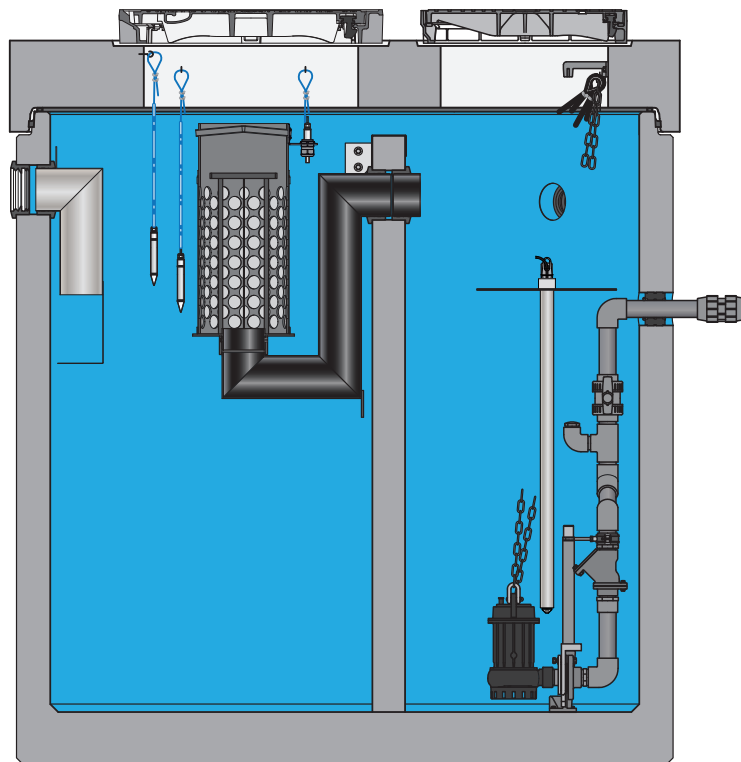


## Oleolift-C

**Light liquid separator (separator class I according to DIN EN 858-1 in conjunction with DIN 1999-100 and DIN 1999-101) with integrated sludge trap, integrated sampler, integrated pump station for backflow protection and warning system for locking the submerged pumps, for underground installation**



For safe and proper use, read carefully through the instructions for use and all other documents enclosed with the product, pass them on to the end user and keep them until the end of the product's life.

The German version of the instructions for use is definitive.


## Introduction

ACO Tiefbau Vertrieb GmbH (hereinafter referred to as ACO) thanks you for your trust and provides you with a product (light liquid separator Oleolift-C, hereinafter referred to as the plant) which incorporates state-of-the-art technology and has been checked for proper condition in the course of quality controls prior to delivery.



Figures in these instructions for use are provided for basic understanding and may differ, depending on the product version and the installation situation.


### ACO Service

Accessories, refer to "Product catalogue":  <http://katalog.aco-tiefbau.de>  
For additional information regarding the plant, ordering spare parts and services, e.g. maintenance contracts, general inspections, please contact ACO Service.

ACO Service	Telephone: + 49 (0) 36965 819-444
Im Gewerbepark 11c	Fax: + 49 (0) 36965 819-367
36457 Stadtlengsfeld, Germany	<a href="mailto:service@aco.com">service@aco.com</a>

### Target group

The target group for these operating instructions is technically trained personnel.

The personnel must have the appropriate qualifications,  Chapter 1.3 "Personnel qualifications". Areas of responsibility, competence and monitoring of the personnel must be closely regulated by the operator. Any lack of knowledge in the personnel must be rectified through training and instruction by adequately trained skilled personnel. Training on the system shall be carried out only under the supervision of technical skilled personnel.

### Guarantee

For warranty information, see "General Terms and Conditions",

 <http://www.aco-tiefbau.de/agb>

### Symbols used

Certain information in these instructions for use is marked as follows:



Tips and additional information, which make the work easier

■ Bullet points

→ Actions to be carried out in the specified order

 References to other information in these instructions for use and other documents

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# 1 For your safety



Always read the safety instructions before installing and commissioning the plant in order to prevent personal injuries and damage to property.

## 1.1 Intended use

### 1.1.1 Area of use

The plant serves to retain light liquids of mineral origin from the waste water. In areas where the handling of light liquids with a mineral origin or mixtures of light liquids may endanger the environment, separator plants for treatment or as retention devices must be provided.

#### **Discharge into public sewerage or combined sewerage systems**

The system can be used in the application areas listed below:

- Treatment of mineral oil-contaminated rainwater from paved
  - areas where mineral oil products containing up to 100% biodiesel and biofuel oil and/or 10% ethanol are handled
  - Traffic areas (car parks and roads)
- Protection of plants and areas in or on which mineral oil products containing up to 100% biodiesel and biofuel oil and/or up to 10% ethanol are handled (retention)
- Pre-separation of light liquids from wastewater which undergoes more stringent treatment to limit hydrocarbons before being discharged into public sewerage systems
- Treatment of wastewater containing mineral oil (industrial wastewater), which is produced under operating conditions similar to DIN 1999-1004, section 12.2 for industrial processes, the cleaning of oil-contaminated parts and the cleaning of oil-contaminated floor surfaces (workshop floors are only allowed after checking the possibilities in individual cases)

In these cases, the treated discharge water from the plant is intended to be discharged into the public sewerage or combined sewerage systems.

#### **Discharge into water body**

If the discharged water is to be discharged into a body of water, this is only possible in individual cases after the permissibility of such a discharge or any additional requirements that may be necessary have been clarified with the local competent water authority.

### **Special introduction**

The use of the plants for the treatment of waste water arising from workshop drainage and from the draining, dismantling, compaction and shredding of end-of-life vehicles is only possible in specific cases after the permissibility of such a discharge has been clarified with the competent water authority, since in these cases other pollutants in addition to hydrocarbons may be present in concentrations that cannot be adequately treated in a plant.


### **Wastewater treatment according to Annex 49 of the wastewater regulation**

If the plant is used for the treatment of wastewater which contains mineral oil within the meaning of Annex 49 of the Wastewater regulation, e.g.

- in mechanical vehicle cleaning (partial flow: discharge before the circulation system with subsequent discharge),
- manual vehicle cleaning (vehicle washing, engine washing, underbody washing, chassis cleaning in wash halls and at self-service or company washing stations),
- the drainage of areas which are to receive and store end-of-life vehicles, then it constitutes a plant for the limitation of hydrocarbons in waste water containing mineral oil within the meaning of Part E, paragraph 2 of Annex 49 of the Wastewater regulation.

In these cases, the value for hydrocarbons of  $\leq 20$  mg/l required under water law is deemed to be complied with.

### **1.1.2 Application limits**

- The maximum installation depth (distance between the upper edge of the manhole cover and the tank base) is 7.00 m.
- When transferring wastewater into the public sewer system, the locally applicable limiting value for hydrocarbons must be observed. Additional wastewater treatment may be required. Suitable wastewater treatment plants on request,  Introduction "ACO Service".

### **1.1.3 Installation requirements**

Only applies to Germany. Provisions in other countries can vary.

#### **Protection against leakage of light liquids:**

The light liquid must never be able to escape from the plant or from the shaft construction. The installation is to be installed in such a way that the upper edge of the cover (earth's surface) is arranged sufficiently high in relation to the decisive level of the surface to be drained.

As the plant is equipped with an electrical warning system (suitable for operation in zone 0) for light liquids, the plant does not need to be installed in an elevated position.

**Protection against backflow:**

The required elevation must also be maintained with regard to the local backwater level of the draining sewer system. In addition to the decisive level of the area to be drained on the inlet side, the backwater level must also be considered as an additional decisive level for the required elevation. The higher measure is to be applied for the excess height.

As the plant is equipped with an integrated pump station (double pump station according to DIN EN 752 or DIN EN 12056-4) and is installed with a backflow loop, the plant does not need to be installed in an elevated position.

## 1.2 Improper use

**Scope and changes**

Applications and uses other than those described in chapter 1.1 and modifications are not permitted.

**Non-approved parts**

Installation of unapproved parts impairs safety and excludes any guarantee from ACO. In the event of replacement, only use original ACO parts or spare parts approved by ACO.

**Introduction**

- No substances may be discharged into the plant which could impair the stability of the materials used, the functional capability of the plant or compliance with the discharge requirements into the downstream wastewater treatment plant or a water body (refer to e.g. Series DWA-M 167). This includes in particular:
  - Faecal wastewater
  - Wastewater containing organic oils and greases
  - Wastewater in which a significant proportion of stable emulsions is present
  - Aggressive substances and cleaning agents containing chlorine
- Drainage of areas where light liquids do not accumulate, such as roofs and yards, should not be discharged into separator systems

**Entry into the plant**

- The built-in fittings and components (e.g. separator inlet, coalescence insert) are designed for operation as separators. They are not designed to be a step or foot board for people and storage e.g. heavy cleaning devices. The bearing force is not designed for such purposes.
- The use of an access aid for accessing or entering the plant is anchored in the requirements of the employers' liability insurance association.



## 1.3 Fundamental hazard potential

The plant is defined as a Zone 0 hazardous area.

- Access to the plant is only permitted when the accident prevention regulations valid at the time of access are taken into account. Accident prevention regulations can be obtained from your local accident insurance association.
- Never descend into the plant without breathing apparatus and/or without prior testing of the gas concentration and without safety equipment (refer to the responsible accident prevention regulations).
- Work on electrical system parts may therefore only be carried out by qualified personnel.

## 1.4 Normative specifications

The installation and operation of the plant is subject to the local authority regulations. For more information, please contact the responsible authorities. The following standards are listed for orientation purposes and must be supplemented and checked to ensure that they are up-to-date (only applies for Germany. Provisions in other countries can vary).

### Light liquid separator

- EN 858-1 Separator systems for light liquids
  - Part 1: Principles of design, performance and testing, marking and quality control
- EN 858-2 Separator systems for light liquids
  - Part 2: Selection of nominal size, installation, operation and maintenance”
- DIN 1999-100 Installations for separation of light liquids
  - Part 100: Provisions for the utilisation of separator plants for light liquids according to DIN EN 858-1 and DIN EN 858-2”
- DIN 1999-101 Installations for separation of light liquids
  - Part 100: Additional requirements for separator systems according to DIN EN 858-1, DIN EN 858-2 and DIN 1999-100 for light liquids containing biodiesel or fatty acid methyl ester (FAME)
- EN 752-4 “Drain and sewer systems outside buildings”
- DIN 1986-100 ‘Drainage systems for buildings and property
  - Part 100: Provisions in connection with DIN EN 752 and DIN EN 12056
- DIN EN 12056-1 “Gravity drainage systems”
- DIN EN 124/DIN 1229 “Gully tops and covers for traffic areas”
- DIN EN 476 “General requirements for components of sewers and sewer pipes”.

Examples from the listed standards:

- Self-monitoring: Functionality and condition of the separator system shall be checked every month at least by a competent person.
- Maintenance: The separator system must be serviced every six months by properly qualified personnel in accordance with the manufacturer's specifications and the official ruling.
- General inspection: Before commissioning and then at regular intervals of every five years at the latest after that, the separator system must be completely drained and cleaned and then checked by a properly qualified technician to ensure that it is in proper working order and operates properly.
- Emptying and cleaning: The plant (separator chamber) must be emptied and cleaned by competent persons.

Emptying should be implemented immediately when:

- The volume of separated light liquid has reached 80% of the maximum storage capacity volume,
- the separated sludge volume has reached half of the sludge capture volumes.

### **Pump station (lifting plant)**

- DIN EN 12050-2 'Wastewater lifting plants for land and site drainage – Part 2: Wastewater lifting plants for faecal-free wastewater
- DIN EN 12050-4 'Wastewater lifting plants for land and site drainage – Part 4: Non-return valves for faecal-free wastewater and wastewater containing faecal matter"
- EN 12056-1 'Gravity drainage systems inside buildings – Part 1: General and performance requirements
- EN 12056-4 'Gravity drainage systems inside buildings – Part 4: Wastewater lifting plants, layout and calculation
- EN 12056-5 'Gravity drainage systems inside buildings – Part 5: Wastewater lifting station: Installation and testing, instructions for operation, maintenance and use'
- EN 752 "Drain and sewer systems outside buildings"
- DIN 1986-100 'Drainage systems for buildings and property – Part 100: Provisions in connection with DIN EN 752 and DIN EN 12056

Examples from the listed standards:






- Backflow protection: Wastewater which is produced below the backflow level must be routed into the drainage system via an automatic wastewater lifting plant.
- Sampling: Execute at least 2 samplings every month
- Maintenance: Wastewater lifting plants must be operated and maintained according to EN 12056-4 in such a way as to ensure proper functioning and operating safety. Prescribed maintenance intervals for the wastewater lifting plant according to DIN EN 12056-4: Operation in commercial enterprises = every 3 months

## 1.5 Personnel qualifications

Activities	Person	Knowledge
Layout, operational changes	Planners	Knowledge of building systems and services, evaluation of wastewater technology application cases. Layout of light liquid separators and drainage systems. Normative specifications and directives
Below ground installation	Skilled people	Specific knowledge of carrying out civil engineering works
Sanitary installation	Skilled people	Installation, fixing and connection of pipes
Electrical installation	Electrician	Work on electrical connections to power supply must be carried out by qualified electricians only
Operation monitoring	Operator	No specific requirements
Operating the plant, self-monitoring, servicing	Properly qualified, competent people	"Expert assessors" in accordance with DIN 1999-100*
Emptying and cleaning	Properly qualified, competent people	Approved disposal contractor
General inspection before commissioning and every 5 years	Qualified persons	"Properly qualified, competent people" according to DIN 1999-100**
Disposal	Skilled people	Appropriate and environmentally friendly disposal of materials and substances, knowledge of recycling
<p>*Definition of "properly qualified, competent people" in accordance with DIN 1999-100:            Properly qualified, competent personnel are people from the owner, operator or designated third parties, who by virtue of their training, knowledge and practical experience ensure that they can execute assessments, inspections or tests and inspections in the respective field properly.</p> <p>The qualified, competent person can acquire the expertise for the operation and maintenance of separator plant in a training course followed by on-site instruction, which is offered e.g. by the relevant manufacturers, professional associations, chambers of skilled trades as well as the expert organisations active in the field of separation technology.</p>		
<p>**Definition of "properly qualified, competent people" in accordance with DIN 1999-100:            Properly qualified, competent people are employees of companies independent of the operating company/owner, experts or other institutions, who verifiably have the required technical knowledge for the installation operating, maintain and general inspection of separation plants to the scope named here and have the equipment required to test separation plants and whose independence with regard to its auditing activities is ensured. Independence is ensured, in particular, when the properly qualified, competent person has not implemented any installation and/or remedial measures on the same plant nor executed any self-monitoring.</p> <p>Verification of technical qualification can be deemed to have been furnished when the requirements e.g. in accordance with RAL-GZ 968 for the assessment group G-L or equivalent requirements, are fulfilled.</p>		




## 1.6 Personal protective equipment

Personal protective equipment must be made available to the personnel and supervisors must check that it is used or worn.

Mandatory sign	Meaning
	Safety footwear provides good slip resistance, especially in wet conditions, as well as a high degree of penetration resistance (e.g. in case of nails) and protects the feet from falling objects (e.g. during transport).
	Protective gloves protect the hands from infection and from minor bruising and cut injuries.
	Protective clothing protect the skin from infection and from minor bruising and cut injuries.
	A protective helmet protects the head in case of low ceilings and from falling objects (e.g. during transport).
	Safety glasses and goggles protect eyes from infections, especially during launch, maintenance and repair.

## 1.7 Warnings

In the instructions for use, warnings are identified by the following warning symbols and signal words.

Warning symbols and signal words		Meaning	
	<b>DANGER</b>	Personal injuries	Hazard with a high degree of risk which, if not prevented, results in death or severe injuries.
	<b>WARNING</b>		Hazard with a moderate degree of risk which, if not prevented, can result in death or severe injuries.
	<b>CAUTION</b>		Hazard with a low degree of risk which, if not prevented, can result in minor or moderate injuries.
	<b>IMPORTANT</b>	Damage to property	Hazard which, if not prevented, can result in the damage of products and their functions or an item/property in the surrounding area.

## 1.8 Transport and storage

**IMPORTANT** Note during storage and transport:

- Store the plant parts in frost-protected premises.
- If intermediate storage is required, then the tank must be protected from water ingress.
- Never drive the forks of a fork-lift truck or lift truck directly under the plant parts.
- Where possible, do not remove the packaging and transport restraints until the components are at their installation site.
- If transporting the unit parts using a crane or crane hook:
  - Comply with the accident prevention regulations
  - Check the working load limit of the crane and the slings
  - Never stand under the suspended load
  - Prevent other persons from entering the entire danger zone
  - Avoid oscillating motion (swinging) during transport

## 1.9 Decommissioning and disposal

**IMPORTANT** Improper disposal is a hazard for the environment. Comply with the regional disposal regulations.

- Completely drain and clean the plant when decommissioning.
- Separate the unit parts according to their material and hand them over for recovery or recycling.
- Electrical equipment must never be disposed of in household waste.

## 2 Product Description

**ACO Oleolift-C** = several functions in one product:

- Light liquid separator class I with integrated sludge trap
- Signalling of the required emptying at 80 % of the maximum light liquid storage quantity by means of an electrical warning system
- Signalling when the maximum light liquid storage quantity of 100 % is reached by electrical warning system and simultaneous locking (blocking) of the pump station (protection against light liquid in the outlet)
- Signalling when the maximum build-up is reached by an electrical warning system and simultaneous locking (blocking) of the pump station (protection against light liquids in the outlet))
- integrated sampling option
- integrated pumping station (double pumping system) with the formation of a backflow loop (protection against backflow from the sewer)

### 2.1 Product features

For further key data of individual components,  Chapter 7 "Technical data".

#### 2.1.1 Plant

- Comprising: Tank, cover plate with manhole covers and accessories
- Load class D 400: truck trafficable – the safe solution for heavy goods vehicles and storage areas and side strips (hard shoulders) of carriageways
- Easy accessibility for maintenance work
- Selected material combinations for longer service life

#### 2.1.2 Tank

##### Basin

- Monolithic (one-piece) basin made from high-quality, quality-monitored reinforced concrete
- Solid concrete partition wall divides the basin into a separator chamber and a pump station chamber
- Basin with rebate formation in accordance with DIN 4034 Part 1 and assembled mechanical seal
- Socket with socket seal (connection on-site to inlet pipe)
- Compression fitting and/or flange connection (connection on-site to pressure pipe)

- Socket with socket seal (connection on-site to ventilation pipe)
- Socket pipe with socket seal (connection on-site to reserve cable conduit) and cable gland (sealing insert)
- Direct extraction of the separator chamber (right or left version) with compression fitting (optional), connection of on-site disposal pipe

### Separator chamber

- standard-compliant interior coating provides additional, permanent resistance and thus permanent structural protection \*
- Submersible inlet pipe made of stainless steel
- Submerged outlet pipe with valve seat and guide for coalescence insert, made of polyethylene (PE-HD)
- Coalescence insert
  - Supporting cage made of polyethylene (PE-HD) with mounted holder for high liquid level sensor
  - NS 3 - 10: Coalescence mat made of a combination knitted wire mesh (stainless steel and polypropylene)
  - NS 15 - 30: Coalescence mat made of polyurethane foam (PPI 10)
- Submersible pipe for direct suction (optional)
- Warning system type idOil 30 for checking the thickness of the oil layer and liquid level:
  - 3x sensor mounting set
  - 2x oil layer sensor idOil-OIL with 5 m connection cable (message 80 % and 100 %)
  - 1x idOil-LIQ high liquid level sensor with 5 m connection cable
- Cable connector LCJ3

### Pump station chamber

- standard-compliant interior coating provides additional, permanent resistance and thus permanent structural protection \*
- Inlet pipe (overflow pipe from separator chamber) made from polyethylene (PE-HD)
- Pressure pipe unit:
  - Piping made from PVC-U up to approx. 30 – 40 cm outside the pump station chamber
  - 2x underwater coupling system with short guide pipe (slider pipe) made from plastic
  - 2x Ball check valve made of cast iron EN-GJL
  - 1x Ball valve made of PVC-U and/or gate valve made from cast iron
  - 1x flush pipe connection possibility
- Universal special bracket made from stainless steel
- Connection socket DN/OD 110 with socket seal (connection on-site to reserve cable conduit and/or ventilation pipe)

- 2x submerged pumps (special pumps), selection:
  - DRG 150/2/50 ex for plants/NS: 3-6/600 \_ DL 50, 3-6/900 \_ DL 50, 3-6/1200 \_ DL 50, 3-6/1800 \_ DL 50, 3-6/2500 \_ DL 50, 6-10/2500 \_ DL 50, 6-10/3000 \_ DL 50
  - DRG 200/4/100 ex for plants/NS: 6-10/2500 \_ DL 100 und 6-10/3000 \_ DL 100
  - KL-AT-M 400/4/80 ex for plant/NS 15-30/4500 \_ DL 100
- Level sensor:
  - 4 - 20 mA output signal for hydrostatic level measurement in water and wastewater
  - Very easy to clean and is ideally suited for wastewater with the front flush-installed membrane (ATEX II 2 G EEx ia IIC T6: XA131P/00/a3)
  - Degree of protection IP68
  - Utilisation for ambient temperature: -10 °C to +70 °C
  - Measuring range: 0.1 – 0.4 bar
  - 20, 50 and/or 80 m connecting cable (bending radius maximum 120 mm)

### Integrated sampling

- Integrated in the pump station chamber (arranged via the collection area and/or pump area)
- Sampling in accordance with 4040-100:
  - Overflow pipe extends approx. 30 mm freely into the pump station chamber
  - Gradient of at least 160 mm
  - Utilising a wide-neck bottle for sampling

\* Instead of the standard-compliant inner coating, the separator chamber and the pump station chamber can be optionally equipped with an inner lining of polyethylene (PE-HD).

### 2.1.3 Cover plate, complete

- Cover plate made from concrete with maintenance opening:
  - 1x clear width Ø 625 mm and 1x clear width Ø 800 mm (NS 3 - 10 / DL 50)
  - 2x clear width Ø 800 mm (NS 6 – 30/DL 100)
- Manhole covers Class D 400 made from cast iron:
  - 1x clear width Ø 600 mm and 1x clear width Ø 800 mm (NS 3 - 10 / DL 50)
  - 2x clear width Ø 800 mm (NS 6 – 30/DL 100)



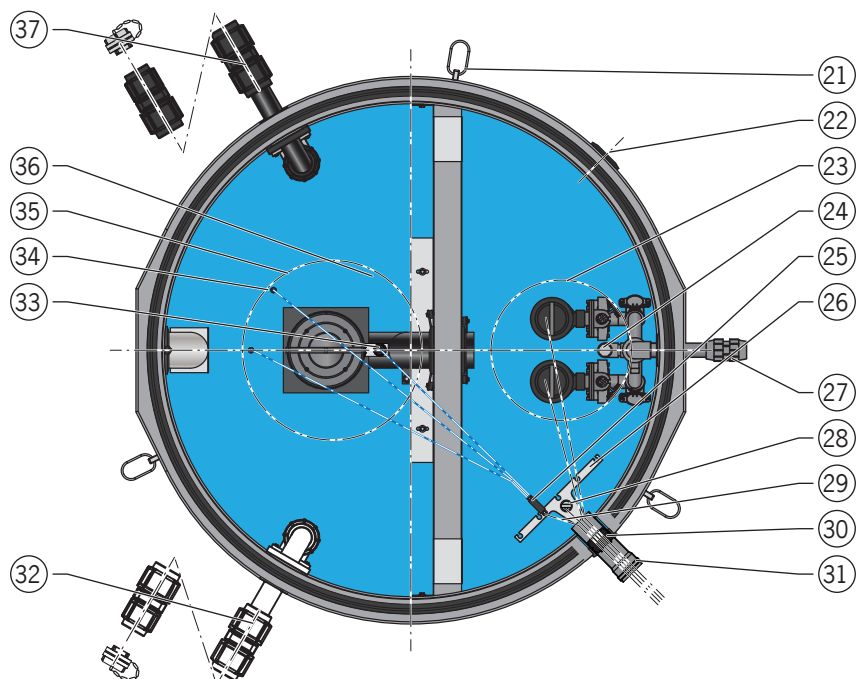
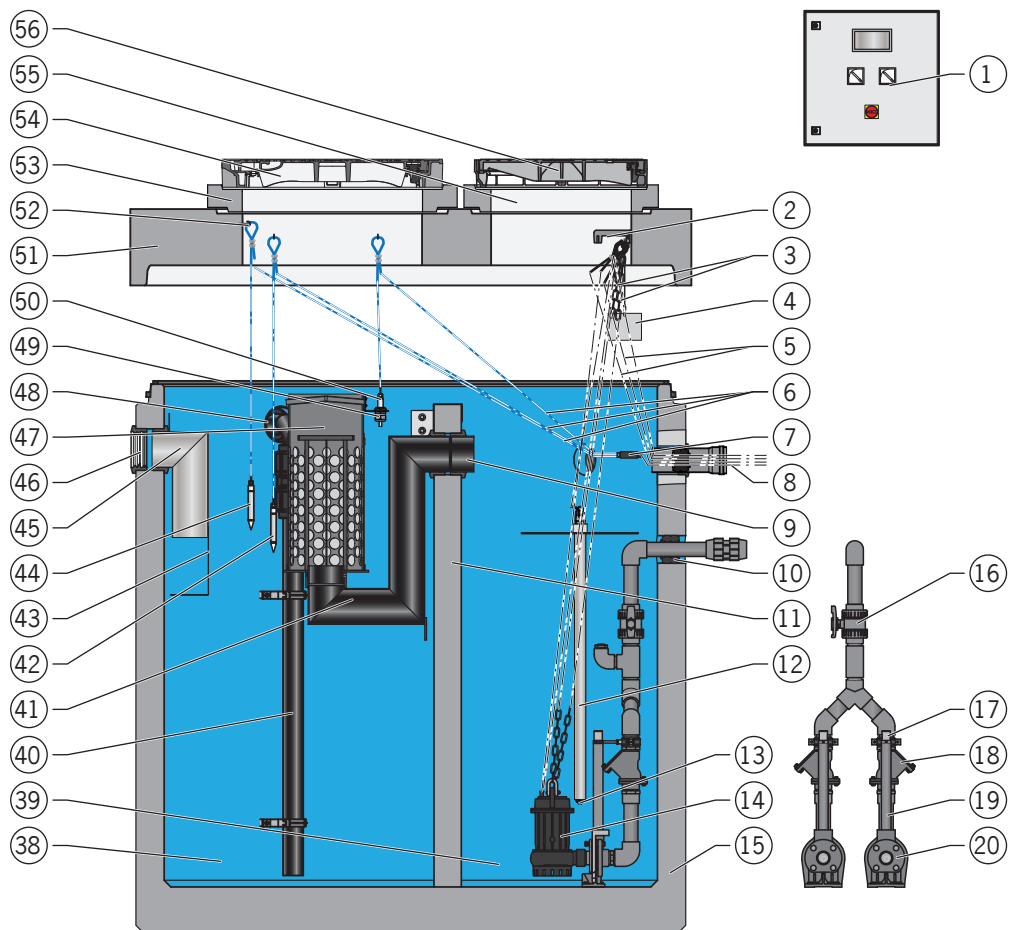
### 2.1.4 Oleolift control unit

