

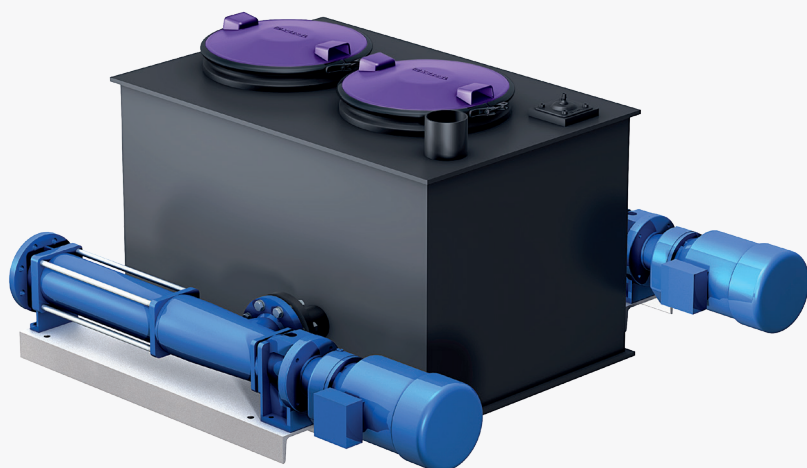
KESSEL Progressing cavity pump

Aquarize Mono, Duo

for greasy wastewater

for set-up in frost-free rooms

D Page 1- 34



Product advantages

- ☐ Safety thanks to control unit with self- diagnosis system and battery back-up
- ☐ Pressure sensor for the safe recording of filling levels
- ☐ 100% resistant against aggressive grease acids
- ☐ Tank dimensions are adapted to local circumstances
- ☐ 20-year guarantee for the tank



☐ Installation ☐ Commissioning ☐ Instruction
for the system was carried out by your specialist company:

Name/signature

Date

Town/city

Stamp of specialist company

Subject to technical modifications



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1 Introduction

Dear Customer,

We are pleased that you have decided to buy one of our products. This will certainly completely match your requirements.

These installation, operating and maintenance instructions contain important information that has to be observed during installation, assembly, operation, maintenance and repair. Prior to carrying out any work on the system, the operator and the responsible specialist staff must carefully read and heed these instructions. We wish you smooth and successful installation.

In trying to keep our quality standard as high as possible, we rely on your help of course. Please let us know of any possible improvements we could make to our product.

Do you have any questions? We look forward to you getting in touch.

1.1 Product description, general

The KESSEL progressing cavity pump SONDER-HEBE has been designed for pumping out greasy wastewater. The system is positioned upstream from the grease separator system. The greasy wastewater is routed to the grease separator via the lifting station SONDER-HEBE.

The wastewater tank houses the pump(s) and the level sensor(s). The lifting station is equipped with a perforated stainless steel bucket to protect the progressing cavity pump from coarse material. The dimensions of the inlet pipe are produced in accordance with the customer wishes. In most cases it has dimensions of DN 100/150.

The system has only been designed for wastewater from kitchens with a maximum inlet temperature of 60°C. Higher temperatures lead to system damage. The assemblies have been designed in such a way that they can be connected directly to a KESSEL control unit.

KESSEL lifting stations SONDER-HEBE can be used with suction and pressure. A large variety of applications is possible in combination with a variety of different collecting tank designs.

The system represents one component in a whole system. Please therefore also heed the operating instructions for the system as a whole and the individual components. During assembly, maintenance, service and repair work on one of the components, the system as a whole must always be put out of operation and secured against unintentional restart.

Introduction

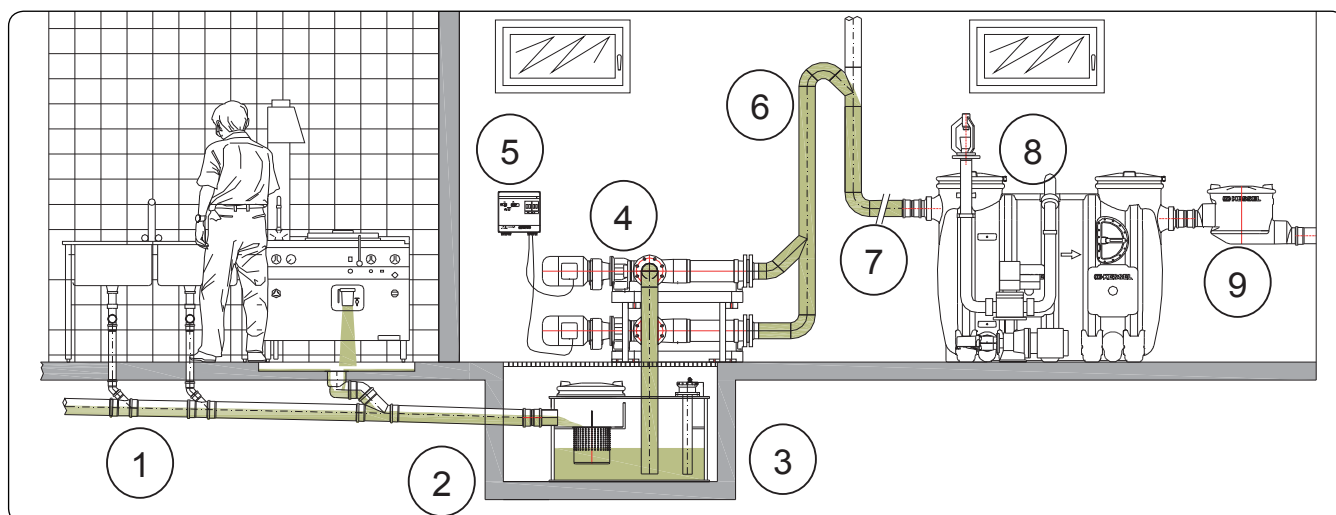


Fig. [1]

- 1 Drains in the kitchen
- 2 Inlet pipe DN 100/150
- 3 Collection tank with perforated stainless steel bucket
- 4 Screw pump twin station
- 5 Control unit
- 6 Pressure pipe
- 7 calmed inlet to the grease separator
- 8 Grease separator
- 9 Sampling spot

1.2 Use

The following applies in accordance with DIN 1986-100: "Lifting stations must be installed downstream from separator systems. If this is not possible in exceptional cases, pumping equipment should be used upstream from the grease separator, which does not have a negative effect on the separating process e.g. hose pumps or progressing cavity pump."

KESSEL supplies lifting stations SONDER-HEBE for this area of application. These gently pump greasy wastewater, thus avoiding stable emulsions and not preventing the separating process in the following grease separator.

1.3 System types

The following versions of the KESSEL lifting station SONDER-HEBE are produced.

Pumping capacity	Power	Mono	Duo	Piping	suitable up to NS*
6.5 m³/h	1.1 kW	x	x	DN65	NS 4
12 m³/h	2.2 kW	x	x	DN80	NS 7
20 m³/h	3.0 kW	x	x	DN100	NS 15
44 m³/h	7.5 kW	x	x	DN125	NS 30

* apply to Duo systems

1.4 Type plate

Information on the lifting station SONDER-HEBE type plate

- 10 Hardware revision status
- 52 Material designation
- 53 Material number
- 55 Standard
- 56 Free text / explanation
- 57 Free text / explanation
- 58 Free text / explanation
- 59 Free text / explanation
- 75 Free text / explanation
- 76 Material
- 77 Approval
- 78 Gross weight
- 79 Date of manufacture
- 80 Order number

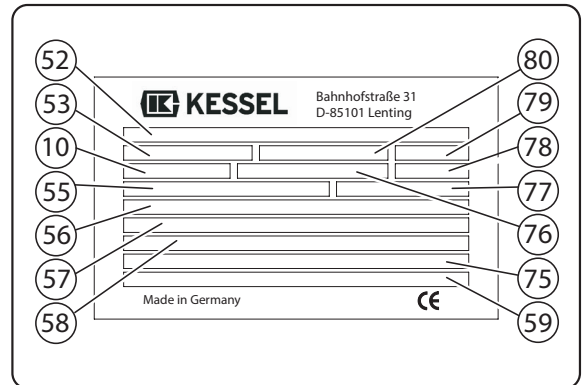


Fig. [2]

