

**HYDROVEX® HHV-E**  
**VORTEX DRIVEN REGULATOR**  
*CSO, SSO, Stormwater Management*

**WATER TECHNOLOGIES**

# HYDROVEX® HHV-E Vortex Driven Regulator

## Application

The HYDROVEX® HHV-E Vortex Driven Regulator is a device which effectively combines hydraulics and electronics to provide reliable and highly accurate flow control. Designed for use in any type of sewer, storm basin or retention facility, the HYDROVEX® HHV-E is especially

adapted for flow rates ranging from 10 L/s to 200 L/s [0.23 MGD to 4.57 MGD]. The addition of electronic components to the already proven and reliable vortex flow regulator makes this regulator ideal for use in real time control applications.

## Operation

The HYDROVEX® HHV-E Vortex Driven Regulator is equipped with a pressure sensor, a motorized gate valve and a control panel. The arrangement of the regulating circuit is shown in Figure 1. When the flow through the vortex regulator is lower than the set point, the pressure in the recorder will be lower than the rated pressure. As a result, the control circuit is not activated and the valve remains completely open.

When the flow increases and exceeds the set point, the valve begins its closing operation. This operation continues as long as the flow exceeds the set-flow rate. Once the measured value reaches the set point, the valve will enter a throttling sequence to keep the flow rate constant. The impulses - work and pause - are given only by pressure contact in the vortex chamber and not by a pre-defined sequence.

If the valve is in regulating position and a partial blockage of the opening occurs, the flow through the unit decreases. The system recognizes this situation as a drop of pressure and will open the valve. The valve will continue to open until the set-flow rate is reached or the debris is pushed through the opening. In the latter case, the valve will begin throttling once the obstruction has passed.

## Advantages

The HYDROVEX® HHV-E is characterized by the following advantages:

- constant output under varying upstream water pressure
- quick reaction time of the flow regulating circuit
- strong operating security based on the integration of a vortex flow regulator
- control of small sanitary flows
- simple and easy changes to flow set point
- robust stainless steel construction

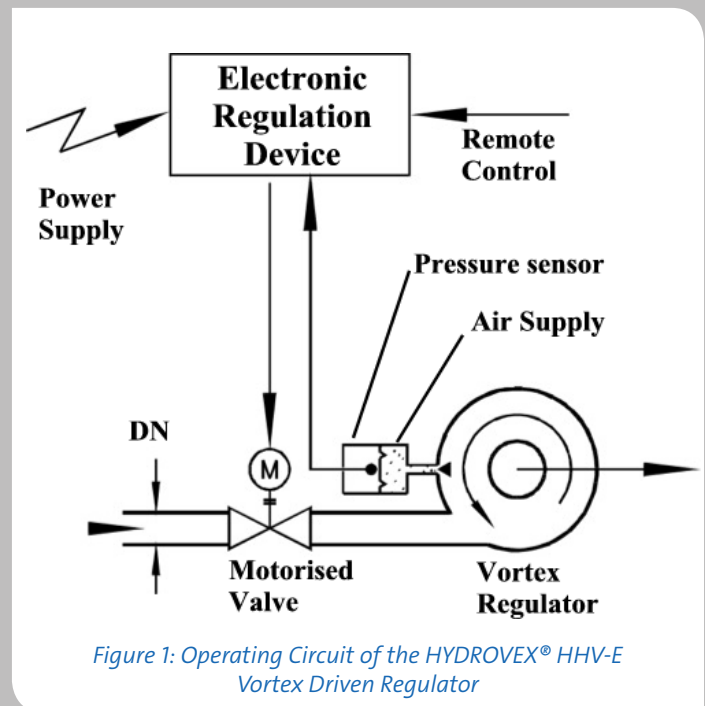


Figure 1: Operating Circuit of the HYDROVEX® HHV-E Vortex Driven Regulator

All commands and monitoring functions are automatic and handled by the programmable controller located within the control panel. The system is flexible and can be programmed to control other devices such as: pumps, mixers, tipping buckets, etc. located at the same site.

# Flow Characteristics

The HYDROVEX® HHV-E Vortex Driven Regulator operates in dry time conditions without activating the control circuit. The lower portion of the graph is a result of the hydraulic behaviour of the vortex regulator.

Once the design flow is reached, the control circuit will begin adjusting the valve. The outflow becomes constant, irrelevant of the upstream head as the valve is throttling the flow.

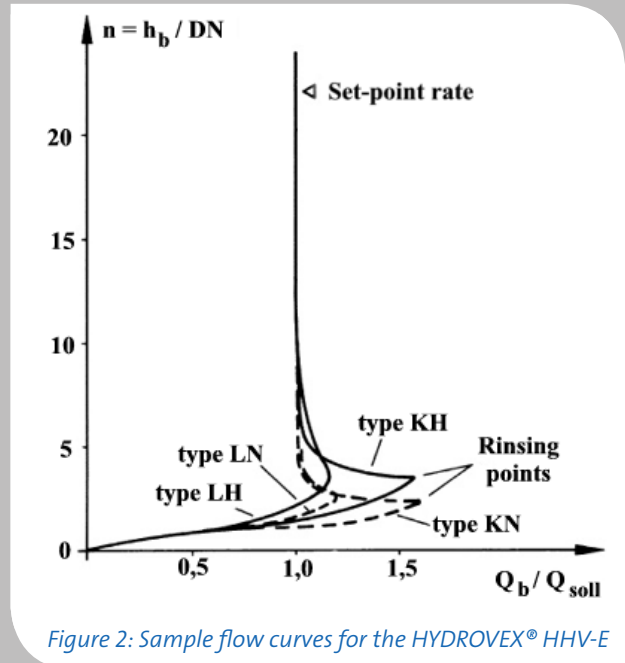


Figure 2: Sample flow curves for the HYDROVEX® HHV-E

# Selection

There are five standard HHV-E models available. Each model is available in four different types. The operating range for each regulator is shown in the table below.

Model	Type			
	HE-KN L/s [MGD]	HE-LN L/s [MGD]	HE-KH L/s [MGD]	HE-LH L/s [MGD]
200 HHV-E	10 - 18 [0.23 – 0.41]	12 - 35 [0.27 – 0.80]	11 - 24 [0.25 – 0.55]	15 - 32 [0.34 – 0.73]
250 HHV-E	16 - 31 [0.37 – 0.71]	22 - 44 [0.50 -1.00]	20 - 41 [0.46 – 0.94]	27 - 56 [0.62 – 1.28]
300 HHV-E	34 - 65 [0.78 – 1.48]	45 - 91 [1.03 – 2.08]	42 - 87 [0.96 – 1.99]	56 - 116 [1.28 – 2.65]
350 HHV-E	50 - 95 [1.14 – 2.17]	66 - 134 [1.51 – 3.06]	61 - 127 [1.39 – 2.90]	82 - 171 [1.87 – 3.90]
400 HHV-E	70 - 133 [1.60 – 3.04]	93 - 187 [2.12 -4.27]	85 - 177 [1.94 – 4.04]	114 - 238 [2.60 – 5.43]



Figure 3: HYDROVEX® HHV-E in operation. The access cover is open for inspection

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