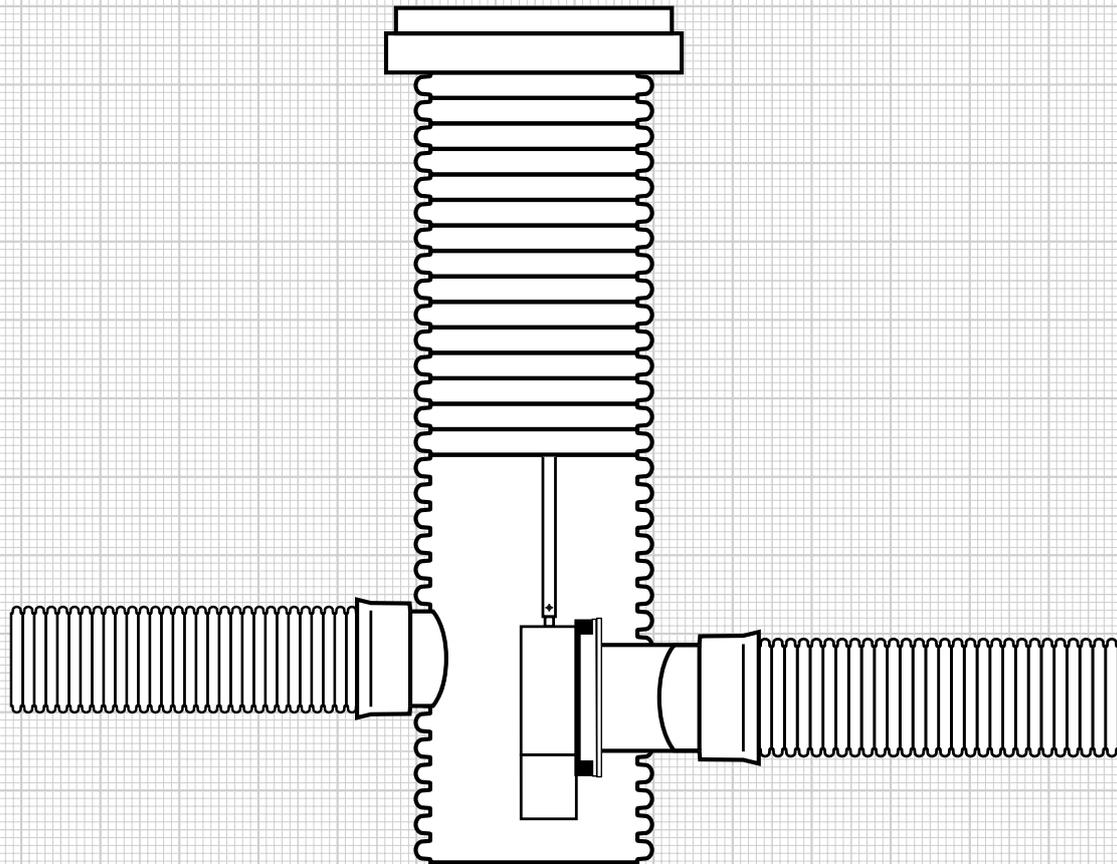


Installation manual

AquaLimit



Stormwater throttle shaft

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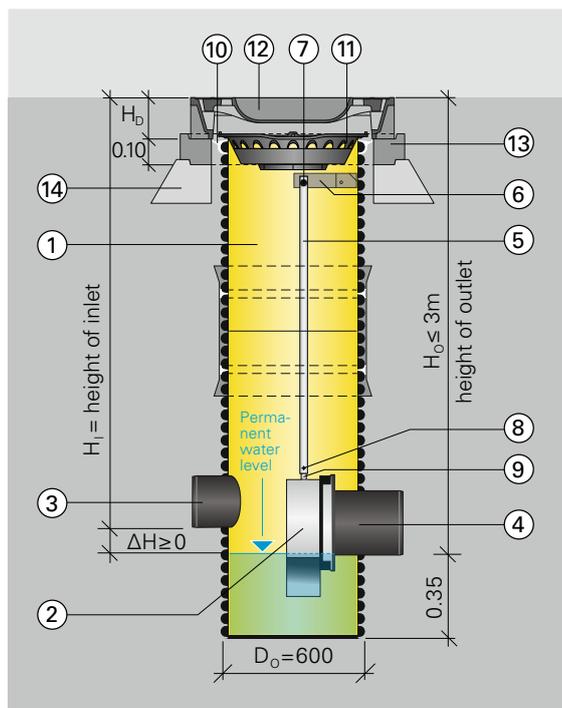
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1. Shaft design/function

AquaLimit is a plastic throttle shaft D_o 600 with integrated vertical vortex valve.

