

HydroJack 75

Operating manual

Automatic wastewater lifting station

Translation of the German original operating manual

Date: 2016-06-30

Version: 1.11



Before starting any work, read the operating manual!
Always have the operating manual to hand on the equipment!

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Service:	Please contact your local dealer
Product:	HydroJack 75
Product no.:	PR10903
Version:	1.11
Written on:	2015-11-09
Date of the last change:	2016-06-30
No. of pages:	100

TECHNOLOGY FROM GERMANY

1. REVISIONS

VERSION:	NAME:	DATE:	REMARKS:
1.00	Christian Hellwig	2015-11-09	Creation
1.10	Christian Hellwig	2016-06-20	Revision / Correction
1.11	Christian Hellwig	2016-06-30	Supplementary audible alarm, manual emptying

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3. GENERAL INFORMATION

3.1 Introduction

HST Systemtechnik GmbH & Co. KG is grateful for the confidence you have placed in a quality wastewater lifting station with the distinction of having been 'Made in Germany'. The wastewater lifting station (hereinafter also referred to as the 'lifting station' or 'system') is equipped with high quality components and corresponds to the latest in technology. Before delivery, your system was tested in order to ensure that it is in good condition as per the quality controls and was subjected to a functional test. A test log is enclosed with the system. Our staff place great emphasis on top quality. As such, our production staff vouch for quality by putting their name and signature on the product.

HST Systemtechnik GmbH & Co. KG has over 30 years of experience in the development, production and installation of equipment and systems in conjunction with the IT and automation technology that is used in equipment, systems as well as operationally within technical infrastructure projects, particularly in the water industry. HST is a leading industrial company in the field of wastewater and sanitation. The company, its product development and production, combined with the highest standards in industry, lies in Germany. For the implementation of projects and service, we have international partners and subsidiaries on a global level in over 13 countries.

3.2 Translation for delivery in the countries of the EEA



In the case of delivery in countries of EEA, the operating manual should be translated into the official language of the country of use. If there are discrepancies in the translation, the original operating manual (German) should be consulted for clarification or the manufacturer should be contacted.

3.3 Copyright

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4. SAFETY

	<p>Before starting work, the operating manual must be read carefully. All installations must be carried out by qualified personnel.</p>	
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4.1 General information

- The operating manual should always be kept in proximity to the system
- If problems cannot be solved with the help of the operating instructions, please contact the manufacturer
- Conversion of (or changes to) the system poses a risk to operational safety and are only permitted following consultation with the manufacturer. Correspondence concerning this should only be in writing. If this is not complied with, all liability, warranties and certificates of conformity will be rendered void.
- The use of non-original spare parts, particularly in the case of repairs, may render any liability for the resulting consequences void
- After commissioning, the operating manual should be handed to the end user and kept until the product is disposed of

In addition to this operating manual, pay attention to the following points:

- Warnings on the system, prohibition signs, warning signs und signs giving orders
- Locally applicable laws and regulations
- Local legal regulations concerning accident prevention
- Relevant harmonised standards and regulations
- Operating instructions of attached components and accessories
- Operating instructions of possible upgradings, add-ons and the SCADA.web

4.2 Safety and warning notices

The system is provided with generally accepted safety symbols.

Failure to do observe these may cause a hazard to persons and render the warranty void. The safety and accident prevention regulations must be observed without fail.

Observe safety notices and warnings notices for the safe and efficient use of the product.

Key words concerning specific hazards and (possible) consequences are defined in the following section. As the case may be, these are supplemented by symbols (pictograms).

4.2.1 Warnings

NOTE

Potentially hazardous situation. If the warning is ignored, damage can result. Not to be used in the event of personal injury.

CAUTION

A potentially hazardous situation with low risk. If the warning is ignored, slight or medium-scale injury can result. Can also be used in connection with property damage.















WARNING

A potentially hazardous situation with medium risk. If the warning is ignored, death or serious damage to health can result.

HAZARD

An immediately hazardous situation with a high risk. If the warning is ignored, death or serious damage to health can result.

4.2.2 Warning signs

				
Warning of a suspended load	Warning of a risk of stumbling	Warning of a crushing hazard	Warning of an explosive atmosphere	Warning of hot surfaces
				
Warning of an entanglement hazard	Warning of hand injuries	Warning of a hazardous area	Warning of a hazardous electrical voltage	Warning of sharp objects
				
Warning of ground conveyors	Warning of a risk of tipping	Warning: Risk of falling	Warning: The machine starts automatically	

4.2.3 Signs giving orders

			
Follow the operating manual and installation manual	Wear safety shoes	Wear gloves	Wear work clothing/ Safety clothing
			
Wear a helmet	Wear safety goggles	Wear ear protection	Wear respiratory protection
			
Wear a harness	Wear a face mask	Wear a mask	Wear a safety vest

4.3 Hazards which emanate from the system

HST products correspond to the latest technology.

Nevertheless there is a residual risk, as systems work with:

- mechanical movements causing a hazard (see the chapter 'Assembly')
- electrical voltages and currents (see the chapter 'Assembly')
- thermal hazards
- thermal hazards do not emanate from the electric motor of the centrifugal pump when the unit is operated properly, because this works intermittently.

CAUTION



In the case of a fault, the motor can be hot (up to 110 °C) and cause burns. The temperature must therefore be checked before physical contact and protective equipment should be worn.

Allow the motor to cool down for 30 minutes.

We have minimised the risk to the health of persons as a result of these hazards through design elements and the safety-related technology.

4.4 Qualification of the staff

This operating manual is directed at:

- operators/owners
- attendants/users
- technical installers/set up staff
- maintenance staff

4.5 Authorised persons

Instructed and trained professionals commissioned by the operator/manufacture are persons who are authorised to carry out installation, operation, setting up and maintenance. The operator has the duty to instruct the operating and servicing staff concerning the safety devices on the system and monitor compliance with the safety measures.

NOTE

If not explicitly identified for other people (owners, users), all work on the system must be carried out by professionals. The direct supplier of the system is responsible for their availability.

In addition to many years of professional experience, skilled workers must have proven knowledge as follows:

PERSON	WORK	KNOWLEDGE
Planners	Design work, changes in operations, new user concept	<ul style="list-style-type: none"> Technical plumbing systems Designing of wastewater lifting stations
Traders, forwarders	Transport/Warehousing	<ul style="list-style-type: none"> Briefing of warehouse safety Safe handling with the hoist and sling gear
Professionals	Installation of plumbing Installation of electrics Initial commissioning Servicing Repairs Decommissioning Disassembly Checking Disposal	<ul style="list-style-type: none"> Safe handling of tools Laying and connection of pressured pipelines and non-pressurised pipelines and connections Safe handling of electrics Measuring the effectiveness of electrical safety measures Specific product knowledge Proper disposal / Environmentally-friendly disposal of materials and substances Decontamination of pollutants (including, among other things, wastewater) A knowledge of recycling
Owners, users	Handling Operation Monitoring Servicing Eliminating faults	<ul style="list-style-type: none"> No specific requirements Briefing by a professional

In order to test expertise, locally applicable laws and regulations must also be drawn upon.

4.5.1 Owners and users

HAZARD

The operator has to ensure that the system is properly set up and access is prevented by unauthorised persons.

NOTE

Extensive skills are an essential prerequisite for any work on the system.

The operator is responsible for:

- designing (planning and dimensioning) of the system
- briefing staff
- adhering to safety rules
- observing the operating manual

The operator needs...

- to have received the briefing
- to have read and understood the relevant parts of the operating manual before taking up duties
- to know the safety equipment and regulations
- to check the running operation

The following adjustments are to be made if the operator is not the owner:

- Who prompts maintenance and/or the repairing of the system?
- Who responds to a fault?
- etc.

4.5.2 Notes for the operator

- Regular inspection, servicing and the timely replacement of all parts which no longer ensure safe operation
- The procedure invention described in the operating manual for stopping the system must be respected
- After completion of the work, all safety devices / protective devices must be re-attached or activated

4.5.3 Safety notes for servicing, inspection work and assembly work

- Work on the system should be performed when it has been brought to a standstill and it is depressurised
- Empty the pressure line when disassembling the pump module
- When working on live electrical components, pull out the mains plug and secure from being plugged in again
- Adhere to the procedure for stopping the system in accordance with the Chapter 'Decommissioning'
- Decontaminate systems, which pump hazardous media (wastewater)
- Before putting the system back into service, follow the chapter 'Commissioning'

4.6 Hazards which are not obvious

- Slipping on wet and slippery floors
- Risk of falls during installation work, operational work and maintenance work
- Allergies, infections and irritations caused by skin contact with wastewater or debris
- Explosions and fires caused by gases or vapours
- Injuries in the area of work around the system

CAUTION

Contact with wastewater

There may be injuries to the skin and eyes and there is a possible risk of infection

- Wear personal safety equipment
- Contact with skin: Immediately wash affected areas of the skin and thoroughly with soap and disinfect
- In the case of contact with eyes: Rinse eyes. If tears do not go away, consult a doctor

4.7 Personal safety equipment

Personal protective equipment is required for various work on the system.

- For your own safety, personal safety equipment (e.g. safety goggles, gloves, anti-slip safety shoes etc.) and/or additional equipment should be used
- In order to avoid/limit risks, use collective safety equipment or work organisation measures

4.8 Safety equipment / Protective equipment

- Start and stop devices must be clearly identifiable. Take appropriate action in order to avoid errors
- Observe information signs, warning signs and instruction signs on the system
- Hot surfaces which are present on the system during normal operation are marked with a hazard symbol

4.9 Foreseeable misuse

Serious injuries and damage to property can arise through:

- Improper use
- Incorrect installation or operation of the system
- Unauthorised removal of the necessary safety equipment
- Dismantled operation of the pump

4.10 Intended use

- Only use the system in perfect condition and in consideration of the operating instructions
- Only put the system into service if the set up site (inflow, ventilation, pressure pipe, etc.), into which the system is installed, corresponds to the provisions of the applicable directives and regulations
- Read the technical data on the rating plate and in the operating manual and adhere to it
- The arrangement of the operating manual for the system takes place in accordance with the model

 HST SYSTEMTECHNIK	<p>HYDROJACK 75</p> <p>Automatic wastewater lifting station in accordance with DIN EN 12050-1</p> <p>Model HYDROJACK 75</p> <p>Type HPW07ES2A4B1A4XS</p> <p>Serial No.</p> <p>Month of fabrication</p> <p>Main connection  ~230V / 50Hz, 1500 W</p> <p>Motor power 750W</p> <p>Protection class IP68 / IP54</p> <p>Handcrafted by _____</p> <p style="text-align: right;">Made in Germany</p>	
<p>HST Systemtechnik GmbH & Co. KG</p> <p>Heinrichsthaler Straße 8</p> <p>59872 Meschede, GERMANY</p> <p>Phone +49 291 9929 0</p> <p>More information on hydrojack.de</p> <div style="display: flex; align-items: center;">   <div style="margin-left: 10px;">Refer to manual</div> </div>		

4.10.1 Scope of application

The wastewater lifting station is used to collect and automatically lift wastewater which contains faeces and wastewater which is free of faeces above the level of backed up water. The wastewater is passed to the sewer without danger to humans and in a way that does not damage structures.

Areas of application:

- Private residential buildings
- Single family houses
- Basement flats

Other uses and applications, as well as changes, are not allowed.

4.10.2 Planning

Drainage systems shall be planned and installed in such a way that the health and safety of users and the people who reside in the building, is not affected by:

- Backflow of wastewater into the building
- Leakage of the system
- Leakage of sewer gases into the building
- Contamination of the drinking water system
- Mechanical stress
- Impact of frost
- Corrosion
- Spreading of fire

4.10.3 Improper use

Examples of improper use are:

- Operation of the system outside the operating limits (see 'Technical data')
- Operation of the system and/or the centrifugal pump when running dry
- Use of worn components (lack of maintenance)
- Not observing this operating manual other documents accompanying the product
- Use in areas at risk of an explosion

Never put harmful substances in the system which may lead to personal injury, contaminate the water or affect the functioning of the system.

Harmful substances

Harmful substances especially include:

- Wastewater, containing mineral oils and greases
- Wastewater, containing organic oils and fats
- Heavy metals (e.g. zinc, lead, cadmium, nickel, chromium)
- Caustic substances (e.g. acids, alkalis, salts and condensates)
- Detergents and disinfectants, washing up liquid and washing machine powder in large quantities and/or quantities which disproportionately tend to generate a large amount of foam.
- Flammable or explosive substances (eg. petrol, benzene, oil, phenols, paints containing solvents, spirits)
- Solids (e.g kitchen waste, glass, sand, ash, fibers, resins, tar, cardboard, textiles, fats (oils), remains of paint)
- Hygiene products / residual waste (for example, tampons, sanitary towels, wipes, hair, cotton swabs)
- Liquids which can harden (e.g. plaster, cement, lime)
- Biocides (e.g. plant treatments and pesticide)
- Wastewater from manure pits and animal husbandry (e.g. manure, slurry)

Not observing these rules may lead to a failure or a defect in the system, and may cause personal injury and damage to property. Failure to comply renders the warranty void

4.11 Warranty

Before being released onto the market, the system underwent extensive quality controls and all components were tested under maximum load. The installation of unauthorised parts compromise safety and exclude a warranty from HST. When exchanging only use original parts from HST or parts cleared by HST.

- Guarantee in accordance with the delivery conditions and confirmation of the order by HST
- Guarantee in accordance with the delivery conditions and confirmation of the order by the trader
- A prerequisite for the warranty of the system is that it corresponds with the cited operating manual, in accordance with the rating plate/data sheet
- All consumables are excluded from the warranty

4.12 Test protocol


The test protocol (as shown below) will be enclosed with each system and includes the test results of your wastewater lifting station. The following test points are listed:

- Visual inspection
- Electrical test
- Functional test
- Test to ensure a good seal

Test Protocol

HYDROJACK 75

Automatic wastewater lifting station



HST

SYSTEMTECHNIK

Serial number

Internal serial number

Test results:

Product type number

User name

Test date

201602010

Passed

HPWJ075XS2A4040/I

Lillpopp, Sandra (sandra.lillpopp)

02.02.2016 12:12:08

Testing list

Test	Final Inspection
Test results:	Passed
Intermediate test step	Visual Inspection
Test results:	Passed
Intermediate test step	Electrical Test
Test results:	Passed
More details below	
Intermediate test step	Function Test
Test results:	Passed
Intermediate test step	Leak Test
Test results:	Passed

Electrical details

<u>PE test</u>	nominal	actual	
Test current [A]	10,0	10,5	
Measurement value [Ω]	0,280	0,195	
Test results:			Passed
<u>Insulation test</u>	nominal	actual	
Insulation resistance [$M\Omega$]	2,00	10000	
Test voltage [V]	500,00	500,00	
Test results:			Passed
<u>High voltage test</u>	nominal	actual	
Test current [mA]	5,00	1,02	
Test voltage [V]	1000,00	999,00	
Test results:			Passed

Page 1 of 1

Illustrative example

5. DESCRIPTION

5.1 Introduction

The wastewater lifting station is used to collect and automatically lift wastewater which contains faeces and wastewater which is free of faeces above the level of backed up water. The wastewater is passed to the sewer without danger to humans and in a way that does not damage structures.

The system is designed to be used as a free standing installation (floor-mounted installation) and a recessed installation (underfloor installation).

In accordance with DIN EN 60335-1, the system is a stationary device.

A quality lifting station in full compliance with the standard DIN EN 12050-1

5.1.1 Application


- Hygienic unpressurized collection and the pumping of domestic waste water/wastewater from a kitchen, bathroom, basement or garage
- Suitable for sullage and untreated wastewater
- Reliable building drainage, in order to prevent backflow from the sewer and improve the disposal of wastewater at positions below the level of backed up water.
- Automatic and manual emptying
- The unit seals off smells and is also sealed against water
- Attractive design, also suitable for an installation where the device is visible

5.1.2 Technical description

- Developed and produced in Germany
- Long-life components built to industrial standards
- User-friendly design with all hydraulic components on one platform
- Conveyance away is performed hygienically and operation is reliable. Among other things, this includes the use of non-contact level measurements outside of the tank
- All hydraulic components outside of the tank are accessible
- The system is ready for "Plug & Play". There is no need to carry out any other settings on the system/controller, or reconnection work (such as cable connections)
- Built in non-return valve with standard components (no protection against backflow in accordance with DIN EN 13564-1)
- Integrated drain off device from the discharge line to the non return valve
- Multiple connections for connecting to new and existing piping systems
- Adapter for connecting inflows (from DN40 to DN100)
- All fastening elements are made of stainless steel
- Powerful pump using a vortex impeller

- Ergonomic transportation and assembly handles/contacts
- Compact design
- Safe lifting assembly
- Chemically resistant closed tank
- Usable volume up to 75 litres
- With an inspection lid for easy maintenance, inspection and cleaning
- Tools which are required for the installation are included in the scope of delivery
- available with other optional sensor types
- available with optional M2M communications and remote maintenance / monitoring
- available with an optional connection kit for washing machines and dishwashers

5.2 Description of how the system works

WARNUNG	
	<p>The pump starts automatically when the plug is plugged in</p> <p>There may be injuries/cutting off of finger tips.</p> <p>Risk of clothing etc. becoming drawn in</p> <p>Only operate the wastewater lifting station with a closed controller and a closed inspection lid (and/or in the case of an open lid maintain a safety distance).</p>

Waste water that occurs (containing faeces or free of faeces) flows out of the drainage pipes in the building via the inflows into the sump. Through the incoming wastewater, the water level rises in the tank. If the water level reaches the activation level for pumping, the pump is switched on automatically. The wastewater is sucked via the suction port into the centrifuge housing and the rotating vortex impeller facilitates this through the check above the level of backed up water in the pressure line. After falling below the switch off level (switch OFF delay 500 ms), the pump switches off automatically. The pumped water column then presses the non-return valve so that it is closed again. The pumped wastewater then flows to the backflow loop to fall freely into the sewer.