Information on the control unit type plate

- 1 Designation of the control unit
- 2 Material number of the control unit
- 3 Connection voltage and connection frequency
- 4 Current consumption range
- 5 Protective rating (IP)
- 6 Serial number of the control unit
- 7 Spare part number of the control unit
- 8 Danger sign (electrical control unit)
- 9 Protective class I - protective earthing
- 10 CE marking
- 11 Hazardous waste electric device - emptying not via domestic waste
- 12 Hardware revision status

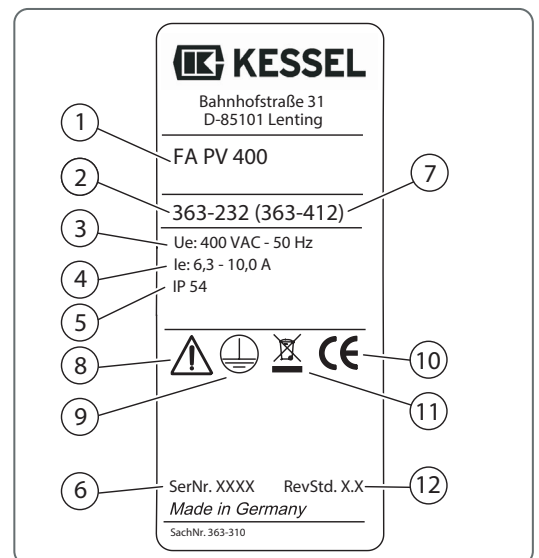


Fig. [3]

1.5 Scope of delivery

- Storage tank made of PE-HD and perforated stainless steel bucket with inlet DN100/150
- Progressing cavity pump and SDS control unit
- Operating and maintenance instructions

1.6 General information on these operating and maintenance instructions

Symbols and keys used

- <1> Reference in the text to a key number in an illustration
- [2] Reference to an illustration (Figure)
- Work step
- 3. Work step in numbered order
- List
- Italics* Italic font: Reference to a section / item in the control menu



CAUTION: Warns of a hazard for persons and material. Disregard of the instructions marked with this symbol can lead to serious injuries and material damage.



Note: Technical information or instructions which must be paid particular attention.

1.7 Assemblies and functional characteristics

- 1 Inlet
(Diameter in accordance with the customer wishes, usually DN100 or DN150)
- 2 Ventilation DN100
- 3 Perforated sludge bucket
- 4 Cover
- 5 Pump suction pipe
(DN65/DN80/DN100 in accordance with the pump capacity)
- 6 Pump pressure pipe
(DN65/DN80/DN100 in accordance with the pump capacity)
- 7 Overflow
- 8 Immersion pipe with level measurement
- 9 Progressing cavity pump
- 10 Control unit
- 11 Shut-off valve (optional accessory)
- 12 Backwater flap (optional accessory)*
- 13 Type plate



The illustration may differ in form and characteristics from the features of your system.
The illustration shows the Duo version of the system in each case. Each system is a custom-built product.

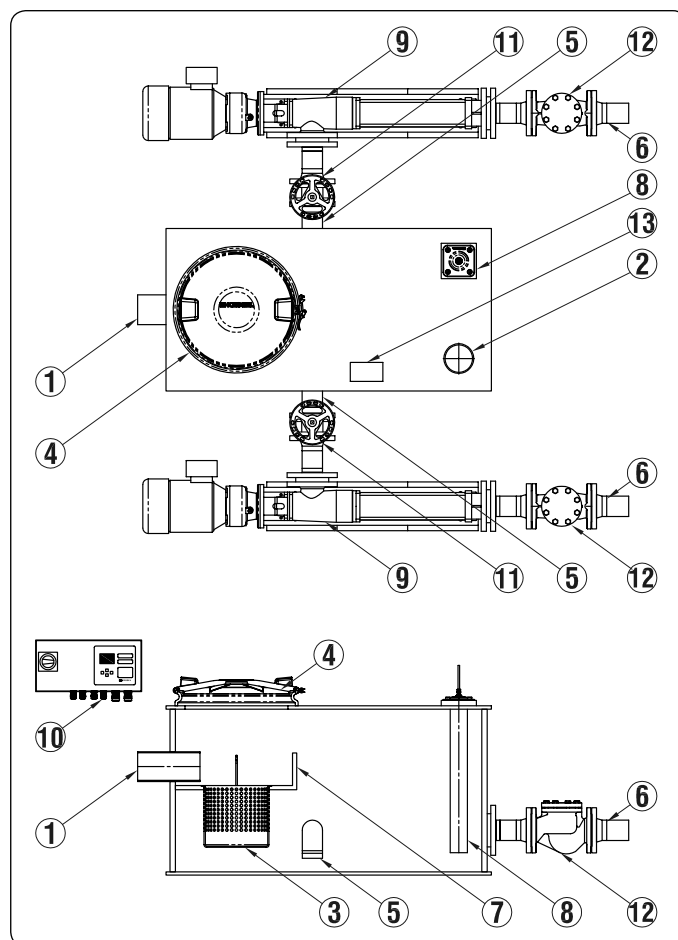


Fig. [4]

* It is essential that a backwater flap is installed in the pressure pipe to guarantee problem-free operation.

2 Safety

2.1 Intended use

The system has only been designed for wastewater from kitchens with a maximum inlet temperature of 60°C. Higher temperatures lead to system damage. The lifting station represents one component in a whole system. Please therefore also heed the operating instructions for the system as a whole and the individual components. During assembly, maintenance, service and repair work on one of the components, the system as a whole must always be put out of operation and secured against unintentional restart.

The system must not be used in a potentially explosive environment.

Any

- modifications or attachments
 - use of non-genuine spare parts
 - carrying out of repairs by companies or persons not approved by the manufacturer
 - use under conditions other than those required in the current guidelines and standards
- without the express and written approval of the manufacturer can lead to a loss of warranty.

Note:

The control unit is equipped with a protective circuit to protect the system's electrical components from damage in case of possible voltage peaks. This does not serve as lightning protection; if such requirements are made, an appropriate protective device must be installed on site.

2.2 Staff selection and qualification

The relevant operational safety regulations and the hazardous substances ordinance or national equivalents apply for the operation of the system. The owner-operator of the system must

- prepare a risk assessment
- identify and demarcate corresponding hazard zones
- carry out safety training
- secure the system against unauthorised¹ use.

People who operate and/or install or service the system must

- be at least 18 years old
- have been sufficiently trained for the respective task
- be familiar with and follow the relevant technical rules and safety regulations.

person ¹	Approved activities on KESSEL systems			
Operating company	Visual inspection, inspection, change of battery			
Technical expert, (is familiar with, understands the operating instructions)		Emptying, cleaning (inside), functional check, configuration of the control unit		
Technical specialist, (specialist craftsman, in accordance with the installation instructions and execution standards)			Installation, replacement, maintenance of components, commissioning	
Qualified electrician VDE 0105) (in accordance with the regulations for electrical safety)				Work on electrical installation

The owner-operator decides on the required qualifications for the

- Operating personnel
- Maintenance personnel
- Repair personnel

The owner-operator must ensure that only qualified personnel work on the grease separator.

Qualified personnel are persons who, on the basis of their training and experience as well as their knowledge of the relevant provisions, current standards and accident prevention regulations, can carry out the required tasks and both recognise and avoid any possible hazards. Work on electrical components may only be carried out by specially trained personnel and under adherence to all the valid accident prevention regulations (UVV).

¹ Operation and assembly work may only be carried out by persons who are 18 years of age.

2.3 Organisational safety measures

The operating and maintenance instructions must always be kept near to the system.