Vortex valves work without moving parts and without requiring auxiliary energy. The vortex effect is created solely by current effects. They generate a very high vortex effect with a large, free-passage cross-section and are therefore quite resistant against blockages as can occur, e.g., in open basins from drifting foliage.



Legend

- ① AquaLimit base shaft
- ② Vertical stainless steel vortex valve
- ③ Inlet DN 200 or DN 250
- ④ Outlet DN 250
- ⑤ Stainless steel lifting bar
- ⑥ Lifting bar fixture
- ⑦ Lifting bar handle
- ⑧ Connection of lifting bar with vortex valve (screw and self-locking nut)
- ⑨ Cuff at the valve crown
- ⑩ DOM sealing ring (optional accessory)
- ⑪ Sediment trap, large (optional accessory)
- ⑫ Shaft cover CW 610 (to be supplied on site)
- ⑬ Concrete support ring $h=100\text{mm}$ (to be supplied on site)
- ⑭ Bearing without stationary loads (to be supplied on site)

2. Transport and construction site storage

The vortex valve, the lifting bar with handle and the assembly material (screw and nut) are delivered together with the appropriate AquaLimit plastic shaft. The shaft components are delivered packaged. Unload using appropriate lifting equipment (e.g., excavator, wheel loader). Use wide hoisting slings.

AquaLimit can be stored outside. The storage period outside should, however, not exceed one year. Protect the material from direct sunlight (store in the shade or cover with lightweight, light-tight foil). Store the components such that they are not damaged and that they are protected from getting dirty. Store the components on sleepers on plain ground. Store the vortex valve and its accessories safely and in a dry place.

Use appropriate labels to avoid mixing up valves for different AquaLimit shafts at the construction site – the shaft intake fits all nominal diameters.

You can transport shaft components by hand or using appropriate equipment at the construction site. Check the components for defects before installation. The impact strength of the material decreases in sub-zero temperatures. Damaged components must not be installed! The relevant safety provisions of the building industry apply.

ATTENTION

Check all components for completeness and intactness upon delivery. Damaged parts must not be installed.

Do not throw components, they include breakable parts!

3. Creating excavation pit and bearing

Create the excavation pit according to the design specifications. The provisions of DIN 18300 "Earthworks" ("*Erdarbeiten*") and DIN 4124 "Excavations and trenches" ("*Baugruben und Gräben*") apply. When installing the shaft, comply with DIN EN 1610 "Construction and testing of drains and sewers" ("*Verlegung von Abwasserleitungen*").

Create and compact a planar shaft bearing with 10 cm to 15 cm of stoneless, compactable material.

ATTENTION

Create AquaLimit bearing heights exactly according to plan provisions.

4. Installing the base shaft

Place the shaft, initially without vortex valve, on the prepared planum at the appropriate height and secure against shifting.

Connect the feeding pipe and drainage pipe according to planning specifications. Make sure no backfill material enters the shaft **by using on-site protective cover**.

5. Embedding the pipes

DIN EN 1610 forms the basis for the entire installation. Bedding and side filling must be created by means of stoneless, compactable material. Compact material by hand.

6. Checks before backfilling the excavation pit

Before backfilling the excavation pit, check the system for proper assembly. The following tests must be performed in particular:

1. Height of the shaft according to design specifications.
2. Exact adjustment of the shaft.
3. Check for damage, foreign objects or coarse contamination.

ATTENTION

We recommend having the system approved by the site management before backfilling.

7. Backfilling excavation pit

Backfill the excavation pit according to the design specifications. Compact material layer by layer. Adhere to the provisions of DIN EN 1610.

Make sure that the extension pipe is not shifted during compacting.

ATTENTION

Do not remove on-site protective covers from shafts during backfilling!

ATTENTION

**Align the extension pipe upright.
Adhere to the provisions of DIN EN 1610.**

8. Installing shaft covers

The extension pipe D_o 600 is pre-fabricated project-specifically in the right length so that it ends at the support ring.

The gap between the support ring and the outside shaft wall can be closed using a DOM sealing ring. This guarantees watertight connections. Mount the sealing ring onto the last corrugation trough of the extension pipe.

Place a sediment trap D_o 600 on the extension pipe.

