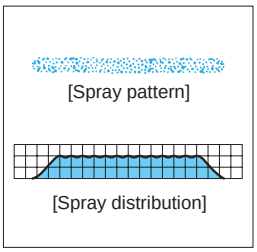
Even Flat Spray Nozzles VE/VEP



- Flat spray pattern with uniform distribution across the pattern area.
- Even spray impact across the entire spray area.

[STANDARD PRESSURE]
0.3 MPa

[APPLICATIONS]

Cleaning: Automotives, containers, films, felts, filters, screens, bottles, crushed stone, earth and sand, metal parts, machines, steel plates, steel pieces, wires
Spraying: Etchants, oils, lubricants, liquids, solutions, insecticides, herbicides
Cooling: Gas, heat exchangers, tanks, steel, roofs
Water screen: Fire protection, heat protection, dust suppression, deodorization

VE SERIES (three-piece structure)

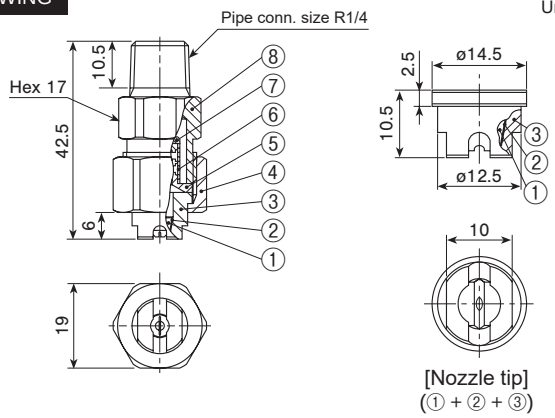
Structure	• Three-piece structure with a ceramic orifice insert. • Includes three parts: Nozzle tip, cap, and adaptor. Worn-out nozzle tips can be replaced separately. • Small spray capacity models come with or without a strainer.
Material	• Nozzle orifice: ceramic • Tip retainer: S303 • Cap, Adaptor, and Strainer: S303 SPECIAL ORDER MATERIAL: S316 or others
Weight	• Complete assembly*1: 49 g • Nozzle tip: 6.5 g

*1) With a strainer, add 2–5 g to the above weight and 2 mm to the total length.

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

DRAWING

Unit: mm



Nozzle (①Ceramic orifice ②Adhesive: Araldite® ③Tip retainer ④Cap ⑧Adaptor)
Strainer (⑤Strainer holder ⑥Strainer screen [S316] ⑦Strainer cap)

VEP SERIES (one-piece structure)

Structure	• One-piece structure with a ceramic orifice insert. • Small spray capacity VEP nozzles made of metal come with or without a strainer. • CERTIIM® is a one-piece plastic nozzle molded around a ceramic orifice.
Material	• Nozzle orifice: ceramic • Metal parts: S303 or B (brass) • CERTIIM®'s plastic body: PVDF SPECIAL ORDER MATERIAL: S316 or others

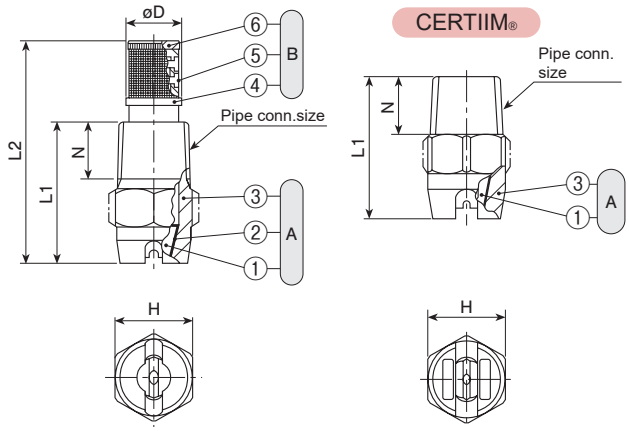
Pipe conn. size	Dimensions (mm)					Weight (g)		
	L1	L2	H	øD	N	S303*1	B*1	CERTIIM®
R1/8	16.5	30	12	7.5	6.5	8	9	–
R1/4	26	40	14	10	10.5	20	22	–
R3/8	30	–	19	–	11	33	–	–
R1/2	38	–	23	–	14	57	–	–
CERTIIM® R1/8	22	–	12	–	8.5	–	–	2.1
CERTIIM® R1/4	26	–	14	–	10.5	–	–	6

*1) With a strainer, add 2–5 g to the above weight.
No strainers for CERTIIM® (VEP-TPVDF).

