Unilift AP12, AP35, AP50

Installation and operating instructions





Other languages

http://net.grundfos.com/qr/i/96011045

English (GB) Installation and operating instructions

Original installation and operating instructions

These installation and operating instructions describe Grundfos Unilift AP12, AP35 and AP50. Sections 1-5 give the information necessary to be able to unpack, install and start up the product in a safe way.

Sections 6-10 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 before installing 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 hazard statements are structured in the following way:

SIGNAL WORD



Description of hazard

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

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 explosionproof 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

WARNING



Falling objects

Death or serious personal injury

- Keep the product in a stable position during unpacking.
 - Wear personal protective equipment.

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.

3. Installing the product

CAUTION

Toxic material



Minor or moderate personal injury

- The product will be classified as contaminated if used for a liquid which is injurious to health or toxic.
- Wear personal protective equipment.



Installation must be carried out by specially trained persons and according to local regulations.



According to EN 60335-2-41/A2:2010, this product with 5 m of mains cable may be used only for indoor applications.

3.1 Location



Always have at least 3 m free cable above liquid level. This limits the installation depth to 7 m for pumps with 10 m cable and to 2 m for pumps with 5 m cable.

3.1.1 Minimum space

The pit, basin or tank must be sized according to the relation between the water flow to the pit, basin or tank and the pump performance.

When the pump is installed in a permanent installation with a float switch, the minimum dimensions of the pit, basin or tank must be as shown in fig. 1 to ensure free movability of the float switch. The float switch is set to the minimum free cable length. See section 3.2.5 Adjusting the float switch cable length.

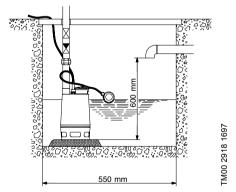


Fig. 1 Minimum pit dimensions when the float switch is set to the minimum free cable length

3.2 Mechanical installation

DANGER

\wedge

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

Sharp element



- Wear personal protective equipment.
 - Unilift AP35, AP50: Make sure that persons cannot come into contact with the pump impeller.



Do not install the pump hanging from the electric cable or the outlet pipe.

3.2.1 Foundation

Place the pump on a plate or on bricks so that the inlet strainer is free of sludge, mud or similar materials. See fig. 2.

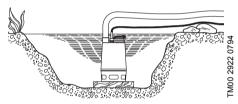


Fig. 2 Place the pump on a plate

3.2.2 Lifting the pump



Do not pull or lift the product by the power cable

Lift the pump using the pump handle. Do not lift the pump by the power cable or by the outlet pipe or hose.

If the pump is installed in a well or tank, lower and lift it by means of a wire or chain fastened to the pump handle.

3.2.3 Positioning the pump

The pump can be used in vertical or horizontal position. The outlet must be the highest point of the pump. See fig. 3.

During operation, the inlet strainer must always be completely covered by the pumped liquid.

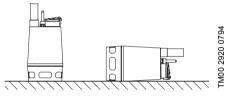


Fig. 3 Position of the pump

When the pipe or hose has been connected, place the pump in its operating position.

Position the pump so that the pump inlet will not be blocked or partly blocked by sludge, mud or similar materials.

In the case of permanent installation, the pit must be cleared of sludge, pebbles, etc. before the pump is installed.

3.2.4 Pipe connection

For permanent installation, we recommend that you fit a union, a non-return valve and an isolating valve in the outlet pipe.

3.2.5 Adjusting the float switch cable length

For pumps supplied with a float switch, the difference in level between start and stop can be adjusted by changing the free cable length between the float switch and the pump handle.

- An increased free cable length will result in fewer starts and stops and a large difference in level.
- A reduced free cable length will result in more frequent starts and stops and a small difference in level.

The stop level must be above the pump inlet to prevent the pump from taking in air.

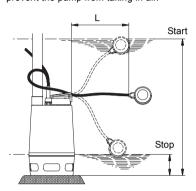


Fig. 4 Start and stop levels

The start and stop levels vary according to the cable length.

Unilift	AΡ	start	and	ston	levels

		m cable h (L): mm	Maximum cable length (L): 250 mm		
Pump type	Start [mm]	Stop [mm]	Start [mm]	Stop* [mm]	
AP12.40	360	230	370	100	
AP12.50	410	250	380	110	
AP35	440	280	450	155	
AP50	460	320	450	190	

^{*} Minimum stop level during continuous operation or when using an external controller.

