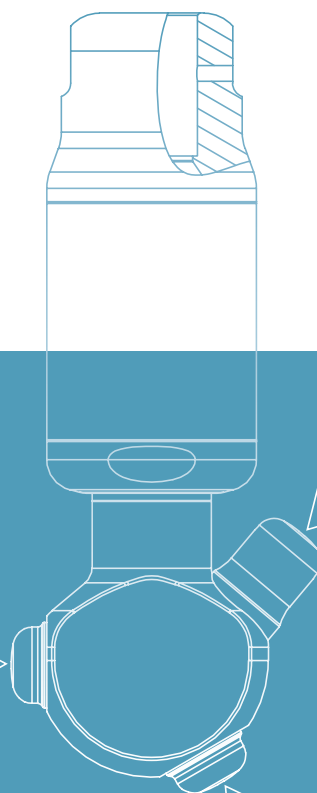


## TANK CLEANING NOZZLES



# TANK CLEANING NOZZLES

## GENERAL INFORMATION



### Static

Static spray balls do not rotate and therefore require considerably more liquid for cleaning processes. They are used primarily for rinsing tanks. Spray balls are a very robust and cost effective solution used in many processes.



### Free-spinning

Free spinning devices utilize spray orifices that are engineered in a specific position to allow the fluid to drive/rotate the spray head. The repeated impacts of the spray remove the soil and rinse it from the tank surface. This results in optimum cleaning efficiency at low pressures in small to medium-sized tanks.



### Controlled rotation

The rotating head is driven by the fluid. A turbine wheel with an internal gear is used to control the rotation. This ensures that the speed remains in the optimum range even at higher pressures. The generated droplets are larger and impact the tank wall at higher speed. These rotating cleaning nozzles achieve higher impact which is especially important for large tanks.



### Gear-controlled

The cleaning fluid drives an internal gear by means of a turbine wheel so that the spray head rotates around two axes. The solid jet nozzles mounted on the spray head produce powerful solid stream like jets. These solid jets sweep the entire tank surface in a pre-programmed, model-specific, pattern during a spray cycle. This requires a certain minimum time. These models generate the highest impact and are ideal for very large tanks and the toughest cleaning tasks.

## Materials



Lechler tank cleaning nozzles are made of high quality materials such as Stainless steel 316L, PVDF, PEEK or PTFE. In addition to the requirements for material resistance and wear, the materials must also be food grade for use in the beverage, food and pharmaceutical industries.

A large number of the materials used for Lechler tank cleaning nozzles comply with the requirements of the FDA or conform to regulation (EC) 1935/2004.

## Hygienic requirements



All Lechler precision nozzles for tank cleaning are designed to meet hygiene requirements. In addition, Lechler also offers special nozzles for particularly stringent hygienic applications, certified to 3-A.

## ATEX



Lechler offers several nozzle series designed especially for use in explosive atmospheres.

**The respective logo on the product pages indicates which requirements are met.**

## Good to know

Detailed information can be found in our brochure "Tank and Equipment Cleaning" as well as at <https://www.lechlerusa.com/en/products/product-by-type/tank-and-equipment-cleaning-products>.

## Cleaning efficiency classes 1 to 5



## Cleaning efficiency classes

Lechler precision nozzles for tank and equipment cleaning are divided into five different cleaning efficiency classes. This is intended to help users find the right nozzle for the respective application quickly.

Every tank cleaning nozzle from Lechler is assigned to a class. The respective class is suitable for specific cleaning tasks.

Dependant upon the application, several cleaning classes can be suitable to the task of removing soils from your application. Generally, it is not possible to quantify and/or differentiate between soil types. The information should be seen as guide intended to make it easier in the selection to finding the right nozzle.

The first step is to find a cleaning efficiency class suitable for the task. If your application is to clean a non-adhering powder material

from a tank surface the cleaning task can be defined as "rinsing". The nozzle series in cleaning efficiency class 1, e.g. static spray ball, or class 2, e.g. MicroWhirly or MiniSpinner, would be suitable for rinsing/washing cycle.

Taking into account the maximum possible tank diameter and the flow rate range, the tables on the following pages can be used to quickly narrow down the suitable nozzles. If the focus is on a low purchase price in the above referenced example, a spray ball should be chosen. If you want to save on your cost-intensive cleaning media, the MicroWhirly or MiniSpinner would be recommended.

If there is no recommended series for the tank diameter, several nozzles can be positioned in the tank to ensure that the distance between nozzle and tank is within the required dimensions.

## Simulation software

Various inserts, such as agitators or mixing blades, can cause spray shadowing. To find the ideal nozzle for such complex challenges, we have developed TankClean.

The software simulates the use of various tank cleaning nozzles. The tank shape is freely definable. As a result, subsequent cleaning can be optimized in the planning phase.

# TankClean



Function video

[www.lechler.com/tankclean](http://www.lechler.com/tankclean)

Or scan the QR code.

# »» WHAT TO KEEP IN MIND WHEN PLANNING

## ① The fundamentals of cleaning technology

Sinner's circle

Cost reduction by efficient cleaning processes

## ② Mechanical cleaning effects with Lechler rotating cleaning nozzles

Mechanical cleaning

## ① The fundamentals of cleaning technology

### Sinner's circle

The Sinner's circle illustrates the interplay between the four main factors for successful cleaning:

- Chemistry (choice of cleaning agent)
- Mechanical (removal of soil via pressure or friction)
- Temperature (at which cleaning is performed)
- Time (duration of the total cleaning processes)

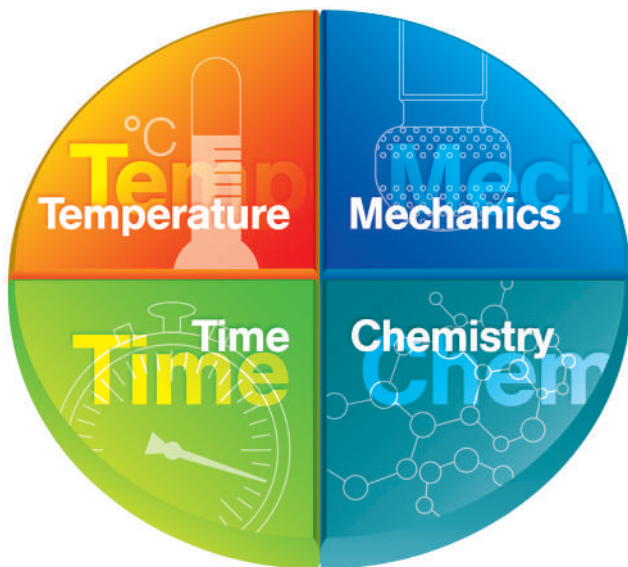
The proportion of the individual factors as a part of the entire cleaning can be varied, provided that the total is 100 per cent. This results in significant savings potentials.

As a result, the intensification of mechanical cleaning enables

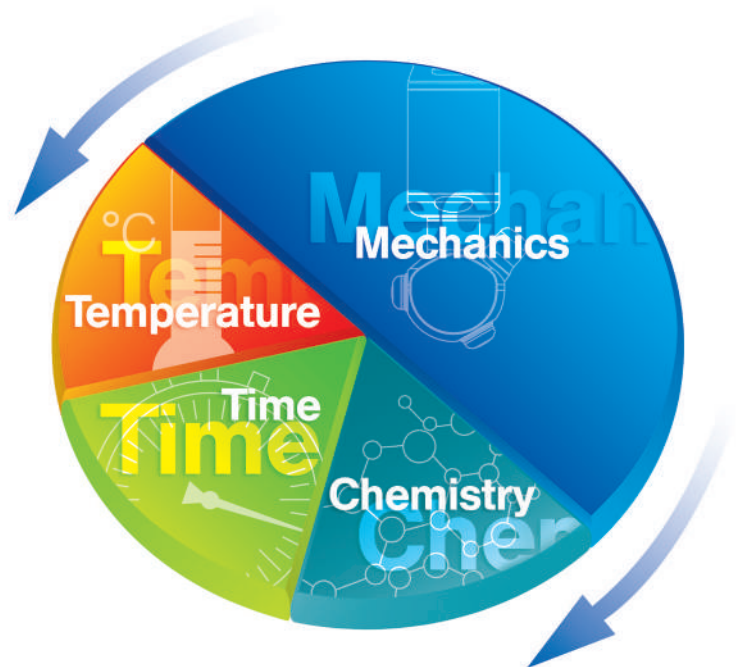
the consumption of cleaning agents or the duration of cleaning to be reduced. Consequently, the mechanical factor takes up a greater part of the Sinner's circle, while the other factors can end up being reduced.

### Cost reduction by efficient cleaning processes

This is precisely where our nozzles come into play, having been specially developed for delivering a high mechanical cleaning action. Their greater efficiency helps to permanently reduce on going costs for energy and cleaning agents, and also the duration of cleaning. Consequently a one-off investment in improved nozzle technology pays for itself after only a short time.



**Figure 1:** Sinner's circle with equal proportions of the temperature, time, chemistry and mechanical factors.



**Figure 2:** Lechler nozzles and rotating cleaning nozzles have high mechanical cleaning efficiency. This reduces the proportion of the other factors, as well as the resulting costs.

## ② Mechanical cleaning effects with Lechler rotating cleaning nozzles

### Mechanical cleaning

Rotating cleaning nozzles deliver the greatest impact when cleaning the surface area of the tank. To achieve this, large droplets must strike at high speed. This enables thick soil to be removed that cannot dissolve in the cleaning fluid. Important influencing factors are the distance between the nozzle and wall, and the operating pressure. If either are too great the fluid

will break down into smaller droplets (see Figs. 3 and 4) and the impact will be reduced.

Besides the impact, the fluid running down the tank wall also has a significant cleaning effect. If the formed film is thick enough, the resulting shear stresses can remove light to moderate soil. In that case, unsprayed patches are less of an issue than is the case during impact cleaning (see Fig. 5).

