

ALPHA1 L

Installation and operating instructions



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GRUNDFOS 

English (GB) Installation and operating instructions

Original installation and operating instructions

These installation and operating instructions describe Grundfos ALPHA1 L.

Sections 1-4 give the information necessary to be able to unpack, install and start up the product in a safe way.

Sections 5-11 give important information about the product, as well as information on service, fault finding and disposal of the product.

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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.



Observe these instructions for explosion-proof products.



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

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 [5.4.1 Nameplate](#).

2.2 Scope of delivery

The box contains the following items:

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

3. Installing the product

3.1 Mechanical installation

3.1.1 Mounting the product

1. The arrows on the pump housing indicate the flow direction through the pump. See fig. 1.
2. Fit the two gaskets supplied with the pump when you mount the pump in the pipe. Install the pump with a horizontal motor shaft. See fig. 2. See also section [3.3 Control box positions](#).
3. Tighten the fittings. See fig. 3.

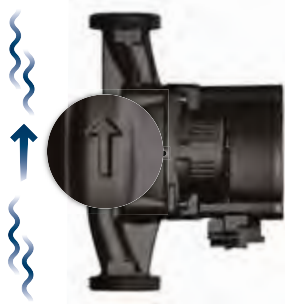


Fig. 1 Flow direction

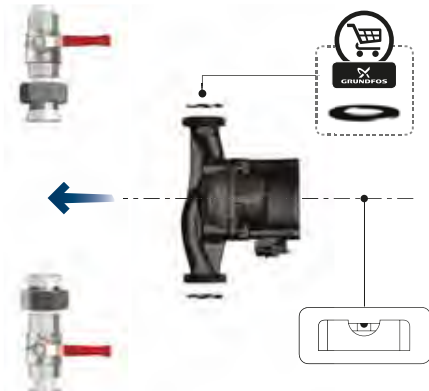


Fig. 2 Pump installation

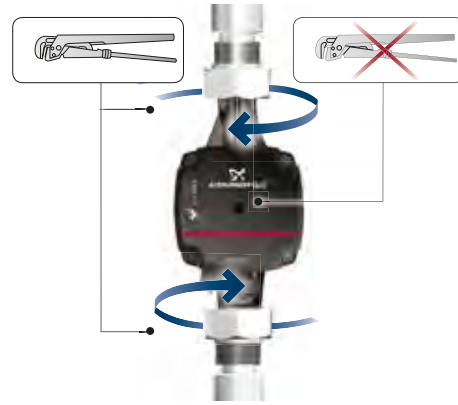


Fig. 3 Tightening the fittings

3.2 Pump positions

Always install the pump with a horizontal motor shaft. Do not install the pump with a vertical motor shaft. See fig. 4, bottom row.

- Pump installed correctly in a vertical pipe. See fig. 4, top row, left.
- Pump installed correctly in a horizontal pipe. See fig. 4, top row, right.



Fig. 4 Pump positions

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3.3 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.

The control box can be mounted in all positions. See fig. 5.

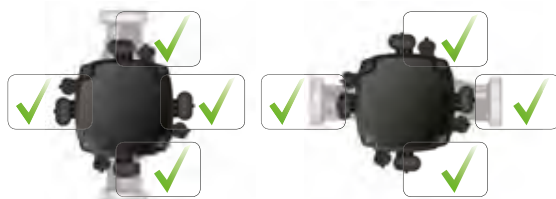


Fig. 5 Possible control box positions

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3.3.1 Changing the control box position

Step	Action	Illustration
1	Make sure that the inlet and outlet valves are closed. Unscrew the screws on the pump head.	TM06 8539 0918
2	Turn the pump head to the desired position.	TM06 8540 0918
3	Refit the screws on the pump head.	TM06 8541 0918

3.4 Insulating the pump housing



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Fig. 6 Insulating the pump housing

You can reduce the heat loss from the pump and pipe by insulating the pump housing and the pipe with insulating shells, which can be ordered as an accessory. See section [5.5.2 Insulating shells](#).



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

3.5 Electrical connection

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.
- Connect the pump to an external main switch with a minimum contact gap of 3 mm in all poles.



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 motor requires no external motor protection.
- Check that the supply voltage and frequency correspond to the values stated on the nameplate. See section [5.4.1 Nameplate](#).
- Connect the pump to the power supply with the plug supplied with the pump. See steps 1 to 7.

3.6 Assembling the installer plug

Step	Action	Illustration
1	Loosen the cable gland and unscrew the union nut in the centre of the terminal cover.	
2	Detach the terminal cover.	
3	Pull the power cable through the cable gland and terminal cover.	
4	Strip the cable conductors as illustrated.	
5	Loosen the screws on the power supply plug and connect the cable conductors.	
6	Tighten the screws on the power supply plug.	

Step	Action	Illustration
7	<p>Refit the terminal cover. See A.</p> <p>Note: It is possible to turn the power supply plug on the side for a 90° cable entry. See B.</p>	
8	Tighten the union nut.	
9	Tighten the cable gland onto the power supply plug.	
10	<p>Insert the power supply plug into the male plug on the pump.</p>	

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4. Starting up the product

4.1 Before startup

Do not start the pump until the system has been filled with liquid and vented. Make sure that the required minimum inlet pressure is available at the pump inlet. See section 10. *Technical data*.

When using the pump for the first time, the system must be vented at the highest point. See section 4.3 *Venting the pump*. The pump is self-venting through the system.

