

Grundfos ALPHA2

Installation and operating instructions



Original installation and operating instructions.

CONTENTS

	Page		
1. Symbols used in this document	3	13.7 Performance curves, ALPHA2 25-60 A	28
1.1 Warning symbols used in the quick guide	3	13.8 Performance curves, ALPHA2 XX-80 (N)	29
2. General information	4	14. Accessories	30
2.1 System specifications	4	14.1 Insulating shells	31
2.2 Applications	4	14.2 ALPHA plugs	31
2.3 Pumped liquids	4	15. Disposal	31
3. Identification	5		
3.1 Nameplate	5		
3.2 Model type	5		
3.3 Type key	5		
4. Mechanical installation	6		
4.1 Mounting	6		
4.2 Control box positions	6		
4.3 Positioning in heating and domestic hot-water systems	6		
4.4 Positioning in air-conditioning and cold-water systems	7		
4.5 Changing the control box position	7		
4.6 Insulation of pump housing	7		
4.7 Air-conditioning and cold-water systems	7		
5. Electrical installation	8		
5.1 Assembling the plug	8		
5.2 Disassembling the plug	9		
5.3 First startup	9		
6. Control panel	10		
6.1 Elements on the control panel	10		
6.2 Display	10		
6.3 Light fields indicating the pump setting	10		
6.4 Light field indicating the status of automatic night setback	11		
6.5 Button for enabling or disabling of automatic night setback	11		
6.6 Button for selection of pump setting	11		
7. Setting the pump	12		
7.1 Pump setting for two-pipe heating systems	12		
7.2 Pump setting for one-pipe heating systems	12		
7.3 Pump setting for underfloor heating systems	13		
7.4 Pump setting for domestic hot-water systems	13		
7.5 Changing from recommended to alternative pump setting	13		
7.6 Pump control	14		
8. Automatic night setback/summer mode	15		
8.1 Use of automatic night setback	15		
8.2 Function of automatic night setback	15		
8.3 Setting summer mode	16		
8.4 Purpose of bypass valve	16		
8.5 Manually operated bypass valve	16		
8.6 Automatic bypass valve (thermostatically controlled)	16		
9. Startup	17		
9.1 Before startup	17		
9.2 Venting the pump	17		
9.3 Venting of heating systems	17		
10. Pump settings and pump performance	18		
10.1 Relation between pump setting and pump performance	18		
11. Fault finding	19		
12. Technical data and installation dimensions	20		
12.1 Technical data	20		
12.2 Installation dimensions, Grundfos ALPHA2 XX-40, XX-50, XX-60, XX-80	21		
12.3 Installation dimensions, Grundfos ALPHA2 25-40 A, 25-60 A	22		
13. Performance curves	23		
13.1 Guide to performance curves	23		
13.2 Curve conditions	23		
13.3 Performance curves, ALPHA2 XX-40 (N)	24		
13.4 Performance curves, ALPHA2 XX-50 (N)	25		
13.5 Performance curves, ALPHA2 XX-60 (N)	26		
13.6 Performance curves, ALPHA2 25-40 A	27		

**Warning**

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

**Warning**

The use of this product requires experience with and knowledge of the product.

Persons with reduced physical, sensory or mental capabilities must not use this product, unless they are under supervision or have been instructed in the use of the product by a person responsible for their safety.

Children must not use or play with this product.

**Warning**

This product can be used by children of eight years and up and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they are under supervision or have been instructed in the safe use of the product and understand the hazards involved.

Children must not play with the product. Cleaning and maintenance of the product must not be made by children without supervision.

1. Symbols used in this document



Warning

If these safety instructions are not observed, it may result in personal injury.








Warning

If these instructions are not observed, it may lead to electric shock with consequent risk of serious personal injury or death.

Caution

If these safety instructions are not observed, it may result in malfunction or damage to the equipment.

1.1 Warning symbols used in the quick guide

Symbol	Description
	<p>Warning</p> <p><i>Do not use the pump for flammable liquids, such as diesel oil and petrol.</i></p>
	<p>Warning</p> <p><i>Do not use the pump for aggressive liquids, such as acids and seawater.</i></p>
	<p>Warning</p> <p><i>Drain the system or close the isolating valves on either side of the pump before you remove the screws.</i></p> <p><i>The pumped liquid may be scalding hot and under high pressure.</i></p>
	<p>Warning</p> <p><i>Position the pump so that persons cannot accidentally come into contact with hot surfaces.</i></p>
	<p>Warning</p> <p><i>Switch off the power supply before making connections. Make sure that the power supply cannot be accidentally switched on.</i></p> <p><i>The pump must be connected to earth.</i></p> <p><i>The pump must be connected to an external mains switch with a minimum contact gap of 3 mm in all poles.</i></p>

2. General information



2.1 System specifications

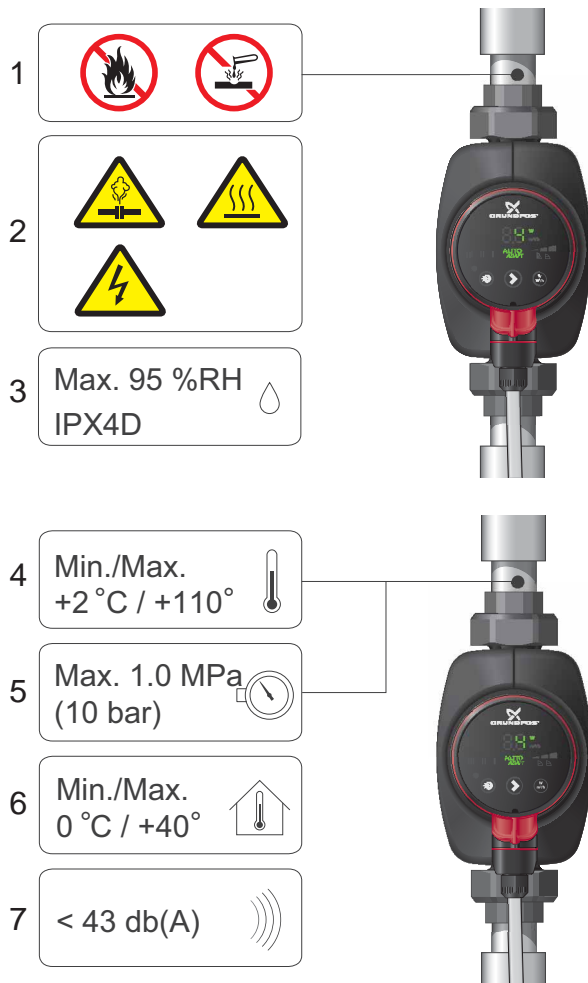


Fig. 1 Pumped liquids, warnings and operating conditions

2.2 Applications

The Grundfos ALPHA2 circulator pump is designed for the circulation of water in heating systems, domestic hot-water systems as well as air-conditioning and cold-water systems. Cold-water systems are defined as systems where the ambient temperature is higher than the temperature of the pumped liquid. Grundfos ALPHA2 is the best choice for the following systems:

- underfloor heating systems
- one-pipe systems
- two-pipe systems.

Grundfos ALPHA2 is suitable for the following:

- Systems with constant or variable flows where it is desirable to optimise the setting of the pump duty point.
- Systems with variable flow-pipe temperature.
- Systems where automatic night setback is desired.

2.3 Pumped liquids

Fig. 1, pos. 1.

In heating systems, the water should meet the requirements of accepted standards on water quality in heating systems, for example the German standard VDI 2035.

The pump is suitable for the following liquids:

- Thin, clean, non-aggressive and non-explosive liquids, not containing solid particles or fibres.
- Cooling liquids, not containing mineral oil.
- Domestic hot water, max. 14 °dH, max. 65 °C, peak max. 70 °C.

For water with a higher degree of hardness, we recommend a direct-coupled TPE pump.


- Softened water.


The kinematic viscosity of water is $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt) at 20 °C. If the pump is used for a liquid with a higher viscosity, the hydraulic performance of the pump will be reduced.


Example: 50 % glycol at 20 °C means a viscosity of approx. 10 mm²/s (10 cSt) and a reduction of the pump performance by approx. 15 %.

Do not use additives that in anyway can/will disturb the functionality of the pump.


When selecting a pump, take the viscosity of the pumped liquid into consideration.

Warning

Do not use the pump for flammable liquids, such as diesel oil and petrol.

Warning

Do not use the pump for aggressive liquids, such as acids and seawater.

Warning

In domestic hot-water systems, the temperature of the pumped liquid must always be above 50 °C due to the risk of legionella.

Recommended boiler temperature: 60 °C.

Warning

In domestic hot-water systems, the pump is permanently connected to the mains water and therefore not allowed to be connected by a hose set

3. Identification

3.1 Nameplate

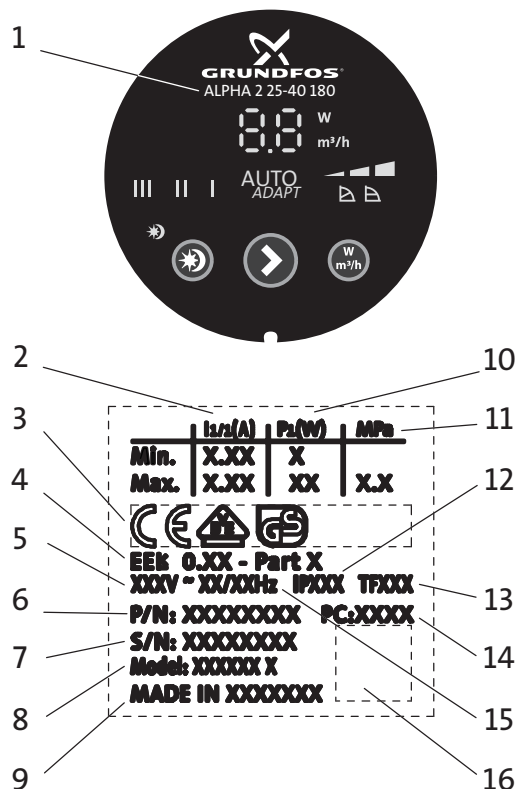


Fig. 2 Nameplate

Pos.	Description
1	Pump type
2	Rated current [A]: • Min.: Minimum current [A] • Max.: Maximum current [A]
3	CE mark and approvals
4	EEL: Energy Efficiency Index Part 1: Indicating whether the pump is tested in accordance with the following: Part 2 - Stand-alone product Part 3 - Integrated product according to EN 16297-1:2012 and EN 16297-2:2012.
5	Voltage [V]
6	Product number
7	Serial number
8	Model
9	Country of origin
10	Input power P1 [W]: • Min.: Minimum input power P1 [W] • Max.: Maximum input power P1 [W]
11	Maximum system pressure [MPa]
12	Enclosure class
13	Temperature class
14	Production code: • 1st and 2nd figures = year • 3rd and 4th figures = week
15	Frequency [Hz]
16	QR code

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3.2 Model type

These installation and operating instructions cover model B and C. The model type is stated on the packaging and nameplate. See figs. 3 and 4.



Fig. 3 Model type on packaging



Fig. 4 Model type on nameplate

The table below shows the ALPHA2 models with built-in functions and features.

