

BJ

Low Flow



FAN

DESIGN FEATURES

- Three-piece construction
- Interchangeable spray tips
- Integral strainer available (refer to page 121 for more information)
- Male and female connections

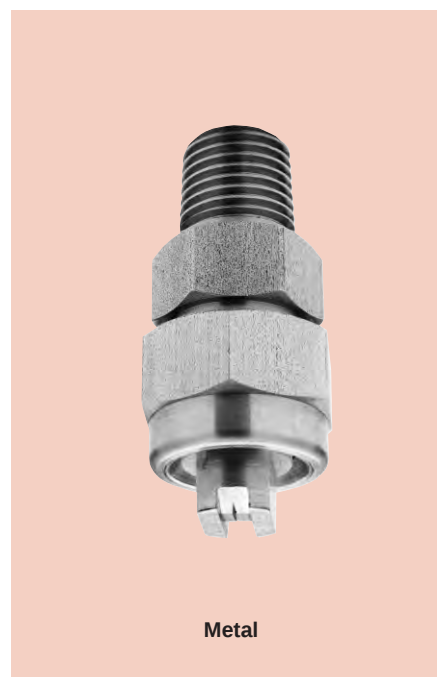
SPRAY CHARACTERISTICS

- Relatively coarse atomization
- Uniform distribution with tapered edges for use in overlapping sprays

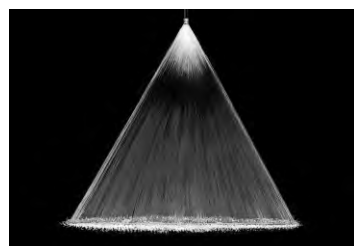
Spray pattern: Flat Fan

Spray angles: 0° to 110°

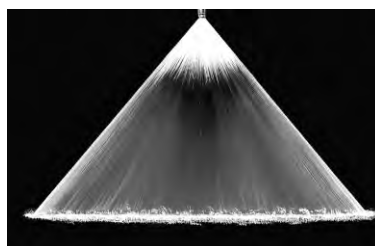
Flow rate: 0.024 to 24.7 gpm



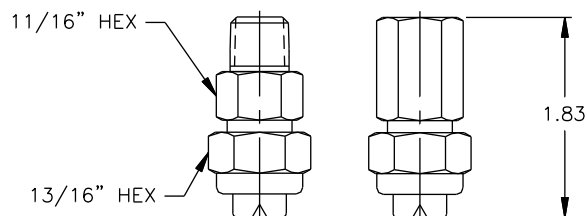
Metal



Fan 50°



Fan 80°



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

BJ Spray Angles and Weights

Fan, 0° to 110° Spray Angles, 1/8", 1/4", 3/8", and 1/2" Pipe Size, Male and Female

Pipe Size	Nozzle Number	Flow Rate @ 40 psi	Available Spray Angle										Optional Strainer Mesh Size	Wt. (Oz.)
			0°	15°	25°	40°	50°	65°	73°	80°	95°	110°		
1/8"	BJ 0067	0.067	0°	15°	25°	40°	50°	65°					100	2
	BJ 0077	0.077							73°					
	BJ 01	0.10	0°	15°	25°	40°	50°	65°		80°	95°	110°		
	BJ 0116	0.12							73°					
OR	BJ 015	0.15	0°	15°	25°	40°	50°	65°		80°	95°	110°	50	2
	BJ 0154	0.15							73°					
	BJ 02	0.20	0°	15°	25°	40°	50°	65°		80°	95°	110°		
	BJ 0231	0.23							73°					
1/4"	BJ 03	0.30	0°	15°	25°	40°	50°	65°		80°	95°	110°		
	BJ 0308	0.31							73°					
	BJ 0385	0.39							73°					
	BJ 04	0.40	0°	15°	25°	40°	50°	65°		80°	95°	110°		
OR	BJ 0462	0.46							73°					
	BJ 05	0.50	0°	15°	25°	40°	50°	65°		80°	95°	110°		
	BJ 06	0.60	0°	15°	25°	40°	50°	65°		80°	95°	110°		
	BJ 0616	0.62							73°					
3/8"	BJ 077	0.77							73°					
	BJ 08	0.80	0°	15°	25°	40°	50°	65°		80°	95°	110°		
	BJ 0924	0.92							73°					
	BJ 10	1.0	0°	15°	25°	40°	50°	65°		80°	95°	110°		
1/2"	BJ 15	1.5	0°	15°	25°	40°	50°	65°		80°	95°	110°		
	BJ 20	2.0	0°	15°	25°	40°	50°	65°		80°	95°	110°		
	BJ 30	3.0	0°	15°	25°	40°	50°	65°		80°	95°	110°		
3/8"	BJ 40	4.0	0°	15°	25°	40°	50°	65°		80°	95°	110°	50	2
	BJ 50	5.0								80°	95°	110°		
	BJ 60	6.0		15°	25°	40°	50°	65°		80°	95°	110°		
	BJ 70	7.0		15°	25°	40°	50°	65°		80°	95°	110°		

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

HYDROPULSE® - PNEUMATIC

Liquid inlet connection	¼" NPT or BSPP, liquid; ⅜" NPT or BSPP, cylinder air; or ½" tri-clamp
Maximum flow rate	12.6 GPM
Maximum rated liquid pressure	600 PSI
Operating temperature range	-15°F to 400°F
Air cylinder pressure	30 PSI to 250 PSI
Air cylinder operation	Single acting (spring return) or double acting.
Maximum cycle frequency	3 cycles/sec
Nozzle construction	Stainless steel wetted components, Viton® (FKM) seals
Interchangeable BJ, BJH, CW, and ST nozzle tip options.	



Provides a controlled intermittent liquid spray using only liquid pressure as the force for atomization. Offers drip-free performance. Pneumatically actuated for crisp on/off precision spray performance.

BJ Flow Rates and Dimensions

Fan, 0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110° Spray Angles



	GALLONS PER MINUTE @ PSI									Equivalent Orifice Dia. (in.)	Available Spray Angles
	K Factor	5 PSI	10 PSI	20 PSI	40 PSI	80 PSI	100 PSI	500 PSI			
BJ 0067	0.0106	0.024	0.034	0.047	0.067	0.095	0.11	0.24	0.023	0°, 15°, 25°, 40°, 50°, 65°, 80°	
BJ 01	0.0158	0.035	0.050	0.071	0.100	0.14	0.16	0.35	0.028	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	
BJ 015	0.0237	0.053	0.075	0.11	0.15	0.21	0.24	0.53	0.038	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	
BJ 02	0.0316	0.071	0.1	0.14	0.20	0.28	0.32	0.71	0.039	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	
BJ 03	0.0474	0.11	0.15	0.21	0.30	0.42	0.47	1.1	0.047	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	
BJ 04	0.0632	0.14	0.20	0.28	0.40	0.57	0.63	1.4	0.055	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	
BJ 05	0.0791	0.18	0.25	0.35	0.50	0.71	0.79	1.8	0.061	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	
BJ 06	0.0949	0.21	0.30	0.42	0.60	0.85	0.95	2.1	0.067	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	
BJ 08	0.127	0.28	0.40	0.57	0.80	1.1	1.3	2.8	0.074	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	
BJ 10	0.158	0.35	0.50	0.71	1.0	1.4	1.6	3.5	0.086	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	
BJ 15	0.237	0.53	0.75	1.1	1.5	2.1	2.4	5.3	0.107	0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°	

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

BJ Tip Materials: Brass, 303 Stainless Steel, and 316 Stainless Steel.

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

BJH Flow Rates and Dimensions

5° to 120° Spray Angles, Tungsten Carbide Insert with 303 Stainless Steel Housing



	GALLONS PER MINUTE @ PSI							Available Spray Angles
	K Factor	30 PSI	40 PSI	50 PSI	100 PSI	500 PSI	Equivalent Orifice Dia. (in.)	
BJH-0.18	0.0012	-	-	-	0.012	0.027	0.007	5°, 10°, 15°, 20°, 25°, 30°, 33°, 40°, 50°
BJH-0.28	0.0030	-	-	-	0.030	0.067	0.011	5°, 10°, 20°, 33°, 40°, 50°, 65°, 73°
BJH-0.38	0.0055	-	-	-	0.055	0.123	0.015	10°, 20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°
BJH-0.45	0.0076	0.042	0.048	0.054	0.076	0.170	0.018	10°, 20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-0.53	0.0105	0.058	0.067	0.075	0.105	0.236	0.021	10°, 20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-0.66	0.0164	0.090	0.104	0.116	0.164	0.367	0.026	10°, 20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-0.68	0.0174	0.095	0.110	0.123	0.174	0.389	0.027	10°, 20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-0.78	0.0229	0.125	0.145	0.162	0.229	0.512	0.031	10°, 20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-0.89	0.0298	0.163	0.188	0.211	0.298	0.666	0.035	10°, 20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-0.99	0.0369	0.202	0.233	0.261	0.369	0.825	0.039	10°, 20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-1.14	0.0490	0.268	0.310	0.346	0.490	1.10	0.045	20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-1.29	0.0627	0.343	0.397	0.443	0.627	1.40	0.051	20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-1.45	0.0792	0.434	0.501	0.560	0.792	1.77	0.057	20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-1.60	0.0964	0.528	0.727	0.813	1.15	2.57	0.069	20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-1.80	0.122	0.668	0.772	0.863	1.22	2.73	0.071	20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°
BJH-1.91	0.137	0.750	0.866	0.969	1.37	3.06	0.075	20°, 33°, 40°, 50°, 65°, 73°, 80°, 90°, 100°, 110°, 120°