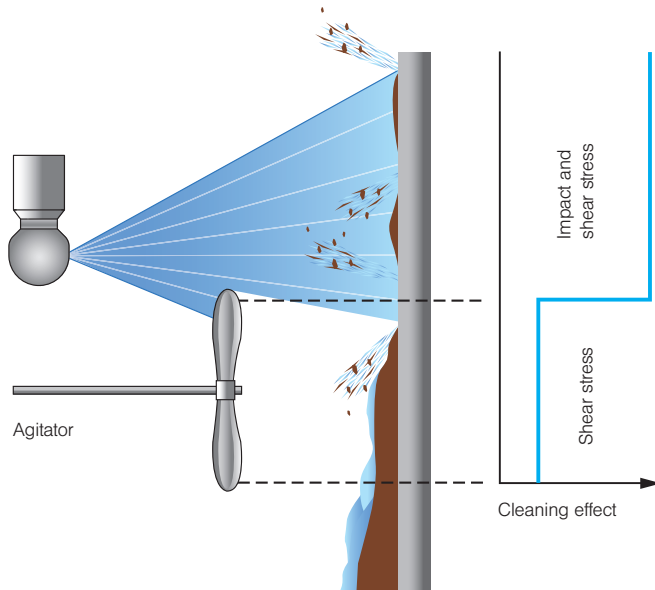


Figure 5: Cleaning mechanisms, impact and shear stress

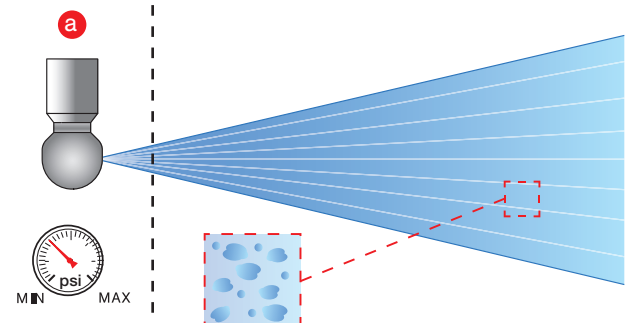


Figure 3: Rotating cleaning nozzles with recommended operating pressure

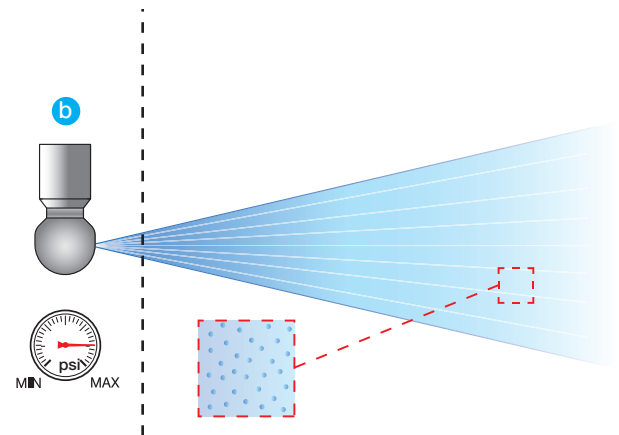


Figure 4: Rotating cleaning nozzles with operating pressure too high

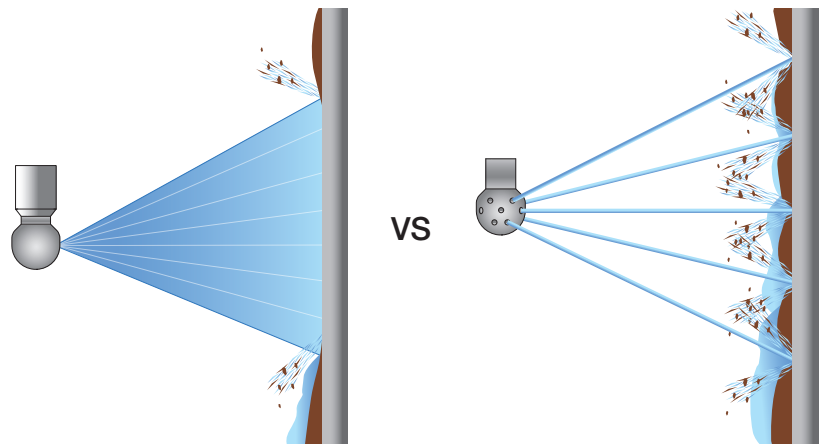
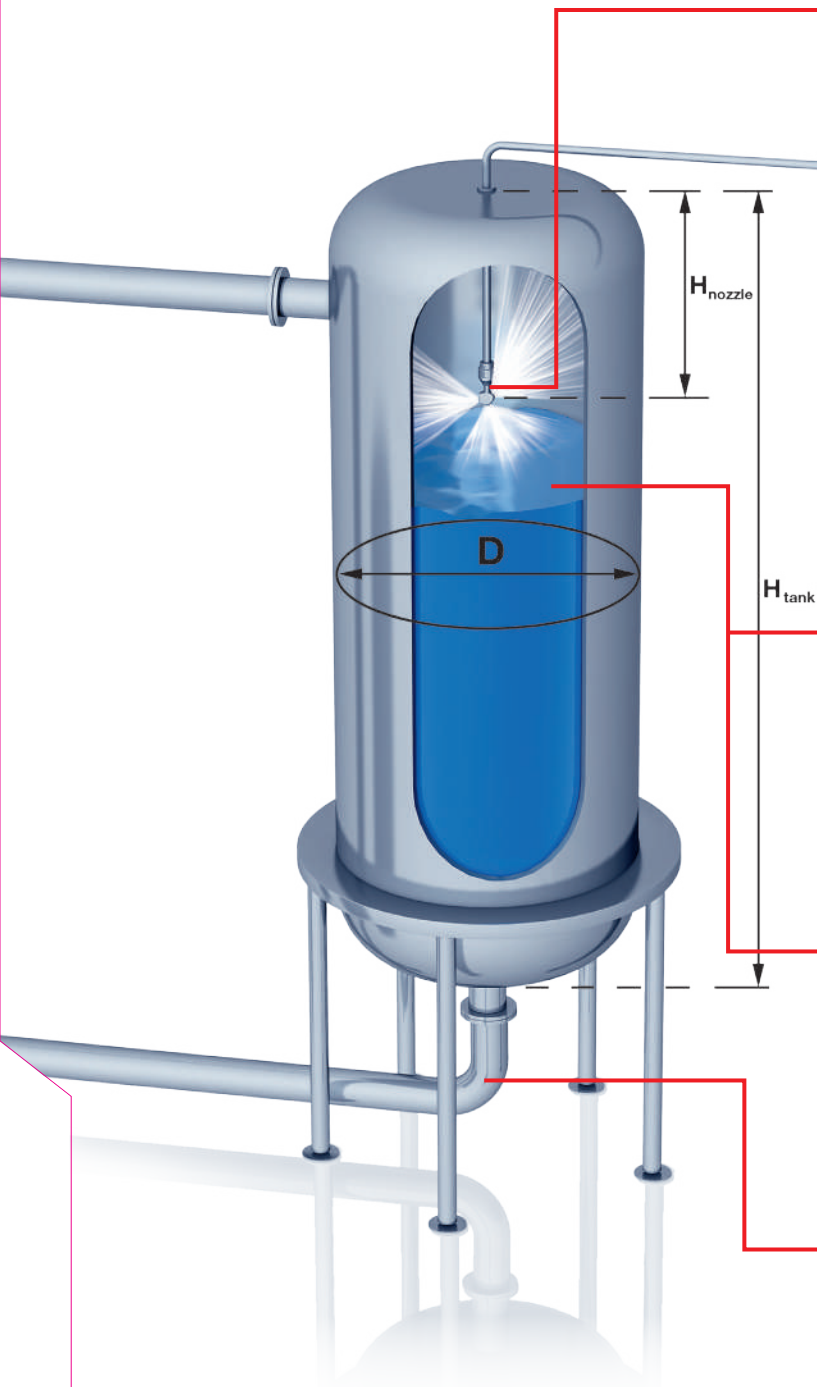


Figure 6: Comparison of rotating cleaning nozzles and static spray balls

# WHAT TO KEEP IN MIND WHEN PLANNING



## Nozzle selection

Choosing the right Lechler rotating cleaning nozzle or static spray ball is determined primarily by the type of soil to be cleaned and the tank diameter. You can find this information on the product pages. It must be guaranteed that the diameter of the tank to be cleaned is smaller than the specified maximum possible tank diameter of the nozzles.

## Pump and pipes

The pipe size used depends mainly on the required flow rate and should be chosen so that the pressure losses in the pipe system are as low as possible. It must be guaranteed that the required static operating pressure is available directly at the nozzle. The pump power must be matched to this.

## Arrangement

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

$$H_{\text{nozzle}} = 1/3 \cdot H_{\text{tank}} \text{ and } H_{\text{nozzle}} < 1/3 \cdot D_{\text{max spray diameter nozzle}}$$

In addition, it must be ensured that sufficient cleaning fluid strikes the tank top.

## Filling level

If possible, the nozzle should not come into contact with the product during production. The nozzle should be positioned at least 1" above the maximum product level in the tank.

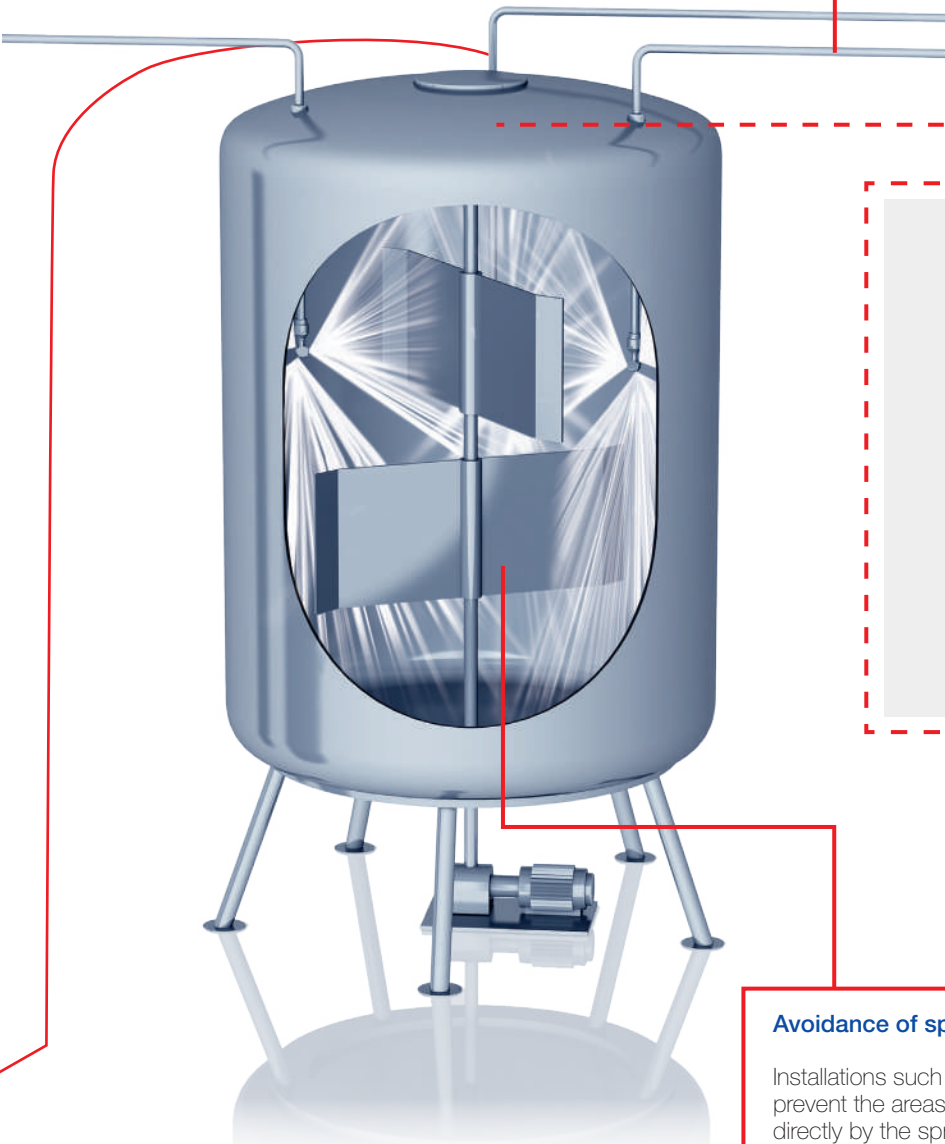
## Tank drainage rate

The tank drainage rate is to be selected to prevent the level of liquid from rising during the cleaning process. Make sure the drain can handle whatever volume you put into the tank. (See chart on the right)

1"	6 gal/min
1 1/2"	13 gal/min
2"	23 gal/min
2 1/2"	35 gal/min
3"	50 gal/min
4"	87 gal/min
5"	141 gal/min
6"	204 gal/min

### Number of nozzles

When cleaning large tanks or complex installations, you may need to install several nozzles. The nozzles must be positioned for the spray jets to overlap. These nozzles effectively clean the tank surface area.














### Avoidance of spray shadows

Installations such as agitators, baffle plates or pipes prevent the areas behind them from being reached directly by the spray jet. Impact cleaning is not possible in these locations. For this reason, several nozzles must be installed if the tank contains equipment such as agitators or pipes. The number of nozzles should be chosen 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.










# TANK CLEANING NOZZLES

## OVERVIEW OF SERIES







		Cleaning efficiency class 1					
							
Series		527	540/541	5B2/5B3	500.234	566	500.186
Information on page		<a href="#">65</a>	66	<a href="#">68-68</a>	69	70-71	72
Type		Static spray ball	Static spray ball	Static spray ball	Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle
Operating principle	Static	•	•	•			
	Free-spinning				•	•	•
	Controlled rotation						
	Gear-controlled						
 Max. tank diameter	Very small (up to ≈ 3.28 ft)	•	•	•	•	•	•
	Small (up to ≈ 6.56 ft)	•	•	•		•	
	Medium (up to ≈ 9.84 ft)	•	•	•			
	Large (up to ≈ 26.25 ft)	•	•	•			
	Very large (> 26.25 ft)	•	•				
 Flow rate	Very low (up to ≈ 6.60 gal/min)		•	•	•	•	•
	Low (up to ≈ 13.21 gal/min)	•	•	•			
	Medium (up to ≈ 26.42 gal/min)	•	•	•			
	High (up to ≈ 105.67 gal/min)	•		•			
	Very high (up to ≈ 184.92 gal/min)			•			
 Nozzle material	Stainless steel	•	•	•	•	•	
	Plastic						•
 Nozzle connection	Thread		•		•	•	•
	Slip-on connection	•		•			
	Tri-Clamp						
ATEX available						•	









## Cleaning efficiency class 2

						
500.191	5M1	5M2	5M3	5M4	573/583	5P2/5P3
73	74	76	78	80	82	84
Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle
•	•	•	•	•	•	•
•	•	•	•	•	•	•
		•	•	•	•	•
			•	•	•	
				•		
•	•	•				•
		•	•		•	•
			•	•	•	
				•		
	•	•	•	•		•
•					•	
•	•	•	•	•	•	
		•	•	•	•	
						•
	•	•	•	•		•



		Cleaning efficiency class 3			Cleaning efficiency class 4	
						
Series		594/595	5W9	577	5S6/5S7	5S5
Information on page		86	88	90	91	93
Type		Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle
<div>Operating principle</div>	Static					
	Free-spinning	•	•	•		
	Controlled rotation				•	•
	Gear-controlled					
<div>Max. tank diameter</div>	Very small (up to ≈ 3.28 ft)	•	•			
	Small (up to ≈ 6.56 ft)	•	•	•	•	•
	Medium (up to ≈ 9.84 ft)	•	•	•	•	•
	Large (up to ≈ 26.25 ft)			•	•	•
	Very large (> 26.25 ft)				•	•
<div>Flow rate</div>	Very low (up to ≈ 6.60 gal/min)	•				
	Low (up to ≈ 13.21 gal/min)	•	•			
	Medium (up to ≈ 26.42 gal/min)	•	•		•	•
	High (up to ≈ 105.67 gal/min)			•	•	•
	Very high (up to ≈ 184.92 gal/min)			•		
<div>Nozzle material</div>	Stainless steel	•	•	•	•	•
	Plastic					
<div>Nozzle connection</div>	Thread	•	•	•	•	•
	Slip-on connection	•	•		•	•
	Tri-Clamp					
ATEX available			•			

Cleaning efficiency class 5			Specialty		Accessories	
						
5T2/5T3	5TB	5TM	597	5P5	Rotation Monitor	HygienicFit
95	97	98	100	101	102	103
High impact cleaner	High impact cleaner	High impact cleaner	Static spray ball	Static spray ball	Accessory	Accessory
			•	•		
•	•	•				
			•	•		
•	•	•				
•	•	•				
•	•	•				
			•	•		
•						
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	•	•				
•	•	•	•	•		
•	•	•	•			•
•	•					

# Static spray balls

## Series 527

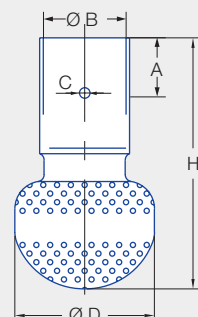


### Features:

- Complies with 3-A standards
- Powerful solid jet
- Resistant to high temperatures



Series 527



Slip-on connection  
ASME - BPE 1997 (OD-Tube)

Max. tank diameter [ft]	0	5	10	15	20	25	30
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### Technical data:



**Maximum operating temperature**  
400 °F



**Maximum ambient temperature**  
400 °F



**Installation**  
Operation in every installation position



**Bearing**  
Static – no bearing



**Material**  
Stainless steel  
1.44404 (316L)



**Weight**  
.11–1.43lbs



**Surface quality**  
≤ 0.8 µm



**Surface quality**  
≤ 0.8 µm



**Steam suitability**  
Suitable




**Insertion diameter**  
1.3- 4in



**Recommended filter**  
Smaller than the narrowest cross-section



**Recommended operating pressure**  
20 psi

Spray angle	Ordering number	Narrowest free cross section Ø [in]	V̇ water [gal/min]				Dimensions approx. (in)					Max. tank diameter [ft]
	Type		p [psi] (p <sub>max</sub> = 145 psi)				Height H (in.)	Diameter D (in.)	B	C	A	
			20	40	Liters per min. 2 bar	60						
	527.209.1Y.00.75	0.031	13	19	60	23	2.7	1.3	.75	.13	.50	17
	527.209.1Y.01.50	0.043	37	53	170	65	4.6	2.6	1.51	.19	1.00	20
	527.209.1Y.02.00	0.067	92	130	420	160	6.0	4.0	2.01	.19	1.00	27

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

### Slip-on information

- R-clip made of stainless steel AISI 316L is included.
- Depending on diameter of the adapter the flow rate can increase due to leakage between the connection and static spray ball.

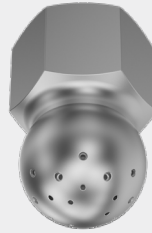
# Static spray balls

## Series 540/541

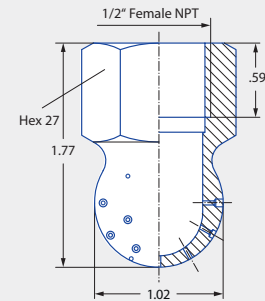


### Features:

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



Series 540/541



Female thread

Max. tank diameter [ft]	0	5	10	15	20	25	30
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### Technical data:



**Maximum operating temperature**  
392 °F



**Maximum ambient temperature**  
482 °F



**Installation**  
Operation in every installation position



**Bearing**  
Static – no bearing



**Material**  
Stainless steel  
1.4305 (303)



**Weight**  
.20–.22 lbs



**Surface quality**  
≤ 6.3 µm



**Surface quality**  
≤ 6.3 µm



**Steam suitability**  
Suitable




**Insertion diameter**  
1.22 in



**Recommended filter**  
Smaller than the narrowest cross-section



**Recommended operating pressure**  
45 psi

Spray angle	Ordering number		Narrowest free cross section Ø [in]	V̇ water [gal/min]						Max. tank diameter [ft]
	Type	Connection		p [psi] (p <sub>max</sub> = 145 psi)						
		1/2" Female NPT		7	15	30	45	Liters per min. 3 bar	75	
<div>240°</div> 	540.909.16	BH	0.031	2.33	3.41	4.83	5.81	22	7.63	21
	540.989.16	BH	0.039	3.60	5.27	7.46	9.13	34	11.79	23
	541.109.16	BH	0.059	7.42	10.86	15.35	18.81	70	24.28	25
	541.189.16	BH	0.079	11.66	17.06	24.13	29.55	110	38.15	27
	541.239.16	BH	0.091	15.36	22.49	31.81	38.95	145	50.29	31

BSPP thread available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

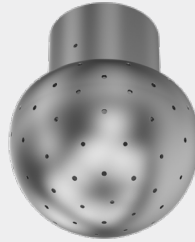
# Static spray balls RinseClean

## Series 5B2/5B3

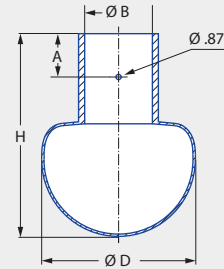


### Features:

- No moving parts
- Self-draining
- Proven use in many applications
- Suitable for very high temperatures and hygienic requirements



Series 5B2/5B3

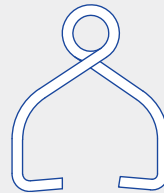


Dimension of the slip-on connection according to DIN 10357, Series B

With the slip-on connection, the spray ball is pushed onto the customer's connection pipe and secured with the supplied Pin.



