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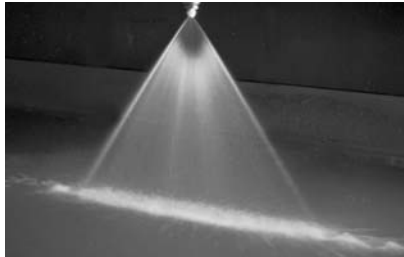
This catalog lists the most popular models of BEX spray nozzles and accessories. Many others are available, often in special materials.
PLEASE NOTE THAT SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

$$\frac{\text{Flow A}}{\text{Flow B}} = \sqrt{\frac{\text{Pressure A}}{\text{Pressure B}}}$$

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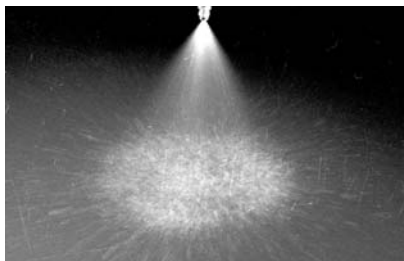
This engineering section describes some of the factors to be considered when selecting spray nozzles.



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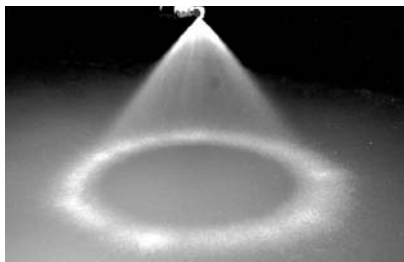
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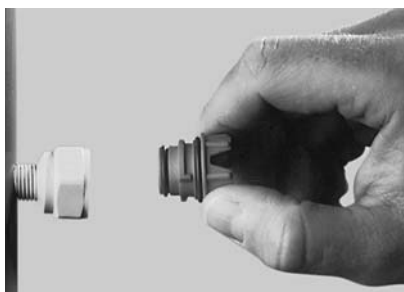
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A variety of special products for special applications.



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JPL Air Atomizing nozzles	inside back cover
---------------------------------	-------------------

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FLAT SPRAY

FULL CONE SPRAY

HOLLOW CONE SPRAY

QUICK DISCONNECT

OTHER NOZZLES

SELECTION GUIDE

This page describes some of the questions to be considered when selecting spray nozzles. In addition, answers for uncomplicated situations are provided where possible. In some applications, because of the large number of variables involved, accurate answers are not always possible except through actual testing or simulation. Our technical staff, however, may be able to lend assistance in their areas of expertise. Please feel free to give us a call.

WHAT SPRAY NOZZLE CONSTRUCTION DO I REQUIRE?

The basic elements of spray nozzle construction are pipe connection, physical dimensions, and material of construction.

PIPE CONNECTION is described by type, size, male, female, or flange. Nozzles described in this catalog have BSPT threaded pipe connections (NPT are also available for most models).

SIZE - Standard sizes from 1/8 BSPT to 4" BSPT, or as indicated.

MALE AND FEMALE connections are available where indicated.

PHYSICAL DIMENSIONS are listed throughout this catalog. They are set at our factory and we recommend that you do not alter any spray nozzle dimensions, as this could affect spray nozzle performance.

MATERIAL OF CONSTRUCTION

Standard materials are available as noted in this catalog. In addition, many models are available in special materials. Our technical staff will be pleased to discuss your special material requirements with you. BEX nozzles have been produced in the following materials:

Materials	Material Codes
Brass	B
Steel/Cast Iron	I
303 Stainless Steel	3
316 Stainless Steel	6
Hastelloy®	E
Titanium	N
Monel®	O
Carpenter 20®	C
PVC	V
CPVC	A
Acetal	DD
Glass Reinforced Polypropylene (GRP)	L
	LN (molded natural)
PVDF/Kynar	K
	KN (molded natural)
Teflon	T

WHAT SPRAY CHARACTERISTICS DO I REQUIRE?

A spray may be characterized by describing its spray pattern, flow rate, atomization and spray angle. This catalog describes these characteristics for the listed nozzles, for spraying water under controlled conditions.

SPRAY PATTERN: Common spray patterns (flat, full cone, hollow cone) are all described in this catalog. The spray pattern of a nozzle will generally travel further under higher fluid pressures. However, fine mist-like sprays are very susceptible to air movement, and may be carried away by such movement of air.

FLOW RATE: The low rates listed in this catalog are for water in U.S. litres per minute, unless otherwise indicated. "--" in the capacity table means "not recommended at this pressure."

ATOMIZATION: Atomization is primarily dependent on pressure and viscosity, and varies from point to point within a spray pattern. A range of particle sizes is produced, with some average value which varies according to conditions. For this reason, spray droplet sizes are not listed in this catalog. If you require spray droplet information for critical applications, BEX will be pleased to provide you with measurements, using our in-house laser doppler anemometry equipment.

SPRAY ANGLES: The spray angles listed in this catalog are for water spray under controlled conditions. Under low pressure, the sides of the spray may curve in due to the acceleration of gravity. Spray angles may also be reduced due to the tendency of spray patterns to interfere with themselves or with spray patterns from adjacent nozzles. Table 1 on page 3 lists theoretical spray coverage for a variety of spray angles at various distances from the nozzle.

WHAT FACTORS WILL AFFECT MY SPRAY CHARACTERISTICS?

When the conditions controlling spray nozzle performance change, the spray characteristics may change. This section lists conditions which may vary, and how those conditions may affect the spray characteristics.

PRESSURE: The flow rate of a liquid is proportional to the square root of the pressure difference between the pressure liquid and external (usually atmospheric) conditions, thus

$$\frac{\text{Flow A}}{\text{Flow B}} = \frac{\sqrt{\text{Pressure A}}}{\sqrt{\text{Pressure B}}}$$

higher pressure generally results in finer spray atomization, greater spray impact, and greater spraying distance.

VISCOSITY: Spraying liquids with higher viscosity than water generally results in reduced atomization, and impact. Spray angle will usually decrease.

SPECIFIC GRAVITY: Flow rates shown in this catalog are for water. (The specific gravity of water is 1.0). For liquids with a different specific gravity, flow is given by the formula:

$$\text{Flow} = \text{Water Flow} \times \frac{1}{\sqrt{\text{Spec. gravity}}}$$

SURFACE TENSION: An increase in surface tension generally results in an increase in spray droplet size, and a reduction in spray angle.

SPRAY DROP SIZE (Atomization)

One Inch = 25,400 Microns

- 500 Microns
- 1,200 Microns
- 5,500 Microns

IMPACT

Spray impingement, or "spray impact" as it's otherwise known, can be calculated using several different methods. The most widely used value with regards to nozzle performance is "impact per square inch." However, it's dependent on spray pattern and spray angle. In order to calculate the impact per square inch for a given nozzle, you must first determine the theoretical total impact using the formula below:

Next, using the chart to the right, find the relevant percent per square inch of the theoretical total impact and multiply this by the theoretical total. The result of this equation is the spray impact in pounds per square inch. The greatest impact in pounds per square inch is attained by solid stream nozzles and can be calculated using the formula:

$$1.9 \times (\text{spraying pressure, psi})$$

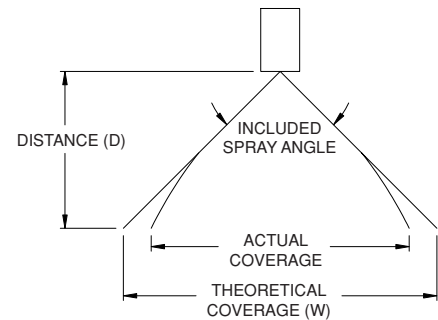
Theoretical Total Impact Spraying Water (kg-force) =

$$.0421 \times (\text{L/min at spraying pressure}) \times \sqrt{\text{spraying pressure, bar}}$$

INCLUDED SPRAY ANGLE	W/D RATIO	Theoretical coverage (W) at various distances (D) from the nozzle									
		Distance (D) inches									
		2	3	4	6	8	12	16	24	34	48
5°	0.087	0.2	0.3	0.3	0.5	0.7	1.0	1.4	2.1	3.0	4.2
10°	0.175	0.3	0.5	0.7	1.0	1.4	2.1	2.8	4.2	5.9	8.4
15°	0.263	0.5	0.8	1.1	1.6	2.1	3.2	4.2	6.3	9.0	12.6
20°	0.353	0.7	1.1	1.4	2.1	2.8	4.2	5.6	8.5	12.0	16.9
25°	0.443	0.9	1.3	1.8	2.7	3.5	5.3	7.1	10.6	15.1	21.3
30°	0.536	1.1	1.6	2.1	3.2	4.3	6.4	8.6	12.9	18.2	25.7
35°	0.631	1.3	1.9	2.5	3.8	5.0	7.6	10.1	15.1	21.4	30.3
40°	0.728	1.5	2.2	2.9	4.4	5.8	8.7	11.6	17.5	24.7	34.9
45°	0.828	1.7	2.5	3.3	5.0	6.6	9.9	13.3	19.9	28.2	39.8
50°	0.933	1.9	2.8	3.7	5.6	7.5	11.2	14.9	22.4	31.7	45
55°	1.04	2.1	3.1	4.2	6.2	8.3	12.5	16.7	25.0	35.4	50
60°	1.15	2.3	3.5	4.6	6.9	9.2	13.9	18.5	27.7	39.3	55
65°	1.27	2.5	3.8	5.1	7.6	10.2	15.3	20.4	30.6	43	61
70°	1.40	2.8	4.2	5.6	8.4	11.2	16.8	22.4	33.6	48	67
75°	1.53	3.1	4.6	6.1	9.2	12.3	18.4	24.6	36.8	52	74
80°	1.68	3.4	5.0	6.7	10.1	13.4	20.1	26.9	40	57	81
85°	1.83	3.7	5.5	7.3	11.0	14.7	22.0	29.3	44	62	88
90°	2.00	4.0	6.0	8.0	12.0	16.0	24.0	32.0	48	68	96
95°	2.18	4.4	6.5	8.7	13.1	17.5	26.2	34.9	52	74	105
100°	2.38	4.8	7.2	9.5	14.3	19.1	28.6	38.1	57	81	114
110°	2.86	5.7	8.6	11.4	17.1	22.9	34.3	46	69	97	137
120°	3.46	6.9	10.4	13.9	20.8	27.7	42	55	83	118	166
130°	4.29	8.6	12.9	17.2	25.7	34.3	51	69	103	146	206
140°	5.49	11.0	16.5	22.0	33.0	44	66	88	132	187	264
150°	7.46	14.9	22.4	29.9	45	60	90	119	179	254	358

Spray Pattern Type	Spray Angle	Percent Impact per sq. in. of Theoretical Total Impact
Flat Fan	15°	30%
	25°	20%
	35°	15%
	40°	12%
	50°	10%
	65°	7%
Full Cone	80°	5%
	15°	10%
	30°	2%
	50°	1%
	65°	0.5%
Hollow Cone	80°	0.2%
	100°	0.1%
	70°	1.5%

At a distance of 12" from nozzle.



Spray coverages shown in Table 1 are based on straight sided spray patterns. At low pressures the sides may curve in, as shown below, because of the acceleration due to gravity.

To find the width of a spray (W) at any distance (D), multiply the W/D ratio by the distance.

OTHER TRADEMARKS FOUND IN THIS CATALOGUE:

BEX® is a registered trademark of BEX
 K-Ball® is a registered trademark of BEX
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 Carpenter 20® is a registered trademark of Carpenter Technologies
 Monel® is a registered trademark of The International Nickel Company, Inc.
 Teflon® is a registered trademark of E.I. DuPont de Nemours and Company
 Kynar® is a registered trademark of Elf Atochem North America, Inc.
 Viton® is a registered trademark of E.I. DuPont de Nemours and Company
 TWK Patent No. 5,316,218
 ZIP-TIP Patent No. 5,421,522 – other patents pending

SELECTION GUIDE

USEFUL CONVERSION FACTORS:

Volume	1 U.S. gallon = 3.785 litre = 0.1337 ft ³ = .003785 m ³ 1 ft ³ = 0.02832 m ³ = 7.48 U.S. gallons
Pressure	1 psi = 6895 N/m ² = 6895 Pa = .069 bar = .069 Kg/cm ² 1 in Hg = 25.4 mm Hg = .4912 psi = 3386 N/m ² 1 in H ₂ O = 25.4 mm H ₂ O = .0361 psi = 249.1 N/m ² 1 atmosphere = 14.7 psi = 29.92 in Hg = 760 mm Hg = 101.325 kN/m ² 1 bar = 14.504 psi = 100 kN/m ² = 1.02 Kg/cm ² 1 foot head (water) = .433 psi
Flow rate	1 U.S. gallon per minute = 0.1337 ft ³ /min = 3.785 l/min 1 ft ³ /sec = .02832 m ³ /sec = 28.32 l/sec
Length	1 in = 25.4 mm 1 ft = .3048 m 1 mile = 1.609 km

EASY PUMP HEAD TABLE

Feet Head (Water)	PSI
10	4.3
20	8.6
30	13
40	17
50	22
60	26
70	30
80	34
90	38
100	42
110	46
120	50
130	54
140	58
150	61

TABLE OF EQUIVALENTS

Volumetric Unit	VOLUMETRIC UNITS - EQUIVALENTS						
	Cubic Centimeter	Fluid Ounce	Pound of Water	Liter	US Gallon	Cubic Foot	Cubic Meter
Cubic Centimeter	•	0.034	2.2x10 ⁻³	0.001	2.64x10 ⁻⁴	3.53x10 ⁻⁵	1.0x10 ⁻⁶
Fluid Ounce	29.4	•	0.065	0.030	7.81x10 ⁻³	1.04x10 ⁻³	2.96x10 ⁻⁵
Pound of Water	454	15.4	•	0.454	0.12	0.016	4.54x10 ⁻⁴
Liter	1,000	33.8	2.2	•	0.264	0.035	0.001
US Gallon	3,785	128	8.34	3.785	•	0.134	3.78x10 ⁻³
Cubic Foot	28,320	958	62.4	28.3	7.48	•	0.028
Cubic Meter	1.0x10 ⁶	3.38x10 ⁴	2202	1000	264	35.3	•

Linear Unit	LINEAR UNITS - EQUIVALENTS						
	Micron	Mil	Millimeter	Centimeter	Inch	Foot	Meter
Micron	•	0.039	0.001	1.0x10 ⁻⁴	3.94x10 ⁻⁵		
Mil	25.4	•	2.54x10 ⁻²	2.54x10 ⁻³	0.001	8.33x10 ⁻⁵	
Millimeter	1000	39.4	•	0.10	0.0394	3.28x10 ⁻³	0.001
Centimeter	10,000	394	10	•	0.394	0.033	0.01
Inch	2.54x10 ⁴	1,000	25.4	2.54	•	0.083	0.0254
Foot	3.05x10 ⁵	1.2x10 ⁴	305	30.5	12	•	0.305
Meter	1.0x10 ⁶	3.94x10 ⁴	1,000	100	39.4	3.28	•

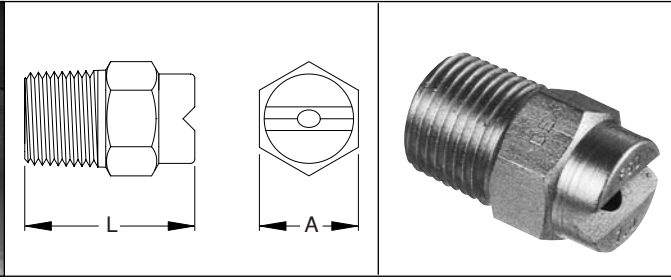
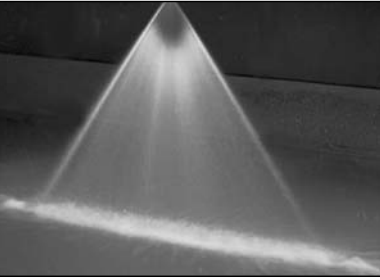
Liquid Pressure	LIQUID PRESSURE - EQUIVALENTS						
	Lb/In ² (psi)	Ft Water	Kg/Cm ²	Atmosphere	Bar	Inch Mercury	kPa (kilopascal)
Lb/In ² (psi)	•	2.31	0.070	0.068	0.069	2.04	6.895
Ft Water	0.433	•	0.030	0.029	0.030	0.882	2.99
Kg/Cm ²	14.2	32.8	•	0.968	0.981	29.0	98
Atmosphere	14.7	33.9	1.03	•	1.01	29.9	101
Bar	14.5	33.5	1.02	0.987	•	29.5	100
Inch Mercury	0.491	1.13	0.035	0.033	0.034	•	3.4
kPa (kilopascal)	0.145	0.335	0.01	0.009	0.01	0.296	•

THREADED NOZZLES



F SERIES

Flat "V" spray nozzles



SPRAY CHARACTERISTICS:

F-Series spray nozzles produce a flat, fan-shaped spray pattern, with spray angles available from 5° to 110° measured at 40 psi. Spray angles generally increase with pressure, as shown in the capacity table.

Spray density tapers off toward the outside of these sprays, to permit overlapping of spray patterns while maintaining uniform spray density.

See page 13 for 0° solid stream spray nozzles.

CONSTRUCTION:

The models listed are machined from bar stock and are one piece construction. Standard materials are brass, mild steel, 303 stainless steel and 316 stainless steel. Some models are also stocked in Carpenter 20®, PVC, CPVC and polypropylene. All models are available in either BSPT or BSPT threads.

For molded plastic models, please see page 20.

TYPICAL APPLICATIONS:

Suitable for a variety of washing and spraying applications.

- Parts Cleaning
- Metal Washing
- Foam Control
- Asphalt Spraying
- Gravel Washing
- Vehicle Washing
- Fertilizer Spraying
- Dishwashers

DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8F	20.6	11 HEX
1/4F	23.8	14 HEX
3/8F	30.2	17 HEX
1/2F	33.3	22 HEX
3/4F	42.8	27 HEX
1F	63.5	35 HEX
1 1/4F	92	44.5 HEX
1 1/2F	114.3	50.8 Dia.
2F	127	60.3 Dia.

ACCESSORIES:



Many F-Series flat "V" spray nozzles are also offered in the FT-Series 3-piece setup.

SPRAY ANGLE @ 3 bar	MODEL NUMBER	PIPE SIZE BSPT	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar
110°	1/8F11003	1/8	1.04	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	96°	110°	118°
	1/4F11003	1/4	1.04	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	92°	110°	118°
	1/8F11004	1/8	1.19	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	90°	110°	112°
	1/4F11004	1/4	1.19	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	90°	110°	112°
	1/8F11005	1/8	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.60	5.10	6.24	96°	110°	114°
	1/4F11005	1/4	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.60	5.10	6.24	96°	110°	114°
	1/8F11006	1/8	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.62	4.32	6.11	7.5	97°	110°	115°
	1/4F11006	1/4	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.62	4.32	6.11	7.5	97°	110°	115°
	1/8F11008	1/8	0.091	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.16	3.65	4.08	4.82	5.8	8.2	100°	110°	115°
	1/4F11008	1/4	0.091	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.16	3.56	4.08	4.82	5.8	8.2	100°	110°	115°
	1/8F11010	1/8	1.91	1.25	1.61	1.91	2.28	2.79	3.22	3.95	4.56	5.10	6.0	7.2	10.2	12.5	102°	110°	115°
	1/4F11010	1/4	1.91	1.25	1.61	1.91	2.28	2.79	3.22	3.95	4.56	5.10	6.0	7.2	10.2	12.5	102°	110°	115°
	1/8F11015	1/8	2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8	15.3	18.7	102°	110°	115°
	1/4F11015	1/4	2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8	15.3	18.7	102°	110°	115°
	1/8F11020	1/8	2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	103°	110°	112°
	1/4F11020	1/4	2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	103°	110°	112°
	1/4F11030	1/4	3.28	3.74	4.83	5.72	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	103°	110°	112°
	1/4F11040	1/4	3.78	4.99	6.45	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	40.8	49.9	103°	110°	112°
	1/4F11050	1/4	4.24	6.24	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0	51.0	62.4	107°	110°	116°

FLAT SPRAY

SPRAY ANGLE @ 3 bar	MODEL NUMBER	PIPE SIZE BSPT	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)														SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar	
95°	1/8F9505	1/8	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.0	3.6	5.1	6.2	86°	95°	101°	
	1/4F9505	1/4	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.0	3.6	5.1	6.2	87°	95°	101°	
	1/8F9506	1/8	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	86°	95°	101°	
	1/4F9506	1/4	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	86°	95°	101°	
	1/8F9508	1/8	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	86°	95°	100°	
	1/4F9508	1/4	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	85°	95°	100°	
	1/8F9510	1/8	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	88°	95°	99°	
	1/4F9510	1/4	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	88°	95°	99°	
	1/8F9515	1/8	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	90°	95°	100°	
	1/4F9515	1/4	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	90°	95°	100°	
	1/8F9520	1/8	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	89°	95°	99°	
	1/4F9520	1/4	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	89°	95°	99°	
	1/8F9530	1/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	90°	95°	101°	
	1/4F9530	1/4	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	90°	95°	101°	
	3/8F9530	3/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	90°	95°	101°	
	1/4F9540	1/4	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	90°	95°	100°	
	3/8F9540	3/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	90°	95°	100°	
	1/4F9550	1/4	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	91°	95°	101°	
	3/8F9550	3/8	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	91°	95°	101°	
	1/4F9560	1/4	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	92°	95°	102°	
	3/8F9560	3/8	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	92°	95°	102°	
	1/2F9560	1/2	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	91°	95°	102°	
	1/4F9570	1/4	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	92°	95°	103°	
	3/8F9570	3/8	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	90°	95°	101°	
	1/2F9570	1/2	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	90°	95°	101°	
	1/2F95100	1/2	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	92°	95°	103°	
	1/2F95150	1/2	7.34	18.7	24	29	34	42	48	59	68	76	90	108	153	187	92°	95°	102°	
	80°	1/8F8005	1/8	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	74°	80°	83°
		1/4F8005	1/4	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	74°	80°	83°
		1/8F8006	1/8	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	74°	80°	83°
1/4F8006		1/4	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	74°	80°	83°	
1/8F8008		1/8	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	75°	80°	83°	
1/4F8008		1/4	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	75°	80°	83°	
1/8F8010		1/8	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	75°	80°	83°	
1/4F8010		1/4	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	75°	80°	83°	
3/8F8010		3/8	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	75°	80°	83°	
1/8F8015		1/8	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	74°	80°	86°	
1/4F8015		1/4	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	74°	80°	86°	
3/8F8015		3/8	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	75°	80°	86°	
1/8F8020		1/8	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	74°	80°	85°	
1/4F8020		1/4	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	74°	80°	85°	
3/8F8020		3/8	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	74°	80°	85°	
1/8F8030		1/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	75°	80°	86°	
1/4F8030		1/4	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	75°	80°	86°	
3/8F8030		3/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	75°	80°	86°	
1/8F8040		1/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	76°	80°	85°	
1/4F8040		1/4	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	76°	80°	85°	
3/8F8040		3/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	76°	80°	85°	
1/4F8050		1/4	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	77°	80°	84°	
3/8F8050		3/8	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	77°	80°	84°	
1/4F8060		1/4	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	77°	80°	84°	
3/8F8060		3/8	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	77°	80°	84°	
1/2F8060		1/2	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	78°	80°	84°	
1/4F8070		1/4	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	78°	80°	87°	
3/8F8070		3/8	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	78°	80°	87°	
1/2F8070		1/2	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	78°	80°	87°	
1/4F8080		1/4	5.36	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	48	58	82	100	78°	80°	88°	
3/8F8080	3/8	5.36	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	48	58	82	100	78°	80°	88°		
1/2F8080	1/2	5.36	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	48	58	82	100	78°	80°	88°		

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FLAT SPRAY

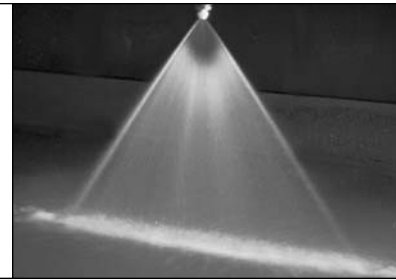
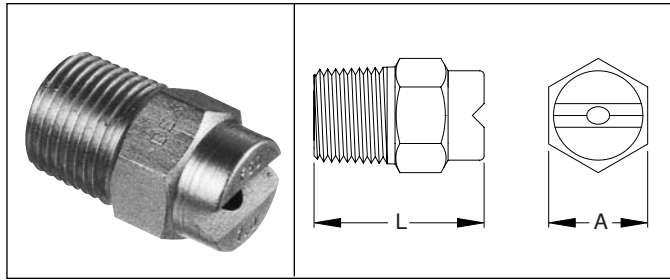
FLAT SPRAY

SPRAY ANGLE @ 3 bar	MODEL NUMBER	PIPE SIZE BSPT	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar
80°	3/8F80100	3/8	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	75°	80°	83°
	1/2F80100	1/2	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	75°	80°	83°
	3/8F80150	3/8	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	73°	80°	84°
	1/2F80150	1/2	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	73°	80°	84°
	1/2F80200	1/2	8.46	25.0	32	38	46	56	64	79	91	102	121	144	204	250	74°	80°	82°
	3/4F80200	3/4	8.46	25.0	32	38	46	56	64	79	91	102	121	144	204	250	74°	80°	82°
	3/4F80400	3/4	11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	74°	80°	82°
65°	1/8F6505	1/8	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	53°	65°	72°
	1/4F6505	1/4	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	53°	65°	72°
	1/8F6506	1/8	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	54°	65°	72°
	1/4F6506	1/4	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	54°	65°	72°
	1/8F6508	1/8	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	55°	65°	71°
	1/4F6508	1/4	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	55°	65°	71°
	1/8F6510	1/8	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	57°	65°	73°
	1/4F6510	1/4	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	57°	65°	73°
	3/8F6510	3/8	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	57°	65°	73°
	1/8F6512	1/8	2.08	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	7.2	8.6	12.2	15.0	59°	65°	71°
	1/4F6512	1/4	2.08	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	7.2	8.6	12.2	15.0	60°	65°	72°
	1/8F6515	1/8	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	59°	65°	72°
	1/4F6515	1/4	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	59°	65°	72°
	3/8F6515	3/8	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	60°	65°	72°
	1/8F6520	1/8	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	61°	65°	72°
	1/4F6520	1/4	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	61°	65°	72°
	3/8F6520	3/8	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	61°	65°	72°
	1/8F6530	1/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	62°	65°	72°
	1/4F6530	1/4	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	62°	65°	72°
	3/8F6530	3/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	62°	65°	72°
	1/8F6540	1/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	63°	65°	72°
	1/4F6540	1/4	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	63°	65°	72°
	3/8F6540	3/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	64°	65°	74°
	1/4F6550	1/4	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	63°	65°	73°
	3/8F6550	3/8	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	63°	65°	73°
	1/2F6550	1/2	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	63°	65°	74°
	1/4F6560	1/4	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	63°	65°	73°
	3/8F6560	3/8	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	63°	65°	73°
	1/2F6560	1/2	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	63°	65°	73°
	1/4F6570	1/4	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	63°	65°	74°
	3/8F6570	3/8	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	63°	65°	74°
	1/2F6570	1/2	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	63°	65°	75°
	3/8F65100	3/8	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	59°	65°	69°
	1/2F65100	1/2	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	59°	65°	70°
	1/2F65150	1/2	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	59°	65°	68°
	1/2F65200	1/2	8.46	25.0	32	38	46	56	64	79	91	102	121	144	204	250	60°	65°	67°
3/4F65200	3/4	8.46	25.0	32	38	46	56	64	79	91	102	121	144	204	250	60°	65°	67°	
3/4F65300	3/4	10.36	37	48	57	68	84	97	118	137	153	181	216	306	374	60°	65°	68°	
3/4F65400	3/4	11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	60°	65°	68°	
50°	1/8F5005	1/8	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	44°	50°	56°
	1/4F5005	1/4	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	44°	50°	56°
	1/8F5006	1/8	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	45°	50°	56°
	1/4F5006	1/4	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	45°	50°	56°
	1/8F5008	1/8	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	45°	50°	56°
	1/4F5008	1/4	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	45°	50°	56°
	1/8F5010	1/8	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	43°	50°	55°
	1/4F5010	1/4	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	43°	50°	55°
	3/8F5010	3/8	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	43°	50°	55°
	1/4F5015	1/4	2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	43°	50°	55°
	3/8F5015	3/8	2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	43°	50°	55°

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DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8F	20.6	11 HEX
1/4F	23.8	14 HEX
3/8F	30.2	17 HEX
1/2F	33.3	22 HEX
3/4F	42.8	27 HEX
1F	63.5	35 HEX
1 1/4F	92	44.5 HEX
1 1/2F	114.3	50.8 Dia.
2F	127	60.3 Dia.



ACCESSORIES:

Check Valves:

For use when a complete shut-off is required. See page 71 for details.



FLAT SPRAY

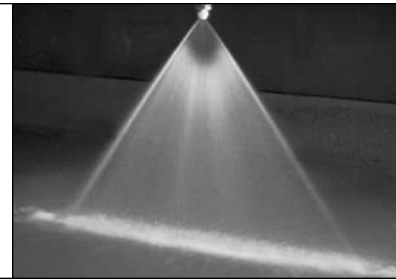
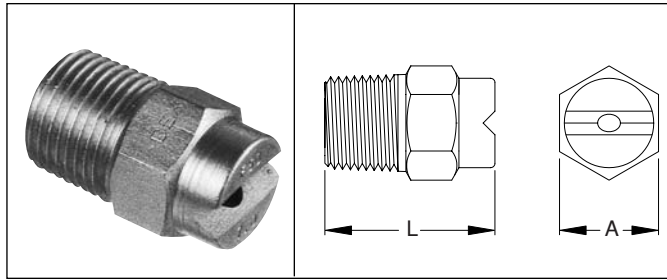
SPRAY ANGLE @ 3 bar	MODEL NUMBER	PIPE SIZE BSPT	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												SPRAY ANGLE @			
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar
50°	1/2F5020	1/2	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	43°	50°	55°
	1/4F5020	1/4	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	43°	50°	55°
	3/8F5020	3/8	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	43°	50°	55°
	1/8F5030	1/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	43°	50°	54°
	1/4F5030	1/4	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	43°	50°	55°
	3/8F5030	3/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	43°	50°	54°
	1/8F5040	1/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	43°	50°	54°
	1/4F5040	1/4	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	43°	50°	54°
	3/8F5040	3/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	43°	50°	54°
	1/4F5050	1/4	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	43°	50°	53°
	3/8F5050	3/8	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	43°	50°	53°
	1/4F5060	1/4	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	43°	50°	53°
	3/8F5060	3/8	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	43°	50°	53°
	1/2F5060	1/2	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	43°	50°	53°
	1/4F5070	1/4	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	44°	50°	53°
	3/8F5070	3/8	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	44°	50°	53°
	1/2F5070	1/2	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	44°	50°	53°
	3/8F50100	3/8	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	44°	50°	52°
	1/2F50100	1/2	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	44°	50°	52°
	3/8F50120	3/8	6.55	15.0	19.3	22.9	27.3	33	39	47	55	61	72	86	122	150	44°	50°	53°
	1/2F50120	1/2	6.55	15.0	19.3	22.9	27.3	33	39	47	55	61	72	86	122	150	44°	50°	53°
	3/8F50150	3/8	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	45°	50°	52°
	1/2F50150	1/2	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	45°	50°	52°
	1/2F50200	1/2	8.46	25.0	32	38	46	56	64	79	91	102	121	144	204	250	46°	50°	52°
3/4F50200	3/4	8.46	25.0	32	38	46	56	64	79	91	102	121	144	204	250	46°	50°	52°	
3/4F50400	3/4	11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	47°	50°	54°	
1F50500	1	13.39	62	81	95	114	140	161	197	228	255	301	360	510	624	46°	50°	55°	
1 1/4F50500	1 1/4	13.39	62	81	95	114	140	161	197	228	255	301	360	510	624	46°	50°	55°	
1 1/4F50750	1 1/4	16.38	94	121	143	171	209	242	296	342	382	452	540	764	936	46°	50°	54°	
1 1/4F501000	1 1/4	18.92	125	161	191	228	279	322	395	456	510	603	721	1019	1248	46°	50°	55°	

CONTINUED on next page...

SPRAY ANGLE @ 3 bar	MODEL NUMBER	PIPE SIZE BSPT	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @			
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar	
40°	1/8F4005	1/8	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	26°	40°	46°	
	1/4F4005	1/4	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	26°	40°	46°	
	1/8F4006	1/8	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	37°	40°	44°	
	1/4F4006	1/4	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	37°	40°	44°	
	1/8F4008	1/8	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	35°	40°	43°	
	1/4F4008	1/4	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	35°	40°	43°	
	1/8F4010	1/8	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12	30°	40°	43°	
	1/4F4010	1/4	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12	30°	40°	43°	
	1/8F4015	1/8	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	35°	40°	41°	
	1/4F4015	1/4	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	35°	40°	41°	
	1/8F4020	1/8	2.67	2.5	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	33°	40°	43°	
	1/4F4020	1/2	2.67	2.5	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	33°	40°	43°	
	3/8F4020	3/8	2.67	2.5	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	33°	40°	43°	
	1/8F4030	1/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	34°	40°	45°	
	1/4F4030	1/4	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	34°	40°	45°	
	3/8F4030	3/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	34°	40°	45°	
	1/8F4040	1/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	33°	40°	43°	
	1/4F4040	1/4	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	33°	40°	43°	
	3/8F4040	3/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	33°	40°	43°	
	1/4F4050	1/4	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	35°	40°	46°	
	3/8F4050	3/8	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	35°	40°	46°	
	1/4F4060	1/4	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	37°	40°	48°	
	3/8F4060	3/8	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	37°	40°	48°	
	1/2F4060	1/2	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	37°	40°	48°	
	1/4F4070	1/4	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	35°	40°	46°	
	3/8F4070	3/8	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	35°	40°	46°	
	1/2F4070	1/2	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	35°	40°	44°	
	3/8F40100	3/8	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	33°	40°	44°	
	1/2F40100	1/2	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	33°	40°	44°	
	3/4F40100	3/4	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	36°	40°	44°	
	1/2F40120	1/2	6.55	15.0	19.3	22.9	27.3	33	39	47	55	61	72	86	122	150	36°	40°	43°	
	1/2F40150	1/2	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	37°	40°	44°	
	3/4F40150	3/4	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	37°	40°	44°	
	1/2F40200	1/2	8.46	25.0	32	38	46	56	64	79	91	102	121	144	204	250	38°	40°	43°	
	3/4F40200	3/4	8.46	25.0	32	38	46	56	64	79	91	102	121	144	204	250	38°	40°	43°	
	3/4F40300	3/4	10.36	37	48	57	68	84	97	118	137	153	181	216	306	374	38°	40°	44°	
	3/4F40350	3/4	11.20	44	56	67	80	98	113	138	160	178	211	252	357	437	37°	40°	44°	
	3/4F40400	3/4	11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	38°	40°	44°	
	25°	1/8F2505	1/8	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	20°	25°	31°
		1/4F2505	1/4	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	20°	25°	31°
1/8F2506		1/8	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	17°	25°	31°	
1/4F2506		1/4	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	17°	25°	31°	
1/8F2508		1/8	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	16°	25°	32°	
1/4F2508		1/4	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	16°	25°	32°	
1/8F2510		1/8	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12	17°	25°	31°	
1/4F2510		1/4	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12	17°	25°	31°	
1/8F2515		1/8	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	11	15	19	18°	25°	30°	
1/4F2515		1/4	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	11	15	19	18°	25°	30°	
1/8F2520		1/8	2.67	2.50	3.22	3.8	4.6	5.6	6.4	7.9	9.1	10	12	14	20	25	18°	25°	28°	
1/4F2520		1/4	2.67	2.50	3.22	3.8	4.6	5.6	6.4	7.9	9.1	10	12	14	20	25	18°	25°	28°	
1/8F2530		1/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	19°	25°	29°	
1/4F2530		1/4	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	19°	25°	29°	
3/8F2530		3/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	19°	25°	29°	
1/8F2540		1/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	22°	25°	32°	
1/4F2540		1/4	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	22°	25°	32°	
3/8F2540		3/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	22°	25°	32°	

DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8F	20.6	11 HEX
1/4F	23.8	14 HEX
3/8F	30.2	17 HEX
1/2F	33.3	22 HEX
3/4F	42.8	27 HEX
1F	63.5	35 HEX
1 1/4F	92	44.5 HEX
1 1/2F	114.3	50.8 Dia.
2F	127	60.3 Dia.



ACCESSORIES:

A Flow Stabilizer may be required where nozzles are installed close to elbows or tees. See page 70 for this and other accessories.



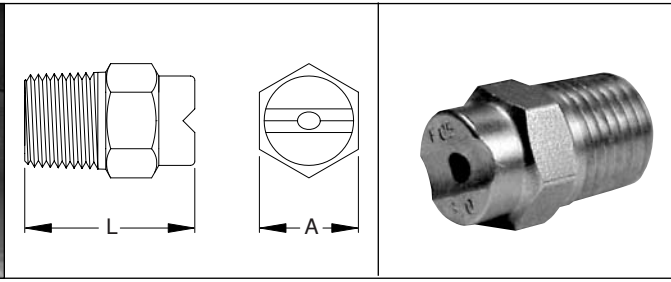
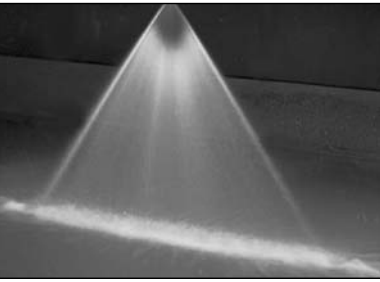
FLAT SPRAY

SPRAY ANGLE @ 3 bar	MODEL NUMBER	PIPE SIZE BSPT	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar
25°	1/4F2550	1/4	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0	51	62	20°	25°	32°
	3/8F2550	3/8	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0	51	62	20°	25°	32°
	1/4F2560	1/4	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	18°	25°	28°
	3/8F2560	3/8	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	18°	25°	28°
	1/4F2570	1/4	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	19°	25°	27°
	3/8F2570	3/8	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	19°	25°	27°
	3/8F25100	3/8	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	21°	25°	28°
	1/2F25100	1/2	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	21°	25°	28°
	1/2F25150	1/2	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	18°	25°	28°
	1/2F25200	1/2	8.46	25.0	32	38	46	56	64	79	91	102	121	144	204	250	19°	25°	27°
15°	1/8F1505	1/8	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	10°	15°	20°
	1/4F1505	1/4	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	10°	15°	20°
	1/8F1506	1/8	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	11°	15°	24°
	1/4F1506	1/4	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	11°	15°	24°
	1/8F1508	1/8	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	11°	15°	21°
	1/4F1508	1/4	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	11°	15°	21°
	1/8F1510	1/8	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	13°	15°	16°
	1/4F1510	1/4	1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	13°	15°	16°
	1/8F1515	1/8	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	11°	15°	20°
	1/4F1515	1/4	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	11°	15°	20°
	3/8F1515	3/8	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	11°	15°	20°
	1/8F1520	1/8	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	11°	15°	20°
	1/4F1520	1/4	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	11°	15°	20°
	3/8F1520	3/8	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	11°	15°	18°
	1/8F1530	1/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	11°	15°	18°
	1/4F1530	1/4	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	12°	15°	18°
	3/8F1530	3/8	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	12°	15°	18°
	1/4F1540	1/4	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	12°	15°	18°
	3/8F1540	3/8	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	12°	15°	19°
	1/4F1550	1/4	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	12°	15°	19°
	3/8F1550	3/8	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	12°	15°	19°
	1/4F1560	1/4	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	12°	15°	17°
	3/8F1560	3/8	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	12°	15°	17°
	1/4F1570	1/4	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	12°	15°	19°
	3/8F1570	3/8	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	12°	15°	19°
	3/8F15100	3/8	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	12°	15°	19°
	1/2F15100	1/2	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	12°	15°	19°
	3/8F15120	3/8	6.55	15.0	19.3	22.9	27.3	33	39	47	55	61	72	86	122	150	12°	15°	19°
	1/2F15120	1/2	6.55	15.0	19.3	22.9	27.3	33	39	47	55	61	72	86	122	150	12°	15°	18°
	3/8F15150	3/8	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	12°	15°	18°
1/2F15150	1/2	7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	12°	15°	18°	
1/2F15200	1/2	8.46	25.0	32.2	38	46	56	64	79	91	102	121	144	204	250	13°	15°	17°	

CONTINUED on next page...

F SERIES

Flat "V" spray nozzles continued



DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8F	20.6	11 HEX
1/4F	23.8	14 HEX
3/8F	30.2	17 HEX
1/2F	33.3	22 HEX
3/4F	42.8	27 HEX
1F	63.5	35 HEX
1 1/4F	92	44.5 HEX
1 1/2F	114.3	50.8 Dia.
2F	127	60.3 Dia.

ACCESSORIES:

Adjustable joints may be used to accurately orient a spray pattern. See page 70 for this and other accessories.



FLAT SPRAY

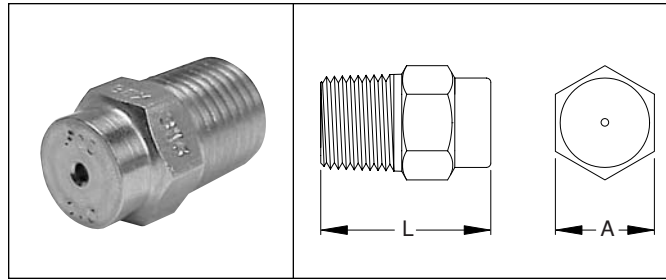
SPRAY ANGLE @ 3 bar	MODEL	PIPE SIZE BSPT	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar
5°	1/8F0505	1/8	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.60	5.10	6.24	4°	5°	9°
	1/4F0505	1/4	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.60	5.10	6.24	4°	5°	9°
	1/8F0506	1/8	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.62	4.32	6.11	7.5	5°	5°	8°
	1/4F0506	1/4	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.62	4.32	6.11	7.5	5°	5°	8°
	1/8F0508	1/8	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.16	3.65	4.08	4.82	5.8	8.2	10.0	4°	5°	7°
	1/4F0508	1/4	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.16	3.65	4.08	4.82	5.8	8.2	10.0	4°	5°	7°
	1/8F0510	1/8	1.91	1.25	1.61	1.91	2.28	2.79	3.22	3.95	4.56	5.10	6.0	7.2	10.2	12.5	5°	5°	8°
	1/4F0510	1/4	1.91	1.25	1.61	1.91	2.28	2.79	3.22	3.95	4.56	5.10	6.0	7.2	10.2	12.5	5°	5°	8°
	1/8F0515	1/8	2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8	15.3	18.7	5°	5°	9°
	1/4F0515	1/4	2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8	15.3	18.7	5°	5°	9°
	3/8F0515	3/8	2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8	15.3	18.7	5°	5°	9°
	1/8F0520	1/8	2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	5°	5°	9°
	1/4F0520	1/4	2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	5°	5°	9°
	3/8F0520	3/8	2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	5°	5°	9°
	1/8F0530	1/8	3.28	3.74	4.83	5.72	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	5°	5°	9°
	1/4F0530	1/4	3.28	3.74	4.83	5.72	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	5°	5°	9°
	3/8F0530	3/8	3.28	3.74	4.83	5.72	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	5°	5°	9°
	1/4F0540	1/4	3.78	4.99	6.45	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	40.8	49.9	5°	5°	9°
	3/8F0540	3/8	3.78	4.99	6.45	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	40.8	49.9	5°	5°	9°
	1/4F0550	1/4	4.24	6.24	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0	51.0	62.4	5°	5°	10°
3/8F0550	3/8	4.24	6.24	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0	51.0	62.4	5°	5°	10°	
1/4F0560	1/4	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36.2	43.2	61.1	75	5°	5°	10°	
3/8F0560	3/8	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36.2	43.2	61.1	75	5°	5°	10°	
1/4F0570	1/4	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	31.9	35.7	42.2	50.4	71	87	5°	5°	10°	
3/8F0570	3/8	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	31.9	35.7	42.2	50.4	71	87	5°	5°	10°	
3/8F05100	3/8	5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60	72	102	125	5°	5°	19°	
3/8F05120	3/8	6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150	5°	5°	19°	
3/8F05150	3/8	7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108	153	187	5°	5°	18°	

Solid stream spray nozzles

F SERIES

DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8F	20.6	11 HEX
1/4F	23.8	14 HEX
3/8F	30.2	17 HEX
1/2F	33.3	22 HEX
3/4F	42.8	27 HEX
1F	63.5	35 HEX
1 1/4F	92	44.5 HEX
1 1/2F	114.3	50.8 Dia.
2F	127	60.3 Dia.