4.2 Starting up the pump

Step	Action	Illustration
1	Open the inlet and outlet valves.	
2	Switch on the power supply.	
3	<p>The lights in the operating panel indicates that the power supply has been switched on and the pump is running.</p>	

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4.3 Venting the pump

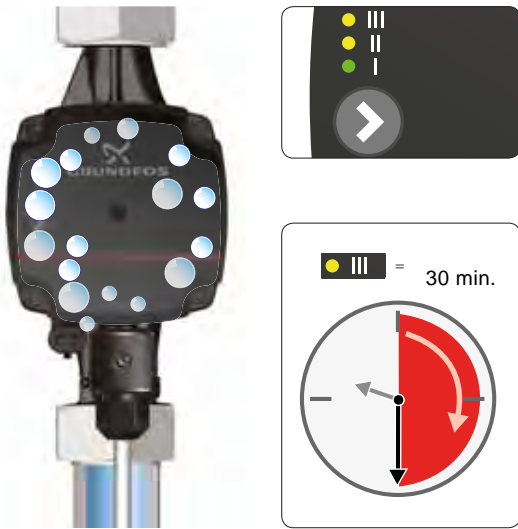


Fig. 7 Venting the pump

Small air pockets trapped inside the pump may cause noise when starting up the pump. However, because the pump is self-venting through the system, the noise ceases over a period of time.

To speed up the venting process, do as follows:

1. Set the pump to speed III using the push-button on the operating panel.
2. Let the pump run for approximately 30 minutes. How fast the pump is vented depends on the system size and design.

When you have vented the pump, that is when the noise has ceased, set the pump according to the recommendations. See section 6. [Control functions](#).



The pump must not run dry.



The pump is from factory set to radiator heating mode.

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5. Product introduction

5.1 Product description

ALPHA1 L can be used as stand-alone or integrated circulator pump in existing systems as replacement or in new systems with either variable or constant flow rate.

5.1.1 Model type

These installation and operating instructions cover ALPHA1 L. The model type is stated on the packaging and nameplate.

5.2 Applications

ALPHA1 L is designed for circulating liquids in all kinds of heating applications. The pumps are suitable for the following systems:

- Systems with constant or variable flows where it is desirable to optimise the pump duty point.
- Installation in existing systems where the differential pressure of the pump is too high during periods of reduced flow demand.
- Installation in new systems for automatic adjustment of the performance to flow demands without the use of bypass valves or similar expensive components.

The speed can be controlled by a low-voltage PWM (Pulse Width Modulation) signal.

High-efficiency ECM (Electronically Commutated Motor) pumps, such as ALPHA1 L, must not be speed-controlled by an external speed controller varying or pulsing the supply voltage.

The speed can be controlled by a low-voltage PWM (Pulse Width Modulation) signal.

5.3 Pumped liquids

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

The pump is suitable for clean, thin, non-aggressive and non-explosive liquids, not containing solid particles, fibres or mineral oil.

- Maximum water/propylene glycol mixture is 50 %
- Maximum 10 mm²/s viscosity

Note: The water/propylene glycol mixture reduces the performance due to higher viscosity.

See section 10. [Technical data](#) for further information.



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

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.

5.4 Identification

5.4.1 Nameplate

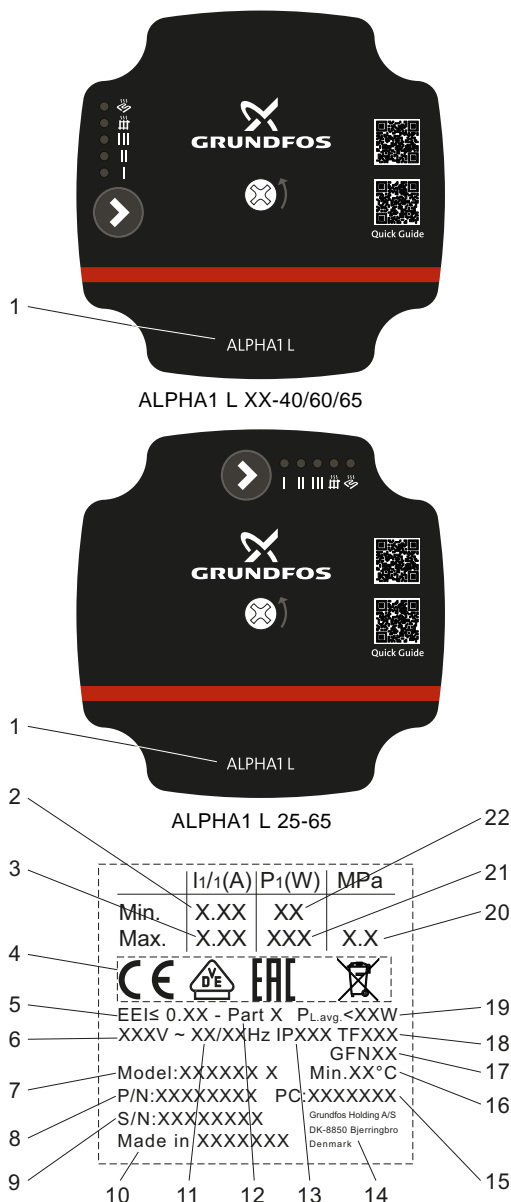


Fig. 8 Nameplate

Pos.	Description
1	Pump name
2	Minimum current [A]
3	Maximum current [A]
4	CE mark and approvals
5	Energy Efficiency Index, EEI
6	Voltage [V]
7	Product type
8	Material number
9	Serial number
10	Country of manufacture
11	Frequency [Hz]
12	Part, according to EEI
13	Enclosure class
14	Manufacturer's name and address
15	Production code, year and week
16	Minimum liquid temperature
17	VDE code
18	TF class
19	Average compensated power input PL, avg [W]
20	Maximum system pressure
21	Maximum input power [W]
22	Minimum input power [W]