- Functional and safety-relevant for Oleolift-C in combination with submerged pump
- Operating voltage: 400 V– frequency: 50 Hz
- Degree of protection: IP 52
- Selection or version according to motor protection switch:
  - 2x 2.5-4 A
  - 2x 4-6 A
  - 2x 6-10 A

## 2.2 Accessories

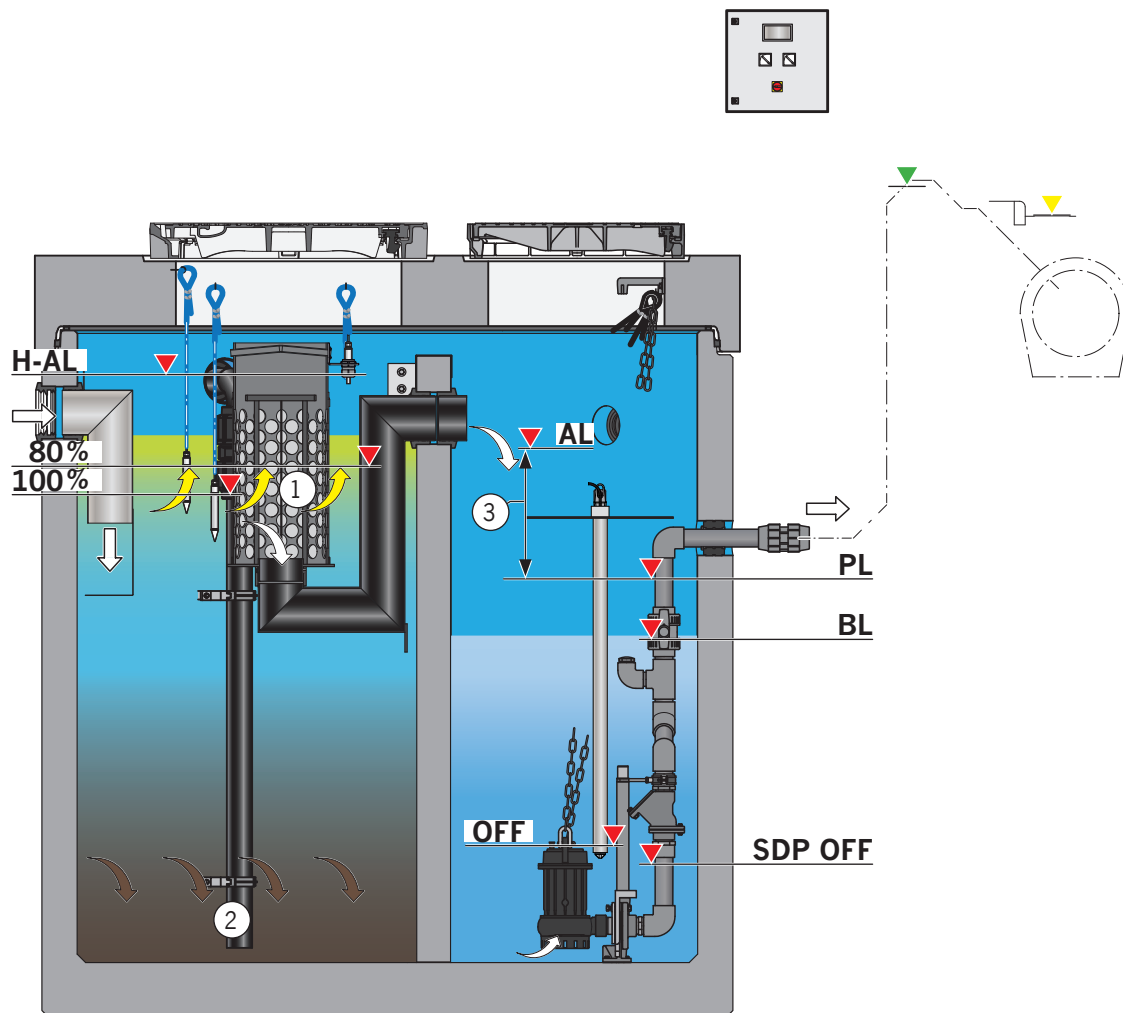
Component	Version	Weight
<b>Pump drive chain</b>	<ul style="list-style-type: none"> <li>■ Pump drive chain incl. shackle</li> <li>■ Made of stainless steel</li> <li>■ Load-bearing capacity 200 kg</li> <li>■ Length 4 m</li> </ul>	15.5 kg
<b>Rechargeable battery</b>	<ul style="list-style-type: none"> <li>■ To maintain alarm signal in the event of a power failure</li> <li>■ 12 V/1.2 aH</li> </ul>	0.8 kg
<b>Outdoor cabinet</b>	<ul style="list-style-type: none"> <li>■ As empty housing</li> <li>■ Dimension: 806 x 2,000 x 338 mm (WxHxD)</li> <li>■ With horizontal partition wall</li> <li>■ Area above the partition:               <ul style="list-style-type: none"> <li>■ Spare space for a local Multi-Control mono or duo switching device, with socket 230 V and 400 V</li> </ul> </li> <li>■ Area below the partition wall: Space reserved for a local backflow loop DN 50 - 200, with 100 W heater with thermostat</li> </ul>	40 kg
<b>Protective pipe</b>	<ul style="list-style-type: none"> <li>■ Protective tube for level sensor</li> <li>■ Length 1,220 mm</li> </ul>	1 kg
<b>Ex-safety-barrier</b>	<p>In combination with level sensor</p> <ul style="list-style-type: none"> <li>■ For separating potentially explosive and safe area. The ex-safety-barrier is an additional piece of equipment whose purpose is to achieve safe isolation of intrinsically safe electric circuits from non-intrinsically safe electric circuits. It contains limiting devices with voltage limitation for two circuits.</li> <li>■ Maximum permissible ambient temperature: -20 °C to +50 °C</li> </ul>	

## 2.3 Components



- |  |   |
|--|---|
| 1 = Control unit   | 32 = Direct suction, complete (optional), version right                     |
| 2 = Chain holder   | 33 = idOil-LIQ high liquid level sensor                                     |
| 3 = Pump drive chain (optional) for submersible pump 1 and 2   | 34 = idOil-OIL/2 oil level sensor   |
| 4 = Type plate   | 35 = Maintenance opening  |
| 5 = Submersible pump 1 and 2 connection cable  | 36 = idOil-OIL/1 oil level sensor   |
| 6 = Connection cable for the sensors   | 37 = Direct suction, complete (optional), version left                      |
| 7 = LCJ3 cable connector   | 38 = Separator chamber  |
| 8 = On site connection cable for the sensors   | 39 = Pump station chamber   |
| 9 = Inlet pipe (pump station)  | 40 = Submersible pipe (optional)  |
| 10 = Pipe feed-through   | 41 = Submerged outlet pipe with guide for coalescence insert                |
| 11 = Partition wall  | 42 = idOil-OIL/2 oil level sensor   |
| 12 = Protective pipe for level probe   | 43 = Baffle plate   |
| 13 = Level probe   | 44 = idOil-OIL/1 oil level sensor   |
| 14 = Submerged pump (optional)   | 45 = Submersible inlet pipe   |
| 15 = Basin (tank)  | 46 = Socket with socket seal (connection on-site to inlet pipe)             |
| 16 = Ball valve and/or gate valve  | 47 = Coalescence insert   |
| 17 = Clip on nipple  | 48 = Sealing plug   |
| 18 = Ball retaining valve  | 49 = Holder for high liquid level sensor                                    |
| 19 = Slide pipe  | 50 = idOil-LIQ high liquid level sensor                                     |
| 20 = Underwater coupling system-automatic  | 51 = Cover plate  |
| 21 = Lifting lug   | 52 = Sensor mounting kit  |
| 22 = Socket with socket seal (On site connection to ventilation line), also available in flow direction right  | 53 = Support rings AR-V 800 (optional) for adjusting the installation depth |
| 23 = Maintenance opening   | 54 = Cover, nominal size 800 (maintenance or inspection opening)            |
| 24 = Flushing connection (optional)  | 55 = Support rings AR-V 625 (optional) for adjusting the installation depth |
| 25 = LCJ3 cable connector  | 56 = Cover, nominal size 625 (maintenance or inspection opening)            |
| 26 = Probe holder  |   |
| 27 = Compression fitting and/or flange connection (connection on-site to pressure pipe)                        |   |
| 28 = Level probe   |   |
| 29 = On site connection cable for the sensors  |   |
| 30 = Cable feed-through (sealing insert)   |   |
| 31 = Socket pipe with socket seal (connection to on site cable conduit), also available in left flow direction |   |

## 2.4 Operating principle



Separator chamber / Pump station chamber

- 1 = Light liquid collecting chamber
- 2 = Sludge collection area
- 3 = Sampling position (available height at least 160 mm)
- ▼ = Pipe base, backflow loop
- ▼ = Backflow level

### Alarm levels in the separator chamber:

- H-AL = Signalling of high water alarm and simultaneous locking of the \* pump.
- 80% = Signalling of the necessary emptying at 80% of the maximum light liquid storage quantity
- 100% = Signalling of the maximum light liquid storage quantity of 100% and simultaneous locking\* of the pump station.

### Water levels in pump station:

- AL = High water level alarm
- PL = Peak load
- BL = Base load
- OFF = Submerged pump OFF
- SDP OFF = Stop delay period OFF

\* Locking = switching on the submerged pumps is blocked

### 2.4.1 Separator chamber

Before commissioning, the separator chamber must be filled with water until it overflows into the pump station chamber.

The light liquid collecting chamber (1) and the sludge collecting chamber (2) are arranged one above the other in the separator chamber. The light liquid separator works purely physically according to the gravity principle (difference in density): heavy waste water constituents sink to the bottom into the sludge collection chamber, light substances such as mineral oils and greases rise in the separator chamber upwards into the light liquid collection chamber.

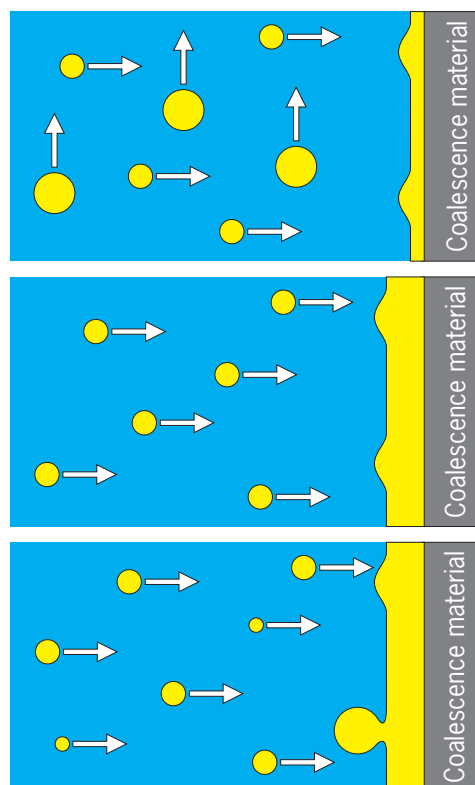
The Oleolift-C is a class I light liquid separator (coalescence separator) and has a coalescence insert upstream of the submerged outlet pipe. Due to the surface properties of the material, coarse to finely dispersed light liquids are also separated via the coalescence insert. This further improves the separation efficiency. However, coalescence is not sufficient to separate stable emulsions.

#### Coalescence procedures

The small oil droplets, which are not separated due to their density difference to water, impact with the oil-friendly coalescing material and adhere to it.

The oil droplets spread out on the coalescence material, additional oil droplets are adsorbed and the oil film continues to expand.

The adhesion ability of the oil film is exceeded. A large drop of oil begins to dissolve, floats up and is therefore separable.



The submersible pipes at the inlet and outlet of the separator chamber and the partition wall allow the freely separable and settleable substances to remain in the separator chamber.

After reaching 80% of the maximum storage capacity of oil or 50% of the maximum storage capacity of sludge, the contents of the separator chamber must be completely disposed of.

Before recommissioning, the separation chamber must be filled with fresh water again.

The sensors mounted in the separator chamber are connected to the idOil-D30 warning system (mounted on a DIN rail in the control unit) and register the following conditions:

- Oil layer sensor idOil-OIL / 1 reacts to the separating line oil / water at 80 % of the maximum oil storage quantity
- Oil layer sensor idOil-OIL / 2 reacts to the separating line oil / water at 100 % of the maximum oil storage quantity
- The idOil-LIQ high liquid level sensor reacts to the maximum permissible liquid level

**ATTENTION** The following measures must be taken after the following messages are displayed on the control unit:

Message	Actions
80 % of the maximum oil storage capacity	Schedule emptying and cleaning of the separator chamber and perform it immediately. Before emptying, first empty or pump out the contents of the pump station chamber!
100 % of the maximum oil storage capacity	Empty and clean the separator chamber immediately. Before emptying, first empty or pump out the contents of the pump station chamber!  As the switching on of the submerged pumps in the pumping station is blocked by this message, the inflow of wastewater into the plant must be prevented until after the emptying process. Otherwise there is a risk of light liquid escaping from the maintenance opening!
maximum liquid level H-AL	As the switching on of the submerged pumps in the pumping station is blocked by this message, the inflow of wastewater into the plant must be prevented until after the emptying process. Otherwise there is a risk of light liquid escaping from the maintenance opening!  A check of the plant function with a possible intermediate cleaning of the coalescence insert or complete emptying and cleaning must be carried out.

### 2.4.2 Sampling

The wastewater from the separator chamber flows via the inlet pipe, which protrudes over the partition wall, into the pump station chamber at a free gradient. There is sufficient space between the pipe bottom of the inlet pipe and the water level PL (peak load) to take a sample from the draining water of the light liquid separator (e.g. with a 1 litre wide-neck bottle).

### 2.4.3 Pump station chamber

Waste water arising from the separator chamber flows via the submerged outlet pipe and via the inlet pipe protruding over the partition into the pump station chamber at a free gradient. The mounted level sensor (level probe) for the level switching is connected to the control unit. If necessary, the submerged pumps can be switched on and off or the flood alarm can be triggered.

The water level in the pump station is shown in the display panel of the control unit.

If the water level reaches the base load (BL), then a submerged pump switches on and pumps the wastewater through the pressure pipe above the ▼ “Pipe base, backflow loop” level. From there the wastewater flows by gravity to the drainage sewer.

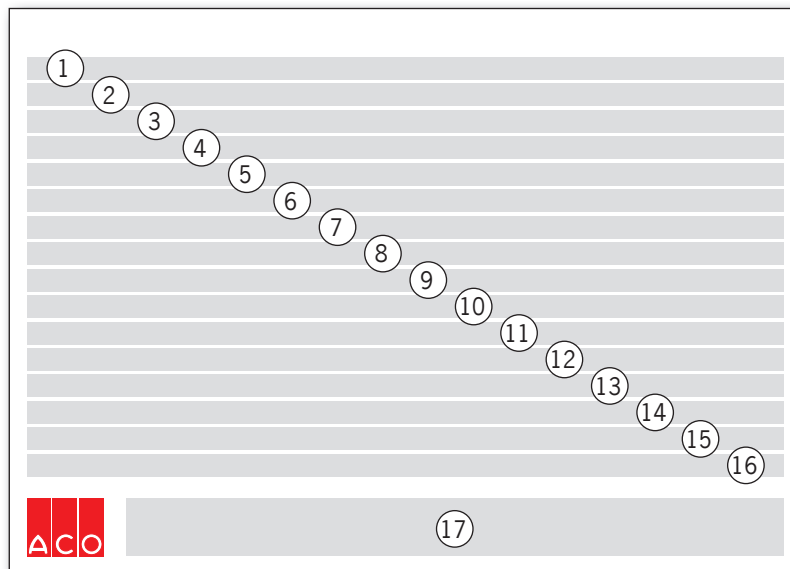
Two ball retaining valves prevent a backflow from the pressure pipe and into the pump station chamber.

If the water level falls to the pump OFF (OFF) level, then the submerged pump switches off. With a set stop delay period (SDP), the submersible pump remains activated and the water level continues to be lowered to the stop delay period OFF (SDP OFF) level.

The pump station chamber is equipped with two submerged pumps:

- With each new start, alternating operation is executed.
- If one submerged pump fails, then the second submerged pump switches on.
- If the wastewater inflow is higher than the delivery performance of one submerged pump and the water level rises to the peak load (PL) level, then the second submersible pump also switches on.


## 2.5 Product identification (type plate)



- |  |   |
|--|---|
| 1 = Year of construction                 | 10 = Type of sludge trap                    |
| 2 = Product name                         | 11 = Separator chamber volume               |
| 3 = Separation compartment               | 12 = Pump station usable volume             |
| 4 = Standard information                 | 13 = Maximum light liquid storage capacity  |
| 5 = Approval No.                         | 14 = Maximum light liquid layer thickness   |
| 6 = Test/conformity marking              | 15 = Maximum sludge storage capacity        |
| 7 = DOP No. (Declaration of Performance) | 16 = Maximum light liquid storage thickness |
| 8 = Internet address                     | 17 = Manufacturer's address                 |
| 9 = Nominal size                         |   |

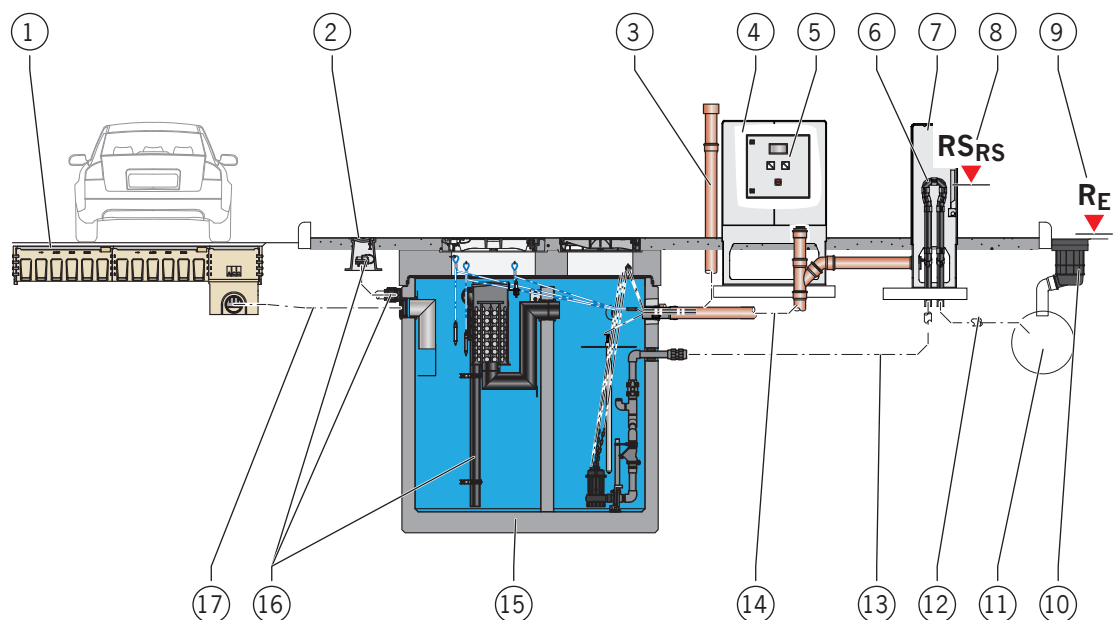


## 3 Installation

**IMPORTANT** Always ensure the required qualifications of personnel,  Chapter 1.5 "Personnel qualifications".

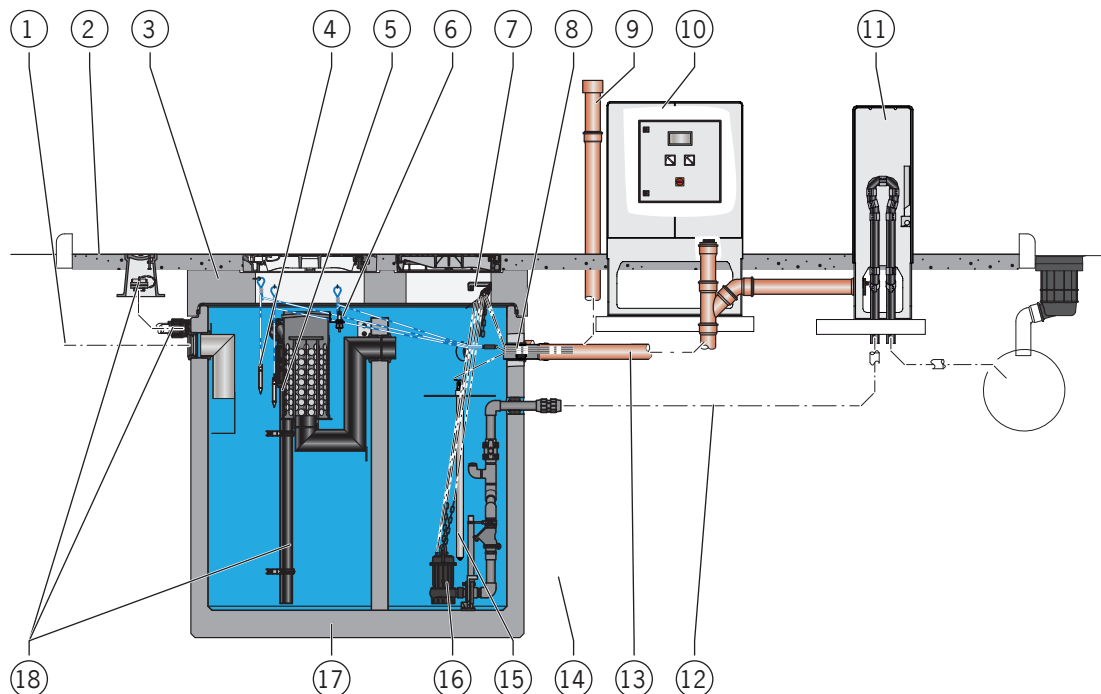
### 3.1 Installation example (schematic diagram)


Example shows the installation of the system when draining a car park. The components used can differ, depending on the installation situation.



- |   |   |
|---|---|
| 1 = Channel (optional)  | 10 = Road gully (optional)  |
| 2 = Manhole cover (optional)  | 11 = Sewage channel   |
| 3 = On-site ventilation pipe for Lipulift-C   | 12 = On-site connecting pipe to sewer   |
| 4 = Outdoor cabinet (optional)  | 13 = On-site pressure pipe  |
| 5 = Control unit  | 14 = On-site cable duct   |
| 6 = On-site backflow loop   | 15 = Oleolift-C   |
| 7 = Outdoor cabinet (optional)  | 16 = Direct extraction (in flow direction right or left) for separator chamber (optional) |
| 8 = PBBL / Pipe bottom backflow loop (the backflow loop must be established above the backflow level) | 17 = On-site inlet pipe   |
| 9 = BFL/Backflow level (if not otherwise known = upper edge of street)                                |   |

## 3.2 Overview of earthwork and installation works



Item	Work	Description  Chapter
1	Laying and connecting the on-site inlet pipe	3.3.5
2	Backfilling the excavation	3.3.12
3	Installation of shaft components	3.3.4
4	Mount oil layer sensor idOil-OIL / 1	3.4.5
5	Mount oil layer sensor idOil-OIL / 2	3.4.5
6	Mount the idOil-LIQ high liquid level sensor	3.4.5
7	Assembling the chain holder	3.4.1
8	Assembling cable gland	3.4.4
9	Laying and connecting the on-site ventilation pipe	3.3.6
10	Installation in the outdoor cabinet (optional)	3.3.10
11	Installation in the outdoor cabinet (optional)	3.3.10
12	Laying and connecting the on-site pressure pipe	3.3.8
13	Laying and connecting the on-site blank cable pipe	3.3.7
14	Digging the excavation	3.3.2
15	Mounting the level probe with protective pipe	3.4.3
16	Installing the submerged pumps	3.4.2
17	Installing the tank	3.3.3
18	Installing on-site direct suction (optional)	3.3.9
-	Execute leak test	3.3.11

## **3.3 Earthworks**

### **IMPORTANT**

- Always remove the coalescence insert from the plant and store them safely during the construction stage.
- Protect the outlet opening of the outlet submersible pipe on site against soiling or pollution.
- The coating of the tank must be protected against damage, e.g. falling stones, during filling.

### **3.3.1 Specifications**

#### **Installation site**

- Separator plants must be installed near the source of the light liquids.
- Separator plants are to be constructed as far as possible outside areas subject to traffic movements, but still be accessible for self-monitoring, maintenance as well as removal and emptying.
- Separator plants for light liquids should not be operated in flood-prone areas.
- The plant must be easily accessible for cleaning vehicles.
- The parking places for cleaning vehicles should be paved.

#### **Installation depth**

In Germany, the minimum depth for frost-free earthworks is regulated in DIN 1054. In this standard, the depth is cited as min. 80 cm, but can be stipulated even higher due to supplementary regional ordinances or empirical meteorological values.

#### **Installation in groundwater**

When the structural prerequisites make a buoyancy safeguard necessary, then the following proposal for buoyancy safeguard applies:

The tank will have drill holes drilled in the factory, including delivery of short structural steel pieces for connection to the on-site in-situ concrete structure to be erected by the customer.

Please note that we do not provide a reinforcement plan and that the calculation as well as an associated reinforcement plan must be inspected and approved by a structural engineer (client's obligation). We would be happy to do this for you for a fee.

#### **Excavated pit**

- Excavation and back-filling per DIN 18300
- Embankment / work space / shoring per DIN 4124
- With normal ground conditions, a profile-following, compacted sand or gravel bed with levelling accuracy will suffice.
- Maximum ground pressure is 15.5 N/cm<sup>2</sup>


- Work must be carried out in such a way that no damage is caused to the plant and the pipes and that they remain in their position. Subsequent subsidence of plant components shall be prevented by appropriate measures.
- If the levelling is created using concrete, a 5 cm thick sand layer must be established on top of this in order to guarantee uniform load distribution and to be able to compensate for any manufacturing tolerances that may arise.
- A foundation earthing electrode or earthing strip shall be provided for potential compensation during the construction phase.
- Always secure the excavation pit during the construction stage.

