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. 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 droplets produced are larger and strike the tank wall at higher speed. These rotating cleaning nozzles thus achieve an even higher impact which is especially for large tanks important.

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, PVDF, PEEK, or PTFE. 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	7.6
	Max. tank diameter [m]	0 – 1					
	**566** MicroWhirly	180° 360°	15 – 21	2 bar	130 °C	3/8 BSPP male 3/8 BSPP female	7.6
	Max. tank diameter [m]	0 – 1					
	**500.186** MiniWhirly	300°	18	2 bar	50 °C	1/2 BSPP	7.7
	Max. tank diameter [m]	0 – 1					
	**500.191** PVDF MicroWhirly	180° 360°	13 – 20	2 bar	90 °C	1/2 BSPP	7.7
	Max. tank diameter [m]	0 – 1					
	**5MC** MicroSpinner	60° 180° 360°	32 – 40	2 bar	140 °C	3/8 BSPP 1/2" Slip-on	7.8
	Max. tank diameter [m]	0 – 1					
	**5MI** MiniSpinner	60° 180° 360°	30 – 100	2 bar	140 °C	3/4 BSPP 1/2 BSPP 3/4" Slip-on	7.9
	Max. tank diameter [m]	0 – 2					

Tank cleaning nozzles

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

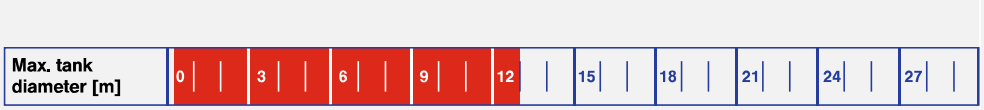
Controlled rotating tank cleaning nozzles	Series		V̇ [l/min] at recommended operating pressure	Recommended operating pressure	Max. Temperature	Connection	Page
	**5S2/5S3** **XactClean® HP**	180° 270° 360°	40 – 213	5 bar	95 °C	3/8 BSPP 1/2 BSPP 3/4 BSPP 1 BSPP 1/2" Slip-on 3/4" Slip-on	7.14
	**5S5** **XactClean® HP+**	180° 270° 360°	202 – 367	3 bar	95 °C	1 BSPP 1 1/4 BSPP 1 1/2 BSPP 1 1/2" Slip-on	7.15

Max. tank diameter [m]

Tank cleaning nozzles

Gear-controlled tank cleaning nozzles	Series		V̇ [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
	5TB IntenseClean Hygienic	360°	169 – 261	5 bar	95 °C	1 1/2 BSPP	7.16
	**5TM** IntenseClean	360°	198 – 411	5 bar	60 °C	1 1/2 BSPP	7.17

Static spray balls	Series		V̇ [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
	**5B2/5B3 RinseClean**	180° 360°	15 – 670	2 bar	200 °C	Slip-on connection	7.19



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

PicoWhirly Series 500.234

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

Materials:
316L SS

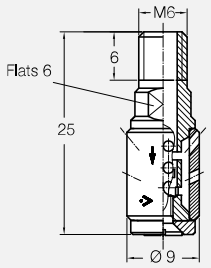
Max. temperature:
200 °C

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



Male thread

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 has negative effects on the cleaning result and wear.

MicroWhirly Series 566

- Compact design
- Self rotating
- Effective flat jet nozzles

Materials:
316L SS and PEEK

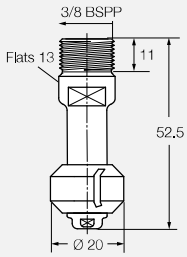
Max. temperature:
130 °C

Recommended operating pressure:
2 bar

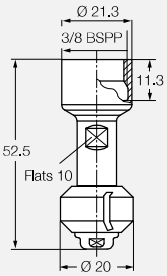
Installation:
Operation in every direction is possible

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

Bearing:
Slide bearing made of PEEK



Male thread



Female thread

Spray angle	Ordering number Type	Connection 3/8 BSPP male	Connection 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 has negative effects on the cleaning result and wear.

