



Alfa Laval Free Rotating Retractor UltraPure

Wall-mounted cleaning device for high-purity ducts, tanks and other hard-to-clean vessels

Introduction

When high-purity pharmaceutical processing is a must, select the Alfa Laval Free Rotating Retractor UltraPure. This wall-mounted cleaning device lets manufacturers spend less time cleaning and more time producing. Lift uptime and productivity with cleaner ducts and tanks, especially in those hard-to-reach shadow areas. This dynamic, resource-efficient, retractable cleaning device removes contaminants from the interior surfaces of processing vessels while reducing the total cost of ownership.

Applications

The Free Rotating Retractor UltraPure provides the highest levels of hygiene for high-purity products manufactured in the biotechnology and pharmaceutical industries. It provides 100% cleaning coverage of ducts, tanks, and processing vessels with hard-to-reach shadow areas. The device, combined with other Free Rotating Retractors, can be used as a stand-alone wall-mounted cleaning device, or paired with an Alfa Laval ThinkTop sensing and control unit to monitor or regulate the opening and closing of the device. The interior surfaces of processing vessels are spotless after every CIP cycle.

Benefits

- Up to 35% savings in time, water and cleaning media compared to static spray ball systems
- Reduce total cost of ownership due to minimal cost and effort to install, operate and maintain the retractor
- Lift uptime and productivity with faster and resource-efficient CIP cycles
- Electropolished product contact surface with roughness less than Ra 0.38
- Fully automated operation when paired with an Alfa Laval ThinkTop sensing and control unit

Standard design

Based on the proven solutions of the Alfa Laval SSV valve and the SaniMidget SB series, versatile and modular, the Free Rotating Retractor UltraPure consists of all AISI 316L stainless-steel for product-wetted metal parts. Process-wetted parts have a surface finish of Ra 0.8 and product-wetted metal parts are electropolished with a surface finish of Ra 0.38. Product-wetted elastomers and polymers are food-compliant (FDA and EU



regulations) and compliant with pharmaceutical standards (USP 87 and 88 Class VI or ISO 10993-5 and ISO 10993-6, -10, -11).

The Free Rotating Retractor UltraPure comes with the Alfa Laval Q-doc documentation package, ensuring full traceability of the entire supply chain. The Q-doc includes 3.1 certificates for metal parts.

Certificates

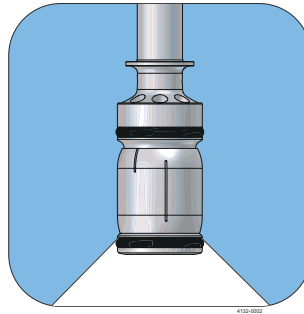
- Q-Doc

2.2 material certificate, Q-doc applicable to product contact parts only.



Working principles

The Alfa Laval Free Rotating Retractor UltraPure functions as a pneumatically open and spring-close seat valve to clean the interior surfaces of vessels used for the manufacture of high-purity products. In the closed position, the installation forms a flush design with the vessel wall, and the spray head is not exposed to the product zone. Prior to cleaning, the spray head extends into the product area. It rotates between the two hydro bearings due to the reaction forces of the cleaning media expelled from the orifices in a swirling 310°-up spray pattern. In doing so, the device provides complete coverage of the vessel surfaces through vibrating impact and cascading flow of the cleaning media.



The actuator can remain extended during a draining or purging phase.

The device is completely self-cleaning except for the product-facing part of the plug. This surface is typically cleaned by pairing it with another tank cleaning device. When properly installed, the device is self-draining.

TECHNICAL DATA

Temperature/pressure – process contact	
Temperature range – liquid service	-10° C to 95° C (14° F to 284° F)
Temperature max. – steam/gas service	Max. 121° C (250° F)
Temperature max. – ambient	Max. 150° C (304° F)
Pressure range – liquid service	1-3 bar (14.5 psi to 43.5 psi)
Pressure max. – liquid service	5 bar (72.5 psi)
Pressure max. – steam/gas	Contact Alfa Laval for information
Pressure min. – vessel	Full Vacuum

Temperature/pressure – actuator	
Temperature range	-10° C to 60° C (14° F to 140° F)
Pressure range - supply	5-7 bar (72.5 psi to 101.5 psi)

Misc.	
Wetting radius (see performance data)	900 mm (35.5 inch)
Cleaning radius (see performance data)	800 mm (31.5 inch)
Lubrication – product contact	Cleaning media
Air supply connection	6 mm (0.24 inch)

