



# ELECTRONIC CIRCULATORS

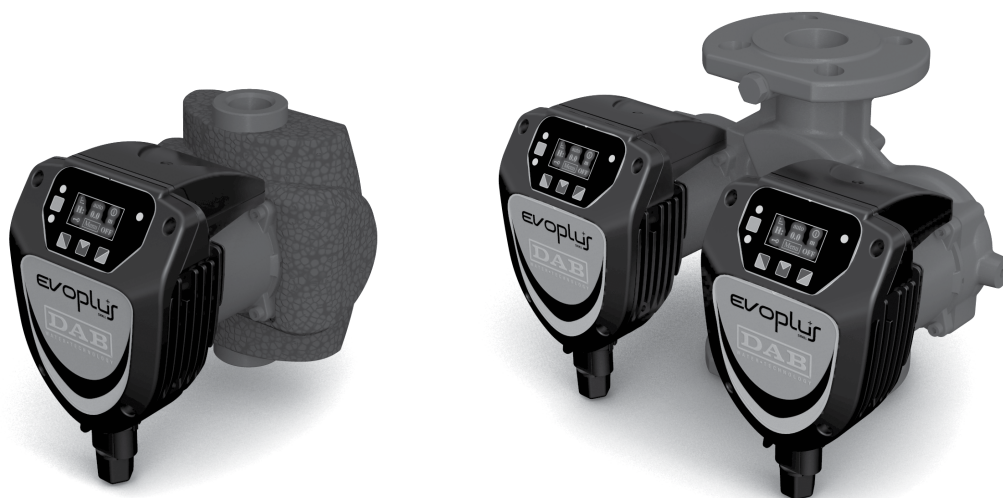
## evoplus<sup>+</sup>



Technical Sheet



# ELECTRONIC CIRCULATORS FOR SMALL COMMUNITY HEATING AND AIR CONDITIONING SYSTEMS



compliant with the 2013 and 2015  
european directive ErP 2009/125/EC (ex EuP)

## GENERAL DATA

### APPLICATIONS

EVOPLUS electronic circulators can be used in heating, ventilation, and air conditioning systems for residential and commercial buildings including:

- Large residential buildings
- Clinics and Hospitals
- Real Estate Assets
- Condominiums and apartment blocks
- Schools
- Homes
- Office buildings

Single version is available with threaded ports from 1 ½" and 2" and flanged DN 32, DN 40, PN 6 / PN 10 / PN 16.

The twin version is available with flanged pump body DN 32 and DN 40, PN 6 / PN 10 / PN 16.

Special version with bronze pump body for sanitary water circulation.

### APPLICATIONS IN HEATING

The heating required in various applications changes significantly during the day/night due to the ambient temperature and changing occupancy levels. This situation is compounded by the different requirements of the various rooms and opening or closing of the various circuit branches in complex installations. Electronically controlled wet rotor pumps constantly ensure, in almost all correctly sized installations, sufficient power and, simultaneously, lower noise emissions, greater comfort and a significant reduction in running costs.

### APPLICATIONS IN AIR CONDITIONING

Unlike conventional electronic pumps, EVOPLUS electronic circulators can also be used in air conditioning systems where the temperature of the liquid pumped is lower than the ambient temperature. In these conditions condensate tends to form on the outer surface of the circulator although this does not impair proper operation of either the electronic or mechanical sections. The unit is designed and sized in such a way as to allow the condensate to drain without damaging the construction components.

### APPLICATIONS FOR HOT WATER CIRCULATION

The SAN version pump with bronze body has been developed specifically for the circulation of secondary hot water. The constant temperature operating mode controls the water temperature in the circulation pipe without needing to use thermostatic valves, thus maintaining required water temperature for user.

## CONSTRUCTION FEATURES

Enbloc circulator composed of cast iron hydraulic section and wet rotor synchronous motor. Motor casing in aluminium. Scroll type pump body featuring high hydraulic efficiency thanks to highly precise design and smooth internal surfaces. In-line suction and discharge ports. The single version is supplied as standard with insulating covers to avoid heat loss and/or the formation of condensate on the pump body. Insulation of the twin version is to be provided by the installer. Use special caution to avoid obstructing the condensate drainage labyrinths in order to avoid impairing operation.

EVOPLUS circulators for small community systems are connected to the power supply line by means of a convenient connector with relative plug supplied as standard that makes the operation simple and fast.

Impeller in technopolymer, motor shaft in alumina held in graphite bearings lubricated by the pumping medium. Rotor protective jacket in stainless steel. Ceramic thrust ring, ethylene propylene seals and stator jacket in carbon fiber composite. Permanent magnet synchronous motor. The twin version features an automatic swing check valve incorporated in the discharge port to avoid water recirculating through the unit when it is not running; moreover, a blank flange is supplied as standard to allow either of the two motors to be removed for servicing. Standard execution of the pump body is PN 16; the flanged version features 4 slots compatible with PN 6 / PN 10 / PN 16 counter-flanges for interchangeability of pumps in existing systems.

Circulator protection rate: IP 44

Insulation Class: F

Standard voltage: single-phase 220/240 V, 50/60Hz

This product complies with European standards EN 61800-3 – EN 60335-1 – EN 60335-2-51

## EVOPLUS CONSTRUCTION FEATURES FOR SMALL COMMUNITY SYSTEMS (ELECTRONIC DEVICE)

EVOPLUS circulators are controlled by means of an IGBT-based device in NPT-technology of the latest generation for higher efficiency and robustness. Specific features includes:

- Sensorless motor control
- Sine wave modulated PWM
- High carrier frequency to eliminate all audio band noise
- Dedicated 32-bit Processor
- Optimised space vector algorithm

An intuitive and functional user interface ensures ease of calibration for all users. The easy to read OLED display on the control panel, 4 easy navigation keys, a drop down menu in line with the latest trends in the field of mobile telephony and a very wide range of functions mean that EVOPLUS circulators are truly revolutionary products. A reliable and robust construction combined with a modern and innovative design completes the product also from an aesthetic point of view.

This range is prearranged for operation with the remote controls having the following expansion modules:

### BASIC MODULE

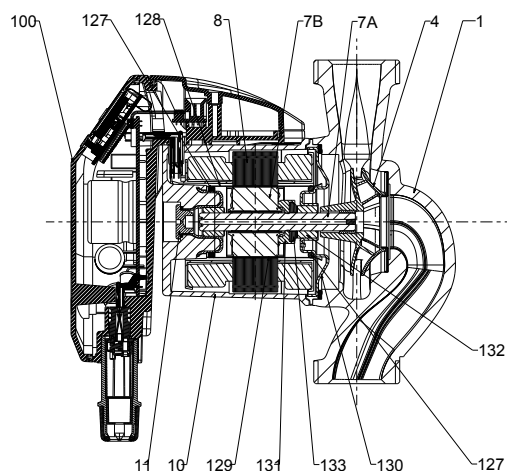
- Economy Function
- Circulator Start/stop
- Alarms system availability
- Indication pump running

### MULTIFUNCTION MODULE

- 2 analogue signals 0-10V
- 1 PWM signal
- 1 analogue signal 4-20 mA
- 1 analogue signal  $\Delta T$  from temperature sensor
- Connection to ModBus control systems.  
Optional Lonbus with relative module.
- Alarms system availability
- Indication pump running

## TECHNICAL DATA

| N°  | PARTS               | MATERIAL                                                    |
|-----|---------------------|-------------------------------------------------------------|
| 1   | PUMP BODY           | CAST IRON 250 UNI ISO 185 - CTF<br>BRONZE (for SAN version) |
| 4   | IMPELLER            | TECHNOPOLYMER                                               |
| 7A  | MOTOR SHAFT         | ALUMINA                                                     |
| 7B  | ROTOR               | STAINLESS JACKET                                            |
| 8   | STATOR              | - -                                                         |
| 10  | MOTOR HOUSING       | DIE CAST ALLUMINIUM                                         |
| 127 | O-RING              | RUBBER EPDM                                                 |
| 128 | STATOR SLEEVE       | STAINLESS STEEL                                             |
| 130 | CLOSING FLANGE      | STAINLESS STEEL                                             |
| 131 | THRUST RING SUPPORT | RUBBER EPDM                                                 |
| 132 | BUSHINGS            | GRAPHITE                                                    |





## DESIGNATION INDEX:

|                                                    |                |           |            |          |            |          |
|----------------------------------------------------|----------------|-----------|------------|----------|------------|----------|
| Electronic circulator                              | <b>EVOPLUS</b> | <b>40</b> | <b>180</b> | <b>X</b> | <b>SAN</b> | <b>M</b> |
| Maximum head (dm)                                  |                |           |            |          |            |          |
| Centre distance (mm)                               |                |           |            |          |            |          |
| ( ) = thread 1" ½                                  |                |           |            |          |            |          |
| <b>X</b> = thread 2"                               |                |           |            |          |            |          |
| <b>SAN</b> = application for hot water circulation |                |           |            |          |            |          |
| <b>M</b> = voltage single-phase                    |                |           |            |          |            |          |

|                                                    |                |          |                  |             |            |          |
|----------------------------------------------------|----------------|----------|------------------|-------------|------------|----------|
| Electronic circulator                              | <b>EVOPLUS</b> | <b>B</b> | <b>120 / 250</b> | <b>. 40</b> | <b>SAN</b> | <b>M</b> |
| <b>B</b> = single circulator flanged               |                |          |                  |             |            |          |
| <b>D</b> = twin circulator flanged                 |                |          |                  |             |            |          |
| Maximum head (dm)                                  |                |          |                  |             |            |          |
| Centre distance (mm)                               |                |          |                  |             |            |          |
| (DN) nominal diameter of flanged ports             |                |          |                  |             |            |          |
| <b>SAN</b> = application for hot water circulation |                |          |                  |             |            |          |
| <b>M</b> = single-phase motor                      |                |          |                  |             |            |          |

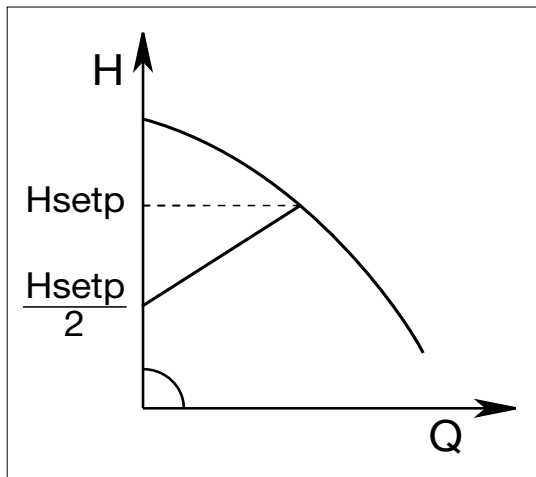
|                                       |                                                                                                                                                    |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Operating range:</b>               | 2 to 12 m <sup>3</sup> /h with head up to 11 meters;                                                                                               |
| <b>Liquid temperature range:</b>      | from -10 °C to +110 °C.                                                                                                                            |
| <b>Pumped liquid:</b>                 | clean, free of solid contaminants and mineral oils, non-viscous, chemically neutral, close to the properties of water. (max. glycol contents 30%). |
| <b>Maximum working pressure:</b>      | 16 bars (1600 kPa)                                                                                                                                 |
| <b>Standard flanging:</b>             | DN 32, DN 40 PN 6 / PN 10 / PN 16 (4 slots)                                                                                                        |
| <b>Maximum ambient temperature:</b>   | +40°C.                                                                                                                                             |
| <b>Minimum suction pressure:</b>      | the values are given in the relevant tables.                                                                                                       |
| <b>Accessories:</b>                   | ½"F, ¾"F, 1"F, 1"¼F, 1"¼M unions DN 32 PN 6 and DN 40 PN 10 threaded counter flanges.                                                              |
| <b>Electromagnetic compatibility:</b> | EVOPLUS circulators comply with standard EN 61800-3, in category C2, in terms of electromagnetic compatibility.                                    |
| <b>Electromagnetic emissions:</b>     | Residential environment (containment measures may be necessary in certain cases).                                                                  |
| <b>Conducted emissions:</b>           | Residential environment (containment measures may be necessary in certain cases).                                                                  |

## OPERATING MODES

All functions listed below can be consulted by all users (irrespective of the level of expertise) simply by scrolling through the EVOPLUS menu. Calibration and parameter editing are protected and reserved for expert users. The EVOPLUS range is factory-set to the control mode with differential pressure proportional to the curve that guarantees the best energy efficiency index (EEI).

### 1 - $\Delta P$ -v proportional differential pressure control mode

Control mode  $\Delta P$ -v provides linear variation of the head delivery value from  $H_{setp}$  to  $H_{setp}/2$  in accordance with changes in flow rate.



This control mode is particularly useful in the following types of installations:

#### a. two-pipe central heating systems with thermostatic valves and with:

- head of more than 4 metres;
- very long circuit piping;
- valves with broad operating range;
- differential pressure regulators;
- high pressure drops in sections of the system carrying the entirety of the water flow rate;
- low differential temperature.

#### b. Under-floor central heating systems and systems with thermostatic valves and significant pressure drops in the boiler circuit.

#### c. Installations having primary circuit pumps with high pressure drops

#### Examples of set-point input with $\Delta P$ -v

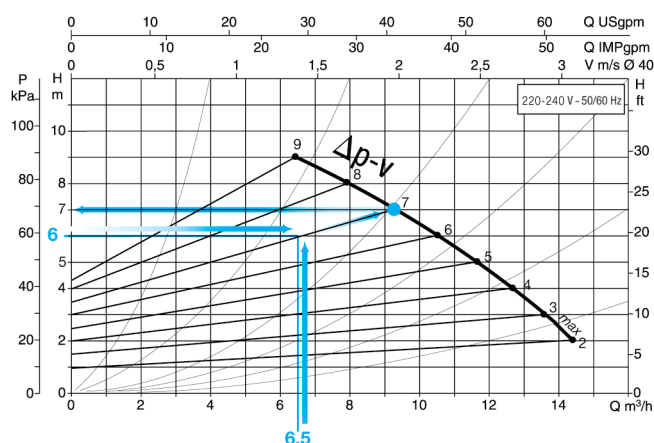
The following operating point is required:

$$Q = 6,5 \text{ m}^3/\text{h}$$

$$H = 6 \text{ m}$$

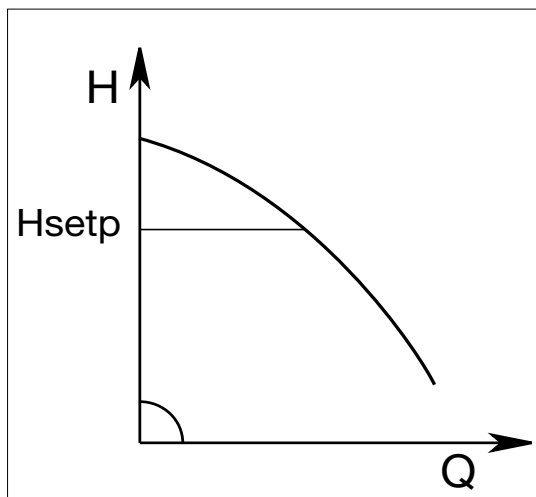
PROCEDURE:

1. In the graph, find the required operating point and then find the nearest EVOPLUS curve to it (in this case the point lies precisely on the curve)
2. Follow the curve until intersecting the circulator limit curve.
3. The head reading found at this limit point will be the set-point head to be entered to obtain the required operating point.



### 2 - $\Delta P$ -c constant differential pressure control mode

Control mode  $\Delta P$ -c keeps system differential pressure constant at the user-settable value of  $H_{setp}$  despite changes in flow rate.



This control mode is particularly useful in the following types of installations:

#### a. two-pipe central heating systems with thermostatic valves and with:

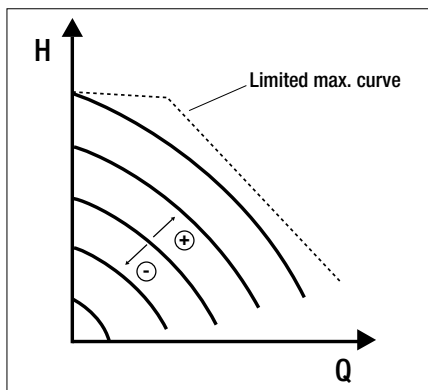
- head of less than 2 metres;
- natural circulation;
- low pressure drops in sections of the system carrying the entirety of the water flow rate;
- high differential temperature (central heating).

#### b. Under-floor central heating systems with thermostatic valves

#### c. Single-pipe central heating systems with thermostatic valves and calibration valves

#### c. Installations having primary circuit pumps with low pressure drops

### 3 - Constant curve control mode

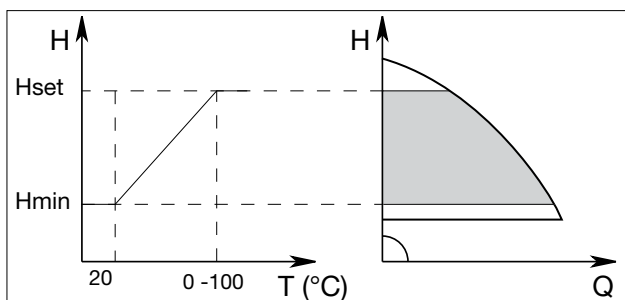


This control setting shows the curve of the circulator at constant speed. The operation curve is selected by setting the rotation speed on a percentage factor. Reaching 100% indicates the curve maximum. The speed of rotation may depend on power restriction and difference in pressure subject to model of circulator. The rotation speed can be set from the display or from an external signal 0-10V or PWM using the multifunction module.

The control setting is ideal for heating and air conditioning applications that require constant flow.

### 4 - Constant and proportional differential pressure control mode depending on water temperature.

(Function can be activated with multifunction module)



The circulator head set-point is reduced in accordance with the water temperature.

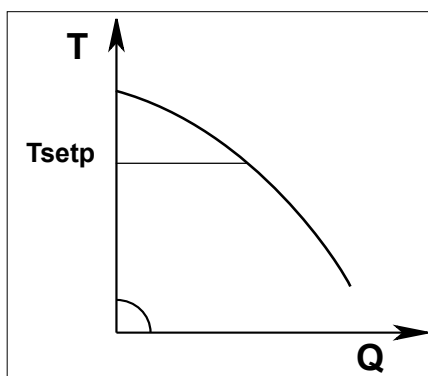
Liquid temperature can be set from 0°C to 100°C.

This control mode is particularly useful in the following types of installations:

- in variable flow rate installations (two-pipe central heating systems), in which a further reduction of circulator performance is provided in accordance with lowering of the circulating liquid temperature, in the presence of reduced heating demand.
- in constant flow rate installations (single-pipe and under-floor central heating systems), where the performance of the circulator can be adjusted only by activating the temperature influence function.

This function is set on EVOPLUS control panel.

### 5 - $\Delta T$ -c constant differential temperature control mode (Function can be activated with multifunction module)



**$\Delta T$ -c control mode keeps the differential temperature of the pumped liquid constant, changing the flow rate to the user-settable value  $T_{setp}$ .**

(Function can be activated with multifunction module)

This control mode is particularly useful in the following types of installations :

- Under-floor central heating systems
- Installations having primary circuit pumps
- Installations having circuit pumps with heat exchanger
- Solar energy systems with storage tanks
- Swimming pool heating systems with solar panels

\* Available from 2013

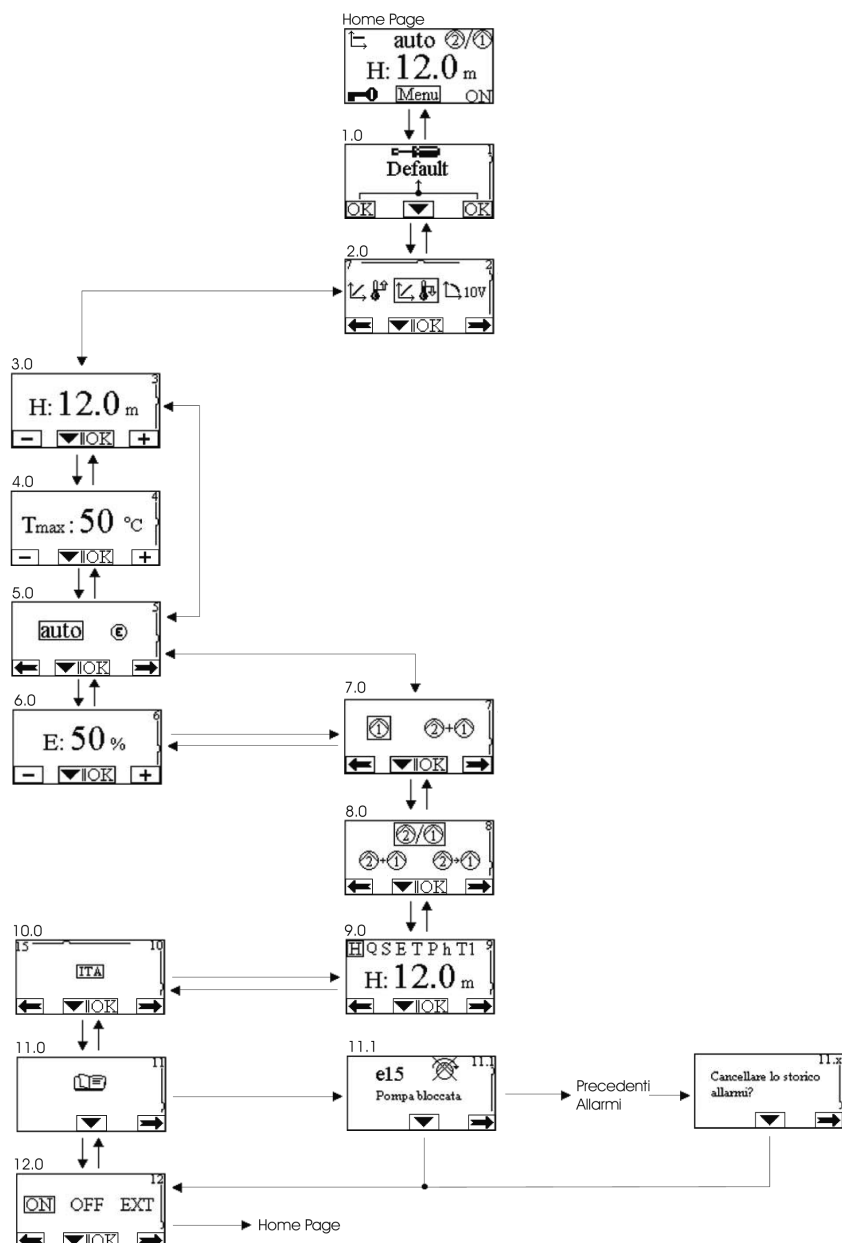
### ECONOMY FUNCTION

The economy function can be set directly on the control panel, by setting a reduction value (f.rid) the maximum value of which is 50%.

In all settings listed above the Hset value must be replaced with a  $H_{set} \times f.rid$  value

## EVOPLUS MENU CONFIGURATIONS

The settings are made when passing from one page to another, in the circulator configuration menu.



## DESCRIPTION OF SYMBOLS DISPLAYABLE QUANTITIES

| Symbol           | Description                                                                                                                            |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| H Q S E T P h T1 | Shows parameters                                                                                                                       |
| H                | Head in metres                                                                                                                         |
| Q                | Flow rate in m <sup>3</sup> /h<br>$Q < Q_{min}$ when Q is less than 30% of $Q_{max}$<br>$Q = 0$ only when the Evoplus is switched off. |
| S                | Speed in revs/minute (rpm)                                                                                                             |
| E                | Analog input 0-10V or PWM                                                                                                              |
| T                | Liquid temperature in °C – input D                                                                                                     |
| P                | Power in kW                                                                                                                            |
| h                | Working hours                                                                                                                          |
| T1               | Liquid temperature in °C – input C                                                                                                     |
| TMAX             | Maximum liquid temperature in °C depending on regulation                                                                               |

## CIRCULATOR STATUS

| Symbol | Description                                                                        |
|--------|------------------------------------------------------------------------------------|
|        | Single circulator or nr. 1                                                         |
|        | Circulator nr. 2                                                                   |
|        | Alternate twin circulators                                                         |
|        | Principal/reserve twin circulators (24 hours one motor / 24 hours the other motor) |
|        | Simultaneous twin circulators                                                      |
| ON     | Circulator on                                                                      |
| OFF    | Circulator off                                                                     |
| EXT    | Circulator controlled by remote signal (ref. terminals 1-2)                        |

## TYPE OF OPERATION

| Symbol | Description      |
|--------|------------------|
| auto   | Auto function    |
|        | Economy function |

## TYPES OF CONTROL MODE

| Symbol        | Description                                                                |
|---------------|----------------------------------------------------------------------------|
|               | $\Delta p$ -c control mode (constant pressure)                             |
|               | $\Delta p$ -c control mode depending on temperature with positive increase |
|               | $\Delta p$ -c control mode depending on temperature with negative increase |
|               | $\Delta p$ -v control mode (variable pressure)                             |
|               | $\Delta p$ -v control mode depending on temperature with positive increase |
|               | $\Delta p$ -v control mode depending on temperature with negative increase |
|               | Servomotor control mode with speed set on the display.                     |
|               | Servomotor control mode with speed set by remote signal 0-10V              |
| $\Delta T$ -c | $\Delta T$ -c ontrol mode (constant temperature)                           |

## VARIOUS

| Symbol | Description                                                     |
|--------|-----------------------------------------------------------------|
|        | Control panel blocked                                           |
|        | Multifunction key for confirming parameters and scrolling pages |

## FACTORY SETTINGS

| Parameter                            | Value                                |
|--------------------------------------|--------------------------------------|
| Control mode                         | Display of parameters                |
| Hs (Differential Pressure Set-point) |                                      |
| Fs (Frequency Set-point)             | auto                                 |
| Set-point percentage reduction       | 50 %                                 |
| Twin operating mode                  |                                      |
| Pump start control                   | EXT (from remote signal on input I1) |

## TYPES OF ALARMS AND HOW TO DEAL WITH THEM

| Alarm code         | Alarm symbol | Alarm description |
|--------------------|--------------|-------------------|
| e0 - e16; e21      |              | Internal Error    |
| e17 - e19          |              | Short circuit     |
| e20                |              | Voltage Error     |
| e22 - e30          |              | Voltage Error     |
| e31                |              | Protocol Error    |
| e32 - e35          |              | Overheating       |
| e37                |              | Low voltage       |
| e38                |              | High voltage      |
| e39 - e40          |              | Overcurrent       |
| e43; e44; e45; e54 |              | Pressure sensor   |
| e46                |              | Pump Disconnected |

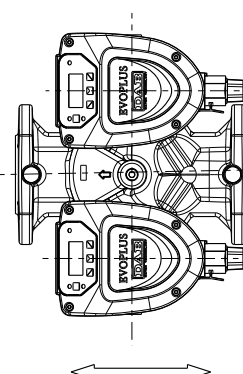
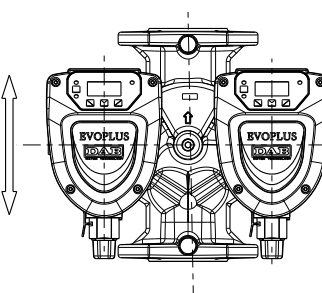
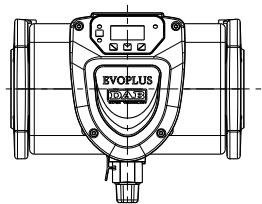
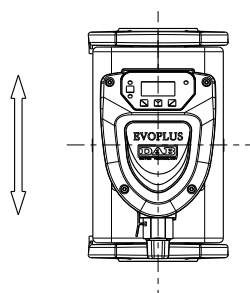
## TROUBLESHOOTING

| Error condition    |                                     |                                                                                                                                                                                                                                                                |
|--------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display indication | Description                         | Reset sequence                                                                                                                                                                                                                                                 |
| E0 - E16           | Internal Error                      | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS</li> <li>- Wait 5 minutes then restore power to the EVOPLUS.</li> <li>- If the error persists, replace the EVOPLUS.</li> </ul>                                                            |
| E37                | Mains voltage too low (LP)          | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS</li> <li>- Wait 5 minutes then restore power to the EVOPLUS.</li> <li>- Check that the mains system voltage is correct; if necessary, restore it to the device's rated level.</li> </ul>  |
| E38                | Mains voltage too high (HP)         | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS</li> <li>- Wait 5 minutes then restore power to the EVOPLUS.</li> <li>- Check that the mains system voltage is correct; if necessary, restore it to the device's rated level.</li> </ul>  |
| E32-E35            | Overheating of key electronic parts | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS</li> <li>- Wait 5 minutes then remove the EVOPLUS from the pump and clean the motor casing.</li> <li>- Clean the heat sink.</li> </ul>                                                    |
| E43-E45; E54       | No signal from sensor               | <ul style="list-style-type: none"> <li>- Check the sensor connection</li> <li>- If the sensor has failed, replace it.</li> </ul>                                                                                                                               |
| E39-E40            | Overload cutout tripped             | <ul style="list-style-type: none"> <li>- Check that the circulation pump turns freely.</li> <li>- Check that the level of antifreeze does not exceed the maximum level of 30%</li> </ul>                                                                       |
| E21-E30            | Voltage Error                       | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS.</li> <li>- Wait 5 minutes then restore power to the EVOPLUS.</li> <li>- Check that the mains system voltage is correct; if necessary, restore it to the device's rated level.</li> </ul> |
| E31                | Twin connection failure             | <ul style="list-style-type: none"> <li>- Inspect the twin connection cable for damage.</li> <li>- Check that both circulation pumps can be supplied with power.</li> </ul>                                                                                     |

## INSTALLATION:

### HEATING AND CONDITIONING

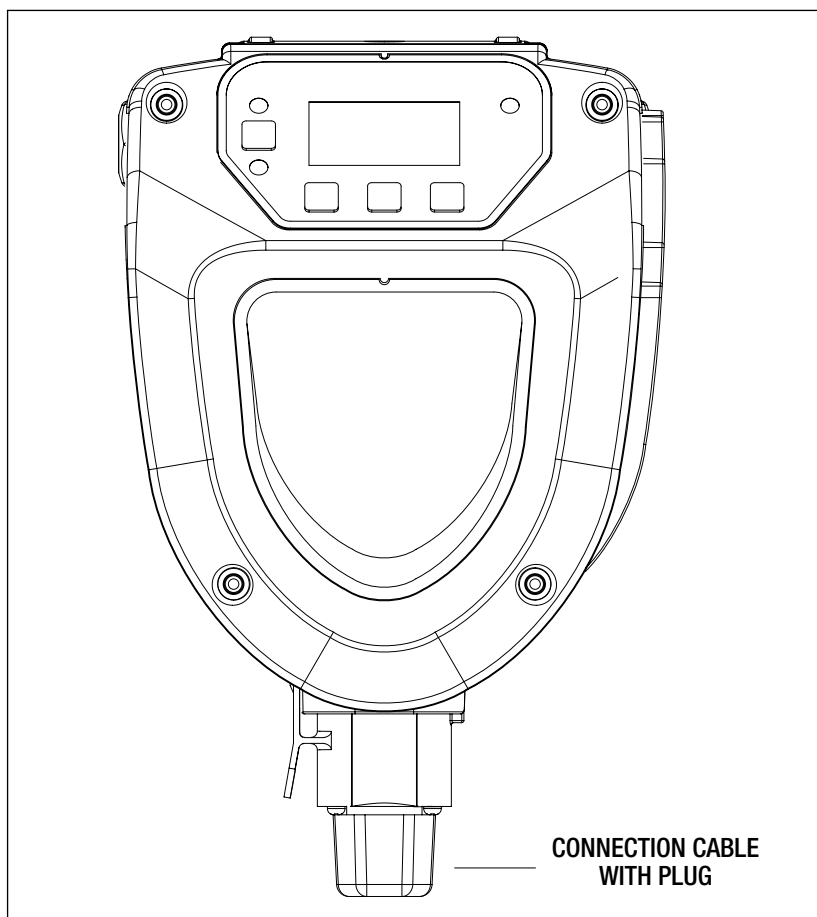
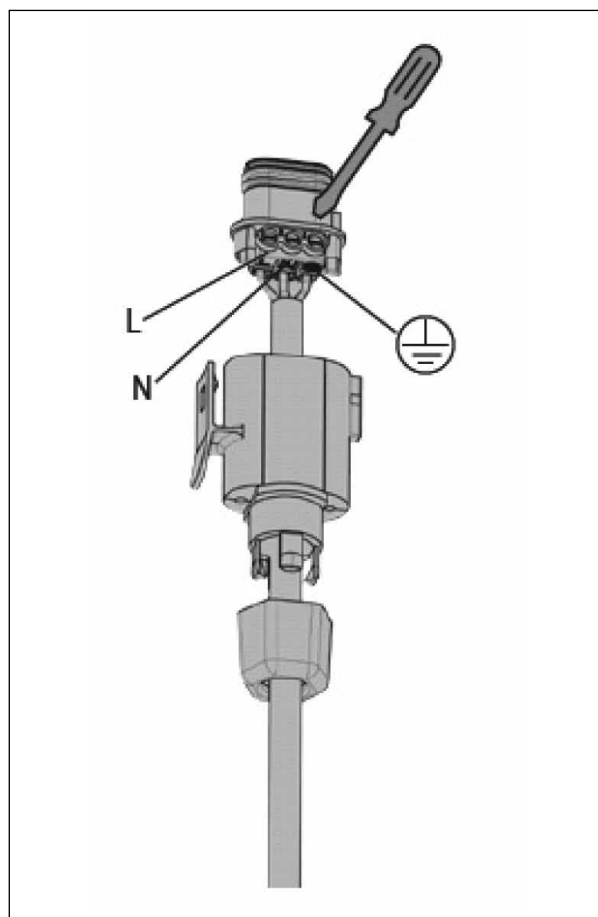
### ONLY HEATING



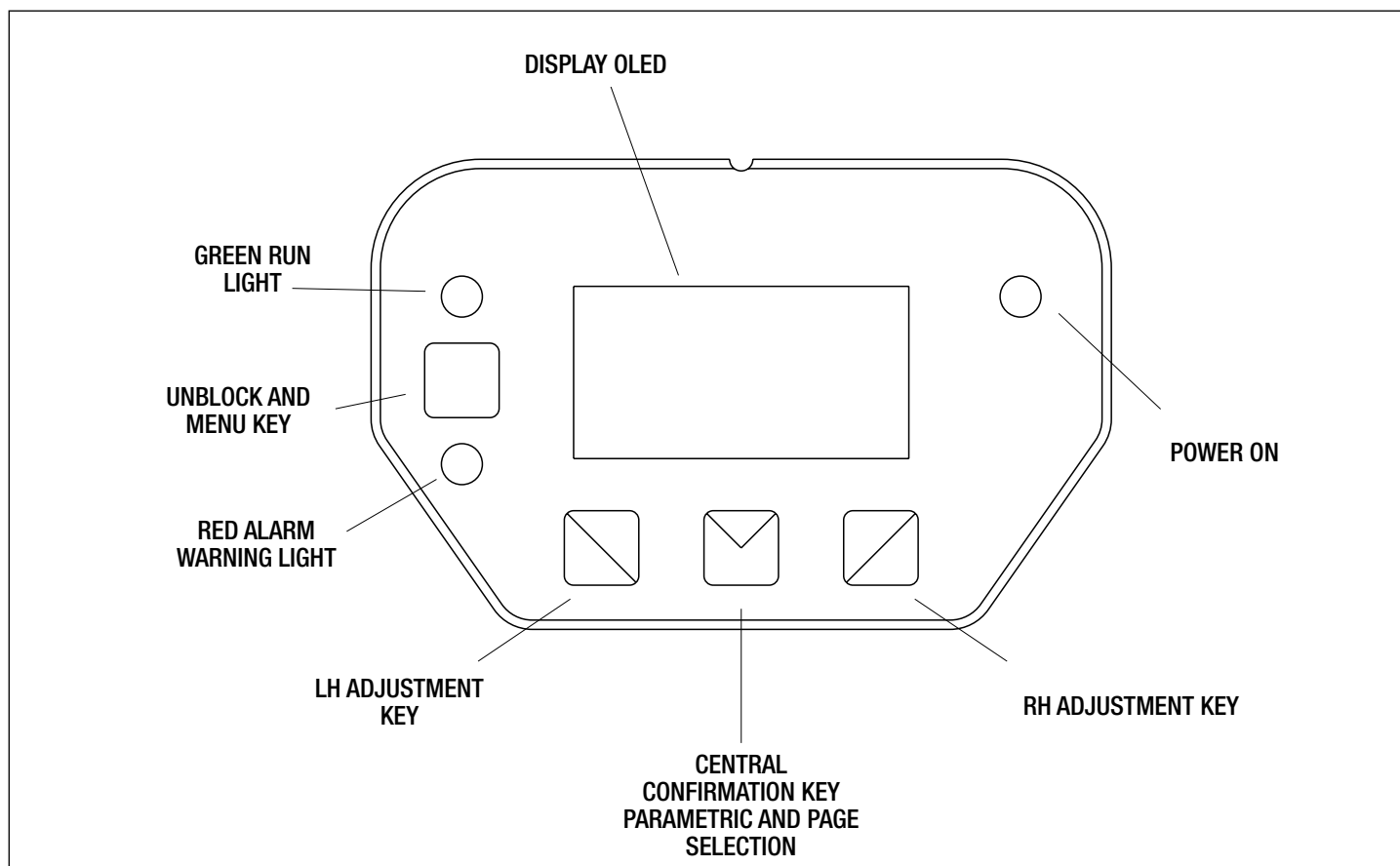
SINGLE

TWIN

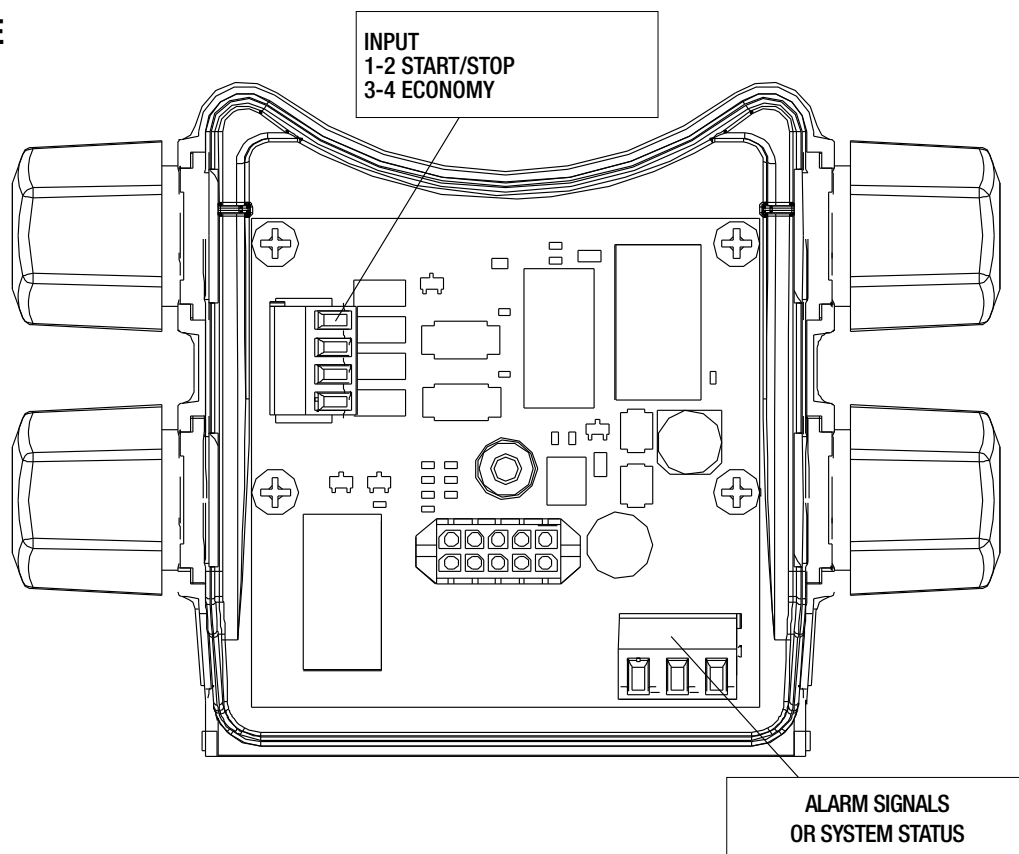
## CONNECTION DIAGRAM



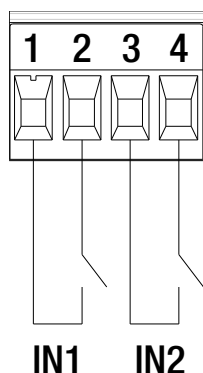
## CONTROL PANEL DESCRIPTION



## BASIC MODULE



### Digital inputs



Input:  
1-2 STAT/STOP  
3-4 ECONOMY

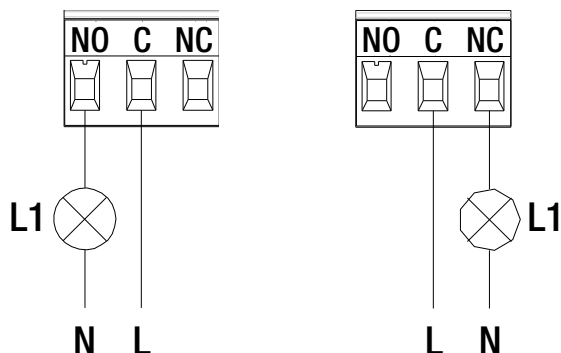
| INPUT | TERMINAL NO. | TYPE OF CONTACT | ASSOCIATED FUNCTION                                                                                                                        |
|-------|--------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| IN1   | 1            | Clean contact   | <b>EXT:</b> If it is activated from the control panel it will be possible to command the switching on and off of the pump in remote mode.  |
|       | 2            |                 |                                                                                                                                            |
| IN2   | 3            | Clean contact   | <b>Economy:</b> If it is activated from the control panel it will be possible to activate the set-point reduction function in remote mode. |
|       | 4            |                 |                                                                                                                                            |

If the **EXT** and **Economy** functions have been activated from the control panel, the system will behave as follows:

| IN1    | IN2    | SYSTEM STATUS                               |
|--------|--------|---------------------------------------------|
| Open   | Open   | Pump stopped                                |
| Open   | Closed | Pump stopped                                |
| Closed | Open   | Pump running with set-point set by the user |
| Closed | Closed | Pump running with reduced set-point         |

### Digital outputs

Alarm signals or system status



The function associated with the output OUT1 is "alarms present" and L1 lights up when there is an alarm in the system and switches off when no type of malfunction is found.

