

Spillback

High Turndown Ratio

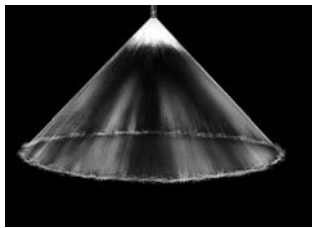
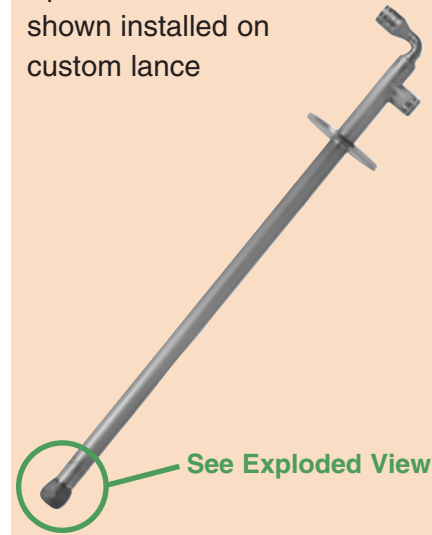
DESIGN FEATURES:

- High turndown ratio
- Minimal variation in dropsize
- High reliability in extreme environments

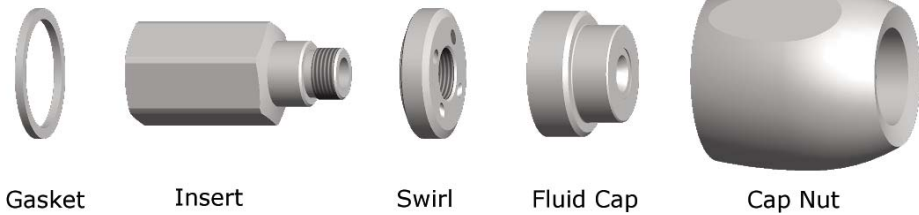
SPRAY CHARACTERISTICS:

- **Spray angles:** 70-90 degrees
- **Spray patterns:** Hollow cone
- **Flow rates:** 0.24 to 110 gpm

Spillback nozzle shown installed on custom lance



Hollow Cone



Gasket

Insert

Swirl

Fluid Cap

Cap Nut

3/4" and 1" SB Nozzle Exploded View

Spillback Nozzle

Minimum and Maximum Injection Flow Rates at Fixed Inlet Pressures

Pipe Size	BETE Set-up#	Spray Angle	GALLONS PER MINUTE @ PSI												Free Passage (in.) Approx.
			350 PSI		400 PSI		500 PSI		600 PSI		650 PSI		750 PSI		
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
3/4"	SB-19	70° - 90°	0.24	1.4	0.27	1.5	0.32	1.8	0.41	2.0	0.59	2.3	0.73	2.4	0.03
	SB-29		0.32	2.3	0.35	2.5	0.39	2.9	0.45	3.2	0.59	3.6	0.71	3.7	
	SB-36		0.38	2.9	0.38	3.2	0.41	3.6	0.41	4.0	0.62	4.4	0.95	4.5	
	SB-41		0.51	3.3	0.54	3.6	0.61	4.1	0.68	4.5	0.75	5.0	0.79	5.2	0.04
	SB-51		0.40	4.2	0.42	4.5	0.46	5.1	0.50	5.7	0.54	6.2	0.56	6.4	
	SB-59		0.52	4.8	0.56	5.2	0.63	5.9	0.70	6.5	0.77	7.1	0.80	7.4	
1"	SB-115		1.1	10	1.2	11	1.2	11	1.3	12	1.3	12	1.4	14	0.06
	SB-130		1.1	11	1.2	12	1.2	13	1.3	14	1.4	15	1.5	15	0.07
	SB-150		1.3	13	1.4	14	1.5	15	1.6	16	1.7	17	1.8	18	
2"	SB-250		2.1	22	2.3	23	2.5	25	2.6	27	2.8	29	2.9	30	0.09
	SB-350		3.0	30	3.3	33	3.5	36	3.8	38	4.0	40	4.2	42	0.11
	SB-520		4.4	44	4.8	48	5.2	52	5.5	55	5.9	59	6.1	62	0.12
	SB-620	5.2	53	5.9	59	6.2	62	6.7	68	7.0	71	7.5	76	0.13	
	SB-820	7.0	71	7.7	77	8.2	83	9.0	91	9.6	96	10.0	100	0.15	
	SB-890	7.4	75	8.2	82	8.8	89	9.8	98	10.5	106	11.0	110		

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.

