



PRODUCT OVERVIEW

Spray balls

1 – 2.5 bar

Working pressure

up to 8 m

Cleaning diameter

up to 150 °C

Operating temperature

3A

compliant versions available



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SPRAY BALLS

Selection and installation

Technical data, design notes and installation dimensions of the static spray balls

This information applies to the spray balls on pages 20 to 26 – not to the spray balls SK and TM on pages 27 to 29.

Technical data

Working pressure	1 – 2.5 bar g at the spray ball inlet
Cleaning diameter	max. 8 m
Operating temperature	max. 150 °C (302 °F)
Spray ball materials	1.4404 (316L), 1.4435 (316L), 1.4539, 2.4602 (Hastelloy C22)
Clamp/R-clip materials	1.4310, 1.4401, 2.4610
Surfaces	matt ground, outside Ra ≤ 0.8 µm electropolished, outside Ra ≤ 0.4 µm
3A-compliant version	1.4404 (316L), Ra ≤ 0.8 µm, mounting with R-clip or welded connection

Design

Guide value for the flow rate: 1.8 – 3 m³/h (30 – 50 l/min) per metre of tank circumference.

Flow rate at pressures other than in the tables:

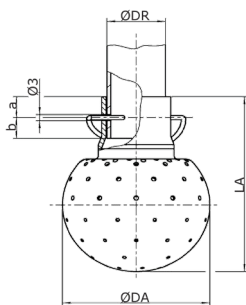
$$Q_2 = Q_1 \cdot \sqrt{\frac{P_2}{P_1}} \quad Q = \text{flow rate, } P = \text{pressure}$$

The choice of spray ball type, installation depth and installation distance depends on tank dimensions, tank design and tank use.

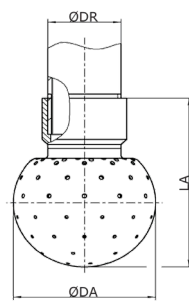
For electropolished spray balls, the flow rate is approx. 15 – 20 % higher than stated in the tables.

Connection types and installation dimensions

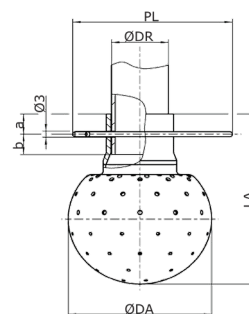
Connection type	ØDR	Type	ØDA mm	LA mm	a mm	b mm	PL mm
Clamp mounting DN	DN 10 (12 mm)	05	28	46.6	10	8	–
	DN 10 (13 mm)	05	28	46.6	10	8	–
	DN 25 (29 mm)	1	64	84	10	10	–
	DN 50 (53 mm)	2	93	113.5	10	20	–
Clamp mounting inch OD	½" (12.7 mm)	05	28	46.6	8	8	–
	1" (25.4 mm)	1	64	84	10	10	–
	2" (50.8 mm)	2	93	113.5	10	20	–
Clamp mounting ISO 1127	13.5 mm	05	28	46.6	10	8	–
	33.7 mm	1	68	84	6	10	–
Threaded connection DIN ISO 228-1	G ¼"	05	28	24.5	–	–	–
	G 1"	1	68	84	–	–	–
	G 2"	2	93	113.5	–	–	–
Mounting with R-clip, inch OD	1" (25.4 mm)	1	68	84	10	8	78
	1½" (38.1 mm)	1	68	92	5.5	10	101
	2" (50.8 mm)	2	93	113.5	10	20	117
Welded connection, inch OD	1" (25.4 mm)	1	68	79	–	–	–
	1½" (38.1 mm)	1	68	79	–	–	–
	2" (50.8 mm)	2	93	98.5	–	–	–



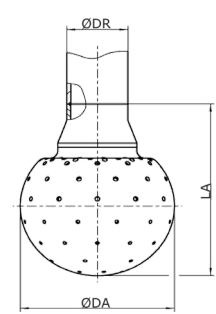
Clamp mounting



Threaded connection



Mounting with R-clip



Welded connection

DR = pipe diameter DA = outside diameter of spray ball LA = length a / b = installation dimensions PL = insertion depth

Clamp and R-clip: the annular gap between sleeve and outside diameter of the pipe serves to clean the insertion pipe.

3A welded connection: once welded in, the spray ball must remain inspectable and accessible so that contamination can be detected and removed; the cleaning lance must therefore not be too long. The welded assembly must comply with the latest version of 3A Standard 78-.

Installation, safety and ATEX information: see installation instructions for spray balls.

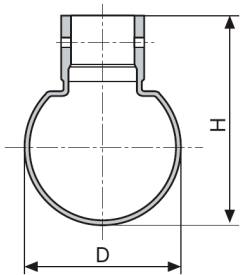
The data, technical data and information presented do not release the user from the obligation to check the suitability of the products supplied for the intended application. All information is without guarantee. (Status: 03.10.2026-71427321893-1888948-71042)



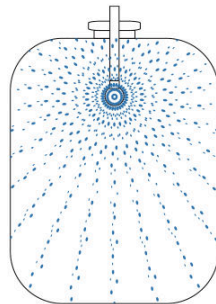
SPRAY BALLS

with threaded connection

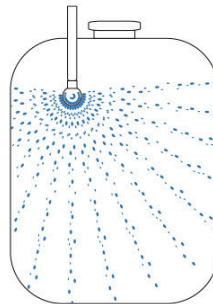
Thread according to DIN EN ISO 228-1



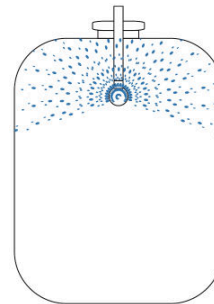
Connection: thread DIN EN ISO 228-1
Material: 1.4404 (316L)
Surface: matt



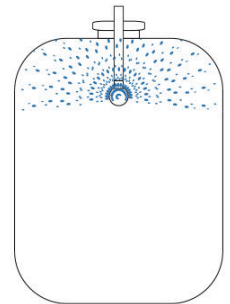
Type A/LA 360°,
vertical and
horizontal tanks



Type B 192° - 194°,
directed downwards



Type G 206° - 246°,
directed upwards



Type L 188°,
directed upwards,
horizontal tanks

Type	Spray angle	Cleaning Ø (m)	Flow rate m³/h at pressure (bar)						DA mm	LA mm	Connection	Order code
			1.0	1.5	1.8	2.0	2.2	2.5				
A 05	360°	1.0 - 2.0	4.7	5.8	6.3	6.6	7.0	7.4	28	24.5	G 1/4"	253-106.01
A 05-1,0	360°	0.8 - 1.0	2.4	2.9	3.2	3.4	3.6	3.8	28	24.5	G 1/4"	253-106.26
A 1-1,0	360°	1.5 - 2.0	2.5	3.1	3.4	3.5	3.7	4.0	68	84	G 1"	253-106.34
A 1-1,5	360°	1.8 - 3.0	6.5	8.0	8.7	9.2	9.6	10.3	68	84	G 1"	253-106.35
A1	360°	2.0 - 3.0	9.4	11.5	12.6	13.3	13.9	14.9	68	84	G 1"	253-106.10
A 1-1	360°	2.5 - 3.5	12.3	15.1	16.5	17.4	18.2	19.4	68	84	G 1"	253-106.11
A 1-2	360°	3.0 - 4.0	14.8	18.1	19.9	20.9	22.0	23.4	68	84	G 1"	253-106.12
A2	360°	3.5 - 5.0	20.9	25.6	28.0	29.6	31.0	33.0	93	113.5	G 2"	253-106.36
A 2-1	360°	4.0 - 6.0	27.3	33.4	36.6	38.6	40.5	43.2	93	113.5	G 2"	253-106.37
A 2-2	360°	5.0 - 7.0	34.6	42.4	46.4	48.9	51.3	54.7	93	113.5	G 2"	253-106.38
A 2-3	360°	6.0 - 8.0	39.9	48.9	53.5	56.4	59.2	63.1	93	113.5	G 2"	253-106.33
B 05	192°	1.0 - 2.0	2.5	3.1	3.4	3.5	3.7	4.0	28	24.5	G 1/4"	253-106.02
B1	192°	2.0 - 3.0	9.0	11.0	12.1	12.7	13.3	14.2	68	84	G 1"	253-106.13
B 1-1	Performance data on request								68	84	G 1"	253-106.14
B 1-2	Performance data on request								68	84	G 1"	253-106.15
B2	194°	3.5 - 5.0	21.4	26.2	28.7	30.3	31.7	33.8	93	113.5	G 2"	253-106.39
B 2-1	Performance data on request								93	113.5	G 2"	253-106.40
B 2-3	194°	6.0 - 8.0	41.2	50.5	55.3	58.3	61.1	65.1	93	113.5	G 2"	253-106.42
G 05	232°	1.0 - 2.0	4.2	5.1	5.6	5.9	6.2	6.6	28	24.5	G 1/4"	253-106.22
G1	206°	2.0 - 3.0	8.7	10.7	11.7	12.3	12.9	13.8	68	84	G 1"	253-106.19
G 1-1	206°	2.5 - 3.5	10.7	13.1	14.4	15.1	15.9	16.9	68	84	G 1"	253-106.20
G 1-2	206°	3.0 - 4.0	14.0	17.1	18.8	19.8	20.8	22.1	68	84	G 1"	253-106.21
G2	246°	3.5 - 5.0	19.1	23.4	25.6	27.0	28.3	30.2	93	113.5	G 2"	253-106.47
G 2-1	246°	4.0 - 6.0	25.8	31.6	34.6	36.5	38.3	40.8	93	113.5	G 2"	253-106.48
G 2-2	246°	5.0 - 7.0	33.7	41.3	45.2	47.7	50.0	53.3	93	113.5	G 2"	253-106.49
G 2-3	246°	6.0 - 8.0	40.0	49.0	53.7	56.6	59.3	63.2	93	113.5	G 2"	253-106.50
L1	188°	2.5 - 3.0	8.1	9.9	10.9	11.5	12.0	12.8	68	84	G 1"	253-106.73
LA 1-1,5	360°	2.5 - 3.0	10.5	12.9	14.1	14.8	15.6	16.6	68	84	G 1"	253-106.77

For electropolished spray balls, the flow rate is approx. 15 - 20 % higher than stated in the table.

