

# Aerator for Sewer Odor and Corrosion Control



**Vortex FORCE™**  
ODOR & CORROSION CONTROL



## MUNICIPAL SYSTEMS

- Sewer Force Main Discharge
- Sewer Wet Wells & Storage Tanks
- Irrigation Ponds

  
**IPEX**  
Committed to Excellence

We build tough products for tough environments®

## A NEW SOLUTION FOR ODOR AND CORROSION CONTROL IN FORCEMAINS

**S**ewage forcemains, wet wells and storage tanks are a constant source of odor complaints. One of the main causes is airborne hydrogen sulfide (H<sub>2</sub>S), which is produced when sewage becomes anaerobic, and turbulent flow releases the noxious gas. This can be an intractable problem requiring the use of expensive chemical feed systems, biofilters and other high maintenance solutions to avoid the inevitable corrosion issues associated with H<sub>2</sub>S attack.

The Vortex Force is a specially designed aeration device that draws in and powerfully mixes air into sewage flow, transforming the anaerobic conditions that produce odors and oxidizing the H<sub>2</sub>S and other odor producing compounds in the sewage flow. By dramatically increasing the dissolved oxygen (DO) content in the sewage flow, the benefits of the Vortex Force extend for a long distance downstream.

### EASILY CONNECTS IN **THREE SIZES**

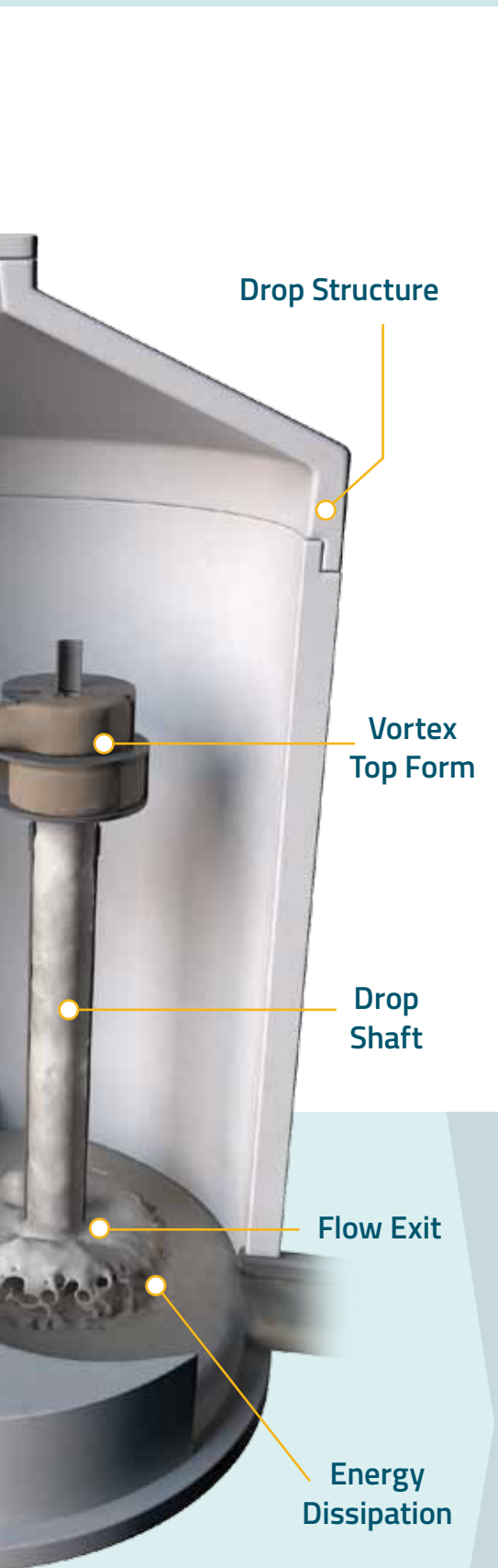
The Vortex Force easily connects to your system using simple flanges and supports. It is available in small, medium and large sizes covering a wide range of flows from 125 GPM to 2,616 GPM. The compact design can effectively aerate flows with at least a three foot drop.

Sizes	Flow Rate (GPM)	Product Code
Small	125 – 396	113085
Medium	396 – 1,110	113086
Large	1,110 – 2,616	113087

Flange Connection

Influent Line





## HOW IT WORKS

### 1 VORTEX TOP FORM

The incoming flow is split into two streams, each being directed into a vortex channel. The upper vortex directs the flow in a clockwise direction while the lower vortex is counter-clockwise.

### 2 VORTEX DROP SHAFT

The two flows intersect at the drop pipe, creating an area of intense turbulence and mixing where air is drawn in to the device. The turbulence breaks up the air into extremely small bubbles, thus maximizing the surface area of the air in contact with the water, allowing oxygen to quickly diffuse into the flow.

