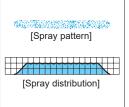
# **Even Flat Spray Nozzles**

# **VE/VEP**







### [Features]

- Flat spray pattern with uniform distribution throughout 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 stones, earth and sand, metal parts, machines, steel plates, steel pieces wires

Spraying: Etchants, oils, lubricants, liquids, solutions, insecticides, herbicides Cooling: Gas, smokes, heat exchangers, tanks, steels, roofs

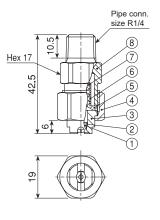
Water screen: Fire protection, heat protection, dust suppression, deodorization

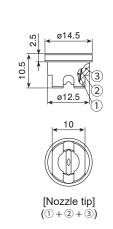
## · VE series (three-piece structure) -

	VE series (with ceramic orifice inserted)
Structure	<ul> <li>Three-piece structure with ceramic orifice inserted.</li> <li>Comprises three parts: Nozzle tip, cap, and adaptor. Worn-out nozzle tip can be replaced separately.</li> <li>Small spray capacity models come with or without a removable strainer.</li> </ul>
Material	<ul> <li>Nozzle orifice: ceramic</li> <li>Tip retainer: S303</li> <li>Cap, Adaptor, and Strainer: S303</li> <li>Optional material: S316 or others</li> </ul>
Mass	Complete assemblies*1     S303: 49 g     Nozzle tip     S303: 6.5 g

<sup>\*1)</sup> When with a strainer, add 2–5 q to the above mass and 2 mm to the total length

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





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

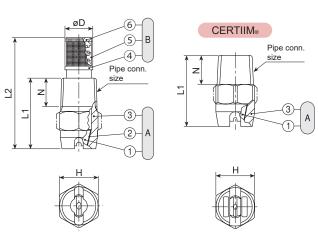
## **VEP** series (one-piece structure)

# Structure Output O

Pipe conn.		Din	nensions	Mass*1(g)					
size	L1	L2	Н	øD	N	S303	В	CER- TIIM⊚	
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	_	_	
CER- TIIM <sub>®</sub> R1/8	22	_	12		8.5	_		2.1	
CER- TIIM® R1/4	26		14	_	10.5	-	_	6	

<sup>\*1)</sup> When with a strainer, add 2-5 g to the above mass.

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



- (1) Nozzle (1) Ceramic orifice (2) Adhesive: Araldite® (3) Nozzle Body)
- Strainer (4) Strainer holder (5) Strainer screen [S316] (6) Strainer cap

