

DWK

Installation and operating instructions



QR97515233
Installation and operating instructions
(all available languages)
<http://net.grundfos.com/qr/i/97515233>

DWK

English (GB)

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English (GB) Installation and operating instructions

Original 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 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

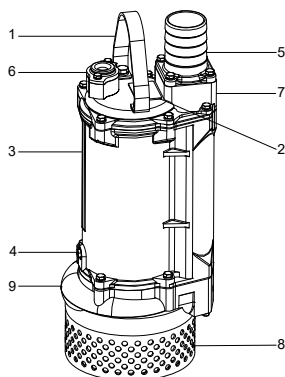
These installation and operating instructions are intended for professional installers.

2. Product introduction

2.1 Product description

The pumps are designed with enclosed or semi-open impeller for use in a wide range of applications in industrial and construction building sites.

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



DWK pump

Pos.	Description
1	Lifting bracket
2	Nameplate
3	Motor
4	Oil plug
5	Outlet flange or hose connection
6	Cable inlet
7	Top cover
8	Inlet strainer
9	Pump housing

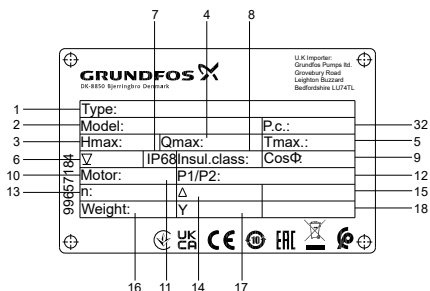
TM044 143

2.4 Identification

2.4.1 Nameplate

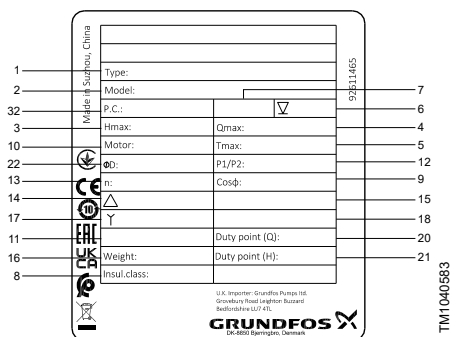
Fix the extra nameplate supplied with the product at the installation site or production location, so the data can be checked when necessary. Make sure that the nameplate is visible.

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



TM044-365

Nameplate on product



TM1040583

Nameplate in packaging

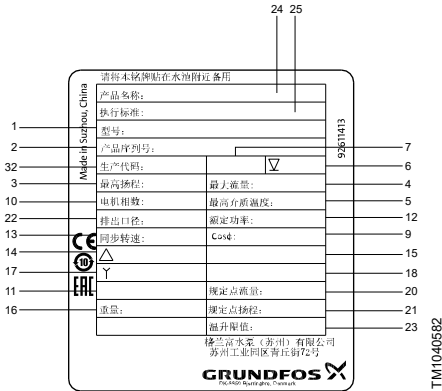
2.2 Intended use

The pumps are designed for pumping surface, drainage and underground water containing abrasives, such as sand or gravel.

2.3 Pumped liquids

The pumps are designed for transferring the following liquids:

- underground water
- drainage- and surface water.



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)
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: DWK.O.6.50.15.5.0D.R

Code	Description	Explanation
DWK	Dewatering pump	Pump type
O	Semi-open impeller	Impeller type
E	Enclosed impeller	
H	High-head, double impeller	
6	Maximum solids size [mm]	Strainer hole size
50	Nominal diameter of pump outlet [mm]	Pump outlet
15	Output power P2 15 = 1.5 kW ¹⁾	Power [kW]
[]	Standard	Equipment
5	50 Hz	Frequency [Hz]
6	60 Hz	
0D	380-415 V, DOL	Voltage and starting method
1D	380-415 V, Y/D	
0E	220-240 V, DOL	
1E	220-240 V, Y/D	Pump version
[]	Standard	
R	Cast iron ²⁾	
Z	Custom-built variant	Customisation

1) Exception: Code 075 = 0.75 kW.

