

## DP and EF AUTO<sub>ADAPT</sub>

Installation and operating instructions  
50 Hz



Installation and operating instructions



DP10/EF30 AUTO<sub>ADAPT</sub>

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GRUNDFOS 

# English (GB) Installation and operating instructions

## Original installation and operating instructions

These installation and operating instructions describe Grundfos DP and EF AUTO<sub>ADAPT</sub> pumps.

Sections 1-5 give the information necessary to be able to unpack, install and start up the product in a safe way.

Sections 6-11 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 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.

### 1.3 Target group

These installation and operating instructions are intended for professional installers.

## 2. Receiving the product

The pump may be transported and stored in a vertical or horizontal position. Make sure that the pump cannot roll or fall over.

Check that the protective cap for the level sensor has not been damaged during transportation. See pos. 7 in figs 10 to 12. If the protective cap is defective, contact your nearest Grundfos company.

### 2.1 Transporting the product

All lifting equipment must be rated for the purpose and checked for damage before any attempts to lift the pump. The lifting equipment rating must under no circumstances be exceeded. The pump weight is stated on the nameplate.

#### WARNING

##### Crushing hazard

Death or serious personal injury

- Do not stack pump packages or pallets on top of each other when lifting or moving them.
- Always lift the pump by its lifting bracket or by means of a forklift truck if the pump is fixed on a pallet. Never lift the pump by means of the power cable, hose or pipe.



#### CAUTION

##### Sharp element

Minor or moderate personal injury

- Make sure not to cut your hands on the sharp edges when opening the pump package.



The polyurethane-embedded plug prevents water from penetrating into the motor via the power cable.



We recommend that you keep the cable end protectors in storage for later use.

### 3. Installing the product



Pump installation in pits must be carried out by specially trained persons.  
Work in or near pits must be carried out according to local regulations.



Persons must not enter the installation area when the atmosphere is explosive.

#### DANGER

##### Electric shock



Death or serious personal injury  
- It must be possible to lock the main switch in position 0. Type and requirements as specified in EN 60204-1, 5.3.2.

#### DANGER

##### Electric shock



Death or serious personal injury  
- Make sure there are at least 3 m free cable above the maximum liquid level.

For safety reasons, all work in pits must be supervised by a person outside the pit.



We recommend that you carry out all maintenance and service work when the pump is placed outside the pit.

#### DANGER

##### Crushing hazard



Death or serious personal injury  
- Make sure that the lifting bracket is tightened before attempting to lift the pump. Tighten if necessary.

Carelessness during lifting or transportation may cause personal injury or damage to the pump.

### 3.1 Mechanical installation



Make sure the pit bottom is even before installing the product.

#### DANGER

##### Electric shock



Death or serious personal injury  
- Before beginning the installation, switch off the power supply and lock the main switch in position 0.  
- Switch off any external voltage connected to the product before working on it.

#### CAUTION

##### Hot surface



Minor or moderate personal injury  
- Make sure that the pump has cooled down before touching it.

#### DANGER

##### Electric shock



Death or serious personal injury  
- Before installing the pump and starting it up for the first time, check the power cable for visible defects to avoid short circuits.

#### CAUTION

##### Biological hazard



Minor or moderate personal injury  
- Flush the pump thoroughly with clean water and rinse the pump parts in water after dismantling.  
Pits for submersible drainage and effluent pumps may contain drainage or effluent with toxic and/or disease-causing substances.  
- Wear appropriate personal protective equipment and clothing.  
- Observe the local hygiene regulations in force.

Fit the extra nameplate supplied with the pump at the installation site or keep it in the cover of this booklet. Observe all safety regulations at the installation site, for instance the use of blowers for fresh-air supply to the pit.

Check the oil level in the oil chamber before installing the pump. See section [8.4 Oil check and oil change](#).

The pumps are suitable for different installation types which are described in sections [3.1.2 Installation on auto coupling](#) and [3.1.3 Free-standing submerged installation](#).

The pump housings have an Rp 2 outlet branch or a DN 65, PN 10 outlet flange.



The pumps are designed for intermittent operation. When completely submerged in the pumped liquid, the pumps can also operate continuously.



Always use Grundfos accessories to avoid malfunction due to incorrect installation.



Only use the lifting bracket for lifting the pump. Do not use it to hold the pump when in operation.

### CAUTION

#### Crushing of hands

- Minor or moderate personal injury
- Do not put your hands or any tool into the pump inlet or outlet port after the pump has been connected to the power supply, unless the pump has been switched off by removing the fuses or switching off the main switch.
  - Make sure that the power supply cannot be accidentally switched on.



Make sure that the liquid entering the pit through the inlet does not cause water to be splashed on the sensors of the pump.

### CAUTION

#### Biological hazard

- Minor or moderate personal injury
- Make sure to seal the pump outlet properly when fitting the outlet pipe, otherwise water might spray out of the sealing.



### 3.1.1 Lifting the product

#### WARNING

##### Crushing of hands



- Death or serious personal injury
- When lifting the pump, make sure your hand is not caught between the lifting bracket and the hook.

#### CAUTION

##### Crushing hazard



- Minor or moderate personal injury
- Make sure that the hook is fixed properly to the lifting bracket.
  - Always lift the pump by its lifting bracket or by means of a forklift truck if the pump is fixed on a pallet.
  - Never lift the pump by means of the power cable, hose or pipe.
  - Make sure that the lifting bracket is tightened before attempting to lift the pump. Tighten if necessary.

Carelessness during lifting or transportation may cause personal injury or damage to the pump.

When lifting the pump, use the right lifting point to keep the pump balanced. Place the lifting chain hook in point A for auto-coupling installations and in point B for other installations. See [fig. 1](#).

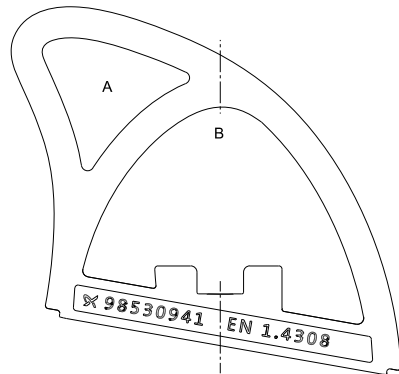


Fig. 1 Lifting points

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### 3.1.2 Installation on auto coupling

Pumps for permanent installation can be installed on a stationary auto-coupling guide rail system or a hookup auto-coupling system.

Both auto-coupling systems facilitate maintenance and service as the pump can easily be lifted out of the pit.

DP 10.65.26 pumps have a cast iron DN 65, PN 10 outlet flange and cannot be installed on a hookup auto-coupling.



Before beginning installation procedures, make sure that the atmosphere in the pit is not potentially explosive.

We recommend that you use loose flanges to ease the installation and to avoid pipe tension at flanges and bolts.



Make sure that the pipes are installed without the use of undue force. No loads from weight of the pipes must be carried by the pump.



Do not use elastic elements or bellows in the pipes. Never use these elements as a means to align the pipes.

#### Auto-coupling guide rail system

See fig. 1 in [Appendix](#).

Proceed as follows:

1. Drill mounting holes for the guide rail bracket on the inside of the pit, and fasten the guide rail bracket provisionally with two anchor bolts.
2. Place the auto-coupling base unit on the bottom of the pit. Use a plumb line to establish the correct positioning. Fasten the auto coupling with anchor bolts. If the bottom of the pit is uneven, the auto-coupling base unit must be supported so that it is level when being fastened.
3. Assemble the outlet line in accordance with the generally accepted procedures and without exposing the line to distortion or tension.
4. Insert the guide rails in the auto-coupling base unit, and adjust the length of the rails accurately to the guide rail bracket at the top of the pit.
5. Unscrew the provisionally fastened guide rail bracket, fit it on top of the guide rails, and finally fasten it firmly to the pit wall.



The guide rails must not have any axial play as this would cause noise during pump operation.

6. Clean out debris from the pit before lowering the pump into the pit.
7. Fit the guide claw to the pump outlet. Grease the gasket of the guide claw before lowering the pump into the pit.
8. Slide the guide claw between the guide rails and lower the pump into the pit by means of a chain secured to the lifting bracket of the pump. When the pump reaches the auto-coupling base unit, the pump will automatically connect tightly.



When the pump has reached the auto-coupling base unit, shake the pump by means of the chain to make sure that it is placed in the correct position.

9. Hang up the end of the chain on a suitable hook at the top of the pit and in such a way that the chain cannot come into contact with the pump housing.
10. Adjust the length of the power cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook at the top of the pit. Make sure that the cables are not sharply bent or pinched.
11. Connect the power cable and the control cable, if any.



The free end of the cable must not be submerged as water may penetrate through the cable into the motor.

## Hookup auto-coupling system

See fig. 2 in [Appendix](#).

Proceed as follows:

1. Fit the crossbar in the pit.
2. Fit the stationary part of the auto-coupling on top of the crossbar.
3. Fit the adapted piece of pipe for the movable part of the hookup auto coupling to the pump outlet.
4. Fasten a shackle and a chain to the movable part of the hookup auto coupling.
5. Clean out debris from the pit before lowering the pump into the pit.
6. Lower the pump into the pit by means of the chain secured to the lifting bracket. When the movable part of the auto coupling reaches the stationary part, the two will automatically connect tightly.



When the pump has reached the auto-coupling base unit, shake the pump by means of the chain to make sure that it is placed in the correct position.

7. Hang up the end of the chain on a suitable hook at the top of the pit and in such a way that the chain cannot come into contact with the pump housing.
8. Adjust the length of the power cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook at the top of the pit. Make sure that the cables are not sharply bent or pinched.
9. Connect the power cable and the control cable, if any.



The free end of the cable must not be submerged as water may penetrate through the cable into the motor.

### 3.1.3 Free-standing submerged installation

Pumps for free-standing submerged installation can stand freely on the bottom of the pit or similar location. See fig. 3 in [Appendix](#).

The pump must be mounted on separate feet (accessory).

In order to facilitate service on the pump, fit a flexible union or coupling to the outlet line for easy separation.

If a hose is used, make sure that the hose does not buckle and that the inside diameter of the hose matches that of the outlet port.

If a rigid pipe is used, fit the union or coupling, non-return valve and isolating valve in the order mentioned, when viewed from the pump.

If the pump is installed in muddy conditions or on uneven ground, we recommend that you support the pump on bricks or a similar support.

Proceed as follows:

1. Fit a 90 ° elbow to the pump outlet, and connect the outlet pipe or hose.
2. Lower the pump into the liquid by means of a chain secured to the lifting bracket of the pump. We recommend that you place the pump on a plane, solid foundation. Make sure that the pump is hanging from the chain and not the cable.
3. Hang up the end of the chain on a suitable hook at the top of the pit and in such a way that the chain cannot come into contact with the pump housing.
4. Adjust the length of the power cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook. Make sure that the cables are not sharply bent or pinched.
5. Connect the power cable and the control cable, if any.



The free end of the cable must not be submerged as water may penetrate through the cable into the motor.



If several pumps are installed in the same pit, the pumps must be installed at the same level in order to allow optimum pump alternation.

## 3.2 Electrical connection



Do not run the pump via a frequency converter.

Carry out the electrical connection according to local regulations.

### DANGER

#### Electric shock

Death or serious personal injury

- Connect the pump to an external main switch which ensures all-pole disconnection with a contact separation according to EN 60204-1, 5.3.2.
- It must be possible to lock the main switch in position 0. Type and requirements as specified in EN 60204-1, 5.3.2.



The pump incorporates a motor-protective circuit breaker and all control logic.



Make sure there are at least 3 m free cable above the maximum liquid level.

The classification of the installation site must be approved according to local rules in each individual case.

The CIU unit, if used, must not be installed in potentially explosive environments.

On explosion-proof pumps, make sure that an external earth conductor is connected to the external earth terminal of the pump using a conductor with a secure cable clamp. Clean the surface for external earth connection, and fit the cable clamp.



The cross section of the earth conductor must be at least 4 mm<sup>2</sup>, e.g. type H07 V2-K (PVT 90 °) yellow and green.

Make sure that the earth connection is protected from corrosion.

### DANGER

#### Electric shock

Death or serious personal injury

- If the power cable is damaged, it must be replaced by the manufacturer, his service agent or a similarly qualified person.



Set the motor-protective circuit breaker to the maximum current of the pump. The maximum current is stated on the pump nameplate.



Make sure that the pump is connected in accordance with the instructions given in this booklet.

The supply voltage and frequency are marked on the pump nameplate. For voltage tolerance, see section 10. [Technical data](#). Make sure that the motor is suitable for the power supply available at the installation site.

All pumps are supplied with 10 m cable and a free cable end.

### DANGER

#### Electric shock

Death or serious personal injury

- Before installing the pump and starting it up for the first time, check the power cable for visible defects to avoid short circuits.



A possible replacement of the power cable must be carried out by Grundfos or a service workshop authorised by Grundfos.

### 3.2.1 Wiring diagrams

#### Single-phase pumps

The pump has a patented start function which eliminates the need of a starting capacitor. The run capacitor is incorporated in the pump.