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

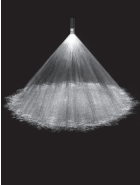
BJH Tip Materials: Tungsten Carbide Insert with 303 Stainless Steel Housing

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

CW Flow Rates and Dimensions

Full Cone and Hollow Cone, 80° and 120° Spray Angles



	GALLONS PER MINUTE @ PSI											Approx Orifice Dia. (in.)
	K Factor	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	
CW25	0.04	0.13	0.18	0.22	0.25	0.28	0.30	0.33	0.35	0.37	0.38	0.045
CW50	0.09	0.26	0.36	0.44	0.50	0.56	0.60	0.65	0.69	0.73	0.77	0.054
CW75	0.13	0.39	0.54	0.66	0.75	0.83	0.91	0.98	1.04	1.10	1.15	0.063
CW100	0.18	0.52	0.72	0.87	1.00	1.11	1.21	1.30	1.39	1.46	1.54	0.086

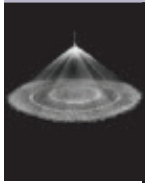
$$\text{Flow Rate (GPM)} = K(\text{PSI})^{0.47}$$

CW Tip Materials: Brass, 303 Stainless Steel and 316 Stainless Steel.

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

ST Flow Rates and Dimensions

Full Cone, 90° (FCN) and 120° (FC) Spray Angles



GALLONS PER MINUTE @ PSI

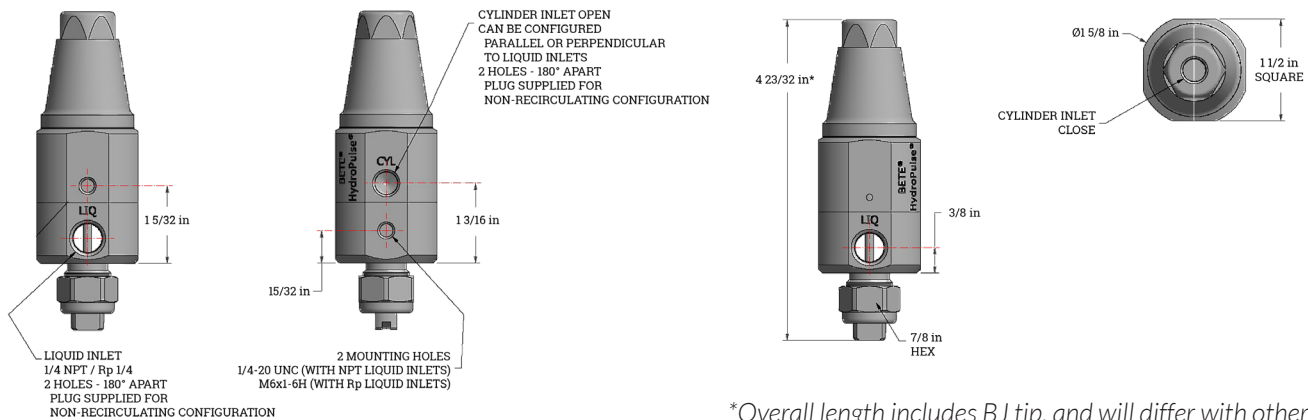
	K Factor	5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	Approx Orifice Dia. (in.)
ST6	0.22	0.49	0.70	0.86	0.99	1.21	1.40	1.57	1.71	1.98	2.21	3.13	4.43	0.09
ST8	0.41	0.92	1.30	1.59	1.84	2.25	2.60	2.91	3.18	3.68	4.11	5.81	8.22	0.13
ST10	0.63	1.41	2.00	2.45	2.83	3.46	4.00	4.47	4.90	5.66	6.32	8.94	12.6	0.16

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

ST Tip Materials: Cobalt Alloy 6

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

1/4-PHP-00 (RECIRCULATING)



*Overall length includes BJ tip, and will differ with other tips.

Pneumatic HydroPulse Ordering Nomenclature

TRI-1/2 PHP 00 BJ 01 90

Connection

1/2" ASME Tri-clamp: TRI-1/2

1/4" NPT thread: 1/4

1/4" BSPP thread: 1/4 B

DN10 DIN 32676/A Tri-clamp: TRE01-DN10

Series Name

PHP

Body Style

recirculating - 00

non-recirculating - 01

Spray Angle

series dependent

Tip Rating

series dependent

Tip Series

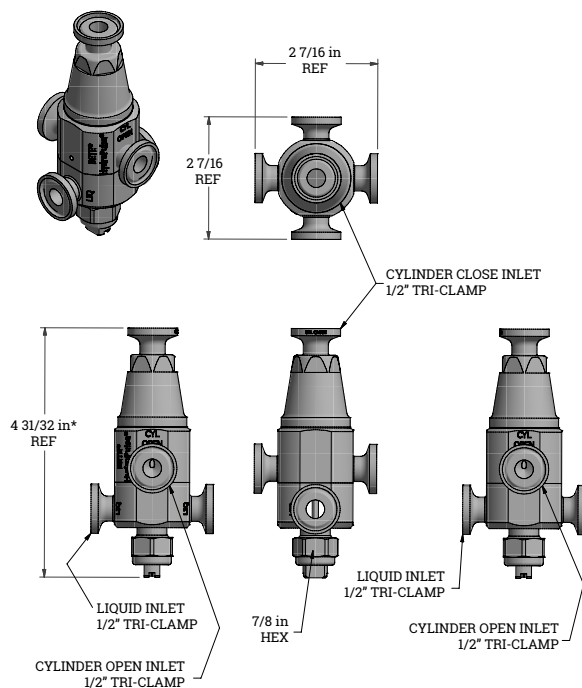
BJ
BJH
CW
ST

PNEUMATIC HYDROPULSE AUTOMATIC SPRAY NOZZLES WITH HYGIENIC TRI-CLAMP CONNECTIONS

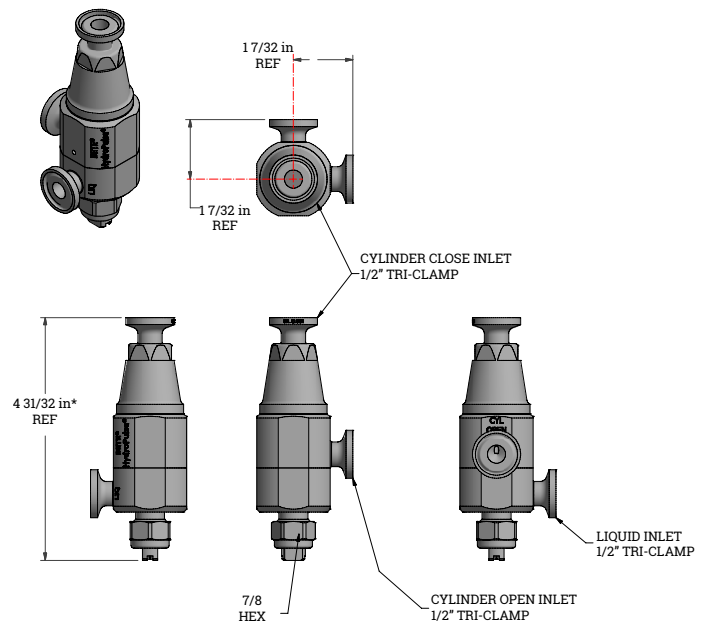
Tri-clamps are sanitary pipe connections commonly used in the food, beverage, biopharmaceutical, and personal care industries.



1/2" TRI-CLAMP PHP-00 (RECIRCULATING)



1/2" TRI-CLAMP PHP-01 (NON-RECIRCULATING)



*Overall length includes BJ tip, and will differ with other tips.

