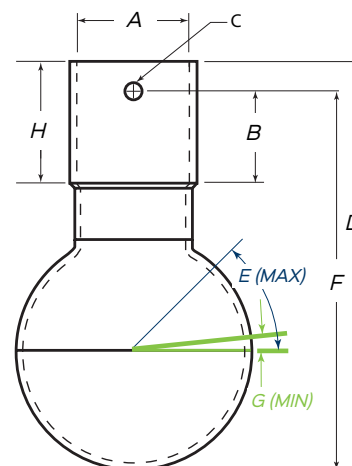


Static Spray Balls

Static spray balls clean tanks and vessels by saturating them with a significant amount of fluid with high flow, and relatively low pressure. The solution cascades down the tank's sidewalls eroding water-soluble soils.

Spherical Static Spray Ball Type Dimensions

Ball Diameter	A	B	C	D	E (MAX)	F	G (MIN)	H
4.0"	Ø 2 1/2"	1"	Ø 13/64"	6 1/16"	48°	5 9/16"	11°	1 1/2"
	Ø 2"	1"	Ø 13/64"	5 15/16"	55°	5 1/2"	11°	1 7/16"
	Ø 1 1/2"	11/16"	Ø 13/64"	5 7/8"	62°	5 7/16"	11°	1 1/8"
	Ø 1"	3/8"	Ø 9/64"	5 3/8"	70°	5"	11°	3/4"
3.0"	Ø 2 1/2"	1"	Ø 13/64"	4 3/4"	32°	4 1/4"	11°	1 1/2"
	Ø 2"	1"	Ø 13/64"	4 13/16"	42°	4 3/8"	11°	1 7/16"
	Ø 1 1/2"	3/4"	Ø 13/64"	4 13/16"	55°	4 3/8"	11°	1 3/16"
	Ø 1"	3/8"	Ø 9/64"	4 5/16"	67°	3 15/16"	11°	3/4"
2.5"	Ø 2"	1"	Ø 13/64"	4 3/16"	32°	3 3/4"	11°	1 7/16"
	Ø 1 1/2"	3/4"	Ø 13/64"	4 1/4"	48°	3 13/16"	11°	1 3/16"
	Ø 1"	3/8"	Ø 9/64"	3 3/4"	62°	3 3/8"	11°	3/4"
	Ø 3/4"	1/4"	Ø 9/64"	3 5/8"	68°	3 3/16"	11°	5/8"
2.0"	Ø 1 1/2"	11/16"	Ø 13/64"	3 11/16"	35°	3 1/4"	11°	1 1/8"
	Ø 1"	3/8"	Ø 9/64"	3 1/4"	55°	2 7/8"	11°	3/4"
	Ø 3/4"	1/4"	Ø 9/64"	3 1/16"	62°	2 11/16"	11°	5/8"
1.5"	Ø 1"	3/8"	Ø 9/64"	2 11/16"	40°	2 5/16"	15°	3/4"
	Ø 3/4"	1/4"	Ø 9/64"	2 1/2"	52°	2 1/8"	15°	5/8"
	Ø 1/2"	3/16"	Ø 5/64"	2 9/16"	61°	2 1/16"	15°	11/16"
1.25"	Ø 1"	1/4"	Ø 9/64"	2 3/8"	30°	2"	15°	5/8"
	Ø 3/4"	1/4"	Ø 9/64"	2 1/4"	42°	1 7/8"	15°	5/8"
	Ø 1/2"	3/16"	Ø 5/64"	2 5/16"	57°	1 13/16"	15°	11/16"