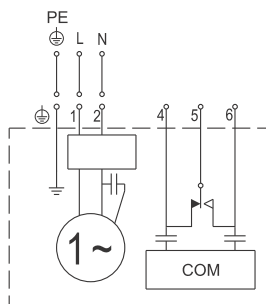


Fig. 2 Wiring diagram for single-phase pumps

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### Three-phase pumps

The motor is designed so that the phase sequence in the terminal box is clockwise. This can be determined with a phase sequence detector. The pump does not start unless the phase sequence is correct.

If the dry-running sensors are covered by liquid, and the pump does not start, the cause may be a wrong phase sequence. Interchange L1 and L2.

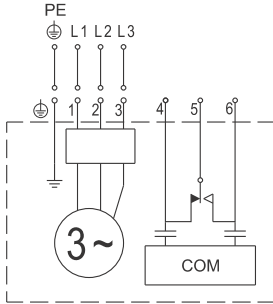


Fig. 3 Wiring diagram for three-phase pumps

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#### 3.2.2 Grundfos CIU

CIU stands for "Communication Interface Unit", and CIU is used as a communication interface between a DP or EF AUTO<sub>ADAPT</sub> pump and a main data communication network.

CIU is optional. See separate installation and operating instructions supplied with the unit.

#### 3.2.3 Alarm relay or communication connection

The pump incorporates an alarm relay output. NC and NO are available and can be used as required, for example for acoustic or visual alarms. Maximum relay load is 230 VAC 2 A.

Alternatively, wires 4 and 6 can be used for external communication via a CIU.



If a CIU is connected, do not use a relay. CIU incorporates a relay which takes over the alarm function.

See example of wiring diagram in the documentation supplied with CIU.

#### 3.2.4 Supply requirement

The maximum permissible system impedance  $Z_{max}$  must be 0.24 Ohm at 50 Hz at the interface point of the user's supply or the current capacity, which is 100 A per phase, supplied from a distribution network.

If not, a minor voltage drop may occur, which may result in a brief flashing of an electric light.

Consult the supply authority, if necessary, to ensure that the current capacity at the interface point is sufficient for the equipment.

## 4. Starting up the product

### CAUTION

#### Crushing of hands

Minor or moderate personal injury

- Do not put your hands or any tool into the pump inlet or outlet port after the pump has been connected to the power supply, unless the pump has been switched off by removing the fuses or switching off the main switch.
- Make sure that the power supply cannot be accidentally switched on.



Before starting the product:



- Make sure that the fuses have been removed.
- Make sure that all protective equipment has been connected correctly.

### CAUTION

#### Biological hazard

Minor or moderate personal injury

- Make sure to seal the pump outlet properly when fitting the outlet pipe otherwise water might spray out of the sealing.



### WARNING

#### Crushing of hands

Death or serious personal injury

- When lifting the pump, make sure your hand is not caught between the lifting bracket and the hook.



### DANGER

#### Crushing hazard

Death or serious personal injury

- Make sure that the hook is fixed properly to the lifting bracket.
- Always lift the pump by its lifting bracket or by means of a forklift truck if the pump is fixed on a pallet.
- Never lift the pump by means of the power cable, hose or pipe.
- Make sure that the lifting bracket is tightened before attempting to lift the pump. Tighten if necessary.



**DANGER****Electric shock**

Death or serious personal injury

- Before starting up the product for the first time, check the power cable for visible defects to avoid short circuits.
- If the power cable is damaged, it must be replaced by the manufacturer, his service agent or a similarly qualified person.
- Make sure that the product is earthed properly.
- Switch off the power supply and lock the main switch in position 0.
- Switch off any external voltage connected to the product before working on it.

**CAUTION****Biological hazard**

Minor or moderate personal injury

- Flush the pump thoroughly with clean water and rinse the pump parts in water after dismantling.
- Pits for submersible drainage and effluent pumps may contain drainage or effluent with toxic and/or disease-causing substances.
- Wear appropriate personal protective equipment and clothing.
- Observe the local hygiene regulations in force.

**CAUTION****Hot surface**

Minor or moderate personal injury

- Do not touch the surface of the pump while the pump is running.



Do not open the clamp while the pump is running.

**4.1 Operating modes**

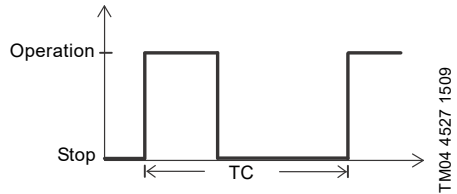
Do not start the pump if the atmosphere in the pit is potentially explosive.

The pumps are designed for intermittent operation (S3). When completely submerged in the pumped liquid, the pumps can also operate continuously (S1).

**S3, intermittent operation**

S3 operation is a series of 10-minute duty cycles (TC). Each cycle has a 4-minute period of constant load followed by a 6-minute period of rest. Thermal equilibrium is not reached during the cycle. See fig. 4.

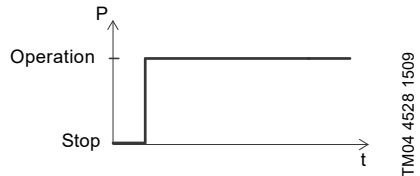
In this operating mode, the pump is partly submerged in the surrounding liquid. The minimum liquid level is at the top of the cable entry.



**Fig. 4** S3 operation

**S1, continuous operation**

In this operating mode, the pump can operate continuously without being stopped for cooling. Being completely submerged, the pump is sufficiently cooled by the surrounding liquid. See fig. 5.



**Fig. 5** S1 operation

## 4.2 Preparations for starting up

### 4.2.1 Default settings

The pump is supplied from the factory with the following default settings.

Parameter	0.6 - 2.6 kW	
Start delay, random	Off	
Start level	25 cm	
High-level alarm	+10 cm	
Anti-seizing:	Interval	3 days
	Duration	2 sec.

If one or more of the above parameters are to be changed, use the optional CIU together with Grundfos GO. CIU can be connected temporarily for configuration. If no CIU is available, the parameters can be changed by means of Grundfos PC tool. For further information, see installation and operating instructions for CIU.

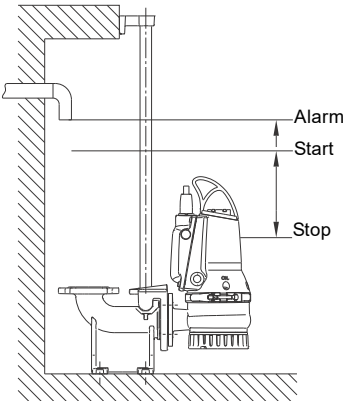


Fig. 6 Start and stop levels

### 4.2.2 Pump alternation

If up to four pumps are installed in the same pit, the control logic incorporated in the pumps will ensure that the load is distributed evenly among the pumps over time.

Alternation is carried out according to a patented method based on measurement of the liquid level in the pit.



The barometric pressure may affect the alternating sequence.

## 4.3 Start and stop levels

### 4.3.1 Setting the start level

The pump start level may be affected by the barometric pressure. In the case of long intervals between start and stop, the actual start level may differ from the start level set. See examples below.

#### Example 1: Constant barometric pressure

The pump will start when the liquid level in the pit has reached the set start level. Then the pump will run until the liquid level reaches the stop level. When it stops, the pump will calibrate itself in relation to the actual barometric pressure. See fig. 7.

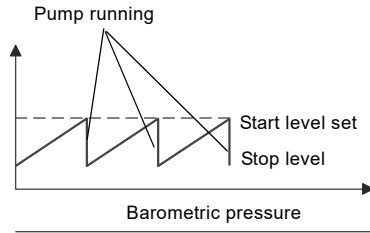


Fig. 7 Example 1: Constant barometric pressure

#### Example 2: Rising barometric pressure

If the barometric pressure rises after the pump has stopped, the pump will register this rise as a rise in liquid level. The result may be that the pump starts before the set start level is reached. See fig. 8.

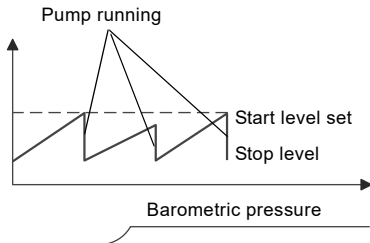


Fig. 8 Example 2: Rising barometric pressure

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### Example 3: Falling barometric pressure

If the barometric pressure falls after the pump has stopped, the pump will register this fall as a fall in liquid level. The result may be that the pump starts after the set start level was reached. See fig. 6.

Therefore, the distance between the pump stop level and the inlet to the pit must be at least 50 cm. See fig. 9.

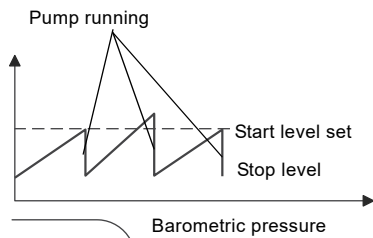


Fig. 9 Example 3: Falling barometric pressure

The pump incorporates dry-running protection via two dry-running sensors placed on either side of the electronic unit. If the water level falls below a dry-running sensor, the pump will stop immediately, and it cannot restart until the sensors are fully submerged again.

The sensors must be cleaned at regular intervals, depending on the deposits of sludge on the sensors in the pit.



### 4.4 Direction of rotation



The pump may be started for a very short period without being submerged to check the direction of rotation.

All single-phase pumps are factory-wired for the correct direction of rotation.

The electronics incorporated in a three-phase pumps ensure that the pump does not start with a wrong phase sequence, and consequently wrong direction of rotation.

If the pump does not run, and the liquid level is above the dry-running sensors, interchange L1 and L2.

An arrow on the stator housing indicates the correct direction of rotation.

### 4.5 Start up



The pump must not run dry.



If the atmosphere in the pit is potentially explosive, use only pumps with Ex approval.



Before startup, check that the system has been filled with liquid and vented. The pump is self-venting.



If the dry-running sensors are not covered by liquid, the pump cannot start.

In case of abnormal noise or vibrations from the pump, other pump failure or power supply failure, stop the pump immediately.



Do not attempt to restart the pump until the cause of the fault has been found and corrected.

Proceed as follows:

1. Remove the fuses and check that the impeller can rotate freely. Turn the impeller by hand.
2. Check the condition of the oil in the oil chamber. See also section [8.4 Oil check and oil change](#).
3. Check that the level sensor is clean, and that the protective cap is intact.
4. Check that the dry-running sensors are clean.
5. Open the isolating valves, if fitted.

**Auto coupling:** It is important to grease the gasket of the guide claw before lowering the pump into the pit.

6. Lower the pump into the liquid, and insert the fuses.
- Auto coupling:** Check that the pump is in the right position on the auto-coupling base unit.
7. Check that the system has been filled with liquid and vented. The pump is self-venting.
8. Switch on the power supply to the pump. When power is on, the pump will start and pump down to the dry-running level. This process can be used to check that the pump functions correctly.

If the dry-running sensors are not covered by liquid, the pump cannot start. To check that the phase sequence is correct, test run the pump for a few seconds. If the pump does not run, interchange L1 and L2 and repeat the test run.



After one week of operation or after replacement of the shaft seal, check the condition of the oil in the oil chamber. See section [8.4 Oil check and oil change](#).

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#### 4.6 Resetting the pump

To reset the pump, switch off the power supply to the pump for one minute, and switch it on again.

### 5. Handling and storing the product

#### 5.1 Handling the product

Before handling the product, see section [3.1.1 Lifting the product](#).

#### 5.2 Storing the product

During long periods of storage, protect the pump against moisture, heat and temperatures below -25 °C.

After a long period of storage, inspect the pump before putting it into operation. Make sure that the impeller can rotate freely. Pay special attention to the condition of the shaft seal, the cable entry and sensors.

### 6. Product introduction

#### 6.1 Product description

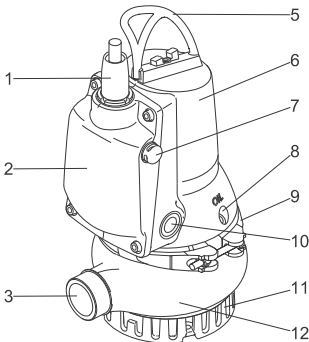


Fig. 10 DP 10.50 AUTO<sub>ADAPT</sub> pump

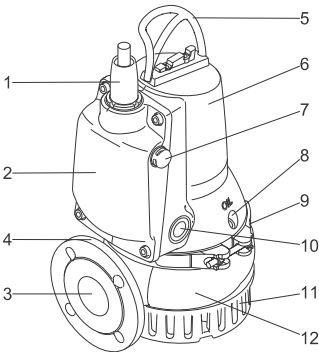


Fig. 11 DP 10.65 AUTO<sub>ADAPT</sub> pump

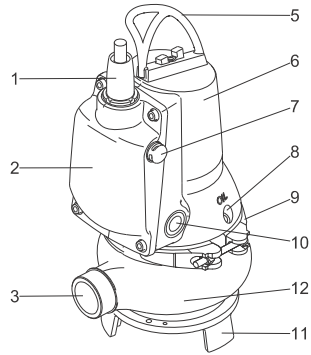


Fig. 12 EF 30.50 AUTO<sub>ADAPT</sub> pump

Pos.	Description
1	Cable plug
2	Electronic unit
3	Outlet port
4	Outlet flange DN 65, PN 10
5	Lifting bracket
6	Stator housing
7	Level sensor
8	Oil screw
9	Clamp
10	Dry-running sensors
11	Pump foot
12	Pump housing

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## 6.2 Applications

The compact design makes the pumps suitable for both temporary and permanent installation.

