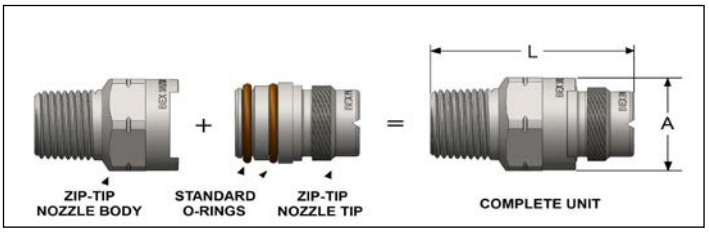
ZF00 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25









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

SPRAY CHARACTERISTICS:

These ZF-Series spray nozzles produce zero degree needlle-type of spray.

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 NPT or BSPT threaded bodies.

TYPICAL APPLICATIONS:

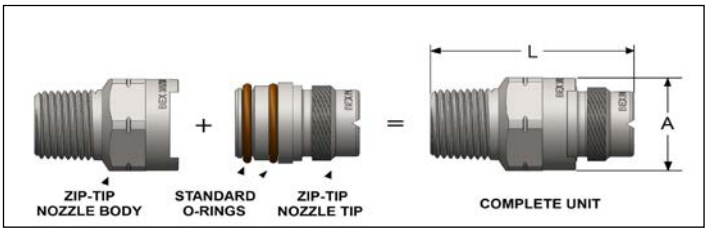
Suitable for a variety of washing and spraying applications.

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

Model		Orifice Dia. (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model	ZLF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF0002		0.034	0.07	0.08	0.10	0.31	0.14	0.17	0.20	0.56	0.25	0.28	0.32	0.97	0.55	0 Degrees		
ZF0003		0.041	0.11	0.13	0.15	0.37	0.21	0.26	0.30	0.67	0.37	0.42	0.47	1.16	0.82			
ZF0004		0.047	0.14	0.17	0.20	0.49	0.28	0.35	0.40	0.89	0.49	0.57	0.63	1.55	1.10			
ZF0005		0.053	0.18	0.21	0.25	0.61	0.35	0.43	0.50	1.12	0.61	0.71	0.79	1.94	1.37			
ZF0006		0.058	0.21	0.25	0.30	0.92	0.42	0.52	0.60	1.68	0.73	0.85	0.95	2.90	1.64			
ZF0008		0.067	0.28	0.33	0.40	1.22	0.57	0.69	0.80	2.24	0.98	1.13	1.26	3.9	2.19			
ZF0010		0.075	0.35	0.42	0.50	1.84	0.71	0.87	1.00	3.4	1.22	1.41	1.58	5.8	2.74			
ZF0012		0.089	0.42	0.50	0.60	2.45	0.85	1.04	1.20	4.5	1.47	1.70	1.90	7.7	3.3			
ZF0015		0.191	0.53	0.63	0.75	3.06	1.06	1.30	1.50	5.6	1.84	2.12	2.37	9.7	4.1			
ZF0020		0.105	0.71	0.84	1.00	3.7	1.41	1.73	2.00	6.7	2.45	2.83	3.2	11.6	5.5			
ZF0030		0.129	1.06	1.26	1.50	4.3	2.12	2.60	3.00	7.8	3.7	4.2	4.7	13.6	8.2			
ZF0040		0.149	1.41	1.67	2.00	4.9	2.83	3.5	4.0	8.9	4.9	5.7	6.3	15.5	11.0			
ZF0050		0.167	1.77	2.09	2.50	6.1	3.5	4.3	5.0	11.2	6.1	7.1	7.9	19.4	13.7			
ZF0060		0.182	2.12	2.51	3.00	7.3	4.2	5.2	6.0	13.4	7.3	8.5	9.5	23.2	16.4			
ZF0070		0.197	2.47	2.93	3.5	9.2	4.9	6.1	7.0	16.8	8.6	9.9	11.1	29.0	19.2			
	ZLF0080	0.211	2.83	3.3	4.0	12.2	5.7	6.9	8.0	22.4	9.8	11.3	12.6	39	21.9			
	ZLF00100	0.236	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4			
	ZLF00120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33			
	ZLF00150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41			
	ZLF00200	0.333	7.1	8.4	10.0	12.2	14.1	17.3	20.0	22.4	24.5	28.3	32	39	55			
	ZLF00400	0.471	14.1	16.7	20.0	24.5	28.3	35	40	45	49	57	63	77	110			

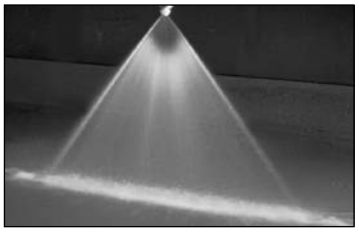
ZF05 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25









Spray angle not exactly as shown.

