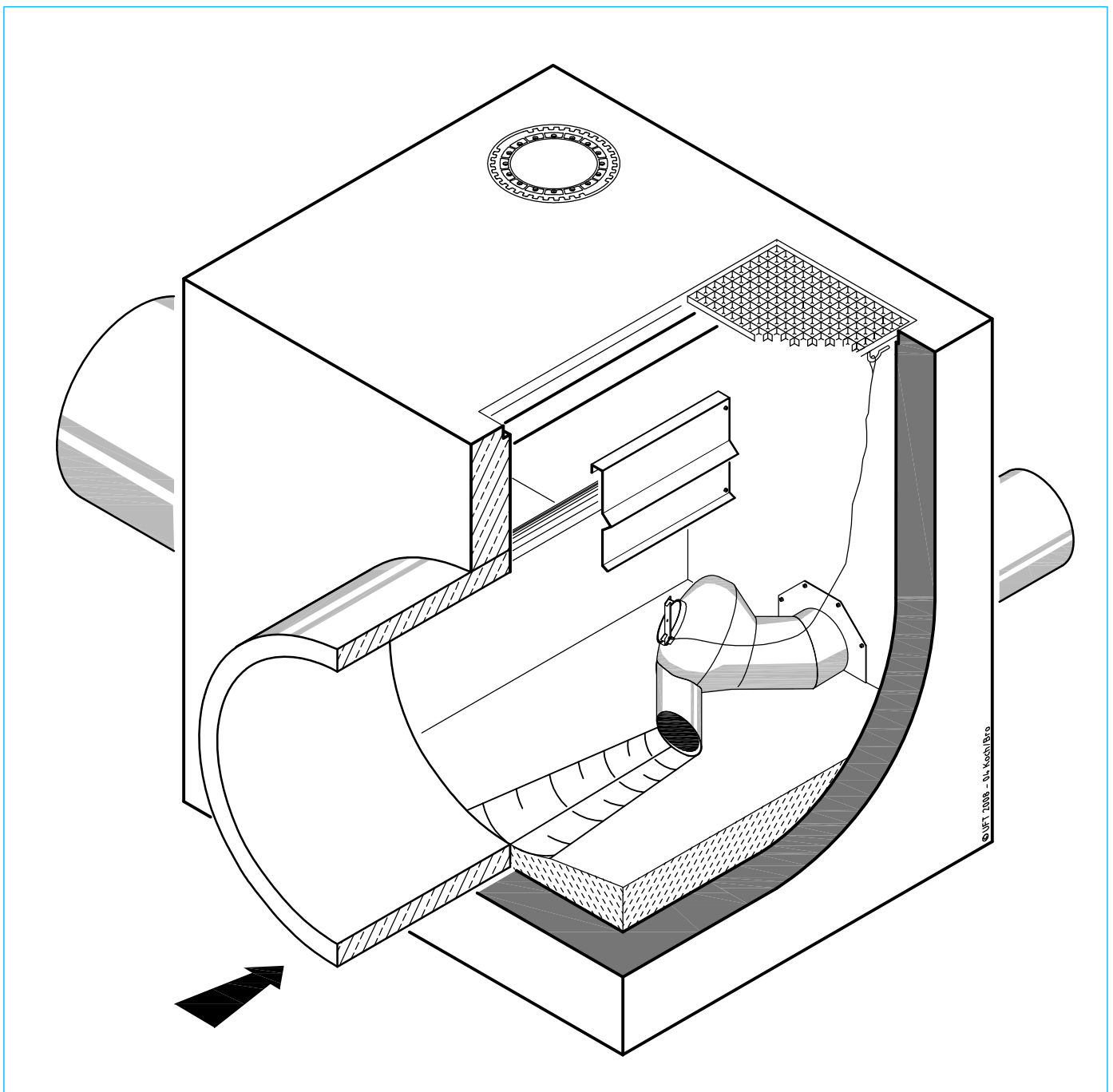


## Product Information

Vortex Flow Regulator for Wet Well Installation  
*UFT-FluidCon*

**SUn**  
**0121n**



## 1 Application

The UFT-*FluidCon* Vortex Flow Regulators operate without moving parts, exclusively under the effects of the flow.

