

GRUNDFOS ALPHA+

Installation and operating instructions



GRUNDFOS ALPHA+

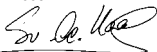
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GB Declaration of Conformity

We **Grundfos** declare under our sole responsibility that the product **GRUNDFOS ALPHA+**, to which this declaration relates, is in conformity with the Council Directives on the approximation of the laws of the EC Member States relating to

- Machinery (98/37/EC).
Standard used: EN ISO 12100.
- Electromagnetic compatibility (89/336/EEC).
Standards used: EN 61000-6-2 and EN 61000-6-3.
- Electrical equipment designed for use within certain voltage limits (73/23/EEC) [95].
Standards used: EN 60335-1: 2002 and EN 60335-2-51: 2003.

Bjerringbro, 1st April 2006



Svend Aage Kaae
Technical Director



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

1. General description

GRUNDFOS ALPHA+ is a range of circulator pumps with integrated differential pressure control enabling adjustment of pump performance to the actual system requirements. In many systems, this will mean a considerable reduction in power consumption, prevent noise from thermostatic valves and similar fittings, and improve the control of the system.

2. Applications

GRUNDFOS ALPHA+ is designed for circulating liquids in heating systems. The pumps can also be used in domestic hot-water systems.

GRUNDFOS ALPHA+ 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** and
- systems where night-time duty is desired.

2.1 Pumped liquids

Thin, clean, non-aggressive and non-explosive liquids, not containing solid particles, fibres or mineral oil.

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

In **domestic hot-water systems**, it is advisable to use GRUNDFOS ALPHA+ pumps only for water with a degree of hardness lower than approx. 14°dH. For water with a higher degree of hardness a direct-coupled TPE pump is recommended.



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

3. Installation

The pump must be installed with the motor shaft horizontal, see ❶, page 261.

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

See mounting dimensions at the end of these instructions.



Care should be taken to ensure that persons cannot accidentally come into contact with hot surfaces of the pump.

3.1 Terminal box positions

The terminal box can be turned to the positions shown in ②.



Before the screws are removed, the system must be drained or the isolating valves on either side of the pump must be closed as the pumped liquid may be scalding hot and under high pressure.

Change the terminal box position as shown in ③.

3.3 Bypass valve

If the pump is installed in a two-pipe system with a bypass valve between flow pipe and return pipe, it is recommended to set the pump to constant pressure control as illustrated in the figure.



3.4 Non-return valve

If a non-return valve is fitted in the pipe system, see ④, it must be ensured that the minimum pump pressure is always higher than the closing pressure of the valve.

3.5 Air separator pump



GRUNDFOS ALPHA+ pumps type A must be fitted with an automatic air vent. This must be fitted to the pump housing before priming.

4. Electrical connection

The electrical connection and protection should be carried out in accordance with local regulations.



The earth terminal of 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.
- The operating voltage and frequency are marked on the pump nameplate. Make sure that the motor is suitable for the electricity supply on which it will be used.
- Mains connection is to be carried out as shown in 7.
- The green indicator light on the pump terminal box indicates that the electricity supply has been switched on.

5. Start-up

Do not start the pump until the system has been filled with liquid and vented. Furthermore, the required minimum inlet pressure must be available at the pump inlet, see section 7. *Technical data*. The system cannot be vented through the pump.

As the pump is self-venting, it need not be vented before start-up.



When the inspection screw is slackened (see 5), scalding hot liquid under high pressure may escape. Care should be taken to ensure that the escaping liquid does not cause personal injury or damage to other components.

The pump may be noisy, when first switched on, due to air remaining in the chamber. This noise should cease after a few minutes running.

6. Setting the pump

The selector switch on the pump terminal box has been factory-set to the middle position.

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This setting is suitable for 80-90% of all single-family houses.







The selector switch for normal and night-time duty has been factory-set to "normal duty". If night-time duty is desired, see section 6.3 *Automatic night-time duty*.