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

SPRAY CHARACTERISTICS:

ZF-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.

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 NPT or BSPT threaded bodies.

TYPICAL APPLICATIONS:

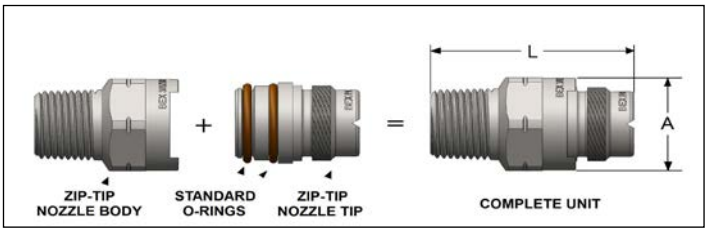
Suitable for a variety of washing and spraying applications.

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

Model	Max. Free Passage (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF0505	0.053	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.56	0.61	0.71	0.79	0.97	1.37	4	5	9
ZF0506	0.058	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.67	0.73	0.85	0.95	1.16	1.64	5	5	8
ZF0508	0.067	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.89	0.98	1.13	1.26	1.55	2.19	4	5	7
ZF0510	0.075	0.35	0.42	0.50	0.61	0.71	0.87	1.00	1.12	1.22	1.41	1.58	1.94	2.74	5	5	8
ZF0515	0.091	0.53	0.63	0.75	0.92	1.06	1.30	1.50	1.68	1.84	2.12	2.37	2.90	4.1	5	5	9
ZF0520	0.105	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	5	5	9
ZF0530	0.129	1.06	1.26	1.50	1.84	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.8	8.2	5	5	9
ZF0540	0.149	1.41	1.67	2.00	2.45	2.83	3.5	4.0	4.5	4.9	5.7	6.3	7.7	11.0	5	5	9

ZF15 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25

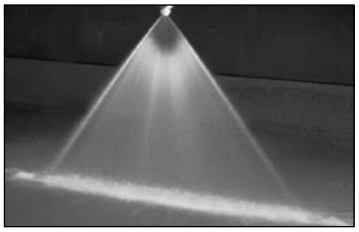




ZIP-TIP NOZZLE INSTALLATION & REMOVAL

- 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





Spray angle not exactly as shown.

SPRAY CHARACTERISTICS:

ZF-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.

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 NPT or BSPT threaded bodies.

TYPICAL APPLICATIONS:

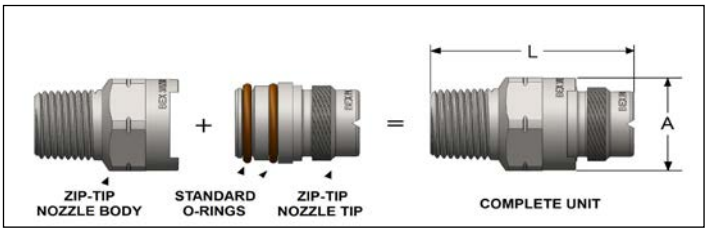
Suitable for a variety of washing and spraying applications.

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

Model		Max. Free Passage (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model	ZLF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF1505		0.053	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.56	0.61	0.71	0.79	0.97	1.37	10	15	20
ZF1506		0.058	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.67	0.73	0.85	0.95	1.16	1.64	11	15	24
ZF1508		0.067	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.89	0.98	1.13	1.26	1.55	2.19	11	15	21
ZF1510		0.075	0.35	0.42	0.50	0.61	0.71	0.87	1.00	1.12	1.22	1.41	1.58	1.94	2.74	13	15	16
ZF1512		0.091	0.53	0.63	0.75	0.92	1.06	1.30	1.50	1.68	1.84	2.12	2.37	2.90	4.1	11	15	20
ZF1520		0.105	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	11	15	20
ZF1530		0.129	1.06	1.26	1.50	1.84	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.8	8.2	11	15	18
ZF1540		0.149	1.41	1.67	2.00	2.45	2.83	3.5	4.0	4.5	4.9	5.7	6.3	7.7	11.0	12	15	18
ZF1550		0.167	1.77	2.09	2.50	3.06	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	13.7	12	15	19
ZF1560		0.182	2.12	2.51	3.00	3.7	4.2	5.2	6.0	6.7	7.3	8.5	9.5	11.6	16.4	12	15	17
ZF1570		0.197	2.47	2.93	3.5	4.3	4.9	6.1	7.0	7.8	8.6	9.9	11.1	13.6	19.2	12	15	19
	ZLF1580	0.211	2.83	3.3	4.0	4.9	5.7	6.9	8.0	8.9	9.8	11.3	12.6	15.5	21.9	12	15	19
	ZLF15100	0.236	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4	12	15	19
	ZLF15120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33	12	15	19
	ZLF15150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41	12	15	18
	ZLF15200	0.333	7.1	8.4	10.0	12.2	14.1	17.3	20.0	22.4	24.5	28.3	32	39	55	13	15	17
	ZLF25100	0.211	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4	21	25	28
	ZLF25120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33	20	25	28
	ZLF25150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41	18	25	28
	ZLF25200	0.333	7.1	8.4	10.0	12.2	14.1	17.3	20.0	22.4	24.5	28.3	32	39	55	19	25	27
	ZLF25400	0.471	14.1	16.7	20.0	24.5	28.3	35	40	45	49	57	63	77	110	19	25	27

