

SQ, SQE

Installation and operating instructions



SQ, SQE
Installation and operating instructions
Other languages
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SQ, SQE

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English (GB) Installation and operating instructions

Original installation and operating instructions

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1. General information



This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.



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

2. Symbols used in this document



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 text accompanying the three hazard symbols DANGER, WARNING and CAUTION is structured in the following way:



SIGNAL WORD

Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.



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.

3. General



WARNING

Electric shock

Death or serious personal injury

- The pump must not be used when people are in the water.

In the section [A.1. Appendix](#) of these installation and operating instructions, you will find copies of the pump and motor nameplates.

Before the SQ/SQE pump is lowered into the borehole, this page should be filled in with the relevant nameplate data.

These installation and operating instructions must be kept in a dry place near the installation site for reference purposes.

3.1 Applications

The **SQ** and **SQE** pumps are designed for pumping thin, clean, non-aggressive, non-explosive liquids, not containing solid particles or fibres.

Typical applications:

- Groundwater supply for
 - private housing
 - small waterworks
 - irrigation systems in for instance green houses.
- Liquid transfer in tanks.
- Pressure boosting.

The **SQE-NE** pumps are designed for pumping thin, clean, non-explosive liquids, not containing solid particles or fibres.

These pumps are suitable for pumping contaminated or hydrogen-carbonate containing groundwater, e.g. from

- dumps
- chemical depots
- industrial areas
- oil and petrol filling stations
- environmental applications.

The **SQE-NE** pumps can also be used for sampling and monitoring and to some extent for incorporation in water treatment systems.

Information applying to all pump types

The maximum sand content of the water must not exceed 50 g/m³. A larger sand content will reduce the life of the pump and increase the risk of blocking.



If liquids with a viscosity higher than that of water are to be pumped, please contact Grundfos.

pH values

SQ and SQE: 5 to 9.

SQE-NE: Please contact Grundfos.

Liquid temperature

The temperature of the pumped liquid must not exceed 35 °C.

4. Technical data

Supply voltage

1 x 200-240 V - 10 %/+ 6 %, 50/60 Hz, PE.

Operation via generator: As a minimum, the generator output must be equal to the motor P1 [kW] + 10 %.

Starting current

The motor starting current is equal to the highest value stated on the motor nameplate.

Power factor

PF = 1.

Motor liquid

Type SML 3.

Motor cable

1.5 m, 3 x 1.5 mm², PE.

Liquid temperature

Maximum 35 °C.

Pump outlet size

SQ 1, SQ 2, SQ 3: Rp 1 1/4.

SQ 5, SQ 7: Rp 1 1/2.

Pump diameter

74 mm.

Borehole diameter

Minimum 76 mm.

Installation depth

Maximum 150 m below static water level.

See also section Installation depths.

Net weight

Maximum 6.5 kg.

Related information

[7.8.2 Installation depths](#)

4.1 Storage

Storage temperature: -20 °C to +60 °C.

4.1.1 Frost protection

If the pump has to be stored after use, it must be stored on a frost-free location or it must be ensured that the motor liquid is frost-proof.

The motor must not be stored without being filled with motor liquid.

4.2 Sound pressure level

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

5. Preparation

Grundfos MS 3 and MSE 3 submersible motors have water-lubricated slide bearings. No additional lubrication is required.

The submersible motors are factory-filled with a special Grundfos motor liquid (type SML 3), which is frost-proof down to $-20\text{ }^{\circ}\text{C}$ and preserved to prevent the growth of bacteria.

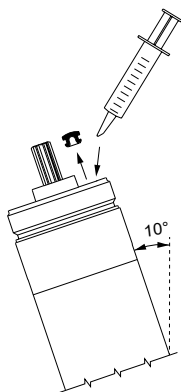
The level of motor liquid is decisive for the operating life of the bearings and consequently the life of the motor.

5.1 Refilling of motor liquid

If for any reason the motor liquid has been drained or lost, the motor must be refilled with Grundfos motor liquid SML 3.

