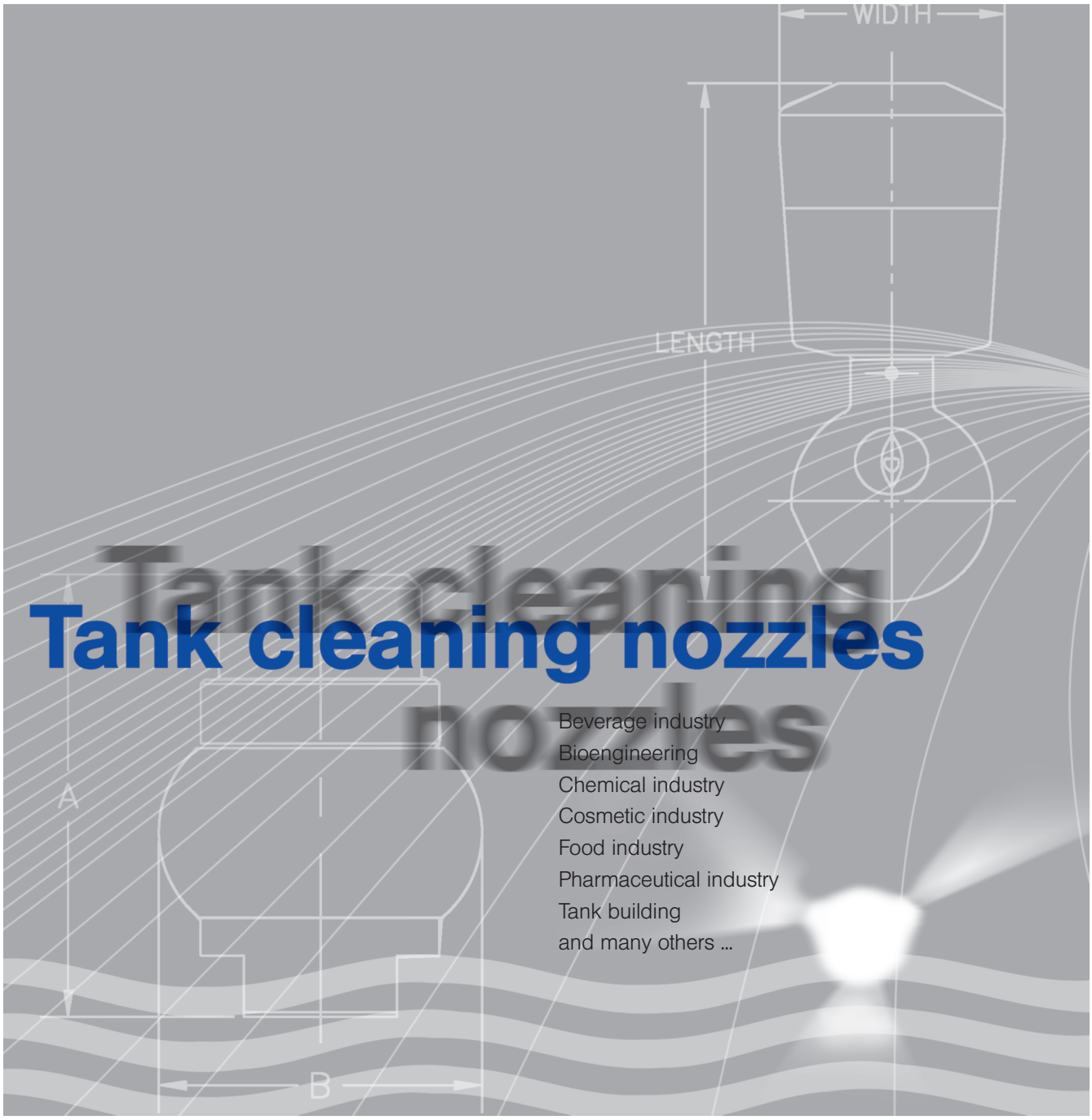
ENGINEERING
YOUR SPRAY SOLUTION



Tank cleaning nozzles

Beverage industry
Bioengineering
Chemical industry
Cosmetic industry
Food industry
Pharmaceutical industry
Tank building
and many others ...

Tank cleaning nozzles

Operating principles

Static

Static spray balls do not rotate and therefore require considerably more fluid. They are used primarily for rinsing tanks. They are inexpensive to purchase and are very robust (trouble-free).

Free-spinning

The cleaning fluid drives the spray head by means of specially positioned nozzles. The rapidly repeated impacts removes the soil and rinses 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. Either a turbine wheel with an internal gear or a hydraulic brake is used to control the rotation. This ensures that the speed remains in the optimum range even at higher pressures. The droplets produced are larger and strike the tank wall at higher speed. These rotating cleaning nozzles thus achieve an even higher impact.

Gear-controlled

The cleaning fluid drives an internal gear by means of a turbine wheel so that the spray head rotates by two axes. The solid jet nozzles mounted on the spray head produce powerful jets. These 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 therefore ideal for very large tanks and the toughest cleaning tasks.

Materials

Lechler tank cleaning nozzles are made of highest-quality materials, such as stainless steel 316L SS, PVDF, PEEK, or Teflon®. In addition to meeting the requirements for resistance and wear, materials used in the beverage, food and pharmaceutical industries must also be food-grade.

Many of the materials used for Lechler tank cleaning nozzles fully comply with FDA requirements and conform to (EC) 1935/2004.

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

Hygiene 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 3A® or EHEDG.

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

ATEX

Lechler offers several nozzle series designed especially for use in explosive atmospheres. For more detailed information, please request our brochure “Precision nozzles for tank and equipment cleaning”.

For detailed information and planning resources, please request our brochure „Precision nozzles for tank and equipment cleaning“.