ZF25 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25

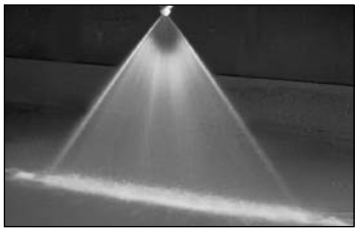




ZIP-TIP NOZZLE INSTALLATION & REMOVAL

- 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





Spray angle not exactly as shown.

SPRAY CHARACTERISTICS:

ZF-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.

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 NPT or BSPT threaded bodies.

TYPICAL APPLICATIONS:

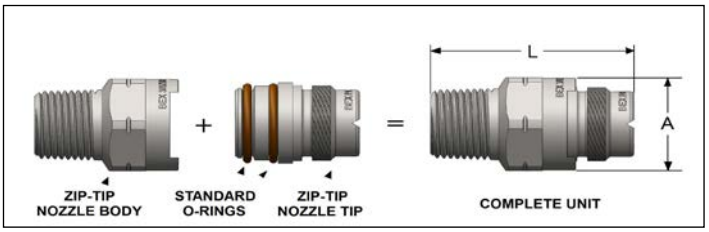
Suitable for a variety of washing and spraying applications.

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

Model		Max. Free Passage (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model	ZLF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF2502		0.034	0.07	0.08	0.10	0.12	0.14	0.17	0.20	0.22	0.25	0.28	0.32	0.39	0.55	20	25	31
ZF2503		0.041	0.11	0.13	0.15	0.18	0.21	0.26	0.30	0.34	0.37	0.42	0.47	0.58	0.82	20	25	31
ZF2504		0.047	0.14	0.17	0.20	0.25	0.28	0.35	0.40	0.45	0.49	0.57	0.63	0.77	1.10	19	25	31
ZF2505		0.053	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.56	0.61	0.71	0.79	0.97	1.37	18	25	31
ZF2506		0.058	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.67	0.73	0.85	0.95	1.16	1.64	17	25	31
ZF2508		0.067	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.89	0.98	1.13	1.26	1.55	2.19	16	25	32
ZF2510		0.075	0.35	0.42	0.50	0.61	0.71	0.87	1.00	1.12	1.22	1.41	1.58	1.94	2.74	17	25	31
ZF2512		0.082	0.42	0.50	0.60	0.73	0.85	1.04	1.20	1.34	1.47	1.70	1.90	2.32	3.3	18	25	30
ZF2515		0.091	0.53	0.63	0.75	0.92	1.06	1.30	1.50	1.68	1.84	2.12	2.37	2.90	4.1	18	25	30
ZF2520		0.105	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	18	25	28
ZF2530		0.129	1.06	1.26	1.50	1.84	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.8	8.2	19	25	29
ZF2540		0.149	1.41	1.67	2.00	2.45	2.83	3.5	4.0	4.5	4.9	5.7	6.3	7.7	11.0	22	25	32
ZF2550		0.167	1.77	2.09	2.50	3.06	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	13.7	20	25	32
ZF2560		0.167	2.12	2.51	3.00	3.7	4.2	5.2	6.0	6.7	7.3	8.5	9.5	11.6	16.4	18	25	28
ZF2570		0.182	2.47	2.93	3.5	4.3	4.9	6.1	7.0	7.8	8.6	9.9	11.1	13.6	19.2	19	25	27
	ZLF2580	0.197	2.83	3.3	4.0	4.9	5.7	6.9	8.0	8.9	9.8	11.3	12.6	15.5	21.9	20	25	27
	ZLF25100	0.211	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4	21	25	28
	ZLF25120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33	20	25	28
	ZLF25150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41	18	25	28
	ZLF25200	0.333	7.1	8.4	10.0	12.2	14.1	17.3	20.0	22.4	24.5	28.3	32	39	55	19	25	27
	ZLF25400	0.471	14.1	16.7	20.0	24.5	28.3	35	40	45	49	57	63	77	110	19	25	27

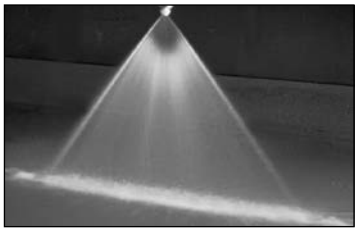
ZF40 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25









Spray angle not exactly as shown.