The function associated with the output OUT1 is "pump status" and L1 lights up when the pump is running and switches off when the pump is stopped.

| OUTPUT | TERMINAL NO. | TYPE OF CONTACT | ASSOCIATED FUNCTION                                                                                                               |
|--------|--------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|
| OUT1   | NC           | NC              | <ul style="list-style-type: none"> <li>• Presence/Absence of alarms in the system</li> <li>• Pump running/Pump stopped</li> </ul> |
|        | C            | COM             |                                                                                                                                   |
|        | NO           | NO              |                                                                                                                                   |

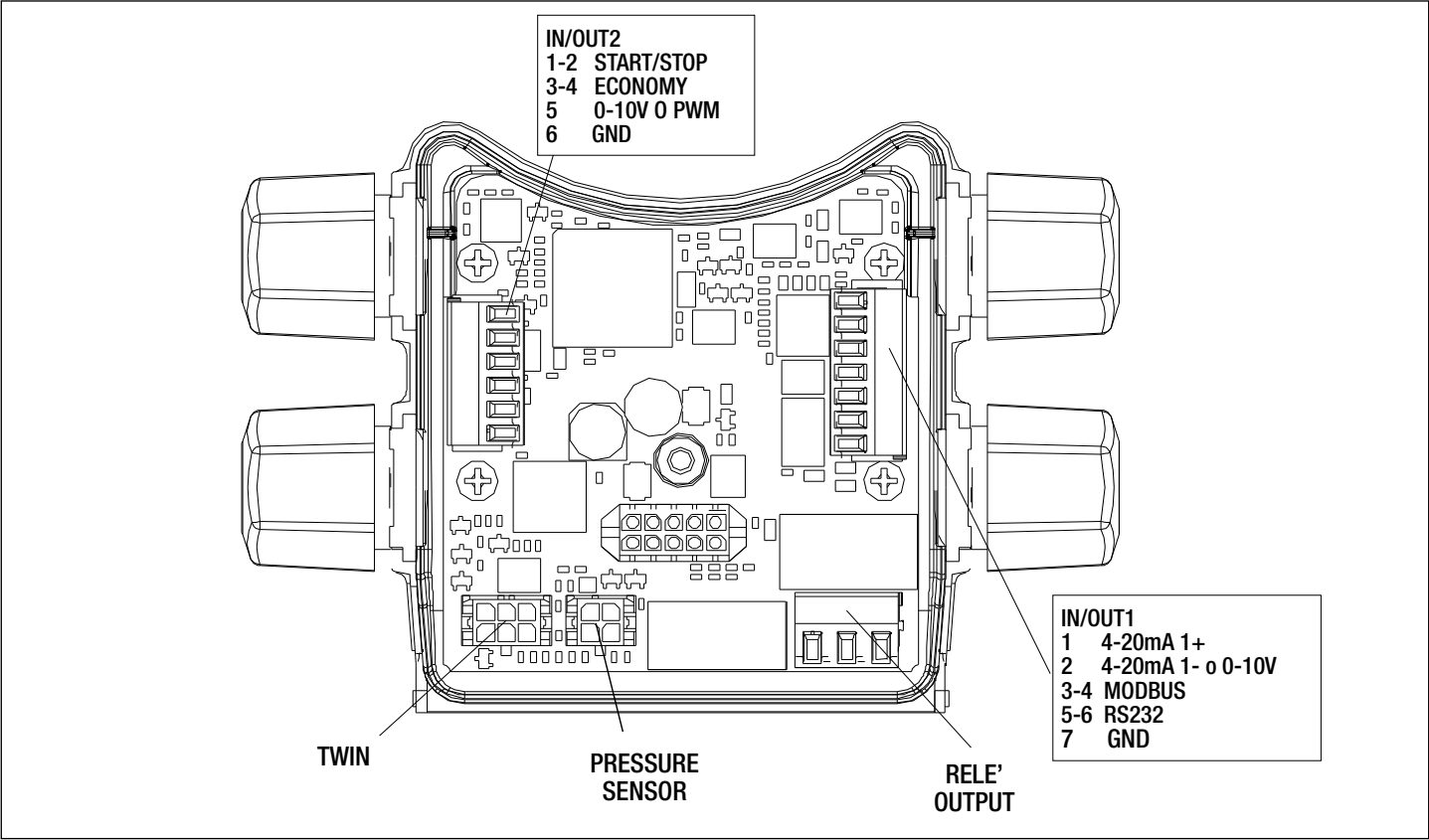
Output OUT1 is available on the pull-out 3-pole terminal board as specified in Table 3: Output OUT1 which also shows the type of contact (NC = Normally Closed, COM = Common, NO = Normally Open).

#### CHARACTERISTICS OF THE OUTPUT CONTACTS

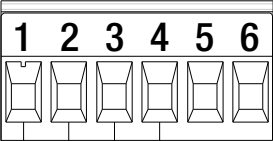
|                                                |                                                  |
|------------------------------------------------|--------------------------------------------------|
| Max. bearable voltage [V]                      | 250                                              |
| Max. bearable current [A]                      | 5 - If resistive load<br>2,5 - If inductive load |
| Max. accepted cable section [mm <sup>2</sup> ] | 1,5                                              |



MULTI-FUNCTION MODULE



Digital inputs



IN1 IN2

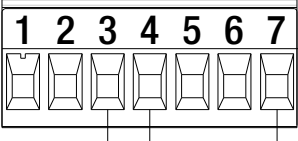
IN/OUT2  
1-2 START/STOP  
3-4 ECONOMY  
5 0-10V 0 PWM  
6 GND

| INPUT | TERMINAL NO. | TYPE OF CONTACT | ASSOCIATED FUNCTION                                                                                                                        |
|-------|--------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| IN1   | 1            | Clean contact   | <b>EXT:</b> If it is activated from the control panel it will be possible to command the switching on and off of the pump in remote mode.  |
|       | 2            |                 |                                                                                                                                            |
| IN2   | 3            | Clean contact   | <b>Economy:</b> If it is activated from the control panel it will be possible to activate the set-point reduction function in remote mode. |
|       | 4            |                 |                                                                                                                                            |

If the **EXT** and **Economy** functions have been activated from the control panel, the system will behave as follows:

| IN1    | IN2    | SYSTEM STATUS                               |
|--------|--------|---------------------------------------------|
| Open   | Open   | Pump stopped                                |
| Open   | Closed | Pump stopped                                |
| Closed | Open   | Pump running with set-point set by the user |
| Closed | Closed | Pump running with reduced set-point         |

MODBUS



A B

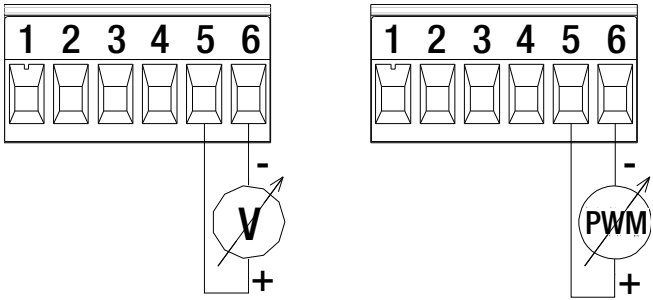
Y

IN/OUT1  
1 4-20mA 1+  
2 4-20mA 1- o 0-10V  
3-4 MODBUS  
5-6 RS232  
7 GND

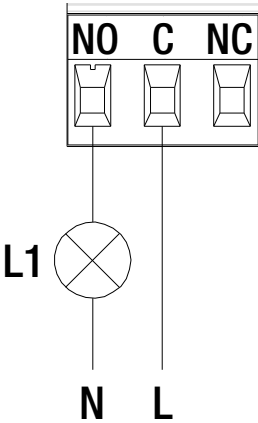
The multifunction expansion module provides serial communication through an input RS-485. The communication is achieved according to MODBUS specifications. With MODBUS it is possible to set the circulator operating parameters in remote mode such as, for example, the desired differential pressure, the regulating mode, etc. At the same time the circulator can provide important information on the system status.

| MODBUS TERMINALS | TERMINAL NO. | DESCRIPTION               |
|------------------|--------------|---------------------------|
| A                | 3            | Terminal not inverted (+) |
| B                | 4            | Terminal inverted (-)     |
| Y                | 7            | GND                       |

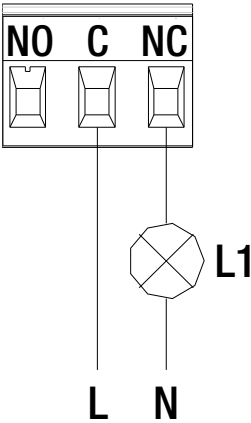
# Analogue Input and PWM



# Digital outputs



The function associated with the output OUT1 is "alarms present" and L1 lights up when there is an alarm in the system and switches off when no type of malfunction is found.



The function associated with the output OUT1 is "pump status" and L1 lights up when the pump is running and switches off when the pump is stopped.

| OUTPUT | TERMINAL NO. | TYPE OF CONTACT | ASSOCIATED FUNCTION                                                                                                            |
|--------|--------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------|
| OUT1   | NC           | NC              | <ul style="list-style-type: none"><li>• Presence/Absence of alarms in the system</li><li>• Pump running/Pump stopped</li></ul> |
|        | C            | COM             |                                                                                                                                |
|        | NO           | NO              |                                                                                                                                |

L'uscita OUT1 è disponibile sulla morsettiera estraibile a 3 poli dove è riportata anche la tipologia di contatto (NC = Normalmente Chiuso, COM = Comune, NO = Normalmente Aperto).

| CHARACTERISTICS OF THE OUTPUT CONTACTS |                                                  |
|----------------------------------------|--------------------------------------------------|
| Max. bearable voltage [V]              | 250                                              |
| Max. bearable current [A]              | 5 - If resistive load<br>2,5 - If inductive load |
| Max. accepted cable section [mm²]      | 1,5                                              |

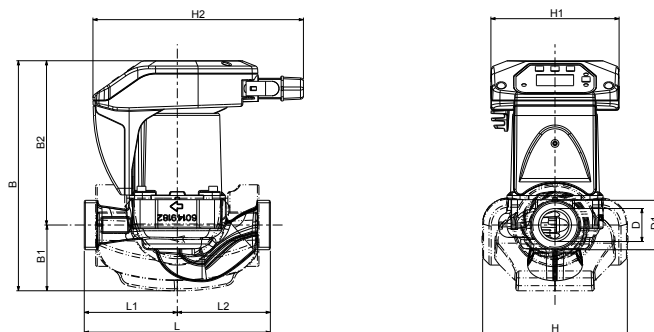
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C

Maximum operating pressure: 16 bar (1600 kPa)

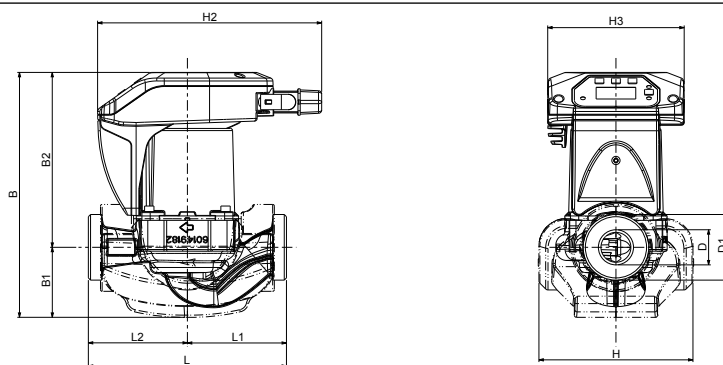
| MODEL                    | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | UNIONS ON REQUEST |              | ELECTRICAL DATA<br>P1 MAX W | EEI        | MINIMUM HEAD PRESSURE |     |      |
|--------------------------|---------------------|--------------------------|-------------------|--------------|-----------------------------|------------|-----------------------|-----|------|
|                          |                     |                          | STANDARDIZED      | SPECIAL      |                             |            | t°                    | 90° | 100° |
| <b>EVOPLUS 40/180 M</b>  | 220/240 V           | 180                      | 1" F              | ¾" F - 1¼" M | 70                          | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS 60/180 M</b>  | 220/240 V           | 180                      | 1" F              | ¾" F - 1¼" M | 100                         | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS 80/180 M</b>  | 220/240 V           | 180                      | 1" F              | ¾" F - 1¼" M | 135                         | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS 110/180 M</b> | 220/240 V           | 180                      | 1" F              | ¾" F - 1¼" M | 170                         | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1 | L2 | B   | B1 | B2  | D  | D1  | H   | H1  | H2  | WEIGHT (Kg) |
|-----|----|----|-----|----|-----|----|-----|-----|-----|-----|-------------|
| 180 | 90 | 90 | 223 | 64 | 159 | 32 | 1½" | 140 | 124 | 204 | 2,8         |

| MODEL                     | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | UNIONS ON REQUEST |         | ELECTRICAL DATA<br>P1 MAX W | EEI        | MINIMUM HEAD PRESSURE |     |      |
|---------------------------|---------------------|--------------------------|-------------------|---------|-----------------------------|------------|-----------------------|-----|------|
|                           |                     |                          | STANDARDIZED      | SPECIAL |                             |            | t°                    | 90° | 100° |
| <b>EVOPLUS 40/180 XM</b>  | 220/240 V           | 180                      | 2" G              | 1¼" F   | 70                          | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS 60/180 XM</b>  | 220/240 V           | 180                      | 2" G              | 1¼" F   | 100                         | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS 80/180 XM</b>  | 220/240 V           | 180                      | 2" G              | 1¼" F   | 135                         | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS 110/180 XM</b> | 220/240 V           | 180                      | 2" G              | 1¼" F   | 170                         | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1 | L2 | B   | B1 | B2  | D  | D1 | H   | H1  | H2  | WEIGHT (Kg) |
|-----|----|----|-----|----|-----|----|----|-----|-----|-----|-------------|
| 180 | 90 | 90 | 223 | 64 | 159 | 32 | 2" | 140 | 124 | 204 | 2,8         |

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

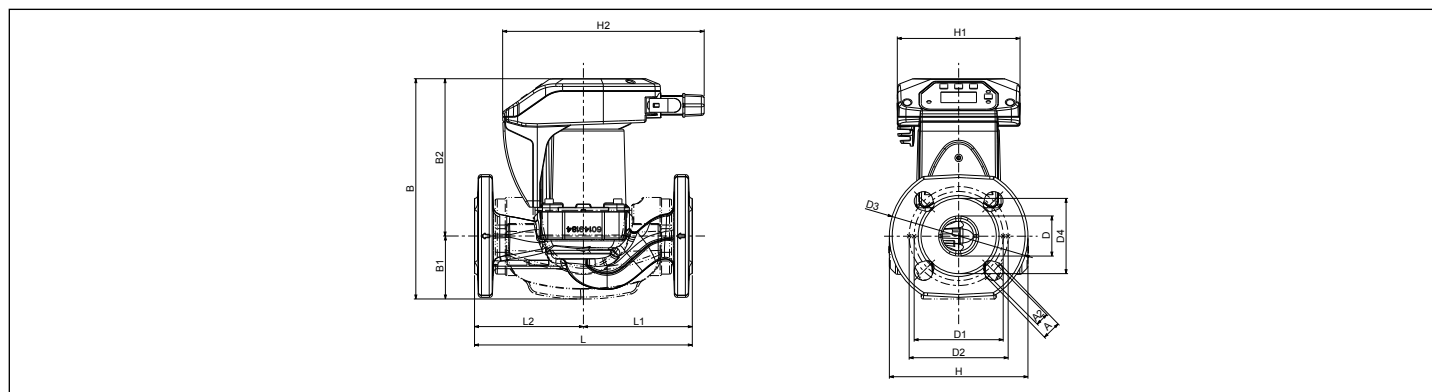
## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C

Maximum operating pressure: 16 bar (1600 kPa)

| MODEL                           | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|---------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                                 |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/220.32 M *</b>  | 220/240 V           | 220                      | DN 32 PN 6                  | 75              | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/220.32 M *</b>  | 220/240 V           | 220                      | DN 32 PN 6                  | 105             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/220.32 M *</b>  | 220/240 V           | 220                      | DN 32 PN 6                  | 140             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 110/220.32 M *</b> | 220/240 V           | 220                      | DN 32 PN 6                  | 190             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |

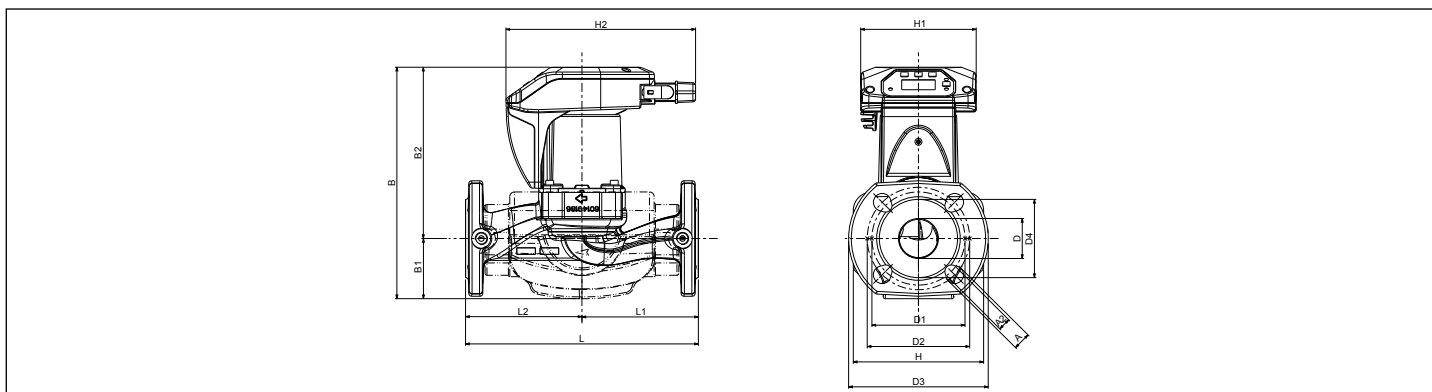
\* Available from 2013



### Dimensions and weight

| L   | L1  | L2  | A  | B   | B1 | B2  | D  | D1 | D2  | D3  | D4 | H   | H1  | H2  | WEIGHT (Kg) |
|-----|-----|-----|----|-----|----|-----|----|----|-----|-----|----|-----|-----|-----|-------------|
| 220 | 110 | 110 | 14 | 248 | 64 | 184 | 40 | 90 | 100 | 140 | 76 | 140 | 124 | 204 | 6,9         |

| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/250.40 M</b>  | 220/240 V           | 250                      | DN 40 PN 10                 | 75              | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/250.40 M</b>  | 220/240 V           | 250                      | DN 40 PN 10                 | 105             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/250.40 M</b>  | 220/240 V           | 250                      | DN 40 PN 10                 | 140             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 110/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 190             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A  | B   | B1 | B2  | D  | D1  | D2  | D3  | D4 | H   | H1  | H2  | WEIGHT (Kg) |
|-----|-----|-----|----|-----|----|-----|----|-----|-----|-----|----|-----|-----|-----|-------------|
| 250 | 125 | 125 | 14 | 248 | 64 | 184 | 43 | 100 | 110 | 150 | 84 | 140 | 124 | 204 | 6,9         |

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

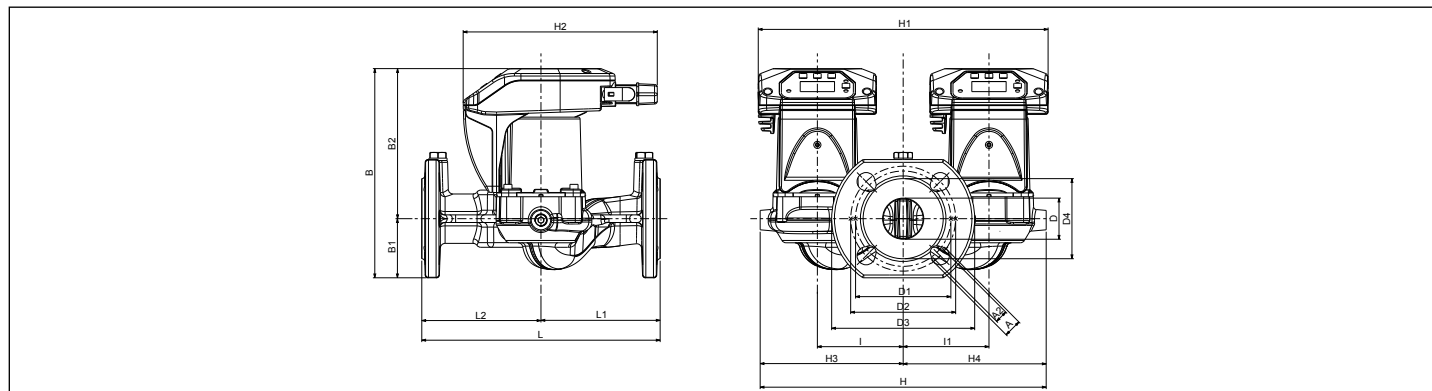
## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C

Maximum operating pressure: 16 bar (1600 kPa)

| MODEL                          | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|--------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                                |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 40/220.32 M *</b> | 220/240 V           | 220                      | DN 32 PN 6                  | 75              | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 60/220.32 M *</b> | 220/240 V           | 220                      | DN 32 PN 6                  | 100             | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 80/220.32 M *</b> | 220/240 V           | 220                      | DN 32 PN 6                  | 135             | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D110/220.32 M *</b> | 220/240 V           | 220                      | DN 32 PN 6                  | 190             | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |

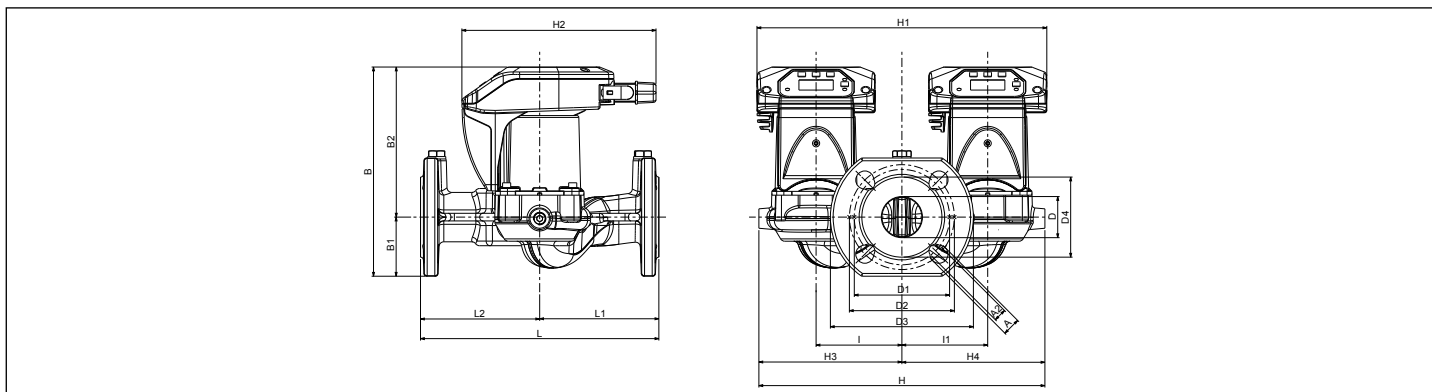
\* Available from 2013



### Dimensions and weight

| L   | L1  | L2  | A  | B   | B1 | B2  | D  | D1  | D2  | D3  | D4 | I  | I1 | H   | H1  | H2  | H3  | H4  | WEIGHT (Kg) |
|-----|-----|-----|----|-----|----|-----|----|-----|-----|-----|----|----|----|-----|-----|-----|-----|-----|-------------|
| 220 | 110 | 110 | 14 | 220 | 62 | 158 | 43 | 100 | 110 | 150 | 84 | 90 | 90 | 300 | 304 | 204 | 150 | 150 | 12,7        |

| MODEL                        | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                              |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 40/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 75              | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 60/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 100             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 80/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 135             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D110/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 190             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A  | B   | B1 | B2  | D  | D1  | D2  | D3  | D4 | I  | I1 | H   | H1  | H2  | H3  | H4  | WEIGHT (Kg) |
|-----|-----|-----|----|-----|----|-----|----|-----|-----|-----|----|----|----|-----|-----|-----|-----|-----|-------------|
| 250 | 125 | 125 | 14 | 220 | 62 | 158 | 43 | 100 | 110 | 150 | 84 | 90 | 90 | 300 | 304 | 204 | 150 | 150 | 12,7        |

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

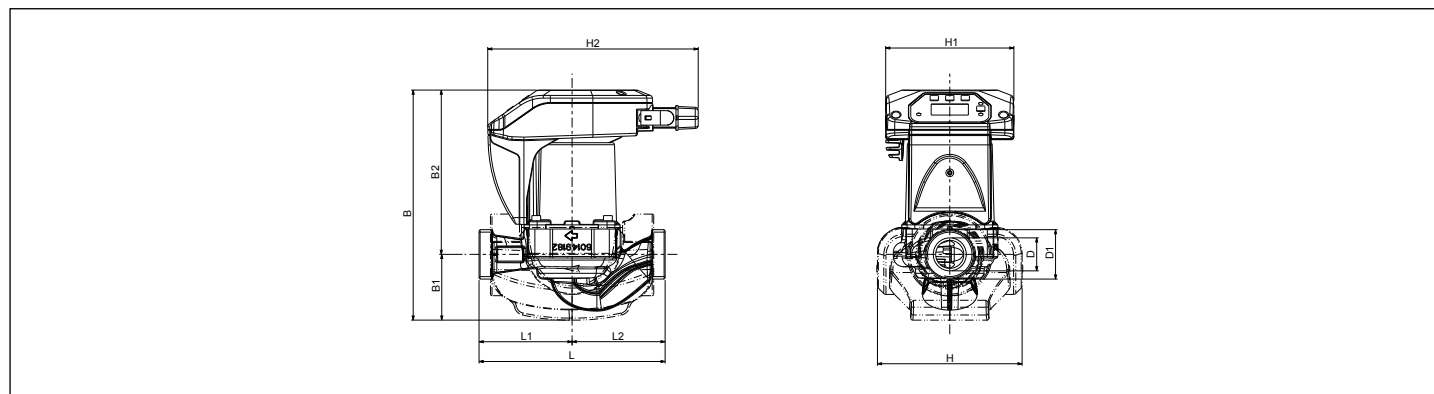
## CIRCULATORS FOR SMALL HOT WATER APPLICATIONS

Liquid temperature range: da -10°C a +110°C

Maximum operating pressure: 16 bar (1600 kPa)

| MODEL                          | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | UNIONS ON REQUEST |              | ELECTRICAL DATA<br>P1 MAX W | MINIMUM HEAD PRESSURE |     |      |
|--------------------------------|---------------------|--------------------------|-------------------|--------------|-----------------------------|-----------------------|-----|------|
|                                |                     |                          | STANDARDIZED      | SPECIAL      |                             | t°                    | 90° | 100° |
| <b>EVOPLUS 40/180 SAN M *</b>  | 220/240 V           | 180                      | 1" F              | ¾" F - 1¼" M | 70                          | m.c.a.                | 20  | 25   |
| <b>EVOPLUS 60/180 SAN M *</b>  | 220/240 V           | 180                      | 1" F              | ¾" F - 1¼" M | 100                         | m.c.a.                | 20  | 25   |
| <b>EVOPLUS 80/180 SAN M *</b>  | 220/240 V           | 180                      | 1" F              | ¾" F - 1¼" M | 135                         | m.c.a.                | 20  | 25   |
| <b>EVOPLUS 110/180 SAN M *</b> | 220/240 V           | 180                      | 1" F              | ¾" F - 1¼" M | 170                         | m.c.a.                | 20  | 25   |

\* Available from 2013

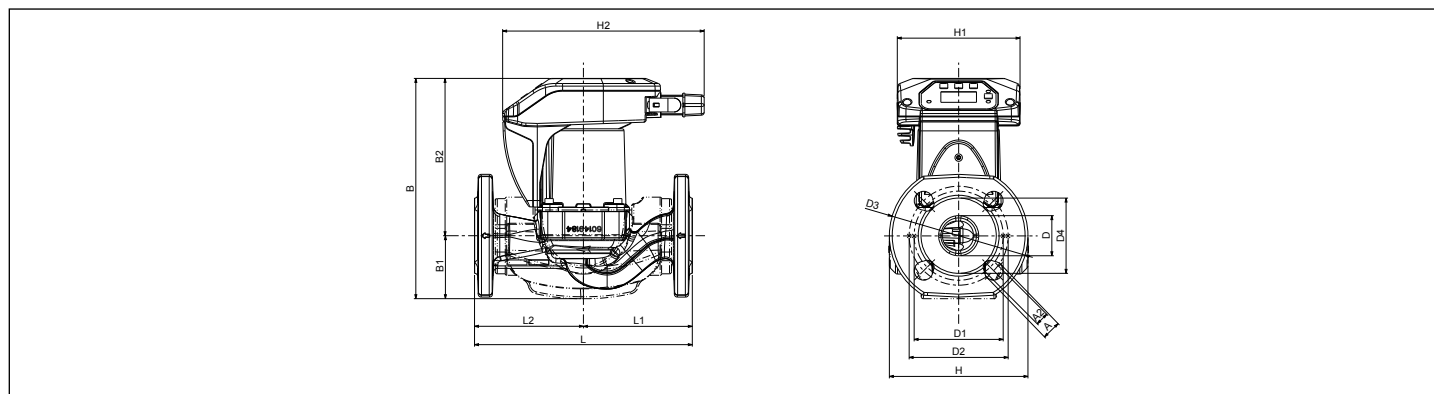


### Dimensions and weight

| L   | L1 | L2 | B   | B1 | B2  | D  | D1  | H   | H1  | H2  | WEIGHT (Kg) |
|-----|----|----|-----|----|-----|----|-----|-----|-----|-----|-------------|
| 180 | 90 | 90 | 223 | 64 | 159 | 32 | 1½" | 140 | 124 | 204 | 2,8         |

| MODEL                               | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------------|---------------------|--------------------------|-----------------------------|-----------------|-----------------------|-----|------|
|                                     |                     |                          |                             | P1 MAX W        | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/220.32 SAN M *</b>  | 220/240 V           | 220                      | DN 32 PN 6                  | 75              | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/220.32 SAN M *</b>  | 220/240 V           | 220                      | DN 32 PN 6                  | 105             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/220.32 SAN M *</b>  | 220/240 V           | 220                      | DN 32 PN 6                  | 140             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 110/220.32 SAN M *</b> | 220/240 V           | 220                      | DN 32 PN 6                  | 190             | m.c.a.                | 20  | 25   |

\* Available from 2013



### Dimensions and weight

| L   | L1  | L2  | A  | B   | B1 | B2  | D  | D1 | D2  | D3  | D4 | H   | H1  | H2  | WEIGHT (Kg) |
|-----|-----|-----|----|-----|----|-----|----|----|-----|-----|----|-----|-----|-----|-------------|
| 220 | 110 | 110 | 14 | 248 | 64 | 184 | 40 | 90 | 100 | 140 | 76 | 140 | 124 | 204 | 6,9         |

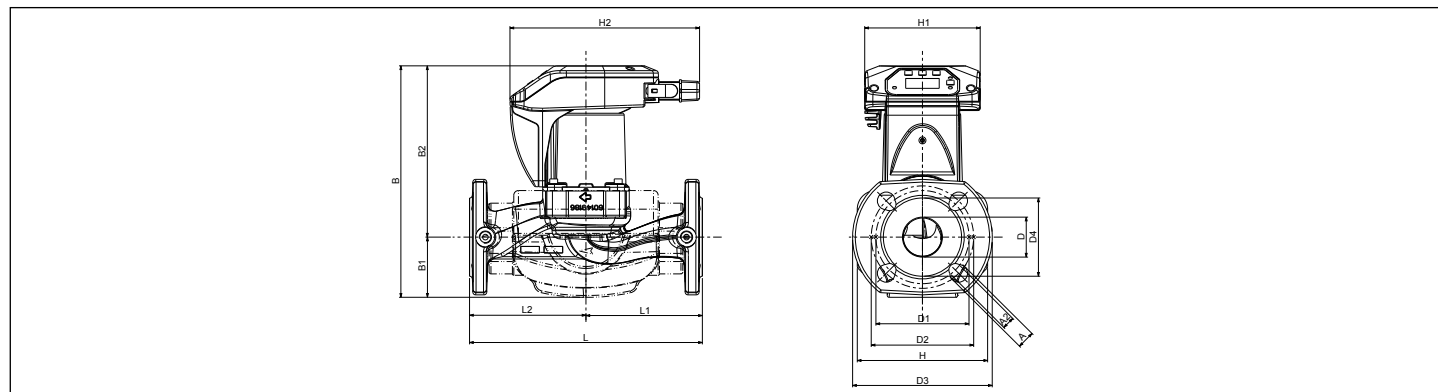
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR SMALL HOT WATER APPLICATIONS

Liquid temperature range: da -10°C a +110°C  
Maximum operating pressure:: 16 bar (1600 kPa)

| MODEL                               | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------------|---------------------|--------------------------|-----------------------------|-----------------|-----------------------|-----|------|
|                                     |                     |                          |                             | P1 MAX W        | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/250.40 SAN M *</b>  | 220/240 V           | 250                      | DN 40 PN 10                 | 75              | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/250.40 SAN M *</b>  | 220/240 V           | 250                      | DN 40 PN 10                 | 105             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/250.40 SAN M *</b>  | 220/240 V           | 250                      | DN 40 PN 10                 | 140             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 110/250.40 SAN M *</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 190             | m.c.a.                | 20  | 25   |

