Pioneering for You

DrainLift S

en Installation and operating instructions

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1 General information

1.1 About these instructions

These installation and operating instructions are an integral part of the product. Read these instructions before commencing work and keep them in an accessible place at all times. Strict adherence to these instructions is a precondition for the intended use and correct operation of the product. All information and markings on the product must be observed.

The language of the original operating instructions is German. All other languages of these instructions are translations of the original operating instructions.

1.2 Copyright

1.3 Subject to change

The manufacturer reserves the right to make technical modifications to the device or individual components. The illustrations used may differ from the original and are intended as an example representation of the device.

1.4 Warranty

The specifications in the current "General Terms and Conditions" apply to the warranty and the warranty period. These can be found at www.wilo.com/legal

Any deviations must be contractually agreed and shall then be given priority.

Claim to warranty

If the following points are complied with, the manufacturer is obligated to rectify every qualitative or constructive flaw:

- The defects are reported in writing to the manufacturer within the warranty period.
- Application according to intended use.
- All monitoring devices are connected and tested before commissioning.

Exclusion from liability

Exclusion from liability excludes all liability for personal injury, material damage or financial losses. This exclusion ensues as soon as one of the following applies:

- Inadequate configuration due to inadequate or incorrect instructions by the operator or the client
- Non-compliance with installation and operating instructions
- Improper use
- Incorrect storage or transport
- Incorrect installation or dismantling
- Insufficient maintenance
- Unauthorised repairs
- Inadequate construction site
- Chemical, electrical or electro-chemical influences
- Wear

2 Safety

This chapter contains basic information which must be adhered to during the individual phases of the life cycle. Failure to follow the installation and operating instructions will result in injuries to persons, damage to the environment and the device and result in the loss of any claims for damages. Failure to follow the instructions can result in the following risks:

- Danger to persons due to electrical, mechanical and bacteriological factors as well as electromagnetic fields
- Environmental risks due to leakage of hazardous substances
- Property damage
- Failure of important functions of the product

Additionally, the instructions and safety instructions in the other chapters must be observed!

2.1 Identification of safety instructions

These installation and operating instructions set out safety instructions for preventing personal injury and damage to property. These safety instructions are shown differently:

- Safety instructions relating to personal injury start with a signal word, are **preceded by a corresponding symbol** and are shaded in grey.

DANGER

Type and source of the danger!

Consequences of the danger and instructions for avoidance.

- Safety instructions for property damage start with a signal and are displayed **without** a symbol.

CAUTION

Type and source of the danger!

Consequences or information.

Signal words

- **DANGER!**
  Failure to observe the safety instructions will result in serious injuries or death!
- **WARNING!**
  Failure to follow the instructions can lead to (serious) injuries!
- **CAUTION!**
  Failure to follow the instructions can lead to property damage and a possible total loss.
- **NOTE!**
  Useful information on handling the product.

Markups

✓ Prerequisite

1. Work step/list

⇒ Information/instructions

► Result

Symbols

These instructions use the following symbols:


Danger of electric voltage


Danger of bacterial infection


Danger of explosion


Warning of hot surfaces


Personal protective equipment: Wear a safety helmet


Personal protective equipment: Wear foot protection


Personal protective equipment: Wear hand protection


Personal protective equipment: Wear mouth protection


Personal protective equipment: Wear safety goggles

Autonomous work prohibited! A second person must be present.

Transport by two persons

Useful information

2.2 Personnel qualifications

Personnel must:
- Be instructed in the locally applicable accident prevention regulations.
- Have read and understood the installation and operating instructions.

Personnel must have the following qualifications:
- Electrical work: Electrical work must be carried out by a qualified electrician (in accordance with EN 50110-1).
- Installation-/dismantling: The technician must be trained in the use of the necessary tools and fixation materials for the relevant construction site. The technician must also be trained in the processing of plastic pipes. In addition, the technician must be instructed in the locally applicable guidelines for sewage lifting units.

Definition of "qualified electrician"

A qualified electrician is a person with appropriate technical education, knowledge and experience who can identify **and** prevent electrical hazards.

2.3 Electrical work

- A qualified electrician must carry out the electrical work.
- When connecting to the mains, comply with the locally applicable laws and regulations of the local energy supply company.
- Before commencing work, disconnect the device from the mains and secure it against being switched on again without authorisation.
- Personnel are trained on the execution of the electrical connection and the options for switching off the device.
- Comply with the technical specifications contained in these installation and operating instructions and on the rating plate.
- Earth the device.
- Switchgears are to be arranged overflow-proof.
- Replace defective power supply cables immediately. Contact customer service.

2.4 Monitoring devices

The following monitoring devices must be provided on-site:

Circuit breaker

The size of the circuit breakers conforms to the rated current of the pump. The switching characteristics should comply with group B or C. Observe local regulations.

Residual-current device (RCD)

Comply with the regulations of the local energy supply company! The use of a residual-current device is recommended.
If persons come into contact with the device and conductive fluids, secure the connection **with** a residual-current device (RCD).

2.5 Pumping fluids that are hazardous to health

When pumping fluids that are hazardous to heath, there is a risk of bacterial infection if the user comes into contact with the fluid! Thoroughly clean and disinfect the device during removal and prior to further use. The operator must ensure the following:
- The following protective equipment is provided and worn when cleaning the device:
  - Closed safety goggles
  - Breathing mask
  - Protective gloves
- All persons are informed about the fluid, the associated danger and its correct handling!

2.6 Explosive atmosphere in the collection reservoir

Gas can collect in the collection reservoir when pumping sewage containing faeces. These gas accumulations can escape into the operating space and create an explosive atmosphere as a result of incorrect installation and maintenance work. This atmosphere can ignite and lead to an explosion. In order to prevent an explosive atmosphere, observe the following points:
- The collection reservoir must be undamaged (no cracks, leaks, porous material)! Take any defective lifting units out of operation.

- Ensure all connections for the inlet, pressure pipe and venting are sealed tightly and in accordance with regulations!
- When opening the collection reservoir (e.g. during maintenance work), ensure appropriate replacement of air!

2.7 Transport

- Wear the following protective equipment:
  - Safety shoes
  - Safety helmet (when using lifting equipment)
- Hold the reservoir when transporting the device. Never pull the power supply cable!
- Devices weighing 50 kg and over must be transported by two persons. Generally, it is recommended that two persons transport the device.
- If lifting equipment is used, observe the following points:
  - Only use legally specified and approved lifting gear.
  - Select the lifting gear based on the existing conditions (weather, attachment point, load, etc.).
  - Always attach the lifting gear to the attachment points.
  - The stability of the lifting equipment must be ensured during operation.
  - When using lifting equipment, a second person must be present to coordinate the procedure if required (e.g. if the operator's field of vision is blocked).
  - Persons are not permitted to stand beneath suspended loads. Do **not** carry suspended loads over workplaces where people are present.

2.8 Installing/dismantling

- Wear the following protective equipment:
  - Safety shoes
  - Safety gloves against cuts
  - Safety helmet (when using lifting equipment)
- Locally applicable laws and regulations for work safety and accident prevention must be complied with.
- Disconnect the device from the mains and secure it against being switched on again without authorisation.
- Close the gate valve in the inlet and in the pressure pipe.
- Provide adequate aeration in closed rooms.
- When working in chambers and closed spaces, a second person must be present for safety reasons.
- Take immediate countermeasures if there is a build-up of toxic or suffocating gases!
- Clean the device thoroughly both inside and outside.

