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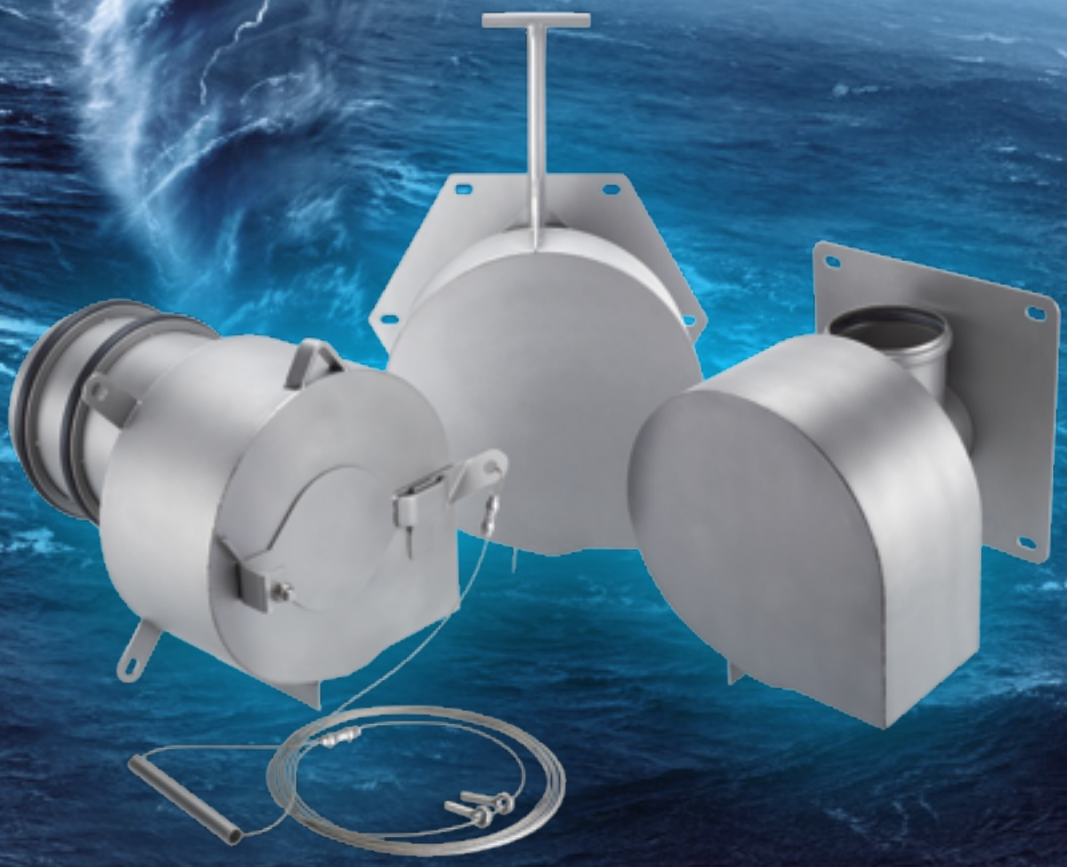
August 2015 WM446

Wavin + Mosbaek Vortex Flow Control Valves



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CONNECT TO BETTER

Wavin + Mosbaek
Vortex Flow Control Valves

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Wavin Introduction

Wavin

Wavin is the leading European manufacturer of industrial plastic products, and one of the largest producers of plastic pipe and fittings in the world. Wavin is credited with inventing and pioneering the use of plastic pipe for water distribution in the mid 1950s. Constant research and development has enabled Wavin to maintain its position at the forefront of plastics technology.

Environmental Responsibility

Wavin has BS EN ISO 9001: 2008 BSI status and was the first plastic pipe manufacturer to be accredited to BS EN ISO 14001:2004 Environmental Management Systems. Wavin is committed to its environmental responsibility, and is a leading pioneer of systems to conserve and control water. In production the Company recycles the majority of waste material it produces and sets annual targets for energy efficiency, audited by independent certificating bodies.