SPRAY CHARACTERISTICS:

A high impact solid stream. For situations where maximum impact is required over a very small target area:

- Metal Wash
- Agitation
- Mixing

CONSTRUCTION:

The models listed are machined from bar stock, and are one piece construction. Standard materials are brass, steel, 303 stainless steel and 316 stainless steel.

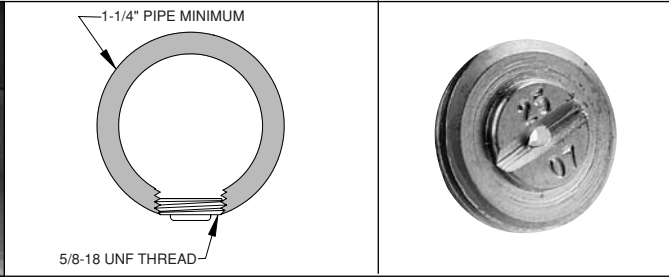
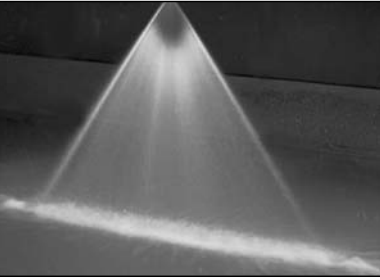
For molded plastic models, please see page 20.

FLAT SPRAY

SPRAY ANGLE @ 3 bar	MODEL NUMBER	PIPE SIZE BSPT	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)														SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar	
0°	1/8F0003	1/8	1.04	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	0° Solid Stream			
	1/4F0003	1/4	1.04	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74				
	1/8F0004	1/8	1.19	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99				
	1/4F0004	1/4	1.19	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99				
	1/8F0005	1/8	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.60	5.10	6.24				
	1/4F0005	1/4	1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.60	5.10	6.24				
	1/8F0006	1/8	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.62	4.32	6.11	7.5				
	1/4F0006	1/4	1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.62	4.32	6.11	7.5				
	1/8F0008	1/8	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.16	3.65	4.08	4.82	5.8	8.2	10.0				
	1/4F0008	1/4	1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.16	3.65	4.08	4.82	5.8	8.2	10.0				
	1/8F0010	1/8	1.91	1.25	1.61	1.91	2.28	2.79	3.22	3.95	4.56	5.10	6.0	7.2	10.2	12.5				
	1/4F0010	1/4	1.91	1.25	1.61	1.91	2.28	2.79	3.22	3.95	4.56	5.10	6.0	7.2	10.2	12.5				
	1/8F0015	1/8	2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8	15.3	18.7				
	1/4F0015	1/4	2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8	15.3	18.7				
	1/8F0020	1/8	2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0				
	1/4F0020	1/4	2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0				
	1/8F0030	1/8	3.28	3.74	4.83	5.72	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4				
	1/4F0030	1/4	3.28	3.74	4.83	5.72	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4				
	1/8F0040	1/8	3.78	4.99	6.45	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	40.8	49.9				
	1/4F0040	1/4	3.78	4.99	6.45	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	40.8	49.9				
3/8F0040	3/8	3.78	4.99	6.45	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	40.8	49.9					
1/4F0050	1/4	4.24	6.24	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0	51.0	62.4					
3/8F0050	3/8	4.24	6.24	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0	51.0	62.4					
1/4F0060	1/4	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36.2	43.2	61.1	75					
3/8F0060	3/8	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36.2	43.2	61.1	75					
1/4F0070	1/4	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	31.9	35.7	42.2	50.4	71	87					
3/8F0070	3/8	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	31.9	35.7	42.2	50.4	71	87					
1/4F0080	1/4	5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100					
3/8F0080	3/8	5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100					
3/8F00100	3/8	5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60	72	102	125					
3/8F00120	3/8	6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150					
1/2F00120	1/2	6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150					
1/2F00150	1/2	7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108	153	187					
1/2F00200	1/2	8.46	25.0	32.2	38.1	45.6	55.8	64	79	91	102	121	144	204	250					
3/4F00250	3/4	9.47	31.2	40.3	47.7	57.0	70	81	99	114	127	151	180	255	312					
3/4F00350	3/4	11.20	43.7	56.4	66.7	80	9.8	113	138	160	178	211	252	357	437					
3/4F00400	3/4	11.96	49.9	64.5	76	91	112	129	158	182	204	241	288	408	499					
3/4F00500	3/4	13.39	62.4	81	95	114	140	161	197	228	255	301	360	510	624					
3/4F00700	3/4	15.82	87	113	133	160	195	226	276	319	357	422	504	713	874					
1F001000	1	18.92	125	161	191	228	279	322	395	456	510	603	721	1019	1248					

STF SERIES

Flat "V" spray nozzles



FLAT SPRAY

SPRAY CHARACTERISTICS:

STF spray nozzles produce a flat, fan-shaped spray pattern, similar to the F Series. Spray angles are available for a 0° solid stream to 90°, measured at 3 bar. Spray angles generally increase with pressure, as shown in the capacity table below.

Spray density tapers off toward the outside edges of these sprays, to permit overlapping of spray patterns while maintaining uniform spray density.

CONSTRUCTION:

The STF are disc-shaped, with a male 5/8-18 straight thread. They are machined from bar stock, and are one piece construction. Standard materials are 303 stainless steel and 316 stainless steel. Some models are also available in other materials.

TYPICAL APPLICATIONS:

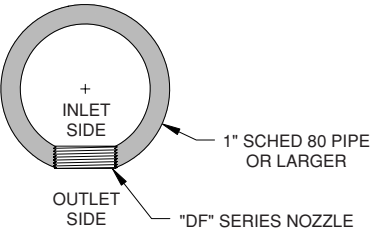
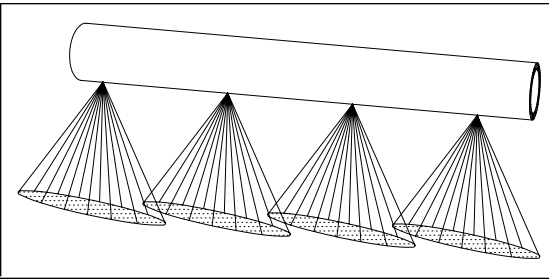
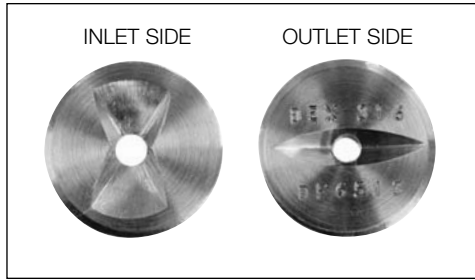
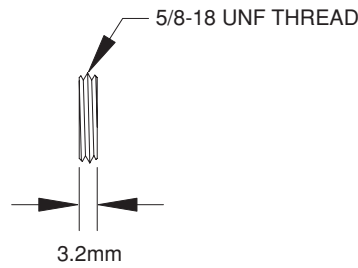
The STF series is designed for applications where space is at a minimum, or where the nozzles must not protrude from the header. Typically the outer surface of the nozzle is flush with the outside of the header.

(NOTE: Certain models will protrude slightly).

SPRAY ANGLE @ 3 bar	MODEL NUMBER	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @		
			0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	4 bar	5 bar	6 bar	8 bar	11 bar	15 bar	20 bar	1.5 bar	3 bar	5 bar
0°	STF0003	1.04	0.57	0.68	0.84	0.97	1.08	1.18	1.37	1.53	1.67	1.93	2.27	2.65	3.06	0°	0°	0°
	STF0007	1.57	1.33	1.60	1.95	2.26	2.52	2.76	3.2	3.6	3.9	4.5	5.3	6.2	7.1	0°	0°	0°
25°	STF2507	1.57	1.33	1.60	1.95	2.26	2.52	2.76	3.2	3.6	3.9	4.5	5.3	6.2	7.1	19°	25°	26°
50°	STF50084	1.73	1.60	1.91	2.34	2.71	3.03	3.3	3.8	4.3	4.7	5.4	6.3	7.4	8.6	42°	50°	57°
	STF5013	2.16	2.48	2.96	3.6	4.2	4.7	5.1	5.9	6.6	7.3	8.4	9.8	11.5	13.2	44°	50°	56°
	STF5019	2.59	3.6	4.3	5.3	6.1	6.8	7.5	8.7	9.7	10.6	12.2	14.4	16.8	19.4	45°	50°	54°
60°	STF6003	1.04	0.57	0.68	0.84	0.97	1.08	1.18	1.37	1.53	1.67	1.93	2.27	2.65	3.06	50°	60°	65°
	STF50054	1.40	1.03	1.23	1.51	1.74	1.95	2.13	2.46	2.75	3.01	3.5	4.1	4.8	5.5	52°	60°	64°
	STF60093	1.83	1.77	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.2	6.0	7.0	8.2	9.5	56°	60°	66°
	STF6013	2.16	2.48	2.96	3.6	4.2	4.7	5.1	5.9	6.6	7.3	8.4	9.8	11.5	13.2	55°	60°	64°
	STF6020	2.67	3.8	4.6	5.6	6.4	7.2	7.9	9.1	10.2	11.2	12.9	14.4	17.7	20.4	55°	60°	63°
	STF6024	2.92	4.6	5.5	6.7	7.7	8.6	9.5	10.9	12.2	13.4	15.5	18.1	21.2	24.5	58°	60°	66°
	STF6033	3.43	6.3	7.5	9.2	10.6	11.9	13.0	15.0	16.8	18.4	21.3	24.9	29.1	34	58°	60°	64°
	STF6040	3.76	7.6	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	25.8	30.2	35	41	57°	60°	62°
	STF6047	4.09	9.0	10.7	13.1	15.1	16.9	18.6	21.4	23.9	26.2	30.3	36	41	48	58°	60°	62°
STF6088	5.59	16.8	20.1	24.6	28.4	32	35	40	45	49	57	67	78	90	58°	60°	62°	
65°	STF65054	1.40	1.03	1.23	1.51	1.74	1.95	2.13	2.46	2.75	3.01	3.5	4.1	4.8	5.5	55°	65°	72°
	STF6513	2.16	2.48	2.96	3.6	4.2	4.7	5.1	5.9	6.6	7.3	8.4	9.8	11.5	13.2	57°	65°	70°
	STF6519	2.59	3.6	4.3	5.3	6.1	6.8	7.5	8.7	9.7	10.6	12.2	14.4	16.8	19.4	60°	65°	69°
	STF6520	2.67	3.8	4.6	5.6	6.4	7.2	7.9	9.1	10.2	11.2	12.9	15.1	17.7	20.4	62°	65°	69°
	STF6524	2.92	4.6	5.5	6.7	7.7	8.6	9.5	10.9	12.2	13.4	15.5	18.1	21.2	24.5	62°	65°	67°
	STF6588	5.59	16.8	20.1	24.6	28.4	32	35	40	45	49	57	67	78	90	61°	65°	69°
68°	STF6824	2.92	4.6	5.5	6.7	7.7	8.6	9.5	10.9	12.2	13.4	15.5	18.1	21.2	24.5	65°	68°	70°
80°	STF8004	1.19	0.76	0.91	1.12	1.29	1.44	1.58	1.82	2.04	2.23	2.58	3.02	3.5	4.1	75°	80°	84°
	STF80054	1.40	1.03	1.23	1.51	1.74	1.95	2.13	2.46	2.75	3.01	3.5	4.1	4.8	5.5	72°	80°	87°
	STF80084	1.73	1.56	1.87	2.29	2.64	2.95	3.2	3.7	4.2	4.6	5.3	6.2	7.2	8.4	76°	80°	84°
	STF80093	1.83	1.77	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.2	6.0	7.0	8.2	9.5	74°	80°	84°
	STF8010	1.88	1.91	2.28	2.79	3.2	3.6	3.9	4.6	5.1	5.6	6.4	7.6	8.8	10.2	75°	80°	86°
	STF8013	2.16	2.48	2.96	3.6	4.2	4.7	5.1	5.9	6.6	7.3	8.4	9.8	11.5	13.2	76°	80°	85°
	STF8024	2.92	4.6	5.5	6.7	7.7	8.6	9.5	10.9	12.2	13.4	15.5	18.1	21.2	24.5	75°	80°	83°
	STF8033	3.43	6.3	7.5	9.2	10.6	11.9	13.0	15.0	16.8	18.4	21.3	24.9	29.1	34	76°	80°	82°
90°	STF90054	1.40	1.03	1.23	1.51	1.74	1.95	2.13	2.46	2.75	3.01	3.5	4.1	4.8	5.5	82°	90°	96°
	STF90093	1.83	1.77	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.2	6.0	7.0	8.2	9.5	83°	90°	95°
	STF9013	2.16	2.48	2.96	3.6	4.2	4.7	5.1	5.9	6.6	7.3	8.4	9.8	11.5	13.2	85°	90°	93°

Threaded disc flat "V" spray nozzles (low profile)

DF SERIES

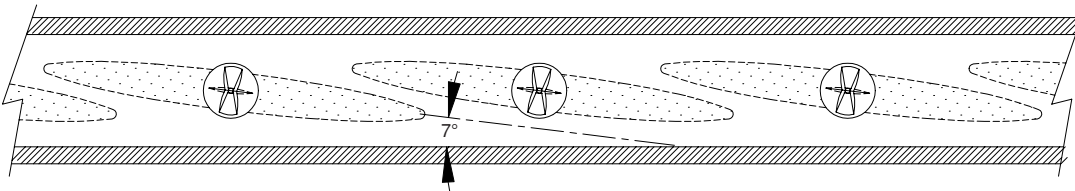


SPRAY CHARACTERISTICS:

These thin-disc flat spray nozzles are used where the nozzle must not project beyond the wall of the header pipe. Minimum recommended pipe size is 1" schedule 80. Optimum thread engagement occurs on pipes of 1-1/4" schedule 80 and larger. Usual operating pressures are up to 10 bar.

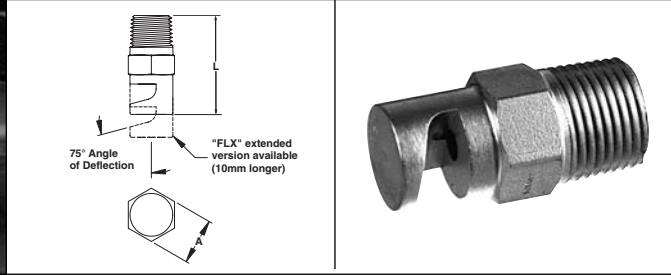
CONSTRUCTION:

Standard materials of construction are 316 stainless steel and 303 stainless steel. Other materials and capacities can be supplied.



10 - 15% overlap is recommended for complete coverage

MODEL NUMBER	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)										SPRAY ANGLE @ 3 bar
		0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	13 bar	
DF35054	1.40	1.03	1.23	1.51	1.74	2.13	2.46	2.75	3.3	3.9	4.4	35°
DF3513	2.16	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.8	9.4	10.7	35°
DF3524	2.92	4.6	5.5	6.7	7.7	9.5	10.9	12.2	14.5	17.3	19.7	35°
DF3533	3.43	6.3	7.5	9.2	10.6	13.0	15.0	16.8	19.9	23.8	27.1	35°
DF4013	2.16	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.8	9.4	10.7	40°
DF4047	4.09	9.0	10.7	13.1	15.1	18.6	21.4	23.9	28.3	34	39	40°
DF4313	2.16	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.8	9.4	10.7	43°
DF5013	2.16	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.8	9.4	10.7	50°
DF55054	1.40	1.03	1.23	1.51	1.74	2.13	2.46	2.75	3.3	3.9	4.4	55°
DF55084	1.73	1.60	1.91	2.34	2.71	3.3	3.8	4.3	5.1	6.1	6.9	55°
DF5513	2.16	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.8	9.4	10.7	55°
DF5824	2.92	4.6	5.5	6.7	7.7	9.5	10.9	12.2	14.5	17.3	19.7	58°
DF5833	3.43	6.3	7.5	9.2	10.6	13.0	15.0	16.8	19.9	23.8	27.1	58°
DF6022	2.79	4.2	5.0	6.1	7.1	8.7	10.0	11.2	13.3	15.9	18.1	60°
DF65054	1.40	1.03	1.23	1.51	1.74	2.13	2.46	2.75	3.3	3.9	4.4	65°
DF6513	2.16	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.8	9.4	10.7	65°
DF6515	2.31	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	12.3	65°
DF6519	2.59	3.6	4.3	5.3	6.1	7.5	8.7	9.7	11.5	13.7	15.6	65°
DF6524	2.92	4.6	5.5	6.7	7.7	9.5	10.9	12.2	14.5	17.3	19.7	65°
DF6840	3.76	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	33	68°
DF70054	1.40	1.03	1.23	1.51	1.74	2.13	2.46	2.75	3.3	3.9	4.4	70°
DF80054	1.40	1.03	1.23	1.51	1.74	2.13	2.46	2.75	3.3	3.9	4.4	80°
DF80084	1.73	1.60	1.91	2.34	2.71	3.3	3.8	4.3	5.1	6.1	6.9	80°
DF8013	2.16	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.8	9.4	10.7	80°
DF8019	2.59	3.6	4.3	5.3	6.1	7.5	8.7	9.7	11.5	13.7	15.6	80°
DF8024	2.92	4.6	5.5	6.7	7.7	9.5	10.9	12.2	14.5	17.3	19.7	80°
DF8033	3.43	6.3	7.5	9.2	10.6	13.0	15.0	16.8	19.9	23.8	27.1	80°
DF90054	1.40	1.03	1.23	1.51	1.74	2.13	2.46	2.75	3.3	3.9	4.4	90°
DF11006	1.47	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	4.9	110°



SPRAY CHARACTERISTICS:

A wide, flat fan-shaped spray with low impact. The spray is deflected 75° away from the centerline of the pipe connection, as shown.

CONSTRUCTION:

The models listed are machined from bar stock, and are one piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Some models

are also available in other materials, such as PVC, CPVC, Teflon® and polypropylene.



TYPICAL APPLICATIONS:

Wherever a low impact, wide angle spray is required.

- Rinsing and Cooling
- Dishwashing
- Fertilizer Spraying
- Metal Wash

FLAT SPRAY

MODEL NUMBER	PIPE SIZE BSPT	ORIFICE DIA. (mm)	DIMENSIONS		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)									SPRAY ANGLE @					
			A	L	.2 bar	.3 bar	.5 bar	.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	.2 bar	.3 bar	.5 bar	.7 bar	1.5 bar	4 bar
1/8FL.25	1/8	0.43	11 mm	15.8	--	--	--	0.10	0.11	0.14	0.16	0.20	0.23	--	--	--	90°	106°	120°
1/8FL.50	1/8	0.61	11 mm	15.8	--	--	0.16	0.19	0.23	0.28	0.32	0.39	0.46	--	--	65°	78°	99°	120°
1/8FL.75	1/8	0.74	11 mm	19.9	--	--	0.24	0.29	0.34	0.42	0.48	0.59	0.68	--	--	72°	85°	112°	140°
1/8FL1	1/8	0.84	11 mm	19.9	--	--	0.32	0.38	0.46	0.56	0.64	0.79	0.91	--	--	90°	97°	135°	148°
1/8FL1.3	1/8	0.97	11 mm	20.7	--	0.32	0.42	0.50	0.59	0.73	0.84	1.03	1.19	--	73°	80°	92°	115°	134°
1/8FL1.5	1/8	1.07	11 mm	20.7	0.31	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	57°	69°	75°	87°	104°	125°
1/8FL2	1/8	1.19	11 mm	20.7	0.41	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	60°	73°	82°	86°	104°	125°
1/8FL2.5	1/8	1.40	11 mm	20.7	0.52	0.63	0.82	0.97	1.16	1.42	1.64	2.01	2.32	749°	87°	92°	101°	112°	130°
1/8FL3	1/8	1.50	11 mm	20.7	0.61	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	84°	97°	106°	115°	130°	140°
1/8FL4	1/8	1.78	11 mm	23.8	0.82	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	74°	87°	89°	101°	116°	127°
1/8FL5	1/8	1.93	11 mm	23.8	1.02	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	78°	89°	97°	103°	113°	132°
1/8FL7.5	1/8	2.39	11 mm	23.8	1.53	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	98°	105°	112°	120°	132°	144°
1/8FL10	1/8	2.79	11 mm	23.8	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	116°	125°	135°	137°	144°	150°
1/8FL12	1/8	3.05	14 mm	23.8	2.45	3.00	3.9	4.6	5.5	6.7	7.7	9.5	10.9	98°	105°	109°	118°	134°	139°
1/8FL15	1/8	3.28	14 mm	26.7	3.06	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	100°	110°	115°	124°	131°	139°
1/8FL18	1/8	3.73	14 mm	26.7	3.7	4.5	5.8	6.9	8.2	10.0	11.6	14.2	16.4	100°	112°	116°	124°	135°	137°
1/8FL20	1/8	3.91	14 mm	26.7	4.1	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	115°	125°	128°	134°	142°	147°
1/4FL1.3	1/4	0.97	14 mm	23.8	0.26	0.32	0.42	0.50	0.59	0.73	0.84	1.03	1.19	52°	62°	71°	81°	97°	116°
1/4FL1.5	1/4	1.07	14 mm	23.8	0.31	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	57°	70°	77°	85°	103°	122°
1/4FL2	1/4	1.19	14 mm	25.4	0.41	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	62°	76°	84°	96°	110°	134°
1/4FL2.5	1/4	1.40	14 mm	23.8	0.51	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	88°	110°	114°	126°	145°	152°
1/4FL3	1/4	1.50	14 mm	23.8	0.61	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	77°	91°	99°	104°	128°	149°
1/4FL4	1/4	1.78	14 mm	25.4	0.82	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	65°	73°	82°	87°	96°	104°
1/4FL5	1/4	1.93	14 mm	25.4	1.02	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	69°	84°	89°	97°	107°	124°
1/4FL7.5	1/4	2.39	14 mm	25.4	1.53	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	90°	104°	122°	133°	145°	150°
1/4FL10	1/4	2.79	14 mm	25.4	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	125°	130°	134°	137°	148°	156°
1/4FL12	1/4	3.05	14 mm	25.4	2.45	3.00	3.9	4.6	5.5	6.7	7.7	9.5	10.9	110°	115°	122°	130°	141°	150°
1/4FL15	1/4	3.28	14 mm	33.4	3.06	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	90°	98°	109°	125°	136°	144°
1/4FL18	1/4	3.73	14 mm	33.4	3.7	4.5	5.8	6.9	8.2	10.0	11.6	14.2	16.4	104°	113°	118°	124°	134°	138°
1/4FL20	1/4	3.91	14 mm	33.4	4.1	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	110°	119°	127°	131°	136°	144°
1/4FL22	1/4	4.09	14 mm	33.4	4.5	5.5	7.1	8.4	10.0	12.3	14.2	17.4	20.1	97°	108°	114°	120°	128°	132°
1/4FL24	1/4	4.29	14 mm	33.4	4.9	6.0	7.7	9.2	10.9	13.4	15.5	18.9	21.9	106°	118°	121°	127°	136°	154°
1/4FL27	1/4	4.50	14 mm	33.4	5.5	6.7	8.7	10.3	12.3	15.1	17.4	21.3	24.6	110°	120°	124°	129°	139°	146°
3/8FL30	3/8	4.78	17 mm	33.4	6.1	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	104°	116°	121°	127°	135°	138°
3/8FL35	3/8	4.98	17 mm	33.4	7.1	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	104°	114°	118°	126°	130°	137°
3/8FL40	3/8	5.31	17 mm	33.4	8.2	10.0	12.9	15.3	18.2	22.3	25.8	32	36	109°	115°	123°	126°	135°	136°
3/8FL45	3/8	5.79	17 mm	33.4	9.2	11.2	14.5	17.2	20.5	25.1	29.0	36	41	117°	126°	134°	139°	142°	144°

MODEL NUMBER	PIPE SIZE BSPT	ORIFICE DIA. (mm)	DIMENSIONS		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)										SPRAY ANGLE @					
			A	L	.2 bar	.3 bar	.5 bar	.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	.2 bar	.3 bar	.5 bar	.7 bar	1.5 bar	4 bar	
1/2FL40	1/2	5.31	22mm	42.9	8.2	10.0	12.9	15.3	18.2	22.3	25.8	32	36	106°	111°	119°	124°	129°	133°	
1/2FL50	1/2	6.15	22mm	42.9	10.2	12.5	16.1	19.1	22.8	27.9	32	39	46	106°	122°	130°	133°	139°	141°	
1/2FL60	1/2	6.76	22mm	42.9	12.2	15.0	19.3	22.9	27.3	33	39	47	55	110°	120°	124°	128°	133°	138°	
1/2FL70	1/2	7.37	22mm	50.8	14.3	17.5	22.6	26.7	32	39	45	55	64	105°	118°	119°	121°	124°	130°	
1/2FL80	1/2	7.92	22mm	50.8	16.3	20.0	25.8	30.5	36	45	52	63	73	114°	116°	124°	126°	130°	135°	
3/4FL90	3/4	8.03	31.8mm	60.3	18.3	22.5	29.0	34	41	50	58	71	82	104°	115°	120°	121°	125°	128°	
3/4FL100	3/4	8.74	31.8mm	60.3	20.4	25.0	32	38	46	56	64	79	91	105°	113°	115°	118°	121°	125°	
3/4FL110	3/4	8.84	31.8mm	60.3	22.4	27.5	35	42	50	61	71	87	100	106°	110°	116°	119°	120°	121°	
3/4FL120	3/4	9.53	31.8mm	60.3	24.5	30.0	39	46	55	67	77	95	109	119°	125°	129°	131°	133°	135°	
3/4FL140	3/4	10.21	31.8mm	65.1	28.5	35	45	53	64	78	90	111	128	115°	120°	128°	133°	137°	139°	
3/4FL160	3/4	11.92	38.1mm	65.1	33	40	52	61	73	89	103	126	146	117°	122°	130°	135°	139°	140°	
3/4FL180	3/4	11.68	38.1mm	66.7	37	45	58	69	82	100	116	142	164	117°	128°	131°	133°	136°	136°	
3/4FL210	3/4	12.70	38.1mm	66.7	43	52	68	80	96	117	135	166	191	122°	127°	132°	135°	136°	136°	
1FL140	1	10.21	38.1mm	73.0	29	35	45	53	64	78	90	111	128	117°	122°	126°	130°	133°	133°	
1FL160	1	10.92	38.1mm	71.3	33	40	52	61	73	89	103	126	146	117°	127°	131°	135°	136°	136°	
1FL180	1	11.68	38.1mm	73.0	37	45	58	69	82	100	116	142	164	115°	125°	128°	132°	135°	135°	
1FL210	1	12.70	38.1mm	73.0	43	52	68	80	96	117	135	166	191	117°	122°	127°	130°	133°	134°	
1FL300	1	14.68	44.5mm	92.1	61	75	97	114	137	167	193	237	273	114°	118°	120°	123°	124°	124°	
1FL450	1	17.88	44.5mm	92.1	92	112	145	172	205	251	290	355	410	128°	135°	139°	142°	144°	144°	

FLAT SPRAY

Flooding nozzles for air and steam applications

FL SERIES

SPRAY CHARACTERISTICS:

The FL series spray nozzles may also be used with air or steam, resulting in a deflected curtain of gas extending no more than a few centimetres away from the nozzle. For most applications, the maximum practical target distance from the nozzle is 25 cm.

CONSTRUCTION:

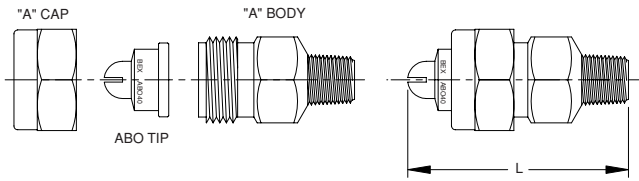
The models listed are machined from bar stock, and are one piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Some models are also available in other materials, such as PVC, CPVC, Teflon® and polypropylene.

TYPICAL APPLICATIONS:

For dispensing air or steam. Stainless steel construction recommended for steam applications.

- Cleaning
- Cooling
- Blow-off of surfaces

MODEL NUMBER			ORIFICE DIA. (mm)	AIR CAPACITY (L/min)					STEAM CAPACITY (kg/Hr)					COVERAGE AT 15 cm DISTANCE FROM THE NOZZLE	
1/8 Pipe Size	1/4 Pipe Size	3/8 Pipe size		.7 bar	1.5 bar	3 bar	4 bar	5 bar	.7 bar	1.5 bar	3 bar	4 bar	5 bar	0.7 bar	1 bar
1/8FL.25			0.43	1.7	4.0	6.6	8.3	10.0	0.12	0.17	0.29	0.36	0.43	5	11
1/8FL.50			0.61	3.1	7.6	12.8	16.0	19.2	0.25	0.36	0.60	0.75	0.9	5	13
1/8FL.75			0.74	4.8	11.0	18.5	23.2	27.8	0.38	0.53	0.89	1.1	1.3	6	15
1/8FL1			0.84	6.2	14.4	24.2	30.3	36.3	0.49	0.69	1.2	1.4	1.7	8	15
1/8FL1.3	1/4FL1.3		0.97	8.2	19.3	32.3	40	48	1	0.9	1.5	1.9	2.3	8	17
1/8FL1.5	1/4FL1.5		1.07	9.9	23.5	39	49	59	1	1.1	1.9	2.4	2.9	9	17
1/8FL2	1/4FL2		1.19	12.5	29.2	49	61	73	1	1.5	2.4	3.0	3.7	9	19
1/8FL2.5	1/4FL2.5		1.40	17.0	40	67	84	101	1	2.0	3.4	4.2	5.0	10	19
1/8FL3	1/4FL3		1.50	19.5	46	77	97	116	2	2.3	3.8	4.8	5.7	13	20
1/8FL4	1/4FL4		1.78	27.7	65	109	137	164	2	3.3	5.5	6.9	8.2	13	23
1/8FL5	1/4FL5		1.93	33	76	128	160	192	3	3.9	6.5	8.1	10	15	25
1/8FL7.5	1/4FL7.5		2.39	50	119	199	249	299	4	5.9	10	12	15	17	25
1/8FL10	1/4FL10		2.79	68	161	271	338	406	6	8.1	14	17	20	18	28
1/8FL12	1/4FL12		3.05	82	193	323	404	484	7	10	16	20	24	18	29
1/8FL15	1/4FL15		3.28	99	238	399	499	598	9	12	20	25	30	18	30
1/8FL18	1/4FL18		3.73	122	292	489	611	734	10	15	24	30	37	20	33
1/8FL20	1/4FL20		3.91	133	320	537	671	805	11	16	27	33	40	22	37
	1/4FL22		4.09	147	348	584	730	876	13	39	30	37	45	22	37
	1/4FL24		4.29	161	385	646	807	969	14	20	33	41	49	22	38
	1/4FL27		4.50	178	422	708	885	1061	15	21	36	45	54	22	38
	3/8FL30		4.78	201	476	798	997	1197	17	24	40	50	61	22	39



FLAT SPRAY

SPRAY CHARACTERISTICS:

ABO Series air blow-off nozzles project a flat fan-shaped curtain of gas in a direction parallel to the axis of the nozzle body. Gases most commonly used are air and steam. ABO nozzles are designed with large maximum free passage sizes to reduce clogging and minimize the effects of minor tip damage.

CONSTRUCTION:

ABO assemblies comprise a body, a retaining cap and a nozzle tip. Standard materials are brass, 303 stainless steel and 316 stainless steel. Other materials are available on request.

SPECIAL FEATURES:

- Large maximum free passage
- Wider, more uniform coverage
- Easy assembly/disassembly and cleaning

TYPICAL APPLICATIONS:

- Cooling of Components/Parts
- Debris Removal
- Cleaning and Drying of Parts
- Small Gas Curtains

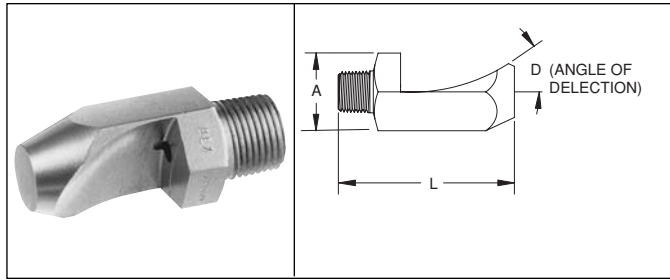
DIMENSIONS

MODEL NUMBER	PIPE SIZE (BSPT)	OVERALL LENGTH (L) (mm)
1/8ABO	1/8	45.0
1/4ABO	1/4	46.5
3/8ABO	3/8	48.3

MODEL NUMBER	SLOT WIDTH (mm)	AIR CAPACITY (L/min)				STEAM CAPACITY (kg/hr)				DISTANCE FROM NOZZLE (cm)	APPROX. WIDTH OF AIR COVERAGE(cm)						
		0.7 bar	1.5 bar	4 bar	6 bar	0.7 bar	1.5 bar	4 bar	6 bar		0.3 bar	0.7 bar	1.5 bar	3 bar	4 bar	5 bar	6 bar
ABO16	0.41	1.70	31	67	74	0.54	1.04	2.2	3.1	5	13	13	15	20	23	25	25
										10	18	20	23	30	36	41	41
										15	23	25	28	41	48	56	58
										25	25	33	38	53	64	71	74
										51	30	41	51	81	89	99	102
ABO20	0.51	40	57	121	134	1.32	2.0	4.3	6.0	5	13	15	18	23	25	28	28
										10	20	25	30	33	41	43	43
										15	25	33	41	43	53	61	61
										25	38	51	61	64	74	76	76
										51	61	71	79	84	97	104	107
ABO28	0.71	65	99	212	235	2.3	3.6	7.5	10.5	5	15	15	15	23	28	30	36
										10	20	23	23	36	14	46	58
										15	25	30	30	46	53	64	74
										25	38	43	46	66	74	86	94
										51	61	74	76	97	112	122	130
ABO40	1.02	119	170	364	403	4.1	5.9	12.4	17.3	5	18	20	20	28	28	30	30
										10	28	28	30	43	46	56	56
										15	33	33	41	58	61	74	76
										25	38	43	58	79	81	97	107
										51	56	71	102	114	117	127	140
ABO51	1.30	201	312	668	739	7.3	10.9	22.8	32.0	5	221	23	25	33	36	41	58
										10	30	38	41	53	61	71	81
										15	41	51	56	71	86	97	109
										25	61	74	76	102	117	124	135
										51	91	104	109	140	157	157	160
ABO72	1.83	368	538	1153	1277	12.3	20	40.9	57.3	5	18	23	30	41	51	56	58
										10	28	33	38	64	56	91	94
										15	36	43	48	86	104	114	119
										25	51	61	66	114	140	124	157
										51	84	99	104	140	178	188	193

High impact flat spray nozzles

FP SERIES



SPRAY CHARACTERISTICS:

A flat and thin fan-shaped spray with sharp definition on all edges. This spray delivers very high impact over the area covered. The spray is deflected by angle D away from the centerline of the spray nozzle.

CONSTRUCTION:

The models listed are machined from bar stock, and are one piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel.

TYPICAL APPLICATIONS:

- High Impact Applications
- Metal Wash
- Gravel Washing
- Vehicle Washing

SPRAY ANGLE @ 3 bar	MODEL NUMBER	PIPE SIZE BSPT	ORIFICE DIA. (mm)	ANGLE 'D' @ 3 bar	Dimensions (mm)		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)								SPRAY ANGLE @			
					'A'	'L'	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	4 bar	5 bar	6 bar	1 bar	3 bar	5 bar	
50°	1/8FP5001	1/8	0.61	40°	17 Hex	21.1	0.23	0.28	0.32	0.36	0.39	0.46	0.51	0.56	30°	50°	58°	
	1/4FP50025	1/4	0.97	41°	17 Hex	27.3	0.57	0.70	0.81	0.90	0.99	1.14	1.27	1.40	29°	50°	57°	
	1/4FP5005	1/4	1.35	41°	17 Hex	28.3	1.14	1.40	1.61	1.80	1.97	2.28	2.55	2.79	30°	50°	59°	
	1/4FP5010	1/4	1.91	52°	17 Hex	31.8	2.28	2.79	3.2	3.6	3.9	4.6	5.1	5.6	32°	50°	59°	
	1/4FP5025	1/4	3.00	40°	17 Hex	33.3	5.7	7.0	8.1	9.0	9.9	11.4	12.7	14.0	41°	50°	58°	
	3/8FP5025	3/8	3.00	40°	17 Hex	34.9	5.7	7.0	8.1	9.0	9.9	11.4	12.7	14.0	41°	50°	58°	
	1/4FP5040	1/4	3.78	45°	22 Hex	47.7	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	42°	50°	59°	
	3/8FP5040	3/8	3.78	44°	22 Hex	48.4	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	40°	50°	59°	
	3/8FP5060	3/8	4.65	40°	22 Hex	55.5	13.7	16.7	19.3	21.6	23.7	27.3	30.6	33	41°	50°	52°	
	3/8FP50100	3/8	5.99	38°	31.8Hex	69.9	22.8	27.9	32	36	39	46	51	56	44°	50°	54°	
	3/8FP50125	3/8	6.76	34°	31.8Hex	65.3	28.5	35	40	45	49	57	64	70	39°	50°	57°	
	3/8FP50160	3/8	7.57	37°	31.8Hex	67.8	36	45	52	58	63	73	82	89	46°	50°	55°	
3/8FP50200	3/8	8.33	33°	34.9Hex	73.0	46	56	64	72	79	91	102	112	47°	50°	55°		
40°	3/8FP4040	3/8	3.78	34°	22 Hex	53.1	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	29°	40°	48°	
	3/8FP4050	3/8	4.24	32°	31.8Hex	56.9	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	30°	40°	47°	
	3/8FP4060	3/8	4.65	31°	28.6Hex	72.2	13.7	16.7	19.3	21.6	23.7	27.3	30.6	33	31°	40°	50°	
	3/8FP4070	3/8	5.00	28°	31.8Hex	71.9	16.0	19.5	22.6	25.2	27.6	32	36	39	33°	40°	50°	
	3/8FP4080	3/8	5.36	28°	31.8Hex	71.9	18.2	22.3	25.8	28.8	32	36	41	45	33°	40°	48°	
	3/8FP4090	3/8	5.79	28°	31.8Hex	71.9	20.5	25.1	29.0	32	36	41	46	50	34°	40°	46°	
	3/8FP40100	3/8	5.99	31°	31.8Hex	74.6	22.8	27.9	32	36	39	46	51	56	34°	40°	46°	
	35°	1/8FP3504	1/8	1.19	36°	11 Hex	49.2	0.91	1.12	1.29	1.44	1.58	1.82	2.04	2.23	20°	35°	41°
		1/4FP3510	1/4	1.91	37°	17 Hex	36.5	2.28	2.79	3.2	3.6	3.9	4.6	5.1	5.6	18°	35°	38°
1/4FP3520		1/4	2.67	30°	17 Hex	39.4	4.6	5.6	6.4	7.2	7.9	9.1	10.2	11.2	25°	35°	42°	
3/8FP3520		3/8	2.67	32°	17 Hex	40.2	4.6	5.6	6.4	7.2	7.9	9.1	10.2	11.2	25°	35°	41°	
3/8FP3525		3/8	2.97	29°	17 Hex	50.8	5.7	7.0	8.1	9.0	9.9	11.4	12.7	14.0	24°	35°	41°	
3/8FP3530		3/8	3.25	28°	22 Hex	54.2	6.8	8.4	9.7	10.8	11.8	13.7	15.3	16.7	25°	35°	42°	
3/8FP3540		3/8	3.78	31°	22 Hex	60.4	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	29°	35°	42°	
3/8FP3550		3/8	4.24	26°	25.4Hex	63.5	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	30°	35°	40°	
1/2FP3560		1/2	4.65	29°	27 Hex	73.0	13.7	16.7	19.3	21.6	23.7	27.3	30.6	33	27°	35°	40°	
1/2FP3580		1/2	5.36	22°	31.8Hex	79.9	18.2	22.3	25.8	28.8	31.6	36.5	40.8	44.7	25°	35°	38°	
1/2FP35100		1/2	5.61	24°	31.8Hex	88.9	22.8	27.9	32	36	39	46	51	56	25°	35°	40°	
3/4FP35160		3/4	7.49	22°	31.8Hex	117.0	36	45	52	58	63	73	82	89	26°	35°	39°	
3/4FP35200		3/4	8.46	24°	31.8Hex	110.3	46	56	64	72	79	91	102	112	31°	35°	42°	
25°	1/4FP2540	1/4	3.78	24°	22 Hex	68.2	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	22°	25°	27°	
15°	1/4FP1510	1/4	1.91	22°	17Hex	49.0	2.28	2.79	3.2	3.6	3.9	4.6	5.1	5.6	--	15°	21°	
	1/4FP1520	1/4	2.67	16°	17Hex	57.2	4.6	5.6	6.4	7.2	7.9	9.1	10.2	11.2	--	15°	18°	
	3/8FP1530	3/8	3.28	20°	22Hex	73.4	6.8	8.4	9.7	10.8	11.8	13.7	15.3	16.7	8°	15°	24°	
	3/8FP1540	3/8	3.78	13°	22Hex	95.3	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	8°	15°	20°	
	3/8FP1550	3/8	4.24	14°	22Hex	92.1	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	8°	15°	22°	
	1/2FP1560	1/2	4.65	14°	25.4Hex	111.8	13.7	16.7	19.3	21.6	23.7	27.3	30.6	33	11°	15°	18°	
	1/2FP1580	1/2	5.54	14°	28.6Hex	130.2	18.2	22.3	25.8	28.8	32	36	41	45	11°	15°	18°	
	1/2FP15100	1/2	5.99	15°	28.6Hex	138.1	22.8	27.9	32	36	39	46	51	56	11°	15°	17°	
	3/4FP15200	3/4	8.46	15°	38.1Hex	189.5	46	56	64	72	79	91	102	112	11°	15°	17°	
	3/4FP15300	3/4	10.36	15°	44.5Hex	190.5	68	84	97	108	118	137	153	167	12°	15°	18°	

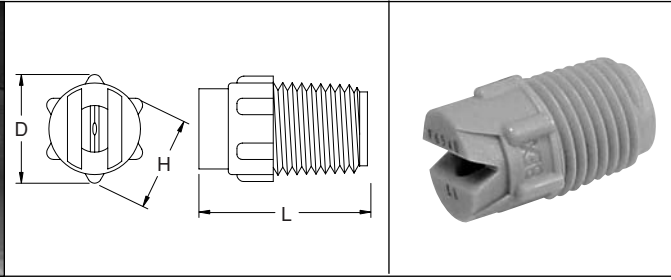
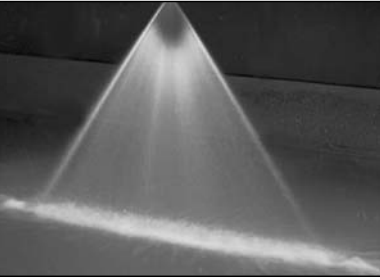
'--' means not recommended at this pressure

See pages 2, 3 and 4 for engineering data and spray coverage.

