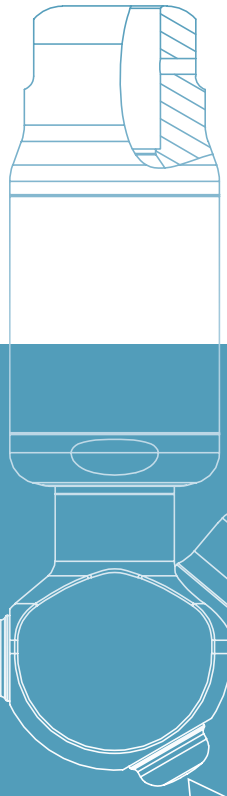
TANK CLEANING NOZZLES



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
Or scan the QR code.

WHAT TO KEEP IN MIND WHEN PLANNING

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.

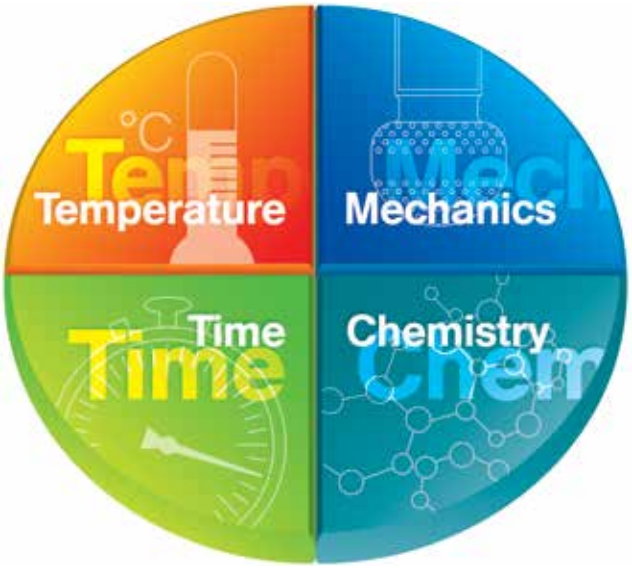


Figure 1: Sinner's circle with equal proportions of the temperature, time, chemistry and mechanical factors.

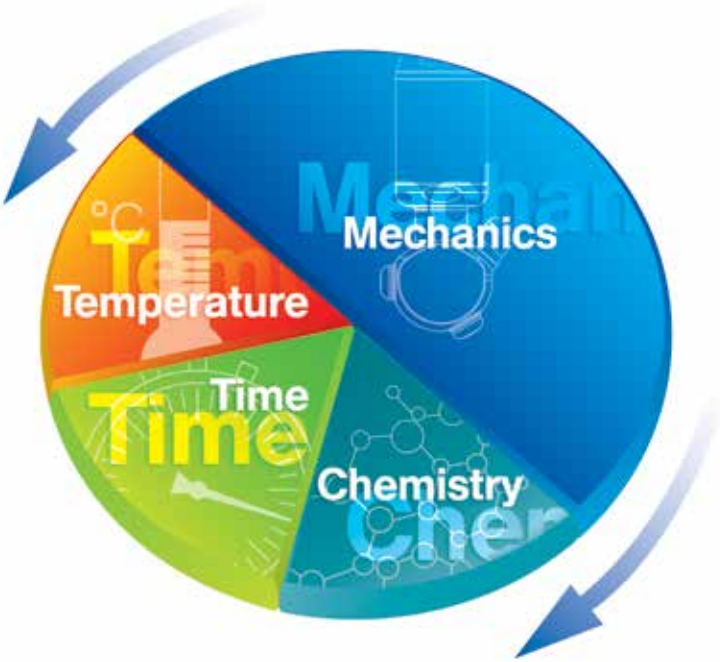


Figure 2: Lechler nozzles and rotating cleaning nozzles have high mechanical cleaning efficiency. This reduces the proportion of the other factors, as well as the resulting costs.

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).

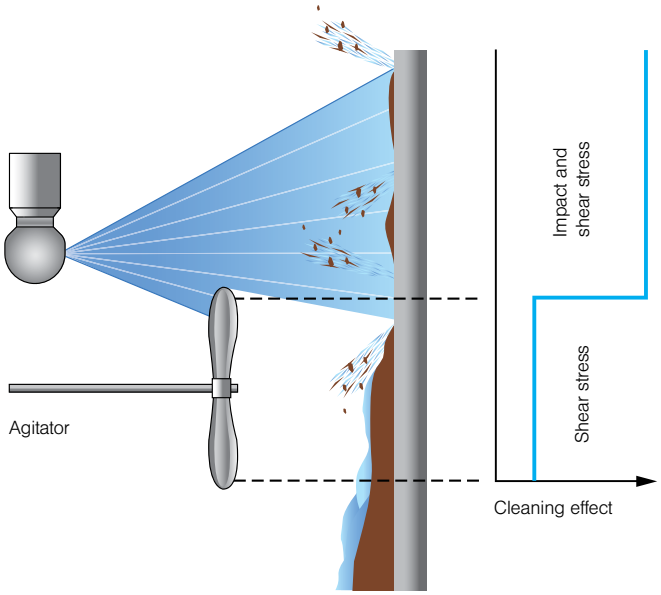


Figure 5: Cleaning mechanisms, impact and shear stress

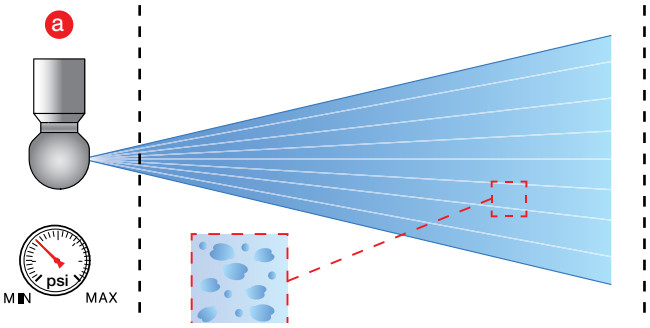


Figure 3: Rotating cleaning nozzles with recommended operating pressure

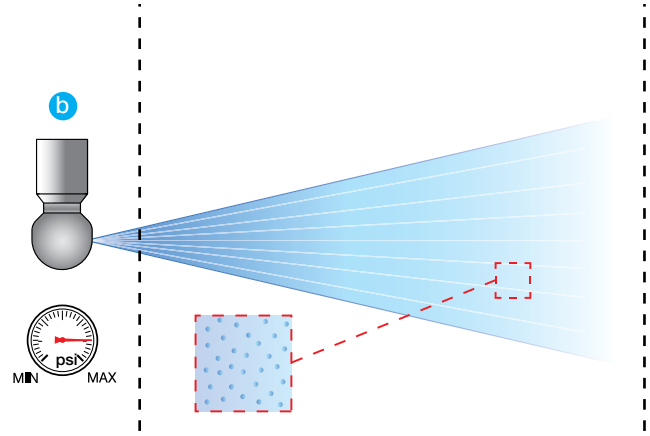


Figure 4: Rotating cleaning nozzles with operating pressure too high

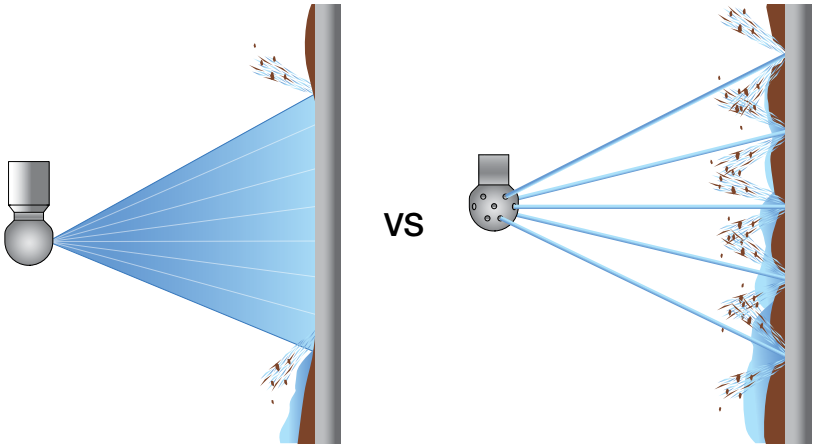
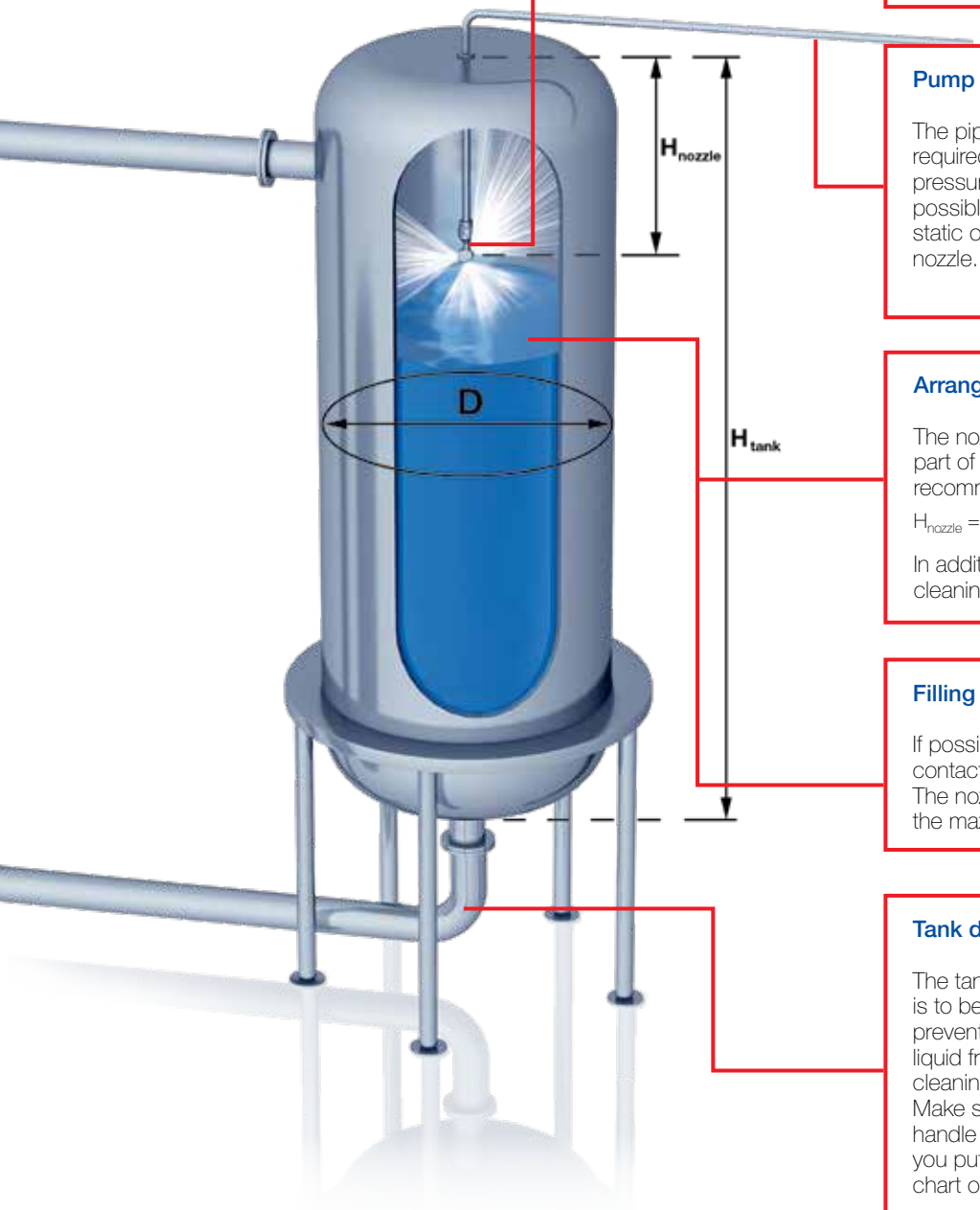


Figure 6: Comparison of rotating cleaning nozzles and static spray balls

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:

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

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.

