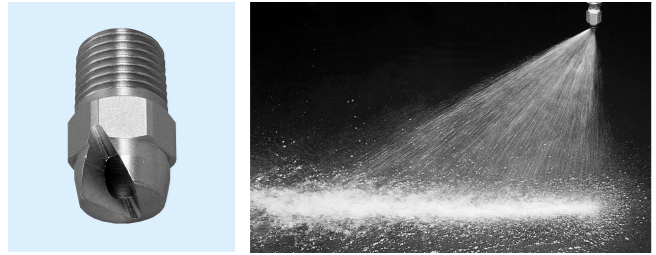


# OVVEP series Off-center Flat Spray Nozzles with Even Distribution

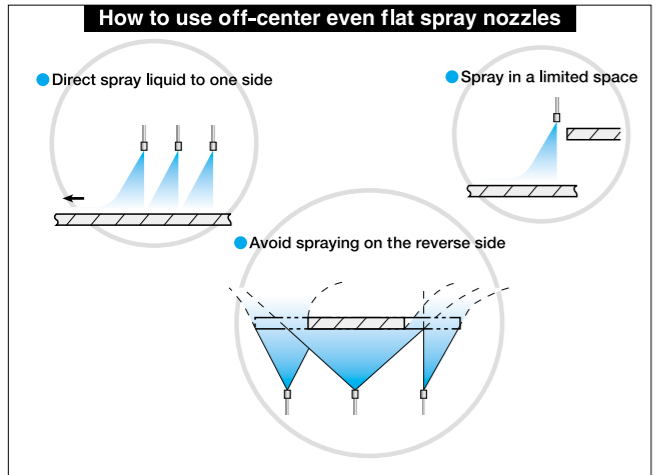
**Rolling mill process**

- Controlled cooling of plates
- Cooling of shaped steel



**FEATURES**

- Produces off-center spray with normal installation. Unnecessary to install obliquely.
- With one direction flow, OVVEP prevents accumulation of spray fluid in multiple-nozzle arrangement and achieves optimal cooling.
- Off-center flat spray pattern with uniform distribution.



**OVVEP series**

**MATERIALS** Brass (C3604) or S303  
**OPTIONAL MATERIAL:** S316 or others

Pipe connection size

Series	Pipe conn. size	Dimensions (mm)			Mass (g)	
		h	ℓ	n	B	S303
OVVEP	1/4M	14	26	10.5	18	17

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

Spray angle code	Spray capacity code	Pipe connection size	Spray angle			Spray capacity (ℓ/min)										Mean droplet diameter (μm)	Free passage diameter (mm)	
			0.05 MPa	0.3 MPa	0.7 MPa	0.05 MPa	0.07 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa	0.7 MPa	1 MPa	1.5 MPa			2 MPa
60°	200	1/4M	56°	60°	62°	8.2	9.7	11.5	14.1	16.3	20.0	25.8	30.6	36.5	44.7	21.6	540	2.4
	250		57°	60°	61°	10.2	12.1	14.4	17.7	20.4	25.0	32.3	38.2	45.6	55.9	64.5	5	2.7
	300		57°	60°	61°	12.2	14.5	17.3	21.2	24.5	30.0	38.7	45.8	54.8	67.1	77.5	670	3.0
45°	200	1/4M	41°	45°	48°	8.2	9.7	11.5	14.1	16.3	20.0	25.8	30.6	36.5	44.7	21.6	600	3.2
	250		42°	45°	47°	10.2	12.1	14.4	17.7	20.4	25.0	32.3	38.2	45.6	55.9	64.5	5	3.6
	300		42°	45°	47°	12.2	14.5	17.3	21.2	24.5	30.0	38.7	45.8	54.8	67.1	77.5	750	4.0

**How to order**

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

**Example** 1/4MOVVEP60200B

1/4MOVVEP **60** **200** **B**

■ 60°   ■ 200   ■ B  
 ■ 45°   ■ 250   ■ S303  
 ■ 300

# Affiliated Products WOVVEP series Thick Off-center Flat Spray Nozzles with Even Distribution

**Rolling mill process**

- Cooling steel H-beam flanges
- Controlled cooling of plates



**FEATURES**

- New design to produce unique spray pattern.
- Thick off-center flat spray with uniform distribution.
- With one direction flow, WOVVEP prevents accumulation of spray fluid in multiple-nozzle arrangements and achieves optimal cooling.
- Thick spray pattern with high cooling effect.

**WOVVEP used in cooling applications**

- Wide cooling zone
- Steel H-beam flange cooling with WOVVEP nozzles alignment - Off-center flat spray does not scatter over into inner surfaces.

\*Please contact our local sales for details.

# AJP series Anti-clogging Vaneless Full Cone Spray Nozzles

**Raw material process**

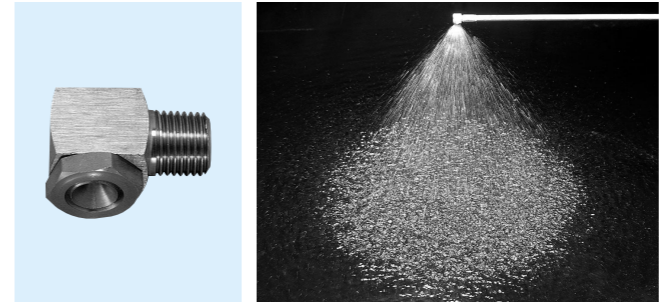
- Gas absorption in flue gas desulfurization
- Cleaning of precipitator electrodes

**Steel making process**

- Cooling of electric furnace covers

**Rolling mill process**

- Controlled cooling of reverse side of steel
- Spray cooling in continuous annealing



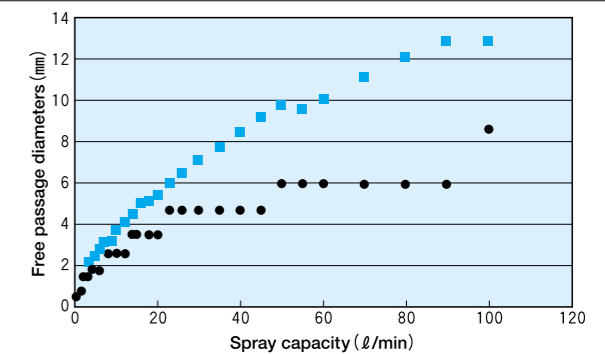
**FEATURES**

- Spray produced perpendicular to the axis of nozzle inlet.
- No-whirler design minimizes clogging.
- Ideal for spraying in limited space.
- Full cone spray pattern with uniform distribution.

## Free passage diameter comparison: AJP series vs. other full cone spray nozzles

Due to its unique vaneless design (no blockages inside nozzle), AJP has the largest free passage diameter of all of our full cone spray nozzles. Ideal for applications where clogging is a concern such as spraying slurry.

● Conventional full cone spray nozzles  
 ■ AJP

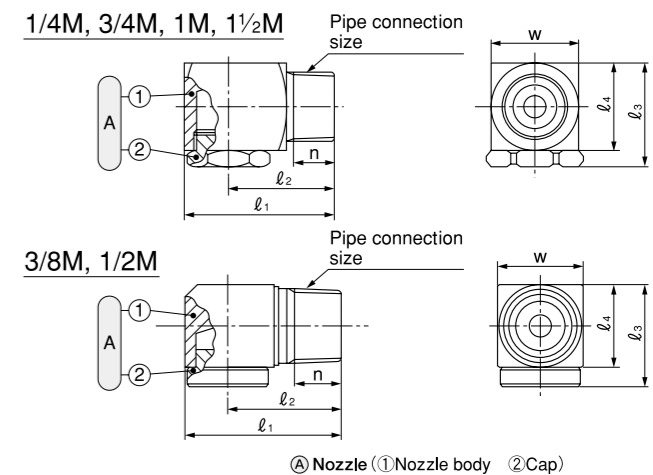


# AJP series

**MATERIALS** S303 (SCS13)

**OPTIONAL MATERIAL:** Brass (C3604), S316

Series	Pipe connection size	Dimensions (mm)					Mass (g)	
		ℓ <sub>1</sub>	ℓ <sub>2</sub>	ℓ <sub>3</sub>	ℓ <sub>4</sub>	w	n	S303
AJP	1/4M	32	23	20.5	16.5	16	10.5	55
	3/8M	36	26	23.5	19	20	11	70
AJP	1/2M	46	33.5	31	25	25	14	180
	3/4M	55	39	38	32	32	15	340
	1M	70	50	48	40	40	18	670
	1 1/2M	100	70	73.5	60	60	20	2400