Slip-on information:
- R-clip made of stainless steel 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

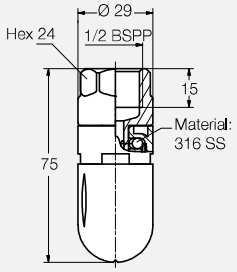
Recommended operating pressure:
2 bar

Installation:
Vertically facing downward

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

Bearing:
Ball bearing made of stainless steel

FDA



Female thread

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

PVDF MicroWhirly Series 500.191

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

Material:
PVDF

Max. Temperatur:
90 °C

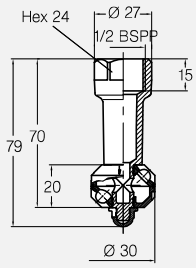
Recommended operating pressure:
2 bar

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

FDA



Female thread

Spray angle	Ordering number Type	E Ø [mm]	Connection 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 · 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.

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

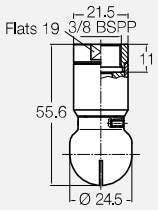
Installation:
Operation in every direction is possible

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

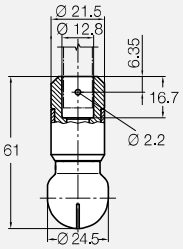
Bearing:
Double ball bearing made of 440C SS

ATEX version on request

FDA



Female thread



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

Spray angle	Ordering number: Type	Mat. no. 1Y 316L SS	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.022**	○	**AF**	**TF05**	1.0	16	23	28	7	-
	5MC.042	○	**AF**	**TF05**	3.0	28	40	49	12	-
180°	**5MC.004**	○	**AF**	**TF05**	0.8	22	32	39	10	1.8
360°	**5MC.049**	○	**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 has negative effects on the cleaning result and wear.

Slip-on information:
- R-clip made of stainless steel 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

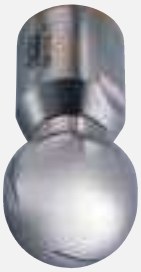
Installation:
Operation in every direction is possible

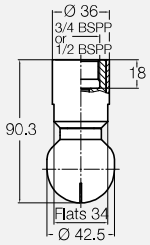
Filtration:
Line strainer with a mesh size of 0.1 mm/170 mesh

Bearing:
Double ball bearing made of 440C SS

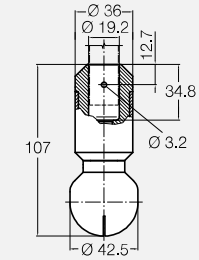
ATEX version on request

FDA





Female thread



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

Spray angle	Ordering no.					E Ø [mm]	V̇ [l/min]				Max. tank diameter [m]
	Type	Mat. no. 1Y 316L SS	Connection				p [bar] (p_{max} = 5 bar)				
			1/2 BSPP	3/4 BSPP	3/4" Slip-on		1	2	3	at 40 psi [US gal./min]	
60°	**5MI.162**	○	**AH**	**-**	**TF07**	2.6	45	63	77	20	-
180°	**5MI.113**	○	**-**	**AL**	**TF07**	1.0	47	67	82	21	2.6
180°	**5MI.114**	○	**-**	**AL**	**TF07**	1.0	47	67	82	21	2.6
360°	**5MI.054**	○	**-**	**AL**	**TF07**	0.5	21	30	37	9	1.8
	5MI.074	○	**-**	**AL**	**TF07**	0.6	35	49	60	15	2.1
	5MI.014	○	**-**	**AL**	**TF07**	0.9	49	69	85	21	2.3
	5MI.209	○	**-**	**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 has negative effects on the cleaning result and wear.

