

ENGINEERING
YOUR SPRAY SOLUTION



➤➤ TANK AND EQUIPMENT CLEANING

Cleaning diversity of the highest quality

GENERAL INDUSTRY





A CLEAN SOLUTION

140 YEARS OF HYGIENE COMPETENCE

For over 140 years, we at Lechler have been researching drops and their applications. Our nozzles ensure optimum cleanliness particularly in locations that are difficult to access, where it is dangerous or where things have to be especially clean.

With more than 700 employees, we work worldwide to provide the right nozzle for every application. With our own Development and Technology Center in Metzingen we simulate complex spray characteristics, check nozzles in endurance tests and optimize cleaning patterns so that the ideal relationship between flow rate, range and spray force is achieved.

Over the course of all these years, we have developed a deep understanding of the processes in a large number of different industries. That is why we do not just support our customers with high-performance precision nozzles for tank and equipment cleaning, but also help them to optimize their processes.



1879

Company founded
by Paul Lechler

1893

Patent for
liquid atomization

1967

Relocation of production
to Metzingen











1978

Expansion to the
USA and then to
other countries

1995

Production, sales and
administration are
concentrated in Metzingen

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140
1879 - 2019

2010

Expansion of production with a new, 13,000 m² production hall

2016

Opening of the state-of-the-art Development and Technology Center in Metzingen

2019

Lechler celebrates 140th anniversary

2021

New factory in China

2022

New logistics center in Metzingen



EVERY DROP ON TARGET HOW WE HELP TO CLEAN UP AGAIN

An excellent understanding of cleaning processes, tank geometries and nozzle design is required in order to achieve optimum cleaning of tanks and equipment. We have been at home in all three fields for a long time now. But there are still always new challenges for us. Thanks to state-of-the-art CFD analysis and highly precise measuring instruments for drop sizes and speeds, we are quickly able to develop suitable solutions in these cases.

With our proprietary *TankClean* software, we are also able to simulate complex tank geometries and spray processes with different nozzles. Together with our extensive range of cleaning nozzles, we can develop tailor-made solutions for your tank and equipment cleaning requirements – particularly if complex applications are involved.

Why Lechler?

- Unique product variety of the market leader
- Cleaning efficiency classes – for easy nozzle selection
- Planning security thanks to *TankClean* simulation software
- Solutions for agitator, filler neck and line cleaning
- Extensive accessories for complete solutions
- Individual advice – on-the-spot worldwide
- Short delivery times thanks to high stock availability

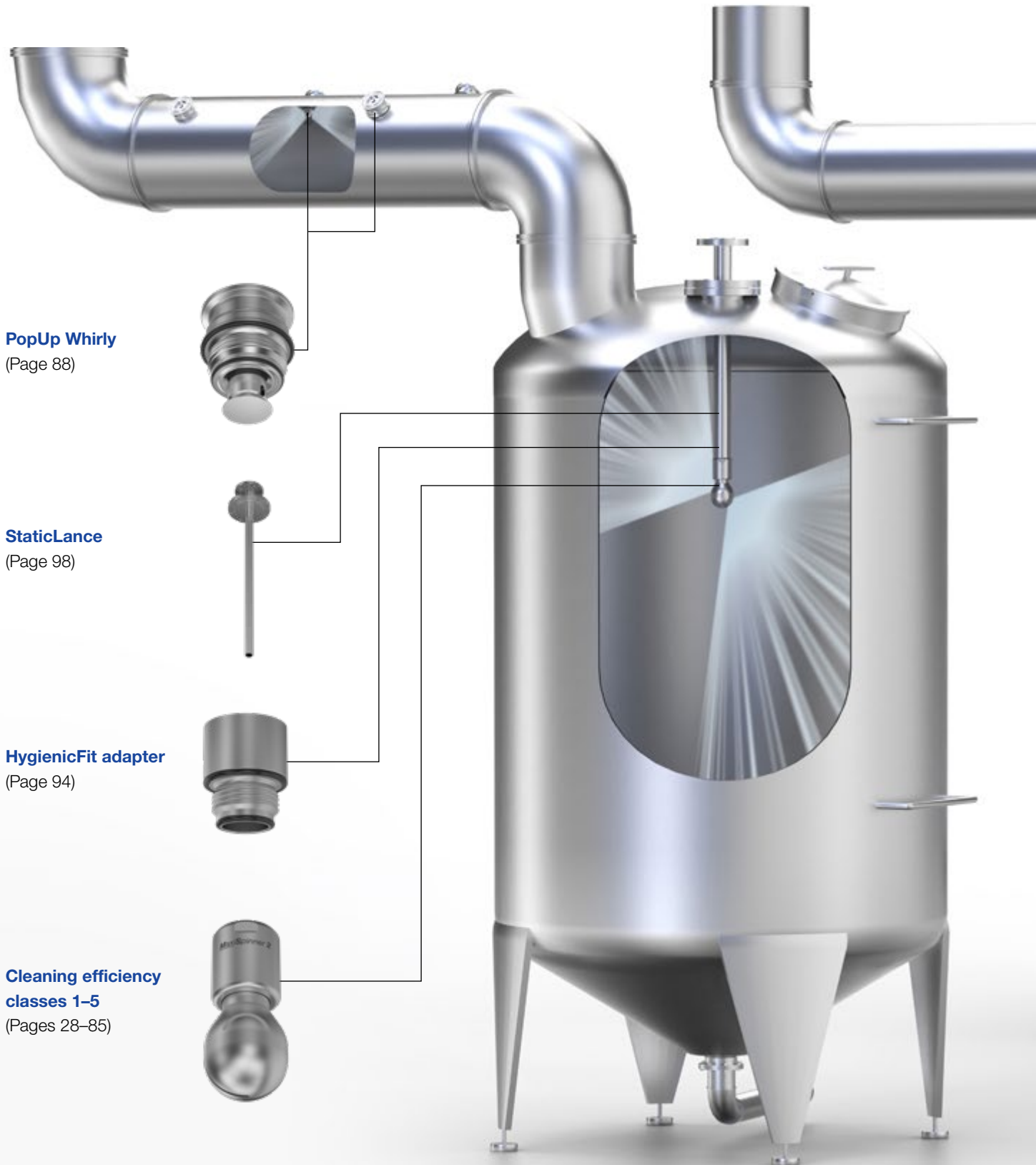






MORE THAN JUST NOZZLES OUR COMMITMENT TO TANK AND EQUIPMENT CLEANING

Effective tank and equipment cleaning cannot just be limited to the tanks. Lechler therefore offers a comprehensive and coordinated product range to allow fast, efficient and thorough cleaning from the feed lines through to the discharge lines.



PopUp Whirly
(Page 88)

StaticLance
(Page 98)

HygienicFit adapter
(Page 94)

**Cleaning efficiency
classes 1–5**
(Pages 28–85)



FlexLance
(Page 99)

Rotation monitoring sensor
(Page 96)

Cleaning efficiency classes 1–5
(Pages 28–85)

PopUp Clean
(Page 92)

GIVE DIRT NO CHANCE TIME TO GET CLEANING

Nobody likes dirt or contaminations: they impair product quality. But removal takes time – and causes costs.

As your partner, we help to minimize these costs as much as possible.



This is how efficient cleaning works – Sinner's circle

Every cleaning process is based on four main factors:

- Chemical (choice and concentration of the cleaning agents)
- Mechanical (detachment of dirt by impact or shear stress)
- Temperature (at which cleaning takes place)
- Time (duration of the overall cleaning process)

The four cleaning factors can be clearly demonstrated by Sinner's circle. Together, they always result in 100 % of the cleaning effort. Depending on the cleaning process, the individual factors may be of different magnitudes and they mutually influence each other. The cleaning nozzle directly influences the mechanical factor.

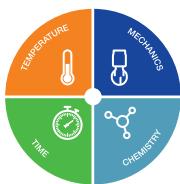
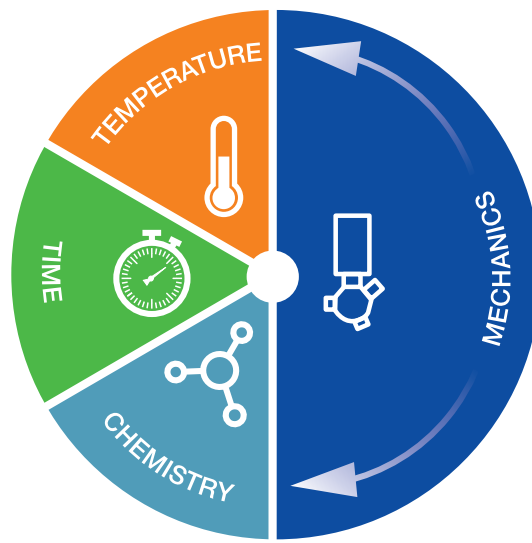
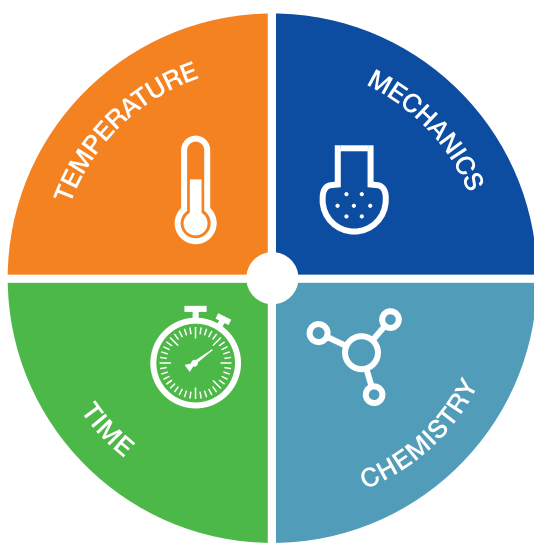


Fig. 1

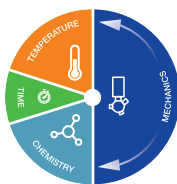


Fig. 2

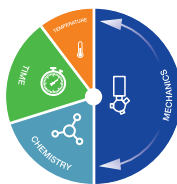
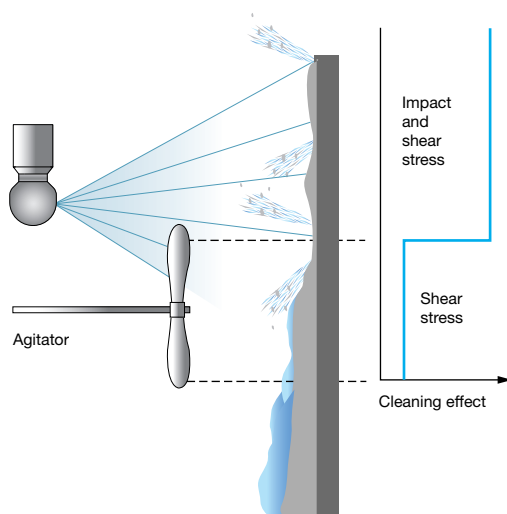


Fig. 3

Example

Assumption: A given tank can be successfully cleaned with equal shares for the time, temperature, chemical and mechanical factors (Fig. 1). Choosing a different nozzle with more powerful cleaning force results in additional freedom for cleaning faster (Fig. 2) or with a lower temperature (Fig. 3) and thus more energy-efficiently, for example.



Cleaning by impact only occurs
if it takes place directly

If a jet is sprayed on to a surface, this generates an impact. This direct impact leads to a better cleaning effect. As a result of shear forces or shear stresses produced by the cleaning fluid as it runs down, areas that are not impacted directly are also rinsed. However, the cleaning effect there is much weaker in comparison with direct impact.

Important: The best cleaning effect is obtained by high impact at the location to be cleaned.

Cleaning in the low-pressure range (2 bar to 5 bar) is normally most effective and efficient. This is because normally larger tanks are cleaned and higher pressures would lead there to a high level of atomization with a reduced cleaning effect.

Good to know

The impact is sufficient for a rough assessment of the cleaning force. However, things are often much more complex in practice. In specific applications, it is sometimes possible to realize additional savings by conducting a more detailed analysis. Talk to us. We will gladly advise you: by phone on +49 7123 962-0 or by email at info@lechler.de.



QUICK DECISION-MAKING AID

LECHLER CLEANING EFFICIENCY CLASSES


Our promise: Lechler has the right cleaning nozzle for every application. We have separated our extensive range of nozzles into five different cleaning efficiency classes so that you can easily find the product that is right for your application. Below you will find the typical soiling types for the respective efficiency class. Here, the higher the efficiency class, the more powerful and efficient the mechanical cleaning effect (see page 8, Sinner's circle).



1

Possible soiling type




- Type** Spray ball, static
- Cleaning effect** 
- Drive** No drive, no rotating parts
- Typical soiling** Light soiling such as non-adhering powder or liquids
- Nozzle design** Static spray pattern with punctiform impact



2

Possible soiling type




- Type** Rotating cleaner, free-spinning
- Cleaning effect** 
- Drive** By the medium
- Typical soiling** Low-viscosity to slightly viscous substances such as fresh ketchup
- Nozzle design** Slot design or bore layout with direct impact on the entire tank surface



3

Possible soiling type



- Type** Rotating cleaner, free-spinning
- Cleaning effect** 
- Drive** By the medium
- Typical soiling** More viscous substances such as chocolate sauce
- Nozzle design** Special flat fan geometry with direct impact on the entire tank surface

4



Possible soiling type



Type	Rotating cleaner, controlled rotation
Cleaning effect	<div style="width: 70%; background-color: #0056b3; height: 10px;"></div> <div style="width: 30%; background-color: #a6a6a6; height: 10px;"></div>
Drive	By the medium, drive unit with turbine and gear unit
Typical soiling	Medium soiling such as high-viscosity creams
Nozzle design	Special flat fan nozzle inserts with direct impact on the entire tank surface

5



Possible soiling type



Type	High impact tank cleaning machine, controlled rotation about two axes
Cleaning effect	<div style="width: 85%; background-color: #0056b3; height: 10px;"></div> <div style="width: 15%; background-color: #a6a6a6; height: 10px;"></div>
Drive	By the medium, drive unit with turbine and gear unit
Typical soiling	Persistent soiling such as make-up
Nozzle design	Solid stream nozzles with controlled rotation about two axes, direct impact on the entire tank surface during a cleaning cycle

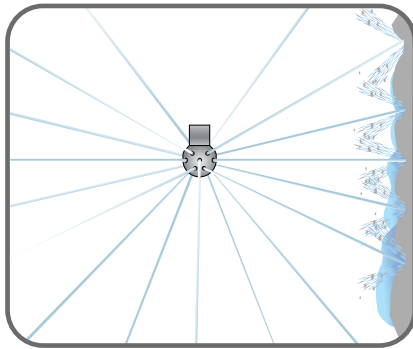
Good to know

The individual cleaning efficiency classes are not sharply defined. Depending on application, nozzles from the next-higher or next-lower cleaning efficiency class may be suitable. Please ask us in case of doubt. We will gladly advise you: by phone on +49 7123 962-0 or by email at info@lechler.de.



OPERATING PRINCIPLES DESIGN AND CLEANING CAPACITY

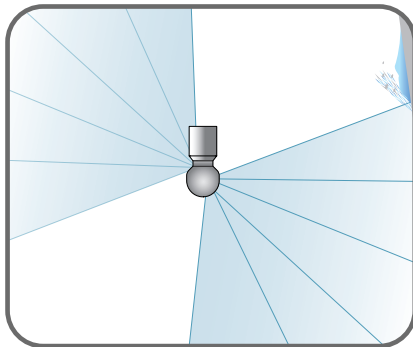
Different operating principles influence the impact and the cleaning effect. The cleaning efficiency can also be influenced by choosing the appropriate nozzle.



Spray ball, static

Static spray balls do not have any moving parts and are largely maintenance-free.

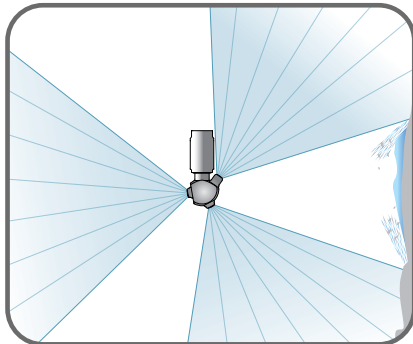
- The impact of the spray jets is punctiform and the surfaces are cleaned by the shear stress of the liquid running down the surface.
- The water consumption is comparatively high
- Increasing soiling results in a significantly longer cleaning time, and cleaning may not be complete
- Simple, inexpensive solution



Rotating cleaner, free-spinning

Thanks to their special nozzle geometry, free-spinning rotating cleaners permit area impact on the tank walls. They are particularly suitable for small to medium-sized tanks.

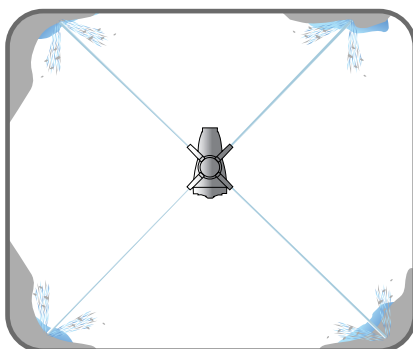
- Drive by cleaning fluid
- Fast impact repetition
- Optimum cleaning performance in the low pressure range



Rotating cleaner, controlled rotation

These rotating cleaners are characterized by their controlled rotation and a stronger cleaning effect thanks to special flat fan geometries. They are particularly suitable for medium-sized to large tanks.

- Increased impact thanks to low rotation speed and resultant larger drops
- Optimum cleaning performance in medium pressure ranges



High impact tank cleaning machines, controlled rotation about two axes

High impact tank cleaning machines operate with few solid streams for maximum impact. The rotation of the nozzles about two axes means that every point on the tank wall is hit by the streams during the cleaning cycle.

- Punctiform impact over the entire tank surface
- Maximum impact
- Highest cleaning power

A few rules of thumb

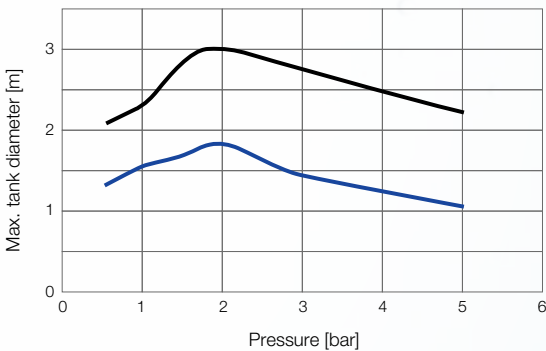
Flow rate and impact

The higher the flow rate, the greater the impact and the more intensive the cleaning effect. For the best possible results, the nozzles with the highest flow rate should be chosen from the suitable nozzles within a series.

Operating pressure

The best results can be achieved with the recommended operating pressure of the respective nozzle. An excessively high pressure leads to greater atomization and reduces the spraying range.

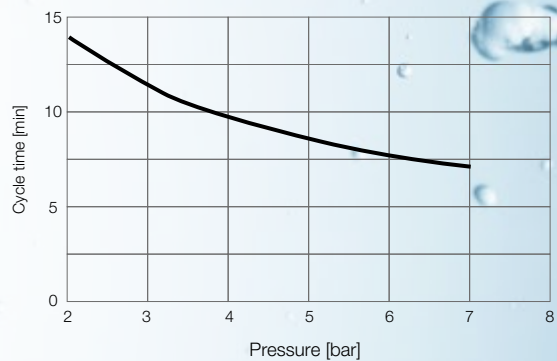
If there is more than one flow rate size within a series, the types with the largest and smallest spraying range are shown. If other flow rate sizes are available, their comparable curves run between the shown upper and lower limits. Information on the maximum tank diameter is provided in the table on the respective product page.



Cleaning cycle time

Rotating cleaners of cleaning efficiency classes 2 to 4 achieve fast, full-area impact in one revolution.

In contrast, high impact tank cleaning machines need several revolutions to complete a cleaning cycle. High impact tank cleaning machines of cleaning efficiency class 5 spray the tank wall in a defined pattern with their powerful solid jets. A certain number of revolutions of the high impact tank cleaning machine is needed to cover every point in the tank. The time required for this is referred to as “Cleaning cycle duration”.



Good to know

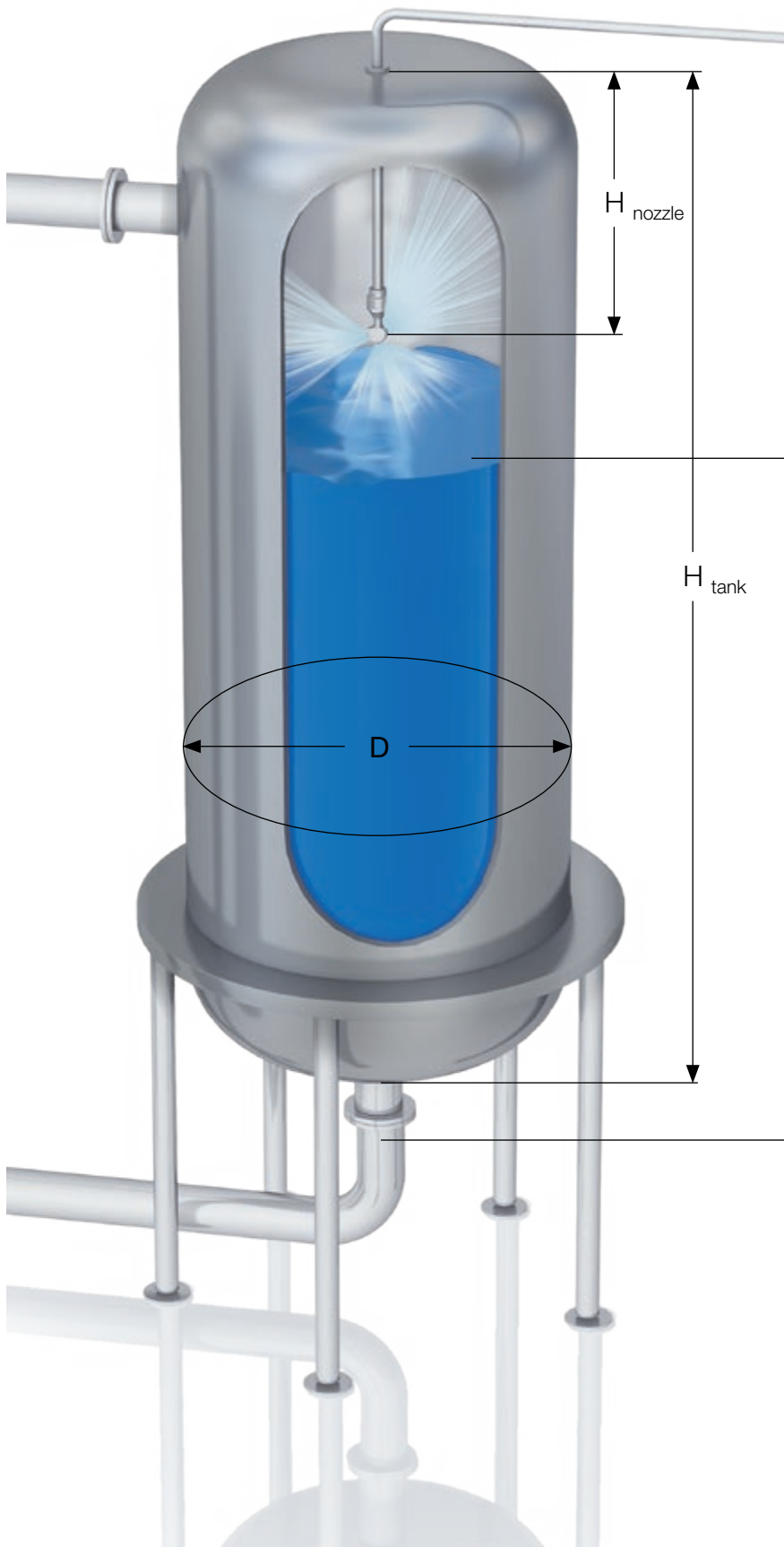
There is at least one exception to every rule of thumb. If you are unsure or need further support, make life easier for yourself and just ask us. You can contact us by phone on +49 7123 962-0 or by email at info@lechler.de.



FOR YOUR PLANNING

CRITERIA FOR NOZZLE SELECTION

The size of the tank, its shape and possible fittings are important factors for selection of the right cleaning nozzle. Fittings in particular determine the number of nozzles required for optimum cleaning.



Tank size

The diameter of the tank to be cleaned should be smaller than the maximum tank diameter recommended in the product tables. You can find the necessary information on the product pages.

Fill level

If possible, the nozzle should not come into contact with the product during production. It is therefore recommended to install nozzles above the maximum tank fill level.

