

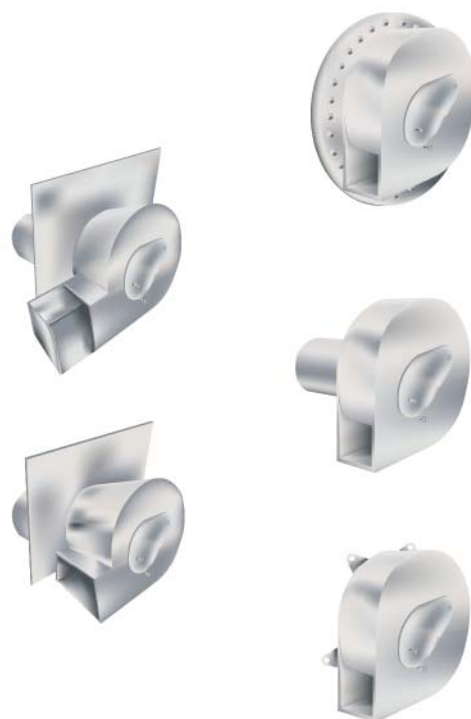
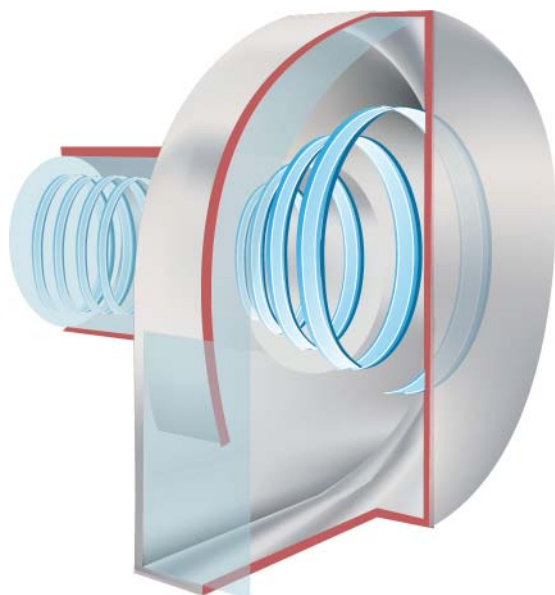
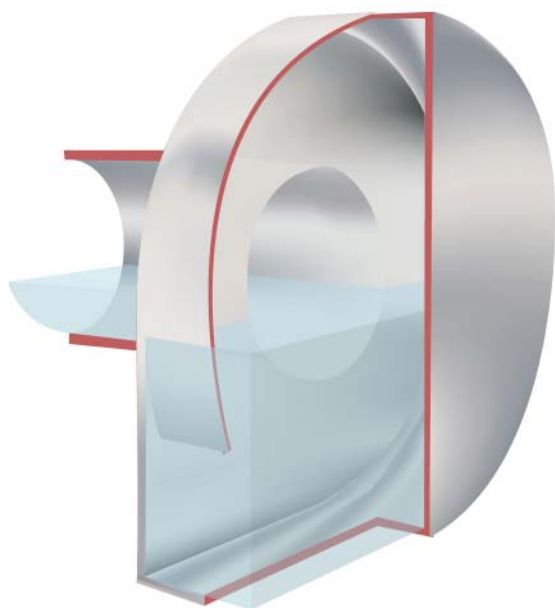


Modular Geo-Void Systems

Total Water Management

AquaBrakes

Vortex Flow Control Solutions



- Easy to install
- Multiple design options
- Controls and minimises peak stormwater flows
- Reduces storage requirements
- Vortex flow removes risk of clogging

