

# Askoll

HIGH EFFICIENCY CIRCULATORS



CATALOGUE **EN**

easyuse  greatperformance



#### SAVINGS

Up to 80% less than traditional pumps



#### TECHNOLOGY

Best available technology - PM Motor



#### ENVIRONMENT

Protection



#### INVERTER TECH

Best performance with high flexibility

### Askoll, naturally innovators

Askoll'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 Askoll users. Our technicians and engineers constantly strive to create high performance increasingly efficient products.

Askoll 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.

### Askoll Group

Superb energy efficiency, low consumption and savings on raw materials: for thirty years now, these have been the hallmark features of the motors, pumps and fan motors for home appliances and heating systems manufactured by **Askoll**, an Italian company that leads the market in electrical synchronous motor technology. On-going investment in Research & Development and perfect integration between product and process development have always allowed Askoll to offer the most innovative, **eco-friendly** solutions on the market. During the years Askoll registered more than 900 patents and it has collaborated with the best European Universities, to ensure the best products and services to its customers.

Today Askoll is an international group headquartered in Dueville, with production facilities in Italy, Brazil, Mexico, Slovakia, Romania and China, as well as sales offices in the USA and South Korea.

### 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 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 Askoll technology.

### Askoll stays close to its customers

No matter where the heating or cooling system is, whatever the type, Askoll 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.askoll.com](http://www.askoll.com)



Askoll 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



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## 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<sub>2</sub> emissions should be reduced by 20%.

**20%**  
decrease in the  
consumption of  
primary energy

**20%**  
increase in  
renewable energy  
sources

**20%**  
decrease  
in CO<sub>2</sub>  
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. Deadlines for compliance with the Directive have been set and must be respected.

### 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. 64/2009 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.**

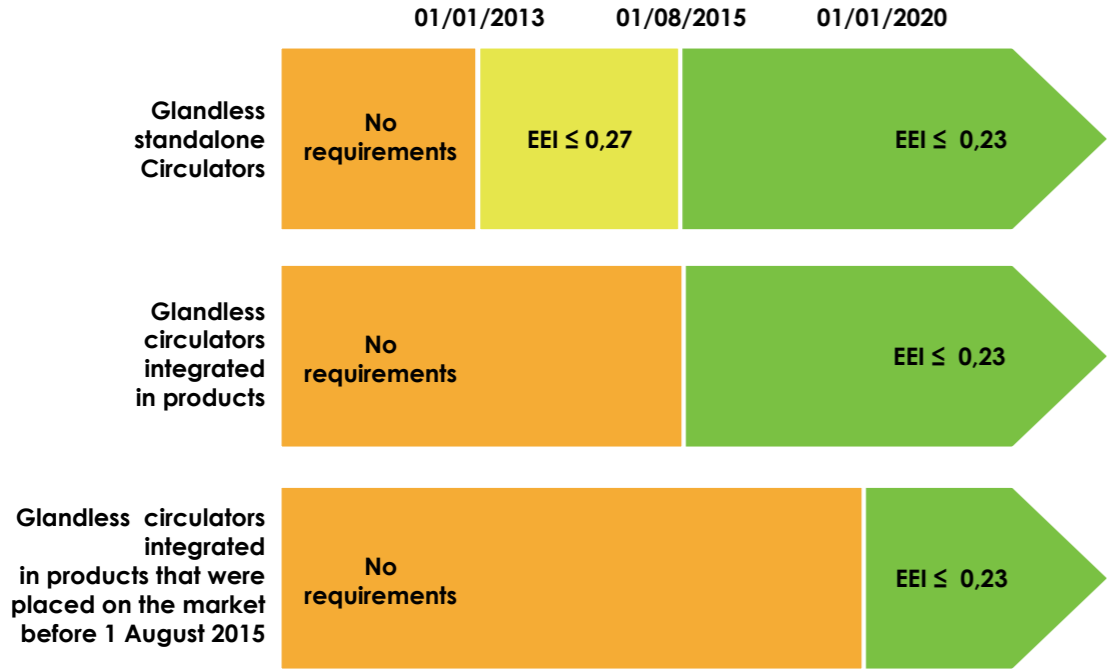
### When does the ErP Directive become effective?

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: Askoll circulators are among them.



Askoll 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.

### ASKOLL PERMANENT MAGNET MOTORS



The entire range of Askoll 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 ASKOLL CIRCULATORS

### Wet rotor circulator

Askoll 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 Askoll circulators)

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

### Vent routine



Askoll 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 unlocking programme



Askoll 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 ADAPT	✓	-	✓	-
ES C A	✓	-	-	-
ES MAXI	✓	✓	✓	-
ES2 SOLAR	✓	-	✓	-
E-PURE	-	-	-	✓

KEY: ✓ Applicable - Not applicable

# ENERGY SAVING

## Design

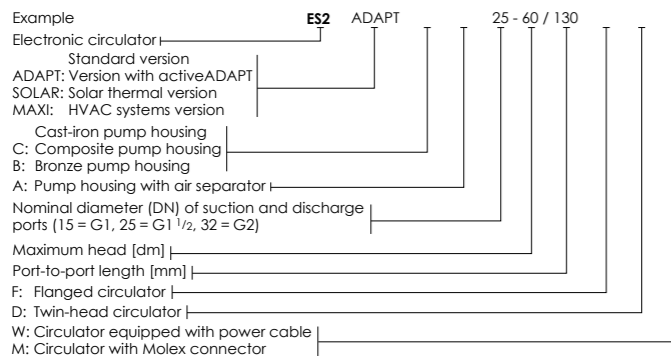
The **Askoll ENERGY SAVING** circulators are wet rotor type, driven by a permanent magnets synchronous motor (PM motor) controlled by an on board inverter. **Askoll ENERGY SAVING** circulators are variable speed circulator characterized by higher energy efficiency and provide excellent benefits:

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

## Distinctive elements

- Very high degrees of efficiency due to Askoll 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  $\Delta p-c$  (constant differential pressure) and  $\Delta p-v$  (proportional differential pressure)
- Min-Max mode: allows to set the exact working point across the range
- Integrated motor protection
- Automatic unlocking programme
- Reliability and comfort during installation and operation

## Type key

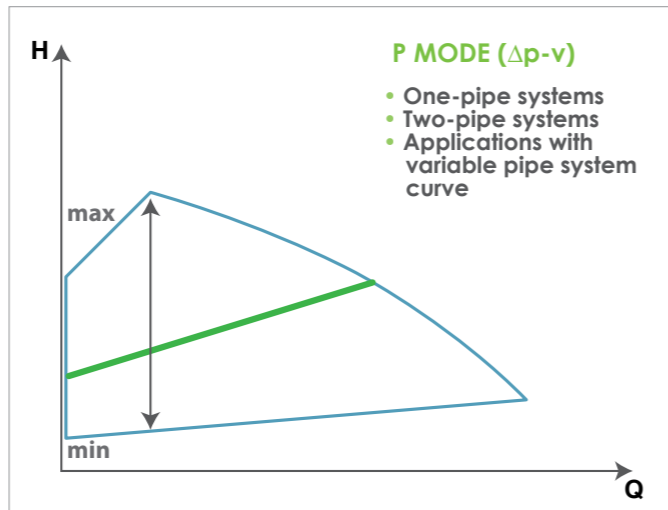


## Operating mode

**Askoll 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 ( $\Delta p-v$ ) Proportional differential pressure

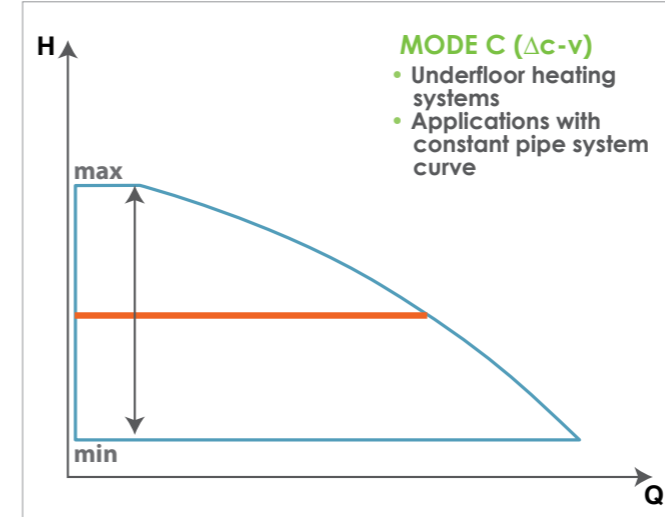
The innovative electronics of the circulator, developed in Askoll laboratories, proportionally reduces the pressure level (head) according to the reduction of the heat requested by the system (reduced flow). A proportional curve can be selected within the allowed flow rate range.



Thanks to this feature, the power consumption of **Askoll ENERGY SAVING** is even smaller: the energy (power) used by the circulator decreases according to the pressure and flow level. With this setting, **Askoll ENERGY SAVING** ensures optimal performance in the majority of heating systems, making it particularly suitable in single pipe and two pipe installations. **Askoll 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 ( $\Delta p-c$ ) Constant differential pressure

The circulator maintains a constant pressure level (head) upon the decreasing demand for heat from the system (reduced flow rate). A constant curve can be selected within the allowed flow rate range.



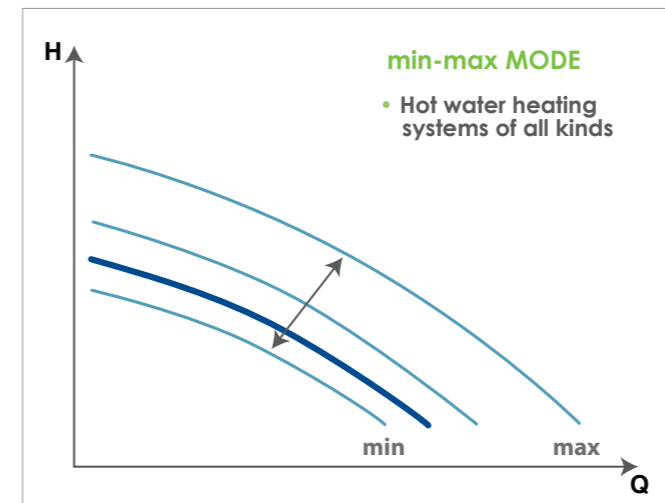
This mode is suitable for all underfloor heating systems, where all circuits must be balanced for the same drop in the head or for applications with no changeable pipe system curve (e.g. system without thermostatic valves).

### min-max mode – Fixed speed

**Askoll 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.

Installing a traditional three-speed circulator is not always possible to operate the circulator at the optimum working point of the system. Being able to gradually adjust the speed, it is possible to select the exact working point across the range.

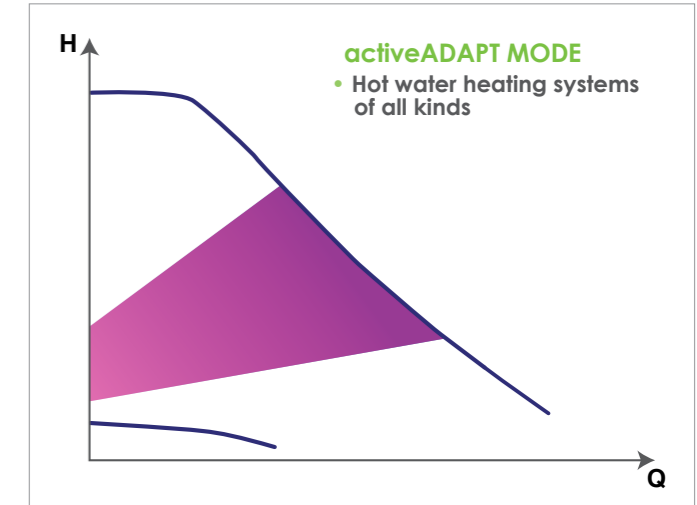
**Askoll ENERGY SAVING** replaces entire ranges of traditional circulators: the warehouse management becomes much easier.



### 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.

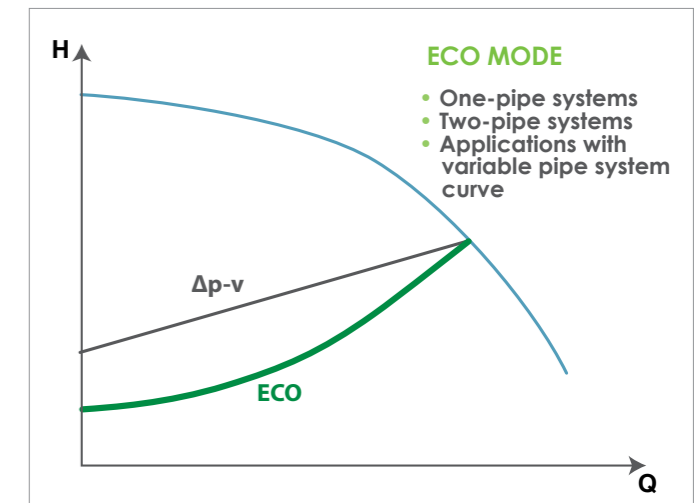
- Improves the hydraulic balance of the system
- Ensures optimum performance during partial load periods
- Enables quick installation



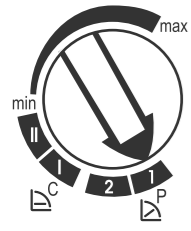
Developed and patented by Askoll, activeADAPT mode makes installation quick and easy.