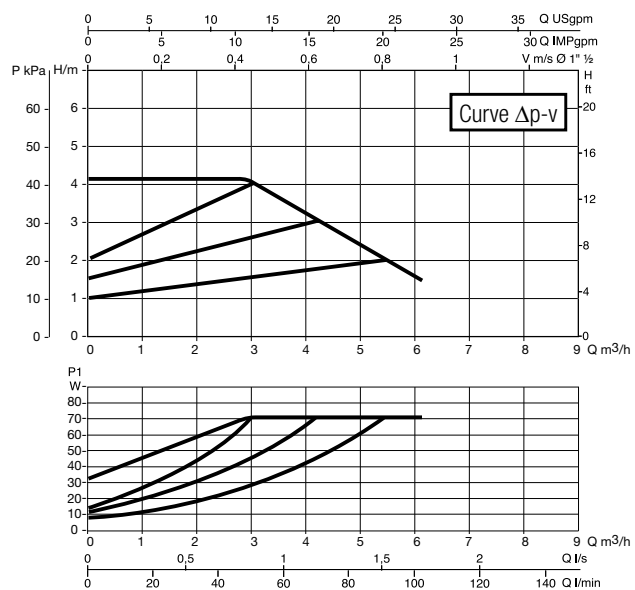
\* Available from 2013



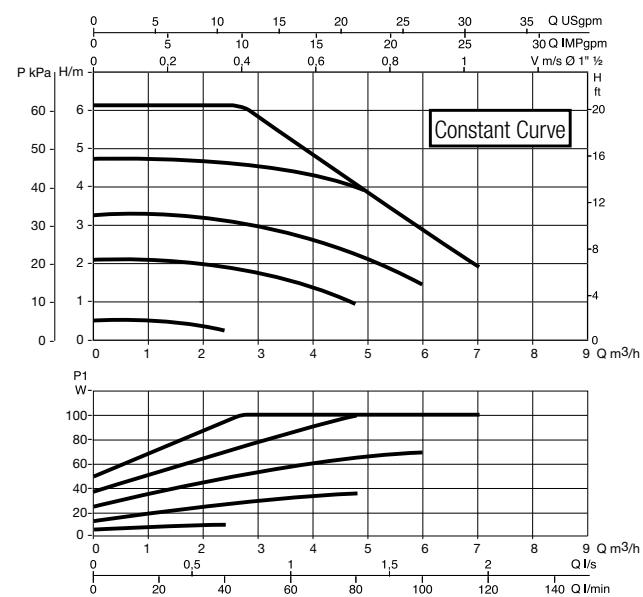
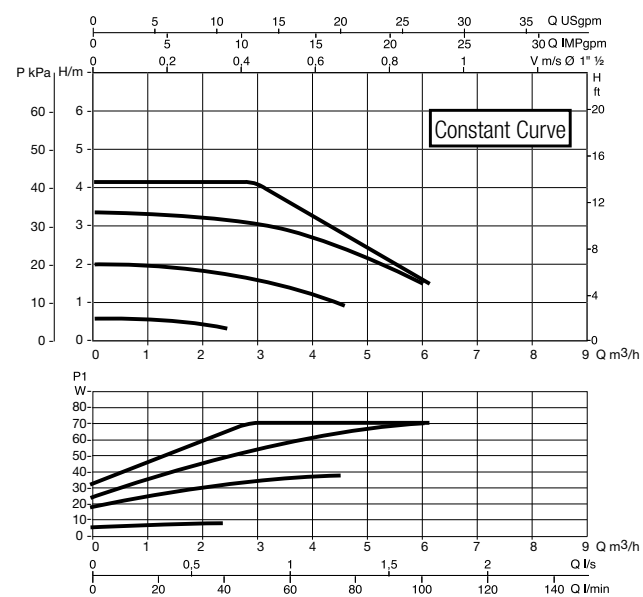
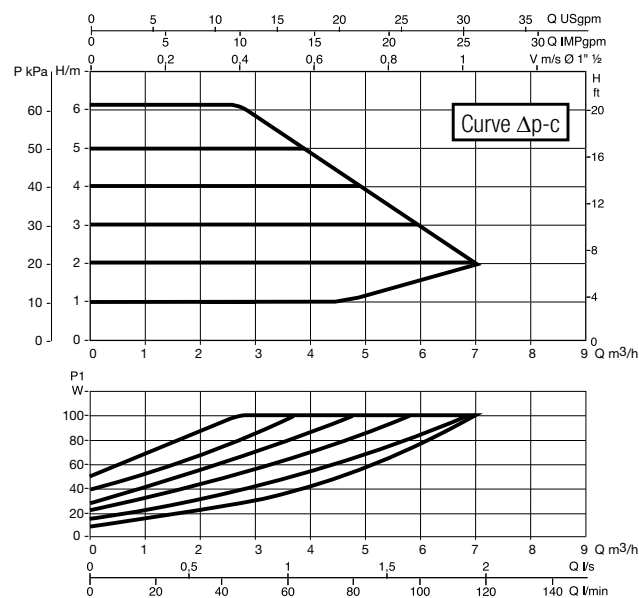
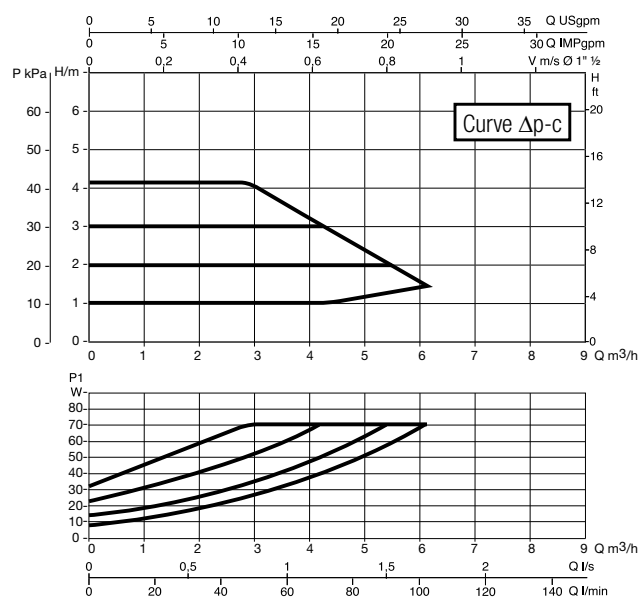
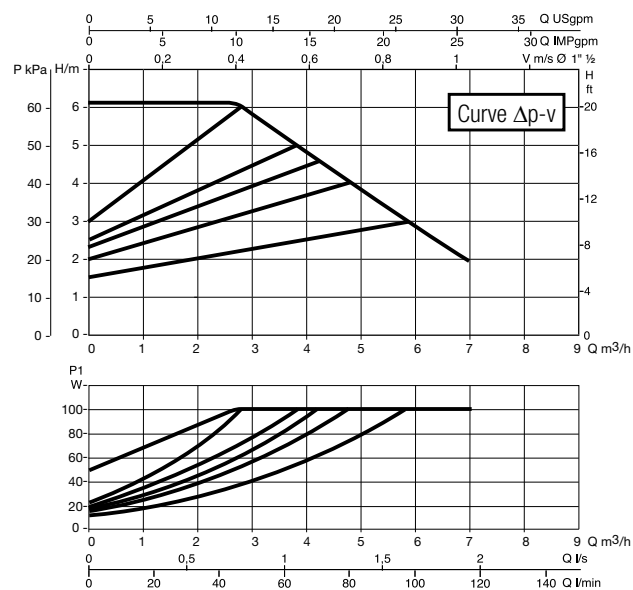
### Dimensions and weight

| L   | L1  | L2  | A  | B   | B1 | B2  | D  | D1  | D2  | D3  | D4 | H   | H1  | H2  | WEIGHT (Kg) |
|-----|-----|-----|----|-----|----|-----|----|-----|-----|-----|----|-----|-----|-----|-------------|
| 250 | 125 | 125 | 14 | 248 | 64 | 184 | 43 | 100 | 110 | 150 | 84 | 140 | 124 | 204 | 6,9         |

## EVOPLUS 40/180 (SAN) M

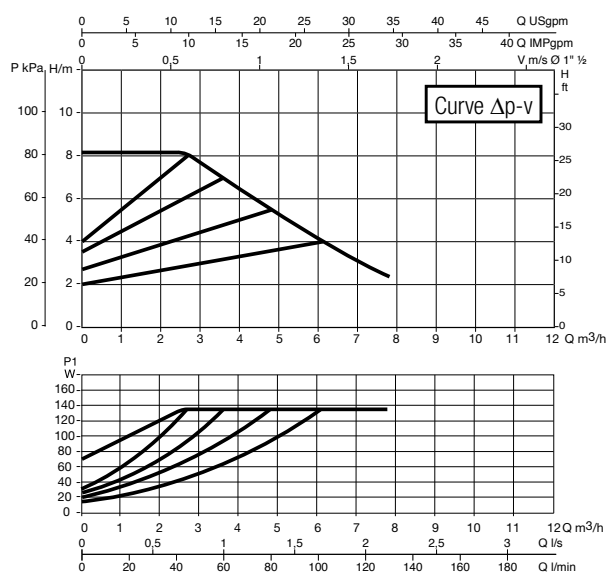


## EVOPLUS 60/180 (SAN) M

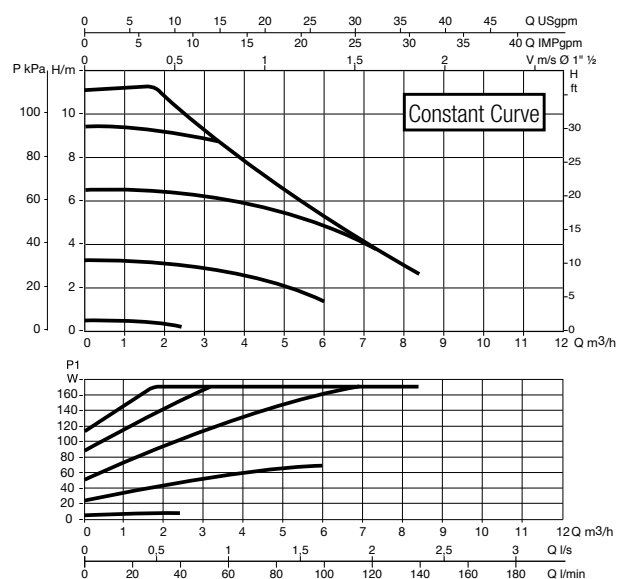
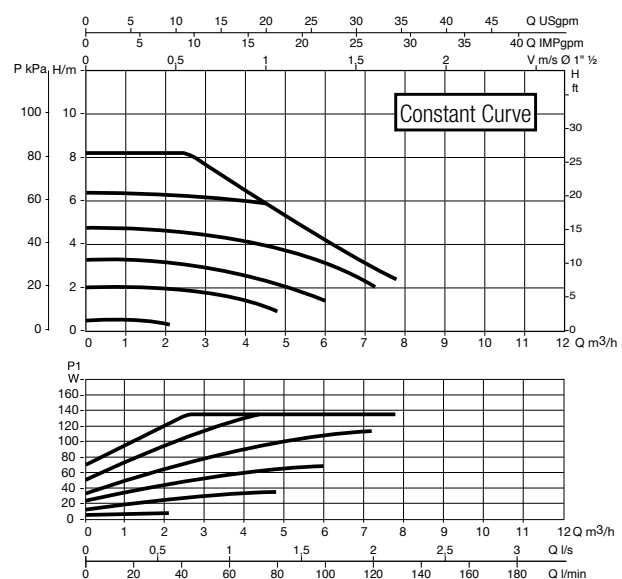
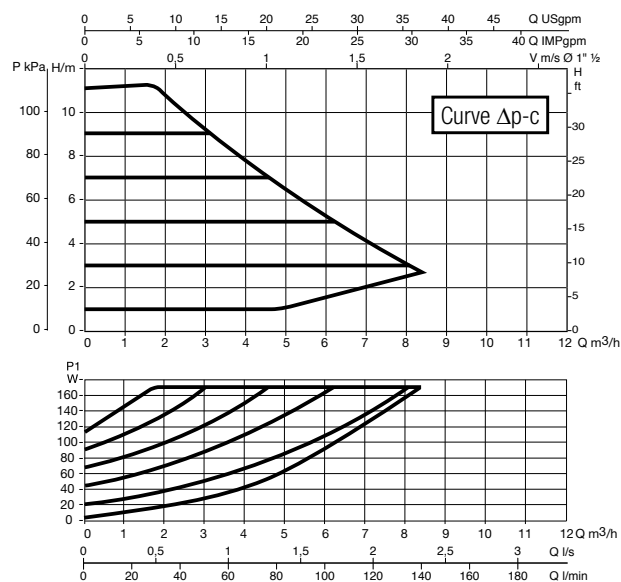
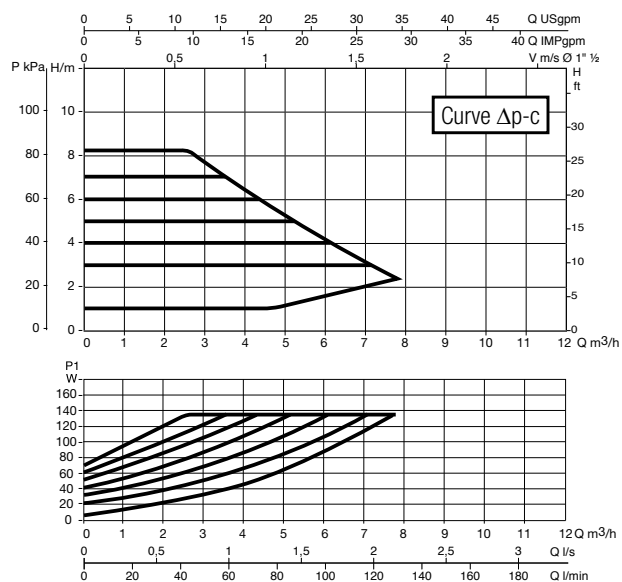
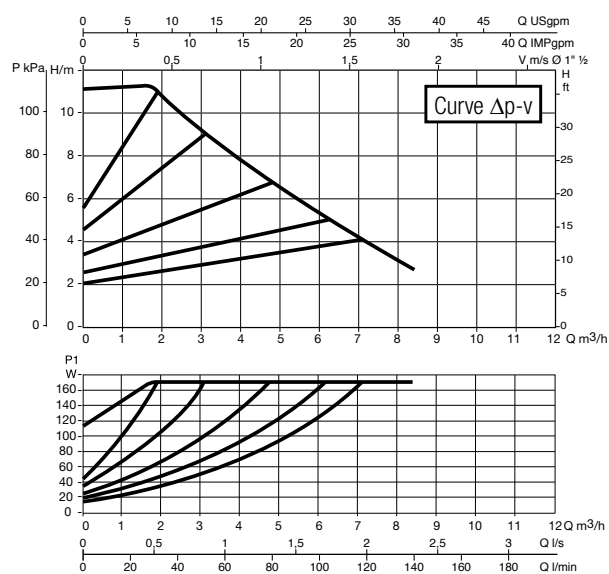




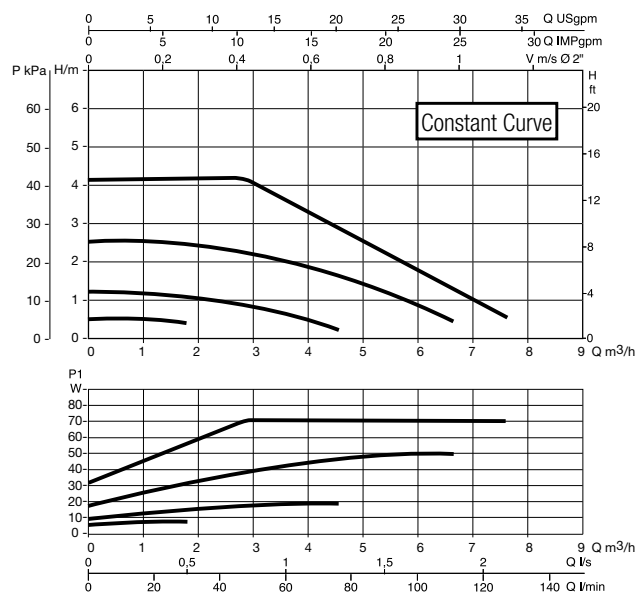
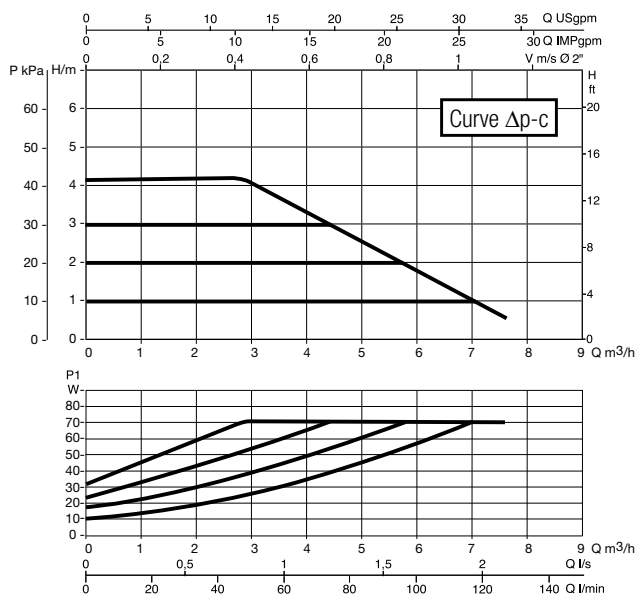
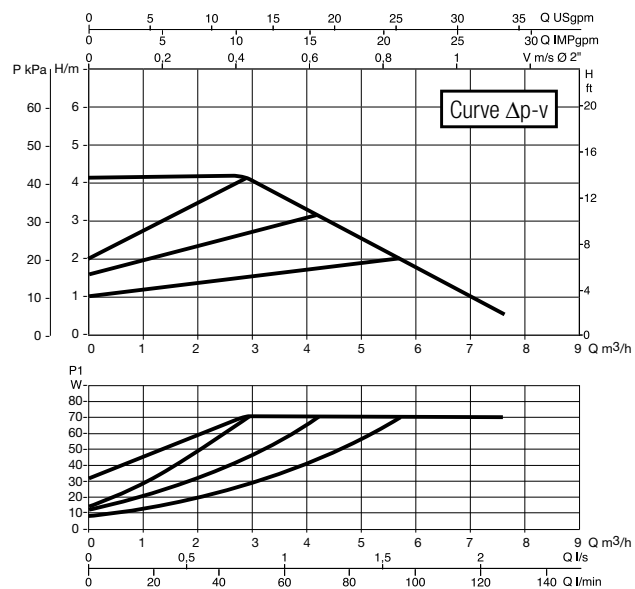
## EVOPLUS 80/180 (SAN) M



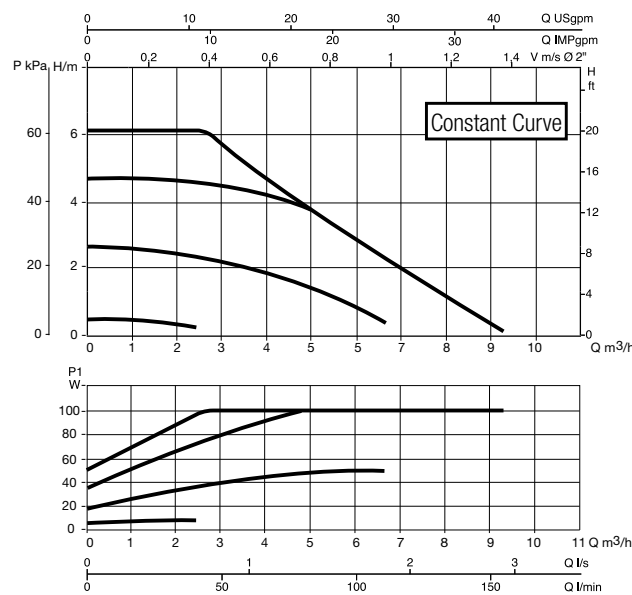
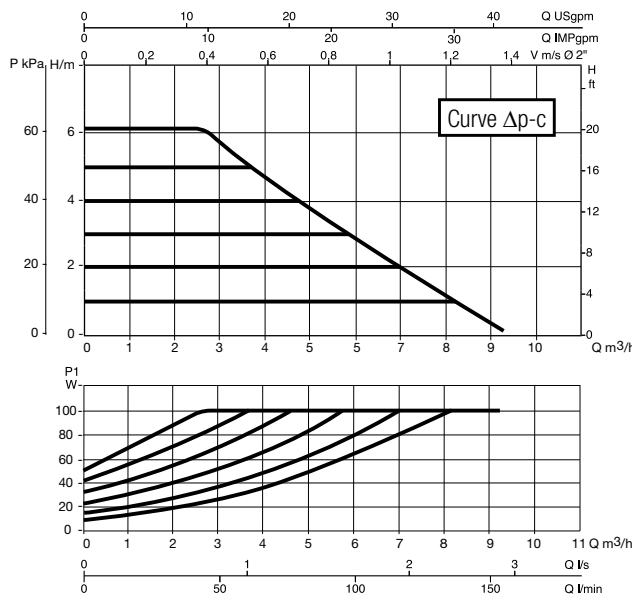
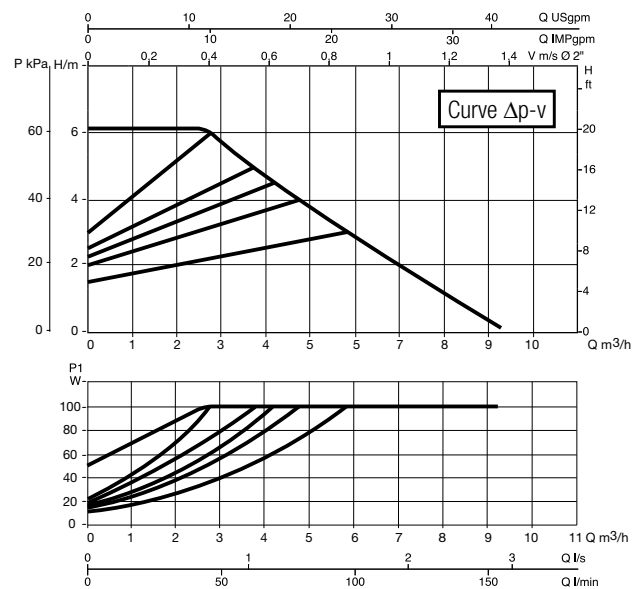
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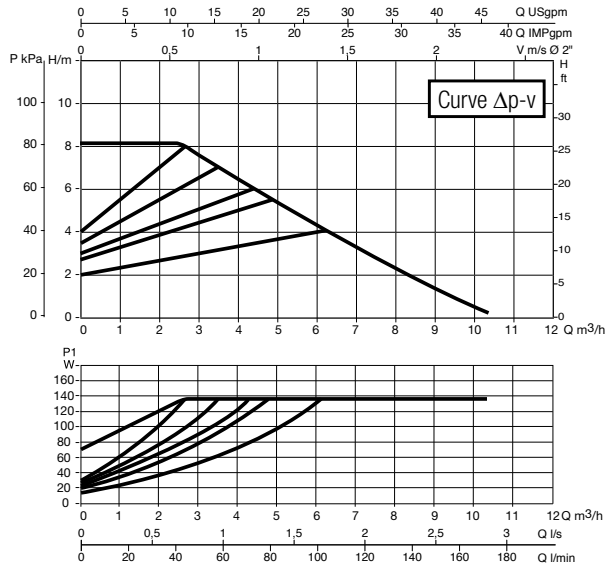
## EVOPLUS 40/180 XM



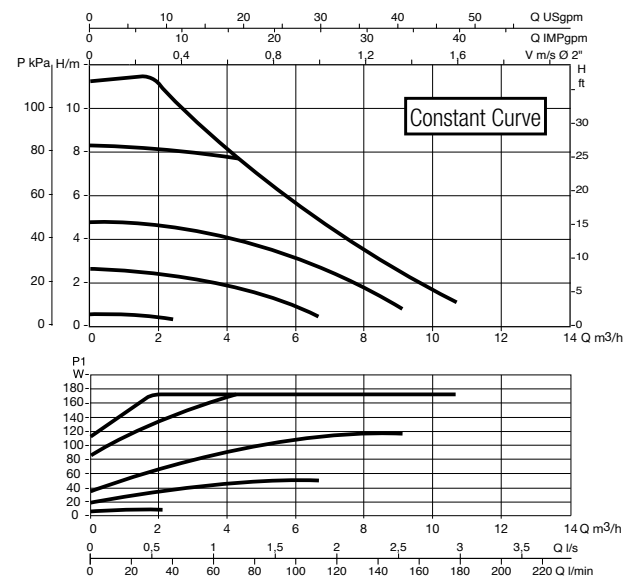
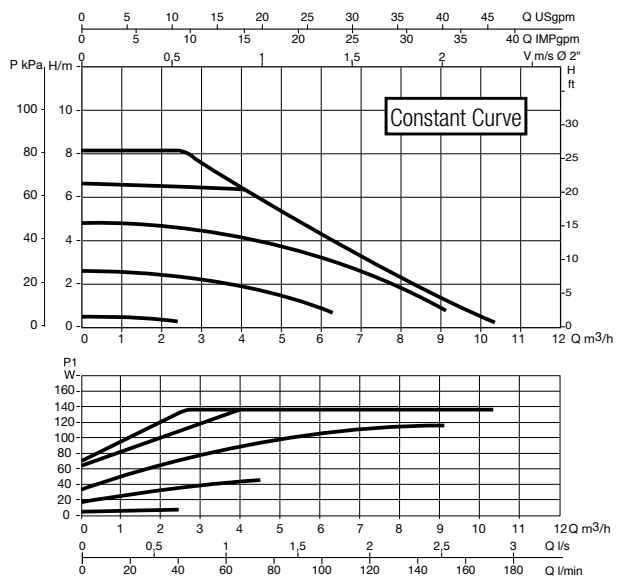
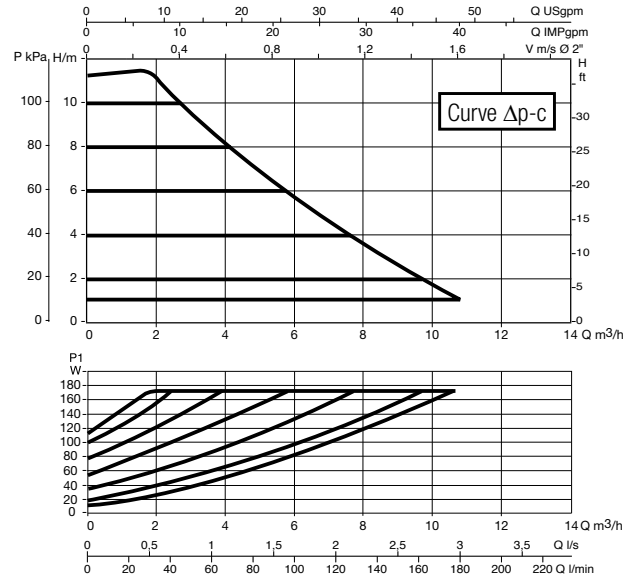
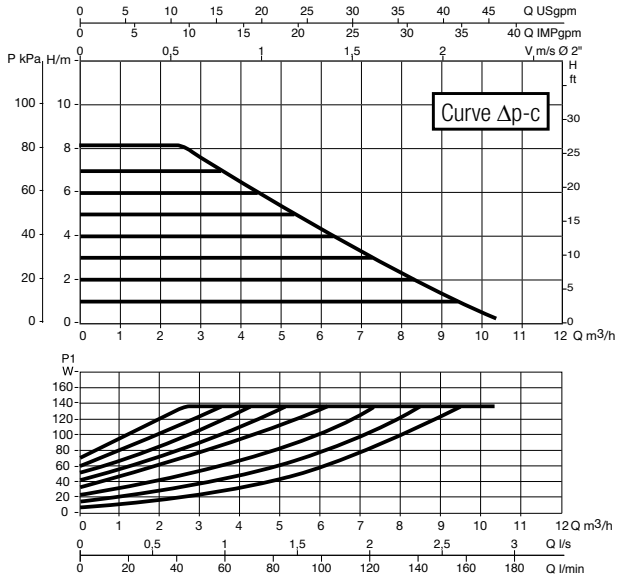
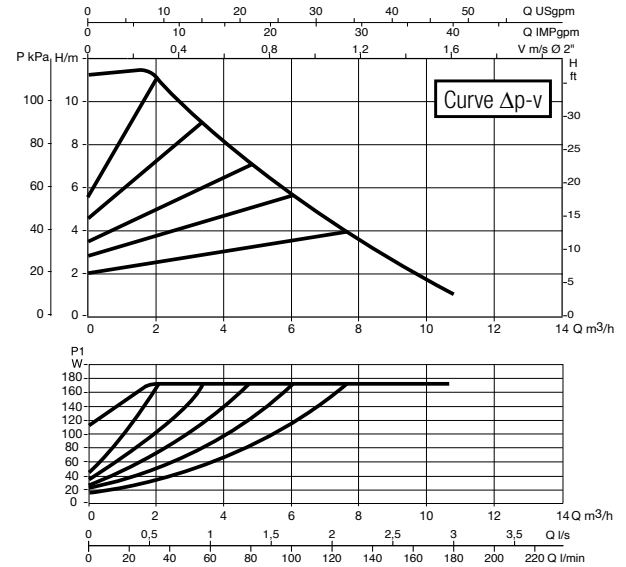
## EVOPLUS 60/180 XM



## EVOPLUS 80/180 XM

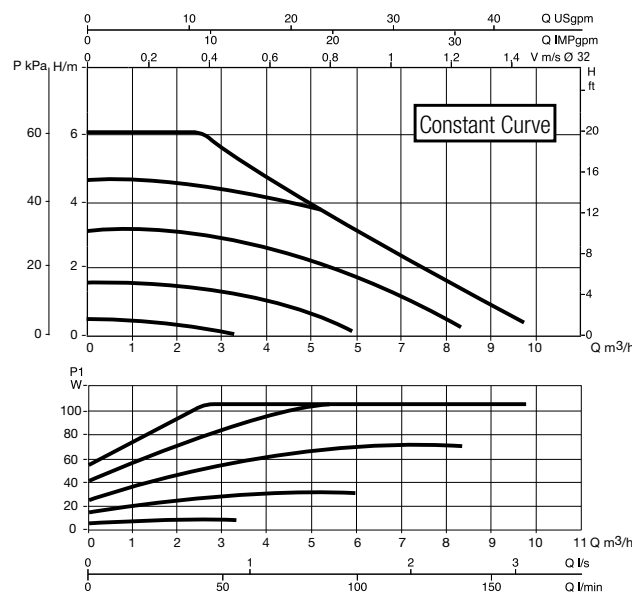
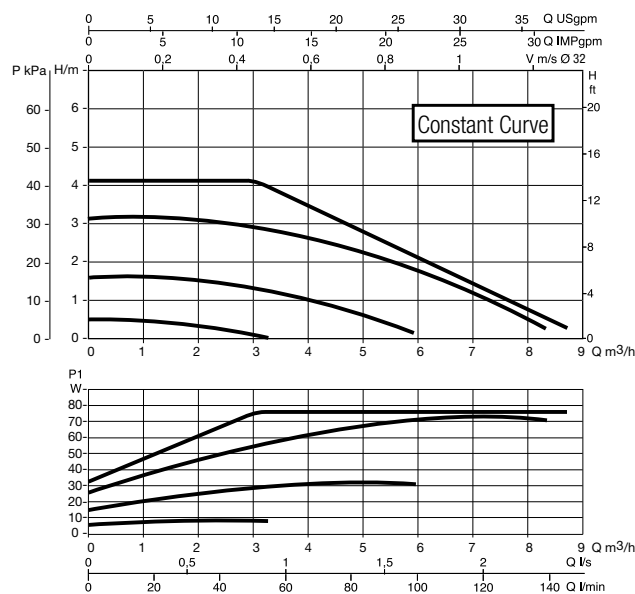
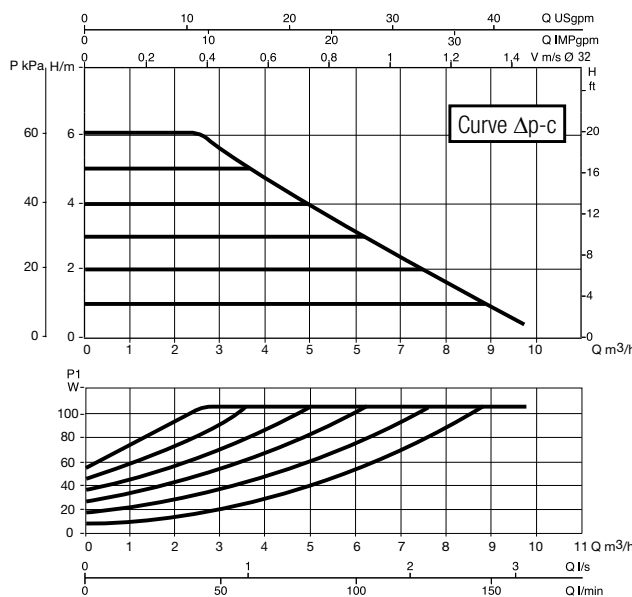
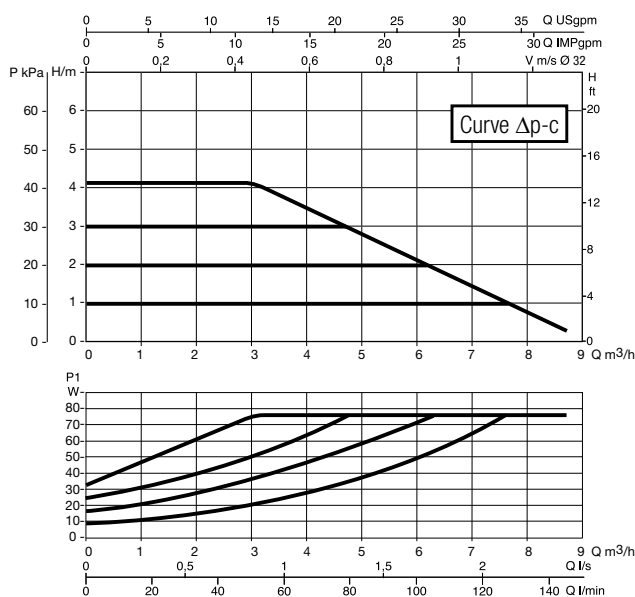
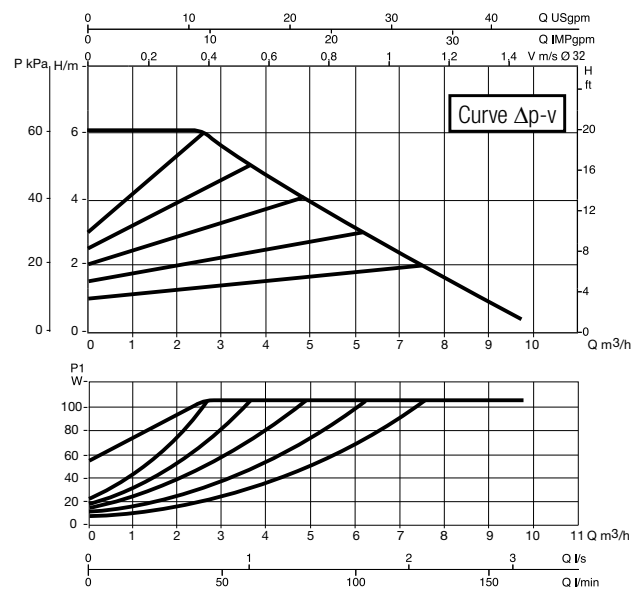
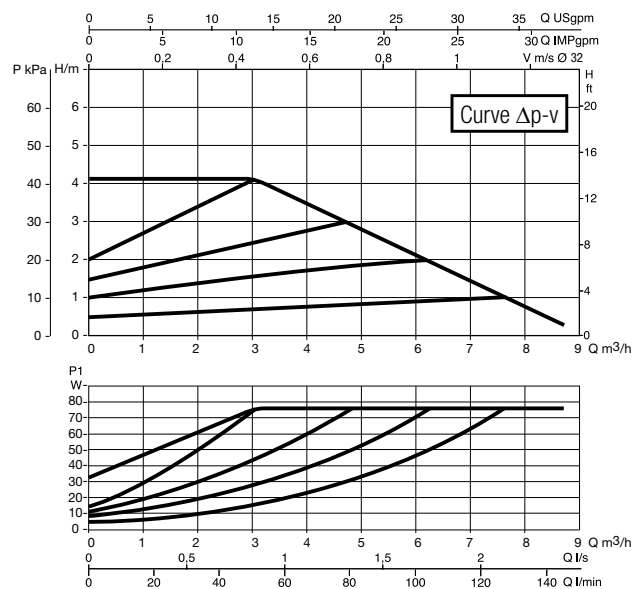