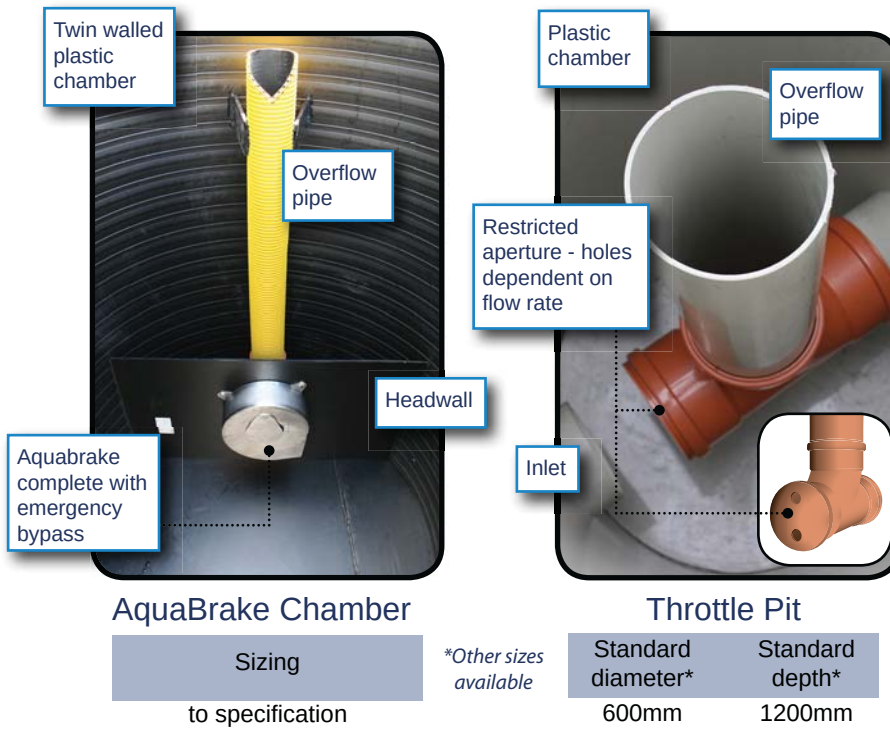


Flow Control

AquaBrake Chambers and Throttle Pits

AquaBrake Flow Control

AquaBrakes are an efficient and convenient tool for regulating flow rates through storm, sewer or combined systems. As vortex flow controls, they are powered by the water flow alone and are activated simply by the flow of water. With no moving parts and no requirements for external energy sources, their clever design minimises maintenance and prevents clogging. AquaBrakes can be supplied alone or pre-fitted within chambers designed to site requirements.

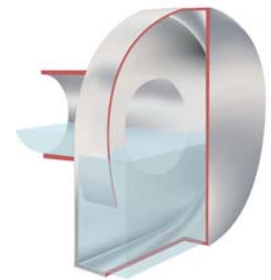


Traditional Flow Control

The ESS Throttle Pit is an alternative to the AquaBrake. It regulates flow in a more traditional manner by restricting an aperture to allow only a certain flow to pass through. Like AquaBrakes they are all designed with overflow channels which run vertically to the top of the pit ensuring continuous water discharge in the event of a blockage.

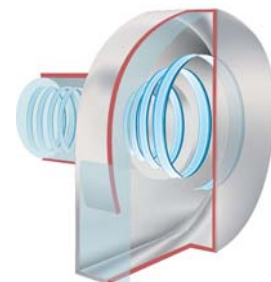


Vortex Flow Control: How does it work?



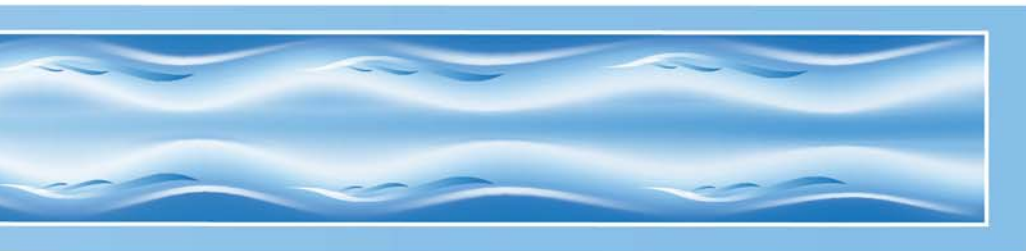
Low flow Conditions

During low flows, the AquaBrake behaves like a traditional opening and water passes through at a normal rate.