### 3 ENERGY DISSIPATION POOL

The flow is then discharged to the energy dissipation pool where any air not dissolved into the flow is allowed to bubble out of the flow, and the energy of the discharge is dissipated.



# HOW VORTEX FORCE CAN SAVE MUNICIPALITIES MONEY



## REDUCED CORROSION EXTENDS SEWER AND WET WELL LIFE

Hydrogen sulfide ( $H_2S$ ) emissions from forcemain discharges can literally eat through a concrete drop manhole. By oxidizing dissolved  $H_2S$ , a Vortex Force Insert in a municipal sewer drop can significantly reduce concrete and metal corrosion, extending sewer life and saving the municipality money.



## REDUCES ODOR TREATMENT COSTS

By increasing dissolved oxygen levels in wastewater and oxidizing sulfides and other odorous compounds, the use of a Vortex Force in a drop structure or wet well reduces the need for costly chemical injection, high-maintenance biofilters and air scrubbers.



## IMPROVES WASTE WATER QUALITY

Because a Vortex drop structure reduces the odorous and corrosive elements in the flow, a Vortex Force Insert, installed upstream of a treatment plant, can actually improve wastewater quality prior to treatment, reducing treatment costs at sewage plants.



## REDUCED MAINTENANCE COSTS

The Vortex Force virtually eliminates the corrosion of concrete and metal sewer components, dramatically reducing municipal maintenance costs of manholes, sewers and pumping stations.





## APPLICATIONS

### SEWER FORCEMAIN DISCHARGE

Wherever you have a drop from one pipe to another, Vortex drop structures can transform drop manholes from potential maintenance problems into effective aeration devices that control odor and corrosion.



### PUMPING STATION WET WELLS

A Vortex Force structure can minimize gas emissions from pumping station wet wells.



### IRRIGATION PONDS

The Vortex Force can quickly aerate irrigation ponds to prevent stagnant pools and odorous smells.





## TYPICAL PROJECT FLOW FOR A VORTEX FORCE INSERT

### STEP 1 FLOW RATE

Determine the peak flow rate of your system.

### STEP 3 SIZE SELECTION

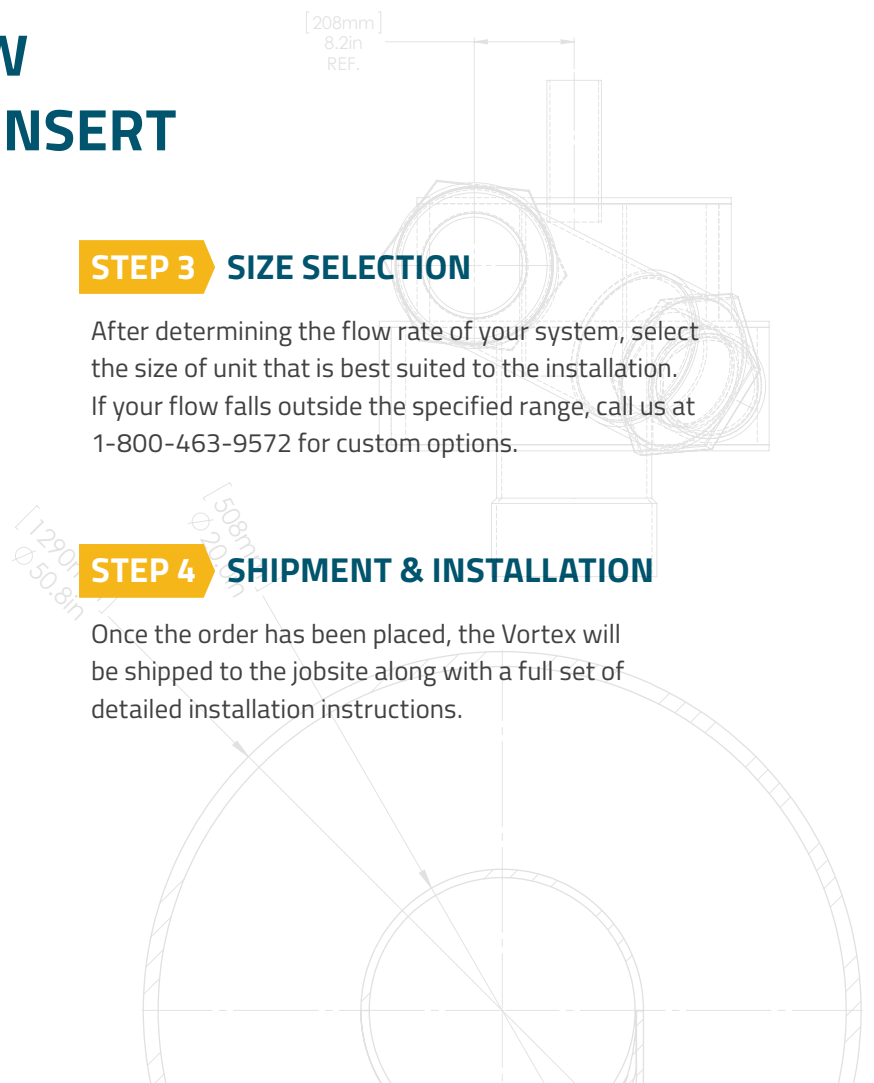
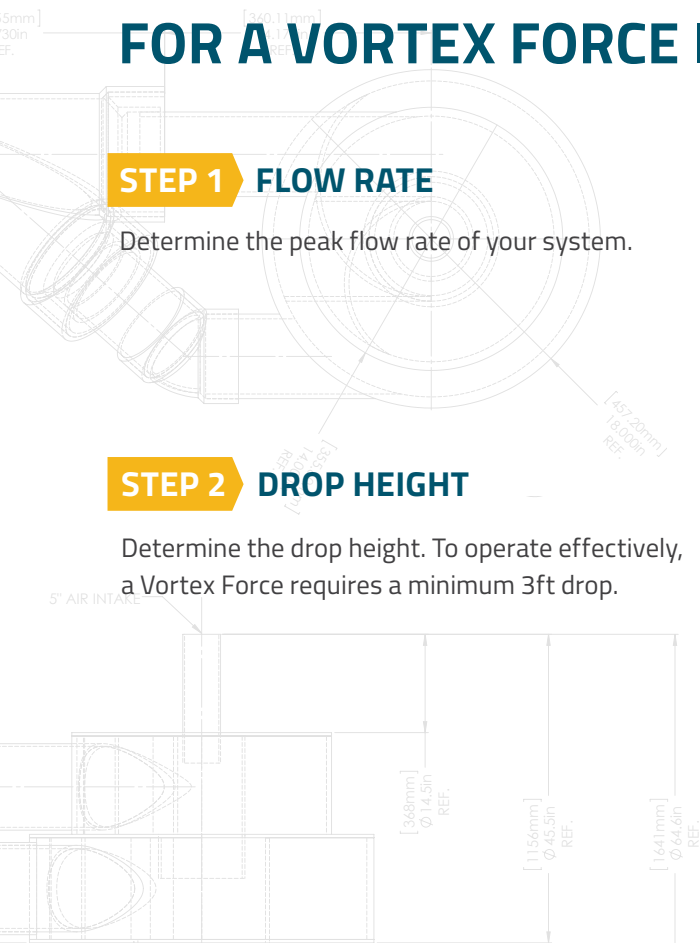
After determining the flow rate of your system, select the size of unit that is best suited to the installation. If your flow falls outside the specified range, call us at 1-800-463-9572 for custom options.

