

Quick-detachable Standard Flat Spray Nozzles

INVV

Patented

Flat Spray



[Features]

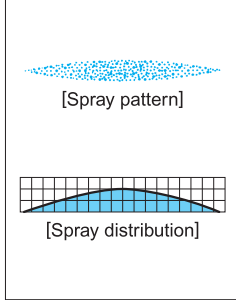
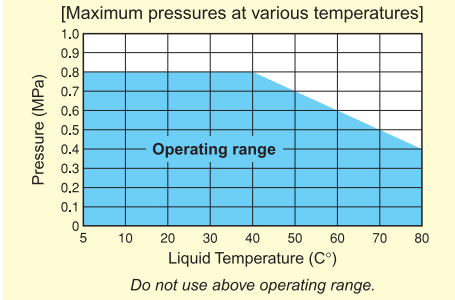
- Flat spray pattern with a mountain-shaped spray distribution having gradually tapered edges.
- Made in highly chemical and heat resistant PP (nozzle tip) and PPS (adaptor).
- Quick installation and removal by just turning the nozzle 60° by hand.
- Nozzle bodies are color-coded by spray capacity for easy identification.

[Standard Pressure]

0.3 MPa

[Applications]

- Cleaning
- Etching
- Stripping
- Chemical treatment
- For periodic maintenance or for the applications where precise spray alignment is required



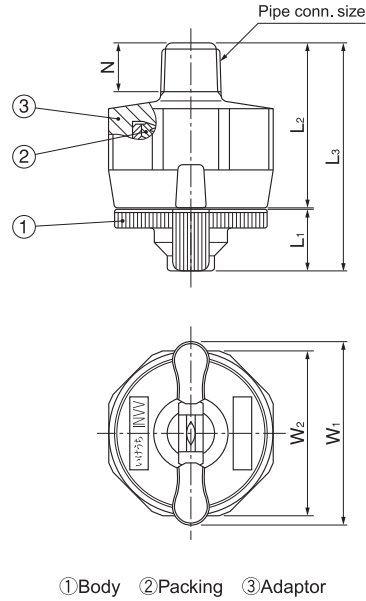
INVV series

INVV series	
Structure	<ul style="list-style-type: none"> • Two-piece structure comprising nozzle and adaptor. • Easy installation and removal by just turning a nozzle 60°.
Material	<ul style="list-style-type: none"> • Nozzle: PP • Adaptor: PPS • Packing: FEPM

Pipe conn. size	Dimensions (mm)						Mass (g)
	L ₁	L ₂	L ₃	W ₁	W ₂	N	
1/8M	10	27	37	30	27	8	12
1/4M	10	30	40	30	27	11.5	12
3/8M	10	30	40	30	27	12	14

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

• **INVV series nozzles are not compatible with the discontinued ISVV series.**



Spray Angle Code	Spray Capacity Code	Pipe Conn. Size			Spray Angle (°)			Spray Capacity (ℓ/min)							Mean Drop. Dia. (μm)	Free Pass. Dia. (mm)	Color of Nozzle Body
		1/8M	1/4M	3/8M	0.15 MPa	0.3 MPa	0.7 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa	0.7 MPa			
115	05	○	○	○	102	115	124	—	0.29	0.35	0.41	0.50	0.65	0.76	}	0.3	Green
	07	○	○	○	103	115	124	—	0.40	0.49	0.57	0.70	0.90	1.07		0.3	Brown
	10	○	○	○	103	115	124	0.41	0.58	0.71	0.82	1.00	1.29	1.53		0.4	Red
	15	○	○	○	104	115	123	0.61	0.87	1.06	1.23	1.50	1.94	2.29		0.5	Grey
	20	○	○	○	104	115	123	0.82	1.15	1.41	1.63	2.00	2.58	3.06		0.6	Black
	30	○	○	○	105	115	122	1.23	1.73	2.12	2.45	3.00	3.88	4.58		0.8	Blue
	40	○	○	○	106	115	122	1.63	2.31	2.83	3.27	4.00	5.16	6.11		0.8	Orange
90	05	○	○	○	77	90	100	—	0.29	0.35	0.41	0.50	0.65	0.76	}	0.3	Green
	07	○	○	○	78	90	100	—	0.40	0.49	0.57	0.70	0.90	1.07		0.4	Brown
	10	○	○	○	78	90	99	0.41	0.58	0.71	0.82	1.00	1.29	1.53		0.5	Red
	15	○	○	○	79	90	99	0.61	0.87	1.06	1.23	1.50	1.94	2.29		0.6	Grey
	20	○	○	○	79	90	98	0.82	1.15	1.41	1.63	2.00	2.58	3.06		0.7	Black
	30	○	○	○	80	90	97	1.23	1.73	2.12	2.45	3.00	3.88	4.58		0.9	Blue
	40	○	○	○	81	90	97	1.63	2.31	2.83	3.27	4.00	5.16	6.11		1.1	Orange
50	○	○	○	81	90	97	2.04	2.89	3.54	4.08	5.00	6.46	7.64	1.2	Pink		