Pin 1



Pin 2-5

Max. tank diameter [ft]	0	5	10	15	20	25	30	35	40	45
-------------------------	---	---	----	----	----	----	----	----	----	----

### Technical data:



**Maximum operating temperature**  
392 °F



**Maximum ambient temperature**  
482 °F



**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**  
.02–.66 lbs



**Surface quality**  
Ra ≤ 0.8 µm  
polished Ra ≤ 0.5 µm



**Surface quality**  
Ra ≤ 0.8 µm



**Steam suitability**  
Suitable



**Insertion diameter**  
.79–3.54 in



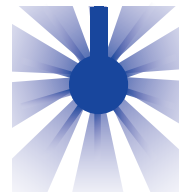
**Recommended filter**  
Smaller than the narrowest cross-section



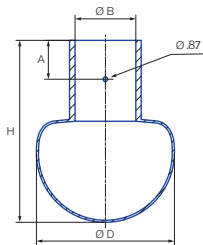
**Recommended operating pressure**  
30 psi

Function video  
[www.lechler.com/staticsprayball](http://www.lechler.com/staticsprayball)  
Or scan the QR code.





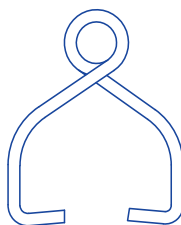
## Slip-on connection



Dimensions slip-on connection according to DIN 10357 Series D (ASME BPE 1997.00 tube compatible)




Pin 1



Pin 2-5

Pin	Ordering no.
1	095.013.1Y.06.55
2	095.013.1Y.06.58
3	095.013.1Y.06.56
4	095.013.1Y.06.59
5	095.013.1Y.06.57

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

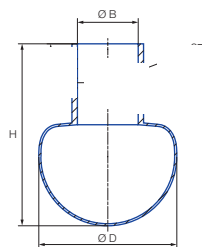
Spray angle	Ordering number	Narrowest free cross section Ø [in]	V̇ water [gal/min]					Dimensions [in]				Pin	Max. tank diameter [ft]
	Type		p [psi] (p <sub>max</sub> = 75 psi)					Distance to bore A	Connection B	Height H	Ø D		
			7	15	30	Liters per min. 2 bar	45						
<div>360°</div> 	5B3.089.1Y.A1.00	0.04	6.49	9.50	13.43	50	16.45	0.35	0.48	1.65	1.10	1	7
	5B3.209.1Y.A1.90	0.06	12.98	19.00	26.87	100	32.90	0.35	0.72	1.65	1.10	1	8
	5B3.309.1Y.A2.90	0.07	23.36	34.19	48.36	180	59.32	0.71	0.87	3.31	2.52	2	11
	5B3.379.1Y.A2.60	0.08	33.74	49.39	69.85	260	85.55	0.71	1.11	3.31	2.52	3	17
	5B3.449.1Y.A3.80	0.12	53.21	77.89	110.15	410	134.90	0.71	1.11	3.31	2.52	3	18
	5B3.539.1Y.A5.10	0.13	86.95	127.28	180.00	670	220.45	0.98	2.06	4.37	3.54	5	18


Spray balls with other spray angles and connection options (various slip-on connections as well as threaded and welded connections) can be found in our brochure "Precision nozzles for tank and equipment cleaning".

### Information about slip-on connections

- Stainless steel 316L pin supplied.
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the spray ball.

## Threaded connection



Spray angle	Ordering number		Narrowest free cross section Ø [in]	V̇ water [gal/min]					Dimensions (in)		Pin	Max. tank diameter [ft]
	Type	Connection		p [psi] (p <sub>max</sub> = 75 psi)					Height H	Ø D		
		ØB Female NPT		7	15	30	Liters per min.	45				
				2 bar								
360° 	5B2.879.1Y.BB	1/8"	0.03	1.95	2.85	4.03	15	4.94	1.46	0.79	1	6
	5B3.309.1Y.BH	1/2"	0.07	23.36	34.19	48.36	180	59.23	3.31	2.52	2	11
	5B3.379.1Y.BN	1"	0.08	33.74	49.39	69.85	260	85.55	3.31	2.52	3	17
	5B3.539.1Y.BW	2"	0.13	86.95	127.28	180.00	670	220.45	4.37	3.54	5	18

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

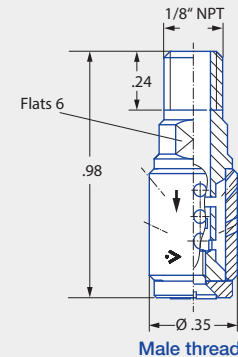


# Rotating cleaning nozzle PicoWhirly Series 500.234



## Features:

- Cleaning with rotating solid jet
- Compact design for confined spaces
- Suitable for very high temperatures
- Full stainless steel design



Series 500.234

Max. tank diameter [ft]	0	5	10	15	20	25	30
-------------------------	---	---	----	----	----	----	----

## Technical data:



**Maximum operating temperature**  
392 °F



**Maximum ambient temperature**  
392 °F



**Installation**  
Operation in every installation position



**Bearing**  
Kolsterised slide bearing



**Material**  
Stainless steel 1.4404 (316L)



**Weight**  
.03 lbs



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



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



**Steam suitability**  
Suitable



**Insertion diameter**  
.35 in



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




**Recommended operating pressure**  
45 psi

[Function video](#)

[www.lechler.com/picowhirly](http://www.lechler.com/picowhirly)

Or scan the QR code.



Spray angle	Ordering number		Narrowest free cross section Ø [in]	V̇ water [gal/min]					Max. tank diameter [ft]
	Type	Connection		p [psi] (p <sub>max</sub> = 75 psi)					
		1/8" Male NPT		15	30	45	Liters per min. 3 bar	75	
300° 	500.234.G9	BA	0.07	1.52	2.15	2.63	9.8	3.40	3

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

Also available with an M6 metric connection

# Rotating cleaning nozzle MicroWhirly Series 566



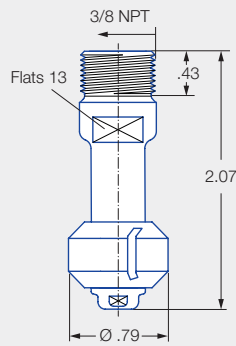
## Features:

- Cleaning with effective flat jets
- Robust slide bearing made of PEEK
- Equipped with a thread or slip-on connection
- Food grade compatibility

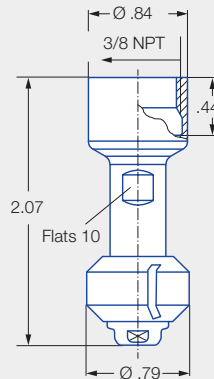


**ATEX version  
available on request**

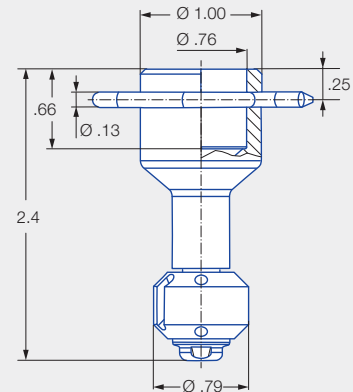
## Series 566



Male thread



Female thread



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

Max. tank diameter [ft]	0	5	10	15	20	25	30
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## Technical data:



**Maximum operating temperature**  
302 °F  
194 °F (ATEX)



**Maximum ambient temperature**  
392 °F  
248 °F (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**  
Threaded = 0.1 lbs  
Slip-on = 0.2 lbs



**Surface quality**  
Ra ≤ 1.6 µm



**Surface quality**  
Ra ≤ 1.6 µm



**Steam suitability**  
Suitable



**Insertion diameter**  
.79–1.89 in



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






**Recommended operating pressure**  
30 psi

Function video  
[www.lechler.com/microwhirly](http://www.lechler.com/microwhirly)  
Or scan the QR code.





Spray angle	Ordering number				Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type	Connection				p [psi] (p <sub>max</sub> = 90 psi)				
		3/8" NPT Male	3/8" NPT Female	3/4"- Slip-on		15	30	Liters per min. 2 bar	45	
 180°	566.873.1Y	BE	BF	TF07	0.04	2.85	4.03	15	4.94	5
	566.933.1Y	BE	BF	TF07	0.09	3.99	5.64	21	6.91	5.5
 180°	566.874.1Y	BE	BF	TF07	0.04	2.85	4.03	15	4.94	5
	566.934.1Y	BE	BF	TF07	0.09	3.99	5.64	21	6.91	5.5
 360°	566.879.1Y	BE	BF	TF07	0.04	2.85	4.03	15	4.94	5
	566.939.1Y	BE	BF	TF07	0.09	3.99	5.64	21	6.91	5.5

BSPP and weld-on version available upon request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

#### Information about slip-on connections

- Stainless steel 316L pin supplied.
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

Ordering	Type	+	Code	=	Ordering no.
example:	566.873.1Y	+	BE	=	566.873.1Y.BE

# Rotating cleaning nozzle MiniWhirly

## Series 500.186

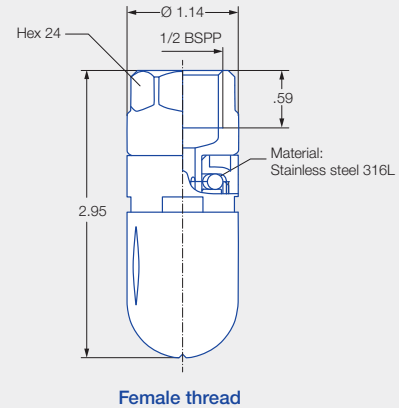


### Features:

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



Series 500,186



Max. tank diameter [ft]	0	5	10	15	20	25	30
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### Technical data:



**Maximum operating temperature**  
122 °F



**Maximum ambient temperature**  
212 °F



**Installation**  
Vertically downwards



**Bearing**  
Ball bearing made of stainless steel 1.4401 (316)



**Material**  
POM, stainless steel 1.4401 (316)



**Weight**  
.15 lbs



**Surface quality**  
Ra ≤ 1.6 µm



**Surface quality**  
Ra ≤ 1.6 µm



**Steam suitability**  
Not suitable



**Insertion diameter**  
1.14 in




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



**Recommended operating pressure**  
30 psi

**Function video**  
[www.lechler.com/miniwhirly](http://www.lechler.com/miniwhirly)  
Or scan the QR code.



Spray angle	Ordering number	Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type 1/2" Female BSPP		p [psi] (p <sub>max</sub> = 75 psi)				
			15	30	Liters per min. 2 bar	45	
300° 	500.186.56.AH	0.07	3.42	4.84	18	5.92	4

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

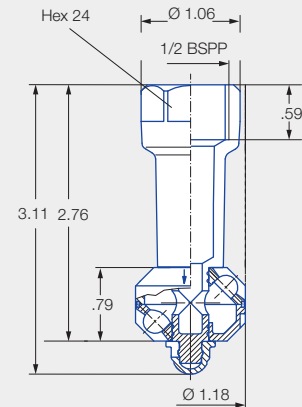
Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

# Rotating cleaning nozzle PVDF MicroWhirly Series 500.191



## Features:

- Designed for work in a corrosive environment
- Suitable for contact with food and the application of foam
- Very good price-performance ratio
- Made entirely of PVDF



Female thread

Series 500.191

Max. tank diameter[ft]	0	5	10	15	20	25	30
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## Technical data:



**Maximum operating temperature**  
203 °F



**Maximum ambient temperature**  
302 °F



**Installation**  
Operation in every installation position



**Bearing**  
Slide bearing made of PVDF



**Material**  
PVDF



**Weight**  
.03-.07 lbs



**Surface quality**  
Ra ≤ 1.6 µm



**Surface quality**  
Ra ≤ 1.6 µm



**Steam suitability**  
Not suitable



**Insertion diameter**  
1.18 in



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







**Recommended operating pressure**  
30 psi

**Function video**

[www.lechler.com/microwhirly](http://www.lechler.com/microwhirly)  
Or scan the QR code.



Spray angle	Ordering number	Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type 1/2" Female BSPP		p [psi] (p <sub>max</sub> = 75 psi)				
			15	30	Liters per min. 2 bar	45	
180° 	500.191.5E.02	0.09	2.47	3.49	13	4.28	2
180° 	500.191.5E.01	0.09	2.47	3.49	13	4.28	2
270° 	500.191.5E.31	0.09	3.80	5.37	20	6.58	3
360° 	500.191.5E.00	0.09	3.80	5.37	20	6.58	3

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.

The cleaning result is also affected by the type of soiling.

The PVDF MicroWhirly is not suitable for operation with compressed air or any other gas. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

# Rotating cleaning nozzle NanoSpinner2

## Series 5M1



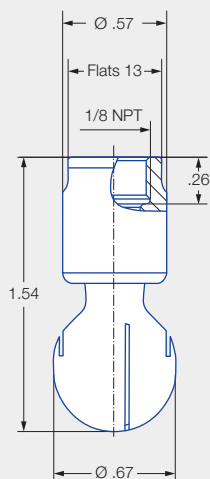
### Features:

- Compact design for confined spaces
- Hygienic design
- Suitable for high temperatures
- Made entirely of stainless steel

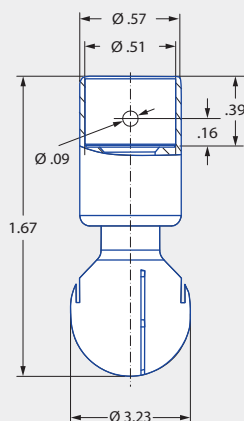


**ATEX version  
available on request**

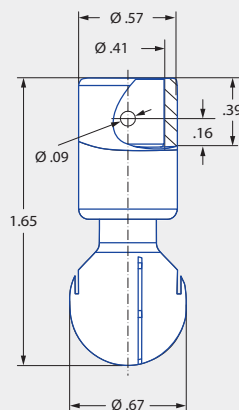
### Series 5M1



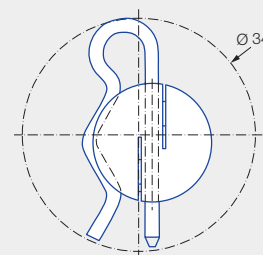
Female thread



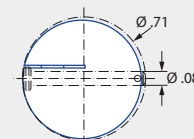
Dimensions of slip-on  
connection according to ASME-  
BPE (OD tube)



Dimensions of slip-on  
connection according to  
DIN 11866 series B



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



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

Max. tank diameter [ft]	0	1	2	3	4	5	6	7	8	9
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### Technical data:



**Maximum operating temperature**  
392 °F  
203 °F (ATEX)



**Maximum ambient temperature**  
482 °F  
392 °F (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**  
.04 lbs



**Surface quality**  
Ra ≤ 0,4 µm



**Surface quality**  
Ra ≤ 0,8 µm



**Steam suitability**  
Not suitable



**Insertion diameter**  
.67-1.34 in



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




**Recommended operating pressure**  
30 psi

**Function video**  
[www.lechler.com/de-en/medialibrary](http://www.lechler.com/de-en/medialibrary)  
Or scan the QR Code.





