DPK, DPK.V

Installation and operating instructions









DPK, DPK.V

English (GB)
Installation and operating instructions
Čeština (CZ) Montážní a provozní návod
Deutsch (DE) Montage- und Betriebsanleitung
Dansk (DK) Monterings- og driftsinstruktion
Español (ES) Instrucciones de instalación y funcionamiento85
Français (FR) Notice d'installation et de fonctionnement
Hrvatski (HR) Montažne i pogonske upute
Magyar (HU) Telepítési és üzemeltetési utasítás
Italiano (IT) Istruzioni di installazione e funzionamento
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Polski (PL) Instrukcja montażu i eksploatacji
Português (PT) Instruções de instalação e funcionamento
Română (RO) Instrucțiuni de instalare și utilizare
Srpski (RS) Uputstvo za instalaciju i rad
Slovensko (SI) Navodila za montažo in obratovanje
Slovenčina (SK) Návod na montáž a prevádzku
Türkçe (TR) Montaj ve kullanım kılavuzu

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English (GB) Installation and operating instructions

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1. General information



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

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 the hazard

Consequence of ignoring the warning

Action to avoid the hazard.

1.2 Notes

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



Observe these instructions for explosionproof products.



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



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



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



Tips and advice that make the work easier.

1.3 Target group

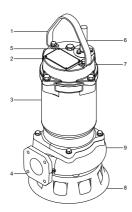
These installation and operating instructions are intended for professional installers.

2. Product introduction

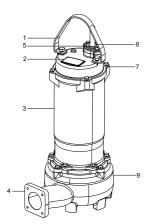
2.1 Product description

DPK pumps are designed with semi-open or SuperVortex, free-flow impeller for use in a wide range of applications in industrial and construction sites.

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



DPK pump



DPK.V pump

Pos.	Description
1	Lifting bracket
2	Nameplate
3	Motor
4	Outlet flange

Pos.	Description
5	Cable inlet
6	Cable
7	Top cover
8	Ring stand
9	Pump housing

2.2 Intended use

Pumps are designed for pumping surface-, drainageand underground water in a wide range of commercial and industrial applications.

2.3 Pumped liquids

DPK pumps are ideal for transferring the following liquids:

- · drainage water
- · surface water
- underground water.

DPK.V pumps are ideal for transferring the following liquids:

· effluent

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TM076892

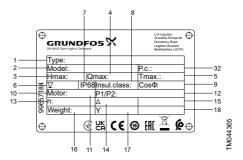
· screened sewage.

2.4 Identification

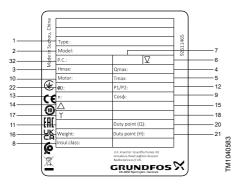
2.4.1 Nameplate

Fix the extra nameplate supplied with the product at the installation site or production location, so the data can be checked when necessary. Make sure that the nameplate is visible.

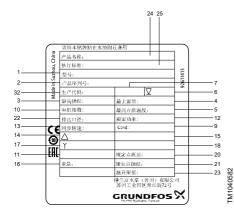
The nameplate is fitted to the top cover of the pump.



Nameplate on product



Nameplate in packaging



Nameplate for products in China

Pos.	Description
1	Type designation
2	Material No. + Serial No.
3	Maximum head [m]
4	Maximum flow [l/s]
5	Maximum liquid temperature [°C]
6	Maximum installation depth [m]
7	Enclosure class
8	Insulation class/temperature class
9	Power factor
10	Number of phases
11	Frequency [Hz]
12	Motor input and output power P1/P2 [kW]
13	Speed [rpm]
14	Rated voltage [V] (delta connection)

Pos.	Description
15	Rated current [A] (delta connection)
16	Weight [kg]
17	Rated voltage [V] (star connection)
18	Rated current [A] (star connection)
20	Duty point Q [m ³ /h]
21	Duty point H [m]
22	Size of flange
23	Temperature rise [K]
24	Product type
25	Company standard
32	Production code (year and week)

2.4.2 Type key

The pump can be identified by the type designation stated on the nameplate.

Example: DPK.15.80.22.5.0D

		<u> </u>		
Code	Description	Designation		
DPK	Drainage pump	Pump type		
[]	Single-channel, semi-open impeller	Impeller type		
V	SuperVortex impeller			
15	Maximum solids size [mm]	Free passage		
80	Nominal outlet diameter	Pump outlet		
22	Output power P2 22 = 2.2 kW ¹⁾	Power [kW]		
[]	Standard	Equipment		
2	2-pole	- Number of poles		
4	4-pole			
5	50 Hz	F		
6	60 Hz	Frequency [Hz]		
0D	380-415 V, DOL			
1D	380-415 V, Y/D	Voltage and		
0E	220-240 V, DOL	starting method		
1E	220-240 V, Y/D	•		
Z	Custom-built variant Customisation			

¹⁾ Exception: Code 075 = 0.75 kW.

3. Receiving the product

The product is supplied in proper packing in which it must remain until it is to be installed.



Make sure that the product cannot roll or fall over

If the product is not installed immediately, the free end of the power cable or the sensor cables must be protected from moisture, which could otherwise penetrate into the motor windings. This must be done as soon as the product is received.

Protect the cables by fitting a cable cap or by wrapping the free end of the cable in plastic and securing the plastic with strong waterproof tape.

3.1 Transporting the product

While in factory packaging, transport the pumps in vertical position only. Pumps without factory packaging can be transported either horizontally or vertically



Make sure that the product cannot roll or fall over.

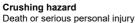
Make sure that the received product corresponds to the order. In case of damage or missing parts, inform the transport company or the manufacturer immediately.

3.2 Handling and lifting the product

Use approved lifting equipment only.

The weight of the specific product is stated on the nameplate.

WARNING





 Do not work near or under suspended loads.

 The area below the lifted pump must be clear of people and marked off.

WARNING

Crushing hazard

Death or serious personal injury



All lifting equipment must be rated for the purpose and checked for damage before lifting the product. The lifting equipment rating must not be exceeded.

CAUTION Crushing hazard

Crushing hazard
Minor or moderate personal injury



- Make sure that the pump cannot swing during lifting.
- Place the pump on a solid foundation.
- Make sure that the pump cannot roll or fall over.

WARNING

Crushing hazard

Minor or moderate personal injury

- Before lifting the package, check the centre of gravity marked on the box.
- Always check the lifting bracket and chain for corrosion or wear before lifting.
- Always lift the pump by its lifting bracket or by a forklift truck.
- Never lift the pump by the power cable, hose or pipe.
- Do not stack pump packages.

A

Crushing hazard

CAUTION

Minor or moderate personal injury

 Make sure that the lifting bracket is tightened before lifting the pump.

4. Mechanical installation

Before installation, check the oil level in the oil chamber.

The pumps are suitable for auto-coupling and freestanding installations. All pump housings can be connected to a JIS flange, hose coupling or auto coupling.

DANGER Electric shock

Death or serious personal injury



- Before installation, switch off the power supply and lock the main switch in position 0.
- Before working on the pump, switch off any external voltage connection.

DANGER

Electric shock

Death or serious personal injury



Before installation and the first startup of the pump, check the power cable for visible defects and measure the cable resistance to avoid short circuits.

