

TFE

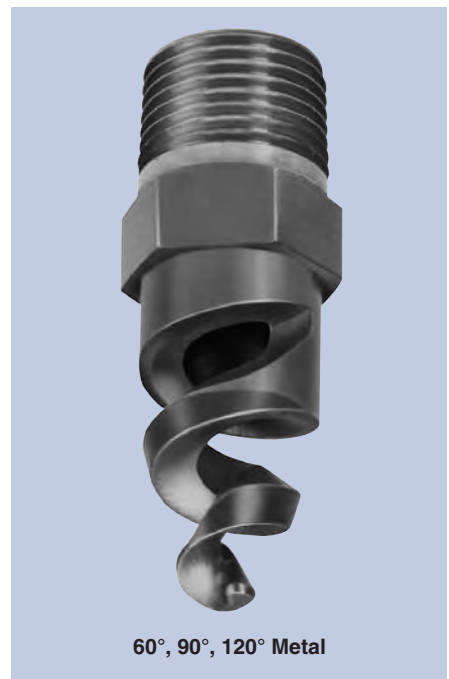
Wide Range of Flows and Angles

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
- TF24-150 has FM approval

SPRAY CHARACTERISTICS

- Wide range of flow rates and spray angles
 - Fine atomization
- Spray patterns:** Full and Hollow Cone
Spray angles: 50° to 180°
Flow rates: 0.5 to 3320 gpm (Higher flow rates available)



60°, 90°, 120° Metal



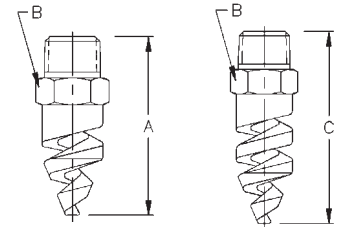
Full Cone 60° (NN)



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

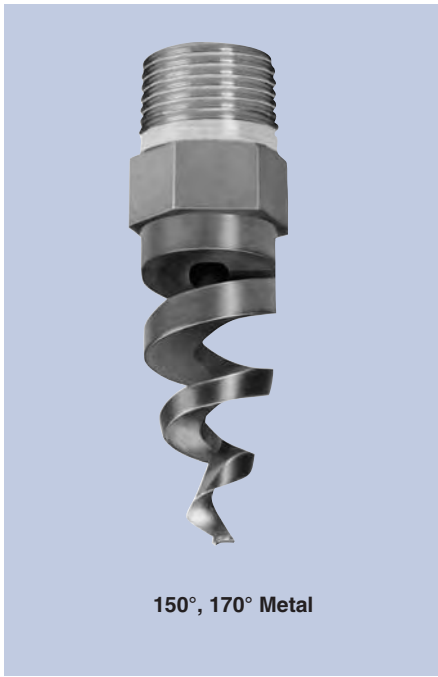
Full Cone, 60° (NN), 90° (FCN or FFCN), 120° (FC or FFC), 150° and 170° Spray Angles, 1/8" to 4" Pipe Sizes