2) Pump with high-chrome stainless steel impeller and stainless steel inlet strainer.

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

The pumps can be transported and stored in vertical or horizontal position, except for the 0.75 - 15 kW range which can only be transported and stored vertically. Make sure that it 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

Crushing hazard

Death or serious personal injury

- 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

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.



CAUTION

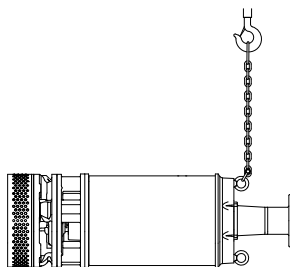
Crushing hazard

Minor or moderate personal injury

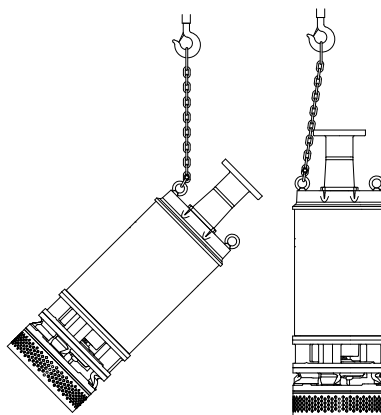
- Make sure that the lifting bracket is tightened before lifting the pump.



3.2.1 Correct lifting sequence



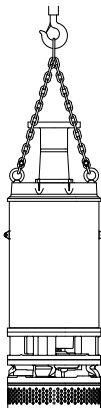
Raising the pump to vertical position, step 1



Raising the pump to vertical position, step 2

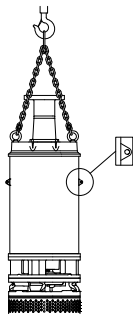
TM070307

TM070307



Raising the pump to vertical position, step 3

Do not lift the pump by the brackets of the motor.



DWK motor bracket location

TM070308

TM070309

4. Mechanical installation

DWK pumps are suitable for free-standing installation with a hose or flange connection on the top of the motor. DWK.H pumps can be ordered with optional auto coupling installation.

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, check the power cable for visible defects and measure the cable resistance to avoid short circuits.

DANGER

Electric shock

Death or serious personal injury



- Make sure that the earthing is connected first.

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.

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 element**

Minor 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 Free-standing installation

Pumps for free-standing submerged installation can stand freely on the bottom of the pit.

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 the hose does not buckle and the inside diameter of the hose fits to the outlet. If a rigid pipe is used, fit the union or coupling, non-return- and isolating valve 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.



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



The free end of the cables must not be submerged as water may penetrate the motor.

Proceed as follows:

1. Lower the pump into the pumped liquid by a chain secured to the lifting bracket. Place the pump on a plain, solid foundation.
2. 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.
3. Adjust the length of the motor cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation.
4. Fasten the relief fitting to a suitable hook.
5. Connect the power and sensor cables, if any.

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.

