



TF

Wide Range of Flows and Angles

DESIGN FEATURES

- The original spiral nozzle invented by BETE and continuously improved!
- High energy efficiency
- One-piece/no internal parts
- Clog-resistant performance
- High discharge velocity
- Male connection standard; female connection available by special order

SPRAY CHARACTERISTICS

- Wide range of flow rates and spray angles
- Fine atomization

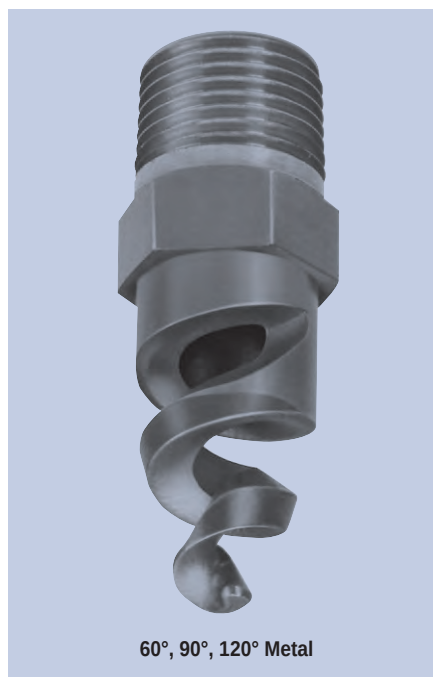
Spray patterns: Full Cone.

For Hollow Cone, see page 45

Spray angles: 50° to 180°

Flow rates: 0.5 to 3320 gpm
(Higher flow rates available)

Available with FM approval: N series (page 102), 1/4" TF8 NN, FCN in brass, 1/2" TF24-150 in multiple materials



60°, 90°, 120° Metal



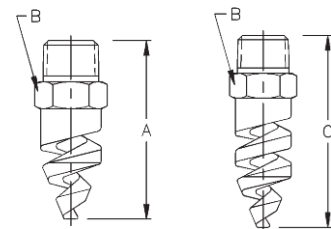
Full Cone 60° (NN)



Full Cone 90° (FCN)



Full Cone 150°/170°



90°, 120°

150°, 170°

Dimensions are approximate. Check with BETE for critical dimension applications.

TF Full Cone Flow Rates and Dimensions

Full Cone, 60° (NN), 90° (FCN or FFCN), 120° (FC or FFC), 150°, and 170° Spray Angles, 1/8" to 4" Pipe Sizes

Male Pipe Size	Nozzle Number	Available Spray Angles 60° 90° 120° 150° 170°	K Factor	GALLONS PER MINUTE @ PSI								PTFE not recommended at pressures above red line				Approx. (in.)		Dim. (in.) for			60° 90°		
				5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	Metal ONLY at pressures above green line		Free Orif. Dia.	Pass. Dia.	A**	B	C	Metal Only*	120° Metal Plas		
													200 PSI	400 PSI									
1/8	TF6 TF8	60° 90° 120° 150° 170° 60° 90° 120° 150° 170°	0.221 0.411	0.495 0.919	0.70 1.30	0.99 1.84	1.21 2.25	1.40 2.60	1.57 2.91	1.71 3.18	1.98 3.68	2.21 4.11	3.13 5.81	4.43 8.22	0.09 0.13	0.09 0.13	1.69 1.69	0.56 0.56	1.69 2.19	1.00	0.20		
1/4	TF6 TF8 TF10	60° 90° 120° 150° 170° 60° 90° 120° 150° 170° 60° 90° 120° 150° 170°	0.221 0.411 0.632	0.495 0.919 1.41	0.70 1.30 2.00	0.99 1.84 2.83	1.21 2.25 3.46	1.40 2.60 4.00	1.57 2.91 4.47	1.71 3.18 4.90	1.98 3.68 5.66	2.21 4.11 6.32	3.13 5.81 8.94	4.43 8.22 12.6	0.09 0.13 0.16	0.09 0.13 0.13	1.88 1.88 1.88	0.56 0.56 0.56	1.88 2.38 2.38	1.25	0.20		
	3/8	TF6 TF8 TF10 TF12 TF14 TF16 TF20	60° 90° 120° 60° 90° 120° 60° 90° 120° 60° 90° 120° 150° 170° 60° 90° 120° 150° 170° 60° 90° 120° 150° 170° 60° 90° 120° 150° 170°	0.221 0.411 0.632 0.949 1.28 1.68 2.61	0.495 0.919 1.41 2.12 2.86 3.75 5.83	0.70 1.30 2.00 3.00 4.05 5.30 8.25	0.99 1.84 2.83 4.24 5.73 7.50 11.7	1.21 2.25 3.46 5.20 7.01 9.18 14.3	1.40 2.60 4.00 6.00 8.10 10.6 16.5	1.57 2.91 4.47 6.71 9.06 11.9 18.4	1.71 3.18 4.90 7.35 9.92 13.0 20.2	1.98 3.68 5.66 8.49 11.5 15.0 23.3	2.21 4.11 6.32 9.49 12.8 16.8 26.1	3.13 5.81 8.94 13.4 18.1 23.7 36.9	4.43 8.22 12.6 19.0 25.6 33.5 52.2	0.09 0.13 0.16 0.19 0.22 0.25 0.31	0.09 0.13 0.13	1.88 0.69	2.38	1.63	0.25		
		1/2	TF24 TF28	60° 90° 120° 150° 170° 60° 90° 120° 150° 170°	3.81 5.22	8.52 11.7	12.1 16.5	17.0 23.3	20.9 28.6	24.1 33.0	26.9 36.9	29.5 40.4	34.1 46.7	38.1 52.2	53.9 73.8	76.2 104	0.38 0.44	0.19 0.19	2.50	0.88	3.06	3.00	0.50
3/4			TF32	60° 90° 120° 150° 170°	6.64	14.8	21.0	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	133	0.50	0.19	2.75	1.13	3.50	5.50	0.88
1		TF40 TF48	60° 90° 120° 150° 170° 60° 90° 120° 150° 170°	10.6 15.0	23.7 33.6	33.5 47.5	47.4 67.2	58.0 82.3	67.0 95.0	74.9 106	82.1 116	94.8 134	106 150	150 212	212 300	0.63 0.75	0.25 0.25	3.63	1.38	4.38	8.50	2.50	
		1 1/2	TF56 TF64 TF72	60° 90° 120° 150° 170° 60° 90° 120° 150° 170° 60° 90° 120° 150° 170°	20.4 26.7 30.4	45.6 59.7 67.9	64.5 84.5 96.0	91.2 120 136	112 146 166	129 169 192	144 189 215	158 207 235	182 239 272	204 267 304	288 378 429	408 534 607	0.88 1.00 1.13	0.31 0.31	5.38	4.38	2.00	5.38	22.0
2			TF88 TF96 ¹	60° 90° 120° 150° 170° 60° 90° 120° 150° 170°	44.3 55.9	99.0 125	140 177	198 250	242 306	280 354	313 395	343 433	396 500	443 559	626 791	885 1120	1.38 1.50	0.44 0.44	5.63 6.88	2.50 2.50	5.88 7.00	46.0	8.00
	3		TF112 ¹ TF128	60° 90° 120° 150° 170° 60° 90° 120° 150° 170°	81.0 107	181 239	256 339	362 480	443 588	512 679	572 759	627 831	724 960	810 1070	1150 1510	1620 2150	1.75 2.00	0.56 0.56	8.63	3.50	9.25	114	20.0
4		TF160 ¹	60° 90° 120°	166	371	525	742	909	1050	1170	1290	1480	1660	2350	3320	2.50	0.63	10.1	4.50		169	27.0	

Flow Rate (GPM) = $K \sqrt{PSI}$ *Dimensions are for bar stock, cast sizes may vary. **60° nozzles slightly longer, consult BETE. ¹ Three turn nozzles

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene, and PTFE (Poly. not available for TF6 thru TF10).

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

TFXP

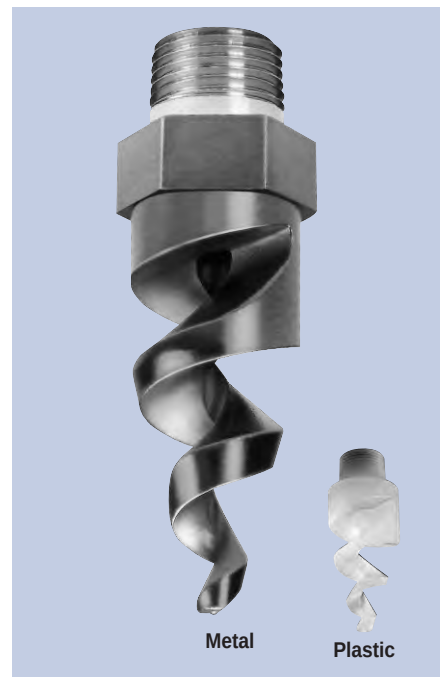
Largest Free Passage

DESIGN FEATURES

- Largest free passage in the original spiral nozzle invented by BETE and continuously improved!
- Passes particles equal to orifice size
- Clog-resistant
- One-piece, extra heavy construction
- High energy efficiency
- Male connection

SPRAY CHARACTERISTICS

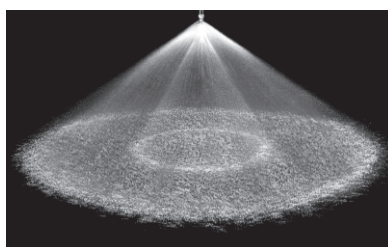
- Wide range of flow rates
 - Fine atomization
- Spray pattern:** Full Cone
(Hollow Cone available by special order)
- Spray angles:** 90° and 120°
- Flow rates:** 3.0 to 3320 gpm



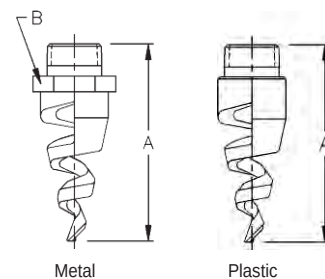
FULL CONE



Full Cone 90° (XPN)



Full Cone 120° (XP)



Metal

Plastic

Dimensions are approximate. Check with BETE for critical dimension applications.

TFXP Flow Rates and Dimensions

Full Cone, 90° (XPN) and 120° (XP) Spray Angles, 3/8" to 4" Pipe Sizes

Male Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI						PTFE not recommended at pressures above red line Metal ONLY at pressures above green line				Approx. Free Pass. & Orifice Dia. (in.)	Approximate Dimensions (in.) for Metal Only		Wt. (lbs.)	
			10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI		A	B	Metal	Plas.
3/8	TF12	0.949	3.00	4.24	5.20	6.00	6.71	7.35	8.49	9.49	13.4	19.0	0.19	2.88	0.88	0.20	0.04
	TF14	1.28	4.05	5.73	7.01	8.10	9.06	9.92	11.5	12.8	18.1	25.6	0.22	2.88	0.88		
	TF16	1.68	5.30	7.50	9.2	10.6	11.9	13.0	15.0	16.8	23.7	33.5	0.25	2.75	0.88		
	TF20	2.61	8.25	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	0.31	3.12	0.88		
1/2	TF24	3.81	12.1	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	0.38	3.47	1.13	0.41	0.06
	TF28	5.22	16.5	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104	0.44	3.50	1.13		
3/4	TF32	6.64	21.0	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	133	0.50	5.38	1.75	1.56	0.22
1	TF40	10.6	33.5	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212	0.63	5.25	2.00	1.56	0.25
	TF48	15.0	47.5	67.2	82.3	95.0	106	116	134	150	212	300	0.75	6.63	2.00	2.06	0.47
1 1/2	TF56	20.4	64.5	91.2	112	129	144	158	182	204	288	408	0.88	6.97	2.50	4.00	0.59
	TF64	26.7	84.5	120	146	169	189	207	239	267	378	534	1.00	6.94	2.50	2.44	0.53
	TF72	30.4	96.0	136	166	192	215	235	272	304	429	607	1.13	7.41	2.50	2.81	0.53
2	TF88	44.3	140	198	242	280	313	343	396	443	626	885	1.38	10.5	2.63	5.12	1.25
	TF96	55.9	177	250	306	354	395	433	500	559	791	1120	1.50	11.0	2.63	6.31	1.25
3	TF112	81.0	256	362	443	512	572	627	724	810	1150	1620	1.75**	12.0	3.50	8.37	1.37
	TF128	107	339	480	588	679	759	829	960	1070	1510	2150	2.00**	11.7	3.50	9.75	1.50
4	TF160	166	525	742	909	1050	1170	1290	1480	1660	2350	3320	2.50**	12.0	4.50	15.6	1.87