The pumps can be installed on an auto-coupling system or stand freely on the bottom of a pit.

DP and EF AUTO<sub>ADAPT</sub> pumps are portable and designed for pumping domestic and industrial drainage and effluent.

The EF pumps are suitable for pumping effluent and other liquids with solids up to 30 mm.

## 6.3 Pumped liquids

### DP 10

The product is designed for pumping these liquids:

- drainage and surface water
- groundwater
- industrial process water without solids or fibres.

### EF 30

The product is designed for pumping these liquids:

- drainage and surface water with small impurities
- wastewater with fibres, e.g. from laundries
- wastewater without discharge from toilets
- effluent from commercial buildings without discharge from toilets.

## 6.4 Potentially explosive environments

Use explosion-proof pumps for applications in potentially explosive environments.



The pumps must under no circumstance pump combustible or flammable liquids.



The classification of the installation site must be approved according to local rules in each individual case.

The letter X in the certificate number indicates that the equipment is subject to special conditions for safe use. The conditions are mentioned in the certificate and in these installation and operating instructions.

Special conditions for safe use of explosion-proof pumps:


1. Bolts used for replacement must be class A2-80 or better according to EN/ISO 3506-1.
2. The pump must not run dry.
3. Make sure the permanently attached cable is suitably mechanically protected and terminated in a suitable terminal board placed outside the potentially explosive area.
4. The thermal protection in the stator windings has a rated cutout temperature of 150 °C guaranteeing the disconnection of the power supply.
5. The IP68 rating is limited to maximum 10 m submersion depth.
6. The temperature range is limited to -20 to +40 °C for ambient temperature and 0-40 °C for liquids.
7. Contact the manufacturer regarding the "d" protection type for pumps and for information on the dimensions of the flameproof joints.
8. The lock nut of the cable connector must only be replaced with an identical one.




## 6.5 Approvals

All versions have been approved by TÜV Rheinland LGA (notified body under the Construction Products directive) according to EN 12050-2 as specified on the pump nameplate.

### 6.5.1 Approval standards

The explosion-proof versions have been approved by DEKRA according to the ATEX directive. The explosion protection classification of the pumps is CE 0344  II 2 G Ex db h ib IIB T4 Gb.

Directive or standard	Code	Description
ATEX	CE 0344	= CE mark of conformity according to the ATEX directive 2014/34/EU. 0344 is the number of the notified body which has certified the quality system for ATEX.
		= Explosion protection mark.
	II	= Equipment group according to the ATEX directive, defining the requirements applicable to the equipment in this group.
	2	= Equipment category according to the ATEX directive, defining the requirements applicable to the equipment in this category.
	G	= Explosive atmosphere caused by gases, vapours or mists.
	Harmonised European standard	Ex
h		= Non-electrical equipment for explosive atmosphere.
db		= Flameproof enclosure according to EN 60079-1.
ib		= Intrinsic safety.
IIB		= Classification of gases, see EN 60079-0. Gas group B includes gas group A.
T4		= Maximum surface temperature is 135 °C.
Gb		= Equipment for explosive gas atmosphere with "high" level of protection.

### 6.5.2 Australia

For IEC countries, such as Australia and others, the explosion proof versions have been approved by DEKRA, certificate no. IECEx DEK 11.0026X. The explosion protection classification of the pumps is Ex db h ib IIB T4 Gb based on IEC 60079-0:2017 and IEC 60079-1:2014, IEC 60079-11:2011, ISO 80079-36:2016, ISO 80079-37:2016.

Standard	Code	Description
IEC 60079-0:2011, IEC 60079-1:2014, IEC 60079-11:2011	Ex	= The equipment conforms to the IECEx.
	db	= Flameproof enclosure.
	ib	= Intrinsic safety.
	IIB	= Classification of gases. Gas group B includes gas group A.
	T4	= Maximum surface temperature is 135 °C.
	Gb	= Equipment for explosive gas atmosphere with "high" level of protection.

## 6.6 Identification

### 6.6.1 Nameplate

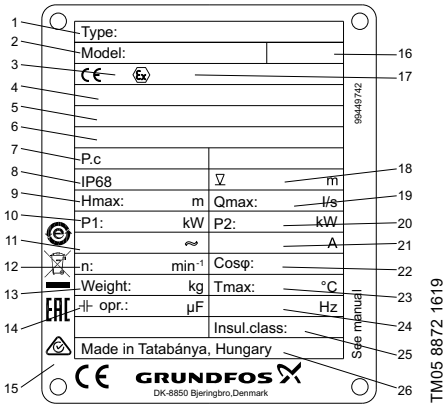


Fig. 13 Nameplate

Pos.	Description
1	Type designation
2	Product number
3	Approval
4	ATEX certificate number
5	IEC Ex description
6	IEC Ex certificate number
7	Production code, year and week
8	Enclosure class according to IEC 60529
9	Maximum head [m]
10	Rated input power [kW]
11	Rated voltage
12	Speed [rpm]
13	Net weight [kg]
14	Run capacitor [ $\mu$ F]
15	Marks of approval
16	Safety instructions, publication number RCM logo**
17	Ex description
18	Maximum installation depth [m]
19	Maximum flow rate [l/s]
20	Rated power output [kW]
21	Rated current [A]
22	Cos $\phi$ , 1/1 load
23	Maximum liquid temperature [ $^{\circ}$ C]
24	Frequency [Hz]
25	Insulation class
26	Production country

### 6.6.2 Type key

Example: DP.10.50.15.E.Ex.2.1.5.02

Code	Description	Explanation
DP	Grundfos drainage pump	Pump type
EF	Grundfos effluent pump	
10	Maximum solids size 10 = 10 mm	Pump passage
50	Nominal diameter of pump outlet port 50 = 50 mm	Pump outlet
15	Output power P2 15 = 1.5 kW	Power [kW]
E	AUTO <sub>ADAPT</sub> version	Equipment
[ ]	Standard version	
Ex	Explosion-proof pump	Pump version
2	2-pole	Number of poles
1	Single-phase motor	Number of phases
[ ]	Three-phase motor	
5	50 Hz	Frequency [Hz]
02	230 V, DOL	Voltage code and starting method
0B	400-415 V, DOL	
[ ]	1st generation	Generation*
A	2nd generation	
B	3rd generation	
[ ]	Standard	Pump material

\* The pumps in the individual generations differ in design but are similar in terms of power rating.



## 7. Protection and control functions

### 7.1 Built-in protection

The motor incorporates an electronic unit which protects the motor in various situations.

In case of overload, the built-in overload protection stops the pump for 5 minutes. After that period, the pump is ready to restart if the starting conditions are fulfilled.

To reset the pump, switch off the power supply for one minute.

The motor is protected in the following situations:

- dry running
- voltage surges up to 6000 V  
In areas with high lightning intensity, external lightning protection is required.
- overvoltage
- undervoltage
- overload
- overtemperature

### 7.2 Thermal switches

All pumps have two sets of thermal switches incorporated in the stator windings.

When a thermal switch is activated, the pump will stop immediately, and it will not restart until the motor windings have cooled sufficiently.

If the pump does not restart automatically, the pump must be reset and restarted manually. If the pump has to be restarted manually repeatedly, contact Grundfos or a service workshop authorised by Grundfos.

## 8. Servicing and maintaining the product

### 8.1 Safety instructions and requirements

#### DANGER

##### Electric shock

Death or serious personal injury

- Before starting work on the pump, make sure that the fuses have been removed or the main switch has been switched off.
- Make sure that the power supply cannot be accidentally switched on.



#### CAUTION

##### Crushing of hands

Minor or moderate personal injury

- Do not put your hands or any tool into the pump inlet or outlet port after the pump has been connected to the power supply, unless the pump has been switched off by removing the fuses or switching off the main switch.
- Make sure that all the rotating parts have stopped moving.



#### CAUTION

##### Biological hazard

Minor or moderate personal injury

- Make sure to seal the pump outlet properly when fitting the outlet pipe, otherwise water might spray out of the sealing.



#### CAUTION

##### Hot surface

Minor or moderate personal injury

- Do not touch the surface of the pump while the pump is running.



#### WARNING

##### Crushing of hands

Death or serious personal injury

- When lifting the pump, make sure your hand is not caught between the lifting bracket and the hook.



**DANGER****Crushing hazard**

Death or serious personal injury

- Make sure that the hook is fixed properly to the lifting bracket.
- Always lift the pump by its lifting bracket or by means of a forklift truck if the pump is fixed on a pallet.
- Never lift the pump by means of the power cable, hose or pipe.
- Make sure that the lifting bracket is tightened before attempting to lift the pump. Tighten if necessary.

**DANGER****Electric shock**

Death or serious personal injury

- Before installing the pump and starting it up for the first time, check the power cable for visible defects to avoid short circuits.
- If the power cable is damaged, it must be replaced by the manufacturer, his service agent or a similarly qualified person.
- Make sure that the product is earthed properly.
- Switch off the power supply and lock the main switch in position 0.
- Switch off any external voltage connected to the product before working on it.

**CAUTION****Biological hazard**

Minor or moderate personal injury

- Flush the pump thoroughly with clean water and rinse the pump parts in water after dismantling.
- Pits for submersible drainage and effluent pumps may contain drainage or effluent with toxic and/or disease-causing substances.
- Wear appropriate personal protective equipment and clothing.
- Observe the local hygiene regulations in force.

**CAUTION****Pressurised system**

Minor or moderate personal injury

- As pressure may have built up in the oil chamber, do not remove the screws until the pressure has been fully relieved.



Except for service on the pump parts, all other service work must be carried out by Grundfos or a service workshop authorized by Grundfos and approved for servicing explosion-proof products.



If the pump is inactive for long periods of time, we recommend that you check the function of the pump.



Service videos can be found in Grundfos Product Center at [www.grundfos.com](http://www.grundfos.com).



A possible replacement of the power cable must be carried out by Grundfos or a service workshop authorised by Grundfos.

**8.2 Contaminated pumps****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.

### 8.3 Maintenance schedule

Inspect pumps running normal operation every 3000 operating hours or at least once a year. If the dry-solid content of the pumped liquid is very high or sandy, check the pump at shorter intervals.

Check the following points:

- **Power consumption**  
See section [6.6.1 Nameplate](#).
- **Oil level and oil condition**  
When the pump is new or after replacement of the shaft seal, check the oil level after one week of operation.  
Use Shell Ondina X420 oil or similar type. See section [8.4 Oil check and oil change](#).
- **Sensors**  
For cleaning of sensors, see section [8.5 Cleaning the sensors](#).
- **Cable entry**



Make sure that the cable entry is watertight and that the cable is not sharply bent and/or pinched.

- **Pump parts**  
Check the impeller, the pump housing, etc. for possible wear. Replace defective parts. See section [8.9 Service kits](#).
- **Ball bearings**  
Check the shaft for noisy or heavy operation by turning the shaft by hand. Replace defective ball bearings.  
A general overhaul of the pump is usually required in case of defective ball bearings or poor motor function. This work must be carried out by Grundfos or a service workshop authorised by Grundfos.

### 8.4 Oil check and oil change

Every 3000 operating hours or at least once a year, change the oil in the oil chamber as described below. If the shaft seal has been changed, the oil must be changed as well.

The table below states the quantity of oil in the oil chamber:

Pump type	Quantity of oil in the oil chamber [l]
DP and EF pumps up to 1.5 kW	0.17
DP pumps of 2.6 kW	0.42

### Draining of oil

#### CAUTION

##### Pressurised system



Minor or moderate personal injury  
- As pressure may have built up in the oil chamber, do not remove the screws until the pressure has been fully relieved.

1. Loosen and remove both oil screws to allow all the oil to drain from the chamber.
2. Check the oil for water and impurities. If the shaft seal has been removed, the oil will give a good indication of the condition of the shaft seal.

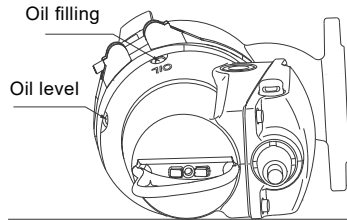


Dispose of used oil in accordance with local regulations.

#### Oil filling, pump lying down

See fig. 14.

1. Place the pump in such a position that it is lying on the stator housing and the outlet flange and that the oil screws are pointing upwards.
2. Fill oil into the oil chamber through the upper hole until it starts running out of the lower hole. The oil level is now correct.
3. Fit both oil screws using the gaskets included in the O-ring service kit. See section [8.9 Service kits](#).



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Fig. 14 Oil filling holes

#### Oil filling, pump in upright position

1. Place the pump on a plane, horizontal surface.
2. Fill oil into the oil chamber through one of the holes until it starts running out of the other hole.
3. Fit both oil screws using the gaskets included in the O-ring service kit. See section [8.9 Service kits](#).

## 8.5 Cleaning the sensors

The cleaning intervals below are stated as guidelines and must be adapted to the pit.

