SPAD FLOW
گروه صنعتی اسپاد فلو
SPRAYING SYSTEMS AND NOZZLES

CHAPTER 6
Deflector Nozzles

ENG-036-R03-03.08.20

ABOUT US

We Are Here to Help

Welcome to SPADFLOW

facing the Challenges of new industries and emerging markets.

Spray Technologies

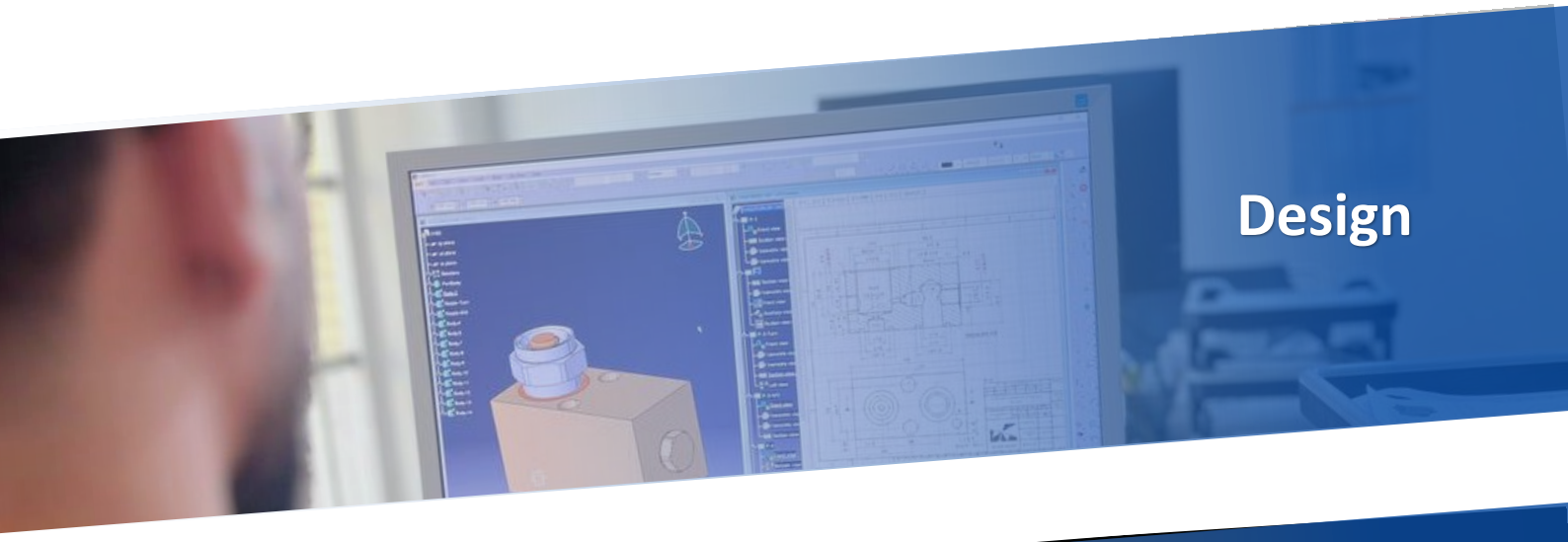
with over Thousands of Spray Nozzle Types SPADFLOW has become Iran's leading producer.

