

GRUNDFOS ALPHA1

Installation and operating instructions



Original installation and operating instructions

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Read this document and the quick guide before you install the product. Installation and operation must comply with local regulations and accepted codes of good practice.



This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

1. General information

1.1 Hazard statements

The symbols and hazard statements below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The text accompanying the three hazard symbols DANGER, WARNING and CAUTION is structured in the following way:



SIGNAL WORD

Description of hazard

Consequence of ignoring the warning.
- Action to avoid the hazard.

The hazard statements are structured in the following way:

1.2 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



A blue or grey circle with a white graphical symbol indicates that an action must be taken.



A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.



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



Tips and advice that make the work easier.

2. Receiving the product

2.1 Inspecting the product



CAUTION

Crushing of feet

- Minor or moderate personal injury
- Wear safety shoes when opening the box and handling the product.

Check that the product received is in accordance with the order.

Check that the voltage and frequency of the product match voltage and frequency of the installation site. See section [7.1 Nameplate](#).

2.2 Scope of delivery

The box contains the following items:

- ALPHA1 pump
- installer plug
- two gaskets
- quick guide.

3. Installing the product



DANGER

Electric shock

- Death or serious personal injury
- Switch off the power supply before starting any work on the product. Make sure that the power supply cannot be accidentally switched on.



CAUTION

Crushing of feet

- Minor or moderate personal injury
- Wear safety shoes when opening the box and handling the product.



Installation must be carried out by trained persons in accordance with local regulations.



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

3.1 Mechanical installation



The mechanical installation must be carried out by trained persons in accordance with local regulations.

3.2 Mounting

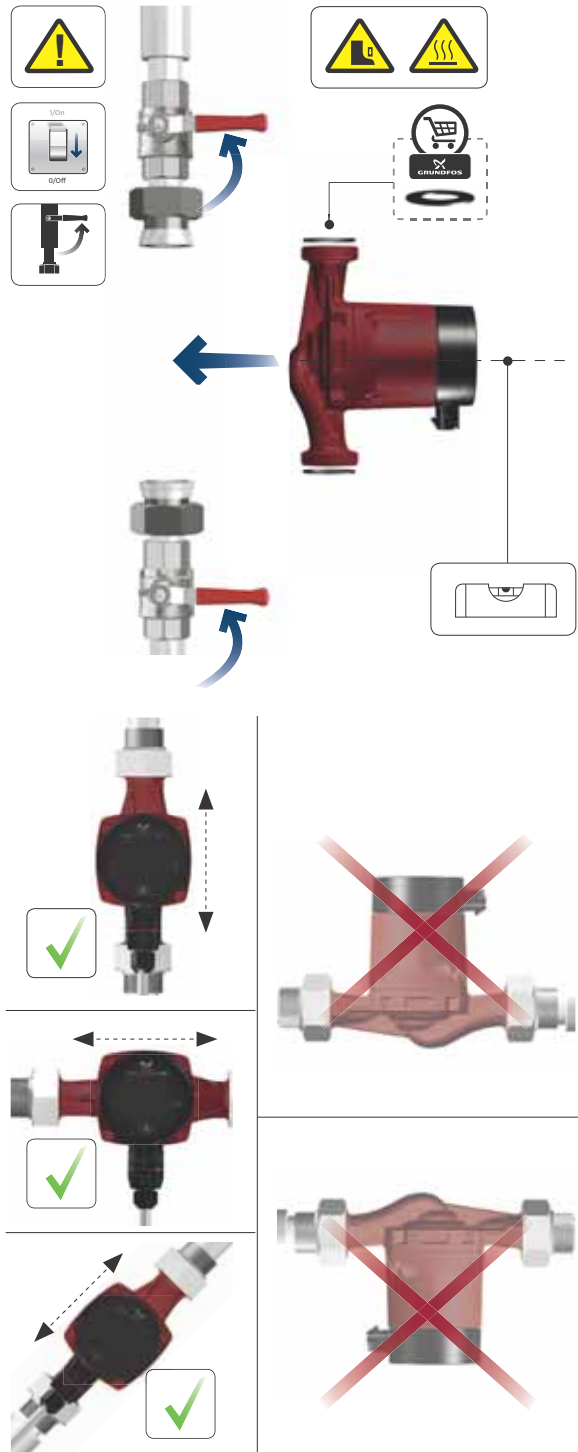


Fig. 1 Mounting the GRUNDFOS ALPHA1 L

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TM07 4156 1119

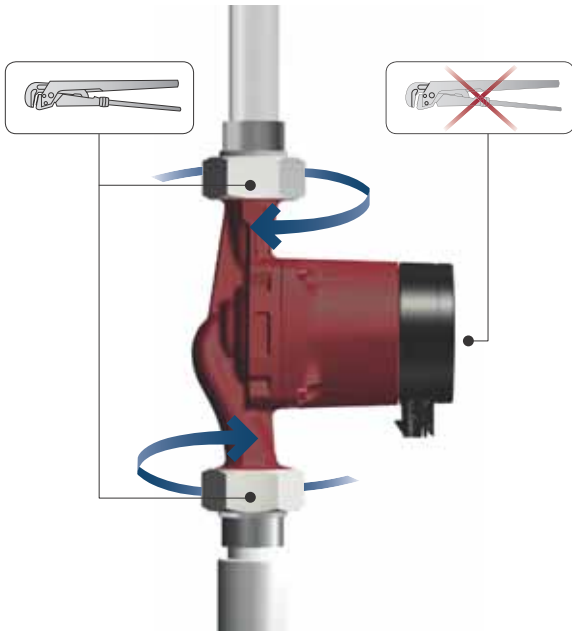


Fig. 2 Mounting the GRUNDFOS ALPHA1 L

Arrows on the pump housing indicate the liquid flow direction through the pump.

See section [14.2 Installation dimensions, GRUNDFOS ALPHA1 XX-40, XX-45, XX-50, XX-60 \(international markets\)](#).

- Fit the two gaskets supplied when the pump is mounted in the pipe.
- Install the pump with horizontal motor shaft. See figs 1 and 2.

3.3 Control box positions

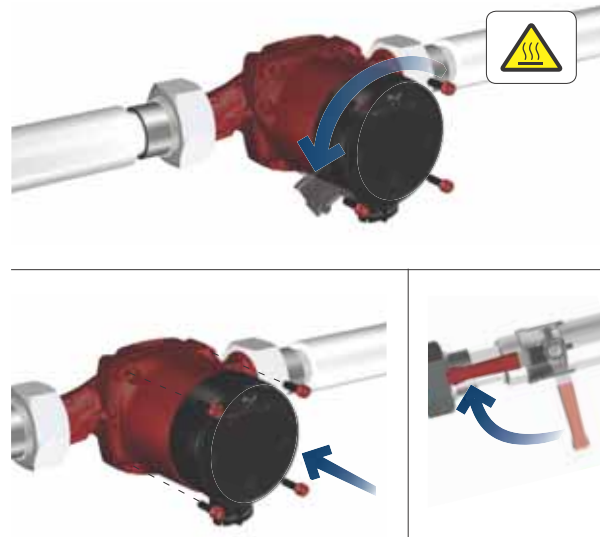
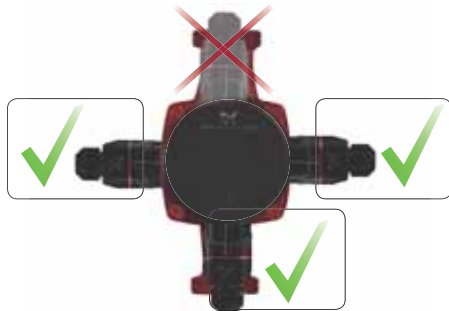


Fig. 3 Control box positions

DANGER

Electric shock



Death or serious personal injury
- Switch off the power supply before starting any work on the product. Make sure that the power supply cannot be accidentally switched on.