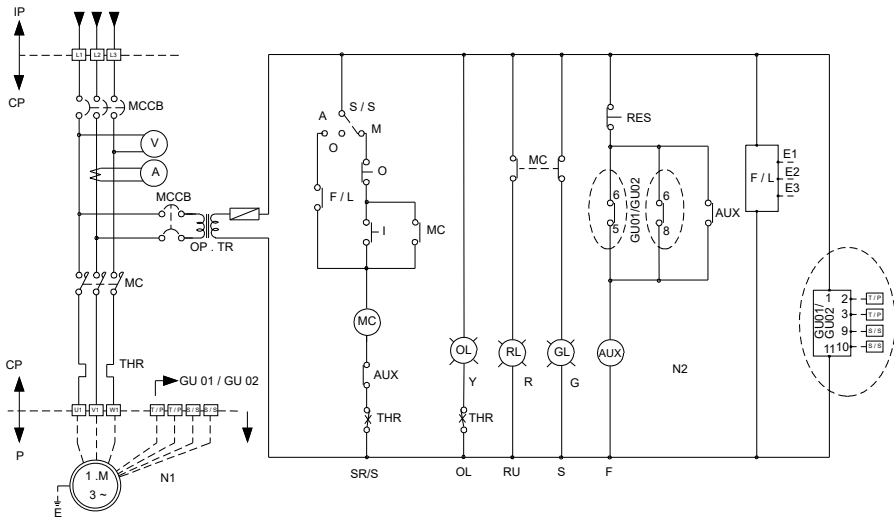


Check the signal wires (marked with "TP" for thermal protection) of the power cable with a multimeter. The circuit must be closed and resistance must be below 1 Ohm.

Related information

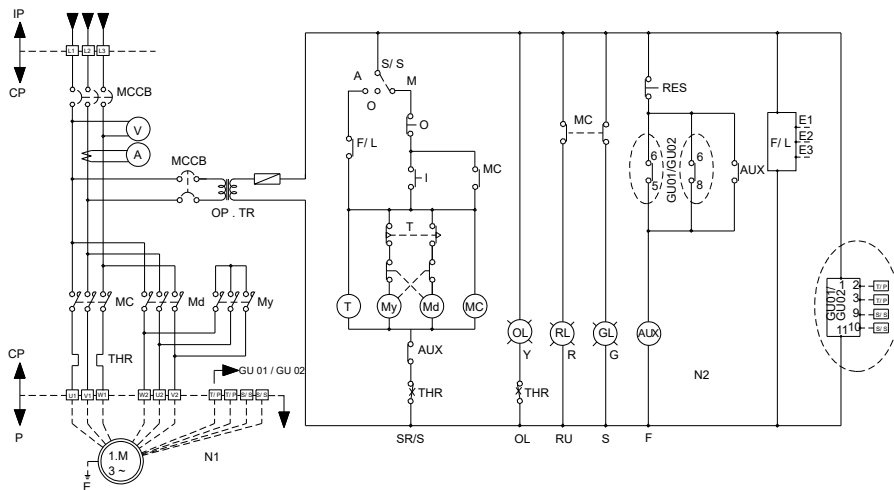
[5.1 Wiring diagram](#)

5.1 Wiring diagram



TM081069

Direct-on-line starting



TM081070

Star-delta starting

Pos.	Description
IP	Input power
CP	Control panel
P	Pump
N1	1. T/P: thermal switch 2. S/S: seal sensor
A	Auto
M	Manual
O	Off
I	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 the DWK.E and DWK.H versions, for all sizes. DWK.O 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 noisier. 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 selected 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 1 m/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 to break the circuit in case of overheating.

The following thermal protections are available for DWK pumps, depending on the pump type:

- PTO or Klixon thermal switch (Bi-metallic)
- circuit breaker - Klixon (connected to the star point of the stator)
- Pt100 thermal sensor (PCA Platinum chip).

Connect the thermal switch to the control wire of the power cable inside the pump and to the safety circuit of the separate pump controller.

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).

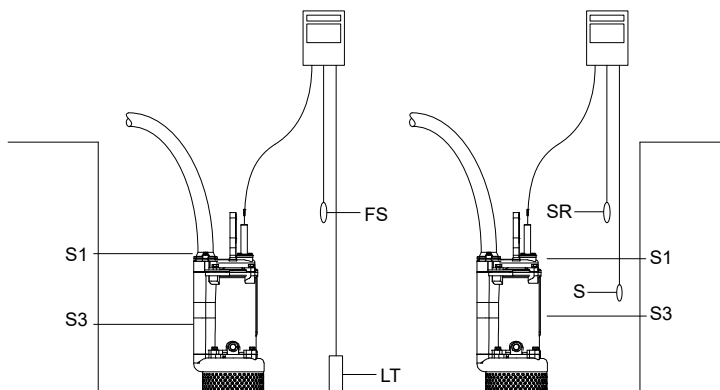
Analogue level transmitters can be used, and all levels can be customised. Level switches can be used with level transmitters, for dry-run protection and high level alarm.



