# **GRUNDFOS ALPHA2 L**

Installation and operating instructions



# Declaration of conformity

#### **GB: EC declaration of conformity**

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

- Low Voltage Directive (2006/95/EC).
   Standard used: EN 60335-2-51:2003.
- EMC Directive (2004/108/EC).
  - Standards used: EN 55014-1:2006 and EN 55014-2:1997.
- Ecodesign Directive (2009/125/EC).

Circulators:

Commission Regulation Nos 641/2009 and 622/2012. Applies only to circulators marked with the energy efficiency index EEI. See the pump nameplate.

Standards used: EN 16297-1:2012 and EN 16297-2:2012

This EC declaration of conformity is only valid when published as part of the Grundfos installation and operating instructions (publication number 95047490 0813).

### RU: Декларация о соответствии EC

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

- Низковольтное оборудование (2006/95/EC).
   Применявшийся стандарт: EN 60335-2-51:2003.
- Электромагнитная совместимость (2004/108/EC)
- Применявшиеся стандарты: EN 55014-1:2006 и EN 55014-2:1997.
- Директива по экологическому проектированию энергопотребляющей продукции (2009/125/ЕС).

Циркуляционные насосы:

Постановление Комиссии № 641/2009 и 622/2012.

Применяется только по отношению к циркуляционным насосам, промаркированным и имеющим индекс энергоэффективности FEI. См. фирменную табличку насоса

EEI. См. фирменную табличку насоса. Применявшиеся стандарты: EN 16297-1:2012 и EN 16297-2:2012.

Данная декларация о соответствии EC имеет силу только в случае публикации в составе инструкции по монтажу и эксплуатации на продукцию производства компании Grundfos (номер публикации 95047490 0813).

Bjerringbro, 1st August 2013

Svend Aage Kaae Technical Director Grundfos Holding A/S Poul Due Jensens Vej 7 8850 Bjerringbro, Denmark

Person authorised to compile technical file and empowered to sign the EC declaration of conformity.



АЯ56

#### Декларация о соответствии на территории РФ

Насосы серии GRUNDFOS ALPHA2 L сертифицированы в системе

Сертификат соответствия:

№ POCC DK.AЯ56.B43661, срок действия до 24.04.2014г.

1 августа 2013г.

Касаткина В. В.
Руководитель отдела качества, экологии и охраны труда
ООО Грундфос Истра, Россия
143581, Московская область, Истринский район, дер. Лешково, д.188

### Original installation and operating instructions.

### **CONTENTS**

	Pa	ige
1.	Symbols used in this document	3
2.	General description	4
2.1	Advantages of installing a GRUNDFOS ALPHA2 L	4
3.	Identification	5
3.1	Nameplate	5
3.2	Type key	5
<b>4.</b> 4.1	Applications System types	<b>6</b> 6
4.2	Pumped liquids	6
4.3	System pressure	6
4.4	Relative air humidity (RH)	6
4.5	Enclosure class	6
4.6	Inlet pressure	6
<b>5.</b> 5.1	Mechanical installation Mounting	<b>7</b> 7
5.2	Control box positions	8
5.3	Changing the control box position	8
5.4	Insulation of pump housing	9
6.	Electrical installation	10
7.	Control panel	11
7.1	Elements on the control panel	11
7.2 7.3	"POWER ON" light field Light fields indicating the pump setting	11 11
7.4	Push-button for selection of pump setting	11
8.	Setting the pump	12
8.1	Pump setting for system type	12
8.2	Pump control	12
9.	Systems with bypass valve between flow and return	
9.1	pipes Purpose of bypass valve	<b>13</b> 13
9.2	Manually operated bypass valve	13
9.3	Automatic bypass valve (thermostatically controlled)	13
10.	Startup	14
10.1	•	14
10.2	0 1 1	14
10.3	Venting of heating systems	14
<b>11.</b> 11.1	Pump settings and pump performance Relation between pump setting and pump performance	15 15
12.	Fault finding	16
13.	Technical data and installation dimensions	17
	Technical data	17
13.2	Installation dimensions, GRUNDFOS ALPHA2 L XX-40, XX-50, XX-60	18
14.	Performance curves	19
14.1	Guide to performance curves	19
14.2		19
14.3 14.4	,	20 21
14.5	Performance curves, ALPHA2 L XX-50	22
15.	Accessories	23
	Disposal	23



### 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



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.

# 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.



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

Note

Notes or instructions that make the job easier and ensure safe operation.

# 2. General description

The GRUNDFOS ALPHA2 L 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 control panel. See sections 3. *Identification* and 7. *Control panel*.

# 2.1 Advantages of installing a GRUNDFOS ALPHA2 L

The installation of a GRUNDFOS ALPHA2 L means

## easy installation and start-up

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 energyrelated (ErP) products is EU legislation requiring manufacturers to reduce the overall environmental impact of their products.
- Circulator pumps will be EuP-ready and comply with the requirements as from 2015.