\wedge

Electric shock

DANGER

Death or serious personal injury

 Make sure that the earthing is connected first.



The pumps are designed for operation in vertical position only.

4.1 Installation requirements

Before installation, check that the pump is suitable for the supply voltage and frequency available at the installation site.



Pump installation in pits must be carried out by trained persons.



Make sure that there is enough fresh air in the pit.



All work in pits must be supervised by a person outside the pump pit.

CAUTION

Biological hazard



Minor or moderate personal injury

Pits for sewage and wastewater may contain toxic or contagious substances. Always wear appropriate personal protective equipment and clothing before entering the pit.

DANGER

Electric shock



Death or serious personal injury

Before installation, switch off the power supply and lock the mains switch in position 0.

DANGER

Electric shock



Death or serious personal injury

It must be possible to lock the main switch in position 0. Type and requirements are specified in EN 60204-1.

WARNING

Hot surface



Minor or moderate personal injury

 Do not touch the pump or cables during operation as the surface temperature may exceed 70 °C.

CAUTION

Sharp elementMinor or moderate personal injury

 Wear protective gloves when working on the pump.



Maintenance and service work must be carried out when the pump is outside the pit. For safety reasons, all work inside pits must be supervised by a person outside the pit.



Observe all safety regulations at the installation site.



These installation and operating instructions cover the standard installation types. For customised installation, contact Grundfos.

WARNING

Crushing hazard

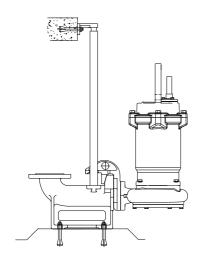


Death or serious personal injury

Make sure that the lifting bracket is tightened before lifting the pump.

4.2 Installation on auto coupling

Pumps for permanent vertical installation in a pit can be mounted on a stationary auto-coupling unit. The auto-coupling system facilitates maintenance and service as the pump can easily be lifted out of the tank.



Installation on auto coupling

Proceed as follows:

- Fit the guide-rail bracket on the inside of the pit and fasten it with anchor bolts.
- 2. Place the auto-coupling base unit on the bottom of the pit.
- Fasten it with heavy-duty expansion bolts. Support the auto-coupling base unit to be leveled.
- Connect the outlet line without exposing it to distortion or tension.
- 5. Insert the guide rails in the auto-coupling base unit and adjust the length of the rails accurately.
- Unscrew the provisionally fastened guide-rail bracket and fit it on the top of the guide rails. Fasten the bracket to the pit wall.
- 7. Clean out debris from the pit before lowering the pump into it.
- Fit the guide claw to the outlet port of the pump. Slide it down the guide rails and lower the pump into the pit by a chain fastened to the lifting bracket. When the pump reaches the autocoupling base unit, it automatically connects.

- Hang up the end of the chain on a suitable hook at the top of the pit, so 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.
- 11. Connect the power cable.



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

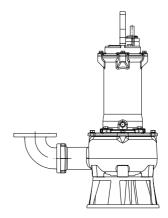


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Make sure that the cable is not sharply bent or pinched.

4.3 Installation on ring stand

Pumps for free-standing submerged installation can stand freely on the bottom of the pit. The pump must be installed on a ring stand.



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Fit a flexible union or coupling to the outlet for service and easy separation of the pump.

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

If a rigid pipe is used, fit the union or coupling, nonreturn- and isolating valves in this order starting from the pump.

If the pump is installed in muddy conditions or on uneven ground, place it on a solid support.

Proceed as follows:

- 1. Fit a 90° elbow to the pump outlet port and connect the outlet pipe or hose.
- Lower the pump into the liquid by a chain secured to the lifting bracket. Place the pump on a plain, solid foundation to make sure that it stands securely.

- Hang up the end of the chain on a suitable hook at the top of the pit, so the chain cannot come into contact with the pump housing.
- 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.
- 5. Fasten the relief fitting to a suitable hook.
- 6. Connect the motor power cable.



Make sure that the cable is not sharply bent or pinched.

5. Electrical connection

WARNING

Electric shock

Death or serious personal injury



Before working on the pump, make sure that the main switch is switched off and locked in position 0. Make sure that the power supply cannot be switched on unintentionally.

WARNING Electric shock

Death or serious personal injury



During frequency converter operation, residual voltage may be present in the motor terminal. Wait for the residual voltage to discharge or add a maintenance switch suitable for isolation between frequency converter and motor.

WARNING

Electric shock

Death or serious personal injury



- Install a motor protector. Set it to the rated current +10 %.
- Make sure that all protective equipment is connected correctly.

WARNING

Electric shock



Death or serious personal injury

Cable extension is not permitted.
Contact Grundfos for the right cable length.

WARNING

Electric shock



Death or serious personal injury

The motor-protective circuit breaker of the pump controller must include a circuit which automatically disconnects the power supply in case the protective circuit of the pump is opened.



Make sure that the electrical connection complies with local regulations.



Do not install Grundfos control boxes and pump controllers in potentially explosive environments.



Connect the pump to a control box with a motor-protective relay with IEC trip class 10 or 15



The pump must be connected to a main switch with a minimum 3 mm contact gap in all poles.

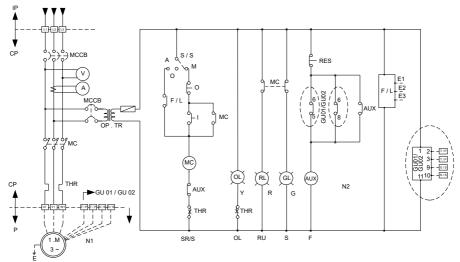


Check the signal wires (marked with "TP" for thermal protection) of the power cable with a multimeter. The circuit must be closed and resistence must be below 1 Ohm.

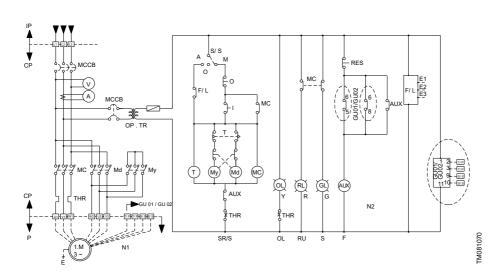
Related information

5.1 Wiring diagram

5.1 Wiring diagram



Direct-on-line starting



Star-delta starting

M081069

Pos.	Description
IP	Input power
CP	Control panel
P	Pump
N1	 T/P: thermal switch S/S: seal sensor
Α	Auto
М	Manual
0	Off
1	On
SR/S	Start-stop
OL	Overload
RU	Run
S	Stop
F	Fault
Y	Yellow
R	Red
G	Green
RES	Reset
N2	F/L: level controller

5.2 Frequency converter operation



Frequency converter is available only for DPK 19kW and 22kW versions. Other DPK pumps cannot be operated with frequency converter.

In principle, all three-phase motors can be connected to a frequency converter. However, frequency converter operation often exposes the motor insulation system to a heavier load and causes the motor to be more noisy. In addition, large motors driven with a frequency converter are loaded by bearing currents.