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

Spray capacity code	Pipe connection size	Spray angle			Spray capacity (ℓ/min)							Mean droplet diameter (μm)	Free passage diameter (mm)
		0.05 MPa	0.2 MPa	0.5 MPa	0.03 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa		
04	1/4M	65°	75°	68°	1.59	2.04	2.86	3.48	4.00	4.70	5.77	640	2.2
		65°	75°	68°	1.99	2.55	3.57	4.35	5.00	5.88	7.21	5	2.5
		70°	80°	73°	2.39	3.06	4.28	5.22	6.00	7.06	8.66	5	2.8
		70°	80°	73°	2.79	3.57	5.00	6.09	7.00	8.35	10.4	800	3.1
08	3/8M	70°	80°	73°	3.18	4.08	5.71	6.96	8.00	9.54	11.9	680	3.2
		70°	80°	73°	3.98	5.10	7.14	8.70	10.0	11.9	14.9	5	3.7
		75°	85°	78°	4.78	6.12	8.57	10.4	12.0	14.3	17.9	5	4.1
		75°	85°	78°	5.57	7.14	10.0	12.2	14.0	16.7	20.8	5	4.5
16		75°	85°	78°	6.37	8.16	11.4	13.9	16.0	19.1	23.8	1000	5.0

**AJP series**  
Anti-clogging Vaneless Full Cone Spray Nozzles

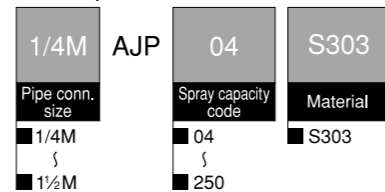
Spray capacity code	Pipe connection size	Spray angle			Spray capacity (ℓ/min)							Mean droplet diameter (μm)	Free passage diameter (mm)	
		0.05 MPa	0.2 MPa	0.5 MPa	0.03 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa			
18	1/2M	76°	85°	79°	7.16	9.18	12.9	15.7	18.0	21.5	27.1	750	5.1	
20		76°	85°	79°	7.96	10.2	14.3	17.4	20.0	23.9	30.1		5.4	
23		76°	85°	79°	9.15	11.7	16.4	20.0	23.0	27.5	34.6		6.0	
26		76°	85°	79°	10.3	13.3	18.6	22.6	26.0	31.1	39.1		6.5	
30		76°	85°	79°	11.9	15.3	21.4	26.1	30.0	35.9	45.1		7.1	
35		83°	90°	85°	13.9	17.9	25.0	30.5	35.0	41.9	52.6		7.8	
40		83°	90°	85°	15.9	20.4	28.6	34.8	40.0	47.9	60.1		8.5	
45		83°	90°	85°	17.9	23.0	32.1	39.2	45.0	53.9	67.6		9.2	
50		83°	90°	85°	19.9	25.5	35.7	43.5	50.0	59.9	75.2		1050	9.8
55		3/4M	83°	90°	85°	21.9	28.1	39.3	47.9	55.0	65.8		82.7	950
60	83°		90°	85°	23.9	30.6	42.8	52.2	60.0	71.8	90.2	1010	10.1	
70	83°		90°	85°	27.9	35.7	50.0	60.9	70.0	83.8	105	1120	11.2	
80	83°		90°	85°	31.4	40.8	57.1	69.6	80.0	95.8	120	1250	12.2	
90	83°		90°	85°	35.8	45.9	64.3	78.3	90.0	108	135	1400	13.0	
100	1M	83°	90°	85°	39.8	51.0	71.4	87.0	100	120	150	1000	13.0	
120		83°	90°	85°	47.8	61.2	85.7	104	120	144	180	1100	14.8	
150		83°	90°	85°	59.7	76.5	107	131	150	180	226	1200	17.4	
180		83°	90°	85°	71.6	91.8	129	157	180	216	271	1100	17.8	
200	1½M	83°	90°	85°	79.6	102	143	174	200	240	300	1100	18.8	
250		83°	90°	85°	99.5	128	179	217	250	299	376	1400	22.3	

Conversion of unit [Pressure] 0.1MPa ≒ 14.50psi [Flow rate] 1ℓ (liter) ≒ 0.264 US gal.  
10psi ≒ 0.069MPa 1US gal. ≒ 3.79ℓ (liter)

**How to order**

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

Example: 1/4MAJP04S303

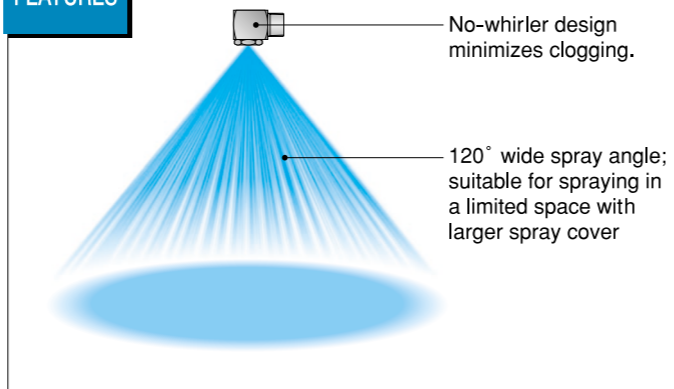


**Affiliated Products** **Wide angle AJP series** **Anti-clogging Vaneless Full Cone Spray - Wide angle** Patented

**Steel making process** • Cooling of electric furnace cover



**FEATURES**



Spray capacity code	Pipe connection size		Spray angle			Spray capacity (ℓ/min)						
	1/4M	3/4M	0.03 MPa	0.15 MPa	0.5 MPa	0.03 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa
1.5*120/7 0.3*120/21	○	○	115° 120°	120° 114°	110° 110°	3.20 21.0	4.11 26.9	5.75 37.7	7.00 45.9	8.05 52.7	9.47 63.2	11.6 79.3

**How to order**

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

E 1/4M (PT) AJP1.5\*120/7S303 or E 3/4M (PT) AJP0.3\*120/21S303

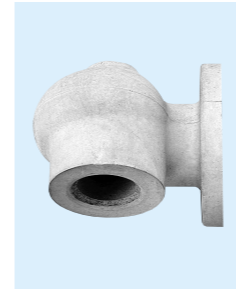
**TAA series** **Wear-resistant Large Capacity Hollow Cone Spray Nozzles**

**Raw material process**

• Gas absorption in flue gas desulfurization

**Iron making process**

• Recycled water spraying in water granulation process (spraying in cooling tower)

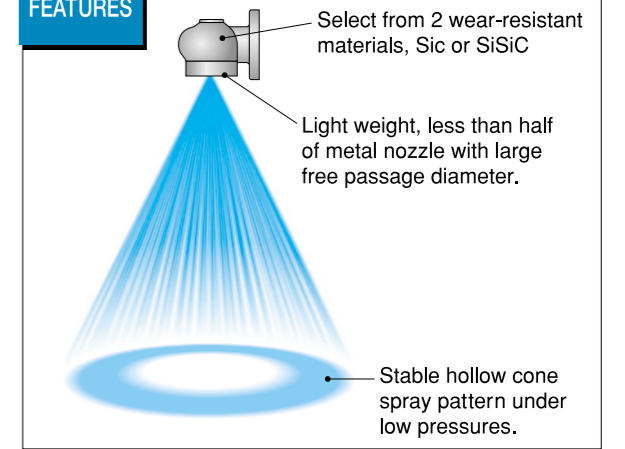


• TAA-series available range

Flange connection size (inches)	at pressure 0.07MPa		Free passage diameter (mm)
	Spray angle (°)	Spray capacity (ℓ/min)	
2	67	200~300	28~33
3	67~80	400~800	38~57
4	80	1000~1200	63~68

