

ALPHA

Variable speed circulators with Auto^{ADAPT}[™]

Installation and operating instructions



3191277



Intertek



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GRUNDFOS 

English (US) Installation and operating instructions

Original installation and operating instructions.

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Warning

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



1. Limited warranty

Products manufactured by GRUNDFOS PUMPS CORPORATION (Grundfos) are warranted to the original user only to be free of defects in material and workmanship for a period of 36 months from date of manufacture.

Grundfos' liability under this warranty shall be limited to repairing or replacing at Grundfos' option, without charge, F.O.B. Grundfos' factory or authorized service station, any product of Grundfos' manufacture. Grundfos will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim. Products which are sold but not manufactured by Grundfos are subject to the warranty provided by the manufacturer of said products and not by Grundfos' warranty. Grundfos will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with Grundfos' printed installation and operating instructions.

To obtain service under this warranty, the defective product must be returned to the distributor or dealer of Grundfos' products from which it was purchased together with proof of purchase and installation date, failure date, and supporting installation data. Unless otherwise provided, the distributor or dealer will contact Grundfos or an authorized service station for instructions. Any defective product to be returned to Grundfos or a service station must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed.

GRUNDFOS WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, OR EXPENSES ARISING FROM INSTALLATION, USE, OR ANY OTHER CAUSES. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH EXTEND BEYOND THOSE WARRANTIES DESCRIBED OR REFERRED TO ABOVE.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages and some jurisdictions do not allow limit actions on how long implied warranties may last. Therefore, the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

2. Symbols used in this document

The safety instructions are identified by the following symbols:



Warning

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

Caution

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.

3. Product introduction

3.1 Introduction

Grundfos Alpha is suitable for systems with constant or variable flows where it is desirable to optimize the setting of the pump duty point.

3.2 Delivery and handling

3.2.1 Shipment inspection

Examine the components carefully to make sure no damage has occurred to the pump during shipment. Care should be taken to ensure the pump is NOT dropped or mishandled.

Check to see that these are included:

- One Grundfos Alpha pump
- One line cord or terminal box
- Two gaskets
- One installation and operating instructions
- One check valve
- One "Check Valve Installed" sticker

3.3 Applications



Warning

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

Pump not for pool or marine use.

Grundfos Alpha is designed for pumping clean water, or up to 50/50 mixtures by weight of glycol and water.

For glycol usage as well as additional liquid information see [section 8. Technical data](#).

4. Identification

4.1 Nameplate

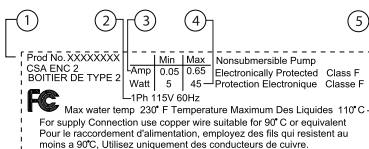


Fig. 1 Nameplate

Pos.	Description
1	Product Number
2	Voltage (V):
3	Rated current (A): <ul style="list-style-type: none"> • Min.: Minimum Current (A) • Max.: Maximum Current (A)
4	Input power (W): <ul style="list-style-type: none"> • Min.: Minimum Power (W) • Max.: Maximum Power (W)
5	Max. fluid temperature (°F)

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5. Installation

Warning

Do not energize pump until properly installed.

Risk of electric shock - this pump has not been investigated for use in swimming pool or marine areas.



5.1 Quick install tips

1. To insure proper air venting of your system, place Alpha in Fixed Speed III mode until all air has been removed. Isolating zones during this process will ensure proper air removal.
2. For balancing manifold zone(s) applications, utilizing Constant Pressure mode 1 or 2 and only one zone at a time during balancing will ensure proper flow rate to each zone.
3. **Always review your boiler minimum flow rate requirements if utilizing Alpha as a primary pump.** Select one of the fixed speed modes for boiler primary pump applications.
4. In general, for maximum energy savings and comfort level, start with the AUTO_{ADAPT}[™] mode.
5. You may change hydraulic selection while pumping. No permanent damage will occur. In fact, Grundfos encourages testing the various hydraulic modes with your hydronic system to ensure maximum energy savings and comfort level.
6. Zone panel control applications - when there is a call for heat and power has been sent to the Alpha pump, the Alpha will remember and restart from the last duty point and hydraulic mode.

