



# TF

## Wide Range of Flows and Angles

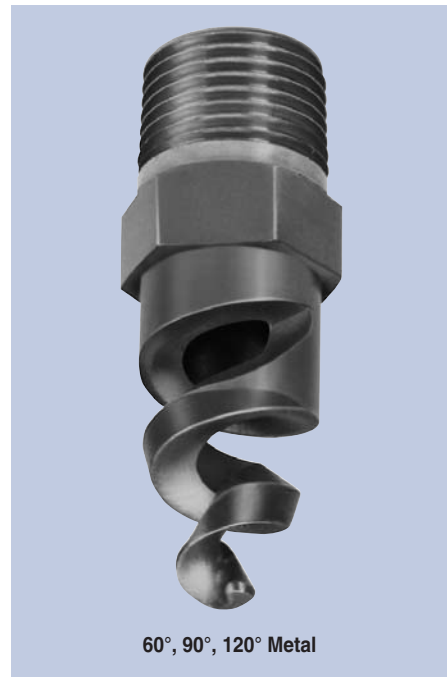
### DESIGN FEATURES

- 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



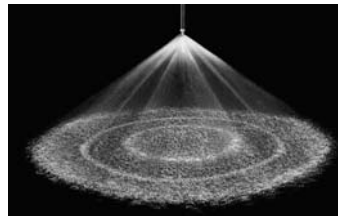
60°, 90°, 120° Metal



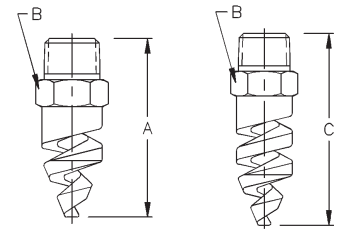
Full Cone 60° (NN)



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										Approx. (in.)		Dim. (in.) for Metal Only*			60° 90° 120°		
				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	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	1.88	0.69	2.38	1.63	0.25
	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					
	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					
1/2	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					
	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	3.63	1.38	4.38	8.50	2.50
	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					
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 <sup>1</sup>	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 <sup>1</sup>	60° 90° 120° 150° 170°	81.0	181	256	362	443	512	572	627	724	810	1150	1620	1.75	0.56	8.63	3.50	9.25	114	20.0
	TF128 <sup>1</sup>	60° 90° 120° 150° 170°	107	239	339	480	588	679	759	831	960	1070	1510	2150	2.00	0.56					
4	TF160 <sup>1</sup>	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 √PSI \*Dimensions are for bar stock, cast sizes may vary. \*\*60° nozzles slightly longer, consult BETE. <sup>1</sup> Three turn nozzles

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene, Cobalt Alloy 6, and PTFE (Poly. not available for TF6 thru TF10).

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

# TF

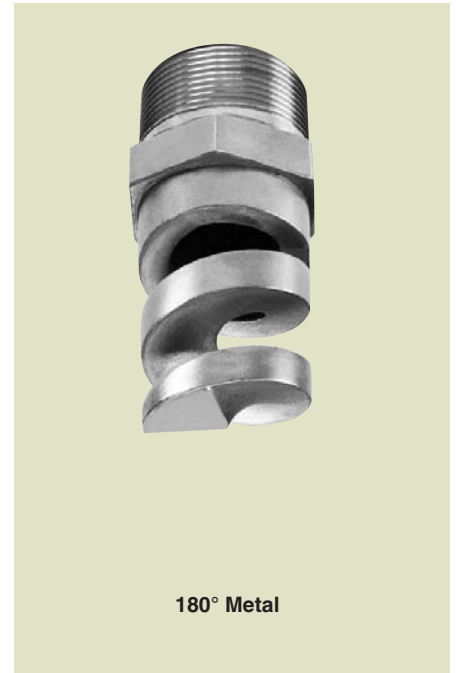
## Wide Range of Flows and Angles

### DESIGN FEATURES

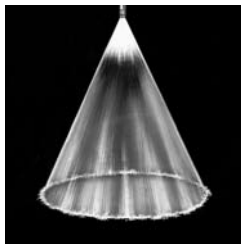
- The original spiral nozzle invented by BETE and continuously improved!
- High energy efficiency
- One-piece/no internal parts
- Clog-resistant performance
- High discharge velocity
- Male connection standard; female connection available by special order

### SPRAY CHARACTERISTICS

- Wide range of flow rates and spray angles
  - Fine atomization
- Spray patterns:** Hollow Cone  
For Full Cone, see page 20
- Spray angles:** 50° to 180°
- Flow rates:** 0.5 to 3320 gpm  
(Higher flow rates available)



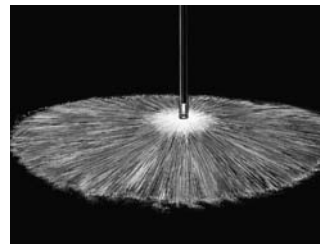
HOLLOW CONE



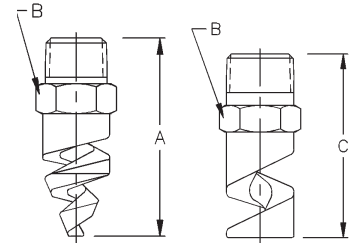
Hollow Cone 50° (N)



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										Approx. (in.)		Dim. (in.) for Metal Only*			Wt. (oz.) 180° Metal Plas.					
		50°	60°	90°	120°		180°	5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	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						
	TF8	50°	60°	90°	120°	180°	0.411	0.919	1.30	1.84	2.25	2.60	2.91	3.18	.68	4.11	5.81	8.22	0.13	0.13	1.88	0.56	1.88	1.25	0.25		
	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 <sup>1</sup>	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 <sup>2</sup>	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								
	TF64	60°	90°	120°	180°	26.7	59.7	84.5	120	146	169	189	207	239	267	378	534	1.00	0.31	4.38	2.00	4.38	30.0	6.00			
	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	12.75					

Flow Rate (GPM) = K √PSI

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

<sup>1</sup> 1.00 for 180°

<sup>2</sup> 1.63 for 180°

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

TF8 and TF 24 150° are Factory Mutual approved. Contact BETE for more information.

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.