S pumps, ranges 50-70

S1, S2, S3, ST, SV
7.5 - 155 kW

Installation and operating instructions

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Original installation and operating instructions.

CONTENTS

Warning

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

1. Symbols used in this document

Warning

If these safety instructions are not observed, it may result in personal injury.

Warning

If these instructions are not observed, it may lead to electric shock with consequent risk of serious personal injury or death.

Warning

The surface of the product may be so hot that it may cause burns or personal injury.

Warning

These instructions must be observed for explosion-proof pumps. We recommend that you also follow these instructions for standard pumps.

Warning

The sound pressure level is so high that hearing protection must be used.

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

Note ***Notes or instructions that make the job easier and ensure safe operation.***

2. General description

This booklet includes instructions for installation, operation and maintenance of Grundfos submersible sewage and wastewater S pumps, range 50-70, fitted with motors of 7.5 to 160 kW.

The booklet also includes specific instructions for the explosion-proof pumps.

Special conditions for safe use of S pumps, range 50-70 Ex:

1. Make sure the moisture switches and thermal switches are connected in two separate circuits and have separate alarm outputs (motor stop) in case of high humidity or high temperature in the motor.
2. Bolts used for replacement must be class A4-80 or A2-80 according to EN/ISO 3506-1.
3. The flame path gaps of the motor are specified by the manufacturer and are narrower than standard.
   Note: In case of repairs always use original service parts from the manufacturer as this ensures correct dimensions of flame path gaps.
4. During operation the cooling jacket, when fitted, must be filled with pumped liquid. The level of pumped liquid must be controlled by level switches connected to the motor control circuit.
5. The minimum level depends on the installation type and is specified in these installation and operating instructions.
6. Make sure the permanently attached cable is suitably mechanically protected and terminated in a suitable terminal board.

2.1 Applications

S pumps, range 50-70 are designed for the pumping of sewage and wastewater in a wide range of municipal, private and industrial applications.

Depending on the installation type, the pumps can be used for submerged or dry, horizontal or vertical installation.

Maximum solids size: 80-145 mm depending on range.

2.1.1 Potentially explosive environments

Use the explosion-proof S pumps, range 50-70, in potentially explosive environments. See section *2.5.1 Ex certification and classification*.

Note ***The explosion classification of the pump is Ex bc d IIB T3. The installation must be approved by the local authorities in each individual case.***

2.2 Operating conditions

2.2.1 pH value

All pumps can be used for pumping liquids with a pH value between 4 and 10.

2.2.2 Liquid temperature

0 °C to +40 °C.

2.2.3 Ambient temperature

-20 °C to +40 °C.

2.2.4 Density and viscosity of pumped liquid

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

2.2.5 Flow velocity

It is advisable to keep a minimum flow velocity to avoid sedimentations in the piping system.

Recommended velocities

In vertical pipes: 0.7 m/s

In horizontal pipes: 1.0 m/s

2.2.6 Level of pumped liquid

For a submerged pump, installation type C, the lowest stop level must always be above the pump housing.

Warning

Dry-running is not allowed.

The level of pumped liquid must be controlled by level switches connected to the motor control circuit. The minimum level depends on the installation type and is specified in these installation and operating instructions.

Installation type	Description	Accessories
S	Sewage pump without cooling jacket for submerged installation on auto coupling.	Auto coupling
C	Sewage pump with cooling jacket for submerged installation on auto coupling.	Auto coupling
D	Sewage pump with cooling jacket for dry vertical installation.	Range 50, 54, 58 and 62: Base stand for vertical installation.
		Range 66 and 70: Base plate for vertical installation.
ST	Sewage pump with or without cooling jacket for vertical installation in column pipe.	Seat ring for vertical installation in column pipe.
H	Sewage pump with cooling jacket for dry horizontal installation.	Base stand for horizontal installation.

To ensure adequate cooling of the motor during operation, the following minimum requirements must be met:

- **Installation type S**
  For S1 operation (continuous operation), the pump must always be covered by the pumped liquid to the top of the motor.
  For S3 operation (intermittent operation), the pump must always be covered by the pumped liquid to the middle of the motor.

Warning

Installation type S pumps must always be fully submerged in the pumped liquid to be Ex protected.

- **Installation type C**
  The pump housing must always be covered by the pumped liquid.

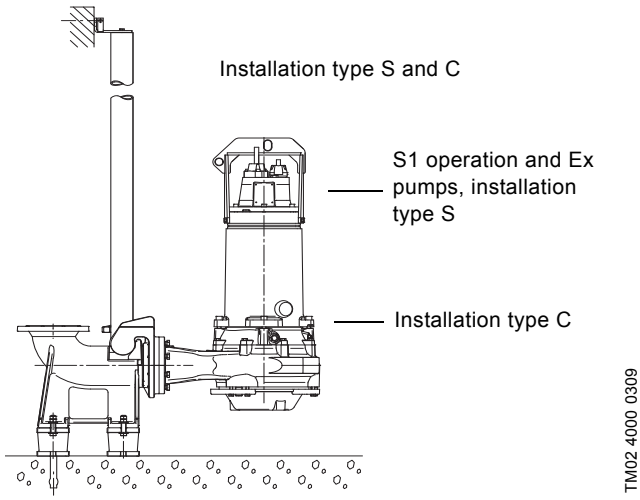

Fig. 1 Liquid level

- **Installation type D and H**
  No special requirements.
- **Pump type ST**
  The liquid level must be at least 350 mm above the pump inlet. See fig. 9.

2.2.7 Operating mode

The pumps are designed for continuous operation or for intermittent operation with the maximum number of starts per hour stated in the table below:

S pump, range	Starts per hour
50 54 58	20
62 66 70	15

2.2.8 Enclosure class

IEC IP68.

2.3 Sound pressure level

Warning

Depending on the installation type the sound pressure level of the pump can be higher than 70 dB(A).

When working nearby such an installation in operation, hearing protection must be used.

2.4 Type key

All S pumps, range 50-70, described in this booklet are identified by the type code stated in the confirmation of order and other documentation supplied with the pump.

Please note that the pump type described in this booklet is not necessarily available in all variants.

Code	Example	S	1	.100	.100	.55	4	.50	M	.S	.205	.G	.N	.D	.5	11	.Z

Pump type
- S — Grundfos sewage and wastewater pump
- ST — Multi-channel impeller pump installed in column pipe

Impeller type
- 1 — Single-channel
- 2 — Two-channel
- 3 — Three-channel
- V — SuperVortex

Pump passage
Maximum solids size [mm]

Pump discharge
Nominal diameter of pump discharge port [mm]

Output power P2
Code number from type designation / 10 [kW]

Number of poles
- 2 — 2-pole motor
- 4 — 4-pole motor
- 6 — 6-pole motor
- 8 — 8-pole motor
- 10 — 10-pole motor
- 12 — 12-pole motor

Pump range
- 50 — Range 50
- 54 — Range 54
- 58 — Range 58
- 62 — Range 62
- 66 — Range 66
- 70 — Range 70

Pressure version
- S — Super high
- H — High
- M — Middle
- L — Low
- E — Extra low
- F — Super low

Installation type
- S — Submersible installation without cooling jacket
- C — Submersible installation with cooling jacket
- D — Dry, vertical installation
- H — Dry, horizontal installation

Actual impeller diameter [mm]

Material code for impeller, pump- and motor housing
- G — Cast iron impeller, pump housing and motor housing
- Q — Stainless steel impeller, DIN W.-Nr. 1.4408
- S — Stainless steel impeller and pump housing, DIN W.-Nr. 1.4408
- R — Stainless steel impeller, pump housing and motor housing, DIN W.-Nr. 1.4408

Pump version
- N — Non-ex pump
- Ex — Pump with explosion-proof motor

Sensor version
- B — S pump with built-in SM 113 module. PTC sensors are connected directly to IO 113 or other PTC relay.
- C — Not in use
- D — S pump without built-in SM 113 module

Frequency:
- 5 — 50 Hz
- 6 — 60 Hz

Voltage code and connection:

50 Hz:
- 11 — 3 x 400 / 690 V — Y/D
- 13 — 3 x 415 / (719) V — Y/D

60 Hz:
- 11 — 3 x 460 / (797) V — Y/D
- 15 — 3 x 380 / 660 V — Y/D

- Z — Custom-built products

2.5 Nameplate

All pumps can be identified by means of the nameplate on the motor top cover. See fig. 2. If the nameplate is missing or damaged, the pump can be identified by the serial number stamped under the nameplate.

