

# ALPHA2 GO

Circulator pump



<b>1. Product introduction</b> .....	<b>3</b>
Product description .....	3
Applications .....	3
Features and benefits .....	4
Type key .....	4
Performance range .....	5
<b>2. Construction</b> .....	<b>6</b>
Sectional view .....	6
Exploded view .....	6
Material specification .....	7
Mechanical construction .....	7
<b>3. Operating conditions</b> .....	<b>8</b>
Technical data .....	8
Pumped liquids .....	8
Dry-running protection .....	8
<b>4. Installation and operation</b> .....	<b>9</b>
Mechanical installation .....	9
Control box position .....	9
Electrical connection .....	9
Operating panel .....	10
<b>5. Control and communication</b> .....	<b>12</b>
Control modes .....	12
Constant curve .....	12
Constant pressure .....	12
Proportional pressure .....	12
AUTOADAPT .....	13
Constant flow .....	13
PWM signal .....	13
Setting of the product .....	16
<b>6. Performance curves and technical data</b> ..	<b>18</b>
Guide to performance curves .....	18
Curve conditions .....	18
ALPHA2 GO XX-40 .....	19
ALPHA2 GO XX-60 .....	21
ALPHA2 GO K XX-75 .....	23
ALPHA2 GO XX-90 .....	25
<b>7. Accessories</b> .....	<b>27</b>
Cables and plugs .....	27
Insulating shells .....	28
Unions and valve kits .....	28
<b>8. Product numbers</b> .....	<b>29</b>
<b>9. Document quality feedback</b> .....	<b>30</b>
<b>10. Grundfos Product Center</b> .....	<b>31</b>

# 1. Product introduction

## Product description

ALPHA2 GO is a high-efficiency circulator pump fitted with an electronically commutated motor and designed for circulating liquids in heating and air conditioning systems.

The Grundfos GO app offers a range of digital features that simplify the setup process for both new and replacement installations.

By using Grundfos GO, you can easily verify compatibility when replacing integrated and stand-alone circulator pumps, including replicating exact pump curves.

ALPHA2 GO is designed with intelligent controls modes:

- constant pressure
- proportional pressure
- constant flow
- constant curve.

Each mode has adjustable setpoints.

- The AUTOADAPT setting, available for constant and proportional pressure, removes the need to manually select the pump setpoint.

The PWM input (externally controlled) allows for precise control of the speed, better enabling complete system optimization.

The toolless installer plug results in fast and easy electrical connection.

The automatic self-venting ability and dry-running protection ensure quiet operation and reliability of the pump.

The product features robust startup which reduces the risk of blockages from dirt, magnetite and limescale build-up. In the unlikely case of a blocked pump, the motor attempts to continuously start at the highest possible torque, ensuring startup in tough conditions.

The ceramic shaft and bearings experience minimal wear, resulting in a longer lifespan and a reduced likelihood of noise in the system due to increased bearing clearance from wear.

When the system air detection and venting feature detects air in the system, the circulator pump pulsates to more effectively push air to the closest air removal device.

Grundfos GO also provides the ability to conveniently fault-find the system through the event log and historical trend data for flow, head, estimated media temperature and on-cycle durations.

## Applications

The product is designed for domestic building applications such as:

- heating systems
- air conditioning.

We recommend using the products in following applications:

- radiator systems
- underfloor heating
- domestic hot-water cylinder or production
- mixed system<sup>1)</sup>
- fan coil.

<sup>1)</sup> Mix of radiators, underfloor heating and/or domestic hot water cylinder.

## Features and benefits

Feature	Benefits
Guided setup via Grundfos GO	By answering a few questions through the Grundfos GO app, guided setup ensures the correct control mode and setpoint are chosen, ensuring optimised comfort and reduced energy consumption.
GO Replace	By connecting to the Grundfos GO app, you can easily check the compatibility of both integrated and standalone circulator pumps and replicate the pump curves, ensuring energy savings and system reliability.
AUTOADAPT	AUTOADAPT for both radiators and underfloor heating ensures optimal comfort with minimal energy consumption while removing the need to manually choose the setpoint.
Air detection and system venting	When enabled in the Grundfos GO app, the air detection feature allows the pump to detect air around the impeller, indicating air in the system. If air is detected, the pump starts to pulsate in order to more effectively push air to the closest air removal device in the system.
Display (W, m, m <sup>3</sup> /h)	The pump display allows the user to see the current flow rate, head and power consumption, helping to indicate if there are any issues in the system as well as assisting in setup.
Trend data	Trend data, available via the Grundfos GO app, allows users to track the circulator pump's performance over time, identifying patterns in flow rate, pressure, temperature and on-cycle time for easier fault finding.
Event log	Via the Grundfos GO app you can access the event log that suggests possible remedies to warnings or alarms.
Software update	New features in the circulator pump can be implemented via a software update through the Grundfos GO app.
Dry-running protection	The dry-running protection feature prevents the pump from operating without water, protecting the circulator pump.
Robust start	The non-magnetic shaft and bearings reduce the risk of blockages from dirt or magnetite, while the bearing system helps prevent limescale build-up. In the unlikely case of a blocked pump, the motor continuously attempts to start at the highest possible torque, ensuring startup in tough conditions.
Installer plug	The installer plug features a toolless design, simplifying the installation process.
Ambient temperature	At 55 °C the pump is designed to ensure optimal performance and longevity when integrated in heating appliances.
Acoustic noise	At 25 db(A) the pump guarantees silent operation, which enhances the comfort of living and working spaces.

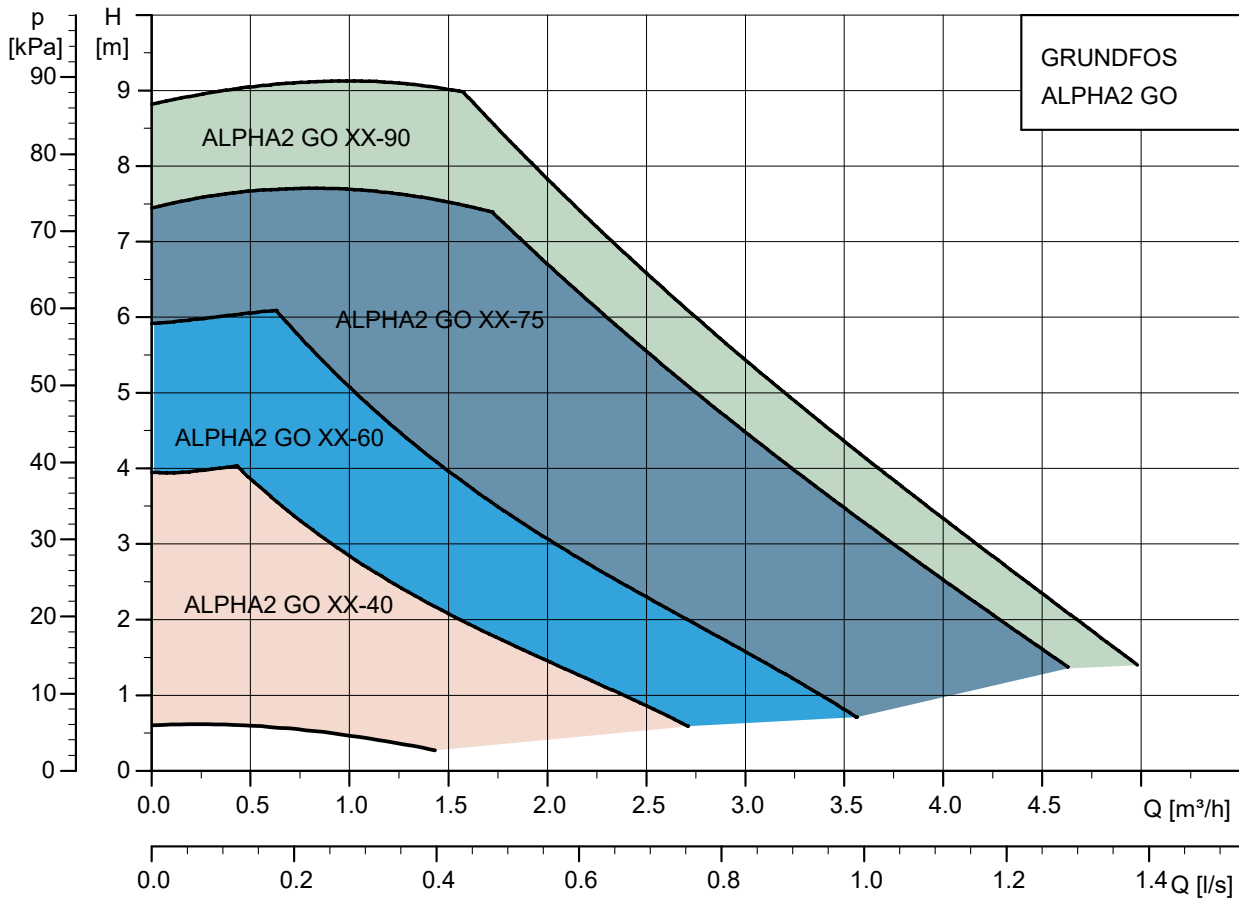
## Type key

Example: ALPHA2 GO 25-40 180 220-240 V

Code	Explanation	Designation
ALPHA2 GO	Grundfos circulator pump	Pump type
25	Nominal diameter (DN) of inlet and outlet ports	Connections
40	Maximum head [dm]	
130	Port-to-port length [mm]	
220-240 V	Voltage	

### Performance range

A performance curve is crucial for selecting the right pump. It shows the head (pressure) that a pump can produce at different flow rates. The highest point on the Y-axis indicates the shut-off pressure (maximum head at zero flow), while the highest point on the X-axis shows the maximum flow at zero head.

