

SL1.20 / SLV.25 / DP04 / EF12

2.0 / 1.2 - 2.0 / 1.2 - 2.0 / 1.2 - 2.0 hp ANSI 60 Hz

Installation and operating instructions



English (US)

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Limited consumer warranty 29

Limited manufacturer's warranty 31

Original installation and operating instructions

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1. General information**1.1 Hazard statements**

The symbols and hazard statements below may appear in Peerless 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.



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.

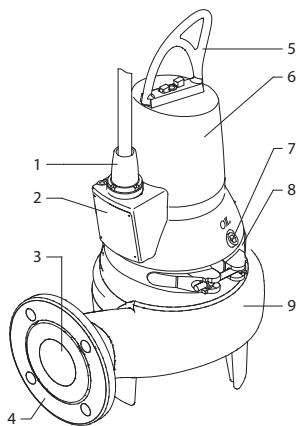
1.3 Target group

These installation and operation instructions are intended for professional installers.

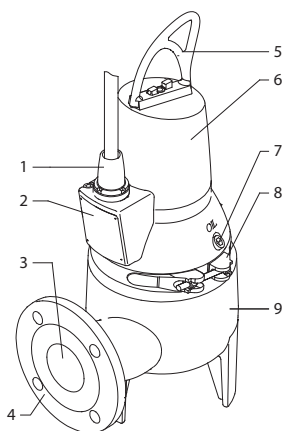
2. Product introduction

2.1 Product description

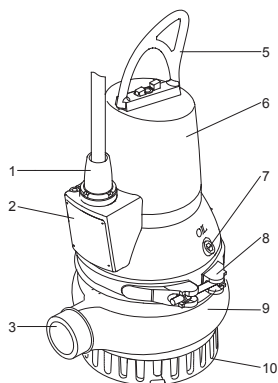
This manual describes instructions for the installation, operation and maintenance of Grundfos SL1, SLV, DP and EF submersible sewage, wastewater, drainage and effluent pumps., 1.2 - 2.0 hp.



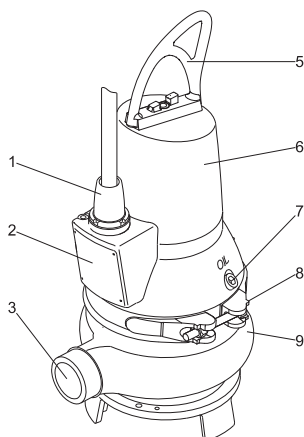
SL1.20.A25 and SLV.25.A25 pumps



SLV.25.A25 pump



DP04.A20 pump



EF12.A20 pump

TM065918

TM065937

TM065981

TM065906

Pos.	Description
1	Cable plug
2	Nameplate
3	Outlet
4	Outlet flange ANSI NPS 2 1/2"
5	Lifting bracket
6	Stator housing
7	Oil screw
8	Clamp
9	Pump housing
10	Inlet strainer (DP pumps only)

2.2 Pumped liquids

SL1.20.A25

The product is designed for pumping the following liquids:

- large quantities of drainage and surface water
- domestic wastewater with discharge from toilets
- wastewater from commercial buildings without discharge from toilets
- industrial wastewater containing sludge
- industrial process water.

SLV.25.A25

The product is designed for pumping the following liquids:

- surface water with abrasive particles
- municipal sewage
- sewage from commercial buildings
- industrial wastewater containing sludge or fiber.

DP04

The product is designed for pumping the following liquids:

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

EF12

The product is designed for pumping the following liquids:

- drainage and surface water with small impurities
- wastewater with fibers, such as from laundries
- wastewater without discharge from toilets
- effluent from commercial buildings without discharge from toilets.

2.3 Intended use

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

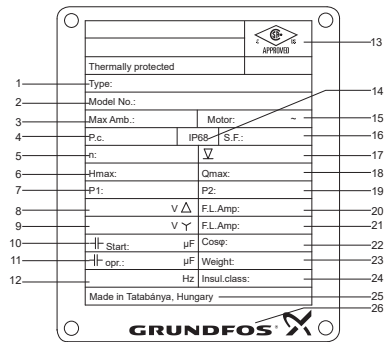
The pumps can be installed on an auto-coupling system or stand freely on the bottom of a pit.

The pumps are portable and designed for pumping domestic and industrial sewage and wastewater.

2.4 Identification

2.4.1 Nameplate

Fix the extra nameplate supplied with the pump at the installation site or keep it in the cover of this manual.



Nameplate

P o s.	Description	P o s.	Description
1	Type designation	14	IP class
2	Product number + serial number	15	Phase
3	Max. ambient/liquid temperature	16	Motor safety factor S. F.
4	Production code (YYWW)	17	Max installation depth [ft]
5	Speed [rpm]	18	Max flow rate [USgpm]
6	Max head [ft]	19	Nominal power output P2 [hp]
7	Nominal power input P1 [hp]	20	Combines amp. expression 1
8	Combined voltage expression 1	21	Combines amp. expression 2
9	Combined voltage expression 2	22	Cos Φ, 1/1 load
10	Start capacitor [μF]	23	Net weight [lbs]
11	Run capacitor [μF]	24	Insulation class
12	Frequency [Hz]	25	Production site and country
13	cCSAus approval	26	Grundfos logo

TM087631

2.4.2 Type key SL 1.20, SLV.25

Example: SLV.25.A25.20.2.60M

Code	Description	Explanation
SL	Grundfos sewage and wastewater pumps	Pump type
SL1	Sewage pump with single-channel impeller	Impeller type
SLV	Sewage pump with free-flow impeller (SuperVortex)	
25	Maximum solids size [inch]	Pump passage
A25	Nominal diameter of the pump outlet port/10 [inch]	Pump outlet
20	Rated output power/10 [hp]	Power
2	2-pole	Number of poles
1	Single-phase motor	Number of phases
[]	Three-phase motor	
6	60 Hz	Frequency ¹⁾
03	1 x 208 - 230 V, DOL	Voltage and starting method
0M	3 x 200 - 230 V, DOL	
0H	3 x 460 V, DOL	
0L	3 x 575 V, DOL	
[]	Standard	
Z	Custom-built products	Customization

¹⁾ Maximum frequency in case of frequency converter operation.

2.4.3 Type key DP04, EF12

Example: DP04.A20.20.2.60M

Code	Description	Explanation
DP	Grundfos drainage pump	Pump type
EF	Grundfos effluent pump	
04	Maximum spherical impeller clearance [inch]	Impeller clearance
A20	Nominal diameter of outlet port/10 [inch]	Pump outlet
20	Rated output power/10 [hp]	Outlet power
2	2-pole	Number of poles
1	Single-phase motor	Number of phases
[]	Three-phase motor	
6	60 Hz	Frequency ¹⁾
03	208-230 V, DOL	Voltage and starting method
0M	200-230 V, DOL	
0H	460 V, DOL	
0L	3 x 575 V, DOL	
Z	Custom-built products	
Z	Custom-built products	Customization

¹⁾ Maximum frequency in case of frequency converter operation.

2.5 Approvals

The SL1, SLV, DP, and EF pumps have been approved by CSA approval according to CSA C22.2 Nr. 108-14 and ANSI/UL 778.

3. Receiving the product

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

3.1 Transporting the product

The pump may be transported and stored in a vertical or horizontal position.



CAUTION

Crushing hazard

Minor or moderate personal injury

- Make sure the pump cannot roll or fall over.

3.2 Handling the product

All lifting equipment must be rated for the purpose and checked for damage before lifting the pump. The lifting equipment rating must not be exceeded. The pump weight is stated on the nameplate.