2.4 Hazards caused by the product

2.4.1 Risk of slipping when emptying the system



During cleaning work, greasy liquid and/or grease can wet the floor. This results in a slipping hazard. Always remove any liquid and/or grease that has leaked immediately, and wear suitable footwear.

2.4.2 Risk of infection in case of contact with the wastewater



The wastewater contains bacteria. There is a risk of infection in the event of contact with mucous membranes, eyes, wounds or when absorbed into the body. If any parts of the body come into contact with wastewater, clean immediately and change contaminated clothing. Wear personal protective equipment. The atmosphere in the wastewater tank can present a health risk. Before opening the wastewater tank (e.g. dismantling the pump), ensure there is an adequate exchange of air in the room.

2.4.3 Risk caused by electric current and cables



All live components must be protected against unintentional contact. Before housing covers, plugs and cables are opened they must be switched voltage-free. Work on electrical components may only be carried out by specialist staff (page 2.2).

2.4.4 Risks caused by hot surfaces



Pump drive motors heat up during operation. Touching the hot surfaces can lead to burns. Make sure parts have cooled down before they are touched.

2.4.5 Noise hazard



Operation of the system can cause a high noise level*. Wear appropriate protective equipment if necessary and take sound-insulating measures.

* Pumps <70 dB, grey iron backflow preventer and flow noises of the water max. 80 dB

2.4.6 Explosion hazard



The inside of the wastewater tank can be classified as a potentially explosive space (EN 12050). Biological digestion processes can result in combustible gases (hydrogen sulphide, methane gas). Before opening the wastewater tank (e.g. dismantling the pump), ensure there is an adequate exchange of air in the room and tank.

When the wastewater tank is open, make sure there are no sources of ignition nearby (e.g. operation of electrical devices without encapsulated motor, metalworking, smoking etc.).

3 Packaging, transport and storage

3.1 Packaging

Packaging the tanks for the purpose of transport or storage is not necessary if the following points are observed.

Examine the system for transport damage before installation. The ingress of impurities (dirt, dust etc.) into the grease separator and the lifting stations SONDER-HEBE must be avoided. If necessary, covers must be attached to all openings.

3.2 Transport

Transport must only be carried out by companies who are in possession of the technical experience, suitable implements, equipment and means of transport, as well as adequately trained personnel.

Systems are heavy and bulky. Suitable load-bearing equipment (crane, lifting truck etc.) can be used for transport. When load-bearing equipment is used for transport, the system must be secured on a sufficiently stable pallet. If restraints are used, these must be attached such that damage to the tanks is ruled out (e.g. use of canvas belts, hemp ropes). The use of wire ropes or chains is not permissible.

When lifting, transporting and putting down the tanks, impact loads must be avoided. If a fork lift is used, the tanks must be secured while they are transported on the fork lift. Muffs and other projecting tank parts must not be used for attachment or for lifting purposes. It is not permissible to roll or drag the tanks across the floor.

The tanks must be secured against undue dislocations during transport. The manner of fastening may not damage the tanks.

3.3 Storage

If it is necessary to store the tanks prior to installation, this may only be done temporarily and on level ground that has been cleared of any sharp-edged objects. In case of outdoor storage, the tanks must be protected against damage, exposure to storms and soiling.

4 Installation

4.1 Installation pre-conditions

- The system must be set up on a level base with a sufficient load-bearing capacity (take weight in filled state into consideration).
- The base must be suitable for holding floor fasteners (per screw 0.9 kN) which are fixed in place to prevent the system floating up.
- Connection pipes (inlet and outlet as well as venting) must be attached as self-supporting elements, they must not strain the system.
- The filling volume of the pressure pipe must not be greater than the system's pumping volume.
- The installation and operating instructions of the manufacturer must be heeded.

The system's pumping volume is defined by the switch ON and OFF points as well as the Post run time. Non-compliance can lead to deposits in the inlet pipe which result in functional problems.

Dependence of the useful volume on the inlet position

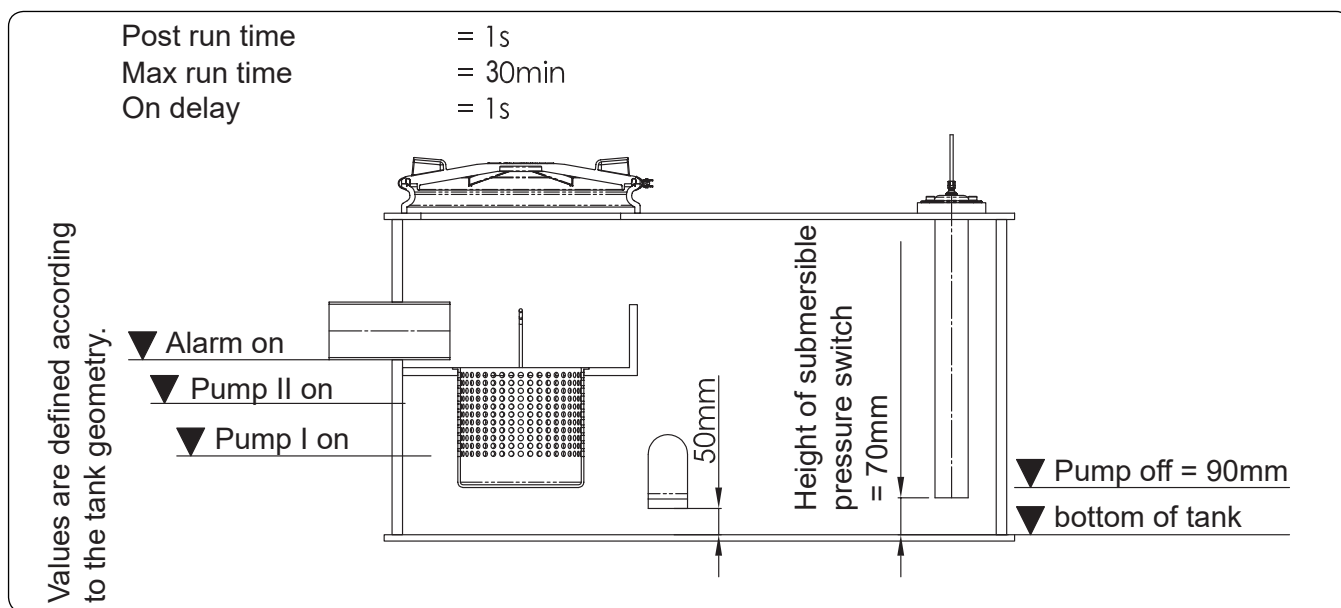


Fig. [5]

Switching heights of the custom-built product

Heights in mm

Alarm ON

Pump || On

Pump | On

4.2 Setting up / installing the system

The systems are heavy and bulky. Suitable load-bearing equipment (crane, lifting truck etc.) can be used for transport. During installation, the pertinent regulations in EN 1825 and DIN 1986 must be heeded.

The storage tank must be set down completely on its base.

If the system is to be lifted, we recommend removing the pump(s) to reduce weight. If these have been removed, the system must be checked for leaks at the pump flange before it is put into operation.

➡ Make sure there is enough room for maintenance work to be carried out in accordance with the valid directives and standards. We recommend a space of at least 60 cm all the way round.

4.2.1 Connecting the inlet

The inlet pipe must be connected to the tank on site. After commissioning, check the connection pipes for leaks. If water leaks, check the fit of the connections.

4.2.2 Connecting the ventilation pipe

Connect the ventilation pipe to the ventilation connection (in accordance with DIN EN 12056-4). A separate ventilation pipe must be routed over the roof.

➡ Connections and clamps should have sound-reducing properties.

4.2.3 Connecting the pressure pipe

Connection to the grease separator system must be interlocking. In addition, it is necessary to ensure that the inlet pipe is ventilated at the separator.