### Cleaning intervals for non-explosion-proof pumps

The following table lists the recommended cleaning intervals for sensors in non-explosion-proof pumps. These cleaning intervals are for guidance. We recommend that you find the right cleaning level based on experience and the composition of the wastewater in the specific application.

Wastewater containing grease	Wastewater containing dry solid matter or fibres	Wastewater without grease, dry solid matter or fibres
3 months	6 months	12 months

### Cleaning intervals for explosion-proof pumps



Cleaning intervals of the sensors in explosion-proof pumps are mandatory in order to ensure that the pump is working correctly.

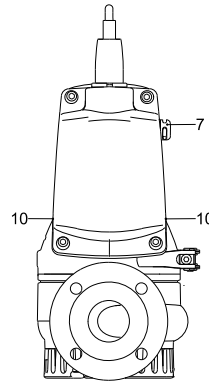
After cleaning, both dry-running sensors must be checked individually for proper functioning.



If the dry-running sensors are not functioning properly, there is a risk of dry-running of the hydraulic part of the pump, which can provoke ignition.

The following table lists the required cleaning intervals for sensors in explosion-proof pumps.

Wastewater containing grease	Wastewater containing dry solid matter or fibres	Wastewater without grease, dry solid matter or fibres
3 months	6 months	6 months



**Fig. 15** Position of level and dry-running sensors

Proceed as follows:

See fig. 15.

1. Level sensor (7):  
Flush the sensor with clean water.
- Dry-running sensors (10):  
Flush the dry-running sensors with clean water and clean them using a soft brush.
2. Switch on the power supply to the pump.
3. Check that the pump starts and pumps down to the dry-running level.



To avoid damaging the sensors, do not use other cleaning aids than those mentioned in this booklet.



If the dry-running sensors are not covered by liquid, the pump cannot start.

### Checking the functionality of the dry-running sensors

1. Cover one dry-running sensor with a wet cloth.
2. Let the pump run and pump down to the dry-running level.  
– The pump must stop at the dry-running level.
3. Repeat this check with the other sensor.

## 8.6 Adjusting the impeller clearance

For position numbers in brackets, see figs 4 to 6 in [Appendix](#).

Proceed as follows:

### DP pumps only

1. Loosen and remove the screws (188c) holding the inlet strainer (84). Remove the strainer.

### All pumps

2. Loosen the locking screws (188b).
3. Loosen the adjusting screws (189), and push the wear plate (162) until it touches the impeller.
4. Tighten the adjusting screws so that the wear plate still touches the impeller. Then loosen all the adjusting screws about half a turn.



Make sure the impeller can rotate freely without touching the wear plate.

5. Tighten the locking screws.
6. Rotate the impeller by hand to check that it is not touching the wear plate.

### DP pumps only

7. Fit the inlet strainer. Fit and tighten the screws (188c).

See also section [8.7 Cleaning the pump housing](#).

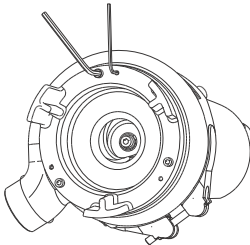


Fig. 16 Pump viewed from inlet side

## 8.7 Cleaning the pump housing

For position numbers in brackets, see figs 4 to 6 in [Appendix](#).

Proceed as follows:

### Dismantling

1. Stand the pump upright.
2. Loosen and remove the clamp (92) fastening the pump housing to the motor.
3. Lift the motor out of the pump housing (50). As the impeller is fastened to the shaft end, the impeller will be removed together with the motor.
4. Clean the pump housing and the impeller.

### Assembly

1. Place the motor with impeller in the pump housing.
2. Fit and tighten the clamp (92).

See also section [8.8 Checking or replacing the shaft seal](#).

## 8.8 Checking or replacing the shaft seal

To make sure that the shaft seal is intact, check the oil.

If the oil contains more than 20 % water, the shaft seal is defective and must be replaced. If the shaft seal is not replaced, the motor will be damaged.

If the oil is clean, it can be reused. See also section [8. Servicing and maintaining the product](#).

For position numbers in brackets, see figs 4 to 6 in [Appendix](#).

Proceed as follows:

1. Loosen and remove the clamp (92) fastening the pump housing to the motor.
2. Lift the motor out of the pump housing (50). As the impeller is fastened to the shaft end, the impeller will be removed together with the motor.
3. Remove the screw (188a) from the shaft end.
4. Remove the impeller (49) from the shaft.
5. Drain the oil from the oil chamber. See section [8.4 Oil check and oil change](#). The shaft seal is a complete unit for all pumps.
6. Remove the screws (188a) securing the shaft seal (105).
7. Lift the shaft seal (105) out of the oil chamber using the lever principle, the two dismounting holes in the shaft seal carrier (58) and two screwdrivers.
8. Check the condition of the bush (103) where the secondary seal of the shaft seal touches the bush. The bush must be intact. If the bush is worn and must be replaced, the pump must be checked by Grundfos or a service workshop authorised by Grundfos.

If the bush is intact, proceed as follows:

1. Check and clean the oil chamber.
2. Lubricate the faces in contact with the shaft seal with oil.
3. Insert the new shaft seal (105) using the plastic bush included in the kit.
4. Tighten the screws (188a) securing the shaft seal to 16 Nm.
5. Fit the impeller. Make sure that the key (9a) is fitted correctly.
6. Fit and tighten the screw (188a) securing the impeller to 22 Nm.
7. Place the motor part with impeller in the pump housing (50).
8. Fit and tighten the clamp (92).
9. Fill the oil chamber with oil. See section [8.4 Oil check and oil change](#).

For adjustment of the impeller clearance, see section [8.6 Adjusting the impeller clearance](#).

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## 8.9 Service kits

The following service kits are available for all pumps.

Service kit	Contents	Pump type	Material	Product number
Shaft seal kit	Shaft seal complete	0.6 - 1.5 kW	BQQP	96106536
			BQQV	96645161
		2.6 kW	BQQP	96076123
			BQQV	96645275
O-ring kit	O-rings and gaskets for the oil screws	0.6 - 1.5 kW	NBR	96115107
			FKM	96646049
		2.6 kW	NBR	96115108
			FKM	96646060
Impeller	Impeller complete with adjusting screw, shaft screw and key	EF 30.50.06		96115101
		EF 30.50.09		96115109
		EF 30.50.11		96115102
		EF 30.50.15		96115103
		DP 10.50.09		96115104
		DP 10.50.15		96115105
		DP 10.65.26		96115106
Oil	1 litre of oil, type Shell Ondina X420. See section <a href="#">8.4 Oil check and oil change</a> for the required quantity of oil in oil the chamber.	All types		96586753
Lifting bracket	Lifting bracket and screw	0.6 - 1.5 kW		96984147
		2.6 kW		96984148
Power plug	Plug for the power supply and O-rings for the cover	All types		96984144
Protective cap for the level sensor	Protective cap and O-rings for the cover and the sensor	All types		96898081
Level sensor	Level sensor, protective cap and O-rings for the cover and the sensor	Standard pumps		96898082
		Ex pumps		96984130
Dry-running sensor	Dry-running sensor and O-rings for the cover and the sensor	Standard pumps		96898083
		Ex pumps		96984131
Electronic unit, single-phase	Cover with electronics and O-rings for the cover	Single-phase pumps		96898085
		Single-phase Ex pumps		96984145
Electronic unit, three-phase	Cover with electronics and O-rings for the cover	Three-phase pumps		96898086
		Three-phase Ex pumps		96984146
Pt1000 sensor	Pt1000 sensor and bracket	All types		96984143
Run capacitor	Run capacitor, Pt1000 sensor, bracket and O-rings for the cover.	All single-phase pumps		96984142

## 9. Fault finding the product

Before attempting to diagnose any fault, read and observe the safety instructions in section [8.1 Safety instructions and requirements](#).



Observe all regulations applying to pumps installed in potentially explosive environments.

Make sure that no work is carried out in potentially explosive atmosphere.



Before attempting to diagnose any fault:

- Make sure that the fuses have been removed or the main switch has been switched off.
- Make sure that the power supply cannot be accidentally switched on.
- Make sure that all rotating parts have stopped moving.

Fault	Cause	Remedy
1. The pump does not run.	a) The dry-running sensors are not covered by the liquid.	After power-on, allow the liquid level to rise until the dry-running sensors are covered with liquid.
	b) Three-phase pumps only: The pump is connected to the power supply with a wrong phase sequence.	Interchange L1 and L2.
	c) The fuses in the electrical installation have blown.	Replace the blown fuses. If the new fuses blow too, check the electric installation and the power cable.
	d) Power supply failure, short circuit or earth leakage in the cable or the motor windings.	Have the cable and the motor checked and repaired by a qualified electrician.
	e) Fault in the motor electronics.	Have the motor checked and repaired by a Grundfos service engineer.
	f) Deposits on the level or dry-running sensors.	Clean the sensor(s).
2. The pump starts, but stops after a short while.	a) The impeller is blocked by impurities. Increased current consumption in all three phases.	Clean the impeller.
	b) Increased current consumption due to a large voltage drop.	Check that the supply voltage is within the range. If not, reestablish correct voltage supply.
	c) The liquid temperature is too high.	Reduce the liquid temperature.
	d) The liquid viscosity is too high.	Dilute the liquid.
3. The pump runs at below-standard performance and power consumption.	a) The outlet pipe is partly blocked by impurities.	Clean the outlet pipe.
	b) The valves in the outlet pipe are partly closed or blocked.	Check and clean or replace the valves, if necessary.
4. The pump runs, but delivers no liquid.	a) The outlet valve is closed or blocked.	Check the outlet valve, and possibly open and/or clean it.
	b) The non-return valve is blocked.	Clean the non-return valve.
	c) There is air in the pump.	Vent the pump.

### 9.1 Megging



Do not meg AUTO<sub>ADAPT</sub> pumps as this may damage the built-in electronics.

## 10. Technical data

### 10.1 Operating conditions

#### 10.1.1 Operating mode

The pumps are designed for intermittent operation (S3). When completely submerged in the pumped liquid, the pumps can also operate continuously (S1).

#### 10.1.2 Installation depth

Maximum 10 m below liquid level.

#### 10.1.3 Operating pressure

Maximum 6 bar.

#### 10.1.4 Number of starts per hour

Maximum 30.

#### 10.1.5 pH value

Pumps in permanent installations can be used for pumping liquids with a pH value between 4 and 10.

#### 10.1.6 Liquid temperature

0-40 °C.

For short periods of maximum 10 minutes, a temperature of up to 60 °C is allowed. This applies for standard versions only.



Explosion-proof pumps must never pump liquids at a temperature higher than 40 °C.

#### 10.1.7 Density of pumped liquid

When pumping liquids with a density and/or a kinematic viscosity higher than that of water, use motors with correspondingly higher outputs.

#### 10.1.8 Sound pressure level

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

## 10.2 Electrical data

### 10.2.1 Power supply

- 1 x 230 V - 10 %/+ 6 %, 50 Hz
- 3 x 400 V - 10 %/+ 10 %, 50 Hz

### 10.2.2 Enclosure class

IP68, according to IEC 60529.

### 10.2.3 Insulation class

F (155 °C).

### 10.2.4 Pump curves

Pump curves are available via [www.grundfos.com](http://www.grundfos.com).

The curves are to be considered as a guide. They must not be used as guarantee curves.

Test curves for the supplied pump are available on request.

## 10.3 Dimensions and weights

### 10.3.1 Dimensions

See figs 1 to 3 in [Appendix](#).

### 10.3.2 Weights

Weights do not include accessories.

Power [kW]	Weight [kg]
DP 0.9 - 1.5	39
DP 2.6	68
EF 0.6 - 1.5	39

## 11. 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 wheeled 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

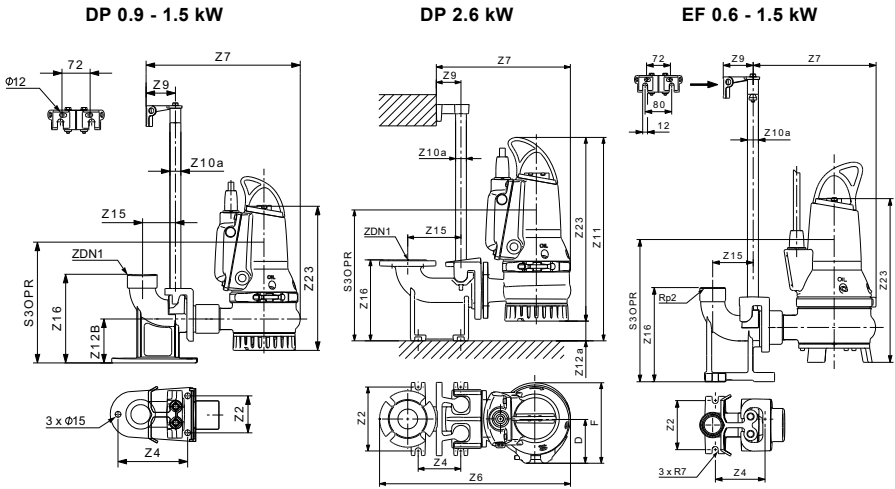
waste disposal authorities. The separate collection and recycling of such products will help protect the environment and human health.