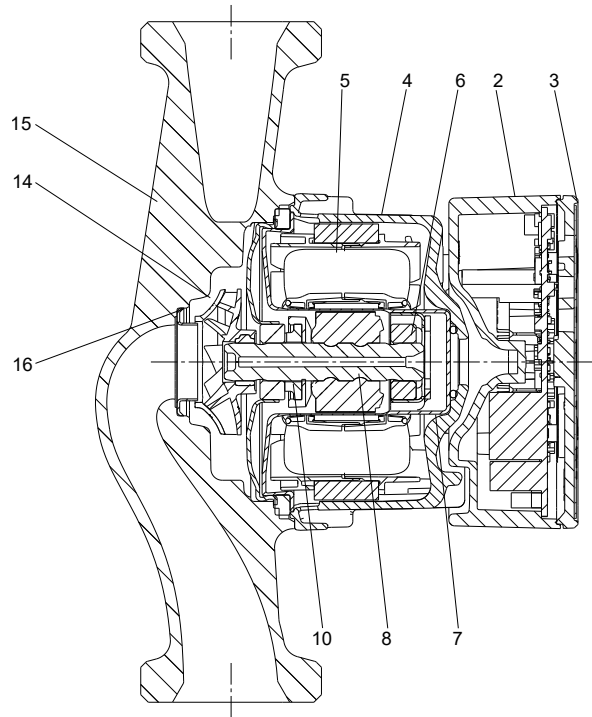


TM090531

Performance curves, ALPHA2 GO

## 2. Construction

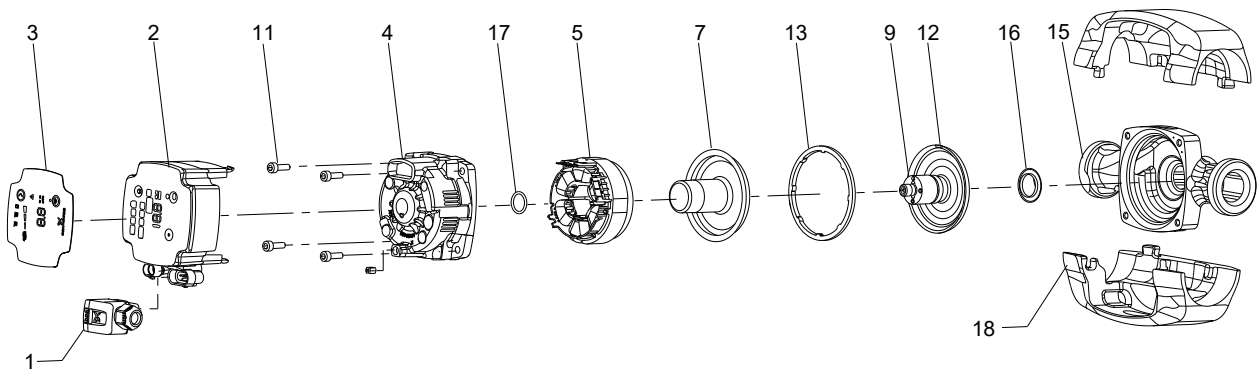
### Sectional view



TM089300

ALPHA2 GO

### Exploded view



TM089292

ALPHA2 GO

## Material specification

Pos.	Component	Material	EN/DIN
1	Plug	Composite PA6-GF30	
2	Control box	Composite PC-GF10 FR	
	Control electronics	Printed circuit board with surface mounted device components	
3	Front foil	LEXAN 8A13F	
4	Stator housing	Aluminium, silumin	
5	Stator	Copper wire	
	Stator lamination	Laminated iron	
6	Radial bearing	Ceramics	
7	Rotor can	Stainless steel	1.4401
8	Shaft	Ceramics	
9	Rotor	Injection Molded Ferrite Magnet	
	Rotor tube	Stainless steel	1.4521
	Rotor cladding	Stainless steel	1.4401/1.4301
	Bush	Stainless steel	1.4301
10	Thrust bearing	Carbon	
	Thrust bearing retainer	EPDM	
11	Screws	Steel	
12	Bearing plate	Stainless steel	1.4301
13	Gasket	EPDM	
14	Impeller	Composite / PES 20 or 30% GF	
15	Pump housing	Cast iron GG15	EN-GJL-150
16	Neck ring	Stainless steel	1.4301
17	O-ring	EPDM	
18	Insulating shells	EPP	

## Mechanical construction

This product is designed for long and trouble-free operation as a canned-rotor type, that is pump and motor form an integral unit without shaft seal, with only one gasket for sealing. The bearings are lubricated by the pumped liquid. This construction ensures maintenance-free operation.

The pump is characterised by the following:

- Permanent-magnet rotor and compact-stator motor which contribute to high efficiency and high starting torque.
- Ceramic shaft and radial bearings which contribute to long life.
- Carbon thrust bearing which contributes to long life.
- Stainless-steel rotor can, bearing plate and rotor cladding which contribute to corrosion-free long life.
- Composite impeller which contributes to corrosion-free long life.
- Cast-iron pump housing.

## 3. Operating conditions

### Technical data

Supply voltage	1 × 220-240 V, ± 6%, 50/60 Hz
Minimum supply voltage	160 VAC (runs with reduced performance)
Motor protection	The pump requires no external motor protection.
Enclosure class	Indoor use only IP44 IPX4D (only ALPHA2 K XX-75)
Temperature class	TF110 to EN 60335-2-51 TF95 to EN 60335-2-51 (only ALPHA2 GO XX-90)
Reaction time - power on	No specific requirements.
Reaction time - standby	< 1 s
Reaction time - speed change	< 1 s
Inrush current	< 4 A
Standby power consumption <sup>2)</sup> 3)	< 0.7 W
Insulation class	F
Relative humidity	Max. 95 %
Max. outlet pressure	1.0 MPa (10 bar)
Surge robustness	> 3 W (DWCM)
Radio frequency radiation exposure	-6 dB CE/EN55014-1, CE/EN55014-2
Sound pressure level (LP)	< 25 dB(A)
Pump housing	Electrocoated cast iron
Connection type	G 1, G 1 1/2, G 2

3) Applicable for pumps that are stopped and connected to the power supply. Only applicable for variants with the PWM functionality.

### Product size

	Max. flow rate (Q) [m <sup>3</sup> /h]	Max. head (H) [m]
XX-40	2.7	4.0
XX-60	3.5	6.0
XX-75	4.5	7.5
XX-90	4.8	9.0

### Power usage (approximate)

	Min.	Max.
XX-40	3 W	21 W
XX-60	3 W	37 W
XX-60	3 W	37 W
XX-75	3 W	75 W
XX-90	3 W	90 W

### Liquid temperature

	Max. ambient temperature 55 °C	Max. ambient temperature 70 °C
XX-40	2 to 110 °C	2 to 75 °C
XX-60	2 to 110 °C	2 to 75 °C
XX-75	-10 to +110 °C	-10 to +75 °C
K XX-75	-20 to +110 °C	-20 to +75 °C
XX-90	-10 to +95 °C	-10 to +60 °C

### Inlet pressure

Liquid temperature [°C]	Min. inlet pressure [bar]
75	0.05
95	0.5
110	1.08

### Pumped liquids

The product is suitable for the following liquids:

- Clean, thin, non-aggressive and non-explosive liquids, not containing solid particles or fibres.
- In heating systems, the water must meet the requirements of accepted standards on water quality in heating systems, for example the German standard VDI 2035.
- The pH must be between 8.2 and 9.5. The minimum value depends on the water hardness and must not be below 7.4 at 4 °dH (0.712 mmol/l).
- The electrical conductivity at 25 °C must be equal to or larger than 10 µS/cm.
- Mixtures of water with antifreeze media such as glycol or ethanol with a kinematic viscosity lower than 15 mm<sup>2</sup>/s (15 cSt).

### Dry-running protection

The dry-running protection protects the pump against dry running during startup and normal operation.

#### Startup

If water has not been detected before (new pump), the pump does a detection cycle to verify that water is present. If water is not detected during the first cycle, the pump retries several times.

If water is still not detected, the pump stops, the warning and alarm symbol on the operating panel is flashing red and the error code E4 is displayed on the operating panel.

#### Normal operation

If dry running is detected during normal operation, the pump retries several times. If dry running continues, the pump stops, the warning and alarm symbol on the display is flashing red and the error code E4 is displayed on the operating panel.

The pump can be restarted by pressing the **Selection** button on the pump. The pump repeats the dry-running detection every 25 hours to verify that the pump is not running dry. Note: The pump can sustain 25 hours of dry-running operation.



## 4. Installation and operation

### Mechanical installation



Make sure the pump orientation is correct.



The pump must always be installed with a horizontal motor shaft within  $\pm 5^\circ$ .

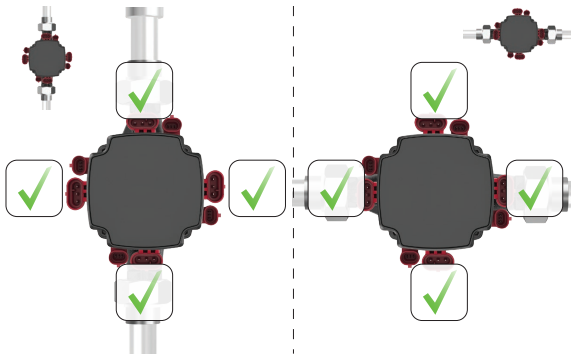


The arrows on the pump housing indicate the flow direction through the pump.

1. Close the inlet and outlet valves.
2. Fit the two gaskets supplied with the pump, when you mount the pump in the pipes.
3. Tighten the unions.
4. Make sure to use an allowed control box position.
5. Mount the power plug.
6. Mount the PWM signal plug if used.

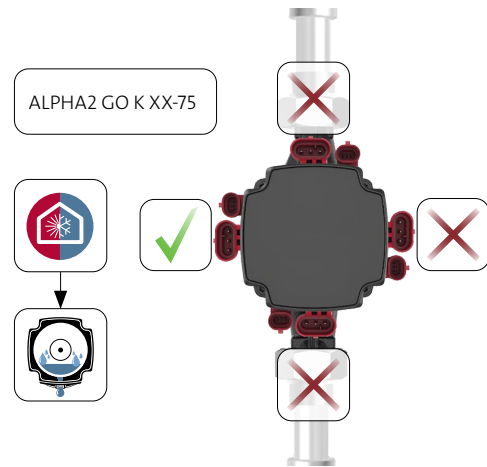
### Control box position

The control box can be turned in steps of  $90^\circ$ .



ALPHA2 GO

TM087893



TM088798

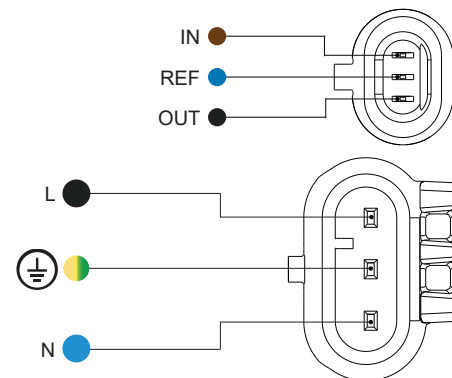
ALPHA2 GO K version

### Electrical connection

The pump requires no external motor protection.