Suitable pipework should be chosen for the pressure pipe (e.g. polymer pressure pipe or stainless steel pipe with pressure rating PN10). The respective guidelines and DIN standards (sound protection, insulation, masonry and watering/draining) as well as the manufacturer specifications must be taken into consideration.

➡ We recommend keeping the pressure pipe as short as possible, using 45° bends to carry out changes in direction and sound insulation.

➡ **Torques for the screw connections** are listed in chapter 7.1 on page 29. Make sure these are heeded accordingly.

4.2.4 Fastening to the floor

The sound-absorbent mat(s) must be laid in such a way at the set-up location that the pump(s) can be positioned on them. The pump(s) must be attached to the floor using suitable screws (using the fastening material provided).

➡ Tightening strength min. 0.9 kN

Installation

4.2.5 Installing the control unit

Pump capacity in kW (lifting station SONDER-HEBE)	1.1	2.2	3.0	7.5
Nominal current range* [A]	2.5 - 4.0	4.0 - 6.3	6.3 - 10	13 - 18
Weight [kg] ³	3.8			
Dimensions [mm]	380 x 280 x 130			
Operating voltage [V]	400V AC / 50Hz			
Standby power [W]	5			
Potential-free contact	max. 42V DC / 0.5A			
Battery	2 x 9V 6LR614			
Working temperature [°C]	5 - 30°C			
Protective rating	IP 54			
Protection class	I			
Connection type	Direct connection			
Required Mono fusing [A]	C16	C16	C20	C20
Required Duo fusing* [A]	C16	C20	C32	C32
RCD [mA]	30mA			

Duo systems have two pumps with identical technical data. The respective control units are available in different power levels (of the motor protection switch).



Isolate the system! Make sure that cables and electrical components are disconnected from the power supply during work.

Install the control unit (Comfort Plus 400V) in accordance with the operating and maintenance instructions for the control unit. Connect the electrical connections of the pump(s) and the connection of the immersion pipe level measurement to the control unit.

- 1 Main switch
- 2 Display and control panel
- 3 Type plate
- 4 Cable duct, connections

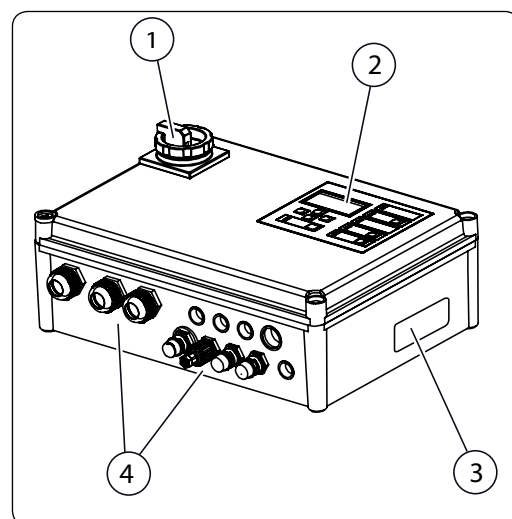


Fig. [6]



Please note that all electric connection work may only be carried out by a qualified electrician.



The control unit can only be opened when the main switch <1> "Fig. [6]" is in the OFF position.

Installation

- Loosen the screws for the housing cover and open the housing cover.
- Install the housing at the planned spot, using all four attachment possibilities in the corners.
- Take the ambient conditions into account. There is a drilling template included in the scope of delivery.
- Connect the mains cable 400 V “Fig. [7]”

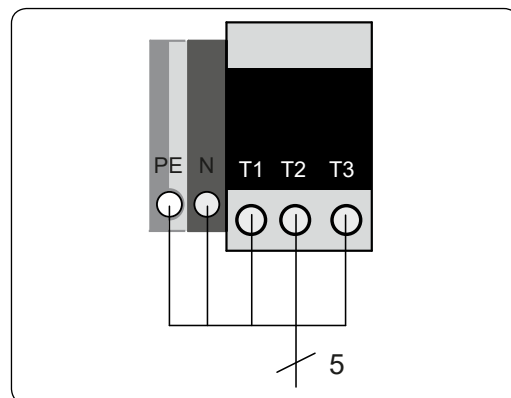


Fig. [7]

Source	Connection cable	Type of conductor	Label	Connection designation
Mains	5-pole	Protective earth	yellow/green	PE
		Neutral	blue	N
		Phase	L1	T1
		Phase	L2	T2
		Phase	L3	T3

- Lay the connection cable through the housing openings up to the terminal clamps and main switch.
- Establish the connections in accordance with the connection diagram (in the housing cover of the control unit or see Fig. [9] on page 16).
- Tighten the cable fastener to guarantee the seal. Torques for the cable duct connections in accordance with “Fig. [8]”

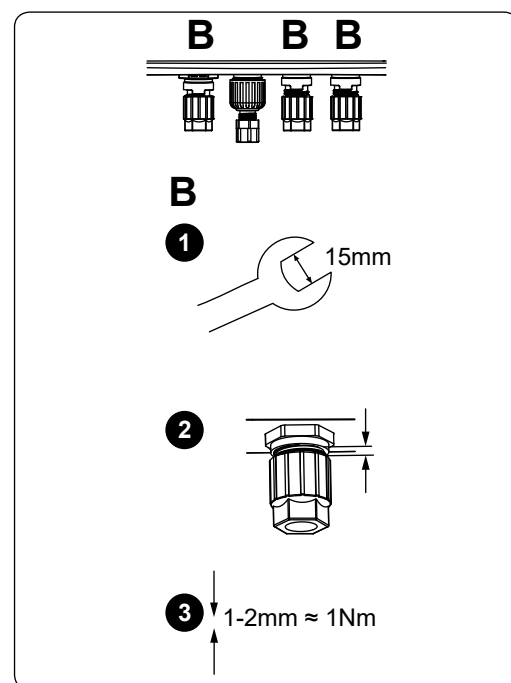


Fig. [8]

4.2.6 Connecting the pump(s) to the control unit



Before connecting the pump(s), check whether the control unit's motor protection switch is suitable for the current consumption of the pump (see type plate).

- Adjust the motor protection switch to the nominal current of the pump(s) (see pump's type plate)
- Pull the connection cable through the housing openings and connect to the mains cable in the same way as the screw connection.
- Establish the connections in accordance with the connection diagram (in the housing cover of the control unit and (see 5.1 Carry out initialisation on page 19).