See also end-of-life information at

[www.grundfos.com/product-recycling](http://www.grundfos.com/product-recycling).



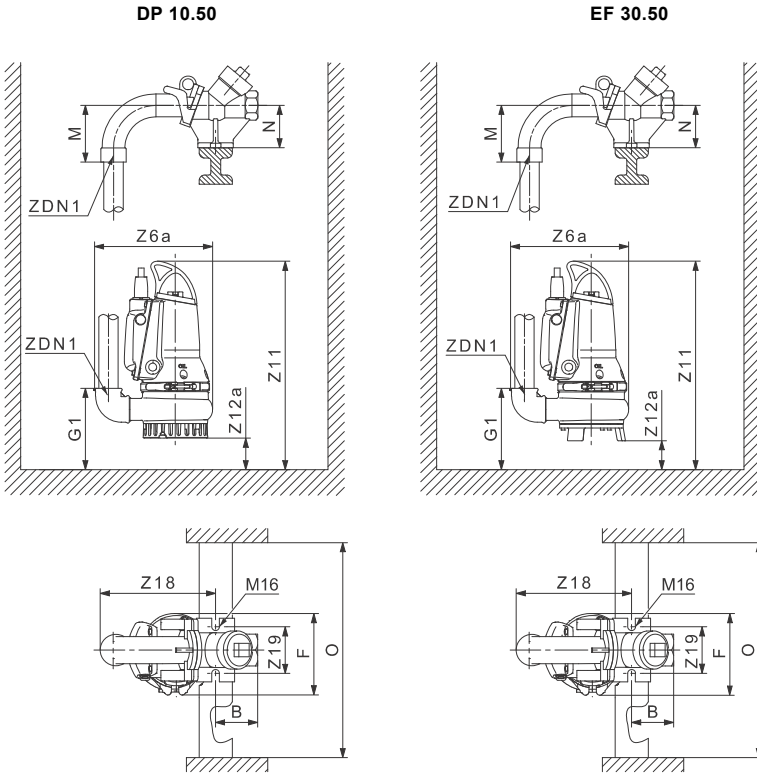
Fig. 1 One-pump installation on auto-coupling



TM06 5882 - 5904 - 5908 1317

Power [kW]	D	F	Z2	Z4	Z6	Z7	Z9	Z10a	Z11	Z12a	Z12B	Z15	Z16	Z23	ZDN1	S3OPR
DP 0.9 - 1.5	117	150	115	118	325	370	70	1"	523	30	128	90	226	393	Rp 2	324
DP 2.6	137	252	210	140	623	436	81	1 1/2"	671	64	-	175	226	472	Rp 2	391
EF 0.6 - 1.5	117	150	115	118	-	370	70	1"	530	30	220	90	226	390	Rp 2	323

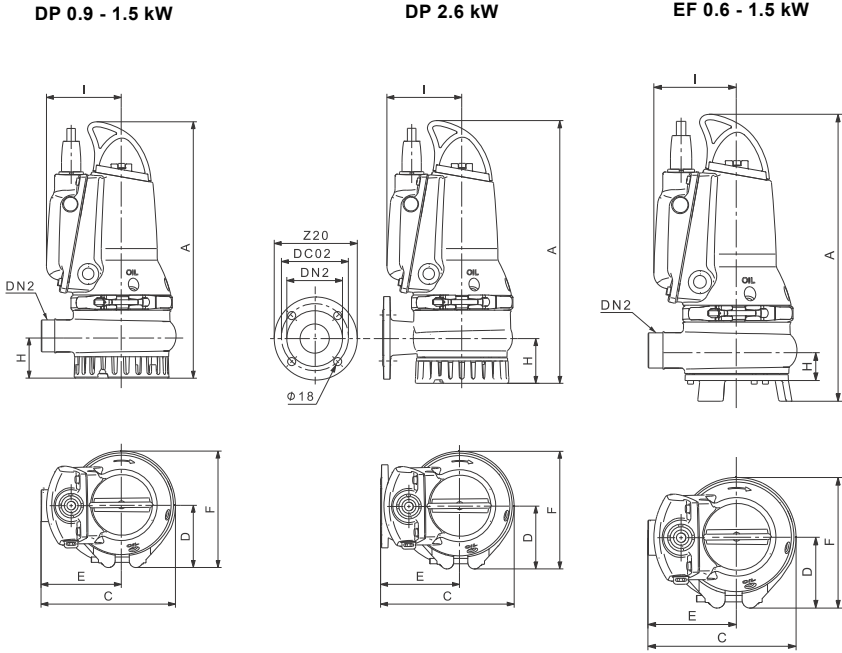
Fig. 2 One-pump installation on hookup auto-coupling



TM06 5883 0316

Power [kW]	B	F	G1	O	M	N	ZDN1	Z6a	Z12a	Z18	Z19
DP 0.9 - 1.5	75	218	160	600	140	100	R2	325	30	286	110
EF 0.6 - 1.5	75	218	163	600	140	100	R2	325	30	286	110

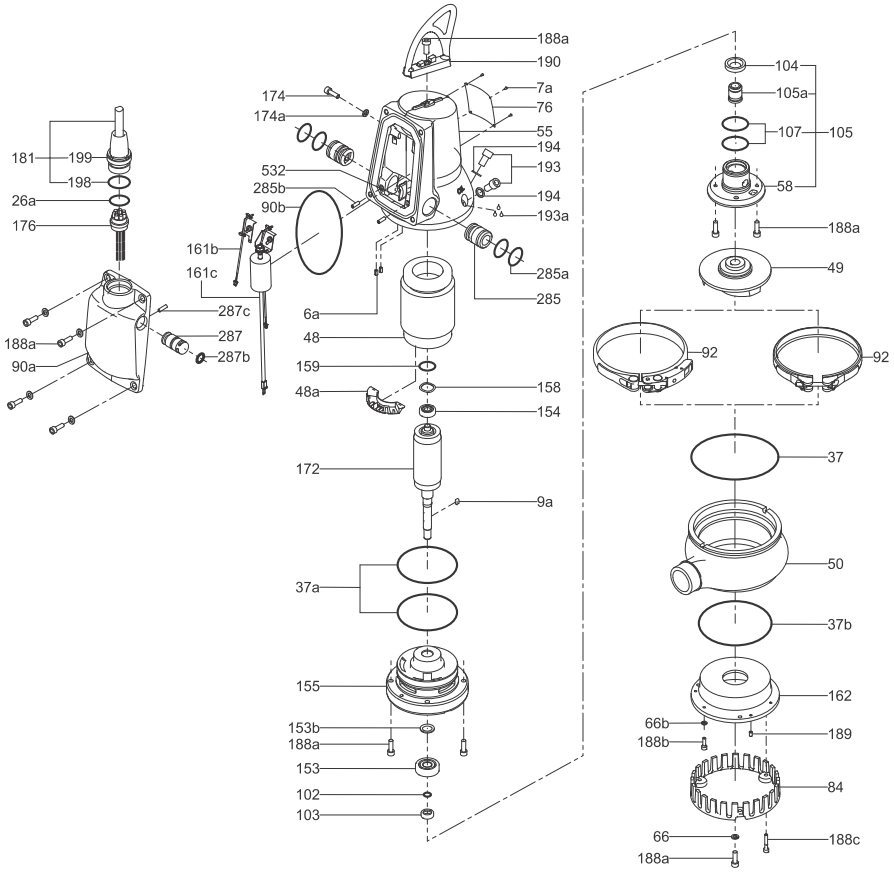
**Fig. 3 Free-standing installation**



Power [kW]	A	C	D	E	F	H	I	Z20	DC02	DN2
DP 0.9 - 1.5	503	252	117	150	218	87	123	-	145	Rs 2
DP 2.6	587	294	137	180	252	102	143	185	145	DN 65
EF 0.6 - 1.5	490	252	117	150	218	84	141	-	145	Rs 2