TM05 7745 1613

Fig. 1 EuP-ready label

# 3. Identification

# 3.1 Nameplate

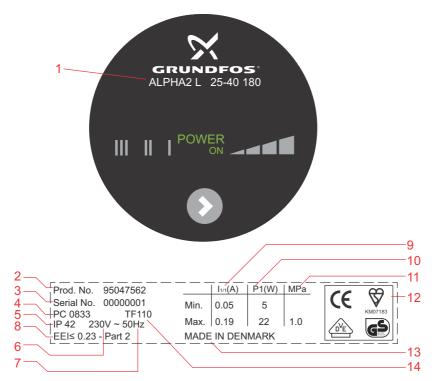


Fig. 2 Example of nameplate

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

# 3.2 Type key

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

5

TM05 5925 2013

# 4. Applications

# 4.1 System types

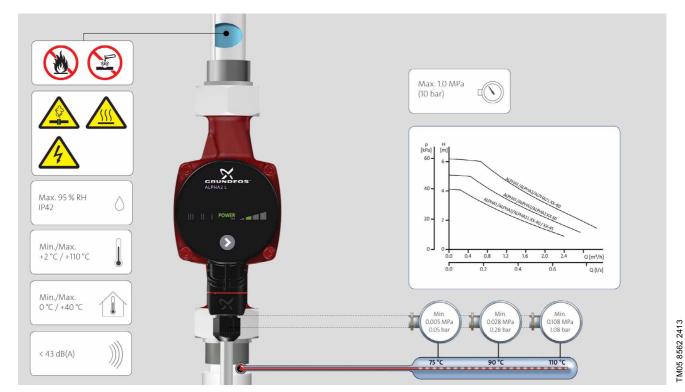


Fig. 3 Pumped liquids and operating conditions

### GRUNDFOS ALPHA2 L 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.

# 4.2 Pumped liquids

Clean, thin, non-aggressive and non-explosive liquids, not containing solid particles, fibres or mineral oil. See fig. 3. 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.



# Warning

The pump must not be used for the transfer of flammable liquids such as diesel oil, petrol and similar liquids.

# 4.3 System pressure

Maximum 1.0 MPa (10 bar). See fig. 3.

### 4.4 Relative air humidity (RH)

Maximum 95 %. See fig. 3.

# 4.5 Enclosure class

IP42. See fig. 3.

# 4.6 Inlet pressure

Minimum inlet pressure in relation to liquid temperature. See fig. 3.

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

# 5. Mechanical installation

# 5.1 Mounting

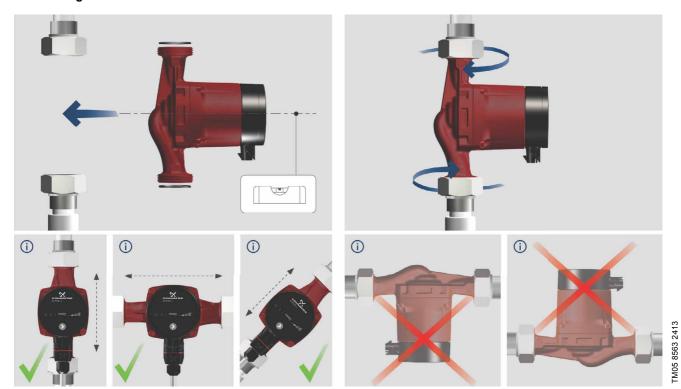


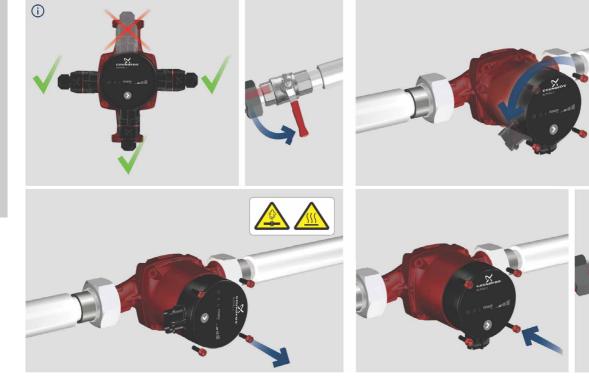
Fig. 4 Mounting the GRUNDFOS ALPHA2 L

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

See section 13.2 Installation dimensions, GRUNDFOS ALPHA2 L XX-40, XX-50, XX-60.

- Fit the two gaskets supplied when the pump is mounted in the pipe.
- Install the pump with horizontal motor shaft. See fig. 4.

# 5.2 Control box positions



TM05 8564 2413

Fig. 5 Control box positions

# Warning



The pumped liquid may be scalding hot and under high pressure.

Drain the system or close the isolating valves on either side of the pump before the screws are removed.

