

# Unilift KP 150, KP 250, KP 350

Installation and operating instructions



# English (US) Installation and operating instructions

## Original installation and operating instructions

These installation and operating instructions describe Grundfos Unilift KP 150, KP 250 and KP 350.

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.



Read this document before installing the product. Installation and operation must comply with local regulations and accepted codes of good practice.



Successful operation depends on careful attention to the procedures described in this manual. Keep this manual for future use.

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## 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 24 months from date of installation, but not more than 30 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 that 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 and accepted codes of good practice. The warranty does not cover normal wear and tear.

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 limitations 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.

Products which are repaired or replaced by Grundfos or authorized service center under the provisions of these limited warranty terms will continue to be covered by Grundfos warranty only through the remainder of the original warranty period set forth by the original purchase date.

## 2. General information

### 2.1 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.

## 2.2 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



Observe these instructions for explosion-proof products.



A blue or grey circle with a white graphical symbol indicates that an action must be taken.



A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.

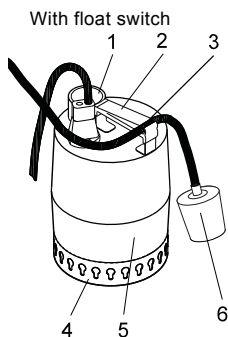


If these instructions are not observed, it may result in malfunction or damage to the equipment.



Tips and advice that make the work easier.

## 2.3 Overview drawing



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Fig. 1 Unilift KP pump

Pos.	Description
1	Outlet port 1.25" NPT
2	Handle
3	Clamp
4	Inlet strainer
5	Pump housing
6	Float switch (optional)

## 3. Receiving the product

### CAUTION

#### Crushing of feet



- Minor or moderate personal injury
- Wear safety shoes when handling the product.
- Use the pump handle to move the pump. Do not lift it by the power cable.

### 3.1 Inspecting the product

Check that the product received is in accordance with the order.

Check that the voltage and frequency of the product match the voltage and frequency of the installation site.

### 3.2 Scope of delivery

The box contains the following items:

- pump
- power cable
- float switch (if included with the model)
- installation and operating instructions.

## 4. Installing the product

### DANGER

#### Electric shock



Death or serious personal injury

- The installation, electrical connection, and maintenance of the product must be carried out by an authorized electrician in accordance with the National Electrical Code and any state, local governing codes and regulations.

### DANGER

#### Electric shock



Death or serious personal injury

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

### DANGER

#### Electric shock



Death or serious personal injury

- Pump installation in a sump pit, basin or tank must be carried out by qualified, specially trained persons in accordance with the National Electrical Code and any state, local governing codes and regulations.

### DANGER

#### Electric shock



Death or serious personal injury

- Route the power cable in a way that supports it and protects it from being cut, pinched or damaged.
- If the power cable is cut, pinched, or damaged, replace it before using the product.

### DANGER

#### Electric shock



Death or serious personal injury

- Do not remove the power cable and strain relief.
- Do not connect electrical conduit to the pump.

## WARNING



#### Moving parts

Minor or moderate personal injury

- Make sure that persons cannot come into contact with moving parts.



If the pump is used without a float switch, use an approved level controller with a motor protection unit and set the current rating to match the nominal current marked on the product's nameplate.



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.

### 4.1 Pipe connection

Threaded steel or rigid plastic pipes can be screwed directly into the 1.25" NPT outlet port. For permanent installation, we recommend that you fit a union, a check valve and a gate valve in the outlet pipe.

Other recommendations:

- For portable or temporary installations, a plastic outlet pipe can be used in conjunction with a suitable screwed connection or hose coupling.
- To remove the pump, secure a cable to the pump handle. Do not remove it by the pipes.
- Threads must be sealed using Teflon<sup>®</sup> tape.



Do not install the pump hanging from the outlet pipe or hose.

Do not lift the pump by its power cable. Lower and lift it by means of a wire or chain fastened to the pump handle.

