

Alfa Laval Controlled Rotating Retractor

Wall mounted cleaning nozzle

Introduction

The Alfa Laval Controlled Rotating Retractor is a high-performance, resource-efficient CIP cleaning device that uses up to 55% less water and delivers up to 100x higher cleaning efficiency than static spray balls. Its extended reach, adjustable rotation speed, low maintenance, and real-time monitoring help reduce installation and operating costs. It also maximizes uptime, ensuring thorough cleaning of hard-to-access areas – even where devices cannot remain in place during operation.

Applications

The Controlled Rotating Retractor provides the highest levels of hygiene for high-purity products manufactured in the biotechnology and pharmaceutical industries. It delivers comprehensive cleaning for ducts, tanks, and vessels, targeting challenging shadow areas. Mounted directly on ducts or tanks, it comes standard with the Alfa Laval ThinkTop® V70 for real-time feedback and automated operation. Its precision-cut nozzles direct a cleaning jets along the duct length, with adjustable rotation speed for optimal removal of both light and stubborn residues.

Clean ducts are essential for product quality and operational efficiency. Residue buildup can lead to contamination, reduced shelf life, and costly downtime. Advanced cleaning solutions like the Controlled Rotating Retractor ensure thorough cleaning and helping you meet food safety standards and maintain reliable production.

Benefits

- Significantly improve cleaning efficiency in demanding applications
- Increase resource efficiency by up to 55% by reducing the use of water and cleaning media
- Reduce CAPEX and OPEX with extended reach and fewer units
- Minimize maintenance requirements with real-time remote monitoring
- Optimize cleaning performance with adjustable rotation speed



Standard design

The Controlled Rotating Retractor features robust, hygienic construction with fully self-cleaning, CIP-compatible, and air-purge capabilities.

It supports draining and sterilization-in-place (SIP) cycles, and its modular design allows for easy maintenance without disconnecting supply tubes.

All wetted parts are made from high-quality stainless steel and food-compliant materials, ensuring durability and regulatory compliance.

Working principles

The Alfa Laval Controlled Rotating Retractor is a high-precision, wall-mounted CIP cleaning device designed for industries with strict hygiene standards. It ensures efficient, controlled cleaning in demanding environments.

Pneumatic extension and precise cleaning sweep

The CIP cleaning device extends and retracts pneumatically into the product contact area. Once fully extended, a pneumatic actuator triggers a slow, controlled rotation of the device. The controlled rotating retractor then performs a thorough 400° cleaning sweep in one direction, immediately followed by a 400° sweep in the opposite direction, thoroughly cleaning surfaces inside pipes, ducts or tanks. Two throttle valves allow operators to adjust rotation speed – faster for lightly soiled, easy-to-clean areas and slower for stubborn residues.

Real-time monitoring and control

The Alfa Laval ThinkTop integrated with the retractor connects to the PLC system for real-time control. The ThinkTop monitors device position, jet impact, and cleaning performance.

Maximized coverage and efficiency

Precision-cut openings deliver powerful cleaning jets, covering a larger cleaning area than similar devices, reducing the number of units needed and lowering capital costs.

Versatile and hygienic design

The retractor supports draining, air purging, and sterilization-in-place (SIP) cycles, and is self-cleaning except for the product-contact surface, which is cleaned by a neighboring device.

Safe, simplified maintenance

Using a one-handed tool, operators can remove wear parts without disconnecting the supply tube from the retractor. The retractor body remains attached to the SIP supply tube and the process line during maintenance, enabling safe, quick and easy maintenance.

Certificates

- Q-Doc



Q-doc applicable to product contact parts only.

Technical data

Temperature/pressure – process contact

Temperature range – liquid service:	-10°C to 95°C / 14°F to 203°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 / 14.5–43.5 psi
Pressure max. – liquid service:	5 bar / 72.5 psi
Pressure max. – steam/gas:	2 bar / 29 psi
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 / 72.5–101.5 psi

Misc.

Wetting radius:	See performance data
Cleaning radius:	See performance data
Lubrication – product contact:	Cleaning media
Air supply connection:	6 mm / ¼ inch adaptor included in the box