Caution

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

# 5.3 Changing the control box position

The control box position can be changed in steps of 90  $^{\circ}$ .

Possible/permissible positions and the procedure of changing the position of the control box are illustrated in fig. 5.

### Procedure:

- 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.

# 5.4 Insulation of pump housing



Fig. 6 Insulation of pump housing

Note 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. 6.

As an alternative, polystyrene insulating shells can be fitted to the pump. See section *15. Accessories*.

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

# 6. Electrical installation



TM05 8565 2413

Fig. 7 Electrical connection

Carry out the electrical connection and protection according to local regulations.



### 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 pump 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 as shown in fig. 7.
- Light in the control panel shows that the power supply has been switched on.

# 7. Control panel

# 7.1 Elements on the control panel

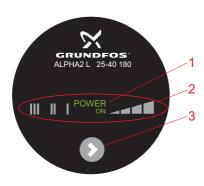


Fig. 8 GRUNDFOS ALPHA2 L control panel

The control panel comprises:

Pos.	Description
1	"POWER ON" light field
2	Seven light fields indicating the pump setting
3	Push-button for selection of pump setting

### 7.2 "POWER ON" light field

The "POWER ON" light field (fig. 8, 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 12. Fault finding.

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

### 7.3 Light fields indicating the pump setting

The pump has seven optional settings which can be selected with the push-button. See fig. 8, pos. 4.

The pump setting is indicated by seven different light fields. See fig. 9.

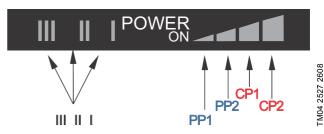


Fig. 9 Seven light fields

TM04 2526 2013

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 11. Pump settings and pump performance for information about the function of the settings.

# 7.4 Push-button for selection of pump setting

Every time the push-button (fig. 8, pos. 4) is pressed, the pump setting is changed.

A cycle is seven button presses. See section 7.3 Light fields indicating the pump setting.

# 8. Setting the pump

# 8.1 Pump setting for system type

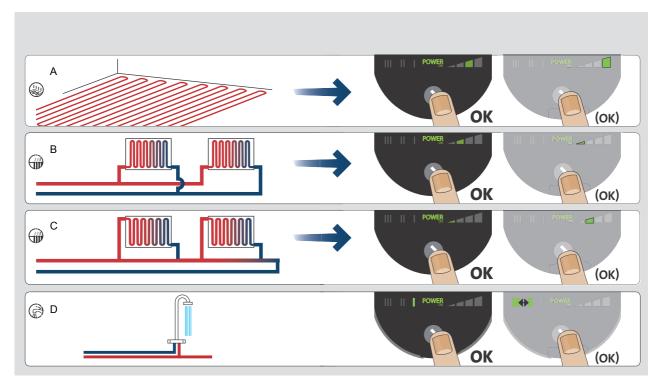


Fig. 10 Selection of pump setting for system type

Factory setting = highest proportional-pressure curve (PP2).
Recommended and alternative pump settings according to fig. 10:

Pos.	Custom tum	Pump setting			
	System type	Recommended	Alternative		
Α	Underfloor heating	Lowest constant-pressure curve (CP1)*	Highest constant-pressure curve (CP2)*		
В	Two-pipe systems	Highest proportional-pressure curve (PP2)*	Lowest proportional-pressure curve (PP1)*		
С	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 14.1 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 11. Pump settings and pump performance.

# 8.2 Pump control

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

TM05 1921 4512

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 Q/H diagrams. See section 11. 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 Q/H diagrams. See section 11. Pump settings and pump performance.

12

# 9. Systems with bypass valve between flow and return pipes

# 9.1 Purpose of bypass valve

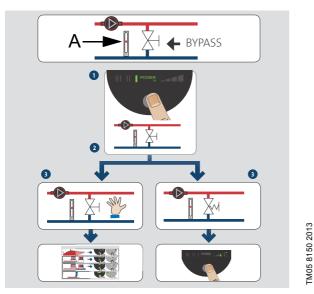


Fig. 11 Systems with bypass valve

### 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.

## 9.2 Manually operated bypass valve

Follow this procedure:

- Adjust the bypass valve with the pump in setting I (speed I).
   The minimum flow (Q<sub>min.</sub>) 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 8. Setting the pump.

# 9.3 Automatic bypass valve (thermostatically controlled)

Follow this procedure:

- Adjust the bypass valve with the pump in setting I (speed I).
   The minimum flow (Q<sub>min.</sub>) for the system must always be observed. Consult the manufacturer's instructions.
- 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 11. Pump settings and pump performance.

# 10. Startup

# 10.1 Before start-up

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 4. Applications and 13. Technical data and installation dimensions.