For frequency converter operation, observe the following:

- The thermal protection of the motor must be connected.
- Peak voltage and dU/dt must be according to the table below. The values stated are maximum values supplied to the motor terminals. The cable influence is not taken into account. See the frequency converter data sheet regarding the actual values and the cable influence on the peak voltage and dU/dt.
- Use a screened power cable if there is a risk that electrical noise may disturb other electrical equipment.
- Set the frequency converter U/f ratio according to the motor data.

- The locked-rotor torque can be lower depending on the type of the frequency converter.
- The noise level may increase. See the installation and operating instructions of the chosen frequency converter.
- Minimum switching frequency is 2 kHz. Variable switching frequency is accepted.
- Do not exceed the frequency indicated on the nameplate as this may cause motor overload.
- Keep the power cable as short as possible. The peak voltage increases with the length of the power cable.
- Use input and output filters on the frequency converter.
- Do not reduce the motor speed to less than 30% of the rated speed.
- Keep the flow velocity above 1m/sec.
- Let the pump run at rated speed at least once a day to prevent sedimentation in the pipe system.

Maximum repetitive peak voltage [V]	Maximum dU/dt U _N 400 V [V/μ sec.]
850	2000



Frequency converter use may reduce life span of the bearings and the shaft seal, depending on the operating mode and other circumstances.

5.3 Thermal protection

One thermal switch is built into the motor winding and breaks the circuit in case of overheating.

In case of intermittent operation with the water level up to half of the motor, the thermal switch inside the motor winding might be activated and cause the pump to stop.

DPK 19 and 22 kW

 Thermal switch: as standard, a Klixon thermal switch is installed, opening at a temperature of 130 °C.

Connect the thermal switch according to the wiring diagram. Make sure that the alarm output causes a motor stop in case of high temperature in the motor. The thermal switch must be connected to the control wire of the power cable inside the pump and to the safety circuit of the separate pump controller.

5.3.1 Inspections after electrical connection

Use a multimeter to check the two signal wires of the power cable. The circuit must be closed and the resistance must be less than 1 Ohm.

5.4 Pump controllers

5.4.1 Level controllers

The liquid level can be controlled by the Grundfos LC level controllers.

Suitable level controllers, depending on the size of pumps:

 LC 231: a compact solution with certified motor protection for a nominal current of up to 12A (9.6A in the US) when running a single pump, or up to 9A (7.6A in the US) when running two pumps simultaneously. Supports the DOL starting method.

LC 231 supports analog level transmitters, digital float switches and combinations of both. Air bells are available as an accessory.

 LC 241: a cabinet solution offering modularity and customisation for single- and dual-pump versions. Supports DOL, star-delta and soft starter starting methods. Standard variant ranges are available for up to 23A in DOL, 43A in star-delta, and up to 72A with soft starter. Customable variants are available on request.

LC 241 supports analog level transmitters, digital float switches and combinations of both. Electrodes are available as an option and air bells as an accessory.

"Level switches" can be air bells, float switches or electrodes depending on the selected pump controller.

Depending on the security levels and the number of pumps, level switches can be used in the following setups:

- dry run (optional)
- stop
- start pump 1 (single-pump version)
- start pump 2 (dual-pump version)
- high level (optional).

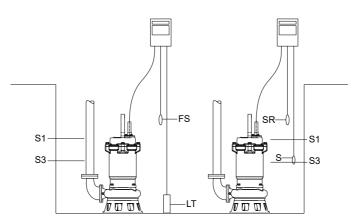
Analogue level transmitters can be used, and all levels can be customised. Level switches can be used with level transmitters, for dry-run protection and high level alarm.



The pump must not run dry. Install an additional level switch to ensure that the pump is stopped in case the stop level switch is not operating.

Both controllers can be fitted with a single level transmitter, and can be supported with one or two digital float switches for high level and dry-run setup for security. The controllers can also be equipped with up to 5 pieces of digital float switches only in a two-pump installation.

If a simple installation is required, a one-pump installation can be controlled by just one digital float switch acting as "start pump 1 / stop" where the one float switch starts and stops the pump. A stop delay can be added to avoid too many starts and stops. Similarly a two-pump installation can be created with two digital float switches.



Pump operating levels, analog level transmitter and high-level float switch or digital float switches

DV41320

Pos.	Description
S1	S1 operation
S3	S3 operation
FS	High-level float switch
LT	Level transmitter
SR	Start
S	Stop

For more information about level controllers, see the installation and operating instructions of the selected level controller.

5.4.2 GU01 and GU02

GU01 is a device that monitors the stator temperature and water penetration into the motor. It receives a digital signal.

GU02 is a device that monitors the stator and bearing temperature as well as water penetration into the motor. It receives an analog signal.

Both monitoring devices must be connected to the control panel through a relay.

GU01 and GU02 are manufactured for Grundfos. For further information, contact Grundfos.

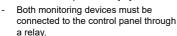
LC 231 and LC 241 controllers can handle the same sensors as GU01 and GU02 but cannot give an alarm.

For further information, see the data sheets for GU01 and GU02 at www.grundfos.com.

WARNING

Electric shock

Death or serious personal injury



6. Preparations before startup

Before starting the product:

- Make sure that the product is not connected to the power supply.
- Make sure that the impeller can rotate freely by turning it by hand.



Wear protective gloves when touching the impeller.

- Check the condition of the oil.
- · Check the direction of rotation.
- Make sure that the monitoring units, if used, are operating.
- Check the setting of the level- and float switches or electrodes.

WARNING

Electric shock

Death or serious personal injury



 Before working on the pump, make sure that the main switch is switched off and locked in position 0. Make sure that the power supply cannot be switched on unintentionally.

Related information

- 6.3 Checking the direction of rotation
- 7.2 Oil check and change

6.1 Startup



The pump must not run dry.



In case of abnormal noise or vibration, stop the pump immediately. Do not restart the pump until the cause of the fault is identified and eliminated.



If star-delta starting is used, keep the switching transient time to a minimum to avoid high transient torques.

DANGER

Rotating elements

Death or serious personal injury



 Before manual startup or changeover to automatic control, make sure that no persons are working on or near the pump.

To start the pump, proceed as follows:

- 1. Switch on the power supply.
- 2. Open the isolating valves, if fitted.

- 3. Make sure that the pump is at least 2/3rd submerged into the pumped liquid.
- 4. Tilt the pump by the lifting chain to vent it and relieve any trapped air.
- Run the pump briefly and check the liquid level. A correctly vented pump lowers the liquid level quickly.
- 6. Start the pump.

Use hearing protection when working nearby an installation in operation with a sound pressure level above 70 dB(A).

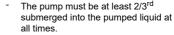
6.2 Operating modes

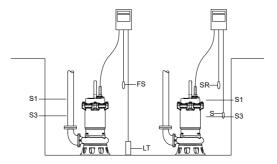
The pumps are designed for intermittent operation (S3). When completely submerged, the pumps can also operate continuously (S1).