To refill the motor, proceed as follows:

1. Remove the cable guard and separate the pump part from the motor.



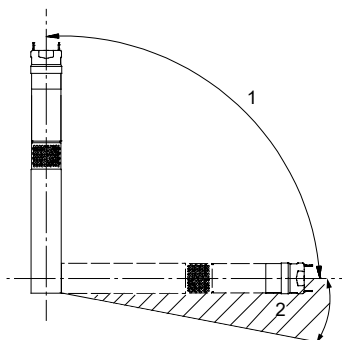
Refilling of motor liquid

2. Place the motor in vertical position with an inclination of approx. 10 ° .
3. Remove the filling plug using a screwdriver or a similar tool.
4. Inject motor liquid into the motor with a filling syringe or the like.
5. To allow possible air to escape, move the motor from side to side.
6. Refit the filling plug and make sure it is tight.
7. Assemble pump part and motor.
8. Refit the cable guard.

The pump is now ready for installation.

5.2 Positional requirements

The pump is suitable for vertical as well as horizontal installation, however, the pump shaft **must never** fall below the horizontal plane. See fig. Positional requirements of the pump.



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Positional requirements of the pump

Pos.	Description
1	Allowed
2	Not allowed

If the pump is to be installed horizontally, e.g. in a tank, and there is a risk that the pump might be covered by mud, it must be fitted in a flow sleeve.

For installation depths, see section Installation depths.

Related information

[7.8.2 Installation depths](#)

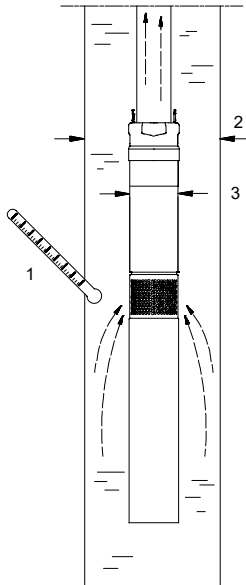
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5.3 Liquid temperatures/cooling

Figure SQ/SQE pump in a borehole shows an SQ/SQE pump installed in a borehole. The pump is operating.

Figure SQ/SQE pump in a borehole illustrates the following:

- borehole diameter
- pump diameter
- temperature of pumped liquid
- flow past the motor to the pump suction strainer.



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SQ/SQE pump in a borehole

Pos.	Description
1	Liquid temperature
2	Borehole diameter
3	Pump diameter

To ensure sufficient cooling of the motor, it is important to observe the maximum liquid temperature of 35 °C under all conditions.



The borehole diameter must be at least 76 mm (approx. 3").

The motor should always be installed above the well screen. If a flow sleeve is used, the pump may be installed freely in the borehole.



Do not let the pump run against a closed discharge pipe for more than 5 minutes. When the discharge pipe is closed, there is no cooling flow and there is a risk of overtemperature in motor and pump.

If the actual temperature of the pumped liquid exceeds the specified value or the operating conditions otherwise fall outside the specified conditions, the pump may stop. Please contact Grundfos.

6. Electrical connection

6.1 General

The electrical connection should be carried out by an authorised electrician in accordance with local regulations.



The pump must never be connected to a capacitor or to another type of control box than CU 300 or CU 301.

The pump must never be connected to an external frequency converter.

WARNING

Electric shock

Death or serious personal injury

- Before starting work on the pump, make sure that the power supply has been switched off and that it cannot be accidentally switched on.
- The pump must be earthed.
- The pump must be connected to an external mains switch with a minimum contact gap of 3 mm in all poles.
- If the motor cable is damaged, it must be replaced by Grundfos, an authorised Grundfos service workshop or similarly qualified persons to avoid a hazard.



The supply voltage, rated maximum current and power factor (PF) appear from the motor nameplate.

The required voltage for Grundfos submersible motors, measured at the motor terminals, is - 10 %/+ 6 % of the nominal voltage during continuous operation (including variation in the supply voltage and losses in cables).


WARNING

Electric shock

Death or serious personal injury

- If the pump is connected to an electric installation where an earth-leakage circuit breaker (ELCB) is used as an additional protection, this circuit breaker **must** trip out when earth fault currents with DC content (pulsating DC) occur.



The earth leakage circuit breaker **must** be marked with the following symbol: .

Supply voltage

1 x 200-240 V - 10 %/+ 6 %, 50/60 Hz, PE.

The current consumption can only be measured by means of a true RMS instrument. If other instruments are used, the value measured will differ from the actual value.