Spray Angle Code	Spray Capacity Code	Pipe Conn. Size			Spray Angle (°)			Spray Capacity (ℓ/min)							Mean Drop. Dia. (μm)	Free Pass. Dia. (mm)	Color of Nozzle Body													
		1/8M	1/4M	3/8M	0.15 MPa	0.3 MPa	0.7 MPa	0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.5 MPa	0.7 MPa																
65	05	○	○	○	52	65	74	—	0.29	0.35	0.41	0.50	0.65	0.76	190	0.4														
	07	○	○	○	53	65	74	—	0.40	0.49	0.57	0.70	0.90	1.07				0.5												
	10	○	○	○	54	65	73	0.41	0.58	0.71	0.82	1.00	1.29	1.53						0.6										
	15	○	○	○	54	65	73	0.61	0.87	1.06	1.23	1.50	1.94	2.29								0.8								
	20	○	○	○	55	65	72	0.82	1.15	1.41	1.63	2.00	2.58	3.06										350	0.9					
	30	○	○	○	56	65	72	1.23	1.73	2.12	2.45	3.00	3.88	4.58													1.1			
	40	○	○	○	56	65	71	1.63	2.31	2.83	3.27	4.00	5.16	6.11															1.3	
	50	○	○	○	57	65	71	2.04	2.89	3.54	4.08	5.00	6.46	7.64																
50	05	○	○	○	38	50	59	—	0.29	0.35	0.41	0.50	0.65	0.76	210	0.4														
	07	○	○	○	38	50	58	—	0.40	0.49	0.57	0.70	0.90	1.07				0.5												
	10	○	○	○	40	50	58	0.41	0.58	0.71	0.82	1.00	1.29	1.53						0.6										
	15	○	○	○	40	50	57	0.61	0.87	1.06	1.23	1.50	1.94	2.29								0.8								
	20	○	○	○	41	50	57	0.82	1.15	1.41	1.63	2.00	2.58	3.06										400	1.0					
	30	○	○	○	42	50	56	1.23	1.73	2.12	2.45	3.00	3.88	4.58													1.2			
	40	○	○	○	42	50	56	1.63	2.31	2.83	3.27	4.00	5.16	6.11															1.4	
	50	○	○	○	43	50	55	2.04	2.89	3.54	4.08	5.00	6.46	7.64																

How to order

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

① Complete unit

(Example) ...1/8M(PT)INVV9030PP(FEPM)+PPS

1/8M (PT) INVV 90 30 PP (FEPM) + PPS

Pipe Conn. Size	Thread type	Spray Angle Code	Spray Capacity Code
1/8M	(PT)	115	05
1/4M	(NPT)	5	5
3/8M		50	50

② Nozzle only

(Example) ... INVV9030PP(FEPM)

INVV 90 30 PP (FEPM)

Spray Angle Code	Spray Capacity Code
115	05
5	5
50	50

ALSO AVAILABLE!

Quick-detachable
Full Cone
Spray Nozzles

INJXX series

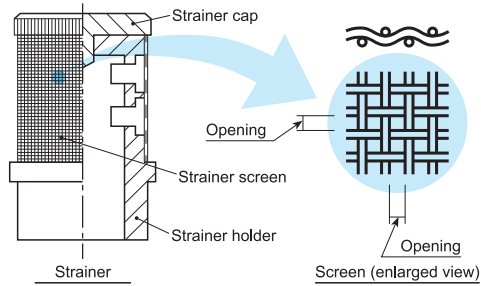
See p.63 of this catalog.