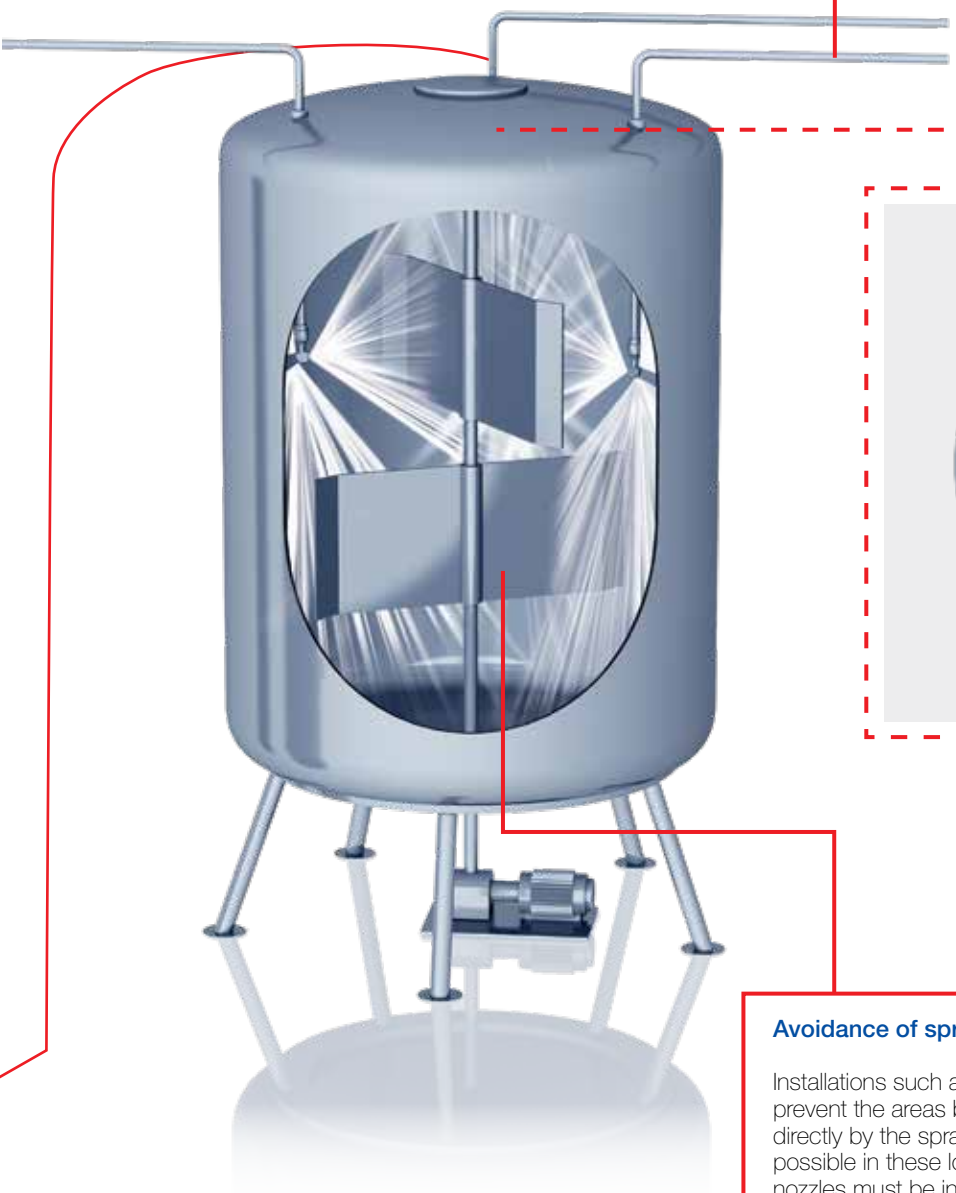
Tank drainage rate

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		65	66	68-68	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	Ex					●		

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
	●	●	●	●	●	●	●
	●	●	●	●	●	●	●
			●	●	●	●	●
				●	●	●	
					●		
	●	●	●				●
			●	●		●	●
				●	●	●	
					●		
		●	●	●	●		●
	●					●	
	●	●	●	●	●	●	
			●	●	●	●	
							●
		●	●	●	●		●

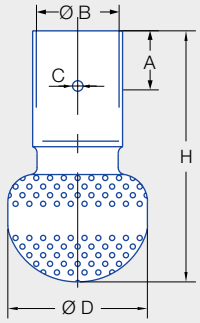
		Cleaning efficiency class 3			Cleaning efficiency class 4	
						
Series		594/595	5W9	577	5S6/5S7	5S5
Information on page		84	86	88	91	93
Type		Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle	Rotating cleaning nozzle
Operating principle	**Static**					
	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	Ex		●			

Cleaning efficiency class 5				Specialty		Accessories	
							
5T2/5T3	5T5	5TM	5TP	597	5P5	Rotation Monitor	HygienicFit
93	95	96	100	101	102	103	104
High impact cleaner	High impact cleaner	High impact cleaner	High impact cleaner	Static spray ball	Static spray ball	Accessory	Accessory
				●	●		
●	●	●	●				
				●	●		
●	●	●					
●	●	●	●				
●	●	●					
●	●	●					
			●	●	●		
●							
●	●	●					
	●	●					
●	●	●	●	●	●		
●	●	●		●			●
			●				
●	●						

Static spray balls
Series 527

Features:
- Complies with 3-A standards
- Powerful solid jest
- 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

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
OUTSIDE

Surface quality
≤ 0.8 µm
INSIDE

Steam suitability
Suitable

Insertion diameter
1.3- 4 in

Recommended filter
Smaller than the narrowest cross-section

Recommended operating pressure
20 psi

Spray angle	Ordering number Type	Narrowest free cross section Ø [in]	V̇ water [gal/min] p [psi] (p_{max} = 145 psi) 20	30	Liters per min. 2 bar	40	60	80	100	Dimensions approx. (in) Height H (in.)	Diameter D (in.)	B	C	A	Max. tank diameter [ft]
360°	527.209.1Y.00.75	0.031	**13**	16	**60**	19	23	26	29	2.7	1.3	.75	.13	.50	17
	527.289.1Y.01.50	0.043	**37**	46	**170**	53	65	74	83	4.6	2.6	1.51	.19	1.00	20
	527.449.1Y.02.00	0.067	**92**	113	**420**	130	160	184	206	6.0	4.0	2.01	.19	1.00	27

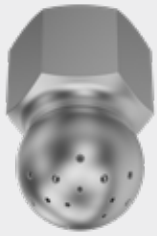
The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.
The cleaning result is also affected by the type of soiling.

Slip-on information

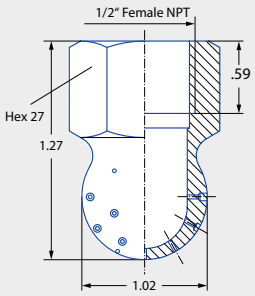
- R-clip made of stainless steel AISI 316L is included.
- Depending on diameter of the adapter the flow rate can increase due to leakage between the connection and static spray ball.

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

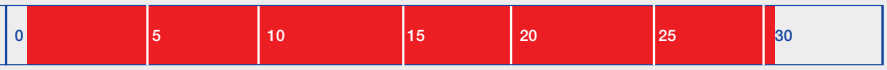


Series 540/541



Female thread

Max. tank diameter [ft]



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
OUTSIDE

Surface quality
≤ 6.3 µm
INSIDE

Steam suitability
Suitable

Insertion diameter
1.22 in

Recommended filter
Smaller than the narrowest cross-section

Recommended operating pressure
45 psi

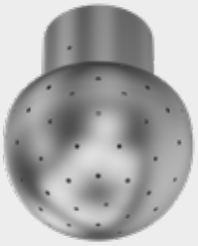
Spray angle	Ordering number: Type	Ordering number: Connection 1/2" Female NPT	Narrowest free cross section Ø [in]	V̇ water [gal/min] p [psi] (p_{max} = 145 psi) 10	20	30	40	45	Liters per min. 3 bar	60	80	100	Max. tank diameter [ft]
240°	540.909.16	BH	0.031	2.78	3.94	4.83	5.57	**5.91**	**22**	6.82	7.88	8.81	21
	540.989.16	BH	0.039	4.30	6.09	7.46	8.61	**9.13**	**34**	10.55	12.18	13.61	23
	541.109.16	BH	0.059	8.86	12.54	15.35	17.73	**18.81**	**70**	21.71	25.07	28.03	25
	541.189.16	BH	0.079	13.93	19.70	24.13	27.86	**29.55**	**110**	34.12	39.40	44.05	27
	541.239.16	BH	0.091	18.36	25.97	31.81	36.72	**38.95**	**145**	44.98	51.94	58.07	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.

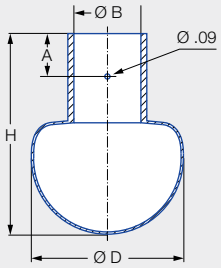
Static spray balls RinseClean
Series 5B2/5B3

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



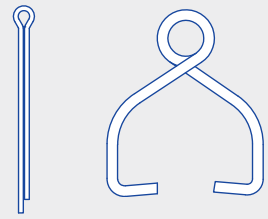
FDA

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

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
OUTSIDE polished Ra ≤ 0.5 µm

Surface quality
Ra ≤ 0.8 µm
INSIDE

Steam suitability
Suitable

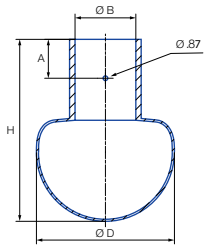
Insertion diameter
.79–3.54 in

Recommended filter
Smaller than the narrowest cross-section

Recommended operating pressure
30 psi

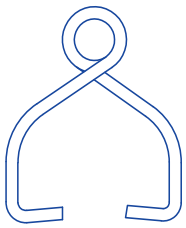
Function video
www.lechler.com/staticsprayball
Or scan the QR code.

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.

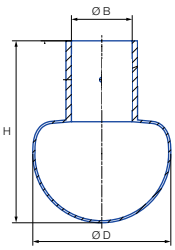
Spray angle	Ordering number: Type	Material no. 1Y: 1.4404 (316L)	Material no. 21: 2.4602 (Alloy 22)	Connection	Narrowest free cross section Ø [in]	V̇ water [gal/min] p [psi] (p_{max} = 75 psi) 10	20	30	Liters per min. 2 bar	40	60	75	Dimensions [in] Distance to bore A	Connection B	Height H	Ø D	Pin	Max. tank diameter [ft]
360°	5B3.089	●	●	A1.00	0.04	7.75	10.97	**13.43**	**50**	15.51	18.99	21.24	0.35	0.48	1.65	1.10	1	7
	5B3.209	●	●	A1.90	0.06	15.51	21.93	**26.87**	**100**	31.02	37.99	42.48	0.35	0.72	1.65	1.10	1	8
	5B3.309	●	●	A1.90	0.07	27.92	39.48	**48.36**	**180**	55.84	68.39	76.46	0.71	0.87	3.31	2.52	2	11
	5B3.379	●	●	A2.60	0.08	40.33	57.03	**69.85**	**260**	80.65	98.78	110.44	0.71	1.11	3.31	2.52	3	17
	5B3.449	●	●	A3.80	0.12	63.59	89.93	**110.15**	**410**	127.19	155.77	174.16	0.71	1.11	3.31	2.52	3	18
	5B3.539	●		A5.10	0.13	103.92	146.97	**180.00**	**670**	207.84	254.55	284.60	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: Type	Material no. 1Y: 1.4404 (316L)	Material no. 21: 2.4602 (Alloy 22)	Connection ØB Female NPT		Narrowest free cross section Ø [in]	V̇ water [gal/min] p [psi] (p_{max} = 75 psi) 10	20	30	Liters per min. 2 bar	40	60	75	Dimensions (in) Height H	Ø D	Pin	Max. tank diameter [ft]
360°	5B2.879	●	●	BB	1/8"	0.03	2.32	3.29	**4.03**	**15**	4.65	5.70	6.37	1.46	0.79	1	6
	5B3.309	●	●	BH	1/2"	0.07	27.92	39.48	**48.36**	**180**	55.84	68.39	76.46	3.31	2.52	2	11
	5B3.379	●	●	BN	1"	0.08	40.33	57.03	**69.85**	**260**	80.65	97.78	110.44	3.31	2.52	3	17
	5B3.539	●		BW	2"	0.13	103.92	146.97	**180.00**	**670**	207.84	254.55	284.60	4.37	3.54	5	18

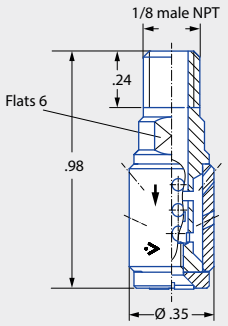
The maximum tank diameter applies to the recommended operating pressure and is meant as a recommendation only.
The cleaning result is also affected by the type of soiling.