Flow Rate (GPM) = $K \sqrt{PSI}$ **Free passage is 1.5"

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene, Cobalt Alloy 6, and PTFE.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

www.BETE.com

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



ST

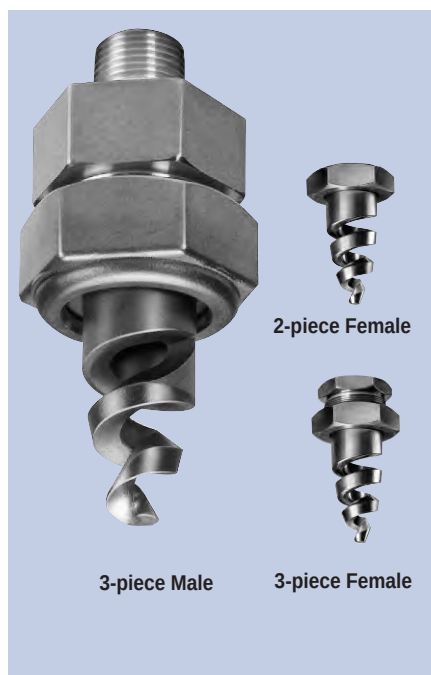
Abrasion Resistant

DESIGN FEATURES

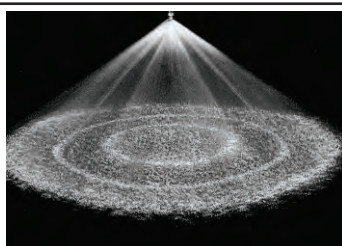
- Cobalt Alloy 6 or RBSC ceramic parts in high-wear areas
- High energy efficiency
- No internal parts
- Clog-resistant
- Male and female connections
- Flanged and special connections available as required

SPRAY CHARACTERISTICS

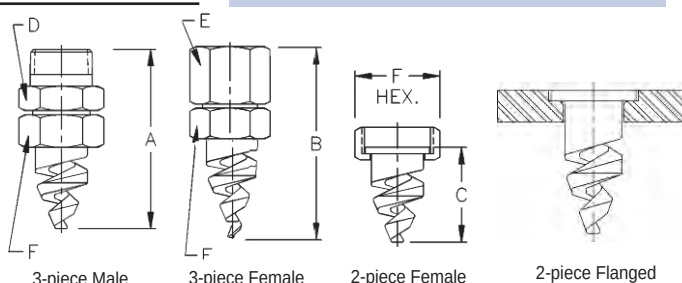
- Fine atomization
- Spray pattern:** Full Cone
- (Hollow Cone available by special order)
- Spray angles:** 90° and 120° standard
- Flow rates:** 0.5 to 3320 gpm
- (Higher flow rates available)



Full Cone 90° (FCN)



Full Cone 120° (FFC)



Dimensions are approximate. Check with BETE for critical dimension applications.

ST Flow Rates and Dimensions

Full Cone, 90° (FCN or FFCN) and 120° (FC or FFC) Spray Angles, 1/4" to 4" Pipe Sizes

3-piece Male or Female Pipe Size	** 2-piece Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI												Approx. (in) Free Orifice Pass.		Approximate Dimensions (in.)						Wt. (lbs.) Male
				5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	Di.	Di.	A	B	C	D	E	F	
1/4		ST6	0.221	0.495	0.700	0.857	0.990	1.21	1.40	1.57	1.71	1.98	2.21	3.13	4.43	0.09	0.09	2.56	2.56		0.69	0.69	0.81	0.19
		ST8	0.411	0.919	1.30	1.59	1.84	2.25	2.60	2.91	3.18	3.68	4.11	5.81	8.22	0.13	0.13	2.56	2.56		0.69	0.69	0.81	
		ST10	0.632	1.41	2.00	2.45	2.83	3.46	4.00	4.47	4.90	5.66	6.32	8.94	12.6	0.16	0.13	2.56	2.56		0.69	0.69	0.81	
3/8		ST12	0.949	2.12	3.00	3.67	4.24	5.20	6.00	6.71	7.35	8.49	9.49	13.4	19.0	0.19	0.13	2.94	2.94		0.94	0.94	1.13	0.31
		ST14	1.28	2.86	4.05	4.96	5.73	7.01	8.10	9.06	9.92	11.5	12.8	18.1	25.6	0.22	0.13	2.88	2.88		0.94	0.94	1.13	
		ST16	1.68	3.75	5.30	6.49	7.50	9.18	10.6	11.9	13.0	15.0	16.8	23.7	33.5	0.25	0.13	3.00	3.00		0.94	0.94	1.13	
		ST20	2.61	5.83	8.25	10.1	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	0.31	0.13	2.88	2.88		0.94	0.94	1.13	
3/4		ST24	3.81	8.52	12.1	14.8	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	0.38	0.19	3.56	3.56		1.38	1.38	1.50	0.62
		ST28	5.22	11.7	16.5	20.2	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104	0.44	0.19	3.53	3.53		1.38	1.38	1.50	
		ST32	6.64	14.8	21.0	25.7	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	133	0.50	0.19	3.50	3.50		1.38	1.38	1.50	
1		ST40	10.6	23.7	33.5	41.0	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212	0.63	0.25	4.50	4.50		1.88	1.75	2.00	1.25
		ST48	15.0	33.6	47.5	58.2	67.2	82.3	95.0	106	116	134	150	212	300	0.75	0.25	4.50	4.50		1.88	1.75	2.00	
1 1/2		ST56	20.4	45.6	64.5	79.0	91.2	112	129	144	158	182	204	288	408	0.88	0.31	5.75	5.75		1.94	2.13	2.19	1.75
		ST64	26.7	59.8	84.5	103	120	146	169	189	207	239	267	378	534	1.00	0.31	5.75	5.75		1.94	2.13	2.19	
		ST72	30.4	67.9	96.0	118	136	166	192	215	235	272	304	429	607	1.12	0.31	5.75	5.75		1.94	2.13	2.19	
2	2 1/2 3	ST88	44.3	99.0	140	171	198	242	280	313	343	396	443	626	885	1.37	0.44	7.63	6.31	4.56	3.00	3.50	3.50	5.00
		ST96 ¹	55.9	125	177	216	250	306	354	395	433	500	559	791	1120	1.50	0.44	9.00	7.38	5.63	3.63	4.00	4.00	7.00
3	3	ST112 ¹	81.0	181	256	314	362	443	512	572	627	724	810	1150	1620	1.75	0.56	10.3		6.84	3.63	4.00	4.00	9.00
		ST128 ¹	107	239	339	414	480	588	679	759	831	960	1070	1510	2150	2.00	0.56	10.7		7.28	3.63	4.00	4.00	
4	4	ST160 ¹	166	371	525	643	742	909	1050	1170	1290	1480	1660	2350	3320	2.50	0.63	11.9		8.25	4.56	5.00	5.00	14.0

Flow Rate (GPM) = $K \sqrt{PSI}$ ¹Three turn nozzles **Parallel threads only

Standard Materials: Base and Caps - 316 Stainless Steel; Tip - Cobalt Alloy 6 or RBSC Ceramic. (RBSC not available on nozzle numbers ST6 - ST32).

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

STXP

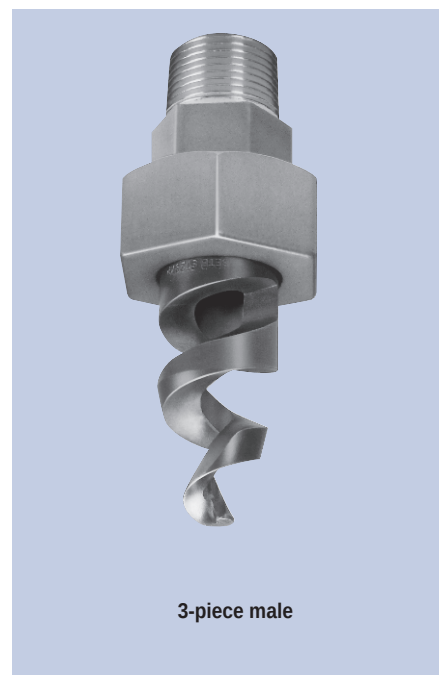
Largest Free Passage

DESIGN FEATURES

- Abrasion resistant
- Cobalt Alloy 6 or RBSC ceramic parts in high-wear areas
- High energy efficiency
- Largest free passage in spiral design
- Extra heavy, rugged construction
- Male and female connections
- Flanged and special connections available as required

SPRAY CHARACTERISTICS

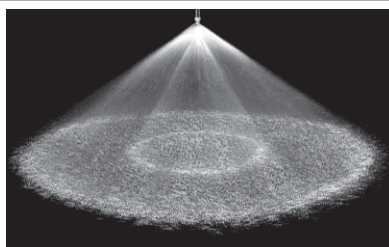
- Fine atomization
- Spray pattern:** Full Cone
(Hollow Cone available by special order)
- Spray angles:** 90° and 120° standard
- Flow rates:** 2.12 to 3320 gpm
(Higher flow rates available)



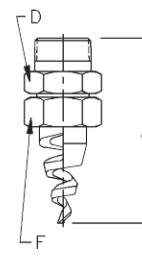
3-piece male



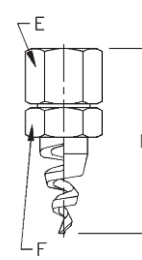
Full Cone 90° (XPN)



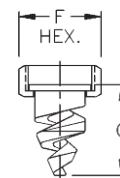
Full Cone 120° (XP)



3-piece Male



3-piece Female



2-piece Female

Dimensions are approximate. Check with BETE for critical dimension applications.

STXP Flow Rates & Dimensions

Full Cone, 90° (XPN) and 120° (XP) Spray Angles, 3/8" to 4" Pipe Sizes

3-piece Male or Female Pipe Size	** 2-piece Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI												Approx. (in.) Orifice & Free Pass. Dia.	Approximate Dimensions (in.)						Wt. (lbs.) Metal Male Fem.	
				5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI		A	B	C	D	E	F		
3/8		ST12	0.949	2.12	3.00	3.67	4.24	5.20	6.00	6.71	7.35	8.49	9.49	13.4	19.0	0.19	3.94	3.38	2.13	1.38	1.38	1.50	0.5	0.5
		ST14	1.28	2.86	4.05	4.96	5.73	7.01	8.10	9.06	9.92	11.5	12.8	18.1	25.6	0.22	3.94	3.38	2.11	1.38	1.38	1.50		
		ST16	1.68	3.75	5.30	6.49	7.50	9.18	10.6	11.9	13.0	15.0	16.8	23.7	33.5	0.25	3.94	3.38	2.12	1.38	1.38	1.50		
		ST20	2.61	5.83	8.25	10.1	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	0.31	3.94	3.38	2.12	1.38	1.38	1.50		
3/4		ST24	3.81	8.52	12.1	14.8	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	0.38	4.56	3.81	2.68	1.19	1.19	1.75	1.1	1.1
		ST28	5.22	11.7	16.5	20.2	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104	0.44	4.56	3.81	2.68	1.19	1.19	1.75	1.1	1.1
		ST32	6.64	14.8	21.0	25.7	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	133	0.50	5.14	5.12	4.22	1.50	1.50	2.19	2.0	2.0
1		ST40	10.6	23.7	33.5	41.0	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212	0.63	6.31	5.30	4.05	1.88	1.88	2.75	3.0	2.6
		ST48	15.0	33.6	47.5	58.2	67.2	82.3	95.0	106	116	134	150	212	300	0.75	7.44	6.44	5.56	1.88	1.88	2.75		
1 1/2	2 1/2	ST56	20.4	45.6	64.5	79.0	91.2	112	129	144	158	182	204	288	408	0.88	8.56	7.25	5.50	3.00	3.00	3.50	6.0	3.4
		ST64	26.7	59.8	84.5	103	120	146	169	189	207	239	267	378	534	1.00	8.56	7.25	5.71	3.00	3.00	3.50		
		ST72	30.4	67.9	96.0	118	136	166	192	215	235	272	304	429	607	1.13	8.88	7.63	5.73	3.00	3.00	3.50		
2	3	ST88	44.3	99.0	140	171	198	242	280	313	343	396	443	626	885	1.38	11.8	8.00	8.38	3.63	3.63	4.00	8.0	4.0
		ST96	55.9	125	177	216	250	306	354	395	433	500	560	791	1120	1.50	11.4	10.2	8.60	3.63	3.63	4.00		
3	3	ST112	81.0	181	256	314	362	443	512	572	627	724	810	1150	1620	1.75 ¹	11.9	11.8	8.56	3.63	4.00	4.00	10	5.9
		ST128	107	239	339	414	480	588	679	759	829	960	1070	1510	2150	2.00 ¹	12.6	11.8	8.56	3.63	4.00	4.00		
4	4	ST160	166	371	525	643	742	909	1050	1170	1290	1480	1660	2350	3320	2.50 ¹	13.0	13.0	10.0	5.00	5.00	5.00	12	10

Flow Rate (GPM) = K √PSI ¹Free Passage is 1.5" **Parallel threads only

Standard Materials: Base and Caps - 316 Stainless Steel; Tip - Cobalt Alloy 6 or RBSC Ceramic. (RBSC not available on nozzle numbers STXP12 - STXP32).

