Semi-fine Atomization and Small Capacity
Hollow Cone Spray Nozzles

K

[Spray Pattern]

[Spray Distribution]
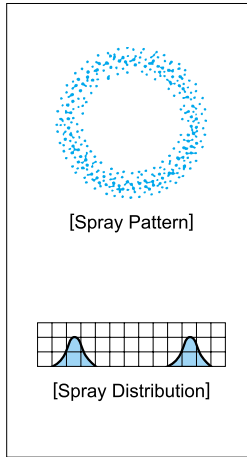
[Features]
• Small capacity hollow cone spray nozzle.
• Semi-fine atomization.
• The whirl chamber is formed by a ceramic orifice and closer, which provides excellent wear-resistance.

[Standard Pressure]
0.3MPa

[Applications]
Humidifying : Air handling units, etc.
Cooling :　　Gases, metals, etc.
Spraying :　　Chemicals, etc.

K-series

	K-series (with ceramic orifice inserted)
Structure	• Spray orifice and closer are made of ceramics. • Each part can be disassembled. • All models equipped with built-in strainers.
Material	• Spray orifice & closer : ceramic • Metal parts : B (brass) or S303 (stainless steel 303)
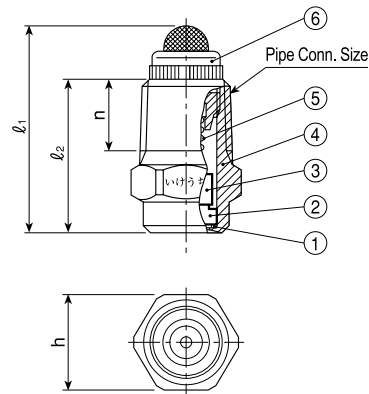
Pipe Conn. Size

Series	Pipe Conn. Size	Dimensions(mm)				Mass(g)	
		ℓ_1	ℓ_2	h	n	B	SUS
K	¼M	30.4	22.5	14	10.5	18.5	17.5

[Note] Appearance and dimensions may differ slightly depending on materials and nozzle codes.

①Packing-PTFE　②Ceramic orifice　③Ceramic closer
④Nozzle body　⑤Spring-SUS304
⑥Strainer-B+SUS304 or SUS303+SUS304

Spray Capacity Code	Pipe Conn. Size	Spray Angle			Spray Capacity (ℓ/min)									Mean Drop. Dia. (μm)	Free Pass. Dia. (mm)	Strainer Mesh Size
		0.15 MPa	0.3 MPa	0.7 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa	0.7 MPa	1 MPa	1.5 MPa	2 MPa	2.5 MPa			
006		—	80°	80°	—	—	0.06	0.08	0.09	0.11	0.13	0.15	0.16	80	0.4	150
008		—	80°	80°	—	—	0.08	0.10	0.12	0.14	0.17	0.20	0.22		0.4	150
010		—	80°	80°	—	—	0.10	0.13	0.15	0.18	0.22	0.25	0.27		0.5	100
012		—	80°	80°	—	—	0.12	0.15	0.18	0.21	0.26	0.30	0.33		0.5	100
015		—	80°	80°	—	0.12	0.15	0.19	0.22	0.27	0.32	0.37	0.41	〜	0.6	100
020		70°	80°	80°	0.14	0.16	0.20	0.26	0.30	0.35	0.43	0.49	0.55		0.7	50
025		70°	80°	80°	0.18	0.21	0.25	0.32	0.37	0.44	0.54	0.62	0.69		0.7	50
030		70°	80°	80°	0.22	0.25	0.30	0.38	0.45	0.53	0.65	0.74	0.82		0.9	50
040	¼M	70°	80°	80°	0.29	0.33	0.40	0.51	0.60	0.71	0.86	0.99	1.10		0.9	50
050		70°	80°	80°	0.36	0.41	0.50	0.64	0.75	0.89	1.08	1.23	1.37	200	1.0	50
060		70°	80°	80°	0.43	0.49	0.60	0.77	0.90	1.06	1.29	1.48	1.65	220	1.0	50
070		70°	80°	80°	0.50	0.58	0.70	0.89	1.05	1.24	1.51	1.73	1.92		1.0	50
080		70°	80°	80°	0.58	0.66	0.80	1.02	1.20	1.42	1.72	1.97	2.20		1.2	50
100		70°	80°	80°	0.72	0.82	1.00	1.28	1.50	1.77	2.15	2.47	2.74	〜	1.3	50
120		70°	80°	80°	0.86	0.99	1.20	1.53	1.80	2.13	2.58	2.96	3.29		1.3	50
140		70°	80°	80°	1.01	1.15	1.40	1.79	2.10	2.48	3.01	3.46	3.84		1.5	50
160		70°	80°	80°	1.15	1.32	1.60	2.04	2.40	2.84	3.44	3.95	4.39		1.5	50
180		70°	80°	80°	1.29	1.48	1.80	2.30	2.69	3.19	3.87	4.44	4.94	380	1.7	50