CAUTION

Hot surface

Minor or moderate personal injury





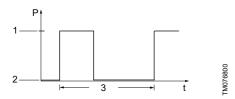
4081220

Pump operating levels, analog level transmitter and high-level float switch or digital float switches

Pos.	Description
S1	S1 operation
S3	S3 operation
FS	High-level float switch
LT	Level transmitter
SR	Start
S	Stop

S3, intermittent operation

S3 operation is a series of 10-minute duty cycles (TC): the pump must run for maximum 4 minutes and stop for minimum 6 minutes. Thermal equilibrium is not reached during the cycle. In this operating mode, the pump is partly submerged in the surrounding liquid. The pump must be at least 2/3rd submerged into the pumped liquid.



S3 operation

Pos.	Description
1	Operation
2	Stop
3	Duty cycle

S1, continuous operation

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



S1 operation

Pos.	Description
1	Operation
2	Stop

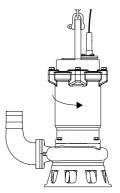
Related information

10.1 Operating conditions

6.3 Checking the direction of rotation

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

- 1. Remove the pump from the system.
- 2. Let the pump hang from a lifting device such as the chain used for lowering the pump into the pit.
- 3. Start and stop the pump while observing the movement (jerk) of the pump.
- If connected correctly, the pump jerks counterclockwise.
- 5. If the direction of rotation is wrong, interchange two phases in the power cable.



M076890



Crushing of hands

Death or serious personal injury

Do not touch the pump when starting it up.



Without being submerged in the pumped liquid, start the pump and let it run for maximum 5 seconds to check the direction of rotation.



Before startup, make sure that the bottom of the pit is clean to avoid material or objects being sucked into the impeller.

Related information

- 6. Preparations before startup
- 9. Fault finding

7. Maintenance and service

7.1 Maintenance schedule

Under normal operating conditions, remove the pump from the pit and inspect it once a year.

Under severe operating conditions including when the liquid contains sand, fibrous matter and solids, inspect the pump once a month.

DANGER

Electric shock

Death or serious personal injury



Before working on the pump, make sure the main switch is switched off and locked in position 0. Make sure that the power supply is switched off and it cannot be switched on unintentionally.



Measure insulation resistance once a month



Measure outlet pressure and flow rate once a month if a flowmeter is available.



Ball bearings require no maintenance and are lubricated for life.

Check the current and voltage

Check the pump current and voltage. If the value measured by the ammeter exceeds or is lower than the rated value, it indicates a problem. The voltage must be stable (within \pm 5 %) throughout the operational period.

Check the insulation resistance

If the insulation resistance has significantly declined since the previous reading, it may indicate an impending insulation failure. The pump must be scheduled for service even if the insulation resistance is still over 10 MO.

Check the outlet pressure and flow rate

Declining performance may indicate the need for an overhaul. Regardless of performance, the pressure and flow rate must be stable. Rapidly changing pressure or flow rate indicate system problems on the inlet or outlet side.

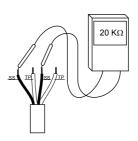
Check impeller clearence

For DPK pumps, check the clearance between the impeller and the wear plate. The recommended clearance is 0.3 - 0.5 mm. Replace or repair it as necessary.

For DPK.V pumps, impeller clearance check is not needed

Inspect the seal sensor

Check the resistance of the seal sensor with a multimeter.



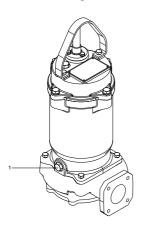
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Resistance check



Do not use a megger as it damages the control circuit of the seal sensor.

7.2 Oil check and change



Pos.	Description
1	Oil filling hole

When the pump is new or the shaft seal is replaced, check the oil level and water content after one week of operation. If there is more than 20 % extra liquid (water) in the oil chamber, the shaft seal is defective.



Use original parts only.



Use ISO VG 32 Mobil DTE 24 turbine oil 90 or an equivalent type.



Dispose of used according to local regulations.

CAUTION Pressurised system



Minor or moderate personal injury

 The oil chamber may be under pressure. Loosen the screws carefully and do not remove them until the pressure is completely relieved.



After 3000 operating hours or at least once a year, change the oil in the oil chamber as described below. If the shaft seal is replaced, the oil must be changed.

Related information

6. Preparations before startup

7.2.1 Oil draining

- 1. Loosen the oil plug.
- 2. Remove the oil plug and check the oil level.
- 3. Place a clean container under the pump to collect the drained oil.
- 4. Tilt the pump with the oil-filling hole pointing downwards to drain the oil.
- 5. Inspect the oil.

If the colour is greyish white, the oil may contain water. If the oil contains water, the shaft seal is defective and must be replaced. If the oil quantity is less than the specified, the shaft seal is defective and must be replaced. If the shaft seal is not replaced, it can cause motor damage.

7.2.2 Oil filling

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Fill the oil chamber with new oil through the oil filling hole.

7.3 Contaminated pumps

The product is classified as contaminated, if it is used for contagious or toxic liquid.

WARNING Biological hazard



Death or serious personal injury

 Flush the pump thoroughly with clean water, and rinse the pump parts after dismantling.

Before returning the product for service, contact Grundfos with details about the pumped liquid. Otherwise, Grundfos can deny to service the product.

8. Storing the product

Newly delivered products can be stored for 1 year without opening the original package.



For extended periods of storage, the pump must be protected from moisture, heat, vibration and corrosion.

After an extended period of storage, inspect the pump before operation. Make sure that the impeller can rotate freely. Check the condition of the shaft seals, O-rings and the cable entries.



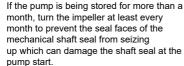
Store the pump in a vertical position on a pallet or a stand while in the factory packaging. Make sure that it cannot roll or fall over. Pumps without factory packaging can be stored both horizontally and vertically.



Leave the cable-end protectors on the power- and control cables until starting the electrical connection. Whether insulated or not, the free cable end must never be exposed to moisture or water to prevent motor damage.



Give all unpainted surfaces a thin coat of oil or grease to prevent corrosion.



If the impeller cannot be turned, contact Grundfos or an authorised service workshop.



WARNING Crushing hazard

Death or serious personal injury

Do not turn the impeller by hand.
 Always use an appropriate tool.



If an installed pump is not in operation for a longer period, check the insulation resistance and run the pump for 30 minutes every month.



When the pump is not in service, disconnect the power supply from the control panel.

9. Fault finding

Before diagnosing any fault, read and observe the safety instructions.



For pumps with a sensor, start fault finding by checking the status on the GU01 or GU02 front panel. See the installation and operating instructions for GU01 or GU02.

DANGER Electric shock



Before working on the product, make sure that the power supply is switched off and it cannot be switched on unintentionally.

Death or serious personal injury

Related information

6.3 Checking the direction of rotation

9.1 The motor does not start, the fuses blow or the motor protector trips out immediately



Do not start the pump.

	Cause	Re	emedy
	Power supply failure, short circuit or earth leakage in the cable or the motor winding.	•	Have the cable and motor checked and repaired by a qualified electrician.
	The fuses blow due to use of incorrect fuses.	•	Fit fuses of the correct type.
	The impeller is blocked by impurities.	•	Clean the impeller.
	The level pickup, float switch or electrode is out of adjustment or defective.	•	Check the level pickups, float switches or electrodes.
	Motor phase malfunction.	•	Inspect the motor and the connections.