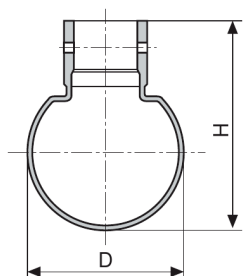
Recommended operating pressure 1.0 to 2.5 bar g at the spray ball inlet. Guide value for cleaning liquid: 30 to 50 l/min per metre of tank circumference.



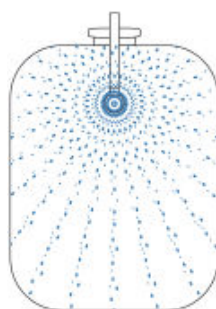
SPRAY BALLS

with clamp connection

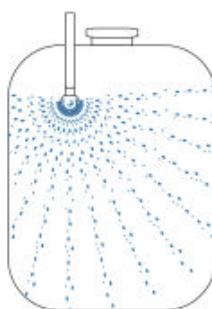
according to DIN EN 10357 Series A / DIN 11866 Series A (DN)



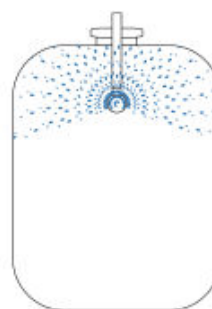
Connection: clamp DN
Ball material: 1.4404 (316L)
Clamp material: 1.4310
Surface: matt



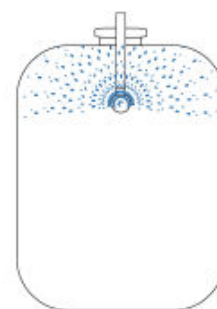
Type A/LA 360°,
vertical and
horizontal tanks



Type B 192° – 194°,
directed downwards



Type G 206° – 246°,
directed upwards



Type L 188°,
directed upwards,
horizontal tanks

Type	Spray angle	Cleaning Ø (m)	Flow rate m³/h at pressure (bar)						DA mm	LA mm	Connection	Order code
			1.0	1.5	1.8	2.0	2.2	2.5				
A 05	360°	1.0 – 2.0	5.1	6.2	6.8	7.2	7.6	8.1	28	46.6	DN10 (12)	11850-253-109.63
A 05	360°	1.0 – 2.0	5.1	6.2	6.8	7.2	7.6	8.1	28	46.6	DN10 (13)	11850-253-111.40
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	28	46.6	DN10 (12)	11850-253-109.73
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	28	46.6	DN10 (13)	11850-253-111.41
A 1-1,0	360°	1.5 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	64	84	DN25 (29)	11850-254-000044
A 1-1,5	360°	1.8 – 3.0	7.0	8.6	9.4	9.9	10.4	11.1	64	84	DN25 (29)	11850-254-000046
A1	360°	2.0 – 3.0	9.8	12.0	13.1	13.9	14.5	15.5	64	84	DN25 (29)	11850-254-000030
A 1-1	360°	2.5 – 3.5	12.8	15.7	17.2	18.1	19.0	20.2	64	84	DN25 (29)	11850-254-000031
A 1-2	360°	3.0 – 4.0	15.3	18.7	20.5	21.6	22.6	24.1	64	84	DN25 (29)	11850-254-000032
A2	360°	3.5 – 5.0	21.9	26.8	29.4	31.0	32.5	34.6	93	113.5	DN50 (53)	11850-254-000042
A 2-1	360°	4.0 – 6.0	28.4	34.8	38.2	40.2	42.2	45.0	93	113.5	DN50 (53)	11850-254-000040
A 2-2	360°	5.0 – 7.0	35.6	43.6	47.8	50.3	52.8	56.3	93	113.5	DN50 (53)	11850-254-000041
A 2-3	360°	6.0 – 8.0	40.9	50.1	54.9	57.8	60.7	64.7	93	113.5	DN50 (53)	11850-254-000049
B 05	192°	1.0 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	28	46.6	DN10 (12)	11850-253-109.74
B 05	192°	1.0 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	28	46.6	DN10 (13)	11850-253-111.42
B1	192°	2.0 – 3.0	9.5	11.6	12.7	13.4	14.1	15.0	64	84	DN25 (29)	11850-254-000033
B2	194°	3.5 – 5.0	22.4	27.4	30.1	31.7	33.2	35.4	93	113.5	DN50 (53)	11850-254-000050
B 2-3	194°	6.0 – 8.0	42.2	51.7	56.6	59.7	62.6	66.7	93	113.5	DN50 (53)	11850-254-000053
G 05	232°	1.0 – 2.0	4.7	5.8	6.3	6.6	7.0	7.4	28	46.6	DN10 (12)	11850-253-109.78
G 05	232°	1.0 – 2.0	4.7	5.8	6.3	6.6	7.0	7.4	28	46.6	DN10 (13)	11850-253-111.46
G1	206°	2.0 – 3.0	9.2	11.3	12.3	13.0	13.6	14.5	64	84	DN25 (29)	11850-254-000036
G 1-1	206°	2.5 – 3.5	11.2	13.7	15.0	15.8	16.6	17.7	64	84	DN25 (29)	11850-254-000037
G 1-2	206°	3.0 – 4.0	14.5	17.8	19.5	20.5	21.5	22.9	64	84	DN25 (29)	11850-254-000038
G2	246°	3.5 – 5.0	20.1	24.6	27.0	28.4	29.8	31.8	93	113.5	DN50 (53)	11850-254-000054
G 2-1	246°	4.0 – 6.0	26.8	32.8	36.0	37.9	39.8	42.4	93	113.5	DN50 (53)	11850-254-000055
G 2-2	246°	5.0 – 7.0	34.7	42.5	46.6	49.1	51.5	54.9	93	113.5	DN50 (53)	11850-254-000056
G 2-3	246°	6.0 – 8.0	41.0	50.2	55.0	58.0	60.8	64.8	93	113.5	DN50 (53)	11850-254-000057
L1	188°	2.5 – 3.0	8.6	10.5	11.5	12.2	12.8	13.6	64	84	DN25 (29)	11850-254-000045
LA 1-1,0	360°	1.5 – 2.5	5.5	6.7	7.4	7.8	8.2	8.7	64	84	DN25 (29)	11850-254-000048
LA 1-1,5	360°	2.5 – 3.0	11.0	13.5	14.8	15.6	16.3	17.4	64	84	DN25 (29)	11850-254-000047

For electropolished spray balls, the flow rate is approx. 15 – 20 % higher than stated in the table.

Recommended operating pressure 1.0 to 2.5 bar g at the spray ball inlet. Guide value for cleaning liquid: 30 to 50 l/min per metre of tank circumference.

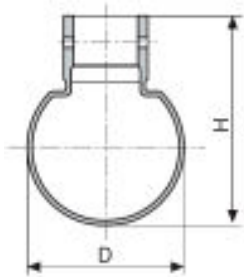
The annular gap between sleeve and outside diameter of the pipe serves to clean the insertion pipe. Spare retaining clamps: see page 26.



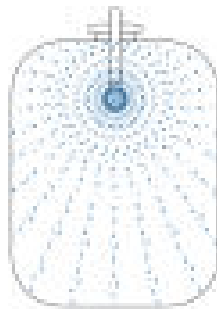
SPRAY BALLS

with clamp connection

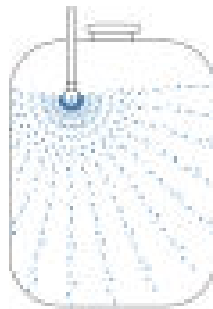
Inch connection (OD)
DIN 10357 Series C / DIN 11866 Series C / ASME-BPE 2022



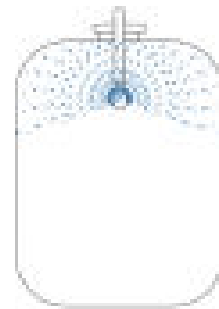
Connection: clamp inch OD
Ball material: 1.4404 (316L)
Clamp material: 1.4310
Surface: ground, outside Ra ≤ 0.8 µm



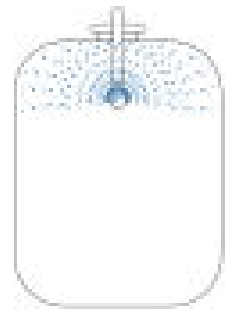
Type A/LA 360°,
vertical and
horizontal tanks