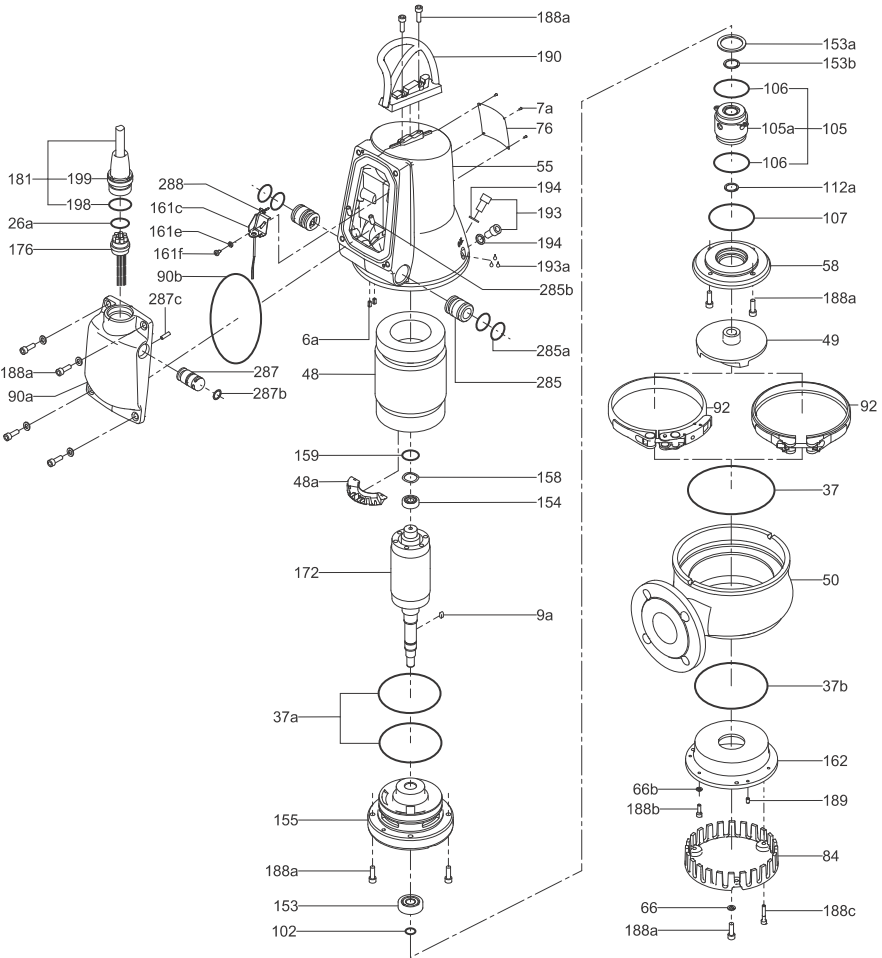
TM06 5881 - 5915 0316

Fig. 4 Exploded view of DP 10.50 pump



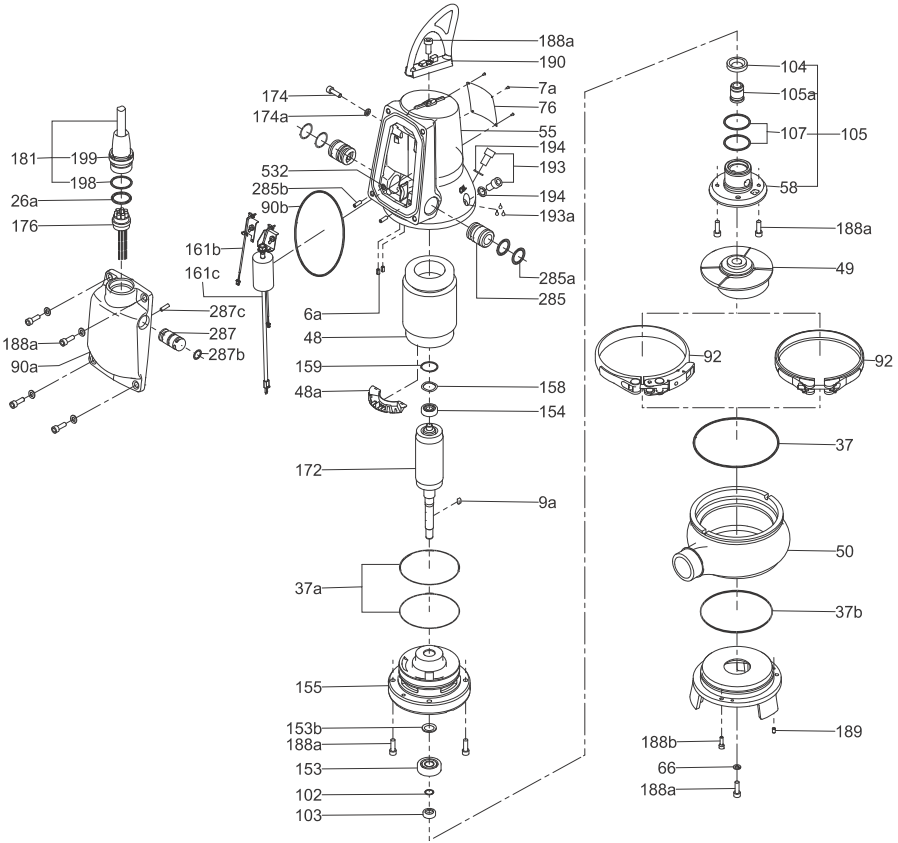
TM06 5879 0316

**Fig. 5 Exploded view of DP 10.65 pump**



TM06 5900 0316

Fig. 6 Exploded view of EF 30.50 pump



TM06 5913 0316

Pos.	Description	Описание	Popis	Beschreibung
	GB	BG	CZ	DE
6a	Pin	Щифт	Kolík	Stift
7a	Rivet	Нит	Nýt	Niet
9a	Key	Фиксатор	Pero	Passfeder
26a	O-ring	О-пръстен	O-kroužek	O-Ring
37	O-ring	О-пръстен	O-kroužek	O-Ring
37a	O-ring	О-пръстен	O-kroužek	O-Ring
37b	O-ring	О-пръстен	O-kroužek	O-Ring
48	Stator	Статор	Stator	Stator
48a	Terminal board	Клеморед	Svorkovnice	Klemmbrett
49	Impeller	Работно колело	Oběžné kolo	Laufrad
50	Pump housing	Помпен корпус	Těleso čerpadla	Pumpengehäuse
55	Stator housing	Корпус на статора	Těleso statoru	Statorgehäuse
58	Shaft seal carrier	Носач на уплътнението при вала	Unašeč ucpávky	Aufnahme für Gleitringdichtung
66	Locking ring	Фиксиращ пръстен	Pojistný kroužek	Sicherungsring
76	Nameplate	Табела	Typový štítek	Leistungsschild
84	Suction strainer	Смукателна решетка	Sací síto	Einlaufsieb
90a	Electronic unit	Електронен блок	Elektronická jednotka	Elektronikeinheit
90b	O-ring	О-пръстен	O-kroužek	O-Ring
92	Clamp	Скоба	Fixační objímka	Spannband
102	O-ring	О-пръстен	O-kroužek	O-Ring
103	Bush	Втулка	Pouzdro	Buchse
104	Seal ring	Уплътняващ пръстен	Těsnící kroužek	Dichtungsring
105 105a	Shaft seal	Уплътнение при вала	Hřídlová ucpávka	Gleitringdichtung
106	O-ring	О-пръстени	O-kroužky	O-Ring
107	O-ring	О-пръстени	O-kroužky	O-Ring
112a	Locking ring	Застопоряващ пръстен	Pojistný kroužek	Sicherungsring
153	Bearing	Лагер	Ložisko	Lager
153a	Lock washer	Стопорна шайба	Pojistná podložka	Sicherungsscheibe
153b	Locking ring	Застопоряващ пръстен	Pojistný kroužek	Sicherungsring
154	Bearing	Лагер	Ložisko	Lager
155	Oil chamber	Маслото в камерата	Olejové komoře	Ölsperkammer
158	Corrugated spring	Гофрирана пружина	Tlačná pružina	Gewellte Feder
159	O-ring	О-пръстен	O-kroužek	O-Ring
161b	Pt1000 sensor with bracket	Pt1000 сензор със скоба	Snímač Pt1000 s držákem	Pt1000-Sensor mit Konsole
161c	Run capacitor and Pt1000 sensor with bracket*	Работен кондензатор и Pt1000 сензор със скоба*	Spouštěcí kondenzátor a snímač Pt1000 s držákem*	Betriebskondensator und Pt1000-Sensor mit Konsole*
162	Wear plate	Износваща се плоча	Těsnící deska	Verschleißplatte
172	Rotor/shaft	Ротор/вал	Rotor/hřídel	Rotor/Welle
174	Earth screw	Винт за заземяване	Zemnicí šroub	Erdungsschraube
174a	Washer	Шайба	Podložka	Unterlegscheibe

Pos.	Description GB	Описание BG	Popis CZ	Beschreibung DE
176	Inner plug part	Вътрешна част на щепсела	Vnitřní část kabelové průchodky	Kabelanschluss, innerer Teil
181	Outer plug part	Външна част на щепсела	Vnější část kabelové průchodky	Kabelanschluss, äußerer Teil
188a	Screw	Винт	Šroub	Schraube
188b	Locking screw	Фиксиращ винт	Pojistný šroub	Sicherungsschraube
188c	Screw	Винт	Šroub	Schraube
189	Adjusting screw	Винт за настройка	Stavěcí šroub	Einstellschraube
190	Lifting bracket	Ръкохватка	Zvedací rukojeť	Tragbügel
193	Oil screw	Винт при камерата за масло	Olejevá zátka	Ölschraube
193a	Oil	Масло	Olej	Öl
194	Gasket	Гарнитура	Těsnící kroužek	Dichtung
198	O-ring	О-пръстен	O-kroužek	O-Ring
199	Locking nut	Контрагайка	Pojistná matice	Sicherungsmutter
285	Dry-running sensor**	Сензор за "суха" работа**	Snímač provozu nasucho**	Trockenlaufsensor**
285a	O-ring	О-пръстен	O-kroužek	O-Ring
285b	Set screw	Фиксиращ винт	Stavěcí šroub	Einstellschraube
287	Level sensor	Сензор за ниво	Hladinový snímač	Niveausensor
287a	Protection cap	Защитна капачка	Ochranná čepička	Schutzkappe
287b	O-ring	О-пръстен	O-kroužek	O-Ring
287c	Set screw	Фиксиращ винт	Stavěcí šroub	Einstellschraube
532	Silica gel	Силикагел	Silikonový gel	Kieselgel

\* Single-phase pumps only.  
Само за монофазни помпи.  
Pouze jednofázová čerpadla.  
Nur einphasige Pumpen

\*\* Standard pumps have only one dry-running sensor.  
Стандартните помпи имат само един сензор за работа на сухо.  
Běžná čerpadla mají pouze jeden snímač provozu nasucho.  
Standardpumpen verfügen nur über einen Trockenlaufsensor.



Pos.	Beskrivelse	Seletus	Descripción	Kuvas
	DK	EE	ES	FI
6a	Stift	Tihvt	Pasador	Tappi
7a	Nitte	Neet	Remache	Niitti
9a	Feder	Kiil	Chaveta	Kiila
26a	O-ring	O-ring	Junta tórica	O-rengas
37	O-ring	O-ring	Junta tórica	O-rengas
37a	O-ring	O-ring	Junta tórica	O-rengas
37b	O-ring	O-ring	Junta tórica	O-rengas
48	Stator	Staator	Estator	Staattori
48a	Klembræt	Klemmliist	Caja de conexiones	Kytkentälevy
49	Løber	Tööratas	Impulsor	Juoksupyörä
50	Pumpehus	Pumbapesa	Cuerpo de bomba	Pumpupesä
55	Statorhus	Staatori korpus	Alojamiento de estator	Staattoripesä
58	Akseltætningsholder	Völlitihendi alusplaat	Soporte de cierre	Akselitiivistekannatin
66	Låsering	Lukustusrõngas	Anillo de cierre	Lukkorengas
76	Typeskilt	Andmeplaat	Placa de identificación	Arvokilpi
84	Indløbssi	Imisõel	Filtro de aspiración	Imusihti
90a	Elektronikenhed	Elektroonikaplokk	Unidad electrónica	Elektroniikkayksikkö
90b	O-ring	O-ring	Junta tórica	O-rengas
92	Spændebånd	Klamber	Abrazadera	Kiinnityspanta
102	O-ring	O-ring	Junta tórica	O-rengas
103	Bøsning	Puks	Casquillo	Holkki
104	Simmerring	Tihend	Anillo de cierre	Tiivisterengas
105 105a	Akseltætning	Völlitihend	Cierre	Akselitiiviste
106	O-ring	O-ring	Junta tórica	O-rengas
107	O-ring	O-ring	Junta tórica	O-rengas
112a	Låsering	Lukustusrõngas	Anillo de bloqueo	Lukkorengas
153	Leje	Laager	Cojinete	Laakeri
153a	Låseskive	Lukustussei	Arandela de seguridad	Lukkoaluslevy
153b	Låsering	Lukustusrõngas	Anillo de bloqueo	Lukkorengas
154	Leje	Laager	Cojinete	Laakeri
155	Oliekammer	Õlikamber	Cámara de aceite	Õljytila
158	Bølgefeder	Vedruseib	Muelle ondulado	Aaltojousi
159	O-ring	O-ring	Junta tórica	O-rengas
161b	Pt1000-sensor med holder	Pt1000 andur koos kinnitusega	Sensor Pt1000 con abrazadera	Pt1000-anturi ja kiinnike
161c	Driftskondensator og Pt1000-sensor med holder*	Käivituskondensaator ja Pt1000 andur koos kinnitusega*	Condensador de funcionamiento y sensor Pt1000 con abrazadera*	Käyntikondensaattori ja kiinnikkeellä varustettu Pt1000-anturi*
162	Slidplade	Pumbapesa põhi	Placa de desgaste	Kulutuslevy
172	Rotor/aksel	Rooror/võll	Rotor/eje	Roottori/akseli
174	Jordskrue	Maanduspolt	Tornillo de tierra	Maadoitusruuvi
174a	Skive	Seib	Arandela	Aluslevy
176	Indvendig stikdel	Pistiku sisemine pool	Parte de clavija interior	Sisäpuolinen tulppaosa

Pos.	Beskrivelse	Seletus	Descripción	Kuvaus
	DK	EE	ES	FI
181	Udvendig stikdel	Pistiku välimine pool	Parte de clavija exterior	Ulkopuolinen tulppaosa
188a	Skruue	Polt	Tornillo	Ruuvi
188b	Läseskrue	Lukustusrõngas	Tornillo de apriete	Lukitusruuvi
188c	Skruue	Polt	Tornillo	Ruuvi
189	Justerskrue	Reguleerimiskruvi	Tornillo de ajuste	Säätöruuvi
190	Løftebøjle	Tõsteaas	Asa	Nostosanka
193	Olieskrue	Õlikambri kork	Tornillo de aceite	Õljytulppa
193a	Olie	Õli	Aceite	Õljy
194	Pakning	Tihend	Junta	Tiiviste
198	O-ring	O-ring	Junta tórica	O-rengas
199	Låsemøtrik	Lukustusmutter	Tuerca de seguridad	Lukkomutteri
285	Tørløbssensor**	Kuivkäiguandur**	Sensor de marcha en seco**	Kuivakäyntianturi**
285a	O-ring	O-ring	Junta tórica	O-rengas
285b	Pinolskrue	Seadepolt	Tornillo ajuste	Asetusruuvi
287	Niveausensor	Nivooandur	Sensor de nivel	Pinta-anturi
287a	Beskyttelseshætte	Kaitsekork	Tapón de protección	Suojakansi
287b	O-ring	O-ring	Junta tórica	O-rengas
287c	Pinolskrue	Seadepolt	Tornillo ajuste	Asetusruuvi
532	Kiselgel	Silikageel	Gel de sílice	Silikageeli

\* Kun 1-fasede pumper  
Ainult ühefaasilised pumbad.  
Sólo bombas monofásicas.  
Vain 1-vaihepumput.

\*\* Standardpumper har kun én tørløbssensor.  
Standard pumpadel on ainult üks kuivkäigukaitse.  
Las bombas estándar sólo cuentan con un sensor de marcha en seco.  
Vakiopumpuissa on vain yksi kuivakäyntianturi.

Pos.	Description	Περιγραφή	Opis	Megnevezés
	FR	GR	HR	HU
6a	Broche	Πείρος	Nožica	Csap
7a	Rivet	Πριτσίνι	Zareznani čavao	Szegecs
9a	Clavette	Κλειδί	Opruga	Rögzítőék
26a	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
37	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
37a	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
37b	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
48	Stator	Στάτης	Stator	Állórész
48a	Bornier	Κλέμες σύνδεσης	Priključna letvica	Kapcsoló tábla
49	Roue	Πτερωτή	Rotor	Járókerék
50	Corps de pompe	Περιβλήμα αντλίας	Kucište crpke	Szivattyúház
55	Logement de stator	Περιβλήμα στάτη	Kucište statora	Állórészház
58	Support de garniture mécanique	Φορέας στυπιοθλιπτη άξονα	Držac brtve	Tengelytömítés-keret
66	Anneau de serrage	Ασφαλιστικός δακτύλιος	Sigurnosni prsten	Rögzítőgyűrű
76	Plaque signalétique	Πινακίδα	Natpisna pločica	Adattábla
84	Crépine d'aspiration	Φίλτρο αναρρόφησης	Ulazno sito	Színókosár
90a	Unité électronique	Ηλεκτρονική μονάδα	Elektronička jedinica	Elektromos egység
90b	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
92	Collier de serrage	Σφιγκτήρας	Zatezna traka	Bilincs
102	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
103	Douille	Αντιπριβικός δακτύλιος	Brtvenica	Tömítőgyűrű
104	Anneau d'étanchéité	Στεγανοποιητικός δακτύλιος	Brtveni prsten	Tömítőgyűrű
105 105a	Garniture mécanique	Στυπιοθλιπτης άξονα	Brtva vratila	Tengelytömítés
106	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
107	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrűk
112a	Collier de serrage	Ασφαλιστικός δακτύλιος	Stezni prsten	Rögzítőgyűrű
153	Roulement	Έδρανο	Ležaj	Csapágy
153a	Rondelle de blocage	Ροδέλα ασφαλείας	Sigurnosna podložka	Rögzítő alátét
153b	Collier de serrage	Ασφαλιστικός δακτύλιος	Stezni prsten	Rögzítőgyűrű
154	Roulement	Έδρανο	Ležaj	Csapágy
155	Chambre à huile	Θάλαμος λαδιού	Komora za ulje	Olajkamra
158	Ressort ondulé	Αυλακωτό ελατήριο	Valovića opruga	Hullámrugó
159	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
161b	Capteur Pt1000 avec support	Αισθητήρας Pt1000 με βραχίονα στήριξης	Pt1000 senzor s nosačem	Pt1000 érzékelő kerettel
161c	Condensateur de fonctionnement et capteur Pt1000 avec support*	Πυκνωτής λειτουργίας και αισθητήρας Pt1000 με βραχίονα στήριξης*	Radni kondenzator i Pt1000 senzor s nosačem*	Üzemi kondenzátor és Pt1000 érzékelő kerettel*
162	Plaque d'usure	Πλάκα φθοράς	Žrtvena pločica	Kopóelem
172	Rotor/arbre	Ρότορας/άξονας	Rotor/vratilo	Forgórész/tengely
174	Vis terre	Βίδα γείωσης	Vijak za uzemljenje	Földelő csavar
174a	Rondelle	Ροδέλα	Podložna pločica	Alátét