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

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

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

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.
5. 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

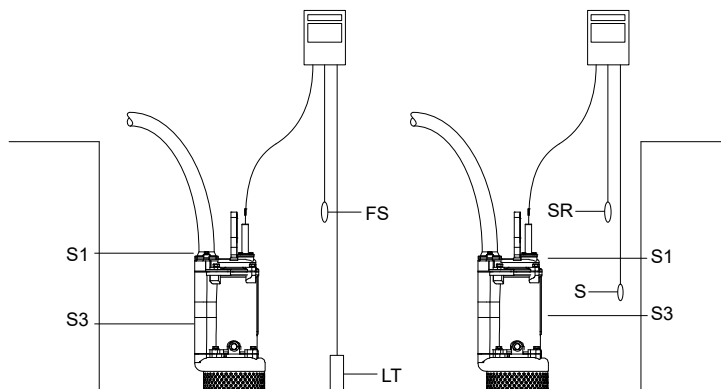
The pumps are designed for intermittently operation (S3). When DWK.O pumps are completely submerged in the pumped liquid, they can also operate continuously (S1). DWK.E and DWK.H pumps do not have to be fully submerged for S1 operation.



CAUTION **Hot surface**

Minor or moderate personal injury

- The pump must be at least 2/3rd submerged into the pumped liquid at all times.



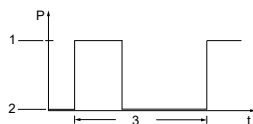
TM081328

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 minimum liquid level is at the top of the cable entry.



TM076800

S3 operation

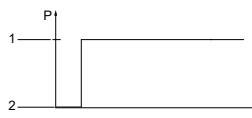
Pos.	Description
1	Operation
2	Stop
3	Duty cycle

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.



DWK.O pumps must be fully submerged for S1 operation.



TM076798

S1 operation

Pos.	Description
1	Operation
2	Stop

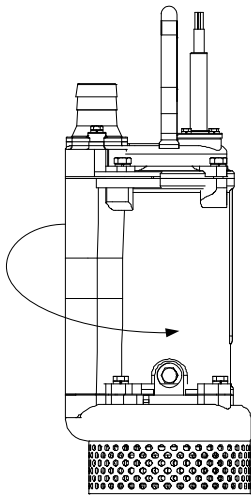
Related information

[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.
4. If connected correctly, the pump jerks counterclockwise.
5. If the direction of rotation is wrong, interchange two phases in the power cable.



TM044146



DANGER 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 that 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 deviates from 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 M Ω .

Check the outlet pressure and flow rate

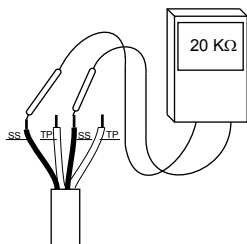
Declining performance may indicate the need for an overhaul. Regardless of performance, the pressure and flow rate must be stable, and rapidly changing pressure or flow rate indicate system problems on the inlet or outlet side.

Check impeller clearance

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.

Inspect the seal sensor

Check the resistance of the seal sensor with a multimeter.

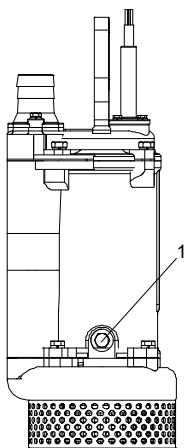


Resistance check



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 any equivalent type.



Dispose of used oil 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-off oil.
4. Tilt the pump with the oil-filling hole pointing downwards.
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

Fill the oil chamber with 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.

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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 it cannot roll or 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 pump is being stored for more than a month, turn the impeller at least every month to prevent the seal faces of the mechanical shaft seal from seizing up which can damage the shaft seal at the pump start.