Check that the supply voltage and frequency correspond to the values stated on the nameplate.

### Wiring diagram



TM089307

### Power and signal plug

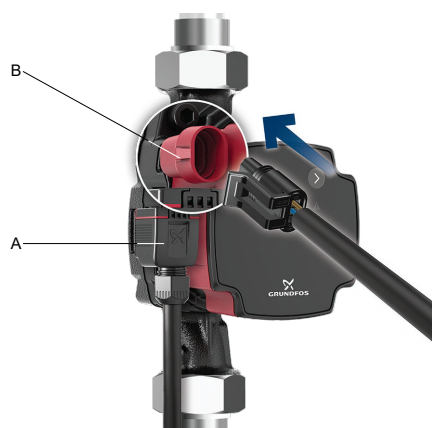
Pos.	Description	Wire colour
IN	PWM input	Brown
REF	Signal reference	Blue
OUT	PWM output	Black
L	Phase	Black or brown
	Earth	Yellow/green
N	Neutral	Blue

### Control box connections

All control boxes have two electrical inlets placed on one side:

- power inlet
- signal inlet.

The signal inlet is galvanically isolated from the power supply of the circulator pump. There is therefore no risk of electrical shock if touching the signal inlet. Furthermore, the signal plug is "water tight" protecting against ingress of liquids into the control box.

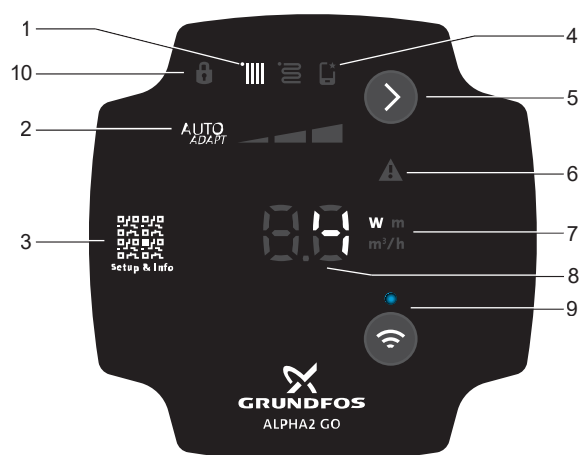


TM089771

Pos.	Description
A	Power inlet (superseal)
B	Signal inlet (mini superseal)

## Operating panel

LEDs and buttons on the pump display.



TM087129

### ALPHA2 GO




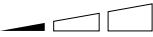




Pos.	Description
1	Control mode The LED shows the operating mode of the product.
2	Settings for the selected control mode Use the <b>Selection</b> button to toggle between I, II, III and AUTOADAPT.
3	QR code The QR code links to information about the pump and how to set it.
4	If lit, the pump has been set via Grundfos GO.
5	Selection button Use this button to select control mode and settings.
6	Warning and alarm A warning is indicated with yellow, and the pump continues operation. An alarm is indicated with red, and the pump stops.
7	Unit The LED shows the unit used for the number to the left. W = watt, m = metre, m <sup>3</sup> /h = cubic metre per hour.
8	The LED indicates: <ul style="list-style-type: none"> <li>power consumption [W]</li> <li>head [m]</li> <li>flow rate [m<sup>3</sup>/h]</li> <li>error code</li> </ul>
9	Connect button Use this button to activate and deactivate the wireless Bluetooth connection. <ul style="list-style-type: none"> <li>Press the button once to activate Bluetooth.</li> <li>Press and hold the button for 15 seconds to deactivate Bluetooth.</li> </ul>
10	Lock The LED indicates that the operating panel is locked and no buttons can be used. The operating panel can only be locked and unlocked via Grundfos GO.

## Overview of LEDs

The LEDs indicate the control mode, setting and operating status.

### Factory setting

The pump is factory set to proportional pressure, AUTOADAPT.

Active light fields	Description
	Advanced mode The control mode is set via Grundfos GO. When the pump is set via Grundfos GO, the icon is lit and the control modes and settings on the operating panel are switched off.
	Proportional-pressure mode
	Constant-pressure mode
	Setting I
	Setting II
	Setting III
	AUTOADAPT mode
	The pump is set to <b>STOP</b> in Grundfos GO or by an active PWM stop signal.

When the symbols for the constant-pressure and proportional-pressure modes are off, the pump is running in constant-curve mode.

## 5. Control and communication

### Control modes

ALPHA2 GO can be set to the following control modes:

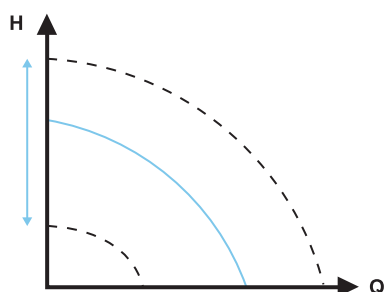
- constant curve
- proportional pressure
- constant pressure
- constant flow
- external control (PWM)
- advanced mode

All control modes can be set in Grundfos GO. However, only constant curve, constant pressure and proportional pressure can be set on the operating panel.

### Constant curve

In the constant-curve mode, the pump runs at a constant curve, which means that it runs at constant speed or power. The pump performance follows the selected constant curve. This control mode is especially suitable in applications where the characteristics of the heating system are steady, and the emitters require a constant flow. The selection of the constant-curve setting depends on the characteristics of the heating system and the actual required flow and heat demand.

The curve's setpoint is user defined in Grundfos GO. The speed in percentage of maximum speed can be chosen anywhere between the minimum and maximum constant curve in intervals of 1 %.



TM071005

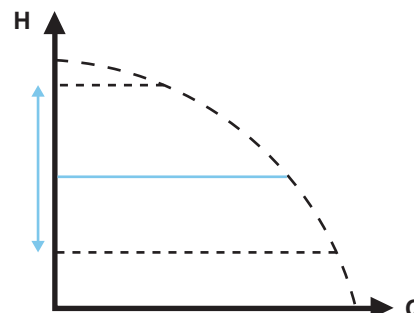
Constant curve

### Constant pressure

In the constant-pressure mode, the pump runs at constant pressure, which means the head (pressure difference) is kept constant, regardless of the heat demand (actual number of open zones). The pump performance follows the selected constant-pressure curve.

This control mode is especially suitable for underfloor heating and applications where the pump is used to supply a common manifold for multiple zones. The head across each zone will remain constant, independent of how many zones request heat. Thus a constant flow in each zone will be maintained, independent of other zones. The selection of the constant-pressure setting depends on the characteristics of the zones in the heating system and the actual heat demand.

The curve's setpoint is user defined in Grundfos GO. The setpoint can be chosen anywhere between the minimum and maximum constant-pressure curve in intervals of 0.1 m.



TM083818

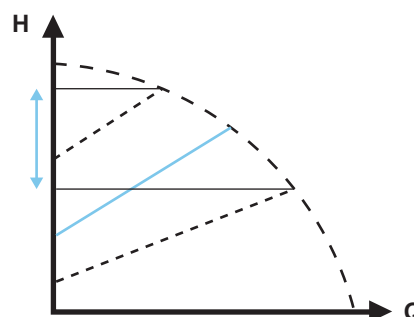
Constant pressure

### Proportional pressure

In the proportional-pressure mode, the pump runs at proportional pressure, which means the head (pressure) is reduced at falling heat demand and increased at rising heat demand. The pump performance follows the selected proportional-pressure curve. This control mode is especially suitable for applications where the heat emitters are equipped with a TRV (thermostatic radiator valve) which controls the flow depending on the room temperature. At increased flow, the losses in the distribution system (pipes and fittings) increase, hence the pumps increase the pressure to compensate and vice versa, hereby maintaining an almost constant differential pressure across the thermostatic radiator valve.

The proportional-pressure mode setpoint depends on the heating system's characteristics and the actual heat demand.

The curve's setpoint is user defined in Grundfos GO. The setpoint can be chosen anywhere between the minimum and maximum proportional curve in intervals of 0.1 m. The head against a closed valve is half the setpoint  $H_{set}$ , although never below 1 m.



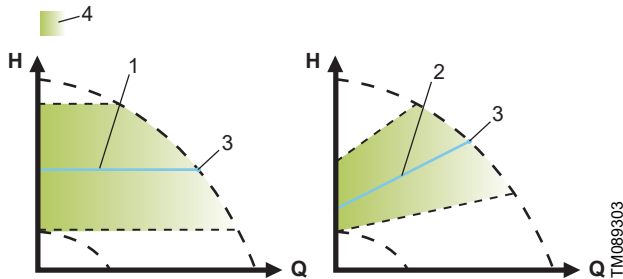
TM071003

Proportional-pressure settings

## AUTOADAPT

AUTOADAPT is an integrated function in the constant-pressure and proportional-pressure modes.

AUTOADAPT selects the best control curve under the given operating conditions. The pump performance is automatically adjusted to the actual heat demand, that is the size of the system and the changing heat demand over time, by continuously selecting either a proportional-pressure curve or constant-pressure curve within the AUTOADAPT performance range.



### AUTOADAPT

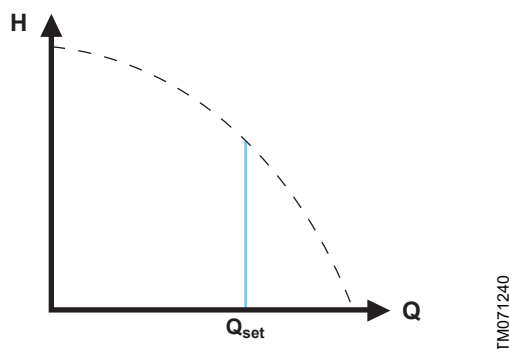
Pos.	Description
1	Constant-pressure curve
2	Proportional-pressure curve
3	Setpoint
4	AUTOADAPT performance range

Do not expect an optimal pump setting from day one. If the power supply fails or is disconnected, the pump stores the AUTOADAPT setting in an internal memory and resumes the automatic adjustment when the power supply has been restored.

## Constant flow

In this control mode, the pump maintains a constant flow in the system independently of the head.

The curve's setpoint is user defined only in Grundfos GO. The setpoint can be chosen anywhere between the minimum and maximum flow curve in intervals of 0.1 m<sup>3</sup>/h.



