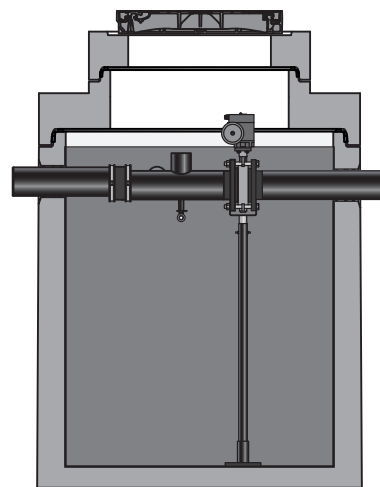


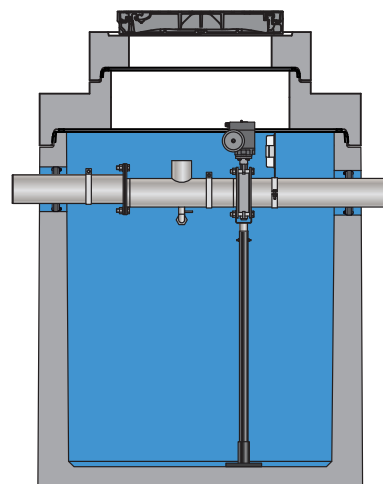
Protector-D retaining system

**for water-polluting liquids, with general construction approval
Z-74.1-70, for below ground installation**

**Jointless basin made
from reinforced
concrete with interior
liner made from
polyethylene**



**Jointless basin made
from reinforced
concrete with special
interior coating**



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.

Introduction

ACO Tiefbau Vertrieb GmbH (referred to as ACO in the following) thanks you for your trust and hands over to you a product which is state-of-the-art and has been tested for proper condition as part of quality controls carried out before 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, see "Product catalogue":  <http://katalog.aco-tiefbau.de>

For further information on the retaining system, ordering spare parts and services, e.g. maintenance contracts, general inspections, please contact ACO Service.


ACO Service Tel.: + 49 (0) 36965 819-444

Im Gewerbepark 11c Fax: + 49 (0) 36965 819-367

36457 Stadtlengsfeld, Germany service@aco.com


Target group

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

The personnel must have the appropriate qualifications,  Chap. 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 information on the guarantee, see General Terms and Conditions of Business ("Allgemeine Geschäftsbedingungen"),

 <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



Read the safety instructions before installing and commissioning the retaining system, in order to prevent personal injuries and damage to property.

1.1 Intended use


Surfaces (covered or open) where water-polluting liquids are transhipped, can be connected to the sewage system via the Protector-D retaining system. During the transshipping procedure, the retaining device is actuated and any water-polluting liquids that escape (with or without surface water) are retained in the Protector-D.

The following versions of Protector-D with differentiating product features are available as standard (complete feature comparison  Chap. 2.1 "Product features"):

	Protector-D			
	With interior liner		With special interior coating	
	A*	B*	C*	D*
Flap disc	Stainless steel / Halar coated (ECTFE)	Stainless steel / Halar coated (ECTFE)	Stainless steel / Halar coated (ECTFE)	Stainless steel / Halar coated (ECTFE)
Sealing sleeve	EPDM	FPM	EPDM	FPM
Swivel drive	Without Ex-protection	Without Ex-protection	With Ex-protection	With Ex-protection
Piping	Polyethylene (PE-HD)	Polyethylene (PE-HD)	Stainless steel	Stainless steel
* Design code letter				



Further combinations upon request!

The following substances may be introduced to the various versions (differentiation per code letter,  table above) of the Protector-D:

No.	Substance to be introduced	Protector-D			
		A	B	C	D
1	Petrol fuel, 'Super' and 'Normal' (per DIN EN 228: 2004) with max. 5% by vol. bio-alcohol	-	-	-	+
1a	Petrol fuel, 'Super' and 'Normal' (per DIN EN 228: 2004) with max. 20% by vol. bio-alcohol	-	-	-	+
2	Aviation fuel	-	-	-	+

No.	Substance to be introduced	Protector-D			
		A	B	C	D
3	<ul style="list-style-type: none"> ■ Heating oil EL (per DIN 51 603-1) ■ Unused combustion engine oils ■ Unused motor vehicle transmission oils ■ Mixtures of saturated and aromatic hydrocarbons with aromatics content of ≤ 20% by weight and a flashpoint > 60°C 	-	-	-	+
3b	Diesel fuel (per DIN EN 590: 2004) with max. 20% by vol. bio-diesel (per DIN EN 14214 2003-11)	-	-	-	+
4	All hydrocarbons as well as mixtures containing benzene with max. 5% by vol. benzene	-	-	-	+
4a	Benzene and mixtures containing benzene	-	-	-	+
4b	Crude oils	-	-	-	+
4c	Used combustion engine oils and used motor vehicle transmission oils with a flashpoint > 55°C	-	-	-	+
5	Monohydric and polyhydric alcohols (up to max. 48% by vol. methanol), glycol ethers	+	-	+	-
5a	All alcohols and glycol ethers (e.g. brake fluids, ethylene glycol monobutyl ether (EGMBE), diethylene glycol monobutyl ether (DGMBE), ethylene glycol monoethyl ether (EGEE), propylene glycol-n-butyl ether (PnB), propylene glycol methylether (PGME))	-	-	+	-
5b	Monohydric and polyhydric alcohols ≥ C2 (e.g. ethylene glycol (frost protection), glycerine, isopropanol)	-	-	+	-
6	Halogenated hydrocarbons ≥ C2 (e.g. DDE, DDD, chlordane)	-	-	-	+
6b	Aromatic halogenated hydrocarbons (e.g. DDT, chlorobenzene, 2-chlorobenzene, CS gas, eosin, merbromin, tetrabrombisphenol, decabromdiphenylether (flame retardant), fluorobenzene, bromobenzene, chlorobenzene, iodobenzene)	-	-	-	+
7b	Bio-diesel (per DIN EN 14214: 2003-11)	-	+	-	+
8	Aqueous solutions aliphatic aldehydes up to 40% (e.g. formaldehyde, acetaldehyde)	+	-	+	-
8a	Aliphatic aldehydes and their aqueous solutions	-	-	+	-
9	Aqueous solutions of organic acids (carbonic acids: acetic acid, citric acid, acrylic acid, oxalic acid, fumaric acid, benzoic acid, nicotinic acid, abietic acid) up to 10% as well as their salts (in aqueous solution)	-	+	-	+
10	Mineral acids up to 20% as well as acid hydrolyzing, inorganic salts in aqueous solution (pH < 6), except for hydrofluoric acid and oxidising acids and their salts (e.g. sulphuric acid, z. B. nitric acid, phosphoric acid, hydrochloric acid, silicic acid, boric acid)	+	+	+	+
11	Inorganic alkalis as well as alkali hydrolyzing, inorganic salts (e.g. sodium chloride, calcium chloride) in aqueous solution (pH > 8), with the exception of ammonia solution and oxidising salt solutions (e.g. hypochlorite)	+	-	+	-
12	Aqueous solutions of inorganic salts (e.g. ammonium chloride, zinc chloride, potassium chloride, barium chloride) with a pH value between 6 and 8	+	-	+	-
14	Aqueous solutions of organic tensides, tensides of natural origins (e.g. soaps that have been made through the saponification of natural raw materials) fatty alcohol polyglycol ethers (FAE), fatty alcohol sulphates (FAS), fatty alcohol ether sulphates, fatty alcohol polyglycol ethers, methyl ester sulphonates, fatty acid methyl esters, alkyl polyglycosides	+	+	+	+

No.	Substance to be introduced	Protector-D			
		A	B	C	D
+ = Suitable - = Unsuitable					

Other possible uses and changes are not allowed. 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.

1.2 Special provisions

Protector-D has a general construction approval with approval number Z-74.1-70. The regulations cited there and in these operating instructions must be complied with:

Characteristics

The material composition and design arrangement of the retaining system comply with the general construction approval.

Monitoring

The compliance of the product with the approval is guaranteed through regular production checks at the factory and through external monitoring carried out twice per year.

Design and dimensioning

- The installation of the retaining system must be expertly planned.
- Design documentation for the installation of the retaining system must be generated. In doing so, the regulations and provisions relating to water legislation must be taken into account along with the anticipated loads.
- Any buoyancy safeguard required is incorporated into every new planning.
- The planning of the system will include the verification that the components of the retaining system are resistant to the water-polluting liquids.

Installation

The installation of the retaining system shall be undertaken only by companies that are considered qualified contractors for such tasks in the sense of § 62 (AwSV) of the ordinance dealing with systems for handling water-polluting substances.


Declaration of conformity

- The compliance of the each version of the design of the retaining system installed with the provisions of the general construction approval must be confirmed with a declaration of conformity by the company carrying out the installation.
- The records must be available on-site during the construction period. After the conclusion of the work, they must be retained by the system operator for at least 5 years and must be submitted upon request.

Operation

- According to § 46 (AwSV) of the ordinance dealing with systems for handling water-polluting liquids, the system operator is obligated to carry out continuous monitoring for leaks and the functional capability of the retaining system.
- The retaining system shall be operated only by persons who have been trained for this purpose. The relevant health and safety regulations must be observed during all work.
- For the maintenance, repair and cleaning of the retaining system, the system operator is obligated to commission only those companies that are qualified contractors for such work in the sense of § 62 (AwSV) of the ordinance dealing with systems for handling water-polluting substances.

Checks

- A final commissioning check of the retaining system installed, to ensure that it complies with water-related legislation, is carried out by an expert by means of a functioning test and visual inspection of all areas of the retaining system.
- The retaining system is to be checked every six months or after every fifth filling procedure with regard to its protective function. ACO Service would be pleased to undertake the servicing and maintenance work professionally. Maintenance contract request  tiefbau@aco.com.
- A statement should be made with regard to the results of the testing within the scope of the certificates to be issued in accordance with occupational safety or water-related legislation.

Operating log







The operating log (can also be acquired from ACO as an option) must be maintained.