## 4.2 Minimum space

When the pump is installed in a permanent installation with a float switch, and the cable length is set to the minimum length of at least 2.5 in. (63.5 mm), the minimum dimensions of the sump pit, basin or tank must be as shown in fig. 2.

In addition, the sump pit, basin or tank must be sized according to the relation between the water flow to the sump pit, basin or tank and the pump capacity.

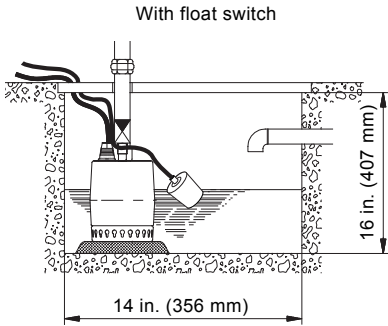


Fig. 2 Minimum installation dimensions

## 4.3 Location

Pumps with or without a float switch can be used in vertical position with the outlet port uppermost or in horizontal or tilted position with the outlet port as the highest point of the pump. See fig. 3. During operation, the inlet strainer must be completely covered by the pumped liquid.

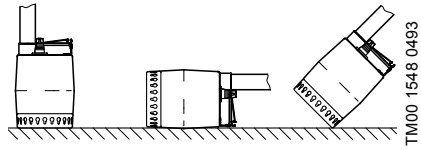


Fig. 3 Pump positions

When the pipe or hose has been connected, place the pump in its operating position. Position the pump so that the inlet strainer will not be blocked by sludge, mud or similar materials.

We recommend that you place the pump on a solid base. See fig. 4.

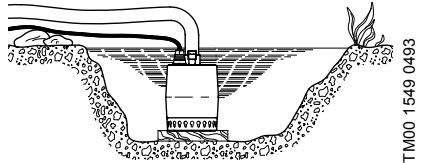


Fig. 4 Pump placed on a plate

#### 4.4 Adjustment of cable length for 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 free cable length must be:

- at least 2.5 in. (63.5 mm)
- no more than 6 in. (152 mm)

Minimum and maximum cable length

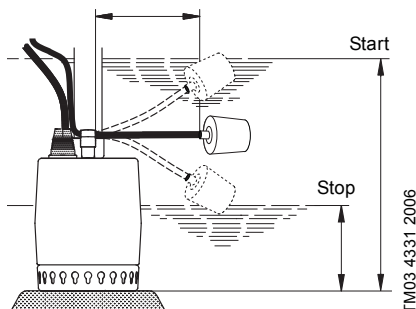


Fig. 5 Start and stop levels

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

Unilift KP start and stop levels				
Pump type	Cable length min. 2.5 in. (63.5 mm)		Cable length max. 6 in. (152 mm)	
	Start	Stop	Start	Stop
<b>KP 150</b>	11.5 in. (292 mm)	5.5 in. (140 mm)	12.5 in. (318 mm)	3.5 in. (89 mm)
<b>KP 250</b>				
<b>KP 350</b>	12 in. (305 mm)	6 in. (152 mm)	13 in. (330 mm)	4 in. (102 mm)

Manual operation can be achieved in one of two ways:

- Unplug both the pump and float switch from the wall socket. Insert the pump plug into the wall socket.
- Keep the float switch in a high position by attaching it to the outlet pipe or hose.

#### 4.5 Check valve

Whenever the pump is installed in a permanent installation with a float switch, a check valve must be fitted in the outlet pipe or hose.

#### 4.6 Electrical connection

### DANGER

#### Electric shock

Death or serious personal injury

- Pump installation in a sump pit, basin or tank must be carried out by qualified, specially trained persons in accordance with the National Electrical Code and any state, local governing codes and regulations.



### WARNING

#### Electric shock

Death or serious personal injury

- Connect the product only to a properly grounded receptacle.
- We recommend that you connect the pump to an electrical circuit with a Ground Fault Circuit Interrupter (GFCI).



### WARNING

#### Electric shock

Death or serious personal injury

- The protective ground of the pump power plug must be connected to the protective ground receptacle of the power outlet.
- The plug must have the same ground connection system as that of the power outlet. If not, use a suitable adapter.