From Design to Installation

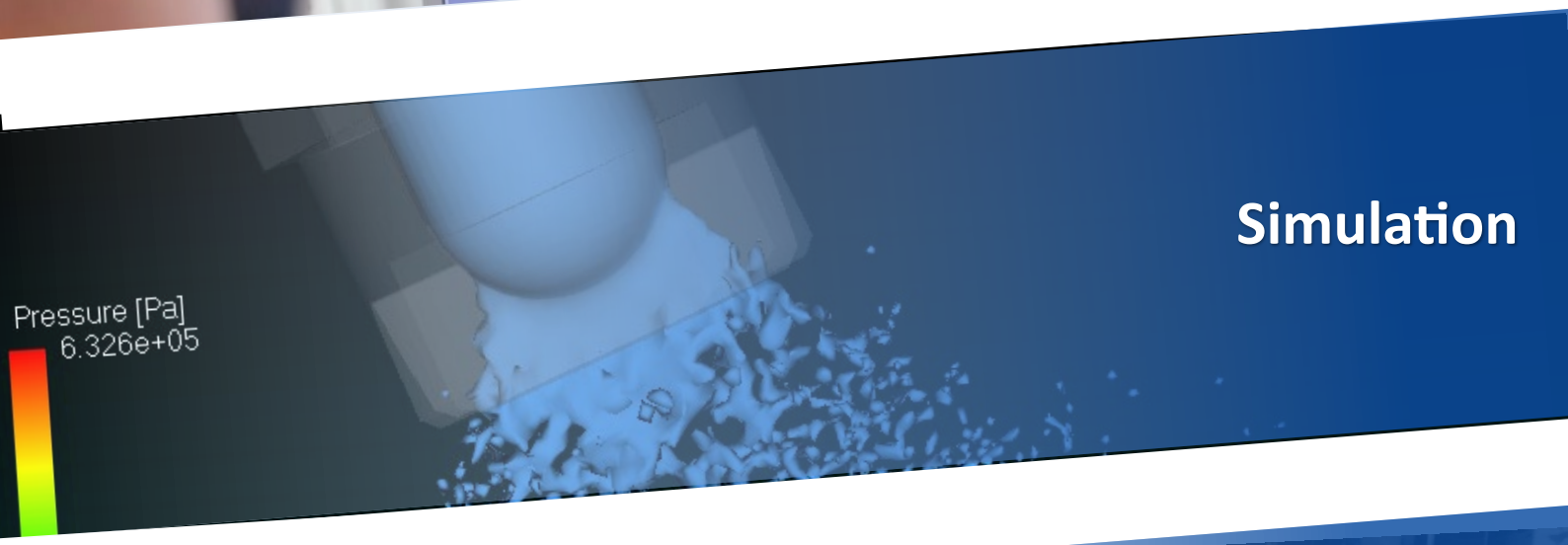
with Skilled engineers and project managers, SPADFLOW is providing consultancy and support services.

Knowledge and Experience

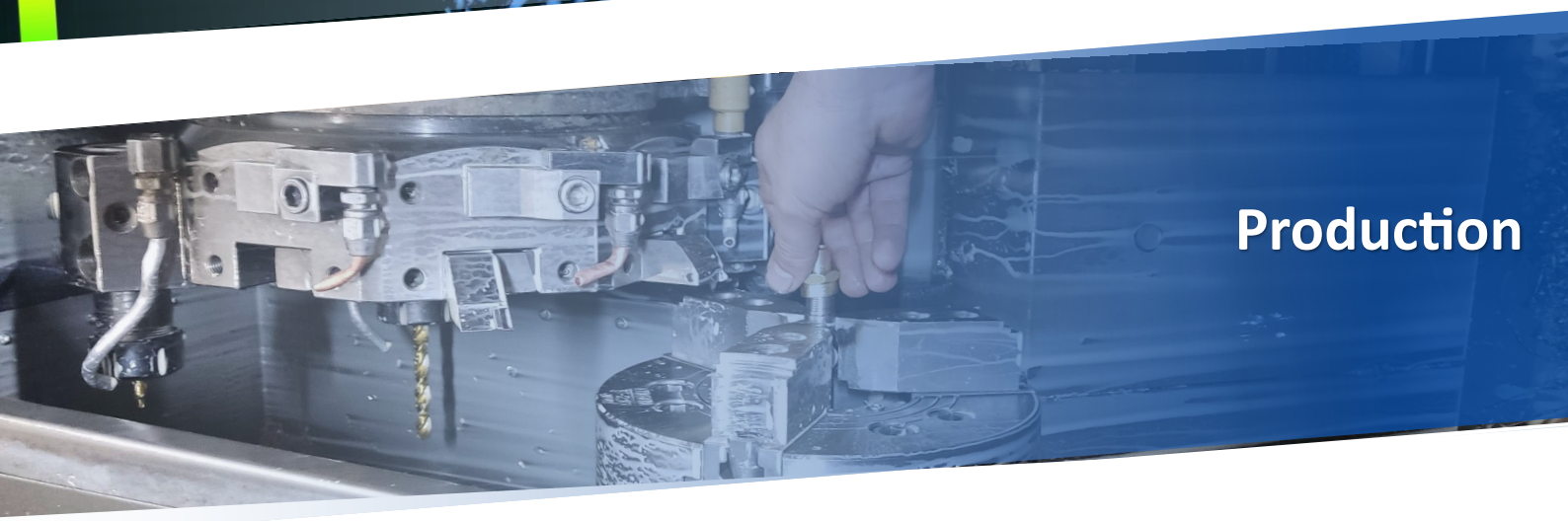
as an Expert on spray technology, SPADFLOW is at the forefront of production and innovation.