Slip-on information:
- R-clip made of stainless steel 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	+	Material no.	+	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

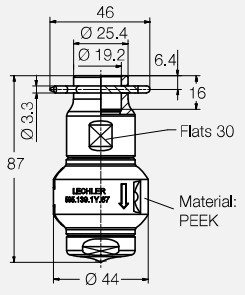
Max. temperature:
100 °C,
short-term up to 140 °C

Recommended operating pressure:
3 bar

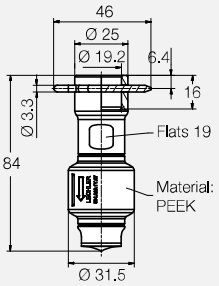
Installation:
Operation in every direction is possible

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

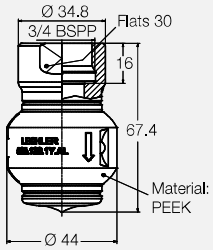
Bearing:
Slide bearing made of PEEK



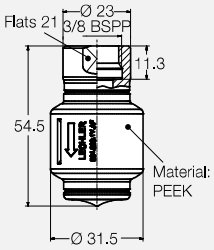
EHEDG-version Dimensions slip-on connection according to ASME-BPE (OD-tube) 595.139.1Y.67



EHEDG-version Dimensions slip-on connection according to ASME-BPE (OD-tube) 59X.XX9.1Y.67



Female tread 595.139.1Y.AL



Female tread 59X.XX9.1Y.AF

Spray angle	Ordering no.				E Ø [mm]	V̇ [l/min]					Max. tank diameter [m]
	Type	Connection				p [bar] (p_{max} = 5 bar)					
		3/8 BSPP female	3/4 BSPP female	3/4" Slip-on EHEDG version		0.5	1	2	3	at 40 psi [US gal./min]	
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 stainless steel 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

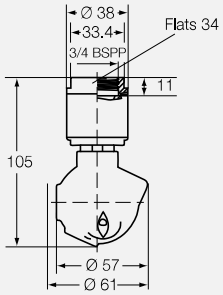
Installation:
Operation in every direction is possible; in horizontal installation position no rotating until 2 bar

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

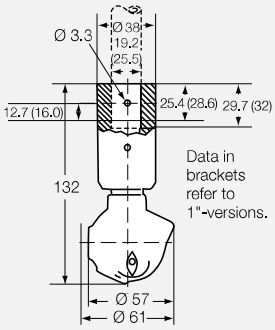
Bearing:
Double ball bearing made of stainless steel

ATEX version on request

FDA



Female thread



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

Spray angle	Ordering no.			E Ø [mm]	V̇ [l/min]				Max. tank diameter [m]
	Type	Connection			p [bar] (p_{max} = 6 bar)				
		3/4 BSPP female	3/4" Slip-on		1	2	3	at 40 psi [US gal./min]	
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 has negative effects on the cleaning result and wear.

Slip-on information:
- R-clip made of stainless steel 316L SS is included(Ordering no.: 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.
	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 »PTFE Whirly«
Series 573/583