5.2 Mechanical installation

When making piping connections, be sure to follow piping manufactures recommendations and all code requirements for piping material.

- System should be properly flushed of debris before pump installation.
- Insert check valve only if required, see fig. 2.
- Arrows on the pump housing indicate the liquid flow direction through the pump.
- Install the pump with the motor shaft horizontal; see fig. 3.
- Fit the two gaskets supplied to pump ends.

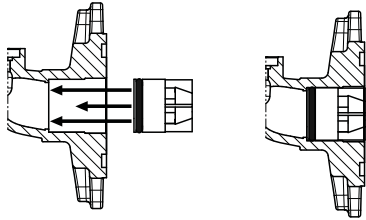


Fig. 2 Check valve installation

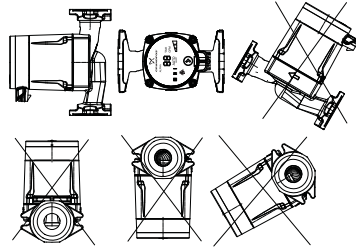


Fig. 3 Installation positions

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5.3 Changing the power head position

Warning
Before starting any work on this circulator, make sure electrical supply has been switched off and that it cannot be accidentally switched on.

The power head orientation change should be made before filling the system with fluid.
 Pump liquid may be scalding hot and under high pressure.
 The power head can be rotated in steps of 90 °.
 Review fig. 4 for possible/permissible positions.
 Only use orientations C and D for CSA Enclosure Type 2.

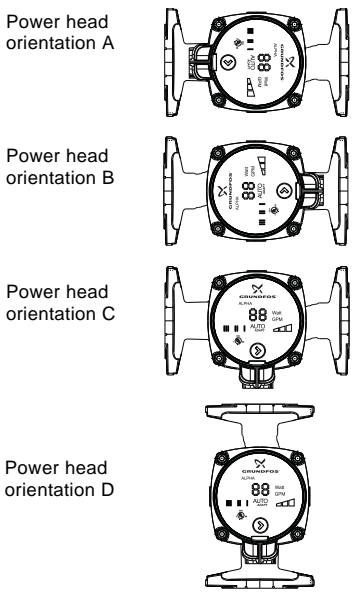


Fig. 4 Changing the power head position

- Procedure:**
1. If fluid is present, drain system fluid from pump or isolate system fluid from pump.
 2. Loosen 4 mm screws and turn the pump head to desired position; see fig. 4.
 3. Insert and cross-tighten the screws to: **7 ft-lbs** torque.

5.4 Electrical installation

Warning
Do not energize pump until properly installed.
Risk of electric shock - this pump has not been investigated for use in swimming pool or marine areas.

Warning
Risk of electric shock - This pump is supplied with a grounding conductor and grounding-type attachment plug. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle in accordance with the National Electric Code and any state, local governing codes and regulations.

All electrical work should be performed by a qualified electrician in accordance with the latest edition of the National Electric Code and state, local codes and regulations.

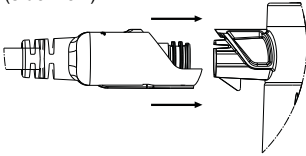
- The motor of Grundfos Alpha is protected by the electronics in the control box and requires no external motor protection.
- Check that the supply voltage and frequency correspond to the values stated on the pump.
- Only connect the pump to the mains with the line cord or through the terminal box supplied; see fig. 5 and 5.
- Do not modify and only use cord set supplied
- Lights on the control panel indicate electrical supply has been switched on.

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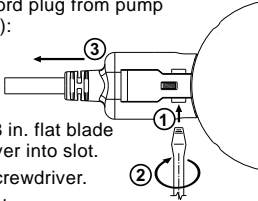
5.4.1 For line cord models

Follow procedure outlined in fig. 5.

Insert line cord plug onto pump
(side view):



To remove cord plug from pump
(bottom view):



1. Insert 1/8 in. flat blade screwdriver into slot.
2. Rotate screwdriver.
3. Pull cord to remove.

Fig. 5 Connecting and removing power plug for line cord models

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5.4.2 Terminal box models

Wiring procedure:

1. Loosen terminal box screw from terminal box cover.
2. Utilize either conduit port for wiring entrance.
3. Gently push open wiring terminal levers (L-N-G) for wiring installation.
4. Slide terminal box cover over terminal box body.
5. Tighten terminal box screw Phillips #1 **(5 in-lbs)**.
6. Apply power.
7. Lights on the control panel indicate electrical supply has been switched on.