WARNING

Crushing hazard

Death or serious personal injury

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



CAUTION

Sharp element

Minor or moderate personal injury

- Wear protective gloves when opening the pump package.



Keep the cable end protectors in storage for later use.

3.3 Lifting the product

WARNING

Crushing of hands

Death or serious personal injury

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



CAUTION

Crushing hazard

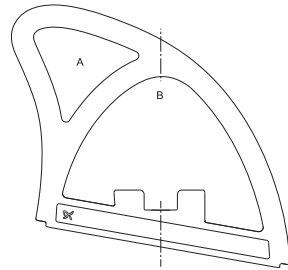
Minor or moderate personal injury

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



When lifting the pump, use the right lifting point to keep the pump balanced.

Place the lifting chain hook in point A for auto-coupling installations and in point B for other installations.



Lifting points

4. Installing the product



Do not install the pump more than 6560 ft (3000 m) above sea level.



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

Work in or near pits must be carried out according to local regulations.

DANGER

Electric shock

Death or serious personal injury

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



DANGER

Electric shock

Death or serious personal injury

- Make sure there is at least 10 ft (3m) free cable above the maximum liquid level.



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



Carry out all maintenance and service work when the pump is placed outside the pit.

DANGER

Crushing hazard

Death or serious personal injury

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



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

4.1 Mechanical installation

The compact design makes the pumps suitable for both temporary and permanent installations. The pumps can be installed on an auto-coupling system or stand freely on the bottom of the pit.



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

DANGER

Electric shock

Death or serious personal injury

- Switch off the power supply and lock the main switch in position 0.
- Switch off any external voltage connected to the product before working on it.



CAUTION

Hot surface

Minor or moderate personal injury

- Make sure that the pump has cooled down before touching it.



DANGER

Electric shock

Death or serious personal injury

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



CAUTION

Biological hazard

Minor or moderate personal injury

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



CAUTION

Sharp element

Minor or moderate personal injury

- Do not touch the sharp edges of the impeller without wearing protective gloves.



Fit the extra nameplate supplied with the pump at the installation site or keep it in the cover of this manual.

Observe all safety regulations at the installation site.

Check the oil level in the oil chamber before installing the pump.

The pumps are suitable for different installation types

The pump housings have a cast iron NPT 2" threaded connection or a NPS 2 1/2" outlet flange.



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



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



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

CAUTION

Crushing of hands

Minor or moderate personal injury



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

CAUTION

Biological hazard

Minor or moderate personal injury



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

4.1.1 Installation on auto coupling

Pumps for permanent installation can be installed on a stationary auto-coupling system. Additionally, the DP and EF pumps can be also installed on a hookup auto-coupling system.

The auto-coupling system facilitates maintenance and service as the pump can easily be lifted out of the pit.

Use loose flanges to ease the installation and to avoid pipe tension at flanges and bolts.



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



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

4.1.1.1 Auto-coupling guide-rail system

Proceed as follows:

1. Drill mounting holes for the guide-rail bracket on the inside of the pit and fasten the guide-rail bracket with two anchor bolts.

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



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

6. Before lowering the pump, clean out debris from the pit.
7. Fit the guide claw to the pump outlet. Grease the gasket of the guide claw before lowering the pump into the pit.
8. Slide the guide claw between the guide rails and lower the pump into the pit by a chain secured to the lifting bracket. (See fig. Lowering the pump to the auto-coupling base.) When the pump reaches the auto-coupling base unit, the pump automatically connects.

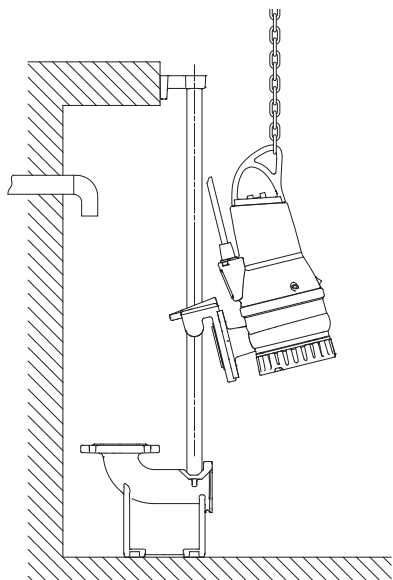


When the pump reaches the auto-coupling base unit, shake the pump by the chain to make sure that it is placed in the correct position. (See fig. Connecting the pump to the auto-coupling base.)

9. 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. Make sure that the chain is straight but not strained.
10. Adjust the length of the power cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook at the top of the pit. Make sure that the cables are not sharply bent or pinched.
11. Connect the power- and control cables, if any.

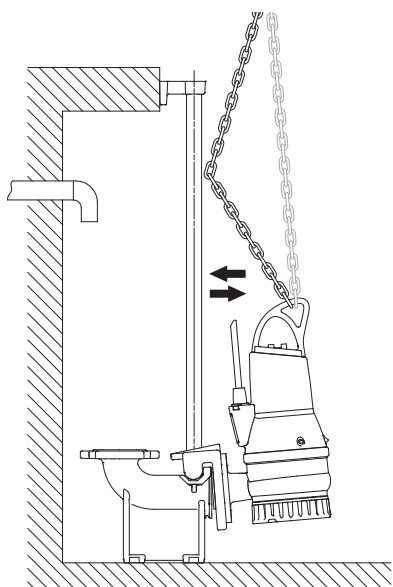


The free end of the cable must not be submerged as water may penetrate through the cable into the motor.



TM076207

Lowering the pump to the auto-coupling base



TM076208

Connecting the pump to the auto-coupling base

4.1.1.2 Hookup auto-coupling system

Proceed as follows:

1. Fit the crossbar in the pit.
2. Fit the stationary part of the auto coupling on top of the crossbar.

3. Fit the adapted piece of pipe for the movable part of the hookup auto coupling to the pump outlet.
4. Fasten a shackle and a chain to the movable part of the hookup auto coupling.
5. Clean out debris from the pit before lowering the pump.
6. Lower the pump into the pit by the chain secured to the lifting bracket. When the movable part of the auto coupling reaches the stationary part, the two connect automatically.
7. 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.
8. Adjust the length of the power cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook at the top of the pit. Ensure that the coiled cable cannot fall into the pit. Make sure that the cables are not sharply bent or pinched.
9. Connect the power- and control cables, if any.



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

4.1.2 Free-standing submerged installation

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

SL pumps must be mounted on separate feet (accessory).

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

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

If a rigid pipe is used, fit the union or coupling, non-return valve, and isolating valve in this order.

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

Proceed as follows:

1. Fit a 90° elbow to the pump outlet and connect the outlet pipe or hose.
2. Lower the pump into the liquid by a chain secured to the lifting bracket. Place the pump on a plain, solid foundation. Make sure that the pump is lifted by the chain and not the power cable.
3. 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.

4. Adjust the length of the power cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook at the top of the pit. Make sure that the cables are not sharply bent or pinched.
5. Connect the power- and the control cables, if any.



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



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

5. Electrical connection

Make sure that the electrical connection complies with the local regulations.

DANGER

Electric shock

Death or serious personal injury

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



Connect the pumps to a control unit with a motor protection relay with IEC trip class 10 or 15.



The permanent installation must be fitted with an earth-leakage circuit breaker.



Make sure there is at least 10 ft (3 m) free cable above the maximum liquid level.