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



Death or serious personal injury

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

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	Remedy
Power supply failure, short circuit or earth leakage in the cable or the motor winding.	<ul style="list-style-type: none"> • Have the cable and motor checked and repaired by a qualified electrician.
The fuses blow due to use of incorrect fuses.	<ul style="list-style-type: none"> • Fit fuses of the correct type.
The impeller is blocked by impurities.	<ul style="list-style-type: none"> • Clean the impeller.
The level pickup, float switch or electrode is out of adjustment or defective.	<ul style="list-style-type: none"> • Check the level pickups, float switches or electrodes.
Motor phase malfunction.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> Set the relay according to the specifications on the pump nameplate.
Increased current consumption due to large voltage drop.	<ul style="list-style-type: none"> Measure the voltage between two motor phases. Tolerance: $\pm 5\%$.
The impeller is blocked by impurities.	<ul style="list-style-type: none"> Clean the impeller.
The direction of rotation is wrong.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Improve cooling or lower the liquid temperature.
The viscosity of the pumped liquid is too high.	<ul style="list-style-type: none"> Dilute the pumped liquid.
Fault in the electrical connection.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Clean the impeller.
The direction of rotation is wrong.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Vent the pump twice.
The outlet valve is closed or blocked.	<ul style="list-style-type: none"> Check the outlet valve and open and/or clean it if necessary.
The non-return valve is blocked.	<ul style="list-style-type: none"> Clean the non-return valve.

9.6 The pump is clogged

Cause	Remedy
The liquid contains large particles.	<ul style="list-style-type: none"> Select a pump with a larger size of passage.
A float layer has formed on the surface.	<ul style="list-style-type: none"> Install a mixer in the pit.

10. Technical data

10.1 Operating conditions

Operating mode	S1, S3
Liquid temperature	0-40 °C
Ambient temperature ³⁾	0-40 °C
Maximum density of the medium ⁴⁾	1000 kg/m ³
pH	4-10
Maximum installation depth	25 m
Maximum operating pressure	16 bar
Maximum starts per hour	30 (DWK.O) 15 (DWK.E, DWK.H)
Maximum operating altitude	2000 m above sea level

³⁾ If the pump is not completely submerged.

⁴⁾ In case of higher densities, contact Grundfos.

Related information

[6.2 Operating modes](#)

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 wheellie bin symbol on a product means that it must be disposed of separately from household waste. When a product 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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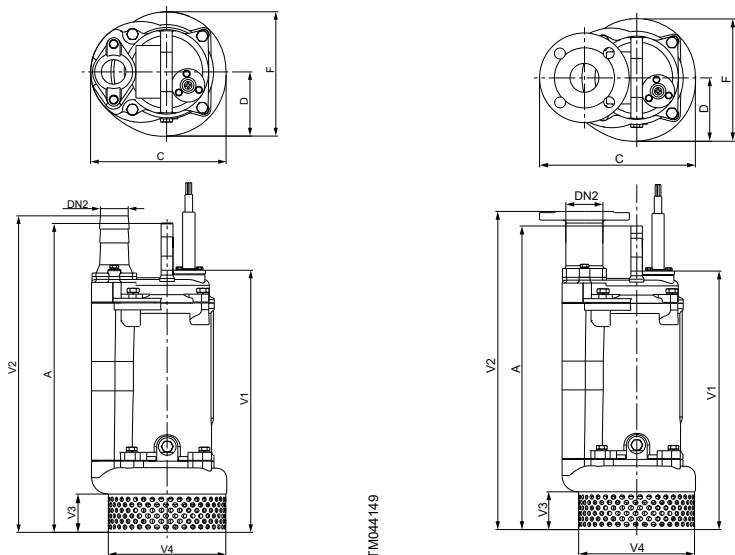