Tank cleaning nozzles

Free-spinning Tank cleaning nozzles	Series	∢	V̇ [l/min] at recommended operating pressure	Recommended operating pressure	Max. Temperature	Connection	Page
	**500.234 PicoWhirly**	300°	9.8	3 bar	200 °C	M6	**7.7**
	566 MicroWhirly	180° 360°	15 – 21	2 bar	130 °C	3/8 BSPP male 3/8 BSPP female	**7.7**
	**500.186 MiniWhirly**	300°	18	2 bar	50 °C	1/2 BSPP	**7.8**
	**500.191 PVDF MicroWhirly**	180° 360°	13 – 20	2 bar	90 °C	1/2 BSPP	**7.8**
	**5MC MicroSpinner**	60° 180° 360°	32 – 40	2 bar	140 °C	3/8 BSPP 1/2" Slip-on	**7.9**

Max. tank diameter [m]	0	1	2	3	4	5	6	7	8	9
500.234 PicoWhirly	■									
566 MicroWhirly	■	■								
500.186 MiniWhirly	■	■								
500.191 PVDF MicroWhirly	■	■								
5MC MicroSpinner	■	■								

Tank cleaning nozzles

Free-spinning Tank cleaning nozzles	Series	∢	V̇ [l/min] at recommended operating pressure	Recommended operating pressure	Max. Temperature	Connection	Page
	**5MI MiniSpinner**	60° 180° 360°	30 – 100	2 bar	140 °C	3/4 BSPP 1/2 BSPP 3/4” Slip-on	**7.10**
	**594/595 Hygienic Whirly**	360°	14 – 82	3 bar	100 °C	3/8 BSPP 3/4 BSPP 3/4” Slip-on	**7.11**
	**569 Whirly**	270° 360°	48 – 145	2 bar	140 °C	3/4 BSPP 3/4” Slip-on	**7.12**
	**573/583 Teflon® Whirly**	270° 360°	67 – 225	2 bar	140 °C	3/4 BSPP 1 BSPP 3/4” Slip-on	**7.13**
	**577 Gyro**	360°	200 – 659	3 bar	90 °C	1 BSPP 2 BSPP	**7.14**

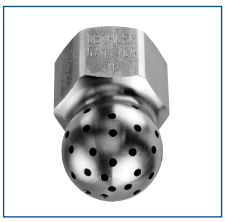
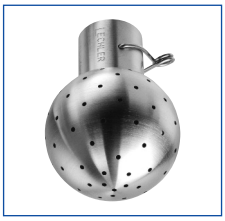
Max. tank diameter [m]: 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

Tank cleaning nozzles

Controlled rotating Tank cleaning nozzles	Series	∢	$\dot{V}$ [l/min] at recommended operating pressure	Recommended operating pressure	Max. Temperature	Connection	Page
	**5S2/5S3 XactClean® HP**	270° 360°	40 – 213	5 bar	95 °C	3/8 BSPP 1/2 BSPP 3/4 BSPP 1 BSPP 1/2" Slip-on 3/4" Stlip-on	**7.15**
	Max. tank diameter [m]		0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9				

Gear-controlled Tank cleaning nozzles	Series	∢	$\dot{V}$ [l/min] at recommended operating pressure	Recommended operating pressure	Max. Temperature	Connection	Page
	**5TA IntenseClean Hygienic**	360°	40 – 79	5 bar	95 °C	3/4 BSPP	**7.16**
	Max. tank diameter [m]		0 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27				
	**5TB IntenseClean Hygienic**	360°	169 – 261	5 bar	95 °C	1 1/2 BSPP	**7.16**
	Max. tank diameter [m]		0 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27				
	**5TM IntenseClean**	360°	198 – 411	5 bar	60 °C	1 1/2 BSPP	**7.17**
	Max. tank diameter [m]		0 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27				

Tank cleaning nozzles

Static spray balls	Series	∢	$\dot{V}$ [l/min] at recommended operating pressure	Recommended operating pressure	Max. Temperature	Connection	Page
	**540/541**	240°	22 – 145	3 bar	200 °C	1/2 BSPP	**7.18**
	**591**	180° 360°	17 – 563	3 bar	200 °C	Pin connection	**7.19**

Rotating cleaning nozzles »PicoWhirly« / »MicroWhirly« Series 500.234 / 566

PicoWhirly Series 500.234

- Very compact design
- Self rotating
- Rotating solid jets
- Completely made of stainless steel

Material:
316L SS

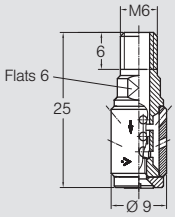
Max. temperature:
200 °C

Recommended operating pressure:
3 bar

Installation:
Operation in every direction is possible

Filtration:
Line strainer with a mesh size of 0.3 mm/50 mesh

Bearing:
Kolsterised slide bearing



Spray angle	Ordering number Type	E Ø [mm]	V̇ [l/min] p [bar] (p_{max} = 5 bar) 1	2	3	at 40 psi [US gal./min]	Max. tank diameter [m]
300°	**500.234.G9.00**	1.8	5.7	8.0	9.8	2.5	0.9

E = Narrowest free cross-section

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

Operation with compressed air 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.

MicroWhirly Series 566

- Compact design
- Self rotating
- Effective flat jet nozzles

Materials:
316L SS and PEEK

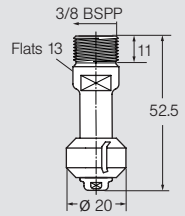
Max. temperature:
130 °C

Recommended operating pressure:
2 bar

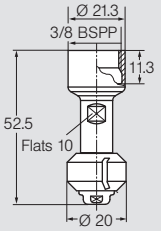
Installation:
Operation in every direction is possible

Filtration:
Line strainer with a mesh size of 0.3 mm/50 mesh

Bearing:
Slide bearing made of PEEK



3/8 BSPP male thread



3/8 BSPP female thread

Spray angle	Ordering number Type	Connection 3/8 BSPP* male	3/8 BSPP* female	E Ø [mm]	V̇ [l/min] p [bar] (p_{max} = 6 bar) 1	2	3	at 40 psi [US gal./min]	Max. tank diameter [m]
180°	**566.873.1Y**	**AE**	**AF**	1.0	12	15	18	5	1.6
	566.933.1Y	**AE**	**AF**	2.4	15	21	26	7	1.7
180°	**566.874.1Y**	**AE**	**AF**	1.0	12	15	18	5	1.6
	566.934.1Y	**AE**	**AF**	2.4	15	21	26	7	1.7
360°	**566.879.1Y**	**AE**	**AF**	1.0	12	15	18	5	1.6
	566.939.1Y	**AE**	**AF**	2.4	15	21	26	7	1.7

E = Narrowest free cross-section · *NPT and weld-on version on request

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

Operation with compressed air 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.

