

# VORTEX FLOW INSERT FOR ODOUR & CORROSION CONTROL

## Vortex Flow™

Hydrogen sulfide (H<sub>2</sub>S) gas and other odorous gases are a fact of life with sanitary sewer drop structures. When these gases become airborne, they not only generate complaints from the neighbourhood, but also impact air quality and cause corrosion within the sewer system.

The IPEX Vortex Flow Insert (VFI) offers a revolutionary new technology to eliminate odorous emissions and minimize corrosion in vertical sewer drops. With no moving parts and requiring virtually no maintenance, VFIs have delivered significant cost savings in installations across North America.

The patented spiral flow design eliminates odorous and corrosive gases in a unique way by using the wastewater's own flow energy to suppress the turbulence which releases noxious gases. The spiral flow creates a downdraft to trap airborne gases and force air into the sewage flow, oxidizing the odorous gases. By installing a Vortex drop structure, municipalities can save thousands of dollars in monthly chemical feed, air-phase treatment and maintenance costs.

### APPLICATIONS

- Manholes, Chambers and Forcemains
- Pumping Station Wet Wells
- Steep Grade Sewers
- Turbine discharges

### DID YOU KNOW?

Dr. Eugene Natarius, creator of the Vortex Drop Structure, received a Technical Innovation Award from the American Public Works Association for this revolutionary design.



### ADVANTAGES

- 1 Reduced Corrosion Extends Sewer Life**  
Hydrogen sulfide (H<sub>2</sub>S) emissions from forcemain discharges can literally eat through a concrete drop manhole. By oxidizing dissolved H<sub>2</sub>S, a Vortex Flow Insert can significantly reduce concrete and metal corrosion, extending sewer life and saving the municipality money.
- 2 Eliminates Odour Treatment Costs**  
By increasing dissolved oxygen levels in wastewater and oxidizing sulfides and other odorous compounds, the use of a Vortex Flow Insert in a drop structure eliminates the need for costly chemical injection, high-maintenance biofilters and air scrubbers.
- 3 Improves Waste Water Quality**  
Because a Vortex drop structure reduces the odorous and corrosive elements in the flow, a Vortex Flow Insert, installed upstream of a treatment plant, can actually improve wastewater quality prior to treatment, reducing treatment costs at sewage plants.

- 4 Reduced Maintenance Costs**  
The use of a Vortex drop structure eliminates the corrosion of concrete and metal sewer components, dramatically reducing municipal maintenance costs of manholes and sewers.

- 5 Built-to-Spec for Any Size**  
Manholes, chambers and pumping stations are built in a variety of sizes. For that reason, IPEX custom designs and builds every Vortex Flow Insert based on the peak flow that the unit is required to handle.