### 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 ( $\Delta p-v$ )**, in **ECO** mode it is possible to **reduce power absorption by an additional 20% without affecting comfort and reliability.**

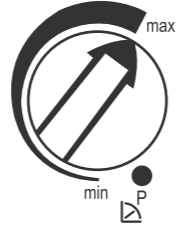


## Regulation and control



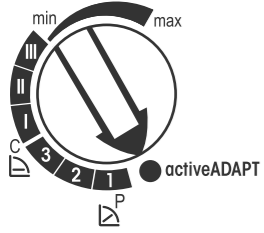
### ■ ES2 model

- Turn the regulator to select the desired operating curve
- Nr. 2 proportional-pressure curves (P1,P2)
  - Nr. 2 constant-pressure curves (C1,C2)
  - min-max mode – Fixed speed



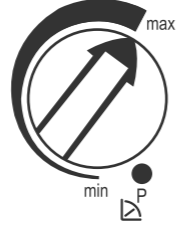
### ■ ES2 SOLAR model

- Turn the regulator to select the desired operating curve
- Nr. 1 proportional-pressure curve (P)
  - min-max mode – Fixed speed



### ■ ES2 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 (C1,C2, C3)
  - min-max mode – Fixed speed



### ■ ES C A model

- Turn the regulator to select the desired operating curve
- Nr. 1 proportional-pressure curve (P)
  - 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, symbols and display

### ■ ES2, ES2 ADAPT, ES2 SOLAR, ES C A model

A LED provides information about the operation status of the circulator

LED	COLOR	DESCRIPTION	ES2	ES2 ADAPT	ES2 SOLAR	ES C A
activeADAPT	Violet	activeADAPT mode	-	✓	-	-
P	Green	P mode ( $\Delta p-v$ ) – Proportional differential pressure	✓	✓	✓	✓
C	Orange	C mode ( $\Delta p-c$ ) - 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	✓	✓	✓	-
	Flashing and performing a rapid succession of different colour		-	-	-	✓
	Red	Any fault or malfunction such as to prevent the proper functioning: <ul style="list-style-type: none"> <li>Rotor blocked</li> <li>Insufficient supply voltage</li> <li>Electrical fault</li> </ul>	✓	✓	✓	✓

KEY: ✓ Applicable; - Not applicable



### ■ ES MAXI model

The display alternates between the flow rate [m<sup>3</sup>/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%)

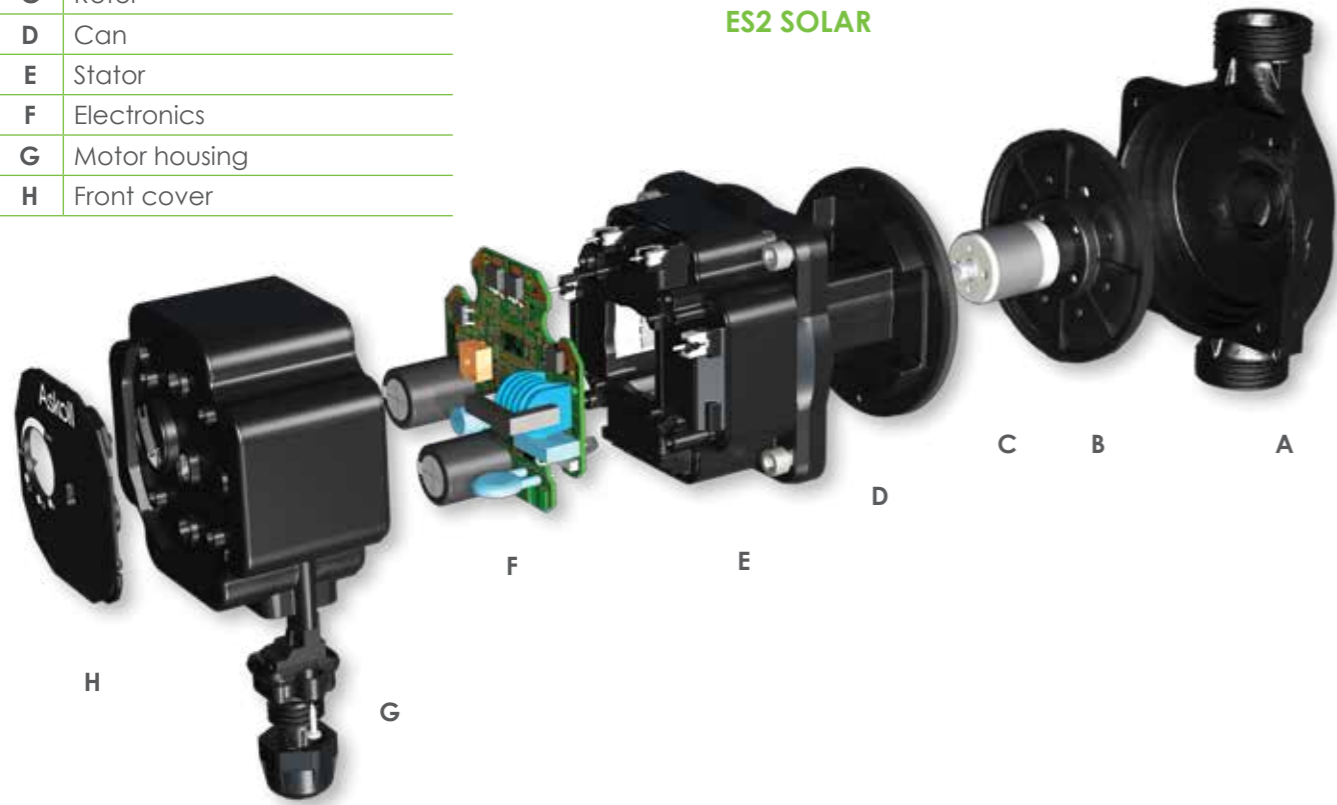
SIMBOL	DESCRIPTION
	P mode ( $\Delta p-v$ ) – Proportional differential pressure
	C mode ( $\Delta p-c$ ) - Constant differential pressure
	min-max mode – Fixed speed
	ECO mode – Energy-saving Both these symbols are light when this operating mode is active.
0-10V	Operating mode 0-10V
Modbus	Operating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



## Components

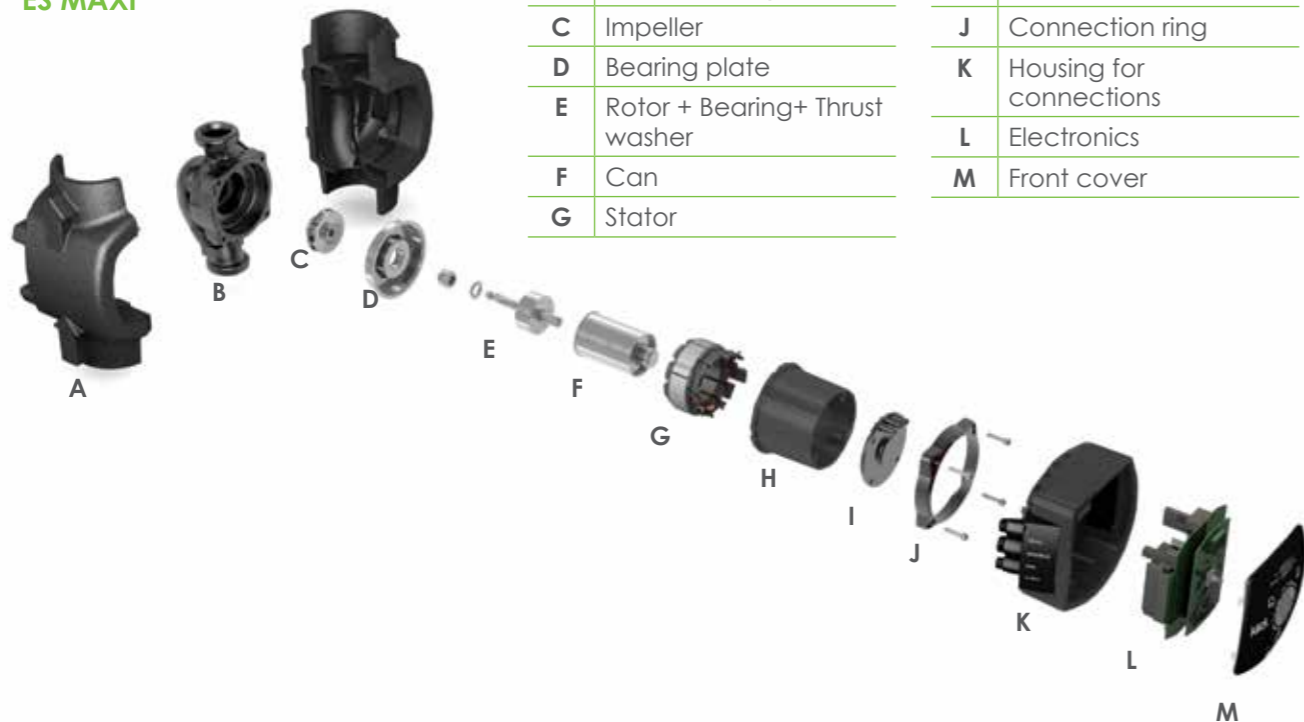
DESCRIPTION	
A	Pump housing
B	Impeller and bearing plate
C	Rotor
D	Can
E	Stator
F	Electronics
G	Motor housing
H	Front cover

ES2  
ES2 ADAPT  
ES2 SOLAR



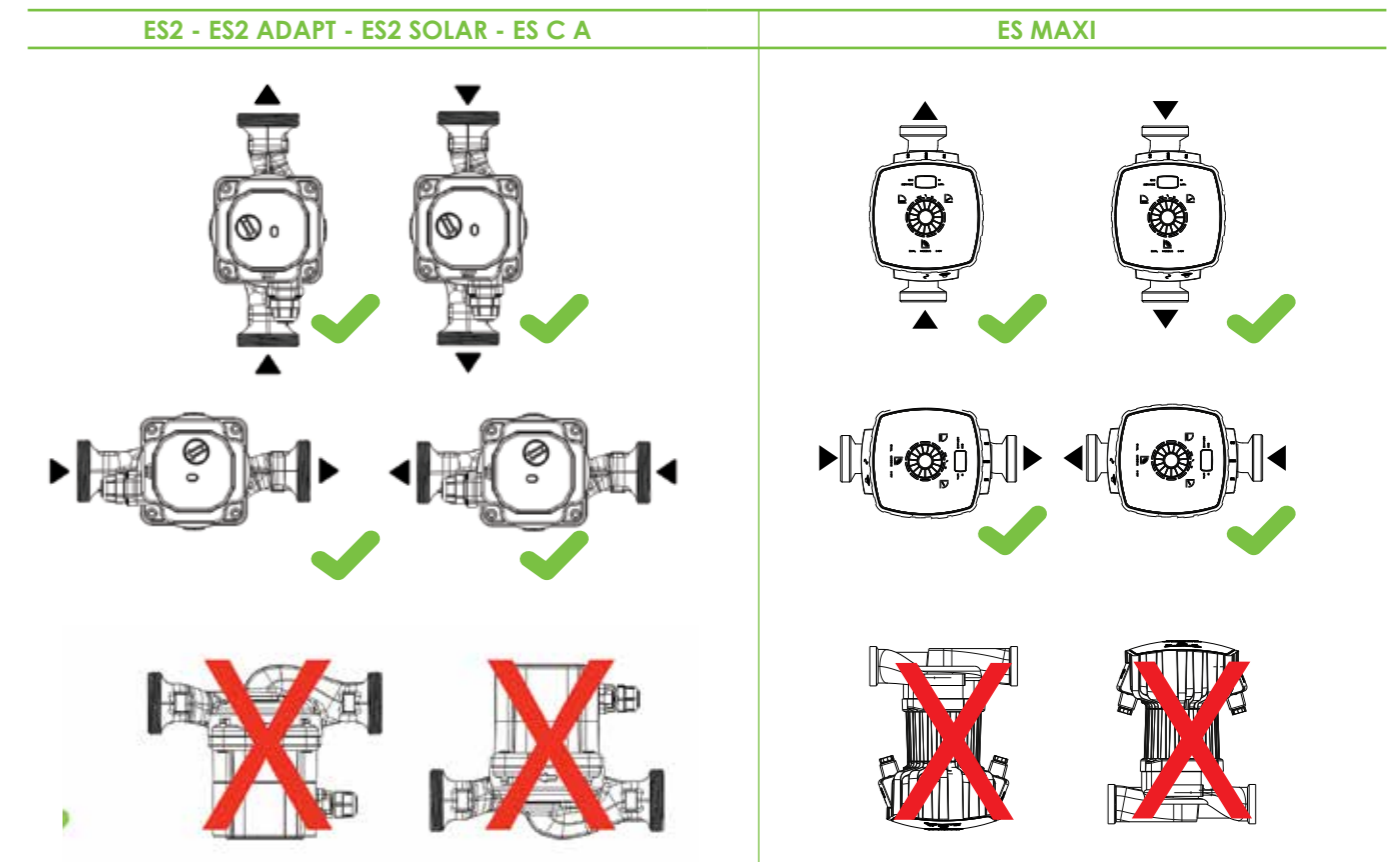
## ES MAXI

DESCRIPTION		DESCRIPTION	
A	Heat insulation	H	Motor housing
B	Pump housing	I	Motor cover
C	Impeller	J	Connection ring
D	Bearing plate	K	Housing for connections
E	Rotor + Bearing+ Thrust washer	L	Electronics
F	Can	M	Front cover
G	Stator		



## 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. **Askoll ENERGY SAVING** circulators have to be always installed with the motor shaft horizontal.