CAUTION

Hot surface



Minor or moderate personal injury
- The pump housing may be hot due to the pumped liquid being scalding hot. Close the isolating valves on both sides of the pump and wait for the pump housing to cool down.

CAUTION

Pressurised system



Minor or moderate personal injury
- Before dismantling the pump, drain the system or close the isolating valves on both sides of the pump. The pumped liquid may be scalding hot and under high pressure.



Fill the system with the liquid to be pumped or open the isolating valves when the position of the control box has been changed.

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TM07 4158 1119

TM07 4157 1119

3.4 Changing the control box position

The control box position can be changed in steps of 90 °.

Possible/permissible positions and the procedure of changing the position of the control box are illustrated in fig. 2.

Procedure:

1. Slacken and remove the four hexagon-socket head screws 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.

3.5 Insulation of pump housing



Fig. 4 Insulation of pump housing



Limit the heat loss from the pump housing and pipework.

The heat loss from the pump and pipework can be reduced by insulating the pump housing and the pipe. See fig. 4.

As an alternative, polystyrene insulating shells can be fitted to the pump. See section [6.1 Product description](#).



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

4. Electrical installation

DANGER

Electric shock

Death or serious personal injury
- All electrical connections must be carried out by a qualified electrician in accordance with local regulations.



DANGER

Electric shock

Death or serious personal injury
- Switch off the power supply before starting any work on the product. Make sure that the power supply cannot be accidentally switched on.



DANGER

Electric shock

Death or serious personal injury
- Connect the pump to earth.



DANGER

Electric shock

Death or serious personal injury
- If national legislation requires a Residual-Current Device (RCD) or equivalent in the electrical installation, or if the pump is connected to an electric installation where an RCD is used as an additional protection, this must be type A or better, due to the nature of the pulsating DC leakage current. The RCD must be marked with the symbol shown below:



The pump is not a safety component and cannot be used to ensure functional safety in the final appliance.

The pump requires no external motor protection.

- Check that the supply voltage and frequency correspond to the values stated on the nameplate. See section [7.1 Nameplate](#).
- Connect the pump to the power supply with the plug supplied with the pump as shown in [4.1 Assembling the plug](#).

Light in the operating panel shows that the power supply has been switched on.

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4.1 Assembling the plug

Step	Action	Illustration
1	Fit the cable gland and plug cover to the cable. Strip the cable conductors as illustrated.	<p>7 mm 12 mm 17 mm 0.5-1.5 mm² Ø 5.5-10 mm</p> <p>TM05 5538 3812</p>
2	Connect the cable conductors to the power supply plug.	<p>TM05 5539 3812</p>
3	Bend the cable with the cable conductors pointing upwards.	<p>TM05 5540 3812</p>
4	Pull out the conductor guide plate and throw it away.	<p>TM05 5541 3812</p>
5	Click the plug cover onto the power supply plug.	<p>TM05 5542 3812</p>
6	Screw the cable gland onto the power supply plug.	<p>TM05 5543 3812</p>

Step	Action	Illustration
7	Insert the power supply plug into the male plug in the pump control box.	<p>TM07 4159 1119</p>

5. Starting up the product

5.1 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 [14.1 Technical data](#) and [14.2 Installation dimensions, GRUNDFOS ALPHA1 XX-40, XX-45, XX-50, XX-60 \(international markets\)](#).

5.2 Venting the pump



Fig. 5 Venting the pump

The pump is self-venting. It need not be vented before startup. Air in the pump may cause noise. This noise will cease 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 [10. Setting the pump](#).



The pump must not run dry.

The system cannot be vented through the pump. See section [5.3 Venting of heating systems](#).

5.3 Venting of heating systems

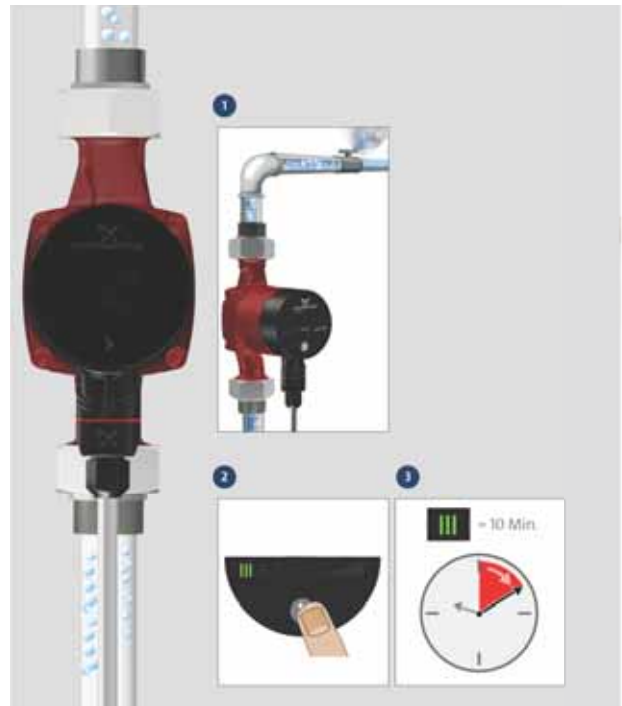


Fig. 6 Venting of heating systems

The heating system can be vented via an air escape valve installed above the pump. 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, that is when the possible noise has ceased, set the pump according to the recommendations. See section [10. Setting the pump](#).

Repeat the procedure, if necessary.



The pump must not run dry.

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6. Product introduction

6.1 Product description

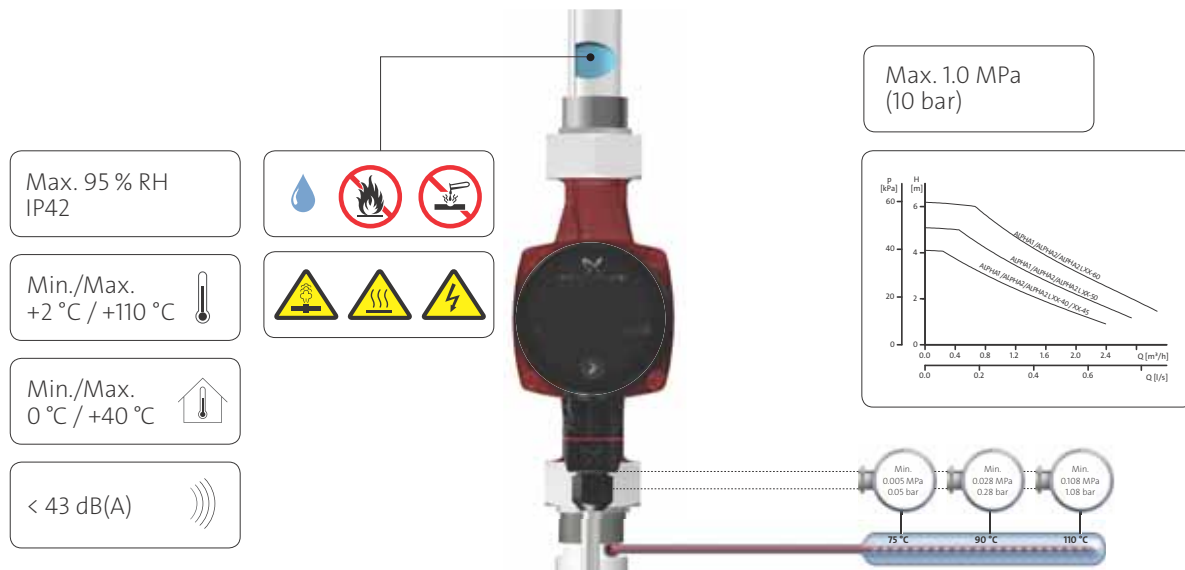


Fig. 7 Pumped liquids and operating conditions

6.2 Application

The GRUNDFOS ALPHA1 circulator pump is designed for the circulation of water in heating systems.

