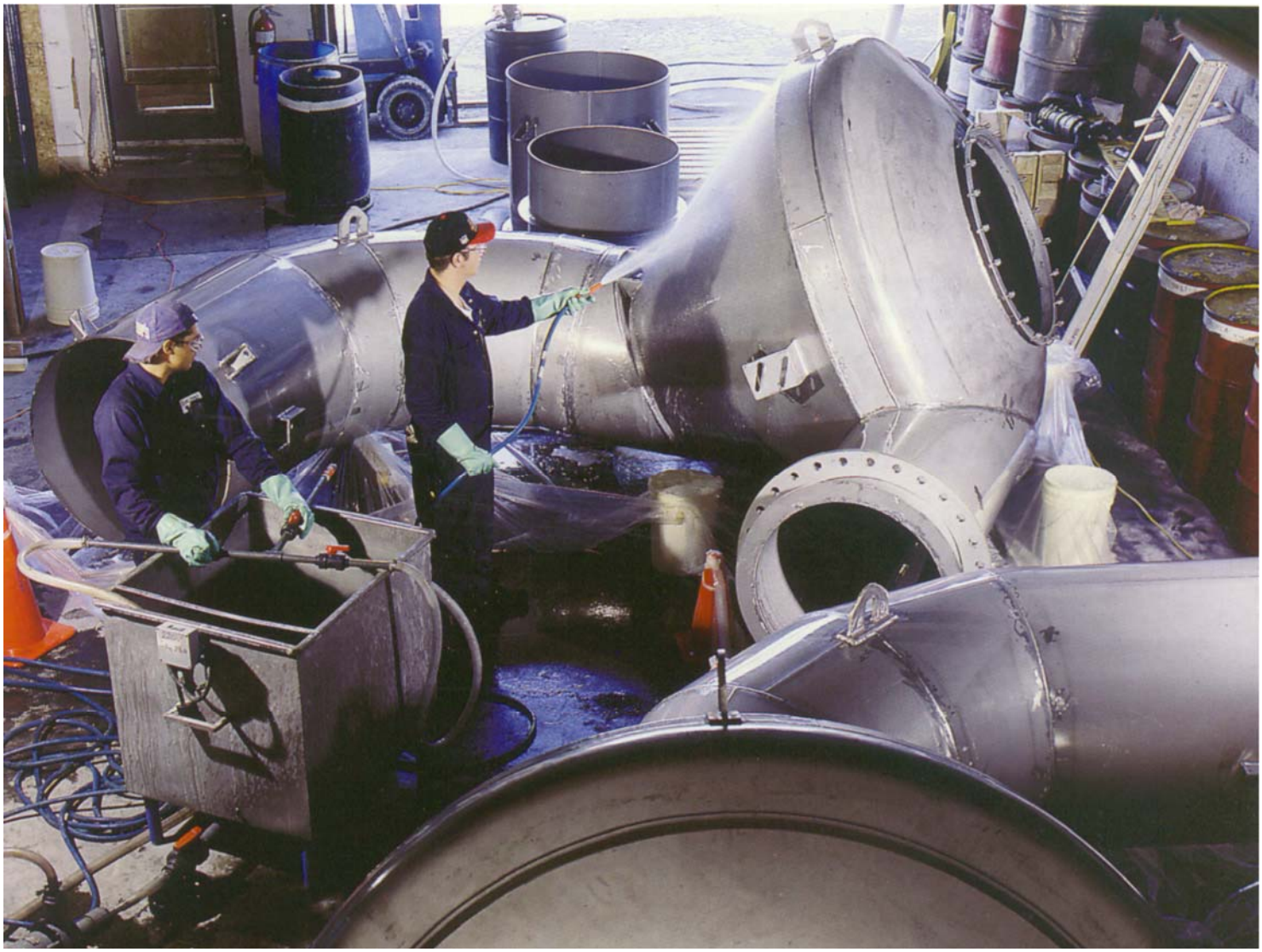
CSO/STORMWATER MANAGEMENT

® HYDROVEX®
IHV / HHV Flow Regulators

Regulating Flow in Combined and Sanitary Sewers



JOHN MEUNIER

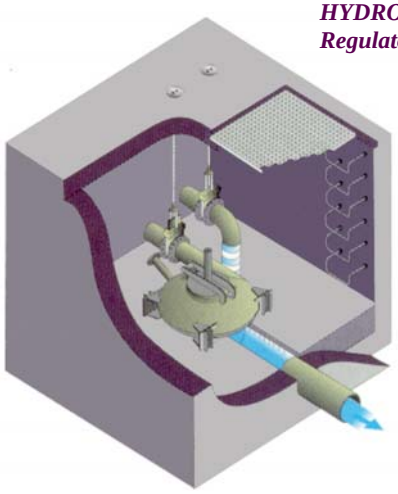
HYDROVEX® IHV / HHV FLOW REGULATORS

The HYDROVEX® IHV / HHV Flow Regulator is a vortex throttle designed to limit flows from storm overflows, retention basins, combined and sanitary sewers.

FEATURES

- No moving parts;
- No wear;
- No auxiliary energy required;
- Large inlet and outlet;
- Corrosion free construction;
- Precise throttling;
- Small head loss during dry weather flow;
- Easy to modify throttling;
- Simple and quick to install;