DANGER

Electric shock

Death or serious personal injury

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



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



Make sure that the pump is connected according to these installation and operating instructions.

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

All pumps are supplied with 33 ft (10 m) cable and free cable end.

DANGER

Electric shock

Death or serious personal injury

- Before the first startup of the pump, check the cable for visible defects to avoid short circuits.



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

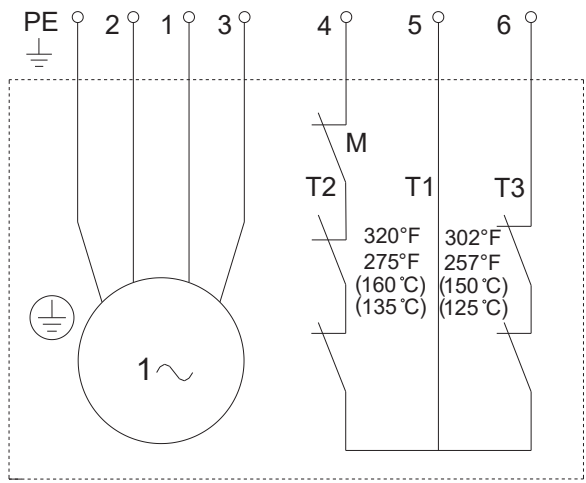
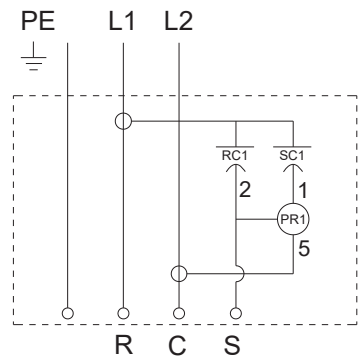
The pump must be connected to one of the following controller types:

- a control unit with a motor-protective circuit breaker.
- Grundfos LC 231 or 241 pump controller.

See the wiring diagrams and the installation and operating instructions for the selected control unit or pump controller.

For further information about the function of the thermal switches, see section 5.2.2 Thermal switches.

5.1 Wiring diagrams



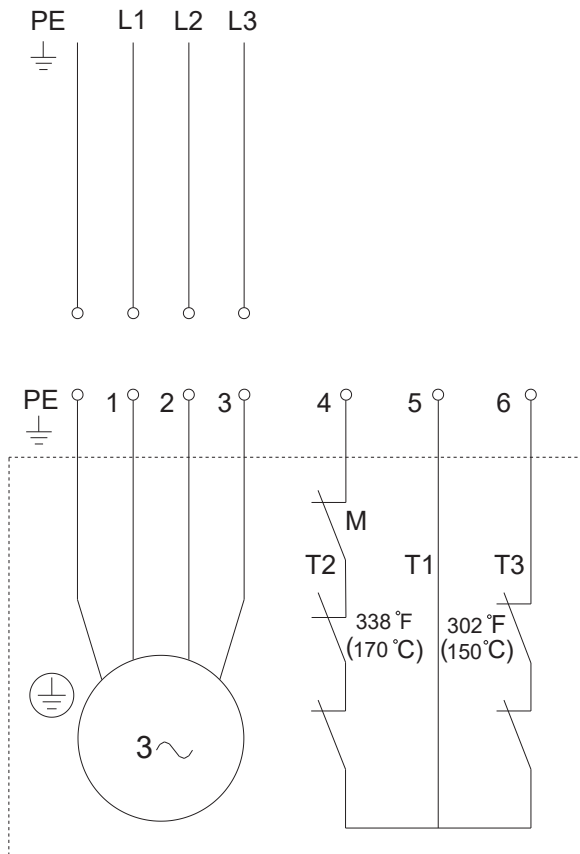
Wiring diagram for single-phase pumps



275 °F (135 °C) and 257 °F (125 °C) apply to single-phase, 2 hp pumps.

Wire NO.	Type	Connection
1	Common (C)	U1/Z1
2	Run (R)	U2
3	Start (S)	Z2

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TM087672

Wiring diagram for three-phase pumps

5.2 Protection and control functions

The liquid level can be controlled by the Grundfos LC 231 and LC 241 level controllers. The pumps are protected by thermal switches connected to the LC controller.

5.2.1 Level controllers

Suitable level controllers:

- LC 231: compact solution with certified motor protection for single- and dual-pump versions.
- LC 241: cabinet solution offering modularity and customisation for single- and dual-pump versions.
- Dedicated Controls (DC): high-end cabinet solution for multi-pump versions up to 6 pumps.

In the following description, "level switches" can be air bells, float switches, or electrodes depending on the selected pump controller.

Depending on the security 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)

An analog level transmitter can be used and all levels can be customised. Level switches can be used with level transmitters (one for dry and one for high level).

When installing the level switches, observe the following points:

- To prevent air intake and vibrations, install the stop level switch so the pump is stopped before the liquid level is lowered to the middle of the motor housing.

- Install the start level switch so the pump is started at the required level. The pump must always be started before the liquid level reaches the bottom of the inlet pipe.
- Always install the high-level alarm switch about 0.4" above the start level switch. However, the alarm must always be given before the liquid level reaches the inlet pipe.

For further settings, see the installation and operating instructions for the selected pump controller.

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.



The pump must be stopped when the liquid level reaches the upper edge of the clamp. For more information see section Start and Stop level.

5.2.2 Thermal switches

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

The thermal switch in circuit 1 (T1-T3) breaks the circuit at a winding temperature of approximately 302°F (150 °C). This thermal switch must always be connected.

The thermal switch in circuit 2 (T1-T2) breaks the circuit at the following approximate winding temperatures:

- 338 °F (170 °C) for three-phase pumps
- 320 °F (160 °C) for single-phase pumps.

The maximum operating current and voltage of the thermal switches are 0.5 A at 500 VAC and $\cos \phi$ 0.6. The thermal switches must be able to break a coil in the supply circuit.

When the thermal switches in standard pumps close the circuit after cooling, the controller automatically restarts the pump.

5.2.3 Moisture switch

Moisture switch is available as an option. In case of a moisture switch version, the sensor is connected to circuit 2 (T1-T2) in serial.

It opens if moisture is detected and breaks an electric circuit. The pump must be switched off and checked.

The maximum current and voltage on the moisture switches are limited to 0.5 A and 250 V.

5.3 Frequency converter operation

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 due to eddy currents caused by voltage peaks.

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 in accordance with 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 .
- The switching frequency is 2 kHz. Variable switching frequency is accepted.
- Set the frequency converter U/f ratio according to the motor data.
- Local regulations or standards must be fulfilled.

Before installing a frequency converter, calculate the lowest permissible frequency in the installation to avoid zero flow.

- Do not reduce the motor speed to less than 50 %.
- Keep the flow rate above 3.3 ft/s (1 m/s).
- Let the pump run at rated speed at least once a day to prevent sedimentation in the piping system.
- 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.
- Use a screened power cable if there is a risk that electrical noise may disturb other electrical equipment.
- Set frequency converter for constant-torque operation. Pulse width modulation should be used.

When operating the pump by a frequency converter, consider the following:

- 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 for the selected frequency converter.

Maximum repetitive peak voltage [V]	Maximum dU/dt U_N 400 V [V/ μ sec.]
650	2000

6. Startup

CAUTION

Crushing of hands

Minor or moderate personal injury

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



Before starting the product:

- Make sure that the fuses are removed.
- Make sure that all protective equipment is connected correctly.