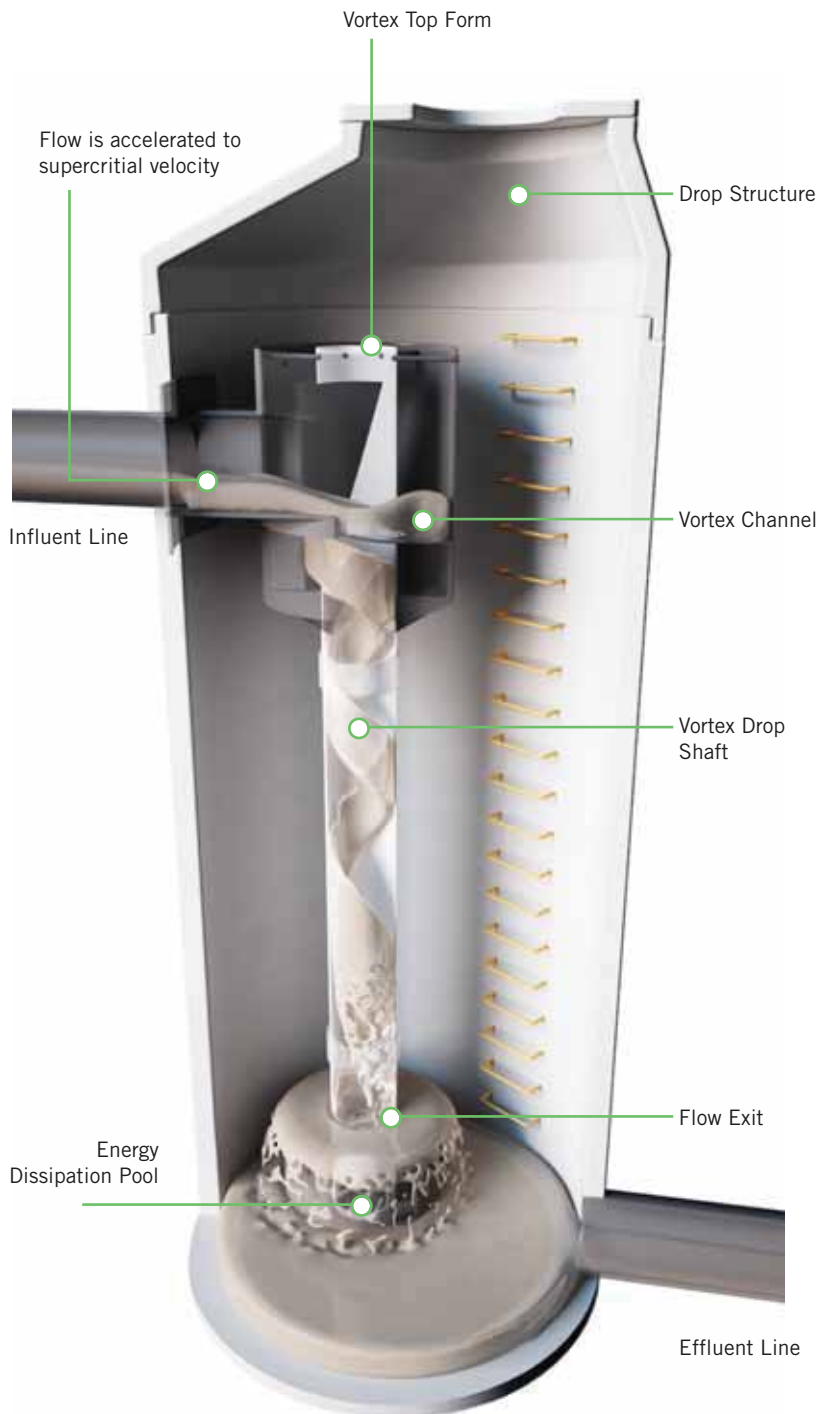


## SHORT FORM SPECIFICATIONS

All sanitary sewer drops of five feet or more in manholes or pumping stations shall be equipped with Vortex Flow Drop structures as manufactured by IPEX Inc.

Vortex units must be fabricated using AWWA C900 or AWWA C905 pipe, as well as PVC sheet conforming to ASTM D1248.

Vortex drop structures must be supplied with shop drawings approved by the Project Engineer, as well as installation instructions. The hydraulic capacity of the unit (both minimum and maximum flows) must be clearly indicated in the submission.



## HOW IT WORKS

### 1. Vortex Top Form



Wastewater flows into the Vortex Top Form directing the flow around a channel of decreasing radius. At the same time, the Vortex channel slopes downward to accelerate the wastewater to a supercritical velocity.

### 2. Vortex Drop Shaft



Once in the smaller Drop Shaft, the velocity and centrifugal forces generated cause the flow to hug the inside walls of the Drop Shaft. This spiraling flow creates a negative air core, drawing airborne gases down to the Energy Dissipation Pool.

### 3. Energy Dissipation Pool



The flow exit is submerged in the Energy Dissipation Pool at the bottom of the Vortex. Air and gases drawn down the air core are forced back through the wastewater and re-entrained into the flow. This significantly increases the dissolved oxygen concentration, and the odorous compounds are quickly oxidized.

