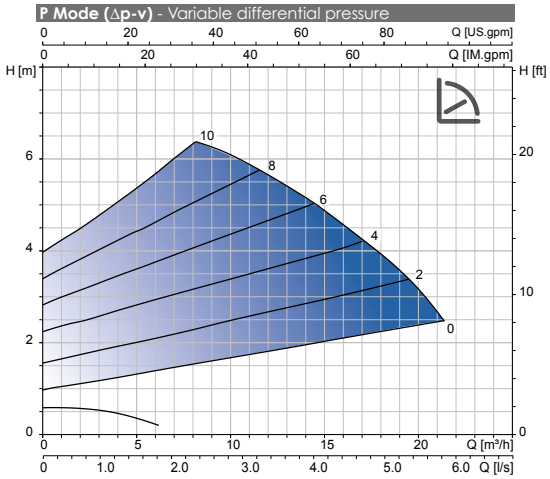
Maximum head [dm]

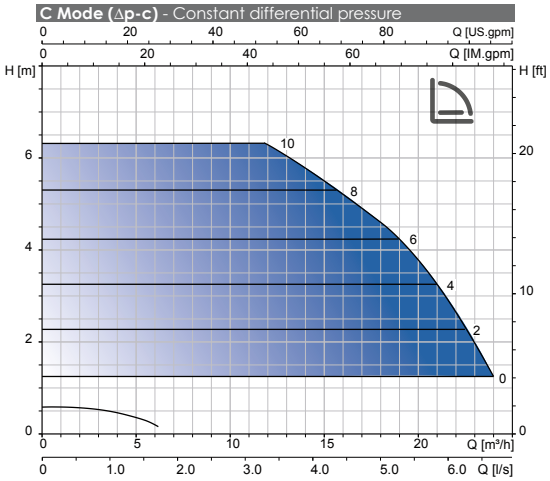
Port-to-port length [mm]

F: Flanged circulator

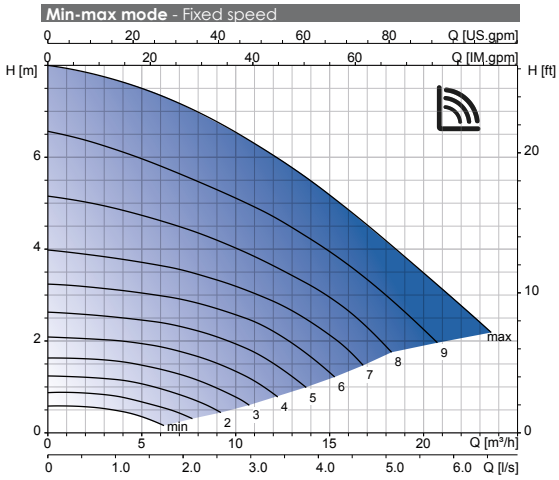
* The benchmark for most efficient circulators is EEI ≤ 0,20.

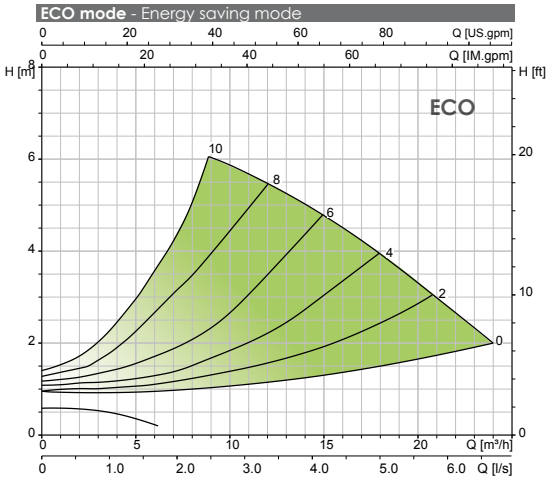
PERFORMANCE CURVES AND PUMP SETTINGS





Select program items and confirm parameters by pressing the button



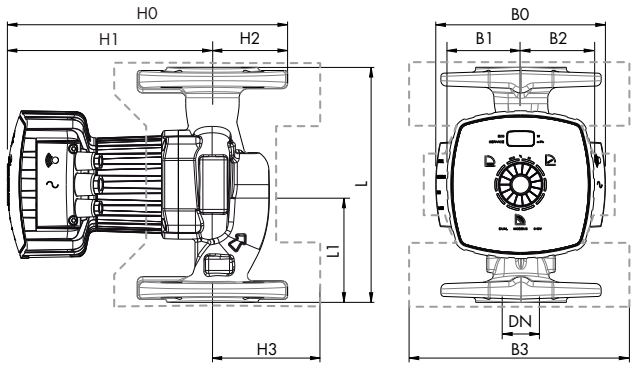


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 80	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	CONNECTION	DIMENSIONS [mm]										WEIGHTS [Kg]	
	DN	L	L1	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 50-80/240 F	50	240	130	160	70	70	231	334	256	78	111	12,60	15,10

ENERGY SAVING

ES MAXI 100 | DN 50

ErP ready

easy

air

autounlock

Display alternates pump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

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APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 20W, Max. 500W
Input current (I_1)	Min. 0.10A, Max. 2.20A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

TYPE KEY

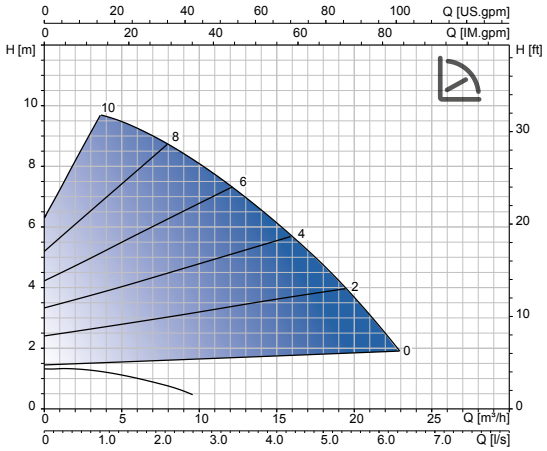
Example: **ES** MAXI 50-100 / 280 F

- Electronic circulator
  - Standard version
  - ADAPT: Version with activeADAPT
  - SOLAR: Solar thermal version
  - PURE: DHW version
  - MAXI: HVAC systems version
- Cast-iron pump housing
  - C: Composite pump housing
  - B: Bronze pump housing
- A: Pump housing with air separator
- Nominal diameter (DN) of suction and discharge ports [mm]
- Maximum head [dm]
- Port-to-port length [mm]
- F: Flanged circulator

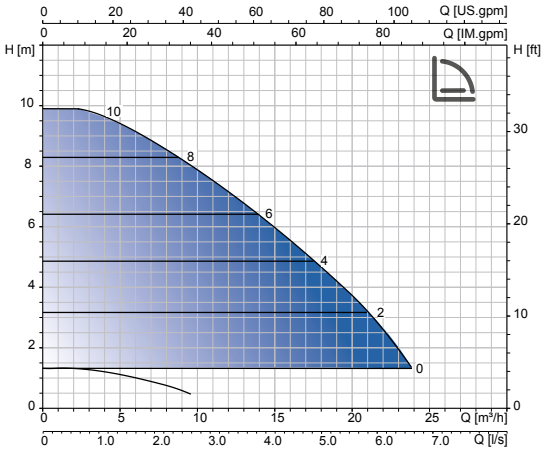
* The benchmark for most efficient circulators is EEI ≤ 0,20.