Design



Simulation

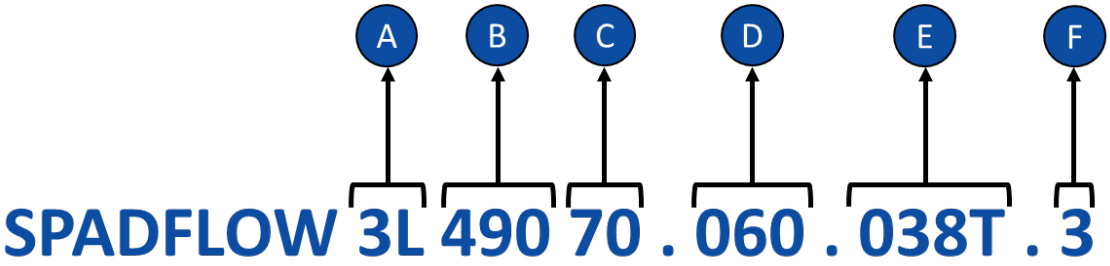


Production

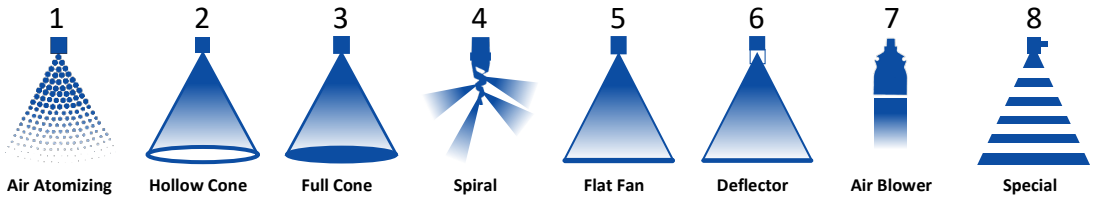
Installation

SPADFLOW
گروه صنعتی اسپاد فلو
SPRAYING SYSTEMS AND NOZZLES

PRODUCT NUMBERS
Everything You Need to Know



A Nozzle Type (Spray Pattern)



B Nozzle Series

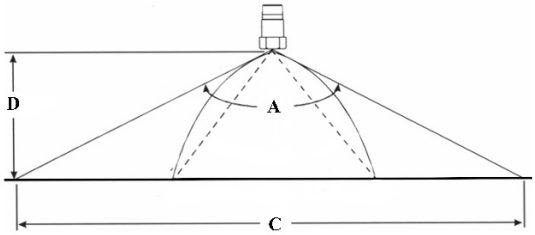
C Flow Rate Rank

The flow rate rank is relative and depends on the respective nozzle type. The exact value is mentioned in tables on the product pages.

D Spray Angle

Theoretical spray angle is mentioned in tables on the product pages. Actual spray angle depends on installation and alignment.