[Pressure] 0.1MPa ≒ 14.50psi [Flow rate] 1ℓ (liter) ≒ 0.264 US gal.  
10psi ≒ 0.069MPa 1US gal. ≒ 3.79ℓ (liter)

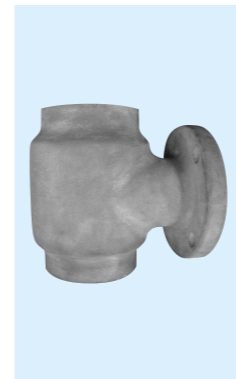
**FEATURES**



**WTAA series** **Wear-resistant bi-directional flange shape hollow cone spray nozzle**

**Raw material process**

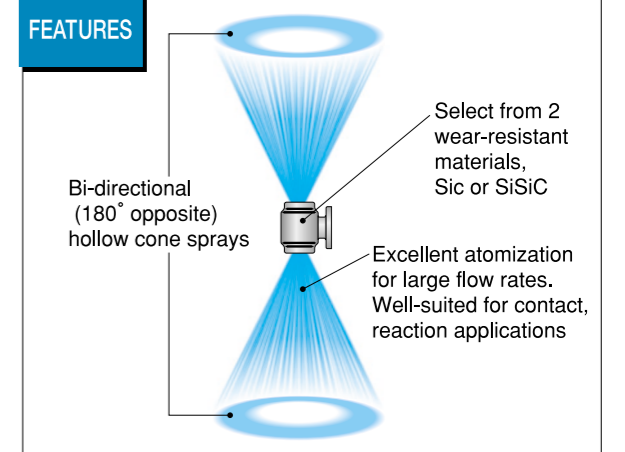
• Gas absorption in flue gas desulfurization



• WTAA-series available range

Standard pressure ..... 0.07MPa  
Spray capacity range ..... 200~1200 ℓ/min  
Connection flange size ..... 2~4 inches

**FEATURES**



**JUXP series** **Wear-resistant Full Cone Spray Nozzles**

**Raw material process**

• Gas absorption in flue gas desulfurization

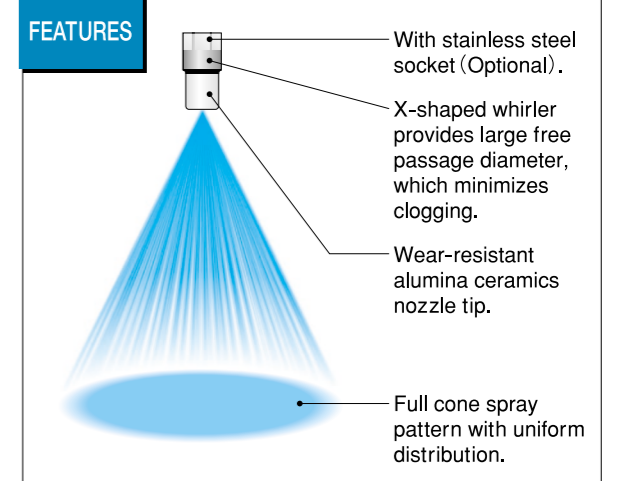


• JUXP-series available range

Pipe connection size (inches)	at pressure 0.2MPa	
	Spray angle (°)	Spray capacity (ℓ/min)
1F	75~95	50~90
1½F	85~95	100~200
2F	90~95	250~350
2½F	85~100	400~550
2F	90~95	600~700

[Pressure] 0.1MPa ≒ 14.50psi [Flow rate] 1ℓ (liter) ≒ 0.264 US gal.  
10psi ≒ 0.069MPa 1US gal. ≒ 3.79ℓ (liter)

**FEATURES**

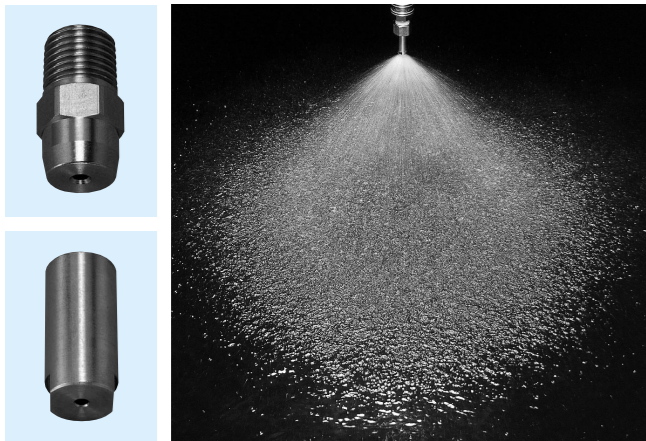


**How to order**

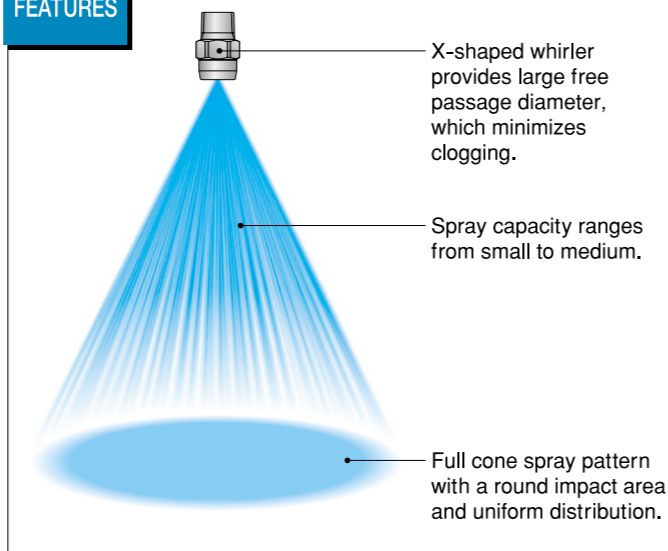
Please contact our local sales for details.

# JJXP series Standard Full Cone Spray Nozzles

- Iron making process** ● Gas temperature control at the top of furnace
- Steel making process** ● Cooling steel in CCM



### FEATURES



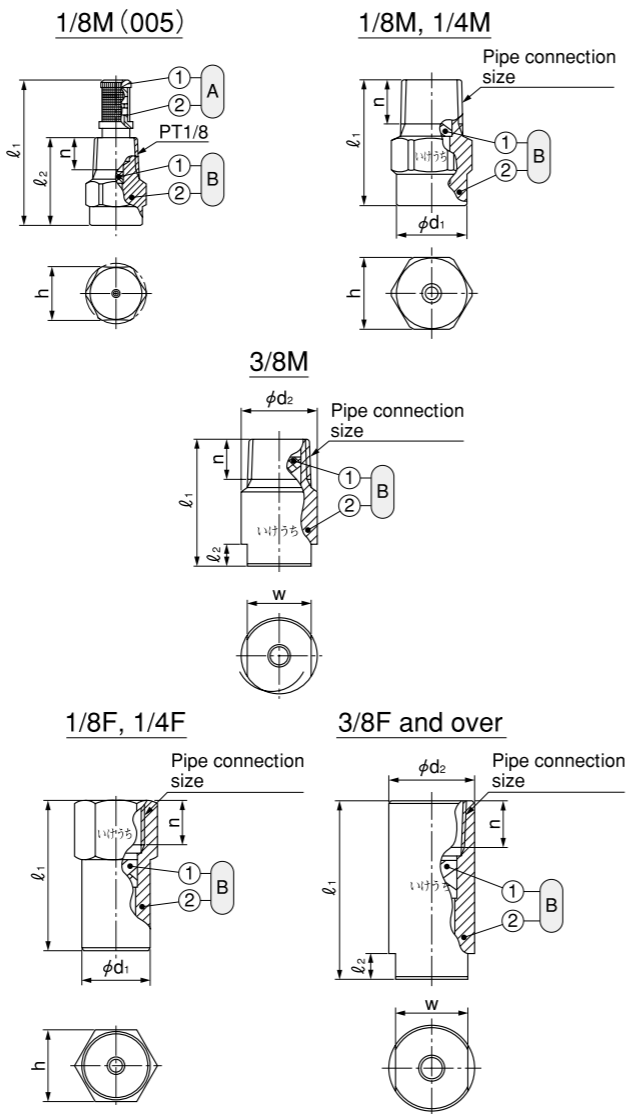
### JJXP series

#### MATERIALS

Sizes 3/8M(F) or smaller: S303 (SCS13)  
 Sizes 1/2F-1F: Brass (C3604) or S303 (SCS13)  
 Sizes 1½F or larger: S316 (SCS14)

**OPTIONAL MATERIAL:**  
 S316L (SCS16), plastic, others

\*Thread size of optional material may differ depending on materials.