## E-PURE

### Design

**Askoll E-PURE** are circulators for domestic hot water. They are driven by a permanent magnet synchronous motor controlled by an embedded on board inverter.

**Askoll E-PURE** models are innovative synchronous technology circulators designed and manufactured specifically for the circulation of domestic hot water and liquids in the food industry.

**This circulator is suitable for drinking water only.**

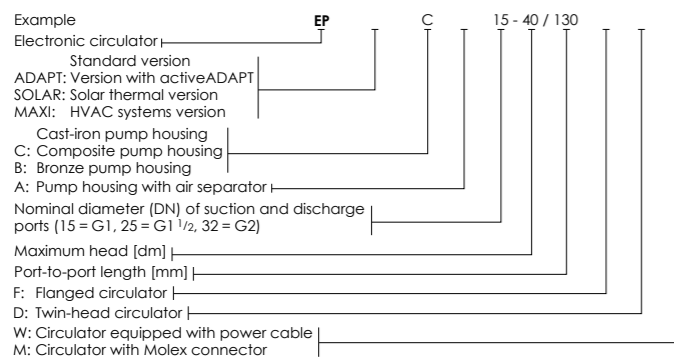
**Askoll E-PURE** circulators are variable speed circulator characterized by higher energy efficiency and provide excellent benefits:

1. **Maximum energy efficiency**
2. **A single model for "infinite" installations**
3. **Easy installation**

### DISTINCTIVE ELEMENTS

- Very high degrees of efficiency due to Askoll permanent magnets motor
- Maximum energy efficiency
- A single model replaces up to 5 models offered by other manufacturers
- Easy installation
- Quick and secure-fixing electrical connection
- A LED provides information about the operation status of the circulator
- The adjustment is simple and intuitive: simply turn the regulator
- Electronic controls allow to set the necessary working point
- The pump housing realized in composite plastic material is designed for working at high temperatures (TF95)
- The composite plastic material guarantees a top hygiene standards and reduces drastically incrustations and oxidations
- Integrated motor protection
- Automatic unlocking programme

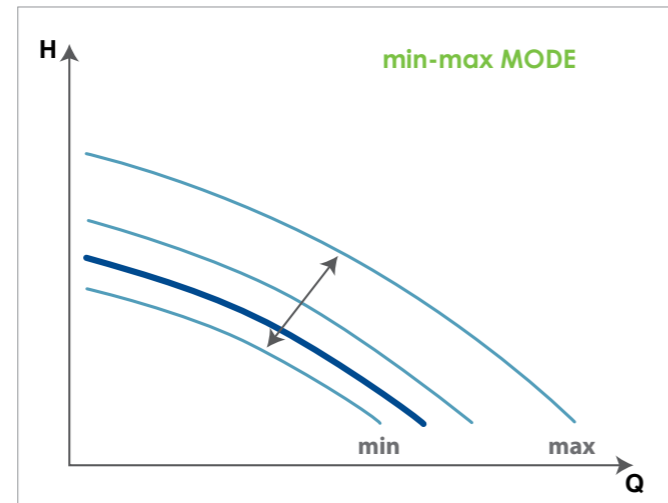
### Type key



### Operating mode

**Askoll E-PURE** circulators meet, with the same outstanding efficiency, the requirements of different systems.

#### min-max mode – Fixed speed



**Askoll E-PURE** features fixed speed 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. Single speed circulators often do not allow to operate in the best conditions for the system. The smart electronics of **Askoll E-PURE** allow to vary the speed gradually and to adapt circulator performance to the features of each individual system. Each installation is a success.

### Regulation and control

Turn the regulator to select the desired operating curve

#### min-max mode – Fixed speed



	DESCRIPTION
min	Minimum performance
1	Performance equivalent to a circulator with a maximum head of 1 m
2	Performance equivalent to a circulator with a maximum head of 2 m
max	Maximum performance

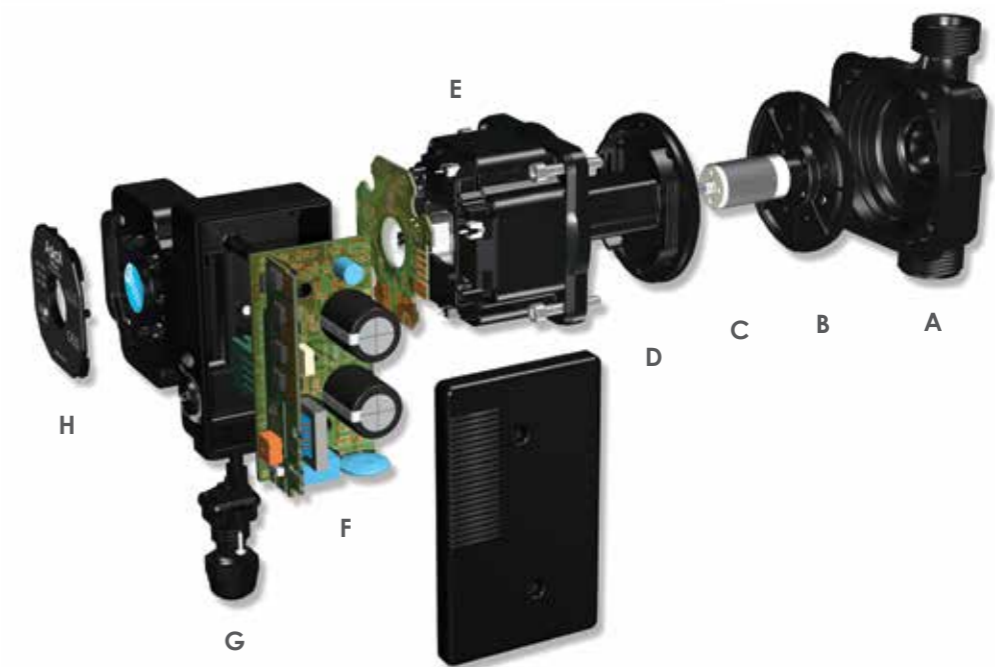
### Led, symbols and display

A LED provides information about the operation status of the circulator.

LED	COLOR	DESCRIPTION
	Green	min-max mode – Fixed speed
	Flashing green	Adjustement of working point as a result of a setting change
	Red	Any fault or malfunction such as to prevent the proper functioning: <ul style="list-style-type: none"> <li>• Rotor blocked</li> <li>• Insufficient supply voltage</li> <li>• Electrical fault</li> </ul>

### Components

#### E-PURE



	DESCRIPTION
A	Pump housing
B	Impeller and bearing plate
C	Rotor
D	Can

	DESCRIPTION
E	Stator
F	Electronics
G	Motor housing
H	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. **Askoll E-PURE** circulators have to be always installed with the motor shaft horizontal.





## 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.

Askoll circulators are designed with innovative technology which, compared to conventional circulators, **are able to reduce power consumption up to 80%** and optimize system performance by promptly responding to its demands, thus preventing unnecessary waste.

ES2 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



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.



MOTOR TECHNICAL DATA

Power supply	1x230 V (-10%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)*	≤ 0,20 – Part 2
Input power (P <sub>1</sub> )	Min 3W, Max 42W
Input current (I <sub>1</sub> )	Min 0.03A, Max 0.33A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

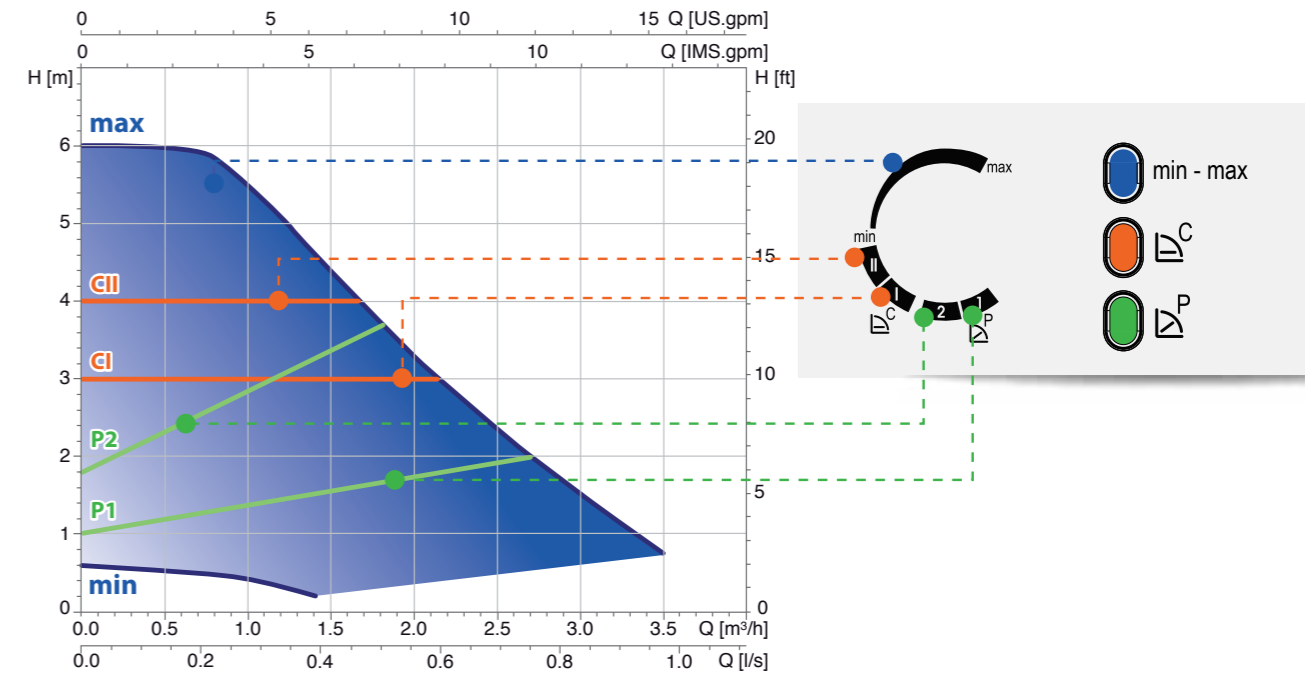
Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Maximum operating pressure	Max 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (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
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 30%.

TYPE KEY

Example	ES2	25 - 60 / 180
Electronic circulator		
Standard version		
ADAPT: Version with activeADAPT		
SOLAR: Solar thermal 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 (15 = G1, 25 = G1 1/2, 32 = G2)		
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.

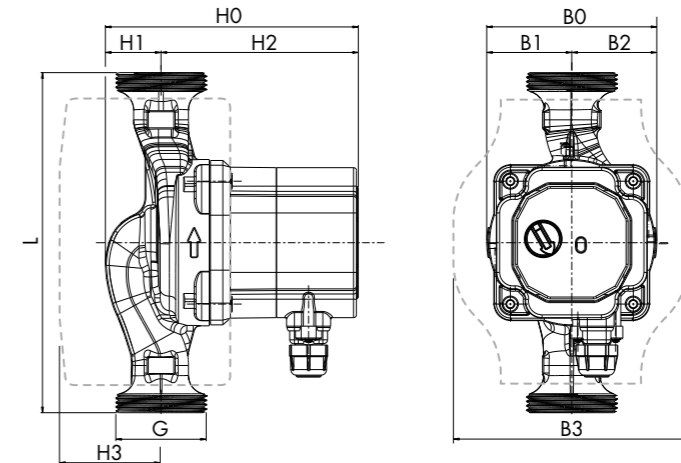
PERFORMANCE CURVES AND PUMP SETTINGS



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]	
		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 1/2	130	90	45	45	124	133,8	29,4	104,4	49	1,81	2,01
ES2 25 - 60/180	G 1 1/2	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

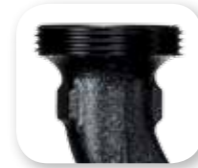
ES2 70



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



Pull-out resistant cable gland with integrated sealing lip



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.