Physical data

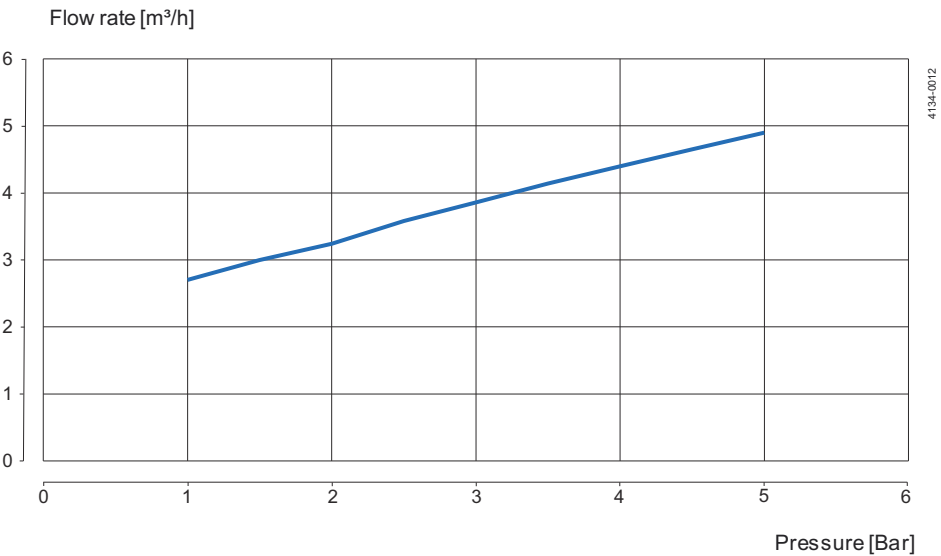
Materials	
Steel parts – product wetted:	AISI 316/316L
Steel parts – non-product wetted:	AISI 304, AISI 304L, AISI 302, Chemically nickel-plated brass
Seal parts – product wetted:	EPDM
Seal parts – non-product wetted exposed:	NBR, FPM
Polymer parts – product wetted:	PTFE
Polymer parts – non-product wetted 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

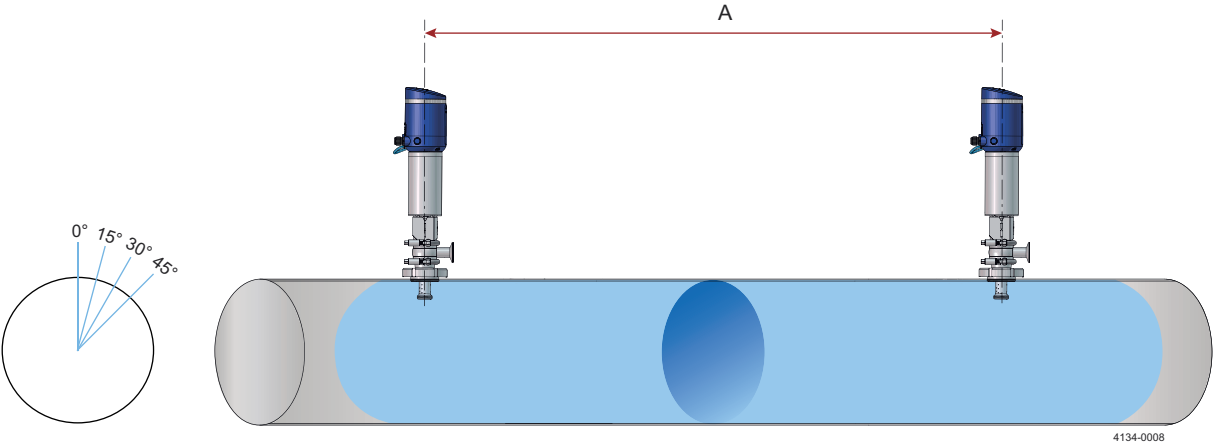
Communication	
Digital PNP	
AS-Interface v2.1, 31 node	
AS-Interface v3.0, 62 node	
IO-Link	