9.2 The pump operates but the motor protector trips after a short while

Cause	Remedy
Low setting of the thermal relay in the motor protector.	Set the relay according to the specifications on the pump nameplate.
Increased current consumption due to large voltage drop.	Measure the voltage between two motor phases. Tolerance: ± 5 %.
The impeller is blocked by impurities.	Clean the impeller.
The direction of rotation is wrong.	Check the direction of rotation and possibly interchange any two phases in the power supply. See section Direction of rotation.

9.3 The thermal switch of the pump trips after a short while

Cause	Remedy
The liquid temperature is too high. Inadequate cooling.	Improve cooling or lower the liquid temperature.
The viscosity of the pumped liquid is too high.	Dilute the pumped liquid.
Fault in the electrical connection.	Check and correct the electrical connection (Y- connection of pump to D-connection results in considerable undervoltage).

9.4 The pump operates at below-standard performance and power consumption

Cause	Remedy	
The impeller is blocked by impurities.	Clean the impeller.	
The direction of rotation is wrong.	Check the direction of rotation and possibly interchange any two phases in the power supply. See section Direction of rotation.	

9.5 The pump operates, but gives no liquid

Cause		Remedy	
There is air in the pump.	•	Vent the pump twice.	
The outlet valve is closed or blocked.	•	Check the outlet valve and open and/or clean it if necessary.	
The non-return valve is blocked.	•	Clean the non-return valve.	

9.6 The pump is clogged		
Cause	Remedy	
The liquid contains large particles.	Select a pump with a larger size of passage.	
A float layer has formed on the surface.	Install a mixer in the pit.	

10. Technical data

10.1 Operating conditions

Operating mode	S1, S3
Liquid temperature	0-40 °C
Maximum number of starts per hour	15 (19-22 kW range) 30 (0.75 - 15 kW range)
Ambient temperature 2)	0-40 °C
Maximum density of the medium	1000 kg/m³
pH	4-10
Maximum installation depth 3)	25 m
Maximum operating pressure	5.7 bar
Maximum operating altitude	2000 m above sea level

²⁾ If the pump is not completely submerged.

Related information

6.2 Operating modes

³⁾ For DPK.V, maximum installation depth is 20m.

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 wheelie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local waste disposal authorities. The separate collection and recycling of such products will help protect the environment and human health.

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

12. Document quality feedback

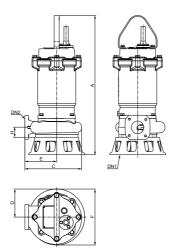
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A.1. Dimensions and weights

DPK

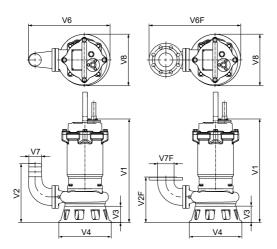


Pump dimensions without accessories

			ı	Dimensi	ons [mm]			
Pump type	Α	С	D	Е	F	Н	DN1	DN2 1)	Weight [kg]
DPK.10.50.075	398	226	88	127	196	40	48	DN 50	31
DPK.10.50.15	428	226	88	127	196	40	48	DN 50	35
DPK.10.80.22 (50 Hz)	456	246	102	145	212	46	48	DN 80	40
DPK.10.80.22 (60 Hz)	448	246	88	147	215	36	48	DN 80	40
DPK.15.80.30	575	279	119	160	246	39	75	DN 80	46
DPK.15.80.37	625	279	119	160	246	39	75	DN 80	60
DPK.15.80.55	792	380	142	222	317	66	75	DN 80	113
DPK.15.100.75	792	375	138	220	312	59	72	DN 100	118
DPK.20.100.110	840	375	151	220	325	59	90	DN 100	166
DPK.20.100.150	840	375	151	220	325	59	90	DN 150	177
DPK.20.150.190	1023	483	181	432	416	113	110	DN 150	300
DPK.20.150.220	1023	483	181	432	416	113	110	DN 150	320

¹⁾ See the Outlet connection section.

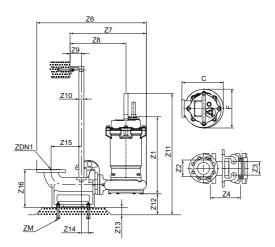
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Pump dimensions on ring stand

D				D	imensi	ons [mi	m]				Mainle Flori
Pump type	V1	V2	V2F	V3	V4	V6	V6F	V 7	V7F	V8	-Weight [kg]
DPK.10.50.075	425	232	202	70	223	354	384	50	50	223	31
DPK.10.50.15	428	232	202	70	223	354	384	50	50	223	35
DPK.10.80.22 (50 Hz)	498	306	230	85	235	415	477	73	80	235	40
DPK.10.80.22 (60 Hz)	475	296	220	70	223	411	473	73	80	223	40
DPK.15.80.30	575	309	233	80	280	452	514	73	80	280	46
DPK.15.80.37	597	309	233	80	280	452	514	73	80	280	60
DPK.15.80.55	734	356	280	100	350	549	611	73	80	350	113
DPK.15.100.75	734	384	309	100	350	572	630	100	100	350	118
DPK.20.100.110	780	384	309	100	350	572	630	100	100	350	166
DPK.20.100.150	780	384	309	100	350	572	630	100	100	350	177
DPK.20.150.190	1163	513	362	90	380	708	778	150	150	407	300
DPK.20.150.220	1163	513	362	90	380	708	778	150	150	407	320



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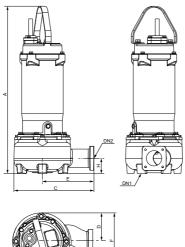
Pump dimensions on auto coupling

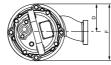
	Dimensions [mm]											
Pump type	С	F	Z 1	Z2	Z 3	Z4	Z6	Z 7	Z 8	Z9		
DPK.10.50.075	226	196	355	120	70	120	569	396	284	50		
DPK.10.50.15	226	196	382	120	70	120	569	396	284	50		
DPK.10.80.22 (50 Hz)	246	212	413	130	90	200	685	460	342	75		
DPK.10.80.22 (60 Hz)	246	215	405	130	90	200	679	454	344	75		
DPK.15.80.30	279	246	475	130	90	200	701	476	357	75		
DPK.15.80.37	279	246	517	130	90	200	701	476	357	75		
DPK.15.80.55	380	317	634	130	90	200	802	577	419	75		
DPK.15.100.75	375	312	634	150	90	200	870	585	430	75		
DPK.20.100.110	375	325	680	150	90	200	884	599	430	75		
DPK.20.100.150	375	325	680	150	90	200	884	599	430	75		
DPK.20.150.190	483	416	1078	250	150	300	1083	743	540	90		
DPK.20.150.220	483	416	1078	250	150	300	1083	743	540	90		

			Di							
Pump type	Z10	Z11	Z12	Z13	Z14	Z15	Z16	ZDN1	ZM	Weight [kg]
DPK.10.50.075	25.4	558	160	50	28	140	250	50	4 × M16 × 200	31
DPK.10.50.15	25.4	588	160	50	28	140	250	50	4 × M16 × 200	35
DPK.10.80.22 (50 Hz)	25.4	610	154	50	46	200	250	80	4 × M16 × 200	40
DPK.10.80.22 (60 Hz)	25.4	612	164	50	46	200	250	80	4 × M16 × 200	40
DPK.15.80.30	25.4	786	161	50	46	200	250	80	4 × M16 × 200	46
DPK.15.80.37	25.4	786	161	50	46	200	250	80	4 × M16 × 200	60

