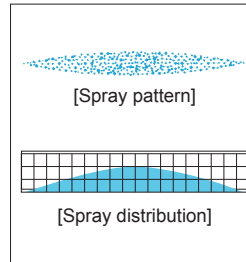


Quick-detachable Standard Flat Spray Nozzles

Stainless Steel

INVV-SS
INV



- Flat spray pattern with a mountain-shaped spray distribution and gradually tapered edges.
- The unique design accommodates easy installation and removal.
- Quick-detachable design helps to significantly reduce maintenance time.

[STANDARD PRESSURE]
0.3 MPa

[APPLICATIONS]

Cleaning: Automotives, containers, films, felts, filters, screens, bottles, crushed stone, earth and sand, metal parts, machines, steel plates and pieces

Spraying: Oils, lubricants, glues, insecticides, herbicides

Cooling: Tanks, roofs

Water screen: Dust suppression, deodorization

INVV-SS SERIES

Structure	• Includes a nozzle section (nozzle tip + cap + packing) and an adaptor. • Worn-out nozzle tips and other parts are available separately for replacement. • Easy installation and removal of the nozzle section with a twist of about 90°. • Tip or packing will not fall out when the nozzle section is removed.
Material	• Nozzle tip: S303 • Cap and Adaptor: S316L equivalent • Packing: FEPM
Weight	• Complete assembly: 57 g • Nozzle tip: 11 g

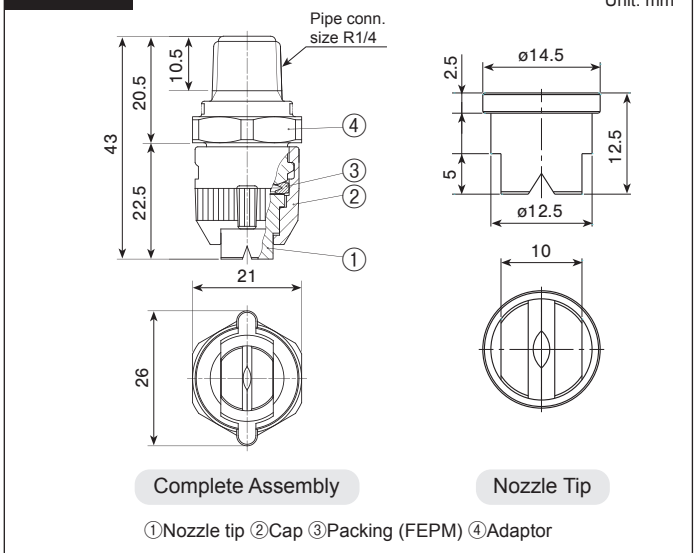
Max. temperature: 150°C

Max. operating pressure: 2.0 MPa

The flat spray spread direction is parallel to the surface milling.

[Note] Appearance and dimensions may differ slightly depending on material and nozzle code.

DRAWING



INV SERIES (with ceramic orifice)

Structure	• Has a ceramic orifice in the nozzle tip. • Includes a nozzle section (nozzle tip + cap + packing) and an adaptor. • Worn-out nozzle tips and other parts are available separately for replacement. • Easy installation and removal of the nozzle section with a twist of about 90°. • Tip or packing will not fall out when the nozzle section is removed.
Material	• Nozzle orifice: ceramic • Tip retainer: S303 • Cap and Adaptor: S316L equivalent • Packing: FEPM
Weight	• Complete assembly: 51 g • Nozzle tip: 6.5 g

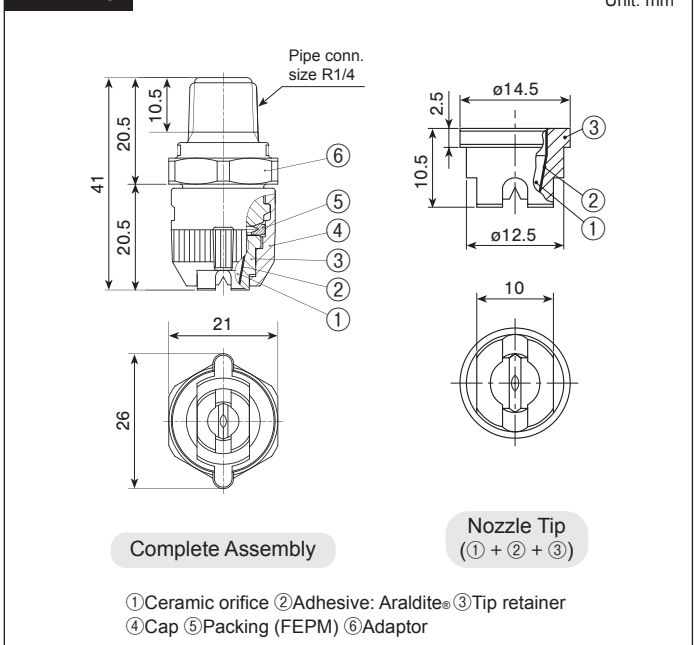
Max. temperature: 60°C

Max. operating pressure: 2.0 MPa

The flat spray spread direction is parallel to the surface milling.