Type B 192° – 194°,
directed downwards



Type G 206° – 246°,
directed upwards



Type L 188°,
directed upwards,
horizontal tanks

Type	Spray angle	Cleaning Ø (m)	Flow rate m³/h at pressure (bar)						DA mm	LA mm	Connection	Order code
			1.0	1.5	1.8	2.0	2.2	2.5				
A 05	360°	1.0 – 2.0	5.1	6.2	6.8	7.2	7.6	8.1	28	46.6	½" (12.7)	INCH-253-109.42
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	28	46.6	½" (12.7)	INCH-253-111.43
A 1-1,0	360°	1.5 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	64	84	1" (25.4)	INCH-253-111.48
A 1-1,5	360°	1.8 – 3.0	7.0	8.6	9.4	9.9	10.4	11.1	64	84	1" (25.4)	INCH-253-111.49
A1	360°	2.0 – 3.0	9.8	12.0	13.1	13.9	14.5	15.5	64	84	1" (25.4)	INCH-253-109.43
A 1-1	360°	2.5 – 3.5	12.8	15.7	17.2	18.1	19.0	20.2	64	84	1" (25.4)	INCH-253-109.44
A 1-2	360°	3.0 – 4.0	15.3	18.7	20.5	21.6	22.6	24.1	64	84	1" (25.4)	INCH-253-109.47
A2	360°	3.5 – 5.0	21.9	26.8	29.4	31.0	32.5	34.6	93	113.5	2" (50.8)	INCH-253-109.49
A 2-1	360°	4.0 – 6.0	28.4	34.8	38.2	40.2	42.2	45.0	93	113.5	2" (50.8)	INCH-253-109.52
A 2-2	360°	5.0 – 7.0	35.6	43.6	47.8	50.3	52.8	56.3	93	113.5	2" (50.8)	INCH-253-109.54
A 2-3	360°	6.0 – 8.0	40.9	50.1	54.9	57.8	60.7	64.7	93	113.5	2" (50.8)	INCH-253-109.59
B 05	192°	1.0 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	28	46.6	½" (12.7)	INCH-253-111.44
B1	192°	2.0 – 3.0	9.5	11.6	12.7	13.4	14.1	15.0	64	84	1" (25.4)	INCH-253-109.50
B2	194°	3.5 – 5.0	22.4	27.4	30.1	31.7	33.2	35.4	93	113.5	2" (50.8)	INCH-253-111.51
B 2-2	Performance data on request								93	113.5	2" (50.8)	INCH-253-111.53
B 2-3	194°	6.0 – 8.0	42.2	51.7	56.6	59.7	62.6	66.7	93	113.5	2" (50.8)	INCH-253-111.54
G 05	232°	1.0 – 2.0	4.7	5.8	6.3	6.6	7.0	7.4	28	46.6	½" (12.7)	INCH-253-111.45
G1	206°	2.0 – 3.0	9.2	11.3	12.3	13.0	13.6	14.5	64	84	1" (25.4)	INCH-253-109.06
G 1-1	206°	2.5 – 3.5	11.2	13.7	15.0	15.8	16.6	17.7	64	84	1" (25.4)	INCH-253-109.45
G 1-2	206°	3.0 – 4.0	14.5	17.8	19.5	20.5	21.5	22.9	64	84	1" (25.4)	INCH-253-109.48
G2	246°	3.5 – 5.0	20.1	24.6	27.0	28.4	29.8	31.8	93	113.5	2" (50.8)	INCH-253-109.07
G 2-1	246°	4.0 – 6.0	26.8	32.8	36.0	37.9	39.8	42.4	93	113.5	2" (50.8)	INCH-253-109.53
G 2-2	246°	5.0 – 7.0	34.7	42.5	46.6	49.1	51.5	54.9	93	113.5	2" (50.8)	INCH-253-109.55
G 2-3	246°	6.0 – 8.0	41.0	50.2	55.0	58.0	60.8	64.8	93	113.5	2" (50.8)	INCH-253-111.55
L1	188°	2.5 – 3.0	8.6	10.5	11.5	12.2	12.8	13.6	64	84	1" (25.4)	INCH-253-111.37
LA 1-1,0	360°	1.5 – 2.5	5.5	6.7	7.4	7.8	8.2	8.7	64	84	1" (25.4)	INCH-253-111.65
LA 1-1,5	360°	2.5 – 3.0	11.0	13.5	14.8	15.6	16.3	17.4	64	84	1" (25.4)	INCH-253-111.62

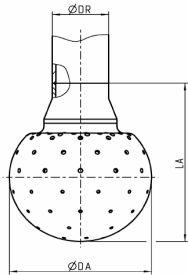
For electropolished spray balls, the flow rate is approx. 15 – 20 % higher than stated in the table.
Recommended operating pressure 1.0 to 2.5 bar g at the spray ball inlet. Guide value for cleaning liquid: 30 to 50 l/min per metre of tank circumference.
The annular gap between sleeve and outside diameter of the pipe serves to clean the insertion pipe. Spare retaining clamps: see page 26.



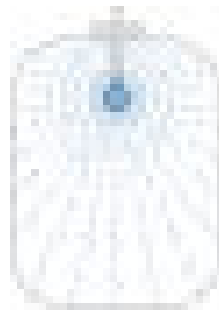
SPRAY BALLS

with welded connection

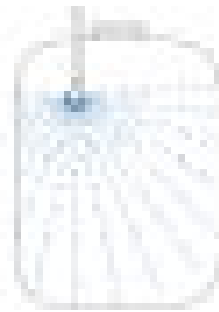
3A · inch connection
DIN 10357 Series C / DIN 11866 Series C / ASME-BPE 2022



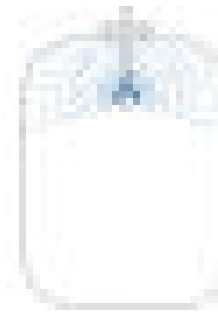
Connection: inch OD, welded connection
Material: 1.4404 (316L)
Surface: ground, outside Ra ≤ 0.8 µm



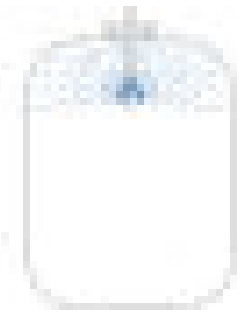
Type A/LA 360°,
vertical and
horizontal tanks



Type B 192° – 194°,
directed downwards



Type G 206° – 246°,
directed upwards



Type L 188°,
directed upwards,
horizontal tanks

Type	Spray angle	Cleaning Ø (m)	Flow rate m³/h at pressure (bar)						DA mm	LA mm	Connection	Order code
			1.0	1.5	1.8	2.0	2.2	2.5				
A 1-1,0	360°	1.5 – 2.0	2.5	3.1	3.4	3.5	3.7	4.0	68	79	1" (25.4)	WF-253-114.04
A 1-1,0	360°	1.5 – 2.0	2.5	3.1	3.4	3.5	3.7	4.0	68	79	1½" (38.1)	WF-253-114.08
A 1-1,5	360°	1.8 – 3.0	6.5	8.0	8.7	9.2	9.6	10.3	68	79	1" (25.4)	WF-253-114.05
A 1-1,5	360°	1.8 – 3.0	6.5	8.0	8.7	9.2	9.6	10.3	68	79	1½" (38.1)	WF-253-114.09
A1	360°	2.0 – 3.0	9.4	11.5	12.6	13.3	13.9	14.9	68	79	1" (25.4)	WF-253-114.01
A1	360°	2.0 – 3.0	9.4	11.5	12.6	13.3	13.9	14.9	68	79	1½" (38.1)	WF-253-114.02
A 1-1	360°	2.5 – 3.5	12.3	15.1	16.5	17.4	18.2	19.4	68	79	1" (25.4)	WF-253-114.06
A 1-1	360°	2.5 – 3.5	12.3	15.1	16.5	17.4	18.2	19.4	68	79	1½" (38.1)	WF-253-114.10
A 1-2	360°	3.0 – 4.0	14.8	18.1	19.9	20.9	22.0	23.4	68	79	1" (25.4)	WF-253-114.07
A 1-2	360°	3.0 – 4.0	14.8	18.1	19.9	20.9	22.0	23.4	68	79	1½" (38.1)	WF-253-114.11
A2	360°	3.5 – 5.0	20.9	25.6	28.0	29.6	31.0	33.0	93	98.5	2" (50.8)	WF-253-114.03
A 2-1	360°	4.0 – 6.0	27.3	33.4	36.6	38.6	40.5	43.2	93	98.5	2" (50.8)	WF-253-114.12
A 2-2	360°	5.0 – 7.0	34.6	42.4	46.4	48.9	51.3	54.7	93	98.5	2" (50.8)	WF-253-114.13
A 2-3	360°	6.0 – 8.0	39.9	48.9	53.5	56.4	59.2	63.1	93	98.5	2" (50.8)	WF-253-114.14
B1	192°	2.0 – 3.0	9.0	11.0	12.1	12.7	13.3	14.2	68	79	1" (25.4)	WF-253-114.15
B1	192°	2.0 – 3.0	9.0	11.0	12.1	12.7	13.3	14.2	68	79	1½" (38.1)	WF-253-114.16
B2	194°	3.5 – 5.0	21.4	26.2	28.7	30.3	31.7	33.8	93	98.5	2" (50.8)	WF-253-114.17
B 2-3	194°	6.0 – 8.0	41.2	50.5	55.3	58.3	61.1	65.1	93	98.5	2" (50.8)	WF-253-114.18
G1	206°	2.0 – 3.0	8.7	10.7	11.7	12.3	12.9	13.8	68	79	1" (25.4)	WF-253-114.19
G1	206°	2.0 – 3.0	8.7	10.7	11.7	12.3	12.9	13.8	68	79	1½" (38.1)	WF-253-114.22
G 1-1	206°	2.5 – 3.5	10.7	13.1	14.4	15.1	15.9	16.9	68	79	1" (25.4)	WF-253-114.20
G 1-1	206°	2.5 – 3.5	10.7	13.1	14.4	15.1	15.9	16.9	68	79	1½" (38.1)	WF-253-114.23
G 1-2	206°	3.0 – 4.0	14.0	17.1	18.8	19.8	20.8	22.1	68	79	1" (25.4)	WF-253-114.21
G 1-2	206°	3.0 – 4.0	14.0	17.1	18.8	19.8	20.8	22.1	68	79	1½" (38.1)	WF-253-114.24
G2	246°	3.5 – 5.0	19.1	23.4	25.6	27.0	28.3	30.2	93	98.5	2" (50.8)	WF-253-114.25
G 2-1	246°	4.0 – 6.0	25.8	31.6	34.6	36.5	38.3	40.8	93	98.5	2" (50.8)	WF-253-114.26
G 2-2	246°	5.0 – 7.0	33.7	41.3	45.2	47.7	50.0	53.3	93	98.5	2" (50.8)	WF-253-114.27
G 2-3	246°	6.0 – 8.0	40.0	49.0	53.7	56.6	59.3	63.2	93	98.5	2" (50.8)	WF-253-114.28
L1	188°	2.5 – 3.0	8.1	9.9	10.9	11.5	12.0	12.8	68	79	1" (25.4)	WF-253-114.29
L1	188°	2.5 – 3.0	8.1	9.9	10.9	11.5	12.0	12.8	68	79	1½" (38.1)	WF-253-114.32
LA 1-1,0	360°	1.5 – 2.5	Flow rate on request						68	79	1" (25.4)	WF-253-114.30
LA 1-1,0	360°	1.5 – 2.5	Flow rate on request						68	79	1½" (38.1)	WF-253-114.33
LA 1-1,5	360°	2.5 – 3.0	10.5	12.9	14.1	14.8	15.6	16.6	68	79	1" (25.4)	WF-253-114.31
LA 1-1,5	360°	2.5 – 3.0	10.5	12.9	14.1	14.8	15.6	16.6	68	79	1½" (38.1)	WF-253-114.34

For electropolished spray balls, the flow rate is approx. 15 – 20 % higher than stated in the table.

Recommended operating pressure 1.0 to 2.5 bar g at the spray ball inlet. Guide value for cleaning liquid: 30 to 50 l/min per metre of tank circumference.

3A: After welding in, the spray balls must remain accessible for inspection and cleaning (3A Standard 78).