Passion & Resourcefulness

All Wavin personnel are committed to providing a comprehensive and responsive customer service – and are passionate about delivering Customer Satisfaction. Wavin maintains an industry-wide dialogue and rigorous assessment of all procedures to ensure that Wavin product development and product support accurately addresses the needs of all Customers – today and into the future.

Quality Assured Products

Wavin systems are the benchmark for excellence and product innovation: precision manufactured in the UK using the most advanced injection moulding and extrusion machines. All products comply with our exceed relevant British and European Standards to ensure reliability and long-lasting service.

Stormwater Management Solutions

Wavin's unique expertise in stormwater management combines focused stormwater systems with proven project management skills to offer sustainable, customised, end-to-end solutions that deliver guaranteed performance and optimum customer value. The Wavin Stormwater Management Systems include:

Surface Catchment Systems

- Domestic Plastic Channel Systems
- Polymer Concrete Channel Systems
- Plastic Pervious Paving Systems
- Plastic Road and Yard Gullies

Roof Catchment Systems

- Siphonic Roof Drainage Systems
- Gravity Roof Drainage Systems

Stormwater Transportation Systems

- Solid Wall Pipe Systems – plastic and clay
- Structured Wall Pipe Systems – plastic
- Land Drainage Systems – plastic
- Inspection Cambers and Silt Traps
- Anti-Flood, Non-return Valve

Modular Storage Units

- Modular Storage Units
  - AquaCell Eco
  - AquaCell Prime
  - AquaCell Core
  - AquaCell Plus

Oil Separation Systems

- Full Retention
- By-pass

Commercial Rainwater Re-use

- Compact, high quality systems for any type and size of building

To request details with regards to any of the above components and/or for any technical enquires please contact

Literature Requests
Tel: 01249 766333
Email: literature@wavin.co.uk

Technical Design
Tel: 0844 8565165
Email: technical.design@wavin.co.uk

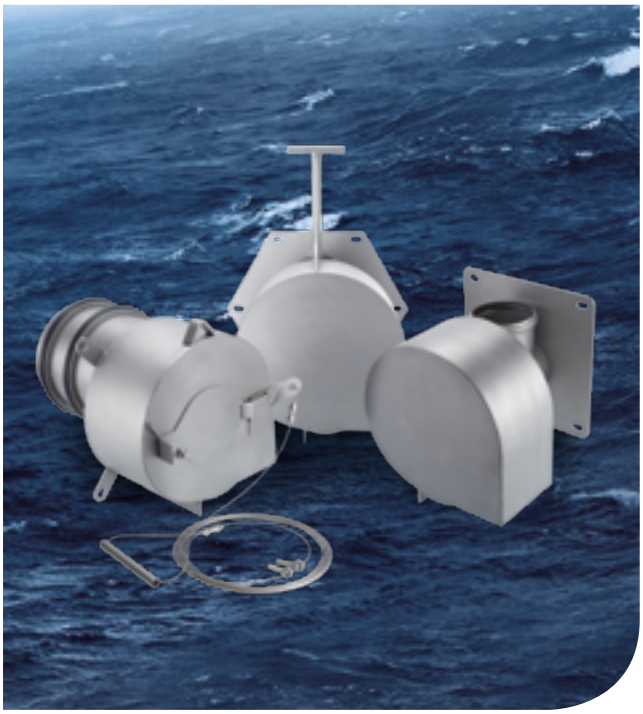
Wavin Online
The complete Wavin product catalogue, together with design and installation guidance, is also available online at:
www.wavin.co.uk

Wavin + Mosbaek
Vortex Flow Control Valves

Overview of Mosbaek Vortex Flow Control Valves

The Wavin + Mosbaek range of Vortex Flow Control Valves enables precise control of stormwater discharge flow rates. They are typically used in applications such as...

