



THE  
**SPRAY NOZZLE**  
PEOPLE

# TF

Wide range of flows  
and angles



## FULL CONE

### 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 atomisation
- ✓ Spray patterns: Full cone
- ✓ For hollow cone, see TF - Hollow Cone
- ✓ Spray angles: 50° to 180°
- ✓ Flow rates: 2.26 to 10700 l/min (Higher flow rates available)



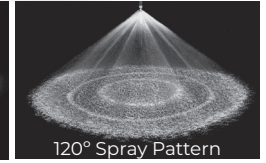
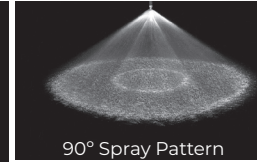
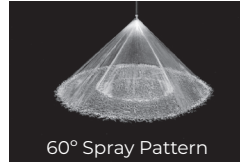
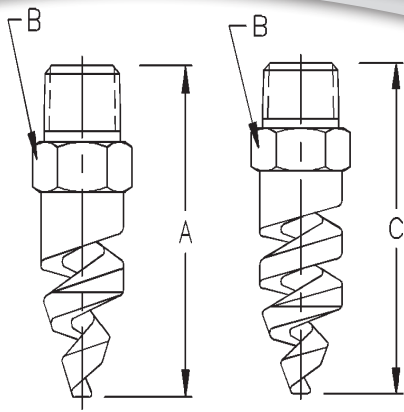
The TF nozzle is the original Spiral Nozzle designed by Bete Fog Nozzle. Its spiral shape shears the liquid into multiple cones with the intercone sections filled with finer droplets to create a full cone pattern. The spiral design gives excellent clog resistance and also tends to atomise the fluid better than conventional nozzles resulting in a finer drop size. Full cone TF nozzles are used in a wide variety of applications including:

Gas scrubbing  
Gas cooling  
Evaporative cooling  
Evaporation ponds  
Moistening  
And many more.

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The Go-to People for spray nozzle solutions



## TF Full Cone Flow Rates and Dimensions

Full Cone, 60° (NN), 90° (FCN or FFCN), 120° (FC), 150° and 170° Spray Angles, 1/8" to 4" Pipe Sizes, BSP or NPT  
Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene and PTFE (poly not available for TF6-TF10)