The pump is suitable for the following systems:

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

The pump incorporates a permanent-magnet motor and differential-pressure control enabling continuous adjustment of the pump performance to the actual system requirements.

The pump has a user-friendly front-mounted operating panel. See sections 7. *Identification* and 9. *Operating panel*.

6.3 Advantages of installing a GRUNDFOS ALPHA1

The installation of a GRUNDFOS ALPHA1 means

easy installation and startup

- The pump is easy to install. With the factory setting, the pump can, in most cases, be started without making any settings.

high degree of comfort

- Minimum noise from valves, etc.

low energy consumption

- Low energy consumption compared to conventional circulator pumps.

Energy efficiency index (EEI)

- The Ecodesign directive for energy-using (EuP) and energy-related (ErP) products is EU legislation requiring manufacturers to reduce the overall environmental impact of their products.
- The pumps are energy-optimised and comply with the EuP directive.

6.4 Intended use

GRUNDFOS ALPHA1 is suitable for

- 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.

6.5 Pumped liquids

Clean, thin, non-aggressive and non-explosive liquids, not containing solid particles, fibres or mineral oil. See fig. 7.

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.

CAUTION

Flammable material



- Minor or moderate personal injury
- Do not use the pump for flammable liquids, such as diesel oil and petrol.

CAUTION

Corrosive substance



- Minor or moderate personal injury
- Do not use the pump for aggressive liquids, such as acids and seawater.

6.6 System pressure

Maximum 1.0 MPa (10 bar). See fig. 7.

6.7 Relative air humidity (RH)

Maximum 95 %. See fig. 7.

6.8 Enclosure class

IP42. See fig. 7.

6.9 Inlet pressure

Minimum inlet pressure in relation to liquid temperature. See fig. 7.

Liquid temperature	Minimum inlet pressure	
	[MPa]	[bar]
≤ 75 °C	0.005	0.05
90 °C	0.028	0.28
110 °C	0.108	1.08

7. Identification

7.1 Nameplate

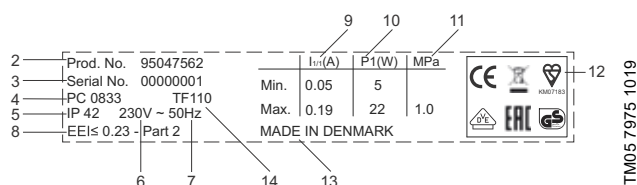


Fig. 8 Example of nameplate

Pos.	Description
1	Pump type
2	Product number
3	Serial number
4	Production code: 1st and 2nd digits = year 3rd and 4th digits = week
5	Enclosure class
6	Voltage [V]
7	Frequency [Hz]
8	Energy efficiency index (EEI)
9	Rated current [A]: Min.: Minimum current [A] Max.: Maximum current [A]
10	Input power P1 [W]: Min.: Minimum input power P1 [W] Max.: Maximum input power P1 [W]
11	Maximum system pressure [MPa]
12	CE mark and approvals
13	Country of manufacture
14	Temperature class

7.2 Type key

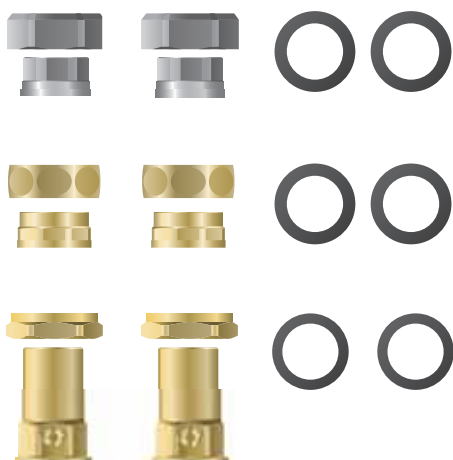
Example	ALPHA1	25	-40	180
Pump type				
Nominal diameter (DN) of inlet and outlet ports [mm]				
Maximum head [dm]				
: Cast-iron pump housing				
N: Stainless-steel pump housing				
Port-to-port length [mm]				

8. Accessories

Accessories for GRUNDFOS ALPHA1. See fig. 9.

Accessories include

- fittings (unions and valves)
- insulating kits (insulating shells)
- plug.



Product No		
25-XX (A)	3/4"	529921
25-XX (A)	1"	529922
32-XX	1"	509921
32-XX	1 1/4"	509922

Product No		
25-XX N	3/4"	529971
25-XX N	1"	529972
32-XX N	1 1/4"	509971

Product No		
25-XX (A)(N)	3/4"	519805
25-XX (A)(N)	1"	519806
32-XX (N)	1 1/4"	505539



Product No		
15-XX	130	505821
25-XX	130	
32-XX	130	



Product No		
15-XX A	180	505822
25-XX A	180	

Fig. 9 Accessories

8.1 ALPHA plugs



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Fig. 10 ALPHA plugs

Pos.	Description	Product number
1	ALPHA plug with cable gland, standard plug connector, complete	98284561
2	ALPHA plug angled 90 ° left, with cable gland	98610291
3	ALPHA plug angled 90 ° left, including 4 m cable	96884669
4*	ALPHA plug angled 90 ° left, including 1 m cable and integrated NTC protection resistor	97844632

* This special cable with an active built-in NTC protection circuit will reduce possible inrush currents. To be used in case of e.g poor quality of relay components that are sensitive to inrush current.

9. Operating panel

9.1 Elements on the operating panel

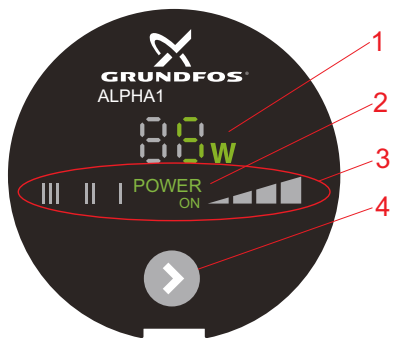


Fig. 11 GRUNDFOS ALPHA1 operating panel

The operating panel comprises:

Pos.	Description
1	Display showing the actual pump power consumption in Watt
2	"POWER ON" light field
3	Seven light fields indicating the pump setting
4	Push-button for selection of pump setting

9.2 Display

The display (fig. 11, pos. 1) is on when the power supply has been switched on.