2.9 During operation

- Do not open the device!
- Open all gate valves in the inlet and in the pressure pipe!
- Ensure ventilation!
- The operator is trained in the functionality and the options for switching off the device!

2.10 Maintenance tasks

- Wear the following protective equipment:
  - Closed safety goggles
  - Safety gloves
- Close the gate valve in the inlet.
- Only carry out maintenance tasks mentioned in these installation and operating instructions.
- Only original parts from the manufacturer may be used for maintenance and repairs. Use of parts other than the original parts releases the manufacturer from any liability.
- Collect any leakage of pumped fluid immediately and dispose of it according to the locally applicable guidelines.

2.11 Operator responsibilities

- Installation and operating instructions must be in a language which the personnel can understand.
- Make sure that the personnel is relevantly trained for the specified work.
- Provide the necessary protective equipment and make sure that the personnel wears it.
- Safety and information signs mounted on the device must be always legible.
- Train the personnel pertaining to the functioning of the system.
- Eliminate risk from electrical current.

Children and persons below 16 years or with reduced physical, sensory or mental capacities or limited experience are prohibited from handling the device! A technician must supervise persons below 18 years!

3 Application/use

3.1 Intended use

- For the backflow resistant drainage of discharge points for buildings below the backflow level
- Installation inside buildings (according to EN 12056 und DIN 1986-100)
- Pumping sewage with and without faeces (according to EN 12050-1) out of the domestic area in accordance with EN 12056-1
  A grease trap must be installed for pumping greasy sewage!

Application limits

Improper use and overstraining will damage the reservoir. Strictly adhere to the application limits:

- Max. intake/h: 600 l
- Max. positive suction head: 5 m
- Max. pressure in the pressure pipe: 1.5 bar
- Fluid temperature: 3...40 °C
- Ambient temperature: 3...40 °C

CAUTION

Overpressure in the collection reservoir!

Exceeding the application limits can result in overpressure in the collection reservoir. This can cause the collection reservoir to burst! The application limits must be strictly observed! The maximum possible intake must always be less than the volume flow of the lifting unit at the respective duty point!

3.2 Improper use

DANGER

Explosion due to pumping of explosive fluids!

Pumping of highly flammable and explosive fluids (gasoline, kerosene, etc.) in pure form is strictly prohibited. There is a risk of fatal injury due to explosion! The lifting unit is not designed for these fluids.

The following fluids may **not** be introduced:

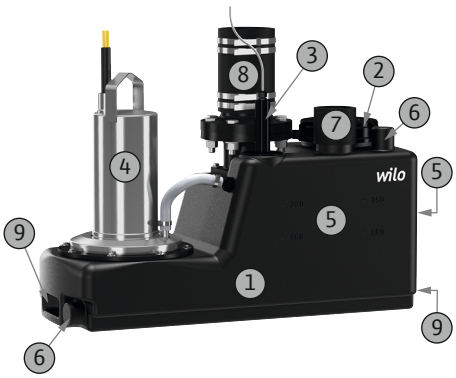
- Sewage from drainage objects that are located above the backflow level and can be drained by natural fall (in accordance with EN 12056-1).
- Debris, ash, garbage, glass, sand, plaster, cement, lime, mortar, fibrous materials, textiles, paper towels, wet-wipes (e.g. fleece cloths, moist toilet paper wipes), nappies, cardboard, coarse paper, synthetic resins, tar, kitchen waste, grease, oil
- Slaughterhouse waste, disposal of slaughtered animals and animal waste (liquid manure, etc.)
- Toxic, aggressive and corrosive media, such as heavy metals, biocides, pesticides, acids, bases, salts, swimming-pool water (in Germany in accordance with DIN 1986-3)
- Cleaning agents, disinfectants, dishwashing or laundry detergents in excess amounts, and such which have a high degree of foam formation
- Drinking water

Intended use also includes compliance with this manual. Any other use is regarded as non-compliant with the intended use.

4 Product description

4.1 Design

Submersible, ready for connection and fully automatic sewage lifting unit as a single-pump system for installation in buildings.



1	Collection reservoir
2	Inspection opening
3	Level control
4	Motor
5	Free choice of inlet surface areas
6	Inlet DN 40
7	Ventilation connection
8	Pressure connection
9	Transport/fastening straps

Fig. 1: Overview

4.1.1 Collection reservoir

Gas-tight and watertight collection reservoir made from plastic. The base of the reservoir is bevelled for reliable operation without any build-up of deposits. The inlet connections DN 100 can be selected as required on both sides and on one end. The pressure connection DN 80 is configured vertically above the reservoir. Furthermore, the lifting unit has two inlet connections DN 40 and one ventilation connection DN 70.

For easy maintenance of the unit, the collection reservoir is equipped with an inspection opening.

Two fastening straps are provided on the collection reservoir for transport and fixation. This allows the lifting unit to be gripped securely for transport and anchored in an anti-buoyant way to the ground with the supplied fixation material.

4.1.2 Motor

The motor that is mounted is a surface-cooled, watertight encapsulated motor with a stainless steel housing. The cooling is done by the ambient air. The waste heat is given off via the motor housing.

With single-phase AC motors, the operating capacitor is integrated in the motor.

4.1.3 Level control

The level control is fitted in the collection reservoir. Rod float switches are used as signal transmitters. The switching points for “Pump ON” and “High water alarm” are preset. The switching point for “Pump OFF” is defined by the set follow-up time of the pump.

4.1.4 Switchgear

The lifting unit is controlled via the fitted switchgear. The switchgear can also be used to implement a collective fault signal (SSM). See the enclosed installation and operating instructions for the precise switchgear specifications.

For detailed information on connecting the lifting unit to the switchgear, refer to the connection diagram in this operating and maintenance manual!

4.2 Monitoring devices

Monitoring of motor winding

The motor is equipped with thermal motor monitoring with bimetallic strips:

- Single-phase current motor: The motor monitoring is self-switching. This means that the motor is switched off if it overheats and is automatically switched on again when it has cooled down.
- Three-phase current motor: The motor monitoring is displayed and reset via the connected switchgear.

High water alarm with collective fault signal

When the high water level is reached, an acoustic and optical alarm signal is given, the forced switch-on of the pump follows and the collective fault signalling contact is activated. An external alarm (horn, SMS via SmartHome connection) can be triggered via this potential-free contact.

As soon as the water drops below the high water level, the pump is deactivated once the follow-up time has elapsed, and the alarm signal is acknowledged automatically.

4.3 Operating principle

The sewage that arrives is channelled into the collection reservoir via the inlet pipe, where it collects. When the water level reaches the switch-on level, the pump is switched on by the integrated level control and the collected sewage is pumped into the connected pressure pipe. When the switch-off level is reached, the pump is deactivated after the set follow-up time.

4.4 Operating modes

Operating mode S3: Intermittent periodic duty

This operating mode defines a switching cycle in a combination of periods of operation and standstill. Specified value (e.g. S3 25 %) relates to the operating time. The switching cycle has a duration of 10 min.
If two values (e.g. S3 25 %/120 s) are specified, the first value relates to the operating time. The second value specifies the max. period of the switching cycle.

The unit is not designed for continuous duty! The max. volume flow applies to intermittent periodic duty according to EN 60034-1!

4.5 Operation with frequency converter

Operation on the frequency converter is not permitted.