### 10.2 Venting the pump

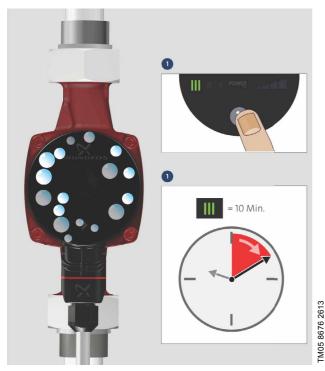


Fig. 12 Venting the pump

The pump is self-venting. It need not be vented before start-up. 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 8. Setting the pump.

Caution The pump must not run dry.

The system cannot be vented through the pump. See section 11. Pump settings and pump performance.

### 10.3 Venting of heating systems

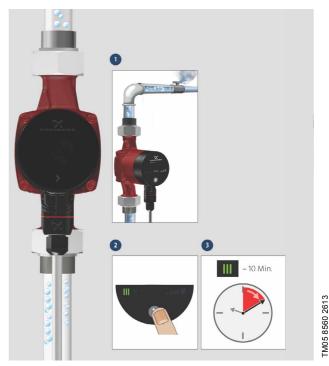


Fig. 13 Venting of heating systems

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, i.e. when the possible noise has ceased, set the pump according to the recommendations. See section 8. Setting the pump.

Repeat the procedure, if necessary.

Caution The pump must not run dry.

# 11. Pump settings and pump performance

# 11.1 Relation between pump setting and pump performance

Figure 14 shows the relation between pump setting and pump performance by means of curves. See also section *14. Performance curves*.

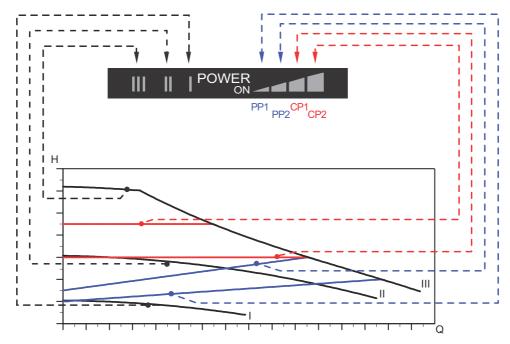


Fig. 14 Pump setting in relation to pump performance

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. 14.  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. 14.  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. 14.  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. 14.  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. 14.  Quick venting of the pump can be obtained by setting the pump to speed III for a short period. See section 10.2 Venting the pump.
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. 14.
ı	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. 14.

TM04 2532 2608

# 12. Fault finding



Warning

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

Fault Control panel		Control panel	rol panel Cause		Remedy
1.	The pump does not		a)	A fuse in the installation is blown.	Replace the fuse.
	run.	Light off.	b)	The current-operated or voltage- operated circuit breaker has tripped out.	Cut in the circuit breaker.
			c)	The pump is defective.	Replace the pump.
		"POWER ON" is on only.	a)	Power supply failure. The power supply might be too low.	Check that the power supply falls within the specified range.
		-	b)	The pump is blocked.	Remove the impurities.
2.	Noise in the system.	Oh average and a second as		Air in the system.	Vent the system. See section 11. Pump settings and pump performance.
		Shows normal operating status.	b)	The flow is too high.	Reduce the suction head. See section 11. Pump settings and pump performance.
3.	Noise in the pump.	Shows normal operating	a)	Air in the pump.	Let the pump run. It vents itself over time. See section 10.2 Venting the pump.
		status.	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 normal operating status.	a)	The pump performance is too low.	Increase the suction head. See section 11. Pump settings and pump performance.

# 13. Technical data and installation dimensions

# 13.1 Technical data

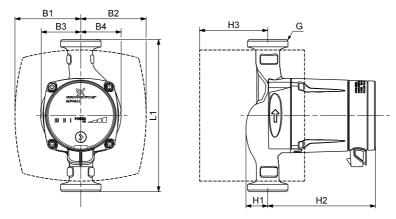
Supply voltage	1 x 230 V - 10 %/+ 10 %, 50/60 Hz, PE.					
Motor protection	The pump requires no extern	The pump requires no external motor protection.				
Enclosure class	IP42.					
Insulation class	F.					
Relative air humidity	Maximum 95 %.					
System pressure	Maximum 1.0 MPa, 10 bar, 1	02 m head.				
	Liquid temperature	Minimum inlet pressure				
Inlet pressure	≤ +75 °C	0.05 bar, 0.005 MPa, 0.5 m head				
mict pressure	+90 °C	0.28 bar, 0.028 MPa, 2.8 m head				
	+110 °C	1.08 bar, 0.108 MPa, 10.8 m head				
EMC	EN 55014-1:2006 and EN 55	014-2:1997.				
Sound pressure level	The sound pressure level of	the pump is lower than 43 dB(A).				
Ambient temperature	0 to +40 °C.					
Temperature class	TF110 to CEN 335-2-51.	TF110 to CEN 335-2-51.				
Surface temperature	The maximum surface temper	erature will not exceed +125 °C.				
Liquid temperature	+2 to +110 °C.					

