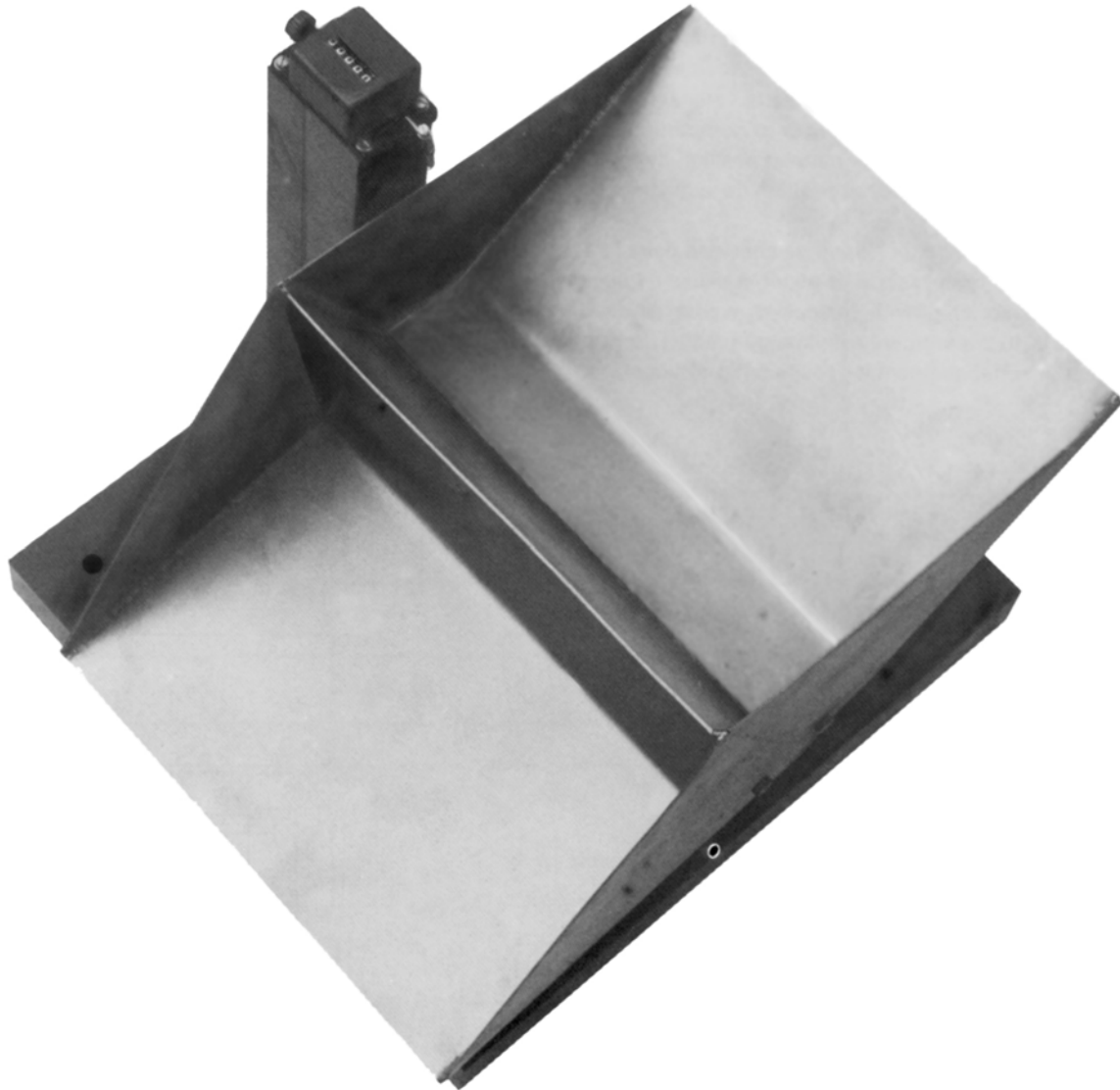


# CSO/STORMWATER MANAGEMENT



 <sup>®</sup> HYDROVEX <sup>®</sup>

Tipper Flow Measuring Device



**JOHN MEUNIER**

# HYDROVEX® TIPPER FLOW MEASURING DEVICE

## GENERAL

Standard flow monitoring devices cannot readily perform the monitoring of small and very small flows (for example, inductive flow meters or Venturi orifice units). The flow velocity becomes too low to ensure a sediment-free operation. In addition, monitoring of very irregular or even intermittent flows is not feasible.

The **HYDROVEX® Tipper** Flow Measuring Device is designed to collect small flows. The monitored flow can even fall to zero for a long period. However, over a certain period, an average flow is measured.