4.6 Type key

Example: Wilo-DrainLift S 1/6M RV	
DrainLift	Sewage lifting unit
S	Size
1	Single-pump system
6	Maximum delivery head in m at Q = 0
M	Mains connection version: M = 1~230 V, 50 Hz T = 3~400 V, 50 Hz
RV	Version with non-return valve

4.7 Technical data

Approved field of application	
Max. intake per hour	600 l
Max. pressure in the pressure pipe	1.5 bar
Max. delivery head	6 m
Max. volume flow	35 m³/h
Max. positive suction head	5 m
Fluid temperature	3...40 °C
Ambient temperature	3...40 °C
Motor data	
Mains connection	1~230 V, 50 Hz
Power consumption [P_1]	See rating plate
Rated power [P_2]	See rating plate
Rated current [I_N]	See rating plate
Speed [n]	See rating plate
Activation type	direct
Operating mode	S3 15 %/120 s
Protection class	IP68
Cable length to plug	1.4 m
Cable length to switchgear	4 m
Plug	Single-phase current: Shockproof plug Three-phase current: CEE plug
Connections	
Pressure connection	DN 80, PN 10
Inlet connection	1x DN 100, 2x DN 40
Ventilation connection	DN 70
Dimensions and weights	
Gross volume	45 l
Switching volume	21 l

Diagonal dimension	853 mm
Weight	30 kg

4.8 Scope of delivery

- Sewage lifting unit ready for connection with switchgear and plug
- 1x inlet seal DN 100 for plastic pipe (Ø110 mm)
- 1x hole saw (Ø124 mm) for inlet DN 100
- 1x non-return valve DN 80 (only for “RV” version)
- 1x flange connector DN 80/100
- 1x PVC hose section (Ø50 mm) with clamps for inlet connection DN 40
- 1x collar for ventilation connection DN 70
- 1x set of fixation material (2x mounting brackets, screws, wall plugs, washers)
- 3x sound absorption strips for insulation of structure-borne noise
- Installation and operating instructions

4.9 Accessories

On the pressure side

- Flange connector DN 80 for connection of a pressure pipe with flange connection
- Flange gate valve DN 80 made of cast material

On the inlet side

- Flange connector DN 100 for connection of a flange gate valve
- Flange gate valve DN 100 made of cast material
- Gate valve DN 100 made of PVC with fixed pipe ends
- Inlet seal DN 100

General

- Diaphragm hand pump with R1½ connection (without hose)
- 3-way stopcock for switching over to the manual suctioning
- Horn 230 V, 50 Hz
- Flash light 230 V, 50 Hz
- Signal lamp 230 V, 50 Hz
- SmartHome radio transmitter for networking with the Wilo wibutler

5 Transportation and storage

5.1 Delivery

After receiving the shipment, this must be checked immediately for defects (damage, completeness). Defects must be noted on the freight documentation! Furthermore, defects must be notified to the transport company or the manufacturer immediately on the day of receipt of shipment. Subsequently notified defects can no longer be asserted.

5.2 Transport

WARNING

Head and foot injuries due to lack of protective equipment!

Danger of (serious) injuries during work. Wear the following protective equipment:

- Safety shoes
- Safety helmet must be used if lifting equipment are used!

Only remove the outer packaging at the place of utilisation to ensure that the lifting unit is not damaged during transport. Use tear-proof plastic sacks of sufficient size to package used lifting units for transport in a leak-proof manner.

The following points must also be observed:

- To transport the device, use the carrying straps – never pull the power supply cable!
- Transport with two persons.
- If lifting equipment is used, observe the following points:
  - Use legally specified and approved lifting gear.
  - Select the lifting gear based on the existing conditions (weather, attachment point, load, etc.).
  - Always attach the lifting gear to the attachment points (handle or lifting eyelet).
  - The stability of the lifting equipment must be ensured during operation.
  - When using lifting equipment, a second person must be present to coordinate the procedure if required (e.g. if the operator’s field of vision is blocked).
  - Persons are not permitted to stand beneath suspended loads. Do **not** carry suspended loads over workplaces where people are present.

5.3 Storage

DANGER

Danger due to fluids hazardous to health! Disinfect the lifting unit!

If the lifting unit is used to pump fluids that are hazardous to health, decontaminate the lifting unit after dismantling and before carrying out any other work! There is a risk of fatal injury! Observe the specifications in the work regulations! The operator must make sure that the personnel have received and read the work regulations!

CAUTION

Total damage due to moisture ingress

Moisture ingress in the power supply cable damages the power supply cable and the pump! Never immerse the end of the power supply cable in a fluid and firmly seal it during storage.

Newly supplied lifting units can be stored for one year. For longer storage periods, contact customer service.

The following must be observed for storage:

- Place the lifting unit on a firm bearing surface and secure it against slipping and falling over!
- The max. storage temperature is -15 °C to +60 °C at a max. relative humidity of 90 %, non-condensing. Frost-proof storage at a temperature of 5 °C to 25 °C with relative humidity of 40 % to 50 % is recommended.
- Drain the collection reservoir completely.
- Coil the power supply cables and attach them to the pump.
- Seal the ends of the power supply cables against water ingress.
- Remove the existing switchgear and store it according to the manufacturer's instructions.
- Tightly seal all open connections.
- Do not store the lifting unit in rooms in which welding work is carried out. The resulting gases or radiation can corrode the elastomer parts.
- The lifting unit must be protected from direct sunlight and heat. Extreme heat can cause damage to the reservoir and the pumps!
- Elastomer parts are subject to natural brittleness. Contact customer service if the pump must be stored for more than 6 months.

After storage, the maintenance work according to EN 12056-4 must be carried out prior to commissioning.

6 Installation and electrical connection

6.1 Personnel qualifications

- Electrical work: Electrical work must be carried out by a qualified electrician (in accordance with EN 50110-1).
- Installation-/dismantling: The technician must be trained in the use of the necessary tools and fixation materials for the relevant construction site. The technician must also be trained in the processing of plastic pipes. In addition, the technician must be instructed in the locally applicable guidelines for sewage lifting units.

6.2 Installation types

- Floor-mounted installation in buildings
- Concealed floor installation in pump chambers outside of buildings

6.3 Operator responsibilities

- Observe locally applicable accident prevention and safety regulations of trade associations.
- Provide protective equipment and ensure that the protective equipment is worn by personnel.
- Observe all regulations for working under suspended loads when using lifting equipment.
- The operating space must be freely accessible in order to be able to easily deliver the lifting unit incl. transport equipment. There must be adequate access to the operating space, and existing elevators must have the required load-bearing capacity.

- Structural components and foundations must have sufficient stability in order to allow the device to be fixed securely and functionally. The operator is responsible for the provision and suitability of the structural component/foundation!
- The installation surface must be horizontal and flat, as well as suitable for fixation with anchors.
- Carry out installation according to locally applicable regulations (DIN 1986-100, EN 12056).
- For correct installation and operation of the lifting unit, lay and prepare the pipes according to the consulting documents.
- Mains connection must be arranged overflow-proof.

6.4 Installation

WARNING

Hand and foot injuries due to lack of protective equipment!

Danger of (serious) injuries during work. Wear the following protective equipment:

- Safety gloves
- Safety shoes

CAUTION

Material damage due to incorrect transport!

It is not possible to transport and to position the lifting unit alone. There is a risk of material damage to the lifting unit! Always transport the lifting unit and align it at the installation location with two persons.