The display shows the actual pump power consumption in Watt (integer) during operation.



Faults preventing the pump from operating properly (for example seizing-up) are indicated in the display by "- -". See section 13. [Fault finding](#).

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.

9.3 "POWER ON" light field

The "POWER ON" light field (fig. 11, pos. 2) is on when the power supply has been switched on.



When the "POWER ON" light field is on only, a fault preventing the pump from operating properly (for example seizing-up) has occurred. See section 13. [Fault finding](#).

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

9.4 Light fields indicating the pump setting

The pump has seven optional settings which can be selected with the push-button. See fig. 11, pos. 4.

The pump setting is indicated by seven different light fields. See fig. 12.

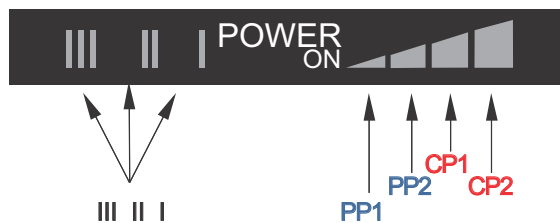


Fig. 12 Seven light fields

Number of button presses	Light field	Description
0	PP2 (factory setting)	Highest proportional-pressure curve
1	CP1	Lowest constant-pressure curve
2	CP2	Highest constant-pressure curve
3	III	Constant speed, speed III
4	II	Constant speed, speed II
5	I	Constant speed, speed I
6	PP1	Lowest proportional-pressure curve
7	PP2	Highest proportional-pressure curve

See section 12. [Pump settings and pump performance](#) for information about the function of the settings.

9.5 Push-button for selection of pump setting

Every time the push-button (fig. 11, pos. 4) is pressed, the pump setting is changed.

A cycle is seven button presses. See section 9.4 [Light fields indicating the pump setting](#).

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10. Setting the pump

10.1 Pump setting for system type

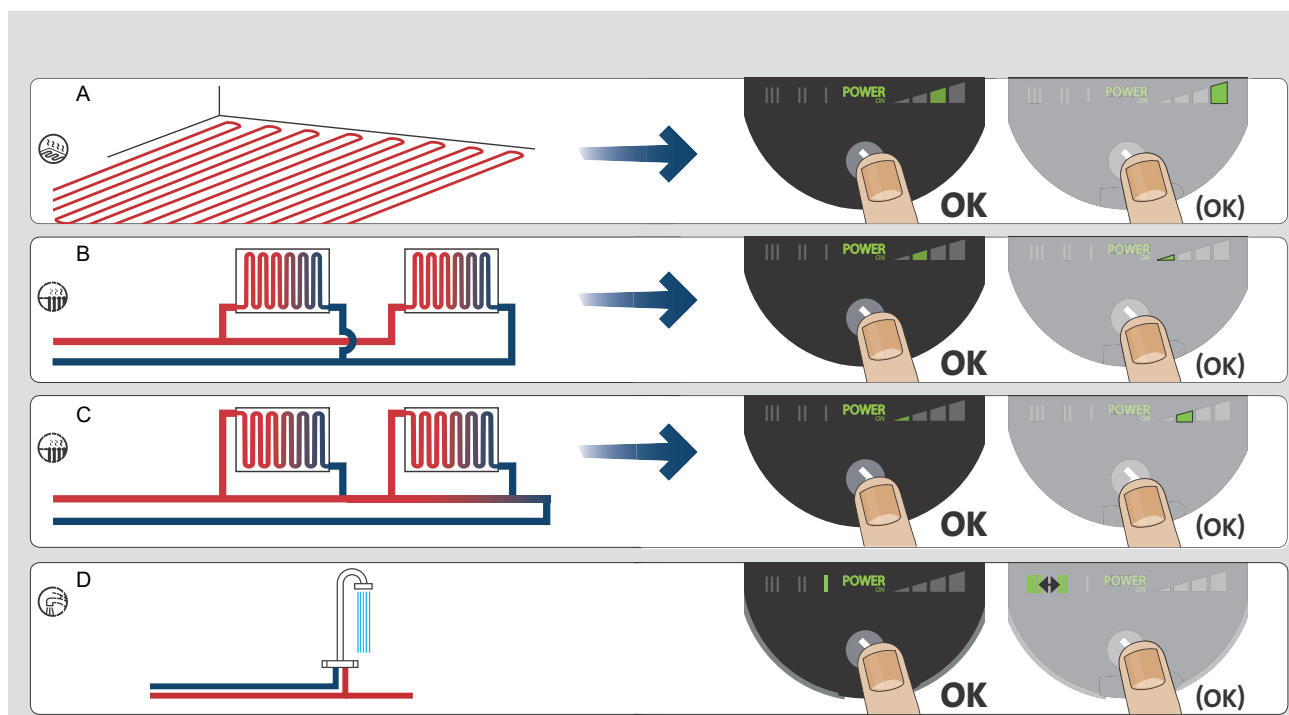


Fig. 13 Selection of pump setting for system type

Factory setting = highest proportional-pressure curve (PP2).

Recommended and alternative pump settings according to fig. 13:

Pos.	System type	Pump setting	
		Recommended	Alternative
A	Underfloor heating	Lowest constant-pressure curve (CP1)*	Highest constant-pressure curve (CP2)*
B	Two-pipe systems	Highest proportional-pressure curve (PP2)*	Lowest proportional-pressure curve (PP1)*
C	One-pipe systems	Lowest proportional-pressure curve (PP1)*	Highest proportional-pressure curve (PP2)*
D	Domestic water	Constant speed, speed I*	Constant speed, speed II or III*

* See section 15.1 Guide to performance curves.

Changing from recommended to alternative pump setting

Heating systems are "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 12. Pump settings and pump performance.

10.2 Pump control

During operation, the pump head is 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

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

The proportional-pressure curves are indicated by PP1 and PP2 in the QH diagrams. See section 12. Pump settings and pump performance.

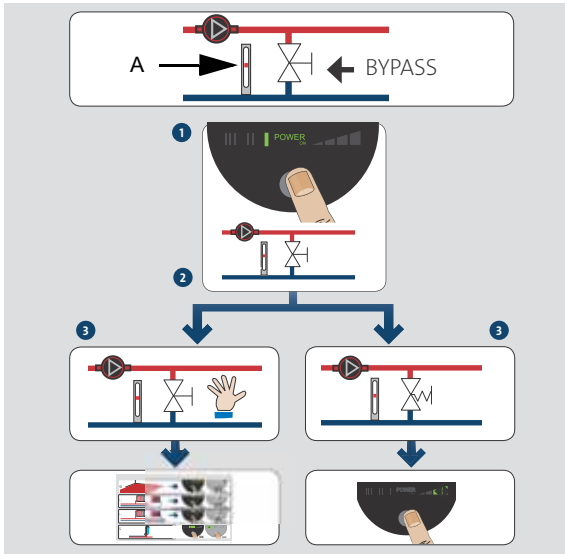
Constant-pressure control

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 and CP2 and are the horizontal performance curves in the QH diagrams. See section 12. Pump settings and pump performance.

11. Systems with bypass valve between flow and return pipes

11.1 Purpose of bypass valve



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Fig. 14 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 present when all valves are closed.

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

11.2 Manually operated bypass valve

Follow this procedure:

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 section 10. [Setting the pump](#).