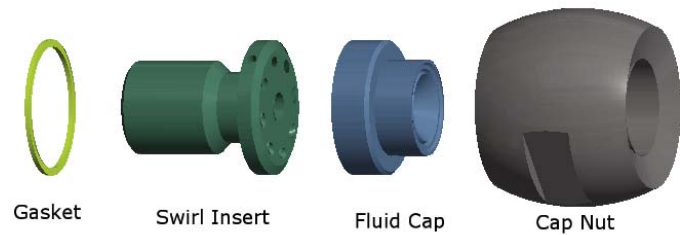
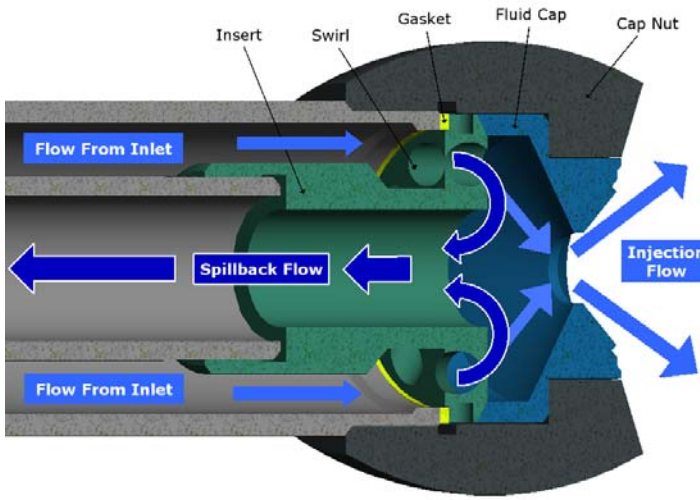
Contact BETE for Complete Lance Assemblies plus Equipment/Control Skid Systems

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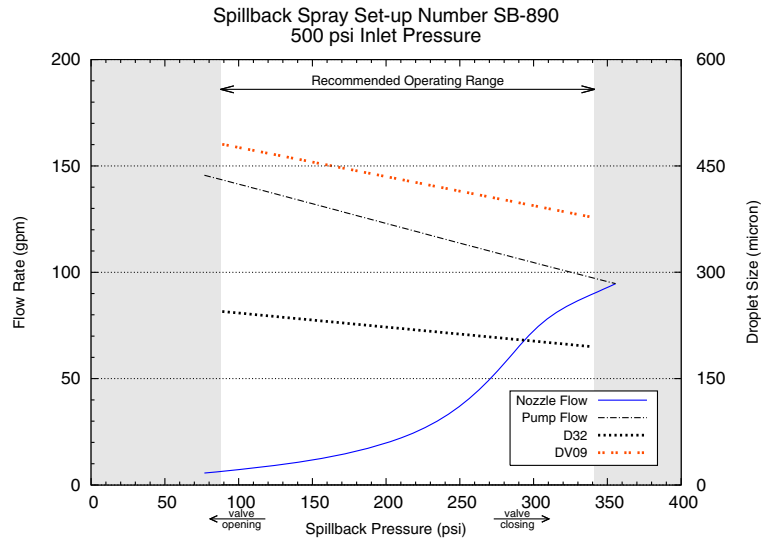
SPECIAL PURPOSE

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

Call for the name of your nearest BETE representative.
CALL 413-772-0846



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					
					GALLONS PER MINUTE @ PSI					
					350 PSI	400 PSI	500 PSI	600 PSI	650 PSI	750 PSI
3/4"	SB-19	FC090	IN135	SW069-2	2.0	2.2	2.5	2.8	3.1	3.3
	SB-29	FC128	IN161	SW085-2	3.2	3.4	3.9	4.3	4.7	4.9
	SB-36	FC114	IN188	SW081-3	4.3	4.5	5.0	5.6	6.1	6.3
	SB-41	FC144	IN204	SW085-3	4.6	4.9	5.5	6.0	6.6	6.9
	SB-51	FC164	IN234	SW081-4	5.7	6.1	6.8	7.6	8.4	8.7
	SB-59	FC182	IN259	SW090-4	6.7	7.2	8.1	9.0	9.8	10
1"	SB-115	FC258	IN360	SW114-5	13	14	15	16	17	18
	SB-130	FC258	IN420	SW133-5	17	19	20	22	23	24
	SB-150	FC297	IN420	SW133-5	17	19	21	22	23	24
2"	SB-250	FC296	IN485	Swirl is integral with Insert	34	37	40	43	45	48
	SB-350	FC365	IN590		48	52	56	60	64	67
	SB-520	FC419	IN690		73	78	86	95	97	100
	SB-620	FC455	IN740		83	93	99	110	110	120
	SB-820	FC490	IN800		110	120	130	140	150	160
	SB-890	FC514	IN840		120	140	150	160	170	180

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 Gaskets in 316 Stainless Steel

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