Installation

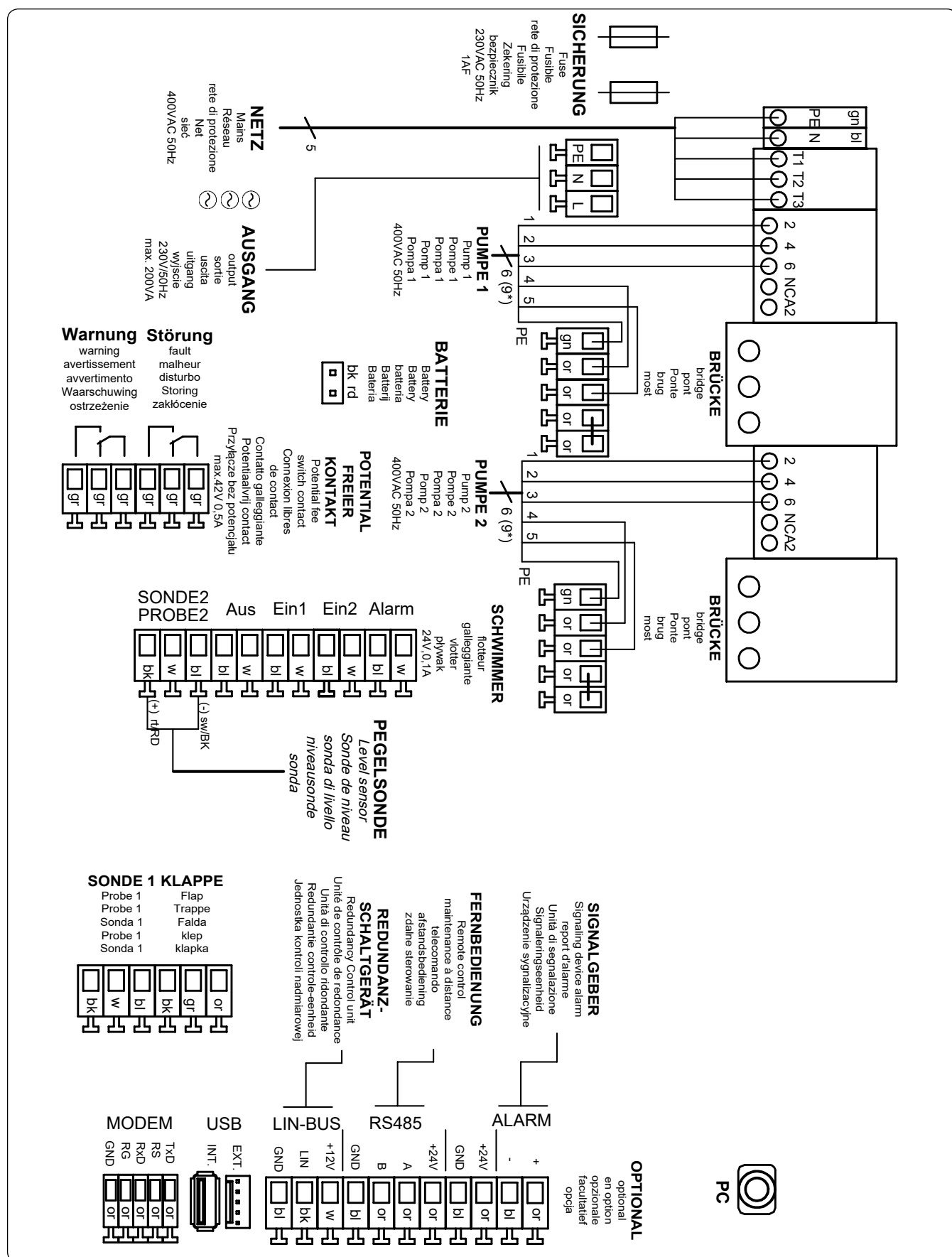


Fig. [9]

4.2.7 Connecting the level measurement

Connect the immersion pipe as follows:

- Slide the air hose of the pressure sensor onto the connecting nipple of the pressure pipe <1> “Fig. [10]” and fasten with the lock nut.
- Always lay the air hose on a gradient.
- With lengths over 10 m or if the air hose has a counter slope, use a compressor set for air bubbling (see KESSEL accessories).

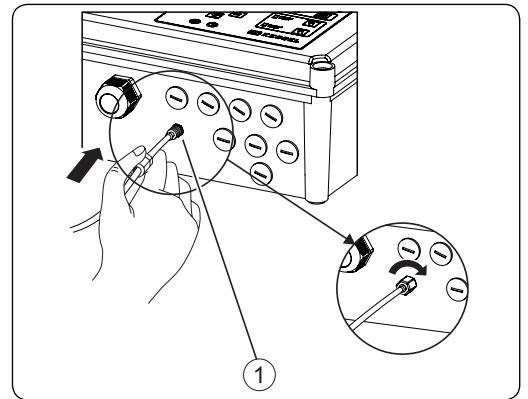


Fig. [10]

4.2.8 Installing the optional accessories

For servicing and maintenance we recommend installation of a shut-off valve between the storage tank and screw pump as well as in the pressure pipe (see accessories).

In addition, it is essential that a backwater flap is installed in the pressure pipe to guarantee problem-free operation.

Routing the USB connection (option)

To make the USB socket on the PCB accessible without the housing having to be opened, a USB housing socket with cable and connector for installation in the control unit housing can be ordered from KESSEL (art. no. 28785).

KESSEL TeleControl modem (option)

Install the KESSEL TeleControl modem (art. no. 28792) in accordance with the installation instructions enclosed with it.

5 Commissioning the system



Avoid the wastewater pump(s) running dry at all costs, it/ they could become damaged. Never switch pumps on if the wastewater tank is not filled at least to the minimum level (PUMP off).

Initial Commissioning

- Connect to the mains voltage
- Connect the mains cable to the mains power supply
- Move the main switch <1> into the ON position
- Initialisation begins automatically
 - The device checks the electrical components
 - Voltage test of the standby batteries
 - Menu item |3.10. Language| is displayed

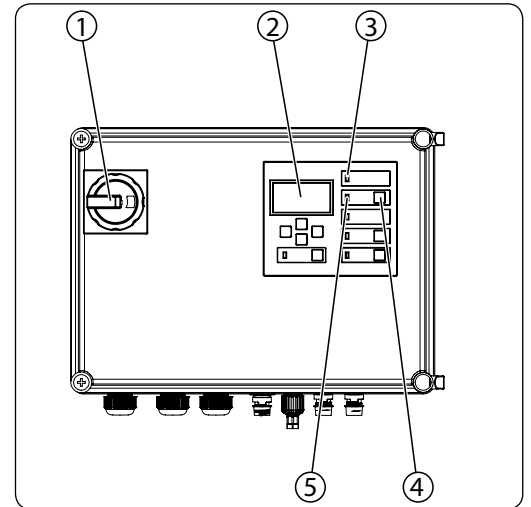


Fig. [11]

Switching on / off

- Proceed as described for the initial commissioning
- Turn the main switch <1> to position I (ON/OFF)
- Following a successful system test, the display shows |0 System info| and the green LED <3> indicates that the system is ready to use
- If the display does not show initialisation |3.10. Language| the control unit has already been initialised. In this case, the set parameters must be checked or the unit must be reset to the factory setting |3.11 Reset|. After the factory settings have been reset, the control unit starts initialisation automatically. Please note that the counter for the maintenance interval is not changed by a reset to the factory settings.

Fault displays

Read off message	If a state occurs which triggers a message (e.g. fault on a pump, wastewater level has reached alarm level), the alarm LED <5> will light up. A plain text fault message may be shown on the display.
Switch off the acoustic alarm	Press the alarm key <4> briefly.
Acknowledge the alarm	Pressing the alarm key <4> for 5 s acknowledges the message. The message disappears, the acknowledgement is noted in the log book.

5.1 Carry out initialisation

During initialisation, the following input is expected:

- |*Language*|
- |*Date / time*|
- |*Product type*|
- |*System variant*|
- |*Power rating*|
- |*S1 / S3 operation*|
- |*Maintenance interval*|

- 1 Scroll up
- 2 Confirm by pressing "OK"
- 3 Scroll down
- 4 "ESC" - back

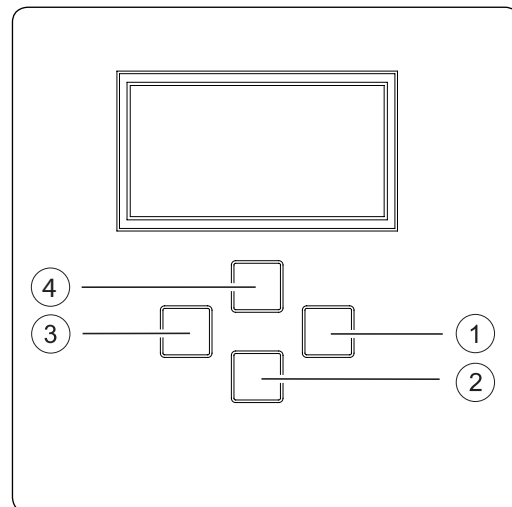


Fig. [12]

Language

- Press OK
- Use the cursor keys to select the language and confirm with OK.
- Menu |Date/Time| appears.

Date / Time

- Set the respective flashing figure in date and time and confirm with OK.
- Menu |Product type| appears.

Product type

- Select between hybrid lifting station, lifting station or pumping station and confirm with OK.
- The selection affects which setting options are available.
- Menu |System variant| appears.