5.4.2 Type key

Example	ALPHA1 L	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]				

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5.5 Accessories

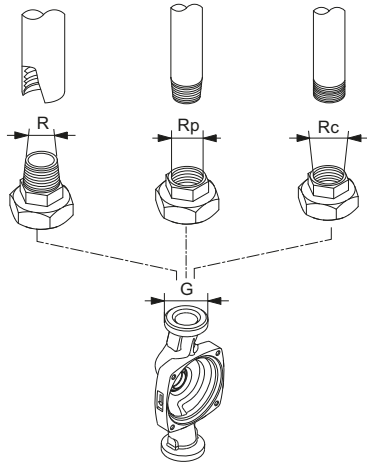
5.5.1 Unions and valve kits

		Product numbers, unions														
ALPHAX	Connection	Rp			R		Rp			mm		mm				
		3/4	1	1 1/4	1	1 1/4	3/4	1	1 1/4	Ø22	Ø28	Ø15	Ø18	Ø22	Ø28	Ø42
25-xx	G 1 1/2	529921	529922	529821	529925	529924										
25-xx N	G 2	529971	529972				519805	519806	519807	519808	519809		529977	529978	529979	
32-xx	G 2		509921	509922												

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

R-threads are tapered external threads in accordance with the EN z0226-1 standard.

Rc- or Rp-threads are internal threads with either tapered or cylindrical threads. You can screw conical male R-threads into female Rc- or Rp-threads. See fig. 9.



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Fig. 9 G-threads and R-threads

5.5.2 Insulating shells

The insulating shells, which are tailored to the individual pump type, can be ordered as accessories. It is easy to fit the insulating shells around the pump.

Pump type	Product number
ALPHA1 L XX-XX (N)	99270706

5.5.3 Control box connections

The ALPHA1 L control box has two electrical connections on one side: the power supply and the control signal connection.

5.6 Power supply

The installer plug is supplied with the pump and is available as an accessory.

Power cable adapters are also available as accessories.

5.6.1 Control signal connection

The control signal cable connection has three conductors: the signal input, the signal output and the signal reference. Connect the cable to the control box by a mini superseal plug. See fig. 11. The optional signal cable can be supplied with the circulator as an accessory.

The PWM signal connection is covered by a blind plug from the factory. See fig. 10.



Fig. 10 Control signal connection







Fig. 11 Mini superseal plug

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5.6.2 Cables and plugs

Picture	Product description	Length [mm]	Product number
	Installer plug		99439948
	Signal cable with mini superseal	2000	99165309
	Superseal Molex cable adapter, overmoulded	150	99165311
	Superseal Volex cable adapter, overmoulded	150	99165312

6. Control functions

6.1 Operating panel



Fig. 12 Operating panel

Symbol	Description
	Push-button
I, II, III	Constant curve or constant speed curve I, II and III
	Radiator heating mode (proportional pressure)
	Underfloor heating mode (constant pressure)

The operating panel shows the following:

- The control mode, after pressing the button
- Alarm status

6.1.1 Alarm or warning

If the pump has detected one or more alarms or warnings, the first LED switches from green to red. When the fault has been resolved the operating panel switches back to operating status. See section [9. Fault finding the product](#).

6.2 Control modes

The pump has seven different control modes. Learn more about them in the following sections.

6.2.1 Radiator heating mode (factory setting)

The radiator heating mode adjusts the pumps performance to the actual heat demand in the system following a proportional-pressure curve.

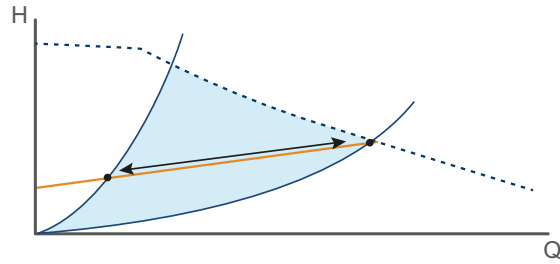


Fig. 13 Proportional-pressure curve

System type	Recommended control mode	Alternative control mode
Two-pipe system	Radiator heating mode	Constant curve or constant speed I, II, III, see section 6.2.3 Constant curve or constant speed, I, II or III

6.2.2 Underfloor heating mode

The underfloor heating mode adjusts the pumps performance to the actual heat demand in the system following a constant-pressure curve.

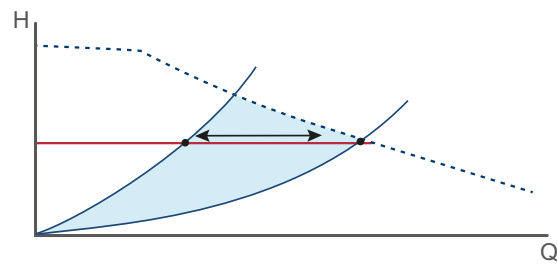


Fig. 14 Constant-pressure curve

System type	Recommended control mode	Alternative control mode
Underfloor heating system	Underfloor heating mode	No alternatives

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6.2.3 Constant curve or constant speed, I, II or III

At constant-curve or constant-speed operation, the pump runs at a constant curve. The pump performance follows the selected performance curve, I, II or III. See fig. 15 where II has been selected.