MOTOR TECHNICAL DATA

Power supply	1x230 V (-10%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)*	≤ 0,21 – Part 2
Input power (P <sub>1</sub> )	Min 3W, Max 56W
Input current (I <sub>1</sub> )	Min 0.03A, Max 0.44A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

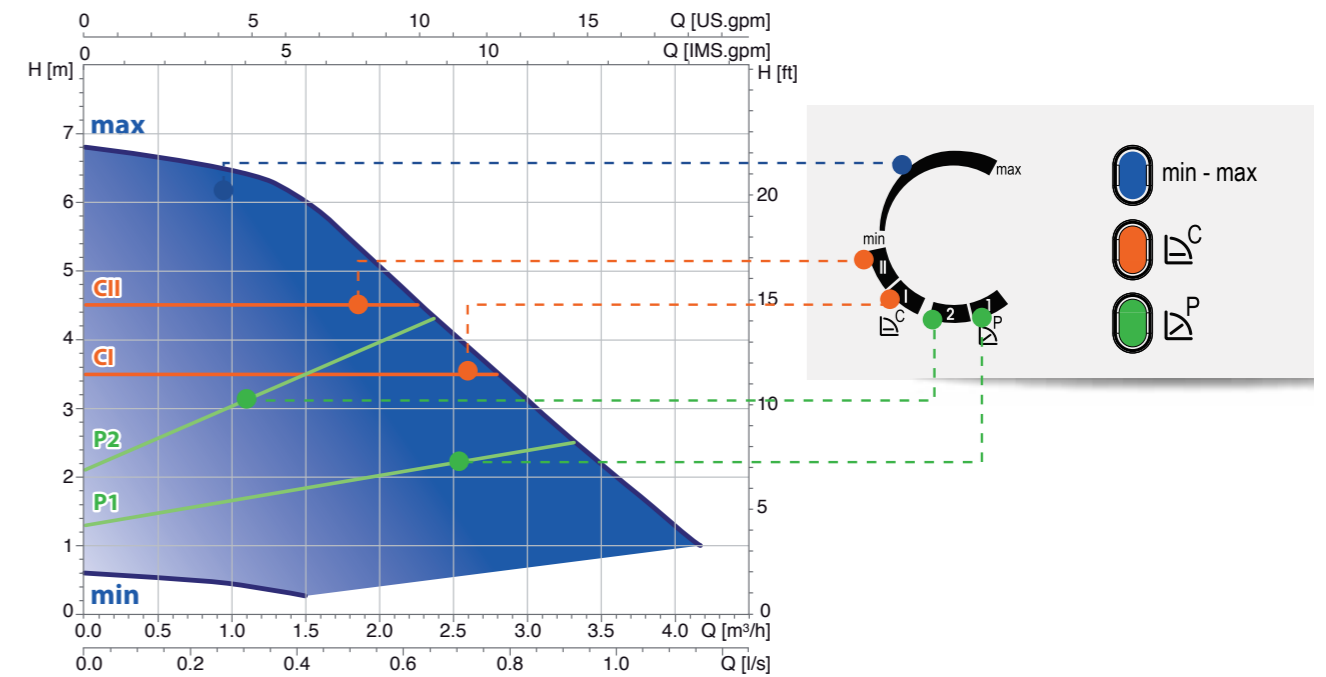
Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Maximum operating pressure	Max 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (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
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 30%.

TYPE KEY

Example	ES2	25 - 70 / 180
Electronic circulator		
Standard version		
ADAPT: Version with activeADAPT		
SOLAR: Solar thermal 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 (15 = G1, 25 = G1 1/2, 32 = G2)		
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.

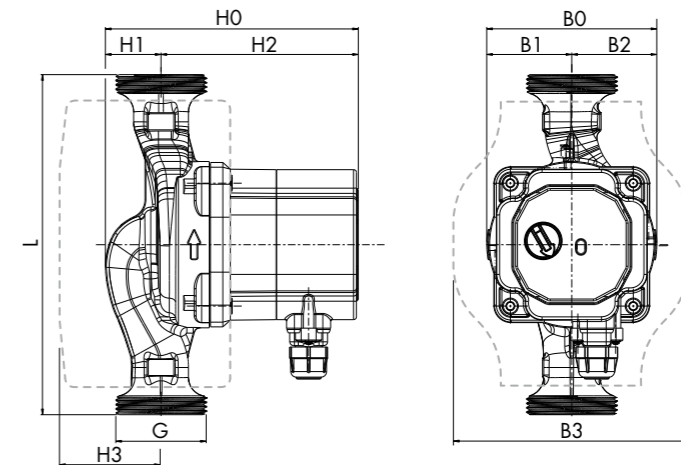
PERFORMANCE CURVES AND PUMP SETTINGS



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]	
		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 1/2	130	90	45	45	124	143,8	29,4	114,4	49	2,05	2,25
ES2 25 - 70/180	G 1 1/2	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



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.



MOTOR TECHNICAL DATA

Power supply	1x230 V (-10%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)*	≤ 0,23 – Part 2
Input power (P <sub>1</sub> )	Min 3W, Max 42W
Input current (I <sub>1</sub> )	Min 0.03A, Max 0.33A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

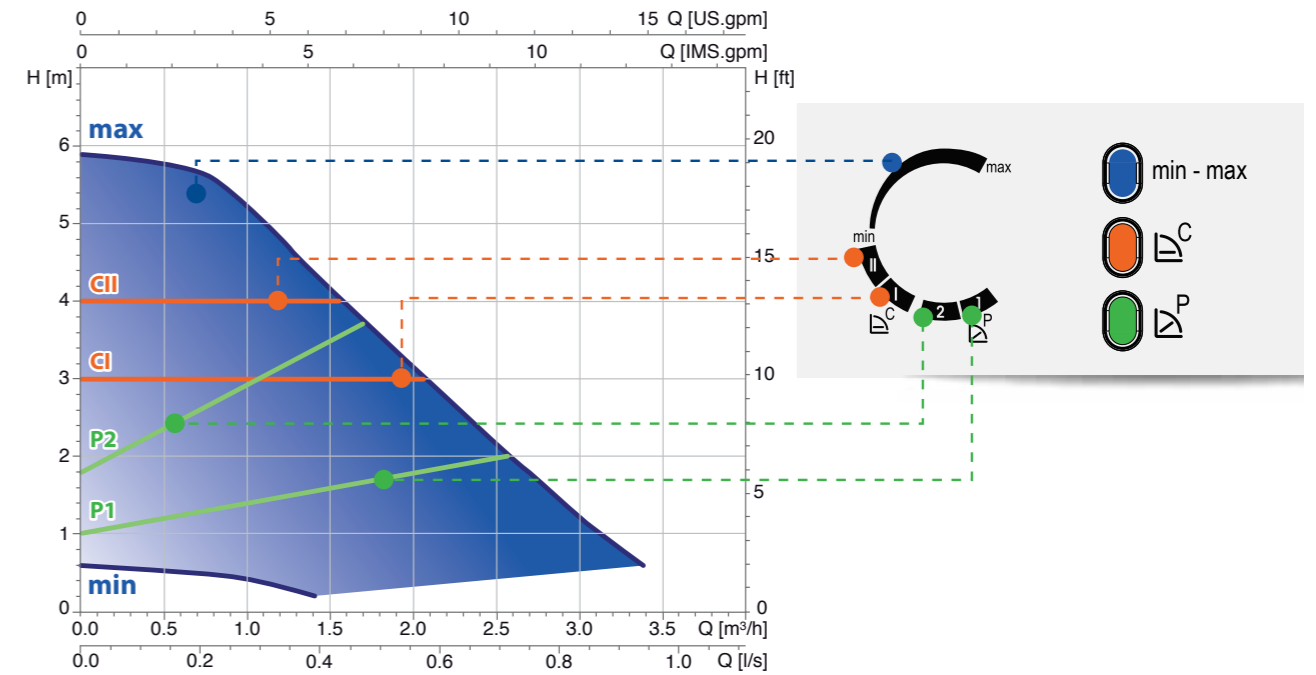
Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Maximum operating pressure	Max 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (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
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 30%.

TYPE KEY

Example	ES2	C	15 - 60 / 130
Electronic circulator			
Standard version			
ADAPT: Version with activeADAPT			
SOLAR: Solar thermal 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 (15 = G1, 25 = G1 1/2, 32 = G2)			
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.

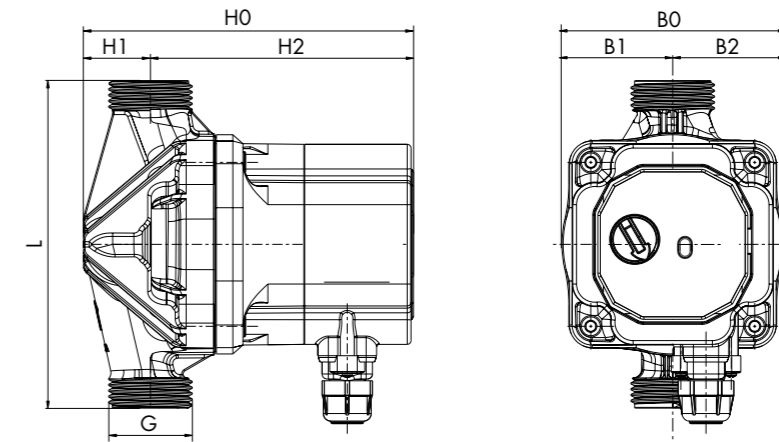
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

Model	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 C 60	PA66 GF composite	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]							WEIGHTS [kg]	
		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



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



MOTOR TECHNICAL DATA

Power supply	1x230 V (-10%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)*	≤ 0,23 – Part 2
Input power (P <sub>1</sub> )	Min 3W, Max 56W
Input current (I <sub>1</sub> )	Min 0.03A, Max 0.44A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

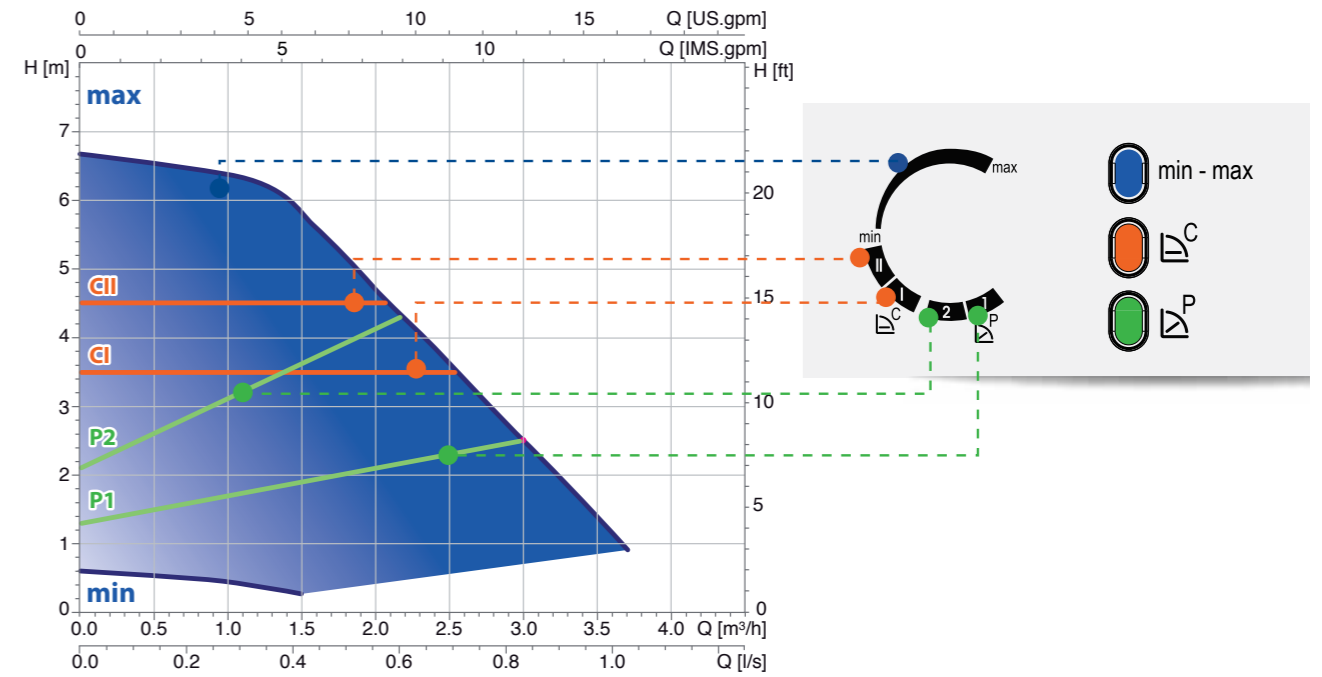
Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Maximum operating pressure	Max 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (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
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 30%.

TYPE KEY

Example	ES2	C	15 - 70 / 130
Electronic circulator			
Standard version			
ADAPT: Version with activeADAPT			
SOLAR: Solar thermal 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 (15 = G1, 25 = G1 1/2, 32 = G2)			
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.