4. Electrical connection

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

 The installation must be fitted with a residual-current device (RCD) with a tripping current less than 30 mA.

DANGER

Electric shock

Death or serious personal injury



TM00 2924 1719

- Make sure that the power supply plug delivered with the product is in compliance with local regulations.
- The plug must have the same protective earth (PE) connection system as the power outlet. If not, use a suitable adapter if allowed by local regulations.

DANGER

Electric shock



Death or serious personal injury

Power cables without a plug must be connected to a supply disconnecting device incorporated in the fixed wiring according to the local wiring rules.



All electrical connections must be carried out by a qualified person in accordance with local regulations.



Depending on local regulations, a pump with minimum 10 m of mains cable must be used if the pump is used as a portable pump for different applications.

Make sure that the product is suitable for the supply voltage and frequency available at the installation site. Voltage and frequency are marked on the pump nameplate.

The pump must be connected to an external main switch. If the pump is not installed close to the switch, the switch must be of a lockable type.

Three-phase pumps must be connected to an external motor-protective circuit breaker with differential release. The rated current of the motor-protective circuit breaker must correspond to the electrical data marked on the pump nameplate.

If a level switch is connected to a three-phase pump, the motor-protective circuit breaker must be magnetically operated.

Single-phase pumps incorporate thermal overload protection and require no additional motor protection.



If the motor is overloaded, it will stop automatically. When the motor has cooled to normal temperature, it restarts automatically.

4.1 Checking the direction of rotation

Three-phase pumps only

Check the direction of rotation every time the pump is connected to a new installation.

- Position the pump so that you can observe the impeller.
- 2. Start the pump for a short period.
- Observe the rotation of the impeller. The correct direction of rotation is indicated by an arrow on the inlet strainer (clockwise when seen from the bottom). If the impeller rotates in the wrong direction, reverse the direction of rotation by interchanging two of the phases to the motor.

If the pump is connected to a pipe system, check the direction of rotation in this way:

- Start the pump and check the quantity of water or the pressure.
- 2. Stop the pump and interchange two of the phases to the motor.
- 3. Start the pump and check the quantity of water or the pressure.
- 4. Stop the pump.

Compare the results taken under points 1 and 3. The largest quantity of water indicates the correct direction of rotation.

5. Starting up the product

DANGER

Electric shock Death or seriou



Death or serious personal injury

 Do not use the pump in swimming pools, garden ponds or similar places if there are people in the water.



The pump may be run briefly to check the direction of rotation without being submerged in the pumped liquid.

- Before starting the pump, check that the inlet strainer is fitted to the pump and submerged in the pumped liquid.
- 2. Open the isolating valve, if fitted, and check the level switch setting.

6. Product introduction

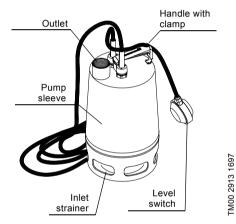


Fig. 5 Unilift AP

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6.1 Intended use

The Grundfos Unilift AP pump is a single-stage submersible pump designed for pumping wastewater.

The pump is capable of pumping water which contains a limited quantity of solids, however not stones and similar materials, without being blocked or damaged.

The pump is available for automatic as well as manual operation and can be installed in a permanent installation or used as a portable pump.

Applications	AP12	AP35	AP50
Drainage of flooded cellars or buildings	•	•	•
Groundwater lowering	•	•	•
Pumping of water from drain water collecting pits	•	•	•
Pumping of water from surface water pits with inflow from roof gutters, shafts, tunnels, etc.	•	•	•
Emptying and filling of swimming pools, ponds, pits, etc.	•	•	•
Pumping of fibre-containing wastewater from laundries and light industries		•	•
Pumping of domestic wastewater from septic tanks and sludge treating systems		•	•
Pumping of domestic wastewater without discharge from water closets		•	•

Incorrect application of the pump, for example resulting in blocking of the pump, and wear are not covered by the warranty.