Series	Pipe connection size	Dimensions (mm)							Mass (g)	
		l <sub>1</sub>	l <sub>2</sub>	h	w	φd <sub>1</sub>	φd <sub>2</sub>	n	B	S303
JJXP	1/8M (005)	32.5	20	12	—	—	—	7	—	9.5*
	1/8M	20	—	12	—	11.5	—	7	—	11
	1/4M	28	—	14	—	13.5	—	10.5	—	21
	3/8M	34	6	—	17	—	20	11	—	50
	1/8F	26	—	12	—	11.5	—	7	18	17
	1/4F	35.5	—	17	—	16	—	10.5	48	45
	3/8F	43	6	—	17	—	20	11	66	61
	1/2F	54	8	—	22	—	25	14	150	140
	3/4F	69	10	—	27	—	32	15	290	270
	1F	89	14	—	34	—	40	17	550	515
	1½F	124	20	—	50	—	58	19	—	1520
	2F(250~350)	160	24	—	60	—	70	23	—	2600
2F(400~550)	118.5	24	—	60	—	70	23	—	2050	
2½F	147.5	27	—	80	—	90	27	—	4360	
3F(920)	163.5	30	—	90	—	105	30	—	6700	
3F(1200)	170.5	30	—	90	—	105	30	—	6500	

\*1) Mass of JJXP005 with strainer is 2-5g heavier than above figures.  
 \*2) Mass accounts for JJXP thread size 1½F-3F material as S316 (SCS14).

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

Ⓐ Strainer (① Strainer holder ② Strainer screen)  
 Ⓑ Nozzle (① Whirler ② Body)

### JJXP series Standard Full Cone Spray Nozzles

Spray capacity code	Pipe connection size						Spray angle			Spray capacity (ℓ/min)										Mean droplet diameter (μm)	Free passage diameter (mm)
	1/8M	1/4M	3/8M	1/8F	1/4F	3/8F	0.05 MPa	0.2 MPa	0.5 MPa	0.03 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa	0.7 MPa	1 MPa			
005	●						—	55°	65°	—	—	0.36	0.44	0.50	0.59	0.73	0.83	0.96	270	0.5	
010	○						50°	55°	45°	—	0.53	0.73	0.88	1.00	1.18	1.45	1.67	1.93	290	0.8	
015	○						60°	65°	55°	—	0.79	1.09	1.32	1.50	1.77	2.18	2.50	2.89	3	0.8	
020	○						60°	65°	55°	—	1.06	1.46	1.75	2.00	2.36	2.91	3.34	3.86	5	1.5	
030	○						65°	70°	60°	—	1.59	2.18	2.63	3.00	3.54	4.36	5.00	5.79	410	1.5	
040		○					60°	65°	55°	—	2.12	2.91	3.51	4.00	4.72	5.81	6.67	7.72	380	1.8	
050		○					65°	70°	60°	—	2.65	3.64	4.38	5.00	5.90	7.27	8.34	9.64	5	1.8	
060		○					70°	75°	65°	2.51	3.18	4.37	5.26	6.00	7.08	8.72	10.0	11.6	520	1.8	
070			○				60°	65°	60°	2.93	3.71	5.09	6.14	7.00	8.26	10.2	11.7	13.5	480	1.9	
080			○				65°	70°	65°	3.35	4.24	5.82	7.01	8.00	9.44	11.6	13.3	15.4	5	1.9	
10			○				75°	80°	75°	4.19	5.29	7.28	8.77	10.0	11.8	14.5	16.7	19.3	5	2.6	
12			○				80°	85°	80°	5.03	6.35	8.73	10.5	12.0	14.2	17.4	20.0	23.1	660	2.6	

Spray capacity code	Pipe connection size							Spray angle			Spray capacity (ℓ/min)										Mean droplet diameter (μm)	Free passage diameter (mm)
	1/2F	3/4F	1F	1½F	2F	2½F	3F	0.05 MPa	0.2 MPa	0.5 MPa	0.03 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa	0.7 MPa	1 MPa			
14	○							65°	70°	55°	5.86	7.41	10.2	12.3	14.0	16.5	20.3	23.3	27.0	590	3.5	
16	○							70°	75°	60°	6.70	8.47	11.6	14.0	16.0	18.9	23.3	26.7	30.9	5	3.5	
18	○							75°	80°	65°	7.54	9.53	13.1	15.8	18.0	21.2	26.2	30.0	34.7	5	3.5	
20	○							80°	85°	70°	8.38	10.6	14.6	17.5	20.0	23.6	29.1	33.4	38.6	740	3.5	
23		○						70°	75°	60°	9.63	12.2	16.7	20.2	23.0	27.1	33.4	38.4	44.4	630	4.7	
26		○						75°	80°	65°	10.9	13.8	18.9	22.8	26.0	30.7	37.8	43.4	50.1	5	4.7	
30		○						80°	85°	70°	12.6	15.9	21.8	26.3	30.0	35.4	43.6	50.0	57.9	5	4.7	
35		○						85°	90°	75°	14.7	18.5	25.5	30.7	35.0	41.3	50.9	58.4	67.5	5	4.7	
40		○						90°	95°	80°	16.8	21.2	29.1	35.1	40.0	47.2	58.1	66.7	77.2	5	4.7	
45		○						90°	95°	80°	18.8	23.8	32.7	39.5	45.0	53.1	65.4	75.0	86.8	950	4.7	
50			○					70°	75°	60°	20.9	26.5	36.4	43.8	50.0	59.0	72.7	83.4	96.4	800	6.0	
60			○					80°	85°	70°	25.1	31.8	43.7	52.6	60.0	70.8	87.2	100	115	5	6.0	
80			○					90°	95°	80°	33.5	42.4	58.2	70.1	80.0	94.4	115	135	155	5	6.0	
90			○					90°	95°	80°	37.7	47.7	65.5	78.9	90.0	106	130	150	175	1150	6.6	
100				○				80°	85°	70°	41.9	52.9	72.8	87.7	100	120	145	170	195	1000	8.4	
150				○				85°	90°	75°	62.8	79.4	110	130	150	180	220	250	290	5	8.4	
200				○				90°	95°	80°	83.8	105	145	175	200	240	290	335	385	1350	10.3	
250					○			85°	90°	75°	105	130	180	220	250	295	360	420	480	1200	12.7	
300					○			90°	95°	80°	125	160	220	265	300	355	435	500	580	5	12.7	
350					○			90°	95°	80°	150	185	255	310	350	415	510	585	675	1450	12.7	
400					○			75°	80°	65°	170	210	290	350	400	470	580	670	770	1300	13.4	
500					○			95°	95°	80°	210	265	365	440	500	590	730	835	965	1500	13.4	
600						○		75°	80°	65°	250	320	440	525	600	710	870	1000	1160	1500	17.0	
700					○			85°	90°	75°	290	370	510	615	700	826	1020	1170	1359	1800	17.0	
920						○		100°	100°	85°	385	490	670	810	920	1090	1340	1535	1780	1660	18.4	
1200						○		105°	105°	90°	505	635	875	1050	1200	1420	1740	2000	2320	1950	22.0	

●...With strainer (100 mesh only) ○...Without strainer

Conversion of unit [Pressure] 0.1MPa ≅ 14.50psi [Flow rate] 1ℓ (liter) ≅ 0.264 US gal.  
 10psi ≅ 0.689MPa 1US gal. ≅ 3.79ℓ (liter)

