



Alfa Laval Vortex Radial Eductor®

Advanced tank agitation and mixing eductor

Introduction

Tank mixing and agitation 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 leave vortices and dead spots in tank fluids where stratification and solids settling can occur. Recirculation of tank fluid through piping with simple nozzles is an acceptable 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 Radial Eductor is a unique style of tank mixing eductor that employs a proprietary design to achieve up to four times the total in tank fluid movement that can be had by simple nozzles and can eliminate the dead zones left by mechanical agitators. 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 Radial Eductor is a high performance tank mixing eductor that is optimized to operate in demanding tank mixing jobs with irregular shaped tanks, rapid turnover requirements, and high solids content. Applications that are ideal for Vortex Radial Eductors include solids suspension, sludge mixing, blending, and chemical mixing. Industrial applications where 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



- Fully homogeneous tank fluid mix
- Eliminates tank sludge and cleaning time

Standard Design

The Alfa Laval Vortex Radial Eductor consists of a tapered, nozzle housed inside of a uniquely designed body constructed of molded high density, abrasion resistant polyurethane with a fused stainless steel female NPT nut-style connection. It is offered in 25 mm (1 in.), 38 mm (1.5 in.) and 51 mm (2 in) connection sizes. Typically, one or more are mounted on a piping manifold inside of a tank. The number and size of eductors required is dependent on the vessel size and the necessary agitation or turnover rate (TOR.)

Working Principle

Fluid is pumped into the 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 helical shaped suction ports. These unique suction ports shape a radially flowing, spiraled discharge plume that resembles a vortex. This plume is more stable, further reaching, and displaces a much greater volume of surrounding fluid than a plume from a standard nozzle or tank mixing eductor. The result is much greater fluid displacement and movement inside of tanks. The Radial Eductor can be utilized in any application where the motive fluid can be handled by a centrifugal pump.

Technical Data

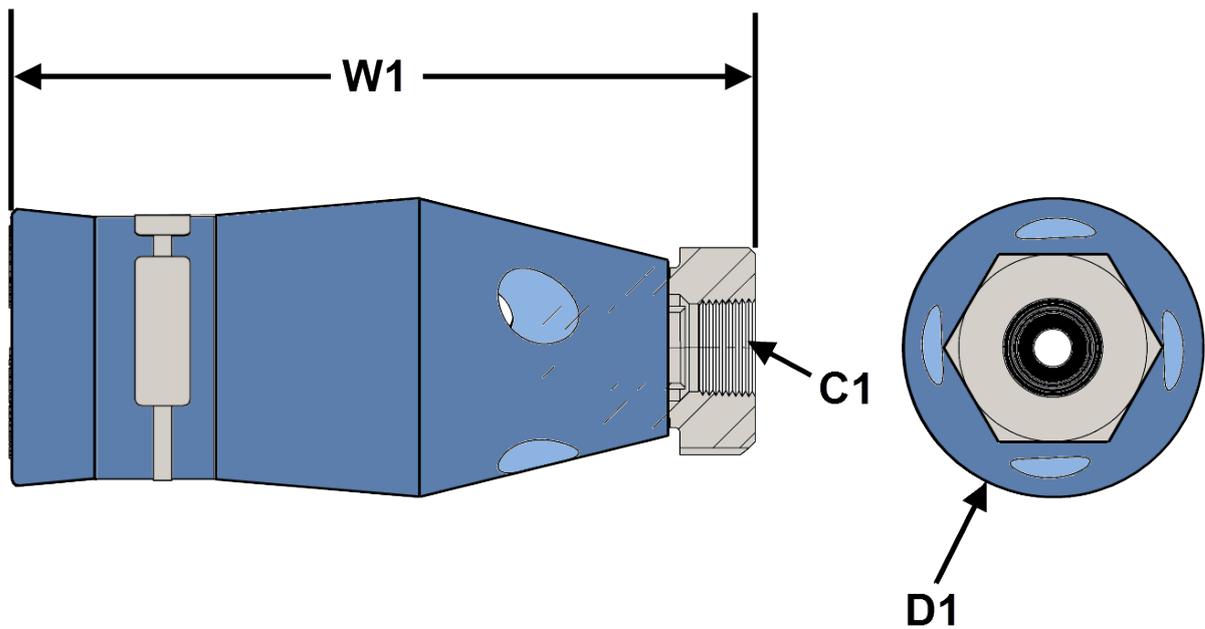
Model	RE1000	RE1500	RE2000
Connections	26 mm (1 in) FNPT	38 mm (1.5 in) FNPT	51 mm (2 in) FNPT
Connection material	304SS	304SS	304SS
Body material	Molded Polyurethane	Molded Polyurethane	Molded Polyurethane
Weight	1.13 kg (2.5 lbs)	1.13 kg (2.5 lbs)	2.72 kg (6 lbs)
Design temperature	-28.8°C to 57°C (-20°F to 135°F)	-28.8°C to 57°C (-20°F to 135°F)	-28.8°C to 57°C (-20°F to 135°F)
Differential Head Requirement (with water)	70-185 ft head (30-80 PSI)	70-185 ft head (30-80 PSI)	70-185 ft head (30-80 PSI)