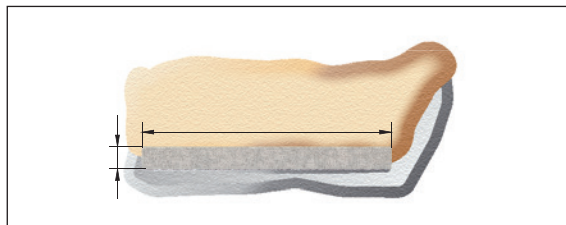
### Slings for transport using lifting gear

- Tank and cover plate: Use 3-part harness with at least 5 m long strands made from chain or cables with load hooks and NG 5 shackles according to DIN 82101
- Cover and shaft components: Use 3-type part harness with at least 5 m long strands made from chain or cables with shaft jaws

### 3.3.2 Digging the excavation

Requirement: Excavation pits should have a diameter at least 1,500 mm larger than the external diameter of the tank.


- Excavate the pit and secure.
- Establish underfill,  order-specific design documentation.

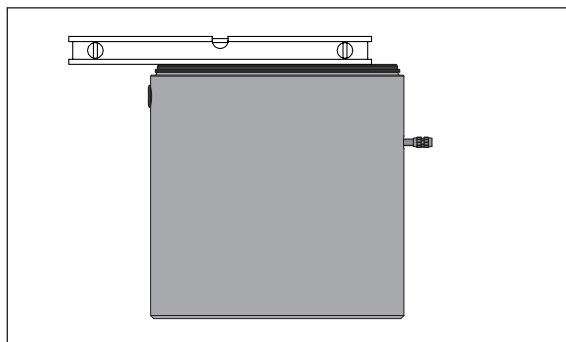


### 3.3.3 Installing the tank

**IMPORTANT** Transport lifting lugs are designed for the load of the tank. Do not transport with shaft components placed on top.

- Bring in the tank and align horizontally.

Complete weight,  
 Chapter 7.1.2 “Characteristic Data”



### 3.3.4 Installation of shaft components

Cover plate, support rings and covers are delivered loose.



■ Shaft components delivered by ACO according to/similar to DIN 4034-1 have an ACO mechanical seal for joint sealing. The mechanical seal is a compression mechanical seal with a wedge-shaped cross section and a factory-made, closed, pre-lubricated slide sleeve. A load-distributing tube filled with fine quartz sand is permanently attached to the sealing ring.



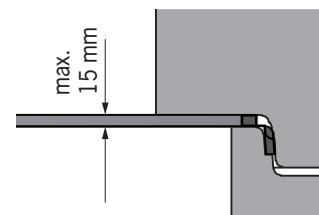
■ The circular rotating mechanical seal is pre-fitted at the factory to the tank spigot.

Should the mechanical seal slip out of place e.g. during transportation or on-site, then this should be tightened again as follows:

- On cold days, pre-heat the sealing, e.g. construction tank.
- Clean spigot.
- Fit the circular rotating mechanical seal to the spigot such that the slide sleeve of the circular rotating mechanical seal faces outwards and the load-distributing tube lies centrally on the spigot.
- Position the circular rotating mechanical seal on the shoulder and spread the pre-tensioning evenly.


#### IMPORTANT

- Transport lifting lugs on the shaft components are designed for their own weight load. Do not transport with other shaft components placed on top.
- After placement, there must be a maximum gap of 15 mm present in the interior.

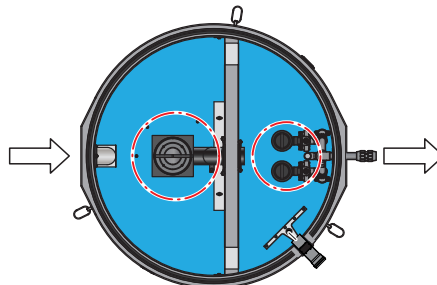


- Always observe the maximum installation depth of the plant, Chapter 7.1.1 "Dimensions".

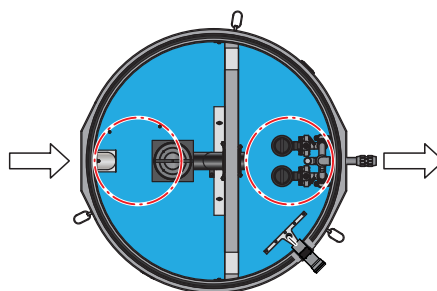
### Cover plate similar to 4034-1

**IMPORTANT** Arrange the openings of the cover plates as  shown below:

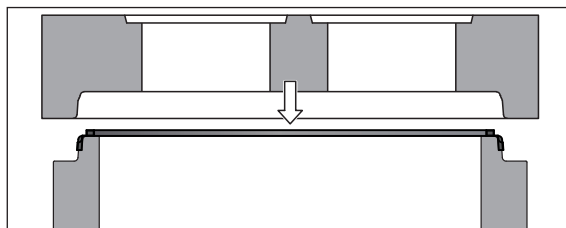
Cover plates with openings: 1x Ø800  
and 1x Ø625




Cover plates with openings: 2x Ø800




→ Position the cover plate in the centre above the container, place it vertically and let it slide on. Press carefully if there is any canting.



Complete weight,  
 Chapter 7.1.2 “Characteristic Data”.

### Supporting rings

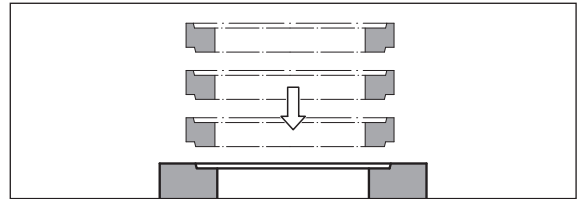
 Standard supporting rings can be installed between the cover and the cover plate to adjust to the upper level of the terrain on site. Supporting rings with construction heights from 70 to 210 mm can be optionally purchased from ACO.

**ATTENTION** Produce a maximum of 600 mm with a inside width of 625 mm.

Specifications:

- The mortar joint shall not be less than 1 cm or more than 3 cm.
- Use MG III mortar per DIN 1053. Alternatively, use non-shrinking shaft-grouting mortar, e.g. Ebralit or equivalent. In doing so, the manufacturer's processing instructions must be complied with.
- Establishing a permanently liquid-tight connection.

- Clean and moisten the sliding rebate or adapter plate and the underside of the supporting ring.
- Apply mortar bed on the surface of the rebate.
- Insert the supporting ring into the centre of the "retainer".



Weights, Chapter 7.3 "Shaft components".

### Manhole covers

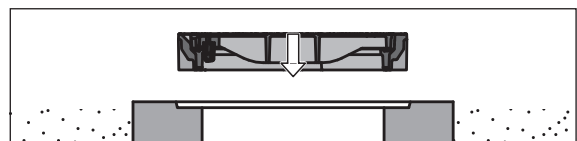
#### IMPORTANT

- Depending on the installation site, covers must be positioned in such a way that no loads exceeding the load-bearing capacity of the installation are transferred to it.
- Before the cover is installed, the excavation pit must be backfilled up to this level, Chapter 3.3.12 "Backfilling the excavation pit".
- Release for traffic is only permitted after an adequate bonding time has passed, once the mortar has reached a compressive strength of at least 10 N/mm<sup>2</sup>.
- When installing in asphalt surfaces, it is not permitted to tar over the cover.

Specifications:


- The mortar joint shall not be less than 1 cm or more than 3 cm.
- Use MG III mortar per DIN 1053. Alternatively, use non-shrinking shaft-grouting mortar, e.g. Ebralit or equivalent. In doing so, the manufacturer's processing instructions must be complied with.
- Establishing a permanently liquid-tight connection.
- Installation, product-accompanying documentation: Instruction "Multitop manhole cover".

- Clean and moisten the sliding rebate of the cover plate and/or the supporting ring and the underside of the cover.
- Apply mortar bed on the surface of the rebate.
- Insert the cover in the "retainer" and align.




Weights, Chapter 7.4 "Manhole covers class D 400".

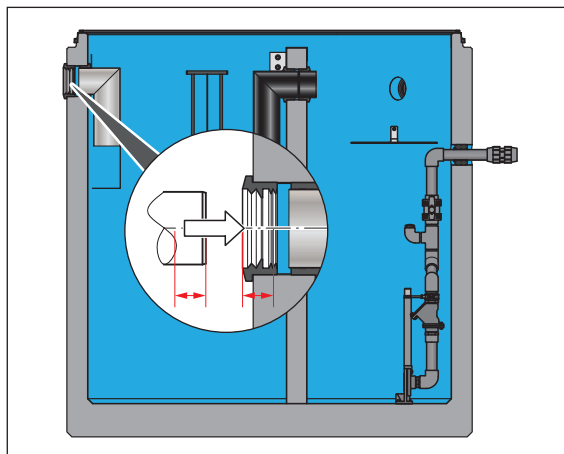
### 3.3.5 Laying and connecting the on-site inlet pipe

**IMPORTANT** Before the inlet pipe is connected, the excavations must be filled up to this level,  Chapter 3.3.12 “Backfill excavations”.


Specifications:

- Pipe nominal width,  Chapter 7.1.1 “Dimensions”.
- Lay pipes to be frost resistant.
- The pipe cross-section must not reduce in the direction of flow.
- Make flexible pipe joints.
- Lay up to the tank with a gradient of at least 1.5 – 2 %.
- Reverse gradients, and the formation of siphons or pockets are not allowed.
- Select material that is resistant to the wastewater (e.g. KML, PP, PE, PVC).

- **IMPORTANT** Mark the insertion depth at the spigot end of the inlet pipe (if the spigot end of the pipe is inserted too deeply, then the installation parts will be damaged).
- Use acid-free lubricant to grease the spigot of the inlet pipe and the sealing lips of the socket seal.
- Slide the spigot end into the socket seal up to the marked insertion depth.



### 3.3.6 Laying and connecting the on-site ventilation pipe

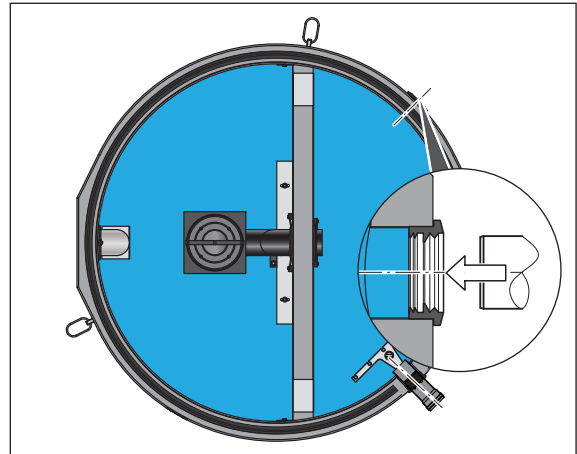
**IMPORTANT** Before the on-site ventilation pipe is connected, the excavations must be backfilled up to this level,  Chapter 3.3.12 “Backfill excavations”.

Specifications:


- Pipe nominal size DN 100, OD = 110 mm
- Lay the vent stack so that it rises continuously. Do not reduce the stack cross-section.
- The end of the vent stack must be routed to above the roof or, for example, in the ground, where it does not cause any odour nuisance.
- Choose resistant material (e.g. KML, PP, PE, PVC).



- Use acid-free lubricant to grease the spigot end of the ventilation pipe and the sealing lips of the socket seal for the socket pipe.
- Push the spigot end into the socket pipe.

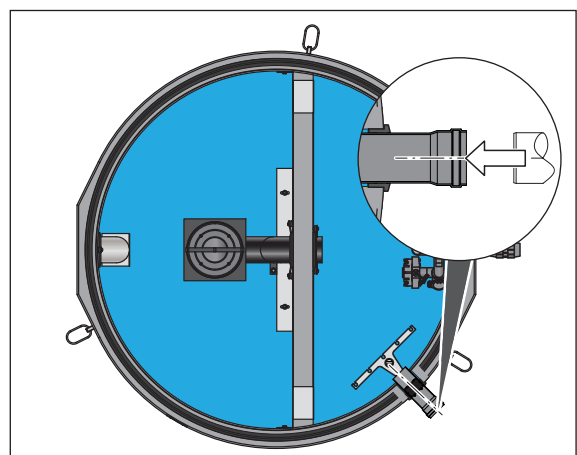


### 3.3.7 Laying and connecting the on-site blank cable pipe


**IMPORTANT** Before the on-site reserve cable conduit is connected, the excavations must be backfilled up to this level,  Chapter 3.3.12 “Backfill excavations”.

Specifications:

- Pipe nominal size DN 100, OD = 110 mm
  - The cable conduit must be laid from the container to the installation site of the control unit (plant room or outdoor cabinet) in a continuously rising position. Do not reduce the stack cross-section.
  - Do not use pipe bends with angles larger than 30°.
  - Lay a high-quality pull wire in the reserve conduit directly at the same time.
  - Choose resistant material (e.g. KML, PP, PE, PVC).
- 
- Use acid-free lubricant to grease the spigot end of the blank cable pipe and the sealing lips of the socket seal for the socket pipe.
  - Push the spigot end into the socket pipe.




### 3.3.8 Laying and connecting the on-site pressure pipe


**IMPORTANT** Before the on-site pressure pipe is connected, the excavations must be backfilled up to this level,  Chapter 3.3.12 “Backfill excavations”.

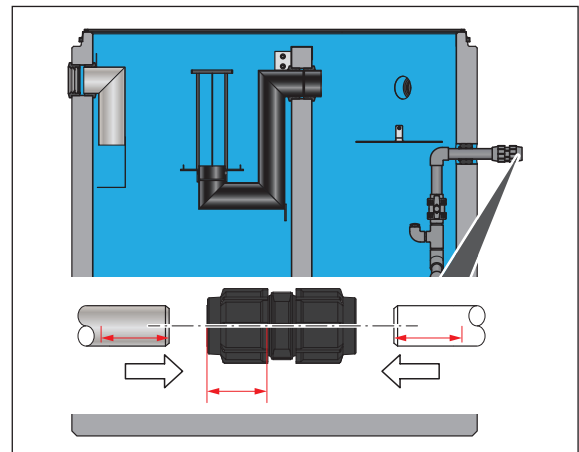
Based on normative requirements:

- The pressure pipe must be designed for at least 1.5 times the pump pressure.
- Lay the pressure pipe so that it rises continuously and is frost-resistant.
- The flow velocity in the pressure pipe must not fall below 0.7 m/s and must not exceed 2.3 m/s.
- Never connect other pipes to the pressure pipe.
- Air admittance valves are not allowed in the pressure pipe.
- Connect the pressure pipe stress-free.


#### Pressure line DN 50, DN 70 or DN 80 (all NS with DL 50)

 Compression fitting ID 63 mm to ID 75 and 90 can be purchased from ACO as an optional item.

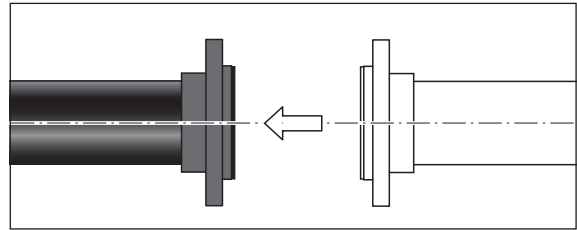
- Cut the on-site pressure pipe at right-angles and grind the spigot end.
- Use acid-free lubricant to grease the spigot end of the on-site pressure pipe and the connection pipe to the pump station.
- Determine the insertion depth  and mark it on the pipe.
- Loosen the conical nuts on the compression fitting by a 3 – 4 turn (do not loosen off completely).
- Insert the pipe to the end stop and/or marking in the compression fitting.
- Hand tighten the conical nuts.
- Tighten for an optimal strength with tools suitable for plastic compression fittings.




### Pressure line DN 100 (all NS with DL 100)

 Flange connection dimension according to DIN 2501/PN 16.

- Connect the on-site pressure pipe with the on-site seal and on-site fastening material on the flange.



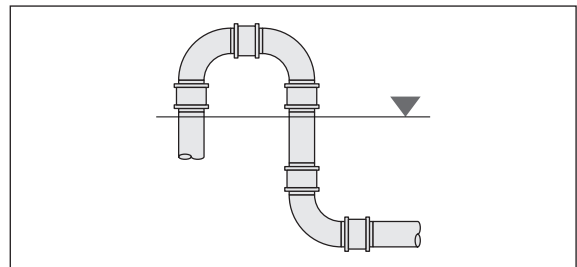
### Creating the backflow loop in the pressure pipe

Based on the normative requirements, the unit should drain via a backflow loop. The backflow loop must be established above the backflow level. The installation example shows the basic layout,  Chapter 3.1 “Installation example”.


Definition of terms in accordance with EN 12056-4:

- “Back flow”: Wastewater return pressure from the sewer into the connected pipes.
- “Back flow level“: The highest level to which water can rise within a drainage system.
- “Back flow loop“: Part of the pressure pipe of a wastewater lifting plant above backflow level.

- Lay the backflow loop above the “backflow level” ▼ .



### 3.3.9 Installing on-site direct suction (optional)

**IMPORTANT** Before the on-site direct suction pipe (version as right or left) is installed, the excavation pit must be backfilled up to this height,  Chapter 3.3.12 “Backfill excavation pits”.

Specifications:

- Direct suction, pressure pipes and/or suction pipes must be designed and implemented with at least pressure rating PN 6. Utilise tension-resistant connections (maximum strength 1.5 times the pump pressure of the suction carriage) for individual pipes and fittings.
- Install direct suction made of corrosion-resistant materials (e.g. plastic pipes made of PE, PP).

- Install direct suction from the separator up to the transfer point (disposal vehicle) with a continuously rising gradient, implement alterations in direction in the pipe with 90° elbow bends with the largest possible radius. If the horizontal pipes are particularly long, then it may make sense to install the pipe on-site on a gradient towards the disposal point (to prevent the wastewater flowing back into the grease separator after disposal).
- Limit the maximum length to the performance of the suction vehicle pump.

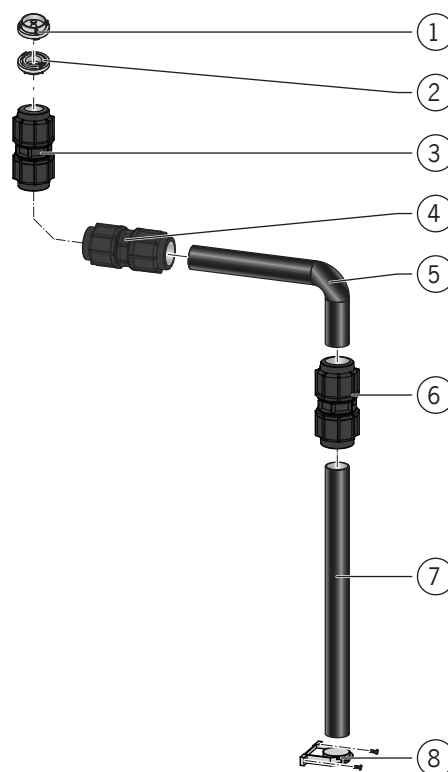


The following products for creating direct suction can be purchased from ACO as optional components:

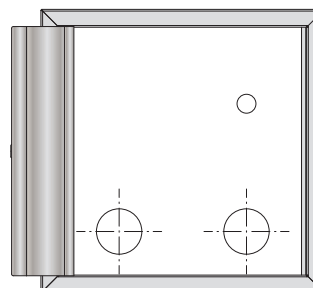
■ Direct extraction

Scope of supply:

- 1 = Blank cover
- 2 = Disposal connection DN 65
- 3 = Compression fitting OD 90/OD 75
- 4 = Compression fitting OD 90/OD 90
- 5 = Submersible bend with connecting pipe
- 6 = Compression fitting OD 90/OD 90
- 7 = Submersible pipe
- 8 = Pipe clamp



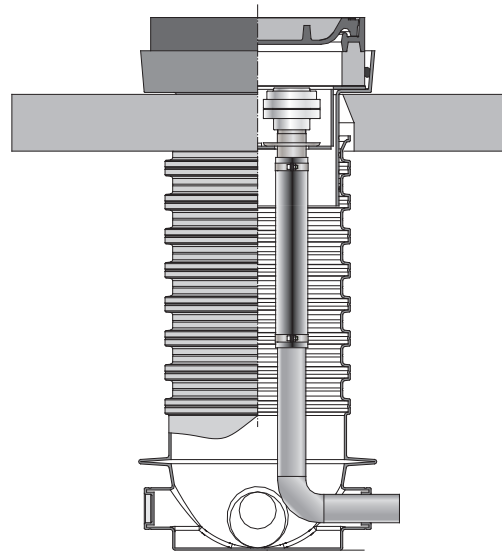
- A connection box with space for 2 connecting couplings (for direct suction pipe and pendulum gas pipe and one water connection)



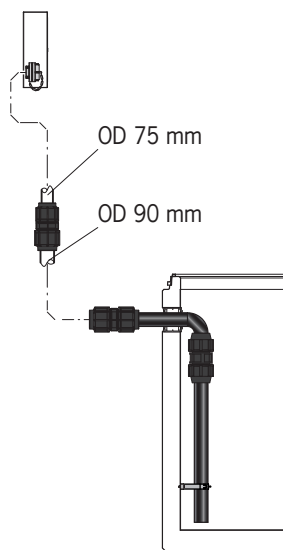
- Street installation cap



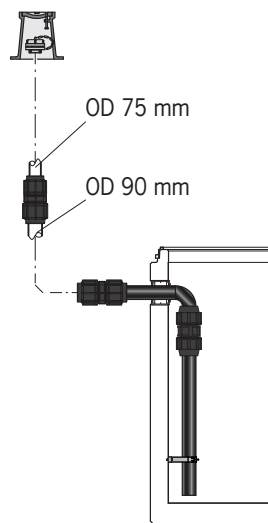
- Disposal shaft



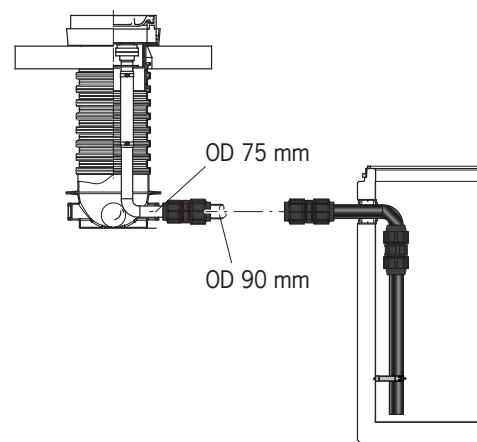
The following possibilities can be implemented for direct suction:



**Variant with connection box**



**Variant with street installation cap**



**Variant with disposal shaft**

→ Assemble the part for direct suction according to separate, product accompanied instructions for use.

### 3.3.10 Installation in the outdoor cabinet (optional)

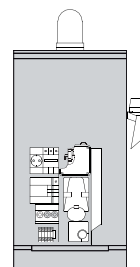
#### Outdoor cabinet for accommodation of accessories

Specifications:

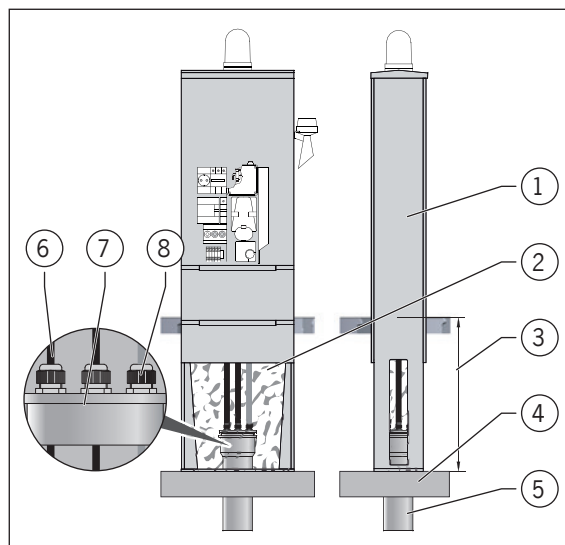
- The construction materials used and installation method must not cause any harmful deformations, damage or unfavourable load cases for the outdoor cabinet.
- Use base filler (fill material for reducing the formation of condensation).



An outdoor cabinet for accommodating the control unit, flashing light, horn, etc. can be purchased from ACO as an optional product. Components such as the control unit, heating, working socket,... are then usually already pre-assembled in the outdoor cabinet.



- Make a hole in the ground for the outdoor cabinet (1), note the buried depth (3) (📖 outdoor cabinet data sheet).
- Build the foundation (4) for the outdoor cabinet (1) and at the same time position the cable duct above the foundation.
- Install and fix the outdoor cabinet (1) onto a foundation (4).
- Feed through the cables (6), e.g. with cable glands (8) and end cover (7).
- Fill the void (2) with base filler.
- Backfill the excavated hole.

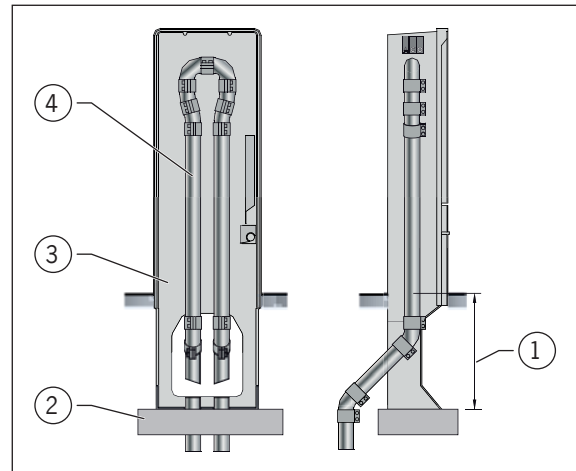


#### Outdoor cabinet for accommodation of a backflow loop

Specifications:

- The construction materials used and installation method must not cause any harmful deformations, damage or unfavourable load cases for the outdoor cabinet.
- Install the backflow loop not necessarily "filling the cabinet". It is sufficient if the pipe bottom of the backflow loop is located above the backflow level on site.
- The backflow loop must be protected on site against the effects of frost e.g. by utilising trace heating tape.

- i
  - An outdoor cabinet for accommodating the backflow loop can be purchased from ACO as an optional product.
  - ACO recommends that the backflow loop is created in PE-HD using mirror-image welding with short-legged bends or in PVC-U in an adhesive process on site.
- Make a hole in the ground for the outdoor cabinet (3), note the buried depth (1) (📖 outdoor cabinet data sheet).
- Make the foundation (2) for the outdoor cabinet (3).
- Install and fix the outdoor cabinet (3) onto a foundation (2).
- Install the on-site pressure pipe in the outdoor cabinet as a backflow loop (4).
- Backfill the excavated hole.



### 3.3.11 Leak test



#### **WARNING**

#### **Danger of injury caused by incorrect execution**

- Any resulting buoyancy forces acting on the cover plate due to the water filling must be compensated for by applying an additional load to the shaft structure.