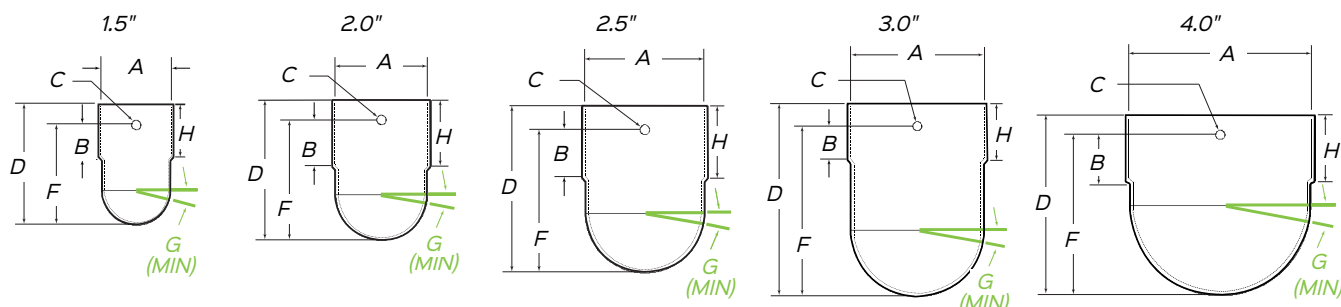
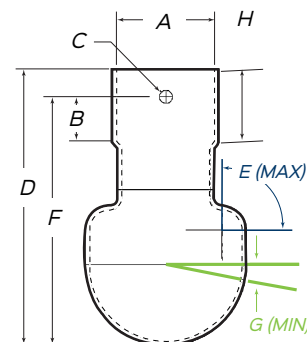
Tangential Static Spray Ball Type Dimensions

Ball Diameter	A	B	C	D	E (MAX)	F	G (MIN)	H
2.5"	Ø 1 1/2"	3/4"	Ø 3/16"	4 5/16"	90°	3 7/8"	11°	1 3/16"
1.5"	Ø 3/4"	1/4"	Ø 9/64"	2 13/16"	90°	2 7/16"	15°	5/8"

NOTE: Other slip collar connection sizes are available as a special request. Dimensions will vary.

Spray Bubble Spray Ball Type Dimensions

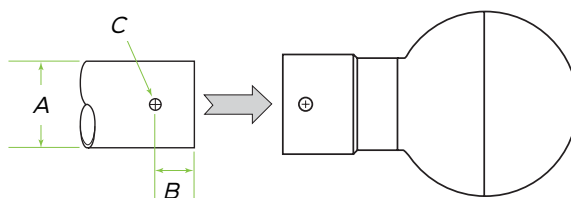
Ball Diameter	A	B	C	D	F	G (MIN)	H
4.0"	Ø 4.05"	0.95"	Ø 13/64"	4.00"	3.56"	11°	1.39"
3.0"	Ø 3.02"	0.75"	Ø 13/64"	4.34"	3.84"	11°	1.25"
2.5"	Ø 2.52"	1.0"	Ø 13/64"	3.50"	3.0"	11°	1.50"
2.0"	Ø 2.02"	1.0"	Ø 13/64"	3.06"	2.63"	11°	1.44"
1.5"	Ø 1.52"	0.69"	Ø 13/64"	2.63"	2.19"	15°	1.13"



NOTE: Spray ball drawings and dimensions on this page are shown for slip collar connections - contact Sani-Matic for other connection style dimensions.

Supply Tube Pinhole Location for Proper Fit with Spray Ball

Tube A (OD)	Distance B	Drill Diameter C
1/2"	3/16"	5/64"
3/4"	3/16"	9/64"
1"	5/16"	9/64"
1 1/2"	11/16"	13/64"
2"	15/16"	13/64"



QUICK TIPS Calculate the recommended minimum spray ball flow rate required for cleaning process vessels by entering the tank diameter:

$$\frac{\text{(Spray Ball Flow in gpm)}}{\text{(Tank Diameter in feet)}} = \frac{\text{Tank Diameter in feet}}{\text{Tank Diameter in feet}} \times 9.5$$

A minimum flow rate of 3 gallons per minute (gpm) for every foot of tank circumference is required to produce sufficient turbulent flow to cascade solution down vessel walls.

Choosing a Spray Ball Type:

Spherical: Most common spray ball; ideal for general patterns.

Tangential: The 90 degree / perpendicular flat area at the "top" of a tangential spray ball allows for a vertical spray pattern. This can help provide maximum spray coverage to the top of a tank.