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.



WL

Low Flow/Full Cone

DESIGN FEATURES

- Advanced whirl plate design produces uniform coverage
- Male and female connections

SPRAY CHARACTERISTICS

- Medium to coarse atomization

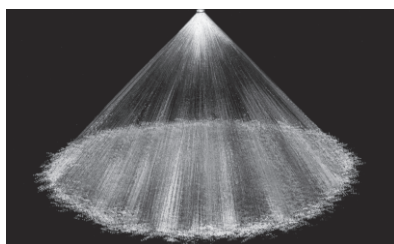
Spray pattern: Full Cone. Square patterns available for most sizes.

Spray angles: 30°, 60°, 90° and 120° standard

Flow rates: 0.13 to 59 gpm



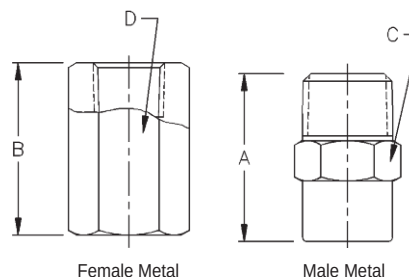
Metal



Full Cone 90°



Full Cone 120°



Female Metal

Male Metal

Dimensions are approximate. Check with BETE for critical dimension applications.

WL Flow Rates and Dimensions

Full Cone, 30°, 60°, 90° and 120° Spray Angles

Male or Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI										Approx. Orifice Dia. (in.)	Dimensions for Metal Only (in.)				Wt. (oz.)	
			10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	200 PSI	400 PSI		A	B	C	D	Metal	Plas.
1/8*	WL 1/4**	0.044	0.13	0.18	0.22	0.25	0.30	0.35	0.38	0.47	0.53	0.74	0.043						
	WL 1/2	0.088	0.26	0.36	0.44	0.50	0.60	0.69	0.77	0.93	1.07	1.48	0.055	0.88	1.13	0.44	0.56	1.00	0.25
	WL 3/4	0.132	0.39	0.54	0.66	0.75	0.91	1.04	1.15	1.40	1.60	2.21	0.072						
1/4	WL 1	0.177	0.52	0.72	0.87	1.00	1.21	1.39	1.54	1.86	2.13	2.95	0.082	1.06	1.38	0.56	0.69	1.50	0.38
	WL 1 1/2	0.265	0.78	1.08	1.31	1.50	1.81	2.08	2.31	2.79	3.20	4.43	0.109						
3/8	WL 2	0.353	1.04	1.44	1.75	2.00	2.42	2.77	3.08	3.72	4.26	5.90	0.125						
	WL 3	0.530	1.56	2.17	2.62	3.00	3.63	4.16	4.61	5.58	6.39	8.85	0.156	1.25	1.50	0.69	0.88	2.00	0.50
	WL 4	0.706	2.08	2.89	3.49	4.00	4.84	5.54	6.15	7.44	8.52	11.8	0.188						
1/2	WL 5	0.883	2.61	3.61	4.37	5.00	6.05	6.93	7.69	9.31	10.6	14.8	0.203						
	WL 6	1.06	3.13	4.33	5.24	6.00	7.26	8.31	9.23	11.2	12.8	17.7	0.219	1.50	2.00	0.88	1.13	3.00	1.00
	WL 7	1.24	3.65	5.05	6.11	7.00	8.47	9.70	10.8	13.0	14.9	20.7	0.228						
3/4	WL 8	1.41	4.17	5.78	6.99	8.00	9.68	11.1	12.3	14.9	17.0	23.6	0.234						
	WL 10	1.77	5.21	7.22	8.74	10.0	12.1	13.8	15.4	18.6	21.3	29.5	0.281	1.75	2.13	1.13	1.38	6.00	1.50
	WL 12	2.12	6.25	8.66	10.5	12.0	14.5	16.6	18.5	22.3	25.6	35.4	0.312						
1	WL 15	2.65	7.82	10.8	13.1	15.0	18.1	20.8	23.1	27.9	32.0	44.3	0.328	2.19	2.38	1.38	1.63	14.0	3.50
	WL 20	3.53	10.4	14.4	17.5	20.0	24.2	27.7	30.8	37.2	42.6	59.0	0.375						

$$\text{Flow Rate (GPM)} = K (\text{PSI})^{0.47}$$

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel, PVC, Polypropylene, and PTFE

*1/8" PTFE and Polypropylene not available in 120°.

**1/8 WL-1/4 not available in Polypropylene.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

MaxiPass® L

Low Flow, Full Cone, Maximum Free Passage

DESIGN FEATURES

- 1/8 and 1/4 pipe connection sizes
- Ultimate clog-resistant design, with the **largest free passage available** in an axial, full-cone nozzle
- Unique, S-shaped internal vanes allow free passage of particles
- High-energy efficiency
- Easily handles dirty, contaminated liquids
- Male connections
- Nozzle body available in Brass, 303, 316 Stainless Steel
- Vanes are 316 Stainless Steel for optimum wear and corrosion resistance

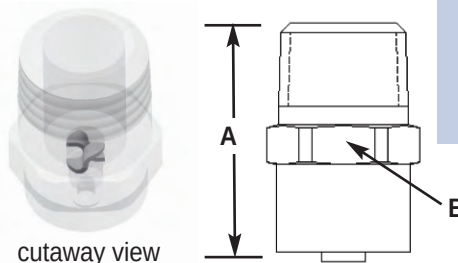
SPRAY CHARACTERISTICS

- High reliability spray performance under the most difficult conditions
- Uniform spray distribution

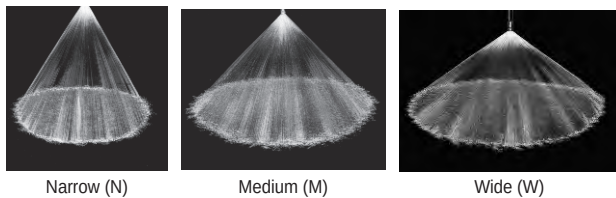
Spray pattern: Full Cone

Spray angles: Narrow (N), Medium (M), Wide (W)

Flow rates: 0.12 to 2.03 gpm



cutaway view



Narrow (N)

Medium (M)

Wide (W)

MaxiPass L Ordering Nomenclature

1/8		MPL0.21M		-B-		316	
pipe connection size		series		BSP thread connection		material	
		flow rating		spray angle			

MaxiPass L (MPL) Flow Rates

Male Pipe Size	K Factor	Nozzle Number	GALLONS PER MINUTE @ PSI							
			10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI
1/8	0.043	MPL0.21	0.12	0.16	0.19	0.21	0.23	0.25	0.27	0.28
	0.061	MPL0.30	0.17	0.22	0.27	0.30	0.33	0.36	0.38	0.40
	0.086	MPL0.42	0.23	0.31	0.37	0.42	0.46	0.50	0.53	0.57
	0.117	MPL0.57	0.31	0.42	0.51	0.57	0.63	0.68	0.73	0.77
1/4	0.158	MPL0.77	0.42	0.57	0.68	0.77	0.85	0.92	0.98	1.04
	0.229	MPL1.12	0.62	0.83	0.99	1.12	1.23	1.33	1.42	1.51
	0.309	MPL1.51	0.83	1.12	1.33	1.51	1.66	1.80	1.92	2.03

Flow Rate (GPM) = K (PSI)^{0.43}

Spray Angle and Dimensions

Nozzle Number	N spray angle	M spray angle	W spray angle	Approx. Free Passage Dia. (in.)			Approx. Dimensions (in.)		Wt. (oz) Metal
	40 PSI	40 PSI	40 PSI	N	M	W	A length	B hex size	
MPL0.21	51	77	129	0.037	0.036	0.036	0.70	7/16	0.30
MPL0.30	53	86	134	0.043	0.039	0.044			
MPL0.42	51	90	128	0.053	0.047	0.044			
MPL0.57	61	92	127	0.06	0.057	0.052			
MPL0.77	62	90	125	0.067	0.067	0.067	0.88	9/16	0.62
MPL1.12	60	92	124	0.085	0.081	0.081			
MPL1.51	70	97	123	0.105	0.09	0.09			

Spray angle performance varies with pressure. Contact BETE Applications Engineering for specific data on critical applications.

Dimensions are approximate. Check with BETE for critical dimension applications.





MaxiPass®

Maximum Free Passage

DESIGN FEATURES

- Ultimate clog-resistant design with largest free passage available in a full cone nozzle
- Two unique S-shaped internal vanes allow free passage of particles
- High energy efficiency
- Easily handles dirty, lumpy liquids
- Male and female connections
- Flanged connection available
- U.S. Patent

SPRAY CHARACTERISTICS

- High reliability spray performance under the most difficult conditions

Spray pattern: Full Cone

(Square patterns to special order)

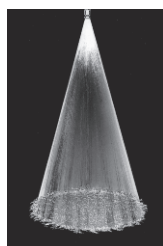
Spray angles: 30°, 60°, 90°, and 120°

Flow rates: 0.7 to 978 gpm

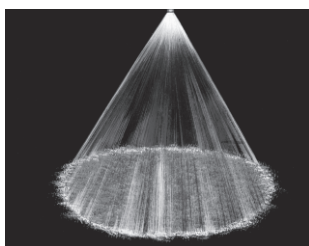
(Flow rates up to 4500 gpm available; call BETE Applications Engineering for details.)



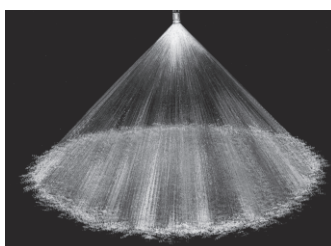
Wide Angle Metal



Full Cone 30° (NN)



Full Cone 60° (N)



Full Cone 90° (M)



Full Cone 120° (W)

Dimensions are approximate. Check with BETE for critical dimension applications.