### How to order

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

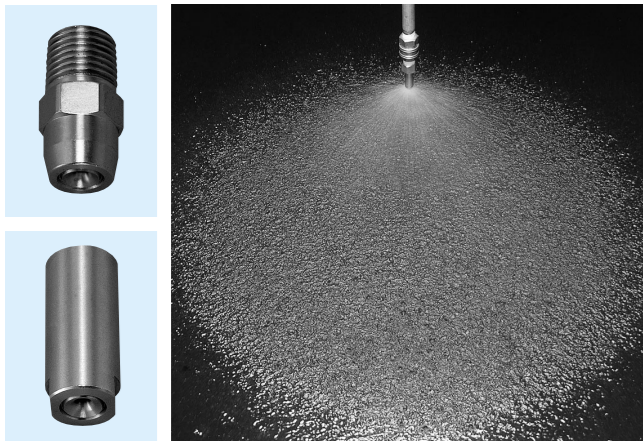
⟨Example⟩ 1/8M JJXP 005 S303 W

1/8M	JJXP	005	S303	W
Pipe conn. size	Spray capacity code	Material	Strainer	
<ul style="list-style-type: none"> <li>■ 1/8M</li> <li>○ 1/4M</li> <li>○ 3/8M</li> <li>○ 1/8F</li> <li>○ 1/4F</li> <li>○ 3F</li> </ul>	<ul style="list-style-type: none"> <li>■ 005</li> <li>○ 1200</li> </ul>	<ul style="list-style-type: none"> <li>■ B</li> <li>■ S303</li> <li>■ S316</li> </ul>	<ul style="list-style-type: none"> <li>■ W (with strainer: 1/8MJJXP005 only)</li> <li>○ — (without strainer)</li> </ul>	

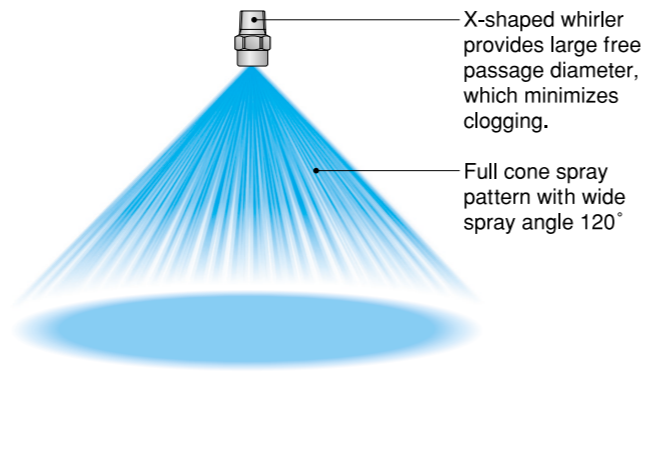
# BBXP series Wide-angle Full Cone Spray Nozzles

BBXP series  
Wide-angle Full Cone Spray Nozzles

- Iron making process**
  - Gas temperature control at the top of furnace
- Steel making process**
  - Cooling steel in CCM



## FEATURES

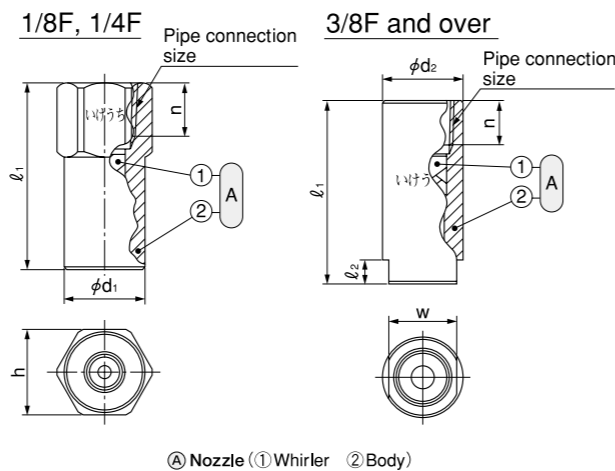
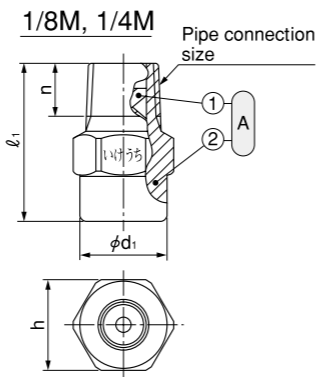


## BBXP series

### MATERIALS

Sizes 3/8M (F) or smaller: S303 (SCS13)  
 Sizes 1/2F-1F: Brass (C3604) or S303 (SCS13)  
 Sizes 1½F or larger: S316 (SCS14)

**OPTIONAL MATERIAL:**  
 S316L (SCS16) or others



Series	Pipe conn. size	Dimensions (mm)							Mass (g)	
		ℓ <sub>1</sub>	ℓ <sub>2</sub>	h	w	φd <sub>1</sub>	φd <sub>2</sub>	n	B	S303
BBXP	1/8M	21	—	12	—	11.5	—	7	—	11
	1/4M	29	—	14	—	13.5	—	10.5	—	19.5
	1/8F	27	—	12	—	11.5	—	7	—	19
	1/4F	36.5	—	17	—	16	—	10.5	—	66
	3/8F	45.5	6	—	17	—	20	11	—	75
	1/2F	56	8	—	22	—	25	14	150	140
	3/4F	73	10	—	27	—	32	15	320	300
	1F	94	14	—	34	—	40	17	625	585
	1½F	131	20	—	50	—	58	19	—	1760
	2F	168	24	—	60	—	70	23	—	2980
	2½F	199	27	—	80	—	90	27	—	5890
	3F	220	30	—	90	—	105	30	—	9400
	4F	278	40	—	115	—	130	36	—	16100

\*1) Mass accounts for BBXP thread size 1½F-4F material as S316 (SCS14).

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

Conversion of unit [Pressure] 0.1MPa ≒ 14.50psi [Flow rate] 1ℓ (liter) ≒ 0.264 US gal.  
 10psi ≒ 0.689MPa 1US gal. ≒ 3.79ℓ (liter)

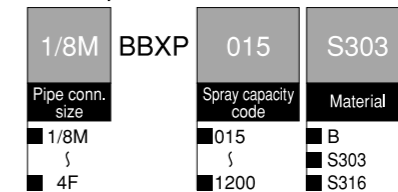
Spray capacity code	Pipe connection size									Spray angle			Spray capacity (ℓ/min)									Mean droplet diameter (μm)	Free passage diameter (mm)
	3/8F	1/2F	3/4F	1F	1½F	2F	2½F	3F	4F	0.15 MPa	0.35 MPa	0.7 MPa	0.03 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.35 MPa	0.5 MPa	0.7 MPa	1 MPa		
10	○									123°	120°	111°	3.34	4.21	5.79	6.98	7.96	10.0	11.6	13.3	15.3	340	1.9
12	○									124°	120°	112°	4.00	5.06	6.95	8.37	9.55	12.0	13.9	15.9	18.4	}	1.9
14	○									124°	120°	112°	4.67	5.90	8.10	9.77	11.1	14.0	16.2	18.6	21.5	}	2.6
16	○									125°	120°	113°	5.33	6.74	9.25	11.2	12.7	16.0	18.5	21.2	24.6	430	2.6
18		○								123°	120°	111°	6.00	7.58	10.4	12.6	14.3	18.0	20.8	23.9	27.6	420	2.9
20		○								123°	120°	111°	6.67	8.43	11.6	14.0	15.9	20.0	23.1	26.5	30.7	}	2.9
23		○								124°	120°	112°	7.67	9.69	13.3	16.0	18.3	23.0	26.6	30.5	35.3	}	2.9
26		○								124°	120°	112°	8.67	11.0	15.1	18.1	20.7	26.0	30.1	34.5	39.9	480	3.5
30			○							123°	120°	111°	10.0	12.6	17.4	20.9	23.9	30.0	34.7	39.8	46.0	430	3.8
40			○							124°	120°	112°	13.3	16.9	23.2	27.9	31.8	40.0	46.3	53.1	61.4	}	4.1
50			○							125°	120°	113°	16.7	21.0	29.0	34.9	39.8	50.0	57.8	66.3	76.7	550	4.7
60				○						124°	120°	112°	20.0	25.3	34.7	41.9	47.7	60.0	69.4	79.6	92.1	570	5.3
80				○						125°	120°	113°	26.7	33.7	46.3	55.8	63.7	80.0	92.5	106	123	630	5.7
100					○					123°	120°	111°	33.3	42.1	57.9	69.8	79.6	100	115	135	155	600	6.2
150					○					124°	120°	112°	50.0	63.2	86.9	105	120	150	175	200	230	700	7.5
200						○				124°	120°	112°	66.7	84.3	115	140	160	200	230	265	310	710	9.0
300						○				125°	120°	113°	100	125	175	210	240	300	350	400	460	900	11.5
400							○			124°	120°	112°	135	170	235	280	320	400	465	530	615	900	13.4
500							○			125°	120°	113°	170	210	290	350	400	500	580	665	770	1000	14.0
600								○		124°	120°	112°	200	255	350	420	480	600	695	795	920	900	16.0
700								○		125°	120°	113°	235	295	405	490	550	700	810	930	1070	1100	17.2
900									○	124°	120°	112°	300	380	520	630	720	900	1041	1195	1380	1100	19.3
1200									○	125°	120°	113°	400	505	695	840	955	1200	1390	1590	1840	1200	22.4