A = Theoretical Spray Angle
D = Spray Distance
C = theoretical Spray Coverage



SPADFLOW
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SPRAYING SYSTEMS AND NOZZLES

PRODUCT NUMBERS
Everything You Need to Know

E Connection

1/8" to 4" connections. The exact specification is mentioned in tables on the product pages.
T = BSBT Thread Type Connection
P = BSPP Thread Type Connection
N = NPT Thread Type Connection
R = Retaining Nut

F Material

Material	Code	Material	Code
Brass	1	Polyvinylchloride	PVC
AISI 304/304L Stainless Steel	2	Polypropylene	PP
AISI 316/316L Stainless Steel	3	Polyamide	PA
AISI 310 Stainless Steel	4	Polyvinylidenefluoride	PVDF
AISI 321 Stainless Steel	5	Polytetrafluorethylene	PTFE
AISI 420 Stainless Steel	6	Polyoxymethylene	POM
Tungsten Carbide	TN	Nitrile Butadiene Rubber	NBR
Phosphor Bronze	CuSn	Polylactic Acid	PLA
Copper	Cu	Acrylonitrile Butadiene Styrene	ABS
Titanium	TI	Nylon Polyamide	PA6
Aluminum	AL	Polycarbonate	PC

Ø B (Equivalent Bore Diameter)
Applies to elliptical discharge holes of flat fan nozzles. A cylindrical hole with a diameter A has the same surface area as the ellipse.

Ø E (Narrowest Free Cross Section)
Important Characteristics for determining the pre-filtration of a nozzle. Can be less than a due to several swirl ducts.

Conversion Formula: K factor $\times\sqrt{P(bar)}$ = Q (l/min)

All flow rate data in this catalogue is based on measurements with water,

Spray angle (α)	Code	Connection Size [inch]	Ø B [mm]	Ø E [mm]	Flow rate (Q) [l/min] Pressure (P) [bar] 0.5	1.0 K factor	2.0	3.0	5.0	7.0	10.0
45°	3L 490 40 . 045	1/8"	1.25	1.25	0.57	0.76	1.00	1.18	1.44	1.65	1.90
	3L 490 60 . 045	1/4"	2.00	2.00	1.81	2.39	3.15	3.70	4.54	5.20	6.00
	3L 490 70 . 045	3/8"	2.65	2.65	3.22	4.24	5.60	6.59	8.08	9.24	10.66
	3L 490 78 . 045	1/2"	3.45	3.45	5.17	6.82	9.00	10.58	12.98	14.85	17.12
60°	3L 490 40 . 060	1/8"	1.15	1.15	0.57	0.76	1.00	1.18	1.44	1.65	1.90
	3L 490 80 . 060	3/8"	3.70	3.70	5.74	7.58	10.00	11.76	14.43	16.51	19.04
	3L 490 88 . 060	1/2"	4.65	4.65	9.19	12.13	16.00	18.82	23.08	26.41	30.46
	3L 490 96 . 060	3/4"	5.80	5.80	14.36	18.95	25.00	29.40	36.07	41.26	47.59
	3L 491 08 . 060	1"	8.15	8.15	28.72	37.89	50.00	58.80	72.14	82.53	95.18

SPADFLOW spray nozzles are manufactured with the highest precision and undergo permanent quality checks. However, production-related tolerances can affect the spray angle, flow rate, droplet size and droplet distribution.