- Modular attenuation tanks (e.g. AquaCell)
- Traditional attenuation tanks
- Infiltration and/or soakaway structures
- Discharge points from wetlands, ponds and swales

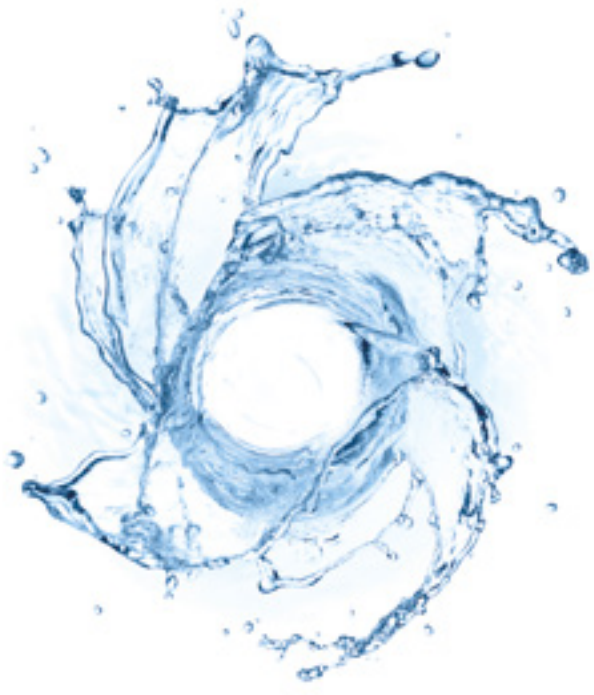


Mosbaek Vortex Flow Control Valves

Mosbaek A/S was founded in 1969 by inventor and engineer, Joergen Mosbaek Johannessen, who was credited as the first person in the world to conceive the idea of developing a water brake. The device for sewage systems, allowed only a limited but constant flow to pass, regardless of the water level.

Mosbaek A/S now offers a comprehensive range of valves, suitable for use with either stormwater and/or foul water sewage systems. Based on 50 years' experience in terms of developing valve solutions and by means of specially developed software packages all Mosbaek valves are designed to suit the exact needs of the customer, who may rest assured that we offer them the best solution possible.

Mosbaek A/S prides itself in being able find the simplest possible solution to specific flow control problems in order to ensure optimum construction, operating and maintenance costs for the user. Mosbaek A/S, Flow Control Valves have no moving parts, no electrical components and constantly larger orifice openings.



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Overview of how Vortex Flow Control Valves work

Individually designed to deliver optimum performance

The Wavin + Mosbaek range of vortex flow control valves are bespoke manufactured for each project to enable precise control of stormwater discharge rates between 1 to >80 litres/second.

As the flow control valve acts as a 'choke point' in the system, consideration needs to be given to addressing this issue in each and every application.

In the event of a blockage, the chamber will fill with water and our range of Tornado, Typhoon and Hurricane designs each provide a unique way of activating an emergency drain-down to gain access and restore optimum operation.

Overview as to how Vortex Valves work

A Vortex Flow Control Valve, controls stormwater flow by hydraulic effect without the requirement of moving parts. During low flow conditions, water entering through the inlet of the Vortex Flow Control Valve passes through the valve with negligible pressure drop. During high flow conditions, a vortex flow pattern develops within the device creating an air filled core. This phenomenon restricts and throttles flow through the device creating back pressure immediately upstream of its discharge point.

Unlike a traditional orifice plate, where an accumulation of small sized debris might cause an obstruction, by using a Vortex Flow Control Valve the debris is able to pass through the valve due to the relatively larger flow path opening.