Spray capacity code	Pipe connection size				Spray angle			Spray capacity (ℓ/min)									Mean droplet diameter (μm)	Free passage diameter (mm)
	1/8M	1/4M	1/8F	1/4F	0.05 MPa	0.2 MPa	0.5 MPa	0.03 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.35 MPa	0.5 MPa	0.7 MPa	1 MPa		
015	○		○		—	120°	112°	—	—	1.09	1.32	1.50	1.88	2.18	2.50	2.89	300	0.8
020	○		○		110°	120°	112°	—	1.06	1.46	1.75	2.00	2.51	2.91	3.34	3.86	}	1.2
030	○		○		112°	120°	113°	—	1.59	2.18	2.63	3.00	3.77	4.36	5.00	5.79	350	1.3
040		○		○	110°	120°	112°	—	2.12	2.91	3.51	4.00	5.03	5.81	6.67	7.72	340	1.3
050		○		○	112°	120°	113°	—	2.65	3.64	4.38	5.00	6.28	7.27	8.34	9.64	}	1.5
060		○		○	114°	120°	114°	2.51	3.18	4.37	5.26	6.00	7.54	8.72	10.0	11.6	430	1.8

## How to order

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

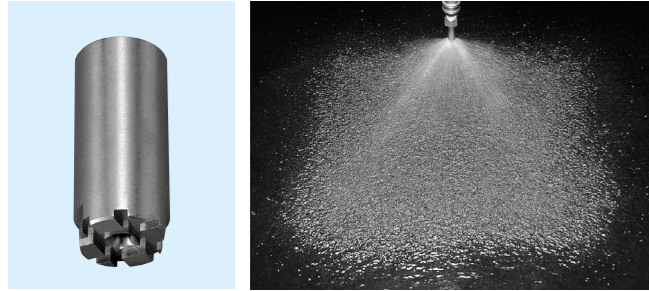
(Example) 1/8M BBXP 015 S303



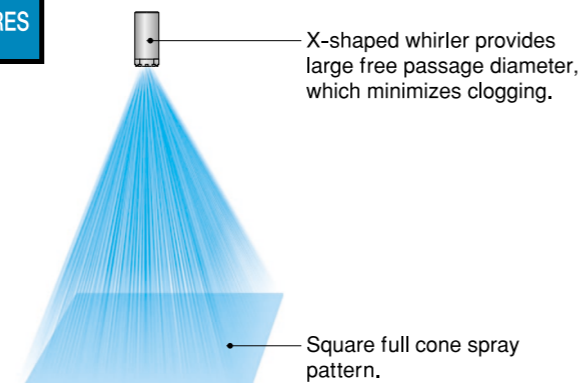
# SSXP series Square Spray Nozzles

Steel making process ● Cooling steel in CCM

Rolling mill process ● Cooling plates



### FEATURES



### SSXP series

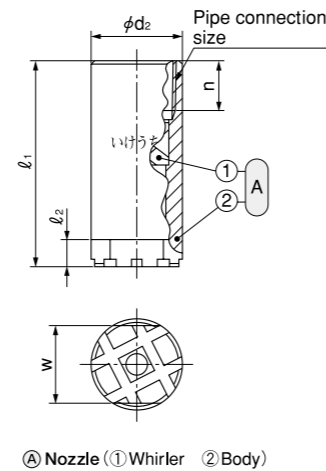
**MATERIALS**  
 Sizes 1F or smaller: Brass (C3604) or S303  
 Sizes 1½F or larger: S316 (SCS14)

OPTIONAL MATERIAL: S316L (SCS16) or others

Series	Pipe conn. size	Dimensions (mm)								Mass (g)	
		l <sub>1</sub>	l <sub>2</sub>	h	w	φd <sub>1</sub>	φd <sub>2</sub>	n	B	S303	
SSXP	3/8F	45.5	6	—	17	—	20	11	74	70	
	1/2F	56	8	—	22	—	25	14	160	150	
	3/4F	73	10	—	27	—	32	15	320	300	
	1F	94	14	—	34	—	40	17	620	575	
	1½F	131	20	—	50	—	58	19	—	1690	
	2F	168	24	—	60	—	70	23	—	2910	
	2½F	199	27	—	80	—	90	27	—	5860	
	3F	220	30	—	90	—	105	30	—	9420	

\*1) Mass accounts for SSXP thread size 1½F-3F material as S316 (SCS14).

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



① Nozzle (① Whirler ② Body)

Spray capacity code	Pipe connection size								Spray angle			Spray capacity (ℓ/min)								Mean droplet diameter (μm)	Free passage diameter (mm)	
	3/8F	1/2F	3/4F	1F	1½F	2F	2½F	3F	0.05 MPa	0.2 MPa	0.5 MPa	0.03 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa	0.7 MPa			1 MPa
070	○								94°	100°	89°	2.93	3.71	5.09	6.14	7.00	8.26	10.2	11.7	13.5	440	2.0
080	○								95°	100°	90°	3.35	4.24	5.82	7.01	8.00	9.44	11.6	13.3	15.4	440	2.0
10	○								96°	100°	91°	4.19	5.29	7.28	8.77	10.0	11.8	14.5	16.7	19.3	440	2.6
12	○								97°	100°	92°	5.03	6.35	8.73	10.5	12.0	14.2	17.4	20.0	23.1	630	2.6
16		○							95°	100°	90°	6.70	8.47	11.6	14.0	16.0	18.9	23.3	26.7	30.9	600	2.8
20		○							96°	100°	91°	8.36	10.6	14.6	17.5	20.0	23.6	29.1	33.4	38.6	710	3.5
30			○						96°	100°	91°	12.6	15.9	21.8	26.3	30.0	35.4	43.6	50.0	57.9	700	4.1
40			○						97°	100°	92°	16.8	21.2	29.1	35.1	40.0	47.2	58.1	66.7	77.2	900	4.4
50				○					95°	100°	90°	20.9	26.5	36.4	43.8	50.0	59.0	72.7	83.4	96.4	750	5.3
60				○					96°	100°	91°	25.1	31.8	43.7	52.6	60.0	70.8	87.2	100	115	135	5.7
80				○					97°	100°	92°	33.5	42.4	58.2	70.1	80.0	94.4	115	135	155	1000	6.7
100					○				96°	100°	91°	41.9	52.9	72.8	87.7	100	120	145	170	195	1000	7.5
150					○				97°	100°	92°	62.8	79.4	110	130	150	180	220	250	290	1200	10.3
300						○			97°	100°	92°	125	160	220	265	300	355	435	500	580	1350	12.7
500							○		97°	100°	92°	210	265	365	440	500	590	730	835	965	1500	17.5
700							○		97°	100°	92°	290	370	510	615	700	826	1020	1170	1350	1700	19.0