FLAT SPRAY

F SERIES

Molded plastic spray nozzles



DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. D (mm)	Dim. H (mm)	Dim. L (mm)
1/8F	16	14	20
1/4F	16	14	25
3/8F	20	18	25

SPRAY CHARACTERISTICS:

BEX F series spray nozzles produce a flat spray pattern with spray angles of 0° to 110° @ 3 bar.

CONSTRUCTION:

Each BEX molded nozzle is designed with a series of "knobs" which makes them easier to finger tighten than a hex, especially when wet. The design feature of a small starter barrel greatly reduces the tendency to strip or cross-thread the nozzle during the installation.

MATERIALS AVAILABLE:

ACETAL - (Yellow) suitable for most aqueous solutions (ph 4-9) up to 80°C.
 POLYPROPYLENE - (Green) excellent chemical and corrosion resistance. Useful up to 80°C.
 NATURAL POLYPROPYLENE - non-pigmented for optimum purity.
 PVDF - (Red) excellent durability and abrasion resistance and is inert to most chemicals. Many applications useful up to 150°C.
 NATURAL PVDF - non-pigmented for optimum purity.

TYPICAL APPLICATIONS:

- Printed Circuit Board Washing
- PCB-Etching/Developing
- Semiconductor Manufacturing
- Pressure Washers
- Car Washing
- Street Sweeping
- Carpet Cleaning
- Fruit and Vegetable Washing
- Plating Processes
- Dust Suppression
- Acid Spraying
- Degreasing
- Coating Applications
- Foam Control
- Metal Washing
- Chemical Spraying
- Rinsing Parts

FLAT SPRAY

	SPRAY ANGLES @ 3 bar									CAPACITY (L/min)		
	0°	15°	25°	40°	50°	65°	80°	95°	110°	@0.7 bar	@3 bar	
1/8 MODELS	1/8F0002	1/8F1502	1/8F2502	1/8F4002	1/8F5002	1/8F6502	1/8F8002	1/8F9502	1/8F11002	0.38	0.79	
	1/8F00025	1/8F15025	1/8F25025	1/8F40025	1/8F50025	1/8F65025	1/8F80025	1/8F95025	1/8F110025	0.48	0.99	
	1/8F0003	1/8F1503	1/8F2503	1/8F4003	1/8F5003	1/8F6503	1/8F8003	1/8F9503	1/8F11003	0.57	1.18	
	1/8F0004	1/8F1504	1/8F2504	1/8F4004	1/8F5004	1/8F6504	1/8F8004	1/8F9504	1/8F11004	0.76	1.58	
	1/8F0005	1/8F1505	1/8F2505	1/8F4005	1/8F5005	1/8F6505	1/8F8005	1/8F9505	1/8F11005	0.95	1.97	
	1/8F0006	1/8F1506	1/8F2506	1/8F4006	1/8F5006	1/8F6506	1/8F8006	1/8F9506	1/8F11006	1.14	2.37	
	1/8F0007	1/8F1507	1/8F2507	1/8F4007	1/8F5007	1/8F6507	1/8F8007	1/8F9507	1/8F11007	1.33	2.76	
	1/8F0008	1/8F1508	1/8F2508	1/8F4008	1/8F5008	1/8F6508	1/8F8008	1/8F9508	1/8F11008	1.53	3.16	
	1/8F0010	1/8F1510	1/8F2510	1/8F4010	1/8F5010	1/8F6510	1/8F8010	1/8F9510	1/8F11010	1.91	3.95	
	1/8F0015	1/8F1515	1/8F2515	1/8F4015	1/8F5015	1/8F6515	1/8F8015	1/8F9515	1/8F11015	2.86	5.92	
	1/8F0020	1/8F1520	1/8F2520	1/8F4020	1/8F5020	1/8F6520	1/8F8020	1/8F9520	1/8F11020	3.8	7.89	
	1/4 MODELS	1/4F0002	1/4F1502	1/4F2502	1/4F4002	1/4F5002	1/4F6502	1/4F8002	1/4F9502	1/4F11002	0.38	0.79
		1/4F0003	1/4F1503	1/4F2503	1/4F4003	1/4F5003	1/4F6503	1/4F8003	1/4F9503	1/4F11003	0.57	1.18
		1/4F0004	1/4F1504	1/4F2504	1/4F4004	1/4F5004	1/4F6504	1/4F8004	1/4F9504	1/4F11004	0.76	1.58
1/4F0005		1/4F1505	1/4F2505	1/4F4005	1/4F5005	1/4F6505	1/4F8005	1/4F9505	1/4F11005	0.95	1.97	
1/4F0006		1/4F1506	1/4F2506	1/4F4006	1/4F5006	1/4F6506	1/4F8006	1/4F9506	1/4F11006	1.14	2.37	
1/4F0008		1/4F1508	1/4F2508	1/4F4008	1/4F5008	1/4F6508	1/4F8008	1/4F9508	1/4F11008	1.53	3.16	
1/4F0010		1/4F1510	1/4F2510	1/4F4010	1/4F5010	1/4F6510	1/4F8010	1/4F9510	1/4F11010	1.91	4.0	
1/4F0015		1/4F1515	1/4F2515	1/4F4015	1/4F5015	1/4F6515	1/4F8015	1/4F9515	1/4F11015	2.86	5.9	
1/4F0020		1/4F1520	1/4F2520	1/4F4020	1/4F5020	1/4F6520	1/4F8020	1/4F9520	1/4F11020	3.8	7.9	
1/4F0030		1/4F1530	1/4F2530	1/4F4030	1/4F5030	1/4F6530	1/4F8030	1/4F9530	1/4F11030	5.7	11.8	
1/4F0040		1/4F1540	1/4F2540	1/4F4040	1/4F5040	1/4F6540	1/4F8040	1/4F9540	1/4F11040	7.6	15.8	
1/4F0050		1/4F1550	1/4F2550	1/4F4050	1/4F5050	1/4F6550	1/4F8050	1/4F9550	1/4F11050	9.5	19.7	
1/4F0060		1/4F1560	1/4F2560	1/4F4060	1/4F5060	1/4F6560	1/4F8060	1/4F9560	1/4F11060	11.4	23.7	
1/4F0070		1/4F1570	1/4F2570	1/4F4070	1/4F5070	1/4F6570	1/4F8070	1/4F9570	1/4F11070	13.4	27.6	
3/8 MODELS	3/8F0010	3/8F1510	3/8F2510	3/8F4010	3/8F5010	3/8F6510	3/8F8010	3/8F9510	3/8F11010	1.91	4.0	
	3/8F0015	3/8F1515	3/8F2515	3/8F4015	3/8F5015	3/8F6515	3/8F8015	3/8F9515	3/8F11015	2.86	5.9	
	3/8F0020	3/8F1520	3/8F2520	3/8F4020	3/8F5020	3/8F6520	3/8F8020	3/8F9520	3/8F11020	3.8	7.9	
	3/8F0030	3/8F1530	3/8F2530	3/8F4030	3/8F5030	3/8F6530	3/8F8030	3/8F9530	3/8F11030	5.7	11.8	
	3/8F0040	3/8F1540	3/8F2540	3/8F4040	3/8F5040	3/8F6540	3/8F8040	3/8F9540	3/8F11040	7.6	15.8	
	3/8F0050	3/8F1550	3/8F2550	3/8F4050	3/8F5050	3/8F6550	3/8F8050	3/8F9550	3/8F11050	9.5	19.7	
	3/8F0060	3/8F1560	3/8F2560	3/8F4060	3/8F5060	3/8F6560	3/8F8060	3/8F9560	3/8F11060	11.4	23.7	
	3/8F0070	3/8F1570	3/8F2570	3/8F4070	3/8F5070	3/8F6570	3/8F8070	3/8F9570	3/8F11070	13.4	27.6	

Full cone spray nozzles

S SERIES

SPRAY CHARACTERISTICS:

Full cone spray pattern, with uniform distribution throughout the cone.

CONSTRUCTION:

The nozzle contains a patented insert with larger flow passages than older styles, and is less susceptible to clogging. Standard materials are brass, 303 stainless steel, and 316 stainless steel. Some models are also

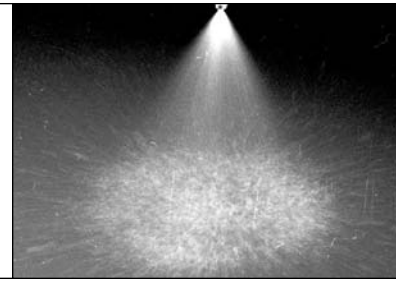
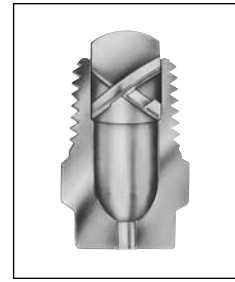
stocked in PVC, CPVC, and polypropylene.

For molded plastic models, please see page 29.

TYPICAL APPLICATIONS:

- Chemical Processing
- Cooling Sprays
- Foam Breaking
- Continuous Casting

U.S. Patent No. 4,142,682
Canadian Patent No. 1,050,589

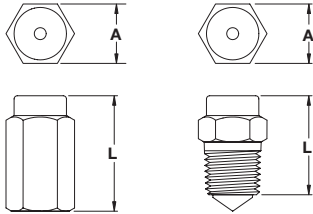


S SERIES

One piece body + non-removable insert

DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. L (mm)
1/8S	11 HEX	21
1/4S	14 HEX	24
3/8S	17 HEX	29
1/2S	22 HEX	33
3/4FS	27 HEX	52
1S	35 HEX	40
1FS	32 HEX	26
1S	42 dia.	68

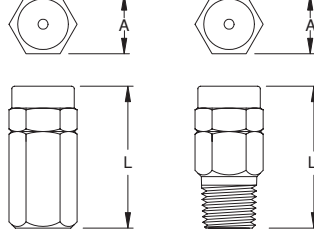


GS SERIES

Two piece body + removable insert

DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. B (mm)
1/8GS	16 HEX	33
1/4GS	18 HEX	34
3/8GS	21 HEX	43
1/2GS	25 HEX	51
1/8FSGS	16 HEX	33
1/4FSGS	18 HEX	42
3/8FSGS	21 HEX	49
1/2FSGS	25 HEX	53



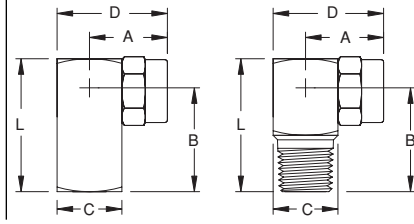
HGS SERIES

Two piece body + removable insert.

Sprays at right angle to pipe.

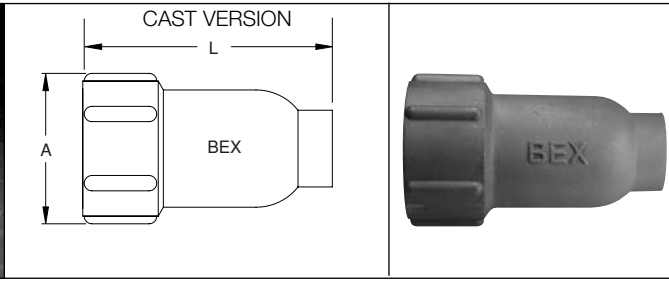
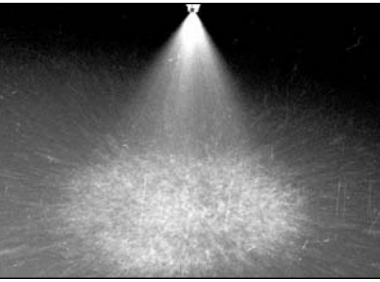
DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. B (mm)	Dim. C (mm)	Dim. D (mm)	Dim. L (mm)
1/8HGS	18	18	16 SQ	26	25
1/4HGS	23	25	19 SQ	33	35
3/8HGS	26	27	22 SQ	38	39
1/2HGS	30	35	25 SQ	43	48
1/8FHGS	17	18	16 SQ	23	25
1/4FHGS	23	25	19 SQ	33	35
3/8FHGS	26	28	22 SQ	38	39
1/2FHGS	30	35	25 SQ	43	48



FULL CONE SPRAY

S one piece body	GS two piece body		HGS ¹ right angle, two piece body		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													Spray Angle @		
							0.2 bar	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	.5 bar	1.5 bar	5 bar	
1/8S1	1/8FGS1	1/8GS1	1/8FHGS1	1/8HGS1	1/8	0.84	--	--	--	--	0.46	0.56	0.64	0.79	0.91	1.02	1.12	1.29	--	55°	52°	
1/8S1.5	1/8FGS1.5	1/8GS1.5	1/8FHGS1.5	1/8HGS1.5	1/8	1.17	--	--	--	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.67	1.93	--	65°	57°	
1/8S2	1/8FGS2	1/8GS2	1/8FHGS2	1/8HGS2	1/8	1.30	--	--	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.23	2.58	54°	59°	60°	
1/8S3	1/8FGS3	1/8GS3	1/8FHGS3	1/8HGS3	1/8	1.30	--	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.3	3.9	50°	53°	60°	
1/8S3.5	1/8FGS3.5	1/8GS3.5	1/8FHGS3.5	1/8HGS3.5	1/8	1.30	0.71	0.87	1.13	1.33	1.60	1.95	2.26	2.76	3.2	3.6	3.9	4.5	48°	58°	61°	
1/8S5	1/8FGS5	1/8GS5	1/8FHGS5	1/8HGS5	1/8	1.63	1.02	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.4	60°	75°	70°	
1/8S6	1/8FGS6	1/8GS6	1/8FHGS6	1/8HGS6	1/8	1.63	1.22	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	6.7	7.7	67°	72°	70°	
1/4S5	1/4FGS5	1/4GS5	1/4FHGS5	1/4HGS5	1/4	2.06	1.02	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.4	58°	68°	62°	
1/4S6.5	1/4FGS6.5	1/4GS6.5	1/4FHGS6.5	1/4HGS6.5	1/4	2.31	1.32	1.62	2.09	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.3	8.4	48°	56°	50°	
1/4S7.5	1/4FGS7.5	1/4GS7.5	1/4FHGS7.5	1/4HGS7.5	1/4	2.31	1.53	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	8.4	9.7	55°	65°	48°	
1/4S8.5	1/4FGS8.5	1/4GS8.5	1/4FHGS8.5	1/4HGS8.5	1/4	2.31	1.73	2.12	2.74	3.2	3.9	4.7	5.5	6.7	7.7	8.7	9.5	11.0	58°	65°	63°	
1/4S10	1/4FGS10	1/4GS10	1/4FHGS10	1/4HGS10	1/4	2.31	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	60°	65°	62°	
1/4S14	1/4FGS14	1/4GS14	1/4FHGS14	1/4HGS14	1/4	2.31	2.85	3.5	4.51	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	78°	85°	75°	
3/8S9.5	3/8FGS9.5	3/8GS9.5	3/8FHGS9.5	3/8HGS9.5	3/8	2.59	1.94	2.37	3.06	3.6	4.3	5.3	6.1	7.5	8.7	9.7	10.6	12.2	58°	68°	62°	
3/8S10	3/8FGS10	3/8GS10	3/8FHGS10	3/8HGS10	3/8	2.59	2.04	2.50	3.02	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	55°	65°	50°	
3/8S15	3/8FGS15	3/8GS15	3/8FHGS15	3/8HGS15	3/8	2.59	2.85	3.5	4.8	5.3	6.8	8.4	9.7	11.8	13.7	15.3	16.7	19.3	63°	65°	60°	
3/8S18	3/8FGS18	3/8GS18	3/8FHGS18	3/8HGS18	3/8	2.59	3.7	4.5	5.8	6.9	8.2	10.0	11.6	14.2	16.4	18.3	20.1	23.2	85°	88°	76°	
3/8S20	3/8FGS20	3/8GS20	3/8FHGS20	3/8HGS20	3/8	2.59	4.1	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	76°	82°	75°	
3/8S22	3/8FGS22	3/8GS22	3/8FHGS22	3/8HGS22	3/8	2.90	4.5	5.5	7.1	8.4	10.0	12.3	14.2	17.4	20.1	22.4	24.6	28.4	76°	78°	76°	
1/2S16	1/2FGS16	1/2GS16	1/2FHGS16	1/2HGS16	1/2	3.66	3.3	4.0	5.2	6.1	7.3	8.9	10.3	12.6	14.6	16.3	17.9	20.6	55°	60°	55°	
1/2S25	1/2FGS25	1/2GS25	1/2FHGS25	1/2HGS25	1/2	3.66	5.1	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	27.9	32	68°	73°	65°	
1/2S32	1/2FGS32	1/2GS32	1/2FHGS32	1/2HGS32	1/2	3.66	6.5	8.0	10.3	12.2	14.6	17.9	20.6	25.3	29.2	33	36	41	80°	90°	75°	
1/2S40	1/2FGS40	1/2GS40	1/2FHGS40	1/2HGS40	1/2	4.11	8.2	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	45	52	86°	90°	81°	
3/4FS30	3/4S30				3/4	4.11	6.1	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	33	39	50°	52°	49°	
3/4FS50	3/4S50				3/4	4.95	10.2	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	64	65°	70°	65°	
3/4FS83	3/4S83				3/4	4.95	16.9	20.7	26.7	32	38	46	53	66	76	85	93	107	93°	97°	86°	
1FS83	1S83				1	5.56	16.9	20.7	26.7	32	38	46	53	66	76	85	93	107	71°	78°	75°	
1FS106	1S106				1	5.56	21.6	26.5	34	40	48	59	68	84	97	108	118	137	86°	89°	80°	
1FS120	1S120				1	5.56	24.5	30.0	39	46	55	67	77	95	109	122	134	155	80°	94°	85°	
1FS142	1S142				1	5.56	28.9	35	46	54	65	79	92	112	129	145	159	183	88°	92°	83°	



DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. L (mm)
1 ¹ / ₄ FS	47.6	89
1 ¹ / ₂ FS	57.2	108
2FS	69.9	138
2 ¹ / ₂ FS	92.1	178
3FS	102	197
4FS	127	251

SPRAY CHARACTERISTICS:

Full cone spray pattern, with uniform distribution throughout the cone.

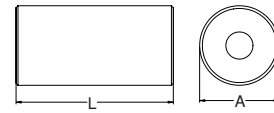
CONSTRUCTION:

All models have a female BSPT connection, and consist of a one piece body plus an internal insert. Standard materials are machined 316 stainless steel or cast 316 stainless steel.

TYPICAL APPLICATIONS:

- Chemical Processing
- Cooling Sprays
- Foam Breaking
- Heat Exchanger Cooling
- Coke Quenching
- Absorption Stack Spraying
- Gravel Washing

MACHINED VERSION



3" and 4" machined from bar.

FULL CONE SPRAY

'FS' FEMALE	PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @		
			0.2 bar	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	9 bar	0.5 bar	1.5 bar	5 bar	
1 ¹ / ₄ FS7.1	1 ¹ / ₄	6.6	14.5	17.7	22.9	27.1	32	40	46	56	65	72	79	97	54°	56°	50°	
1 ¹ / ₄ FS12	1 ¹ / ₄	6.6	24.5	30.0	39	46	55	67	77	95	109	122	134	164	72°	76°	70°	
1 ¹ / ₄ FS14.1	1 ¹ / ₄	6.6	28.7	35	45	54	64	79	91	111	129	144	157	193	76°	80°	74°	
1 ¹ / ₄ FS16.5	1 ¹ / ₄	7.7	34	41	53	63	75	92	106	130	150	168	184	226	85°	90°	83°	
1 ¹ / ₄ FS23.8	1 ¹ / ₄	7.9	49	60	77	92	109	134	155	189	219	245	268	328	94°	98°	89°	
1 ¹ / ₂ FS12.5	1 ¹ / ₂	8.0	25.5	31	40	48	57	70	81	99	114	127	140	171	50°	51°	49°	
1 ¹ / ₂ FS19	1 ¹ / ₂	8.4	39	47	61	72	87	106	122	150	173	194	212	260	68°	70°	62°	
1 ¹ / ₂ FS24	1 ¹ / ₂	8.4	49	60	77	92	109	134	155	189	219	245	268	328	82°	88°	70°	
1 ¹ / ₂ FS36	1 ¹ / ₂	9.5	73	90	116	137	164	201	232	284	328	367	402	492	98°	103°	85°	
2FS20	2	11.1	41	50	64	76	91	112	129	158	182	204	223	273	50°	64°	60°	
2FS36	2	11.1	73	90	116	137	164	201	232	284	328	367	402	492	70°	75°	68°	
2FS42	2	11.1	86	105	135	160	191	234	271	332	383	428	469	574	74°	78°	70°	
2FS47	2	11.1	96	117	151	179	214	262	303	371	428	479	525	643	78°	80°	84°	
2FS59	2	11.1	120	147	190	225	269	329	380	466	538	601	659	807	82°	86°	78°	
2FS71	2	11.1	145	177	229	271	324	396	458	560	647	724	793	971	98°	100°	93°	
2 ¹ / ₂ FS30	2 ¹ / ₂	11.1	61	75	97	114	137	167	193	237	273	306	335	410	55°	59°	55°	
2 ¹ / ₂ FS59	2 ¹ / ₂	11.1	120	147	190	225	269	329	380	466	538	601	659	807	75°	80°	72°	
2 ¹ / ₂ FS71	2 ¹ / ₂	13.5	145	177	229	271	324	396	458	560	647	724	793	971	80°	85°	77°	
2 ¹ / ₂ FS83	2 ¹ / ₂	13.5	169	207	267	317	378	463	535	655	757	846	927	1135	80°	82°	76°	
2 ¹ / ₂ FS95	2 ¹ / ₂	13.5	194	237	306	362	433	530	612	750	866	968	1061	1299	86°	90°	82°	
2 ¹ / ₂ FS108	2 ¹ / ₂	17.5	220	270	348	412	492	603	696	853	984	1101	1206	1477	96°	98°	86°	
3FS50	3	17.5	102	125	161	191	228	279	322	395	456	510	558	684	49°	50°	46°	
3FS95	3	17.5	194	237	306	362	433	530	612	750	866	968	1061	1299	81°	84°	76°	
3FS108	3	17.5	220	270	348	412	492	603	696	853	984	1101	1206	1477	86°	89°	81°	
3FS119	3	17.5	243	297	384	454	542	664	767	939	1085	1213	1329	1627	92°	95°	87°	
3FS142	3	17.5	289	354	458	541	647	793	915	1121	1294	1447	1585	1942	102°	105°	93°	
4FS189	4	22.2	385	472	609	721	861	1055	1218	1492	1723	1926	2110	2584	87°	90°	85°	
4FS212	4	22.2	432	529	683	808	966	1183	1366	1674	1932	2161	2367	2899	92°	95°	87°	
4FS238	4	22.2	485	594	767	908	1085	1329	1534	1879	2169	2426	2657	3254	97°	100°	91°	
4FS250	4	22.2	510	624	806	953	1139	1396	1611	1974	2279	2548	2791	3418	102°	105°	95°	

Wide angle full cone spray nozzles

SW SERIES

SPRAY CHARACTERISTICS:

A wide angle full cone spray pattern, with uniform distribution throughout the cone.

CONSTRUCTION:

This nozzle contains a patented insert with larger flow passages than older styles, and is less susceptible to clogging. Standard materials are brass, 303 stainless steel and 316 stainless steel. Some models are also stocked in PVC,

C PVC and polypropylene.

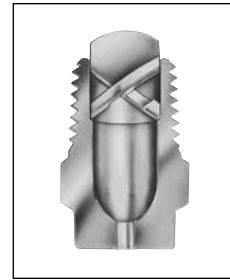
For molded plastic models, please see page 29.

TYPICAL APPLICATIONS:

Anywhere a wide angle full cone spray is required:

- Chemical Processing
- Cooling Sprays
- Continuous Casting

U.S. Patent No. 4,142,682
Canadian Patent No. 1,050,589

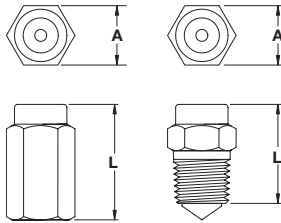


SW SERIES

One piece body + non-removable insert

DIMENSIONS

MALE SIZE (BSPT)	Dim. A (mm)	Dim. L (mm)	FEMALE SIZE (BSPT)	Dim. A (mm)	Dim. L (mm)
1/8SW	1 HEX	21	3/8FSW	32 HEX	60
1/4SW	14 HEX	24	1FSW	38 HEX	64
3/8SW	17 HEX	27	1 1/8FSW	48 HEX	89
1/2SW	22 HEX	37	1 1/2FSW	57 Dia.	108
3/4SW	32 HEX	30	2FSW	70 Dia.	149
1SW	35 dia.	52	2 3/4FSW	89 Dia.	165
			3FSW	102 Dia.	197
			4FSW	127 Dia.	267

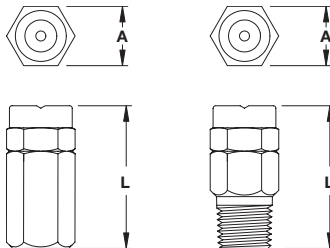


GSW SERIES

Two piece body + removable insert

DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. B (mm)
1/8GSW	16 HEX	33
1/4GSW	18 HEX	40
3/8GSW	21 HEX	43
1/2GSW	25 HEX	51
1/8FGSW	16 HEX	33
1/4FGSW	18 HEX	42
3/8FGSW	21 HEX	49
1/2FGSW	25 HEX	53



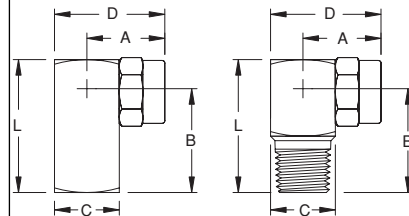
HGSW SERIES

Two piece body + removable insert.

Sprays at right angle to pipe.

DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. B (mm)	Dim. C (mm)	Dim. D (mm)	Dim. L (mm)
1/8HGSW	18	18	16 SQ	26	25
1/4HGSW	23	25	18 SQ	33	35
3/8HGSW	26	27	21 SQ	38	39
1/2HGSW	30	35	26 SQ	43	48
1/8FHGSW	17	18	16 SQ	23	25
1/4FHGSW	23	25	18 SQ	33	35
3/8FHGSW	26	27	21 SQ	38	39
1/2FHGSW	30	35	26 SQ	43	48

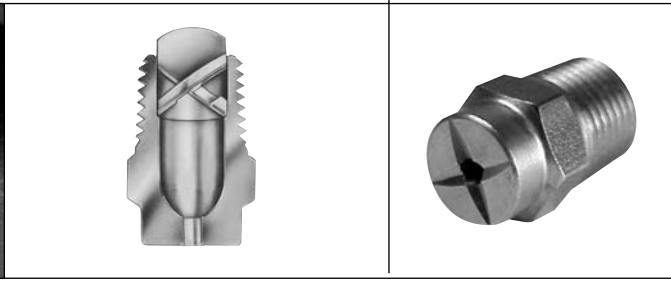


FULL CONE SPRAY

'SW' one piece body	'GSW' two piece body		'HGSW' right angle, two piece body		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)										Spray Angle @			
	FEMALE	MALE	FEMALE	MALE			FEMALE	MALE	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar
	1/8S2.8W	1/8FGS2.8W	1/8GS2.8W	1/8HGS2.8W	1/8	1.30	--	0.90	1.07	1.28	1.56	1.80	2.21	2.55	2.85	3.13	3.6	110°	105°	96°
	1/8S4.3W	1/8FGS4.3W	1/8GS4.3W	1/8HGS4.3W	1/8	1.30	--	1.39	1.64	1.96	2.40	2.77	3.4	3.9	4.4	4.8	5.5	117°	108°	100°
	1/8S5.6W	1/8FGS5.6W	1/8GS5.6W	1/8HGS5.6W	1/8	1.63	--	1.80	2.14	2.55	3.13	3.6	4.4	5.1	5.7	6.3	7.2	117°	110°	100°
	1/8S8W	1/8FGS8W	1/8GS8W	1/8HGS8W	1/8	2.06	2.00	2.58	3.05	3.6	4.5	5.2	6.3	7.3	8.2	8.9	10.3	118°	110°	103°
	1/4S5.6W	1/4FGS5.6W	1/4GS5.6W	1/4HGS5.6W	1/4	1.63	1.40	1.80	2.14	2.55	3.13	3.6	4.4	5.1	5.7	6.3	7.2	120°	108°	102°
	1/4S10W	1/4FGS10W	1/4GS10W	1/4HGS10W	1/4	2.31	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	118°	108°	102°
	1/4S12W	1/4FGS12W	1/4GS12W	1/4HGS12W	1/4	2.31	3.00	3.9	4.6	5.5	6.7	7.7	9.5	10.9	12.2	13.4	15.5	112°	102°	102°
	1/4S14W	1/4FGS14W	1/4GS14W	1/4HGS14W	1/4	2.31	3.5	4.5	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	118°	114°	104°
	3/8S17W	3/8FGS17W	3/8GS17W	3/8HGS17W	3/8	2.59	4.2	5.5	6.5	7.7	9.5	11.0	13.4	15.5	17.3	19.0	21.9	118°	117°	102°
	3/8S20W	3/8FGS20W	3/8GS20W	3/8HGS20W	3/8	2.59	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	120°	120°	106°
	3/8S24W	3/8FGS24W	3/8GS24W	3/8HGS24W	3/8	2.59	6.0	7.7	9.2	10.9	13.4	15.5	18.9	21.9	24.5	26.8	30.9	122°	118°	106°
	3/8S27W	3/8FGS27W	3/8GS27W	3/8HGS27W	3/8	2.59	6.7	8.7	10.3	12.3	15.1	17.4	21.3	24.6	27.5	30.1	35	122°	120°	107°
	1/2S30W	1/2FGS30W	1/2GS30W	1/2HGS30W	1/2	3.66	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	33	39	120°	118°	110°
	1/2S35W	1/2FGS35W	1/2GS35W	1/2HGS35W	1/2	3.66	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	39	45	122°	118°	108°
	1/2S40W	1/2FGS40W	1/2GS40W	1/2HGS40W	1/2	4.11	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	45	52	122°	119°	104°
	1/2S45W	1/2FGS45W	1/2GS45W	1/2HGS45W	1/2	4.11	11.2	14.5	17.2	20.5	25.1	29.0	36	41	46	50	58	141°	118°	108°
	3/4FS50W	3/4S50W			3/4	4.95	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	64.5	120°	120°	110°
	3/4FS71W	3/4S71W			3/4	4.95	17.7	22.9	27.1	32	40	46	56	65	72	79	92	118°	120°	112°
	1FS13W	1S13W			1	5.56	32	42	50	59	73	84	103	119	132	145	168	120°	125°	118°
	1 1/4FS19W				1 1/4	6.60	47	61	72	87	106	122	150	173	194	212	245	122°	123°	120°
	1 1/2FS29W				1 1/2	8.36	72	93	111	132	162	187	229	264	296	324	374	125°	125°	120°
	2FS56W				2	11.1	140	180	214	255	313	361	442	510	571	625	722	125°	125°	118°
	2 1/2FS83W				2 1/2	13.5	207	267	317	378	463	535	655	757	846	927	1070	122°	123°	120°
	3FS107W				3	17.5	267	345	408	488	597	690	845	975	1090	1195	1379	125°	123°	123°
	4FS165W				4	22.2	412	532	629	752	921	1064	1303	1504	1682	1842	2127	125°	125°	123°

SQ SERIES

Full square spray nozzles



-SPRAY CHARACTERISTICS:

Full cone spray pattern, with uniform distribution throughout the approximately square cone.

CONSTRUCTION:

Standard materials are brass, 303 and 316 stainless. Larger sizes in cast 316 or 303 stainless bar. Some models are also stocked in plastics and other materials.

Please see page 29 for molded plastic models.

TYPICAL APPLICATIONS:

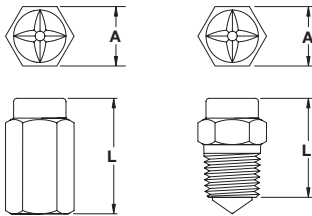
- Chemical Processing
- Cooling Sprays
- Continuous Casting

SQ SERIES

One piece body + non-removable insert

DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. L (mm)
1/8SQ	11 HEX	21
1/4SQ	14 HEX	24
3/8SQ	17 HEX	29
1/2SQ	22 HEX	33
3/4SQ	27 HEX	52
1FSQ	38 dia.	67
1 1/4FSQ	48 dia.	89
1 1/2FSQ	57 dia.	108
2FSQ	70 dia.	138
2 1/2FSQ	89 dia.	175

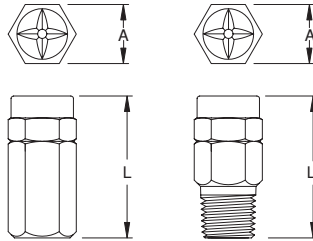


GSQ SERIES

Two piece body + removable insert

DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. L (mm)
1/8GSQ	16 HEX	33
1/4GSQ	18 HEX	40
3/8GSQ	21 HEX	43
1/2GSQ	26 HEX	51
1/4FGSQ	16 HEX	33
1/2FGSQ	18 HEX	42
3/8FGSQ	21 HEX	49
1/2FGSQ	26 HEX	53



'SQ' one piece body		'GSQ' two piece body		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												Spray Angle @		
FEMALE	MALE	FEMALE	MALE			0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar	1.5 bar	5 bar	
	1/8SQ3.6SQ	1/8FGS3.6SQ	1/8GS3.6SQ	1/8	1.45	--	1.16	1.37	1.64	2.01	2.32	2.84	3.3	3.7	4.0	4.6	42°	55°	50°	
	1/8SQ4.8SQ	1/8FGS4.8SQ	1/8GS4.8SQ	1/8	1.63	--	1.55	1.83	2.19	2.68	3.09	3.8	4.4	4.9	5.4	6.2	50°	65°	60°	
	1/8SQ6SQ	1/8FGS6SQ	1/8GS6SQ	1/8	2.06	--	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	6.7	7.7	30°	65°	60°	
	1/4SQ6SQ	1/4FGS6SQ	1/4GS6SQ	1/4	2.06	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	6.7	7.7	60°	65°	60°	
	1/4SQ10SQ	1/4FGS10SQ	1/4GS10SQ	1/4	2.31	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	61°	67°	60°	
	1/4SQ12SQ	1/4FGS12SQ	1/4GS12SQ	1/4	2.31	3.00	3.9	4.6	5.5	6.7	7.7	9.5	10.9	12.2	13.4	15.5	71°	76°	69°	
	1/4SQ14SQ	1/4FGS14SQ	1/4GS14SQ	1/4	2.31	3.5	4.5	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	78°	85°	75°	
	3/8SQ18SQ	3/8FGS18SQ	3/8GS18SQ	3/8	2.59	4.5	5.8	6.9	8.2	10.0	11.6	14.2	16.4	18.3	20.1	23.2	70°	75°	68°	
	1/2SQ29SQ	1/2FGS29SQ	1/2GS29SQ	1/2	3.66	7.2	9.3	11.1	13.2	16.2	18.7	22.9	26.4	29.6	32	37	70°	75°	68°	
	1/2SQ36SQ	1/2FGS36SQ	1/2GS36SQ	1/2	3.66	9.0	11.6	13.7	16.4	20.1	23.2	28.4	33	37	40	46	80°	85°	77°	
	3/4SQ50SQ			3/4	4.95	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	64	70°	75°	68°	
1FS106SQ				1	5.56	26.5	34	40	48	59	68	84	97	108	118	137	77°	80°	72°	
1 1/4FS177SQ				1 1/4	6.60	44	57	67	81	99	114	140	161	180	198	228	77°	80°	72°	
1 1/2FS230SQ				1 1/2	9.96	57	74	88	105	128	148	182	210	234	257	296	74°	79°	72°	
2FS290SQ				2	11.13	72	93	111	132	162	187	229	264	296	324	374	65°	70°	65°	
2FS360SQ				2	11.13	90	116	137	164	201	232	284	328	367	402	464	70°	75°	70°	
2FS480SQ				2	11.13	120	155	183	219	268	309	379	438	489	536	619	78°	80°	76°	
2 1/2FS590SQ				2 1/2	13.49	147	190	225	269	329	380	466	538	601	659	761	75°	80°	73°	

Wide angle full square nozzles

SWSQ SERIES

SPRAY CHARACTERISTICS:

Full cone wide angle spray pattern, with uniform distribution through the approximately square cone.

CONSTRUCTION:

Standard materials are brass, 303 and 316 stainless steel. Some models are

also stocked in other materials. See page 31 for PSWSQ plastic wide angle full square nozzles in larger capacities.

TYPICAL APPLICATIONS:

Same as full square (pg. 26) but for applications where a wider angle is required.



'SWSQ' one piece body		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													Spray Angle @		
FEMALE	MALE			0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar	1.5 bar	5 bar		
	1/4S14WSQ	1/4	2.31	3.5	4.5	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	99°	95°	84°		
	3/8S17WSQ	3/8	2.59	4.2	5.5	6.5	7.7	9.5	11.0	13.4	15.5	17.3	19.0	21.9	98°	94°	82°		
	3/8S20WSQ	3/8	2.59	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	102°	102°	86°		
	3/8S24WSQ	3/8	2.59	6.0	7.7	9.2	10.9	13.4	15.5	18.9	21.9	24.5	26.8	30.9	104°	102°	86°		
	3/8S27WSQ	3/8	2.59	6.7	8.7	10.3	12.3	15.1	17.4	21.3	24.6	27.5	30.1	35	104°	102°	87°		
	1/2S30WSQ	1/2	3.66	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	33	39	100°	96°	85°		
	1/2S35WSQ	1/2	3.66	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	39	45	104°	99°	88°		
	1/2S40WSQ	1/2	4.11	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	45	52	106°	104°	90°		
	1/2S45WSQ	1/2	4.11	11.2	14.5	17.2	20.5	25.1	29.0	36	41	46	50	58	106°	104°	94°		
3/4FS50WSQ	3/4S50WSQ	3/4	4.95	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	64	108°	102°	97°		
3/4FS71WSQ	3/4S71WSQ	3/4	4.95	17.7	22.9	27.1	32	40	46	56	65	72	79	92	99°	102°	93°		
1FS130WSQ	1S130WSQ	1	5.56	32	42	50	59	73	84	103	119	132	145	168	102°	107°	99°		
1 1/4FS190WSQ		1 1/4	6.60	47	61	72	87	106	122	150	173	194	212	245	104°	105°	102°		
1 1/2FS290WSQ		1 1/2	8.36	72	93	111	132	162	187	229	264	296	324	374	107°	107°	102°		
2FS560WSQ		2	11.1	140	180	214	255	313	361	442	510	571	625	722	107°	107°	99°		
2 1/2FS830WSQ		2 1/2	13.5	207	267	317	378	463	535	655	757	846	927	1070	104°	105°	102°		
3FS1070WSQ		3	17.5	267	345	408	488	597	690	845	975	1090	1195	1379	107°	105°	105°		

DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. L (mm)
1/4SWSQ	14 HEX	24
3/8SWSQ	17 HEX	30
1/2SWSQ	22 HEX	37
3/4SWSQ	32 HEX	56
1SWSQ	38 HEX	67
1 1/4SWSQ	48 dia.	95
1 1/2SWSQ	57 dia.	108
2SWSQ	70 dia.	149
2 1/2SWSQ	92 dia.	165
3SWSQ	102 dia.	197

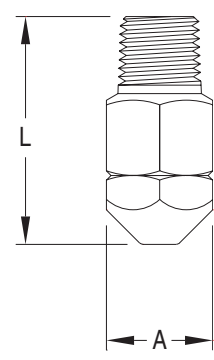
FULL CONE SPRAY

Narrow angle full cone spray nozzles

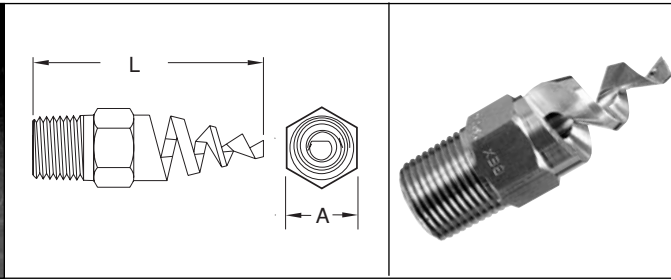
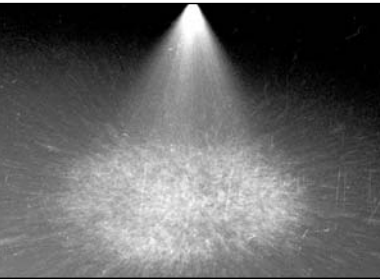
GS30, S30

With a narrow spray angle and a larger droplet size, BEX 30 degree full cone nozzles have more impact per unit area than the wider angle full cone sprays. Standard connections are BSPT threads. BSPT

threads are also available. GS and FGS styles may be disassembled for cleaning. Stock materials are brass, 303 stainlesssteel and 316 stainless steel.



MODEL NUMBER		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	Dimensions		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													Spray Angle @		
FEMALE	MALE			"A" (mm)	"L" (mm)	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	12 bar	15 bar	1 bar	3 bar	8 bar			
1/8FGS3001.4	1/8GS3001.4	1/8	0.71	16 Hex	33	0.32	0.39	0.45	0.55	0.64	0.71	0.84	1.01	1.11	1.24	17°	30°	31°			
1/8FGS3002.5	1/8GS3002.5	3/8	0.91	16 Hex	33	0.57	0.70	0.81	0.99	1.14	1.27	1.51	1.80	1.97	2.21	17°	30°	32°			
1/8FGS3004	1/8GS3004	3/8	1.24	16 Hex	37	0.91	1.12	1.29	1.58	1.82	2.04	2.51	2.88	3.16	3.5	26°	30°	32°			
1/8FGS3007	1/8GS3007	3/8	1.45	16 Hex	37	1.60	1.95	2.26	2.76	3.2	3.6	4.2	5.0	5.5	6.2	23°	30°	30°			
1/4FGS3009	1/4GS3009	3/8	1.70	17 Hex	38	2.05	2.51	2.90	3.6	4.1	4.6	5.4	6.5	7.1	7.9	23°	30°	30°			
3/8FGS3014	3/8GS3014	1/2	2.06	21 Hex	54	3.2	3.9	4.51	5.5	6.4	7.1	8.4	10.1	11.1	12.4	26°	30°	31°			
1/2FGS3030	1/2GS3030	1/2	2.90	26 Hex	59	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	23.7	26.5	31°	30°	31°			
3/4FGS3050	3/4GS3050	1/2	4.11	35 Hex	89	11.4	14.0	16.1	19.7	22.8	25.5	30.2	36	39	44	26°	30°	31°			
	1S3070	1/2	4.90	35 round	92	15.6	20.0	22.6	27.6	32	36	42	50	55	62	27°	30°	30°			
	1S30100	1/2	5.84	35 round	92	22.8	27.9	32	40	46	51	60	72	79	88	27°	30°	30°			
	1 1/4FS30150	3/4	7.16	45 round	127	34	42	48	59	68	76	90	108	118	132	27°	30°	30°			
	1 1/4FS30200	3/4	8.28	45 round	127	45	56	64	79	91	102	121	144	158	177	27°	30°	30°			
	1 1/2FS30250	1 1/4	9.14	51 round	156	57	70	81	99	114	127	151	180	197	221	27°	30°	30°			
	1 1/2FS30300	1 1/4	10.3	51 round	156	68	83	97	118	137	153	181	216	237	265	27°	30°	30°			
	2S30350	2	10.9	61 round	200	79	98	113	138	160	178	211	252	276	309	28°	30°	30°			
	2S30400	2	11.7	61 round	200	91	112	129	158	182	204	241	288	316	353	28°	30°	30°			
	2S30500	2	12.7	61 round	200	113	140	161	197	228	255	301	360	395	441	28°	30°	30°			
	2 1/2FS30600	2 1/2	14.2	76 round	264	137	167	193	237	273	306	362	432	474	530	28°	30°	30°			
	2 1/2FS30700	2 1/2	15.2	76 round	264	160	195	226	276	319	357	422	504	553	618	28°	30°	30°			
	2 1/2FS301000	2 1/2	18.5	76 round	264	228	279	322	395	456	510	603	721	789	883	28°	30°	30°			
	2 1/2FS301100	2 1/2	19.3	76 round	264	251	307	355	434	501	561	663	793	868	971	28°	30°	30°			
	2 1/2FS301200	2 1/2	20.3	76 round	264	274	335	387	474	547	611	724	865	947	1059	28°	30°	30°			



SPRAY CHARACTERISTICS:

A full cone spray pattern with larger flow rates and smaller droplet sizes. Durable, one-piece, anti-clog design has no internal vane to clog or wear out.