[Note] Appearance and dimensions may differ slightly depending on material and nozzle code.

DRAWING



Quick-detachable Standard Flat Spray Nozzles

INVV-SS/INV SERIES Stainless Steel

Flat Spray

Spray angle code	Spray capacity code	INVV-SS	INV	Spray angle (°)			Spray capacity (L/min)										Mean droplet diameter (μm)	Free passage diameter (mm)
				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	1 MPa	2 MPa			
115	60	○		107	115	121	2.45	3.46	4.24	4.90	6.00	7.75	9.17	11.0	15.5	340	1.0	
	80	○		107	115	121	3.27	4.62	5.66	6.53	8.00	10.3	12.2	14.6	20.6	}	1.2	
	100	○		107	115	120	4.08	5.77	7.07	8.17	10.0	12.9	15.3	18.3	25.8	}	1.4	
	200	○		109	115	120	8.16	11.5	14.1	16.3	20.0	25.8	30.6	36.5	51.6	510	2.4	
90	40	○	○	81	90	97	1.63	2.31	2.83	3.27	4.00	5.16	6.11	7.30	10.3	300	1.1	
	50	○	○	81	90	97	2.04	2.89	3.54	4.08	5.00	6.46	7.64	9.13	12.9	}	1.2	
	60	○		82	90	96	2.45	3.46	4.24	4.90	6.00	7.75	9.17	11.0	15.5	}	1.3	
	80	○		82	90	96	3.27	4.62	5.66	6.53	8.00	10.3	12.2	14.6	20.6	}	1.5	
	100	○		82	90	96	4.08	5.77	7.07	8.17	10.0	12.9	15.3	18.3	25.8	}	1.8	
	120	○		83	90	95	4.90	6.93	8.49	9.80	12.0	15.5	18.3	21.9	31.0	}	1.9	
	140	○		83	90	95	5.72	8.08	9.90	11.4	14.0	18.1	21.4	25.6	36.1	}	2.1	
	170	○		83	90	95	6.94	9.82	12.0	13.9	17.0	22.0	26.0	31.1	43.9	}	2.3	
200	○		84	90	95	8.16	11.5	14.1	16.3	20.0	25.8	30.6	36.5	51.6	540	2.4		
80	30	○	○	70	80	87	1.23	1.73	2.12	2.45	3.00	3.88	4.58	5.48	7.75	290	1.0	
	40	○	○	71	80	87	1.63	2.31	2.83	3.27	4.00	5.16	6.11	7.30	10.3	}	1.2	
	80	○	○	72	80	86	3.27	4.62	5.66	6.53	8.00	10.3	12.2	14.6	20.6	}	1.7	
	100	○		72	80	85	4.08	5.77	7.07	8.17	10.0	12.9	15.3	18.3	25.8	}	2.0	
	120	○		73	80	85	4.90	6.93	8.49	9.80	12.0	15.5	18.3	21.9	31.0	}	2.3	
	200	○		74	80	85	8.16	11.5	14.1	16.3	20.0	25.8	30.6	36.5	51.6	550	2.8	
65	30	○	○	56	65	72	1.23	1.73	2.12	2.45	3.00	3.88	4.58	5.48	7.75	310	1.1	
	40	○	○	56	65	71	1.63	2.31	2.83	3.27	4.00	5.16	6.11	7.30	10.3	}	1.3	
	50	○	○	57	65	71	2.04	2.89	3.54	4.08	5.00	6.46	7.64	9.13	12.9	}	1.5	