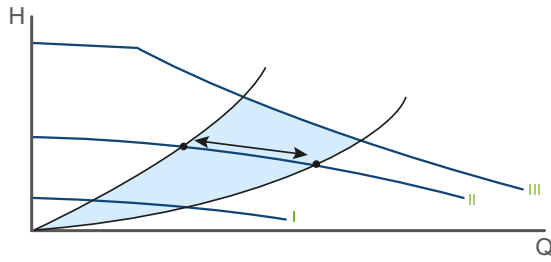


Fig. 15 Constant-curve/speed curve

The selection of the constant-curve or constant-speed setting depends on the characteristics of the heating system in question.

6.2.4 Pump setting for one-pipe heating systems

Recommended and alternative pump settings:

System type	Recommended control mode	Alternative control mode
One-pipe heating system	Constant curve or constant speed, I, II or III. See section 6.2.3 <i>Constant curve or constant speed, I, II or III.</i>	No alternatives

6.2.5 Pump setting for domestic hot-water systems

Recommended and alternative pump settings:

System type	Recommended control mode	Alternative control mode
Domestic hot-water system	Constant curve or constant speed, I, II or III. See section 6.2.3 <i>Constant curve or constant speed, I, II or III.</i>	No alternatives

6.2.6 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.

6.2.7 Externally controlled signal connection: PWM input signal profile A (heating)

ALPHA1 L can be controlled via a digital low-voltage pulse-width modulation (PWM) signal. For instructions on how to set the connection, see section 7.1 *Setting the PWM input signal.*

The circulator runs on constant-speed curves depending on the PWM input signal. The speed decreases when the PWM value increases. If PWM equals 0, the circulator runs at maximum speed.

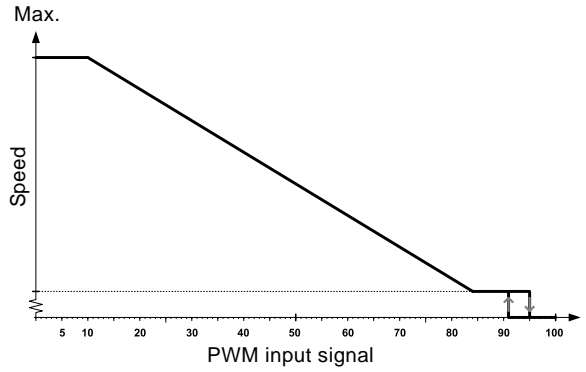


Fig. 16 PWM input signal profile A (heating)

PWM input signal [%]	Pump status
≤ 10	Maximum speed: max.
> 10 / ≤ 84	Variable speed: min. to max.
> 84 / ≤ 91	Minimum speed: IN
> 91/95	Hysteresis area: on/off
> 95 or ≤ 100	Standby mode: off

6.2.8 PWM feedback signal - power consumption

The PWM feedback signal offers pump information like in bus systems:

- current power consumption (accuracy ± 2 % of PWM signal)
- warning
- alarm
- operation status.

6.2.9 Alarms

Alarm output signals are available because some PWM output signals are dedicated to alarm information. If a supply voltage is measured below the specified supply voltage range, the output signal is set to 75 %. If the rotor is locked due to deposits in the hydraulics, the output signal is set to 90 % because this alarm has a higher priority. See fig. 17.

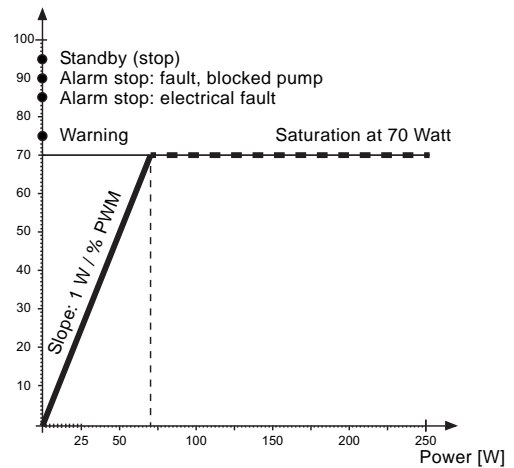


Fig. 17 PWM feedback signal - power consumption

6.3 Pump performance

Figure 18 shows the relation between pump setting and pump performance by means of curves.