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

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

# 13.2 Installation dimensions, GRUNDFOS ALPHA2 L XX-40, XX-50, XX-60

# Dimensional sketches and table of dimensions



TM04 2533 2608

 $\textbf{Fig. 15} \;\; \textbf{Dimensional sketches}, \, \textbf{ALPHA2} \; \textbf{L} \; \textbf{XX-40}, \, \textbf{XX-50}, \, \textbf{XX-60}$ 

Dames to the	Dimensions								
Pump type	L1	B1	B2	В3	B4	H1	H2	Н3	G
ALPHA2 L 25-40 180	180	78	78	47	48	26	127	58	1 1/2
ALPHA2 L 32-40 180	180	78	78	47	48	26	127	58	2
ALPHA2 L 15-50 130*	130	78	78	46	49	27	127	58	1 1/2
ALPHA2 L 15-60 130*	130	77	78	46	49	27	129	58	1 1/2
ALPHA2 L 25-60 180	180	78	78	47	48	26	127	58	1 1/2
ALPHA2 L 32-60 180	180	78	77	47	48	26	127	58	2

<sup>\*</sup> For UK only.

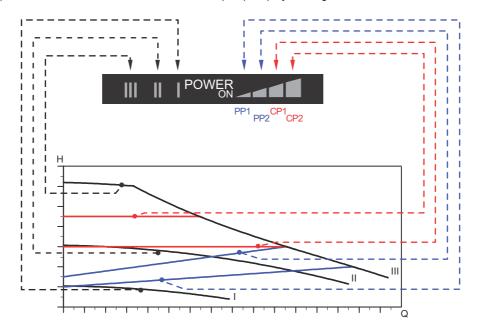
### 14. Performance curves

### 14.1 Guide to performance curves

Each pump setting has its own performance curve (Q/H curve).

A power curve (P1 curve) belongs to each Q/H curve. The power curve shows the pump power consumption (P1) in Watt at a given Q/H curve.

The P1 value corresponds to the value that can be read from the pump display. See fig. 16:



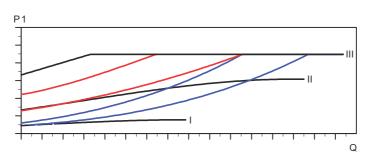


Fig. 16 Performance curves in relation to pump setting

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
1	Constant speed, speed I

For further information about pump settings, see sections

- 7.3 Light fields indicating the pump setting
- 8. Setting the pump
- 11. Pump settings and pump performance.

# 14.2 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 kg/m<sup>3</sup> and a liquid temperature of +60 °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  $\upsilon$  = 0.474 mm<sup>2</sup>/s (0.474 cSt).