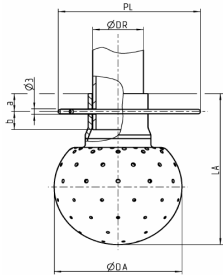
The data, technical data and information presented do not release the user from the obligation to check the suitability of the products supplied for the intended application.
All information is without guarantee. (Status: 03.10.2026-71427321893-1888948-71042)



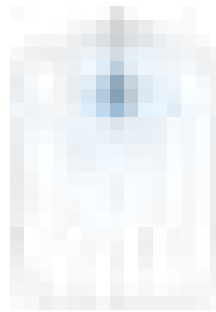
SPRAY BALLS

with pin connection

3A · inch connection (R-clip)
DIN 10357 Series C / DIN 11866 Series C / ASME-BPE 2022



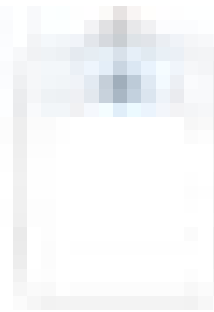
Connection: inch OD / R-clip
Ball material: 1.4404 (316L)
R-clip material: 1.4401
Surface: ground, outside Ra ≤ 0.8 µm



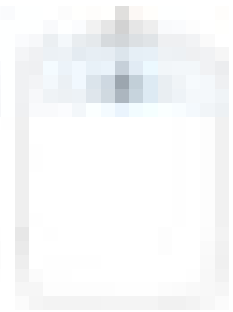
Type A/LA 360°,
vertical and
horizontal tanks



Type B 192° – 194°,
directed downwards



Type G 206° – 246°,
directed upwards



Type L 188°,
directed upwards,
horizontal tanks

Type	Spray angle	Cleaning Ø (m)	Flow rate m³/h at pressure (bar)						DA mm	LA mm	PL mm	Connection	Order code
			1.0	1.5	1.8	2.0	2.2	2.5					
A 1-1,0	360°	1.5 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	68	84	78	1" (25.4)	PF-253-112.21
A 1-1,0	360°	1.5 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	68	92	101	1½" (38.1)	PF-253-112.23
A 1-1,5	360°	1.8 – 3.0	7.0	8.6	9.4	9.9	10.4	11.1	68	84	78	1" (25.4)	PF-253-112.22
A 1-1,5	360°	1.8 – 3.0	7.0	8.6	9.4	9.9	10.4	11.1	68	92	101	1½" (38.1)	PF-253-112.24
A1	360°	2.0 – 3.0	9.8	12.0	13.1	13.9	14.5	15.5	68	84	78	1" (25.4)	PF-253-112.06
A1	360°	2.0 – 3.0	9.8	12.0	13.1	13.9	14.5	15.5	68	92	101	1½" (38.1)	PF-253-112.25
A 1-1	360°	2.5 – 3.5	12.8	15.7	17.2	18.1	19.0	20.2	68	84	78	1" (25.4)	PF-253-112.07
A 1-1	360°	2.5 – 3.5	12.8	15.7	17.2	18.1	19.0	20.2	68	92	101	1½" (38.1)	PF-253-112.26
A 1-2	360°	3.0 – 4.0	15.3	18.7	20.5	21.6	22.6	24.1	68	84	78	1" (25.4)	PF-253-112.08
A 1-2	360°	3.0 – 4.0	15.3	18.7	20.5	21.6	22.6	24.1	68	92	101	1½" (38.1)	PF-253-112.27
A2	360°	3.5 – 5.0	21.9	26.8	29.4	31.0	32.5	34.6	93	113.5	117	2" (50.8)	PF-253-112.09
A 2-1	360°	4.0 – 6.0	28.4	34.8	38.2	40.2	42.2	45.0	93	113.5	117	2" (50.8)	PF-253-112.10
A 2-2	360°	5.0 – 7.0	35.6	43.6	47.8	50.3	52.8	56.3	93	113.5	117	2" (50.8)	PF-253-112.11
A 2-3	360°	6.0 – 8.0	40.9	50.1	54.9	57.8	60.7	64.7	93	113.5	117	2" (50.8)	PF-253-112.12
B1	192°	2.0 – 3.0	9.5	11.6	12.7	13.4	14.1	15.0	68	84	78	1" (25.4)	PF-253-112.28
B1	192°	2.0 – 3.0	9.5	11.6	12.7	13.4	14.1	15.0	68	92	101	1½" (38.1)	PF-253-112.29
B2	194°	3.5 – 5.0	22.4	27.4	30.1	31.7	33.2	35.4	93	113.5	117	2" (50.8)	PF-253-112.30
B 2-3	194°	6.0 – 8.0	42.2	51.7	56.6	59.7	62.6	66.7	93	113.5	117	2" (50.8)	PF-253-112.31
G1	206°	2.0 – 3.0	9.2	11.3	12.3	13.0	13.6	14.5	68	84	78	1" (25.4)	PF-253-112.13
G1	206°	2.0 – 3.0	9.2	11.3	12.3	13.0	13.6	14.5	68	92	101	1½" (38.1)	PF-253-112.32
G 1-1	206°	2.5 – 3.5	11.2	13.7	15.0	15.8	16.6	17.7	68	84	78	1" (25.4)	PF-253-112.14
G 1-1	206°	2.5 – 3.5	11.2	13.7	15.0	15.8	16.6	17.7	68	92	101	1½" (38.1)	PF-253-112.33
G 1-2	206°	3.0 – 4.0	14.5	17.8	19.5	20.5	21.5	22.9	68	84	78	1" (25.4)	PF-253-112.15
G 1-2	206°	3.0 – 4.0	14.5	17.8	19.5	20.5	21.5	22.9	68	92	101	1½" (38.1)	PF-253-112.34
G2	246°	3.5 – 5.0	20.1	24.6	27.0	28.4	29.8	31.8	93	113.5	117	2" (50.8)	PF-253-112.16
G 2-1	246°	4.0 – 6.0	26.8	32.8	36.0	37.9	39.8	42.4	93	113.5	117	2" (50.8)	PF-253-112.17
G 2-2	246°	5.0 – 7.0	34.7	42.5	46.6	49.1	51.5	54.9	93	113.5	117	2" (50.8)	PF-253-112.18
G 2-3	246°	6.0 – 8.0	41.0	50.2	55.0	58.0	60.8	64.8	93	113.5	117	2" (50.8)	PF-253-112.19
L1	188°	2.5 – 3.0	8.6	10.5	11.5	12.2	12.8	13.6	68	84	78	1" (25.4)	PF-253-112.35
L1	188°	2.5 – 3.0	8.6	10.5	11.5	12.2	12.8	13.6	68	92	101	1½" (38.1)	PF-253-112.38
LA 1-1,0	360°	1.5 – 2.5	5.5	6.7	7.4	7.8	8.2	8.7	68	84	78	1" (25.4)	PF-253-112.36
LA 1-1,0	360°	1.5 – 2.5	5.5	6.7	7.4	7.8	8.2	8.7	68	92	101	1½" (38.1)	PF-253-112.39
LA 1-1,5	360°	2.5 – 3.0	11.0	13.5	14.8	15.6	16.3	17.4	68	84	78	1" (25.4)	PF-253-112.37
LA 1-1,5	360°	2.5 – 3.0	11.0	13.5	14.8	15.6	16.3	17.4	68	92	101	1½" (38.1)	PF-253-112.40

For electropolished spray balls, the flow rate is approx. 15 – 20 % higher than stated in the table.
Recommended operating pressure 1.0 to 2.5 bar g at the spray ball inlet. Guide value for cleaning liquid: 30 to 50 l/min per metre of tank circumference.
PL = insertion depth. Installation dimensions a / b: 1" = 10 / 8 mm; 1½" = 5.5 / 10 mm; 2" = 10 / 20 mm.
The annular gap between sleeve and outside diameter of the pipe serves to clean the insertion pipe. Spare R-clips: see page 26.

The data, technical data and information presented do not release the user from the obligation to check the suitability of the products supplied for the intended application.
All information is without guarantee. (Status: 03.10.2026-71427321893-1888948-71042)



SPRAY BALLS

Special materials

Special materials 1.4435, 1.4539 and Hastelloy C22
as well as electropolished versions

Type	Spray angle	Cleaning Ø (m)	Flow rate m³/h at pressure (bar)						DA mm	LA mm	Connection	Order code
			1.0	1.5	1.8	2.0	2.2	2.5				
Clamp connection DIN 11850			Material 1.4435 (316L), Fe < 1 % · electropolished, outside Ra ≤ 0.4 µm									
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	28	46.6	Pipe 12	11850P-253-112.44
A 1-1,0	360°	1.5 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	64	84	Pipe 29	11850P-253-111.83
A 1-1,5	360°	1.8 – 3.0	7.0	8.6	9.4	9.9	10.4	11.1	64	84	Pipe 29	11850P-253-111.84
A1	360°	2.0 – 3.0	9.8	12.0	13.1	13.9	14.5	15.5	64	84	Pipe 29	11850P-253-111.82
LA 1-1,0	360°	1.5 – 2.5	5.5	6.7	7.4	7.8	8.2	8.7	64	84	Pipe 29	11850P-253-111.80
LA 1-1,5	360°	2.5 – 3.0	11.0	13.5	14.8	15.6	16.3	17.4	64	84	Pipe 29	11850P-253-111.81
Clamp connection ISO			Material 1.4435 (316L), Fe < 1 % · electropolished, outside Ra ≤ 0.4 µm									
A 05	360°	1.0 – 2.0	5.1	6.2	6.8	7.2	7.6	8.1	28	46.6	ISO 13.5	ISOP-253-111.78
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	28	46.6	ISO 13.5	ISOP-253-111.79
A 1-1,0	360°	1.5 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	68	84	ISO 33.7	ISOP-253-111.88
A 1-1,5	360°	1.8 – 3.0	7.0	8.6	9.4	9.9	10.4	11.1	68	84	ISO 33.7	ISOP-253-111.87
LA 1-1,0	360°	1.5 – 2.5	5.5	6.7	7.4	7.8	8.2	8.7	68	84	ISO 33.7	ISOP-253-111.85
LA 1-1,5	360°	2.5 – 3.0	11.0	13.5	14.8	15.6	16.3	17.4	68	84	ISO 33.7	ISOP-253-111.86
L1	188°	2.5 – 3.0	8.6	10.5	11.5	12.2	12.8	13.6	68	84	ISO 33.7	ISOP-253-111.97
Clamp connection inch OD			Material 1.4435 (316L) · electropolished, outside Ra ≤ 0.4 µm									
A 1-1,5	360°	1.8 – 3.0	7.0	8.6	9.4	9.9	10.4	11.1	64	84	1" (25.4)	253-111.94
L 1-1,0	Performance data on request								64	84	1" (25.4)	254-000880
Clamp connection inch OD, ISO and DIN			Hastelloy C22 (2.4602) · electropolished, outside Ra ≤ 0.4 µm									
A 05	360°	1.0 – 2.0	5.1	6.2	6.8	7.2	7.6	8.1	28	46.6	½" (12.7)	INCHA-253-111.76
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	28	46.6	½" (12.7)	INCHA-253-111.77
A 1-1,0	360°	1.5 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	68	84	ISO 33.7	ISOA-253-111.68
A 1-1,5	360°	1.8 – 3.0	7.0	8.6	9.4	9.9	10.4	11.1	68	84	ISO 33.7	ISOA-253-111.69
LA 1-1,0	360°	1.5 – 2.5	5.5	6.7	7.4	7.8	8.2	8.7	68	84	ISO 33.7	ISOA-253-111.74
A 1-1,0	360°	1.5 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	64	84	DIN pipe 29	254-000830
L 1-1,0	Performance data on request								68	84	ISO 33.7	ISOA-254-000303
Threaded connection DIN ISO 228-1			Hastelloy C22 (2.4602) · electropolished, outside Ra ≤ 0.4 µm									
A 05	360°	1.0 – 2.0	4.7	5.8	6.3	6.6	7.0	7.4	28	24.5	G 1/4"	GA-253-106.78
A 05-1,0	360°	0.8 – 1.0	2.4	2.9	3.2	3.4	3.6	3.8	28	24.5	G 1/4"	GA-253-106.79
Material 1.4539			Clamp DIN and ISO electropolished · thread matt									
A 05	360°	1.0 – 2.0	5.1	6.2	6.8	7.2	7.6	8.1	28	46.6	DIN pipe 13	253-111.60
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	28	46.6	ISO 13.5	253-111.92
A 05	360°	1.0 – 2.0	4.7	5.8	6.3	6.6	7.0	7.4	28	24.5	G 1/4"	GS-253-106.68
Clamp connection inch OD			Material 1.4404 (316L) · electropolished									
A 05	360°	1.0 – 2.0	5.1	6.2	6.8	7.2	7.6	8.1	28	46.6	½" (12.7)	254-000882
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	28	46.6	½" (12.7)	253-111.95
G 05	232°	1.0 – 2.0	4.7	5.8	6.3	6.6	7.0	7.4	28	46.6	½" (12.7)	254-000556