System variant

- Select between the product variants. The product variants can be found in the respective manufacturer's documents.
- The selection affects which setting options are available.
- Menu |S1 / S3 operation| appears.

S1 / S3 operation

- Select between the operating modes. The operating mode can be found in the respective manufacturer's documents. Following the last entry, the menu |Maintenance interval| appears.

Maintenance interval

- Enter the maintenance interval specified in the standard.
- Initialisation completed, the control unit is ready for use.

5.2 Functional description of the control unit

5.2.1 Single station

The system is ready for operation when the POWER LED is lit and no malfunction (ALARM LED) is indicated. As the (wastewater) level rises in the tank, the "ON" level is detected via the level switch and the pump is switched on. The level in the tank decreases through the pump operation so that the level falls below the "OFF" level. The pump is switched off after the post run time. If the current pump running time exceeds the configured value of the max run time, the pump is switched off. At the same time, a malfunction message is issued by the orange LED "run time" and via the "malfunction" relay output. The malfunction message (LED and relay) remains stored until the "alarm" key is actuated, and the pump can only be restarted once this has taken place. The pump(s) can be switched on manually by pressing the test key twice.

5.2.2 Twin pump station

Alternating operation:

The system is ready for operation when the POWER LED is lit and no malfunction (ALARM LED) is indicated.

As the (wastewater) level rises in the tank, the "ON" level is detected via the level switch and the pump is switched on. The level in the tank decreases through the pump operation so that the level falls below the "OFF" level. The pump is switched off after the post run time.

Next time the "ON 1" level is reached, the other pump is switched on.

Parallel operation:

As the (wastewater) level rises in the tank, the "ON" level is detected via the level switch and the pump is switched on. If the water level continues to rise, the second pump is switched on in addition if the "ON 2" level is exceeded. This parallel pump operation continues until the level falls below the "OFF" level and the post run time has expired.

5.3 Functional check

Visual inspection through the opening in the cleaning cover:

- Make sure that the level in the wastewater tank after pumping is at least 1 cm under the immersion pipe (level measurement). (Diagram, see Fig. [5] on page 12)
- The immersion pipe must be vented during every pumping sequence.



To avoid the pump running dry, increase the post run time by only a factor of 1 in each case. Increase the post run time via the control unit settings menu if necessary, and then check again.



The commissioning must be carried out in accordance with EN 12056-4:2000, which requires the exact checking of all system components as well as the written recording of all essential data.

5.4 Briefing / handover

The commissioning and briefing are generally carried out by factory customer service employees.

- The following points must be fulfilled for the commissioning and briefing:
 - Sanitary installations must be completed
- The following persons should be present at the handover:
 - Person authorised to perform the acceptance on behalf of the building owner
 - Sanitary fitter
- In addition, we recommend the participation of
 - Operating personnel
 - System operator
- Briefing:
 - Information about disposal
 - Practical demonstration of the operating possibilities
 - Functional test
 - Information on disposal intervals
- Handover of installation and operating instructions
- After the briefing has been completed, the lifting station SONDER-HEBE must be made ready for operation again, i.e. the system must be filled with cold water.
- Drawing up the handover certificate. Make sure that there are no external materials or soiling in the grease separator.

6 Overview of the configuration menu

The parameters and setting options shown depend on the system, sensor and product configuration set in the control unit (e.g. | *lifting station SONDER-HEBE Duo* | *lifting station SONDER-HEBE Mono* |). If individual menu items are not available, check whether the control unit configuration matches the system. To do so, select |1.3 *Control type*| in the “Information” sub-menu.

The ordinal number <3> of the menu item is in the top line of the display. The key assignment of the control unit is explained in section (see 5.1 Carry out initialisation on page 19)

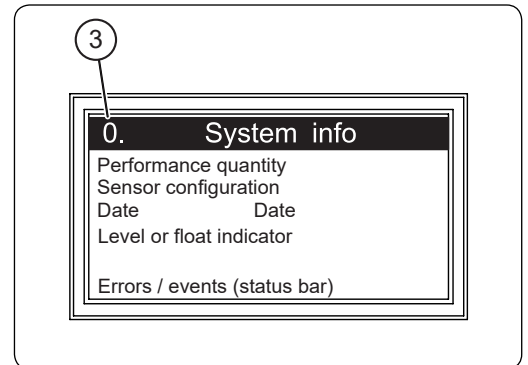


Fig. [13]

Operating menu

0	System info				
1	Information	1.1	Hours of operation	1.1.1	Total running time
				1.1.2	Run time pump 1
				1.1.3	Operating cycles 1
				1.1.4	Power outage
				1.1.5	Energy usage
				1.1.6	Run time pump 2
				1.1.7	Operating cycles 2
				1.1.8	...
		1.2	Log book		
		1.3	Control type		
		1.4	Maintenance date	1.4.1	Last maintenance
				1.4.2	Next maintenance
		1.5	Current measured values	1.5.1	Mains power
				1.5.2	Battery voltage
				1.5.3	Level
				1.5.4	Mains voltage
				1.5.5	Temperature
				1.5.6	...
		1.6	Parameter	1.6.1	On delay
				1.6.2	Post run time
				1.6.3	Max. current
				1.6.4	Min. current
				1.6.5	Max run occur
				1.6.6	Max run time
				1.6.7	Air compressor offset
				1.6.8	Sensor height
				1.6.9	SDS Self diagnosis system
				1.6.10	Sensing zone level probe
				1.6.11	ON 1 - level
				1.6.12	Off 1 - level
				1.6.13	Alarm level

Overview of the configuration menu

2	Maintenance	2.1	Manual operation	1.6.14	ON 2 - level
				1.6.15	OFF 1 - level
				1.6.16	On delay flap
				1.6.17	Post run time flap
				1.6.18	Max. current flap
				1.6.19	S1/S3 pump operation
				2.1.1	Pump 1
				2.1.2	Potential-free contact
				2.1.3	Ext. audible alarm
				2.1.4	Communication
				2.1.5	Pump 2
				2.1.6	Flap
				2.1.7	AC output
				2.1.8	DC output
		2.2	Automatic operation		Automatic operation
		2.3	SDS	2.3.1	Test pump I
				2.3.2	Test battery
				2.3.3	Test pump II
				2.3.4	Test flap"
		2.4	Maintenance date	2.4.1	Last maintenance
				2.4.2	Next maintenance
		2.5	Maintenance done		
		2.6	Maintenance interval	2.6.1	3 months
				2.6.2	6 months
				2.6.3	12 months
		2.7	Clearance RemoteControl	2.6.4	Manual maintenance intervals entry
				2.6.5	No maintenance interval
				2.7.1	Clearance duration
		2.8	Calibrate pressure sensor	2.7.2	Deactivate
				3.1.1	On delay
				3.1.2	Post run time
3	Settings	3.1	Parameter	3.1.3	Max. current
				3.1.4	Min. current
				3.1.5	Max run occur
				3.1.6	Max run time
				3.1.7	Air compressor offset
				3.1.8	Sensor height
				3.1.9	SDS Self diagnosis system
				3.1.10	Sensing zone level probe
				3.1.11	ON 1 - level
				3.1.12	OFF 1 - level
				3.1.13	Alarm level
				3.1.14	ON 2 - level
				3.1.15	OFF 2 - level
				3.1.16	On delay flap

