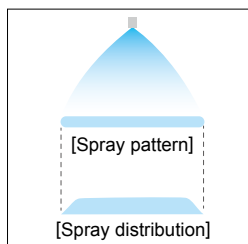


Even Flat Spray Nozzles

VEP / VE

Flat Spray



- 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

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

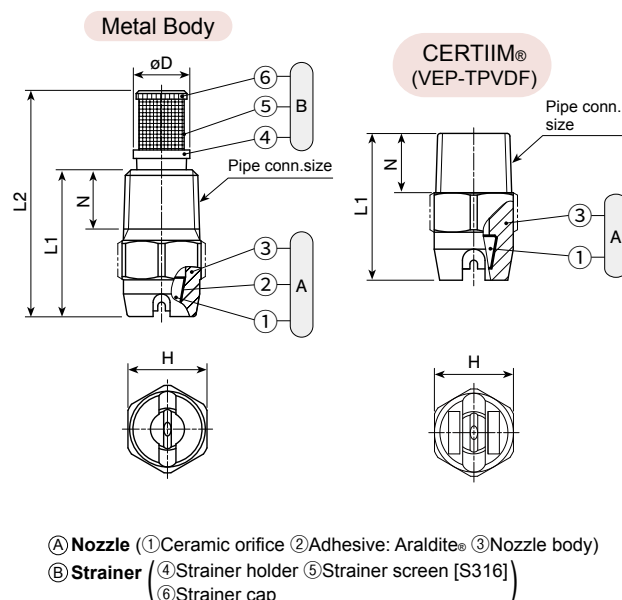
*1) With strainer, add 2 g for R1/8 and 5 g for R1/4 to the above weight.
No strainers for CERTIIM (VEP-TPVDF).

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

Strainer is optional on some metal VEP models and can be ordered without it. See table for details.

DRAWING

Unit: mm



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^{*2}: 43 g • Nozzle tip: 6.5 g

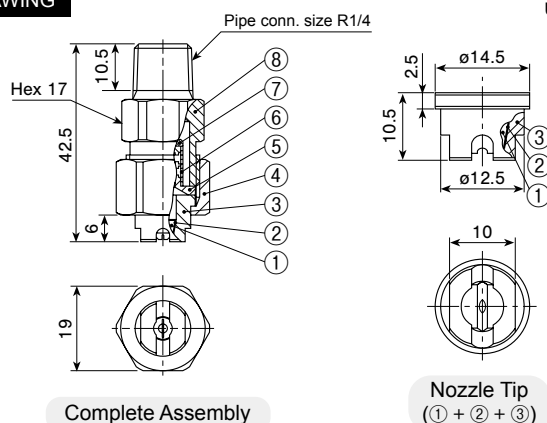
*2) With strainer, add 5 g to the above weight and 2 mm to the total length.

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

Strainer is optional on some models and can be ordered without it. See table for details.

DRAWING

Unit: mm



Nozzle (1 Ceramic orifice 2 Adhesive: Araldite 3 Tip retainer)
Strainer (4 Cap 5 Adaptor 6 Strainer holder 7 Strainer screen [S316] 8 Strainer 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																
		VEP							VE	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 ³	5 MPa ³																		
		Metal Body				CER-TIIM																																			
		R1/8	R1/4	R3/8	R1/2	R1/8	R1/4	R1/4																																	
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		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		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																											

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		
		VEP																								
		Metal Body				CER-TIIM		VE	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 MPa³				5 MPa³	
		R1/8	R1/4	R3/8	R1/2	R1/8	R1/4																			R1/4
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

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

HOW TO ORDER

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

VEP SERIES (One-Piece Structure)

Example: 1/4M VEP 11519 S303W

Pipe conn. size ⁷	VEP	115	19	S303	W
1/8M		115	03	S303	W (with strainer)
1/4M		115	15	B	(Blank indicates "without strainer")
3/8M		15	469	TPVDF	
1/2M					

*4) When spray capacity code is 03, 04, or 05, "AL99-" is indicated before the material code.

Example: 1/4M VEP 9003 **AL99**-S303W

*5) Brass body available in R1/8 and R1/4 only (VEP series).

*6) No strainers for VEP-TPVDF.

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

VE SERIES (Three-Piece Structure)

① Complete Assembly

Example: 1/4M VE 11519 S303W

Pipe conn. size ⁷	VE	115	19	S303	W
1/8M		115	03	S303	W (with strainer)
1/4M		115	15	B	(Blank indicates "without strainer")
3/8M		15	469	TPVDF	
1/2M					

② Nozzle Tip Only

Example: 1/4 VE 11519 S303

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