For electropolished spray balls, the flow rate is approx. 15 – 20 % higher than stated in the table.
Recommended operating pressure 1.0 to 2.5 bar g at the spray ball inlet. Guide value for cleaning liquid: 30 to 50 l/min per metre of tank circumference.



SPRAY BALLS

Special designs spare parts and accessories

Spray balls with special pipe sizes, surfaces or connections,
replacement spray balls for In-Line Sprayers, retaining clamps and R-clips

Type	Spray angle	Cleaning Ø (m)	Flow rate m³/h at pressure (bar)						DA mm	LA mm	Connection	Order code
			1.0	1.5	1.8	2.0	2.2	2.5				
Clamp connection for pipe 28 mm DN25 according to DIN 11850 Series 1 · material 1.4404 (316L) · matt												
A 1-1,0	360°	1.5 – 2.0	3.0	3.7	4.0	4.2	4.4	4.7	on req.	on req.	Pipe 28	253-109.68
A 1-1,5	360°	1.8 – 3.0	7.0	8.6	9.4	9.9	10.4	11.1	on req.	on req.	Pipe 28	253-109.70
A1	360°	2.0 – 3.0	9.8	12.0	13.1	13.9	14.5	15.5	64	84	Pipe 28	253-109.10
A 1-1	360°	2.5 – 3.5	12.8	15.7	17.2	18.1	19.0	20.2	on req.	on req.	Pipe 28	253-109.11
A 1-2	360°	3.0 – 4.0	15.3	18.7	20.5	21.6	22.6	24.1	on req.	on req.	Pipe 28	253-109.12
B1	192°	2.0 – 3.0	9.5	11.6	12.7	13.4	14.1	15.0	on req.	on req.	Pipe 28	253-109.13
B 1-2		Performance data on request							on req.	on req.	Pipe 28	253-109.15
L1	188°	2.5 – 3.0	8.6	10.5	11.5	12.2	12.8	13.6	on req.	on req.	Pipe 28	253-111.38
Clamp connection, other pipe sizes Material 1.4404 (316L) · matt												
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	on req.	on req.	DN15	253-109.05
A1	360°	2.0 – 3.0	9.8	12.0	13.1	13.9	14.5	15.5	on req.	on req.	ISO 26.9	253-109.03
G 1-1	206°	2.5 – 3.5	11.2	13.7	15.0	15.8	16.6	17.7	on req.	on req.	Pipe 30	253-109.32
A2	360°	3.5 – 5.0	21.9	26.8	29.4	31.0	32.5	34.6	on req.	on req.	Pipe 52	253-109.82
Clamp connection pipe 34 Material Alloy 59 (2.4605) · matt												
LA 1-1,5	360°	2.5 – 3.0	11.0	13.5	14.8	15.6	16.3	17.4	64	on req.	Pipe 34	253-111.75
Clamp connection DIN 11850, ground Material 1.4404 (316L) · ground instead of matt												
A 05-1,0	360°	0.8 – 1.0	2.8	3.4	3.8	4.0	4.2	4.4	28	46.6	Pipe 13	254-200059
B1	192°	2.0 – 3.0	9.5	11.6	12.7	13.4	14.1	15.0	64	84	Pipe 29	254-200062
Welded connection inch ½" without 3A · ground												
A 05-1,0	360°	0.8 – 1.0	2.4	2.9	3.2	3.4	3.6	3.8	on req.	on req.	½" (12.7)	253-114.36

Recommended operating pressure 1.0 to 2.5 bar g at the spray ball inlet. Guide value for cleaning liquid: 30 to 50 l/min per metre of tank circumference.
on req. = on request

Recommended operating pressure 1.0 to 2.5 bar g at the spray ball inlet. Guide value for cleaning liquid: 30 to 50 l/min per metre of tank circumference.
on req. = on request

Replacement spray balls for In-Line Sprayer IS 25

Order code	Designation	Material	Certificate
254-000289	IS/kpl D30/B0.6 4e 1.4435	1.4435	
254-000221	IS/kpl D30/B0.8 4e 1.4435	1.4435	
254-000897	IS/kpl D30/B1.0 4e 1.4435	1.4435	
254-200003	IS/kpl D30/B0.6 2.4602	Hastelloy C22 (2.4602)	
254-000807	IS/kpl D30/B0.8 2.4602 3.1	Hastelloy C22 (2.4602)	3.1
254-000835	IS/kpl D30/B1.0 2.4602 3.1	Hastelloy C22 (2.4602)	3.1



Accessories: retaining clamps and R-clips all with inspection certificate 3.1

Order code	Designation	Ball Ø	Surface	Material	Order code	R-clip for pin connection
253-107.03	Retaining clamp 05/M 28	28 mm	matt	1.4310	253-107.09	R-clip 1" OD 3A · 1.4401
253-107.06	Retaining clamp 05/E 28	28 mm	electropolished	1.4310	253-107.11	R-clip 1½" OD 3A · 1.4401
253-107.08	Retaining clamp 05/M 28	28 mm	matt	Hastelloy C4 (2.4610)	253-107.10	R-clip 2" OD 3A · 1.4401
253-107.01	Retaining clamp 1/M 64	64 mm	matt	1.4310		
253-107.04	Retaining clamp 1/E 64	64 mm	electropolished	1.4310		
253-107.07	Retaining clamp 1/M 64	64 mm	matt	Hastelloy C4 (2.4610)		
253-107.02	Retaining clamp 2/M 93	93 mm	matt	1.4310		
253-107.05	Retaining clamp 2/E 93	93 mm	electropolished	1.4310		

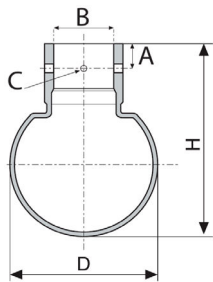
The data, technical data and information presented do not release the user from the obligation to check the suitability of the products supplied for the intended application.
All information is without guarantee. (Status: 03.10.2026-71427321893-1888948-71042)



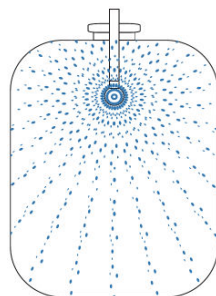
SPRAY BALL SK

with push-in connection

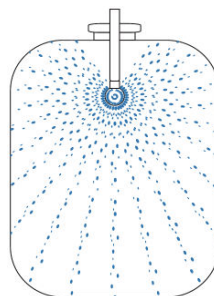
Standard spray ball for CIP cleaning of vessels and tanks
 Sizes DN8 to DN50, four spray patterns, working pressure 1 – 2.5 bar



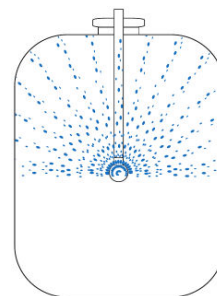
Connection: push-in connection, secured
 with split pin or retaining clamp
 Pipe: DIN 11850 Series 1 / Series 2
 Material: 1.4404 (316L)