Arrangement

The nozzle must be positioned in the upper part of the tank if possible. The following recommendation applies:

$$H_{\text{nozzle}} = \frac{1}{3} \cdot H_{\text{tank}}$$

Make sure that sufficient cleaning fluid strikes the tank ceiling.

$$H_{\text{nozzle}} < \frac{1}{3} \cdot D_{\text{max. nozzle}}$$

Conversion

Flow rate according to density:

If the density of the cleaning agent (R) differs from that of water (W), the flow rate is calculated as follows:

$$\dot{V}_R = \dot{V}_W \sqrt{\frac{\rho_W}{\rho_R}}$$

Flow rate according to differential pressure:

If the tank cleaning nozzle is operated with a deviating differential pressure, the flow rate is calculated as follows:

$$\dot{V}_2 = \sqrt{\frac{p_2}{p_1}} \cdot \dot{V}_1$$

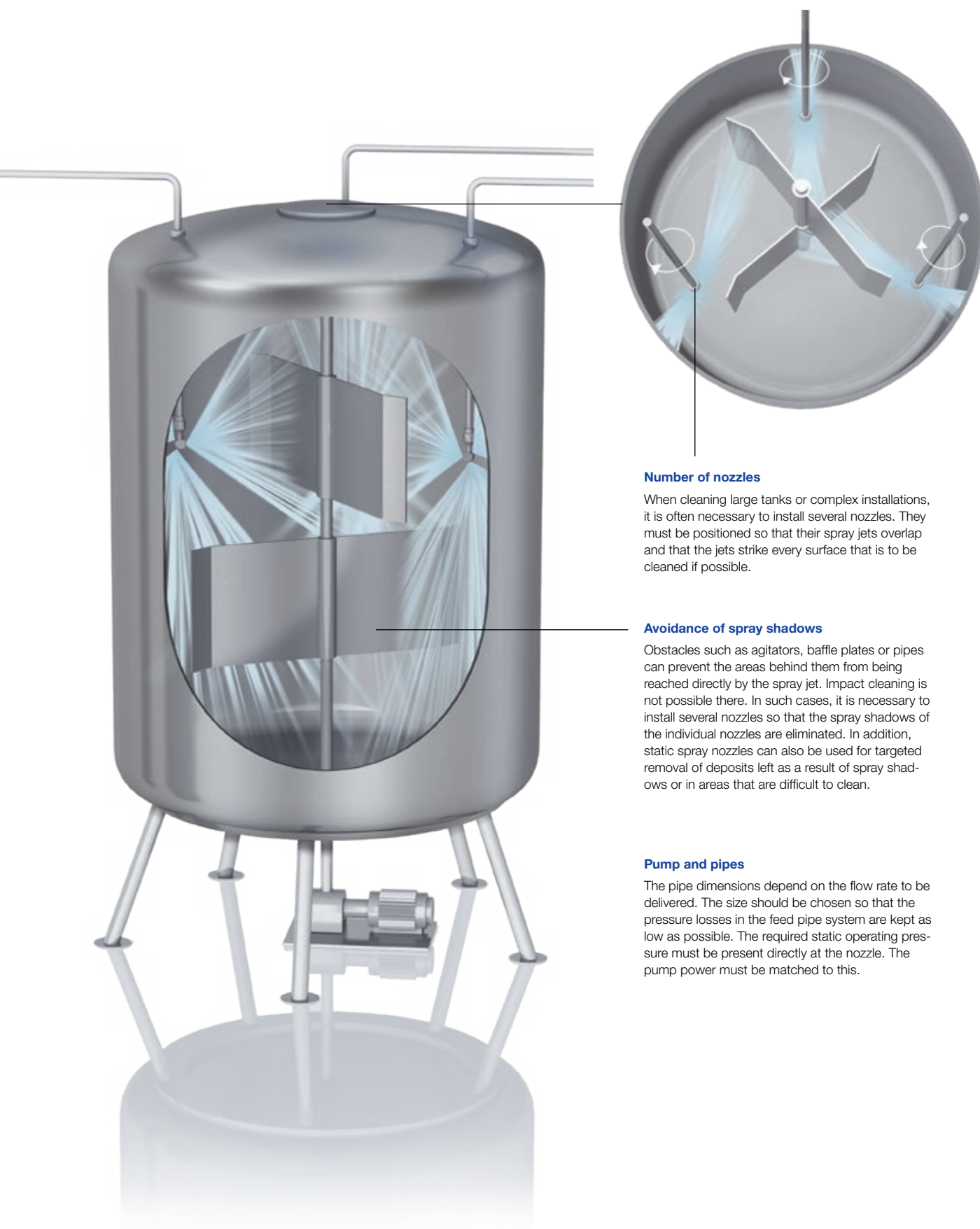
Differential pressure according to volume flow:

$$p_2 = \left(\frac{\dot{V}_2}{\dot{V}_1}\right)^2 \cdot p_1$$

Tank drainage rate

The tank drainage rate must be chosen so that the liquid level does not rise during the cleaning process. The following values are recommended.

Drain ["]	Drainage rate [l/min]
1	23
1 1/2	50
2	87
2 1/2	132
3	190
4	330



Number of nozzles

When cleaning large tanks or complex installations, it is often necessary to install several nozzles. They must be positioned so that their spray jets overlap and that the jets strike every surface that is to be cleaned if possible.

Avoidance of spray shadows

Obstacles such as agitators, baffle plates or pipes can prevent the areas behind them from being reached directly by the spray jet. Impact cleaning is not possible there. In such cases, it is necessary to install several nozzles so that the spray shadows of the individual nozzles are eliminated. In addition, static spray nozzles can also be used for targeted removal of deposits left as a result of spray shadows or in areas that are difficult to clean.

Pump and pipes

The pipe dimensions depend on the flow rate to be delivered. The size should be chosen so that the pressure losses in the feed pipe system are kept as low as possible. The required static operating pressure must be present directly at the nozzle. The pump power must be matched to this.



FOR YOUR PLANNING PROFESSIONAL SUPPORT

TankClean



On the previous pages we provided you with the most important information for planning efficient tank and equipment cleaning. In many cases, this will already allow you to find the optimum solution for your requirements.

However, what if the situation is more complex? For example, due to fitting-related spray shadows – or if you want to be absolutely sure that every area in the tank has been fully cleaned? The solution here is simple: we will gladly support you with our TankClean simulation software.

With TankClean we can ...

- simulate tank geometries with a large number of fittings precisely and realistically
- select the right number of optimum nozzles and position them freely
- simulate the cleaning process and thus show spray shadows or other problematic areas
- record the simulation as a PDF and video

YOUR ADVANTAGES

PLANNING RELIABILITY

We assist you in planning your tank cleaning solution to ensure cleaning without any gaps.

PROCESS OPTIMIZATION

By simulating the existing cleaning processes, we show you the optimization potentials for these processes.

PROCESS RELIABILITY

Thanks to realistic and individually customizable process simulation, we can offer you individual solution concepts.

COST AND TIME SAVINGS

Simulation makes it possible to detect any potential problem areas before final definition of the cleaning concept. This makes it possible to significantly reduce the number of time- and cost-intensive practical cleaning tests.

See and understand TankClean



Discover the possibilities of TankClean: Visit www.lechler.com/tankclean or scan the QR code.



FOR YOUR PLANNING

CERTIFICATES AND DECLARATIONS

We can issue various certificates and declarations for our products. It must be checked in advance whether the desired document can be issued for a certain product. We will gladly inform you about the conditions for the documents on request.

Declaration of compliance EN 10204 - 2.1

This declaration confirms that the products have been manufactured and tested in accordance with the specifications.

Test report EN 10204 - 2.2

The report can be issued for the material (including the non-specific material certificate of the supplier), surface quality or spray parameters (spray angle and flow rate, without additional document).

Inspection certificate EN 10204 - 3.1

The inspection certificate is usually issued for the material. It can be issued for selected tank cleaning nozzles on request. In this case, production of the parts takes place on an order-specific basis with restamping.

However, a specific certificate can also be issued for the flow rate, spray angle nozzle dimensions, surface quality, etc.

FDA declaration of conformity

Confirmation that the material used complies with the specifications of the FDA.

3-A declaration of conformity

Confirmation that the product complies with the requirements of 3-A Sanitary Standards No. 78-03.

Declaration of conformity according to regulations (EC) No. 1935/2004 and (EC) No. 10/2011

Confirmation that the supplied product is suitable for use in contact with food and that the material complies with the above regulations.

ATEX type examination certificate

The ATEX type examination certificate certifies approval of the tank cleaning nozzle for corresponding ATEX environments.

Supplier declaration

Declaration on certificates of origin of the European Union, issued by Lechler. A supplier declaration can be issued for a specific order (individual supplier declaration) or as a long-term supplier declaration with a validity of two years.

Certificate of origin

Official confirmation of the origin of a product, certified by the Chamber of Commerce and Industry.

FOR YOUR PLANNING LECHLER ONLINE-SERVICES

3D design data

We can support you in your design work with the freely available 3D design data of Lechler nozzles and accessories.



After free registration, you can download the required data packages in all common CAD formats from www.lechler.com/de-en/service/cad.

- Time-saving, immediate download of 3D drawings and technical data
- Simple product selection like in Lechler print catalog
- Preview function with product photo and 3D graphics
- Available in all common 3D file formats

Ready at all times – the Lechler Industry app

The Lechler Industry app offers all important calculation and conversion functions in one place:

- Units converter for pressure, volume and flow rate
- Pressure/flow rate calculator for single fluid nozzles including axial-flow full cone nozzles
- Determination of the pipe diameter



iOS (Apple)



Android (Google)

Available free of charge in the Apple App Store and Google Play Store.

Current brochure



We are continuously developing our product range. You can always access the latest version of this brochure at www.lechler.com/de-en/catalogues.



Good to know

You can find current information about Lechler and our products and services online at www.lechler.com/de-en.





THE PRODUCT RANGE A BRIEF INTRODUCTION

Cleaning efficiency class 1

Cleaning efficiency class 2

Cleaning efficiency class 3

Cleaning efficiency class 4

Cleaning efficiency class 5

Perfect add







FOR YOUR PLANNING OPTIMUM PREPARATION

Every industry and every process has its own requirements. We know them all and supply the optimum cleaning nozzles for an extremely wide range of ambient conditions.

FDA



FOOD CONFORMITY

Many of the materials used for Lechler tank cleaning nozzles comply with the requirements of the FDA and conform to the regulation EU1935/2004.



HYGIENE REQUIREMENTS

Lechler cleaning nozzles meet the strictest hygiene requirements. Selected series are available as specially certified 3-A-compliant nozzles.



ATEX

Lechler offers specially approved nozzle series for use in explosive atmospheres.



MAXIMUM OPERATING TEMPERATURE

Maximum permitted temperature of the cleaning medium during operation.



MAXIMUM AMBIENT TEMPERATURE

Maximum permitted ambient temperature within the tank.



INSTALLATION

The installation symbol describes the position in which the nozzle must be installed so that it functions properly.



BEARING

The primary bearing used is described here.



MATERIAL

Here you can find all materials that are used in the nozzle. This list permits a simple check of the chemical resistance.



WEIGHT

The weight is specified from the lightest to the heaviest nozzle within a series.



INSIDE AND OUTSIDE

SURFACE QUALITY

We distinguish between surfaces inside the cleaning nozzle and outside surfaces. Excepted from this are threads, weld seams and gear wheels as well as areas in which the cleaning medium flows very quickly.



STEAM SUITABILITY

If the SIP process is realized by the cleaning nozzle, the suitability for hot water or even steam operation is decisive. Our products have been tested in vertically downwards-facing installation position at a temperature of 150 °C and a pressure of 2.5 bar(g) specifically for the extreme conditions in steam operation. The wear behavior differs depending on the design and materials used. We therefore categorize the steam suitability of our products as follows:

- Suitable (only slight wear evident after test duration of 50 h)
- Conditionally suitable (clear wear already evident after test duration of 25 h)
- Not suitable (the tested type was worn so that it was no longer capable of operation within a very short time)

It must be noted that operation with steam means increased wear irrespective of suitability. The following rule of thumb therefore applies: The lower the pressure, the lower the rotation speed and load and also the lower the wear of the cleaning nozzle.



INSERTION DIAMETER

This is the minimum diameter of the opening that is required to insert the cleaning nozzle in the tank. Since the exact insertion diameter depends on the selected type, a range is specified for some series. If the size of the insertion opening is within the specified range, the exact insertion diameter must be requested from Lechler.



RECOMMENDED OPERATING PRESSURE

The recommended operating pressure is the optimum pressure at which the nozzle cleans most efficiently. The recommended operating pressure must be determined directly in front of the nozzle.



ADAPTER

The HygienicFit adapter guarantees hygienic connection of the supply line. Compatible products are identified by this pictogram.



ROTATION MONITORING

These nozzles are compatible with the Lechler rotation monitoring sensor.



MAINTENANCE

All nozzles with the maintenance symbol can be maintained. You can find further information on pages 100–101.

























RECOMMENDED FILTER








We recommend a filter with the specified mesh size in order to prevent clogging and excessive wear of the cleaning nozzle.



Prüfstand 305




















TANK CLEANING NOZZLES SERIES OVERVIEW








		Cleaning efficiency class 1					
Series		Spray ball 527	Spray ball 540/541	RinseClean 5B2/5B3	PicoWhirly 500.234	MicroWhirly 566	MiniWhirly 500.186
Information on Page		30	32	34	40	42	44
							
	Operating principle						
	Max. tank diameter [m]	5.2–8.2	6.5–9.5	2.2–5.6	0.9	1.6–1.7	1.3
	Insertion diameter [mm]	35.0–102.0	31.0	20.0–90.0	9.0	20.0–48.0	29.0
	Recommended operating pressure [bar]	1.5	3.0	2.0	3.0	2.0	2.0
	Flow rate at recommended operating pressure [l/min]	52.0–364.0	22.0–145.0	15.0–1,000.0	9.8	15.0–21.0	18.0
	Food-compliant	●	●	●	●	●	
	ATEX available					●	
	Surface quality (outside) [µm]	≤ 0.8 µm	≤ 6.3 µm	≤ 0.8	≤ 1.6	≤ 1.6	≤ 1.6
	Steam suitability	suitable	suitable	suitable	suitable	suitable	not suitable
	Max. operating temperature [°C]	200	200	200	200	150	50
	Max. ambient temperature [°C]	250	250	250	200	200	100
	Compatible with HygienicFit						
	Rotation monitoring						
	Weight [g]	50–660	90–100	10–300	10	50–200	40
	Maintainable						

Cleaning efficiency class 2					
PVDF MicroWhirly 500.191	NanoSpinner 2 5M1	MicroSpinner 2 5M2	MiniSpinner 2 5M3	MaxiSpinner 2 5M4	PTFE Whirly 573/583
46	48	50	52	56	58
					
					
0.8–1.1	1.4–1.6	1.7–1.8	1.8–2.6	4.0–5.0	2.4–3.2
30.0	17.0–34.0	28.0–48.0	39.0–58.0	69.0	49.0–78.4
2.0	2.0	2.0	2.0	2.0	2.0
13.0–20.0	15.0–20.0	23.0–40.0	30.0–100.0	135.0–250.0	58.0–225.0
●	●	●	●	●	●
	●	●	●	●	
≤ 1.6	≤ 0.4	≤ 0.4	≤ 0.4	≤ 0.4	≤ 0.8
not suitable	not suitable	conditionally suitable	conditionally suitable	conditionally suitable	not suitable
95	200	200	200	200	95
150	250	250	250	250	200
		●	●	●	
12–30	20	80–100	230–340	1,100–1,500	140–300





		Cleaning efficiency class 3		
Series		HygienicWhirly 594/595	Whirly 2 5W9	Gyro 577
Information on Page		64	66	68
				
	Operating principle			
	Max. tank diameter [m]	0.8–2.7	1.8–3.0	3.4–5.4
	Insertion diameter [mm]	31.5–48.0	69.5	110.0–156.0
	Recommended operating pressure [bar]	3.0	2.0	3.0
	Flow rate at recommended operating pressure [l/min]	14.0–82.0	48.0–145.0	200.0–659.0
	Food-compliant	●	●	●
	ATEX available		●	
	Surface quality (outside) [µm]	≤ 0.8	≤ 0.4	≤ 0.8
	Steam suitability	suitable	not suitable	conditionally suitable
	Max. operating temperature [°C]	150	150	95
	Max. ambient temperature [°C]	150	200	200
	Compatible with HygienicFit		●	
	Rotation monitoring			
	Weight [g]	90–290	360–500	640–1,920
	Maintainable			

Cleaning efficiency class 4		Cleaning efficiency class 5		
XactClean HP 2 5S6/5S7	XactClean HP+ 5S5	MeshClean 5T2/5T3	IntenseClean Hygienic 5TB	IntenseClean 5TM
72	76	80	82	84
				
				
3.5–8.0	9.0–9.6	11.5–13.0	14.0–15.0	18.0–24.0
50.0–79.0	81.0–140.0	68.0–82.0	130.0	160.0–230.0
5.0	3.0	5.0	5.0	5.0
40.0–213.0	202.0–367.0	20.0–79.0	169.0–238.0	198.0–411.0
●	●	●	●	●
●		●	●	●
≤ 1.6	≤ 0.8	≤ 0.8	≤ 0.8	≤ 0.8
suitable	suitable	suitable	suitable	not suitable
150	150	150	150	95
150	150	150	150	140
	●	●		
●	●	●	●	●
650–900	1,120–1,930	1,000	4,000	7,400–7,880
●	●	●	●	●



CLEANING EFFICIENCY CLASS 1 RINSE EFFICIENTLY AND RELIABLY

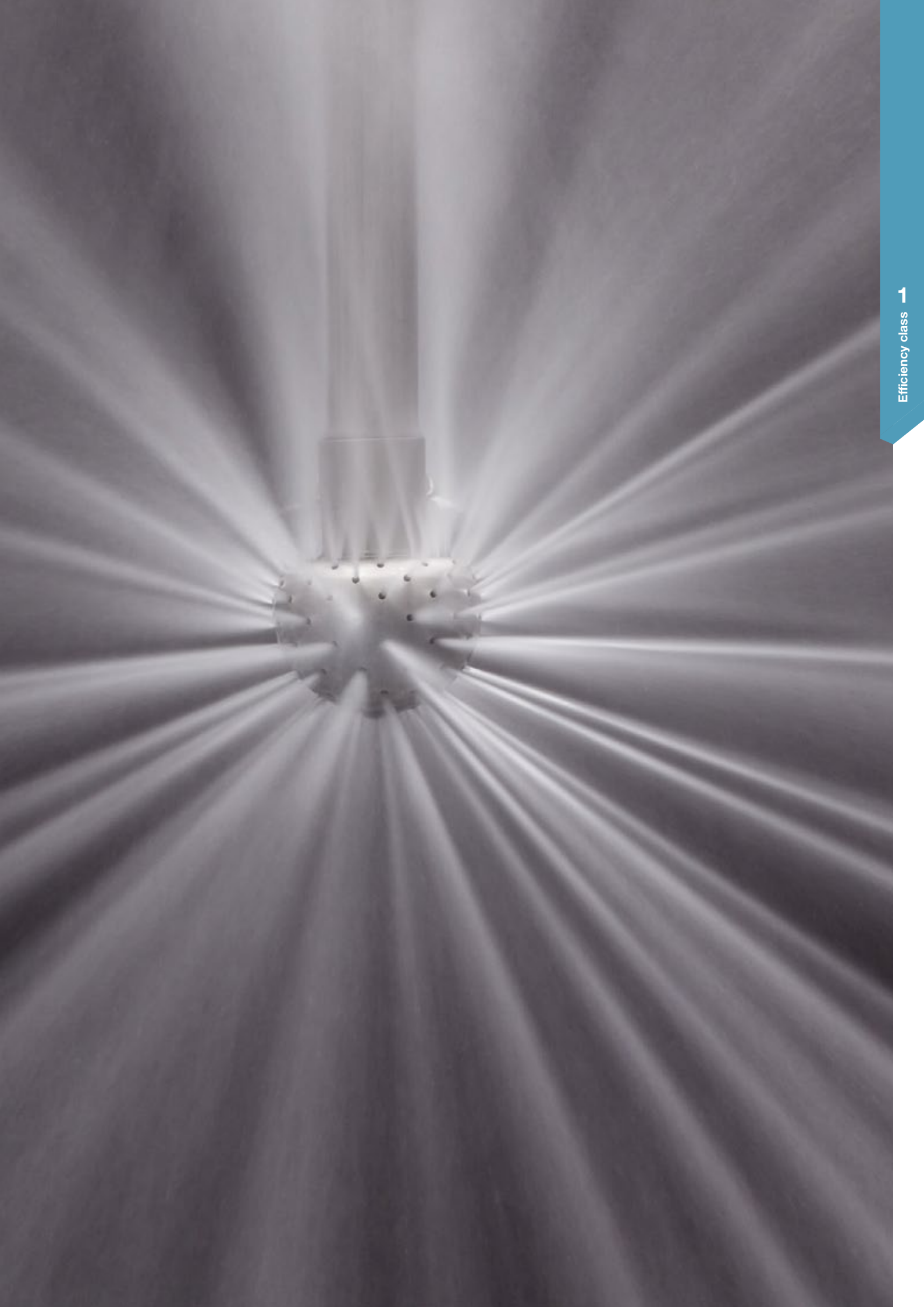
Type Spray ball, static

Cleaning effect 

Drive No drive, no rotating parts

Typical soiling Light soiling such as non-adhering powder or liquids

Nozzle design Static spray pattern with punctiform impact



Static spray balls

Series 527



Features:

- Suitable for the highest hygiene requirements due to 3-A certification
- High surface quality
- Suitable for very high temperatures



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 527

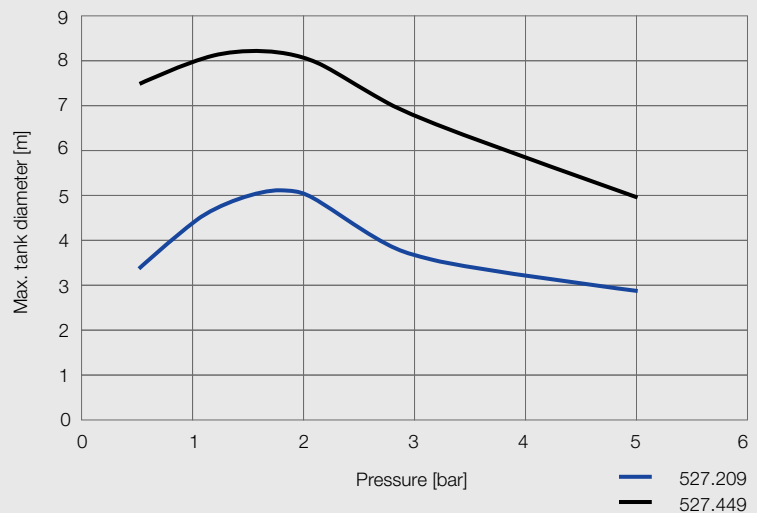
Technical data:

Maximum operating temperature 200 °C	Maximum ambient temperature 250 °C	Installation Operation in every installation position	Bearing Static – no bearing
Material Stainless steel 1.4404 (316L)	Weight 50–660 g	Surface quality √Ra ≤ 0.8 μm <small>OUTSIDE</small>	Surface quality √Ra ≤ 0.8 μm <small>INSIDE</small>
Steam suitability Suitable	Insertion diameter 35–102 mm	Recommended filter Smaller than the narrowest cross-section	Recommended operating pressure 1.5 bar

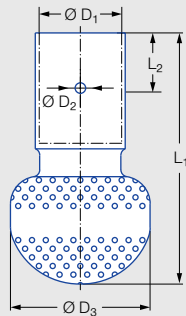


Max. tank diameter

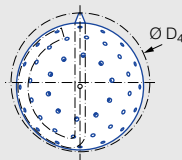
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



Overview of maximum tank diameter depending on pressure




Dimensions of slip-on connection according to ASME-BPE (OD tube)



Insertion diameter D_4 of slip-on connection

With the slip-on connection, the spray ball is pushed onto the customer connecting pipe and secured with the supplied cotter pin.

Spray angle	Order no.	Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]				\dot{V} water		Dimensions [mm]						Max. tank diameter [m]
			p [bar] ($p_{\max} = 5$ bar)				at 1.5 bar [m ³ /h]	at 2 bar [m ³ /h]	L_1	L_2	$\varnothing D_1$	$\varnothing D_2$	$\varnothing D_3$	$\varnothing D_4$	
			1.0	1.5	2.0	3.0									
 360°	527.209.1Y.00.75	0.8	42	52	60	73	3.1	3.6	68.0	12.7	19.0	3.3	32.0	35.0	5.2
	527.289.1Y.01.50	1.1	120	147	170	208	8.8	10.2	116.0	25.4	38.3	4.9	65.0	71.0	6.0
	527.449.1Y.02.00	1.7	297	364	420	514	21.8	25.2	152.0	25.4	51.0	4.9	102.0	102.0	8.2

Information on slip-on connection

- Cotter pin made of stainless steel 1.4404 (316L) included.
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and spray ball.

Information on operation

Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Static spray balls

Series 540/541



Features:













- Robust and especially compact design
- Threaded connection
- Suitable for very high temperatures
- Also suitable for steam and air operation




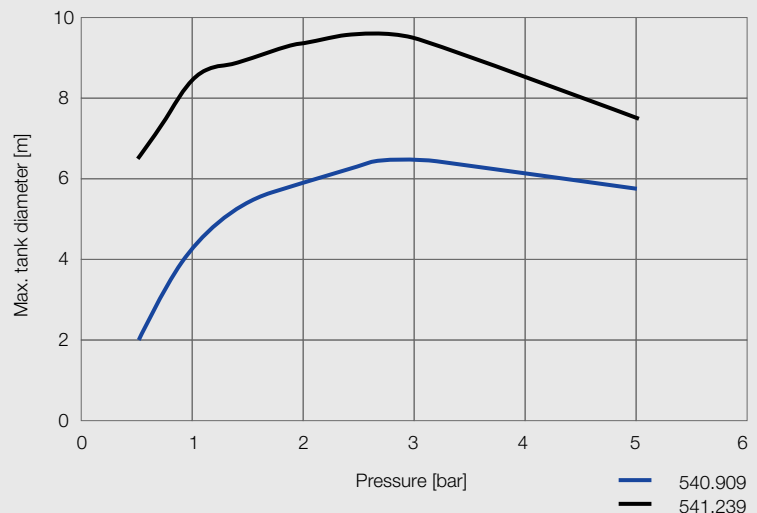
Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 540/541

Technical data:

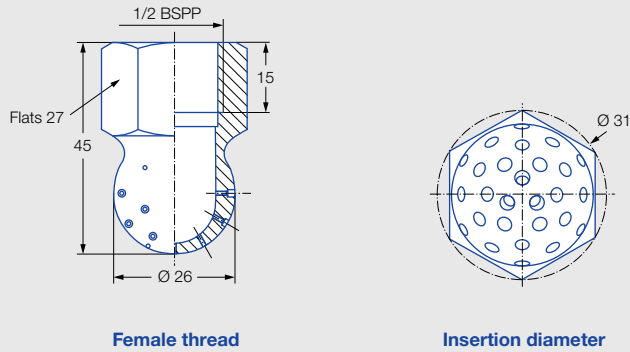
 Maximum operating temperature 200 °C	 Maximum ambient temperature 250 °C	 Installation Operation in every installation position	 Bearing Static – no bearing
 Material Stainless steel 1.4305 (303)	 Weight 90–100 g	 Surface quality √Ra ≤ 6.3 μm <small>OUTSIDE</small>	 Surface quality √Ra ≤ 6.3 μm <small>INSIDE</small>
 Steam suitability Suitable	 Insertion diameter 31 mm	 Recommended filter Smaller than the narrowest cross-section	 Recommended operating pressure 3 bar

 **Max. tank diameter**
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.




Overview of maximum tank diameter depending on pressure

Dimensions in mm.



Female thread

Insertion diameter

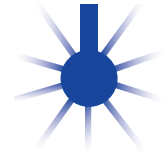
Spray angle	Order no.	Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]					\dot{V} water	Max. tank diameter [m]
	Type		p [bar] ($p_{\max} = 10$ bar)						
			0.5	1.0	2.0	3.0	5.0	at 3 bar [m ³ /h]	
240° 	540.909.16	0.8	9	13	18	22	28	1.3	6.5
	540.989.16	1.0	14	20	28	34	44	2.0	7.0
	541.109.16	1.5	29	40	57	70	90	4.2	7.5
	541.189.16	2.0	45	64	90	110	142	6.6	8.3
	541.239.16	2.3	59	83	118	145	187	8.7	9.5

NPT threads on request.