CAUTION

Biological hazard

Minor or moderate personal injury

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



WARNING

Crushing of hands

Death or serious personal injury

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



DANGER

Crushing hazard

Death or serious personal injury

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



DANGER

Electric shock

Death or serious personal injury

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



CAUTION

Biological hazard

Minor or moderate personal injury

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



CAUTION

Hot surface

Minor or moderate personal injury

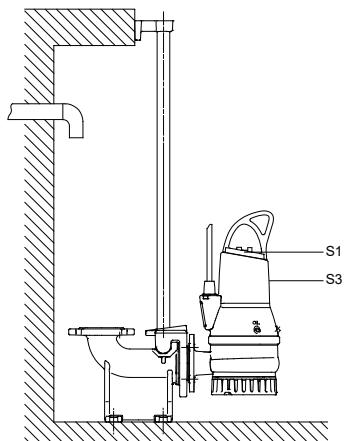
- Do not touch the surface of the pump while the pump is running.



Do not open the clamp while the pump is running.

6.1 Operating modes

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

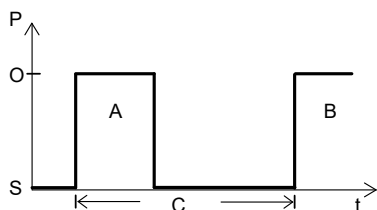


Operating levels

S3, intermittent operation

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

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.

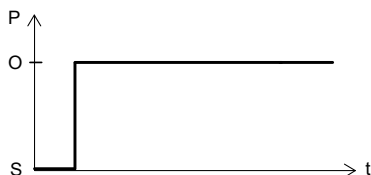


S3 operation

Pos.	Description
P	Pressure
O	Operation
S	Stop
C	Duty cycle
t	Time

S1, continuous operation

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



S1 operation

Pos.	Description
O	Operation
S	Stop

6.2 Start and stop levels

The difference between the start and stop levels can be adjusted by changing the free cable length.

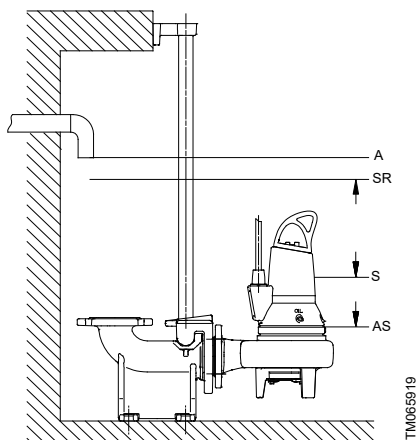
Long free cable = large difference in level.

Short free cable = small difference in level.

Observe the following points:

- To prevent air intake and vibrations, install the stop level switch so the pump is stopped before the liquid level is lowered below the upper edge of the clamp on the pump.
- Install the start level switch so the pump is started at the required level; however, the pump must always be started before the liquid level reaches the bottom inlet pipe to the pit.





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Start and stop levels

Pos.	Description
A	Alarm
SR	Start
S	Stop
AS	Additional stop

6.3 Direction of rotation



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

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

Before starting up three-phase pumps, check the direction of rotation.

An arrow on the stator housing indicates the correct direction.



The impeller rotates clockwise. When started, the pump jerks counterclockwise.

If the direction of rotation is wrong, interchange two of the phases in the power cable.

Checking the direction of rotation

Check the direction of rotation in one of the following ways every time the pump is connected to a new installation.

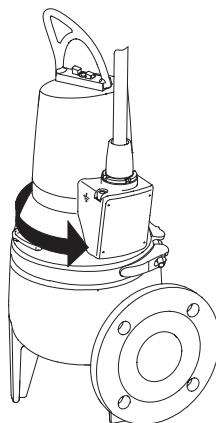
Procedure 1:

1. Start the pump and measure the liquid quantity or the outlet pressure.
2. Stop the pump and interchange any two of the phases in the power cable.
3. Restart the pump and measure the liquid quantity or the outlet pressure.

4. Stop the pump.
5. Compare the results taken under points 1 and 3. The connection which gives the larger liquid quantity or the higher pressure is the correct direction of rotation.

Procedure 2:

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



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Jerk direction

6.4 Starting up the product



The pump must not run dry.



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

Proceed as follows:

1. Remove the fuses and check that the impeller can rotate freely. Turn the impeller by hand.
2. Check the condition of the oil in the oil chamber.
3. Check that the monitoring units, if used, are operating satisfactorily and appropriately.
4. Check the setting of the air bells, float switches, or electrodes.

5. Open the isolating valves, if fitted.

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

6. Lower the pump into the liquid and insert the fuses.

Auto coupling: Check that the pump is in the right position on the auto-coupling base unit.

7. Check if the system is filled with liquid and vented. The pump is self-venting.
8. Switch on the power supply to the pump. When the power is on, the pump starts and pumps down to the dry-running level. This process can be used to check that the pump functions correctly.

After one week of operation or after the replacement of the shaft seal, check the condition of the oil in the chamber.

6.5 Resetting the pump

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

7. Maintenance and service

DANGER

Electric shock

Death or serious personal injury



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

CAUTION

Crushing of hands

Death or serious personal injury



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

CAUTION

Biological hazard

Minor or moderate personal injury



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

CAUTION

Hot surface

Minor or moderate personal injury



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

WARNING

Crushing of hands

Death or serious personal injury



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

CAUTION

Sharp element

Minor or moderate personal injury



- Do not touch the sharp edges of the impeller without wearing protective gloves.

DANGER

Crushing hazard

Death or serious personal injury



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

DANGER

Electric shock

Death or serious personal injury



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

CAUTION

Biological hazard

Minor or moderate personal injury

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



CAUTION

Pressurized system

Minor or moderate personal injury

- The oil chamber may be under pressure. Do not remove the screws until the pressure is completely relieved.



Before carrying out maintenance and service, flush the pump thoroughly with clean water. Rinse the pump parts after dismantling.



If the pump is inactive for long periods, check its function.



Service videos can be found in Grundfos Product Center at www.grundfos.com.



If the pump is inactive for a longer period (more than 1-3 months), ensure the free rotation of the shaft by rotating it by hand. In case of any seizing, refer to the section Maintenance schedule.



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

7.1 Contaminated pumps

CAUTION

Biological hazard

Minor or moderate personal injury

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



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

Contact Grundfos with details about the pumped liquid before returning the product for service. Otherwise, Grundfos can refuse to accept the product.

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

Clean the product in the best possible way before returning it.

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

7.2 Maintenance schedule

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

Check the following points:

- **Power consumption**

See the nameplate.

- **Oil level and condition**

When the pump is new or after the replacement of the shaft seal, check the oil level after one week of operation. Use Shell Ondina X420 oil or an equivalent type. Oil autoignition temperature must be above 356 °F (180 °C).

- **Cable entry**

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

- **Pump parts**

Check the wear parts and replace the defective ones.

- **Ball bearings**

Check the shaft for noisy or heavy operation by turning the shaft by hand. Replace defective ball bearings. A general overhaul of the pump is usually required in case of defective ball bearings or poor motor function. This work must be carried out by Grundfos or an authorized service workshop.

The ball bearings are lubricated for a lifetime.

- **Cable handling**

Do not lay the pump on the power cable.

When the pump is laid horizontally, pay attention to avoid any sharp surface touching the power cable, otherwise the insulation could be damaged.

7.3 Oil check and change

Change the oil in the oil chamber every 3000 operating hours or at least once a year or if the shaft seal is replaced.

In case of the drained oil contains water, check and replace the shaft seal.