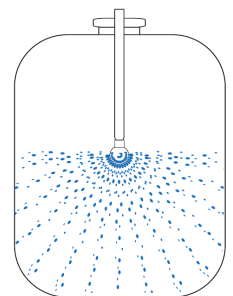
360°



270° top,
with drain hole



180° top



180° bottom

Size	Hole ØE mm	Spray Ø in m	Flow rate m³/h								A mm	ØB mm	ØC mm	ØD mm	H mm	Pin mm	Clamp mm
			360°		270° top		180° top		180° bottom								
			1 bar	2.5 bar	1 bar	2.5 bar	1 bar	2.5 bar	1 bar	2.5 bar							
DN8	0.8	0.4	0.7	n. s.	–	–	–	–	–	–	7.5	8.2	2.5	20	32.8	0.8	–
DN10	1.2	0.8	2.4	n. s.	–	–	–	–	–	–	8.5	12.3	2.5	24	37	1.8	–
DN15	1.3	1.5	4	n. s.	3	n. s.	2	n. s.	2	n. s.	9	18.3	2.5	30	38.5	2.2	2.0
DN20	2.0	2.5	8	13	8	12	5	9	6	9	11	22.3	2.5 / 3.5	39	53	2.8	2.0
DN25	2.0	3	11	17	11	17	9	14	7	11	16	28.3	3	64	84.5	2.2	2.0
DN25/1	3.0	4	18	28	16	26	14	23	12	19	16	28.3	3	64	84.5	2.2	2.0
DN32	2.0	3.5	13	20	11	18	10	16	8	13	16	34.3	2.5 / 3.5	64	80.5	2.8	2.0
DN32/1	3.0	4	21	34	21	33	17	26	14	23	16	34.3	2.5 / 3.5	64	80.5	2.8	2.0
DN40	2.0	3.5	11	19	11	16	10	15	11	16	18	40.3	2.5 / 3.5	64	79.5	2.8	2.0
DN40/1	3.0	4	22	36	20	33	15	24	14	23	18	40.3	2.5 / 3.5	64	79.5	2.8	2.0
DN50	2.2	5	28	42	27	42	20	30	17	27	25	52.3	3.5 / 3.5	90	118	2.8	2.5
DN50/1	3.0	6	49	69	45	67	31	51	30	49	25	52.3	3.5 / 3.5	90	118	2.8	2.5
DN50/2	–	10	–	–	–	–	35	58	–	–	25	52.3	3.5 / 3.5	90	118	2.8	2.5

Flow rates and spray circles are approximate values. Recommended working pressure 1 – 2.5 bar. Other spray angles and special designs on request.
 Material: standard 1.4404 (316L), optionally 1.4571, 1.4435, 1.4539, 2.4602 etc. Surface: ground, outside $Ra \leq 0.2 - 0.3 \mu m$, optionally electropolished.
 Inspection certificate 3.1 available. The spray balls comply with Regulation (EC) No 1935/2004. Manufactured according to DIN EN ISO 9001:2015.
 The annular gap between socket and connecting pipe serves to clean the connecting pipe.
 n. s. = not suitable at 2.5 bar – = spray pattern not available for this size Pin / Clamp = wire thickness of the securing element

Securing the push-in connection optionally with retaining clamp or split pin

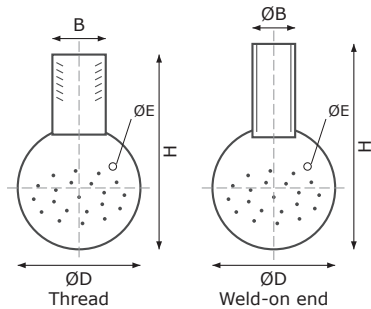
The spray ball is pushed onto the connecting pipe and secured with a retaining clamp or a split pin.
 The wire thickness of the securing element for each size is given in the table (columns Pin / Clamp).



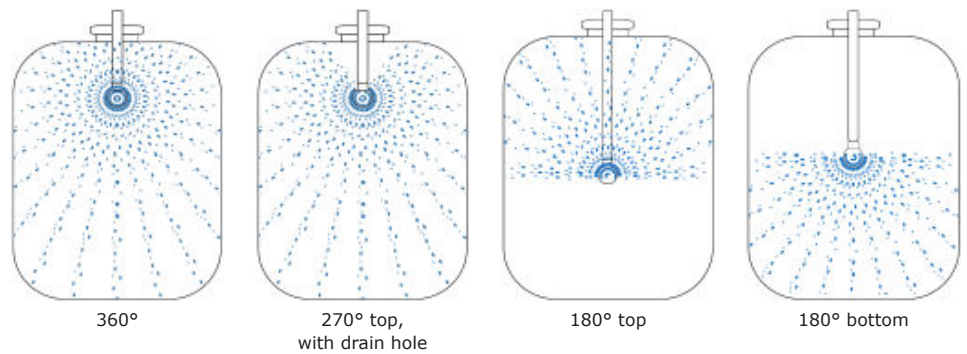
SPRAY BALL SK

with thread and weld-on end

Standard spray ball for CIP cleaning of vessels and tanks
Thread G 1/4" to G 2" or weld-on end DN8 to DN50



Connection: thread or weld-on end
Material: 1.4404 (316L)
Surface: ground



Size	Hole ØE mm	Spray Ø in m	Flow rate m³/h								B	ØD mm	H mm
			360° 1 bar 2.5 bar		270° top 1 bar 2.5 bar		180° top 1 bar 2.5 bar		180° bottom 1 bar 2.5 bar				
Threaded connection B = thread size · G 3/8" with male thread, other sizes with female thread													
G 1/4"	1.3	1.5	3.2	n. s.	2.6	n. s.	2.3	n. s.	2.1	n. s.	G 1/4"	30	39.2
G 3/8"	1.3	1.5	3.4	n. s.	2.8	n. s.	2.3	n. s.	2.2	n. s.	G 3/8"	30	39.5
G 1/2"	2.0	2.5	7.7	11.6	7.1	10.4	5.2	7.7	5.1	7.7	G 1/2"	40	49.5
G 3/4"	2.0	3	8.5	12.9	6.8	10.4	5.2	7.9	4.7	7.1	G 3/4"	64	81
G 1"	2.0	4	8.1	12.2	7.2	10.9	5	7.4	4.7	7.2	G 1"	64	80.5
G 1 1/2"	2.2	3.5	23.6	on req.	22	on req.	12.5	on req.	17.9	on req.	G 1 1/2"	90	104
G 2"	2.2	4	22.4	on req.	21.7	on req.	12.8	on req.	17.9	on req.	G 2"	90	116
Weld-on end B = connection diameter in mm													
DN8	0.8	0.4	0.7	n. s.	–	–	–	–	–	–	8.2	20	32.8
DN10	1.2	0.8	2.4	n. s.	–	–	–	–	–	–	12.3	24	37
DN15	1.3	1.5	4	n. s.	3	n. s.	2	n. s.	2	n. s.	18.3	30	38.5
DN20	2.0	2.5	8	13	8	12	5	9	6	9	22.3	39	53
DN25	2.0	3	11	17	11	17	9	14	7	11	28.3	64	84.5
DN25/1	3.0	4	18	28	16	26	14	23	12	19	28.3	64	84.5
DN32	2.0	3.5	13	20	11	18	10	16	8	13	34.3	64	80.5
DN32/1	3.0	4	21	34	21	33	17	26	14	23	34.3	64	80.5
DN40	2.0	3.5	11	19	11	16	10	15	11	16	40.3	64	79.5
DN40/1	3.0	4	22	36	20	33	15	24	14	23	40.3	64	79.5
DN50	2.2	5	28	42	27	42	20	30	17	27	52.3	90	118
DN50/1	3.0	6	49	69	45	67	31	51	30	49	52.3	90	118

Flow rates and spray circles are approximate values. Recommended working pressure 1 – 2.5 bar. Other spray angles and special designs on request.
Material: standard 1.4404 (316L), optionally 1.4571, 1.4435, 1.4539, 2.4602 etc. Surface: ground, outside Ra ≤ 0.2 – 0.3 µm, optionally electropolished.
Inspection certificate 3.1 available. The spray balls comply with Regulation (EC) No 1935/2004. Manufactured according to DIN EN ISO 9001:2015.
n. s. = not suitable at 2.5 bar on req. = on request - = spray pattern not available for this size

Special spray balls to your specifications in shape, material and hole pattern

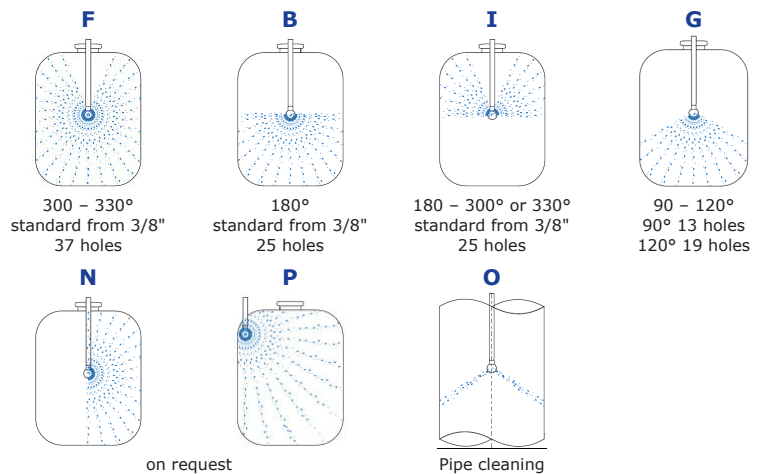
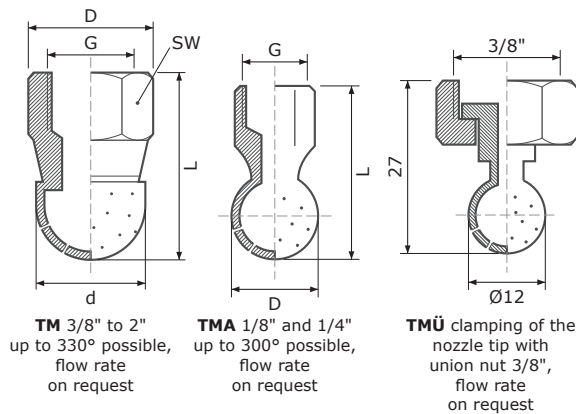
- In addition to the standard sizes, spray balls for special requirements are available:
- Design to your specifications
 - Manufacture to your drawing
 - Replica of an existing spray head by 3D scan
 - Individual spray angles and special materials

SPRAY BALLS

TM series

Materials: stainless steel, brass, plastic, others
Holes and distribution patterns to customer specification

Recommended minimum order quantity TM and TMA: 5 pieces (custom-made)



Hole Ø (mm)	Flow rate $\dot{V}$ in l/min at pressure p (bar) for 1 hole								max. rec. Tank Ø in m
	0.5	1	2	3	5	10	15	20	
0.6	0.10	0.14	0.20	0.24	0.32	0.45	0.55	0.63	0.3
0.8	0.20	0.28	0.40	0.45	0.60	0.89	1.10	1.26	0.4
1.0	0.35	0.50	0.70	0.85	1.10	1.57	1.92	2.21	0.6
1.5	0.75	1.07	1.50	1.83	2.37	3.36	4.11	4.74	1.0
2.0	1.20	1.70	2.40	2.93	3.79	5.37	6.58	7.58	1.5
2.5	2.05	2.91	4.10	5.00	6.48	11.2	11.2	12.9	2.0
3.0	3.00	4.26	6.00	7.32	9.40	13.5	16.4	19.0	3.0
4.0	4.20	5.96	8.40	10.4	13.3	19.7	23.0	26.5	5.0
5.0	7.00	9.90	14.0	17.1	22.1	32.8	38.4	44.2	8.0