## EVOPLUS 110/180 XM



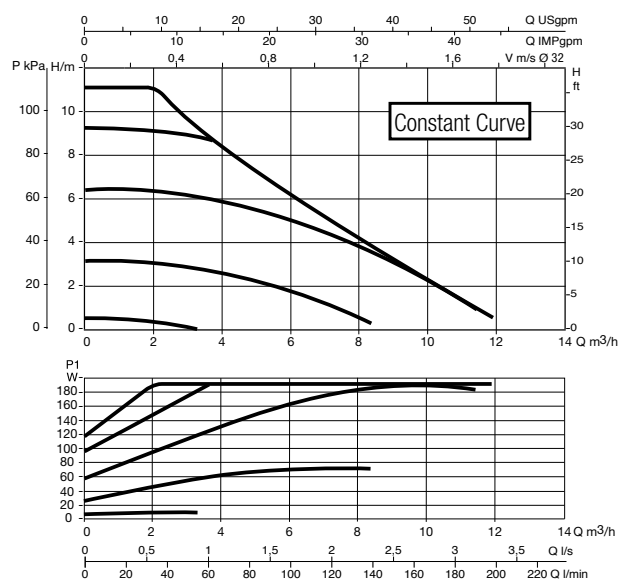
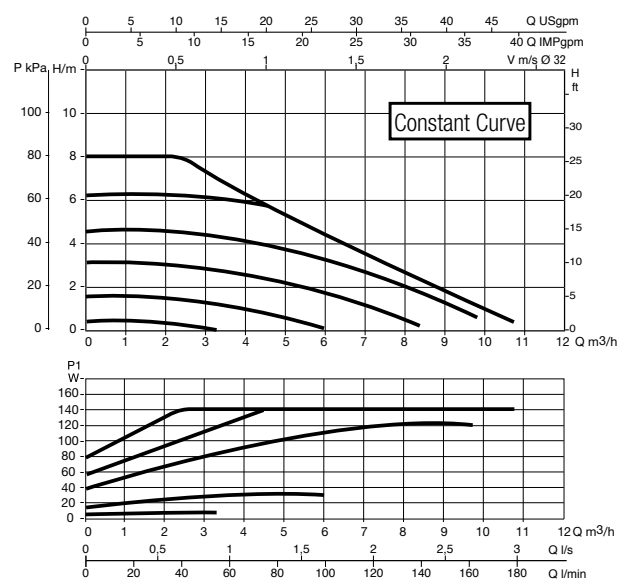
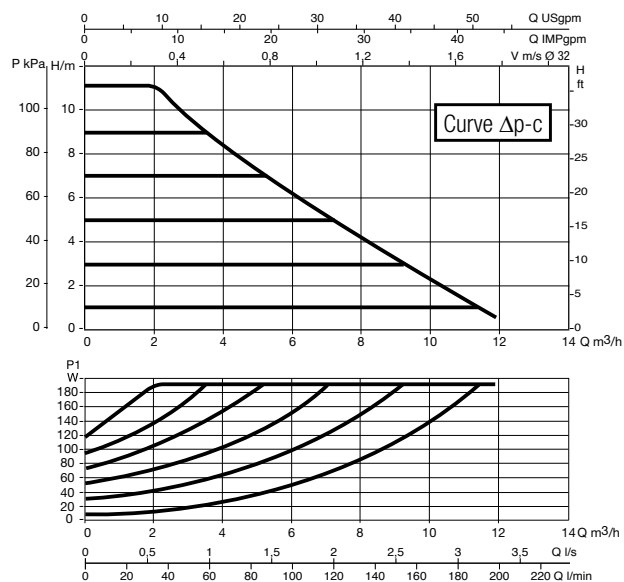
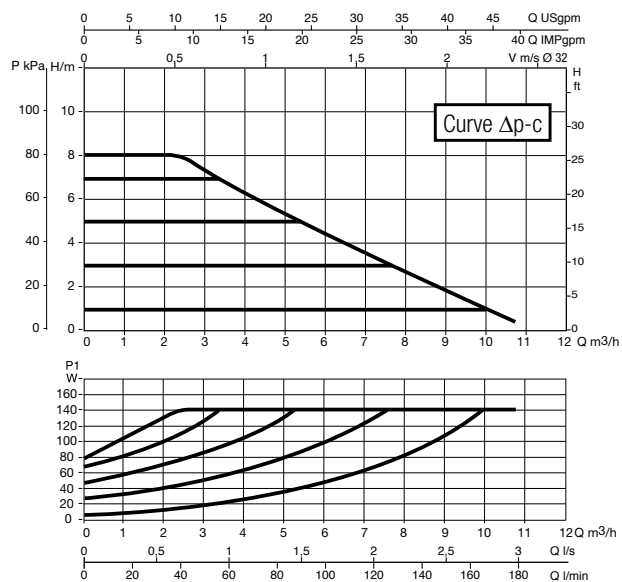
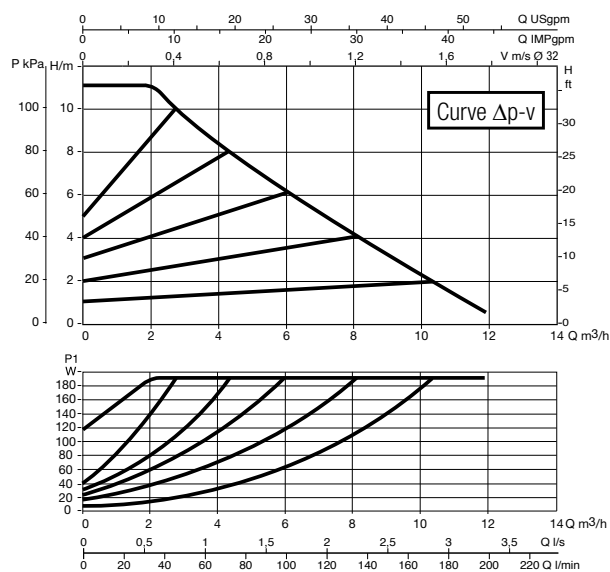
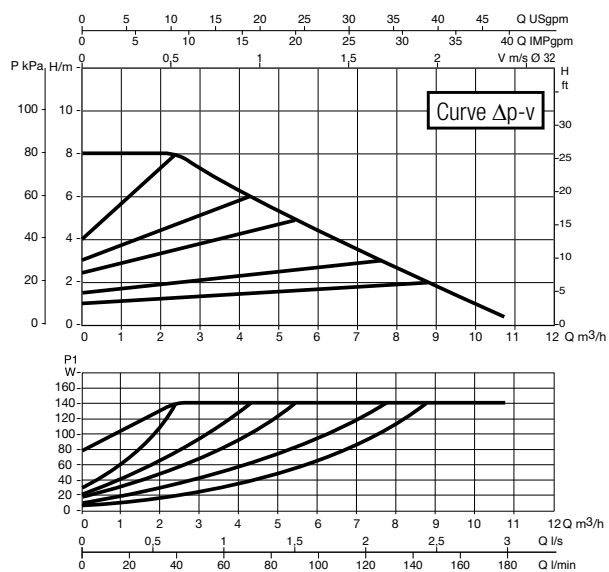
# EVOPLUS B 40/220.32 (SAN) M - EVOPLUS D 40/220.32 M

# EVOPLUS B 60/220.32 (SAN) M - EVOPLUS D 60/220.32 M

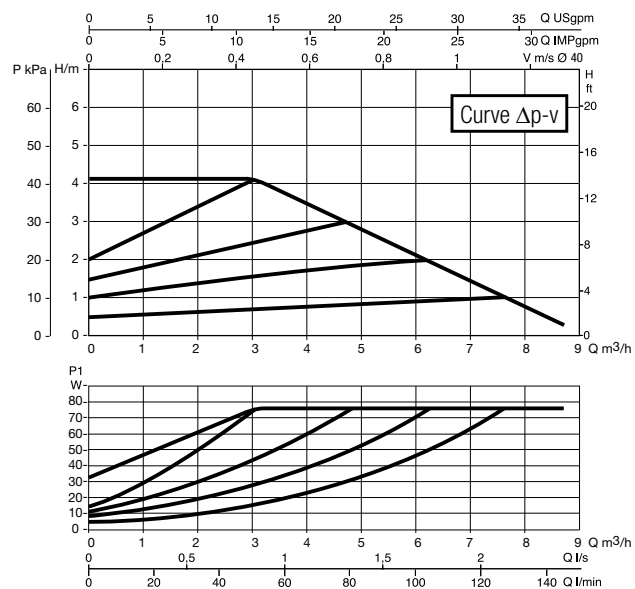


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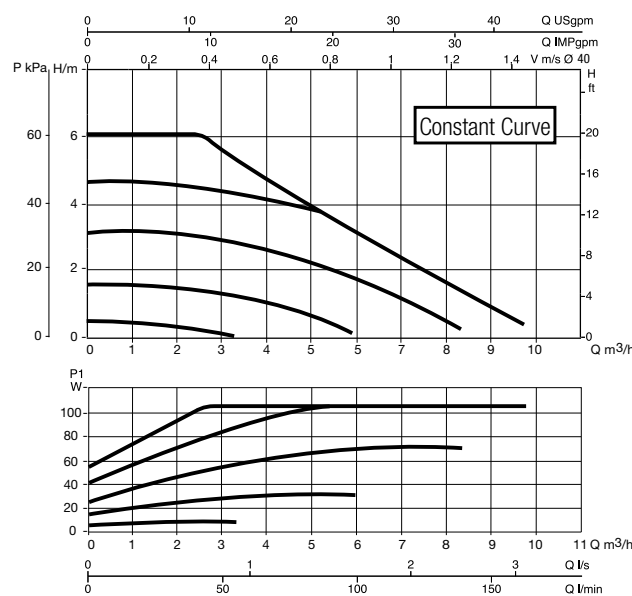
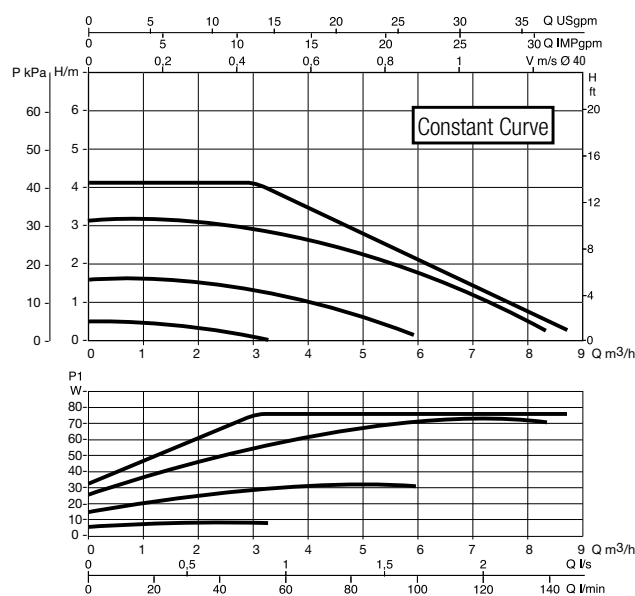
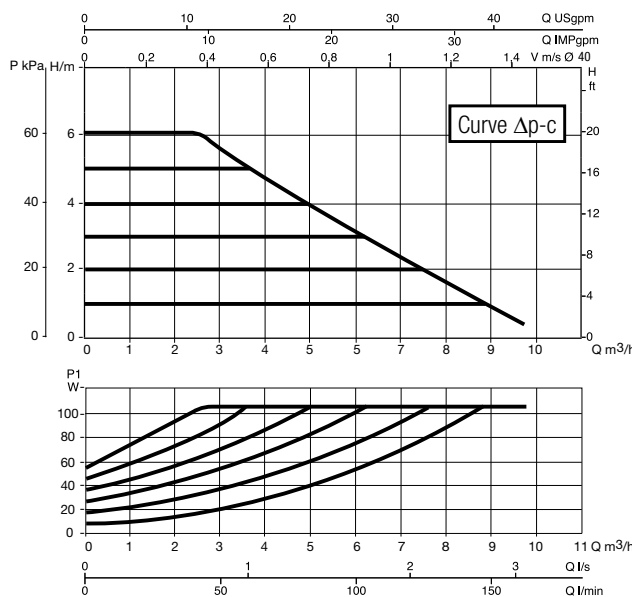
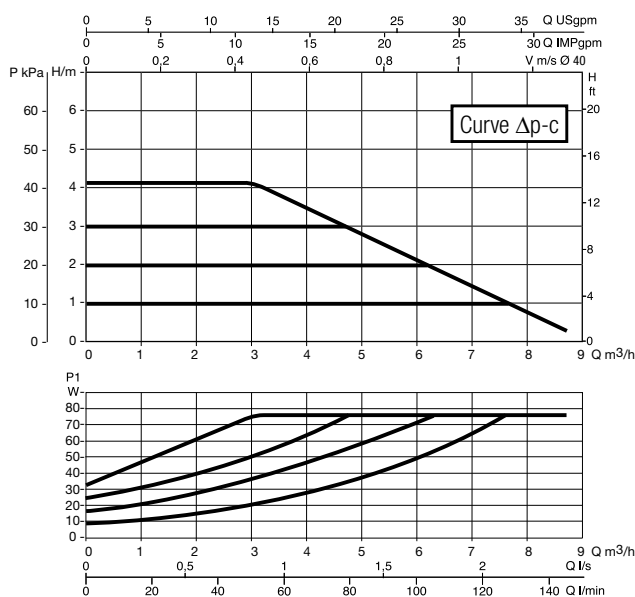
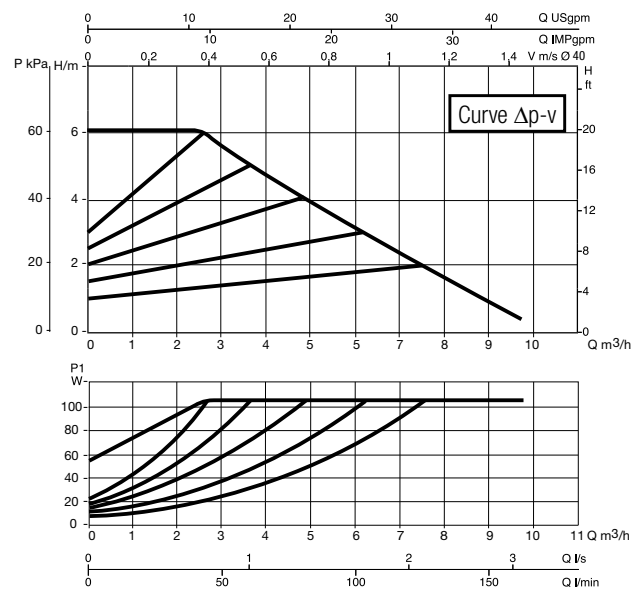
# EVOPLUS B 110/220.32 (SAN) M - EVOPLUS D 110/220.32 M



# EOPLUS B 40/250.40 (SAN) M - EOPLUS D 40/250.40 M

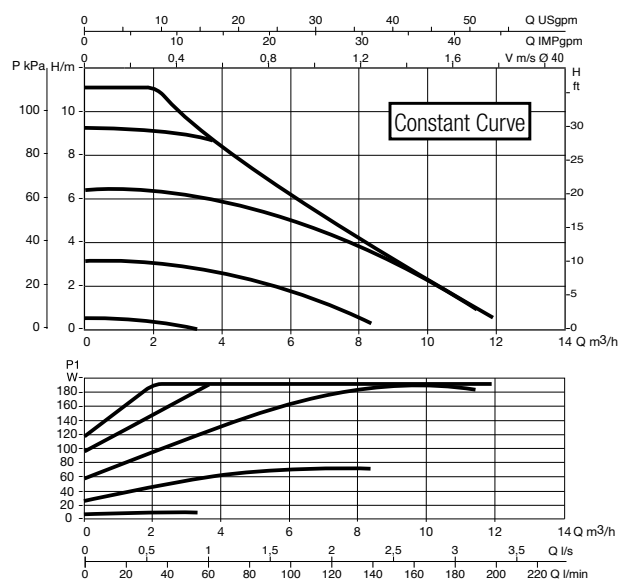
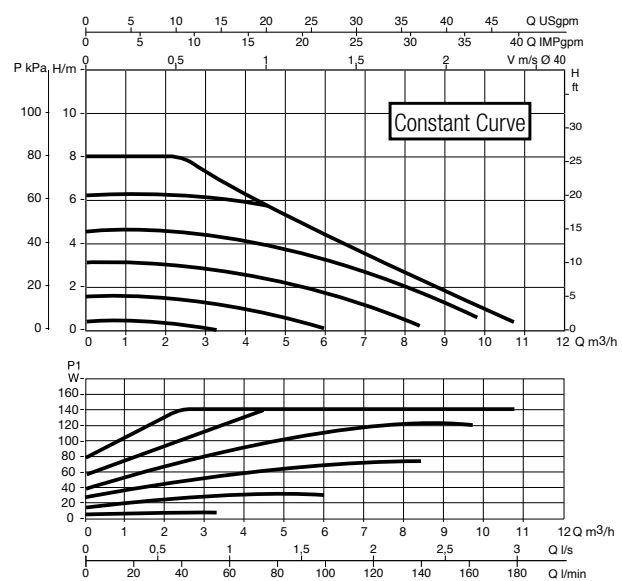
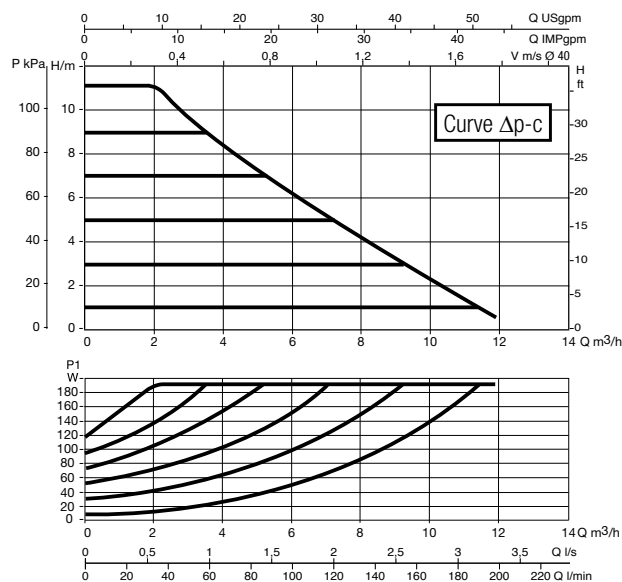
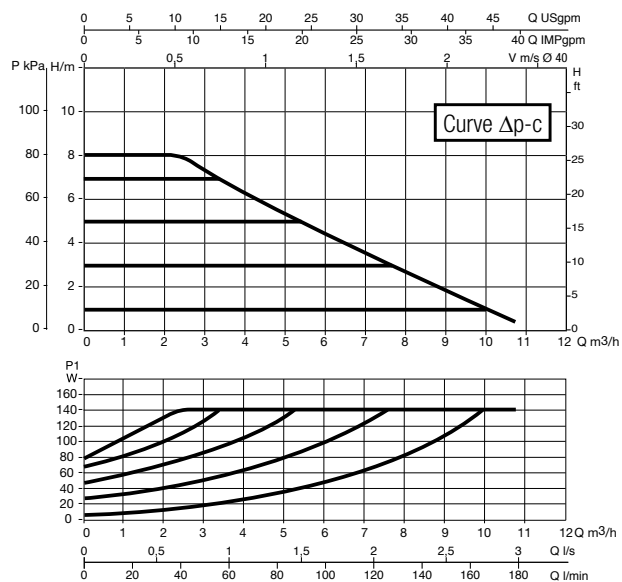
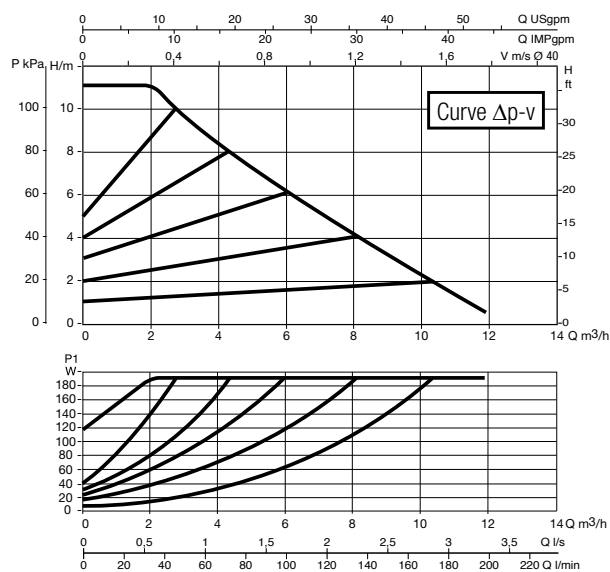
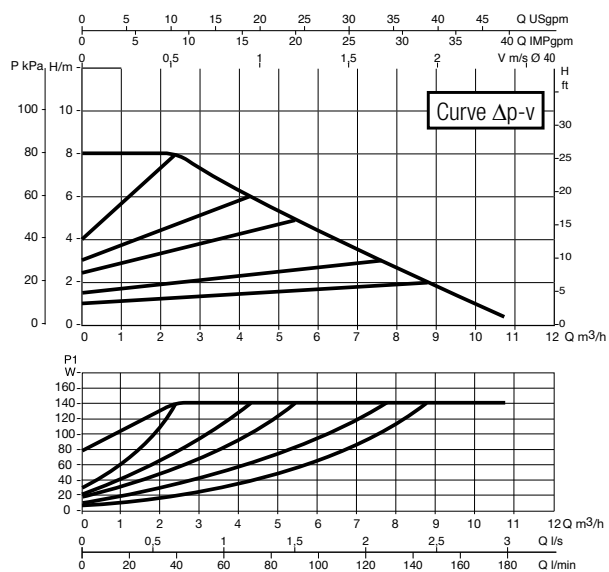


# EOPLUS B 60/250.40 (SAN) M - EOPLUS D 60/250.40 M



# EVOPLUS B 80/250.40 (SAN) M - EVOPLUS D 80/250.40 M

# EVOPLUS B 110/250.40 (SAN) M - EVOPLUS D 110/250.40 M







# ELECTRONIC CIRCULATORS FOR COMMUNITY HEATING AND AIR CONDITIONING SYSTEMS



compliant with the european directive  
ErP 2009/125/EC (ex EuP)

## GENERAL DATA

### APPLICATIONS

EVOPLUS electronic circulators can be used in heating, ventilation and air conditioning systems for residential and commercial buildings including:

- Large residential buildings
- Condominiums and apartment blocks
- Homes
- Clinics and Hospitals
- Schools
- Office buildings
- Real Estate Assets

All models are available in both the single and twin version.

Made with bronze pump body for secondary hot water circulation. Available in single version with 1 1/2" threaded connection as well as DN 32 and DN 40 flanged connection.

### APPLICATIONS IN HEATING

The heating required in various applications changes significantly during the day/night due to the ambient temperature and changing occupancy levels. This situation is compounded by the different requirements of the various rooms and opening or closing of the various circuit branches in complex installations. Electronically controlled wet rotor pumps constantly ensure, in almost all correctly sized installations, sufficient power and, simultaneously, lower noise emissions, greater comfort and a significant reduction in running costs.

### APPLICATIONS IN AIR CONDITIONING

Unlike conventional electronic pumps, EVOPLUS electronic circulators can also be used in air conditioning systems where the temperature of the liquid pumped is lower than the ambient temperature. In these conditions condensate tends to form on the outer surface of the circulator although this does not impair proper operation of either the electronic or mechanical sections. The unit is designed and sized in such a way as to allow the condensate to drain without damaging the construction components.

### APPLICATIONS FOR HOT WATER CIRCULATION

The SAN version pump with bronze body has been developed specifically for the circulation of secondary hot water. The constant temperature operating mode controls the water temperature in the circulation pipe without needing to use thermostatic valves, thus maintaining required water temperature for user.

## CONSTRUCTION FEATURES

Enbloc circulator composed of cast iron hydraulic section and wet rotor synchronous motor. Motor casing in aluminium. Scroll type pump body featuring high hydraulic efficiency thanks to highly precise design and smooth internal surfaces. Flanged suction and discharge ports equipped with threaded fittings for pressure and temperature readings.

The single version is supplied as standard with insulating covers to avoid heat loss and/or the formation of condensate on the pump body.

Insulation of the twin version is to be provided by the installer. Use special caution to avoid obstructing the condensate drainage labyrinths in order to avoid impairing operation.

Impeller in technopolymer, motor shaft in hardened stainless steel held in ceramic bearings lubricated by the pumping medium. Rotor protective jacket in stainless steel. Ceramic thrust ring, ethylene propylene seals and stator jacket in carbon fiber composite. Permanent magnet synchronous motor. The twin version features an automatic swing check valve incorporated in the discharge port to avoid water recirculating through the unit when it is not running; moreover, a blank flange is supplied as standard to allow either of the two motors to be removed for servicing. Standard execution of the pump body is PN 16. Both the DN 80 and the DN 100 PN 6 (4 holes) versions can be supplied on request

Circulator protection rate: IP 44

Insulation Class: F

Standard voltage: single-phase 220/240 V , 50/60Hz

This product complies with European standards EN 61800-3 – EN 60335-1 – EN 60335-2-5151

## EVOPLUS CONSTRUCTION FEATURES FOR SMALL COMMUNITY SYSTEMS (ELECTRONIC DEVICE)

EVOPLUS circulators are controlled by means of an IGBT-based device in NPT-technology of the latest generation for higher efficiency and robustness.

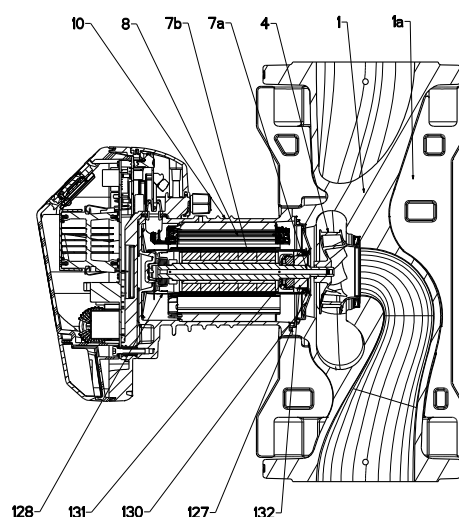
Specific features includes:

- Sine wave modulated PWM
- High carrier frequency to eliminate all audio band noise
- 2 dedicated 32-bit processors:
  - one dedicated to motor control
  - one dedicated to the user interface allowing the following functions:
    - start/stop control
    - Economy control
    - 0-10V analogue signal control
    - PWM signal control
    - 4-20 mA analogue signal control
    - $\Delta T$  Temperature sensor signal control
    - Connection to ModBus control systems. Optional Lonbus with relative module.
- Optimised space vector algorithm
- Alarms system availability
- Indication pump running

An intuitive and functional user interface ensures ease of calibration for all users. The easy to read OLED display on the control panel, three easy navigation keys, a drop down menu in line with the latest trends in the field of mobile telephony and a very wide range of functions mean that EVOPLUS circulators are truly revolutionary products. A reliable and robust construction combined with a modern and innovative design completes the product also from an aesthetic point of view.

## TECHNICAL DATA

| N°  | PARTS               | MATERIAL                                                 |
|-----|---------------------|----------------------------------------------------------|
| 1   | PUMP BODY           | CAST IRON 250 UNI ISO 185 - CTF BRONZE (for SAN version) |
| 4   | IMPELLER            | TECHNOPOLYMER                                            |
| 7A  | MOTOR SHAFT         | STAINLESS STEEL                                          |
| 7B  | ROTOR               | STAINLESS JACKET                                         |
| 8   | STATOR              | - -                                                      |
| 10  | MOTOR HOUSING       | DIE CAST ALLUMINIUM                                      |
| 127 | SEAL RING           | RUBBER EPDM                                              |
| 128 | STATOR SLEEVE       | COMPOSITE WITH CARBON FIBRE                              |
| 130 | CLOSING FLANGE      | STAINLESS STEEL                                          |
| 131 | THRUST RING SUPPORT | STAINLESS STEEL                                          |
| 132 | BUSHINGS            | ALLUMINA                                                 |



## DESIGNATION INDEX:

Electronic circulator ————— **EVOPLUS B 120 / 250 . 40 SAN M**

**B** = single circulator flanged  
**D** = twin circulator flanged

Maximum head (dm)

Centre distance (mm)

(DN) nominal diameter of flanged ports

**SAN** = application for hot water circulation

**M** = single-phase motor

### Operating range:

3 to 75,6 m<sup>3</sup>/h with head up to 18 meters;

### Liquid temperature range:

from -10 °C a +110 °C

### Pumped liquid:

clean, free of solid contaminants and mineral oils, non-viscous, chemically neutral, close to the properties of water.  
(max. glycol contents 30%).

### Maximum working pressure:

16 bar (1600 kPa)

### Standard flanging:

DN 32, DN 40, DN 50, DN 65, PN 6 / PN 10 / PN 16 (4 slots),  
DN 80 and DN 100, PN 6 (4 slots)  
+40°C.

### Maximum ambient temperature:

### Minimum suction pressure:

the values are given in the relevant tables.

### Special executions on request:

DN 80 , DN 100 PN 10 / PN 16 (8 holes)

### Accessories (Counterflanges):

PN 6 DN 32  
PN 10 da DN 40 - DN 50 - DN 65, PN 6 da DN 80  
DN 100

### Electromagnetic compatibility:

EVOPLUS circulators comply with standard EN 61800-3, in category C2, in terms of electromagnetic compatibility.

Electromagnetic emissions - Residential environment (containment measures may be necessary in certain cases).

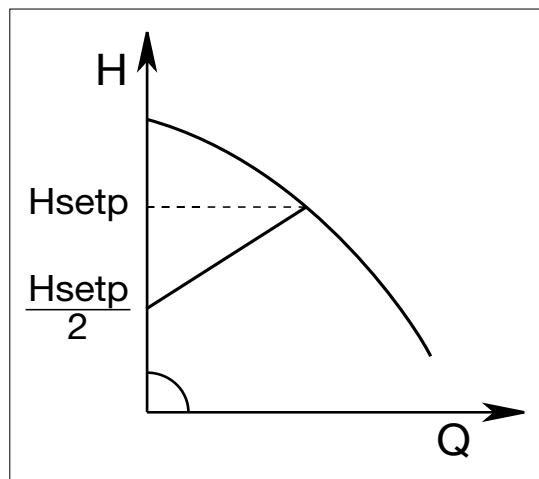
Conducted emissions - Residential environment (containment measures may be necessary in certain cases).

## OPERATING MODES

All functions listed below can be consulted by all users (irrespective of the level of expertise) simply by scrolling through the menu. Calibration and parameter editing are protected and reserved for expert users. The EVOPLUS range is factory-set to the control mode with differential pressure proportional to the curve that guarantees the best energy efficiency index (EEI).

### 1 - $\Delta P$ -v proportional differential pressure control mode

Control mode  $\Delta P$ -v provides linear variation of the head delivery value from  $H_{setp}$  to  $H_{setp}/2$  in accordance with changes in flow rate. This control mode is particularly useful in the following types of installations:



#### a. two-pipe central heating systems with thermostatic valves and with:

- head of more than 4 metres;
- very long circuit piping;
- valves with broad operating range;
- differential pressure regulators;
- high pressure drops in sections of the system carrying the entirety of the water flow rate;
- low differential temperature.

#### b. Under-floor central heating systems and systems with thermostatic valves and significant pressure drops in the boiler circuit.

#### c. Installations having primary circuit pumps with high pressure drops.

#### Examples of set-point input with $\Delta P$ -v

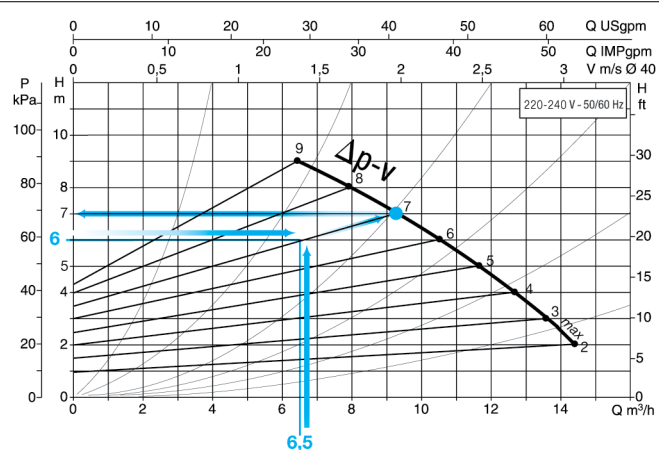
The following operating point is required:

$$Q = 6,5 \text{ m}^3/\text{h}$$

$$H = 6 \text{ m}$$

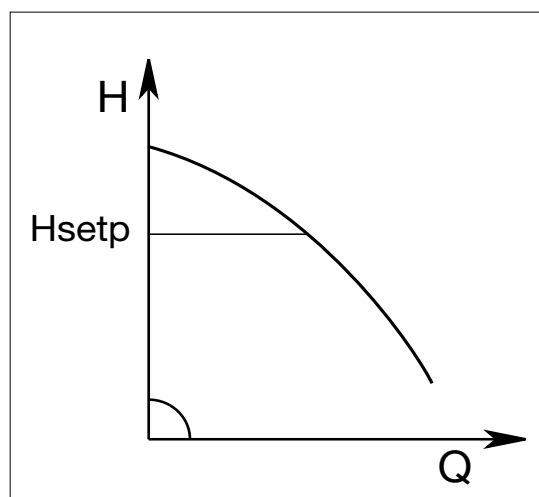
#### PROCEDURE:

1. In the graph, find the required operating point and then find the nearest curve to it (in this case the point lies precisely on the curve)
2. Follow the curve until intersecting the circulator limit curve.
3. The head reading found at this limit point will be the set-point head to be entered to obtain the required operating point.



### 2 - $\Delta P$ -c constant differential pressure control mode

Control mode  $\Delta P$ -c keeps system differential pressure constant at the user-settable value of  $H_{setp}$  despite changes in flow rate.



This control mode is particularly useful in the following types of installations:

#### a. two-pipe central heating systems with thermostatic valves and with:

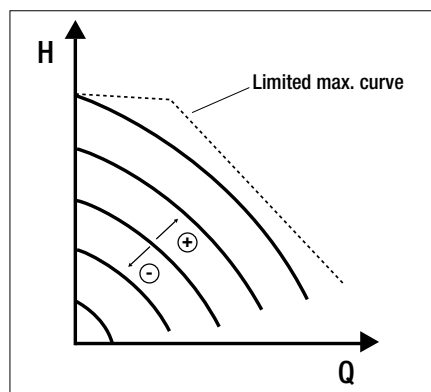
- head of less than 2 metres;
- natural circulation;
- low pressure drops in sections of the system carrying the entirety of the water flow rate;
- high differential temperature (central heating).

#### b. Under-floor central heating systems with thermostatic valves

#### c. Single-pipe central heating systems with thermostatic valves and calibration valves

#### d. Installations having primary circuit pumps with low pressure drops.

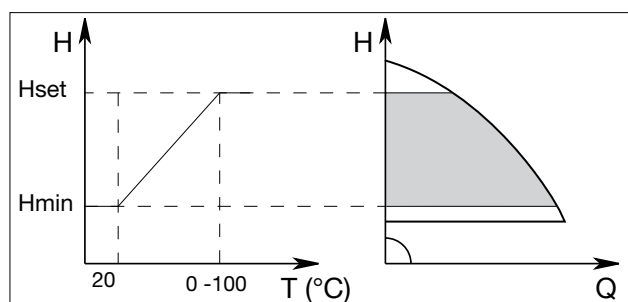
### 3 - Constant curve control mode



This control setting shows the curve of the circulator at constant speed. The operation curve is selected by setting the rotation speed on a percentage factor. Reaching 100% indicates the curve maximum. The speed of rotation may depend on power restriction and difference in pressure subject to model of circulator. The rotation speed can be set from the display or from an external signal 0-10V or PWM using the multifunction module.

The control setting is ideal for heating and air conditioning applications that require constant flow.

### 4 - Constant and proportional differential pressure control mode depending on water temperature.



The circulator head set-point is reduced in accordance with the water temperature.

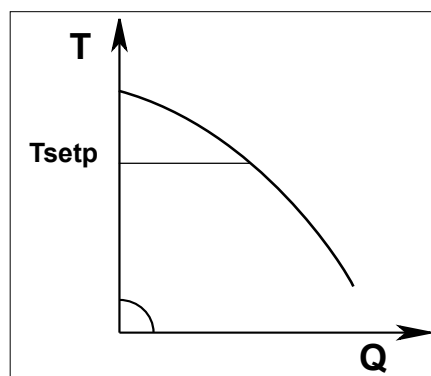
Liquid temperature can be set from 0°C to 100°C.

This control mode is particularly useful in the following types of installations:

- in variable flow rate installations (two-pipe central heating systems), in which a further reduction of circulator performance is provided in accordance with lowering of the circulating liquid temperature, in the presence of reduced heating demand.
- in constant flow rate installations (single-pipe and under-floor central heating systems), where the performance of the circulator can be adjusted only by activating the temperature influence function.

This function is set on EVOPLUS control panel.

### 5 - $\Delta T$ -c constant differential temperature control mode



$\Delta T$ -c control mode keeps the differential temperature of the pumped liquid constant, changing the flow rate to the user-settable value  $T_{setp}$ .

This control mode is particularly useful in the following types of installations:

- Under-floor central heating systems
- Installations having circuit pumps with heat exchanger
- Solar energy systems with storage tanks
- Swimming pool heating systems with solar panels

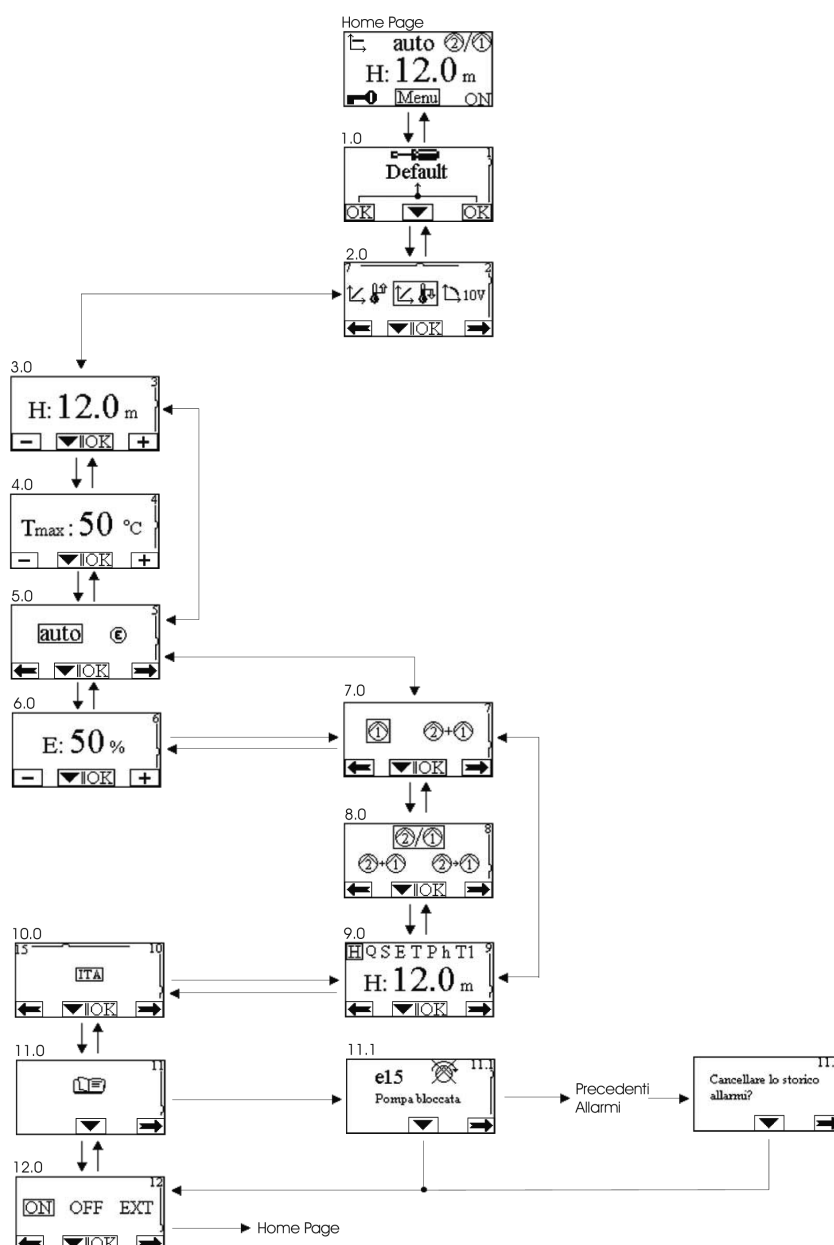
\* Available from 2013

### ECONOMY FUNCTION

The economy function can be set directly on the control panel, by setting a reduction value (f. rid) the maximum value of which is 50%. In all settings listed above the  $H_{set}$  value must be replaced with a  $H_{set} \times f. rid$  value.