UFT-*FluidCon* Vortex Flow Regulators are designed to perform dynamic flow regulation. They find their application in Stormwater, Combined or Sanitary Sewers. They are installed at the outlet point of drains, retention tanks, Storm outfalls, etc.

The UFT-*FluidCon* allows practical and easy flow regulation of sites that are otherwise difficult to manage. Some 6 000 UFT-*FluidCon* regulators of all kinds are installed throughout the world. The fact that, until now, none of them have failed its task, confirms the exceptional reliability of the product.

Contrary to flow regulators in dry pits, wet well flow regulators do not require chambers separate from the storage area. These units can be mounted directly on the outlet wall of basins or the storage pipes.

## 2 Operation

The UFT-*FluidCon* Vortex Flow Regulator has a rigid hydrodynamic body without any moving parts. Water enters the vortex chamber through the tangential inlet pipe. In dry time flow conditions, the unit presents very open sections to the flow. The dry time flow is simply deviated in soft curves; the flow pattern here is a simple large area change of direction. In this flow mode, the Vortex Flow Regulator presents virtually no resistance to the flow (see Figure 1 - top).

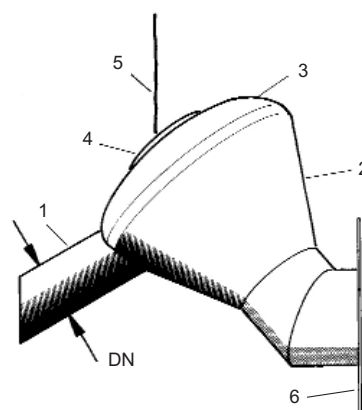
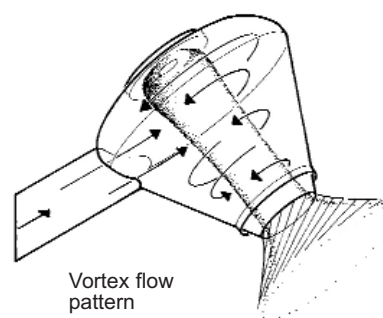
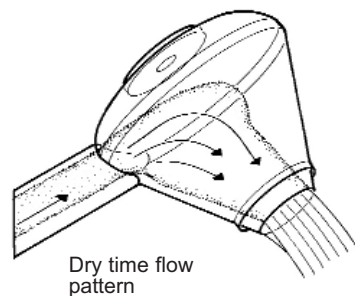
If the upstream head increases, air escapes from the vortex chamber. The conical vortex chamber creates a vortex flow pattern. High tangential velocities are formed, as well as a swirling core of air in the center. The air core blocks the major part of the outlet section (see Figure 1 - center).

### Advantages of Vortex Flow Regulator UFT-*FluidCon*

The UFT-*FluidCon* Vortex Flow Regulator is an automatic water flow control unit. The regulation effect is simply caused by the non-destructive effects of flow. The active force of the flow resides in the differential pressure head between the inlet and outlet of the Vortex Flow Regulator.

The advantages of the UFT-*FluidCon* Vortex Flow Regulator are as follows:

- no moving parts
- no wear
- no external energy required
- large open port section for free flow passage
- high reliability and safe operation
- no additional concrete chamber necessary
- anticorrosive construction
- precise reduction of flow rate
- low headloss in dry time flow conditions
- flow regulation even at small water head
- possibility of flow rate adjustment after installation
- easy and quick installation
- no adjustment required
- easy operation and control