All drainage systems on private ground must be leaktight (only applies to Germany. Provisions in other countries can vary).

The requirements and provisions for the leak test sequence must be enquired about for each individual country.

#### **IMPORTANT**

- Leak tests must be executed on the whole plant by a specialist company before backfilling the excavation pit.
- Fill the separator chamber first.

### 3.3.12 Backfilling the excavation

Specifications:

- The construction materials utilised and installation method must not cause any harmful deformations, damage or unsuitable load cases for the tank and shaft components.
  - Bed the tank all round ( $\geq 0.50$  m) with a fine-grained sand-gravel or sand-crushed rock mixture of the soil groups GW or GI according to DIN 18196.
  - The backfill material must be placed in layers ( $\leq 30$  cm high) and compacted with lightweight compacting equipment to a Proctor density of  $D_{pr} \geq 97\%$ .
  - The frame of the cover should never be higher than the surfacing, rather the surfacing should be slightly higher and drawn up at the edge of the frame.
  - When laying the surfacing (e.g. asphalt surface), the cover must not be moved.
  - The shaft structure may not be loaded until the excavated pit has been completely backfilled and the materials used have cured sufficiently.
- Backfill the excavation pit.

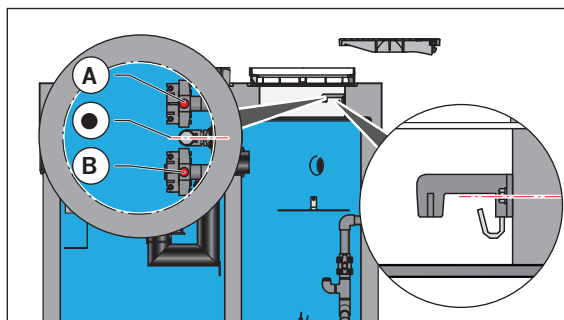
## 3.4 Installation work

### 3.4.1 Assembling the chain holder

In the as-delivered condition, a chain holder with fixing material is enclosed as a loose part.

Requirement: The chain holder should be assembled centrally in the cover plate according to the height.

- Lift the cover out of the cover frame above the pump station chamber and store to the side.
- Transfer and mark the middle axis (●) between both sliding pipes (A + B) vertically in the opening of the cover plate.
- Fasten the chain holder — on the marked position.
- Replace the cover.




### 3.4.2 Installing the submerged pumps

Submerged pumps with assembled coupling pieces, cable eyelets, pump pull chains (by the metre) and shackles can be purchased from ACO as an option.



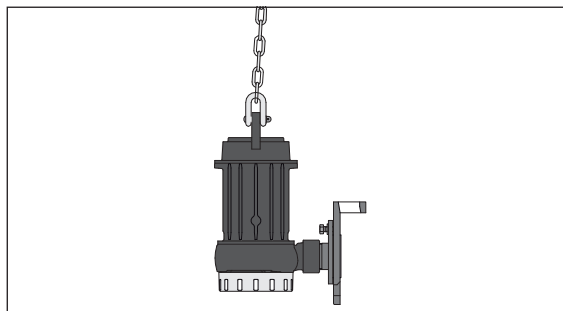
The connection cable (10 m long) is already connected in the terminal box of the submerged pump in the ready to deliver status, cable type  Chapter 7.2 "Submerged pumps".

**IMPORTANT** Protect the end of the connecting cable against the penetration of moisture.

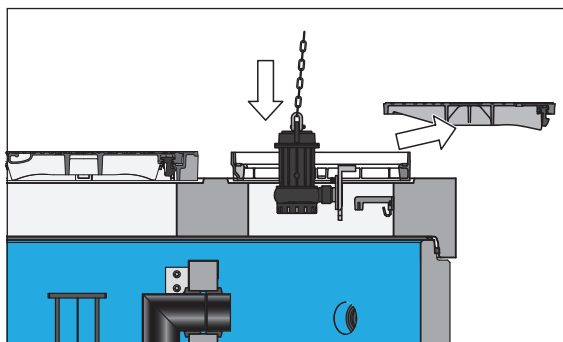
Allocation of the optimised or intended submersible pumps to the respective nominal size (NS) of the plant,  Chapter 2.1.2 "Tank".

The description applies to both submerged pumps:

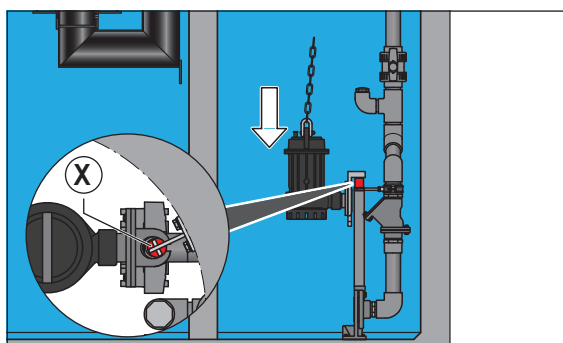
- Assemble the shackle on the handle of the submersible pump and/or lay the chain around the submerged pump handle and connect two chain links with the shackle.



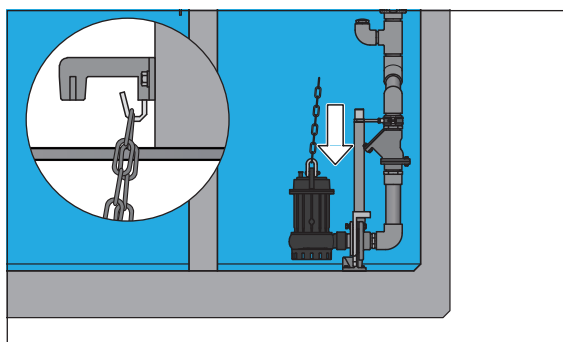
- Lift the cover out of the cover frame above the pump station chamber and store to the side.
- Lower the submerged pump on the chain into the tank.



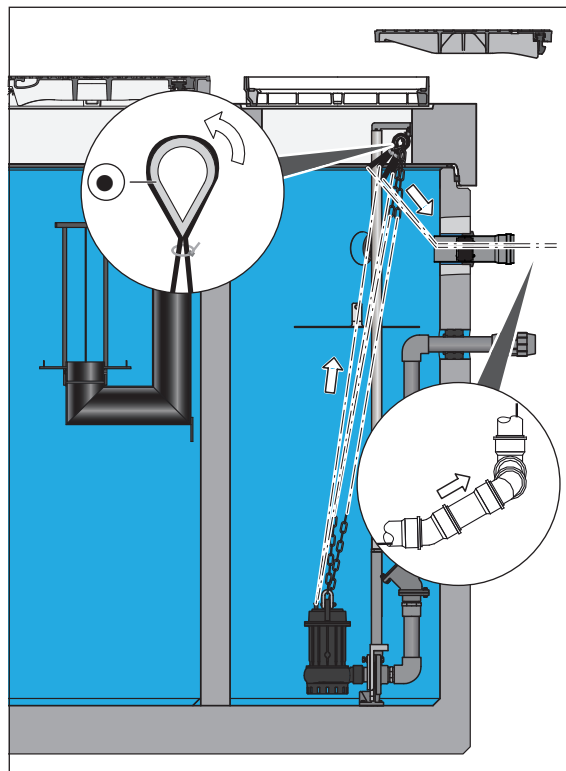
- Thread the coupling piece for the submerged pump onto the sliding pipe: Position X.



- Lower the submerged pump further until the coupling piece sits in the underwater automatic coupling.
- Hook the chain onto the chain holder.



- Protect the end of the submerged pump connecting cable against penetrating moisture.
- Pull the connecting cable upwards (not while energised) until it reaches the chain holder.
- Place the loop around the cable eye (●) and fasten with cable tie.
- Hang the cable lug on the chain holder.
- Pull the connecting cable (together with the connecting cables of the level probe and the sensors) with the pull wire through the cable conduit to the installation site of the control unit.
- Keep sufficient excess cable length (approx. 1 m), to enable the wiring in the terminal compartment of the control unit.
- Replace the cover.



This is the only way that enables the submerged pumps to be removed and to be stored to the side next to the inspection opening.

### 3.4.3 Mounting the level probe with protective pipe

The level sensor has a 20 m, 50 m and/or 80 m long connecting cable (connected and sealed on the level sensor).

**IMPORTANT** Protect the end of the connecting cable against the penetration of moisture.

The probe bracket is already assembled in the tank in the as-delivered condition.

A protective pipe (optional, total length 1,220 mm), a tensioning clamp and a cable eyelet are delivered as loose in the as-delivered condition.

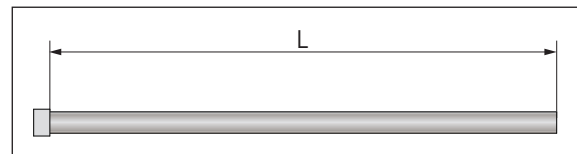
The protective pipe must be adjusted to the **length measurement L** according to the following table.

#### Longitudinal measurement L:

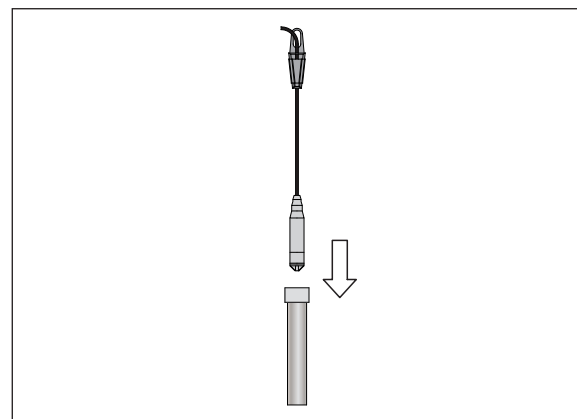
Plant/NS	Longitudinal measurement L [cm]
3-6/600_DL 50	700
3-6/900_DL 50	700
3-6/1200_DL 50	700
3-6/1800_DL 50	700
3-6/2500_DL 50	700

Plant/NS	Longitudinal measurement L [cm]
6-10/2500 _ DL 50	1,000
6-10/2500 _ DL 100	1,000
6-10/3000 _ DL 50	1,000
6-10/3000 _ DL 100	1,000
15-30/4500 _ DL 100	1,000

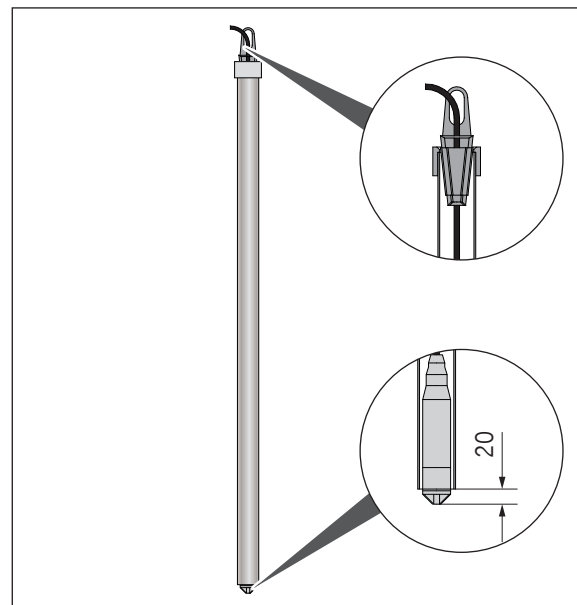
→ Cut the protective pipe to the **longitudinal measurement L** length .



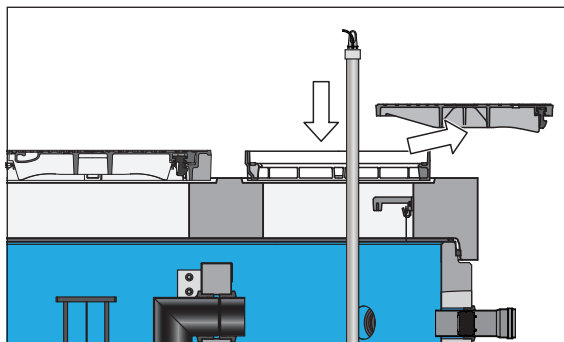
→ Insert the level sensor in the protective pipe.



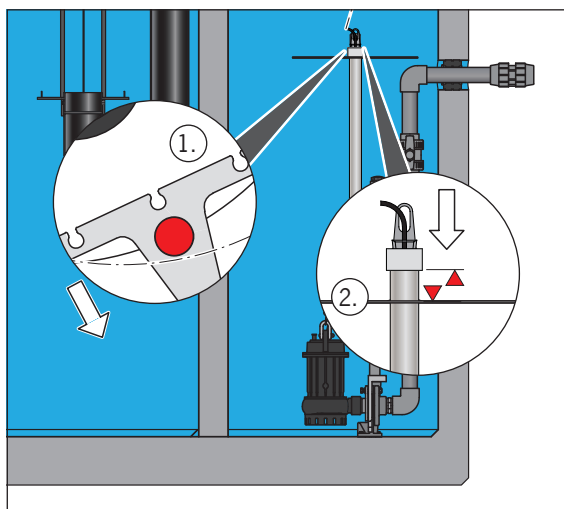
→ Fix the length (projection of 20 mm) with the tensioning clamp and centre it in the protective pipe.



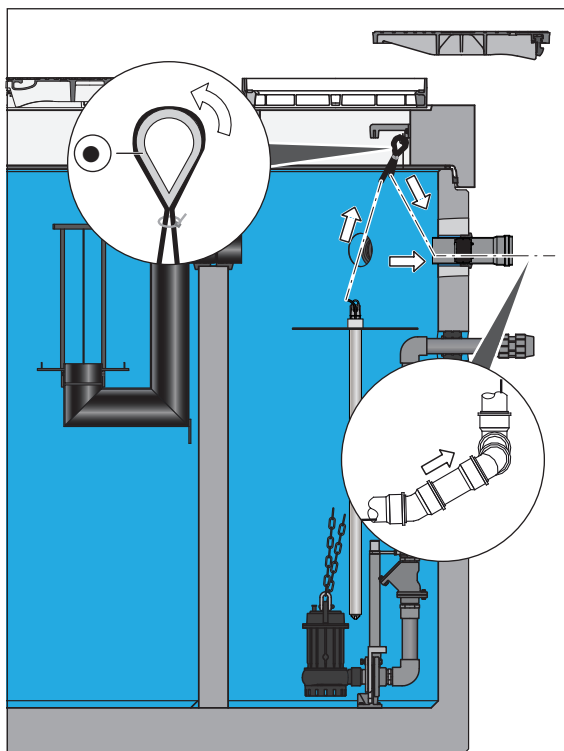
- Lift the cover out of the cover frame above the pump station chamber and store to the side.
- Lower the “protective pipe with level sensor” unit on the protective pipe into the tank.



- Guide the protective pipe into the drill bore hole (●) of the probe bracket (1).
- Lower the protective pipe with level sensor until the protective pipe sits on the probe bracket (2).



- Pull the connecting cable for the level sensor upwards (not while energised) until it reaches the chain holder.
- Place the loop around the cable eye (●) and fasten with cable tie.
- Hang the cable lug on the chain holder.
- Utilise the pull wire to pull the connecting cable together with the submerged pump connection cable through the cable conduit up to the assembly location of the control unit.
- Keep sufficient excess cable length (approx. 1 m), to enable the wiring in the terminal compartment of the control unit.
- Replace the cover.



This is the only way that the level sensor can be removed from the tank.

### 3.4.4 Assembling cable gland

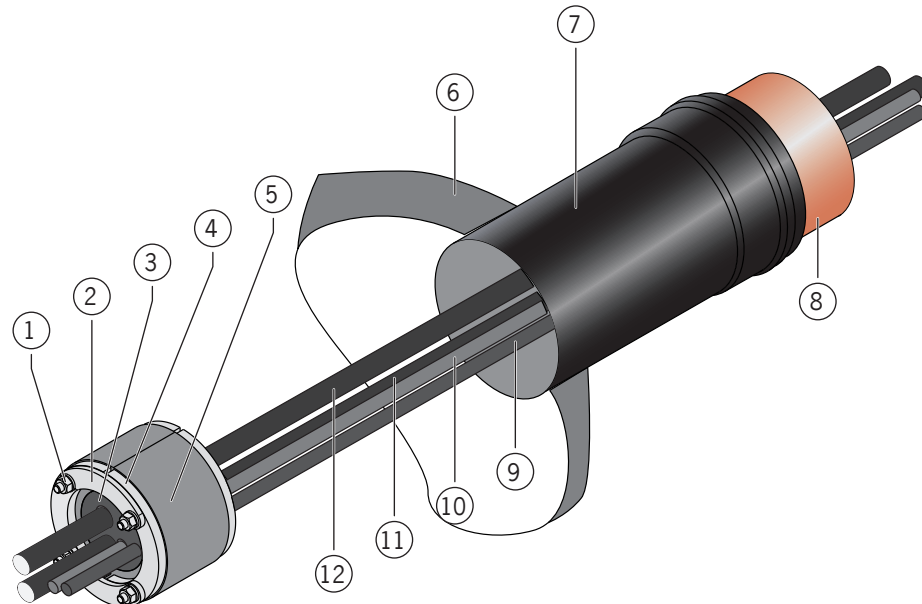


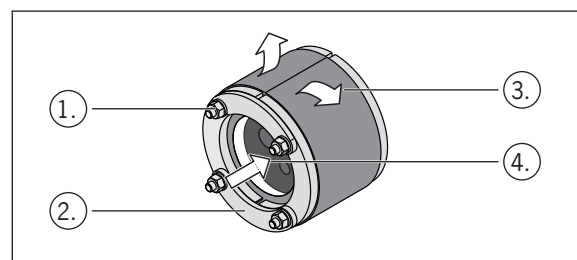
Figure: Components for cable gland

- 1 = Threaded connector
- 2 = Clamp
- 3 = Sealing insert
- 4 = Flange
- 5 = Split sleeve
- 6 = Tank wall
- 7 = Socket pipe

- 8 = On-site blank cable pipe
- 9 = Level probe connection cable
- 10 = Cable extension for idOil sensors (e.g. twisted pair cable, 2 x 0.75 mm<sup>2</sup>, unshielded)
- 11 = Submerged pump 1 connection cable
- 12 = Submerged pump 2 connection cable

The cable gland is loose in the as-delivered condition.

- Undo the threaded connector (1).
- Open the clamp (2).
- Split open the sleeve (3).
- Remove the sealing insert (4).

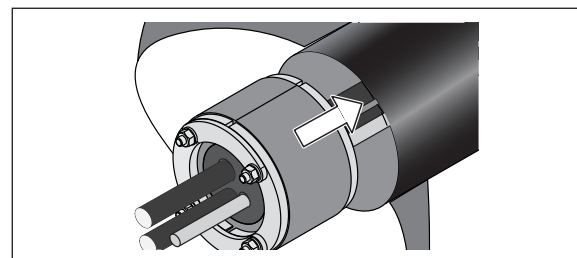
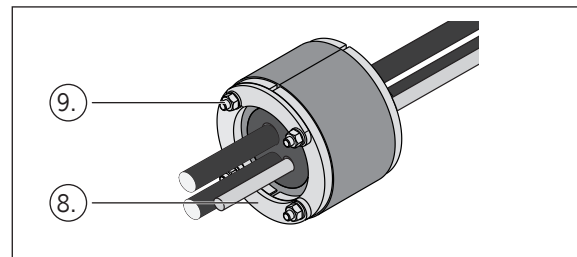
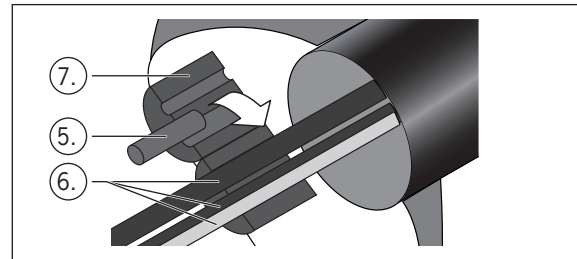


**IMPORTANT** the sealing insert must be positioned tightly on the socket pipe.




The sealing insert has 4 drill holes with "placeholders".

- Fold open the sealing insert and remove "placeholder" (5).
  - Place the connection cable and cable extension in the recesses of the seal insert half (6) and pull it through the cable conduit into the terminal compartment of the control unit.
  - Fold the upper half of the sealing insert onto the lower half (7).
  - Place the split sleeve around the insert.
  - Re-fit the clamp (8).
  - Screw on the threaded connector (9) slightly.
- 
- Push the cable feed-through into the socket tube.
  - Tighten the threaded connector uniformly cross-wise until it is hand-tight.



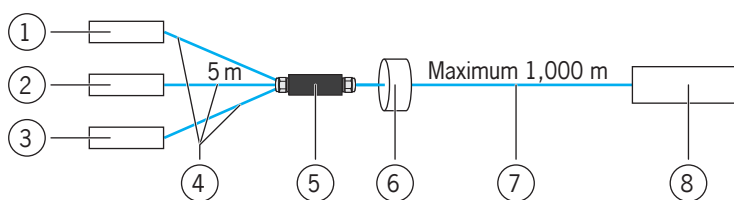
### 3.4.5 Mount idOil sensors

#### IMPORTANT

- To facilitate easy removal of the sensors for cleaning or testing, it is recommended that the sensor cables be sufficiently long and coiled up and fixed in the cover plate. With the build-up sensor (fixed to the holder of the coalescence insert) the complete removal of the coalescence insert with accumulation probe must be guaranteed.
- Oil layer sensors idOil-OIL / 1 + 2 must be suspended in a freely movable manner in the separator chamber after installation
- Electrical connection in the cable connector,  Section 3.5.8 "Connecting the LCJ1-3 cable connector"

idOil sensors (idOil-LIQ high liquid level sensor and 2 idOil-OIL oil layer sensors, each with 5 m connection cable), 1 LCJ3 cable connector and 3 sensor mounting kits (dowels, screw hooks and cable ties) are supplied loose on delivery.



The cable connector (protection type IP 68) is resistant to mineral oil and is suitable for use in ATEX Zone 0.

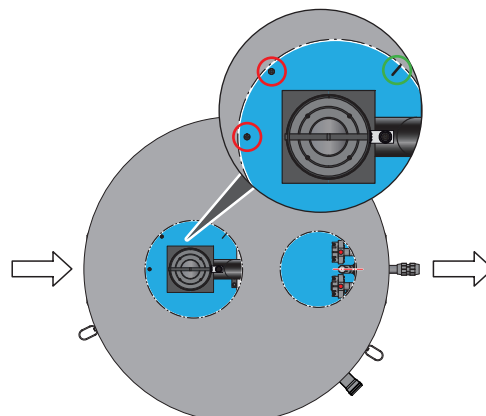


- |  |  |
|--|--|
| 1 = idOil-LIQ high liquid level sensor                 | 6 = Cable gland  |
| 2 = idOil-OIL/1 oil level sensor                       | 7 = On-site extension cable                            |
| 3 = idOil-OIL/2 oil level sensor                       | 8 = idOil warning device (built into the control unit) |
| 4 = Connection cable / (each 5 m long) for the sensors |  |
| 5 = LCJ3 cable connector                               |  |

#### Position of the idOil sensors

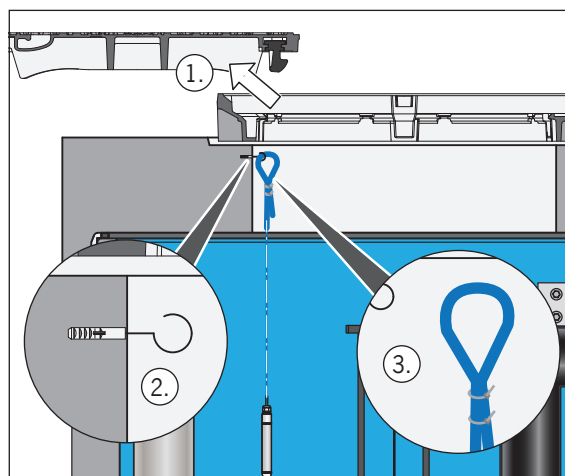
#### IMPORTANT

- The two idOil-OIL /1 + 2 oil layer sensors are to be fixed in the maintenance opening above the separator chamber, position .
- The screw hook for the cable of the idOil-LIQ high liquid level sensor is to be fixed above the separator chamber, position .

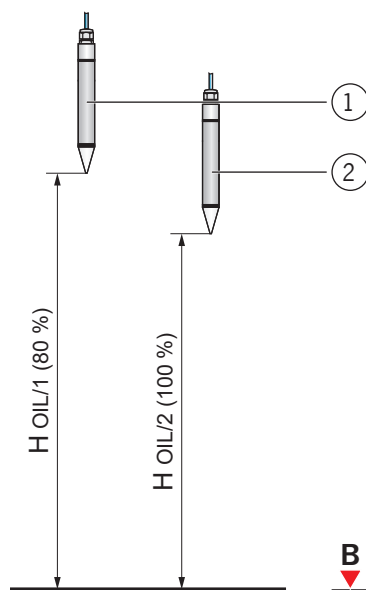


**Installation of the idOil-OIL / 1 + 2 oil layer sensors**

- Lift the cover out of the cover frame and store to the side (1).
- Place dowels in the maintenance opening of the cover plate and screw in the screw hooks (2).
- Lay the connection cable of the sensor according to the height measurement, according to the following table "Adjustment of the switching points", in a loop around the screw hook and fix it with cable ties (3).
- After mounting all sensors, put the cover back in place.