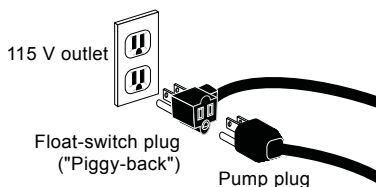


The electrical connection must be carried out in accordance with local regulations and follow the National Electrical Code (USA) and the Canadian Electrical Code. The pump must be grounded. The operating voltage and frequency are marked on the nameplate. Make sure that the motor is suitable for the power supply on which it will be used.

## Power supply

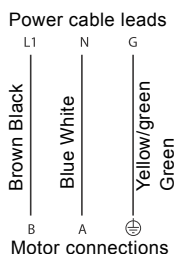
- 1 x 115 V, 60 Hz

To connect the pump for manual operation, insert the pump plug into a wall socket. If a float switch is included for automatic operation, it will be of the "piggy-back" design. Insert the float-switch plug into the wall socket, and insert the pump plug into the back of the float-switch plug.



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Fig. 6 Pump and float-switch plugs



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Fig. 7 Wiring diagram

## Motor protection

The Unilift KP pumps have built-in thermal overload protection and require no additional motor protection. If the motor is overloaded, it stops automatically. When cooled to normal temperature, the motor starts automatically.

## 5. Starting up the product

### DANGER



#### Moving parts

- Death or serious personal injury
- Do not touch the inside of the pump while the pump is running.
  - The inlet strainer must always be fitted to the pump during operation.

### 5.1 Starting

Before starting the pump, check that the following requirements are fulfilled:

- The pump is submerged in liquid. During normal operation, the inlet strainer of the pump must be below the surface of the liquid.
- The pump is placed on a base so that the inlet strainer is not blocked by sludge, mud or similar materials.
- The pipe or hose connection is tight.
- The outlet pipe is open, that is the hose is not bent, etc.
- The pump is connected to the power supply in accordance with the instructions.
- For pumps with a float switch, check that the float switch will allow the pump to pump down to the chosen level according to fig. 5. If you want to pump below this level, hold the float switch in vertical position.

#### Startup procedure:

- Switch on the pump and check:
- that the pump is operating properly
  - that water is being pumped.



## 6. Product introduction

### 6.1 Product description

The Grundfos Unilift KP 150, KP 250 and KP 350 pumps are single-stage, submersible pumps designed for pumping grey water, that is, the wastewater from showers, sinks, washing machines, etc.



This pump has been evaluated for use with water, grey wastewater and heated wastewater.

The pump is capable of pumping water which contains a limited quantity of spherical solids up to 0.39 in. (10 mm) in diameter without being blocked or damaged.

The product is designed for automatic operation with a float switch or for manual operation.

The product can be installed in a permanent installation or used as a portable pump.

### 6.2 Applications

#### DANGER



##### Electric shock

Death or serious personal injury

- Do not use the pumps in or at swimming pools, garden ponds, etc. when there are persons in the water.



If the pump has been used for very dirty or chlorinated water, flush the pump thoroughly with clean water after use.

Wear gloves and other suitable personal protective equipment in accordance with local regulations. Observe local regulations on any exposure to wastewater.



The product is not designed for pumping stones and similar materials

Incorrect use of the product, for example resulting in blockage or wear of the pump, will void the pump's warranty. Note that the pump is not suitable for these liquids:

- sewage
- liquids containing long fibers
- flammable liquids (oil, gasoline, etc.)
- aggressive liquids
- liquids containing solids exceeding the pump's recommended maximum particle size of 0.39 in. (10 mm).

Pumping of particles exceeding maximum particle size for the pump may block or damage the pump.

The pump contains approximately 70 ml of non-poisonous motor liquid that may pollute the pumped liquid if the pump should leak.

The pump is suitable for the following applications.