CONSTRUCTION:

All models are machined from solid bar stock. Standard materials of construction are brass, 303 stainless steel, 316 stainless steel, PVC and Teflon®. Other materials may be available on request.

TYPICAL APPLICATIONS:

- Washing and Rinsing
- Gas Cooling
- Chemical Processing
- Cooling Sprays
- Humidification

FULL CONE SPRAY

Spray Angle	MODEL NUMBER	Pipe Size (BSP)	Orifice Dia. (mm)	Dimensions		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													
				"A" (mm)	"L" (mm)	0.3 bar	0.5 bar	.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	6 bar	10 bar	13 bar	17 bar	20 bar	
60°	1/4YS6007	1/4	2.21	14 Hex	47.7	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.8	10.1	11.5	13.2	14.3	
	1/4YS6013	1/4	3.18	14 Hex	47.7	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5	
	3/8YS6007	3/8	2.21	17 Hex	54.0	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.8	10.1	11.5	13.2	14.3	
	3/8YS6013	3/8	3.18	17 Hex	54.0	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5	
	3/8YS6020	3/8	3.96	17 Hex	54.0	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41	
	3/8YS6030	3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61	
	3/8YS6040	3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82	
	3/8YS6053	3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108	
	3/8YS6082	3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167	
	1/2YS60120	1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245	
	1/2YS60164	1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334	
	90°	1/4YS9007	1/4	2.21	14 Hex	47.7	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.8	10.1	11.5	13.2	14.3
1/4YS9013		1/4	3.18	14 Hex	47.7	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5	
1/4YS9020		1/4	3.96	14 Hex	47.7	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41	
3/8YS9030		3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61	
3/8YS9040		3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82	
3/8YS9053		3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108	
3/8YS9082		3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167	
1/2YS90120		1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245	
1/2YS90164		1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334	
120°		1/4YS12007	1/4	2.21	14 Hex	47.7	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.8	10.1	11.5	13.2	14.3
		1/4YS12013	1/4	3.18	14 Hex	47.7	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5
		1/4YS12020	1/4	3.96	14 Hex	47.7	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41
	3/8YS12030	3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61	
	3/8YS12040	3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82	
	3/8YS12053	3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108	
	3/8YS12082	3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167	
	1/2YS120120	1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245	
	1/2YS120164	1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334	
	150°	1/4YS15007	1/4	2.21	14 Hex	47.7	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.8	10.1	11.5	13.2	14.3
		1/4YS15013	1/4	3.18	14 Hex	47.7	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5
		1/4YS15020	1/4	3.96	14 Hex	47.7	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41
3/8YS15030		3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61	
3/8YS15040		3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82	
3/8YS15053		3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108	
3/8YS15082		3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167	
1/2YS150120		1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245	
1/2YS150164		1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334	

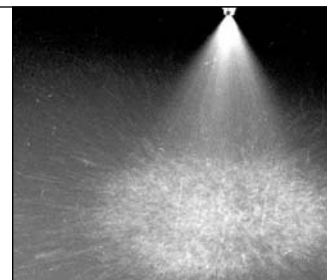
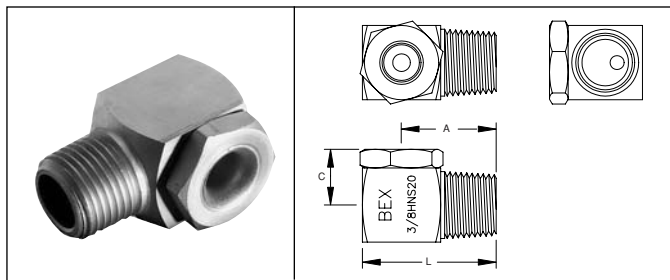
Spray Angle	MODEL NUMBER	Pipe Size (BSPT)	Orifice Dia. (mm)	Dimensions		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												
				"A" (mm)	"L" (mm)	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	6 bar	10 bar	13 bar	17 bar	20 bar
170°	1/4YS17013	1/4	3.18	14 Hex	30.2	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5
	1/4YS17020	1/4	3.96	14 Hex	30.2	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41
	3/8YS17030	3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61
	3/8YS17040	3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82
	3/8YS17053	3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108
	3/8YS17082	3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167
	1/2YS170120	1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245
	1/2YS170164	1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334

Vaneless full cone nozzles

HNS SERIES

DIMENSIONS

MODEL NUMBER FEMALE (BSPT)	Dim. A (mm)	Dim. B (mm)	Dim. L (mm)	MODEL NUMBER MALE (BSPT)	Dim. A (mm)	Dim. C (mm)	Dim. L (mm)
1/4FHNS	24	13	31	1/4HNS	24	13	31
3/8FHNS	25	14	36	3/8HNS	27	16	38
1/2FHNS	36	19	48	1/2HNS	36	19	48



FULL CONE SPRAY

SPRAY CHARACTERISTICS:

The HNS series vaneless full-cone nozzle projects a medium to coarse full-cone spray in a direction perpendicular to the nozzle inlet axis. The maximum free passage in this nozzle is substantially larger than most full-cone nozzles due to the 'vaneless' design. This nozzle is suitable for applications where a relatively coarse full-cone spray is required, and where standard nozzles are subject to plugging.

CONSTRUCTION:

The HNS series are made from bar stock and are a two piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Other materials are available upon request.

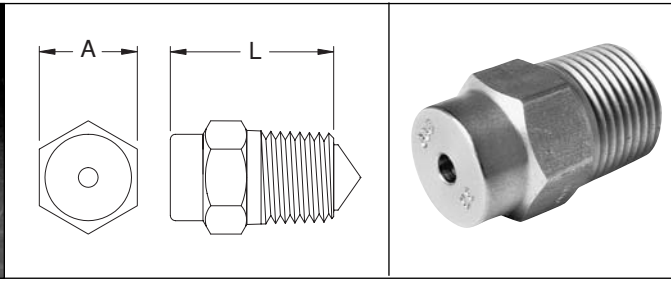
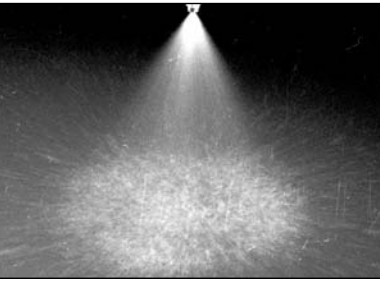
TYPICAL APPLICATIONS:

Wherever a medium to coarse full-cone spray is required from a nozzle with a larger maximum free passage.

SPECIAL FEATURES:

- 'Vaneless' full-cone design
- Large maximum free passage
- Easy disassembly/assembly and cleaning

MODEL NUMBER		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												
FEMALE	MALE			0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar		
1/4FHNS5	1/4HNS5	1/4	1.98	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.0		
1/4FHNS7	1/4HNS7	1/4	2.39	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.1	7.8	8.4		
1/4FHNS8	1/4HNS8	1/4	2.77	2.00	2.58	3.05	3.6	4.5	5.2	6.3	7.3	8.2	8.9	9.6		
1/4FHNS10	1/4HNS10	1/4	3.18	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.1		
1/4FHNS11	1/4HNS11	1/4	3.58	2.75	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.3	13.3		
3/8FHNS11	3/8HNS11	3/8	3.18	2.75	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.3	13.3		
3/8FHNS13	3/8HNS13	3/8	3.58	3.2	4.2	5.0	5.9	7.3	8.4	10.3	11.9	13.2	14.5	15.7		
3/8FHNS16	3/8HNS16	3/8	3.96	4.0	5.2	6.1	7.3	8.9	10.3	12.6	14.6	16.3	17.9	19.3		
3/8FHNS20	3/8HNS20	3/8	4.37	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	24.1		
3/8FHNS23	3/8HNS23	3/8	4.78	5.7	7.4	8.8	10.5	12.8	14.8	18.2	21.0	23.4	25.7	27.7		
3/8FHNS26	3/8HNS26	3/8	5.16	6.5	8.4	9.9	11.9	14.5	16.8	20.5	23.7	26.5	29.0	31		
3/8FHNS29	3/8HNS29	3/8	5.56	7.2	9.3	11.1	13.2	16.2	18.7	22.9	26.4	29.6	32	35		
3/8FHNS33	3/8HNS33	3/8	5.94	8.2	10.6	12.6	15.0	18.4	21.3	26.1	30.1	34	37	40		
1/2FHNS32	1/2HNS32	1/2	5.16	8.0	10.3	12.2	14.6	17.9	20.6	25.3	29.2	33	36	39		
1/2FHNS40	1/2HNS40	1/2	5.94	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	45	48		
1/2FHNS48	1/2HNS48	1/2	7.14	12.0	15.5	18.3	21.9	26.8	30.9	38	44	49	54	58		
1/2FHNS56	1/2HNS56	1/2	7.54	14.0	18.0	21.4	25.5	31.3	36	44	51	57	63	68		
1/2FHNS64	1/2HNS64	1/2	8.33	16.0	20.6	24.4	29.2	36	41	51	58	65	71	77		
1/2FHNS72	1/2HNS72	1/2	9.12	18.0	23.2	27.5	33	40	46	57	66	73	80	87		



DIMENSIONS

THREAD SIZE (BSPT)	Dim. A (mm)	Dim. L (mm)
1/4 CCS	14 HEX	24
3/8 CCS	17 HEX	30

SPRAY CHARACTERISTICS:

Full cone spray pattern with a distribution that is heavier in the middle. Spray angle remains nearly constant at pressures between 1.5 and 5 bar

CONSTRUCTION:

CCS nozzles are machined from bar, and consist of a one piece body, plus a non-removable insert. Standard material is brass.

TYPICAL APPLICATIONS:

Suitable for temperature control applications, where the volume of sprayed coolant can be adjusted without significantly affecting spray coverage. This enables the user to maximize heat transfer efficiency while avoiding loss of coverage area. CCS nozzles feature an internal insert which will not come loose in environments which are subject to thermal cycling.

- Continuous Casting and Billet Casting
- Rinsing and Cooling
- Heat Exchanger Cooling
- Chemical Processing

FULL CONE SPRAY

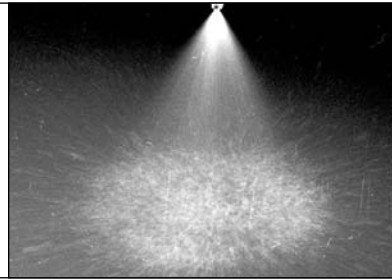
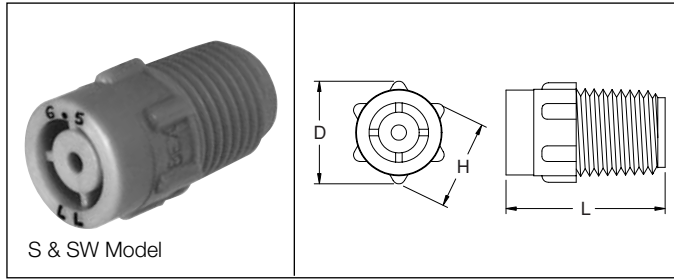
SPRAY ANGLE @ 3 bar	MODEL NUMBER	PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)										
				1 bar	1.5 bar	2 bar	2.5 bar	3 bar	3.5 bar	4 bar	4.5 bar	5 bar	6 bar	7 bar
49°	1/4 CCS4917	1/4	2.31	3.9	4.7	5.5	6.1	6.7	7.2	7.7	8.2	8.7	9.5	10.2
	3/8 CCS4917	3/8	2.31	3.9	4.7	5.5	6.1	6.7	7.2	7.7	8.2	8.7	9.5	10.2
	3/8 CCS4922	3/8	2.31	5.0	6.1	7.1	7.9	8.7	9.4	10.0	10.6	11.2	12.3	13.3
	3/8 CCS4927	3/8	2.59	6.2	7.5	8.7	9.7	10.7	11.5	12.3	13.1	13.8	15.1	16.3
	3/8 CCS4931	3/8	2.90	7.1	8.7	10.0	11.2	12.2	13.2	14.1	15.0	15.8	17.3	18.7
57°	1/4 CCS5710	1/4	1.63	2.28	2.79	3.2	3.6	3.9	4.3	4.6	4.8	5.1	5.6	6.0
	1/4 CCS5713	1/4	2.06	2.96	3.6	4.2	4.7	5.1	5.5	5.9	6.3	6.6	7.3	7.8
	1/4 CCS5715	1/4	2.31	3.4	4.2	4.8	5.4	5.9	6.4	6.8	7.3	7.6	8.4	9.0
	1/4 CCS5718	1/4	2.31	4.1	5.0	5.8	6.5	7.1	7.7	8.2	8.7	9.2	10.0	10.9
	3/8 CCS5718	3/8	2.31	4.1	5.0	5.8	6.5	7.1	7.7	8.2	8.7	9.2	10.0	10.9
	3/8 CCS5726	3/8	2.31	5.9	7.3	8.4	9.4	10.3	11.1	11.9	12.6	13.2	14.5	15.7
	3/8 CCS5731	3/8	2.59	7.1	8.7	10.0	11.2	12.2	13.2	14.1	15.0	15.8	17.3	18.7
	3/8 CCS5744	3/8	2.90	10.0	12.3	14.2	15.9	17.4	18.8	20.1	21.3	22.4	24.6	26.5
66°	1/4 CCS6614	1/4	1.63	3.2	3.9	4.5	5.0	5.5	6.0	6.4	6.8	7.1	7.8	8.4
	1/4 CCS6624	1/4	2.31	5.5	6.7	7.7	8.6	9.5	10.2	10.9	11.6	12.2	13.4	14.5
	1/4 CCS6629	1/4	2.31	6.6	8.1	9.3	10.4	11.4	12.4	13.2	14.0	14.8	16.2	17.5
	3/8 CCS6629	3/8	2.31	6.6	8.1	9.3	10.4	11.4	12.4	13.2	14.0	14.8	16.2	17.5
	3/8 CCS6633	3/8	2.31	7.5	9.2	10.6	11.9	13.0	14.1	15.0	16.0	16.8	18.4	19.9
	3/8 CCS6648	3/8	2.90	10.9	13.4	15.5	17.3	18.9	20.5	21.9	23.2	24.5	26.8	28.9
	3/8 CCS6648	3/8	2.90	10.9	13.4	15.5	17.3	18.9	20.5	21.9	23.2	24.5	26.8	28.9
76°	1/4 CCS7622	1/4	2.31	5.0	6.1	7.1	7.9	8.7	9.4	10.0	10.6	11.2	12.3	13.3
	1/4 CCS7632	1/4	2.31	7.3	8.9	10.3	11.5	12.7	13.6	14.6	15.4	16.3	17.8	19.3
	3/8 CCS7632	3/8	2.31	7.3	8.9	10.3	11.5	12.7	13.6	14.6	15.4	16.3	17.8	19.3
	3/8 CCS7638	3/8	2.31	8.7	10.6	12.2	13.7	15.0	16.2	17.3	18.4	19.4	21.2	22.9
	3/8 CCS7664	3/8	2.90	14.6	17.9	20.6	23.1	25.3	27.3	29.2	30.9	33	36	39
86°	1/4 CCS8618	1/4	2.31	4.1	5.0	5.8	6.5	7.1	7.7	8.2	8.7	9.2	10.0	10.9
	1/4 CCS8633	1/4	2.31	7.5	9.2	10.6	11.9	13.0	14.1	15.0	16.0	16.8	18.4	19.9
	3/8 CCS8633	3/8	2.31	7.5	9.2	10.6	11.9	13.0	14.1	15.0	16.0	16.8	18.4	19.9
	3/8 CCS8642	3/8	2.31	9.6	11.7	13.5	15.1	16.6	17.9	19.1	20.3	21.4	23.4	25.3
	3/8 CCS8649	3/8	2.59	11.2	13.7	15.8	17.7	19.3	20.9	22.3	23.7	25.0	27.4	29.5
	3/8 CCS8667	3/8	2.90	15.3	18.7	21.6	24.1	26.4	28.6	30.5	32	34	37	40
	3/8 CCS8667	3/8	2.90	15.3	18.7	21.6	24.1	26.4	28.6	30.5	32	34	37	40

Molded plastic spray nozzles

S SERIES

DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. D (mm)	Dim. H (mm)	Dim. L (mm)
1/8S	16	14	21
1/4S	16	14	24
3/8S	20	17	28
1/8SW	16	14	16
1/8SQ	16	14	21
1/4SQ	20	14	24



SPRAY CHARACTERISTICS:

These models produce a full cone spray pattern with spray angles of 60° to 120° @ 0.7 bar.

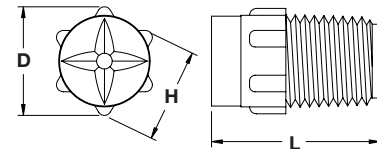
PVDF - excellent durability and abrasion resistance and is inert to most chemicals. Many applications useful up to 150°C.

CONSTRUCTION:

Each BEX molded nozzle is designed with a series of "knobs" which makes them easier to finger tighten than a hex, especially when wet. The design feature of a small starter barrel greatly reduces the tendency to strip or cross-thread the nozzle during installation.

Natural PVDF - where solution purity must be

SQ Model optimized.



MATERIALS AVAILABLE:

Polypropylene - excellent chemical and corrosion resistance. Useful up to 80°C.

Natural Polypropylene - non-pigmented for optimum purity.

FITTING SIZES:

1/8", 1/4" and 3/8" MALE BSPT (NPT also available)

STANDARD MODELS LISTED IN TABLES BELOW.

ADDITIONAL MODELS MAY BE AVAILABLE UPON REQUEST.

TYPICAL APPLICATIONS:

- Printed Circuit Board Washing
- PCB-Etching/Developing
- Semiconductor Manufacturing
- Carpet Cleaning
- Fruit and Vegetable Washing
- Plating Processes
- Dust Suppression
- Acid Spraying
- Degreasing
- Coating Applications
- Metal Washing
- Chemical Spraying
- Rinsing Parts

MOLDED PLASTIC S SERIES FULL CONE SPRAY MODELS (For capacity and spray angle data please refer to table on page 21)

1/8 Models	1/8S1	1/8S1.5	1/8S3	1/8S3.5	1/8S5	1/8S6
1/4 Models	1/4S6.5	1/4S7.5	1/4S10			
3/8 Models	3/8S10	3/8S15	SN4780 (70° spray angle/5.7 L/min @ 2.8 bar)			

MOLDED PLASTIC SW WIDE ANGLE FULL CONE SPRAY MODELS (For capacity and spray angle data please refer to table on page 23)

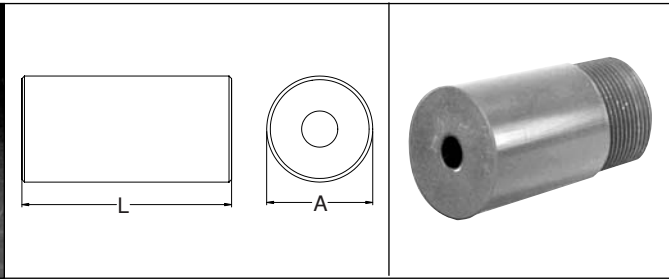
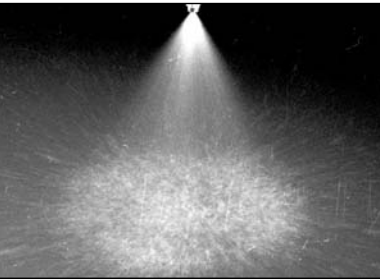
1/8 Models	1/8S2.8W	1/8S4.3W	1/8S5.6W	1/8S8W
1/4 Models	1/4S5.6W	1/4S10W	1/4S12W	1/4S14W

MOLDED PLASTIC SQ SERIES FULL CONE SPRAY MODELS (For capacity and spray angle data please refer to table on page 24)

1/8 Models	1/8S4.8SQ	1/8S5SQ		
1/4 Models	1/4S6SQ	1/4S10SQ	1/4S12SQ	1/4S14SQ

FULL CONE SPRAY

PS & PSW SERIES Plastic full cone spray nozzles



DIMENSIONS

FEMALE FPS (BSPT)	Dim. A (mm)	Dim. L (mm)	MALE PS (BSPT)	Dim. A (mm)	Dim. L (mm)
1 1/4 FPS	51	83	1 1/4 PS	45	76
1 1/2 FPS	64	108	1 1/2 PS	51	102
2 FPS	76	149	2 PS	64	105
2 1/2 FPS	89	149	2 1/2 PS	76	114
3 FPS	102	149	3 PS	89	140

SPRAY CHARACTERISTICS:

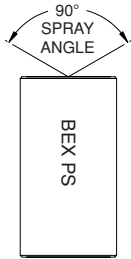
A full cone spray pattern with large flow capacities. Spray angle is 90° (included angle). Other sizes and spray angles available upon request.

CONSTRUCTION:

The models listed are machined from plastic and consist of a body plus a non-removable insert. Standard materials are PVC, CPVC and polypropylene.

TYPICAL APPLICATIONS:

- Scrubbing and Pollution Control
- Rinsing and Cooling



MODEL NUMBER		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)								
FEMALE	MALE			0.2 bar	0.3 bar	0.5 bar	0.7 bar	1.5 bar	3 bar	4 bar	5 bar	6 bar
1 1/4 FPS17	1 1/4 PS17	1 1/4	6.4	35	42	55	65	95	134	155	173	190
1 1/4 FPS20	1 1/4 PS20	1 1/4	6.4	41	50	64	76	112	158	182	204	223
1 1/2 FPS17	1 1/2 PS17	1 1/2	6.4	35	42	55	65	95	134	155	173	190
1 1/2 FPS19	1 1/2 PS19	1 1/2	6.4	39	47	61	72	106	150	173	194	212
1 1/2 FPS21	1 1/2 PS21	1 1/2	6.4	43	52	68	80	117	166	191	214	234
1 1/2 FPS25	1 1/2 PS25	1 1/2	7.9	51	62	81	95	140	197	228	255	279
1 1/2 FPS29	1 1/2 PS29	1 1/2	7.9	59	72	93	111	162	229	264	296	324
2 FPS20	2 PS20	2	6.4	41	50	64	76	112	158	182	204	223
2 FPS25	2 PS25	2	7.9	51	62	81	95	140	197	228	255	279
2 FPS32	2 PS32	2	7.9	65	80	103	122	179	253	292	326	357
2 FPS40	2 PS40	2	9.5	82	100	129	153	223	316	365	408	447
2 FPS48	2 PS48	2	9.5	98	120	155	183	268	379	438	489	536
2 FPS55	2 PS55	2	13.5	112	137	177	210	307	434	501	561	614
2 FPS60	2 PS60	2	13.5	122	150	193	229	335	474	547	611	670
2 FPS72	2 PS72	2	14.3	147	180	232	275	402	568	656	734	804
2 FPS76	2 PS76	2	14.3	155	190	245	290	424	600	693	775	848
2 FPS84	2 PS84	2	15.9	171	210	271	320	469	663	766	856	938
2 1/2 FPS84	2 1/2 PS84	2 1/2	15.9	171	210	271	320	469	663	766	856	938
2 1/2 FPS96	2 1/2 PS96	2 1/2	17.5	196	240	309	366	536	758	875	978	1072
2 1/2 FPS108	2 1/2 PS108	2 1/2	17.5	220	270	348	412	603	853	984	1101	1206
3 FPS70	3 PS70	3	14.3	38	175	226	267	391	553	638	713	781
3 FPS100	3 PS100	3	17.5	204	250	322	381	558	789	912	1019	1116
3 FPS115	3 PS115	3	17.5	234	287	371	439	642	908	1048	1172	1284
3 FPS140	3 PS140	3	20.6	285	349	451	534	781	1105	1276	1427	1563

FULL CONE SPRAY

Plastic wide angle full cone spray nozzles

SPRAY CHARACTERISTICS:

A full cone spray pattern with large flow capacities. Similar to the PS series above, but with a wider spray angle of 120° (included angle). Other sizes and spray angles available upon request.

CONSTRUCTION:

The models listed are machined from plastic and consist of a body plus a non-removable

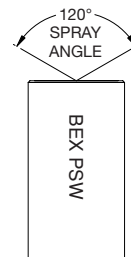
insert. Standard materials are PVC, CPVC and polypropylene.

DIMENSIONS:

Same as PS series (above).

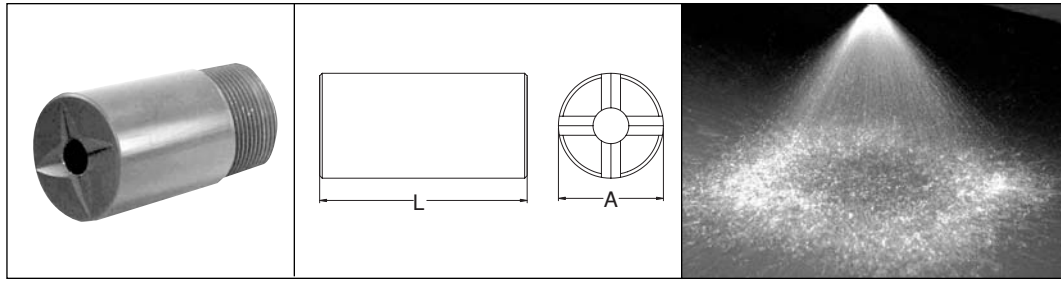
TYPICAL APPLICATIONS:

Same as PS series, but where a wider spray coverage is required.



SAME CAPACITIES AS PS SERIES (above). ADD "W" AT THE END OF THE MODEL NUMBER FOR WIDE ANGLE WHEN ORDERING (IE: 2FPS40W).

Plastic full square spray nozzles **PSQ & PSWSQ SERIES**



DIMENSIONS

FEMALE FPS (BSPT)	Dim. A (mm)	Dim. L (mm)	MALE PS (BSPT)	Dim. A (mm)	Dim. L (mm)
1 1/4 FPS	51	83	1 1/4 PS	45	76
1 1/2 FPS	64	108	1 1/2 PS	51	102
2 FPS	76	149	2 PS	64	105
2 1/2 FPS	89	149	2 1/2 PS	76	114
3 FPS	102	149	3 PS	89	140

TYPICAL APPLICATIONS:

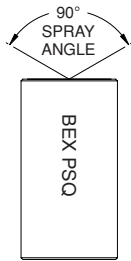
- Scrubbing and Pollution Control
- Rinsing and Cooling

SPRAY CHARACTERISTICS:

A full square spray pattern with large flow capacities. Spray angle is 90° (included angle). Other sizes and angles available upon request.

CONSTRUCTION:

The models listed are machined from plastic and consist of a body plus a non-removable insert. Standard materials are PVC, CPVC and polypropylene.



MODEL NUMBER		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)								
FEMALE	MALE			0.2 bar	0.3 bar	0.5 bar	0.7 bar	1.5 bar	3 bar	4 bar	5 bar	6 bar
1 1/4 FPS17SQ	1 1/4 PS17SQ	1 1/4	6.4	35	42	55	65	95	134	155	173	190
1 1/4 FPS20SQ	1 1/4 PS20SQ	1 1/4	6.4	41	50	64	76	112	158	182	204	223
1 1/2 FPS17SQ	1 1/2 PS17SQ	1 1/2	6.4	35	42	55	65	95	134	155	173	190
1 1/2 FPS19SQ	1 1/2 PS19SQ	1 1/2	6.4	39	47	61	72	106	150	173	194	212
1 1/2 FPS21SQ	1 1/2 PS21SQ	1 1/2	6.4	43	52	68	80	117	166	191	214	234
1 1/2 FPS25SQ	1 1/2 PS25SQ	1 1/2	7.9	51	62	81	95	140	197	228	255	279
1 1/2 FPS29SQ	1 1/2 PS29SQ	1 1/2	7.9	59	72	93	111	162	229	264	296	324
2 FPS20SQ	2 PS20SQ	2	6.4	41	50	64	76	112	158	182	204	223
2 FPS25SQ	2 PS25SQ	2	7.9	51	62	81	95	140	197	228	255	279
2 FPS32SQ	2 PS32SQ	2	7.9	65	80	103	122	179	253	292	326	357
2 FPS40SQ	2 PS40SQ	2	9.5	82	100	129	153	223	316	365	408	447
2 PS48SQ	2 PS48SQ	2	9.5	98	120	155	183	268	379	438	489	536
2 FPS55SQ	2 PS55SQ	2	13.5	112	137	177	210	307	434	501	561	614
2 FPS60SQ	2 PS60SQ	2	13.5	122	150	193	229	335	474	547	611	670
2 FPS72SQ	2 PS72SQ	2	14.3	147	180	232	275	402	568	656	734	804
2 FPS76SQ	2 PS76SQ	2	14.3	155	190	245	290	424	600	693	775	848
2 FPS84SQ	2 PS84SQ	2	15.9	171	210	271	320	469	663	766	856	938
2 1/2 FPS84SQ	2 1/2 PS84SQ	2 1/2	15.9	171	210	271	320	469	663	766	856	938
2 1/2 FPS96SQ	2 1/2 PS96SQ	2 1/2	17.5	196	240	309	366	536	758	875	978	1072
2 1/2 FPS108SQ	2 1/2 PS108SQ	2 1/2	17.5	220	270	348	412	603	853	984	1101	1206
3 FPS70SQ	3 PS70SQ	3	14.3	38	175	226	267	391	553	638	713	781
3 FPS100SQ	3 PS100SQ	3	17.5	204	250	322	381	558	789	912	1019	1116
3 FPS115SQ	3 PS115SQ	3	17.5	234	287	371	439	642	908	1048	1172	1284
3 FPS140SQ	3 PS140SQ	3	20.6	285	349	451	534	781	1105	1276	1427	1563

FULL CONE SPRAY

Plastic wide angle full square spray nozzles

SPRAY CHARACTERISTICS:

A full square spray pattern with large flow capacities. Similar to the PSQ series above, except with a wider spray angle of 120° (included angle). Other sizes and spray angles available upon request.

CONSTRUCTION:

The models listed are machined from plastic and consist of a body plus a non-removable

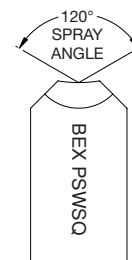
insert. Standard materials are PVC, CPVC and polypropylene.

DIMENSIONS:

Same as PSQ series (above).

TYPICAL APPLICATIONS:

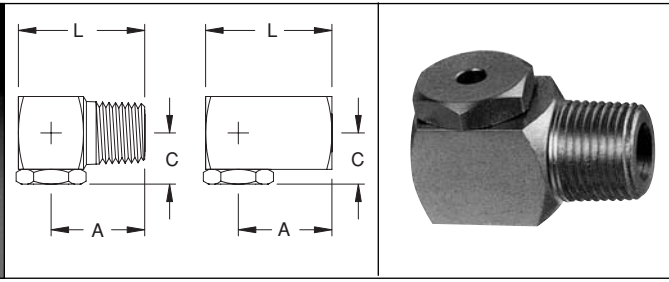
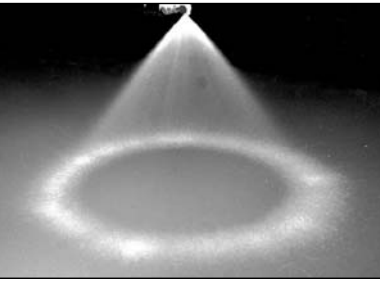
Same as PSQ series, but where a wider spray coverage is required.



SAME CAPACITIES AS PSQ SERIES (above). ADD "WSQ" AT THE END OF THE MODEL NUMBER FOR WIDE ANGLE WHEN ORDERING (IE: 2FPS40WSQ).

H SERIES

Hollow cone spray nozzles



DIMENSIONS

MALE MODEL (BSPT)	Dim. A (mm)	Dim. L (mm)	Dim. C (mm)	FEMALE MODEL (BSPT)	Dim. A (mm)	Dim. L (mm)	Dim. C (mm)
1/8H	18	25	10	1/8FH	18	25	10
1/4H	24	25	13	1/4FH	24	25	13
3/8H	25	35	14	3/8FH	25	35	14
1/2H	35	48	19	1/2FH	35	48	19
3/4H	40	57	22	3/4FH	40	57	22

SPRAY CHARACTERISTICS:

A hollow cone spray pattern, emerging at right angles to the centerline of the pipe connection. The standard included angle of the spray cone is 70° at 0.7 bar. At low pressures hollow cone nozzles produce medium size, uniform droplets. At higher pressures finer droplets are produced.

CONSTRUCTION:

The models listed are machined from bar stock, and are two piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Some models available in other materials.

TYPICAL APPLICATIONS:

- Air and Gas Washing
- Aerating, Rinsing and Humidifying
- Industrial Washers and Spray Ponds
- Cooling Tunnels
- Roof Cooling
- Degreasing
- Dust Suppression
- Metal Treatment

HOLLOW CONE SPRAY

MODEL NUMBER		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)											SPRAY ANGLE @			
FEMALE	MALE			0.2 bar	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	6 bar	8 bar	0.7 bar	1.5 bar	3 bar	6 bar
1/8FH0.5	1/8H0.5	1/8	0.71	--	--	--	--	--	--	0.32	0.39	0.46	0.56	0.64	--	--	40°	45°
1/8FH1	1/8H1	1/8	1.35	--	--	--	--	0.46	0.56	0.64	0.79	0.91	1.12	1.29	--	60°	74°	75°
1/8FH2	1/8H2	1/8	2.18	--	--	--	--	0.91	1.12	1.29	1.58	1.82	2.23	2.58	--	65°	72°	76°
1/8FH3	1/8H3	1/8	2.49	--	--	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.3	3.9	65°	76°	80°	83°
1/8FH5	1/8H5	1/8	3.25	--	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.6	6.4	70°	77°	80°	81°
1/8FH7.5	1/8H7.5	1/8	3.89	1.53	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	8.4	9.7	70°	86°	94°	94°
1/8FH10	1/8H10	1/8	4.34	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	11.2	12.9	70°	71°	73°	75°
1/4FH1	1/4H1	1/4	1.52	--	--	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.12	1.29	--	61°	74°	69°
1/4FH2	1/4H2	1/4	2.16	--	--	--	0.76	0.91	1.12	1.29	1.58	1.82	2.23	2.58	70°	75°	83°	85°
1/4FH3	1/4H3	1/4	2.82	--	--	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.3	3.9	70°	70°	72°	74°
1/4FH5	1/4H5	1/4	3.45	--	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.6	6.4	70°	77°	80°	83°
1/4FH7.5	1/4H7.5	1/4	4.22	1.53	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	8.4	9.7	70°	70°	74°	75°
1/4FH10	1/4H10	1/4	4.32	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	11.2	12.9	70°	74°	76°	80°
1/4FH12.5	1/4H12.5	1/4	4.50	2.55	3.12	4.0	4.8	5.7	7.0	8.1	9.9	11.4	14.0	16.1	70°	82°	83°	83°
1/4FH15	1/4H15	1/4	5.41	3.06	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	16.7	19.3	70°	73°	75°	75°
3/8FH5	3/8H5	3/8	3.45	--	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.6	6.4	70°	74°	76°	76°
3/8FH7.5	3/8H7.5	3/8	4.17	1.53	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	8.4	9.7	70°	74°	78°	82°
3/8FH10	3/8H10	3/8	4.93	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	11.2	12.9	70°	78°	80°	81°
3/8FH12.5	3/8H12.5	3/8	5.21	2.55	3.12	4.0	4.8	5.7	7.0	8.1	9.9	11.4	14.0	16.1	70°	80°	82°	84°
3/8FH15	3/8H15	3/8	5.89	3.06	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	16.7	19.3	70°	73°	75°	75°
3/8FH20	3/8H20	3/8	6.35	4.1	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	22.3	25.8	70°	73°	75°	75°
3/8FH25	3/8H25	3/8	7.09	5.1	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	27.9	32	70°	72°	73°	73°
3/8FH30	3/8H30	3/8	7.42	6.1	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	33	39	70°	70°	73°	72°
1/2FH25	1/2H25	1/2	7.49	5.1	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	27.9	32	70°	75°	76°	76°
1/2FH30	1/2H30	1/2	8.36	6.1	7.5	9.7	11.4	13.37	16.7	19.3	23.7	27.3	33	39	70°	78°	80°	81°
1/2FH40	1/2H40	1/2	9.37	8.2	10.0	12.9	15.3	18.2	22.3	25.8	32	36	45	52	70°	75°	75°	75°
1/2FH50	1/2H50	1/2	9.98	10.2	12.5	16.1	19.1	22.8	27.9	32	39	46	56	64	70°	70°	71°	73°
1/2FH60	1/2H60	1/2	10.69	12.2	15.0	19.3	22.9	27.3	33	39	47	55	67	77	70°	70°	71°	71°
3/4FH40	3/4H40	3/4	9.35	8.2	10.0	12.9	15.3	18.2	22.3	25.8	32	36	45	52	70°	71°	76°	79°
3/4FH50	3/4H50	3/4	10.69	10.2	12.5	16.1	19.1	22.8	27.9	32	39	46	56	64	70°	73°	74°	74°
3/4FH60	3/4H60	3/4	11.13	12.2	15.0	19.3	22.9	27.3	33	39	47	55	67	77	70°	75°	78°	80°
3/4FH70	3/4H70	3/4	11.91	14.3	17.5	22.6	26.7	32	39	45	55	64	78	90	70°	74°	76°	76°
3/4FH80	3/4H80	3/4	12.29	16.3	20.0	25.8	30.5	36	45	52	63	73	89	103	70°	73°	75°	76°
3/4FH90	3/4H90	3/4	12.70	18.3	22.5	29.0	34	41	50	58	71	82	100	116	70°	70°	71°	73°
3/4FH100	3/4H100	3/4	12.88	20.4	25.0	32	38	46	56	64	79	91	112	129	70°	73°	76°	78°
3/4FH110	3/4H110	3/4	14.61	22.4	27.5	35	42	50	61	71	87	100	123	142	70°	72°	75°	72°
3/4FH120	3/4H120	3/4	14.43	24.5	30	39	46	55	67	77	95	109	134	155	70°	70°	71°	71°

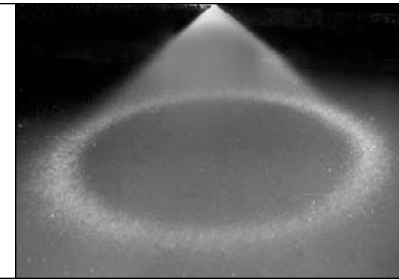
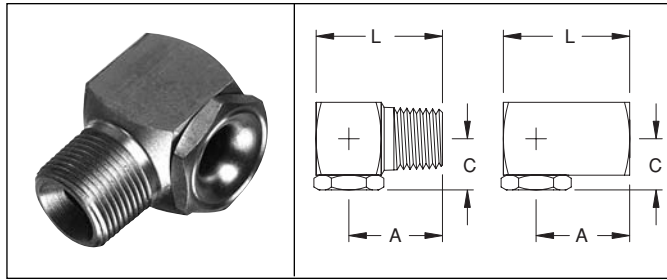
-- means not recommended at this pressure

Wide angle hollow cone spray nozzles

HW SERIES

DIMENSIONS

MALE MODEL (BSPT)	Dim. A (mm)	Dim. L (mm)	Dim. C (mm)	FEMALE MODEL (BSPT)	Dim. A (mm)	Dim. L (mm)	Dim. C (mm)
1/8HW	18	25	10	1/8FHW	18	25	10
1/4HW	24	25	13	1/4FHW	24	25	13
3/8HW	25	35	14	3/8FHW	25	35	14
1/2HW	35	48	19	1/2FHW	35	48	19
3/4HW	40	57	22	3/4FHW	40	57	22



TYPICAL APPLICATIONS:

- Water Cooling
- Roof Cooling
- Air Cooling
- Air Washing

SPRAY CHARACTERISTICS:

A hollow cone spray pattern, similar to the BEX H series, but with wider spray angles. The included angle of the spray cone is 120° at 0.7 bar.

CONSTRUCTION:

The models listed are machined from bar stock, and are two piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Some models are also available in other materials.