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

Materials:
PTFE

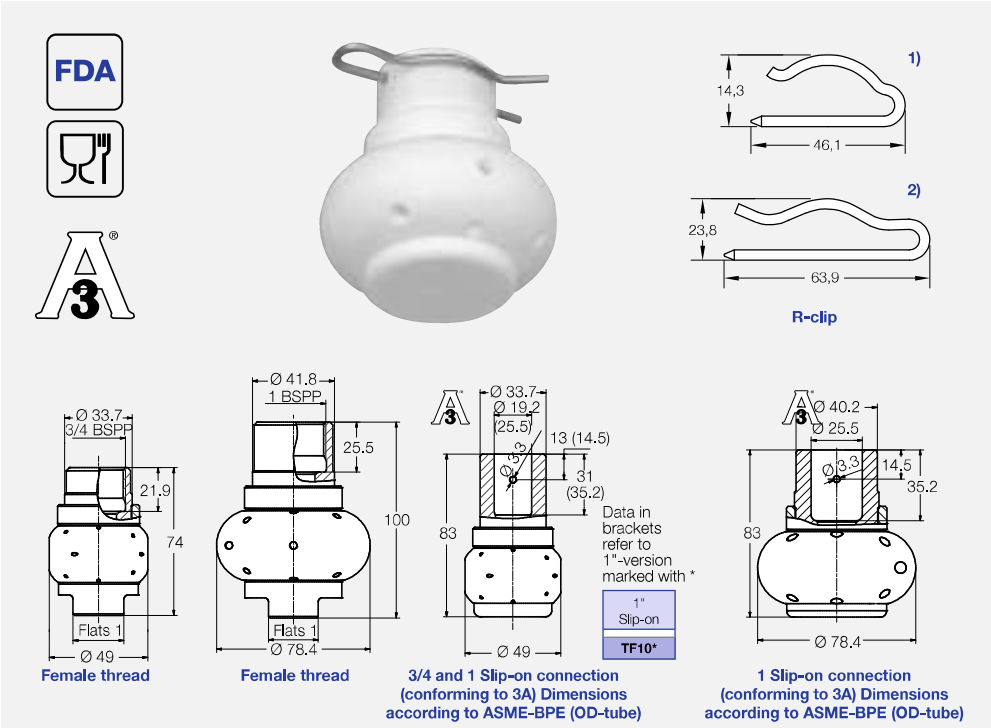
Max. temperature:
95 °C
(Versions for use with higher temperature (130 °C) on request)

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



Spray angle	R-clip	Ordering no. Type	Connection 3/4 BSPP	Connection 1 BSPP	Connection 3/4" Slip-on	Connection 1" Slip-on	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]
270°	1)	**583.266.55**	**AL**	**-**	**TF07**	**TF10***	3.4	103	145	178	45	2.8
270°	1)	**573.266.55**	**AL**	**-**	**TF07**	**TF10***	3.4	103	145	178	45	2.8
360°	1)	**583.119.55**	**AL**	**-**	**TF07**	**TF10***	1.8	41	58	71	18	2.4
	1)	**583.209.55**	**AL**	**-**	**TF07**	**TF10***	3.5	71	100	122	31	2.5
	1)	**583.269.55**	**AL**	**-**	**TF07**	**TF10***	4.8	103	145	178	45	2.8
	2)	**583.279.55**	**-**	**AN**	**-**	**TF10**	3.7	106	150	184	47	3.0
	2)	**583.349.55**	**-**	**AN**	**-**	**TF10**	5.6	159	225	276	70	3.2

E = narrowest free cross-section · NPT on request
* see drawing 3 for details

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

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 has negative effects on the cleaning result and wear.

Slip-on information:
- R-clip made of stainless steel 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.
	583.266.55	+	AL	=	583.266.55.AL

Rotating cleaning nozzle »Gyro«
Series 577

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

Max. tank diameter:
5.5 m

Materials:
316L SS, PTFE

Max. temperature:
90 °C

Recommended operating pressure:
3 bar

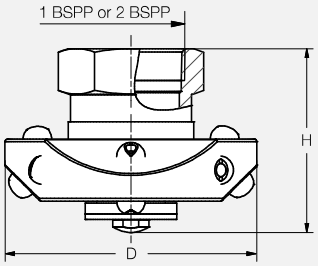
Installation:
Vertically facing downward

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

FDA



Female thread

Spray angle	Ordering no.			$\dot{V}$ [l/min]					Dimensions	
	Type	Connection		p [bar] (p_{max} = 5 bar)						
		1 BSPP	2 BSPP	1	2	3	5	at 40 psi [US gal./min]	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 has negative effects on the cleaning result and wear.