04 2534 2608

# 14.3 Performance curves, ALPHA2 L XX-40

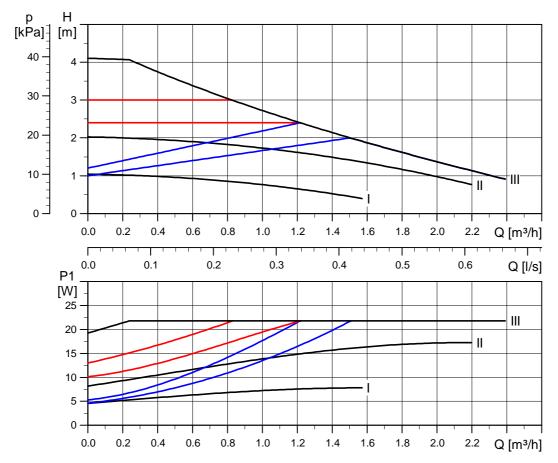


Fig. 17 ALPHA2 L XX-40

# 14.4 Performance curves, ALPHA2 L XX-50

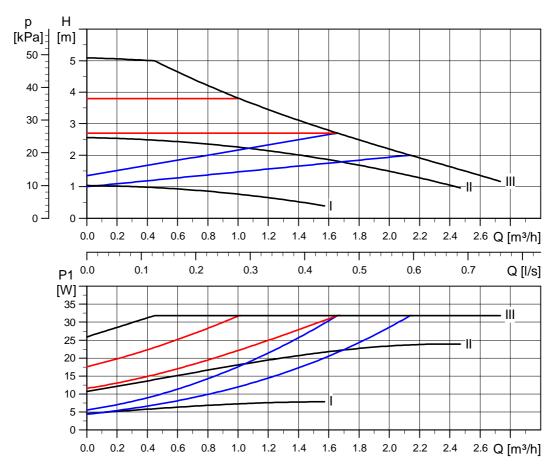


Fig. 18 ALPHA2 L XX-50

# 14.5 Performance curves, ALPHA2 L XX-60

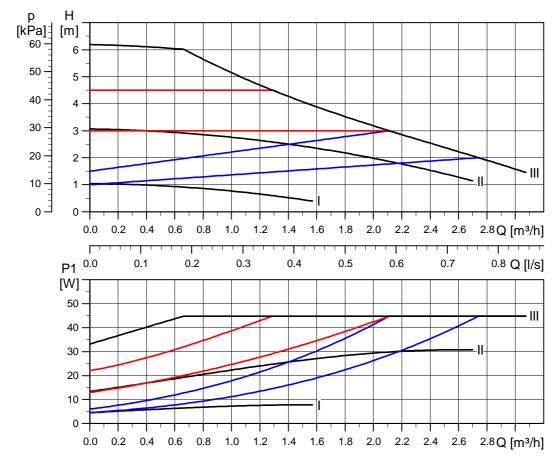


Fig. 19 ALPHA2 L XX-60

### 15. Accessories

Accessories for GRUNDFOS ALPHA2 L. See fig. 20.

Accessories include

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

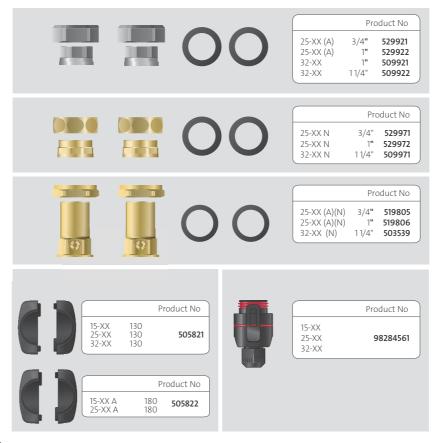


Fig. 20 Accessories

# 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.

Subject to alterations.

#### Argentina

Bombas GRUNDFOS de Argentina S.A. Ruta Panamericana km. 37.500 Centro Industrial Garin 1619 Garín Pcia. de B.A.

Phone: +54-3327 414 444 Telefax: +54-3327 45 3190

GRUNDFOS Pumps Pty. Ltd. P.O. Box 2040 Regency Park South Australia 5942 Phone: +61-8-8461-4611 Telefax: +61-8-8340 0155

AUSTra GRUNDFOS Pumpen Vertrieb Ges.m.b.H. Grundfosstraße 2 A-5082 Grödig/Salzburg Tel.: +43-6246-883-0 Telefax: +43-6246-883-30

**Belgium** N.V. GRUNDFOS Bellux S.A. Boomsesteenweg 81-83 B-2630 Aartselaar Tél.: +32-3-870 7300 Télécopie: +32-3-870 7301

#### Belarus

Представительство ГРУНДФОС в Минске Ул. Шафарнянская, 11, оф. 56 Тел.: +7 (375 17) 286 39 72, 286 39 73 Факс: +7 (375 17) 286 39 71 E-mail: minsk@grundfos.com

Bosnia/Herzegovina GRUNDFOS Sarajevo Trg Heroja 16, BiH-71000 Sarajevo Phone: +387 33 713 290 Telefax: +387 33 659 079 e-mail: grundfos@bih.net.ba

#### Brazil

BOMBAS GRUNDFOS DO BRASIL Av. Humberto de Alencar Castelo Branco, 630

CEP 09850 - 300 São Bernardo do Campo - SP Phone: +55-11 4393 5533 Telefax: +55-11 4343 5015

#### Bulgaria

Grundfos Bulgaria EOOD Slatina District Iztochna Tangenta street no. 100 BG - 1592 Sofia Tel. +359 2 49 22 200 Fax. +359 2 49 22 201 email: bulgaria@grundfos.bg

#### Canada

GRUNDFOS Canada Inc. 2941 Brighton Road Oakville, Ontario L6H 6C9

Phone: +1-905 829 9533 Telefax: +1-905 829 9512

GRUNDFOS Pumps (Shanghai) Co. Ltd. 50/F Maxdo Center No. 8 XingYi Rd. Hongqiao development Zone Shanghai 200336 PRC

Phone: +86 21 612 252 22 Telefax: +86 21 612 253 33

# Croatia

GRUNDFOS CROATIA d.o.o. Cebini 37, Buzin HR-10010 Zagreb Phone: +385 1 6595 400 Telefax: +385 1 6595 499 www.grundfos.hr

# Czech Republic

GRUNDFOS s.r.o. Čajkovského 21 779 00 Olomouc Phone: +420-585-716 111 Telefax: +420-585-716 299

# **Denmark** GRUNDFOS DK A/S

GRUNDFOS DK A/S Martin Bachs Vej 3 DK-8850 Bjerringbro Tlf.: +45-87 50 50 50 Telefax: +45-87 50 51 51 E-mail: info\_GDK@grundfos.com www.grundfos.com/DK

# Estonia

GRUNDFOS Pumps Eesti OÜ Peterburi tee 92G 11415 Tallinn Tel: + 372 606 1690 Fax: + 372 606 1691