High flow Conditions

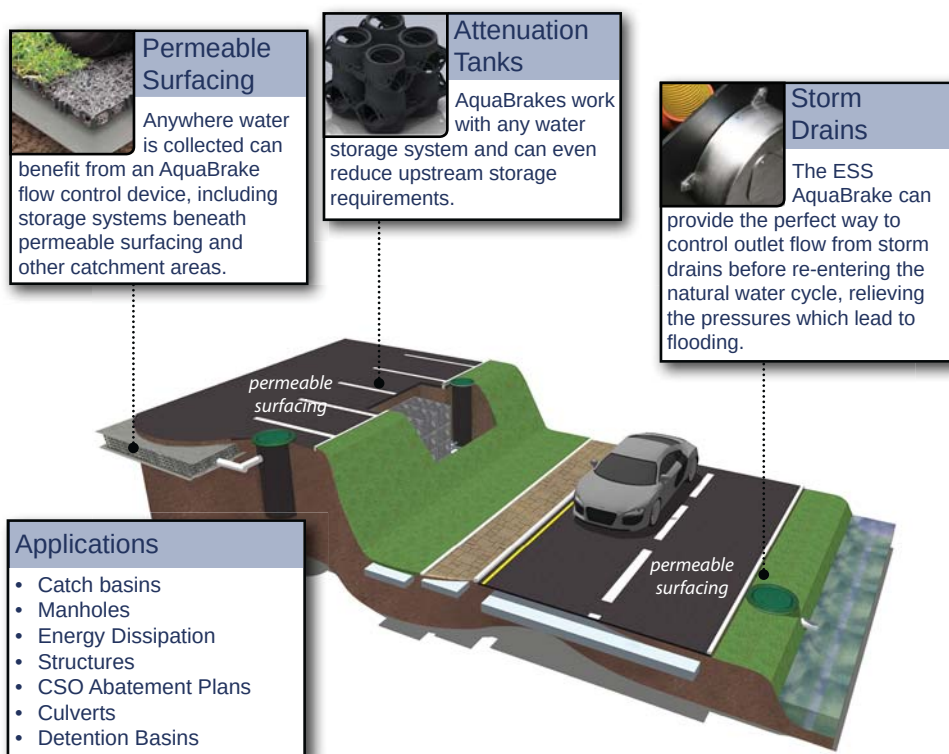
As the surrounding chamber fills, the AquaBrake becomes submerged beneath the water level causing a rotational velocity to be established. The rotational velocities in the inlet section of the device cause an air-cored vortex to form in the outlet section. The air core occupies the centre of the outlet and creates a significant opposition to flow through the device.



Applications

The ESS AquaBrake can be used for a variety of flow control purposes, including drainage systems for permeable surfacing, roadside runoff, attenuation systems and any general storm drains.

With a self activating, clog resistant operating mode, the ESS AquaBrake is the option of choice for any flow control application.



ESS and Total Stormwater Management

AquaBrakes form only a small part of our water management range. As part of the Alderburgh Group, ESS has the benefit of over twenty years of experience and is able to provide the solution to almost any stormwater problem.



Porous Surfacing and Sub-Strata, Combined Surface and Sub-Surface Swale Systems, Geocellular Ground Stabilisation, Infiltration and Water Storage Systems, Roadside Drainage.



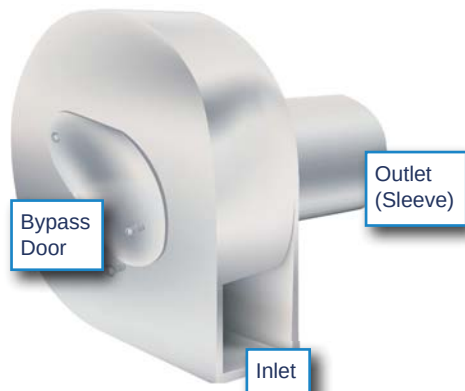
Benefits

-  **Cost Savings**
 - a simple solution to flow control.
 - can reduce upstream storage requirements by up to 30%.
-  **Durability**
 - corrosion resistant stainless steel.
 - tried and tested by independent sources - test data available on request.
-  **No energy requirements**
 - self-activating solution with no moving parts.
 - powered by the energy of the water flow alone.
-  **Clog Resistant**
 - AquaBrake design prevents blockages likely to occur in traditional orifices.
 - built in overflows and bypasses mean that if a blockage does occur it is easily sorted.
-  **Flexible Design**
 - several options for attachment available.
 - specification of type, size, orientation and attachment gives total control.

