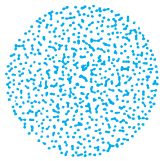
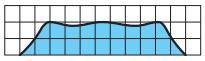
All Alumina Ceramic
Full Cone Spray Nozzles

JUXP-AL92

(JUXP-AL92 nozzle with S316 socket)



[Spray pattern]



[Spray distribution]

[Features]
- X-shaped whirler provides large free passage diameter for minimal clogging.
- Made of high-purity alumina and provide excellent wear-resistance.
- Spray capacity ranges from medium to large.

[Standard Pressure]
0.2 MPa

[Applications]
- Absorption tower of flue gas desulfurization equipment.
- Spraying slurry

JUXP-AL92 series

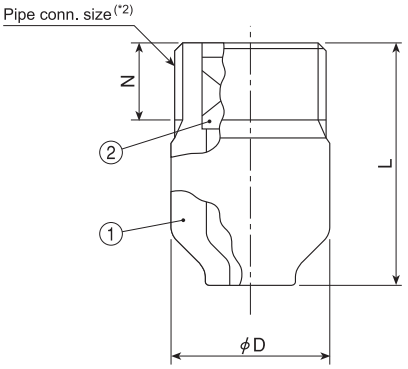
	JUXP-AL92 series
Structure	● Whole nozzle fired as one piece.
Material	● 92% Alumina

* If installed into a metal header, this nozzle should be used with a socket made of S316, shown on page 85 (otherwise, the thread may be damaged). Please refer to page 85.

Pipe conn. size*1,2	Dimensions (mm)			Mass (g)
	L	ϕD	N	
1M	53	35	18	110
1½M	67	50	20	350
2M	100	65	24	760
2½M (250–350)	136	80	29	1,520
2½M (400–550)	94	80	29	1,130
3M	120	90	31	1,690

*1) Figures in ( ) after the pipe connection sizes indicate the spray capacity codes.

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



①Body ②Ceramic whirler

*2) When used with our S316 socket, socket thread for pipe connection is female thread.
Drawing for nozzle with socket is available on request.
(The above drawing is nozzle only)

Spray Capacity Code	Pipe Conn. Size					Spray Angle (°)			Spray Capacity (ℓ/min)									Mean Drop. Dia. (μm)	Free Pass. Dia. (mm)
	1M	1½M	2M	2½M	3M	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		
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		4.7
30	○					80	85	70	12.6	15.9	21.8	26.3	30.0	35.4	43.6	50.0	57.9	〃	4.7
35	○					85	90	75	14.7	18.5	25.5	30.7	35.0	41.3	50.9	58.4	67.5		4.7
40	○					90	95	80	16.8	21.2	29.1	35.1	40.0	47.2	58.1	66.7	77.2		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
55		○				75	80	65	23.0	29.1	40.0	48.2	55.0	64.9	79.9	91.7	105		6.0
60		○				80	85	70	25.1	31.8	43.7	52.6	60.0	70.8	87.2	100	115	〃	6.0
70		○				85	90	75	29.3	37.1	50.9	61.4	70.0	82.6	100	120	135		6.0
80		○				90	95	80	33.5	42.4	58.2	70.1	80.0	94.4	115	135	155		6.6
90		○				90	95	80	37.7	47.7	65.5	78.9	90.0	106	130	150	175	1,150	6.6
100			○			80	85	70	41.9	52.9	72.8	87.7	100	120	145	170	195	1,000	8.7
120			○			80	85	70	50.3	63.5	82.3	105	120	140	175	200	230		8.7
150			○			85	90	75	62.8	79.4	110	130	150	180	220	250	290	〃	8.7
180			○			90	95	80	75.4	95.3	130	160	180	210	260	300	350		10.3
200			○			90	95	80	83.8	105	145	175	200	240	290	335	385	1,350	10.7
250				○		85	90	75	105	130	180	220	250	295	360	420	480	1,200	12.7
300				○		90	95	80	125	160	220	265	300	355	435	500	580	〃	12.7
350				○		90	95	80	150	185	255	310	350	415	510	585	675	1,450	12.7

All Alumina Ceramic / Full Cone Spray Nozzles

JUXP-AL92 series

Spray Capacity Code	Pipe Conn. Size					Spray Angle (°)			Spray Capacity (ℓ/min)									Mean Drop. Dia. (μm)	Free Pass. Dia. (mm)
	1M	1½M	2M	2½M	3M	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		
400				○		80	80	65	170	210	290	350	400	470	580	670	770	1,300	13.4
450				○		90	90	75	190	240	330	395	450	530	655	750	870	≀	13.4
500				○		95	95	80	210	265	365	440	500	590	730	835	965		13.4
550				○		100	100	85	230	290	400	480	550	650	800	920	1,060	1,550	13.4
600					○	80	80	65	250	320	440	525	600	710	870	1,000	1,160	1,500	17.0
700					○	90	90	75	290	370	510	615	700	826	1,020	1,170	1,359	1,800	17.0

How to order

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

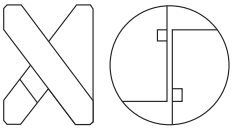
〈Example〉···1MJUXP23AL92

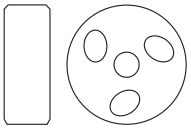
1M	JUXP	23	AL92
Pipe Conn. Size		Spray Capacity Code	
1M		23	
≀		≀	
3M		700	

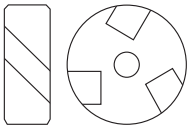
Effective Use of Full Cone Spray Nozzles

Clogging and Free Passage Diameter

In order to form uniform distribution, full cone spray nozzles are usually fitted with whirlers and this part is the bottleneck of the liquid passage, where clogging problems often occur. Whirlers have several shapes such as X-shaped, disc-shaped and spiral-shaped ones, and the diameter of a sphere that can pass through the whirler is defined as free passage diameter.
As compared with other whirlers, the **X-shaped whirler** has a larger free passage diameter, which minimizes clogging. Some full cone nozzles without whirlers have been developed to eliminate clogging problems, such as the **AJP series** nozzle which features minimal clogging.


