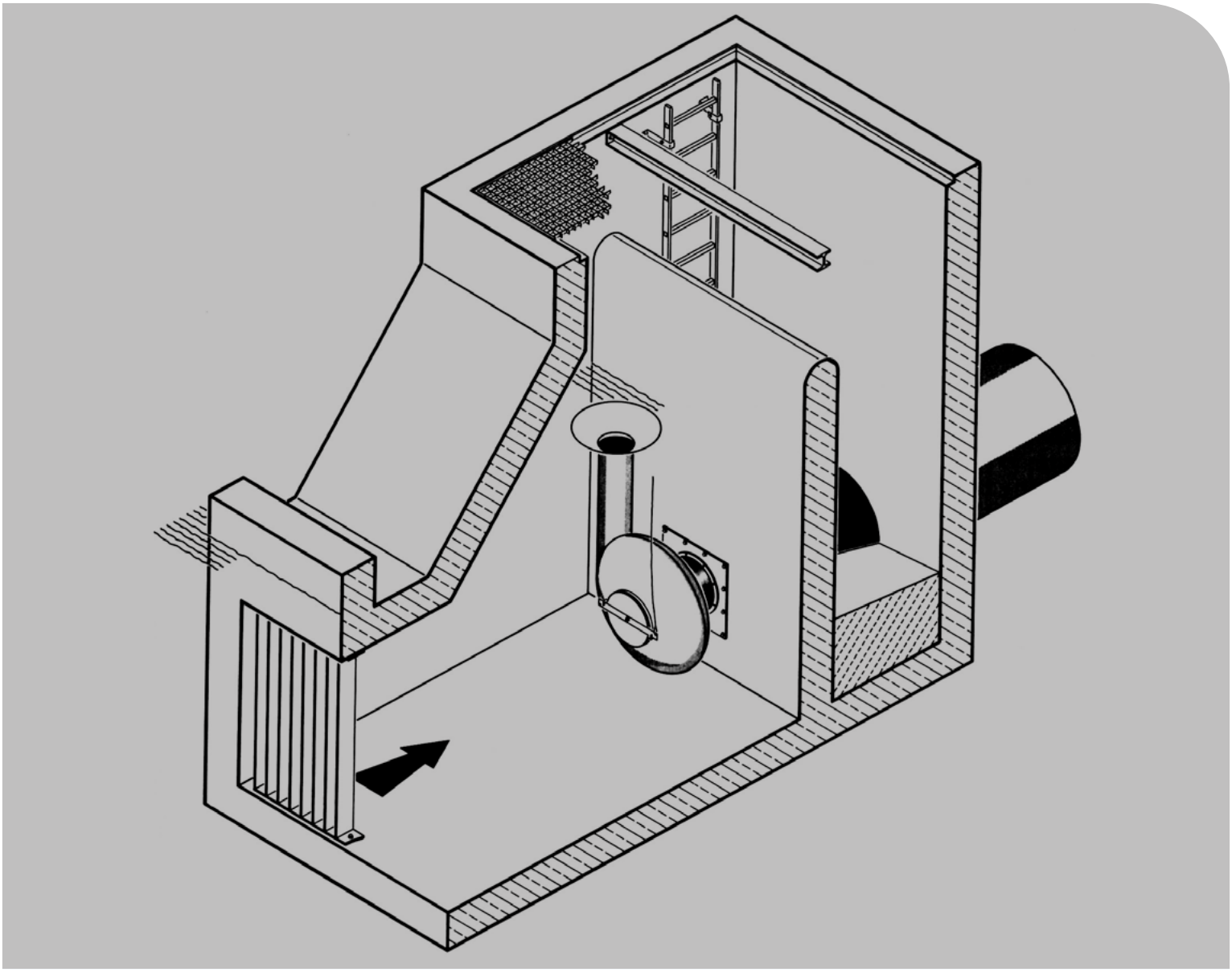


VEOLIA

HYDROVEX® Pond

Vertical Vortex Regulator

CSO, SSO, Stormwater Management

WATER TECHNOLOGIES

HYDROVEX® POND VERTICAL VORTEX REGULATOR

Application

The design of the **HYDROVEX® Pond** is based on the reliable and very popular HYDROVEX® VHV/SVHV Vortex Regulator. Operating solely using the effects of the flow (Fluidic), the use of moving parts or external energy is not required. These units create important restrictions while keeping a large open section for the flow.

