

Product brochure

# AquaLimit tube



Throttle shaft with integrated tube throttle for smaller discharge values

## Controlled discharge of stormwater

Successful and sustainable stormwater management mainly depends on the controlled discharge of stormwater from infiltration swales, ground basins, or other stormwater retention structures. The objective is to return inflowing stormwater to nature later but continuously, and to prevent flooding. Throttle elements are important components of stormwater management. Thanks to their special design, they return a defined and harmless amount of water into nature.

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## AquaLimit tube – throttle shaft with tube throttle



AquaLimit tube is a modular polypropylene (PP) throttle shaft  $D_o$  600 that is suitable for many applications and features an integrated tube throttle produced by **UFT Umwelt- und Fluid-Technik Dr. Brombach GmbH**. AquaLimit tube combines a strong discharge performance with highest operational reliability.

The modular shaft is characterised by steep  $Q(h)$  characteristics, a short delivery time, and easy installation. The removable tube throttle can be maintained and the vortex outlet can be adjusted subsequently.

Stormwater retention systems discharge quickly but at the same time in a controlled manner that does not harm the discharge point. Therefore, the entire storage volume is quickly available for the next rainfall.

### The tube throttle

Tube throttles work without auxiliary energy and operate according to the so-called Bernoulli effect. This effect basically states the following: an increase in the speed of a fluid occurs simultaneously with a decrease in pressure. Rising water leads to a higher flow velocity in the throttle, which creates underpressure (pull). This causes the rubber membrane to contract and reduces the throttle cross-section. Thus, less water can flow through the throttle. This allows the realisation of very small discharge values and/or an almost constant throttle curve.

Compared to the orifice, a tube throttle generates a relatively constant discharge, irrespective of the water level in the storage/infiltration system/basin. This ensures that the storage/infiltration system empties within the shortest possible time and is available again for the next rainfall.



Tube throttle without membrane

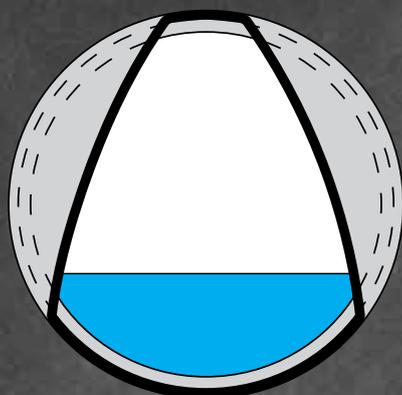
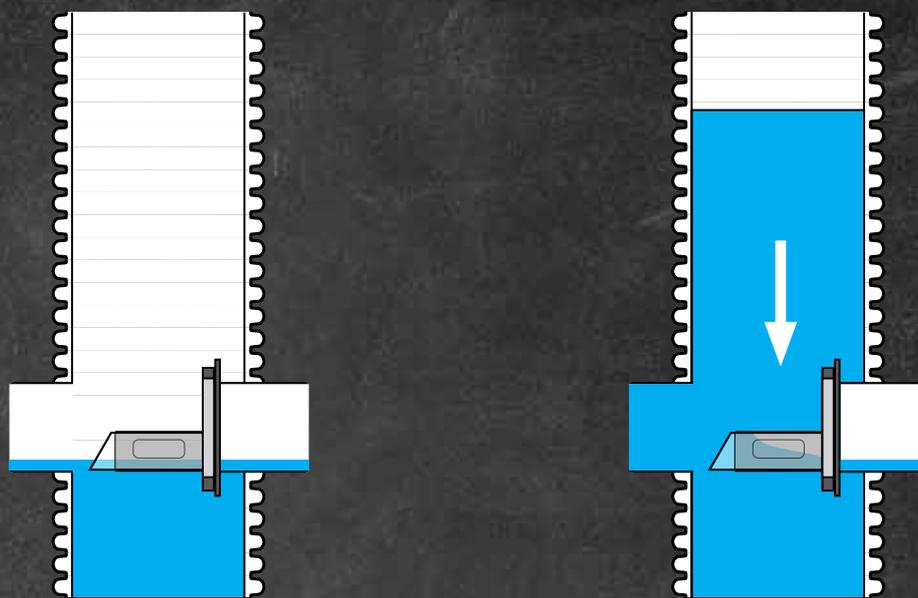


Tube throttle with membrane



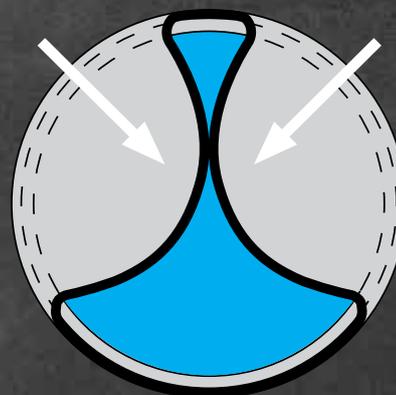
Base plate with sealing

## Operating principle of the tube throttle



### Free discharge

With low water levels, the tube throttle remains in its normal condition and the stormwater can be discharged through the throttle freely.