Benefits of Wavin + Mosbaek Vortex Flow Control Valves

- Precise flow control
- No moving parts or power requirements
- Self-activating
- Reduced risk of blockages compared to orifice plates
- Integral by-pass/drain-down features allowing access for cleaning
- Custom built
- Manufactured from corrosion resistant stainless steel

Product Specification

Our technical advisory team can advise on the most appropriate product for your application. To enable us to specify the correct product we will require the following information;

- Design Head
- Design Peak Discharge Rate
- Details of the proposed application, manhole or flow control chamber

On receipt of the above Wavin can provide:

- Vortex Valve model, size and specification
- Typical installation drawing
- Quotation for supply of the Vortex Valve

Wavin + Mosbaek
Vortex Flow Control Valves

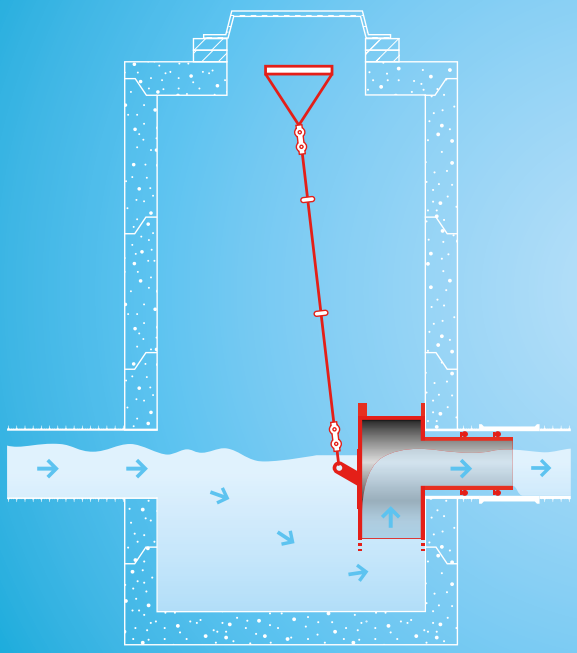
Tornado

The Tornado series offers an emergency drain-down facility by means of an integral, pivoting door mounted on the front face of the unit. This bypass door is fitted with a stainless steel rope which, when pulled from ground level, will open the door, exposing a larger aperture and allowing the system to be drained.

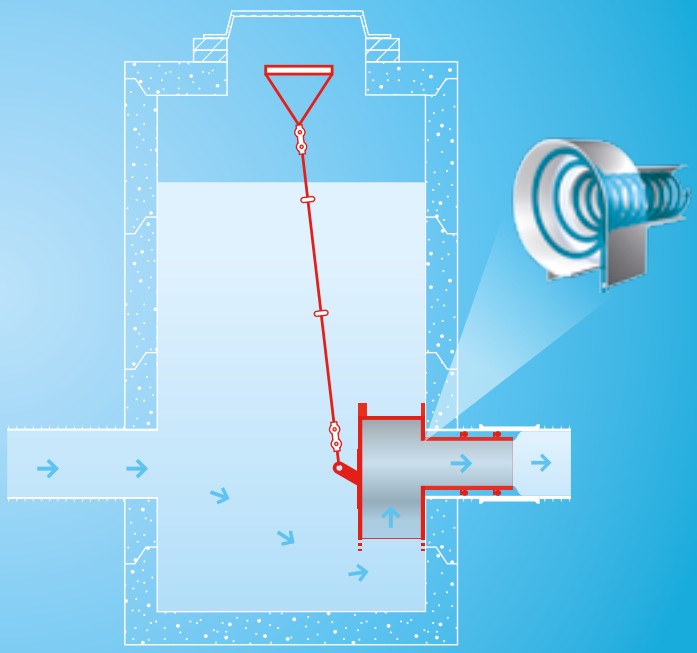
The Tornado valve is ideal for installations in either shallow or deep chambers, where man access is possible to clean out/ maintain the valve head if required. Emergency drain-down is also possible remotely, by opening the bypass door using the stainless steel rope provided.

Type	Options
Door	Spigot or plate fixing

Tornado low flow



Tornado peak flow



Typhoon

The unique design of the Typhoon series provides the security of an overflow and emergency draining facility via a plastic up-stand pipe, seated in the valve's extended outlet tube.