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

FDA



Male thread

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 ≤ 1.6 µm
OUTSIDE

Surface quality
Ra ≤ 1.6 µm
INSIDE

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
Or scan the QR code.

Spray angle	Ordering number: Type	Ordering number: Connection 1/8" Male NPT	Narrowest free cross section Ø [in]	V̇ water [gal/min] at p [psi] (p_{max} = 75 psi): 20	30	40	**45**	Liters per min. **3 bar**	60	75	Max. tank diameter [ft]
300°	**500.234.G9**	**BA**	0.07	1.75	2.15	2.48	**2.63**	**9.8**	3.04	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

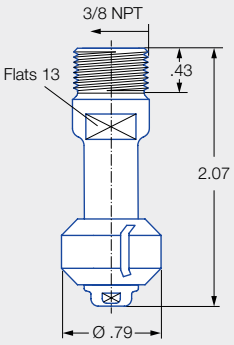
Features:

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

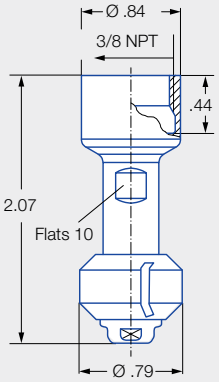
FDA

ATEX version available on request

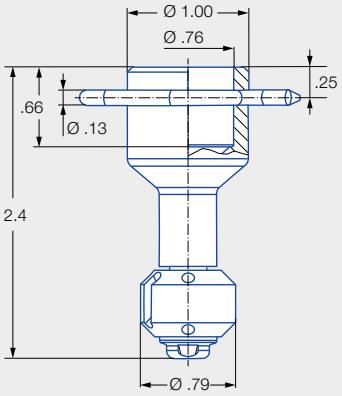
Series 566



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

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
OUTSIDE

Surface quality
Ra ≤ 1.6 µm
INSIDE

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
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_{max} = 90 psi)						
		3/8" NPT Male	3/8" NPT Female	3/4"- Slip-on		20	**30**	**2 bar**	Liters per min. 40	60	80	
180°	**566.873.1Y**	**BE**	**BF**	**TF07**	0.04	3.29	**4.03**	**15**	4.65	5.70	6.58	5
	566.933.1Y	**BE**	**BF**	**TF07**	0.09	4.60	**5.64**	**21**	6.51	798	9.21	5.5
180°	**566.874.1Y**	**BE**	**BF**	**TF07**	0.04	3.29	**4.03**	**15**	4.65	5.70	6.58	5
	566.934.1Y	**BE**	**BF**	**TF07**	0.09	4.60	**5.64**	**21**	6.51	798	9.21	5.5
360°	**566.879.1Y**	**BE**	**BF**	**TF07**	0.04	3.29	**4.03**	**15**	4.65	5.70	6.58	5
	566.939.1Y	**BE**	**BF**	**TF07**	0.09	4.60	**5.64**	**21**	6.51	798	9.21	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.

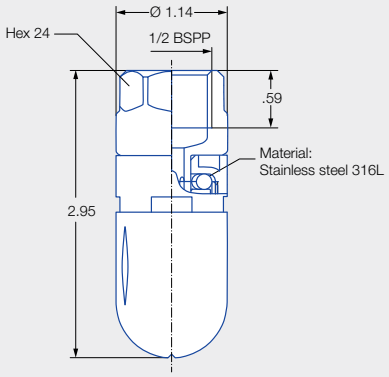
Ordering example:	Type	+	Code	=	Ordering no.
	566.873.1Y	+	BE	=	566.873.1Y.BE

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



Female thread

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

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
OUTSIDE

Surface quality
Ra ≤ 1.6 µm
INSIDE

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
Or scan the QR code.

Spray angle	Ordering number Type 1/2" Female BSPP	Narrowest free cross section Ø [in]	V̇ water [gal/min] p [psi] (p_{max} = 75 psi) Liters per min. 20	**30**	**2 bar**	40	60	75	Max. tank diameter [ft]
300°	**500.186.56.AH**	0.07	3.95	**4.84**	**18**	5.58	6.84	7.64	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.

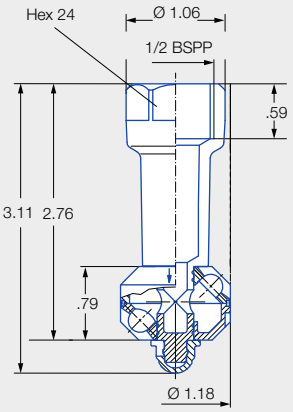
Compressed air should be used for dry blowing for a short time only. Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

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

Series 500.191



Female thread

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

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
Or scan the QR code.

Spray angle	Ordering number Type 1/2" Female BSPP	Narrowest free cross section Ø [in]	V̇ water [gal/min] p [psi] (p_{max} = 75 psi)						Max. tank diameter [ft]
			20	**30**	Liters per min. **2 bar**	40	60	75	
180°	**500.191.5E.02**	0.09	2.85	**3.49**	**13**	4.03	4.94	5.52	2
180°	**500.191.5E.01**	0.09	2.85	**3.49**	**13**	4.03	4.94	5.52	2
270°	**500.191.5E.31**	0.09	4.38	**5.37**	**20**	6.20	7.60	8.49	3
360°	**500.191.5E.00**	0.09	4.38	**5.37**	**20**	6.20	7.60	8.49	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

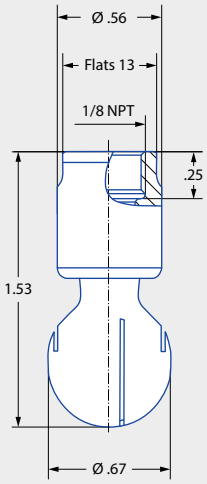
Features:

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

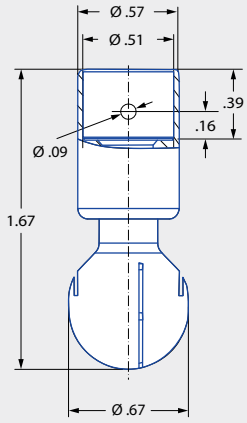
FDA

ATEX version available on request

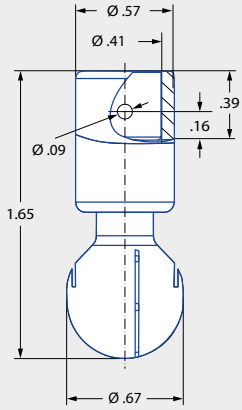
Series 5M1



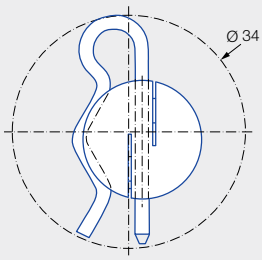
Female thread



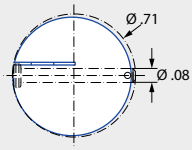
Dimensions of slip-on connection according to ASME-BPE (OD tube)



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)

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
OUTSIDE

Surface quality
Ra ≤ 0.8 µm
INSIDE

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
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	Material		Connection				p [psi] (p_{max} = 100 psi)							
		1Y	21	1/8 NPT	Ø .4 inches in accordance with DIN 11866 Series B	1/2" slip-on connection		20	30	Liters per min. 2 bar	40	60	80	100	
		SS 1.4404 (316L)	2.4602 (Alloy 22)												
360°	5M1.879	●	●	BB	TF04	TF05[1]	0.016	3.29	**4.03**	**15**	4.65	5.70	6.60	7.36	4
	5M1.929	●	●	BB	TF04	TF05[1]	0.020	4.40	**5.37**	**20**	6.20	7.60	8.77	9.81	5

[1] 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.

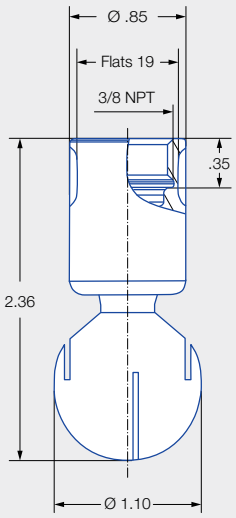
Rotating cleaning nozzle MicroSpinner 2
Series 5M2

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

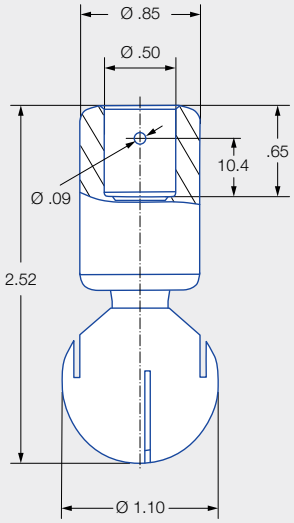
Series 5M2

FDA

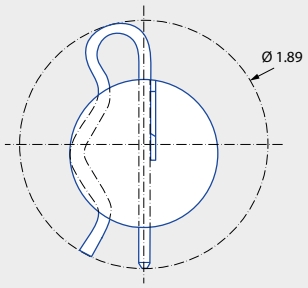
ATEX version available on request



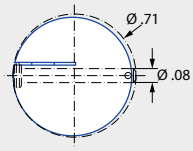
Female thread



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

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
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_{max} = 100 psi)							
		3/8" Female NPT	1/2"-Slip-on		20	**30**	Liters per min. **2 bar**	40	60	80	100	
60°	**5M2.952.1Y**	**BF**	**TF05**	0.06	5.04	**6.18**	**23**	7.13	8.74	10.10	11.28	–
	5M2.042.1Y	**BF**	**TF05**	0.12	8.77	**10.75**	**40**	12.41	15.19	17.55	19.62	–
180°	**5M2.004.1Y**	**BF**	**TF05**	0.04	7.02	**8.60**	**32**	9.93	12.16	14.04	15.70	6
360°	**5M2.969.1Y**	**BF**	**TF05**	0.03	5.50	**6.72**	**25**	7.75	9.50	10.97	12.26	5
	5M2.049.1Y	**BF**	**TF05**	0.04	8.55	**10.48**	**39**	12.10	14.82	17.11	19.13	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 steal 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 of ordering:	Type	+	Connection	=	Ordering no.
	5M2.952.1Y	+	BF	=	5M2.952.1Y.BF

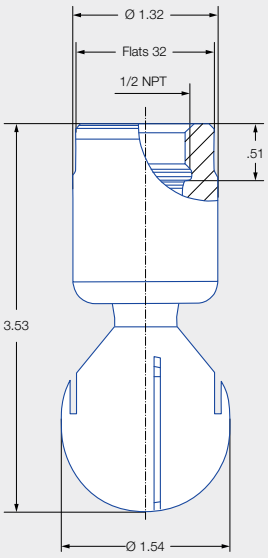
Rotating cleaning nozzle MiniSpinner 2
Series 5M3