Litres per minute @ BAR

| Male Pipe Size | Nozzle No          | Available Spray Angles | K    | Flow Rates (L/min) @ BAR |      |      |      |      |      |      |       |          |           | Dimensions (mm) |      |      | Weight (g) |      |
|----------------|--------------------|------------------------|------|--------------------------|------|------|------|------|------|------|-------|----------|-----------|-----------------|------|------|------------|------|
|                |                    |                        |      | 0.5                      | 0.7  | 1    | 2    | 3    | 5    | 10   | 20    | Orif Dia | Free Pass | A               | B    | C    | Met        | Plas |
| 1/8"           | TF6                | 60° 90° 120° 150° 170° | 3.19 | 2.26                     | 2.67 | 3.19 | 4.5  | 5.5  | 7.1  | 10.1 | 14.3  | 2.38     | 2.38      | 42.9            | 14.3 | 42.9 | 28         | 6    |
|                | TF8                | 60° 90° 120° 150° 170° | 5.93 | 4.19                     | 4.96 | 5.93 | 8.4  | 10.3 | 13.2 | 18.7 | 26.5  | 3.18     | 3.18      | 42.9            | 14.3 | 55.6 |            |      |
| 1/4"           | TF6                | 60° 90° 120° 150° 170° | 3.19 | 2.26                     | 2.67 | 3.19 | 4.5  | 5.5  | 7.1  | 10.1 | 14.3  | 2.38     | 2.38      | 47.6            | 14.3 | 47.6 |            |      |
|                | TF8                | 60° 90° 120° 150° 170° | 5.93 | 4.19                     | 4.96 | 5.93 | 8.4  | 10.3 | 13.2 | 18.7 | 26.5  | 3.18     | 3.18      | 47.6            | 14.3 | 60.3 | 35         | 6    |
|                | TF10               | 60° 90° 120° 150° 170° | 9.12 | 6.45                     | 7.63 | 9.12 | 12.9 | 15.8 | 20.4 | 28.8 | 40.8  | 3.97     | 3.18      | 47.6            | 14.3 | 60.3 |            |      |
| 3/8"           | TF6                | 60° 90° 120°           | 3.19 | 2.36                     | 2.67 | 3.19 | 4.5  | 5.5  | 7.1  | 10.1 | 14.3  | 2.38     | 2.38      |                 |      |      |            |      |
|                | TF8                | 60° 90° 120°           | 5.93 | 4.19                     | 4.96 | 5.93 | 8.4  | 10.3 | 13.2 | 18.7 | 26.5  | 3.18     | 3.18      |                 |      |      |            |      |
|                | TF10               | 60° 90° 120°           | 9.12 | 6.45                     | 7.63 | 9.12 | 12.9 | 15.8 | 20.4 | 28.8 | 40.8  | 3.97     | 3.18      |                 |      |      |            |      |
|                | TF12               | 60° 90° 120° 150° 170° | 13.7 | 9.7                      | 11.4 | 13.7 | 19.3 | 23.7 | 30.6 | 43.2 | 61.1  | 4.76     | 3.18      | 47.6            | 17.5 | 60.5 | 46         | 7    |
|                | TF14               | 60° 90° 120° 150° 170° | 18.5 | 13.1                     | 15.4 | 18.5 | 26.1 | 32   | 41.3 | 58.4 | 82.6  | 5.56     | 3.18      |                 |      |      |            |      |
|                | TF16               | 60° 90° 120° 150° 170° | 24.2 | 17.1                     | 20.2 | 24.2 | 34.2 | 41.8 | 54   | 76.4 | 108   | 6.35     | 3.18      |                 |      |      |            |      |
| 1/2"           | TF20               | 60° 90° 120° 150° 170° | 37.6 | 26.6                     | 31.5 | 37.6 | 53.2 | 65.1 | 84.1 | 119  | 168   | 7.94     | 3.18      |                 |      |      |            |      |
|                | TF24               | 60° 90° 120° 150° 170° | 54.9 | 38.8                     | 46   | 54.9 | 77.7 | 95.1 | 123  | 174  | 246   | 9.53     | 4.76      | 63.5            | 22.2 | 77.7 | 85         | 14   |
|                | TF28               | 60° 90° 120° 150° 170° | 75.2 | 53.2                     | 62.9 | 75.2 | 106  | 130  | 168  | 238  | 336   | 11.1     | 4.76      |                 |      |      |            |      |
| 3/4"           | TF32               | 60° 90° 120° 150° 170° | 95.7 | 67.7                     | 80.1 | 95.7 | 135  | 166  | 214  | 303  | 428   | 12.7     | 4.76      | 69.9            | 28.6 | 88.9 | 156        | 25   |
| 1"             | TF40               | 60° 90° 120° 150° 170° | 153  | 108                      | 128  | 153  | 216  | 264  | 341  | 483  | 683   | 15.9     | 6.35      | 92.1            | 34.9 | 111  | 241        | 71   |
|                | TF48               | 60° 90° 120° 150° 170° | 217  | 153                      | 181  | 217  | 306  | 375  | 484  | 685  | 968   | 19.1     | 6.35      |                 |      |      |            |      |
|                | TF56               | 60° 90° 120° 150° 170° | 294  | 208                      | 246  | 294  | 416  | 509  | 657  | 930  | 1320  | 22.2     | 7.94      | 111             | 50.8 | 137  |            |      |
| 1 1/2"         | TF64               | 60° 90° 120° 150° 170° | 385  | 272                      | 322  | 385  | 545  | 667  | 861  | 1220 | 1720  | 25.4     | 7.94      | 111             | 50.8 | 137  | 624        | 120  |
|                | TF72               | 60° 90° 120° 150° 170° | 438  | 309                      | 366  | 438  | 619  | 758  | 978  | 1380 | 1960  | 28.6     | 7.94      | 111             | 50.8 | 143  |            |      |
| 2"             | TF88               | 60° 90° 120° 150° 170° | 638  | 451                      | 534  | 638  | 902  | 1110 | 1430 | 2020 | 2850  | 34.9     | 11.1      | 143             | 63.5 | 175  | 1300       | 227  |
|                | TF96 <sup>1</sup>  | 60° 90° 120° 150° 170° | 806  | 570                      | 674  | 806  | 1140 | 1400 | 1800 | 2550 | 3600  | 38.1     | 11.1      | 176             | 63.5 | 178  | 1530       | 255  |
| 3"             | TF112 <sup>1</sup> | 60° 90° 120° 150° 170° | 1170 | 825                      | 976  | 1170 | 1650 | 2020 | 2610 | 3690 | 5220  | 44.5     | 14.3      | 219             | 88.9 | 235  | 3230       | 567  |
|                | TF128 <sup>1</sup> | 60° 90° 120° 150° 170° | 1550 | 1090                     | 1290 | 1550 | 2190 | 2680 | 3460 | 4891 | 6920  | 50.8     | 14.3      |                 |      |      |            |      |
| 4"             | TF160 <sup>1</sup> | 60° 90° 120°           | 2390 | 1690                     | 2000 | 2390 | 3380 | 4140 | 5350 | 7570 | 10700 | 63.5     | 15.9      | 257             | 114  |      | 4790       | 765  |