Information on operation

Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Static spray balls RinseClean Series 5B2/5B3



Features:

- No moving parts
- Self-draining
- Proven in numerous applications
- Suitable for very high temperatures and high hygiene requirements
- Also available in 2.4602 (Alloy 22)



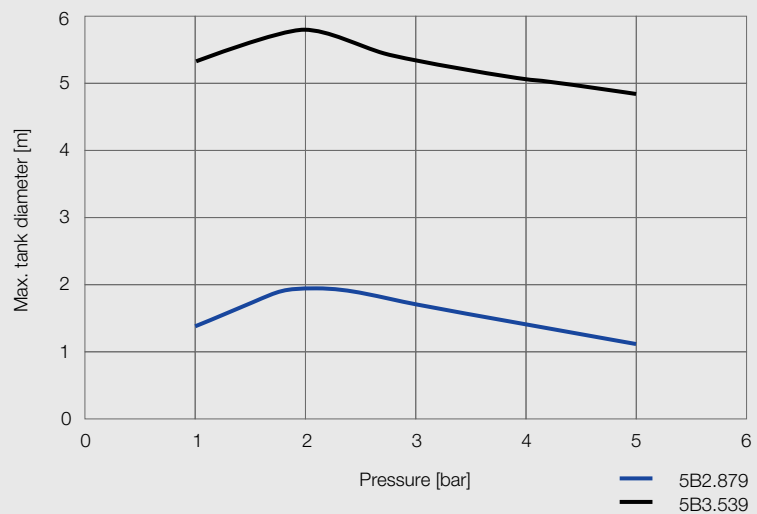
Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5B2/5B3

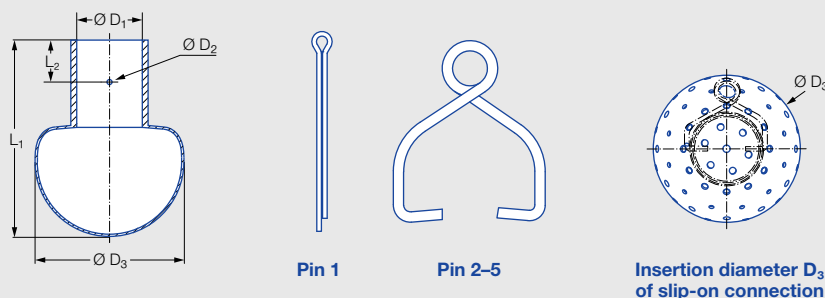
Technical data:

Maximum operating temperature 200 °C	Maximum ambient temperature 250 °C	Installation Operation in every installation position	Bearing Static – no bearing
Material Stainless steel 1.4404 (316L), cotter pin made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22), cotter pin made of 2.4602 (Alloy 22)	Weight 10–300 g	Surface quality Ra ≤ 0.8 µm OUTSIDE polished Ra ≤ 0.5 µm	Surface quality Ra ≤ 0.8 µm INSIDE
Steam suitability Suitable	Insertion diameter 20–90 mm	Recommended filter Smaller than the narrowest cross-section	Recommended operating pressure 2 bar

Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.







Overview of maximum tank diameter depending on pressure



With the slip-on connection, the spray ball is pushed onto the customer connecting pipe and secured with the supplied cotter pin.

Slip-on connection according to DIN 10357, series B (replaces DIN 11850, series 1)

Spray angle	Order no.			Narrowest cross-section Ø [mm]	V̇ water [l/min]				V̇ water at 2 bar [m³/h]	Dimensions [mm]					Pin	Max. tank diameter [m]	
	Type	Mat. no.			Connection	p [bar] (p _{max} = 5 bar)				L ₁	L ₂	Ø D ₁	Ø D ₂	Ø D ₃			
		1Y	21			0.5	1.0	2.0									3.0
		1.4404 (316L)	2.4602 (Alloy 22)														
180° 	5B3.083	●	●	D1.80	1.2	25	35	50	61	3.0	42.0	9.0	18.2	2.2	28.0	1	2.2
	5B3.253	●	●	D2.20	1.8	65	92	130	159	7.8	84.0	18.0	22.2	2.2	64.0	2	3.0
	5B3.323	●	●	D2.80	2.3	100	141	200	245	12.0	84.0	18.0	28.2	2.2	64.0	3	3.5
	5B3.463	●	●	D5.20	3.3	230	325	460	563	27.6	111.0	25.0	52.3	3.0	90.0	5	5.4
180° 	5B3.114	●	●	D1.80	1.4	30	42	60	74	3.6	42.0	9.0	18.2	2.2	28.0	1	2.2
	5B3.274	●	●	D2.20	2.3	75	106	150	184	9.0	84.0	18.0	22.2	2.2	64.0	2	3.0
	5B3.394	●	●	D2.80	3.0	145	205	290	355	17.4	84.0	18.0	28.2	2.2	64.0	3	5.0
	5B3.444	●	●	D5.20	3.2	200	283	400	490	24.0	111.0	25.0	52.3	3.0	90.0	5	5.2
270° 	5B3.305	●	●	D2.20	1.9	90	127	180	221	10.8	84.0	18.0	22.2	2.2	64.0	2	3.5
	5B3.345	●	●	D2.80	2.1	115	163	230	282	13.8	84.0	18.0	28.2	2.2	64.0	3	5.0
	5B3.385	●	●	D3.40	2.2	140	198	280	343	16.8	84.0	18.0	34.3	2.2	64.0	4	5.2
	5B3.405	●	●	D3.40	2.4	160	226	320	392	19.2	84.0	18.0	34.3	2.2	64.0	4	5.2
	5B3.425	●	●	D2.80	2.8	180	255	360	441	21.6	84.0	18.0	28.2	2.2	64.0	3	5.2
	5B3.445	●	●	D4.00	2.7	205	290	410	502	24.6	84.0	18.0	40.3	2.2	64.0	4	5.4
	5B3.475	●	●	D3.40	3.1	235	332	470	576	28.2	84.0	18.0	34.3	2.2	64.0	4	5.4
	5B3.535	●	●	D5.20	3.6	335	474	670	821	40.2	111.0	25.0	52.3	3.0	90.0	5	5.6
	5B3.605	●	●	D5.20	4.5	500	707	1,000	1,225	60.0	111.0	25.0	52.3	3.0	90.0	5	5.6
360° 	5B2.879	●	●	D0.80	0.8	8	11	15	18	0.9	37.0	9.0	8.2	2.2	20.0	1	2.0
	5B3.089	●	●	D1.20	1.0	25	35	50	61	3.0	42.0	9.0	12.2	2.2	28.0	1	2.2
	5B3.139	●	●	D1.20	1.6	33	46	65	80	3.9	42.0	9.0	12.2	2.2	28.0	1	2.3
	5B3.209	●	●	D1.80	1.5	50	71	100	123	6.0	42.0	9.0	18.2	2.2	28.0	1	2.5
	5B3.309	●	●	D2.20	1.7	90	127	180	221	10.8	84.0	18.0	22.2	2.2	64.0	2	3.5
	5B3.379	●	●	D2.80	2.1	130	184	260	318	15.6	84.0	18.0	28.2	2.2	64.0	3	5.2
	5B3.389	●	●	D4.00	2.1	140	198	280	343	16.8	84.0	18.0	40.3	2.2	64.0	4	5.2
	5B3.409	●	●	D3.40	2.3	160	226	320	392	19.2	84.0	18.0	34.2	2.2	64.0	4	5.2
	5B3.449	●	●	D2.80	3.0	205	290	410	502	24.6	84.0	18.0	28.2	2.2	64.0	3	5.4
	5B3.489	●	●	D3.40	2.9	255	361	510	625	30.6	84.0	18.0	34.2	2.2	64.0	4	5.5
	5B3.499	●	●	D4.00	2.8	270	382	540	661	32.4	84.0	18.0	40.3	2.2	64.0	4	5.5
	5B3.539	●	●	D5.20	3.2	335	474	670	821	40.2	111.0	25.0	52.3	3.0	90.0	5	5.6

Pin	Order no.	
	1Y	21
	Stainless steel 1.4404 (316L)	2.4602 (Alloy 22)
1	095.013.1Y.06.55	095.013.21.06.55
2	095.013.1Y.06.58	095.013.21.06.58
3	095.013.1Y.06.56	095.013.21.06.56
4	095.013.1Y.06.59	095.013.21.06.59
5	095.013.1Y.06.57	

Note

Available in polished version on request.

Information on slip-on connection

- Cotter pin made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22) included.
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and spray ball.

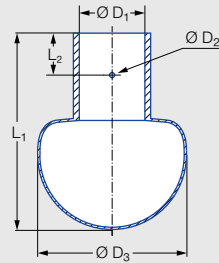
Information on operation

Use above the recommended pressure will have a negative effect on the cleaning result and wear.

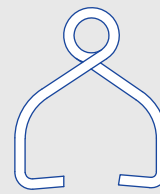
Ordering Type + Material no. + Connection = Order no.
example: 5B3.083 + 1Y + D1.80 = 5B3.083.1Y.D1.80



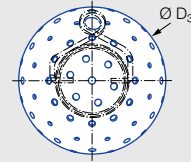
Slip-on connection



Pin 1



Pin 2-5



Insertion diameter D_3 of slip-on connection

Slip-on connection according to DIN EN 10357 series A (replaces DIN 11850, series 2)

Spray angle	Order no.				Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]				\dot{V} water at 2 bar [m ³ /h]	Dimensions [mm]					Pin	Max. tank diameter [m]
	Type	Mat. no.		Connection		p [bar] ($p_{max} = 5$ bar)					L_1	L_2	$\varnothing D_1$	$\varnothing D_2$	$\varnothing D_3$		
		1Y	21			0.5	1.0	2.0	3.0								
		1.4404 (316L)	2.4602 (Alloy 22)														
360° 	5B3.149	●	●	D2.90	0.9	35	50	70	86	4.2	84.0	18.0	29.2	2.2	64.0	3	2.3
	5B3.299	●	●	D2.90	1.5	83	117	165	202	9.9	84.0	18.0	29.2	2.2	64.0	3	3.2
	5B3.359	●	●	D2.90	1.9	115	163	230	282	13.8	84.0	18.0	29.2	2.2	64.0	3	5.0
	5B3.399	●	●	D2.90	2.2	150	212	300	367	18.0	84.0	18.0	29.2	2.2	64.0	3	5.2
	5B3.429	●	●	D2.90	2.6	180	255	360	441	21.6	84.0	18.0	29.2	2.2	64.0	3	5.2
	5B3.539	●		D5.30	3.2	335	474	670	821	40.2	111.0	25.0	53.3	3.0	90.0	5	5.6

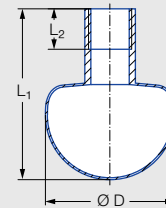
Slip-on connection according to DIN EN 10357 series D (ASME BPE 1997, OD-tube compatible)

Spray angle	Order no.				Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]				\dot{V} water at 2 bar [m ³ /h]	Dimensions [mm]					Pin	Max. tank diameter [m]
	Type	Mat. no.		Connection		p [bar] ($p_{max} = 5$ bar)					L_1	L_2	$\varnothing D_1$	$\varnothing D_2$	$\varnothing D_3$		
		1Y	21			0.5	1.0	2.0	3.0								
		1.4404 (316L)	2.4602 (Alloy 22)														
360° 	5B3.089	●	●	A1.00	1.0	25	35	50	61	3.0	42.0	9.0	28.0	2.2	9.8	1	2.2
	5B3.209	●	●	A1.90	1.5	50	71	100	123	6.0	42.0	9.0	28.0	2.2	19.3	1	2.5
	5B3.309	●	●	A1.90	1.7	90	127	180	221	10.8	84.0	18.0	64.0	2.2	19.3	1	3.5
	5B3.379	●	●	A2.60	2.1	130	184	260	318	15.6	84.0	18.0	64.0	2.2	25.6	3	5.2
	5B3.449	●	●	A3.80	3.0	205	290	410	502	24.6	84.0	18.0	64.0	2.2	38.3	4	5.4
	5B3.539	●		A5.10	3.2	335	474	670	821	40.2	111.0	25.0	90.0	3.0	51.1	5	5.6


Information on slip-on connection

- Cotter pin made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22) included.
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and spray ball.

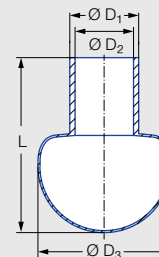
Threaded connection




Threaded connection

Spray angle	Order no.							Narrowest cross-section Ø [mm]	V̇ water [l/min]				V̇ water at 2 bar [m³/h]	Dimensions [mm]			Max. tank diameter [m]
	Type	Mat. no.		Connection					p [bar] (p _{max} = 5 bar)					L ₁	L ₂	Ø D	
		1Y	21	1/8 BSPP male	1/2 BSPP	1 BSPP	2 BSPP		0.5	1.0	2.0	3.0					
		1.4404 (316L)	2.4602 (Alloy 22)														
360° 	5B2.879	●	●	AA				0.8	8	11	15	18	0.9	37	8	20	2.0
	5B3.309	●	●		AH			1.9	90	127	180	221	10.8	84	14	64	3.5
	5B3.379	●	●			AN		2.1	130	184	260	318	15.6	84	18	64	5.2
	5B3.539	●					AW	3.1	335	474	670	821	40.2	111	24	90	5.6

Welded connection



Welded connection according to ISO 2037

Spray angle	Order no.				Narrowest cross-section Ø [mm]	V̇ water [l/min]				V̇ water at 2 bar [m³/h]	Dimensions [mm]				Max. tank diameter [m]
	Type	Mat. no.		Connection		p [bar] (p _{max} = 5 bar)					Adapter				
		1Y	21			0.5	1.0	2.0	3.0		L	Ø D ₁	Ø D ₂	Ø D ₃	
		1.4404 (316L)	2.4602 (Alloy 22)												
360° 	5B2.879	●	●	W1.20	0.8	8	11	15	18	0.9	37.0	12.0	10.0	20.0	2.0
	5B3.089	●	●	W1.20	1.0	25	35	50	61	3.0	42.0	12.0	10.0	28.0	2.2
	5B3.209	●	●	W1.70	1.5	50	71	100	123	6.0	42.0	17.2	15.2	28.0	2.5
	5B3.309	●	●	W2.50	1.7	90	127	180	221	10.8	84.0	25.0	22.6	64.0	3.5
	5B3.379	●	●	W2.50	2.1	130	184	260	318	15.6	84.0	25.0	22.6	64.0	5.2
	5B3.449	●	●	W3.80	3.0	205	290	410	502	24.6	84.0	38.0	35.6	64.0	5.4

Information on operation

Use above the recommended pressure will have a negative effect on the cleaning result and wear.



CLEANING EFFICIENCY CLASS 2 RINSING AND LIGHT CLEANING

Type Rotating cleaner, free-spinning

Cleaning effect



Drive By the medium

Typical soiling Low-viscosity to slightly viscous substances such as fresh ketchup

Nozzle design Slot design or bore layout with direct impact on the entire tank surface



Rotating cleaning nozzle PicoWhirly Series 500.234



Features:

- Cleaning with rotating solid jets
- Compact design for confined spaces
- Suitable for very high temperatures
- Made completely of stainless steel



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 500.234

Technical data:



Maximum operating temperature
200 °C



Maximum ambient temperature
200 °C



Installation
Operation in every installation position



Bearing
Kolsterised slide bearing



Material
Stainless steel 1.4404 (316L)



Weight
10 g



Surface quality
Ra ≤ 1.6 µm
OUTSIDE



Surface quality
Ra ≤ 1.6 µm
INSIDE



Steam suitability
Suitable



Insertion diameter
9 mm



Recommended filter
Line strainer with a mesh size of 0.3 mm/50 mesh

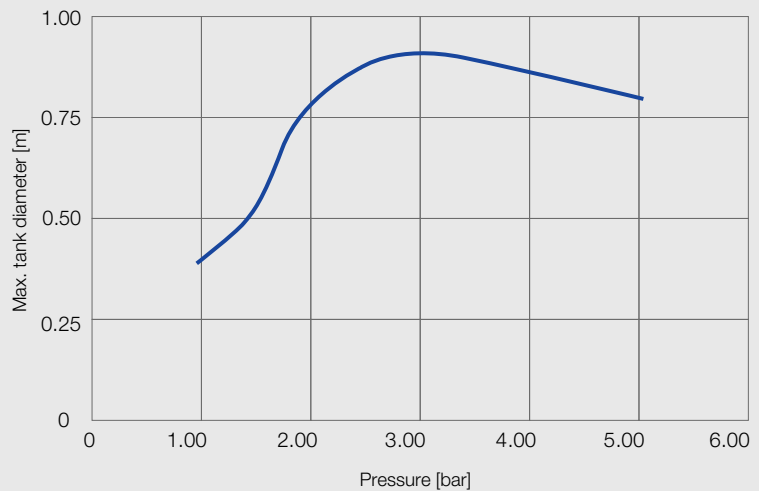


Recommended operating pressure
3 bar



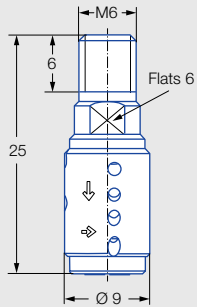
Max. tank diameter

The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.




Overview of maximum tank diameter depending on pressure

Dimensions in mm.



Male thread

Spray angle	Order no.	Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]				\dot{V} water	Max. tank diameter [m]
	Type		p [bar] ($p_{max} = 5$ bar)					
			1.0	2.0	3.0	5.0	at 3 bar [m ³ /h]	
300° 	500.234.G9.00	1.8	5.7	8.0	9.8	12.7	0.6	0.9

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Rotating cleaning nozzle MicroWhirly Series 566



Features:

- Cleaning with effective flat fan jets
- Robust slide bearing made of PEEK
- Connection via thread or slip-on connection



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 566

Technical data:



Maximum operating temperature
 150 °C
 90 °C (ATEX)



Maximum ambient temperature
 200 °C
 120 °C (ATEX)



Installation
 Operation in every installation position



Bearing
 Slide bearing made of PEEK



Material
 Stainless steel 1.4404 (316L), PEEK ESD (only ATEX version)



Weight
 50–200 g



Surface quality
 $Ra \leq 1.6 \mu m$
OUTSIDE



Surface quality
 $Ra \leq 1.6 \mu m$
INSIDE



Steam suitability
 Suitable



Insertion diameter
 20–48 mm



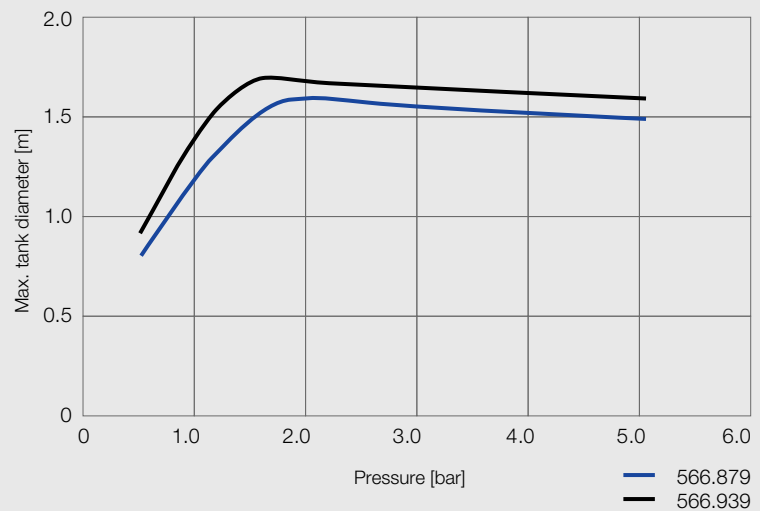
Recommended filter
 Line strainer with a mesh size of 0.3 mm/50 mesh



Recommended operating pressure
 2 bar

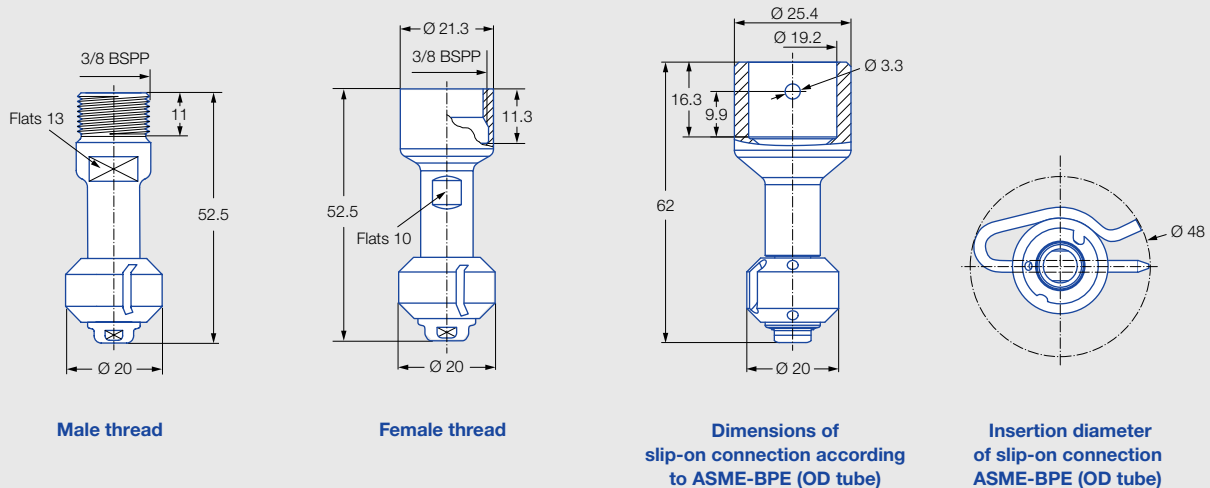





Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



Overview of maximum tank diameter depending on pressure

Dimensions in mm.



Spray angle	Order no.				Narrowest cross-section Ø [mm]	V̇ water [l/min]			V̇ water at 2 bar [m³/h]	Max. tank diameter [m]
	Type	Connection				p [bar] (p _{max} = 6 bar)				
		3/8 BSPP male	3/8 BSPP female	3/4" slip-on connection		1.0	2.0	3.0		
180° 	566.873.1Y	AE	AF	TF07	1.0	12	15	18	0.9	1.6
	566.933.1Y	AE	AF	TF07	2.4	15	21	26	1.3	1.7
180° 	566.874.1Y	AE	AF	TF07	1.0	12	15	18	0.9	1.6
	566.934.1Y	AE	AF	TF07	2.4	15	21	26	1.3	1.7
360° 	566.879.1Y	AE	AF	TF07	1.0	12	15	18	0.9	1.6
	566.939.1Y	AE	AF	TF07	2.4	15	21	26	1.3	1.7

NPT threads and weld-on version on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Information on slip-on connection

- Cotter pin made of stainless steel 1.4404 (316L) included.
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.



Type + Connection = Order no.
566.873.1Y + AE = 566.873.1Y.AE

Ordering example with ATEX approval. No FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

- Ex II 1G Ex h IIB T6...T3 Ga
- Ex II 1D Ex h IIIC T85 °C...T150 °C Da



Important

The code for the connection changes for the ATEX version with slip-on connection.
Ordering example for slip-on connection: 566.873.1Y.TF.EX

Type + Connection + ATEX = Order no.
566.873.1Y + AE + EX = 566.873.1Y.AE.EX

Rotating cleaning nozzle MiniWhirly Series 500.186



Features:

- Economical entry-level model
- Cleaning with effective flat fan jets
- Specially designed for barrel and canister cleaning



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 500.186

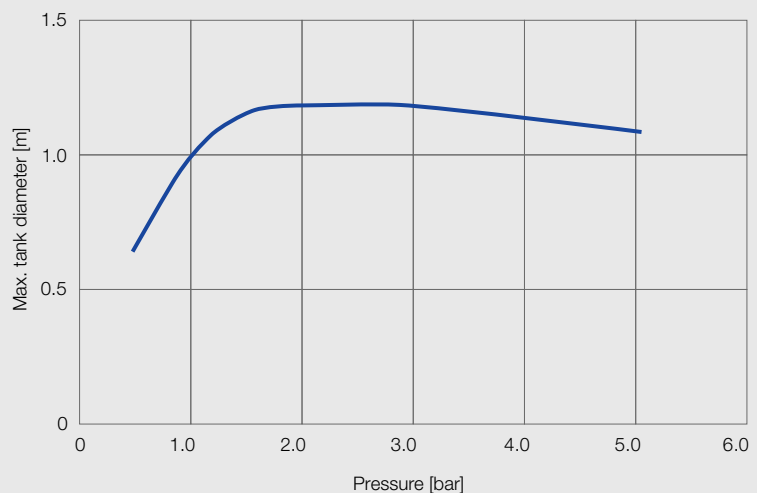
Technical data:

Maximum operating temperature 50 °C	Maximum ambient temperature 100 °C	Installation Vertically downwards	Bearing Ball bearing made of stainless steel 1.4401 (316)
Material POM, stainless steel 316	Weight 40 g	Surface quality Ra ≤ 1.6 µm <small>OUTSIDE</small>	Surface quality Ra ≤ 1.6 µm <small>INSIDE</small>
Steam suitability Not suitable	Insertion diameter 29 mm	Recommended filter Line strainer with a mesh size of 0.3 mm/50 mesh	Recommended operating pressure 2 bar



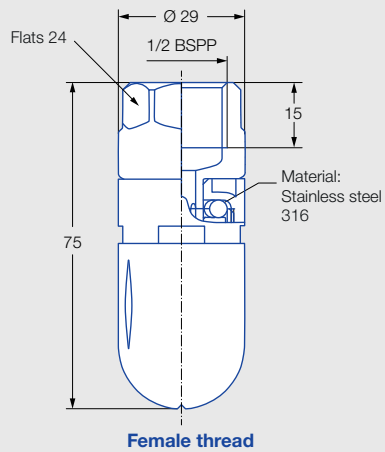
Max. tank diameter


The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



Overview of maximum tank diameter depending on pressure

Dimensions in mm.