Example for Ordering:	**Type**	**+**	**Connection**	**=**	**Ordering no.**
	577.289.1Y.	**+**	**AN**	**=**	**577.289.1Y.AN**

Rotating cleaning nozzle »XactClean® HP«
Series 5S2/5S3

- Controlled rotation
- Powerful flat fan 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:

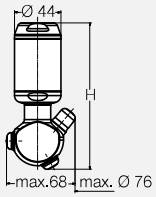
Sensor compatible, please ask for more information.

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.

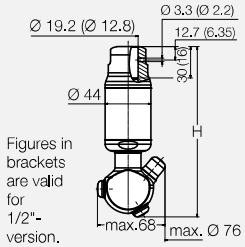
Operation with compressed air only for short-term usage. Operation above the recommended operating pressure has negative effects on the cleaning result and wear.

Slip-on information:
- R-clip made of stainless steel 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.

FDA



Female thread



Dimensions according to ASME-BPE (OD-tube)

Nozzle dimensions [mm]

Connection	Max. Height H
AF	146
AH	149
AL	139
AN	139
TF05	148
TF07	164

ATEX version on request

Spray angle	Ordering no. 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} = 15 bar) 2	5	10	at 40 psi [US gal./min]	Max. tank diameter [m]
180°	**5S2.953.1Y**	**AF**	**AH**	**-**	**-**	**TF05**	**-**	2.0	25	40	57	7.8	3.5
	5S3.053.1Y	**-**	**AH**	**-**	**-**	**-**	**TF07**	2.0	41	65	92	12.8	4.0
	5S3.113.1Y	**-**	**AH**	**AL**	**-**	**-**	**TF07**	2.0	60	94	133	18.4	6.0
	5S3.183.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	89	141	199	27.7	7.0
	5S3.233.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	111	175	248	34.3	7.5
	5S3.263.1Y	**-**	**-**	**AL**	**AN**	**-**	**TF07**	2.0	135	213	301	41.8	8.0
180°	**5S2.954.1Y**	**AF**	**AH**	**-**	**-**	**TF05**	**-**	2.0	25	40	57	7.8	3.5
	5S3.054.1Y	**-**	**AH**	**-**	**-**	**-**	**TF07**	2.0	41	65	92	12.8	4.0
	5S3.114.1Y	**-**	**AH**	**AL**	**-**	**-**	**TF07**	2.0	60	94	133	18.4	6.0
	5S3.184.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	89	141	199	27.7	7.0
	5S3.234.1Y	**-**	**-**	**AL**	**-**	**-**	**TF07**	2.0	111	175	248	34.3	7.5
	5S3.264.1Y	**-**	**-**	**AL**	**AN**	**-**	**TF07**	2.0	135	213	301	41.8	8.0
270°	**5S2.955.1Y**	**AF**	**AH**	**-**	**-**	**TF05**	**-**	2.0	25	40	57	7.8	3.5
	5S3.055.1Y	**-**	**AH**	**-**	**-**	**-**	**TF07**	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
	5S3.056.1Y	**-**	**AH**	**-**	**-**	**-**	**TF07**	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**	**-**	**-**	**-**	**TF07**	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

Rotating cleaning nozzle »XactClean® HP+« Series 5S5

- Controlled rotation
- Powerful flat fan nozzles
- Very efficient tank cleaning nozzle, especially for larger tanks

Materials:
316L SS,
316 SS, PEEK, EPDM

Max. temperature:
95 °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:
Double ball bearing

Rotation monitoring sensor:

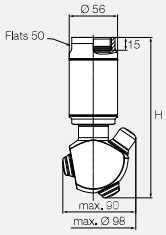
Sensor compatible, please ask for more information.

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.

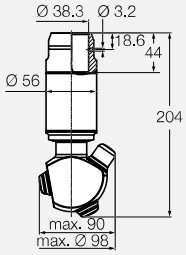
Operation with compressed air only for short-term usage. Operation above the recommended operating pressure has negative effects on the cleaning result and wear.