Spray Bubble: These are size-on-size sprays (hemisphere to supply tube) and ideal for saving space. Although it is a space saving design, it's important to recognize that the design also eliminates any "upward" spray coverage, assuming a vertical supply tube application. It's essentially one half of a spray ball (one hemisphere), attached to end of tube with the same diameter.



Spherical



Tangential



Spray Bubble

Strainer Sizing:

Use the below recommendations for sizing a strainer to use upstream of static spray balls. This will keep debris from being collected inside the spray ball which would reduce effectiveness of cleaning.

Wedgewire Element: 0.015" or smaller

Mesh Overlay: 40 mesh or higher

Filter Tubes: 425 micron or smaller

GOOD TO KNOW

- **Spray Ball Material:** 316Lss
- **Maximum Operating Pressure:** 70 psi
- Wraparound clips are standard.
- Material Test Reports (MTRs) are available.
- Hastelloy and AL-6XN material options are available for some spray balls.
- Custom spray balls require longer lead times.
- A 1/16" drain hole is standard for all spray balls.
- A clip is included with every spray ball with slip collar connection.
- **Cleaning Distance:** A static spray device's cleaning radius (the distance away that it can provide solution for cleaning) depends on many variables including pressure and spray ball hole size and angle. As a general rule of thumb, if operating in pressure ranges of 10-20 psi, the cleaning radius is 4-6 feet. If operating in pressure ranges above 20 psi, the cleaning radius is 5-7 feet.

Static Spray Ball Model Number Key

Example Model #:
SB5-200-150-SC-040-25-32-MP-SP

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1, 2	Component Model																						
	SB Static Spray Ball																						
3	Drill Pattern																						
	0 No Holes (Except 1/16" Drain Hole)																						
	1 180° Up - Vertical Mount																						
	2 180° Up - Double Ball																						
	3 Special Spray Pattern																						
	4 180° Down - Vertical Mount																						
	5 360° Full Coverage																						
	6 180° Up - Horizontal Mount																						
	7 270° Up - Vertical Mount																						
4-6	Ball Diameter																						
	125 1.25" Ball Diameter																						
	150 1.50" Ball Diameter																						
	200 2.00" Ball Diameter																						
	250 2.50" Ball Diameter																						
	300 3.00" Ball Diameter																						
	400 4.00" Ball Diameter																						
7-9	Connection Size																						
	050 0.50" - 12 gpm Max. Flow ¹																						
	075 0.75" - 25 gpm Max. Flow																						
	100 1.00" - 40 gpm Max. Flow																						
	150 1.50" - 100 gpm Max. Flow																						
	200 2.00" - 240 gpm Max. Flow																						
	250 2.50" - 400 gpm Max. Flow																						
10, 11	Connection Style																						
	SC Slip Collar - Clip Included (Standard)																						
	BW Butt Weld																						
	FL Flare (No Connection)																						
	TC Tri-Clamp ¹																						
	HC Half Coupling (FNPT) ¹																						
	PN Pipe Nipple (MNPT) ¹																						
12-14	Flow																						
	040 40 gpm (Standard)																						
	000 0 gpm (No Holes)																						
	### Custom Flow (gpm)																						
15, 16	Pressure																						
	25 25 psi (Standard)																						
	00 0 psi (No Holes)																						
	## Custom Pressure (psi)																						
17, 18	Finish																						
	32 32 µin Ra (Standard)																						
	20 20 µin Ra*																						
	15 15 µin Ra*																						
19, 20	Polish																						
	MP Mechanical Polish (Standard)																						
	EP Electropolish*																						
21, 22	Ball Type																						
	SP Spherical																						
	TG Tangential																						
	BB Bubble																						

***Longer lead times apply.**

Specify custom flow and custom pressure values when ordering.

¹Does not conform to 3-A standard.

NOTE: Some constraints exist that limit selecting certain options together. Sani-Matic will advise if issues exist with a specified model #.

NOTE: Flare connection is a weld pullout connection directly at the upper hemisphere of the spray ball. Butt Weld connection adds 1.5" of tubing to this flare.

NOTE: One clip is included with every spray ball with slip collar connection.