		Pipe connection si						ize		0		I- (0)	Spray capacity ( <i>ℓ</i> /min)													
Spray	Spray	V	Έ	VEP						Spray angle (°)			Spray capacity (¿/min)												Free	Strainer
angle code	capacity code	Metal	IIIM⊜	R1/8 R	Me1		R1/2	TII	ER- IM⊚ 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	5 MPa	drop. dia. (µm)	pass. dia. (mm)	mesh size
	19	•	0		7				0	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
115	23 31 36 39 59 78 117 157 196 235 274 314 392		0000000			000	00		0000000	105 105 105 105 105 106 106 106 108 108 108 108	115 115 115 115 115 115 115 115 115 115	122 122 122 122 122 121 120 120 120 118 118 118	0.94 1.26 1.47 1.59 2.40 3.18 4.78 6.41 8.00 9.54 11.2 12.8 16.0	1.33 1.79 2.08 2.25 3.41 4.50 6.75 9.06 11.3 13.6 15.8 18.1 22.6	1.63 2.19 2.55 2.76 4.17 5.52 8.27 11.1 13.9 16.6 19.4 22.2 27.7	1.88 2.53 2.94 3.18 4.82 6.37 9.55 12.8 16.0 19.2 22.4 25.6 32.0	2.30 3.10 3.60 3.90 5.90 7.80 11.7 15.7 19.6 23.5 27.4 31.4 39.2	2.97 4.00 4.65 5.03 7.62 10.1 15.1 20.3 25.3 30.3 35.4 40.5 50.6	3.51 4.74 5.50 5.96 9.01 11.9 17.8 24.0 30.0 35.9 41.9 48.0 60.0	4.20 5.66 6.57 7.12 10.8 14.2 21.4 28.0 35.8 42.9 50.0 57.3 71.6	5.94 8.00 9.30 10.1 15.2 20.1 30.2 40.5 50.6 60.7 70.7 81.1	9.80	9.39 12.7 14.6 15.9 24.1 31.8 47.8 64.1 80.0 95.9 112 128 160	\$ 450 \$ 510 \$	0.6 0.6 0.7 0.7 0.9 1.0 1.2 1.4 1.6 1.7 1.9 2.0 2.2	100 100 50 50 50 ———————————————————————
	469						Ō			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 04 05 07 10 15 19 23 31 36 39 59 78 117 157 196 235 274 314		00000000000000	(		0000	000	00000	000000000000000	78 79 79 80 80 82 82 82 83 83 83 84 84 84 85 85	90 90 90 90 90 90 90 90 90 90 90 90 90 9	101 101 101 100 100 98 98 97 97 97 97 96 96 96 96 95 94	0.41 0.61 0.78 0.94 1.26 1.47 1.59 2.40 3.18 4.78 6.41 8.00 9.54 11.2 12.8	0.17 0.23 0.29 0.40 0.58 0.87 1.10 1.33 1.79 2.08 2.25 3.41 4.50 6.75 9.06 11.3 13.6 15.8 18.1	0.21 0.28 0.35 0.49 0.71 1.06 1.34 1.63 2.19 2.55 2.76 4.17 5.52 8.27 11.1 13.9 16.6 19.4 22.2 27.7	0.24 0.33 0.41 0.57 0.82 1.23 1.55 1.88 2.53 2.94 3.18 4.82 6.37 9.55 12.8 16.0 19.2 22.4 25.6 32.0	0.30 0.40 0.50 0.70 1.00 1.50 1.90 2.30 3.10 3.60 3.90 5.90 7.80 11.7 15.7 19.6 23.5 27.4 31.4 39.2	0.39 0.52 0.65 0.90 1.29 1.94 2.45 2.97 4.00 4.65 5.03 7.62 10.1 15.1 20.3 25.3 30.3 35.4 40.5 50.6	0.46 0.61 0.76 1.07 1.53 2.29 2.90 3.51 4.74 5.50 9.01 11.9 17.8 24.0 30.0 35.9 41.9 48.0 60.0	0.55 0.73 0.91 1.28 1.83 2.74 3.47 4.20 5.66 6.57 7.12 10.8 14.2 21.4 28.0 35.8 42.9 50.0 57.3 71.6	0.77 1.03 1.29 1.81 2.58 3.87 4.91 5.94 8.00 9.30 10.1 15.2 20.1 30.2 40.5 60.7 70.7 81.1	1.58 2.21 3.16 4.74 6.00 7.27 9.80 11.4 12.3 18.6 24.7 37.0 49.6 62.0 74.3 86.6 99.3	2.04 2.86 4.08 6.12 7.76 9.39 12.7 14.6 15.9 24.1 31.8 47.8 64.1 80.0 95.9 112 128 160	140 \$ 250 \$ 480 \$ 540 \$ 600	0.2 0.2 0.3 0.4 0.4 0.7 0.7 0.9 1.0 1.2 1.4 1.7 2.0 2.2 2.4 2.6 2.8 3.1	200 200 150 150 150 50 50 — — — — — — — — — — — — — — — —