## EVOPLUS MENU CONFIGURATIONS

The settings are made when passing from one page to another, in the circulator configuration menu.



## DESCRIPTION OF SYMBOLS DISPLAYABLE QUANTITIES

| Symbol           | Description                                                                                                                            |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| H Q S E T P h T1 | Shows parameters                                                                                                                       |
| H                | Head in metres                                                                                                                         |
| Q                | Flow rate in m <sup>3</sup> /h<br>$Q < Q_{min}$ when Q is less than 30% of $Q_{max}$<br>$Q = 0$ only when the Evoplus is switched off. |
| S                | Speed in revs/minute (rpm)                                                                                                             |
| E                | Analog input 0-10V or PWM                                                                                                              |
| T                | Liquid temperature in °C – input D                                                                                                     |
| P                | Power in kW                                                                                                                            |
| h                | Working hours                                                                                                                          |
| T1               | Liquid temperature in °C – input C                                                                                                     |
| T <sub>MAX</sub> | Maximum liquid temperature in °C depending on regulation                                                                               |

## CIRCULATOR STATUS

| Symbol | Description                                                                        |
|--------|------------------------------------------------------------------------------------|
|        | Single circulator or nr. 1                                                         |
|        | Circulator nr. 2                                                                   |
|        | Alternate twin circulators                                                         |
|        | Principal/reserve twin circulators (24 hours one motor / 24 hours the other motor) |
|        | Simultaneous twin circulators                                                      |
| ON     | Circulator on                                                                      |
| OFF    | Circulator off                                                                     |
| EXT    | Circulator controlled by remote signal (ref. terminals 1-2)                        |

## TYPE OF OPERATION

| Symbol | Description      |
|--------|------------------|
| auto   | Auto function    |
|        | Economy function |

## TYPES OF CONTROL MODE

| Symbol        | Description                                                                |
|---------------|----------------------------------------------------------------------------|
|               | $\Delta p$ -c control mode (constant pressure)                             |
|               | $\Delta p$ -c control mode depending on temperature with positive increase |
|               | $\Delta p$ -c control mode depending on temperature with negative increase |
|               | $\Delta p$ -v control mode (variable pressure)                             |
|               | $\Delta p$ -v control mode depending on temperature with positive increase |
|               | $\Delta p$ -v control mode depending on temperature with negative increase |
|               | Servomotor control mode with speed set on the display.                     |
|               | Servomotor control mode with speed set by remote signal 0-10V              |
| $\Delta T$ -c | $\Delta T$ -c control mode (constant temperature)                          |

## VARIOUS

| Symbol | Description                                                     |
|--------|-----------------------------------------------------------------|
|        | Control panel blocked                                           |
|        | Multifunction key for confirming parameters and scrolling pages |

## FACTORY SETTINGS

| Parameter                            | Value                                |
|--------------------------------------|--------------------------------------|
| Control mode                         | Display of parameters                |
| Hs (Differential Pressure Set-point) |                                      |
| Fs (Frequency Set-point)             | auto                                 |
| Set-point percentage reduction       | 50 %                                 |
| Twin operating mode                  |                                      |
| Pump start control                   | EXT (from remote signal on input I1) |

## TYPES OF ALARMS AND HOW TO DEAL WITH THEM

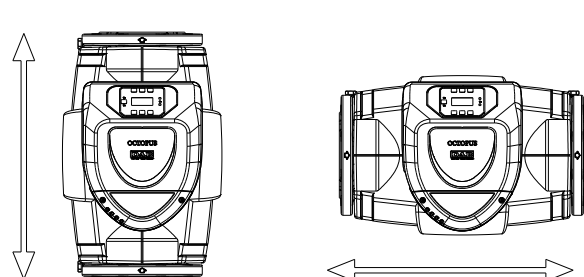
| Alarm code         | Alarm symbol | Alarm description |
|--------------------|--------------|-------------------|
| e0 - e16; e21      |              | Internal Error    |
| e17 - e19          |              | Short circuit     |
| e20                |              | Voltage Error     |
| e22 - e30          |              | Voltage Error     |
| e31                |              | Protocol Error    |
| e32 - e35          |              | Overheating       |
| e37                |              | Low voltage       |
| e38                |              | High voltage      |
| e39 - e40          |              | Overcurrent       |
| e43; e44; e45; e54 |              | Pressure sensor   |
| e46                |              | Pump Disconnected |

## TROUBLESHOOTING

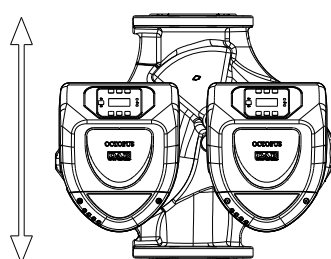
| Error condition    |                                     |                                                                                                                                                                                                                                                                |
|--------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display indication | Description                         | Reset sequence                                                                                                                                                                                                                                                 |
| E0 - E16           | Internal Error                      | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS</li> <li>- Wait 5 minutes then restore power to the EVOPLUS.</li> <li>- If the error persists, replace the EVOPLUS.</li> </ul>                                                            |
| E37                | Mains voltage too low (LP)          | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS</li> <li>- Wait 5 minutes then restore power to the EVOPLUS.</li> <li>- Check that the mains system voltage is correct; if necessary, restore it to the device's rated level.</li> </ul>  |
| E38                | Mains voltage too high (HP)         | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS</li> <li>- Wait 5 minutes then restore power to the EVOPLUS.</li> <li>- Check that the mains system voltage is correct; if necessary, restore it to the device's rated level.</li> </ul>  |
| E32-E35            | Overheating of key electronic parts | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS</li> <li>- Wait 5 minutes then remove the EVOPLUS from the pump and clean the motor casing.</li> <li>- Clean the heat sink.</li> </ul>                                                    |
| E43-E45; E54       | No signal from sensor               | <ul style="list-style-type: none"> <li>- Check the sensor connection</li> <li>- If the sensor has failed, replace it.</li> </ul>                                                                                                                               |
| E39-E40            | Overload cutout tripped             | <ul style="list-style-type: none"> <li>- Check that the circulation pump turns freely.</li> <li>- Check that the level of antifreeze does not exceed the maximum level of 30%</li> </ul>                                                                       |
| E21-E30            | Voltage Error                       | <ul style="list-style-type: none"> <li>- Switch off power to EVOPLUS.</li> <li>- Wait 5 minutes then restore power to the EVOPLUS.</li> <li>- Check that the mains system voltage is correct; if necessary, restore it to the device's rated level.</li> </ul> |
| E31                | Twin connection failure             | <ul style="list-style-type: none"> <li>- Inspect the twin connection cable for damage.</li> <li>- Check that both circulation pumps can be supplied with power.</li> </ul>                                                                                     |

## INSTALLATION:

### HEATING AND CONDITIONING

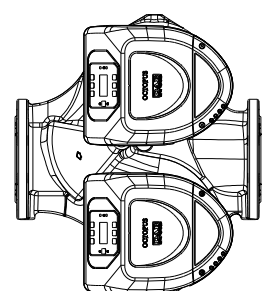


**SINGLE**



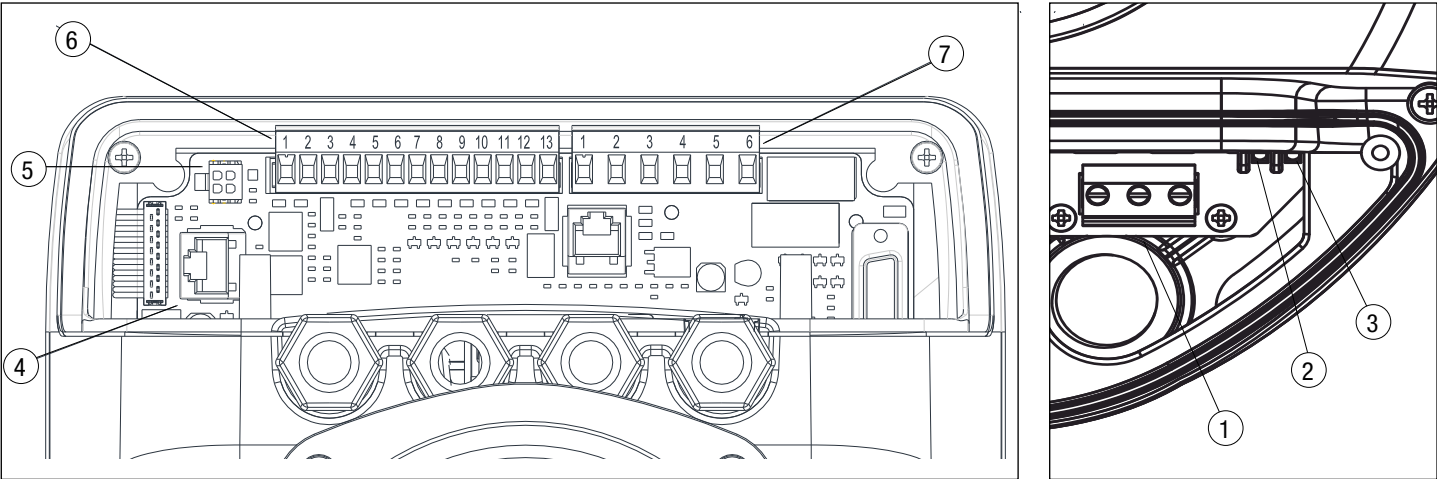
**TWIN**

### ONLY HEATING



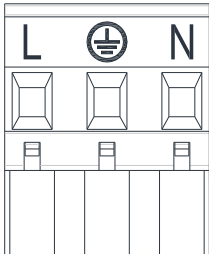


# CONNECTION DIAGRAM



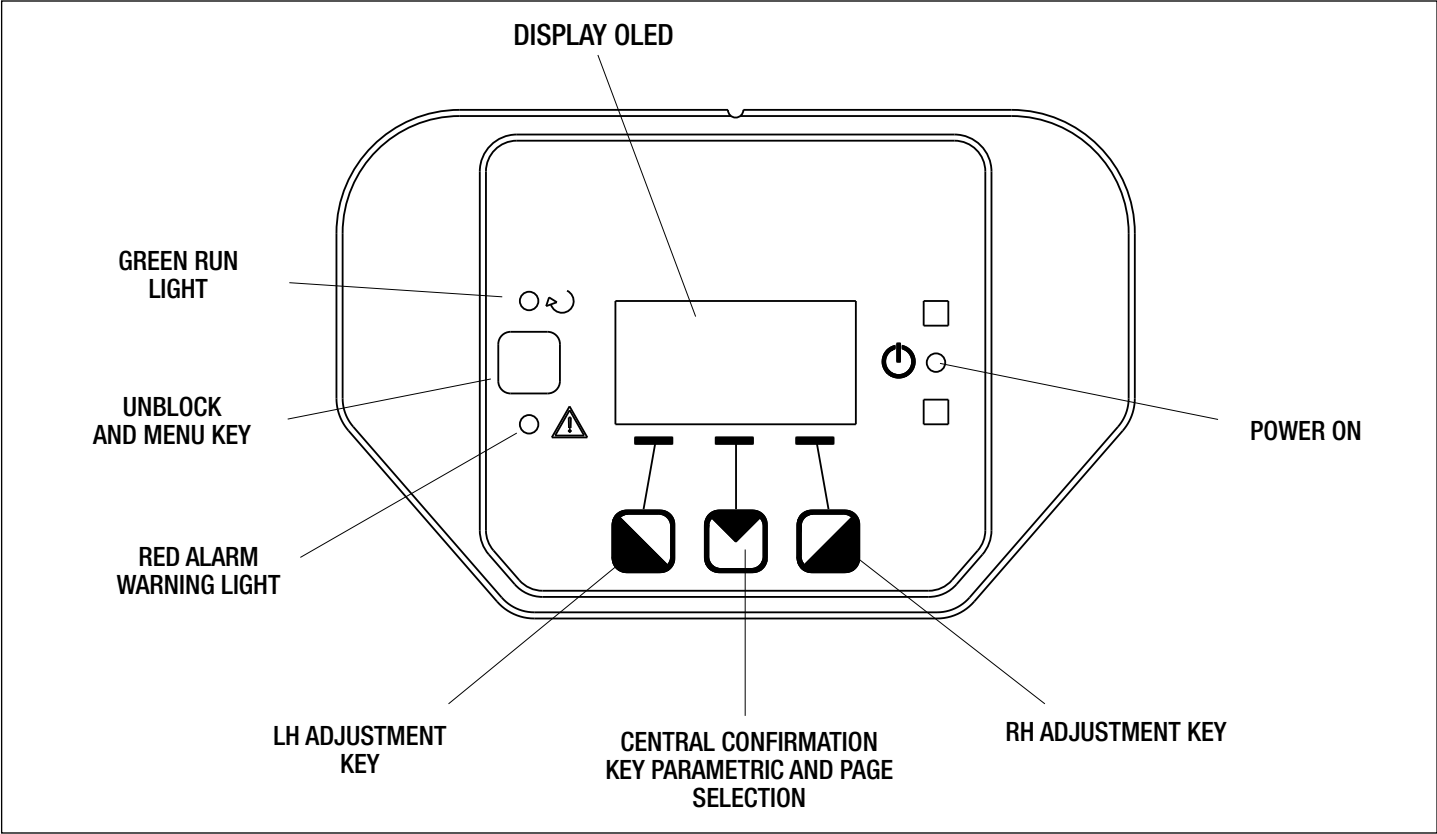
|   |                                                                                           |
|---|-------------------------------------------------------------------------------------------|
| 1 | Pull-out terminal board for connection of the supply line: 1x220-240 V, 50/60 Hz          |
| 2 | Auxiliary LED                                                                             |
| 3 | System live indicating LED                                                                |
| 4 | Connector for connecting twin circulators                                                 |
| 5 | Connector for connecting the pressure and temperature sensor on the circulator (standard) |
| 6 | Pull-out 13-pole terminal board for connecting the inputs and the MODBUS systems          |
| 7 | Pull-out 6-pole terminal board for alarm signals and system status                        |

## Power supply connection

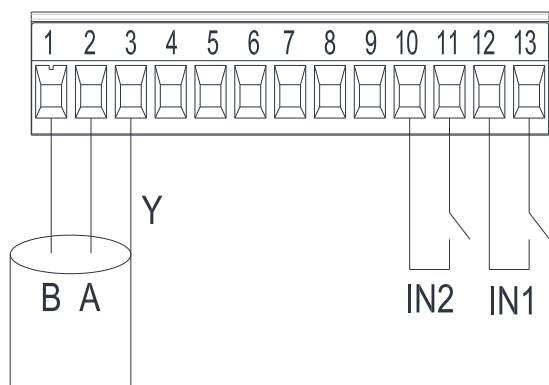


Pull-out terminal board for supply

# CONTROL PANEL DESCRIPTION



## Digital inputs



| INRESSO | TERMINAL NO. | TYPE OF CONTACT | FUNZIONE ASSOCIATA                                                                                                                         |
|---------|--------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| IN1     | 12           | Clean contact   | <b>EXT:</b> If it is activated from the control panel it will be possible to command the switching on and off of the pump in remote mode.  |
|         | 13           |                 |                                                                                                                                            |
| IN2     | 10           | Clean contact   | <b>Economy:</b> If it is activated from the control panel it will be possible to activate the set-point reduction function in remote mode. |
|         | 11           |                 |                                                                                                                                            |

If the **EXT** and **Economy** functions have been activated from the control panel, the system will behave as follows:

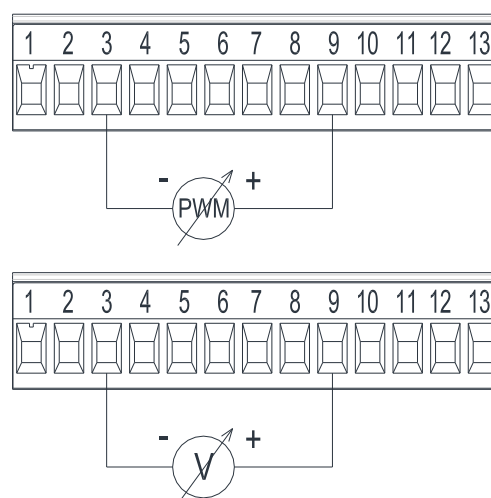
| IN1    | IN2    | SYSTEM STATUS                               |
|--------|--------|---------------------------------------------|
| Open   | Open   | Pump stopped                                |
| Open   | Closed | Pump stopped                                |
| Closed | Open   | Pump running with set-point set by the user |
| Closed | Closed | Pump running with reduced set-point         |

## MODBUS

EVOPLUS circulators provide serial communication through an input RS-485. The communication is realised according to MODBUS specifications. With MODBUS it is possible to set the circulator operating parameters in remote mode such as, for example, the desired differential pressure, the influence of temperature, the regulating mode, etc. At the same time the circulator can provide important information on the system status.

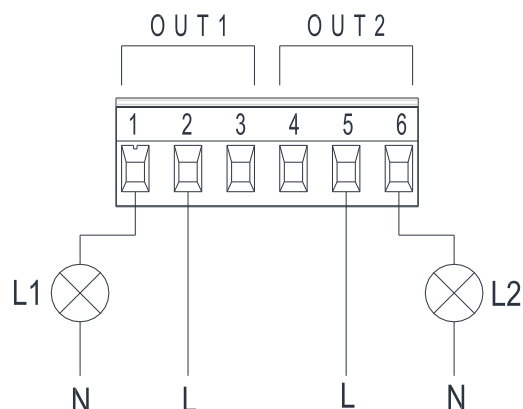
| MODBUS TERMINALS | TERMINAL NO. | DESCRIPTION               |
|------------------|--------------|---------------------------|
| A                | 2            | Terminal not inverted (+) |
| B                | 1            | Terminal inverted (-)     |
| Y                | 3            | GND                       |

## Analogue Input and PWM



The wiring diagram of the external signals 0-10V and PWM. The 2 signals share the same terminals on the terminal board, so they are mutually exclusive.

## Digital outputs



The light L1 is lit when there is an alarm in the system and it goes off when no kind of malfunction is found, whereas the light L2 is lit when the pump is running and goes off when the pump is stopped.

| OUTPUT | TERMINAL NO. | TYPE OF CONTACT | ASSOCIATED FUNCTION                      |
|--------|--------------|-----------------|------------------------------------------|
| OUT1   | 1            | NC              | Presence/Absence of alarms in the system |
|        | 2            | COM             |                                          |
|        | 3            | NO              |                                          |
| OUT2   | 4            | NC              | Pump running/Pump stopped                |
|        | 5            | COM             |                                          |
|        | 6            | NO              |                                          |

The outputs OUT1 and OUT2 are available on the pull-out 6-pole terminal board which also shows the type of contact (NC = Normally Closed, COM = Common, NO = Normally Open).

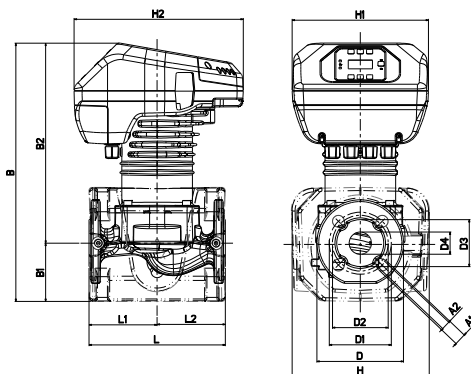
| CHARACTERISTICS OF THE OUTPUT CONTACTS |                                                  |
|----------------------------------------|--------------------------------------------------|
| Max. bearable voltage [V]              | 250                                              |
| Max. bearable current [A]              | 5 - If resistive load<br>2,5 - If inductive load |
| Max. accepted cable section [mm²]      | 1,5                                              |

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C  
Maximum operating pressure: 16 bar (1600 kPa)

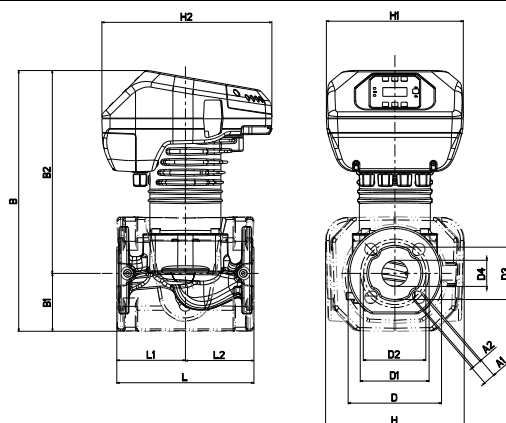
| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 120/220.32 M</b> | 220/240 V           | 220                      | DN 32 PN 6                  | 340             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1 | B2  | D   | D1  | D2 | D3 | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|----|-----|-----|-----|----|----|----|-----|-----|-----|----------------|
| 220 | 110 | 110 | 19 | 14 | 417 | 94 | 323 | 140 | 100 | 90 | 76 | 36 | 222 | 220 | 273 | 14             |

| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/220.40 M</b>  | 220/240 V           | 220                      | DN 40 PN 10                 | 90              | EEI ≤ 0,24 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/220.40 M</b>  | 220/240 V           | 220                      | DN 40 PN 10                 | 175             | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/220.40 M</b>  | 220/240 V           | 220                      | DN 40 PN 10                 | 260             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 100/220.40 M</b> | 220/240 V           | 220                      | DN 40 PN 10                 | 350             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|-----|----------------|
| 220 | 110 | 110 | 19 | 14 | 419 | 93 | 326 | 150 | 110 | 100 | 84 | 42 | 222 | 220 | 273 | 15,5           |

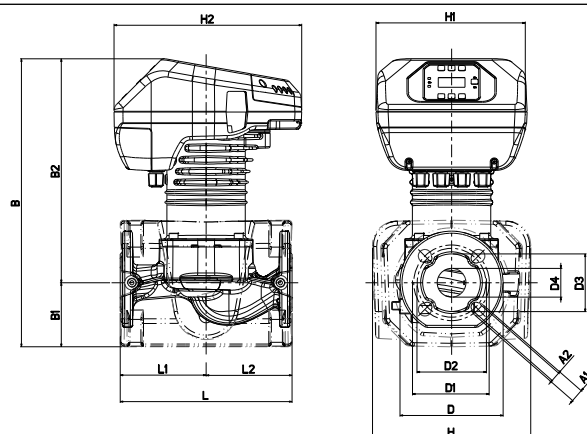
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C

Maximum operating pressure: 16 bar (1600 kPa)

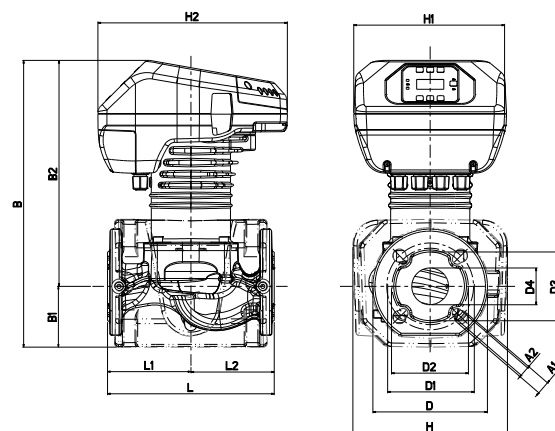
| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 120/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 465             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 150/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 610             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 180/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 610             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|-----|----------------|
| 250 | 125 | 125 | 19 | 14 | 419 | 93 | 326 | 150 | 110 | 100 | 84 | 42 | 230 | 220 | 273 | 16             |

| MODEL                        | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                              |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/240.50 M</b> | 220/240 V           | 240                      | DN 50 PN 10                 | 140             | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/240.50 M</b> | 220/240 V           | 240                      | DN 50 PN 10                 | 260             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/240.50 M</b> | 220/240 V           | 240                      | DN 50 PN 10                 | 330             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|-----|----------------|
| 240 | 120 | 120 | 19 | 14 | 413 | 87 | 325 | 165 | 125 | 110 | 99 | 53 | 222 | 220 | 273 | 17             |

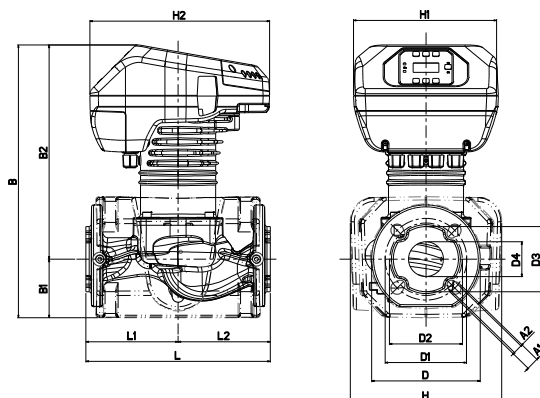
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C

Maximum operating pressure: 16 bar (1600 kPa)

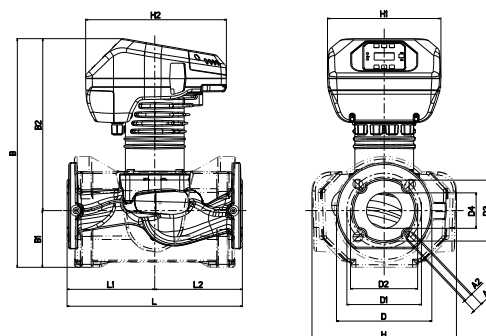
| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 100/280.50 M</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 430             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 120/280.50 M</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 530             | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 150/280.50 M</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 640             | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 180/280.50 M</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 750             | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|-----|----------------|
| 280 | 140 | 140 | 19 | 14 | 413 | 87 | 325 | 165 | 125 | 110 | 99 | 53 | 230 | 220 | 273 | 18             |

| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/340.65 M</b>  | 220/240 V           | 340                      | DN 65 PN 10                 | 190             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/340.65 M</b>  | 220/240 V           | 340                      | DN 65 PN 10                 | 355             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/340.65 M</b>  | 220/240 V           | 340                      | DN 65 PN 10                 | 465             | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 100/340.65 M</b> | 220/240 V           | 340                      | DN 65 PN 10                 | 590             | EEI ≤ 0,18 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 120/340.65 M</b> | 220/240 V           | 340                      | DN 65 PN 10                 | 730             | EEI ≤ 0,18 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 150/340.65 M</b> | 220/240 V           | 340                      | DN 65 PN 10                 | 1210            | EEI ≤ 0,18 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1  | B2  | D   | D1  | D2  | D3  | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|----------------|
| 340 | 170 | 170 | 19 | 14 | 443 | 110 | 333 | 185 | 145 | 130 | 118 | 69 | 280 | 220 | 273 | 20             |

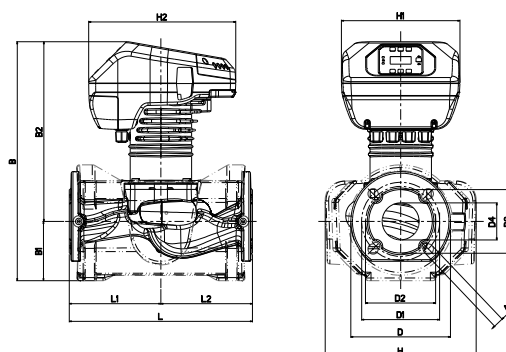
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C

Maximum operating pressure: 16 bar (1600 kPa)

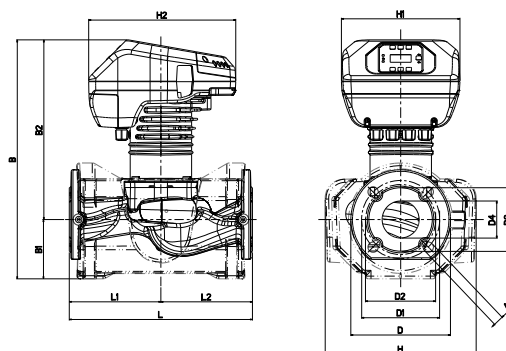
| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/360.80 M</b>  | 220/240 V           | 360                      | DN 80 PN 16                 | 330             | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/360.80 M</b>  | 220/240 V           | 360                      | DN 80 PN 16                 | 535             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/360.80 M</b>  | 220/240 V           | 360                      | DN 80 PN 16                 | 670             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 100/360.80 M</b> | 220/240 V           | 360                      | DN 80 PN 16                 | 1005            | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 120/360.80 M</b> | 220/240 V           | 360                      | DN 80 PN 16                 | 1235            | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | B   | B1  | B2  | D   | D1  | D3  | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|----------------|
| 360 | 180 | 180 | 19 | 446 | 106 | 340 | 200 | 160 | 132 | 80 | 279 | 220 | 273 | 25             |

| MODEL                          | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|--------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                                |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/450.100 M</b>  | 220/240 V           | 450                      | DN 100 PN 16                | 530             | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/450.100 M</b>  | 220/240 V           | 450                      | DN 100 PN 16                | 760             | EEI ≤ 0,18 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/450.100 M</b>  | 220/240 V           | 450                      | DN 100 PN 16                | 1080            | EEI ≤ 0,18 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 100/450.100 M</b> | 220/240 V           | 450                      | DN 100 PN 16                | 1380            | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 120/450.100 M</b> | 220/240 V           | 450                      | DN 100 PN 16                | 1560            | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |



### Dimensions and weight

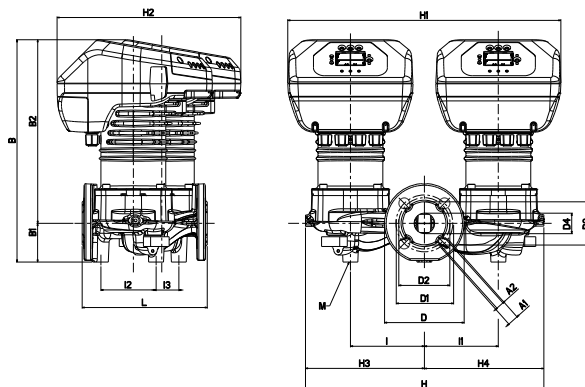
| L   | L1  | L2  | A1 | B   | B1  | B2  | D   | D1  | D3  | D4  | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|
| 450 | 225 | 225 | 19 | 463 | 110 | 353 | 220 | 180 | 156 | 105 | 292 | 220 | 273 | 30             |

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C  
Maximum operating pressure: 16 bar (1600 kPa)

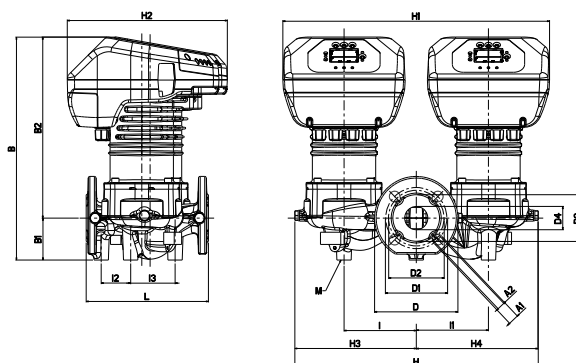
| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 120/220.32 M</b> | 220/240 V           | 220                      | DN 32 PN 6                  | 340             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | A1 | A2 | B   | B1 | B2  | D   | D1  | D2 | D3 | D4 | I   | I1  | I2 | I3 | M   | H   | H1  | H2  | H3  | H4  | WEIGHT<br>(Kg) |
|-----|----|----|-----|----|-----|-----|-----|----|----|----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|----------------|
| 220 | 19 | 14 | 391 | 68 | 323 | 140 | 100 | 90 | 76 | 36 | 130 | 130 | 97 | 40 | M12 | 419 | 480 | 323 | 209 | 210 | 29             |

| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 40/220.40 M</b>  | 220/240 V           | 220                      | DN 40 PN 10                 | 90              | EEI ≤ 0,25 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 60/220.40 M</b>  | 220/240 V           | 220                      | DN 40 PN 10                 | 175             | EEI ≤ 0,25 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 80/220.40 M</b>  | 220/240 V           | 220                      | DN 40 PN 10                 | 260             | EEI ≤ 0,25 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 100/220.40 M</b> | 220/240 V           | 220                      | DN 40 PN 10                 | 350             | EEI ≤ 0,25 | m.c.a.                | 20  | 25   |



### Dimensions and weight

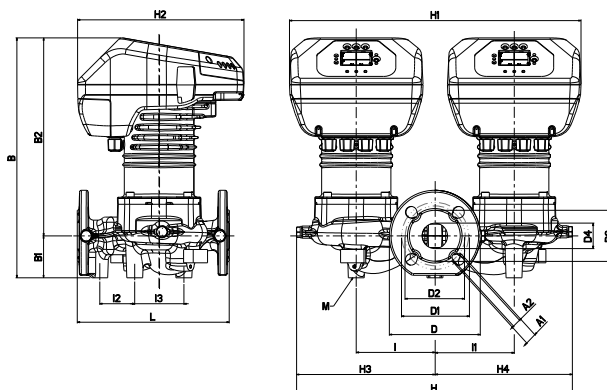
| L   | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | I   | I1  | I2 | I3 | M   | H   | H1  | H2  | H3  | H4  | WEIGHT<br>(Kg) |
|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|----------------|
| 220 | 19 | 14 | 436 | 75 | 361 | 150 | 110 | 100 | 84 | 42 | 130 | 130 | 53 | 80 | M12 | 438 | 480 | 288 | 219 | 218 | 31             |

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C  
Maximum operating pressure: 16 bar (1600 kPa)

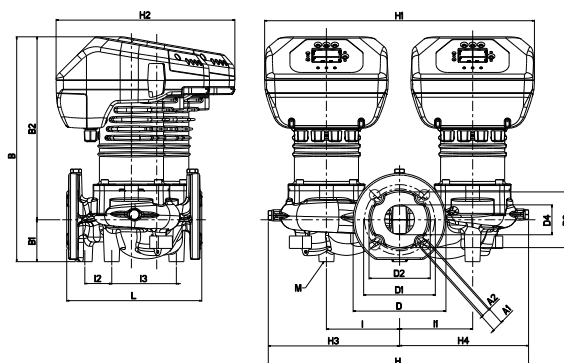
| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTOFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                            | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 120/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                | 465             | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 150/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                | 610             | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 180/250.40 M</b> | 220/240 V           | 250                      | DN 40 PN 10                | 610             | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | I   | I1  | I2 | I3 | M   | H   | H1  | H2  | H3  | H4  | WEIGHT<br>(Kg) |
|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|----------------|
| 250 | 19 | 14 | 395 | 69 | 326 | 150 | 110 | 100 | 84 | 42 | 130 | 130 | 58 | 81 | M12 | 454 | 480 | 274 | 228 | 226 | 32             |

| MODEL                        | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTOFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|------------------------------|---------------------|--------------------------|----------------------------|-----------------|------------|-----------------------|-----|------|
|                              |                     |                          |                            | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 40/240.50 M</b> | 220/240 V           | 240                      | DN 50 PN 10                | 140             | EEI ≤ 0,23 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 60/240.50 M</b> | 220/240 V           | 240                      | DN 50 PN 10                | 260             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 80/240.50 M</b> | 220/240 V           | 240                      | DN 50 PN 10                | 330             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | I   | I1  | I2 | I3  | M   | H   | H1  | H2  | H3  | H4  | WEIGHT<br>(Kg) |
|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|----------------|
| 240 | 19 | 14 | 400 | 75 | 325 | 165 | 125 | 110 | 99 | 53 | 130 | 130 | 48 | 115 | M12 | 463 | 480 | 318 | 233 | 230 | 33             |

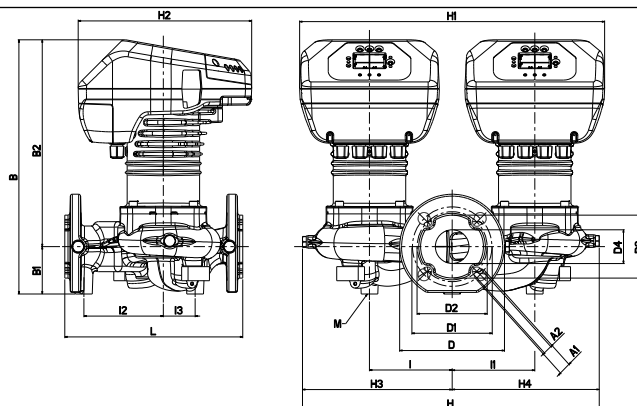


The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C  
Maximum operating pressure: 16 bar (1600 kPa)