Male Pipe Size	Nozzle Number	Available Spray Angles 60° 90° 120° 150° 170°	K Factor	GALLONS PER MINUTE @ PSI											Approx. (in.)		Dim. (in.) for Metal Only*			Wt. (oz.)	
				5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	Free Orif. Dia.	Pass. Dia.	A**	B	C	60° 90° Metal Plas.	120° Metal Plas.
1/8	TF6	60° 90° 120° 150° 170°	0.221	0.495	0.70	0.99	1.21	1.40	1.57	1.71	1.98	2.21	3.13	4.43	0.09	0.09	1.69	0.56	1.69	1.00	0.20
	TF8	60° 90° 120° 150° 170°	0.411	0.919	1.30	1.84	2.25	2.60	2.91	3.18	3.68	4.11	5.81	8.22	0.13	0.13	1.69	0.56	2.19		
1/4	TF6	60° 90° 120° 150° 170°	0.221	0.495	0.70	0.99	1.21	1.40	1.57	1.71	1.98	2.21	3.13	4.43	0.09	0.09	1.88	0.56	1.88	1.25	0.20
	TF8	60° 90° 120° 150° 170°	0.411	0.919	1.30	1.84	2.25	2.60	2.91	3.18	3.68	4.11	5.81	8.22	0.13	0.13	1.88	0.56	2.38		
	TF10	60° 90° 120° 150° 170°	0.632	1.41	2.00	2.83	3.46	4.00	4.47	4.90	5.66	6.32	8.94	12.6	0.16	0.13	1.88	0.56	2.38		
3/8	TF6	60° 90° 120°	0.221	0.495	0.70	0.99	1.21	1.40	1.57	1.71	1.98	2.21	3.13	4.43	0.09	0.09					
	TF8	60° 90° 120°	0.411	0.919	1.30	1.84	2.25	2.60	2.91	3.18	3.68	4.11	5.81	8.22	0.13	0.13					
	TF10	60° 90° 120°	0.632	1.41	2.00	2.83	3.46	4.00	4.47	4.90	5.66	6.32	8.94	12.6	0.16	0.13					
	TF12	60° 90° 120° 150° 170°	0.949	2.12	3.00	4.24	5.20	6.00	6.71	7.35	8.49	9.49	13.4	19.0	0.19	0.13	1.88	0.69	2.38	1.63	0.25
	TF14	60° 90° 120° 150° 170°	1.28	2.86	4.05	5.73	7.01	8.10	9.06	9.92	11.5	12.8	18.1	25.6	0.22	0.13					
	TF16	60° 90° 120° 150° 170°	1.68	3.75	5.30	7.50	9.18	10.6	11.9	13.0	15.0	16.8	23.7	33.5	0.25	0.13					
1/2	TF20	60° 90° 120° 150° 170°	2.61	5.83	8.25	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	0.31	0.13					
	TF24	60° 90° 120° 150° 170°	3.81	8.52	12.1	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	0.38	0.19	2.50	0.88	3.06	3.00	0.50
3/4	TF28	60° 90° 120° 150° 170°	5.22	11.7	16.5	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104	0.44	0.19					
	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	60° 90° 120° 150° 170°	10.6	23.7	33.5	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212	0.63	0.25					
	TF48	60° 90° 120° 150° 170°	15.0	33.6	47.5	67.2	82.3	95.0	106	116	134	150	212	300	0.75	0.25	3.63	1.38	4.38	8.50	2.50
1 1/2	TF56	60° 90° 120° 150° 170°	20.4	45.6	64.5	91.2	112	129	144	158	182	204	288	408	0.88	0.31					
	TF64	60° 90° 120° 150° 170°	26.7	59.7	84.5	120	146	169	189	207	239	267	378	534	1.00	0.31	4.38	2.00	5.38	22.0	4.25
	TF72	60° 90° 120° 150° 170°	30.4	67.9	96.0	136	166	192	215	235	272	304	429	607	1.13	0.31					
2	TF88	60° 90° 120° 150° 170°	44.3	99.0	140	198	242	280	313	343	396	443	626	885	1.38	0.44	5.63	2.50	5.88	46.0	8.00
	TF96 ¹	60° 90° 120° 150° 170°	55.9	125	177	250	306	354	395	433	500	559	791	1120	1.50	0.44	6.88	2.50	7.00	54.0	9.00
3	TF112 ¹	60° 90° 120° 150° 170°	81.0	181	256	362	443	512	572	627	724	810	1150	1620	1.75	0.56					
	TF128 ¹	60° 90° 120° 150° 170°	107	239	339	480	588	679	759	831	960	1070	1510	2150	2.00	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

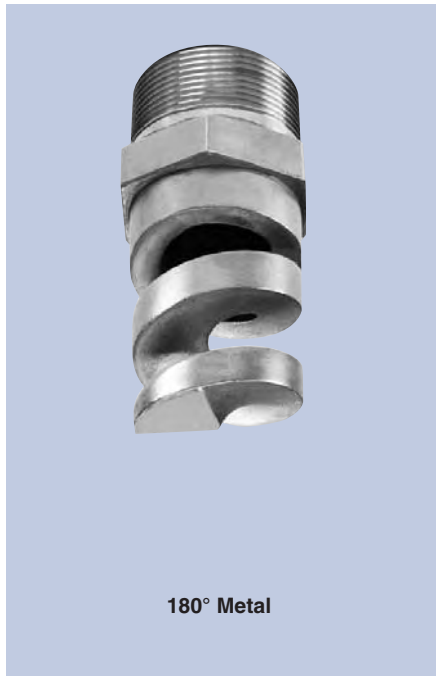
Flow Rate (GPM) = $K \sqrt{PSI}$ *Dimensions are for bar stock, cast sizes may vary. **60° nozzles slightly longer, consult BETE. ¹ Three turn nozzles

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

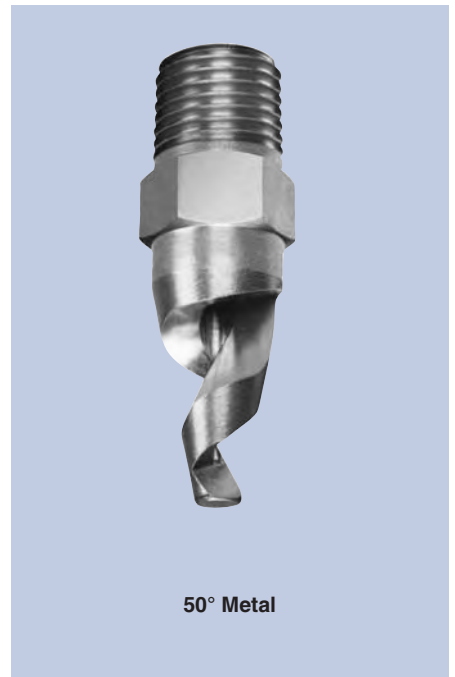
Spray angle performance varies with pressure. Contact BETE for specific data on critical applications.