Effective Use of Standard Flat Spray Nozzles

Strainer Mesh Size

The strainer fitted inside the nozzle comprises strainer holder, strainer screen and strainer cap.

Strainer mesh size	Opening (mm)	Free passage diameter (mm)
#200	0.07	below 0.2
#150	0.10	0.3–0.4
#100	0.15	0.5–0.7
#50	0.30	0.8–0.9

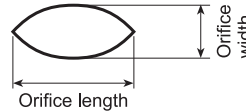


Advantages and Disadvantages of Ceramic Nozzles

- CERJET® Ceramic Nozzle can resist most acids and strong corrosive liquid except for hydrofluoric acid and strong alkalis (pH 12 or higher).
- CERJET® Ceramic Nozzle has high wear resistance (its hardness Mohs scale 7), several hundred times that of brass and 20–30 times that of stainless steel. It is well-suited for high pressure cleaning. However, it is brittle and may crack by quenching or sudden temperature drops of more than 200°C.
- For attaching the ceramic orifice to the metal body or retainer, epoxy resin adhesive (Araldite®) is used. In applications where epoxy resin is not suitable, CERTIIM® with the ceramic orifice inserted into a plastic body or retainer by injection molding is recommended.

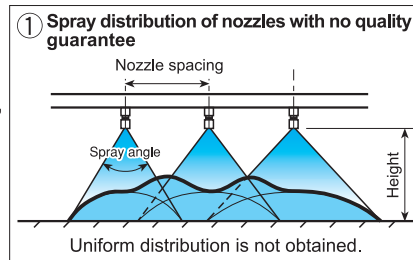
Free Passage Diameter

The standard flat spray nozzle orifice has a cat-eye shape. The free passage diameter is the orifice width multiplied with a safety factor.



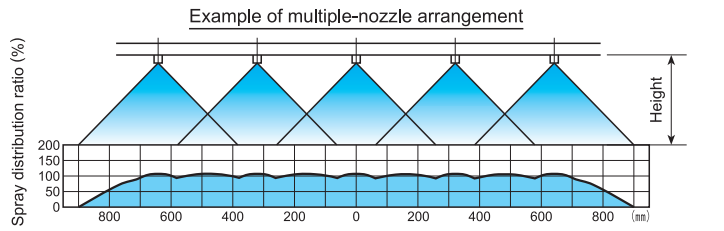
Spray Distribution

The standard flat spray nozzles are designed to produce a mountain-shaped distribution in order to obtain a uniform spray distribution in a multiple-nozzle arrangement. Although the distribution depends on spray height, nozzle spacing, liquid pressure and liquid nature, you need spray nozzles guaranteed in spray performance to get the desired superimposed spray distribution. IKEUCHI nozzles have guaranteed spray angles and spray capacities in order to maintain uniform distribution.



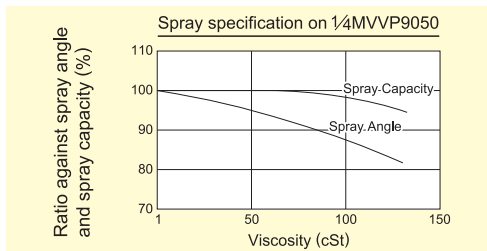
2 Spray distribution of nozzles guaranteed in spray performance

Uniform distribution is formed by overlapping mountain-shaped distributions.



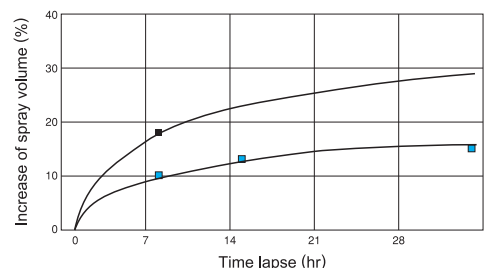
Viscosity

There is a tendency for spray capacity and spray angle to be decreased and also for spray distribution to deteriorate if the viscosity of the liquid is increased. The resistance of liquid in the pipe is also increased. When spraying such liquids, pressure drop in the pipe must be also taken into consideration.



Comparison of Wear-resistance

The comparison of wear-resistance between a UVVP series flat spray nozzle and our conventional type is shown here.