11.3 Automatic bypass valve (thermostatically controlled)

Follow this procedure:

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

12. Pump settings and pump performance

Figure 15 shows the relation between pump setting and pump performance by means of curves. See also section 15. [Performance curves](#).

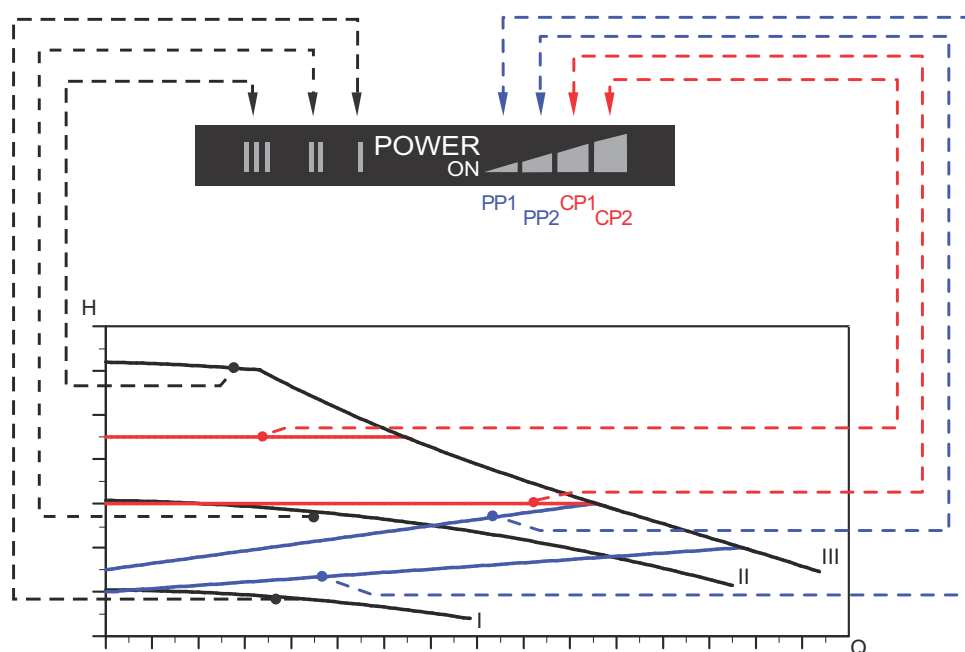


Fig. 15 Pump setting in relation to pump performance

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Setting	Pump curve	Function
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 in the system. See fig. 15. The head (pressure) is reduced at falling heat demand and increased at rising heat demand.
PP2 (factory setting)	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 in the system. See fig. 15. 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. 15. The head (pressure) is kept constant, irrespective of the heat demand.
CP2	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. 15. The head (pressure) is kept constant, irrespective of the heat demand.
III	Speed III	The pump runs at a constant speed and consequently on a constant curve. In speed III, the pump is set to run on the maximum curve under all operating conditions. See fig. 15. Quick venting of the pump can be obtained by setting the pump to speed III for a short period. See section 12. Pump settings and pump performance .
II	Speed II	The pump runs at a constant speed and consequently on a constant curve. In speed II, the pump is set to run on the intermediate curve under all operating conditions. See fig. 15.
I	Speed I	The pump runs at a constant speed and consequently on a constant curve. In speed I, the pump is set to run on the minimum curve under all operating conditions. See fig. 15.

13. Fault finding



DANGER

Electric shock

- Death or serious personal injury
- Switch off the power supply before starting any work on the product. Make sure that the power supply cannot be accidentally switched on.



CAUTION

Pressurised system

- Minor or moderate personal injury
- Before dismantling the pump, drain the system or close the isolating valves on either side of the pump. The pumped liquid may be scalding hot and under high pressure.



WARNING

Electric shock

- Death or serious personal injury
- A damaged product must be repaired by Grundfos or a service workshop authorised by Grundfos.



WARNING

Hot surface

- Minor or moderate personal injury
- The pump housing may be hot due to the pumped liquid being scalding hot. Close the isolating valves on both sides of the pump and wait for the pump housing to cool down.

13.1 Fault finding table

Fault	Operating panel	Cause	Remedy
1. The pump does not run.	Light off.	a) A fuse in the installation is blown.	Replace the fuse.
		b) The current-operated or voltage-operated circuit breaker has tripped out.	Cut in the circuit breaker.
	Display shows "- -". "POWER ON" is on only.	c) The pump is defective.	Replace the pump.
		a) Power supply failure. The power supply might be too low.	Check that the power supply falls within the specified range.
2. Noise in the system.	Shows normal operating status.	b) The pump is blocked.	Remove the impurities.
		a) Air in the system.	Vent the system. See section 5.3 Venting of heating systems .
3. Noise in the pump.	Shows normal operating status.	b) The flow is too high.	Reduce the suction head. See section 12. Pump settings and pump performance .
		a) Air in the pump.	Let the pump run. It vents itself over time. See section 12. Pump settings and pump performance .
4. Insufficient heat.	Shows normal operating status.	b) The inlet pressure is too low.	Increase the inlet pressure or check the air volume in the expansion tank, if installed.
		a) The pump performance is too low.	Increase the suction head. See section 12. Pump settings and pump performance .

14. Technical data and installation dimensions

14.1 Technical data

Operating conditions									
Relative humidity	Maximum 95 % RH								
System pressure	Maximum 1.0 MPa, 10 bar, 102 m head								
Inlet pressure	<table border="1"> <thead> <tr> <th>Liquid temperature</th> <th>Minimum inlet pressure</th> </tr> </thead> <tbody> <tr> <td>≤ 75 °C</td> <td>0.005 MPa, 0.05 bar, 0.5 m head</td> </tr> <tr> <td>90 °C</td> <td>0.028 MPa, 0.28 bar, 2.8 m head</td> </tr> <tr> <td>110 °C</td> <td>0.108 MPa, 1.08 bar, 10.8 m head</td> </tr> </tbody> </table>	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
	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 (2014/30/EU). Standards used: EN 55014-1:2006/A1:2009/A2:2011, EN 55014-2:2015, EN 61000-3-2:2014 and EN 61000-3-3:2013.								
Sound pressure level	The sound pressure level of the pump is lower than 43 dB(A).								
Ambient temperature	0-40 °C								
Surface temperature	The maximum surface temperature will not exceed 125 °C.								
Liquid temperature	2-110 °C								
Electrical data									
Supply voltage	1 x 230 V ± 10 %, 50/60 Hz, PE								
Insulation class	F								
Miscellaneous data									
Motor protection	The pump requires no external motor protection.								
Temperature class	TF110 to EN 60335-2-51								
Enclosure class	IP42								

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



The pump can run at ambient temperatures higher than the liquid temperature if the plug connection in the pump head is pointing downwards



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.