MaxiPass Flow Rates and Dimensions

Full Cone, Extra Narrow 30° (NN), Narrow 60° (N), Medium 90° (M) and Wide 120° (W) Spray Angles, 3/8" to 4" Pipe Sizes

Male or Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI										Approx. Free Passage Dia. (in.)	Approx. Dimensions (in.) Overall length (MAX)					Wt.** (lbs.) Metal
			3 PSI	5 PSI	7 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI		30° A	60° A	90° A	120° A B		
3/8*	MP125	0.416	0.70	0.89	1.04	1.23	1.49	1.70	2.06	2.35	2.85	3.26	0.125	-	1.50	1.50	1.50	0.88	0.19
	MP156	0.661	1.11	1.41	1.65	1.95	2.36	2.70	3.27	3.74	4.52	5.18	0.156	-	1.50	1.50	1.50	0.88	0.19
	MP187	0.954	1.60	2.03	2.38	2.82	3.41	3.90	4.72	5.40	6.54	7.48	0.188	-	1.50	1.50	1.50	0.88	0.16
1/2*	MP187	0.954	1.60	2.03	2.38	2.82	3.41	3.90	4.72	5.40	6.54	7.48	0.188	-	1.88	1.88	1.88	1.00	0.28
	MP218	1.52	2.54	3.23	3.79	4.48	5.42	6.20	7.50	8.59	10.4	11.9	0.219	-	1.88	1.88	1.88	1.00	0.25
	MP250	1.71	2.87	3.65	4.27	5.05	6.11	7.00	8.47	9.70	11.7	13.4	0.250	-	1.88	1.88	1.88	1.00	0.25
3/4	MP281	2.10	3.53	4.48	5.25	6.21	7.51	8.60	10.4	11.9	14.4	16.5	0.281	4.00	2.50	2.50	2.50	1.25	0.50
	MP312	2.54	4.26	5.42	6.35	7.51	9.08	10.4	12.6	14.4	17.4	20.0	0.312	4.00	2.50	2.50	2.50	1.25	0.50
	MP343	3.11	5.21	6.62	7.75	9.17	11.1	12.7	15.4	17.6	21.3	24.4	0.344	4.00	2.50	2.50	2.50	1.25	0.44
	MP375	3.67	6.15	7.82	9.16	10.8	13.1	15.0	18.1	20.8	25.1	28.8	0.375	4.00	2.50	2.50	2.50	1.25	0.44
1	MP375	3.67	6.15	7.82	9.16	10.8	13.1	15.0	18.1	20.8	25.1	28.8	0.375	4.38	2.94	2.94	2.94	1.50	0.78
	MP406	4.40	7.38	9.38	11.0	13.0	15.7	18.0	21.8	24.9	30.2	34.5	0.406	4.38	2.94	2.94	2.94	1.50	0.72
	MP437	5.14	8.61	10.9	12.8	15.2	18.3	21.0	25.4	29.1	35.2	40.3	0.438	4.38	2.94	2.94	2.94	1.50	0.72
1 1/4	MP437	5.14	8.61	10.9	12.8	15.2	18.3	21.0	25.4	29.1	35.2	40.3	0.438	5.38	3.38	3.38	3.38	2.00	1.34
	MP500	6.61	11.1	14.1	16.5	19.5	23.6	27.0	32.7	37.4	45.2	51.8	0.500	5.38	3.38	3.38	3.38	2.00	1.34
	MP531	7.34	12.3	15.6	18.3	21.7	26.2	30.0	36.3	41.6	50.3	57.6	0.531	5.38	3.38	3.38	3.38	2.00	1.34
	MP562	8.07	13.5	17.2	20.1	23.8	28.8	33.0	39.9	45.7	55.3	63.3	0.562	5.38	3.38	3.38	3.38	2.00	1.34
1 1/2	MP562	8.07	13.5	17.2	20.1	23.8	28.8	33.0	39.9	45.7	55.3	63.3	0.550	7.25	4.38	4.38	4.38	2.25	2.00
	MP593	9.17	15.4	19.5	22.9	27.1	32.8	37.5	45.4	51.9	62.8	71.9	0.594	7.25	4.38	4.38	4.38	2.25	2.00
	MP625	9.79	16.4	20.8	24.4	28.9	34.9	40.0	48.4	55.4	67.0	76.7	0.625	7.25	4.38	4.38	4.38	2.25	2.00
	MP656	11.9	19.9	25.3	29.6	35.0	42.4	48.5	58.7	67.2	81.3	93.0	0.656	7.25	4.38	4.38	4.38	2.25	2.00
	MP687	12.5	20.9	26.6	31.1	36.8	44.6	51.0	61.7	70.6	85.5	97.8	0.688	7.25	4.38	4.38	4.38	2.25	2.00

Flow Rate (GPM) = K (PSI)^{0.47} ** Weights given are for 60°, 90°, and 120°

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene, and PTFE. (PTFE not available in 3/8" and 1/2" sizes. Cobalt A6 not available in 3/8".)

The spray angle of wide and medium angle whirl nozzles is affected by increasing pressure. *3/8" and 1/2" sizes: 30° not available, 60° not available in plastic. Contact BETE Applications Engineering when using the MaxiPass above 40 PSI.

Spray angle and pattern vary with pressure. Contact BETE for specific data on critical applications.



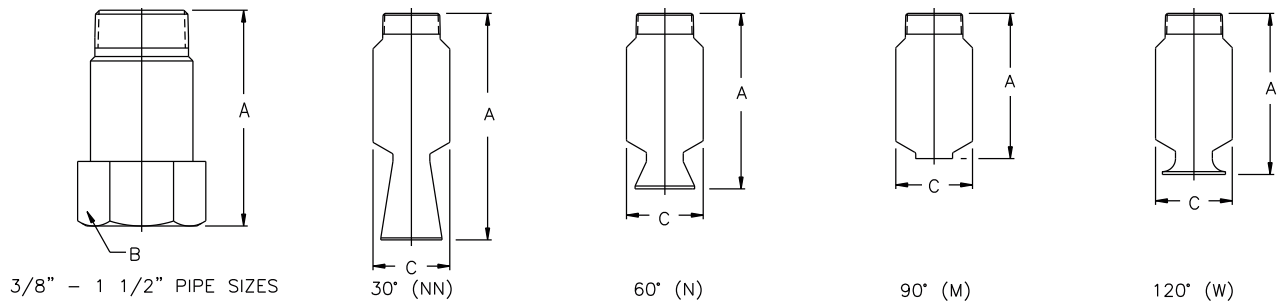
A cutaway view of the MaxiPass nozzle showing the S-shaped vanes that enable the nozzle to successfully handle large particles without clogging.



MaxiPass®
Free Passage

Traditional Full Cone
Free Passage

A comparison of the free passage available with the BETE MaxiPass nozzle compared to the free passage of a traditional full cone nozzle. The BETE MaxiPass is designed to pass solid particles that are 2-3 times larger in diameter than particles that will pass through a traditional full cone nozzle.



For plastic dimensions, please call BETE Customer Service.
Dimensions are approximate. Check with BETE for critical dimension applications.

MaxiPass Flow Rates and Dimensions

Full Cone, Extra Narrow 30°(NN), Narrow 60° (N), Medium 90°(M) and Wide 120°(W) Spray Angles, 3/8" to 4" Pipe Sizes

Male or Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI											Approx. Free Passage Dia. (in.)	Approx. Dimensions (in.) Overall Length (MAX)						Wt.** (lbs.) Metal
			3	5	7	10	15	20	30	40	60	80	30°		60°	90°	120°				
			PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	PSI	A		A	A	A	C°			
2	MP750	15.2	25.4	32.3	37.9	44.8	54.2	62.0	75.0	85.9	104	119	0.750							3.50	
	MP812	16.6	27.9	35.4	41.5	49.1	59.4	68.0	82.3	94.2	114	130	0.813	8.25	7.19	6.30	6.30	2.69			
	MP875	20.5	34.4	43.8	51.3	60.6	73.4	84.0	102	116	141	161	0.875								
	MP937	23.0	38.5	49.0	57.4	67.9	82.1	94.0	114	130	158	180	0.938	9.00	7.63	6.00	6.50	3.25	3.75		
	MP1000	26.9	45.1	57.3	67.2	79.4	96.1	110	133	152	184	211	1.00	10.3	7.63	6.00	6.75	3.25			
	MP1125	33.0	55.3	70.4	82.4	97.5	118	135	163	187	226	259	1.12								
2 1/2	MP1000	26.9	45.1	57.3	67.2	79.4	96.1	110	133	152	184	211	1.00							4.50	
	MP1125	33.0	55.3	70.4	82.4	97.5	118	135	163	187	226	259	1.12	12.0	9.63	6.50	7.13	3.25			
	MP1250	39.6	66.4	84.4	98.9	117	142	162	196	224	271	311	1.24								
	MP1375	47.5	79.5	101	118	140	169	194	235	269	325	372	1.37	13.0	10.5	8.38	9.00	4.00	6.25		
	MP1500	58.2	97.6	124	145	172	208	238	288	330	399	457	1.50								
3	MP1500	58.2	97.6	124	145	172	208	238	288	330	399	457	1.46							7.25	
	MP1625	68.5	115	146	171	202	245	280	339	388	469	537	1.62	13.5	11.0	9.00	9.88	4.75			
	MP1750	78.3	131	167	195	231	280	320	387	443	536	614	1.75								
4	MP1750	78.3	131	167	195	231	280	320	387	443	536	614	1.75							8.00	
	MP1875	88.1	148	188	220	260	314	360	436	499	603	691	1.87	16.0	10.7	8.88	9.81	4.78			
	MP2000	103	173	220	258	305	369	422	511	585	707	810	1.96							16.0	
	MP2125	115	193	245	287	339	411	470	569	651	788	902	2.12	16.0	14.5	11.6	12.7	6.06			
	MP2250	125	209	266	311	368	446	510	617	706	855	978	2.25								

Flow Rate (GPM) = K (PSI)^{0.47}

*C dimension for 30° (NN) is larger

**Weights given are for 60°, 90°, and 120°

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene, and PTFE.

The spray angle of wide and medium angle whirl nozzles is affected by increasing pressure. Contact BETE Applications Engineering when using the MaxiPass above 40 PSI.

Spray angle and pattern vary with pressure. Contact BETE for specific data on critical applications.

CW

Low Flow

DESIGN FEATURES

- Standard 3-piece construction
- Optional 50- or 100-mesh strainer (refer to page 121 for additional information)
- Male and female connections
- Interchangeable spray tips

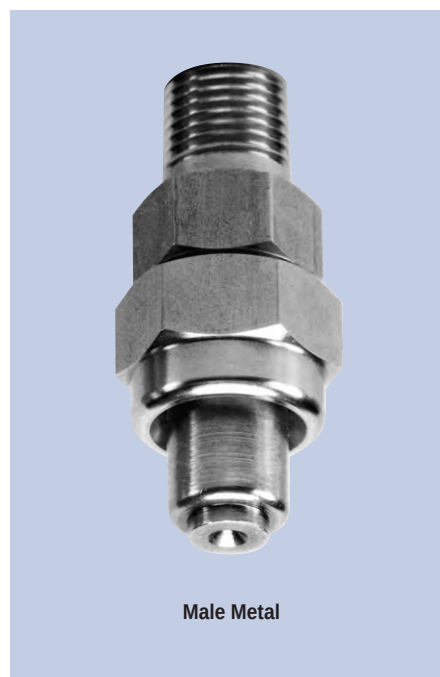
SPRAY CHARACTERISTICS

Spray patterns: Full Cone (F).

- For Hollow Cone (H), see page 44.

Spray angles: 80° and 120°

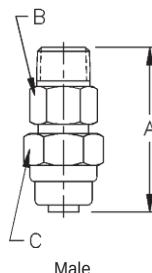
Flow rates: 0.13 to 1.54 gpm



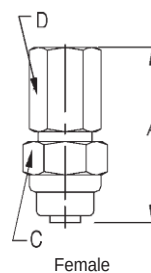
Full Cone 80° (F)



Hollow Cone 80° (H)



Male



Female

Dimensions are approximate. Check with BETE for critical dimension applications.

CW Flow Rates and Dimensions

Full Cone, 80° and 120° Spray Angles, 1/8" to 3/8" Pipe Sizes

Male or Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI											Approx. Orifice Dia. (in.)	Male or Female Pipe Size	Dimensions (in.)				Wt. (oz.) Metal
			10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	A			B	C	D		
1/8 or	CW25-F	0.044	0.13	0.18	0.22	0.25	0.28	0.30	0.33	0.35	0.37	0.38	0.045	1/8 - 1/4	2.06 0.68 0.81 0.68	2.5				
1/4	CW50-F	0.088	0.26	0.36	0.44	0.50	0.56	0.60	0.65	0.69	0.73	0.77	0.054							
or	CW75-F	0.132	0.39	0.54	0.66	0.75	0.83	0.91	0.98	1.04	1.10	1.15	0.063							
3/8	CW100-F	0.177	0.52	0.72	0.87	1.00	1.11	1.21	1.30	1.39	1.46	1.54	0.086							

$$\text{Flow Rate (GPM)} = K (\text{PSI})^{0.47}$$

Standard Materials: Brass, 303 Stainless Steel and 316 Stainless Steel.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

WTZ

Right Angle Full Cone

DESIGN FEATURES

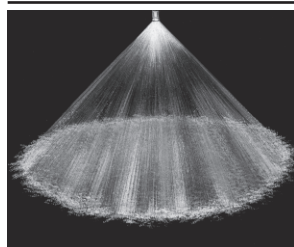
- No internal parts, clog-resistant
- Uniform distribution
- Male and female connections
- Large free passage

SPRAY CHARACTERISTICS

Spray pattern: Full Cone

Spray angle: 90° and 110°

Flow rates: 0.18 to 49 gpm

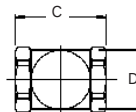
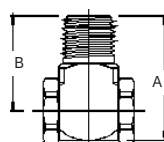


Full Cone 90°

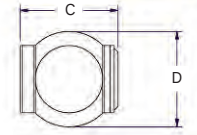
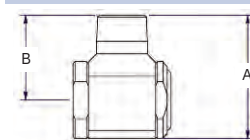


Full Cone 110°

Dimensions are approximate.
Check with BETE for critical dimension applications.