1.3 Personnel qualifications

Activities	Person	Knowledge
Layout, operational changes	Planners	Knowledge in the sense of § 17 (AwSV) of the ordinance dealing with systems for handling water-polluting substances.
Below ground installation	Skilled persons	Qualified contractors in the sense of § 62 (AwSV) of the ordinance dealing with systems for handling water-polluting substances.
Installation	Skilled persons	Qualified contractors in the sense of § 62 (AwSV) of the ordinance dealing with systems for handling water-polluting substances.
Electrical installation	Electrician	Work on electrical connections to power supply must be carried out by qualified electricians only
Commissioning, operational monitoring and checking	Qualified persons	Expert in the sense of § 47 (AwSV) of the ordinance dealing with systems for handling water-polluting substances.
Maintenance, repair	Qualified persons	Qualified contractors in the sense of § 62 (AwSV) of the ordinance dealing with systems for handling water-polluting substances.
Disposal	Skilled persons	Qualified contractors in the sense of § 62 (AwSV) of the ordinance dealing with systems for handling water-polluting substances.




1.4 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 hands from infections (moisture-tight protective gloves) and minor bruises and cuts, especially during transport, installation, maintenance and dismantling and contact with water-polluting liquids*.
	Protective clothing protects the skin from minor mechanical effects and infections.
	A safety helmet protects against head injuries, e.g. in case of falling objects or knocks in the event of low room heights.
	Safety glasses and goggles protect eyes, especially during commissioning, maintenance and repair.
*  Safety datasheet for the water-polluting liquids	

1.5 Warnings

Warnings are identified through the following warning signs and signal words.

Warning symbols and signal words		Meaning	
	DANGER	Personal injuries	Hazard with a high degree of risk which, if not prevented, results in death or severe injuries.
	WARNING		Hazard with a moderate degree of risk which, if not prevented, can result in death or severe injuries.
	CAUTION		Hazard with a low degree of risk which, if not prevented, can result in minor or moderate injuries.
	IMPORTANT	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.

1.6 Transport and storage

IMPORTANT Note during storage and transport:

- Store the system parts in frost-proof premises.
- If intermediate storage is required, the basin must be protected from water ingress.
- Never drive the forks of a fork-lift truck or lift truck directly under the system 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

1.7 Decommissioning and disposal

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

- Completely drain and clean the system 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

2.1 Product features

		Protector-D	
		With interior liner	With special interior coating
Types		1.4 / 2.5 / 3.5 / 5.0 and 10.0	1.4 / 2.5 / 3.5 / 5.0 and 10.0
Technical features		<ul style="list-style-type: none"> ■ General construction approval Z-74.1-70 ■ Inner liner, durable interior cladding made from polyethylene (PE-HD) ■ Jointless basin made from reinforced concrete (DIN 4281) with type-approved statics and active exterior protection appropriate for concrete applications to protect against weak chemical attack per DIN 4030 (e.g. 200 – 5,800 mg sulphate/l) ■ Through-piping DN 150 made from polyethylene (PE-HD) with overflow and check flap incl. electrical swivel drive ■ Check flap: <ul style="list-style-type: none"> □ Flap disc made from stainless steel / Halar coated (ECTFE) and sealing sleeve made from EPDM (optional) □ Flap disc made from stainless steel / Halar coated (ECTFE) and sealing sleeve made from FPM (optional) ■ Swivel drive without Ex-protection, with manual emergency actuation ■ Position switch for electrical swivel drive (optional) ■ DN 100 connection (in the basin) for ventilation lines fitted on-site ■ DN 100 connection (in the basin) for blank cable pipe fitted on-site with sealing insert for sealing the cable feed-throughs ■ Shaft components made from concrete for creating the minimum installation depth: <ul style="list-style-type: none"> □ Sleeve formation per DIN 4034 part 1 □ Joint sealing by means of circular rotating mechanical seal with integrated load relief ■ Odour-proof screwed cover ■ Alarm device with build-up sensor (optional) 	<ul style="list-style-type: none"> ■ General construction approval Z-74.1-70 ■ Interior coating of the collecting space with DIBt-tested coating system, crack-bridging, electrically conductive, processed by qualified contractor in accordance with Section 19 WHG (Water Resources Law) ■ Jointless basin made from reinforced concrete (DIN 4281) with type-approved statics and active exterior protection appropriate for concrete applications to protect against weak chemical attack per DIN 4030 (e.g. 200 – 5,800 mg sulphate/l) ■ Through-piping DN 150 made from stainless steel (1.4571) with overflow, check flap incl. electrical swivel drive and connection box for on-site connection to the equipotential bonding system ■ Check flap: <ul style="list-style-type: none"> □ Flap disc made from stainless steel / Halar coated (ECTFE) and sealing sleeve made from EPDM (optional) □ Flap disc made from stainless steel / Halar coated (ECTFE) and sealing sleeve made from FPM (optional) ■ Swivel drive with Ex-protection and manual emergency actuation ■ Position switch for electrical swivel drive (optional) ■ DN 100 connection (in the basin) for ventilation lines fitted on-site ■ DN 100 connection (in the basin) for blank cable pipe fitted on-site with sealing insert for sealing the cable feed-throughs ■ Shaft components made from concrete for creating the minimum installation depth: <ul style="list-style-type: none"> □ Sleeve formation per DIN 4034 part 1 □ Joint sealing by means of circular rotating mechanical seal with integrated load relief ■ Odour-proof screwed cover ■ Alarm device with build-up sensor (optional)

Protector-D		
	With interior liner	With special interior coating
Operating signals	<ul style="list-style-type: none"> ■ Manual shut-off of the sewerage connection during the filling process ■ Automatic overflow or retention of any water-polluting liquid that may arise ■ Automatic display of liquid in the retaining system (optional) 	<ul style="list-style-type: none"> ■ Manual shut-off of the sewerage connection during the filling process ■ Automatic overflow or retention of any water-polluting liquid that may arise ■ Automatic display of liquid in the retaining system (optional)



Further versions upon request.

2.2 Product identification (type plate)

A type plate is attached to the shaft construction, underneath the cover. The following data must be copied from there for information and made available in the event of any enquiries:

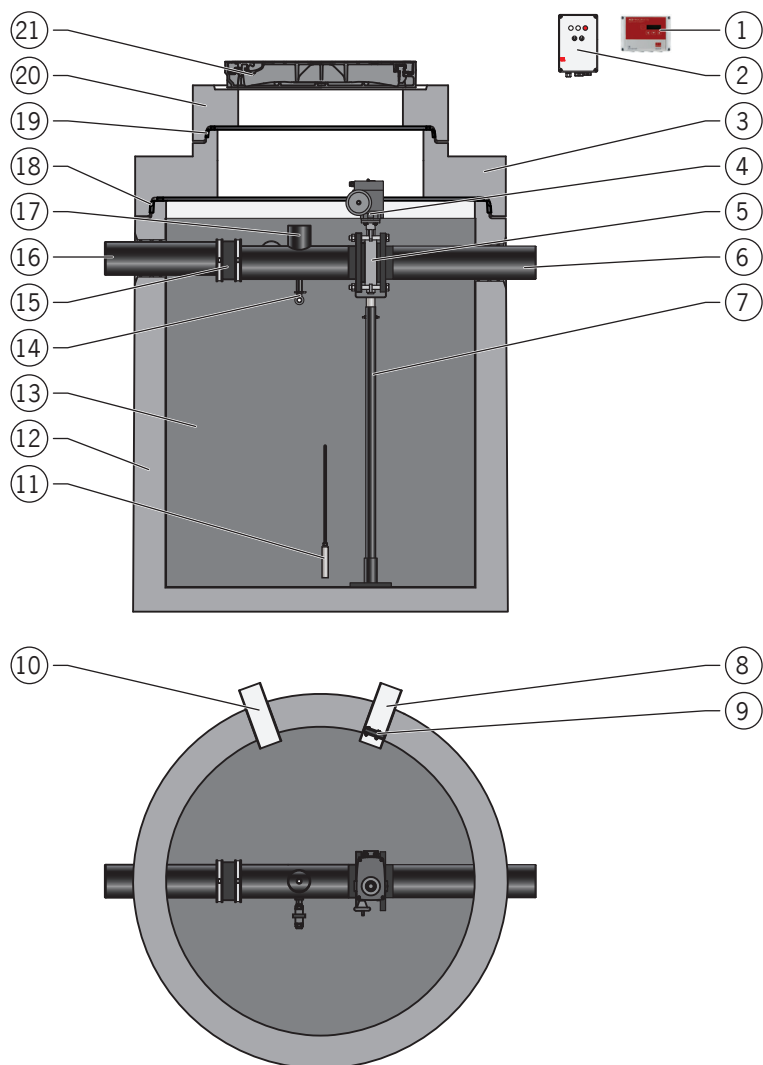
- Name and type
- Approval number
- Manufacturer
- Date of manufacture

Information for construction:

- Coating / plastic cladding
 - Name
 - Approval number
- Pipeline material
- Information on the check flap:
 - Flap disc material
 - Sealing sleeve material
- Sealing material