Performance Data

Model	Flow type	Pressure Differential – PSI					
		30	40	50	60	70	80
RE1000	Inlet	38 (144)	45 (170)	50 (189)	55 (208)	59 (223)	63 (238)
	Outlet	95 (360)	135 (511)	150 (568)	165 (625)	177 (670)	189 (715)
RE1500	Inlet	60 (227)	69 (261)	78 (295)	85 (322)	92 (348)	98 (371)
	Outlet	150 (568)	207 (784)	234 (886)	255 (965)	276 (1045)	294 (1113)
RE2000	Inlet	118 (447)	136 (515)	152 (575)	166 (628)	180 (681)	192 (727)
	Outlet	295 (1117)	408 (1544)	456 (1726)	498 (1885)	540 (2044)	576 (2180)

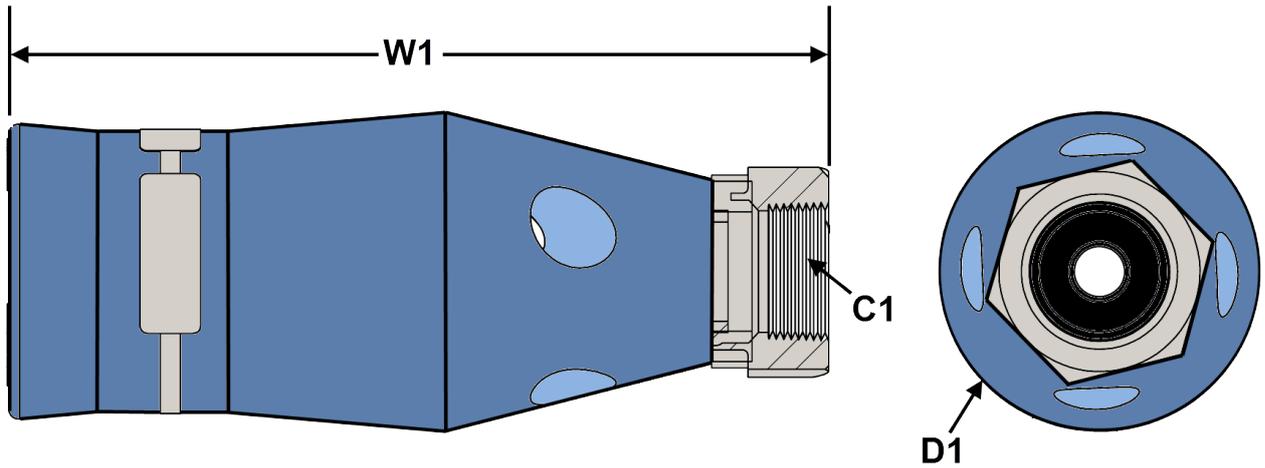
Flowrates are with water and are shown in gallons per minute and liters per minute in parentheses.

Dimensional Drawings



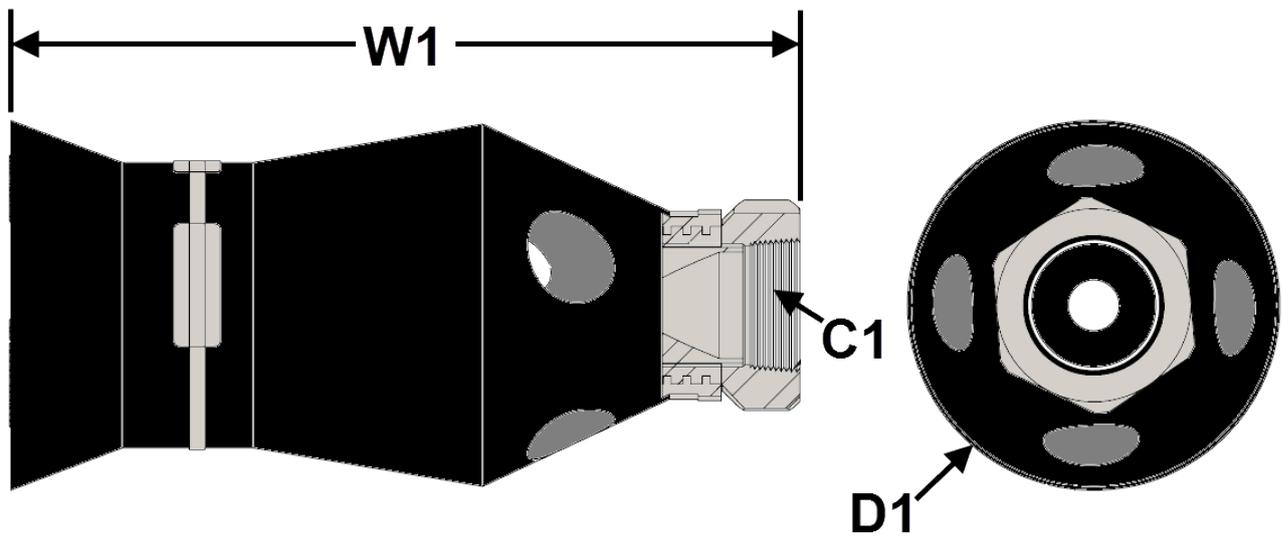
Model RE1000

W1	250 mm (9.8 in)
C1	26 mm (1 in) female pipe threads
D1	101 mm (4 in) diameter



Model RE1500

W1	258 mm (10.2 in)
C1	38 mm (1.5 in) female pipe threads
D1	101 mm (4 in) diameter



Model RE2000

W1	323 mm (12.7 in)
C1	51 mm (2 in) female pipe threads
D1	153 mm (6 in) diameter

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