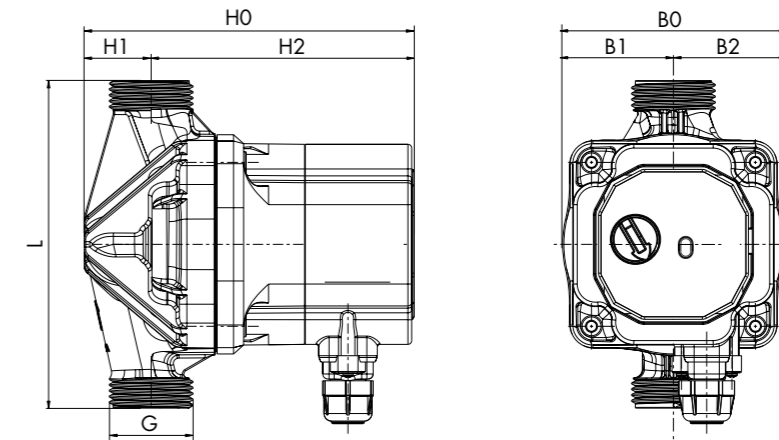
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

Model	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES2 C 70	PA66 GF composite	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



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

ES2 ADAPT 60



activeADAPT mode for easier and faster installations



Effective performance tuning in constant differential pressure ( $\Delta p-c$ ), proportional differential pressure ( $\Delta p-v$ ) 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.



MOTOR TECHNICAL DATA

Power supply	1x230 V (-10%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)*	≤ 0,20 – Part 2
Input power (P <sub>i</sub> )	Min 3W, Max 42W
Input current (I <sub>i</sub> )	Min 0.03A, Max 0.33A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

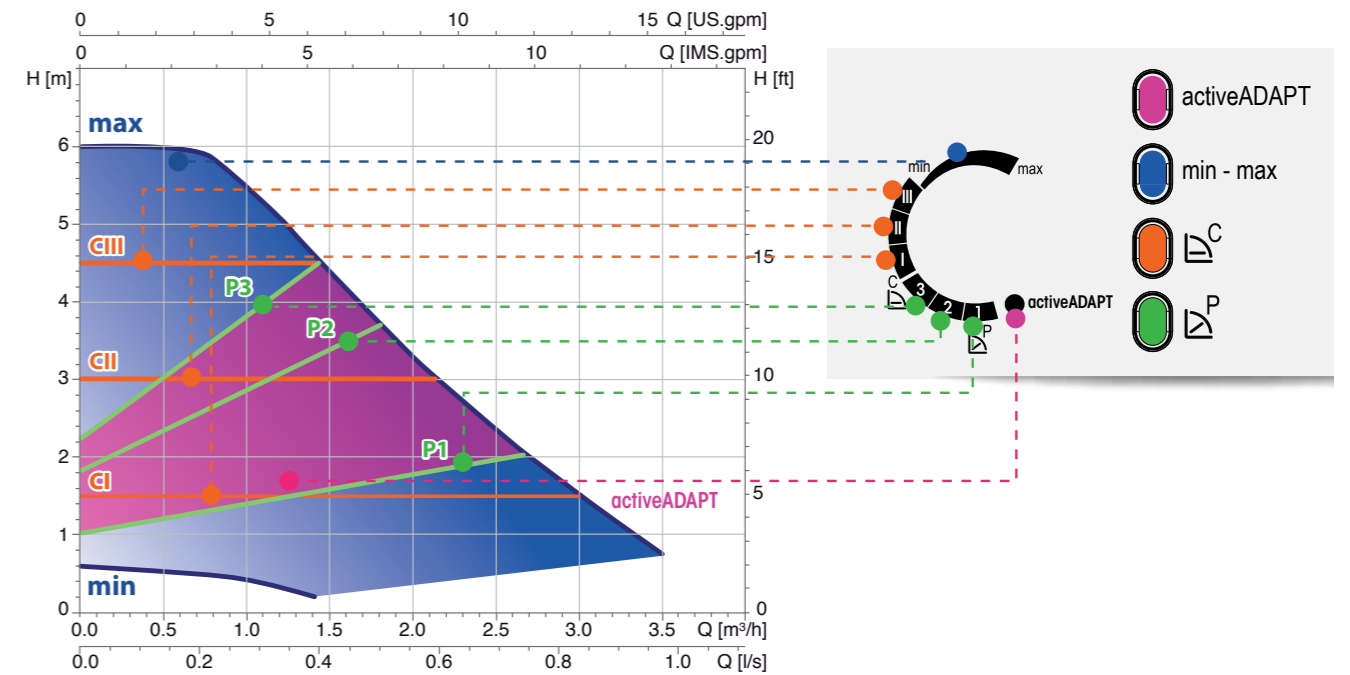
Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +110°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +110°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Maximum operating pressure	Max 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.03 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
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 30%.

TYPE KEY

Example	ES2 ADAPT 15 - 60 / 130
Electronic circulator	ES2
Standard version	ADAPT
ADAPT: Version with activeADAPT	
SOLAR: Solar thermal version	
Cast-iron pump housing	15
C: Composite pump housing	60
B: Bronze pump housing	130
A: Pump housing with air separator	
Nominal diameter (DN) of suction and discharge ports (15 = G1, 25 = G1 1/2, 32 = G2)	
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.

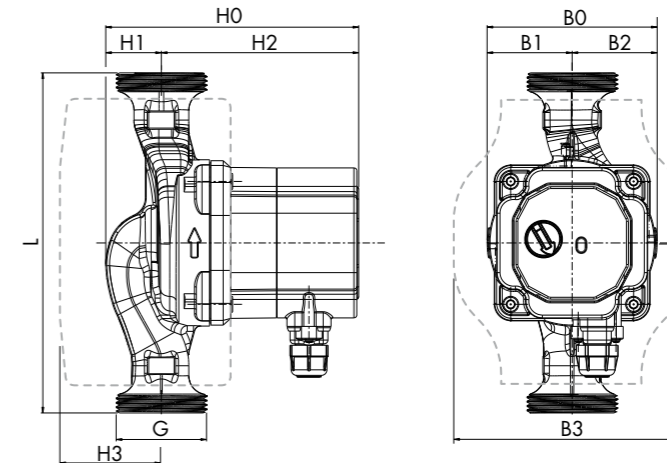
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

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

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [kg]	
		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 1/2	130	90	45	45	124	133,8	29,4	104,4	49	1,81	2,16
ES2 ADAPT 25 - 60/180	G 1 1/2	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



ES2 ADAPT 70



activeADAPT mode for easier and faster installations



Effective performance tuning in constant differential pressure ( $\Delta p-c$ ), proportional differential pressure ( $\Delta p-v$ ) 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.



MOTOR TECHNICAL DATA

Power supply	1x230 V (-10%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)*	≤ 0,21 – Part 2
Input power (P <sub>1</sub> )	Min 3W, Max 56W
Input current (I <sub>1</sub> )	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
Maximum 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
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 30%.

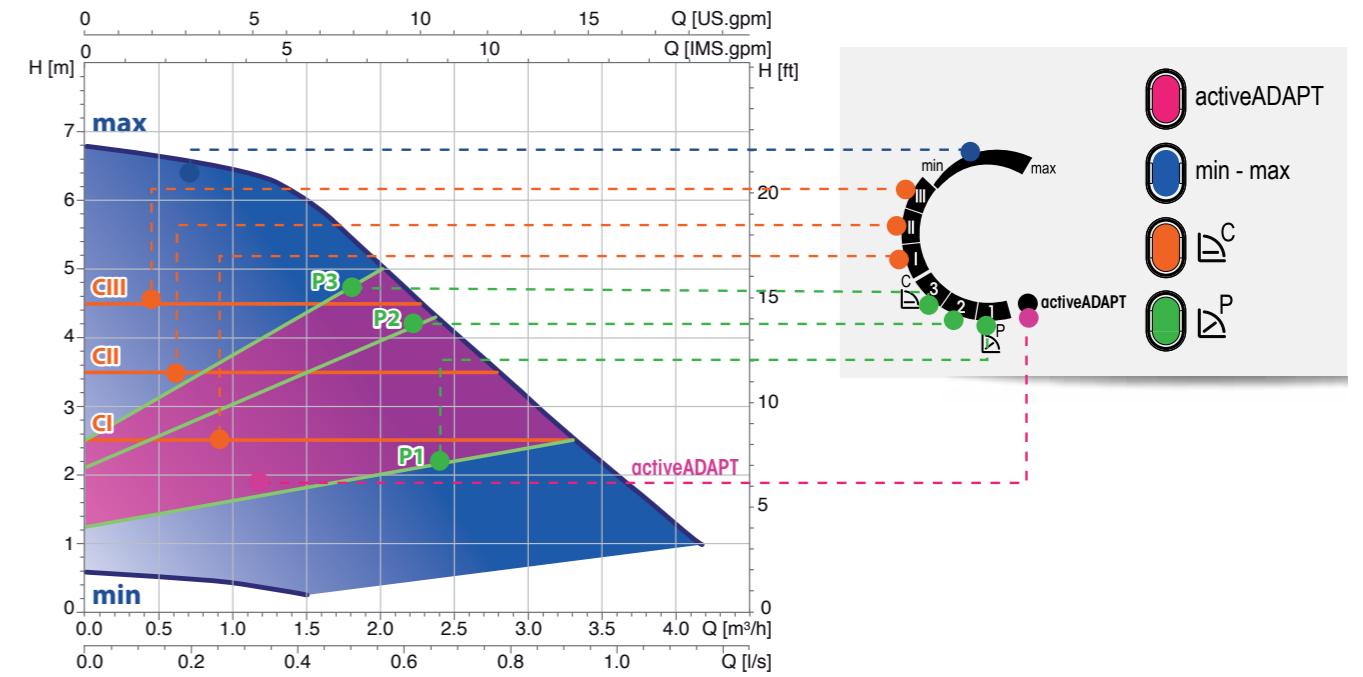
TYPE KEY

Example	ES2 ADAPT 15 - 70 / 130
Electronic circulator	ES2
Standard version	ADAPT
ADAPT: Version with activeADAPT	
SOLAR: Solar thermal version	
Cast-iron pump housing	15
C: Composite pump housing	70
B: Bronze pump housing	130
A: Pump housing with air separator	
Nominal diameter (DN) of suction and discharge ports (15 = G1, 25 = G1 1/2, 32 = G2)	
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.

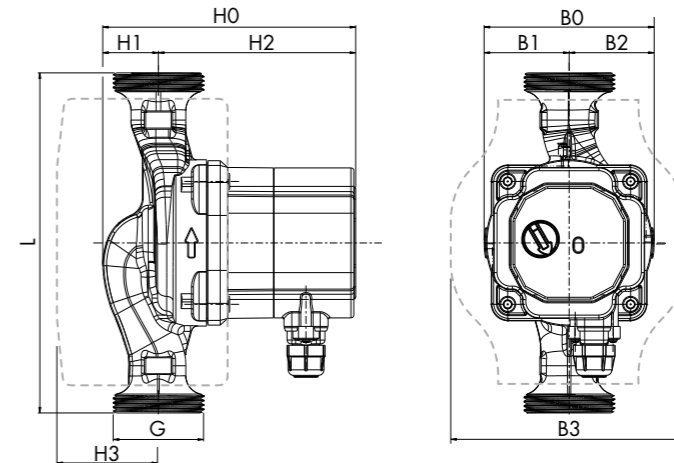
PERFORMANCE CURVES AND PUMP SETTINGS



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]	
		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 1/2	130	90	45	45	124	143,8	29,4	114,4	49	2,05	2,40
ES2 ADAPT 25 - 70/180	G 1 1/2	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



Min-Max mode: allows to set the exact working point across the range



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.



MOTOR TECHNICAL DATA

Power supply	1x230 V (-10%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)*	≤ 0,27 – Part 2
Input power (P <sub>1</sub> )	Min 10W, Max 51W
Input current (I <sub>1</sub> )	Min 0.08A, Max 0.32A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

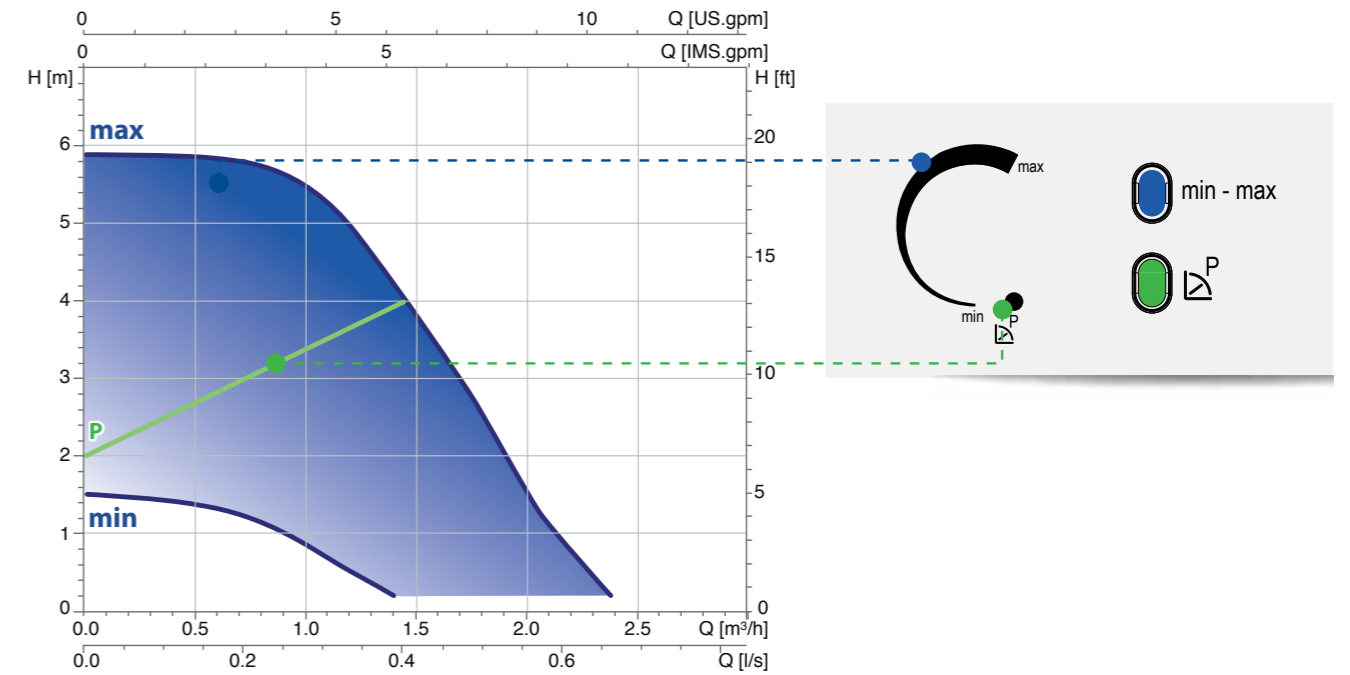
Ambient temperature	from +2°C to +40°C
Allowed liquid temperature**	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +90°C of 40°C = +40°C to +70°C
Maximum operating pressure	Max 0.6 MPa - 6 bar
Minimum pressure on the intake opening	0.03 MPa (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
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 30%.