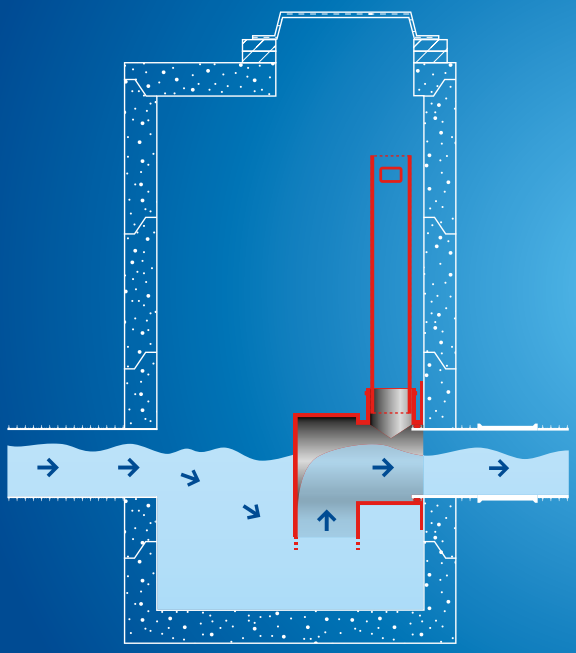
The overflow facility is incorporated into the top of this pipe, which must be higher than that of the maximum head and enables overflow water to bypass the flow control valve and exit the system.

The drain-down facility can be activated simply by pulling the up-stand pipe clear of its seating, from the surface.

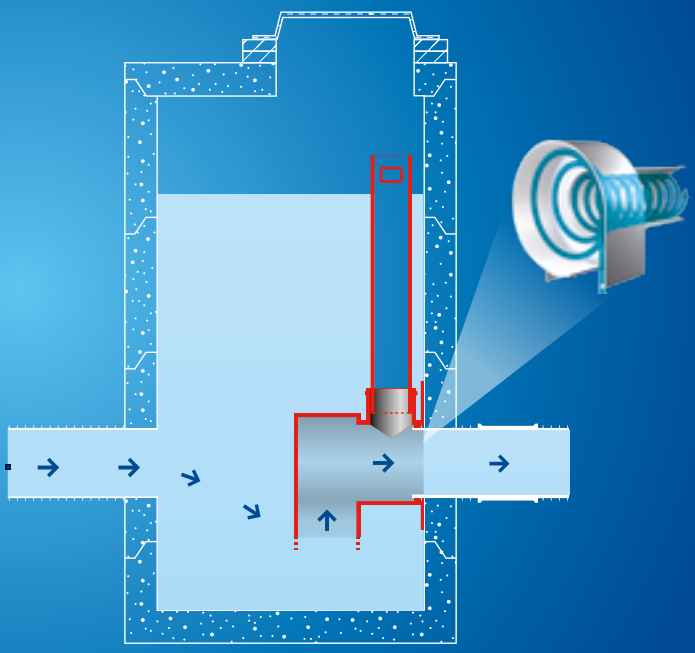
The Typhoon valve is typically for use where the ground immediately upstream of the valve chamber needs to be protected from localised flooding. In the event of a blockage the water can pass through the overflow slots on the up-stand pipe.