Spray angle	Ordering number				Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type 1/8" Female NPT	Connection				p [psi] (p <sub>max</sub> = 100 psi)				
		1/8 NPT	Ø .4 inches in accordance with DIN 11866 Series B	1/2" slip-on connection		15	30	Liters per min.  2 bar	45	
360° 	5M1.879.1Y	BB	TF04	TF05 <sup>1</sup>	0.016	2.85	4.03	15	4.94	4
	5M1.929.1Y	BB	TF04	TF05 <sup>1</sup>	0.020	3.80	5.37	20	6.58	5

<sup>1</sup> The connection variant TF05 is not available as an ATEX variant.

BSPP thread available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact 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.



# Rotating cleaning nozzle MicroSpinner 2 Series 5M2



## Features:

- Hygienic design
- Suitable for high temperatures
- Made entirely of stainless steel

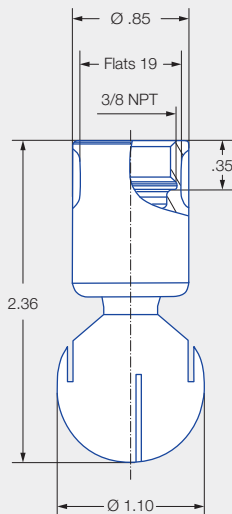


FDA

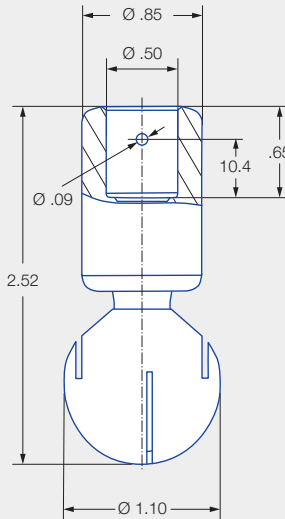


ATEX version  
available on request

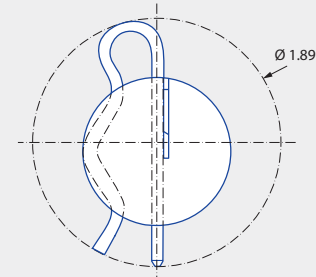
## Series 5M2



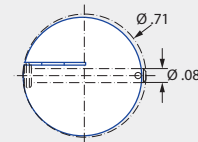
Female thread



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



Dimensions of the  
slip-on connection  
top view



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

Max. tank diameter [ft]	0	1	2	3	4	5	6	7	8	9
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## Technical data:



**Maximum operating temperature**  
392 °F  
203 °F (ATEX)



**Maximum ambient temperature**  
482 °F  
392 °F (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**  
Threaded 0.15 lbs  
Slip-on 0.23 lbs



**Surface quality**  
Ra ≤ 0.4 µm  
OUTSIDE



**Surface quality**  
Ra ≤ 0.8 µm  
INSIDE



**Steam suitability**  
Conditionally suitable



**Insertion diameter**  
1.10–1.89 in



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



**Recommended operating pressure**  
30 psi






**Adapter**  
3/8 BSPP is compatible with  
HygienicFit

Function video  
[www.lechler.com/de-en/medialibrary](http://www.lechler.com/de-en/medialibrary)  
Or scan the QR Code.





Spray angle	Ordering number			Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type	Connection			p [psi] (p <sub>max</sub> = 100 psi)				
		3/8" Female NPT	1/2"-Slip-on		15	30	Liters per min. 2 bar	45	
<div>60°</div> 	5M2.952.1Y	BF	TF05	0.06	4.37	6.18	23	7.57	–
	5M2.042.1Y	BF	TF05	0.12	7.60	10.75	40	13.16	–
<div>180°</div> 	5M2.004.1Y	BF	TF05	0.04	6.08	8.60	32	10.53	6
<div>360°</div> 	5M2.969.1Y	BF	TF05	0.03	4.75	6.72	25	8.23	5
	5M2.049.1Y	BF	TF05	0.04	7.41	10.48	39	12.83	6

BSPP thread, weld-on and further slip-on versions on request.

The max. tank diameter shown above applies for the recommended operating pressure and has to be seen as a recommendation.  
The cleaning result is also affected by the type of soiling.

Operating with compressed air only for short-term usage. Operation above the recommended operating pressure has negative effects on the cleaning result and wear.

#### Information slip-on connection

- Pin made of stainless steel 316L included (ordering no. 05M.230.1Y.00.00.0).
- Depending on diameter of the adapter, the flow rate increase due to leakage between connecting pipe and rotating cleaning nozzle.
- Minimum insertion diameter (with mounted pin) is 1.91 in

Example	Type	+	Connection	=	Ordering no.
of ordering:	5M2.952.1Y	+	BF	=	5M2.952.1Y.BF

# Rotating cleaning nozzle MiniSpinner 2

## Series 5M3



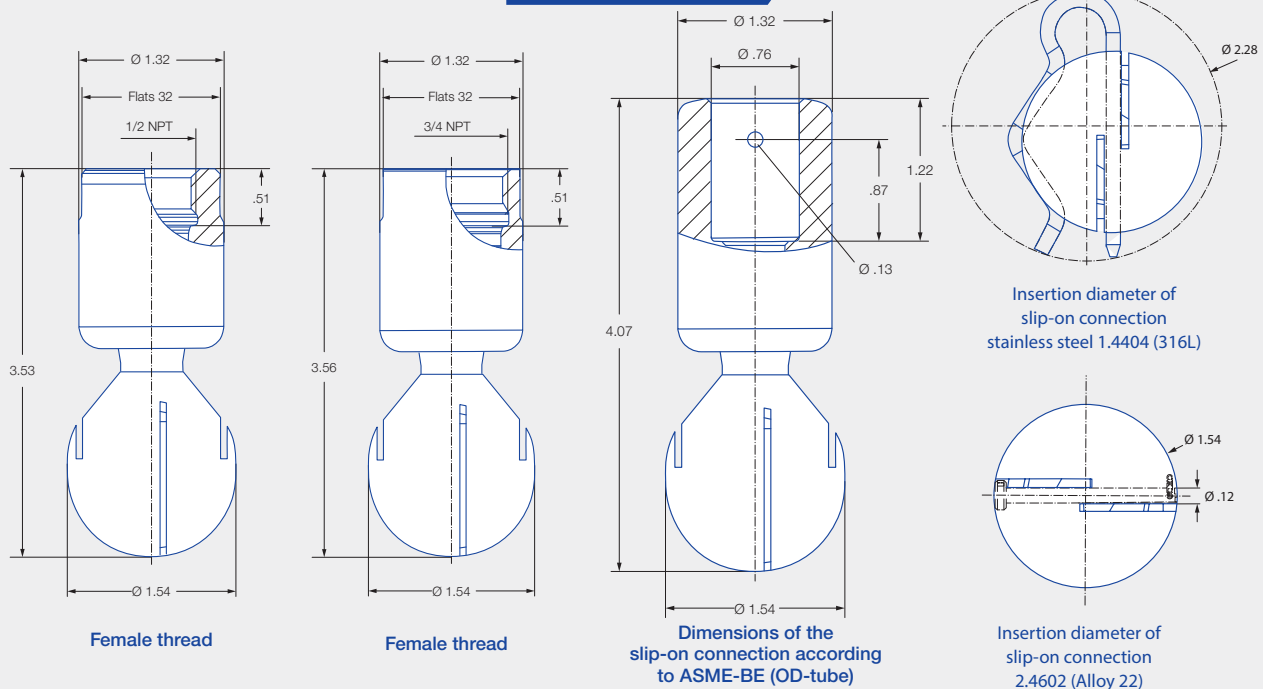
### Features:

- Hygienic design
- Suitable for high temperatures
- Made entirely of stainless steel



**ATEX version  
available on request**

### Series 5M3



Max. tank diameter [ft]	0	1	2	3	4	5	6	7	8	9
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### Technical data:



**Maximum operating temperature**  
392 °F  
203 °F (ATEX)



**Maximum ambient temperature**  
482 °F  
392 °F (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**  
Threaded 0.55 lbs  
Slip-on 0.75 lbs



**Surface quality**  
Ra ≤ 0.4 µm  
OUTSIDE



**Surface quality**  
Ra ≤ 0.8 µm  
INSIDE



**Steam suitability**  
Conditionally suitable



**Insertion diameter**  
1.54–2.28 in



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



**Recommended operating pressure**  
30 psi







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

### Function video

[www.lechler.com/de-en/medialibrary](http://www.lechler.com/de-en/medialibrary)  
Or scan the QR Code.





Spray angle	Ordering number				Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type	Connection				p [psi] (p <sub>max</sub> = 100 psi)				
		1/2" Female NPT	3/4" Female NPT	3/4"- Slip-on		15	30	Liters per min. 2 bar	45	
	5M3.122.1Y	BH		TF07	0.102	11.97	16.93	63	20.73	–
	5M3.133.1Y		BL	TF07	0.047	12.73	18.00	67	22.05	8
	5M3.134.1Y		BL	TF07	0.051	12.73	18.00	67	22.05	8
	5M3.999.1Y		BL	TF07	0.016	5.70	8.06	30	9.87	5
	5M3.089.1Y		BL	TF07	0.028	9.31	13.16	49	16.12	6
	5M3.139.1Y		BL	TF07	0.031	13.11	18.54	69	22.70	7
	5M3.209.1Y		BL	TF07	0.059	19.00	26.87	100	32.90	8

BSPP thread, weld-on and further slip-on versions on request.

The max. tank diameter shown above applies for the recommended operating pressure and has to be seen as a recommendation.  
The cleaning result is also affected by the type of soiling.

Operating with compressed air only for short-term usage. Operation above the recommended operating pressure has negative effects on the cleaning result and wear.

#### Information slip-on connection

- Pin made of stainless steel 316L included (Ordering no. 05M.330.1Y.00.00.0).
- Depending on diameter of the adapter, the flow rate increase due to leakage between connecting pipe and rotating cleaning nozzle.
- Minimum insertion diameter (with mounted pin) is 2.32 in.

Example of ordering: Type 5M3.122. 1Y + Connection BH = Ordering no. 5M3.122.1Y.BH

# Rotating cleaning nozzle MaxiSpinner 2

## Series 5M4



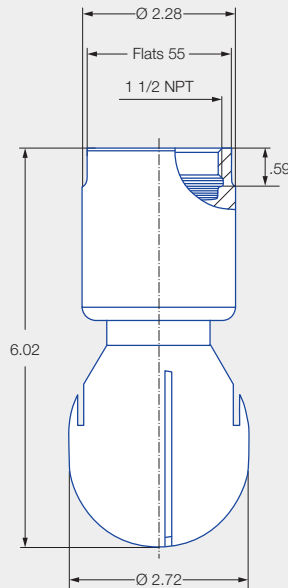
### Features:

- Hygienic design
- Suitable for high temperatures
- Made entirely of stainless steel

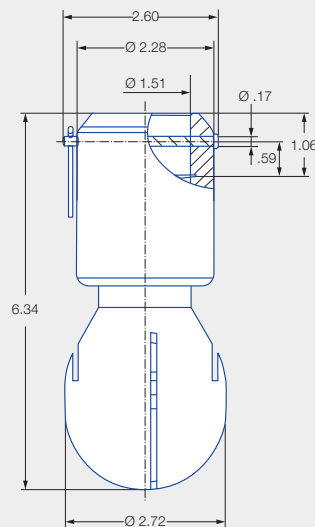


**ATEX version  
available on request**

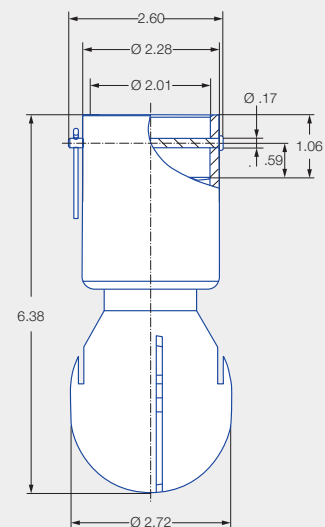
### Series 5M4



Female thread



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



Dimensions of the  
2" slip-on connection according  
to ASME-BE (OD-tube)

Max. tank diameter [ft]	0	1	2	3	4	5	6	7	8	9
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### Technical data:



**Maximum operating temperature**  
392 °F  
203 °F (ATEX)



**Maximum ambient temperature**  
482 °F  
392 °F (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 1/4" threaded 2.43 lbs  
1 1/2" threaded 3.75 lbs  
1 1/2" slip-on 3.3 lbs  
2" slip-on 2.87 lbs



**Surface quality**  
Ra ≤ 0.4 µm



**Surface quality**  
Ra ≤ 0.8 µm



**Steam suitability**  
Conditionally suitable



**Insertion diameter**  
2.72 in



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



**Recommended operating pressure**  
30 psi




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

**Function video**  
[www.lechler.com/de-en/medialibrary](http://www.lechler.com/de-en/medialibrary)  
Or scan the QR Code.





Spray angle	Ordering number					Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type	Connection					p [psi] (p <sub>max</sub> = 100 psi)*				
		1 1/4" Female NPT	1 1/2" Female NPT	1 1/2" Slip-on	2"- Slip-on		15	30	Liters per min. 2 bar	45	
<div>360°</div> 	5M4.279.1Y	BQ	BS	TF15	TF20	0.07	28.49	40.30	150	49.35	13
	5M4.329.1Y	BQ	BS	TF15	TF20	0.08	37.99	53.73	200	65.81	15
	5M4.369.1Y	BQ	BS	TF15	TF20	0.09	47.49	67.16	250	82.26	16

BSPP thread and weld-on versions on request.

\* Please note the maximum operating pressure of 58 psi for the 2" slip-on connection.

The max. tank diameter shown above applies for the recommended operating pressure and has to be seen as a recommendation.  
The cleaning result is also affected by the type of soiling

Operating with compressed air only for short-term usage. Operation above the recommended operating pressure has negative effects on the cleaning result and wear.