	60	○	○	57	65	71	2.45	3.46	4.24	4.90	6.00	7.75	9.17	11.0	15.5	}	1.6	
	80	○	○	58	65	71	3.27	4.62	5.66	6.53	8.00	10.3	12.2	14.6	20.6	}	1.9	
	100	○		58	65	70	4.08	5.77	7.07	8.17	10.0	12.9	15.3	18.3	25.8	}	2.1	
	120	○		58	65	70	4.90	6.93	8.49	9.80	12.0	15.5	18.3	21.9	31.0	}	2.3	
	140	○		59	65	69	5.72	8.08	9.90	11.4	14.0	18.1	21.4	25.6	36.1	}	2.5	
170	○		59	65	69	6.94	9.82	12.0	13.9	17.0	22.0	26.0	31.1	43.9	}	2.8		
200	○		59	65	69	8.16	11.5	14.1	16.3	20.0	25.8	30.6	36.5	51.6	580	3.0		
50	20	○	○	41	50	57	0.82	1.15	1.41	1.63	2.00	2.58	3.06	3.65	5.16	320	1.0	
	30	○	○	42	50	56	1.23	1.73	2.12	2.45	3.00	3.88	4.58	5.48	7.75	}	1.2	
	40	○	○	42	50	56	1.63	2.31	2.83	3.27	4.00	5.16	6.11	7.30	10.3	}	1.4	
	80	○	○	43	50	55	3.27	4.62	5.66	6.53	8.00	10.3	12.2	14.6	20.6	}	2.0	
	120	○		44	50	54	4.90	6.93	8.49	9.80	12.0	15.5	18.3	21.9	31.0	}	2.4	
	200	○		45	50	53	8.16	11.5	14.1	16.3	20.0	25.8	30.6	36.5	51.6	640	3.3	
40	20	○		32	40	46	0.82	1.15	1.41	1.63	2.00	2.58	3.06	3.65	5.16	380	1.0	
	30	○		33	40	46	1.23	1.73	2.12	2.45	3.00	3.88	4.58	5.48	7.75	}	1.3	
	40	○		33	40	45	1.63	2.31	2.83	3.27	4.00	5.16	6.11	7.30	10.3	}	1.5	
	80	○		34	40	44	3.27	4.62	5.66	6.53	8.00	10.3	12.2	14.6	20.6	}	2.1	
	120	○		35	40	44	4.90	6.93	8.49	9.80	12.0	15.5	18.3	21.9	31.0	}	2.8	
	200	○		35	40	43	8.16	11.5	14.1	16.3	20.0	25.8	30.6	36.5	51.6	710	3.5	
25	15	○		19	25	31	0.61	0.87	1.06	1.23	1.50	1.94	2.29	2.74	3.87	440	1.0	
	30	○		19	25	30	1.23	1.73	2.12	2.45	3.00	3.88	4.58	5.48	7.75	}	1.4	
	40	○		19	25	30	1.63	2.31	2.83	3.27	4.00	5.16	6.11	7.30	10.3	}	1.7	
	80	○		20	25	29	3.27	4.62	5.66	6.53	8.00	10.3	12.2	14.6	20.6	}	2.3	
	200	○		21	25	27	8.16	11.5	14.1	16.3	20.0	25.8	30.6	36.5	51.6	850	3.9	
15	15	○		10	15	20	0.61	0.87	1.06	1.23	1.50	1.94	2.29	2.74	3.87	500	1.0	
	30	○		10	15	19	1.23	1.73	2.12	2.45	3.00	3.88	4.58	5.48	7.75	}	1.5	
	40	○		10	15	19	1.63	2.31	2.83	3.27	4.00	5.16	6.11	7.30	10.3	}	1.7	
	80	○		11	15	18	3.27	4.62	5.66	6.53	8.00	10.3	12.2	14.6	20.6	}	2.4	
	200	○		11	15	17	8.16	11.5	14.1	16.3	20.0	25.8	30.6	36.5	51.6	1,000	4.0	