Applications	KP 150	KP 250	KP 350
Drainage of basements or buildings prone to flooding.	•	•	•
Pumping of wastewater from washing machines, sinks, baths, showers, etc., up to the sewer level.	•	•	•
Dewatering of sites or pumping of water for fountains.	•	•	•
Pumping in draining wells.	•	•	•
Emptying of swimming pools, ponds, tanks, or fountains.	•	•	•

Check the regional or local EX-approval requirements for surface water at gas stations and in parking areas.

Note: Unilift KP does not have any explosion-proof approval. See the Grundfos SL range.

## 6.3 Identification

### 6.3.1 Nameplate

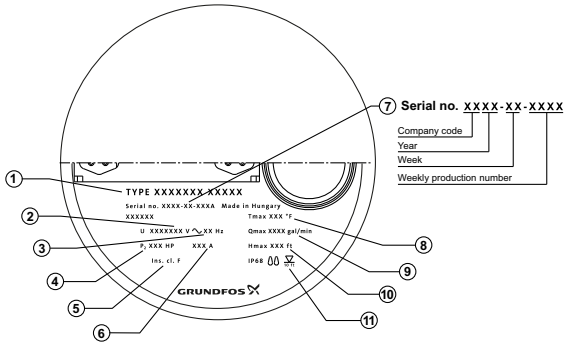


Fig. 8 Nameplate information, located on the top of the pump

Pos.	Nameplate text	Description
1	Type	See <a href="#">6.3.2 Type key</a>
2	Voltage	Voltage (-/+ 5 %) [V]
3	Frequency	[Hz]
4	P <sub>2</sub>	Power output [Hp]
5	Ins. cl.	Insulation class
6	XXX A	Maximum current [A]
7	Serial no.	Serial number showing company code, year, week and weekly production number
8	Tmax	Maximum liquid temperature [°F]
9	Qmax	Maximum flow rate [gal/min]
10	Hmax	Maximum head [ft]
11	∇	Maximum installation depth [ft]

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### 6.3.2 Type key

Code	Example	Unilift KP	150	A	1
<b>Type range</b>					
<b>Rated motor output, P<sub>2</sub> [W]</b>					
			150		
			250		
			350		
<b>Level control</b>					
S	Integrated, electronic sensor, automatic operation				
A	Float switch, automatic operation				
M	No level switch, manual operation				
<b>Motor</b>					
1	Single-phase				
3	Three-phase				

### 6.4 Functions

#### Pump with float switch

The float switch enables automatic start and stop of the pump according to the water level.

#### Pump without float switch

A pump without a float switch requires manual, external start and stop.

### 6.5 Pump construction

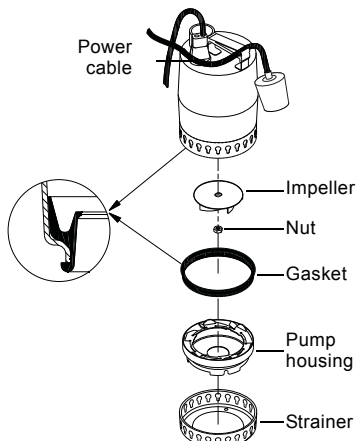


Fig. 9 Pump components

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## 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

#### Biological hazard

- Minor or moderate personal injury
- Before carrying out maintenance and service, flush the pump thoroughly with clean water.
  - After dismantling the pump, rinse the pump parts in clean water.



### CAUTION

#### Sharp element

- Minor or moderate personal injury
- Wear protective gloves.
  - Never touch the inside of the pump while the pump is running.



### CAUTION

#### Biological hazard

- Minor or moderate personal injury
- If a pump has been used for a liquid which is injurious to health or toxic, the pump will be classified as contaminated.



- Service must be carried out by specially trained persons. Furthermore, all rules and regulations covering safety, health and environment must be observed.



Under normal operating conditions, the pump is maintenance-free.