	469 19	•					<u> </u>			85 72	90	94	19.1	27.0	33.2 1.34	38.4 1.55	46.9 1.90	60.7 2.45	71.8	85.6 3.47	121 4.91	149 6.00	192 7.76	680 260	3.4 0.7	50
80	23 31 36 39 59 78 117 157 196 235 274 314 392	• 000000	00000000			000	000		0000000	72 72 72 73 74 74 75 76 76 76 76	80 80 80 80 80 80 80 80 80 80 80	84 84 84 84 84 84 83 83 83 83 83	0.94 1.26 1.47 1.59 2.40 3.18 4.78 6.41 8.00 9.54 11.2 12.8 16.0	1.33 1.79 2.08 2.25 3.41 4.50 6.75 9.06 11.3 13.6 15.8 18.1 22.6	1.63 2.19 2.55 2.76 4.17 5.52 8.27 11.1 13.9 16.6 19.4 22.2 27.7	1.88 2.53 2.94 3.18 4.82 6.37 9.55 12.8 16.0 19.2 22.4 25.6 32.0	2.30 3.10 3.60 3.90 5.90 7.80 11.7 15.7 19.6 23.5 27.4 31.4 39.2	2.97 4.00 4.65 5.03 7.62 10.1 15.1 20.3 25.3 30.3 35.4 40.5 50.6	3.51 4.74 5.50 5.96 9.01 11.9 17.8 24.0 30.0 35.9 41.9 48.0 60.0	4.20 5.66 6.57 7.12 10.8 14.2 21.4 28.0 35.8 42.9 50.0 57.3 71.6	5.94 8.00 9.30 10.1 15.2 20.1 30.2 40.5 50.6 60.7 70.7 81.1	7.27 9.80 11.4 12.3 18.6 24.7 37.0 49.6 62.0 74.3 86.6 99.3 124	9.39 12.7 14.6 15.9 24.1 31.8 47.8 64.1 80.0 95.9 112 128 160	\$ 490 \$ 560 \$	0.8 0.9 1.0 1.0 1.3 1.6 1.9 2.4 2.6 3.1 3.3 3.3 3.7	50 50 —————————————————————————————————
	469 03	•					<u> </u>			76 54	80 65	83 76	19.1	27.0 0.17	33.2 0.21	38.4 0.24	46.9 0.30	0.39	71.8	85.6 0.55	121 0.77	149 0.95	192 1.22	700 150	4.3 0.3	150
	03 04 05 07 10 15 19		00000000	•				000000	0000000	54 54 55 56 56 57	65 65 65 65 65 65 65	76 76 75 75 74 74 73 73	0.41 0.61 0.78 0.94	0.17 0.23 0.29 0.40 0.58 0.87 1.10 1.33	0.21 0.28 0.35 0.49 0.71 1.06 1.34 1.63	0.24 0.33 0.41 0.57 0.82 1.23 1.55 1.88	0.30 0.40 0.50 0.70 1.00 1.50 1.90 2.30	0.39 0.52 0.65 0.90 1.29 1.94 2.45 2.97	0.46 0.61 0.76 1.07 1.53 2.29 2.90 3.51	0.55 0.73 0.91 1.28 1.83 2.74 3.47 4.20	1.03 1.29 1.81 2.58 3.87 4.91 5.94	1.26 1.58 2.21 3.16 4.74 6.00	1.63 2.04 2.86 4.08 6.12	\$	0.3 0.4 0.4 0.5 0.5 0.8 0.9	150 150 150 150 100 100 50
65	23 31 36 39 59 78 117 157 196 235 274 314	0000000	0000000		000000	000	0		0000000	57 57 57 58 58 58 58 60 60 60	65 65 65 65 65 65 65 65 65 65	73 73 73 73 72 72 69 69 69 69 69	1.26 1.47 1.59 2.40 3.18 4.78 6.41 8.00 9.54 11.2 12.8	1.33 1.79 2.08 2.25 3.41 4.50 6.75 9.06 11.3 13.6 15.8	1.63 2.19 2.55 2.76 4.17 5.52 8.27 11.1 13.9 16.6 19.4 22.2	2.53 2.94 3.18 4.82 6.37 9.55 12.8 16.0 19.2 22.4 25.6	2.30 3.10 3.60 3.90 5.90 7.80 11.7 15.7 19.6 23.5 27.4 31.4	2.97 4.00 4.65 5.03 7.62 10.1 15.1 20.3 25.3 30.3 35.4 40.5	3.51 4.74 5.50 5.96 9.01 11.9 17.8 24.0 30.0 35.9 41.9 48.0	4.20 5.66 6.57 7.12 10.8 14.2 21.4 28.0 35.8 42.9 50.0 57.3	5.94 8.00 9.30 10.1 15.2 20.1 30.2 40.5 50.6 60.7 70.7 81.1	9.80		520 \$	1.1 1.2 1.3 1.4 1.8 2.3 2.7 2.9 3.4 3.6 3.7	50          
	392 469			lable v			00			60 60	65 65	69 68	16.0 19.1	22.6 27.0	27.7 33.2	32.0 38.4	39.2 46.9	50.6 60.7	60.0 71.8	71.6 85.6	101 121	124 149	160 192	5 740	4.4 4.4	