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

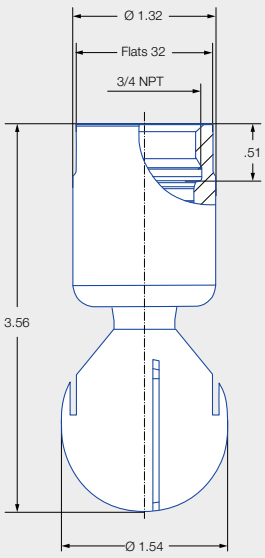
FDA

ATEX version available on request

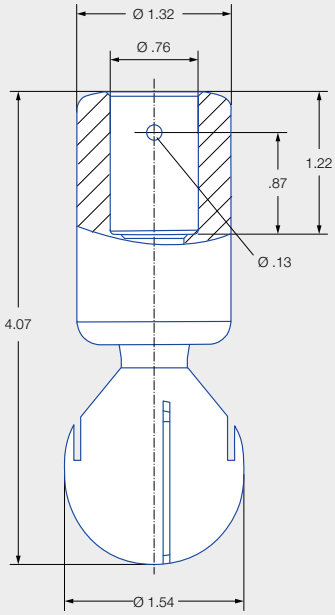
Series 5M3



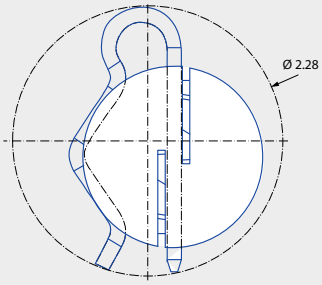
Female thread



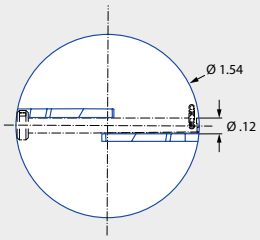
Female thread



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



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



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

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
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_{max} = 100 psi)							
		1/2" Female NPT	3/4" Female NPT	3/4"- Slip-on		20	**30**	Liters per min. **2 bar**	40	60	80	100	
60°	**5M3.122.1Y**	**BH**		**TF07**	0.102	13.82	**16.92**	**63**	19.54	23.93	27.64	30.90	–
180°	**5M3.133.1Y**		**BL**	**TF07**	0.047	14.70	**18.00**	**67**	20.78	24.45	29.40	32.86	8
180°	**5M3.134.1Y**		**BL**	**TF07**	0.051	14.70	**18.00**	**67**	20.78	24.45	29.40	32.86	8
360°	**5M3.999.1Y**		**BL**	**TF07**	0.016	6.58	**8.06**	**30**	9.30	11.40	13.16	14.71	5
	5M3.089.1Y		**BL**	**TF07**	0.028	10.75	**13.16**	**49**	15.20	18.62	21.50	24.03	6
	5M3.139.1Y		**BL**	**TF07**	0.031	15.13	**18.54**	**69**	21.40	26.21	30.27	33.84	7
	5M3.209.1Y		**BL**	**TF07**	0.059	21.93	**26.86**	**100**	31.02	37.99	43.87	49.05	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 steal 316L included (Ordering no. 05M.330.1Y.00.00.0).For version made of 2.4602 (Alloy 22), bolt with head incl. cotter pin included (Order no. 05M.131.21.00.00).
- 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	+	Connection	=	Ordering no.
	5M3.122. 1Y	+	BH	=	5M3.122.1Y.BH

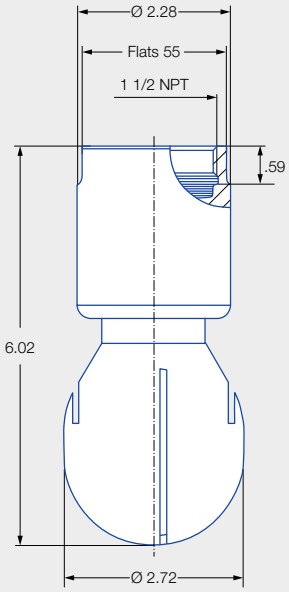
Rotating cleaning nozzle MaxiSpinner 2
Series 5M4

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

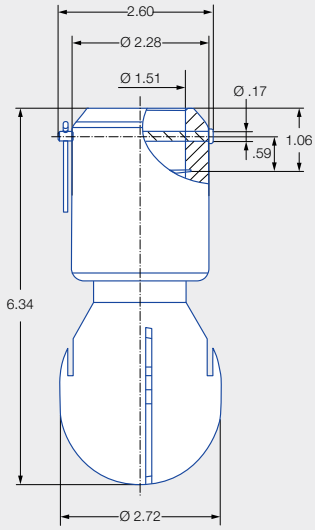
FDA

ATEX version available on request

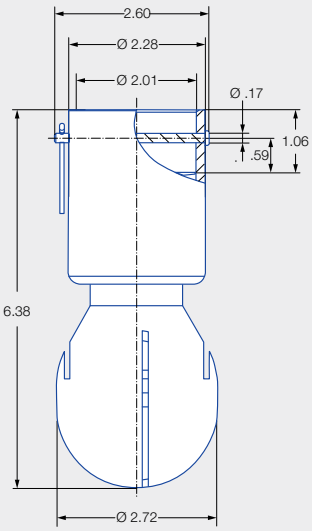
Series 5M4



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)

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
OUTSIDE

Surface quality
Ra ≤ 0.8 µm
INSIDE

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
Or scan the QR Code.

Spray angle	Ordering number							Narrowest free cross section Ø [in]	V̇ water [gal/min]							Max. tank diameter [ft]
	Type	Material		Connection					p [psi] (p_{max} = 100 psi)*							
		1Y	21	1 1/4" Female NPT	1 1/2" Female NPT	1 1/2" Slip-on	2"- Slip-on		20	**30**	Liters per min. **2 bar**	40	60	80	100	
		1.4404 (316L)	2.4602 (Alloy 22)													
180°	**5M4.253**	●	●	**BQ**	**BS**	**TF15**	**TF20**	0.07	29.61	**36.27**	**135**	41.88	51.29	59.22	66.21	13
180°	**5M4.254**	●	●	**BQ**	**BS**	**TF15**	**TF20**	0.08	26.61	**36.27**	**135**	41.88	51.29	59.22	66.21	15
270°	**5M4.365**	●	●	**BQ**	**BS**	**TF15**	**TF20**	0.10	54.84	**67.15**	**250**	77.55	94.98	109.68	122.62	16
360°	**5M4.279**	●	●	**BQ**	**BS**	**TF15**	**TF20**	0.07	32.90	**40.30**	**150**	46.53	56.99	65.80	49.05	13
	5M4.329	●	●	**BQ**	**BS**	**TF15**	**TF20**	0.08	43.87	**53.73**	**200**	62.04	75.98	87.74	98.10	15
	5M4.369	●	●	**BQ**	**BS**	**TF15**	**TF20**	0.09	54.84	**67.16**	**250**	77.55	94.98	109.68	122.62	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 steal 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 of ordering:	Type	+	Connection	=	Ordering no.
	5M4.369. 1Y	+	BQ	=	5M4.369.1Y.BQ

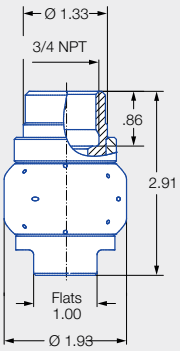
Rotating cleaning nozzle PTFE Whirly
Series 573/583

Features:

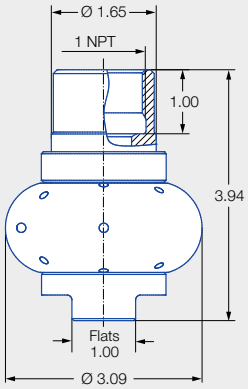
- Made entirely of PTFE
- Slip-on connection conforms to 3-A
- Suitable for corrosive environments
- Suitable for very hygienic requirements (e.g. contact with food)

FDA

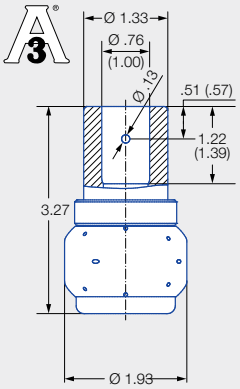
Series 573/583



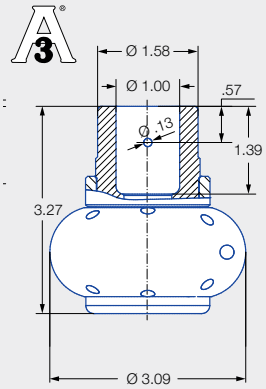
Female thread
3/4 NPT



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)

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
OUTSIDE

Surface quality
Ra ≤ 0.8 µm
INSIDE

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
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_{max} = 85 psi)							
		3/4" NPT	1" NPT	3/4" Slip-on	1" Slip-on		20	30	Liters per min. 2 bar	40	60	80		
180°	583.114.55	BL		TF07*		.083	14.69	**18.00**	**67**	20.78	25.45	29.39	1	8
	583.264.55	BL		TF07*		.129	31.80	**38.95**	**145**	44.98	55.09	63.61	1	9
	583.344.55		BN		TF10*	.279	49.35	**60.45**	**225**	69.79	85.48	98.71	2	10
180°	573.114.55	BL		TF07*		.083	14.69	**18.00**	**67**	20.78	25.45	29.39	1	8
	573.264.55	BL		TF07*		.129	31.80	**38.95**	**145**	44.98	55.09	63.61	1	9
	573.344.55		BN			.232	49.35	**60.45**	**225**	69.79	85.48	98.71	2	10
270°	583.116.55	BL		TF07*		0.09	14.69	**18.00**	**67**	20.78	25.45	29.39	1	8
	583.266.55	BL		TF07*		.133	31.80	**38.95**	**145**	44.98	55.09	63.61	1	9
	583.346.55		BN		TF10*	.232	49.35	**60.45**	**225**	69.79	85.48	98.71	2	10
270°	573.116.55	BL		TF07*		0.09	14.69	**18.00**	**67**	20.78	25.45	29.39	1	8
	573.226.55	BL		TF07*		.133	31.80	**38.95**	**145**	44.98	55.09	63.61	1	9
	573.346.55		BN		TF10*	.232	49.35	**60.45**	**225**	69.79	85.48	98.71	2	10
360°	583.119.55	BL		TF07*	TF10*	0.07	12.72	**15.58**	**58**	17.99	22.03	25.44	1	8
	583.209.55	BL		TF07*	TF10*	0.14	21.93	**26.86**	**100**	31.02	37.99	13.87	1	8
	583.269.55	BL		TF07*	TF10*	0.19	31.80	**38.95**	**145**	44.98	55.09	63.61	1	9
	583.279.55		BN		TF10*	0.15	32.90	**40.30**	**150**	46.53	56.99	65.80	2	10
	583.349.55		BN		TF10*	0.22	49.35	**60.45**	**225**	69.80	85.48	98.71	2	10

BSPP thread available on request.