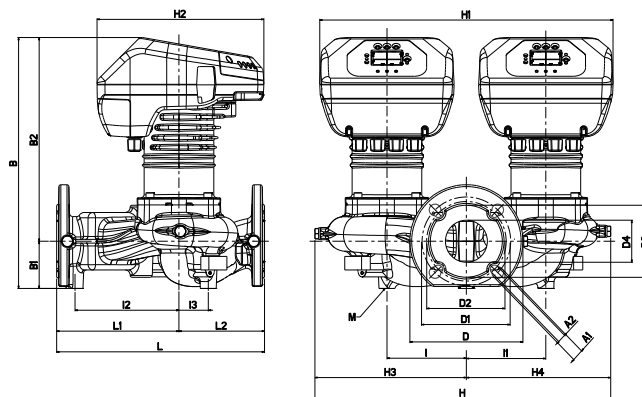
| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 100/280.50 M</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 430             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 120/280.50 M</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 530             | EEI ≤ 0,22 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 150/280.50 M</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 640             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 180/280.50 M</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 750             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | I   | I1  | I2  | I3 | M   | H   | H1  | H2  | H3  | H4  | WEIGHT<br>(Kg) |
|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|----------------|
| 280 | 19 | 14 | 400 | 75 | 325 | 165 | 125 | 110 | 99 | 53 | 130 | 130 | 125 | 50 | M12 | 467 | 480 | 273 | 235 | 232 | 34             |

| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 40/340.65 M</b>  | 220/240 V           | 340                      | DN 65 PN 10                 | 190             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 60/340.65 M</b>  | 220/240 V           | 340                      | DN 65 PN 10                 | 355             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 80/340.65 M</b>  | 220/240 V           | 340                      | DN 65 PN 10                 | 465             | EEI ≤ 0,21 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 100/340.65 M</b> | 220/240 V           | 340                      | DN 65 PN 10                 | 590             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 120/340.65 M</b> | 220/240 V           | 340                      | DN 65 PN 10                 | 730             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 150/340.65 M</b> | 220/240 V           | 340                      | DN 65 PN 10                 | 1210            | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3  | D4 | I   | I1  | I2  | I3 | M   | H   | H1  | H2  | H3  | H4  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|----|-----|-----|-----|-----|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|----------------|
| 340 | 200 | 140 | 19 | 14 | 411 | 77 | 334 | 185 | 145 | 130 | 118 | 69 | 130 | 130 | 170 | 48 | M12 | 484 | 480 | 273 | 248 | 236 | 37             |

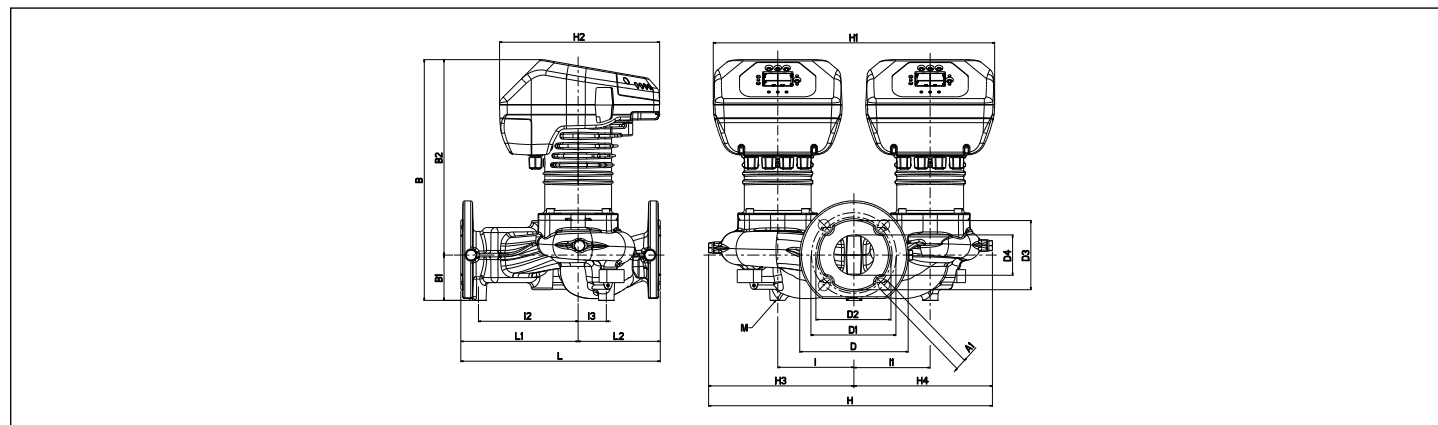
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR HEATING AND AIR-CONDITIONING SYSTEMS

Liquid temperature range: da -10°C a +110°C

Maximum operating pressure: 16 bar (1600 kPa)

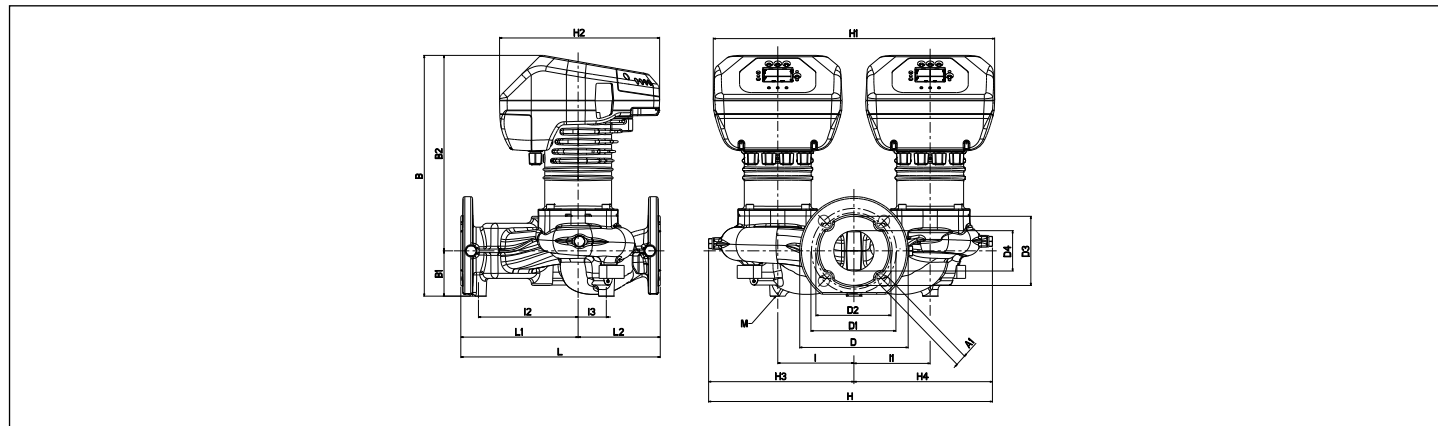
| MODEL                         | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                               |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 40/360.80 M</b>  | 220/240 V           | 360                      | DN 80 PN 16                 | 330             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 60/360.80 M</b>  | 220/240 V           | 360                      | DN 80 PN 16                 | 535             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 80/360.80 M</b>  | 220/240 V           | 360                      | DN 80 PN 16                 | 670             | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 100/360.80 M</b> | 220/240 V           | 360                      | DN 80 PN 16                 | 1005            | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 120/360.80 M</b> | 220/240 V           | 360                      | DN 80 PN 16                 | 1235            | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | B   | B1 | B2  | D   | D1  | D3  | D4 | I   | I1  | I2  | I3 | M   | H   | H1  | H2  | H3  | H4  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|-----|----|-----|-----|-----|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|----------------|
| 360 | 200 | 160 | 19 | 437 | 96 | 341 | 200 | 160 | 132 | 80 | 130 | 130 | 160 | 58 | M12 | 515 | 480 | 273 | 262 | 253 | 44             |

| MODEL                          | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | EEI        | MINIMUM HEAD PRESSURE |     |      |
|--------------------------------|---------------------|--------------------------|-----------------------------|-----------------|------------|-----------------------|-----|------|
|                                |                     |                          |                             | P1 MAX W        |            | t°                    | 90° | 100° |
| <b>EVOPLUS D 40/450.100 M</b>  | 220/240 V           | 450                      | DN 100 PN 16                | 530             | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 60/450.100 M</b>  | 220/240 V           | 450                      | DN 100 PN 16                | 760             | EEI ≤ 0,19 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 80/450.100 M</b>  | 220/240 V           | 450                      | DN 100 PN 16                | 1080            | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 100/450.100 M</b> | 220/240 V           | 450                      | DN 100 PN 16                | 1380            | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |
| <b>EVOPLUS D 120/450.100 M</b> | 220/240 V           | 450                      | DN 100 PN 16                | 1560            | EEI ≤ 0,20 | m.c.a.                | 20  | 25   |



### Dimensions and weight

| L   | L1  | L2  | A1 | B   | B1  | B2  | D   | D1  | D3  | D4  | I   | I1  | I2  | I3 | M  | H   | H1  | H2  | H3  | H4  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|----------------|
| 450 | 260 | 190 | 19 | 456 | 103 | 353 | 220 | 180 | 156 | 105 | 135 | 135 | 200 | 43 | 12 | 517 | 490 | 273 | 265 | 252 | 53             |

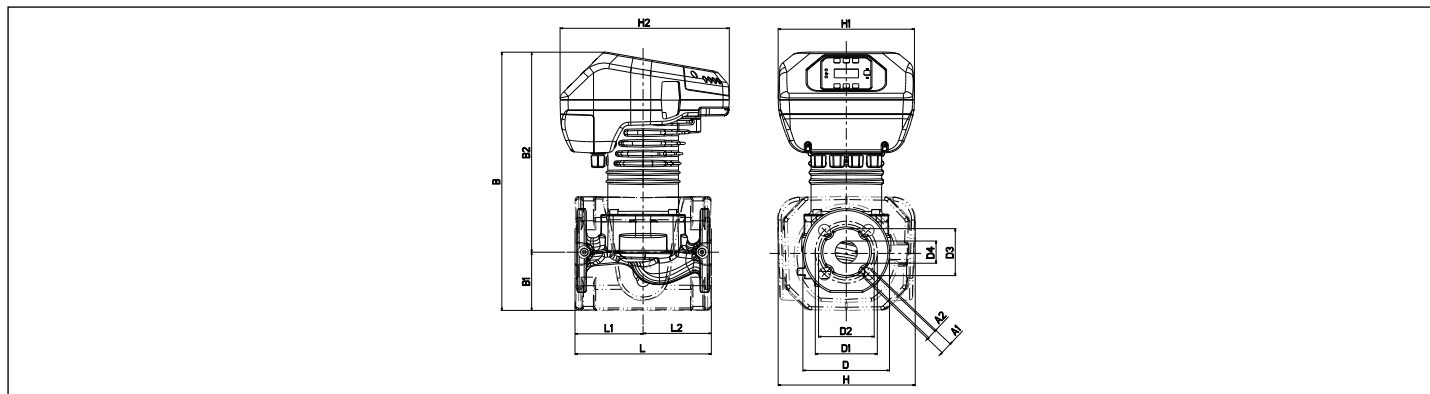
The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

## CIRCULATORS FOR SMALL HOT WATER APPLICATIONS

Liquid temperature range: da -10°C a +110°C  
Maximum operating pressure: 16 bar (1600 kPa)

| MODEL                               | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------------|---------------------|--------------------------|-----------------------------|-----------------|-----------------------|-----|------|
|                                     |                     |                          |                             | P1 MAX W        | t°                    | 90° | 100° |
| <b>EVOPLUS B 120/220.32 SAN M *</b> | 220/240 V           | 220                      | DN 32 PN 6                  | 340             | m.c.a.                | 20  | 25   |

\* Available from 2013

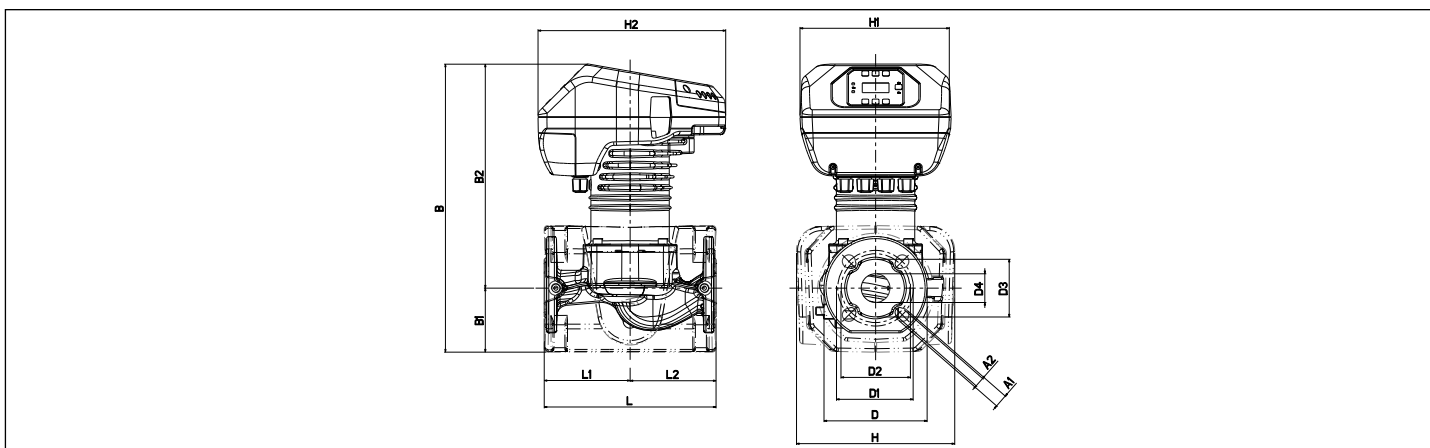


### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1 | B2  | D   | D1  | D2 | D3 | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|----|-----|-----|-----|----|----|----|-----|-----|-----|----------------|
| 220 | 110 | 110 | 19 | 14 | 417 | 94 | 323 | 140 | 100 | 90 | 76 | 36 | 222 | 220 | 273 | 14             |

| MODEL                               | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------------|---------------------|--------------------------|-----------------------------|-----------------|-----------------------|-----|------|
|                                     |                     |                          |                             | P1 MAX W        | t°                    | 90° | 100° |
| <b>EVOPLUS B 120/250.40 SAN M *</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 465             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 150/250.40 SAN M *</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 610             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 180/250.40 SAN M *</b> | 220/240 V           | 250                      | DN 40 PN 10                 | 610             | m.c.a.                | 20  | 25   |

\* Available from 2013



### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|-----|----------------|
| 250 | 125 | 125 | 19 | 14 | 419 | 93 | 326 | 150 | 110 | 100 | 84 | 42 | 230 | 220 | 273 | 16             |

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equivalent to 1000 kg/m<sup>3</sup>. Tolerance of curves to ISO 9906.

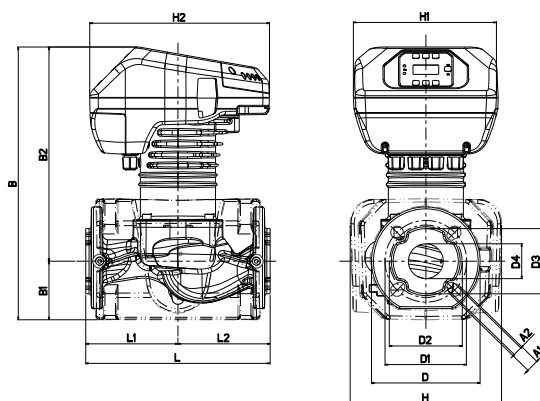
## CIRCULATORS FOR SMALL HOT WATER APPLICATIONS

Liquid temperature range: da -10°C a +110°C

Maximum operating pressure: 16 bar (1600 kPa)

| MODEL                               | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------------|---------------------|--------------------------|-----------------------------|-----------------|-----------------------|-----|------|
|                                     |                     |                          |                             | P1 MAX W        | t°                    | 90° | 100° |
| <b>EVOPLUS B 100/280.50 SAN M *</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 430             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 120/280.50 SAN M *</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 530             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 150/280.50 SAN M *</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 640             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 180/280.50 SAN M *</b> | 220/240 V           | 280                      | DN 50 PN 10                 | 750             | m.c.a.                | 20  | 25   |

\* Available from 2013

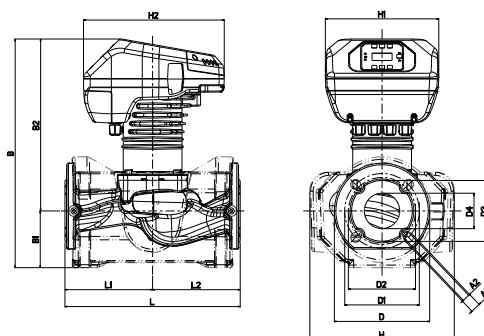


### Dimensions and weight

| L   | L1  | L2  | A1 | A2 | B   | B1 | B2  | D   | D1  | D2  | D3 | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|----|-----|-----|-----|-----|----|----|-----|-----|-----|----------------|
| 280 | 140 | 140 | 19 | 14 | 413 | 87 | 325 | 165 | 125 | 110 | 99 | 53 | 230 | 220 | 273 | 18             |

| MODEL                               | VOLTAGE<br>50/60 Hz | CENTRE<br>DISTANCE<br>mm | CONTROFLANGES<br>ON REQUEST | ELECTRICAL DATA | MINIMUM HEAD PRESSURE |     |      |
|-------------------------------------|---------------------|--------------------------|-----------------------------|-----------------|-----------------------|-----|------|
|                                     |                     |                          |                             | P1 MAX W        | t°                    | 90° | 100° |
| <b>EVOPLUS B 40/340.65 SAN M *</b>  | 220/240 V           | 340                      | DN 65 PN 10                 | 190             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 60/340.65 SAN M *</b>  | 220/240 V           | 340                      | DN 65 PN 10                 | 355             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 80/340.65 SAN M *</b>  | 220/240 V           | 340                      | DN 65 PN 10                 | 465             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 100/340.65 SAN M *</b> | 220/240 V           | 340                      | DN 65 PN 10                 | 590             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 120/340.65 SAN M *</b> | 220/240 V           | 340                      | DN 65 PN 10                 | 730             | m.c.a.                | 20  | 25   |
| <b>EVOPLUS B 150/340.65 SAN M *</b> | 220/240 V           | 340                      | DN 65 PN 10                 | 1210            | m.c.a.                | 20  | 25   |

\* Available from 2013

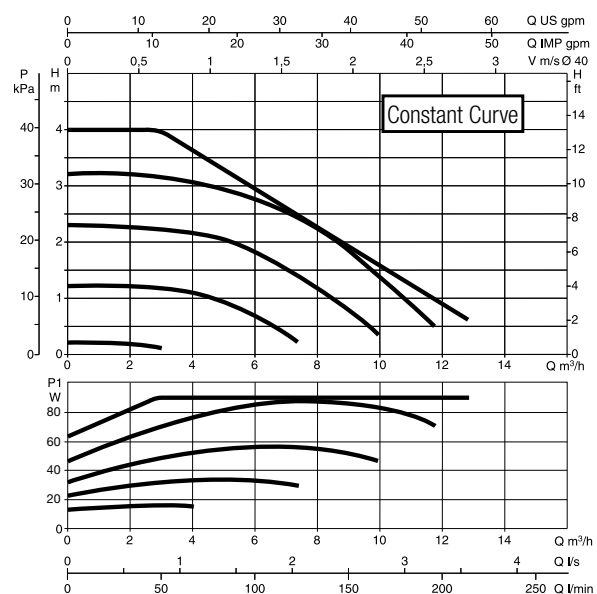
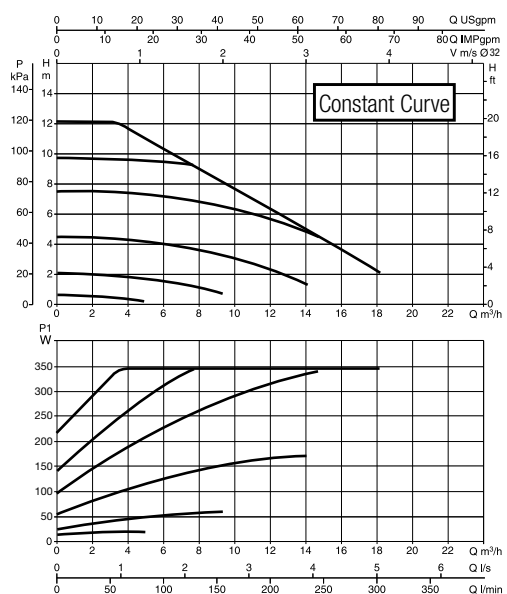
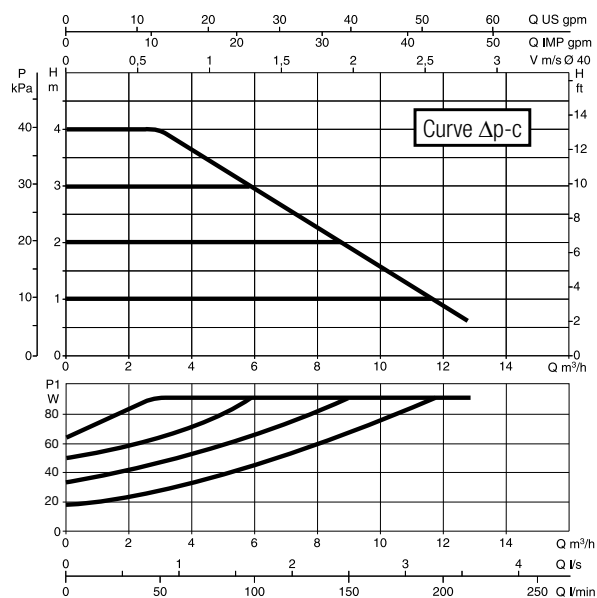
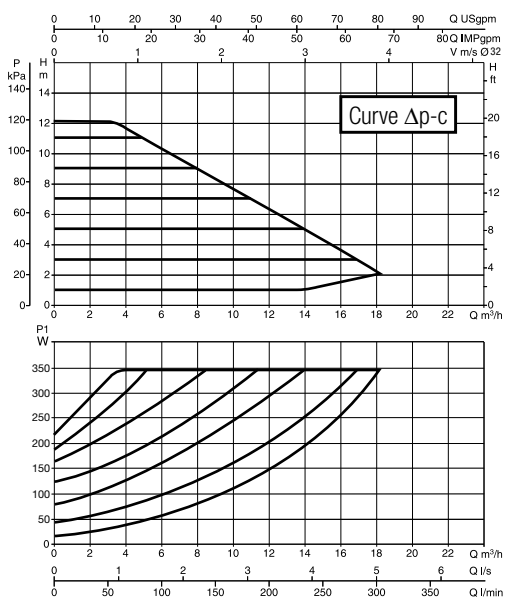
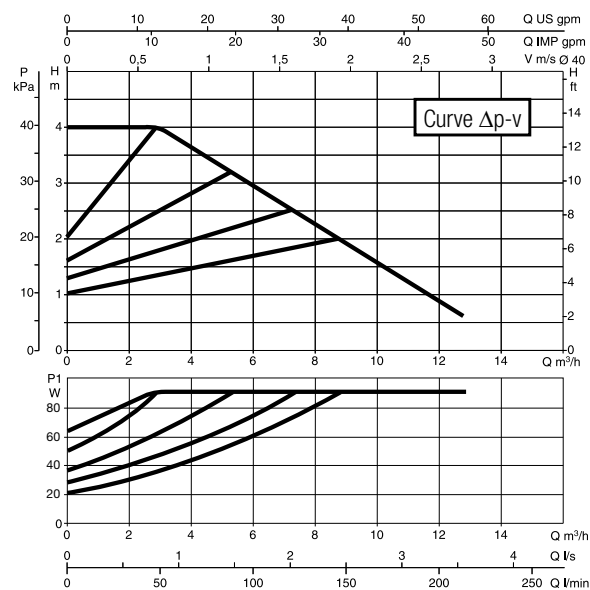
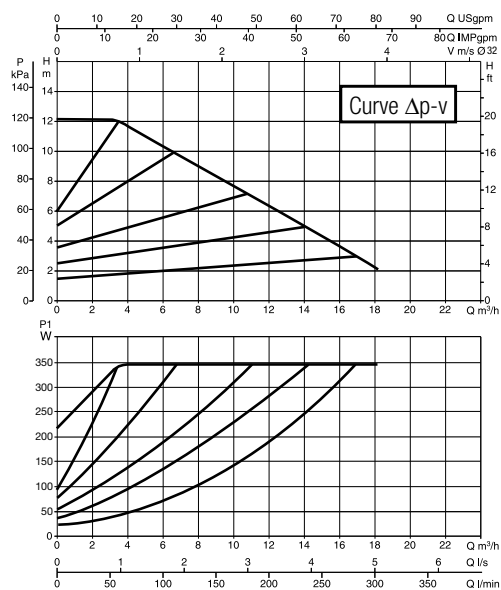


### Dimensions and weight

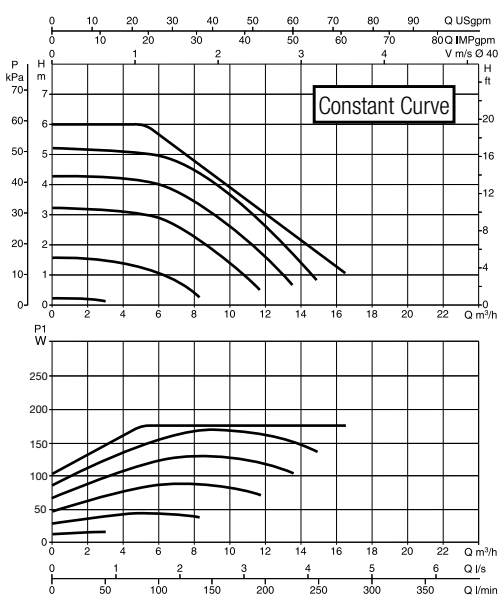
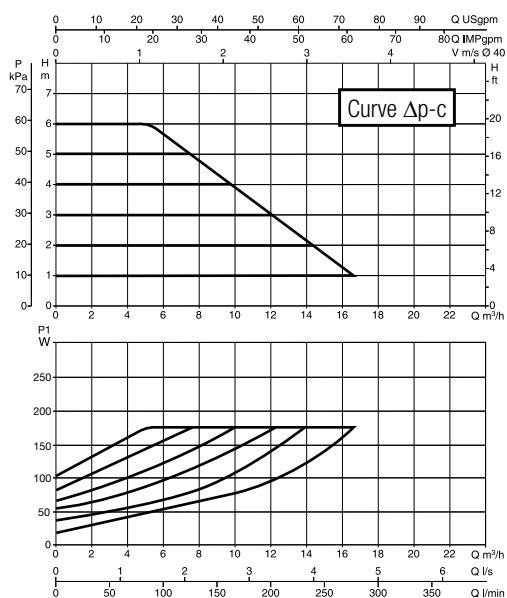
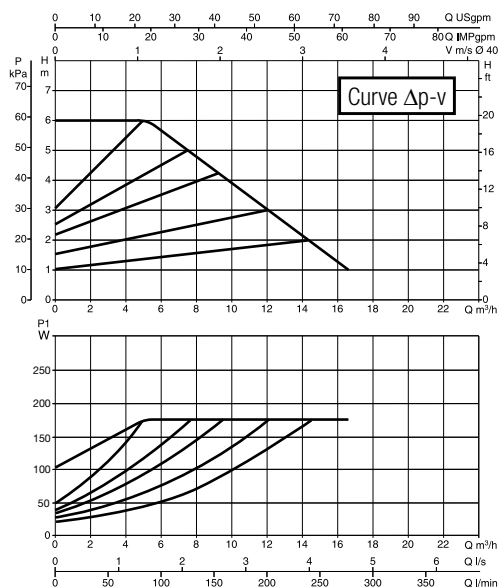
| L   | L1  | L2  | A1 | A2 | B   | B1  | B2  | D   | D1  | D2  | D3  | D4 | H   | H1  | H2  | WEIGHT<br>(Kg) |
|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|----------------|
| 340 | 170 | 170 | 19 | 14 | 443 | 110 | 333 | 185 | 145 | 130 | 118 | 69 | 280 | 220 | 273 | 20             |

# EVOPLUS B 120/220.32 (SAN) M - EVOPLUS D 120/220.32 M

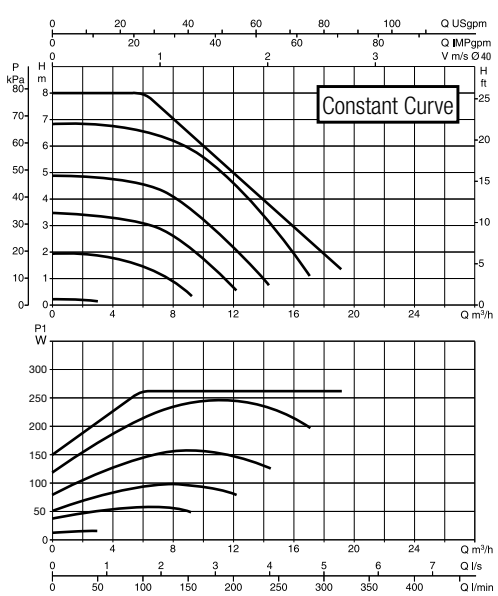
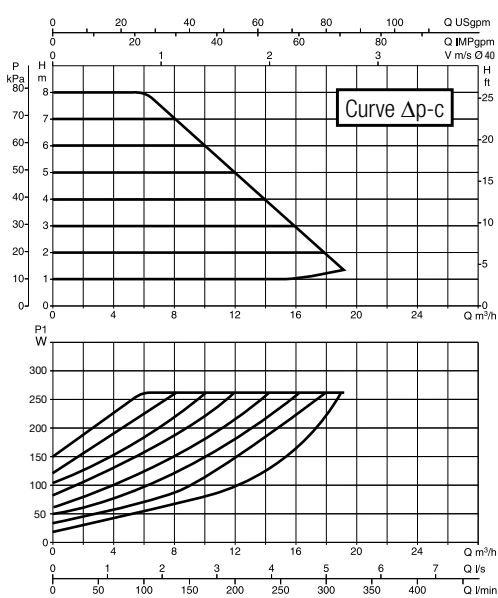
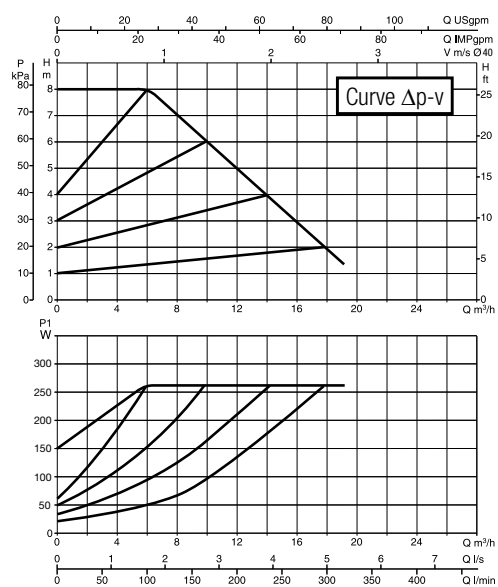
# EVOPLUS B 40/220.40 M - EVOPLUS D 40/220.40 M



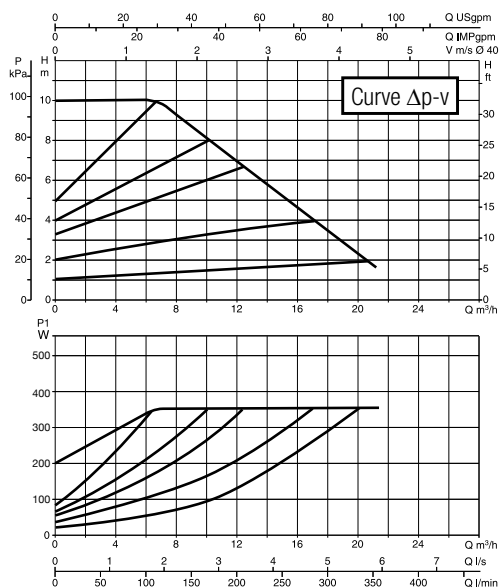
## EVOPLUS B 60/220.40 M - EVOPLUS D 60/220.40 M



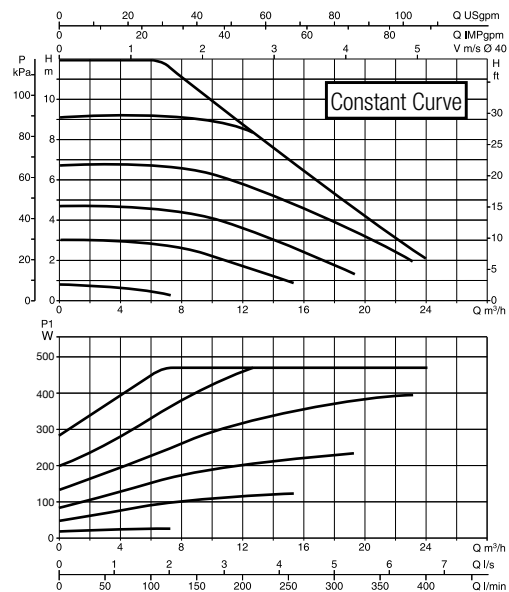
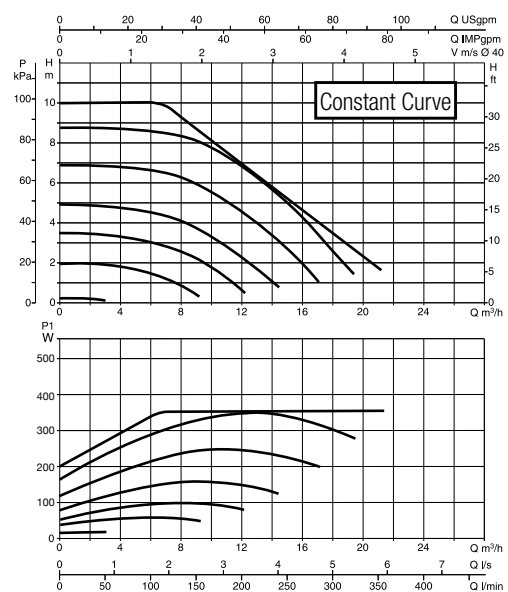
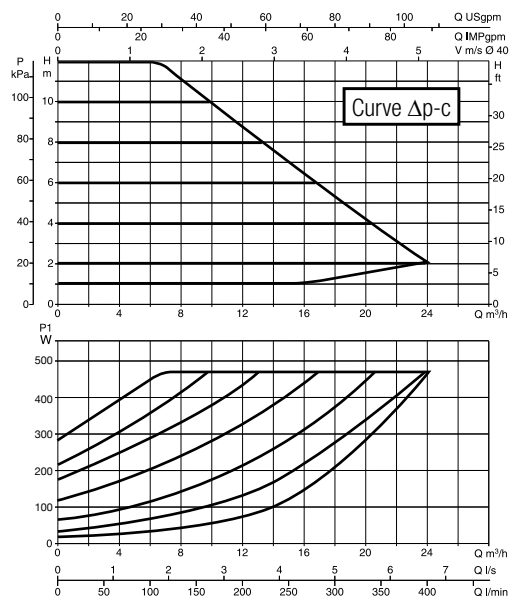
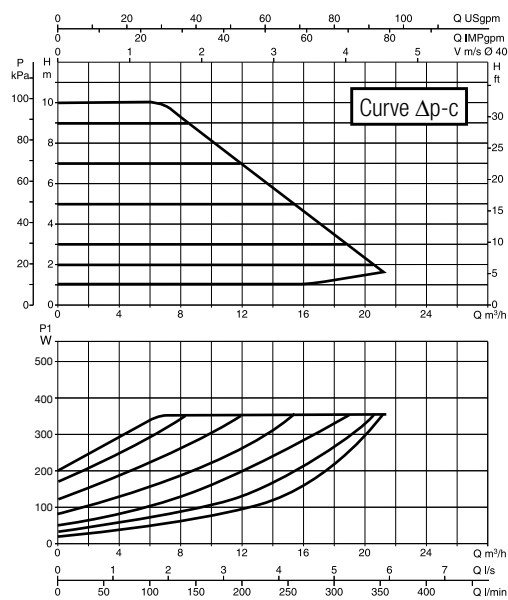
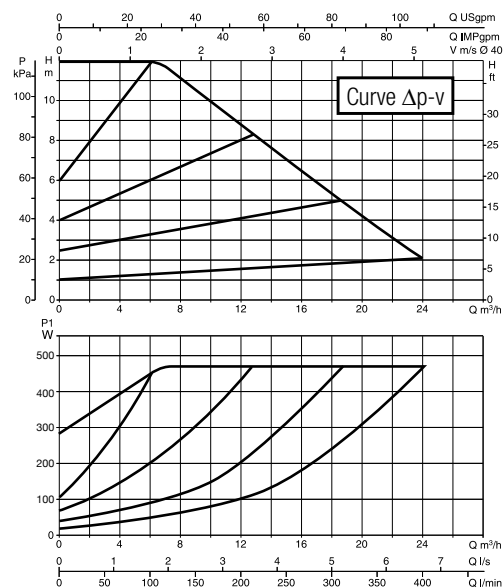
## EVOPLUS B 80/220.40 M - EVOPLUS D 80/220.40 M