Metal



3/4" and 1"

Spray angle performance
varies with pressure.

Contact BETE for specific
data on
critical applications.



Metal



FULL CONE

WTZ Flow Rates and Dimensions

Full Cone, 90° and 110° Spray Angles, 1/4", 3/8", 1/2", 3/4", and 1" Pipe Size

Male or Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI									Approx. Orifice Dia. (in)	Dimensions (in.) Metal Only			
			5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI		A	B	C	D
1/4"	WTZ 50	0.079	0.18	0.25	0.30	0.35	0.43	0.50	0.61	0.70	0.79	0.075	1.31	1.00	0.80	0.63
	WTZ 56	0.088	0.20	0.28	0.34	0.39	0.48	0.56	0.68	0.79	0.88	0.079				
	WTZ 62	0.098	0.22	0.31	0.38	0.44	0.54	0.62	0.76	0.88	0.98	0.083				
	WTZ 77	0.122	0.27	0.39	0.47	0.55	0.67	0.77	0.95	1.10	1.22	0.091				
3/8"	WTZ 98	0.155	0.35	0.49	0.60	0.69	0.85	0.98	1.20	1.38	1.55	0.102	1.50	1.12	1.17	0.75
	WTZ 120	0.196	0.44	0.62	0.76	0.88	1.07	1.24	1.52	1.75	1.96	0.118				
	WTZ 150	0.245	0.55	0.77	0.95	1.10	1.34	1.55	1.90	2.19	2.45	0.130				
	WTZ 170	0.275	0.61	0.87	1.06	1.23	1.50	1.74	2.13	2.46	2.75	0.138				
	WTZ 200	0.309	0.69	0.98	1.20	1.38	1.69	1.95	2.39	2.76	3.09	0.146				
	WTZ 250	0.392	0.88	1.24	1.52	1.75	2.15	2.48	3.04	3.51	3.92	0.163				
	WTZ 280	0.441	0.99	1.39	1.71	1.97	2.42	2.79	3.42	3.95	4.41	0.173				
	WTZ 310	0.490	1.10	1.55	1.90	2.19	2.69	3.10	3.80	4.39	4.90	0.183				
1/2"	WTZ 390	0.613	1.37	1.94	2.37	2.74	3.36	3.88	4.75	5.48	6.13	0.205	1.87	1.38	1.48	1.00
	WTZ 500	0.785	1.75	2.48	3.04	3.51	4.30	4.96	6.08	7.02	7.85	0.228				
	WTZ 620	0.98	2.19	3.10	3.80	4.38	5.37	6.20	7.59	8.77	9.80	0.287				
	WTZ 780	1.23	2.74	3.88	4.75	5.48	6.71	7.75	9.49	11.0	12.3	0.315				
	WTZ 980	1.54	3.45	4.88	5.98	6.91	8.46	9.77	12.0	13.8	15.4	0.343				
	WTZ 1120**	1.77	3.96	5.60	6.86	7.92	9.70	11.2	13.7	15.8	17.7	0.389				
3/4" *	WTZ 1280**	2.02	4.53	6.40	7.84	9.05	11.1	12.8	15.7	18.1	20.2	0.420	3.00	2.00	2.00	2.00
	WTZ 1440**	2.28	5.09	7.20	8.82	10.2	12.5	14.4	17.6	20.4	22.8	0.391				
	WTZ 1200	1.90	4.24	6.00	7.35	8.49	10.4	12.0	14.7	17.0	19.0	0.335				
1" *	WTZ 1500	2.37	5.30	7.50	9.19	10.6	13.0	15.0	18.4	21.2	23.7	0.412	3.20	2.20	2.55	2.48
	WTZ 1900	3.00	6.72	9.50	11.6	13.4	16.5	19.0	23.3	26.9	30.0	0.469				
	WTZ 2200	3.48	7.78	11.0	13.5	15.6	19.1	22.0	26.9	31.1	34.8	0.500				
1" *	WTZ 3100	4.90	11.0	15.5	19.0	21.9	26.9	31.0	38.0	43.8	49.0	0.531				

$$\text{Flow Rate (GPM)} = K \sqrt{\text{PSI}}$$

Standard Materials: Brass, PVC, 303 Stainless Steel and 316 Stainless Steel.

*Male connection standard; female connection available by special order.

**90° Spray Angle ONLY; other angles available on request.



EZ_{TF WL}

EZ Change Quick Connection System

DESIGN FEATURES

- Nozzles can be changed in seconds without tools
- Three part nozzle, base, gasket and interchangeable tip
- Exclusive ramped engagement for efficient, automatic alignment
- Threaded adapters will accommodate other standard BETE nozzles. Shut-off plugs are also available
- Sanitary EZs are available with weld connection and no knurling

SPRAY CHARACTERISTICS

- Available in six standard tips: EZTF; EZWL; EZWT; EZFF; EZNF; EZSPN

More EZ tips:

Hollow Cone: page 46

Flat Fan: pages 66 and 67

Flow rates: 0.04 to 58.4 gpm

Spray Angle:

EZTF: 60°, 90°, 120°, 150°, and 170°

EZWL: 30°, 60°, 90°, 120°



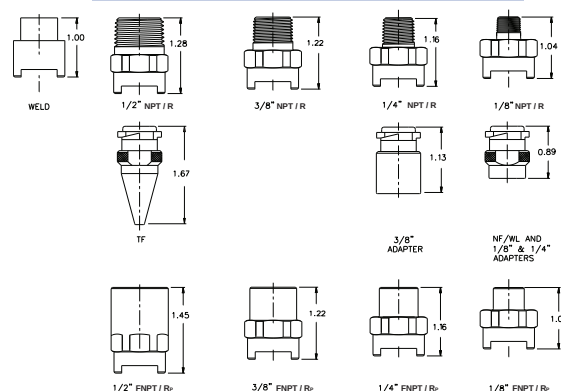
EZTF



120° Full Cone



90° Full Cone Spiral



EZTF Flow Rates and Dimensions

Full Cone Spiral 60° (NN), 90° (FCN), 120° (FC), 150°, 170° Spray Angle 1/8" to 1/2" Pipe Sizes

Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI											Approx. Orifice Dia. (in.)	Approx. Assembly Dim. (in.)		Wt. (oz.)	
			5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	500 PSI		Hex	Length		
1/8" TO 1/2"	EZTF6	0.221	0.49	0.70	0.99	1.21	1.40	1.71	1.98	2.21	3.13	4.43	4.94	0.09	1/8"	0.88	2.41	2.2
	EZTF8	0.411	0.92	1.30	1.84	2.25	2.60	3.18	3.68	4.11	5.81	8.22	9.19	0.13				
	EZTF10	0.632	1.41	2.00	2.83	3.46	4.00	4.90	5.66	6.32	8.94	12.6	14.1	0.16	1/4"	0.88	2.53	2.2
	EZTF12	0.949	2.12	3.00	4.24	5.20	6.00	7.35	8.49	9.49	13.4	19.0	21.2	0.19				
1/4" TO 1/2"	EZTF14	1.28	2.86	4.05	5.73	7.01	8.10	9.92	11.5	12.8	18.1	25.6	28.6	0.22	3/8"	0.88	2.59	2.6
	EZTF16	1.68	3.76	5.30	7.50	9.18	10.6	13.0	15.0	16.8	23.7	33.5	37.6	0.25				
	EZTF20	2.61	5.83	8.25	11.7	14.3	16.5	20.2	23.3	26.1	36.9	52.2	58.4	0.31	1/2"	0.88	2.65	2.6

Flow Rate (GPM) = $K \sqrt{\text{PSI}}$

TF14-TF20 not available with 1/8" base

Standard Materials: Brass, Viton gaskets standard. 316 Stainless Steel available upon request.

EZWL Flow Rates and Dimensions

Full Cone Whirl 30°, 60°, 90°, 120° Spray Angle; 1/8" to 1/2" Pipe Sizes

Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI											Approx. Orifice Dia. (in.)	Approx. Assembly Dim. (in.)		Wt. (oz.)	
			5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	500 PSI		Hex	Length		
1/8"	EZWL 1/4	0.044	0.09	0.13	0.18	0.22	0.25	0.30	0.35	0.38	0.53	0.74	0.82	0.043	1/8"	0.88	1.63	2.2
	EZWL 1/2	0.088	0.19	0.26	0.36	0.44	0.50	0.60	0.69	0.77	1.07	1.48	1.64	0.055				
	EZWL 3/4	0.132	0.28	0.39	0.54	0.66	0.75	0.91	1.04	1.15	1.60	2.21	2.46	0.072				
	EZWL1	0.177	0.38	0.52	0.72	0.87	1.00	1.21	1.39	1.54	2.13	2.95	3.28	0.082				
TO	EZWL 1 1/2	0.265	0.56	0.78	1.08	1.31	1.50	1.81	2.08	2.31	3.20	4.43	4.92	0.109	3/8"	0.88	1.81	2.6
1/2"	EZWL2	0.353	0.75	1.04	1.44	1.75	2.00	2.42	2.77	3.08	4.26	5.90	6.56	0.125				
	EZWL3	0.530	1.13	1.56	2.17	2.62	3.00	3.63	4.16	4.61	6.39	8.85	9.83	0.156				
	EZWL4	0.706	1.51	2.08	2.89	3.49	4.00	4.84	5.54	6.15	8.52	11.8	13.1	0.188				
	EZWL5	0.883	1.88	2.26	3.61	4.37	5.00	6.05	6.93	7.69	9.31	10.6	14.8	0.203				
	EZWL6	1.06	2.26	3.13	4.33	5.24	6.00	7.26	8.31	9.23	11.2	12.8	17.7	0.219				

Flow Rate (GPM) = $K (\text{PSI})^{0.47}$

Note: Square pattern also available

Standard Materials: 303 Stainless Steel, 316 Stainless Steel, Brass, Viton gaskets standard.

Dimensions are approximate. Check with BETE for critical dimension applications.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

SF

Snap Release Nozzle System

DESIGN FEATURES

- Nozzles can be quickly changed and aligned by hand without tools
- Clamp-on adapter fits any style nozzle
- Quick set-up system features special "Snap-in" tips
- Polypropylene, resistant to most acids and alkalis
- Double clamp base or adapter available for higher pressure operation



80° Full Cone

SPRAY CHARACTERISTICS

- Quick Set-up System can be provided with fan, hollow or full cone spray tips
- Full 45° alignment of spray without tools

More SF Nozzle Systems:

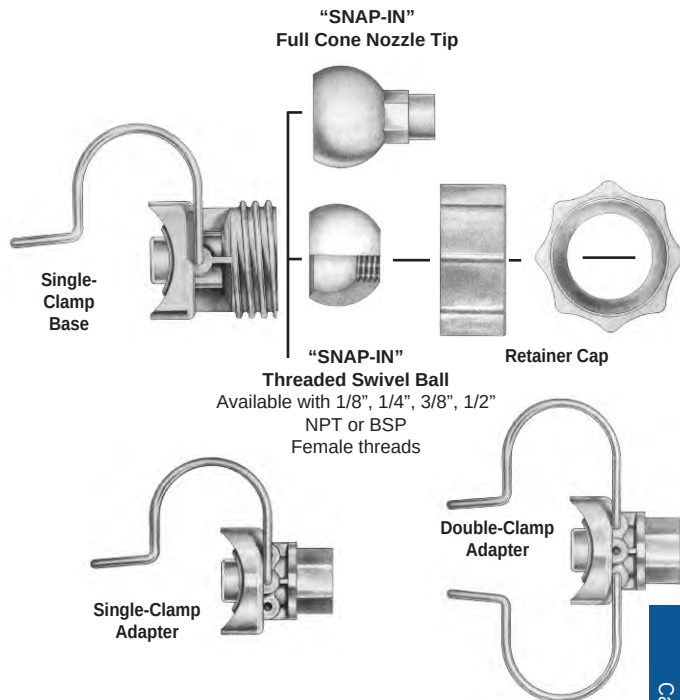
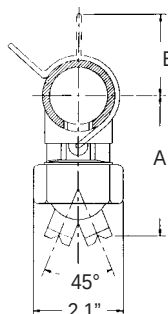
Hollow Cone: page 48

Flat Fan: page 68

Flow rates: 0.35 to 15.8 gpm

Spray angles:

Full Cone: 35°, 65°, 80°



CLAMP-ON ADAPTER

- Available for 1", 1-1/4", 1-1/2" and 2" pipe.
- Available with 1/8", 1/4", 3/8", 1/2" NPT female threads; or 1/8" BSP female threads
- Available with single or double clamp.
- **TO ORDER ADAPTER Specify:** Pipe Size, thread size, thread type, number of clamps, materials.