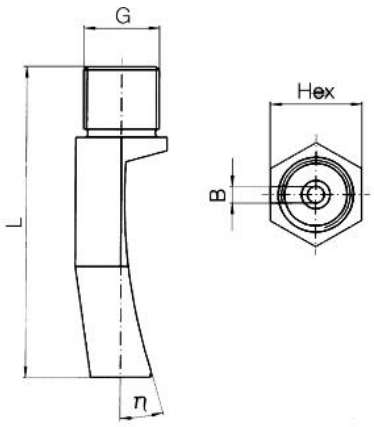
Deflector Nozzles
Selection Guide

Nozzle Series	Flow Capacity	Operating Pressures	Spray Angle	Application	Page
 5L 688	**standard Flow** Up to 40 liters per Minute	**Low Pressure** Up to 5.0 bar	**Narrow Spray Angle** 15° - 30° - 45°	Cleaning Washing Degreasing Phosphating Process Engineering	85
 5L 689	**Standard Flow** Up to 100 liters per Minute	**Low Pressure** Up to 5.0 bar	**Narrow Spray Angle** 15° - 30° - 45°	Cleaning Washing Degreasing Phosphating Process Engineering	85
 5M LD	**Standard Flow** Up to 150 liters per Minute	**Standard Pressure** Up to 10 bar	**Narrow Spray Angle** 15° - 25° - 30° - 40- 50°	Cleaning Rinsing Degreasing Phosphating Process Engineering	86 – 87
 5L 686	**Standard Flow** Up to 50 liters per Minute	**Low Pressure** Up to 5.0 bar	**Wide Spray Angle** 90°- 140°	Foam Control Carte Washers Cleaning Washing Preparation Techniques	88 - 89

SPADFLOW 6L 688/689

Powerful Deflector Nozzle

Webpage + STP



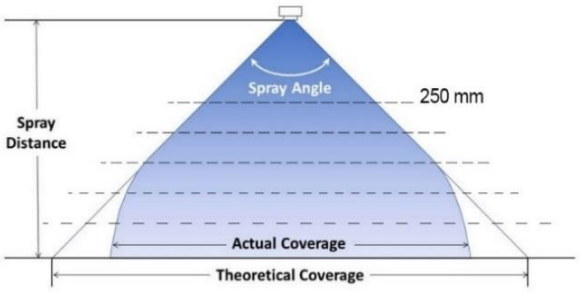
Size	Conn. code			Weight
	BSPT	BSPP	NPT	
3/8”	038T	038P	038N	150 gr
1/2”	012T	012P	012N	220 gr
3/4”	034T	034P	034N	306 gr

Material*	Code
Brass	1
S.S.304	2
S.S.316	3

α	Spray coverage @ 250 mm
15°	65 mm
30°	135 mm
45°	220 mm

Properties:

High Resistance to Physical Damage
Sharp Flat-Fan Spray
Not prone to clogging



Spray angle (α)	Code	η	Connection** [Inch]	B Ø [mm]	Flow rate [l/min] P [bar] 1.0 K factor	2.0	5.0	Dimensions L [mm] R 3/8	R 1/2	R 3/4	Hex [mm] R 3/8	R 1/2	R 3/4
15°	5L 688 92 . 015	10°	1/2"	4.7	14.14	20	31.62	-	103	-	-	22	-
	5L 689 00 . 015	9°	3/4"	6	22.27	31.5	49.81	-	-	141	-	-	27
	5L 689 12 . 015	9°	3/4"	8.6	44.55	63	99.61	-	-	168	-	-	27
30°	5L 688 92 . 030	17°	1/2"	4.7	14.14	20	31.62	-	73	-	-	22	-
	5L 689 00 . 030	17°	3/4"	6	22.27	31.5	49.81	-	-	86,5	-	-	27
	5L 689 08 . 030	15°	1/2" - 3/4"	7.6	35.36	50	79.06	-	-	97,5	-	-	27
	5L 689 12 . 030	15°	3/4"	8.6	44.55	63	99.61	-	-	108,5	-	-	27
45°	5L 688 76 . 045	35°	3/8"	3	5.66	8	12.65	42	-	-	19	-	-
	5L 688 84 . 045	30°	3/8"	3.8	8.84	12.5	19.76	49,5	-	-	19	-	-
	5L 688 92 . 045	29°	3/8"	4.8	14.14	20	31.62	58,5	-	-	22	-	-
	5L 688 92 . 045	29°	3/8"	4.8	14.14	20	31.62	54	-	-	22	-	-
	5L 689 00 . 045	35°	3/8" - 1/2" - 3/4"	6	22.27	31.5	49.81	65	-	73,5	24	-	27
	5L 689 04 . 045	21°	3/8"	6.9	28.28	40	63.25	66,5	-	-	24	-	-
	5L 689 08 . 045	18°	3/4"	7.6	35.36	50	79.06	-	-	73,5	-	-	27
	5L 689 12 . 045	18°	3/8"	8.6	44.55	63	99.61	78,5	-	-	24	-	-