* Complies with and is authorized to use with A3

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

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

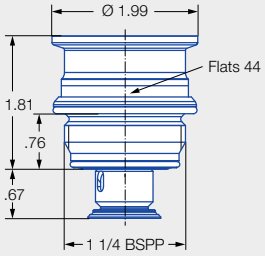
Features:

- 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

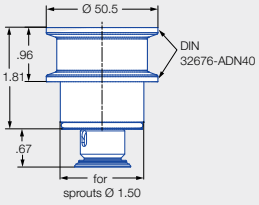
ATEX version available on request

FDA

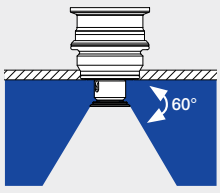
Series 5P2

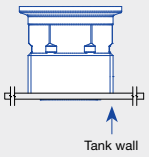


Male thread



Tri-Clamp connection[1]

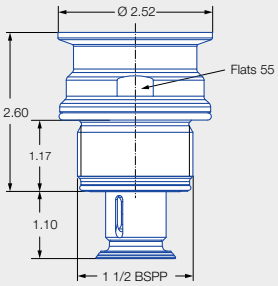




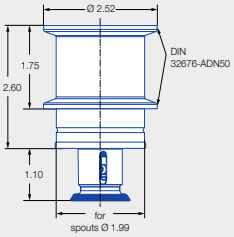
Via thread in idle position

FDA

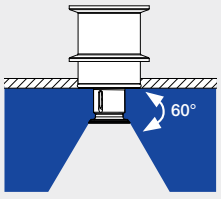
Series 5P3

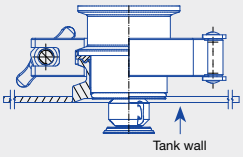


Male thread



Tri-Clamp connection[2]





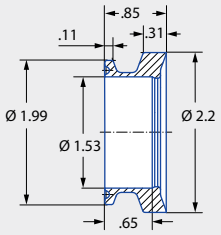
Via Tri-Clamp in operating position

Installation situation

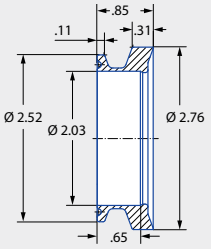
Note Tri-Clamp Version:
Gasket with a thickness of .08 in. must be used with weld-in-flange. Not sold with nozzle.
5P2 requires standard DIN32676-A / DN40
5P3 requires standard DIN32676-A / DN50

[1] 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.
[2] 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



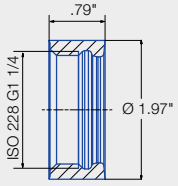
Ordering no.: 050.020.1Y.01.00
Material: Stainless steel 316L



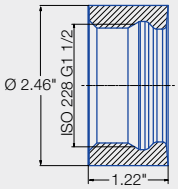
Ordering no.: 050.020.1Y.01.01
Material: Stainless steel 316L

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

Technical data:

Maximum operating temperature
284 °F
284 °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
1.32 lbs

Surface quality
Ra ≤ 0.8 µm on process side, remaining housing Ra ≤ 1.6 µm

Surface quality
Ra ≤ 1.6 µm

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: Type	Connection: 1 1/4" Male BSPP	Connection: 1 1/2" Male BSPP	Connection: Tri-Clamp	Narrowest free cross section Ø [in]	V̇ water [gal/min] p [psi] (p_{max} = 75 psi): 15	20	30	Liters per min. 2 bar	40	60	75	Max. tank diameter [ft]
60°	5P2.873.1Y	AP			0.10	2.85	3.29	**4.03**	**15**	4.65	5.70	6.37	2
	5P2.873.1Y			00	0.10	2.85	3.29	**4.03**	**15**	4.65	5.70	6.37	2
	5P2.923.1Y	AP			0.14	3.80	4.38	**5.37**	**20**	6.20	7.60	8.49	3
	5P2.923.1Y			00	0.14	3.80	4.38	**5.37**	**20**	6.20	7.60	8.49	3
	5P3.043.1Y		AR		0.13	7.60	8.77	**10.75**	**40**	12.41	15.19	16.99	7
	5P3.043.1Y			00	0.13	7.60	8.77	**10.75**	**40**	12.41	15.19	16.99	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

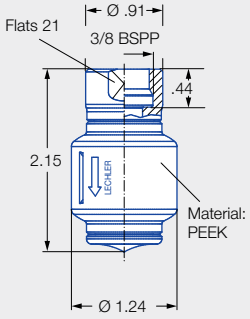
- The PopUp Whirly is not suitable for operation with compressed air or any other gas.
- Operation above the recommended operating pressure has a negative impact on the cleaning result and wear.

Rotating cleaning nozzle HygienicWhirly
Series 594/595

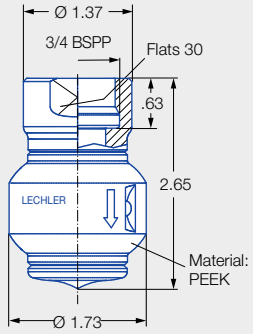
Features:
- Cleaning with highly effective flat jets
- Good cleaning effect even at low pressure
- Suitable for the application of foam

FDA

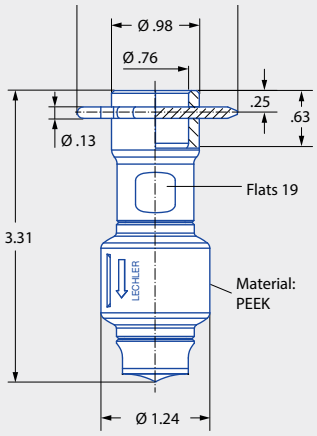
Series 594/595



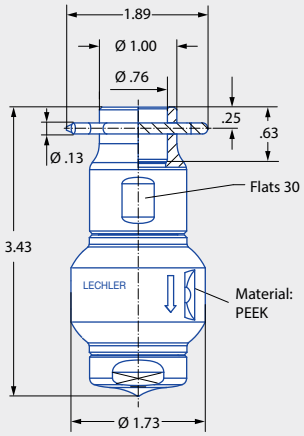
Standard version/Female thread
59x.xx9.1Y.AF



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

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
Or scan the QR code.

Spray angle	Ordering number: Type	Connection: 3/8" Female BSPP	Connection: 3/4" Female BSPP	Connection: 3/4" slip-on	Narrowest free cross section Ø [in]	V̇ water [gal/min] p [psi] (p_{max} = 75 psi): 10	20	30	40	**45**	Liters per min. **3 bar**	60	75	Max. tank diameter [ft]
360°	**594.829.1Y**	**AF**		**67**	0.07	1.77	2.50	3.07	3.54	**3.76**	**14**	4.34	4.85	2
	594.879.1Y	**AF**		**67**	0.10	2.28	3.22	3.95	4.56	**4.84**	**18**	5.58	6.24	4
	595.009.1Y	**AF**		**67**	0.16	4.94	6.98	8.55	9.88	**10.48**	**39**	12.10	13.52	5
	595.049.1Y	**AF**		**67**	0.17	6.20	8.77	10.75	12.41	**13.16**	**49**	15.20	16.99	6
	595.139.1Y		**AL**	**67**	2.00	10.38	14.68	17.98	20.77	**22.03**	**82**	25.44	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 example:	Type	+	Code	=	Ordering no.
	594.829.1Y	+	AF	=	594.829.1Y.AF

Rotating cleaning nozzle Whirly 2
Series 5W9

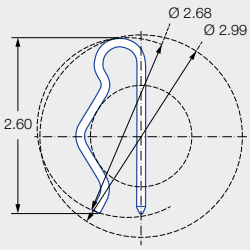
Features:

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

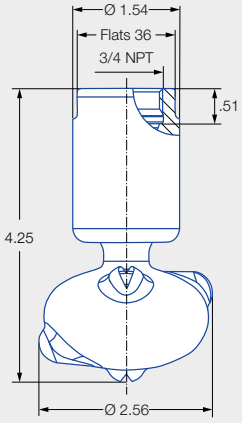
ATEX version available on request

Series 5W9

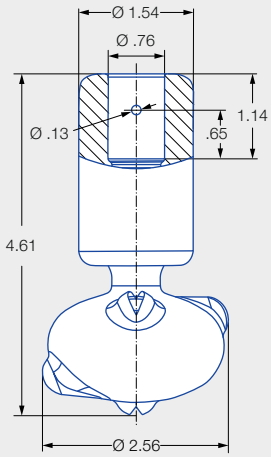
FDA



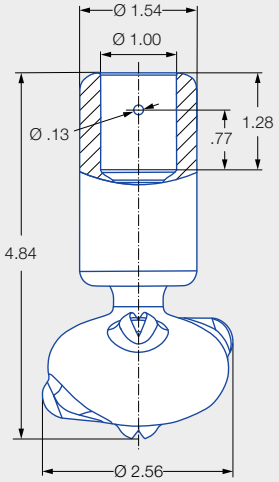
Dimensions slip-on connection top view



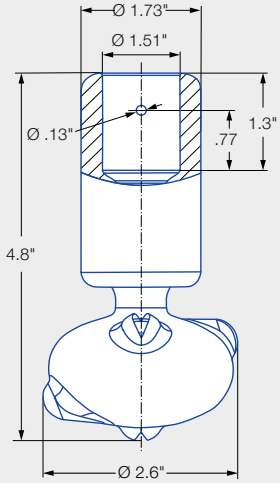
Female thread



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

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
OUTSIDE

Surface quality
Ra ≤ 0.8 µm
INSIDE

Steam suitability
Not suitable

Insertion diameter
2.56-2.6 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
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_{max} = 87 psi)						
		3/4" Female NPT	3/4" Slip-on	1" Slip-on	1.5" Slip-on		20	**30**	Liters per min. **2 bar**	40	60	80	
270°	**5W9.075.1Y**	**BL**	**TF07**	**TF10**	**TF15**	0.08	10.53	**12.90**	**48**	14.89	18.23	21.06	6
	5W9.145.1Y	**BL**	**TF07**	**TF10**	**TF15**	0.11	15.57	**19.07**	**71**	22.02	26.97	31.15	7
	5W9.195.1Y	**BL**	**TF07**	**TF10**	**TF15**	0.13	21.27	**26.06**	**97**	30.09	36.85	42.55	8
270°	**5W9.076.1Y**	**BL**	**TF07**	**TF10**	**TF15**	0.08	10.53	**12.90**	**48**	14.89	18.23	21.06	6
	5W9.106.1Y	**BL**	**TF07**	**TF10**	**TF15**	0.10	12.72	**15.58**	**58**	17.99	22.03	25.44	7
	5W9.196.1Y	**BL**	**TF07**	**TF10**	**TF15**	0.13	21.27	**26.06**	**97**	30.09	36.85	42.55	8
360°	**5W9.079.1Y**	**BL**	**TF07**	**TF10**	**TF15**	0.06	10.53	**12.90**	**48**	14.89	18.23	21.06	6
	5W9.149.1Y	**BL**	**TF07**	**TF10**	**TF15**	0.09	15.57	**19.07**	**71**	22.02	26.97	31.15	7
	5W9.199.1Y	**BL**	**TF07**	**TF10**	**TF15**	0.12	21.27	**26.06**	**97**	30.09	36.85	42.55	8
	5W9.279.1Y	**BL**	**TF07**	**TF10**	**TF15**	0.14	31.80	**38.95**	**145**	44.98	55.09	63.61	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

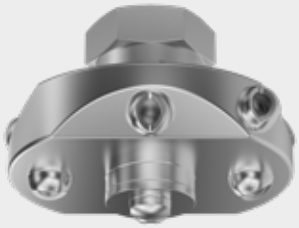
- Pin made of stainless steel 316L supplied (Ordering no.: 095.013.1Y.06.72.0).
- Depending on the diameter of the adapter, the flow rate can increase due to a leakage between the adapter and the rotating cleaning nozzle.
- Minimum insertion diameter (with mounted pin) is 2.68 in.

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

Rotating cleaning nozzle Gyro
Series 577

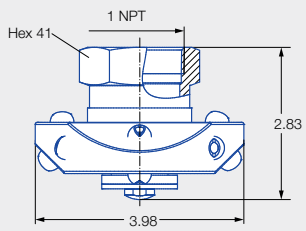
Features:

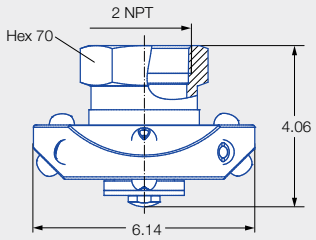
- Cleaning with powerful nozzle inserts
- Suitable for very large tanks
- Available with a wide range of flow rates
- Non clogging and large free cross sections



FDA

Series 577





Female thread | Female thread

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

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
3.98–6.14 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
Or scan the QR code.