Slip-on information:
– R-clip made of stainless steel 316L SS is included (Ordering number: 095.013.1Y.06.45.0).
– Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and rotating cleaning nozzle.

FDA



Female thread



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

Nozzle dimensions [mm]

Connection	Max. Height [H]
AN	185
AQ	185
AS	187

Spray angle	Ordering no.					E Ø [mm]	V̇ [l/min]				Max. tank diameter [m]
	Type	Connection					p [bar] (p_{max} = 10 bar)				
		1 BSPP	1 1/4 BSPP	1 1/2 BSPP	1 1/2" Slip-on		2	3	5	at 40 psi [US gal./ min]	
180°	**5S5.293.1Y**	**AN**	**-**	**-**	**TF15**	3.0	165	202	261	51.2	9.0
	5S5.323.1Y	**AN**	**AQ**	**-**	**TF15**	3.0	200	245	316	62.0	9.2
	5S5.363.1Y	**-**	**AQ**	**AS**	**TF15**	3.0	250	306	395	77.6	9.4
180°	**5S5.294.1Y**	**AN**	**-**	**-**	**TF15**	3.0	165	202	261	51.2	9.0
	5S5.324.1Y	**AN**	**AQ**	**-**	**TF15**	3.0	200	245	316	62.0	9.2
	5S5.364.1Y	**-**	**AQ**	**AS**	**TF15**	3.0	250	306	395	77.6	9.4
270°	**5S5.295.1Y**	**AN**	**-**	**-**	**TF15**	3.0	165	202	261	51.2	9.0
	5S5.325.1Y	**AN**	**AQ**	**-**	**TF15**	3.0	200	245	316	62.0	9.2
	5S5.365.1Y	**-**	**AQ**	**AS**	**TF15**	3.0	250	306	395	77.6	9.4
270°	**5S5.296.1Y**	**AN**	**-**	**-**	**TF15**	3.0	165	202	261	51.2	9.0
	5S5.326.1Y	**AN**	**AQ**	**-**	**TF15**	3.0	200	245	316	62.0	9.2
	5S5.366.1Y	**-**	**AQ**	**AS**	**TF15**	3.0	250	306	395	77.6	9.4
360°	**5S5.299.1Y**	**AN**	**-**	**-**	**TF15**	3.0	165	202	261	51.2	9.0
	5S5.329.1Y	**AN**	**AQ**	**-**	**TF15**	3.0	200	245	316	62.0	9.2
	5S5.369.1Y	**-**	**AQ**	**AS**	**TF15**	3.0	250	306	395	77.6	9.4
	5S5.399.1Y	**-**	**AQ**	**AS**	**TF15**	3.0	300	367	474	93.1	9.6

E = narrowest free cross-section · NPT on request

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

- 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

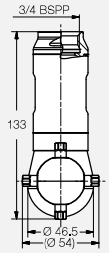
Rotation monitoring sensor:

Sensor compatible, please ask for more information.

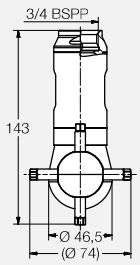
ATEX version on request

FDA

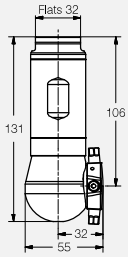
5TA



Female thread 5TA.403.1Y.AL and 5TA.404.1Y.AL



Female thread 5TA.405.1Y.AL



Female thread

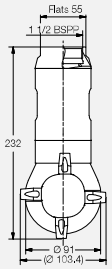
Spray angle	Ordering no. Type	E Ø [mm]	Number. Ø Nozzles [mm]	V̇ [l/min] p [bar] (p_{max} = 15 bar) 2	5	10	at 40 psi [US gal./ min]	Max. tank diameter [m]
360°	**5TA.403.1Y.AL**	1.5	4 x 3.0	25	40	56	7.8	12.0
	5TA.404.1Y.AL	1.5	4 x 4.0	35	55	78	10.9	12.5
	5TA.405.1Y.AL	1.5	4 x 5.0	50	79	112	15.5	13.0

E = narrowest free cross-section · Slip-on connection on request

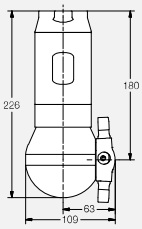
The maximum tank diameter shown above applies for the recommended operating pressure and is indicative only. The cleaning result is also affected by the type of soiling.