**Setting switching points to oil layer sensors idOil-OIL / 1 + 2**



- 1 = idOil-OIL/1 oil level sensor
- 2 = idOil-OIL/2 oil level sensor

B = Reference point / lowest point of the **internal** container base

Plant/NS	H OIL / 1	H OIL / 2
3-6/600_DL 50	1,070	1,040
3-6/900_DL 50	1,070	1,040
3-6/1200_DL 50	1,070	1,040
3-6/1800_DL 50	1,070	1,040
3-6/2500_DL 50	1,070	1,040
6-10/2500 _ DL 50	1,490	1,440



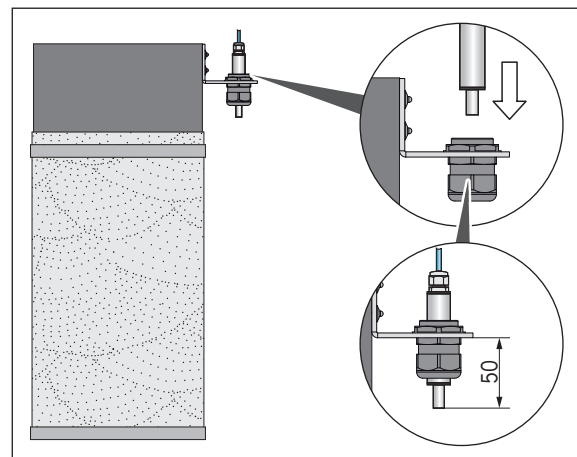
Plant/NS	H <sub>OIL/1</sub>	H <sub>OIL/2</sub>
6-10/2500 _ DL100	1,490	1,440
6-10/3000 _ DL50	1,490	1,440
6-10/3000 _ DL100	1,490	1,440
15-30/4500 _ DL100	1,540	1,480

### Installation of the idOil-LIQ high liquid level sensor

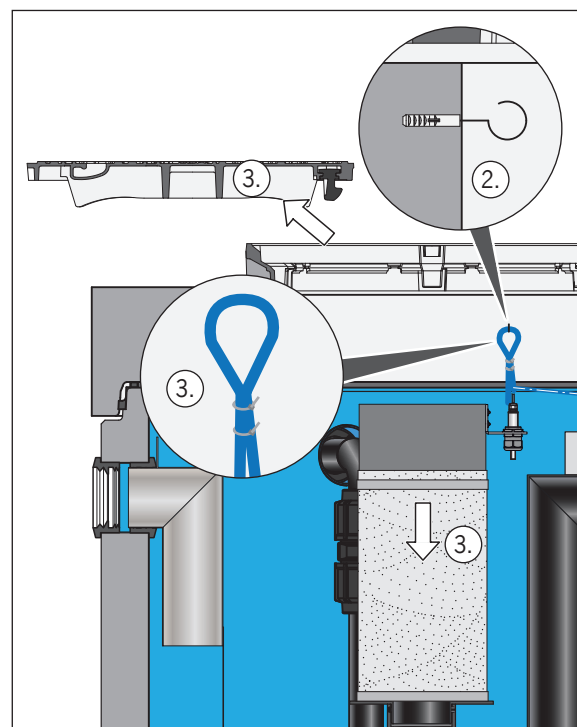


Bracket with screw connection for attaching the high liquid level sensor is mounted on the coalescence insert on delivery.

- Loosen the union nut of the screw connection.
- Push the high liquid level sensor into the screw connection.
- Attach the high liquid level sensor with a union nut at a distance of 50 mm.



- Lift the cover out of the cover frame and store to the side (1).
- Place dowels in the maintenance opening of the cover plate and screw in the screw hooks (2).
- Put the coalescence insert over the guide of the drain dip tube, position it in the centre and press down until it rests on the surrounding plate (3).
- Place the sensor connection cable in a loop around the screw hook and fix it with cable ties (4).
- After mounting all sensors, put the cover back in place.




## 3.5 Electrical installation



### WARNING

#### Electric shock risk in case of improper electrical installation

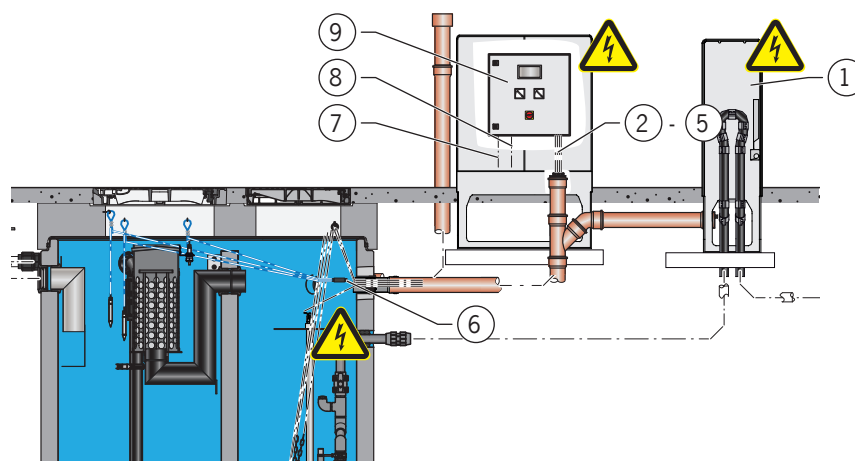
- The control unit must not be connected to the power supply until after all installation work has been completed.
- The voltage supply must be implemented in compliance with the directives of the local power supplier.
- Electrical connections may only be executed by qualified electricians.
- Electrical connections are to be made according to the circuit diagram of the control unit or the idOil-30 instructions,  chapter 7.5 "Control units" or the documents accompanying the product "Assembly and operating instructions idOil-30".


**IMPORTANT** Voltage failures caused by longer cable routes must be considered on site.




Heating and working socket for the outdoor cabinets and Ex-safety barrier can be obtained from ACO as optional extras.

### 3.5.1 Overview of the electrical installation work



Item	Work	Description  Chapter
1	Supply power to the heater (optional) and the power socket (optional)	3.5.2
2	Connect the connection cable of the submerged pumps	3.5.5
3	Check the rotational direction of the submerged pumps	3.5.6
4	Connect the connection cable for the level probe	3.5.7
5	Connect the cable extension (idOil sensors)	3.5.9
6	Connect cable connector LCJ1-3	3.5.8

Item	Work	Description  Chapter
7	Connecting the control to the power supply	3.5.4
8	Connecting fault message device (optional)	3.5.10
9	Installing the control unit	3.5.3
–	Installing ex-barrier (optional)	3.5.11

### 3.5.2 Supply power to the heater (optional) and the power socket (optional)

→ Observe the connection values with electrical installations: 400 V, 50 HZ, fuse 25 A

### 3.5.3 Installing the control unit

#### Mounting on a wall

Specifications:

- Flood-proof and clear wall surface of at least 1,000 mm x 1,000 mm (width x height)
- Select the maximum distance according to the length of the connection cables from the submerged pumps and level probe. If required, versions with longer connection cables can be obtained from ACO as optional extras.

#### Installation in the outdoor cabinet


 Chapter 3.3.10 "Installing the outdoor cabinet (optional)"

### 3.5.4 Connecting the control unit to the power supply

With the electrical installation:

→ Observe the connection values,  Chapter 7.5 "Control unit".

### 3.5.5 Connect the connection cable of the submerged pumps

The submerged pump connection cables are 10 m long and are connected in the terminal room of the sub in the as-delivered condition. Type of cable,  Chapter 7.2 “Submerged pumps”.

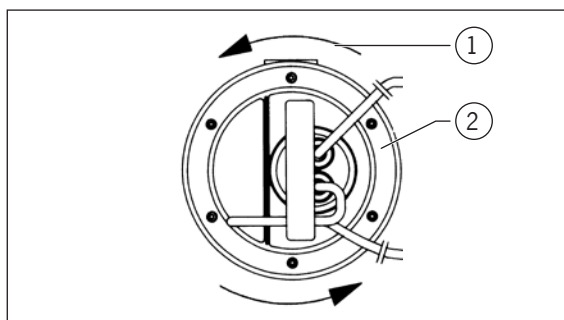
#### IMPORTANT

- The ends of the wire are labelled. There is a risk of short circuits if the wires are confused.
  - If the connecting cable is shortened, transfer the identification of the wires.
- Adjust the length of the connecting cable or hang in sufficiently large loops and attach.
- Insert the connection cable into the terminal compartment of the control unit and connect to the electrical system.

### 3.5.6 Check the rotational direction of the submerged pumps

**IMPORTANT** The rotational direction is correct, i.e. clockwise, when the protective cover (2) moves as shown (1).

- Check the rotational direction: Switch on the submerged pump and switch off again immediately. Observe the starting recoil carefully from the motor side.



### 3.5.7 Connect the connection cable for the level probe

The level sensor connecting cables are 20, 50 and/or 80 m long and are connected in the terminal room of the pump in the as-delivered condition.

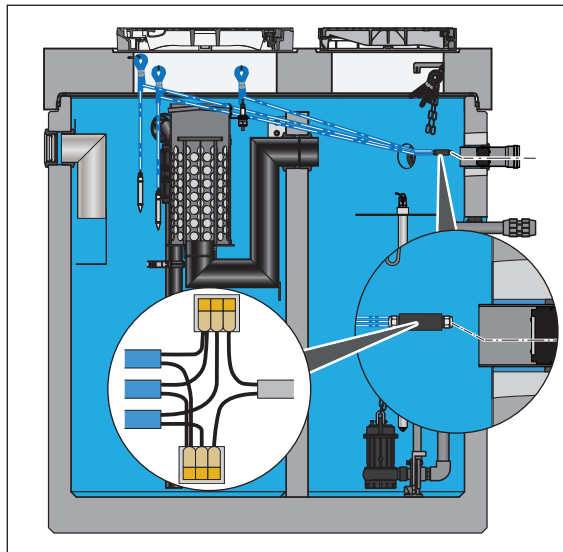
- Insert the connection cable into the terminal compartment of the control unit and connect to the electrical system.

### 3.5.8 Connect cable connector LCJ1-3

Cable connector LCJ3 is supplied loose

The 3 connection cables of the idOil sensors and the on-site cable extension (e.g. twisted pair cable, 2 x 0.75 mm<sup>2</sup>, unshielded) must be connected to the cable connector LCJ3 in the container near the cable gland.

- Connect the connection cable of the idOil sensors and the on-site cable extension with the cable connector LCJ3.



### 3.5.9 Connect the cable extension (idOil sensors)

**IMPORTANT**

- For the proper functioning of the idOil warning system, the maximum cable extension of 1 km for a cable cross-section of 0.75 mm<sup>2</sup> must not be exceeded.
  - The maximum loop resistance of the extension cable must not exceed 68 Ω .
- Insert the cable extension into the terminal compartment of the control unit and connect to the electrical system.

### 3.5.10 Connect fault message device (optional)

If a fault signalling device is specified, this should be installed so that a system malfunction is signalled to each connected unit.

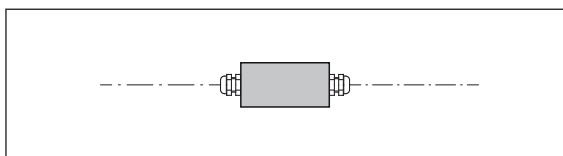
A cable (2-wire/0.75 mm<sup>2</sup>) must be connected in the control unit to forward the potential-free contact as a group alarm.

### 3.5.11 Installing ex-safety-barrier (optional)

**IMPORTANT** If the level sensor is to be utilised in an explosion protected area, then an ex-safety-barrier must be installed.



Ex-safety-barrier can be purchased from ACO as an optional component.

- Ex-safety-barrier must be installed and/or connected in the connection cable for the level sensor.



## 4 Operation

### 4.1 Commissioning

**IMPORTANT** A general inspection by a properly qualified, competent person is mandatory before the initial commissioning,  Chapter 1.5 "Personnel qualifications". Scope of the general inspection,  Chapter 5.3 "5 General inspection of the light liquid separator".

Requirements:


- All installation work is now completed.
- Pipelines have been flushed out
- The tank has been thoroughly cleaned (if necessary from construction debris)
- There is no wastewater running into the plant.
- Any existing gate valves in inlet pipes and outlet pipes were opened.

#### Execute initial commissioning



For the purposes of filling the plant, surface water or process water can be used as well as fresh water, providing it complies with the local discharge conditions.


Characters in brackets "()", refer to representation for the plant,  Chapter 2.3. "Components".

- Lift the lid out of the cover (54 + 56) and store it on its side.
- Clean the plant.
- Check the setting values in the menu points for the control unit,  Chapter 4.2. "Control unit" and/or 4.3 "Setting values for commissioning".

**IMPORTANT** There must not be any water in the pump station chamber during the setting operation.

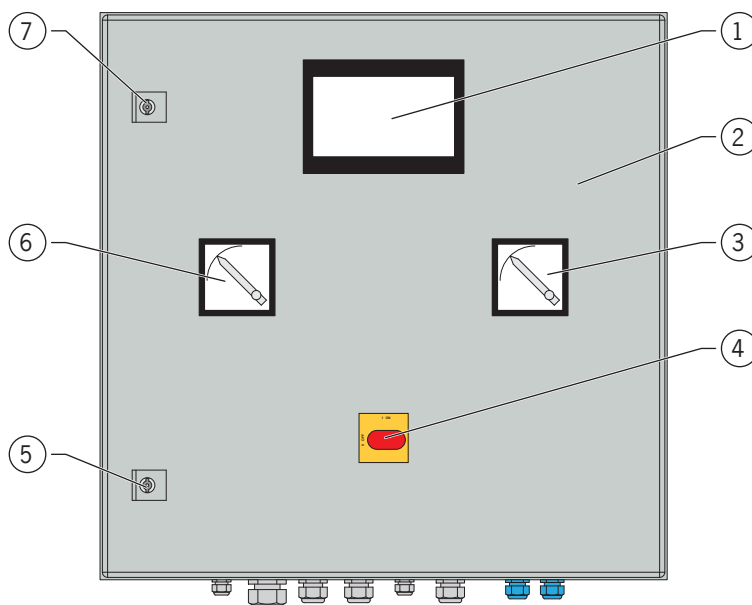
- Remove the protection from the outlet opening on the submerged outlet pipe (41).

If the separation chamber (38) still has a water seal from the installation or the leak test, then the following "filling" step can be omitted.





- Fill the separator chamber (38) with water via the shaft structure or the feed pipe (46) up to the static water level (pipe bottom of the submerged outlet pipe, 41).
- Put the coalescence insert (47) over the guide of the submerged outlet pipe (41), position it in the centre and press down until it rests on the surrounding plate.
- Execute a test run for the pump station,  Chapter 4.5 "Execute test run for pump station".

## 4.2 Control unit

### 4.2.1 Operating and display elements - External control unit



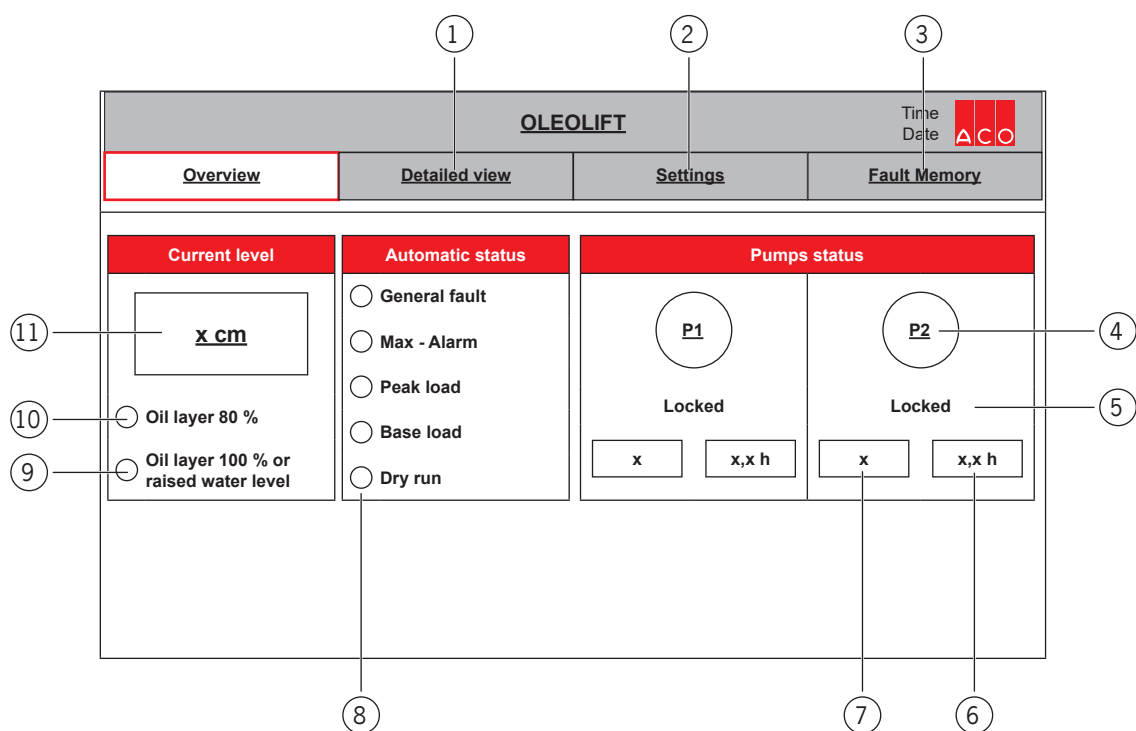
- 1 = Touch panel
- 2 = Housing
- 3 = Ammeter meter P 2 (optional)
- 4 = Main switch
- 5 = Cam lock
- 6 = Ammeter meter P 1 (optional)
- 7 = Cam lock

Item	Control and display element	Function or meaning	Explanation
1		Touch-Panel	 Chapter 4.3 "Touch panel".
3+6		Display current consumption of the pumps	The ammeter displays the current power consumption of pump P 1 or P 2 during operation.
4		Connect power circuits	If the main switch is in position "I", the electrical equipment is connected with all poles to the electric power supply .

## 4.3 Touch-Panel

**IMPORTANT** The display possibilities on the Touch-Panel are varied. The following selection does not claim to be complete.

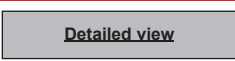
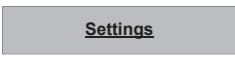
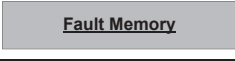
### 4.3.1 Main screen \_ Overview











- |   |  |
|---|--|
| 1 = Control panel: Select "Detailed view" page view                       | 7 = Display panel: Display number of pump starts for pump P2 or P1                       |
| 2 = Control panel: Select the "Settings" page view                        | 8 = Display panel: Display automatic mode status   |
| 3 = Control panel: Select the "Fault memory" page view                    | 9 = Display panel: indicate when 100% oil layer or maximum raised water level is reached |
| 4 = Display panel: Display pump P2 or P1 operation                        | 10 = Display panel: show when 80 % oil layer is reached                                  |
| 5 = Display panel: Pump P2 or P1 Display pump status                      | 11 = Display panel: Display current level in separator chamber                           |
| 6 = Display panel: Display the number of operating hours of pump P2 or P1 |  |



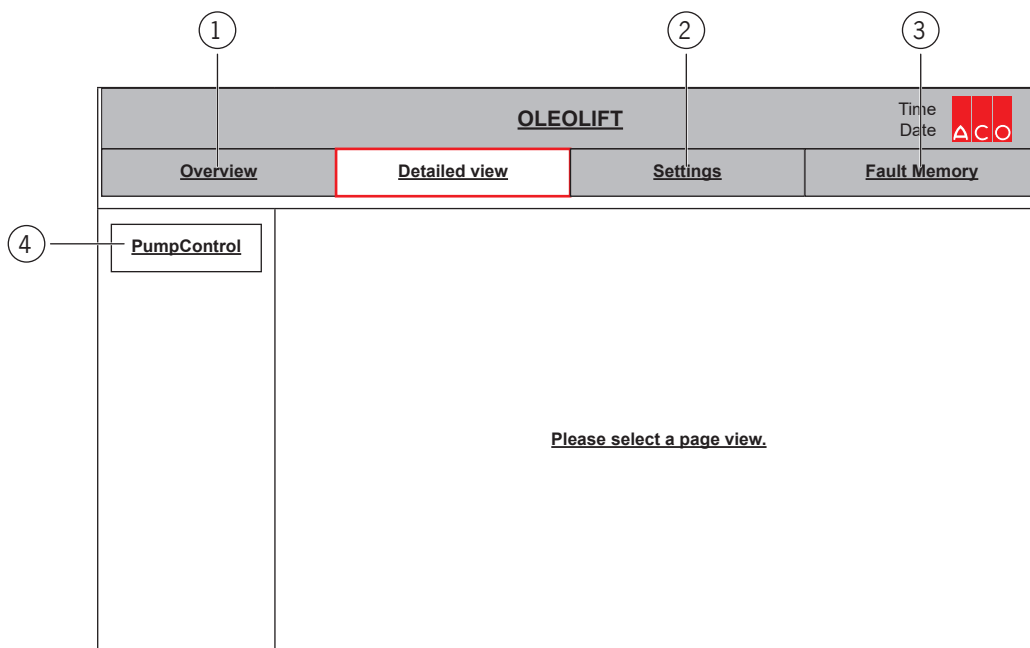
### Operating elements

Position	Operating field	Meaning	Explanation
1		Select "Detailed view" page view	Press the control panel: The display changes to the "Detailed view" page view
2		Select the "Settings" page view	Press the control panel: The display changes to the "Settings" page view
3		Select the "Fault memory" page view	Press the control panel: The display changes to the "Fault Memory" page view

### Display elements

Position	Display panel	Meaning	Explanation
4		Display operation	Display field off: Pump out of operation
			The display panel lights up: Pump in manual mode The display panel flashes: Pump in automatic mode
5	Text	Display pump status	Selection: <ul style="list-style-type: none"> <li>■ Automatic</li> <li>■ Manual</li> <li>■ Locked</li> </ul>
6	...h	Display number of operating hours	Numerical value indicates number of operating hours
7	...	Display number of pump starts	Numerical value indicates number of pump starts
8		Display automatic mode status	Display panel off: Status not active
			The display panel lights up: Status active, selection <ul style="list-style-type: none"> <li>■ General fault</li> <li>■ Maximum alarm</li> <li>■ Peak load</li> <li>■ Base load</li> <li>■ Dry run</li> </ul>
9		Display when 100% oil layer or maximum raised water level is reached	Display field off: Status not reached
			The display panel lights up: 100% oil layer or maximum raised water level reached
10		Display when 80 % oil layer is reached	Display field off: Status not reached
			The display panel lights up: 80 % oil layer reached
11	... cm	Display current level in separator chamber	Numerical value indicates current level in separator chamber

### 4.3.2 Page view \_ Detailed view

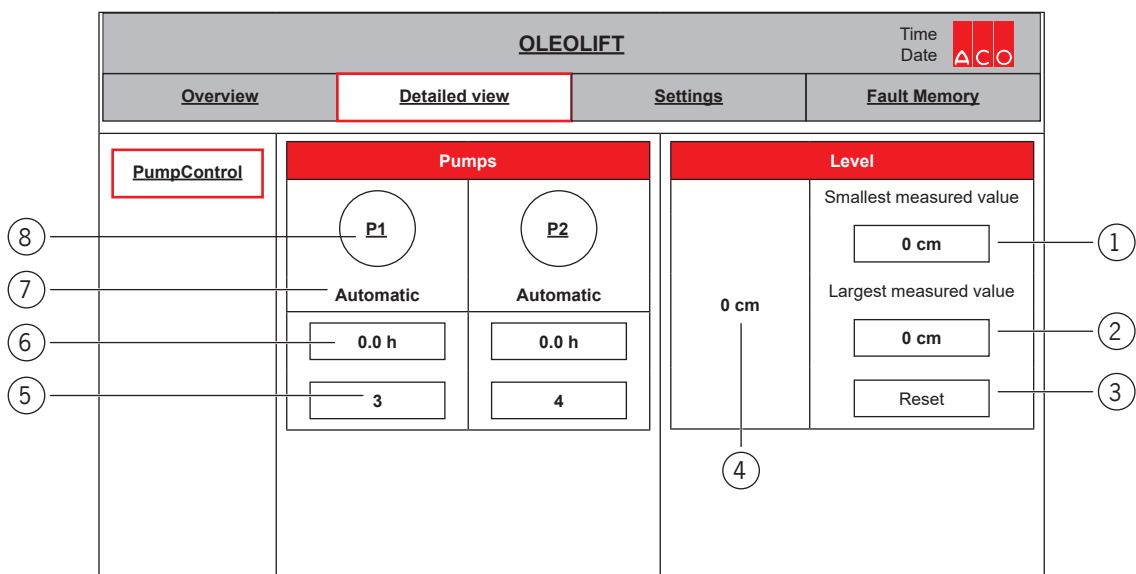


- 1 = Control panel: Select "Overview" page view                      4 = Control panel: Select the "PumpControl" page view  
 2 = Control panel: Select the "Settings" page view  
 3 = Control panel: Select the "Fault memory" page view

#### Operating elements

Item	Operating field	Meaning	Explanation
1	<b>Overview</b>	Select "Overview" page view	Press the control panel: The display changes to the "Overview" page view
2	<b>Settings</b>	Select the "Settings" page view	Press the control panel: The display changes to the "Settings" page view
3	<b>Fault Memory</b>	Select the "Fault memory" page view	Press the control panel: The display changes to the "Fault Memory" page view
4	<b>PumpControl</b>	Select "PumpControl" page view	Press the control panel: The display changes to "Detailed view _ PumpControl" page view

Page view \_ Detailed view/ PumpControl





- 1 = Display panel: Display smallest measured value
- 2 = Display panel: Display largest measured value
- 3 = Control panel: Reset level values to zero
- 4 = Display field: Display current level
- 5 = Display panel: Display number of pump starts for pump P1 or P2
- 6 = Display panel: Display the number of operating hours of pump P1 or P2
- 7 = Display panel: Pump P1 or P2 Display pump status
- 8 = Control / display panel: Display or select pump operation

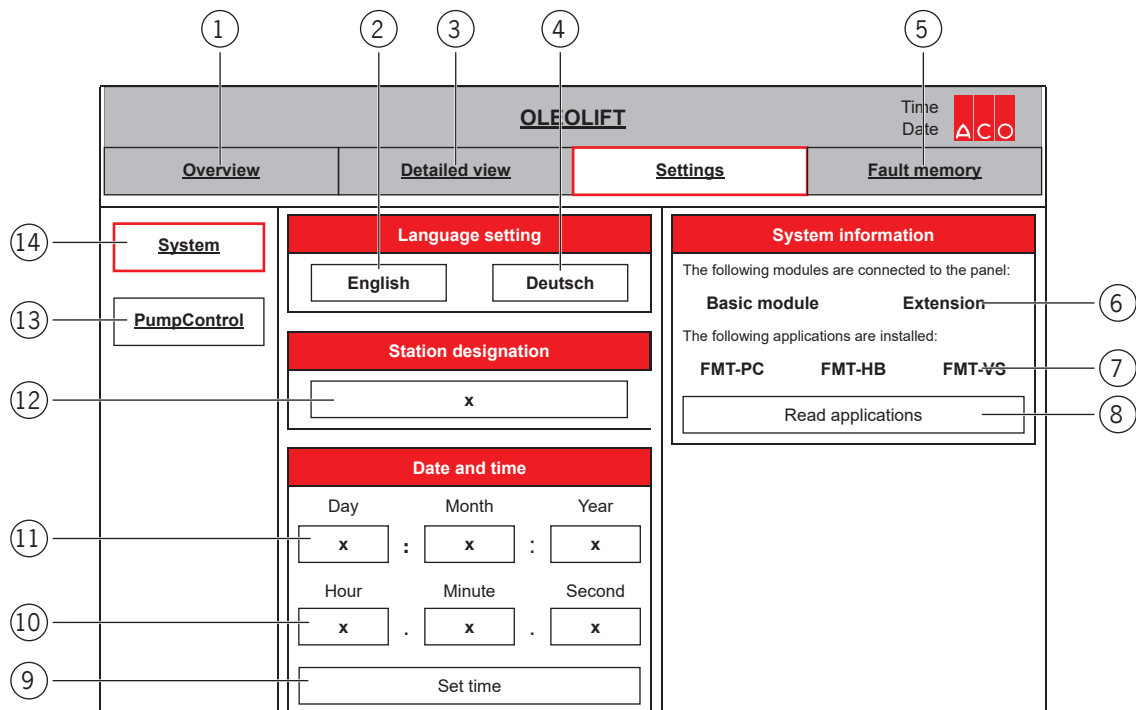
Operating elements

Item	Operating field	Meaning	Explanation
3	<input type="button" value="Reset"/>	Reset level values	Press the control panel: Values in the display fields 1, 2 and 4 are reset to zero
8	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin-bottom: 5px;">P1</div> <p>and/or</p> <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">P2</div> </div>	Select pump operation P1 or P2	<p>Press <b>P1</b> the control panel: Select operating mode "Manual", "Off" or "Automatic" of pump P1 via the window</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #f00; color: white; margin: 0;">Pump 1</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 10px;">P1</div> <div style="text-align: center;"> <input type="button" value="Manual"/>  <input type="button" value="OFF"/>  <input type="button" value="Automatic"/> </div> </div> <div style="text-align: center; margin-top: 5px;"><input type="button" value="Close"/></div> </div> <p>and confirm with Close</p> <p>Press <b>P2</b> the control panel: Select operating mode "Manual", "Off" or "Automatic" of pump P2 via the window</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #f00; color: white; margin: 0;">Pump 2</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-right: 10px;">P2</div> <div style="text-align: center;"> <input type="button" value="Manual"/>  <input type="button" value="OFF"/>  <input type="button" value="Automatic"/> </div> </div> <div style="text-align: center; margin-top: 5px;"><input type="button" value="Close"/></div> </div> <p>and confirm with Close</p>