PHYSICAL DATA

Materials	
Steel parts – product wetted	AISI 316
Steel parts – non-product wetted	AISI 304, AISI 304L, AISI 302, Brass
Seal parts – product wetted	EPDM
Seal parts – non-product wetted exposed	NBR, FPM
Polymer parts – product wetted	PEEK
Polymer parts – non-product wetted exposed	Igildur, PP

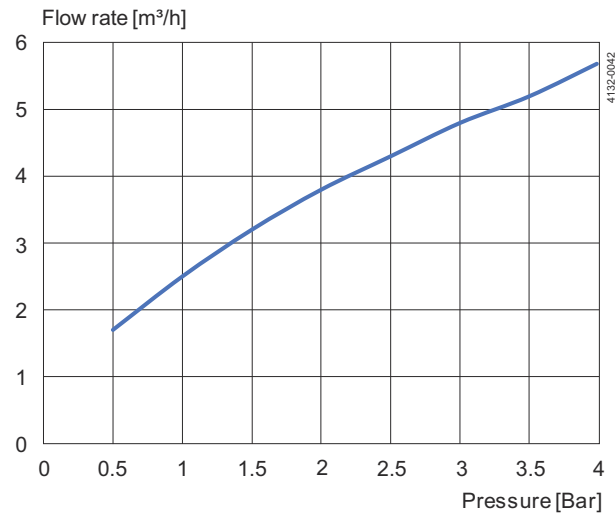
Surface roughness

External surface finish	Bead blasted
Internal surface finish – cleaning media	Ra 0.8 µm / Ra 32 µi
Internal surface finish - product	Ra 0.8 µm / Ra 32 µi

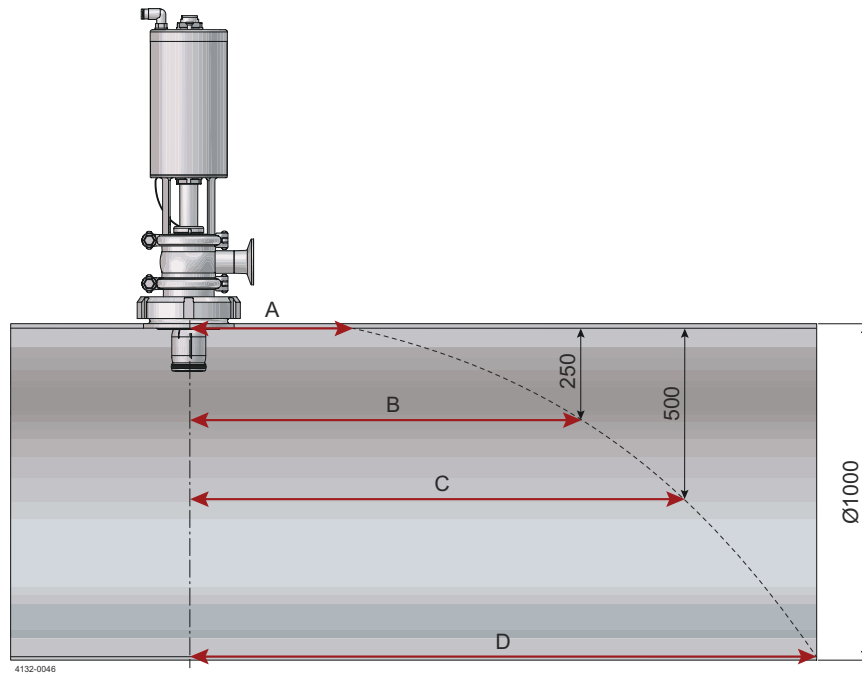
Surface roughness

External surface finish	Bead blasted
Internal surface finish – cleaning media	Ra 0.8 µm / Ra 32 µi
Internal surface finish - product	Ra 0.38 µm EP / Ra 15 µi EP