### Constant-flow curve

We recommend that you select this control mode if you know the desired flow rate to the system.

## Overview of ALPHA2 GO flow rates:

Pump variant	Lower flow limit [m <sup>3</sup> /h]	Upper flow limit [m <sup>3</sup> /h]
ALPHA2 GO XX-40	0.25	2.0
ALPHA2 GO XX-60	0.25	2.5
ALPHA2 GO XX-75	0.25	3.5
ALPHA2 GO XX-90	0.25	3.8

## PWM signal

A PWM (Pulse Width Modulation) signal is used in pumps to control their speed and flow rate efficiently. External PWM control mode can only be selected via Grundfos GO.

Below is a description of the functions and benefits:

- **Speed control**

By adjusting the duty cycle of the PWM signal, the speed of the pump can be precisely controlled. This allows for variable speed operation, which is essential for applications requiring different flow rates at different times.

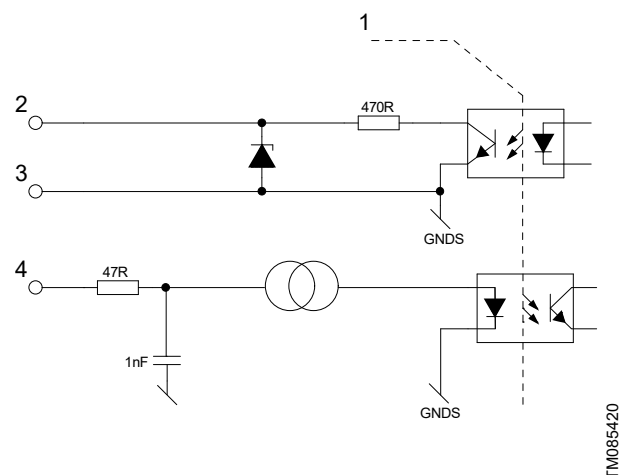
- **Feedback and monitoring**

PWM signals can also be used to monitor the pump's performance, such as measuring power consumption and detecting operating status.

## PWM interface

The PWM interface consists of an galvanically isolated circuit connecting the external control signal to the pump. The interface translates the external signal into a signal type that the microprocessor can understand.

The galvanically isolated interface ensures that the user cannot get into contact with dangerous voltage if the signal wires are touched when the pump is connected to power.



Schematic drawing, equivalent interface

Pos.	Description
1	Galvanic isolation
2	PWM output
3	Signal reference (without connection to protective earth)
4	PWM input

## Digital low-voltage PWM signal

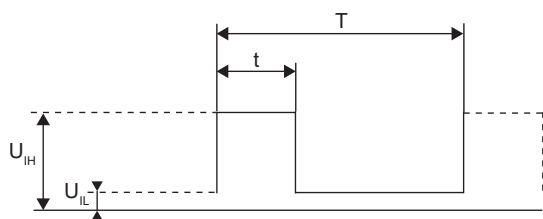
The square-wave PWM signal is designed for a frequency range of 100 to 1500 Hz for the standard input profiles. The PWM signal is used to select the speed (speed command) and as feedback signal. The PWM frequency on the feedback signal is fixed at 75 Hz in the pump.

### Duty cycle

$$d \% = 100 \times t/T$$

Example	Rating
$T = 2 \text{ ms}$ (500 Hz)	$U_{IH} = 4\text{-}24 \text{ V}$
$t = 0.6 \text{ ms}$	$U_{IL} \leq 1 \text{ V}$
$d \% = 100 \times 0.6 / 2 = 30 \%$	$4.5 \text{ mA} \leq I_H \leq 10 \text{ mA}$ (depending on $U_{IH}$ )

### Example



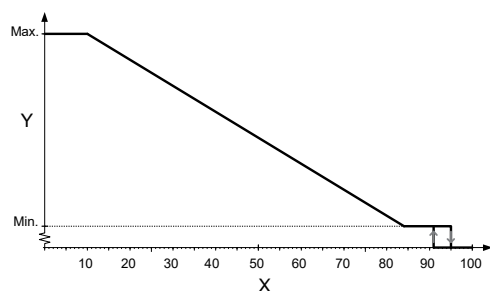
TM049911

### PWM signal

Abbreviation	Description
t	Duration of the pulse signal [s]
T	Total period of time [s]
$U_{IH}$	High-level input voltage
$U_{IL}$	Low-level input voltage

## PWM input signal profile A (heating)

At high PWM signal duty cycles, a hysteresis prevents the pump from starting and stopping if the input signal fluctuates around the shifting point. At low PWM signal duty cycles, the pump speed is high for safety reasons. In case a cable breaks when mounted in a system, the pump starts to run at maximum speed. This is suitable for both boilers and heat pumps to ensure that the pump transfers heat even if a cable breaks.



TM049985

### PWM input profile A (heating)

Axis	Value
X	Input duty cycle
Y	Speed

PWM input duty cycle	Pump status
PWM signal $\leq 10 \%$	Max. speed
$10 \% < \text{PWM signal} \leq 84 \%$	Variable speed from min. to max. speed
$84 \% < \text{PWM signal} \leq 91 \%$	Min. speed
$91 \% < \text{PWM signal} \leq 95 \%$	Hysteresis area: on/off
$95 \% < \text{PWM signal} \leq 100 \%$	Standby mode: off

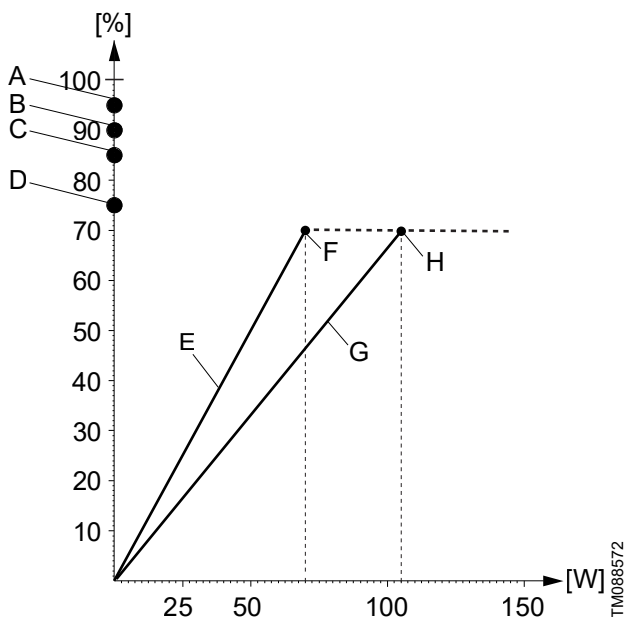
## PWM feedback signal

The PWM feedback signal offers the same pump information as in bus systems:

- current power consumption or flow estimation
- warning
- alarm
- operating status.

## Alarms on power consumption

Alarm output signals are available because some PWM output duty cycles are dedicated to alarm information. If a supply voltage is measured below the specified supply voltage range, the output duty cycle is set to 75 %. If the rotor is locked due to deposits in the hydraulics, the output duty cycle is set to 90 % as this alarm has a higher priority.



TM086572

### PWM feedback signal, power consumption

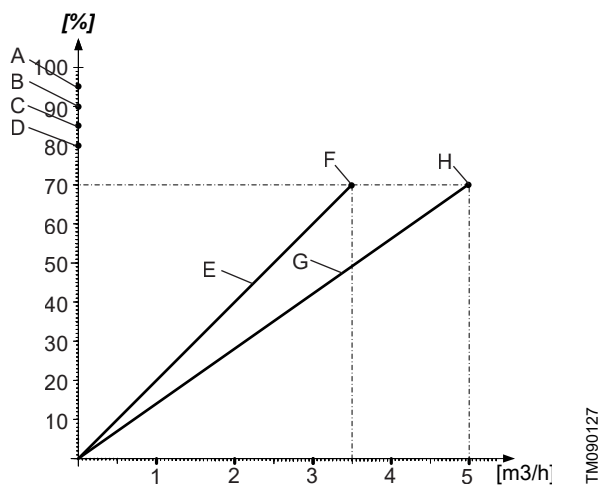
Pos.	Description
X-axis	Output power consumption [W]
Y-axis	Output duty cycle in percentage [%]
A	Standby (stop)
B	Alarm stop: fault, blocked pump
C	Alarm stop: electrical fault
D	Warning
E	Slope: 1 W / % PWM signal Valid for ALPHA2 GO XX-40 and XX-60
F	Saturation at 70 W
G	Slope: 1.5 W / % PWM signal Valid for ALPHA2 GO XX-75 and XX-90
H	Saturation at 105 W

PWM output duty cycle	Pump information
95 %	Standby (stop) by PWM duty cycle
90 %	Alarm, stop, blocked error
85 %	Alarm, stop, electrical error
75 %	Warning
0-70 %	Operating range

Output frequency: 75 Hz  $\pm$  5 %.

### Alarms on flow estimation

Alarm output signals are available because some PWM output duty cycles are dedicated to alarm information. If a supply voltage is measured below the specified supply voltage range, the output duty cycle is set to 75 %. If the rotor is locked due to deposits in the hydraulics, the output duty cycle is set to 90 % as this alarm has a higher priority.



PWM feedback signal, flow estimation

Pos.	Description
X-axis	Output power consumption [m <sup>3</sup> /h]
Y-axis	Output duty cycle in percentage [%]
A	Standby (stop)
B	Alarm stop: fault, blocked pump
C	Alarm stop: electrical fault
D	Dry running
E	Slope: 0.05 m <sup>3</sup> /h / % PWM signal Valid for ALPHA2 GO XX-40 and XX-60
F	Saturation at 3.5 m <sup>3</sup> /h
G	Slope: 0.07 m <sup>3</sup> /h / % PWM signal Valid for ALPHA2 GO XX-75 and XX-90
H	Saturation at 5.0 m <sup>3</sup> /h

PWM output duty cycle	Pump information
95 %	Standby (stop) by PWM duty cycle
90 %	Alarm, stop, blocked error
85 %	Alarm, stop, electrical error
80 %	Dry running
0-70 %	Operating range

Output frequency: 75 Hz  $\pm$  5 %.

### Control signal data levels

PWM input duty cycle	Symbol	Value
PWM input frequency with high-speed optocoupler	F <sub>i</sub>	100-1500 Hz <sup>4)</sup>
Rated input voltage - high level	U <sub>iH</sub>	4-24 V
Rated input voltage - low level	U <sub>iL</sub>	< 1 V
High-level input current	I <sub>iH</sub>	< 10 mA
Input duty cycle	PWM	0-100 %

4) Only for standard profiles.