SF Flow Rates and Dimensions

SF Full Cone 35°, 65° and 80° Spray Angles 1", 1-1/4", 1-1/2" and 2" Pipe Sizes

Nozzle Number	Available Spray Angle	K Factor	GALLONS PER MINUTE @ PSI									Pipe Size	Body Color	Approx Dim. (in.)		Wt. (oz.)
			5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI			A	B	
SF31FC	35°	0.527	1.14	1.59	1.94	2.22	2.70	3.10	3.77	4.32	4.81	1"	blue	3.3	1.7	2.0
SF32FC	80°	0.545	1.18	1.64	2.00	2.29	2.79	3.20	3.89	4.46	4.97	1-1/4"	red	3.4	1.9	2.2
SF102FC	65°	1.736	3.76	5.24	6.37	7.31	8.88	10.2	12.4	14.2	15.8	1-1/2"	purple	3.6	2.0	2.2
												2"	green	3.7	2.2	2.2

$$\text{Flow Rate (GPM)} = K(\text{PSI})^{0.48}$$

Standard Materials: Polypropylene, 302 Stainless Steel clamp, EPDM seal.

Optional Materials: Viton seal.

NOTE: Drill 21/32" hole in pipe to install SF.

NOTE: Maximum recommended working pressures for SF assemblies: with single clamp, 70 psi for 1" pipe; 50 psi for 1-1/4" and 1-1/2" pipe; and 35 psi for 2" pipe; with double clamp up to 150 psi.

SC

Cast Metal Alloy

DESIGN FEATURES

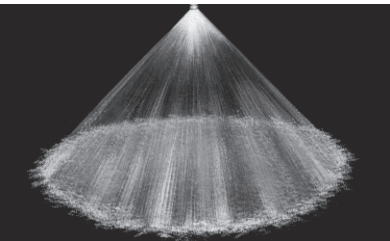
- Complete line of full cone nozzles made in cast metal alloys
- Internal removable vane available
- Male and female connections
- Flanged connections available
- For plastic nozzles, see NC (pp. 34, 35), or MaxiPass (pp. 26, 27)

SPRAY CHARACTERISTICS

- **Spray pattern:** Full Cone with uniform distribution. For square spray patterns, please contact BETE.
- **Spray angles:** 60°, 90°, and 120°
- **Flow rates:** 1.68 to 2150 gpm



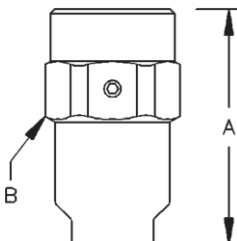
Male



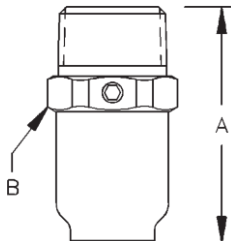
Full Cone 90° (M)



Full Cone 120° (W)



60° / 90° / 120° Female



60° / 90° / 120° Male

Dimensions are approximate. Check with BETE for critical dimension applications.

SC Flow Rates & Dimensions

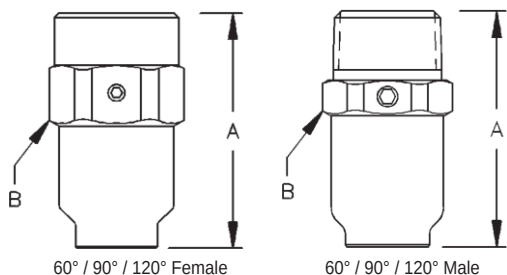
Full Cone, Narrow 60° (N), Medium 90° (M) and Wide 120° (W) Spray Angles, 3/4" to 6" Pipe Sizes

Male or Female Pipe Size	Nozzle Number	Available Spray Angles 60° 90° 120°	K Factor	GALLONS PER MINUTE @ PSI									Approx. Orifice Dia. (in.)	Approx. Free Pass. Dia. (in.)	Male Dim. (in.)		Wt. (lbs.) Metal
				3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI			A	B	
3/4	SC 2.5	60° 90°	1.00	1.68	2.13	2.50	2.96	4.09	5.67	6.86	7.86	8.72	0.19				
	SC 3	60° 90° 120°	1.20	2.01	2.56	3.00	3.55	4.91	6.81	8.23	9.43	10.5	0.20				
	SC 4	60° 90° 120°	1.60	2.69	3.41	4.00	4.73	6.55	9.07	11.0	12.6	14.0	0.28	0.19	2.00	1.22	0.3
	SC 6	90° 120°	2.40	4.03	5.12	6.00	7.10	9.83	13.6	16.5	18.9	20.9	0.30				
	SC 7	90° 120°	2.81	4.70	5.98	7.00	8.28	11.5	15.9	19.2	22.0	24.4	0.35				
1	SC 4.2	60° 90°	1.68	2.82	3.59	4.20	4.97	6.88	9.53	11.5	13.2	14.7	0.25	0.25			
	SC 7	60° 90° 120°	2.80	4.70	5.98	7.00	8.28	11.5	15.9	19.2	22.0	24.4	0.33	0.31			
	SC 8	60° 90° 120°	3.21	5.37	6.83	8.00	9.46	13.1	18.1	22.0	25.1	27.9	0.35	0.31			
	SC 9	60° 90° 120°	3.61	6.04	7.68	9.00	10.6	14.7	20.4	24.7	28.3	31.4	0.40	0.31	2.88	1.50	0.7
	SC 10	60° 90° 120°	4.01	6.72	8.54	10.0	11.8	16.4	22.7	27.4	31.4	34.9	0.42	0.31			
	SC 11	60° 90° 120°	4.41	7.39	9.39	11.0	13.0	18.0	25.0	30.2	34.6	38.4	0.44	0.31			
	SC 12	90° 120°	4.81	8.06	10.2	12.0	14.2	19.7	27.2	32.9	37.7	41.9	0.46	0.31			
1 1/4	SC 6	60° 90°	2.40	4.03	5.12	6.00	7.10	9.83	13.6	16.5	18.9	20.9	0.30	0.30			
	SC 10	60° 90° 120°	4.01	6.72	8.54	10.0	11.8	16.4	22.7	27.4	31.4	34.9	0.39	0.38			
	SC 12	60° 90° 120°	4.81	8.06	10.2	12.0	14.2	19.7	27.2	32.9	37.7	41.9	0.42	0.38			
	SC 14	60° 90° 120°	5.61	9.40	12.0	14.0	16.6	22.9	31.8	38.4	44.0	48.9	0.46	0.38	3.50	1.88	1.3
	SC 16	60° 90° 120°	6.41	10.7	13.7	16.0	18.9	26.2	36.3	43.9	50.3	55.8	0.48	0.38			
	SC 17	60° 90° 120°	6.81	11.4	14.5	17.0	20.1	27.8	38.6	46.7	53.4	59.3	0.53	0.38			
	SC 20	90° 120°	8.01	13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	0.63	0.38			

$$\text{Flow Rate (GPM)} = K (\text{PSI})^{0.47}$$

Standard Materials: Brass, Carbon Steel and 316 Stainless Steel.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.



Dimensions are approximate. Check with BETE for critical dimension applications.

SC Flow Rates & Dimensions

Full Cone, Narrow 60° (N), Medium 90° (M) and Wide 120° (W) Spray Angles, 3/4" to 6" Pipe Sizes

Male or Female Pipe Size	Nozzle Number	Available Spray Angles			K Factor	GALLONS PER MINUTE @ PSI								Approx.		Dim. (in.) A B		Wt. (lbs.) Meta	
		60°	90°	120°		3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI	Approx. Orifice Dia. (in.)				Free Pass. Dia. (in.)
1 1/2	SC 10	60°	90°		4.01	6.72	8.54	10.0	11.8	16.4	22.7	27.4	31.4	34.9	0.39	0.38	3.88	2.19	1.8
	SC 16	60°	90°	120°	6.41	10.7	13.7	16.0	18.9	26.2	36.3	43.9	50.3	55.8	0.53	0.38			
	SC 20	60°	90°	120°	8.01	13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	0.56	0.41			
	SC 24	60°	90°	120°	9.62	16.1	20.5	24.0	28.4	39.3	54.4	65.9	75.4	83.8	0.63	0.41			
	SC 29		90°	120°	11.6	19.5	24.8	29.0	34.3	47.5	65.8	79.6	91.1	101	0.69	0.41			
	SC 30		90°	120°	12.0	20.1	25.6	30.0	35.5	49.1	68.1	82.3	94.3	105	0.75	0.41			
2	SC 17	60°	90°		6.81	11.4	14.5	17.0	20.1	27.8	38.6	46.7	53.4	59.3	0.48	0.48	5.12	2.75	3.3
	SC 30	60°	90°	120°	12.0	20.1	25.6	30.0	35.5	49.1	68.1	82.3	94.3	105	0.64	0.56			
	SC 35	60°	90°	120°	14.0	23.5	29.9	35.0	41.4	57.3	79.4	96.1	110	122	0.72	0.56			
	SC 40	60°	90°	120°	16.0	26.9	34.1	40.0	47.3	65.5	90.7	110	126	140	0.78	0.56			
	SC 47	60°	90°	120°	18.8	31.6	40.1	47.0	55.6	77.0	107	129	148	164	0.97	0.56			
	SC 50	60°	90°	120°	20.0	33.6	42.7	50.0	59.1	81.9	113	137	157	174	1.10	0.56			
	SC 60		90°	120°	24.0	40.3	51.2	60.0	71.0	98.3	136	165	189	209	1.14	0.75			
2 1/2	SC 25	60°	90°		10.0	16.8	21.3	25.0	29.6	40.9	56.7	68.6	78.6	87.2	0.61	0.61	6.28	3.25	6.5
	SC 50	60°	90°		20.0	33.6	42.7	50.0	59.1	81.9	113	137	157	174	0.87	0.75			
	SC 60	60°	90°	120°	24.0	40.3	51.2	60.0	71.0	98.3	136	165	189	209	0.96	0.75			
	SC 70	60°	90°	120°	28.1	47.0	59.8	70.0	82.8	115	159	192	220	244	1.07	0.75			
	SC 80	60°	90°	120°	32.1	53.7	68.3	80.0	94.6	131	181	220	251	279	1.15	0.75			
	SC 90		90°	120°	36.1	60.4	76.8	90.0	106	147	204	247	283	314	1.27	0.75			
3	SC 42	60°	90°		16.8	28.2	35.9	42.0	49.7	68.8	95.3	115	132	147	0.75	0.75	7.16	3.75	9.4
	SC 58	60°	90°		23.2	38.9	49.5	58.0	68.6	95.0	131.6	159	182	202	0.90	0.90			
	SC 80	60°	90°	120°	32.1	53.7	68.3	80.0	94.6	131	181	220	251	279	1.10	1.00			
	SC 90	60°	90°	120°	36.1	60.4	76.8	90.0	106	147	204	247	283	314	1.20	1.00			
	SC 95	60°	90°	120°	38.1	63.8	81.1	95.0	112	156	216	261	299	332	1.13	1.00			
	SC 100	60°	90°	120°	40.1	67.2	85.4	100	118	164	227	274	314	349	1.34	1.00			
	SC 117	60°	90°	120°	46.9	78.6	99.9	117	138	192	265	321	368	408	1.42	1.00			
	SC 120	60°	90°	120°	48.1	80.6	102	120	142	197	272	329	377	419	1.5	1.00			
	SC 135		90°	120°	54.1	90.7	115	135	160	221	306	371	424	471	1.64	1.00			
4	SC 125	60°	90°		50.1	83.9	107	125	148	205	284	343	393	436	1.35		8.64	4.75	15.8
	SC 130	60°	90°		52.1	87.3	111	130	154	213	295	357	409	454	1.38				
	SC 160	60°	90°		64.1	107	137	160	189	262	363	439	503	558	1.60				
	SC 180	60°	90°	120°	72.1	121	154	180	213	295	408	494	566	628	1.72	1.33			
	SC 188	60°	90°	120°	75.3	126	161	188	222	308	427	516	591	656	1.69				
	SC 200	60°	90°	120°	80.1	134	171	200	237	328	454	549	628	698	1.88				
	SC 210	60°	90°	120°	84.1	141	179	210	248	344	476	576	660	733	2.03				
	SC 250		90°	120°	100	168	213	250	296	409	567	686	786	872	2.25				
6	SC 350	60°	90°	120°	140	235	299	350	414	573	794	961	1100	1220	2.60	1.38	*	*	*
	SC 480		90°	120°	192	322	410	480	568	786	1090	1320	1510	1680	2.80	1.69	*	*	*
	SC 615		90°	120°	246	413	525	615	727	1010	1400	1690	1930	2150	3.00	1.69	*	*	*