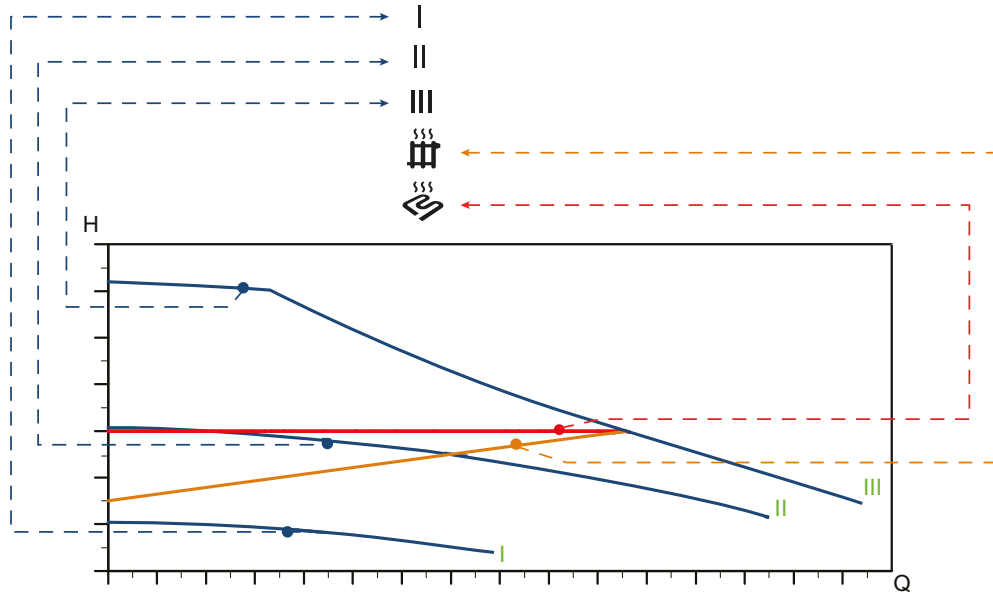




Fig. 18 Pump setting in relation to pump performance

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Setting	Pump curve	Function
I	Constant curve or constant speed I	The pump runs at a constant speed and consequently on a constant curve. At speed I, the pump is set to run on the minimum curve under all operating conditions.
II	Constant curve or constant speed II	The pump runs at a constant speed and consequently on a constant curve. At speed II, the pump is set to run on the intermediate curve under all operating conditions.
III	Constant curve or constant speed III	The pump runs at a constant speed and consequently on a constant curve. At speed III, the pump is set to run on the maximum curve under all operating conditions. Quick venting of the pump can be obtained by setting the pump to speed III for a short period.
	Radiator heating mode (proportional-pressure curve)	The duty point of the pump will move up or down on a proportional-pressure curve, depending on the heat demand in the system. The head (pressure) is reduced at falling heat demand and increased at rising heat demand.
	Underfloor heating mode (constant-pressure curve)	The duty point of the pump will move out or in on a constant-pressure curve, depending on the heat demand in the system. The head (pressure) is kept constant, irrespective of the heat demand.

7. Setting the product

To set the product use the push-button on the operating panel. Every time you press the push-button, the pump setting is changed. The LEDs will indicate the chosen control mode. See fig. 19. A cycle is five button presses.

The pump automatically enables the PWM input-signal control mode when the signal cable is plugged in and the PWM signal is detected by the pump. For details on setting the PWM input signal, see section [7.1 Setting the PWM input signal](#).

To select the fixed proportional-pressure curve, press and hold the push-button for 3 seconds. To disable this control mode, press and hold the button for 3 seconds.

To learn more about each control mode, see section [6.2 Control modes](#)

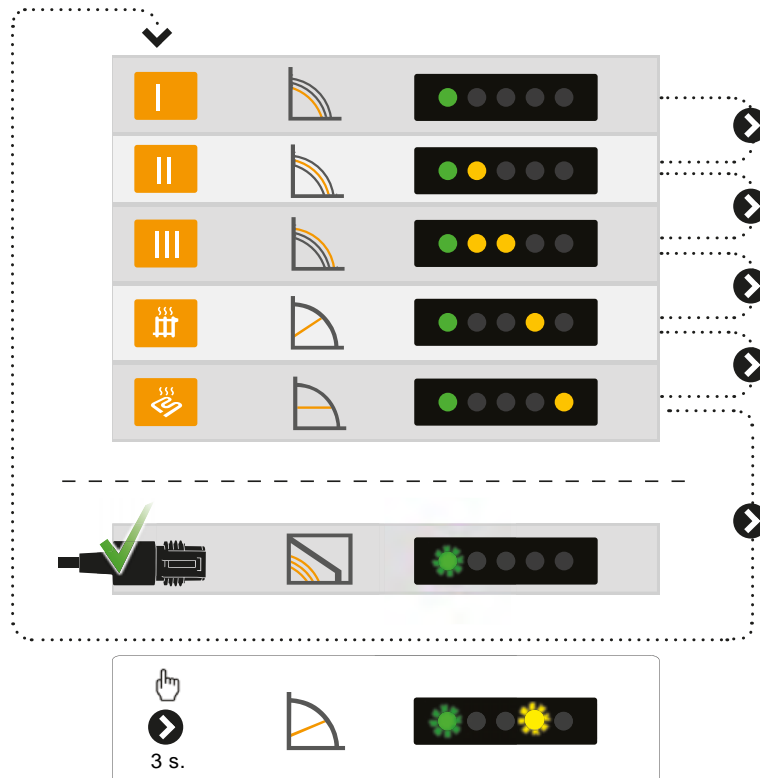


Fig. 19 Operating panel LEDs indicating the different control modes



The pump has been factory-set to radiator heating mode.

7.1 Setting the PWM input signal

To enable the external control mode (PWM profile A), you need a signal cable connected to an external system. The cable connection has three conductors: the signal input, the signal output and the signal reference.

The cable is not supplied with the pump but can be ordered as an accessory.



The cable must be connected to the control box via a mini superseal plug. See fig. 20.



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Fig. 20 Mini superseal plug

Set the signal connection

1. Make sure that the pump is turned off.
2. The PWM signal connection is covered by a blind plug. Remove the plug.
3. Connect the signal cable with the mini superseal plug.
4. Switch on the power supply.
5. The pump automatically detects if a valid PWM signal is available after which it enables the control mode on the pump. See fig. 21.



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Fig. 21 Connecting the signal cable to the ALPHA1 L

8. Servicing the product

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.

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.

8.1 Dismantling the product

1. Switch off the power supply.
2. Pull out the plug. For instructions on how to dismantle the plug, see section [8.2 Dismantling the plug](#).
3. Close the two isolating valves on both sides of the pump.
4. Loosen the fittings.
5. Remove the pump from the system.

8.2 Dismantling the plug

1. Loosen the cable gland and unscrew the union nut in the centre of the terminal cover.
2. Detach the terminal cover.
3. Loosen the screws on the power supply plug and disconnect the cable conductors.
4. Pull the power cable back through the cable gland and terminal cover.