Pos.	Description	Περιγραφή	Opis	Megnevezés
	FR	GR	HR	HU
176	Partie intérieure de la fiche	Εσωτερικό τμήμα φικς	Kabel. priključak, nutarnji dio	Belső kábelbevezetés
181	Partie extérieure de la fiche	Εξωτερικό τμήμα φικς	Kabel. priključak, vanjski dio	Külső kábelbevezetés
188a	Vis	Βίδα	Vijak	Csavar
188b	Vis de fixation	Βίδα συγκράτησης	Sigurnosni vijak	Rögzítő csavar
188c	Vis	Βίδα	Vijak	Csavar
189	Vis d'ajustement	Βίδα ρύθμισης	Vijak za justiranje	Beállító csavar
190	Poignée de levage	Χειρολαβή	Transportni stremen	Emelőfül
193	Bouchon d'huile	Βίδα λαδιού	Vijak za ulje	Olajtöltőnyílás zárócsavarja
193a	Huile	Λάδι	Ulje	Olaj
194	Joint d'étanchéité	Τσιμούχα	Brtva	Tömítés
198	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
199	Écrou de verrouillage	Ασφαλιστικό περικόχλιο	Sigurnosna matica	Biztosítóanya
285	Capteur de marche à sec**	Αισθητήρας ξηρής λειτουργίας**	Senzor rada na suho**	Szárazonfutás szenzor**
285a	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
285b	Jeu de vis	Βίδα ρύθμισης	Set vijaka	Beállítócsavar
287	Capteur de niveau	Αισθητήρας στάθμης	Senzor razine	Szinttávadó
287a	Bouchon de protection	Προστατευτικό καπάκι	Zaštitna kapa	Védősapka
287b	Joint torique	Δακτύλιος-Ο	O-prsten	O-gyűrű
287c	Jeu de vis	Βίδα ρύθμισης	Set vijaka	Beállítócsavar
532	Gel de silice	Σίλικα τζελ	Silikonski gel	Szilikagél

\* Pompes monophasées uniquement.  
Μονοφασικές αντλίες μόνο.  
Samo jednofazne crpke.  
Csak egyfázisú szivattyúknál.

\*\* Les pompes standard possèdent un seul capteur de marche à sec.  
Οι τυπικές αντλίες διαθέτουν έναν μόνο αισθητήρα ξηρής λειτουργίας.  
Standardne crpke imaju samo jedan senzor rada na suho.  
Az alapkitelű szivattyúk csak egy szárazonfutás érzékelővel vannak ellátva.

Pos.	Descrizione	Aprašymas	Apraksts	Omschrijving
	IT	LT	LV	NL
6a	Perno	Vielokaištis	Tapa	Paspfen
7a	Rivetto	Kniedė	Kniede	Klinknagel
9a	Chiavetta	Kaištis	Atslēga	Spie
26a	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
37	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
37a	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
37b	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
48	Statore	Statorius	Stators	Stator
48a	Morsettiera	Kontaktų plokštė	Spaiļu plate	Aansluitblok
49	Girante	Darbaratis	Darbrats	Waaier
50	Corpo pompa	Siurblio korpusas	Sūkņa korpus	Pomphuis
55	Cassa statore	Statoriaus korpusas	Statora korpus	Motorhuis
58	Supporto tenuta meccanica	Veleno sandariklio lizdas	Vārpstas blīvējuma turētājs	Dichtingsplaat
66	Anello di arresto	Fiksavimo žiedas	Sprostgredzens	Borgring
76	Targhetta di identificazione	Vardinė plokštelė	Pases datu plāksnīte	Typeplaatje
84	Griglia di aspirazione	Jsiurbimo koštuvas	Sietfiltrs iesūkšanas pusē	Zuigkorf
90a	Unità elettronica	Elektronikos blokas	Elektroniskā ierīce	Elektronische unit
90b	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
92	Fascetta	Apkaba	Apskava	Span ring
102	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
103	Bussola	Ivorė	Ieliktnis	Bus
104	Anello di tenuta	Sandarinimo žiedas	Blīvējošais gredzens	Olie keerring
105 105a	Tenuta meccanica	Veleno sandariklis	Vārpstas blīvējums	As afdichting
106	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
107	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
112a	Anello di blocco	Fiksavimo žiedas	Sprostgredzens	Vergrendelingsring
153	Cuscinetto	Guolis	Gultnis	Kogellager
153a	Rondella di sicurezza	Fiksavimo poveržlė	Sprostpaplāksne	Borgring
153b	Anello di blocco	Fiksavimo žiedas	Sprostgredzens	Vergrendelingsring
154	Cuscinetto	Guolis	Gultnis	Kogellager
155	Camera dell'olio	Alyvos kamera	Eļļas kamera	Oliekamer
158	Molla ondulata	Rifliuota spyruoklė	Vīļņotā atspere	Drukkring
159	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
161b	Sensore Pt1000 con staffa	Pt1000 jutiklis su laikikliu	Pt1000 sensors ar kronštein	Pt1000 sensor met beugel

Pos.	Descrizione	Aprašymas	Apraksts	Omschrijving
	IT	LT	LV	NL
161c	Condensatore di marcia e sensore Pt1000 con staffa*	Darbinis kondensatorius ir Pt1000 jutiklis su laikikliu*	Darba kondensators un Pt1000 sensors ar kronšteinu*	Bedrijfscondensator en Pt1000 sensor met beugel*
162	Flangia	Dilimo plokštelė	Nodiluma platne	Slijtplaat
172	Gruppo rotore/albero	Rotorius/velenas	Rotors/vārpsta	Rotor/as
174	Vite di messa a terra	Ižeminimo varžtas	Zemēšanas skrūve	Aardschroef
174a	Rondella	Poveržlė	Paplāksne	Ring
176	Parte interna del connettore	Vidinė kištuko dalis	Spraudņa iekšējā daļa	Kabel connector inwendig
181	Parte esterna del connettore	Išorinė kištuko dalis	Spraudņa ārējā daļa	Kabel connector uitwendig
188a	Vite	Varžtas	Skrūve	Inbusbout
188b	Vite di chiusura	Fiksavimo varžtas	Sprostgredzens	Borgbout
188c	Vite	Varžtas	Skrūve	Inbusbout
189	Vite di regolazione	Reguliovimo varžtas	Regulēšanas skrūve	Stelbout
190	Maniglia	Kėlimo rankena	Rokturis	Ophangbeugel
193	Tappo dell'olio	Alyvos varžtas	Eļļas aizgrieznis	Inbusbout
193a	Olio	Alyva	Eļļa	Olie
194	Guarnizione	Tarpiklis	Blīvslēgs	Packing ring
198	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
199	Controdado	Fiksavimo veržlė	Bloķēšanas uzgrieznis	Borgmoer
285	Sensore di marcia a secco**	Sausosios eigos jutiklis**	Bezšķidruma darbības indikācijas sensors**	Droogloopsensor**
285a	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
285b	Vite di fermo	Reguliovimo varžtas	Iestatīšanas skrūve	Stelbout
287	Sensore di livello	Lygio jutiklis	Līmeņa sensors	Niveausensor
287a	Tappo di protezione	Apsauginis dangtelis	Aizsargvāciņš	Beschermkap
287b	O-ring	O žiedas	Apaļa šķērsgriezuma blīvgredzens	O-ring
287c	Vite di fermo	Reguliovimo varžtas	Iestatīšanas skrūve	Stelbout
532	Gel di silice	Silikagelis	Silikagels	Silicagel

\* Solo pompe monofase.  
Tik vienfaziai siurbliai.  
Tikai vienfāzes sūkņiem.  
Alleen eenfasepompen.

\*\* Pompe standard con un solo sensore di marcia a secco.  
Standartiniuose siurbliuose yra tik vienas sausosios eigos jutiklis.  
Standarta sūkņiem ir tikai viens bezšķidruma darbības sensors.  
Standaard pompen hebben slechts één droogloopsensor.

Pos.	Opis	Descrição	Instalație fixă	Naziv
	PL	PT	RO	RS
6a	Kołek	Pino	Pin	Klin
7a	Nit	Rebite	Nit	Zakovica
9a	Klin	Chaveta	Cheie	Klin
26a	Pierścień O-ring	O-ring	Inel tip O	O-prsten
37	Pierścień O-ring	O-ring	Inel tip O	O-prsten
37a	Pierścień O-ring	O-ring	Inel tip O	O-prsten
37b	Pierścień O-ring	O-ring	Inel tip O	O-prsten
48	Stator	Estator	Stator	Stator
48a	Listwa przyłączeniowa	Caixa terminais	Înveliș stator	Priključna letva
49	Wirnik	Impulsor	Rotor	Propeler
50	Korpus pompy	Voluta da bomba	Carcasă pompa	Kućište pumpe
55	Obudowa statora	Carcaça do motor	Carcasă stator	Stator kućišta
58	Mocowanie uszczelnienia wału	Suporte do empanque	Etanșare	Nosač zaptivanja osovine
66	Pierścień mocujący	Anilha de fixação	Inel închidere	Prsten pričvršćivanja
76	Tabliczka znamionowa	Chapa de características	Etichetă	Pločica za obeležavanje
84	Sito pompy	Grelha de aspiração	Filtru de aspirație	Usisni filter
90a	Skrzynka z układami elektronicznymi	Unidade electrónica	Unitate electronică	Električna jedinica
90b	Pierścień O-ring	O-ring	Inel tip O	O-prsten
92	Zacisk	Grampo	Șurub	Obujmica spajanja
102	Pierścień O-ring	O-ring	Inel tip O	O-prsten
103	Tulejka	Anilha	Bucșă	Čaura
104	Pierścień uszczelniający	Anilha do empanque	Inel etanșare	Zaptivni prsten
105 105a	Uszczelnienie wału	Empanque	Etanșare	Zaptivka osovine
106	Pierścień O-ring	O-ring	Inel tip O	O-prsten
107	Pierścień O-ring	O-ring	Inel tip O	O-prsten
112a	Pierścień zaciskowy	Anel de fixação	Inel de blocar	Osigurač
153	Łożysko	Rolamento	Rulment	Kuglični ležaj
153a	Podkładka blokująca	Anilha de bloqueio	Șaibă de blocare	Sigurnosna podloška
153b	Pierścień zaciskowy	Anel de fixação	Inel de blocar	Osigurač
154	Łożysko	Rolamento	Rulment	Kuglični ležaj
155	Komorze olejowej	Compartimento do óleo	Camera de ulei	Uljnoj komori
158	Sprężyna falista	Mola	Arc canelat	Sigurnosni prste
159	Pierścień O-ring	O-ring	Inel tip O	O-prsten
161b	Czujnik Pt1000 z uchwytem	Sensor Pt1000 com suporte	Senzor Pt1000 și consolă	Pt1000 senzor a podupiračem
161c	Kondensator roboczy oraz czujnik Pt1000 z uchwytem*	Condensador de funcionamento e sensor Pt1000 com suporte*	Condensator de funcționare și senzor Pt1000 cu consolă*	Radni kondenzator s Pt1000 senzor sa nosačem*
162	Tarcza	Base de desgaste	Placă uzată	Ploča
172	Rotor/wał	Rotor/veio	Rotor/ax	Rotor/osovina
174	Zacisk uziemiający	Parafuso de terra	Șurub de legare la pământ	Zavrtnaj uzemljenja
174a	Podkładka	Anilha	Spălător	Prsten podloške

Pos.	Opis PL	Descrição PT	Instalație fixă RO	Naziv RS
176	Część zewn. wtyczki	Parte interna do bujão	Cablu conector intrare	Unutrašnji deo konektora
181	Część wewn. wtyczki	Parte externa do bujão	Cablu conector ieșire	Spoljni deo konektora
188a	Śruba	Parafuso	Filet	Zavrtnaj
188b	Śruba mocująca	Parafuso de segurança	Șurub de fixare	Zavrtnaj
188c	Śruba	Parafuso	Filet	Zavrtnaj
189	Śruba regulacyjna	Parafuso de ajuste	Șurub de ajustare	Zavrtnaj za podešavanje
190	Uchwyt	Suporte de elevação	Mâner	Ručica
193	Śruba olejowa	Parafuso do óleo	Șurub ulei	Zavrtnaj za ulje
193a	Olej	Óleo	Ulei	Ulje
194	Uszczelka	Junta	Spălător	Podloška
198	Pierścień O-ring	O-ring	Inel tip O	O-prsten
199	Nakrętka	Contra-porca	Contrapiuliță	Zaštitna matica
285	Czujnik suchobiegu**	Sensor de funcionamento em seco**	Senzor pentru mers în gol**	Senzor rada na suvo**
285a	Pierścień O-ring	O-ring	Inel tip O	O-prsten
285b	Zestaw śrub	Conjunto de parafusos	Șurub de reglare	Set zavrtnanja
287	Czujnik poziomu	Sensor de nível	Senzor de nivel	Senzor nivoa
287a	Oslona ochronna	Tampa de protecção	Capac de protecție	Zaštitna kapa
287b	Pierścień O-ring	O-ring	Inel tip O	O-prsten
287c	Zestaw śrub	Conjunto de parafusos	Șurub de reglare	Set zavrtnanja
532	Żel krzemionkowy	Gel de sílica	Silicagel	Silikonski gel

\* Tylko pompy jednofazowe.  
Apenas bombas monofásicas.  
Numai pompe monofazate.  
Samo jednofazne pumpe.