Fluid Amp AquaBrake

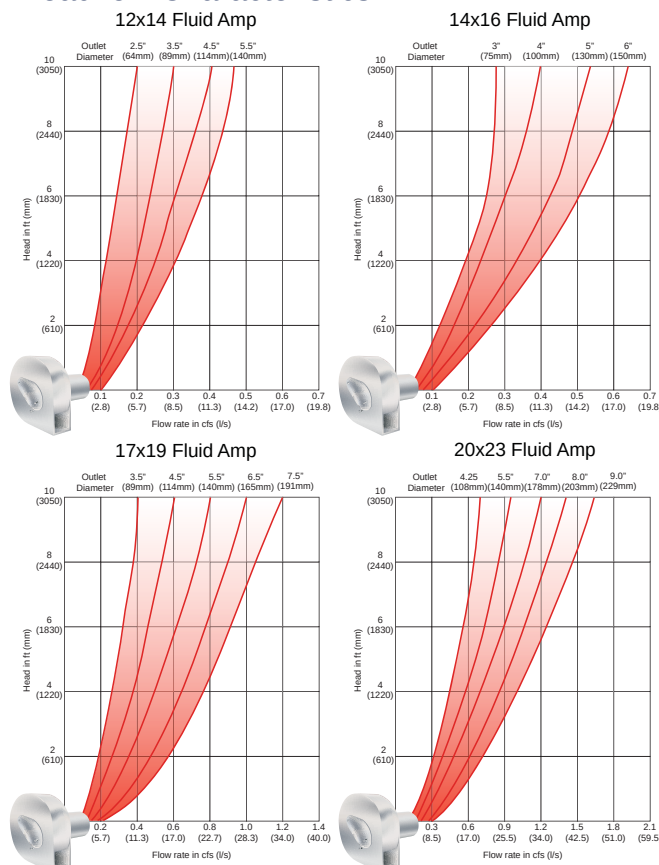
Fluid Amp

The Fluid Amp AquaBrake derives its name from the amplifier discussed in most fluid mechanics texts. They are most commonly installed in a catch basin outlet.



The Fluid Amp can be designed completely to specification and comes with a manual bypass as standard. If required, the Fluid Amp can be supplied pre-installed within a chamber, complete with a vertical overflow pipe to allow the entire chamber to be drained down in the unlikely event of a blockage. Separate fittings and attachments can be specified.

Headflow Characteristics



Size to specification

Attachments Various

Overflow Yes*

Manual Bypass Yes

*When supplied within a chamber

Fluid Amp Variations



Lug and Sleeve combination fitting



Flange



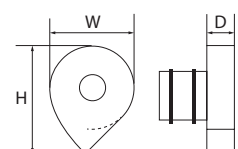
Lugs

Standard specification

Specialist Specification

Standard Fluid Amp Sizes

Model	Width		Height		Depth	
	in	mm	in	mm	in	mm
12x14	12	305	13.8	351	4	102
14x16	14.5	368	16.75	425	4.5	114
17x19	16.75	425	19.5	495	5.5	140
20x23	20.25	514	23.5	597	6.5	165

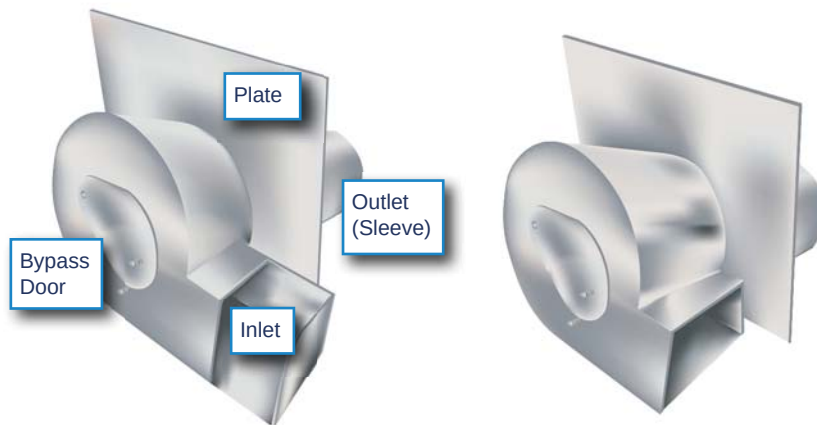


The information provided on these pages is for your information only. For further design information, technical sizing and specific configurations please contact ESS technical department.