- Minimum maintenance.

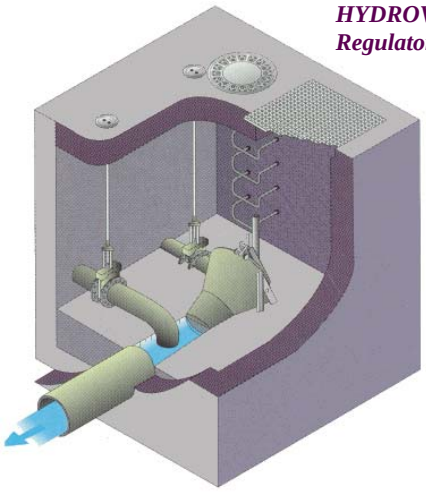
HHV Horizontal HYDROVEX® Regulator



ADVANCED FEATURES

- Rounded head for enhanced control
- Lighter and stronger structure
- Positive venting to eliminate suppression during initial start-up
- Air allowed in the vortex ensures a smooth, accurate stabilized vortex action

IHV Inclined HYDROVEX® Regulator

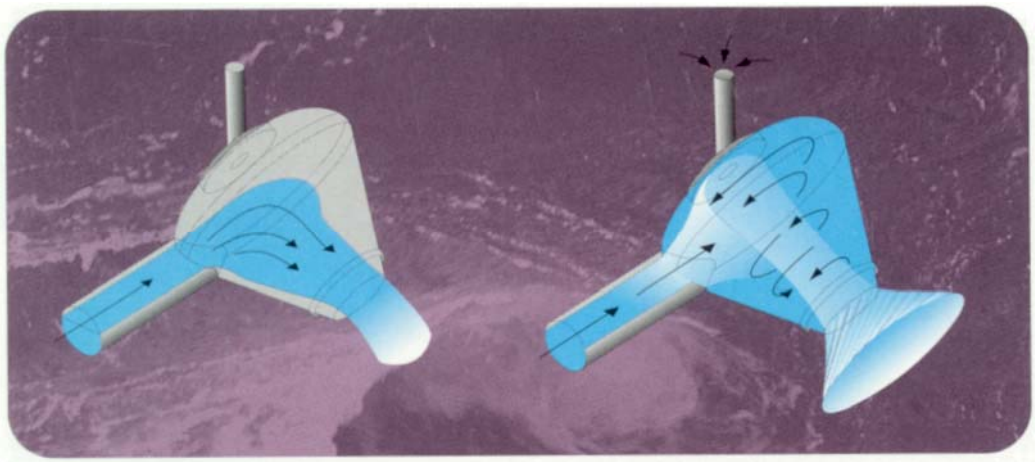


OPERATING PRINCIPLES

The **HYDROVEX® IHV / HHV** Flow Regulator has a rigid housing with no moving parts. Water enters the regulator tangentially into the chamber. At low flows, the regulator presents practically no resistance to the flow.