Functions/features	Model B 2012	Model C 2014
AUTO _{ADAPT}	•	•
Proportional pressure	•	•
Constant pressure	•	•
Constant curve	•	•
Automatic night setback	•	•
Summer mode		•
ALPHA2 XX-40	•	•
ALPHA2 XX-50	•	•
ALPHA2 XX-60	•	•
ALPHA2 XX-80		•

3.3 Type key

Example	ALPHA2	25	-40	N	180
Pump type					
: Standard version					
L: Limited version					
Nominal diameter (DN) of suction and discharge ports [mm]					
Maximum head [dm]					
: Cast-iron pump housing					
A: Pump housing with air separator					
N: Stainless-steel pump housing					
Port-to-port length [mm]					

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TM06 1716 2614

4. Mechanical installation



4.1 Mounting

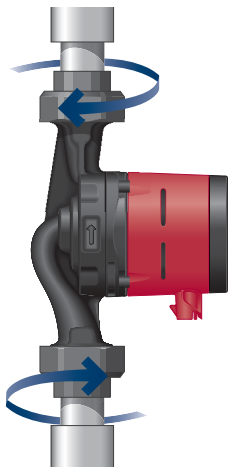
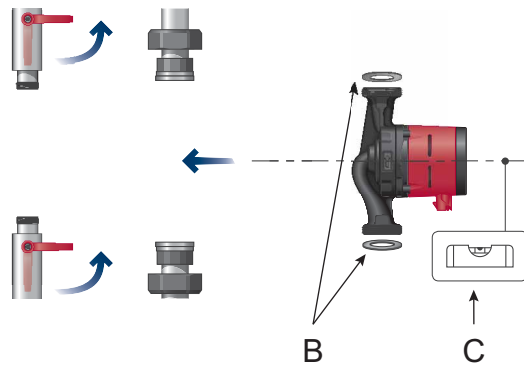
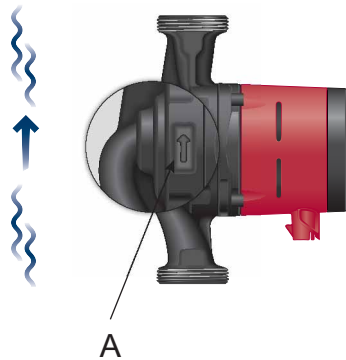


Fig. 5 Mounting the Grundfos ALPHA2

Arrows on the pump housing indicate the liquid flow direction through the pump. See fig. 5, pos. A.

See section [12.2 Installation dimensions, Grundfos ALPHA2 XX-40, XX-50, XX-60, XX-80](#) or [12.3 Installation dimensions, Grundfos ALPHA2 25-40 A, 25-60 A](#).

1. Fit the two gaskets supplied when you mount the pump in the pipe. See fig. 5, pos. B.
2. Install the pump with horizontal motor shaft. See fig. 5, pos. C. See also section [4.2 Control box positions](#).
3. Tighten the fittings.

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4.2 Control box positions

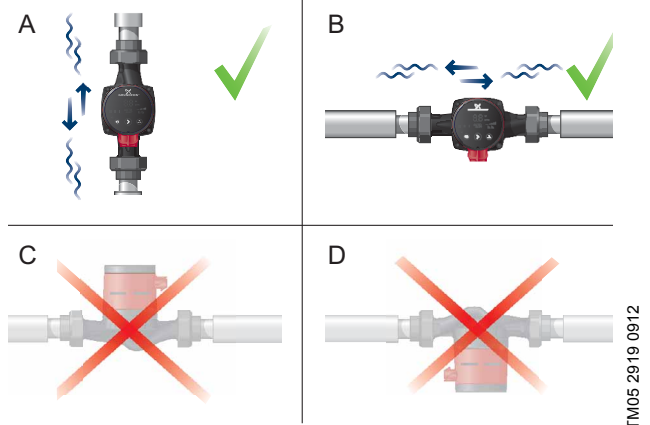


Fig. 6 Control box positions

Always install the pump with horizontal motor shaft.

- Pump installed correctly in a vertical pipe. See fig. 6, pos. A.
- Pump installed correctly in a horizontal pipe. See fig. 6, pos. B.
- Do not install the pump with vertical motor shaft. See fig. 6, pos. C and D.

4.3 Positioning in heating and domestic hot-water systems

You can position the control box in position 3, 6 and 9 o'clock. See fig. 8.

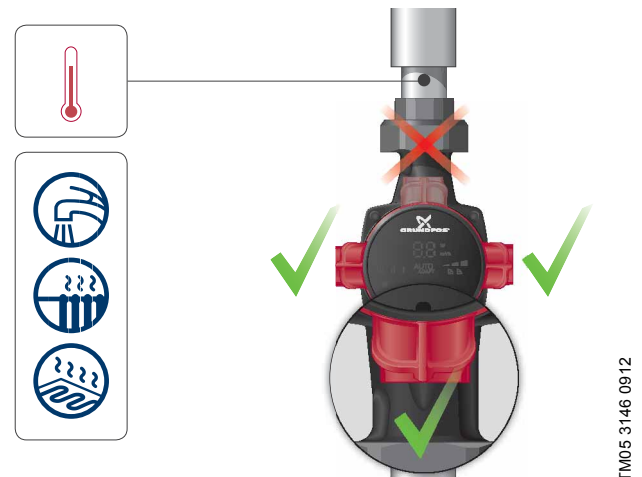


Fig. 7 Control box positions, heating and domestic hot-water systems

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4.4 Positioning in air-conditioning and cold-water systems

Position the control box with the plug pointing downwards. See fig. 8.

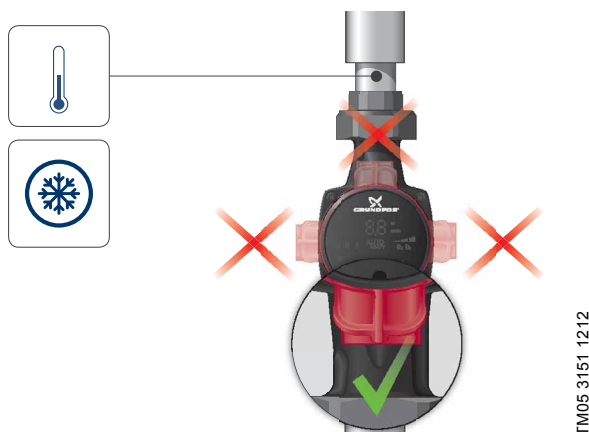


Fig. 8 Control box positions, air-conditioning and cold-water systems

4.5 Changing the control box position

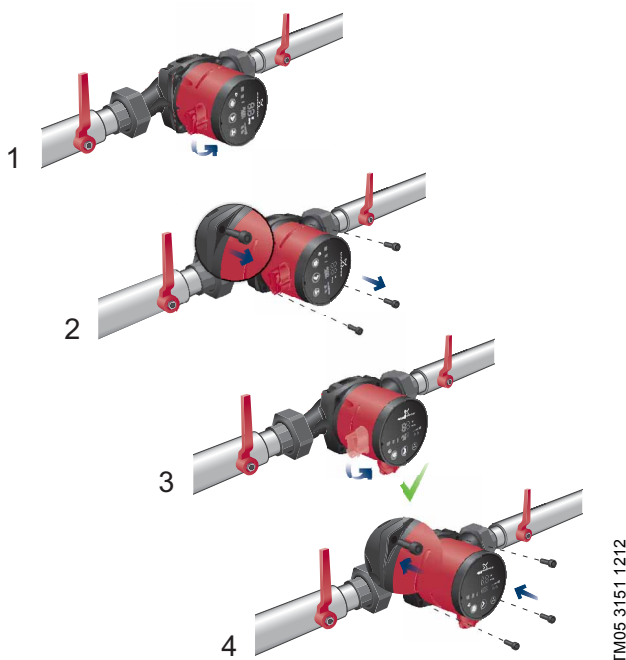


Fig. 9 Changing the control box position

The control box can be turned in steps of 90 °.

Warning

Drain the system or close the isolating valves on either side of the pump before you remove the screws. The pumped liquid may be scalding hot and under high pressure.



Caution

When the position of the control box has been changed, fill the system with the liquid to be pumped or open the isolating valves.

Procedure:

1. Slacken and remove the four hexagon socket head screws while holding the pump head with a tee key (M4).
2. Turn the pump head to the desired position.
3. Insert and cross-tighten the screws.

4.6 Insulation of pump housing



Fig. 10 Insulation of pump housing

Note

Limit the heat loss from the pump housing and pipework.

You can reduce the heat loss from the pump and pipework by insulating the pump housing and the pipe with the insulating shells supplied with the pump. See fig. 10.

Caution

Do not insulate the control box or cover the control panel.

4.7 Air-conditioning and cold-water systems

Use the insulating shells for pumps in air-conditioning and cold-water systems as well.

Polystyrene insulating shells can be ordered from Grundfos. See section 14. [Accessories](#).

5. Electrical installation



Fig. 11 Electrical connection

Warning

The pump must be connected to earth ⚡.



The pump must be connected to an external mains switch with a minimum contact gap of 3 mm in all poles.

The electrical connections and protection must be carried out in accordance with local regulations.


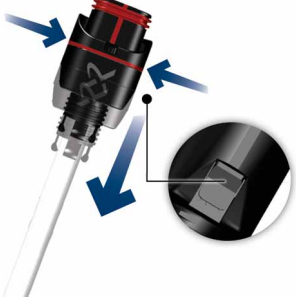
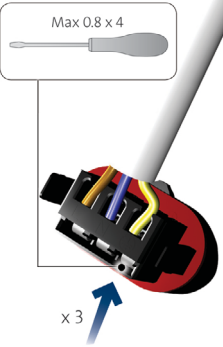
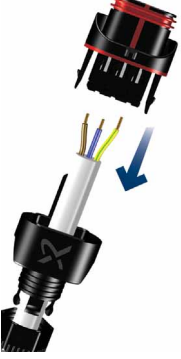
- The motor requires no external motor protection.
- Check that the supply voltage and frequency correspond to the values stated on the nameplate. See section [3.1 Nameplate](#).
- Connect the pump to the power supply with the plug supplied with the pump. See steps 1 to 7.

5.1 Assembling the plug

Step	Action	Illustration
1	Fit the cable gland and plug cover to the cable. Strip the cable conductors as illustrated.	
2	Connect the cable conductors to the power supply plug.	
3	Bend the cable with the cable conductors pointing upwards.	

4	Pull out the conductor guide plate and throw it away.	
5	Click the plug cover onto the power supply plug.	
6	Screw the cable gland onto the power supply plug.	
7	Insert the power supply plug into the male plug in the pump control box.	

5.2 Disassembling the plug

Step	Action	Illustration
1	Loosen the cable gland and remove it from the plug.	
2	Pull off the plug cover while pressing on both sides.	
3	Add the conductor guide plate to loosen all three cable conductors at the same time. If the guide plate is missing, then loosen the cable conductors one by one by pressing a screwdriver gently into the terminal clip.	
4	The plug has now been removed from the power supply plug.	

5.3 First startup

- The light in the control panel shows that the power supply has been switched on. See fig. 12.
- Factory setting: AUTO_{ADAPT}.

1 x 230 V ± 10 % 50/60 Hz Ⓢ



Fig. 12 Switching on the pump



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6. Control panel

6.1 Elements on the control panel



Fig. 13 Control panel

The control panel on the pump comprises the following:

Pos.	Description
1	Display showing the actual pump power consumption in watt or the actual flow in m ³ /h.
2	Nine light fields indicating the pump setting. See section 6.3 Light fields indicating the pump setting .
3	Light field indicating the status of automatic night setback.
4	Button for enabling or disabling of automatic night setback/summer mode.
5	Button for selection of pump setting.
6	Button for selection of parameter to be shown in the display, i.e. actual power consumption in watt or actual flow in m ³ /h.

6.2 Display

The display (pos. 1) is on when the power supply has been switched on.

The display shows the actual pump power consumption in watt (integer) or the actual flow in m³/h (in steps of 0.1 m³/h) during operation.