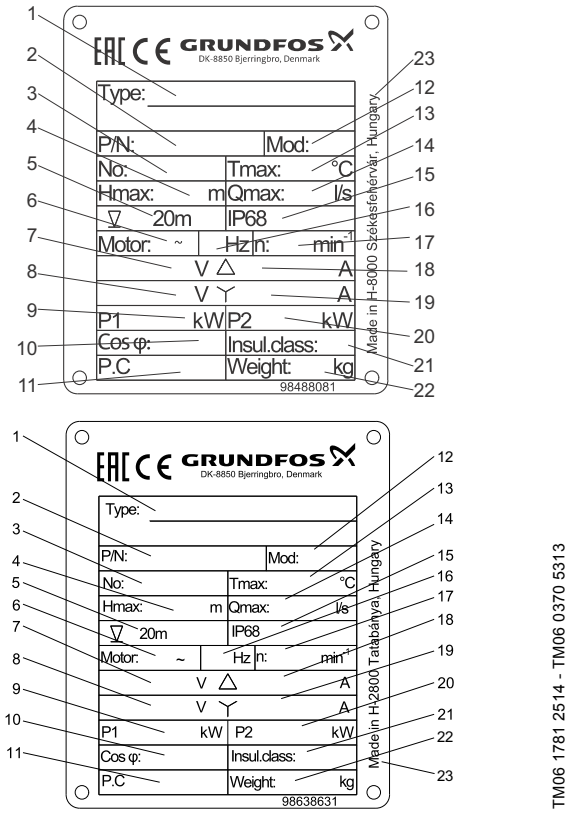

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Fig. 2 Pump nameplate

Pos.	Description
1	Type designation
2	SAP code
3	Serial number
4	Maximum head [m]
5	Maximum installation depth [m]
6	Number of phases
7	Voltage, delta connection
8	Voltage, star connection
9	Rated power input
10	Cos φ, 1/1 load
11	Production code (YY/WW)
12	Production number
13	Maximum liquid temperature [°C]
14	Maximum flow rate [l/s]
15	Enclosure class
16	Frequency [Hz]
17	Rated speed
18	Current, delta connection
19	Current, star connection
20	Rated power output
21	Insulation class
22	Net weight [kg]
23	Production site

2.5.1 Ex certification and classification

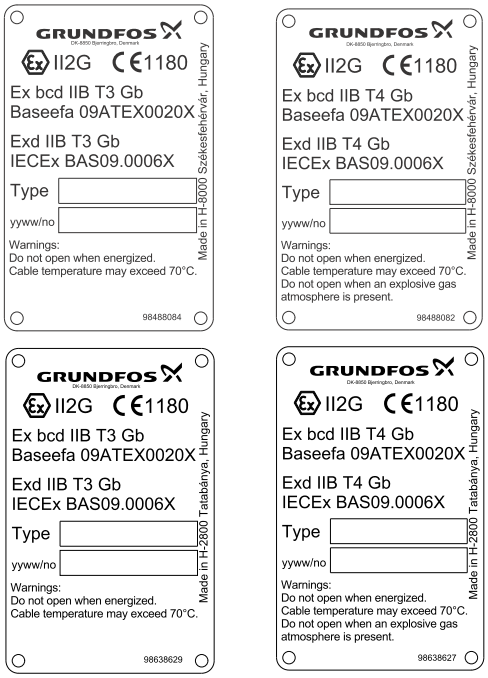
Direct drive, 50 or 60 Hz: CE 1180 II2 G Ex bc d IIB T4.

Frequency converter drive: CE 1180 II2 G Ex bc d IIB T3.

Explosion-proof pumps have been approved by Baseefa (2001) Ltd. in conformity with the essential health and safety requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Council Directive 94/9/EC (ATEX).

The certified pumps (Ex pumps) are supplied with an approval plate fixed in the visible place close to the nameplate.

Figure 3 shows the approval plates for the pumps equipped optionally with the motors classified to T3 or T4 temperature class.



TM06 1779 2814 - TM06 1780 2814 - TM05 8222 2113 - TM05 8224 2113

Fig. 3 Approval plates of explosion-proof pumps, T3 and T4 classification

The approval plate gives the following details:

Ex	EU ex-symbol
II	Equipment group (II = non-mining)
2	Equipment category (high protection)
G	Type of explosive atmosphere
CE	CE mark
1180	Number of quality assurance notified body
Ex	Motor explosion-proof according to European standard
b	Control of ignition sources
c	Constructional safety
d	Motor withstands explosion pressure
IIB	Gas group (ethylene)
T3	Maximum surface temperature of the motor is 200 °C
T4	Maximum surface temperature of the motor is 135 °C
Gb	Equipment protection level, zone 1
Baseefa	Certificate number
IECEx	Certificate number

3. Safety

Warning

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

Warning

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

Warning

It must be possible to lock the mains switch in position 0. Type and requirements as specified in EN 60204-1, 5.3.2.

For safety reasons, all work in tanks must be supervised by a person outside the pump tank.

Tanks for submersible sewage and wastewater pumps contain sewage and wastewater with toxic and/or disease-causing substances. Therefore, all persons involved must wear appropriate personal protective equipment and clothing and all work on and near the pump must be carried out under strict observance of the hygiene regulations in force.

Warning

For some installation types, the surface temperature may be up to 90 °C.

Warning

Make sure that the lifting eye bolts are tightened before attempting to lift the pump. Tighten if necessary. Carelessness during lifting or transportation may cause injury to personnel or damage to the pump.

Warning

Make sure the rated lifting capacity of the lifting equipment (lifting chain etc.) is adequate before attempting to lift the pump.

The rated lifting capacity of the lifting equipment is marked in the identification label. The weight of the pump is marked in the pump nameplate.

3.1 Lifting points for submerged and dry vertical installation (S/C/D)

When lifting the pump, it is important to use the right lifting point to keep the pump balanced. S pumps model S/C/D are equipped with a bracket with lifting points ensuring that the pump can be lifted in a safe manner. See fig. 4 and table below to find the correct lifting point.

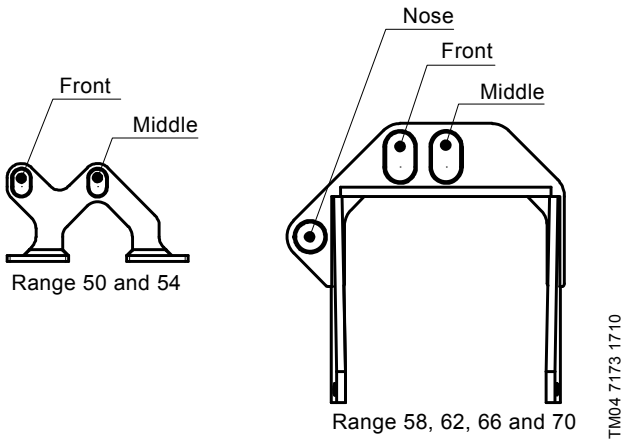


Fig. 4 Lifting points

Discharge flange size	Pump range					
	50	54	58	62	66	70
DN80	Middle	Middle	-	-	-	-
DN100	Middle	Middle	-	-	-	-
DN125	Middle	Middle	Middle	Middle	-	-
DN200	Front	Front	Front	Middle	Middle	Middle
DN250	-	Front	-	-	Middle	Middle
DN300	-	-	Front	Middle	Middle	Middle
DN500	-	-	-	-	Nose	Front
DN600	-	-	-	-	Nose	Front

4. Transportation and storage

The pump is supplied from the factory in proper packing in which it should remain until it is to be installed.

Make sure that the pump cannot roll or fall over.

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

Warning

Always lift the pump by its lifting bracket or by means of a fork-lift truck, never by means of the motor cable or the hose/pipe.

Caution

Do not remove the insulation from the free end of the supply cable until the electrical connection is to be made. Whether insulated or not, the free cable end must never be exposed to moisture or water. Non-compliance with this may cause damage to the motor.

For long periods of storage, the pump must be protected against moisture and heat.

Storage temperature: -30 °C to +60 °C.

Warning

If the pump is stored for more than one year or it will be a long time before it is put into operation after the installation, the impeller must be turned at least once a month.

After a long period of storage, the pump should be inspected before it is put into operation. Make sure that the impeller can rotate freely. Pay special attention to the condition of the shaft seals and the cable entry.

5. Installation

Warning

During installation, always support the pump by means of lifting chains or place it in horizontal position to secure stability.

Warning

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

Any external voltage connected to the pump must be switched off before working on the pump.

The extra nameplate supplied with the pump should be fixed at the installation site.

All safety regulations must be observed at the installation site, for instance the use of blowers for fresh-air supply to the tank.

Warning

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

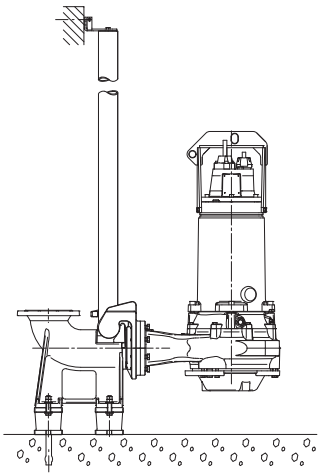
Prior to installation, check the oil level in the oil chamber.
See section *9.1 Oil check and oil change*.

5.1 Installation type

S pumps, range 50-70 are designed for various installation types.