- Prepare operating space/installation location as follows:
  - Clean, free of coarse solids
  - Dry well
  - Frost-free
  - Well lit
- Ensure adequate aeration of the operating space.
- Ensure a clearance of min. 60 cm around the system for maintenance work.
- An additional pump sump in the operating space must be provided for draining large leakages, min. dimensions: 500 x 500 x 500 mm. Select the pump used according to the delivery head of the lifting unit. Draining by hand must be possible in an emergency situation.
- The power supply cables must be properly laid. There must be no danger to the power supply cables (i.e. tripping, damage during operation). Check whether the cable cross-section and the cable length are sufficient for the selected installation type.
- The mounted switchgear is not overflow-proof. Install the switchgear adequately high. Ensure good operation!
- To transport the lifting unit , use the carrying straps – never pull the power supply cable! Transport with two persons.

Installation in the pump chamber

DANGER

Potentially fatal danger due to dangerous autonomous work!

Work in chambers and narrow rooms as well as work involving risk of falling are dangerous work. Such work may not be carried out autonomously! A second person must be present for safety reasons.

WARNING

Head injuries due to lack of protective equipment!

Danger of (serious) injuries during work. If lifting equipment is used, wear a safety helmet!

Additionally comply with the following points if the lifting unit is installed in a pump chamber:

- Take immediate countermeasures if there is a build-up of toxic or suffocating gases!

- Note the diagonal dimension of the lifting unit.
- It must be possible to attach lifting equipment safely. The storage place and the operating space/installation site must be accessible with the lifting equipment without any difficulty. The set-down location must have a solid bearing surface.
- Attach the lifting gear to the lifting unit using the two transport straps. Secure the transport straps against slipping! Only use lifting gear which has been technically approved.

6.4.1 Note on fixation material

The lifting unit can be installed on various constructions (concrete, steel, etc.). Select the fixation material which is suitable for the relevant construction. For correct installation, observe the following instructions for the fixation material:

- Avoid tearing or chipping of the construction surface, **observe the minimum edge distances**.
- Ensure tight and secure installation, **adhere to the prescribed borehole depth**.
- Drilling dust impairs holding strength, **always blow out or vacuum out the borehole**.
- Only use components (e.g. screws, anchors, mortar cartridges) which are in perfect condition.

6.4.2 Note on pipework

The pipework is subjected to different pressures during operation. Pressure surges can also occur (e.g. when closing the non-return valve) which may be several times higher than the pump pressure, depending on the operating conditions. These different pressures put a strain on the piping and the pipe adaptors. In order to ensure safe and faultless operation, the following parameters must be checked and adapted for the piping and pipe adaptors and designed according to the requirements:

- Pressure resistance of pipework and pipe adaptors
- Tensile strength of the pipe adaptors (= longitudinal force fit connection)

The following points must also be observed:

- Pipes are self-supporting.
- Connect the pipes free of stress and vibrations.
- No tensile or compressive forces must act on the lifting unit.
- In order to allow the inlet pipe to drain automatically, lay the pipe with a slope to the lifting unit.
- Do not install constrictions/reductions!
- Provide a gate valve in the inlet and the pressure pipe on-site!

6.4.3 Work steps

The lifting unit is installed in the following steps:

- Preparatory tasks.
- Place the lifting unit.
- Connect the pressure pipe.
- Connect the main inlet.
- Connect the vent.
- Connect additional inlets.

6.4.4 Preparatory tasks

- Unpack the lifting unit and remove the securing mechanisms.
- Check the scope of delivery.
- Check all components are in proper working condition.
  CAUTION! Do not install defective components! Defective components can lead to system failures!
- Place accessories to one side and keep them for later use.
- Select the installation location.
  NOTICE! Provide a clearance of min. 60 cm around the lifting unit for maintenance work!

6.4.5 Placing the lifting unit

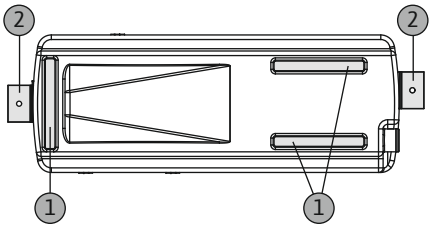


Fig. 2: Lifting unit underside

1	Sound absorption strip
2	Mounting bracket

Lifting units must be installed so they are prevented from twisting and also in an antibuoyant fashion, depending on the installation location. Anchor the lifting unit to the floor using the mounting brackets.

✓ Preparatory tasks have been completed.

✓ Operating space prepared according to consulting documents.

1. Place the lifting unit at the installation location and align to the pipework.
   CAUTION! Secure the switchgear to the lifting unit against falling. The switchgear may be destroyed if it falls over!

2. Insert mounting bracket into the fastening strap (on both front ends) and mark the drilling holes.
3. Remove mounting bracket and place lifting unit to one side.
4. Drill and clean the boreholes. **NOTICE! Observe the information on the fixation material used!**
5. Tilt the lifting unit and attach the sound absorption strips to the underside of the lifting unit.
   WARNING! This work must be carried out by two persons. If the lifting unit slips, it can lead to (severe) crushing injuries!
6. Reposition the lifting unit and insert the mounting bracket into the fastening strap.
7. Attach mounting bracket to the floor. **NOTICE! Observe the information on the fixation material used!**

► Lifting unit is installed in the operating space in an anti-buoyant fashion and also prevented from twisting. Next step: Connect the pressure pipe.

6.4.6 Connecting the pressure pipe

Observe the following information when connecting the pressure pipe:
- Pressure pipe in DN 80 or DN 100 (in accordance with DIN EN 12050-1)!
- The flow rate in the pressure pipe must be between 0.7 m/s and 2.3 m/s (in accordance with EN 12056-4)!
- Reducing the pipe diameter in the pressure pipe is not permitted!
- Ensure all connections are completely tight!
- To avoid backflow from the main public sewer, the pressure pipe must be installed as a “pipe loop”.
  The bottom edge of the pipe loop must be above the locally defined backflow level at its highest point!
- Pressure pipe installed must be frost-proof.
- Install non-return valve with ventilation device at the discharge port.
  The ventilation device allows the pressure pipe to be drained if the lifting unit is subsequently removed.
- Install the gate valve on the non-return valve.

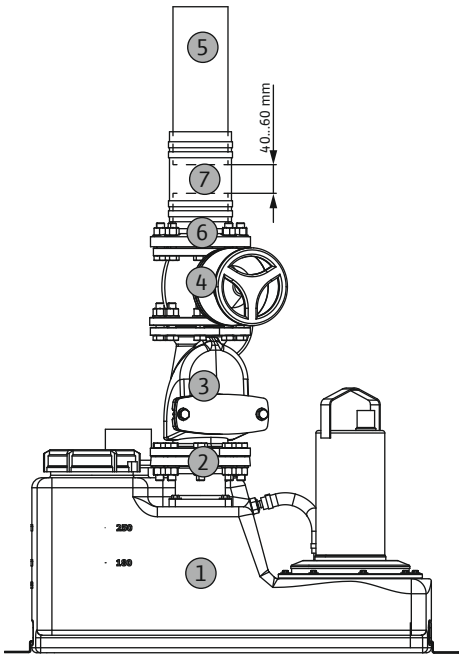


Fig. 3: Fitting pressure connection

	Lifting unit
2	Pressure connection
3	Non-return valve with ventilation device
4	Gate valve
5	Pressure pipe
6	Flange connector
7	Connecting hose, flexible

✓ Pressure pipe installed correctly according to consulting documents and perpendicular to the pressure port.