Conversion of unit [Pressure] 0.1MPa ≒ 14.50psi [Flow rate] 1ℓ (liter) ≒ 0.264 US gal.  
 10psi ≒ 0.689MPa 1US gal. ≒ 3.79ℓ (liter)

### How to order

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

Example 3/8F SSXP 070 B

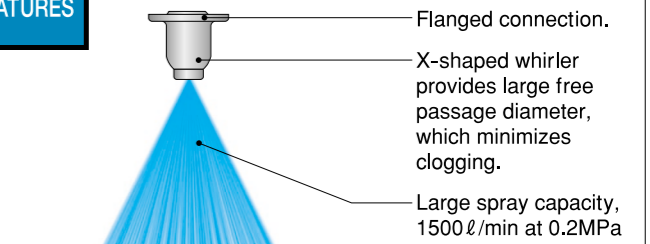
3/8F	SSXP	070	B
Pipe conn. size		Spray capacity code	Material
3/8F		070	B
1/2F			S303
3F		700	S316

# TJJX series Flange Type Full Cone Spray Nozzles

Raw material process ● Gas absorption in flue gas desulfurization



### FEATURES



### TJJX series

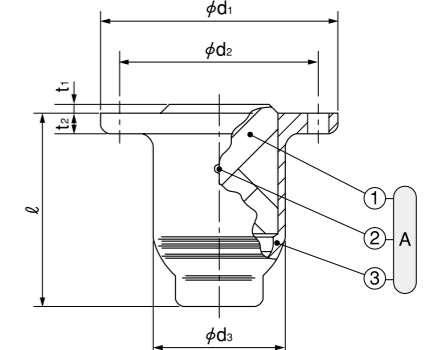
**MATERIALS**

SCS14 (S316)

OPTIONAL MATERIAL:  
 S316L (SCS16)

Series	Flange size	Dimensions (mm)						Flange (JIS 10k)		Mass (kg)
		ℓ	φd <sub>1</sub>	φd <sub>2</sub> PCD	φd <sub>3</sub>	t <sub>1</sub>	t <sub>2</sub>	Holes φ(mm)		
TJJX	4T	171	210	175	117	8	18	8	19	9.3
	5T	211	250	210	143	9	20	8	23	11.4
	6T	253	280	240	169	10	22	8	23	22.7
	8T	333	330	290	222	14	22	12	23	42.6

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



① Nozzle (① Whirler ② Lock bolt ③ Body)

Spray capacity code	Flange size				Spray angle			Spray capacity (ℓ/min)							Mean droplet diameter (μm)	Free passage diameter (mm)
	4T	5T	6T	8T	0.05 MPa	0.2 MPa	0.5 MPa	0.03 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa		
1500	○				90°	90°	75°	630	795	1090	1315	1500	1770	2180	1850	29
2000	○				100°	100°	85°	840	1060	1460	1755	2000	2360	2910	2910	29
2500		○			90°	90°	75°	1050	1325	1820	2190	2500	2950	3630	3630	36
3000		○			100°	100°	85°	1260	1590	2180	2630	3000	3540	4360	2500	36
3500			○		90°	90°	75°	1470	1850	2550	3070	3500	4130	5090	44	44
4000			○		95°	95°	80°	1680	2120	2910	3510	4000	4720	5810	44	44
4500			○		100°	100°	85°	1890	2380	3270	3950	4500	5310	6540	2850	44
5000				○	85°	85°	70°	2100	2650	3640	4390	5000	5900	7270	58	58
6000				○	90°	90°	75°	2510	3180	4370	5260	6000	7080	8720	3200	58

\*TJJX nozzle with larger spray flow / larger flange is available upon request.

\*For spraying slurry, TJJX nozzles made of highly wear-resistant silicon carbide are available (TJJX-SiC series).

Conversion of unit [Pressure] 0.1MPa ≒ 14.50psi [Flow rate] 1ℓ (liter) ≒ 0.264 US gal.  
 10psi ≒ 0.689MPa 1US gal. ≒ 3.79ℓ (liter)

### How to order

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

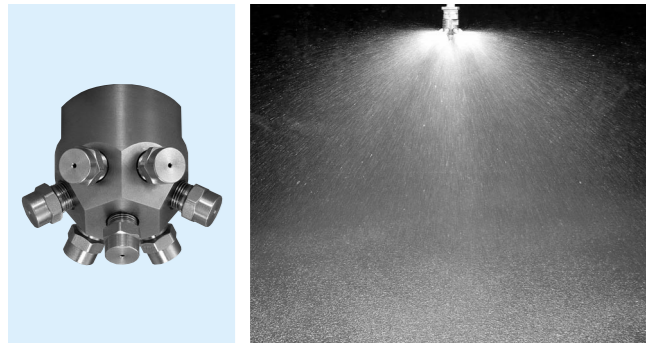
Example 4 TJJX 1500 SCS14

4	TJJX	1500	SCS14
Flange size		Spray capacity code	Material
4		1500	SCS14 (S316)
5			
8		6000	

# 7JJXP series 7-head Full Cone Spray Nozzles

Iron making process ● Gas cooling

Rolling mill process ● Cleaning inside of tank



**FEATURES**

- 7 full cone spray nozzle heads are screwed into a very compact header.
- Spray droplet diameter of 7JJXP is about half the size of those of other full cone spray nozzles having the same spray capacity.

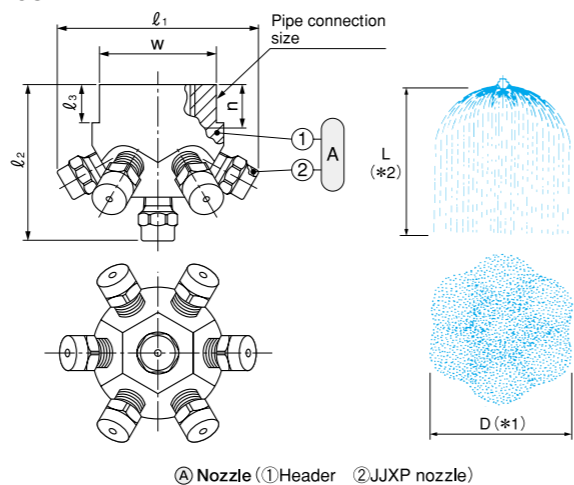
## 7JJXP series

**MATERIALS** Brass (C3604) or S303

OPTIONAL MATERIAL: S316

Series	Pipe conn. size	Dimensions (mm)						Mass (g)	
		ℓ <sub>1</sub>	ℓ <sub>2</sub>	ℓ <sub>3</sub>	w	n	B	S303	
7JJXP	3/4 F	71	55	13	40	15	400	380	
	1 F (280)	89	67.5	17	46	17	660	620	
	1 F (490, 840)	103	75	20	55	17	1140	1080	
	1 1/2 F	128	92.5	20	70	19	1970	1860	
	2 F	171	121.5	27	85	23	3870	3650	

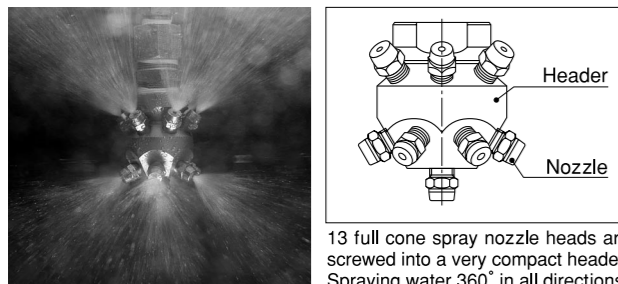
[Note] Appearance and dimensions may differ slightly depending on materials and nozzle codes.