Slip-on information: - R-clip made of 316L SS is included (Ordering number: 095.022.1Y.50.94.E)
- Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and rotating cleaning nozzle.

ATEX version on request

Rotating cleaning nozzles »MiniWhirly« / »PVDF MicroWhirly« Series 500.186 / 500.191

MiniWhirly Series 500.186

- Effective flat jet nozzles
- For applications in barrel and canister cleaning

Materials:
POM, 316 SS

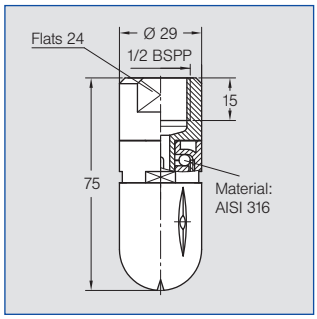
Max. temperature:
50 °C

Recommended operating pressure:
2 bar

Installation:
Vertically facing downward

Filtration:
Line strainer with a mesh size of 0.3 mm/50 mesh

Bearing:
Ball bearing made of stainless steel



Spray angle	Ordering number Type	E Ø [mm]	V̇ [l/min] p [bar] (p_{max} = 5 bar) 1	2	3	at 40 psi [US gal./ min]	Max. tank diameter [m]
300°	**500.186.56.AH**	1.9	13	18	22	6	1.3

E = Narrowest free cross-section

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

Operation with compressed air 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.

PVDF MicroWhirly Series 500.191

- Very inexpensive
- Self rotating
- Effective flat jet nozzles
- Completely made of PVDF

Material:
PVDF

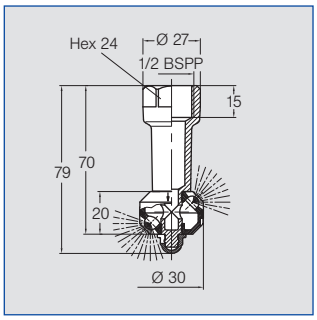
Max. temperature:
90 °C

Recommended operating pressure:
2 bar

Installation:
Operation in every direction is possible

Filtration:
Line strainer with a mesh size of 0.3 mm/50 mesh

Bearing:
Slide bearing made of PVDF



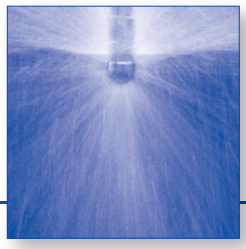
Spray angle	Ordering number Type	E Ø [mm]	Con-nection BSPP female	V̇ [l/min] p [bar] (p_{max} = 5 bar) 1	2	3	at 40 psi [US gal./min]	Max. tank diameter [m]
180°	**500.191.5E.02**	2.2	1/2"	9	13	16	4	0.8
180°	**500.191.5E.01**	2.2	1/2"	9	13	16	4	0.8
270°	**500.191.5E.31**	2.2	1/2"	14	20	24	6	1.1
360°	**500.191.5E.00**	2.2	1/2"	14	20	24	6	1.1

E = Narrowest free cross-section

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

Rotating cleaning nozzle »MicroSpinner«

Series 5MC



- Completely made of stainless steel
- Self rotating
- Efficient slot design
- Modern bearing construction

Materials:
316L SS,
440C SS

Max. temperature:
140 °C

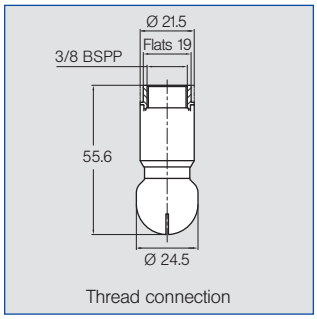
Recommended operating pressure:
2 bar

Installation:
Operation in every direction is possible

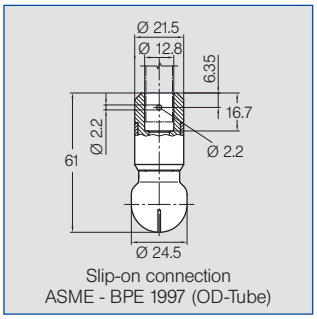
Filtration:
Line strainer with a mesh size of 0.1 mm/170 mesh

Bearing:
Double ball bearing made of 440C SS

ATEX version on request



Thread connection



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

Spray angle	Ordering number: Type	Connection*: 3/8 BSPP	Connection*: 1/2" Slip-on	E Ø [mm]	V̇ [l/min] p [bar] (p_max = 5 bar): 1	2	3	at 40 psi [US gal./min]	Max. tank diameter [m]
60°	**5MC.042.1Y**	**AF**	**TF05**	3.0	28	40	49	12	-
180°	**5MC.004.1Y**	**AF**	**TF05**	0.8	22	32	39	10	1.8
360°	**5MC.049.1Y**	**AF**	**TF05**	0.9	28	39	48	12	1.8

E = Narrowest free cross-section
*NPT, more slip-on sizes and weld-on versions on request

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

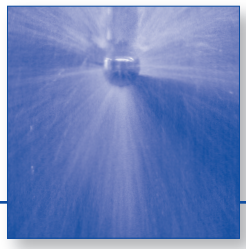
Operation with compressed air only for short-term usage. Operation above the recommended operating pressure means higher wear and smaller droplets. This might have adverse effects on the cleaning result.

Slip-on information: - R-clip made of 316L SS is included (Ordering no.: 095.013.1E.05.59).
- Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and rotating cleaning nozzle.

Example of ordering:	Type	+	Connection	=	Ordering no.
	5MC.042.1Y	+	**AF**	=	**5MC.042.1Y.AF**

Rotating cleaning nozzle »MiniSpinner«

Series 5MI



- Completely made of stainless steel
- Self rotating
- Efficient slot design
- Modern bearing construction

Materials:
316L SS,
440C SS

Max. temperature:
140 °C

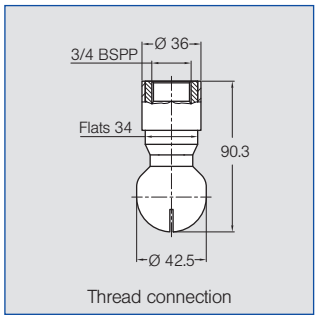
Recommended operating pressure:
2 bar

Installation:
Operation in every direction is possible

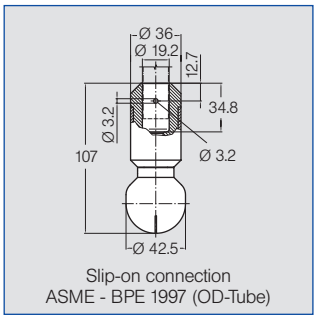
Filtration:
Line strainer with a mesh size of 0.1 mm/170 mesh