Spray angle	Order no.	Narrowest cross-section Ø [mm]	V̇ water [l/min]			V̇ water at 2 bar [m³/h]	Max. tank diameter [m]
	Type		p [bar] (p _{max} = 5 bar)				
			1.0	2.0	3.0		
300° 	500.186.56.AH	1.9	13	18	22	1.1	1.3

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Rotating cleaning nozzle PVDF MicroWhirly Series 500.191



Features:

- Developed for work in corrosive environments
- Good suitability for food contact and foam delivery
- Made completely of PVDF



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 500.191

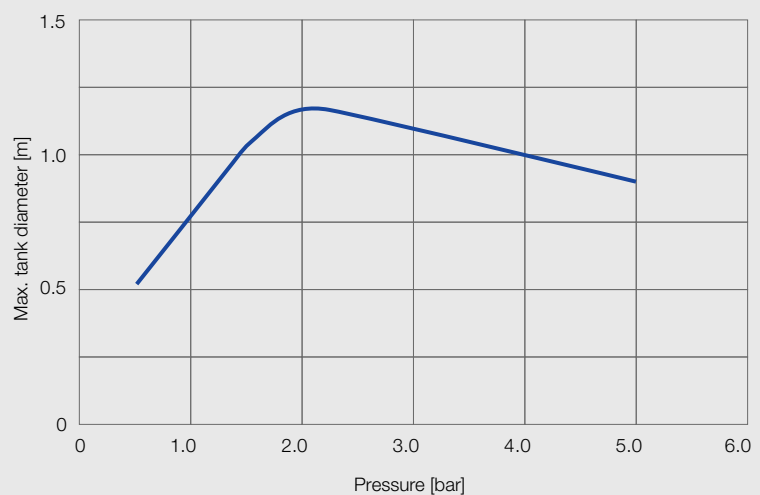
Technical data:

Maximum operating temperature 95 °C	Maximum ambient temperature 150 °C	Installation Operation in every installation position	Bearing Slide bearing made of PVDF
Material PVDF	Weight 12–30 g	Surface quality Ra ≤ 1.6 µm <small>OUTSIDE</small>	Surface quality Ra ≤ 1.6 µm <small>INSIDE</small>
Steam suitability Not suitable	Insertion diameter 30 mm	Recommended filter Line strainer with a mesh size of 0.3 mm/50 mesh	Recommended operating pressure 2 bar



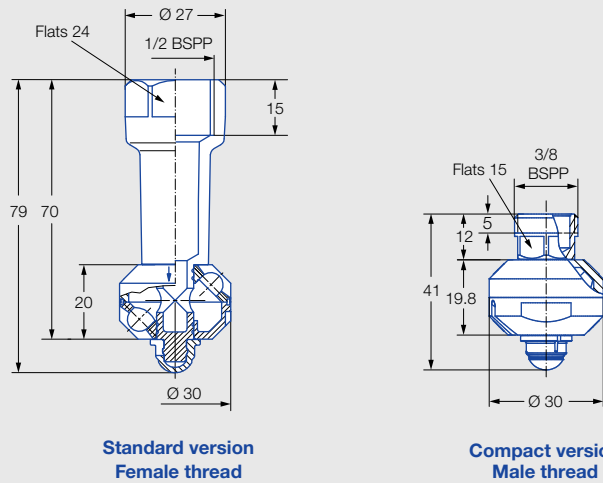
Max. tank diameter





The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.





Overview of maximum tank diameter depending on pressure

Dimensions in mm.


**Standard version
Female thread**
**Compact version
Male thread**
Standard version with female thread

Spray angle	Order no.	Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]			\dot{V} water at 2 bar [m ³ /h]	Max. tank diameter [m]
	Type		p [bar] (p _{max} = 5 bar)				
			1.0	2.0	3.0		
180° 	500.191.5E.02	2.2	9	13	16	0.8	0.8
180° 	500.191.5E.01	2.2	9	13	16	0.8	0.8
270° 	500.191.5E.31	2.2	14	20	25	1.2	1.1
360° 	500.191.5E.00	2.2	14	20	25	1.2	1.1

Compact version with male thread

Spray angle	Order no.	Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]			\dot{V} water at 2 bar [m ³ /h]	Max. tank diameter [m]
	Type		p [bar] (p _{max} = 5 bar)				
			1.0	2.0	3.0		
180° 	500.191.5E.21	2.2	9	13	16	0.8	0.8
360° 	500.191.5E.22	2.2	14	20	25	1.2	1.1

Information on operation

The PVDF MicroWhirly is not suitable for operation with compressed air or another gas. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Rotating cleaning nozzle NanoSpinner 2 Series 5M1



Features:

- Compact design for confined spaces
- Hygienic design
- Suitable for high temperatures
- Completely made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5M1

Technical data:



Maximum operating temperature
 200 °C
 95 °C (ATEX)



Maximum ambient temperature
 250 °C
 200 °C (ATEX)



Installation
 Operation in every installation position



Bearing
 Double ball bearing made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Material
 Stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Weight
 20 g



Surface quality
 $Ra \leq 0.4 \mu m$
OUTSIDE



Surface quality
 $Ra \leq 0.8 \mu m$
INSIDE



Steam suitability
 Not suitable



Insertion diameter
 17–34 mm



Recommended filter
 Line strainer with a mesh size of 0.1 mm/170 mesh

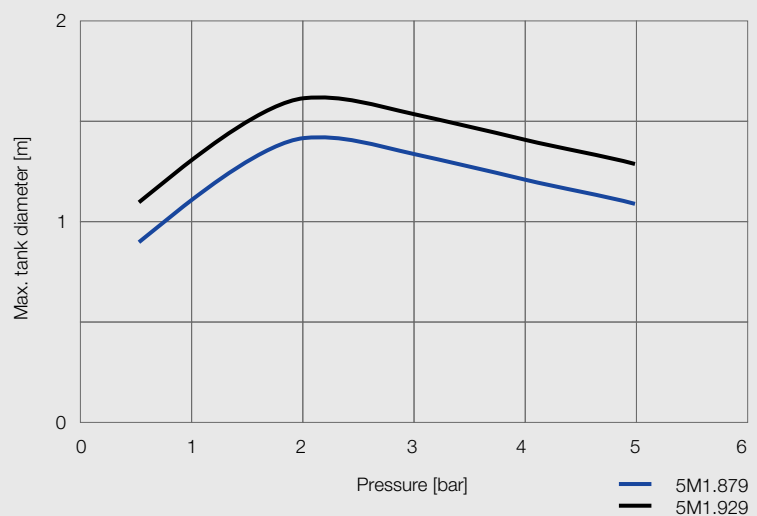


Recommended operating pressure
 2 bar

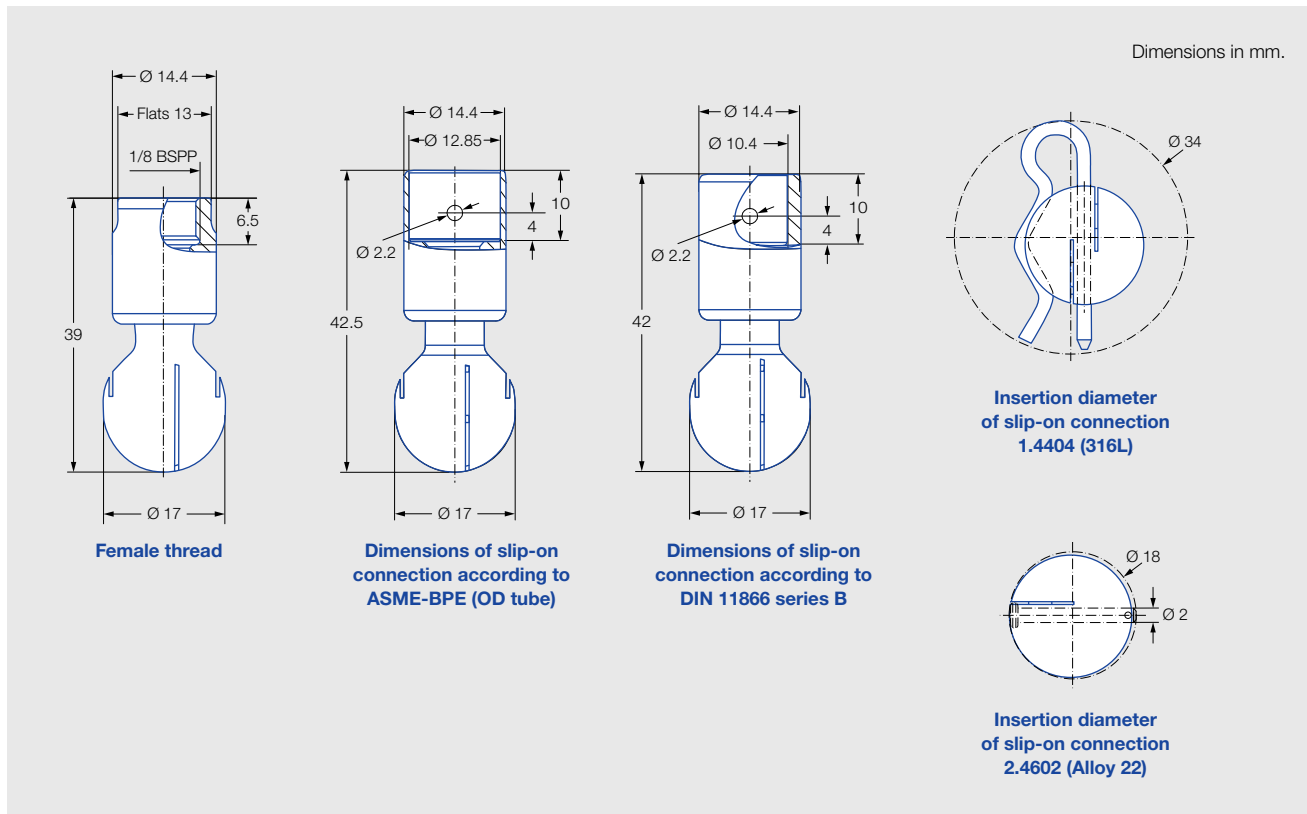


Max. tank diameter

The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



Overview of maximum tank diameter depending on pressure



Spray angle	Order no.						Narrowest cross-section \varnothing [mm]	V water [l/min]			V water at 2 bar [m ³ /h]	Max. tank diameter [m]
	Type	Mat. no.		Connection				p [bar] (p _{max} = 7 bar)				
		1Y	21	1/8 BSPP	$\varnothing 10.2$ mm in accordance with DIN 11866 Series B	1/2" slip-on connection		1.0	2.0	3.0		
360° 	5M1.879	●	●	AB	TF04	TF05 ¹	0.4	11	15	18	0.9	1.4
	5M1.929	●	●	AB	TF04	TF05 ¹	0.5	14	20	25	1.2	1.6

¹ The connection variant TF05 is not available as an ATEX variant.

NPT threads and weld-on version on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Information on slip-on connection

- Cotter pin made of stainless steel 1.4404 (316L) included (Order no. 05M.130.1Y.00.00). For version made of 2.4602 (Alloy 22), bolt with head incl. cotter pin included (Order no. 05M.131.21.00.00).
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.



Type + Material no. + Connection = Order no.
5M1.879 + 1Y + AB = 5M1.879.1Y.AB

Ordering example with ATEX approval, FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

- ⊕ II 1G Ex h IIB T6...T2 Ga
- ⊕ II 1D Ex h IIC T85 °C...T250 °C Da



Important

The code for the connection changes for the ATEX version with slip-on connection.
Ordering example for slip-on connection: 5M1.879.1Y.T0.EX



Type + Material no. + Connection + ATEX = Order no.
5M1.879 + 1Y + AB + EX = 5M1.879.1Y.AB.EX

Rotating cleaning nozzle MicroSpinner 2 Series 5M2



Features:

- Hygienic design
- Suitable for high temperatures
- Completely made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5M2

Technical data:



Maximum operating temperature
 200 °C
 95 °C (ATEX)



Maximum ambient temperature
 250 °C
 200 °C (ATEX)



Installation
 Operation in every installation position



Bearing
 Double ball bearing made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Material
 Stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Weight
 80–100 g



Surface quality
 $Ra \leq 0.4 \mu m$
OUTSIDE



Surface quality
 $Ra \leq 0.8 \mu m$
INSIDE



Steam suitability
 Conditionally suitable



Insertion diameter
 28–48 mm



Recommended filter
 Line strainer with a mesh size of 0.1 mm/170 mesh



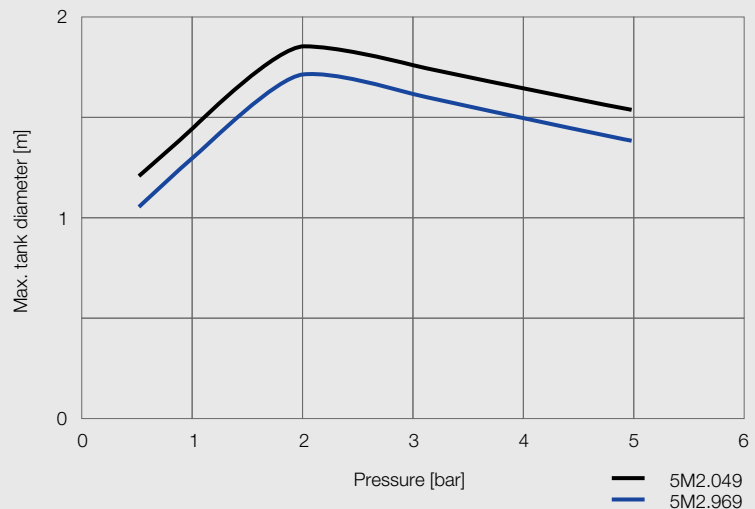
Recommended operating pressure
 2 bar



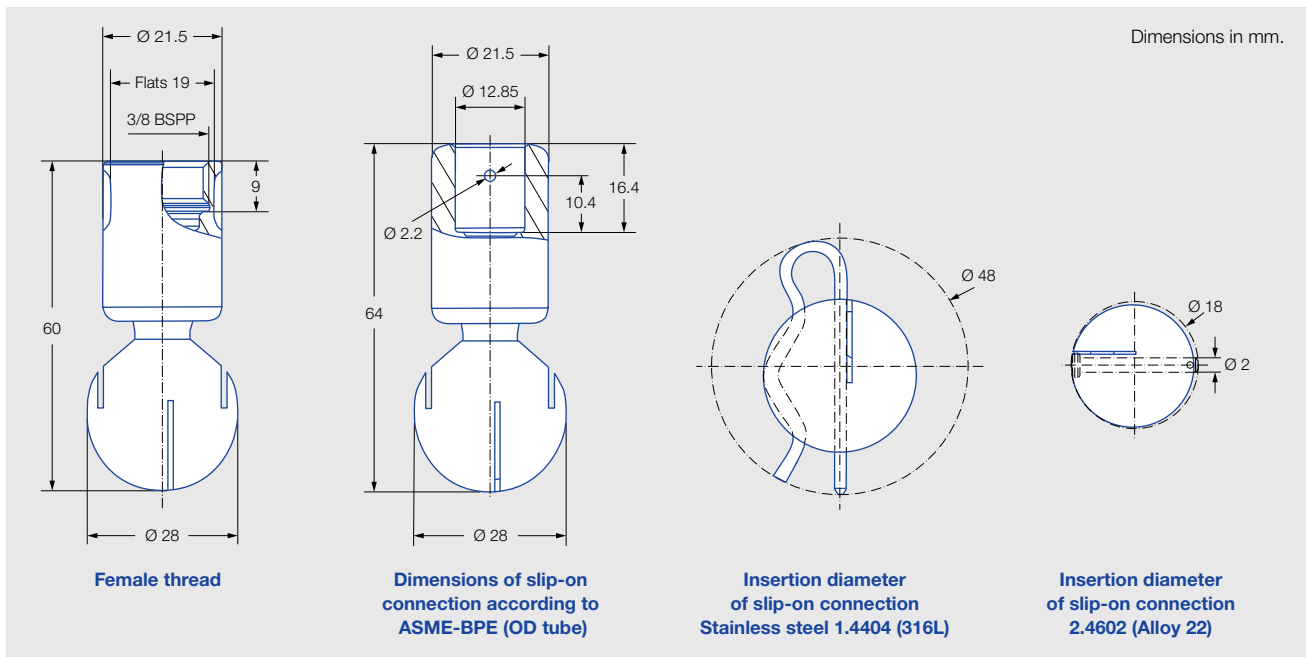
Adapter
 3/8 BSPP is compatible with HygienicFit



Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



Overview of maximum tank diameter depending on pressure



Spray angle	Order no.					Narrowest cross-section Ø [mm]	V̇ water [l/min]			V̇ water at 2 bar [m³/h]	Max. tank diameter [m]
	Type	Mat. no.		Connection			p [bar] (p _{max} = 7 bar)				
		1Y	21	3/8 BSPP	1/2" slip-on connection		1.0	2.0	3.0		
60° 	5M2.952	●	●	AF	TF05	1.5	16	23	28	1.4	-
	5M2.042	●	●	AF	TF05	3.0	28	40	49	2.4	-
180° 	5M2.004	●	●	AF	TF05	0.9	22	32	39	1.9	1.8
360° 	5M2.969	●	●	AF	TF05	0.8	18	25	31	1.5	1.7
	5M2.049	●	●	AF	TF05	0.9	28	39	48	2.3	1.8

NPT threads, other slip-on connections and weld-on versions on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Information on slip-on connection

- Cotter pin made of stainless steel 1.4404 (316L) included (Order no. 05M.230.1Y.00.00). For version made of 2.4602 (Alloy 22), bolt with head incl. cotter pin included (Order no. 05M.231.21.00.00).
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.



Type + Material no. + Connection = Order no.
5M2.952 + 1Y + AF = 5M2.952.1Y.AF

Ordering example with ATEX approval, FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

- Ex II 1G Ex h IIB T6...T2 Ga
- Ex II 1D Ex h IIIC T85 °C...T250 °C Da



Important

The code for the connection changes for the ATEX version with slip-on connection.
Ordering example for slip-on connection: 5M2.952.1Y.T1.EX



Type + Material no. + Connection + ATEX = Order no.
5M2.952 + 1Y + AF + EX = 5M2.952.1Y.AF.EX

Rotating cleaning nozzle MiniSpinner 2 Series 5M3



Features:

- Hygienic design
- Suitable for high temperatures
- Completely made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5M3

Technical data:



Maximum operating temperature
 200 °C
 95 °C (ATEX)



Maximum ambient temperature
 250 °C
 200 °C (ATEX)



Installation
 Operation in every installation position



Bearing
 Double ball bearing made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Material
 Stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Weight
 230–340 g



Surface quality
 $Ra \leq 0.4 \mu m$



Surface quality
 $Ra \leq 0.8 \mu m$



Steam suitability
 Conditionally suitable



Insertion diameter
 39–58 mm



Recommended filter
 Line strainer with a mesh size of 0.1 mm/170 mesh



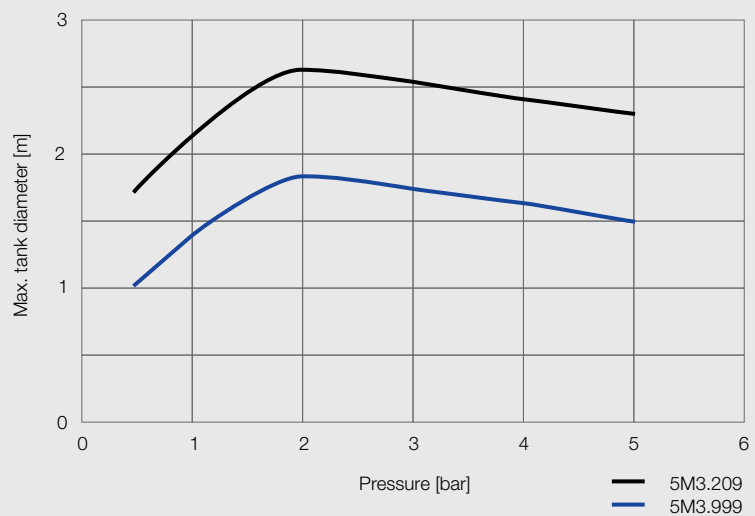
Recommended operating pressure
 2 bar



Adapter
 1/2 BSPP and 3/4 BSPP are compatible with HygienicFit

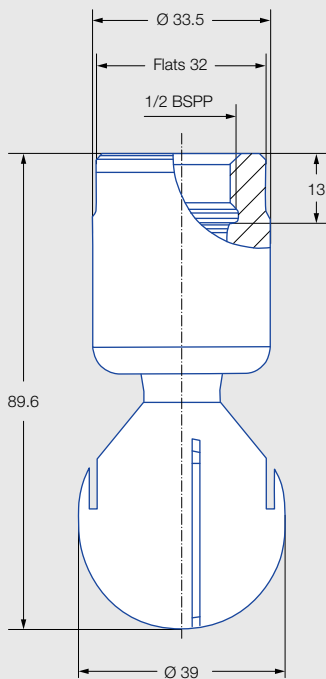


Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

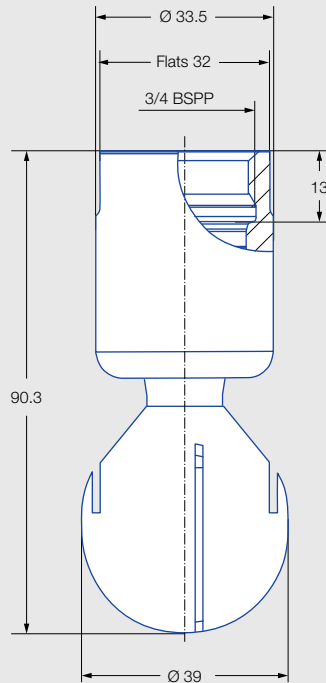


Overview of maximum tank diameter depending on pressure

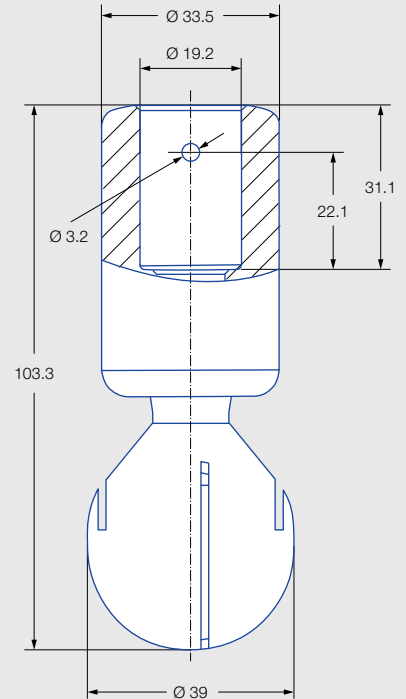
Dimensions in mm.



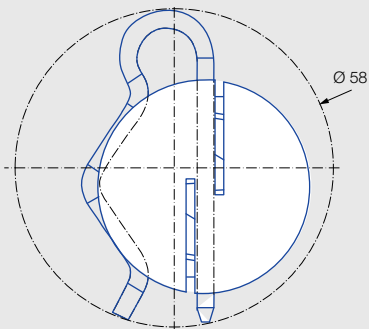
Female thread



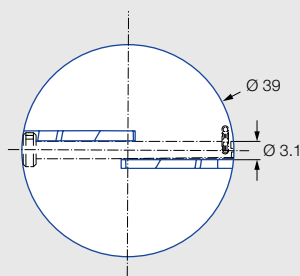
Female thread



Dimensions of slip-on connection according to ASME-BPE (OD tube)



Insertion diameter of slip-on connection stainless steel 1.4404 (316L)



Insertion diameter of slip-on connection 2.4602 (Alloy 22)





Spray angle	Order no.						Narrowest cross-section Ø [mm]	V̇ water [l/min]			V̇ water at 2 bar [m³/h]	Max. tank diameter [m]
	Type	Mat. no.		Connection				p [bar] (p _{max} = 7 bar)				
		1Y	21	1/2 BSPP	3/4 BSPP	3/4" slip-on connection		1.0	2.0	3.0		
60° 	5M3.122	●	●	AH		TF07	2.6	45	63	77	3.8	-
180° 	5M3.133	●	●		AL	TF07	1.2	47	67	82	4.0	2.6
180° 	5M3.134	●	●		AL	TF07	1.3	47	67	82	4.0	2.6
360° 	5M3.999	●	●		AL	TF07	0.4	21	30	37	1.8	1.8
	5M3.089	●	●		AL	TF07	0.7	35	49	60	2.9	2.1
	5M3.139	●	●		AL	TF07	0.8	49	69	85	4.1	2.3
	5M3.209	●	●		AL	TF07	1.5	71	100	122	6.0	2.6

NPT threads, other plug connections and weld-on versions on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Information on slip-on connection

- Cotter pin made of stainless steel 1.4404 (316L) included (05M.330.1Y.00.00). For version made of 2.4602 (Alloy 22), bolt with head incl. cotter pin included (Order no. 05M.332.21.00.00).
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

FDA

Type	+	Material no.	+	Connection	=	Order no.
5M3.122	+	1Y	+	AH	=	5M3.122.1Y.AH

Ordering example with ATEX approval, FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:
 ⚠ II 1G Ex h IIB T6...T2 Ga
 ⚠ II 1D Ex h IIIC T85 °C...T250 °C Da

Ex

FDA

Important
 The code for the connection changes for the ATEX version with slip-on connection.
 Ordering example for slip-on connection: 5M3.122.1Y.T2.EX

Type	+	Material no.	+	Connection	+	ATEX	=	Order no.
5M3.122	+	1Y	+	AH	+	EX	=	5M3.122.1Y.AH.EX



Rotating cleaning nozzle MaxiSpinner 2 Series 5M4



Features:

- Hygienic design
- Suitable for high temperatures
- Completely made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5M4

Technical data:



Maximum operating temperature
 200 °C
 95 °C (ATEX)



Maximum ambient temperature
 250 °C
 200 °C (ATEX)



Installation
 Operation in every installation position



Bearing
 Double ball bearing made of stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Material
 Stainless steel 1.4404 (316L) or 2.4602 (Alloy 22)