Automation	
Updated V70 ThinkTop with auto setup	

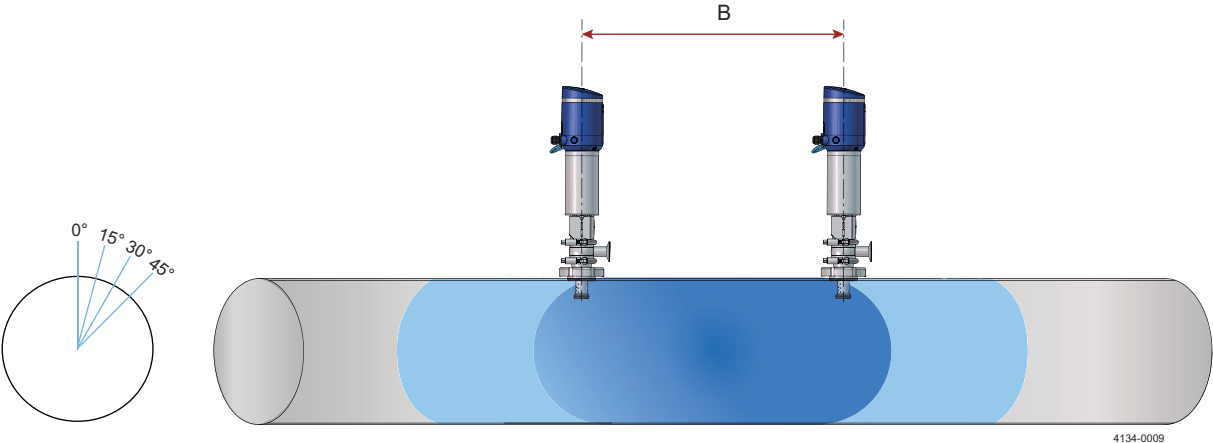
Flow rate



Cleaning distance

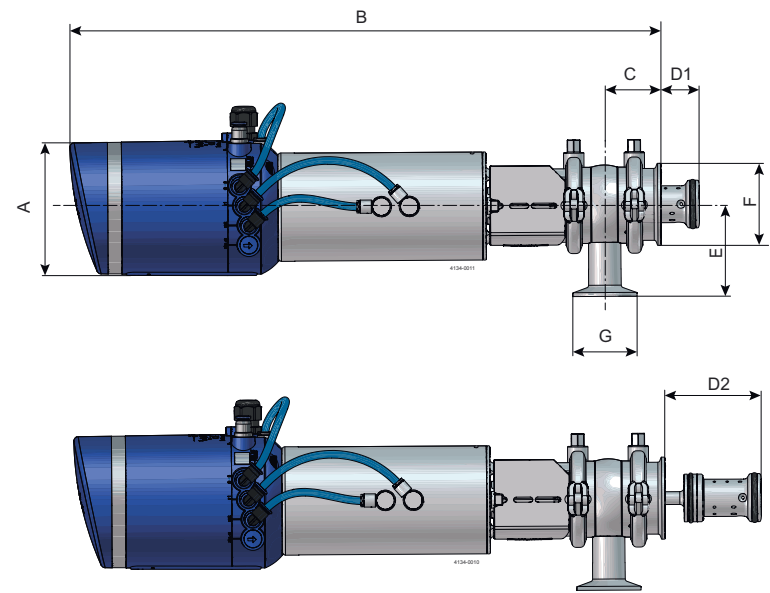


A (mm / feet)			
Overlapping cleaning distance at 2 bar / 29 psi			
0°	15°	30°	45°
2200 / 7.2	2400 / 7.9	3200 / 10.5	3700 / 12.1

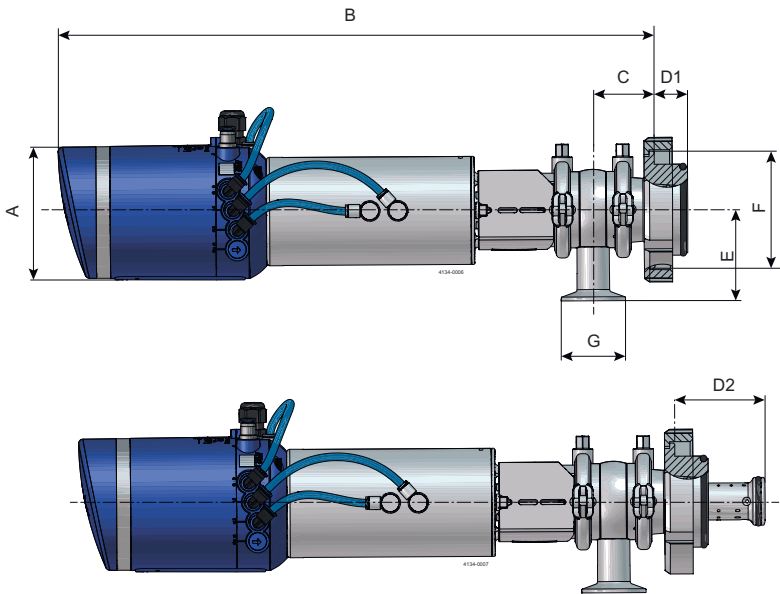


B (mm / feet)			
Distance to reach next cleaning retractor at 2 bar / 29 psi			
0°	15°	30°	45°
1000 / 3.3	1600 / 5.2	2000 / 7.2	2600 / 8.5

Dimensions



Tank connection	Inlet connection	Dimension (mm / inch)						Weight
F	G	A	B	C	D1	D2	E	Kg / lb
2 inch clamp	1 inch clamp	105 / 4.1	463.4 / 18.2	44 / 1.7	30.1 / 1.9	71.1 / 2.8	71.5 / 2.8	4.5 / 9.9



Tank connection	Inlet connection	Dimension (mm / inch)						Weight
F	G	A	B	C	D1	D2	E	Kg / lb
3 inch RJT	1 inch clamp	105 / 4.1	467.8 / 18.4	48.4 / 1.9	26.0 / 1.0	66.7 / 2.6	71.5 / 2.8	5.9 / 13.0
DN80			464.3 / 18.3	44.9 / 1.8	29.5 / 1.2	70.2 / 2.8		5.3 / 11.9
3 inch clamp			470.8 / 18.5	51.4 / 2.0	23.0 / 0.9	63.7 / 2.5		5.1 / 11.2

Qualification documentation

Documentation specification

Q-doc	Equipment Documentation includes: • EN 1935/2004 DoC • EN 10204 type 3.1 Certificate and DoC • FDA DoC • GMP EC 2023/2006 DoC • EU 10/2011 DoC • ADI DoC • QC DoC • China GB-4806 DoC • Japan Article 18(3) DoC • EU national rubber regulation
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