### Display elements



Item	Display panel	Meaning	Explanation
1	... cm	Display smallest level	Numerical value indicates lowest level
2	... cm	Display largest level	Numerical value indicates largest level
4	... cm	Display current level	Numerical value indicates current level
5	...	Display number of pump starts	Numerical value indicates number of pump starts
6	...h	Display number of operating hours	Numerical value indicates number of operating hours
7	Text	Display pump status	Selection: <input type="checkbox"/> Automatic <input type="checkbox"/> Manual <input type="checkbox"/> Locked
8		Display operation	Display field off: Pump out of operation
			The display panel lights up: Pump in manual mode The display panel flashes: Pump in automatic mode

### 4.3.3 Page view \_ Settings / System



- |   |   |
|---|---|
| 1 = Control panel: Select "Overview" page view          | 8 = Control panel: Only for ACO service                     |
| 2 = Control panel: Select "English" operating language  | 9 = Control panel: Set the time                             |
| 3 = Control panel: Select the "Detailed View" page view | 10 = Display panel: Display Time                            |
| 4 = Control panel: Select "Deutsch" page view           | 11 = Display panel: Display date                            |
| 5 = Control panel: Select the "Fault memory" page view  | 12 = Control / display panel: Enter or display station name |
| 6 = Control panel: Only for ACO service                 | 13 = Control panel: Select the "PumpControl" page view      |
| 7 = Control panel: Only for ACO service                 | 14 = Control panel: Select the "System" page view           |

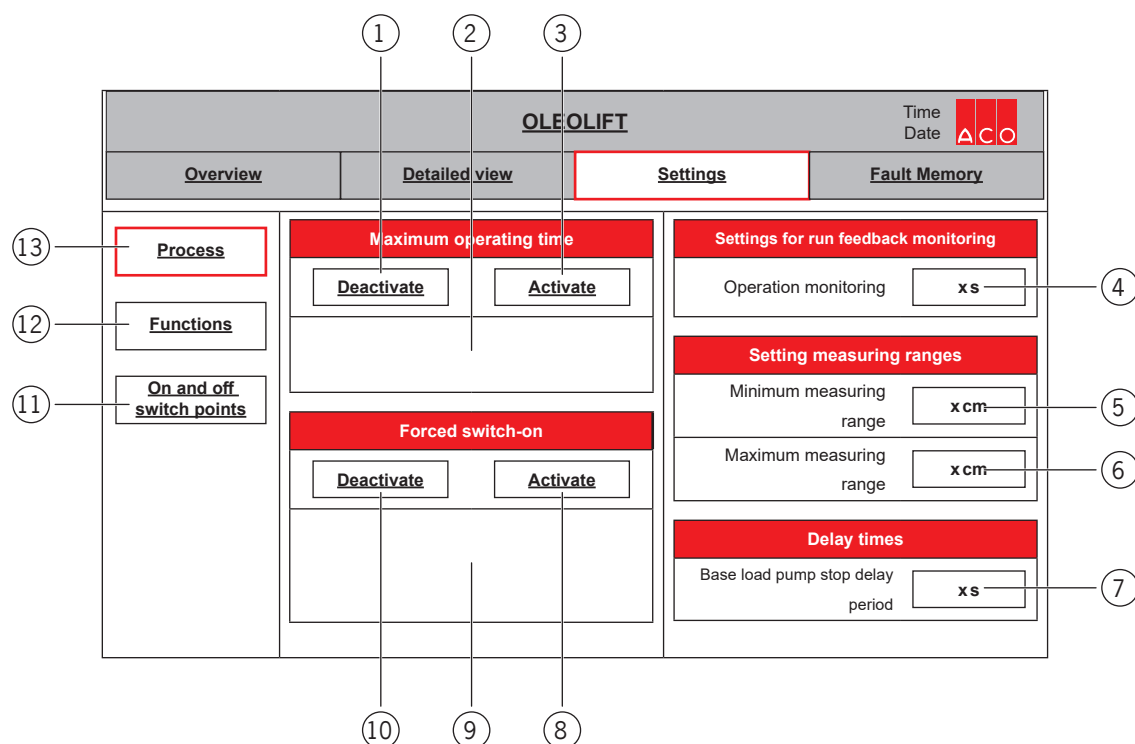
## Operating elements

Item	Operating field	Meaning	Explanation
1	<input type="button" value="Overview"/>	Select "Overview" page view	Press the control panel: The display changes to the "Overview" page view
2	<input type="button" value="English"/>	Select "English" operating language	Press the control panel: The operating language changes to "English"
3	<input type="button" value="Detailed view"/>	Select "Detailed view" page view	Press the control panel: The display changes to the "Detailed view" page view
4	<input type="button" value="Deutsch"/>	Select "Deutsch" operating language	Press the control panel: The operating language changes to "English"
5	<input type="button" value="Fault Memory"/>	Select the "Fault memory" page view	Press the control panel: The display changes to the "Fault Memory" page view
6-8	<input type="text"/>	Change system information	Only for ACO Service
9	<input type="button" value="Set time"/>	Set the date and time	Press the control panel: Enter the date and time via the window *  and confirm with ENT
12	<input type="text"/>	Enter station designation	Press control panel: Enter station designation via the window *  and confirm with ENT
13	<input type="button" value="PumpControl"/>	Select "PumpControl" page view	Press the control panel: The display changes to "Detailed view _ PumpControl" page view
14	<input type="button" value="System"/>	Select "System" page view	Press the control panel: The display changes to the "Settings_System" page view
* Example of a keyboard			

## Display elements





Item	Display panel	Meaning	Explanation
10	<input type="text"/>	Display time	Numerical values indicate the time
11	<input type="text"/>	Display date	Numerical values indicate the date
12	<input type="text"/>	Display station designation	Text shows the designation of the station

## Page view \_ Settings / PumpControl / Process



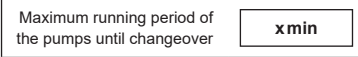
- 1 = Control panel: disable settings for maximum operating time
- 2 = Display panel: Display settings for maximum operating time
- 3 = Control panel: Activate settings for maximum operating time
- 4 = Control / display panel: Enter or display setting for run feedback monitoring
- 5 = Control / display panel: Enter or display setting for the minimum measuring range
- 6 = Control / display panel: Enter or display setting for the maximum measuring range
- 7 = Control / display panel: Enter or display the setting for the stop delay period
- 8 = Control panel: Enable settings for forced power on
- 9 = Display panel: Display settings for forced power on
- 10 = Control Panel: Disabling settings for forced power on
- 11 = Control panel: Page view: select "Switch-on and switch-off points"
- 12 = Control panel: Select the "Functions" page view
- 13 = Control panel: Select the "Process" page view

### Operating elements

Item	Operating field	Meaning	Explanation
1	<input type="text" value="Deactivate"/>	Disable maximum operating time	Press the control panel: setting for the maximum operating time is disabled
3	<input type="text" value="Activate"/>	Activate maximum operating time	Press the control panel: setting for the maximum operating time is activated
4	<input type="text" value="xs"/>	Enter run feedback monitoring	Press the control panel: Enter value for run feedback monitoring via the window  and confirm with ENT
5	<input type="text" value="x cm"/>	Enter minimum measuring range	Press the control panel: Enter value for minimum measuring range via the window  and confirm with ENT
6	<input type="text" value="x cm"/>	Enter maximum measuring range	Press the control panel: Enter value for run maximum measuring range via the window  and confirm with ENT
7	<input type="text" value="xs"/>	Enter stop delay period	Press the control panel: Enter value for stop delay period via the window  and confirm with ENT
8	<input type="text" value="Activate"/>	Activate forced switch-on	Press the control panel: settings for forced switch-on are activated
10	<input type="text" value="Deactivate"/>	Deactivate forced switch-on	Press the control panel: setting for forced switch-on are deactivated
11	<input type="text" value="On and off switch points"/>	Page view: select "Switch-on and switch-off points"	Press the control panel: The display changes to "Settings _ Switch-on and switch-off points" page view
12	<input type="text" value="Functions"/>	Select "Functions" in the page view	Press the control panel: The display changes to the "Settings_Functions" page view
13	<input type="text" value="Process"/>	Select "Process" page view	Press the control panel: The display changes to the "Settings_Process" page view

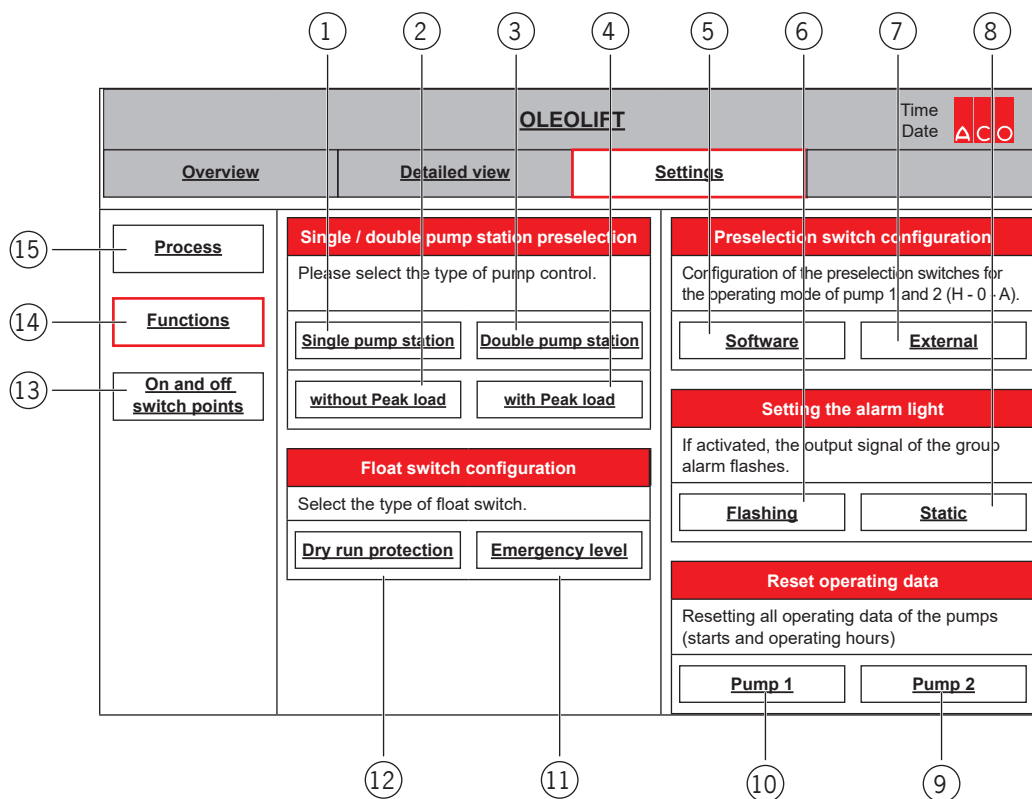
\* Example of a keyboard

### Display elements

Item	Display panel	Meaning	Explanation
2	<input type="text"/>	Display maximum operating time	Maximum operation time setting is displayed 
4	<input type="text" value="xs"/>	Display run feedback monitoring	Numerical value indicates setting of the run feedback monitoring

Item	Display panel	Meaning	Explanation
5	<input type="text" value="x cm"/>	Display minimum measuring range	Numerical value indicates setting of the minimum measuring range
6	<input type="text" value="x cm"/>	Display maximum measuring range	Numerical value indicates setting of the maximum measuring range
7	<input type="text" value="x s"/>	Display after-running period	Numerical value indicates setting of the stop delay period
9	<input type="text"/>	Display forced switch-on	Settings for forced switch-on are displayed <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">                     Time until forced switch-on starts <input type="text" value="x h"/> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">                     Duration of forced switch-on <input type="text" value="x s"/> </div>

Page view \_ Settings / PumpControl / Process





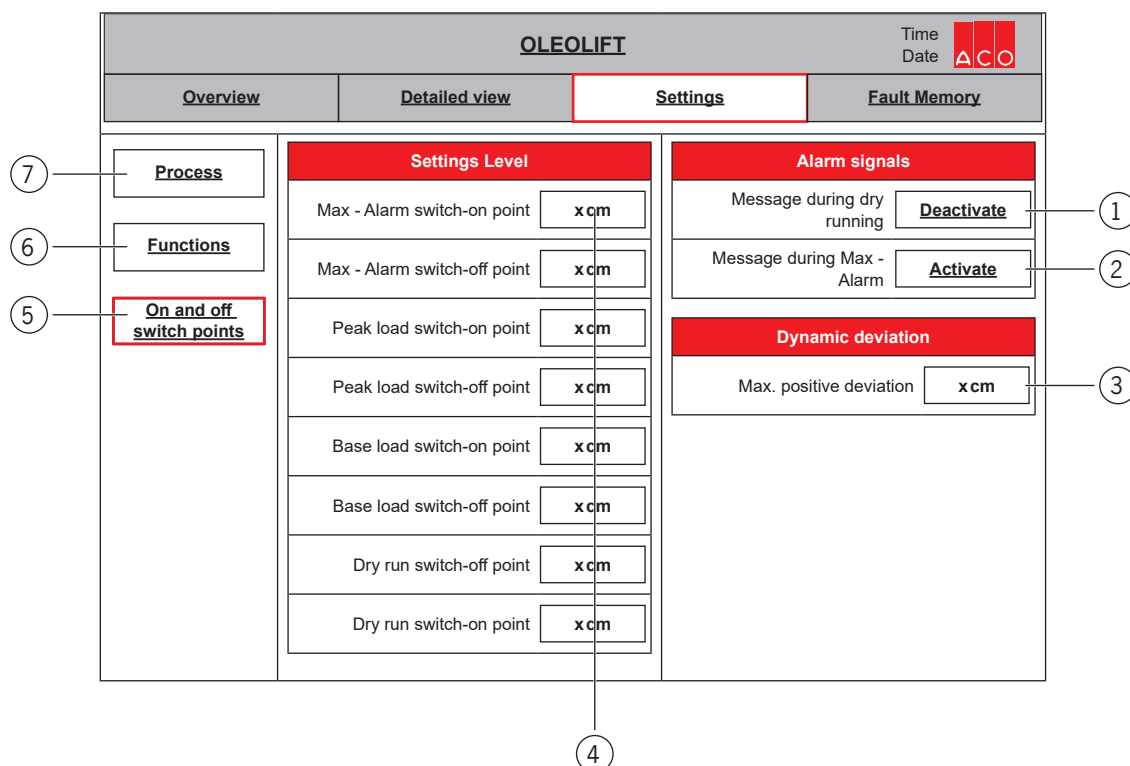
- 1 = Control panel: select "single pump station" of the pump control unit
- 2 = Control panel: Select preselection "without peak load" of pump control unit
- 3 = Control panel: select "double pump station" of the pump control unit
- 4 = Control panel: select "with peak load" of the pump control unit
- 5 = Control panel: select pump operating mode via "Software"
- 6 = Control panel: Select "Flashing" alarm light
- 7 = Control panel: Select pump operating mode via "External"
- 8 = Control panel: Select "Static" alarm light
- 9 = Control panel: Reset operating data for pump 2
- 10 = Control panel: Reset operating data for pump 1
- 11 = Control panel: Select operating mode of the float switch as "emergency level"
- 12 = Control panel: Select operating mode of the float switch as "dry run protection"
- 13 = Control panel: Page view: select "Switch-on and switch-off points"
- 14 = Control panel: Select the "Functions" page view
- 15 = Control panel: Select the "Process" page view

### Operating elements

Item	Operating field	Meaning	Explanation
1	<u>Single pump station</u>	Select single pump station	Press the control panel: Select the control unit operation for "single pump station"
2	<u>without Peak load</u>	Select operation without peak load	Press the control panel: Select the function "without peak load"
3	<u>Double pump station</u>	Select double pump station	Press the control panel: Select the control unit operation for "double pump station"
4	<u>with Peak load</u>	Select operation with peak load	Press the control panel: Select the function "with peak load"
5	<u>Software</u>	Select pump operating mode via "Software"	Press control panel: pumps will be controlled by software
6	<u>Flashing</u>	Select "Flashing" alarm light	Press the control panel: Alarm light flashes to indicate group alarm
7	<u>External</u>	Select pump operating mode via "External"	Press control panel: pumps are controlled externally
8	<u>Static</u>	Select "static" alarm light	Press the control panel: Alarm light static to indicate group alarm
9	<u>Pump 2</u>	Reset operating data for pump 2	Press the control panel: Reset operating data for pump 2
10	<u>Pump 1</u>	Reset operating data for pump 1	Press the control panel: Reset operating data for pump 1
11	<u>Emergency level</u>	Select operating mode of the float switch as "emergency level"	Press the control panel: Select operating mode of the float switch as "emergency level"
12	<u>Dry run protection</u>	Select operating mode of the float switch as "dry run protection"	Press control panel: Select operating mode of the float switch as "dry run protection"
11	<u>On and off switch points</u>	Page view: select "Switch-on and switch-off points"	Press the control panel: The display changes to "Settings _ Switch-on and switch-off points" page view


Item	Operating field	Meaning	Explanation
12	<input type="button" value="Functions"/>	Select "Functions" in the page view	Press the control panel: The display changes to the "Settings_Functions" page view
13	<input type="button" value="Process"/>	Select "Process" page view	Press the control panel: The display changes to the "Settings_Process" page view

**Page view \_ Settings / Pump control / Switch-on and switch-off points**

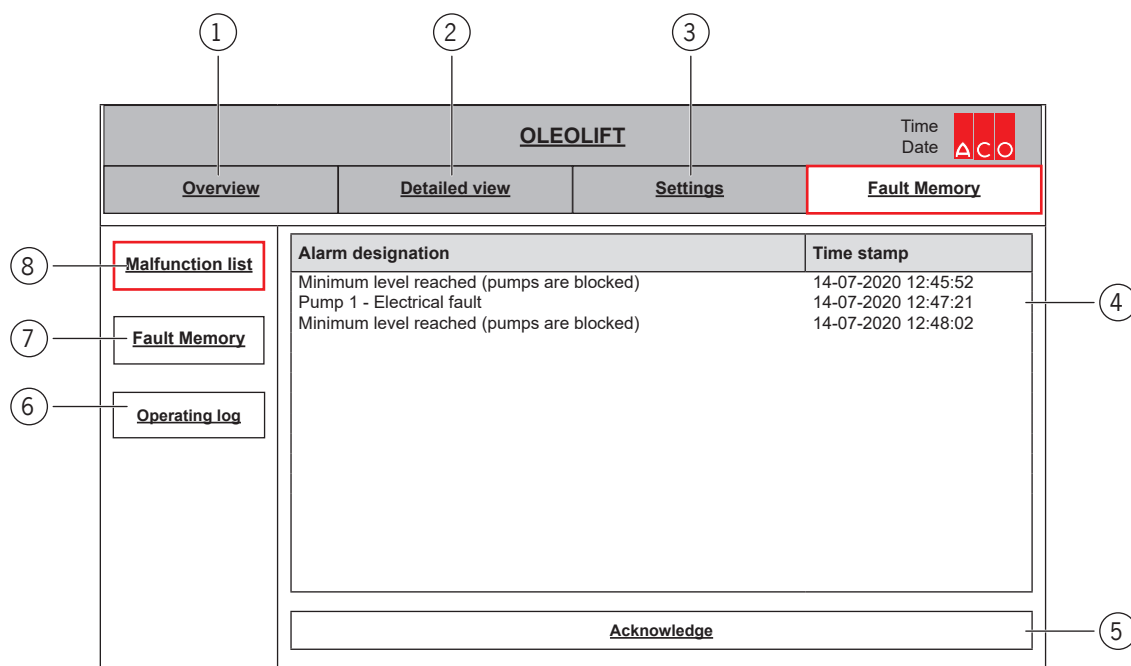


- 1 = Control panel: Activate or deactivate alarm message for dry running
- 2 = Control panel: Activate or deactivate alarm message for Max-Alarm
- 3 = Control panel: Only for ACO service
- 4 = Control panel: Enter level settings
- 5 = Control panel: Page view: select "Switch-on and switch-off points"
- 6 = Control panel: Select the "Functions" page view
- 7 = Control panel: Select the "Process" page view

### Operating elements

Item	Operating field	Meaning	Explanation
1	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">Activate</div> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Deactivate</div>	Activate or deactivate alarm message during dry running	Press the control panel: Activate or deactivate alarm message during dry running
2	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">Activate</div> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Deactivate</div>	Activate or deactivate alarm message for Max - Alarm	Press the control panel: Activate or deactivate alarm message for Max - Alarm
4	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">x cm</div>	Enter level settings	Press the control panel: Enter the value for the various level settings  via the window * and confirm with ENT
5	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">On and off switch points</div>	Page view: select "Switch-on and switch-off points"	Press the control panel: The display changes to "Settings _ Switch-on and switch-off points" page view
6	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">Functions</div>	Select "Functions" in the page view	Press the control panel: The display changes to the "Settings_Functions" page view
7	<div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">Process</div>	Select "Process" page view	Press the control panel: The display changes to the "Settings_Process" page view
* Example of a keyboard			

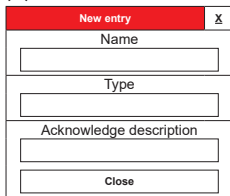

### 4.3.4 Page view \_ Fault Memory



- 1 = Control panel: Select "Overview" page view
- 2 = Control panel: Select "Detailed view" page view
- 3 = Control panel: Select the "Settings" page view
- 4 = Control / display panels: Display or select alarm message with alarm name and time stamp
- 5 = Control panel: Acknowledge alarm message
- 6 = Control panel: Select the "Operating log" page view
- 7 = Control panel: Select the "Fault memory" page view
- 8 = Control panel: select "Malfunction list" page view

#### Operating elements

Item	Operating field	Meaning	Explanation
1	Overview	Select "Overview" page view	Press the control panel: The display changes to the "Overview" page view
2	Detailed view	Select "Detailed view" page view	Press the control panel: The display changes to the "Detailed view" page view
3	Settings	Select the "Settings" page view	Press the control panel: The display changes to the "Settings" page view
4	–	Select alarm message	Press the line (control panel): Select alarm message

Item	Operating field	Meaning	Explanation
5	<b>Acknowledge</b>	Acknowledge alarm message	<p>Press the control panel: Selected alarm message (4) via the window</p>  <p>and window *  after entering name / type / description</p>
6	<b>Operating log</b>	Select the "Operating log" page view	Press the control panel: The display changes to the "operating log" page view
7	<b>Fault Memory</b>	Select the "Fault memory" page view	Press the control panel: The display changes to the "Fault Memory" page view
8	<b>Malfunction list</b>	Select the "Fault list" page view	Press the control panel: The display changes to the "Fault list" page view
* Example of a keyboard			

### Display elements

Item	Display panel	Meaning	Explanation
4	–	Display alarm message	Display alarm message with alarm name and time stamp

## Page view \_ Fault memory / Fault memory

The screenshot shows the OLEOLIFT control panel interface. At the top, there is a header with 'OLEOLIFT' and 'Time Date ACO'. Below this is a navigation bar with four tabs: 'Overview', 'Detailed view', 'Settings', and 'Fault Memory' (which is highlighted with a red box). On the left side, there is a sidebar with three buttons: 'Malfunction list', 'Fault Memory' (highlighted with a red box), and 'Operating log'. The main display area shows a table with three columns: 'Alarm designation', 'Time stamp', and 'Status'. The table contains several rows of alarm messages, such as 'Minimum level reached (pumps are blocked)', 'Dry run float switch triggered', and 'Pump 2 - Electrical fault'. A refresh button (circular arrow icon) is located at the bottom of the table area. Numbered callouts (1-5) point to specific elements: 1 points to the first row of the table, 2 points to the refresh button, 3 points to the 'Operating log' button, 4 points to the 'Fault Memory' button, and 5 points to the 'Malfunction list' button.