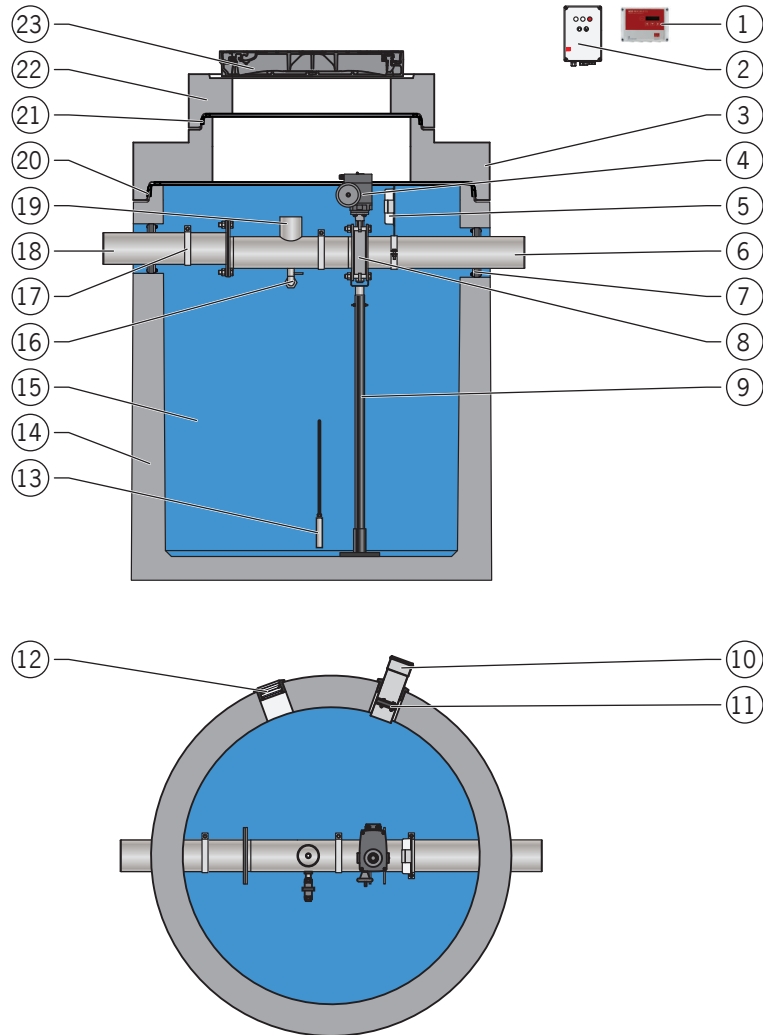
2.3 Equipment or components

2.3.1 Protector-D with inliner



- | | |
|--|--|
| 1 = Alarm device evaluation unit (optional) | 12 = Basin |
| 2 = Position switch (optional) | 13 = Inner liner |
| 3 = Transition plate | 14 = Drain cock |
| 4 = Electrical swivel drive | 15 = Connecting sleeve |
| 5 = Check flap | 16 = Supply pipe |
| 6 = Drain pipe | 17 = Overflow |
| 7 = Support | 18 = Circular rotating mechanical seal |
| 8 = On-site blank cable pipe connection | 19 = Circular rotating mechanical seal |
| 9 = Cable feed-through (sealing insert) | 20 = Adapter plate |
| 10 = Connection for on-site ventilation line | 21 = Cover |
| 11 = Build-up sensor (optional) | |

2.3.2 Protector-D with special interior coating



- | | |
|--|--|
| 1 = Alarm device evaluation unit (optional) | 13 = Build-up sensor (optional) |
| 2 = Position switch (optional) | 14 = Basin |
| 3 = Transition plate | 15 = Special coating |
| 4 = Electrical swivel drive | 16 = Drain cock |
| 5 = Potential compensation connection box | 17 = Clamp |
| 6 = Drain pipe | 18 = Supply pipe |
| 7 = Sealing insert | 19 = Overflow |
| 8 = Check flap | 20 = Circular rotating mechanical seal |
| 9 = Support | 21 = Circular rotating mechanical seal |
| 10 = On-site blank cable pipe connection | 22 = Adapter plate |
| 11 = Cable feed-through (sealing insert) | 23 = Cover |
| 12 = Connection for on-site ventilation line | |

2.4 Function

No diversion of water-polluting liquids:

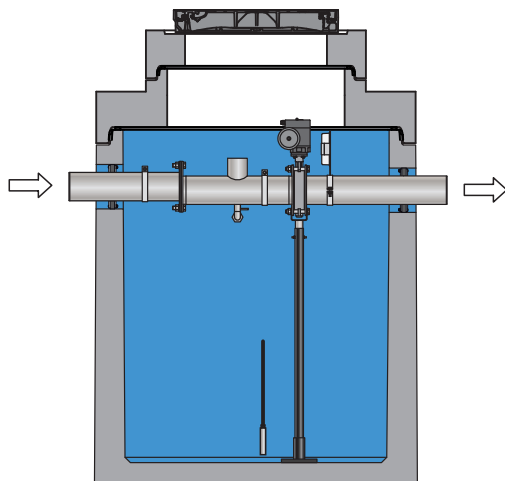


Illustration: Shutdown – Check flap open

Any surface water arising runs unimpeded through the "through-piping" of the retaining system and into the sewage system.

Diversion of water-polluting liquids:

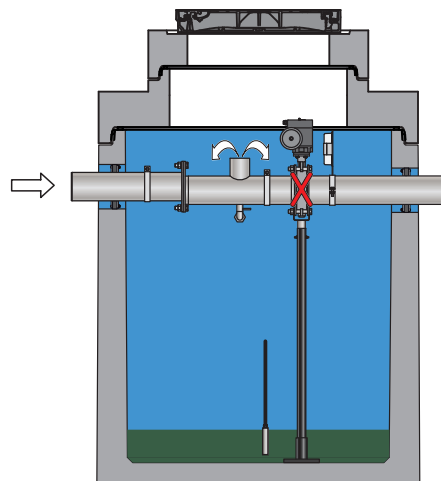


Illustration: Operation (transshipping) – Check flap closed

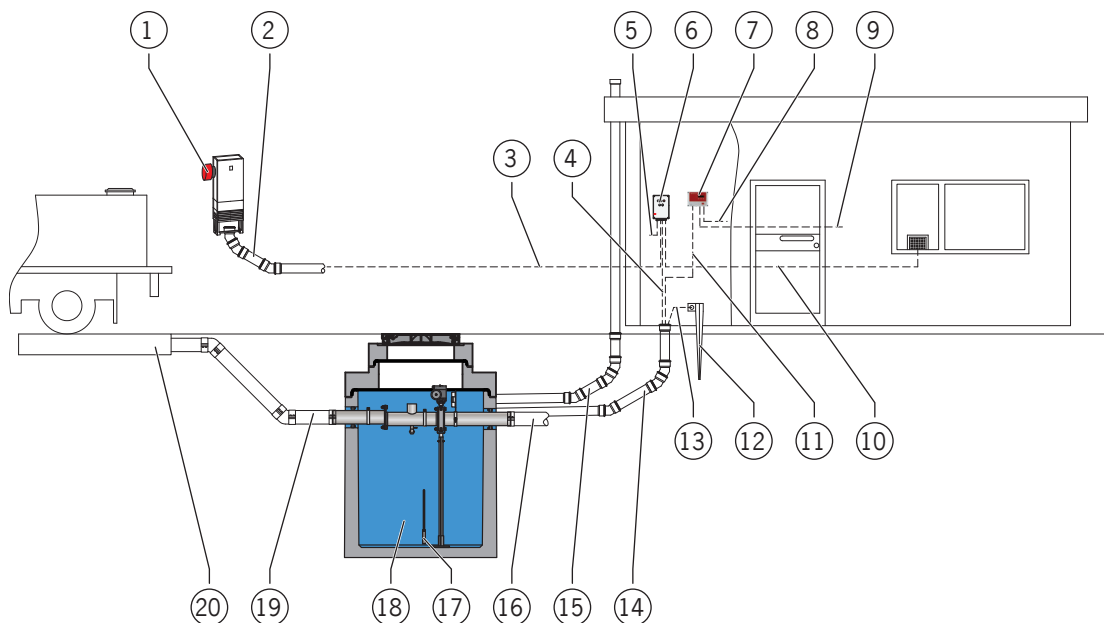
Any water-polluting liquids arising (e.g. in the event of leaks) and any surface water arising runs through the overflow and into the basin of the retaining system. Here the liquids are retained, registered by the build-up sensor (optional) in the container and displayed at the evaluation unit (optional) or reported by the buzzer.

3 Installation

IMPORTANT Assure required qualifications of personnel, 📖 Chap. 1.2 "Special provisions" and chapter 1.3 "Personnel qualifications".

3.1 Installation example (schematic diagram)

The example shows the installation of a Protector-D retaining system. The components used can differ, depending on the installation situation.



- | | |
|---|---|
| 1 = On-site external control contact for controlling the swivel drive | 10 = On-site cable 10 x 1.5 mm ² (NYY-J or NYM-J), position switch potential-free contact connection |
| 2 = On-site blank pipe (deflection ≤ 45° bend) with draw-wire | 11 = ACO sensor cable, blue 2 x 0.75 mm ² , connection of build-up sensor to alarm device (optional) |
| 3 = On-site cable 3 x 1.5 mm ² (NYY-J or NYM-J), connection of external control contact to position switch | 12 = On-site earthing rod (only with Ex-version) |
| 4 = On-site cable 7 x 1.5 mm ² (NYY-J), connection of swivel drive to position switch | 13 = On-site cable 1 x 16 mm ² (NYY-J), potential compensation connection (only with Ex-version) |
| 5 = On-site cable 3 x 1.5 mm ² (NYM-J), position switch power supply, max. 10 A protection | 14 = On-site blank cable pipe DN 100 (deflection ≤ 45° bend) with draw-wire |
| 6 = Position switch (optional) | 15 = On-site ventilation line DN 100 |
| 7 = Procurat alarm device (optional) | 16 = On-site drainage line DN 150 |
| 8 = On-site cable 3 x 1.5 mm ² (NYM-J), alarm device power supply, max. 10 A protection (optional) | 17 = Build-up sensor (optional) |
| 9 = On-site cable, alarm device potential-free contact connection | 18 = Protector-D retaining system |
| | 19 = On-site inlet line DN 150 |
| | 20 = On-site transshipment station for water-polluting liquids |

3.2 Earthworks

3.2.1 Specifications

Installation site

Load class D 400: truck trafficable – the safe solution for heavy goods vehicles and storage areas and side strips (hard shoulders) of carriageways.



Other installation situations upon request.

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

If the constructional prerequisites necessitate a buoyancy safeguard, observe the following:

We would be happy to calculate adequate reinforcement (incl. reinforcement drawing) for you for a processing fee. The reinforcement must be approved by a structural engineer to comply with construction principal liability. We would be happy to carry this out 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.
- Max. ground pressure is 15.5 N/cm²
- Works are to be carried out such that the system and the lines are not damaged and that they remain in place. Subsequent settlement of system parts must 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.

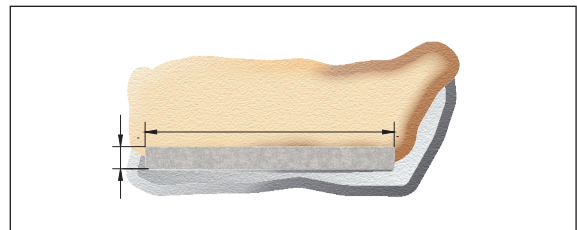
Slings for transport using lifting gear

- Basin
 - Type 1.4 – 5.0: Use 3-part harness with at least 5 m long strands of chain or cables with load hooks and NG 5 shackles per DIN 82101
 - Type 10.0: Use 4-part harness with at least 5 m long strands of chain with load hooks and load balancing
- Transition plate: Use 3-part harness with at least 2 – 3 m long strands of chain or cables with load hooks and NG 1 shackles per DIN 82101
- Cover, adapter plate and manhole rings: Use shaft ring harness with claws

3.2.2 Digging the excavation

Requirement: Excavations shall have a diameter at least 1,500 mm larger than the external diameter of the basin.