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

DRAWING

Unit: mm



Ⓐ **Nozzle** (①Ceramic orifice ②Adhesive: Araldite® ③Nozzle body)
Ⓑ **Strainer** (④Strainer holder ⑤Strainer screen [S316] ⑥Strainer cap)

Spray angle code	Spray capacity code	Pipe connection size							Spray angle (°)			Spray capacity (L/min)											Mean drop. dia. (μm)	Free pass. dia. (mm)	Strainer mesh size
		VE	VEP																						
			Metal				CER-TIIM®																		
		R1/4	R1/8	R1/4	R3/8	R1/2	R1/8	R1/4	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	3 MPa*2	5 MPa*2			
115	19	●		●				○	104	115	122	0.78	1.10	1.34	1.55	1.90	2.45	2.90	3.47	4.91	6.00	7.76	240	0.5	100
	23	●		●				○	105	115	122	0.94	1.33	1.63	1.88	2.30	2.97	3.51	4.20	5.94	7.27	9.39		0.6	100
	31	●		●				○	105	115	122	1.26	1.79	2.19	2.53	3.10	4.00	4.74	5.66	8.00	9.80	12.7		0.6	100
	36	●		●				○	105	115	122	1.47	2.08	2.55	2.94	3.60	4.65	5.50	6.57	9.30	11.4	14.6		0.7	50
	39	●		●				○	105	115	122	1.59	2.25	2.76	3.18	3.90	5.03	5.96	7.12	10.1	12.3	15.9	≀	0.7	50
	59	●		●				○	105	115	122	2.40	3.41	4.17	4.82	5.90	7.62	9.01	10.8	15.2	18.6	24.1		0.9	50
	78	○		○				○	106	115	121	3.18	4.50	5.52	6.37	7.80	10.1	11.9	14.2	20.1	24.7	31.8		1.0	–
	117	○		○				○	106	115	120	4.78	6.75	8.27	9.55	11.7	15.1	17.8	21.4	30.2	37.0	47.8		1.2	–
	157	○		○				○	106	115	120	6.41	9.06	11.1	12.8	15.7	20.3	24.0	28.0	40.5	49.6	64.1		1.4	–
	196				○				108	115	120	8.00	11.3	13.9	16.0	19.6	25.3	30.0	35.8	50.6	62.0	80.0	450	1.6	–
	235				○				108	115	118	9.54	13.6	16.6	19.2	23.5	30.3	35.9	42.9	60.7	74.3	95.9	≀	1.7	–
	274				○				108	115	118	11.2	15.8	19.4	22.4	27.4	35.4	41.9	50.0	70.7	86.6	112		1.9	–
	314					○			108	115	118	12.8	18.1	22.2	25.6	31.4	40.5	48.0	57.3	81.1	99.3	128	510	2.0	–
	392					○			108	115	118	16.0	22.6	27.7	32.0	39.2	50.6	60.0	71.6	101	124	160	≀	2.2	–
	469					○			108	115	118	19.1	27.0	33.2	38.4	46.9	60.7	71.8	85.6	121	149	192	640	2.4	–
90	03	●	●	●			○	○	78	90	101	–	0.17	0.21	0.24	0.30	0.39	0.46	0.55	0.77	0.95	1.22	140	0.2	200
	04	●	●	●			○	○	79	90	101	–	0.23	0.28	0.33	0.40	0.52	0.61	0.73	1.03	1.26	1.63		0.2	200
	05	●	●	●			○	○	79	90	101	–	0.29	0.35	0.41	0.50	0.65	0.76	0.91	1.29	1.58	2.04		0.3	150
	07	●	●	●			○	○	80	90	101	–	0.40	0.49	0.57	0.70	0.90	1.07	1.28	1.81	2.21	2.86	≀	0.3	150
	10	●	●	●			○	○	80	90	100	0.41	0.58	0.71	0.82	1.00	1.29	1.53	1.83	2.58	3.16	4.08		0.4	150
	15	●	●	●			○	○	82	90	100	0.61	0.87	1.06	1.23	1.50	1.94	2.29	2.74	3.87	4.74	6.12		0.4	150
	19	●		●				○	82	90	98	0.78	1.10	1.34	1.55	1.90	2.45	2.90	3.47	4.91	6.00	7.76	250	0.7	50
	23	●		●				○	82	90	98	0.94	1.33	1.63	1.88	2.30	2.97	3.51	4.20	5.94	7.27	9.39		0.7	50
	31	●		●				○	83	90	97	1.26	1.79	2.19	2.53	3.10	4.00	4.74	5.66	8.00	9.80	12.7		0.9	50
	36	○		○				○	83	90	97	1.47	2.08	2.55	2.94	3.60	4.65	5.50	6.57	9.30	11.4	14.6		1.0	–
	39	○		○				○	83	90	97	1.59	2.25	2.76	3.18	3.90	5.03	5.96	7.12	10.1	12.3	15.9		1.0	–
	59	○		○				○	83	90	97	2.40	3.41	4.17	4.82	5.90	7.62	9.01	10.8	15.2	18.6	24.1	≀	1.2	–
	78	○		○				○	84	90	97	3.18	4.50	5.52	6.37	7.80	10.1	11.9	14.2	20.1	24.7	31.8		1.4	–
	117	○		○				○	84	90	96	4.78	6.75	8.27	9.55	11.7	15.1	17.8	21.4	30.2	37.0	47.8		1.7	–
	157	○		○				○	84	90	96	6.41	9.06	11.1	12.8	15.7	20.3	24.0	28.0	40.5	49.6	64.1		2.0	–
	196				○				84	90	96	8.00	11.3	13.9	16.0	19.6	25.3	30.0	35.8	50.6	62.0	80.0	480	2.2	–
	235				○				85	90	95	9.54	13.6	16.6	19.2	23.5	30.3	35.9	42.9	60.7	74.3	95.9		2.4	–