Bearing:
Double ball bearing made of 440C SS

ATEX version on request



Thread connection



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

Spray angle	Ordering number: Type	Connection*: 1/2 BSPP	Connection*: 3/4 BSPP	Connection*: 3/4" Slip-on	E Ø [mm]	V̇ [l/min] p [bar] (pmax = 5 bar): 1	2	3	at 40 psi [US gal./min]	Max. tank diameter [m]
60°	**5MI.162.1Y**	**AH**	**-**	**TF07**	2.6	45	63	77	20	-
180°	**5MI.114.1Y**	**-**	**AL**	**TF07**	1.0	47	67	82	21	2.6
360°	**5MI.054.1Y**	**-**	**AL**	**TF07**	0.5	21	30	37	9	1.8
	5MI.074.1Y	**-**	**AL**	**TF07**	0.6	35	49	60	15	2.1
	5MI.014.1Y	**-**	**AL**	**TF07**	0.9	49	69	85	21	2.3
	5MI.209.1Y	**-**	**AL**	**TF07**	1.5	71	100	122	31	2.6

E = Narrowest free cross-section
*NPT, more slip-on sizes and weld-on versions on request

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

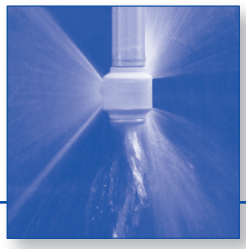
Operation with compressed air only for short-term usage. Operation above the recommended operating pressure means higher wear and smaller droplets. This might have adverse effects on the cleaning result.

Slip-on information: - R-clip made of 316L SS is included (Ordering no.: 095.022.1Y.50.60).
- Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and rotating cleaning nozzle.

Example of ordering:	Type	+	Connection	=	Ordering no.
	5MI.162.1Y	+	**AH**	=	**5MI.162.1Y.AH**

Rotating cleaning nozzle »HygienicWhirly«

Series 594 / 595



- EHEDG version available
- Self rotating
- Effective flat jet nozzles
- Also suited for the application of foam

Materials:
316L SS, PEEK,
EHEDG version:
O-ring made of EPDM

Max. temperature:
100 °C, short-term up to 140 °C

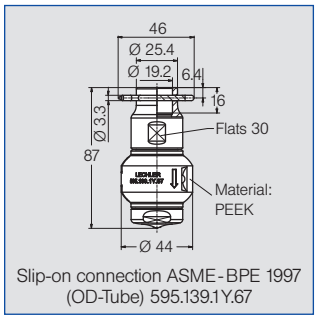
Recommended operating pressure:
3 bar

Installation:
Operation in every direction is possible

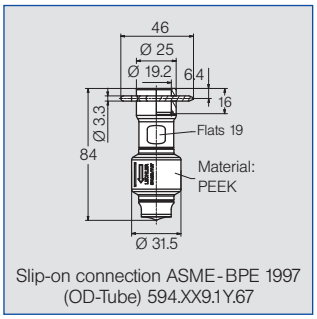
Filtration:
Line strainer with a mesh size of 0.3 mm/50 mesh

Bearing:
Slide bearing made of PEEK

EHEDG version

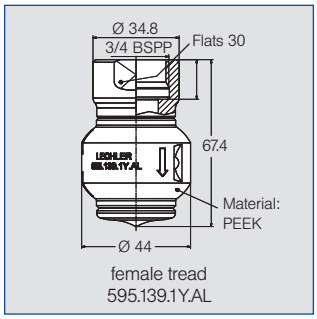


Slip-on connection ASME-BPE 1997
(OD-Tube) 595.139.1Y.67

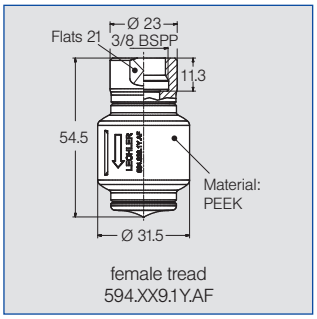


Slip-on connection ASME-BPE 1997
(OD-Tube) 594.XX9.1Y.67

Standard version



female tread
595.139.1Y.AL



female tread
594.XX9.1Y.AF

Spray angle	Ordering number: Type	Connection: 3/8 BSPP* female	Connection: 3/4 BSPP* female	Connection: 3/4" Slip-on EHEDG version	E Ø [mm]	V̇ [l/min] p [bar] (pmax = 5 bar): 0.5	1	2	3	at 40 psi [US gal./min]	Max. tank diameter [m]
360°	**594.829.1Y**	**AF**	**-**	**67**	1.7	6	8	11	14	3	0.8
	594.879.1Y	**AF**	**-**	**67**	2.5	8	11	15	18	5	1.2
	595.009.1Y	**AF**	**-**	**67**	4.0	16	22	32	39	10	1.5
	595.049.1Y	**AF**	**-**	**67**	4.2	20	28	40	49	12	2.0
	595.139.1Y	**-**	**AL**	**67**	5.0	34	47	67	82	21	2.7

E = Narrowest free cross-section · *NPT on request

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

Slip-on information: - R-clip made of 316L SS is included (Ordering number: 095.022.1Y.50.94.E).
- Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and rotating cleaning nozzle.