Flow Rate (GPM) = K (PSI)^{0.47} * Dimensions vary with spray angle ordered, please call for dimensions

Standard Materials: Brass, Carbon Steel and 316 Stainless Steel.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

NC

Threaded Connection/Plastic Material

DESIGN FEATURES

- Complete line of full cone nozzles made of plastic
- Male and female connections
- Flanged connection available in larger models—see NCFL (p. 38)
- For metal alloy nozzles, refer to MaxiPass (pp. 26, 27), SC (pp. 32, 33), or TC (p. 39) Series

SPRAY CHARACTERISTICS

Spray pattern: Full Cone with uniform distribution. For square patterns, please contact BETE.

Spray angles: 60°, 90°, and 120° standard

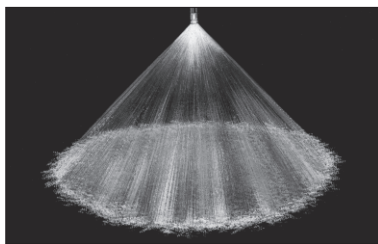
Flow rates: 2.01 to 2150 gpm (Higher flow rates available)



Male 120°



Full Cone 60° (N)



Full Cone 90° (M)



Full Cone 120° (W)

Dimensions are approximate. Check with BETE for critical dimension applications.

NC Flow Rates and Dimensions

Full Cone, Narrow 60°(N), Medium 90°(M) and Wide 120° (W) Spray Angles, 3/4" to 6" Pipe Sizes

Male or Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI									Approx. Orifice Dia. (in.)	Approx. Free Pass. Dia. (in.)	Approximate Dimensions (in.)				Wt. (oz.) Male
			3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI			A	B	C	D	
3/4	NC 0703	1.20	2.01	2.56	3.00	3.55	4.91	6.81	8.23	9.43	10.5	0.25	0.16					
	NC 0704	1.60	2.69	3.41	4.00	4.73	6.55	9.07	11.0	12.6	14.0	0.25	0.19	1.75	1.12	2.12	1.50	1.00
	NC 0707	2.80	4.70	5.98	7.00	8.28	11.5	15.9	19.2	22.0	24.4	0.33	0.23					
1	NC 1009	3.61	6.04	7.68	9.00	10.6	14.7	20.4	24.7	28.3	31.4	0.38	0.25	2.19	1.38	2.50	1.75	1.25
	NC 1012	4.81	8.06	10.2	12.0	14.2	19.7	27.2	32.9	37.7	41.9	0.45	0.30					
1 1/4	NC 1214	5.61	9.40	12.0	14.0	16.6	22.9	31.8	38.4	44.0	48.9	0.47	0.34	3.25	1.75	3.25	2.00	3.75
	NC 1217	6.81	11.4	14.5	17.0	20.1	27.8	38.6	46.7	53.4	59.3	0.53	0.38					
1 1/2	NC 1516	6.41	10.7	13.7	16.0	18.9	26.2	36.3	43.9	50.3	55.8	0.50	0.38					
	NC 1520	8.01	13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	0.56	0.41	4.25	2.00	4.25	2.50	6.75
	NC 1524	9.62	16.1	20.5	24.0	28.4	39.3	54.4	65.9	75.4	83.8	0.61	0.44					
2	NC 2017	6.81	11.4	14.5	17.0	20.1	27.8	38.6	46.7	53.4	59.3	0.53	0.38					
	NC 2020	8.01	13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	0.56	0.41					
	NC 2033	13.2	22.2	28.2	33.0	39.0	54.1	74.9	90.6	104	115	0.72	0.55	5.81	2.50	5.81	3.00	12.7
	NC 2040	16.0	26.9	34.1	40.0	47.3	65.5	90.7	110	126	140	0.80	0.63					
	NC 2045	18.0	30.2	38.4	45.0	53.2	73.7	102	124	141	157	0.84	0.63					

Flow Rate (GPM) = K (PSI)^{0.47}

Standard Materials: PVC, Polypropylene, and PTFE.

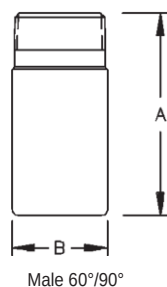
NOTE for PTFE nozzles: if operating temperature is to exceed 300°F, or the operating pressure is to exceed the values listed in the table above, please contact BETE Applications Engineering for assistance.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

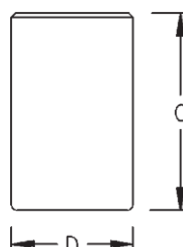
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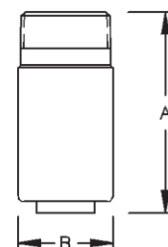
Female 120°



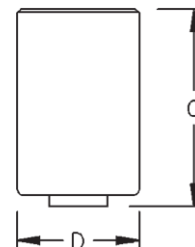
Male 60°/90°



Female 60°/90°



Male 120°



Female 120°

Dimensions are approximate. Check with BETE for critical dimension applications.

NC Flow Rates and Dimensions

Full Cone, Narrow 60° (N), Medium 90° (M) and Wide 120° (W) Spray Angles, 3/4" to 6" Pipe Sizes

Male or Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI									Approx. Orifice Dia. (in.)	Approx. Free Pass. Dia. (in.)	Approximate Dimensions (in.)				Wt. (lbs.) Male
			3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI			A	B	C	D	
2	NC 2050	20.0	33.6	42.7	50.0	59.1	81.9	113	137	157	174	0.89	0.60	5.81	2.50	5.81	3.00	0.79
	NC 2060	24.0	40.3	51.2	60.0	71.0	98.3	136	165	189	209	0.94	0.63					
	NC 2065	26.0	43.6	55.5	65.0	76.9	106	147	178	204	227	1.00	0.67					
	NC 2070	28.1	47.0	59.8	70.0	82.8	115	159	192	220	244	1.05	0.68					
2 1/2	NC 2570	28.1	47.0	59.8	70.0	82.8	115	159	192	220	244	1.05	0.68	5.88	3.00	5.88	3.50	1.23
	NC 2580	32.1	53.7	68.3	80.0	94.6	131	181	220	251	279	1.13	0.69					
	NC 2590	36.1	60.4	76.8	90.0	106	147	204	247	283	314	1.19	0.78					
3	NC 3058	23.2	38.9	49.5	58.0	68.6	95.0	132	159	182	202	0.95	0.63	5.88	3.50	5.88	4.00	1.42
	NC 3084	33.7	56.4	71.7	84.0	99.3	138	191	231	264	293	1.17	0.88					
	NC 3096	38.5	64.5	82.0	96.0	114	157	218	264	302	335	1.12	0.95					
	NC 30117	46.9	78.6	99.9	117	138	192	265	321	368	408	1.36	0.97					
4	NC 40125	50.1	83.9	107	125	148	205	284	343	393	436	1.39	0.98	5.88	4.50	7.25	5.00	2.90
	NC 40130	52.1	87.3	111	130	154	213	295	357	409	454	1.42	1.00					
	NC 40180	72.1	121	154	180	213	295	408	494	566	628	1.69	1.31					
	NC 40250	100	168	213	250	296	409	567	686	786	872	1.98	1.586					
6	NC 60350	140	235	299	350	414	573	794	961	1100	1220	2.38	1.70	9.50	6.63	11.0	7.19	8.12
	NC 60480	192	322	410	480	568	786	1090	1320	1510	1670	2.75	1.75					
	NC 60615	246	413	525	615	727	1010	1390	1690	1930	2150	3.11	1.97					

$$\text{Flow Rate (GPM)} = K (\text{PSI})^{0.47}$$

Standard Materials: PVC, Polypropylene and PTFE.

NOTE for PTFE nozzles: if operating temperature is to exceed 300°F, or the operating pressure is to exceed the values listed in the table above, please contact BETE Applications Engineering for assistance.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

NCS

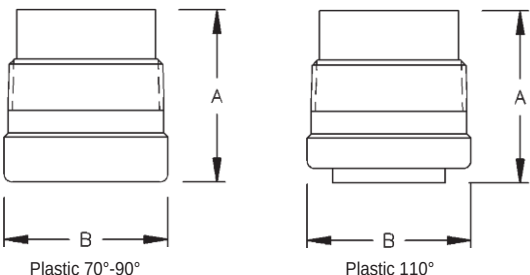
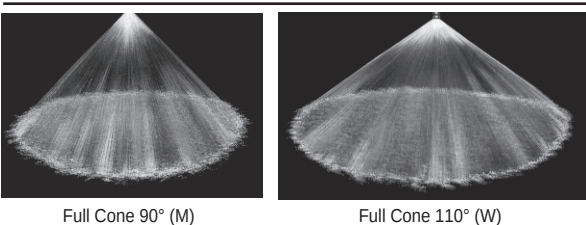
Stubbies/Minimize Head Space

DESIGN FEATURES

- Takes no more room than pipe plug, yet performs like full-size nozzle
- Small projection
- Can be used with standard pipe couplings to form female nozzle, with elbows to form right angle nozzle, or with tees or crosses for multiple installations
- Male connection
- Metal and plastic materials

SPRAY CHARACTERISTICS

Spray pattern: Full Cone
Spray angles: 70°, 90°, and 110° standard
Flow rates: 2.0 to 419 gpm
 (Special flow rates available)



Dimensions are approximate. Check with BETE for critical dimension applications.