HOW TO ORDER

To inquire about or order a specific nozzle please refer to this coding system.

① Complete Assembly

Example: 1/4M INV V 11560 S303 (FEPM) + S316L-IN

1/4M	INV V	115	60	S303 (FEPM) + S316L-IN
Pipe conn. size ¹⁾	Series	Spray angle code	Spray capacity code	Nozzle tip material Packing material Material of cap & adaptor
	INV V	115	15	
	INV	15	200	

② Nozzle Tip Only²⁾

Example: 1/4 V V 11560 S303

1/4	V V	115	60	S303
	Series	Spray angle code	Spray capacity code	Material
	V V	115	15	
	V	15	200	

③ Adaptor (R1/4), cap, and packing are available separately for purchase.¹⁾ "M" indicates male thread ("R" of the ISO standard), e.g. 1/4M = R1/4.²⁾ Nozzle tips for the INV V-SS series are the same as those used for the V V series.
Nozzle tips for the INV series are the same as those used for the V series.**ALSO AVAILABLE!**Quick-detachable **Even Flat** Spray NozzlesStainless Steel**INVE** SERIES

See page 27 of this catalog.

Quick-detachable Standard Flat Spray Nozzles

Plastic

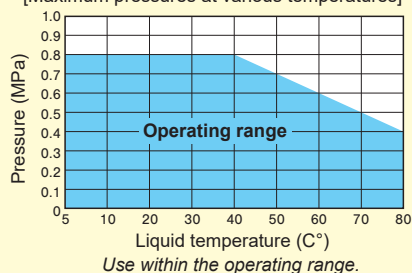
INVV

Flat Spray

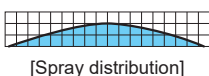


- Flat spray pattern with a mountain-shaped spray distribution and gradually tapered edges.
- Made of highly chemical and heat resistant plastic.
- Quick-detachable design helps to significantly reduce maintenance time.
- Nozzle tips are color-coded by spray capacity for easy identification.
- Adaptors are color-coded by material: gray for PP and black for PPS. (PVDF adaptor is only available on a made-to-order basis.)

[Maximum pressures at various temperatures]



[Spray pattern]



[STANDARD PRESSURE]

0.3 MPa

[APPLICATIONS]

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

Structure	• Two-piece structure including a nozzle tip with packing and an adaptor. • Easy installation and removal of the nozzle tip with a twist of about 60°.
Material	• Nozzle tip: PP • Adaptor: PP or PPS [SPECIAL ORDER MATERIAL: PVDF] • Packing: FEPM

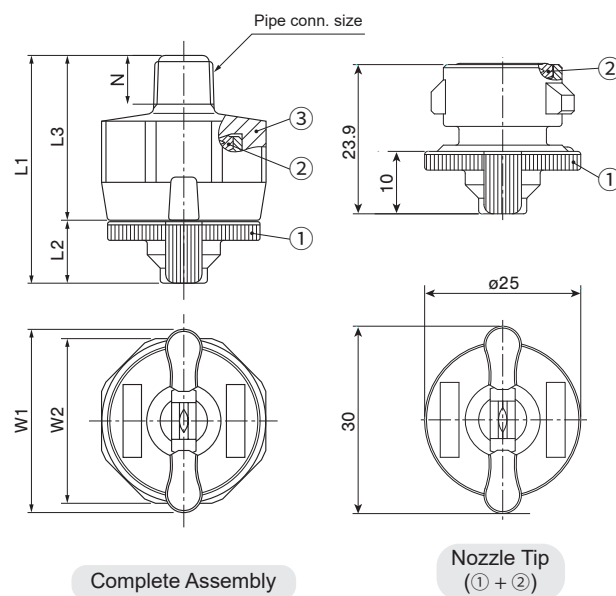
Pipe conn. size	Dimensions (mm)						Weight (g)	
	L1	L2	L3	W1	W2	N	PP	PPS
R1/8	37	10	27	30	27	8	9.0	12
R1/4	40	10	30	30	27	11.5	9.4	12
R3/8	40	10	30	30	27	12	10.3	14

[Note]

- **INVV series nozzles are not compatible with the discontinued ISVV series.**
- Appearance and dimensions may differ slightly depending on material and nozzle code.
- The tabs (wings) are in line with the flat spray spread direction.

DRAWING

Unit: mm



① Nozzle tip ② Packing (FEPM) ③ Adaptor

Spray angle code	Spray capacity code	Pipe connection size			Spray angle (°)			Spray capacity (L/min)							Mean drop. dia. (µm)	Free pass. dia. (mm)	Nozzle tip color
		R1/8	R1/4	R3/8	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	160	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	300	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
	50	○	○	○	106	115	122	2.04	2.89	3.54	4.08	5.00	6.46	7.64		0.9	Pink
90	05	○	○	○	77	90	100	—	0.29	0.35	0.41	0.50	0.65	0.76	170	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	300	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
65	05	○	○	○	52	65	74	—	0.29	0.35	0.41	0.50	0.65	0.76	190	0.4	Green
	07	○	○	○	53	65	74	—	0.40	0.49	0.57	0.70	0.90	1.07		0.5	Brown
	10	○	○	○	54	65	73	0.41	0.58	0.71	0.82	1.00	1.29	1.53		0.6	Red
	15	○	○	○	54	65	73	0.61	0.87	1.06	1.23	1.50	1.94	2.29		0.8	Grey
	20	○	○	○	55	65	72	0.82	1.15	1.41	1.63	2.00	2.58	3.06	350	0.9	Black
	30	○	○	○	56	65	72	1.23	1.73	2.12	2.45	3.00	3.88	4.58		1.1	Blue
	40	○	○	○	56	65	71	1.63	2.31	2.83	3.27	4.00	5.16	6.11		1.3	Orange
	50	○	○	○	57	65	71	2.04	2.89	3.54	4.08	5.00	6.46	7.64		1.5	Pink
50	05	○	○	○	38	50	59	—	0.29	0.35	0.41	0.50	0.65	0.76	210	0.4	Green
	07	○	○	○	38	50	58	—	0.40	0.49	0.57	0.70	0.90	1.07		0.5	Brown
	10	○	○	○	40	50	58	0.41	0.58	0.71	0.82	1.00	1.29	1.53		0.6	Red
	15	○	○	○	40	50	57	0.61	0.87	1.06	1.23	1.50	1.94	2.29		0.8	Grey
	20	○	○	○	41	50	57	0.82	1.15	1.41	1.63	2.00	2.58	3.06	400	1.0	Black
	30	○	○	○	42	50	56	1.23	1.73	2.12	2.45	3.00	3.88	4.58		1.2	Blue
	40	○	○	○	42	50	56	1.63	2.31	2.83	3.27	4.00	5.16	6.11		1.4	Orange
	50	○	○	○	43	50	55	2.04	2.89	3.54	4.08	5.00	6.46	7.64		1.6	Pink