Spray angle	Ordering number: Type	Connection: 1" Female NPT	Connection: 2" Female NPT	V̇ water [gal/min] p [psi] (p_{max} = 75 psi): 20	30	40	Liters per min. 45	3 bar	60	75	Max. tank diameter [ft]
360°	577.289.1Y	BN		35.82	43.87	50.66	**53.73**	**200**	62.04	69.36	11
	577.369.1Y	BN		56.59	69.31	80.04	**84.89**	**316**	98.03	109.60	13
	577.409.1Y		BW	70.56	86.42	99.79	**105.85**	**394**	122.22	136.65	14
	577.439.1Y		BW	84.71	103.75	119.80	**127.07**	**473**	146.73	164.05	15
	577.499.1Y		BW	118.03	144.55	44.84	**177.04**	**659**	204.43	61.40	18

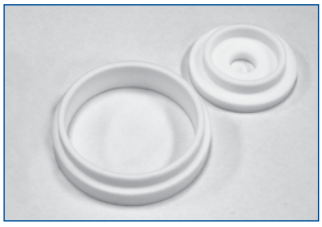
BSPP thread available on request.

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.

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

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

Rotating cleaning nozzle XactClean HP2
Series 5S6/5S7

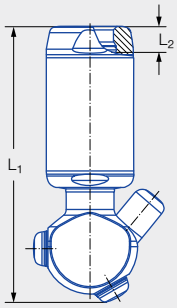
Features:

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

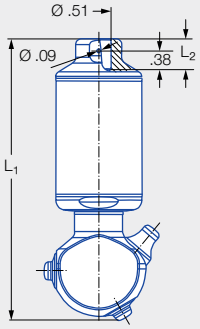
Series 5S6/5S7

FDA

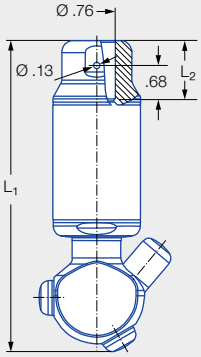
ATEX version available on request



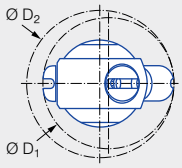
Female thread



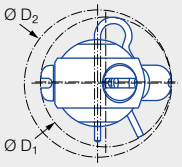
Dimensions of 1/2" slip-on connection according to ASME-BPE (OD tube)



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

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 ≤ 0.8 µm

Surface quality Inside
Ra ≤ 1.6 µm

Steam suitability
Suitable

Insertion diameter
1.97–3.11 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_1	L_2	Insertion diameter D_1	Interference circle diameter D_2
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] (p_{max} = 217.5 psi)									
		3/8" Female NPT	1/2" Female NPT	3/4" Female NPT	1" Female NPT	1/2" slip-on	3/4" slip-on		20	30	40	45	Liters per min. 3 bar	60	80	100	200	
180°	5S6.963.1Y	BF	BH			TF05		0.07	5.55	6.80	7.85	8.33	31	9.61	11.10	12.41	17.55	11
	5S7.043.1Y		BH				TF07	0.08	8.95	10.97	12.66	13.43	50	15.11	17.91	20.02	28.32	13
	5S7.113.1Y		BH	BL			TF07	0.08	13.07	16.01	18.49	19.61	73	22.64	26.15	29.23	41.34	19
	5S7.183.1Y			BL			TF07	0.08	19.52	23.91	27.61	29.28	109	33.81	39.04	43.65	61.73	23
	5S7.223.1Y			BL			TF07	0.08	24.36	29.83	34.44	36.54	136	42.19	48.71	54.46	77.02	24
	5S7.253.1Y			BL	BN		TF07	0.08	29.55	36.19	41.79	44.33	165	51.18	59.10	66.08	93.45	26
180°	5S6.964.1Y	BF	BH			TF05		0.07	5.55	6.80	7.85	8.33	31	9.61	11.10	12.41	17.55	11
	5S7.044.1Y		BH				TF07	0.08	8.95	10.97	12.66	13.43	50	15.11	17.91	20.02	28.32	13
	5S7.114.1Y		BH	BL			TF07	0.08	13.07	16.01	18.49	19.61	73	22.64	26.15	29.23	41.34	19
	5S7.184.1Y			BL			TF07	0.08	19.52	23.91	27.61	29.28	109	33.81	39.04	43.65	61.73	23
	5S7.224.1Y			BL			TF07	0.08	24.36	29.83	34.44	36.54	136	42.19	48.71	54.46	77.02	24
	5S7.254.1Y			BL	BN		TF07	0.08	29.55	36.19	41.79	44.33	165	51.18	59.10	66.08	93.45	26
270°	5S6.965.1Y	BF	BH			TF05		0.07	5.55	6.80	7.85	8.33	31	9.61	11.10	12.41	17.55	11
	5S7.045.1Y		BH				TF07	0.08	8.95	10.97	12.66	13.43	50	15.11	17.91	20.02	28.32	13
	5S7.115.1Y		BH	BL			TF07	0.08	13.07	16.01	18.49	19.61	73	22.64	26.15	29.23	41.34	19
	5S7.185.1Y			BL			TF07	0.08	19.52	23.91	27.61	29.28	109	33.81	39.04	43.65	61.73	23
	5S7.225.1Y			BL			TF07	0.08	24.36	29.83	34.44	36.54	136	42.19	48.71	54.46	77.02	24
	5S7.255.1Y			BL	BN		TF07	0.08	29.55	36.19	41.79	44.33	165	51.18	59.10	66.08	93.45	26
270°	5S6.966.1Y	BF	BH			TF05		0.07	5.55	6.80	7.85	8.33	31	9.61	11.10	12.41	17.55	11
	5S7.046.1Y		BH				TF07	0.08	8.95	10.97	12.66	13.43	50	15.11	17.91	20.02	28.32	13
	5S7.116.1Y		BH	BL			TF07	0.08	13.07	16.01	18.49	19.61	73	22.64	26.15	29.23	41.34	19
	5S7.186.1Y			BL			TF07	0.08	19.52	23.91	27.61	29.28	109	33.81	39.04	43.65	61.73	23
	5S7.226.1Y			BL			TF07	0.08	24.36	29.83	34.44	36.54	136	42.19	48.71	54.46	77.02	24
	5S7.256.1Y			BL	BN		TF07	0.08	29.55	36.19	41.79	44.33	165	51.18	59.10	66.08	93.45	26
360°	5S6.969.1Y	BF	BH			TF05		0.06	5.55	6.80	7.85	8.33	31	9.61	11.10	12.41	17.55	11
	5S7.049.1Y		BH				TF07	0.08	8.95	10.97	12.66	13.43	50	15.11	17.91	20.02	28.32	13
	5S7.119.1Y		BH	BL			TF07	0.08	13.07	16.01	18.49	19.61	73	22.64	26.15	29.23	41.34	19
	5S7.189.1Y			BL			TF07	0.08	19.52	23.91	27.61	29.28	109	33.81	39.04	43.65	61.73	23
	5S7.229.1Y			BL			TF07	0.08	24.36	29.83	34.44	36.54	136	42.19	48.71	54.46	77.02	24
	5S7.259.1Y			BL	BN		TF07	0.08	29.55	36.19	41.79	44.33	165	51.18	59.10	66.08	93.45	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.

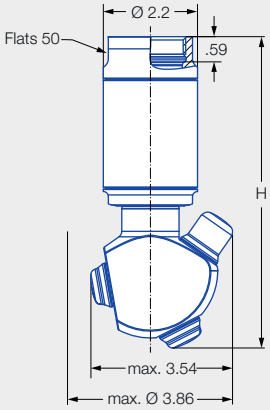
Rotating cleaning nozzle XactClean HP+
Series 5S5

Features:

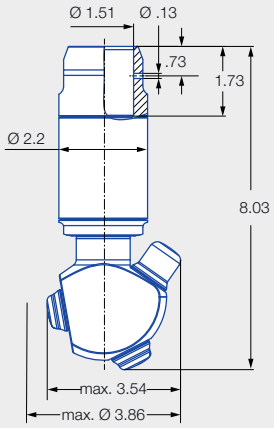
- High impact and uniform cleaning due to specially developed flat fan nozzles
- Effective cleaning of larger tanks due to higher flow rates
- High dependability and operational reliability due to robust drive unit
- Compatible with Lechler rotation monitoring sensor

FDA

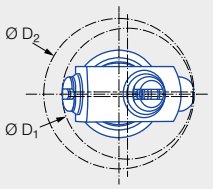
Series 5S5



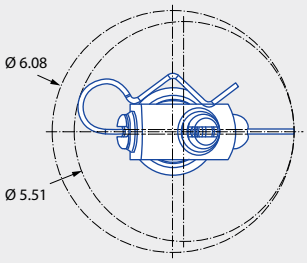
Female thread



Dimension of the 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 and interference circle diameter of the slip-on connection

Max. tank diameter [ft]	0	10	20	30

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
Ra ≤ 0.8 µm

Surface quality Inside
Ra ≤ 1.6 µm

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
Or scan the QR code.

Connection		Dimensions [in]		
		L	Insertion diameter D_1	Interference circle diameter D_2
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_{max} = 145 psi)								
		1" Female NPT	1 1/4" Female NPT	1 1/2" Female NPT	1 1/2"- Slip-on		20	30	40	45	liters per min. 3 bar	60	80	100	
180°	5S5.293.1Y	BN			TF15	0.12	36.18	44.31	51.16	54.27	202	62.66	72.36	80.90	29
	5S5.323.1Y	BN	BQ		TF15	0.12	43.88	53.74	62.05	65.82	245	76.00	87.76	98.12	30
	5S5.363.1Y		BQ	BS	TF15	0.12	54.80	67.12	77.50	82.21	306	94.62	109.61	122.55	31
180°	5S5.294.1Y	BN			TF15	0.12	36.18	44.31	51.16	54.27	202	62.66	72.36	80.90	29
	5S5.324.1Y	BN	BQ		TF15	0.12	43.88	53.74	62.05	65.82	245	76.00	87.76	98.12	30
	5S5.364.1Y		BQ	BS	TF15	0.12	54.80	67.12	77.50	82.21	306	94.62	109.61	122.55	31
270°	5S5.295.1Y	BN			TF15	0.12	36.18	44.31	51.16	54.27	202	62.66	72.36	80.90	29
	5S5.325.1Y	BN	BQ		TF15	0.12	43.88	53.74	62.05	65.82	245	76.00	87.76	98.12	30
	5S5.365.1Y		BQ	BS	TF15	0.12	54.80	67.12	77.50	82.21	306	94.62	109.61	122.55	31
270°	5S5.296.1Y	BN			TF15	0.12	36.18	44.31	51.16	54.27	202	62.66	72.36	80.90	29
	5S5.326.1Y	BN	BQ		TF15	0.12	43.88	53.74	62.05	65.82	245	76.00	87.76	98.12	30
	5S5.366.1Y		BQ	BS	TF15	0.12	54.80	67.12	77.50	82.21	306	94.62	109.61	122.55	31
360°	5S5.299.1Y	BN			TF15	0.12	36.18	44.31	51.16	54.27	202	62.66	72.36	80.90	29
	5S5.329.1Y	BN	BQ		TF15	0.12	43.88	53.74	62.05	65.82	245	76.00	87.76	98.12	30
	5S5.369.1Y		BQ	BS	TF15	0.12	54.80	67.12	77.50	82.21	306	94.62	109.61	122.55	31
	5S5.399.1Y		BQ	BS	TF15	0.12	65.73	80.50	92.95	98.60	367	113.85	131.46	146.98	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 example:	Type 5S5.293.1Y	+	Code BN	=	Ordering no. 5S5.293.1Y.BN

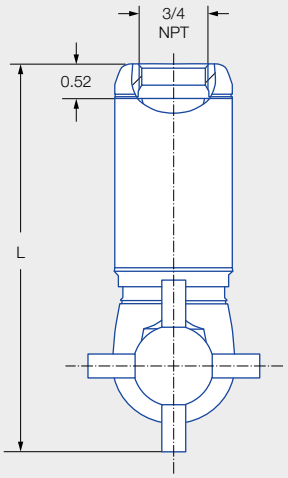
High impact cleaner MeshClean
Series 5T2/5T3

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

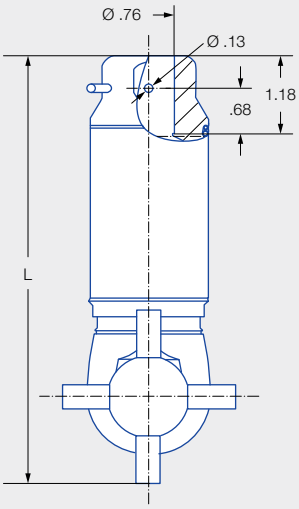
Series 5T2/5T3

FDA

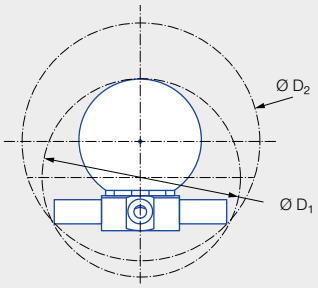
ATEX version available on request



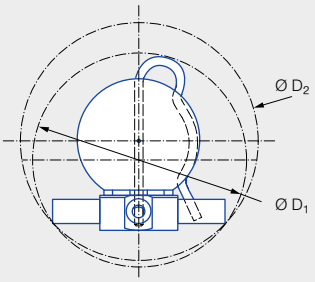
Female thread



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

Max. Tank diameter [ft]	0	15	30	45	60

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
Or scan the QR code.