Faults preventing the pump from operating properly (for example blocked rotor) are indicated in the display by fault codes. See section 11. [Fault finding](#).

Note

If a fault is indicated, correct the fault and reset the pump by switching the power supply off and on.

If the pump impeller is rotated, for example when filling the pump with water, sufficient energy can be generated to light up the display even if the power supply has been switched off.

Note

6.3 Light fields indicating the pump setting

The pump has ten optional performance settings which can be selected with the button. See fig. 13, pos. 5.

The pump setting is indicated by nine light fields in the display. See fig. 14.



Fig. 14 Nine light fields


Button presses	Active light fields	Description
0	AUTO _{ADAPT} (factory setting)	AUTO _{ADAPT}
1		Lowest proportional-pressure curve, referred to as PP1
2		Intermediate proportional-pressure curve, referred to as PP2
3		Highest proportional-pressure curve, referred to as PP3
4		Lowest constant-pressure curve, referred to as CP1
5		Intermediate constant-pressure curve, referred to as CP2
6		Highest constant-pressure curve, referred to as CP3
7		Constant curve/constant speed III
8		Constant curve/constant speed II
9		Constant curve/constant speed I
10	AUTO _{ADAPT}	AUTO _{ADAPT}

See section 10. [Pump settings and pump performance](#) for information about the function of the settings.

TM05 3060 0912

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6.4 Light field indicating the status of automatic night setback

Light in  13 shows that automatic night setback is active. See fig. 13, pos. 3. See also section [6.5 Button for enabling or disabling of automatic night setback](#).

6.5 Button for enabling or disabling of automatic night setback

The button enables/disables automatic night setback. See fig. 13, pos. 4.

Automatic night setback is only relevant for heating systems prepared for this function. See section [8. Automatic night setback/summer mode](#).

The light field  is on  when automatic night setback is active. See fig. 13, pos. 3.

Factory setting: automatic night setback = not active.

Note

If the pump has been set to speed I, II or III, it is not possible to select automatic night setback.

6.6 Button for selection of pump setting

Every time the button is pressed, the pump setting is changed. See fig. 13, pos. 5.

A cycle is ten button presses. See [6.3 Light fields indicating the pump setting](#).

7. Setting the pump



7.1 Pump setting for two-pipe heating systems

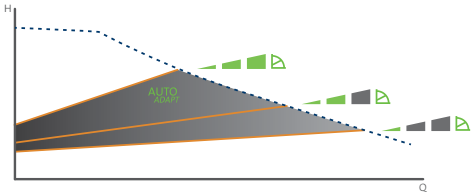


Fig. 15 Selection of pump setting for system type

Factory setting: $AUTO_{ADAPT}$.

Recommended and alternative pump settings according to fig. 15:

Heating system	Pump setting	
	Recommended	Alternative
Two-pipe system	$AUTO_{ADAPT}^*$	Proportional-pressure curve (PP1, PP2 or PP3)*

* See section 13.1 Guide to performance curves.

$AUTO_{ADAPT}$

The $AUTO_{ADAPT}$ function adjusts the pump performance to the actual heat demand in the system. As the performance is adjusted gradually, we recommend that you leave the pump in the $AUTO_{ADAPT}$ mode at least one week before changing the pump setting.

If the power supply fails or is disconnected, the pump stores the $AUTO_{ADAPT}$ setting in an internal memory and will resume the automatic adjustment when the power supply has been restored.

Proportional-pressure curve (PP1, PP2 or PP3)

Proportional-pressure control adjusts the pump performance to the actual heat demand in the system, but the pump performance follows the selected performance curve, PP1, PP2 or PP3. See fig. 16 where PP2 has been selected. See section 13.1 Guide to performance curves for further information.

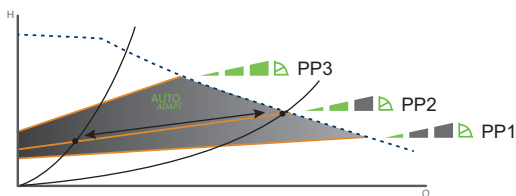


Fig. 16 Three proportional-pressure curves/settings

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

7.2 Pump setting for one-pipe heating systems

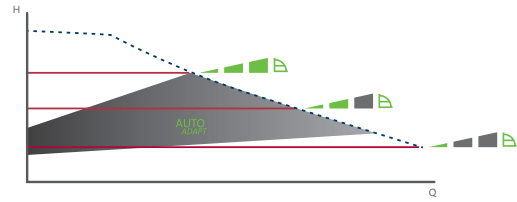
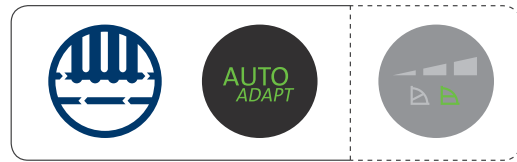


Fig. 17 Selection of pump setting for system type

Factory setting: $AUTO_{ADAPT}$.

Recommended and alternative pump settings according to fig. 17:

Heating system	Pump setting	
	Recommended	Alternative
One-pipe system	$AUTO_{ADAPT}^*$	Constant-pressure curve (CP1, CP2 or CP3)*

* See section 13.1 Guide to performance curves.

$AUTO_{ADAPT}$

The $AUTO_{ADAPT}$ function adjusts the pump performance to the actual heat demand in the system. As the performance is adjusted gradually, we recommend that you leave the pump in the $AUTO_{ADAPT}$ mode at least one week before changing the pump setting.

If the power supply fails or is disconnected, the pump stores the $AUTO_{ADAPT}$ setting in an internal memory and will resume the automatic adjustment when the power supply has been restored.

Constant-pressure curve (CP1, CP2 or CP3)

Constant-pressure control adjusts the pump performance to the actual heat demand in the system, but the pump performance follows the selected performance curve, CP1, CP2 or CP3. See fig. 18 where CP1 has been selected. See section 13.1 Guide to performance curves for further information.

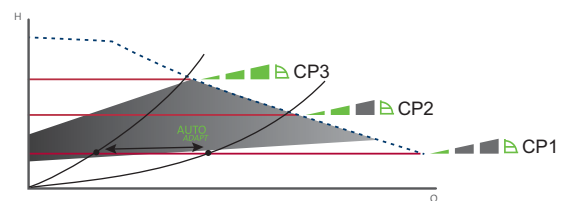


Fig. 18 Three constant-pressure curves/settings

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

7.3 Pump setting for underfloor heating systems

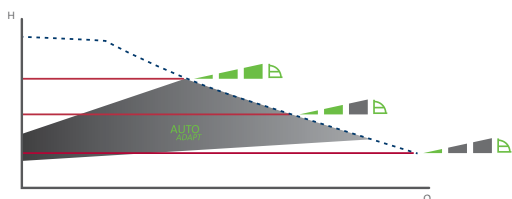
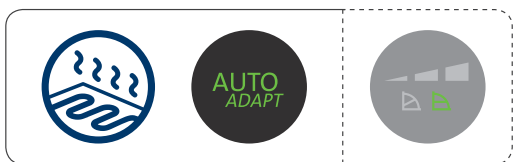


Fig. 19 Selection of pump setting for system type

Factory setting: AUTO_{ADAPT}.

Recommended and alternative pump settings according to fig. 19:

System type	Pump setting	
	Recommended	Alternative
Underfloor heating	AUTO _{ADAPT} *	Constant-pressure curve (CP1, CP2 or CP3)*

* See section 13.1 Guide to performance curves.

AUTO_{ADAPT}

The AUTO_{ADAPT} function adjusts the pump performance to the actual heat demand in the system. As the performance is adjusted gradually, we recommend that you leave the pump in the AUTO_{ADAPT} mode at least one week before changing the pump setting.

If the power supply fails or is disconnected, the pump stores the AUTO_{ADAPT} setting in an internal memory and will resume the automatic adjustment when the power supply has been restored.

Constant-pressure curve (CP1, CP2 or CP3)

Constant-pressure control adjusts the flow to the actual heat demand in the system keeping a constant pressure at the same time. The pump performance follows the selected performance curve, CP1, CP2 or CP3. See fig. 20 where CP1 has been selected. See section 13.1 Guide to performance curves for further information.

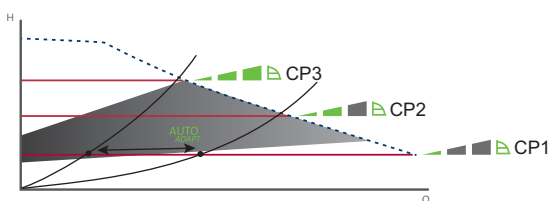


Fig. 20 Three constant-pressure curves/settings

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

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7.4 Pump setting for domestic hot-water systems

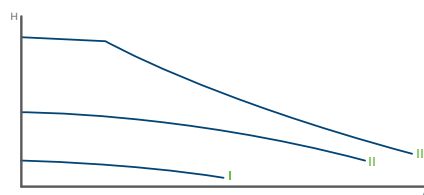
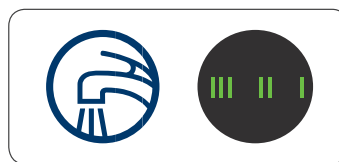


Fig. 21 Selection of pump setting for system type

Factory setting: AUTO_{ADAPT}.

Recommended and alternative pump settings according to fig. 21:

System type	Pump setting	
	Recommended	Alternative
Domestic hot water	Constant curve/constant speed (I, II or III)	-

* See section 13.1 Guide to performance curves.

Constant curve/constant speed (I, II or III)

At constant-curve/constant-speed operation, the pump runs at a constant speed, independent of the actual flow demand in the system. The pump performance follows the selected performance curve, I, II or III. See fig. 22 where II has been selected. See section 13.1 Guide to performance curves for further information.

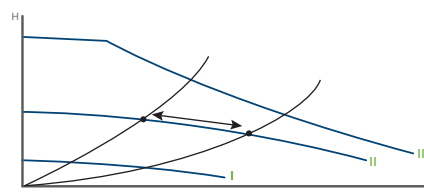


Fig. 22 Three constant curve/constant speed settings

The selection of the right constant-curve/constant-speed setting depends on the characteristics of the heating system in question and the number of taps likely to be opened at the same time.

7.5 Changing from recommended to alternative pump setting

Heating systems are relatively "slow" systems that cannot be set to the optimum operation within minutes or hours.

If the recommended pump setting does not give the desired distribution of heat in the rooms of the house, change the pump setting to the shown alternative.

Explanation to pump settings in relation to performance curves, see section 10. Pump settings and pump performance.

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7.6 Pump control

During operation, the pump head will be controlled according to the principle "proportional-pressure control" (PP) or "constant-pressure control" (CP).

In these control modes, the pump performance and consequently the power consumption are adjusted according to the heat demand in the system.

Proportional-pressure control

Use the button to select the proportional-pressure control mode and then select proportional-pressure level (PP1, PP2 or PP3). See section [6.1 Elements on the control panel](#), fig. 13, pos. 5.

In this control mode, the differential pressure across the pump is controlled according to the flow.

The proportional-pressure curves are indicated by PP1, PP2 and PP3 in the QH diagrams. See section [10. Pump settings and pump performance](#).

Constant-pressure control

Use the button to select the constant-pressure control mode and then select constant-pressure level (CP1, CP2 or CP3).

See section [6.1 Elements on the control panel](#), fig. 13, pos. 5.

In this control mode, a constant differential pressure across the pump is maintained, irrespective of the flow.

The constant-pressure curves are indicated by CP1, CP2 and CP3 and are the horizontal performance curves in the QH diagrams. See section [10. Pump settings and pump performance](#).