HOW TO ORDER

To inquire about or order a specific nozzle please refer to this coding system.

① Complete Assembly

Example: 1/8M INVV 9030 PP (FEPM) + PP

1/8M	INVV	90	30	PP (FEPM) +	PP
Pipe conn. size*		Spray angle code	Spray capacity code	Nozzle tip material (packing: FEPM)	Adaptor material
1/8M		115	05		PP
1/4M		50	50		PPS
3/8M					

③ Adaptor is available for purchase separately.

**M" indicates male thread ("R" of the ISO standard), e.g. 1/8M = R1/8.

② Nozzle Tip Only (with packing)

Example: INVV 9030 PP (FEPM)

INVV	90	30	PP (FEPM)
	Spray angle code	Spray capacity code	Nozzle tip material (packing: FEPM)
	115	05	
	50	50	

ALSO AVAILABLE!

Quick-detachable
Off-center Even Flat
Spray Nozzles

INOVE SERIES

See page 39 for more details.

Quick-detachable
Full Cone
Spray Nozzles

INJXX SERIES

See page 67 for more details.

Quick-detachable IN PLUG SERIES

Picture	Features																					
 IN Plug tip	• Two-piece structure includes a plug tip with packing and an adaptor. • You can change an IN-series nozzle tip to this plug tip, or replace a complete IN nozzle assembly with an IN plug assembly. IN plug tips are compatible with INVV, INOVVE, and INJJX series adaptors. When ordering use the item names shown in the table below. <table><tr><th>Pipe conn. size</th><th>Adaptor material</th><th>Order item name</th></tr><tr><td rowspan="2">R1/8</td><td>PPS</td><td>1/8M INPLUG PP(FEPM)+PPS</td></tr><tr><td>PP</td><td>1/8M INPLUG PP(FEPM)+PP</td></tr><tr><td rowspan="2">R1/4</td><td>PPS</td><td>1/4M INPLUG PP(FEPM)+PPS</td></tr><tr><td>PP</td><td>1/4M INPLUG PP(FEPM)+PP</td></tr><tr><td rowspan="2">R3/8</td><td>PPS</td><td>3/8M INPLUG PP(FEPM)+PPS</td></tr><tr><td>PP</td><td>3/8M INPLUG PP(FEPM)+PP</td></tr><tr><td colspan="2">Plug tip only, without adaptor</td><td>INPLUG PP(FEPM)</td></tr></table>	Pipe conn. size	Adaptor material	Order item name	R1/8	PPS	1/8M INPLUG PP(FEPM)+PPS	PP	1/8M INPLUG PP(FEPM)+PP	R1/4	PPS	1/4M INPLUG PP(FEPM)+PPS	PP	1/4M INPLUG PP(FEPM)+PP	R3/8	PPS	3/8M INPLUG PP(FEPM)+PPS	PP	3/8M INPLUG PP(FEPM)+PP	Plug tip only, without adaptor		INPLUG PP(FEPM)
Pipe conn. size	Adaptor material	Order item name																				
R1/8	PPS	1/8M INPLUG PP(FEPM)+PPS																				
	PP	1/8M INPLUG PP(FEPM)+PP																				
R1/4	PPS	1/4M INPLUG PP(FEPM)+PPS																				
	PP	1/4M INPLUG PP(FEPM)+PP																				
R3/8	PPS	3/8M INPLUG PP(FEPM)+PPS																				
	PP	3/8M INPLUG PP(FEPM)+PP																				
Plug tip only, without adaptor		INPLUG PP(FEPM)																				