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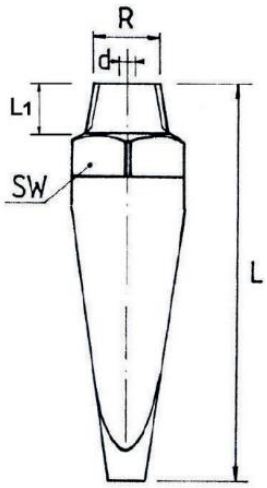
SPADFLOW 6M LD

Square-Shape Deflector Nozzle

Webpage + STP



G1	Thread Type			Weight
	BSPT	BSPP	NPT	
1/4”	014T	014P	014N	135 gr
3/8”	038T	038P	038N	150 g
1/2”	012T	012P	012N	170 gr
3/4”	034T	034P	034N	306g

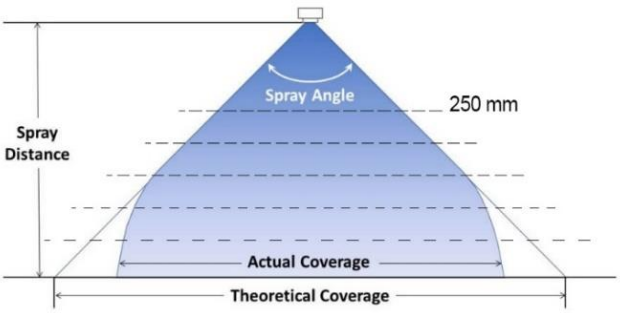
Material*	Code
Brass	1
S.S.304	2
S.S.316	3

* Different materials are available upon request

Properties:

Square Section
High Resistance to Physical Damage
Sharp Flat-Fan Spray
Not prone to clogging

α	Spray coverage @ 250 mm
15°	65
25°	110
30°	130
40°	180
50°	230



Spray angle (α)	Code	η	Connection** [Inch]	B Ø [mm]	Flow rate [l/min] P [bar] 1.0 K factor	2.0	3.0	5.0	10.0	Dimensions [mm] L	L1	SW
15°	5M LD 10 . 015	22°	1/4"	2	2.3	3.3	3.8	5	7	48	10	16
	5M LD 20 . 015	19°	1/4"	2.8	4.5	6.5	7.5	10	15	54	10	16
	5M LD 30 . 015	25°	3/8"	3.2	7	10	11	15	22	72	10	20
	5M LD 40 . 015	19°	3/8"	3.5	9.5	13	15	20	29	92	10	20
	5M LD 50 . 015	15°	3/8"	4	12	16	19	25	37	91	10	20
	5M LD 60 . 015	14°	1/2"	4.6	13.5	19.2	23	30	43	125	13	25
	5M LD 80 . 015	14°	1/2"	5.3	18.1	26	31	40	57	130	13	25
	5M LD 100 . 015	14°	1/2"	6	23	33	39	50	73	137	13	25
	5M LD 200 . 015	14°	3/4"	8.4	45	64	78	101	143	191	15	30