Weight
 1.1–1.5 kg



Surface quality
 $Ra \leq 0.4 \mu\text{m}$
OUTSIDE



Surface quality
 $Ra \leq 0.8 \mu\text{m}$
INSIDE



Steam suitability
 Conditionally suitable



Insertion diameter
 69 mm



Recommended filter
 Line strainer with a mesh size of 0.1 mm/170 mesh



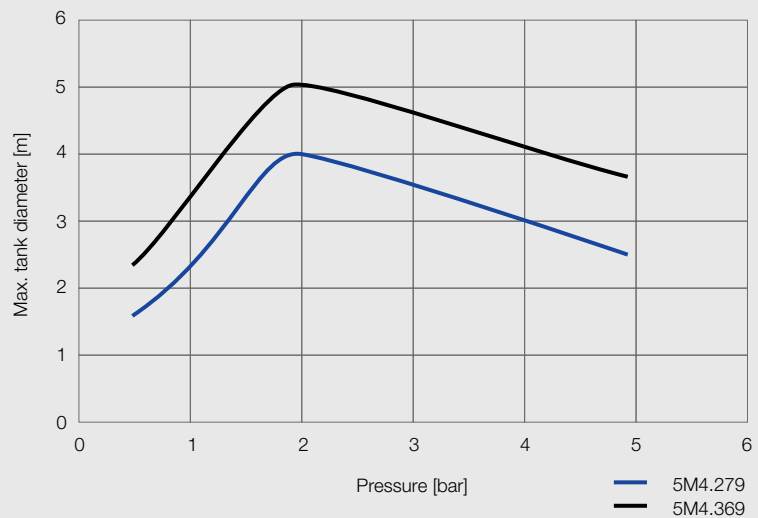
Recommended operating pressure
 2 bar



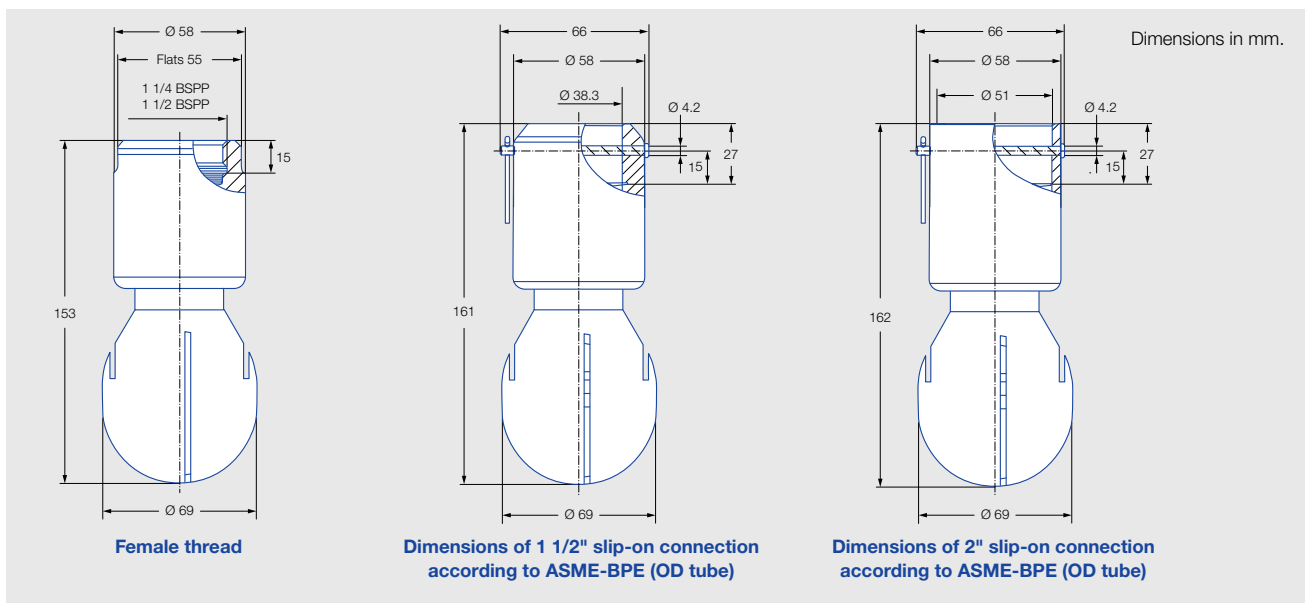
Adapter
 1 1/4 BSPP and 1 1/2 BSPP are compatible with HygienicFit



Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



Overview of maximum tank diameter depending on pressure



Spray angle	Order no.							Narrowest cross-section Ø [mm]	V̇ water [l/min]			V̇ water at 2 bar [m³/h]	Max. tank diameter [m]
	Type	Mat. no.		Connection					p [bar] (p _{max} = 7 bar) ¹				
		1Y 1.4404 (316L)	21 2.4602 (Alloy 22)	1 1/4 BSPP	1 1/2 BSPP	1 1/2" slip-on connection	2" slip-on connection		1.0	2.0	3.0		
180° 	5M4.253	●	●	AQ	AS	TF15	TF20	1.8	95	135	165	8.1	4.0
180° 	5M4.254	●	●	AQ	AS	TF15	TF20	2.1	95	135	165	8.1	4.0
270° 	5M4.365	●	●	AQ	AS	TF15	TF20	2.5	177	250	306	15.0	5.0
360° 	5M4.279	●	●	AQ	AS	TF15	TF20	1.7	107	150	184	9.0	4.0
	5M4.329	●	●	AQ	AS	TF15	TF20	2.0	141	200	245	12.0	4.5
	5M4.369	●	●	AQ	AS	TF15	TF20	2.3	177	250	306	15.0	5.0

¹ Please note the maximum operating pressure of 4 for the 2" slip-on connection variant. NPT threads and weld-on version on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Information on slip-on connection

- Bolt with head incl. cotter pin made of 1.4404 (316L) included (Order no. 05M.431.1Y.00.00). For version made of 2.4602 (Alloy 22), bolt with head incl. cotter pin included (05M.431.21.00.00).
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.



Type + Material no. + Connection = Order no.
5M4.253 + 1Y + AQ = 5M4.253.1Y.AQ

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

- II 1G Ex h IIB T6...T2 Ga
- II 1D Ex h IIIC T85 °C...T250 °C Da

Important

The code for the connection changes for the ATEX version with slip-on connection.

Ordering example for 1 1/2" slip-on connection:

5M4.253.1Y.T5.EX

Ordering example for 2" slip-on connection: 5M4.253.1Y.T6.EX



Type + Material no. + Connection + ATEX = Order no.
5M4.253 + 1Y + AQ + EX = 5M4.253.1Y.AQ.EX

Rotating cleaning nozzle PTFE Whirly Series 573/583



Features:

- Entirely made of PTFE
- 3-A-compliant slip-on connection
- Suitable for corrosive environments
- Suitable for particularly high hygiene requirements (e.g. milk industry)



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 573/583

Technical data:



Maximum operating temperature
95 °C



Maximum ambient temperature
200 °C



Installation
Operation in every installation position



Bearing
Slide bearing made of PTFE



Material
PTFE



Weight
140–300 g



Surface quality
Ra ≤ 0.8 µm
OUTSIDE



Surface quality
Ra ≤ 0.8 µm
INSIDE



Steam suitability
Not suitable



Insertion diameter
49.0–78.4 mm



Recommended filter
Line strainer with a mesh size of 0.3 mm/50 mesh

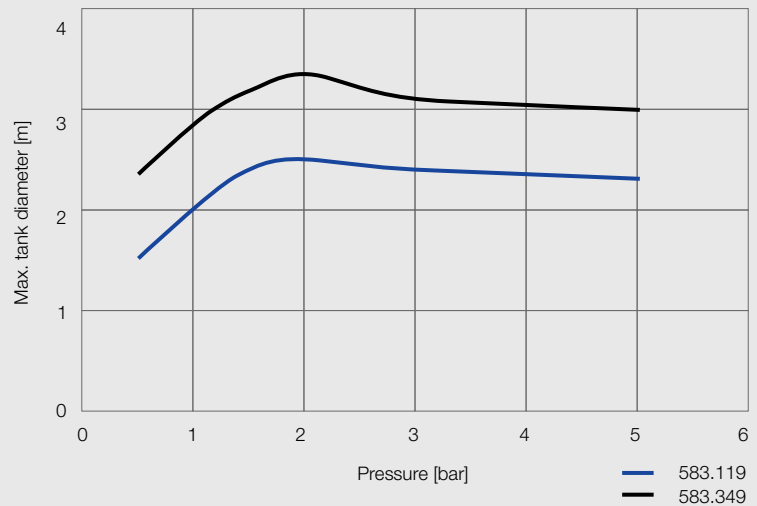


Recommended operating pressure
2 bar



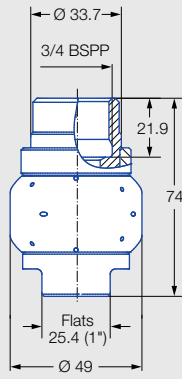
Max. tank diameter

The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

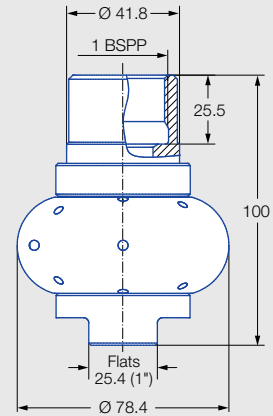


Overview of maximum tank diameter depending on pressure

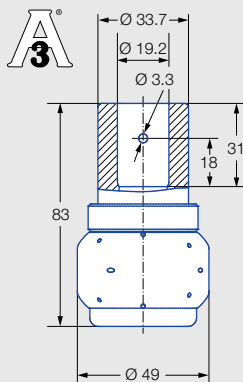
Dimensions in mm.



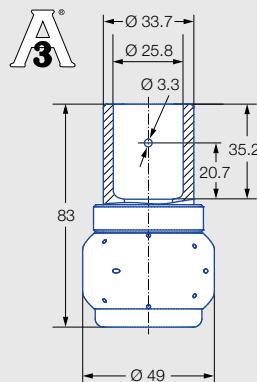
Female thread



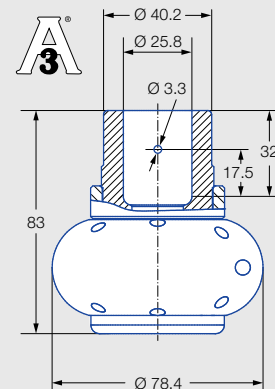
Female thread



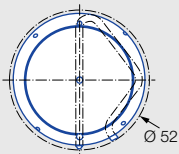
3/4" slip-on connection
(3-A-compliant)
Dimensions of slip-on connection
according to ASME-BPE (OD tube)



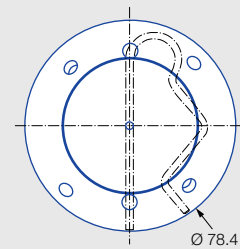
1" slip-on connection pin 1
(3-A-compliant)
Dimensions of slip-on connection
according to ASME-BPE (OD tube)



1" slip-on connection pin 2
(3-A-compliant)
Dimensions of slip-on connection
according to ASME-BPE (OD tube)






Insertion diameter of
slip-on connection according
to ASME-BPE (OD tube)



Insertion diameter of
slip-on connection according
to ASME-BPE (OD tube)





Spray angle	Order no.					Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]			\dot{V} water at 2 bar [m ³ /h]	Pin	Max. tank diameter [m]
	Type	Connection					p [bar] (p _{max} = 6 bar)					
		3/4 BSPP	1 BSPP	3/4" slip-on connection	1" slip-on connection		1.0	2.0	3.0			
270° 	583.116.55	AL		TF07		2.4	47	67	82	4.0	1	2.5
	583.346.55				TF10	5.9	159	225	276	13.5	2	3.2
270° 	573.116.55	AL		TF07		2.4	47	67	82	4.0	1	2.5
360° 	583.119.55	AL		TF07	TF10	1.8	41	58	71	3.5	1	2.4
	583.209.55	AL		TF07	TF10	3.5	71	100	122	6.0	1	2.5
	583.269.55	AL		TF07		4.8	103	145	178	8.7	1	2.8
	583.279.55		AN		TF10	3.7	106	150	184	9.0	2	3.0
	583.349.55		AN		TF10	5.6	159	225	276	13.5	2	3.2

NPT threads on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Information on slip-on connection

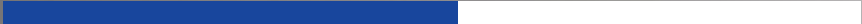
- Cotter pin made of stainless steel 1.4401 (316) included (Order no. for pin 1: 095.013.17.06.60, pin 2: 095.013.17.06.61).
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.


Ordering Type + Connection = Order no.
example: 583.116.55 + AL = 583.116.55.AL





CLEANING EFFICIENCY CLASS 3 LIGHT TO MEDIUM SOILING

Type	Rotating cleaner, free-spinning
Cleaning effect	
Drive	By the medium
Typical soiling	More viscous substances such as chocolate sauce
Nozzle design	Special flat fan geometry with direct impact on the entire tank surface

A close-up, vertical shot of a showerhead nozzle. The nozzle is made of polished metal and has a spherical tip. It is covered in water droplets, suggesting it is in use. The background is a blurred, light-colored surface. The brand name "Whirly2" is printed on the side of the nozzle.

Whirly2

Rotating cleaning nozzle HygienicWhirly Series 594/595



Features:

- Cleaning with effective flat fan jets
- Effective cleaning even at low pressure
- Suitable for foam delivery



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 594/595

Technical data:



Maximum operating temperature
150 °C



Maximum ambient temperature
150 °C



Installation
Operation in every installation position



Bearing
Slide bearing made of PEEK



Material
Stainless steel 1.4404 (316L), PEEK, version with slip-on connection: O-ring made of EPDM



Weight
90–290 g



Surface quality
Ra ≤ 0.8 µm
OUTSIDE



Surface quality
Ra ≤ 0.8 µm
INSIDE



Steam suitability
Suitable



Insertion diameter
31.5–48.0 mm



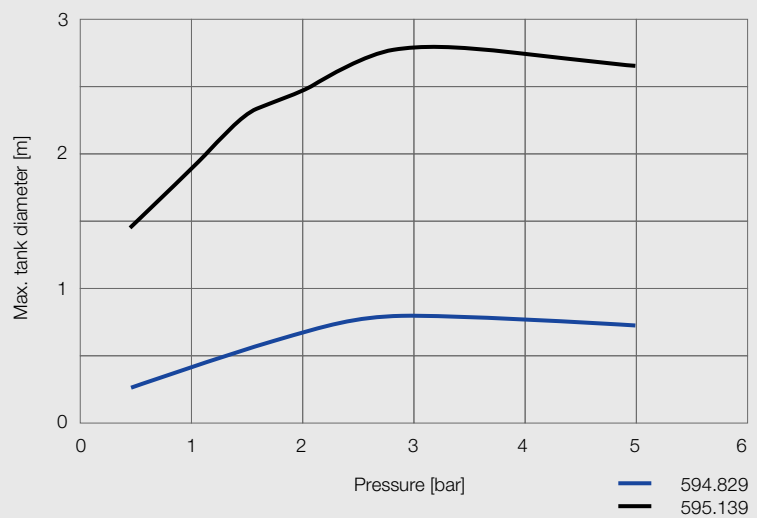
Recommended filter
Line strainer with a mesh size of 0.3 mm/50 mesh



Recommended operating pressure
3 bar

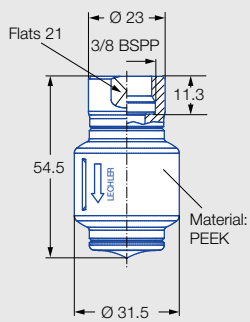


Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

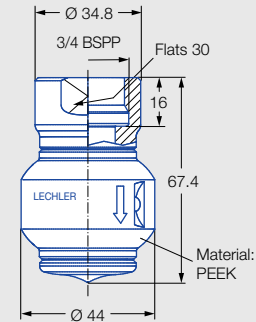


Overview of maximum tank diameter depending on pressure

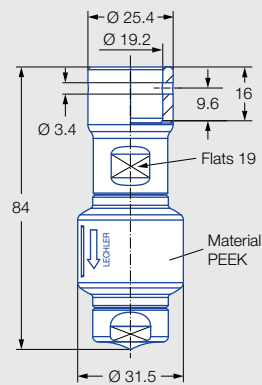
Dimensions in mm.



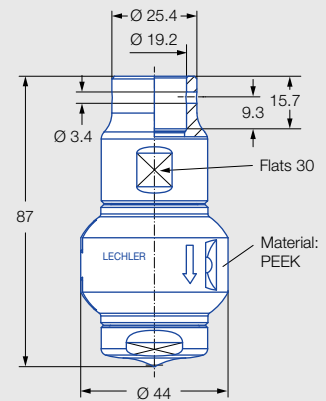
**Standard version
Female thread
59x.xx9.1Y.AF**



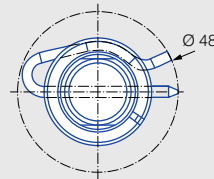
**Standard version
Female thread
595.139.1Y.AL**



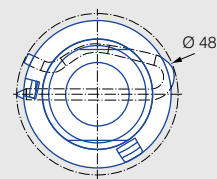
**Dimensions of slip-on
connection according to
ASME-BPE (OD tube)
59x.xx9.1Y.67**




**Dimensions of slip-on
connection according to
ASME-BPE (OD tube)
595.139.1Y.67**



**Insertion diameter
of slip-on connection
59x.xx9.1Y.67**



**Insertion diameter
of slip-on connection
595.139.1Y.67**

Spray angle	Order no.				Narrowest cross-section Ø [mm]	V̇ water [l/min]					V̇ water at 3 bar [m³/h]	Max. tank diameter [m]
	Type	Connection				p [bar] (p _{max} = 5 bar)						
		3/8 BSPP	3/4 BSPP	3/4" slip-on connection		0.5	1.0	2.0	3.0	5.0		
 360°	594.829.1Y	AF		67	1.7	6	8	11	14	18	0.8	0.8
	594.879.1Y	AF		67	2.5	8	11	15	18	23	1.1	1.2
	595.009.1Y	AF		67	4.0	16	22	32	39	50	2.3	1.5
	595.049.1Y	AF		67	4.2	20	28	40	49	63	2.9	2.0
	595.139.1Y		AL	67	5.0	34	47	67	82	106	4.9	2.7

NPT threads on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Information on slip-on connection

- Cotter pin made of stainless steel 1.4404 (316L) included (Order no. 095.022.1Y.50.94.E).
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.

Ordering Type + Connection = Order no.
example: 594.829.1Y + AF = 594.829.1Y.AF



Rotating cleaning nozzle Whirly 2 Series 5W9



Features:

- Popular hygienic design
- Cleaning with effective flat fan jets
- Flexible connection options
- Available with many different flow rates and spray angles



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5W9

Technical data:



Maximum operating temperature
 150 °C
 95 °C (ATEX)



Maximum ambient temperature
 200 °C
 140 °C (ATEX)



Installation
 Operation in every installation position



Bearing
 Double ball bearing made of stainless steel



Material
 Stainless steel 1.4404 (316L), PEEK



Weight
 360–500 g



Surface quality
 $Ra \leq 0.4 \mu m$
OUTSIDE



Surface quality
 $Ra \leq 0.8 \mu m$
INSIDE



Steam suitability
 Not suitable



Insertion diameter
 69.5 mm



Recommended filter
 Line strainer with a mesh size of 0.1 mm/170 mesh



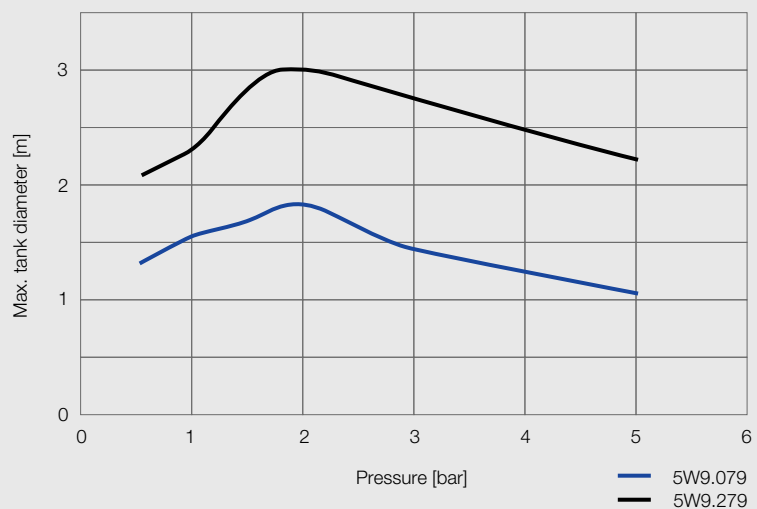
Recommended operating pressure
 2 bar



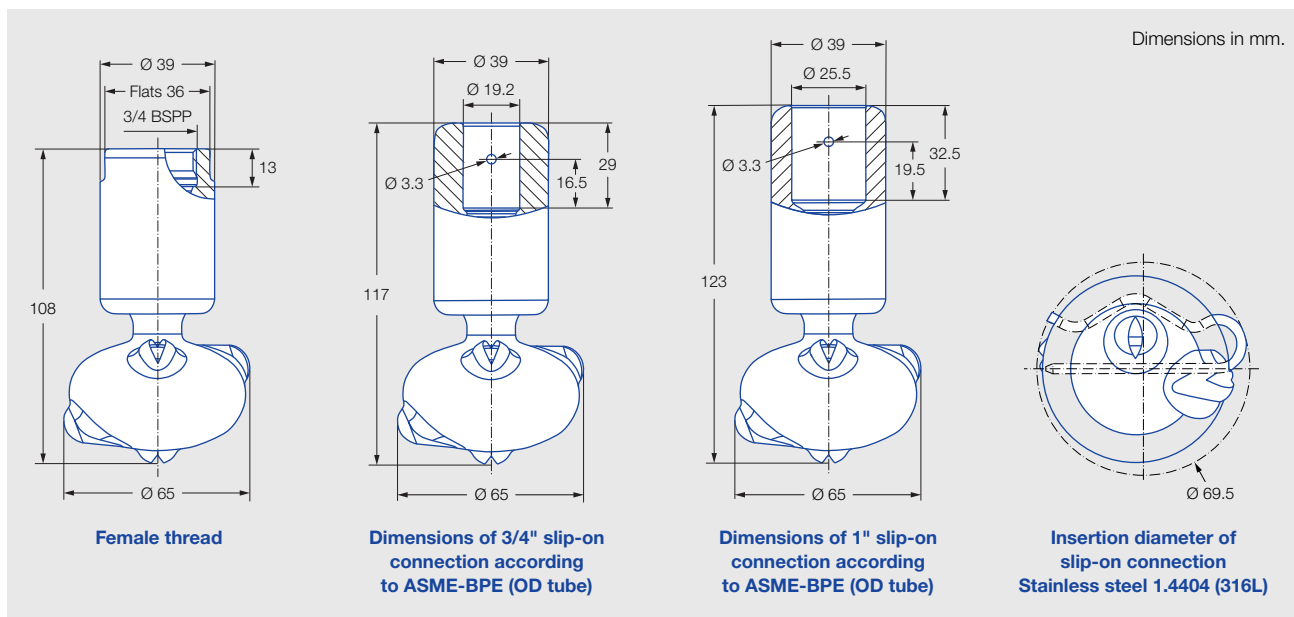
Adapter
 3/4 BSPP is compatible with HygienicFit



Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



Overview of maximum tank diameter depending on pressure



Spray angle	Order no.				Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]			\dot{V} water at 2 bar [m ³ /h]	Max. tank diameter [m]
	Type	Connection				p [bar] (p _{max} = 6 bar)				
		3/4 BSPP	3/4" slip-on connection	1" slip-on connection		1.0	2.0	3.0		
270° 	5W9.075.1Y	AL	TF07	TF10	2.0	34	48	59	2.9	1.8
	5W9.145.1Y	AL	TF07	TF10	2.8	50	71	87	4.3	2.1
	5W9.195.1Y	AL	TF07	TF10	3.3	69	97	119	5.8	2.6
270° 	5W9.076.1Y	AL	TF07	TF10	2.0	34	48	59	2.9	1.8
	5W9.106.1Y	AL	TF07	TF10	2.5	41	58	71	3.5	2.1
	5W9.196.1Y	AL	TF07	TF10	3.4	69	97	119	5.8	2.6
360° 	5W9.079.1Y	AL	TF07	TF10	1.6	34	48	59	2.9	1.8
	5W9.149.1Y	AL	TF07	TF10	2.4	50	71	87	4.3	2.1
	5W9.199.1Y	AL	TF07	TF10	3.0	69	97	119	5.8	2.6
	5W9.279.1Y	AL	TF07	TF10	3.5	103	145	178	8.7	3.0

NPT threads on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Information on slip-on connection

- Cotter pin made of stainless steel 1.4404 (316L) included (Order no. 095.013.1Y.06.72).
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.

Type	+ Connection	= Order no.
5W9.075.1Y	+ AL	= 5W9.075.1Y.AL

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:
 Ex II 1G Ex h IIB T6...T3 Ga
 Ex II 1D Ex h IIIC T85 °C...T170 °C Da

Important
 The code for the connection changes for the ATEX version with slip-on connection.
 Ordering example for 3/4" slip-on connection: 5W9.075.1Y.T2.EX
 Ordering example for 1" slip-on connection: 5W9.075.1Y.T3.EX

Type	+ Connection	+ ATEX	= Order no.
5W9.075.1Y	+ AL	+ EX	= 5W9.075.1Y.AL.EX

Rotating cleaning nozzle Gyro Series 577



Features:

- Cleaning with powerful nozzle inserts
- Suitable for very large tanks
- Available with many different flow rates
- Clogging-resistant and large clear cross-sections



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 577

Technical data:



Maximum operating temperature
95 °C



Maximum ambient temperature
200 °C



Installation
Vertically downwards



Bearing
Slide bearing made of PTFE



Material
Stainless steel 1.4404 (316L), PTFE



Weight
0.64–1.92 kg



Surface quality
Ra ≤ 0.8 µm
OUTSIDE



Surface quality
Ra ≤ 4.0 µm
INSIDE



Steam suitability
Conditionally suitable



Insertion diameter
110–156 mm



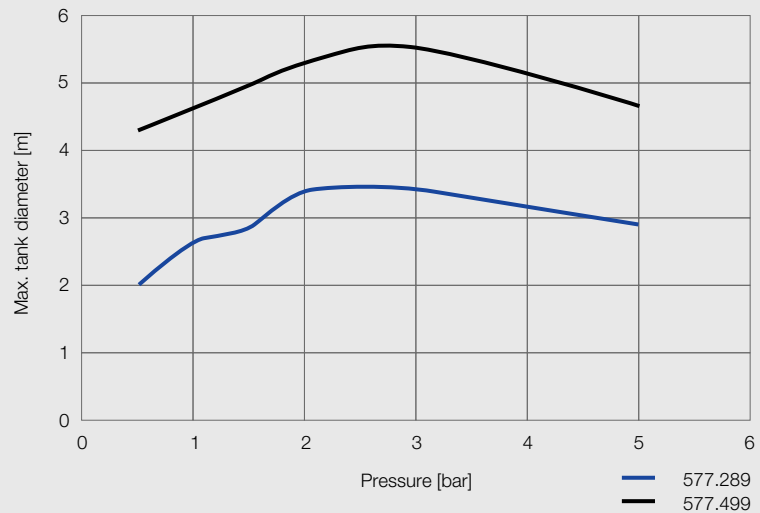
Recommended filter
Line strainer with a mesh size of 0.3 mm/50 mesh



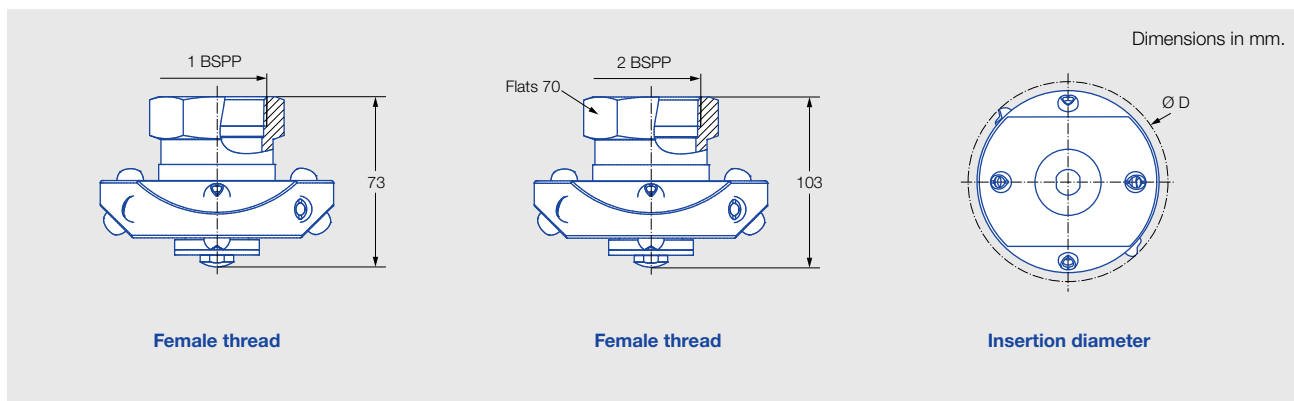
Recommended operating pressure
3 bar







Max. tank diameter
The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



Overview of maximum tank diameter depending on pressure



Spray angle	Order no.		V̇ water [l/min]				V̇ water	Dimensions [mm]	Max. tank diameter [m]	
	Type	Connection		p [bar] (p _{max} = 5 bar)						
		1 BSPP	2 BSPP	1.0	2.0	3.0	5.0	at 3 bar [m³/h]	Ø D	
180° 	577.283.1Y	AN		115	163	200	258	12.0	118	3.4
	577.363.1Y	AN		182	258	316	408	19.0	118	3.9
	577.403.1Y		AW	228	322	394	509	23.6	156	4.2
	577.433.1Y		AW	273	386	473	610	28.4	156	4.6
	577.523.1Y		AW	452	639	783	1,010	39.5	156	5.4
180° 	577.284.1Y	AN		115	163	200	258	12.0	118	3.4
	577.364.1Y	AN		182	258	316	408	19.0	118	3.9
	577.404.1Y		AW	228	322	394	509	23.6	156	4.2
	577.434.1Y		AW	273	386	473	610	28.4	156	4.6
	577.494.1Y		AW	380	538	659	851	39.5	156	5.4
270° 	577.285.1Y	AN		115	163	200	258	12.0	118	3.4
	577.365.1Y	AN		182	258	316	408	19.0	118	3.9
	577.405.1Y		AW	228	322	394	509	23.6	156	4.2
	577.435.1Y		AW	273	386	473	610	28.4	156	4.6
	577.495.1Y		AW	380	538	659	851	39.5	156	5.4
360° 	577.289.1Y	AN		115	163	200	258	12.0	110	3.4
	577.369.1Y	AN		182	258	316	408	19.0	110	3.9
	577.409.1Y		AW	228	322	394	509	23.6	156	4.2
	577.439.1Y		AW	273	386	473	610	28.4	156	4.6
	577.499.1Y		AW	380	538	659	851	39.5	156	5.4

NPT threads on request.


Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Ordering Type + Connection = Order no.
example: 577.283.1Y + AN = 577.283.1Y.AN



CLEANING EFFICIENCY CLASS 4 MEDIUM TO HEAVY SOILING

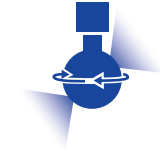
Type	Rotating cleaner, controlled rotation
Cleaning effect	
Drive	By the medium, drive unit with turbine and gear unit
Typical soiling	Medium soiling such as high-viscosity creams
Nozzle design	Special flat fan nozzle inserts with direct impact on the entire tank surface



Rotating cleaning nozzle

XactClean HP 2

Series 5S6/5S7



Features:

- Flat fan nozzle with high impact
- Uniform cleaning
- High efficiency due to controlled rotation
- High operating reliability thanks to robust drive unit



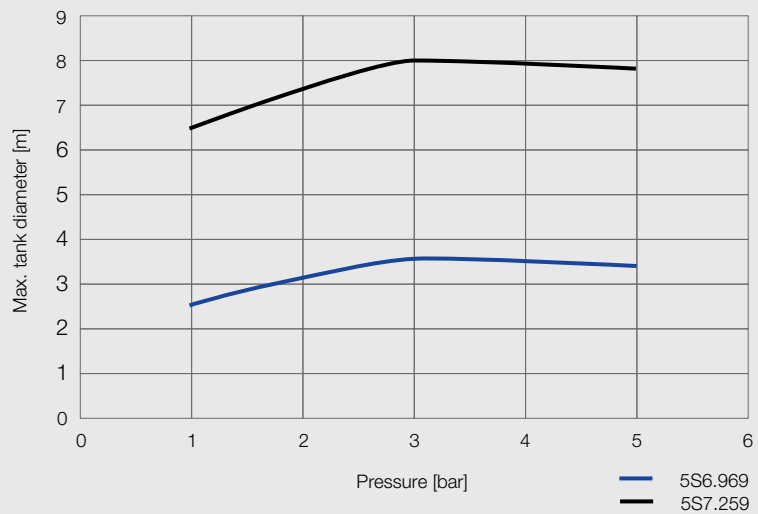
Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5S6/5S7

Technical data:

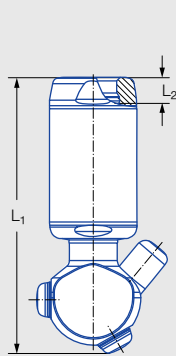
Maximum operating temperature 150 °C	Maximum ambient temperature 150 °C	Installation Operation in every installation position	Bearing Double ball bearing
Material Stainless steel 1.4404 (316L), PEEK, EPDM	Weight 650–900 g	Surface quality Ra ≤ 0.8 µm <small>OUTSIDE</small>	Surface quality Ra ≤ 1.6 µm <small>INSIDE</small>
Steam suitability Suitable	Insertion diameter 50–79 mm	Recommended filter Line strainer with a mesh size of 0.3 mm/50 mesh	Recommended operating pressure 3 bar
Rotation monitoring Sensor-compatible, information: see pages 96–97	Maintainable	Adapter 3/8 BSPP, 1/2 BSPP, 3/4 BSPP and 1 BSPP are compatible with HygienicFit	

Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.

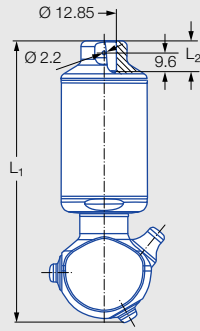


Overview of maximum tank diameter depending on pressure

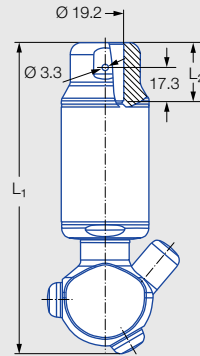
Dimensions in mm.



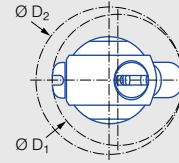
Female thread



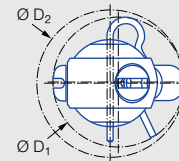
Dimensions of 1/2" slip-on connection according to ASME-BPE (OD tube)



Dimensions of 3/4" slip-on connection according to ASME-BPE (OD tube)



Insertion diameter D_1 and interference circle diameter D_2 of the threaded connection






Insertion diameter D_1 and interference circle diameter D_2 of the slip-on connection

Connection		Dimensions [mm]			
		L ₁	L ₂	Insertion diameter D ₁	Interference circle diameter D ₂
AF	3/8 BSPP	141.0	9.0	50.0–66.0	50.0–67.0
AH	1/2 BSPP	143.0	13.0	50.0–74.0	50.0–76.0
AL	3/4 BSPP	143.0	13.2	50.0–79.0	50.0–81.0
AN	1 BSPP	140.0	16.5	51.0–79.0	53.0–80.0
TF05	1/2" slip-on connection	150.0	16.0	52.0–66.0	50.0–67.0
TF07	3/4" slip-on connection	160.0	30.0	66.0–79.0	50.0–81.0

Spray angle	Order no.	Connection						Narrowest cross-section Ø [mm]	V̇ water [l/min]				Max. tank diameter [m]	
		Type	3/8 BSPP	1/2 BSPP	3/4 BSPP	1 BSPP	1/2" slip-on connection		3/4" slip-on connection	p [bar] (p _{max} = 15 bar)				
										2.0	3.0	5.0		10.0
180° 	5S6.963.1Y	AF	AH				TF05	1.7	25	31	40	57	1.9	3.5
	5S7.043.1Y		AH				TF07	2.0	41	50	65	92	3.0	4.0
	5S7.113.1Y		AH	AL			TF07	2.0	60	73	94	133	4.4	6.0
	5S7.183.1Y			AL			TF07	2.0	89	109	141	199	6.5	7.0
	5S7.223.1Y			AL			TF07	2.0	111	136	175	248	8.2	7.5
	5S7.253.1Y			AL	AN		TF07	2.0	135	165	213	301	9.9	8.0
180° 	5S6.964.1Y	AF	AH				TF05	1.7	25	31	40	57	1.9	3.5
	5S7.044.1Y		AH				TF07	2.0	41	50	65	92	3.0	4.0
	5S7.114.1Y		AH	AL			TF07	2.0	60	73	94	133	4.4	6.0
	5S7.184.1Y			AL			TF07	2.0	89	109	141	199	6.5	7.0
	5S7.224.1Y			AL			TF07	2.0	111	136	175	248	8.2	7.5
	5S7.254.1Y			AL	AN		TF07	2.0	135	165	213	301	9.9	8.0





Spray angle	Order no.							Narrowest cross-section Ø [mm]	V̇ water [l/min]				V̇ water at 5 bar [m³/h]	Max. tank diameter [m]
	Type	Connection							p [bar] (p _{max} = 15 bar)					
		3/8 BSPP	1/2 BSPP	3/4 BSPP	1 BSPP	1/2" slip-on connection	3/4" slip-on connection		2.0	3.0	5.0	10.0		
270° 	5S6.965.1Y	AF	AH				TF05	1.7	25	31	40	57	1.9	3.5
	5S7.045.1Y		AH				TF07	2.0	41	50	65	92	3.0	4.0
	5S7.115.1Y		AH	AL			TF07	2.0	60	73	94	133	4.4	6.0
	5S7.185.1Y			AL			TF07	2.0	89	109	141	199	6.5	7.0
	5S7.225.1Y			AL			TF07	2.0	111	136	175	248	8.2	7.5
	5S7.255.1Y			AL	AN		TF07	2.0	135	165	213	301	9.9	8.0
270° 	5S6.966.1Y	AF	AH				TF05	1.7	25	31	40	57	1.9	3.5
	5S7.046.1Y		AH				TF07	2.0	41	50	65	92	3.0	4.0
	5S7.116.1Y		AH	AL			TF07	2.0	60	73	94	133	4.4	6.0
	5S7.186.1Y			AL			TF07	2.0	89	109	141	199	6.5	7.0
	5S7.226.1Y			AL			TF07	2.0	111	136	175	248	8.2	7.5
	5S7.256.1Y			AL	AN		TF07	2.0	135	165	213	301	9.9	8.0
360° 	5S6.969.1Y	AF	AH				TF05	1.5	25	31	40	57	1.9	3.5
	5S7.049.1Y		AH				TF07	2.0	41	50	65	92	3.0	4.0
	5S7.119.1Y		AH	AL			TF07	2.0	60	73	94	133	4.4	6.0
	5S7.189.1Y			AL			TF07	2.0	89	109	141	199	6.5	7.0
	5S7.229.1Y			AL			TF07	2.0	111	136	175	248	8.2	7.5
	5S7.259.1Y			AL	AN		TF07	2.0	135	165	213	301	9.9	8.0

NPT threads on request.

Information on operation



Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Information on slip-on connection

- Cotter pin made of stainless steel 316L included (Order no. 095.022.1Y.50.60.E [TF07], 095.013.1E.05.59 [TF05]).
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.



Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.







Type	+	Connection	=	Order no.
5S6.965.1Y	+	AF	=	5S6.965.1Y.AF

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:
 II 1G Ex h IIB T6...T3 Ga
 II 1D Ex h IIIC T85 °C...T190 °C Da

Important
 The code for the connection changes for the ATEX version with slip-on connection.
 Ordering example for 1/2" slip-on connection: 5S6.963.1Y.T1.EX
 Ordering example for 3/4" slip-on connection: 5S7.043.1Y.T2.EX

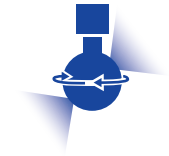




Type	+	Connection	+	ATEX	=	Order no.
5S6.965.1Y	+	AF	+	EX	=	5S6.965.1Y.AF.EX



□

Rotating cleaning nozzle XactClean HP+ Series 5S5



Features:

- High impact and uniform cleaning thanks to specially developed flat fan nozzles
- Effective cleaning of larger tanks through higher flow rates
- High operating reliability due to robust drive unit



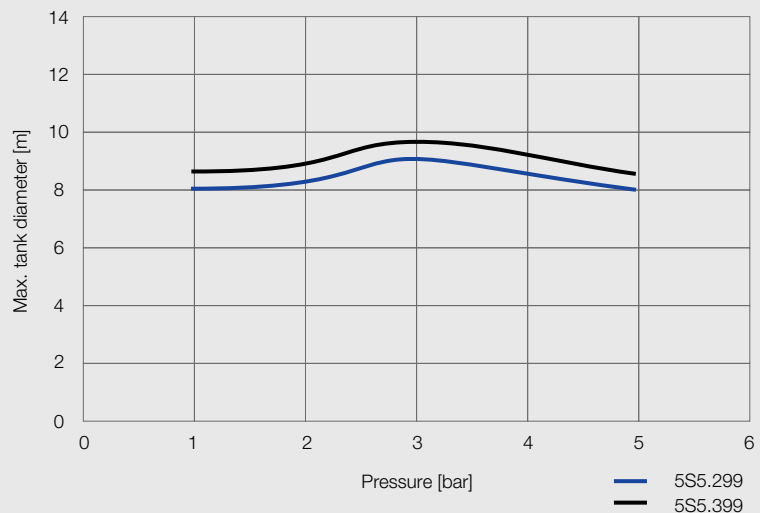
Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5S5

Technical data:

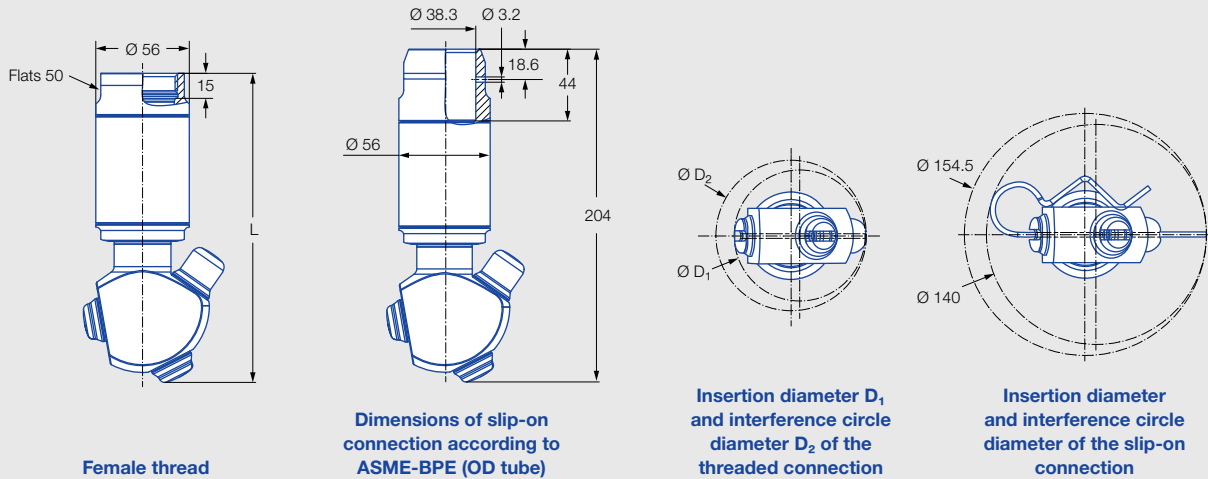
Maximum operating temperature 150 °C	Maximum ambient temperature 150 °C	Installation Operation in every installation position	Bearing Double ball bearing
Material Stainless steel 1.4404 (316L), stainless steel 1.4401 (316), PEEK, EPDM	Weight 1.12–1.93 kg	Surface quality Outside Ra ≤ 0.8 µm	Surface quality Inside Ra ≤ 1.6 µm
Steam suitability Suitable	Insertion diameter 81–140 mm	Recommended filter Line strainer with a mesh size of 0.3 mm/50 mesh	Recommended operating pressure 3 bar
Adapter 1 BSPP, 1 1/4 BSPP and 1 1/2 BSPP are compatible with HygienicFit	Rotation monitoring Sensor-compatible, information: see pages 96–97	Maintainable	

Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



Overview of maximum tank diameter depending on pressure

Dimensions in mm.



Connection		Dimensions [mm]		
		L	Insertion diameter D ₁	Interference circle diameter D ₂
AN	1 BSPP	185	81-92	82-98
AQ	1 1/4 BSPP	185	81-92	82-98
AS	1 1/2 BSPP	187	81-92	82-98

Spray angle	Order no.					Narrowest cross-section Ø [mm]	V̇ water [l/min]			V̇ water at 3 bar [m³/h]	Max. tank diameter [m]
	Type	Connection					p [bar] (p _{max} = 10 bar)				
		1 BSPP	1 1/4 BSPP	1 1/2 BSPP	1 1/2" slip-on connection		2.0	3.0	5.0		
180° 	5S5.293.1Y	AN			TF15	3.0	165	202	261	12.1	9.0
	5S5.323.1Y	AN	AQ		TF15	3.0	200	245	316	14.7	9.2
	5S5.363.1Y		AQ	AS	TF15	3.0	250	306	395	18.4	9.4
180° 	5S5.294.1Y	AN			TF15	3.0	165	202	261	12.1	9.0
	5S5.324.1Y	AN	AQ		TF15	3.0	200	245	316	14.7	9.2
	5S5.364.1Y		AQ	AS	TF15	3.0	250	306	395	18.4	9.4
270° 	5S5.295.1Y	AN			TF15	3.0	165	202	261	12.1	9.0
	5S5.325.1Y	AN	AQ		TF15	3.0	200	245	316	14.7	9.2
	5S5.365.1Y		AQ	AS	TF15	3.0	250	306	395	18.4	9.4
270° 	5S5.296.1Y	AN			TF15	3.0	165	202	261	12.1	9.0
	5S5.326.1Y	AN	AQ		TF15	3.0	200	245	316	14.7	9.2
	5S5.366.1Y		AQ	AS	TF15	3.0	250	306	395	18.4	9.4
360° 	5S5.299.1Y	AN			TF15	3.0	165	202	261	12.1	9.0
	5S5.329.1Y	AN	AQ		TF15	3.0	200	245	316	14.7	9.2
	5S5.369.1Y		AQ	AS	TF15	3.0	250	306	395	18.4	9.4
	5S5.399.1Y		AQ	AS	TF15	3.0	300	367	474	22.0	9.6

NPT threads on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.


Information on slip-on connection

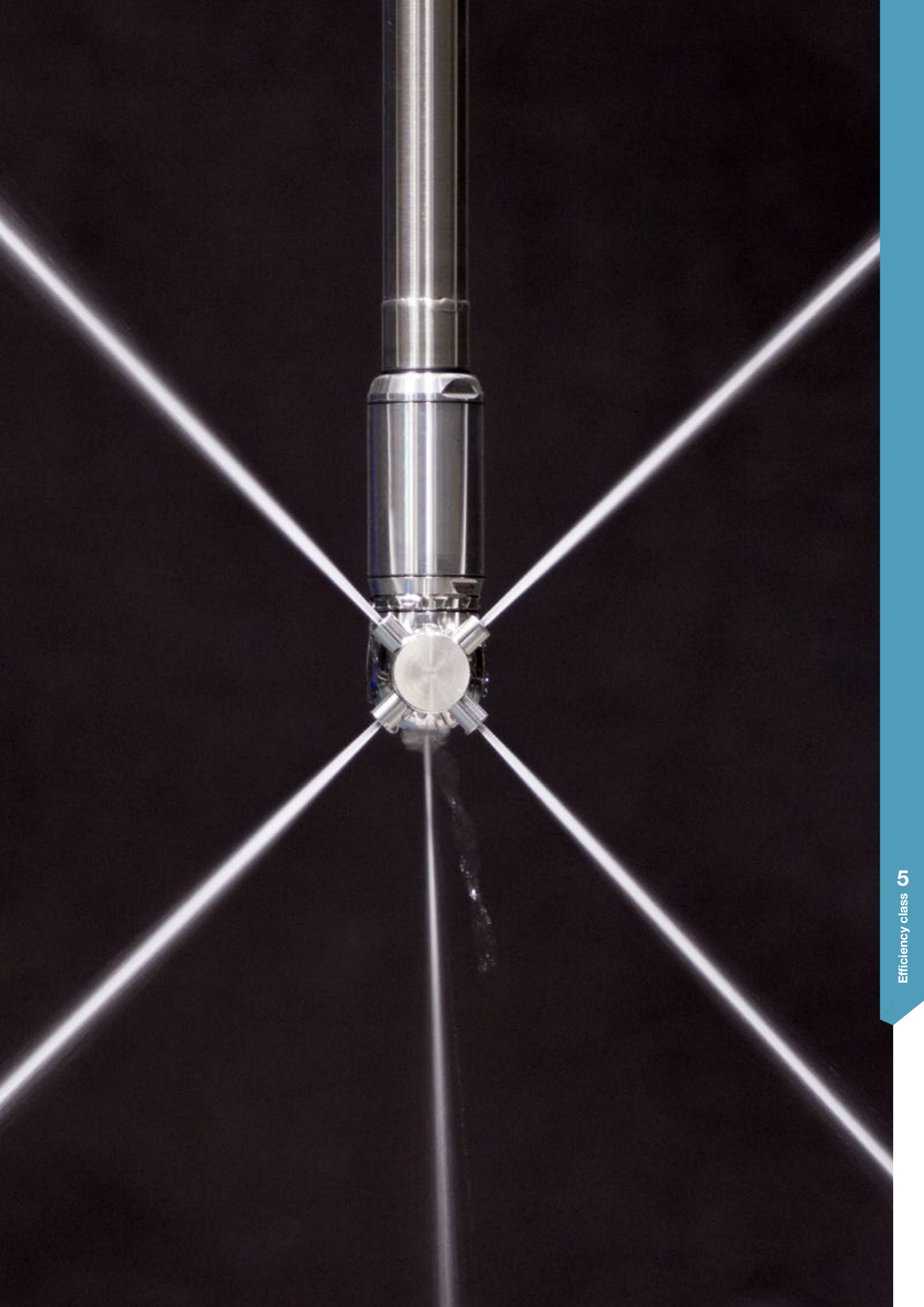
- Cotter pin made of stainless steel 1.4404 (316L) included (Order no. 095.013.1Y.06.45).
- Depending on the adapter diameter, the flow rate may increase due to the leakage between the adapter and rotating cleaning nozzle.

Ordering Type + Connection = Order no.
example: 5S5.293.1Y + AN = 5S5.293.1Y.AN



CLEANING EFFICIENCY CLASS 5 PERSISTENT SOILING

Type	High impact tank cleaning machine, controlled rotation about two axes
Cleaning effect	
Drive	By the medium, drive unit with turbine and gear unit
Typical soiling	Persistent soiling such as make-up
Nozzle design	Solid stream nozzles with controlled rotation about two axes, direct impact on the entire tank surface during a cleaning cycle



High impact tank cleaning machine

MeshClean

Series 5T2/5T3



Features:

- High efficiency thanks to especially powerful solid jet nozzles
- Also suitable for smaller tanks with stubborn soiling
- Active self-cleaning through special nozzle geometry
- Particularly low-maintenance



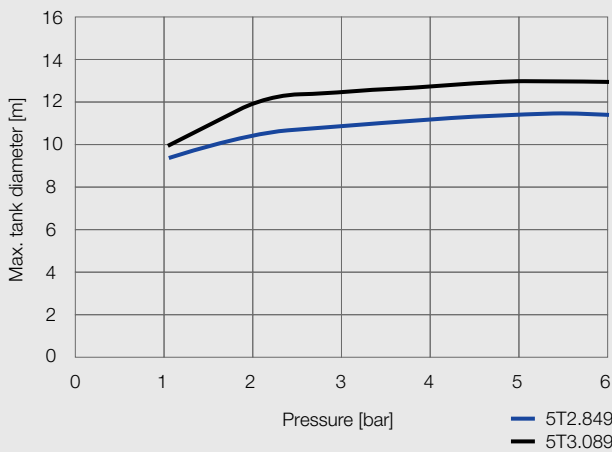
Function video
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 Or scan the QR code.

Series 5T2/5T3

Technical data:

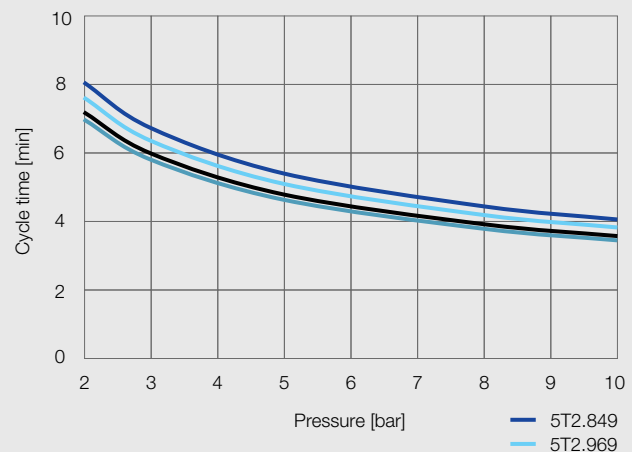
Maximum operating temperature 150 °C 150 °C (ATEX)	Maximum ambient temperature 150 °C 150 °C (ATEX)	Installation Operation in every installation position	Bearing Ball bearing
Material Stainless steel 1.4404 (316L), PTFE, PEEK, EPDM	Weight 1.0 kg	Surface quality OUTSIDE Ra ≤ 0.8 µm	Surface quality INSIDE Ra ≤ 1.6 µm
Steam suitability Suitable	Insertion diameter 68–82 mm	Recommended filter Line strainer with a mesh size of 0.2 mm/80 mesh	Recommended operating pressure 5 bar
Adapter 3/4 BSPP is compatible with HygienicFit	Rotation monitoring Sensor-compatible, information: see pages 96–97	Maintainable	

Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



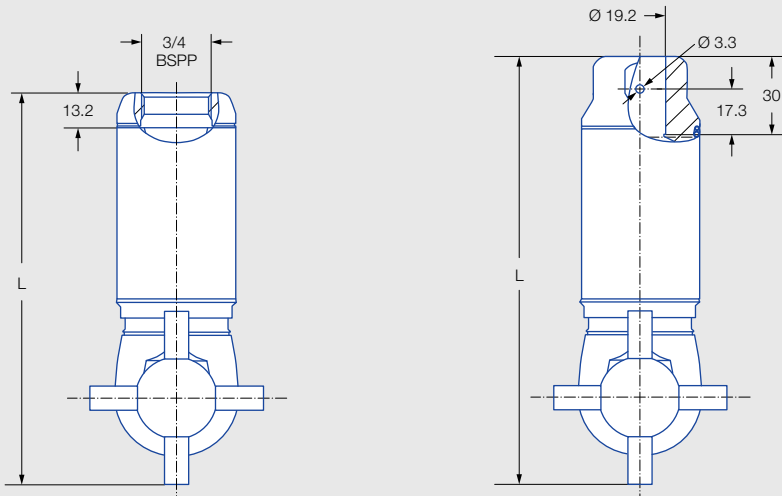
Overview of maximum tank diameter depending on pressure

Duration of cleaning cycle



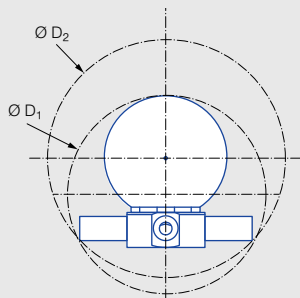
Duration of cleaning cycle depending on pressure

Dimensions in mm.

