

Spillback

High Turndown Ratio

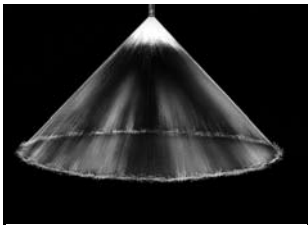
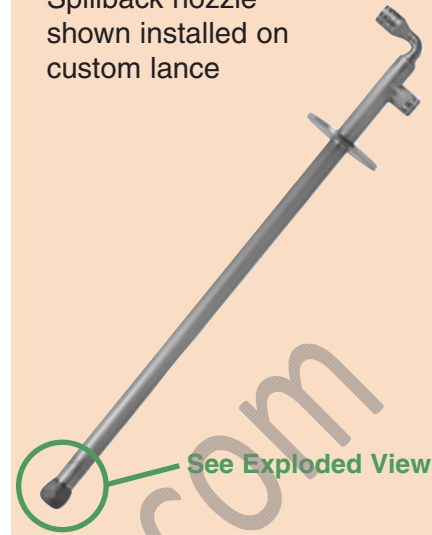
DESIGN FEATURES:

- High turndown ratio
- Minimal variation in droplet size
- High reliability in extreme environments

SPRAY CHARACTERISTICS:

- **Spray angles:** 70-90 degrees
- **Spray patterns:** Hollow cone
- **Flow rates:** 0.9 to 410 L/min

Spillback nozzle shown installed on custom lance



Hollow Cone



3/4" and 1" SB Nozzle Exploded View

SPECIAL PURPOSE

TO ORDER: specify pipe size, connection type, set-up number, and material.

Spillback Nozzle Minimum and Maximum Injection Flow Rates at Fixed Inlet Pressures

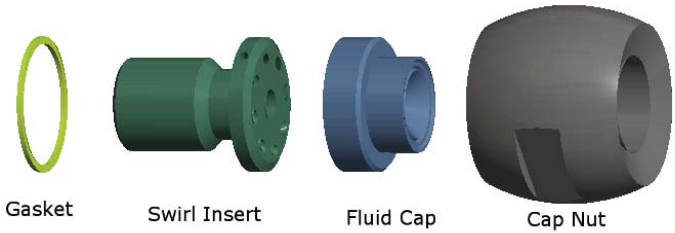
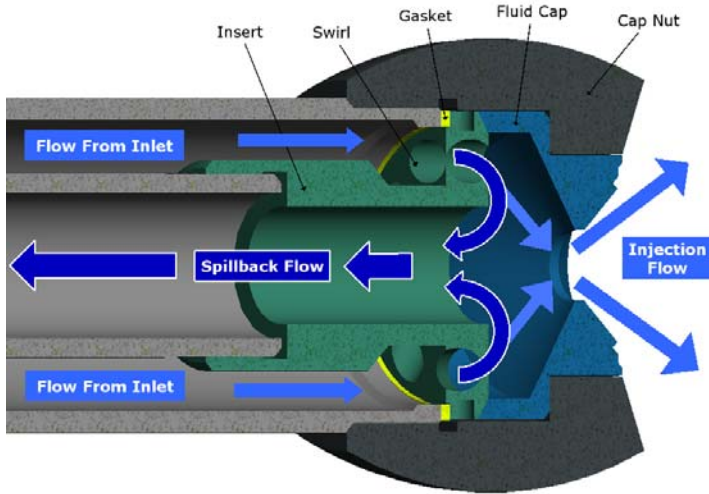
Pipe Size	BETE Set-up#	Spray Angle	LITERS PER MINUTE @ BAR												Free Passage (mm) Approx.
			25 bar		30 bar		35 bar		40 bar		45 bar		50 bar		
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
3/4"	SB-19	70° - 90°	0.9	5.3	1.0	5.7	1.2	6.8	1.6	7.6	2.2	8.7	2.8	9.1	0.8
	SB-29		1.2	8.7	1.3	9.5	1.5	11	1.7	12	2.2	14	2.7	14	
	SB-36		1.4	11	1.4	12	1.6	14	1.6	15	2.3	17	3.6	17	
	SB-41		1.9	12	2	14	2.3	16	2.6	17	2.8	19	3	20	
	SB-51		1.5	16	1.6	17	1.7	19	1.9	22	2	23	2.1	24	
	SB-59		2	18	2.1	20	2.4	22	2.6	25	2.9	27	3	28	
1"	SB-115	70° - 90°	4.2	36	4.5	40	4.5	42	4.9	45	4.9	47	5.3	51	1.5
	SB-130		4.2	42	4.5	45	4.5	48	4.9	52	5.3	55	5.7	58	
	SB-150		4.9	48	5.3	53	5.7	58	6.1	61	6.4	64	6.8	68	
2"	SB-250	70° - 90°	7.9	81	8.7	88	9.5	96	9.8	100	11	110	11	110	2.3
	SB-350		11	110	12	120	13	130	14	140	15	150	16	160	
	SB-520		17	170	18	180	20	200	21	210	22	220	23	230	
	SB-620		20	200	22	220	23	240	25	260	26	270	28	290	
	SB-820		26	270	29	290	31	310	34	340	36	360	38	380	
	SB-890		28	280	31	310	33	340	37	370	40	400	42	410	

Standard Materials: Nozzles in Hardened 420 Stainless Steel and 316 Stainless Steel.