FDA

5TB



Female thread



Spray angle	Ordering no. Type	E Ø [mm]	Number, Ø Nozzles [mm]	V̇ [l/min] p [bar] (p_{max} = 25 bar) 2	5	10	at 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, 304 SS, 302 SS, PTFE, PEEK

Max. temperature:
95 °C

Recommended operating pressure:
5 bar

Installation:
Operation in every direction possible

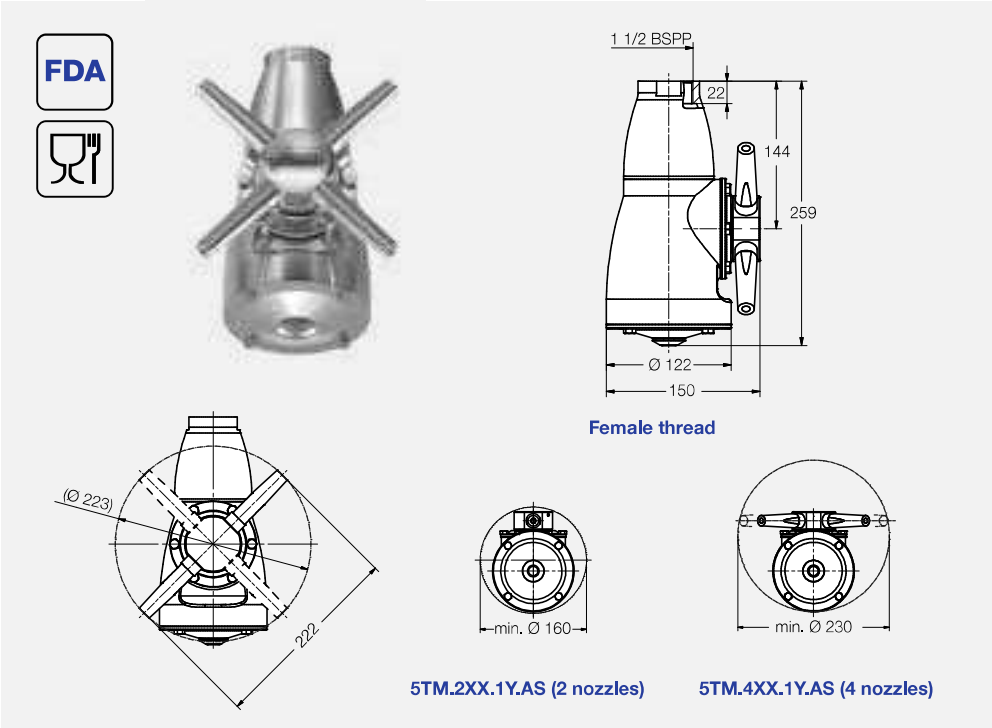
Filtration:
Line strainer with a mesh size of 0.2 mm/80 mesh

Bearing:
Ball bearing

Weight:
7.5 kg

Rotation monitoring sensor:

Sensor compatible, please ask for more information.



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.

Static spray balls
Series 540/541

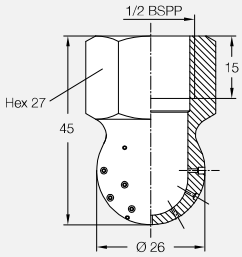
- Compact design
- Effective solid jets
- Also to use with saturated steam

Materials:
303 SS

Max. temperature:
200 °C

Recommended operating pressure:
3 bar

Installation:
Operation in every direction possible



Female thread

Spray angle	Ordering number Type	E Ø [mm]	$\dot{V}$ [l/min] p [bar] (p_{max} = 10 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

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.