The **HYDROVEX® Pond** is designed for installation in stormwater retention systems. Fitted with a vertical inlet pipe, the **HYDROVEX® Pond** is ideal for systems requiring a permanent water level or multistage designs where multiple storms need to be considered.

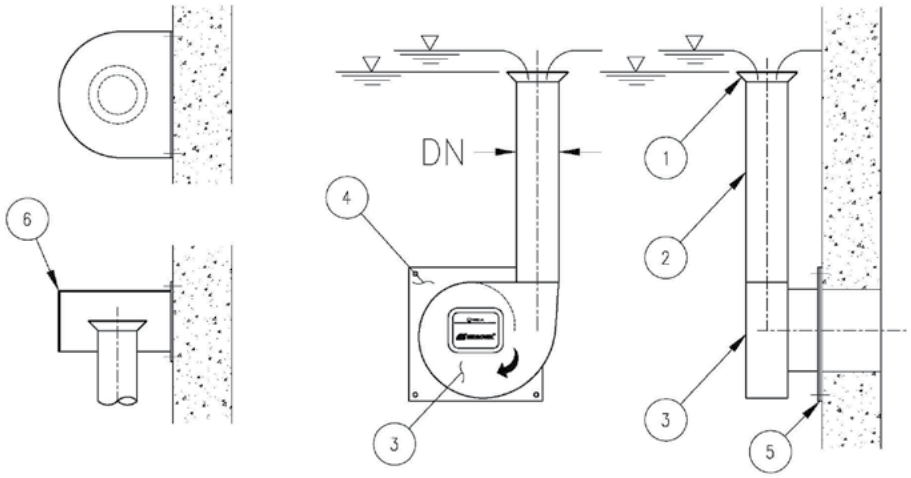
Advantages

- Precise flow control
- Vortex mode achieved almost instantly
- Large open sections
- No moving parts or external energy
- Minimal wear
- Great operational safety
- Corrosion resistant construction
- Easy and quick installation
- No adjustment required

Operation

The vortex chamber of the HYDROVEX® Pond is positioned vertically and is connected to an outlet tube fitted with a wall mounting plate. The mounting plate is anchored to the chamber back wall and a neoprene gasket used as a seal. The inlet tube is vertical and connected tangentially to the vortex chamber as can be seen in Figure 2.

The height of the inlet tube is variable and is set to begin discharging at a specific elevation. This feature can be used to either maintain a permanent water level in the basin or for multistage designs where flow must be controlled for various storm events. Flow through the unit begins once the upstream water level reaches the edge of the vertical inlet pipe. The edge of the inlet pipe is equipped with a funnel. If floatables are a potential problem, the HYDROVEX® Pond can be equipped with an optional floatables hood.



1. Funnel
2. Vertical inlet pipe
3. Vortex chamber
4. Wall plate
5. Gasket
6. Floatable hood (optional)

Figure 1: Components of a HYDROVEX® Pond

Flow characteristics

A typical flow curve for the HYDROVEX Pond is shown as the dark solid line in Figure 3. The initial part of the flow curve (section b) is nearly flat and produced by the funnel acting as an overflow weir. Once water enters and completely fills the flow control chamber, a vortex is produced almost instantaneously and the unit will continue to behave as a standard vortex regulator (section a). At this point, flow will increase or decrease with rising or falling upstream water pressure.

The dotted line portion represents the flow pattern that actually never happens, since the discharge curve is based on a standard vortex regulator. As the inlet pipe is set at a predefined start level, the pressure head is already large enough to create the full vortex once flow begins.