Example of ordering:	Type	+	Connection	=	Ordering no.
	594.829.1Y	+	**AF**	=	**594.829.1Y.AF**

Rotating cleaning nozzle »Whirly«

Series 569

- Popular and proven design
- Powerful flat jets
- Wide range of flow rates

Materials:
316L SS,
PEEK, Rulon 641

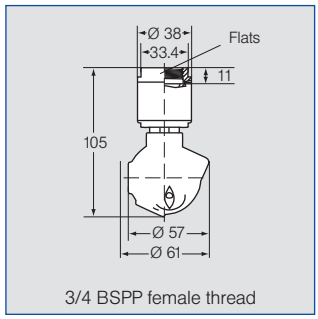
Max. temperature:
140 °C

Recommended operating pressure:
2 bar

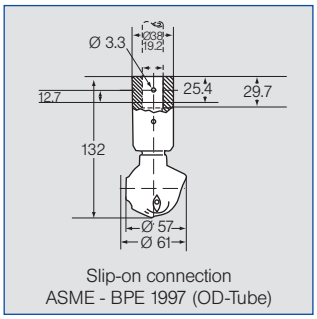
Installation:
Operation in every direction is possible; in horizontal installation position no rotating until 2 bar

Filtration:
Line strainer with a mesh size of 0.1 mm/170 mesh

Bearing:
Double ball bearing made of stainless steel



3/4 BSPP female thread



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

Spray angle	Ordering number			E Ø [mm]	V̇ [l/min] p [bar] (p_{max} = 6 bar)				Max. tank diameter [m]
	Type	Connection			1	2	3	at 40 psi [US gal./min]	
		3/4 BSPP* female	3/4" Slip-on						
270°	**569.055.1Y**	**AL**	**TF07**	3.6	36	48	62	15	1.8
	569.135.1Y	**AL**	**TF07**	4.8	52	71	87	22	2.1
	569.195.1Y	**AL**	**TF07**	5.6	69	97	119	30	2.6
270°	**569.056.1Y**	**AL**	**TF07**	3.6	36	48	62	15	1.8
	569.106.1Y	**AL**	**TF07**	4.8	41	58	71	18	2.1
	569.196.1Y	**AL**	**TF07**	5.6	69	97	119	30	2.6
360°	**569.059.1Y**	**AL**	**TF07**	3.2	36	48	62	15	1.8
	569.139.1Y	**AL**	**TF07**	3.6	52	71	87	22	2.1
	569.199.1Y	**AL**	**TF07**	4.8	69	97	119	30	2.6
	569.279.1Y	**AL**	**TF07**	7.1	103	145	178	45	3.0

E = Narrowest free cross-section · *NPT on request

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

Operation with compressed air 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.

Slip-on information: - R-clip made of 316L SS is included (Ordering number: 095.022.1Y.50.60.E).
- Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and rotating cleaning nozzle.

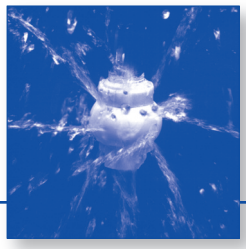
ATEX version on request

Example of ordering:	Type	+	Connection	=	Ordering no.
	569.055.1Y.	+	AL	=	569.055.1Y.AL

For additional connection options please refer to our brochure „Precision Spray Nozzles for Tank and Equipment Cleaning“

Rotating cleaning nozzle »Teflon® Whirly«

Series 573 / 583



- Self rotating
- Rotating solid jets
- Recommended for tanks made of glass and enamel
- 3A® version available

Material:
PTFE (Teflon®)

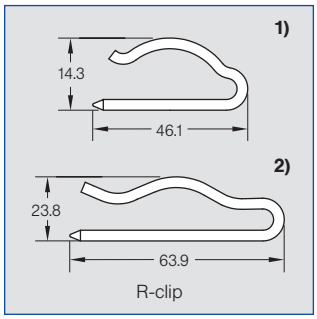
Max. temperature:
95 °C
(Versions for use with higher temperature (130 °C) on request)

Recommended operating pressure:
2 bar

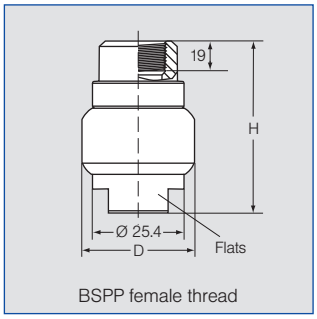
Installation:
Operation in every direction is possible

Filtration:
Line strainer with a mesh size of 0.3 mm/50 mesh

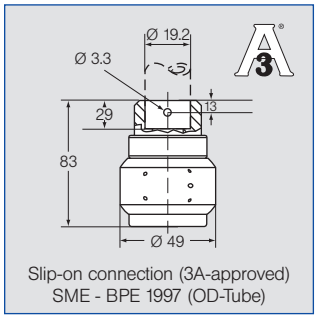
Bearing:
Slide bearing made of PTFE



R-clip



BSPP female thread



Slip-on connection (3A-approved)
SME - BPE 1997 (OD-Tube)

Spray angle	Ordering number: R-clip	Type	Connection: 3/4 BSPP	1 BSPP	3/4" Slip-on	E Ø [mm]	V̇ [l/min] p [bar] (p_{max} = 6 bar): 1	2	3	at 40 psi [US gal./min]	Dimmensions for female thread version: Height H [mm]	Diameter D [mm]	Max. tank diameter [m]
270°	1	583.266.55	AL	-	TF07	3.4	103	145	178	45	74	49	2.8
270°	1	573.266.55	AL	-	TF07	3.4	103	145	178	45	74	49	2.8
360°	1	583.119.55	AL	-	TF07	1.8	41	58	71	18	74	49	2.4
	1	583.209.55	AL	-	TF07	3.5	71	100	122	31	74	49	2.5
	1	583.269.55	AL	-	TF07	4.8	103	145	178	45	74	49	2.8
	2	583.279.55	-	AN	TF10	3.7	106	150	184	47	100	78.5	3.0
	2	583.349.55	-	AN	TF10	5.6	159	225	276	70	100	78.5	3.2

E = Narrowest free cross-section · NPT on request

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

Druckluft nur kurzzeitig zum Trockenblasen einsetzbar. Einsatz oberhalb des empfohlenen Drucks hat negative Auswirkungen auf Reinigungsergebnis und Verschleiß. Teflon® ist eine registrierte Handelsmarke von E. I. Dupont de Nemours and Company.

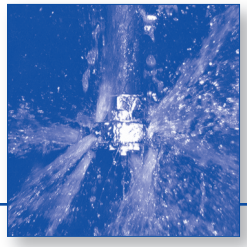
Slip-on information: - R-clip made of 316L SS is included
(Ordering number: R-clip 1: 095.022.1Y.50.88.E, R-clip 2: 095.022.1Y.50.60.E).
- Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and rotating cleaning nozzle.