✓ Installation materials available:
1x gate valve
1x non-return valve with ventilation device
1x connecting hose
2x pipe clamps

1. Install the supplied non-return valve on the pressure port.
2. Install the gate valve on the non-return valve.
3. Push the flexible connecting hose over the pressure pipe and secure against shifting.
4. Install flange connector on the gate valve.
   ⇒ To ensure that the pressure pipe is installed acoustically isolated, maintain a distance of 40 – 60 mm between end discharge pipeline and the end of the flange connector!
   - If the distance is too small, the discharge pipe or the flange connector must be shortened.
   - If the distance is too large, the hose section supplied cannot be used. A suitable connecting sleeve must be provided by the customer!
5. Push the pipe clamps over the flange connector.

6. Align the flexible connecting hose centrally between the flange connector and the discharge pipe.
7. Attach the connecting hose on each flange connector and the pressure pipe with the two pipe clamps. **Max. tightening torque: 5 Nm!**

► Pressure pipe connected. Next step: Connect the inlet.

6.4.7 Connecting the main inlet

The inlet can be on both sides and the rear end, according to choice. In addition, there are markings on the reservoir for direct connection to a toilet:
- Stand-alone toilets: Positive suction head 180 mm
- Wall-mounted toilet: Positive suction head 250 mm

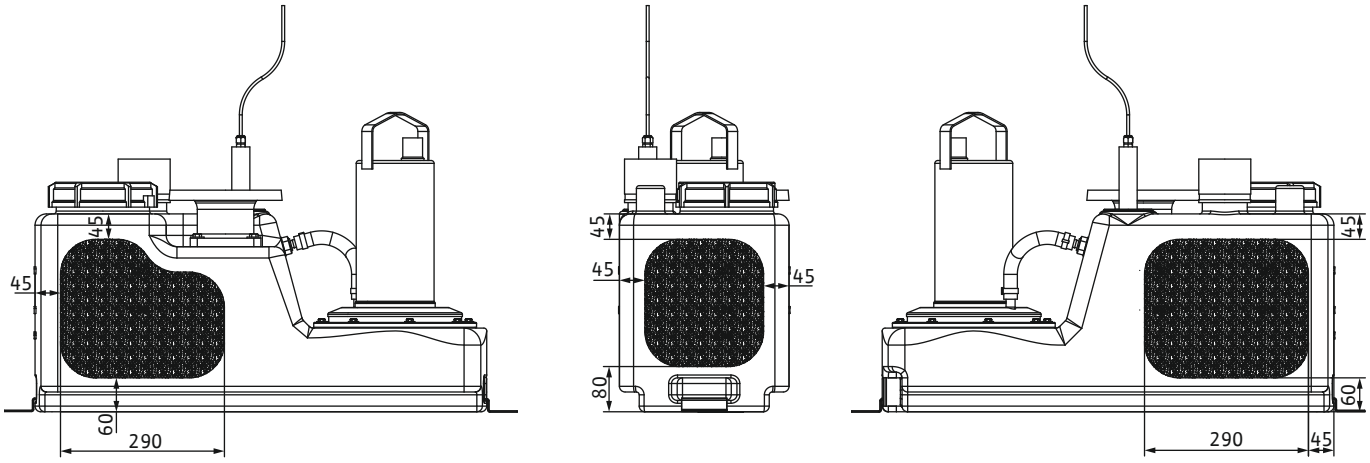


Fig. 4: Free inlets

Observe the following information when connecting the inlet pipe:
- The inlet must be within the marked areas. If the inlet is outside the marked areas, the following problems can occur:
  - Connection on the collection reservoir will leak.
  - Backflow into the connected inlet pipe.
- Avoid an inlet surge and air intake in the collection reservoir. Route the inlet properly. **CAUTION! Inlet surges or air intake in the collection reservoir can cause malfunctions of the lifting unit!**
- The minimum connection height is 180 mm. **NOTICE! An inlet at less than this height can lead to backflow in the inlet pipe!**
- Ensure all connections are completely tight!
- Install gate valve in the inlet!

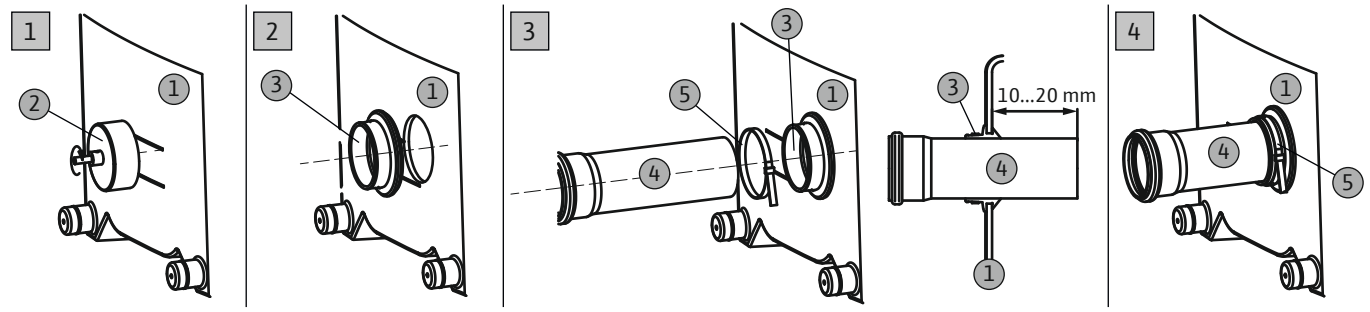


Fig. 5: Connecting the inlet

1	Reservoir wall
2	Hole saw for drill
3	Inlet seal
4	Inlet pipe
5	Pipe clamp

✓ Inlet pipe installed properly to collection reservoir and according to consulting documents.

✓ Installation materials available:
1x hole saw
1x drill

1x inlet seal
1x pipe clamp

1. Mark the inlet point on the collection reservoir.
2. Use the supplied hole saw to cut the hole for the inlet into the reservoir wall.
   When cutting holes on the collection reservoir, observe the following points:
   – Observe the dimensions of the inlet surfaces.
   – Max. speed of the drill: 200 rpm.
   – Check the hole diameter: DN 100 = 124 mm. **NOTICE! Drill the connection carefully. Impermeability of the connection depends on the hole diameter!**
   – Make sure the excess material in the drill bit is removed completely! If the excess material removal is reduced, the material will heat up excessively and melt.
   ⇒ Interrupt the drilling process, allow the material to cool and clean the hole saw!
   ⇒ Reduce the speed of the drill.
   ⇒ Vary the feed pressure when drilling.
3. Deburr and smooth the cut surface.
4. Insert the inlet seal into the hole.
5. Push the pipe clamp onto the inlet seal.
6. Coat the inner surface of the inlet seal with lubricant.
7. Push the inlet pipe into the inlet seal.
   Push the inlet pipe 10...20 mm into the collection reservoir.
8. Connect the inlet seal and pipe firmly to the pipe clamp. **Max. tightening torque: 5 Nm.**

► Inlet connected. Next step: Connect the vent.

6.4.8 Connecting the vent

Connection of a ventilation line is a specified requirement and essential for correct function of the lifting unit. Observe the following points when connecting the ventilation line:

- Guide the ventilation line over the roof.
- Ensure all connections are completely tight.

✓ Ventilation line is properly installed.
✓ Installation materials available:
1x pipe clamp

1. Open the connection port: Pull the strip on the Konfix connector and open the connection port.
2. Put the pipe clamp on the connection port.
3. Attach the ventilation pipe to the connection port.
4. Secure the ventilation pipe on the connection port with the pipe clamp. **Max. tightening torque: 5 Nm.**

► Lifting unit is installed. If required, further drainage fixtures or a diaphragm hand pump can be connected to the additional connection port.