The table below indicates the oil quantity in the oil chamber:

Pump type	Quantity of oil in the oil chamber [fl oz] (ltr)
SL1, SLV, DP, and EF pumps up to 2.0 hp	5.74 (0.17)

Draining of oil

CAUTION

Pressurized 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.

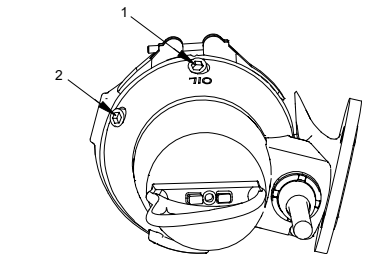
- Loosen and remove both oil screws to allow all the oil to drain from the chamber.
- Check the oil for water and impurities. If the shaft seal is removed, the oil indicates the condition of the shaft seal.



Dispose of used oil in accordance with local regulations.

Oil filling, pump in a horizontal position

- Place the pump horizontally on the stator housing and make sure the outlet flange and the oil screws are pointing upwards.
- Fill oil into the oil chamber through the upper hole until it starts running out of the lower hole. The oil level is now correct.
- Fit both oil screws using the gaskets included in the O-ring service kit.



Oil filling holes

Pos.	Description
1	Oil filling
2	Oil level

Oil filling, pump in a vertical position

- Place the pump on a plain, horizontal surface.
- Fill oil into the oil chamber through hole Nr. 1 until it starts running out from the other hole on the side (Nr. 2)
- Fit both oil screws using the gaskets included in the O-ring service kit.

7.4 Adjusting the impeller clearance

The SLV pumps (SuperVortex) with semi-open impellers do not need impeller adjustment.

SL1 pumps

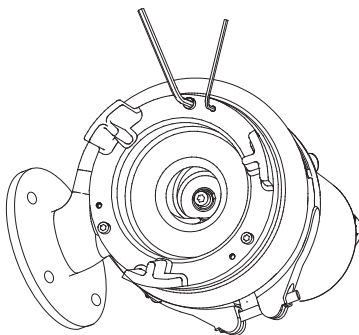
Proceed as follows:

- Undo the locking screws.
- Undo the adjusting screws and push the wear plate until it touches the impeller.
- Tighten the adjusting screws so that the wear plate still touches the impeller. Then loosen all the adjusting screws for about half a turn.



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

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



Pump viewed from the inlet side

7.5 Cleaning the pump housing

Proceed as follows:

Dismantling

- Place the pump in a vertical position.
- Loosen and remove the clamp fastening the pump housing to the motor.
- Lift the motor out of the pump housing. As the impeller is fastened to the shaft end, the impeller is removed together with the motor.
- Clean the pump housing and the impeller.

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Assembly

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

7.6 Checking or replacing the shaft seal

Check the oil to make sure that the shaft seal is intact.

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

If the oil is clean, it can be reused.

Proceed as follows:

1. Loosen and remove the clamp fastening the pump housing to the motor.
2. Lift the motor out of the pump housing. As the impeller is fastened to the shaft end, the impeller is removed together with the motor.
3. Remove the screw from the shaft end.
4. Remove the impeller from the shaft.
5. Drain the oil from the oil chamber. The shaft seal is a complete unit for all pumps.
6. Remove the screws securing the shaft seal.
7. Lift the shaft seal out of the oil chamber using the lever principle using the two dismantling holes in the shaft seal carrier and two screwdrivers.
8. Check the condition of the bush where the secondary seal of the shaft seal touches the bush. The bush must be intact. If the bush is worn and must be replaced, the pump must be checked by Grundfos or an authorized service workshop. If the bush is intact, continue as follows:
9. Check and clean the oil chamber.
10. Lubricate the faces in contact with the shaft seal with oil.
11. Insert the new shaft seal using the plastic bush included in the kit.
12. Tighten the screws securing the shaft seal to 16 Nm.
13. Fit the impeller. Make sure that the key is fitted correctly.
14. Fit and tighten the screw securing the impeller to 22 Nm.
15. Place the motor with the impeller in the pump housing.
16. Fit and tighten the clamp.
17. Fill the oil chamber with oil.

For adjustment of the impeller clearance, see section Adjusting the impeller clearance.

7.7 Service kits

For service kits, please visit www.grundfos.us (Grundfos Product Center) or see the Service Kit Catalogue.

8. Storage

During long periods of storage, protect the pump against moisture and heat.

After a long period of storage (1-3 months), rotate the shaft at least once a month to avoid seizing internal parts.

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

9. Fault finding the product

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



Before diagnosing any fault, make sure the following:

- The fuses are removed or the main switch is switched off.
- The power supply cannot be switched on unintentionally.
- All rotating parts have stopped moving.

9.1 The motor does not start. The trip blow or the motor-protective circuit breaker trips out immediately.

Caution: do not start again!

Cause	Remedy
Power supply failure, short circuit, or earth leakage in the power cable or the motor windings.	<ul style="list-style-type: none"> • Have the power cable and motor checked and repaired by a qualified electrician.
The fuses blow due to the use of incorrect fuses.	<ul style="list-style-type: none"> • Install the correct fuses.
The impeller is blocked by impurities.	<ul style="list-style-type: none"> • Clean the impeller.
The air bells, the float switches, or the electrodes are out of adjustment or defective.	<ul style="list-style-type: none"> • Readjust or replace the air bells, float switches, or electrodes.

9.2 The pump operates, but the motor-protective circuit breaker trips after a short time.

Cause	Remedy
Low setting of the thermal relay in the motor-protective circuit breaker.	<ul style="list-style-type: none"> • Set the relay in accordance with the specifications on the nameplate.
Increased current consumption due to large voltage drop.	<ul style="list-style-type: none"> • Measure the voltage between two motor phases. • Tolerance: -10 %, +6 %. • Re-establish the correct voltage supply.
The impeller is blocked by impurities.	<ul style="list-style-type: none"> • Clean the impeller.
Increased current consumption in all three phases.	<ul style="list-style-type: none"> • Check the direction of rotation and interchange any two of the phases in the incoming supply cable.
The impeller clearance is incorrect.	<ul style="list-style-type: none"> • Readjust the impeller.

9.3 The thermal switch trips after the pump is running for some time.

Cause	Remedy
The liquid temperature is too high.	<ul style="list-style-type: none"> • Reduce the liquid temperature.
The liquid viscosity is too high.	<ul style="list-style-type: none"> • Dilute the liquid.
Wrong electrical connection. (If the pump is star-connected to a delta connection, it results in very low undervoltage).	<ul style="list-style-type: none"> • Check and correct the electrical installation.

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. If it is incorrect, interchange two phases in the power cable.

9.5 The pump operates but delivers no liquid.

Cause	Remedy
The outlet valve is closed or blocked.	<ul style="list-style-type: none"> • Check the outlet valve and open or clean it, if necessary.
The non-return valve is blocked.	<ul style="list-style-type: none"> • Clean the non-return valve.
There is air in the pump.	<ul style="list-style-type: none"> • Vent the pump.

9.6 High power consumption (SLV)

Cause	Remedy
Wrong direction of rotation.	<ul style="list-style-type: none"> • Check the direction of rotation and interchange any two of the phases in the incoming supply cable. The impeller is blocked by impurities. • Clean the impeller.

9.7 Noisy operation and excessive vibrations (SL1)

Cause	Remedy
Wrong direction of rotation.	<ul style="list-style-type: none"> • Check the direction of rotation and interchange any two of the phases in the incoming supply cable. The impeller is blocked by impurities. • Clean the impeller.