On SQ/SQE pumps, a leakage current of 2.5 mA at 230 V, 50 Hz, can typically be measured. The leakage current is proportional to the supply voltage.

The SQE and SQE-NE pumps can be connected to a control box, type CU 300 or CU 301.

6.2 Motor protection

The motor incorporates thermal overload protection and requires no additional motor protection.

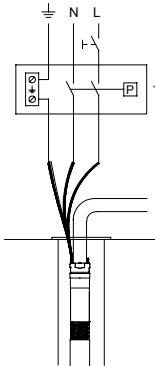
6.3 Connection of motor

The motor incorporates a starter device and can therefore be connected directly to the mains.

Start/stop of the pump will typically be done via a pressure switch. See fig. Connection of motor.



The pressure switch must be rated for the maximum amps of the specific pump size.



Connection of motor

Pos.	Description
1	Pressure switch

7. Installation

7.1 General

WARNING

Electric shock

Death or serious personal injury



- Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

WARNING

Contamination when pumping drinking water

Death or serious personal injury



- Before the pump is used for supplying drinking water, flush the pump thoroughly with clean water.
- Do not use the pump for drinking water if the internal parts have been in contact with particles or substances not suitable for water intended for human consumption.



The pump must be installed according to national water regulations and standards.



Do not lower or lift the pump by means of the motor cable.

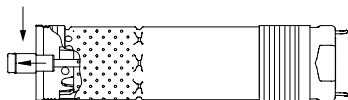
The separate data plate supplied with the pump should be fixed close to the installation site.

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7.2 Assembly of pump part and motor

To assemble pump part and motor, proceed as follows:

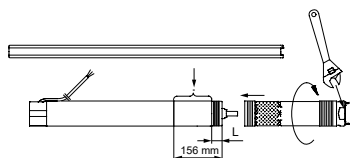
1. Place the motor horizontally in a vice and tighten it. See fig. Assembly of pump part and motor.
2. Pull the pump shaft out to the position shown in fig. Position of pump shaft.



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Position of pump shaft

3. Grease the motor shaft end with the grease supplied with the motor.
4. Screw the pump part on the motor (55 Nm). **Caution:** The pump shaft must engage with the motor shaft. A spanner may be used on the clamping faces of the pump part. See fig. Assembly of pump part and motor.



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Assembly of pump part and motor

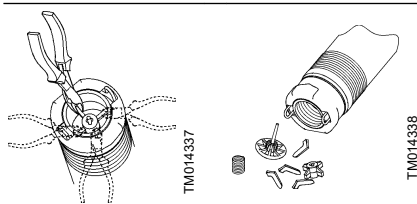
Motor (P2) [kW]	L [mm]
0.70	120
1.15	102
1.55	84
1.85	66

When pump part and motor have been assembled correctly, there must not be a clearance between pump part and motor.

7.3 Removal of non-return valve

If a pump without non-return valve is required, the valve can be removed as follows:

1. Cut off the legs of the valve guide using side-cutting pliers or a similar tool. See fig. Removal of non-return valve.
2. Turn the pump upside down.
3. Check that all loose parts fall out of the pump.



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Removal of non-return valve



SQE-NE is supplied without non-return valve.

The non-return valve can be fitted in a Grundfos service workshop.

7.4 Fitting the cable plug to the motor

WARNING

Electric shock

Death or serious personal injury



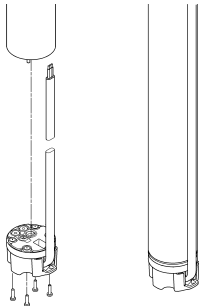
- The motor plug must under no circumstances be removed by the user.
- The cable with plug must be fitted or removed by an authorised Grundfos service workshop or a similarly qualified person.

The following description is exclusively intended for service personnel. If the motor cable is to be replaced, see section General.

The cable plug supplied with the motor is factory-greased. Check that the plug is greased correctly.

To fit the cable plug, proceed as follows:

1. Check that the cable is of the correct type, cross-section and length.
2. Check that the mains on the location has correct connection to earth.
3. Check that the motor socket is clean and dry. Make sure that the loose gasket has been fitted.
4. Press the cable plug onto the motor socket. The plug cannot be fitted wrongly. See fig. Fitting the cable plug onto the motor socket.