#### Finland

OY GRUNDFOS Pumput AB Mestarintie 11 FIN-01730 Vantaa

Phone: +358-(0)207 889 900 Telefax: +358-(0)207 889 550

#### France

Pompes GRUNDFOS Distribution S.A. Parc d'Activités de Chesnes 57, rue de Malacombe F-38290 St. Quentin Fallavier (Lyon) Tél.: +33-4 74 82 15 15 Télécopie: +33-4 74 94 10 51

# **Germany** GRUNDFOS GMBH

Schlüterstr. 33 40699 Erkrath Tel.: +49-(0) 211 929 69-0 Telefax: +49-(0) 211 929 69-3799 e-mail: infoservice@grundfos.de Service in Deutschland: e-mail: kundendienst@grundfos.de

HILGE GmbH & Co. KG Hilgestrasse 37-47 55292 Bodenheim/Rhein Germany Tel.: +49 6135 75-0 Telefax: +49 6135 1737 e-mail: hilge@hilge.de

### Greece

GRUNDFOS Hellas A.E.B.E. 20th km. Athinon-Markopoulou Av. PO Box 71 GR-19002 Peania

Phone: +0030-210-66 83 400 Telefax: +0030-210-66 46 273

Hong Kong GRUNDFOS Pumps (Hong Kong) Ltd. Unit 1, Ground floor Siu Wai Industrial Centre 29-33 Wing Hong Street & 68 King Lam Street, Cheung Sha Wan

Kowloon Phone: +852-27861706 / 27861741

Telefax: +852-27858664

**Hungary** GRUNDFOS Hungária Kft. Park u. 8 H-2045 Törökbálint, Phone: +36-23 511 110 Telefax: +36-23 511 111

GRUNDFOS Pumps India Private Limited 118 Old Mahabalipuram Road Thoraipakkam Chennai 600 096 Phone: +91-44 2496 6800

Indonesia PT GRUNDFOS Pompa JI. Rawa Sumur III, Blok III / CC-1 Kawasan Industri, Pulogadung Jakarta 13930

Jakarta 13930 Phone: +62-21-460 6909 Telefax: +62-21-460 6910 / 460 6901

# Ireland

GRUNDFOS (Ireland) Ltd. Unit A, Merrywell Business Park Ballymount Road Lower Dublin 12 Phone: +353-1-4089 800 Telefax: +353-1-4089 830

Italy
GRUNDFOS Pompe Italia S.r.l. Via Gran Sasso 4 I-20060 Truccazzano (Milano) Tel.: +39-02-95838112 Telefax: +39-02-95309290 / 95838461

GRUNDFOS Pumps K.K. GRUNDFOS Pumps K.K. Gotanda Metalion Bldg., 5F, 5-21-15, Higashi-gotanda Shiagawa-ku, Tokyo 141-0022 Japan Phone: +81 35 448 1391 Telefax: +81 35 448 9619

#### Korea

GRUNDFOS Pumps Korea Ltd. 6th Floor, Aju Building 679-5 Yeoksam-dong, Kangnam-ku, 135-916 Seoul, Korea

Phone: +82-2-5317 600 Telefax: +82-2-5633 725

#### Latvia

SIA GRUNDFOS Pumps Latvia Deglava biznesa centrs Augusta Deglava ielā 60, LV-1035, Rīga, Tālr.: + 371 714 9640, 7 149 641 Fakss: + 371 914 9646

#### Lithuania

GRUNDFOS Pumps UAB Smolensko g. 6 LT-03201 Vilnius Tel: + 370 52 395 430 Fax: + 370 52 395 431

Malaysia GRUNDFOS Pumps Sdn. Bhd. 7 Jalan Peguam U1/25 Glenmarie Industrial Park 40150 Shah Alam Selangor Phone: +60-3-5569 2922 Telefax: +60-3-5569 2866

Bombas GRUNDFOS de México S.A. de Boulevard TLC No. 15
Parque Industrial Stiva Aeropuerto Apodaca, N.L. 66600 Phone: +52-81-8144 4000 Telefax: +52-81-8144 4010

Netherlands

GRUNDFOS Netherlands Veluwezoom 35 1326 AE Almere Postbus 22015 1302 CA ALMERE Tel.: +31-88-478 6336 Telefax: +31-88-478 6332 E-mail: info\_gnl@grundfos.com

#### New Zealand

GRUNDFOS Pumps NZ Ltd. 17 Beatrice Tinsley Crescent North Harbour Industrial Estate

Albany, Auckland Phone: +64-9-415 3240 Telefax: +64-9-415 3250

Norway GRUNDFOS Pumper A/S Strømsveien 344 Postboks 235, Leirdal N-1011 Oslo Tlf.: +47-22 90 47 00