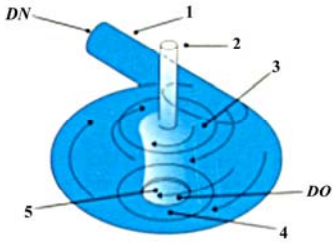
As flow increases, tangential velocities in the regulator increase and eventually lead to the formation of an air-filled vortex core. The latter obstructs most of the outlet orifice without physically reducing its size. The Hydrovex® now becomes an ideal throttle.

The discharge from a **HYDROVEX® IHV / HHV** Flow Regulator is equivalent to an orifice 4-6 times smaller. The likelihood of blockage is greatly reduced.



HYDROVEX® IHV / HHV Flow Regulator in open and throttle positions.

Major components of the HYDROVEX® IHV / HHV Flow Regulator



DN Nominal inlet diameter
1 Inlet
2 Air vent
3 Removable cover
4 Vortex chamber
5 Vortex airstream
DO Outflow orifice diameter ≥ DN

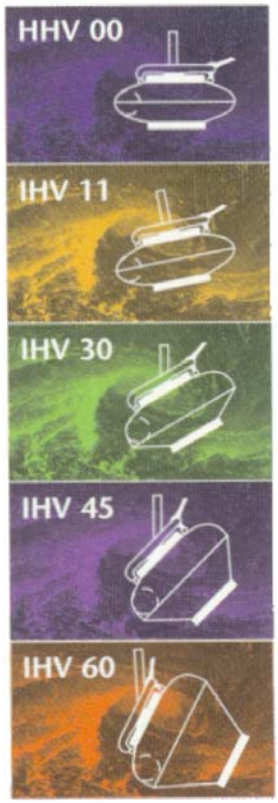
HYDRAULICS CHARACTERISTICS

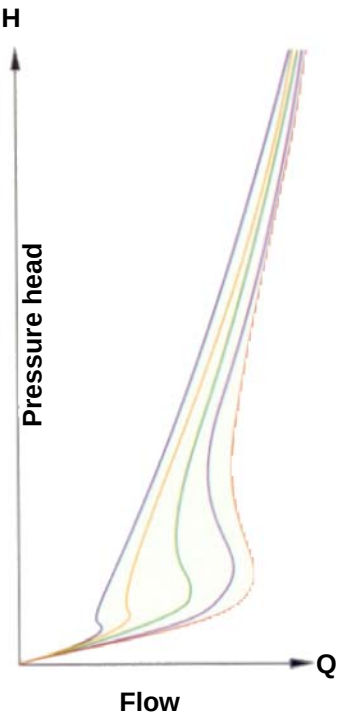
HYDROVEX® IHV / HHV Flow Regulators have "S" shaped flow curves. The lower curve indicates dry weather flow, the steep curve the vortex flow.

Flow characteristics of the **HYDROVEX® IHV / HHV** Flow Regulators are the product of the pressure on the inlet side and the following parameters:

- inlet diameter (DN);
- housing or bowl diameter;
- angle of inclination and vessel shape;
- outlet diameter (DO).

Modification of the parameters produces an entire family of vortex regulators.