#### Information slip-on connection

- Bolt with head incl. pin made of stainless steel 316L included (Ordering no. 05M.431.1Y.00.00.0).
- Depending on diameter of the adapter, the flow rate increase due to leakage between connecting pipe and rotating cleaning nozzle.
- Minimum insertion diameter (with mounted bolt) is the same as for the threaded variants 2.72 in.

Example	Type	+	Connection	=	Ordering no.
of ordering:	5M4.369.1Y	+	BQ	=	5M4.369.1Y.BQ

# Rotating cleaning nozzle PTFE Whirly Series 573/583

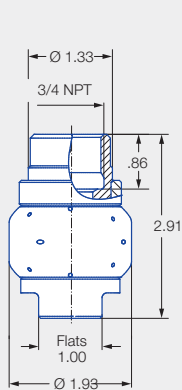


## Features:

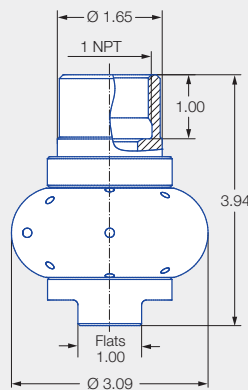
- Made entirely of PTFE
- Slip-on connection conforms to 3-A
- Suitable for corrosive environments
- Suitable for very hygienic requirements (e.g. contact with food)



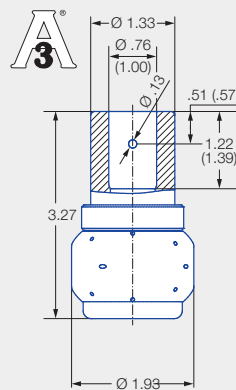
## Series 573/583



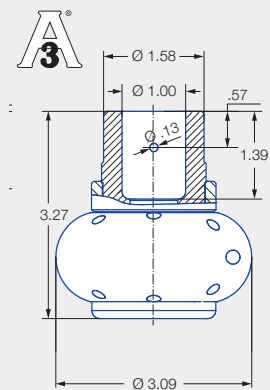
Female thread  
3/4 NPT



Female thread  
1 NPT



3/4" and 1" slip-on connection  
(conforms to 3-A)  
Dimension of the slip-on  
connection according to  
ASME-BPE (OD tube)



1" slip-on connection  
(conforms to 3-A)  
Dimension of the slip-on  
connection according to  
ASME-BPE (OD tube)

Data in brackets refers to  
1" version marked with "1".

Max. tank diameter [ft]	0	5	10	15	20	25	30
-------------------------	---	---	----	----	----	----	----

## Technical data:



**Maximum operating temperature**  
203 °F



**Maximum ambient temperature**  
392 °F



**Installation**  
Operation in every installation position



**Bearing**  
Slide bearing made of PTFE



**Material**  
PTFE



**Weight**  
3/4" slip-on 0.4 lbs  
1" slip-on 1.98 lbs  
3/4" slip-on 0.4 lbs  
1" slip-on 1.98 lbs



**Surface quality**  
Ra ≤ 0.8 µm



**Surface quality**  
Ra ≤ 0.8 µm



**Steam suitability**  
Not suitable



**Insertion diameter**  
1.93–3.09 in



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



**Recommended operating pressure**  
30 psi






Function video

[www.lechler.com/ptfewhirly](http://www.lechler.com/ptfewhirly)  
Or scan the QR code.








Spray angle	Ordering number					Narrowest free cross section Ø [in]	V̇ water [gal/min]				Pin	Max. tank diameter [ft]
	Type	Connection					p [psi] (p <sub>max</sub> = 85 psi)					
		3/4" NPT	1" NPT	3/4" Slip-on	1" Slip-on		15	30	Liters per min. 2 bar	45		
	583.114.55	BL		TF07*		.083	12.73	18.00	67	22.05	1	8
	583.264.55	BL		TF07*		.129	27.55	38.95	145	47.71	1	9
	583.344.55		BN			.279	42.74	60.45	225	74.03	2	10
	573.114.55	BL		TF07*		.083	12.73	18.00	67	22.05	1	8
	573.264.55	BL		TF07*		.129	27.55	38.95	145	47.71	1	9
	573.344.55		BN			.232	42.74	60.45	225	74.03	2	10
	583.116.55	BL		TF07*		0.09	12.73	18.00	67	22.05	1	8
	583.266.55	BL		TF07*		.133	27.55	38.95	145	47.71	1	9
	583.346.55		BN		TF10*	.232	42.74	60.45	225	74.03	2	10
	573.116.55	BL		TF07*		0.09	12.73	18.00	67	22.05	1	8
	573.226.55	BL		TF07*		.133	27.55	38.95	145	47.71	1	9
	573.346.55		BN		TF10*	.232	42.74	60.45	225	74.03	2	10
	583.119.55	BL		TF07*	TF10 <sup>1*</sup>	0.07	11.02	15.58	58	19.08	1	8
	583.209.55	BL		TF07*	TF10 <sup>1*</sup>	0.14	19.00	26.87	100	32.90	1	8
	583.269.55	BL		TF07*		0.19	27.55	38.95	145	47.71	1	9
	583.279.55		BN		TF10*	0.15	28.49	40.30	150	49.35	2	10
	583.349.55		BN		TF10*	0.22	42.74	60.45	225	74.03	2	10

BSPP thread available on request.

<sup>1</sup> See drawing 3 for details (Page 82).

\* Complies with and is authorized to use with 

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

#### Information about slip-on connections

- Pin made of stainless steel 316L supplied (Ordering no. Pin 1: 095.013.17.06.60, Pin 2: 095.013.17.06.61).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

Ordering	Type	+	Code	=	Ordering no.
example:	583.116.55	+	BL	=	583.116.55.BL

# Extendable rotating cleaning nozzle PopUp Whirly Series 5P2/5P3



## Features:

- Pressure-dependent automatically extending rotating cleaning nozzle
- Can be installed flush in the tank wall
- Suitable for cleaning pipes and applications that use foam
- Particularly suitable for applications in the pharmaceutical, chemical and food and beverage industry



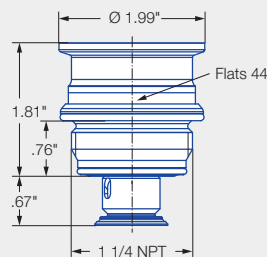
**ATEX version  
available on request**



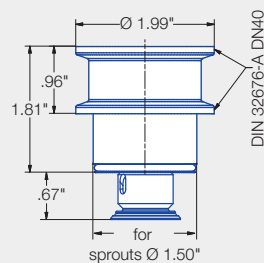
**FDA**



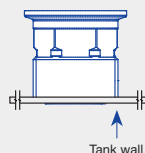
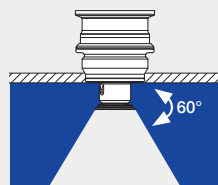
**Series 5P2**



**Male thread**



**Tri-Clamp connection<sup>1</sup>**



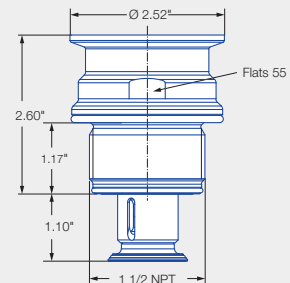
**Via thread in idle position**



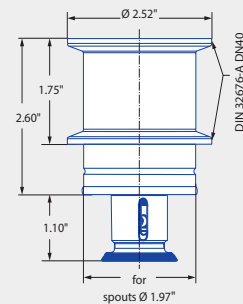
**FDA**



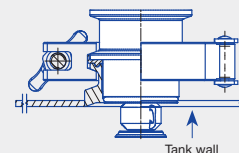
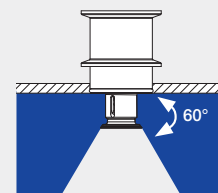
**Series 5P3**



**Male thread**



**Tri-Clamp connection<sup>2</sup>**



**Via Tri-Clamp in operating position**

## Installation situation

### Note Tri-Clamp Version:

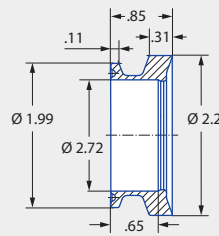
Gasket with a thickness of .08 in. must be used with weld-in-flange. Not sold with nozzle. 5P2 requires standard DIN32676-A / DN40. 5P3 requires standard DIN32676-A / DN50.

<sup>1</sup> A clamp according to DIN 32676-A with a connection diameter of 1.99 in is required to connect the nozzle to the weld-in flange.

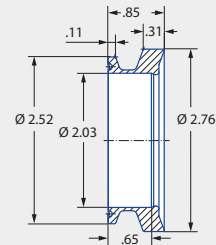
<sup>2</sup> A clamp according to DIN 32676-A with a connection diameter of 2.52 in is required to connect the nozzle to the weld-in flange.



### Weld-in Flange for Tri-Clamp



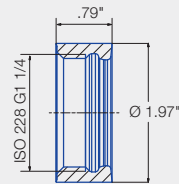
Ordering no.: 050.020.1Y.01.00  
Material: Stainless steel 316L



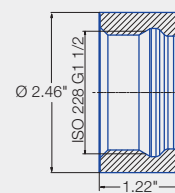
Ordering no.: 050.020.1Y.01.01  
Material: Stainless steel 316L

### Weld-in socket for Threaded Version

The thread is hygienically sealed with 2 O-rings included in the scope of delivery



Ordering no.: 050.020.1Y.AQ.00  
Material: Stainless steel 316L



Ordering no.: 050.020.1Y.AS.00  
Material: Stainless steel 316L

Max. tank diameter [ft]	0	5	10	15	20	25	30
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#### Technical data:



**Maximum operating temperature**  
284 °C  
284 °C (ATEX)



**Maximum ambient temperature**  
302 °C  
284 °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**  
1 1/4" threaded 1.2 lbs  
1 1/2" threaded 2.54 lbs  
1 1/4" slip-on 2.11 lbs  
1 1/2" slip-on 4.52 lbs



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



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



**Steam suitability**  
Not suitable




**Insertion diameter**  
.79–2.52 in



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



**Recommended operating pressure**  
30 psi  
5P2: Opening pressure approx 14.5 psi and closing pressure approx 7.25 psi  
5P3: Opening pressure approx 13.05 psi and closing pressure approx 7.25 psi

Spray angle	Ordering number				Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type	Connection				p [psi] (p <sub>max</sub> = 75 psi)				
		1 1/4" Male BSPP	1 1/2" Male BSPP	Tri-Clamp						
						15	30	Liters per min. 2 bar	45	
	5P2.873.1Y	AP			0.10	2.85	4.03	15	4.94	2
	5P2.873.1Y			00	0.10	2.85	4.03	15	4.94	2
	5P2.923.1Y	AP			0.14	3.80	5.37	20	6.58	3
	5P2.923.1Y			00	0.14	3.80	5.37	20	6.58	3
	5P3.043.1Y		AR		0.13	7.60	10.75	40	13.16	7
	5P3.043.1Y			00	0.13	7.60	10.75	40	13.16	7

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

#### Information on operation

- The PopUp Whirly is not suitable for operation with compressed air or any other gas.
- Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

# Rotating cleaning nozzle HygienicWhirly Series 594/595



## Features:

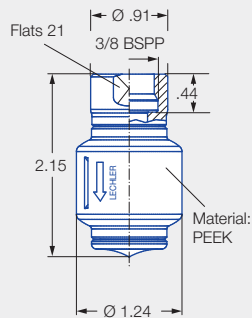
- Cleaning with highly effective flat jets
- Good cleaning effect even at low pressure
- Suitable for the application of foam



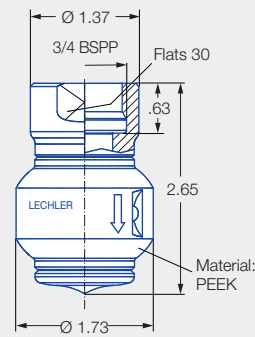
FDA



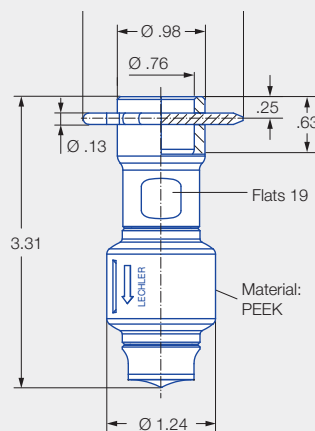
Series 594/595



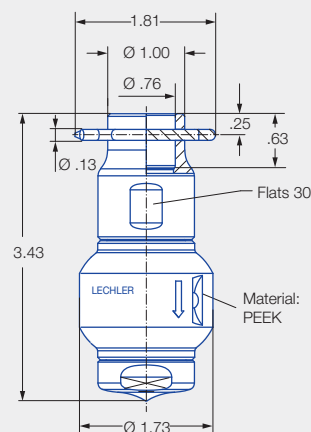
Standard version/Female thread  
59x.xx9.1Y.AF



Standard version/Female thread  
595.139.1Y.AL



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



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





	Max. tank diameter [ft]	0	5	10	15	20	25
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#### Technical data:



**Maximum operating temperature**  
302 °F



**Maximum ambient temperature**  
302 °F



**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**  
3/8" 0.21 lbs  
3/4" 0.05 lbs



**Surface quality**  
Ra ≤ 0.8 µm  
OUTSIDE



**Surface quality**  
Ra ≤ 0.8 µm  
INSIDE



**Steam suitability**  
Suitable



**Insertion diameter**  
1.24–1.89 in



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




**Recommended operating pressure**  
45 psi

[Function video](#)

[www.lechler.com/hygienicwhirly](http://www.lechler.com/hygienicwhirly)

Or scan the QR code.