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



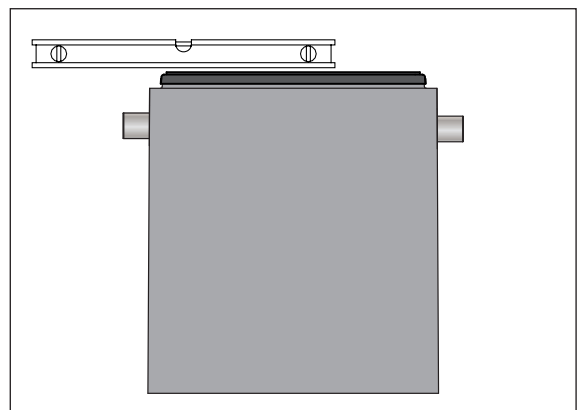
3.2.3 Installation of the basin

IMPORTANT Transport eyebolts are designed for the load of the basin. Do not transport with shaft components placed on top.


- Place basin in the pit and align horizontally.

Complete weights of the basin:

- 1.4 2,840 kg
- 2.5 4,400 kg
- 3.5 5,920 kg
- 5.0 6,720 kg
- 10.0 15,310 kg



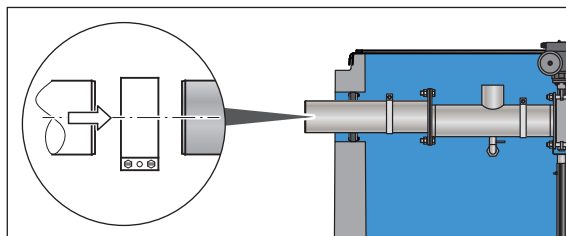
3.2.4 Laying and connecting the on-site inlet line

IMPORTANT Before the inlet line is connected, the excavations must be filled up to this level,  Chap. 3.2.9 “Backfill excavations”.


Specifications:

- Pipe nominal size DN 150, OD = 160 mm
- 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 basin with a free slope of at least 1.5 – 2%.
- Use materials resistant to any water-polluting liquids that may arise.

→ Connect on-site inlet line (e.g. with pipe connector).



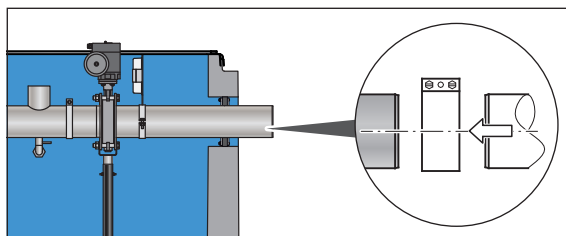
3.2.5 Laying and connecting the on-site drainage pipe

IMPORTANT Before the drainage line is connected the excavations must be filled up to this level,  Chap. 3.2.9 “Backfill excavations”.

Specifications:

- Pipe nominal size DN 150, OD = 160 mm
- Lay up to the sewage system with a free slope of at least 1.5 – 2%.
- If the bottom of the drainage line pipe lies underneath the backflow level (highest level up to which the water in a drainage system can rise), drainage should be implemented via a downstream lifting system.

→ Connect on-site drainage line (e.g. with pipe connector).



3.2.6 Laying and connecting the on-site ventilation line

IMPORTANT Before the on-site ventilation pipe is connected, the excavations must be backfilled up to this level, 📖 Chap. 3.2.9 “Backfill excavations”.

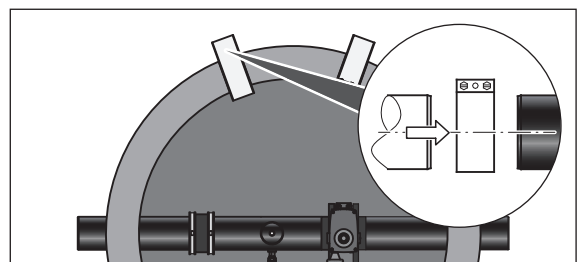
Specifications:

- 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.
- Use materials resistant to any vapours that may arise from the water-polluting liquids.

The connection on the basin is formed as a spigot (Protector-D with inner lining) as a socket (Protector-D with special interior coating).

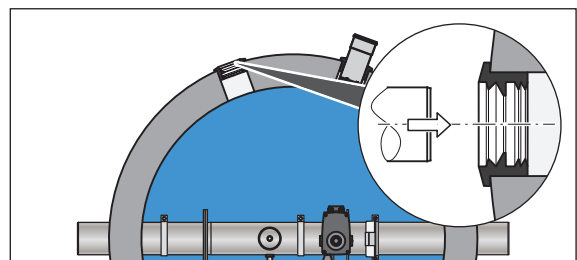
Protector-D with inliner

- Connect on-site ventilation line (e.g. with pipe connector).



Protector-D with special interior coating

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



3.2.7 Laying and connecting the on-site blank cable pipe

IMPORTANT Before the on-site blank cable pipe is connected, the excavations must be backfilled up to this level, 📖 Chap. 3.2.9 “Backfill excavations”.

Specifications:

- Pipe nominal size DN 100, OD = 110 mm
- The blank cable pipe must be laid from the place in which the position switch is installed (plant room) up to the basin with a gradient of at least 1.5 – 2 %.
- Use $\leq 45^\circ$ pipe bends.
- Insert good quality draw-wire directly into the blank pipe or lay the swivel drive

Protector-D retaining system

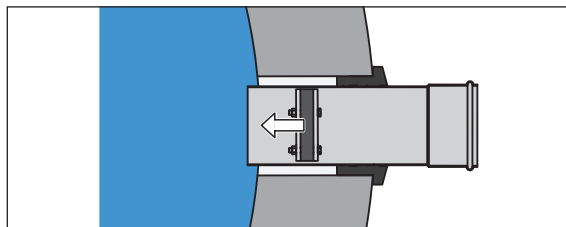
Installation

connecting cable or build-up sensor (optional) connecting cable at the same time.

- Protect the connection cable ends against water ingress.

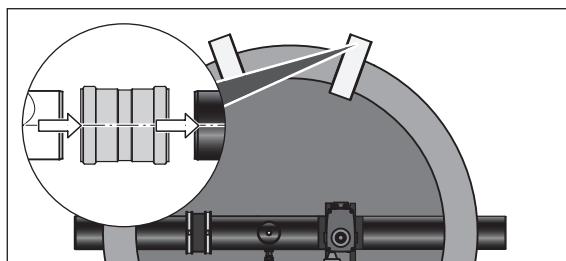
Cable feed-through is delivered fitted in the connecting pipe for the on-site blank cable pipe.

- Release the cable feed-through clamping, remove from the connecting pipe and set to the side.



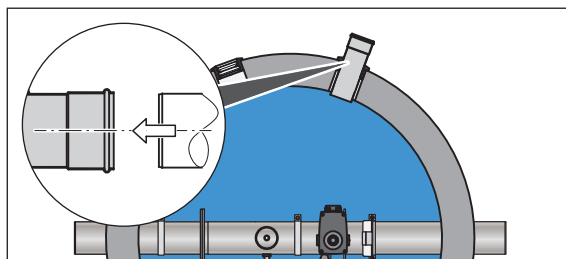
Protector-D with inliner

- Connect on-site blank cable pipe (e.g. with sliding coupling).



Protector-D with special interior coating

- Use acid-free lubricant to grease the spigot of the blank cable pipe and the sealing lip of the socket seal.
- Push the spigot into the socket.



3.2.8 Installation of shaft components

Transition plate, adapter plate and cover are supplied loose.



- Shaft components delivered by ACO in accordance with or based on DIN 4034-1 have an ACO circular rotating mechanical seal for joint sealing. The circular rotating mechanical seal is a compression circular rotating 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 spigot of the shaft component.

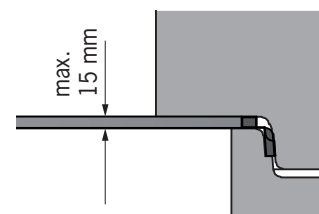


If the circular rotating mechanical seal slips out of place, e.g. during transportation or on-site, this should be tightened again as follows:

- On cold days, pre-heat the sealing, e.g. construction container.
- 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

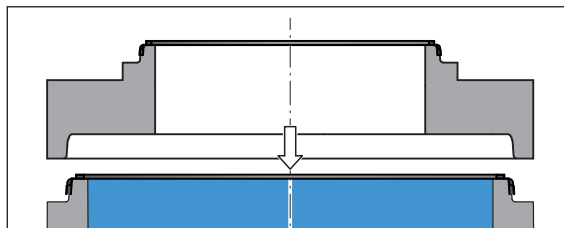
- Transport eyes on the shaft components are designed for their own weight load. Do not transport with other shaft components placed on top.
- After placement, there must be a max. gap of 15 mm present in the interior.




- Observe max. installation depth for the Protector-D, Chap. 6.1 "Basin with shaft construction".

Transition plate per / based on DIN 4034-1

- Arrange transition plate centrally over the basin, fit plumb and allow to slide on. If canted, carefully push back.

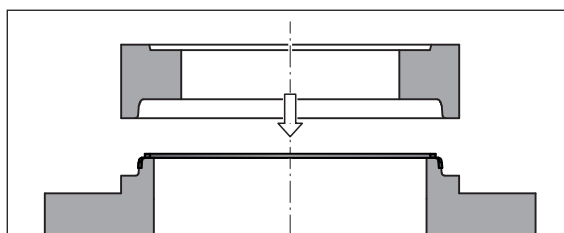


Manhole rings


-  Manhole rings or nominal size 1,000 per DIN 4034-1 can be installed between the transition plate and the adapter plate to adapt the installation depth. Manhole rings can be acquired from ACO as an option.

Adapter plate based on DIN 4034-1

- Arrange adapter plate centrally over the transition plate or the manhole ring, fit plumb and allow to slide on. If canted, carefully push back.



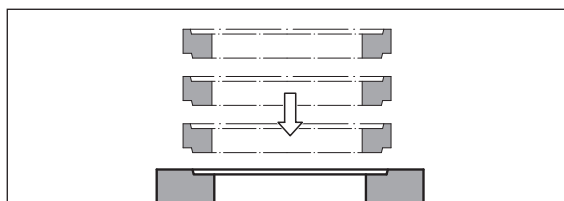
Supporting rings

-  Standard supporting rings can be installed between the cover and the adapter plate to adjust to the ground level.