10. Technical data

Operating conditions

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

Operating pressure	Maximum 87.0 psi (6 bar)
Number of starts per hour	Maximum 30
pH value	Pumps in permanent installations can be used for pumping liquids with a pH value between 4 and 10.

Installation depth

Minimum 65.6 ft (20 m) below liquid level.



Ensure a minimum power cable length of the installation depth plus 10 ft (3 m).

10.1 Operating mode

Maximum solids size	
Type	Maximum solids size [in] (mm)
SL1.20.A25	1.97 (50)
SLV.25.A25	2.56 (65)
EF12.A20	1.18 (30)

Liquid temperature

32-104 °F (0 - 40 °C).

For short periods of a maximum of 15 minutes, a temperature of up to 140°F (60 °C) is allowed. This applies to standard versions only.

Density of the pumped liquid

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

Sound pressure level

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

10.2 Electrical data

Power supply	<ul style="list-style-type: none"> 1 x 208 V - 230 V - 10 % / +6 %, 60 Hz 3 x 200 V - 230 V - 10 % / +6 %, 60 Hz 3 x 460 V - 10 % / +6 %, 60 Hz 3 x 575 V - 10 % / +6 %, 60 Hz.
Enclosure class	IP68, according to IEC 60529
Insulation class	F (311 °F/155 °C)

10.2.1 Winding resistances



These values are valid for 68 °F environmental temperature. Resistance tolerance is $\pm 10\%$.

Motor size [hp]	Single-phase motor	
	Starting winding	Main winding
1.2 - 1.6	4.5 Ω	2.75 Ω
2.0	4.1 Ω	2.9 Ω
Three-phase motor		
	3 x 230 V	3 x 400 V
1.2 - 2.0	6.8 Ω	9.1 Ω

The table values do not include the cable. Resistance in the cables: 2 x 33 ft (10 m), approximately 0.28 Ω .

Explanation: $R_s = R_m (T_s + T_k) / (T_m + T_k)$:

R_s : Resistance value to be calculated at a specific temperature (68°F/20 °C).

R_m : Resistance value measured.

T_m : Temperature at which the was measured.

T_k : Winding material constant (235 in case of copper).

10.2.2 Pump performance curves

Pump performance curves are available at www.grundfos.com.

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

Test curves for the supplied pump are available on request.

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 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.

1. Limited consumer warranty

This Limited Warranty is provided for Consumer Products sold in the United States only and applies to Consumer Transactions as defined in and applicable under the Magnusson-Moss Warranty Act and any other applicable Federal and/or State laws. In case of non-Consumer Products, please refer to Grundfos' warranty terms defined in clause 10 of Grundfos US Terms and Conditions of Sale of Product and Services available at <https://www.grundfos.com/legal/grundfos-customer-terms/usa-grundfos-general-terms-for-sales-of-products-and-services>

This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

New products manufactured by Grundfos are warranted to the original purchaser only and are to be free from defects in design, material and workmanship under normal use and service for no greater than a period of thirty (30) months from the date of manufacture which is set forth on the product's nameplate and on the product's packaging or the minimum period required by the applicable State law. For New Jersey, the applicable period is one year from the date of purchase.

The warranty period for replacement products, parts and components expires thirty (30) months from the original date of manufacture of the product originally purchased, unless a longer period is required under the applicable State law. For New Jersey, the warranty period for replacement products, parts and components expires one year from the original date of purchase of the product, not the date of replacement.

Products sold by Grundfos that are manufactured by others are not covered by this warranty.

Note that when purchasing a Grundfos product online, it is important to check the date of manufacture and the duration of the warranty with the seller as the product might no longer be covered under this Limited Warranty.

When a product is subject to this Limited Warranty a purchaser should contact the seller from which it purchased the product to make a claim.

If the seller of a product is no longer in business, the purchaser should contact a Grundfos Authorized Service Partner, which can be found at www.grundfos.com/us under > Support > Contact Service.

As part of making a claim, a purchaser shall return a defective product at the purchaser's cost, to the extent allowed by applicable law, along with proof of purchase and an explanation of the defect, date the defect occurred and circumstances surrounding the defect. For New Jersey there is no prohibition on returning a defective product at a purchaser's cost. If Grundfos is required by applicable State law to pay for the cost of shipment under applicable State law, then a purchaser should contact a Grundfos Authorized Service Partner to arrange for shipment. A purchaser also needs to promptly respond to Grundfos as to any inquiries regarding a warranty claim.

Grundfos' liability under this Limited Warranty to purchaser is limited to the repair or replacement of a product (at Grundfos' decision) that is the sole and exclusive remedy for purchaser to the extent permissible by applicable law. For New Jersey this limitation is permissible.

This warranty does not cover the following: ordinary wear and tear; use of a product for applications for which it is not intended; use of a product in an unsuitable environment; modifications, alterations or repair undertaken by anyone not acting with Grundfos' written authorization; failure to follow Grundfos' instructions, operations manuals, any other guidelines or good industry practice; use of faulty or inadequate ancillary equipment in combination with a product; application of spare or replacement parts not provided or authorized by Grundfos; accidental or intentional damage or misuse of a product.

The time period for making a claim under the implied warranty of merchantability and implied warranty of fitness are limited to the same time period as provided by this warranty to the extent permissible by applicable law. For residents of New Jersey, this limitation is permissible, but note that some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Grundfos shall not be liable for any incidental and consequential damages in connection with a product to the extent permissible by applicable law. For residents of New Jersey, this limitation is permissible, but note that some states do not allow limitations of incidental or consequential damages, so the above limitation may not apply to you.

2. Garantía limitada del consumidor

Esta garantía limitada se proporciona únicamente para los productos de consumo vendidos en los Estados Unidos y es aplicable a las transacciones de consumo tal y como se define en y resulta aplicable en virtud de la ley de Garantías Magnusson-Moss y cualquier otra legislación federal y/o estatal aplicable. Para el caso de productos que no sean de consumo, consulte los términos de la garantía de Grundfos definidos en la cláusula 10 de los términos y condiciones de venta de productos y servicios de Grundfos para los EE. UU., disponibles en <https://www.grundfos.com/legal/grundfos-customer-terms/usa-grundfos-general-terms-for-sales-of-products-and-services>.

Esta garantía limitada le confiere derechos legales específicos. Puede que también tenga otros derechos en virtud de su jurisdicción estatal.

Se garantiza únicamente al comprador original que los productos fabricados por Grundfos estarán libres de defectos de diseño, materiales y mano de obra en condiciones normales de uso y servicio durante un periodo no mayor a treinta (30) meses a partir de la fecha de fabricación que figura en la placa de datos del producto y en el empaque del mismo o el periodo mínimo exigido por la legislación estatal aplicable. Para Nueva Jersey, el periodo aplicable es de un año a partir de la fecha de compra.

El periodo de garantía para los productos, partes y componentes de repuesto vence a los treinta (30) meses contados a partir de la fecha de fabricación original del producto adquirido en primer lugar, a menos que la legislación estatal aplicable exija un periodo más largo. Para Nueva Jersey, el periodo de garantía de los productos, partes y componentes de repuesto vence un año contado a partir de la fecha original de compra del producto, no de la fecha de sustitución.

Los productos vendidos por Grundfos que sean producidos por otros fabricantes no están cubiertos por esta garantía.

Tenga en cuenta que, al comprar un producto Grundfos en línea, es importante revisar la fecha de fabricación y la duración de la garantía con el vendedor, ya que es posible que el producto ya no esté cubierto por esta garantía limitada.