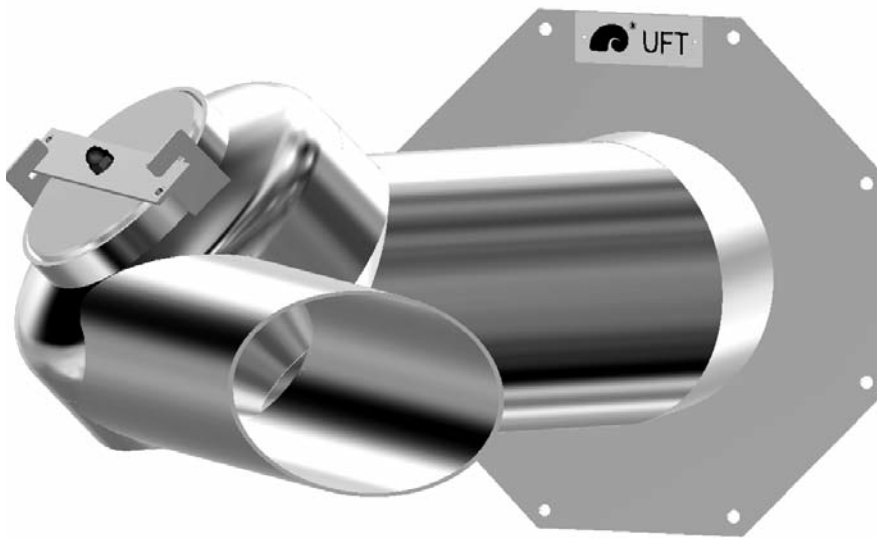


In this mode, the vortex regulator is an ideal hydraulic brake. The flow restriction is equivalent to an orifice plate with an open area up to 6 times smaller.

The Vortex Flow Regulator in wet well is not accessible when there is water stored. For this reason, the unit requires an emergency bypass operated without any access to the unit. In case of blockage, the operators can pull the pull cord mounted on the unit's cover crosspiece, release the cover attaches and pull the cover out of the well (see Figure 2). This effectively opens a unit bypass where the trapped water can escape. After the water drains down from the wet well, the cover is re-installed with the crosspiece lock.

- DN regulator's inlet nominal diameter
- 1 inlet pipe connecting tangentially to the body
  - 2 vortex chamber
  - 3 dished head top
  - 4 inspection cover and emergency bypass
  - 5 emergency bypass pull cord
  - 6 mounting plate

**Fig. 1:** Parts and flow patterns of a Vortex Flow Regulator



**Fig. 2:** Overview of a UFT-FluidCon flow regulator for wet well. The inspection cover has an emergency opening mechanism with a pull cord.

Nominal Diameter DN	Upstream flowrate for 2 m water head in l/s	
	min.	max.
100	10	27
150	25	61
200	50	102
250	86	167
300	132	232
350	199	239
400	261	362

**Tabelle 1:** Several standard performances of the UFT-FluidCon flow regulator Type SUn for 2 m water head

Vortex flow regulators obtain a flow of 25 l/s with a free opening letting through 150 to 200 mm diameter spheres. They are consistent to the german technical guideline DWA-A 111.

### 3 Performance

The UFT-FluidCon flow regulator presents flow curves as shown in Figure 3. The lower portion represents the dry time flow conditions and the top portion, the vortex flow conditions. The flow characteristics are determined by the geometry of the regulator's body. The required geometric parameters are as follows:

- Nominal diameter
- Assembly angle
- Dimensions of the vortex chamber
- Diameter of outlet orifice plate

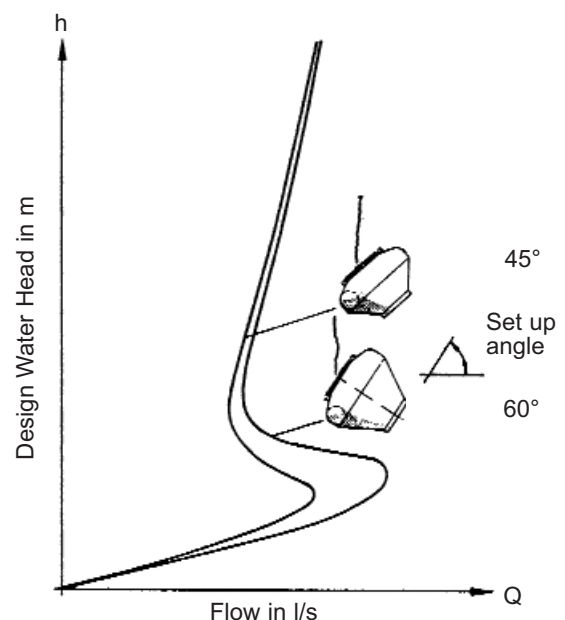
The UFT-FluidCon Vortex Flow Regulators are constructed with nominal diameters from DN 100 to DN 1000. Based on the above parameters, there are several hundred possible configurations for these regulators. We use a selection program to calculate the ideal solution that will grant the perfect hydraulic solution.

### 4 Material

The Vortex Flow Regulators are made to be used in both stormwater and sanitary or combined sewers. The only materials used for fabrication are stainless steel and plastics. Any additional corrosion protection is not required. We guarantee the exact operation of the device for five years.