Type	Options
Drain-down	Spigot or plate fixing

Typhoon low flow



Typhoon peak flow



Wavin + Mosbaek
Vortex Flow Control Valves

Hurricane

The Hurricane series offers an emergency drain-down facility by simply removing the valve from its location plate from ground level. The Hurricane-valve consists of two elements:

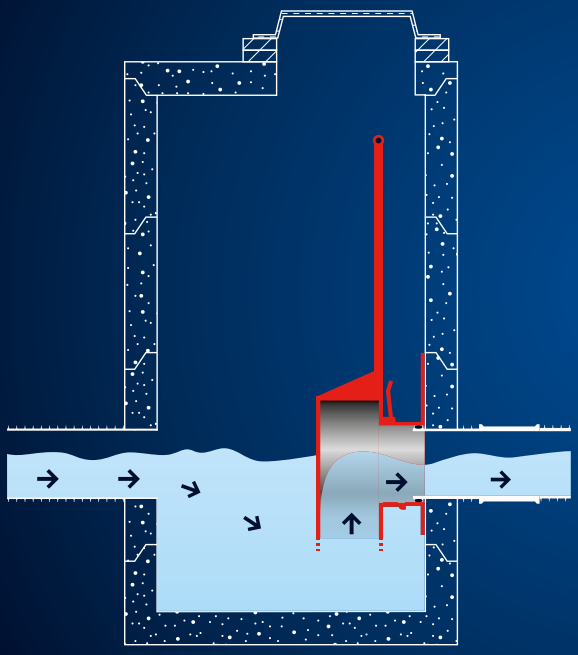
The first part is a location plate which is fixed to the inside of the chamber as appropriate and which houses a male location device. The second part is the valve head, featuring a customised and pre-fitted lifting rod and handle, designed to terminate some 300mm below the level of the chamber cover. The back of the valve incorporates a female location device.

Using the handle to lift the valve head from the surface, the locating devices are disengaged, activating the drain-down facility and enabling maintenance to either the valve head or chamber. To re-engage, simply lower the valve head back into position.

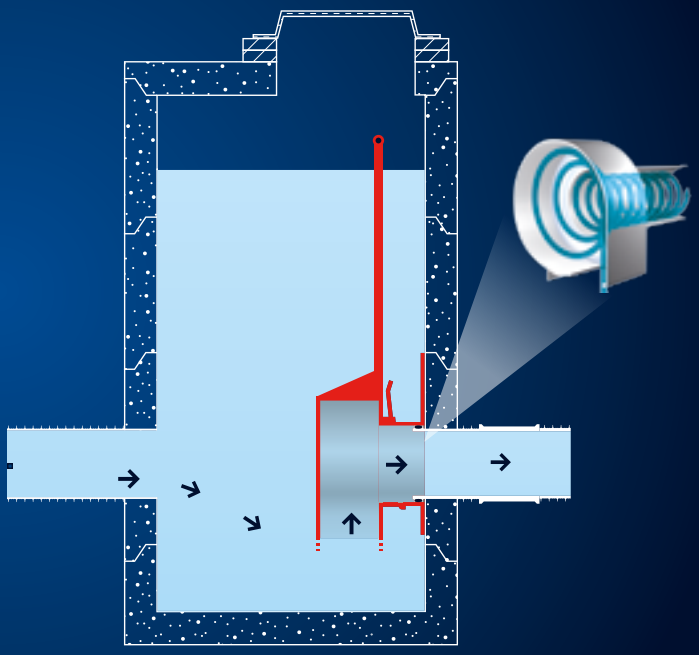
The Hurricane valve is particularly suitable for use within non-man entry chambers as the valve head can be fully detached from ground level using the lift rod and handle.