Figures 5 to 9 show the possible installation types.

Installation type S and C



TM02 4000 0309

Fig. 5 Submerged installation on auto coupling

Caution ***Avoid pipe tension at flanges and bolts.***

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

Permanent installation in tank

The pump can easily be pulled out and lowered into the tank by means of the guide rails. The liquid level can be set lower for type C than for type S. See fig. 1.

Installation type D

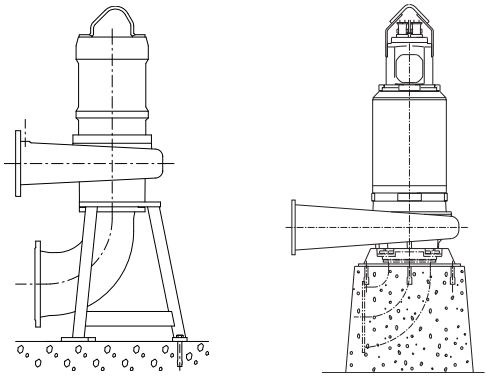


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Fig. 6 Dry, vertical installation with base stand (left) and base plate on two concrete pedestals (right)

Permanent installation in a pump room

The pump is bolted to the suction and discharge pipes by means of flange connections. Pumps with DN 500 or DN 600 flange are to be installed on a concrete foundation (see the above figure to the right).

Installation type S and C

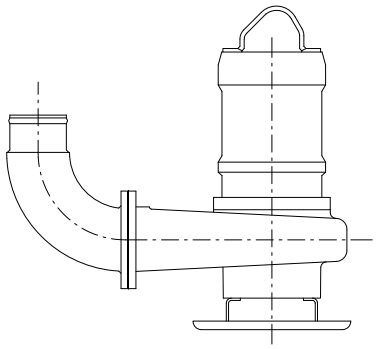

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Fig. 7 Submerged, temporary installation

Temporary installation in a tank

The liquid level can be set lower for type C than for type S. See fig. 1.

Installation type H

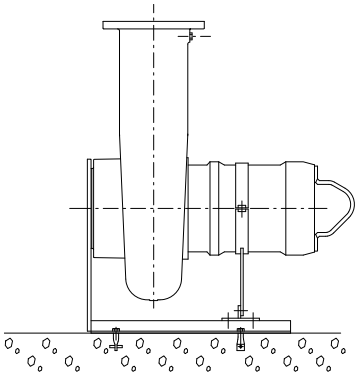

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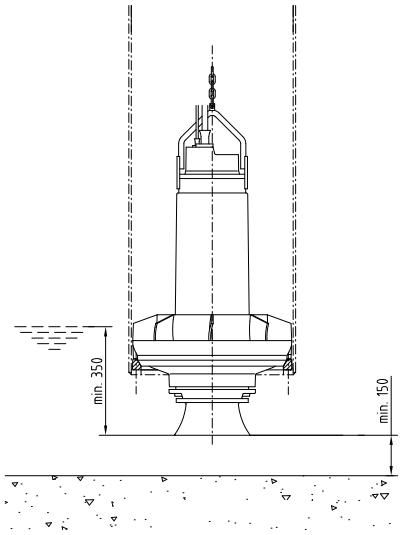
Fig. 8 Dry horizontal installation with base stand and bracket

Permanent installation in a pump room

The pump is bolted to the suction and discharge pipes by means of flange connections.

Pump type ST



TM02 2494 4401

Fig. 9 Vertical column pipe installation

Vertical column pipe installation in steel pipe or concrete shaft.

5.2 Submerged installation on auto coupling

Pumps for permanent installation can be installed on a stationary auto coupling and operated completely or partially submerged in the pumped liquid.

Note

Make sure that the pipework is installed without the use of undue force. No loads from the pipework weight must be carried by the pump. We recommend the use of loose flanges to ease the installation and to avoid pipe tension at flanges and bolts.

Note

Do not use elastic elements or bellows in the pipework; these elements should never be used as a means to align the pipework.

Note

In some installations, a plinth is required beneath the auto coupling to ensure correct installation of the pump. This should be considered during the design of the installation.

1. Drill mounting holes for the guide rail bracket on the inside of the tank and fasten the guide rail bracket provisionally with two screws.
2. Place the auto-coupling base unit on the bottom of the tank. Use a plumb line to establish the correct positioning. Fasten the auto coupling with expansion bolts. If the bottom of the tank is uneven, the auto-coupling base unit must be supported so that it is level when being fastened.
3. Assemble the discharge pipe in accordance with the generally accepted procedures and without exposing the pipe to distortion or tension.
4. Place the guide rails on the auto-coupling base unit and adjust the length of the rails accurately to the guide rail bracket at the top of the tank.
5. Unscrew the provisionally fastened guide rail bracket. Insert the expansion dowels into the guide rails. Fasten the guide rail bracket on the inside of the tank. Tighten the bolts in the expansion dowels.
6. Clean out debris from the tank before lowering the pump into the tank.
7. Fit the guide claw to the pump.
8. Slide the guide claw of the pump between the guide rails and lower the pump into the tank by means of a chain secured to the lifting bracket of the pump. When the pump reaches the auto-coupling base unit, the pump will automatically connect tightly.
9. Hang up the end of the chain on a suitable hook at the top of the tank and in such a way that the chain cannot come into contact with the pump housing.
10. Adjust the length of the motor cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook at the top of the tank. Make sure that the cables are not sharply bent or pinched.
11. Connect the motor cable and the control cable, if any.

Note

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

5.3 Dry installation

Pumps in dry installation are installed permanently in a pump room.

The pump motor is enclosed and watertight and will not be damaged if the installation site is flooded with water.

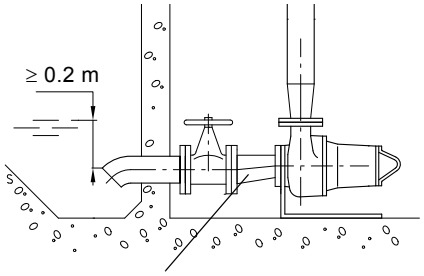
1. Mark and drill mounting holes in the concrete floor/concrete foundation.
2. Fit the bracket or base stand to the pump.
3. Fasten the pump with expansion bolts.
4. Check that the pump is vertical/horizontal.

In order to facilitate service on the pump, we recommend to use isolating valves on either side of the pump.

5. Fit the suction and discharge pipes and isolating valves, if used, and ensure that the pump is not stressed by the pipework.
6. Adjust the length of the motor cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook. Make sure that the cables are not sharply bent or pinched.
7. Connect the motor cable and the control cable, if any.

Caution

We recommend to use a reducer between the suction pipe and the pump in horizontal installations. The reducer must be of the eccentric type and must be installed so that the straight edge is pointing upwards. In this way, the accumulation of air in the suction pipe is avoided and the risk of disturbance of operation is eliminated. See fig. 10.



TM02 2396 4201

Fig. 10 Eccentric reducer

5.4 Submerged installation, portable

1. Fit the ring stand to the pump suction flange.
2. Fit a 90 ° elbow to the pump discharge port and connect the discharge pipe/hose.
   If a hose is used, make sure that the hose does not buckle and that the inside diameter matches that of the discharge port.
3. Lower the pump into the liquid by means of a chain secured to the lifting bracket of the pump. It is recommended to place the pump on a plane, solid foundation. Make sure that the pump is hanging from the chain and not the cable.
4. Hang up the end of the chain on a suitable hook at the top of the tank and in such a way that the chain cannot come into contact with the pump housing.
5. Adjust the length of the motor cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook.
   Make sure that the cables are not sharply bent or pinched.
6. Connect the motor cable and the control cable, if any.

5.5 Vertical installation in column pipe

1. Weld the ring supplied with the pump onto the lower opening of the steel column pipe or concrete it into place at the lower opening of the concrete column pipe.
2. Fasten a chain to the lifting bracket and uncoil the supply cable.
3. Lower the pump into place in the column pipe. Make sure that the O-ring seal is positioned correctly in the groove on the outside of the pump housing. Three guide pins on the ring will guide the pump into the right position and prevent it from turning in the seat when running.
4. Hang up the end of the chain on a suitable hook at the top of the tank and in such a way that the chain cannot come into contact with the pump housing.
5. Adjust the length of the motor cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook.
   Make sure that the cables are not sharply bent or pinched.
6. Connect the motor cable and the control cable, if any.

5.6 Pump controller

S pumps, range 50-70 can be connected to a separate Grundfos pump controller for level control, which is available as an accessory:

- type LC for one-pump installations
- type LCD for two-pump installations.

Depending on application, different types of level control equipment can be used.

The LC controller is fitted with two or three level switches: Two for start and stop of pump. The third level switch, which is optional, is for high-level alarm.

The LCD controller is fitted with three or four level switches: One for common stop and two for start of the pumps. The fourth level switch, which is optional, is for high-level alarm.