In order to operate the system, the controller has three LEDs and a manual button:

- green Automatic mode and/or pump operation
- red General fault and/or plausibility error
- yellow Online and/or service (only possible with the add-on module)
- manual button Manual operation (manual pump operation)

The lifting station has a fault signalling device. If a fault occurs, for example as a result of a contaminated tank or a blocked pressure line, this is signalled by the red indicator light on the control lighting up continuously or flashing. Depending on the type of control unit an acoustic alert is available. These error messages are described in further detail in the chapter 'Controller'.

The controller has an optical signal and a potential free contact for an additional signalling device. We recommend that an additional (optionally available) warning device with a visual and audible alarm is connected via the potential-free contact.

Additionally, a device should be installed (at the installation site of the lifting station) which signals a warning in the event of water escaping into the building (by, for example, a faulty connection of the supply line). For this, the local laws and insurance provisions must be examined.

5.3 Technical data

5.3.1 General data

COMPONENT	TYPE	DESCRIPTION/SPECIFICATION
Overall	Stability/Load capacity	Structural strength
	Weight	35 kg (wastewater lifting station, individual) ~40 kg (incl. accessories & packaging)
	Installation part	Floor/Wall
	Colour	RAL5005/9005/7024, stainless steel
Inlets	Horizontal	Right height ~ 180 mm DN100 (110 mm) Left height ~ 180 mm DN100 (110 mm) Rear height ~ 225 mm DN100 (110 mm)
	Vertical	Top height ~ 385 mm DN100 (110 mm)
Pressure line	Vertical	Top height ~ 495 mm DN80 (90 mm)
Ventilation	Vertical	Top height ~ 460 mm DN65 (75 mm)
Noise level	Field measurement (2 m)	< 70 dB
Dimensions	L x W + H	550 x 550 x 490 mm
Pump capacity (see characteristic curve)	Pump height H_{max} (min. 0.7 m/s)	11 m @ 0 m³/h 8,5 m @ 12.4 m³/h (DN80) 6,8 m @ 18.6 m³/h (DN100) 0,0 m @ 30 m³/h
	Pump quantity Q_{max}	30 m³/h (8.3 l/s)
Controller	Operation	Automatic (Plug & Play)
	Display	3 pcs LED: green, red, yellow
	F switch on	Button

5.3.2 Mechanical data

COMPONENT	TYPE	DESCRIPTION/SPECIFICATION
Collection tank	Material	Polyethylene
	Gross volume	Up to 75 litres
	Minimum useful volume	35 litres
	Inspection opening	Ø 134 on the top side
Pump	Ball passage	50 mm
	Material	Material cast iron with stainless steel housing
	Impeller design	stable cast iron vortex impeller
	Bearing	Permanently lubricated NTN bearing
	Medium side	Carbon ceramics – Bearing ring seal to the oil chamber
	Motor side	Double lip seal
	Switch on duration	S3 intermittent duty
	Temperature	Interval operation ~ 50 °C Maximum ~ 110°C (In the case of a 20°C ambient temperature) In the case of proper operations, there is no excessive temperature increase on the device
Return flap	Ball passage	70 mm
	Material	PP
	Seal	EPDM
Return flap housing	Material	PP GF30
	Seal	NBR
Fastening means	Screws	V2A
	Floor anchor	Galvanised steel
Controller	Place of installation	Wall
	Material	Shock proof, ABS

5.3.3 Electrical data

COMPONENT	TYPE	DESCRIPTION/SPECIFICATION
Power supply	Nominal voltage	230 VAC, single phase
	Frequency	50 Hz
	Output	1.550 W
	Nominal current	6.7 A
	Voltage range	207-253 VAC
Cable lengths	Lifting station up to the controller	~4.0 m
	Controller up to the mains connection	~4.0 m (~1.5 m)
Pump	Nominal speed	2.890 1/min
	Protective device	via an automatically resetting temperature limiter (safety device)
Connection on the part of the consumer	Fault signalling contact	potential free 24 VDC, max. 500 mA
	Dosing station / Additional contact SCADA	potential free 24 VDC, max. 500 mA (optional, only with an add on module)

5.3.4 Conditions of use

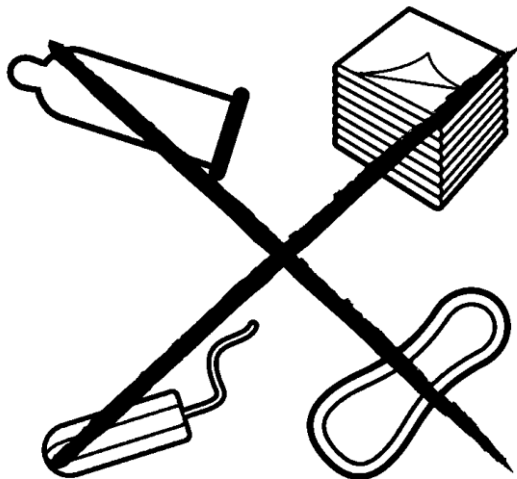
COMPONENT	TYPE	DESCRIPTION/SPECIFICATION
Installation position	Lifting station	Horizontally planar
	Controller	any
Installation site	Inner space	Free standing or shaft installation in a dry frost-free room
Use	Medium	Domestic wastewater
Operating temperature	Environment	10°C to 35 °C
	Medium in the tank	max. 35 °C
	Inflows	max. 70°C in the case of compliance with the top temperature of the medium in the tank (depending on the fill level in the tank)
Installation space	Variable	A working space of at least 60 cm
Protection against corrosion	Standard	Suitable for the top installation position
Set up height	Standard	< 2,000 above sea level
Safety type Safety class	Wastewater lifting station	Secured against overflow in accordance with IP68 Overflow height, 1 m max. Overflow duration, 14 days max.

COMPONENT	TYPE	DESCRIPTION/SPECIFICATION
	Controller	At least IP54

NOTE

It is recommended that hygiene products are disposed of separately. Failure to comply can result in a blockage of the building's drainage and possibly, failure of the lifting station.

The toilet is not a rubbish bin!

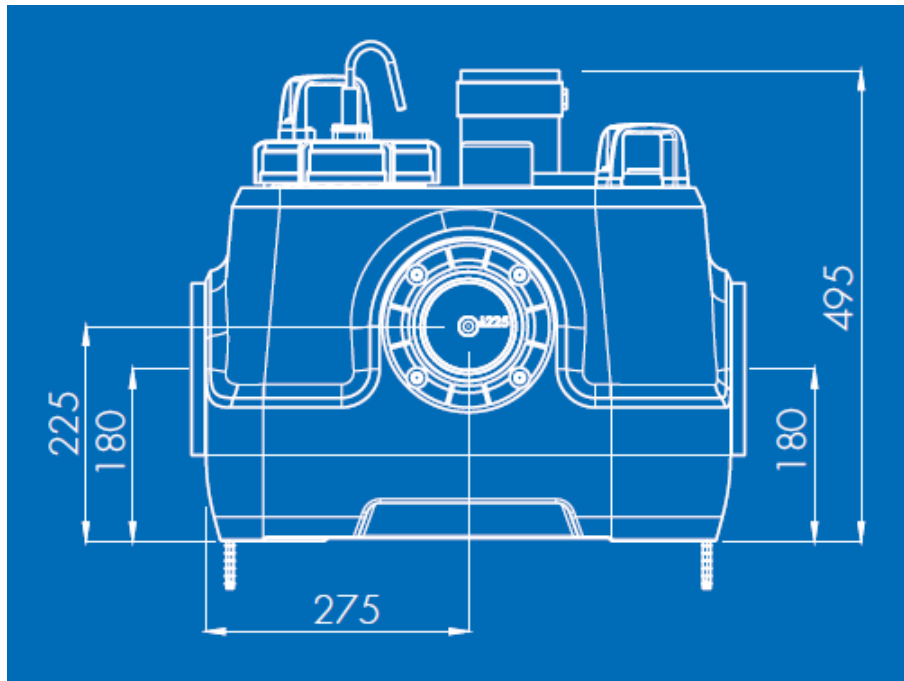
**NOTE**

In accordance with DIN EN 12056-4 surface water which occurs outside of the building, below the level of backed-up water, is separated from domestic wastewater and pumped outside of the building via separate lifting station.

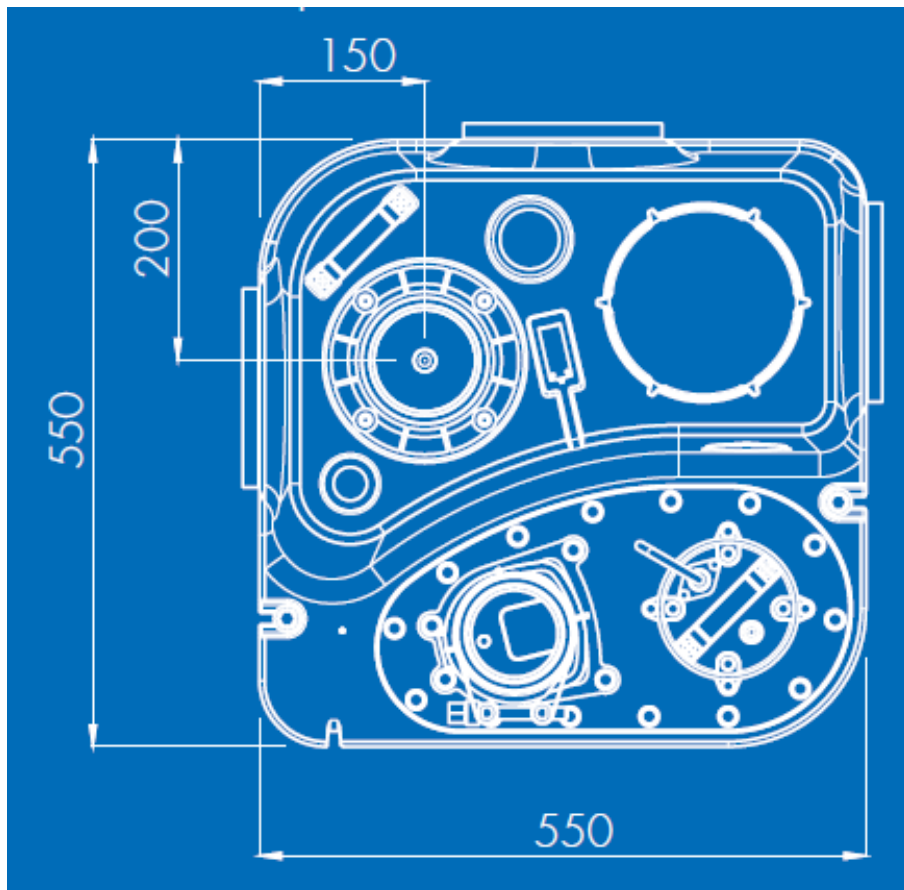
5.3.5 Dimensions

The following values are stated in mm.

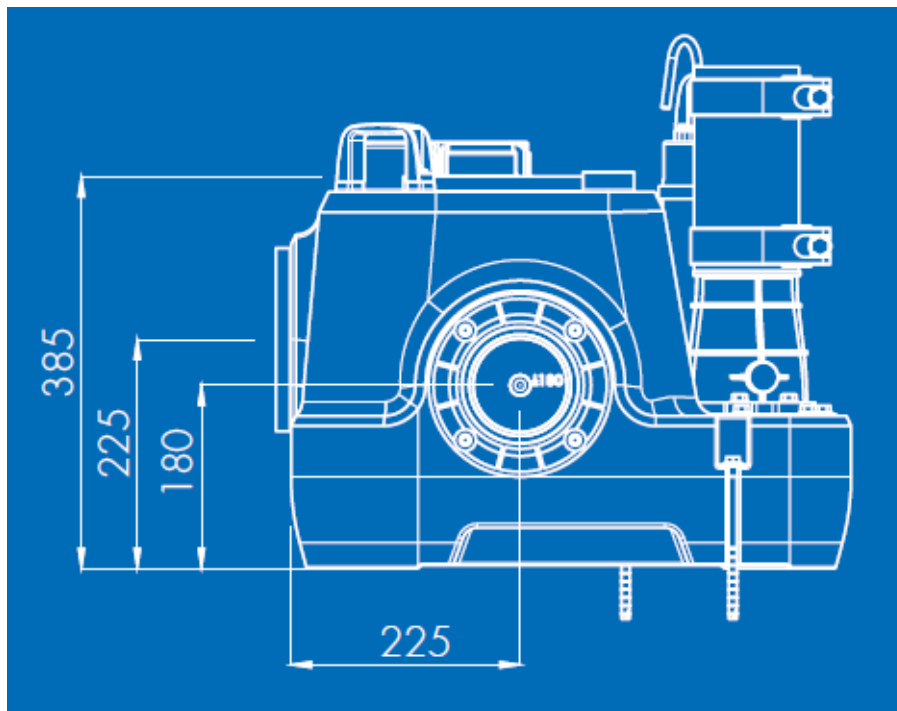
Rear view



Top view



Side view from the left



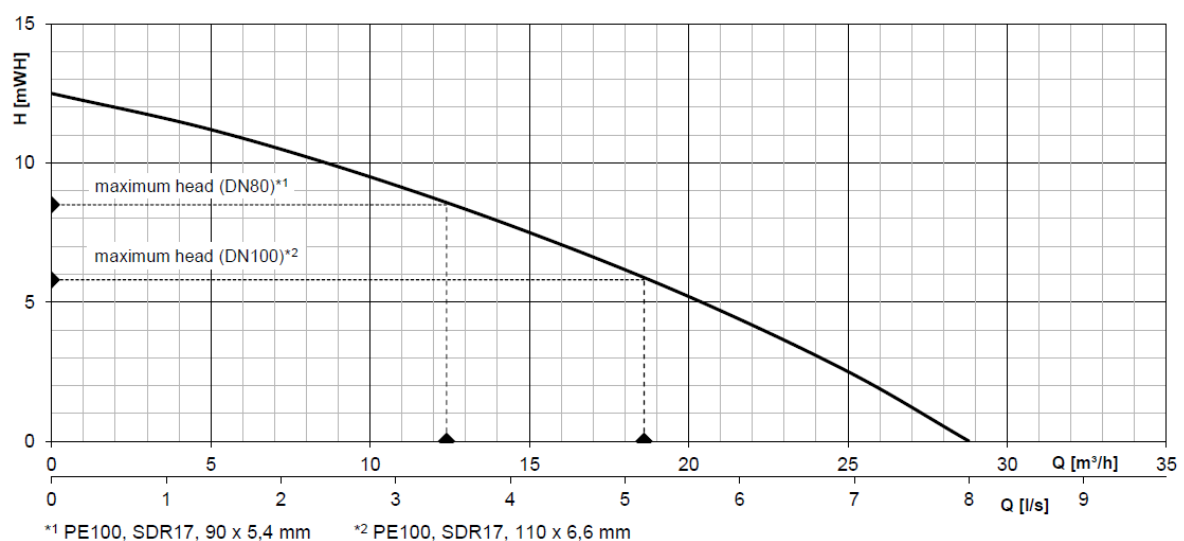
5.4 Inflow quantities / Design sizes

NOTE

The design of the lifting station / pumps must take place in accordance with DIN EN 12056-4.

In the following section, the characteristic curve / output curve of the wastewater lifting station is shown.

A minimum flow rate of 0.7 m/s is the design basis for the discharge line. As such, the minimum flow rate and pumping height depend on the nominal diameter of the pressure line.



Example of connected drainage units

**NOTE**

The design of lifting equipment / pumps must be carried out in accordance with DIN EN 12056-4

5.5 Backflow protection

In accordance with DIN 12056-4, the level of backed up water is the upper edge of the street or the top of the roadside curb. In the event of heavy rain, backwater must therefore be expected along with backwater in the connection line.

The protection against backflow is to be designed in such a way that water in the sewer can flow back and not into the lifting station.

NOTE

In accordance with the DIN EN standard, each person making a connection must take protective measures against backflow.