### Throttled

Self-regulating throttling thanks to the Bernoulli effect. Outside pressure and internal pull create a pressure difference which causes the membrane to bulge in.

# AquaLimit tube system benefits

## Easy installation

- Delivered ready-to-connect, only the total height of the shaft is adjusted on site.
- Install the throttle shaft into the drainage system – done.
- Particularly efficient and convenient handling during installation as compared to conventional reinforced concrete shafts.

## Advantages of a tube throttle

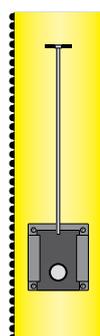
- Constant discharge performance across all operating conditions
- High operating reliability thanks to large outlet opening – no risk of blockages
- Reduction in discharge time – system volume is available for the next rainfall
- Minimisation of required storage volume
- Self-activating and solely hydraulically controlled – no external power supply
- Bottom-aligned installation – no height loss
- Easy installation
- Small discharge values can be realised
- Corrosion-resistant
- No mechanically moved parts



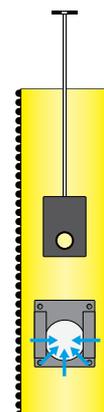
## Operational requirements can be fulfilled without requiring access to the shaft

- Throttle can be removed and re-inserted
- Emergency emptying of the tank possible
- Cleaning of the throttle at the surface, no access required
- Subsequent adjustment of the throttle outlet possible

Particularly efficient operation thanks to lifting bars for on-site assembly and disassembly. The tube throttle can be removed and re-inserted at any time for maintenance or emergency emptying.