- 1 = Display panel: Display alarm messages with alarm name, time stamp and status  
 2 = Control panel: Browse the fault memory  
 3 = Control panel: Select the "Operating log" page view  
 4 = Control panel: Select the "Fault memory" page view  
 5 = Control panel: select "Malfunction list" page view

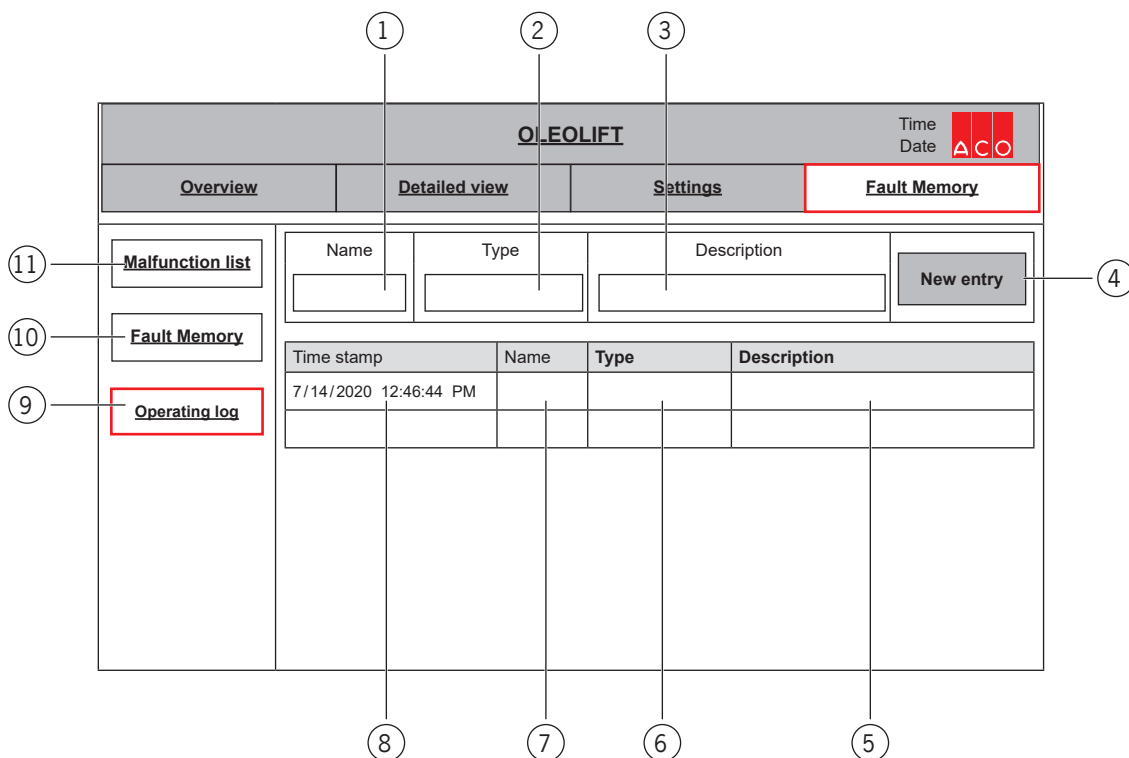
### Operating elements

Item	Operating field	Meaning	Explanation
2		Browse the fault memory	Press the control panel: Browse the fault memory
3		Select the "Operating log" page view	Press the control panel: The display changes to the "operating log" page view
4		Select the "Fault memory" page view	Press the control panel: The display changes to the "Fault Memory" page view
5		Select the "Malfunction list" page view	Press the control panel: The display changes to the "Malfunction list" page view

### Display elements




Item	Display panel	Meaning	Explanation
1	-	Display alarm message	Display alarm messages with alarm name, time stamp and status

Page view \_ Fault memory / operating log



- 1 = Control panel: Enter operator or service technician name
- 2 = Control panel: Enter note or service type
- 3 = Control panel: Enter note or service description
- 4 = Control Panel: Create a New Entry
- 5 = Display panel: Show description
- 6 = Display panel: Display note or service type
- 7 = Display panel: Display name
- 8 = Display panel: Show timestamp
- 9 = Control panel: Select the "Operating log" page view
- 10 = Select the "Fault memory" page view
- 11 = Control panel: select "Malfunction list" page view

Operating elements

Item	Operating field	Meaning	Explanation
1	<input type="text"/>	Enter Name	Press the control panel: Enter the name of the operator or service technician in the window * 
2	<input type="text"/>	Enter note or service type	Press the control panel: Entering a note or service type via a window * 
3	<input type="text"/>	Enter note or service description	Press the control panel: Enter a note or service description via window * 
4	<input type="button" value="New entry"/>	Create new entry	Press the control panel: the current time stamp for a new entry in display panel 8 is created
9	<input type="button" value="Operating log"/>	Select the "Operating log" page view	Press the control panel: The display changes to the "operating log" page view

Item	Operating field	Meaning	Explanation
10	<input type="text" value="Fault Memory"/>	Select the "Fault memory" page view	Press the control panel: The display changes to the "Fault Memory" page view
11	<input type="text" value="Malfunction list"/>	Select the "Malfunction list" page view	Press the control panel: The display changes to the "Malfunction list" page view
* Example of a keyboard			

### Display elements

Item	Display panel	Meaning	Explanation
5	<input type="text"/>	Display description	Display note or service description
6	<input type="text"/>	Display type	Display note or service type
7	<input type="text"/>	Display name	Display name of operator or service technician
8	7/14/2020 12:46:44 PM	Show time stamp	Show current time stamp for new entry



### 4.3.5 Operating and display elements - Internal control unit





#### DANGER

#### Danger of electric shock due to dangerous electrical voltage

- There is a danger to life through electric shock when working on the open control unit. During all work, the control unit must always be disconnected from the power supply via the back-up fuse or the main switch and secured against being switched on again. This work may only be carried out by a qualified electrician.
- Special care must be taken when making adjustments to the electrical components.



- |                              |  |
|------------------------------|--|
| 1 = Power supply unit        | 8 = Automatic circuit breaker P2       |
| 2 = Relay                    | 9 = Automatic circuit breaker P1       |
| 3 = Logic module             | 10 = Circuit breaker P1                |
| 4 = Passive isolators        | 11 = Circuit breaker P2                |
| 5 = Alarm system idOil - D30 | 12 = Phase monitoring relays           |
| 6 = Motor protection P1      | 13 = Thermal motor protection relay P1 |
| 7 = Motor protection P2      | 14 = Thermal motor protection relay P2 |

 Notes on commissioning idOil-30,  Assembly and operating instructions "idOil -30 - Labkotec"

## 4.4 Settings before commissioning

### 4.4.1 Touch-Panel



- If no factory settings have been made under the control panels on the touch panel, use the recommended settings from the table.
- The settings made during the commissioning must be entered in the following table by hand

Touch panel page view	Operating field	Meaning	Recommended settings	Commissioning settings
Detailed view/ Pump-Control	8	Select pump operation P1 or P2	Automatic	
Settings / system	4	Select "Deutsch" operating language	Deutsch	
	9	Set the date and time	Date and time	
	12	Enter station name	OLEOLIFT	
Settings / Pump-Control / Process	1	Disable maximum operating time	Deactivate	
	4	Enter run feedback monitoring	?	
	5	Enter minimum measuring range	3 cm	
	6	Enter maximum measuring range	200 cm	
	7	Enter stop delay period	0 s	
	8	Activate forced switch-on	?	
Settings / Pump-Control / Functions	3	Select double pump station	Double pump station	
	4	Select operation with peak load	with Peak load	
	5	Select pump operating mode via "Software"	Software	
	6	Select "Flashing" alarm light	?	
	8	Select "Static" alarm light	?	
	?	?	?	

Touch panel page view	Operating field	Meaning	Recommended settings	Commissioning settings
Settings / Pump-Control / Switch-on and switch-off points	1	Activate or deactivate alarm message during dry running	Deactivate	
	2	Activate or deactivate alarm message for Max - Alarm	Activate	
	4	Max - Alarm switch-on point	72 cm (NS 3-6) 93 cm (NS 6-10) 84 cm (NS 15-30)	
		Max - Alarm switch-off point	?	
		Peak load switch-on point	67 cm (NS 3-6) 88 cm (NS 6-10) 79 cm (NS 15-30)	
		Peak load switch-off point	?	
		Base load switch-on point	62 cm (NS 3-6) 83 cm (NS 6-10) 74 cm (NS 15-30)	
		Base load switch-off point	?	
		Dry run switch-off point	5 cm	
		Dry run switch-on point	?	

#### 4.4.2 Circuit breaker



##### **DANGER**

##### **Danger of electric shock due to dangerous electrical voltage**

- Special care must be taken when making adjustments to the electrical components.

The following setting values for the maximum current consumption of the pumps must be set on the two circuit breakers 2Q1 and 3Q2


Plant 3-10_DL50	2.4A
Plant 6-10_DL100	3.4A
15-30/4500_DL100	7.3A



The circuit breaker must then be closed.

## 4.5 Starting up the submerged pumps

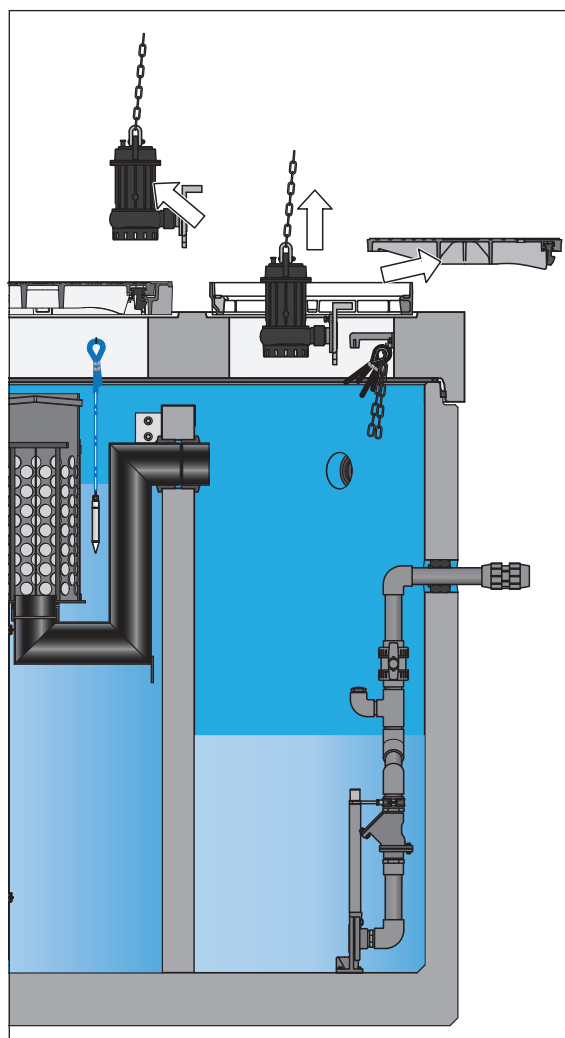
**IMPORTANT** To ensure dry-running protection, the pump chamber of the submerged pump must be vented during the initial start-up.

 It can be filled with drinking water, rainwater or process water (if it meets the local discharge conditions for effluent).

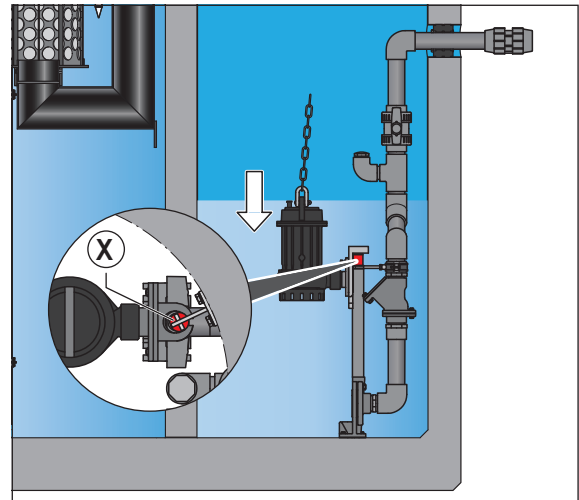
The pump station chamber can be filled via the inlet pipe of the plant or via the inspection opening.  
Requirement: Separator chamber is filled with water.

The description applies to both submerged pumps:

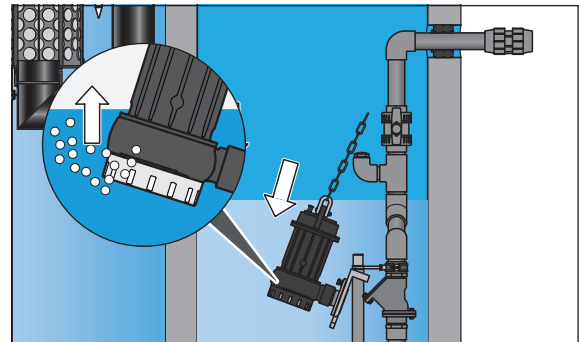
- Lift the cover out of the cover frame above the pump station chamber and store to the side.
- Remove the submerged pumps from the pump station chamber and store to the side.
- Fill the pump station chamber up to approx. half-full (relative to the inlet level).



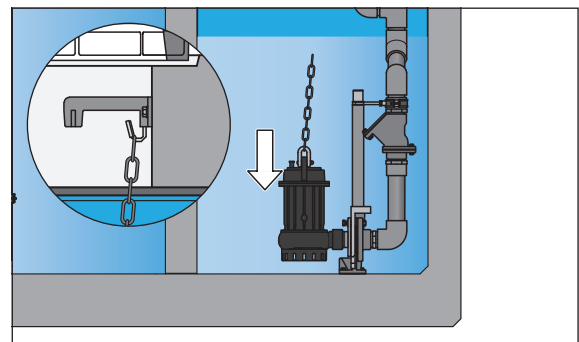
- Thread the coupling piece for the submerged pump onto the sliding pipe: Position **X**.



- Pull the submerged pump at an angle and drain further into the water filling.  
Air escapes from the submerged pump chamber.



- Lower the submerged pump further vertically until the coupling piece sits in the underwater automatic coupling.
- Hook the chain onto the chain holder.



## 4.6 Executing pump station test run

Requirements:

- The ball valve and/or gate valve is opened in the pressure pipe.
- The control unit is connected to the power supply.


During the trial run, pay attention to the following:

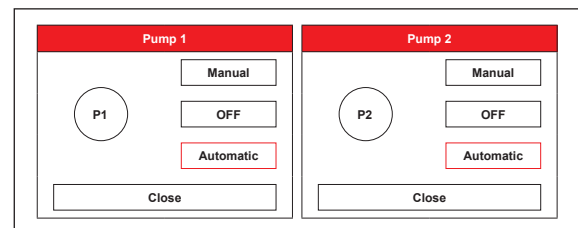
- Perform the trial run at least twice during commissioning.
- Perform the trial run with drinking water, rainwater or process water (if it meets the local discharge conditions for effluent).
- Avoid dry running during the trial run.
- Observe the signals/messages in the display panel of the control unit.

**IMPORTANT** If knocking noises/vibrations occur in the pressure pipe when the submerged pump is switched off, then set an stop delay period and/or increase the set stop delay period.

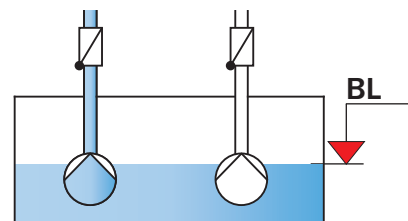
The pump station chamber can be filled via the inlet pipe or via the inspection opening (cover above the pump station chamber).

**Starting automatic mode:**

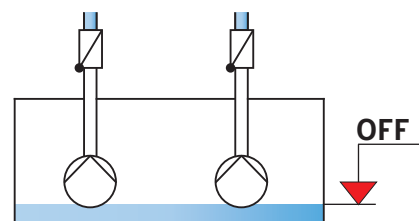
- Start pump 1 and 2 automatic mode,  
 Chapter 4.3.2 "Page view \_ Detailed view".



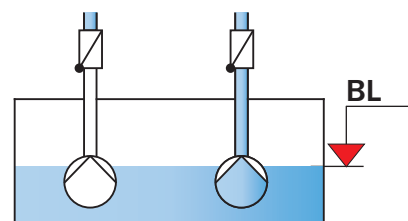
- Fill pump station chamber.
- When the water level reaches the "Base load" (BL) level, pump 1 switches on.
- Interrupt the inlet.



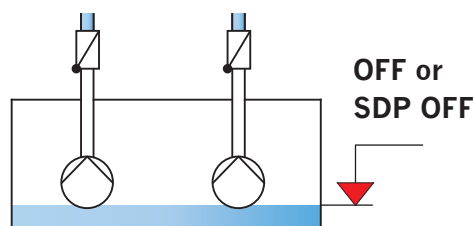
- When the water reaches the "OFF" level, Pump 1 switches off.



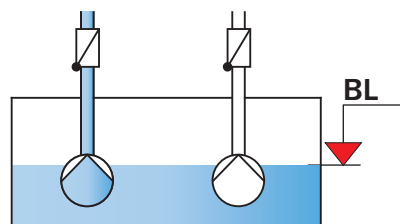
- Fill pump station chamber.
- When the water level reaches the "Base load" (BL) level, pump 2 switches on.
- Interrupt the inlet.



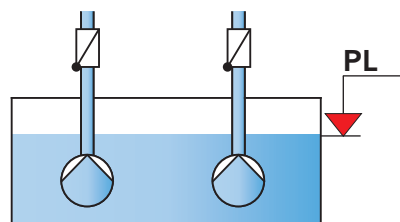
When the water reaches the "OFF" level, Pump 2 switches off.



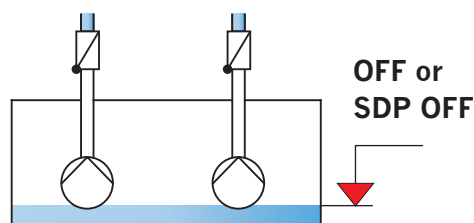
- Fill pump station chamber.
- When the water level reaches the "Base load" (BL) level, pump 1 switches on.
- Increase the inlet flow so that the water level continues to rise.




- When the water reaches the "Peak load" (PL) level, Pump 2 also switches on.
- Interrupt the inlet.

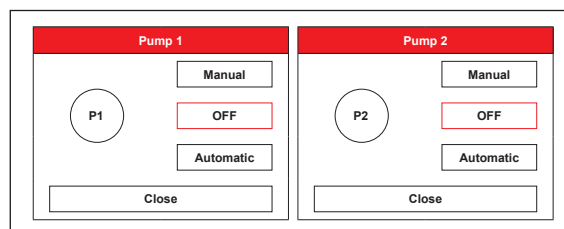


When the water level reaches the "OFF" level, the pumps switch off.

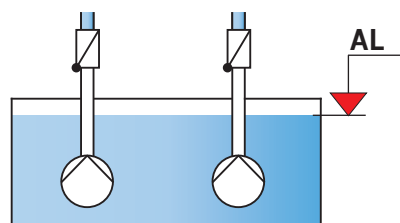


### Ending automatic mode:

- End pump 1 and 2 automatic mode,  Chapter 4.3.2 "Page view \_ Detailed view".

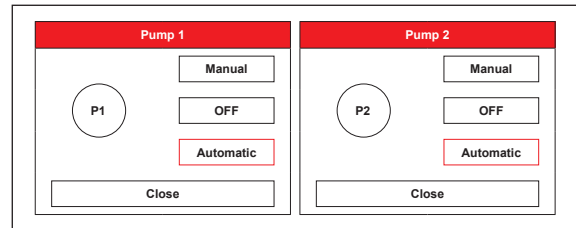


- Fill pump station chamber.
- If the water reaches the "Flood alarm" (AL) level, an alarm sounds, a fault message appears in the display panel and the LED for "Flood alarm" ● lights up:
- Interrupt the inlet.



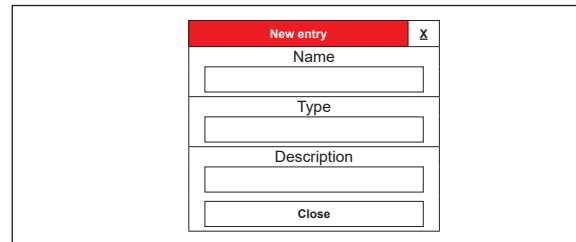
### Starting automatic mode:

- Start pump 1 and 2 automatic mode,  
📖 Chapter 4.3.2 "Page view \_ Detailed view".



### Acknowledging a malfunction:

- Acknowledge fault,  
📖 Chapter 4.3.4 "Page view \_ Fault memory".



### The trial run is finished.

Final work:

- Position the cover again
- Document settings, 📖 Chapter 4.4.1 "Touch panel"
- Document the commissioning, 📖 Appendix: "Commissioning report"

## 4.7 Requirements for operation

For the operation, self-monitoring, maintenance, emptying and general inspection of the separator system, DIN EN 858-2, DIN 1999-101, DIN EN 12056-5, DIN 1986-100, and any necessary local authority rulings and the operating and maintenance instructions must be utilised.

In addition, existing statutory provisions and water-law provisions regarding self-monitoring, maintenance and general inspection must be observed.

**IMPORTANT** The plant must only be operated according to its intended use, 📖 Chapter 1.1 "Intended Use".

The work necessary for the operator during operation is restricted to:

- Perform monthly self-monitoring of the light liquid separator,  
📖 Chapter 4.7 "Self-monitoring of the light liquid separator"
- Perform at least 2 test runs of the pump station every month,  
📖 Chapter 4.5 "Performing a test run of the pump station".
- Initiate the emptying and cleaning of the light liquid separator as required or after the control unit has signalled 80 % or 100 % of the maximum light liquid storage quantity,  
📖 Chapter 4.8.1 "Emptying and cleaning".
- Check the plant after signalling the raised water level message H-AL and, if necessary, carry out a cleaning of the coalescence insert, 📖 Chapter 4.8.2 "Cleaning the coalescence insert"



- Arrange for the quarterly maintenance of the pump station,  
📖 Chapter 5.1 "Quarterly maintenance of the pump station".
- Arrange for half-yearly maintenance of the light liquid separator,  
📖 Chapter 5.2 "Bi-annual maintenance of the light liquid separator"
- Arranging for the general inspection of the light liquid separator,  
📖 Chapter 5.3 "5-year general inspection of the light liquid separator"

## 4.8 Self-monitoring of the light liquid separator

### IMPORTANT


- The functionality and condition of the separator plant must be controlled at least once a month by the operator, owner and/or by an expert assessor using the following measures (applies only to Germany). Provisions in other countries can vary).
- If defects are identified during the tests or inspections, then the light liquid separator plant must not be put back into service until these defects have been remedied.

Controls executed, possible defects and their remedial works must be documented in the operating log.

Scope of the monitoring work:

- Check the condition of the separator chamber and the installation parts (if visible from above).
- Check the condition of the sampling point.
- Remove coarse floating matter from the water surface area.
- Visually check the permeability of the coalescent insert: If the water level in the separator chamber is more than 100 mm below the upper edge of the partition wall, proper function is ensured. Otherwise implement intermediate cleaning,  
📖 Chapter 4.8.2 "Cleaning the coalescence insert".
- Check storage capacity:
  - 80 % or 100 % of the maximum storage quantity of light liquid is automatically determined and displayed.
  - The height of the sludge level is to be determined by auxiliary means provided by the customer.


## 4.9 Emptying and cleaning the light liquid separator

The plant (separation chamber) must be drained and cleaned at least once a month by properly qualified, competent people  Chapter 1.5 "Personnel qualifications".

### IMPORTANT



- The country-related regulations must be complied with.
- Emptying should be implemented immediately when:
  - The volume of separated light liquid has reached 80% of the maximum storage capacity volume,
  - when the separated sludge volume has reached half of the sludge capture volumes,
  - before a general inspection.
- Drainage must be carried out immediately when the quantity of separated light liquid has reached 100% of the maximum storage capacity. As the switching on of the submerged pumps in the pumping station is blocked by this message, the inflow of wastewater into the plant must be prevented until after the emptying process. Otherwise there is a risk of light liquid escaping from the maintenance opening!




- Enter the date and address of an approved waste disposal company in the operating log.
- The resulting disposal volume is 1.15 x the total volume of the plant. Ensure that the disposal vehicle is large enough. Total content,  Chapter 7.1.2 "Characteristic Data".


### 4.9.1 Execute draining and cleaning



#### IMPORTANT

- Before the separator chamber is emptied, the contents of the pump station chamber must be removed or manually pumped into the sewer.
  - Sensors removed for cleaning must be in their original position after insertion,  chapter 3.4.5 "Mounting idOil sensors".
-  ■ Direct extraction for separator chamber can be obtained from ACO as an optional extra.
- For the purposes of filling the plant, surface water or process water can be used as well as fresh water, providing it complies with the local discharge conditions. If wastewater from the disposal vehicle is to be utilised for refilling, then compliance with the municipal limiting values for the wastewater must be documented accordingly. The disposal company must submit the relevant documentation to the owner or operator.



- A second coalescence insert can be utilised alternately for operation. A coalescence insert can be purchased from ACO Service as an option,  Chapter Introduction "ACO Service". This will prevent interruptions in operation, as the dirty coalescence insert can be cleaned later. The uncleaned coalescence insert should be stored temporarily in a container which is filled with water or in a plastic bag so that the dirt does not dry firmly in it.

Characters in brackets "()", refer to representation for the plant,  Chapter 2.3. "Components".

- Interrupt the wastewater infeed.
- Lift the cover (54) out of the frame and store it to one side.
- Lift the coalescence insert (47), pull it upwards above the water level, allow the water to drip off briefly. Remove the high liquid level sensor (50) from the holder (49) on the coalescence insert (47) and clean it. A grease dissolving cleaning agent and a brush can be used to clean the high liquid level sensor (50). Transport coalescence insert (47) in a collection tray and clean it at the washing area. Cleaning process,  Chapter 4.8.2 "Cleaning the coalescence insert".
- Remove both oil layer sensors (42 + 44) from the system, clean and store them on their sides. A grease dissolving cleaning agent and a brush can be used to clean the sensors.
- Insert the suction hose (vacuum truck) into the separator chamber (38).
- Switch on the suction pump and completely suck out the contents.
- Clean separator chamber (38) and built-in parts (41, 43 and 45).
- Switch on suction pump (suction vehicle) and pump out polluted cleaning water.
- Switch off suction pump (suction vehicle) and remove the suction hose from the separator chamber (38).
- Fill the separator chamber (38) with water via the inspection opening (54) or the inlet pipe (46) up to the resting water level (pipe bottom, submerged outlet pipe, 41).
- Mount the high liquid level sensor (50) again in the holder (49) on the coalescence insert (47),  chapter 4.8.2 "Cleaning the coalescence insert". "Mounting the idOil-LIQ high liquid level sensor" in section 3.4.5 "Mounting idOil sensors".
- Put the coalescence insert (47) over the guide of the submerged outlet pipe (41), position it in the centre and press down until it rests on the surrounding plate.
- Insert the cover (54) into the frame.

**Plant is ready for operation again, inflow of wastewater can take place.**

## **4.9.2 Cleaning the coalescence insert**

### **IMPORTANT**

- Checking and cleaning must be carried out immediately when the H-AL raised water level message is signalled. As the switching on of the submerged pumps in the pumping station is blocked by this message, the inflow of waste water into the plant must be prevented until the emptying process. Otherwise there is a risk of light liquid escaping from the maintenance opening!
- Clean the coalescence insert in a tub
- After completing the cleaning process, dispose of the contents of the tray via the inlet point of the plant or by an approved disposal company.
- Any soiling or pollution of the combination weaving must be completely removed.

### **Cleaning the coalescing material several times**

The coalescing material consists of high-quality combination knit (plastic/stainless steel), is very resistant to ageing and poses no physiological risk. It is therefore generally suitable for repeated cleaning and use.