NOTE

The wastewater occurring under the level of backed up water must be channelled over the level of backed up water by means of a pressure pipe. The bottom of the backwater loop should be at least 300 mm above the backwater level.

In accordance with DIN 12050-4, this must be provided with backflow protection in the pressure line.

Discharge points below the backflow level should be protected against backflow from the sewer by automatic lifting equipment with a backflow loop in accordance with DIN EN 12056-4 or under certain conditions, by backflow locks in accordance with DIN EN 13564-1.

NOTE

The lifting unit has a non-return valve to ensure correct pump function. The non-return valve does not serve to protect against backflow.

Therefore, please observe the legislation at the set up site and the applicable local insurance provisions of relating to the protective device against backflow.

CAUTION

Risk of a blockage when using incorrect backflow lock! Insured losses will only be compensated if the proper backflow type is installed in accordance with DIN EN 13564.

NOTE

Extensive expert knowledge is essential to the design and installation of the system.

If a backflow protection device is missing, the administrative processor or the planning office is liable.

5.6 Construction and equipment

The system consists of individual system components. As such, any assembly or disassembly of the system, replacement of individual consumable parts, maintenance and service work is easy to carry out.

NOTE

Modifications or changes to the system put operational safety at risk and are only permitted after consultation with the manufacturer. Correspondence relating to this must be in writing. Failure to comply renders any liability, warranty or conformity void.

NOTE

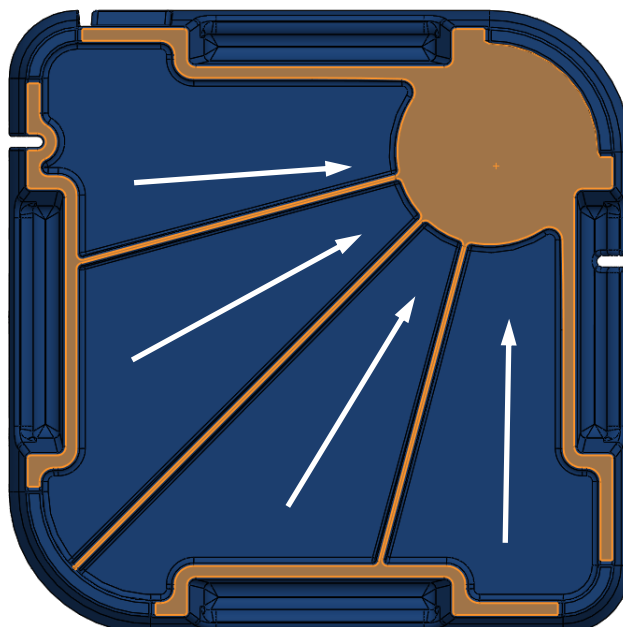
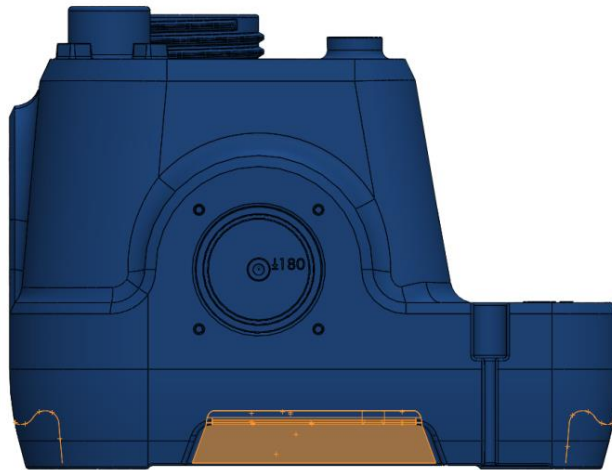
Unless other people (owners, users) are designated, all work on the system must be carried out by professionals. The direct supplier of the system is responsible for their availability.



5.6.1 Tank

The reservoir serves as the basis for the wastewater lifting station. It has the following features:

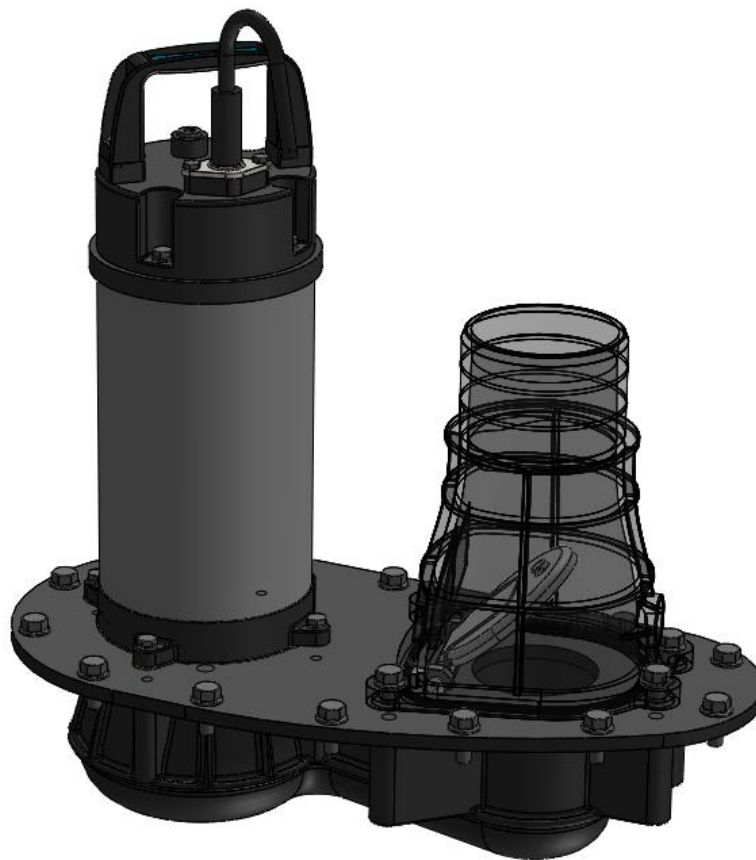
- A tank with a long service life and resistance to chemicals
- Optimised tank dimensions for tight spaces and easy transportation
- No fixtures in the tank to which solids can stick
- Ergonomic transportation and assembly grips and/or contacts
- A modern design and height markings of the connections
- A recessed pump sump and inlet slopes
- Stiffening crimps against vibration noises
- Increased base for greater stability on uneven surfaces
- Screw cap as a inspection safety port and safety device



5.6.2 Pump module

The pump module (also known as the hydraulic part) consists of several components:

- Base plate (platform)
- Centrifugal pump
- Centrifuge housing
- Non-return valve
- Non-return valve housing with pressure connection
- Hose compensator



The pump module is a continuous flow machine. By means of a rotating impeller, centrifugal force is used to pump liquids. The large amount of free space in the spiral casing enables the liquid to flow easily into the pump chamber via the suction port. In addition, solid and long-fibred thick matter can pass through without problems and without blocking the impeller housing.

In the next section, the individual parts are described in greater detail

Centrifugal pump

- Blockage free vortex impeller made of stable cast iron
- Stainless steel motor cover
- Safety device against dry running (an automatically resetting temperature limiter)
- Controllable oil chamber
- High-grade oil-supported double seal system of the drive shaft with an oil reservoir
- Robust motor mounting
- Large, free passage for the ball

Centrifuge housing

- Large intake opening
- Large, free ball passage

Non-return valve

- Fully-free flow cross section in the case of an open non-return valve
- No large dead zones behind the non-return valve. This avoids the formation of tangles.
- Soft sealing valve body
- Use of a industrial standard valve body

NOTE

It is necessary to provide a riser (at least 3 meters high) in order to achieve required seal through the corresponding counter-pressure when the system is brought to a stand.

Non-return valve housing

- Compact design
- Pressure connection for the compensator
- Integrated drain off device

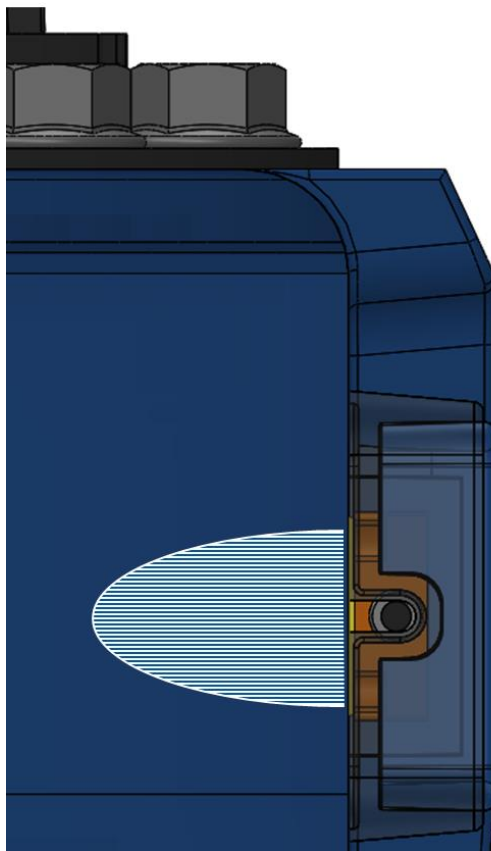
Hose compensator

- Compensation of vibrations
- Compensation for mismatches in the pressure line connection
- Compensation for the stretching in the case of temperature impacts

5.6.3 Sensors

By default, non-contact sensors are used. These have the advantage that there is no contact with the medium and such no contaminants can stick. As such, purification of the container interior is facilitated significantly. Optionally, further sensor types are available.

- Detecting of the limit status, arranged fully outside the container
- Reliable operation, even in the case of wastewater with a large proportion of solids
- Status LED on each sensor
(Information: LED does not light up when the medium is detected)
- Contactless and continuous measuring methods based on industrial standards



Advantages of this measurement method

- Smooth surfaces within the tank
- No blocking of the measurement surface
- No failure as a result of fibrous material and through the entanglement that is caused
- No sticking directly onto the sensor
- No movable parts
- Free of wear and tear

- Specific parameterisation is possible

5.6.4 Controller

For operation, the controller consists of the following components:

- Status LEDs
- Button for manual pump operation
- Supply line for power supply (customer connection)
- Supply line from the wastewater lifting station to the controller



The controller consists of the following individual components:

- Impact resistant housing with integrated double hinge
- Easy to clean plastic sheet on the front for operation
- Circuit board with long lasting quality components
- Robust design based on the new industrial standard
- Optionally with Add-On-Circuit board for the SCADA.web connection (remote monitoring)

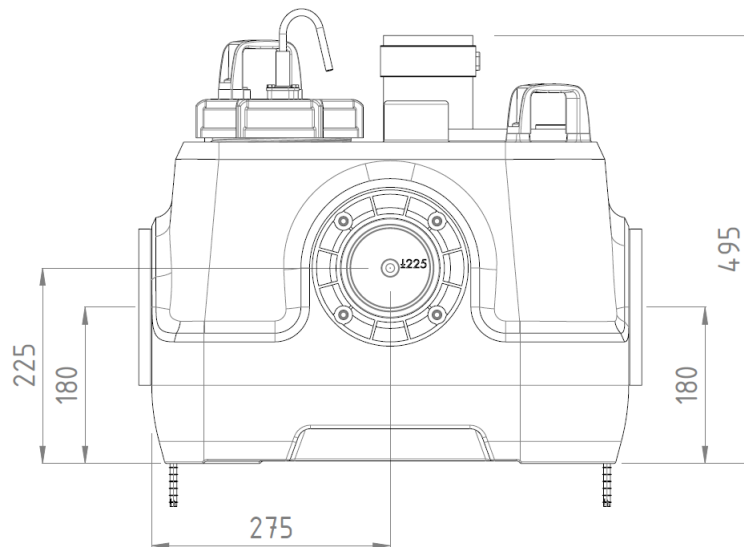
5.7 Connections

5.7.1 Inflow

Connection on the rear

Suitable for suspended toilets and/or connecting of existing pipe systems

- Horizontal connection
- Height 225 mm



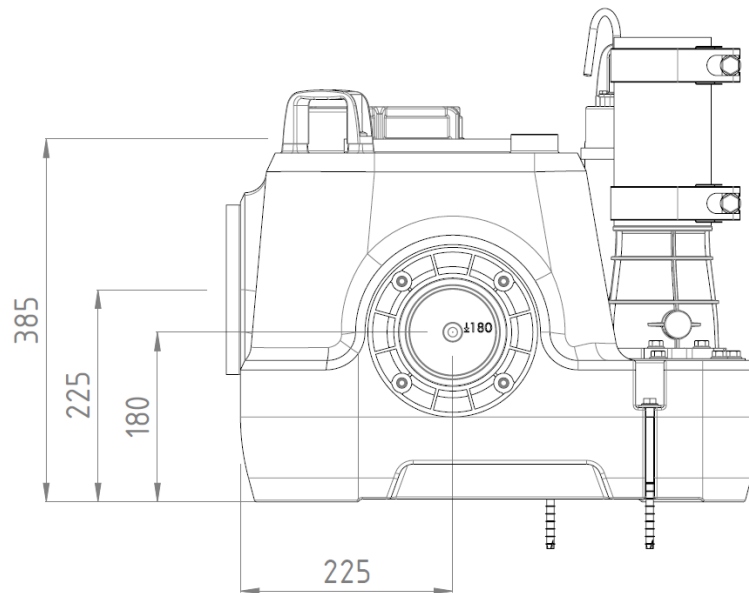
Example photo



Connection on the left and right side

Suitable for standing toilets and/or connecting existing pipe systems

- Horizontal connection
- Height 180 mm



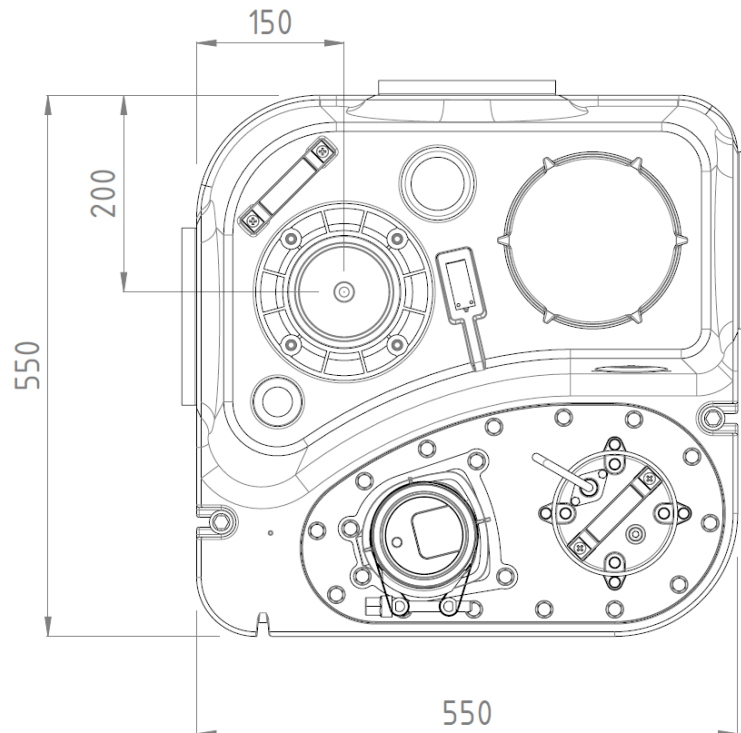
Example photo



Connection on the top side

Suitable for wash basins and/or connecting existing pipe systems

- Vertical inflow
- Height 385 mm



Example photo



5.7.2 Emptying line/Pressure connection

The pressure outlet consists of the fitting connector the non-return valve housing and a rubber hose, including hinge bolt clamps.

The description of this can be found in the previous chapter relating to the pump module.

The connection and specification of the discharge line are described in the Chapter "Assembly/Installation".



5.7.3 Electrical connection

Connection is possible by plugging in the power cord (Plug & Play). For the connection, cables may need to be adapted or connected. The controller is pre-set and no further adjustments need to be made. (Sensor type 1)

HAZARD



Mains voltage and mains frequency.

Death or serious injury occurs.

The installation should be performed by a qualified electrician and/or by checking it on a compulsory basis prior to commissioning. The electrical connection must be previously checked by the qualified electrician and put into operation according to local regulations.

WARNING



Automatic start up of the pump when the mains plug is plugged in

There may be injuries/cutting off of finger tips.

Risk of clothing etc. becoming drawn in

Only operate the wastewater lifting station with a closed controller and a closed inspection lid (and/or in the case of an open lid maintain a safety distance).







5.8 Scope of delivery

NOTE

The detailed scope of delivery of the wastewater lifting station and the accessories can be found in the delivery note and/or if available, the technical data sheet.