			Di							
Pump type	Z10	Z11	Z12	Z13	Z14	Z15	Z16	ZDN1	ZM	Weight [kg]
DPK.15.80.55	25.4	926	134	50	46	200	250	80	4 × M16 × 200	113
DPK.15.100.75	31.75	983	191	50	51	250	350	100	4 × M16 × 200	118
DPK.20.100.110	31.75	1031	191	50	51	250	350	100	4 × M16 × 200	166
DPK.20.100.150	31.75	1031	191	50	51	250	350	100	4 × M16 × 200	177
DPK.20.150.190	38.1	1199	164	80	65	290	450	150	4 × M16 × 200	300
DPK.20.150.220	38.1	1199	164	80	65	290	450	150	4 × M16 × 200	320

DPK.V



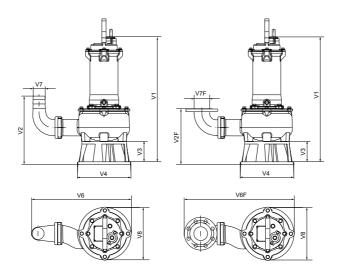


Pump dimensions without accessories

Dump tupo		Dimensions [mm]									
Pump type	Α	С	D	E	F	Н	DN1	DN2 ²⁾	Weight [kg]		
DPK.V.65.80.15.2.5	548	372	125	247	250	103	65	DN 80	58.6		
DPK.V.65.80.15.4.5	715	410	165	245	329	85	65	DN 80	75.5		
DPK.V.65.80.22.2.5	568	372	125	247	250	103	65	DN 80	62.6		
DPK.V.65.80.22.4.5	715	410	165	245	329	85	65	DN 80	78.5		
DPK.V.80.80.37.2.5	728	429	153	276	306	82	80	DN 80	79.8		
DPK.V.80.80.37.4.5	895	460	193	267	386	92	80	DN 80	116.1		
DPK.V.80.80.55.2.5.0D	886	429	153	276	306	82	80	DN 80	107.3		
DPK.V.80.80.55.2.5.1D	886	429	153	276	306	82	80	DN 80	113.5		
DPK.V.80.80.55.2.5.0E	886	429	153	276	306	82	80	DN 80	107.5		
DPK.V.80.80.55.2.5.1E	886	429	153	276	306	82	80	DN 80	111.4		
DPK.V.80.80.55.4.5	895	460	193	267	386	92	80	DN 80	120.7		
DPK.V.80.80.75.2.5.0D	886	429	153	276	306	82	80	DN 80	114.6		

Diamon france			I	Dimensi	ons [mm]			Wainht [km]
Pump type	Α	С	D	E	F	Н	DN1	DN2 ²⁾	· Weight [kg]
DPK.V.80.80.75.2.5.1D	886	429	153	276	306	82	80	DN 80	118.7
DPK.V.80.80.75.2.5.0E	886	429	153	276	306	82	80	DN 80	119.6
DPK.V.80.80.75.2.5.1E	886	429	153	276	306	82	80	DN 80	118.5
DPK.V.80.80.75.4.5	895	460	193	267	386	92	80	DN 80	130

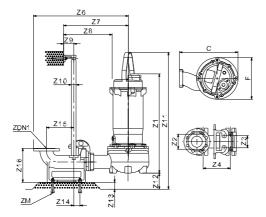
²⁾ See the Outlet connection section.



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Pump dimensions on ring stand

					imensi	ne Im	ml				
Pump type	V1	V2	V2F	V3	V4	V6	···J V6F	V7	V7F	V8	-Weight [kg]
DPK.V.65.80.15.2.5	636	421	345	128	330	564	626	73	80	330	58.6
DPK.V.65.80.15.4.5	737	405	329	130	351	574	635	73	80	351	75.5
DPK.V.65.80.22.2.5	656	421	345	128	330	564	626	73	80	330	62.6
DPK.V.65.80.22.4.5	737	405	329	130	351	574	635	73	80	351	78.5
DPK.V.80.80.37.2.5	748	402	322	130	351	604	665	73	80	351	79.8
DPK.V.80.80.37.4.5	867	412	336	130	351	612	674	73	80	351	116.1
DPK.V.80.80.55.2.5.0D	858	402	326	130	351	604	665.5	73	80	351	107.3
DPK.V.80.80.55.2.5.1D	858	402	326	130	351	604	665.5	73	80	351	113.5
DPK.V.80.80.55.2.5.0E	858	402	326	130	351	604	665.5	73	80	351	107.5
DPK.V.80.80.55.2.5.1E	858	402	326	130	351	604	665.5	73	80	351	111.4
DPK.V.80.80.55.4.5	867	412	336	130	351	612	674	73	80	351	120.7
DPK.V.80.80.75.2.5.0D	858	402	326	130	351	604	665.5	73	80	351	114.6
DPK.V.80.80.75.2.5.1D	858	402	326	130	351	604	665.5	73	80	351	118.7
DPK.V.80.80.75.2.5.0E	858	402	326	130	351	604	665.5	73	80	351	119.6
DPK.V.80.80.75.2.5.1E	858	402	326	130	351	604	665.5	73	80	351	118.5
DPK.V.80.80.75.4.5	867	412	336	130	351	612	674	73	80	351	130



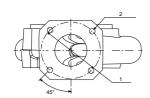
Pump dimensions on auto coupling

Dumm tuma					Dimensi	ons [mm	1]			
Pump type	С	F	Z 1	Z2	Z3	Z4	Z6	Z 7	Z8	Z9
DPK.V.65.80.15.2.5	372	250	508	130	90	200	834	609	444	75
DPK.V.65.80.15.4.5	410	329	607	130	90	200	843	619	442	75
DPK.V.65.80.22.2.5	372	250	528	130	90	200	834	609	444	75
DPK.V.65.80.22.4.5	410	329	607	130	90	200	843	619	442	75
DPK.V.80.80.37.2.5	429	306	618	130	90	200	851	626	473	75
DPK.V.80.80.37.4.5	460	386	737	130	90	200	882	657	464	75
DPK.V.80.80.55.2.5	429	306	728	130	90	200	851	626	473	75
DPK.V.80.80.55.4.5	460	386	737	130	90	200	882	657	464	75
DPK.V.80.80.75.2.5	429	306	728	130	90	200	851	626	473	75
DPK.V.80.80.75.4.5	460	386	737	130	90	200	882	657	464	75