Fitting the cable plug onto the motor socket

5. Fit and tighten the four screws (1 - 1.5 Nm). See fig. Fitting the cable plug onto the motor socket.

When the plug has been fitted, there must not be a clearance between the motor and the cable plug.

Related information

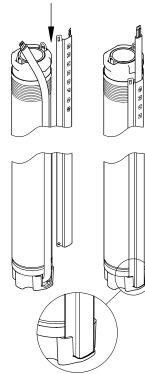
6.1 General

7.5 Fitting the cable guard

To fit the cable guard, proceed as follows:

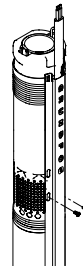
1. Make sure that the submersible drop cable lies flat in the cable guard.

2. Place the cable guard in the groove in the cable plug. The two flaps of the cable guard must engage with the upper edge of the pump sleeve. See fig. Placement of the cable guard in the cable plug.



Placement of the cable guard in the cable plug

3. Fasten the cable guard to the pump suction strainer with the two self-tapping screws supplied. See fig. Fastening of the cable guard to the pump suction strainer.



Fastening of the cable guard to the pump suction strainer

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7.6 Cable sizing

Before you install the pump, make sure to use the right cable size for the submersible drop cable.



The cross-section of the submersible drop cable must be large enough to meet the voltage requirements.

How to calculate the maximum cable length

If the power factor (PF) of the motor unit equals 1.0, you can use this equation to calculate the maximum cable length:

$$L_{MAX} = \frac{U \cdot \Delta U}{I \cdot 2 \cdot 100 \cdot \left(\frac{\rho}{q}\right)}$$

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Explanation of the equation

Symbol	Unit	Description
L_{MAX}	[m]	Maximum cable length
U	[V]	Supply voltage
ΔU	[%]	Maximum recommended voltage drop in percentage
I	[A]	Maximum motor current
ρ	[Ω mm ² /m]	Specific resistance of the cable
q	[mm ²]	Cross-sectional area of the individual wires in the submersible drop cable

Maximum motor current

The maximum motor current depends on the motor properties and electrical installation. According to IEC 60364-5-52:2009 the installation and cable must be dimensioned for a current that is higher than the maximum motor current.

Maximum recommended voltage drop

- According to IEC 60364-5-52:2009 for installation in domestic applications, the maximum recommended voltage drop is 5 % for cable lengths up to 100 m.
- For installation in industrial applications and in regions where the IEC standard is not applicable, local regulations may require that a different maximum value for voltage drop must be used for the calculation of the maximum cable length.

Specific resistance of the drop cables

The specific resistance of the drop cables supplied by Grundfos for SQ and SQE pumps is 0.02 Ω mm²/m.

Maximum cable lengths for Grundfos MSF 3 motors

Calculation of maximum cable length for the different motor sizes is based on a voltage drop of 5 % and a supply voltage of 240 V.

If the calculation above cannot be used, go to Grundfos Product Center for sizing.

7.7 Fitting the submersible drop cable

It is recommended to join the submersible drop cable and the motor cable by means of a Grundfos cable termination kit, type KM.

Cable termination kit, type KM	
Cross-sectional area	Product number
1.5 to 6.0 mm ²	96021473

For larger cross-sections, please contact Grundfos.

7.8 Pipework connection

If a tool, e.g. a chain pipe wrench, is used when the riser pipe is fitted to the pump, the pump must only be gripped by the pump discharge chamber.

When connecting plastic pipes, a compression coupling should be used between the pump and the first pipe section.

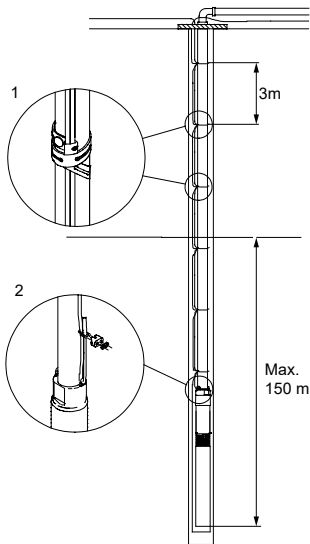


For pumps fitted with plastic pipes, the expansion of the pipes when loaded should be taken into consideration, when deciding on the installation depth of the pump.

Where flanged pipes are used, the flanges should be slotted to take the submersible drop cable.