X-shaped whirler


Disc whirler


Spiral-shaped whirler

Wear and Corrosion Resistance

If the liquid contains slurry, the inside of the nozzle exposed to the flow of liquid at high speed will wear out relatively quickly. For these applications, the **JUP series** nozzle is ideal, as the orifice and whirler are made of ceramics. **JUXP, AJP-AL92 and TJJX-SiC series** nozzles are more effective as all parts are made of ceramics. For corrosive applications, nozzles made of special materials such as plastics and titanium alloy are available.

Mass Savings

For arrangements of many large size nozzles, mass savings of the nozzles affects the total production cost for the systems. The **TJJX series** nozzle with a newly developed X-shaped whirler has a 20% shorter overall length and 20% less mass than conventional nozzles. In addition, the mass of TJJX-SiC series nozzle (made of silicon nitride bonded silicon carbide) is less than half of metal nozzles.

Rotation Reaction Force

In full cone spray nozzles with whirlers, rotation torque is generated as a reaction force by the vortex current produced by the whirler, which is determined by the following equation.

$$T \approx C \cdot Q \cdot D \cdot \sqrt{P}$$

T: Torque (N-m)
C: Constant
Q: Spray capacity (ℓ/min)
D: External dimension of whirler (mm)
P: Spray pressure (MPa)

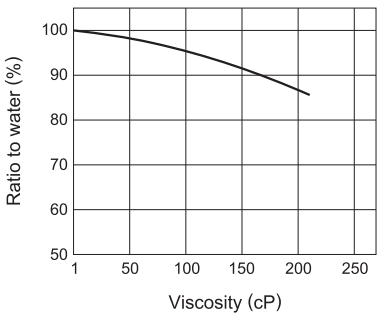
[Example]

Nozzle No.	Torque at pressure of 0.2 MPa
¾FJJXP23	0.025 N-m
6TJJX4000	3,000 N-m

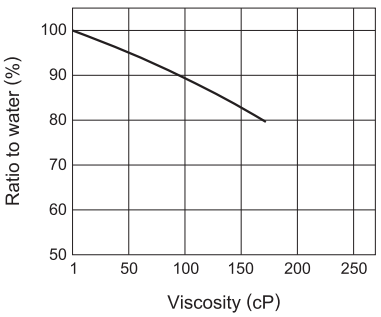
Viscosity

As the viscosity of the liquid increases, generally spray capacity and angle decreases, spray distribution deteriorates and spray droplet size becomes larger.
(Spray capacity of hollow cone spray nozzles increases as the viscosity of liquid increases.
See page 55 for details.)

[Relation between viscosity and spray capacity]



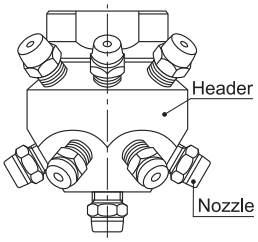
[Relation between viscosity and spray angle]



Nozzle tested: JJXP90
Pressure: 0.02–0.03 MPa

Related Products

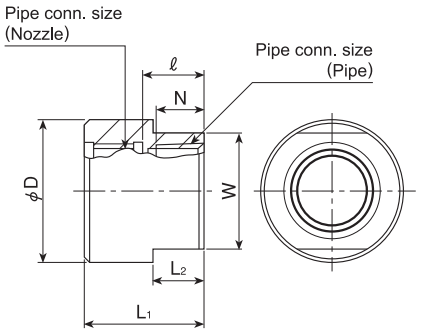
13JJXP series (13-head Full Cone Spray Nozzles)

Series	Appearance	Structure	Features	Applications
13JJXP			● Full cone spray pattern with uniform spray distribution. ● 13 pcs. of JJXP series full cone spray nozzles are screwed into a very compact header. ● Spray droplet diameter is smaller than those of other single-head full cone spray nozzles having the same spray capacity.	● Gas cooling ● Moisture control

Socket for Alumina Nozzles

Optional socket available for alumina nozzles (AP-AL92, JUXP-AL92, AJP-AL92 series).

Material of socket: S316



Nominal diameter	Pipe conn. size		Dimensions (mm)						Mass (g)
	Nozzle	Pipe	L_1	L_2	ℓ	W	ϕD	N	
1/2	1/2	1/2	34	10	18	27	30	14	120
3/4	3/4	3/4	39	14	21	35	40	15	230
3/4x1	1	3/4	41	18	21	41	50	15	200
1	1	1	43	18	23	41	50	17	400
1x1 1/2	1 1/2	1	47	24	24	60	70	17	560
1 1/2	1 1/2	1 1/2	50	24	27	60	70	19	840
1 1/2x2	2	1 1/2	54	27	27	70	80	19	680
2	2	2	58	27	31	70	80	23	1,100
2x2 1/2	2 1/2	2	62	30	31	90	100	23	1,400
2 1/2	2 1/2	2 1/2	66	30	35	90	100	27	2,000
2 1/2x3	3	2 1/2	71	35	36	100	110	27	1,500
3	3	3	75	35	40	100	110	30	2,200

* Thread for connecting pipe is female taper thread.