\*\* Pompy standardowe posiadają tylko jeden czujnik wykrywający suchobiegi.  
As bombas standard têm apenas um sensor de funcionamento em seco.  
Pompele standard au doar un senzor de mers în gol.  
Standardne pumpe imaju samo jedan senzor rada na suvo.



Pos.	Наименование	Beskrivning	Opis
	RU	SE	SI
6a	Штифт	Stift	Zatič
7a	Заклепка	Nit	Zakovica
9a	Шпонка	Kil	Ključ
26a	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
37	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
37a	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
37b	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
48	Статор	Stator	Stator
48a	Клеммная колодка	Kopplingsplint	Priključna letvica
49	Рабочее колесо	Pumphjul	Tekalno kolo
50	Корпус насоса	Pumphus	Ohišje črpalke
55	Корпус статора	Statorhus	Ohišje statorja
58	Корпус уплотнения вала	Axeltätningshållare	Nosilec tesnila osi
66	Стопорная шайба	Låsring	Zaklepni obroček
76	Фирменная табличка с номинальными техническими данными	Typskylt	Tipska ploščica
84	Фильтр	Sugsil	Sesalno sito
90a	Электронный блок	Elektronikenhet	Elektronska enota
90b	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
92	Хомут	Spännband	Sponka
102	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
103	Втулка	Bussning	Podloga ležaja
104	Уплотнительное кольцо	Simmerring	Tesnilni obroč
105 105a	Уплотнение вала	Axeltätning	Tesnilo osi
106	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
107	Уплотнительное кольцо круглого сечения	O-ring	O-obroči
112a	Стопорное кольцо	Låsring	Varovalni obroč
153	Подшипник	Lager	Ležaj
153a	Стопорная шайба	Låsbricka	Varovalna podložka
153b	Стопорное кольцо	Låsring	Varovalni obroč
154	Подшипник	Lager	Ležaj
155	Масляная камера	Oljekammare	Oljni komori
158	Упорное нажимное кольцо	Fjäder	Vzmet
159	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
161b	Датчик Pt1000 с кронштейном	Pt1000-sensor med fäste	Senzor Pt1000 z nosilcem
161c	Рабочий конденсатор и датчик Pt1000 с кронштейном*	Driftskondensator, Pt1000-sensor med fäste*	Kondenzator teka in senzor Pt1000 z nosilcem*
162	Нижняя крышка	Slitplatta	Obrabna plošča

Pos.	Наименование	Beskrivning	Opis
	RU	SE	SI
172	Ротор/вал	Rotor/axel	Rotor/os
174	Винт заземления	Jordskruv	Ozemljitveni vijak
174a	Шайба	Bricka	Tesnilni obroč
176	Внутренняя часть разъема кабеля	Kontakt, inre del	Notranji vtični del
181	Наружная часть разъема кабеля	Kontakt, yttre del	Zunanji vtični del
188a	Винт	Skruv	Vijak
188b	Болт	Låsskruv	Varnostni vijak
188c	Винт	Skruv	Vijak
189	Регулировочный винт	Justerskruv	Nastavitveni vijak
190	Ручка	Lyftbygel	Ročaj
193	Резьбовая пробка	Oljeskruv	Oljni vijak
193a	Масло	Olja	Olje
194	Прокладка	Packning	Tesnilni obroč
198	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
199	Контргайка	Låsmutter	Zaporna matica
285	Датчик сухого хода**	Torrkörningsgivare**	Senzor zaščite proti suhemu teku**
285a	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
285b	Установочный винт	Justerskruv	Nastavitveni vijak
287	Датчик контроля уровня	Nivågivare	Senzor nivoja
287a	Защитная крышка	Skyddskåpa	Zaščitna kapica
287b	Уплотнительное кольцо круглого сечения	O-ring	O-obroč
287c	Установочный винт	Justerskruv	Nastavitveni vijak
532	Силикагель	Kiselgel	Silikonski gel

\* Только для насосов с однофазными электродвигателями.  
Endast 1-fasumpar.  
Samo enofazne črpalke.

\*\* Стандартные насосы оснащены только одним датчиком сухого хода.  
Standardpumpar har endast en torrkörningsensor.  
Standardne črpalke imajo samo en senzor suhega teka.

Pos.	Popis	Tanim	Beskrivelse	Lýsing
	SK	TR	NO	IS
6a	Kolík	Pim	Nål	Pinni
7a	Nýt	Perçin	Nagle	Hnoðnagli
9a	Pero	Anahtar	Kile	Lykill
26a	O-krúžok	O-ring	O-ring	O-hringur
37	O-krúžok	O-ring	O-ring	O-hringur
37a	O-krúžok	O-ring	O-ring	O-hringur
37b	O-krúžok	O-ring	O-ring	O-hringur
48	Stator	Stator	Stator	Sátur
48a	Svorkovnica	Klemens bařlantısı	Koblingsbrett	Tengibretti
49	Obežné koleso	Çark	Løpehjul	Dæluhjóll
50	Teleso čerpadla	Pompa gövdesi	Pumpehus	Dæluhlíf
55	Teleso statora	Stator muhafazası	Statorhus	Sáturhús
58	Unášač upchávký	Salmastra taşıyıcı	Akseltetningsholder	Umgjörð um öxulþétti
66	Poistný krúžok	Kiilitleme halkası	Låsering	Láshringur
76	Typový štítok	Bilgi etiketi	Typeskiilt	Merkiplata
84	Sacie sito	Emiş süzgeci	Sugesil	Sogsigti
90a	Elektronická jednotka	Elektronik ünite	Elektronisk enhet	Rafmagnseining
90b	O-krúžok	O-ring	O-ring	O-hringur
92	Fixačná objímka	Kelepçe	Spennbånd	Klemma
102	O-krúžok	O-ring	O-ring	O-hringur
103	Púzdro	Burç	Hylse	Hólkur
104	Tesniaci krúžok	Sızdırmazlık halkası	Tetningsring	Þéttihringur
105 105a	Hriadelová upchávka	Salmastra	Akseltetning	Öxulþétti
106	O-krúžok	O-ring	O-ring	O-hringur
107	O-krúžky	O-ringler	O-ring	O-hringur
112a	Poistný krúžok	Kilit halkası	Låsering	Láshringur
153	Ložisko	Rulman	Lager	Lega
153a	Poistná podložka	Rondela	Låseskive	Lásskinna
153b	Poistný krúžok	Kilit halkası	Låsering	Láshringur
154	Ložisko	Rulman	Lager	Lega
155	Olejovej komore	Yağ bölmesi	Oljekammer	Oliugeymir
158	Tlačná pružina	Oluklu yay	Korrugert fjær	Riffaður gormur
159	O-krúžok	O-ring	O-ring	O-hringur
161b	Snímač Pt1000 s konzolou	Pt1000 sensörü ve elemanı	Pt1000-sensor med brakett	Pt1000-skynjari með festingu
161c	Prevádzkový kondenzátor a snímač Pt1000 s konzolou*	Hareket kondansatörü, Pt1000 sensörü ve brakett*	Driftkondensator og Pt1000-sensor med brakett*	Keyrsluþéttir og Pt1000-skynjari með festingu*
162	Tesniaca doska	Aşınma plakası	Sliteplate	Slitplata
172	Rotor/hriadel	Rotor/mil	Rotor/aksel	Snúður/drifskaft
174	Uzemňovacia skrutka	Toprak civatası	Jordskrue	Jarðtengi
174a	Podložka	Pul	Brikke	Skinna
176	Vnútorná časť káblovej priechodky	İç fiş kısmı	Innvendig pluggdel	Innri hluti tengis
181	Vonkajšia časť káblovej priechodky	Dış fiş kısmı	Utvendig pluggdel	Ytri hluti tengis

Pos.	Popis SK	Tanım TR	Beskrivelse NO	Lýsing IS
188a	Skrutka	Vida	Skrue	Skrúfa
188b	Poistná skrutka	Tespit vidası	Låseskrue	Læsiskrúfa
188c	Skrutka	Vida	Skrue	Skrúfa
189	Nastavovacia skrutka	Ayar vidası	Justeringsskrue	Stilliskrúfa
190	Dvíhacia rukoväť	Kaldırma kolu	Løftøbøyle	Lyftifesting
193	Olejová zátka	Yağ vidası	Oljeskrue	Olíuskrúfa
193a	Olej	Yağ	Olje	Olía
194	Tesniaci krúžok	Conta	Pakning	Pakning
198	O-krúžok	O-ring	O-ring	O-hringur
199	Poistná matica	Emniyet somunu	Låsemutter	Lásró
285	Snímač prevádzky nasucho**	Kuru çalıştırma sensörü**	Tørrkjøringssensor**	Vökvaskynjari**
285a	O-krúžok	O-ring	O-ring	O-hringur
285b	Regulačná skrutka	Ayar vidası	Settskrue	Festiskrúfa
287	Hladinový snímač	Seviye sensörü	Nivåsensor	Hæðarskynjari
287a	Ochranné viečko	Koruma başlığı	Beskyttelseshette	Hlíðarlok
287b	O-krúžok	O-ring	O-ring	O-hringur
287c	Regulačná skrutka	Ayar vidası	Settskrue	Festiskrúfa
532	Silika gél	Silika jel	Silikagel	Kisilhlaup

\* Len jednofázové čerpadlá.  
Yalnızca tek fazlı pompalar.  
Kun enfasepumper.  
Eingöngu eins fasa dælur.

\*\* Štandardné čerpadlá majú iba jeden snímač prevádzky nasucho.  
Standart pompalar sadece bir kuru çalışma sensörüne sahiptir.  
Standardpumper har bare én tørrkjøringssensor.  
Venjulegar dælur eru aðeins með einn vökvaskynjara.

Pos.	الوصف AR
6a	مسمار محور
7a	مسمار برشام
9a	مفتاح
26a	حلقة دائرية
37	حلقة دائرية
37a	حلقة دائرية
37b	حلقة دائرية
48	ساكن
48a	لوحة التوصيلات الكهربائية
49	الدافعة
50	غلاف المضخة
55	غلاف الساكن
58	حامل مانع تسرب عمود الإدارة
66	حلقة زنق
76	لوحة بيانات الموديل
84	مرشح جهة السحب
90a	الوحدة الإلكترونية
90b	حلقة دائرية
92	المشبيك
102	حلقة دائرية
103	جلبة
104	حلقة سد
105	مانع تسرب عمود الإدارة
105a	
106	حلقة دائرية
107	حلقة دائرية
112a	حلقة زنق
153	كرسي تحميل
153a	حلقة إكمام الربط الخاصة بالفيل
153b	حلقة زنق
154	كرسي تحميل
155	حجرة الزيت
158	نابض مموج
159	حلقة دائرية
161b	مجس Pt1000 مع كتيفة
161c	مكثف تشغيل ومجس Pt1000 مع كتيفة*
162	لوح مقاوم للسري
172	العضو الدوار/عمود الإدارة
174	المسمار الأرضي
174a	حلقة إكمام الربط
176	الجزء الداخلي للقابس
181	الجزء الخارجي للقابس

Pos.	الوصف AR
188a	مسمار
188b	مسمار القفل
188c	مسمار
189	مسمار الضبط
190	كثيفة الرفع
193	مسمار الزيت
193a	الزيت
194	حشية
198	حلقة دائرية
199	صمولة الزنق
285	حساس التشغيل الجاف**
285a	حلقة دائرية
285b	برغي تثبيت
287	مجس المستوى
287a	غطاء الحماية
287b	حلقة دائرية
287c	برغي تثبيت
532	سيليكا جل

\* للمضخات أحادية الطور فقط.

\*\* للمضخات القياسية مجس واحد فقط للتشغيل الجاف.



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