



Alfa Laval Vortex PS Radial Eductor®

Advanced tank mixing eductor for fluid shearing

Introduction

In tank mixing and shearing of fluids is a necessary process in many industry applications that is often achieved via mechanical paddle agitators or a network of in tank piping with nozzles and recirculating pumps. Although these agitation methods are widely accepted, they are not always the best option. Mechanical agitators are often large, expensive and require the construction of additional support structure. Their moving parts must receive regular maintenance, and agitators often don't provide the level of fluid shearing required for full reactivity. Recirculation of tank fluid through piping with simple nozzles is a method of fluid agitation, but it leaves much to be desired in terms of overall turbulence generation and fluid mixing. A great alternative to these methods are tank mixing eductors. These are small, simple devices that can be used to achieve highly effective fluid mixing and agitation. They use pressurized fluid energy to entrain, mix, and pump fluid in tanks, and they possess a number of benefits over the more traditional approaches. The Alfa Laval Vortex PS Radial Eductor is a unique style of tank mixing eductor that employs a proprietary nozzle design to dynamically shear fluid and achieve up to 3 times the total in tank fluid movement that can be had by simple nozzles. It can be used as the primary means of pit agitation, or as a complement to existing mechanical agitators for eliminating dead zones in corners of rectangular tanks.

Applications

The Alfa Laval Vortex PS Radial Eductor is a high performance tank mixing eductor that is optimized to operate in demanding tank mixing jobs with irregular shaped tanks, fluid shearing requirements, and high solids content. Applications that are ideal for Vortex Radial Eductors include blending, reactor tanks, and chemical mixing. Industrial applications where PS Radial Eductors are commonly used include oil and gas drilling fluid mixing, construction material production, chemical production, and mining.

Benefits

- Simple, robust design, no moving parts
- No maintenance
- Low cost alternative to mechanical paddle agitators
- Compact design



- Dynamically shears fluid. Enhances reactions
- Fully homogeneous tank fluid mix

Standard Design

The Alfa Laval Vortex PS Radial Eductor consists of a uniquely designed body featuring the proprietary Lobestar Mixing Nozzle® molded from high density, abrasion resistant polyurethane. It has a stainless steel 76 mm (3 in) male NPT connection. Typically, one or more are mounted on a manifold inside of a tank, and the number of eductors required is dependent on the vessel size and the necessary agitation or turnover rate (TOR.)

Working Principle

Fluid is pumped into the PS Radial Eductor inlet where pressure builds at its nozzle. The fluid velocity increases at the nozzle, resulting in a pressure drop and strong vacuum that pulls surrounding fluid into the eductor body through its six peripheral suction ports. The converging fluid streams are dynamically sheared by the nozzle in the eductor's venturi throat and discharged into the tank as a high-energy plume. The PS Radial Eductor can be utilized in any application where the motive fluid can be handled by a centrifugal pump.

Technical Data

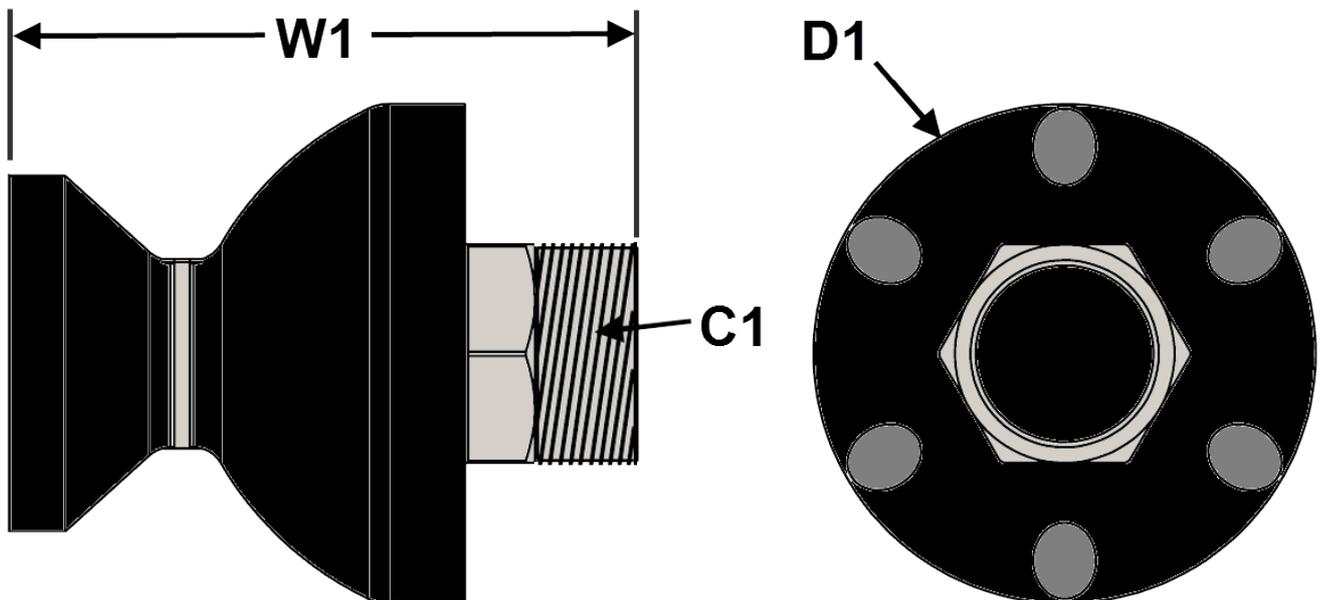
Model Number	PS3000
Connections	76mm (3in) MNPT
Connection material	304SS
Body material	Molded Polyurethane
Weight	4 kg (9 lbs)
Design Temperature	-28.8°C to 57°C (-20°F to 135°F)
Liquid Flow	360-587 lpm (95-155 gpm)
Differential Head Requirement	70-185 ft head (30-80 PSI) with water

Performance Data

Model	Flow Type	Pressure Differential – PSI					
		30	40	50	60	70	80
PS3000	Inlet	95 (360)	110 (416)	123 (466)	134 (507)	145 (549)	155 (587)
	Outlet	238 (901)	275 (1041)	307 (1162)	335 (1268)	363 (1374)	388 (1469)

Flowrates are with water and are shown in gallons per minute and liters per minute in parentheses

Dimensional Drawing



Model PS3000

W1	254 mm (10 in)
C1	76 mm (3 in) male pipe threads
D1	203 mm (8 in) diameter

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