NOTE: Non-stock spray balls are built to order and are non-returnable.

Standard Static Spray Ball Products

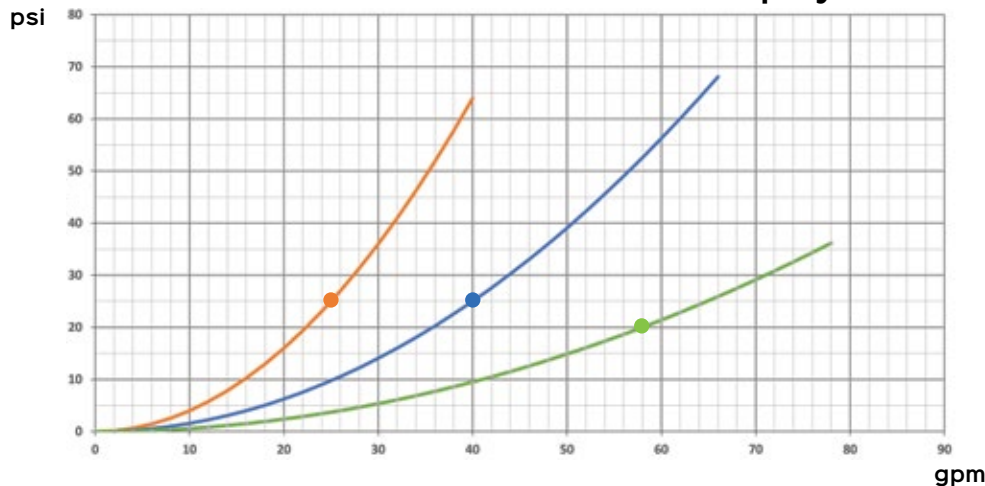


Stock Static Spray Balls - 316Lss

Model	Drill Pattern	Ball Diameter	Connection Size	Connection Style	Flow (gpm)	Pressure (psi)	Finish	Ball Type	Part #	New Model Key #
SB-1	180° Up - Vertical Mount	2.50"	1.50"	SC	40	25	32 μ in Ra	Spherical	128271	SB-1-250-150-SC-040-25-32-MP-SP
SB-1	180° Up - Vertical Mount	3.00"	1.50"	SC	40	25	32 μ in Ra	Spherical	131028	SB-1-300-150-SC-040-25-32-MP-SP
SB-2	180° Up - Double Ball (each ball)	4.00"	1.50"	SC	40	25	32 μ in Ra	Spherical	128272	SB-2-400-150-SC-040-25-32-MP-SP
SB-5	360° Full Coverage	1.50"	0.75"	SC	25	25	32 μ in Ra	Spherical	154624	SB-5-150-075-SC-025-25-32-MP-SP
SB-5	360° Full Coverage	1.50"	1.00"	SC	40	25	32 μ in Ra	Spherical	199108	SB-5-150-100-SC-040-25-32-MP-SP
SB-5	360° Full Coverage	2.00"	1.00"	SC	40	25	32 μ in Ra	Spherical	128276	SB-5-200-100-SC-040-25-32-MP-SP
SB-5	360° Full Coverage	2.00"	1.50"	SC	40	25	32 μ in Ra	Spherical	199102	SB-5-200-150-SC-040-25-32-MP-SP
SB-5	360° Full Coverage	2.50"	1.00"	PN	58	20	32 μ in Ra	Spherical	117503	SB-5-250-100-PN-058-20-32-MP-SP
SB-5	360° Full Coverage	2.50"	1.50"	SC	40	25	32 μ in Ra	Spherical	128275	SB-5-250-150-SC-040-25-32-MP-SP
SB-5	360° Full Coverage	3.00"	1.50"	SC	40	25	32 μ in Ra	Spherical	128274	SB-5-300-150-SC-040-25-32-MP-SP
SB-5	360° Full Coverage	4.00"	1.50"	SC	40	25	32 μ in Ra	Spherical	128273	SB-5-400-150-SC-040-25-32-MP-SP
SB-5	360° Full Coverage	2.50"	1.50"	SC	40	25	32 μ in Ra	Tangential	219549	SB-5-250-150-SC-040-25-32-MP-TG

NOTE: One clip is included with every spray ball with slip collar connection.