PWM output duty cycle	Symbol	Value
PWM frequency output, open collector	f	75 Hz $\pm$ 5 %
Accuracy of output signal regarding power consumption	-	$\pm$ 2 % (of PWM signal)
Output duty cycle	D <sub>o</sub>	0-100
Output impedance	Z <sub>o</sub>	< 500 $\Omega$

## Setting of the product

The operating panel can be used for the following:

- Connecting to Grundfos GO.
- Selecting proportional pressure (radiator system), constant pressure (underfloor heating system) or constant curve (speed).
- Selecting pump setting (I, II, III or AUTOADAPT) for the three control modes available on the operating panel.

In Grundfos GO you can access all settings.

## Connecting the product to Grundfos GO

Before connecting the product to Grundfos GO, the Grundfos GO app must be downloaded to your smartphone or tablet. The app is free of charge and available for iOS and Android devices.

The connection can be started either from the operating panel or Grundfos GO. If you have several products installed, we recommend starting the connection from the operating panel.

## Setting of the pump in Grundfos GO

Once the pump is connected to Grundfos GO, you can choose between **Use default settings** and **Start setup**. We recommend selecting **Start setup** which leads you to the guided setup.

By answering a few simple questions, the guided setup will help you select the optimal control mode and setpoint for the system, which reduces energy consumption and helps prevent potential noise problems.

If you select **Use default settings**, the pump uses the factory setting, proportional pressure, AUTOADAPT.

## Replacement of UPM3 or UPM4 pump

ALPHA2 GO can be used to replace the majority of integrated UPM3 or UPM4 circulator pumps. This means that when replacing an existing circulator pump, the new ALPHA2 GO pump replicates the performance as well as PWM configuration of the existing circulator pump. In the Grundfos GO app (via the **GO Replace** tool) or online via <https://grundfos.to/replace>, you can check the compatibility of the pump.

During the replacement process, Grundfos GO guides you step-by-step through the setup of the new circulator pump to match the existing circulator pump. The replication process can be initiated directly from the GO Replace tool or through the guided setup when initially connecting the pump to Grundfos GO.

## Air detection and system venting

The product offers a **Continuous air detection and venting** feature which means the pump can detect air and push it quickly to the air removal device.

If the pump detects air, it runs a venting sequence which enables more air to escape compared to letting the pump run at maximum speed during the entire process.

During system venting, the air is pushed to the system vent.

The function can be enabled in Grundfos GO in the **Settings** menu.

During the guided setup, you are asked if you want to vent the pump and system now. This is a one time event and will not permanently enable this function. .

## Flow limitation

You can set a minimum and maximum flow rate in Grundfos GO.

A minimum flow limit can be set to prevent the boiler from overheating. A maximum flow limit can be set to prevent noise in the system.

## Night setback

This product offers a night setback function, which can only be activated via Grundfos GO in the **Settings** menu. With automatic night setback enabled, the pump automatically switches between normal operation and the automatic night setback curve.

The pump switches to night setback when a flow-pipe temperature drop of more than 10 to 15 °C within approximately two hours is registered. The temperature drop must be at least 0.1 °C/min.

Changeover to normal operation takes place without a time lag when the flow-pipe temperature has increased by approximately 10 °C. You do not have to re-enable night setback if the power supply has been switched off.

If the power supply is switched off when the pump is running on the curve for night setback, the pump starts in normal operation. The pump changes back to the curve for night setback when the condition for night setback is fulfilled again.

If there is insufficient heat in the heating system, check whether night setback has been enabled. If yes, disable the function.

To ensure the optimum function of night setback, the following conditions must be fulfilled:

- The pump must be installed in the flow pipe.
- The boiler must incorporate automatic control of the liquid temperature.



Do not use automatic night setback when the pump is installed in the return pipe of the heating system.



Automatic night setback is available in all control modes.

## Trend data

In the **Trend data** menu in Grundfos GO, you can see system data for the last 10 or 100 on-cycles. An on-cycle is the period from when the pump turns on until it turns off.



If the pump runs continuously for more than 24 hours, one on-cycle is registered and a new on-cycle will start even though the pump has not yet turned off.

You can see the following data:

- **Duration of each on-cycle**
- **Flow**
- **Head**
- **Estimated media temperature.**

You can use the trend data for system optimization and fault finding.

### Update of the pump software

When the pump is connected to a mobile device and the Internet, it is possible to update the pump's software. Once the connection to Grundfos GO is established, the pump automatically checks for available updates, and a pop-up notification appears in Grundfos GO.

### Grundfos GO Balance

The Grundfos GO Balance app is a powerful tool designed to simplify the hydronic balancing process for heating systems, particularly for two-string radiator systems and underfloor heating.

It includes the following features:

- **Guided balancing process:**  
The app provides step-by-step instructions to help with balancing the heating systems effectively, ensuring optimal performance.
- **Real-time flow data:**  
Grundfos GO Balance receives real-time flow data from the pump, allowing it to automatically calculate the necessary adjustments for each radiator.
- **Documentation:**  
Once the system is balanced, Grundfos GO Balance generates a report that can be e-mailed or printed, providing a record of the work done.

Grundfos GO Balance enhances efficiency and accuracy in hydronic balancing, making it a valuable tool for professionals and DIY enthusiasts.

## 6. Performance curves and technical data

### Guide to performance curves

Each pump setting has its own performance curve.

A power curve, P1, belongs to each performance curve.

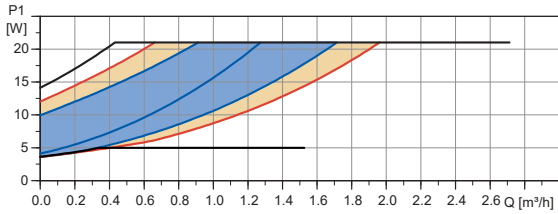
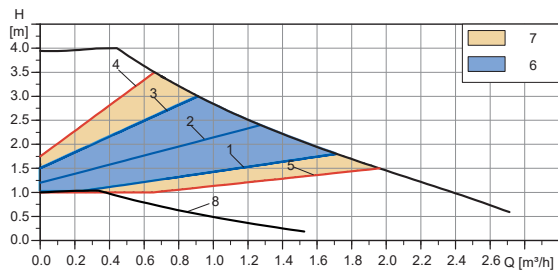
The power curve shows the pump power consumption in watt at a given performance curve.

### Curve conditions

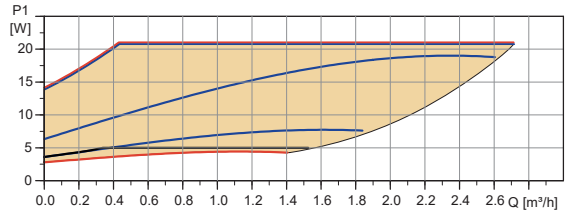
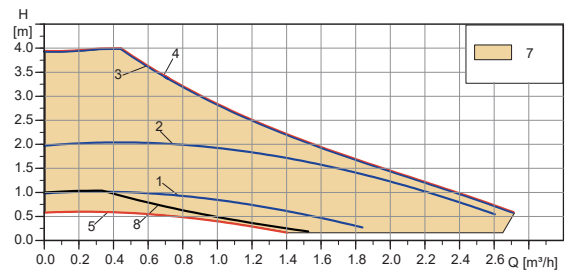
The guidelines below apply to the performance curves:

- Test liquid: airless water.
- The curves apply to a density of  $998.2 \text{ kg/m}^3$  and a liquid temperature of  $20 \text{ }^\circ\text{C}$ .
- Curves are obtained according to EN 16297-1.
- Maximum curves are limited by speed and power
- The EEI values are obtained according to EN 16297 part 2.

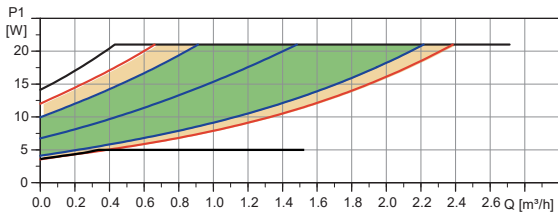
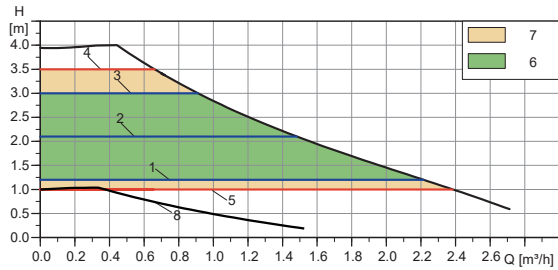
ALPHA2 GO XX-40



Proportional pressure



Constant curve



Constant pressure

Pos.	Description
1	Setting I
2	Setting II
3	Setting III
4	Max. manual setpoint via Grundfos GO
5	Min. manual setpoint via Grundfos GO
6	AUTOADAPT range
7	Manual setpoint range
8	Night setback curve

EEl ≤ 0.16 Part 3

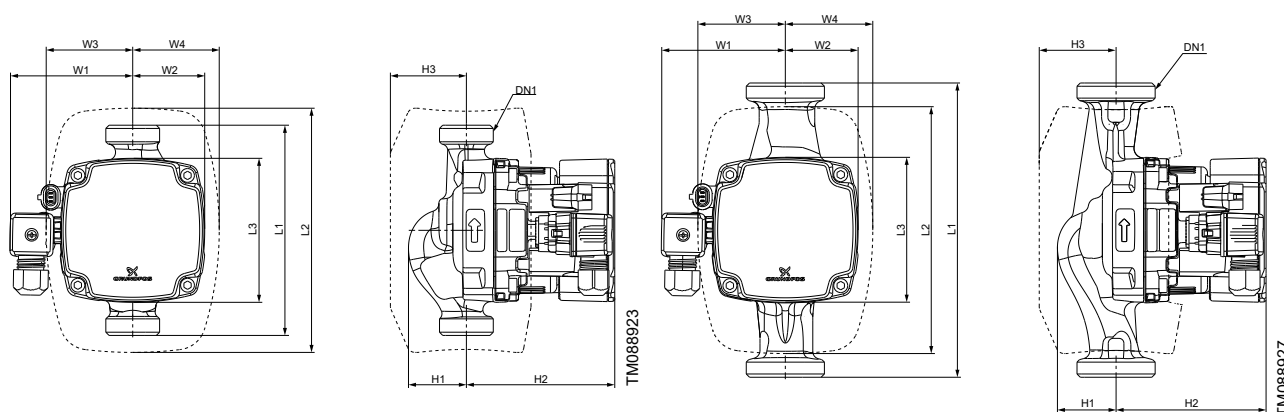
PL,avg ≤ 9.45 W

Electrical data, 1 × 220 - 240 V, 50 Hz		
Speed	P <sub>1</sub> [W]	I <sub>1/1</sub> [A]
Min.	3	0.04
Max.	21	0.26