9. Fault finding the product

If the pump has detected one or more alarms, the first LED switches from green to red. When an alarm is active, the LEDs indicate the alarm type as defined in fig. 22.



If multiple alarms are active at the same time, the LEDs only show the error with the highest priority. The priority is defined by the sequence of the table.

When there is no active alarm anymore, the operating panel switches back to operating status and the first LED switches from red to green.



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.

Status	Fault	Display	Solution
Alarm The pump stops. The pump is blocked.			Deblock the shaft. See section 9.1 Deblocking the shaft .
Warning The pump keeps running. The supply voltage is low.			Make sure that there is sufficient voltage supply to the pump.
Alarm The pump stops. Electrical error.			Replace the pump and send the pump to the nearest Grundfos Service Center.

Fig. 22 Fault finding table

9.1 Deblocking the shaft

If the pump is blocked it is necessary to deblock the shaft. The ALPHA1 L deblocking device is accessible from the front of the circulator without having to demount the control box. The force of the device is high enough to deblock circulators, which are seized by lime, e.g. if the pump has been turned off during summer.

Course of action:

1. Switch off the power supply.
2. Locate the deblocking screw in the centre of the control box.
3. Use a star screwdriver with a size 2 Phillips tip to push the deblocking screw inwards.
4. When the screw can be turned counterclockwise, the shaft has been deblocked. Repeat step 3, if necessary.
5. Switch on the power supply.

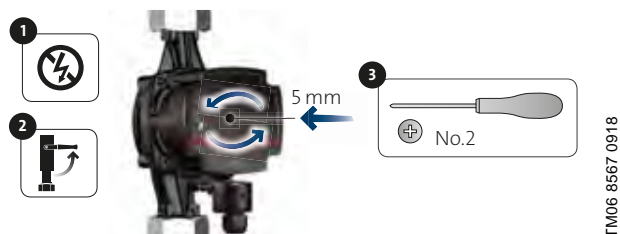


Fig. 23 Deblocking the shaft



Before, during and after the deblocking, the device is tight and must not release any water.

10. Technical data

Operating conditions		
Sound pressure level	The sound pressure level of the pump is lower than 43 dB(A).	
Relative humidity	Maximum 95 %, non-condensing environment	
System pressure	PN 10: Maximum 1.0 MPa (10 bar)	
	Liquid temperature	Minimum inlet pressure
Inlet pressure	75 °C	0.005 MPa (0.05 bar), 0.5 m head
	95 °C	0.05 MPa (0.5 bar), 5 m head
Ambient temperature	0-55 °C	
Liquid temperature	2-95 °C	
Liquid	Maximum water/propylene glycol mixture is 50 %	
Viscosity	Maximum 10 mm ² /s	
Minimum switching time power on/off	No specific requirements.	
Maximum altitude of installation	2000 m above sea level	
Electrical data		
Supply voltage	1 x 230 V - 15 %/+ 10 %, 50/60 Hz, PE	
Insulation class	F	
Standby power consumption	< 0.3 W	
Miscellaneous data		
Motor protection	The pump requires no external motor protection.	
Enclosure class	IPX4D	
Temperature class (TF)	TF95	
Specific EEI values	ALPHA1 L XX-40: EEI ≤ 0.20	
	ALPHA1 L XX-60: EEI ≤ 0.20	
	ALPHA1 L XX-65: EEI ≤ 0.20	

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



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

10.1 Dimensions, ALPHA1 L XX-40, XX-60, 15-65

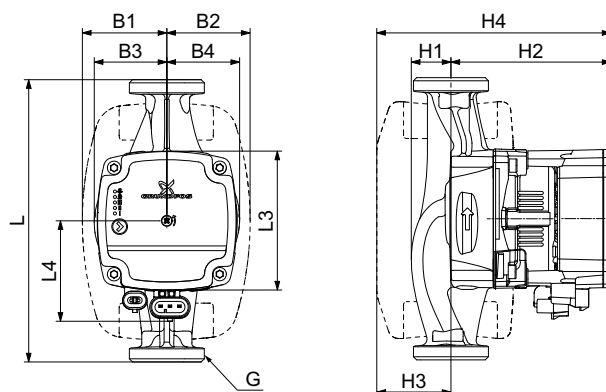


Fig. 24 ALPHA1 L XX-40, XX-60, 15-65

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Pump type	Dimensions [mm]											
	L	L3	L4	B1	B2	B3	B4	H1	H2	H3	H4	G
ALPHA1 L 15-40	130	88	64	54	54	46	47	25	102	47	149	G 1
ALPHA1 L 15-60	130	88	64	54	54	46	47	25	102	47	149	G 1
ALPHA1 L 15-65	130	88	64	54	54	46	47	25	102	47	149	G 1
ALPHA1 L 20-40	130	88	64	54	54	46	47	25	102	47	149	G 1 1/4
ALPHA1 L 20-40 N	150	90	64	54	54	49	49	27	102	47	149	G 1 1/4
ALPHA1 L 20-60	130	88	64	54	54	46	47	25	102	47	149	G 1 1/4
ALPHA1 L 20-60 N	150	90	64	54	54	49	49	27	102	47	149	G 1 1/4
ALPHA1 L 25-40	130	88	64	54	54	46	47	25	102	47	149	G 1 1/2
ALPHA1 L 25-40 N	180	88	64	54	54	46	46	25	102	47	149	G 1 1/2
ALPHA1 L 25-60	130	88	64	54	54	46	47	25	102	47	149	G 1 1/2
ALPHA1 L 25-60 N	180	88	64	54	54	46	46	25	102	47	149	G 1 1/2
ALPHA1 L 25-60 N	180	90	64	54	54	49	49	27	102	47	149	G 1 1/2
ALPHA1 L 32-40	180	88	64	54	54	46	48	26	102	47	149	G 2
ALPHA1 L 32-60	180	88	64	54	54	46	48	26	102	47	149	G 2