Flow / Pressure Curve - Stock Static Spray Balls



NOTE: These are estimated theoretical flow and pressure values at operating points other than the listed design flow and pressure point. The listed design flow and pressure point is marked.

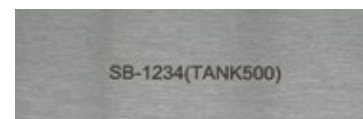
- 25 GPM @ 25 psig
- 40 GPM @ 25 psig
- 58 GPM @ 20psig

Services (Static Spray Ball)

The following services can be added to a static spray ball order.

Description	Part #
Passivation, Static Spray Ball	PASSIVATION-SB
Custom Etching, Static Spray Ball	ETCHING-SB

NOTE: Custom Etching has a 20 character limit.



Custom Etching Example

Static Spray Ball Clips (316ss)

Description	Part #
Hair Pin Clip for 0.50" SC ¹	321443
Wraparound Clip for 0.75" SC	321554
Wraparound Clip for 1.00" SC	321555
Wraparound Clip for 1.50" SC	321556
Wraparound Clip for 2.00" SC	321557
Wraparound Clip for 2.50" SC	321658

¹0.50" Clip diameter does not conform to 3-A standard.

NOTE: One clip is included with every spray ball with slip collar connection.



Slip Collars (316Lss)

Slip Collar Size	Overall Length	Part #
0.50"	1 1/32"	320955
0.75"	1 1/16"	320747
1.00"	1 5/16"	320627
1.50"	1 7/8"	320085
2.00"	2 1/16"	320383

NOTE: Slip Collar Size is size of sanitary tubing (nominal) that fits in slip collar. The opposite end is a butt-weld connection.

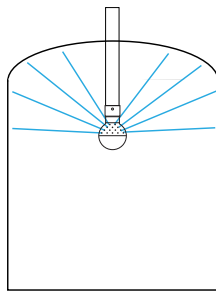
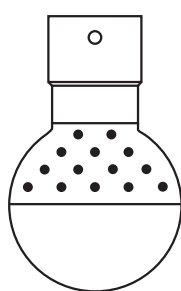
NOTE: See "Spherical Static Spray Ball Type Dimensions" table for more detailed slip collar dimensions.



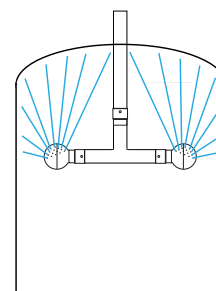
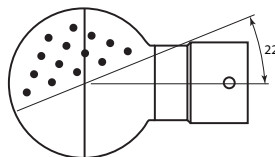
1.00" Slip Collar

Static Spray Ball Drill Patterns

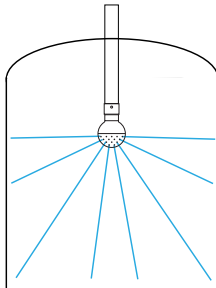
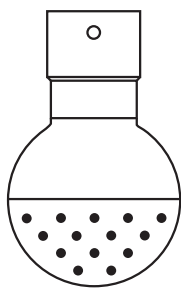
SB-1
180° Up -
Vertical
Mount



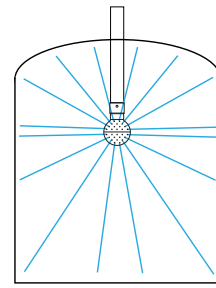
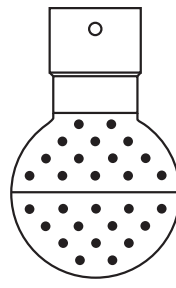
SB-2
180° Up -
Double Ball



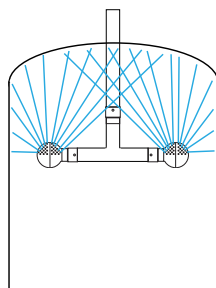
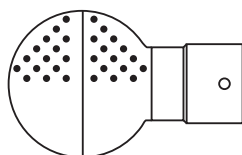
SB-4
180° Down -
Vertical
Mount