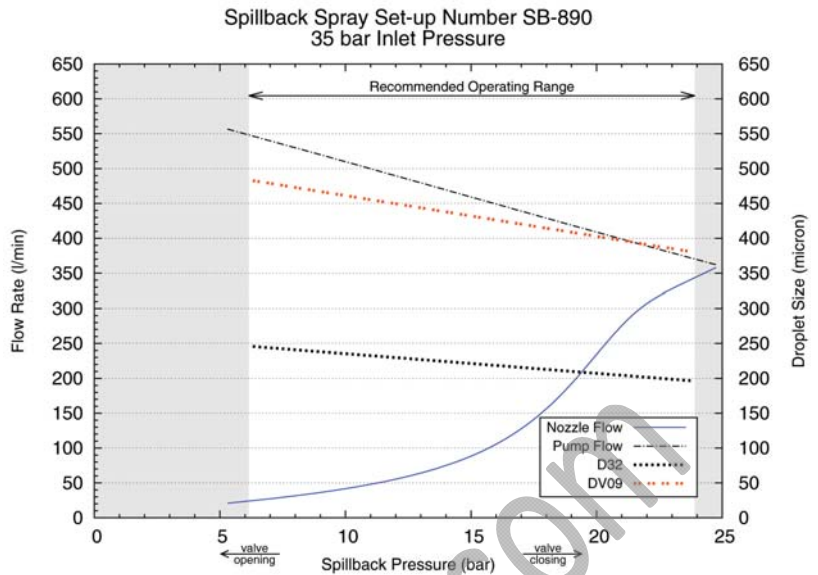
Gaskets in 316 Stainless Steel

See next page for pump flow rates and set-up details.

Contact BETE for Complete Lance Assemblies plus Equipment/Control Skid Systems



2" SB Nozzle Exploded View



Example SB Performance Curve

Contact BETE for More Flow and Drop Size Information

A spillback nozzle is a type of whirl nozzle that is equipped with two connections instead of the single inlet on most traditional whirl nozzles. Fluid enters the swirl chamber in the fluid cap through angled holes in the swirl component that impart a tangential velocity to the fluid. As the fluid exits the fluid cap orifice, the tangential velocity creates a cone pattern and atomization of the fluid. Spillback nozzles achieve a 10:1 turndown ratio of the injection flow rate by diverting a portion of the flow rate through an internal return line, using a spillback valve in the return line to adjust the return flow rate. An increase in flow rate through the return line results in a decrease in injection flow rate through the orifice. A constant supply pressure maintains liquid velocity through the internal swirl disk component, providing relatively constant atomization throughout the flow range.

NOTE: As the injection flow to the process decreases, the required pump supply flow to the inlet increases.

Proper sizing of the pump is critical to operating performance.

Spillback Nozzle Set-up Components					Supply Flow Rates					
Pipe Size	BETE Set-up#	Fluid Cap	Insert	Swirl	Max Supply Flow Required at Inlet of Each Nozzle					
					LITERS PER MINUTE @ BAR					
					25 bar	30 bar	35 bar	40 bar	45 bar	50 bar
3/4"	SB-19	FC090	IN135	SW069-2	8	8	10	11	12	12
	SB-29	FC128	IN161	SW085-2	12	13	15	16	18	19
	SB-36	FC114	IN188	SW081-3	16	17	19	21	23	24
	SB-41	FC144	IN204	SW085-3	17	19	21	23	25	26
	SB-51	FC164	IN234	SW081-4	22	23	26	29	32	33
	SB-59	FC182	IN259	SW090-4	25	27	31	34	37	39
1"	SB-115	FC258	IN360	SW114-5	49	54	58	60	64	67
	SB-130	FC258	IN420	SW133-5	64	71	76	81	85	90
	SB-150	FC297	IN420	SW133-5	65	72	78	83	87	92
2"	SB-250	FC296	IN485	Swirl is integral with Insert	130	140	150	160	170	180
	SB-350	FC365	IN590		180	200	210	230	240	250
	SB-520	FC419	IN690		280	300	330	360	370	380
	SB-620	FC455	IN740		310	350	370	410	420	450
	SB-820	FC490	IN800		420	470	500	540	560	610
	SB-890	FC514	IN840		440	510	560	600	630	680

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