Type	Options
De-mountable	Spigot or plate fixing

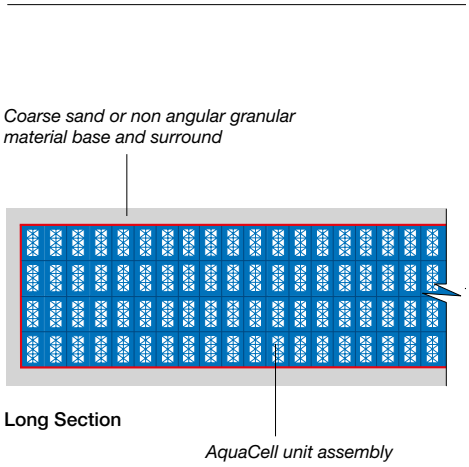
Hurricane low flow



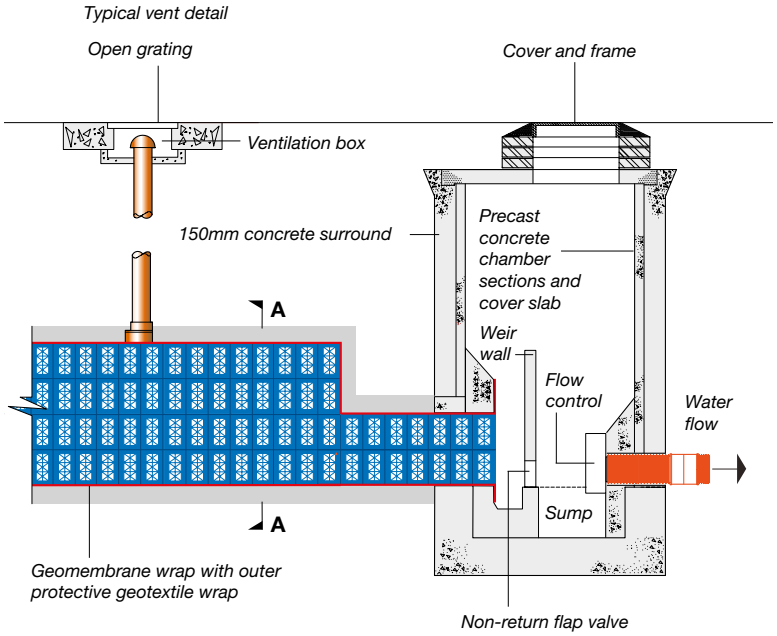
Hurricane peak flow

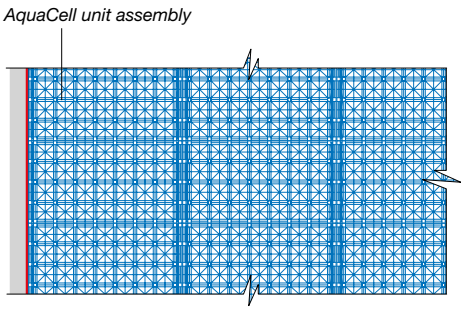


Typical Application

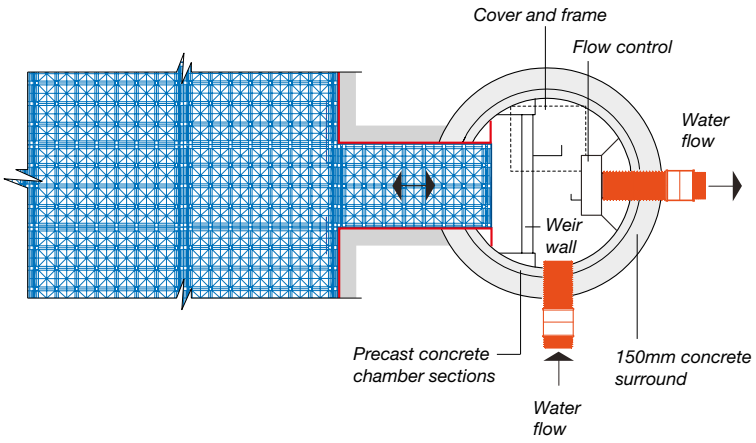


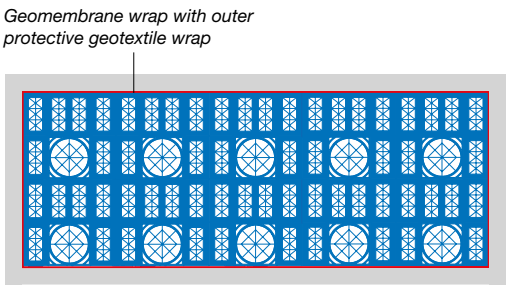
Long Section





Plan





Cross Section A-A

What happens to the water?