Dimensions in mm					max. $\dot{V}$ l/min at 3 bar	max. number of holes	max. hole Ø in mm
G	D	d	L	SW			
1/8"	13	13	26	11	16	13	1.0
1/4"	16	16	30	15	29	19	1.5
3/8"	24	21	36	22	45	37	2.0
1/2"	29	26	45	27	88	43	2.5
3/4"	34	31	54	32	181	74	3.0
1"	38	35	60	36	282	96	4.0
1 1/4"	50	50	78	46	410	108	5.0
1 1/2"	64	64	98	59	577	120	6.0
2"	70	70	106	64	1000	144	8.0

TM G – 90° Ø (mm)	Flow rate $\dot{V}$ in l/min at pressure p (bar) 13 holes							
	0.5	1	2	3	5	10	15	20
0.6	1.30	1.82	2.60	3.12	4.16	5.85	7.15	8.19
0.8	2.60	3.64	5.20	5.85	7.80	11.57	14.17	16.4
1.0	4.55	6.50	9.10	11.0	14.3	20.4	24.8	28.7
1.5	9.75	13.9	19.5	23.8	30.8	43.7	53.4	61.6
2.0	15.6	22.1	31.2	38.1	49.3	69.8	85.4	98.5
2.5	26.6	37.8	53.3	65.0	84.2	118	146	168
3.0	39.0	55.4	78.0	95.2	122	176	214	246
4.0	54.6	77.5	109	135	173	248	299	344
5.0	91.0	129	180	222	287	426	499	575

TM G – 120° Ø (mm)	Flow rate $\dot{V}$ in l/min at pressure p (bar) 19 holes							
	0.5	1	2	3	5	10	15	20
0.6	1.90	2.66	3.80	4.56	6.08	8.55	10.4	12.0
0.8	3.80	5.32	7.60	8.55	11.4	16.9	20.7	23.9
1.0	6.65	9.50	13.3	16.2	20.9	29.8	36.3	42.0
1.5	14.2	20.3	28.5	34.8	45.0	63.8	78.1	90.1
2.0	22.8	32.3	45.6	55.7	72.0	102	125	144
2.5	39.0	55.3	77.9	95.0	123	174	213	246
3.0	57.0	80.9	114	139	179	256	312	360
4.0	80.0	113	210	260	332	374	437	504
5.0	133	188	266	325	420	623	730	840

TM B + I 180° Ø (mm)	Flow rate $\dot{V}$ in l/min at pressure p (bar) 25 holes							
	0.5	1	2	3	5	10	15	20
0.6	2.50	3.50	5.00	6.00	8.00	11.2	13.8	15.8
0.8	5.00	7.00	10.0	11.2	15.0	22.2	27.2	31.5
1.0	8.75	12.5	17.5	21.2	27.5	39.2	47.8	55.2
1.5	18.8	26.8	37.5	45.8	59.2	84.0	103	118
2.0	30.0	42.5	60.0	73.2	94.8	134	164	190
2.5	51.2	72.8	102	125	162	280	281	324
3.0	75.0	106	150	183	235	338	411	474
4.0	105	149	210	260	332	492	575	662
5.0	175	248	350	428	552	820	960	1105

TM F – 330° Ø (mm)	Flow rate $\dot{V}$ in l/min at pressure p (bar) 37 holes							
	0.5	1	2	3	5	10	15	20
0.6	3.70	5.18	7.40	8.88	11.8	16.6	20.4	23.3
0.8	7.40	10.4	14.8	16.6	22.2	33.0	40.3	46.6
1.0	12.8	18.5	25.9	31.4	40.7	58.1	70.7	81.8
1.5	27.8	39.6	55.5	67.7	87.7	124	152	175
2.0	44.4	63.3	88.8	108	140	199	243	280
2.5	75.8	108	152	185	238	414	415	479
3.0	111	158	222	271	348	500	608	701
4.0	155	220	311	385	492	729	851	980
5.0	259	366	518	632	818	1214	1421	1635

When selecting the number of holes and the hole Ø, the flow rate $\dot{V}$ should not be significantly exceeded.

The data, technical data and information presented do not release the user from the obligation to check the suitability of the products supplied for the intended application.
All information is without guarantee. (Status: 03.10.2026-71427321893-1888948-71042)

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1 General information

1.1 Manufacturer's address

Breconcherry GmbH

Sägewerkstr. 3
83395 Freilassing
Germany

1.2 Customer service

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Fax: +49 8654 7783-47
office@breconcherry.de
www.breconcherry.de

2 Safety

This chapter describes the minimum requirements for the intended use of the cleaner. It forms the basis for the safe operation of the cleaner.

2.1 Intended use

The spray balls are intended for cleaning tanks and vessels. Any other use is considered improper.



Note

The manufacturer accepts no liability for damage resulting from improper use of the cleaner. The operator alone bears the risk.

2.2 General safety instructions

The cleaner has been built according to the state of the art and the recognised safety rules at the time it was placed on the market.

Nevertheless, the cleaner can pose hazards if

- the cleaner is not used as intended,
- the cleaner is used incorrectly,
- the cleaner is operated under impermissible conditions.

The safety measures specified by the operator and listed below must be observed.

2.3 Use in potentially explosive atmospheres (ATEX)

The following instructions apply to operation in a potentially explosive atmosphere.

Safety instructions

- The cleaners must be filled with cleaning liquid without pressure. A sudden start-up can cause damage and thus create ignition sources. Pressure surges must be avoided.
- The maximum operating conditions must be observed and monitored. There is a risk of excessive charge build-up.
- During cleaning, liquids must be drained from the tank so that no electrostatic charges that could accumulate build up in the liquid. No liquid may collect in the vessel during cleaning.
- Atmospheric conditions must prevail inside the tank or vessel when cleaning starts.
- The cleaner must be checked regularly for damage and correct function, taking the operating conditions into account. Breconcherry recommends a visual inspection before and after each cleaning process.

Selection of cleaning parameters according to TRGS 727:2016

Breconcherry accepts no liability for this information. If there is a risk of explosion due to the use of cleaners, all current ATEX-relevant standards and regulations must always be applied.



Note

The accumulation of liquid in the vessel during cleaning must be avoided.

Liquids of low conductivity, such as hydrocarbons, become less charged than water when sprayed, as they contain only a low concentration of dissociated ions.

Cleaning with water jets at pressures up to 12 bar

When cleaning with water jets up to 12 bar and with up to 20 nozzles, no hazardous charges are to be expected as long as the liquid throughput does not exceed 7 l/s and the vessel volume does not exceed 10 m³.

Cleaning with solvents of low and medium conductivity at pressures up to 12 bar

If liquids of low and medium conductivity, for example organic solvents, are used as cleaning agents, the proportion of a second phase, for example water or solids, must not exceed 1 %. Cleaning agents may only be circulated in a closed circuit if the contamination is kept below 1 %.

3 Technical data

Technical data – cleaner

Designation	Specification
Working pressure	1 – 2.5 bar
Cleaning diameter	max. 8 m
Operating temperature	max. 150 °C (302 °F)
Spray ball materials	1.4404 (316L), 1.4435 (316L), 1.4539, 2.4602 (Alloy 22)
Clamp/R-clip materials	1.4310, 1.4401, 2.4610
Surfaces	matt ground, outside Ra ≤ 0.8 µm electropolished, outside Ra ≤ 0.4 µm
3A-compliant versions available	Material 1.4404/316L, Ra 0.8 µm, mounting with R-clip and welded connection

Technical data – cleaner types

Type	Spray angle	Cleaning diameter [m]
A 05	360°	1 – 2
A 05/1.0	360°	0.8 – 1
A 1/1.0	360°	1.5 – 2
A 1/1.5	360°	1.8 – 3
A 1	360°	2 – 3
A 1-1	360°	2.5 – 3.5
A 1-2	360°	3 – 4
A 2	360°	3.5 – 5
A 2-1	360°	4 – 6
A 2-2	360°	5 – 7
A 2-3	360°	6 – 8
B 05	192°	1 – 2
B 1	192°	2 – 3

Type	Spray angle	Cleaning diameter [m]
B 2	194°	3.5 – 5
B 2-3	194°	6 – 8
G 05	232°	1 – 2
G 1	206°	2 – 3
G 1-1	206°	2.5 – 3.5
G 1-2	206°	3 – 4
G 2	246°	3.5 – 5
G 2-1	246°	4 – 6
G 2-2	246°	5 – 7
G 2-3	246°	6 – 8
L 1	188°	2.5 – 3
LA 1/1.0	360°	1.5 – 2.5
LA 1/1.5	360°	2.5 – 3