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SPADFLOW 6M LD

Square-Shape Deflector Nozzle

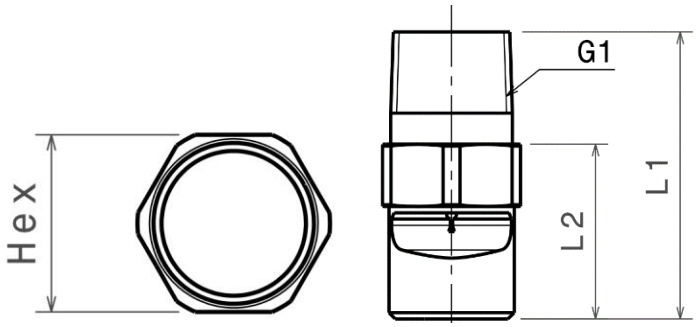
Webpage + STP

Spray angle (α)	Code	η	Connection** [Inch]	B Ø [mm]	Flow rate [l/min] P [bar] 1.0 K factor	2.0	3.0	5.0	10.0	Dimensions [mm] L	L1	SW
25°	**5M LD 40 . 025**	25°	**1/4"**	3.7	9	12.8	15.5	**20**	29	65	10	19
35°	**5M LD 04 . 035**	40°	**1/8"**	1.2	0.9	1.3	1.6	**2**	2.9	23	7	16
	5M LD 10 . 035	35°	**1/4"**	2	2.3	3.3	3.8	**5**	7	37	10	16
	5M LD 20 . 035	30°	**1/4"-3/8"**	2.6	4.5	6.4	7.8	**10.1**	14.3	42	10	20
	5M LD 25 . 035	28°	**1/4"-3/8"**	2.9	5.6	8	9.8	**12.6**	17.9	49	10	20
	5M LD 30 . 035	28°	**3/8"**	3.3	6.8	9.6	11.7	**15.1**	21	52	10	20
	5M LD 40 . 035	25°	**3/8"**	3.5	9.5	13	15	**22**	29	58	10	20
	5M LD 50 . 035	23°	**3/8"**	4	12	16	19	**25**	37	64	10	20
	5M LD 60 . 035	27°	**1/2"**	4.5	13.5	19.1	23	**30**	43	73	13	25
	5M LD 80 . 035	24°	**1/2"**	5.2	18	26	30	**40**	58	81	13	25
	5M LD 100 . 035	20°	**1/2"**	6	23	33	38	**50**	73	89	13	25
	5M LD 160 . 035	23°	**3/4"**	7.5	37	52	60	**80**	177	114	15	30
	5M LD 200 . 035	23°	**3/4"**	8.4	45	64	78	**101**	143	122	15	30
40°	**5M LD 40 . 040**	35°	**3/8"**	3.5	9.5	13	15	**20**	29	60	10	30
	5M LD 50 . 040	34°	**3/8"**	4	12	16	19	**25**	37	64	10	25
	5M LD 60 . 040	33°	**3/8"**	4.5	13.5	19.1	23	**30**	43	72	10	25
	5M LD 70 . 040	29°	**3/8"**	5	15.8	22	27	**35**	50	75	10	25
	5M LD 80 . 040	26°	**3/8"**	5.2	18	26	30	**40**	58	77	10	25
	5M LD 90 . 040	28°	**3/8"**	5.5	21	29	34	**45**	65	77	10	25
	5M LD 100 . 040	28°	**3/8"**	6	23	32	39	**50**	71	87	10	25
50°	**5M LD 10 . 050**	60°	**1/4"**	2	2.3	3.3	3.8	**5**	7	31	10	16
	5M LD 25 . 050	42°	**1/4"-3/8"**	2.9	5.6	8	9.8	**12.6**	17.9	42	10	20
	5M LD 40 . 050	45°	**1/4"-3/8"**	3.5	9	12.8	15.6	**20**	29	47	10	20
	5M LD 60 . 050	37°	**3/8"**	4.4	13.5	19.2	23	**30**	43	55	10	25
	5M LD 100 . 050	40°	**3/8"**	6	23	32	39	**50**	71	72	10	30
	5M LD 125 . 050	40°	**3/8"**	6.7	28	41	49	**63**	89	72	10	30
	5M LD 160 . 050	37°	**3/8"**	7.5	36	51	63	**81**	114	72	10	30
	5M LD 200 . 050	32°	**3/8"**	8.3	46	64	76	**100**	147	72	10	30

SPADFLOW 6L 686

Powerful Deflector Nozzle

Webpage + STP



G1	Thread Type			Dimensions [mm]			Weight
	BSPT	BSPP	NPT	L_1	L_2	Hex	
1/8"	018T	018P	018N	23.0	6.5	11	17 gr
1/4"	014T	014P	014N	35.0	9.7	14	20 gr
3/8"	038T	038P	038N	38.5	10.1	17	30 gr
1/2"	012T	012P	012N	45.0	13.2	22	40 gr