Overview of the configuration menu

		3.1.17	Post run time flap
		3.1.18	Max. current flap
		3.1.19	S1/S3 pump operation
		3.1.30	Access remote control
3.2	Profile memory	3.2.1	Save parameters
		3.2.2	Load parameters
3.3	Date/Time*		
3.4	System configuration	3.4.1	
3.5	Product type	3.5.1	Pumpfix / Ecolift XL Mono
		3.5.2	Pumpfix / Ecolift XL Duo
		3.5.3	Lifting station Aqualift Mono
		3.5.4	Lifting station Aqualift Duo
		3.5.5	Pumping station Aqualift Mono
		3.5.6	Pumping station Aqualift Duo
3.6	System variant	3.6.1	1 motor-driven flap
		3.6.2	2 motor-driven flaps
		3.6.5	F Compact
		3.6.6	F
		3.6.7	F XL 200 I
		3.6.8	F XL 300 I
		3.6.9	F XL 450 I
		3.6.10	S underfloor
		3.6.11	lifting station SONDER-HEBE Mono
		3.6.12	F Compact Duo
		3.6.13	F Duo
		3.6.14	F XL 200 I Duo
		3.6.15	F XL 300 I Duo
		3.6.16	F XL 450 I Duo
		3.6.17	S Underfloor Duo
		3.6.18	S Duo
		3.6.19	lifting station SONDER-HEBE Duo
		3.6.20	F XL Mono (ATEX)
		3.6.21	S Mono
		3.6.22	-not occupied-
		3.6.23	F AP 501 Mono LW 800
		3.6.24	F AP 501 Mono LW 1000
		3.6.25	F without ATEX
		3.6.26	S chamber module LW 600 Mono
		3.6.27	S chamber module LW 1000 Mono
		3.6.28	Special pumping station without ATEX
		3.6.29	Special pumping station ATEX
		3.6.30	F XL Duo (ATEX)
		3.6.31	S Duo
		3.6.32	-not occupied-
		3.6.33	F AP 501 Duo LW 800
		3.6.34	F AP 501 Duo LW 1000

Overview of the configuration menu

	3.6.35	F without ATEX
	3.6.36	S chamber module LW 600 Duo
	3.6.37	S chamber module LW 1000 Duo
	3.6.38	Special pumping station without ATEX
	3.6.39	Special pumping station ATEX
3.7	Performance quantity	
	3.7.1	KTP500 (230V)
	3.7.2	KTP1000 (230V)
	3.7.3	SPF 1400 (230V)
	3.7.4	SPF 1500 (400V)
	3.7.5	SPF 3000 (400V)
	3.7.6	SPF 4500 (400V)
	3.7.7	SPF 5500 (400V)
	3.7.8	1.9 kW
	3.7.9	1.3 kW
	3.7.10	Ama Porter
	3.7.50	Special pump
	3.7.11	230 V / 2.5 - 4 A
	3.7.12	230 V / 4 - 6.3 A
	3.7.13	230 V / 6.3 - 10 A
	3.7.14	400 V / 2.5 - 4 A
	3.7.15	400 V / 4 - 6.3 A
	3.7.16	400 V / 6.3 - 10 A
	3.7.17	400 V / 9 - 12 A
	3.7.25	STZ4400
	3.7.26	STZ5200
	3.7.27	STZ7500
	3.7.28	STZ11000
	3.7.29	GTF/GTK5200
	3.7.50	Special pump
3.8	Sensor configuration	
	3.8.1	Pressure sensor + Optical probe
	3.8.2	Pressure sensor
	3.8.3	Pressure sensor + Float switch alarm
	3.8.4	Pressure sensor + Air compressor
	3.8.5	Level sensor
	3.8.6	Level sensor + Alarm switch
	3.8.7	Floater
	3.8.8	Float switch without off level
3.9	Communication	
	3.9.1	Station name
	3.9.2	Own number
	3.9.3	Modem type
	3.9.4	PIN
	3.9.5	SMS-Center
	3.9.6	SMS-Destination 1
	3.9.7	SMS-Destination 2
	3.9.8	SMS-Destination 3
	3.9.9	Status

Overview of the configuration menu

0	Data exchange	0.10	Language*	3.8.1	Deutsch		
				3.8.2	English		
				3.8.3	Français		
				3.8.4	Italiano		
				3.8.5	Nederlands		
				3.8.6	Polski		
	0.11	Reset	0.12	Expert mode	3.12.1	Power-up delay	
					3.12.2	Battery monitoring	
	3.12.3	Automatic alarm acknowledgement					
	3.12.4	TP-constant					
	3.12.5	Battery threshold					
	3.12.6	Rotary field					
	3.12.7	Alternating operation					
	3.12.8	Reset counter					
	3.12.9	AC output					
	3.12.10	DC output					
	3.12.11	SMS interval					
	3.12.12	OPT fault det. Time					
	3.12.13	OPT logics time					
	3.12.14	Dry-run protection					
	3.12.15	Max. pressure error					
	3.12.16	Offset pressure sensor					
	3.12.17	Temperature drift					
	3.12.18	Delay pressure drop routine					
	3.12.19	Total run occur					
	3.12.20	Total run occur flap					
3.12.21	Start delay						
3.12.22	Delay in current measurement						
3.12.23	Current factor						
3.12.24	Save pressure loss						
0.1	Data exchange	0.1			Hours of operation	Data read-out	
						Software update	
			Read in parameter				

7 Technical data

7.1 Torques

Description / use	Torque Nm	Spanner size
Door hinge screw A2 bright 6x40	4.5 ±0.5	T30
PT-screw 100x30 A2	7	T50
PT-screw KB60x30 WN 1411	4.5 ±0.5	T30
Quick-release closure / on tank	3	ISK 10 mm
Hexagon safety screw M8x30	10	Spanner socket 13 mm
Pipe clamp D=120	8-10	Spanner socket 13 mm
Pipe clamp D=84	8-10	Spanner socket 13 mm
PT hexagon screw K80x40 WN 1447	5.5 ±0.5	Spanner socket 13 mm

8 Maintenance

8.1 Maintenance safety instructions



Before opening the wastewater tank, ensure the room is sufficiently ventilated. Keep sources of ignition away and do not smoke.

- Make sure that the pump(s) are at ambient temperature.
- Inlet and outlet pipes must be emptied and pressure-less before work is started.
- The level in the wastewater tank must be below the attachment level (pump flange) of the wastewater pumps (Fig. [5] on page 12).
- Aggressive cleaning agents can damage seals. Use hot water and a brush for cleaning work.

8.2 Maintenance intervals

Carry out maintenance on the lifting station SONDER-HEBE in accordance with DIN 12056-4

The system must be maintained regularly through a technical specialist. The intervals must not exceed:

- 3 months for systems in commercial use
- 6 months for systems in multi-family homes
- 1 year for systems in single-family homes

A maintenance protocol with details of all the work carried out and the main data must be prepared for all maintenance work.

➡ In as far as faults are found which cannot be eliminated, the system operator must be notified immediately in writing by the maintenance expert, and must confirm receipt of this notification.

8.3 Maintenance activities

8.3.1 Visual inspection

Check all the system components for completeness, a firm fit, sound condition and water-tightness.

8.3.2 Check the shut-off valve

The shut-off valve(s) must be able to be operated easily and smoothly.

8.3.3 Stainless steel bucket

The stainless steel bucket must be cleaned once a day depending on the degree of soiling.

- To do this, open the quick-release closure on the lid of the tank and remove it.
- Take the stainless steel bucket out of the tank and clean it.
- After cleaning, insert the stainless steel bucket, lock the storage tank using the lid with quick-release closure. Make sure everything is clean when replacing the lid, and check that the sealing gasket is fitted correctly.

8.3.4 Storage tank

The storage tank must be opened once a month and checked for any deposits.

- To do this, open the quick-release closure on the lid of the tank and remove it.
- Clean the inside walls of the tank preferably with hot water. Take particular care that the opening to the pressure switch is free of deposits, but do NOT use a hose to spray into the opening as this could damage the pressure switch.
- After cleaning, insert the stainless steel bucket, lock the storage tank using the lid with quick-action closure. Make sure everything is clean when replacing the lid, and check that the sealing gasket is fitted correctly.

8.3.5 Pressure switch

The pressure switch on the storage tank must be serviced twice a year.

- To do this, screw the pressure switch off. Always hold the pressure switch with the backwater pipe facing downwards.
- Remove any dirt deposits on the backwater pipe.
- Insert the pressure switch back into the cleaned opening. Make sure everything is clean and check that the sealing gasket is fitted correctly.