As standard, the following the following components are jointly supplied in a cardboard box:

UNIT	INDIVIDUAL PART	PACKAGING
Fully operational wastewater lifting station	1x connection tank	
	1x pump module	
	2x sensors	
	1x connection cable	
	1x control unit	
	1x mains connection cable	
Fastening material	2x screw anchors for flotation control	
	4x screws and studs for mounting the controller	
	4x plastic screws for fastening the clamping ring	
Connection material	1x hose compensator 2x joint pin clamping piece	
	1x clamping ring with a sealing ring	
	1x sleeve DN75 (see photo 'inflow reductions')	
Inflow reductions	1x reduction 110/90 1x reduction 110/75 1x reduction 110/50 1x reduction 50/40	
Toolkit	1x screwdriver SW13	See installation tools in the chapter "Assembly / Installation"
	1x keyhole saw Ø98 with drill adapter	
	1x TX15 Bit, 125 mm	
Documentation	Operating manual	Online (if necessary, printout)
	CE declaration of conformity	Envelope
	Test protocol	
Accessories	Drain off hose	2 m, inner diameter 19 mm

5.8.1 Checking the delivery

Visible check for damages:

Check by visibly inspecting the goods for damages.

If the delivery has been damaged during transport, get in touch with the last carrier and the dealer immediately. Keep the packaging for a possible check or for return the goods.



Completeness of the delivery:

Check the completeness of the delivery on the basis of the delivery note.

If the delivery is not complete, get in touch immediately with the dealer.

Returning the delivery:

For returning the system, use the original packing materials if possible. For questions concerning packaging and safe transport, contact your dealer.

5.8.2 Optionally available / Accessories

The following options are available for the wastewater lifting station:

- Add-On-Module für SCADA.web
(only available for the type marked "A2" in the description)
- Controller with the Add-On-Module for SCADA.web
- Dosing station for introducing detergents into the wastewater lifting station
(Only available with the Add-On-Module)
- Scent station for eliminating odours in the surrounding area
(Only available with the Add-On-Module)
- Wastewater lifting station with an overflow warning and the second potential-free fault signal output
- The use of several fill level sensors is possible
- Smart Home / Smart Service
(Only available with the Add-On-Module)

The following accessories are available for the wastewater lifting station:

- Warning indicator light for connecting to potential-free contact
- Warning horn for connecting to a potential-free contact
- Fill level sensor with a warning signalling device in the water outlet
(in the case of a incorrect connection of the inlet pipe)
- Hand membrane pump for manual drainage of the wastewater lifting station

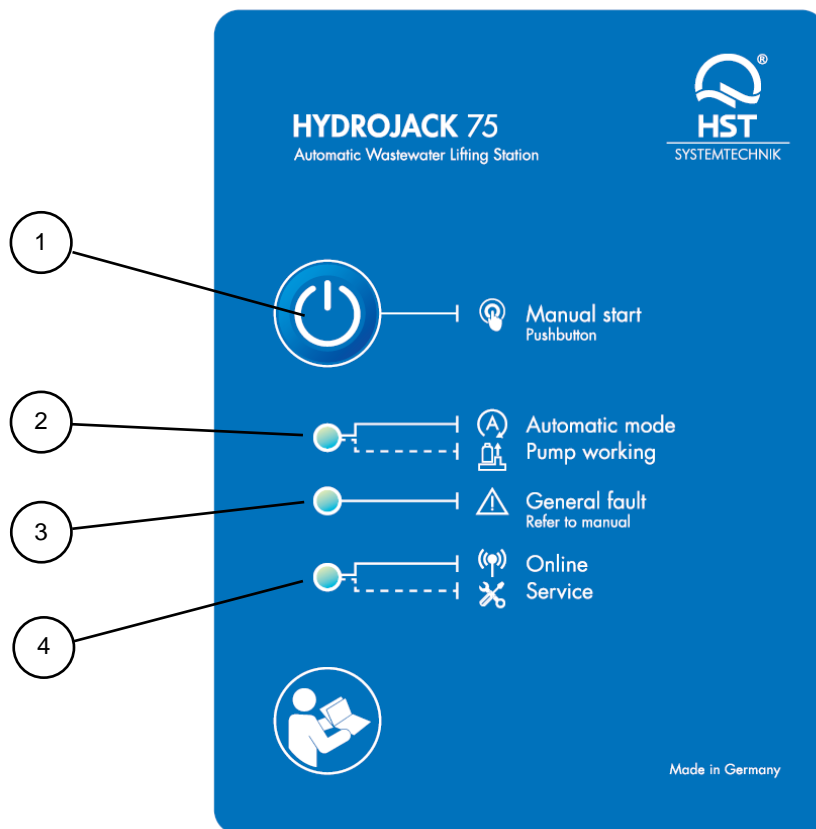
Please contact your dealer if necessary.

6. CONTROLLER

6.1 General description

6.1.1 User interface / Front of the controller

The following section shows the user interface of the wastewater lifting station on the front of the controller. This includes the components shown in the following.



1. Button for manual operation and/or forced activation of the pump

"Manual start (Push button)"

→ Manual start (button)

If this is pressed, the pump is switched on for 1 second.

When the button is held now, the pump remains on until the button is released.

The function is usable, independent of the operating mode also in the case of a fault in the function.

2. Green LED

"Automatic mode" / "Pump working"

→ Automatic mode / Pump is working

This LED lights up, if the software of the controller has started, and the wastewater lifting station is ready for service in automatic mode.

The automatic mode is always active when the system is connected to the power supply.

The automatic mode can be overridden using the button and it puts the system into the manual mode.

If the LED flashes, the pump is in operation and/or is just driven by the controller.

3. Red LED

"General fault (Refer to operating manual)"

→ General fault (Refer to operating manual)

If this LED lights up, there has been a "General fault".

If this LED flashes, there has been a "Plausibility fault".

The procedure of what to do when a fault occurs and the description of this can be found in the Chapter "Fault signalling" under "Automatic mode"

4. Yellow LED

"Online" / "Service"

→ Online / Service

This LED only works in connection with the Add-On-Module for the SCADA.web Portal.

If this LED lights up, a connection is established between the controller to the GSM network and the SCADA.web portal.

If this LED flashes, servicing should be carried out.

The SCADA.web portal alerts you if servicing is necessary - or in case of failure - (for example, via e-mail) if servicing is required or troubleshooting is needed. This function is explained in the following chapter.



NOTE

In accordance with the servicing schedule, the regular checks and servicing are also carried out without any Add-On-Module or the functioning of the service LED. This LED is used when using the Add-On-Module as an additional indication and can be used for monitoring the condition.






Indicator lights

In the following section, the functions of the indicator lights (LEDs) are described in more detail:







Description of the LED arrangements

-  LEDs on the front side of the controller
-  LEDs in the controller, on the circuit board

Start sequence

1.		all LEDs light up	LED function test
2.		green flashing once	Software starts with the program for sensor type 1 (Standard)
2.		green flashing twice	Software starts with the program for sensor type 2
2.		green flashing three times	Software starts with the program for sensor type 3
3.		green lit continuously	Software has started The wastewater lifting station is in automatic Modus (Standby)

Operation

	green lit continuously	The wastewater lifting station is in automatic mode (Standby)
	green flashing	The pump works
	red lit continuously	"General fault", see the operating manual, Chapter "Error messages"
	red flashing	"Plausibility fault" see the operating manual, Chapter "Error messages"
	yellow lit continuously	The controller is online (only with Add-On, optional)
	yellow flashing	Servicing is necessary (only with Add-On, optional)

6.1.2 Housing

HAZARD



Mains voltage and frequency
Death or serious injury occurs
Opening the controller should be carried out by a qualified electrician

The housing of the controller has two opening hinges. The upper hinge closure cannot be opened, as the ribbon cable for the front plastic cover (and optionally, for the GSM antenna) is laid here. The lower hinge closure can be opened by a wide screwdriver as shown in the following section.

NOTE

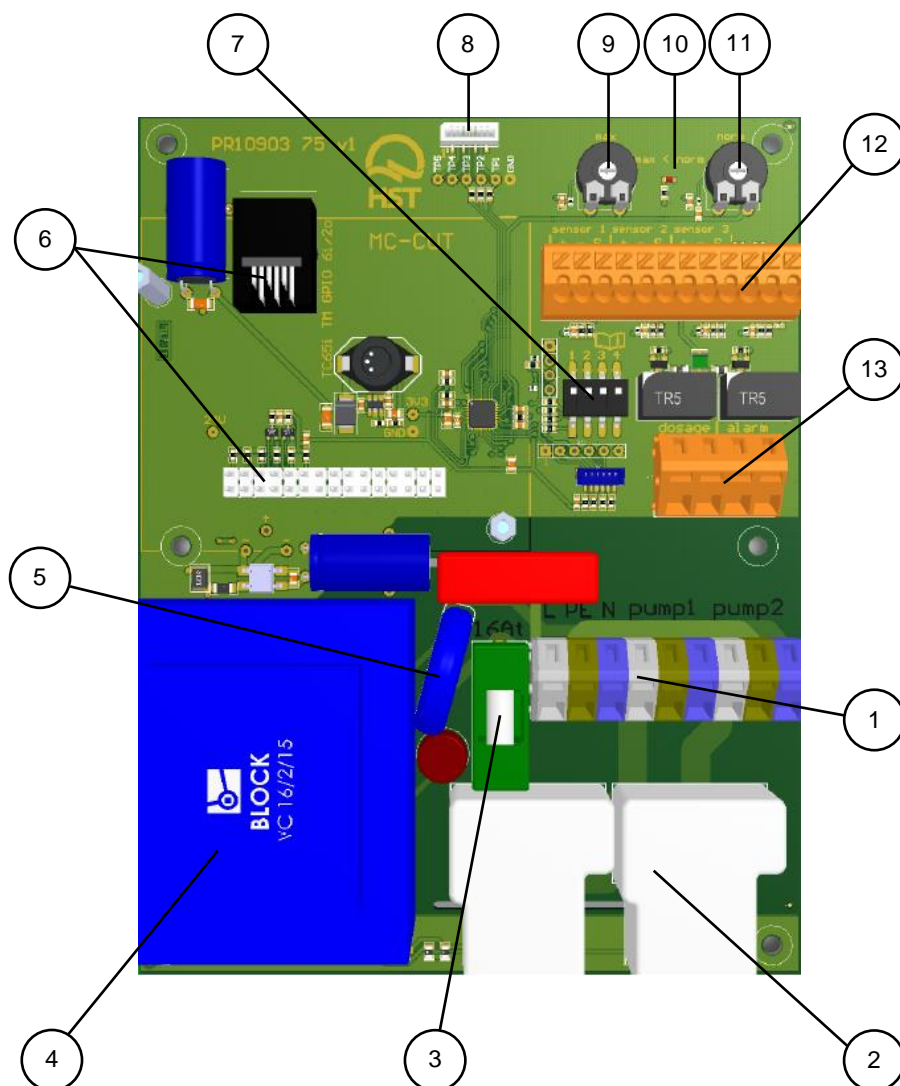
Operators may secure the controller from being opened.
For this, the enclosed screws (attached to the housing)
should be used. These can be screwed into the two
openings when the protective cover is opened.



Opening the bottom hinge closure



6.1.3 Basic circuit board



1. Power supply and power connection of the pump
2. Pump relay
3. Mains fuse / main fuse
4. Transformer for the control and auxiliary voltage
5. Varistor / Surge protection
6. Contacts / Connection for the Add-On-Modul (SCADA.web)
7. Dip switch for sensor selection
8. Connector socket for user interface / front plastic face
9. Setting controls for the maximum pump running time (9-90 seconds)
10. Warning lamp for an implausible setting of the running time (only in the case of sensor type 2)
11. Setting controls to adjust "Normal pump running time" (only in the case of sensor type 2)
12. Terminal strip for sensors
13. Terminal strip for potential-free contacts

6.2 Description of how the station works

The wastewater lifting station is used to collect and automatically lift wastewater which contains faeces and wastewater which is free of faeces above the level of backed up water. The wastewater is passed to the sewer without danger to humans and in a way that does not damage structures.

The system is designed to be used as a free standing installation (floor-mounted installation) and a recessed installation (underfloor installation).

HAZARD



Mains voltage and mains frequency.

Death or serious injury occurs.

The installation should be performed by a qualified electrician and/or by checking it on a compulsory basis prior to commissioning. The electrical connection must be previously checked by the qualified electrician and put into operation according to local regulations.

WARNING



Automatic start up of the pump when the mains plug is plugged in

There may be injuries/cutting off of finger tips.

Risk of clothing etc. becoming drawn in

Only operate the wastewater lifting station with a closed controller and a closed inspection lid (and/or in the case of an open lid maintain a safety distance).

6.2.1 Operation and set up

The connection is established by plugging in the power cord (Plug & Play). No cables need to be connected for the connection. The controller is pre-set and no further adjustments have to be made. (applies to sensor types 1 and 3)

NOTE

The operation of the customer interface / front of the controller has already been described in the previous chapter. Therefore, the following description and setting information only applies to professionals and instructed installation technicians.

The layout of the circuit board was described in the previous chapter. The following settings can be made to the circuit board.

Setting the "maximum pump running time"

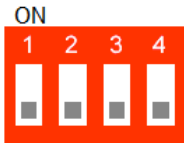
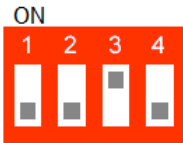
The "maximum pump running time" until a "general error" appears can be set between 9 and 90 seconds. In this running time, a check is made to see whether, up until the switch-off point, the pump has pumped the waste water that has accumulated in the tank so that it is empty. As standard, the controller is set to 90 seconds. The setting takes place via a potentiometer with the heading "max".



Setting the noise level in the case of standard sensors (sensor type 1)

In the case of systems which are equipped with three external sensors, it is possible to choose between the middle and upper sensor as a switch-on point. As such, the usable volume can be maximised. However, an adjustment to the upper switching point is not recommended for media with parts which can sediment or if an overflow cannot be ruled out in case of trouble. As standard, a measuring method is applied (SWITCH ON and SWITCH OFF point) in which the two limit indicators are used.

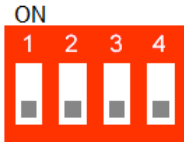

The setting on the top sensor can be carried out as follows:

STANDARD	SELECTION
	

Other sensor types

When using a sensor type which is not standard, settings can be changed on the dip switches. In order to select a measurement method with a switch-on point and a fixed running time from the detection of the switch-on point, the following setting must be made:


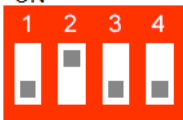
This corresponds to the measurement method for **sensor type 2**

STANDARD	SELECTION
	

With this measurement method, the running time of the pump must be set during commissioning. This is done via a potentiometer with the labelled "norm".

In order to select a measurement method with a switch-on point and a switch-off point via only one limit indicator, the following setting must be made:

This corresponds to the measurement method for **sensor type 3**

STANDARD	SELECTION
	

The operation of sensor types will be described in the next chapter.

Restart / Resetting of the control unit

The controller has no restart or reset button. The restarting or resetting of the controller can be performed by removing the power plug. In order to perform a proper reset, the controller should be without voltage for least 10 seconds. After plugging in the power cord again, you should make sure that the software starts correctly by examining the start-up sequence of indicator lights (see previous chapter).

CAUTION

As the controller has no main switch, you should make sure that the pump is not running before unplugging. This avoids damage to the socket from the formation of sparks. As the system should only to be operated with protective devices (including among other things, closed tanks), there is also no need for an emergency stop switch. If however, an emergency situation should occur, the mains plug should also be pulled out under load and before recommissioning, the contacts on the plug and the socket should be checked.

6.2.2 Automatic mode

The connection is performed by plugging in the power cord (Plug & Play). The waste water pump station is started up in automatic mode a few seconds later, following the software.

In automatic mode, the pump is started automatically after reaching the switching-on point and depending on the sensor type, is either switched-off after reaching the switching off point or after the set running time. In the standard version, the pump is switched on and off by limit levels.

Depending on the place of use and drainage fixtures, it may also take a long time to bring the system to a standstill until the limit level has been reached for the switch-on. In order to prevent downtime damage, the pump switches on for 3 seconds after 5 days of downtime. The pump may not completely empty the tank. The pump may not pump wastewater. This may be due to the fact that the pump housing is not completely underwater and as such, the centrifugal pump cannot pump.

NOTE

It is generally recommended to regularly fill the system up to the switch-on level in order to counteract sedimentation and downtime damage.

6.2.3 Manual mode

In manual mode, the button on the operator interface / front of the controller can be operated. If this is no longer activated, the automatic mode is automatically active again.

When the button is pressed, the pump is activated for at least one second. This is done in order to avoid a failure of the relay in the case of fast switching cycles. If the button is held down, the pump pumps until it is no longer in operation.

In order to pump the waste water from the tank into the pressure line in manual mode by means the centrifugal pump, the centrifugal pump housing must be completely immersed.

6.2.4 Fault signals

The lifting system has an automatic fault signalling device.

If a fault occurs, e.g. as a result of a contaminated container or a blocked pressure line, this is signalled by continuous illumination or flashing of the red indicator light on the operator interface / front of the controller.