When installing the level switches, the following points should be observed:

1. To prevent air intake and vibrations in submerged pumps, the stop level switch must be fitted in such a way that the pump is stopped before the liquid level is lowered below the top of the pump housing.
   As a principal rule for pumps in dry installation, the lowest stop level must be at least 20 cm above the opening of the suction pipe. See fig. 10.
2. The start level switch should be installed in such a way that 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 tank.
3. The high-level alarm switch, if installed, should always be installed about 10 cm above the start level switch; however, alarm must always be given before the liquid level reaches the inlet pipe to the tank.

Warning

The pump controller must not be installed in potentially explosive atmospheres.

Warning

Pumps installed in potentially explosive atmosphere must always be filled with the pumped liquid.

An additional level switch must be installed to ensure that the pump is stopped in case the stop level switch is not operating.

5.7 Galvanic separation

Double-insulated sensors for all measurements of high voltages ensure the electrical safety. Furthermore, there is a galvanic separation inside the IO 113.

5.8 IO 113

The IO 113 forms interface between a Grundfos sewage and wastewater pump with analogue and digital sensors and the pump controller. The most important sensor data are indicated on the front panel.

One pump can be connected to an IO 113 module.

Together with the sensors, the IO 113 forms a galvanic separation between the motor voltage in the pump and the controller connected.

5.8.1 Measurement of insulation resistance

The IO 113 measures the insulation resistance between a stator winding and earth:

- Resistance above 10 MΩ = ok.
- Resistance between 10 MΩ and 1 MΩ = warning.
- Resistance below 1 MΩ = alarm.

5.9 Thermal switches

Three bimetallic thermal switches are built into the stator windings, and a contact will open in case of overtemperature, i.e. 150 °C.

The supply voltage to the thermal switches must be 12-230 VAC.

The thermal switches are connected to the control cable, and must be connected to the safety circuit of the separate pump controller. See section *7. Electrical connection*.

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

Warning

The installer/user must install an automatic circuit breaker which disconnects the power supply in case the thermal switches or the moisture switches are not operating.

5.10 Moisture switches

Non-explosion-proof pumps have one moisture switch, which is fitted in the chamber below the motor top cover.

Explosion-proof pumps have two moisture switches connected in series.

Ranges 50-58 and 66-70 explosion-proof pumps have two moisture switches, one below the motor top cover and one in the stator housing in the bottom of the motor.

Range 62 has both moisture switches placed below the motor top cover.

Moisture switches and thermal switches are motor protection devices which protect the motor from damage due to moisture or overheating. The moisture switches are non-reversing and must be replaced after use.

The moisture switches and thermal switches are connected in two separate circuits and to the control cable. See *7. Electrical connection*. They are also to be connected to the safety circuit of the separate pump controller.

Caution ***The safety circuit for the moisture switch must ensure that the pump cannot start if the moisture switch becomes wet due to water ingress.***

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

5.11 Thermistors

Thermistors are available as an option.

The thermistors can be used as motor protection devices to monitor stator temperature instead of thermal switches and must be connected to the thermistor relay in the control cabinet.

5.11.1 Checking after installation of pump

1. Using a multimeter, check whether the circuit resistance is < 150 Ω/thermistor.
2. Using a multimeter, check whether the insulation between circuit and stator housing is outside the scale (not measurable ∞).
3. Carry out similar measurements at the end of the supply cable.

5.12 Pt100 temperature sensor

The Pt100 temperature sensor is available as an accessory or as an FPV (Factory Product Variant) option.

The Pt100 sensor is primarily used for the monitoring of bearing temperature, but it can also be used in the stator.

Note ***The bearing temperature monitoring is only available as an option. For range 50 and 54 it is only available for monitoring the lower bearing temperature in explosion-proof pumps.***

The sensor resistance is

- 100 Ω at 0 °C
- 138.5 Ω at 100 °C
- approx. 108 Ω at room temperature.

The following temperature limits are used:

- 90 °C: alarm for bearing temperature
- 130 °C: pump stop caused by high bearing temperature
- 150 °C: pump stop caused by high stator temperature.

At room temperature, the thermistor resistance is approx. 100 Ω.

Warning

In case of overheating caused by wear, lack of lubricant etc., the Pt100 sensor trips an alarm and disconnects the power supply at a preset temperature. Max. acceptable alarm temperature in bearing sensors is 100 °C for the lower bearing (shaft end) and 120 °C for the upper bearing (range 58, 62, 66 and 70 only).

5.12.1 Checking after installation of pump

1. Using a multimeter, check whether the resistance at room temperature is approx. 108 Ω.
2. Using a multimeter, check whether the insulation between circuit and stator housing is outside the scale (not measurable ∞).
3. Carry out similar measurements at the end of the supply cable.
4. During pump check, the Pt100 sensor must be connected to a recording device.

6. Water-in-oil (WIO) sensor

6.1 WIO as accessory

Warning

Lack of oil may cause overheating and damage of the mechanical seals. The WIO sensor in the oil chamber will trip the alarm if the oil quality is poor or there is not enough oil in the oil chamber.

The WIO sensor is available as an accessory for pumps with motor sizes of 5.5 to 160 kW.

The sensor measures the water content in the oil chamber.

The sensor consists of a plate capacitor which is immersed in the oil and measures the electronic circuit, emitting a 4-20 mA proportional current signal.

6.2 Fitting the WIO sensor

The WIO sensor is to be fitted in the filling hole of the oil chamber instead of the oil screw.

1. Remove the oil screw.
2. Push the sensor into the oil filling hole.
3. Push the sensor to a suitable depth in the oil chamber without letting it touch the rotating parts, but so deep that the sensor is completely covered by the oil. Recommended insertion depths for different pump types appear from the table below.
4. Screw the sensor bush into the thread for the oil screw.

Note

Vertical installation: Always use the lowest oil screw hole.

Horizontal installation: Always use the inspection screw hole.

Caution

Before refitting the WIO sensor after oil change, clean it with white spirit.

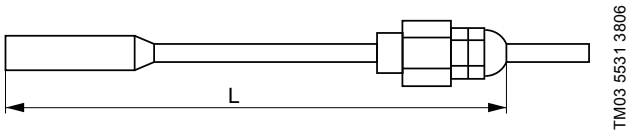


Fig. 11 Dimensions of WIO sensor

S pumps, range	Insertion depths L [mm]
50	80
54	90
58	100
62	100
66	100
70	100

For more detailed information, see installation instruction for the WIO sensor (96591899).

6.3 Electrical data, WIO sensor

Input voltage:	12-24 VDC
Output current:	3.4 - 22 mA
Power consumption:	0.6 W
Ambient temperature:	0 to 70 °C

6.4 Sensor signals

4-20 mA	=	0-20 % water in the oil: Accuracy better than 2 %.
22 mA	=	Warning: Water content far outside measuring range.
3.5 mA	=	Alarm: Air in the oil chamber.

Note

The sensor signal is only valid when oil and water is mixed (when the pump is running).

7. Electrical connection

Warning

The pump must be connected to an external mains switch with a contact separation according to EN 60204-1, 5.3.2.

The electrical connection must be carried out in accordance with local regulations.

The supply voltage and frequency are marked on the pump nameplate.

The voltage tolerance at the motor terminals must be within - 10 %/+ 10 % of the rated voltage.

Make sure that the motor is suitable for the power supply available at the installation site.

The motor is effectively earthed via the power cable and pipework. The motor top cover is equipped with connections for external earthing or an equipotential bonding conductor.

Warning

For Ex models in dry installation (version D), we recommend also to connect an external earthing.

Warning

Before installation and the first start-up of the pump, check the condition of the cable visually to avoid short circuits.

The pump must be connected to a motor protective circuit breaker.

The most commonly used start-up methods are direct-on-line starting (DOL), star-delta starting (Y/D) and soft start. The pump can even be started via a frequency converter according to the frequency converter manufacturer's specifications. The selection of suitable starting method depends on several considerations on usage and mains supply conditions.

Note

When using star-delta starting, it is important to keep switching transient time to a minimum to avoid high transient torques. We recommend to use a time relay with a switching time of maximum 50 ms or according to the starter manufacturer's specifications.

The wiring diagrams for direct-on-line starting and star-delta starting are shown in fig. 12 and fig. 13, respectively.

L1 and L2 are connected in series with the thermal switches and the moisture switches.

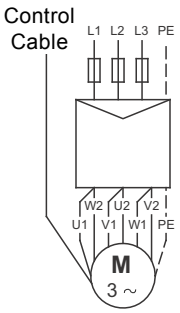


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Fig. 12 Direct-on-line starting

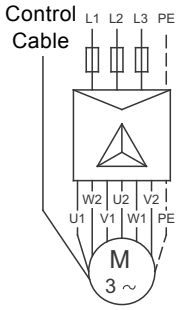

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Fig. 13 Star-delta starting

7.1 Frequency converter operation

In principle, all three-phase motors can be connected to a frequency converter.