	274				○				85	90	95	11.2	15.8	19.4	22.4	27.4	35.4	41.9	50.0	70.7	86.6	112	≀	2.6	–
	314					○			85	90	94	12.8	18.1	22.2	25.6	31.4	40.5	48.0	57.3	81.1	99.3	128	540	2.8	–
	392					○			85	90	94	16.0	22.6	27.7	32.0	39.2	50.6	60.0	71.6	101	124	160	≀	3.1	–
	469					○			85	90	94	19.1	27.0	33.2	38.4	46.9	60.7	71.8	85.6	121	149	192	680	3.4	–
80	19	●		●				○	72	80	84	0.78	1.10	1.34	1.55	1.90	2.45	2.90	3.47	4.91	6.00	7.76	260	0.7	50
	23	●		●				○	72	80	84	0.94	1.33	1.63	1.88	2.30	2.97	3.51	4.20	5.94	7.27	9.39		0.8	50
	31	●		●				○	72	80	84	1.26	1.79	2.19	2.53	3.10	4.00	4.74	5.66	8.00	9.80	12.7		0.9	50
	36	○		○				○	72	80	84	1.47	2.08	2.55	2.94	3.60	4.65	5.50	6.57	9.30	11.4	14.6		1.0	–
	39	○		○				○	73	80	84	1.59	2.25	2.76	3.18	3.90	5.03	5.96	7.12	10.1	12.3	15.9	≀	1.0	–
	59	○		○				○	74	80	84	2.40	3.41	4.17	4.82	5.90	7.62	9.01	10.8	15.2	18.6	24.1		1.3	–
	78	○		○				○	74	80	84	3.18	4.50	5.52	6.37	7.80	10.1	11.9	14.2	20.1	24.7	31.8		1.6	–
	117	○		○				○	75	80	84	4.78	6.75	8.27	9.55	11.7	15.1	17.8	21.4	30.2	37.0	47.8		1.9	–
	157	○		○				○	76	80	84	6.41	9.06	11.1	12.8	15.7	20.3	24.0	28.0	40.5	49.6	64.1		2.4	–
	196				○				76	80	83	8.00	11.3	13.9	16.0	19.6	25.3	30.0	35.8	50.6	62.0	80.0	490	2.6	–
	235				○				76	80	83	9.54	13.6	16.6	19.2	23.5	30.3	35.9	42.9	60.7	74.3	95.9	≀	3.1	–
	274				○				76	80	83	11.2	15.8	19.4	22.4	27.4	35.4	41.9	50.0	70.7	86.6	112		3.3	–
	314					○			76	80	83	12.8	18.1	22.2	25.6	31.4	40.5	48.0	57.3	81.1	99.3	128	560	3.3	–
	392					○			76	80	83	16.0	22.6	27.7	32.0	39.2	50.6	60.0	71.6	101	124	160	≀	3.7	–
	469					○			76	80	83	19.1	27.0	33.2	38.4	46.9	60.7	71.8	85.6	121	149	192	700	4.3	–
65	03	●	●	●			○	○	54	65	76	–	0.17	0.21	0.24	0.30	0.39	0.46	0.55	0.77	0.95	1.22	150	0.3	150
	04	●	●	●			○	○	54	65	76	–	0.23	0.28	0.33	0.40	0.52	0.61	0.73	1.03	1.26	1.63		0.3	150
	05	●	●	●			○	○	54	65	75	–	0.29	0.35	0.41	0.50	0.65	0.76	0.91	1.29	1.58	2.04		0.4	150
	07	●	●	●			○	○	55	65	75	–	0.40	0.49	0.57	0.70	0.90	1.07	1.28	1.81	2.21	2.86	≀	0.4	150
	10	●	●	●			○	○	56	65	74	0.41	0.58	0.71	0.82	1.00	1.29	1.53	1.83	2.58	3.16	4.08		0.5	100
	15	●	●	●			○	○	56	65	74	0.61	0.87	1.06	1.23	1.50	1.94	2.29	2.74	3.87	4.74	6.12		0.5	100
	19	●		●				○	57	65	73	0.78	1.10	1.34	1.55	1.90	2.45	2.90	3.47	4.91	6.00	7.76	270	0.8	50
	23	●		●				○	57	65	73	0.94	1.33	1.63	1.88	2.30	2.97	3.51	4.20	5.94	7.27	9.39		0.9	50
	31	○		○				○	57	65	73	1.26	1.79	2.19	2.53	3.10	4.00	4.74	5.66	8.00	9.80	12.7		1.1	–
	36	○		○				○	57	65	73	1.47	2.08	2.55	2.94	3.60	4.65	5.50	6.57	9.30	11.4	14.6		1.2	–
	39	○		○				○	57	65	73	1.59	2.25	2.76	3.18	3.90	5.03	5.96	7.12	10.1	12.3	15.9	≀	1.3	–
	59	○		○				○	58	65	72	2.40	3.41	4.17	4.82	5.90	7.62	9.01	10.8	15.2	18.6	24.1		1.4	–
	78	○		○				○	58	65	72	3.18	4.50	5.52	6.37	7.80	10.1	11.9	14.2	20.1	24.7	31.8		1.8	–
	117	○		○				○	58	65	69	4.78	6.75	8.27	9.55	11.7	15.1	17.8	21.4	30.2	37.0	47.8		2.3	–
	157	○		○				○	58	65	69	6.41	9.06	11.1	12.8	15.7	20.3	24.0	28.0	40.5	49.6	64.1		2.7	–
	196				○				60	65	69	8.00	11.3	13.9	16.0	19.6	25.3	30.0	35.8	50.6	62.0	80.0	520	2.9	–
	235				○				60	65	69	9.54	13.6	16.6	19.2	23.5	30.3	35.9	42.9	60.7	74.3	95.9		3.4	–
	274				○				60	65	69	11.2	15.8	19.4	22.4	27.4	35.4	41.9	50.0	70.7	86.6	112	≀	3.6	–
	314					○			60	65	69	12.8	18.1	22.2	25.6	31.4	40.5	48.0	57.3	81.1	99.3	128	590	3.7	–
	392					○			60	65	69	16.0	22.6	27.7	32.0	39.2	50.6	60.0	71.6	101	124	160	≀	4.4	–
	469					○			60	65	68	19.1	27.0	33.2	38.4	46.9	60.7	71.8	85.6	121	149	192	740	4.4	–