PERFORMANCE CURVES AND PUMP SETTINGS

P Mode (Δp-v) - Variable differential pressure

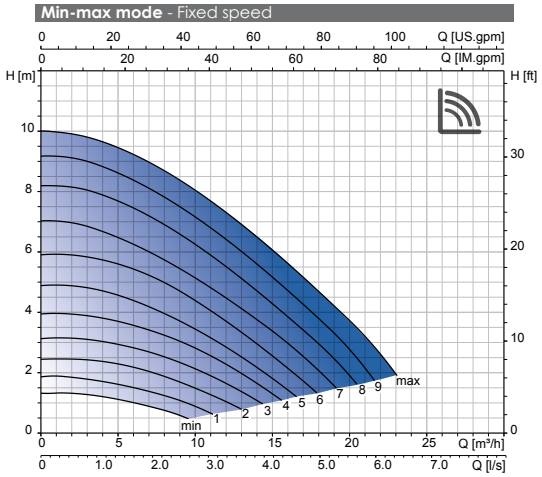


C Mode (Δp-c) - Constant differential pressure

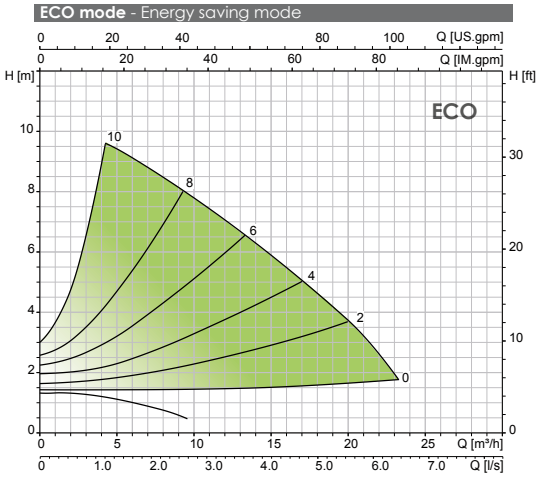


Select program items and confirm parameters by pressing the button

Min-max mode - Fixed speed



ECO mode - Energy saving mode

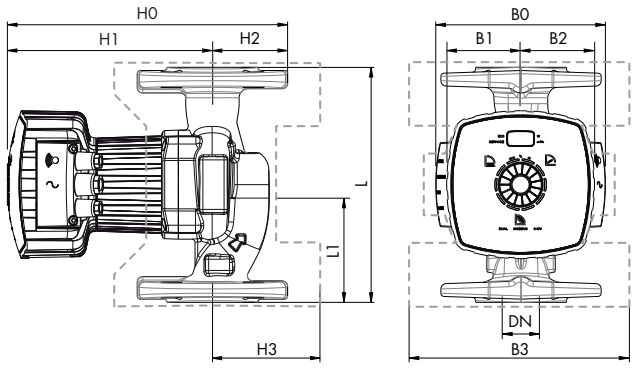


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 100	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	CONNECTION	DIMENSIONS [mm]										WEIGHTS [Kg]	
	DN	L	L1	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 50-100/280 F	50	280	140	240	103	103	229	459	382	77	115	21,00	27,00

ENERGY SAVING

ES MAXI 120 | DN 50

ErP ready

easy

air

autounlock

Display alternatespump power consumption and flow data information

Simple to set with Press&Turn dial. The operating mode symbol lights up when in use

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APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min 20W, Max 520W
Input current (I_1)	Min. 0.10A, Max. 2.30A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

TYPE KEY

Example **ES** MAXI 50-120 / 280 F

Electronic circulator

Standard version
ADAPT: Version with activeADAPT
SOLAR: Solar thermal version
PURE: DHW version
MAXI: HVAC systems version

Cast-iron pump housing
C: Composite pump housing
B: Bronze pump housing

A: Pump housing with air separator

Nominal diameter (DN) of suction and discharge ports [mm]

Maximum head [dm]

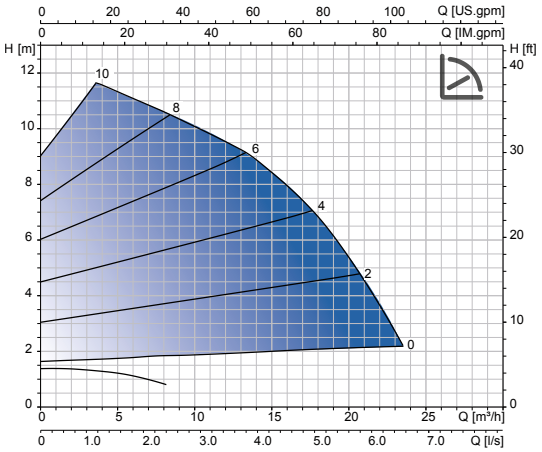
Port-to-port length [mm]

F: Flanged circulator

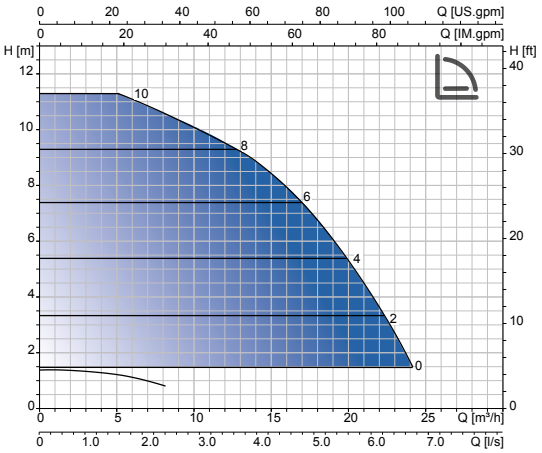
* The benchmark for most efficient circulators is EEI ≤ 0,20.