6.1 Factory settings

Pump type	Head
ALPHA+ xx-40	Maximum head up to 4 metres
ALPHA+ xx-60	Maximum head up to 6 metres

6.2 Change of head setting

Change the pump head by turning the selector switch on the terminal box as indicated in the table below:

Setting	Result	System
 <p>Factory setting</p>	<p>Pump performance according to the heating demand (in 80-90% of all single-family houses).</p>	<p>Variable-load heating system with normal resistance, with or without thermostatic valves.</p>
	<p>Pump head is reduced.</p>	<p>Variable-load heating system with low resistance, with or without thermostatic valves.</p>
	<p>Pump head is increased.</p>	<p>Variable-load heating system with high resistance, with or without thermostatic valves, or underfloor heating system. Also systems fitted with a bypass valve.</p>
	<p>Pump running at minimum performance.</p>	<p>Small constant-load heating system. Setting when adjusting a bypass valve.</p>
	<p>Pump running at medium performance.</p>	<p>Medium-sized constant-load heating system.</p>
	<p>Pump running at maximum performance.</p>	<p>Large constant-load heating system. Setting when venting the system.</p>

6.3 Automatic night-time duty



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Pumps incorporated in gas boilers with small water content must never be set to automatic night-time duty.


To ensure correct function of the automatic night-time duty, these conditions **must** be fulfilled:

- The pump must be installed in the flow pipe.
- The system must be fitted with a flow temperature sensor and a device for automatic control of the changeover between normal duty and automatic night-time duty.

To activate the automatic night-time duty, turn the selector switch on the terminal box to position , see .

(Pos. 1 = automatic night-time duty, pos. 2 = normal duty.)

Note: If the heating system is undersupplied (heat capacity too low), check whether automatic night-time duty has been activated. If yes, deactivate the function.

Once automatic night-time duty has been activated, the pump changes automatically between normal duty and night-time duty, see .

(Pos. 1 = normal duty, pos. 2 = without automatic night-time duty, pos. 3 = with automatic night-time duty.)

Changeover between normal duty and night-time duty is dependent on the flow-pipe temperature.

The pump automatically changes over to night-time duty when the built-in sensor registers a flow-pipe temperature drop of more than 10-15°C within approx. 2 hours. The temperature drop must be at least 0.1°C/min.

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

Note: The night-time duty function is deactivated if the selector switch has been set to speed I, II or III.

6.4 Pump control

During operation, the pump head will be changed according to the principle "proportional-pressure control". In this control mode, the pump performance, and consequently the power consumption, is adjusted to the actual water requirement.

An example is shown in ⑥. In the example, the pump duty point is changed from (1) to (2) because of a changed system characteristic (thermostatic valves are closed) and consequently a lower water requirement.

7. Technical data

Supply voltage: 1 x 230 V $-10\%/+6\%$, 50 Hz, PE.

Motor protection: The pump requires no external motor protection.

Enclosure class: IP 42.

Insulation class: F.

Relative air humidity: Maximum 95%.

Ambient temperature: 0°C to +40°C.

Temperature class: TF110 to CEN 335-2-51.

Liquid temperature: +2°C to +110°C.

Pumps in domestic hot-water systems:
+15°C to +60°C.

To avoid condensation in the terminal box and the stator, the pumped liquid temperature must always be higher than the ambient temperature. See the table:

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

System pressure: Maximum 10 bar, 102 m head.

Inlet pressure: At +75°C: 0.5 m head, at +90°C: 2.8 m head, at +110°C: 11.0 m head.

EMC: EN 61000-6-2 and EN 61000-6-3.

Sound pressure level: The sound pressure level of the pump is lower than 43 dB(A).

Surface temperature: The maximum surface temperature will not exceed +125°C.

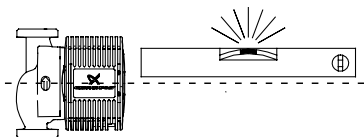
Dry running: Do not run the pump without water.