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Appendix A

A.1. Dimensions and weights

DWK.O



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TM044147

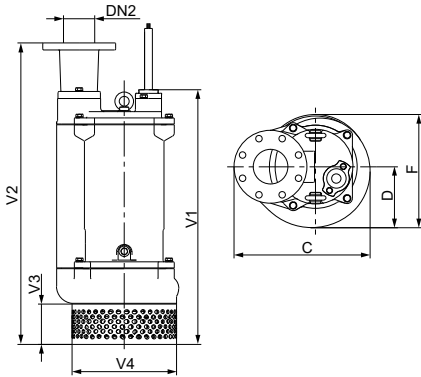
Pump dimensions with hose connection

Pump dimensions with flange connection

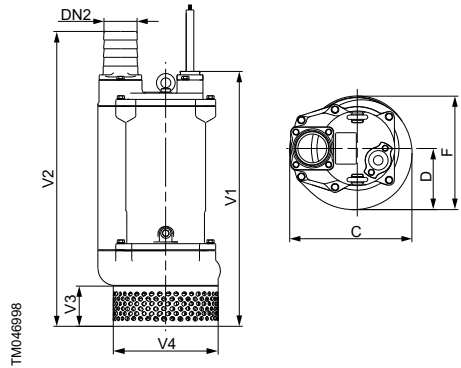
DWK.O.6.50/80.xx and DWK.O.10.80.37

Pump type	Connection type	Dimensions [mm]								Weight [kg]	
		A	C	D	DN2	F	V1	V2	V3		V4
DWK.O.6.50.075	Hose	438	235	110	50	215	398	462	65	202	39
	Flange	438	276	110	50	215	398	490	65	202	39
DWK.O.6.50.15	Hose	468	235	110	50	215	428	492	65	202	41
	Flange	468	276	110	50	215	428	520	65	202	41
DWK.O.6.50.22	Hose	488	235	110	50	215	448	512	65	202	45
	Flange	488	276	110	50	215	448	540	65	202	45
DWK.O.6.80.15	Hose	468	235	110	80	215	428	560	65	202	41
	Flange	468	295	110	80	215	428	520	65	202	41
DWK.O.6.80.22	Hose	488	235	110	80	215	448	580	65	202	45
	Flange	488	276	110	80	215	448	540	65	202	45
DWK.O.10.80.37	Hose	697	286	134	80	253	591	691	90	234	81
	Flange	697	321	134	80	253	591	731	90	234	81

DWK.O.10.100.37 and DWK.O.13.xx.xx



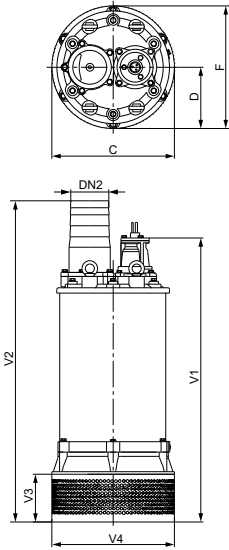
Pump dimensions with flange connection



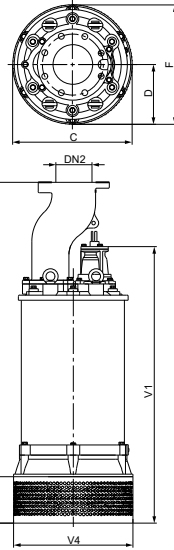
Pump dimensions with hose connection

Pump type	Connection type	Dimensions [mm]								Weight [kg]
		C	D	DN2	F	V1	V2	V3	V4	
DWK.O.10.100.37	Hose	286	134	100	253	591	691	90	234	81
	Flange	321	134	100	253	591	731	90	234	81
DWK.O.13.80.55	Hose	358	179	80	333	734	832	116	302	110
	Flange	390	179	80	333	734	872	116	302	110
DWK.O.13.100.55	Hose	358	179	100	333	734	852	116	302	110
	Flange	409	179	100	333	734	872	116	302	110
DWK.O.13.100.75	Hose	358	179	100	333	734	852	116	302	156
	Flange	409	179	100	333	734	872	116	302	156
DWK.O.13.100.110	Hose	358	179	100	333	779	897	116	302	190
	Flange	431	179	100	333	779	917	116	302	190
DWK.O.13.100.150	Hose	358	179	100	333	779	897	116	302	195
	Flange	431	179	100	333	779	917	116	302	195
DWK.O.13.150.75	Hose	358	179	150	333	734	893	116	302	156
	Flange	434	179	150	333	734	862	116	302	156
DWK.O.13.150.110	Hose	358	179	150	333	779	948	116	302	190
	Flange	457	179	150	333	779	907	116	302	190
DWK.O.13.150.150	Hose	358	179	150	333	779	948	116	302	195
	Flange	457	179	150	333	779	907	116	302	195