Spray angle	Ordering number				Narrowest free cross section Ø [in]	V̇ water [gal/min]						Max. tank diameter [ft]
	Type	Connection				p [psi] (p <sub>max</sub> = 75 psi)						
		3/8" Female BSPP	3/4" Female BSPP	3/4" slip-on		7	15	30	45	Liters per min. 3 bar	75	
360° 	594.829.1Y	AF		67	0.07	1.48	2.17	3.07	3.76	14	4.86	2
	594.879.1Y	AF		67	0.10	1.91	2.79	3.95	4.84	18	6.24	4
	595.009.1Y	AF		67	0.16	4.13	6.05	8.55	10.48	39	13.53	5
	595.049.1Y	AF		67	0.17	5.19	7.60	10.75	13.16	49	17.00	6
	595.139.1Y		AL	67	2.00	8.69	12.72	17.99	22.03	82	28.44	9

NPT thread available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

#### Information about slip-on connections

- Pin made of stainless steel 316L supplied (Ordering no.: 095.022.1Y.50.94.E).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

Ordering    Type    +    Code    =    Ordering no.  
example: 594.829.1Y    +    AF    =    594.829.1Y.AF

# Rotating cleaning nozzle Whirly 2 Series 5W9

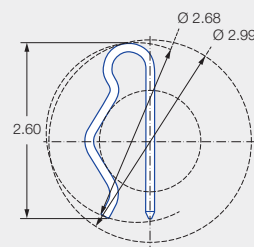


## Features:

- Popular and proven design
- Cleaning with effective flat jets
- Various connection options
- Available with a wide range of flow rates and spray angles

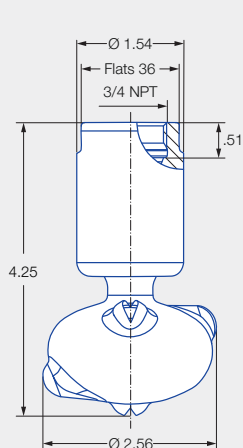


**ATEX version  
available on request**

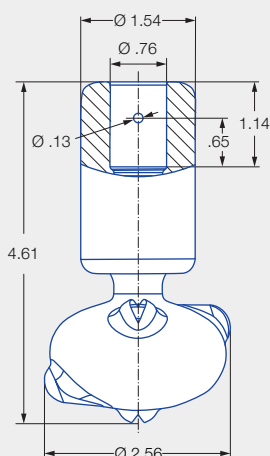


Dimensions slip-on connection  
top view

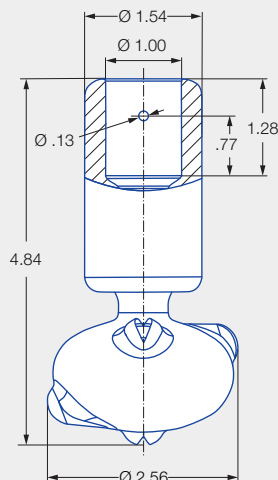
Series 5W9



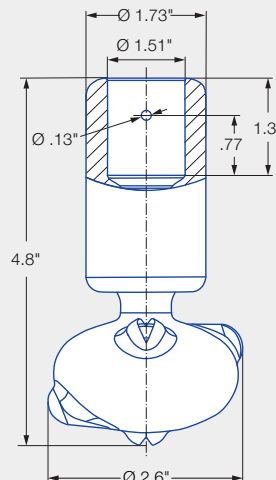
Female thread



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



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



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

Max. tank diameter [ft]	0	5	10	15	20	25
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## Technical data:



**Maximum operating temperature**  
302 °F  
203 °F (ATEX)



**Maximum ambient temperature**  
392 °F  
284 °F (ATEX)



**Installation**  
Operation in every installation position



**Bearing**  
Double ball bearing  
made of stainless steel



**Material**  
Stainless steel 1.4404 (316L), PEEK



**Weight**  
3/4" threaded 0.66 lbs  
3/4" slip-on 0.88 lbs  
1" slip-on 1.10 lbs  
1 1/2" slip-on 2.05 lbs



**Surface quality**  
Ra ≤ 0.4 µm



**Surface quality**  
Ra ≤ 0.8 µm



**Steam suitability**  
Not suitable



**Insertion diameter**  
2.74 in



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



**Recommended operating pressure**  
30 psi






**Adapter**  
3/4 BSPP is compatible with HygienicFit

**Function video**  
[www.lechler.com/de-en/medialibrary](http://www.lechler.com/de-en/medialibrary)  
Or scan the QR Code.





Spray angle	Ordering number					Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type	Connection			p [psi] (p <sub>max</sub> = 87 psi)						
		3/4" Female NPT	3/4" Slip-on	1" Slip-on			1.5" Slip-on				
								15	30	Liters per min. 2 bar	
<div>270°</div> 	5W9.075.1Y	BL	TF07	TF10	TF15	0.08	9.12	12.90	48	15.79	6
	5W9.145.1Y	BL	TF07	TF10	TF15	0.11	13.49	19.07	71	23.36	7
	5W9.195.1Y	BL	TF07	TF10	TF15	0.13	18.43	26.06	97	31.92	8
<div>270°</div> 	5W9.076.1Y	BL	TF07	TF10	TF15	0.08	9.12	12.90	48	15.79	6
	5W9.106.1Y	BL	TF07	TF10	TF15	0.10	11.02	15.58	58	19.08	7
	5W9.196.1Y	BL	TF07	TF10	TF15	0.13	18.43	26.06	97	31.92	8
<div>360°</div> 	5W9.079.1Y	BL	TF07	TF10	TF15	0.06	9.12	12.90	48	15.79	6
	5W9.149.1Y	BL	TF07	TF10	TF15	0.09	13.49	19.07	71	23.36	7
	5W9.199.1Y	BL	TF07	TF10	TF15	0.12	18.43	26.06	97	31.92	8
	5W9.279.1Y	BL	TF07	TF10	TF15	0.14	27.55	38.95	145	47.71	10

BSPP thread available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

#### Information about slip-on connections

- Pin made of stainless steel 316L supplied (Ordering no.: 095.013.1Y.06.72.0).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.
- Minimum insertion diameter (with mounted pin) is 2.68 in.

Ordering	Type	+	Code	=	Ordering no.
example:	5W9.075.1Y	+	BL	=	5W9.075.1Y.BL

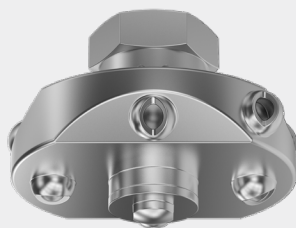


# Rotating cleaning nozzle Gyro Series 577

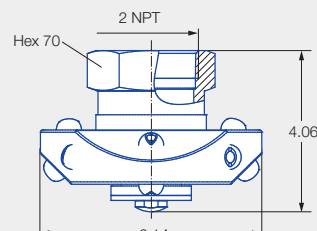
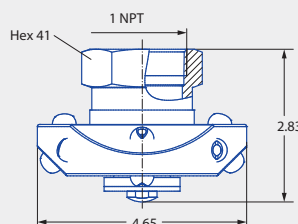


## Features:

- Cleaning with powerful nozzle inserts
- Suitable for very large tanks
- Available with a wide range of flow rates
- Non clogging and large free cross sections



## Series 577



Female thread

Female thread

Max. tank diameter [ft]	0	5	10	15	20
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## Technical data:



**Maximum operating temperature**  
203 °F



**Maximum ambient temperature**  
392 °F



**Installation**  
Vertically downwards



**Bearing**  
Slide bearing made of PTFE



**Material**  
Stainless steel 1.4404 (316L), PTFE



**Weight**  
1" 1.62 lbs  
2" 4.19 lbs



**Surface quality**  
Ra ≤ 0.8 µm  
OUTSIDE



**Surface quality**  
Ra ≤ 4.0 µm  
INSIDE



**Steam suitability**  
Conditionally suitable



**Insertion diameter**  
4.65–6.14 in



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




**Recommended operating pressure**  
45 psi

**Function video**

[www.lechler.com/gyro](http://www.lechler.com/gyro)  
Or scan the QR code.



Spray angle	Ordering number			V̇ water [gal/min]					Max. tank diameter [ft]
	Type	Connection		p [psi] (p <sub>max</sub> = 75 psi)					
		1" Female NPT	2" Female NPT						
		15	30	45	Liters per min. 3 bar	75			
360° 	577.289.1Y	BN		31.02	43.87	53.73	200	69.37	11
	577.369.1Y	BN		49.01	69.32	84.89	316	109.60	13
	577.409.1Y		BW	61.11	86.43	105.85	394	136.65	14
	577.439.1Y		BW	73.37	103.75	127.07	473	164.05	15
	577.499.1Y		BW	102.22	144.55	177.04	659	228.56	18

BSPP thread available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.

The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

## Contents of Gyro rebuild kit



The PTFE bearings can be replaced easily to extend the life of the unit. A rebuild kit contains: Bearing sleeves and complete instructions.

Size	Product code
1"	057.701.55.01
2"	057.702.55.01

Ordering	Type	+	Code	=	Ordering no.
example:	577.289.1Y	+	BN	=	577.289.1Y.BN

# Rotating cleaning nozzle XactClean HP2 Series 5S6/5S7



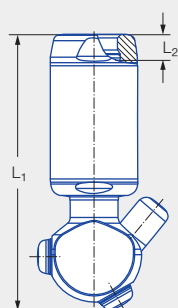
## Features:

- Flat fan nozzle with high impact
- Uniform cleaning
- High efficiency due to controlled rotation
- Suitable for use with steam

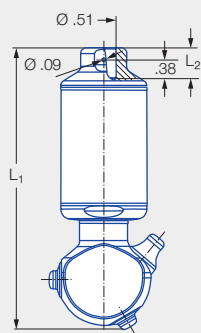


**ATEX version  
available on request**

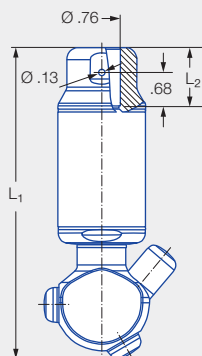
Series 5S6/5S7



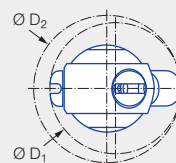
Female thread



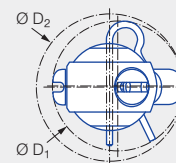
Dimensions of  
1/2" slip-on connection  
according to  
ASME-BPE (OD tube)



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

Max. tank diameter [ft]	0	5	10	20	25	30
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## Technical data:



**Maximum  
operating temperature**  
302 °F



**Maximum  
ambient temperature**  
302 °F



**Installation**  
Operation in every  
installation position



**Bearing**  
Double ball bearing



**Material**  
Stainless steel 1.4404  
(316L), PEEK, EPDM



**Weight**  
1.43lbs - 1.98lbs



**Surface quality  
Outside**  
 $Ra \leq 0.8 \mu m$



**Surface quality  
Inside**  
 $Ra \leq 1.6 \mu m$



**Steam suitability**  
Suitable



**Insertion diameter**  
3.19–5.51 in



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



**Recommended  
operating pressure**  
45 psi



**Adapter**  
3/8 BSPP, 1/2 BSPP,  
3/4 BSPP and 1 BSPP are  
compatible with HygienicFit



**Rotation monitoring**  
Sensor-compatible,  
information:  
see pages 96–97








**Maintainable**





Connection		Dimensions [in]			
		L <sub>1</sub>	L <sub>2</sub>	Insertion diameter D <sub>1</sub>	Interference circle diameter D <sub>2</sub>
BF	3/8 NPT	5.55	0.35	1.97–2.60	1.97–2.64
BH	1/2 NPT	5.63	0.51	1.97–2.91	1.97–2.99
BL	3/4 NPT	5.63	0.52	1.97–3.11	1.97–3.19
BN	1 NPT	5.51	0.65	2.01–3.11	2.09–3.15
TF05	1/2" slip-on connection	5.91	0.63	2.05–2.60	1.97–2.64
TF07	3/4" slip-on connection	6.30	1.18	2.60–3.11	1.97–3.19

Spray angle	Order number							Narrowest cross-section Ø [in]	V̇ water [gal/min]					Max. tank diameter [ft]
	Type	Connection							p [psi]					
		3/8" Female NPT	1/2" Female NPT	3/4" Female NPT	1" Female NPT	1/2" slip-on	3/4" slip-on		30	45	Liters per min. 3 bar	75	145	
	5S6.963.1Y	BF	BH			TF05		0.07	6.80	8.33	31	10.75	14.95	11
	5S7.043.1Y		BH				TF07	0.08	10.97	13.43	50	17.34	24.11	13
	5S7.113.1Y		BH	BL			TF07	0.08	16.01	19.61	73	25.32	35.20	19
	5S7.183.1Y			BL			TF07	0.08	23.91	29.28	109	37.80	52.56	23
	5S7.223.1Y			BL			TF07	0.08	29.83	36.54	136	47.17	65.59	24
	5S7.253.1Y			BL	BN		TF07	0.08	36.19	44.33	165	57.23	79.57	26
	5S6.964.1Y	BF	BH			TF05		0.07	6.80	8.33	31	10.75	14.95	11
	5S7.044.1Y		BH				TF07	0.08	10.97	13.43	50	17.34	24.11	13
	5S7.114.1Y		BH	BL			TF07	0.08	16.01	19.61	73	25.32	35.20	19
	5S7.184.1Y			BL			TF07	0.08	23.91	29.28	109	37.80	52.56	23
	5S7.224.1Y			BL			TF07	0.08	29.83	36.54	136	47.17	65.59	24
	5S7.254.1Y			BL	BN		TF07	0.08	36.19	44.33	165	57.23	79.57	26
	5S6.965.1Y	BF	BH			TF05		0.07	6.80	8.33	31	10.75	14.95	11
	5S7.045.1Y		BH				TF07	0.08	10.97	13.43	50	17.34	24.11	13
	5S7.115.1Y		BH	BL			TF07	0.08	16.01	19.61	73	25.32	35.20	19
	5S7.185.1Y			BL			TF07	0.08	23.91	29.28	109	37.80	52.56	23
	5S7.225.1Y			BL			TF07	0.08	29.83	36.54	136	47.17	65.59	24
	5S7.255.1Y			BL	BN		TF07	0.08	36.19	44.33	165	57.23	79.57	26
	5S6.966.1Y	BF	BH			TF05		0.07	6.80	8.33	31	10.75	14.95	11
	5S7.046.1Y		BH				TF07	0.08	10.97	13.43	50	17.34	24.11	13
	5S7.116.1Y		BH	BL			TF07	0.08	16.01	19.61	73	25.32	35.20	19
	5S7.186.1Y			BL			TF07	0.08	23.91	29.28	109	37.80	52.56	23
	5S7.226.1Y			BL			TF07	0.08	29.83	36.54	136	47.17	65.59	24
	5S7.256.1Y			BL	BN		TF07	0.08	36.19	44.33	165	57.23	79.57	26
	5S6.969.1Y	BF	BH			TF05		0.06	6.80	8.33	31	10.75	14.95	11
	5S7.049.1Y		BH				TF07	0.08	10.97	13.43	50	17.34	24.11	13
	5S7.119.1Y		BH	BL			TF07	0.08	16.01	19.61	73	25.32	35.20	19
	5S7.189.1Y			BL			TF07	0.08	23.91	29.28	109	37.80	52.56	23
	5S7.229.1Y			BL			TF07	0.08	29.83	36.54	136	47.17	65.59	24
	5S7.259.1Y			BL	BN		TF07	0.08	36.19	44.33	165	57.23	79.57	26

BSPP thread available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.