150°, 170° Metal



180° Metal



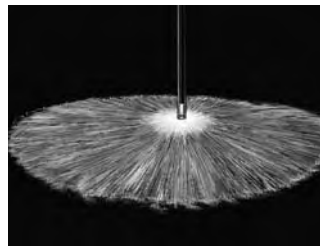
50° Metal



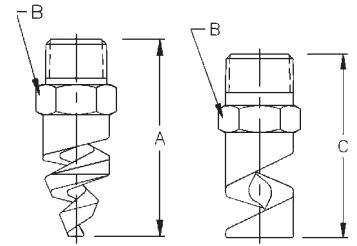
Hollow Cone 50° (N)



Hollow Cone 120° (W)



Hollow Cone 180° (XW)



50°, 60°, 90°, 120°

180°

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

TF Hollow Cone Flow Rates and Dimensions

Hollow Cone, 50° (N), 60° (V), 90° (M), 120° (W), and 180° (XW) Spray Angles, 1/4" to 4" Pipe Sizes

Male Pipe Size	Nozzle Number	Available Spray Angles					K Factor	GALLONS PER MINUTE @ PSI										Operation above 60 PSI not recom. for PTFE		High PSI operation recom. for Metal Only		Approx. (in.)		Dim. (in.) for Metal Only*			Wt. (oz.) 180° Metal Plas.	
		50°	60°	90°	120°	180°		5	10	20	30	40	50	60	80	100	200	400	Orif. Dia.	Free Pass. Dia.	A	B	C					
1/4	TF6	50°	60°	90°	120°	0.221	0.495	0.70	0.99	1.21	1.40	1.57	1.71	1.98	2.21	3.13	4.43	0.09	0.09	1.88	0.56			1.25	0.25			
	TF8	50°	60°	90°	120°	180°	0.411	0.919	1.30	1.84	2.25	2.60	2.91	3.18	3.68	4.11	5.81	8.22	0.13	0.13	1.88	0.56	1.88					
	TF10	50°	60°	90°	120°	180°	0.632	1.41	2.00	2.83	3.46	4.00	4.47	4.90	5.66	6.32	8.94	12.6	0.16	0.13	1.88	0.56	1.88					
3/8	TF12	50°	60°	90°	120°	180°	0.949	2.12	3.00	4.24	5.20	6.00	6.71	7.35	8.49	9.49	13.4	19.0	0.19	0.13								
	TF14	50°	60°	90°	120°	180°	1.28	2.86	4.05	5.73	7.01	8.10	9.06	9.92	11.5	12.8	18.1	25.6	0.22	0.13	1.88	0.69	1.88	1.75	0.25			
	TF16	50°	60°	90°	120°	180°	1.68	3.75	5.30	7.50	9.18	10.6	11.9	13.0	15.0	16.8	23.7	33.5	0.25	0.13								
	TF20	50°	60°	90°	120°	180°	2.61	5.83	8.25	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	0.31	0.13								
1/2	TF24	50°	60°	90°	120°	180°	3.81	8.52	12.1	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	0.38	0.19	2.50	0.88 ¹	2.38	3.00	0.50			
	TF28	50°	60°	90°	120°	180°	5.22	11.7	16.5	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104	0.44	0.19								
3/4	TF32	50°	60°	90°	120°	180°	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	3.00	3.00	1.00			
1	TF40	60°	90°	120°	180°	10.6	23.7	33.5	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212	0.63	0.25	3.63	1.38 ²	3.63	15.0	3.00				
	TF48	60°	90°	120°	180°	15.0	33.6	47.5	67.2	82.3	95.0	106	116	134	150	212	300	0.75	0.25									
1 1/2	TF56	60°	90°	120°	180°	20.4	45.6	64.5	91.2	112	129	144	158	182	204	288	408	0.88	0.31	4.38	2.00	4.38	30.0	6.00				
	TF64	60°	90°	120°	180°	26.7	59.7	84.5	120	146	169	189	207	239	267	378	534	1.00	0.31									
	TF72	60°	90°	120°	180°	30.4	67.9	96.0	136	166	192	215	235	272	304	429	607	1.13	0.31									
2	TF88	60°	90°	120°	180°	44.3	99.0	140	198	242	280	313	343	396	443	626	885	1.38	0.44	5.63	2.50	5.00	46.0	8.00				
	TF96	60°	90°	120°	180°	55.9	125	177	250	306	354	395	433	500	559	791	1120	1.50	0.44	6.88	2.50	5.00	54.0	9.00				
3	TF112	60°	90°	120°		81.0	181	256	362	443	512	572	627	724	810	1150	1620	1.75	0.56	8.63	3.50							
	TF128	60°	90°	120°		107	239	339	480	588	679	759	831	960	1070	1510	2150	2.00	0.56									
4	TF160	60°	90°	120°		166	371	525	742	909	1050	1170	1290	1480	1660	2350	3320	2.50	0.63	10.1	4.50							

Flow Rate (GPM) = K √PSI

*Dimensions are for bar stock, cast sizes may vary.

¹ 1.00 for 180°

² 1.63 for 180°

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

TF 24 150° available in Factory Mutual approved brass

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