PERFORMANCE CURVES AND PUMP SETTINGS

P Mode (Δp-v) - Variable differential pressure

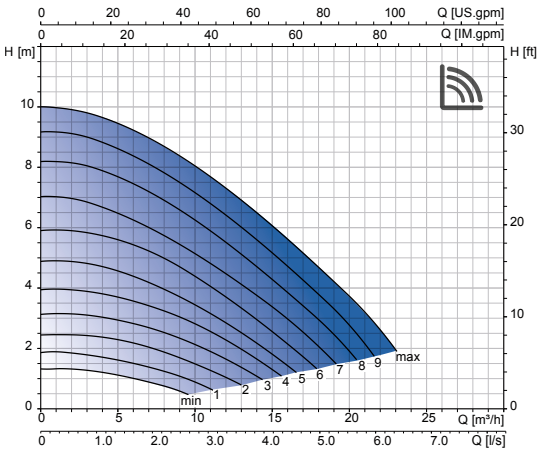


C Mode (Δp-c) - Constant differential pressure

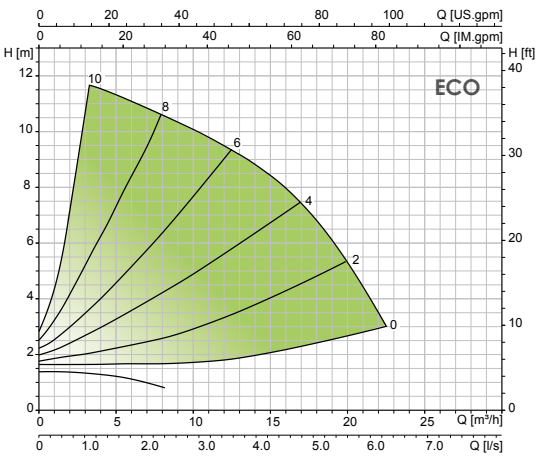


Select program items and confirm parameters by pressing the button

Min-max mode - Fixed speed



ECO mode - Energy saving mode

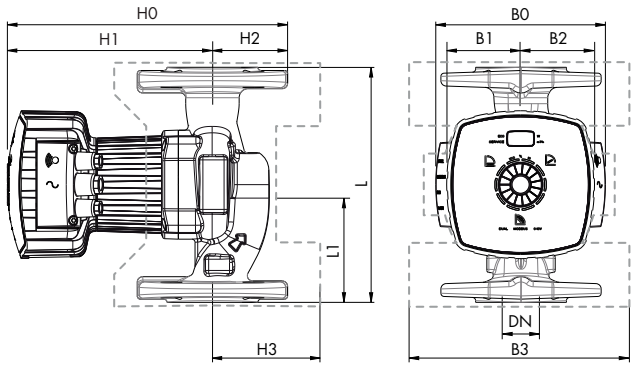


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 120	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	CONNECTION	DIMENSIONS [mm]										WEIGHTS [Kg]	
	DN	L	L1	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 50-120/280 F	50	280	140	240	103	103	229	459	382	77	115	21,00	27,00

ENERGY SAVING

ES MAXI 180 | DN 50

ErP ready

easy

air

autounlock

Display alternates pump power consumption and flow data information

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APPLICATION

Hot-water heating systems of all kinds, closed cooling circuits, circulation in solar thermal and geothermal systems, for domestic and industrial circulation systems.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,23 - Part 2*

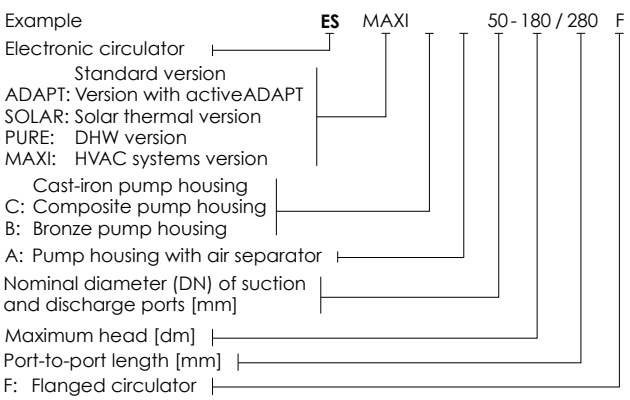
MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Input power (P_1)	Min. 20W, Max. 800W
Input current (I_1)	Min. 0.10A, Max. 3.50A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

PUMP TECHNICAL DATA

Ambient temperature	from +0°C to +40°C
Allowed liquid temperature	from -10°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +90°C of 40°C = +40°C to +110°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.05 MPa (0.5 bar) at 80°C 0.15 MPa (1.5bar) at 95°C
Maximum relative humidity	≤ 80%
Sound pressure level	< 45 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 60335-1, EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-6-2, EN 61000-6-3
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1, EN 16297-2
Inputs/Outputs	Modbus RTU, 0-10VDC, Start/Stop signal, dual function, general fault signal

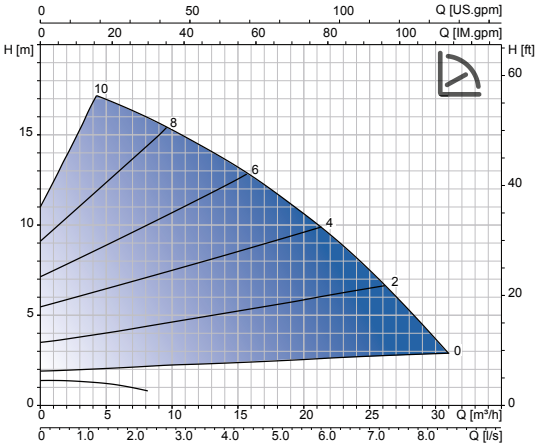
TYPE KEY



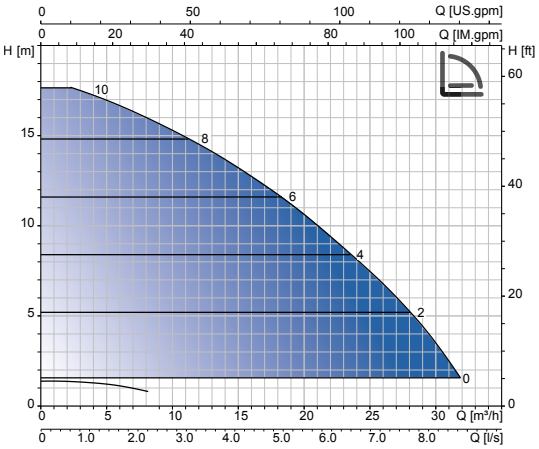
* The benchmark for most efficient circulators is EEI ≤ 0,20.