The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

#### Information about slip-on connections

- Pin made of stainless steel 316L supplied (Ordering no.: 095.013.1Y.06.45).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

# Rotating cleaning nozzle XactClean HP+ Series 5S5



## Features:

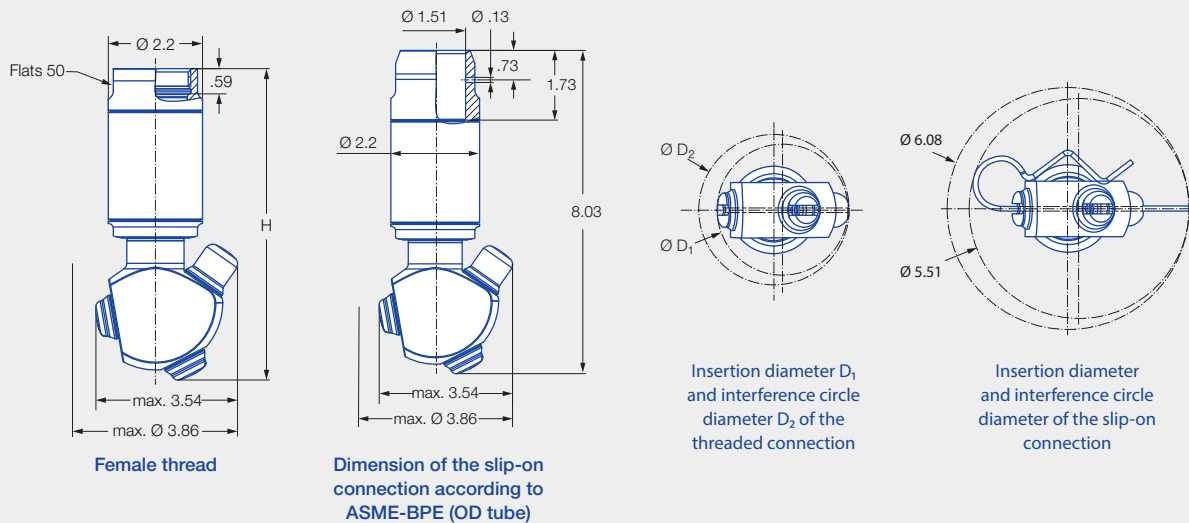
- High impact and uniform cleaning due to specially developed flat fan nozzles
- Effective cleaning of larger tanks due to higher flow rates
- High dependability and operational reliability due to robust drive unit
- Compatible with Lechler rotation monitoring sensor



FDA



Series 5S5



Max. tank diameter [ft]	0	10	20	30
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## Technical data:



**Maximum operating temperature**  
302 °F



**Maximum ambient temperature**  
302 °F



**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" 4.05 lbs  
1 1/4" 3.97 lbs  
1 1/2" 3.58 lbs  
1 1/2" slip-on 3.97 lbs



**Surface quality Outside**  
 $R_a \leq 0.8 \mu\text{m}$



**Surface quality Inside**  
 $R_a \leq 1.6 \mu\text{m}$



**Steam suitability**  
Suitable



**Insertion diameter**  
3.19–5.51 in



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



**Recommended operating pressure**  
45 psi



**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**

Function video






[www.lechler.com/xactcleanhpplus](http://www.lechler.com/xactcleanhpplus)

Or scan the QR code.





Connection		Dimensions [in]		
		L	Insertion diameter D <sub>1</sub>	Interference circle diameter D <sub>2</sub>
BN	1 NPT	7.28	3.19–3.62	3.23–3.86
BQ	1 1/4 NPT	7.28	3.19–3.62	3.23–3.86
BS	1 1/2 NPT	7.36	3.19–3.62	3.23–3.86

Spray angle	Ordering number					Narrowest free cross section Ø [in]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type	Connection					p [psi] (p <sub>max</sub> = 145 psi)				
		1" Female NPT	1 1/4" Female NPT	1 1/2" Female NPT	1 1/2"- Slip-on		30	45	liters per min. 3 bar	75	
	5S5.293.1Y	BN			TF15	0.12	44.31	54.27	202	70.06	29
	5S5.323.1Y	BN	BQ		TF15	0.12	53.74	65.82	245	84.97	30
	5S5.363.1Y		BQ	BS	TF15	0.12	67.12	82.21	306	106.13	31
	5S5.294.1Y	BN			TF15	0.12	44.31	54.27	202	70.06	29
	5S5.324.1Y	BN	BQ		TF15	0.12	53.74	65.82	245	84.97	30
	5S5.364.1Y		BQ	BS	TF15	0.12	67.12	82.21	306	106.13	31
	5S5.295.1Y	BN			TF15	0.12	44.31	54.27	202	70.06	29
	5S5.325.1Y	BN	BQ		TF15	0.12	53.74	65.82	245	84.97	30
	5S5.365.1Y		BQ	BS	TF15	0.12	67.12	82.21	306	106.13	31
	5S5.296.1Y	BN			TF15	0.12	44.31	54.27	202	70.06	29
	5S5.326.1Y	BN	BQ		TF15	0.12	53.74	65.82	245	84.97	30
	5S5.366.1Y		BQ	BS	TF15	0.12	67.12	82.21	306	106.13	31
	5S5.299.1Y	BN			TF15	0.12	44.31	54.27	202	70.06	29
	5S5.329.1Y	BN	BQ		TF15	0.12	53.74	65.82	245	84.97	30
	5S5.369.1Y		BQ	BS	TF15	0.12	67.12	82.21	306	106.13	31
	5S5.399.1Y		BQ	BS	TF15	0.12	80.50	98.60	367	127.29	31

BSPP thread available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

#### Information about slip-on connections

- Pin made of stainless steel 316L supplied (Ordering no.: 095.013.1Y.06.45).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

Ordering	Type	+	Code	=	Ordering no.
example:	5S5.293.1Y	+	BN	=	5S5.293.1Y.BN

# High impact cleaner MeshClean Series 5T2/5T3



## Features:

- High degree of effectiveness due to particularly powerful solid stream nozzles
- Suitable for smaller tanks with stubborn dirt
- Active self-cleaning due to engineered nozzle design
- Low maintenance

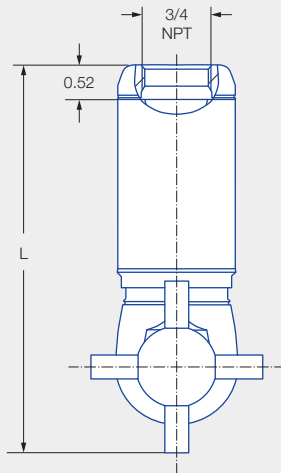


FDA

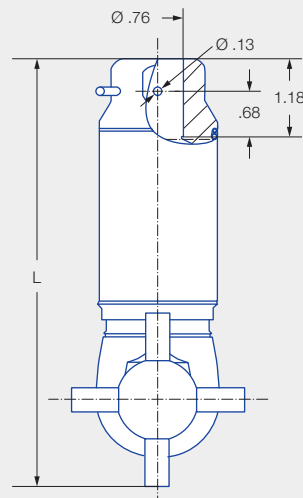


**ATEX version  
available on request**

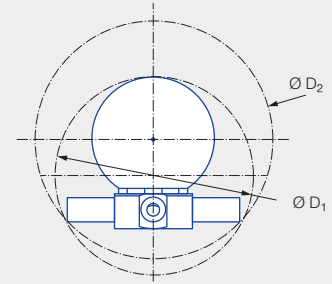
Series 5T2/5T3



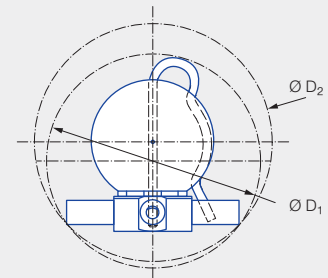
Female thread



Dimensions of the  
slip-on connection according  
to ASME-BE (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





	<b>Max. Tank diameter [ft]</b>	0	15	30	45	60
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#### Technical data:



**Maximum operating temperature**  
302 °F  
302 °F (ATEX)



**Maximum ambient temperature**  
302 °F  
302 °F (ATEX)



**Installation**  
Operation in every installation position



**Bearing**  
Ball bearing



**Material**  
Stainless steel 1.4404  
(316L), PTFE, PEEK, EPDM



**Weight**  
2.2 lbs



**Surface quality**  
Ra ≤ 0.8 µm  
OUTSIDE



**Surface quality**  
Ra ≤ 1.6 µm  
INSIDE



**Steam suitability**  
Suitable



**Insertion diameter**  
2.68–3.23 in



**Recommended filter**  
Line strainer with a mesh size of 0.2 mm/80 mesh



**Recommended operating pressure**  
75 psi



**Adapter**  
3/4 BSPP is compatible with HygienicFit




**Rotation monitoring**  
Sensor-compatible, information: see pages 96–97



**Maintainable**

**Function video**  
[www.lechler.com/de-en/medialibrary/videos-general-industry](http://www.lechler.com/de-en/medialibrary/videos-general-industry)  
Or scan the QR code.



Spray angle	Ordering number			Narrowest free cross section Ø (in)	Number Ø Nozzles (mm)	V̇ water [gal/min]				Dimensions [in]						Max. tank diameter [ft]
	Type	Connection				p [psi] (p <sub>max</sub> = 218 psi)				Female thread			Slip-on connection			
		3/4" Female NPT	3/4"-Slip-on													
						30	75	Liters per min. 5 bar	75 psi [SCFM]	L	Ø D <sub>1</sub>	Ø D <sub>2</sub>	L	Ø D <sub>1</sub>	Ø D <sub>2</sub>	
	5T2.849.1Y	BL	TF07	.067	4 x 1.75	3.40	5.37	20	0.7	5.59	2.68	3.23	6.18	3.03	3.23	37
	5T2.969.1Y	BL	TF07	.106	4 x 2.70	6.80	10.57	40	1.4	5.59	2.68	3.23	6.18	3.03	3.23	39
	5T3.029.1Y	BL	TF07	.126	4 x 3.20	9.35	14.78	55	1.9	5.59	2.68	3.23	6.18	3.03	3.23	41
	5T3.089.1Y	BL	TF07	.157	4 x 4.00	13.42	21.22	79	2.8	5.83	2.91	3.58	6.42	3.23	3.58	42

BSPP connection available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.

#### Information about slip-on connections

- Pin made of stainless steel 316L supplied (Ordering no.: 095.022.1Y.50.60.E).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.

# High impact cleaner IntenseClean Hygienic Series 5TB



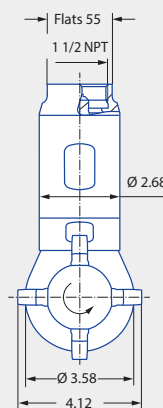
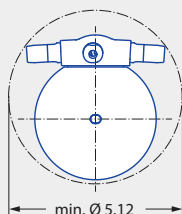
## Features:

- Extremely high degree of effectiveness due to particularly powerful solid stream nozzles
- High level of efficiency due to gear-controlled rotation
- Proven in the pharmaceutical and food and beverage industry
- Suitable for pressure levels up to 363 psi
- High surface quality

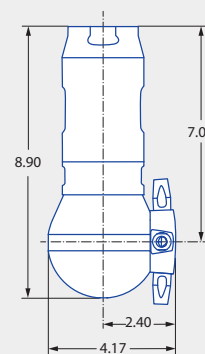


**ATEX version available on request**

Series 5TB



Female thread



**Max. Tank diameter [ft]**

0

15

30

45

60

## Technical data:



**Maximum operating temperature**  
302 °F  
207 °F (ATEX)



**Maximum ambient temperature**  
302 °F  
275 °F (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**  
8.12 lb



**Surface quality**  
Ra ≤ 0.8 µm  
OUTSIDE



**Surface quality**  
Ra ≤ 0.8 µm  
INSIDE



**Steam suitability**  
Suitable



**Insertion diameter**  
5.12 in



**Recommended filter**  
Line strainer with a mesh size of 0.2 mm/80 mesh



**Recommended operating pressure**  
75 psi



**Rotation monitoring**  
Sensor-compatible, information: see pages 96–97




**Maintainable**

[Function video](#)

[www.lechler.com/intensecleanhygienic5tb](http://www.lechler.com/intensecleanhygienic5tb)  
Or scan the QR code.



Spray angle	Ordering number	Narrowest free cross section Ø [in]	Number, Ø Nozzles [mm]	V̇ water [gal/min]				Max. tank diameter [ft]
	Type 1 1/2" Female NPT			p [psi] (p <sub>max</sub> = 363 psi)				
				30	75	Liters per min. 5 bar	145	
360° 	5TB.406.1Y.BS	.24	4 × 6.0	28.72	45.40	169	63.13	46
	5TB.407.1Y.BS	.24	4 × 7.0	35.51	56.15	209	78.07	46
	5TB.408.1Y.BS	.24	4 × 8.0	40.44	63.94	238	88.90	49

BSPP thread available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only. The cleaning result is also affected by the type of soiling.



# High impact cleaner IntenseClean Series 5TM



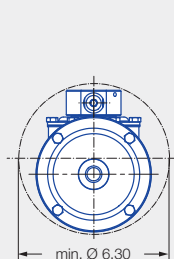
## Features:

- Very robust design
- High degree of effectiveness due to particularly powerful solid stream nozzles
- High level of efficiency due to gear-controlled rotation
- Proven in the petrochemical industry

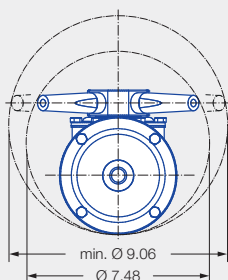


**ATEX version available on request**

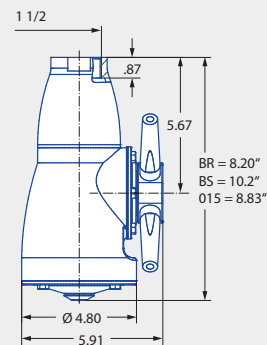
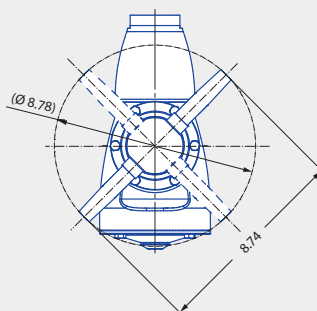
## Series 5TM



**5TM.2xx.1Y**  
(2 nozzles)



**5TM.4xx.1Y**  
(4 nozzles)



**Female thread**

Max. tank diameter [ft]	0	20	40	60	80
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## Technical data:



**Maximum operating temperature**  
203 °F  
203 °F (ATEX)



**Maximum ambient temperature**  
284 °F  
248 °F (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**  
16.5 lbs



**Surface quality**  
Ra ≤ 0.8 µm  
OUTSIDE



**Surface quality**  
Ra ≤ 4.5 µm  
INSIDE



**Steam suitability**  
Not suitable



**Insertion diameter**  
6.30–9.06 in



**Recommended filter**  
Line strainer with a mesh size of 0.2 mm/80 mesh



**Recommended operating pressure**  
75 psi



**Rotation monitoring**  
Sensor-compatible, information: see pages 96–97




**Maintainable**

**Function video**  
[www.lechler.com/intenseclean](http://www.lechler.com/intenseclean)  
Or scan the QR code.

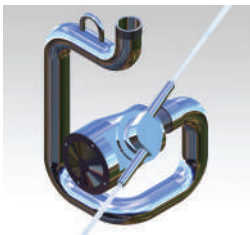




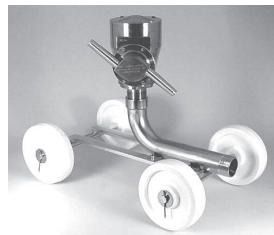
Spray angle	Ordering number				Narrowest free cross section Ø [in]	Number, Ø Nozzles [mm]	V̇ water [gal/min]					Max. tank diameter [ft]
	Type	Connection					p [psi] (p <sub>max</sub> = 100 psi)					
		1 1/2" Male NPT	1 1/2" Female NPT	1 1/2" CL 150 Flange			40	60	75	Liters per min. 5 bar	100	
<div>360°</div> 	5TM.208.1Y	BR	BS	015	0.31	2 × 8.0	39	48	53	198	61	79
	5TM.209.1Y	BR	BS	015	0.35	2 × 9.0	45	55	61	227	70	79
	5TM.210.1Y	BR	BS	015	0.39	2 × 10.0	50	61	68	253	79	79
	5TM.211.1Y	BR	BS	015	0.43	2 × 11.0	58	71	79	295	92	75
	5TM.406.1Y	BR	BS	015	0.24	4 × 6.0	43	53	59	224	69	59
	5TM.407.1Y	BR	BS	015	0.28	4 × 7.0	53	65	72	269	83	66
	5TM.408.1Y	BR	BS	015	0.31	4 × 8.0	62	76	85	316	98	72
	5TM.409.1Y	BR	BS	015	0.35	4 × 9.0	73	89	99	370	115	75
5TM.410.1Y	BR	BS	015	0.39	4 × 10.0	81	99	110	411	128	75	

BSPP thread available on request.