### **Single use**

If there are no suitable cleaning possibilities (exceptional case) or if there are other reasons for this, a single use is also possible in exceptional cases. The soiled coalescence mats are removed from the support basket and must be disposed of in a sturdy and tightly sealed plastic bag as special waste that contains grease.

### **Removing coalescent mats**

Each coalescence mat is attached to the top and bottom of the supporting cage using tensioning straps with Velcro (outside fleece side). They must be removed. The mat can then be unrolled. The coalescent mats are fixed in reverse order. It is important to ensure that the coalescent mat is properly wrapped around the supporting cage so that no open passageway for the waste water is created. The flow through the coalescence mat must be ensured. The tension band is extremely tear-resistant and must hold the coalescence mat. Care must be taken that the coalescing mat is not clamped so tightly that it would result in damage to the coalescing mat. The coalescence mat, the support cage and the tensioning straps are wearing parts. The tensioning straps should be replaced every five years. The coalescent mats should be replaced as necessary depending on wear and tear.


### **Cleaning:**

- Pull the coalescence insert out with a lifting device (if necessary) above the water level in the separation chamber and let it drip off.

Weight of the dirty coalescent insert:

NS	3-6/600_DL50	=	kg	NS	6-10/2500_DL50	=	kg
NS	3-6/900_DL50	=	kg	NS	6-10/2500_DL100	=	kg
NS	3-6/1200_DL50	=	kg	NS	6-10/3000_DL50	=	kg
NS	3-6/1800_DL50	=	kg	NS	6-10/3000_DL100	=	kg
NS	3-6/2500_DL50	=	kg	NS	15-30/4500_DL100	=	kg

- Then pull out the coalescence insert completely and place it in a tray.
- Clean the coalescence insert in the tub:
  - Spray it with water jet (with at least a "¾" pipe and pipe pressure at least 4 bar),  
or
  - with a HP device (maximum 60 bar and cold water),  
or (only when absolutely necessary)
  - with additional cleaning agent\* and spray it with a HP device with maximum 60 bar and at 60° C.

\* Only ever utilise separating-friendly cleaning agents. Obtain recommendations from ACO,  Chapter Introduction "Service".


## **4.10 Operating log**


An operating log must be retained and managed in which documents for the respective times and results of the self-monitoring, maintenance, inspections and remedying of any faults are located, as well as the disposal of removed contents.

In addition, proofs of the detergents and cleaning agents used as well as any operating supplies must be listed in the operating log.

Operating log and test reports must be stored by the owner and/or operator and presented on demand to the local authorities responsible, the operators of the public sewage works and the testers commissioned for inspection.

## 5 Regular testing, inspection and maintenance

ACO recommends that you take out a maintenance contract. This therefore guarantees professional and on-schedule completion of the maintenance work by ACO product specialists,  Chapter Introduction "ACO Service".

Required qualifications for testing, inspection and maintenance,  Chapter 1.5 "Personnel qualifications".

Enter the tests, inspections, maintenance work and test results in the operating log:

- Inspections by the operator company
- Sampling
- Measuring: Water consumption, sludge layer and grease layer thickness, pH value, temperature
- Maintenance and general inspections
- Disposal (draining and cleaning)

**IMPORTANT** If defects are determined during inspection and tests, then the plant may only be initially put back into service when these defects have been remedied.


### 5.1 Quarterly maintenance of the pump station

Tests and/or inspections (following prior draining and cleaning) by a competent person (if operated in private areas = every 6 months):

- Test that ball valve and/or gate valve moves smoothly and does not leak, if necessary reset and grease.
- Test the function of the ball valve backflow preventer: open and clean, control the seating of the ball and seal.
- Execute internal cleaning for the pump station chamber
- Check the function of the submerged pumps.
- Check the pump parts for wear.
- Clean the level probe and check the connection cable of the level probe.
- Inspect the function of the level switch: Switching points are factory-set and can be adjusted.

## 5.2 Half-yearly maintenance of the light liquid separator


### IMPORTANT

- Biannual maintenance and inspection (after prior emptying and cleaning) is only permitted by qualified, competent people,  Chapter 1.5 "Personnel qualifications" (applies only to Germany. Provisions in other countries can vary).
- If defects are identified during the tests or inspections, then the light liquid separator plant must not be put back into service until these defects have been remedied.

Inspections executed, maintenance and test results, any defects and their remedial works must be documented in the operating log.

Scope of the maintenance work,  Chapter 4.7 "Self-monitoring of the light liquid separator".


In addition to the self-monitoring measures, the following work must also be done:

- Control the coalescence insert for damage and exchange it when required;
- Check on the visible interior areas and installed parts and coatings by means of visual inspection for recognisable damage and for anything unusual e. g. raised water level, discolouring, bubble formation, delamination, corrosion etc;
- The sensors of the warning system type idOil 30 are cleaned and checked when triggered in accordance with the manufacturer's instructions,  assembly and operating instructions "idOil -30 - Labkotec";
- Empty and clean the separator chamber in the event of exceptional contamination;
- Cleaning the sampling device.

**IMPORTANT** It should be additionally noted that even components which are not directly part of the separator plant must also be serviced and maintained regularly, otherwise the proper operation of the separator plant cannot be ensured.

## 5.3 5-year general inspection of the light liquid separator

### IMPORTANT

- A general inspection (after emptying and cleaning) of the plant must always be executed before initial commissioning and then every 5 years. Only to be executed out by qualified, competent people,  Chapter 1.5 "Personnel qualifications" (Applies only to Germany). Provisions in other countries can vary).
- If defects are identified during the tests or inspections, then the light liquid separator plant must not be put back into service until these defects have been remedied.

Inspections executed, maintenance and test results, any defects and their remedial works must be documented in the operating log.

Scope of the inspection work:

- Checking the leak tightness according to the provisions of DIN 1999-100
- Checking the structural condition
- Checking the condition of the installation parts
- Checking the warning system
- Checking the sampling device
- Checking the coalescence insert
- Checking completeness of required approvals and documents, e.g. inventory data, permits, drainage plans, operating and maintenance instructions
- Checking the completeness and plausibility of the entries in the operating log, e.g. verifications of proper disposal, constituents removed, sampling.
- Checking completeness and plausibility of marking, proof of material resistance and current operating conditions / performance



## 6 Troubleshooting



### WARNING

#### Electric shock

- Work on electrical connections must only be executed by qualified electricians.
- Disconnect the control unit from the power supply before troubleshooting.

### CAUTION

#### Flooding and risk of infection in case of improper sanitary installation

- Work on the sanitary equipment must be carried out by qualified personnel only, Chapter 1.5 "Personnel qualifications".
- Only use original spare parts.
- Only have prefabricated pumping station repairs executed by ACO or an ACO Service partner, Chapter Introduction, "ACO Service".
- Prevent contact with wastewater and wear protective equipment, Chapter 1.6 "Personal protective equipment".
- Never execute work on the connections and pipes unless they are depressurised.

#### Burns due to hot surfaces

- Allow the pump motors to cool.

### Faults on the separator



Fault processing, Assembly and operating instructions "idOil -30 - Labkotec".

### Malfunctions on the pump station

Malfunction	Cause(s)	Actions
Submerged pump not functioning	Power consumption too high (automatic shut-off)	Acknowledge malfunction If the malfunction remains: Contact ACO Service
	Control unit without power supply	Restore power supply (electrician)
	Automatic mode not switched on	Switch on automatic mode
	Pump motor is defective	Submerged pump replacement required (ACO Service)
	Submerged pump blocked by foreign bodies	Submerged pump maintenance required (ACO Service)

Malfunction	Cause(s)	Actions
Submersible pump does not pump or pumps too little or tank full	Ball valve and/or gate valve in the pressure pipe is not fully open or is closed	Fully open the ball valve or stop valve in the pressure pipe
	Pressure pipe obstructed	Clean the pressure pipe
	Impeller (submerged pump) obstructed	Submerged pump maintenance required (ACO Service)
	Pump parts are worn	Submerged pump repair required (ACO Service)
Submerged pump only runs in manual operation	Control line of the level switching is leaking, incorrectly laid, kinked or obstructed	Check the control line
	Pressure bell blocked	Clean the pressure bell
	Closed back pressure bell defective	Replace the closed pressure bell
	Level sensor is defective	Exchange the level sensor
	Float switch is defective	Exchange the float switch(es)
Knocking noises/ vibrations in the pressure pipe on switching off the submerged pump(s)	Stop delay period of the submerged pumps is too short	Increase submerged pumps after-running period

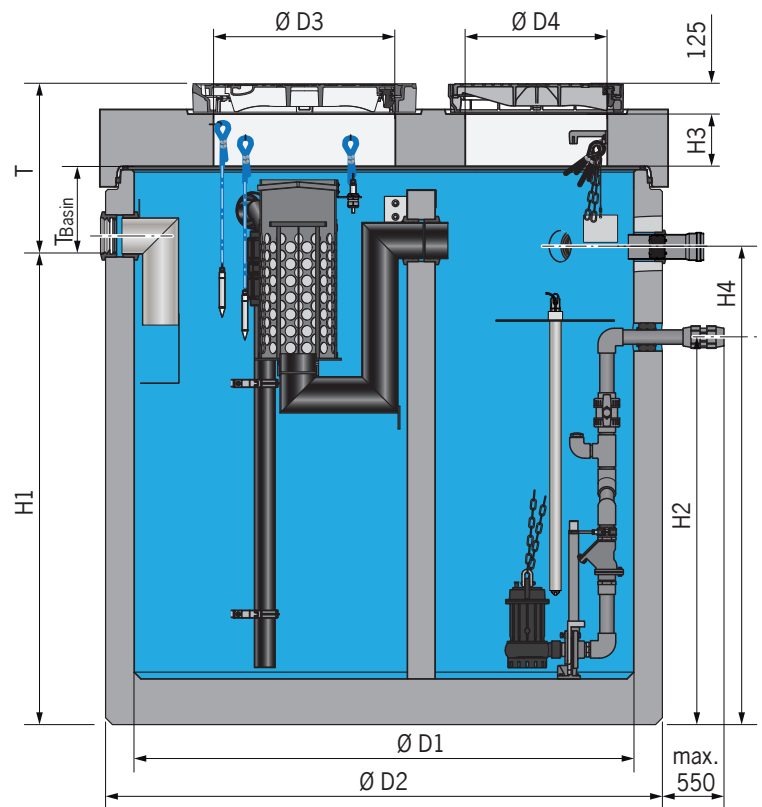
**Fault messages on the control unit**

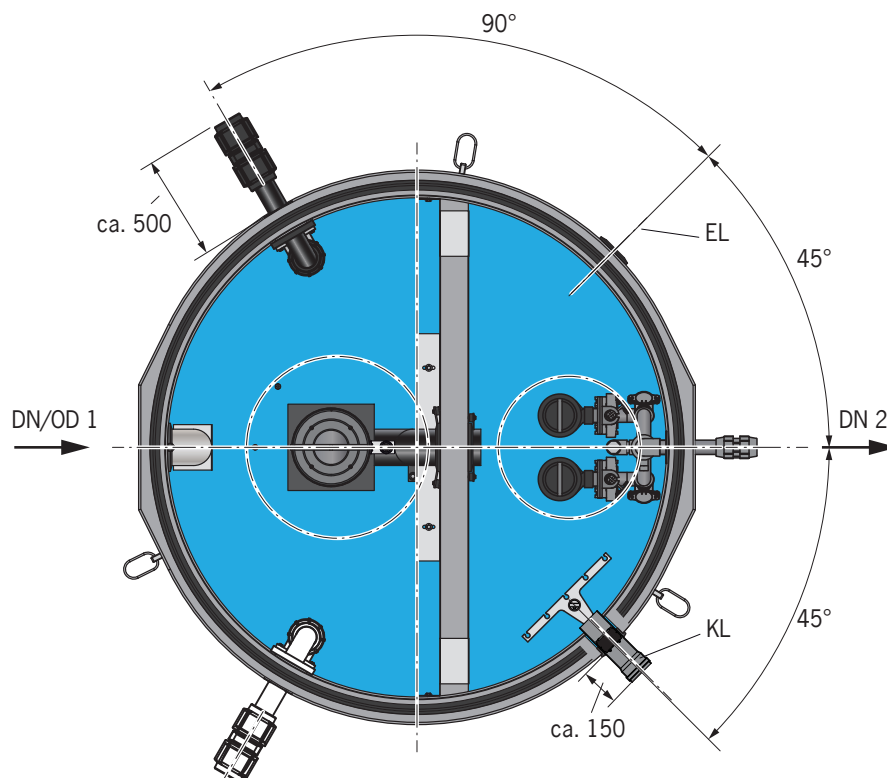
Display panel	LED display(s)	Cause(s)	Actions
Maximum current	??	Power consumption too high (automatic shut-off)	Acknowledge malfunction If the malfunction remains: Contact ACO Service
High water level alarm	??	Ball valve and/or gate valve in the pressure pipe is not fully open and/or is closed	Fully open the ball valve or stop valve in the pressure pipe
		Automatic mode is switched off	Switch on automatic mode
		Pump motor is defective	Submerged pump replacement required (ACO Service)
		Impeller (submerged pump) obstructed	Submerged pump maintenance required (ACO Service)
		Pressure pipe obstructed	Clean the pressure pipe
		Pump parts are worn	Submerged pump repair required (ACO Service)

## 7 Technical data

### 7.1 Oleolift-C

#### 7.1.1 Dimensions





NS	Dimensions [mm]											
	D1	D2	D3	D4	H1	H2	H3	H4	T <sub>basin</sub>	T	OD1	DN2
3-6/600 _DL 50	2,200	2,450	800	625	1,550	1,580	240	1,630	370	730	160	50 <sup>1)</sup>
3-6/900 _DL 50	2,200	2,450	800	625	1,550	1,580	240	1,630	370	730	160	50 <sup>1)</sup>
3-6/1200 _DL 50	2,200	2,450	800	625	1,550	1,580	240	1,630	370	730	160	50 <sup>1)</sup>
3-6/1800 _DL 50	2,200	2,450	800	625	1,550	1,580	240	1,630	370	730	160	50 <sup>1)</sup>
3-6/2500 _DL 50	2,200	2,450	800	625	1,550	1,580	240	1,630	370	730	160	50 <sup>1)</sup>
6-10/2500 _DL 50	2,200	2,450	800	625	2,070	1,700	240	2,100	380	740	160	50 <sup>1)</sup>
6-10/2500 _DL 100	2,200	2,450	800	800	2,070	1,700	240	2,100	380	740	160	100 <sup>2)</sup>
6-10/3000 _DL 50	2,200	2,450	800	625	2,070	1,700	240	2,100	380	740	160	50 <sup>1)</sup>
6-10/3000 _DL 100	2,200	2,450	800	800	2,070	1,700	240	2,100	380	740	160	100 <sup>2)</sup>
15- 30/4500 _DL 100	2,700	3,000	800	800	2,170	1,910	240	2,400	780	1,140	250	100 <sup>2)</sup>

H3, T<sub>Basin</sub> and T = Construction height with joints for circular rotating mechanical seal (15 mm) or mortar (10 mm)  
 VL = Ventilation line connection DN 100/OD = 110 mm  
 CC = Cable conduit connection DN 100/OD = 110 mm  
 1) For connecting pipe OD 63 mm  
 2) Flange connection with flange connection dimension according to DIN 2501– PN 16

### 7.1.2 Key data

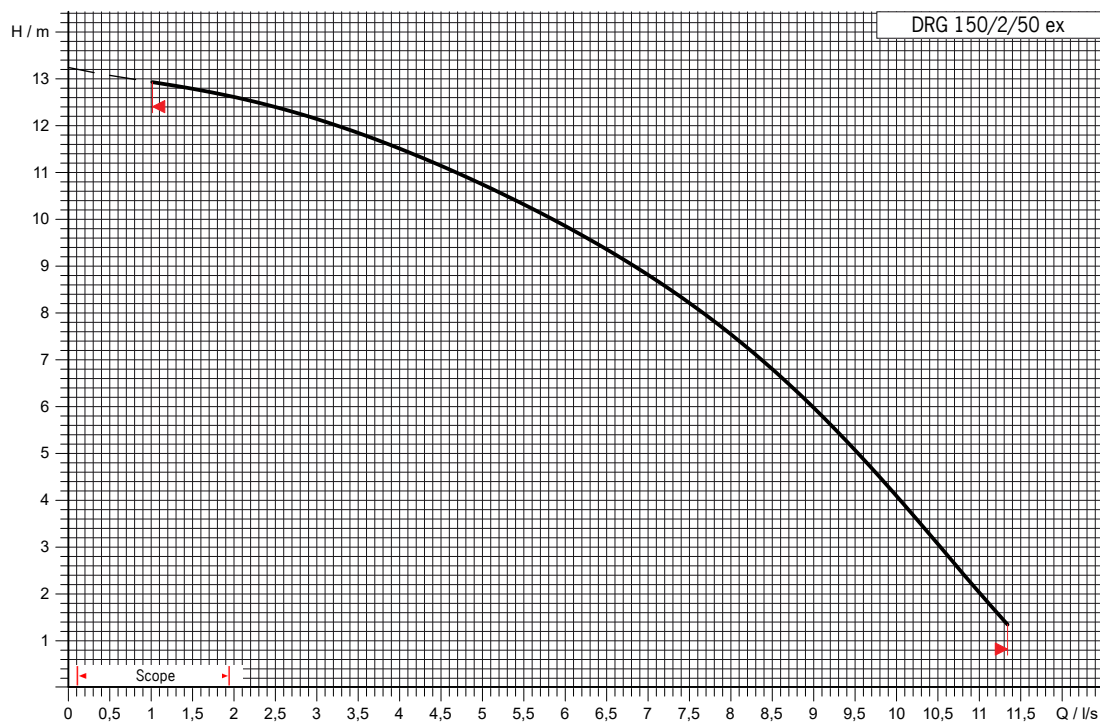
NS	Light liquid separator with integrated sludge trap:			Layer Thickness [mm]	Pump-station Useful content [l]	Weights [kg]	
	Contents [l]					Tank	Cover plate
	maximum sludge storage capacity	maximum light liquid storage capacity	Overall ***	50% sludge storage capacity **		cpl. *	cpl.
3-6/600 _DL 50	600	460	2,830	140	830	6,950	2,200
3-6/900 _DL 50	900	460	2,830	210	830	6,950	2,200
3-6/1200 _DL 50	1,200	460	2,830	280	830	6,950	2,200
3-6/1800 _DL 50	1,800	460	2,830	420	830	6,950	2,200
3-6/2500 _DL 50	2,500	460	2,830	590	830	6,950	2,200
6-10/2500 _DL 50	2,500	520	3,930	590	1,120	8,450	2,200
6-10/2500 _DL 100	3,000	520	3,930	710	1,120	8,450	2,200
6-10/3000 _DL 50	2,500	520	3,930	590	1,120	8,610	2,640
6-10/3000 _DL 100	3,000	520	3,930	710	1,120	8,610	2,640
15-30/4500 _DL 100	4,500	1,400	6,900	640	1,350	15,510	2,640
* without submerged pumps ** when these layer thicknesses are reached, the contents must be disposed of *** plus 15 % cleaning water = volume resulting from emptying the separator chamber							

## 7.2 Submerged pumps

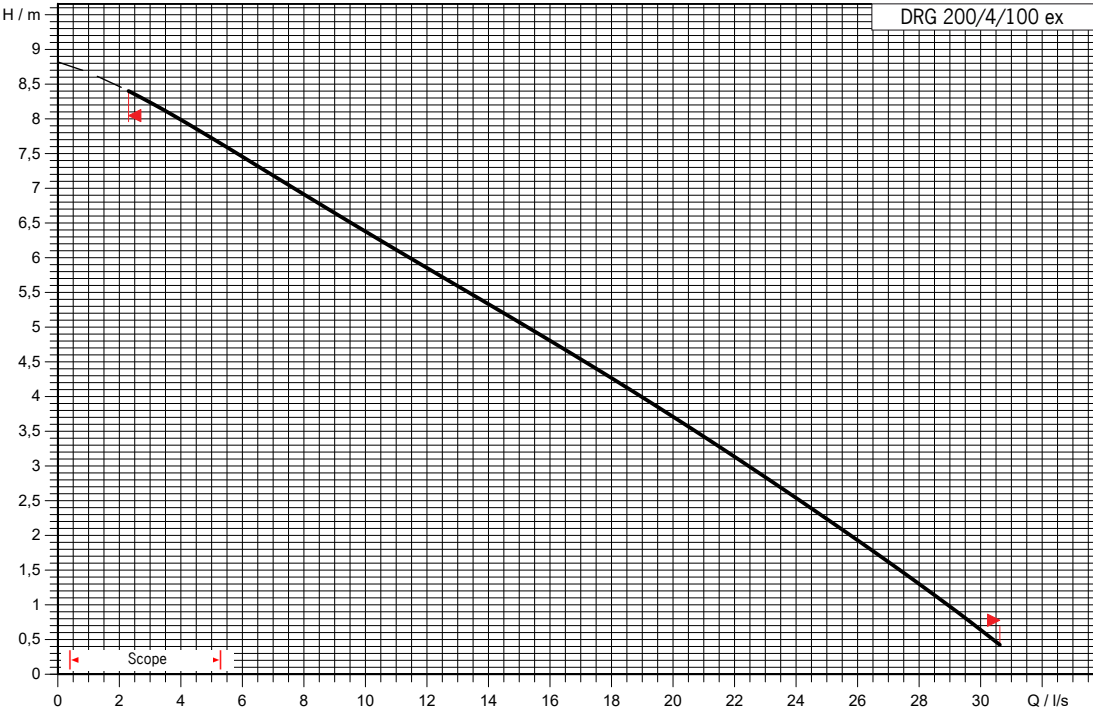
### Characteristic data and use limits

Key data	DRG 150/2/50 ex	DRG 200/4/100 ex
Type of cable for connection cable:	4G1,5 + 3x1	4G1,5 + 3x1
Pump motor operating voltage [V]:	400	400
Frequency [Hz]:	50	50
Pump motor speed [1/min.]:	2,850	1,420
Pump motor power input P1 [kW]:	1.33	1.84
Pump motor output P2 [kW]:	1.10	1.50
Pump motor nominal current [A]:	2.4	3.4
Maximum starts per hour:	30	30
Maximum ball through-flow [mm]:	10x10	45
Impeller type	Open channel impeller	Open channel impeller
Medium temperature range [°C]:	40	40
Fluid pH-value:	6–14	6–14
Fluid viscosity [mm <sup>2</sup> /s]:	1	1
Medium density [kg/ m <sup>3</sup> ]:	1	1
Weight [kg]:	28	59

### DRG 150/2/50 ex



**DRG 200/4/100 ex**






## 7.3 Shaft components

### Key data

Shaft components	Extension height [mm]	Weights [kg]
Supporting ring AR-V 625	70	50
	90	60
	110	70
	210	140
Supporting ring AR-V 800	110	110
	160	165
	210	220

## 7.4 Manhole covers Class D 400

Nominal size	Weights [kg]		
	 cpl.	 Frame	 Cover
600	113	70	43
800	125	75	50




## 7.5 Control unit

### 7.5.1 Control unit (pump station chamber)

#### Key data


Key data	Values
Operating voltage:	~ 400 V (L1, L2, L3, N, PE), 50 Hz
Control voltage:	
Motor current limitation	
Power intake (contactors operated):	
Connected load, maximum:	
Protection type, control unit:	
Isolated alarm contact:	
Fuse (alarm output):	
Rechargeable accumulator (mains-independent alarm):	
Alarm volume:	
MultiControl Duo dimensions:	
* incl. cable glands	

#### Circuit diagram

The complete circuit diagram is enclosed with the control unit and if it is lost it can be re-ordered from ACO Service,  Chapter Introduction "Service".

### 7.5.2 Control unit (separator chamber) /idOil-30



Characteristic data,  Assembly and operating instructions for "idOil-30 – Labkotec".

# Appendix: Commissioning report

Commissioning and instruction of a qualified person takes place in the presence of the authorised acceptance inspection representative and the plant operating company.

Commissioning date: \_\_\_\_\_

Handover date: \_\_\_\_\_

**Oleolift-C**

Oleolift-C_NS										Submerged pumps				
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3-6/600_DL50	3-6/900_DL50	3-6/1200_DL50	3-6/1800_DL50	3-6/2500_DL50	6-10/2500_DL50	6-10/2500_DL100	6-10/3000_DL50	6-10/3000_DL100	15-30/4500_DL100	DRF 150/2/G50H ex	DRF 200/2/G50H ex	DRF 100/4/100A ex	MAN 400/4/80 ex	

**Use location**

Building/room: \_\_\_\_\_

Use: Commercial company

Street: \_\_\_\_\_

Town/city: \_\_\_\_\_

**Responsible persons**

	Competent person	Authorised acceptance inspection representative	Operating company
Name:			
Phone no.:			
Fax no.:			
Email:			
Address:			

### Check list for commissioning (Qualified person)

Two trial runs are required before, during and/or after the commissioning,  
 📖 Chapter 4.5 “Performing a trial run for pump station”.

Checks	OK	Not OK
Water seal in separator chamber	<input type="radio"/>	<input type="radio"/>
Electrical fusing of the plant in accordance with the IEC regulations or national and local regulations	<input type="radio"/>	<input type="radio"/>
Rotational direction of pump motors	<input type="radio"/>	<input type="radio"/>
Operating voltage and frequency	<input type="radio"/>	<input type="radio"/>
Motor protection switch: Test by briefly unscrewing individual fuses (two-phase run)	<input type="radio"/>	<input type="radio"/>
Ball check valve in the pressure pipe: Function testing, actuation, leak tightness	<input type="radio"/>	<input type="radio"/>
Ball valve and/or gate valve in the pressure pipe: function test, actuation, open position, leak tightness	<input type="radio"/>	<input type="radio"/>
Fixing of the pressure pipe	<input type="radio"/>	<input type="radio"/>
Switching and setting of the switching on levels in the control menu	<input type="radio"/>	<input type="radio"/>
Switching and adjustment of the switching points (separator chamber)	<input type="radio"/>	<input type="radio"/>
Leak tightness: Fittings, connections, leak tightness inspection for plant	<input type="radio"/>	<input type="radio"/>
Fault and malfunction signalling equipment: Fault messages in the display panel, LED fault displays, acoustic alarm, telecommunication equipment (group fault)	<input type="radio"/>	<input type="radio"/>

### Instruction (by installer company)

Instruction	Remarks	Yes	No
Instruction:	Functions, control, operating information, troubleshooting, maintenance obligations	<input type="radio"/>	<input type="radio"/>
Handover:	Instructions for Use	<input type="radio"/>	<input type="radio"/>

### Remarks:

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Signature of qualified person: \_\_\_\_\_  
 Signature of authorised acceptance  
 inspection representative: \_\_\_\_\_

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