6.4.9 Connecting additional inlets

In general, all drainage fixtures are connected centrally to the lifting unit via an inlet pipe. However, because this is not always possible, the lifting unit has two additional connections:

- DN 40 connection on the front longitudinal side
  For fixed connection of a diaphragm hand pump. **NOTICE! When drainage fixtures are connected on the longitudinal side, it is possible that drainage problems will arise for physical reasons. Install inlet with a pipe loop! The inlet height of the pipe loop must be 180 mm!**
- DN 40 connection next to the ventilation connection piece
  To connect additional drainage fixtures.

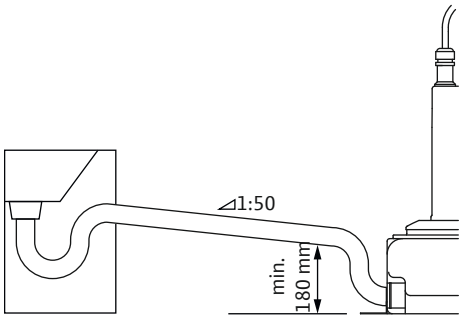


Fig. 6: Inlet connection with seal

When using additional connections, observe the following points:

- Connect the inlet pipe only at the connection port.
- Avoid an inlet surge and air intake in the collection reservoir. Route the inlet properly. **CAUTION! Inlet surges or air intake in the collection reservoir can cause malfunctions of the lifting unit!**
- Ensure all connections are completely tight!
- Install gate valve in the inlet!

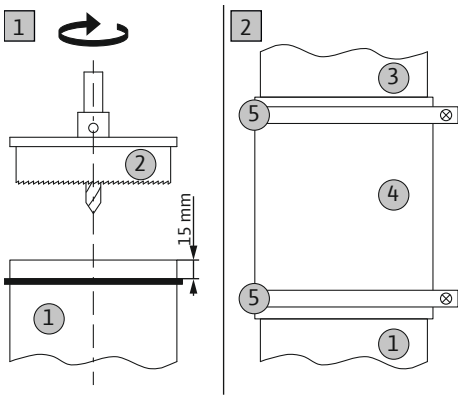


Fig. 7: DN 40 connection

1	Inlet connecting piece
2	Hole saw
3	Inlet pipe
4	Hose section
5	Pipe clamp

✓ Inlet pipe installed properly to collection reservoir and according to consulting documents.

✓ Installation materials available:
1x hole saw (size suitable for connection port)
1x hose section
2x pipe clamps

1. Open the connection port with the hole saw.
   Alternatively, the connection port can also be opened using a hand saw. Using the hand saw, saw off the seal above the lip.
2. Deburr and smooth the opening.
3. Push the hose section over the connection port and secure it with a pipe clamp.
   Max. tightening torque: 5 Nm!
4. Place the second pipe clamp over the inlet pipe.
5. Place the inlet in the hose section.
6. Pull the pipe clamp over the hose section and secure the inlet to the hose section.
   Max. tightening torque: 5 Nm!

► Additional inlet installed.

6.5 Optional: Installation of a diaphragm hand pump

If the lifting unit fails, the accumulated sewage is collected for a period of time depending on the inflow quantity. In order to avoid bursting of the collection reservoir and major damage to the lifting unit, the collected sewage must be regularly pumped into the pressure pipe. For this purpose, it is recommended to install a diaphragm hand pump between the lifting unit and the pressure pipe.

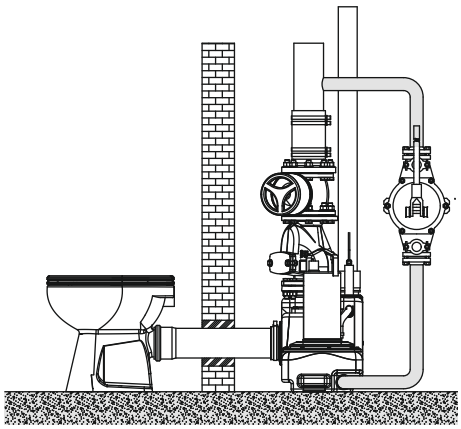


Fig. 8: Optional: Diaphragm hand pump

When installing the diaphragm hand pump, the following points must be observed:

- Select an installation height which is optimal for operation.
- Connect the inlet to a connection port at the end of the lifting unit (lowest point for complete draining).
- Connect the pressure pipe after the gate valve on the pressure side.
  Alternatively, the connection can be made via a pipe loop directly on the sewer.
- Ensure all connections are completely tight!
- Observe the installation and operating instructions for the diaphragm hand pump!

6.6 Electrical connection

DANGER

Risk of death due to electrocution!

Improper conduct when carrying out electrical work can lead to death due to electric shock! Electrical work must be carried out by a qualified electrician in accordance with the locally applicable regulations.

- The mains connection must match the specifications on the rating plate.
- Power supply on mains side for three-phase current motors with clockwise rotating field.
- Lay the power supply cables in accordance with the locally applicable regulations.
- Earth the device properly in accordance with the locally applicable regulations.
  The cross-section of the cable for the protective earth conductor connection must comply with local regulations.

- Attached switchgear is to be arranged overflow-proof.

6.6.1 Fuse on mains side

Circuit breaker

The size of the circuit breakers conforms to the rated current of the pump. The switching characteristics should comply with group B or C. Observe local regulations.

Residual-current device (RCD)

Comply with the regulations of the local energy supply company! The use of a residual-current device is recommended.
If persons come into contact with the device and conductive fluids, secure the connection **with** a residual-current device (RCD).

6.6.2 Mains connection

The attached switchgear of the lifting unit is equipped with a shock-proof or CEE plug. For connection to the power supply, a shock-proof socket (according to local regulations) or a CEE socket must be provided on-site (according to local regulations).

6.6.3 Attached switchgear

The switchgear is pre-wired and factory set for use on the lifting unit. The switchgear has the following functions:

- Level-dependent control
  The switching points of the level control have permanent settings and cannot be adjusted.
- Motor protection
- Rotation direction monitoring (only for the three-phase current version)
- High water alarm
  The switching level for the alarm signal is about 220 mm (above the installation surface upper edge).

The connections of the power supply cable to the switchgear are shown in the circuit diagram in the **appendix of these installation and operating instructions**. For further information on the individual functions, observe the installation and operating instructions for the switchgear.

6.6.4 Operation with frequency converter

Operation on the frequency converter is not permitted.

7 Commissioning

WARNING

Foot injuries due to lack of protective equipment!

Danger of (serious) injuries during work. Wear safety shoes!

7.1 Personnel qualifications

- Electrical work: Electrical work must be carried out by a qualified electrician (in accordance with EN 50110-1).
- Operation/control: Operating personnel must be instructed in the functioning of the complete system.

7.2 Operator responsibilities

- Providing installation and operating instructions by the lifting unit or at a place specially reserved for it.
- Making the installation and operating instructions available in the language of the personnel.
- Making sure that the installation and operating instructions are read and understood by all personnel.
- All safety devices and emergency cut-outs must be active and checked to ensure that they function properly.
- The lifting unit is suitable for use under the specified operating conditions.

7.3 Operation

CAUTION

Malfunction due to incorrect operation of the switchgear!

When the plug is inserted, the switchgear starts in the last operating mode that was set. In order to be familiar with the operation of the switchgear, the installation and operating instructions of the switchgear must be read before inserting the plug.