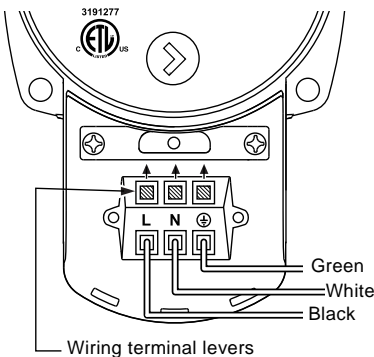
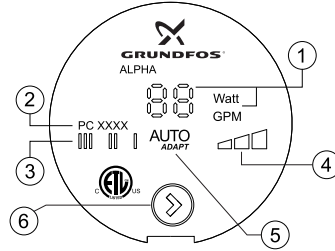


Fig. 6 Terminal box wiring, 1 x 115 V

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6. Operation

6.1 Control display

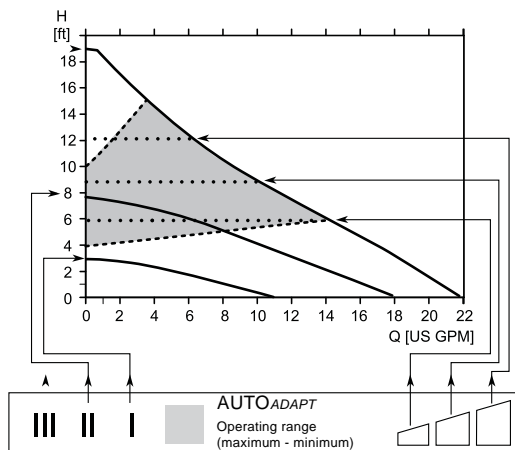


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Fig. 7 Control display

Pos.	Description
1	LED showing Watt or flow indicator
2	Production code: <ul style="list-style-type: none"> • 1st and 2nd figures = year • 3rd and 4th figures = week
3	LED indicating fixed speed
4	LED indicating constant pressure
5	LED AUTO _{ADAPT}
6	Push-button for selection of pump setting

6.2 Performance* and operation mode selection



* Hydraulic performance without check valve.

Pos.	Description
	<ul style="list-style-type: none"> • Push-button for selection of pump setting • Every time the push-button is pressed, the circulator setting is changed
III	<p>High Fixed Speed</p> <ul style="list-style-type: none"> • Runs at a constant speed and consequently on a constant curve. In Speed III, the pump is set on the maximum curve under all operating conditions. Quick Vent of the pump can be obtained by setting the pump to Speed III for a short period.
II	<p>Medium Fixed Speed</p> <ul style="list-style-type: none"> • Runs at a constant speed and consequently on a constant curve. In Speed II, the pump is set on the medium curve under all operating conditions.
I	<p>Low Fixed Speed</p> <ul style="list-style-type: none"> • Runs at a constant speed and consequently on a constant curve. In Speed I, the pump is set on the minimum curve under all operating conditions.
	<p>Constant Pressure I</p> <ul style="list-style-type: none"> • The duty point of the pump will move left and right along the lowest constant-pressure curve depending on water demand in the system. The pump head (pressure) is kept constant, irrespective of the water demand.
	<p>Constant Pressure II</p> <ul style="list-style-type: none"> • The duty point of the pump will move left and right along the middle constant-pressure curve depending on water demand in the system. The pump head (pressure) is kept constant, irrespective of the water demand.
	<p>Constant Pressure III</p> <ul style="list-style-type: none"> • The duty point of the pump will move left and right along the highest constant-pressure curve depending on water demand in the system. The pump head (pressure) is kept constant, irrespective of the water demand.
	<p>AUTO_{ADAPT} (Factory Setting)</p> <ul style="list-style-type: none"> • This function controls the pump performance automatically within the defined performance range (shaded area). AUTO_{ADAPT} will adjust the pump performance to system demands over time.