The **HYDROVEX® Tipper** Flow Measuring Device is a mechanical device requiring no external energy.

## OPERATION

A filling pipe located right over the **HYDROVEX® Tipper** fills the unit's dual compartment semi-stable bucket. One of the two compartments is always in filling position, whereas the other is in tipped position and empty.

As soon as the dripping liquid reaches the activation level of the compartment, the bucket tips and empties the liquid. The tipping takes place due to the displacement of the center of gravity of the filled bucket. The released liquid is drained to the outlet, while the dripping liquid starts filling the other compartment now in place.

A mechanical counting device records each filling cycle. The number of counts, multiplied by the volume of the two compartments, gives the flow per unit of time. After inspection, the meter can be set back to zero.

As an option, the unit can be fitted with a magnetic switch to detect each filling cycle. The switch must be linked to a small control system that will count the pulses and record the information. The magnetic switch can be supplied to meet explosion proof requirements.

## INSTALLATION

To insure a long trouble-free operation, the base plate of the **HYDROVEX® Tipper** must be anchored properly. For temporary installation, the unit can simply be installed in position. However, the unit will require regular visual inspection to guaranty that the unit has not moved at the tipping of the bucket. The filling pipe is set between  $\frac{3}{4}$ " and  $1\frac{1}{2}$ " above the higher edge of the tipping bucket. Insuring a proper liquid drainage under the **HYDROVEX® Tipper** is also mandatory.

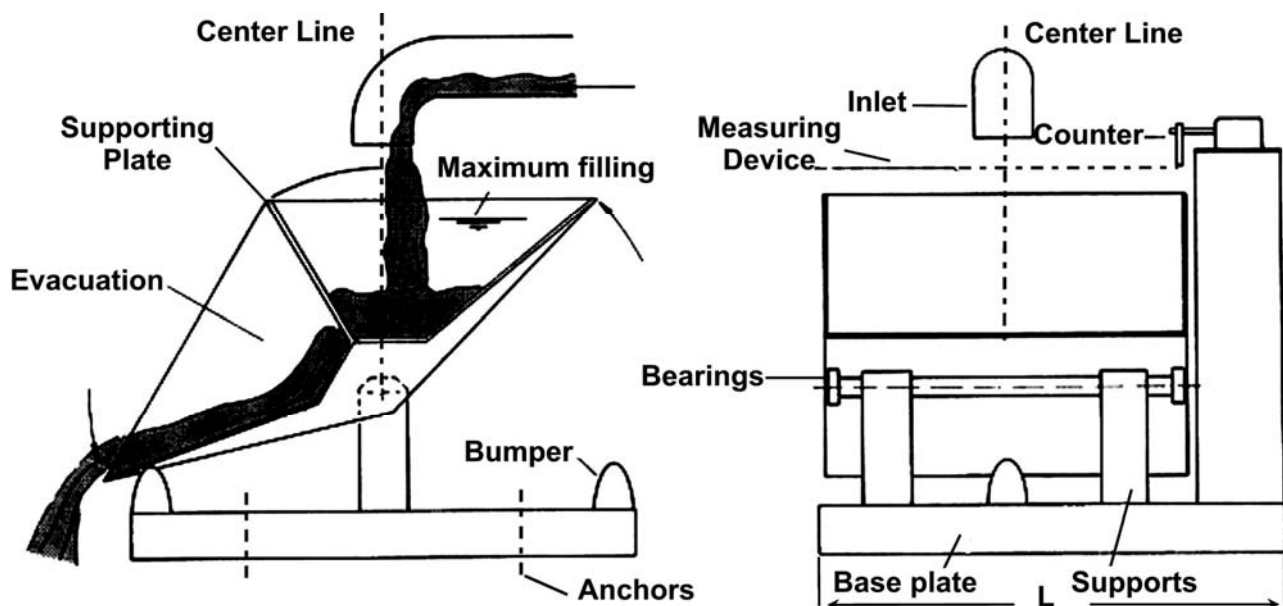


Figure 1: Construction of a HYDROVEX® Tipper Flow Measuring Device

## CONSTRUCTION

The tipping bucket is in 304 Stainless Steel. The flushing angle is at 20° from the horizontal axis. This way, even highly loaded fluids can be reliably treated.