IMPORTANT Compensate out max. 300 mm of height difference with supporting rings.


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




Cover

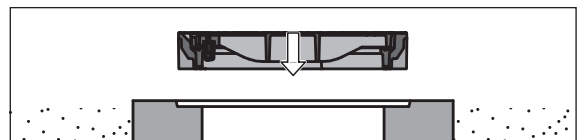
IMPORTANT

- Before the cover is installed, the excavations must be backfilled up to this level,  Chap. 3.2.9 "Backfill 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/mm².
- 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.
- Installation,  product-accompanying documentation: Instruction "Multitop manhole cover".

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



3.2.9 Backfilling the excavation

Specifications:

- The construction materials used and installation method must not cause any harmful deformations, damage or unfavourable load cases for the housing and raising system.
- Bed the housing all round (≥ 0.50 m) with a fine-grained sand-gravel or sand-crushed rock mixture of the soil groups GW or GI as per DIN 18196.
- The backfill material must be placed in layers (≤ 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.
- On laying the surfacing (e.g. asphalt surface) the cover must not be moved.
- The raising system may not be loaded until the excavated pit has been completely backfilled and the materials used have cured sufficiently.

3.2.10 Leak test

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

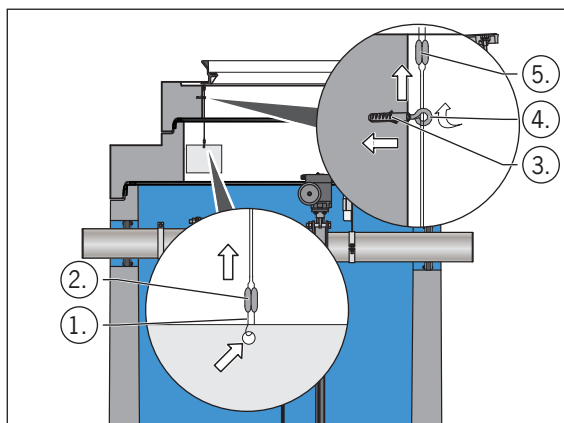
The requirements and provisions for the leak test sequence must be enquired about for each individual country.

3.3 Installation work

3.3.1 Mounting the type plate

The type plate (with cable, wall/floor plugs, eyebolt and seals) is delivered loose and should be fitted underneath the cover during the shaft construction.

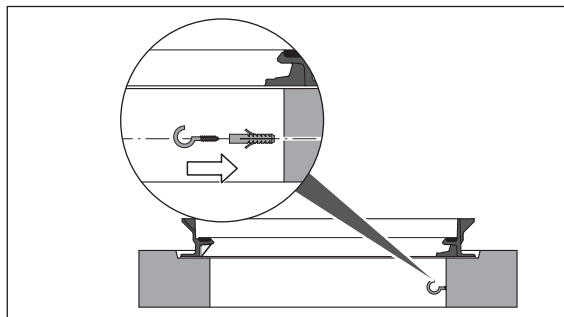
- Feed a cable end through the bore hole on the type plate and then feed both ends of the cable through a lead seal (1).
- Compress seal with pliers (2).
- Fit wall plug into the shaft part underneath the cover (3).
- Screw eyebolt into the wall plug (4).
- Feed both ends of the cable through the eye of the eyebolt, then through the second seal and then compress the seal with pliers (5).



3.3.2 Fitting cable holder

The cable holder (eyebolt) and wall/floor plug are delivered loose.

- Fasten cable holder onto the shaft part underneath the cover.

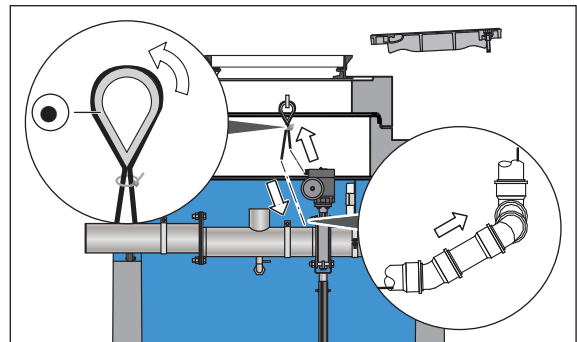


3.3.3 Laying the swivel drive connection cable on site

A cable sleeve for extending and a cable eye are delivered loose.

Specifications:

- Use 7 x 1.5 mm² cable. With a length greater than 40 m, the cable cross section must be calculated anew by an electrician in accordance with the voltage drop or per VDE 0100 part 430.
 - Keep sufficient excess length of connecting cable (ca. 1 m), to protect the wiring in the swivel drive's terminal compartment.
- Pull the connecting cable upwards (not whilst live) until it reaches the cable holder.
 - Place the loop around the cable eye (●) and fasten with cable tie.
 - Hang the cable eye on the cable holder.
 - Use the pull wire to pull the connecting cable together with the build-up sensor (optional) connecting cable through the blank pipe up to the position switch.



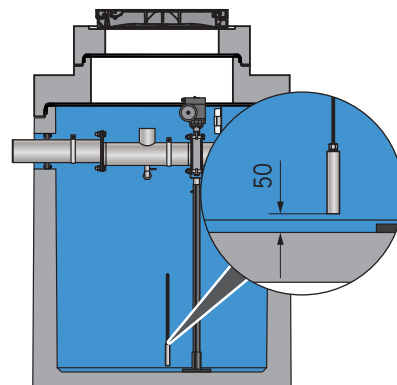
3.3.4 Laying the build-up sensor connecting cable (optional)

An alarm device with build-up sensor can be obtained from ACO as an option. Connecting cable 2 x 0.75 mm² is 5 m long and is connected to and potted in at the build-up sensor. A cable gland for extending and a cable eye are delivered loose.

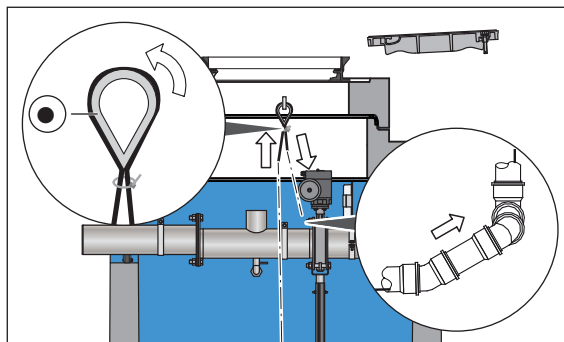
IMPORTANT Max. cable length = 200 m.

Requirement: Keep sufficient excess connecting cable length (approx. 1 m), to enable the wiring in the terminal compartment of the evaluating unit.

IMPORTANT Observe 50 mm clearance to the floor of the chamber.



- Pull the connecting cable upwards until it reaches the cable holder.
- Place the loop around the cable eye (●) and fasten with cable tie.
- Hang the cable eye on the cable holder.
- Use the pull wire to pull the connecting cable together with the swivel drive connecting cable through the blank cable pipe up to the evaluation unit of the alarm device.



3.3.5 Laying the on-site earthing cable

Applies to Ex-version or in accordance with on-site requirements.



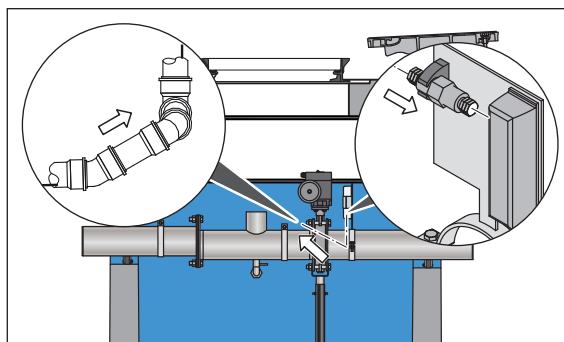
WARNING

Electric shock risk in case of improper electrical installation

- Work on electrical connections to power supply must be carried out by qualified electricians only.

Requirement:

- Use 1 x 16 mm² earthing cable.
 - Establish potential compensation to earth in the basin, outside the electrical unit.
- Connect the earthing cable to the terminal strip of the connection box.
 - Use the pull wire to pull the earthing cable together with the swivel drive connecting cable and the connecting cable of the build-up sensor (optional) through the blank pipe up to the earthing rod.
 - Connect the earthing cable to a suitable earthing rod.



3.3.6 Fitting cable feed-through

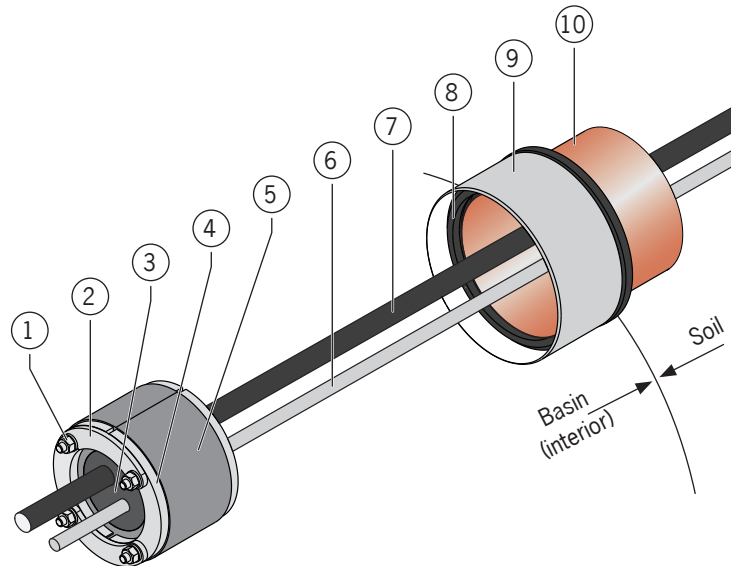
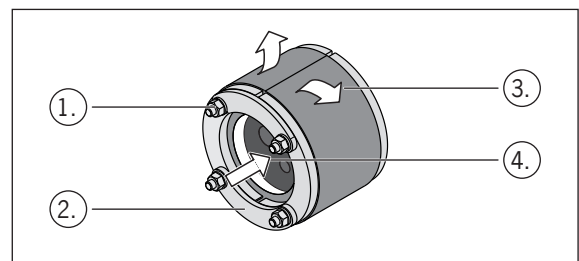



Illustration: Cable feed-through and housing socket

- | | |
|------------------------|---|
| 1 = Threaded connector | 6 = Connecting cable, e.g. swivel drive |
| 2 = Clamp | 7 = Connecting cable, e.g. build-up sensor (optional) |
| 3 = Sealing insert | 8 = Socket seal |
| 4 = Flange | 9 = Socket tube |
| 5 = Split sleeve | 10 = Blank cable pipe |

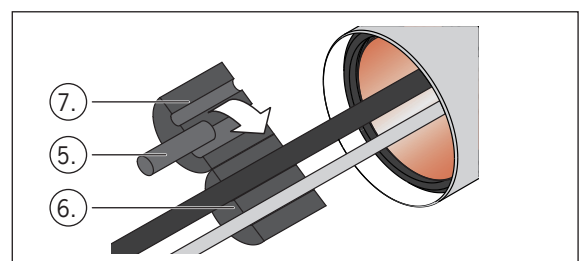
- Undo the threaded connector (1).
- Open the clamp (2).
- Split open the sleeve (3).
- Remove the sealing insert (4).