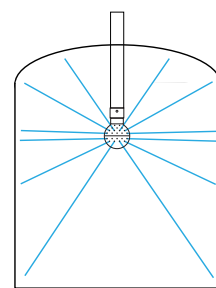
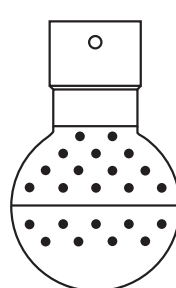
SB-5
360° - Full
Coverage



SB-6
180° Up -
Horizontal
Mount



SB-7
270° Up -
Vertical
Mount



Custom Spray Assemblies

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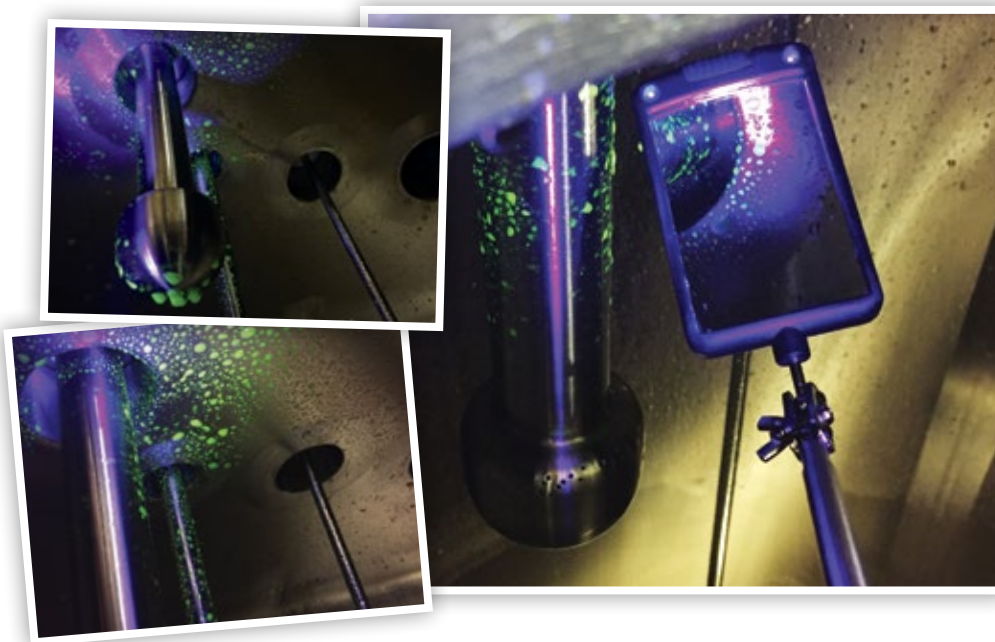
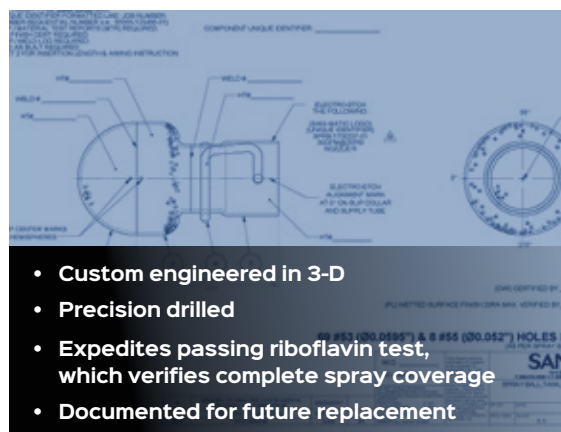
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Custom-Engineered Solutions for Special Spray Patterns

Sani-Matic creates 3-D models of your process vessel to engineer effective static spray device drill patterns for proper coverage of all ports and surfaces.

We may request the following information to best understand your application:

- Tank drawings indicating agitators, dip tubes, anti-foams, and spray ball connections
- Available CIP flow and pressure



Successful riboflavin testing verifies complete spray coverage.