Technical data			
System pressure	Max. 1.0 MPa (10 bar)	Enclosure class	IP44

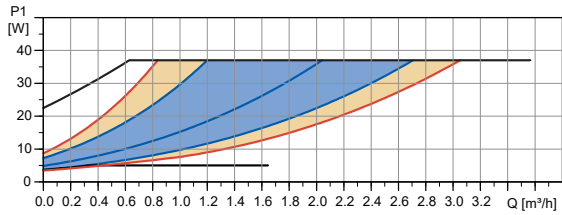
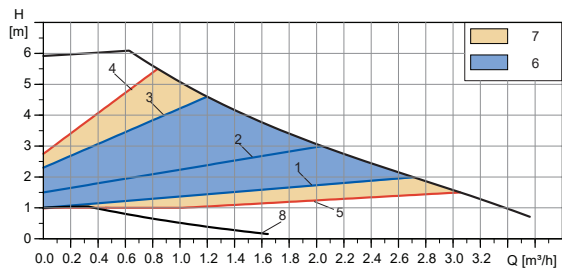
Technical data			
Min. inlet pressure	0.05 MPa (0.50 bar) at 95 °C liquid temperature	Motor protection	No external protection needed
Liquid temperature	2-110 °C (TF110)	Approval and marking	VDE, CE

## Dimensions

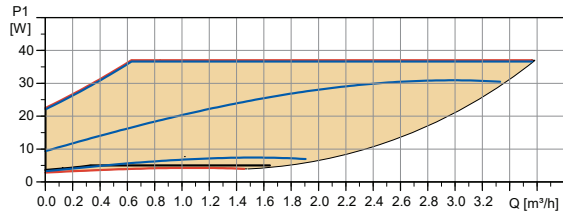
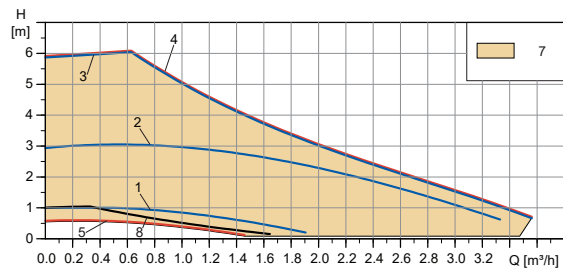


Pump type	Dimensions [mm]										DN1	Weight [kg]
	L1	L2	L3	W1	W2	W3	W4	H1	H2	H3		
ALPHA2 GO 15-40 130	130	151	89	64	46	53.5	53.5	36	92	47	G 1	1.63
ALPHA2 GO 25-40 130	130	151	89	64	46	53.5	53.5	36	92	47	G 1 1/2	1.74
ALPHA2 GO 25-40 180	180	151	89	64	46	53.5	53.5	36	92	47	G 1 1/2	1.89
ALPHA2 GO 32-40 180	180	151	89	64	46	53.5	53.5	36	92	47	G 2	2.09

ALPHA2 GO XX-60



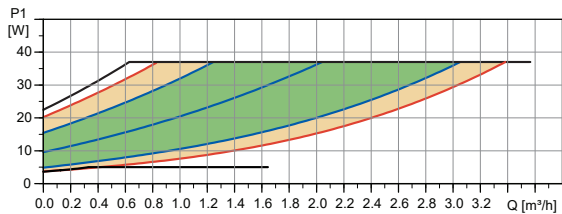
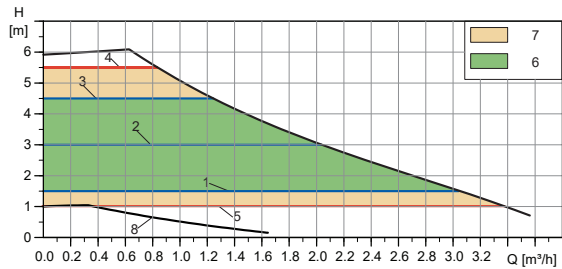
TM090145



TM090147

Proportional pressure

Constant curve



TM090146

Pos.	Description
1	Setting I
2	Setting II
3	Setting III
4	Max. manual setpoint via Grundfos GO
5	Min. manual setpoint via Grundfos GO
6	AUTOADAPT range
7	Manual setpoint range
8	Night setback curve

Constant pressure

EEl ≤ 0.18 Part 3

$P_{L,avg} \leq 15.8 \text{ W}$

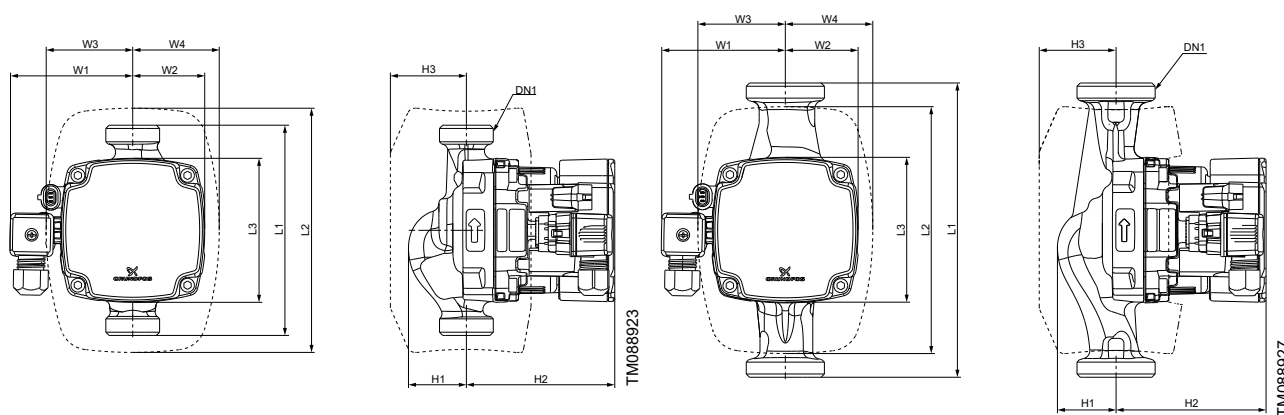
Electrical data, 1 × 220 - 240 V, 50 Hz		
Speed	$P_1$ [W]	$I_{1/1}$ [A]
Min.	3	0.04
Max.	37	0.40

Technical data			
System pressure	Max. 1.0 MPa (10 bar)	Enclosure class	IP44

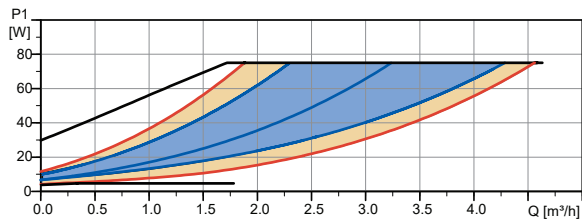
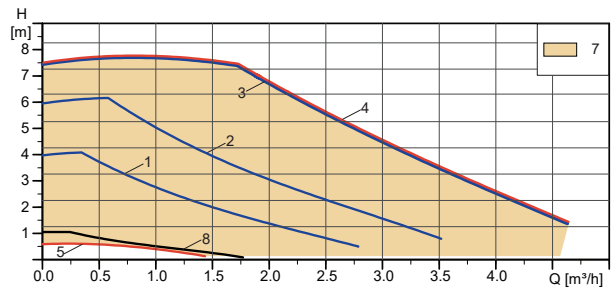
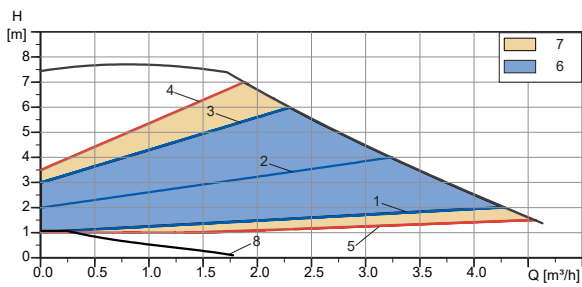
Technical data			
Min. inlet pressure	0.05 MPa (0.50 bar) at 95 °C liquid temperature	Motor protection	No external protection needed
Liquid temperature	2-110 °C (TF110)	Approval and marking	VDE, CE

## Dimensions

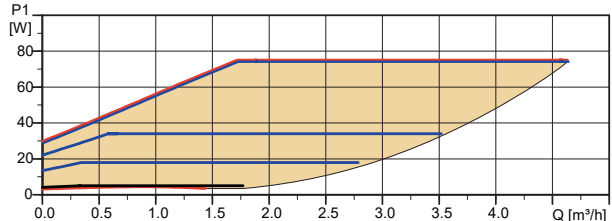


Pump type	Dimensions [mm]										DN1	Weight [kg]
	L1	L2	L3	W1	W2	W3	W4	H1	H2	H3		
ALPHA2 GO 15-60 130	130	151	89	64	46	53.5	53.5	36	92	89	G 1	1.70
ALPHA1 GO 25-60 130	130	151	89	64	46	53.5	53.5	36	92	89	G 1 1/2	1.74
ALPHA1 GO 25-60 180	180	151	89	64	46	53.5	53.5	36	92	89	G 1 1/2	1.89
ALPHA1 GO 32-60 180	180	151	89	64	46	53.5	53.5	36	92	89	G 2	2.09