Example of ordering:	Type	+	Connection	=	Ordering no.
	583.114.55.	+	AL	=	583.114.55.AL

For additional spray angles, nozzle sizes and connection options please refer to our brochure „Precision Spray Nozzles for Tank and Equipment Cleaning“

Rotating cleaning nozzle »Gyro«

Series 577



- Self rotating
- Effective flat jet nozzles
- Large free cross sections, insensitive to clogging

Max. tank diameter:
5.5 m

Materials:
316L SS, PTFE

Max. temperature:
90 °C

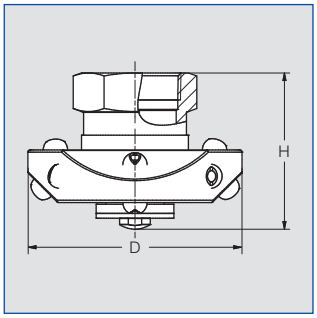
Recommended operating pressure:
3 bar

Installation:
Vertically facing downward

Filtration:
Line strainer with a mesh size of 0.3 mm/50 mesh

Bearing:
Slide bearing made of PTFE

Accessories:
Spare parts set consisting of: top seal, bottom seal, bolt, nut, sleeve, instructions for use



Spray angle	Ordering no. Type	Connection 1 BSPP*	Connection 2 BSPP*	V̇ [l/min] p [bar] (pmax = 5bar) 1	2	3	5	at 40 psi [US gal/min]	Dimensions Height H [mm]	Diameter D [mm]
360°	**577. 289. 1Y**	**AN**	**-**	115	163	200	258	50	72	118
	577. 369. 1Y	**AN**	**-**	182	258	316	408	80	72	118
	577. 409. 1Y	**-**	**AW**	228	322	394	509	100	103	156
	577. 439. 1Y	**-**	**AW**	273	386	473	610	120	103	156
	577. 499. 1Y	**-**	**AW**	380	538	659	851	170	103	156

* NPT on request

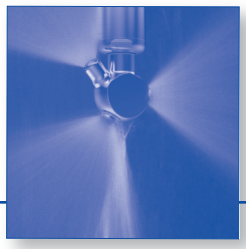
The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

Operation with compressed air 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.

Example for ordering:	Type	+	Connection	=	Ordering no.
	577. 283. 1Y.	+	**AN**	=	**577. 283. 1Y. AN**

Rotating cleaning nozzle »XactClean® HP«

Series 5S2 / 5S3



- Controlled rotation
- Powerful flat jet nozzles
- Very efficient tank cleaning nozzle

Materials:
316L SS, 316 SS, 632 SS, PEEK, PTFE, Zirconium oxide, EPDM

Max. temperature:
95 °C

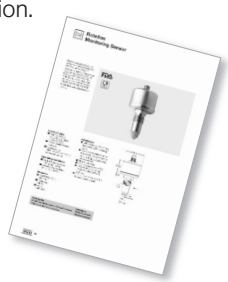
Recommended operating pressure:
5 bar

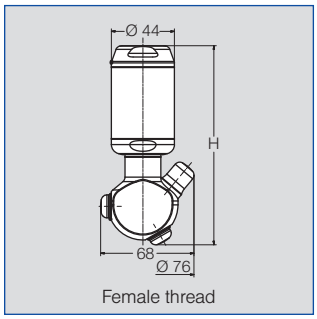
Installation:
Operation in every direction is possible

Filtration:
Line strainer with a mesh size of 0.3 mm/50 mesh

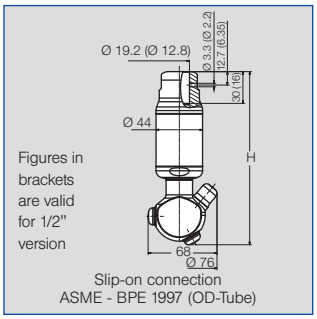
Bearing:
Double ball bearing

Rotation monitoring sensor:
Sensor compatible,
Please ask for more information.





Female thread



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

Nozzle dimensions [mm]

Connection	H
AF	148
AH	149
AL	139
AN	139
TF05	150
TF07	164

ATEX version on request

Spray angle	Ordering number: Type	Connection: 3/8 BSPP* female	1/2 BSPP* female	3/4 BSPP* female	1 BSPP* female	1/2" Slip-on	3/4" Slip-on	E Ø [mm]	V̇ [l/min] p [bar] (p_{max} = 20 bar): 2	5	10	at 40 psi [US gal./min]	Max. tank diameter [m]
270°	**5S2.955.1Y**	**AF**	**AH**	**-**	**-**	**TF05**	**-**	2.0	25	40	57	7.8	3.5
	5S3.055.1Y	**-**	**AH**	**-**	**-**	**TF05**	**-**	2.0	41	65	92	12.8	4.0
	5S3.115.1Y	**-**	**AH**	**AL**	**-**	**-**	**TF07**	2.0	60	94	133	18.4	6.0
	5S3.185.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	89	141	199	27.7	7.0
	5S3.235.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	111	175	248	34.3	7.5
	5S3.265.1Y	**-**	**-**	**AL**	**AN**	**-**	**TF07**	2.0	135	213	301	41.8	8.0
270°	**5S2.956.1Y**	**AF**	**AH**	**-**	**-**	**TF05**	**-**	2.0	25	40	57	7.8	3.5
	5S2.056.1Y	**-**	**AH**	**-**	**-**	**TF05**	**-**	2.0	41	65	92	12.8	4.0
	5S3.116.1Y	**-**	**AH**	**AL**	**-**	**-**	**TF07**	2.0	60	94	133	18.4	6.0
	5S3.186.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	89	141	199	27.7	7.0
	5S3.236.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	111	175	248	34.3	7.5
	5S3.266.1Y	**-**	**-**	**AL**	**AN**	**-**	**TF07**	2.0	135	213	301	41.8	8.0
360°	**5S2.959.1Y**	**AF**	**AH**	**-**	**-**	**TF05**	**-**	1.7	25	40	57	7.8	3.5
	5S3.059.1Y	**-**	**AH**	**-**	**-**	**TF05**	**-**	2.0	41	65	92	12.8	4.0
	5S3.119.1Y	**-**	**AH**	**AL**	**-**	**-**	**TF07**	2.0	60	94	133	18.4	6.0
	5S3.189.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	89	141	199	27.7	7.0
	5S3.239.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	111	175	248	34.3	7.5
	5S3.269.1Y	**-**	**-**	**AL**	**AN**	**-**	**TF07**	2.0	135	213	301	41.8	8.0

E = Narrowest free cross-section. · * NPT on request

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

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

Slip-on information:
- R-clip made of 316L SS is included (Ordering number: 095.022.1Y.50.60.E (TF07), 095.013.1E.05.59.0 (TF05)).
- Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and rotating cleaning nozzle.