8. Automatic night setback/summer mode

8.1 Use of automatic night setback



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Fig. 23 Automatic night setback activated with the green light field on

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

Changeover to normal duty takes place without a time lag when the flow-pipe temperature has increased by approx. 10 °C.

Warning



Do not use automatic night setback for pumps built into gas boilers with a small water content.

Caution

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

Note

If speed I, II or III is selected, automatic night setback is disabled.

It is not necessary to re-enable automatic 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 automatic night setback, the pump will start in normal operation.

Note

See section 10. Pump settings and pump performance.


The pump changes back to the curve for automatic night setback when the condition for automatic night setback is fulfilled again. See section 8.2 Function of automatic night setback.

Note

If the heating system is "undersupplied" (insufficient heat), check whether automatic night setback has been enabled. If yes, disable the function.

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

- The pump must be installed in the flow pipe.
See fig. 23, pos. A.
- The system (boiler) must incorporate automatic control of the liquid temperature.

Enable automatic night setback by pressing .

See section 6.5 Button for enabling or disabling of automatic night setback.

Light in  shows that automatic night setback is active.

8.2 Function of automatic night setback

Once automatic night setback has been enabled, the pump automatically changes between normal duty and night setback.

See section 10. Pump settings and pump performance.

Changeover between normal duty and night setback depends on the flow-pipe temperature.

8.3 Setting summer mode

Summer mode is selectable from model C.

In summer mode, the pump is stopped to save energy and only the electronics are running. To avoid lime and blocking of the pump, the pump is started frequently for a short period. This is an alternative to shut down the pump where there is a risk of lime deposit.

Note

If the pump is shut down by switching of the power supply, there is a risk for lime deposit in case of a long standstill period.

The pump will show E1 at startup.

8.3.1 Activating summer mode


Summer mode is activated by pressing the automatic night setback button 3 to 10 seconds. See fig. 23. The green light field flashes quickly and after a short while the display turns off and the green light field flashes slowly .



Fig. 24 Automatic night setback button

In summer mode, the pump is automatically started frequently at low speed to avoid blocking the rotor. The display is turned off.

If any alarms occur during summer mode, no alarms will be shown. When summer mode is deactivated again, only the actual alarms will be displayed.

8.3.2 Deactivating summer mode

Summer mode is deactivated by pressing any of the buttons and then the pump returns to the previous mode and setting.

If the auto night setback mode is enabled before setting the summer mode, the pump will return to automatic night setback mode after summer mode.

8.4 Purpose of bypass valve

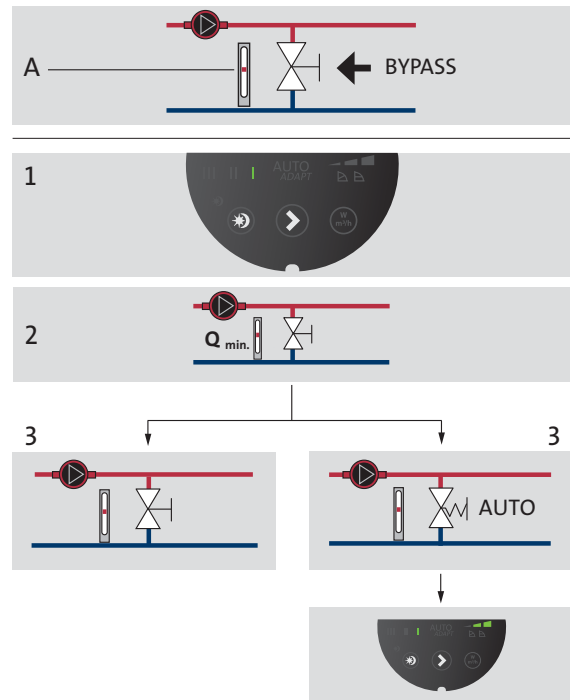


Fig. 25 Systems with bypass valve

Bypass valve

The purpose of the bypass valve is to ensure that the heat from the boiler can be distributed when all valves in the underfloor-heating circuits and/or thermostatic radiator valves are closed.

System elements:

- bypass valve
- flowmeter, pos. A.

The minimum flow must be available when all valves are closed.

The pump setting depends on the type of bypass valve used, i.e. manually operated or thermostatically controlled.

8.5 Manually operated bypass valve

1. Adjust the bypass valve with the pump in setting I (speed I). The minimum flow ($Q_{min.}$) for the system must always be observed. Consult the manufacturer's instructions.
2. When the bypass valve has been adjusted, set the pump according to 7. [Setting the pump](#).

8.6 Automatic bypass valve (thermostatically controlled)

1. Adjust the bypass valve with the pump in setting I (speed I). The minimum flow ($Q_{min.}$) for the system must always be observed. Consult the manufacturer's instructions.
2. When the bypass valve has been adjusted, set the pump to the lowest or highest constant-pressure curve. Explanation to pump settings in relation to performance curves, see section 10. [Pump settings and pump performance](#).

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9. Startup

9.1 Before startup

Do not start the pump until the system has been filled with liquid and vented. The required minimum inlet pressure must be available at the pump inlet.

See sections 2. *General information* and 12. *Technical data and installation dimensions*.

9.2 Venting the pump



Fig. 26 Venting the pump

The pump is self-venting. It need not be vented before startup. Air in the pump may cause noise. This noise ceases after a few minutes running.

Quick venting of the pump can be obtained by setting the pump to speed III for a short period, depending on system size and design.

When the pump has been vented, i.e. when the noise has ceased, set the pump according to the recommendations. See section 7. *Setting the pump*.

Caution *The pump must not run dry.*

The system cannot be vented through the pump. See section 9.3 *Venting of heating systems*.

9.3 Venting of heating systems

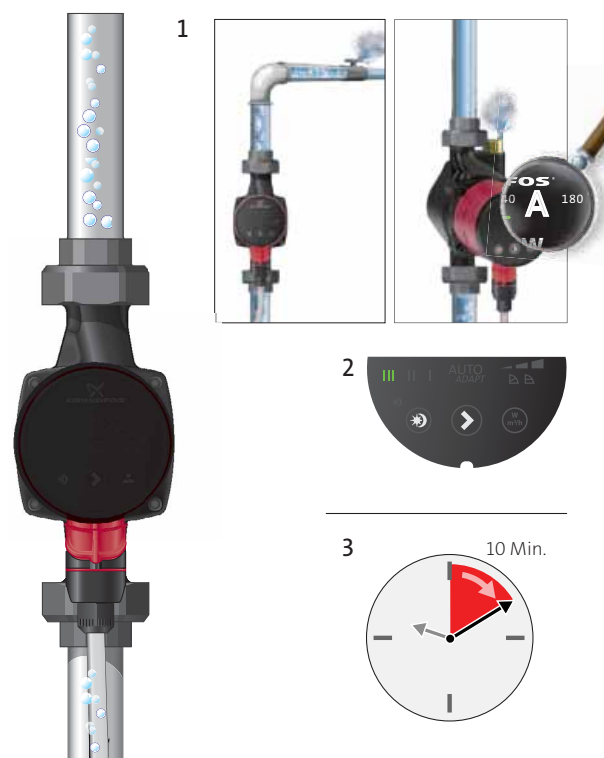


Fig. 27 Venting of heating systems

The heating system can be vented as follows:

- via an air escape valve installed above the pump (pos. 1)
- via a pump housing with air separator (pos. 2).

In heating systems that often contain much air, we recommend the installation of pumps with pump housing with air separator, i.e. ALPHA2 XX-XX A.

When the heating system has been filled with liquid, follow this procedure:

1. Open the air escape valve.
2. Set the pump to speed III.
3. Let the pump run for a short period, depending on system size and design.
4. When the system has been vented, i.e. when the possible noise has ceased, set the pump according to the recommendations. See section 7. *Setting the pump*.

Repeat the procedure, if necessary.

Caution *The pump must not run dry.*

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10. Pump settings and pump performance

10.1 Relation between pump setting and pump performance

Figure 28 shows the relation between pump setting and pump performance by means of curves. See also section 13. [Performance curves](#).

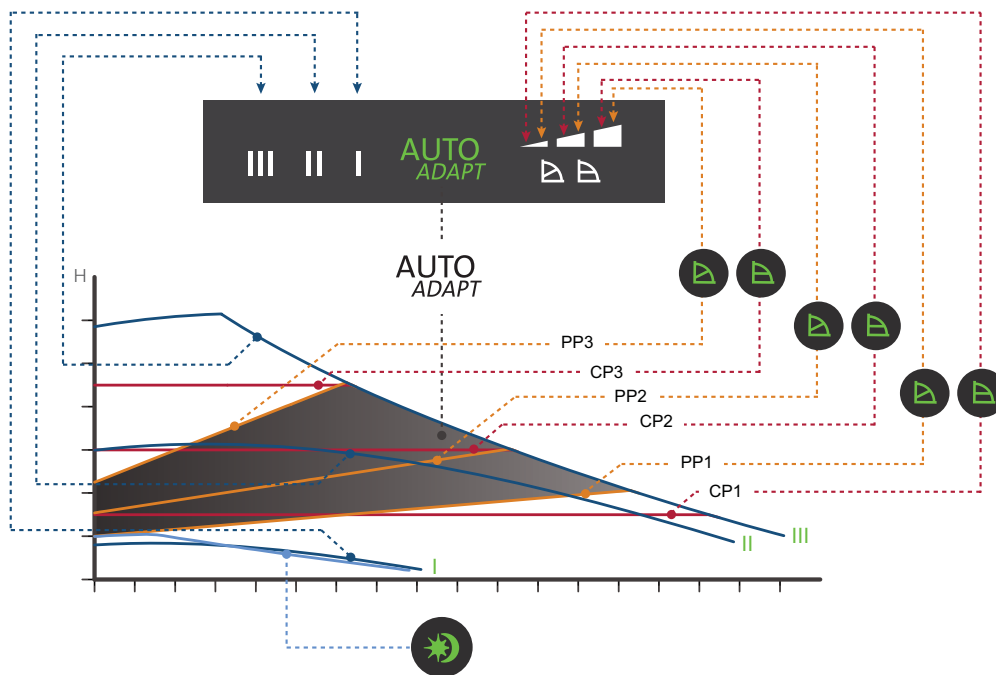



Fig. 28 Pump setting in relation to pump performance

Setting	Pump curve	Function
AUTO _{ADAPT} (factory setting)	Highest to lowest proportional-pressure curve	The AUTO _{ADAPT} function enables the pump to control the pump performance automatically within a defined performance range. See fig. 28: <ul style="list-style-type: none"> Adjusting the pump performance to the size of the system. Adjusting the pump performance to the variations in load over time. In AUTO _{ADAPT} , the pump is set to proportional-pressure control.
PP1	Lowest proportional-pressure curve	The duty point of the pump will move up or down on the lowest proportional-pressure curve, depending on the heat demand. See fig. 28. The head (pressure) is reduced at falling heat demand and increased at rising heat demand.
PP2	Intermediate proportional-pressure curve	The duty point of the pump will move up or down on the intermediate proportional-pressure curve, depending on the heat demand. See fig. 28. The head (pressure) is reduced at falling heat demand and increased at rising heat demand.
PP3	Highest proportional-pressure curve	The duty point of the pump will move up or down on the highest proportional-pressure curve, depending on the heat demand. See fig. 28. The head (pressure) is reduced at falling heat demand and increased at rising heat demand.
CP1	Lowest constant-pressure curve	The duty point of the pump will move out or in on the lowest constant-pressure curve, depending on the heat demand in the system. See fig. 28. The head (pressure) is kept constant, irrespective of the heat demand.
CP2	Intermediate constant-pressure curve	The duty point of the pump will move out or in on the intermediate constant-pressure curve, depending on the heat demand in the system. See fig. 28. The head (pressure) is kept constant, irrespective of the heat demand.
CP3	Highest constant-pressure curve	The duty point of the pump will move out or in on the highest constant-pressure curve, depending on the heat demand in the system. See fig. 28. The head (pressure) is kept constant, irrespective of the heat demand.
III	Speed III	The pump runs on a constant curve which means that it runs at a constant speed. In speed III, the pump is set to run on the maximum curve under all operating conditions. See fig. 28. Quick venting of the pump can be obtained by setting the pump to speed III for a short period. See section 9.2 Venting the pump .
II	Speed II	The pump runs on a constant curve which means that it runs at a constant speed. In speed II, the pump is set to run on the intermediate curve under all operating conditions. See fig. 28.
I	Speed I	The pump runs on a constant curve which means that it runs at a constant speed. In speed I, the pump is set to run on the minimum curve under all operating conditions. See fig. 28.
	Automatic night setback/summer mode	The pump changes to the curve for automatic night setback, i.e. absolute minimum performance and power consumption, provided that certain conditions are met. In summer mode, the pump is stopped to save energy and only the electronics are running. To avoid liming and blocking of the pump, the pump is started frequently in a short period. See section 8. Automatic night setback/summer mode .