●: Available with or without strainer ○: Only available without strainer

*2) Use CERTIIM® (VEP-TPVDF) only at pressures below 2.0 MPa.

Spray angle code	Spray capacity code	Pipe connection size							Spray angle (°)			Spray capacity (L/min)											Mean drop. dia. (μm)	Free pass. dia. (mm)	Strainer mesh size
		VE	VEP																						
			Metal				CER-TIIM®																		
		R1/4	R1/8	R1/4	R3/8	R1/2	R1/8	R1/4	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	3 MPa*2	5 MPa*2			
50	19	●		●				○	43	50	56	0.78	1.10	1.34	1.55	1.90	2.45	2.90	3.47	4.91	6.00	7.76	300	0.9	50
	31	○		○				○	43	50	55	1.26	1.79	2.19	2.53	3.10	4.00	4.74	5.66	8.00	9.80	12.7		1.2	–
	39	○		○				○	43	50	55	1.59	2.25	2.76	3.18	3.90	5.03	5.96	7.12	10.1	12.3	15.9		1.4	–
	59	○		○				○	43	50	55	2.40	3.41	4.17	4.82	5.90	7.62	9.01	10.8	15.2	18.6	24.1	≀	1.5	–
	78	○		○				○	43	50	55	3.18	4.50	5.52	6.37	7.80	10.1	11.9	14.2	20.1	24.7	31.8		2.0	–
	117	○		○				○	43	50	54	4.78	6.75	8.27	9.55	11.7	15.1	17.8	21.4	30.2	37.0	47.8		2.4	–
	157	○		○				○	43	50	54	6.41	9.06	11.1	12.8	15.7	20.3	24.0	28.0	40.5	49.6	64.1		2.9	–
	196				○				43	50	53	8.00	11.3	13.9	16.0	19.6	25.3	30.0	35.8	50.6	62.0	80.0	570	3.3	–
	235				○				43	50	53	9.54	13.6	16.6	19.2	23.5	30.3	35.9	42.9	60.7	74.3	95.9		3.7	–
	274				○				43	50	53	11.2	15.8	19.4	22.4	27.4	35.4	41.9	50.0	70.7	86.6	112	≀	4.0	–
	314					○			44	50	52	12.8	18.1	22.2	25.6	31.4	40.5	48.0	57.3	81.1	99.3	128	650	4.4	–
	392					○			44	50	52	16.0	22.6	27.7	32.0	39.2	50.6	60.0	71.6	101	124	160	≀	4.7	–
	469					○			44	50	52	19.1	27.0	33.2	38.4	46.9	60.7	71.8	85.6	121	149	192	850	5.0	–
40	23	○		○				○	31	40	46	0.94	1.33	1.63	1.88	2.30	2.97	3.51	4.20	5.94	7.27	9.39	350	1.1	–
	36	○		○				○	32	40	45	1.47	2.08	2.55	2.94	3.60	4.65	5.50	6.57	9.30	11.4	14.6		1.4	–
	59	○		○				○	32	40	45	2.40	3.41	4.17	4.82	5.90	7.62	9.01	10.8	15.2	18.6	24.1		1.8	–
	78	○		○				○	33	40	45	3.18	4.50	5.52	6.37	7.80	10.1	11.9	14.2	20.1	24.7	31.8	≀	2.1	–
	117	○		○				○	33	40	44	4.78	6.75	8.27	9.55	11.7	15.1	17.8	21.4	30.2	37.0	47.8		2.6	–
	157	○		○				○	33	40	44	6.41	9.06	11.1	12.8	15.7	20.3	24.0	28.0	40.5	49.6	64.1		3.0	–
	196				○				33	40	43	8.00	11.3	13.9	16.0	19.6	25.3	30.0	35.8	50.6	62.0	80.0	630	3.6	–
	235				○				33	40	43	9.54	13.6	16.6	19.2	23.5	30.3	35.9	42.9	60.7	74.3	95.9	≀	3.7	–
	274				○				33	40	43	11.2	15.8	19.4	22.4	27.4	35.4	41.9	50.0	70.7	86.6	112		4.1	–