Exceeding the maximum pump running time corresponds to a running time fault. This is signalled as a "General fault" by the continuous illumination of the red indicator light. If a "Plausibility fault" is detected (only in the case of sensor type 1), this is signalled by the flashing of the red indicator light.

The controller has an optical signal, a floating contact for an additional external signalling unit and optional an acoustic alert. This is simultaneously switched to the indicator. We recommend that an additional, optional external warning device with a visual and audible alarm is connected via the potential-free contact.

Additionally, at the assembly site of the lifting equipment, a device should be installed which signals a warning when water flows out into the building (e.g. as a result of a faulty connection of the supply line). Concerning this, the local laws and insurance provisions must be examined.

If a fault occurs, more start attempts are carried out after the set maximum running time (1. 60 seconds → 2. 60 seconds → 3. 300 seconds → 4. Continuous repeating of the break time ☹). If there is trouble-free operation within this "fault loop" (normal operation), the red LED goes out and normal operation resumed.

CAUTION

Depending on the type, the control unit is equipped with an acoustic alert. These ones are marked by the letter "A" at the 13th position of the type number.

In Case of opened control unit the volume level is higher than 100dB.

If the lifting station is in the fault loop, the engine becomes hot and is switched off when the maximum temperature reached. This is done by an automatically resetting temperature limiter (safety device). After cooling, the pumping system is fully operational again.

CAUTION



In the event of a fault, the motor can be up to 110 °C hot and cause burns. The temperature must therefore be checked before physical contact and protective equipment should be worn.

Allow the motor to cool for at least 30 minutes.

"General fault"

A "General failure" occurs when the pump cannot empty the tank in the pre-set running time, and/or the switch off level is not correctly detected.

"Plausibility fault"

A "Plausibility fault" occurs if the measurement is not plausible. This means, for example, that the upper sensor detects a limit fill level, whereas the lower does not.

If a "Plausibility fault" is detected, both sensors are covered with wastewater again or both sensors detect no wastewater, the normal state for the automatic mode is once again reached. However, in order to release possible contaminants from the sensor surface, the automatic mode suspended once only after reaching the maximum pump running time of 60 seconds. Depending on the inflow, the target level for emptying the tank can be exceeded. After this break time of 60 seconds, the pump starts automatically. The fault is automatically acknowledged and normal operation is continued.

If again, the lower sensor cannot be correctly detected at the next emptying, the procedure cited above is repeated. This results in no impairment of the operation, however, the set maximum pump run time is reached with each pumping cycle. Here, the cause should be found and eliminated.

6.3 Sensors

If the wastewater in the tank increases the pump is switched on or off via the fill level detector. In automatic mode, the pump is started automatically when reaching the switch-on / switch-off point and depending on the sensor type, is either switched off after reaching the switch-off point or after the set running time. The standard version of the pump is switched on and off by two limit levels. (Sensor type 1)

All sensors are measured with a debouncing of 500 ms. This means that a switch point must only securely pend after 500 ms before it is evaluated in the controller. In addition, all sensors are designed as low-active, so that in event of failure, e.g. as a result of a cable break, the pump pumps the waste water and does not fail.

NOTE

It may happen that, as a result of an extremely high inflow, the switch-off point is not securely detected. This is because the sensor must detect the "empty" level at least 500 milliseconds. Therefore, it may happen that the pump briefly pumps further in "slurp mode", even though the tank is already empty.

It is therefore essential to check the designed water quantity of the inflow.

6.3.1 Sensor type 1 (Standard)

In this type of sensor, two limit switches are used to detect the level. As standard, this are non-contact sensors, which detect the fill level outside the tank. The sensors are firmly glued to the tank and protected against external influences by a cover. As such, the system is cyclic even if completely flooded, and it only detects the medium accumulating in the reservoir. The positions correspond to the limit levels for turning the pump on and off.

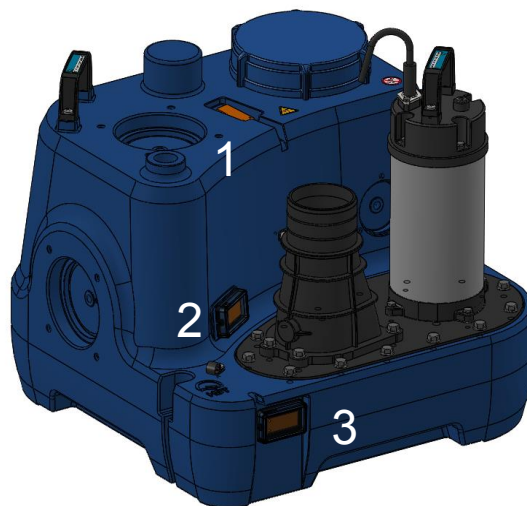
Pressure variations in the tank, heavy soiling or foam does not impair the function of the sensors. However, attention should be paid to the conditions of introducing the medium mentioned in the specification.

The sensors are equipped with a light indicator to check the function and plausibility in the event of faults or failure (for example, cable breakage, contamination).

NOTE

The LED on the sensor is not illuminated when the medium is detected.

- Sensor 1 (optional)
Switch on level for maximum useful volume
- Sensor 2
Switch on level
- Sensor 3
Switch off level



6.3.2 Sensor type 2

In this type of sensor, a threshold measurement is used. This is used to detect the activation point. After detection of the activation levels, the pump is switched on for the pre-set run time and wastewater is pumped. Detection of the switch off levels does not occur.

If within this run time, the limit indicator is still covered with waste water, the pump runs until the pre-set maximum run time and triggers a fault signal when this time is exceeded.

6.3.3 Sensor type 3

In this type of sensor, a probe is used with two limit values. This is e.g. achieved via mechanical hysteresis. The limit indicator detects the switch on level and switches the contact until the switch off level is reached. After falling below the switch off level, the contact returns to the original state.

6.4 Add-On-Module (Optional)

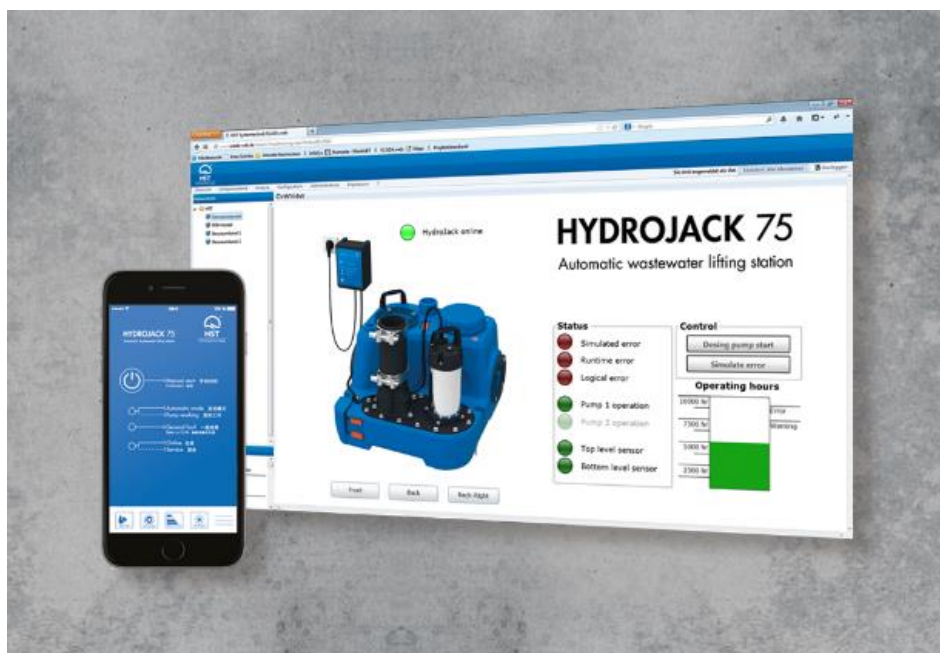
Using the add-on module, the waste water lifting unit can be connected to the Internet and also has condition monitoring, which alarms in the case of any servicing which is necessary.

Control functions

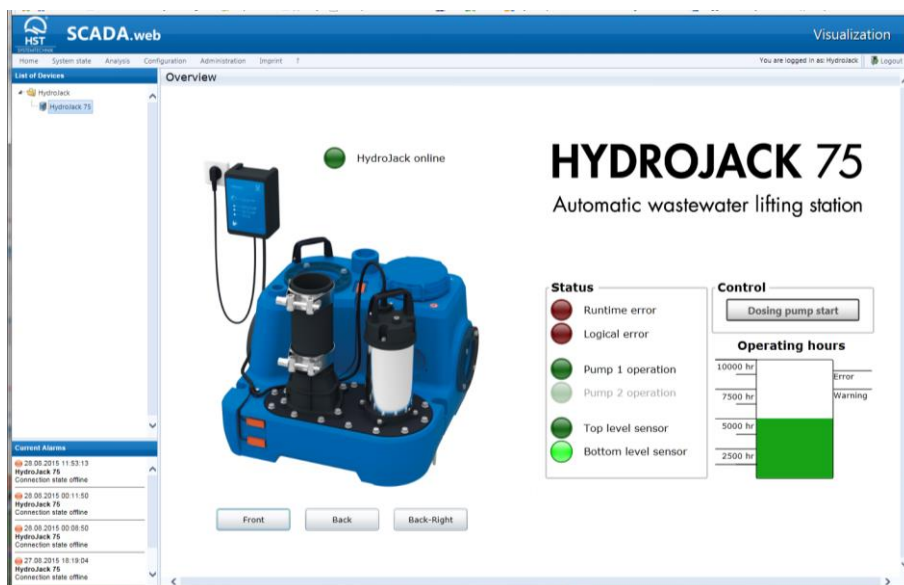
- The device is made a Smart Machine by means of the intelligent extension package smartSCADA
- Possibility of machine to machine communication (M2M)
- Global mobile access to the device via the mobile phone and web browser
- Intelligent evaluation of the operating mode
- Connection of an external evaluation device / PLC via data communications
- Online portal for monitoring the individual wastewater lifting station or a larger number of wastewater lifting station, e.g. for a housing development
- Monitoring of the condition / system availability
- Run times
- Switch cycles
- Pumping volumes over a given period
- Energy consumption over a given period
- Current status of automatic mode, waste water level in the tank, error messages, etc.
- Analysis of pump capacity (Condition Monitoring)
- Intelligent microprocessor control
- Automatic servicing indicator



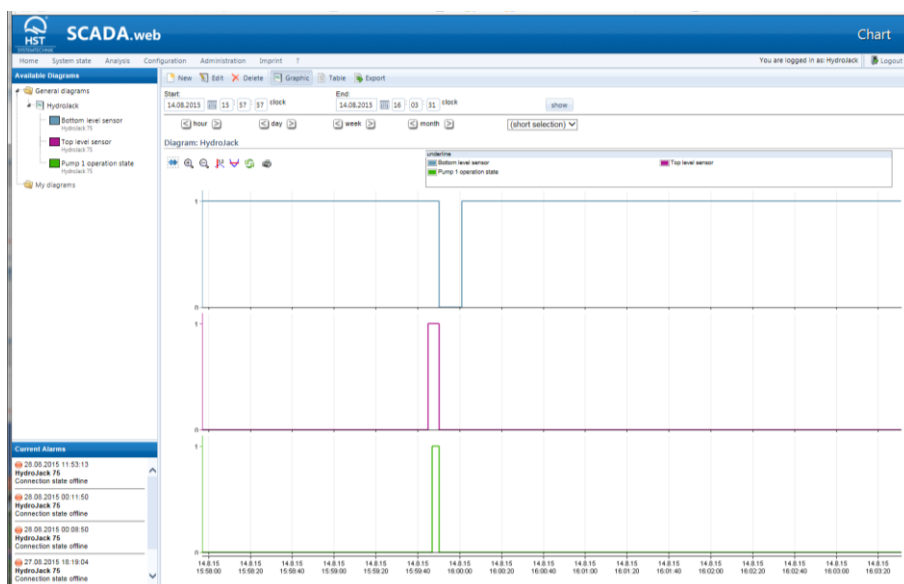
SMART MACHINE



- Graphic visualisation of the current processing state
- Simple operation
- Servicing indicator
- Optimised view for smartphones



- Historic representation of the operating states
- Simple discharge in the case of troubleshooting and servicing (Troubleshooting with data from the past)
- Logbook of important events
- E-mailing of the operation reports
- Notification of critical events or faults (SMS, e-mail, etc.)
- Easy configuration of the standby schedules for various employees (e.g. in the even of contracting solutions or building management)



7. TRANSPORT

WARNUNG

Property damage / Injuries as a result of improper transport

There may be severe injuries, death or property damage

- Follow safety and transport instructions on packaging
- Use suitable lifting equipment
- Transportation of the system by qualified personnel
- Use protective equipment

The delivery of the system takes place on a pallet or in the shipping box.

Transport damage must be recorded in the shipping documents and the dealer must be notified immediately.

7.1 Dimensions, weight and centre of gravity







DESCRIPTION	SPECIFIKATION
Weight of the system	35 kg
Total weight with accessories and packaging	40 kg
Centre of gravity	See following diagrams
External dimensions of the cardboard	Width 575 mm
	Length 575 mm
	Height 500 mm

Centre point of the system




The centre of gravity of the system is located on the axis shown above, at the point shown.

7.2 Important signs

IMPORTANCE OF THE SIGNS					
					
Top	Fragile	Keep dry	Centre of gravity	Lifting point	Top heavy

7.3 Load securing points for securing loads



WARNING	
	<p>Warning of a suspended load. Death or serious injuries can occur.</p> <ul style="list-style-type: none"> Adhere to load securing points for securing loads Transportation should only be performed by qualified staff Note the centre of gravity and weight

7.4 Unpacking the system

- Follow the symbols and instructions on the packaging
- Possibly free the cardboard from the pallet
- Open cardboard at the top
(only use cutting tools superficially)
- Remove system with suitable lifting gear

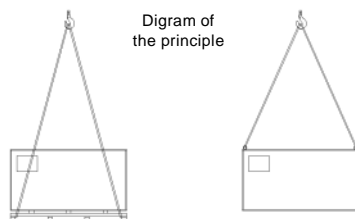


7.5 Transport to the set up site

WARNING	
 	<p>Warning of suspended loads and the risk of tripping</p> <p>Death or serious injuries may occur</p> <ul style="list-style-type: none"> ▪ Note the weight ▪ Note the centre of gravity ▪ Put up a warning sign when putting the system on the ground ▪ During transportation no persons shall stand directly by or under the system

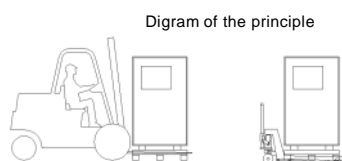
Transportation with a crane

- Ensure that the crane is designed for the weight
- Operate the crane only by authorised persons
- Use the eyebolts and lifting points provided
- Use only suitable lifting equipment
- Make sure that the system is in equilibrium
- Observe the transportation notes



Transport with a fork lift truck or pump truck

- Make sure that the lifting equipment is designed for the weight
- Operating the lifting device should only be performed by authorised persons
- Ensure that the lifting device is driven far enough under the pallet (forks must protrude on the other side)
- Make sure that the system is in equilibrium
- Lift the plant carefully

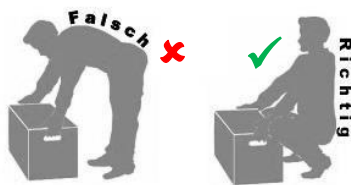


Transportation by persons

WARNING

Physical damage caused by too much weight for one person
Only lift the plant with two persons

- Physical conditions for lifting must be met
- Make sure that you can lift the weight
- Secure lifting with your back straight
- Only lift the plant with two persons



The movement of the system in a box takes place via four holes. The carton should be lifted carefully and transported with two people for each finger hole side.



7.6 Intermediate storage / Conservation

For transportation, all systems are preserved as standard for short-term storage.

NOTE

Property damage as a result of a lack of preservation.

Property damage due to corrosion may occur.

- In order to protect against environmental influences put into intermediate storage in a dry, closed and frost free room
- In the case of intermediate storage, coordinate the necessary preservation with HST

8. ASSEMBLY / INSTALLATION

8.1 Assembly tools / Lifting gear

Lifting gear

Please refer to the previous chapter "Transportation to the set up site"

WARNING



Warning of a suspended load.
Death or serious injuries can occur.



- Note the weight
- Note the centre of gravity
- Put up a warning sign when putting the system on the ground
- During transportation no persons shall stand directly by or under the system

WARNING



Physical damage caused by too much weight for one person
Only lift the plant with two persons

Assembly tools

The tools needed for assembly are listed in the following steps. Special tools and standard tools for servicing are included. The toolkit includes the following components:

- 1x screw driver SW13
- 1x hole saw Ø98 with a 11 mm hexagonal drill adapter
- 1x TX15 bit with 125 mm shaft



8.2 Space requirement

Define the space requirement, taking into account the following requirements:

- Dimensions and weight
- Required transportation and hoisting equipment
- Course of the pipeline
- Disassembly

NOTE

Please refer to the 'conditions of use' table in the technical data section

8.3 General

NOTE

The assembly / installation must be performed by professional staff who are trained to work.