Spray capacity code	Pipe conn. size	Spray angle	Spray pattern diameter D (m) (*1) at pressure 0.2MPa	Spray capacity (ℓ/min)																Mean droplet diameter (μm)	Free passage diameter (mm)
				Spray distance L (*2)						Spray pressure (MPa)											
				1m	1.5m	2m	2.5m	3m	3.5m	0.05	0.1	0.15	0.2	0.3	0.5	0.7	1	1.5	2		
70	3/4 F	170°	1.9	2.4	2.8	3.0	3.1	3.1	—	5.11	6.16	7.00	8.26	10.2	11.7	13.5	15.9	17.9	290	0.8	
140	1 F	180°	2.7	3.3	3.8	4.2	4.5	4.7	—	10.2	12.3	14.0	16.5	20.4	23.4	27.0	31.9	35.8	380	1.5	
280	1 1/2 F	180°	3.4	3.9	4.4	4.8	5.2	5.4	14.8	20.4	24.6	28.0	33.0	40.7	46.7	54.0	63.7	71.7	380	1.8	
490	2 F	180°	4.3	4.8	5.4	5.8	6.2	6.4	26.0	35.6	43.0	49.0	57.8	71.4	81.9	94.5	112	125	480	2.6	
840	2 F	200°	5.2	5.8	6.3	6.8	7.2	7.5	44.5	61.1	73.5	84.0	99.4	122	140	162	191	215	660	2.6	
1120	2 F	190°	5.6	6.3	6.9	7.4	7.8	8.1	59.3	81.2	98.0	112	132	163	187	216	255	287	740	3.5	
1400	2 F	200°	6.0	6.7	7.3	7.8	8.3	8.6	74.2	102	123	140	165	204	234	270	319	358	740	3.5	
1820	2 F	195°	6.2	6.9	7.5	8.0	8.5	8.8	96.6	132	160	182	215	265	304	351	414	466	—	4.7	
2450	2 F	205°	6.4	7.1	7.7	8.2	8.7	9.0	130	179	215	245	289	356	409	473	558	627	—	4.7	
3150	2 F	210°	6.6	7.3	7.9	8.4	8.9	9.2	167	229	277	315	372	458	525	608	717	806	—	4.7	

Conversion of unit [Pressure] 0.1MPa ≒ 14.50psi [Flow rate] 1ℓ (liter) ≒ 0.264 US gal. 10psi ≒ 0.069MPa 1US gal. ≒ 3.79ℓ (liter)

## Affiliated Products 13JJXP series 13-head Full Cone Spray Nozzles

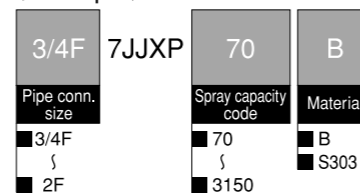


13 full cone spray nozzle heads are screwed into a very compact header. Spraying water 360° in all directions.

### How to order

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

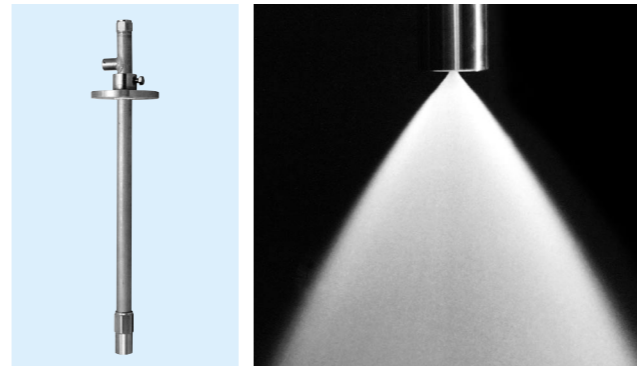
Example 3/4 F 7JJXP 70 B



# SPB series SPILLBACK Nozzle - with Variable Flow

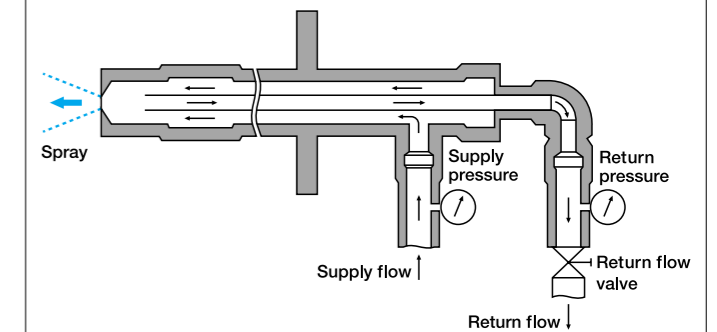
Raw material / pig iron making process

- Gas cooling in flue gas desulfurization
- Gas cooling in blast furnace (dry dust catcher)
- Moisture conditioning of supply air to blast furnace (water spraying to hot blast stove)

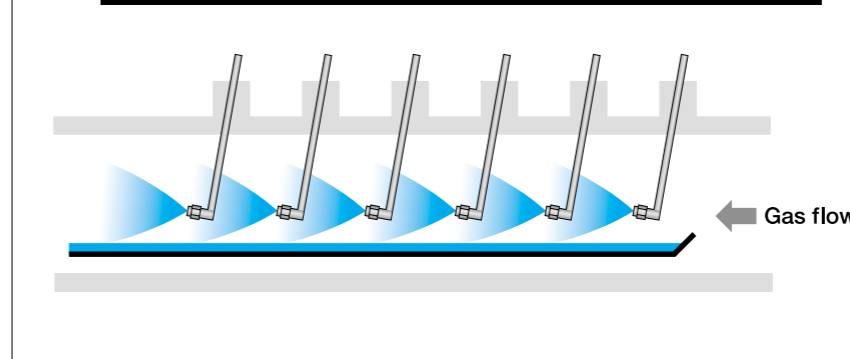


**FEATURES**

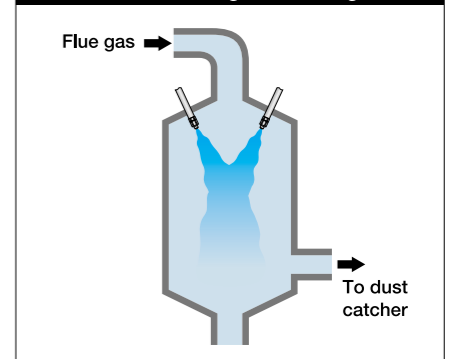
Spray capacity can be controlled by opening/closing the return flow valve while supply pressure is kept constant. Part of the supplied liquid flows back when the return valve is opened, causing supply flow to increase. Featuring minimal variation in spray droplet size with a large turndown ratio of spray capacity (1: 10), SPB nozzles are ideal for gas cooling where the inlet gas temperature and gas flow rate varies.



## SPB nozzles used in air inlets of blast furnace



## SPB used in flue gas cooling tower



## SPB nozzle selection chart

Series	SPB				4SPB	SPB
	Single-head (standard)	Small size/diameter		4-head, small dia.	4-orifice	
Type	60°	85°	60°	85°	100°	115°
Spray angle	60°	85°	60°	85°	100°	115°
Supply pressure (MPa)	2.0	2.0	2.0	2.0	2.0	2.0
Maximum spray capacity (ℓ/min)	3	4	5	6	7	8
3	6003R		6003S			
4	6004R		6004S		6001S	
5	6005R	8505R	6005S	8505S		
6	6006R		6006S		60015S	
7	6007R		6007S			
8	6008R		6008S		6002S	4-11508
10	6010R	8510R	6010S	8510S	6002SS	4-11510
12	6012R		6012S		6003S	4-11512
14	6014R		6014S			
15		8515R		8515S		
16	6016R		6016S		6004S	4-11516
18	6018R					
20	6020R	8520R		8520S	6005S	
25		8525R				
30		8530R				

### How to order

Please contact our local sales for details.

Affiliated SPILLBACK Nozzles for finer atomization

## Affiliated SPB 4-orifice and multiple-head Products series SPILLBACK Nozzles



Nozzles mounted with multiple single-orifice nozzle tips for excellent atomizing performance at the same spray flow.



**4-orifice SPILLBACK Nozzle**  
IKEUCHI original return nozzles spray droplets diameter is 12% smaller than that of standard type with the same outer diameter.

Conversion of unit [Pressure] 0.1MPa ≒ 14.50psi [Flow rate] 1ℓ (liter) ≒ 0.264 US gal. 10psi ≒ 0.069MPa 1US gal. ≒ 3.79ℓ (liter)