

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

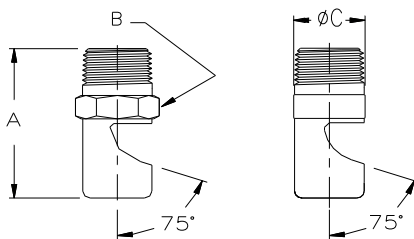
- Extra-wide 105° and 145° spray angles
 - Medium-impact spray
 - Spray discharge deflected 75° from inlet axis
 - Coarse atomization
- Spray pattern:** Flat Fan
Spray angle: 105° or 145°, as listed
Flow rates: 0.014 to 235 gpm



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	

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

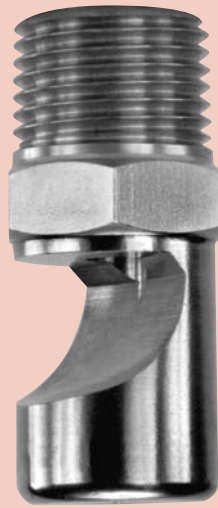
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel, PVC, and PTFE

(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

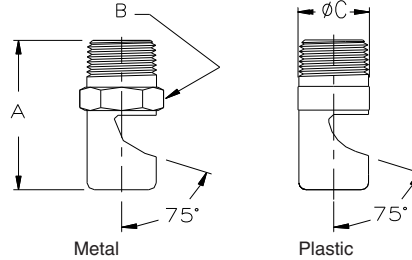
Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.



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															FF Dimensions						
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.)	Pipe Size	Dim. (in.)			Wt. (oz)	
				3 PSI	5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI			A	B	C	M	P
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	3/8	1.75	0.68	0.75	2.54	0.53
	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	1/2	2.00	0.88	0.88	4.13	0.88
	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	3/4	2.63	1.38	1.50	12.2	2.57
	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						
	FF368	145°	3.79	6.60	8.50	12.0	17.0	20.8	24.0	26.8	29.4	33.9	38.0	53.7	0.368						
	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	1	3.38	2.00	2.00	32.0	6.77
	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						

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.



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