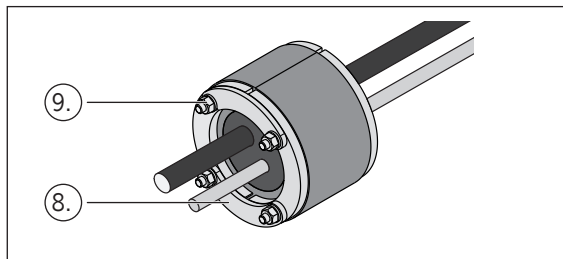
IMPORTANT Position the sealing insert tightly on the housing socket or socket tube.

 The sealing insert has 3 bore holes with "placeholders" (shown with 2 used).

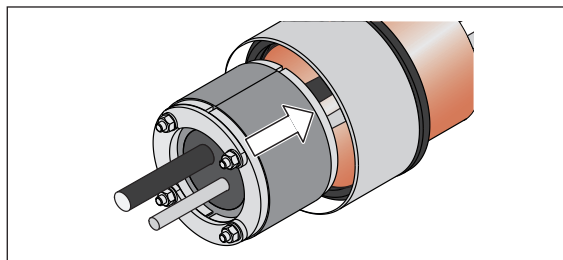
- Fold open the sealing insert and remove "placeholder" (5).
- Place the connecting cable in the recesses of the sealing insert half (6).
- Fold the upper half of the sealing insert onto the lower half (7).



- 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 Electrical installation




WARNING

Electric shock risk in case of improper electrical installation

- The position switch must not be connected to the power supply until after all installation work has been completed.
- Work on electrical connections to power supply must be carried out by qualified electricians only.
- Carry out electrical connections in accordance with circuit diagrams.
- Safety instruction for the Procurat alarm device,  Instructions "Procurat".



Electrical installation to the Procurat alarm device (optional),  Instructions "Procurat" (delivered with the alarm device).


3.4.1 Fastening the position switch (optional)

Specifications:


- Flood-proof and clear wall surface of at least 300 mm x 400 mm (width x height)
- Observe 40 m max. distance between swivel drive and position switch.

→ Mount the position switch to the wall with the site materials.

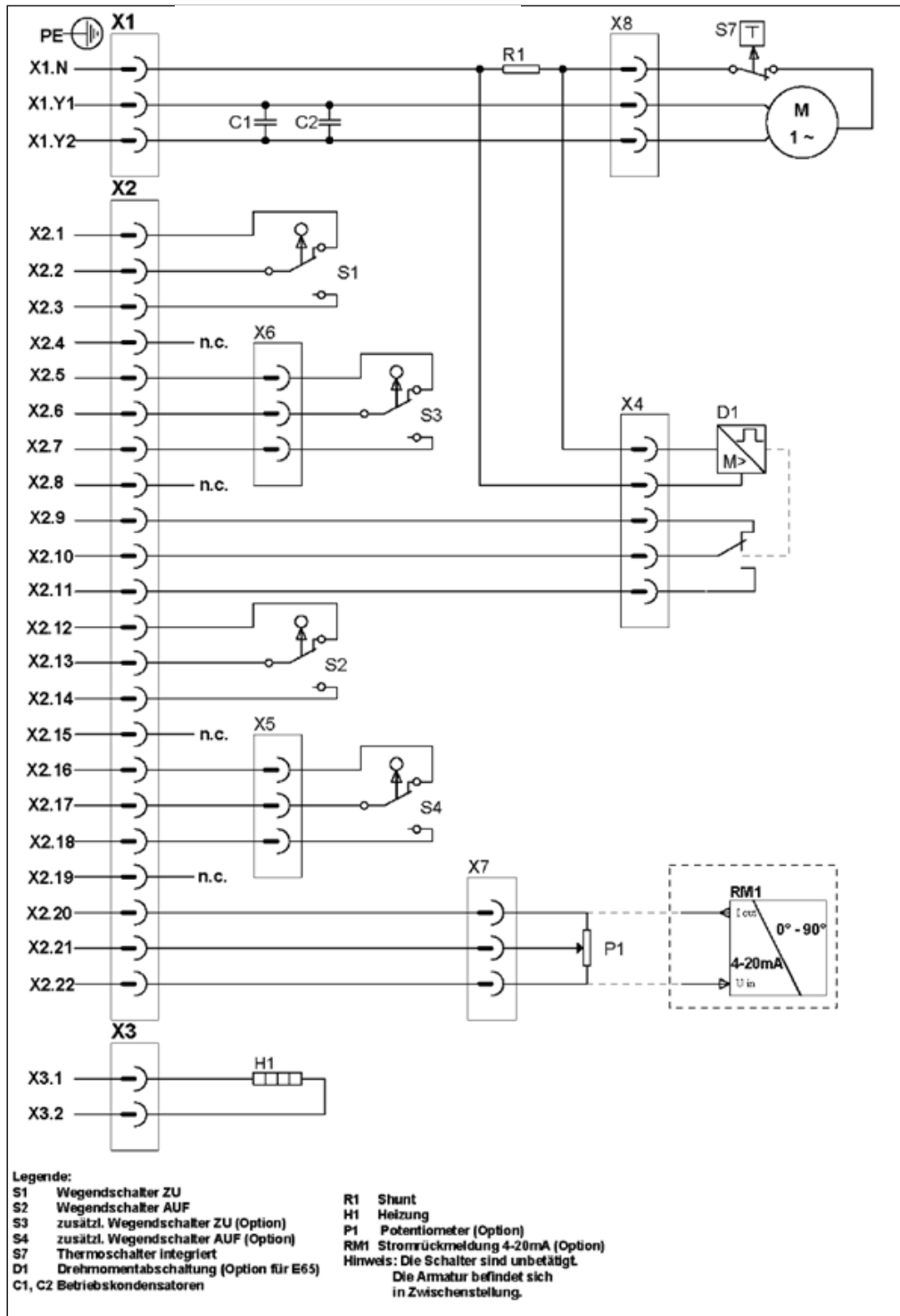
3.4.2 Connecting the position switch (optional) to the power supply

Observe the connection values for the position switch when carrying out the electrical installation,  Chap. 6.4 "Position switch".

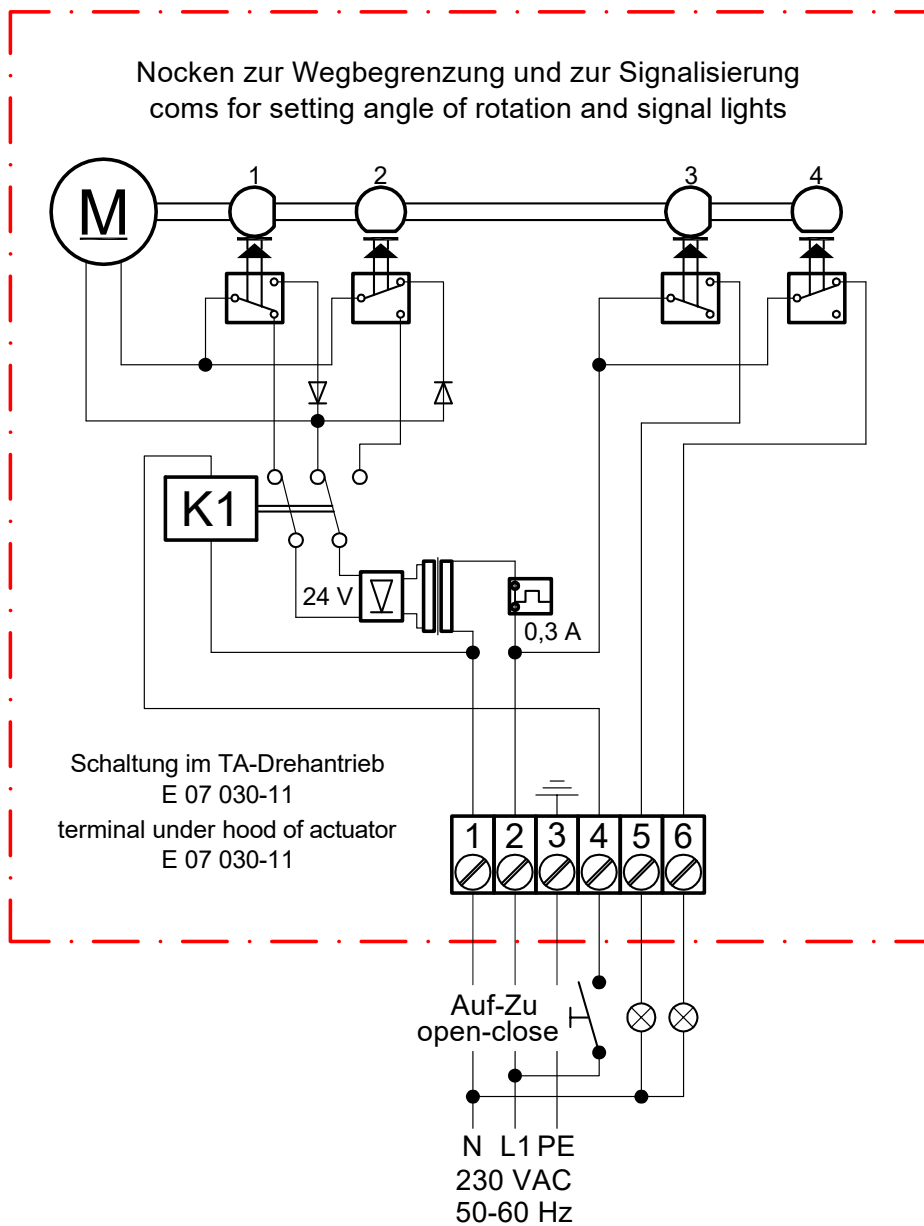
3.4.3 Connecting the swivel drive

→ Insert the connection cable into the terminal compartment of the swivel drive and connect to the electrical system,  circuit diagram (may differ depending on object):