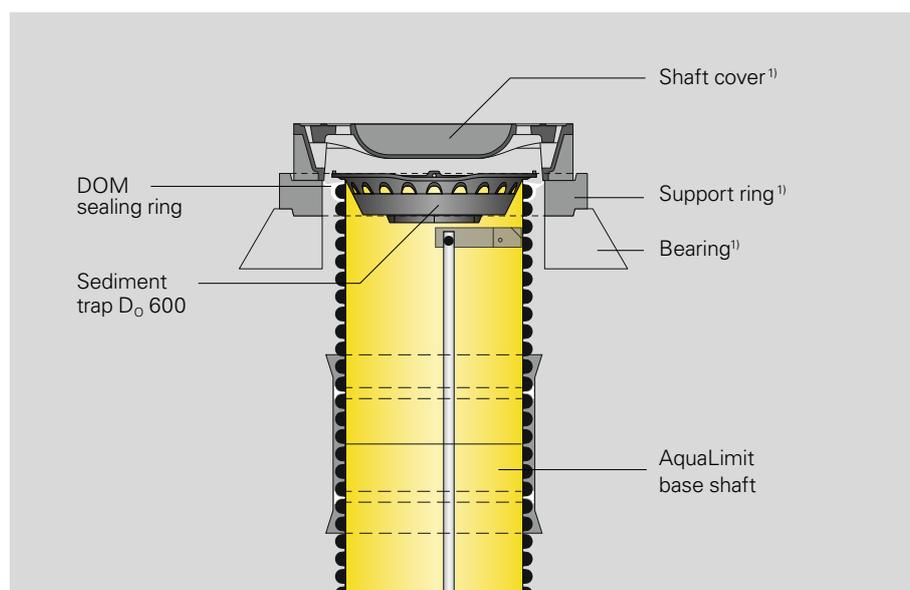
Shaft covers and concrete support rings are not included in the scope of delivery of FRÄNKISCHE Rohrwerke and must be supplied on site.

Install shaft covers according to DIN EN 124, CW 610, installation according to the design specifications.

Put a support ring $h = 100$ mm according to DIN 4034 under the shaft cover on an appropriate bearing. The shaft cover can be placed on a 10-mm-thick mortar joint to avoid stationary loads between equalisation ring and shaft cover.

Create the bearing from compacted bearing layer material (E_{v2} module larger than or equal to 100 MN/m²) or in-situ concrete C 16/20. Avoid interlocking of the bearing with the corrugations of the extension pipe by any means (use casing aid!).

Vertical loads may only be transferred to the load-bearing underground.



Shaft cover on AquaLimit

¹⁾to be supplied on site

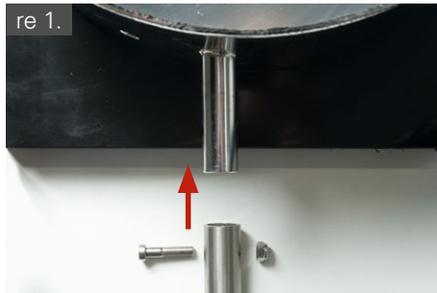
9. Insert vortex valve

Finally, insert the vortex valve into the base shaft.

Note

A slotted screwdriver and a flat wrench (wrench width 13) are required to mount the lifting handle to the vortex valve.

1. Installing the vortex valve is very easy. First, push the included lifting bar over the cuff at the valve crown and mount it using a screw and self-locking nut.



2. We recommend illuminating the bottom of the shaft using an explosion-protected illuminant. Now check whether the stainless steel channel in the shaft is free of contamination; if not, clean/hose it down with water (hose or watering can).



3. After that, insert the valve through the shaft opening and with the square base plate made of dark PE-HD into the stainless steel channel of the branching pipe connection. The valve will slide down the channel to the lower arrester thanks to its own weight and without canting. The handles of the lifting bar are then positioned right under the shaft opening at the same height as the fixture.



4. The lifting bar can now be tilted down on the handle.



10. Safety instructions

ATTENTION

Staff responsible for installation, assembly, operation, maintenance and repair must have appropriate qualifications required for this kind of work. The builder is responsible for organising in detail authority, responsibility and supervision of staff.

The operational safety of the system components supplied is only guaranteed in case of proper installation and correct use. Technical threshold values must not be exceeded.

Observe the accident prevention regulations and relevant standards and directives for installation, fitting, operation, maintenance and repair!