However, frequency converter operation will often expose the motor insulation system to a heavier load and cause the motor to be more noisy than usual due to eddy currents caused by voltage peaks.

In addition, large motors driven via a frequency converter will be loaded by bearing currents.

For frequency converter operation, please observe the following information:

Requirements must be fulfilled.

Recommendations ought to be fulfilled.

Consequences should be considered.

7.1.1 Requirements

- 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 has not been taken into account. See the frequency converter data sheet regarding the actual values and the cable influence on the peak voltage and dU/dt.

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

- If the pump is an Ex-approved pump, check if the Ex certificate of the specific pump allows the use of a frequency converter.
- Set the frequency converter U/f ratio according to the motor data.
- Local regulations/standards must be fulfilled.

7.1.2 Recommendations

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

- Do not reduce the motor speed to less than 30 % of rated speed.
- Keep the flow velocity above 1 m/sec.
- Let the pump run at rated speed at least once a day in order to prevent sedimentation in the piping system.
- Do not exceed the frequency indicated on the nameplate. In this case there is risk of motor overload.
- Keep the motor cable as short as possible. The peak voltage will increase with the length of the motor cable. See data sheet for the frequency converter used.
- Use input and output filters on the frequency converter. See data sheet for the frequency converter used.
- Use screened motor cable if there is a risk that electrical noise can disturb other electrical equipment. See data sheet for the frequency converter used.

7.1.3 Consequences

When operating the pump via a frequency converter, please be aware of these possible consequences:

- The locked-rotor torque will be lower. How much lower will depend on the frequency converter type. See the installation and operating instructions for the frequency converter used for information on the locked-rotor torque available.
- The working condition of bearings and shaft seal may be affected. The possible effect will depend on the application. The actual effect cannot be predicted.
- The acoustic noise level may increase. See the installation and operating instructions for the frequency converter used for advice as to how to reduce the acoustic noise.

7.2 Cable data

Standard H07RN-F

S pump, range	Cable type [mm^2]	Outer cable diameter [mm]		Bending radius
		min.	max.	[cm]
50	7 x 1.5	14.4	16.4	10
	4 x 2.5	16.7	18.7	12
	4 x 6	15.7	17.2	11
54	4 x 6	15.7	17.2	11
	4 x 10	20.9	23.4	14
58	4 x 6	15.7	17.2	11
	4 x 10	20.9	23.4	14
62	4 x 6	15.7	17.2	11
	4 x 10	20.9	23.4	14
	4 x 16	23.8	26.3	16
66	4 x 10	20.9	23.4	14
	4 x 16	23.8	26.3	16
	4 x 25	28.9	31.4	19
70	4 x 25	28.9	31.4	19
	4 x 35	32.5	34.7	22
	4 x 50	37.7	40.4	25
	4 x 70	42.7	45.4	28

EMC

S pump, range	Cable type [mm^2]	Outer cable diameter [mm]		Bending radius
		min.	max.	[cm]
50	3 x 6	13.6	15.2	7.6
54	3 x 6	13.6	15.2	7.6
	3 x 10	17.8	19.8	9.9
58	3 x 6	13.6	15.2	7.6
	3 x 10	17.8	19.8	9.9
62	3 x 6	13.6	15.2	7.6
	3 x 10	17.8	19.8	9.9
	3 x 16	20.9	22.9	11.5
66	3 x 10	17.8	19.8	9.9
	3 x 16	20.9	22.9	11.5
	3 x 35	28.3	31.3	15.7
70	3 x 35	28.3	31.3	15.7
	3 x 70	38.7	41.7	20.9

Control cables

Cable type [mm^2]	Outer cable diameter [mm]		Bending radius
	min.	max.	[cm]
7 x 1.5	14.4	16.0 - 16.4	10
10 x 1.5	0.71 (18)	0.79 (20)	4.7 (12)

Warning

The top cover of explosion-proof pumps is provided with an external earth terminal to ensure the connection to earth. The electrical installation must include an external connection from this terminal to earth. The earth conductor must fulfil all electrical safety regulations in force.

Cross section of phase conductor (S) of the installation [mm^2]	Minimum cross section of earth conductor [mm^2]
$S \leq 16$	S
$16 < S \leq 35$	16
$S > 35$	0.5 *S, max. 70

Warning

Before installation and the first start-up of the pump, check the condition of the cable visually to avoid short circuits.

8. Startup

Warning

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

Warning

Before the first start-up and after a long standstill period, make sure that the pump has been filled with pumped liquid.

In dry installed versions the cooling jacket must always be filled with pumped liquid when operating. Ensure this by venting before the first start-up.

Proceed as follows:

1. Remove the fuses or switch off the mains switch.
2. Check the oil level in the oil chamber.
   See section *9.1 Oil check and oil change*.
3. Check whether the impeller can rotate freely.
4. Check whether the monitoring units, if used, are operating satisfactorily.
5. For pumps in submerged installation, make sure that the pump is submerged in the liquid.
6. For pumps in dry installation, make sure that there is liquid in the tank from which the supply of liquid comes.

Warning

Make sure that the pump has been filled with pumped liquid.

Pumps in dry installation must be vented via the vent hole in the pump housing.

7. Open the isolating valves, if fitted.
8. Check whether the system has been filled with liquid and vented.
9. Check the setting of the level switches.
10. Start the pump and check the pump operation for abnormal noise or vibrations.

Caution ***In case of abnormal noise or vibrations from the pump or other pump or liquid supply failures, stop the pump immediately. Do not attempt to restart the pump until the cause of the fault has been found and the fault corrected.***

11. After start-up, the actual pump duty point must be established as accurately as possible so that it can be checked whether the operating conditions are as desired.

Note ***The pump may only be started for a very short period without being submerged for checking of direction of rotation.***

The operation of the pump should always take place in accordance with established routines with scheduled checks of pump monitoring equipment and accessories (valves, etc.). Make sure that the pump and equipment settings cannot be changed by unauthorised persons.

8.1 Checking the direction of rotation

An arrow cast in the pump housing indicates the correct direction of rotation. The pump must rotate clockwise when seen from the drive end. Observe the movement of the pump (jerk) when started. If the pump jerks counter-clockwise, the direction of rotation is correct.

As an alternative, the direction of rotation can be checked as follows:

1. Start the pump and check the quantity of liquid or the discharge pressure.
2. Stop the pump and interchange two of the phases to the motor.
3. Restart the pump and check the quantity of liquid or the discharge pressure.
4. Stop the pump.
5. Compare the results taken under points 1 and 3.
   The connection which gives the larger quantity of liquid or the higher pressure is the correct direction of rotation.

Caution ***The pump must only run for a short period when suspended from a chain.***

9. Maintenance and service

Warning

During maintenance and service, including transportation to service workshop, always support the pump by means of lifting chains or place it in horizontal position to secure stability.

Warning

Before starting work on the pump, make sure that the fuses have been removed or the mains switch has been switched off. It must be ensured that the power supply cannot be accidentally switched on. All rotating parts must have stopped moving.

Maintenance and service must be carried out by specially trained persons.

Warning

The maintenance and service work on explosion-proof pumps must be carried out by Grundfos or a service workshop authorised by Grundfos.

Warning

Do not open the pump if the ambient atmosphere is explosive or dusty.

Before carrying out maintenance and service, make sure that the pump has been thoroughly flushed with clean water. Rinse the pump parts in water after dismantling.

Pumps running normal operation should be inspected every 2000 operating hours or at least once a year. If the pumped liquid is very muddy or sandy, the pump should be inspected every 1000 operating hours or every six months.

The following points should be checked:

- **Power consumption**
- **Oil level and oil condition**
  When the pump is new or after replacement of the shaft seals, check the oil level and water content after one week of operation. If there is more than 20 % of water in the oil, the shaft seal may be defective. See section *9.1 Oil check and oil change*.

Note ***Dispose of the oil in accordance with local regulations.***

The oil chamber contains 1.9 to 12.5 litres of oil depending on pump size. See table below.

Quantity of oil

S pump, range	Installation type	No of poles	Quantity of oil [l]
50	S	All	2.6
	C-D-H	All	1.9
54	S	All	3.5
	C-D-H	All	2.5
58	S	All	4.6
	C-D-H	All	3.8
62	S	All	9.0
	C-D-H	All	7.1
66	S	All	12.5
	C-D-H	All	9.2
70	S	All	12.4
	C-D-H	All	9.0

- **Cable entry**
  Make sure that the cable entry is waterproof and that the cables are not sharply bent or pinched.
- **Impeller clearance**
  Check the impeller clearance. See section *9.2 Inspection and adjustment of impeller clearance*.
- **Pump parts**
  Check the pump housing, etc. for possible wear.
  Replace defective parts.
- **Ball bearings**
  Check the shaft for noisy or heavy operation (turn 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 an authorised service workshop.

Warning

The ball bearings must be replaced at least every 25,000 operating hours.