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

SPRAY CHARACTERISTICS:

ZF-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.

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 NPT or BSPT threaded bodies.

TYPICAL APPLICATIONS:

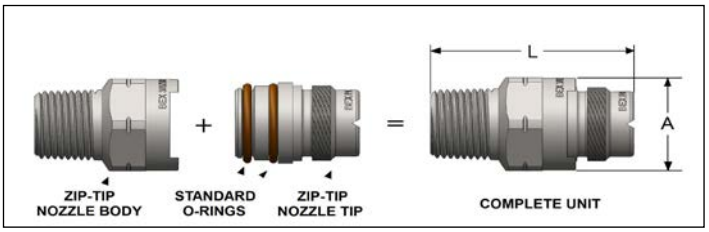
Suitable for a variety of washing and spraying applications.

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

Model		Max. Free Passage (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model	ZLF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF4002		34.000	0.07	0.08	0.10	0.12	0.14	0.17	0.20	0.22	0.25	0.28	0.32	0.39	0.55	26	40	46
ZF4003		0.041	0.11	0.13	0.15	0.18	0.21	0.26	0.30	0.34	0.37	0.42	0.47	0.58	0.82	30	40	45
ZF4004		0.047	0.14	0.17	0.20	0.25	0.28	0.35	0.40	0.45	0.49	0.57	0.63	0.77	1.10	32	40	45
ZF4005		0.053	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.56	0.61	0.71	0.79	0.97	1.37	35	40	44
ZF4006		0.058	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.67	0.73	0.85	0.95	1.16	1.64	37	40	44
ZF4008		0.067	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.89	0.98	1.13	1.26	1.55	2.19	35	40	43
ZF4010		0.075	0.35	0.42	0.50	0.61	0.71	0.87	1.00	1.12	1.22	1.41	1.58	1.94	2.74	30	40	43
ZF4012		0.082	0.42	0.50	0.60	0.73	0.85	1.04	1.20	1.34	1.47	1.70	1.90	2.32	3.3	35	40	41
ZF4015		0.091	0.53	0.63	0.75	0.92	1.06	1.30	1.50	1.68	1.84	2.12	2.37	2.90	4.1	35	40	41
ZF4020		0.105	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	33	40	43
ZF4030		0.129	1.06	1.26	1.50	1.84	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.8	8.2	34	40	45
ZF4040		0.149	1.41	1.67	2.00	2.45	2.83	3.5	4.0	4.5	4.9	5.7	6.3	7.7	11.0	33	40	43
ZF4050		0.167	1.77	2.09	2.50	3.06	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	13.7	35	40	46
ZF4060		0.182	2.12	2.51	3.00	3.7	4.2	5.2	6.0	6.7	7.3	8.5	9.5	11.6	16.4	37	40	48
ZF4070		0.197	2.47	2.93	3.5	4.3	4.9	6.1	7.0	7.8	8.6	9.9	11.1	13.6	19.2	36	40	47
	ZLF4080	0.211	2.83	3.3	4.0	4.9	5.7	6.9	8.0	8.9	9.8	11.3	12.6	15.5	21.9	35	40	46
	ZLF40100	0.236	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4	33	40	44
	ZLF40120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33	36	40	43
	ZLF40150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41	36	40	43
	ZLF40200	0.333	7.1	8.4	10.0	12.2	14.1	17.3	20.0	22.4	24.5	28.3	32	39	55	37	40	44
	ZLF40400	0.466	14.1	16.7	20.0	24.5	28.3	35	40	45	49	57	63	77	110	38	40	43
	ZLF50400	0.466	14.1	16.7	20.0	24.5	28.3	35	40	45	49	57	63	77	110	47	50	54

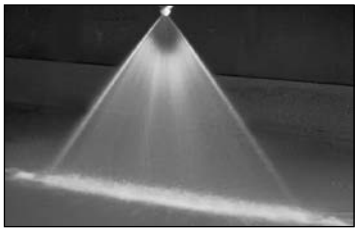
ZF50 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25









Spray angle not exactly as shown.

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

SPRAY CHARACTERISTICS:

ZF-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.

