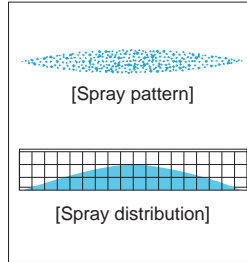


# Quick-detachable Standard Flat Spray Nozzles

Stainless Steel

INVV-SS  
INV

Flat Spray



- 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]

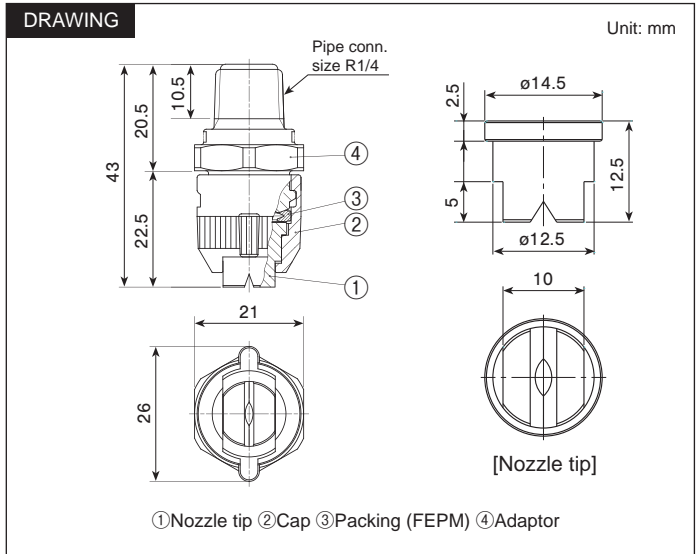
**Cleaning:** Automotives, containers, films, felts, filters, screens, bottles, crushed stone, earth and sand, metal parts, machines, steel plates and pieces  
**Spraying:** Oils, lubricants, glues, insecticides, herbicides  
**Cooling:** Tanks, roofs  
**Water screen:** Dust suppression, deodorization

## INVV-SS SERIES

Structure	<ul style="list-style-type: none"> <li>• Includes a nozzle section (nozzle tip + cap + packing) and an adaptor.</li> <li>• Worn-out nozzle tips and other parts are available separately for replacement.</li> <li>• Easy installation and removal of the nozzle section with a twist of about 90°.</li> <li>• Tip or packing will not fall out when the nozzle section is removed.</li> </ul>
Material	<ul style="list-style-type: none"> <li>• Nozzle tip: S303</li> <li>• Cap and Adaptor: S316L equivalent</li> <li>• Packing: FEPM</li> </ul>
Weight	<ul style="list-style-type: none"> <li>• Complete assembly: 57 g</li> <li>• Nozzle tip: 13 g</li> </ul>

Max. temperature: 150°C  
 Max. operating pressure: 2.0 MPa

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

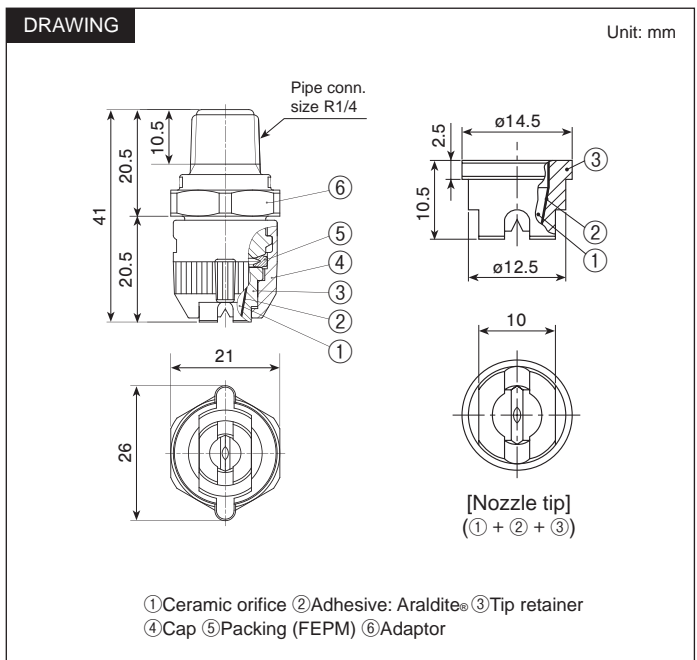


## INV SERIES (with ceramic orifice)

Structure	<ul style="list-style-type: none"> <li>• Has a ceramic orifice in the nozzle tip.</li> <li>• Includes a nozzle section (nozzle tip + cap + packing) and an adaptor.</li> <li>• Worn-out nozzle tips and other parts are available separately for replacement.</li> <li>• Easy installation and removal of the nozzle section with a twist of about 90°.</li> <li>• Tip or packing will not fall out when the nozzle section is removed.</li> </ul>
Material	<ul style="list-style-type: none"> <li>• Nozzle orifice: ceramic</li> <li>• Tip retainer: S303</li> <li>• Cap and Adaptor: S316L equivalent</li> <li>• Packing: FEPM</li> </ul>
Weight	<ul style="list-style-type: none"> <li>• Complete assembly: 51 g</li> <li>• Nozzle tip: 6.5 g</li> </ul>

Max. temperature: 60°C  
 Max. operating pressure: 2.0 MPa

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



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
	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
	200	○	○	59	65	69	5.72	8.08	9.90	11.4	14.0	18.1	21.4	25.6	36.1	}	2.5
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
	200	○	○	35	40	44	4.90	6.93	8.49	9.80	12.0	15.5	18.3	21.9	31.0	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
	200	○	○	20	25	29	3.27	4.62	5.66	6.53	8.00	10.3	12.2	14.6	20.6	850	2.3
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 INVV 11560 S303 (FEPM) + S316L-IN

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

② Nozzle Tip Only<sup>2</sup>

Example: 1/4 VV 11560 S303

1/4	VV	115	60	S303
	Series	Spray angle code	Spray capacity code	Material
	VV V	115 }	15 }	
		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 INVV-SS series are the same as those used for the VV series.  
 Nozzle tips for the INV series are the same as those used for the V series.