TYPE KEY

Example	ES2	C	A	15 - 60 / 130
Electronic circulator				
Standard version				
ADAPT: Version with activeADAPT				
SOLAR: Solar thermal 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 (15 = G1, 25 = G1 1/2, 32 = G2)				
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.

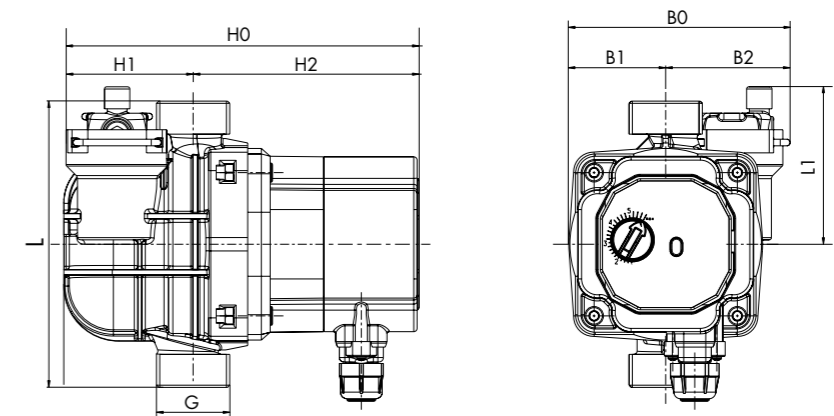
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

Model	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
ES C A 60	PA66 GF composite	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]								WEIGHTS [kg]	
		L	L1	B0	B1	B2	H0	H1	H2	Net	Gross
ES 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



## 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.

**Askoll 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)



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.



MOTOR TECHNICAL DATA

<b>Power supply</b>	1x230 V (±10%), PE; Frequency: 50/60 Hz
<b>Energy Efficiency Index (EEI)*</b>	≤ 0,23 – Part 2
<b>Input power (P<sub>1</sub>)</b>	Min 8W, Max 100W
<b>Input current (I<sub>1</sub>)</b>	Min 0.10A, Max 0.80A
<b>Insulation class</b>	F
<b>Protection class</b>	IP44
<b>Temperature class</b>	TF 110

PUMP TECHNICAL DATA

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

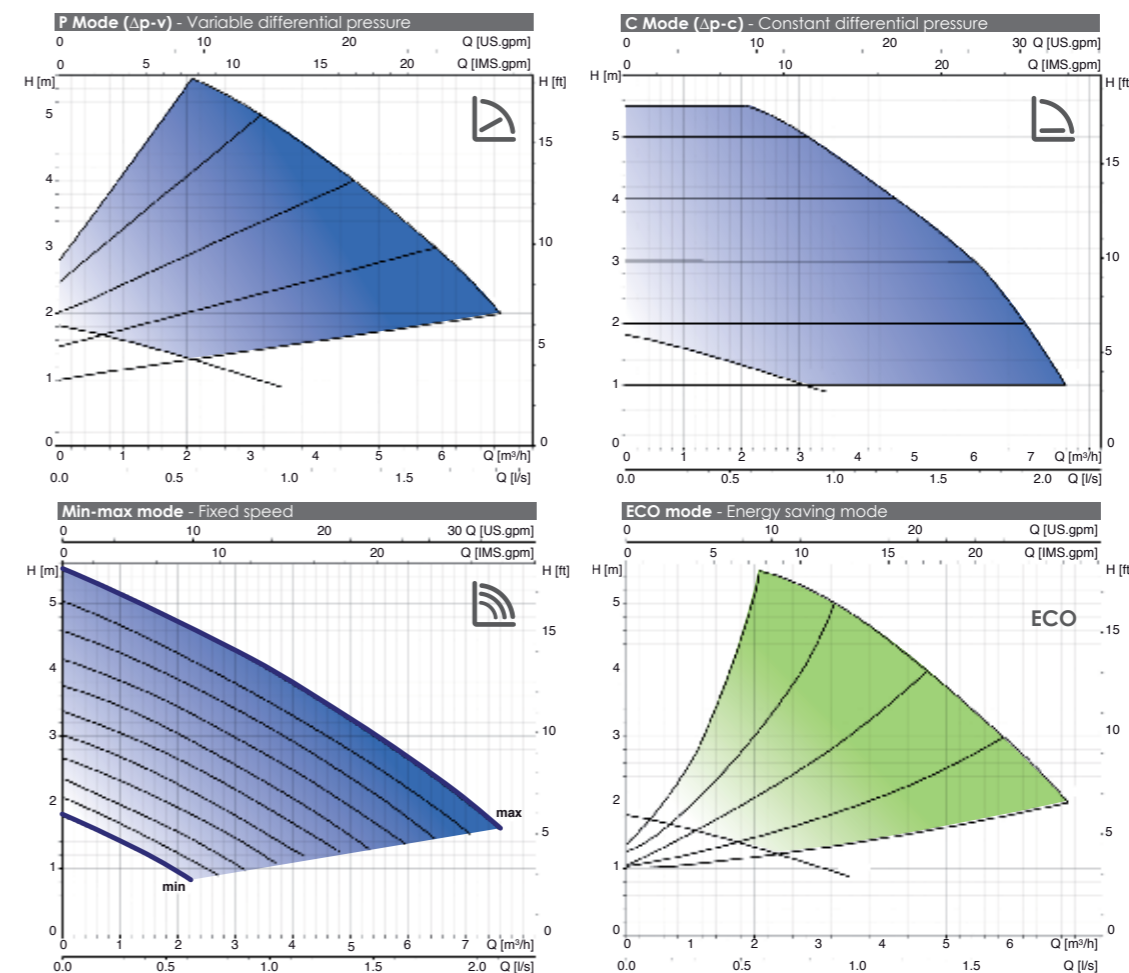
**Approved fluids** Heating water to VDI 2035. Highly viscous fluids (e.g. 30 % glycol content and above) on request. Pure, thin-bodied, non-aggressive and non-explosive fluids not containing any mineral oil, solids or long fibres. Fluids with a viscosity of 10 mm<sup>2</sup>/s max.

**Inputs** Modbus RTU, 0-10VDC, Start/Stop signal, alarm signal, dual function

TYPE KEY

Example	ES	MAXI	25 - 60 / 180
Electronic circulator			
Version			
Nominal diameter (DN) of suction and discharge ports (15 = G1, 25 = G1 1/2, 32 = G2)			
Maximum head [dm]			
Port-to-port length [mm]			

PERFORMANCE CURVES AND PUMP SETTINGS



Select program items and confirm parameters by pressing the button

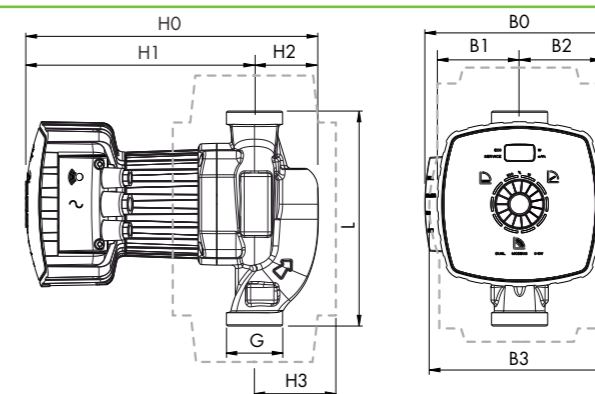


Set the parameters turning the button

MATERIALS

Model	Pump housing	Impeller	Shaft	Bearing	Rotor can	Thermal insulation shell
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	EPP

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [kg]	
		L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 25 - 60/180	G 1 1/2	180	160	70	70	165	245	204	41	81	3,85	5,80
ES MAXI 32 - 60/180	G 2	180	160	70	70	165	245	204	41	81	3,85	5,80

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



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.



MOTOR TECHNICAL DATA

Power supply	1x230 V (±10%), PE; Frequency: 50/60 Hz
Energy Efficiency Index (EEI)*	≤ 0,23 – Part 2
Input power (P <sub>1</sub> )	Min 8W, Max 140W
Input current (I <sub>1</sub> )	Min 0.10A, Max 1.15A
Insulation class	F
Protection class	IP44
Temperature class	TF 110

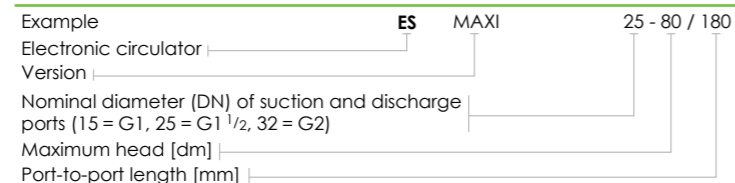
PUMP TECHNICAL DATA

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
Maximum 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 e EN 16297-2

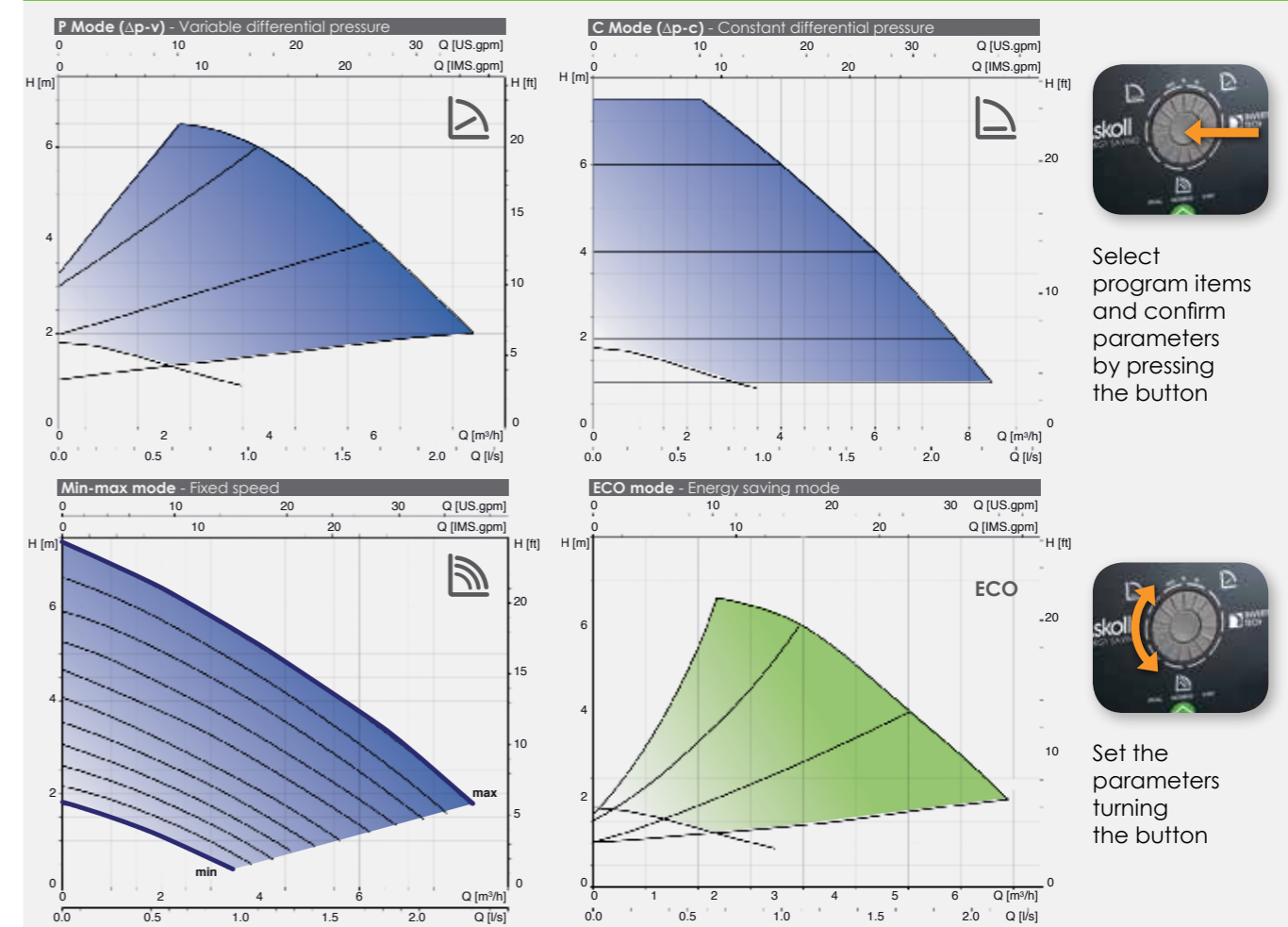
**Approved fluids** Heating water to VDI 2035. Highly viscous fluids (e.g. 30 % glycol content and above) on request. Pure, thin-bodied, non-aggressive and non-explosive fluids not containing any mineral oil, solids or long fibres. Fluids with a viscosity of 10 mm<sup>2</sup>/s max.