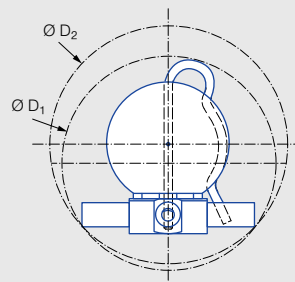


Female thread


Dimensions of slip-on connection according to ASME-BPE (OD tube)



Insertion diameter D_1 and interference circle diameter D_2 of the threaded connection



Insertion diameter D_1 and interference circle diameter D_2 of the slip-on connection

Spray angle	Order no.			\dot{V} water [l/min]		\dot{V} water at 5 bar [m ³ /h]	Dimensions [mm]						Max. tank diameter [m]
	Type	Connection		p [bar] ($p_{max} = 15$ bar)			Female thread			Slip-on connection			
		3/4 BSPP	3/4" slip-on connection	2.0	5.0		L	$\varnothing D_1$	$\varnothing D_2$	L	$\varnothing D_1$	$\varnothing D_2$	
360° 	5T2.849.1Y	AL	TF07	13	20	1.2	142	68	82	157	77	82	11.5
	5T2.969.1Y	AL	TF07	25	40	2.4	142	68	82	157	77	82	12.0
	5T3.029.1Y	AL	TF07	35	55	3.3	142	68	82	157	77	82	12.5
	5T3.089.1Y	AL	TF07	50	79	4.7	148	74	91	163	82	91	13.0

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.



Type + Connection = Order no.
5T2.849.1Y + AL = 5T2.849.1Y.AL

Ordering example with ATEX approval, FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

Ex II 1G Ex h IIB T6...T3 Ga
Ex II 1D Ex h IIIC T85 °C...T190 °C Da



Important

The code for the connection changes for the ATEX version with slip-on connection.

Ordering example for 3/4" slip-on connection: 5T2.849.1Y.T2.EX



Type + Connection + ATEX = Order no.
5T2.849.1Y + AL + EX = 5T2.849.1Y.AL.EX

High impact tank cleaning machine

IntenseClean Hygienic

Series 5TB



Features:

- Proven in the pharmaceutical, food and beverage industries
- High surface quality



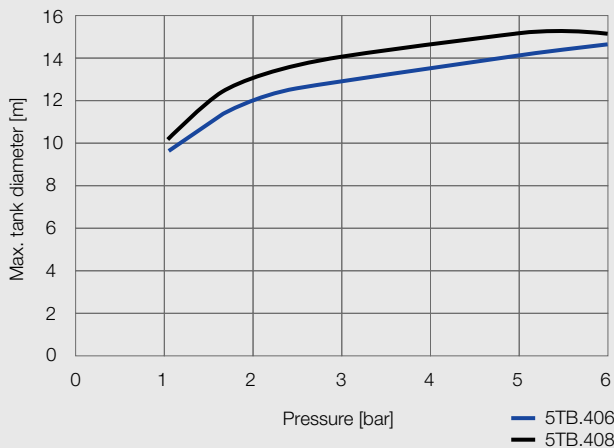
Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5TB

Technical data:

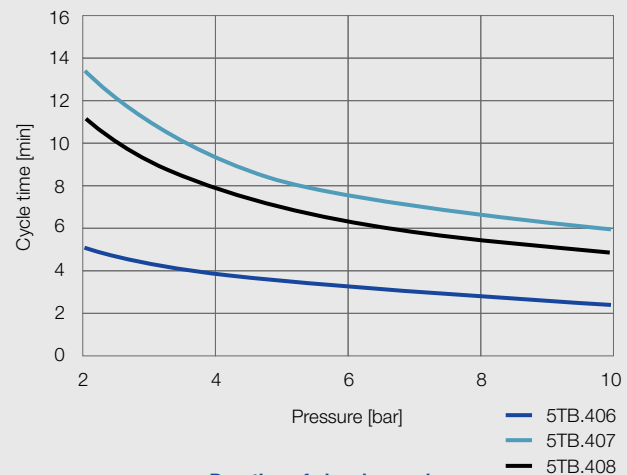
Maximum operating temperature 150 °C 97 °C (ATEX)	Maximum ambient temperature 150 °C 135 °C (ATEX)	Installation Operation in every installation position	Bearing Ball bearing
Material Stainless steel 1.4404 (316L), stainless steel 1.4532 (632), PTFE, PEEK, zirconium oxide, EPDM	Weight 4.0 kg	Surface quality Ra ≤ 0.8 µm <small>OUTSIDE</small>	Surface quality Ra ≤ 0.8 µm <small>INSIDE</small>
Steam suitability Suitable	Insertion diameter 130 mm	Recommended filter Line strainer with a mesh size of 0.2 mm/80 mesh	Recommended operating pressure 5 bar
Rotation monitoring Sensor-compatible, information: see pages 96–97	Maintainable		

Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



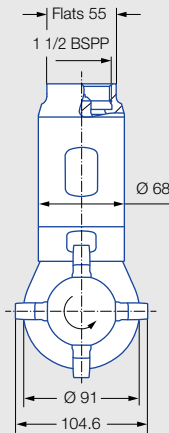
Overview of maximum tank diameter depending on pressure

Duration of cleaning cycle

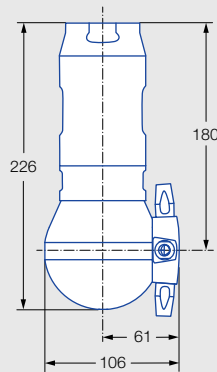


Duration of cleaning cycle depending on pressure

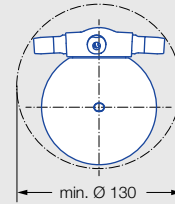
Dimensions in mm.



Female thread



Female thread



Insertion diameter

Spray angle	Order no. Type	Narrowest cross-section Ø [mm]	Quantity x nozzle Ø [mm]	V̇ water [l/min]			V̇ water at 5 bar [m³/h]	Max. tank diameter [m]
				p [bar] (p _{max} = 25 bar)				
				2.0	5.0	10.0		
	5TB.406.1Y.AS	6.0	4 x 6.0	107	169	239	10.1	14.0
	5TB.407.1Y.AS	6.0	4 x 7.0	132	209	296	12.5	14.0
	5TB.408.1Y.AS	6.0	4 x 8.0	150	238	336	14.3	15.0

NPT threads on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Ordering example with FDA and (EC) 1935/2004 conformity.



All materials are suitable for contact with food.



Type + Connection = Order no.
5TB.406.1Y. + AS = 5TB.406.1Y.AS

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.



Unit group/Category/Zones:

⊕ Ex II 1G Ex h IIB T6...T4 Ga

⊕ Ex II 1D Ex h IIIC T85 °C...T135 °C Da



Type + ATEX = Order no.
5TB.406.1Y.AS + EX = 5TB.406.1Y.AS.EX

High impact tank cleaning machine

IntenseClean

Series 5TM



Features:

- Very robust design
- High efficiency thanks to especially powerful solid jet nozzles
- High efficiency due to gear-controlled rotation
- Proven in the petrochemical industry



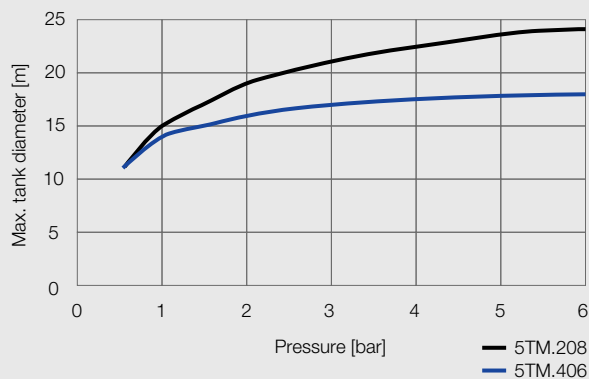
Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5TM

Technical data:

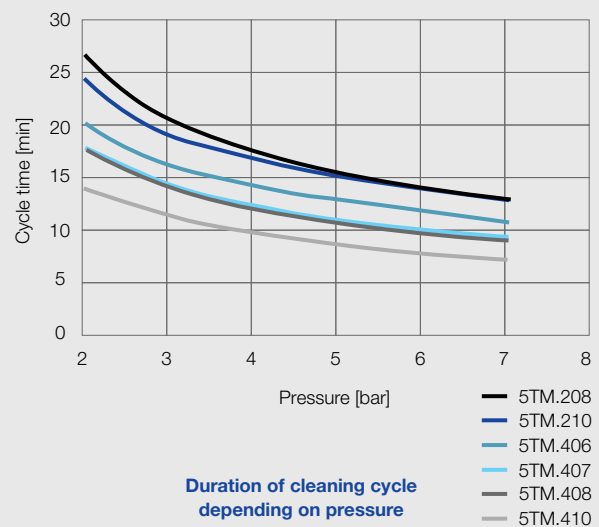
Maximum operating temperature 95 °C 95 °C (ATEX)	Maximum ambient temperature 140 °C 120 °C (ATEX)	Installation Operation in every installation position	Bearing Ball bearing
Material Stainless steel 1.4404 (316L), stainless steel 1.4301 (304), stainless steel 1.4310 (302), PTFE, PEEK	Weight 7.40–7.88 kg	Surface quality Ra ≤ 0.8 µm <small>OUTSIDE</small>	Surface quality Ra ≤ 4.5 µm <small>INSIDE</small>
Steam suitability Not suitable	Insertion diameter 160–230 mm	Recommended filter Line strainer with a mesh size of 0.2 mm/80 mesh	Recommended operating pressure 5 bar
Rotation monitoring Sensor-compatible, information: see pages 96–97	Maintainable		

Max. tank diameter
 The specified maximum tank diameter applies to the recommended operating pressure and is indicative only. The type of soiling is also decisive for the cleaning result.



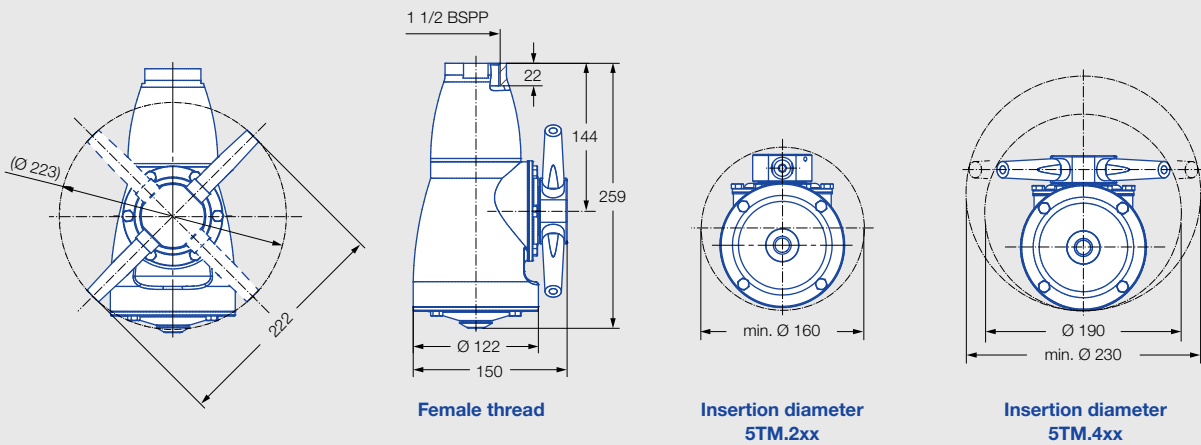
Overview of maximum tank diameter depending on pressure


Duration of cleaning cycle



Duration of cleaning cycle depending on pressure

Dimensions in mm.



Spray angle	Order no.	Narrowest cross-section Ø [mm]	Quantity x nozzle Ø [mm]	V̇ water [l/min]				V̇ water at 5 bar [m³/h]	Max. tank diameter [m]
	Type			p [bar] (p _{max} = 7 bar)					
				2.0	3.0	5.0	7.0		
360° 	5TM.208.1Y.AS	8.0	2 × 8.0	125	153	198	234	11.9	24.0
	5TM.210.1Y.AS	10.0	2 × 10.0	160	196	253	299	15.2	24.0
	5TM.406.1Y.AS	6.0	4 × 6.0	140	171	221	261	13.3	18.0
	5TM.407.1Y.AS	7.0	4 × 7.0	170	208	269	318	16.1	20.0
	5TM.408.1Y.AS	8.0	4 × 8.0	200	245	316	374	19.0	22.0
	5TM.410.1Y.AS	10.0	4 × 10.0	260	318	411	486	24.7	23.0

NPT threads on request.

Information on operation

Compressed air can be used only for a short time for blowing dry. Use above the recommended pressure will have a negative effect on the cleaning result and wear.

Ordering example with FDA and (EC) 1935/2004 conformity.



All materials are suitable for contact with food.



Type + Connection = Order no.
5TM.208.1Y + AS = 5TM.208.1Y.AS

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.



Unit group/Category/Zones:

Ex II 1G Ex h IIB T6...T3 Ga

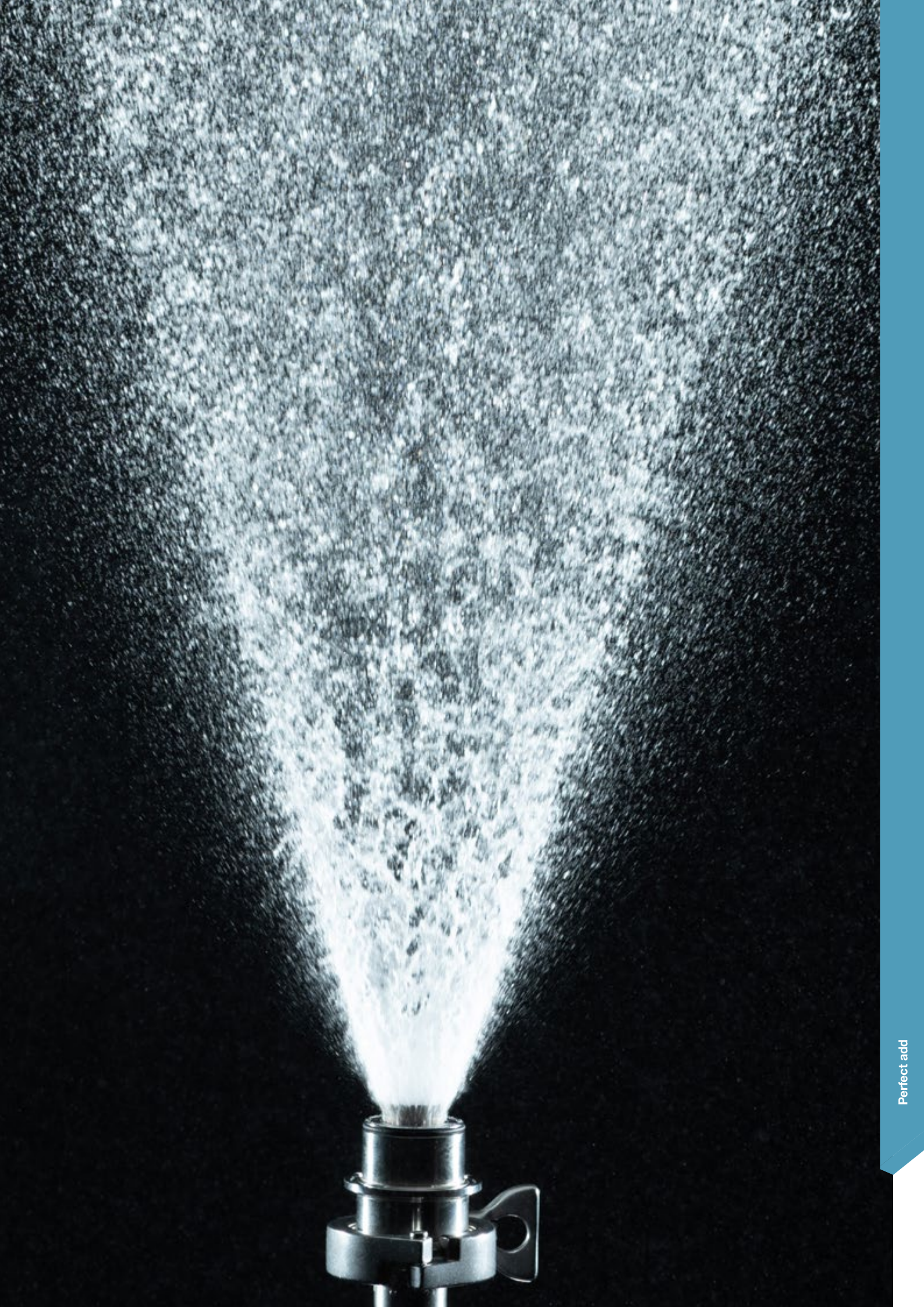
Ex II 1D Ex h IIIC T85 °C...T150 °C Da



Type + ATEX = Order no.
5TM.208.1Y.AS + EX = 5TM.208.1Y.AS.EX

**»» TANK CLEANING
PERFECT ADD**





Extendable rotating cleaning nozzle

PopUp Whirly

Series 5P2



Features:

- Rotating cleaning nozzle extends automatically depending on pressure
- Flush wall installation possible
- Good suitability for cleaning pipes
- Particularly suitable for applications in the pharmaceutical, chemical and food industries



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5P2

Technical data:



Maximum operating temperature
 140 °C
 140 °C (ATEX)



Maximum ambient temperature
 150 °C
 140 °C (ATEX)



Installation
 Operation in every installation position



Bearing
 Slide bearing



Material
 Stainless steel 1.4404 (316L), stainless steel 1.4571 (316Ti), stainless steel 1.4401 (316), FKM



Weight
 500 g



Surface quality
 $Ra \leq 0.8 \mu\text{m}$ on process side, remaining housing
 $Ra \leq 1.6 \mu\text{m}$



Surface quality
 $Ra \leq 1.6 \mu\text{m}$



Steam suitability
 Not suitable

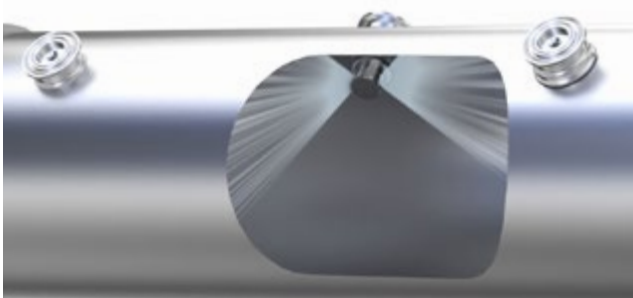


Recommended filter
 Line strainer with mesh size of 0.3 mm/50 mesh

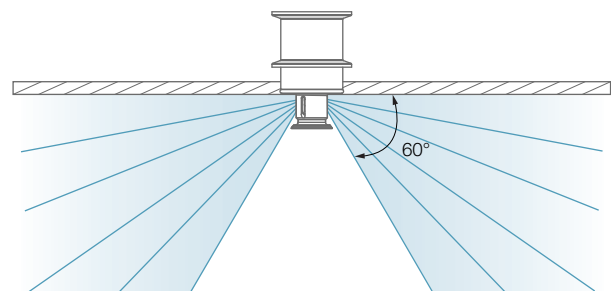


Recommended operating pressure
 2 bar
 Opening pressure approx. 1.0 bar, closing pressure approx. 0.5 bar

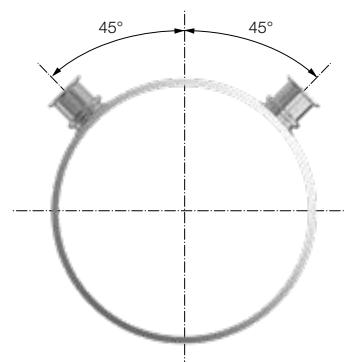
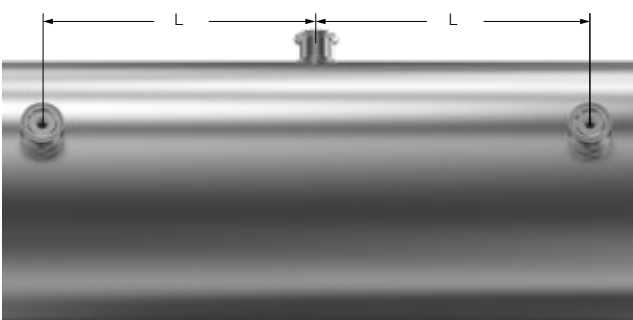
Installation example



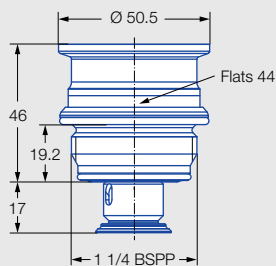
Spray distribution



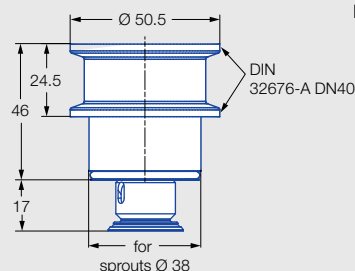
Recommendation for nozzle positioning



Type	Nozzle spacing L [m]
5P2.873	0.8
5P2.923	1.0



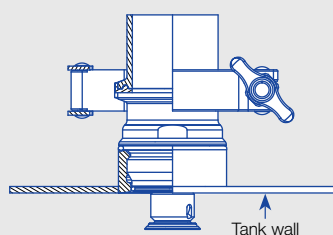
Male thread



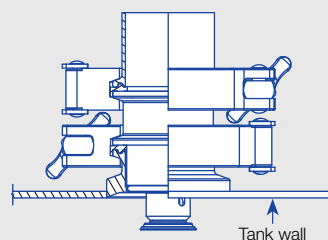
Tri-Clamp connection

Dimensions in mm.

Installation situation



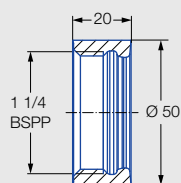
Male thread



Tri-Clamp connection

Weld-in socket for threaded connection

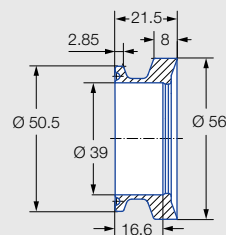
The thread is hygienically encapsulated with two O-rings (included in the scope of delivery of the PopUp Whirly).



Order no.: 050.020.1Y.AQ.00
Material: Stainless steel 1.4404 (316L)

Weld-in flange for Tri-Clamp connection

A joint clamp in accordance with DIN 32676-A DN50 with a connection diameter of 50.5 mm is required for connection of the nozzle at the weld-in flange. A gasket with a thickness of 2 mm is required if the flange is used in combination with the PopUp Whirly.



Order no.: 050.020.1Y.01.00
Material: Stainless steel 1.4404 (316L)

Spray angle	Order no.			Narrowest cross-section \varnothing [mm]	\dot{V} water [l/min]			\dot{V} water at 2 bar [m ³ /h]
	Type	Connection on tank wall			p [bar] (p _{max} = 6 bar)			
		1 1/4 BSPP male	Tri-Clamp		1.0	2.0	3.0	
60°	5P2.873.1Y	AP	00	2.5	11	15	18	0.9
	5P2.923.1Y	AP	00	3.5	14	20	25	1.2

Information on operation

The PopUp Whirly is not suitable for operation with compressed air or another gas. Use above the recommended pressure will have a negative influence on the cleaning result and wear.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.