6.2 Pumped liquids

The pump is capable of pumping water containing a limited quantity of spherical particles. Pumping of spherical particles exceeding the maximum particle size for the pump may block or damage the pump.

Maximum particle size: See section 9. *Technical data*.

The pump is not suitable for these liquids:

- sewage
- · liquids containing long fibres
- · flammable liquids (oil, petrol, etc.)
- aggressive liquids
- liquids containing solids exceeding the pump's recommended maximum particle size.

6.3 Identification

6.3.1 Nameplate

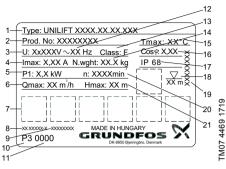
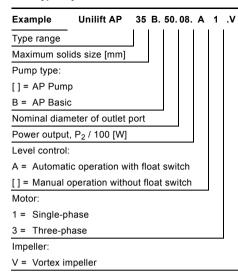


Fig. 6 Nameplate example

Pos.	Description
1	Product type
2	Product number
3	Supply voltage [V]
4	Maximum current [A]
5	Power input [kW]
6	Maximum flow rate [m ³ /h]
7	Approvals
8	ID number for EN standards
9	ID number for Safety Instruction
10	Factory code
11	Production code (YYWW)
12	Frequency [Hz]
13	Insulation class
14	Net weight [kg]
15	Maximum liquid temperature [°C]
16	Cosinus phi
17	Enclosure class
18	Maximum installation depth [m]
19	Nameplate layout
20	Speed [min ⁻¹]
21	Maximum head [m]

6.3.2 Type key



7. Servicing the product

DANGER



Electric shock

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

CAUTION



Sharp element

Minor or moderate personal injury

- Wear personal protective equipment.

CAUTION

Toxic material



Minor or moderate personal injury

- The product will be classified as contaminated if it has been used for a liquid which is injurious to health or toxic
- Wear personal protective equipment.

CAUTION

Biological hazard



- Minor or moderate personal injury
 Flush the product thoroughly with clean water and rinse the parts in water after
- water and rinse the parts in water after dismantling.
- Wear personal protective equipment.



If the power cable or the level switch is damaged, it must be replaced by a service workshop authorised by Grundfos.



Service must be carried out by specially trained persons.

Furthermore, all rules and regulations covering safety, health and environment must be observed.

- If the pump has been used for liquids other than clean water, flush the pump thoroughly with clean water before carrying out maintenance and service.
- 2. Rinse the pump parts in water after dismantling.

7.1 Maintaining the product

Check the pump and replace the oil once a year. If the pump is used for pumping liquids containing abrasive particles or it is operating continuously, the pump must be checked at shorter intervals.

If the drained oil contains water or other impurities, we recommend that you replace the shaft seal.

7.2 Oil

In the case of long operating time or continuous operation, the oil must be replaced as follows:

Liquid temperature	The oil must be replaced after
20 °C	4500 operating hours
40 °C	3000 operating hours
55 °C	1500 operating hours

The pump contains 78 ml non-poisonous oil. Used oil must be disposed of in accordance with local regulations.

7.3 Construction

The construction of the pump will appear from the table below and figures A, B and C at the end of these instructions.

Pos.	Description			
6	Pump housing			
37a	O-ring			
49	Impeller			
55	Pump sleeve with motor			
66	Washer			
67	Lock nut			
84	4 Inlet strainer			
105	Shaft seal			
182	82 Level switch			
188a	Screws			
193 Screws				

7.4 Service kits

Service kit	Part number
Shaft seal, standard	96429307
Shaft seal, FKM	96429308
Oil	96010646

7.5 Contaminated pumps

CAUTION

Biological hazard



Minor or moderate personal injury

- Flush the product thoroughly with clean water and rinse the parts in water after dismantling.
- Wear personal protective equipment.

8. Fault finding the product

DANGER

Electric shock

Death or serious personal injury

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

CAUTION

Toxic material



Minor or moderate personal injury

- The product will be classified as contaminated if it has been used for a liquid which is injurious to health or toxic.
- Wear personal protective equipment.

CAUTION

Sharp element

Minor or moderate personal injury

Wear personal protective equipment.