7. Fault finding



Warning

Before starting any work on this circulator, make sure electrical supply has been switched off and that it cannot be accidentally switched on.

Pump liquid may be scalding hot and under high pressure.

Fault	Control panel	Remedy
1. The pump does not run	LED off	Check power supply (voltage) and circuit breaker.
		Check zone control, voltage, control options, and thermostat.
		Check all power connections. Damaged circulator / replace.
	LED on	Check that the electricity supply falls within the specified range. Impeller blocked by impurities.
		" ____ ____ "
2. Noise in the system	LED on	Install air eliminator. Reduce the pump speed.
		Fluid velocities too high; reduce pump speed.
		Emitter or piping expanding.
3. Noise in the pump	LED on	Let the circulator run, will vent over time. Increase the inlet pressure or check the air volume in the expansion tank, if installed.
		No fluid (dry running). Damaged circulator / replace.
4. Insufficient heat	LED on	Increase circulator speed or constant pressure. Circulator in proper operating mode.
		Check for air, piping, zone(s) and emitter(s). Check thermostat(s).
		Check all valving. Heat emitter large enough.
		Check direction of flow. Check water temperature from boiler and boiler functions.
		Check proper sizing of circulator. Check ΔT calculation.

8. Technical data

Supply voltage:

1 x 115 V, + 10 %/- 10 %, 60 Hz.

Motor protection:

The pump requires no external motor protection.

Enclosure class:

Indoor use only, IP42.

CSA Enclosure Type 2.

Insulation class:

F.

Relative air humidity:

Maximum 95 %.

Maximum discharge pressure:

150 psi (10.34 bar).

Inlet pressure:

Liquid temperature	Min. inlet pressure
167 °F (75 °C)	0.75 psi (0.05 bar)
194 °F (90 °C)	4.06 psi (0.28 bar)
230 °F (110 °C)	15.7 psi (1.08 bar)

Sound pressure level:

43 dB (A).

Ambient temperature:

32 °F (0 °C) to 104 °F (40 °C).

Liquid temperature:

36 °F (2 °C) to 230 °F (110 °C).

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

Ambient temperature [°F (°C)]	Liquid temperature	
	Min. [°F (°C)]	Max. [°F (°C)]
32 °F (0 °C)	36 °F (2 °C)	230 °F (110 °C)
50 °F (10 °C)	50 °F (10 °C)	230 °F (110 °C)
68 °F (20 °C)	68 °F (20 °C)	230 °F (110 °C)
86 °F (30 °C)	86 °F (30 °C)	230 °F (110 °C)
95 °F (35 °C)	95 °F (35 °C)	194 °F (90 °C)
104 °F (40 °C)	104 °F (40 °C)	158 °F (70 °C)

Warning



In domestic hot water systems, it is recommended to keep the liquid temperature below 149 °F (65 °C) to eliminate the risk of lime precipitation.

Maximum glycol concentrations with clean water:

50 % glycol @ 36 °F (2 °C).

Hydraulic performance change can be expected.

Watt readings:

Accuracy: ± 1 Watt.

Flow indicator:

Provides a relative indication of flow - should not be used in lieu of a flow meter.

Check valve:

Use of check valve may reduce pump hydraulic performance (up to -10 %).

Use check valve in parallel pumping applications.

Curve conditions:





Test liquid: Airless water.

Curves apply to a density of 983.2 kg/m³ and a liquid temperature of 140 °F (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.

Curves apply to a kinematic viscosity of 0.474 cSt.

Approximate power usage:

Speed setting		Min.	Max.
High fixed speed	III	39 W	45 W
Medium fixed speed	II	15 W	30 W
Low fixed speed	I	5 W	8 W
Constant pressure		8 W	45 W
Constant pressure		14 W	45 W
Constant pressure		22 W	45 W
AUTO _{ADAPT}		5 W	45 W

8.1 Approvals



FCC Sections:

Section 15.19 (a) 3:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Section 15.21:

Any changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Section 15.105 (b):

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocated the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

Canadian EMC Standard:

ICES-003

This Class B digital apparatus complies with Canadian ICES-003.

9. Disposal

This product or parts of it must be disposed of in an environmentally sound way; please use the public or private waste collection service.

Subject to alterations.

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