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

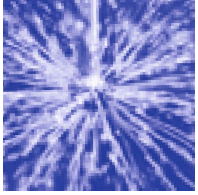
In most applications, static spray balls do not deliver the same cleaning power as rotating nozzles, anyway they do have advantages that make them indispensable for certain tasks:

– 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 »RinseClean« Series 5B2/5B3



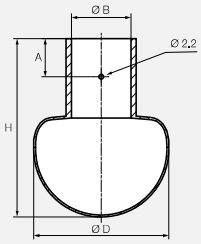
- Popular spray ball design
- Powerful solid jets

Materials:
316L SS
R-clip: 316L SS

Max. temperature:
200 °C

Recommended operating pressure:
2 bar

Installation:
Operation in every direction possible



Dimensions slip-on connection according to DIN 10357 series B

Spray angle	Ordering no. / Type	E Ø [mm]	V̇ [l/min] p [bar] (p_{max} = 5 bar) 1	2	3	at 40 psi [US gal./ min]	Dimensions [mm] Ø D	Height H	Con-nec-tion B	Distance to bore hole A	R-clip	Max. tank diameter [m]
360°	**5B2.879.1Y.D0.80.0**	0.8	11	15	18	4.7	20	37	8.2	9	1	2.0
	5B3.089.1Y.D1.20.0	1.0	35	50	61	15.5	28	42	12.2	9	1	2.2
	5B3.139.1Y.D1.20.0	1.6	46	65	80	20.2	28	42	12.2	9	1	2.3
	5B3.209.1Y.D1.80.0	1.5	71	100	123	31.0	28	42	18.2	9	2	2.5
	5B3.309.1Y.D2.20.0	1.7	127	180	221	55.8	64	84	22.2	18	2	3.5
	5B3.379.1Y.D2.80.0	2.1	184	260	318	80.7	64	84	28.2	18	3	5.2
	5B3.389.1Y.D4.00.0	2.1	198	280	343	86.9	64	84	40.3	18	4	5.2
	5B3.409.1Y.D3.40.0	2.3	226	320	392	99.3	64	84	34.2	18	4	5.2
	5B3.449.1Y.D2.80.0	3.0	290	410	502	127.2	64	84	28.2	18	3	5.4
	5B3.489.1Y.D3.40.0	2.9	361	510	625	158.2	64	84	34.2	18	4	5.5
	5B3.499.1Y.D4.00.0	2.8	382	540	661	167.5	64	84	40.3	18	4	5.5
	5B3.539.1Y.D5.20.0	3.2	474	670	821	207.8	90	111	52.3	25	5	5.6
180°	**5B3.083.1Y.D1.80.0**	1.2	35	50	61	15.5	28	42	18.2	9	2	2.2
	5B3.253.1Y.D2.20.0	1.8	92	130	159	40.3	64	84	22.2	18	2	3.0
	5B3.323.1Y.D2.80.0	2.3	141	200	245	62.0	64	84	28.2	18	3	3.5
	5B3.463.1Y.D5.20.0	3.3	325	460	563	142.7	90	111	52.3	25	5	5.4
180°	**5B3.114.1Y.D1.80.0**	1.4	42	60	74	18.6	28	42	18.2	9	2	2.2
	5B3.274.1Y.D2.20.0	2.3	106	150	184	46.5	64	84	22.2	18	2	3.0
	5B3.394.1Y.D2.80.0	3.0	205	290	355	90.0	64	84	28.2	18	3	5.0
	5B3.444.1Y.D5.20.0	3.2	283	400	490	124.1	90	111	52.3	25	5	5.2

E = narrowest free cross-section

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

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 stainless steel 316L SS is included.
– Depending on diameter of the adapter the flow rate can increase due to leakage between connecting pipe and static spray ball.

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