Connection types



Clamp mounting



Threaded connection



Mounting with R-clip



Welded connection

Flow rate [m³/h] depending on the working pressure

Type	Clamp/R-clip mounting						Threaded and welded connection					
	1 bar	1.5 bar	1.8 bar	2 bar	2.2 bar	2.5 bar	1 bar	1.5 bar	1.8 bar	2 bar	2.2 bar	2.5 bar
A 05	5.1	6.2	6.8	7.2	7.6	8.1	4.7	5.8	6.3	6.6	7	7.4
A 05/1.0	2.8	3.4	3.8	4	4.2	4.4	2.4	2.9	3.2	3.4	3.6	3.8
A 1/1.0	3	3.7	4	4.2	4.4	4.7	2.5	3.1	3.4	3.5	3.7	4
A 1/1.5	7	8.6	9.4	9.9	10.4	11.1	6.5	8	8.7	9.2	9.6	10.3
A 1	9.8	12	13.1	13.9	14.5	15.5	9.4	11.5	12.6	13.3	13.9	14.9
A 1-1	12.8	15.7	17.2	18.1	19	20.2	12.3	15.1	16.5	17.4	18.2	19.4
A 1-2	15.3	18.7	20.5	21.6	22.6	24.1	14.8	18.1	19.9	20.9	22	23.4
A 2	21.9	26.8	29.4	31	32.5	34.6	20.9	25.6	28	29.6	31	33
A 2-1	28.4	34.8	38.2	40.2	42.2	45	27.3	33.4	36.6	38.6	40.5	43.2
A 2-2	35.6	43.6	47.8	50.3	52.8	56.3	34.6	42.4	46.4	48.9	51.3	54.7
A 2-3	40.9	50.1	54.9	57.8	60.7	64.7	39.9	48.9	53.5	56.4	59.2	63.1
B 05	3	3.7	4	4.2	4.4	4.7	2.5	3.1	3.4	3.5	3.7	4
B 1	9.5	11.6	12.7	13.4	14.1	15	9	11	12.1	12.7	13.3	14.2
B 2	22.4	27.4	30.1	31.7	33.2	35.4	21.4	26.2	28.7	30.3	31.7	33.8
B 2-3	42.2	51.7	56.6	59.7	62.6	66.7	41.2	50.5	55.3	58.3	61.1	65.1
G 05	4.7	5.8	6.3	6.6	7	7.4	4.2	5.1	5.6	5.9	6.2	6.6
G 1	9.2	11.3	12.3	13	13.6	14.5	8.7	10.7	11.7	12.3	12.9	13.8
G 1-1	11.2	13.7	15	15.8	16.6	17.7	10.7	13.1	14.4	15.1	15.9	16.9
G 1-2	14.5	17.8	19.5	20.5	21.5	22.9	14	17.1	18.8	19.8	20.8	22.1
G 2	20.1	24.6	27	28.4	29.8	31.8	19.1	23.4	25.6	27	28.3	30.2
G 2-1	26.8	32.8	36	37.9	39.8	42.4	25.8	31.6	34.6	36.5	38.3	40.8
G 2-2	34.7	42.5	46.6	49.1	51.5	54.9	33.7	41.3	45.2	47.7	50	53.3
G 2-3	41	50.2	55	58	60.8	64.8	40	49	53.7	56.6	59.3	63.2
L 1	8.6	10.5	11.5	12.2	12.8	13.6	8.1	9.9	10.9	11.5	12	12.8
LA 1/1.0	5.5	6.7	7.4	7.8	8.2	8.7	–	–	–	–	–	–
LA 1/1.5	11	13.5	14.8	15.6	16.3	17.4	10.5	12.9	14.1	14.8	15.6	16.6

4 Assembly and installation

This chapter contains information and instructions on the assembly and installation of the cleaner.

This chapter is intended for all persons who carry out related work on the cleaner.



Note

The choice of spray ball type, installation depth and installation distance depends on the tank dimensions, tank design and tank use.

Mounting with clamp or R-clip

Spray balls with a clamp or R-clip connection have an annular gap between the sleeve and the outside diameter of the pipe for cleaning the insertion pipe.

Welded connection

To be 3A-compliant, spray balls with a welded connection must be inspectable and accessible in the welded-in state. It must be possible to detect and remove contamination in the ball. For this purpose, the cleaning lance must not be too long, and the user must be able to inspect and clean it.

The welded assembly must comply with the latest version of 3A Standard 78-. See 3A Standards 78- Appendix 10, Figure 1 and 00-, E.4.2.1.

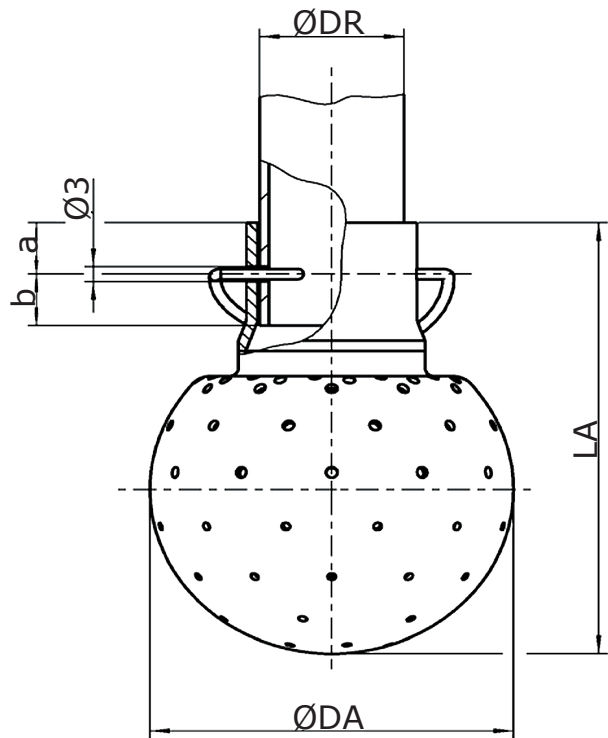
Connection dimensions

Connection type	DR	Type	DA [mm]	LA [mm]	a [mm]	b [mm]	PL [mm]
Clamp mounting according to DIN EN 10357 Series A (formerly DIN 11850); DIN 11860 Series A; DIN 11866 Series A	DN 10 (12 mm)	05	28	46.6	10	8	–
	DN 10 (13 mm)	05	28	46.6	10	8	–
	DN 25 (29 mm)	1	64	84	10	10	–
	DN 50 (53 mm)	2	93	113.5	10	20	–
Clamp mounting according to inch OD DIN 10357 Series D; DIN 11860/11866 Series C; ASME-BPE 2014	½" (12.7 mm)	05	28	46.6	8	8	–
	1" (25.4 mm)	1	64	84	10	10	–
	2" (50.8 mm)	2	93	113.5	10	20	–
Threaded connection according to DIN ISO 228-1	G ¼"	05	28	24.5	–	–	–
	G 1"	1	68	84	–	–	–
	G 2"	2	93	113.5	–	–	–
Clamp mounting according to DIN EN 10357 Series C (ISO 1127)	13.5 mm	05	28	46.6	10	8	–
	33.7 mm	1	68	84	6	10	–
Mounting with R-clip according to DIN 10357 Series D; ASME-BPE 2014	1" (25.4 mm)	1	68	84	10	8	78
	1½" (38.1 mm)	1	68	92	5.5	10	101
	2" (50.8 mm)	2	93	113.5	10	20	117
Welded connection according to inch OD DIN 10357 Series D; DIN 11860/11866 Series C; ASME-BPE 2014	1" (25.4 mm)	1	68	79	–	–	–
	1½" (38.1 mm)	1	68	79	–	–	–
	2" (50.8 mm)	2	93	98.5	–	–	–

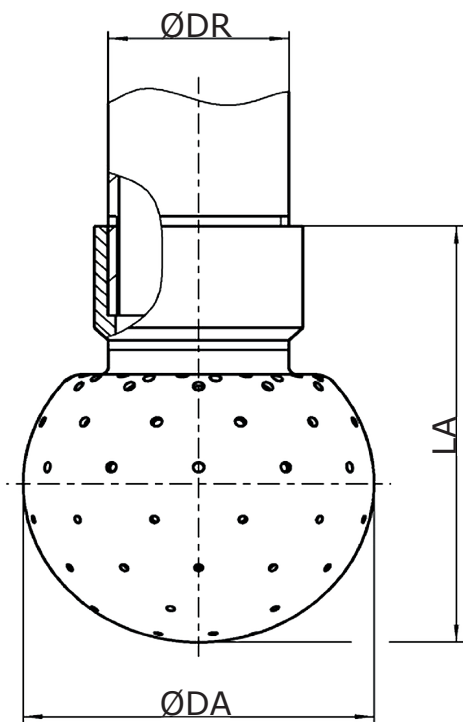
Abbreviations

Abbreviation	Meaning
DR	Pipe diameter
DA	Outside diameter
LA	Length
a/b	Installation dimensions
PL	Insertion depth

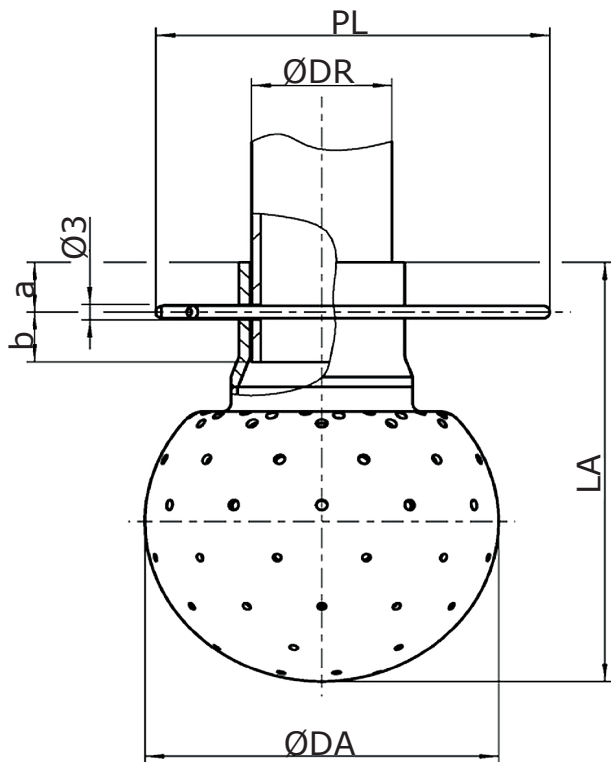
Dimensional drawings



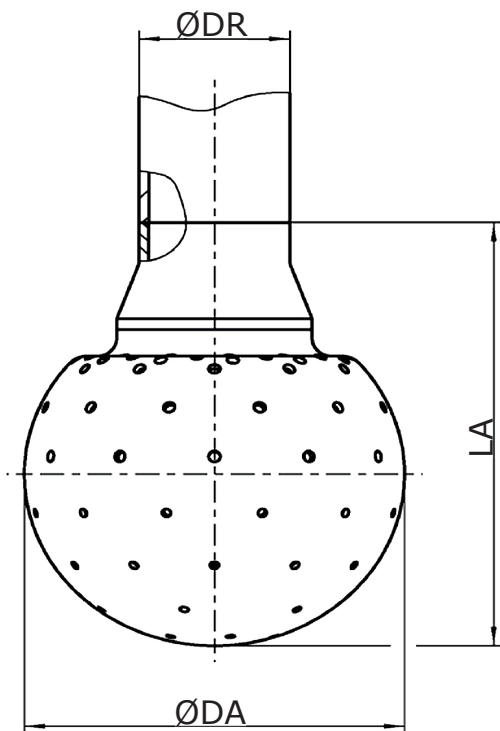
Clamp mounting



Threaded connection



Mounting with R-clip



Welded connection



We are happy to advise you

We will be glad to discuss with you which spray ball and which mounting suit your vessel.

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