Cuando un producto esté sujeto a esta garantía limitada, el comprador deberá ponerse en contacto con el vendedor al que haya comprado el producto para presentar una reclamación.

Si el vendedor de un producto ya no está en el negocio, el comprador debe ponerse en contacto con socio de servicio autorizado por Grundfos, que puede encontrar en la dirección www.grundfos.com/us, en la sección "Support" > "Contact Service".

Como parte de la presentación de una reclamación, el comprador deberá devolver el producto descompuesto a su costa, en la medida en la que lo permita la legislación aplicable, junto con el comprobante de compra y una explicación del defecto, la fecha en que este se haya producido y las circunstancias en torno al defecto. En Nueva Jersey no existe ninguna prohibición de devolver un producto descompuesto a costa del comprador. Si la legislación estatal aplicable obliga a Grundfos a hacerse cargo de los gastos de envío, el comprador deberá ponerse en contacto con un servicio técnico autorizado por Grundfos para organizar el envío. El comprador también debe responder con prontitud a Grundfos cualquier consulta relacionada con una reclamación de garantía.

La responsabilidad de Grundfos hacia el comprador en virtud de esta garantía limitada se limita a la reparación o sustitución de un producto (a decisión de Grundfos), que es el único y exclusivo remedio para el comprador en la medida permitida por la legislación aplicable. Para Nueva Jersey, esta limitación resulta permisible.

Esta garantía no cubre lo siguiente: el desgaste ordinario; el uso de un producto para aplicaciones para las que no está diseñado; el uso de un producto en un entorno inadecuado; las modificaciones, alteraciones o reparaciones realizadas por cualquier persona que no actúe con la autorización por escrito de Grundfos; el incumplimiento de las instrucciones, manuales de operación, cualquier otro lineamiento o las buenas prácticas industriales de Grundfos; el uso de equipos auxiliares descompuestos o inadecuados en combinación con un producto; el uso de repuestos o partes de sustitución no proporcionados ni autorizados por Grundfos; el daño accidental o deliberado o el uso indebido de un producto.

El periodo para presentar una reclamación en virtud de la garantía implícita de comerciabilidad y la garantía implícita de idoneidad se limita al mismo periodo previsto por esta garantía en la medida permitida por la legislación aplicable. Para los residentes de Nueva Jersey, esta limitación resulta permisible, si bien se debe tener en cuenta que algunos estados no permiten limitaciones en cuanto a la duración de una garantía implícita, por lo que la limitación anterior puede no resultar aplicable en su caso.

Grundfos no será responsable de ningún daño indirecto o consecuente en relación con un producto en la medida en la que lo permita la legislación aplicable. Para los residentes de Nueva Jersey, esta limitación resulta permisible, si bien debe tenerse en cuenta que algunos estados no permiten limitaciones en cuanto a daños indirectos o consecuentes, por lo que la limitación anterior puede no resultar aplicable en su caso.

Limited manufacturer's warranty

1. Limited manufacturer's warranty

This Limited Manufacturer's Warranty outlines applicable coverage and claims procedures for the pumps manufactured by Grundfos (the "Product").

This Limited Manufacturer's Warranty is provided for consumer products sold and used in Canada only and applies to consumer transactions as defined in the applicable provincial and territorial laws. In case of non-consumer products, please refer to Grundfos' warranty terms defined in clause 10 of Grundfos Canada Terms and Conditions of Sale of Product and Services available at: <https://www.grundfos.com/ca/legal/general-terms-and-conditions-of-sales-and-delivery>

This Limited Manufacturer's Warranty provides specific rights and limitations. Some of the limitations may not apply to you, and you may also have other rights that vary from province to province.

Scope of the Limited Manufacturer's Warranty

Subject to the following warranty terms and conditions, Grundfos Canada Inc. of 2941 Brighton Rd, Oakville, ON L6H 6C9, Canada ("Grundfos"), warrants to the original consumer (the "Purchaser") that the new Product manufactured by Grundfos is free from defects in design, material and workmanship under normal use and service for a period of twenty-four (24) months from the date of retail purchase but no greater than a period of thirty (30) months from the date of manufacture which is set forth on the Product's nameplate and on the Product's packaging (the "Warranty Period").

Note that when purchasing a Grundfos Product online, it is important to check the date of manufacture and the duration of the warranty with the seller as the Product might no longer be covered under this Limited Manufacturer's Warranty.

This Limited Manufacturer's Warranty applies exclusively to a new Grundfos Product sold and used in Canada. This Limited Manufacturer's Warranty does not apply to any Product sold "as is" or "sales final". This Limited Manufacturer's Warranty is not transferrable by the original Purchaser. Products sold by Grundfos that are manufactured by others are not covered by this warranty.

The sole and exclusive remedy under this Limited Manufacturer's Warranty is the repair or, at the discretion of Grundfos, the replacement of the Product, as set out below. Defects or damages are not covered by the Limited Manufacturer's Warranty if they are due to:

- ordinary wear and tear;
- use of the Product for an application for which it is not intended;
- installation of the Product in an environment not suitable for the Product;
- any modification, alteration or repair of the Product undertaken by the Purchaser or a third party (not acting on Grundfos' behalf);
- failure to follow Grundfos' instructions, including in the installation manual, operation manual, maintenance manual or service manual;
- installation, commissioning, operation (including the use of the Product or any Grundfos product outside its specifications) or maintenance of the Product other than in accordance with Grundfos installation manual, operation manual, maintenance manual or service manual or with good industry practice;
- use of faulty or inadequate ancillary equipment in combination with the Product;
- the application of spare parts of poor quality (excluding the application of any Grundfos original spare parts);
- accidental or intentional damage or misuse of the Products or services by the Purchaser or a third party (not acting on Grundfos' behalf); or
- the non-compliance of the Purchaser or of the Purchaser's own products with applicable law and regulation.

How to get service under the Limited Manufacturer's Warranty:

When a Product is subject to this Limited Manufacturer's Warranty, the Purchaser should contact the seller from which it purchased the Product to make a claim within 24 months from the date of retail purchase but no later than thirty (30) months from the date of manufacture which is set forth on the Product's nameplate and on the Product's packaging (the "Warranty Notification Period").

If the seller of a Product is no longer in business, the Purchaser should contact Grundfos Service at www.grundfos.com/us under **Support > Contact Service**.

To exercise the rights under this Limited Manufacturer's Warranty, the Purchaser shall return a defective Product at the Purchaser's cost, to the extent allowed by applicable law, along with proof of purchase and an explanation of the defect, date the defect occurred and circumstances surrounding the defect.

The Purchaser is responsible for any expenses for dismounting and mounting the Product and for any and costs related to removal, reinstallation, transportation, and insurance. If Grundfos is required by applicable provincial or territorial law to pay for the cost of transportation, then the Purchaser should contact Grundfos Service Partner to arrange for shipment. The Purchaser also needs to promptly respond to Grundfos as to any inquiries regarding a warranty claim.

Unless requested by Grundfos, the Product may not be disassembled prior to remedy. Any failure to comply herewith will render this Limited Manufacturer's Warranty void.

Grundfos will either arrange the repair of the defective Product under this Limited Manufacturer's Warranty or, at Grundfos' option, provide the Purchaser with a replacement of the defective Product. The replacement unit can be new or remanufactured.

To the extent permissible by applicable law, Grundfos shall not be liable for any incidental and consequential damages or losses of any kind whatsoever arising under, relating to or in connection with the Product, use of the Product or the inability to use the Product.