ALPHA2 GO K XX-75



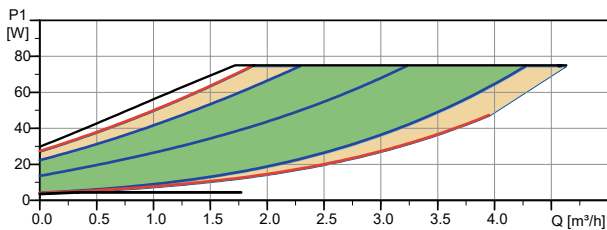
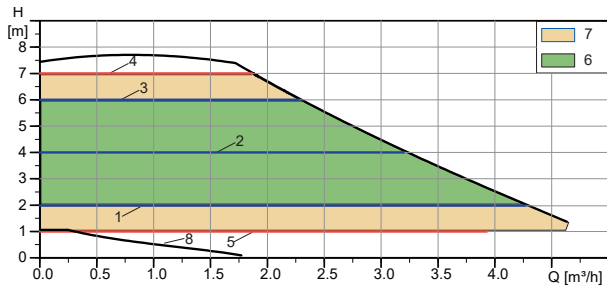
TM0089999



TM0090085

Proportional pressure

Constant curve



TM0090000

Pos.	Description
1	Setting I
2	Setting II
3	Setting III
4	Max. manual setpoint via Grundfos GO
5	Min. manual setpoint via Grundfos GO
6	AUTOADAPT range
7	Manual setpoint range
8	Night setback curve

Constant pressure

EEI ≤ 0.19 Part 3

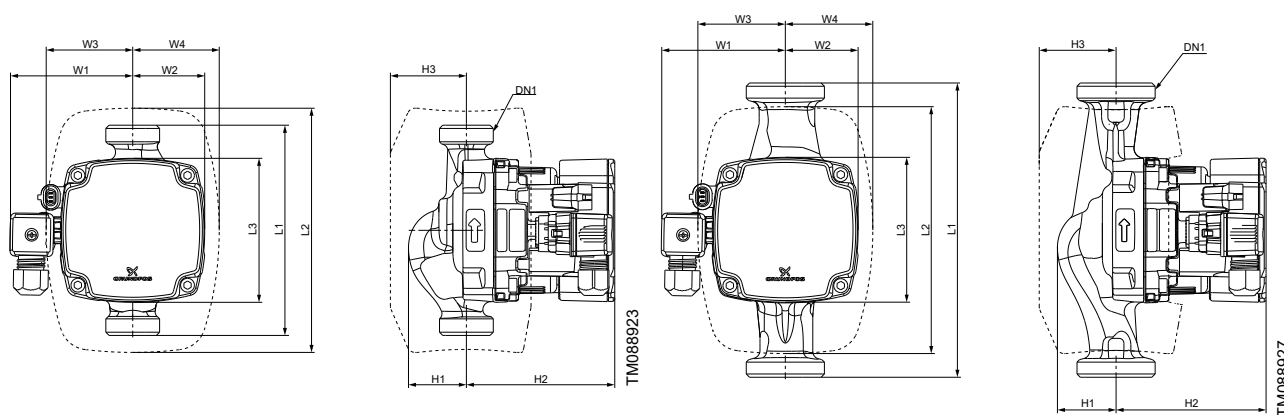
$P_{L,avg} \leq 31W$

Electrical data, 1 × 220 - 240 V, 50 Hz		
Speed	P <sub>1</sub> [W]	I <sub>1/1</sub> [A]
Min.	3	0.04
Max.	75	0.68

Technical data			
System pressure	Max. 1.0 MPa (10 bar)	Enclosure class	IPX4D

Technical data			
Min. inlet pressure	0.05 MPa (0.50 bar) at 95 °C liquid temperature	Motor protection	No external protection needed
Liquid temperature	-10 to +110 °C (TF110) K-version -20 to +110 °C	Approval and marking	VDE, CE

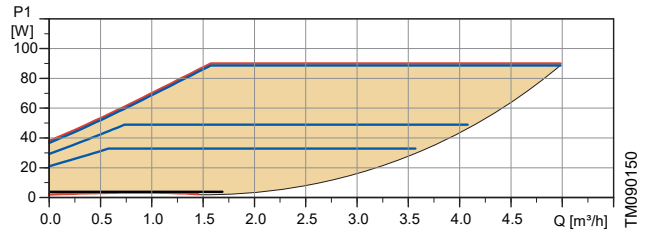
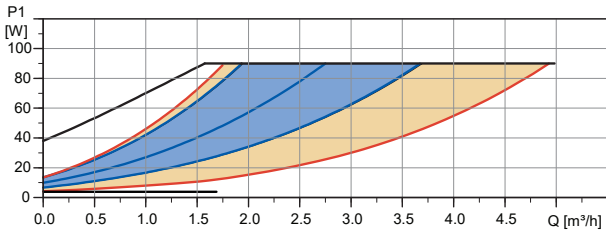
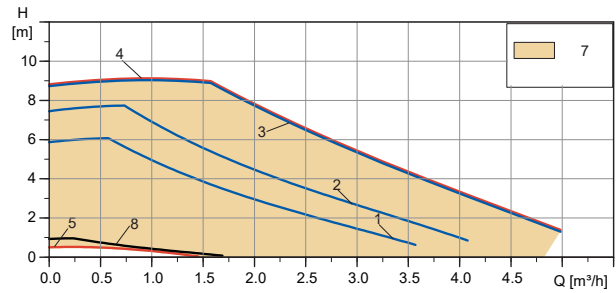
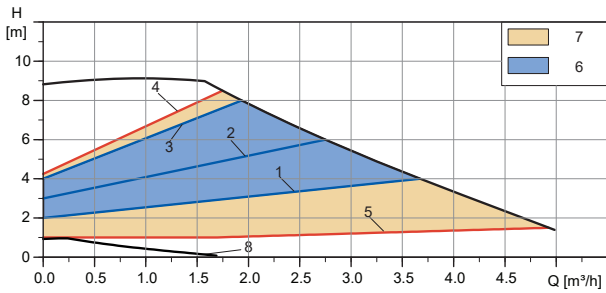
## Dimensions



Pump type	Dimensions [mm]										DN1	Weight [kg]
	L1	L2	L3	W1	W2	W3	W4	H1	H2	H3		
ALPHA2 GO 15-75 130	130	151	89	64	46	53.5	53.5	36	92	47	G 1	1.7
ALPHA2 GO 25-75 130	130	151	89	64	46	53.5	53.5	36	92	47	G 1 1/2	1.81
ALPHA2 GO 25-75 180	180	151	89	64	46	53.5	53.5	36	92	47	G 1 1/2	1.96
ALPHA2 GO 32-75 180	180	151	89	64	46	53.5	53.5	36	92	47	G 2	2.16
ALPHA2 GO K 25-75 130	130	151	89	64	46	53.5	53.5	36	92	47	G 1 1/2	1.81
ALPHA2 GO K 25-75 180	180	151	89	64	46	53.5	53.5	36	92	47	G 1 1/2	1.96

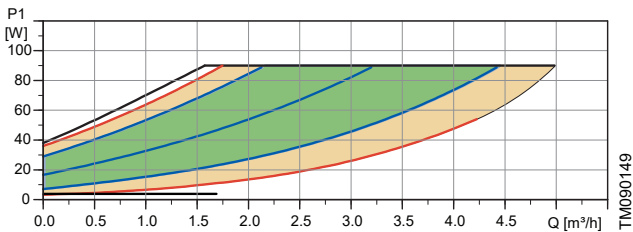
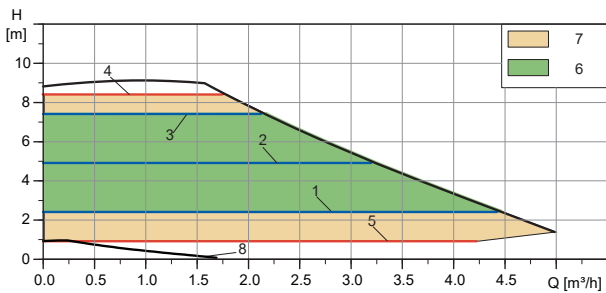


ALPHA2 GO XX-90



Proportional pressure

Constant curve



Pos.	Description
1	Setting I
2	Setting II
3	Setting III
4	Max. manual setpoint via Grundfos GO
5	Min. manual setpoint via Grundfos GO
6	AUTOADAPT range
7	Manual setpoint range
8	Night setback curve

Constant pressure

EEl ≤ 0.20 Part 3

$P_{L,avg} \leq 36.5W$

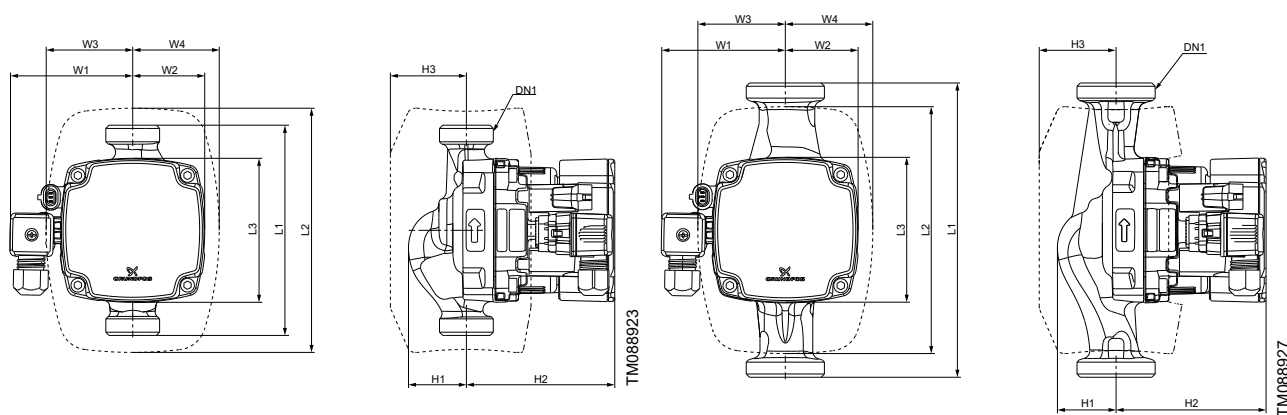
Electrical data, 1 × 220 - 240 V, 50 Hz		
Speed	P <sub>1</sub> [W]	I <sub>1/1</sub> [A]
Min.	3	0.04
Max.	90	0.78

Technical data			
System pressure	Max. 1.0 MPa (10 bar)	Enclosure class	IP44

Technical data			
Min. inlet pressure	0.05 MPa (0.50 bar) at 95 °C liquid temperature	Motor protection	No external protection needed
Liquid temperature	-10 to +95 °C (TF95)	Approval and marking	VDE, CE

## Dimensions



Pump type	Dimensions [mm]										Connections	Weight [kg]
	L1	L2	L3	W1	W2	W3	W4	H1	H2	H3		
ALPHA2 GO 15-90 130	130	151	89	64	46	53.5	53.5	36	92	47	G 1	1.7
ALPHA2 GO 25-90 130	130	151	89	64	46	53.5	53.5	36	92	47	G 1 1/2	1.81
ALPHA2 GO 25-90 180	180	151	89	64	46	53.5	53.5	36	92	47	G 1 1/2	1.96
ALPHA2 GO 32-90 180	180	151	89	64	46	53.5	53.5	36	92	47	G 2	2.16

## 7. Accessories

### Cables and plugs

#### Power supply connection

The installer plug is both supplied with the pump and available as a spare part.