Fluid Cone AquaBrake

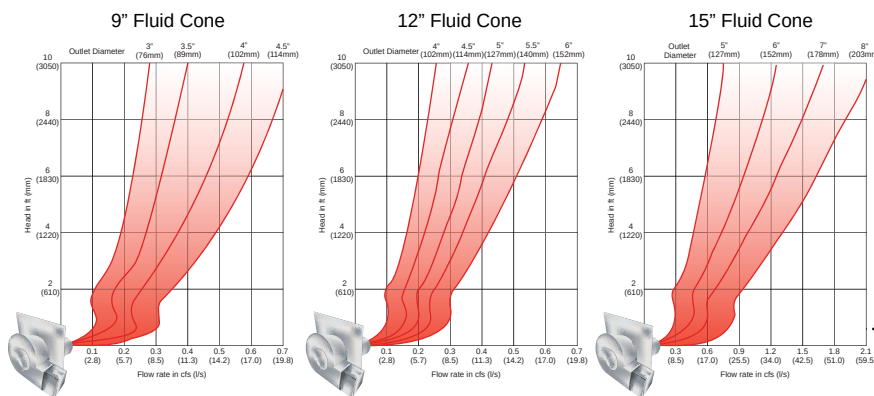
Fluid Cone

The Fluid Cone AquaBrake is named for its conical shape and is installed in structures with no sumps. Typically fitted to outlets from manholes in storm drains or sanitary sewers, they can also be fitted to culverts and detention basin outlets.

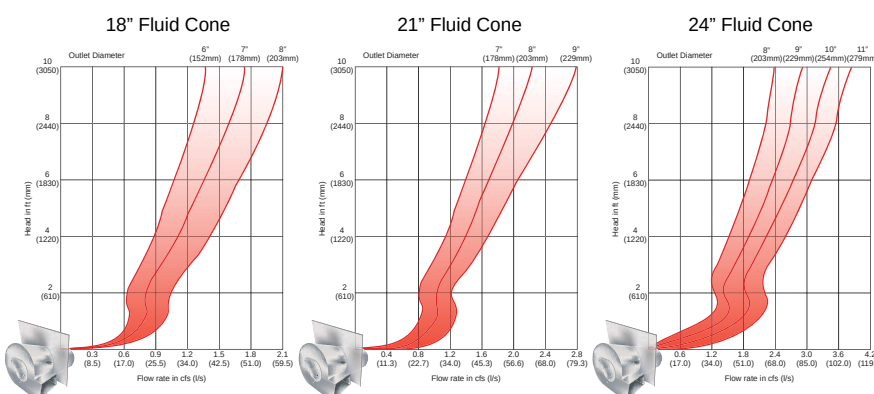


The Fluid Cone can be designed completely to specification and comes with a manual bypass as standard. If required, the Fluid Amp can be supplied pre-installed within a chamber, complete with a vertical overflow pipe to allow the entire chamber to be drained down in the unlikely event of a blockage. Separate fittings and attachments can be specified.

Headflow Characteristics Boxed Inlet



Slotted Inlet



Size	to specification
Attachments	Various
Overflow	Yes*
Manual Bypass	Yes

*When supplied within a chamber

Fluid Cone Variations

When specifying Fluid Cones, you will require either a boxed or slotted inlet. The boxed inlet is used with smaller AquaBrakes and the slotted inlet with larger AquaBrake sizes to keep the overall dimensions small enough to permit the AquaBrake to fit in most manhole or catch basin castings.