- When assembling, please additionally note the other operating instructions
- Installation of the lifting station should be carried out in accordance with DIN EN 12056-1 and in accordance with the written instructions of the manufacturer.
- Please pay attention to the local legislation when assembling
- The lifting gear must be operated and maintained, in such a way that proper functioning is ensured.

8.3.1 Set up

According to DIN 12056-1, the installation space must be sufficiently lit and well ventilated in order to prevent the formation of condensation. The space needs to be so large that in addition to, and above all of the parts to be used, there is a working area of at least 60 cm width / height.

All discharge points below the level of backed up water, which are connected to the lifting station are to be designed in accordance with DIN EN 12056 and installed accordingly.

A pump sump is to be provided for the draining of the space. The sump can be drained through the pump pressure line after the backflow loop in the discharge line of the lifting unit has been drained.

The installation surface of the system must be firm and even.

8.3.2 Installation suggestions

The following installation positions are provided for connecting the drainage fixtures. For the drainage of the room, a pump sump is provided in order to avoid direct water damage in the event of water leaving (for example, incorrect connection of the supply line).

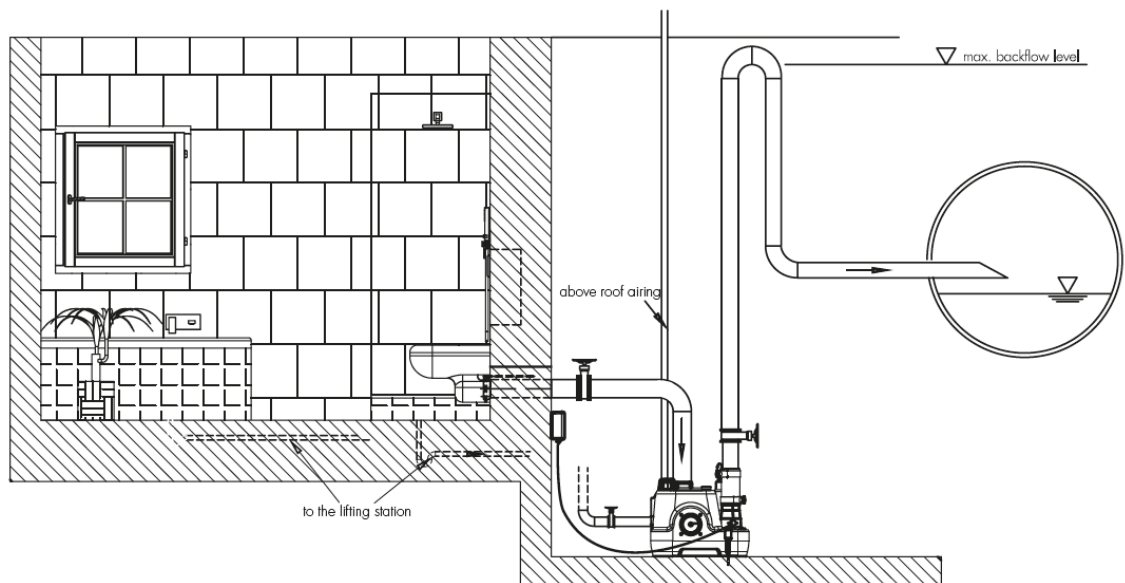
NOTE

In addition, a device should be installed at the assembly site of the lifting station which signals a warning when there is water leakage into the building. For this, the local laws and insurance provisions must be examined.

For the installation of the waste water lifting unit, the following additional components are required / recommended:

- Shut off valve in the supply line
- Shut off valve in the pressure line
- Non-return valve in the pressure line in accordance with DIN 12050-4

Recessed installation in the pump sump / Below floor installation (recommendation)

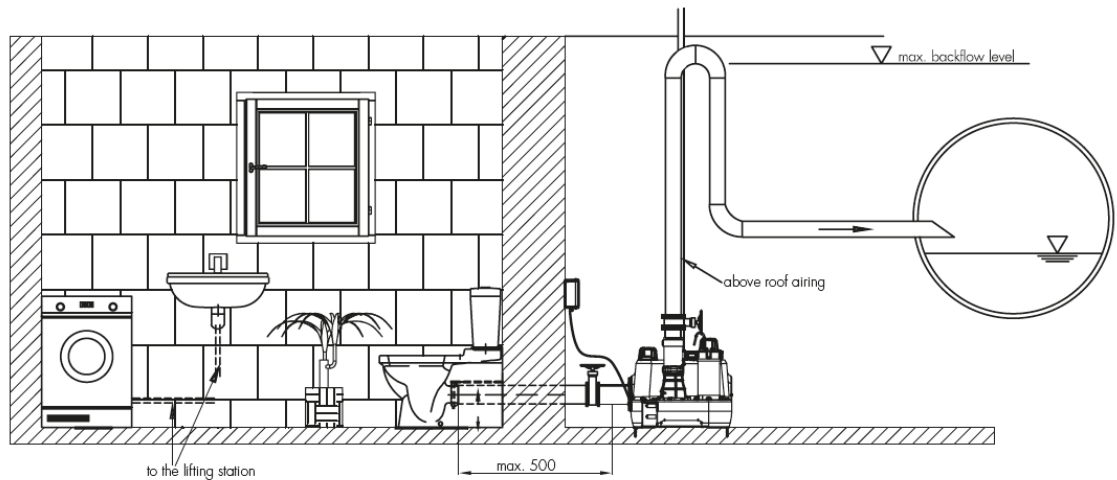


Recessed installation of wastewater lifting unit with various inlets.

The lifting unit is mounted under your bathroom furniture. For example, this may be the bottom slab of a detached house or a more old fashioned sump pump. The connection cable between your HydroJack and the controller is long enough to mount the controller at your desired place.

This installation is recommended, as double security is given by the separate pump sump.

Floor-level installation / Free standing / Above floor installation

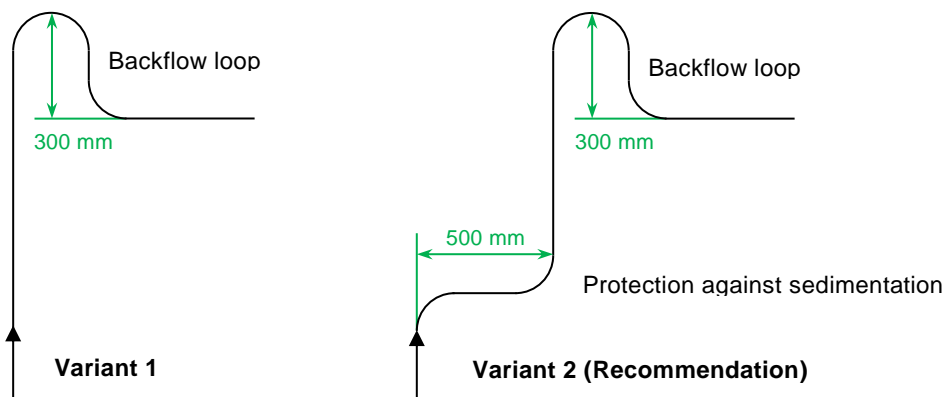


This arrangement is common if you subsequently want to mount a toilet without a wastewater connection. The main reason for this is the installation and/or drain height of your toilet and the drain height of the other siphons. Your lifting station should always be mounted at the same height or lower than the toilet to ensure a good flow to the lifting system. The lifting system has two inlet heights for the toilet connection; 180 mm and 225 mm. Both standing toilets, as well as hanging toilets are directly connected at the same level without extensive piping.

TIP

Since the HydroJack has an attractive design, the lifting unit can also be clearly installed so that it is visible.

Backflow loop



In the case of vertical pipeline paths of the pressure pipeline, variant 2 is recommended to avoid intensive sedimentation of the non-return valve of the waste water lifting system.

8.3.3 Pipelines

The following conditions for pipelines which are connected to the wastewater lifting unit, are to be observed on a general basis:

- All pipelines are to be connected in such a way, that they can run empty independently
- The pipework must not be narrowed (as seen in the flow direction)
- The pipes must keep the exposed mechanical loads upheld
- The piping must be designed for 1.5 times the maximum pressure
- The pipes are to be connected so that they are stressless to the system. No pipeline forces or torques should affect the system
- Thermal expansions in the pipelines must be compensated
- The weight of the cables are to be absorbed
- In the case of longitudinally force-locked elastic connections, secure the pipelines against loosening
- Connections to the system are to be designed so that they are soundproofed and flexible
- The pipelines are to be laid so that they are free from frost

8.4 Important information

Before delivery, your system was tested within the context of quality controls to ensure that it is in good condition and subjected to a functional test. A test protocol lies within the system.

NOTE

- Only the jointly supplied fastening material should be used
- A levelling of the system is required (as the case may be, a levelled foundation)

8.5 Assembly / Installation of the system

CAUTION

Assembly of the lifting station should only be carried out by specialized technicians
Improper installation can cause water leakage and/or damage to the equipment and injury

NOTE

- Ensure stress-free installation of the system
- Unevenness must be corrected with the appropriate documentation. The documents may not be moved during the operation of the plant.

8.5.1 Position the lifting equipment at the assembly position

WARNING



Physical damage caused by too much weight for one person
The following illustration shows the system being lifted by one person. Only lift the system with two persons.

Step 1: Put the system into the assembly position



Step 2: Lift the system into the assembly opening

(Assembly opening is not shown)



Step 3: Push the system back into position



Step 4: Levelling out the system

- Even out unevenness with suitable underlays
- As the case may be, establish a levelled foundation

NOTE



Ensure a level base

A small slope up to 2 degrees is permissible

8.5.2 Fastening the lifting station onto the ground

NOTE

- Only the jointly supplied assembly material should be used
- Levelling the system out is necessary (if necessary, levelled foundation)

In this assembly step, the wastewater lifting station is secured against a secure stand and an upswing.

MATERIAL THAT IS REQUIRED (IN THE SCOPE OF DELIVERY)

- 2x screw anchors
- 2x underlay discs

TOOL THAT IS NEEDED

- Rotary hammer drill with a concrete drill 10 mm, drill length 350 mm
- Tangential impact wrench (or a power screwdriver with percussion, min. 18V)



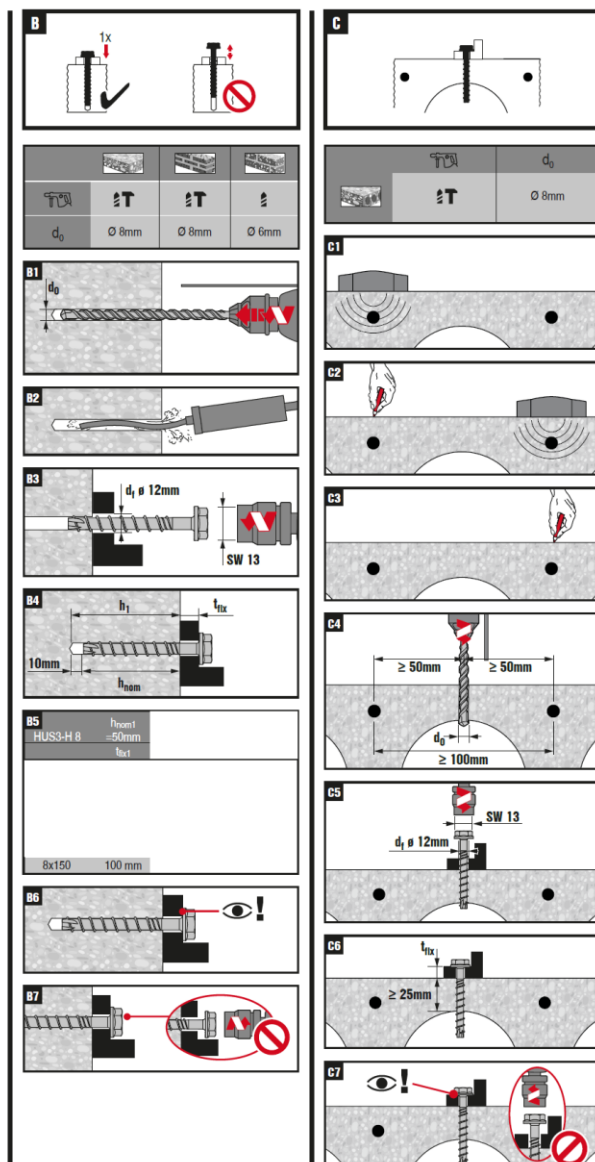
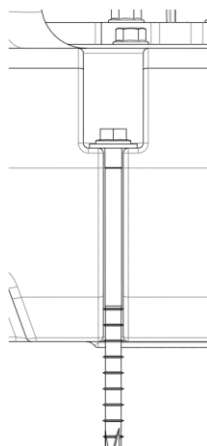
Assembly steps

1. Drill holes (system can remain in position). The holes are drilled through the formed openings on the container, see figure below)
2. Push the washers onto the bolt ties
3. Place the screw anchors into the drilled holes
4. Screw the screw anchors with tangential impact wrench screwdriver into the base until the system is secure. (Pay attention, please make sure the bolt ties are not screwed by force onto the container, thus causing deformation or damage)

NOTE

No nylon plugs are necessary. The screw anchors are screwed directly into the concrete. The attachment takes place through an incision of the edges into the concrete.

Please note that the show plates are not loosened and can be screwed again. An adjustment is possible. Please refer to the following instructions and possibly, the online video via the QR code.

HILTI**HUS3-H 8**

8.5.3 Laying the connection cable

The cable between the wastewater lifting plant and control includes the power cable and the sensor cable. These are protected by a braided hose and are jointly supplied as a prefabricated cable.

The connection cable has a length of 4.0 m (Please observe the technical data and delivery note. The cable length can vary.).

- Lay the connection cable so that there is no tension
- The connection cable must not be bent or squashed. This can lead to broken cable and impair the function of the system.
- Lay the connection cable so that it is dry and secure from frost
- Always lay the connection cable so that it rises

NOTE

Please check, the position at which the controller is to be mounted before laying cables. For this, please take note of the following chapter.

NOTE

A length adjustment of the cable leads to a change of the system and this will render the warranty void.

8.5.4 Mounting the controller on the wall

To mount the controller, a flood-free and free wall surface of at least W x H = 200 x 300 mm is intended.

To mount the controller on the wall, it is necessary to open it beforehand. Concerning the way to open the controller, you can refer to the previous chapter describing the controller.

MATERIAL THAT IS NEEDED (IN THE SCOPE OF DELIVERY)

- 4x head screws
- 4x nylon pegs

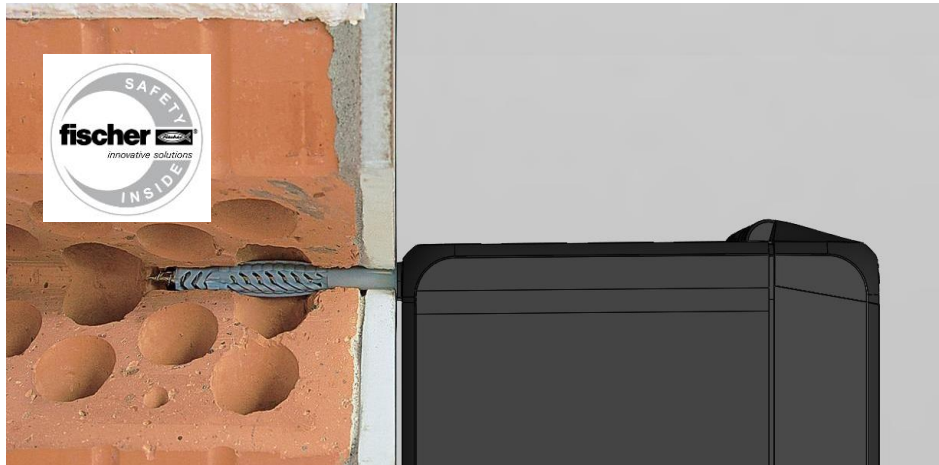
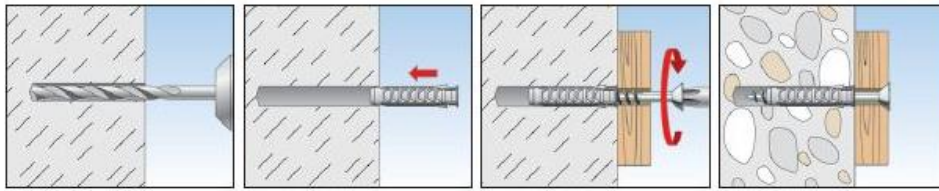
TOOL THAT IS NEEDED

- Hammer drill with a concrete drill 5 mm, drill length 100 mm
- Cordless screwdriver with bit holder
- 1x TX15 bit with a 125 mm shaft (enclosed in the scope of delivery)

Assembly steps

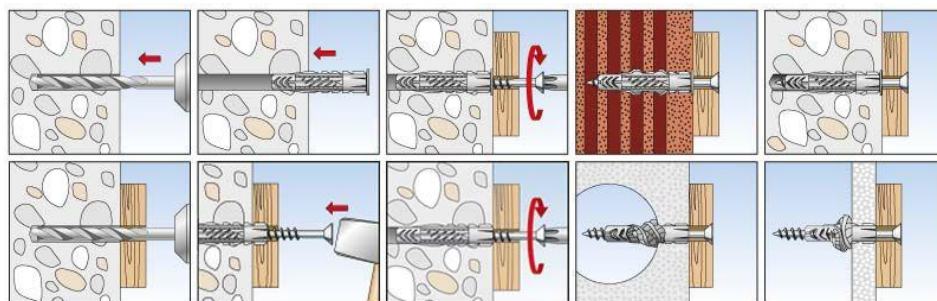
1. Hold the opened controller at the intended position and mark the holes
2. Drill holes, depth 40 mm
3. Place the nylon pegs in the boreholes
4. Place and fix the screws through fastening holes of the controller

Installation onto the wall



NOTE

The pegs are suitable for all usual substrates and mounting cavities.