10.2 Dimensions, ALPHA1 L 25-65

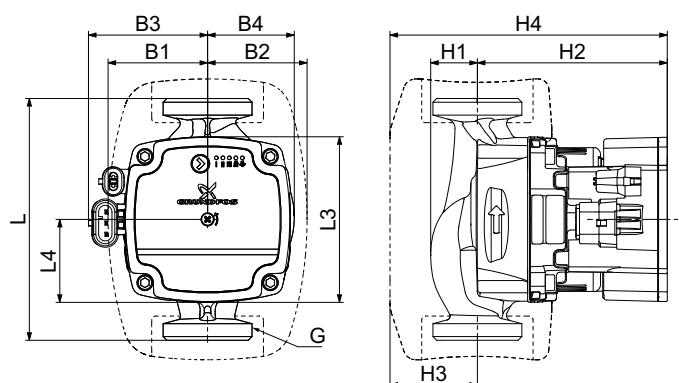


Fig. 25 ALPHA1 L 25-65

Pump type	Dimensions [mm]											
	L	L3	L4	B1	B2	B3	B4	H1	H2	H3	H4	G
ALPHA1 L 25-65	130	89	45	54	54	72	47	25	102	47	149	G 1 1/2

10.3 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 must 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 EEI values obtained according to EN 16297 part 3.