Caution ***Clean the outside of the pump at regular intervals in order to retain the heat conductivity.***

9.1 Oil check and oil change

Caution ***Change the oil every four years to prevent oxidation.***

Warning

Lack of the lubricant may cause overheating and damage of the mechanical seals. The WIO sensor in the oil chamber trips the alarm if the oil quality is poor or there is no oil in the oil chamber.

The oil chamber has two screws, A and B, for oil drainage, oil filling and level control.

In pumps with 8- or 10-pole motors of 22-50 kW and pumps with motors larger than 50 kW, the oil can be changed while the pump is standing upright. The screw B is used for the indication of the oil level in the oil chamber. See fig. 14.

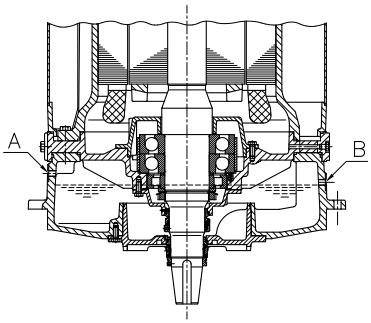

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Fig. 14 Oil level, vertical installation

Horizontally installed pumps (installation type H) have a third screw, C, for oil drainage.

On horizontally installed pumps (installation type H), the oil screws are always positioned as shown in fig. 15.

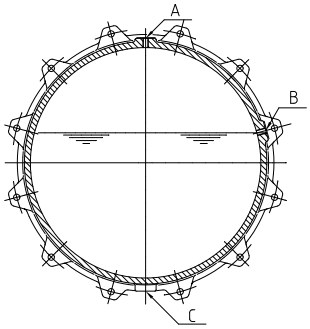

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Fig. 15 Oil level, horizontal installation

Proceed as follows:

1. Place the pump in such a position that the screw A is pointing upwards.

Warning

When slackening the screw A of the oil chamber, note that pressure may have built up in the chamber. Do not remove the screw until the pressure has been fully relieved.

2. Place a clean container under the pump to collect all the drained-off oil. Slacken the screw B pointing to the side and observe the oil level. The drained-off quantity of oil indicates whether the lower mechanical shaft seal is leaking, which may be normal.
3. Turn the pump or remove the screw C and allow all the oil to drain from the chamber into the container. Pour an oil sample into a glass container and observe the condition of the oil. Clear oil can be reused. Emulsified oil must be changed and disposed of.

Note ***Used oil must be disposed of in accordance with local regulations.***

Low oil level may indicate that the upper mechanical shaft seal is defective. Contact an authorised service workshop for further overhaul of the pump and repair, if required.

4. Fill the oil chamber with oil through the top hole A until the oil level reaches the hole B. Replace the O-rings with new rings, insert the screws and tighten securely.

Warning

Use viscosity grade SAE 10 W 30 or ONDINA X420.

9.2 Inspection and adjustment of impeller clearance

Warning

Check impeller clearance every time service is carried out to prevent hot surfaces in the hydraulic parts.

All S1, S2 and S3 pumps have an axial impeller clearance of 0.7 ± 0.2 mm.

If the clearance is 1.2 mm or more, adjust it to 0.7 ± 0.2 mm.

Note ***It is not possible to adjust the impeller clearance of SV pumps.***

The impeller clearance of installation types S and C can be inspected directly through the pump inlet.

Warning

Before inspection, make sure that the motor is switched off and that the mains switch is locked in position 0.

Installation versions D and H can be inspected and adjusted with the pump installed on the base stand and connected to the pipework. Inspect and adjust the impeller clearance as described in sections *9.2.2 Installation types D and H, range 50-54* and *9.2.3 Installation types D and H, range 58-70*.

9.2.1 Installation types S and C, all ranges

1. Slacken the set screws by two full turns each.
2. Close the impeller clearance by lightly tightening the fastening screws diagonally until the impeller touches the pump housing.

Warning

Do not use too much force when tightening the fastening screws as this may damage the bearings. The movement is usual 1 to 3 mm.

3. Slacken the fastening screws to make an 0.7 mm gap under the heads of the fastening screws. See fig. 16.
4. Tighten the set screws tightly.
5. Tighten the fastening screws diagonally.

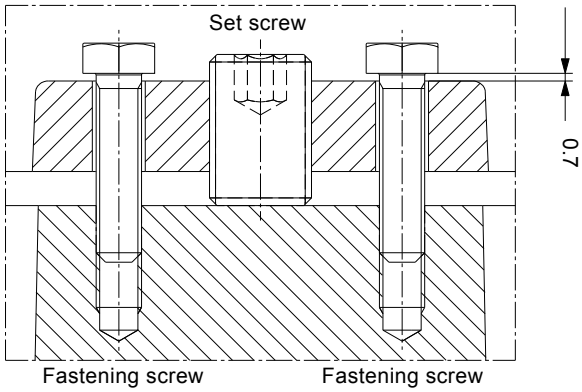

Fig. 16 Impeller clearance adjustment

9.2.2 Installation types D and H, range 50-54

1. Slacken the set screws by two full turns each.
2. Close the impeller clearance by lightly tightening the fastening screws diagonally until the impeller touches the pump housing.

Warning

Do not use too much force when tightening the fastening screws as this may damage the bearings. The movement is usual 1 to 3 mm.

3. Slacken the fastening screws to make an 0.7 mm gap under the heads of the fastening screws. See fig. 16.
4. Tighten the set screws tightly.
5. Tighten the fastening screws diagonally.

9.2.3 Installation types D and H, range 58-70

Adjust the clearance between the impeller and the pump housing by following these steps:

1. Slacken the six fastening screws and close the impeller clearance by tightening the three set screws. Tighten the screws diagonally to move the suction cover evenly.

Warning

Do not use too much force when tightening the fastening screws as this may damage the bearings. The movement is usual 1 to 3 mm.

2. Measure the distance "L" between suction cover and pump housing at three points next to the set screws, using feeler gauges or callipers, and make a note of the distance.
3. Slacken the set screws and draw back the suction cover by between 0.5 and 0.9 mm using the six fastening screws (approx. one 270 ° turn of an M12 fastening screw) and the distance "L" as reference. See fig. 17.
4. Tighten all set screws and check that the distance "L" at the three reference points is stable at the new value.

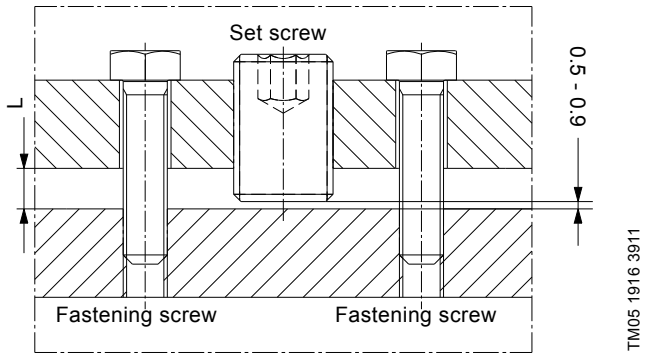

Fig. 17 Impeller clearance adjustment

9.3 Explosion-proof S pumps, range 50-70

Overhauled and repaired explosion-proof motors are marked with a repair plate giving the following information:

- the repair symbol R
- name or registered trade mark of the repairing workshop
- workshop reference number relating to the repair
- date of overhaul or repair.

In the event of subsequent repairs, the existing plate should be replaced by a new updated plate and earlier markings are recorded.

The repairing workshop must keep records of performed overhauls and repairs together with records of all previous overhauls, repairs and possible modifications. Copies of the repairing workshop's detailed records should be filed by the owner or operator together with the original type certificate of the explosion-proof motor in question.

9.3.1 Motor cable

Use only cables which are approved by the manufacturer and suitable for the cable entry as to diameter, number of leads, conductor cross section and sheath material.

9.3.2 Cable entry

Use only EExd cable entry parts corresponding to the cable diameter. The corresponding cable dimension marking is stamped on the inlet or the cable entry.

Secure the cable entry to the motor top cover by tightening the screws evenly one by one until the cable entry is lying flat against the top cover.

9.3.3 Spare parts

Damaged motor parts, such as top cover and cable entry, should always be replaced by new and approved parts. Motor parts must not be reconditioned by machining, re-tapping, welding, etc.

9.4 Contaminated pumps

Warning

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.

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

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.

10. Fault finding

Warning

Before attempting to diagnose any fault, make sure that the fuses have been removed or the mains switch has been switched off. Make sure that the power supply cannot be accidentally switched on. All rotating parts must have stopped moving.

Read and observe the safety instructions in section 3. Safety.