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 NPT or BSPT threaded bodies.

TYPICAL APPLICATIONS:

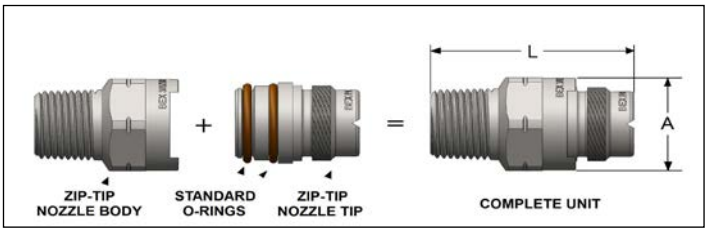
Suitable for a variety of washing and spraying applications.

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

Model		Max. Free Passage (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model	ZLF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF5002		0.034	0.07	0.08	0.10	0.12	0.14	0.17	0.20	0.22	0.25	0.28	0.32	0.39	0.55	43	50	57
ZF5003		0.041	0.11	0.13	0.15	0.18	0.21	0.26	0.30	0.34	0.37	0.42	0.47	0.58	0.82	44	50	57
ZF5004		0.047	0.14	0.17	0.20	0.25	0.28	0.35	0.40	0.45	0.49	0.57	0.63	0.77	1.10	44	50	56
ZF5005		0.053	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.56	0.61	0.71	0.79	0.97	1.37	44	50	56
ZF5006		0.058	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.67	0.73	0.85	0.95	1.16	1.64	45	50	56
ZF5008		0.067	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.89	0.98	1.13	1.26	1.55	2.19	45	50	56
ZF5010		0.075	0.35	0.42	0.50	0.61	0.71	0.87	1.00	1.12	1.22	1.41	1.58	1.94	2.74	43	50	55
ZF5012		0.082	0.42	0.50	0.60	0.73	0.85	1.04	1.20	1.34	1.47	1.70	1.90	2.32	3.3	43	50	55
ZF5015		0.091	0.53	0.63	0.75	0.92	1.06	1.30	1.50	1.68	1.84	2.12	2.37	2.90	4.1	43	50	55
ZF5020		0.105	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	43	50	55
ZF5030		0.129	1.06	1.26	1.50	1.84	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.8	8.2	43	50	54
ZF5040		0.149	1.41	1.67	2.00	2.45	2.83	3.5	4.0	4.5	4.9	5.7	6.3	7.7	11.0	43	50	54
ZF5050		0.167	1.77	2.09	2.50	3.06	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	13.7	43	50	53
ZF5060		0.182	2.12	2.51	3.00	3.7	4.2	5.2	6.0	6.7	7.3	8.5	9.5	11.6	16.4	43	50	53
ZF5070		0.197	2.47	2.93	3.5	4.3	4.9	6.1	7.0	7.8	8.6	9.9	11.1	13.6	19.2	44	50	53
	ZLF5080	0.211	2.83	3.3	4.0	4.9	5.7	6.9	8.0	8.9	9.8	11.3	12.6	15.5	21.9	44	50	52
	ZLF50100	0.236	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4	44	50	52
	ZLF50120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33	44	50	53
	ZLF50150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41	46	50	52
	ZLF50200	0.333	7.1	8.4	10.0	12.2	14.1	17.3	20.0	22.4	24.5	28.3	32	39	55	46	50	54
	ZLF50300	0.408	10.6	12.5	15.0	18.4	21.2	26.0	30.0	34	37	42	47	58	82	47	50	54
	ZLF50400	0.466	14.1	16.7	20.0	24.5	28.3	35	40	45	49	57	63	77	110	47	50	54

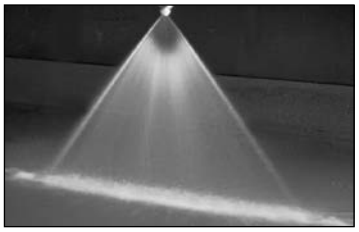
ZF65 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25









Spray angle not exactly as shown.

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

SPRAY CHARACTERISTICS:

ZF-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.

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 NPT or BSPT threaded bodies.

TYPICAL APPLICATIONS:

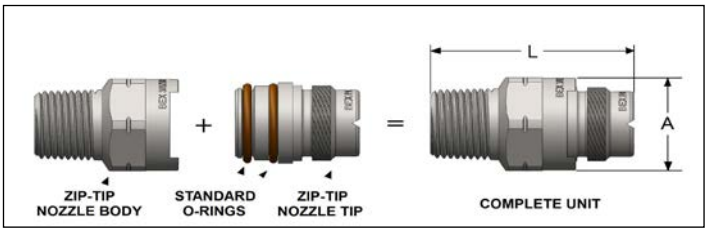
Suitable for a variety of washing and spraying applications.