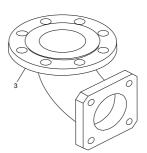
Pump type			Dimensions [mm]											
rump type	Z10	Z11	Z12	Z13	Z14	Z15	Z16	ZDN1	ZM	[kg]				
DPK.V.65.80.15.2.5	25.4	644	97	50	46	200	250	80	4 × M16 × 200	58.6				
DPK.V.65.80.15.4.5	25.4	831	115	50	46	200	250	80	4 × M16 × 200	75.5				
DPK.V.65.80.22.2.5	25.4	664	97	50	46	200	250	80	4 × M16 × 200	62.6				
DPK.V.65.80.22.4.5	25.4	831	115	50	46	200	250	80	4 × M16 × 200	78.5				
DPK.V.80.80.37.2.5	25.4	846	118	50	46	200	250	80	4 × M16 × 200	79.8				
DPK.V.80.80.37.4.5	25.4	1003	108	50	46	200	250	80	4 × M16 × 200	116.1				
DPK.V.80.80.55.2.5.0D	25.4	1004	118	50	46	200	250	80	4 × M16 × 200	107.3				
DPK.V.80.80.55.2.5.1D	25.4	1004	118	50	46	200	250	80	4 × M16 × 200	113.5				

Pump type			Di	imensi	ons [m	m]				Weight
Pump type	Z10	Z11	Z12	Z13	Z14	Z15	Z16	ZDN1	ZM	[kg]
DPK.V.80.80.55.2.5.0E	25.4	1004	118	50	46	200	250	80	4 × M16 × 200	107.5
DPK.V.80.80.55.2.5.1E	25.4	1004	118	50	46	200	250	80	4 × M16 × 200	111.4
DPK.V.80.80.55.4.5	25.4	1003	108	50	46	200	250	80	4 × M16 × 200	120.7
DPK.V.80.80.75.2.5.0D	25.4	1004	118	50	46	200	250	80	4 × M16 × 200	114.6
DPK.V.80.80.75.2.5.1D	25.4	1004	118	50	46	200	250	80	4 × M16 × 200	118.7
DPK.V.80.80.75.2.5.0E	25.4	1004	118	50	46	200	250	80	4 × M16 × 200	119.6
DPK.V.80.80.75.2.5.1E	25.4	1004	118	50	46	200	250	80	4 × M16 × 200	118.5
DPK.V.80.80.75.4.5	25.4	1005	108	50	46	200	250	80	4 × M16 × 200	130

Outlet connection



Discharge connection on pump housing



TM069727

Flange connection on elbow

Pos.	Description
1	Pitch circle diameter
2	4 × bolt size
3	DN norm flange

Outlet flange	Holes for bolts	PCD [mm]
DN 50	4 × M10	92
DN 80	4 × M12	130
DN 100	4 × M16	165
DN 150	4 × ∅23	230

Argentina

Bombas GRUNDFOS de Argentina S.A. Ruta Panamericana km. 37.500industin 1619 - Garín Pcia. de B.A.

Tel: +54-3327 414 444 Fax: +54-3327 45 3190

GRUNDFOS Pumps Pty. Ltd. P.O. Box 2040 Regency Park South Australia 5942 Tel.: +61-8-8461-4611 Fax: +61-8-8340-0155

Austria

GRUNDFOS Pumpen Vertrieb Ges.m.b.H. Grundfosstraße 2 A-5082 Grödig/Salzburg Tel.: +43-6246-883-0 Fax: +43-6246-883-30

Belaium

N.V. GRUNDFOS Bellux S.A. Boomsesteenweg 81-83 B-2630 Aartselaar Tel.: +32-3-870 7300 Fax: +32-3-870 7301

Bosnia and Herzegovina

GRUNDFOS Sarajevo Zmaja od Bosne 7-7A BiH-71000 Sarajevo Tel.: +387 33 592 480 Fax: +387 33 590 465 www.ba.grundfos.com E-mail: grundfos@bih.net.ba

BOMBAS GRUNDFOS DO BRASIL Av. Humberto de Alencar Castelo Branco, 630 CEP 09850 - 300

São Bernardo do Campo - SP Tel.: +55-11 4393 5533 Fax: +55-11 4343 5015

Bulgaria

Grundfos Bulgaria EOOD Slatina District

Iztochna Tangenta street no. 100 BG - 1592 Sofia

Tel.: +359 2 49 22 200 Fax: +359 2 49 22 201 E-mail: bulgaria@grundfos.bg

Canada

GRUNDFOS Canada inc. 2941 Brighton Road Oakville, Ontario L6H 6C9 Tel.: +1-905 829 9533 Fax: +1-905 829 9512

GRUNDFOS Pumps (Shanghai) Co. Ltd. 10F The Hub, No. 33 Suhong Road Minhang District

Shanghai 201106 PRC Tel.: +86 21 612 252 22 Fax: +86 21 612 253 33

Columbia

GRUNDFOS Colombia S.A.S. Km 1.5 vía Siberia-Cota Conj. Potrero Chico,

Parque Empresarial Arcos de Cota Bod. 1A.

Cota, Cundinamarca Tel.: +57(1)-2913444 Fax: +57(1)-8764586

Croatia

GRUNDFOS CROATIA d.o.o. Buzinski prilaz 38, Buzin HR-10010 Zagreb Tel.: +385 1 6595 400 Fax: +385 1 6595 499 www.hr.grundfos.com

Czech Republic

GRUNDFOS Sales Czechia and Slovakia

s.r.o.

Čajkovského 21 779 00 Olomouc Tel.: +420-585-716 111

Denmark

GRUNDFOS DK A/S Martin Bachs Vej 3 DK-8850 Bjerringbro Tel.: +45-87 50 50 50 Fax: +45-87 50 51 51

E-mail: info GDK@grundfos.com www.grundfos.com/DK

Estonia

GRUNDFOS Pumps Eesti OÜ Peterburi tee 92G 11415 Tallinn Tel.: + 372 606 1690 Fax: + 372 606 1691

Finland

OY GRUNDFOS Pumput AB Trukkikuja 1 FI-01360 Vantaa Tel.: +358-(0) 207 889 500

France

Pompes GRUNDFOS Distribution S.A. Parc d'Activités de Chesnes 57, rue de Malacombe F-38290 St. Quentin Fallavier (Lyon) Tel.: +33-4 74 82 15 15 Fax: +33-4 74 94 10 51

Germany

GRUNDFOS GMBH Schlüterstr. 33 40699 Erkrath

Tel.: +49-(0) 211 929 69-0 Fax: +49-(0) 211 929 69-3799 E-mail: infoservice@grundfos.de Service in Deutschland: kundendienst@grundfos.de

GRUNDFOS Hellas A.E.B.E. 20th km. Athinon-Markopoulou Av. P.O. Box 71 GR-19002 Peania

Tel.: +0030-210-66 83 400 Fax: +0030-210-66 46 273

Hong Kong

GRUNDFOS Pumps (Hong Kong) Ltd. Unit 1, Ground floor, Siu Wai industrial

29-33 Wing Hong Street & 68 King Lam Street, Cheung Sha Wan

Kowloon

Tel.: +852-27861706 / 27861741

Fax: +852-27858664

Hungary

GRUNDFOS Hungária Kft. Tópark u. 8 H-2045 Törökbálint Tel.: +36-23 511 110 Fax: +36-23 511 111

GRUNDFOS Pumps india Private Limited 118 Old Mahabalipuram Road Thoraipakkam

Chennai 600 097 Tel.: +91-44 2496 6800

Indonesia

PT GRUNDFOS Pompa Graha intirub Lt. 2 & 3 Jln. Cililitan Besar No.454. Makasar, Jakarta Timur ID-Jakarta 13650 Tel.: +62 21-469-51900 Fax: +62 21-460 6910 / 460 6901