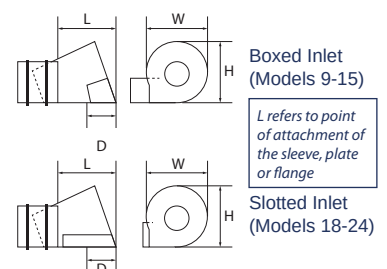


Boxed Inlet
with plate and sleeve
combination fitting



Slotted Inlet
with plate and sleeve
combination fitting

Model	Width in mm	Height in mm	Depth in mm	Length in mm
9	9	229	3-5	76-127
12	12	305	11.75	298
15	15	381	14.75	375
18	18	457	17.75	451
21	21	533	20.5	521
24	24	610	23.5	597



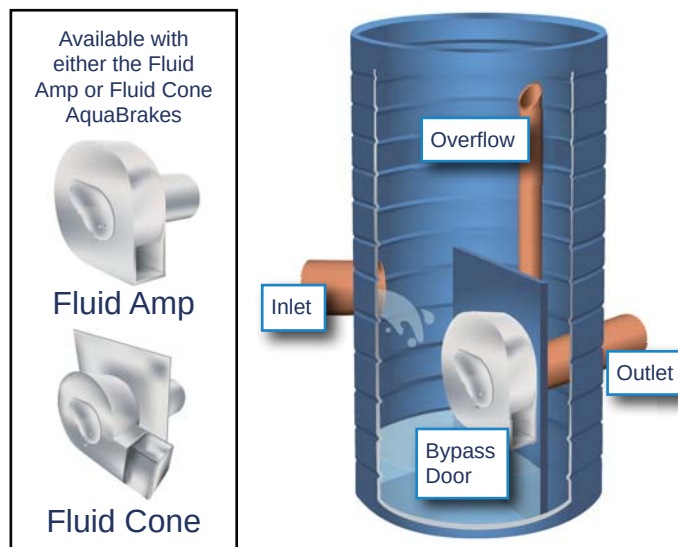
NOTE: Boxed inlets involve some individual custom sizing. The overall box dimensions are always slightly smaller than the outlet diameter specified.

AquaBrake Chambers

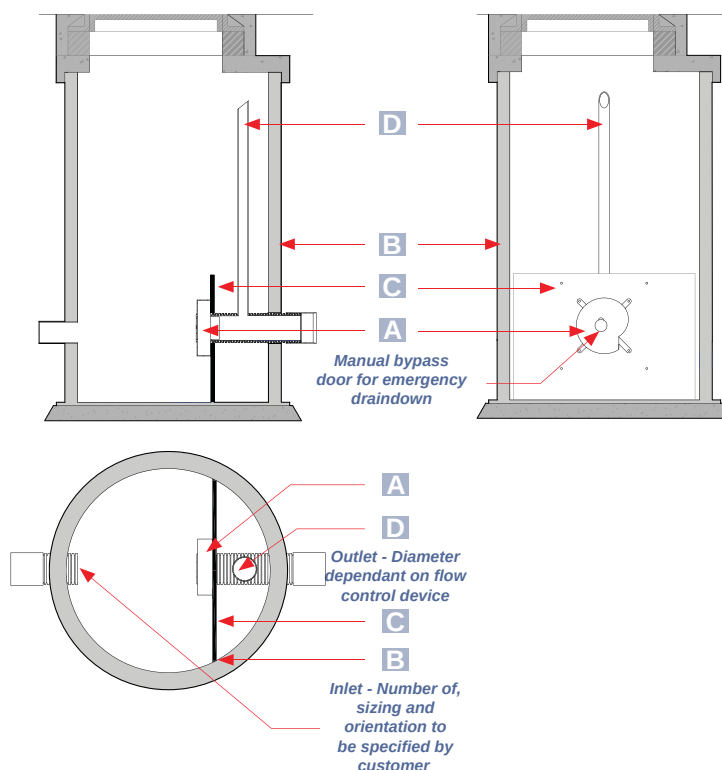
AquaBrake Chamber

The AquaBrake Chamber is available completely to specification, with chamber depth, chamber diameter and the AquaBrake all dependant on design specification.

Standard chamber depth is 1200mm and standard diameters are 900mm and 1200mm.