High impact tank cleaning machine »IntenseClean Hygienic« Series 5TA / 5TB

NEW!

- Gear-controlled
- Particularly powerful solid jets
- Operating pressures up to 15 and 25 bar possible

Materials:
316L SS, 632 SS
PEEK, PTFE, Zirconium oxide, EPDM

Max. temperature:
95 °C

Recommended operating pressure:
5 bar

Installation:
Operation in every direction possible

Filtration:
Line strainer with a mesh size of 0.2 mm/80 mesh

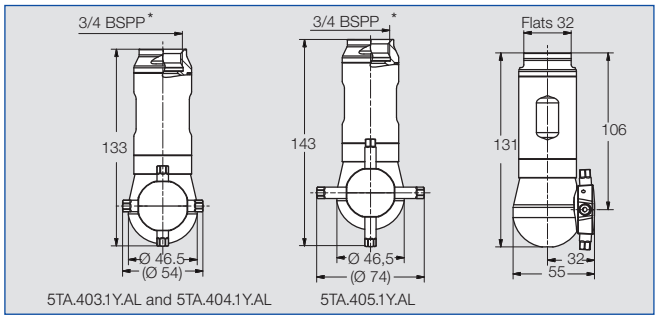
Bearing:
Ball bearing

Weight:
5TA: 0.9 kg
5TB: 4.0 kg

Rotation monitoring sensor:
Sensor compatible,
Please ask for more information.

ATEX version on request

5TA

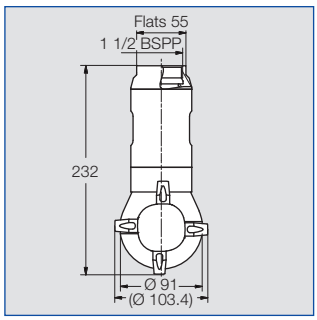


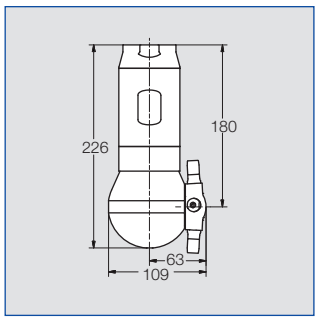
Spray angle	Ordering number / Type	E Ø [mm]	Number, Ø nozzles [mm]	V̇ [l/min] p [bar] (p_{max} = 15 bar) 2	5	10	40 psi [US gal./min]	Max. tank-diameter [m]
360°	**5TA.403.1Y.AL**	1.5	4 x 3.0	25	40	56	7.8	12.0
	5TA.404.1Y.AL	1.5	4 x 4.0	42	66	93	12.9	12.5
	5TA.405.1Y.AL	1.5	4 x 5.0	50	79	112	15.5	13.0

* Slip-on connection on request
E = Narrowest free cross-section

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

5TB





Spray angle	Ordering number / Type	E Ø [mm]	Number, Ø nozzles [mm]	V̇ [l/min] p [bar] (p_{max} = 25 bar) 2	5	10	40 psi [US gal./min]	Max. tank-diameter [m]
360°	**5TB.406.1Y.AS**	6.0	4 x 6.0	107	169	239	33.1	14.0
	5TB.407.1Y.AS	6.0	4 x 7.0	135	213	302	41.9	14.0
	5TB.408.1Y.AS	6.0	4 x 8.0	165	261	369	51.2	15.0

E = Narrowest free cross-section

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

High impact tank cleaning machine »IntenseClean« Series 5TM

- Gear driven
- Very powerful solid jets
- Popular and proven design

Materials*:
316L SS,
PTFE, carbon fibre

Max. temperature:
60 °C
(Version for higher temperatures on request)

Recommended operating pressure:
5 bar

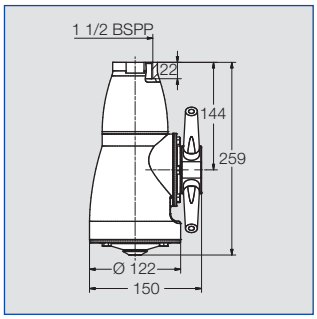
Installation:
Operation in every direction is possible

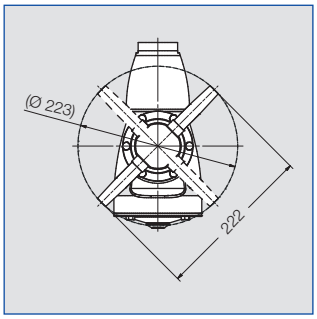
Filtration:
Line strainer with a mesh size of 0.2 mm/80 mesh

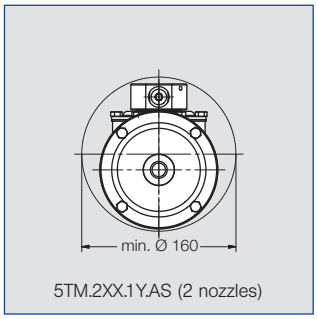
Bearing:
Ball bearing

Weight:
7.5 kg

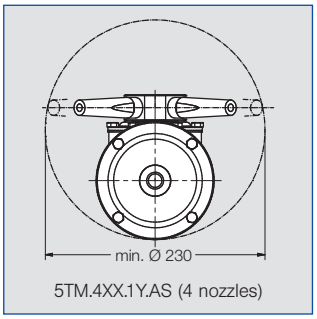
Rotation monitoring sensor:
Sensor compatible,
Please ask for more information.







5TM.2XX.1Y.AS (2 nozzles)



5TM.4XX.1Y.AS (4 nozzles)

Spray angle	Ordering no.	E Ø [mm]	Number, Ø Nozzles [mm]	V̇ [l/min] p [bar] (p_{max} = 7 bar) 2	3	5	at 40 psi [US gal./min]	Max. tank diameter [m]
360°	**5TM.208.1Y.AS**	8	2 x 8.0	125	153	198	39	24.0
	5TM.210.1Y.AS	10	2 x 10.0	160	196	253	50	24.0
	5TM.406.1Y.AS	6	4 x 6.0	140	171	221	43	18.0
	5TM.407.1Y.AS	7	4 x 7.0	170	208	269	53	20.0
	5TM.408.1Y.AS	8	4 x 8.0	200	245	316	62	22.0
	5TM.410.1Y.AS	10	4 x 10.0	260	318	411	81	23.0

E = Narrowest free cross-section

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

* The mentioned materials refer to the main components of the tank cleaning machine.
A detailed list of all contained materials is available on request.