10.4 Performance curves, ALPHA1 L XX-40 (N)

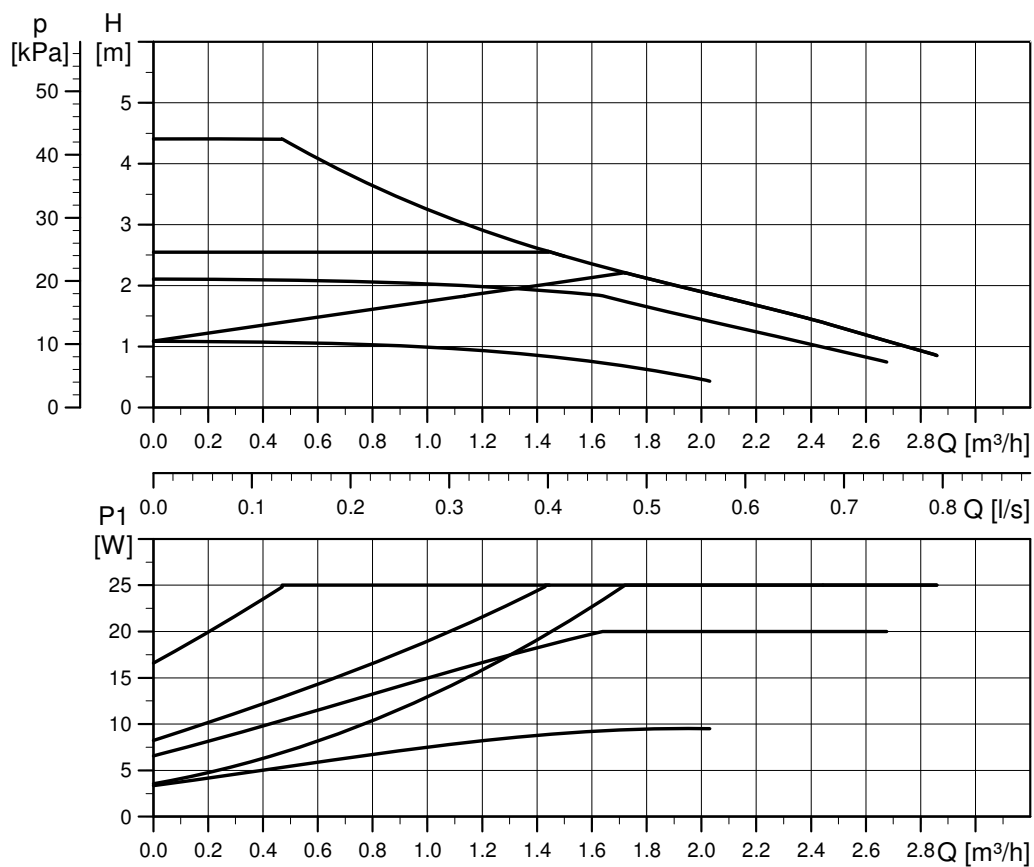


Fig. 26 ALPHA1 L XX-40

Setting	P1 [W]	I ₁ [A]
Min.	4	0.05
Max.	25	0.26

10.5 Performance curves, ALPHA1 L XX-60 (N)

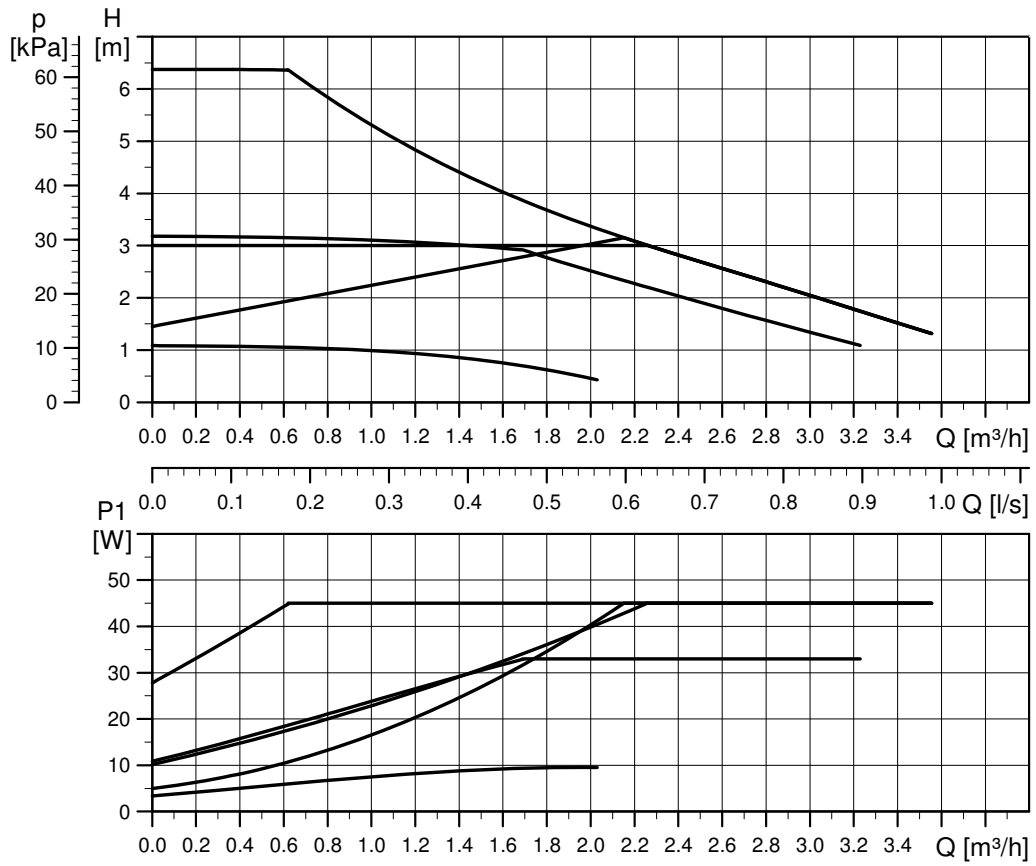


Fig. 27 ALPHA1 L XX-60

Setting	P1 [W]	I ₁ [A]
Min.	4	0.05
Max.	45	0.42

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10.6 Performance curves, ALPHA1 L XX-65 (N)

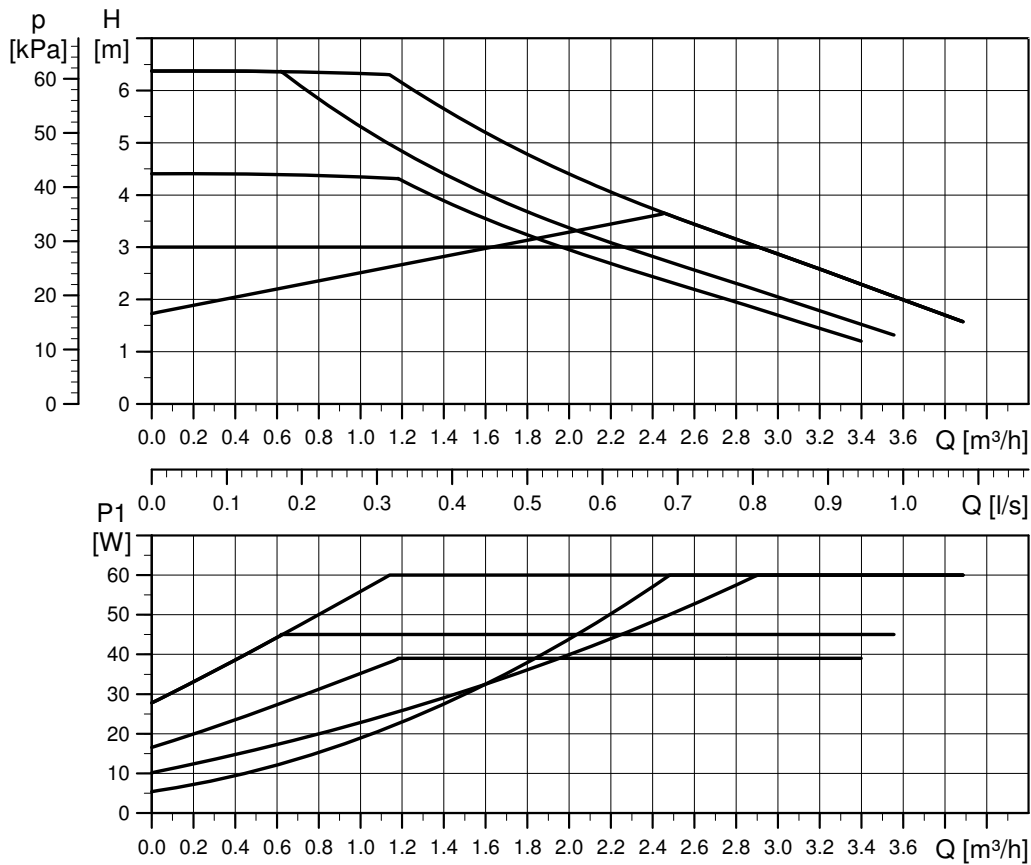


Fig. 28 ALPHA1 L XX-65

Setting	P1 [W]	I ₁ [A]
Min.	4	0.05
Max.	60	0.52

11. Disposing of the product

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.

TM07 0799 1018

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