11. Fault finding

**Warning**

Before starting fault finding, switch off the power supply. Make sure that the power supply cannot be accidentally switched on.

Fault	Control panel	Cause	Remedy
1. The pump does not run.	Light off.	a) One fuse in the installation is blown.	Replace the fuse.
		b) The current-operated or voltage-operated circuit breaker has tripped.	Cut in the circuit breaker.
		c) The pump is defective.	Replace the pump.
	Changes between "- -" and "E 1".	a) The rotor is blocked.	Remove the impurities.
	Changes between "- -" and "E 2".	a) Insufficient supply voltage.	Check that the supply voltage falls within the specified range.
Changes between "- -" and "E 3".	a) Electrical fault.	Replace the pump.	
2. Noise in the system.	Shows a number.	a) Air in the system.	Vent the system. See section 9.3 Venting of heating systems .
		b) The flow is too high.	Reduce the suction head. See section 10. Pump settings and pump performance .
3. Noise in the pump.	Shows a number.	a) Air in the pump.	Let the pump run. The pump vents itself over time. See section 9.2 Venting the pump .
		b) The inlet pressure is too low.	Increase the inlet pressure, or check the air volume in the expansion tank, if installed.
4. Insufficient heat.	Shows a number.	a) The pump performance is too low.	Increase the suction head. See section 10. Pump settings and pump performance .

12. Technical data and installation dimensions

12.1 Technical data

Supply voltage	1 x 230 V \pm 10 %, 50/60 Hz, PE.	
Motor protection	The pump requires no external motor protection.	
Enclosure class	IPX4D.	
Insulation class	F.	
Relative air humidity	Maximum 95 % RH.	
System pressure	Maximum 1.0 MPa, 10 bar, 102 m head.	
Inlet pressure	Liquid temperature	Minimum inlet pressure
	≤ 75 °C	0.005 MPa, 0.05 bar, 0.5 m head
	90 °C	0.028 MPa, 0.28 bar, 2.8 m head
	110 °C	0.108 MPa, 1.08 bar, 10.8 m head
EMC (electromagnetic compatibility)	EMC Directive (2004/108/EC). Standards used: EN 55014-1:2006 and EN 55014-2:1997.	
Sound pressure level	The sound pressure level of the pump is lower than 43 dB(A).	
Ambient temperature	0-40 °C.	
Temperature class	TF110 to CEN 335-2-51.	
Surface temperature	The maximum surface temperature will not exceed 125 °C.	
Liquid temperature	2-110 °C.	
Power consumption in summer mode	< 0.8 watt	
Specific EEI values	ALPHA2 XX-40: EEI \leq 0.15.	
	ALPHA2 XX-50: EEI \leq 0.16.	
	ALPHA2 XX-60: EEI \leq 0.17.	
	ALPHA2 XX-80: EEI \leq 0.18	
	ALPHA2 XX-40 A: EEI \leq 0.18.	
	ALPHA2 XX-60 A: EEI \leq 0.20.	

To avoid condensation in the control box and stator, the liquid temperature must always be higher than the ambient temperature.

Ambient temperature [°C]	Liquid temperature	
	Min. [°C]	Max. [°C]
0	2	110
10	10	110
20	20	110
30	30	110
35	35	90
40	40	70

Caution *If the temperature of the pumped liquid is lower than the ambient temperature, make sure that the pump is installed with the pump head and plug in position 6 o'clock.*

In domestic hot-water systems, we recommend that you keep the liquid temperature below 65 °C to eliminate the risk of lime precipitation.

Caution *The temperature of the pumped liquid must always be above 50 °C due to the risk of legionella.*

Recommended boiler temperature: 60 °C.

12.2 Installation dimensions, Grundfos ALPHA2 XX-40, XX-50, XX-60, XX-80

Dimensional sketches and table of dimensions.

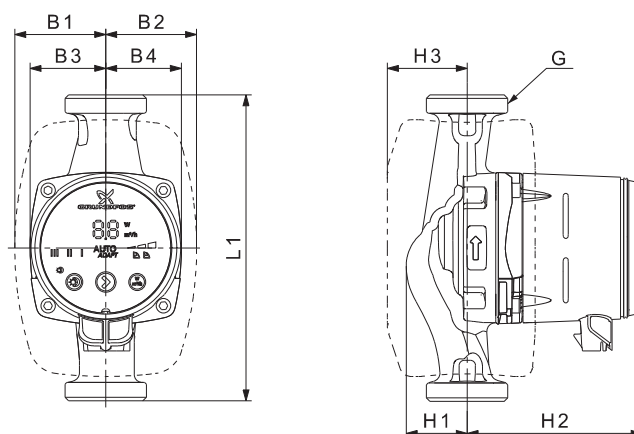


Fig. 29 ALPHA2 XX-40, XX-50, XX-60

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Pump type	Dimensions								
	L1	B1	B2	B3	B4	H1	H2	H3	G
ALPHA2 15-40 130	130	60.5	60.5	44.5	44.5	35.8	103.5	52	1
ALPHA2 15-50 130	130	60.5	60.5	44.5	44.5	35.8	103.5	52	1*
ALPHA2 15-60 130	130	60.5	60.5	44.5	44.5	35.8	103.5	52	1*
ALPHA2 15-80 130	130	60.5	60.5	44.5	44.5	35.8	103.5	52	1*
ALPHA2 25-40 130	130	60.5	60.5	44.5	44.5	35.8	103.5	52	1 1/2
ALPHA2 25-40 N 130	130	60.5	60.5	44.5	44.5	36.8	103.5	52	1 1/2
ALPHA2 25-50 130	130	60.5	60.5	44.5	44.5	35.8	103.5	52	1 1/2
ALPHA2 25-50 N 130	130	60.5	60.5	44.5	44.5	36.8	103.5	52	1 1/2
ALPHA2 25-60 130	130	60.5	60.5	44.5	44.5	35.8	103.5	52	1 1/2
ALPHA2 25-60 N 130	130	60.5	60.5	44.5	44.5	36.8	103.5	52	1 1/2
ALPHA2 25-80 130	130	60.5	60.5	44.5	44.5	36.8	103.5	52	1 1/2
ALPHA2 25-80 N 130	130	60.5	60.5	44.5	44.5	36.8	103.5	52	1 1/2
ALPHA2 25-40 180	180	60.5	60.5	44.5	44.5	35.9	103.5	52	1 1/2
ALPHA2 25-40 N 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	1 1/2
ALPHA2 25-50 180	180	60.5	60.5	44.5	44.5	35.9	103.5	52	1 1/2
ALPHA2 25-50 N 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	1 1/2
ALPHA2 25-60 180	180	60.5	60.5	44.5	44.5	35.9	103.5	52	1 1/2
ALPHA2 25-60 N 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	1 1/2
ALPHA2 25-80 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	1 1/2
ALPHA2 25-80 N 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	1 1/2
ALPHA2 32-40 180	180	60.5	60.5	44.5	44.5	35.9	103.5	52	2
ALPHA2 32-40 N 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	2
ALPHA2 32-50 180	180	60.5	60.5	44.5	44.5	35.9	103.5	52	2
ALPHA2 32-50 N 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	2
ALPHA2 32-60 180	180	60.5	60.5	44.5	44.5	35.9	103.5	52	2
ALPHA2 32-60 N 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	2
ALPHA2 32-80 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	2
ALPHA2 32-80 N 180	180	60.5	60.5	44.5	44.5	36.9	103.5	52	2

* For UK 1 1/2.

12.3 Installation dimensions, Grundfos ALPHA2 25-40 A, 25-60 A

Dimensional sketches and table of dimensions.

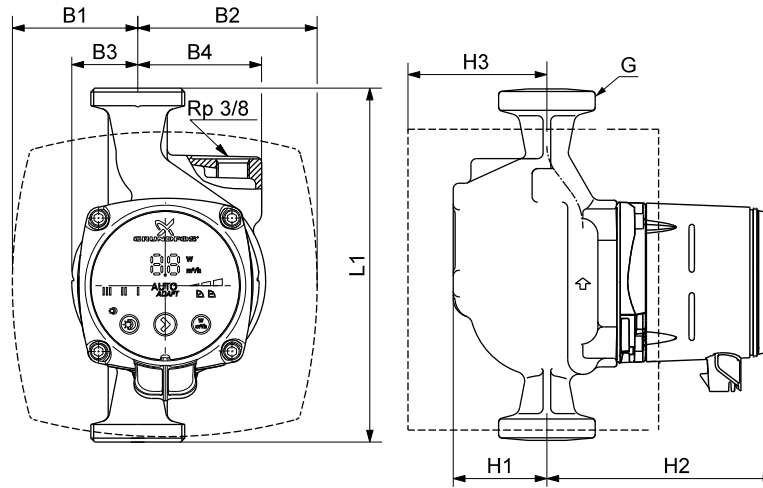


Fig. 30 ALPHA2 25-40 A, 25-60 A

Pump type	Dimensions								
	L1	B1	B2	B3	B4	H1	H2	H3	G
ALPHA2 25-40 A 180	180	63.5	98	32	63	50	124	81	1 1/2
ALPHA2 25-60 A 180	180	63.5	98	32	63	50	124	81	1 1/2

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13. Performance curves

13.1 Guide to performance curves

Each pump setting has its own performance curve (QH curve). However, $AUTO_{ADAPT}$ covers a performance range.

A power curve (P1 curve) belongs to each QH curve. The power curve shows the pump power consumption (P1) in watt at a given QH curve.

The P1 value corresponds to the value that can be read from the pump display. See fig. 31.