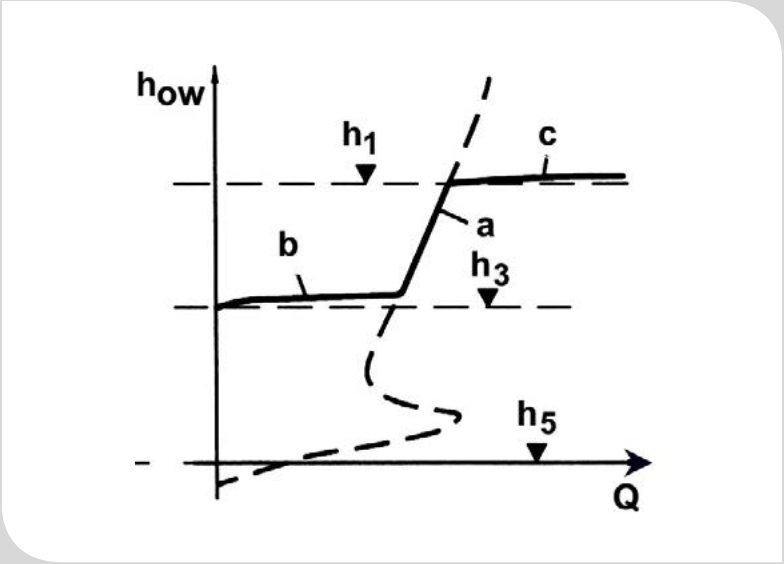


Figure 2: HYDROVEX® Pond typical discharge curve

Selection

The hydraulic dimensioning of the HYDROVEX® Pond Vertical Vortex Flow Regulator is based on the curve characteristics of the HYDROVEX® SVHV Vertical Vortex Flow Regulator, which was the subject of laboratory hydraulic tests.

For a complete dimensioning, the dimensions presented on Figure 4 are required. For retention tanks, the design flow Q can be taken equal to the arithmetic mean between the flow at the beginning of storage and the flow at the maximum water level. The head is measured starting from the axis of the vortex unit h5. Kindly contact Veolia Water Technologies Canada Inc. for sizing and dimensions.

The HYDROVEX® Pond is factory calibrated with a precision of ±10%. Shipped to site ready for installation, the unit requires no additional on-site adjustment.

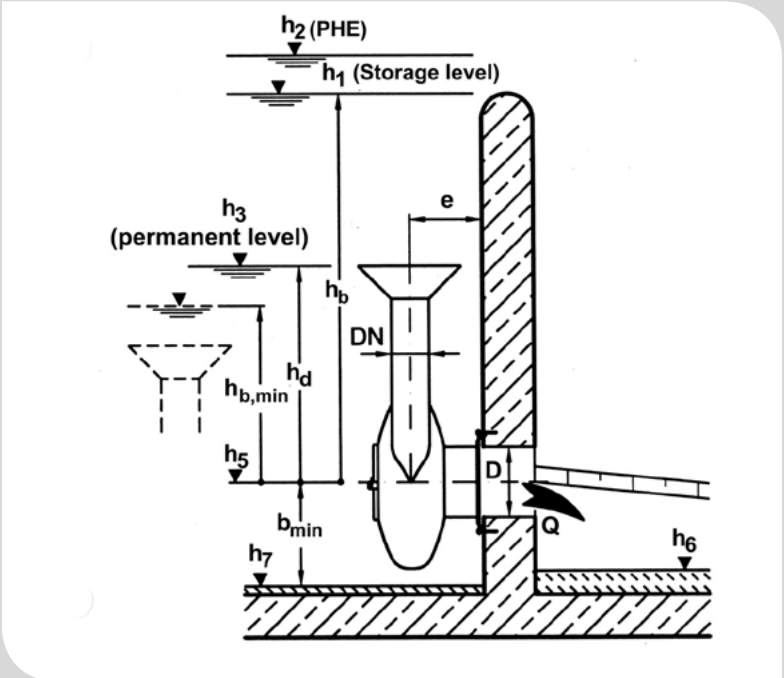


Figure 3: Definition of height, water level and flow rate

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