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

Model		Max. Free Passage (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model	ZLF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF6502		0.034	0.07	0.08	0.10	0.12	0.14	0.17	0.20	0.22	0.25	0.28	0.32	0.39	0.55	53	65	72
ZF6503		0.041	0.11	0.13	0.15	0.18	0.21	0.26	0.30	0.34	0.37	0.42	0.47	0.58	0.82	53	65	72
ZF6504		0.047	0.14	0.17	0.20	0.25	0.28	0.35	0.40	0.45	0.49	0.57	0.63	0.77	1.10	54	65	72
ZF6505		0.053	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.56	0.61	0.71	0.79	0.97	1.37	54	65	72
ZF6506		0.058	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.67	0.73	0.85	0.95	1.16	1.64	54	65	72
ZF6508		0.067	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.89	0.98	1.13	1.26	1.55	2.19	55	65	71
ZF6510		0.075	0.35	0.42	0.50	0.61	0.71	0.87	1.00	1.12	1.22	1.41	1.58	1.94	2.74	57	65	73
ZF6512		0.082	0.42	0.50	0.60	0.73	0.85	1.04	1.20	1.34	1.47	1.70	1.90	2.32	3.3	59	65	71
ZF6515		0.091	0.53	0.63	0.75	0.92	1.06	1.30	1.50	1.68	1.84	2.12	2.37	2.90	4.1	59	65	72
ZF6520		0.105	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	61	65	72
ZF6530		0.129	1.06	1.26	1.50	1.84	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.8	8.2	62	65	72
ZF6540		0.149	1.41	1.67	2.00	2.45	2.83	3.5	4.0	4.5	4.9	5.7	6.3	7.7	11.0	63	65	72
ZF6550		0.167	1.77	2.09	2.50	3.06	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	13.7	63	65	73
ZF6560		0.182	2.12	2.51	3.00	3.7	4.2	5.2	6.0	6.7	7.3	8.5	9.5	11.6	16.4	63	65	73
ZF6570		0.197	2.47	2.93	3.5	4.3	4.9	6.1	7.0	7.8	8.6	9.9	11.1	13.6	19.2	63	65	74
	ZLF6580	0.211	2.83	3.3	4.0	4.9	5.7	6.9	8.0	8.9	9.8	11.3	12.6	15.5	21.9	59	65	63
	ZFL65100	0.236	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4	59	65	69
	ZLF65120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33	59	65	68
	ZLF65150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41	59	65	68
	ZLF65200	0.333	7.1	8.4	10.0	12.2	14.1	17.3	20.0	22.4	24.5	28.3	32	39	55	60	65	67
	ZLF65300	0.408	10.6	12.5	15.0	18.4	21.2	26.0	30.0	34	37	42	47	58	82	60	65	68
	ZLF65400	0.471	14.1	16.7	20.0	24.5	28.3	35	40	45	49	57	63	77	110	60	65	68

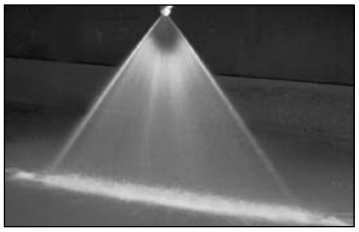
ZF80 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25









Spray angle not exactly as shown.

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

SPRAY CHARACTERISTICS:

ZF-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.

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 NPT or BSPT threaded bodies.

TYPICAL APPLICATIONS:

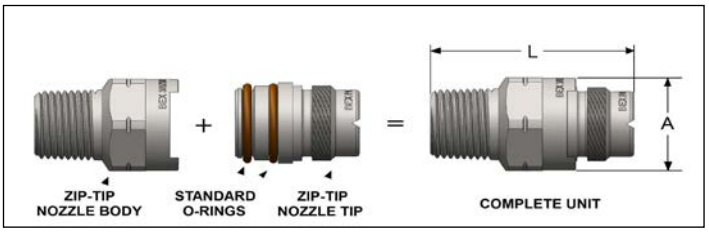
Suitable for a variety of washing and spraying applications.