PERFORMANCE CURVES AND PUMP SETTINGS

P Mode (Δp-v) - Variable differential pressure

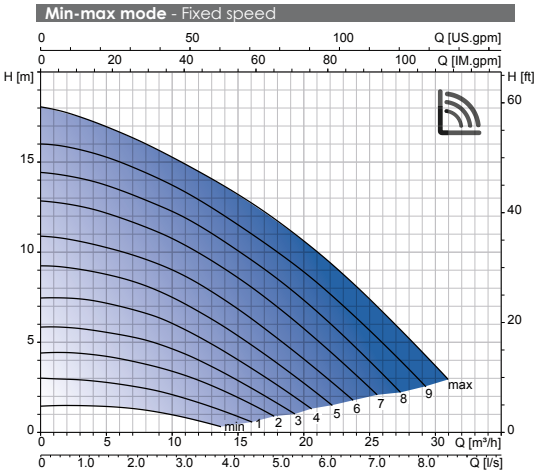


C Mode (Δp-c) - Constant differential pressure

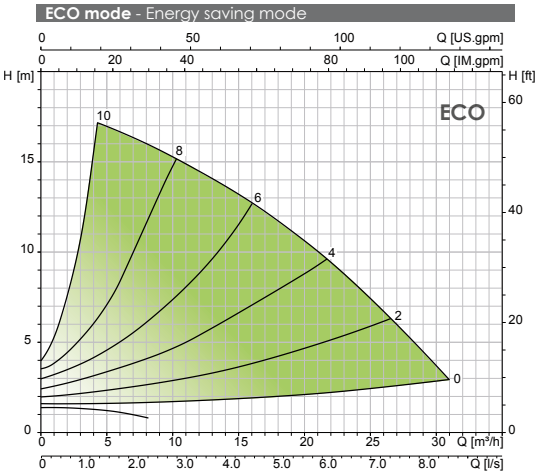


Select program items and confirm parameters by pressing the button

Min-max mode - Fixed speed



ECO mode - Energy saving mode

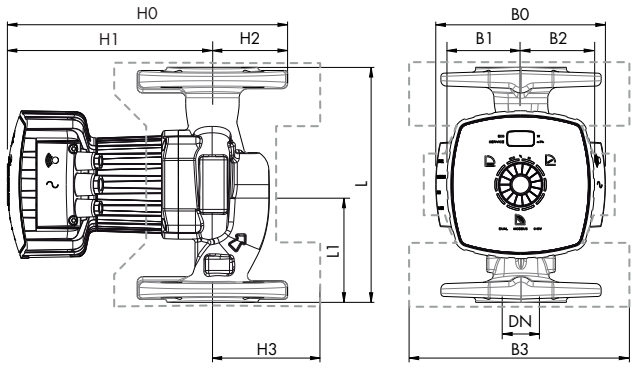


Set the parameters turning the button

MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Rotor can
ES MAXI 180	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Stainless steel/ composite	Stainless steel 1.4304	Ceramics/carbon (metal impregnated)	Stainless steel 1.4301

DIMENSIONS, WEIGHTS



MODEL	CONNECTION	DIMENSIONS [mm]										WEIGHTS [Kg]	
	DN	L	L1	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 50-180/280 F	50	280	140	240	103	103	229	459	382	77	115	21,00	27,00

SOLAR THERMAL

Solar power systems use the sun energy to generate heat and thus employing renewable clean energy: they reduce the emission of harmful substances, reduce the use of non-renewable resources, and therefore help protect the environment. A solar thermal system produces **up to 40% less carbon dioxide** than a conventional plant.
A good solar thermal system also offers significant economic benefits, since it can cover almost all of a family's hot water needs. However, even the most advanced systems often use conventional circulators which consume a great deal of energy: it makes no sense! **To take advantage of all the sun energy you need to have an intelligent circulator.** Taco Italia has developed circulators for solar thermal systems which, thanks to their innovative technology, are able to circulate every single kWh of energy captured by the panels.
ENERGY SAVING, SOLAR version, is suitable for both standard high-flow solar systems, where the temperature rises slowly and evenly with the solar irradiance, and for lowflow solar systems, where the thermovector fluid is heated up more intensely.

ENERGY SAVING

ES2 SOLAR 60

ErP ready

easy

air

autounlock

A LED provides information about the operation status of the circulator

Wide range of temperature from +2°C to +110°C, suitable for circulation in solar thermal systems

The pump housing is cataphoresis treated (KTL) and resistant to corrosion

APPLICATION

Renewable energy solar thermal systems, biomass boilers and hot water heating systems of any kind.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,20 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P_1)	Min. 3W, Max. 42W
Input current (I_1)	Min. 0.03A, Max. 0.33A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +110°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C 0.15 MPa (1.5 bar) at 110°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1 and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2 and EN 61000-3-3, EN 55014-1 and EN 55014-2
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1 and EN 16297-2

TYPE KEY

Example **ES2** SOLAR 15 - 60 / 130

Electronic circuitator

Standard version
ADAPT: Version with activeADAPT
SOLAR: Solar thermal version
PURE: DHW version
MAXI: HVAC systems version

Cast-iron pump housing
C: Composite pump housing
B: Bronze pump housing

A: Pump housing with air separator

Nominal diameter (DN) of suction and discharge ports [mm]

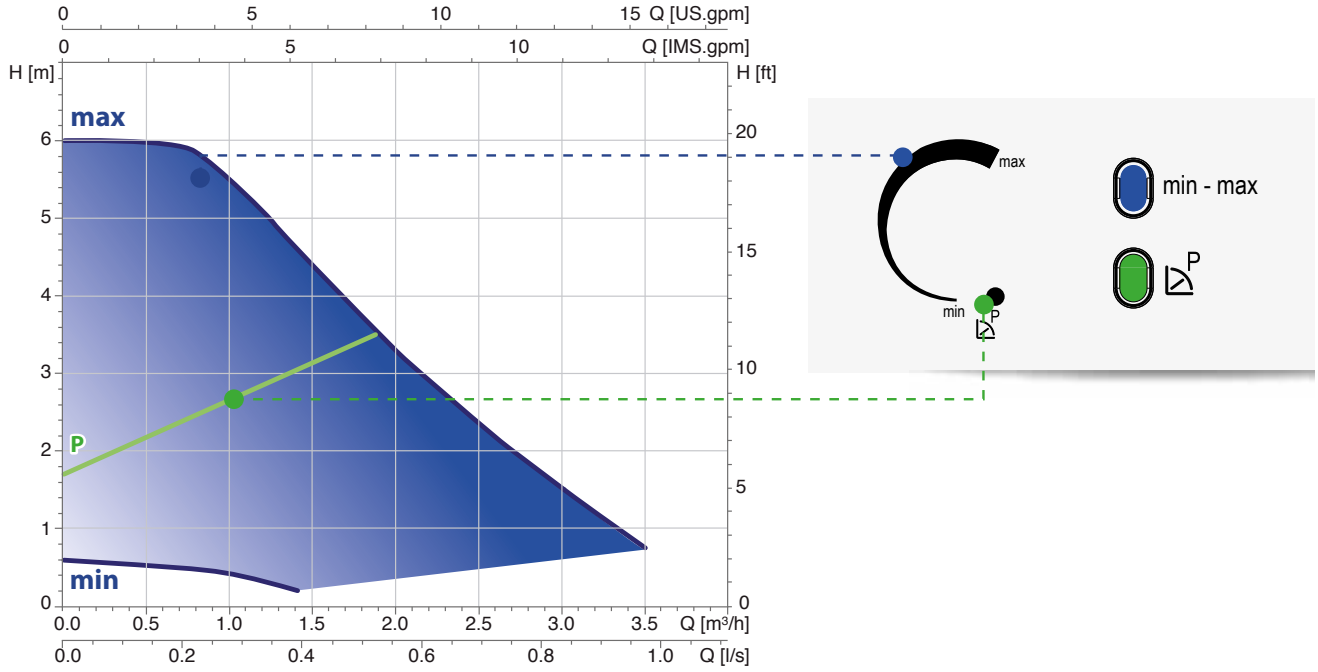
Maximum head [dm]

