FF

Extra-Wide Angle

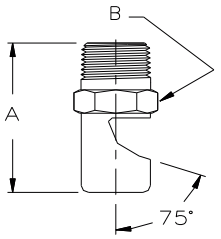
DESIGN FEATURES
- One-piece construction
- Clog-resistant
- Durable
- All 3/8" FFs in Brass are available with UL approval
- Male connection

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

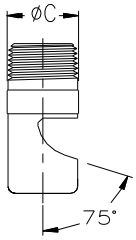
Spray pattern: Flat Fan
Spray angle: 105° or 145°, as listed
Flow rates: 0.014 to 235 gpm

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 3 PSI	5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	Approx. Orifice Dia. (in.)
	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
1/8	**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
	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
1/8	**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
or	**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
1/4	**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
	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
1/4	**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

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

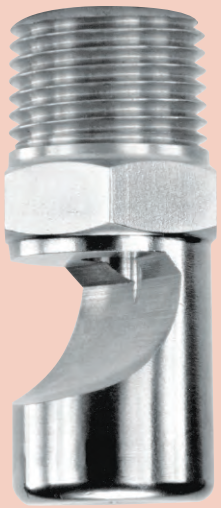
FF Dimensions

Pipe Size	Dim. (in.) A	B	C	Wt. (oz) 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

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).

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.*



Metal

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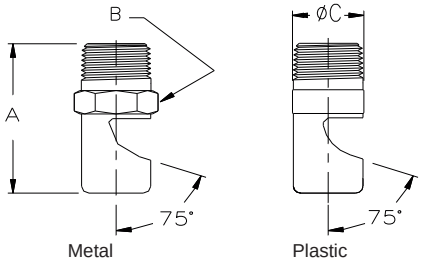

Dimensions are approximate. Check with BETE for critical dimension applications.

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 3 PSI	5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	Approx. Orifice Dia. (in.)
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

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

FF Dimensions

Pipe Size	Dim. (in.) A	B	C	Wt. (oz) 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

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.