Fault	Cause	Remedy
1. Pump does not start or stops without visible cause.	a) No power supply.	Reestablish power supply. Start the pump manually and check contactor operation.
2. Pump does not start or stops. The control panel of the controller indicates that the motor protective circuit breaker or protection equipment has tripped out.	a) Missing phase.	Reestablish all phases.
	b) Pump momentarily overloaded.	If the fault does not disappear automatically, find the cause and remedy the fault.
	c) Impeller clogged by impurities.	Clean impeller as required.
	d) Motor protective circuit breaker not set correctly.	Set the motor protective circuit breaker as required according to rated current.
	e) Thermal switches tripped out. Insufficient motor cooling.	Reestablish motor cooling.
	f) Moisture switch in motor tripped out.	Contact an authorised service workshop.
	g) Motor cable defective.	Contact an authorised service workshop.
	h) Fluctuating voltage.	Reestablish correct voltage supply. Permissible deviation is - 10 %/+ 10 %.
3. Pump runs but does not deliver the rated flow.	a) Wrong direction of rotation.	Interchange two phases to the motor.
	b) Impeller loose or worn.	Tighten or replace the impeller.
	c) Pump or pipework blocked by impurities.	Clean as required.
	d) Pump head too high.	Measure the differential pressure and compare the value with the pump curve. Remove the blockage in the discharge pipe.
	e) Valves closed or blocked. Non-return valve not operating.	Clean or replace valves as required.
	f) Air in pump or suction pipe.	Vent the pump and suction pipe. Increase the stop level in the tank.
	g) Pumped liquid too dense.	Dilute the liquid.
	h) Pump not properly connected to auto coupling.	Pump down the liquid level in tank. Lift out the pump and relocate the pump on the auto coupling.
	i) Leakage in pipework.	Repair the pipework.
	j) Pump tank flushing system inadvertently activated.	Check function and repair as required.
4. Pump starts, but stops immediately.	a) Clogged pump causes motor-protective circuit breaker to trip out.	Clean the pump.
	b) Overheated motor causes thermal switches to trip out.	Allow pump to cool. Clean the pump.
	c) Level switch out of adjustment or defective.	Clean or set level switch or replace as required.
5. Pump vibrating or emitting excessive noise.	a) Pump partly choked by impurities.	Clean the pump.
	b) Wrong direction of rotation.	Interchange two phases to the motor.
	c) Pump operates outside specified operating range.	Reestablish proper operating conditions.
	d) Pump defective.	Repair the pump or contact an authorised workshop, if necessary.
	e) Pump not properly connected to auto coupling.	Pump down the liquid level in tank. Lift out the pump and relocate the pump on the auto coupling.
	f) Pump cavitates.	Clean the suction pipe.
	g) Base stand, auto coupling, ring stand or guide rails not installed correctly.	Install the components correctly.
6. Oil watery or emulsified.	a) Lower mechanical seal leaking.	Contact an authorised service workshop.
7. Low oil level.	a) Upper mechanical seal leaking.	Contact an authorised service workshop.

11. Disposal

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.

1. Wiring diagrams

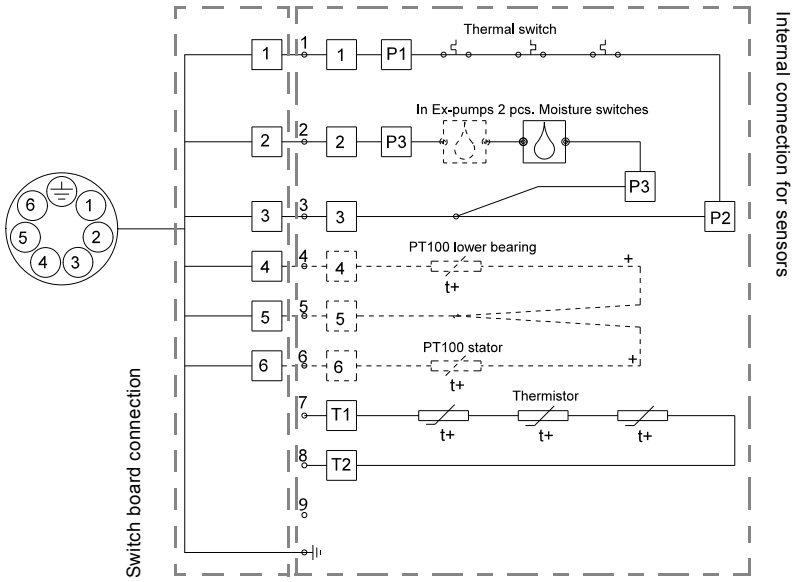

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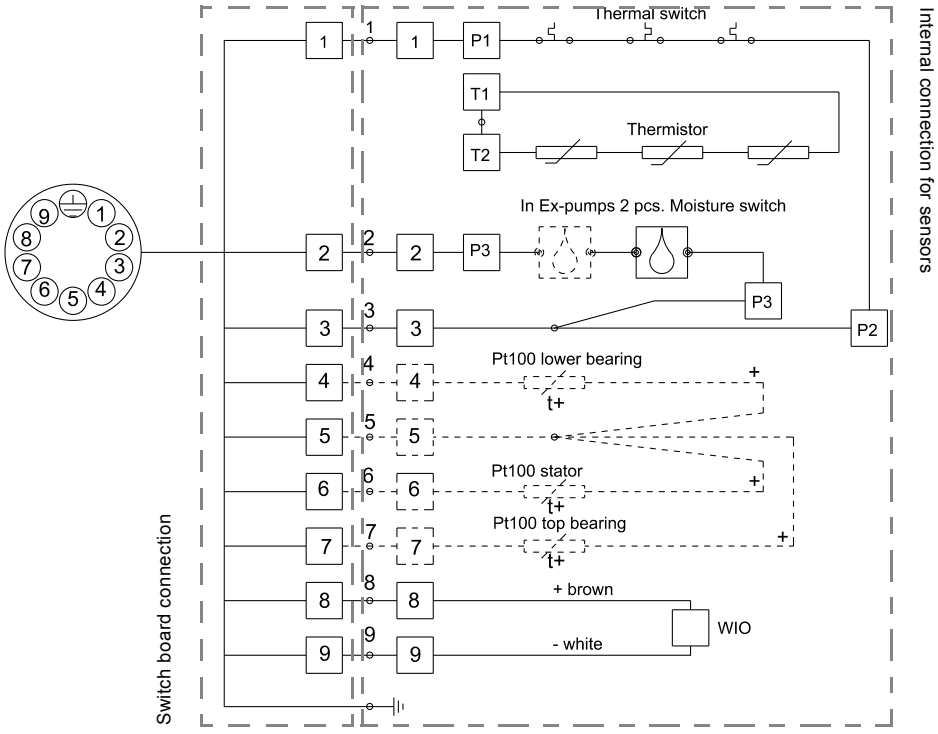
Fig. 1 Wiring diagram for sensor cable 7-lead wires



TM05 1624 3311

Fig. 2 Wiring diagram for sensor cable 10-lead wires

GB: EC declaration of Conformity

We Grundfos declare under our sole responsibility that the products S pumps, ranges 50-70, 7.5-155 kW, to which this declaration relates, are in conformity with these Council directives on the approximation of the laws of the EC member states:

BG: ЕС декларация за съответствие

Ние, фирма Grundfos, заявяваме с пълна отговорност, че продуктите Помпите модел S, типорамери 50-70, 7,5-155 kW, за които се отнася настоящата декларация, отговарят на следните указания на Съвета за уеднаквяване на правните разпоредби на държавите членки на ЕС:

CZ: ES prohlášení o konformitě

My firma Grundfos prohlašujeme na svou plnou odpovědnost, že výrobky Čerpadla S, řady 50-70, 7,5-155 kW, na něž se toto prohlášení vztahuje, jsou v souladu s ustanoveními směrnice Rady pro sblížení právních předpisů členských států Evropského společenství v oblastech:

DK: EF-overensstemmelseserklæring

Vi Grundfos erklærer under ansvar at produkterne S pumper, serie 50-70, 7,5-155 kW, som denne erklæring omhandler, er i overensstemmelse med disse af Rådets direktiver om indbyrdes tilnærmelse til EF-medlemsstaternes lovgivning om:

DE: EG-Konformitätserklärung

Wir, Grundfos, erklären in alleiniger Verantwortung, dass die Produkte S-Pumpen der Baugrößen 50-70, 7,5-155 kW, auf die sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmen:

EE: EL vastavusdeklaratsioon

Meie, Grundfos, deklareerime enda ainuvastutusel, et tooted S pumbed, suurusklass 50-70, 7,5-155 kW, mille kohta käesolev juhend käib, on vastavuses EÜ Nõukogu direktiividega EMÜ liikmesriikide seaduste ühitamise kohta, mis käsitlevad:X tunnustuse andmesildiga ja EC-tüüpi kontrollsertifikaadiga.