NFV

Fan Nozzle with Integral Strainer Option

DESIGN FEATURES

- One-piece construction
- No internal parts
- Male connection
- Low nozzle maintenance
- Optional removable strainer for easy cleaning

Connections: Male NPT and BSP

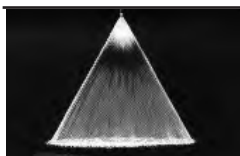
Optional Strainer: 50, 100, 200 mesh

SPRAY CHARACTERISTICS

- High impact
 - Uniform distribution
- Spray pattern:** Flat Fan and Straight Jet
Spray angles: 0°, 15°, 25°, 40°, 50°, 65°, 80°, 95°, 110°
 NFV0067: Max. spray angle available 95°
Flow rates: 0.041 to 12.6 gpm



Metal
Shown with Optional Strainer



Fan 50°

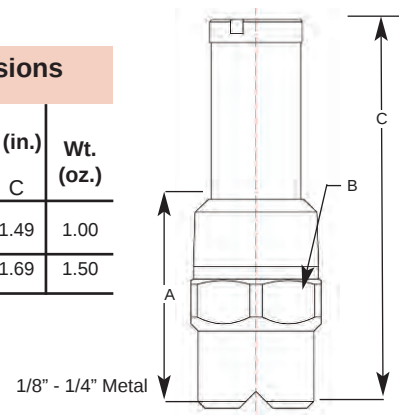
Call BETE to verify spray angle performance at operating pressures above 70 psi.

To Order: Spray Set-up Number

1/4 NFV 0067 95 -L -B 303
 pipe size series nozzle number spray angle optional strainer, also specify mesh size specify material
 BSP thread

NFV Dimensions

Pipe Size	Dimensions (in.)			Wt. (oz.)
	A	B	C	
1/8	0.88	0.44	1.49	1.00
1/4	1.06	0.56	1.69	1.50



NFV Flow Rates

Fan and Straight Jet, 0°, 15°, 25°, 40°, 50°, 65°, 80°, 95° (all sizes); 110° (NFV01 and higher)

Male Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI										Equiv. Orifice Dia. (in.)	Screen Mesh Selection Guide
			15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	200 PSI	400 PSI		
1/8" or 1/4"	NFV0067**	0.0106	0.041	0.047	0.057	0.067	0.082	0.095	0.110	0.130	0.150	0.210	0.023	100
	NFV01	0.0158	0.06	0.07	0.09	0.10	0.12	0.14	0.16	0.19	0.22	0.32	0.026	100
	NFV015	0.0237	0.09	0.11	0.13	0.15	0.18	0.21	0.24	0.29	0.34	0.47	0.031	100
	NFV02	0.0316	0.12	0.14	0.17	0.20	0.25	0.28	0.32	0.39	0.45	0.63	0.036	100
	NFV025	0.0395	0.15	0.18	0.22	0.25	0.31	0.35	0.40	0.48	0.56	0.79	0.040	50
	NFV03	0.0474	0.18	0.21	0.26	0.30	0.37	0.42	0.47	0.58	0.67	0.95	0.043	50
	NFV04	0.0632	0.25	0.28	0.35	0.40	0.49	0.57	0.63	0.78	0.89	1.25	0.052	50
	NFV05	0.0791	0.31	0.35	0.43	0.50	0.61	0.71	0.79	0.97	1.12	1.58	0.057	50
	NFV06	0.0949	0.37	0.42	0.52	0.60	0.74	0.85	0.95	1.16	1.34	1.90	0.062	50
	NFV07	0.111	0.43	0.50	0.61	0.70	0.86	0.99	1.11	1.36	1.57	2.22	0.082	50
	NFV08	0.126	0.49	0.57	0.69	0.80	0.98	1.13	1.26	1.55	1.79	2.53	0.072	50
	NFV10	0.158	0.61	0.71	0.87	1.00	1.22	1.41	1.58	1.94	2.24	3.16	0.080	50
	NFV15	0.237	0.92	1.06	1.30	1.50	1.84	2.12	2.37	2.90	3.35	4.74	0.094	50
	NFV20	0.316	1.22	1.41	1.73	2.00	2.45	2.83	3.16	3.87	4.47	6.32	0.109	50
	NFV30	0.474	1.84	2.12	2.60	3.00	3.67	4.24	4.74	5.81	6.71	9.49	0.141	50
	NFV40	0.632	2.45	2.45	3.46	4.00	4.90	5.66	6.32	7.75	8.94	12.60	0.156	50

**NFV0067: Max. spray angle available: 95°

Flow Rate (GPM) = $K \sqrt{\text{PSI}}$ Standard Materials: Brass and 303 Stainless Steel. Highlighted NFVs available in 316 Stainless Steel.

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

TO ORDER: specify pipe size, connection type, nozzle number, spray angle, and material.

NF

Standard Fan Nozzle

DESIGN FEATURES

- One-piece construction
- No internal parts
- Sizes for all applications
- Male connection

SPRAY CHARACTERISTICS

- High impact
- Uniform distribution with tapered edges for overlapping sprays
- Extra-wide angles available

Spray pattern: Fan and Straight Jet

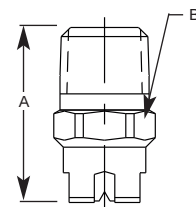
Spray angles: 0° to 120°

Flow rates: 0.103 to 1380 gpm

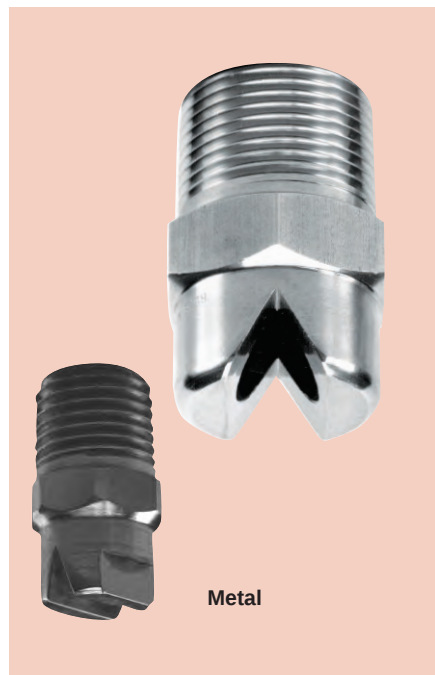


Fan 50°

Call BETE to verify spray angle performance at operating pressures above 70 psi.



3/8" - 2" Metal



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

NF Flow Rates

Straight Jet: 0°; and Fan: 15°, 30°, 50°, 65°, 80°, 90°, 110°, and 120° Spray Angles, 1/8" to 2" Pipe Sizes

Male Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI												Equiv. Orifice Dia. (in.)
			5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	200 PSI	400 PSI	
1/8 or 1/4	NF01	0.0158	0.03	0.05	0.06	0.07	0.09	0.10	0.12	0.14	0.16	0.19	0.22	0.32	0.026
	NF015	0.0237	0.05	0.08	0.09	0.11	0.13	0.15	0.18	0.21	0.24	0.29	0.34	0.47	0.031
	NF02	0.0316	0.07	0.10	0.12	0.14	0.17	0.20	0.25	0.28	0.32	0.39	0.45	0.63	0.036
	NF025	0.0395	0.09	0.13	0.15	0.18	0.22	0.25	0.31	0.35	0.40	0.48	0.56	0.79	0.040
	NF03	0.0474	0.11	0.15	0.18	0.21	0.26	0.30	0.37	0.42	0.47	0.58	0.67	0.95	0.043
	NF04	0.0632	0.14	0.20	0.25	0.28	0.35	0.40	0.49	0.57	0.63	0.78	0.89	1.25	0.052
	NF05	0.0791	0.18	0.25	0.31	0.35	0.43	0.50	0.61	0.71	0.79	0.97	1.12	1.58	0.057
	NF06	0.0949	0.21	0.30	0.37	0.42	0.52	0.60	0.74	0.85	0.95	1.16	1.34	1.90	0.062
	NF08	0.126	0.28	0.40	0.49	0.57	0.69	0.80	0.98	1.13	1.26	1.55	1.79	2.53	0.072
1/8 or 1/4 or 3/8	NF10	0.158	0.35	0.50	0.61	0.71	0.87	1.00	1.22	1.41	1.58	1.94	2.24	3.16	0.080
	NF15	0.237	0.53	0.75	0.92	1.06	1.30	1.50	1.84	2.12	2.37	2.90	3.35	4.74	0.094
	NF20	0.316	0.71	1.00	1.22	1.41	1.73	2.00	2.45	2.83	3.16	3.87	4.47	6.32	0.109
	NF30	0.474	1.06	1.50	1.84	2.12	2.60	3.00	3.67	4.24	4.74	5.81	6.71	9.49	0.141
1/4 or 3/8	NF40	0.632	1.41	2.00	2.45	2.83	3.46	4.00	4.90	5.66	6.32	7.75	8.94	12.6	0.156
	NF50	0.791	1.77	2.50	3.06	3.54	4.33	5.00	6.12	7.07	7.91	9.68	11.2	15.8	0.172
	NF60	0.949	2.12	3.00	3.67	4.24	5.20	6.00	7.35	8.49	9.49	11.6	13.4	19.0	0.186
	NF70	1.11	2.47	3.50	4.29	4.95	6.06	7.00	8.57	9.90	11.1	13.6	15.6	22.1	0.203
3/8 or 1/2	NF60	0.949	2.12	3.00	3.67	4.24	5.20	6.00	7.35	8.49	9.49	11.6	13.4	19.0	0.186
	NF70	1.11	2.47	3.50	4.29	4.95	6.06	7.00	8.57	9.90	11.1	13.6	15.6	22.1	0.203
	NF80	1.26	2.83	4.00	4.90	5.66	6.93	8.00	9.80	11.3	12.6	15.5	17.9	25.3	0.219
	NF90	1.42	3.18	4.50	5.51	6.36	7.79	9.00	11.0	12.7	14.2	17.4	20.1	28.5	0.234
1/2	NF100	1.58	3.54	5.00	6.12	7.07	8.66	10.0	12.2	14.1	15.8	19.4	22.4	31.6	0.250
	NF120	1.90	4.24	6.00	7.35	8.49	10.4	12.0	14.7	17.0	19.0	23.2	26.8	37.9	0.266
3/4	NF150	2.37	5.30	7.50	9.19	10.6	13.0	15.0	18.4	21.2	23.7	29.0	33.5	47.4	0.297
	NF200	3.16	7.07	10.0	12.2	14.1	17.3	20.0	24.5	28.3	31.6	38.7	44.7	63.2	0.344
1	NF300	4.74	10.6	15.0	18.4	21.2	26.0	30.0	36.7	42.4	47.4	58.1	67.1	94.9	0.422
	NF400	6.32	14.1	20.0	24.5	28.3	34.6	40.0	49.0	56.6	63.2	77.5	89.4	126	0.500
1 1/4	NF400	6.32	14.1	20.0	24.5	28.3	34.6	40.0	49.0	56.6	63.2	77.5	89.4	126	0.500
	NF750	11.9	26.5	37.5	45.9	53.0	64.9	75.0	92.0	106	119	145	168	237	0.688
1 1/2	NF800	12.6	28.3	40.0	49.0	56.6	69.3	80.0	98.0	113	126	155	179	253	0.719
	NF1150	18.2	40.7	57.5	70.4	81.3	100	115	141	163	182	223	257	364	0.859
2	NF1500	23.7	53.0	75.0	91.9	106	130	150	184	212	237	290	335	474	0.969
	NF2250	35.6	79.5	113	138	160	195	225	276	318	356	436	500	715	1.19