### STEP 2 DROP HEIGHT

Determine the drop height. To operate effectively, a Vortex Force requires a minimum 3ft drop.

### STEP 4 SHIPMENT & INSTALLATION

Once the order has been placed, the Vortex will be shipped to the jobsite along with a full set of detailed installation instructions.





## RESEARCH AND DEVELOPMENT

The Vortex Force concept was developed by Dr. Eugene Natarius, inventor of the revolutionary Vortex Flow Drop Structure. The Vortex Force is specially designed for applications that are difficult for a standard Vortex Flow device – high velocity flows, minimal drop heights and low flows from small diameter pressure pipes.

The Vortex Force has been extensively analyzed by some of the leading fluid dynamics experts in North America including Dr. Bryan Karney and Dr. Ahmad Malekpour of the University of Toronto. In addition to computer modelling and optimization, full scale physical testing has been carried out at Northwest Hydraulic Labs in Vancouver, British Columbia.

As a final qualification, a Vortex Force prototype was installed in a challenging septic tank application in Barriere, British Columbia. Nearby neighbors were constantly complaining about the extreme odor issues and demanded a solution. The Vortex Force was installed to help oxygenate the 37,000 gallons of septic sewage. After only 1 hour of operation, the dissolved oxygen concentration was increased from 0 mg/L to 5 mg/L and eliminated the odors.



## SALES AND CUSTOMER SERVICE

Canadian Customers call IPEX Inc.  
Toll Free: (866) 473-9462 (IPEX INC)  
**ipexna.com**

### About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the world's largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- PE Electrofusion systems for gas and water
- Industrial process piping systems
- Electrical systems
- Telecommunications and utility piping systems
- Irrigation systems
- Industrial, plumbing and electrical cements
- PVC, CPVC, PP, PVCO, ABS, PEX, FR-PVDF, NFRPP, FRPP, HDPE, PVDF and PE pipe and fittings (1/2" to 60")

Vortex Force™ is manufactured by IPEX Inc.  
Vortex Force™ is a trademark of IPEX Branding Inc.

This literature is published in good faith and is believed to be reliable. However, it does not represent and/or warrant in any manner the information and suggestions contained in this brochure. Data presented is the result of laboratory tests and field experience.

A policy of ongoing product improvement is maintained. This may result in modifications of features and/or specifications without notice.