8.3.6 Control unit

Update and data read-out

External data storage devices must not be connected, the control unit would not work (max. 100 mA power supply). Before use, a USB flash drive

must be formatted with FAT via a Windows PC

and given a name.

When a USB flash drive is connected to the control unit, it will be recognised automatically. Then the data exchange menu will appear with these selection options:

[0.1 Data read-out]

[0.2 Software update]

[0.3 Read in parameter]

If the menu [0 System info] is displayed, the ESC key can be used to return to the data exchange menu described above.

Data read-out

Connect USB flash drive |*Data read-out*| and confirm with OK. A file with the system data is stored on the USB flash drive (*.csv).

Carrying out update

Connect the USB flash drive, data exchange menu appears. (This is only possible if a respective file (*.hex) is on the USB flash drive.) |*Software update*|, enter password and confirm with OK. The update is carried out automatically, simply follow the display dialogue.

Read in parameter

Connect the USB flash drive, data exchange menu appears. (This is only possible if a respective file (*.csv) is on the USB flash drive.) |*Read in parameter*|, enter password and confirm with OK. The parameters are read in automatically.

Replacing the battery

The Comfort PLUS control unit is equipped with batteries in case of a power outage. These batteries must be replaced if this is indicated on the display.



Isolate system! Make sure that cables and electrical components are disconnected from the power supply during work.

- Move the main switch <1> on the control unit to the OFF position and open the control unit.
- Remove the cable ties, take both batteries out <2> and replace them with new ones.
- Fix the batteries in place using the cable ties.

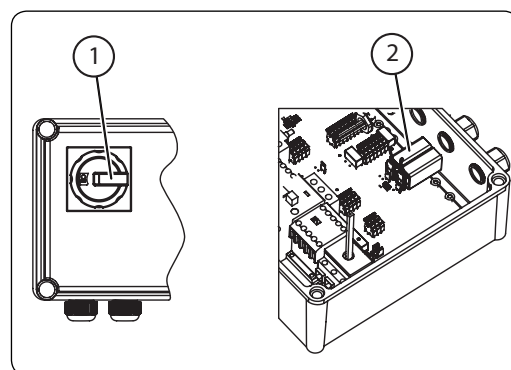


Fig. [14]

Maintenance

8.4 Troubleshooting

Fault	Possible cause	Action(s)
Pumps do not start	Motor protection switch has triggered	If necessary, see display message on the control unit
Capacity too low	Motor is blocked	Remove blockage / service the pump (heed the safety instructions)
	Motor turns sluggishly	Maintenance / repair by Customer Services
	Fault in the power supply: one or two phases are missing or there are heavy fluctuations in current	Check the white mains connection for phase failure
	Pump capacity reduced	Remove blockage / service the pump (heed the safety instructions)
	Wrong direction of pump rotation	Connect rotary field correctly. Make sure that the counterclockwise function is not activated (only on systems with corresponding control unit)
	1 or 2 phases have no current or control unit fails due to excessive fluctuations in the mains current	Check fuses and electric cables and inform the electricity company
Pumps are running	System is overloaded	Check whether there is a short-term increase in wastewater occurrence; if possible do not use drainage points temporarily or divert wastewater elsewhere if possible
Alarm level is reached / is indicated	Too little pumping capacity	Eliminate object in the impeller or housing area
		Remove the object from the pressure fitting or pressure pipe
		Pumps are worn / have them replaced
No display on the control unit	Aeration device not in operating position	Wrong lifting station design / clarification through KESSEL Customer Services
	Power outage	Put aeration device into operating position
	Supply cable faulty	Ensure the power supply
Pump does not start	Control unit fuse faulty	Check mains cable for fault
	Power supply cable to the control unit without current	Replace fuse (specialist staff)
Backwater at the lowest draining points	Level control malfunction	See "No display on the control unit"
	Inlet pipe to the system blocked	Remove the level control and check for soiling / clean immersion pipe / check pneumatic level measurement / check levels / settings for levels
	Wastewater temperature too high over a longer period (15 min) / suction capacity of the system is restricted	Clean inlet pipe / avoid feeding coarse materials
		Reduce wastewater temperature
	Inlet gate to the system (if available) not opened or not opened completely	Open inlet gate completely

Maintenance

System runs too often, switches on for no reason	Supply quantity too high through external water or similar	Find and eliminate the cause (if necessary, reduce amounts of washing powder and detergents used)
	Backwater flap faulty, wastewater runs out of the pressure pipe back into the system	Check backwater flap (integrated in the pressure pipe connection on every pump), clean it and replace any damaged parts if necessary
System does not switch off or has a variety of different switching malfunctions	Foam formation in the system	Reduce amounts of washing powder and detergents used
	Tank or pumps are blocked by grease being discharged in large quantities	Clean the whole system / check grease discharge
	Level control ventilation blocked	Air hose between the control unit and level control for kinks and correct routing (even gradient), correct or replace if necessary
	Level control soiled	Remove the level control / clean immersion pipe
Loud and unusual noises	Switching points set incorrectly or illogically	Check pneumatic level measurement / check levels / settings for levels
	Damage to the pump parts through objects	Check pump parts and replace if necessary (heed the safety instructions)
	Blockage caused by objects	Remove the object / service the pump and check for damage / replace the pump if necessary (heed the safety instructions)

Permanent odour development

Fault	Possible cause	Action(s)
Putrid smell	Connection pipes leaking	Check for a tight fit and check seals, repair if necessary
	Leaks in the lifting station	Check system parts for tightness, such as covers or similar, and eliminate leaks
	Pump leaking	Check pump / have it repaired or replaced by KESSEL Customer Services if necessary
Acrid smell	Motor too hot, overloaded	Check motor and pump to make sure they are running easily, check system for switching malfunctions (particular motor protection switch)
		System switched on and off too often on account of high inlet quantities / clarification with KESSEL Customer Services
	Contactors too hot on account of switching malfunctions	Check system for switching malfunctions



Every malfunction is indicated on the display. If several malfunctions occur at the same time, these are indicated in succession by scrolling through the display.

9 System passport / factory approval

Mat. Des.	
Mat. no./Order no./Prod. Date	
Rev.hrs./Material/Weight	
Standard/Approval	
Dimensions	
Volume	
Density	
Designation 1	
Designation 2	

The system was checked for completeness and for leaks before it left the factory.

Date _____

Name of the tester

General inspection / maintenance requirements

10 General inspection / maintenance requirements

The owner-operator of a separator system is obliged according to valid legal principles as well as according to DIN EN 1825 / DIN 4040-100 to subject the system to a general inspection with leak test before commissioning and repeated every 5 years. This test may only be carried out by a technical specialist. We will be happy to send you a quotation for the general inspection by an independent expert.

Maintenance requirements

For you, it is important that the quality and functional ability of your system is kept at the best possible standard, particularly when this is the pre-condition for warranty conditions.

If you have the maintenance carried out by the manufacturer of the system, we guarantee you continued updating and care for your system.

.....

You would you like a quotation for a maintenance contract / general inspection? Please copy this page, complete it and then fax it to the following No.: 08456/27-173

If you have any questions please do not hesitate to contact our Service department on +49 (0) 8456 / 27-462

Quotation for a general inspection or a maintenance contract for separator systems

Please send me a non-binding quotation for maintenance ☐ general inspection ☐ .
(Please mark with a cross accordingly)

Sender

Name: _____

Street: _____

Postcode/Town or city: _____

Contact: _____

Tel. no.: _____

Person receiving quotation

Name: _____

Street: _____

Postcode/Town or city: _____

Contact: _____

Tel. no.: _____

Building

Name: _____

Street: _____

Postcode/Town or city: _____

Contact: _____

Tel. no.: _____

Type plate data:

**KESSEL**

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D-85101 Lenting

Made in Germany