### 5 Installation

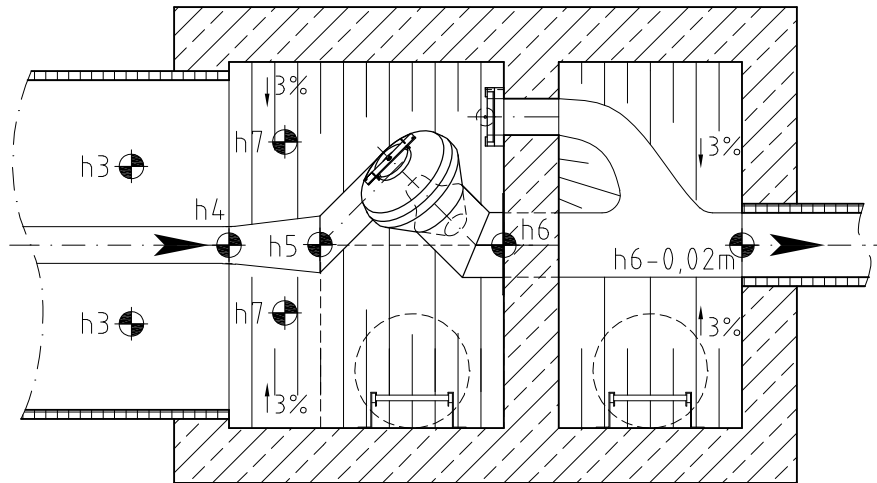
The UFT-FluidCon Vortex Flow Regulators are shipped calibrated and ready to use. The back plate is anchored directly on the outlet pipe concrete wall of the chamber, in front of the outlet pipe. Finishing concrete is then poured around the unit and once it hardens, the regulator is functional.



**Fig. 3:** Influence of unit angle on the flow curve

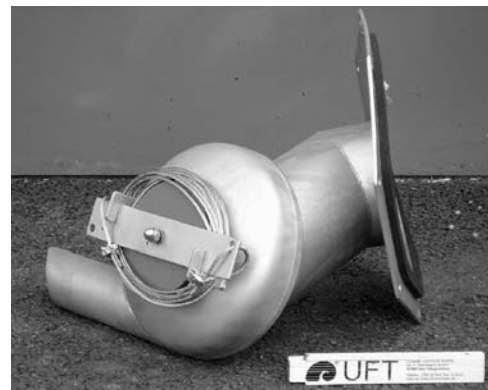
## 6 Maintenance

UFT-FluidCon flow regulators require no maintenance. A regular visual control is recommended. It is possible to verify the interior of the regulator by opening the top cover. In case the flow rate should need to be changed, depending on the model, we can change the outlet orifice plate. This operation requires only minor manipulations and can be done by the maintenance personnel.



**Fig. 4:** Plan view on the wet well installation on the discharge side of a rain retention basin or pipe with a UFT-FluidCon Type SUn

**Fig. 5:** UFT-FluidCon Type SUn 45-4 DN 65, counter-clockwise, ready to be shipped, for installation in a circular manhole, hence the curved mounting plate.



## Bibliography

DWA-Arbeitsblatt A 111 (2010): Hydraulische Dimensionierung und betrieblicher Leistungsnachweis von Anlagen zur Abfluss- und Wasserstandsbegrenzung in Entwässerungssystemen. Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall e.V., Hennef : DWA, Dezember 2010.

## Typical Specification Text

Pos. Number Article

1 x Vortex Flow Regulator

UFT-FluidCon

Flow regulation with no moving parts. Wet well installation, fixed to a flat (or circular) and vertical wall with anchors. 304 Stainless Steel body construction with inlet pipe, stainless steel mounting plate, PVC cover and quick opening cable, orifice plate and mounting anchors and seals.

**Model UFT-FluidCon**

Design pressure head hb:

Design flow Qb:

Dry weather flow Qtx:

Orientation:

Inlet diameter:

Max. upstream head:

Unit ready to be mounted, regulated with required flow rate, includes hydraulic dimensions and technical specifications. The finishing concrete is to be done after assembly of the regulator. The head is measured starting from the invert of the inlet pipe of the regulator.

**Type SUn ...**

... m

... l/s

... l/s

clockwise / counter-clockwise

DN ...

10 m