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

14.2 Installation dimensions, GRUNDFOS ALPHA1 XX-40, XX-45, XX-50, XX-60 (international markets)

Dimensional sketches and tables of dimensions

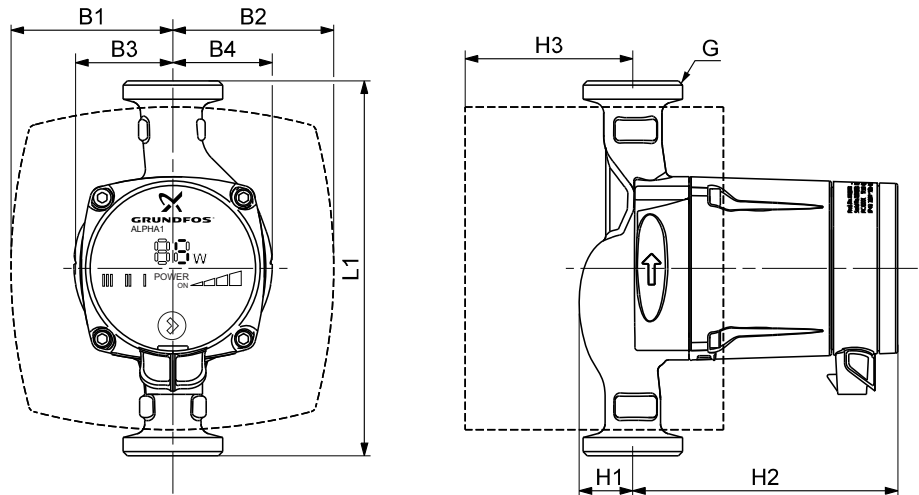


Fig. 16 Dimensional sketches, ALPHA1 XX-40, XX-45, XX-50, XX-60

TM05 7971 1713

Pump type	Dimensions								
	L1	B1	B2	B3	B4	H1	H2	H3	G
ALPHA1 15-40 130	130	78	78	46	49	27	129	58	1
ALPHA1 20-40 130	130	78	78	46	49	27	129	58	1 1/4
ALPHA1 25-40 130	130	78	78	46	49	27	129	58	1 1/2
ALPHA1 25-40 180	180	78	78	47	48	26	127	58	1 1/2
ALPHA1 32-40 180	180	78	78	47	48	26	127	58	2
ALPHA1 15-50 130	130	78	78	46	49	27	129	58	1
ALPHA1 15-50 130*	130	78	78	46	49	27	127	58	1 1/2
ALPHA1 20-50 130	130	78	78	46	49	27	129	58	1 1/4
ALPHA1 25-50 130	130	78	78	46	49	27	129	58	1 1/2
ALPHA1 25-50 180	180	78	78	47	48	26	127	58	1 1/2
ALPHA1 32-50 180	180	78	78	47	48	26	127	58	2
ALPHA1 15-60 130*	130	77	78	46	49	27	129	58	1 1/2
ALPHA1 15-60 130	130	78	78	46	49	27	129	58	1
ALPHA1 20-60 130	130	78	78	46	49	27	129	58	1 1/4
ALPHA1 25-60 130	130	78	78	46	49	27	129	58	1 1/2
ALPHA1 25-60 180	180	78	78	47	48	26	127	58	1 1/2
ALPHA1 32-60 180	180	78	77	47	48	26	127	58	2
ALPHA1 20-40 N 150	150	-	-	49	49	28	127	-	1 1/4
ALPHA1 20-45 N 150**	150	-	-	43	43	27	127	-	1 1/4
ALPHA1 25-40 N 180	180	-	-	47	48	26	127	-	1 1/2
ALPHA1 20-50 N 150	150	-	-	49	49	28	127	-	1 1/4
ALPHA1 25-50 N 180	180	-	-	47	48	26	127	-	1 1/2
ALPHA1 20-60 N 150	150	-	-	49	49	28	127	-	1 1/4
ALPHA1 25-60 N 180	180	-	-	47	48	26	127	-	1 1/2

* For the UK market only.

** ALPHA1 20-45 N 150 is suitable for drinking water only.

14.3 Installation dimensions, GRUNDFOS ALPHA1 XX-40, XX-45, XX-60 (D-A-CH)

Dimensional sketches and tables of dimensions

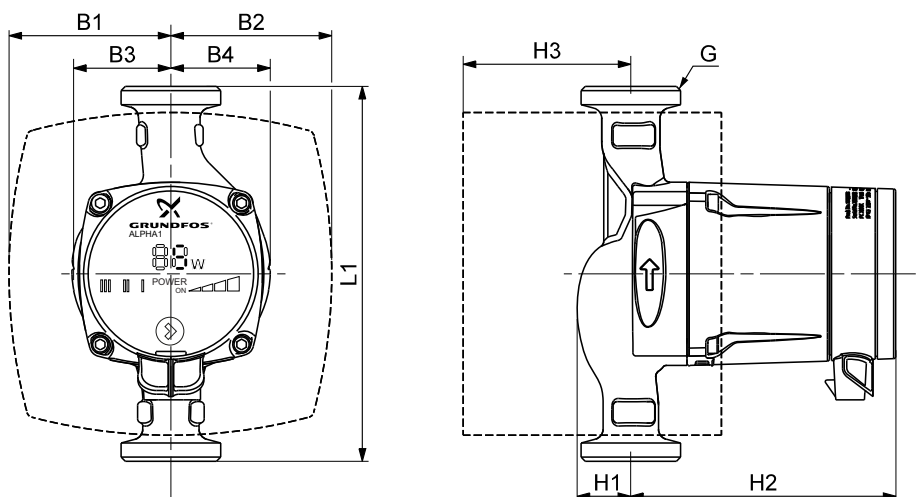


Fig. 17 Dimensional sketches, ALPHA1 XX-40, XX-45, XX-60

TM05 7971 1713

Pump type	Dimensions								
	L1	B1	B2	B3	B4	H1	H2	H3	G
ALPHA1 20-45 N 150 DE*	150	-	-	43	43	27	127	-	1 1/4

* ALPHA1 20-45 N 150 is suitable for drinking water only.

15. Performance curves

15.1 Guide to performance curves

Each pump setting has its own performance curve (QH curve).

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. 18:

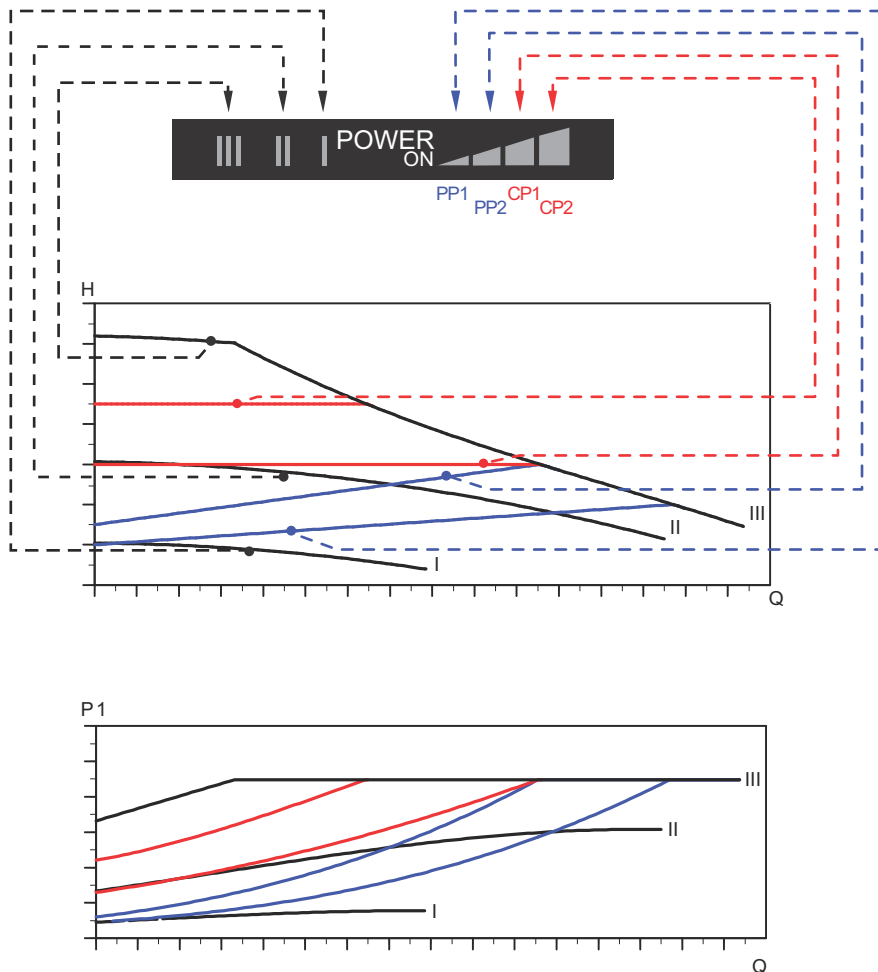


Fig. 18 Performance curves in relation to pump setting

Setting	Pump curve
PP1	Lowest proportional-pressure curve
PP2 (factory setting)	Highest proportional-pressure curve
CP1	Lowest constant-pressure curve
CP2	Highest constant-pressure curve
III	Constant speed, speed III
II	Constant speed, speed II
I	Constant speed, speed I

For further information about pump settings, see sections

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

[10. Setting the pump](#)

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

15.2 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).