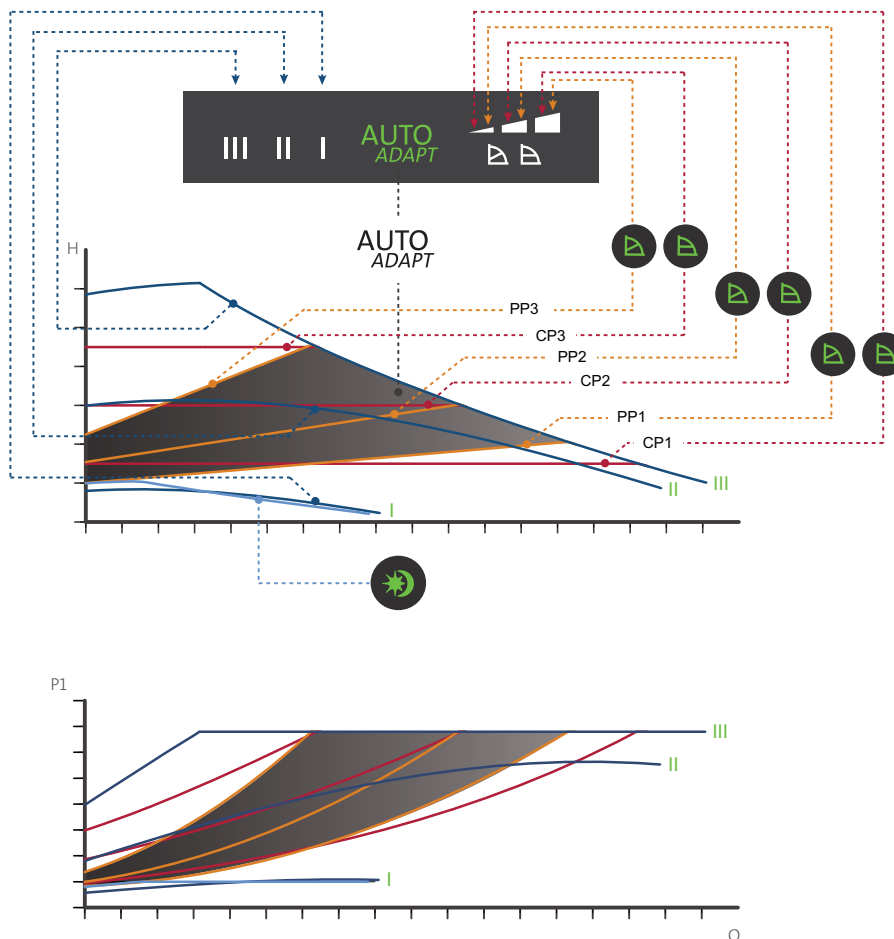



Fig. 31 Performance curves in relation to pump setting

Setting	Pump curve
$AUTO_{ADAPT}$ (factory setting)	Setpoint within the marked area
PP1	Lowest proportional-pressure curve
PP2	Intermediate proportional-pressure curve
PP3	Highest proportional-pressure curve
CP1	Lowest constant-pressure curve
CP2	Intermediate constant-pressure curve
CP3	Highest constant-pressure curve
III	Constant curve/constant speed III
II	Constant curve/constant speed II
I	Constant curve/constant speed I
	Curve for automatic night setback/summer mode

For further information about pump settings, see these sections:

[6.3 Light fields indicating the pump setting](#)

[7. Setting the pump](#)

[10. Pump settings and pump performance.](#)

13.2 Curve conditions

The guidelines below apply to the performance curves on the following pages:

- Test liquid: airless water.
- The curves apply to a density of $\rho = 983.2 \text{ kg/m}^3$ and a liquid temperature of $60 \text{ }^\circ\text{C}$.
- All curves show average values and should not be used as guarantee curves. If a specific minimum performance is required, individual measurements must be made.
- The curves for speeds I, II and III are marked.
- The curves apply to a kinematic viscosity of $\nu = 0.474 \text{ mm}^2/\text{s}$ (0.474 cSt).
- The conversion between head H [m] and pressure p [kPa] has been made for water with a density of $\rho = 1000 \text{ kg/m}^3$. For liquids with other densities, for example hot water, the discharge pressure is proportional to the density.
- Curves obtained according to EN 16297.

13.3 Performance curves, ALPHA2 XX-40 (N)

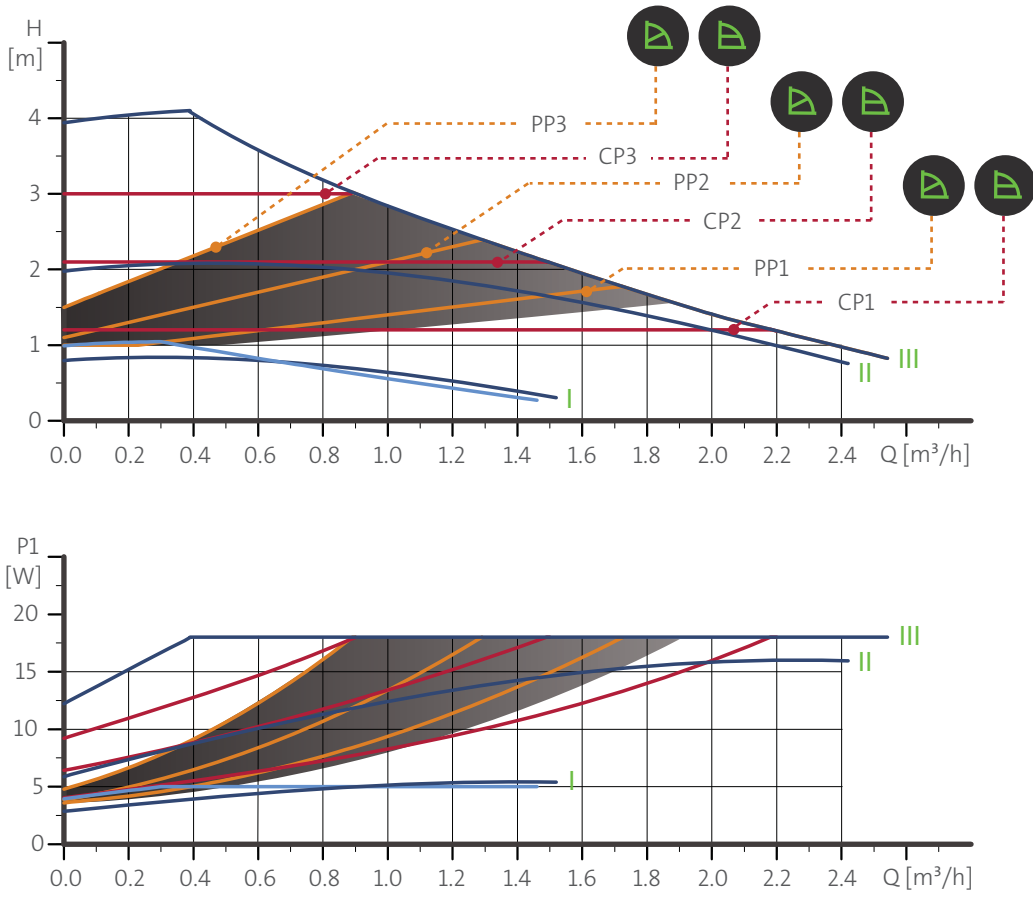


Fig. 32 ALPHA2 XX-40

Setting	P1 [W]	$I_{1/1}$ [A]
AUTO _{ADAPT}	4-18	0.04 - 0.18
Min.	3	0.04
Max.	18	0.18

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13.4 Performance curves, ALPHA2 XX-50 (N)

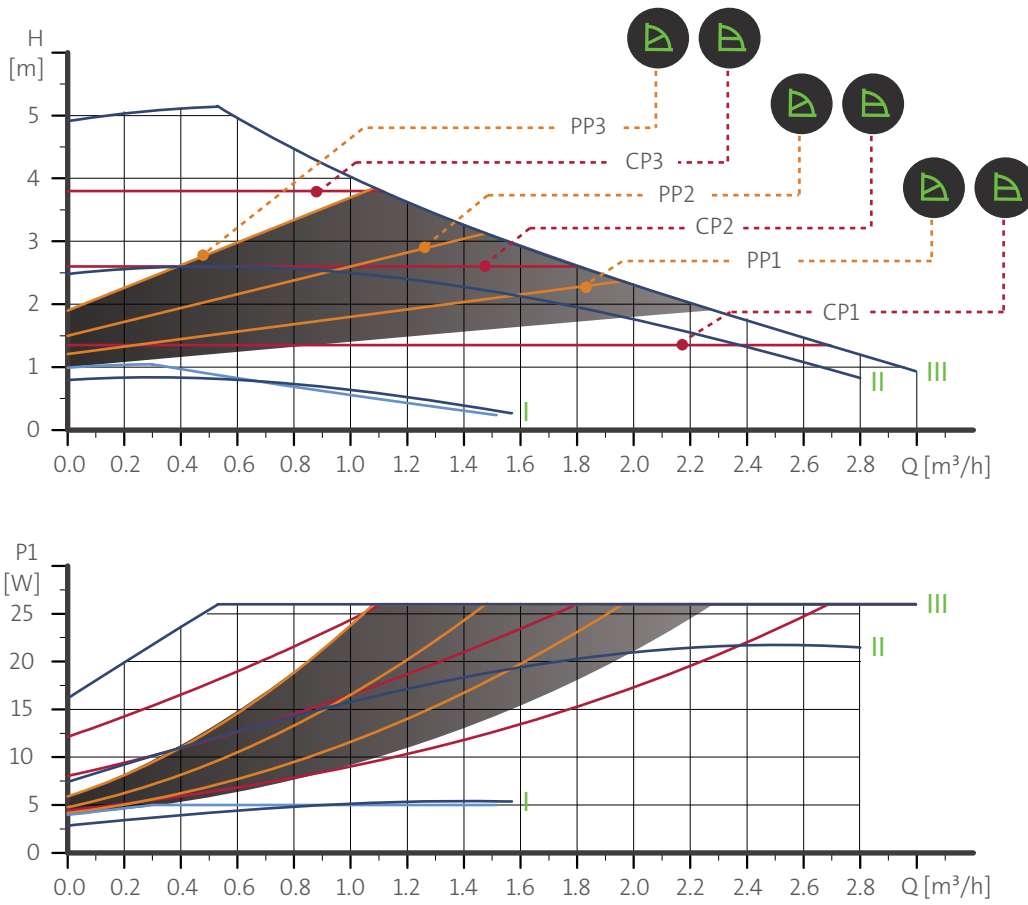


Fig. 33 ALPHA2 XX-50

Setting	P1 [W]	$I_{1/1}$ [A]
AUTO _{ADAPT}	4-26	0.04 - 0.24
Min.	3	0.04
Max.	26	0.24

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13.5 Performance curves, ALPHA2 XX-60 (N)