Port-to-port length [mm]

* The benchmark for most efficient circulators is EEI ≤ 0,20.

** To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

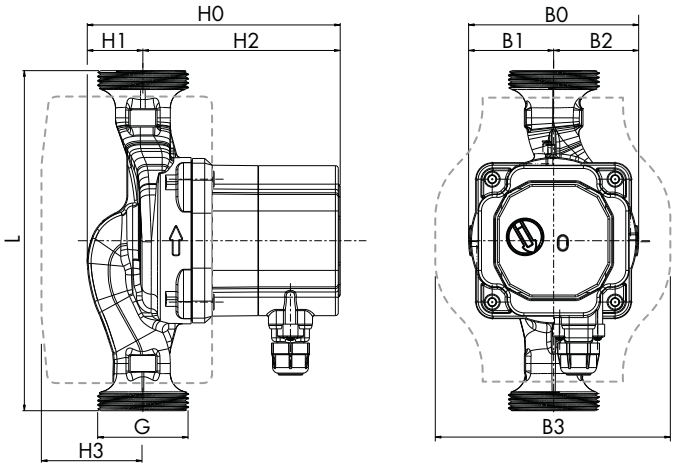
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 SOLAR 60	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [Kg]	
	G	L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES2 SOLAR 15-60/130	G 1	130	90	45	45	124	133,8	29,4	104,4	49	1,67	1,87
ES2 SOLAR 25-60/130	G 1 ½	130	90	45	45	124	133,8	29,4	104,4	49	1,81	2,01
ES2 SOLAR 25-60/180	G 1 ½	180	90	45	45	124	133,8	29,4	104,4	49	1,96	2,16

ENERGY SAVING

ES2 SOLAR 70

ErP ready

easy

air

autounlock

A LED provides information about the operation status of the circulator

Wide range of temperature from +2°C to +110°C, suitable for circulation in solar thermal systems

The pump housing is cataphoresis treated (KTL) and resistant to corrosion

APPLICATION

Renewable energy solar thermal systems, biomass boilers and hot water heating systems of any kind.

ENERGY EFFICIENCY INDEX

EEI ≤ 0,21 - Part 2*

MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P_1)	Min. 3W, Max. 56W
Input current (I_1)	Min. 0.03A, Max. 0.44A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +110°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C 0.15 MPa (1.5 bar) at 110°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2 and EN 61000-3-3, EN 55014-1 and EN 55014-2
Ecodesign Directive (2009/125/CE)	Standard used: EN 16297-1 and EN 16297-2

TYPE KEY

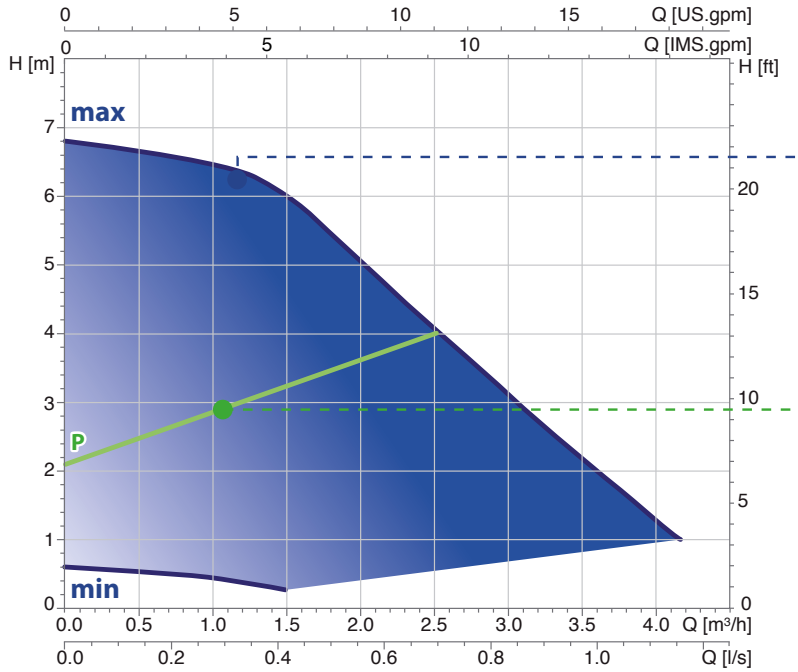
Example **ES2** SOLAR 15 - 70 / 130

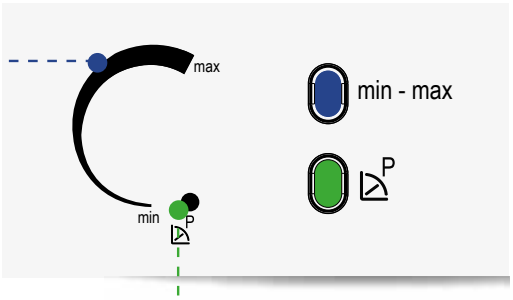
- Electronic circulator
- Standard version
  ADAPT: Version with activeADAPT
  SOLAR: Solar thermal version
  PURE: DHW version
  MAXI: HVAC systems version
- Cast-iron pump housing
  C: Composite pump housing
  B: Bronze pump housing
- A: Pump housing with air separator
- Nominal diameter (DN) of suction and discharge ports [mm]
- Maximum head [dm]
- Port-to-port length [mm]

* The benchmark for most efficient circulators is EEI ≤ 0,20.