1. Control chamber fills with water, up to the top of the weir wall.
2. The water overflows the weir wall and enters the AquaCell storage assembly via the AquaCell connection.
3. The AquaCell storage assembly fills with water.
4. After storm event, water flows back out of the AquaCell storage assembly, finding its own level, and through the non-return flap valve at the bottom of the weir wall.
5. The water then flows through the vortex flow control valve.

Wavin + Mosbaek
Vortex Flow Control Valves

Installation & Maintenance

General Notes for Plate or Spigot Fixings

- The vortex flow control valve is a surface water regulator. It is installed in a control chamber, mounted either onto or over the outgoing pipe
- A flat surface is required for mounting the unit. In a circular chamber it is necessary to build up a concrete mounting pad around the outgoing pipe large enough to accommodate the unit. (Optional curved backing plate available if required)
- A sump is required below the outlet pipe with a depth of at least 350mm

Typical Installation Notes

1. Offer up the unit to the mounting area.
2. Spigot version - push the spigot on the back of the valve into the outlet pipe, ensuring that the orifice of the valve is set at or below the base level of the storage tank. Plate version - align the back of the fixing plate to the outgoing pipe, ensuring that the outlet is approximately 10mm above the invert of the outlet pipe.
3. Mark through the fixing bolt holes (on either the fixing plate or on the fixing lugs on the spigot type valves) and drill the holes for the anchor bolts with a 10mm drill bit.
4. Insert anchor bolts in holes and secure.
5. For Tornado valves, ensure that the steel rope pull cord is secured at the top of the chamber using the fixing bolts provided.

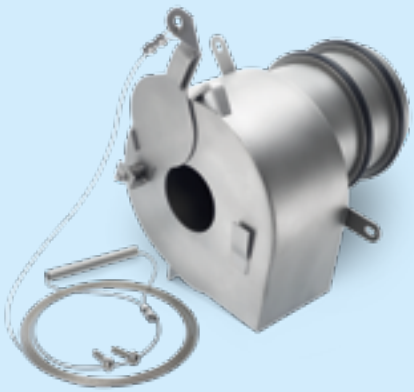
   For Typhoon valves, cut down the stand pipe to the required height, so that it terminates below the top of the chamber and can be easily reached from outside of the chamber and then fit the stand pipe ensuring that the ring seal is correctly fitted. Overflow holes should be set at or just above the height of the storage. For Hurricane valves, ensure that the lifting rod is situated within 300mm from the top of the chamber.

Maintenance

As the Vortex Valve units have no moving parts, maintenance requirements are minimal. The only manual intervention that would be required, would be in the event of a blockage.
Each of the three types of Vortex Valve have an emergency drain-down facility:

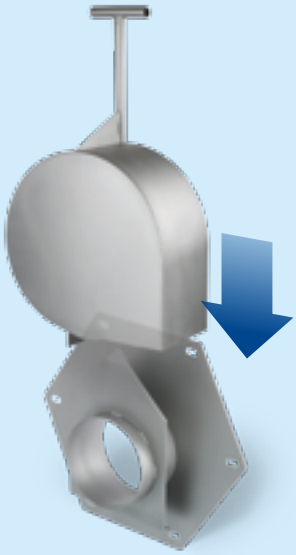
- The 'Tornado' Valve has an integral, pivoting door mounted onto the front face of the unit, which can be opened manually from ground level using the stainless steel rope provided. Once the door is open a larger aperture is exposed, allowing drain-down
- The 'Typhoon' Valve has an overflow and drain-down facility by means of a plastic up-stand pipe, seated in the valve's extended outlet tube. The pipe simply needs to be manually pulled clear of it's seating to activate drain-down
- The 'Hurricane' Valve can be removed from it's location plate from ground level using the integral lifting rod enabling drain-down

Tornado



Typhoon

Hurricane



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