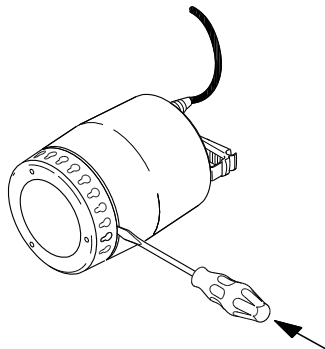
If the pump has been used for liquids other than clean water, it must be flushed through with clean water immediately after use. See section [7.1 Cleaning the pump](#).

## 7.1 Cleaning the pump

If the pump does not deliver a sufficient quantity of water because of sediment, dismantle and clean the pump.

To dismantle the pump, follow this procedure:

1. Disconnect the power supply.
2. Allow the pump to drain.
3. Carefully loosen the inlet strainer by inserting a screwdriver in the recess between the pump housing and the strainer. Use the screwdriver to push apart the outer casing and the strainer. Repeat the procedure, working around the pump, until the strainer is free and can be removed. See [fig. 10](#).



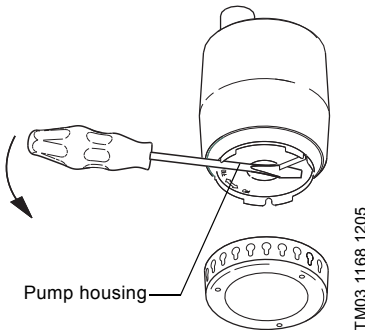
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**Fig. 10** Loosening the strainer

4. Remove the inlet strainer, clean, and refit it.

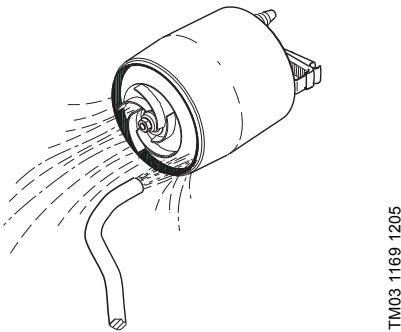
If the pump still does not deliver a sufficient quantity of water, dismantle the pump as follows:

1. Disconnect the power supply.
2. Turn the pump housing 90 ° counterclockwise using a screwdriver. See the arrow on the pump housing. Pull off the housing. See fig. 11.



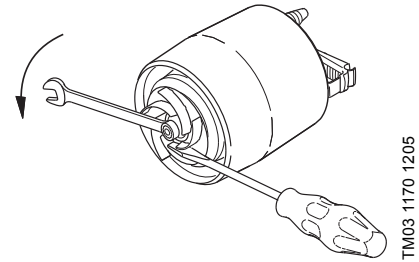
**Fig. 11** Removing the inlet strainer from the pump housing

3. Clean and flush the pump with water to remove possible impurities between the motor and the outer pump housing. Clean the impeller. See fig. 12.



**Fig. 12** Cleaning the impeller

4. Check that the impeller can rotate freely. If not, remove the impeller:
  - Loosen and remove the nut on the motor shaft (13 mm). Use a screwdriver to prevent the impeller from rotating. See fig. 13.
  - Clean the impeller and the area around the shaft.



**Fig. 13** Removing the impeller

5. Check the impeller, the pump housing and the sealing part. Replace possible defective parts.
6. Assemble the pump in reverse order of dismantling.



Check before and when fitting the pump housing that the sealing part is positioned correctly, see fig. 14. Moisten the sealing part with water to facilitate the fitting.

## 7.2 Contaminated pumps

Any application for service must include details about the pumped liquid.

### CAUTION



#### Biological hazard

- Minor or moderate personal injury
- Flush the pump thoroughly with clean water and rinse the pump parts in water after dismantling.

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

If you request Grundfos to service the product, contact Grundfos with details about the pumped liquid before returning the product for service. Otherwise Grundfos can refuse to accept the product for service.

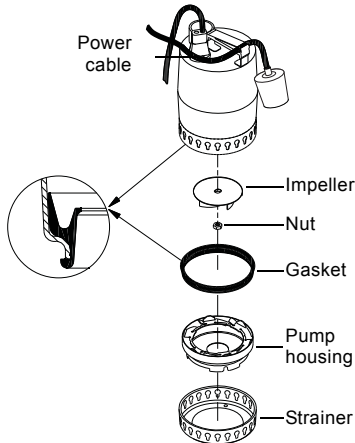
Any application for service must include details about the pumped liquid.