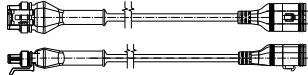
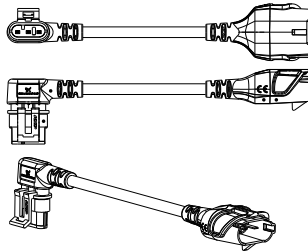
Power cable adapters are available as accessories.



TM067298

Product description	Product number
Installer plug	99439948

#### Power cable adapters

	Description	Length [mm]	Product number
	TM090121 Superseal Molex cable adapter, overmoulded, with rubber cap	150	99165311
	TM090122 Superseal Volex cable adapter, overmoulded, with rubber cap	150	99165312
	TM090123 Superseal to ALPHA plug	145	93296229


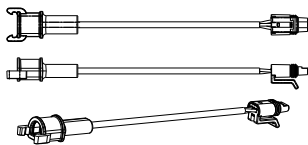
#### Control signal connection

The control signal cable connection has three conductors: the signal input, the signal output and the signal reference.

Connect the cable to the control box by a mini superseal plug. The optional signal cable is available as an accessory. The cable length must not exceed 3 metres.

Conductor	Colour
Signal input	Brown
Signal reference	Blue
Signal output	Black

#### Signal cable and adapter

	Description	Length [mm]	Product number
	TM060610 Mini superseal signal cable	2000	99165309
	TM090124 Mini superseal to FCI signal cable adapter	150	93348101

## Insulating shells

The accessory set is tailored to the individual pump type. The insulating shells enclose the entire pump housing and are easy to fit around the pump.

Pump type	Product number
ALPHA2 GO	93347291



Insulating shells

TM089764

## Unions and valve kits

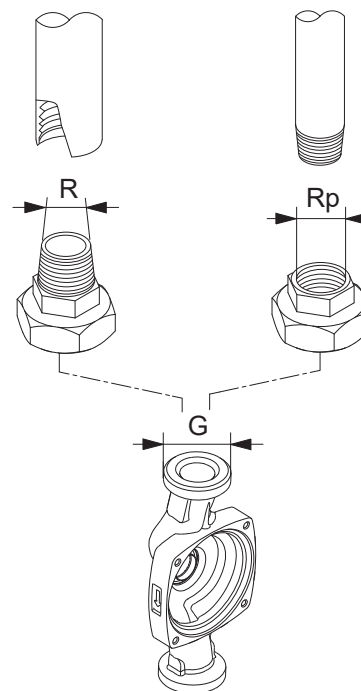
### Product numbers, unions

ALPHA2 Connection	Product numbers, unions				
	3/4	1	1 1/4	1	1 1/4
25-xx G 1 1/2	529921	99672022	529821	529925	529924
32-xx G 2		509921	99672033		

G-threads have a cylindrical form in accordance with the EN ISO 228-1 standard and are not sealing the thread. It requires a flat gasket. You can only screw cylindrical male G-threads, into female G-threads. The G-threads are standard thread on the pump housing.

R-threads are tapered external threads in accordance with the EN 10226-1 standard.

Rc- or Rp-threads are internal threads with either tapered or cylindrical threads. You can screw conical male R-threads into female Rc- or Rp-threads. See fig. G-threads and R-threads.



G-threads and R-threads

TM077425

## 8. Product numbers

### ALPHA2 GO International

Pump type	Port-to-port length [mm]	Connection	Product number
ALPHA2 GO 15-40	130	G 1	93074228
ALPHA2 GO 15-60	130	G 1/2	93074220
ALPHA2 GO 15-75	130	G 1/2	93094215
ALPHA2 GO 15-90	130	G 1/2	93074212
ALPHA2 GO 25-40	130	G 1 1/2	93074226
ALPHA2 GO 25-40	180	G 1 1/2	93074225
ALPHA2 GO 25-60	130	G 1 1/2	93074218
ALPHA2 GO 25-60	180	G 1 1/2	93074216
ALPHA2 GO 25-75	130	G 1 1/2	93094213
ALPHA2 GO K 25-75	130	G 1 1/2	93074277
ALPHA2 GO 25-75	180	G 1 1/2	93074276
ALPHA2 GO K 25-75	180	G 1 1/2	93074275
ALPHA2 GO 25-90	130	G 1 1/2	93074210
ALPHA2 GO 25-90	180	G 1 1/2	93074208
ALPHA2 GO 32-40	180	G 2	93074222
ALPHA2 GO 32-60	180	G 2	93074214
ALPHA2 GO 32-75	180	G 2	93074274
ALPHA2 GO 32-90	180	G 2	93074206

### ALPHA2 GO DACH

Pump type	Port-to-port length [mm]	Connection	Product number
ALPHA2 GO 15-40	130	G 1	93074253
ALPHA2 GO 15-60	130	G 1	93074244
ALPHA2 GO 15-75	130	G 1	93094224
ALPHA2 GO 15-90	130	G 1	93074236
ALPHA2 GO 25-40	130	G 1 1/2	93074250
ALPHA2 GO 25-40	180	G 1 1/2	93074249
ALPHA2 GO 25-60	130	G 1 1/2	93074242
ALPHA2 GO 25-60	180	G 1 1/2	93074240
ALPHA2 GO 25-75	130	G 1 1/2	93094222
ALPHA2 GO 25-75	180	G 1 1/2	93094220
ALPHA2 GO 25-90	130	G 1 1/2	93074234
ALPHA2 GO 25-90	180	G 1 1/2	93074232
ALPHA2 GO 32-40	180	G 2	93074246
ALPHA2 GO 32-60	180	G 2	93074238
ALPHA2 GO 32-75	180	G 2	93094217
ALPHA2 GO 32-90	180	G 2	93074230

## 9. Document quality feedback

To provide feedback about this document, use your smart device to scan the QR code.



FEEDBACK\_93094221

[Click here to submit your feedback](#)

## 10. Grundfos Product Center

Online search and sizing tool to help you make the right choice.

From the international view, you can select your specific country to view the product range available to you.

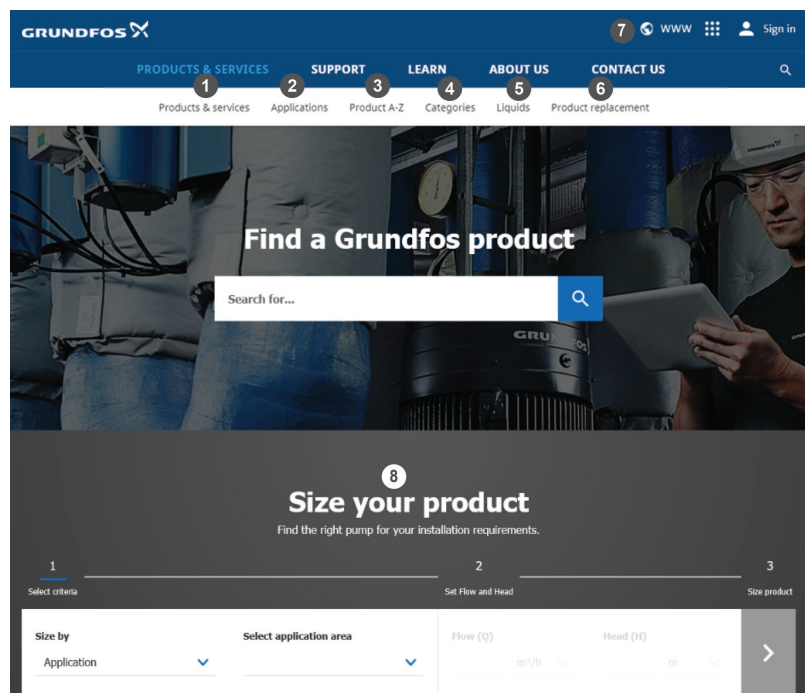
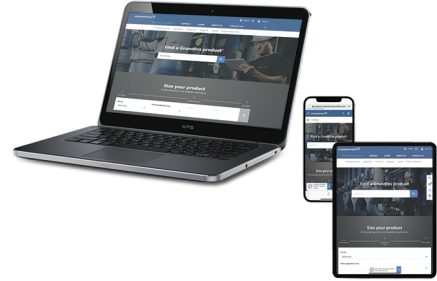
International view: <http://product-selection.grundfos.com>

### All the information you need in one place

Performance curves, technical specifications, pictures, dimensional drawings, motor curves, wiring diagrams, spare parts, service kits, 3D drawings, documents, system parts. The Product Center displays any recent and saved items - including complete projects - right on the main page.

### Downloads

On the product pages, you can download installation and operating instructions, data booklets, service instructions, etc., in PDF format.



When you select your country, you will see the menus below. Note that some menus may not be available depending on the country.

Example: <https://product-selection.grundfos.com/uk>

Pos.	Description
1	<b>Products &amp; services</b> enables you to find products and documents by typing a product number or name into the search field.
2	<b>Applications</b> enables you to choose an application to see how Grundfos can help you design and optimise your system.
3	<b>Products A-Z</b> enables you to look through a list of all the Grundfos products.
4	<b>Categories</b> enables you to look for a product category.
5	<b>Liquids</b> enables you to find pumps designed for aggressive, flammable or other special liquids.
6	<b>Product replacement</b> enables you to find a suitable replacement.
7	<b>WWW</b> enables you to select the country, which changes the language, the available product range and the structure of the website.
8	<b>Sizing</b> enables you to size a product based on your application and operating conditions.

<b>93094221</b> 05.2025
ECM: 1408681

**GRUNDFOS Holding A/S**  
Poul Due Jensens Vej 7  
DK-8850 Bjerringbro  
Tel: +45 87 50 14 00  
[www.grundfos.com](http://www.grundfos.com)