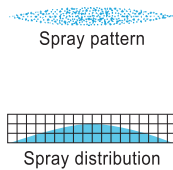
■ Conventional type
 ■ UVVP series
 Pressure: 0.3 MPa
 Test liquid: Al₂O₃ (#200) in water
 Percentage of Al₂O₃: 20wt%

Easy Maintenance
with
Quick-detachable Design

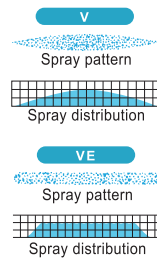
Hydraulic spray nozzles

Quick-Detachable Stainless Steel Spray Nozzles

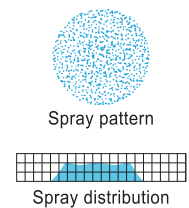
All metal, Flat spray
INVV-SS series



Ceramic orifice inserted, Flat spray
INV/INVE series

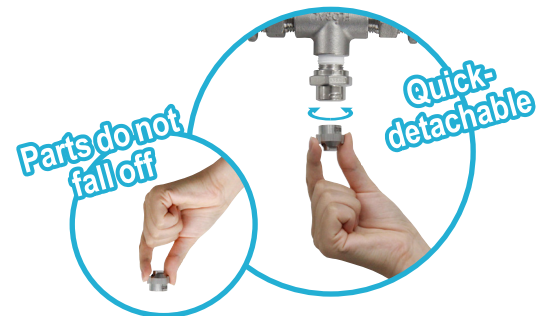


All metal, Full cone spray
INJX-SS series



Features

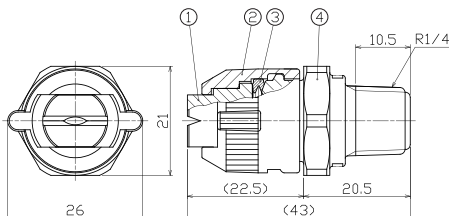
- Quick-detachable design helps to greatly reduce maintenance time.
- Easy mounting/dismounting with knurled tab.
- No falling off of tip or packing when removing the nozzle part.
- Made of stainless steel which provides high heat resistance and durability.



Dimensions, materials and mass

INVV-SS

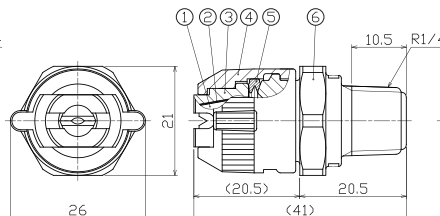
Mass: Approx. 57 g
Heat resistant temperature: 150°C
Pressure resistance: 2 MPa



Components	Materials
① Tip	Stainless steel 303
② Cap	Stainless steel 316L equivalent
③ Packing	FEPM
④ Adaptor	Stainless steel 316L equivalent

INV/INVE

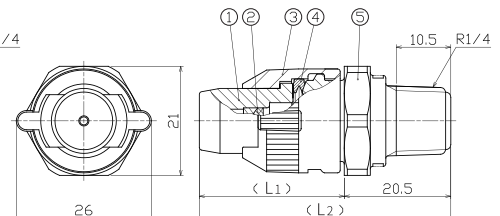
Mass: Approx. 51 g
Heat resistant temperature: 60°C
Pressure resistance: 2 MPa



Components	Materials
① Orifice	Ceramic
② Adhesive	Araldite®
③ Tip retainer	Stainless steel 303
④ Cap	Stainless steel 316L equivalent
⑤ Packing	FEPM
⑥ Adaptor	Stainless steel 316L equivalent

INJX-SS

Mass: Approx. 62 g
Heat resistant temperature: 150°C
Pressure resistance: 2 MPa



Components	Materials
① Tip	Stainless steel 303
② Whirler	Stainless steel 316L equivalent
③ Cap	Stainless steel 316L equivalent
④ Packing	FEPM
⑤ Adaptor	Stainless steel 316L equivalent

L1: 28 mm for INJX010-030, 34 mm for INJX040-060.
L2: 48.5 mm for INJX010-030, 54.5 mm for INJX040-060.

Note: Appearance and dimensions may differ depending on nozzle codes. Please contact us for the dimensional drawings of each nozzle code.



"The Fog Engineers"
H. IKEUCHI & Co., LTD.