**Inputs** Modbus RTU, 0-10VDC, Start/Stop signal, alarm signal, dual function

TYPE KEY



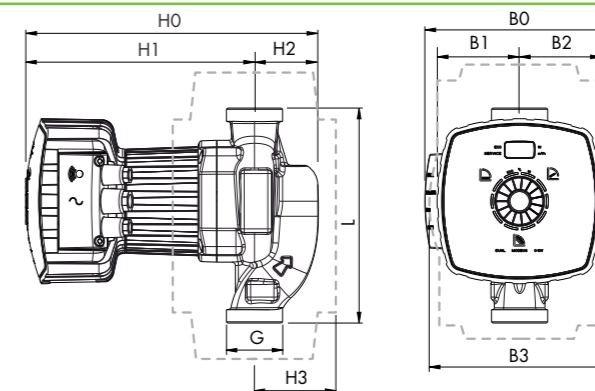
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

Model	Pump housing	Impeller	Shaft	Bearing	Rotor can	Thermal insulation shell
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	EPP

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [kg]	
		L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 25 - 80/180	G 1 1/2	180	160	70	70	165	245	204	41	81	3,85	5,80
ES MAXI 32 - 80/180	G 2	180	160	70	70	165	245	204	41	81	3,85	5,80

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



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.



MOTOR TECHNICAL DATA

<b>Power supply</b>	1x230 V (±10%), PE; Frequency: 50/60 Hz
<b>Energy Efficiency Index (EEI)*</b>	≤ 0,23 – Part 2
<b>Input power (P<sub>1</sub>)</b>	Min 8W, Max 175W
<b>Input current (I<sub>1</sub>)</b>	Min 0.10A, Max 1.40A
<b>Insulation class</b>	F
<b>Protection class</b>	IP44
<b>Temperature class</b>	TF 110

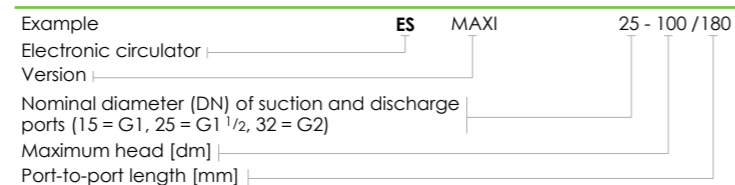
PUMP TECHNICAL DATA

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

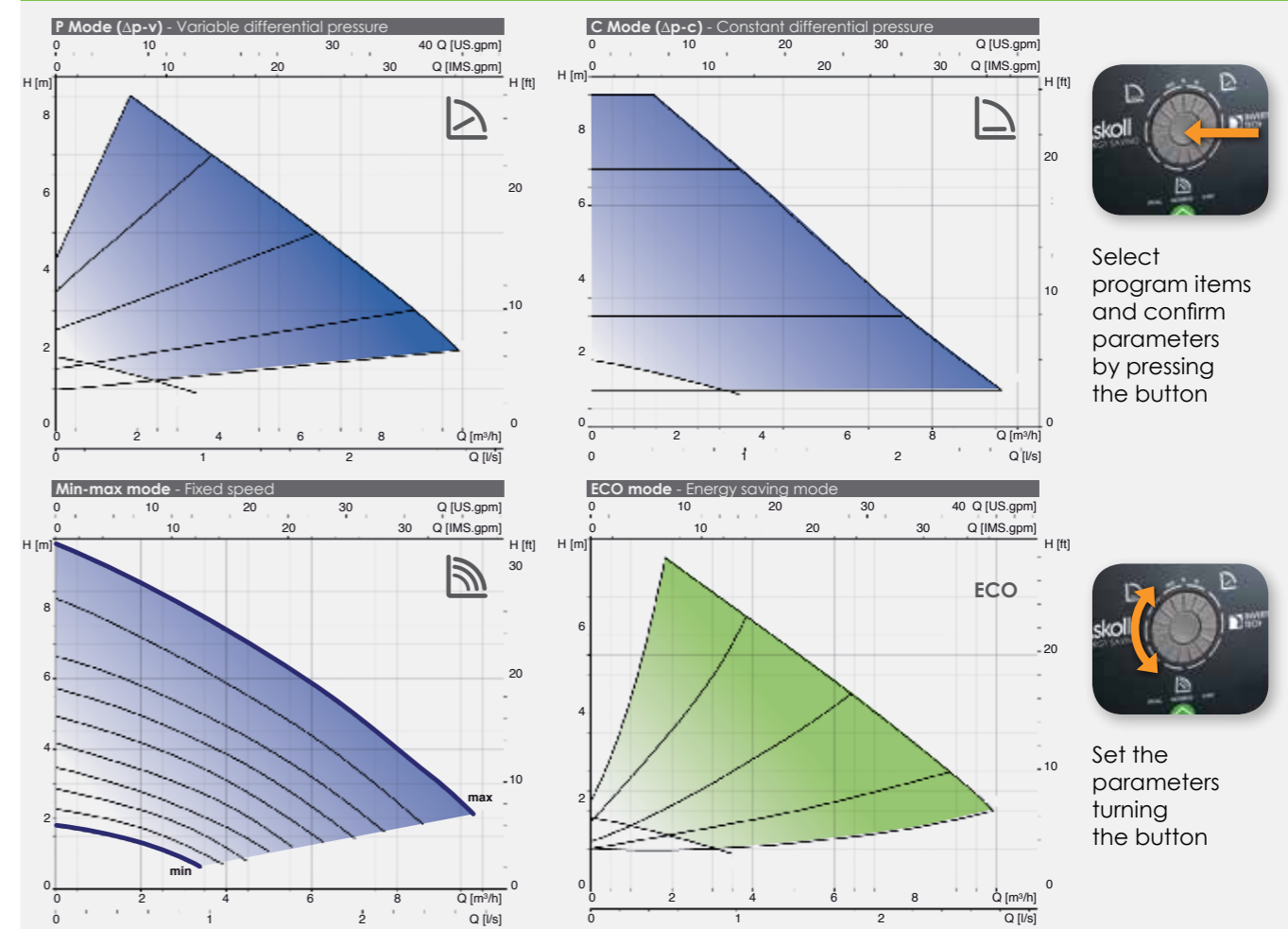
**Approved fluids** Heating water to VDI 2035. Highly viscous fluids (e.g. 30 % glycol content and above) on request. Pure, thin-bodied, non-aggressive and non-explosive fluids not containing any mineral oil, solids or long fibres. Fluids with a viscosity of 10 mm<sup>2</sup>/s max.

**Inputs** Modbus RTU, 0-10VDC, Start/Stop signal, alarm signal, dual function

TYPE KEY



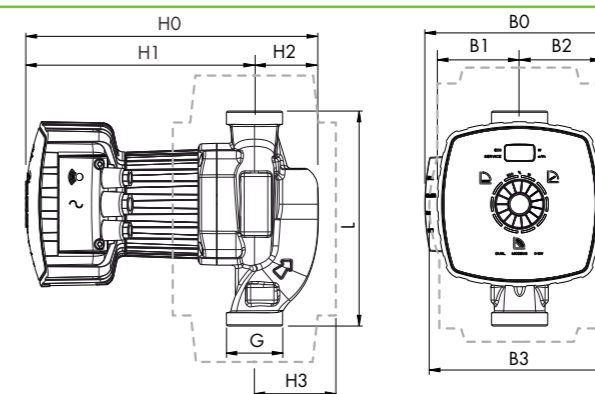
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

Model	Pump housing	Impeller	Shaft	Bearing	Rotor can	Thermal insulation shell
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	EPP

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [kg]	
		L	B0	B1	B2	B3	H0	H1	H2	H3	Net	Gross
ES MAXI 25 - 100/180	G 1 1/2	180	160	70	70	165	245	204	41	81	3,85	5,80
ES MAXI 32 - 100/180	G 2	180	160	70	70	165	245	204	41	81	3,85	5,80

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



## 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.**

Askoll 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.

**Askoll 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.

ES2 SOLAR 60



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 cathaphoresis treated (KTL) and resistant to corrosion

APPLICATION

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



MOTOR TECHNICAL DATA

Power supply	1x230 V (-10%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)*	≤ 0,20 – Part 2
Input power (P <sub>1</sub> )	Min 3W, Max 42W
Input current (I <sub>1</sub> )	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
Maximum 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
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 30%.

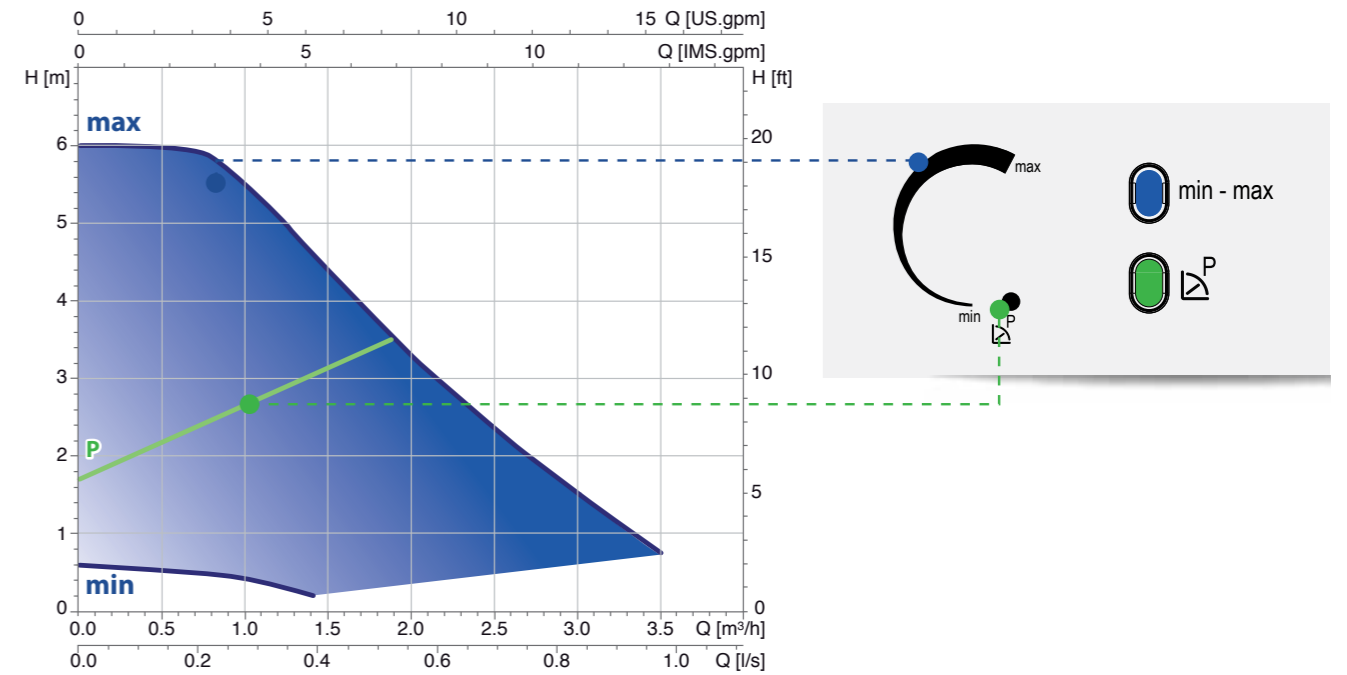
TYPE KEY

Example	ES2	SOLAR	15 - 60 / 130
Electronic circulator			
Standard version			
ADAPT: Version with activeADAPT			
SOLAR: Solar thermal 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 (15 = G1, 25 = G1 1/2, 32 = G2)			
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.