Flow Rate (GPM) = $K \sqrt{PSI}$ Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel, PVC and PTFE (PTFE not available in nozzle numbers NF025 and under).

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

NFD

Dovetail Flat Fan

DESIGN FEATURES

- Dovetail joint guarantees alignment of interchangeable tips
- Dimensionally compatible with other dovetail systems
- Tips offset 5° or 15° for overlapping spray patterns
- Tapered overlapping spray provides uniform coverage
- Male, female and welded connections
- Other sizes available upon request

SPRAY CHARACTERISTICS

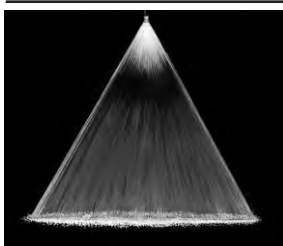
Spray pattern: Flat Fan

Spray angles: 20°, 30°, 45°, 60°, 90° and 120°. Special angles are available on request

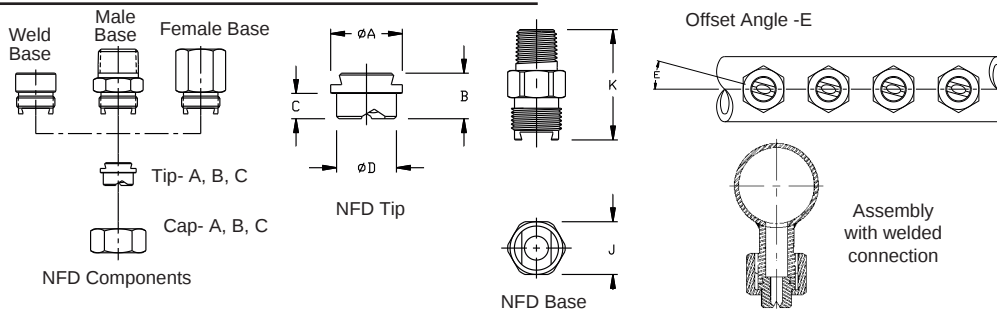
Flow rates: 0.04 to 157 gpm



Metal



Fan 45°



NFD Components

NFD Base

Assembly with welded connection

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

NFD Flow Rates and Dimensions

Fan, 20°, 30°, 45°, 60°, 90°, 120° Spray Angles, 1/4", 3/8", 1/2", 3/4" and 1-1/4" Pipe Size, or Welded Connections

Cap & Tip Size	Nozzle Number	Base Sizes* Available	K Factor	GALLONS PER MINUTE @ PSI								Equiv. Orifice Dia. (in.)	Approximate Tip Dimensions (in.)				Wt. (Oz.)	BSP NPT Pipe	Approx. Base Dim. (in.)	
				10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI		A	B	C	D			E	J
A	NFD 010	1/4 3/8 1/2	0.016	0.049	0.070	0.10	0.12	0.14	0.16	0.22	0.31	0.028	0.58	5°	1.5	1/4"	0.69	1.44		
	NFD 014	1/4 3/8 1/2	0.022	0.070	0.10	0.14	0.17	0.20	0.22	0.31	0.44	0.035								
	NFD 019	1/4 3/8 1/2	0.031	0.10	0.14	0.19	0.24	0.28	0.31	0.44	0.62	0.039								
	NFD 031	1/4 3/8 1/2	0.049	0.15	0.22	0.31	0.38	0.44	0.49	0.69	0.98	0.047								
	NFD 039	1/4 3/8 1/2	0.061	0.19	0.27	0.39	0.47	0.55	0.61	0.87	1.22	0.053	0.47	5°	1.5	3/8"	0.69	1.44		
	NFD 050	1/4 3/8 1/2	0.078	0.25	0.35	0.50	0.61	0.70	0.78	1.10	1.56	0.059								
	NFD 059	1/4 3/8 1/2	0.093	0.29	0.42	0.59	0.72	0.83	0.93	1.32	1.86	0.065								
	NFD 077	1/4 3/8 1/2	0.122	0.39	0.55	0.77	0.95	1.10	1.22	1.73	2.44	0.079								
	NFD 097	1/4 3/8 1/2	0.154	0.49	0.69	0.97	1.19	1.38	1.54	2.18	3.08	0.087	0.47	5°	1.5	3/8"	0.69	1.44		
	NFD 12	1/4 3/8 1/2	0.196	0.62	0.88	1.24	1.52	1.75	1.96	2.77	3.92	0.098								
	NFD 15	1/4 3/8 1/2	0.233	0.74	1.04	1.47	1.80	2.08	2.33	3.30	4.66	0.106								
	NFD 49	1/4 3/8 1/2	0.781	2.47	3.49	4.94	6.05	6.98	7.81	11.0	15.6	0.197								
B	NFD 20	3/4	0.309	0.98	1.38	1.95	2.39	2.76	3.09	4.37	6.18	0.118	0.94	1						

**NFD 496 not available in 120°

Flow Rate (GPM) = $K \sqrt{\text{PSI}}$ *NPT, BSP, male or female or weldable pipe connections. Dimensions are for male base; female and weldable vary.

Standard Materials: Brass, 303 Stainless Steel and 316 Stainless Steel. Weldable adapters also available in mild steel.

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

NFS

Stubby Flat Fan

DESIGN FEATURES

- Extremely short length for minimum projection and maximum clearance
- Produces a flat fan spray pattern available in a variety of spray angles
- Available in straight (parallel) threads only, NPSM and G
- Requires gasket to seal connection

