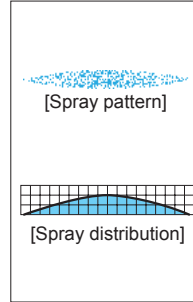


One-piece Structure Standard Flat Spray Nozzles

VVP/VP

Flat Spray



[Features]

- Flat spray pattern with a mountain-shaped spray distribution having gradually tapered edges
- Tapered edges overlap to provide uniformity of spray distribution in multiple-nozzle arrangements.

[Standard pressure]

0.3 MPa

[Applications]

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

VVP series

| VVP series | |
|------------|---|
| Structure | <ul style="list-style-type: none"> • Made of metal or plastic, one-piece structure. • Small spray capacity models of metal VVP come with or without a strainer. |
| Material | <ul style="list-style-type: none"> • S303, B (brass), or PP • S316L equivalent (precision-molded stainless steel)³ • Strainer for precision-molded stainless steel: S303 or S316 • Optional material: S316, PVC, PVDF, Ultrahigh molecular weight polyethylene, or others |

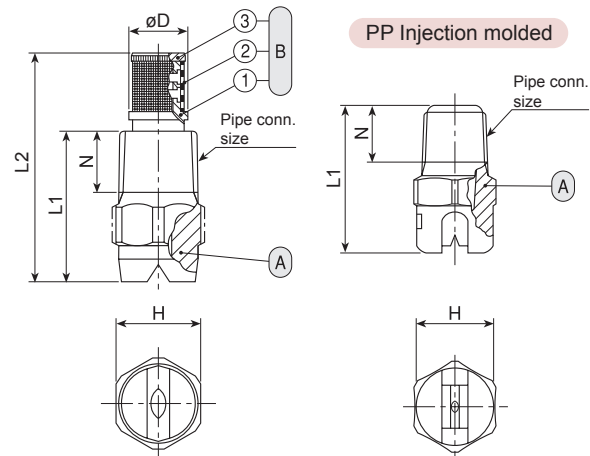
| Series | Pipe conn. size | Dimensions (mm) | | | | | Mass (g) ¹ | | | |
|--|-----------------|-----------------|------|----|-----|------|-----------------------|-----|--------------|-----|
| | | L1 | L2 | H | øD | N | S303 | B | S316L equiv. | PP |
| VVP ² | R1/8 | 18.5 | 31 | 12 | 7.5 | 6.5 | 10 | 11 | — | — |
| | R1/4 | 25 | 40 | 14 | 10 | 10.5 | 21 | 23 | — | — |
| | R3/8 | 30 | — | 19 | — | 10.5 | 37 | 40 | — | — |
| | R1/2 | 38 | — | 23 | — | 14 | 65 | 70 | — | — |
| | R3/4 | 45 | — | 29 | — | 15 | 110 | 120 | — | — |
| R1 | 55 | — | 35 | — | 18 | 170 | 180 | — | — | |
| VVP ³ (Precision-molded stainless steel) | R1/8 | 20 | 33.5 | 12 | 7.5 | 7 | — | — | 9.6 | — |
| | R1/4 | 27 | 41 | 14 | 10 | 10.5 | — | — | 16 | — |
| VVP-PP (Injection molded) | R1/8 | 22 | — | 12 | — | 8.5 | — | — | — | 1.1 |
| | R1/4 | 27 | — | 14 | — | 11.5 | — | — | — | 2.2 |

*1) When with a strainer, add 2–5 g to the above mass.

*2) VVP with spray capacity code of 20 or smaller slightly differs in dimensions (L1, L2) and in shape of nozzle tip from the above. Contact us for details.

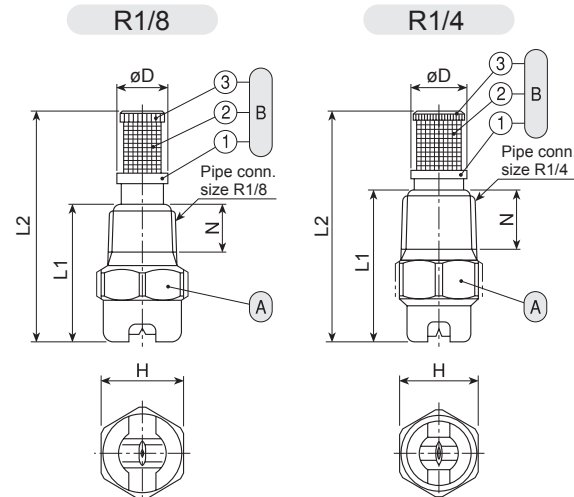
*3) Please see the chart on page 20 for availability.

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



- Ⓐ Nozzle
 Ⓑ Strainer (① Strainer holder ② Strainer screen [S316] ③ Strainer cap)

Precision-molded stainless steel



- Ⓐ Nozzle
 Ⓑ Strainer (① Strainer holder ② Strainer screen [S316] ③ Strainer cap)