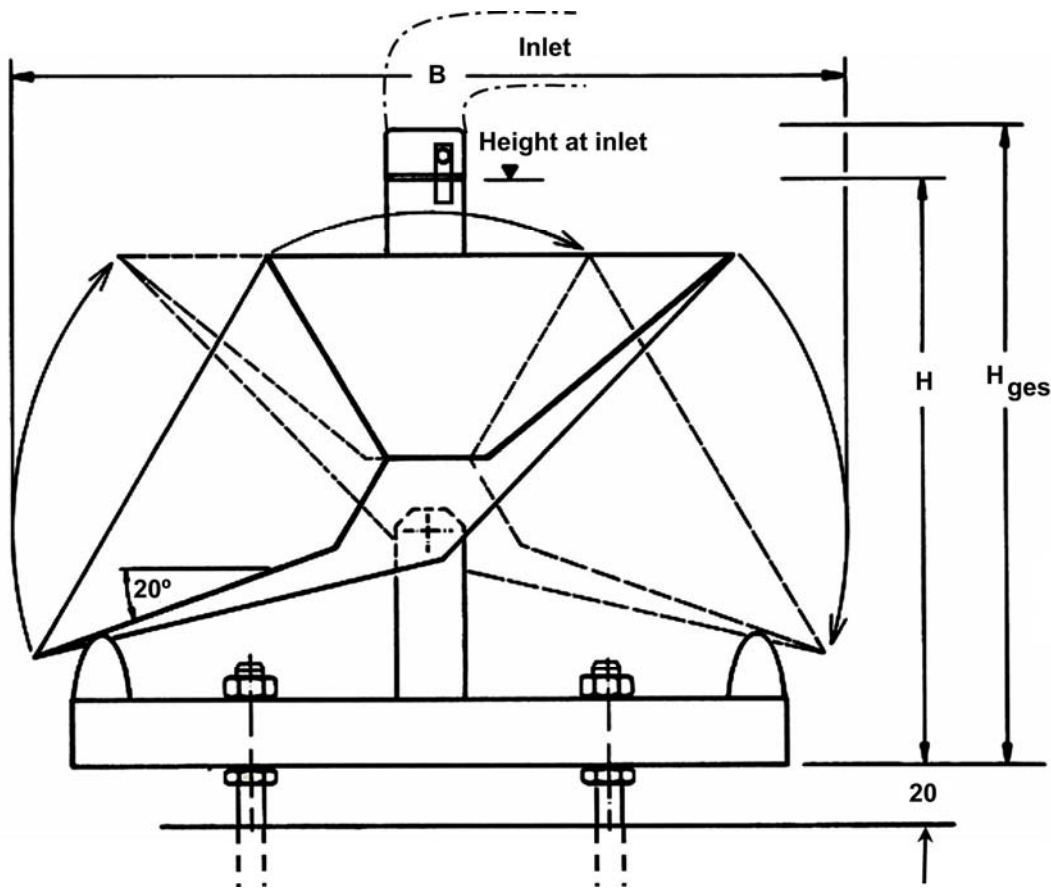
The flow-measuring device is fitted with bearings on a stainless steel shaft safely located under the unit. The base plate and the supports are either made out of massive PVC or 304 Stainless Steel. The bumpers are made of special noise-reducing rubber.

The mechanical meter is splash tight and corrosion resistant.

## APPLICATIONS

The **HYDROVEX® Tipper** Flow Measuring Device can be installed where measurements of small or very small flows with periodic stops and long monitoring must be carried out.

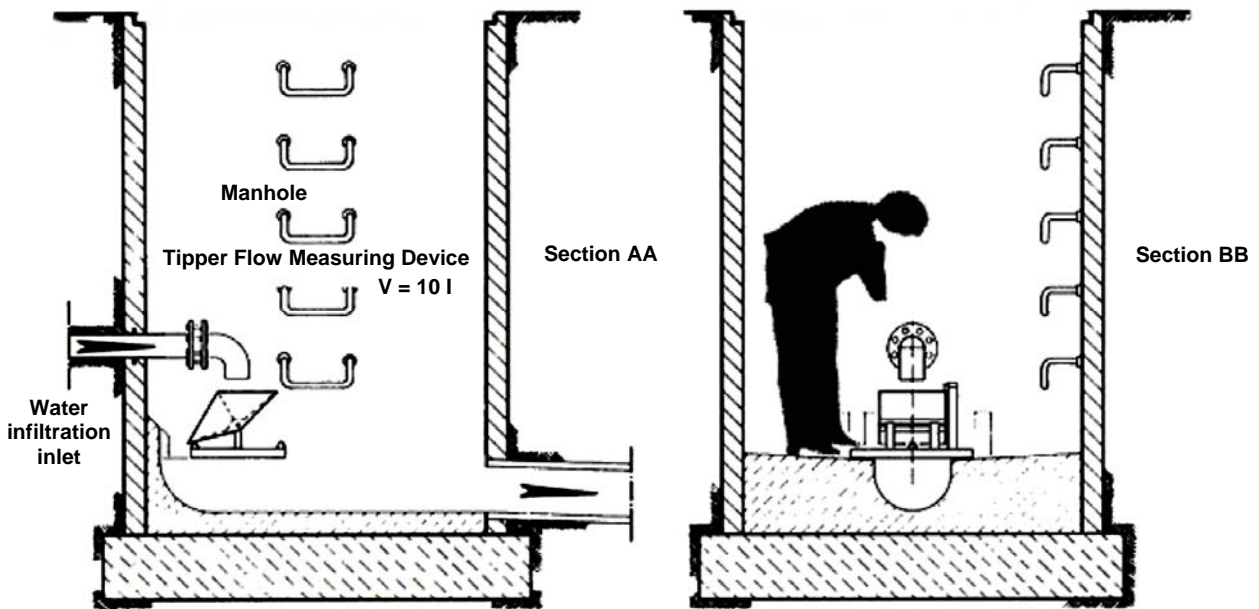
Flows produced by a single household, small industry, flow produced by roof or parking catchments are all good applications for the **HYDROVEX® Tipper** Flow Measuring Device. Landfill or mine infiltration water or dam leaks can also use such a device.