# EVOPLUS B 100/220.40 M - EVOPLUS D 100/220.40 M

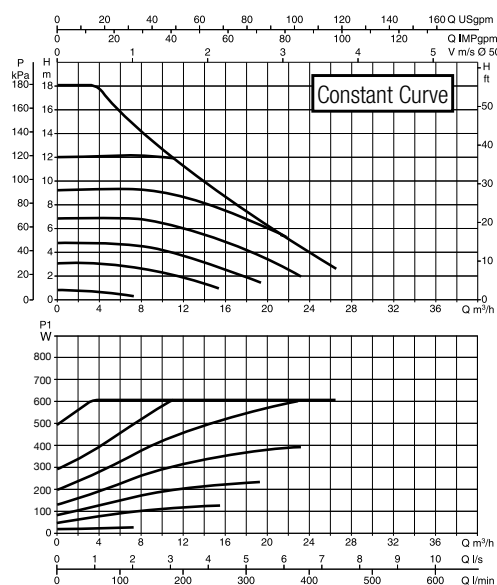
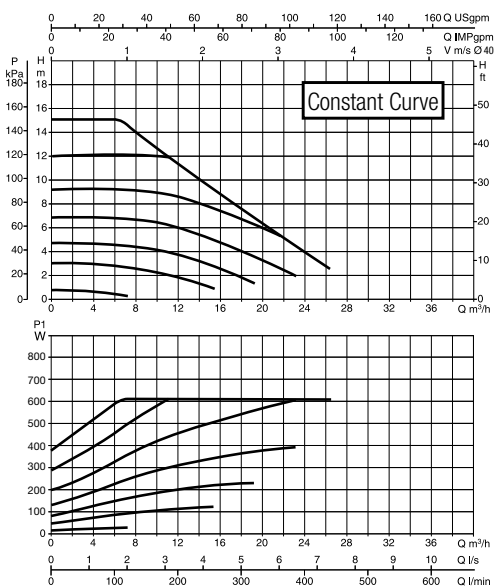
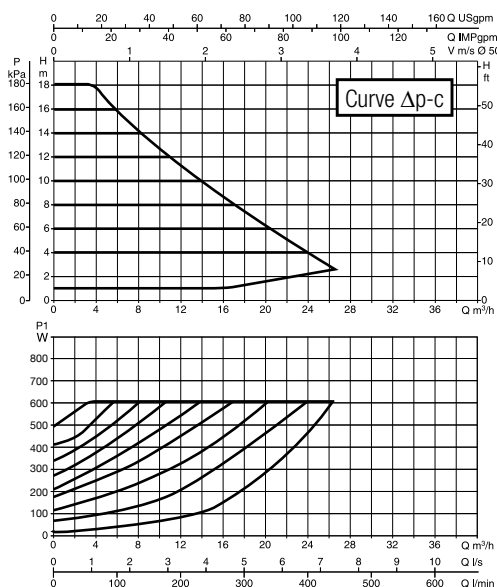
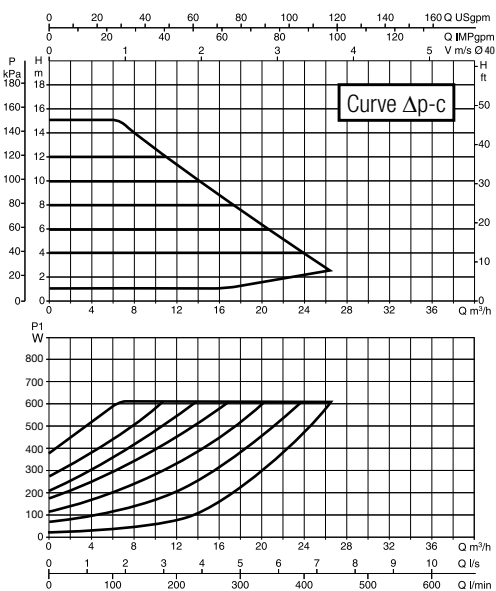
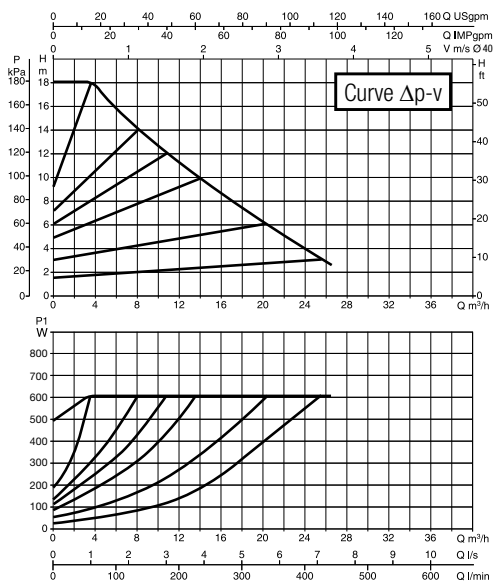
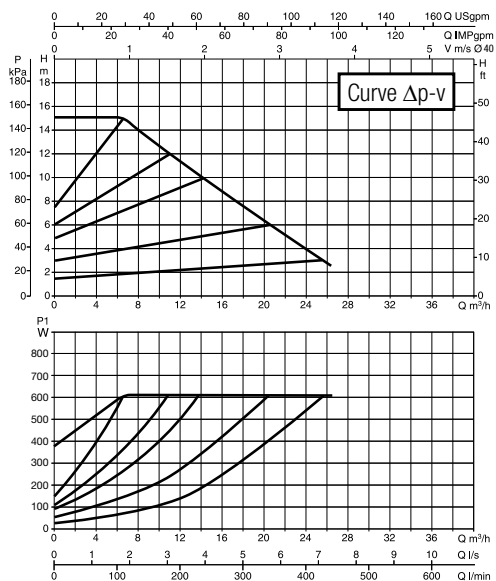


# EVOPLUS B 120/250.40 (SAN) M - EVOPLUS D 120/250.40 M



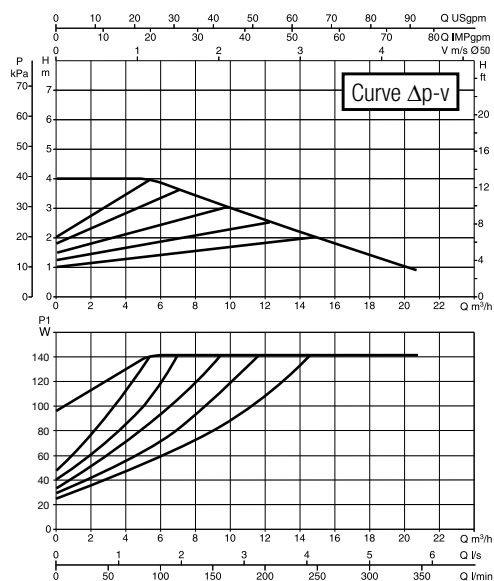
# EVOPLUS B 150/250.40 (SAN) M - EVOPLUS D 150/250.40 M

# EVOPLUS B 180/250.40 (SAN) M - EVOPLUS D 180/250.40 M

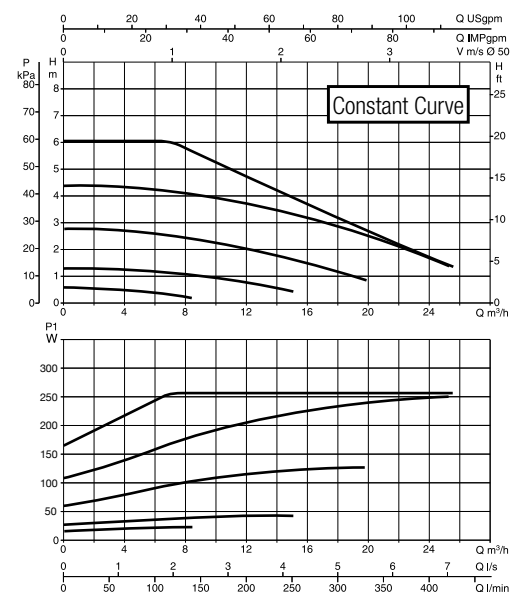
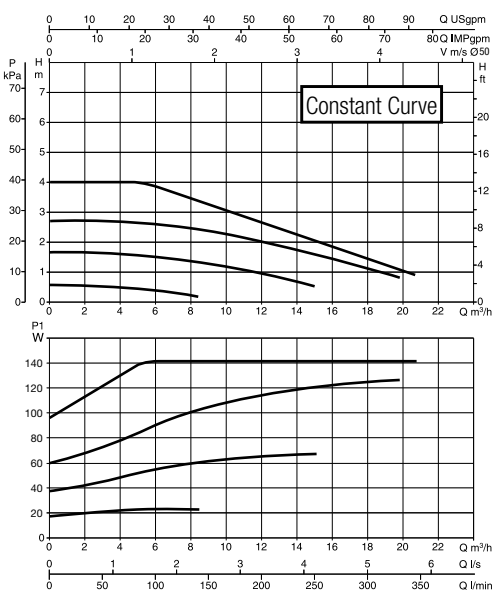
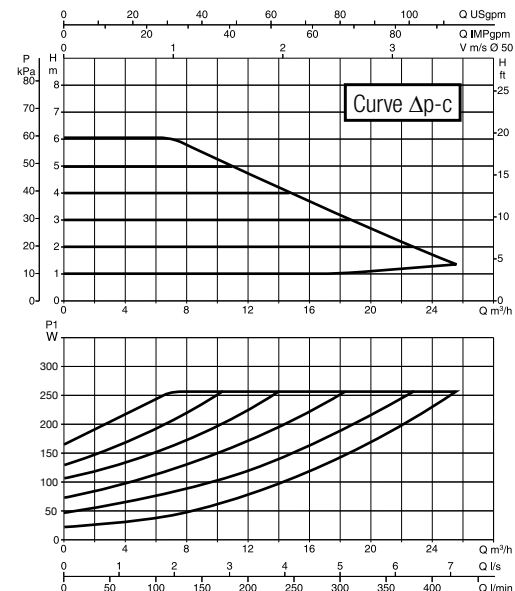
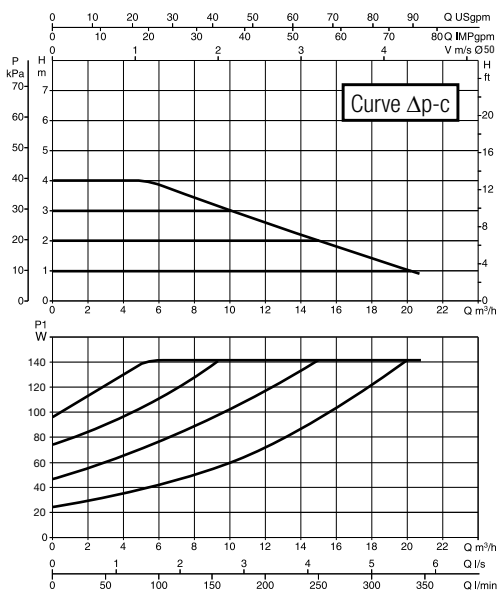
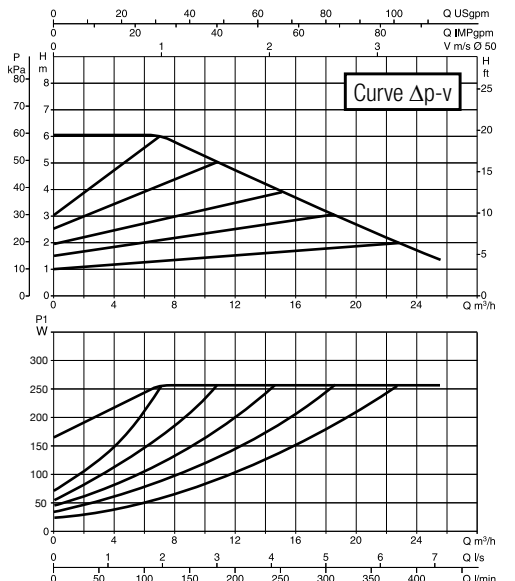




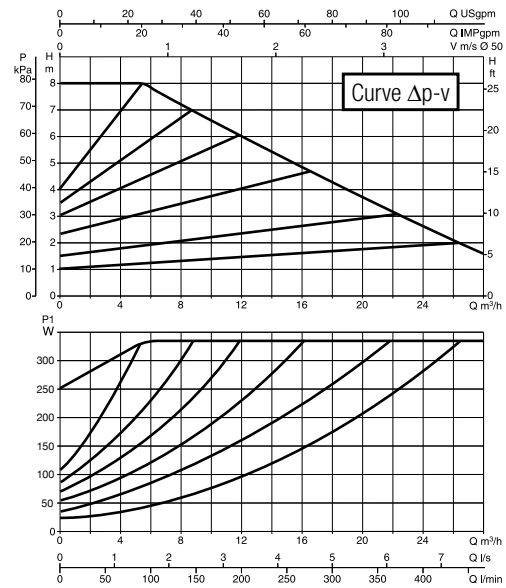
## EVOPLUS B 40/240.50 M - EVOPLUS D 40/240.50 M



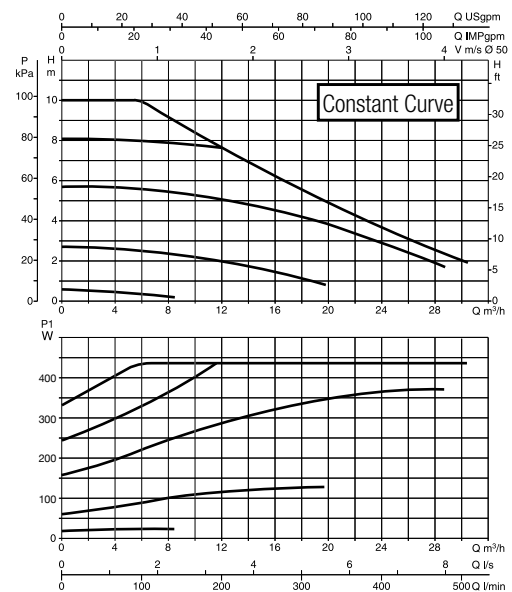
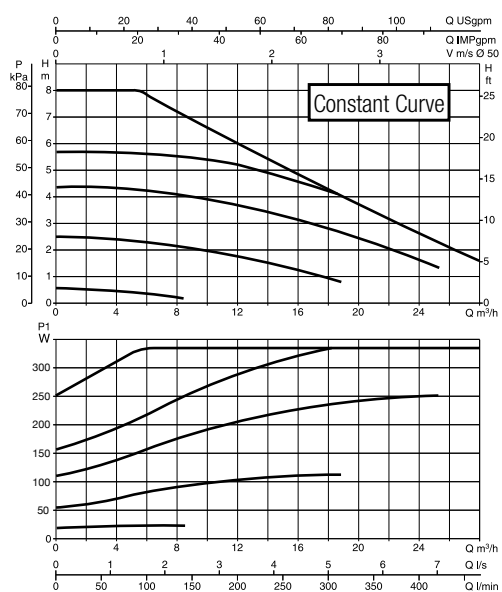
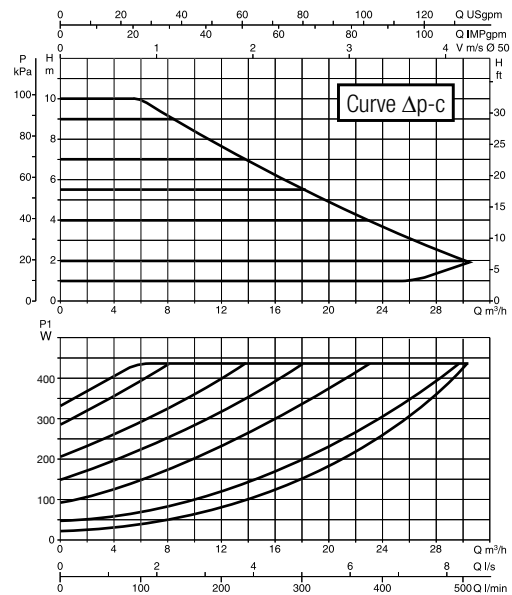
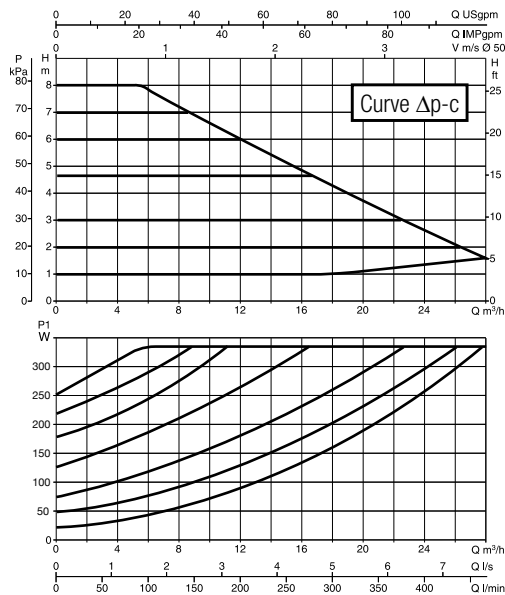
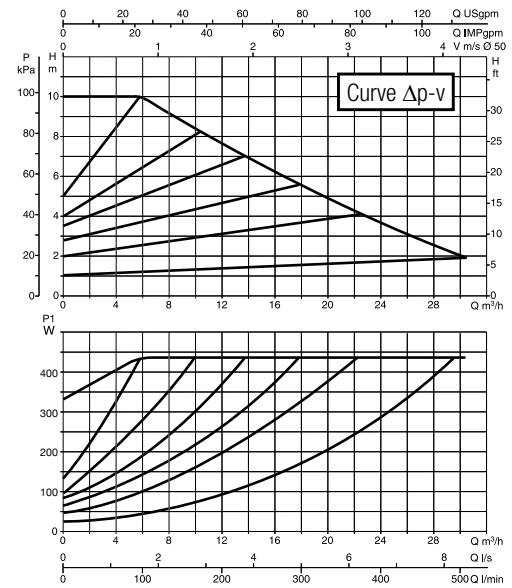
## EVOPLUS B 60/240.50 M - EVOPLUS D 60/240.50 M



## EVOPLUS B 80/240.50 M - EVOPLUS D 80/240.50 M

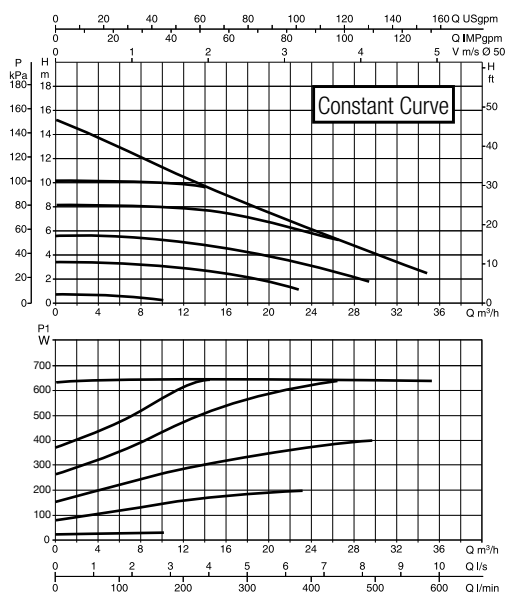
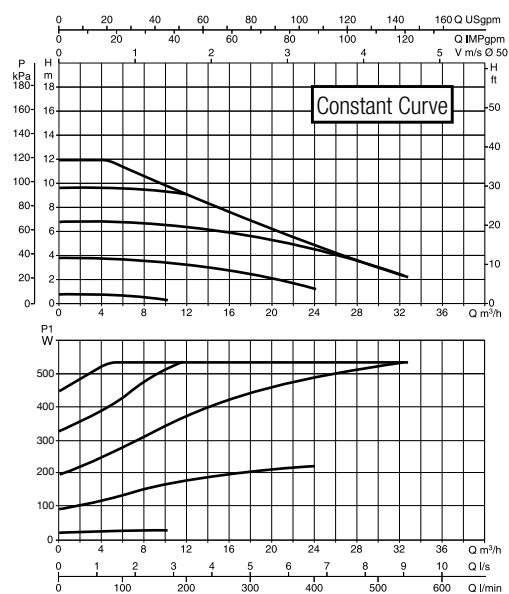
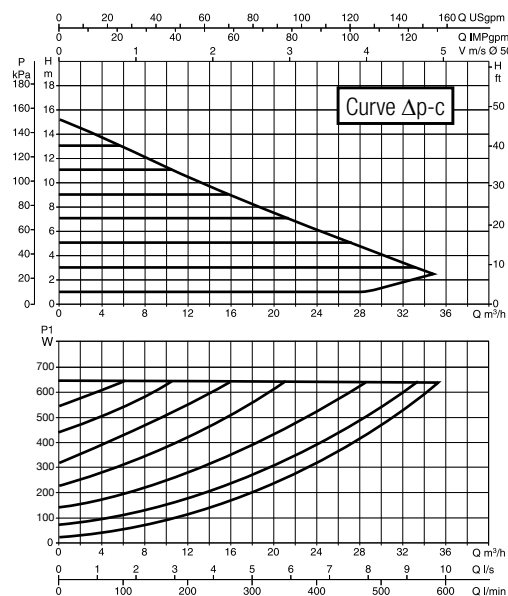
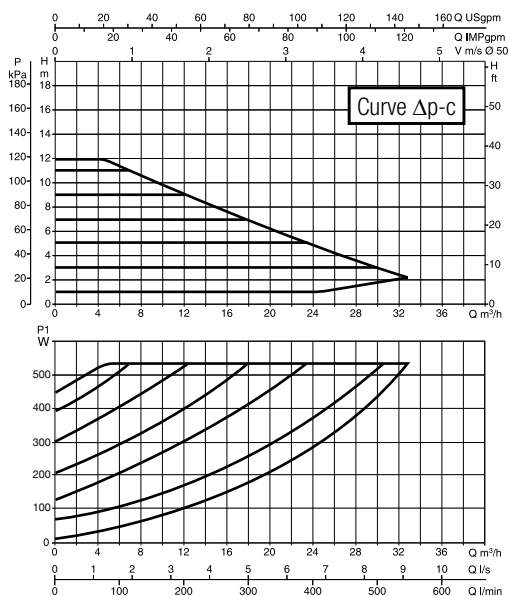
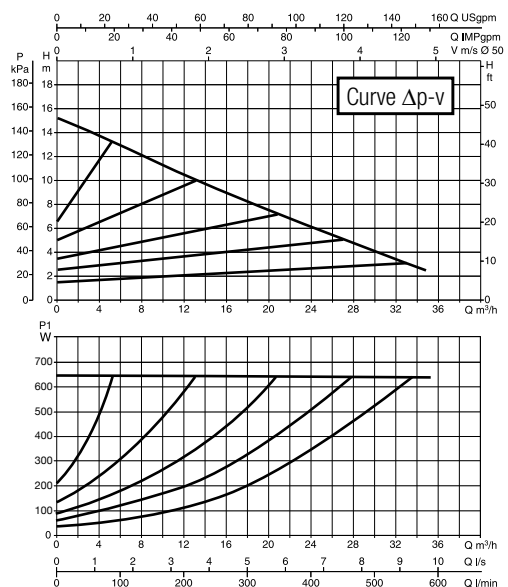
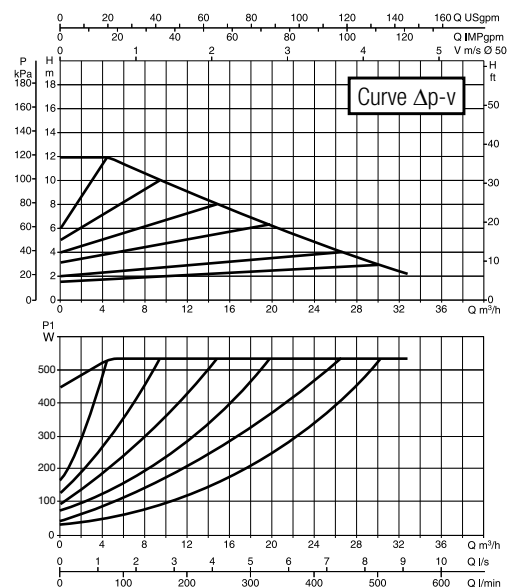


## EVOPLUS B 100/280.50 (SAN) M - EVOPLUS D 100/280.50 M



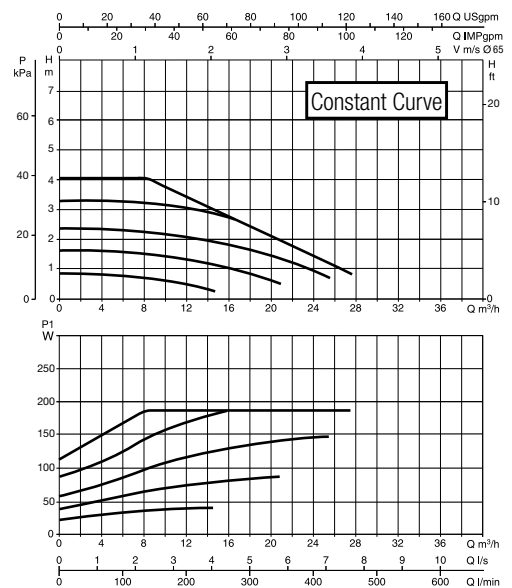
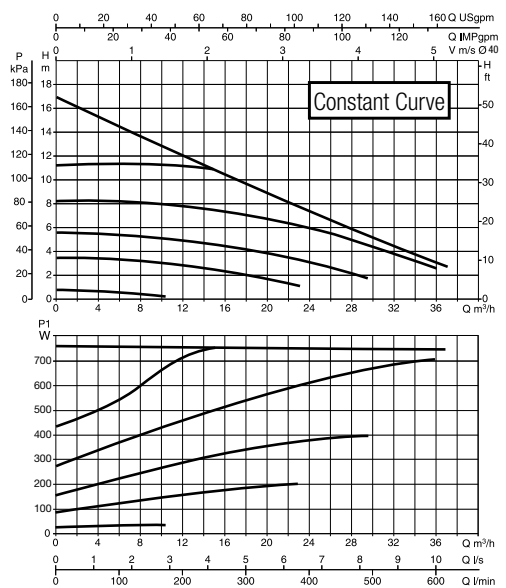
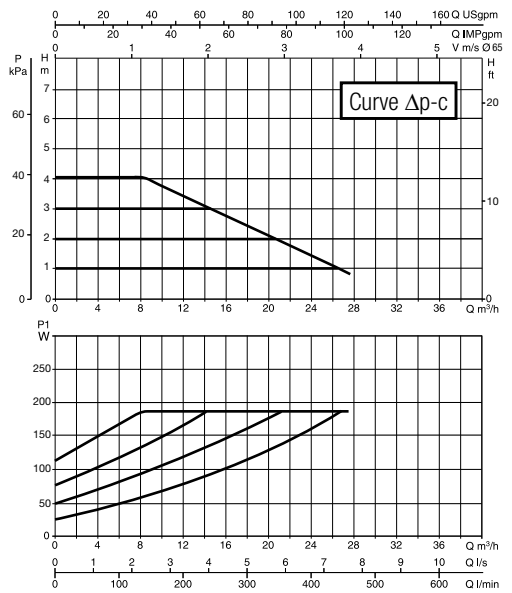
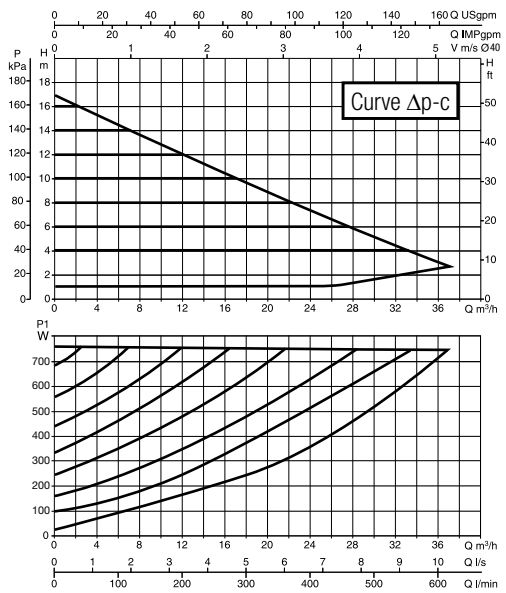
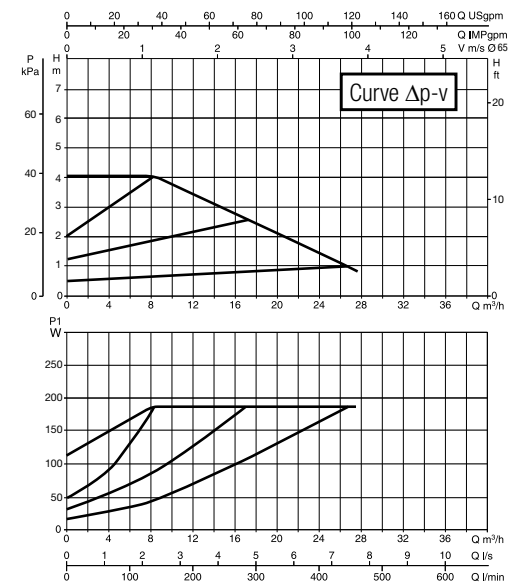
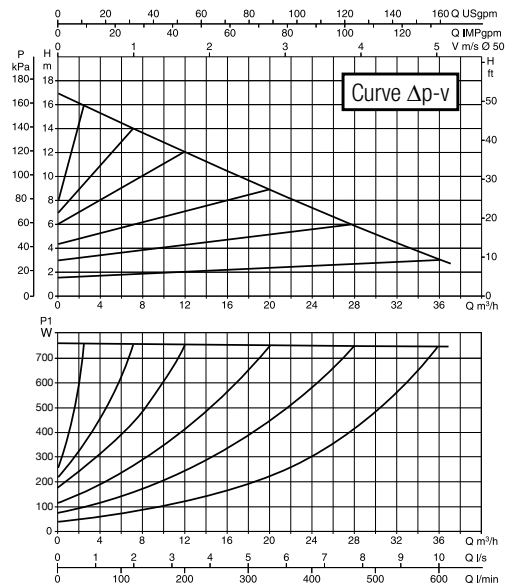
# EVOPLUS B 120/280.50 (SAN) M - EVOPLUS D 120/280.50 M

# EVOPLUS B 150/280.50 (SAN) M - EVOPLUS D 150/280.50 M

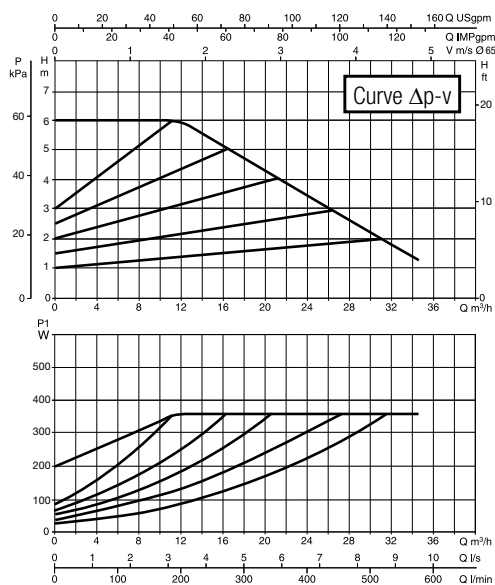


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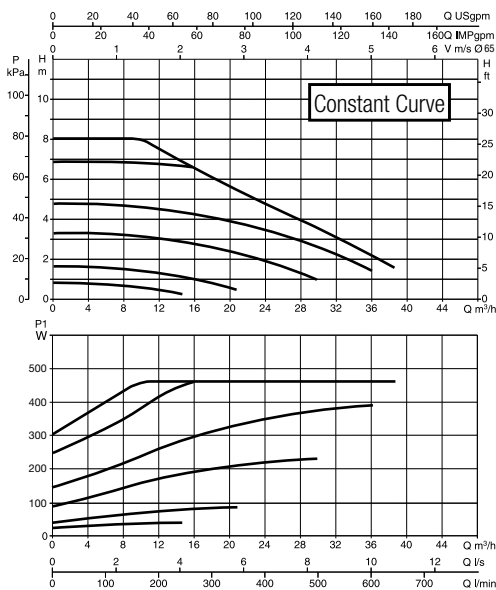
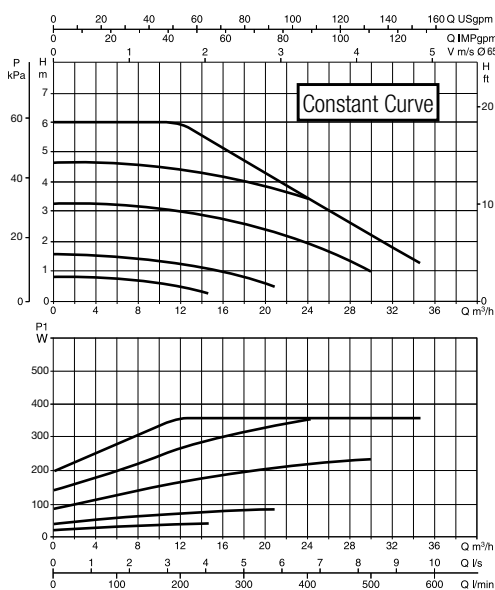
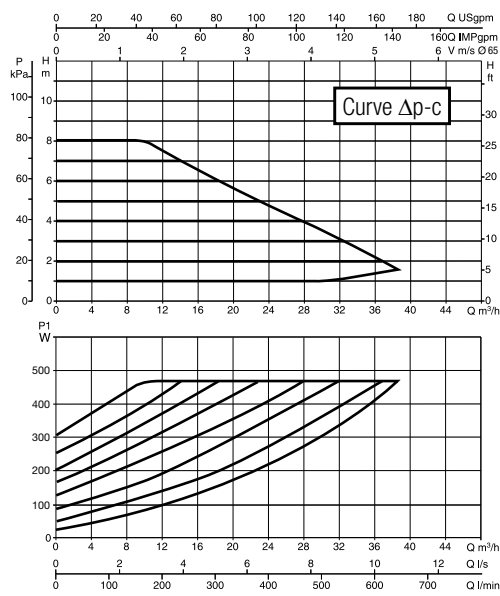
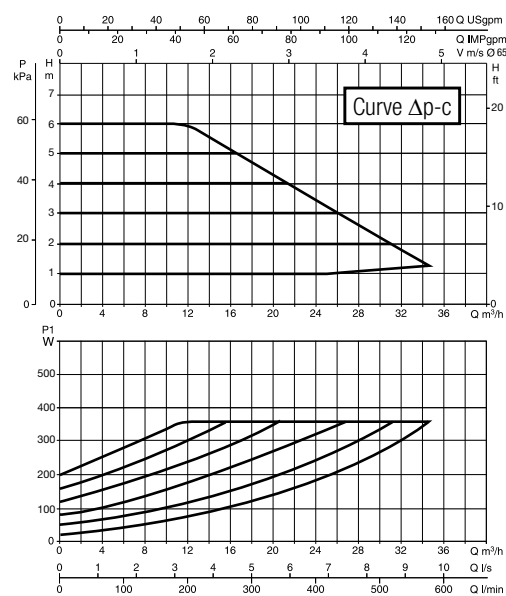
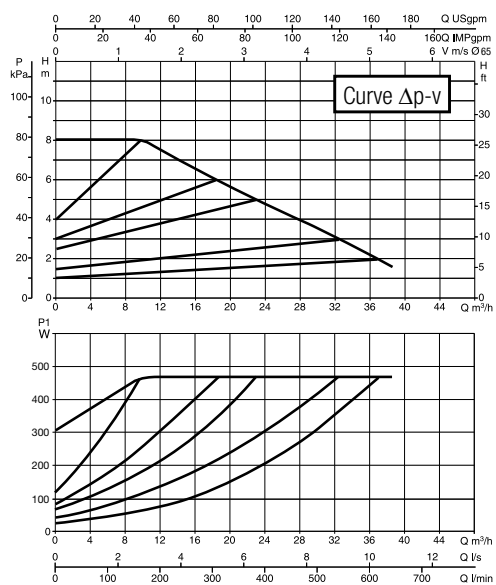
# EVOPLUS B 40/340.65 (SAN) M - EVOPLUS D 40/340.65 M



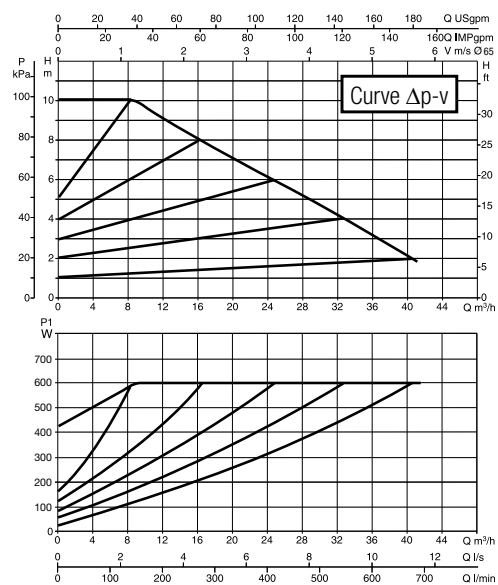
## EVOPLUS B 60/340.65 (SAN) M - EVOPLUS D 60/340.65 M



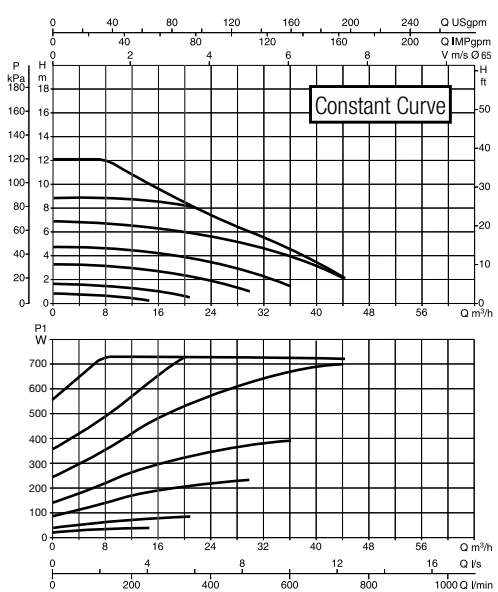
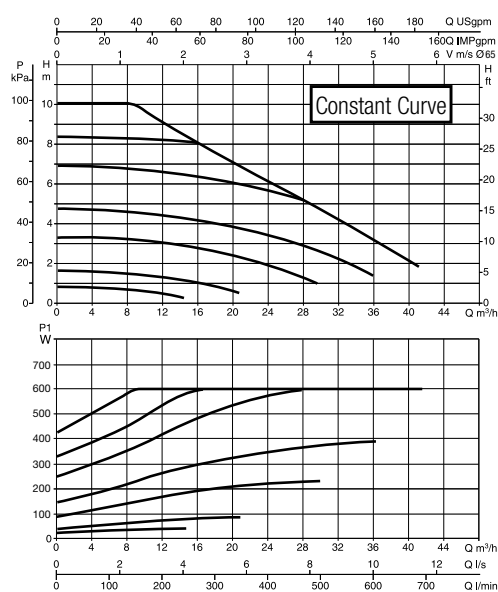
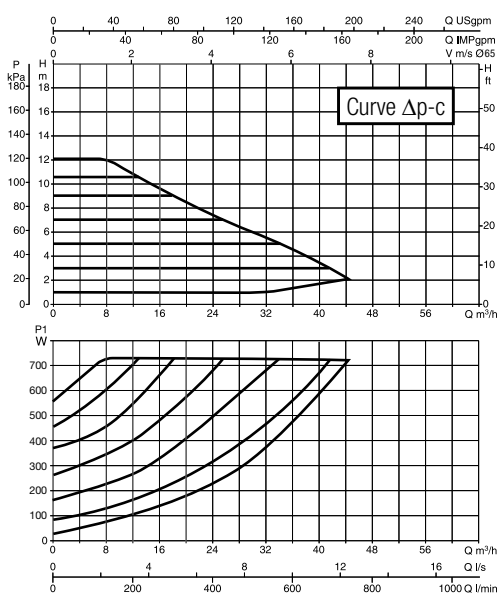
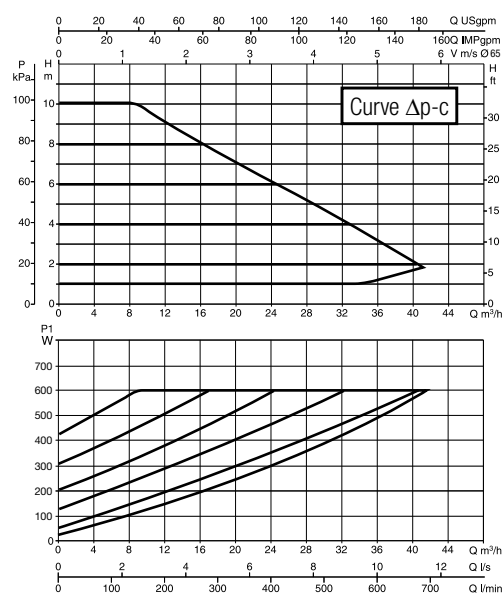
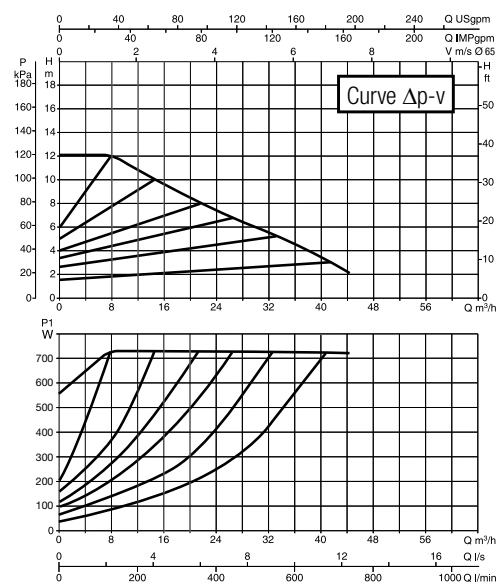
## EVOPLUS B 80/340.65 (SAN) M - EVOPLUS D 80/340.65 M