SPRAY CHARACTERISTICS

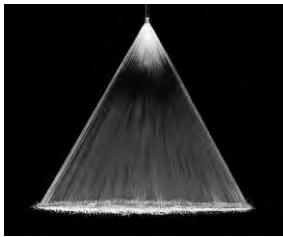
Spray pattern: Fan

Spray angles: 20°, 30°, 45°, 60°, 90° and 120° standard

Flow rates: 0.049 to 295 gpm



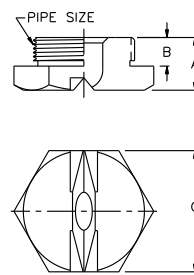
Metal



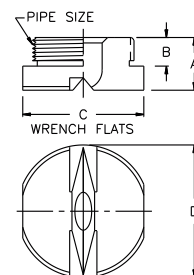
Fan 45°



Fan 90°



Metal



Plastic

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

NFS Flow Rates and Dimensions

Flat Fan, 20°, 30°, 45°, 60°, 90° & 120° Spray Angles, 1/4" to 2" Pipe Sizes

** Male Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI												Equiv. Orifice Dia. (in)
			5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	200 PSI		
1/4	NFS 012	0.020	0.04	0.06	0.08	0.09	0.11	0.12	0.15	0.18	0.20	0.24	0.28	0.0315	
	NFS 019	0.031	0.07	0.10	0.12	0.14	0.17	0.19	0.24	0.28	0.31	0.38	0.44	0.0394	
	NFS 031	0.049	0.11	0.16	0.19	0.22	0.27	0.31	0.38	0.44	0.49	0.60	0.70	0.0472	
	NFS 039	0.061	0.14	0.19	0.24	0.27	0.34	0.39	0.47	0.55	0.61	0.75	0.87	0.0531	
	NFS 050	0.078	0.18	0.25	0.30	0.35	0.43	0.50	0.61	0.70	0.78	0.96	1.11	0.0591	
	NFS 059	0.093	0.21	0.29	0.36	0.42	0.51	0.59	0.72	0.83	0.93	1.14	1.32	0.0650	
	NFS 077	0.122	0.27	0.39	0.47	0.55	0.67	0.77	0.95	1.10	1.22	1.50	1.73	0.0787	
	NFS 098	0.155	0.35	0.49	0.60	0.69	0.85	0.98	1.20	1.38	1.55	1.89	2.19	0.0866	
	NFS 12	0.196	0.44	0.62	0.76	0.88	1.07	1.24	1.52	1.75	1.96	2.40	2.77	0.0984	
	NFS 15	0.233	0.52	0.74	0.90	1.04	1.28	1.47	1.80	2.08	2.33	2.85	3.29	0.106	
1/4 or 3/4"	NFS 20	0.309	0.69	0.98	1.20	1.38	1.69	1.97	2.39	2.76	3.09	3.78	4.36	0.118	
	NFS 25	0.392	0.88	1.24	1.52	1.75	2.15	2.48	3.04	3.51	3.92	4.80	5.55	0.138	
	NFS 31	0.492	1.10	1.56	1.91	2.20	2.70	3.11	3.81	4.40	4.92	6.03	6.96	0.157	
	NFS 39	0.612	1.37	1.94	2.37	2.74	3.35	3.87	4.74	5.48	6.12	7.50	8.66	0.177	
	NFS 50	0.785	1.75	2.48	3.04	3.51	4.30	4.96	6.08	7.02	7.85	9.61	11.1	0.197	
	NFS 62	0.981	2.19	3.10	3.80	4.39	5.37	6.25	7.60	8.77	9.81	12.0	13.9	0.217	
	NFS 77	1.22	2.74	3.87	4.74	5.48	6.71	7.75	9.49	11.0	12.2	15.0	17.3	0.236	
3/4"	NFS 93	1.47	3.28	4.65	5.69	6.57	8.05	9.29	11.4	13.1	14.7	18.0	20.8	0.272	
3/4" or 1-1/4"	NFS 124	1.96	4.39	6.20	7.60	8.77	10.7	12.4	15.2	17.5	19.6	24.0	27.7	0.315	
	NFS 155	2.45	5.48	7.75	9.49	11.0	13.4	15.5	19.0	21.9	24.5	30.0	34.6	0.354	
	NFS 185	2.92	6.53	9.24	11.3	13.1	16.0	18.5	22.6	26.1	29.2	35.8	41.3	0.374	
	NFS 195	3.09	6.91	9.77	12.0	13.8	16.9	19.5	23.9	27.6	30.9	37.8	43.7	0.394	
1-1/4"	NFS 309	4.88	10.9	15.4	18.9	21.8	26.7	30.9	37.8	43.7	48.8	59.8	69.1	0.472	
	NFS 496	7.85	17.5	24.8	30.4	35.1	43.0	49.6	60.8	70.2	78.5	96.1	111	0.591	
2	NFS 557	8.81	19.7	27.8	34.1	39.4	48.2	55.7	68.2	78.8	88.1	108	125	0.630	
	NFS 620	9.81	21.9	31.0	38.0	43.9	53.7	62.0	76.0	87.7	98.1	120	139	0.669	
	NFS 775	12.2	27.4	38.7	47.4	54.8	67.1	77.5	94.9	110	122	150	173	0.748	
	NFS 977	15.5	34.5	48.9	59.8	69.1	84.6	97.7	120	138	155	189	219	0.827	
	NFS 1130	17.9	40.0	56.6	69.3	80.0	98.0	113	139	160	179	219	253	0.886	
	NFS 1320	20.9	46.6	65.9	80.8	93.3	114	132	162	187	209	255	295	0.965	

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

**Available in straight (parallel) threads only, NPSM and G.

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

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

FF

Extra-Wide Angle

DESIGN FEATURES

- One-piece construction
- Clog-resistant
- Durable
- All 3/8" FFs in Brass are available with UL approval
- Male connection

SPRAY CHARACTERISTICS

- Extra-wide 105° and 145° spray angles
- Medium-impact spray
- Spray discharge deflected 75° from inlet axis
- Coarse atomization

Spray pattern: Flat Fan

Spray angle: 105° or 145°, as listed

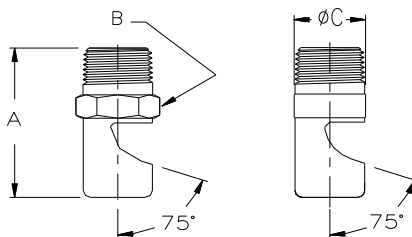
Flow rates: 0.014 to 235 gpm



Plastic



Fan 145°



Metal

Plastic

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

FF Flow Rates

Fan, 105° and 145° Spray Angles, 1/8" to 1" Pipe Sizes

Male Pipe Size	Nozzle Number	Spray Angle	K Factor	GALLONS PER MINUTE @ PSI												Approx. Orifice Dia. (in.)
				3 PSI	5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI		
1/8	FF016	105°	0.00791	0.014	0.018	0.025	0.035	0.043	0.050	0.056	0.061	0.071	0.079	0.112	0.016	
	FF024	105°	0.0158	0.027	0.035	0.050	0.071	0.087	0.100	0.112	0.122	0.141	0.158	0.224	0.024	
	FF028	105°	0.0237	0.041	0.053	0.075	0.106	0.130	0.150	0.168	0.184	0.212	0.237	0.335	0.028	
	FF033	105°	0.0316	0.055	0.071	0.100	0.141	0.173	0.200	0.224	0.245	0.283	0.316	0.447	0.033	
	FF041	145°	0.0474	0.082	0.106	0.150	0.212	0.260	0.300	0.335	0.367	0.424	0.474	0.671	0.041	
	FF046	145°	0.0632	0.110	0.141	0.200	0.283	0.346	0.400	0.447	0.490	0.566	0.632	0.894	0.046	
	FF052	145°	0.0791	0.137	0.177	0.250	0.354	0.433	0.500	0.559	0.612	0.707	0.791	1.11	0.052	
	FF057	145°	0.0949	0.164	0.212	0.300	0.424	0.520	0.600	0.671	0.735	0.849	0.949	1.34	0.057	
	FF065	145°	0.126	0.219	0.283	0.400	0.566	0.693	0.800	0.894	0.980	1.13	1.26	1.79	0.065	
1/8 or 1/4	FF073	145°	0.158	0.274	0.354	0.500	0.707	0.866	1.00	1.12	1.22	1.41	1.58	2.24	0.073	
	FF093	145°	0.237	0.411	0.530	0.750	1.06	1.30	1.50	1.68	1.84	2.12	2.37	3.35	0.093	
	FF104	145°	0.316	0.548	0.707	1.00	1.41	1.73	2.00	2.24	2.45	2.83	3.16	4.47	0.104	
	FF116	145°	0.379	0.657	0.849	1.20	1.70	2.08	2.40	2.68	2.94	3.39	3.79	5.37	0.116	
	FF125	145°	0.395	0.685	0.884	1.25	1.77	2.17	2.50	2.80	3.06	3.54	3.95	5.59	0.125	
	FF129	145°	0.474	0.822	1.06	1.50	2.12	2.60	3.00	3.35	3.67	4.24	4.74	6.71	0.129	
	FF141	145°	0.569	0.986	1.27	1.80	2.55	3.12	3.60	4.02	4.41	5.09	5.69	8.05	0.141	
	FF148	145°	0.632	1.10	1.41	2.00	2.83	3.46	4.00	4.47	4.90	5.66	6.32	8.94	0.148	
1/4	FF156	145°	0.696	1.20	1.56	2.20	3.11	3.81	4.40	4.92	5.39	6.22	6.96	9.84	0.156	
	FF161	145°	0.759	1.31	1.70	2.40	3.39	4.16	4.80	5.37	5.88	6.79	7.59	10.7	0.161	
	FF173	145°	0.854	1.48	1.91	2.70	3.82	4.68	5.40	6.04	6.61	7.64	8.54	12.1	0.173	

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

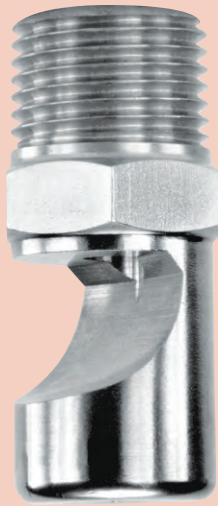
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel, PVC, and PTFE

(PTFE and PVC not available in nozzles FF016 to FF028; PTFE not available in nozzles FF033 to FF065).