To receive a conceptual design for a Vortex Flow Insert, go to [www.ipexinc.com](http://www.ipexinc.com) & complete the design information form

# LIFESAVER MANHOLE & CATCHBASIN ADJUSTMENT UNITS



Lifesavers are high impact HDPE adjustment units designed to bring manhole and catchbasin castings up to the exact height of the asphalt or concrete surface of a roadway. These units cushion the impact loads between the cast iron casting and the concrete manhole or catchbasin structure, while eliminating infiltration and undermining. This extends the life of the surrounding roadway.

## APPLICATIONS

- Grade adjustments for manholes, catchbasins as well as electrical, telephone and other utility vaults
- High Traffic Areas

## STANDARDS



D1248

## ADVANTAGES

1



### No Mortar Required

No more field mixing mortar. Now you can reduce overhead by eliminating your concrete mixer, trailers of sand, mortar mix and water supply – and eliminate inconsistent mixes from batch to batch.

And because there's no need to wait for mortar to harden, installations can be backfilled and compacted as soon as the casting is in place.

2

### Withstands Excessive Loads

Costly restoration from the settlement and break up of road surfaces around castings and manhole rings is a thing of the past. No more migration of fine soils through deteriorated mortar and concrete rings. Lifesaver rings are designed and tested to withstand loading well in excess of standard H 20 loads.

3

### Impervious to Corrosion

The Lifesaver system includes both flat and slope rings to allow precise adjustment to grade. And, unlike concrete, Lifesaver rings are impervious to corrosion from Hydrogen Sulphide gas (H<sub>2</sub>S), common in sanitary sewers.

4

### Lightweight and Easy to Handle

Unlike heavy concrete sewer components, labour saving Lifesaver manhole rings and catchbasin frames weigh a mere six pounds, so they are extremely easy to carry and handle. What's more, their consistent shape and durable, warp-free construction make installation precisely to grade a snap!



## DID YOU KNOW?

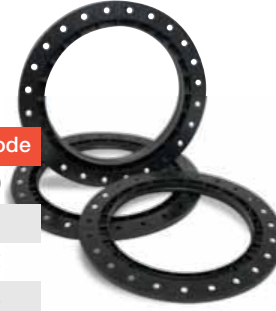
HDPE is able to absorb the shock from traffic loads without cracking, and has the structural strength to handle high static loads in excess of 50,000 lbs.



## PRODUCT SELECTION CHART

### Manhole Adjustment Units

Size	Description	Product Code
24 x 4"	Flat Manhole Adjustment Unit	074140
24 x 2"	Flat Manhole Adjustment Unit	074141
24 x 1-1/2"	Flat Manhole Adjustment Unit	074142
24 x 1-1/4"	Flat Manhole Adjustment Unit	074143
24 x 1-1/2"	Sloped Adjustment Unit	074144
27 x 2"	Flat Manhole Adjustment Unit	074145
27 x 1-1/2"	Flat Manhole Adjustment Unit	074146
27 x 1-1/4"	Flat Manhole Adjustment Unit	074147
27 x 1-1/2"	Sloped Adjustment Units	074148
27 x 4"	Flat Manhole Adjustment Unit	074245
30 x 2-1/4"	Flat Manhole Adjustment Unit	074001
30 x 4"	Flat Manhole Adjustment Unit	074002
30 x 1-1/2"	Sloped Adjustment Unit	074003
30 x 1-1/2"	Flat Manhole Adjustment Unit	074007



### Catchbasin Adjustment Units (24" x 24")

Description	Product Code
3% Sloped Catchbasin Adjustment Unit	074330
6% Sloped Catchbasin Adjustment Unit	074157
1-1/2" Flat Catchbasin Adjustment Unit	074075
2" Flat Catchbasin Adjustment Unit	074076
2-3/4" Flat Catchbasin Adjustment Unit	074077

### Catchbasin Adjustment Units (24" x 36")

Description	Product Code
1% Sloped Catchbasin Adjustment Unit	074997
1-1/2" Flat Catchbasin Adjustment Unit	074994
2" Flat Catchbasin Adjustment Unit	074995
2-3/4" Flat Catchbasin Adjustment Unit	074996