Type	Dimensions [in]					
	Female thread			Slip-on connection		
	L	Ø D_1	Ø D_2	L	Ø D_1	Ø D_2
5T2.849.1Y	5.59	2.68	3.23	6.18	3.03	3.23
5T2.969.1Y	5.59	2.68	3.23	6.18	3.03	3.23
5T3.029.1Y	5.59	2.68	3.23	6.18	3.03	3.23
5T3.089.1Y	5.83	2.91	3.58	6.42	3.23	3.58

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_{max} = 218 psi)								
		3/4" Female NPT		3/4"- Slip-on				30	40	60	**75**	Liters per min. **5 bar**	100	200	75 psi [SCFM]	
		EPDM	FKM	EPDM	FKM											
360°	**5T2.849.1Y**	**BL**	**42**	**TF07**	**31**	.067	4 x 1.75	3.40	3.92	4.80	**5.37**	**20**	6.20	8.77	0.7	37
	5T2.969.1Y	**BL**	**42**	**TF07**	**31**	.106	4 x 2.70	6.80	7.85	9.61	**10.75**	**40**	12.41	17.55	1.4	39
	5T3.029.1Y	**BL**	**42**	**TF07**	**31**	.126	4 x 3.20	9.35	9.34	10.79	**14.78**	**55**	17.06	24.13	1.9	41
	5T3.089.1Y	**BL**	**42**	**TF07**	**31**	.157	4 x 4.00	13.42	15.50	18.98	**21.22**	**79**	24.50	34.66	2.8	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.

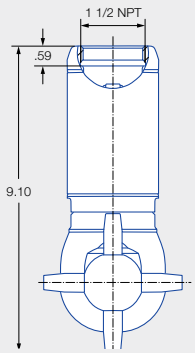
High impact tank cleaning machine MeshClean+
Series 5T5

Features:
- Powerful solid jet nozzles
- Suitable for large tanks with persistent soiling
- Active self-cleaning through special nozzle geometry
- Low maintenance

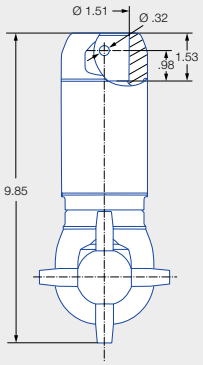
Series 5T5

FDA

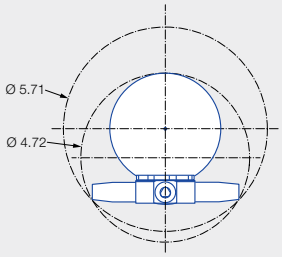
ATEX version available on request



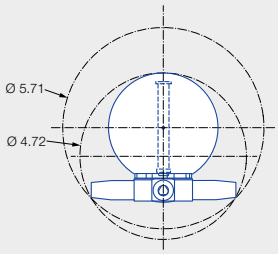
Female thread



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



Insertion diameter and interference circle diameter of the threaded connection



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

Max. Tank diameter [ft]	0	15	30	45	60

Technical data:

- **Maximum operating temperature** 302 °F / 207 °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), 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
- **Adapter** 1 1/2 BSPP is compatible with HygienicFit
- **Rotation monitoring** Sensor-compatible
- **Maintainable**

Function video
Scan the QR code.

Spray angle	Ordering number: Type	Connection: 1 1/2 NPT EPDM	1 1/2 NPT FKM	1 1/2" slip-on connection EPDM	1 1/2" slip-on connection FKM	Narrowest cross-section Ø [in]	Quantity x Ø nozzle [in]	V̇ water [gal/min] p [psi] (p_{max} = 218 psi): 30	45	**75**	Liters per min. **5 bar**	145	V̇ water at 75 psi [SCFM]	Max. tank diameter [ft]
360°	5T5.149.1Y	BS	45	TF15	34	0.17	4 × .17	18.86	23.10	**29.82**	**111**	41.46	3.9	50
	5T5.219.1Y	BS	45	TF15	34	0.22	4 × .22	28.72	35.17	**45.40**	**169**	63.13	5.9	54
	5T5.259.1Y	BS	45	TF15	34	0.25	4 × .25	35.51	43.49	**56.15**	**209**	78.07	7.4	56
	5T5.279.1Y	BS	45	TF15	34	0.28	4 × .28	40.44	49.53	**63.94**	**238**	88.90	8.4	57
	5T5.299.1Y	BS	45	TF15	34	0.31	4 × .31	45.71	55.98	**72.27**	**269**	100.48	9.5	55

BSPP thread available on request.

High impact cleaner IntenseClean
Series 5TM

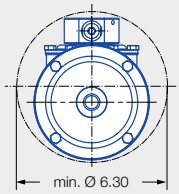
Features:

- 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

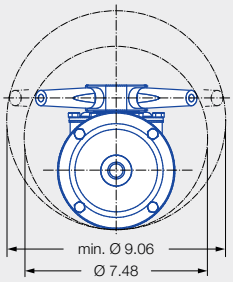
FDA

ATEX version available on request

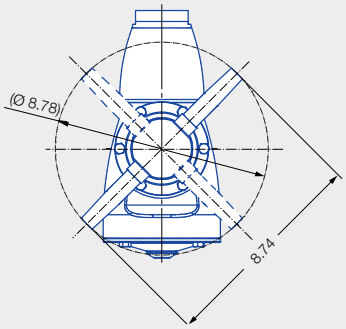
Series 5TM

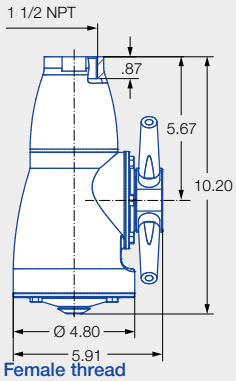


5TM.2xx.1Y
(2 nozzles)



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





Female thread

Max. tank diameter [ft]	0	20	40	60	80

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

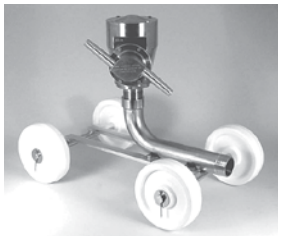
Function video
www.lechler.com/intenseclean
Or scan the QR code.

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_{max} = 100 psi)						
		1 1/2" Male NPT	1 1/2" Female NPT	1 1/2" CL 150 Flange			30	40	60	**75**	Liters per min. **5 bar**	100	
360°	**5TM.208.1Y**	BR	BS	015	0.31	2 × 8.0	33	39	48	**53**	**198**	61	79
	5TM.209.1Y	BR	BS	015	0.35	2 x 9.0	38	45	55	**61**	**227**	70	79
	5TM.210.1Y	BR	BS	015	0.39	2 × 10.0	43	50	61	**68**	**253**	79	79
	5TM.211.1Y	BR	BS	015	0.43	2 x 11.0	50	58	71	**79**	**295**	92	75
	5TM.406.1Y	BR	BS	015	0.24	4 x 6.0	38	43	53	**59**	**224**	69	59
	5TM.407.1Y	BR	BS	015	0.28	4 × 7.0	45	53	65	**72**	**269**	83	66
	5TM.408.1Y	BR	BS	015	0.31	4 × 8.0	53	62	76	**85**	**316**	98	72
	5TM.409.1Y	BR	BS	015	0.35	4 x 9.0	63	73	89	**99**	**370**	115	75
	5TM.410.1Y	BR	BS	015	0.39	4 × 10.0	70	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**



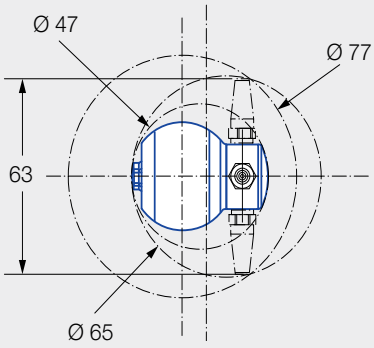
Portable cart for easier transporting of your 5TM from tank to tank. The cart part number is **M20.000.17. BR.**
For use with "BR" connection only.

High pressure tank cleaning machine PressureClean
Series 5TP

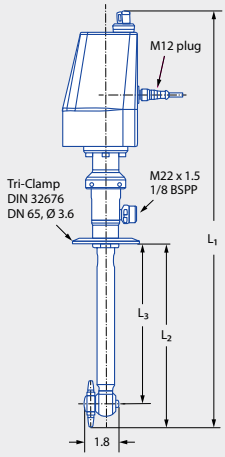
Features:

- Intense cleaning with minimal water and high pressure
- Ideal for small tanks with the persistent soiling
- Driven by an efficient 24 V motor
- "IP 65" certified motor housing
- Scope of delivery:
  - PressureClean
  - 16ft cable with matching plug and open cable end
  - Not included: power supply unit for power supply with 24 VDC/1.1 A

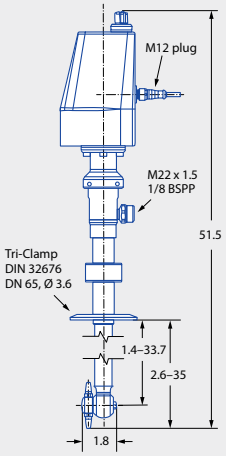
Series 5TP



Insertion diameter and interfence circle diameter



5TP.xx9.1Y.01
5TP.xx9.1Y.02



5TP.xx9.1Y.03

Type	Dimensions [in]		
	L_1	L_2	L_3
5TP.xx9.1Y.01	22.3	9.8	8.6
5TP.xx9.1Y.02	32.1	19.7	18.4

Technical data:

Maximum operating temperature
194 °F

Maximum ambient temperature
122 °F

Installation
Operation in every installation position

Bearing
Ball bearing

Material
Process side:Stainless steel 316L, PTFE with carbon, PEEK, Si_3N_4, EPDM

Weight
6.4 -11.7 lbs

Surface quality
Ra ≤ 1.6 µm
OUTSIDE

Surface quality
Ra ≤ 6.3 µm
INSIDE

Steam suitability
Not suitable

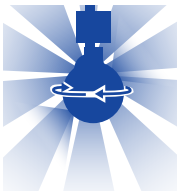
Insertion diameter
2.5 in

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

Recommended operating pressure
1450 psi

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

Maintainable



Spray angle	Ordering number				V̇ water [gal/min]				Max. tank diameter for most persistant soiling [ft]	Max. tank diameter for most medium soiling [ft]
	Type	Lance length			p [psi] (p_{max} = 2,900 psi)					
		10 [in]	20 [in]	39 [in] with adjustable flange	725	1450	Liters per min. **100 bar**	2175		
360°	**5TP.469.1Y**	01	02	03	1.87	2.64	**10**	3.23	3.3	8.2
	5TP.589.1Y	01	02	03	3.73	5.28	**20**	6.47	3.9	9.8
	5TP.659.1Y	01	02	03	5.60	7.92	**30**	9.70	4.6	11.5

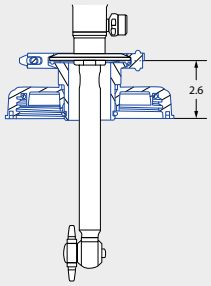
Information on operation
The electric motor may only be switched on when liquid is flowing through the nozzles.