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

Model		Max. Free Passage (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model	ZLF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF8002		0.034	0.07	0.08	0.10	0.12	0.14	0.17	0.20	0.22	0.25	0.28	0.32	0.39	0.55	74	80	83
ZF8003		0.041	0.11	0.13	0.15	0.18	0.21	0.26	0.30	0.34	0.37	0.42	0.47	0.58	0.82	74	80	83
ZF8004		0.047	0.14	0.17	0.20	0.25	0.28	0.35	0.40	0.45	0.49	0.57	0.63	0.77	1.10	74	80	83
ZF8005		0.053	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.56	0.61	0.71	0.79	0.97	1.37	74	80	83
ZF8006		0.058	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.67	0.73	0.85	0.95	1.16	1.64	74	80	83
ZF8008		0.067	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.89	0.98	1.13	1.26	1.55	2.19	75	80	83
ZF8010		0.075	0.35	0.42	0.50	0.61	0.71	0.87	1.00	1.12	1.22	1.41	1.58	1.94	2.74	75	80	83
ZF8015		0.091	0.53	0.63	0.75	0.92	1.06	1.30	1.50	1.68	1.84	2.12	2.37	2.90	4.1	74	80	86
ZF8020		0.105	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	74	80	85
ZF8030		0.129	1.06	1.26	1.50	1.84	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.8	8.2	75	80	86
ZF8040		0.149	1.41	1.67	2.00	2.45	2.83	3.5	4.0	4.5	4.9	5.7	6.3	7.7	11.0	76	80	85
ZF8050		0.167	1.77	2.09	2.50	3.06	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	13.7	77	80	84
ZF8060		0.182	2.12	2.51	3.00	3.7	4.2	5.2	6.0	6.7	7.3	8.5	9.5	11.6	16.4	77	80	84
ZF8070		0.197	2.47	2.93	3.5	4.3	4.9	6.1	7.0	7.8	8.6	9.9	11.1	13.6	19.2	78	80	87
	ZLF8080	0.211	2.83	3.3	4.0	4.9	5.7	6.9	8.0	8.9	9.8	11.3	12.6	15.5	21.9	78	80	88
	ZLF80100	0.236	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4	75	80	83
	ZLF80120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33	73	80	84
	ZLF80150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41	74	80	82
	ZLF80200	0.333	7.1	8.4	10.0	12.2	14.1	17.3	20.0	22.4	24.5	28.3	32	39	55	74	80	82
	ZLF80400	0.471	14.1	16.7	20.0	24.5	28.3	35	40	45	49	57	63	77	110	74	80	82

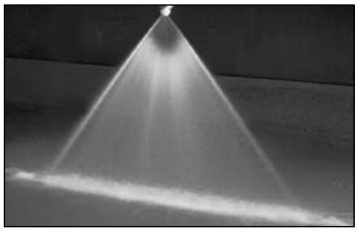
ZF95 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25









Spray angle not exactly as shown.

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

SPRAY CHARACTERISTICS:

ZF-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.

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 NPT or BSPT threaded bodies.

TYPICAL APPLICATIONS:

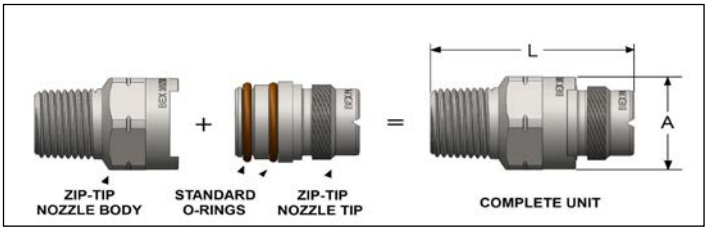
Suitable for a variety of washing and spraying applications.

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

Model		Max. Free Passage (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model	ZLF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF9503		0.041	0.11	0.13	0.15	0.18	0.21	0.26	0.30	0.34	0.37	0.42	0.47	0.58	0.82	86	95	101
ZF9504		0.047	0.14	0.17	0.20	0.25	0.28	0.35	0.40	0.45	0.49	0.57	0.63	0.77	1.10	86	95	101
ZF9505		0.053	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.56	0.61	0.71	0.79	0.97	1.37	86	95	101
ZF9506		0.058	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.67	0.73	0.85	0.95	1.16	1.64	86	95	101
ZF9508		0.067	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.89	0.98	1.13	1.26	1.55	2.19	86	95	100
ZF9510		0.075	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	88	95	99
ZF9515		0.091	0.53	0.63	0.75	0.92	1.06	1.30	1.50	1.68	1.84	2.12	2.37	2.90	4.1	90	95	100
ZF9520		0.105	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	89	95	99
ZF9530		0.129	1.06	1.26	1.50	1.84	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.8	8.2	90	95	101
ZF9540		0.149	1.41	1.67	2.00	2.45	2.83	3.5	4.0	4.5	4.9	5.7	6.3	7.7	11.0	90	95	100
ZF9550		0.167	1.77	2.09	2.50	3.06	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	13.7	91	95	101
ZF9560		0.182	2.12	2.51	3.00	3.7	4.2	5.2	6.0	6.7	7.3	8.5	9.5	11.6	16.4	92	95	102
ZF9570		0.197	2.47	2.93	3.5	4.3	4.9	6.1	7.0	7.8	8.6	9.9	11.1	13.6	19.2	92	95	103
	ZLF9580	0.211	2.83	3.3	4.0	4.9	5.7	6.9	8.0	8.9	9.8	11.3	12.6	15.5	21.9	92	95	103
	ZLF95100	0.236	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4	92	95	103
	ZLF95120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33	92	95	103
	ZLF95150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41	92	95	102