Figure Pipework connection shows a pump installation with indication of:

- position of cable clips, pos. 1, and distance between the clips.
- fitting of straining wire, pos. 2.
- maximum installation depth below the static water level.



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Pipework connection

7.8.1 Cable clips

Cable clips must be fitted every 3 metres. See fig. Pipework connection.

When connecting plastic pipes, some slackness must be left between each cable clip as plastic pipes expand when loaded.

Where flanged pipes are used, the cable clips should be fitted above and below each joint.

7.8.2 Installation depths

Maximum installation depth below the static water level: 150 metres. See fig. Pipework connection.

Minimum installation depths below the dynamic water level:

- **Vertical installation:** During start-up and operation, the pump must always be completely submerged in water.
- **Horizontal installation:** The pump must be installed and run at least 0.5 metres below the dynamic water level. If there is a risk that the pump might be covered by mud, the pump must always be fitted in a flow sleeve.

7.8.3 When lowering the pump into the borehole

It is recommended to secure the pump by an unloaded straining wire. See fig. Pipework connection, pos. 2.

Slacken the straining wire so that it becomes unloaded and lock it to the borehole seal by means of wire locks.



The straining wire must not be used for pulling the pump with riser pipe out of the borehole.



Do not lower or lift the pump by means of the motor cable.

8. Start-up

Make sure that the well is capable of yielding a minimum quantity of water corresponding to the pump capacity.

Do not start the pump until it is completely submerged in the liquid.

Start the pump and do not stop it until the pumped liquid is completely clean, as otherwise the pump parts and the non-return valve may choke up.

9. Operation

9.1 Minimum flow rate

To ensure the necessary cooling of the motor, the pump flow rate should never be set to a value lower than 50 l/h.

If the flow rate suddenly falls, the reason might be that the pump is pumping more water than the borehole can yield. The pump must be stopped and the fault corrected.



The pump dry-running protection is effective only within the recommended duty range of the pump.

9.2 Selection of diaphragm tank and setting of precharge pressure and pressure switch

WARNING

Pressurised system

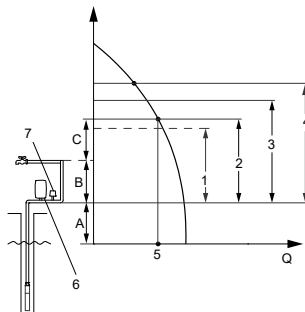
Death or serious personal injury

- The installation must be designed for the maximum pump pressure.



As the pump has a built-in soft starter giving a run-up time of 2 seconds, the pressure at the pressure switch and diaphragm tank during starting will be lower than the pump cut-in pressure set on the pressure switch (Pcut-in). This lower pressure is called minimum pressure (Pmin).

Pmin is equal to the desired minimum pressure at the highest tap + head and head loss in the pipe from the pressure switch and diaphragm tank to the highest tap ($P_{min} = B + C$). See fig. Diaphragm tank and pressure switch.



Diaphragm tank and pressure switch

Pos.	Description
1	Ppre
2	Pmin
3	Pcut-in
4	Pcut-out
5	Qmax
6	Diaphragm tank
7	Pressure switch

A: Head + head loss from dynamic water level to diaphragm tank.

B: Head + head loss from diaphragm tank to highest tap.

C: Minimum pressure at highest tap.



Make sure that the selected pump can deliver a pressure higher than $P_{cut-out} + A$.

Ppre:	Precharge pressure of diaphragm tank.
Pmin:	Desired minimum pressure.
Pcut-in:	Cut-in pressure set on pressure switch.
Pcut-out:	Cut-out pressure set on pressure switch.
Qmax:	Maximum flow at Pmin.

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9.3 Well system pressure overload

In order to provide protection against overpressure, install a pressure relief valve downstream of the well head. The setpoint of the pressure relief valve must be at least 30 psi above the pressure setting.

If you install a relief valve, we recommend that you connect it to an appropriate drainage point.

Using P_{min} and Q_{max} , the **minimum** diaphragm tank size, precharge pressure and pressure switch settings can be found in the guideline table below:

Example

$P_{min} = 35$ m head, $Q_{max} = 2.5$ m³/h.

On the basis of this information, the following values can be found in the table:

Minimum diaphragm tank size = 33 litres.