Effect of angle inclination

INSTALLATION

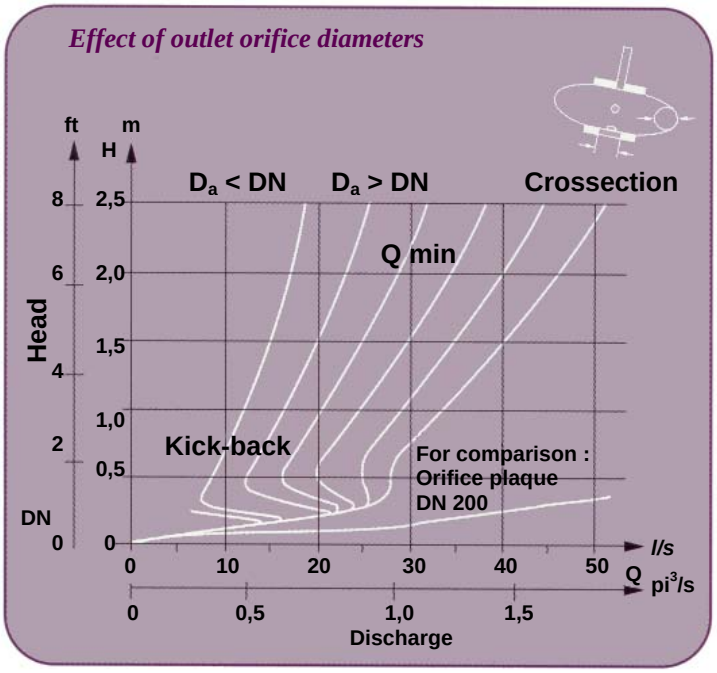
HYDROVEX® IHV / HHV Flow Regulators may be installed in a separate dry chamber or a wet pit with the outflow discharging into an open channel or a fixed pipe. Dry pit installations are preferred as they provide easier access for maintenance and inspections. A clearance of 600 mm (2') should be allowed around the regulator and by-pass.

A minimum clearance below the outlet must be provided for most regulators.

HYDROVEX® IHV / HHV Flow Regulators are manufactured with standard nominal inlet diameters (DN) of 100 to 1,000 mm (4" to 40").

Due to the many design parameters involved, several hundreds of possible regulator models are available. A specially designed computer program allows **John Meunier Inc.** to determine optimum solutions and carry out hydraulic dimensioning.

Model	Minimum clearance
HHV	DN
IHV-11	0,9DN
IHV-30	0,7DN
IHV-45	0,4DN
IHV-60	25 mm (1")



Selecting the HYDROVEX® IHV / HHV Flow Regulator… Data required:

- Maximum upstream water level;
- Maximum outflow;
- Maximum dry weather outflow;
- Regulating structure: new or existing;
  - Inflow pipe:
    - diameter;
    - threshold elevation;
    - slope;
  - Outflow pipe:
    - diameter;
    - threshold elevation;
    - slope;
  - Regulating chamber dimensions.

The **HYDROVEX® IHV / HHV** Flow Regulator is guaranteed for an accuracy of ±5% of the design discharge.

GUARANTEE

HYDROVEX® IHV / HHV Flow Regulators are guaranteed against manufacturing and design defects for a period of 5 years. In the event that the hydraulic characteristics fail to meet the range of accuracy of ±5% for the flows mentioned in the approval documents or if the unit is defective, **John Meunier Inc.** will modify or replace the regulator.

John Meunier Inc.
ISO 9001 : 2000

Head Office
4105 Sartelon
Saint-Laurent (Quebec) Canada H4S 2B3
Tel.: 514-334-7230 www.johnmeunier.com
Fax: 514-334-5070 cso@johnmeunier.com

Ontario Office
2000 Argentia Road, Plaza 4, Unit 430
Mississauga (Ontario) Canada L5N 1W1
Tel.: 905-286-4846 www.johnmeunier.com
Fax: 905-286-0488 ontario@johnmeunier.com

USA Office
2209 Menlo Avenue
Glenside, PA USA 19038
Tel.: 412- 417-6614 www.johnmeunier.com
Fax: 215-885-4741 asteele@johnmeunier.com

Revised : 2008-10-01