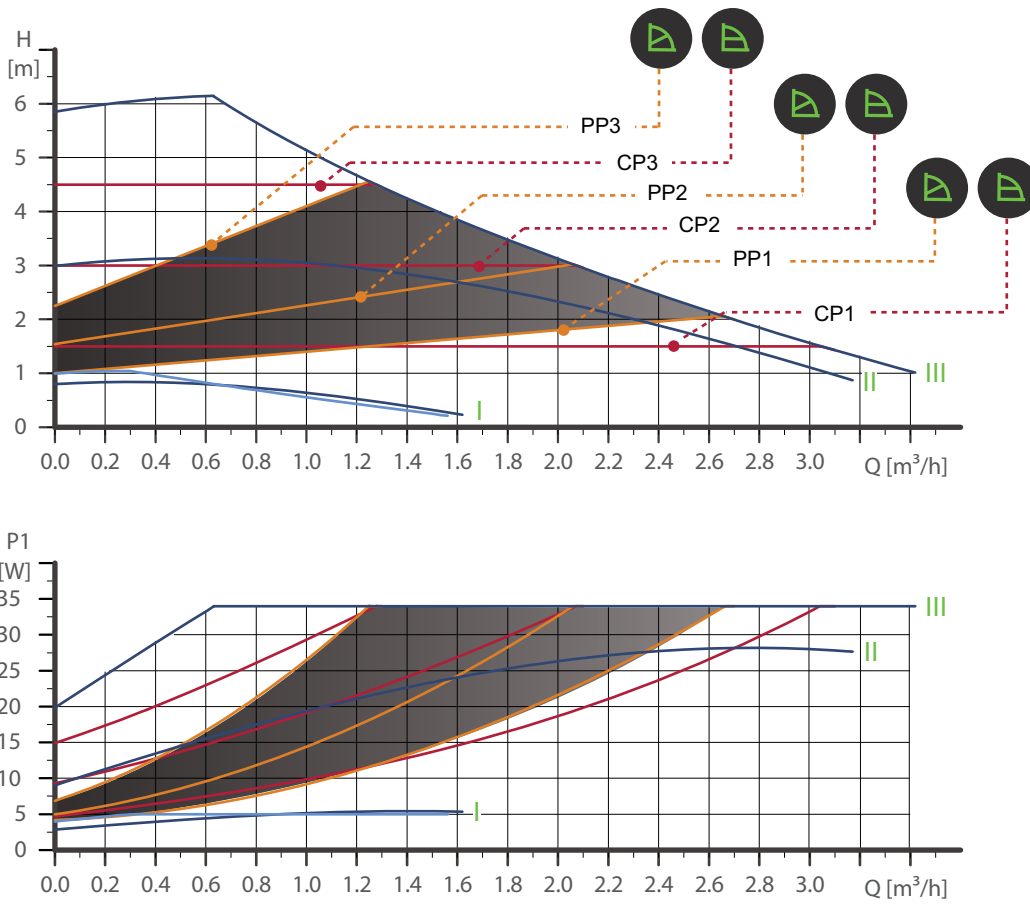


Fig. 34 ALPHA2 XX-60

Setting	P1 [W]	$I_{1/1}$ [A]
AUTO _{ADAPT}	4-34	0.04 - 0.32
Min.	3	0.04
Max.	34	0.32

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13.6 Performance curves, ALPHA2 25-40 A

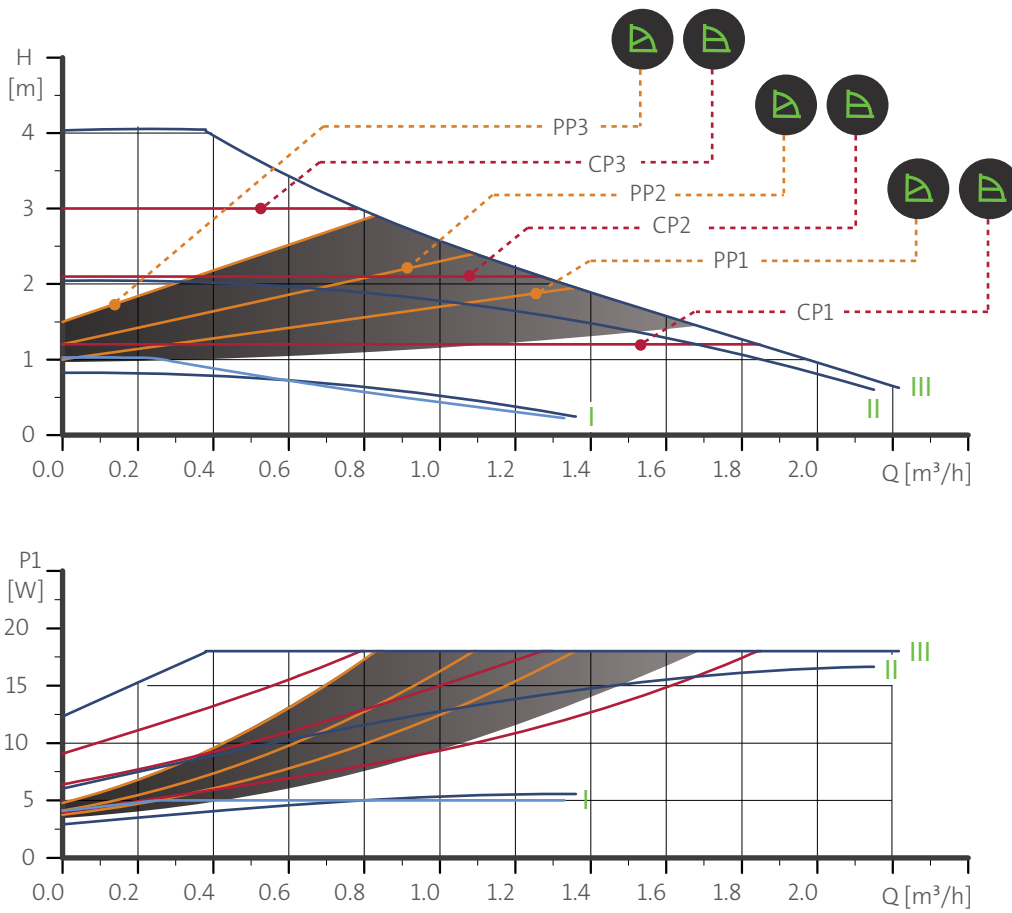


Fig. 35 ALPHA2 25-40 A

Setting	P1 [W]	$I_{1/1}$ [A]
AUTO _{ADAPT}	4-18	0.04 - 0.18
Min.	3	0.04
Max.	18	0.18

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13.7 Performance curves, ALPHA2 25-60 A

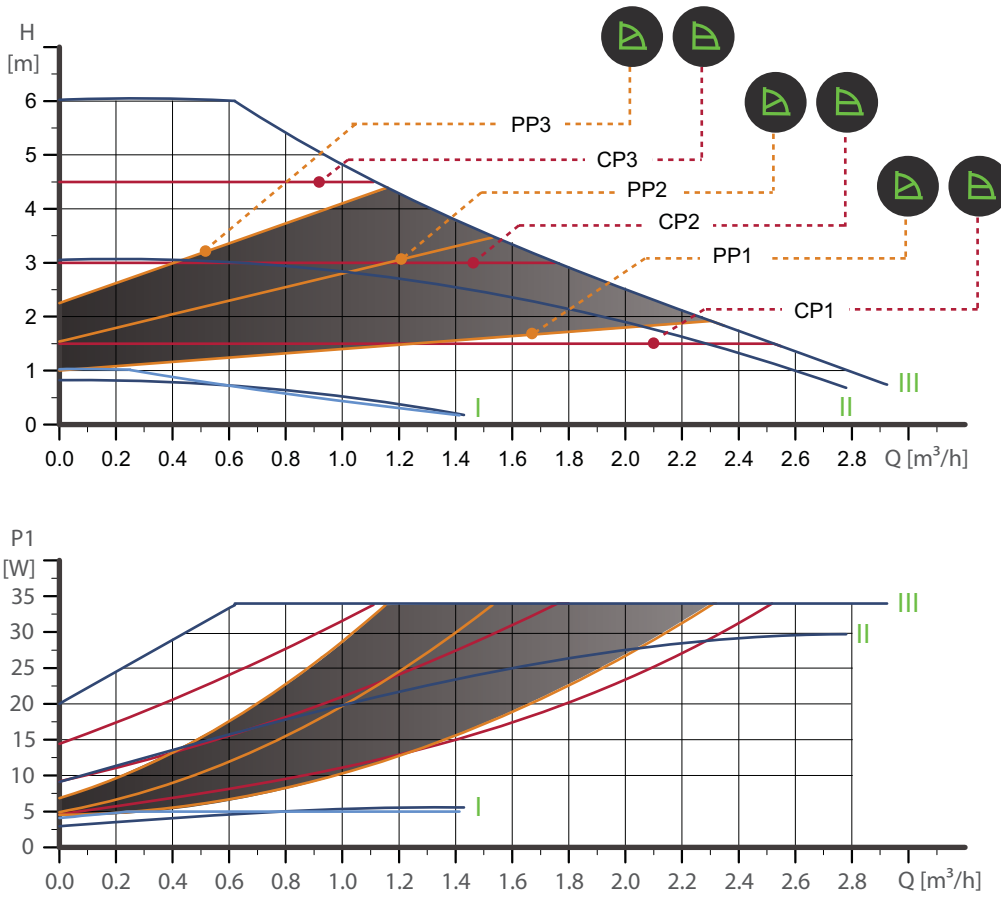


Fig. 36 ALPHA2 25-60 A

Setting	P1 [W]	$I_{1/1}$ [A]
AUTO _{ADAPT}	4-34	0.04 - 0.32
Min.	3	0.04
Max.	34	0.32

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13.8 Performance curves, ALPHA2 XX-80 (N)

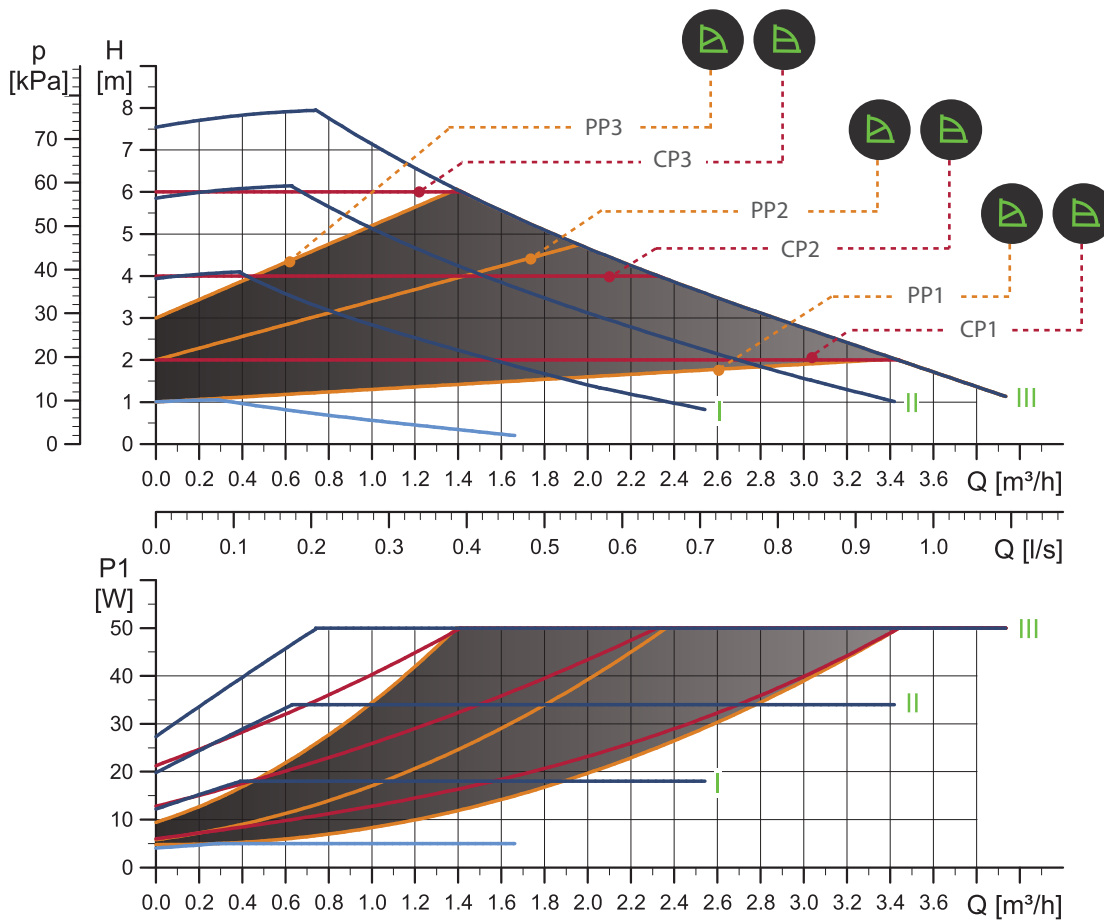


Fig. 37 ALPHA2 25-60 A

Setting	P1 [W]	I _{1/1} [A]
AUTO _{ADAPT}	4-50	0.04 - 0.44
Min.	3	0.04
Max.	50	0.44

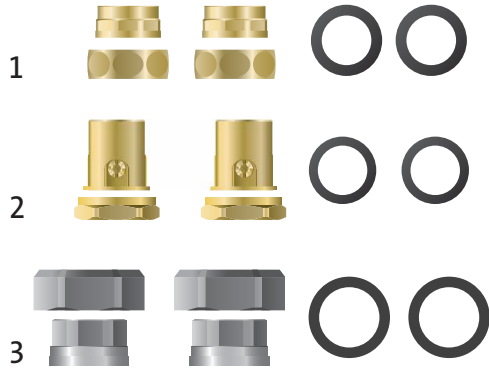
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14. Accessories



Accessories include

- Fittings (unions and valves). See fig. 38.
- Insulating shells. See fig. 39.
- ALPHA plugs. See fig. 40.