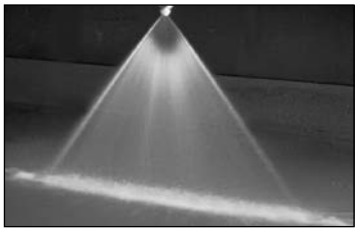
ZF110 SPRAY NOZZLE SPECIFICATIONS

NOZZLE NPT PIPE SIZE	Length L (in)	Dim. A (in)
1/8ZF	1.60	0.97
1/4ZF	1.70	0.97
3/8ZF	1.73	0.97
1/2ZF	1.80	0.97
1/2ZLF	2.11	1.25
3/4ZLF	2.19	1.25









Spray angle not exactly as shown.

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

SPRAY CHARACTERISTICS:

ZF-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.

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 NPT or BSPT threaded bodies.

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

Model		Max. Free Passage (in)	CAPACITY AT VARIOUS PRESSURES (USGPM)													SPRAY ANGLE @ (degrees)		
ZF Model	ZLF Model		5 psi	7 psi	10 psi	15 psi	20 psi	30 psi	40 psi	50 psi	60 psi	80 psi	100 psi	150 psi	300 psi	20 psi	40 psi	80 psi
ZF11003		0.041	0.11	0.13	0.15	0.18	0.21	0.26	0.30	0.34	0.37	0.42	0.47	0.58	0.82	92	110	118
ZF11004		0.047	0.14	0.17	0.20	0.25	0.28	0.35	0.40	0.45	0.49	0.57	0.63	0.77	1.10	90	110	112
ZF11005		0.053	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.56	0.61	0.71	0.79	0.97	1.37	86	110	114
ZF11006		0.058	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.67	0.73	0.85	0.95	1.16	1.64	97	110	115
ZF11008		0.067	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.89	0.98	1.13	1.26	1.55	2.19	100	110	115
ZF11010		0.075	0.35	0.42	0.50	0.61	0.71	0.87	1.00	1.12	1.22	1.41	1.58	1.94	2.74	102	110	115
ZF11015		0.091	0.53	0.63	0.75	0.92	1.06	1.30	1.50	1.68	1.84	2.12	2.37	2.90	4.1	102	110	115
ZF11020		0.105	0.71	0.84	1.00	1.22	1.41	1.73	2.00	2.24	2.45	2.83	3.2	3.9	5.5	103	110	112
ZF11030		0.129	1.06	1.26	1.50	1.84	2.12	2.60	3.00	3.4	3.7	4.2	4.7	5.8	8.2	103	110	115
ZF11040		0.149	1.41	1.67	2.00	2.45	2.83	3.5	4.0	4.5	4.9	5.7	6.3	7.7	11.0	103	110	115
ZF11050		0.167	1.77	2.09	2.50	3.06	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	13.7	107	110	116
ZF11060		0.182	2.12	2.51	3.00	3.7	4.2	5.2	6.0	6.7	7.3	8.5	9.5	11.6	16.4	103	110	115
ZF11070		0.197	2.47	2.93	3.5	4.3	4.9	6.1	7.0	7.8	8.6	9.9	11.1	13.6	19.2	107	110	115
	ZLF11080	0.211	2.83	3.3	4.0	4.9	5.7	6.9	8.0	8.9	9.8	11.3	12.6	15.5	21.9	107	110	115
	ZFL110100	0.236	3.5	4.2	5.0	6.1	7.1	8.7	10.0	11.2	12.2	14.1	15.8	19.4	27.4	106	110	115
	ZLF110120	0.258	4.2	5.0	6.0	7.3	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	33	108	110	117
	ZLF110150	0.289	5.3	6.3	7.5	9.2	10.6	13.0	15.0	16.8	18.4	21.2	23.7	29.0	41	104	110	115
	ZLF110200	0.333	7.1	8.4	10.0	12.2	14.1	17.3	20.0	22.4	24.5	28.3	32	39	55	106	110	116
	ZLF110400	0.471	14.1	16.7	20.0	24.5	28.3	35	40	45	49	57	63	77	110	105	110	115