The lifting unit is operated via the fitted switchgear. The switchgear is preset for operating the lifting unit. For information on operating the switchgear and the individual displays, the installation and operating instructions for the switchgear must be observed.

7.4 Application limits

Improper use and overstraining will damage the reservoir. Strictly adhere to the application limits:

- Max. intake/h: 600 l
- Max. positive suction head: 5 m
- Max. pressure in the pressure pipe: 1.5 bar
- Fluid temperature: 3...40 °C
- Ambient temperature: 3...40 °C

7.5 Test run

Before the lifting unit goes into automatic mode, carry out a test run. During a test run, the proper function and the impermeability of the system are checked. It might be necessary to adjust the pump's follow-up time to guarantee optimum operation of the unit.

✓ Lifting unit installed.

✓ Installation checked for correct execution.

1. Switch on the lifting unit: Insert plug into socket.
2. Check operating mode of the switchgear.
   ⇒ The switchgear must operate in automatic mode.
3. Open the shut-off device on the inlet and pressure sides.
   ⇒ Collection reservoir is filled slowly.
4. Lifting unit is switched on and off using the level control.
   ⇒ In a test run, run through a complete pumping procedure of every pump.
5. Close the gate valve in the inlet.
   ⇒ The lifting unit should no longer switch on because no more fluid flows in. If the lifting unit switches on again, the non-return valve is leaky. For correct functioning of the non-return valve, check the position of the venting screw on the non-return valve and correct if necessary!
6. Check to ensure that all pipe adaptors and the collection reservoir do not leak.
   ⇒ If all the components are leak-tight and the non-return valve closes correctly, the lifting unit can run in automatic mode.
7. Open the gate valve in the inlet again.

► Lifting unit operates in automatic mode.

7.6 Adjusting the follow-up time

The pump run-time is set at the factory. If longer slurping noises can be heard (> 1 s) at the end of the pumping process, reduce the follow-up time on the switchgear. For setting the follow-up time, observe the installation and operating instructions for the fitted switchgear!

NOTICE! If the follow-up time is adjusted, observe the operating mode of the lifting unit. The operating mode specifies the max. permissible operating period!

8 Operation

8.1 Automatic mode

The lifting unit operates in automatic mode by default and is switched on and off using the integrated level control device.

WARNING

Risk of burns from hot surfaces!

Motor housing can become hot during operation. It may cause burns. Allow the motor to cool down at ambient temperature after switching it off!

✓ Commissioning was carried out.

✓ Test run has been completed successfully.

✓ The operation and functioning of the lifting unit are known.

1. Switch on the lifting unit: Insert plug into socket.
2. Select automatic mode on the switchgear.

► The lifting unit operates in automatic mode and is controlled depending on level.

8.2 Manual operation

The lifting unit can also be switched on manually for a short test run or to drain the collection reservoir manually in an emergency. For more information about manual operation, observe the installation and operating instructions for the switchgear.

The lifting unit is only approved for intermittent periodic duty. **Continuous duty is not permitted!** The operating mode determines the max. operating time.**Comply with details on operating mode!**

8.3 Emergency operation

DANGER

Danger due to fluids hazardous to health!

In emergency operation, contact with fluids that are hazardous to health may occur. Observe the following points:

- Wear protective equipment:
  - ⇒ Single-use body suit
  - ⇒ Closed safety goggles
  - ⇒ Mouth protection
- Used accessories (e.g. diaphragm hand pump, hoses) must be thoroughly cleaned and disinfected after completing work.
- In case of flooding, disinfect the lifting unit and the operating space.
- Immediately wipe up drips.
- Flush rinsing water into the sewer system.
- Dispose of protective clothing and cleaning material in accordance with local regulations.
- Observe the specifications in the work regulations! The operator must make sure that the personnel have received and read the work regulations!

8.3.1 Overflow of the lifting unit

The lifting unit is overflow-proof, and can continue to be operated even in a disaster situation. Comply with the following limit values:

- Max. overflow height: 2 mWS
- Max. overflow time: 7 days

NOTICE

Operating the lifting unit in a disaster situation

The switchgear is not overflow-proof. To ensure operation of the lifting unit even in the event of an overflow, install the electrical connections and the switchgear at a suitably high level!

8.3.2 Failure of the level control

If the level control fails, drain the collection reservoir in manual operation. For more information about manual operation, observe the installation and operating instructions for the switchgear.

The lifting unit is only approved for intermittent periodic duty. **Continuous duty is not permitted!** The operating mode determines the max. operating time.**Comply with details on operating mode!**

8.3.3 Failure of the lifting unit

If the lifting unit completely fails, the sewage can be pumped out using the diaphragm hand pump.

1. Close the gate valve in the inlet.
2. Close the gate valve in the pressure pipe.
3. Install the diaphragm hand pump on the lifting unit and the pressure pipe.
   NOTICE! For connecting the diaphragm hand pump, the manufacturer's instructions must be observed!

4. Pump sewage into the pressure pipe using the diaphragm hand pump.

9 Decommissioning/dismantling

9.1 Personnel qualifications

- Operation/control: Operating personnel must be instructed in the functioning of the complete system.
- Installation-/dismantling: The technician must be trained in the use of the necessary tools and fixation materials for the relevant construction site. The technician must also be trained in the processing of plastic pipes. In addition, the technician must be instructed in the locally applicable guidelines for sewage lifting units.
- Electrical work: Electrical work must be carried out by a qualified electrician (in accordance with EN 50110-1).

9.2 Operator responsibilities

- Observe locally applicable accident prevention and safety regulations of trade associations.
- Provide the necessary protective equipment and make sure that the personnel wears it.
- Ensure enclosed spaces have sufficient ventilation.
- Take immediate countermeasures if there is a build-up of toxic or suffocating gases!
- When working in chambers and closed spaces, a second person must be present for safety reasons.
- When using lifting equipment, all regulations for working with and under suspended loads must be observed!

9.3 Removal

DANGER

Danger due to fluids hazardous to health during removal!

During removal, contact with fluids that are hazardous to health may occur. Observe the following points:

- Wear protective equipment:
  - ⇒ Closed safety goggles
  - ⇒ Mouth protection
  - ⇒ Protective gloves
- Immediately wipe up drips.
- Observe the specifications in the work regulations! The operator must make sure that the personnel have received and read the work regulations!

DANGER

Danger due to fluids hazardous to health! Disinfect the lifting unit!

If the lifting unit is used to pump fluids that are hazardous to health, decontaminate the lifting unit after dismantling and before carrying out any other work! There is a risk of fatal injury! Observe the specifications in the work regulations! The operator must make sure that the personnel have received and read the work regulations!

DANGER

Risk of death due to electrocution!

Improper conduct when carrying out electrical work can lead to death due to electric shock! Electrical work must be carried out by a qualified electrician in accordance with the locally applicable regulations.

DANGER

Potentially fatal danger due to dangerous autonomous work!

Work in chambers and narrow rooms as well as work involving risk of falling are dangerous work. Such work may not be carried out autonomously! A second person must be present for safety reasons.

WARNING

Risk of burns from hot surfaces!

Motor housing can become hot during operation. It may cause burns. Allow the motor to cool down at ambient temperature after switching it off!

✓ Lifting unit switched off.

✓ Protective equipment put on.

✓ All gate valves (inlet and pressure pipe) closed.