Technical Information



Size	to specification
Material	polypropylene
AquaBrake	cone/amp
Overflow	yes, fitted
Manual Bypass	yes, fitted

Key Design Information

Design Head

The depth between the invert level of the outlet pipe to the top of the upstream water level.

Design Flow/Peak Discharge

The required discharge from the AquaBrake. This is the desired output that can affect the amount of storage requirements needed for tanks.

Application

Surface water, foul water or combined system.

Further Details

Details of system proposals, manhole details, or any other relevant information.

Components

AquaBrake **A**

Specification dependant on design flow and design head.

Chamber **B**

Twin wall plastic chamber.

Headwall **C**

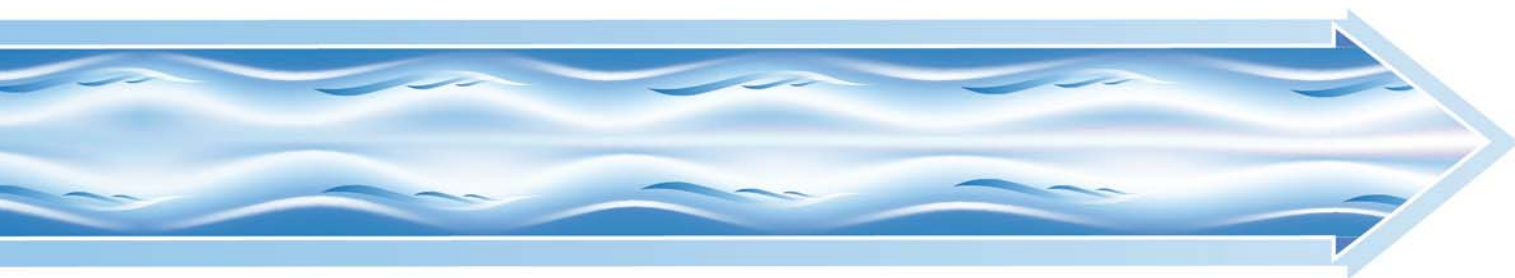
Height dependant on flow control device.

Overflow Pipe **D**

110mm diameter.

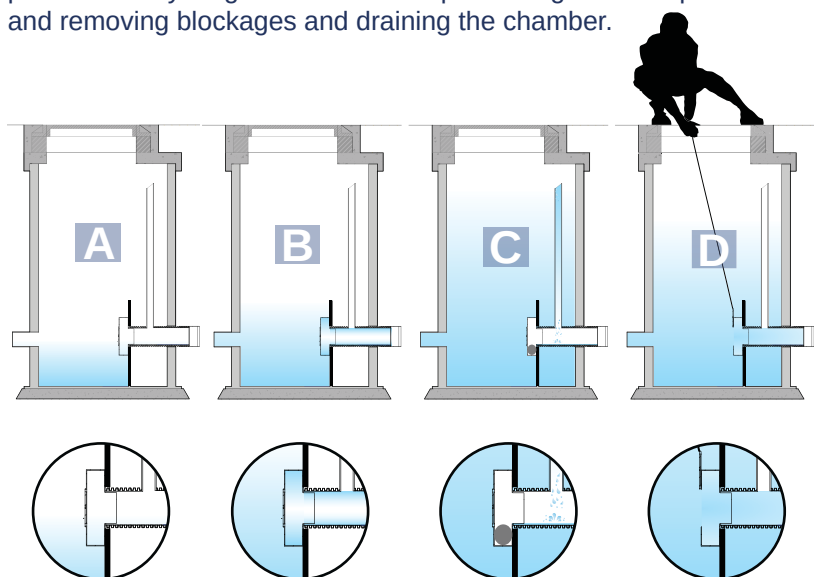
Cover Details by others

Reinforced concrete cover slab with mortar, complete with engineering or special purpose concrete brickwork. Manhole cover and frame bedded and hunched in 1:3 cement mortar. Concrete base and encasement also by others.