8.5.5 Preparing the inflows with the toolkit

The lifting system is now in the correct mounting position. Before making the hole incision, the position of the inflow must be precisely defined.

NOTE

Installation material for connecting one inflow is supplied with the lifting station.

Up to four (five, in the case of the washing machine connection) inflows on the plant. Concerning this, please contact your dealer in order to receive the required installation material.

NOTE

The design of lifting equipment / pumps must be carried out in accordance with DIN EN 12056-4.

WARNING



Physical damage as a result of a sharp hole saw and a knife
Operation should only be performed by specialised technicians
Wear personal protective equipment

BENÖTIGETES WERKZEUG

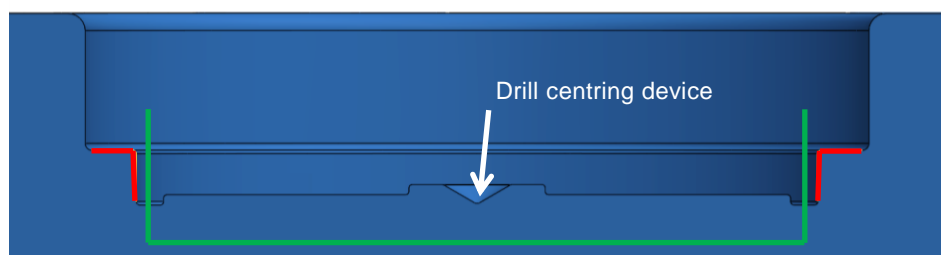
- 1x hole saw Ø98 with drill adapter
(Enclosed within the scope of delivery)
- Cordless screwdriver
- Craft knife

Assembly steps

1. Determine the location for the incision
2. Place the hole saw on the drill centring device
3. Saw out the hole
4. Deburr the edges with the craft knife

NOTE

In the case of the opening (hereinafter marked green) of inflow, do not remove the stand space / collar (hereinafter marked red). The pipe for the inflow is mounted on the collar.





8.5.6 Connecting the inflows

All connections for the inflows are closed and have to be opened before connecting the inflows by making a hole incision, using hole saw (Ø98 mm) from the toolkit which is included.

A shut-off valve has to be installed on the inflow in order to ensure a clean environment when servicing the lifting unit.

- The supply lines are to be mounted on the lifting unit so that they are free of tension
- The own weight of the feed lines is to be absorbed on the part of the customer
- The nominal width of the supply line must not be reduced in the direction of flow
- inlet pipes are to be designed so that they are frost-proof
- The supply line must be laid with a slope to the system

MATERIAL THAT IS NEEDED (WITHIN THE SCOPE OF DELIVERY)

- 4x plastic screws
- 1x clamping ring
- 1x seal ring

TOOL THAT IS NEEDED

- Cordless screwdriver and/or drill

Assembly stems

1. Define the position for insertion
2. Place the hole saw to drill centering device
3. Saw the hole
4. Deburr the edges with the craft knife
5. Insert clamping ring via inflow tube
6. Wet the seal ring with lubricant
7. Relocate the seal ring on the DN 100 (Ø110) inflow pipe and/or DN100/DNXY reduction
8. Attach the clamping ring with the plastic screws and key supplied

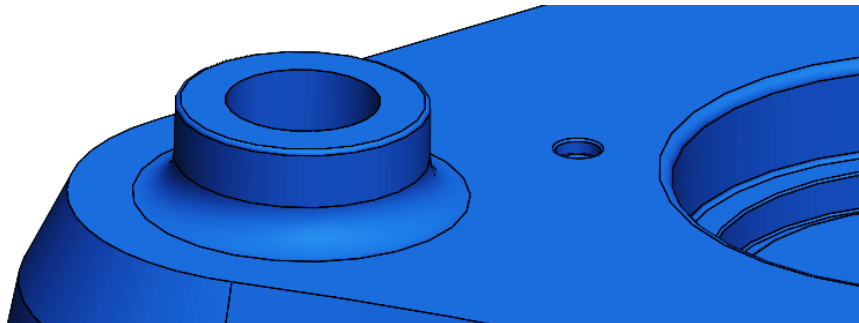


Connecting a washing machine or dishwasher

An additional connection is available on the container.

This is provided for an additional sensor or the connection of a dishwasher or washing machine.

(If this type of connection is used, sensor type 2 cannot be used)



MATERIAL THAT IS NEEDED (AVAILABLE AS AN ACCESSORY)

- 1x hole saw 25 mm
- 1x hose connector G1 / 19 mm
- Sealing tape (e.g., Teflon tape)

TOOL THAT IS NEEDED

- Cordless screwdriver and/or drill

Assembly steps

1. Open the hole for the inflow
2. Deburr the edges
3. Screw the thread of the hose with sealing tape and insulate

Pipe connections

Instead of the inflow with a nominal diameter DN100 (Ø110 mm) smaller inflows can also be connected. This is why reductions are available for the connection sizes DN80 (Ø90 mm), DN65 (Ø75 mm), DN50 (Ø50 mm), DN40 (Ø40 mm) (see the chapter "Scope of delivery").

8.5.7 Ventilation

The venting of lifting plants must be through the roof. The vent pipe must be inserted into both the main ventilation as well as into the secondary ventilation.

In order to avoid odours, the ventilation of lifting plants should, on no account be connected with the vent of another system (e.g., grease traps).

In sewage lifting units in accordance with DIN EN 12050-1 a minimum cross section of the vent pipe DN 70 is required.

- The vent line is should to be assembled on the lifting station without stress
- The weight of the vent line itself should be absorbed on the part of the customer
- The nominal diameter of the vent line feed should not be reduced

MATERIAL REQUIRED (AVAILABLE AS AN ACCESSORY)
<ul style="list-style-type: none">▪ 1x sleeve DN75

Assembly steps

1. Wet the sleeve with lubricant and place it onto the container
2. Wet the ventilation line with lubricant and put it onto the sleeve



8.5.8 Pressure line

A pressure line is to be used, which as such is intended for this use. A sloping line (e.g. HT / PVC water pipe) is not permitted as a pressure line.

The pressure pipe must have a shut-off valve, to ensure servicing of the pumping system. For maintenance use the manual emptying.

NOTE

Please observe the chapter "Installation suggestions"

In accordance with DIN12056-4 all line connections to lifting equipment executed are to be sound absorbing and flexible

- The pressure line should be assembled on the lifting unit without stress
- The own weight of the vent line should be absorbed on the part of the customer
- The nominal size of the discharge line should not be reduced in the direction of flow
- The pressure line is to be executed so that it is secured against frost
- The minimum flow velocity of 0.7 m/s should be observed in the pressure line. (Please refer to the characteristic curve of the wastewater lifting station)
- A minimum nominal width of the pressure pipe DN80 should be executed in accordance with DIN 12050-1
- The pressure line must withstand 1.5 times the maximum pump pressure of the lifting station
- For the tightness of the internal non-return valve, a back pressure of at least 3 metres water column is necessary
- Pressure lines of lifting stations may not be connected to a down pipe, but always to ventilated underground pipes or header pipes
- The pressure line must be laid permanently rising to the backflow loop
- No ventilation valves should be installed on the pressure line
- No other discharge points may be connected to the pressure line
- Pressure lines can, for example, be:
 - Welded PE line
 - Steel pipeline
 - Pressure stable ductile cast iron line
 - Victaulic pipe line

NOTE

HT / PVC pipe systems are only suitable for unpressurised operation and may not be used as a pressure pipe

MATERIAL THAT IS REQUIRED (WITHIN THE SCOPE OF DELIVERY)

- 2x Hinge bolt clamp
- 1x Hose compensator DN80

TOOL THAT IS REQUIRED (WITHIN THE SCOPE OF DELIVERY)

- Socket wrench SW13

Assembly steps

1. Attach hose compensator to the pressure port as far as it goes
2. Guide the hinge bolt clamp over the hose and fasten
(Distance from the bottom edge of hose to the hinge bolt clamp approx. 20 mm)
3. Lead two hinge bolt clamps over the hose
4. Insert pressure line 50 to 80 mm
5. Fasten hinge bolt clamp with a distance of 20 mm to the top edge of the hose compensator

NOTE

- The pressure line must withstand the clamping forces of the hinge bolt clamp
- The pressure line must have an outer diameter of 90 ± 0.5 mm as otherwise, when clamping in the hose compensator, folds occur and the required seal cannot be established.



8.5.9 Checking the assembly

CAUTION

Assembly of the lifting station can only be carried out by professional installers
Improper installation can cause water leakage and/or damage to the system and personal injury.

Before checking the function, re-check all connections for leaks and correct installation.

8.5.10 Functional check

WARNING

The operation of the system must be observed at all times.
During the functional check, nobody should stay in the hazard area.

In the case of the functional check, the satisfactory condition of the moving parts must be checked.

- Ease of movement of the free flow impeller
- Ease of movement of the non-return flap
- Proper circulation of the non-return valve on the sealing surface

WARNING



Physical injury caused by the automatic start

Flood risk

Function check only:



- in the case of a pulled out mains plug
- in the case of a clean tank
- in the case of a closed spacer in the infeed and pressure pipe

CAUTION

Contact with wastewater

There may be injuries to the skin and eyes and there is a possible risk of infection

- Wear personal safety equipment
- Contact with skin: Immediately wash affected areas of the skin and thoroughly with soap and disinfect
- In the case of contact with eyes: Rinse eyes. If tears do not go away, consult a doctor

NOTE

All drainage systems for buildings and plots are to be executed so there is a seal (country-specific conditions apply)

The guidelines and regulations for conducting the leak test are to be asked for on a country by country basis.

8.5.11 Residue free pipelines / System

NOTE

Material damage due to assembly residue
Loss of warranty claims if disregarded

- Keep all pipelines free of foreign objects
- Keep tank free of foreign objects (e.g. assembly tool)

8.6 Electrical assembly of the system

Connection is possible by plugging the power cord (Plug & Play).

HAZARD



Mains voltage and frequency
Death or serious injury occurs.

The installation should be performed by a qualified electrician and/or by checking it on a compulsory basis prior to commissioning. The electrical connection must be previously checked by the qualified electrician and put into operation according to local regulations.

WARNING



Automatic start up of the pump when the mains plug is plugged in
There may be injuries/cutting off of finger tips.

Risk of clothing etc. becoming drawn in

Only operate the wastewater lifting station with a closed controller and a closed inspection lid (and/or in the case of an open lid maintain a safety distance).

HAZARD

Mains voltage and frequency.

- Death or serious injury occurs.
- Follow the rating plating on the system
- Follow the manufacturers' instructions
- Connecting should only be performed by qualified staff
- Follow the 5 safety rules
- Secure from being switched on (e.g. by an information sign)
- Follow the general safety rules

Five safety rules:

Before starting work

- switch off
- lock against reclosure
- check that lines and equipment dead
- ground and short circuit phases
- cover, partition or screen of adjacent line sections



No cables need to be adapted or connected in order to connect. The controller is pre-set when using the standard type of sensor and no further adjustments have to be made.

The socket must be checked by qualified electricians prior to commissioning and put into operation according to local regulations.

- Connection via single-phase power socket
- For connection values, see the rating plate and the chapter "Technical Data"
- Standard connection length between the waste water lifting station and the controller 4.0 m
- Standard network cable 4.0 m (alternatively 1.5 m)

In addition, a potential-free contact for error messages can be connected to the controller (see chapter "Technical Data"). Here, for example, an optical and/or acoustic signal to inform the operator about the status of the system in the event of a fault. (In addition to the fault light on the user interface of the control unit). For this, an additional screwed cable gland has to be installed which fits the cable diameter in the housing, fitting.

NOTE

The electrical company carrying out the work is responsible for the correct execution

- The cable of the pre-assembled connection line from the lifting station to the controller should be laid so that there is no stress
- The own weight of the cables should be absorbed by the customer
- The cable should not be kinked or crushed
- The cables should always be laid rising and frost-proof
- The controller and signalling systems shall be installed in a dry, well-ventilated space which is protected against flooding

CAUTION

An adaptation of the pre-assembled connecting cable between the wastewater lifting plant and controller renders the warranty void

An adaptation of the mains cable requires an electrical testing of the insulation, earthing resistance etc. (repeat test in accordance with VDE 0701)

NOTE

When installing the wastewater lifting station in public facilities, construction sites, commercial venues etc. which, the test deadline in accordance with VDE 0702 must be adhered to for the re-testing and/or the local legislation.

9. COMMISSIONING / DECOMMISSIONING

NOTE

The initial commissioning should only be performed by a trained and qualified professional. Prior to this, the settings have to be checked for correct adjustment and the installation has to be checked for correct assembly.

CAUTION

Contact with wastewater

There may be injuries to the skin and eyes and there is a possible risk of infection

- Wear personal safety equipment
- Contact with skin: Immediately wash affected areas of the skin and thoroughly with soap and disinfect
- In the case of contact with eyes: Rinse eyes. If tears do not go away, consult a doctor

We recommend that initial commission takes place under controlled operation. The system should be visible and capable of being switched off at all times.

Before commissioning the plant needs to have acclimatised to the surrounding climatic conditions and temperatures.

9.1 Measures before commissioning / decommissioning

- Technical data of the system
- Follow the description of the controller


9.1.1 Check the technical installation


- Check the fastening, if necessary, rework
- Check the connection, if necessary, rework

NOTE

Ensure unhindered work on the system
Otherwise there could be a functional failure


9.1.2 Checking the safety equipment on the system

HAZARD	
	<p>Lack of protective equipment.</p> <p>Hazard by being drawn in</p> <ul style="list-style-type: none"> ▪ Equip the system with safety equipment ▪ Follow country-specific safety rules

WARNING	
	<p>Automatic start up of the pump when the mains plug is plugged in</p> <p>There may be injuries/cutting off of finger tips.</p> <p>Risk of clothing etc. becoming drawn in</p> <p>Only operate the wastewater lifting station with a closed controller and a closed inspection lid (and/or in the case of an open lid maintain a safety distance).</p>

- Check the safety equipment to make sure it works. If necessary, carry out additional work
- Check adherence with the country-specific safety rules
- Check adherence with the occupational health and safety / health and safety measured

9.1.3 Checking the electrical connections

HAZARD	
	<p>Hazardous voltage.</p> <p>Death or serious injury occurs</p> <p>Follow safety regulations</p> <ul style="list-style-type: none"> ▪ Separate the system from all sources of energy ▪ Secure electrical connections against reconnection ▪ Comply with and follow the 5 safety rules

- Check connections for the controller. If necessary, carry out rectification work.
- Check connections of the accessories. If necessary, carry out rectification work.

9.1.4 Checking settings

NOTE	
<p>Property damage due to incorrect settings.</p> <ul style="list-style-type: none"> ▪ The settings may only be checked and adjusted by staff of the manufacturer or qualified staff 	

9.2 Initial commissioning / Re-commissioning

WARNING

The condition / operation of the system must be observed at all times

9.2.1 Initial commissioning

The initial commissioning should only be performed by a service engineer of the manufacturer. In doing so, a detailed and thorough briefing and instruction of the operating staff takes place.

In the following section, the conditions for initial commissioning are described.

- The installation has been completed and tested
- The collection tank is empty
- Wastewater still doesn't run into the system

NOTE



Pay attention in order to ensure level ground
A low slope (up to 2 degrees) is permitted

NOTE

Any attempt to carry out initial commissioning independently may lead to injuries or material damage and warranty claims becoming void

When carrying out the commissioning, there should first be a test run with water for at least two cycles. During the test run, dry running of the pump must be avoided.

To avoid malfunctions and damage to property, the water level must at least be maintained at the height of the deactivation level and checked during the test run via the open inspection cover.