Control state:  
vortex effect



Throttle removed:  
emptying of basin,  
maintenance of throttle

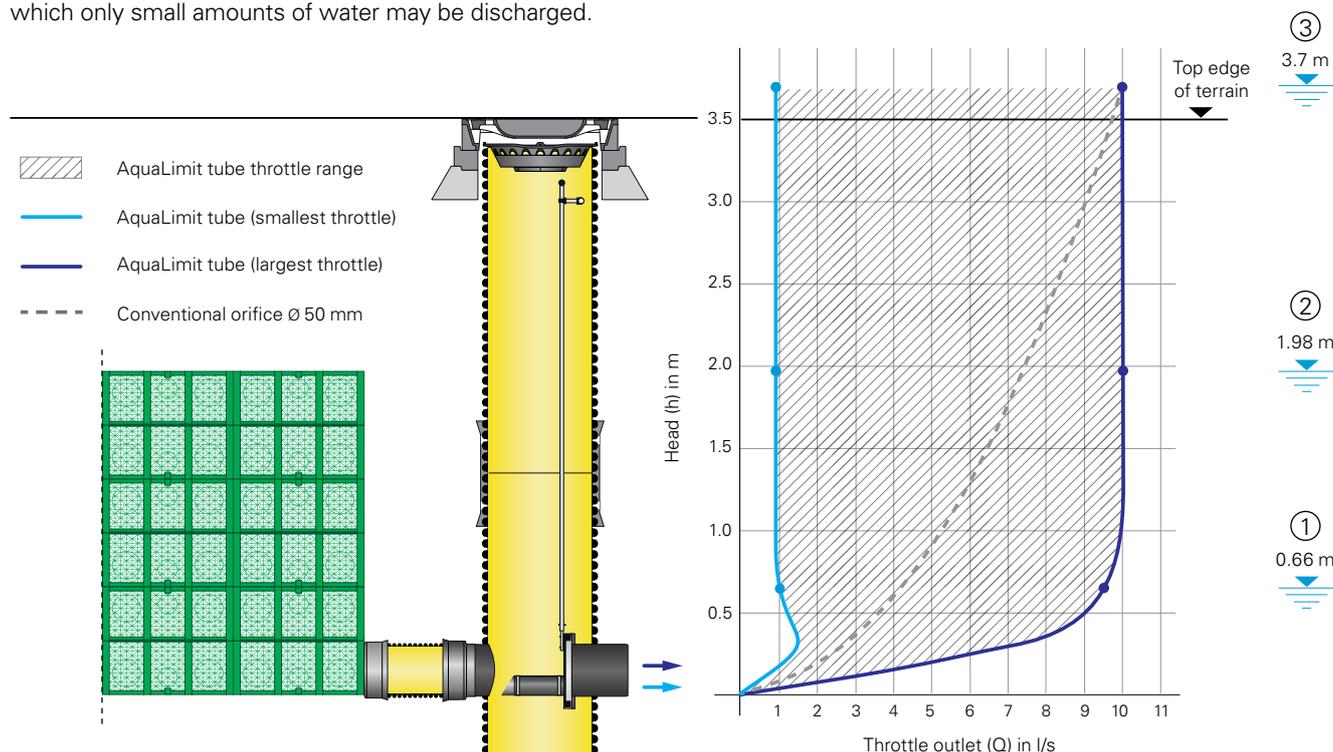
# AquaLimit tube system benefits

## Constant discharge due to steep Q(h) characteristics

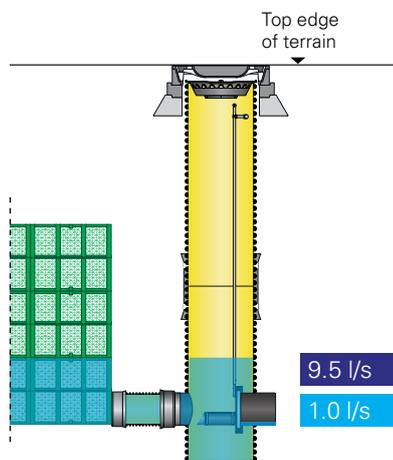
Thanks to the steep throttle characteristics as compared to a simple orifice, the tube throttle can achieve an almost constant discharge even with water levels over top edge of terrain.

The high discharge performance through all operating stages affects the size of the storage/infiltration system. Thanks to the higher discharge performance, the storage/infiltration system can be designed smaller and is quickly available again for the next rainfall.

Since our partner UFT manufactures the throttle project-specifically, throttle outlet ranges of 1-10 l/s can be realised. Therefore, the new corrosion-resistant shaft is especially suited for smaller areas and in case of country-specific provisions according to which only small amounts of water may be discharged.



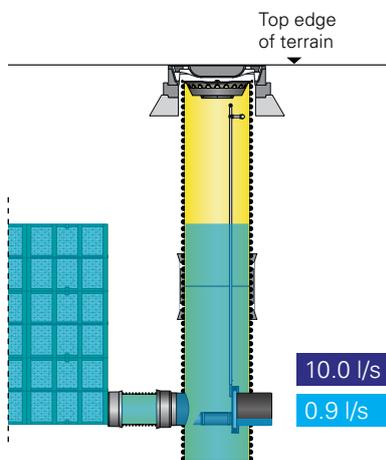
① Head **0.66 m** (1-layer)



Conventional orifice Ø 50 mm

4.2 l/s

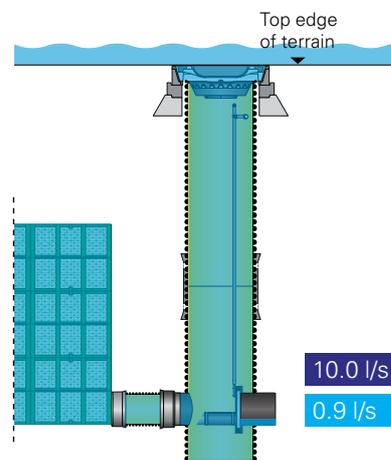
② Head **1.98 m** (3-layer)



Conventional orifice Ø 50 mm

7.3 l/s

③ Head **3.7 m** (over top edge of terrain)