Flow rate



Throw length



Wetting distance mm / inch

Pressure	A	B	C	D
2 bar	900 / 35.5	3300 / 130	4000 / 158	4800 / 189

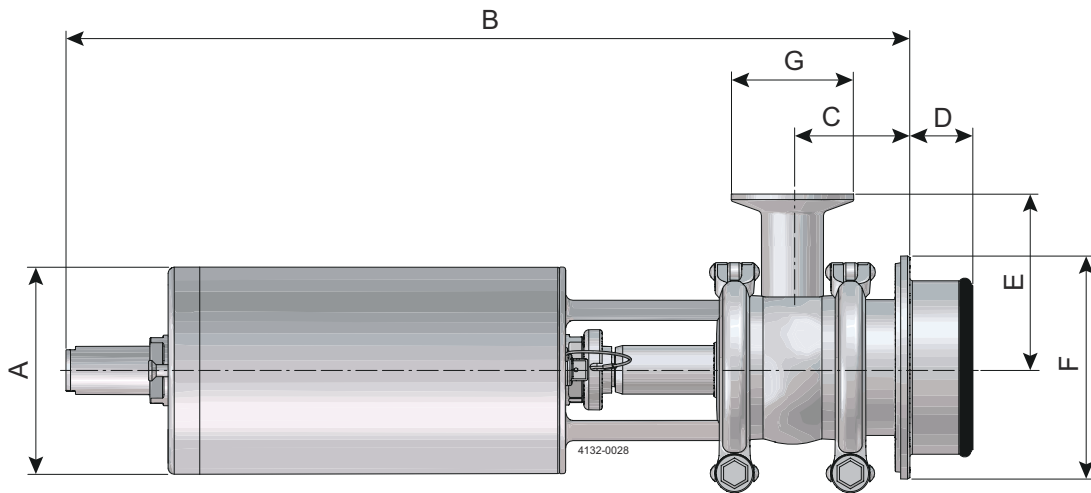
Cleaning distance mm / inch

Pressure	A	B	C	D
2 bar	800 / 31.5			



Throw lengths are measured as horizontal throw length. Effective throw length varies depending on substance to be removed, cleaning procedure and agent. Throw length distance of the machine installed vertically at the top to the circular duct. Along the top wall, throw lengths are smallest. Further down the side of the circular duct, the throw length increases.

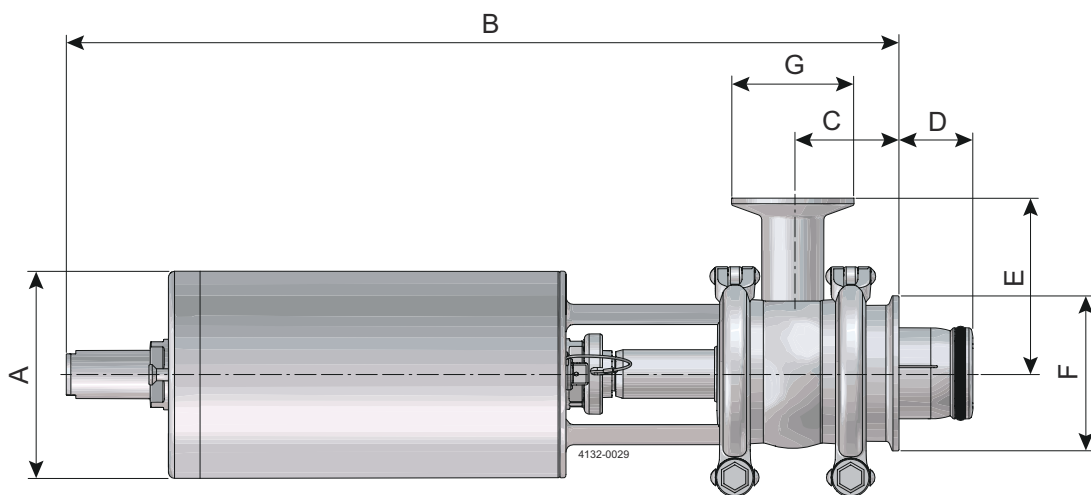
Dimensions



Tank connection	Inlet connection	Dimension mm / inch					Weight
F	G	A	B	C	D	E	Kg / lb
3 inch RJT	1 inch Clamp	85 / 3.3	365.4 / 14.39	48.4 / 1.91	26.0 / 1.02	71.5 / 2.81	5.3 / 11.7
DN80 Clamp ¹			361.8 / 14.24	44.9 / 1.77	29.5 / 1.16		4.7 / 10.4
3 inch Clamp ²			368.4 / 14.50	51.4 / 2.02	23.0 / 0.91		4.5 / 10.0

¹ DIN 11866

² ISO 2852



Tank connection	Inlet connection	Dimension mm / inch					Weight
F	G	A	B	C	D	E	Kg / lb
2 inch Clamp ¹	1 inch Clamp	85 / 3.3	361 / 14.21	44 / 1.73	30.5 / 1.20	71.5 / 2.81	4.0 / 8.8

¹ ISO 2852

Qualification Documentation

Documentation specification

- Q-doc
- Equipment Documentation includes:
- EN 1935/2004 DoC
 - EN 10204 type 3.1 inspection Certificate and DoC
 - FDA DoC
 - GMP EC 2023/2006 DoC
 - EU 10/2011 DoC
 - ADI DoC
 - QC DoC
 - USP 87 and 88 Class VI or ISO 10993-5 and ISO 10993-6, 10, 11
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