2. Garantie limitée du fabricant

Cette garantie limitée du fabricant décrit la couverture applicable et les procédures de réclamation pour les pompes fabriquées par Grundfos (ci-après le « Produit »).

Cette garantie limitée du fabricant est fournie pour les produits de consommation vendus et utilisés au Canada uniquement et s'applique aux transactions de consommateurs telles que définies dans les lois provinciales et territoriales applicables. Dans le cas de produits non destinés aux consommateurs, se référer aux conditions de garantie de Grundfos définies à l'article 10 des Conditions générales de vente des produits et services de Grundfos Canada, qui sont disponibles à l'adresse suivante : <https://www.grundfos.com/ca/fr/legal/general-terms-and-conditions-of-sales-and-delivery>

Cette garantie limitée du fabricant prévoit des droits et des limitations spécifiques. Certaines des limitations peuvent ne pas s'appliquer à vous, et vous pouvez également bénéficier d'autres droits qui varient d'une province à l'autre.

Champ d'application de la garantie limitée du fabricant

Sous réserve des conditions générales de garantie suivantes, Grundfos Canada Inc., dont le siège social est situé au 2941, Brighton Rd, Oakville, ON L6H 6C9, Canada (ci-après « Grundfos »), garantit au consommateur initial (ci-après « l'Acheteur ») que le nouveau Produit fabriqué par Grundfos est exempt de défauts de conception, de matériaux et de fabrication dans des conditions normales d'utilisation et d'entretien pendant une période de vingt-quatre (24) mois à compter de la date d'achat au détail, mais pas plus de trente (30) mois à compter de la date de fabrication indiquée sur la plaque signalétique et sur l'emballage du Produit (« Période de garantie »).

Lors de l'achat d'un Produit Grundfos en ligne, il est important de vérifier la date de fabrication et la durée de la garantie auprès du vendeur, car le Produit pourrait ne plus être couvert par cette garantie limitée du fabricant.

Cette garantie limitée du fabricant s'applique exclusivement à un Produit Grundfos neuf vendu et utilisé au Canada. Cette garantie limitée du fabricant ne s'applique pas aux Produits vendus « en l'état » ou « vente finale ». La présente garantie limitée du fabricant n'est pas transférable par l'Acheteur initial. Les produits vendus par Grundfos qui sont fabriqués par des tiers ne sont pas couverts par cette garantie. Le seul et unique recours dans le cadre de cette garantie limitée du fabricant est la réparation ou, à la discrétion de Grundfos, le remplacement du Produit, comme indiqué ci-dessous. Les défauts ou dommages ne sont pas couverts par la garantie limitée du fabricant s'ils sont dus à :

- l'usure normale ;
- l'utilisation du Produit pour une application pour laquelle il n'est pas prévu ;
- l'installation du Produit dans un environnement non adapté au Produit ;
- toute modification, altération ou réparation du Produit entreprise par l'Acheteur ou un tiers (n'agissant pas pour le compte de Grundfos) ;
- la non-observation des instructions de Grundfos, y compris dans les notices d'installation, d'utilisation, de maintenance ou d'entretien ;
- l'installation, la mise en service, l'utilisation (y compris l'utilisation du Produit ou de tout produit Grundfos en dehors de ses spécifications) ou l'entretien du Produit autrement que conformément aux notices d'installation, d'utilisation, de maintenance ou d'entretien Grundfos ou aux bonnes pratiques de l'industrie ;
- l'utilisation d'un équipement auxiliaire défectueux ou inadéquat en combinaison avec le Produit ;
- l'utilisation de pièces de rechange de mauvaise qualité (à l'exclusion de l'utilisation de pièces de rechange d'origine Grundfos) ;
- tout dommage accidentel ou intentionnel ou toute mauvaise utilisation des Produits ou des services par l'Acheteur ou un tiers (n'agissant pas pour le compte de Grundfos) ; ou
- la non-conformité de l'Acheteur ou de ses propres produits aux lois et règlements applicables.

Procédure à suivre pour bénéficier d'un service dans le cadre de la garantie limitée du fabricant :

Lorsqu'un Produit est soumis à la présente garantie limitée du fabricant, l'Acheteur doit contacter le vendeur auprès duquel il a acheté le produit pour faire une réclamation dans les 24 mois suivant la date d'achat au détail, mais au plus tard trente (30) mois à compter de la date de fabrication indiquée sur la plaque signalétique du Produit et sur l'emballage du Produit (« Période de notification de garantie »).

Si le vendeur d'un Produit n'est plus en activité, l'Acheteur doit contacter le service Grundfos à l'adresse www.grundfos.com/us sous **Support > Contact Service**.

Pour exercer les droits prévus par la présente garantie limitée du fabricant, l'Acheteur doit renvoyer le Produit défectueux à ses frais, dans la mesure où la loi applicable le permet, accompagné de la preuve d'achat et d'une explication du défaut, de la date à laquelle le défaut s'est produit et des circonstances entourant le défaut.

L'Acheteur est responsable de tous les frais de démontage et de montage du Produit et de tous les frais liés à l'enlèvement, à la réinstallation, au transport et à l'assurance. Si Grundfos est tenu par la loi provinciale ou territoriale applicable de payer les frais de transport, l'Acheteur doit contacter le partenaire de service Grundfos pour organiser l'expédition. L'Acheteur doit également répondre rapidement à Grundfos pour toute demande concernant une réclamation au titre de la garantie.

Sauf demande de Grundfos, le Produit ne doit pas être démonté avant d'être remis en état. Tout manquement à ces dispositions entraînera l'annulation de la présente garantie limitée du fabricant.

Grundfos procédera à la réparation du Produit défectueux dans le cadre de cette garantie limitée du fabricant ou, à la convenance de Grundfos, fournira à l'Acheteur un produit de remplacement du Produit défectueux. L'unité de remplacement peut être neuve ou refabriquée.

Dans la mesure autorisée par la loi applicable, Grundfos ne sera pas responsable des dommages accessoires et indirects ou des pertes de quelque nature que ce soit découlant de, liés à ou en rapport avec le Produit, l'utilisation du Produit ou l'incapacité d'utiliser le Produit.

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

Australia

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

Belgium

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
Zrnja 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

Brazil

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
Iztocna 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

China

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 Pumpat AB
Trukkikujua 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

Greece

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 Centre
29-33 Wing Hong Street & 68 King Lam Street, Cheung Sha Wan
Kowloon
Tel.: +852-27861706 / 27861741
Fax: +852-27858664

Hungary

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

India

GRUNDFOS Pumps India Private Limited
118 Old Mahabalipuram Road
Thoraiakkam
Chennai 600 097
Tel.: +91-44 2496 6800

Indonesia

PT GRUNDFOS Pompa
Graha Intirub Lt. 2 & 3
Jln. Cillitan 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

Italy

GRUNDFOS Pompe Italia S.r.l.
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

Latvia

SIA GRUNDFOS Pumps Latvia
Deglava biznesa centrs
Augusta Deglava ielā 60
LV-1035, Rīga,
Tel.: + 371 714 9640, 7 149 641
Fax: + 371 914 9646

Lithuania

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

Malaysia

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

Bombas GRUNDFOS de México
S.A. de C.V.
Boulevard TLC No. 15
Parque industrial Stiva Aeropuerto
Apodaca, N.L. 66600
Tel.: +52-81-8144 4000
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
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
Fax: +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.: +34-91-848 8800
Fax: +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

Taiwan

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 Chaloe 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.
Şti.
Gebze Organize Sanayi Bölgesi
İhsan 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
Tel.: (+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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www.grundfos.com

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