15.3 Performance curves, ALPHA1 XX-40

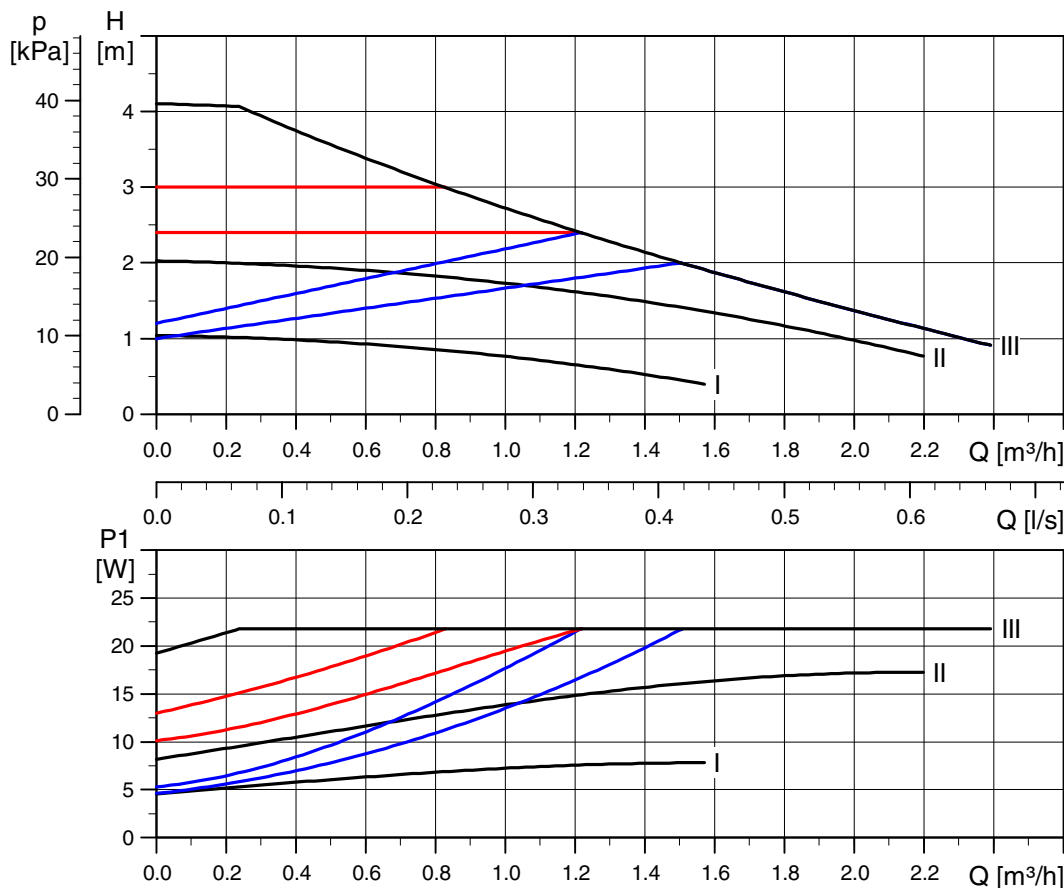


Fig. 19 ALPHA1 XX-40

15.4 Performance curves, ALPHA1 20-45 N 150

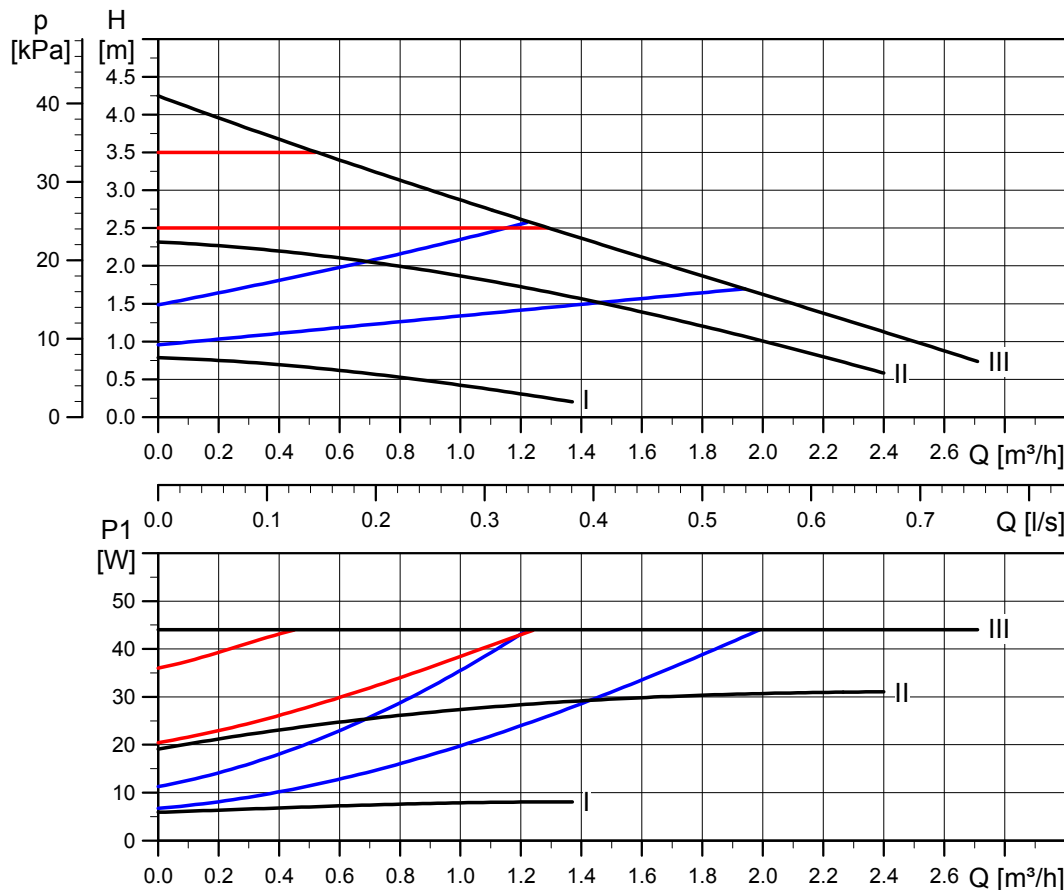


Fig. 20 ALPHA1 20-45 N 150

TM04 2110 2008

TM05 2213 4611

15.5 Performance curves, ALPHA1 XX-50

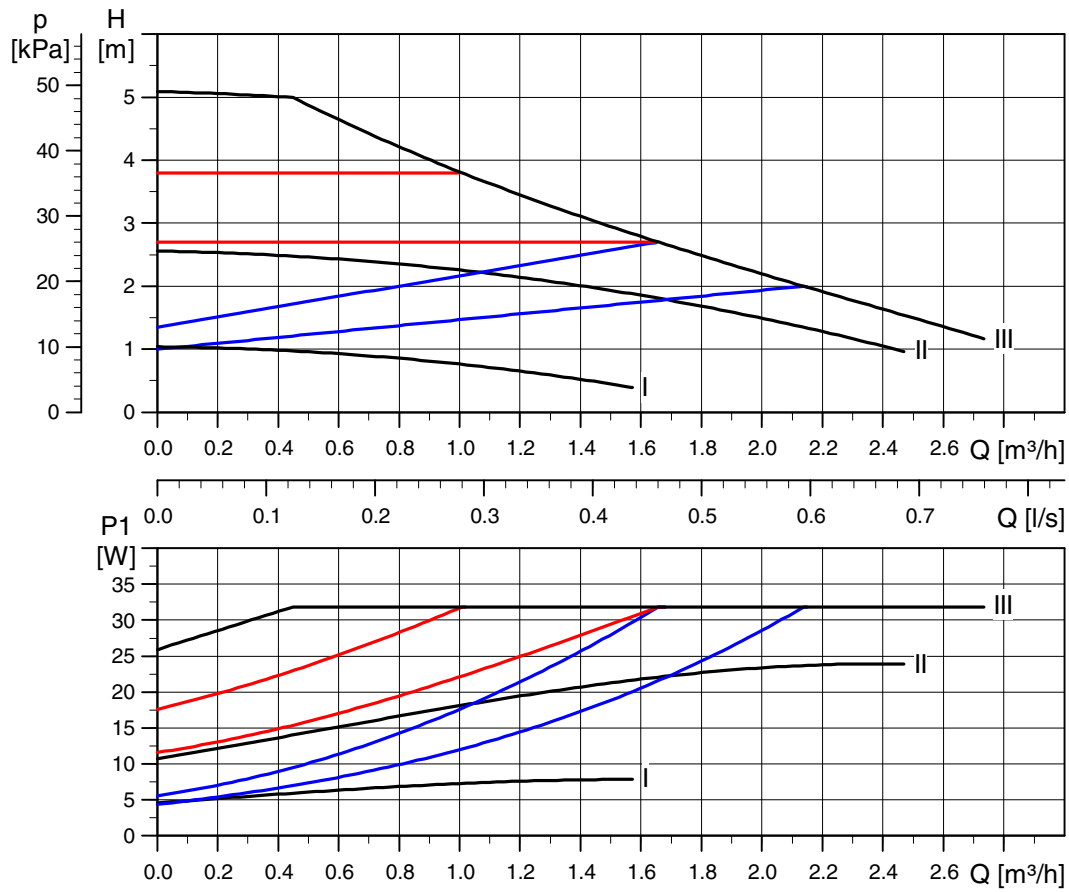


Fig. 21 ALPHA1 XX-50

15.6 Performance curves, ALPHA1 XX-60

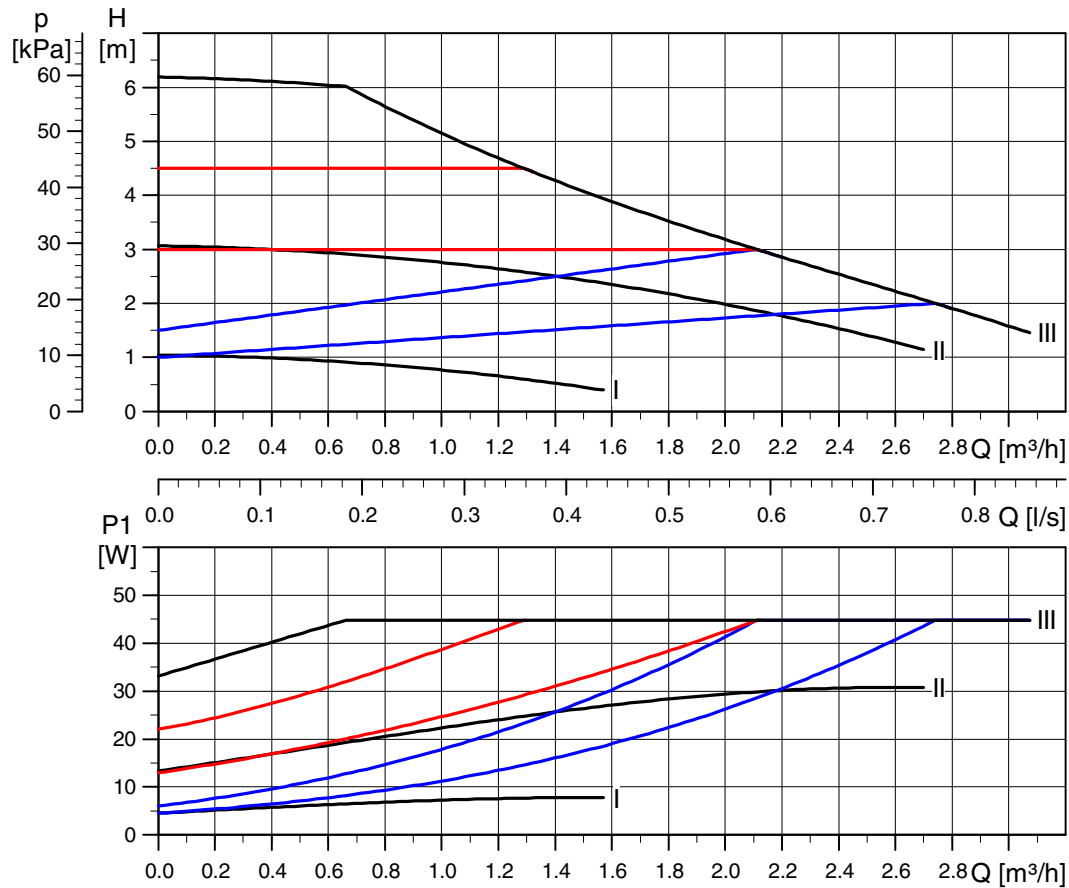


Fig. 22 ALPHA1 XX-60

TM04 2109 2008

TM04 2108 2008

16. Disposal

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.



The crossed-out wheellie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local waste disposal

authorities. The separate collection and recycling of such products will help protect the environment and human health.

See also end-of-life information at www.grundfos.com/product-recycling.

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