FF Dimensions

Pipe Size	Dim. (in.)			Wt. (oz)	
	A	B	C	M	P
1/8	1.00	0.44	0.50	0.49	0.11
1/4	1.38	0.56	0.63	1.23	0.26

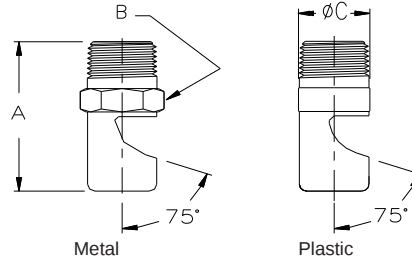
Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.



Metal



All 3/8" FFs in Brass are available with UL approval



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

FF Flow Rates

Fan, 105° and 145° Spray Angles, 1/8" to 1" Pipe Sizes

Male Pipe Size	Nozzle Number	Spray Angle	K Factor	GALLONS PER MINUTE @ PSI											Approx. Orifice Dia. (in.)
				3 PSI	5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	
3/8	FF187	145°	0.949	1.64	2.12	3.00	4.24	5.20	6.00	6.71	7.35	8.49	9.49	13.4	0.187
	FF196	145°	1.11	1.92	2.47	3.50	4.95	6.06	7.00	7.83	8.57	9.90	11.1	15.7	0.196
	FF209	145°	1.18	2.04	2.64	3.73	5.28	6.46	7.46	8.34	9.14	10.1	11.8	16.7	0.209
	FF218	145°	1.26	2.19	2.83	4.00	5.66	6.93	8.00	8.94	9.80	11.3	12.6	17.9	0.218
	FF221	145°	1.42	2.46	3.18	4.50	6.36	7.79	9.00	10.1	11.0	12.7	14.2	20.1	0.221
1/2	FF209	145°	1.18	2.04	2.64	3.73	5.28	6.46	7.46	8.34	9.14	10.1	11.8	16.7	0.209
	FF218	145°	1.26	2.19	2.83	4.00	5.66	6.93	8.00	8.90	9.80	11.3	12.6	17.9	0.218
	FF250	145°	1.66	2.88	3.71	5.25	7.42	9.09	10.5	11.7	12.9	14.8	16.6	23.5	0.250
	FF256	145°	1.90	3.29	4.24	6.00	8.49	10.4	12.0	13.4	14.7	17.0	19.0	26.8	0.256
	FF281	145°	2.21	3.83	4.95	7.00	9.90	12.1	14.0	15.7	17.1	19.8	22.1	31.3	0.281
	FF312	145°	2.53	4.38	5.66	8.00	11.3	13.9	16.0	17.9	19.6	22.6	25.3	35.8	0.312
	FF375	145°	3.79	6.57	8.49	12.0	17.0	20.8	24.0	26.8	29.4	33.9	37.9	53.7	0.375
3/4	FF316	145°	2.85	4.93	6.36	9.00	12.7	15.6	18.0	20.1	22.0	25.5	28.5	40.2	0.316
	FF332	145°	3.16	5.48	7.07	10.0	14.1	17.3	20.0	22.4	24.5	28.3	31.6	44.7	0.332
	FF348	145°	3.48	6.02	7.78	11.0	15.6	19.1	22.0	24.6	26.9	31.1	34.8	49.2	0.348
	FF375	145°	3.79	6.57	8.49	12.0	17.0	20.8	24.0	26.8	29.4	33.9	37.9	53.7	0.375
	FF406	145°	4.43	7.67	9.90	14.0	19.8	24.2	28.0	31.3	34.3	39.6	44.3	62.6	0.406
	FF437	145°	5.06	8.76	11.3	16.0	22.6	27.7	32.0	35.8	39.2	45.3	50.6	71.6	0.437
	FF453	145°	5.69	9.86	12.7	18.0	25.5	31.2	36.0	40.2	44.1	50.9	56.9	80.5	0.453
	FF484	145°	6.64	11.5	14.8	21.0	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	0.484
	FF500	145°	7.59	13.1	17.0	24.0	33.9	41.6	48.0	53.7	58.8	67.9	75.9	107	0.500
1	FF578	145°	9.49	16.4	21.2	30.0	42.4	52.0	60.0	67.1	73.5	84.9	94.9	134	0.578
	FF625	145°	11.5	20.0	25.8	36.5	51.6	63.2	73.0	81.6	89.4	103	115	163	0.625
	FF703	145°	14.2	24.6	31.8	45.0	63.6	77.9	90.0	101	110	127	142	201	0.703
	FF750	145°	16.6	28.8	37.1	52.5	74.2	90.9	105	117	129	148	166	235	0.750

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

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

FF Dimensions

Pipe Size	Dim. (in.)			Wt. (oz)	
	A	B	C	M	P
3/8	1.75	0.68	0.75	2.54	0.53
1/2	2.00	0.88	0.88	4.13	0.88
3/4	2.63	1.38	1.50	12.2	2.57
1	3.38	2.00	2.00	32.0	6.77

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

EZ FF NF SPN

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: EZFF; EZNF; EZSPN; EZWL; EZTF, and EZWT

More EZ tips:

Full Cone: page 30

Hollow Cone: page 46

Flow rates: 0.02 to 42.5 gpm

Spray Angle:

EZFF: 105° and 145°

EZNF: 0°, 15°, 30°, 50°, 65°, 80°, 90°, 110°, 120°

EZSPN: 15°, 25°, 35°, 40° and 50°



EZNF



145° Fan



50° Fan



Base



Gasket



Tip

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

EZFF Flow Rates and Dimensions

Deflected Flat Fan 105° and 145° Spray Angles 1/8" to 1/2" Pipe Sizes

Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI											Approx. Orifice Dia. (in.)	Pipe Size	Approx. Assembly Dim. (in.) Hex Length	Wt. (oz.)
			5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	500 PSI				
1/8"	EZFF016*	0.00791	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.11	0.16	0.18	0.016	1/8"	0.88 1.99	2.2
	EZFF024*	0.0158	0.03	0.05	0.07	0.09	0.10	0.12	0.14	0.16	0.22	0.32	0.35	0.024			
	EZFF028*	0.0237	0.05	0.07	0.11	0.13	0.15	0.18	0.21	0.237	0.34	0.47	0.53	0.028			
	EZFF033*	0.0316	0.07	0.10	0.14	0.17	0.20	0.24	0.28	0.32	0.48	0.63	0.71	0.033			
	EZFF041	0.0474	0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.95	1.06	0.041			
	EZFF046	0.0632	0.14	0.20	0.25	0.37	0.40	0.49	0.57	0.63	0.89	1.26	1.41	0.046			
	EZFF052	0.0791	0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.11	1.58	1.77	0.052			
	EZFF057	0.0949	0.21	0.30	0.42	0.52	0.60	0.74	0.85	0.95	1.34	1.90	2.12	0.057			
	EZFF065	0.126	0.28	0.40	0.57	0.69	0.80	0.98	1.13	1.26	1.79	2.52	2.82	0.065			
	EZFF073	0.158	0.35	0.50	0.71	0.87	1.00	1.22	1.41	1.58	2.24	3.16	3.53	0.073			
TO 1/4"	EZFF093	0.237	0.53	0.75	1.06	1.30	1.50	1.84	2.12	2.37	3.35	4.74	5.30	0.093	1/4"	0.88 2.11	2.2
	EZFF104	0.316	0.71	1.00	1.41	1.73	2.00	2.45	2.83	3.16	4.47	6.32	7.07	0.104			
	EZFF116	0.379	0.85	1.20	1.70	2.08	2.40	2.94	3.39	3.79	5.37	7.58	8.48	0.116			
	EZFF125	0.395	0.88	1.25	1.77	2.17	2.50	3.06	3.54	3.95	5.59	7.90	8.83	0.125			
	EZFF129	0.474	1.06	1.50	2.12	2.60	3.00	3.67	4.24	4.74	6.71	9.48	10.6	0.129			
	EZFF141	0.569	1.27	1.80	2.55	3.12	3.60	4.41	5.09	5.69	8.05	11.4	12.7	0.141			
	EZFF148	0.632	1.41	2.00	2.83	3.46	4.00	4.90	5.66	6.32	8.94	12.6	14.1	0.148			
	EZFF156	0.696	1.58	2.20	3.11	3.81	4.40	5.39	6.22	6.96	9.84	13.9	15.6	0.156			
	EZFF161	0.759	1.70	2.40	3.39	4.16	4.80	5.88	6.79	7.59	10.7	15.2	17.0	0.161			
	EZFF173	0.854	1.91	2.70	3.82	4.68	5.40	6.61	7.64	8.54	12.1	17.1	19.1	0.173			
1/2"	EZFF187	0.949	2.12	3.00	4.24	5.20	6.00	7.35	8.49	9.49	13.4	19.0	21.2	0.187	1/2"	0.88 2.23	2.9
	EZFF196	1.11	2.47	3.50	4.95	6.06	7.00	8.57	9.90	11.1	15.7	22.2	24.8	0.196			
	EZFF218	1.26	2.83	4.00	5.66	6.93	8.00	9.80	11.3	12.6	17.9	25.2	28.2	0.218			
	EZFF221	1.42	3.18	4.50	6.36	7.79	9.00	11.0	12.7	14.2	20.1	28.4	31.8	0.221			
	EZFF250	1.66	3.71	5.25	7.42	9.09	10.5	12.9	14.8	16.6	23.5	33.2	37.1	0.250			
	EZFF256	1.90	4.24	6.00	8.49	10.4	12.0	14.7	17.0	19.0	26.8	38.0	42.5	0.256			
1/4" TO 1/2"																	