1. To drain the pressure pipe into the reservoir, open the non-return valve using the ventilation device.
2. Loosen the connection between the inlet pipes and pull the inlet pipe out of the inlet seal.
3. Disconnect the connection between the non-return valve and the pressure port.
4. Disconnect the connection between the ventilation pipe and the ventilation connection, and pull the pipe up off the connecting piece.
5. If present: Loosen and remove the DN 40 inlets (additional inlet or diaphragm hand pump).
   DANGER! Health risk due to contact with sewage! Via the lower DN 40 connection, the remaining sewage can flow out of the collection reservoir. The sewage must be collected in suitable containers and fed into the sewer system.
6. Release the anchoring point.
7. Pull the lifting unit carefully out of the pipework.

► Lifting unit is dismantled. Clean and disinfect the lifting unit and operating space.

9.4 Clean and disinfect

DANGER

Danger due to fluids hazardous to health!

If the lifting unit is used to pump fluids that are hazardous to health, decontaminate the lifting unit before carrying out any other work! Wear the following protective equipment while performing cleaning tasks:

- Closed safety goggles
- Breathing mask
- Protective gloves

  ⇒ The equipment listed here is the minimum requirement, observe the specifications of the work regulations! The operator must make sure that the personnel have received and read the work regulations!

✓ Lifting unit is dismantled.

✓ Switchgear packaged watertight.

✓ The rinsing water is disposed of in the sewage in accordance with the locally applicable regulations.

✓ A disinfectant in accordance with work regulations is available for contaminated lifting units.
NOTICE! Strictly observe the manufacturer's specifications concerning use!

1. Spray the lifting unit with clean water from top to bottom.
2. Open the collection reservoir and spray the collection reservoir and all connection ports on the inside.
3. Flush all dirt residue onto the floor of the channel.
4. Allow the lifting unit to dry out.

10 Maintenance and repair

WARNING

Warning: danger of infection!

Bacteria can form in sewage which can lead to infections. Wear the following protective equipment while performing the work:

- Closed safety goggles
- Breathing mask
- Protective gloves

For reasons of safety, and thus to guarantee correct function of the lifting unit, it must always be maintained and repaired by professional service providers (e.g. customer service). The maintenance intervals for lifting units must be carried out in accordance with EN 12056-4:

- ¼ year in the case of commercial companies
- ½ year for multi-family houses
- 1 year for single-family houses

A log must be kept of all maintenance and repair work. The service provider and operator must sign the log.

10.1 Personnel qualifications

- Electrical work: Electrical work must be carried out by a qualified electrician (in accordance with EN 50110-1).
- Maintenance tasks: The technician must be familiar with the lifting unit. The technician must also meet the requirements of EN 12056 (including the individual parts).

11 Spare parts

Spare parts are ordered via customer service. To avoid return queries and incorrect orders, the serial or article number must always be supplied. **Subject to change without prior notice.**

12 Disposal

12.1 Protective clothing

Used protective clothing must be disposed off in accordance with the locally applicable guidelines.

12.2 Information on the collection of used electrical and electronic products

Proper disposal and appropriate recycling of this product prevents damage to the environment and dangers to your personal health.

NOTICE

Disposal in domestic waste is forbidden!

In the European Union, this symbol can appear on the product, the packaging or the accompanying documentation. It means that the electrical and electronic products in question must not be disposed of along with domestic waste.

To ensure proper handling, recycling and disposal of the used products in question, please note the following points:

- Only hand over these products at designated, certified collecting points.
- Observe the locally applicable regulations!

Please consult your local municipality, the nearest waste disposal site, or the dealer who sold the product to you for information on proper disposal. For further information on recycling, go to www.wilo-recycling.com.

13 Appendix

13.1 Electrical connection diagram

1	Motor contactor
2	Earth terminal
3	Terminal strip for signal transmitter and alarm signal

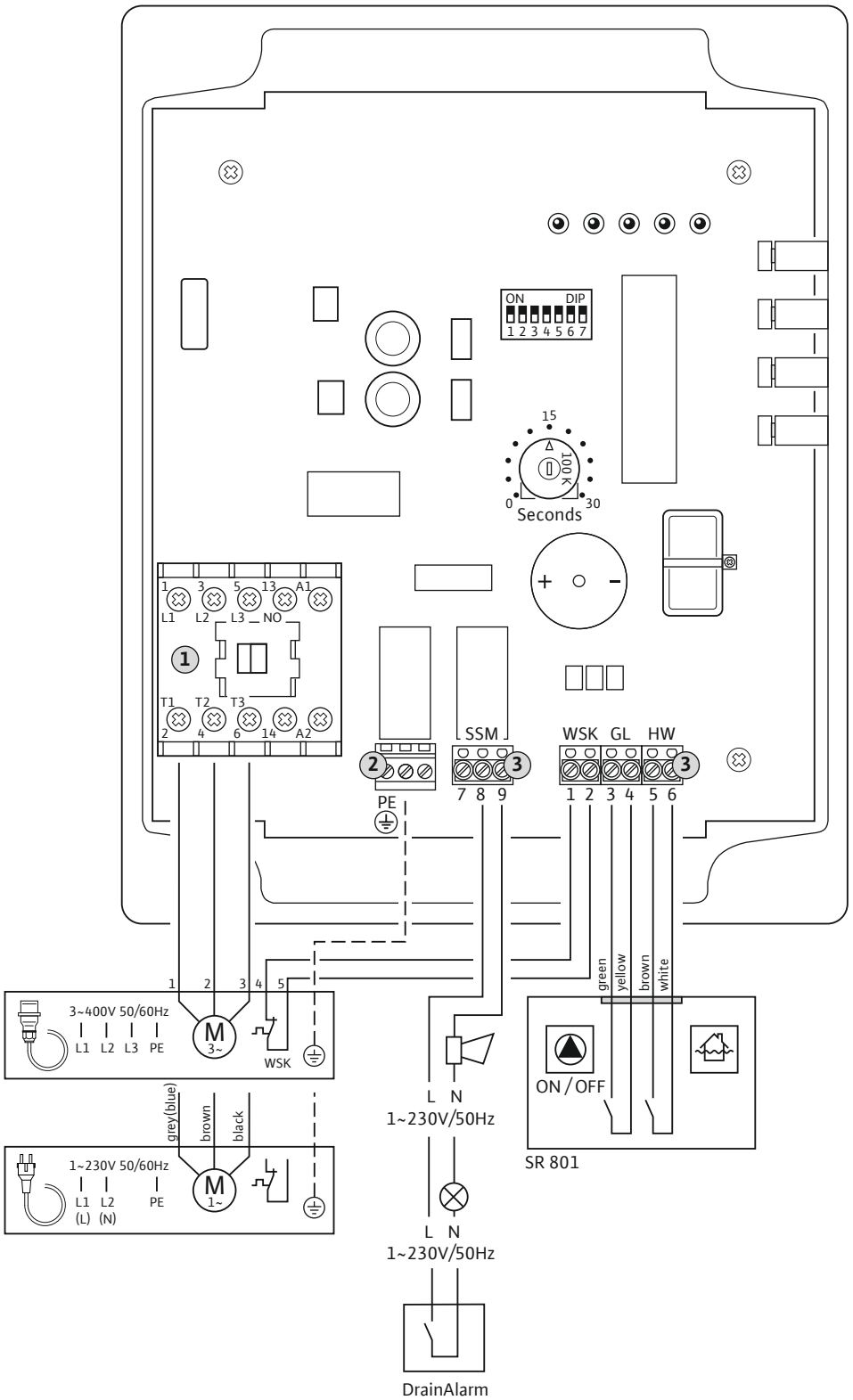


Fig. 9: Connection diagram

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