	314					○			33	40	43	12.8	18.1	22.2	25.6	31.4	40.5	48.0	57.3	81.1	99.3	128	720	4.3	–
	392					○			33	40	43	16.0	22.6	27.7	32.0	39.2	50.6	60.0	71.6	101	124	160	≀	4.8	–
	469					○			34	40	43	19.1	27.0	33.2	38.4	46.9	60.7	71.8	85.6	121	149	192	900	5.5	–
25	19	○		○				○	18	25	32	0.78	1.10	1.34	1.55	1.90	2.45	2.90	3.47	4.91	6.00	7.76	390	1.1	–
	31	○		○				○	19	25	32	1.26	1.79	2.19	2.53	3.10	4.00	4.74	5.66	8.00	9.80	12.7		1.4	–
	39	○		○				○	20	25	32	1.59	2.25	2.76	3.18	3.90	5.03	5.96	7.12	10.1	12.3	15.9		1.5	–
	59	○		○				○	21	25	32	2.40	3.41	4.17	4.82	5.90	7.62	9.01	10.8	15.2	18.6	24.1	≀	1.9	–
	78	○		○				○	21	25	32	3.18	4.50	5.52	6.37	7.80	10.1	11.9	14.2	20.1	24.7	31.8		2.3	–
	117	○		○				○	21	25	32	4.78	6.75	8.27	9.55	11.7	15.1	17.8	21.4	30.2	37.0	47.8		2.7	–
	157	○		○				○	21	25	32	6.41	9.06	11.1	12.8	15.7	20.3	24.0	28.0	40.5	49.6	64.1		3.4	–
	196				○				21	25	32	8.00	11.3	13.9	16.0	19.6	25.3	30.0	35.8	50.6	62.0	80.0	730	3.7	–
	235				○				21	25	31	9.54	13.6	16.6	19.2	23.5	30.3	35.9	42.9	60.7	74.3	95.9	≀	4.0	–
	274				○				21	25	31	11.2	15.8	19.4	22.4	27.4	35.4	41.9	50.0	70.7	86.6	112		4.5	–
	314					○			21	25	31	12.8	18.1	22.2	25.6	31.4	40.5	48.0	57.3	81.1	99.3	128	800	4.8	–
	392					○			21	25	31	16.0	22.6	27.7	32.0	39.2	50.6	60.0	71.6	101	124	160	≀	5.1	–
	469					○			21	25	31	19.1	27.0	33.2	38.4	46.9	60.7	71.8	85.6	121	149	192	1,050	5.5	–
15	23	○		○				○	10	15	19	0.94	1.33	1.63	1.88	2.30	2.97	3.51	4.20	5.94	7.27	9.39	500	1.3	–
	36	○		○				○	10	15	19	1.47	2.08	2.55	2.94	3.60	4.65	5.50	6.57	9.30	11.4	14.6		1.6	–
	59	○		○				○	10	15	19	2.40	3.41	4.17	4.82	5.90	7.62	9.01	10.8	15.2	18.6	24.1		2.0	–
	78	○		○				○	10	15	19	3.18	4.50	5.52	6.37	7.80	10.1	11.9	14.2	20.1	24.7	31.8	≀	2.4	–
	117	○		○				○	10	15	19	4.78	6.75	8.27	9.55	11.7	15.1	17.8	21.4	30.2	37.0	47.8		3.0	–
	157	○		○				○	12	15	19	6.41	9.06	11.1	12.8	15.7	20.3	24.0	28.0	40.5	49.6	64.1		3.5	–
	196				○				13	15	19	8.00	11.3	13.9	16.0	19.6	25.3	30.0	35.8	50.6	62.0	80.0	850	3.8	–
	235				○				13	15	19	9.54	13.6	16.6	19.2	23.5	30.3	35.9	42.9	60.7	74.3	95.9	≀	4.3	–
	274				○				13	15	19	11.2	15.8	19.4	22.4	27.4	35.4	41.9	50.0	70.7	86.6	112		4.7	–
	314					○			13	15	19	12.8	18.1	22.2	25.6	31.4	40.5	48.0	57.3	81.1	99.3	128	950	5.2	–
	392					○			13	15	19	16.0	22.6	27.7	32.0	39.2	50.6	60.0	71.6	101	124	160	≀	5.4	–
	469					○			13	15	18	19.1	27.0	33.2	38.4	46.9	60.7	71.8	85.6	121	149	192	1,250	5.8	–