			Р	Pipe connection size						Spr	ay ang	le (°)	Spray capacity (ℓ/min)													
Spray angle code	Spray capacity code	Meta	CER- TIIM®		Metal CE				R- M⊚	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	5 MPa	Mean drop. dia. (µm)	Free pass. dia. (mm)	Strainer mesh size
		R1/4	R1/4	R1/8	R1/4	R3/8	R1/2	R1/8	R1/4	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA	IVIFA			
50	19 31 39 59 78 117 157	•000000	0000000		000000				0000000	43 43 43 43 43 43 43	50 50 50 50 50 50 50	56 55 55 55 55 54 54	0.78 1.26 1.59 2.40 3.18 4.78 6.41	1.10 1.79 2.25 3.41 4.50 6.75 9.06	1.34 2.19 2.76 4.17 5.52 8.27 11.1	1.55 2.53 3.18 4.82 6.37 9.55 12.8	1.90 3.10 3.90 5.90 7.80 11.7 15.7	2.45 4.00 5.03 7.62 10.1 15.1 20.3	2.90 4.74 5.96 9.01 11.9 17.8 24.0	3.47 5.66 7.12 10.8 14.2 21.4 28.0	4.91 8.00 10.1 15.2 20.1 30.2 40.5	6.00 9.80 12.3 18.6 24.7 37.0 49.6	7.76 12.7 15.9 24.1 31.8 47.8 64.1	300	0.9 1.2 1.4 1.5 2.0 2.4 2.9	50 — — — — —
00	196 235 274 314 392 469					000	000			43 43 43 43 44 44 44	50 50 50 50 50 50	53 53 53 52 52 52	8.00 9.54 11.2 12.8 16.0 19.1	11.3 13.6 15.8 18.1 22.6 27.0	13.9 16.6 19.4 22.2 27.7 33.2	16.0 19.2 22.4 25.6 32.0 38.4	19.6 23.5 27.4 31.4 39.2 46.9	25.3 30.3 35.4 40.5 50.6 60.7	30.0 35.9 41.9 48.0 60.0 71.8	35.8 42.9 50.0 57.3 71.6 85.6	50.6 60.7 70.7 81.1 101	62.0 74.3 86.6 99.3 124 149	80.0 95.9 112 128 160 192	570 \$ 650 \$ 850	3.3 3.7 4.0 4.4 4.7 5.0	_ _ _ _ _
40	23 36 59 78 117 157 196 235 274 314	000000	000000		000000	000			000000	31 32 32 33 33 33 33 33 33 33	40 40 40 40 40 40 40 40 40 40	46 45 45 45 44 44 43 43 43 43	0.94 1.47 2.40 3.18 4.78 6.41 8.00 9.54 11.2	1.33 2.08 3.41 4.50 6.75 9.06 11.3 13.6 15.8 18.1	1.63 2.55 4.17 5.52 8.27 11.1 13.9 16.6 19.4 22.2	1.88 2.94 4.82 6.37 9.55 12.8 16.0 19.2 22.4 25.6	2.30 3.60 5.90 7.80 11.7 15.7 19.6 23.5 27.4 31.4	2.97 4.65 7.62 10.1 15.1 20.3 25.3 30.3 35.4 40.5	3.51 5.50 9.01 11.9 17.8 24.0 30.0 35.9 41.9 48.0	4.20 6.57 10.8 14.2 21.4 28.0 35.8 42.9 50.0 57.3	5.94 9.30 15.2 20.1 30.2 40.5 50.6 60.7 70.7 81.1		9.39 14.6 24.1 31.8 47.8 64.1 80.0 95.9 112 128	350 \$ 630 \$ 720	1.1 1.4 1.8 2.1 2.6 3.0 3.6 3.7 4.1 4.3	
	392 469						0			33 34	40 40	43 43	16.0 19.1	22.6 27.0	27.7 33.2	32.0 38.4	39.2 46.9	50.6 60.7	60.0 71.8	71.6 85.6	101 121	124 149	160 192	900	4.8 5.5	_
25	19 31 39 59 78 117 157 196 235 274 314 392	0000000	000000		0000000	000	000		0000000	18 19 20 21 21 21 21 21 21 21 21 21	25 25 25 25 25 25 25 25 25 25 25 25 25 2	32 32 32 32 32 32 32 32 31 31 31	0.78 1.26 1.59 2.40 3.18 4.78 6.41 8.00 9.54 11.2 12.8	1.10 1.79 2.25 3.41 4.50 6.75 9.06 11.3 13.6 15.8 18.1 22.6	1.34 2.19 2.76 4.17 5.52 8.27 11.1 13.9 16.6 19.4 22.2 27.7	1.55 2.53 3.18 4.82 6.37 9.55 12.8 16.0 19.2 22.4 25.6 32.0	1.90 3.10 3.90 5.90 7.80 11.7 15.7 19.6 23.5 27.4 31.4 39.2	2.45 4.00 5.03 7.62 10.1 15.1 20.3 25.3 30.3 35.4 40.5 50.6	2.90 4.74 5.96 9.01 11.9 17.8 24.0 30.0 35.9 41.9 48.0 60.0	3.47 5.66 7.12 10.8 14.2 21.4 28.0 35.8 42.9 50.0 57.3 71.6	4.91 8.00 10.1 15.2 20.1 30.2 40.5 50.6 60.7 70.7 81.1	6.00 9.80 12.3 18.6 24.7 37.0 49.6 62.0 74.3 86.6 99.3 124	12.7 15.9 24.1 31.8 47.8 64.1 80.0 95.9 112 128 160	390 \$ 730 \$ 800	1.1 1.4 1.5 1.9 2.3 2.7 3.4 3.7 4.0 4.5 4.8 5.1	
15	23 36 59 78 117 157 196 235 274 314 392 469	000000	000000		000000	000	000		000000	21 10 10 10 10 10 10 12 13 13 13 13 13	25 15 15 15 15 15 15 15 15 15 15 15 15 15	31 19 19 19 19 19 19 19 19 19 19 19	19.1 0.94 1.47 2.40 3.18 4.78 6.41 8.00 9.54 11.2 12.8 16.0 19.1	27.0 1.33 2.08 3.41 4.50 6.75 9.06 11.3 13.6 15.8 18.1 22.6 27.0	33.2 1.63 2.55 4.17 5.52 8.27 11.1 13.9 16.6 19.4 22.2 27.7 33.2	38.4 1.88 2.94 4.82 6.37 9.55 12.8 16.0 19.2 22.4 25.6 32.0 38.4	46.9 2.30 3.60 5.90 7.80 11.7 15.7 19.6 23.5 27.4 31.4 39.2 46.9	60.7 2.97 4.65 7.62 10.1 15.1 20.3 25.3 30.3 35.4 40.5 50.6 60.7	71.8 3.51 5.50 9.01 11.9 17.8 24.0 30.0 35.9 41.9 48.0 60.0 71.8	85.6 4.20 6.57 10.8 14.2 21.4 28.0 35.8 42.9 50.0 57.3 71.6 85.6	5.94 9.30 15.2 20.1 30.2 40.5 50.6 60.7 70.7 81.1 101 121		9.39 14.6 24.1 31.8 47.8 64.1 80.0 95.9 112 128 160 192	1,050 500 \$ 850 \$ 950 \$ 1,250	5.5 1.3 1.6 2.0 2.4 3.0 3.5 3.8 4.3 4.7 5.2 5.4 5.8	