| Volume by double fillings<br>V<br>l | Maximum Flow<br>$Q_{max}$ |            | Length<br>L<br>mm (in.) | Width<br>B<br>mm (in.) | Height at inlet<br>H<br>mm (inc.) | Overall height<br>Hges<br>mm (in.) |
|-------------------------------------|---------------------------|------------|-------------------------|------------------------|-----------------------------------|------------------------------------|
|                                     | m <sup>3</sup> /h (cfs)   | l/s (cfs)  |                         |                        |                                   |                                    |
| 10                                  | 4.5 (0.04)                | 1.3 (0.05) | 385 (15.2")             | 490 (19.3")            | 350 (13.8")                       | 375 (14.8")                        |
| 16                                  | 7.21 (0.1)                | 2 (0.07)   | 425 (16.7")             | 575 (22.6")            | 395 (15.6")                       | 420 (16.5")                        |
| 25                                  | 11.3 (0.1)                | 3.2 (0.1)  | 480 (18.9")             | 660 (26.0")            | 440 (17.3")                       | 465 (18.3")                        |
| 40                                  | 18 (0.2)                  | 5 (0.2)    | 535 (21.1)              | 770 (30.3")            | 500 (20.0")                       | 525 (20.7")                        |

Other dimensions upon request

*Table: Characteristics and dimensions of the HYDROVEX® Tipper Flow Measuring Device*



*Example of installation*

*HYDROVEX® Tipper V = 10 l in monitoring manhole for infiltration*

## MATERIALS

|                         |   |
|-------------------------|---|
| Measurement:            | 304 Stainless Steel                     |
| Base Plate              |   |
| Switch support:         | Massive PVC or 304 Stainless Steel      |
| Shaft Support           |   |
| Shaft and bearings:     | 304 Stainless Steel                     |
| Bolt, nuts and anchors: | 304 Stainless Steel                     |
| Mechanical switch:      | Plastics and 304 Stainless Steel        |
| Bumpers:                | Special rubber resistant to waste water |

## UNIT TYPICAL SPECIFICATION

**HYDROVEX® Tipper** Flow Measuring Device with dual compartment bucket;  
 Measuring volume \_\_\_\_\_ liters by double filling with mechanical switch.

Options:

With NEMA 4X magnetic switch

With NEMA 4X magnetic switch with intrinsically safe relay in the control unit for Explosion Proof requirement.

### John Meunier Inc.

ISO 9001 : 2000

#### Head Office

4105 Sartelon

Saint-Laurent (Quebec) Canada H4S 2B3

Tel.: 514-334-7230 [www.johnmeunier.com](http://www.johnmeunier.com)

Fax: 514-334-5070 [cs@johnmeunier.com](mailto:cs@johnmeunier.com)

#### Ontario Office

2000 Argenta Road, Plaza 4, Unit 430

Mississauga (Ontario) Canada L5N 1W1

Tel.: 905-286-4846 [www.johnmeunier.com](http://www.johnmeunier.com)

Fax: 905-286-0488 [ontario@johnmeunier.com](mailto:ontario@johnmeunier.com)

#### USA Office

2209 Menlo Avenue

Glenside, PA USA 19038

Tel.: 412-417-6614 [www.johnmeunier.com](http://www.johnmeunier.com)

Fax: 215-885-4741 [asteele@johnmeunier.com](mailto:asteele@johnmeunier.com)