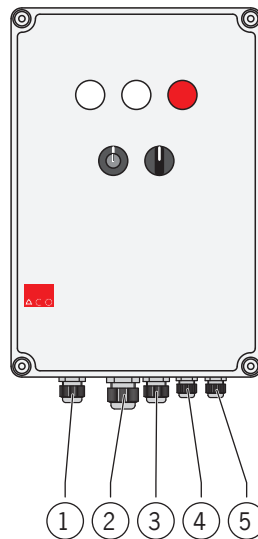
Swivel drive without Ex-protection




Swivel drive with Ex-protection



3.4.4 Position switch connections



- | | |
|--|--|
| 1 = Power supply connection, cable 3 x 1.5 mm ² (NYM-J), max. 10 A protection | 4 = External control contact connection (optional), cable 3 x 1.5 mm ² (NYY-J or NYM-J) |
| 2 = Potential-free alarm signal connection or position signals (optional), cable 10 x 1.5 mm ² (NYY-J or NYM-J) | 5 = External "Not close" contact connection (optional), cable 3 x 1.5 mm ² (NYY-J or NYM-J) |
| 3 = Swivel drive connection, cable 7 x 1.5 mm ² (NYY-J) | |


→ Insert the on-site connection cable into the terminal compartment of the position switch and connect to the electrical system,  circuit diagram (accompanies the position switch).

4 Operation




DANGER


Explosion hazard due to the formation of an explosive atmosphere

- Wear protective equipment,  Chap. 1.4 "Personal protective equipment".
- Before working on the system, ensure that there is an adequate gas exchange from above (ventilation by opening the cover) and check the gas concentration.
- If it is necessary to enter the system, ensure that this is fully emptied and thoroughly ventilated beforehand.


CAUTION

Hazard for personnel in the event of contact with water-polluting liquids

- Observe manufacturer's safety datasheet.
- Wear protective equipment,  Chap. 1.4 "Personal protective equipment".

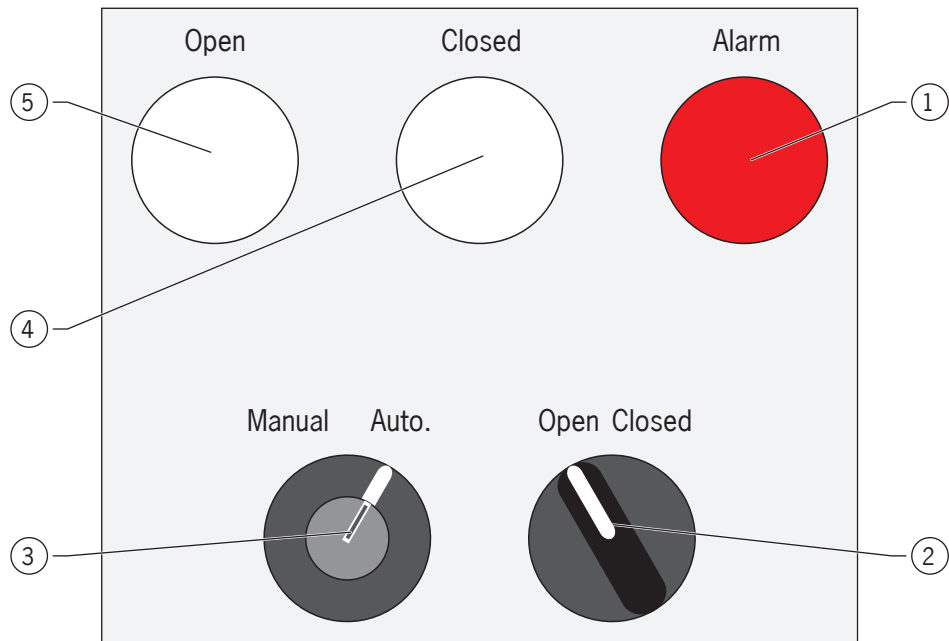
IMPORTANT Assure required qualifications of personnel,  Chap. 1.2 "Special provisions" and chapter 1.3 "Personnel qualifications".



Commissioning and operation of the Procurat alarm device (optional),  Instructions "Procurat" (delivered with the alarm device).

4.1 Position switch (optional)

4.1.1 Controls and display elements



1 = Red light: Display "Alarm"

4 = White light: Display "Check flap closed"

2 = Switch: Manual operation of check flap




5 = White light: Display "Check flap open"

3 = Switch: Manual or automatic mode

4.1.2 Function of the controls

Item	Element	Function	Explanation
3		Manual operation of check flap	"Manual operation of check flap" switch is activated.
		Automatic operation of check flap	"Manual operation of check flap" switch is not activated. External contact is actuated and check flap can be closed via this.
2		Open check flap	Check flap will be manually opened via the electrical swivel drive.
		Close check flap	Check flap will be manually closed via the electrical swivel drive.
All switch positions have detents			

4.1.3 Explanation of the display elements

Item	Element	Meaning	Explanation
5		Check flap open	Light illuminates in manual mode: Check flap has been manually opened
			Light illuminates in automatic mode: External contact is not activated
4		Check flap closed	Light illuminates in manual mode: Check flap has been manually closed
			Light illuminates in automatic mode: External contact has been actuated
1		Check flap closed	Light illuminates in automatic mode: External contact is activated and has closed the check flap
		Malfunction	Light illuminates in automatic mode: Swivel drive or check flap is blocked

4.2 Commissioning

Initial commissioning should be documented,  Appendix „Commissioning report“.

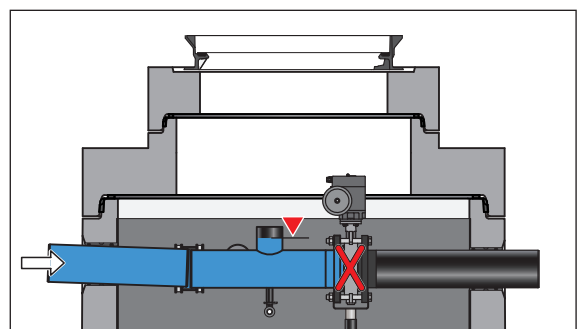
Requirements:

- All installation work is complete.
- A final commissioning check (functional check and visual inspection) of the retaining system installed is to be carried out by an expert in accordance with water-related legislation.

4.3 Checking protective function

IMPORTANT Check "Check flap closed" protective function during the initial commissioning.

- Fill the pipeline with water via the inlet line until just before the overflow in the basin.



4.4 Manual operation (emergency operation)

Check flap can be closed or opened through manual actuation of the swivel drive.

Swivel drive without Ex-protection

The swivel drive can be moved manually to the "open" or "closed" position in non-electrical operation (at any time and without changeover) by means of the handwheel (ca. 15 turns).

Swivel drive with Ex-protection

The swivel drive can be moved manually to the "Open" or "Closed" position in non-electrical operation (at any time and without changeover) by means of the hand lever:

Press hand lever downwards and unlatch the hand lever. Hold this position and move the lever to the desired position, "Open" or "Closed".

IMPORTANT If the swivel drive has been moved manually, when re-commissioning the system, a closing or opening procedure must be carried out initially via the position switch. Upon running past the 90° control angle, the lever receiver latches back into place.

4.5 Operating via the position switch (optional)

The check flap can be controlled with the position switch (manual operation or automatic operation).

4.5.1 Manual drive

Shutdown – Check flap open



→ Connect the position switch with the electrical power supply:

- Switch on pre-fuse.
- Insert into the Schuko plug into the Schuko receptacle.

→ Turn the "Manual or automatic mode" switch to the Manual position  .


→ Turn the "Manual operation of check flap" switch to the Open position  .

Operation (transshipping) – Check flap closed



- Connect the position switch with the electrical power supply:
 - Switch on pre-fuse.
 - Insert into the Schuko plug into the Schuko receptacle.
- Turn the "Manual or automatic mode" switch to the Manual position  .
- Turn the "Manual operation of check flap" switch to the Close position  .

4.5.2 Automatic mode

Shutdown – Check flap open

- Connect the position switch with the electrical power supply:
 - Switch on pre-fuse.
 - Insert into the Schuko plug into the Schuko receptacle.
- Turn the "Manual or automatic mode" switch to the Automatic position  .

Operation (transshipping) – Check flap closed

- Connect the position switch with the electrical power supply:
 - Switch on pre-fuse.
 - Insert into the Schuko plug into the Schuko receptacle.
- Turn the "Manual or automatic mode" switch to the Automatic position  .
- Activate or actuate the external contact, e.g.  .

IMPORTANT After unlocking the external contact, the check flap will be opened again automatically.


4.6 Filling or transshipping procedure

IMPORTANT Before starting with a filling or transshipping procedure with water-polluting liquids, the retaining system check flap must be closed.

4.7 Disposal of the basin contents

IMPORTANT If there are leaks during the filling or transshipping procedure, the water-polluting liquids are retained in the basin of the Protector-D. Immediate disposal by an approved disposal contractor (qualified contractor in the sense of § 62 of the ordinance dealing with systems for handling water-polluting substances) is required.



- If an alarm device with build-up sensor (optional) is installed, the leakage volume is indicated at the evaluation device of the alarm device.
- The disposal volume arising depends on the leakage volume or up to the collection volume of the basin,  Chap. 6 "Technical data".
- Ensure that the disposal vehicle is large enough.
- The disposal code for the water-polluting liquids must be requested from the manufacturer or supplier.

Disposal procedure


- Open the inspection opening (lift cover out of frame and set to the side) and secure.
- Vacuum basin contents into the suction vehicle.

IMPORTANT If possible without entering:

- Open the drain cock on the overflow pipe and allow the complete contents of the inlet line to flow into the basin. Otherwise: Vacuum the complete contents of the inlet line out of the overflow pipe.
- Clean the inlet line (e.g. via the channel for the connected drainage surface).
- Close the drain cock again.
- Clean the collection chamber and the installed parts and then vacuum out the contaminated cleaning water.
- Close the inspection opening.
- Enter the date of the disposal and the address of the disposal contractor in the operating log.