Telefax: +47-22 32 21 50

Poland GRUNDFOS Pompy Sp. z o.o. ul. Klonowa 23 Baranowo k. Poznania PL-62-081 Przeźmierowo Tel: (+48-61) 650 13 00 Fax: (+48-61) 650 13 50

Portugal Bombas GRUNDFOS Portugal, S.A. Rua Calvet de Magalhães, 241 Apartado 1079 P-2770-153 Paço de Arcos Tel.: +351-21-440 76 00 Telefax: +351-21-440 76 90

# Romania

GRUNDFOS Pompe România SRL Bd. Biruintei, nr 103 Pantelimon county Ilfov Phone: +40 21 200 4100 Telefax: +40 21 200 4101 E-mail: romania@grundfos.ro

# Russia

ООО Грундфос Россия, 109544 Москва, ул. Школьная Тел. (+7) 495 737 30 00. 564 88 00

Факс (+7) 495 737 75 36, 564 88 11 E-mail grundfos.moscow@grundfos.com

### Serbia

GRUNDFOS Predstavništvo Beograd Dr. Milutina Ivkovića 2a/29 YU-11000 Beograd Phone: +381 11 26 47 877 / 11 26 47 496 Telefax: +381 11 26 48 340

# Singapore

GRUNDFOS (Singapore) Pte. Ltd. 25 Jalan Tukang Singapore 619264 Phone: +65-6681 9688 Telefax: +65-6681 9689

### Slovenia

Slovenia GRUNDFOS d.o.o. Šlandrova 8b, SI-1231 Ljubljana-Črnuče Phone: +386 1 568 0610 Telefax: +386 1 568 0619 E-mail: slovenia@grundfos.si

# South Africa

GRUNDFOS (PTY) LTD Corner Mountjoy and George Allen Roads Wilbart Ext. 2 Bedfordview 2008 Phone: (+27) 11 579 4800 Fax: (+27) 11 455 6066 E-mail: lsmart@grundfos.com

#### Spain

Bombas GRUNDFOS España S.A. Camino de la Fuentecilla, s/n E-28110 Algete (Madrid) Tel.: +34-91-848 8800 Telefax: +34-91-628 0465

#### Sweden

GRUNDFOS AB Box 333 (Lunnagårdsgatan 6) 431 24 Mölndal Tel.: +46 31 332 23 000 Telefax: +46 31 331 94 60

#### Switzerland

GRUNDFOS Pumpen AG Bruggacherstrasse 10 CH-8117 Fällanden/ZH Tel.: +41-1-806 8111 Telefax: +41-1-806 8115

#### Taiwan

GRUNDFOS Pumps (Taiwan) Ltd. 7 Floor, 219 Min-Chuan Road Taichung, Taiwan, R.O.C. Phone: +886-4-2305 0868 Telefax: +886-4-2305 0878

#### Thailand

GRUNDFOS (Thailand) Ltd. 92 Chaloem Phrakiat Rama 9 Road, Dokmai, Pravej, Bangkok 10250 Phone: +66-2-725 8999 Telefax: +66-2-725 8998

**Turkey**GRUNDFOS POMPA San. ve Tic. Ltd. Sti. GRUNDFOS POMPA San. ve I Gebze Organize Sanayi Bölgesi Ihsan dede Caddesi, 2. yol 200. Sokak No. 204 41490 Gebze/ Kocaeli Phone: +90 - 262-679 7979 Telefax: +90 - 262-679 7905 E-mail: satis@grundfos.com

Ukraine ТОВ ГРУНДФОС УКРАЇНА 01010 Київ, Вул. Московська 8б, Тел.:(+38 044) 390 40 50 Фах.: (+38 044) 390 40 59 E-mail: ukraine@grundfos.com

**United Arab Emirates** GRUNDFOS Gulf Distribution P.O. Box 16768 Jebel Ali Free Zone Dubai Phone: +971 4 8815 166 Telefax: +971 4 8815 136

# United Kingdom

GRUNDFOS Pumps Ltd. Grovebury Road Leighton Buzzard/Beds. LU7 4TL Phone: +44-1525-850000 Telefax: +44-1525-850011

GRUNDFOS Pumps Corporation 17100 West 118th Terrace Olathe, Kansas 66061 Phone: +1-913-227-3400 Telefax: +1-913-227-3500

#### Uzbekistan

Grundfos Tashkent, Uzbekistan The Representative Office of Grundfos Kazakhstan in 38a. Ovbek street. Tashkent

Телефон: (+998) 71 150 3290 / 71 150

Факс: (+998) 71 150 3292

Addresses Revised 06.05.2013

© Copyright Grundfos Holding A/S

The name Grundfos, the Grundfos logo, and be think innovate are registered trademarks owned by Grundfos Holding A/S or Grundfos A/S, Denmark. All rights reserved worldwide.

95047490 0813

ECM: 1120157