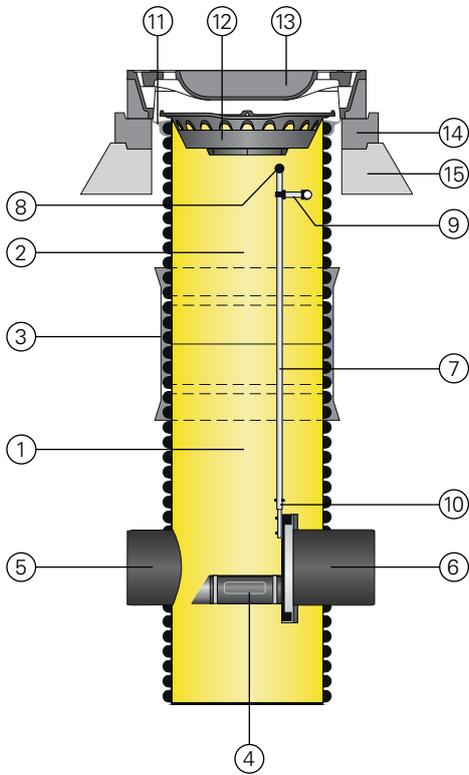


Conventional orifice Ø 50 mm

10.0 l/s

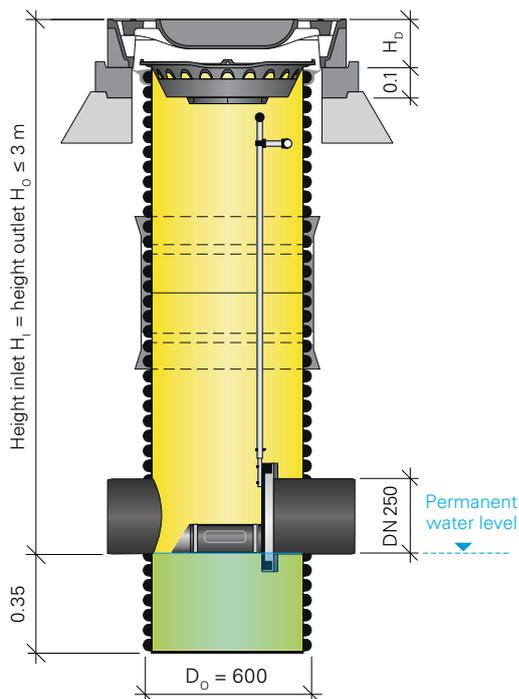
## Structure and technical specifications

### Structure



- ① AquaLimit tube base shaft
- ② Extension pipe (optionally – depending on total height)
- ③ Coupling incl. 2 x sealing rings (optionally – depending on total height)
- ④ Tube throttle
- ⑤ Inlet DN 250
- ⑥ Outlet DN 250 incl. stainless steel base plate
- ⑦ Lifting bar
- ⑧ Lifting bar handle
- ⑨ Lifting bar fixture
- ⑩ Connection of lifting bar with tube throttle
- ⑪ DOM sealing ring (optional accessory)
- ⑫ Sediment trap, large (optional accessory)
- ⑬ Shaft cover CW 610 (to be supplied on site)
- ⑭ Concrete support ring h=100 mm (to be supplied on site)
- ⑮ Bearing without stationary loads (to be supplied on site)

### Technical specifications

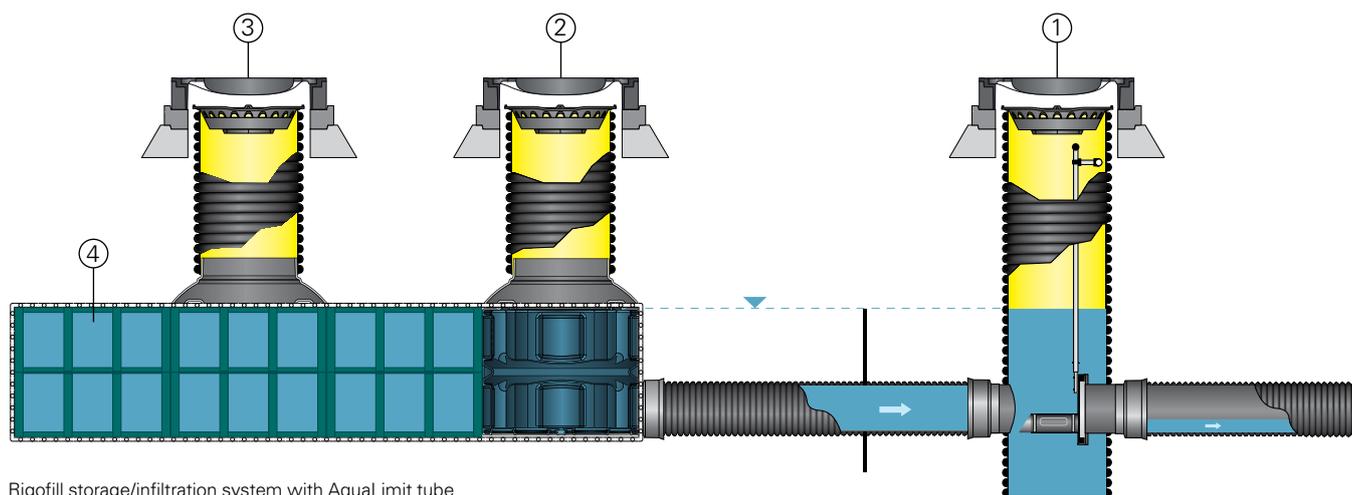


- Plastic shaft  $D_o$  600
- Material PP
- Black outside, yellow inside
- Incl. tube throttle
- Inlet and outlet diameter DN 250 KG
- Throttle outlet range of up to 1-10 l/s depending on the head.

