Hydro International
A CRH COMPANY

Check Your Curve: The Flow Control Guide

Flow Control: It’s Not Just Head & Flow — It’s the Curve That Gets You There

Same numbers.

Different curves.

Different outcomes.

Why the Curve Matters

When reviewing a drainage specification, it's natural to focus on *head and flow*.

But that's only part of the story.

It's not just the numbers – it's the curve that gets you there.

Two flow controls can meet the same design point… but behave very differently across the **discharge curve**.

Same numbers. Different curves. Different outcomes

That difference can influence:

- How quickly storage fills
- How flows are controlled during storm events
- How the system performs in reality

In a drainage design, the flow control isn't just a component — it defines how the system works.

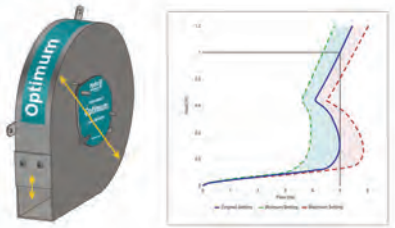
Designed Around the Curve

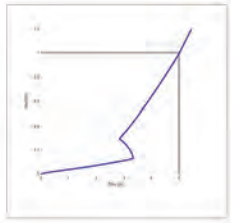
Hydro-Brake® Optimum is designed to deliver controlled, efficient performance across the full discharge curve to meet specific site conditions.

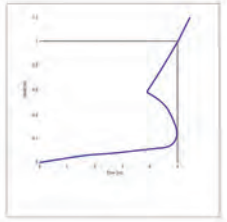
Unlike conventional vortex flow controls, it is engineered to:

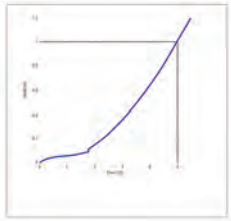
- Optimise performance through Flush-Flo™ and Kick-Flo® points
- Reduce the volume of water that needs to be stored
- Control flows consistently across a wide operating range

This means better use of storage and more predictable system behaviour.









All these vortex flow controls are Hydro-Brake® Optimum units, but they have been designed by the engineer to achieve different site objectives, as is shown by the variance in performance curves.

For a quote call **01275 337937** or email: **stormwater@hydro-int.com**

How Do Flow Controls Really Compare?

At first glance, many flow controls appear similar — especially when compared using just head and flow.

But when you look more closely, important differences start to emerge.

This table highlights how different flow controls compare across key factors including **performance, flexibility, installation, and long-term behaviour**.

What to consider	Hydro-Brake® Optimum	Other Vortex Flow Controls
Curve performance	✓ Optimised across the full discharge curve	Varies depending on design
Storage efficiency	✓ Helps reduce storage requirements	May require more storage
Flow control behaviour	✓ Controlled and predictable	Can behave differently across the curve
Performance consistency	✓ Designed to perform as intended	Performance can vary in real conditions
Flexibility / options	✓ Range of configurations for different sites	Varies by supplier
Installation & maintenance	✓ Designed for practical installation	May differ depending on product
Risk when substituting	✓ Designed to match spec performance	May affect performance if curve differs

What Happens When You Swap a Flow Control?

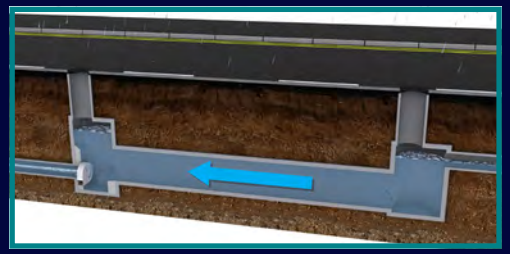
Substituting a flow control based only on head and flow can change how a system performs.

Because the curve changes — **even if the numbers don't**.

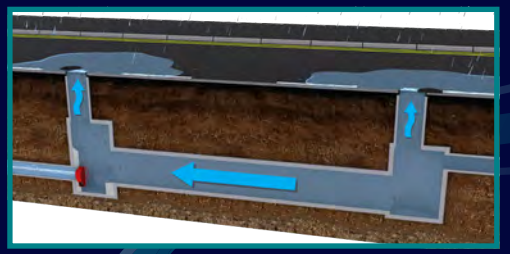
This can result in:

- ✗ Faster storage fill
- ✗ Different flow control behaviour
- ✗ Increased flood risk

In some cases, the drainage system may no longer perform as originally designed.



Hydro-Brake® Optimum with optimised storage volume in pipe.



Alternative flow control with different curve exceeds the storage volume in pipe.

This Hydro-Brake® Optimum has been specifically sized to suit the chamber dimensions and maximise hydraulic performance without restricting inlet flow.

While meeting discharge limits at the required design flow, it operates differently from a conventional vortex flow control.

Substituting it with an alternative device may require a larger chamber footprint and adversely affect system performance, resulting in under-discharge or over-discharge and increasing the risk of flooding upstream or downstream.

Note: Due to the customised performance, where a Hydro-Brake® Optimum is specified, any changes to the specified unit may result in the drainage design not performing how the consultant intended it to. This could result in flooding either upstream or downstream of the unit.

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Hydro-Brake® Optimum

Our most popular and versatile vortex flow control, capable of controlling **storm, foul** or **combined** flows from very low up to 550 l/s. It has a proven track record with **over 14,000 units installed worldwide**.

Where it's used:

For specifications where Hydro-Brake® Optimum is named, and/or where Flush-Flo™ and Kick-Flo® points or a Hydro International reference number are detailed.

A range of options is available to make installation faster, cheaper and safer.

Tested and validated performance

The Hydro-Brake® Optimum remains the only vortex flow control to be certified by both the BBA (Certification No. 08/4596) and the WRc (Certification No. PT/503/0422). This independent verification confirms its performance, structural integrity and long-term durability for controlling stormwater and combined flows.

Our full range of stormwater solutions

The Hydro-Brake® Flow Control Series

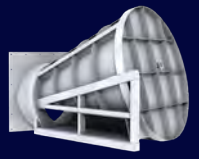
A versatile toolbox of precision-engineered devices for surface water, fluvial, foul/combined water, and sewer network flow control.

Hydro-Brake® Optimum

The vortex control with no equivalent. Independently verified by BBA and WRc

Hydro-Brake® Agile

Precision-engineered flow control giving reduced on-site storage for highly constrained applications



Hydro-Brake® Flood

The vortex controlled solution to watercourse flooding

Hydro-Brake® Orifice

The low cost option for unconstrained sites

Stormwater treatment range

Choose from a range of stormwater treatment devices to treat stormwater flows of varying quality.

All our solutions can work alongside, enable or enhance natural SuDS, helping to meet or improve on biodiversity and amenity targets.

Downstream Defender® Select

Advanced vortex separator

Hydro Biofilter™

Self-contained biofiltration system

Up-Flo™ Filter

Multi-stage treatment system

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Check the Curve Before You Supply or Install

Flow control performance isn't just about hitting a number - it's about how the system behaves from start to finish.

Checklist:

- ✓ Is the exact product specified being used?
- ✓ Does the alternative behave the same across the curve?
- ✓ Has any change been reviewed in the design?

Even small changes in the curve can have a big impact on how the system performs.

That behaviour is defined by the curve.

Speak to your RSM

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