Flow Rate (l/min) = K √ bar

<sup>1</sup> Three turn nozzles

**Ask our technical sales engineers about additional products and services to optimise your spraying process.**

## Spray Calibration Solutions

Easy-to-use, fast measurement solutions to ensure accurate nozzle installation and maintenance, reduce water wastage and identify nozzle wear.



**Spray Pattern & Droplet Distribution**



**Nozzle Flow Calibrators**



**Nozzle Cleaning Kit**

## Complete Spray Bars

Tailored nozzle selections and spray bar designs that integrate seamlessly with your new or existing setup.

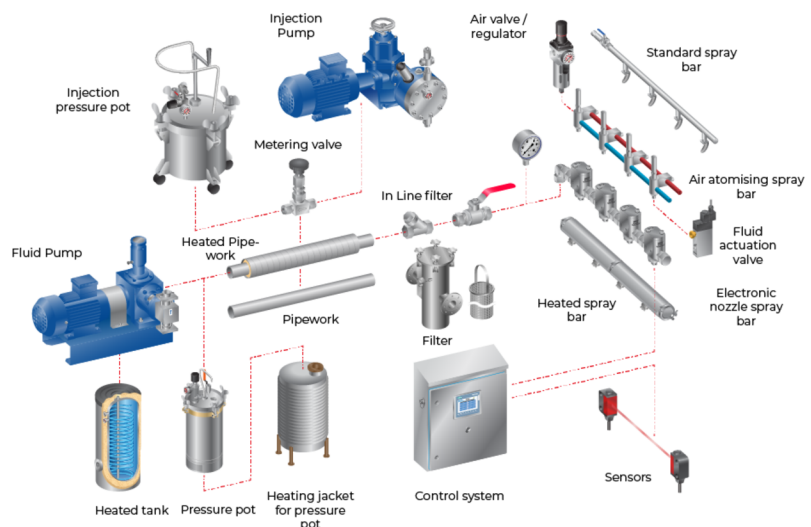
- ✓ Expert nozzle selection and placement
- ✓ Efficient spray coverage
- ✓ Fast turnaround time
- ✓ Reduced design burden
- ✓ High-quality spray bars



## Complete Custom Spraying Systems

Complete spraying systems built around your goals and application.

- ✓ Tailored upstream components supplied individually or as part of complete system
- ✓ Custom pipework, pumps, tanks, sensors, valves, heating, control panels and more
- ✓ Seamless integration with existing processes
- ✓ Built to budget and ROI targets
- ✓ End-to-end support: design, install, maintain



**THE GO-TO PEOPLE FOR SUCCESSFUL SPRAY ENGINEERING**