●: Available with or without strainer ○: Only available without strainer

*2) Use CERTIIM® (VEP-TPVDF) only at pressures below 2.0 MPa.

HOW TO ORDER VE SERIES

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

①Complete Assembly

Example: 1/4M VE 11519 S303W

1/4M	VE	115	19	S303	W
Pipe conn. size*6		Spray angle code	Spray capacity code	Material	Strainer
		115 ≀ 15	03 ≀ 157		W (with strainer) (Blank indicates "without strainer")

②Nozzle Tip Only

Example: 1/4 VE 11519 S303

1/4 VE	115	19	S303
	Spray angle code	Spray capacity code	Material
	115 ≀ 15	03 ≀ 157	

HOW TO ORDER VEP SERIES

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

Example: 1/4M VEP 11519 S303W

1/4M	VEP	115	19	S303	W
Pipe conn. size*6		Spray angle code	Spray capacity code*3	Material*4	Strainer*5
1/8M 1/4M 3/8M 1/2M		115 ≀ 15	03 ≀ 469	S303 B TPVDF	W (with strainer) (Blank indicates "without strainer")

*3) When spray capacity code is 03, 04, or 05, "AL99-" is indicated before the material code.
Example: 1/4M VEP 9003 AL99-S303W

*4) Brass body is available only in sizes R1/8 and R1/4.

*5) No strainers for VEP-TPVDF.

*6) "M" indicates male thread ("R" of the ISO standard), e.g. 1/4M = R1/4.