** To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

PERFORMANCE CURVES AND PUMP SETTINGS

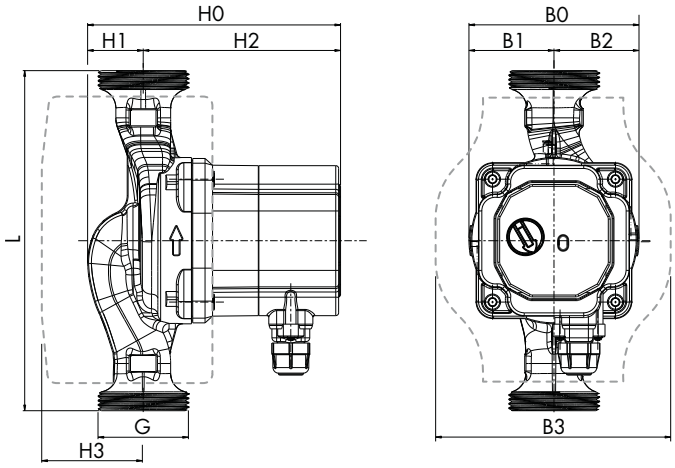




MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 SOLAR 70	Cast iron EN-GJL-200 with cataphoretic coating (KTL)	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [Kg]	
	G	L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES2 SOLAR 15-70/130	G 1	130	90	45	45	124	143,8	29,4	114,4	49	1,91	2,11
ES2 SOLAR 25-70/130	G 1 ½	130	90	45	45	124	143,8	29,4	114,4	49	2,05	2,25
ES2 SOLAR 25-70/180	G 1 ½	180	90	45	45	124	143,8	29,4	114,4	49	2,20	2,40

DOMESTIC HOT WATER

The hot water that we use every day for taking a shower and washing dishes is generally produced using electricity. The transformation of electricity into thermal energy involves the loss of a great quantity of energy and weighs heavily on both the environment and the wallet. Just think the cost of domestic hot water accounts for up to 40% **of total household energy costs.**

Consumption can be reduced in part by using an efficient circulator: how many times, for example, have you turned on the cold water and simply let it run because you have to wait for it to get hot?

An optimum circulator can adjust its activity based on the system demand. **Taco Flow Solutions circulator models not only provide flexibility and adaptability, but also consume up to 80% less compared with conventional circulators.**Their intelligent electronic system delivers hot water immediately after you turn on the faucet: and this prevents wasting cold water and energy loss while heating water as well as ensuring comfort. For technology that is in tune with humankind, the community, and the planet.

ENERGY SAVING

ES2 PURE C 40

easy

air

autounlock

The adjustment is simple and intuitive: simply turn the regulator

Very high degrees of efficiency due to permanent magnets motor

Innovative pump housing realized in composite plastic suitable for drinking water: hygienic and safe

APPLICATION

Domestic hot water circulation, drinking water circulation systems and similar domestic and industrial circulation systems. This circulator is suitable for drinking water only.

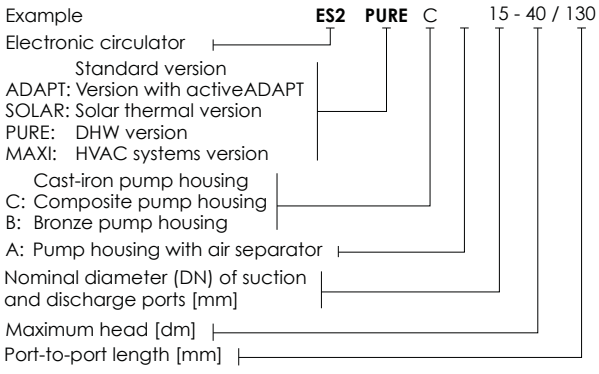
MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%); Frequency: 50/60 Hz
Electrical connection	Pull resistant cable clamp PG11
Input power (P_1)	Min. 4.3W, Max. 40W
Input current (I_1)	Min. 0.03A, Max. 0.32A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

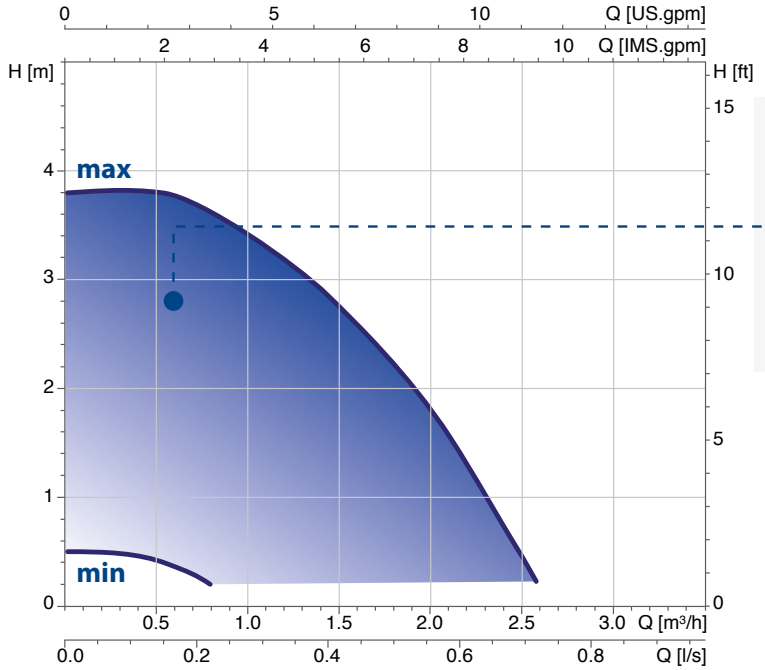
Ambient temperature	from +2°C to +40°C
Allowed liquid temperature*	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Operating pressure	Max. 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.03 MPa (0.3 bar) at 50°C 0.10 MPa (1.0 bar) at 95°C
Maximum relative humidity	≤ 95%
Sound pressure level	< 43 dB(A)
Low Voltage directive (2006/95/CE)	Standard used: EN 62233, EN 60335-1 and EN 60335-2-51
EMC Directive (2004/108/CE)	Standard used: EN 61000-3-2 and EN 61000-3-3, EN 55014-1 and EN 55014-2
Hydraulic group certifications	TIFQ (IT), KTW (DE), DVGW W270 (DE), ACS (FR), WRAS (GB)

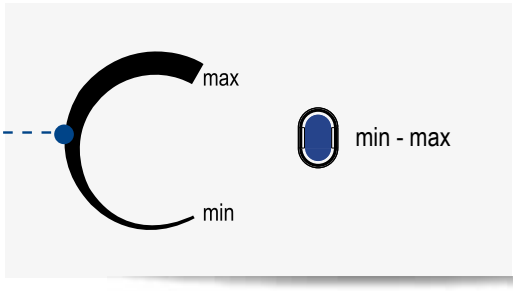
TYPE KEY



* To avoid condensation in the motor and electronics the temperature of the pumped liquid must always be greater than the ambient temperature.