8. Disposal

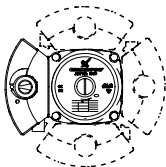
This product or parts of it must be disposed of in an environmentally sound way:

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

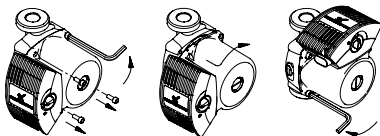
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1

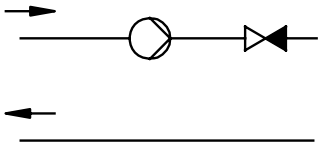
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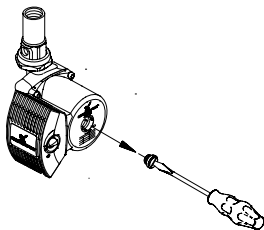
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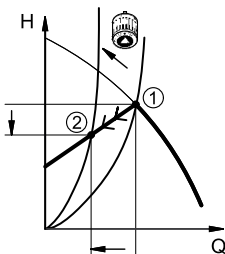
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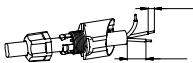
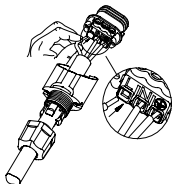
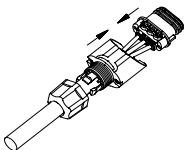
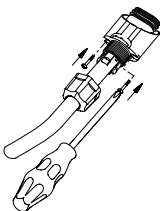
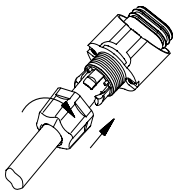
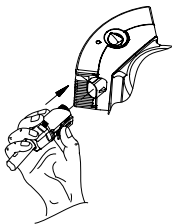


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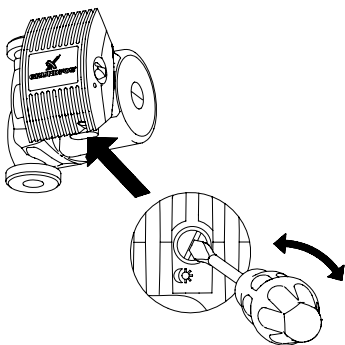
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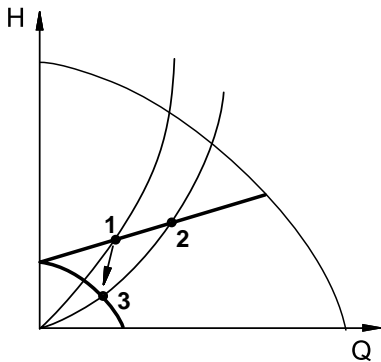
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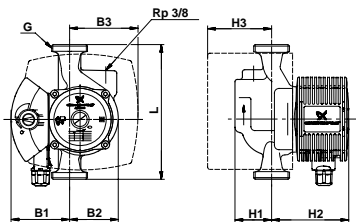


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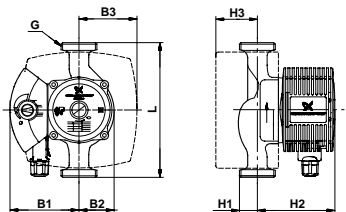


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TM03 1631 2505

Pump versions	Dimensions							
	L	B1	B2	B3	H1	H2	H3	G
ALPHA+ 25-40 A	180	92	51	77	49	113	81	1½
ALPHA+ 25-60 A	180	92	51	77	49	113	81	1½



TM03 1632 2505

Pump versions	Dimensions							
	L	B1	B2	B3	H1	H2	H3	G
ALPHA+ 15-40	130	92	48	77	28	103	57	1
ALPHA+ 25-40	130	92	48	77	32	103	57	1½
ALPHA+ 25-40 (B)	180	92	48	77	32	103	57	1½
ALPHA+ 32-40	180	92	48	77	39	103	57	2
ALPHA+ 15-60	130	92	48	77	28	103	57	1*
ALPHA+ 25-60	130	92	48	77	32	103	57	1½
ALPHA+ 25-60 (B)	180	92	48	77	32	103	57	1½
ALPHA+ 32-60	180	92	48	77	39	103	57	2

* For UK 1½

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Being responsible is our foundation
Thinking ahead makes it possible
Innovation is the essence

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