4.8 Checks during operation

Checks by the operator

IMPORTANT The retaining system is to be checked every six months or after every fifth filling with regard to its protective function,  Chap. 4.3 "Checking protective function".

Checks by experts

The system operator is responsible for ensuring that the repetitive tests stipulated in the regulations pertinent to the location of the system are implemented by qualified personnel * or specialists, in accordance with water legislation § 46 of the ordinance dealing with systems for handling water-polluting substances.

Insofar as the country's system regulations do not stipulate specialist testing, the operator must commission a specialist ** with the repetitive testing of the retaining system.

* Definition "Qualified persons":

Qualified persons are employees of companies independent of the operating company/owner, experts or other institutions, who verifiably have the required technical knowledge to operate, maintain and check retaining systems to the scope named here and have the equipment required to retaining systems. In individual cases, in larger operational units, these tests and inspections can also be carried out by internal personnel of the operator who are properly qualified technicians, independent with regard to their area of responsibility and who are not bound by instructions, and who have the same qualification and technical equipment.

** Definition "Specialist persons":

Specialist personnel are personnel of the operator or designated third parties, who by virtue of their training, knowledge and practical experience ensure that they carry out assessments or tests and inspections in the respective field properly.

The following checks are to be carried out repeatedly and entered into the operating log (checking carried out by means of visual inspection of all areas of the retaining system):

- Protective effect of the coating system or the plastic cladding (in accordance with the regulations of the general construction approval).
- Pipeline and check flap of the retaining system are considered leak-tight and fully functioning if
 - There is no mechanical damage
 - No bubbles forming or blistering
 - No cracks on the surface
 - No dirt entrapment or corrosion that could impair the protective function
 - No softening, hardening or embrittlement of the surface or roughening of the surface detected.

Operating log

To be entered into the operating log:


- Time of the filling or transshipping procedure
- Results of the checks after the filling or transshipping procedure is finished
- Checks for the retaining system:
 - Time
 - Results of the checks of the pipe feed-through, the fitting (particularly the sealing sleeve) and the coating system or the plastic cladding (for mechanical damage, bubbles formation or blistering, cracks on the surface, dirt entrapment or corrosion that could impair the protective function, weakening, hardening, embrittlement or roughening of the surface)
 - Defects found
 - Information for the persons responsible for rectifying defects
- Time and type of action for restoring the leak-tightness.
- Name of the company carrying out the work and name and signature of the responsible party

5 Troubleshooting



DANGER

Explosion hazard due to the formation of an explosive atmosphere

- Wear protective equipment,  Chap. 1.4 "Personal protective equipment".
- Before working on the system, ensure that there is an adequate gas exchange from above (ventilation by opening the cover) and check the gas concentration.
- If it is necessary to enter the system, ensure that this is fully emptied and thoroughly ventilated beforehand.


WARNING

Electric shock

- Work on electrical connections must be carried out by qualified electricians only.
- Disconnect the position switch from the power supply before troubleshooting.

CAUTION

Hazard for personnel in the event of contact with water-polluting liquids

- Observe manufacturer's safety datasheet.
- Wear protective equipment,  Chap. 1.4 "Personal protective equipment".

Burns due to hot surfaces

- Allow the swivel drive to cool.

Faults

Malfunction	Cause(s)	Actions
Pipeline not closed	Check flap soiled	Clean check flap
	Check flap blocked (red "Alarm" light illuminates)	Clear blockage
	Automatic mode is switched off	Switch on automatic mode
	Swivel drive defective	Swivel drive repair required (ACO Service)
	Power supply interrupted	Check the electrical connections to power supply Reinstate the power supply
	Internal position switch microfuse defective	Replace position switch microfuse

6 Technical Data

6.1 Basin with shaft construction

Key data and dimensions

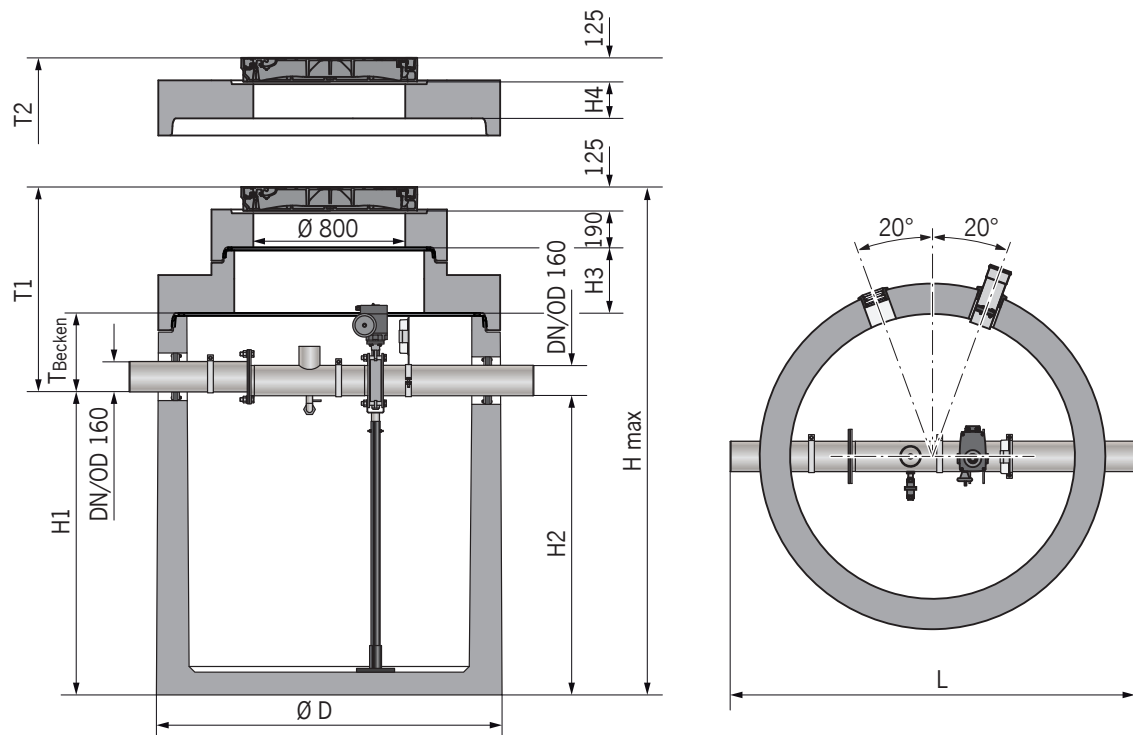


Illustration: Protector-D with special interior coating

Type	Collection volume V [l]	Dimensions [mm]									
		Ø D	H1	H2	H3	H4	H max	T _{basin}	T1	T2	L
1.4	1,400	1,475	1,455	1,435	265	190	6,700	420	1,000	735	1,760
2.5	2,500	1,820	1,640	1,620	345	190	6,900	370	1,030	685	2,100
3.5	3,500	2,050	1,810	1,790	395	240	7,100	435	1,145	800	2,400
5.0	5,000	2,500	1,805	1,785	395	240	7,100	385	1,095	750	2,700
10.0	10,000	3,000	2,145	2,125	-	190	7,400	810 *	-	1,125	3,300

H3, H4, T_{basin}, T1 and T2 = Construction height with joints for circular rotating mechanical seal (15 mm) or mortar (10 mm)

H max = Max. installation depth of the basin relative to the basin base

EL = Ventilation line connection DN 100/OD = 110 mm: Pipe bottom = H1 + 100 mm

KL = Blank cable pipe connection DN 100/OD = 110 mm: Pipe bottom = H1 + 100 mm

* = Basin and transition plate are delivered as an assembly (bonded)

6.2 Swivel drive

Key data	Protector-D with inliner	Protector-D with special interior coating
Operating voltage:	~ 230 V, 50 Hz	~ 230 V, 50 Hz
Power consumption:	160 W	84 W
Protection type:	IP 67	IP 68 (submersion duration max. 48 h with 1m WS)
Closing time:	ca. 6 seconds	ca. 12 seconds
Explosion protection:	–	Ex-d3n D5

6.3 Check flap

Key data	Protector-D with inliner	Protector-D with special interior coating
Flap disc:	Stainless steel / Halar coated	Stainless steel / Halar coated
Sealing sleeve:	Backing rubberised with ethylene propylene diene monomer rubber (EPDM), polytetrafluorethylene (PTFE)	Backing rubberised with fluoroelastomer (FPM), polytetrafluorethylene (PTFE)

6.4 Position switch (optional)

Key data	Values
Operating voltage:	~ 230 V, 50 Hz
Connected load:	90 W
Protection type, controller:	IP 65
Internal pre-fuse:	3.15 A
External pre-fuse:	Max. 10 A
Potential-free contacts:	Max. load 3A 250V~
Dimensions:	200 mm x 300* mm x 160 mm (W x H x D)
* incl. cable glands	

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: _____

Protector-D

Type	Size	Art. no.	Serial No.	Year of construction

Use location

Surface: _____

Use: Commercial operation Other _____

Street: _____

Town/city: _____

Responsible persons

	Qualified person	Authorised acceptance representative	Plant operating company
Name:			
Phone No.:			
Fax No.:			
Email:			
Address:			

Checklist for commissioning (Qualified person)

Checks	OK	Not OK
Electrical fusing of the plant in accordance with the IEC regulations or national and local regulations	<input type="radio"/>	<input type="radio"/>
Operating voltage and frequency	<input type="radio"/>	<input type="radio"/>
Check flap with swivel drive: Functioning test (protective function), leak-tightness	<input type="radio"/>	<input type="radio"/>
Pipe feed-through: Leak-tightness	<input type="radio"/>	<input type="radio"/>
Inner liner or coating: Protective function	<input type="radio"/>	<input type="radio"/>
Manual operation: Functioning test	<input type="radio"/>	<input type="radio"/>
Automatic operation: Functioning test	<input type="radio"/>	<input type="radio"/>
External triggering of closing: Functioning test	<input type="radio"/>	<input type="radio"/>
Fault signal at position switch: Functioning test	<input type="radio"/>	<input type="radio"/>

Instruction (by installer company)

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

Remarks:

Signature of Qualified person: _____
 Signature of authorised acceptance inspection representative: _____

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