MODEL NUMBER		PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												SPRAY ANGLE @			
FEMALE	MALE			0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.7 bar	1 bar	3 bar	6 bar	
1/8FH1W	1/8H1W	1/8	1.40	--	--	--	0.46	0.56	0.64	0.79	0.91	1.02	1.12	1.29	--	115°	107°	95°	
1/8FH2W	1/8H2W	1/8	1.96	--	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.23	2.58	120°	117°	105°	97°	
1/8FH3W	1/8H3W	1/8	2.36	--	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.3	3.9	120°	116°	109°	92°	
1/8FH5W	1/8H5W	1/8	2.77	--	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.4	120°	116°	107°	90°	
1/4FH1W	1/4H1W	1/4	1.40	--	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.02	1.12	1.29	120°	110°	102°	90°	
1/4FH2W	1/4H2W	1/4	1.96	--	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.23	2.58	120°	110°	105°	92°	
1/4FH3W	1/4H3W	1/4	2.36	--	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.3	3.9	120°	114°	104°	90°	
1/4FH5W	1/4H5W	1/4	2.77	--	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.4	120°	113°	107°	98°	
1/4FH7.5W	1/4H7.5W	1/4	4.01	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	8.4	9.7	120°	115°	110°	92°	
1/4FH10W	1/4H10W	1/4	4.32	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	120°	115°	110°	93°	
1/4FH12.5W	1/4H12.5W	1/4	4.78	3.12	4.0	4.8	5.7	7.0	8.1	9.9	11.4	12.7	14.0	16.1	120°	118°	110°	94°	
1/4FH15W	1/4H15W	1/4	5.11	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	16.7	19.3	120°	115°	108°	92°	
3/8FH5W	3/8H5W	3/8	2.77	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.4	120°	117°	107°	99°	
3/8FH7.5W	3/8H7.5W	3/8	4.01	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	8.4	9.7	120°	113°	110°	93°	
3/8FH10W	3/8H10W	3/8	4.32	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	120°	115°	110°	93°	
3/8FH12.5W	3/8H12.5W	3/8	4.78	3.12	4.0	4.8	5.7	7.0	8.1	9.9	11.4	12.7	14.0	16.1	120°	115°	108°	94°	
3/8FH15W	3/8H15W	3/8	5.11	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	16.7	19.3	120°	110°	105°	90°	
3/8FH20W	3/8H20W	3/8	5.94	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	120°	118°	116°	110°	
3/8FH25W	3/8H25W	3/8	6.73	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	27.9	32	120°	117°	115°	110°	
3/8FH30W	3/8H30W	3/8	7.11	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	33	39	120°	115°	110°	102°	
1/2FH50W	1/2H50W	1/2	9.09	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	64	120°	115°	108°	103°	
3/4FH80W	3/4H80W	3/4	11.89	20.0	25.8	30.5	36	45	52	63	73	82	89	103	120°	117°	110°	103°	

HOLLOW CONE SPRAY



Hollow cone phosphating nozzles

PH SERIES

SPRAY CHARACTERISTICS:

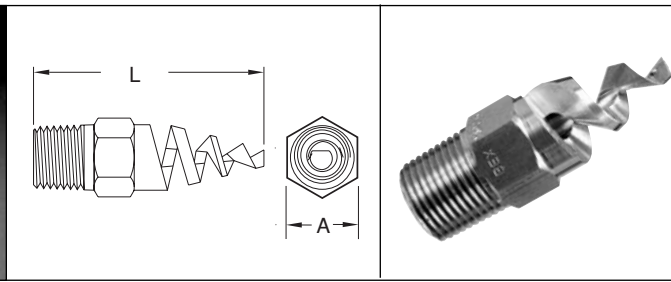
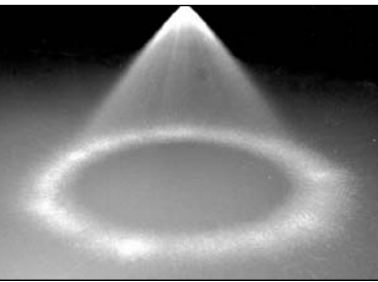
A hollow cone spray pattern for phosphating applications. This large droplet, low impingement type of spray results in a tighter and more consistent phosphate crystalline structure.

CONSTRUCTION:

Two piece construction. Available in 303 stainless steel and 316 stainless steel.



MODEL NUMBER	PIPE SIZE BSPT	ORIFICE DIAMETER (mm)		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												SPRAY ANGLE @		
		BODY	CAP	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	0.7 bar	1 bar	2 bar		
3/8PH23	3/8	5.59	7.92	5.7	7.4	8.8	10.5	12.8	14.8	18.2	21.0	23.4	25.7	45°	53°	60°		
3/8PH28	3/8	5.87	7.92	7.0	9.0	10.7	12.8	15.6	18.0	22.1	25.5	28.5	31	40°	43°	48°		
3/8PH51	3/8	8.74	9.53	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	40°	50°	50°		
3/8PH53	3/8	9.53	9.53	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	70°	70°	70°		



SPRAY CHARACTERISTICS:

A hollow cone spray pattern with large flow rates and small droplet sizes.

CONSTRUCTION:

YH Series nozzles have an anti-clog design

that can be easily inspected, cleaned and serviced. Standard materials are brass, 303 stainless steel, 316 stainless steel, PVC and Teflon®. Other materials available upon request.

TYPICAL APPLICATIONS:

- Air & Gas Washing
- Dust Suppression
- Spray Ponds
- Cooling Tunnels
- Medical Treatment
- Humidification

HOLLOW CONE SPRAY

Spray Angle	MODEL NUMBER	Pipe Size (BSPT)	Orifice Dia. (mm)	Dimensions		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)															
				"A" (mm)	"L" (mm)	0.3 bar	0.5 bar	.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	6 bar	10 bar	13 bar	17 bar	20 bar			
60°	1/4YH6007	1/4	2.21	14 Hex	30.2	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.8	10.1	11.5	13.2	14.3			
	1/4YH6013	1/4	3.18	14 Hex	30.2	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5			
	1/4YH6020	1/4	3.96	14 Hex	30.2	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41			
	3/8YH6030	3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61			
	3/8YH6040	3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82			
	3/8YH6053	3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108			
	3/8YH6082	3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167			
	1/2YH60120	1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245			
	1/2YH60164	1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334			
	3/4YH60210	3/4	12.7	27 Hex	73.0	52	38	80	95.7	117	135	166	191	234	303	345	395	428			
	90°	1/4YH9007	1/4	2.21	14 Hex	30.2	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.8	10.1	11.5	13.2	14.3		
		1/4YH9013	1/4	3.18	14 Hex	30.2	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5		
1/4YH9020		1/4	3.96	14 Hex	30.2	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41			
3/8YH9030		3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61			
3/8YH9040		3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82			
3/8YH9053		3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108			
3/8YH9082		3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167			
1/2YH90120		1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245			
1/2YH90164		1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334			
3/4YH90210		3/4	12.7	27 Hex	73.0	52	38	80	95.7	117	135	166	191	234	303	345	395	428			
1YH90340		1	15.9	35 Hex	93.6	85	110	130	155	190	219	268	310	280	490	559	639	693			
1YH90470		1	19.1	35 Hex	93.6	117	151	179	214	262	303	371	428	525	677	772	883	958			
120°	1/4YH12007	1/4	2.21	14 Hex	30.2	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.8	10.1	11.5	13.2	14.3			
	1/4YH12013	1/4	3.18	14 Hex	30.2	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5			
	1/4YH12020	1/4	3.96	14 Hex	30.2	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41			
	3/8YH12030	3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61			
	3/8YH12040	3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82			
	3/8YH12053	3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108			
	3/8YH12082	3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167			
	1/2YH120120	1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245			
	1/2YH120164	1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334			
	3/4YH120210	3/4	12.7	27 Hex	73.0	52	38	80	95.7	117	135	166	191	234	303	345	395	428			
	1YH12034	3/8	15.9	35 Hex	93.6	85	110	130	155	190	219	268	310	280	490	559	639	693			
	1YH12047	3/8	19.1	35 Hex	93.6	117	151	179	214	262	303	371	428	525	677	772	883	958			
150°	1/4YH15007	1/4	2.21	14 Hex	30.2	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.8	10.1	11.5	13.2	14.3			
	1/4YH15013	1/4	3.18	14 Hex	30.2	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5			
	1/4YH15020	1/4	3.96	14 Hex	30.2	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41			
	3/8YH15030	3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61			
	3/8YH15040	3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82			
	3/8YH15053	3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108			
	3/8YH15082	3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167			
	1/2YH150120	1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245			
	1/2YH150164	1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334			
	3/4YH150210	3/4	12.7	27 Hex	73.0	52	38	80	95.7	117	135	166	191	234	303	345	395	428			
	1YH150340	1	15.9	35 Hex	93.6	85	110	130	155	190	219	268	310	280	490	559	639	693			
	1YH150470	1	19.1	35 Hex	93.6	117	151	179	214	262	303	371	428	525	677	772	883	958			

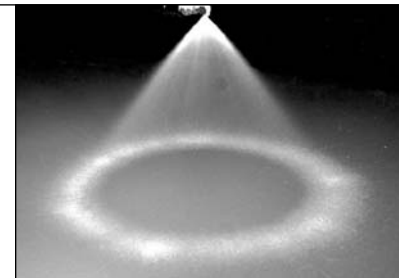
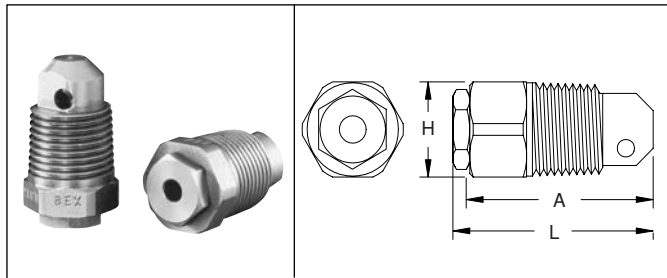
Spray Angle	MODEL NUMBER	Pipe Size (BSPT)	Orifice Dia. (mm)	Dimensions		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												
				"A" (mm)	"L" (mm)	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	6 bar	10 bar	13 bar	17 bar	20 bar
180°	1/4YH18013	1/4	3.18	14 Hex	30.2	3.25	4.2	5.0	5.9	7.3	8.4	10.3	11.9	14.5	18.7	21.4	24.4	26.5
	1/4YH18020	1/4	3.96	14 Hex	30.2	5.0	6.5	7.6	9.1	11.2	12.9	15.8	18.2	22.3	28.8	33	38	41
	3/8YH18030	3/8	4.78	17 Hex	54.0	7.5	9.7	11.4	13.7	16.8	19.3	23.7	27.4	34	43	49	56	61
	3/8YH18040	3/8	5.56	17 Hex	54.0	10.0	12.9	15.5	18.2	22.3	25.8	31.6	36	45	58	66	75	82
	3/8YH18053	3/8	6.35	17 Hex	54.0	13.2	17.1	20.2	24.2	29.6	34	42	48	59	76	87	100	108
	3/8YH18082	3/8	7.95	17 Hex	54.0	20.5	26.4	31.3	37.4	46	53	65	75	92	118	135	154	167
	1/2YH180120	1/2	9.53	22 Hex	63.5	30.0	39	46	54.7	67	77	95	109	134	173	197	226	245
	1/2YH180164	1/2	11.1	22 Hex	63.5	41	53	63	74.8	92	106	129	149	183	236	270	308	334
	3/4YH180210	3/4	12.7	27 Hex	73.0	52	38	80	95.7	117	135	166	191	234	303	345	395	428
	1YH180340	1	15.9	35 Hex	93.6	85	110	130	155	190	219	268	310	280	490	559	639	693
	1YH180470	1	19.1	35 Hex	93.6	117	151	179	214	262	303	371	428	525	677	772	883	958

In-line hollow cone spray nozzles

ILH SERIES

DIMENSIONS

MODEL NUMBER (BSPT)	Dim. A (mm)	Dim. L (mm)	Dim. H (mm)
3/8ILH	31	33	19
1/2ILH	33	38	25
3/4ILH	38	46	31
1 1/2ILH	61	66	51



SPRAY CHARACTERISTICS:

ILH series in-line hollow-cone spray nozzles produce a very evenly distributed hollow-cone spray which emerges through the center axis of the nozzle body. At lower pressures, they produce medium sized, uniform droplets.

Finer droplets are produced at higher pressures.

CONSTRUCTION:

ILH series nozzles have large maximum free passage diameters to reduce clogging.

Interchangeable nozzle caps are easily removed for cleaning or inspection. Standard materials of construction for ILH series nozzles are brass, 303 and 316 stainless steel. Other body and cap materials are available upon request.

MODEL NUMBER	PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)									
			0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	6 bar	8 bar
3/8ILH2	3/8	1.98	--	--	0.76	0.91	1.12	1.29	1.58	1.82	2.23	2.58
3/8ILH3	3/8	2.39	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.3	3.9
3/8ILH5	3/8	2.77	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.6	6.4
3/8ILH8	3/8	3.96	2.00	2.58	3.05	3.6	4.5	5.2	6.3	7.3	8.9	10.3
3/8ILH10	3/8	2.95	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	11.2	12.9
3/8ILH14	3/8	3.96	3.5	4.5	5.3	6.4	7.8	9.0	11.1	12.8	15.6	18.0
1/2ILH5	1/2	3.18	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.6	6.4
1/2ILH8	1/2	3.96	2.00	2.58	3.05	3.6	4.5	5.2	6.3	7.3	8.9	10.3
1/2ILH10	1/2	4.37	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	11.2	12.9
1/2ILH15	1/2	4.37	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	16.7	19.3
1/2ILH20	1/2	4.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	22.3	25.8
1/2ILH25	1/2	5.16	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	27.9	32
3/4ILH5	3/4	3.18	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.6	6.4
3/4ILH8	3/4	3.96	2.00	2.58	3.05	3.6	4.5	5.2	6.3	7.3	8.9	10.3
3/4ILH10	3/4	18.29	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	11.2	12.9
3/4ILH15	3/4	5.56	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	16.7	19.3
3/4ILH20	3/4	6.35	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	22.3	25.8
3/4ILH25	3/4	7.14	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	27.9	32
3/4ILH50	3/4	7.14	12.5	16.1	19.1	22.8	27.9	32	39	46	56	64
1 1/2ILH40	1 1/2	7.95	10.0	12.9	15.3	18.2	22.3	25.8	32	36	45	52
1 1/2ILH50	1 1/2	9.53	12.5	16.1	19.1	22.8	27.9	32	39	46	56	64
1 1/2ILH70	1 1/2	9.53	17.5	22.6	26.7	32	39	45	55	64	78	90
1 1/2ILH90	1 1/2	9.53	22.5	29.0	34	41	50	58	71	82	100	116
1 1/2ILH110	1 1/2	9.53	27.5	35	42	50	61	71	87	100	123	142

TYPICAL APPLICATIONS:

- Dust Suppression
- Spray Ponds
- Metal Treatment
- Roof Cooling
- Brine Spraying
- Humidification
- Aerating

Spray Angle is standard 75 degrees at 0.7 bar.

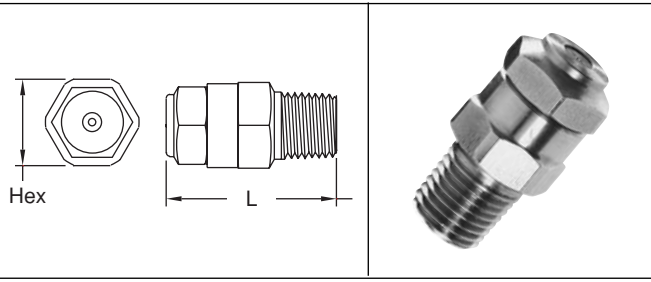
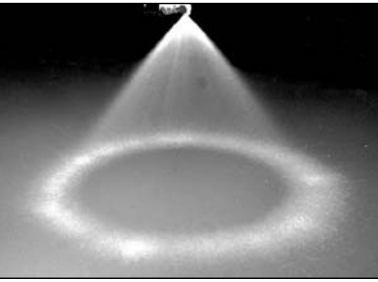
Some Wide-Angle models also available. Contact BEX.

HOLLOW CONE SPRAY

"- -" means not recommended at this pressure.

C SERIES

Hydraulic atomizing nozzles



DIMENSIONS

NOZZLE SIZE (BSPT)	"L" (mm)	BODY (mm)	CAP (mm)
1/4FCL	49	21 HEX	18 HEX
1/4CL	54	21 HEX	18 HEX
1/4FCM.5L	48	21 HEX	16 HEX
1/4CM.5L	52	21 HEX	16 HEX
1/4FC	49	18 HEX	18 HEX
1/4C	36	18 HEX	18 HEX
1/4CC	21	14 HEX	N/A

SPRAY CHARACTERISTICS:

C series hydraulic atomizing nozzles are designed and precision machined to provide a very fine hollow-cone spray using only the liquid pressure for atomizing.

CONSTRUCTION:

Several different styles of nozzle are available in brass, 303 and 316 stainless steel. The orifice insert, core, and strainer are supplied in 316 stainless steel standard.

TYPICAL APPLICATIONS:

- Humidification/Moisture Addition
- Evaporative Cooling
- Steam De-superheating

SPECIAL FEATURES:

- Very fine hollow-cone spray
- Easy disassembly/assembly and cleaning
- Wide range of style and sizes



CL STYLE

Two-piece body with removable cap, orifice, insert, core, core retainer and strainer.



C STYLE

Two piece body with removable cap, orifice insert, core and core retainer.



CM.5L STYLE

1/2" BSPT male wall mount body with removable cap, orifice insert, core, core retainer and strainer.



CC STYLE*

One-piece body with removable orifice insert, core and core retainer. (Add "L" for optional external strainer.)

Standard spray angle is 80° @ 2.8 bar (80° @ 6.9 bar for Models C4.7 and smaller)

MODEL NUMBER							CAPACITY (L/hr) AT VARIOUS PRESSURES (bar)									
'CL' Style		'CM.5L' Style		'C' Style		'CC' Style	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	50 bar	
FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	MALE										
1/4FC1.9L	1/4C1.9L	1/4FC1.9M.5L	1/4C1.9M.5L	1/4FC1.9	1/4C1.9	1/4CC1.9	1.90	2.33	2.69	3.00	3.6	4.2	6.0	7.4	9.5	
1/4FC2.4L	1/4C2.4L	1/4FC2.4M.5L	1/4C2.4M.5L	1/4FC2.4	1/4C2.4	1/4CC2.4	2.40	2.94	3.4	3.8	4.5	5.4	7.6	9.3	12.0	
1/4FC3.0L	1/4C3.0L	1/4FC3.0M.5L	1/4C3.0M.5L	1/4FC3.0	1/4C3.0	1/4CC3.0	3.00	3.7	4.2	4.7	5.6	6.7	9.5	11.6	15.0	
1/4FC3.8L	1/4C3.8L	1/4FC3.8M.5L	1/4C3.8M.5L	1/4FC3.8	1/4C3.8	1/4CC3.8	3.80	4.65	5.37	6.01	7.1	8.5	12.0	14.7	19.0	
1/4FC4.7L	1/4C4.7L	1/4FC4.7M.5L	1/4C4.7M.5L	1/4FC4.7	1/4C4.7	1/4CC4.7	4.7	5.8	6.6	7.4	8.8	10.5	14.9	18.2	23.5	
1/4FC5.9L	1/4C5.9L	1/4FC5.9M.5L	1/4C5.9M.5L	1/4FC5.9	1/4C5.9	1/4CC5.9	5.9	7.2	8.3	9.3	11.0	13.2	18.7	22.9	29.5	
1/4FC7.4L	1/4C7.4L	1/4FC7.4M.5L	1/4C7.4M.5L	1/4FC7.4	1/4C7.4	1/4CC7.4	7.4	9.1	10.5	11.7	13.8	16.5	23.4	28.7	37	
1/4FC9.2L	1/4C9.2L	1/4FC9.2M.5L	1/4C9.2M.5L	1/4FC9.2	1/4C9.2	1/4CC9.2	9.2	11.3	13.0	14.5	17.2	20.6	29.1	36	46	
1/4FC12L	1/4C12L	1/4FC12M.5L	1/4C12M.5L	1/4FC12	1/4C12	1/4CC12	12.0	14.7	17.0	19.0	22.4	26.8	38	46	60	
1/4FC14L	1/4C14L	1/4FC14M.5L	1/4C14M.5L	1/4FC14	1/4C14	1/4CC14	14.0	17.1	19.8	22.1	26.2	31.3	44	54	70	
1/4FC18L	1/4C18L	1/4FC18M.5L	1/4C18M.5L	1/4FC18	1/4C18	1/4CC18	18.0	22.0	25.5	28.5	34	40	57	70	90	
1/4FC23L	1/4C23L	1/4FC23M.5L	1/4C23M.5L	1/4FC23	1/4C23	1/4CC23	23.0	28.2	33	36	43	51	73	89	115	
1/4FC28L	1/4C28L	1/4FC28M.5L	1/4C28M.5L	1/4FC28	1/4C28	1/4CC28	28.0	34	40	44	52	63	89	108	140	
1/4FC35L	1/4C35L	1/4FC35M.5L	1/4C35M.5L	1/4FC35	1/4C35	1/4CC35	35	43	49	55	65	78	111	136	175	
1/4FC44L	1/4C44L	1/4FC44M.5L	1/4C44M.5L	1/4FC44	1/4C44	1/4CC44	44	54	62	70	82	98	139	170	220	
1/4FC55L	1/4C55L	1/4FC55M.5L	1/4C55M.5L	1/4FC55	1/4C55	1/4CC55	55	67	78	87	103	123	174	213	275	
1/4FC69L	1/4C69L	1/4FC69M.5L	1/4C69M.5L	1/4FC69	1/4C69	1/4CC69	69	85	98	109	129	154	218	267	345	
1/4FC86L	1/4C86L	1/4FC86M.5L	1/4C86M.5L	1/4FC86	1/4C86	1/4CC86	86	105	122	136	161	192	272	333	430	

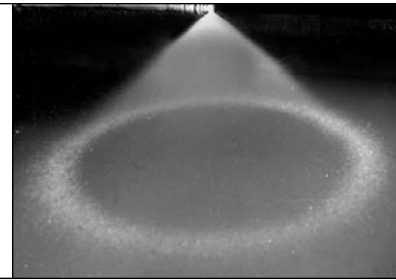
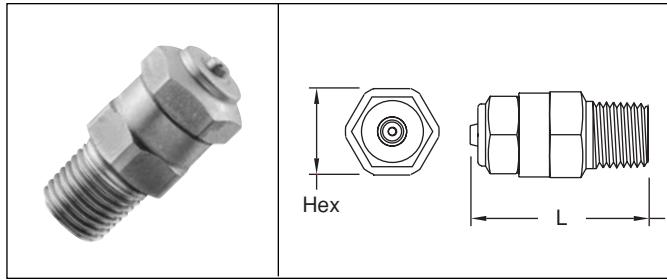
*Some 1/8 BSPT CC Styles are available

Wide angle hydraulic atomizing nozzles

CW SERIES

DIMENSIONS

NOZZLE SIZE (BSPT)	"L" (mm)	BODY (mm)	CAP (mm)
1/4 FCL	51	21 HEX	18 HEX
1/4 CL	21	21 HEX	18 HEX
1/4 FCM.5L	24	21 HEX	16 HEX
1/4 CM.5L	53	21 HEX	16 HEX
1/4 FC	51	18 HEX	18 HEX
1/4 C	37	18 HEX	18 HEX
1/4 CC	23	14 HEX	N/A



SPRAY CHARACTERISTICS:

CW series wide angle hydraulic atomizing nozzles are precision machined to provide a very fine wide angle hollow-cone spray using only the liquid pressure for atomizing.

TYPICAL APPLICATIONS:

- Humidification/Moisture Addition
- Evaporative Cooling
- Steam De-superheating

CONSTRUCTION:

Several different styles of nozzle are available in brass, 303 and 316 stainless steel. The orifice insert, core and strainer are supplied in 316 stainless steel standard.

SPECIAL FEATURES:

- Very fine wide angle hollow-cone spray
- Easy disassembly/assembly and cleaning
- Wide range of styles and sizes



CWL STYLE

Two-piece body with removable cap, orifice insert, core, core retainer and strainer.



CW STYLE

Two-piece body with removable cap, orifice insert, core and core retainer.



CWM.5L STYLE

1/2" BSPT male wallmount body with removable cap, orifice insert, core, core retainer, and strainer.



CCW STYLE*

One-piece body with removable orifice insert, core and core retainer. (Add "L" for optional external strainer.)

Standard spray angle is 150° @ 3 bar

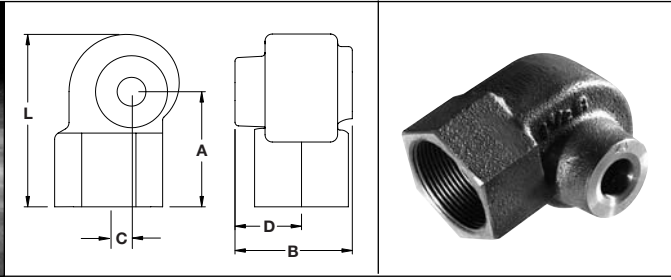
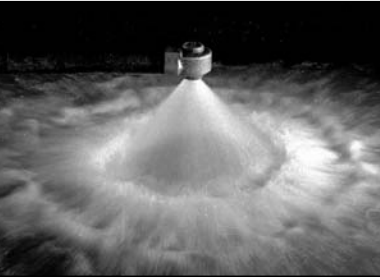
MODEL NUMBER							CAPACITY (L/hr) AT VARIOUS PRESSURES (bar)								
'CWL' Style		'CWM.5L' Style		'CW' Style		'CCW' Style	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	50 bar
FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	MALE									
1/4FC5.9WL	1/4C5.9WL	1/4FC5.9WM.5L	1/4C5.9WM.5L	1/4FC5.9W	1/4C5.9W	1/4CC5.9W	5.9	7.2	8.3	9.3	11.0	13.2	18.7	22.9	29.5
1/4FC7.4WL	1/4C7.4WL	1/4FC7.4WM.5L	1/4C7.4WM.5L	1/4FC7.4W	1/4C7.4W	1/4CC7.4W	7.4	9.1	10.5	11.7	13.8	16.5	23.4	28.7	37
1/4FC9.2WL	1/4C9.2WL	1/4FC9.2WM.5L	1/4C9.2WM.5L	1/4FC9.2W	1/4C9.2W	1/4CC9.2W	9.2	11.3	13.0	14.5	17.2	20.6	29.1	36	46
1/4FC12WL	1/4C12WL	1/4FC12WM.5L	1/4C12WM.5L	1/4FC12W	1/4C12W	1/4CC12W	12.0	14.7	17.0	19.0	22.4	26.8	38	46	60
1/4FC14WL	1/4C14WL	1/4FC14WM.5L	1/4C14WM.5L	1/4FC14W	1/4C14W	1/4CC14W	14.0	17.1	19.8	22.1	26.2	31.3	44	54	70
1/4FC18WL	1/4C18WL	1/4FC18WM.5L	1/4C18WM.5L	1/4FC18W	1/4C18W	1/4CC18W	18.0	22.0	25.5	28.5	34	40	57	70	90
1/4FC23WL	1/4C23WL	1/4FC23WM.5L	1/4C23WM.5L	1/4FC23W	1/4C23W	1/4CC23W	23.0	28.2	33	36	43	51	73	89	115
1/4FC28WL	1/4C28WL	1/4FC28WM.5L	1/4C28WM.5L	1/4FC28W	1/4C28W	1/4CC28W	28.0	34	40	44	52	63	89	108	140

*Some 1/8 BSPT. CCW Styles are available

HOLLOW CONE SPRAY

R SERIES

High capacity hollow cone spray nozzles



DIMENSIONS

MODEL NUMBER (BSPT)	Dim. A (mm)	Dim. B (mm)	Dim. C (mm)	Dim. D (mm)	Dim. L (mm)
1R	51	51	3.2	29	70
1 ¹ / ₄ R	51	57	12.7	32	79
1 ¹ / ₂ R	60	76	14.3	45	95
2R	70	98	25.4	57	121
2 ¹ / ₂ R	89	121	28.6	70	134

At 1 bar: Circular distribution with larger flow rates.

SPRAY CHARACTERISTICS:

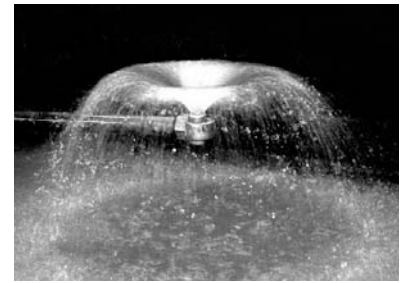
A high capacity hollow cone spray pattern with uniform distribution. The large body and orifice diameters minimize clogging.

CONSTRUCTION:

One piece cast construction. Standard material is 316 stainless steel. All the R series nozzles have a female BSPT pipe connection. Bronze and cast iron available on a limited, special order basis.

TYPICAL APPLICATIONS:

- Aeration & Pollution Control
- Cooling Ponds
- Scrubbing and Washing Gases and Fumes
- Cooling Coil
- Dust Proofing
- Chemical Processes

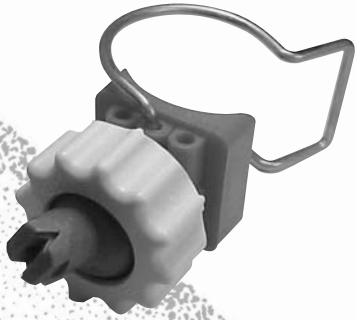


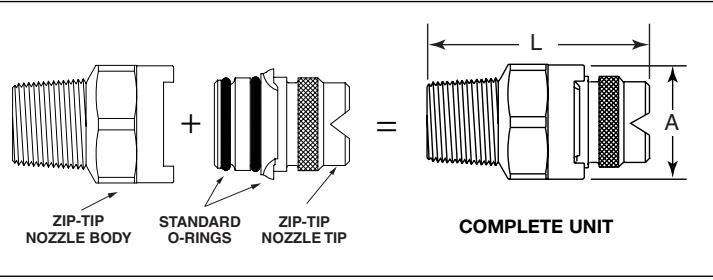
At 0.07 bar: Wide spray angle with large droplets and minimal misting.

HOLLOW CONE SPRAY

MODEL NUMBER	PIPE SIZE BSPT	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												SPRAY ANGLE @		
			0.1 bar	0.2 bar	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	0.5 bar	1.5 bar	4 bar
1R10	1	12.7	14.4	20.4	25.0	32	38	46	56	64	79	91	102	121	65°	72°	73°
1R12	1	12.7	17.3	24.5	30.0	39	46	55	67	77	95	109	122	145	71°	74°	75°
1R14	1	12.7	20.2	28.5	35	45	53	64	78	90	111	128	143	169	74°	79°	80°
1R16	1	12.7	23.1	33	40	52	61	73	89	103	126	146	163	193	77°	83°	83°
1R18	1	12.7	25.9	37	45	58	69	82	100	116	142	164	183	217	80°	86°	76°
1 ¹ / ₄ R12	1 ¹ / ₄	13.1	17.3	24.5	30.0	39	46	55	67	77	95	109	122	145	64°	68°	69°
1 ¹ / ₄ R14	1 ¹ / ₄	14.3	20.2	28.5	35	45	53	64	78	90	111	128	143	169	66°	71°	71°
1 ¹ / ₄ R16	1 ¹ / ₄	14.3	23.1	33	40	52	61	73	89	103	126	146	163	193	71°	75°	75°
1 ¹ / ₄ R18	1 ¹ / ₄	14.3	25.9	37	45	58	69	82	100	116	142	164	183	217	76°	78°	79°
1 ¹ / ₄ R21	1 ¹ / ₄	14.3	30.3	43	52	68	80	96	117	135	166	191	214	253	79°	82°	82°
1 ¹ / ₄ R24	1 ¹ / ₄	14.3	35	49	60	77	92	109	134	155	189	219	245	289	81°	76°	86°
1 ¹ / ₂ R18	1 ¹ / ₂	15.5	25.9	37	45	58	69	82	100	116	142	164	183	217	66°	70°	71°
1 ¹ / ₂ R21	1 ¹ / ₂	17.5	30.3	43	52	68	80	96	117	135	166	191	214	253	70°	74°	74°
1 ¹ / ₂ R24	1 ¹ / ₂	18.8	35	49	60	77	92	109	134	155	189	219	245	289	73°	76°	76°
1 ¹ / ₂ R28	1 ¹ / ₂	18.8	40	57	70	90	107	128	156	180	221	255	285	338	76°	79°	80°
1 ¹ / ₂ R32	1 ¹ / ₂	18.8	46	65	80	103	122	146	179	206	253	292	326	386	79°	84°	84°
1 ¹ / ₂ R37	1 ¹ / ₂	18.8	53	75	92	119	141	169	207	238	292	337	377	446	84°	88°	88°
2R37	2	21.6	53	75	92	119	141	169	207	238	292	337	377	446	62°	64°	65°
2R43	2	23.5	62	88	107	139	164	196	240	277	339	392	438	519	66°	70°	72°
2R49	2	25.7	71	100	122	158	187	223	274	316	387	447	499	591	70°	72°	73°
2R57	2	25.7	82	116	142	184	217	260	318	367	450	520	581	687	74°	77°	77°
2R65	2	25.7	94	132	162	209	248	296	363	419	513	593	662	784	75°	79°	79°
2R75	2	25.7	108	153	187	242	286	342	419	483	592	684	764	904	78°	81°	81°
2R86	2	25.7	124	175	215	277	328	392	480	554	679	784	876	1037	86°	88°	88°
2 ¹ / ₂ R75	2 ¹ / ₂	33.3	108	153	187	242	286	342	419	483	592	684	764	904	67°	72°	72°
2 ¹ / ₂ R86	2 ¹ / ₂	33.3	124	175	215	277	328	392	480	554	679	784	876	1037	73°	76°	76°
2 ¹ / ₂ R100	2 ¹ / ₂	33.3	144	204	250	322	381	456	558	645	789	912	1019	1206	79°	83°	84°
2 ¹ / ₂ R115	2 ¹ / ₂	33.3	166	234	287	371	439	524	642	741	908	1048	1172	1387	80°	84°	85°
2 ¹ / ₂ R132	2 ¹ / ₂	33.3	190	269	330	425	503	602	737	851	1042	1203	1345	1592	82°	87°	87°

QUICK DISCONNECT NOZZLES





BEX ZIP-TIP® quick-disconnect spray nozzles are designed to allow fast and easy installation and removal of spray nozzle tips and adapter fittings, while providing positive alignment between nozzle body and nozzle tip. No tools are required to install or remove ZIP-TIP nozzle tips or adapters. Installation involves simply inserting a ZIP-TIP nozzle tip into a ZIP-TIP nozzle body, pressing lightly, and twisting in a clockwise direction until the nozzle tip or adapter snaps into aligned position. ZIP-TIP nozzles utilize standard

“O-ring” seals, where the “O-rings” are located on, and removed with, the nozzle tip. These seals are supplied with each new spray nozzle tip or adapter fitting. Any “Z” series (e.g. “ZF”), ZIP-TIP nozzle tip or adapter will fit any “Z” series ZIP-TIP nozzle body. Likewise, the “ZL” series (e.g. “ZLF”), ZIP-TIP nozzle tip or adapter for larger capacities will fit any “ZL” series ZIP-TIP nozzle body (note that a minimum pipe size is required for specific capacities). ZIP-TIP nozzles are available in 303 and 316 stainless steel as

well as brass, and all are supplied with VITON® seals standard. Other nozzle tip, nozzle body, and seal materials are available upon request. A wide range of styles and capacities of ZIP-TIP nozzle tips and nozzle bodies for flat, full-cone, and hollow-cone spray patterns are available. ZIP-TIP spray nozzles are rated to 20 bar. (NOTE: Metal and molded plastic ZIP-TIP components are not interchangeable).

U.S. Patent No. 5,421,522

ZIP-TIP NOZZLE INSTALLATION & REMOVAL

- NO TOOLS REQUIRED for ZIP-TIP nozzle tip installation or removal
- POSITIVE ALIGNMENT of spray pattern
- “Light-lock” feature allows for easy removal
- Seals located on and removed with nozzle tip for easy flushing
- New seals supplied with each new nozzle tip (VITON® standard)
- Uses standard “O-RING” seals, available in a variety of materials
- High flow capacities in a small assembly size



ZIP-TIP BODIES AND ADAPTERS



ZBD, ZLBD
1/8" - 3/4" BSPT Male Only
Brass, 303 & 316 SS



ZAJ, ZLAJ
1/8" - 1/2" BSPT Male Only
Brass, 303 & 316 SS



ZTA, ZLTA
1/8" - 1/2" BSPT Female Only
Brass, 303 & 316 SS



ZPLUG, ZLPLUG
To shut off individual nozzles
Brass, 303 & 316 SS

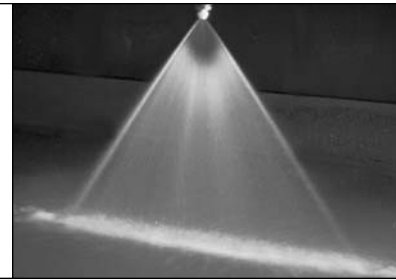
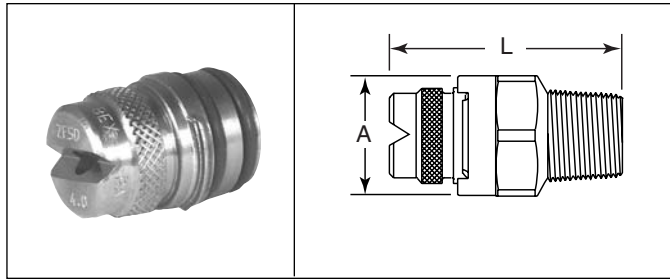
QUICK DISCONNECT

Flat "V" spray nozzles

ZF SERIES

DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZF	41	25
1/4 ZF	43	25
3/8 ZF	44	25
1/2 ZF	46	25
3/8 ZLF	54	32
1/2 ZLF	56	32



SPRAY CHARACTERISTICS:

ZF-Series spray nozzles produce a flat, fan-shaped spray pattern with spray angles available from 15° to 110° measured at 3 bar. Spray angles generally increase with pressure, as shown in the capacity table.

Spray density tapers off toward the outside of these sprays, to permit overlapping of spray patterns while maintaining uniform spray density.

CONSTRUCTION:

The tip models listed are machined from bar stock and are one piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. All bodies are available in either BSPT or NPT threads.

Please see page 40 for body styles and adapters.

Please see page 55 for molded plastic models.

TYPICAL APPLICATIONS:

Suitable for a variety of washing and spraying applications.

- Parts Cleaning
- Metal Washing
- Foam Control
- Asphalt Spraying
- Gravel Washing
- Vehicle Washing
- Fertilizer Spraying
- Dishwashers

SPRAY ANGLE @ 3bar	ZF MODEL	ZLF MODEL	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)														SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar	
110°	ZF11003		1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	92°	110°	118°	
	ZF11004		1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	90°	110°	112°	
	ZF11005		1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	96°	110°	114°	
	ZF11006		1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	97°	110°	115°	
	ZF11008		1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	100°	110°	115°	
	ZF11010		1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	102°	110°	115°	
	ZF11015		2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	102°	110°	115°	
	ZF11020		2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	103°	110°	112°	
	ZF11030		3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	103°	110°	115°	
	ZF11040		3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	103°	110°	115°	
	ZF11050		4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	107°	110°	116°	
	ZF11060		4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	103°	110°	115°	
	ZF11070		5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	107°	110°	115°	
		ZLF11080		5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100	107°	110°	115°
		ZLF110100		5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60	72	102	125	106°	110°	115°
		ZLF110120		6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150	108°	110°	117°
		ZLF110150		7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108	153	187	104°	110°	115°
		ZLF110200		8.46	25.0	32.2	38.1	45.6	55.8	64	79	91	102	121	144	204	250	106°	110°	116°
	ZLF110400		11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	105°	110°	115°	
95°	ZF9503		1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	86°	95°	101°	
	ZF9504		1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	86°	95°	101°	
	ZF9505		1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	86°	95°	101°	
	ZF9506		1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	86°	95°	101°	
	ZF9508		1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	86°	95°	100°	
	ZF9510		1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	88°	95°	99°	
	ZF9515		2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	90°	95°	100°	
	ZF9520		2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	89°	95°	99°	
	ZF9530		3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	90°	95°	101°	
	ZF9540		3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	90°	95°	100°	
	ZF9550		4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	91°	95°	101°	
	ZF9560		4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	92°	95°	102°	
	ZF9570		5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	92°	95°	103°	
		ZLF9580		5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100	92°	95°	103°
		ZLF95100		5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60	72	102	125	92°	95°	103°
		ZLF95120		6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150	92°	95°	103°
		ZLF95150		7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108	153	187	92°	95°	102°

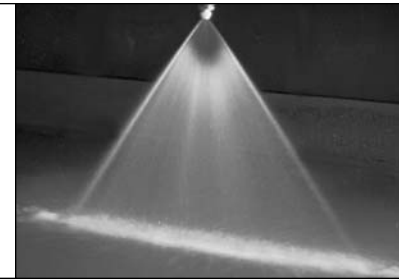
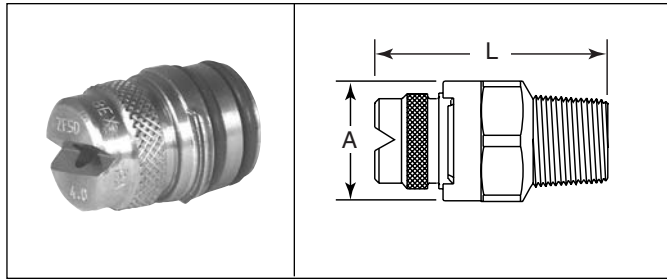
QUICK DISCONNECT

SPRAY ANGLE @ 3bar	ZF MODEL	ZLF MODEL	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)														SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar	
80°	ZF8002		0.91	0.25	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.0	1.2	1.4	2.0	2.45	74°	80°	83°	
	ZF8003		1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	74°	80°	83°	
	ZF8004		1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	74°	80°	83°	
	ZF8005		1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	74°	80°	83°	
	ZF8006		1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	74°	80°	83°	
	ZF8008		1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	75°	80°	83°	
	ZF8010		1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	75°	80°	83°	
	ZF8015		2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	74°	80°	86°	
	ZF8020		2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	74°	80°	85°	
	ZF8030		3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	75°	80°	86°	
	ZF8040		3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	76°	80°	85°	
	ZF8050		4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	77°	80°	84°	
	ZF8060		4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	77°	80°	84°	
	ZF8070		5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	78°	80°	87°	
		ZLF8080		5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100	78°	80°	88°
		ZLF80100		5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60	72	102	125	75°	80°	83°
		ZLF80120		6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150	73°	80°	84°
		ZLF80150		7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108	153	187	74°	80°	82°
		ZLF80200		8.46	25.0	32.2	38.1	45.6	55.8	64	79	91	102	121	144	204	250	74°	80°	82°
		ZLF80400		11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	74°	80°	82°
65°	ZF6502		0.91	0.25	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.0	1.2	1.4	2.0	2.45	53°	65°	72°	
	ZF6503		1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	53°	65°	72°	
	ZF6504		1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	54°	65°	72°	
	ZF6505		1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	54°	65°	72°	
	ZF6506		1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	54°	65°	72°	
	ZF6508		1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	55°	65°	71°	
	ZF6510		1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	57°	65°	73°	
	ZF6512		2.08	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	7.2	8.6	12.2	15.0	59°	65°	71°	
	ZF6515		2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	59°	65°	72°	
	ZF6520		2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	61°	65°	72°	
	ZF6530		3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	62°	65°	72°	
	ZF6540		3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	63°	65°	72°	
	ZF6550		4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	63°	65°	73°	
	ZF6560		4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	63°	65°	73°	
	ZF6570		5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	63°	65°	74°	
		ZLF6580		5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100	59°	65°	69°
		ZLF65100		5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60	72	102	125	59°	65°	69°
		ZLF65120		6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150	59°	65°	68°
		ZLF65150		7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108	153	187	59°	65°	68°
		ZLF65200		8.46	25.0	32.2	38.1	45.6	55.8	64	79	91	102	121	144	204	250	60°	65°	67°
	ZLF65300		10.36	37	48	57	68	84	97	118	137	153	181	216	306	374	60°	65°	68°	
	ZLF65400		11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	60°	65°	68°	
50°	ZF5002		0.91	0.25	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.0	1.2	1.4	2.0	2.45	43°	50°	57°	
	ZF5003		1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	44°	50°	57°	
	ZF5004		1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	44°	50°	56°	
	ZF5005		1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	44°	50°	56°	
	ZF5006		1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	45°	50°	56°	
	ZF5008		1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	45°	50°	56°	
	ZF5010		1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	43°	50°	55°	
	ZF5012		2.08	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	7.2	8.6	12.2	15.0	43°	50°	55°	
	ZF5015		2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	43°	50°	55°	
	ZF5020		2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	43°	50°	55°	
	ZF5030		3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	43°	50°	54°	
	ZF5040		3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	43°	50°	54°	
	ZF5050		4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	43°	50°	53°	
	ZF5060		4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	43°	50°	53°	
	ZF5070		5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	44°	50°	53°	

QUICK DISCONNECT

DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZF	41	25
1/4 ZF	43	25
3/8 ZF	44	25
1/2 ZF	46	25
3/8 ZLF	54	32
1/2 ZLF	56	32