### How to order VE series Please inquire or order for a specific nozzle using this coding system. ①Complete assemblies 2 Nozzle tip only $\langle \text{Example} \rangle$ 1/4M VE 11519 S303W ⟨Example⟩ 1/4 VE 11519 S303 1/4M VE 115 19 S303 W 1/4 VE 115 19 S303 Spray angle code Spray capacity code Spray angle code Spray capacity code Material Material ■ W (with strainer) ■ (Blank denotes "without strainer") 115 S303 **115** S303 03 03 **1**5 **157 15 157**

### How to order VEP series Please inquire or order for a specific nozzle using this coding system. **(Example)** 1/4M VEP 11519 S303W \*2) "M" indicates male thread ("R" of the ISO standard) and "F" indicates 1/4M VEP 115 S303 W 19 female thread ("Rc" of the ISO standard), e.g. 1/8M = R1/8. Pipe conn. size\*2 Spray angle code Spray capacity code\*3 Material\*5 Strainer\*4 \*3) When spray capacity code is 03, 04, or 05, "AL99-" is indicated before the material code. 1/8M 115 03 S303 W (with strainer) ⟨Example⟩ 1/4M VEP 9003 AL99-S303W 1/4M ■ B ∣(Blànk denotes \*4) No strainer for VEP-TPVDF. TPVDF 3/8M **15** 469 "without strainer") ■ 1/2M \*5) Brass body is available only in sizes R1/8 and R1/4.