Key System Responses

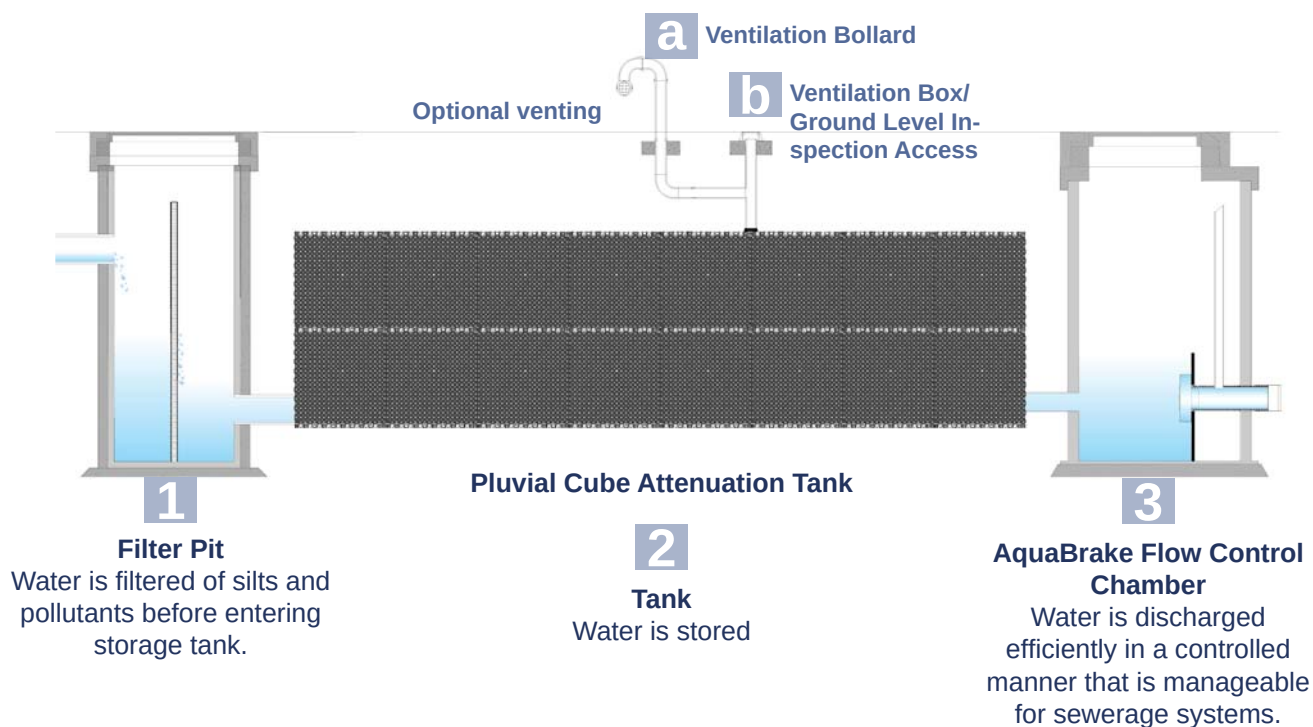
The AquaBrake Chamber is optimally designed to respond not only to high volumes of stormwater discharge, but also to the potential risk of blockage. Even though this risk is minimal, the chamber provides everything needed for both preventing overflow problems and removing blockages and draining the chamber.



- A Low Flow**
During low flows, water passes through the AquaBrake in a traditional manner.
- B High Flow**
During high flows, the AquaBrake becomes submerged beneath the water level causing a rotational velocity. An air-cored vortex is formed.
- C Blockage**
The integral vertical overflow pipe prevents flooding and water bypasses the AquaBrake.
- D Drain-Down**
The chamber can be completely drained down via the manual bypass door and fitted pull wire.

Typical Application

ESS Stormwater Attenuation Tank - Pluvial Cube System complete with filter pit and AquaBrake Flow Control



AquaBrakes

Vortex Flow Control Solutions

All products are manufactured to the highest quality, being subject to rigid quality control. However, the company cannot control conditions of application and use of its products, thus any warranty, written or implied, is given in good faith for materials only. ESS Ltd will not accept any responsibility for damage or injury arising from storage, handling, misapplication or misuse of its products. All transactions are subject to our standard condition of sale, copies of which are available on request.

To find out more about these systems and products please contact us



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