SPRAY ANGLE @ 3bar	ZF MODEL	ZLF MODEL	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @			
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar	
40°		ZLF5080	5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100	44°	50°	52°	
		ZLF50100	5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60	72	102	125	44°	50°	52°	
		ZLF50120	6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150	44°	50°	53°	
		ZLF50150	7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108	153	187	46°	50°	52°	
		ZLF50200	8.46	25.0	32.2	38.1	45.6	55.8	64	79	91	102	121	144	204	250	46°	50°	54°	
		ZLF50300	10.36	37	48	57	68	84	97	118	137	153	181	216	306	374	47°	50°	54°	
	ZLF50400	11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	47°	50°	54°		
	ZF4002			0.91	0.25	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.0	1.2	1.4	2.0	2.45	26°	40°	46°
	ZF4003			1.04	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	30°	40°	45°
	ZF4004			1.19	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	32°	40°	45°
	ZF4005			1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.60	5.1	6.2	35°	40°	44°
	ZF4006			1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.62	4.32	6.1	7.5	37°	40°	44°
	ZF4008			1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	35°	40°	43°
	ZF4010			1.91	1.25	1.61	1.91	2.28	2.79	3.22	3.95	4.56	5.10	6.0	7.2	10.2	12	30°	40°	43°
ZF4015			2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8	15	19	35°	40°	41°	
ZF4020			2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4	20	25	33°	40°	43°	
ZF4030			3.28	3.74	4.83	5.72	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	34°	40°	45°	
ZF4040			3.78	4.99	6.45	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	33°	40°	43°	
ZF4050			4.24	6.24	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0	51	62	35°	40°	46°	
ZF4060			4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36.2	43.2	61	75	37°	40°	48°	
ZF4070			5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	31.9	35.7	42.2	50.4	71	87	36°	40°	47°	
25°		ZLF4080	5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100	35°	40°	46°	
		ZLF40100	5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60	72	102	125	33°	40°	44°	
		ZLF40120	6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150	36°	40°	43°	
		ZLF40150	7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108	153	187	36°	40°	43°	
		ZLF40200	8.46	25.0	32.2	38.1	45.6	55.8	64	79	91	102	121	144	204	250	37°	40°	44°	
		ZLF40400	11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	38°	40°	43°	
	ZF2503			1.04	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	20°	25°	31°
	ZF2504			1.19	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	19°	25°	31°
	ZF2505			1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.60	5.1	6.2	18°	25°	31°
	ZF2506			1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.62	4.32	6.1	7.5	17°	25°	31°
	ZF2508			1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	16°	25°	32°
	ZF2510			1.91	1.25	1.61	1.91	2.28	2.79	3.22	3.95	4.56	5.10	6.0	7.2	10.2	12	17°	25°	31°
	ZF2515			2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8	15	19	18°	25°	30°
	ZF2520			2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4	20	25	18°	25°	28°
ZF2530			3.28	3.74	4.83	5.72	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	19°	25°	29°	
ZF2540			3.78	4.99	6.45	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	22°	25°	32°	
ZF2550			4.24	6.24	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0	51	62	20°	25°	32°	
ZF2560			4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36.2	43.2	61	75	18°	25°	28°	
ZF2570			5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	31.9	35.7	42.2	50.4	71	87	19°	25°	27°	
	ZLF2580	5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100	20°	25°	27°		
	ZLF25100	5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60	72	102	125	21°	25°	28°		
	ZLF25120	6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72	86	122	150	20°	25°	28°		
	ZLF25150	7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108	153	187	18°	25°	28°		
	ZLF25200	8.46	25.0	32.2	38.1	45.6	55.8	64	79	91	102	121	144	204	250	19°	25°	27°		
	ZLF25400	11.96	50	64	76	91	112	129	158	182	204	241	288	408	499	19°	25°	27°		

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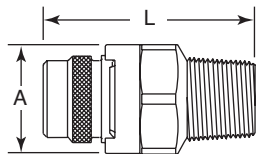
ZF SERIES

Flat "V" spray nozzles continued

SPRAY ANGLE @ 3bar	ZF MODEL	ZLF MODEL	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @			
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar	
15°	ZF1505		1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	10°	15°	20°	
	ZF1506		1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	11°	15°	24°	
	ZF1508		1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	11°	15°	21°	
	ZF1510		1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	13°	15°	16°	
	ZF1515		2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	11°	15°	20°	
	ZF1520		2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	11°	15°	20°	
	ZF1530		3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	11°	15°	18°	
	ZF1540		3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	12°	15°	18°	
	ZF1550		4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	12°	15°	19°	
	ZF1560		4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	12°	15°	17°	
	ZF1570		5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	12°	15°	19°	
		ZLF1580		5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2	58	82	100	12°	15°	19°
		ZLF15100		5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	60	72	102	125	12°	15°	19°
		ZLF15120		6.55	15.0	19.3	22.9	27.3	33	39	47	55	61	72	86	122	150	12°	15°	19°
		ZLF15150		7.34	18.7	24.2	28.6	34	42	48	59	68	76	90	108	153	187	12°	15°	18°
	ZLF15200		8.46	25.0	32.2	38	46	56	64	79	91	102	121	144	204	250	13°	15°	17°	
5°	ZF0505		1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	10°	15°	20°	
	ZF0506		1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	11°	15°	24°	
	ZF0508		1.70	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	11°	15°	21°	
	ZF0510		1.91	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	13°	15°	16°	
	ZF0515		2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	11°	15°	20°	
	ZF0520		2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	11°	15°	20°	
	ZF0530		3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	11°	15°	18°	
	ZF0540		3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	12°	15°	18°	

ZF SERIES

Solid stream spray nozzles



DIMENSIONS

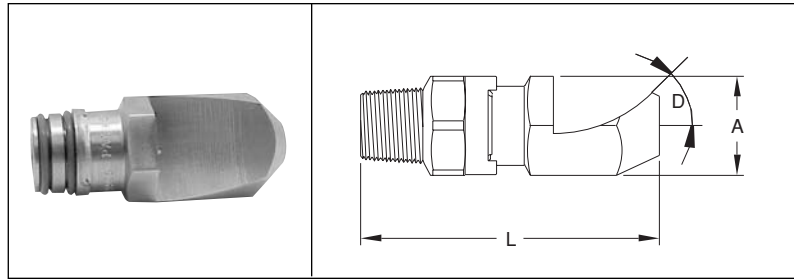
NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZF	41	25
1/4 ZF	43	25
3/8 ZF	44	25
1/2 ZF	46	25
3/8 ZLF	54	32
1/2 ZLF	56	32

QUICK DISCONNECT

SPRAY ANGLE @ 3 bar	ZF STYLE	ZLF STYLE	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)													SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	1.5 bar	3 bar	5 bar		
0°	ZF0002		0.91	0.25	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.0	1.2	1.4	0° Solid Stream				
	ZF0003		1.04	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16					
	ZF0004		1.19	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88					
	ZF0005		1.35	0.62	0.81	0.95	1.14	1.40	1.61	1.97	2.28	2.55	3.01	3.60					
	ZF0006		1.47	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.62	4.32					
	ZF0008		1.70	1.00	0.33	0.40	0.57	0.69	0.80	0.98	1.13	1.26	1.79	2.2					
	ZF0010		1.91	1.25	1.61	1.91	2.28	2.79	3.22	3.95	4.56	5.10	6.0	7.2					
	ZF0015		2.31	1.87	2.42	2.86	3.42	4.19	4.83	5.92	6.8	7.6	9.0	10.8					
	ZF0020		2.67	2.50	3.22	3.81	4.56	5.58	6.4	7.9	9.1	10.2	12.1	14.4					
	ZF0030		3.28	3.74	4.83	5.72	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6					
	ZF0040		3.78	4.99	6.45	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8					
	ZF0050		4.24	6.24	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36.0					
	ZF0060		4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36.2	43.2					
	ZF0070		5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	31.9	35.7	42.2	50.4					
		ZLF0080		5.36	10.0	12.9	15.3	18.2	22.3	25.8	31.6	36.5	40.8	48.2		58			
		ZLF00100		5.99	12.5	16.1	19.1	22.8	27.9	32.2	39.5	45.6	51.0	60		72			
		ZLF00120		6.55	15.0	19.3	22.9	27.3	33.5	38.7	47.4	54.7	61.1	72		86			
	ZLF00150		7.34	18.7	24.2	28.6	34.2	41.9	48.3	59.2	68	76	90	108					
	ZLF00200		8.46	25.0	32.2	38.1	45.6	55.8	64	79	91	102	121	144					
	ZLF00400		11.96	49.9	64.5	76	91	11.2	129	158	182	204	241	288					

High impact flat spray nozzles

ZFP SERIES



SPRAY CHARACTERISTICS:

A flat and thin fan-shaped spray with sharp definition on all edges. This spray delivers very high impact over the area covered. The spray is deflected by angle D away from the centerline of the spray nozzle.

CONSTRUCTION:

The models listed are machined from bar stock, and are one piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Please see page 40 for body styles and adapters.

TYPICAL APPLICATIONS:

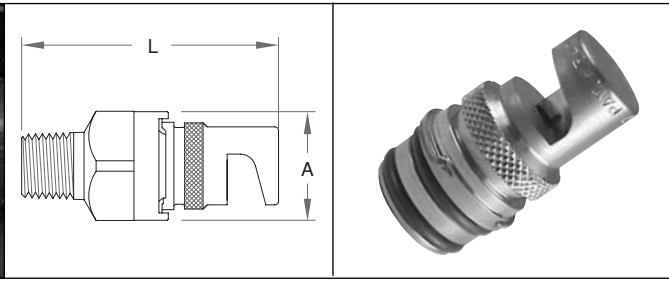
- High Impact Applications
- Metal Wash
- Gravel Washing
- Vehicle Washing

SPRAY ANGLE @ 3 bar	ZFP MODEL	ZLFP MODEL	ORIFICE DIA. (mm)	ANGLE 'D' @ 3 bar	Dimensions (mm)		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)										SPRAY ANGLE @		
					'A'	'L'	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	4 bar	5 bar	6 bar	1 bar	3 bar	6 bar		
50°	ZFP5001		0.61	40°	17 Hex	21.1	0.23	0.28	0.32	0.36	0.39	0.46	0.51	0.56	30°	50°	58°		
	ZFP50025		0.97	41°	17 Hex	27.3	0.57	0.70	0.81	0.90	0.99	1.14	1.27	1.40	29°	50°	57°		
	ZFP5005		1.35	41°	17 Hex	28.3	1.14	1.40	1.61	1.80	1.97	2.28	2.55	2.79	30°	50°	59°		
	ZFP5010		1.91	52°	17 Hex	31.8	2.28	2.79	3.2	3.6	3.9	4.6	5.1	5.6	32°	50°	59°		
	ZFP5025		3.00	40°	17 Hex	33.3	5.7	7.0	8.1	9.0	9.9	11.4	12.7	14.0	41°	50°	58°		
	ZFP5040		3.78	45°	22 Hex	47.7	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	42°	50°	59°		
	ZFP5060		4.65	40°	22 Hex	55.5	13.7	16.7	19.3	21.6	23.7	27.3	30.6	33	41°	50°	52°		
		ZLFP50100		5.99	38°	31.8Hex	69.9	22.8	27.9	32	36	39	46	51	56	44°	50°	54°	
		ZLFP50125		6.76	34°	31.8Hex	65.3	28.5	35	40	45	49	57	64	70	39°	50°	57°	
		ZLFP50160		7.57	37°	31.8Hex	67.8	36	45	52	58	63	73	82	89	46°	50°	55°	
	ZLFP50200		8.33	33°	34.9Hex	73.0	46	56	64	72	79	91	102	112	47°	50°	55°		
40°	ZFP4040		3.78	34°	22 Hex	53.1	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	29°	40°	48°		
	ZFP4050		4.24	32°	31.8Hex	56.9	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	30°	40°	47°		
	ZFP4060		4.65	31°	28.6Hex	72.2	13.7	16.7	19.3	21.6	23.7	27.3	30.6	33	31°	40°	50°		
	ZFP4070		5.00	28°	31.8Hex	71.9	16.0	19.5	22.6	25.2	27.6	32	36	39	33°	40°	50°		
		ZLFP4080		5.36	28°	31.8Hex	71.9	18.2	22.3	25.8	28.8	32	36	41	45	33°	40°	48°	
		ZLFP4090		5.79	28°	31.8Hex	71.9	20.5	25.1	29.0	32	36	41	46	50	34°	40°	46°	
		ZLFP40100		5.99	31°	31.8Hex	74.6	22.8	27.9	32	36	39	46	51	56	34°	40°	46°	
35°	ZFP3504		1.19	36°	11 Hex	49.2	0.91	1.12	1.29	1.44	1.58	1.82	2.04	2.23	20°	35°	41°		
	ZFP3510		1.91	37°	17 Hex	36.5	2.28	2.79	3.2	3.6	3.9	4.6	5.1	5.6	18°	35°	38°		
	ZFP3520		2.67	30°	17 Hex	39.4	4.6	5.6	6.4	7.2	7.9	9.1	10.2	11.2	25°	35°	42°		
	ZFP3525		2.97	29°	17 Hex	50.8	5.7	7.0	8.1	9.0	9.9	11.4	12.7	14.0	24°	35°	41°		
	ZFP3530		3.25	28°	22 Hex	54.2	6.8	8.4	9.7	10.8	11.8	13.7	15.3	16.7	25°	35°	42°		
	ZFP3540		3.78	31°	22 Hex	60.4	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	29°	35°	42°		
	ZFP3550		4.24	26°	25.4Hex	63.5	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	30°	35°	40°		
	ZFP3560		4.65	29°	27 Hex	73.0	13.7	16.7	19.3	21.6	23.7	27.3	30.6	33	27°	35°	40°		
		ZLFP3580		5.36	22°	31.8Hex	79.9	18.2	22.3	25.8	28.8	31.6	36.5	40.8	44.7	25°	35°	38°	
		ZLFP35100		5.61	24°	31.8Hex	88.9	22.8	27.9	32	36	39	46	51	56	25°	35°	40°	
	ZLFP35160		7.49	22°	31.8Hex	117.0	36	45	52	58	63	73	82	89	26°	35°	39°		
	ZLFP35200		8.46	24°	31.8Hex	110.3	46	56	64	72	79	91	102	112	31°	35°	42°		
25°	ZFP2540		3.78	24°	22 Hex	68.2	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	22°	25°	27°		
15°	ZFP1510		1.91	22°	17 Hex	49.0	2.28	2.79	3.2	3.6	3.9	4.6	5.1	5.6	--	15°	21°		
	ZFP1520		2.67	16°	17 Hex	57.2	4.6	5.6	6.4	7.2	7.9	9.1	10.2	11.2	--	15°	18°		
	ZFP1530		3.28	20°	22 Hex	73.4	6.8	8.4	9.7	10.8	11.8	13.7	15.3	16.7	8°	15°	24°		
	ZFP1540		3.78	13°	22 Hex	95.3	9.1	11.2	12.9	14.4	15.8	18.2	20.4	22.3	8°	15°	20°		
	ZFP1550		4.24	14°	22 Hex	92.1	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	8°	15°	22°		
	ZFP1560		4.65	14°	25.4Hex	111.8	13.7	16.7	19.3	21.6	23.7	27.3	30.6	33	11°	15°	18°		
		ZLFP1580		5.54	14°	28.6Hex	130.2	18.2	22.3	25.8	28.8	32	36	41	45	11°	15°	18°	
		ZLFP15100		5.99	15°	28.6Hex	138.1	22.8	27.9	32	36	39	46	51	56	11°	15°	17°	
		ZLFP15200		8.46	15°	38.1Hex	189.5	46	56	64	72	79	91	102	112	11°	15°	17°	
	ZLFP15300		10.36	15°	44.5Hex	190.5	68	84	97	108	118	137	153	167	12°	15°	18°		

QUICK DISCONNECT

ZFL SERIES

Flooding nozzles



SPRAY CHARACTERISTICS:

A wide, flat fan-shaped spray with low impact. The spray is deflected 75° away from the centerline of the pipe connection, as shown.

CONSTRUCTION:

The tip models listed are machined from bar stock, and are one piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Some models may also be available in other materials. Please see page 40 for body styles and adapters.

TYPICAL APPLICATIONS:

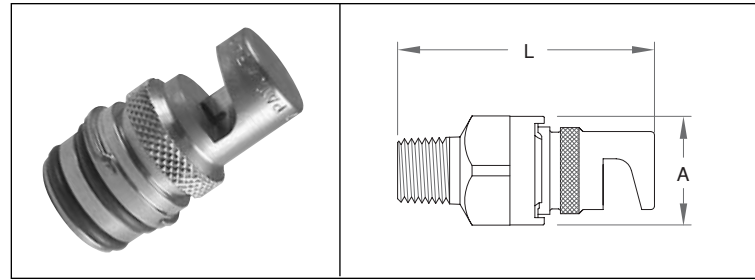
Wherever a low impact, wide angle spray is required.

- Rinsing and Cooling
- Dishwashing
- Fertilizer Spraying
- Metal Wash

ZFL MODEL	ZFLT MODEL	ORIFICE DIA. (mm)	DIMENSIONS		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)								SPRAY ANGLE @						
			"A"	"L"	0.2 bar	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	0.2 bar	0.3 bar	0.5 bar	0.7 bar	1.5 bar	4 bar
	ZFLT.25	0.43	11mm	15.8	--	--	--	0.10	0.11	0.14	0.16	0.20	0.23	--	--	--	90°	106°	120°
	ZFLT.50	0.61	11mm	15.8	--	--	0.16	0.19	0.23	0.28	0.32	0.39	0.46	--	--	65°	78°	99°	120°
	ZFLT.75	0.74	11mm	19.9	--	--	0.24	0.29	0.34	0.42	0.48	0.59	0.68	--	--	72°	85°	112°	140°
	ZFLT1	0.84	11mm	19.9	--	--	0.32	0.38	0.46	0.56	0.64	0.79	0.91	--	--	90°	97°	135°	148°
	ZFLT1.3	0.97	11mm	20.7	--	0.32	0.42	0.50	0.59	0.73	0.84	1.03	1.19	--	73°	80°	92°	115°	134°
	ZFLT1.5	1.07	11mm	20.7	0.31	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	57°	69°	75°	87°	104°	125°
	ZFLT2	1.19	11mm	20.7	0.41	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	60°	73°	82°	86°	104°	125°
	ZFLT2.5	1.40	11mm	20.7	0.52	0.63	0.82	0.97	1.16	1.42	1.64	2.01	2.32	79°	87°	92°	101°	112°	130°
	ZFLT3	1.50	11mm	20.7	0.61	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	84°	97°	106°	115°	130°	140°
ZFL4		1.78	11mm	23.8	0.82	1.00	1.29	1.53	1.82	2.23	2.58	3.2	3.6	74°	87°	89°	101°	116°	127°
ZFL5		1.93	11mm	23.8	1.02	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	78°	89°	97°	103°	113°	132°
ZFL7.5		2.39	11mm	23.8	1.53	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	98°	105°	112°	120°	132°	144°
ZFL10		2.79	11mm	23.8	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	116°	125°	135°	137°	144°	150°
ZFL12		3.05	14mm	23.8	2.45	3.00	3.9	4.6	5.5	6.7	7.7	9.5	10.9	98°	105°	109°	118°	134°	139°
ZFL15		3.28	14mm	26.7	3.06	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	100°	110°	115°	124°	131°	139°
ZFL18		3.73	14mm	26.7	3.7	4.5	5.8	6.9	8.2	10.0	11.6	14.2	16.4	100°	112°	116°	124°	135°	137°
ZFL20		3.91	14mm	26.7	4.1	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	115°	125°	128°	134°	142°	147°
ZFL22		4.09	14mm	33.4	4.5	5.5	7.1	8.4	10.0	12.3	14.2	17.4	20.1	97°	108°	114°	120°	128°	132°
ZFL24		4.29	14mm	33.4	4.9	6.0	7.7	9.2	10.9	13.4	15.5	18.9	21.9	106°	118°	121°	127°	136°	154°
ZFL27		4.50	14mm	33.4	5.5	6.7	8.7	10.3	12.3	15.1	17.4	21.3	24.6	110°	120°	124°	129°	139°	146°
ZFL30		4.78	17mm	33.4	6.1	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	104°	116°	121°	127°	135°	138°
ZFL35		4.98	17mm	33.4	7.1	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	104°	114°	118°	126°	130°	137°
ZFL40		5.31	17mm	33.4	8.2	10.0	12.9	15.3	18.2	22.3	25.8	32	36	104°	116°	121°	127°	135°	138°
ZFL45		5.79	17mm	33.4	9.2	11.2	14.5	17.2	20.5	25.1	29.0	36	41	104°	114°	118°	126°	130°	137°
ZFL60		6.76	22mm	42.9	12.2	15.0	19.3	22.9	27.3	33	39	47	55	110°	120°	124°	126°	130°	135°

-- means not recommended at this pressure

QUICK DISCONNECT



SPRAY CHARACTERISTICS:

The FL series spray nozzles may also be used with air or steam, resulting in a deflected curtain of gas extending no more than a few inches away from the nozzle. For most applications, the maximum practical target distance from the nozzle is 25 cm.

CONSTRUCTION:

The models listed are machined from bar stock, and are one piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Some models may also be available in other materials. Please see page 40 for body styles and adapters.

TYPICAL APPLICATIONS:

For dispensing air or steam. Stainless steel construction recommended for steam applications.

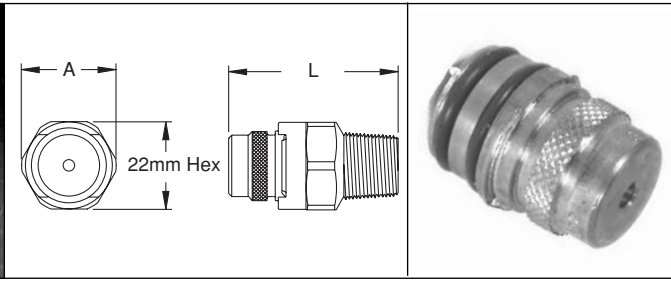
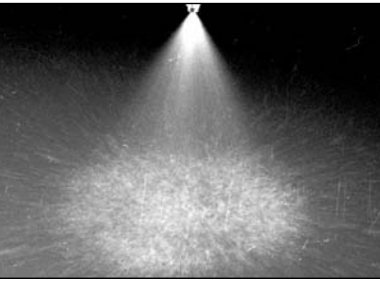
- Cleaning
- Cooling
- Blow-off of Surfaces

ZFL	ZFLT MODEL	ORIFICE DIA. (mm)	DIMENSIONS		AIR CAPACITY (L/min)					COVERAGE AT 15 cm DISTANCE FROM THE NOZZLE	
			"A"	"L"	0.7 bar	1.5 bar	3 bar	4 bar	5 bar	0.7 bar	1 bar
	ZFLT.25	0.43	11mm	15.8	1.7	4.0	6.6	8.3	10.0	5	11
	ZFLT.50	0.61	11mm	15.8	3.1	7.6	12.8	16.0	19.2	5	13
	ZFLT.75	0.74	11mm	19.9	4.8	11.0	18.5	23.2	27.8	6	15
	ZFLT1	0.84	11mm	19.9	6.2	14.4	24.2	30.3	36.3	8	15
	ZFLT1.3	0.97	11mm	20.7	8.2	19.3	32.3	40	48	8	17
	ZFLT1.5	1.07	11mm	20.7	9.9	23.5	39	49	59	9	17
	ZFLT2	1.19	11mm	20.7	12.5	29.2	49	61	73	9	19
	ZFLT2.5	1.40	11mm	20.7	17.0	40	67	84	101	10	19
	ZFLT3	1.50	11mm	20.7	19.5	46	77	97	116	13	20
ZFL4		1.78	11mm	23.8	27.7	65	109	137	164	13	23
ZFL5		1.93	11mm	23.8	33	76	128	160	192	15	25
ZFL7.5		2.39	11mm	23.8	50	119	199	249	299	17	25
ZFL10		2.79	14mm	23.8	68	161	271	338	406	18	28
ZFL12		3.05	14mm	23.8	82	193	323	404	484	18	29
ZFL15		3.28	14mm	26.7	99	238	399	499	598	18	30
ZFL18		3.73	14mm	26.7	122	292	489	611	734	20	33
ZFL20		3.91	14mm	26.7	133	320	537	671	805	22	37
ZFL22		4.09	14mm	33.4	147	348	584	730	876	22	37
ZFL24		4.29	14mm	33.4	161	385	646	807	969	22	38
ZFL27		4.50	14mm	33.4	178	422	708	885	1061	22	38
ZFL30		4.78	17mm	33.4	201	476	798	997	1197	22	39

QUICK DISCONNECT

ZS SERIES

Full cone spray nozzles



TYPICAL APPLICATIONS:

- Chemical Processing
- Cooling Sprays
- Foam Breaking
- Continuous Casting

SPRAY CHARACTERISTICS:

Full cone spray pattern, with uniform distribution throughout the cone.

CONSTRUCTION:

The nozzle contains a patented insert with larger flow passages than older styles, and is less

susceptible to clogging. Standard materials are brass, 303 stainless steel and 316 stainless steel.

Please see page 40 for body styles and adapters.

U.S. Patent No. 4,142,682

Canadian Patent No. 1,050,589

ZS SERIES

One piece body + removable insert



DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZS	41	25
1/4 ZS	43	25
3/8 ZS	44	25
1/2 ZS	46	25
3/8 ZLS	54	32
1/2 ZLS	56	32

ZGS SERIES

Two piece body + removable insert



DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZGS	50	25
1/4 ZGS	54	25
3/8 ZGS	65	25
1/2 ZGS	67	28
3/8 ZLGS	71	32
1/2 ZLGS	73	32

ZHGS SERIES

Two piece body + removable insert



DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZHGS	54	25
1/4 ZHGS	56	25
3/8 ZHGS	57	25
1/2 ZHGS	59	25
3/8 ZHGS	75	32
1/2 ZHGS	77	32

QUICK DISCONNECT

'ZS' one piece tip	'ZGS' two piece tip		'ZHGS' Right Angle two piece tip		MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												Spray Angle @			
	ZGS	ZLGS	ZHGS	ZLHGS		0.2 bar	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar	1.5 bar	5 bar	
ZS1	ZGS1		ZHGS1		0.84	--	--	--	--	0.46	0.56	0.64	0.79	0.91	1.02	1.12	1.29	--	55°	52°	
ZS1.5	ZGS1.5		ZHGS1.5		1.17	--	--	--	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.67	1.93	--	65°	57°	
ZS2	ZGS2		ZHGS2		1.30	--	--	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.23	2.58	54°	59°	60°	
ZS3	ZGS3		ZHGS3		1.30	--	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.3	3.9	50°	53°	60°	
ZS3.5	ZGS3.5		ZHGS3.5		1.30	0.71	0.87	1.13	1.33	1.60	1.95	2.26	2.76	3.2	3.6	3.9	4.5	48°	58°	61°	
ZS5	ZGS5		ZHGS5		1.63	1.02	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.4	60°	75°	70°	
ZS6	ZGS6		ZHGS6		1.63	1.22	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	6.7	7.7	67°	72°	70°	
ZS6.5	ZGS6.5		ZHGS6.5		2.31	1.32	1.62	2.09	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.3	8.4	48°	56°	50°	
ZS7.5	ZGS7.5		ZHGS7.5		2.31	1.53	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	8.4	9.7	55°	65°	48°	
ZS8.5	ZGS8.5		ZHGS8.5		2.31	1.73	2.12	2.74	3.2	3.9	4.7	5.5	6.7	7.7	8.7	9.5	11.0	58°	65°	63°	
ZS10	ZGS10		ZHGS10		2.31	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	60°	65°	62°	
ZS14	ZGS14		ZHGS14		2.31	2.85	3.5	4.51	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	78°	85°	75°	
ZS15	ZGS15		ZHGS15		2.59	2.85	3.5	4.8	5.3	6.8	8.4	9.7	11.8	13.7	15.3	16.7	19.3	63°	65°	60°	
ZS18	ZGS18		ZHGS18		2.59	3.7	4.5	5.8	6.9	8.2	10.0	11.6	14.2	16.4	18.3	20.1	23.2	85°	88°	76°	
ZS20	ZGS20		ZHGS20		2.59	4.1	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	76°	82°	75°	
ZS22	ZGS22		ZHGS22		2.90	4.5	5.5	7.1	8.4	10.0	12.3	14.2	17.4	20.1	22.4	24.6	28.4	76°	78°	76°	
	ZLS16		ZLGS16		ZLHGS16	3.66	3.3	4.0	5.2	6.1	7.3	8.9	10.3	12.6	14.6	16.3	17.9	20.6	55°	60°	55°
	ZLS25		ZLGS25		ZLHGS25	3.66	5.1	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	27.9	32	68°	73°	65°
	ZLS32		ZLGS32		ZLHGS32	3.66	6.5	8.0	10.3	12.2	14.6	17.9	20.6	25.3	29.2	33	36	41	80°	90°	75°
	ZLS40		ZLGS40		ZLHGS40	4.11	8.2	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	45	52	86°	90°	81°

Wide angle full cone spray nozzles

ZSW SERIES

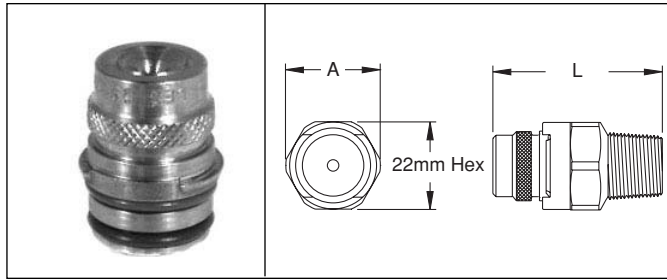
TYPICAL APPLICATIONS:

Anywhere a wide angle full cone spray is required:

- Chemical Processing
- Cooling Sprays
- Continuous Casting

U.S. Patent No. 4,142,682

Canadian Patent No. 1,050,589



SPRAY CHARACTERISTICS:

A wide angle full cone spray pattern, with uniform distribution throughout the cone.

CONSTRUCTION:

This nozzle tip contains a patented insert with larger flow passages than older styles, and is

less susceptible to clogging. Standard materials are brass, 303 stainless steel and 316 stainless steel.

Please see page 40 for body styles and adapters.

ZSW SERIES

One piece body + removable insert



DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZSW	41	25
1/4 ZSW	43	25
3/8 ZSW	44	25
1/2 ZSW	46	25
3/4 ZLSW	54	32
1/2 ZLSW	56	32

ZGSW SERIES

Two piece body + removable insert

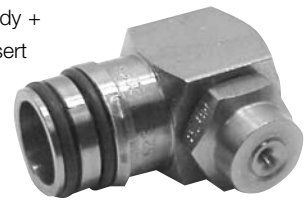


DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZGSW	50	25
1/4 ZGSW	54	25
3/8 ZGSW	65	25
1/2 ZGSW	67	28
3/4 ZLGSW	71	32
1/2 ZLGSW	73	32

ZHGSW SERIES

Two piece body + removable insert



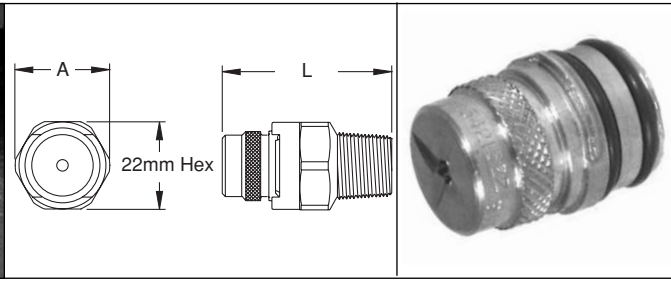
DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZHGSW	54	25
1/4 ZHGSW	56	25
3/8 ZHGSW	57	25
1/2 ZHGSW	59	25
3/4 ZHGSW	75	32
1/2 ZHGSW	77	32

'ZSW' one piece tip	'ZGSW' two piece tip		'ZHGSW' Right Angle two piece tip		MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												Spray Angle @		
	ZGSW	ZLGSW	ZHGSW	ZLHGSW		0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar	1.5 bar	5 bar	
ZS2.8W	ZGS2.8W		ZHGS2.8W		1.30	--	0.90	1.07	1.28	1.56	1.80	2.21	2.55	2.85	3.13	3.6	110°	105°	96°	
ZS4.3W	ZGS4.3W		ZHGS4.3W		1.30	--	1.39	1.64	1.96	2.40	2.77	3.4	3.9	4.4	4.8	5.5	117°	108°	100°	
ZS5.6W	ZGS5.6W		ZHGS5.6W		1.63	--	1.80	2.14	2.55	3.13	3.6	4.4	5.1	5.7	6.3	7.2	117°	110°	100°	
ZS8W	ZGS8W		ZHGS8W		2.06	2.00	2.58	3.05	3.6	4.5	5.2	6.3	7.3	8.2	8.9	10.3	118°	110°	103°	
ZS10W	ZGS10W		ZHGS10W		2.31	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	118°	108°	102°	
ZS12W	ZGS12W		ZHGS12W		2.31	3.00	3.9	4.6	5.5	6.7	7.7	9.5	10.9	12.2	13.4	15.5	120°	112°	102°	
ZS14W	ZGS14W		ZHGS14W		2.31	3.5	4.5	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	118°	114°	104°	
ZS17W	ZGS17W		ZHGS17W		2.59	4.2	5.5	6.5	7.7	9.5	11.0	13.4	15.5	17.3	19.0	21.9	118°	117°	102°	
ZS20W	ZGS20W		ZHGS20W		2.59	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	120°	120°	106°	
ZS24W	ZGS24W		ZHGS24W		2.59	6.0	7.7	9.2	10.9	13.4	15.5	18.9	21.9	24.5	26.8	30.9	122°	118°	106°	
ZS27W	ZGS27W		ZHGS27W		2.59	6.7	8.7	10.3	12.3	15.1	17.4	21.3	24.6	27.5	30.1	35	122°	120°	107°	
	ZLS30W	ZLGS30W		ZLHGS30W	3.66	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	33	39	120°	118°	110°	
	ZLS35W	ZLGS35W		ZLHGS35W	3.66	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	39	45	122°	118°	108°	
	ZLS40W	ZLGS40W		ZLHGS40W	4.11	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	45	52	122°	119°	104°	
	ZLS45W	ZLGS45W		ZLHGS45W	4.11	11.2	14.5	17.2	20.5	25.1	29.0	36	41	46	50	58	141°	118°	108°	

ZSQ SERIES

Full square spray nozzles



SPRAY CHARACTERISTICS:

Full cone spray pattern, with uniform distribution throughout the approximately square cone.

CONSTRUCTION:

Standard materials are brass, 303 and 316 stainless. Larger sizes in cast 316 or 303 stainless bar.

Please see page 40 for body styles and adapters.

TYPICAL APPLICATIONS:

- Chemical Processing
- Cooling Sprays
- Continuous Casting

U.S. Patent No. 4,142,682

Canadian Patent No. 1,050,589

ZSQ SERIES

One piece body + removable insert



DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZSQ	41	25
1/4 ZSQ	43	25
3/8 ZSQ	44	25
1/2 ZSQ	46	25
3/8 ZLSQ	54	32
1/2 ZLSQ	56	32

ZGSQ SERIES

Two piece body + removable insert



DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZGSQ	50	25
1/4 ZGSQ	54	25
3/8 ZGSQ	65	25
1/2 ZGSQ	67	28
3/8 ZLGSQ	71	32
1/2 ZLGSQ	73	32

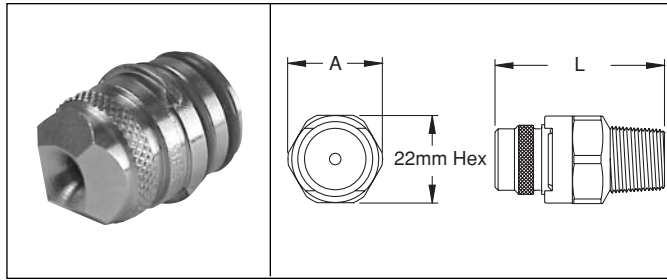
QUICK DISCONNECT

'ZSQ' one piece tip	'ZGSQ' two piece tip		'ZHGSQ' Right Angle two piece tip		MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)											Spray Angle @		
	ZGSQ	ZLGSQ	ZHGSQ	ZLHGSQ		0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar	1.5 bar	5 bar
ZS3.6SQ	ZGS3.6SQ		ZHGS3.6SQ		1.45	--	1.16	1.37	1.64	2.01	2.32	2.84	3.3	3.7	4.0	4.6	42°	55°	50°
ZS4.8SQ	ZGS4.8SQ		ZHGS4.8SQ		1.63	--	1.55	1.83	2.19	2.68	3.09	3.8	4.4	4.9	5.4	6.2	50°	65°	60°
ZS6SQ	ZGS6SQ		ZHGS6SQ		2.06	--	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	6.7	7.7	30°	65°	60°
ZS10SQ	ZGS10SQ		ZHGS10SQ		2.31	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	61°	67°	60°
ZS12SQ	ZGS12SQ		ZHGS12SQ		2.31	3.00	3.9	4.6	5.5	6.7	7.7	9.5	10.9	12.2	13.4	15.5	71°	76°	69°
ZS14SQ	ZGS14SQ		ZHGS14SQ		2.31	3.5	4.5	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	78°	85°	75°
ZS18SQ	ZGS18SQ		ZHGS18SQ		2.59	4.5	5.8	6.9	8.2	10.0	11.6	14.2	16.4	18.3	20.1	23.2	70°	75°	68°
	ZLS29SQ	ZLGS29SQ		ZLHGS29SQ	3.66	7.2	9.3	11.1	13.2	16.2	18.7	22.9	26.4	29.6	32	37	70°	75°	68°
	ZLS36SQ	ZLGS36SQ		ZLHGS36SQ	3.66	9.0	11.6	13.7	16.4	20.1	23.2	28.4	33	37	40	46	80°	85°	77°

Wide angle full square spray nozzles **ZSWSQ SERIES**

DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZSWSQ	41	25 HEX
1/4 ZSWSQ	43	25 HEX
3/8 ZSWSQ	44	25 HEX
1/2 ZSWSQ	46	25 HEX
3/8 ZLSWSQ	54	32 HEX
1/2 ZLSWSQ	56	32 HEX



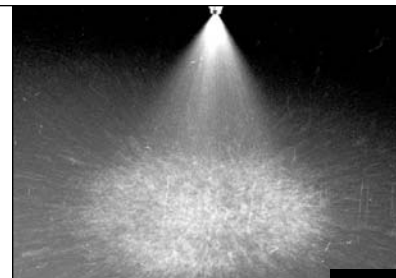
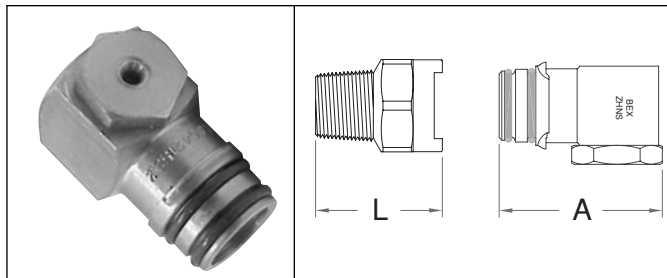
See page 25 for spray characteristics, construction and typical applications.

'ZSWSQ' one piece tip	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												Spray Angle @		
		0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar	1.5 bar	5 bar	
ZS14WSQ	2.31	3.5	4.5	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	102°	98°	84°	
ZS17WSQ	2.59	4.2	5.5	6.5	7.7	9.5	11.0	13.4	15.5	17.3	19.0	21.9	50°	94°	82°	
ZS20WSQ	2.59	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	60°	102°	86°	
ZS24WSQ	2.59	6.0	7.7	9.2	10.9	13.4	15.5	18.9	21.9	24.5	26.8	30.9	104°	102°	86°	
ZS27WSQ	2.59	6.7	8.7	10.3	12.3	15.1	17.4	21.3	24.6	27.5	30.1	35	104°	102°	87°	
ZLS30WSQ	3.66	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	33	39	100°	96°	85°	
ZLS35WSQ	3.66	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	39	45	104°	99°	88°	
ZLS40WSQ	4.11	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	45	52	106°	104°	90°	
ZLS45WSQ	4.11	11.2	14.5	17.2	20.5	25.1	29.0	36	41	46	50	58	106°	104°	94°	
ZLS50WSQ	4.95	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	64	108°	102°	97°	
ZLS71WSQ	4.95	17.7	22.9	27.1	32	40	46	56	65	72	79	92	99°	102°	93°	

Vaneless full cone spray nozzles **ZHNS SERIES**

DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZHNS	54	34
1/4 ZHNS	56	34
3/8 ZHNS	57	34
1/2 ZHNS	59	34



See page 26 for spray characteristics, construction and typical applications.

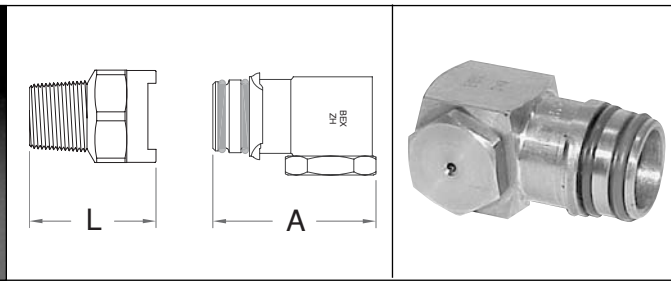
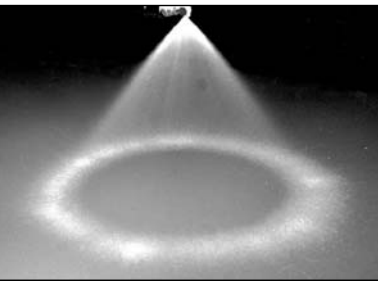
MODEL NUMBER	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)										
		0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar
ZHNS5	1.98	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.0
ZHNS7	2.39	1.75	2.26	2.67	3.2	3.9	4.5	5.5	6.4	7.1	7.8	8.4
ZHNS8	2.77	2.00	2.58	3.05	3.6	4.5	5.2	6.3	7.3	8.2	8.9	9.6
ZHNS10	3.18	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.1
ZHNS11	3.58	2.75	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.3	13.3
ZHNS11	3.18	2.75	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.3	13.3
ZHNS13	3.58	3.2	4.2	5.0	5.9	7.3	8.4	10.3	11.9	13.2	14.5	15.7
ZHNS16	3.96	4.0	5.2	6.1	7.3	8.9	10.3	12.6	14.6	16.3	17.9	19.3
ZHNS20	4.37	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	24.1
ZHNS23	4.78	5.7	7.4	8.8	10.5	12.8	14.8	18.2	21.0	23.4	25.7	27.7
ZHNS26	5.16	6.5	8.4	9.9	11.9	14.5	16.8	20.5	23.7	26.5	29.0	31
ZHNS29	5.56	7.2	9.3	11.1	13.2	16.2	18.7	22.9	26.4	29.6	32	35
ZHNS33	5.94	8.2	10.6	12.6	15.0	18.4	21.3	26.1	30.1	34	37	40
ZLHNS32	5.16	8.0	10.3	12.2	14.6	17.9	20.6	25.3	29.2	33	36	39
ZLHNS40	5.94	10.0	12.9	15.3	18.2	22.3	25.8	32	36	41	45	48
ZLHNS48	7.14	12.0	15.5	18.3	21.9	26.8	30.9	38	44	49	54	58
ZLHNS56	7.54	14.0	18.0	21.4	25.5	31.3	36	44	51	57	63	68
ZLHNS64	8.33	16.0	20.6	24.4	29.2	36	41	51	58	65	71	77
ZLHNS72	9.12	18.0	23.2	27.5	33	40	46	57	66	73	80	87

See pages 2, 3 and 4 for engineering data and spray coverage.