# Applications

## Storage/infiltration system with AquaLimit tube

Storage/infiltration systems store stormwater and discharge it later. For storage/infiltration systems where no or only incomplete infiltration is possible, a vortex element normally controls discharge.



Rigofill storage/infiltration system with AquaLimit tube

- ① AquaLimit tube
- ② QuadroControl with outlet at the bottom of the shaft
- ③ Optional QuadroOverflow emergency overflow shaft
- ④ Rigofill – storage/infiltration module

## Product range overview



### Throttle shaft for stormwater retention systems

Polypropylene (PP) shaft D<sub>o</sub> 600, black outside, yellow inside. With integrated tube throttle, manufacturer: **UFT Umwelt- und Fluid-Technik Dr. H. Brombach GmbH**, inlet and outlet diameter DN 250 KG; throttle outlet range of 1-10 l/s depending on the head.

### Application

Throttle shaft for stormwater retention systems made of Rigofill storage/infiltration modules, SickuPipe, MuriPipe, or ground basins. Ideal for systems with very high demands concerning operating reliability and with the need for high discharge performance across all operating stages.



Product	Technical specifications	Cat. no.
AquaLimit tube	1 m-1.35 m shaft height Please use order form 📄 <a href="http://www.fraenkische.com">www.fraenkische.com</a>	<b>51241135</b>
	1.35 m-2.35 m shaft height Please use order form 📄 <a href="http://www.fraenkische.com">www.fraenkische.com</a>	<b>51241235</b>
	2.35 m-3.35 m shaft height Please use order form 📄 <a href="http://www.fraenkische.com">www.fraenkische.com</a>	<b>51241335</b>
DOM sealing ring	Seal between concrete support ring and extension pipe	<b>51719505</b>
Sediment trap D <sub>o</sub> 600	Suitable for installation under covers	<b>51791095</b>

Shaft covers acc. to DIN EN 124	Class B or D; CW 610	<b>To be supplied on site</b>
Gully gutter acc. to DIN EN 124	Class B, C or D; CW 610	<b>To be supplied on site</b>
Support ring acc. to DIN 4034	100 mm high; D <sub>i</sub> = 625 mm	<b>To be supplied on site</b>

### NB

Please use the AquaLimit tube order form to place a precise order. 📄 [www.fraenkische.com](http://www.fraenkische.com)

Please observe our installation manual.

### General information on using our products and systems:

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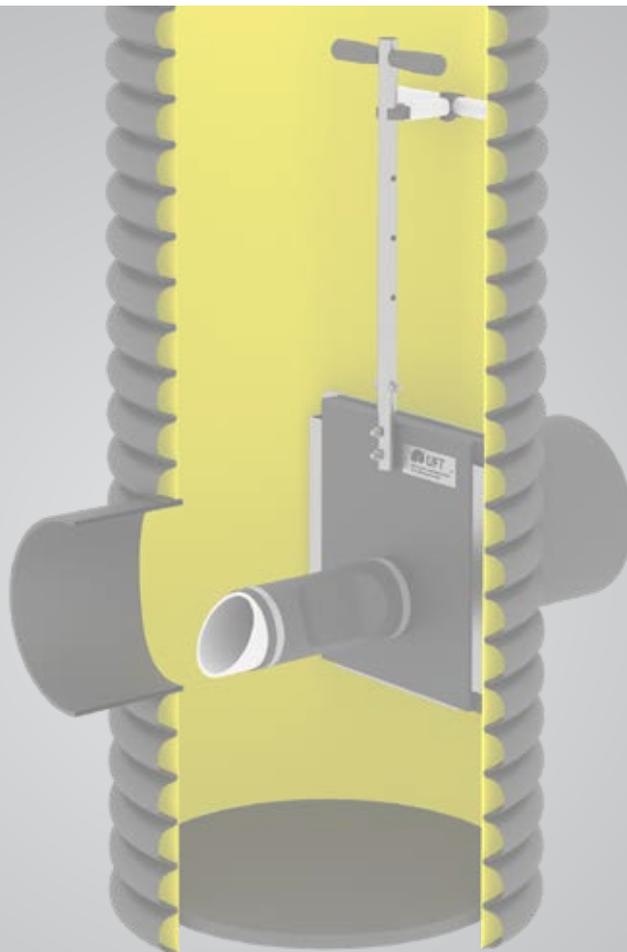
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