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

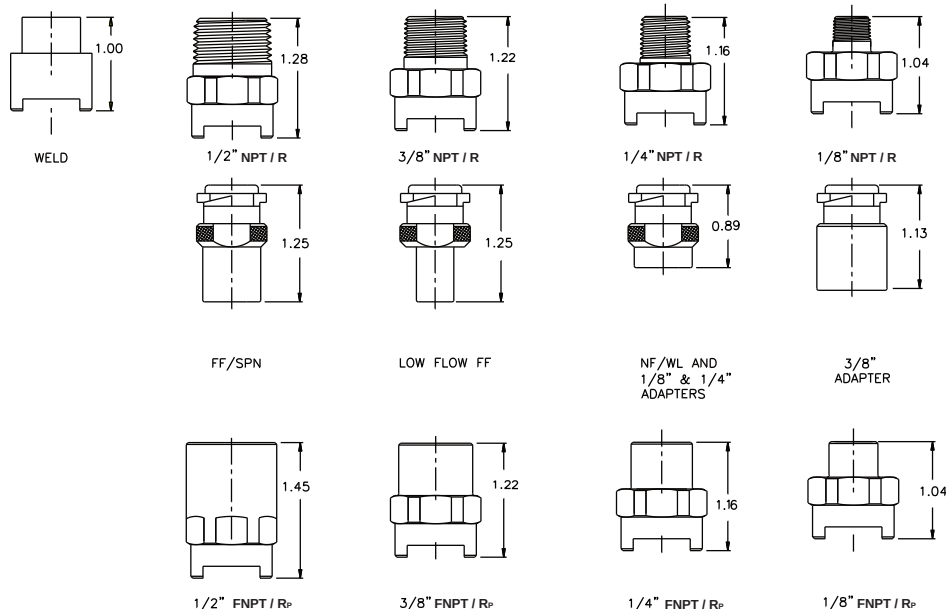
*Available in 105° only; all others 145° FF218 - FF256 not available with 1/8" base

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

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

www.BETE.com

TO ORDER: specify pipe size, connection type, nozzle number, spray angle, and material.



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

EZNF Flow Rates and Dimensions

Fan and Straight Jet 0°, 15°, 30°, 50°, 65°, 80°, 90°, 110° and 120° Spray Angles 1/8" to 1/2" Pipe Sizes

Pipe Size	Nozzle Number	K Factor	GALLONS PER MINUTE @ PSI											Equivalent 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"	EZNF01	0.0158	0.03	0.05	0.07	0.09	0.10	0.12	0.14	0.16	0.22	0.31	0.35	0.026	1/8"	0.88	1.63	2.2	
	EZNF015	0.0237	0.05	0.07	0.11	0.13	0.15	0.18	0.21	0.24	0.33	0.47	0.53	0.031					
	EZNF02	0.0316	0.07	0.10	0.14	0.17	0.20	0.24	0.28	0.32	0.48	0.63	0.71	0.036					
	EZNF025	0.0395	0.09	0.12	0.18	0.22	0.25	0.31	0.35	0.40	0.56	0.79	0.88	0.040					
	EZNF03	0.0474	0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.95	1.06	0.043	1/4"	0.88	1.75	2.2	
	EZNF04	0.0632	0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.26	1.41	0.052					
	EZNF05	0.0791	0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.12	1.58	1.77	0.057					
	EZNF06	0.0949	0.21	0.30	0.42	0.52	0.60	0.73	0.85	0.95	1.34	1.90	2.12	0.062					
	1/2"	EZNF08	0.126	0.28	0.40	0.57	0.69	0.80	0.98	1.13	1.26	1.79	2.53	2.83	0.072	3/8"	0.88	1.81	2.6
		EZNF10	0.158	0.35	0.50	0.71	0.87	1.00	1.22	1.41	1.58	2.24	3.16	3.54	0.080				
EZNF15		0.237	0.53	0.75	1.06	1.30	1.50	1.84	2.12	2.37	3.35	4.74	5.30	0.094					
EZNF20		0.316	0.71	1.00	1.41	1.73	2.00	2.45	2.83	3.16	4.47	6.32	7.07	0.109					
EZNF30		0.474	1.06	1.50	2.12	2.60	3.00	3.67	4.24	4.74	6.71	9.49	10.6	0.141	1/2"	0.88	1.87	2.9	
EZNF40		0.632	1.41	2.00	2.83	3.46	4.00	4.90	5.66	6.32	8.94	12.6	14.1	0.156					
EZNF50		0.791	1.77	2.50	3.54	4.33	5.00	6.12	7.07	7.91	11.2	15.8	17.7	0.172					
1/4" - 1/2"	EZNF60	0.949	2.12	3.00	4.24	5.20	6.00	7.35	8.49	9.49	13.4	19.0	21.2	0.185	1/2"	0.88	1.87	2.9	
	EZNF70	1.11	2.47	3.50	4.95	6.06	7.00	8.57	9.90	11.1	15.6	22.1	24.8	0.203					
	EZNF80	1.26	2.83	4.00	5.66	6.93	8.00	9.80	11.3	12.6	17.9	25.3	28.3	0.219					
	EZNF90	1.42	3.18	4.50	6.36	7.79	9.00	11.0	12.7	14.2	20.1	28.4	31.8	0.234					

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

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

EZSPN Flow Rates and Dimensions

Fan 15°, 25°, 35°, 40° and 50° Spray Angles 1/8" to 1/2" Pipe Sizes

Pipe Size	Nozzle Number	Available Spray Angles			K Factor	GALLONS PER MINUTE @ PSI											Equiv. Orifice Dia. (in.)	Deflection Angle @ Spray Angle 15° 25° 35° 40° 50°			Approx. Assembly Dim. (in.) Hex Length		Wt. (oz.)
						5 PSI	10 PSI	20 PSI	40 PSI	80 PSI	100 PSI	200 PSI	400 PSI	500 PSI									
1/8"	EZSPN10	15°	35°	50°	0.158	0.35	0.50	0.71	1.00	1.40	1.60	2.20	3.16	3.54	0.057	5°	35°	55°	1/8"	0.88	1.99	2.2	
	EZSPN20	15°	35°	50°	0.316	0.71	1.00	1.41	2.00	2.83	3.16	4.47	6.32	7.07	0.080	5°	35°	45°					
	EZSPN25			50°	0.395	0.88	1.25	1.77	2.50	3.54	3.90	5.59	7.91	8.84	0.094			50°					
	TO	EZSPN30	15°	35°		0.474	1.06	1.50	2.12	3.00	4.24	4.74	6.71	9.49	10.6	0.109	5°	28°	1/4"	0.88	2.11	2.2	
		EZSPN40	15° 25°	35° 40° 50°	0.632	1.41	2.00	2.83	4.00	5.66	6.32	9.00	12.6	14.1	0.141	5° 20°	35° 35° 55°						
1/2"	EZSPN50		35° 40°		0.791	1.77	2.50	3.54	5.00	7.07	7.91	11.2	15.8	17.7	0.156		23° 33°						
	EZSPN60	15°	35° 40° 50°		0.949	2.12	3.00	4.24	6.00	8.49	9.49	13.4	19.0	21.2	0.172	5°	20° 33° 35°	3/8"	0.88	2.17	2.6		
	EZSPN70		40°	1.11	2.47	3.50	4.95	7.00	9.90	11.1	15.7	22.1	24.7	0.185		29°							
1/4"	EZSPN80	15°	35° 40° 50°		1.27	2.83	4.00	5.66	8.00	11.3	12.6	17.9	25.3	28.3	0.203	5°	25° 26° 35°	1/2"	0.88	2.23	2.9		
TO	EZSPN90		40°	1.42	3.18	4.50	6.36	9.00	12.7	14.2	20.1	28.5	31.8	0.219		28°							
1/2"	EZSPN100	15°	35° 40° 50°		1.58	3.54	5.00	7.07	10.0	14.1	15.8	22.4	31.6	35.4	0.234	5°	25° 28° 40°						

$$\text{Flow Rate (GPM)} = K \sqrt{\text{PSI}} \quad \text{SPN80 - SPN100 not available with 1/8" base}$$

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

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

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:

Full Cone: page 31

Hollow Cone: page 48

Flow rates: 0.35 to 15.8 gpm

Spray angles:

Fan: 40°, 50°, 65°, 80°, 95°

Hollow Cone: 50°, 65°, 90°

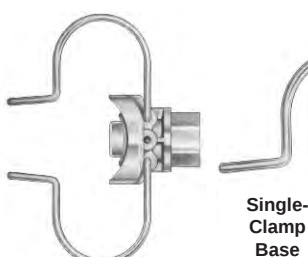
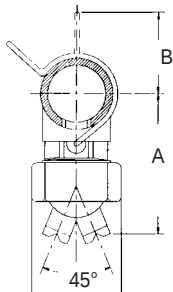
Full Cone: 35°, 65°, 80°



Snap-In Fan Tip



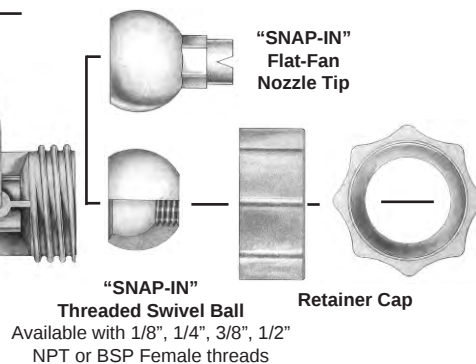
50° Fan



Double-Clamp Adapter



Single-Clamp Adapter



"SNAP-IN" Threaded Swivel Ball
Available with 1/8", 1/4", 3/8", 1/2"
NPT or BSP Female threads

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 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 Fan 40°, 50°, 65°, 80°, 95° Spray Angles 1", 1-1/4", 1-1/2" and 2" Pipe Sizes

Nozzle No.	Available Spray Angles	K Factor	GALLONS PER MINUTE @ PSI									Equiv. Orifice Dia. (in.)	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	
SF10	80°	0.158	0.35	0.50	0.61	0.71	0.87	1.00	1.22	1.41	1.58	0.078	1"	blue	3.3	1.7	2.0
SF20	65°	0.316	0.71	1.00	1.22	1.41	1.73	2.00	2.45	2.83	3.16	0.109					
SF30	65°	0.474	1.06	1.50	1.84	2.12	2.60	3.00	3.67	4.24	4.74	0.141	1-1/4"	red	3.4	1.9	2.2
SF40	65°	0.632	1.41	2.00	2.45	2.83	3.46	4.00	4.90	5.66	6.32	0.156					
SF50	40° 50° 65°	0.791	1.77	2.50	3.06	3.54	4.33	5.00	6.12	7.07	7.91	0.172	1-1/2"	purple	3.6	2.0	2.2
SF60	50° 65° 80° 95°	0.949	2.12	3.00	3.67	4.24	5.20	6.00	7.35	8.49	9.49	0.188					
SF70	50° 80°	1.11	2.47	3.50	4.29	4.95	6.06	7.00	8.57	9.90	11.1	0.203	2"	green	3.7	2.2	2.2
SF100	50°	1.58	3.53	5.00	6.12	7.07	8.65	10.0	12.2	14.1	15.8	0.250					

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

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.

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

www.BETE.com

TO ORDER: specify pipe size, connection type, nozzle number, spray angle, and material.

SPN

High Impact/Narrow Fan Spray

DESIGN FEATURES

- One-piece/heavy construction
- Straight-through orifice minimizes clogging
- Machined from bar stock to exacting standards
- Male connection

SPRAY CHARACTERISTICS

- Yields highest impact, narrow flat spray with least atomization
- Spoon-shaped deflector surface efficiently forms a hard-driving spray

Spray pattern: Fan

Spray angles: 15°, 25°, 35°, 40°, 50°

Flow rates: 0.50 to 44.7 gpm



Metal



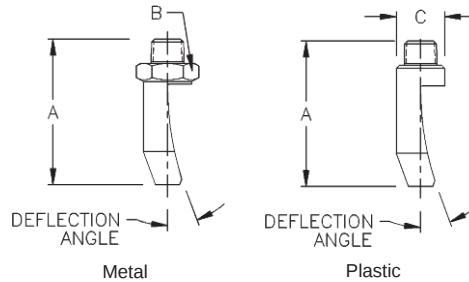
Plastic



FAN



Fan 50°



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

SPN Flow Rates and Dimensions

Fan, 15°, 25°, 35°, 40° and 50° Spray Angles, 1/8" to 3/4" Pipe Sizes

Male Pipe Size	Nozzle Number	Available Spray Angles	K Factor	GALLONS PER MINUTE @ PSI										Approx. Orifice Dia. (in.)	Deflection Angle @ Spray Angle 15° 25° 35° 40° 50°	Dimensions (inches)			Wt (oz) Metal
				10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	Metals Only						
													A			B	C		
1/8	SPN 04	35°	0.063	0.20	0.28	0.35	0.40	0.45	0.49	0.56	0.63	0.89	0.049	15°	0.70	0.50	0.56	0.50	
1/4	SPN 10	15° 35° 50°	0.158	0.50	0.71	0.87	1.00	1.12	1.21	1.40	1.58	2.20	0.078	5° 35° 55°	2.00	0.88	0.75	2.50	
	SPN 20	15° 35° 50°	0.316	1.00	1.41	1.73	2.00	2.24	2.50	2.80	3.16	4.50	0.109	5° 35° 45°					
	SPN 25	15° 35° 50°	0.395	1.30	1.80	2.20	2.50	2.80	3.10	3.50	3.95	5.60	0.120	50°					
	SPN 40	25° 50°	0.633	2.00	2.83	3.50	4.00	4.47	4.90	5.66	6.33	8.90	0.152	20° 45°					
3/8	SPN 20	35°	0.316	1.00	1.41	1.73	2.00	2.24	2.40	2.83	3.16	4.50	0.109	30°	3.00	1.12	1.00	8.00	
	SPN 25	35°	0.395	1.25	1.77	2.17	2.50	2.80	3.06	3.54	3.95	5.59	0.120	28° 45°					
	SPN 30	15° 35°	0.474	1.50	2.12	2.60	3.00	3.35	3.67	4.24	4.74	6.71	0.125	5° 28°					
	SPN 40	15° 35° 40° 50°	0.633	2.00	2.83	3.46	4.00	4.47	4.90	5.66	6.33	9.00	0.152	5° 35° 35° 50°					
	SPN 50	35° 40°	0.791	2.50	3.54	4.33	5.00	5.59	6.12	7.07	7.91	11.2	0.171	23° 33°					
	SPN 60	15° 35° 40° 50°	0.949	3.00	4.24	5.20	6.00	6.71	7.35	8.49	9.49	13.4	0.187	5° 20° 33° 35°					
	SPN 70	40°	1.11	3.50	4.95	6.06	7.00	7.83	8.57	9.90	11.1	15.7	0.199	29°					
	SPN 80	15° 35° 40° 50°	1.26	4.00	5.66	6.93	8.00	8.90	9.80	11.3	12.6	17.9	0.209	5° 25° 26° 35°					
	SPN 90	40°	1.42	4.50	6.36	7.80	9.00	10.1	11.0	12.7	14.2	20.1	0.218	28°					
	SPN 100	15° 35° 40° 50°	1.58	5.00	7.10	8.60	10.0	11.2	12.2	14.1	15.8	22.3	0.234	5° 25° 28° 40°					
	SPN 120	15° 35° 50°	1.90	6.00	8.49	10.4	12.0	13.4	14.7	17.0	19.0	26.8	0.265	5° 25° 40°					
	SPN 125	50°	1.98	6.25	8.84	10.8	12.5	14.0	15.3	17.7	19.8	28.0	0.272	38°					
SPN 160	35° 50°	2.53	8.00	11.3	13.9	16.0	17.9	19.6	23.0	25.3	35.8	0.312	25° 37°						
SPN 200	50°	3.16	10.0	14.2	17.0	20.0	22.4	24.0	28.0	31.6	44.7	0.328	32°						
1/2	SPN 60	15° 35°	0.949	3.00	4.24	5.20	6.00	6.71	7.35	8.49	9.49	13.4	0.187	5° 27°	4.50	1.38	1.25	19.0	
	SPN 80	15° 35° 50°	1.26	4.00	5.66	6.93	8.00	8.14	9.80	11.3	12.6	17.9	0.209	5° 25°					
	SPN 100	15° 35°	1.58	5.00	7.10	8.60	10.0	11.2	12.2	14.1	15.8	22.4	0.234	5° 19°					
	SPN 140	15° 35° 50°	2.21	7.00	10.0	12.0	14.0	15.7	17.0	20.0	22.1	32.0	0.296	5° 25° 40°					
	SPN 160	15° 35° 50°	2.53	8.00	11.3	13.9	16.0	17.9	19.5	22.5	25.2	35.5	0.312	5° 25° 40°					
3/4	SPN 160	35°	2.53	8.00	11.3	13.9	16.0	17.9	19.6	22.6	25.3	35.8	0.312	23°	4.88	1.75	1.69	30.0	
	SPN 200	15° 35°	3.16	10.0	14.2	17.0	20.0	22.4	24.0	28.0	31.6	44.7	0.328	5° 22°					

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

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

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