QUICK DISCONNECT

ZH SERIES

Hollow cone spray nozzles



DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8"ZH	54	34
1/4"ZH	56	34
3/8"ZH	57	34
1/2"ZH	59	34

SPRAY CHARACTERISTICS:

A hollow cone spray pattern, emerging at right angles to the centerline of the pipe connection. The standard included angle of the spray cone is 70° at 0.7 bar. At low pressures hollow cone nozzles produce medium size, uniform droplets. At higher pressures finer droplets are produced.

CONSTRUCTION:

The models listed are machined from bar stock, and are two piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Some models available in other materials. Please see page 40 for body styles and adapters.

TYPICAL APPLICATIONS:

- Air and Gas Washing
- Aerating, Rinsing and Humidifying
- Industrial Washers and Spray Ponds
- Cooling Tunnels
- Roof Cooling
- Degreasing
- Dust Suppression
- Metal Treatment

MODEL NUMBER		MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)											SPRAY ANGLE @			
ZH	ZLH		0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.7 bar	1.5 bar	3 bar	6 bar
ZH0.5		0.71	--	--	--	--	--	0.32	0.39	0.46	0.51	0.56	0.64	--	--	40°	45°
ZH1		1.35	--	--	--	0.46	0.56	0.64	0.79	0.91	1.02	1.12	1.29	--	61°	74°	69°
ZH2		2.18	--	--	--	0.91	1.12	1.29	1.58	1.82	2.03	2.23	2.58	70°	75°	83°	85°
ZH3		2.49	--	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.05	3.3	3.9	70°	70°	72°	74°
ZH5		3.25	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.14	5.6	6.4	70°	77°	80°	83°
ZH7.5		3.89	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.60	8.4	9.7	70°	70°	74°	75°
ZH10		4.34	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.1	11.2	12.9	70°	74°	76°	80°
ZH12.5		5.21	3.12	4.0	4.8	5.7	7.0	8.1	9.9	11.4	12.7	14.0	16.1	70°	82°	83°	83°
ZH15		5.89	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	16.7	19.3	70°	73°	75°	75°
ZH20		6.35	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.3	22.3	25.8	70°	73°	75°	75°
ZH25		7.09	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	27.9	32	70°	72°	73°	73°
ZH30		7.42	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.5	33	39	70°	70°	73°	72°
	ZLH40	9.35	10.0	12.9	15.3	18.2	22.3	25.8	32	36	40.2	45	52	70°	75°	75°	75°
	ZLH50	10.69	12.5	16.1	19.1	22.8	27.9	32	39	46	51.4	56	64	70°	70°	71°	73°
	ZLH60	11.13	15.0	19.3	22.9	27.3	33	39	47	55	61.5	67	77	70°	70°	71°	71°
	ZLH70	11.91	17.5	22.6	26.7	32	39	45	55	64	71.6	78	90	70°	74°	76°	76°
	ZLH80	12.29	20.0	25.8	30.5	36	45	52	63	73	81.6	89	103	70°	73°	75°	76°
	ZLH90	12.70	22.5	29.0	34	41	50	58	71	82	91.7	100	116	70°	70°	71°	73°
	ZLH100	12.88	25.0	32	38	46	56	64	79	91	101	112	129	70°	73°	76°	78°
	ZLH110	14.61	27.5	35	42	50	61	71	87	100	111	123	142	70°	72°	75°	72°
	ZLH120	14.43	30	39	46	55	67	77	95	109	122	134	155	70°	70°	71°	71°

"--" means not recommended at this pressure.

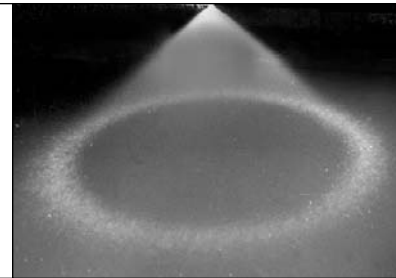
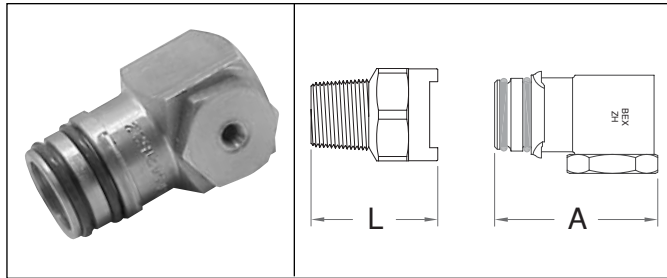
QUICK DISCONNECT

Wide angle hollow cone spray nozzles

ZHW SERIES

DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)
1/8 ZHW	54	34
1/4 ZHW	56	34
3/8 ZHW	57	34
1/2 ZHW	59	34



TYPICAL APPLICATIONS:

- Water Cooling
- Roof Cooling
- Air Cooling
- Air Washing

SPRAY CHARACTERISTICS:

A hollow cone spray pattern, similar to the BEX H series, but with wider spray angles. The included angle of the spray cone is 120° at 0.7 bar.

CONSTRUCTION:

The models listed are machined from bar stock, and are two piece construction. Standard materials are brass, 303 stainless steel and 316 stainless steel. Some models are also available in other materials. Please see page 40 for body styles and adapters.

MODEL NUMBER		MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURE (bar)											SPRAY ANGLE @			
ZHW	ZLHW		0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.7 bar	1.5 bar	3 bar	6 bar
ZH1W		1.40	--	--	--	0.46	0.56	0.64	0.79	0.91	1.02	1.12	1.29	120°	110°	102°	90°
ZH2W		1.96	--	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.23	2.58	120°	110°	105°	92°
ZH3W		2.36	--	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.3	3.9	120°	114°	104°	90°
ZH5W		2.77	--	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.4	120°	113°	107°	98°
ZH7.5W		4.01	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	8.4	9.7	120°	115°	110°	92°
ZH10W		4.32	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	120°	115°	110°	93°
ZH12.5W		4.78	3.12	4.0	4.8	5.7	7.0	8.1	9.9	11.4	12.7	14.0	16.1	120°	118°	110°	94°
ZH15W		5.11	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	16.7	19.3	120°	115°	108°	92°
ZH20W		5.94	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	120°	118°	116°	110°
ZH25W		6.73	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	27.9	32	120°	117°	115°	110°
ZH30W		7.11	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	33	39	120°	115°	110°	102°
	ZLH50W	9.09	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	64	120°	115°	108°	103°
	ZLH80W	11.89	20.0	25.8	30.5	36	45	52	63	73	82	89	103	120°	117°	110°	103°



Hollow cone phosphating nozzles

ZPH SERIES

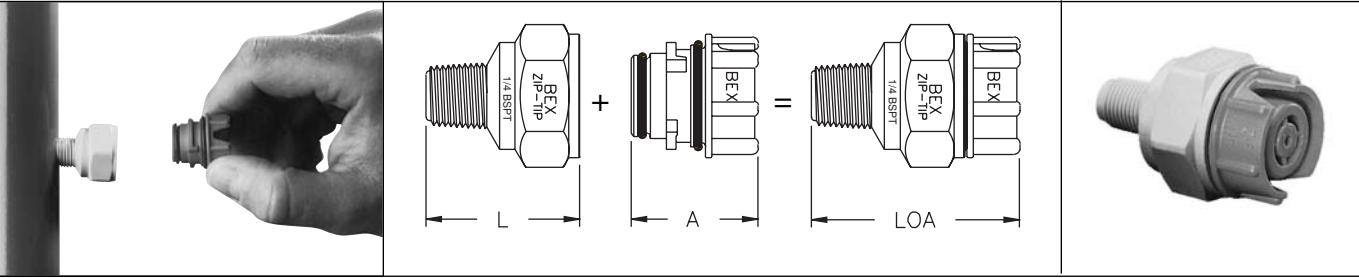
SPRAY CHARACTERISTICS:

A hollow cone spray pattern for phosphating applications. This large droplet, low impingement type of spray results in a tighter and more consistent phosphate crystalline structure.

CONSTRUCTION:

Two piece construction. Available in 303 stainless steel and 316 stainless steel. Please see page 40 for body styles and adapters.

MODEL NUMBER	ORIFICE DIAMETER (mm)		CAPACITY (L/min) AT VARIOUS PRESSURES (bar)										SPRAY ANGLE @		
	BODY	CAP	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	0.7 bar	1 bar	2 bar
			ZPH23	5.59	7.92	5.7	7.4	8.8	10.5	12.8	14.8	18.2	21.0	23.4	25.7
ZPH28	5.87	7.92	7.0	9.0	10.7	12.8	15.6	18.0	22.1	25.5	28.5	31	40°	43°	48°
ZPH51	8.74	9.53	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	40°	50°	50°
ZPH53	9.53	9.53	12.5	16.1	19.1	22.8	27.9	32	39	46	51	56	70°	70°	70°



CHARACTERISTICS:

BEX Molded Plastic Zip-Tip® Spray Nozzles are designed to allow fast and easy installation and removal of spray nozzle tips and adapters, while providing positive alignment of spray pattern. Double VITON® O-Ring seals are supplied standard with each nozzle tip. Seals are located on, and removed with, the nozzle tip for easy flushing. A variety of models and spray patterns are available.

CONSTRUCTION:

Molded plastic spray nozzles are available in glass reinforced polypropylene or PVDF (Kynar®). Other materials are available upon request. All models are available in either BSPT or NPT threads. (NOTE: Metal and molded plastic ZIP-TIP® components are not interchangeable.)

DIMENSIONS

NOZZLE BSPT PIPE SIZE	Length L (mm)	Dim. A (mm)	Dim LOA (mm)
ZF	31	25	43
ZS	31	25	43
ZSW	31	25	43
ZTA	31	25	43
ZPLUG	31	32	43

TYPICAL APPLICATIONS:

- Spray Washing & Rinsing
- Parts Cleaning
- Pretreatment

ZIP-TIP BODIES AND ADAPTERS



ZBD

1/8" - 1/2" BSPT Male Only
Glass reinforced polypropylene or PVDF



KZBD

To be used with K-Ball® Clip-On Nozzle Assemblies.
Glass reinforced polypropylene or PVDF.
(See page 61)



ZTA

1/8" - 3/8" BSPT Female Only
Glass reinforced polypropylene or PVDF



ZPLUG

To shut off individual nozzles
Glass reinforced polypropylene or PVDF

HOW TO ORDER BEX ZIP-TIPS

COMPLETE ASEMBLIES:

Indicate ZBD connection size (1/8", 1/4", 3/8" or 1/2") followed by model number (ZF, ZS, ZSW or ZSQ) found on pages 55-57. Then indicate material of construction (Glass reinforced polypropylene, Red PVDF or Natural PVDF).

REPLACEMENT TIPS ONLY

Indicate the tip model number (ZF, ZS, ZSW or ZSQ) found on pages 55-57. Then indicate material of construction (Glass reinforced polypropylene, Red PVDF or Natural PVDF).



Zip-Tip® with Tabz™

Finger Tabz for easier insertion and removal. Available on all models.

QUICK DISCONNECT

Flat "V" spray nozzles

ZF SERIES

SPRAY CHARACTERISTICS:

ZF-Series spray nozzles produce a flat, fan-shaped spray pattern with spray angles available from 15° to 110° measured at 3 bar. Spray angles generally increase with pressure, as shown in the capacity table.

Spray density tapers off toward the outside of these sprays, to permit overlapping of spray patterns while maintaining uniform spray density.

CONSTRUCTION:

Molded plastic spray nozzles are available in glass reinforced polypropylene or PVDF (Kynar®).

COLOR CODING:

Zip-Tip flat "V" spray tips are color-coded for easy identification.



TYPICAL APPLICATIONS:

- Parts Cleaning
- Gravel Washing
- Metal Washing
- Vehicle Washing
- Foam Control
- Fertilizer Spraying
- Asphalt Spraying
- Dishwashers

Additional sizes may be available upon request. Please contact your BEX distributor.

See chart on page 54 for dimensions.

SPRAY ANGLE @ 3bar	ZF MODEL	TIP COLOR	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												SPRAY ANGLE @				
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar	
110°	ZF11003	Lime Green	1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	92°	110°	118°	
	ZF11004	Lime Green	1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	90°	110°	112°	
	ZF11005	Lime Green	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	96°	110°	114°	
	ZF11006	Lime Green	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	97°	110°	115°	
	ZF11008	Lime Green	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	100°	110°	115°	
	ZF11010	White	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	102°	110°	115°	
	ZF11015	Grey	2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	102°	110°	115°	
	ZF11020	Lt. Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	103°	110°	112°	
	ZF11030	Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	103°	110°	112°	
	ZF11040	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	103°	110°	112°	
	ZF11050	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	107°	110°	116°	
	ZF11060	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	104°	110°	112°	
	ZF11070	Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	107°	110°	112°	
	95°	ZF9503	Lime Green	1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	86°	95°	101°
		ZF9504	Lime Green	1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	86°	95°	101°
		ZF9505	Lime Green	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	86°	95°	101°
ZF9506		Lime Green	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	86°	95°	101°	
ZF9508		Lime Green	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	86°	95°	100°	
ZF9510		White	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	88°	95°	99°	
ZF9515		Grey	2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	90°	95°	100°	
ZF9520		Lt. Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	89°	95°	99°	
ZF9530		Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	90°	95°	101°	
ZF9540		Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	90°	95°	100°	
ZF9550		Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	91°	95°	101°	
ZF9560		Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	92°	95°	102°	
ZF9570		Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	92°	95°	103°	
80°		ZF8002	Lime Green	0.91	0.25	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.0	1.2	1.4	2.0	2.45	74°	80°	83°
		ZF8003	Lime Green	1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	74°	80°	83°
		ZF8004	Lime Green	1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	74°	80°	83°
	ZF8005	Lime Green	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	74°	80°	83°	
	ZF8006	Lime Green	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	74°	80°	83°	
	ZF8008	Lime Green	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	75°	80°	83°	
	ZF8010	White	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	75°	80°	83°	
	ZF8015	Grey	2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	74°	80°	86°	
	ZF8020	Lt. Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	74°	80°	85°	
	ZF8030	Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	75°	80°	86°	
	ZF8040	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	76°	80°	85°	
	ZF8050	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	77°	80°	84°	
	ZF8060	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	77°	80°	84°	
	ZF8070	Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	78°	80°	87°	
	65°	ZF6502	Lime Green	0.91	0.25	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.0	1.2	1.4	2.0	2.45	53°	65°	72°
		ZF6503	Lime Green	1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	53°	65°	72°
ZF6504		Lime Green	1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	54°	65°	72°	
ZF6505		Lime Green	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	54°	65°	72°	
ZF6506		Lime Green	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	54°	65°	72°	
ZF6508		Lime Green	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	55°	65°	71°	
ZF6510		White	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	57°	65°	73°	
ZF6512		Orange	2.08	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	7.2	8.6	12.2	15.0	59°	65°	71°	

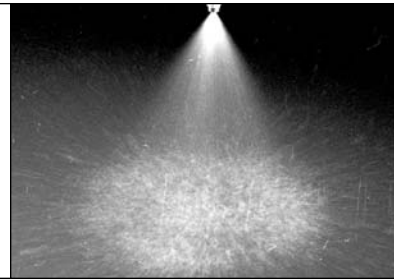
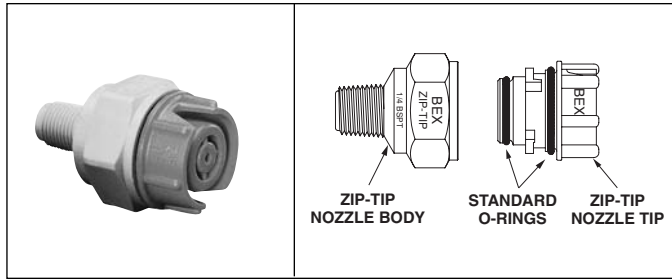
QUICK DISCONNECT

SPRAY ANGLE @ 3 bar	ZF MODEL	TIP COLOR	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)														SPRAY ANGLE @		
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	7 bar	10 bar	20 bar	30 bar	1.5 bar	3 bar	5 bar	
65°	ZF6515	Grey	2.31	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	59°	65°	72°	
	ZF6520	Lt. Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	61°	65°	72°	
	ZF6530	Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37	62°	65°	72°	
	ZF6540	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	63°	65°	72°	
	ZF6550	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	63°	65°	73°	
	ZF6560	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	63°	65°	73°	
	ZF6570	Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	63°	65°	74°	
50°	ZF5002	Lime Green	0.91	0.25	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.0	1.2	1.4	2.0	2.45	53°	65°	72°	
	ZF5003	Lime Green	1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	53°	65°	72°	
	ZF5004	Lime Green	1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	54°	65°	72°	
	ZF5005	Lime Green	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	54°	65°	72°	
	ZF5006	Lime Green	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	54°	65°	72°	
	ZF5008	Lime Green	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	55°	65°	71°	
	ZF5010	White	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	57°	65°	73°	
	ZF5012	Orange	2.08	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	7.2	8.6	12.2	15.0	59°	65°	71°	
	ZF5015	Grey	2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	59°	65°	72°	
	ZF5020	Lt. Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	61°	65°	72°	
	ZF5030	Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	62°	65°	72°	
	ZF5040	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	63°	65°	72°	
	ZF5050	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	63°	65°	73°	
	ZF5060	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	63°	65°	73°	
ZF5070	Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	63°	65°	74°		
40°	ZF4002	Lime Green	0.91	0.25	0.32	0.38	0.46	0.56	0.64	0.79	0.91	1.0	1.2	1.4	2.0	2.45	26°	40°	46°	
	ZF4003	Lime Green	1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	30°	40°	45°	
	ZF4004	Lime Green	1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	32°	40°	45°	
	ZF4005	Lime Green	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	35°	40°	44°	
	ZF4006	Lime Green	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	37°	40°	44°	
	ZF4008	Lime Green	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	35°	40°	43°	
	ZF4010	White	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	30°	40°	43°	
	ZF4015	Grey	2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	35°	40°	41°	
	ZF4020	Lt. Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	33°	40°	43°	
	ZF4030	Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	34°	40°	45°	
	ZF4040	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	33°	40°	43°	
	ZF4050	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	35°	40°	46°	
	ZF4060	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	37°	40°	48°	
	ZF4070	Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	36°	40°	47°	
25°	ZF2503	Lime Green	1.1	0.37	0.48	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.81	2.16	3.06	3.74	20°	25°	31°	
	ZF2504	Lime Green	1.2	0.50	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.41	2.88	4.08	4.99	19°	25°	31°	
	ZF2505	Lime Green	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	18°	25°	31°	
	ZF2506	Lime Green	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	17°	25°	31°	
	ZF2508	Lime Green	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	16°	25°	32°	
	ZF2510	White	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	17°	25°	31°	
	ZF2515	Grey	2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	18°	25°	30°	
	ZF2520	Lt. Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	18°	25°	28°	
	ZF2530	Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	19°	25°	29°	
	ZF2540	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	22°	25°	32°	
	ZF2550	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	20°	25°	32°	
	ZF2560	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	18°	25°	28°	
	ZF2570	Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	19°	25°	27°	
	15°	ZF1505	Lime Green	1.35	0.62	0.81	0.95	0.31	1.40	1.61	1.97	2.28	2.55	3.01	3.6	5.1	6.2	10°	15°	20°
ZF1506		Lime Green	1.47	0.75	0.97	1.14	0.37	1.67	1.93	2.37	2.73	3.06	3.6	4.3	6.1	7.5	11°	15°	24°	
ZF1508		Lime Green	1.70	1.00	1.29	1.53	0.49	2.23	2.58	3.2	3.6	4.1	4.8	5.8	8.2	10.0	11°	15°	21°	
ZF1510		White	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	6.0	7.2	10.2	12.5	13°	15°	16°	
ZF1515		Grey	2.31	1.87	2.42	2.86	0.92	4.2	4.8	5.9	6.8	7.6	9.0	10.8	15.3	18.7	11°	15°	20°	
ZF1520		Lt. Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	12.1	14.4	20.4	25.0	11°	15°	20°	
ZF1530		Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	18.1	21.6	30.6	37.4	11°	15°	18°	
ZF1540		Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	24.1	28.8	41	50	12°	15°	18°	
ZF1550		Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	30.1	36	51	62	12°	15°	19°	
ZF1560		Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	36	43	61	75	12°	15°	17°	
ZF1570		Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	42	50	71	87	12°	15°	19°	

QUICK DISCONNECT

Full cone spray nozzles

ZS SERIES



FULL-CONE SPRAY



ZS

Spray Angles: Wide range
Capacities: Up to 8.4 L/min @ 0.7 bar
Materials: Glass-filled Poly or PVDF

Features: A full-cone spray with uniform spray distribution. Removable patented vane is standard.

MODEL NUMBER	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												Spray Angle @		
		0.2 bar	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar	1.5 bar	5 bar
ZS1	0.84	--	--	--	--	0.46	0.56	0.64	0.79	0.91	1.02	1.12	1.29	--	55°	52°
ZS1.5	1.17	--	--	--	0.57	0.68	0.84	0.97	1.18	1.37	1.53	1.67	1.93	--	65°	57°
ZS2	1.30	--	--	0.64	0.76	0.91	1.12	1.29	1.58	1.82	2.04	2.23	2.58	54°	59°	60°
ZS3	1.30	--	0.75	0.97	1.14	1.37	1.67	1.93	2.37	2.73	3.06	3.3	3.9	50°	53°	60°
ZS3.5	1.30	0.71	0.87	1.13	1.33	1.60	1.95	2.26	2.76	3.2	3.6	3.9	4.5	48°	58°	61°
ZS5	1.63	1.02	1.25	1.61	1.91	2.28	2.79	3.2	3.9	4.6	5.1	5.6	6.4	60°	75°	70°
ZS6	1.63	1.22	1.50	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	6.7	7.7	67°	75°	70°
ZS6.5	2.31	1.32	1.62	2.09	2.48	2.96	3.6	4.2	5.1	5.9	6.6	7.3	8.4	48°	56°	50°
ZS7.5	2.31	1.53	1.87	2.42	2.86	3.4	4.2	4.8	5.9	6.8	7.6	8.4	9.7	55°	65°	48°
ZS8.5	2.31	1.73	2.12	2.74	3.2	3.9	4.7	5.5	6.7	7.7	8.7	9.5	11.0	58°	65°	63°
ZS10	2.31	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	60°	65°	62°
ZS14	2.31	2.85	3.5	4.51	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	78°	85°	75°
ZS15	2.59	2.85	3.5	4.8	5.3	6.8	8.4	9.7	11.8	13.7	15.3	16.7	19.3	63°	65°	60°
ZS18	2.59	3.7	4.5	5.8	6.9	8.2	10.0	11.6	14.2	16.4	18.3	20.1	23.2	85°	88°	76°
ZS20	2.59	4.1	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	76°	82°	75°
ZS22	2.90	4.5	5.5	7.1	8.4	10.0	12.3	14.2	17.4	20.1	22.4	24.6	28.4	76°	78°	76°

See chart on page 54 for dimensions.

WIDE ANGLE FULL-CONE



ZSW

Spray Angles: Up to 125° @ 0.7 bar
Capacities: Up to 9.2 L/min @ 0.7 bar
Materials: Glass-filled Poly or PVDF

Features: A wide full-cone spray with uniform spray distribution. Removable patented vane is standard.

MODEL NUMBER	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)											Spray Angle @		
		0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar	1.5 bar	5 bar
ZS2.8W	1.30	--	0.90	1.07	1.28	1.56	1.80	2.21	2.55	2.85	3.13	3.6	110°	105°	96°
ZS4.3W	1.30	--	1.39	1.64	1.96	2.40	2.77	3.4	3.9	4.4	4.8	5.5	117°	108°	100°
ZS5.6W	1.63	--	1.80	2.14	2.55	3.13	3.6	4.4	5.1	5.7	6.3	7.2	117°	110°	100°
ZS8W	2.06	2.00	2.58	3.05	3.6	4.5	5.2	6.3	7.3	8.2	8.9	10.3	118°	110°	103°
ZS10W	2.31	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	118°	108°	102°
ZS12W	2.31	3.00	3.9	4.6	5.5	6.7	7.7	9.5	10.9	12.2	13.4	15.5	120°	112°	102°
ZS14W	2.31	3.5	4.5	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	118°	114°	104°
ZS17W	2.59	4.2	5.5	6.5	7.7	9.5	11.0	13.4	15.5	17.3	19.0	21.9	118°	117°	102°
ZS20W	2.59	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22.3	25.8	120°	120°	106°
ZS24W	2.59	6.0	7.7	9.2	10.9	13.4	15.5	18.9	21.9	24.5	26.8	30.9	122°	118°	106°

See chart on page 54 for dimensions.

FULL-SQUARE SPRAY



ZSQ

Spray Angles: Wide range
Capacities: Up to 6.8 L/min @ 0.7 bar
Materials: Glass-filled Poly or PVDF

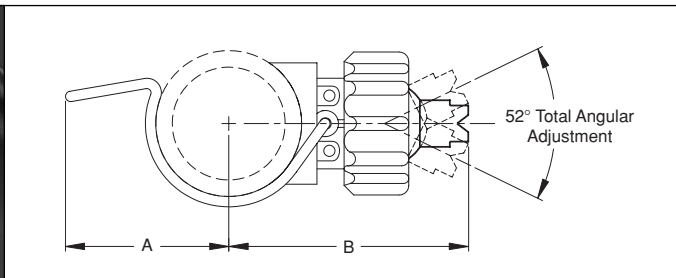
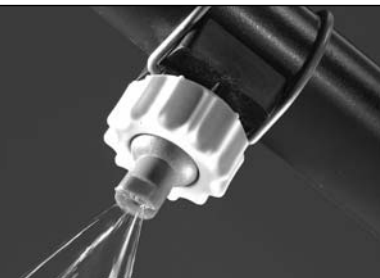
Features: A full-square spray with uniform spray distribution. Removable patented vane is standard.

MODEL NUMBER	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)											Spray Angle @		
		0.7 bar	1 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	0.5 bar	1.5 bar	5 bar
ZS3.6SQ	1.45	--	1.16	1.37	1.64	2.01	2.32	2.84	3.3	3.7	4.0	4.6	42°	55°	50°
ZS4.8SQ	1.63	--	1.55	1.83	2.19	2.68	3.09	3.8	4.4	4.9	5.4	6.2	50°	65°	60°
ZS6SQ	2.06	--	1.93	2.29	2.73	3.3	3.9	4.7	5.5	6.1	6.7	7.7	30°	65°	60°
ZS10SQ	2.31	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	11.2	12.9	61°	67°	60°
ZS12SQ	2.31	3.00	3.9	4.6	5.5	6.7	7.7	9.5	10.9	12.2	13.4	15.5	71°	76°	69°
ZS14SQ	2.31	3.5	4.5	5.3	6.4	7.8	9.0	11.1	12.8	14.3	15.6	18.0	78°	85°	75°
ZS18SQ	2.59	4.5	5.8	6.9	8.2	10.0	11.6	14.2	16.4	18.3	20.1	23.2	85°	88°	76°

See chart on page 54 for dimensions.

See pages 2, 3 and 4 for engineering data and spray coverage.

QUICK DISCONNECT



DIMENSIONS

PIPE SIZE	Dim. A	Dim. B
1"	45 mm	73 mm
1 1/4"	51 mm	77 mm
1 1/2"	54 mm	80 mm
2"	61 mm	89 mm

SPRAY CHARACTERISTICS:

These nozzles simply clip over a pre-drilled pipe (15mm dia. hole) and are available with a variety of spray balls, in various spray patterns, flow rates and spray angles.

CONSTRUCTION:

Made of corrosion-resistant plastic and stainless steel. Heavy-duty spring clip good to 6 bar at 80°C. A 316SS clip is also available, if required.

TYPICAL APPLICATIONS:

- Parts Cleaning
- Pretreatment
- Spray Washing & Rinsing

Double clip model also available.

THE BEX "FINGER" SYSTEM

The BEX spring clamp is the heaviest and most durable used in the industry. It provides long service at pressures up to 7 bar. Also available with a second clip.

Standard O-Ring seal is EPDM. Buna-N, Viton®, and special "retrofit" seals are available.

Square fitting glass filled polypropylene bodies are available in four pipe sizes and are good up to 80°C.

Hundreds of standard nozzle balls and spray options are available when using our threaded ball, below, or the Zip-Tip® nozzle adapter (see page 54).

BEX unique "Finger" system holds the ball securely in alignment to prevent movement when the cap is tightened. The "Finger" system is optional on all BEX B-Ball® adjustable nozzles.

The K-Ball® cap has strong buttress threads and is made from glass filled polypropylene or PVDF.

HOW TO ORDER COMPLETE K-BALL ASSEMBLIES

Use the correct body part number (from the parts listed in BOLD at the right), followed by the model number for the nozzle ball (see pages 59 and 60).

Example:

BF5070 nozzle balls are needed to fit onto a 1-1/4" pipe. Accurate alignment of the nozzles is critical, so the 1-1/4" body with "fingers" will be used. The correct PART number for this K-Ball nozzle assembly is 1.2KFBF5070.

K-BALL BODY COLORS AND PART NUMBERS

Pipe Sizes	1"	1-1/4"	1-1/2"	2"
Standard Body	1K (white)	1.2K (grey)	1.5K (black)	2K (tan)
Body with Fingers	1KF (green)	1.2KF (yellow)	1.5KF (red)	2KF (blue)
Spring Clip	1KCL	1.2KCL	1.5KCL	2KCL
O-ring	KOR	KOR	KOR	KOR
K-Ball Cap	KCAP	KCAP	KCAP	KCAP

SPRAY BALL: CHOOSE FROM THE TABLES ON PAGES 59 AND 60.

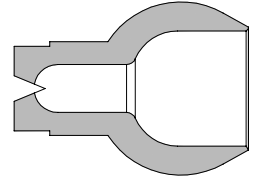
QUICK DISCONNECT

BF FLAT-V SPRAY NOZZLE BALLS (for 1", 1-1/4", 1-1/2" and 2" pipe)**SPRAY CHARACTERISTICS:**

Spray is fan-shaped with spray angles of 15° to 110°. Spray density tapers off toward the outside to permit overlapping of the spray patterns while maintaining uniform spray density.

COLOR CODING:

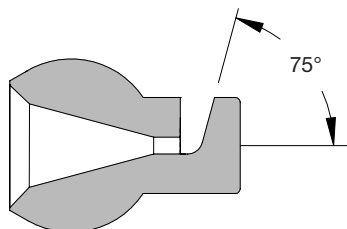
The more popular models of the flat-V spray nozzle balls are color coded by flowrate for easier identification.



SPRAY ANGLE @ 3 bar	MODEL NUMBER	SPRAY BALL COLOUR	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES(bar)										SPRAY ANGLE @	
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	1.5 bar	3 bar	
110°	BF11060	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	107°	110°	
95°	BF9530	Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	63°	95°	
	BF9540	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	63°	95°	
	BF9550	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	63°	95°	
	BF9560	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	63°	95°	
80°	BF8010	White	1.91	1.25	1.61	1.91	0.61	2.79	3.2	3.9	4.6	5.1	75°	80°	
	BF8020	Light Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	63°	80°	
	BF8030	Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	63°	80°	
	BF8040	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	76°	80°	
	BF8050	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	77°	80°	
	BF8060	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	77°	80°	
	BF8070	Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	78°	80°	
	BF80100	Brown	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	75°	80°	
	65°	BF6520	Light Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	63°	65°
BF6530		Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	63°	65°	
BF6540		Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	63°	65°	
BF6550		Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	63°	65°	
BF6560		Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	63°	65°	
BF6570		Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	63°	65°	
BF65100		Brown	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	58°	65°	
50°		BF5020	Light Blue	2.67	2.50	3.2	3.8	4.6	5.6	6.4	7.9	9.1	10.2	63°	50°
	BF5030	Purple	3.28	3.7	4.8	5.7	6.8	8.4	9.7	11.8	13.7	15.3	63°	50°	
	BF5040	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	43°	50°	
	BF5050	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	43°	50°	
	BF5060	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	43°	50°	
	BF5070	Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	43°	50°	
	BF50100	Brown	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	44°	50°	
	40°	BF4040	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	33°	40°
BF4050		Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	35°	40°	
BF4060		Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	37°	40°	
BF4070		Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	35°	40°	
BF40100		Brown	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	33°	40°	
25°	BF2540	Green	3.78	5.0	6.4	7.6	9.1	11.2	12.9	15.8	18.2	20.4	22°	25°	
	BF2550	Yellow	4.24	6.2	8.1	9.5	11.4	14.0	16.1	19.7	22.8	25.5	20°	25°	
	BF2560	Blue	4.62	7.5	9.7	11.4	13.7	16.7	19.3	23.7	27.3	30.6	18°	25°	
	BF2570	Red	5.00	8.7	11.3	13.3	16.0	19.5	22.6	27.6	32	36	19°	25°	
	BF25100	Brown	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	21°	25°	
15°	BF15100	Brown	5.99	12.5	16.1	19.1	22.8	27.9	32	39	46	51	13°	15°	
	BF15120	Black	6.55	15.0	19.3	22.9	27.3	33	39	47	55	61	12°	15°	
	BF15150	Black	7.34	18.7	24.2	28.6	34	42	48	59	68	76	12°	15°	

**BFL FLOODING
SPRAY NOZZLE
BALLS**

(for 1", 1-1/4", 1-1/2" and 2" pipe)



SPRAY CHARACTERISTICS:

A wide, flat shaped spray with low impact. The spray is deflected 75° from the centerline of the nozzle, as shown.

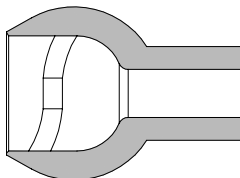
TYPICAL APPLICATIONS:

Flooding nozzles are often used at the beginning and end of phosphate stages, to prevent mist carry over. They can also be used for "wetting" surfaces during long drain stages.

MODEL NUMBER	EQUIV. ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)										SPRAY ANGLE @	
		0.2 bar	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	4 bar	0.5 bar	1.5 bar
BFL5	1.93	1.02	1.25	1.61	1.91	2.28	2.79	3.2	3.6	3.9	4.6	114°	130°
BFL10	2.79	2.04	2.50	3.2	3.8	4.6	5.6	6.4	7.2	7.9	9.1	134°	146°
BFL18	3.78	3.7	4.5	5.8	6.9	8.2	10.0	11.6	13.0	14.2	16.4	130°	142°
BFL24	4.24	4.9	6.0	7.7	9.2	10.9	13.4	15.5	17.3	18.9	21.9	121°	136°
BFL30	4.65	6.1	7.5	9.7	11.4	13.7	16.7	19.3	21.6	23.7	27.3	120°	133°
BFL40	5.54	8.2	10.0	12.9	15.3	18.2	22.3	25.8	28.8	31.6	36	130°	144°

**BPH HOLLOW CONE
PHOSPHATING
NOZZLE BALLS**

(for 1", 1-1/4", 1-1/2" and 2" pipe)



SPRAY CHARACTERISTICS:

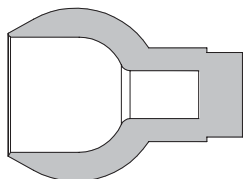
A hollow cone pattern with low impact. BPH nozzle balls are made of glass reinforced polypropylene. Available in three models.

TYPICAL APPLICATIONS:

Designed specifically for phosphate stages. This large droplet, low impact spray results in tighter and more consistent phosphate crystalline structure. It minimizes the misting of phosphate spray, thus reducing 'pre-coating', streaking, and carry over to adjacent stages.

MODEL NUMBER	SPRAY BALL COLOR	MAXIMUM FREE PASSAGE (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)										SPRAY ANGLE @			
			0.2 bar	0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	3 bar	4 bar	0.3 bar	0.5 bar	0.7 bar	1.5 bar	
BPH28	White	4.56	5.7	7.0	9.0	10.7	12.8	15.6	18.0	22.1	25.5	44°	52°	53°	55°	
BPH51	Grey	1.91	10.2	12.5	16.1	19.1	22.8	27.9	32.2	39	46	37°	40°	42°	48°	
BPH53	Black	3.78	10.2	12.5	16.1	19.1	22.8	27.9	32.2	39	46	62°	70°	71°	73°	

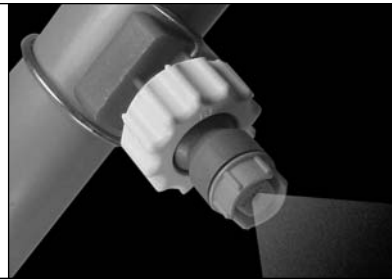
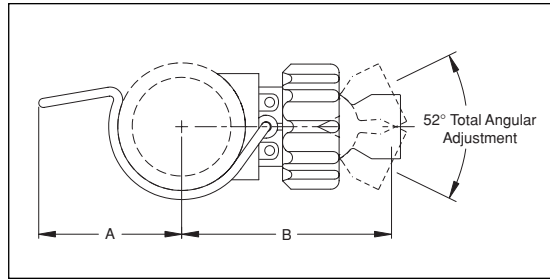
**KPLUG SHUT-OFF
PLUG**



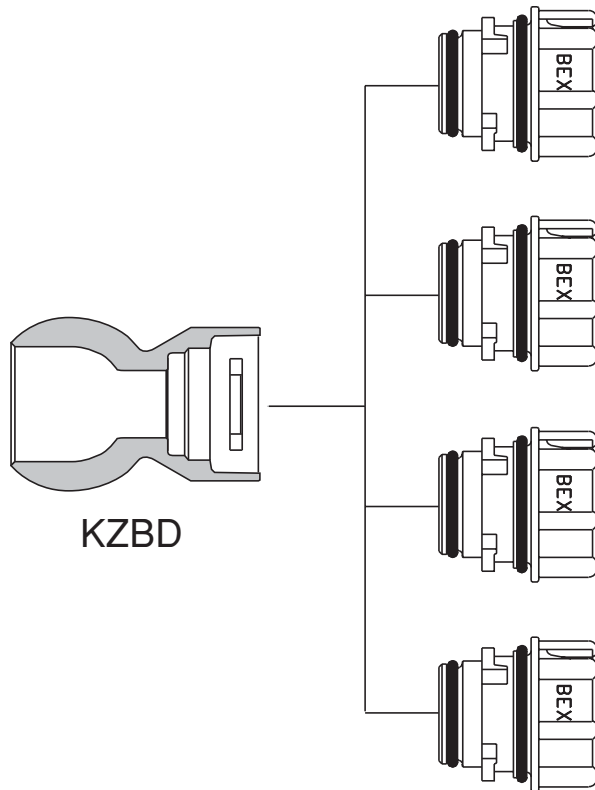
TYPICAL APPLICATIONS:

The KPLUG nozzle ball is used in place of any other nozzle ball to completely shut off the flow through the assembly.

QUICK DISCONNECT



KZBD ADAPTER BALLS



**ZF
FLAT "V" SPRAY**

F-Series spray nozzle that produces a flat, fan-shaped spray pattern. See page 55.

**ZS
FULL-CONE SPRAY**

A full-cone tip with uniform spray distribution. See page 57.

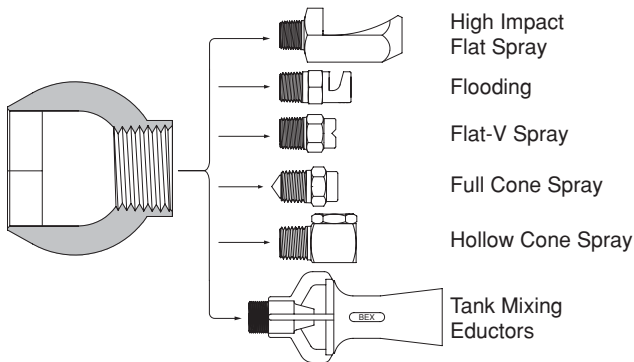
**ZSW
WIDE ANGLE FULL-CONE
SPRAY**

Wide, full-cone spray with uniform spray distribution. See page 57.

**ZSQ
FULL-SQUARE SPRAY**

A full-square spray with uniform spray distribution. See page 57.

THREADED BALLS (for K-Ball nozzle assemblies)



Ball has a hexagonal interior for easy holding

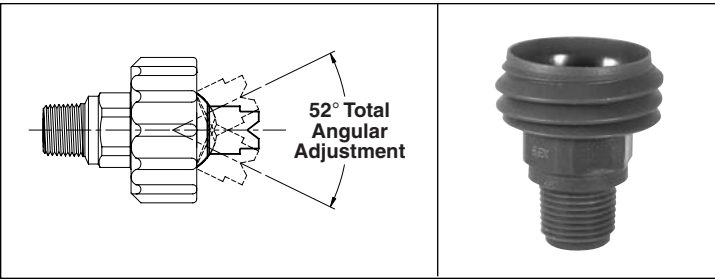
TYPICAL APPLICATIONS:

Expand your range of nozzle choices by using threaded balls. Threaded balls are made of glass reinforced polypropylene, with 1/8", 1/4 and 1/2 BSPT female threads. (NPT also available)

MODEL	DESCRIPTION
1B	1/8 BSPT Female thread
2B	1/4 BSPT Female thread
3B	3/8 BSPT Female thread
5B	1/2 BSPT Female thread

Please note: The 5B has an angular adjustment of only 34°.

QUICK DISCONNECT



The BEX threaded K-Ball® body provides the ability to adjust the direction of the spray pattern by simply twisting the K-Ball® cap, repositioning the nozzle and tightening the cap. The same 52° nozzle angle of adjustability exists in the threaded body as in the K-Ball® clip-on

body. This plastic threaded body is useful when a metal clip is undesirable or where space limitations prevent using a spring clip-on nozzle.

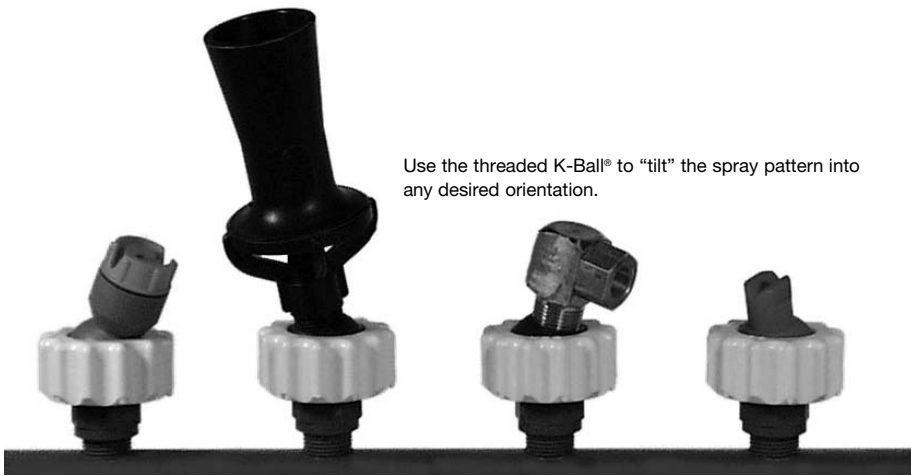
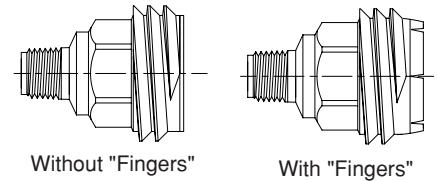
ORDERING ASSEMBLIES:

You can easily order complete threaded K-Ball® ball assemblies using the ball model numbers listed on page 59. Example B3/8KF5070. ('B3/8' denotes 3/8 BSPT thread).