PERFORMANCE CURVES AND PUMP SETTINGS

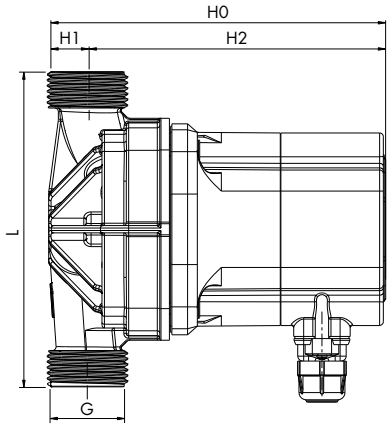


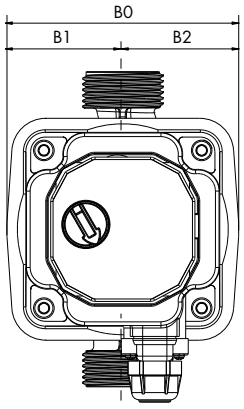


MATERIALS

MODEL	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 PURE C 40	PA 6T/6I GF Composite	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS





MODEL	THREAD	DIMENSIONS [mm]							WEIGHTS [Kg]	
	G	L	B0	B1	B2	H0	H1	H2	Net	Gross
ES2 PURE C 10-40/130	G ¾	130	95,6	47,8	47,8	139	16	123	1,47	1,67
ES2 PURE C 15-40/130	G 1	130	95,6	47,8	47,8	139	16	123	1,47	1,67

ENERGY SAVING FOR THE EUROPEAN MARKET

ENERGY SAVING

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES2 15-60/130	001194	G 1	130	6	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.20
ES2 15-70/130	001202					3 - 56	0,03 - 0,44	≤ 0.21
ES2 25-60/130	001191	G 1 ½	130			3 - 42	0,03 - 0,33	≤ 0.20
ES2 25-60/180	001192		180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 25-70/130	001199		130			3 - 56	0,03 - 0,44	≤ 0.21
ES2 25-70/180	001200		180			3 - 56	0,03 - 0,44	≤ 0.21
ES2 32-60/180	001193	G 2	180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 32-70/180	001201					3 - 56	0,03 - 0,44	≤ 0.21
ES2 C 15-60/130	001194	G 1	130	6	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.21
ES2 C 15-70/130	001202					3 - 56	0,03 - 0,44	≤ 0.21
ES C A 15-60/130	001136	G 1	130	6	1x230V, 50Hz	10 - 51	0,08 - 0,32	≤ 0.27
ES2 C A 15-60/130	001273			6	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.23

ENERGY SAVING - Version with activeADAPT

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES2 ADAPT 15-60/130	001198	G 1	130	10	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.20
ES2 ADAPT 15-70/130	001206					3 - 56	0,03 - 0,44	≤ 0.21
ES2 ADAPT 25-60/130	001195	G 1 ½	130			3 - 42	0,03 - 0,33	≤ 0.20
ES2 ADAPT 25-60/180	001196		180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 ADAPT 25-70/130	001203		130			3 - 56	0,03 - 0,44	≤ 0.21
ES2 ADAPT 25-70/180	001204		180			3 - 56	0,03 - 0,44	≤ 0.21
ES2 ADAPT 32-60/180	001197	G 2	180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 ADAPT 32-70/180	001205					3 - 56	0,03 - 0,44	≤ 0.21

ENERGY SAVING - HVAC systems version

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES MAXI 25-60/180	001207	G 1 ½	180	10	1x230V, 50/60Hz	8 - 100	0,10 - 0,80	≤ 0.23
ES MAXI 25-80/180	001208					8 - 140	0,10 - 1,15	≤ 0.23
ES MAXI 25-100/180	001263					8 - 175	0,10 - 1,40	≤ 0.23
ES MAXI 32-60/180	001261	G2				8 - 100	0,10 - 0,80	≤ 0.23
ES MAXI 32-80/180	001262					8 - 140	0,10 - 1,15	≤ 0.23
ES MAXI 32-100/180	001209					8 - 175	0,10 - 1,40	≤ 0.23
ES MAXI 40-80/220 F	001315	DN40	220	6/10		15 - 280	0,20 - 1,90	≤ 0.23
ES MAXI 40-100/220 F	001316					15 - 350	0,20 - 2,20	≤ 0.23
ES MAXI 40-120/250 F	001317		250			20 - 480	0,10 - 2,10	≤ 0.23
ES MAXI 40-180/250 F	001318					20 - 800	0,10 - 3,50	≤ 0.23
ES MAXI 50-80/240 F	001319	DN50	240			15 - 350	0,20 - 2,20	≤ 0.23
ES MAXI 50-100/280 F	001320		280			20 - 500	0,10 - 2,20	≤ 0.23
ES MAXI 50-120/280 F	001321					20 - 520	0,10 - 2,30	≤ 0.23
ES MAXI 50-180/280 F	001322					20 - 800	0,10 - 3,50	≤ 0.23

ENERGY SAVING - Solar thermal version

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES2 SOLAR 15-60/130	001211	G 1	130	10	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.20
ES2 SOLAR 15-70/130	001214					3 - 56	0,03 - 0,44	≤ 0.21
ES2 SOLAR 25-60/130	001210	G 1 ½	130			3 - 42	0,03 - 0,33	≤ 0.20
ES2 SOLAR 25-60/180	001212		180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 SOLAR 25-70/130	001213		130			3 - 56	0,03 - 0,44	≤ 0.21
ES2 SOLAR 25-70/180	001215		180			3 - 56	0,03 - 0,44	≤ 0.21

ENERGY SAVING - DHW Version

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES2 PURE C 10-40/130	001309	G ¾	130	10	1x230V, 50/60Hz	4,3 - 40	0,03 - 0,32	-
ES2 PURE C 15-40/130	001310	G 1						-

ENERGY SAVING FOR THE UK AND IRISH MARKET

ENERGY SAVING

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES2 15-60/130	-	G 1	130	6	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.20
ES2 15-70/130	-					3 - 56	0,03 - 0,44	≤ 0.21
ES2 25-60/130	001302	G 1 ½	130			3 - 42	0,03 - 0,33	≤ 0.20
ES2 25-60/180	-		180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 25-70/130	001305		130			3 - 56	0,03 - 0,44	≤ 0.21
ES2 25-70/180	-		180			3 - 56	0,03 - 0,44	≤ 0.21
ES2 32-60/180	-	G 2	180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 32-70/180	-					3 - 56	0,03 - 0,44	≤ 0.21
ES2 C 15-60/130	001194	G 1	130	6	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.21
ES2 C 15-70/130	001202					3 - 56	0,03 - 0,44	≤ 0.21
ES C A 15-60/130	001136	G 1	130	6	1x230V, 50Hz	10 - 51	0,08 - 0,32	≤ 0.27
ES2 C A 15-60/130	001273			6	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.23