This includes (in extracts):

- Accident prevention regulations
 - BGV C22 "Construction work" ("Bauarbeiten")
 - GUV-V C5 "Technical wastewater systems" ("Abwassertechnische Anlagen")
- GUV-R 126 "Safety regulations for working in enclosed spaces of technical wastewater systems" ("*Sicherheitsregeln für Arbeiten in umschlossenen Räumen von abwassertechnischen Anlagen*")
- GUV-R 145 "Handling biological working materials in technical wastewater systems" ("*Umgang mit biologischen Arbeitsstoffen in abwassertechnischen Anlagen*")
- BGR 117 "Directives for working in tanks and narrow spaces" ("*Richtlinien für Arbeiten in Behältern und engen Räumen*")
- Standards
 - DIN 4124 "Excavations and trenches - Slopes, planking and strutting, breadths of working spaces" ("*Baugruben und Gräben-Böschungen, Verbau, Arbeitsraumbreiten*")
 - DIN EN 1610 "Construction and testing of drains and sewers" ("*Verlegung und Prüfung von Abwasserleitungen und -kanälen*")
- Tool for safety and health protection in technical wastewater systems

WARNING

- Hazards from gases and vapours such as risk of suffocation, risk of poisoning and risk of explosion
- Risk of falling
- Risk of drowning
- Germ pollution and wastewater with sewage
- High physical and psychic strain during work in deep, narrow and dark spaces
- and others

DANGER

Non-compliance with the operating manual may result in considerable property damage, injury or death.

CAUTION

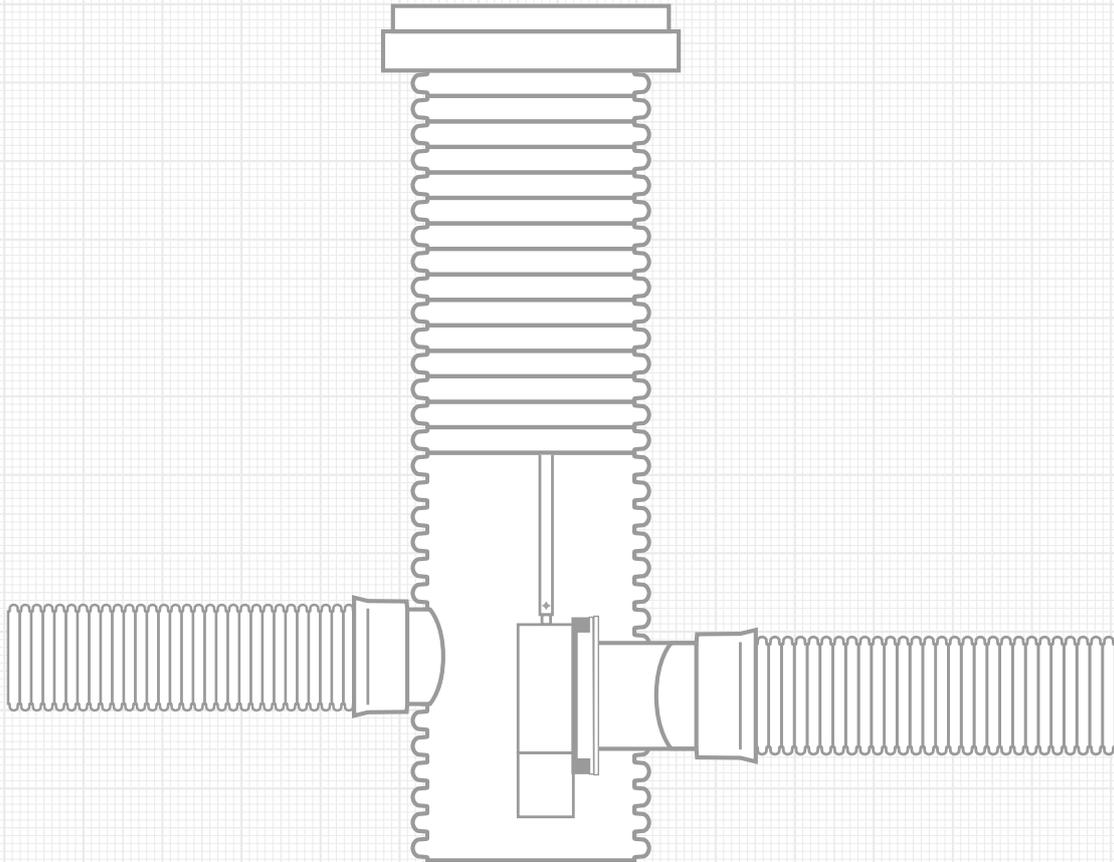
The system is part of an entire network. During installation, maintenance, service and repair work on one component, always consider the entire system. Avoid work during rain.

Changes or modifications to the system may only be carried out with the agreement of the manufacturer. For safety reasons, use original spare parts and accessories approved by the manufacturer. The use of other parts voids the liability for any consequences arising therefrom.

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