GR: Δήλωση συμμόρφωσης ΕC

Εμείς, η Grundfos, δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα Αντλίες S, σειρές 50-70, 7,5-155 kW στα οποία αναφέρεται η παρούσα δήλωση, συμμορφώνονται με τις εξής Οδηγίες του Συμβουλίου περί προσέγγισης των νομοθεσιών των κρατών μελών της ΕΕ:

ES: Declaración CE de conformidad

Nosotros Grundfos declaramos bajo nuestra entera responsabilidad que los productos Bombas S, gamas 50-70, 7,5-155 kW, a los cuales se refiere esta declaración, están conformes con las Directivas del Consejo en la aproximación de las leyes de las Estados Miembros del EM:

FR: Déclaration de conformité CE

Nous, Grundfos, déclarons sous notre seule responsabilité, que les produits Pompes S, tailles 50-70, 7,5-155 kW, auxquels se réfère cette déclaration, sont conformes aux Directives du Conseil concernant le rapprochement des législations des Etats membres CE relatives aux normes énoncées ci-dessous :

HR: EZ izjava o usklađenosti

Mi, Grundfos, izjavljujemo pod vlastitom odgovornošću da je proizvod S crpke, veličine 50-70, 7,5-155 kW, na koji se ova izjava odnosi, u skladu s direktivama ovog Vijeća o usklađivanju zakona država članica EU:

IT: Dichiarazione di conformità CE

Grundfos dichiara sotto la sua esclusiva responsabilità che i prodotti Pompe S, della gamma 50-70, da 7,5-155 kW, ai quali si riferisce questa dichiarazione, sono conformi alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri CE:

KZ: ЕО сәйкестік туралы мәлімдеме

Біз, Grundfos компаниясы, барлық жауапкершілікпен, осы мәлімдемеге қатысты болатын S қатарындағы, түр өлшемдері 50-70, 7,5 тен 155 кВт бұйымдары ЕО мүше елдерінің заң шығарушы жарлықтарын үндестіру туралы мына Еуроодақ Кеңесінің жарлықтарына сәйкес келетіндігін мәлімдейміз:

LV: EK atbilstības deklarācija

Sabiedrība GRUNDFOS ar pilnu atbildību dara zināmu, ka produkti S sērijas sūkņi, ar jaudu 50-70, 7,5-155 kW, uz kuriem attiecas šis paziņojums, atbilst šādām Padomes direktīvām par tuvināšanos EK dalībvalstu likumdošanas normām:

LT: EB atitikties deklaracija

Mes, Grundfos, su visa atsakomybe pareiškiame, kad gaminiai S siurbliai, dydžiai 50-70, 7,5-155 kW, kuriems skirta ši deklaracija, atitinka šias Tarybos Direktyvas dėl Europos Ekonominės Bendrijos šalių narių įstatymų suderinimo:

HU: EK megfelelőségi nyilatkozat

Mi, a Grundfos, egyedüli felelősséggel kijelentjük, hogy a S-sorozatú szivattyúk 50-70-es vázméret, 7,5-155 kW termékek, amelyekre jelen nyilatkozik vonatkozik, megfelelnek az Európai Unió tagállamainak jogi irányelveit összehangoló tanács alábbi előírásainak:

NL: EC overeenkomstigheidsverklaring

Wij Grundfos verklaren geheel onder eigen verantwoordelijkheid dat de producten S Pompen serie 50-70 van 7,5-155 kW waarop deze verklaring betrekking heeft, in overeenstemming zijn met de Richtlijnen van de Raad in zake de onderlinge aanpassing van de wetgeving van de EG Lidstaten betreffende:

UA: Декларація відповідності ЄС

Компанія Grundfos заявляє про свою виключну відповідальність за те, що продукти Насоси серії S, типорозмірів 50-70, 7,5-155 кВт, на які поширюється дана декларація, відповідають таким рекомендаціям Ради з уніфікації правових норм країн - членів ЕС:

PL: Deklaracja zgodności WE

My, Grundfos, oświadczamy z pełną odpowiedzialnością, że nasze wyroby Pompy z typoszeregu S, korpus 50-70, o mocy 7,5-155 kW, których deklaracja niniejsza dotyczy, są zgodne z następującymi wytycznymi Rady d/s ujednolicenia przepisów prawnych krajów członkowskich WE:

PT: Declaração de conformidade CE

A Grundfos declara sob sua única responsabilidade que os produtos Bombas S, gamas 50-70, 7,5-155 kW, aos quais diz respeito esta declaração, estão em conformidade com as seguintes Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da CE:

RU: Декларация о соответствии ЕС

Мы, компания Grundfos, со всей ответственностью заявляем, что изделия Насосы S, типоразмеров 50-70, 7,5-155 кВт, к которым относится настоящая декларация, соответствуют следующим Директивам Совета Евросоюза об унификации законодательных предписаний стран-членов ЕС:

RO: Declaraţie de conformitate CE

Noi, Grundfos, declarăm pe propria răspundere că produsele din gama pompelor S 50-70, 7,5-155 kW, la care se referă această declaraţie, sunt în conformitate cu aceste Directive de Consiliu asupra armonizării legilor Statelor Membre CE:

SK: Prehlásenie o konformite ES

My firma Grundfos prehlasujeme na svoju plnú zodpovednosť, že výrobky Čerpadlá S, rady 50-70, 7,5-155 kW, na ktoré sa toto prehlásenie vzťahuje, sú v súlade s ustanovením smernice Rady pre zblíženie právnych predpisov členských štátov Európskeho spoločenstva v oblastiach:

SI: ES izjava o skladnosti

V Grundfosu s polno odgovornostjo izjavljamo, da so naši izdelki S črpalke velikosti 50-70, 7,5-155 kW, na katere se ta izjava nanaša, v skladu z naslednjimi direktivami Sveta o približevanju zakonodaje za izenačevanje pravnih predpisov držav članic ES:

RS: EC deklaracija o usaglašenosti

Mi, Grundfos, izjavljujemo pod vlastitom odgovornošću da je proizvod S pumpe, veličine 50-70, 7,5-155 kW, na koji se ova izjava odnosi, u skladu sa direktivama Saveta za usklađivanje zakona država članica EU:

FI: EY-vaatimustenmukaisuusvakuutus

Me Grundfos vakuutamme omalla vastuullamme, että tuotteet S-pumput, sarjat 50-70, 7,5-155 kW, joita tämä vakuutus koskee, ovat EY:n jäsenvaltioiden lainsäädännön yhdenmukaistamiseen tähtäävien Euroopan neuvoston direktiivien vaatimusten mukaisia seuraavasti:

SE: EG-försäkran om överensstämmelse

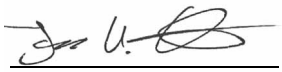
Vi, Grundfos, försäkrar under ansvar att produkterna Serie S, typstorlek 50-70, 7,5-155 kW, som omfattas av denna försäkran, är i överensstämmelse med rådets direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende:

TR: EC uygunluk bildirgesi

Grundfos olarak bu beyannameye konu olan S pompaların, 50-70 ürün aralığının, 7,5-155 kW ürünlerinin, AB Üyesi Ülkelerin kanunlarını birbirine yaklaştırma üzerine Konsey Direktifleriyle uyumlu olduğunun yalnızca bizim sorumluluğumuz altında olduğunu beyan ederiz:

— Machinery Directive (2006/42/EC)
Standard used: SFS-EN 809 + A1/AC:2010.
— EMC Directive (2004/108/EC)
— ATEX Directive (94/9/EC)
Applies only to products intended for use in potentially explosive environments, Group II Category 2G, Ex bcd IIB T3 Gb, and equipped with the separate ATEX approval plate and EC-type examination certificate.

Székesfehérvár, 8th April 2014



Jannek Uldal Christensen
D&E Central Europe, site manager
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Person authorised to compile technical file and empowered to sign the EC declaration of conformity.

Notified body for EC-Type examination:	SGS Baseefa Ltd. No 1180. Buxton, UK.
Notified body for production at GMH2:	Dekra Certification B.V. No 0344, 6802 ED Arnhem, The Neatherlands.
Notified body for production at GMH4:	SGS Baseefa Ltd. No 1180. Buxton, UK.
Manufacturer, Ranges 50 to 58:	Grundfos GMH2 HU-2800 Tatabánya, Hungary
Manufacturer, Ranges 62 to 70:	Grundfos GMH4 HU-8000 Székesfehérvár, Hungary

Range	Certificate No	Standards used
50, 54, 58, 62, 66, 70	Baseefa 09ATEX0020X	EN 60079-0: 2009, EN 60079-1: 2007, EN 13463-1: 2009, EN 13463-5: 2011, EN 13463-6: 2005

Declaration of conformity RU

EAC

Насосы типа S исполнения: S1, S2, S3, S4, SV, S1A, SVA, ST, SVX сертифицированы на соответствие требованиям Технических регламентов Таможенного союза: ТР ТС 004/2011 «О безопасности низковольтного оборудования»; ТР ТС 010/2011 «О безопасности машин и оборудования»; ТР ТС 020/2011 «Электромагнитная совместимость технических средств».

Сертификат соответствия:
№ ТС RU C-DK.АИ30.В.01227, срок действия до 21.12.2019г.

Истра, 1 февраля 2015 г.

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