ENERGY SAVING - Version with activeADAPT

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES2 ADAPT 15-60/130	-	G 1	130	10	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.20
ES2 ADAPT 15-70/130	-					3 - 56	0,03 - 0,44	≤ 0.21
ES2 ADAPT 25-60/130	001303	G 1 ½	130			3 - 42	0,03 - 0,33	≤ 0.20
ES2 ADAPT 25-60/180	-		180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 ADAPT 25-70/130	001306		130			3 - 56	0,03 - 0,44	≤ 0.21
ES2 ADAPT 25-70/180	001308		180			3 - 56	0,03 - 0,44	≤ 0.21
ES2 ADAPT 32-60/180	-	G 2	180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 ADAPT 32-70/180	-					3 - 56	0,03 - 0,44	≤ 0.21

ENERGY SAVING - HVAC systems version

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES MAXI 25-60/180	001207	G 1 ½	180	10	1x230V, 50/60Hz	8 - 100	0,10 - 0,80	≤ 0.23
ES MAXI 25-80/180	001208					8 - 140	0,10 - 1,15	≤ 0.23
ES MAXI 25-100/180	001263					8 - 175	0,10 - 1,40	≤ 0.23
ES MAXI 32-60/180	001261	G2				8 - 100	0,10 - 0,80	≤ 0.23
ES MAXI 32-80/180	001262					8 - 140	0,10 - 1,15	≤ 0.23
ES MAXI 32-100/180	001209					8 - 175	0,10 - 1,40	≤ 0.23
ES MAXI 40-80/220 F	001315	DN40	220	6/10		15 - 280	0,20 - 1,90	≤ 0.23
ES MAXI 40-100/220 F	001316					15 - 350	0,20 - 2,20	≤ 0.23
ES MAXI 40-120/250 F	001317		250			20 - 480	0,10 - 2,10	≤ 0.23
ES MAXI 40-180/250 F	001318					20 - 800	0,10 - 3,50	≤ 0.23
ES MAXI 50-80/240 F	001319	DN50	240			15 - 350	0,20 - 2,20	≤ 0.23
ES MAXI 50-100/280 F	001320		280			20 - 500	0,10 - 2,20	≤ 0.23
ES MAXI 50-120/280 F	001321					20 - 520	0,10 - 2,30	≤ 0.23
ES MAXI 50-180/280 F	001322					20 - 800	0,10 - 3,50	≤ 0.23

ENERGY SAVING - Solar thermal version

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES2 SOLAR 15-60/130	001224	G 1	130	10	1x230V, 50/60Hz	3 - 42	0,03 - 0,33	≤ 0.20
ES2 SOLAR 15-70/130	-					3 - 56	0,03 - 0,44	≤ 0.21
ES2 SOLAR 25-60/130	001304	G 1 ½	130			3 - 42	0,03 - 0,33	≤ 0.20
ES2 SOLAR 25-60/180	-		180			3 - 42	0,03 - 0,33	≤ 0.20
ES2 SOLAR 25-70/130	-		130			3 - 56	0,03 - 0,44	≤ 0.21
ES2 SOLAR 25-70/180	-		180			3 - 56	0,03 - 0,44	≤ 0.21

ENERGY SAVING - DHW Version

MODEL	Product number	Connection	Port-to-port length [mm]	PN [bar]	Electrical data			EEI
					Power supply	P_1 [W]	I_1 [A]	
ES2 PURE C 10-40/130	001309	G ¾	130	10	1x230V, 50/60Hz	4,3 - 40	0,03 - 0,32	-
ES2 PURE C 15-40/130	001310	G 1						-

THERMAL INSULATION SHELLS

Thermal insulation shells	Description	Material	Pump type	Weight [kg]	Product number
	Thermal insulation shells for circulators with standard pump housing *	EPP	ES, ESS, ES2 ES2 ADAPT ES2 SOLAR	0,04	001279

* Supplied as standard only with ES2 ADAPT

SCREWED CONNECTIONS FOR CIRCULATING PUMPS

Screwed connections for screw-end pump pipe connections are not part of the scope of delivery for the pump; they are supplied available upon request at additional charge as a complete set.

A set of screwed unions (one for each pump) consists of: **2 pcs. flat gaskets, 2 pcs. union nuts, 2 pcs. union inserts**

THREADED PIPE UNIONS	Description	Connections		Material	Pump type	Weight [kg]	Product number
		Pump	Pipe				
	Set of screwed unions 1" ½ x 1"F	G 1 ½	Rp 1	Cast iron	ES 25-.., ESS 25-.., ES2 25-.., ES2 ADAPT 25-.., ES2 SOLAR 25-.., ES MAXI 25-..	0,5	001335
	Set of screwed unions 2" x 1" ¼ F	G 2	Rp 1 ¼		ES 25-.., ESS 25-.., ES2 25-.., ES2 ADAPT 25-.., ES2 SOLAR 25-.., ES MAXI 25-..	0,8	001336
	Set of screwed unions 1" x ½"F (Brass material)	G 1	Rp ½	Brass	ES 15-.., ESS 15-.., ES2 15-.., ES2 ADAPT 15-.., ES2 SOLAR 15-.., ES2 PURE 15-..	0,2	001331
	Set of screwed unions 1" ½ x 1"F (Brass material)	G 1 ½	Rp 1		ES 25-.., ESS 25-.., ES2 25-.., ES2 ADAPT 25-.., ES2 SOLAR 25-.., ES MAXI 25-..	0,3	001330
	Set of screwed unions 2" x 1" ¼ F (Brass material)	G 2	Rp 1 ¼		ES 32-.., ESS 32-.., ES2 32-.., ES2 ADAPT 32-.., ES2 SOLAR 32-.., ES MAXI 32-..	0,5	001334
	Set of screwed unions including isolating valve 1" ½ x 1"F (Brass material)	G 1 ½	Rp 1	Brass	ES 25-.., ESS 25-.., ES2 25-…, ES2 ADAPT 25-.., ES2 SOLAR 25-.., ES MAXI 25-..	0,6	001332
	Set of screwed unions including isolating valve 2" x 1" ¼F (Brass material)	G 2	Rp 1 ¼		ES 32-.., ESS 32-.., ES2 32-…, ES2 ADAPT 32-.., ES2 SOLAR 32-.., ES MAXI 32-..	0,9	001333

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