Clean the product in the best possible way before you return it.

Costs of returning the product are to be paid by the customer.

## 7.3 Replacement of parts

The impeller assembly and power cable can be replaced. The part numbers and the components included in the service kits are found in Grundfos Product Center at [www.grundfos.us](http://www.grundfos.us). Alternatively, contact your local Grundfos dealer or service center.



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Fig. 14 Pump components

## 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.

Fault	Cause	Remedy
1. The motor does not start.	a) No power supply.	Connect the power supply.
	b) The motor is switched off by the float switch.	Adjust or replace the float switch.
	c) The fuses are 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. See section <a href="#">7.1 Cleaning the pump</a> .
	f) There is a short circuit in the cable or motor.	Replace the defective part.
2. The motor protection or thermal relay trips after a short time of operation.	a) The temperature of the pumped liquid is too high.	Contact your Grundfos representative.
	b) The impeller is blocked or partly blocked by impurities.	Clean the impeller. See section <a href="#">7.1 Cleaning the pump</a> .
	c) Phase failure.	Consult an electrician.
	d) The voltage is too low.	Consult an electrician.
	e) The overload setting of the motor-protective circuit breaker is set too low.	Adjust the setting.
3. The pump runs constantly or gives insufficient water.	a) The pump is partly blocked by impurities.	Clean the pump. See section <a href="#">7.1 Cleaning the pump</a> .
	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) The float switch is set incorrectly.	Adjust the float switch setting.
	e) The pump is too small for the application.	Replace the pump.
	f) The impeller is worn.	Replace the impeller.

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
4. The pump runs but gives no water.	a) The pump is blocked by impurities.	Clean the pump. See section <a href="#">7.1 Cleaning the pump</a> .
	b) The outlet pipe or check valve is blocked by impurities.	Clean the outlet pipe or the check valve.
	c) The impeller is not properly fixed to the shaft.	Tighten the impeller.
	d) Air is trapped 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's inlet strainer in the liquid or adjust the float switch.
	f) Pumps with float switch: The float switch does not move freely.	Adjust the float switch cable. See section <a href="#">4.4 Adjustment of cable length for a float switch</a> .



## 9. Technical data

The pump can run continuously. Make sure the inlet strainer is covered by the pumped liquid. See the nameplate on the pump for the electrical and hydraulic performance data.

### 9.1 Electrical data

#### Enclosure class

IP68.

#### Insulation class

F.

### 9.2 Operating conditions

#### Liquid temperature

Minimum 32 °F (0 °C).

The maximum liquid temperature depends on the rated voltage of the pump according to the table:

Voltage	Maximum liquid temperature
1 x 115 V, 60 Hz	KP 150, KP 250 122 °F (50 °C)*
	KP 350 113 °F (45 °C)*

\* At intervals of at least 30 minutes, the pump can run for 2 minutes with a liquid temperature of 158 °F (70 °C).

#### Minimum water level

The water level must be above the inlet strainer.

#### Maximum installation depth

30 ft (9.1 m) below the liquid level.

#### pH value

Between 4 and 9.

#### Maximum particle size

0.39 in. (10 mm).

#### Density

146.88 ounce/gallon (8.24 gram/liter)

#### Viscosity

Close to the viscosity of water or 1 cSt (1 mm<sup>2</sup>/s) at 68 °F (20 °C).

## 9.3 Storage temperature

Minimum -4 °F (-20 °C).

## 9.4 Sound pressure level

The sound pressure level of the pump is lower than the limiting values stated in the EC Council Directive 98/37/EC relating to machinery.

#### A-weighted sound pressure level

< 65 dB(A) in accordance with ISO 3743.

For further technical data, see section [6.3 Identification](#) and [6.3.2 Type key](#).

## 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.



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