Fault		Cause		Remedy
1.	The motor does not	a)	No power supply.	Connect the power supply.
	start.	b)	The pump was stopped by the level switch.	Adjust or replace the level switch.
		c)	The fuses have blown.	Replace the fuses.
		d)	The motor protection or thermal relay has tripped.	Wait until the motor protection trips in again or reset the relay.
		e)	The impeller is blocked by impurities.	Clean the impeller.
		f)	Short circuit in the cable or motor.	Replace the defective part.
2.	The motor protection or thermal relay trips after a short time of	a)	The liquid temperature is too high.	Use another pump type. Contact your local Grundfos supplier or sales support.
	operation.	b)	The impeller is blocked or partly blocked by impurities.	Clean the pump.
		c)	Phase failure.	Call an electrician.
		d)	Too low voltage.	Call an electrician.
		e)	The overload setting of the motor-protective circuit breaker is too low.	Adjust the setting.
		f)	Incorrect direction of rotation. See section 4.1 Checking the direction of rotation.	Reverse the direction of rotation.
3.	The pump runs constantly or gives too little water.	a)	The pump is partly blocked by impurities.	Clean the pump.
		b)	The outlet pipe or valve is partly blocked by impurities.	Clean the outlet pipe or valve.
		c)	The impeller is not properly fixed to the shaft.	Tighten the impeller.
		d)	Incorrect direction of rotation. See section 4.1 Checking the direction of rotation.	Reverse the direction of rotation.
		e)	Incorrect setting of the level switch.	Adjust the level switch.
		f)	The pump is too small for the application.	Replace the pump.
		g)	The impeller is worn.	Replace the impeller.

Fault		Ca	use	Remedy
4.	The pump runs but	a)	The pump is blocked by impurities.	Clean the pump.
	gives no water.	b)	The outlet pipe or valve is blocked by impurities.	Clean the outlet pipe or valve.
		c)	The impeller is not properly fixed to the shaft.	Tighten the impeller.
		d)	There is air in the pump.	Vent the pump and the outlet pipe.
		e)	The liquid level is too low. The inlet strainer is not completely submerged in the pumped liquid.	Submerge the pump in the liquid or adjust the level switch.
		f)	Pumps with float switch: The float switch does not move freely.	Adjust the float switch. See section 3.2.5 Adjusting the float switch cable length.

9. Technical data

9.1 Storage temperature

Down to -30 °C.

9.2 Operating conditions

Minimum liquid temperature	0 °C
Maximum liquid temperature	55 °C continuously. Up to 70 °C for periods not exceeding 3 minutes. Then the pump must cool down.
Installation depth	Maximum 10 m below liquid level
pH value	4-10
Density	Maximum 1100 kg/m ³
Viscosity	Maximum 10 mm ² /s
Maximum particle size	Max. spherical diameter: Unilift AP12: 12 mm Unilift AP35: 35 mm Unilift AP50: 50 mm
Technical data	See the pump nameplate.



Always have at least 3 m free cable above liquid level. This limits the installation depth to 7 m for pumps with 10 m cable and to 2 m for pumps with 5 m cable.

9.3 Sound pressure level

The sound pressure level of the pump is lower than the limiting values stated in the EC Council Directive 2006/42/EC relating to machinery.

10. Disposing of the product

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

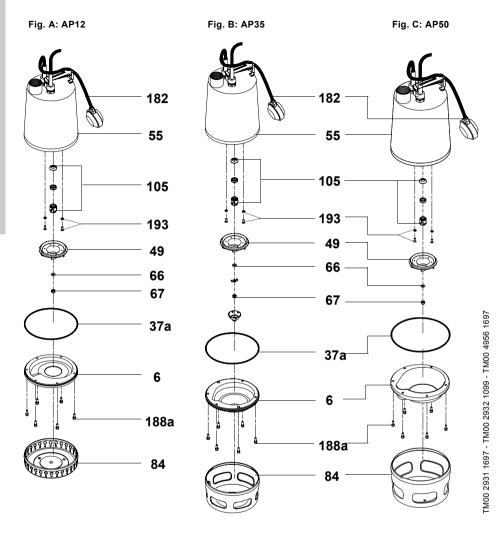
- 1. Use the public or private waste collection service.
- 2. If this is not possible, contact the nearest Grundfos company or service workshop.



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

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

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



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