Ireland

GRUNDFOS (Ireland) Ltd. Unit A, Merrywell Business Park Ballymount Road Lower Dublin 12 Tel.: +353-1-4089 800 Fax: +353-1-4089 830

GRUNDFOS Pompe Italia S.r.I. Via Gran Sasso 4 I-20060 Truccazzano (Milano) Tel.: +39-02-95838112 Fax: +39-02-95309290 / 95838461

Japan

GRUNDFOS Pumps K.K. 1-2-3, Shin-Miyakoda, Kita-ku Hamamatsu 431-2103 Japan Tel.: +81 53 428 4760 Fax: +81 53 428 5005

Kazakhstan

Grundfos Kazakhstan LLP 7' Kyz-Zhibek Str., Kok-Tobe micr. KZ-050020 Almaty Kazakhstan Tel.: +7 (727) 227-98-55/56

Korea

GRUNDFOS Pumps Korea Ltd. 6th Floor, Aju Building 679-5 Yeoksam-dong, Kangnam-ku, 135-916 Seoul, Korea

Tel.: +82-2-5317 600 Fax: +82-2-5633 725

Fax: + 371 914 9646

SIA GRUNDFOS Pumps Latvia Deglava biznesa centrs Augusta Deglava ielā 60 LV-1035, Rīga, Tel.: + 371 714 9640, 7 149 641

Lithuania

GRUNDFOS Pumps UAB Smolensko g. 6 LT-03201 Vilnius Tel.: + 370 52 395 430 Fax: + 370 52 395 431

Malavsia

GRUNDFOS Pumps Sdn. Bhd. 7 Jalan Peguam U1/25 Glenmarie industrial Park 40150 Shah Alam, Selangor Tel.: +60-3-5569 2922 Fax: +60-3-5569 2866

Mexico

S.A. de C.V.
Boulevard TLC No. 15
Parque industrial Stiva Aeropuerto
Apodaca, N.L. 66600
Tel.: +52-81-8144 4000

Bombas GRUNDFOS de México

Fax: +52-81-8144 4010

Netherlands

GRUNDFOS Netherlands Veluwezoom 35 1326 AE Almere Postbus 22015 1302 CA ALMERE Tel.: +31-88-478 6336 Fax: +31-88-478 6332 E-mail: info_gnl@grundfos.com

New Zealand

GRUNDFOS Pumps NZ Ltd. 17 Beatrice Tinsley Crescent North Harbour Industrial Estate Albany, Auckland Tel: +64-9-415 3240

Tel.: +64-9-415 3240 Fax: +64-9-415 3250

Norway

GRUNDFOS Pumper A/S Strømsveien 344 Postboks 235, Leirdal N-1011 Oslo Tel.: +47-22 90 47 00 Fax: +47-22 32 21 50

Poland

GRUNDFOS Pompy Sp. z o.o. ul. Klonowa 23 Baranowo k. Poznania PL-62-081 Przeźmierowo Tel.: (+48-61) 650 13 00 Fax: (+48-61) 650 13 50

Portugal

Bombas GRUNDFOS Portugal, S.A. Rua Calvet de Magalhães, 241 Apartado 1079 P-2770-153 Paço de Arcos Tel.: +351-21-440 76 00 Fax: +351-21-440 76 90

Romania

GRUNDFOS Pompe România SRL S-PARK BUSINESS CENTER, Clădirea A2, etaj 2

Str. Tipografilor, Nr. 11-15, Sector 1, Cod 013714

Bucuresti, Romania Tel.: 004 021 2004 100 E-mail: romania@grundfos.ro

Serbia

Grundfos Srbija d.o.o. Omladinskih brigada 90b 11070 Novi Beograd Tel.: +381 11 2258 740 Fax: +381 11 2281 769 www.rs.grundfos.com

Singapore

GRUNDFOS (Singapore) Pte. Ltd. 25 Jalan Tukang Singapore 619264 Tel.: +65-6681 9688 Faxax: +65-6681 9689

Slovakia

GRUNDFOS s.r.o. Prievozská 4D 821 09 BRATISLAVA Tel.: +421 2 5020 1426 sk.grundfos.com

Slovenia

GRUNDFOS LJUBLJANA, d.o.o. Leskoškova 9e, 1122 Ljubljana Tel.: +386 (0) 1 568 06 10 Fax: +386 (0)1 568 06 19 E-mail: tehnika-si@grundfos.com

South Africa

GRUNDFOS (PTY) LTD 16 Lascelles Drive, Meadowbrook Estate 1609 Germiston, Johannesburg Tel.: (+27) 10 248 6000

Fax: (+27) 10 248 6002 E-mail: lgradidge@grundfos.com

Spain

Bombas GRUNDFOS España S.A. Camino de la Fuentecilla, s/n E-28110 Algete (Madrid) Tel.: +34-91-628 0465

Sweden

GRUNDFOS AB Box 333 (Lunnagårdsgatan 6) 431 24 Mölndal Tel.: +46 31 332 23 000 Fax: +46 31 331 94 60

Switzerland

GRUNDFOS Pumpen AG Bruggacherstrasse 10 CH-8117 Fällanden/ZH Tel.: +41-44-806 8111 Fax: +41-44-806 8115

Taiwar

GRUNDFOS Pumps (Taiwan) Ltd. 7 Floor, 219 Min-Chuan Road Taichung, Taiwan, R.O.C. Tel.: +886-4-2305 0868 Fax: +886-4-2305 0878

Thailand

GRUNDFOS (Thailand) Ltd. 92 Chaloem Phrakiat Rama 9 Road Dokmai, Pravej, Bangkok 10250 Tel.: +66-2-725 8999

Fax: +66-2-725 8998

Turkey

GRUNDFOS POMPA San. ve Tic. Ltd. St. Gebze Organize Sanayi Bölgesi Ihsan dede Caddesi 2. yol 200. Sokak No. 204 41490 Gebze/ Kocaeli Tel.: +90 - 262-679 7979 Fax: +90 - 262-679 7905 E-mail: satis@grundfos.com

Ukraine

ТОВ "ГРУНДФОС УКРАЇНА" Бізнес Центр Європа Столичне шосе, 103 м. Київ, 03131, Україна Теі.: (+38 044) 237 04 00 Fax: (+38 044) 237 04 01 E-mail: ukraine@grundfos.com

United Arab Emirates

GRUNDFOS Gulf Distribution P.O. Box 16768 Jebel Ali Free Zone, Dubai Tel.: +971 4 8815 166 Fax: +971 4 8815 136

United Kingdom

GRUNDFOS Pumps Ltd. Grovebury Road Leighton Buzzard/Beds. LU7 4TL Tel.: +44-1525-850000 Fax: +44-1525-850011

U.S.A.

Global Headquarters for WU 856 Koomey Road Brookshire, Texas 77423 USA Phone: +1-630-236-5500

Uzbekistan

Grundfos Tashkent, Uzbekistan The Representative Office of Grundfos Kazakhstan in Uzbekistan 38a, Oybek street, Tashkent

Tel.: (+998) 71 150 3290 / 71 150 3291

Fax: (+998) 71 150 3292

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