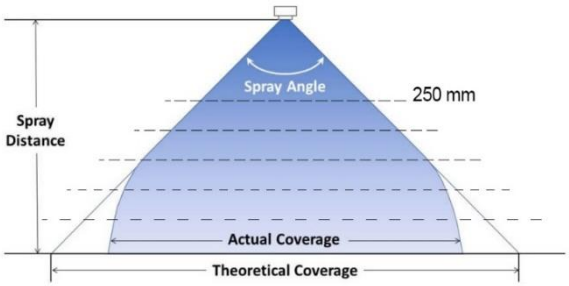
Material*	Code
Brass	1
S.S.304	2
S.S.316	3

* Different materials are available upon request

Properties:

Wide Flat-Fan Spray
Sharply Delimited Jet Pattern
Particularly Clog-Proof

α	Spray coverage
	@ 250 mm
90°	520-530 mm
140°	1360-1370 mm



Spray angle (α)	Code	η	Connection [Inch]	B Ø [mm]	Flow rate [l/min] P [bar]		
					1.0 *K factor*	2.0	5.0
90°	5L 686 36 . 090	75°	1/8"-1/4"	0.80	**0.45**	0.63	1.00
	5L 686 40 . 090	75°	1/8"-1/4"	1.00	**0.71**	1.00	1.58
	5L 686 68 . 090	40°	1/4"	2.40	**3.54**	5.00	7.91
	5L 686 72 . 090	40°	1/8"-1/4"	2.70	**4.45**	6.30	9.96
	5L 686 80 . 090	40°	1/4"	3.40	**7.07**	10.00	15.81
	5L 686 88 . 090	40°	1/4"	4.20	**11.31**	16.00	25.30
	5L 686 92 . 090	40°	3/8"	4.70	**14.14**	20.00	31.62

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Powerful Deflector Nozzle

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Spray angle (α)	Code	η	Connection [Inch]	B Ø [mm]	Flow rate [l/min] P [bar] 1.0 K factor	2.0	5.0
140°	5L 686 36 . 140	75°	1/8"-1/4"	0.80	**0.45**	0.63	1.00
	5L 686 40 . 140	75°	1/8"-1/4"	1.00	**0.71**	1.00	1.58
	5L 686 44 . 140	75°	1/4"	1.20	**0.88**	1.25	1.98
	5L 686 48 . 140	75°	1/8"1/4"	1.30	**1.13**	1.60	2.53
	5L 686 52 . 140	75°	1/8"1/4"	1.50	**1.41**	2.00	3.16
	5L 686 56 . 140	75°	1/8"1/4"	1.70	**1.77**	2.50	3.59
	5L 686 60 . 140	75°	1/8"1/4"	1.90	**2.23**	3.15	4.98
	5L 686 64 . 140	75°	1/4"	2.20	**2.83**	4.00	6.32
	5L 686 68 . 140	75°	1/8"1/4"	2.40	**3.54**	5.00	7.91
	5L 686 72 . 140	75°	1/8"1/4"	2.70	**4.45**	6.30	9.96
	5L 686 76 . 140	75°	1/4"	3.00	**5.66**	8.00	12.65
	5L 686 80 . 140	75°	1/8"1/4"	3.40	**7.07**	10.00	15.81
	5L 686 82 . 140	75°	1/4"	3.60	**7.92**	11.20	17.71
	5L 686 84 . 140	75°	1/4"	3.80	**8.80**	12.50	19.76
	5L 686 86 . 140	75°	1/4"	4.00	**9.90**	14.00	22.14
	5L 686 88 . 140	75°	1/4"	4.20	**11.31**	16.00	25.30
	5L 686 90 . 140	75°	1/4"	4.50	**12.73**	18.00	28.46
	5L 686 92 . 140	75°	3/8"	4.70	**14.14**	20.00	31.62
	5L 686 96 . 140	75°	1/2"	5.30	**17.68**	25.00	39.53
	5L 686 98 . 140	75°	3/8"-1/2"	5.60	**19.80**	28.00	44.27