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

Adapter for IBC containers:

- Suitable for all types of PressureClean
- Fits into a G 2 female thread
- Scope of deliver:
  - Adapter with Tri-Clamp as interface for PressureClean
  - IBC cover (DN 150, thread S165 x 7) made of HDPE
  - Stainless steel joint clamp with EPDM seal

05T.P30.00.00.00.0



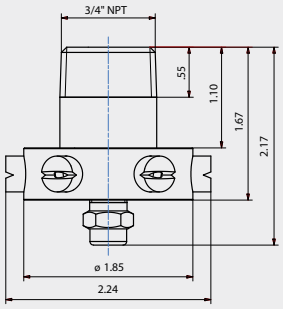
Type	+	Lance length	=	Order no.
5TP.469.1Y	+	01	=	5TP.469.1Y.01

Flushing Nozzle Assembly
Series 597 Lauter Tun

Features:

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

Series 597



Female thread

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 ≤ 0.4 µm
OUTSIDE

Surface quality
Ra ≤ 0.8 µm
INSIDE

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**	40	**45**	60	80
597.085.1C	**BK**	4.83	5.91	**22**	6.82	**7.24**	8.36	9.65

*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 Clean
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 ≤ 0.8 µm on process side, remaining housing Ra ≤ 1.6 µm
OUTSIDE

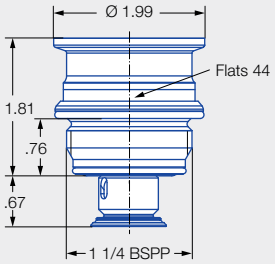
Surface quality
Ra ≤ 1.6 µm
INSIDE

Steam suitability
Not suitable

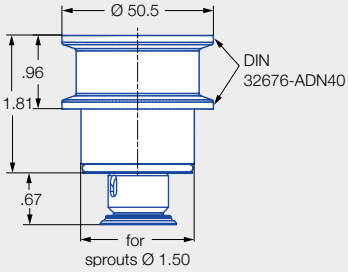
Insertion diameter
1.22 in

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

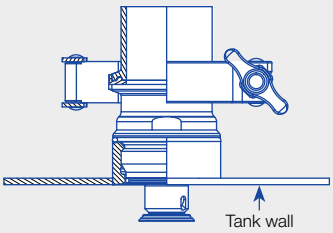


Male thread

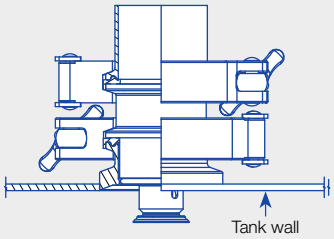


Tri-Clamp connection

Installation situation



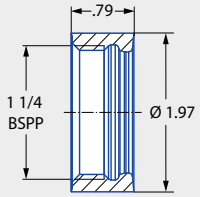
Male thread



Tri-Clamp connection

Weld-in socket for threaded connection

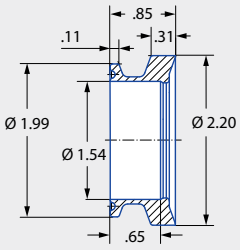
The thread is hygienically encapsulated with two O-rings (included in the scope of delivery of the PopUp Whirly).



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	Material		Connection									
		1Y	21	G1 1/4A ISO 228	Tri-Clamp				Liters per min.				
		1.4404 (316L)	2.4602 (Alloy)			10	20	**30**	**2 bar**	40	60	75	
30°	**5P5.081**	●	●	**AP**	**00**	7.75	10.97	**13.43**	**50**	15.51	19.00	21.24	10

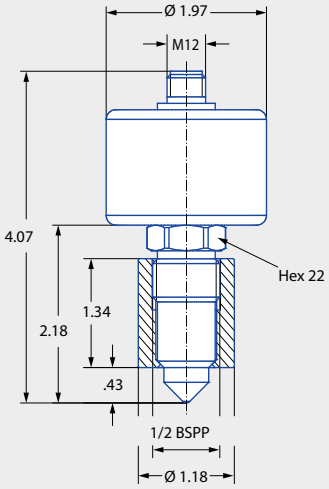
Information on operation
The PopUp Whirly is not suitable for operation with compressed air or another gas. Use above the recommended pressure will have a negative influence on the cleaning result and wear.

*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[1], the sensor function can be specifically adjusted to the tank size, pressure and nozzle.

FDA



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

Operating conditions:
- Ambient temperature: –50 °F to +140 °F
- Process temperature: 0 °F to +212 °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

[1] Software download (free): 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

FDA

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)

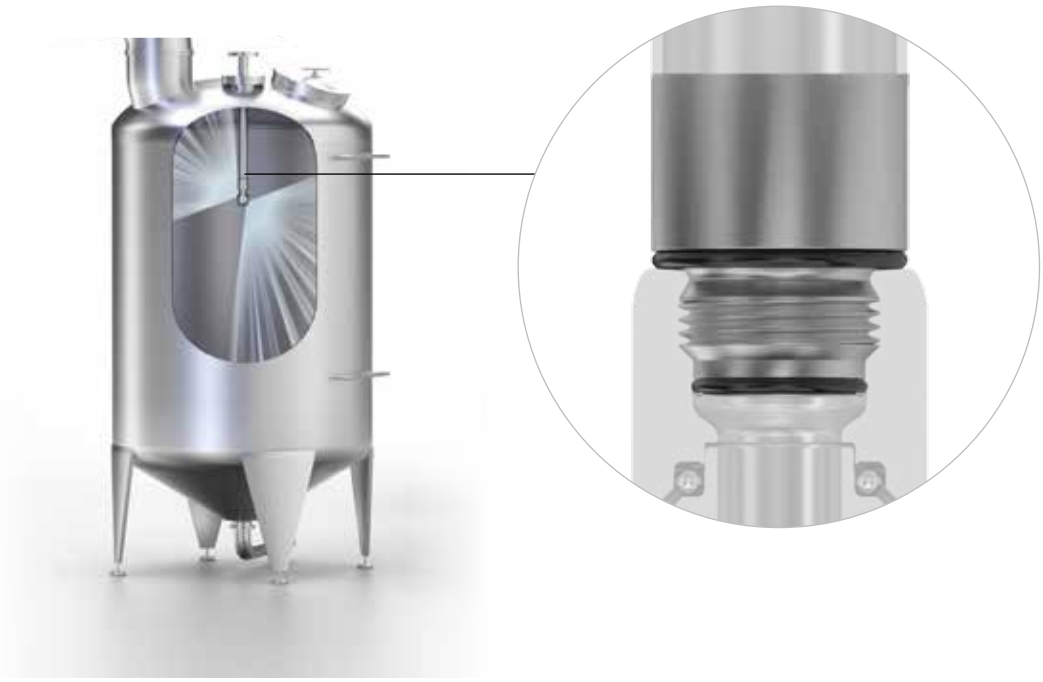
Weight
.15 - .66 lb

Surface quality
Ra ≤ 0.8 µm
OUTSIDE

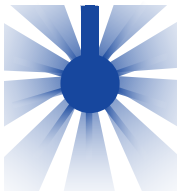
Surface quality
Ra ≤ 0.8 µm
INSIDE

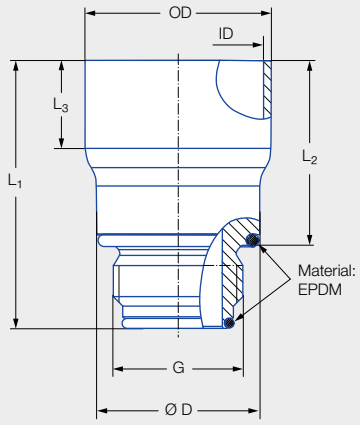
Steam suitability
Suitable

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_1	L_2	L_3	Ø D_1	Ø D_2	Ø D_3	
05C.190.1Y.AE.16	3/8	1.89	1.41	0.71	0.75	0.62	0.85	DIN EN 10357 series D
05C.250.1Y.AE.12	3/8	1.89	1.41	0.67	0.98	0.89	0.85	DIN EN 10357 series D
05C.250.1Y.AG.12	1/2	2.20	1.54	0.71	0.98	0.89	1.22	DIN EN 10357 series D
05C.381.1Y.AK.15	3/4	2.17	1.49	0.71	1.50	1.38	1.32	DIN EN 10357 series D
05C.381.1Y.AM.16	1	2.32	1.54	0.91	1.50	1.37	1.59	DIN EN 10357 series D
05C.508.1Y.AP.15	1 1/4	2.24	1.50	0.87	2.00	1.88	1.94	DIN EN 10357 series D
05C.635.1Y.AR.16	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	**05C.000.E9.AE.00**
1/2	**05C.000.E9.AG.00**
3/4	**05C.000.E9.AK.00**
1	**05C.000.E9.AM.00**
1 1/4	**05C.000.E9.AP.00**
1 1/2	**05C.000.E9.AR.00**

O-ring set also available in FKM on request.

PERFECT FOR RELIABLE PLANNING
Tank*Clean* SIMULATION SOFTWARE

Planing 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.

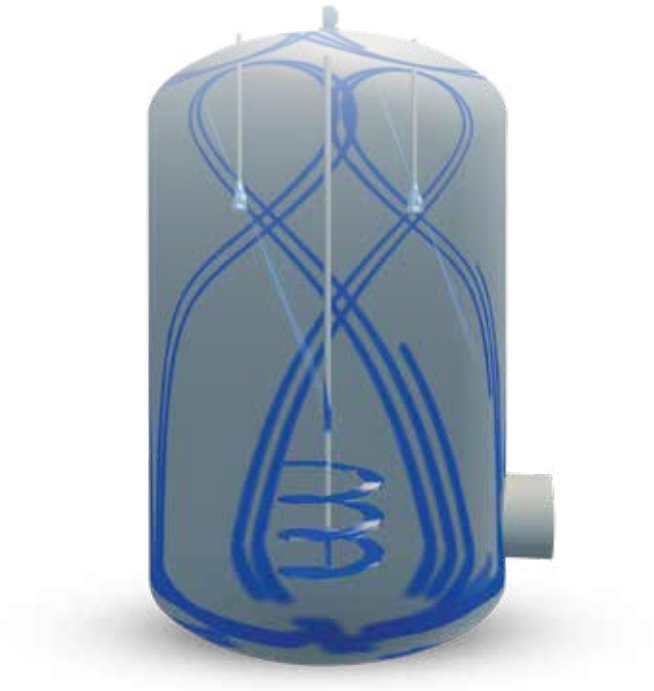
Our unique service – your individual benefit

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

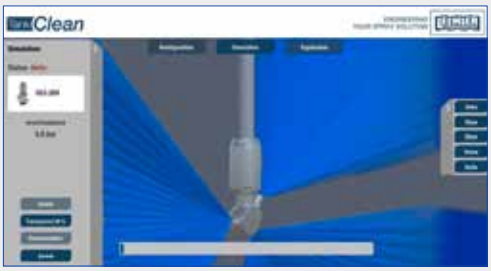
Function video

Scan the QR-code or go to:
www.lechler.de/TankCleanGB

TankClean

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.