Type + Connection = Order no.
5P2.873.1Y + AP = 5P2.873.1Y.AP

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

Ex II 1G Ex h IIB T6...T3 Ga
Ex II 1D Ex h IIIC T85 °C...T170 °C Da



Type + Connection + ATEX = Order no.
5P2.873.1Y + AP + EX = 5P2.873.1Y.AP.EX

Extendable rotating cleaning nozzle

PopUp Whirly

Series 5P3



Features:

- Rotating cleaning nozzle extends automatically depending on pressure
- Flush wall installation possible
- Good suitability for cleaning pipes
- Particularly suitable for applications in the pharmaceutical, chemical, food and beverage industries



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5P3

Technical data:



Maximum operating temperature
 140 °C
 140 °C (ATEX)



Maximum ambient temperature
 150 °C
 140 °C (ATEX)



Installation
 Operation in every installation position



Bearing
 Slide bearing



Material
 Stainless steel 1.4404 (316L), stainless steel 1.4571 (316Ti), stainless steel 1.4401 (316), FKM



Weight
 660 g



Surface quality
 $Ra \leq 0.8 \mu\text{m}$ on process side, remaining housing
 $Ra \leq 1.6 \mu\text{m}$



Surface quality
 $Ra \leq 1.6 \mu\text{m}$



Steam suitability
 Not suitable

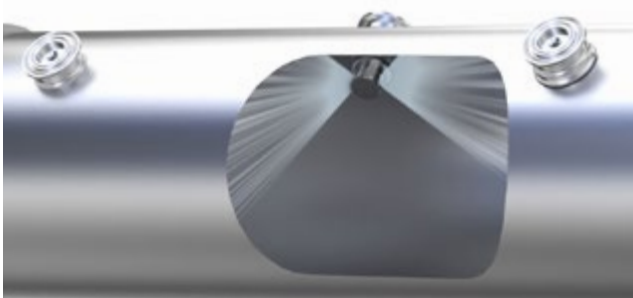


Recommended filter
 Line strainer with mesh size of 0.3 mm/50 mesh

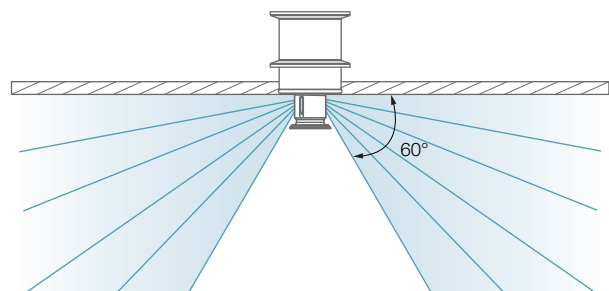


Recommended operating pressure
 2 bar
 Opening pressure approx. 0.9 bar, closing pressure approx. 0.5 bar

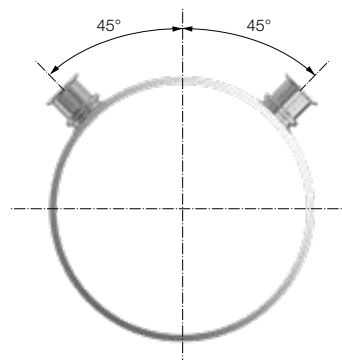
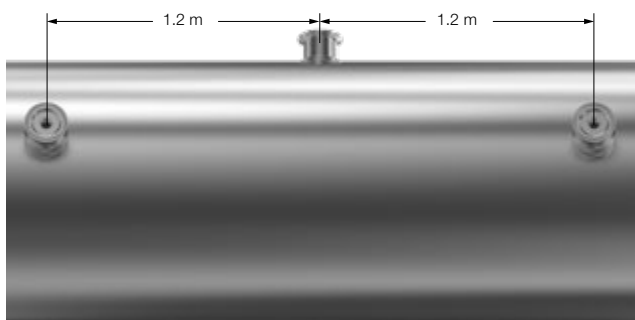
Installation example

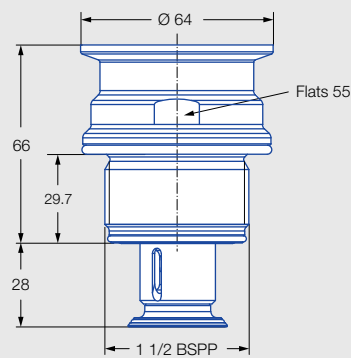


Spray distribution

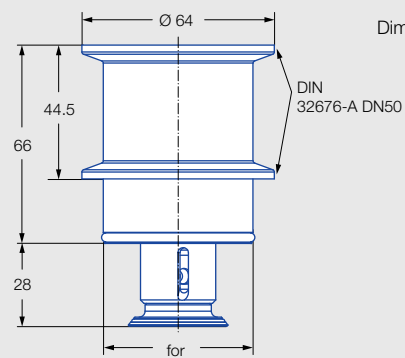


Recommendation for nozzle positioning





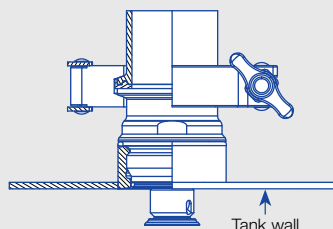
Male thread



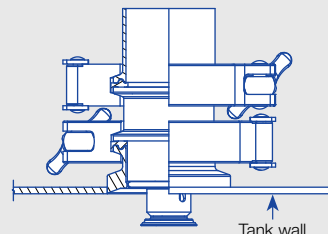
Tri-Clamp connection

Dimensions in mm.

Installation situation



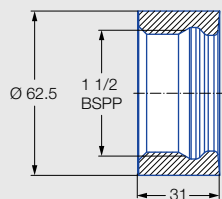
Male thread



Tri-Clamp connection

Weld-in socket for threaded connection

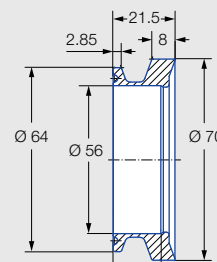
The thread is hygienically encapsulated with two O-rings (included in the scope of delivery of the PopUp Whirly).




Order no.: 050.020.1Y.AS.00
Material: Stainless steel 1.4404 (316L)

Weld-in flange for Tri-Clamp connection

A joint clamp in accordance with DIN 32676-A DN50 with a connection diameter of 64.0 mm is required for connection of the nozzle at the weld-in flange. A gasket with a thickness of 2 mm is required if the flange is used in combination with the PopUp Whirly.



Order no.: 050.020.1Y.01.01
Material: Stainless steel 1.4404 (316L)

Spray angle	Order no.			Narrowest cross-section Ø [mm]	V̇ water [l/min]			V̇ water at 2 bar [m³/h]
	Type	Connection			p [bar] (p _{max} = 6 bar)			
		1 1/2 BSPP male	Tri-Clamp		1.0	2.0	3.0	
60° 	5P3.043.1Y	AR	00	3.3	28	40	49	2.4

Information on operation

The PopUp Whirly is not suitable for operation with compressed air or another gas. Use above the recommended pressure will have a negative influence on the cleaning result and wear.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.



Type + Connection = Order no.
5P3.043.1Y + AR = 5P3.043.1Y.AR

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:
Ex II 1G Ex h IIB T6...T3 Ga
Ex II 1D Ex h IIIC T85 °C...T170 °C Da



Type + Connection + ATEX = Order no.
5P3.043.1Y + AR + EX = 5P3.043.1Y.AR.EX

Extendable cleaning nozzle

PopUp Clean

Series 5P5



Features:

- Cleaning nozzle extends automatically depending on pressure
- Flush wall installation possible
- For cleaning agitators and other spray shadow areas
- Compact, robust design



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 5P5

Technical data:



Maximum operating temperature
 95 °C
 95 °C (ATEX)



Maximum ambient temperature
 150 °C
 140 °C (ATEX)



Installation
 Operation in every installation position



Bearing
 Slide bearing



Material
 Stainless steel 1.4404 (316L), stainless steel 1.4571 (316Ti), FKM or 2.4602 (Alloy 22), 2.4610 (Alloy 4), FKM



Weight
 340 g



Surface quality
 $Ra \leq 0.8 \mu\text{m}$ on process side, remaining housing
 $Ra \leq 1.6 \mu\text{m}$



Surface quality
 $Ra \leq 1.6 \mu\text{m}$



Steam suitability
 Not suitable



Recommended filter
 Line strainer with mesh size of 0.3 mm/50 mesh



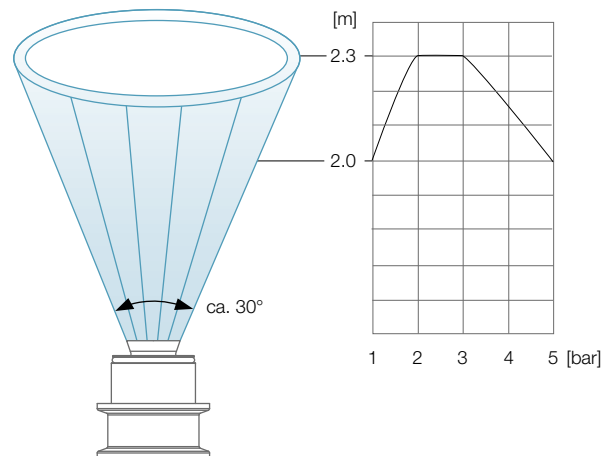
Recommended operating pressure
 2 bar
 Opening pressure: approx. 0.3 bar, closing pressure: approx. 0.3 bar

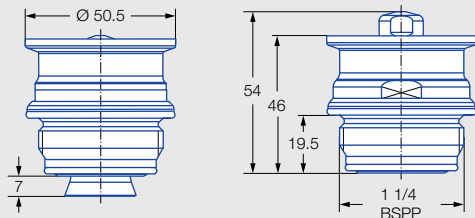
Installation example



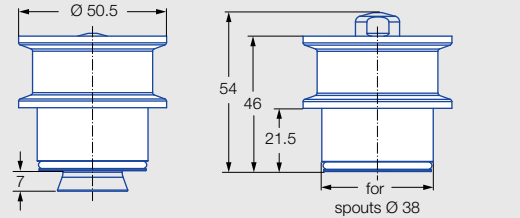
Spray height

Sprays upwards in vertical installation position.



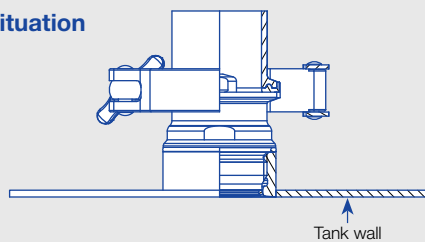


Male threaded connection

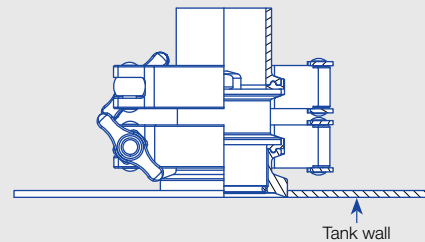


Tri-Clamp connection

Installation situation



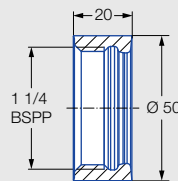
Threaded connection



Tri-Clamp connection

Weld-in socket for threaded connection

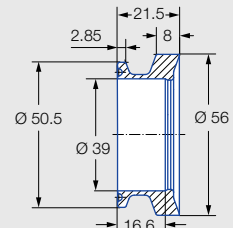
The thread is hygienically encapsulated with two O-rings (included in the scope of delivery of the PopUp Clean).




Order no.: 050.020.1Y.AQ.00
Material: Stainless steel 1.4404 (316L)

Weld-in flange for Tri-Clamp connection

A joint clamp in accordance with DIN 32676-A DN50 with a connection diameter of 50.5 mm is required for connection of the nozzle at the weld-in flange. A gasket with a thickness of 2 mm is required if the flange is used in combination with the PopUp Clean.



Order no.: 050.020.1Y.01.00
Material: Stainless steel 1.4404 (316L)

Spray angle	Order no.					V̇ water [l/min]				V̇ water	
	Type	Material no.		Connection		p [bar] (p _{max} = 5 bar)					
		1Y	21	1 1/4 BSPP male	Tri-Clamp	1.0	2.0	3.0	5.0	at 2 bar [m³/h]	at 5 bar [m³/h]
30° 	5P5.081	●	●	AP	00	35	50	61	79	3.0	4.7

Information on operation

The PopUp Clean is not suitable for operation with compressed air or another gas. Use above the recommended pressure will have a negative influence on the cleaning result and wear.

Ordering example with FDA and (EC) 1935/2004 conformity.

All materials are suitable for contact with food.



Type + Material + Connection = Order no.
5P5.081 + 1Y + AP = 5P5.081.1Y.AP

Ordering example with ATEX approval. FDA and (EC) 1935/2004 conformity.

Unit group/Category/Zones:

Ex II 1G Ex h IIB T6...T3 Ga
Ex II 1D Ex h IIIC T85 °C...T170 °C Da



Type + Material + Connection + ATEX = Order no.
5P5.081 + 1Y + AP + EX = 5P5.081.1Y.AP.EX

Adapter HygienicFit Series 05C



Features:

- Hygienic threaded connection between equipment and nozzle
- Available for many thread sizes
- Weld-on side suitable for common pipe standards
- O-rings ensure a leak-tight connection
- O-rings fully encapsulate the thread



Function video
www.lechler.com/de-en/medialibrary/videos-general-industry
 Or scan the QR code.

Series 05C

Technical data:



Maximum operating temperature
150 °C



Maximum ambient temperature
150 °C



Installation
Operation in every installation position



Material
1.4404 (316L), EPDM (O-ring)



Weight
70–300 g



Surface quality
Ra ≤ 0.8 µm



Surface quality
Ra ≤ 0.8 µm

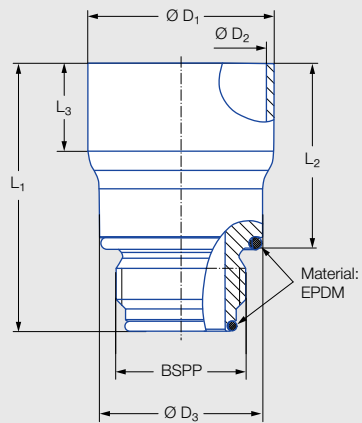


Steam suitability
Suitable



If you find this icon on our product pages, this means that the nozzle is compatible with the HygienicFit adapter.





Order no.		Dimensions [mm]						Pipe standard
Type	Connection thread BSPP male	L_1	L_2	L_3	$\varnothing D_1$	$\varnothing D_2$	$\varnothing D_3$	
05C.190.1Y.AE.16	3/8	48.00	35.70	18.00	19.05	15.80	21.50	DIN EN 10357 series D
05C.230.1Y.AE.15	3/8	48.00	35.70	18.00	23.00	20.00	21.50	DIN EN 10357 series A
05C.250.1Y.AE.12	3/8	48.00	35.70	17.00	25.00	22.60	21.50	DIN EN 10357 series D
05C.250.1Y.AG.12	1/2	56.00	39.00	18.00	25.00	22.60	31.00	DIN EN 10357 series D
05C.350.1Y.AK.15	3/4	55.00	37.80	21.00	35.00	32.00	33.50	DIN EN 10357 series A
05C.380.1Y.AK.12	3/4	55.00	37.80	18.00	38.00	35.60	33.50	ISO 2037
05C.381.1Y.AK.15	3/4	55.00	37.80	18.00	38.10	35.10	33.50	DIN EN 10357 series D
05C.381.1Y.AM.16	1	59.00	39.00	23.00	38.10	34.90	40.50	DIN EN 10357 series D
05C.508.1Y.AP.15	1 1/4	57.00	38.00	22.00	50.80	47.80	49.40	DIN EN 10357 series D
05C.635.1Y.AR.16	1 1/2	63.00	44.00	22.00	63.50	60.30	56.00	DIN EN 10357 series D

Spare parts set of O-rings, EPDM

Thread type BSPP	Order no.
3/8	05C.000.E9.AE.00
1/2	05C.000.E9.AG.00
3/4	05C.000.E9.AK.00
1	05C.000.E9.AM.00
1 1/4	05C.000.E9.AP.00
1 1/2	05C.000.E9.AR.00

O-ring set also available in FKM on request.

Rotation monitoring sensor



Features:

- Reliable monitoring of cleaning processes
- Process connection EHEDG-compliant
- Simple operation and PLC connection possible
- Can be individually adapted to each cleaning task
- Operating principle: capacitive



Technical data:



Maximum operating temperature
0–100 °C



Maximum ambient temperature
–10 °C to +60 °C



Installation
Operation in every installation position



Material
Sleeve (1/2 BSPP):
Stainless steel 1.4404 (316L)
Probe tip: PEEK
Housing: 1.4305 (303)



Weight
350 g



Surface quality
Ra ≤ 0.8 µm weld-in flange,
Ra ≤ 1.6 µm PEEK tip



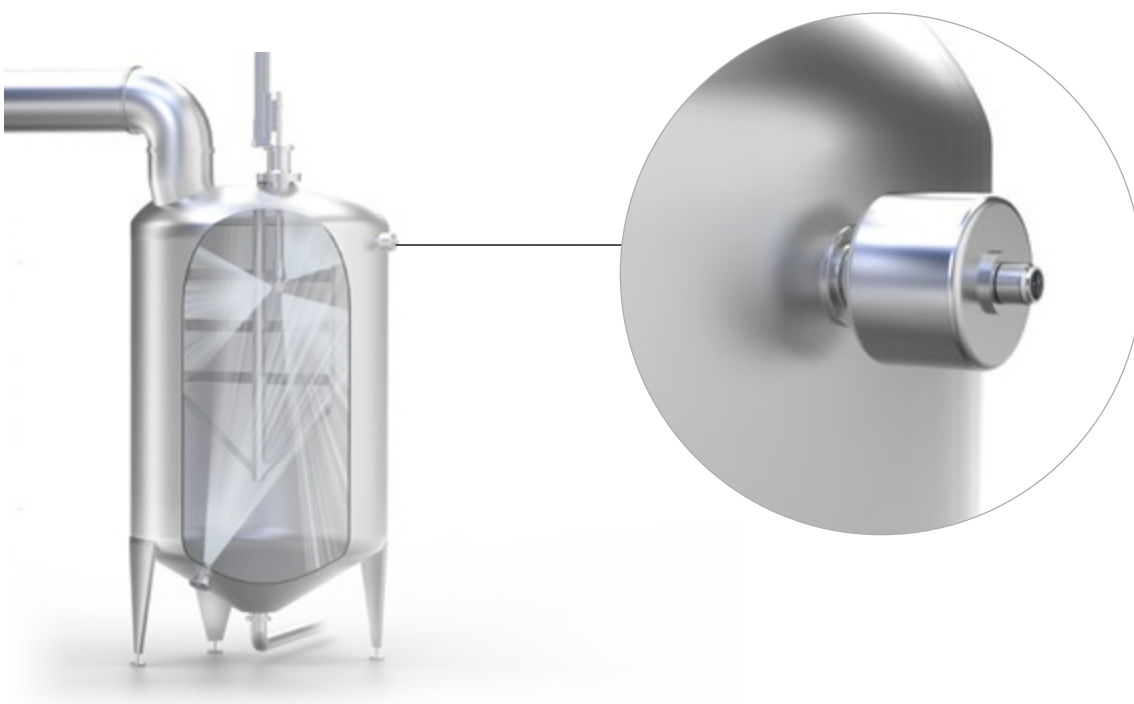
Steam suitability
Max. 125 °C for max.
30 min. at ambient
temperature ≤ 35 °C



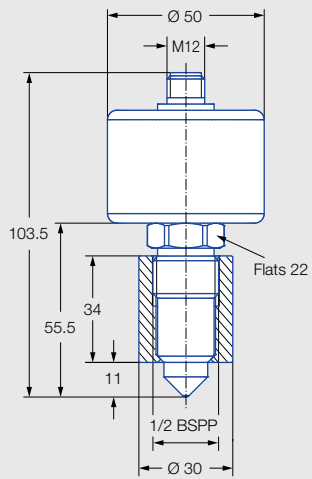
Electrical data
Supply voltage:
U_b = 24 V +/-20 %
(18 to 32 VDC)
Power requirement: < 20 mA
Output signal: PNP, 50 mA,
short circuit protected, active



If you find this icon on our product pages, this means that the nozzle is compatible with the rotation monitoring sensor.



Dimensions in mm.



Rotation monitoring sensor with weld-in sleeve



Cable set for commissioning



Power adapter



USB adapter with cable



Programming adapter Y-piece



Weld-in mandrel

Ordering data	Order no.
Rotation monitoring sensor with weld-in sleeve	050.040.00.00.00
Cable set for commissioning	050.040.00.00.01

Software download (free): www.lechler.com/de-en/software/rotatingcontrolsystem

➤➤ Cleaning lance StaticLance

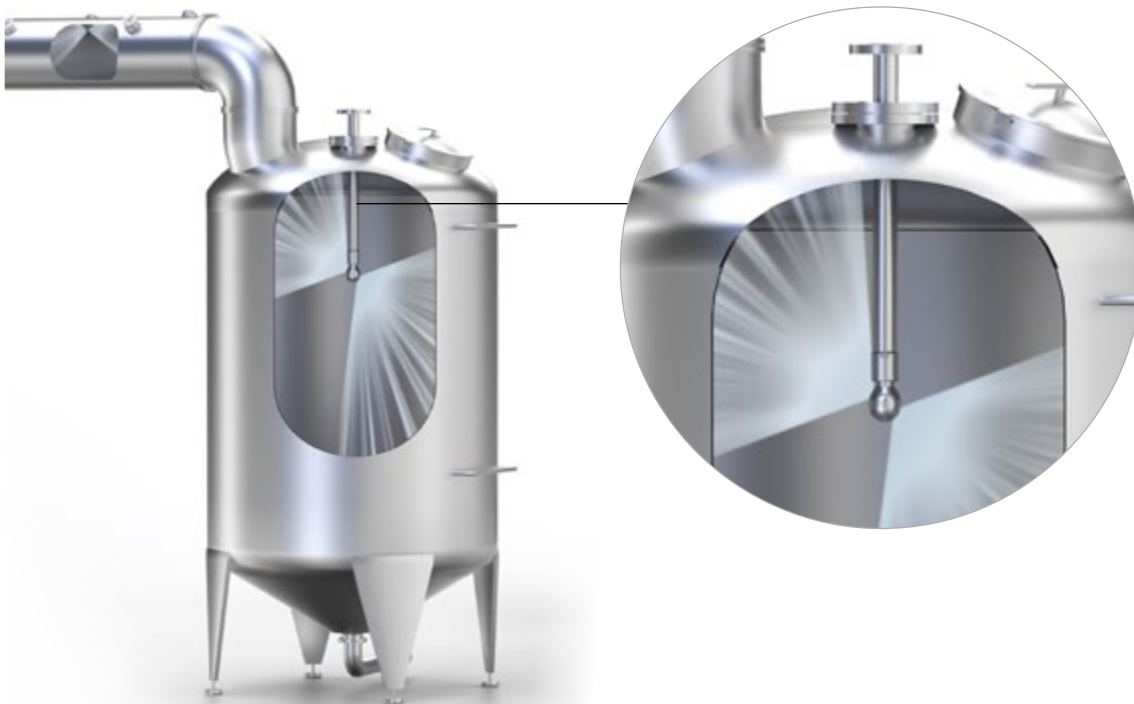


Features:

- Optimum nozzle positioning and alignment in the tank
- Individual design possible depending on existing conditions
- Standard material 1.4404 (316L)
- Different material versions optionally available



Static lance



Good to know

If you would like further information on our static lances, please contact us: by phone on +49 7123 962-0 or by email at info@lechler.de.

➤ Cleaning lance FlexLance

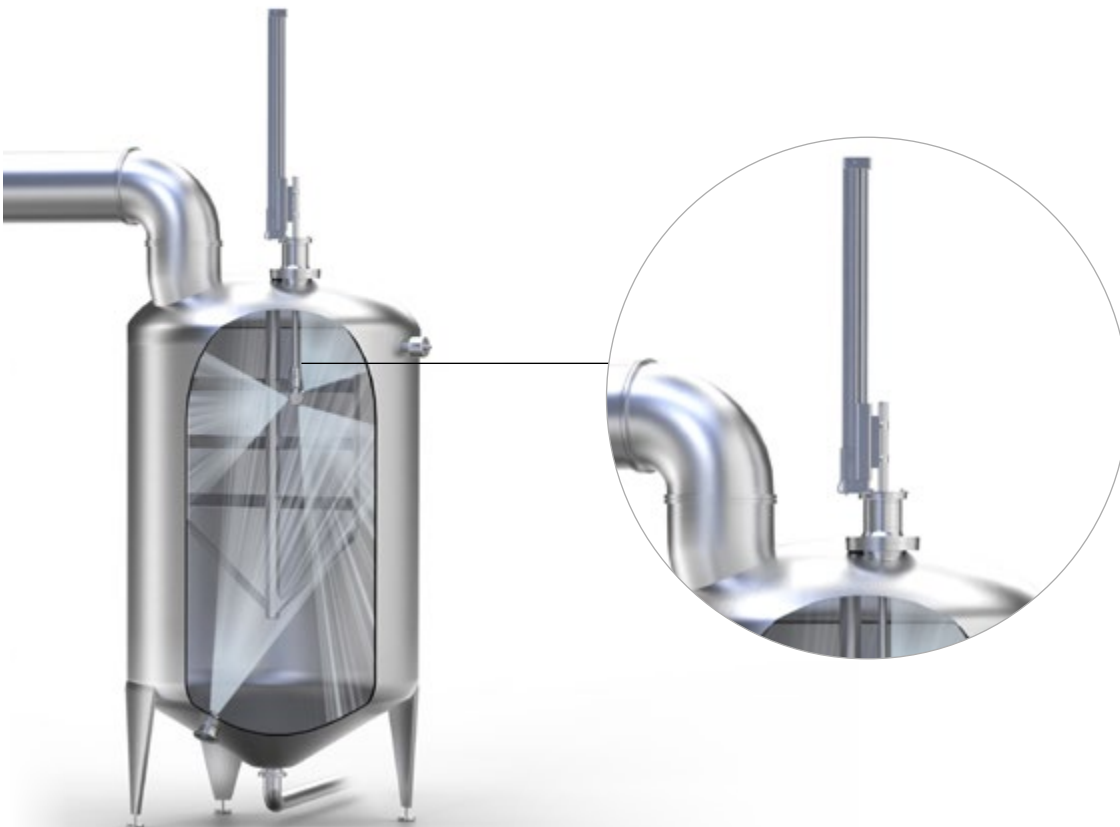


Features:

- Stroke length: 1 mm to 2,700 mm
- Material: contact with process 1.4404 (316L)
- Tank cleaning nozzle connection by means of EN 10226 R 3/4 thread
- Driven pneumatic rodless cylinder
- Position monitoring possible (optional)
- Sealed by rod seal on process side
- Process-side flange EN 1092-1 DN 100 PN 16
- Process-side components are food-compliant



Extendable cleaning lance



Good to know

In some processes, the tank cleaning nozzle must not remain in the tank during the process. Lechler offers pneumatically extendable cleaning lances so that the tank cleaning nozzle is only in the tank when it is used for cleaning. We will be pleased to discuss your requirements. By phone on +49 7123 962-0 or by email at info@lechler.de.



STAY CLEAN THE LECHLER MAINTENANCE SERVICES



Your systems should operate reliably and efficiently in the long term. That is why we recommend regular maintenance. Lechler offers two options to ensure the shortest possible downtimes of your system and to guarantee prompt recommissioning of your tank cleaning products. We will gladly advise you in person on the best solution for your needs.

Two maintenance options for maximum uptime

ZERO DOWNTIME SERVICE

Maintenance: on-the-spot by the customer.

You independently maintain your cleaning system with the genuine Lechler spare parts on the basis of detailed maintenance instructions and can reduce possible downtimes to zero in an ideal case.

YOUR ADVANTAGES

- Zero downtime possible
- Simply perform maintenance yourself on the basis of detailed instructions
- Use of Lechler genuine parts
- No complex import and export processes
- Cost-efficient maintenance

LECHLER FULL SERVICE

Maintenance: at Lechler by Lechler.

You send in your cleaning equipment and our experts will take care of everything else.

YOUR ADVANTAGES

- Immediate feedback if there are any issues
- Use of Lechler genuine parts
- Lechler Service Points also in your vicinity

Please note that maintenance of ATEX-certified products is possible only within the scope of Lechler Full Service for safety reasons.



If you find this icon on our product pages, this means that maintenance is possible.

Lechler Service

You can find detailed information on the Lechler maintenance concept at www.lechler.com/de-en/service/service-offers Or scan the QR code.





Good to know

Do you have any questions about maintenance? Talk to us. We will gladly advise you. By phone on +49 7123 962-0 or by email at service@lechler.de.







EVERYTHING COVERED CLEAN ALL OVER THE WORLD





- Subsidiary
- Sales office/sales agent

-  **Headquarters**
-  **Production**
-  **Sales**
-  **Service Points**

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 info@lechler.de

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