The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.  
The cleaning result is also affected by the type of soiling.



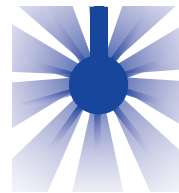
Our special mounting bracket provides the ability for the 5TM to reach the far ends of long horizontal tanks/tankers. Mounting bracket part number: **099.164.17.00.00.0**



Portable cart for easier transporting of your 5TM from tank to tank. The cart part number is **M20.000.17.BR**.  
**For use with "BR" connection only.**

# Flushing Nozzle Assembly

## Series 597 Lauter Tun

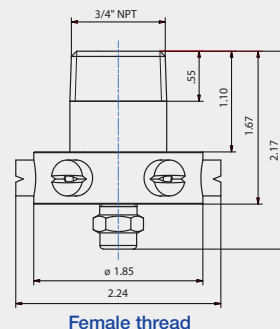


### Features:

- Designed for cleaning the plate screen in lauter tun tanks
- Threaded connection



Series 597



### Technical data:



**Maximum operating temperature**  
203 °F



**Maximum ambient temperature**  
392 °F



**Installation**  
Vertically facing upward



**Bearing**  
Static – no bearing



**Material**  
Stainless steel 304 SS,  
PTFE



**Weight**  
.20 lb



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



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



**Steam suitability**  
Suitable for short term



**Insertion diameter**  
2.24 in



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



**Recommended operating pressure**  
45 psi

Ordering number		V̇ water [gal/min]				
Type	Connection	p [psi]				
	3/4" Female NPT	20	30	Liters per min. 2 bar	45	60
597.085.1C	BK	4.83	5.91	22	7.24	8.36

\*Nozzle 490.568.1Y.BA is used in this assembly

### Information on operation

- Operation with compressed air purge only for short-term usage. Operation above the recommended operating pressure means higher wear and smaller droplets. This might have adverse effects on the cleaning result.

# Extendable cleaning nozzle PopUp Whirly Series 5P5



## Features:

- Designed for cleaning agitators or other spray shadow areas
- Compact design
- Can be installed flush with the wall



Series 5P5

## Technical data:



**Maximum operating temperature**  
 203 °F  
 203 °F (ATEX)



**Maximum ambient temperature**  
 302 °F  
 284 °F (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**  
 .75 lbs



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



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



**Steam suitability**  
 Not suitable



**Insertion diameter**  
 1.22 in

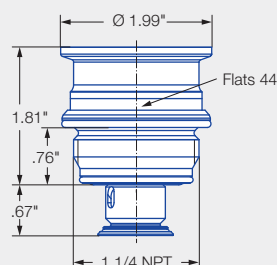


**Recommended filter**  
 Line strainer with a mesh  
 size of 0.3 mm/50 mesh

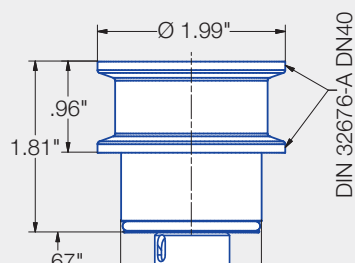


**Recommended operating pressure**  
 30 psi  
 Opening pressure: approx.  
 4 psi, closing pressure:  
 approx. 4 psi



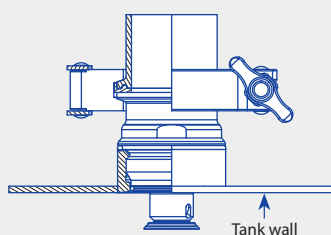


Male thread

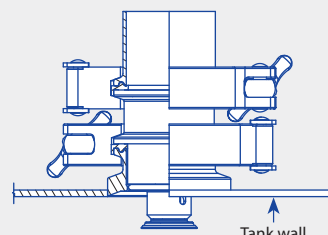


Tri-Clamp connection

#### Installation situation



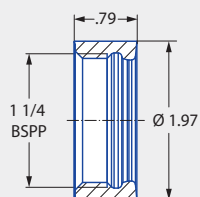
Male thread



Tri-Clamp connection

#### Weld-in socket for threaded connection

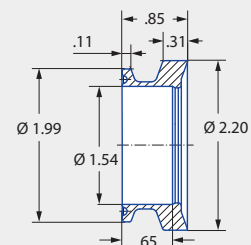
The thread is hygienically encapsulated with two O-rings (included in the scope of delivery of the PopUp Whirly).



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 1.99 in is required for connection of the nozzle at the weld-in flange. A gasket with a thickness of .08 in 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	Ordering number			Flow Rate (Gallons Per Minute)					Max. tank diameter ft.
	Type	Connection		20 psi	30 psi	Liters per min. 2 bar	40 psi	60 psi	
		G1 1/4A ISO 228	Tri-Clamp						
30°	5P5.081.1Y.00.00.0	AP	00	10.97	13.43	50	15.51	19.00	10

#### 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.

\*This product is also available in a ATEX version

# Rotation monitoring sensor



## **Features:**

Cleaning procedures can be monitored easily and reliably with the Lechler rotation monitoring sensor. The sensor records the quantity of liquid flowing past the sensor tip. With the aid of software<sup>1</sup>, the sensor function can be specifically adjusted to the tank size, pressure and nozzle.

## **Electrical data:**

- Supply voltage:  
 $U_b = 24\text{ V} \pm 20\%$   
 (18 to 32 VDC)
- Power requirements:  
 $< 20\text{ mA}$
- Output signal:  
 PNP, 50 mA, short circuit protected, active

## **Operating conditions:**

- Ambient temperature:  
 $-50\text{ }^{\circ}\text{F}$  to  $+140\text{ }^{\circ}\text{F}$
- Process temperature:  
 $0\text{ }^{\circ}\text{F}$  to  $+212\text{ }^{\circ}\text{F}$

## **Materials:**

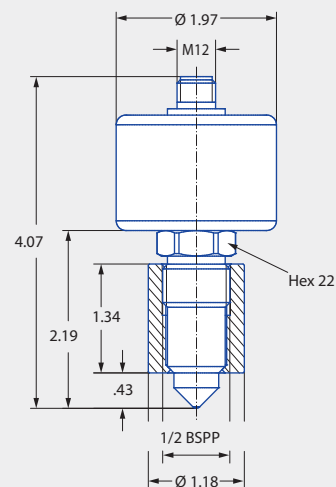
- Socket (1/2 BSPP):  
 Stainless steel 316L
- Probe tip: PEEK
- Housing: Stainless steel 303

## **Operating principle:**

- Capacitive

## **Advantages:**

- Reliable recognition of any faults during the cleaning cycle
- The process connection of the sensor is in compliance with the hygiene guidelines of EHEDG
- Simple operation
- Can be connected to a PLC
- Only needs to be set up once using the software provided
- Can be specifically adapted to each cleaning task



## **Rotation monitoring sensor, incl. weld-in sleeve**



## **Cable set for commissioning**



Mains adapter



USB adapter with cable



Programming adapter Y-piece



Weld-in mandrel

Ordering data	Ordering number
Rotation monitoring sensor, incl. weld-in sleeve	050.040.00.00.00
Cable set for commissioning	050.040.00.00.01

<sup>1</sup> Software download (free): [www.lechler.com/software/rotationcontrolsystem](http://www.lechler.com/software/rotationcontrolsystem)

# 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



Series 05C

## Technical data:



**Maximum operating temperature**  
302 °F



**Maximum ambient temperature**  
302 °F



**Installation**  
Operation in every installation position



**Material**  
Stainless steel 1.4404 (316L),  
EPDM (O-ring)



**Weight**  
.15 - .66 lb



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



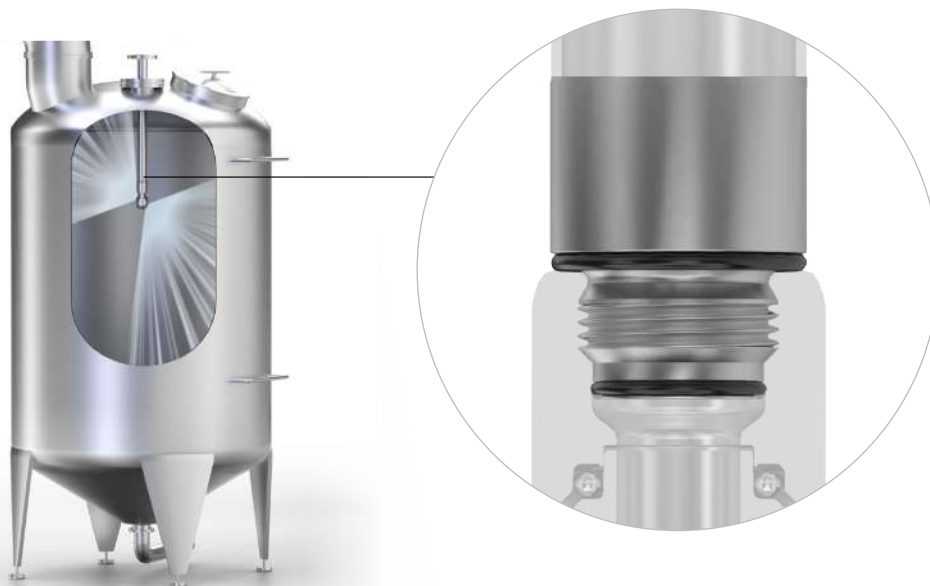
**Surface quality**  
 $Ra \leq 0.8 \mu m$



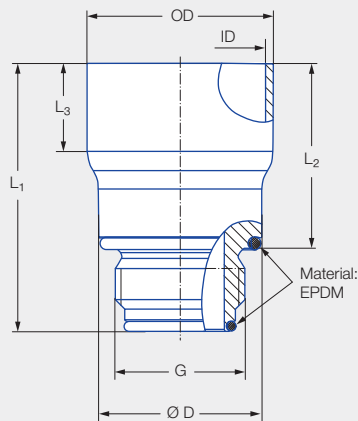
**Steam suitability**  
Suitable



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



# Adapter HygienicFit Series 05C



Order number		Dimensions [in]						Pipe standard
Type	Connection thread BSPP Male	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	Ø D <sub>1</sub>	Ø D <sub>2</sub>	Ø D <sub>3</sub>	
<b>05C.190.1Y.AE.16</b>	3/8	1.89	1.41	0.71	0.75	0.62	0.85	DIN EN 10357 series D
<b>05C.250.1Y.AE.12</b>	3/8	1.89	1.41	0.67	0.98	0.89	0.85	DIN EN 10357 series D
<b>05C.250.1Y.AG.12</b>	1/2	2.20	1.54	0.71	0.98	0.89	1.22	DIN EN 10357 series D
<b>05C.381.1Y.AK.15</b>	3/4	2.17	1.49	0.71	1.50	1.38	1.32	DIN EN 10357 series D
<b>05C.381.1Y.AM.16</b>	1	2.32	1.54	0.91	1.50	1.37	1.59	DIN EN 10357 series D
<b>05C.508.1Y.AP.15</b>	1 1/4	2.24	1.50	0.87	2.00	1.88	1.94	DIN EN 10357 series D
<b>05C.635.1Y.AR.16</b>	1 1/2	2.48	1.73	0.87	2.50	2.37	2.20	DIN EN 10357 series D

## Spare parts set of O-rings, EPDM

Thread type BSPP	Order number
3/8	<b>05C.000.E9.AE.00</b>
1/2	<b>05C.000.E9.AG.00</b>
3/4	<b>05C.000.E9.AK.00</b>
1	<b>05C.000.E9.AM.00</b>
1 1/4	<b>05C.000.E9.AP.00</b>
1 1/2	<b>05C.000.E9.AR.00</b>

O-ring set also available in FKM on request.



# PERFECT FOR RELIABLE PLANNING

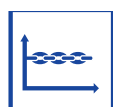
## TankClean SIMULATION SOFTWARE



Planning for a perfectly clean tank can be a challenge. Many tanks have built-in equipment such as agitators or baffles which can create spray shadows. Whether a certain nozzle is able to reliably clean all surfaces of the tank under these conditions cannot be decided with certainty on the basis of just a visual inspection.

With our new and unique TankClean software, we can help you to find the optimum solution for perfectly cleaning your tank. To do this, we replicate the tank geometry in the software and then simulate the spraying operation. Operation of all Lechler tank cleaning nozzles can be simulated – from the static spray ball to the high-impact tank cleaning machine. The result of the simulation is documented and provided in a PDF or video file. Simulation with TankClean can be used as the basis for optimum cleaning in the planning phase of new tanks, as well as to optimize existing tank cleaning processes.

### Our unique service – your individual benefit



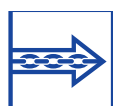
#### Planning certainty

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.



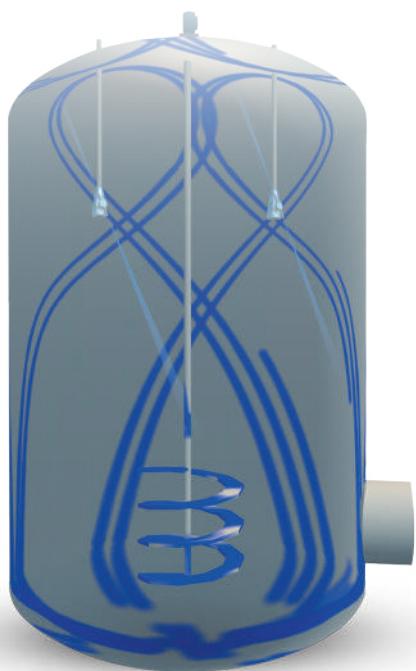
#### Process reliability

Thanks to realistic and individually customized process simulations, 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.



# TankClean



Function video

Scan the QR-code or go to:  
[www.lechler.de/TankCleanGB](http://www.lechler.de/TankCleanGB)



Individual adaptation  
of tank geometries and  
built-in equipment



Selection of the right  
tank cleaning nozzles



Realistic simulation of  
the cleaning process



Documentation of the  
simulation results, including  
additional planning aids



Talk to us

Are you interested in tank cleaning simulations with TankClean? Ask your Lechler contact person for further information or give us a call. We will gladly help you in planning your tank cleaning solution.