P_{pre}	=	31.5 m head																			
P_{cut-in}	=	36 m head																			
$P_{cut-out}$	=	50 m head																			
<hr/>																					
P_{min} [m]	Q_{max} [m ³ /h]																P_{pre} [m]	P_{cut-in} [m]	$P_{cut-out}$ [m]		
	0.6	0.8	1	1.2	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7				7.5	8
Diaphragm tank size [litres]																					
25	8	8	18	18	18	18	24	33	33	50	50	50	50	80	80	80	80	80	22.5	26	40
30	8	8	18	18	18	24	33	33	50	50	50	50	80	80	80	80	80		27	31	45
35	8	18	18	18	18	24	33	33	50	50	50	80	80	80	80	80			31.5	36	50
40	8	18	18	18	18	24	33	50	50	50	80	80	80	80	80				36	41	55
45	8	18	18	18	24	33	33	50	50	50	80	80	80	80					40.5	46	60
50	8	18	18	18	24	33	50	50	50	80	80	80	80						45	51	65
55	18	18	18	18	24	33	50	50	50	80	80	80							49.5	56	70
60	18	18	18	18	24	33	50	50	80	80	80	80							54	61	75
65	18	18	18	24	24	33	50	50	80	80	80	80							58.5	66	80

1 m head = 0.098 bar.

9.4 Built-in protection

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

In case of overload, the built-in overload protection will stop the pump for 5 minutes. After that period, the pump will attempt to restart.

If the pump has been stopped as a result of dry running, it will start automatically after 5 minutes.

If the pump is restarted and the borehole is empty, the pump will stop after 30 seconds.

Resetting of the pump: Switch off the power supply for 1 minute.

The motor is protected in case of:

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

SQE pumps/MSE 3 motors



Via the CU 300 or CU 301, the dry-running stop limit of the MSE 3 motors can be adjusted to match the actual application.

10. Maintenance and service

The pumps are normally maintenance-free.

Deposits and wear may occur. For that purpose, service kits and service tools are available from Grundfos. The Grundfos Service Manual is available on request.

The pumps can be serviced at a Grundfos service centre.

10.1 Contaminated pumps



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

If Grundfos is requested to service the pump, Grundfos must be contacted with details about the pumped liquid, etc. *before* the pump is returned for service. Otherwise, Grundfos can refuse to accept the pump for service.

However, any application for service (no matter to whom it may be made) must include details about the pumped liquid if the pump has been used for liquids which are injurious to health or toxic.

SQE-NE: Only pumps that can be certified as uncontaminated, i.e. pumps containing no hazardous and/or toxic material, may be returned to Grundfos for servicing.

To prevent injury to the health of persons involved and to the environment, a document certifying that the pump is clean is required.

Grundfos must receive this certificate before the product. Otherwise, Grundfos will refuse to accept the product for servicing.

Possible costs of returning the pump are paid by the customer.

11. Fault finding chart



CAUTION

Electric shock

Minor or moderate personal injury

- Before starting any work on the pump/motor, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

11.1 The pump does not run.

Cause	Remedy
The fuses in the electric installation are blown.	Replace the blown fuses. If the new ones blow too, the electric installation and the submersible drop cable should be checked.
The ELCB or the voltage-operated ELCB has tripped out.	Cut in the circuit breaker.
No power supply.	Contact the power supply authorities.
The motor protection has cut off the power supply due to overload.	Check whether the motor/pump is blocked.
The pump/submersible drop cable is defective.	Repair/replace the pump/cable.
Overvoltage or undervoltage has occurred.	Check the power supply.

11.2 The pump runs but gives no water.

Cause	Remedy
The discharge valve is closed.	Open the valve.
No water or too low water level in borehole.	See item 3 a).
The non-return valve is stuck in its closed position.	Pull out the pump and clean or replace the valve.
The suction strainer is choked up.	Pull out the pump and clean the strainer.
The pump is defective.	Repair/replace the pump.