The following points should be considered before, during and after the test run:

- The electrical protection of the wastewater lifting plant
- The slider (on the part of the client) (actuation, open position, seal)
- The circuit and setting of the switching heights in the collection tank
- Sealing of the system, fixtures and services
- Check the operating voltage and frequency
- Functional test of the backflow preventer
- Fault signaling device
- Fastening of the pressure line
- Oil level of the oil chamber
- Indicator lights when plugging the system

Carrying out the test-run

1. Open the non-return valve in the inlet line and pressure pipe
2. Introduce clean water into the wastewater lifting unit
3. Water level rises in the tank until the switch on level
4. Pump pumps the water into the pressure line
5. The water is pumped via the backflow loop and freely flow by gravity into the duct (may require several switching operations depending pressure pipe length)
6. Pump pumps as far as the switch off level
7. The pumped water column pushes the non-return valve onto the sealing surface (Water column should min. be 3 m in order to achieve the required seal)
8. Repeat points 2 to 5 at least 1x (until the water flows into the sewer via the backflow loop)
9. Close the slider in the pressure line
10. Introduce clean water into the wastewater
11. Water level rises in the tank until the switch on level
12. Interrupt water inflow
13. Pump begins to pump
14. Wasser kann nicht gefördert werden, da Druckleitung verschlossen
15. Water cannot be pumped, as pressure line closed
16. The pump pumps until the fault "Run time error" (standard 90 seconds)
17. Pump stops pumping
18. Fault is signaled (red LED lights up, potential-free contact is switched)
19. Open the shut-off valve
20. After 60 seconds, the pump begins with the pumping action a second time (Please pay attention to the description of the controller)
21. The pump pumps the water into the pressure line
22. The pump pumps up to the switch off level
23. Pour water into the wastewater lifting station to below the switch on levels (switch on level is not to be achieved)
24. Empty the tank through manual operation (until the pump starts to slurp)
25. The test-run is ended

Controlled operation

Depending on the operating frequency, the controlled operation comprises at least 2 days or 20 cycles, in which the system should be checked for proper operation.

The following controls should be carried out:

- Function and seal of the shut-off valves and pipes
- Function and seal of the wastewater lifting station
- Function of the controller
- Function of the accessory parts

9.2.2 Handing over the system to users

When handing the system over to users a thorough briefing is required:

- Explain how the system works
- Explain the operating conditions of the system
- Explain the inspection, servicing, and repairs
- Hand over the system in a working state
- Hand out the transfer log mit key data concerning the commissioning
- Hand over the operating manual

9.2.3 Recommissioning

As a general rule, knowing the contents of this manual is a prerequisite for putting the system back into operation.

NOTE



Qualified specialists are assumed for the recommissioning.

A special briefing by the manufacturer is however recommended in order to avoid sources of faults.

At the same time, the following should be considered:

- All protective covers must be attached
- Safety devices must be made to work
- Regular checking of moving parts
- Regular manual operation
- Cleaning the inner wall of the tank
- Visual inspection for blocking
- Removal of interfering foreign material

9.3 Decommissioning

WARNING	
 	<p>The following points are to be carried out for decommissioning:</p> <ul style="list-style-type: none"> ▪ Emptying and/or blocking of the inflow and pressure pipe line ▪ Emptying of the tank ▪ Cleaning the system (inside and outside of the container) ▪ The system and all of its components must be separated from the mains and secured against accidental switching


The system and additional equipment are to be protected from the following:

- Frost
- Deposition of solids
- Sedimentation of the medium
- Corrosion, for parts that come into contact with medium
- Formation of condensation
- Inflows through the inflow line or pressure line

Decommissioning

1. Disconnect the controller from power supply
2. Rinse the connection lines
3. Emptying and cleaning the pump module and non-return valve
4. Empty container, clean and dispose of waste water
5. Cover the pump control and accessory parts and guard against moisture
6. When decommissioning for over one month, preserve the system



9.3.1 Switch off the system


HAZARD	
	<p>Hazardous voltage. Death or serious injury occurs</p> <ul style="list-style-type: none"> ▪ Follow the safety rules ▪ Disconnect the system from all sources of energy ▪ Secure electrical connections from being switched on again ▪ Adhere to the 5 safety rules and follow them

Switching off

1. Disconnect the controller from the power supply

9.3.2 Dismounting the system

WARNING	
 	<p>Warning of a suspended load. Death or serious injuries can occur.</p> <ul style="list-style-type: none"> ▪ Note the weight ▪ Note the centre of gravity ▪ Put up a warning sign when putting the system on the ground ▪ During transportation no persons shall stand directly by or under the system

WARNING	
	<p>Physical damage caused by too much weight for one person Only lift the plant with two persons</p>

Dismounting

1. Separate the controller from the power supply
2. Rinse the connection lines
3. Empty the pump module and non-return valve and clean
4. Empty the tank, clean and dispose of waste water
5. Dismount connection lines
6. Dismantle uplift securing device
7. Dismantle pump control and accessories
8. Preserve system
9. Pack system and protect against moisture

9.3.3 Preserving the system / Putting into storage

NOTE
<p>Property damage as a result of a lack of preservation. Property damage can occur as a result of corrosion.</p> <ul style="list-style-type: none"> ▪ Coordinate preservation measures with HST

10. INSPECTION, SERVICING, REPAIRS

NOTE

The installation of unauthorised parts compromises safety and renders a warranty issued by HST as void. When exchanging, only use original parts from HST or parts cleared by HST.

WARNING



The maintenance and operating staff must have this manual, follow it and have appropriate qualifications.

- Failure to comply renders any liability and warranty void
- The user must only carry out work that is described in this manual.
- All other work requires extensive specialist knowledge and considerable experience in dealing with sewage lifting stations

WARNING



For decommissioning following points must be carried out:

- Emptying and blocking off the inflows and pressure line
 - Emptying the tank
 - Cleaning the system (in and outside of the container)
 - The system and all of its components must be separated from the mains and secured against being switching on accidentally
- Work on the electrical equipment of the system must be done by a qualified electrician

CAUTION

Contact with wastewater

There may be injuries to the skin and eyes and there is a possible risk of infection



- Wear personal safety equipment
- Contact with skin: Immediately wash affected areas of the skin and thoroughly with soap and disinfect
- In the case of contact with eyes: Rinse eyes. If tears do not go away, consult a doctor

CAUTION

Sharp edges by as a result of material splintering

Cuts as a result of worn parts

- Apply special caution and attention
- Wear personal safety equipment

GEFAHR	
 	<p>Risk of explosion in the event of insufficient incoming and outgoing ventilation</p> <p>Tank is in an area at risk of explosion</p> <p>Before starting work, open the inspection lid and aerate well for at least 30 minutes:</p> <ul style="list-style-type: none"> Do not insert any spark generating tools Do not use any statically charged materials Wear anti-static clothing

10.1 System manual

A system manual should be maintained in order to enable the traceability of measures and targeted troubleshooting. Entries in the system manual:

- Data of regular inspection and maintenance work
- Fault occurrences, causes of failure, the measures carried out
- Data from repair / maintenance work that has been carried out
- Data from tests that have been carried out

10.2 Preventative measures

Servicing also depend on the environmental conditions of the system.

In the case of the following working conditions a thorough cleaning of the environment and outer surfaces of the wastewater lifting system should be carried out, at least in the intervals listed.

WORKING CONDITIONS	INTERVALS
Clean	3 years
Dirty	6 months
Very dirty/moist	3 months

NOTE
The lifting station must be operated and maintained so that proper functioning is ensured.

The system should regularly undergo a complete visual inspection depending on frequency of use and the quality of the wastewater. As a result of different usage and operating conditions, the intervals for visual inspection and cleaning are to be set as needed (according to need), based on the local pollution. Dirt which no longer enables a trouble-free operation of the system or causes damage shall be removed.

Daily controls

The following controls are to be carried out every 1 – 2 days:

- Operational readiness of the system on the pump controller
- Watch out for abnormalities (e.g. unusual running noises)
- Check the running time of the system (e.g. extension as a result of a blockage or shortening as a result of the bad seals in the pressure line)

WARNING



Property damage as a result of cleaning
Deposits should be removed with water
The use of solvents for cleaning is prohibited
Only use conventional, non-abrasive detergent

The system should be checked for its operation, especially following large discharge events. It should also be checked in terms of deposits and cleaned if necessary.

10.3 List of the work to be done

WARNING



The following points should be carried out for decommissioning:

- Emptying or shutting off the inflows and pressure pipe
- Emptying the container
- Cleaning the system (inside and outside of the container)
- The system and all of its components must be separated from the mains and secured against being switching on accidentally

Work on the electrical equipment of the system must be done by a qualified electrician

NOTE

In operation, vibrations can cause screw and clamp connections to loosen. Check the system regularly for loose connections in order to prevent damage. The inspection should be carried out depending on frequency of use. An interval of 3 months is recommended.

LIST OF ABBREVIATIONS

y	annually
1/2 y	bi-annually
1/4 y	quarterly
m	monthly
w	weekly
d	daily
MI	manufacturer information

10.3.1 Cleaning work

Lifting equipment should be checked for its proper operation once a month by the operator by monitoring at least two switching cycles.

DESCRIPTION	INTERVAL
Cleaning the information signs on the system (If the signs are no longer legible, they should be exchanged)	m
Cleaning the container inner wall	m
Cleaning the switch, buttons and signs of the switchgear with a lint-free cloth	m

NOTE

Depending on the frequency of use and wastewater quality, the intervals for visual inspection and cleaning as needed, based on the requirement. They need to be adjusted accordingly.

10.3.2 Function and visual inspection

DESCRIPTION	INTERVAL
Functional check of all rotating and moving parts of the system	m
Visual inspection of all connections for a good seal	¼ y
Visual inspection of all system parts for a correct and firm position	¼ y
Visual inspection of the system for material fatigue	y
Visual inspection to ensure that all screw and clamp connections are tight	¼ y
Visual inspection to that all cable connections are tight	¼ y
Visual inspection of all cable against possible chafing	¼ y
Visual inspection of the switchgear for damage	¼ y
Visual inspection to ensure that all cable connections of the switchboard are tight	¼ y
Visual inspection to ensure that the protective cover of the sensor are tight	¼ y
Function check of all signalling lights (bulbs)	¼ y
Functional check the manual button	¼ y
Function control of the fault signaling device	¼ y
Accessories, fittings	MI

10.4 Servicing

Servicing should be performed by an expert at the following intervals:

- After 3 months for lifting stations installed in industrial spaces
- After 6 months for lifting stations in apartment buildings
- After 1 year for lifting stations in single-family homes
- Provisions may vary in other countries.

When servicing, the functional and visual inspection must be carried out initially.

Furthermore, the following work must be carried out at the intervals specified above:

DESCRIPTION
Operation of the slide, adjust and lubricate if necessary
Open and clean the non-return valve
Cleaning of the drainage pump, check the impeller and the bearing
Checking the oil level of the pump (if necessary, topping up or oil change)
Interior cleaning of the sump if necessary, and where necessary, rinsing with water
Checking the joints for a good seal
Searching the environment of systems and fittings

After completion of the maintenance work and carrying out a test run, put the system into service again and create a maintenance log.

If defects are found which cannot be eliminated, these are to be immediately reported to the technician carrying out maintenance for the plant operator against receipt.

Plant operators are advised to take out a maintenance contract with a specialist company, for maintenance and repair work to be carried out regularly.

10.4.1 Servicing checklist for technical specialists

The following list only serves as a model and should be expanded if necessary.

DESCRIPTION	DONE
Controller	
The condition and operation of the indicator lights and manual button	
Check flow signal	
Check circuit breaker	
Check plug connections	
Check cable routing	
Check cable penetrations	
Level measurement	
Check operation at appropriate water levels (Information: LED does not light up when the medium is detected)	
Function of the signal lights	
Tank	
Check condition	
Clean tank	
Pumpe	
Check the condition and function	
Check running noises	
Check the condition of the impeller	
Check the condition of the spiral housing	
Non-return valve	
Check the condition and function	
Check for ease of movement	
Check for a good seal	
Connections	
Check the condition and the seal of the inflows	
Check the condition and the seal of the aeration	
Check the condition and the seal of the pressure line	
Wastewater lifting station	
Carry out a test run	
Accessories	
Check the condition and function	

10.5 Repairs

Repair work must only be performed by trained staff.

If necessary or if you have questions, please contact your dealer.

10.6 Checking the system after completing the work

- has work been completed?
- all safety devices reattached and put into working order?
- all the tools and residual materials removed from the system?

11. ELIMINATING FAULTS

In the case of regular execution and compliance with the specified maintenance and cleaning intervals, malfunctions do not normally occur.

WARNING



The following points should be carried out for decommissioning:

- Emptying or shutting off the inflows and pressure pipe
- Emptying the container
- Cleaning the system (inside and outside of the container)
- The system and all of its components must be separated from the mains and secured against being switching on accidentally

Work on the electrical equipment of the system must be done by a qualified electrician

NOTE

For troubleshooting purposes, it is necessary to have fully read and understood the operating manual.

CAUTION



In the event of a fault, the motor can be up to 110 °C and can cause burns. Therefore the temperature should be checked before touching and protective equipment should be worn.

Allow engine to cool for at least 30 minutes.

NOTE

The use of qualified people is a basic condition for troubleshooting work.

11.1 Troubleshooting

Detailed help in the event of faults with waste water lifting station can be found at

<http://www.hydrojack.de/customer-service>

This page is constantly expanded with support for you. Have you not found what you are looking for? Do you need information? Do you have further ideas to improve our help?

Contact us via our contact form? Call our service hotline (+49 291 9929 0) or write us an e-mail with the key word "Help" at info@hydrojack.de

FAULT	CAUSES	MEASURES
Pump does not pump or pumps too little Container is not emptied	Closed gate valve in pressure pipe or not fully open	Open gate valve completely
	Pressure line blocked	Clean pressure line
	Impeller or centrifuge housing blocked	Disassemble and clean the pump
	Air in the impeller housing and/or aeration is blocked	Clean aeration
	Pump parts worn	Exchange worn parts
Tank is not emptied	Inflow is too high	Check the sizing of the system
Pump blocked and/or does not turn	Impeller is blocked	Dismantle pump and clean impeller
	Motor is defective	Exchange pump
	Electrical connection is disrupted	Check the connection
Loud banging noise after the pumping	Non-return valve is hard to move or return spring is defective	Check non-return valve and clean
	Follow on time of the pump is not long enough	Check the tank for a level stand
Pump pumps for too long, although the tank is empty	Sensor surfaces are very dirty	Clean sensor surfaces
Indicator lights not active Manual button is not active	Electrical connection is faulty	Check electrical connection
	Ribbon cable has contact difficulties	Plug in ribbon cable
Fault light flashes	Plausibility error	Read the chapter "Error messages", check the tank for dirt and clean if necessary

12. SPARE PARTS AND CONSUMABLES

The system has been specifically designed to take economic and technological aspects into account and ensures optimal utilisation of the material properties and the use of quality components. All materials are designed for their use and guarantee broad functional reliability and high service life along with low maintenance and repair costs.

Spare parts and consumables are available on request from your dealer.

NOTE

The installation of unauthorised parts compromise safety and rule out a warranty by HST. When exchanging, only use original parts from HST or spare parts cleared by HST.

13. DISASSEMBLY / DISPOSAL

13.1 Disassembly

The disassembly work must be performed by trained professionals.

HAZARD



Before starting disassembly work, the system must be decommissioned. For this, see the chapter "Decommissioning".

CAUTION

Contact with wastewater

There may be injuries to the skin and eyes and there is a possible risk of infection


- Wear personal safety equipment
- Contact with skin: Immediately wash affected areas of the skin and thoroughly with soap and disinfect
- In the case of contact with eyes: Rinse eyes. If tears do not go away, consult a doctor

CAUTION

Sharp edges by as a result of material splintering

Cuts as a result of worn parts

- Apply special caution and attention
- Wear personal safety equipment

HAZARD	
	<p>Dangerous hazard. Death or serious injury occurs Observe the safety rules</p> <ul style="list-style-type: none"> ▪ Disconnect the system from all sources of energy ▪ Secure electrical connections from being switched on again ▪ Adhere to the 5 safety rules and follow them

- The system mainly consists of recyclable materials
- For information about the materials see the recycling symbols and stickers
- Metallic objects are not marked separately

NOTE
The disassembly work must be performed by trained professionals.

13.2 Disposal

NOTE
<p>Environmental protection. Improper recycling causes unnecessary harm to the environment.</p> <ul style="list-style-type: none"> ▪ Drain pumping medium and dispose of it as directed ▪ Parts coming into contact with media should be decontaminated prior disposal ▪ Dispose of the system in the light of its condition and the regulations

- Separate all steel or cast iron components for recycling
- Separate all rubber parts for recycled
- Separate all plastic parts for recycled
- Separate the controller and all electrical and recycle as electrical waste.

If you have a need....or a query, contact us at

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14. SCOPE OF THE OPERATING MANUAL

The operating manual solely contains details concerning the HST HydroJack 75 waste water lifting station.

Key data and details concerning accessories can be found in separate manuals.

15. NOTES

[illegible]

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