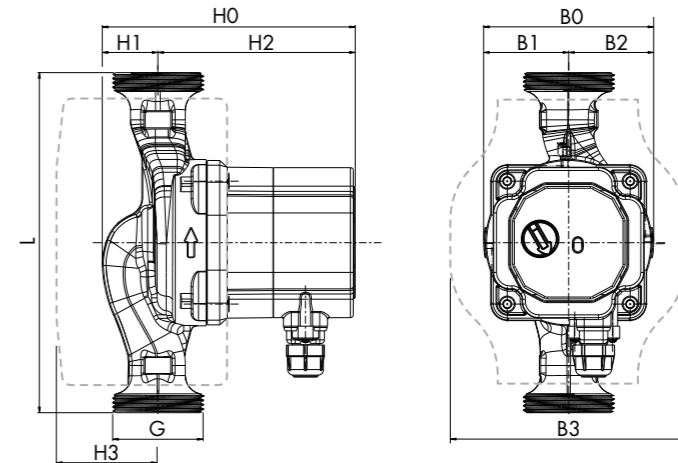
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

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

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [kg]	
		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 1/2	130	90	45	45	124	133,8	29,4	104,4	49	1,81	2,01
ES2 SOLAR 25 - 60/180	G 1 1/2	180	90	45	45	124	133,8	29,4	104,4	49	1,96	2,16



ES2 SOLAR 70



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.



MOTOR TECHNICAL DATA

Power supply	1x230 V (-10%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)*	≤ 0,21 – Part 2
Input power (P <sub>1</sub> )	Min 3W, Max 56W
Input current (I <sub>1</sub> )	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
Maximum 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
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 30%.

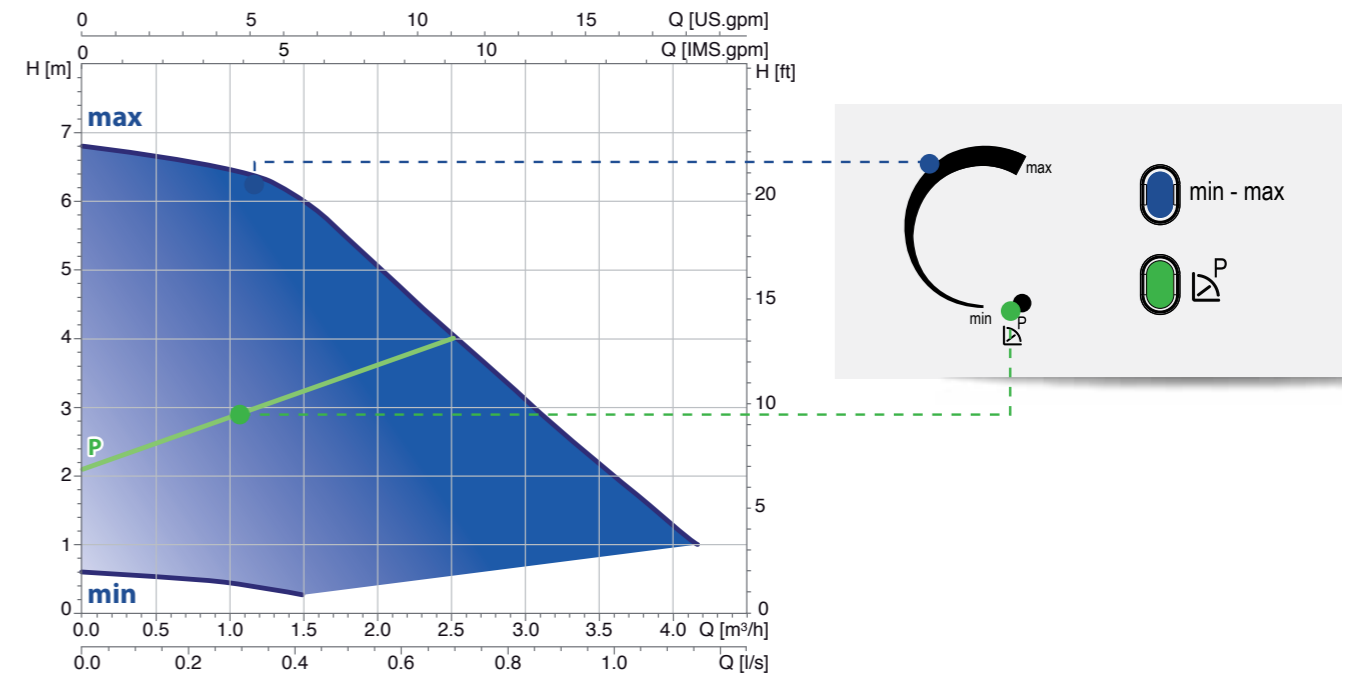
TYPE KEY

Example	ES2	SOLAR	15 - 70 / 130
Electronic circulator			
Standard version			
ADAPT: Version with activeADAPT			
SOLAR: Solar thermal 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 (15 = G1, 25 = G1 1/2, 32 = G2)			
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.

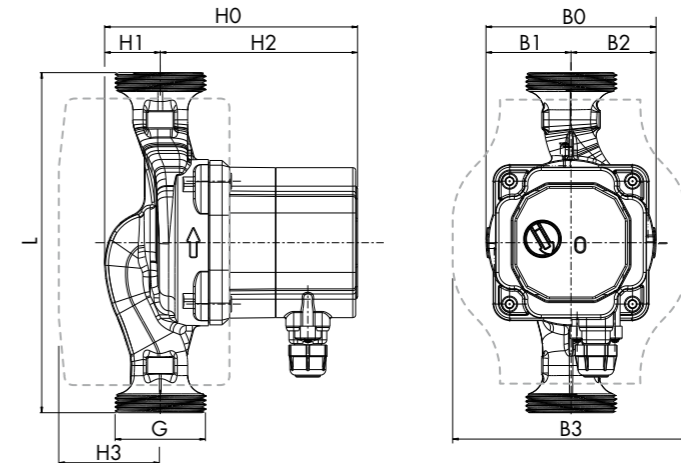
PERFORMANCE CURVES AND PUMP SETTINGS



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]	
		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 1/2	130	90	45	45	124	143,8	29,4	114,4	49	2,05	2,25
ES2 SOLAR 25 - 70/180	G 1 1/2	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. **Askoll 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.



The adjustment is simple and intuitive: simply turn the regulator



Very high degrees of efficiency due to Askoll 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%; + 6%); Frequency: 50 Hz
Electrical connection	Pull resistant cable clamp PG11
Energy Efficiency Index (EEI)	-
Input power (P <sub>1</sub> )	Min 8W, Max 48W
Input current (I <sub>1</sub> )	Min 0.08A, Max 0.41A
Insulation class	H
Protection class	IP44
Appliance class	II

PUMP TECHNICAL DATA

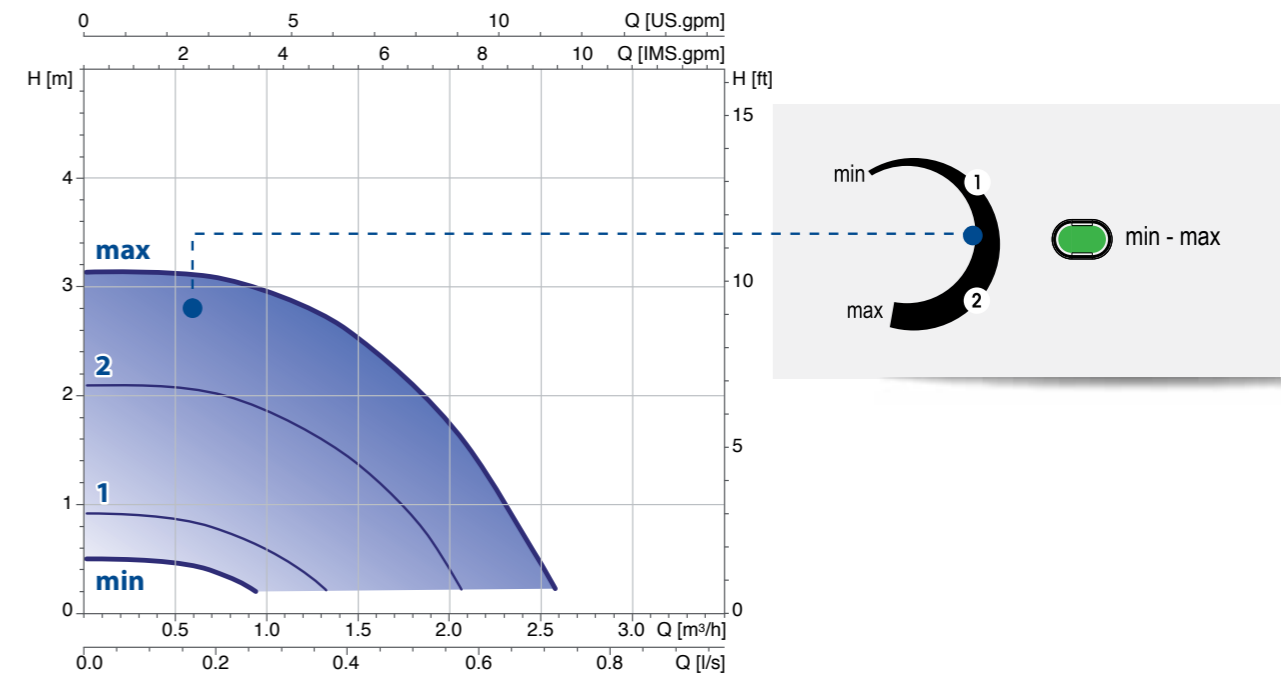
Ambient temperature	from +2°C to +40°C
Allowed liquid temperature*	from +2°C to +95°C
Temperature range at max. ambient temperature	of 30°C = +30°C to +95°C of 35°C = +35°C to +95°C of 40°C = +40°C to +95°C
Maximum operating pressure	Max 1.0 MPa - 10 bar
Minimum pressure on the intake opening	0.03 MPa (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)
Approved fluids	Water for heating according to VDI 2035. Mixtures of water and glycol with glycol percentages not greater than 40%.

TYPE KEY

Example	EP	C	15 - 40 / 130
Electronic circulator	EP		
Standard version		C	
ADAPT: Version with activeADAPT			
SOLAR: Solar thermal version			
Cast-iron pump housing			
C: Composite pump housing		C	
B: Bronze pump housing			
A: Pump housing with air separator			
Nominal diameter (DN) of suction and discharge ports (15 = G1, 25 = G1 1/2, 32 = G2)			
Maximum head [dm]			
Port-to-port length [mm]			

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

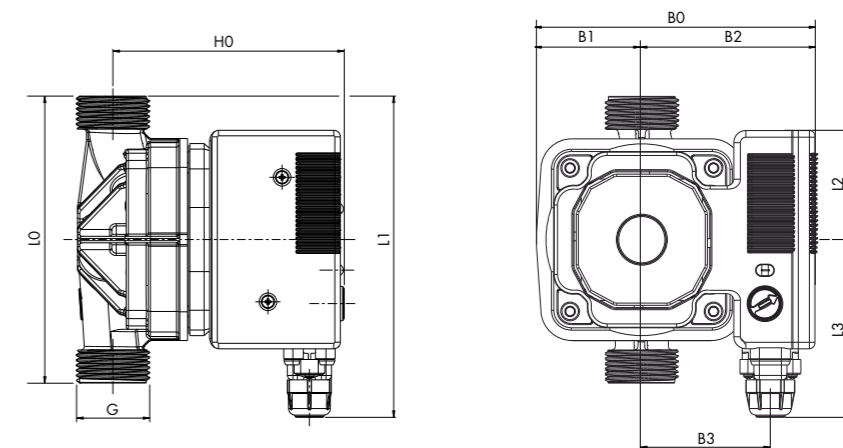
PERFORMANCE CURVES AND PUMP SETTINGS



MATERIALS

Model	Pump housing	Impeller	Shaft	Bearing	Thrust bearing	Rotor can
EP C 40	PA 6T/6I GF composite	Composite	Ceramic	Carbon	Ceramic	Composite

DIMENSIONS, WEIGHTS



MODEL	THREAD	DIMENSIONS [mm]									WEIGHTS [kg]	
		L0	L1	L2	L3	B0	B1	B2	B3	H0	Net	Gross
EP C 10 - 40/130	G 3/4	130	146	49	81	127	48	79	58	105	1,55	1,74
EP C 15 - 40/130	G 1	130	146	49	81	127	48	79	58	105	1,55	1,74



Code	Description	Material	Circulator model
001279	Thermal insulation shells for circulators with standard pump housing	EPP	ES, ESS, ES2 ES2 ADAPT ES2 SOLAR



**SAVINGS**  
Up to 85% less than traditional pumps



Automatic unlocking programme



**TECHNOLOGY**  
Best available technology – PM Motor



Heating system



**ENVIRONMENT**  
Environment protection



Underfloor heating system



**INVERTER TECH**  
Best performance with high flexibility



Cooling system

**HiEff** HIGH EFFICIENCY

High-efficiency electronic circulator



**easy**  
Quick and easy installation



Solar thermal system



**air**  
Vent routine



Domestic hot water circulation system

# Askoll

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