DWK.E



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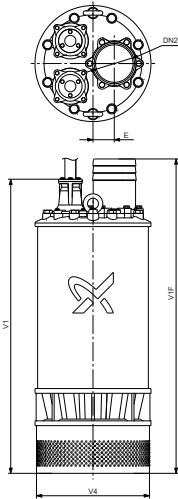
Pump dimensions with hose connection

Pump dimensions with flange connection

Pump type	Connection type	Dimensions [mm]								Weight [kg]
		C	D	DN2	F	V1	V2	V3	V4	
DWK.E.10.100.220	Hose	432	235	100	470	1099	1117	183	470	408
	Flange	432	235	100	470	1099	1342	183	470	420
DWK.E.10.150.220	Hose	432	235	150	470	1099	1232	183	470	417
	Flange	432	235	150	470	1099	1342	183	470	427
DWK.E.10.150.300	Hose	432	235	150	470	1099	1232	183	470	442
	Flange	432	235	150	470	1099	1342	183	470	452
DWK.E.10.150.370	Hose	532	306	150	612	1318	1411	220	557	937
	Flange	532	306	150	612	1318	1561	220	557	839
DWK.E.10.150.450	Hose	532	306	150	612	1318	1411	220	557	846
	Flange	532	306	150	612	1318	1561	220	557	858
DWK.E.10.150.550	Hose	532	306	150	612	1318	1411	220	557	909
	Flange	532	306	150	612	1318	1561	220	557	921
DWK.E.10.200.300	Hose	432	235	200	470	1318	1192	183	470	444
	Flange	432	235	200	470	1318	1342	183	470	462
DWK.E.10.200.370	Hose	532	306	200	612	1318	1411	220	557	839
	Flange	532	306	200	612	1318	1561	220	557	841
DWK.E.10.200.450	Hose	532	306	200	612	1318	1411	220	557	848

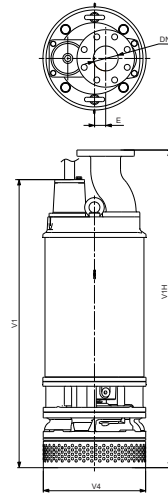
Pump type	Connection type	Dimensions [mm]								Weight [kg]
		C	D	DN2	F	V1	V2	V3	V4	
DWK.E.10.200.550	Flange	532	306	200	612	1318	1561	220	557	860
	Hose	532	306	200	612	1318	1411	220	557	911
	Flange	532	306	200	612	1318	1561	220	557	923
DWK.E.10.200.750	Hose	532	306	200	612	1418	1511	220	557	961
	Flange	532	306	200	612	1418	1661	220	557	973
DWK.E.10.200.900	Hose	532	306	200	612	1418	1511	220	557	1016
	Flange	532	306	200	612	1418	1661	220	557	1028

DWK.H



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Pump dimensions with hose connection



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Pump dimensions with flange connection

Pump type	Dimensions [mm]						Weight [kg]
	E	V1	V1F	V1H	V4	DN2	
DWK.H.7.100.220	0	1161	1410	1180	470	100	530
DWK.H.7.100.300	0	1161	1410	1180	470	100	580
DWK.H.7.100.370	10	1350	1595	1445	518	150	800
DWK.H.7.150.450	10	1350	1595	1445	518	150	830
DWK.H.7.150.550	10	1350	1595	1445	518	150	850
DWK.H.7.150.750	10	1450	1695	1545	518	150	880
DWK.H.7.150.900	10	1450	1695	1545	518	150	1500

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