NCS Flow Rates and Dimensions

Full Cone, Narrow 70° (N), Medium 90° (M) and Wide 110° (W) Spray Angles, 1" to 4" Pipe Sizes

Male Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI									Approx. Orifice Dia. (in.)	Approx. Free Pass. Dia. (in.)	Dim. (in.)		Wt. (oz.) PVC
			3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI			A	B	
1	NCS1003	1.20	2.01	2.56	3.00	3.55	4.91	6.81	8.23	9.43	10.5	0.22	0.15	1.88	1.38	1.50
	NCS1005	2.00	3.36	4.27	5.00	5.91	8.19	11.3	13.7	15.7	17.4	0.28	0.22			
	NCS1007	2.81	4.70	5.98	7.00	8.28	11.5	15.9	19.2	22.0	24.4	0.33	0.21			
1 1/2	NCS1510	4.01	6.72	8.54	10.0	11.8	16.4	22.7	27.4	31.4	34.9	0.41	0.28	2.38	2.00	3.00
	NCS1513	5.21	8.73	11.1	13.0	15.4	21.3	29.5	35.7	40.9	45.4	0.45	0.38			
	NCS1516	6.41	10.7	13.7	16.0	18.9	26.2	36.3	43.9	50.3	55.8	0.50	0.36			
2	NCS2020	8.01	13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	0.56	0.41	2.63	2.50	6.00
	NCS2025	10.0	16.8	21.3	25.0	29.6	40.9	56.7	68.6	78.6	87.2	0.64	0.45			
	NCS2030	12.0	20.1	25.6	30.0	35.5	49.1	68.1	82.3	94.3	105	0.69	0.52			
	NCS2035	14.0	23.5	29.9	35.0	41.4	57.3	79.4	96.1	110	122	0.75	0.55			
2 1/2	NCS2540	16.0	26.9	34.1	40.0	47.3	65.5	90.7	110	126	140	0.8	0.63	3.00	3.00	9.00
	NCS2545	18.0	30.2	38.4	45.0	53.2	73.7	102	124	141	157	0.84	0.63			
	NCS2550	20.0	33.6	42.7	50.0	59.1	81.9	113	137	157	174	0.89	0.63			
3	NCS3060	24.0	40.3	51.2	60.0	71.0	98.3	136	165	189	209	0.94	0.63	3.31	3.50	14.0
	NCS3070	28.0	47.0	59.8	70.0	82.8	115	159	192	220	244	1.05	0.58			
	NCS3085	34.0	57.1	72.6	85.0	101	139	193	233	267	297	1.16	0.66			
4	NCS40100	40.1	67.2	85.4	100	118	164	227	274	314	349	1.25	0.95	4.00	4.50	20.0
	NCS40120	48.1	80.6	102	120	142	197	272	329	377	419	1.38	1.00			

$$\text{Flow Rate (GPM)} = K (\text{PSI})^{0.47}$$

Standard Materials: Brass, 316 Stainless Steel, Polypropylene, PVC and PTFE.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

NCK

Full Cone/Narrow Angle Injector

DESIGN FEATURES

- Narrow spray angles
- High velocity
- Male and female connections
- Flanged connections available

SPRAY CHARACTERISTICS

- Coarse and extremely hard driving spray with even distribution

Spray pattern: Full Cone

Spray angles: 15°, 20° and 30°

Flow rates: 7.1 to 1220 gpm
(Special flow rates available)



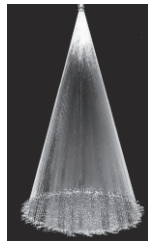
FULL CONE



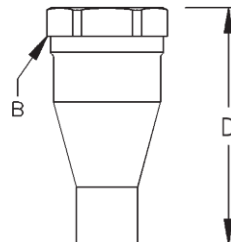
Full Cone 15°



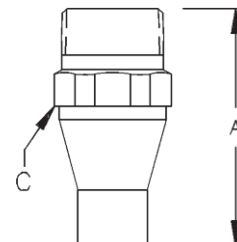
Full Cone 20°



Full Cone 30°



Female



Male

Dimensions are approximate. Check with BETE for critical dimension applications.

NCK Flow Rates and Dimensions

Full Cone, 15°, 20° and 30° Spray Angles, 3/4" to 6" Pipe Sizes

Male or Female Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI							Approx. Orifice Dia. (in.)	Dimensions for Metal Only (in.)				Wt. (lbs.)	
			10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI		A	B	C	D	PVC	Metal
3/4	NC 0706K	2.40	7.10	9.83	11.9	13.6	16.5	18.9	20.9	0.30	3.25	1.38	1.12	3.25	0.09	0.75
1	NC 1012K	4.81	14.2	19.7	23.8	27.2	32.9	37.7	41.9	0.41	3.50	1.75	1.38	3.50	0.12	1.00
1 1/4	NC 1218K	7.21	21.3	29.5	35.7	40.8	49.4	56.6	62.8	0.48	4.00	2.00	1.75	4.00	0.25	1.25
1 1/2	NC 1526K	10.4	30.7	42.6	51.5	59.0	71.4	81.7	90.7	0.60	5.00	2.50	2.00	5.00	0.44	2.25
2	NC 2048K	19.2	56.8	78.6	95.1	109	132	151	168	0.80	6.00	3.00	2.50	6.00	0.82	2.50
2 1/2	NC 2572K	28.8	85.1	118	143	163	198	226	251	0.97	7.00	3.25	3.00	7.63	1.37	5.75
3	NC 30105K	42.1	124	172	208	238	288	330	366	1.16	8.00	3.84	3.50	8.00	1.87	6.25
4	NC 40190K	76.1	225	311	377	431	522	597	663	1.60	9.88	5.00	4.50	10.94	4.50	15.0
6	NC 60350K	140	414	573	694	794	961	1100	1220	2.13	13.5	7.19	6.62	15.0	6.12	35.0

$$\text{Flow Rate (GPM)} = K (\text{PSI})^{0.47}$$

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene, and PTFE.

NOTE for PTFE nozzles: if operating temperature is to exceed 300°F, or the operating pressure is to exceed the values listed in the table above, please contact BETE Applications Engineering for assistance.

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

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



NCFL

Flange Connection/Plastic Material

DESIGN FEATURES

- Large internal passages
- Uniform spray coverage
- High flow rates with coarse atomization
- Variety of polymer materials available, offering high corrosion resistance
- For metal alloy nozzles refer to SC (pp. 32, 33) and TC (p. 39).

SPRAY CHARACTERISTICS

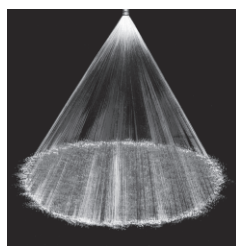
Spray pattern: Full Cone

Spray angles: 60°, 90°, and 120°

Flow rates: 94 to 4360 gpm
(Special flow rates available)



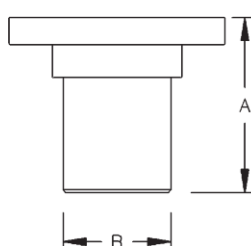
Plastic Flanged



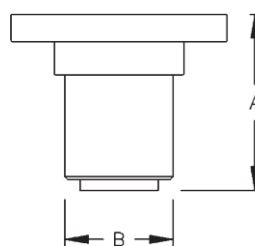
Full Cone 60° (N)



Full Cone 120° (W)



Flanged



Flanged 120°

Dimensions are approximate. Check with BETE for critical dimension applications.

NCFL Flow Rates and Dimensions

Full Cone, Narrow 60° (N), Medium 90° (M) and Wide 120° (W) Spray Angles, Flanged Connection*

Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI							Approx. Free Pass. Dia. (in.)		Dim. (in.)		Wt. PVC (lbs.)
			3 PSI	5 PSI	7 PSI	10 PSI	12 PSI	15 PSI	20 PSI	Approx. Orifice Dia. (in.)	Free Pass. Dia. (in.)	A	B	
4	NCFL40140	56.1	94.0	120	140	166	180	200	229	1.48	1.00	6.30	4.50	8.0
	NCFL40180	72.1	121	154	180	213	232	258	295	1.69	1.31			
	NCFL40250	100	168	213	250	296	322	358	409	1.98	1.58			
6	NCFL60350	140	235	299	350	414	451	501	573	2.38	1.70	10.0	6.62	14
	NCFL60480	192	322	410	480	568	618	687	786	2.75	1.75			
	NCFL60615	246	413	525	615	727	792	880	1010	3.11	1.97			
8	NCFL80665	266	447	568	665	786	857	951	1090	3.25	2.12	12.0	8.62	26
	NCFL80775	311	520	662	775	916	998	1110	1270	3.52	2.38			
	NCFL80885	355	594	756	885	1050	1140	1270	1450	3.75	2.62			
12	NCFL1201280	513	860	1090	1280	1510	1650	1830	2100	4.50	2.88	18.0	12.7	70
	NCFL1201910	765	1280	1630	1910	2260	2460	2730	3130	5.50	3.25			
	NCFL1202665	1070	1790	2270	2665	3150	3430	3810	4360	6.25	3.50			

Flow Rate (GPM) = K (PSI)^{0.47}

*150# flange standard; other options available upon request.

Standard Materials: PVC, Polypropylene, and PTFE (12" NCFL not available in PTFE).

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

TC

High Flow Rate/Metal Alloy

DESIGN FEATURES

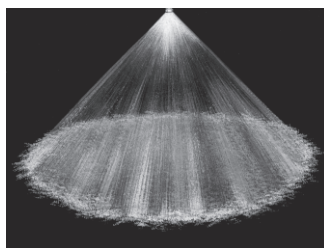
- One-piece body with integral vanes
- Male, female and flanged connections available

SPRAY CHARACTERISTICS

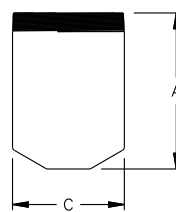
- Extremely high flow rates
- Spray pattern:** Uniform Full Cone
Spray angles: 60°, 90°, and 120°
Flow rates: 217 to 8730 gpm
 (Special flow rates available)



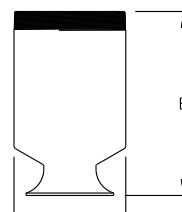
Flanged



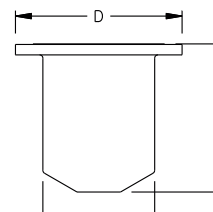
Full Cone 90° (M)



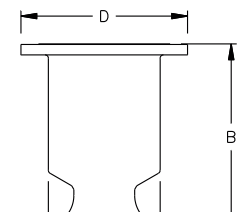
Male 60°/90°



Male 120°



60°/90° Flanged



120° Flanged

Dimensions are approximate. Check with BETE for critical dimension applications.

TC Flow Rates and Dimensions

Full Cone, Narrow 60° (N), Medium 90°(M) and Wide 120°(W) Spray Angles, 6" to 12" Pipe Sizes

Male or Female Pipe Size	Available Spray Angles	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI										Approx. Free Pass. Dia. (in.)	Dimensions (in.)				Wt. (lbs.)
				1 PSI	3 PSI	5 PSI	7 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI		60° A	90° B	120° C	D	
6	60° 90° 120°	TC 532	217	217	360	456	532	627	755	862	1040	1190	1430	1.75	10.2	6.60		25	
	90° 120°	TC 588	240	240	398	504	588	693	835	953	1150	1310	1580		10.2	6.60		25	
	90° 120°	TC 827	338	338	560	708	827	974	1170	1340	1610	1840	2220		10.3	12.3	6.60	25	
8	60° 90° 120°	TC 962	393	393	651	824	962	1130	1370	1560	1880	2140	2580	2.06	12.8	8.60		40	
	90° 120°	TC 1120	458	458	758	959	1120	1320	1590	1810	2190	2500	3010		12.8	15.3	8.60	40	
	60° 90° 120°	TC 1260	515	515	853	1080	1260	1480	1790	2040	2460	2810	3380		12.8	15.3	8.60	40	
	90° 120°	TC 1480	605	605	1000	1270	1480	1740	2100	2400	2890	3300	3980			15.3	8.60	40	
Flanged Connection																			
6	60° 90° 120°	TCFL532	217	217	360	456	532	627	755	862	1040	1190	1430	1.75	9.4	6.60		60	
	90° 120°	TCFL588	240	240	398	504	588	693	835	953	1150	1310	1580		9.4	6.60	11.0		
	90° 120°	TCFL827	338	338	560	708	827	974	1170	1340	1610	1840	2220		9.4	11.5	6.60		
8	60° 90° 120°	TCFL962	393	393	651	824	962	1130	1370	1560	1880	2140	2580	2.06	11.9	8.60		85	
	90° 120°	TCFL1120	458	458	758	959	1120	1320	1590	1810	2190	2500	3010		11.9	14.7	8.60		
	60° 90° 120°	TCFL1260	515	515	853	1080	1260	1480	1790	2040	2460	2810	3380		11.9	14.7	8.60		
	90° 120°	TCFL1480	605	605	1000	1270	1480	1740	2100	2400	2890	3300	3980		11.9	14.7	8.60		
12	60° 90°	TCFL2070	846	846	1400	1770	2070	2440	2940	3350	4040	4610	5560	2.25	17.0	12.7		160	
	90°	TCFL2360	960	960	1590	2010	2360	2770	3340	3810	4590	5240	6310		17.0	12.7			
	90° 120°	TCFL2510	1025	1030	1700	2150	2510	2960	3560	4070	4900	5600	6740		17.0	21.4	12.7		
	90° 120°	TCFL2660	1087	1090	1800	2280	2660	3130	3780	4310	5190	5930	7150		17.0	21.4	12.7		
	90° 120°	TCFL2960	1209	1210	2000	2540	2960	3490	4200	4800	5780	6600	7950		17.0	21.4	12.7		
	90°	TCFL3250	1328	1330	2200	2780	3250	3830	4610	5270	6350	7250	8730		17.0	12.7			

$$\text{Flow Rate (GPM)} = K (\text{PSI})^{0.46}$$

Standard Materials: 316 Stainless Steel

Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.

www.BETE.com



FULL CONE

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