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Fig. 38 Fittings

Pos.	Description	Pump type	Dimension	Product number
1	Fittings. Material: brass.	ALPHA2 25-XX N	3/4"	529971
			1"	559972
			1 1/4"	509971
2	Fittings including isolating valve. Material: brass.	ALPHA2 25-XX N	3/4"	519805
			1"	519806
			1 1/4"	505539
3	Fittings including isolating valve. Material: cast iron.	ALPHA2 25-XX (A)	3/4"	529921
		ALPHA2 25-XX (A)	1"	529922
		ALPHA2 32-XX (A)	1"	509921
		ALPHA2 32-XX (A)	1 1/4"	509922

14.1 Insulating shells



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Fig. 39 Insulating shells

Pos.	Description	Pump type	Port-to-port length [mm]	Product number
1	Insulating shells for pumps with standard pump housing. Material: expanded polypropylene (EPS HT 200).	ALPHA2 15-XX (N)	130	98091786
		ALPHA2 25-XX (N)	180	98091787
		ALPHA2 32-XX (N)		
1	Insulating shells for pumps with air separator pump housing. Material: expanded polypropylene (EPP).	ALPHA2 25-40 A	180	505822
		ALPHA2 32-60 A		

14.2 ALPHA plugs



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Fig. 40 ALPHA plugs

Pos.	Description	Pump type	Product number
1	ALPHA plug, standard plug connection	All types	98284561
2	ALPHA angle plug, standard angle plug connection	All types	98610291
3	ALPHA plug, 90 ° bend, including 4 m cable	All types	96884669

Grundfos offers a special cable with an active built-in NTC protection circuit which will reduce possible inrush currents. The cable is to be used in case of e.g poor quality of relay components which are sensitive to inrush current.

15. Disposal

This product has been designed with focus on the disposal and recycling of materials. The following average disposal values apply to all variants of Grundfos ALPHA2 pumps:

- 92 % recycling
- 3 % incineration
- 5 % depositing.

This product or parts of it must be disposed of in an environmentally sound way according to local regulations.

Subject to alterations.

Declaration of conformity

GB: EC declaration of conformity

We, Grundfos, declare under our sole responsibility that the product Grundfos ALPHA2, to which this declaration relates, is in conformity with these Council directives on the approximation of the laws of the EC member states:

CZ: ES prohlášení o shodě

My firma Grundfos prohlašujeme na svou plnou odpovědnost, že výrobek Grundfos ALPHA2, na nějž se toto prohlášení vztahuje, je v souladu s ustanoveními směrnice Rady pro sblížení právních předpisů členských států Evropského společenství v oblastech:

DE: EG-Konformitätserklärung

Wir, Grundfos, erklären in alleiniger Verantwortung, dass das Produkt Grundfos ALPHA2, auf das sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmt:

GR: Δήλωση συμμόρφωσης CE

Εμείς, η Grundfos, δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα Grundfos ALPHA2, στα οποία αναφέρεται η παρούσα δήλωση, συμμορφώνονται με τις εξής Οδηγίες του Συμβουλίου περί προσέγγισης των νομοθεσιών των κρατών μελών της ΕΕ:

FR: Déclaration de conformité CE

Nous, Grundfos, déclarons sous notre seule responsabilité, que le produit Grundfos ALPHA2, auquel se réfère cette déclaration, est conforme aux Directives du Conseil concernant le rapprochement des législations des Etats membres CE relatives aux normes énoncées ci-dessous:

IT: Dichiarazione di conformità CE

Grundfos dichiara sotto la sua esclusiva responsabilità che il prodotto Grundfos ALPHA2, al quale si riferisce questa dichiarazione, è conforme alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri CE:

LV: EK atbilstības deklarācija

Sabiedrība GRUNDFOS ar pilnu atbildību dara zināmu, ka produkts Grundfos ALPHA2, uz kuru attiecas šīs paziņojums, atbilst šādām Padomes direktīvām par tuvināšanos EK dalībvalstu likumdošanas normām:

HU: EK megfelelőségi nyilatkozat

Mi, a Grundfos, egyedüli felelősséggel kijelentjük, hogy a Grundfos ALPHA2 termék, amelyre jelen nyilatkozik vonatkozik, megfelel az Európai Unió tagállamainak jogi irányelveit összefoglaló tanács alábbi előírásainak:

UA: Декларація відповідності ЄС

Компанія Grundfos заявляє про свою виключну відповідальність за те, що продукт Grundfos ALPHA2, на який поширюється дана декларація, відповідає таким рекомендаціям Ради з уніфікації правових норм країн - членів ЄС:

PT: Declaração de conformidade CE

A Grundfos declara sob sua única responsabilidade que o produto Grundfos ALPHA2, ao qual diz respeito esta declaração, está em conformidade com as seguintes Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da CE:

RO: Declarație de conformitate CE

Noi, Grundfos, declarăm pe propria răspundere că produsele Grundfos ALPHA2, la care se referă această declarație, sunt în conformitate cu aceste Directive de Consiliu asupra armonizării legilor Statelor Membre CE:

SI: ES izjava o skladnosti

V Grundfosu s polno odgovornostjo izjavljamo, da so naši izdelki Grundfos ALPHA2, na katere se ta izjava nanaša, v skladu z naslednjimi direktivami Sveta o približevanju zakonodaje za izenačevanje pravnih predpisov držav članic ES:

FI: EY-vaatimusten mukaisuusvakuutus

Me, Grundfos, vakuutamme omalla vastuullamme, että tuote Grundfos ALPHA2, jota tämä vakuutus koskee, on EY:n jäsenvaltioiden lainsäädännön yhdenmukaistamiseen tähtäävien Euroopan neuvoston direktiivien vaatimusten mukainen seuraavasti:

BG: ЕС декларация за съответствие

Ние, фирма Grundfos, заявяваме с пълна отговорност, че продукта Grundfos ALPHA2, за който се отнася настоящата декларация, отговаря на следните указания на Съвета за уеднавяване на правните разпоредби на държавите членки на ЕС:

DK: EF-overensstemmelseserklæring

Vi, Grundfos, erklærer under ansvar at produktet Grundfos ALPHA2 som denne erklæring omhandler, er i overensstemmelse med disse af Rådets direktiver om indbyrdes tilnærmelse til EF-medlemsstaternes lovgivning:

EE: EL vastavusdeklaratsioon

Meie, Grundfos, deklareerime enda ainuvastutusel, et toode Grundfos ALPHA2, mille kohta käesolev juhend käib, on vastavuses EÜ Nõukogu direktiividega EMÜ liikmesriikide seaduste ühitamise kohta, mis käsitlevad:

ES: Declaración CE de conformidad

Nosotros, Grundfos, declaramos bajo nuestra propia responsabilidad que el producto Grundfos ALPHA2, al cual se refiere esta declaración, está conforme con las Directivas del Consejo en la aproximación de las leyes de los Estados Miembros del EM:

HR: EZ izjava o usklađenosti

Mi, Grundfos, izjavljujemo pod vlastitom odgovornošću da je proizvod Grundfos ALPHA2, na koji se ova izjava odnosi, u skladu s direktivama ovog Vijeća o usklađivanju zakona država članica EU:

KZ: EO сәйкестік туралы мәлімдеме

Біз, Grundfos компаниясы, барлық жауапкершілікпен, осы мәлімдемеге қатысты болатын Grundfos ALPHA2 бұйымы EO мүше елдерінің заң шығарушы жарлықтарын үндестіру туралы мына Еуроодақ кеңесінің жарлықтарына сәйкес келетіндігін мәлімдейміз:

LT: EB atitikties deklaracija

Mes, Grundfos, su visa atsakomybe pareiškiame, kad gaminys Grundfos ALPHA2, kuriam skirta ši deklaracija, atitinka šias Tarybos Direktyvas dėl Europos Ekonominės Bendrijos šalių narių įstatymų suderinimo:

NL: EC overeenkomstigheidsverklaring

Wij, Grundfos, verklaren geheel onder eigen verantwoordelijkheid dat het product Grundfos ALPHA2 waarop deze verklaring betrekking heeft, in overeenstemming is met de Richtlijnen van de Raad in zake de onderlinge aanpassing van de wetgeving van de EG lidstaten betreffende:

PL: Deklaracja zgodności WE

My, Grundfos, oświadczamy z pełną odpowiedzialnością, że nasze wyroby Grundfos ALPHA2, których deklaracja niniejsza dotyczy, są zgodne z następującymi wytycznymi Rady d/s ujednolicenia przepisów prawnych krajów członkowskich WE:

RU: Декларация о соответствии ЕС

Мы, компания Grundfos, со всей ответственностью заявляем, что изделия Grundfos ALPHA2, к которым относится настоящая декларация, соответствуют следующим Директивам Совета Евросоюза об унификации законодательных предписаний стран-членов ЕС:

SK: Prehlásenie o konformite ES

My firma Grundfos prehlasujeme na svoju plnú zodpovednosť, že výrobok Grundfos ALPHA2, na ktorý sa toto prehlásenie vzťahuje, je v súlade s ustanovením smernice Rady pre zblíženie právnych predpisov členských štátov Európskeho spoločenstva v oblastiach:

RS: EC deklaracija o usaglašenosti

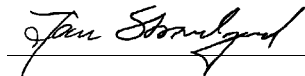
Mi, Grundfos, izjavljujemo pod vlastitom odgovornošću da je proizvod Grundfos ALPHA2, na koji se ova izjava odnosi, u skladu sa direktivama Saveta za usklađivanje zakona država članica EU:

SE: EG-försäkran om överensstämmelse

Vi, Grundfos, försäkrar under ansvar att produkten Grundfos ALPHA2, som omfattas av denna försäkran, är i överensstämmelse med rådets direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende:

-
- Low Voltage Directive (2006/95/EC).
Standard used: EN 60335-1:2012/AC:2014 and
EN 60335-2-51:2003/A1:2008/A2:2012.
 - EMC Directive (2004/108/EC).
Standards used: EN 55014-1:2006/A1:2009/A2:2011 and
EN 55014-2:1997/A1:2001/A2:2008.
 - Ecodesign Directive (2009/125/EC).
Circulator pumps:
Commission Regulation No 641/2009 and 622/2012.
Standards used: EN 16297-1:2012 and EN 16297-2:2012 and
EN 16297-3:2012.

Bjerringbro, 1 September 2014



Jan Strandgaard
Technical Director
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Person authorised to compile the technical file and
empowered to sign the EC declaration of conformity.

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