Static spray balls

Series 540 / 541

- Compact design
- Effective solid jets
- Also to use with saturated steam

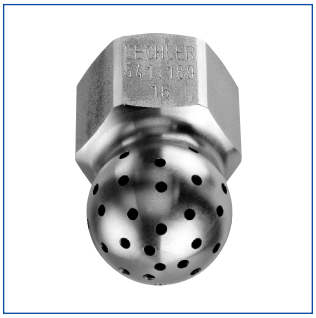
Material:
303 SS

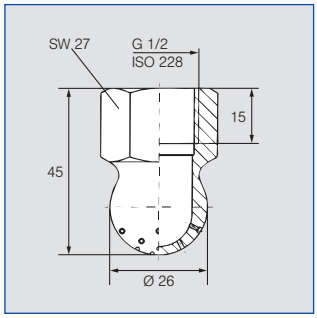
Max. temperature:
200 °C

Recommended operating pressure:
3 bar

Installation:
Operation in every direction is possible

For additional spray balls please refer to our brochure „Precision Spray Nozzles for Tank and Equipment Cleaning“





Spray angle	Ordering no. Type	E Ø [mm]	V̇ [l/min] p [bar] 0,5	1	2	3	at 40 psi [US gal./min]	Max. tank diameter [m]
240°	**540.909.16**	0.8	9	13	18	22	6	6.5
	540.989.16	1.0	14	20	28	34	9	7.0
	541.109.16	1.5	29	40	57	70	18	7.5
	541.189.16	2.0	45	64	90	110	28	8.3
	541.239.16	2.3	59	83	118	145	37	9.5

E = Narrowest free cross-section · NPT on request

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

In most applications, static spray balls do not deliver the same cleaning power as rotating nozzles, anyway they do have advantages that make them indispensable for certain tasks:

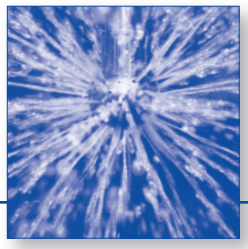
- No moving parts
- Self-draining
- Easy to inspect
- Proven use in hygienically sensitive environments

Should a rotating nozzle stop turning for some reason, parts of the tank may remain uncleaned. This cannot happen with spray balls. However, gaps can occur in the spray pattern if individual openings are blocked with soil.

Compared to rotating nozzles, static spray balls usually need two to three times the amount of liquid.

Static spray balls

Series 591



- Popular spray ball design
- Powerful solid jets

Materials:
316Ti SS,
Pin: 316L SS

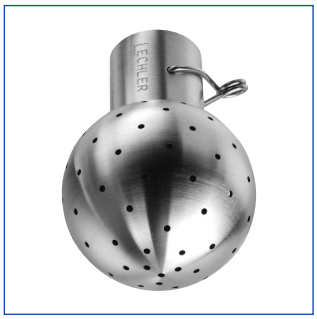
Other materials (316L SS and PTFE) available on request.

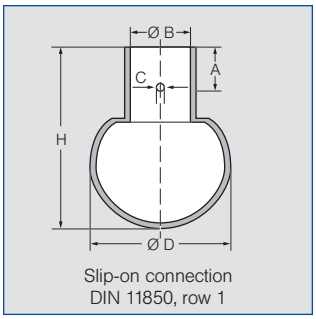
Max. temperature:
200 °C

Recommended operating pressure:
3 bar

Installation:
Operation in every direction is possible

For additional spray balls please refer to our brochure „Precision Spray Nozzles for Tank and Equipment Cleaning“





Slip-on connection
DIN 11850, row 1

Spray angle	Ordering no. Type	E Ø [mm]	V̇ [l/min] p [bar] (p_{max} = 5 bar) 0.5	1.0	2.0	3.0	at 40 psi [US gal./min]	Dimensions approx. [mm] Ø D	Height H	Con-nection B	Slip-on	C	A	Max. tank diameter [m]
360°	**591.M11.17.00**	0.8	7	10	14	17	4	20	32,5	8.2	DN8	2.2	9.0	2.0
	591.X11.17.00	1.2	25	35	49	61	15	24	37,5	12.2	DN10	2.2	9.0	2.2
	591.Y11.17.00	1.6	49	70	99	121	31	30	42	18.2	DN15	2.2	9.0	2.5
	591.A21.17.00	2.0	91	128	181	222	56	40	53	22.2	DN20	2.5	9.0	3.5
	591.B31.17.00	2.1	130	183	259	318	80	64	90	28.2	DN25	2.8	18.0	5.2
	591.B51.17.00	3.0	206	292	412	505	128	64	90	28.2	DN25	2.8	18.0	5.4
180°	**591.A23.17.00**	2.0	74	105	148	182	46	40	53	22.2	DN20	2.5	9.0	2.5
	591.B53.17.00	3.0	146	207	292	358	91	64	90	28.2	DN25	2.8	18.0	4.6
180°	**591.B32.17.00**	2.1	103	145	205	251	64	64	90	28.2	DN25	2.8	18.0	5.2
	591.D42.17.00	2.2	230	325	460	563	142	90	122	52.3	DN50	3.3	25.0	5.5

E = Narrowest free cross-section
Female thread and more slip-on sizes on request

The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

Slip-on information: - R-clip made of 316L SS or similar is included.
- Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and static spray ball.

In most applications, static spray balls do not deliver the same cleaning power as rotating nozzles, anyway they do have advantages that make them indispensable for certain tasks:

- No moving parts
- Self-draining
- Easy to inspect
- Proven use in hygienically sensitive environments

Should a rotating nozzle stop turning for some reason, parts of the tank may remain uncleaned. This cannot happen with spray balls. However, gaps can occur in the spray pattern if individual openings are blocked with soil.

Compared to rotating nozzles, static spray balls usually need two to three times the amount of liquid.