11.3 The pump runs at reduced capacity.

Cause	Remedy
The drawdown is larger than anticipated.	Increase the installation depth of the pump, throttle the pump or replace it by a smaller model to obtain a smaller capacity.
The valves in the discharge pipe are partly closed/ blocked.	Check and clean/replace the valves, if necessary.
The discharge pipe is partly choked by impurities (ochre).	Clean/replace the discharge pipe.
The non-return valve of the pump is partly blocked.	Pull out the pump and check/replace the valve.
The pump and the riser pipe are partly choked by impurities (ochre).	Pull out the pump. Check and clean or replace the pump, if necessary. Clean the pipes.
The pump is defective.	Repair/replace the pump.
Leakage in the pipework.	Check and repair the pipework.

Cause	Remedy
The riser pipe is defective.	Replace the riser pipe.
Undervoltage has occurred.	Check the power supply.

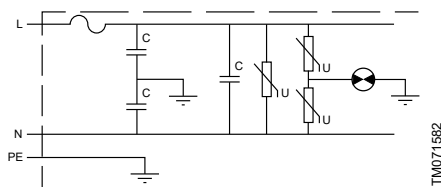
11.4 Frequent starts and stops.

Cause	Remedy
The differential of the pressure switch between the start and stop pressures is too small.	Increase the differential. However, the stop pressure must not exceed the operating pressure of the pressure tank, and the start pressure should be high enough to ensure sufficient water supply.
The water level electrodes or level switches in the reservoir have not been installed correctly.	Adjust the intervals of the electrodes/level switches to ensure suitable time between the cutting-in and cutting-out of the pump. See installation and operating instructions for the automatic devices used. If the intervals between stop/start cannot be changed via the automatics, the pump capacity may be reduced by throttling the discharge valve.
The non-return valve is leaking or stuck half-open.	Pull out the pump and clean/replace the non-return valve.
The supply voltage is unstable.	Check the power supply.
The motor temperature gets too high.	Check the water temperature.

11.5 Megging



Do not meg an installation incorporating this product as the built-in electronics may be damaged.



Megging

12. Checking the power supply

WARNING

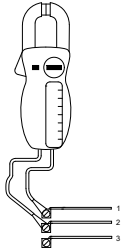
Electric shock

Death or serious personal injury



- Before starting any work on the pump/motor, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

1. Supply voltage



TM001371

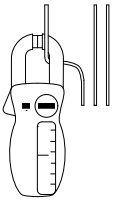
Measure the voltage (RMS) between phase and neutral. Connect the voltmeter to the terminals at the connection.

The voltage should, when the motor is loaded, be within the range specified in section [6.1 General](#).

Large variations in supply voltage indicate poor power supply, and the pump should be stopped until the defect has been remedied.

Pos.	Description
1	L
2	N
3	PE

2. Current consumption



TM001372

Measure the current (RMS) while the pump is operating at a constant discharge head (if possible, at the capacity where the motor is most heavily loaded).

For maximum current, see nameplate.

If the current exceeds the full load current, there are the following possible faults:

- Poor connection in leads, possibly in the cable joint.
- Too low supply voltage, see item 1.

13. Environment

During handling, operation, storage and transport, all environment regulations dealing with the handling of hazardous materials must be observed.

WARNING

Corrosive substance

Death or serious personal injury



- When the pump is taken out of operation, it must be ensured that no hazardous material is left in the pump/motor and the riser pipe, which can be injurious to persons and the environment.

In case of doubt, please contact Grundfos or the local authorities.

14. 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.

Appendix A





A.1. Appendix


Nameplates to be filled in


GRUNDFOS 
DK-8850 Bjerringbro, Denmark


Pumpunit: _____
 Model: _____-_____-_____
 SN: _____

SQ/SQE _____
 Q: ____m³/h H: ____m
 Stages: _____
 P2 motor: ____kW
 Weight: ____kg
 Rp: _____
 MADE IN _____


   



Rotation direction 





UK importer:
 Grundfos Pumps Ltd.
 Grovebury Road,
 Leighton Buzzard,
 LU7 4TL 


TM082278


GRUNDFOS 
DK-8850 Bjerringbro, Denmark


PN: _____
 Model: _____-_____-_____
 SN: _____

SQ/SQE _____
 Pumpunit: _____
 Stages: _____
 Q: ____m³/h H: ____m
 I: ____A P1: ____kW
 P2 motor: ____kW
 Weight: ____kg
 Rp: _____
 MADE IN _____



Rotation direction 

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TM082237

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ECM: 1334401

www.grundfos.com

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