How to order

Please inquire or order for a specific nozzle using this coding system.

〈Example〉…¼MK006NBW

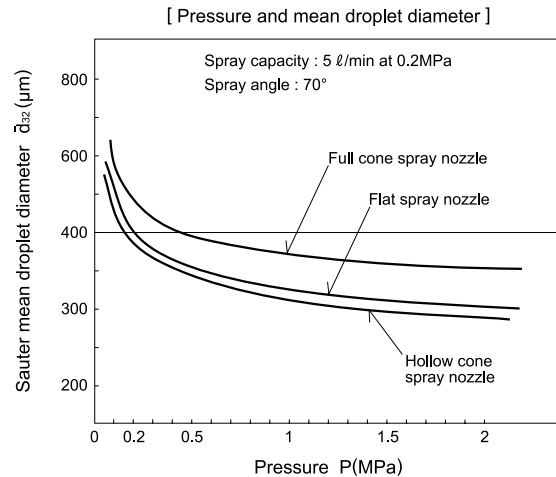| ¼MK	006	N	B	W
	Spray Capacity Code ■ 006 〜 ■ 180		Material ■ B ■ S303	
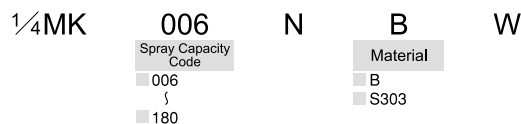
For Effective Use of Hollow Cone Spray Nozzles

Mean Droplet Diameter

If spray pressure, spray capacity and spray angle are kept the same, the mean droplet diameter of a hollow cone spray nozzle is the smallest among all hydraulic nozzles.

Reducing the mean droplet diameter increases the total surface area of the spray liquid which has a great effect on transport phenomena of materials, such as chemical reaction, absorption, adsorption, etc.

Hollow cone spray nozzles are suitable for cooling and washing gases, humidifying and chemical reactions.

[Pressure and mean droplet diameter]

Spray capacity : 5 ℓ/min at 0.2MPa
Spray angle : 70°

Full cone spray nozzle
Flat spray nozzle
Hollow cone spray nozzle

Sauter mean droplet diameter d_{32} (μm)

Pressure P(MPa)

Free Passage Diameter

Free passage diameter shows the approximate value of the smallest dimension of liquid passage in the nozzle. Among hollow cone spray nozzles, **AAP** and **TAA-series** have no obstructions inside and minimize clogging problems.

Wear Resistance

In the tangential hollow cone spray nozzles an air core is generated in the center of the vortex current, which causes wear at the end of the air core when the spraying liquid contains slurry.

In order to maintain optimum nozzle performance, the nozzle material is very important. That is why IKEUCHI's hollow cone spray nozzles are made of highly wear-resistant ceramics and SiC, etc.

Liquid

Air core
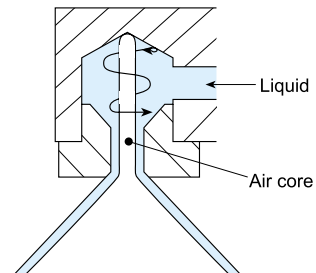
Viscosity

As the viscosity of liquid increases, the spray capacity of hollow cone spray nozzles increases but the spray angle decreases. Also, the mean droplet diameter becomes larger. Because viscous liquid increases the resistance inside the pipe, the liquid pressure drop must be also taken into consideration.

[Relation between liquid pressure and Sauter mean droplet diameter]

Sauter mean droplet diameter d_{32} (μm)

Tap water	100	200	300
○	◑	◐	●

(cP)

Pressure P(MPa)

Variation in liquid flow distribution
caused by increase of viscosity