## EVOPLUS B 100/340.65 (SAN) M - EVOPLUS D 100/340.65 M

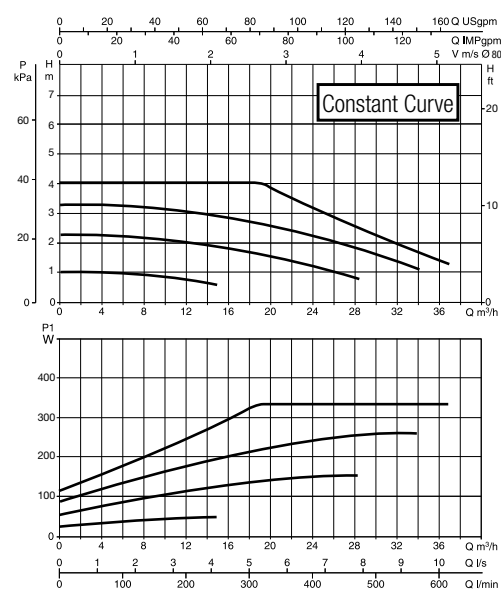
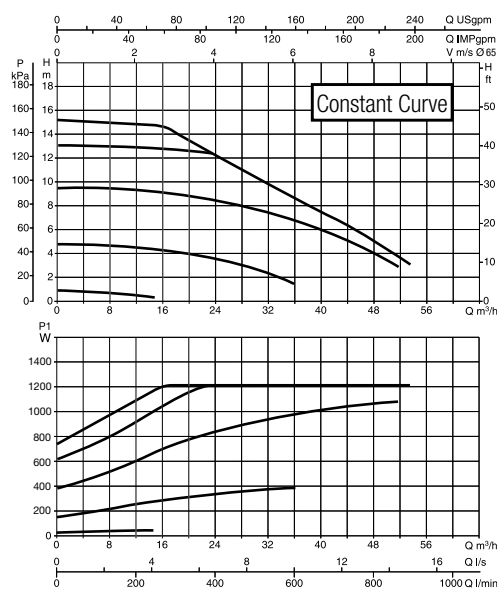
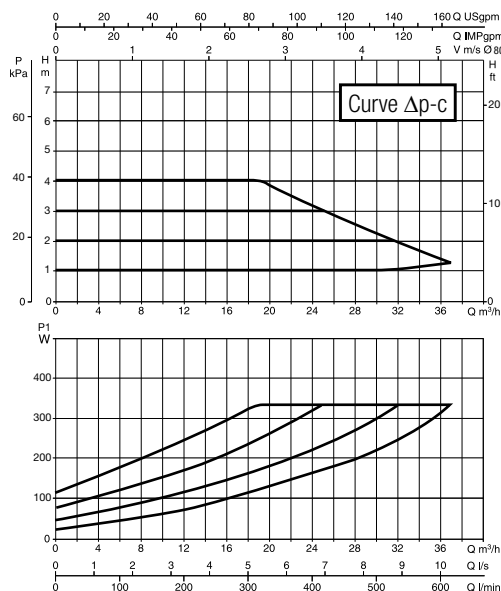
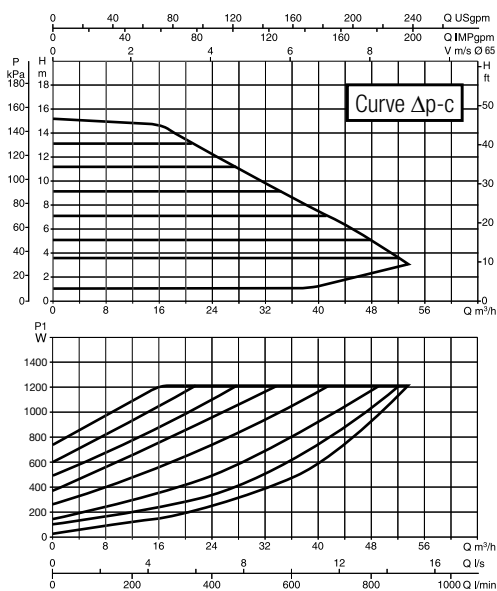
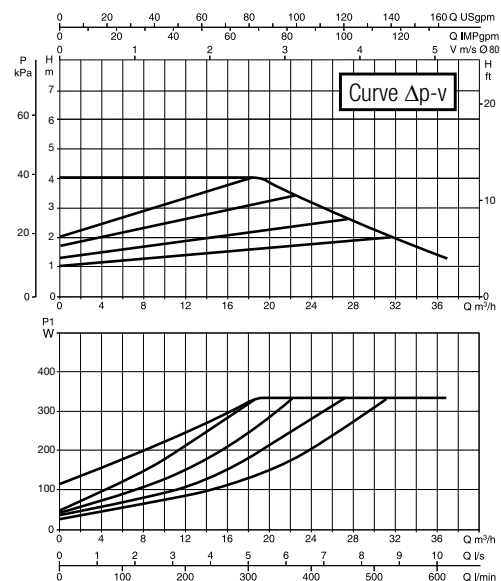
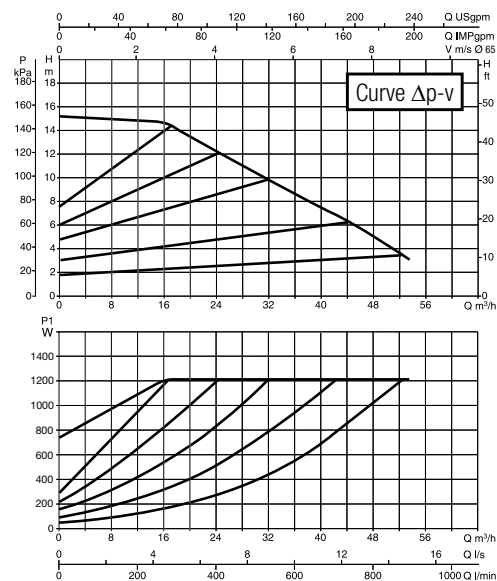


## EVOPLUS B 120/340.65 (SAN) M - EVOPLUS D 120/340.65 M

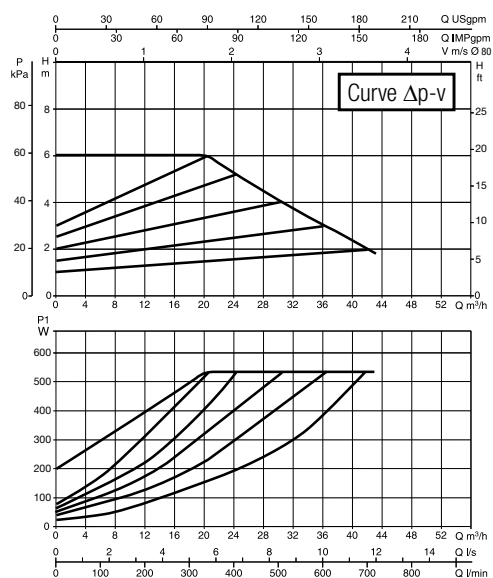


# EVOPLUS B 150/340.65 (SAN) M - EVOPLUS D 150/340.65 M

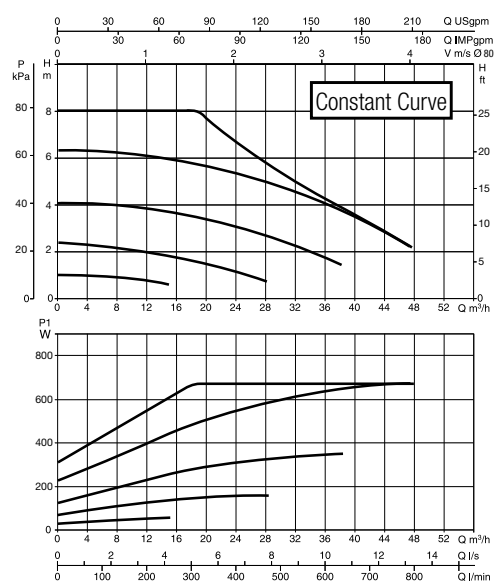
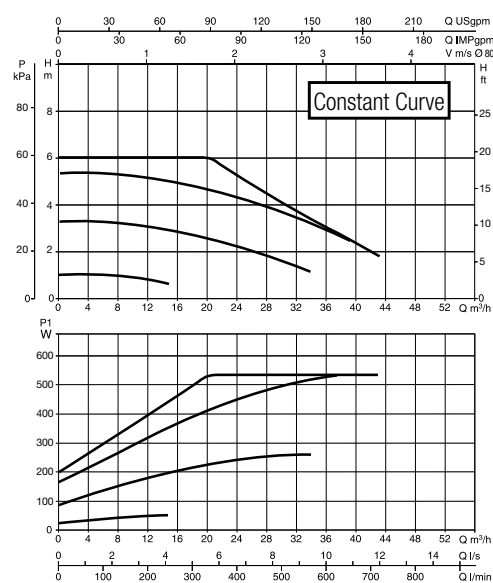
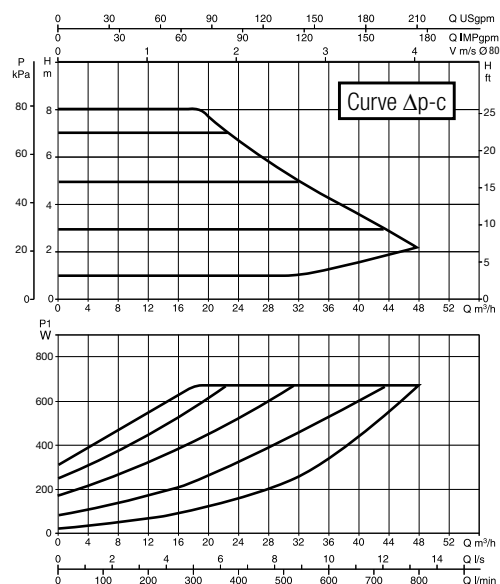
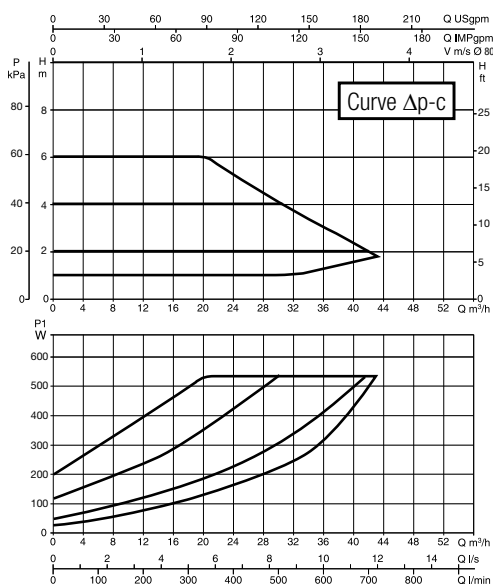
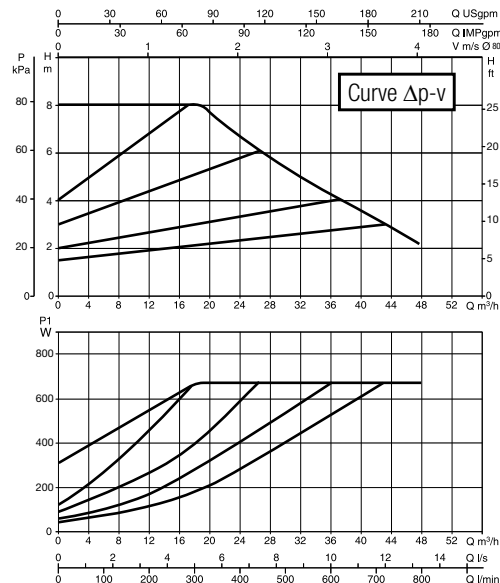
# EVOPLUS B 40/360.80 M - EVOPLUS D 40/360.80 M



## EVOPLUS B 60/360.80 M - EVOPLUS D 60/360.80 M

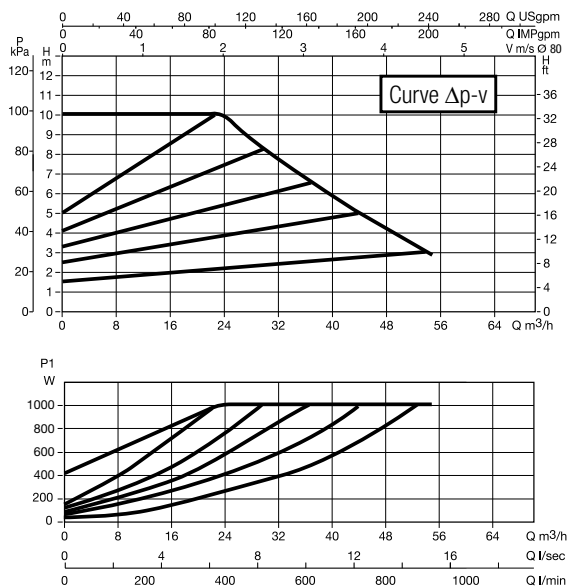


## EVOPLUS B 80/360.80 M - EVOPLUS D 80/360.80 M

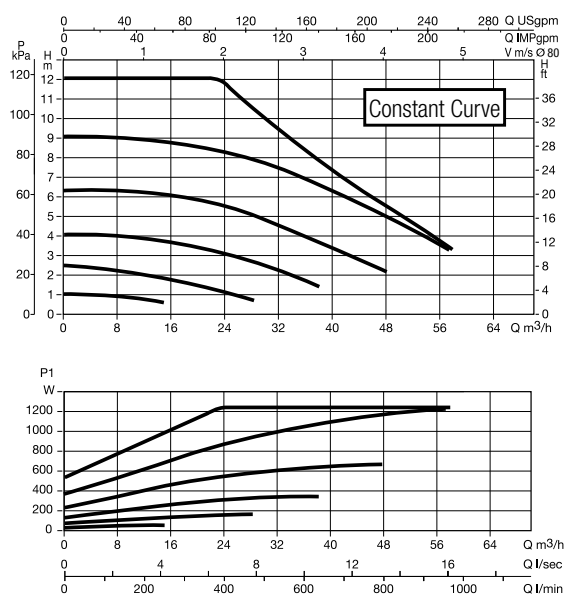
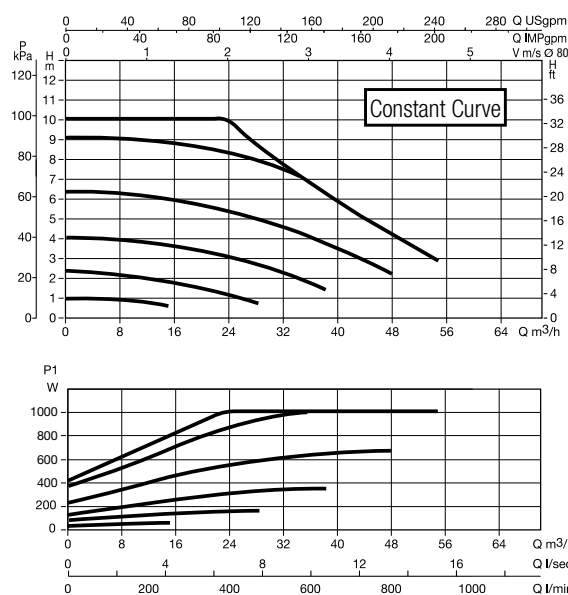
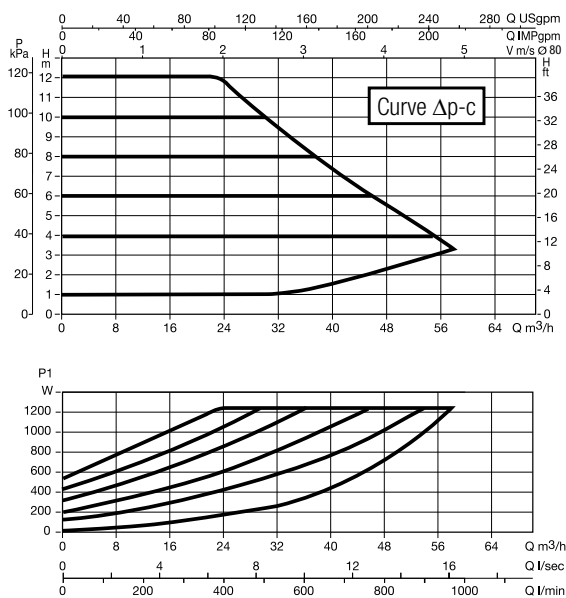
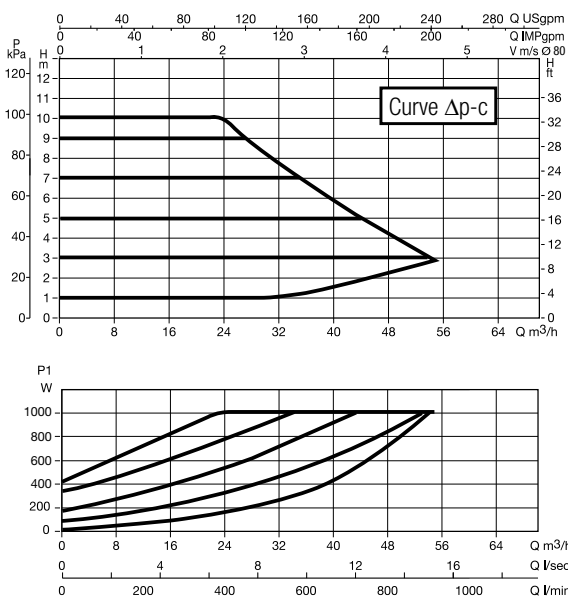
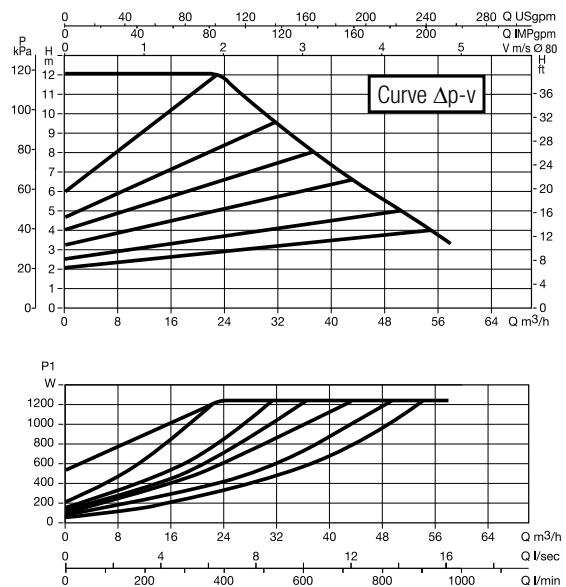




## EVOPLUS B 100/360.80 M - EVOPLUS D 100/360.80 M

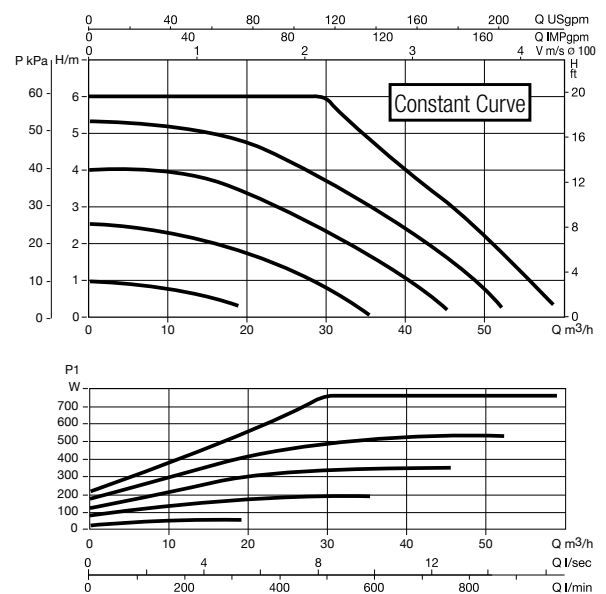
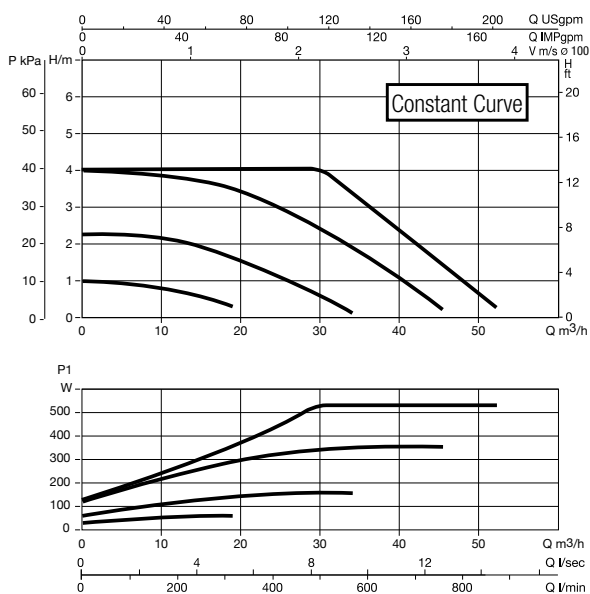
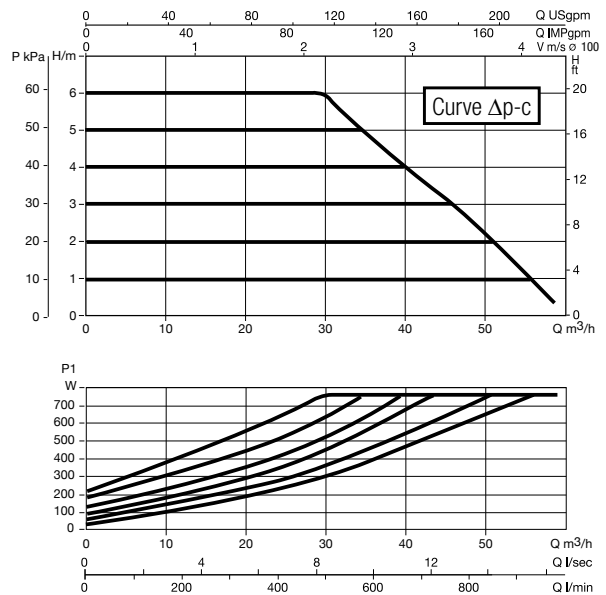
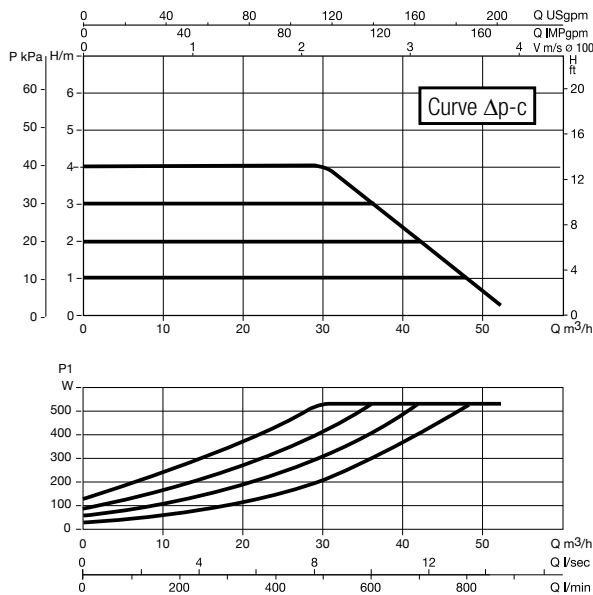
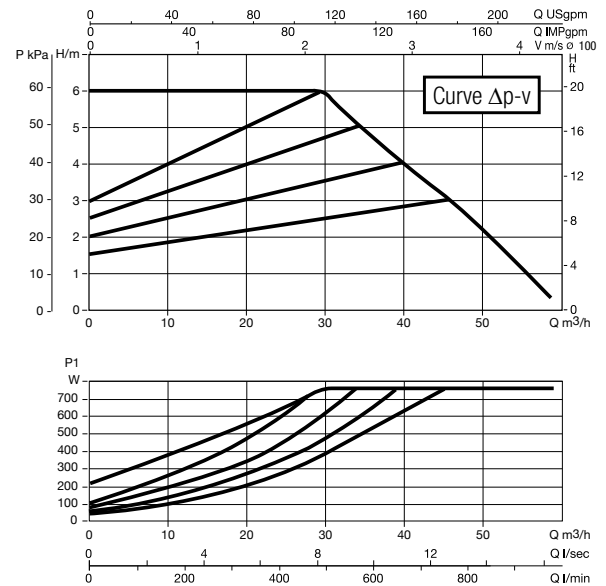
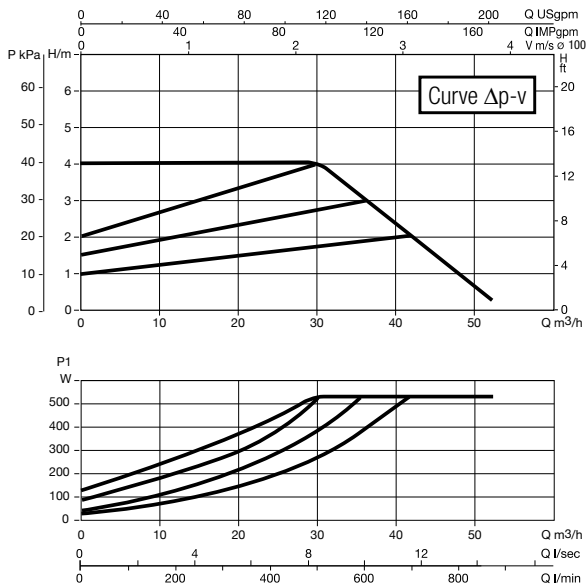


## EVOPLUS B 120/360.80 M - EVOPLUS D 120/360.80 M

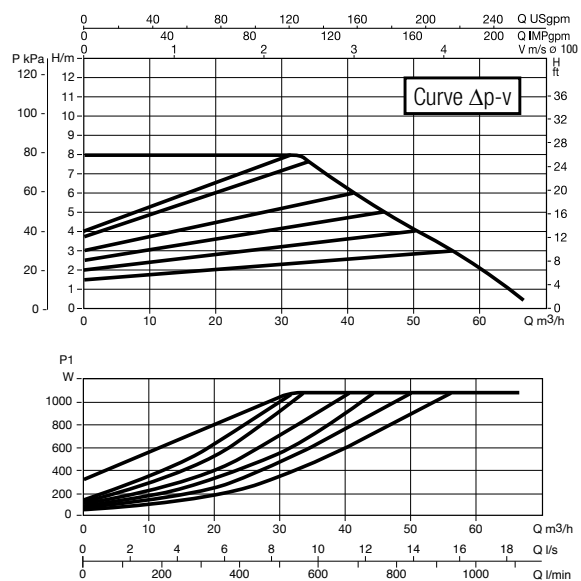


## EVOPLUS B 40/450.100 M - EVOPLUS D 40/450.100 M

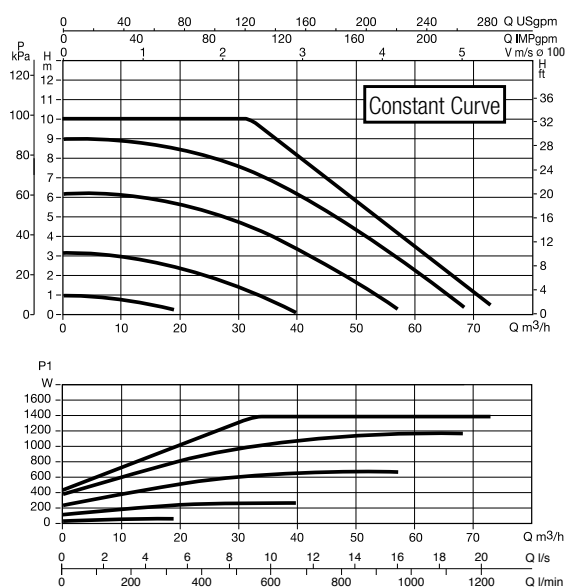
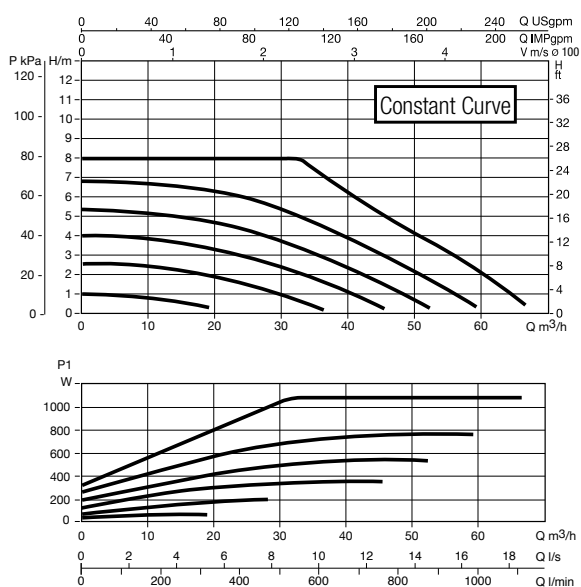
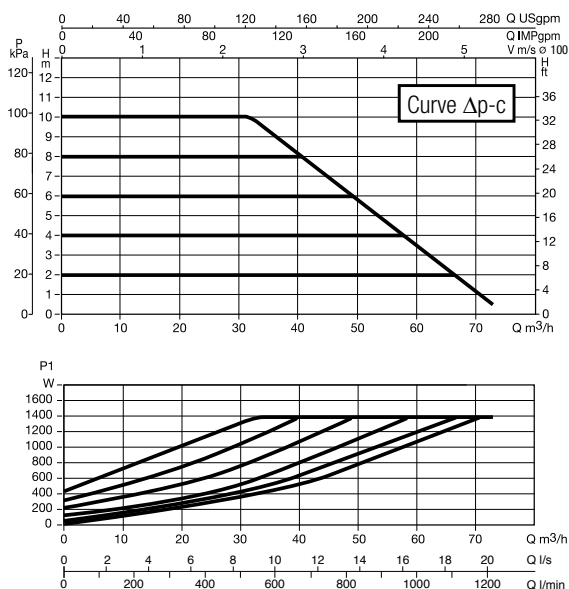
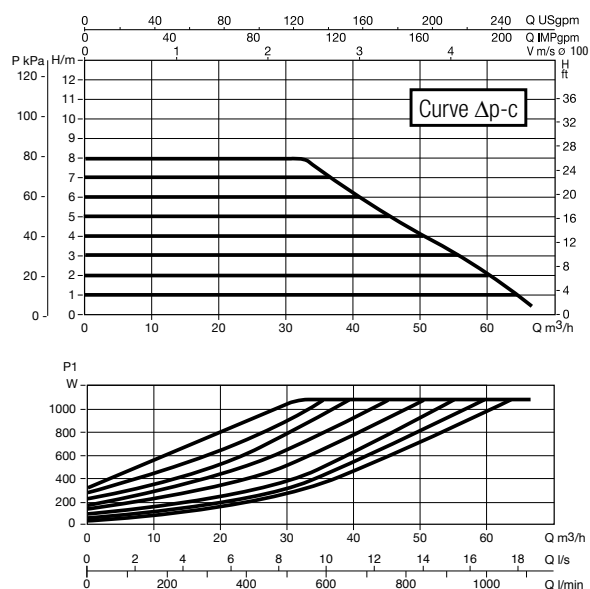
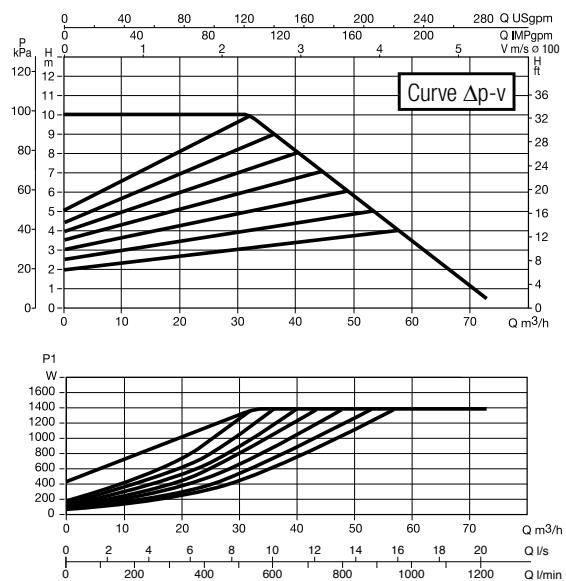
## EVOPLUS B 60/450.100 M - EVOPLUS D 60/450.100 M



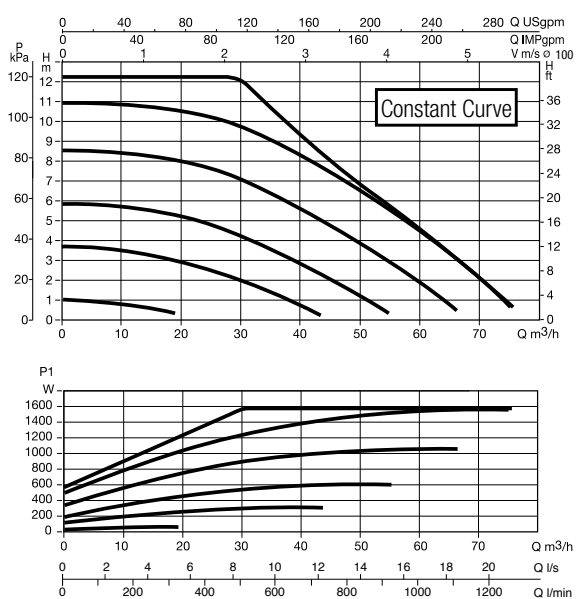
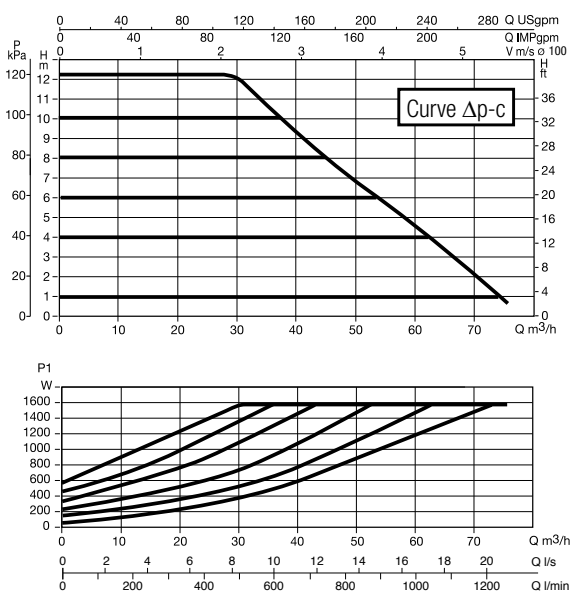
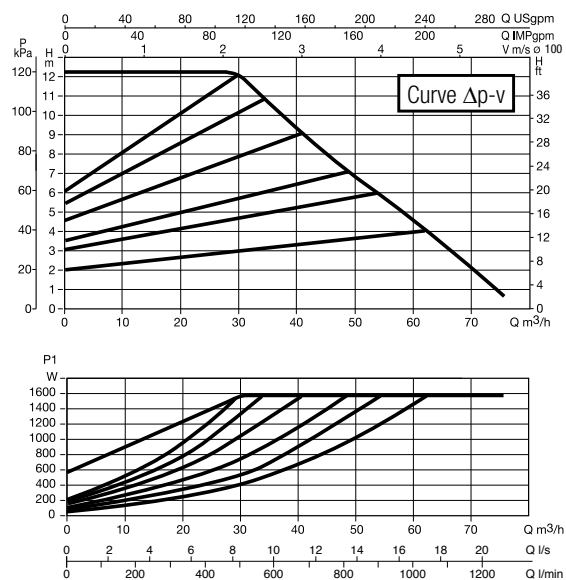
## EVOPLUS B 80/450.100 M - EVOPLUS D 80/450.100 M



## EVOPLUS B 100/450.100 M - EVOPLUS D 100/450.100 M



## EVOPLUS B 120/450.100 M - EVOPLUS D 120/450.100 M









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