MODELS AVAILABLE:

MALE BSPT THREAD	MODEL NUMBER	
	Without "Fingers"	With "Fingers"
1/4	1/4KBD	1/4KFBD
3/8	3/8KBD	3/8KFBD
1/2	1/2KBD	1/2KFBD

*NPT also available



Use the threaded K-Ball® to "tilt" the spray pattern into any desired orientation.

CLIP-ON NOZZLE THREADED ADAPTER (for 1", 1 1/4", 1 1/2" and 2" pipe)

FEATURES:

This adapter allows for quick mounting and removal of threaded nozzles.

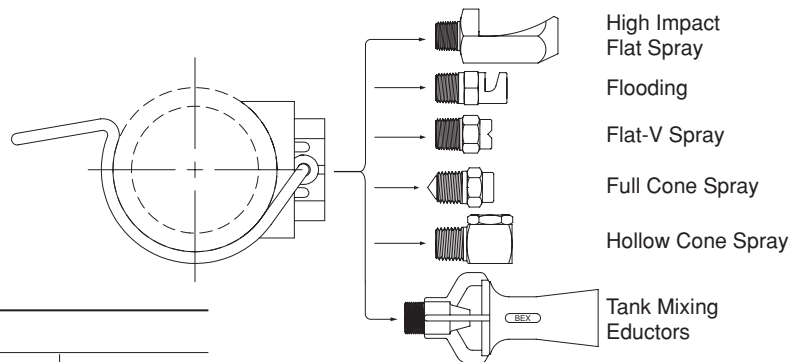
APPLICATIONS:

Useful to mount nozzles in a fixed position, where adjustability is not desired.

(Drill a 15mm diameter hole)

ADAPTER THREAD	MODEL NUMBER			
	1" Pipe	1 1/4" Pipe	1 1/2" Pipe	2" Pipe
1/8 BSPT Female	1K.1	1.2K.1	1.5K.1	2K.1
1/4 BSPT Female	1K.2	1.2K.2	1.5K.2	2K.2
3/8 BSPT Female	1K.3	1.2K.3	1.5K.3	2K.3

Double clip model also available.



QUICK DISCONNECT

OTHER NOZZLES AND ACCESSORIES



EDUCTORS



EDUCTOR PRINCIPLES:

BEX eductors use a unique venturi design which enables smaller pumps to circulate large volumes of tank solution. The eductor will circulate four to five litres of solution for each litre pumped.

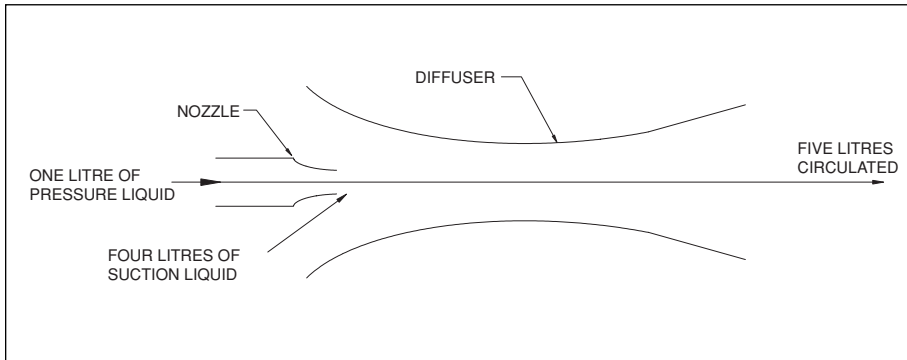
BEX eductors are used for mixing chemicals, suspending solids, adjusting pH, "sweeping" debris or sludge toward a filter intake and many other useful applications.

CONSTRUCTION:

Standard materials are cast iron, 316 SS, PVDF (Kynar®) and glass-filled polypropylene. Other materials are available upon request.

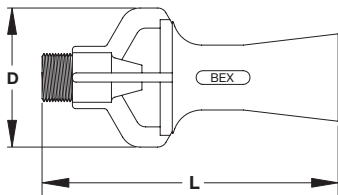
TYPICAL APPLICATIONS:

- Plating Tanks
- Cleaning Tanks
- Phosphating Tanks
- E-coat Tanks
- Fertilizer Tanks
- Pulp Tanks
- Sludge Tanks
- Paint Booths
- Anodizing Tanks
- Cooling Towers
- Decorative Fountains



Sizes from 1/4" to 3" BSPT (NPT models also available)

MOLDED PLASTIC MODELS



DIMENSIONS

MODEL NUMBER	Pipe Size	Dim. L (cm)	Dim. D (cm)
T00MP	1/4" BSPT Male	7.9	3.8
T0MP	3/8" BSPT Male	11.4	5.4
T2MP	3/4" BSPT Male	16.2	7.6
T3MP	1" BSPT Male	21.6	9.5
T4MP	1 1/2" BSPT Male	25.1	11.7

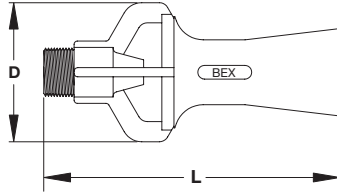
MODEL NUMBER	MAXIMUM FREE PASSAGE (mm)	NOZZLE FLOW (L/min) AT VARIOUS PRESSURES (bar)							
		0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	3.5 bar	4 bar
T00MP	4.78	12.1	14.4	17.8	20.3	22.8	24.9	27.0	28.9
T0MP	7.32	28.6	34	42	48	54	59	64	68.4
T2MP	9.80	51	62	75	87	97	107	115	123
T3MP	12.2	80	96	117	135	151	166	179	191
T4MP	15.5	126	150	184	213	238	261	281	301

EDUCTOR CIRCULATION RATIO OF SUPPLY TO DISCHARGE IS 1:5

The capacity table provides the flow of water through the nozzle orifice. To determine circulation, multiply this value by five (5).

AVAILABLE IN GLASS REINFORCED POLYPROPYLENE AND PVDF (KYNAR®)

BEX 316SS INVESTMENT CAST TANK MIXING EDUCTORS



CONSTRUCTION:

These precision investment cast models are available in 316 stainless steel.

The capacity table provides the flow of water through the nozzle orifice. To determine discharge, multiply this value by five (5).

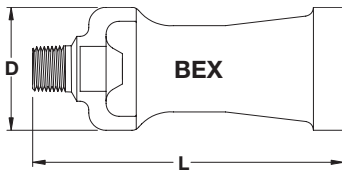
DIMENSIONS

MODEL NUMBER	Pipe Size	Dim. L (cm)	Dim. D (cm)
T0M	3/8 BSPT Male	11.4	5.4
T2M	3/4 BSPT Male	16.2	10.2
T3M	1 BSPT Male	21.6	9.5
T4M	1 1/2 BSPT Male	25.1	11.7

MODEL NUMBER	MAXIMUM FREE PASSAGE (mm)	NOZZLE FLOW (L/min) AT VARIOUS PRESSURES (bar)							
		0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	3.5 bar	4 bar
T0M	7.32	29	34	42	48	54	59	64	68
T2M	9.80	51	62	75	87	97	107	115	123
T3M	12.2	80	96	117	135	151	166	179	191
T4M	15.5	126	150	184	213	238	261	281	301

BEX CAST IRON & SPECIAL "SAND CAST" ALLOYS

Includes 2" & 3" 316SS models



Sand cast models include cast iron, alloy 20 and larger (2" and 3") 316SS models. Special alloys may be available upon request.

The capacity table provides the flow of water through the nozzle orifice. To determine discharge, multiply this value by four (4).

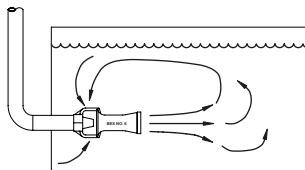
DIMENSIONS

MODEL NUMBER	Pipe Size	Dim. L (cm)	Dim. D (cm)
T0M	3/8 BSPT Male	11.4	4.5
T2M	3/4 BSPT Male	17.2	6.0
T22M	3/4 BSPT Male	17.2	6.0
T3M	1" BSPT Male	19.4	7.3
T4	1 1/2 BSPT Female	24.1	9.5
T5	2" BSPT Female	31.1	12.4
T6	3" BSPT Female	43.5	19.1

MODEL NUMBER	MAXIMUM FREE PASSAGE (mm)	NOZZLE FLOW (L/min) AT VARIOUS PRESSURES (bar)							
		0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	3.5 bar	4 bar
T0M	7.32	28.6	34	42	48	54	59	64	68
T2M	9.80	51	62	75	87	97	107	115	123
T22M	10.7	62	74	90	104	117	128	138	148
T3M	12.2	80	96	117	135	151	166	179	191
T4M	15.5	126	150	184	213	238	261	281	301
T4	15.5	126	150	184	213	238	261	281	301
T5	19.8	210	251	307	355	396	434	469	501
T6	30.2	480	574	703	812	908	995	1074	1149

USING BEX EDUCTORS AS STEAM SPARGERS

(for 1", 1 1/4", 1 1/2" and 2" pipe)



APPLICATIONS:

BEX Steam Spargers heat water and other liquids quickly and efficiently by direct injection of steam. They are designed for tank immersion and eliminate water hammer noise.

SELECTING THE RIGHT EDUCTOR:

(1) Calculate the required steam flow rate from the following equation:

$$\text{Steam Required (kg/hr)} = \frac{\text{Temp. increase of water (}^{\circ}\text{C)} \times \text{weight of water (kg)} \times \text{Time allowed to heat tank (hrs.)} \times 556}{1000}$$

(2) Knowing the steam flow rate and the steam pressure available at the sparger, choose the sparger(s) from the table below. Using several small spargers may be advisable to using one large sparger.

(3) To help eliminate steam hammer, ensure that the minimum absolute pressure of the eductor is at least twice the absolute pressure inside the tank, at eductor depth.

Note:

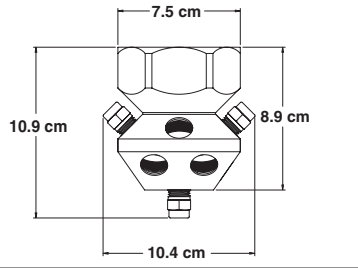
- 1 litre of water = 1 kg
- 1 cubic metre of water = 1000 kg

MODEL NUMBER	MAXIMUM FREE PASSAGE (mm)	STEAM CAPACITIES (kg/hr) AT VARIOUS STEAM PRESSURES (bar)							
		1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	10 bar
T0M	7.32	62	64	68	72	76	79	87	95
T2M	9.80	97	100	106	112	118	124	136	148
T3M	12.2	161	166	176	186	196	206	226	245
T4	15.5	270	278	295	312	328	345	378	411
T5	19.8	410	422	448	473	498	524	574	625
T6	30.2	903	931	987	1043	1099	1154	1266	1377

See pages 2, 3 and 4 for engineering data and spray coverage.

TWA SERIES

Tank washing assembly



TYPICAL APPLICATIONS:

This assembly is suitable for a variety of tank washing applications where the maximum tank diameter is no greater than approximately 3 m. The assembly will pass through a tank opening of at least 10.5 cm in diameter.

SPRAY CHARACTERISTICS:

This unit provides a fixed, non-rotating spray pattern. The assembly body has 13 individual female BSPT nozzle connections which are designed to accept full cone nozzles. For best results, select 'S' series full cone spray nozzles from page 21. A wide variety of flow rates are available. A few standard combinations are listed in the table below.

CONSTRUCTION:

The assembly is available in brass, 303 and 316 stainless steel. A 1 1/2" female BSPT connection attaches to the supply line. Maximum recommended operating pressure is 4 bar.

FULL-CONE SPRAY NOZZLES		CAPACITIES (L/min) AT VARIOUS PRESSURES (bar)						
ONE PIECE BODY REMOVABLE INSERT	TWO PIECE BODY REMOVABLE INSERT	0.7 bar	1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar
1 1/2 TWA 1/4 S5	1 1/2 TWA 1/4 GS5	24.8	36	42	51	59	66	73
1 1/2 TWA 1/4 S10	1 1/2 TWA 1/4 GS10	50	73	84	103	119	132	145
1 1/2 TWA 3/8 S15	1 1/2 TWA 3/8 GS15	76	112	129	158	182	204	223
1 1/2 TWA 3/8 S22	1 1/2 TWA 3/8 GS22	111	162	187	229	264	296	324

M7S SERIES

Cluster nozzle assembly

PRODUCT DESCRIPTION:

The M7S series cluster nozzle uses an array of seven (7) GS style full-cone spray nozzle caps mounted on a cluster nozzle body to produce a full-cone spray. Multiple full-cone spray nozzle caps produce a relatively small droplet size for large flow rates and are less susceptible to clogging. Nozzle caps are easily removed for cleaning or nozzle change-out.

CONSTRUCTION:

Standard cluster nozzle body and cap materials are brass, 303 stainless steel and 316 stainless steel. Other body and cap materials are available upon request.

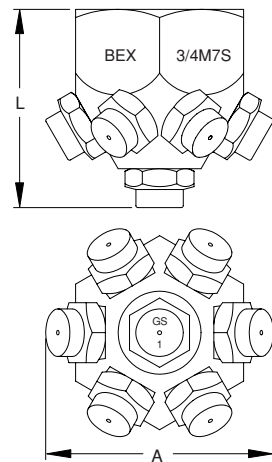
U.S. Patent No. 4,142,682
Canadian Patent No. 1,050,589

TYPICAL APPLICATIONS:

- Chemical Processing
- Cooling Sprays
- Stack Gas Scrubbers

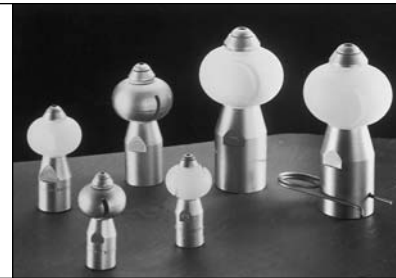
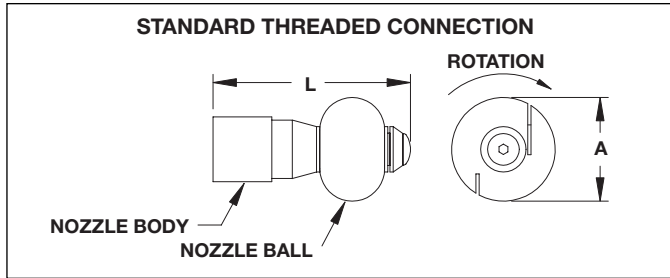
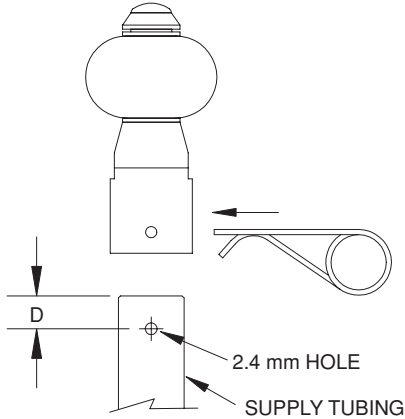
DIMENSIONS

NOZZLE SIZE (BSPT)	Dim. A (mm)	Dim. L (mm)
3/4 M7S	61	53
1 M7S	73	64
1 1/2 M7S	104	86



MODEL NUMBER	PIPE SIZE BSPT FEMALE	NOZZLE CAP MODEL #	CAPACITIES (L/min) AT VARIOUS PRESSURES (bar)						
			1.5 bar	3 bar	4 bar	5 bar	6 bar	8 bar	10 bar
3/4 M7S1	3/4	1/8 GS1	3.9	5.5	6.4	7.1	7.8	9.0	10.1
3/4 M7S1.5	3/4	1/8 GS1.5	5.9	8.3	9.6	10.7	11.7	13.5	15.1
3/4 M7S2	3/4	1/8 GS2	7.8	11.1	12.8	14.3	15.6	18.0	20.2
3/4 M7S3	3/4	1/8 GS3	11.7	16.6	19.1	21.4	23.4	27.1	30.3
3/4 M7S3.5	3/4	1/8 GS3.5	13.7	19.3	22.3	25.0	27.4	32	35
3/4 M7S5	3/4	1/8 GS5	19.5	27.6	32	36	39	45	50
3/4 M7S6	3/4	1/8 GS6	27.4	39	45	50	55	63	71
1 M7S6.5	1	1/4 GS6.5	25.4	36	41	46	51	59	66
1 M7S7.5	1	1/4 GS7.5	29	41	48	54	59	68	76
1 M7S10	1	1/4 GS10	39.1	55	64	71	78	90	101
1 1/2 M7S9.5	1 1/2	3/8 GS9.5	37	52	61	68	74	86	96
1 1/2 M7S15	1 1/2	3/8 GS15	59	83	96	107	117	135	151
1 1/2 M7S16	1 1/2	1/2 GS16	63	88	102	114	125	144	161
1 1/2 M7S20	1 1/2	3/8 GS20	78	111	128	143	156	180	202
1 1/2 M7S22	1 1/2	3/8 GS22	86	122	140	157	172	199	222
1 1/2 M7S25	1 1/2	1/2 GS25	98	138	160	178	195	226	252
1 1/2 M7S32	1 1/2	1/2 GS32	125	177	204	228	250	289	323
1 1/2 M7S40	1 1/2	1/2 GS40	156	221	255	285	313	361	404

SANITARY CONNECTION
(INCLUDES STAINLESS STEEL
HITCH PIN FOR MOUNTING)



PRODUCT DESCRIPTION:

The TWK series rotating nozzles provide true 360° spray coverage in a very compact assembly. The bearing mechanism is self-lubricating and self-cleaning. This nozzle can be installed in any orientation and is effective in vessels up to 3 meters (10 feet) in diameter. The maximum recommended operating pressure is 6 bar at 80°C.

CONSTRUCTION:

Standard nozzle body material is 316 stainless steel. Nozzle balls are available in 316 stainless steel, PVDF (Kynar®), Teflon® and polypropylene. Other body and ball materials are available upon request.

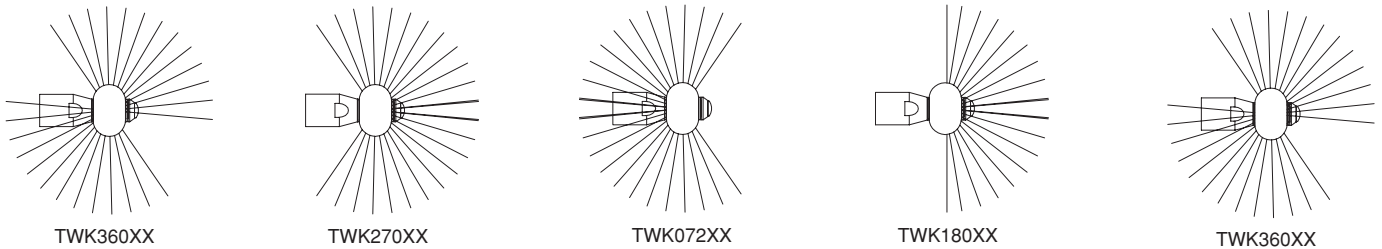
SPECIAL FEATURES:

- True 360° coverage
- Easy disassembly/assembly and cleaning
- FDA approved materials
- Keyed ball can not be installed backwards

TYPICAL APPLICATIONS:

- Keg Washing
- Carboy/Jug Washing
- Spray Tank Washing
- Small Tank Rinsing
- Machine Clean-In-Place (C.I.P.)
- Barrel Washing/Rinsing

U.S. Patent No. 5,316,218

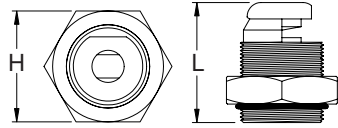


MODEL NUMBER	PIPE SIZE BSPT FEMALE	MAXIMUM FREE PASSAGE (mm)	SANITARY TUBING SIZE * (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)												SPRAY COVERAGE (degrees)	Dim. A (mm)	Dim. L (mm)	Dim. D (mm)
				0.3 bar	0.5 bar	0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	4 bar	5 bar	6 bar					
1/4TWK36050	1/4	1.60	12.7	6.24	8.1	9.5	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	360°	25.4	50.8	9.5	
1/4TWK27050	1/4	1.60	12.7	6.24	8.1	9.5	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	270°	25.4	50.8	9.5	
1/4TWK07250	1/4	1.60	12.7	6.24	8.1	9.5	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	270°	25.4	50.8	9.5	
1/4TWK18050	1/4	1.60	12.7	6.24	8.1	9.5	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	180°	25.4	50.8	9.5	
1/4TWK08150	1/4	1.60	12.7	6.24	8.1	9.5	11.4	14.0	16.1	18.0	19.7	22.8	25.5	27.9	180°	25.4	50.8	9.5	
3/8TWK36075	3/8	1.60	15.9	9.4	12.1	14.3	17.1	20.9	24.2	27.0	29.6	34.2	38.2	41.9	360°	31.8	63.5	9.5	
3/8TWK27075	3/8	1.60	15.9	9.4	12.1	14.3	17.1	20.9	24.2	27.0	29.6	34.2	38.2	41.9	270°	31.8	63.5	9.5	
3/8TWK07275	3/8	1.60	15.9	9.4	12.1	14.3	17.1	20.9	24.2	27.0	29.6	34.2	38.2	41.9	270°	31.8	63.5	9.5	
3/8TWK18075	3/8	1.60	15.9	9.4	12.1	14.3	17.1	20.9	24.2	27.0	29.6	34.2	38.2	41.9	180°	31.8	63.5	9.5	
3/8TWK08175	3/8	1.60	15.9	9.4	12.1	14.3	17.1	20.9	24.2	27.0	29.6	34.2	38.2	41.9	180°	31.8	63.5	9.5	
1/2TWK360100	1/2	1.60	19.1	12.5	16.1	19.1	22.8	27.9	32.2	36.0	39.5	45.6	51.0	55.8	360°	38.1	73.6	9.5	
1/2TWK270100	1/2	1.60	19.1	12.5	16.1	19.1	22.8	27.9	32.2	36.0	39.5	45.6	51.0	55.8	270°	38.1	73.6	9.5	
1/2TWK072100	1/2	1.60	19.1	12.5	16.1	19.1	22.8	27.9	32.2	36.0	39.5	45.6	51.0	55.8	270°	38.1	73.6	9.5	
1/2TWK180100	1/2	1.60	19.1	12.5	16.1	19.1	22.8	27.9	32.2	36.0	39.5	45.6	51.0	55.8	180°	38.1	73.6	9.5	
1/2TWK081100	1/2	1.60	19.1	12.5	16.1	19.1	22.8	27.9	32.2	36.0	39.5	45.6	51.0	55.8	180°	38.1	73.6	9.5	
3/4TWK360180	3/4	2.24	25.4	22.5	29.0	34.3	41.0	50.2	58.0	64.9	71	82	92	100	360°	50.8	97.5	12.7	
3/4TWK270180	3/4	2.24	25.4	22.5	29.0	34.3	41.0	50.2	58.0	64.9	71	82	92	100	270°	50.8	97.5	12.7	
3/4TWK072180	3/4	2.24	25.4	22.5	29.0	34.3	41.0	50.2	58.0	64.9	71	82	92	100	270°	50.8	97.5	12.7	
3/4TWK180180	3/4	2.24	25.4	22.5	29.0	34.3	41.0	50.2	58.0	64.9	71	82	92	100	180°	50.8	97.5	12.7	
3/4TWK081180	3/4	2.24	25.4	22.5	29.0	34.3	41.0	50.2	58.0	64.9	71	82	92	100	180°	50.8	97.5	12.7	

**Add prefix "S" (ie S 1/4 TWK36050) to model number for Sanitary Connection.

WA SERIES

Self-cleaning shower nozzles



DIMENSIONS

NOZZLE TYPE	Dim. H (mm)	Dim. L (mm)
WA	38	41

SPRAY CHARACTERISTICS:

Available in flat fan and solid stream (0 degree) models, these self-cleaning nozzles reduce shower maintenance. By reducing the supplied pressure, an internal piston retracts to purge

fibers and other suspended solids from the clogged nozzle.

CONSTRUCTION:

Standard material of construction is 316 stainless steel.

TYPICAL APPLICATIONS:

- Cleaning Fabric (wire)
- Cleaning Felts
- Pre-wetting Showers
- Knock-off Showers
- Lubrication Shower

SPRAY ANGLE @ 3 bar	MODEL NUMBER	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)															
		1.5 bar	2 bar	2.5 bar	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar	9 bar	10 bar	12 bar	15 bar	18 bar		
0° SOLID STREAM	WA0002	0.56	0.64	0.72	0.79	0.91	1.02	1.12	1.21	1.29	1.37	1.44	1.58	1.77	1.93		
	WA0006	1.67	1.93	2.16	2.37	2.73	3.06	3.3	3.6	3.9	4.1	4.3	4.7	5.3	5.8		
	WA0008	2.23	2.58	2.88	3.2	3.6	4.1	4.5	4.8	5.2	5.5	5.8	6.3	7.1	7.7		
	WA0010	2.79	3.2	3.6	3.9	4.6	5.1	5.6	6.0	6.4	6.8	7.2	7.9	8.8	9.7		
15°	WA1506	1.67	1.93	2.16	2.37	2.73	3.06	3.3	3.6	3.9	4.1	4.3	4.7	5.3	5.8		
30°	WA3005	1.40	1.61	1.80	1.97	2.28	2.55	2.79	3.01	3.2	3.4	3.6	3.9	4.4	4.8		
	WA3014	3.9	4.5	5.0	5.5	6.4	7.1	7.8	8.4	9.0	9.6	10.1	11.1	12.4	13.5		
40°	WA4012	3.3	3.9	4.3	4.7	5.5	6.1	6.7	7.2	7.7	8.2	8.6	9.5	10.6	11.6		
	WA4014	3.9	4.5	5.0	5.5	6.4	7.1	7.8	8.4	9.0	9.6	10.1	11.1	12.4	13.5		
	WA4032	8.9	10.3	11.5	12.6	14.6	16.3	17.9	19.3	20.6	21.9	23.1	25.3	28.2	30.9		
45°	WA4516	4.5	5.2	5.8	6.3	7.3	8.2	8.9	9.6	10.3	10.9	11.5	12.6	14.1	15.5		
	WA4525	7.0	8.1	9.0	9.9	11.4	12.7	14.0	15.1	16.1	17.1	18.0	19.7	22.1	24.2		
50°	WA5032	8.9	10.3	11.5	12.6	14.6	16.3	17.9	19.3	20.6	21.9	23.1	25.3	28.2	30.9		
60°	WA6016	4.5	5.2	5.8	6.3	7.3	8.2	8.9	9.6	10.3	10.9	11.5	12.6	14.1	15.5		
	WA6038	10.6	12.2	13.7	15.0	17.3	19.4	21.2	22.9	24.5	26.0	27.4	30.0	34	37		
80°	WA8011	3.07	3.5	4.0	4.3	5.0	5.6	6.1	6.6	7.1	7.5	7.9	8.7	9.7	10.6		
	WA8030	8.4	9.7	10.8	11.8	13.7	15.3	16.7	18.1	19.3	20.5	21.6	23.7	26.5	29.0		
	WA8046	12.8	14.8	16.6	18.2	21.0	23.4	25.7	27.7	29.6	31.4	33	36	41	44		
110°	WA11011	3.07	3.5	4.0	4.3	5.0	5.6	6.1	6.6	7.1	7.5	7.9	8.7	9.7	10.6		
120°	WA12008	2.23	2.58	2.88	3.2	3.6	4.1	4.5	4.8	5.2	5.5	5.8	6.3	7.1	7.7		
130°	WA13016	4.5	5.2	5.8	6.3	7.3	8.2	8.9	9.6	10.3	10.9	11.5	12.6	14.4	15.5		
	WA13025	7.0	8.1	9.0	9.9	11.4	12.7	14.0	15.1	16.1	17.1	18.0	19.7	22.1	24.2		

Standard thread size is 1/8" - 20.

WN SERIES

Solid stream shower nozzles

SPRAY CHARACTERISTICS:

BEX WN series spray nozzles are custom designed to deliver a solid stream of liquid for high precision applications.

CONSTRUCTION:

Standard material of construction is 316 stainless steel with an optional ruby orifice. Other materials available by special order.

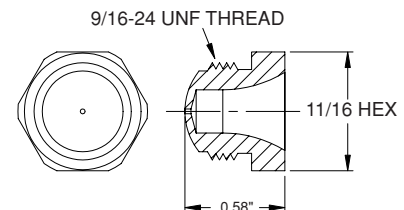
TYPICAL APPLICATIONS:

Uses include cleaning and washing of felts, suction rolls, fabric (wire), and other areas that require flow control and precision delivery of the nozzle stream.

MODEL NUMBER	ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)							
		3 bar	4 bar	5 bar	6 bar	15 bar	40 bar	60 bar	
WN14	0.36	0.109	0.125	0.140	0.154	0.243	0.396	0.485	
WN28	0.71	0.434	0.501	0.561	0.614	0.971	1.585	1.942	
WN33	0.84	0.632	0.729	0.815	0.893	1.412	2.306	2.824	
WN40	1.02	0.908	1.048	1.172	1.284	2.030	3.315	4.060	
WN55	1.40	1.579	1.823	2.038	2.233	3.53	5.77	7.06	
WN70	1.78	2.645	3.054	3.41	3.74	5.91	9.66	11.83	
WN94	2.39	4.74	5.47	6.11	6.70	10.59	17.30	21.18	
WN125	3.18	7.89	9.12	10.19	11.16	17.65	28.83	35.3	



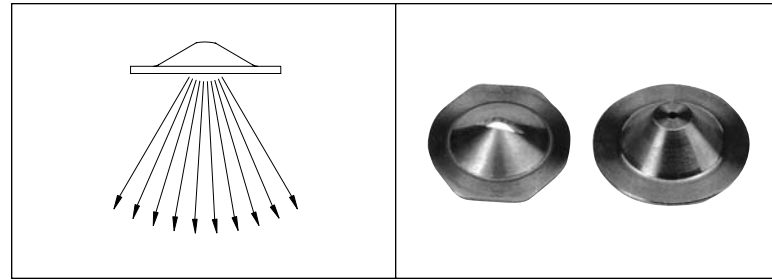
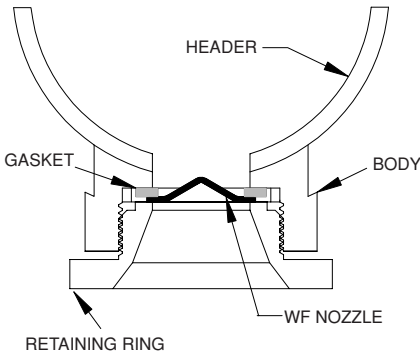
NOTE: Optional orifice sizes and other materials of construction are available on a special order basis. Specifications subject to change without prior notification.



OTHER NOZZLES

Self-aligning disc shower nozzles

WF SERIES



SPRAY CHARACTERISTICS:

Available in 30° and 60° flay V-shaped spray patterns, as well as zero (0) degree solid stream spray.

CONSTRUCTION:

Standard material of construction for the spray disc is 317L stainless steel. A gasket is available for sealing the face between the nozzle disc and the body.

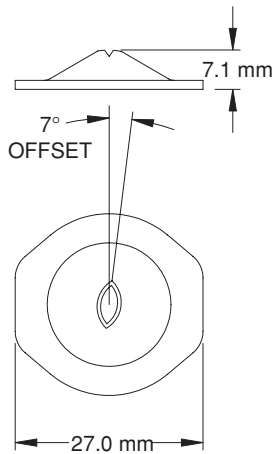
TYPICAL APPLICATIONS:

WF Series shower nozzles are designed to work in a number of commercially available "shower" bar systems where a self-aligning replaceable nozzle disc is required.

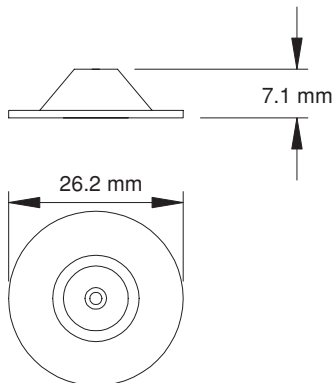
The back protruding design permits the nozzle orifice to be cleaned from inside the header, using a rotating brush.

All flat V-shaped spray models are pre-aligned to a standard 7° offset angle to allow for spray overlap without interference from the adjacent nozzles. (Refer to drawings shown below).

WF FLAT STREAM NOZZLE



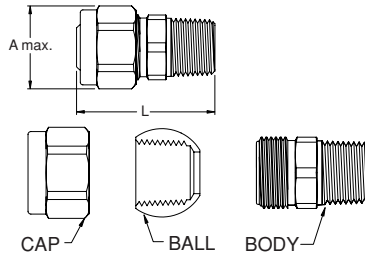
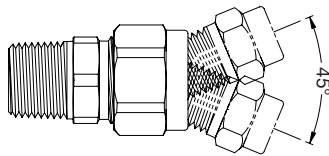
WF SOLID STREAM NOZZLE



SPRAY ANGLE @ 3 bar	MODEL NUMBER	CAPACITIES (L/min) AT VARIOUS PRESSURES (bar)							
		1.5 bar	3 bar	4 bar	5 bar	6 bar	12 bar	25 bar	40 bar
0° SOLID STREAM	WF00004	1.2	1.7	2.0	2.2	2.4	3.4	4.9	6.2
	WF00007	0.20	0.28	0.32	0.36	0.39	0.55	0.80	1.01
	WF00009	0.25	0.36	0.41	0.46	0.50	0.71	1.03	1.30
	WF0001	0.36	0.51	0.59	0.66	0.73	1.03	1.48	1.87
	WF0002	0.64	0.91	1.05	1.17	1.28	1.82	2.62	3.3
	WF0003	0.92	1.30	1.50	1.68	1.84	2.61	3.8	4.8
	WF0004	1.2	1.7	2.0	2.2	2.4	3.4	4.9	6.2
	WF0008	2.20	3.12	3.6	4.0	4.4	6.2	9.0	11.4
	WF0012	3.5	4.9	5.7	6.3	6.9	9.8	14.1	17.9
	WF0020	5.5	7.8	9.0	10.1	11.1	15.6	22.6	28.5
30°	WF3002	0.64	0.91	1.05	1.17	1.28	1.82	2.62	3.3
	WF3003	0.92	1.30	1.50	1.68	1.84	2.61	3.8	4.8
	WF3004	1.2	1.7	2.0	2.2	2.4	3.4	4.9	6.2
	WF3006	1.70	2.41	2.78	3.11	3.4	4.8	7.0	8.8
	WF3008	2.20	3.12	3.6	4.0	4.4	6.2	9.0	11.4
	WF3010	2.85	4.03	4.65	5.20	5.69	8.1	11.6	14.7
	WF3012	3.5	4.9	5.7	6.3	6.9	9.8	14.1	17.9
	WF3016	4.5	6.4	7.3	8.2	9.0	12.7	18.3	23.2
	WF3020	5.5	7.8	9.0	10.1	11.1	15.6	22.6	28.5
	60°	WF6002	0.64	0.91	1.05	1.17	1.28	1.82	2.62
WF6003		0.92	1.30	1.50	1.68	1.84	2.61	3.8	4.8
WF6004		1.2	1.7	2.0	2.2	2.4	3.4	4.9	6.2
WF6006		1.70	2.41	2.78	3.11	3.4	4.8	7.0	8.8
WF6008		2.20	3.12	3.6	4.0	4.4	6.2	9.0	11.4
WF6010		2.85	4.03	4.65	5.20	5.69	8.1	11.6	14.7
WF6012		3.5	4.9	5.7	6.3	6.9	9.8	14.1	17.9
WF6016		4.5	6.4	7.3	8.2	9.0	12.7	18.3	23.2
WF6020		5.5	7.8	9.0	10.1	11.1	15.6	22.6	28.5
WF6025		7.3	10.3	11.9	13.2	14.5	20.5	29.6	37
WF6031		8.7	12.2	14.1	15.8	17.3	24.5	35	45
WF6040		11.2	15.8	18.2	20.4	22.3	32	46	58
WF6049		13.7	19.3	22.3	25.0	27.4	39	56	71
WF6077		22.0	31.2	36	40	44	62	90	114
WF6099	27.6	39	45	50	55	78	113	143	
WF60124	35	49	57	63	69	98	141	179	

MAJ SERIES

Machined adjustable joints



TYPICAL APPLICATIONS:

The MAJ series of adjustable joints allow spray nozzles or other threaded items to be rotated and tilted to obtain the desired spray pattern or orientation, without having to disturb the surrounding piping. They may also be used within piping systems as an adjustable union type connection.

CONSTRUCTION:

The unit consists of a male inlet section and a female outlet section, held together by a threaded cap. The cap may be loosened to change the angle of adjustment between the inlet and outlet sections. Maximum recommended operating pressure is 20 bar. Standard materials are brass, 303 stainless steel, and 316 stainless steel.

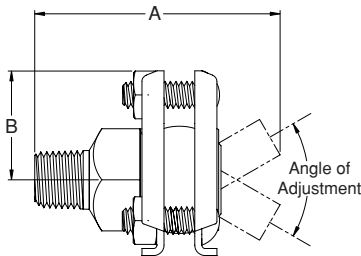
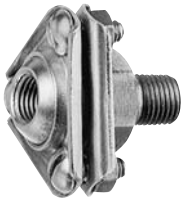
DIMENSIONS

MODEL NUMBER	Inlet Pipe Size BSPT	Outlet Pipe Size BSPT	Dim. A (max) (mm)	Dim. L (max) (mm)
1/8MAJ	1/8 male	1/8 female	25	36
1/4MAJ	1/4 male	1/4 female	28	41
3/8MAJ	3/8 male	3/8 female	35	46
1/2MAJ	1/2 male	1/2 female	44	56
3/4MAJ	3/4 male	3/4 female	49	61

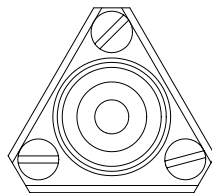
Other combinations are available.

AJ SERIES

Flanged adjustable joints



Inlet of ball is hexagonal for easy holding



TYPICAL APPLICATIONS:

To rotate and tilt spray nozzles, to obtain a desired positioning of a spray pattern, without having to disturb surrounding piping. May also be used within piping systems as an adjustable union type connection. Maximum recommended operating pressure is 8 bar.

CONSTRUCTION:

The unit consists of a male inlet section and a female outlet section, held together by a flange assembly. Locking screws may be loosened to change the angle of adjustment between the inlet and outlet sections. Standard materials are brass and 303 or 316 stainless steel with 304 stainless steel flanges.

DIMENSIONS (mm)

MODEL NUMBER	INLET PIPE SIZE	OUTLET PIPE SIZE	Dim. A	Dim. B	Maximum Angle of Adjustment
1/8 x 1/8 AJ	1/8 male	1/8 female	44.5	25.4	60°
1/4 x 1/8 AJ	1/4 male	1/8 female	44.5	25.4	60°
1/4 x 1/4 AJ	1/4 male	1/4 female	44.5	25.4	60°
3/8 x 1/4 AJ	3/8 male	1/4 female	44.5	25.4	60°
3/8 x 3/8 AJ	3/8 male	3/8 female	44.5	25.4	45°
1/2 x 1/2 AJ	1/2 male	1/2 female	63.5	38.1	50°
1/8 x 3/4 AJ	1/8 male	3/4 female	63.5	38.1	50°
3/4 x 1/2 AJ	3/4 male	1/2 female	66.7	38.1	50°
3/4 x 3/4 AJ	3/4 male	3/4 female	66.7	38.1	40°

STA SERIES

Flow stabilizers



TYPICAL APPLICATIONS:

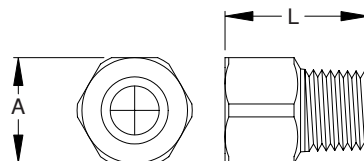
When liquid in a pipe emerges from elbows or tees, the resulting flow is often distorted. These flow stabilizers help to eliminate flow distortion, resulting in a more even and consistent spray pattern.

CONSTRUCTION:

This unit consists of a body and an internal vane. Available in 1/8", 1/4", 3/8" and 1/2" BSPT sizes, with a male inlet and female outlet connection. Standard materials are brass, 303 and 316 stainless steel.

DIMENSIONS

MODEL NUMBER	Inlet Pipe Size BSPT	Outlet Pipe Size BSPT	Dim. A (mm)	Dim. L (mm)
1/8STA	1/8 male	1/8 female	15 HEX	22
1/4STA	1/4 male	1/4 female	18 HEX	25
3/8STA	3/8 male	3/8 female	21 HEX	29
1/2STA	1/2 male	1/2 female	25 HEX	35



High impact flat spray nozzles

SN4224 SERIES



TYPICAL APPLICATIONS:

SN4224 is a specially designed spray nozzle that provides high impact per unit area. This flat spray nozzle works particularly well for screen-filters, pulp "knock-off" showers and other

applications where loose scale and debris removal are required.

CONSTRUCTION:

SN4224 is available in 316 stainless steel with an 3.18 orifice and a 3/8 BSPT male fitting

MODEL NUMBER	ORIFICE DIAMETER (mm)	CAPACITY (L/min) AT VARIOUS PRESSURES (bar)				
		1.5 bar	3 bar	4 bar	5 bar	6 bar
SN4224	3.18	8.1	11.4	13.2	14.8	16.2

CHECK VALVES



TYPICAL APPLICATIONS:

Check valves are used in line with many spray nozzles when the application requires the complete shut-off of flow while maintaining full line pressure. The spring loaded ball-type design provides a drip-free seal with shut-off pressures of .3, .7 and 1.5 bar.

CONSTRUCTION:

The unit consists of a two-piece body, an internal spring and a shut-off stainless steel ball. Available in 1/8, 1/4, 3/8 and 1/2 BSPT sizes. Standard materials are brass, 303SS and 316SS.

SHUT OFF BAR	MODEL NUMBER			
.3	1/8CV5	1/4CV5	3/8CV5	1/2CV5
.7	1/8CV10	1/4CV10	3/8CV10	1/2CV10
1.5	1/8CV20	1/4CV20	3/8CV20	1/2CV20

SPLIT EYELETS



TYPICAL APPLICATIONS:

Anywhere an alternate connection to pipe is desired. Eliminates:

- Threading
- Brazing
- Welding

CONSTRUCTION:

The split eyelet consists of a top and bottom clamp, two retaining bolts, an outlet body and an O-ring. Clamps and retaining bolts are zinc-plated steel. Standard materials for the body are brass, 303 stainless steel and 316 stainless steel. The O-ring seal is Buna-N.

PIPE SIZE	MODELS (BSPT OUTLET SIZE)			MAX. FLOW	DRILL SIZE
	1/8	1/4	3/8		
1/2	1/2x1/8FSE	1/2x1/4FSE		13 L/min	7.1 mm
3/4	3/4x1/8FSE	3/4x1/4FSE		13 L/min	7.1 mm
1	1x1/8FSE	1x1/4FSE		13 L/min	7.1mm
1-1/4	1-1/4x1/8FSE	1-1/4x1/4FSE	1-1/4x3/8FSE	19 GPM	17.4 mm
1-1/2	1-1/2x1/8FSE	1-1/2x1/4FSE	1-1/2x3/8FSE	19 GPM	17.4 mm



BEX FAX FORM

Fax to: 734-464-1988, U.S.A.
905-238-8955, Canada

Name _____

Company _____

Address _____

City _____ Postal _____

Phone _____ Fax _____

e-mail _____

Please explain your application:

Liquid being sprayed: _____ Liquid temperature: _____

Pressure: _____ Flowrate required: _____

Nozzle spray coverage: _____ Nozzle material: _____

Nozzle spray pattern: _____ Thread size: _____

Spray distance from nozzle: _____

If you need further explanation or would like to provide a sketch, use the area below:

Large empty rectangular box for sketch or further explanation.