ALSO AVAILABLE!

Quick-detachable **Even Flat Spray Nozzles**

Stainless Steel

**INVE** SERIES

See page 27 of this catalog.

# Quick-detachable Standard Flat Spray Nozzles

Plastic

INVV

Flat Spray

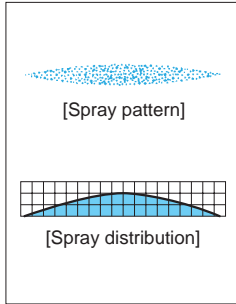
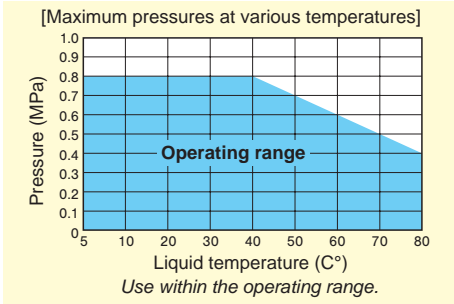


- Flat spray pattern with a mountain-shaped spray distribution and gradually tapered edges.
- Made of highly chemical and heat resistant PP (polypropylene).
- Quick-detachable design helps to significantly reduce maintenance time.
- Nozzle tips are color-coded by spray capacity for easy identification.

**[STANDARD PRESSURE]**  
0.3 MPa

**[APPLICATIONS]**

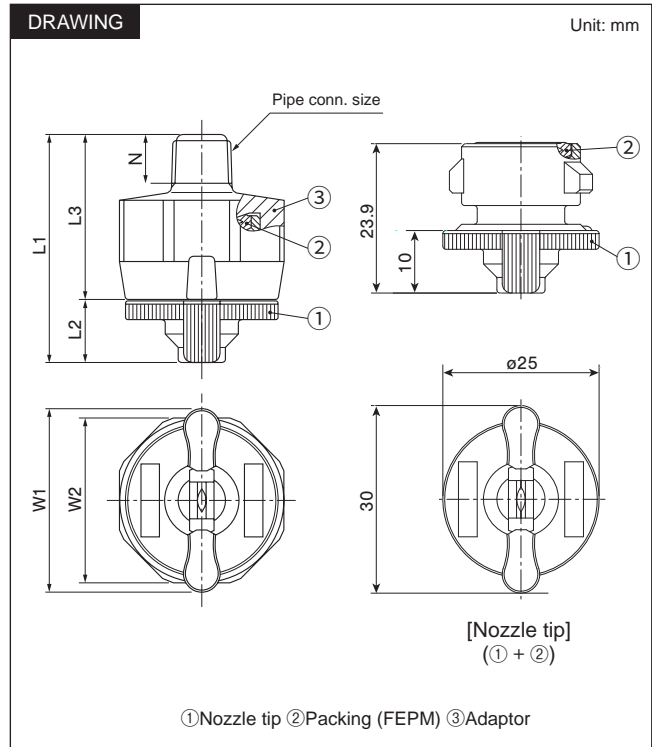
- Cleaning
- Etching
- Stripping
- Chemical treatment
- For periodic maintenance or for applications where precise spray alignment is required



Structure	<ul style="list-style-type: none"> <li>• Two-piece structure including a nozzle tip with packing and an adaptor.</li> <li>• Easy installation and removal of the nozzle tip with a twist of about 60°.</li> </ul>
Material	<ul style="list-style-type: none"> <li>• Nozzle tip: PP</li> <li>• Adaptor: PP or PPS</li> <li>• Packing: FEPM</li> </ul>

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.



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	}	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	
50	○	○	○	106	115	122	2.04	2.89	3.54	4.08	5.00	6.46	7.64	300	0.9	Pink	
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	300	1.2	Pink	
65	05	○	○	○	52	65	74	—	0.29	0.35	0.41	0.50	0.65	0.76	}	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		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	350	1.5	Pink	
50	05	○	○	○	38	50	59	—	0.29	0.35	0.41	0.50	0.65	0.76	}	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		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	400	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					

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	

③ Adaptor is available for purchase separately.

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

**ALSO AVAILABLE!**

Quick-detachable Off-center Even Flat Spray Nozzles

INOVVE 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																				
 <p>IN Plug tip</p>	<ul style="list-style-type: none"> <li>Two-piece structure includes a plug tip with packing and an adaptor.</li> <li>You can change an IN-series nozzle tip to this plug tip, or replace a complete IN nozzle assembly with an IN plug assembly.</li> </ul> <p>IN plug tips are compatible with INVV, INOVVE, and INJXX series adaptors. When ordering use the item names shown in the table below.</p>																				
	<table border="1"> <thead> <tr> <th>Pipe conn. size</th> <th>Adaptor material</th> <th>Order item name</th> </tr> </thead> <tbody> <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> </tbody> </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	
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)																			