One-piece Structure Standard Flat Spray Nozzles

VVP/VP series

Flat Spray

| 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 | | | |
|------------------|---------------------|----------------------|------|------|------|------|----|-------------|------|------|------|------|------|-----------------|---------|---------|------------------------|---------|----------|---------|---------|---------|---------|----------------------|----------------------|--------------------|-------|-------|-----------|
| | | VVP | | | | | | VP | | | | | | 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 | |
| | | All metal | | | | | | All plastic | | | | | | | | | | | | | | | | | | | | | |
| | | R1/8 | R1/4 | R3/8 | R1/2 | R3/4 | R1 | R1/8 | R1/4 | R1/8 | R1/4 | R1/8 | R1/4 | | | | | | | | | | | | | | | | CER-TiIMe |
| 80 | 02 | | | | | | | ● | ● | ○ | ○ | | | 67 | 80 | 90 | — | 0.12 | 0.14 | 0.16 | 0.20 | 0.26 | 0.31 | 0.37 | 0.52 | 150 | 0.2 | 200 | |
| | 03 | | | | | | | ● | ● | ○ | ○ | | | 67 | 80 | 90 | — | 0.17 | 0.21 | 0.24 | 0.30 | 0.39 | 0.46 | 0.55 | 0.77 | 160 | 0.3 | 150 | |
| | 04 | | | | | | | ● | ● | ○ | ○ | | | 67 | 80 | 90 | — | 0.23 | 0.28 | 0.33 | 0.40 | 0.52 | 0.61 | 0.73 | 1.03 | 190 | 0.4 | 150 | |
| | 05 | ● | ● | | | | | ○ | ○ | | | | | 67 | 80 | 90 | — | 0.29 | 0.35 | 0.41 | 0.50 | 0.65 | 0.76 | 0.91 | 1.29 | 180 | 0.3 | 150 | |
| | 07 | ● | ● | | | | | ○ | ○ | | | | | 68 | 80 | 89 | — | 0.40 | 0.49 | 0.57 | 0.70 | 0.90 | 1.07 | 1.28 | 1.81 | 180 | 0.4 | 150 | |
| | 10 | ● | ● | | | | | ○ | ○ | | | | | 68 | 80 | 89 | 0.41 | 0.58 | 0.71 | 0.82 | 1.00 | 1.29 | 1.53 | 1.83 | 2.58 | 180 | 0.5 | 100 | |
| | 15 | | | | | | | | ● | ● | ○ | ○ | | | 69 | 80 | 88 | 0.61 | 0.87 | 1.06 | 1.23 | 1.50 | 1.94 | 2.29 | 2.74 | 3.87 | 180 | 0.7 | 50 |
| | 20 | ● | ● | | | | | ○ | ○ | | | | | 69 | 80 | 88 | 0.82 | 1.15 | 1.41 | 1.63 | 2.00 | 2.58 | 3.06 | 3.65 | 5.16 | 180 | 0.8 | 50 | |
| | 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 | 290 | 1.2 | — | |
| | 50 | | | | | | | | | | | | | 71 | 80 | 86 | 2.04 | 2.89 | 3.54 | 4.08 | 5.00 | 6.46 | 7.64 | 9.13 | 12.9 | 290 | 1.4 | — | |
| | 60 | | | | | | | | | | | | | 72 | 80 | 86 | 2.45 | 3.46 | 4.24 | 4.90 | 6.00 | 7.75 | 9.17 | 11.0 | 15.5 | 290 | 1.5 | — | |
| | 80 | ○ | ○ | | | | | | | | | | | 72 | 80 | 86 | 3.27 | 4.62 | 5.66 | 6.53 | 8.00 | 10.3 | 12.2 | 14.6 | 20.6 | 290 | 1.7 | — | |
| | 100 | ○ | ○ | | | | | | | | | | | 72 | 80 | 85 | 4.08 | 5.77 | 7.07 | 8.17 | 10.0 | 12.9 | 15.3 | 18.3 | 25.8 | 290 | 1.8 | — | |
| | 120 | ○ | ○ | | | | | | | | | | | 73 | 80 | 85 | 4.90 | 6.93 | 8.49 | 9.80 | 12.0 | 15.5 | 18.3 | 21.9 | 31.0 | 290 | 2.1 | — | |
| | 200 | | | | | | | | | | | | | 74 | 80 | 85 | 8.16 | 11.5 | 14.1 | 16.3 | 20.0 | 25.8 | 30.6 | 36.5 | 51.6 | 550 | 2.9 | — | |
| | 300 | | | | | | | | | | | | | 74 | 80 | 84 | 12.2 | 17.3 | 21.2 | 24.5 | 30.0 | 38.7 | 45.8 | 54.8 | 77.5 | 570 | 3.7 | — | |
| | 400 | | | | | | | | | | | | | 75 | 80 | 83 | 16.3 | 23.1 | 28.3 | 32.7 | 40.0 | 51.6 | 61.1 | 73.0 | 103 | 600 | 4.1 | — | |
| 500 | | | | | | | | | | | | | 75 | 80 | 83 | 20.4 | 28.9 | 35.4 | 40.8 | 50.0 | 64.6 | 76.4 | 91.3 | 129 | 600 | 4.8 | — | | |
| 600 | | | | | | | | | | | | | 76 | 80 | 83 | 24.5 | 34.6 | 42.4 | 49.0 | 60.0 | 77.5 | 91.7 | 110 | 155 | 600 | 5.1 | — | | |
| 800 | | | | | | | | | | | | | 76 | 80 | 82 | 32.7 | 46.2 | 56.5 | 65.3 | 80.0 | 103 | 122 | 146 | 206 | 600 | 6.1 | — | | |
| 1000 | | | | | | | | | | | | | 76 | 80 | 82 | 40.8 | 57.7 | 70.7 | 81.7 | 100 | 129 | 153 | 183 | 258 | 600 | 6.2 | — | | |
| 65 | 02 | | | | | | | ● | ● | ○ | ○ | | | 52 | 65 | 75 | — | 0.12 | 0.14 | 0.16 | 0.20 | 0.26 | 0.31 | 0.37 | 0.52 | 155 | 0.2 | 200 | |
| | 03 | | | | | | | ● | ● | ○ | ○ | | | 52 | 65 | 75 | — | 0.17 | 0.21 | 0.24 | 0.30 | 0.39 | 0.46 | 0.55 | 0.77 | 160 | 0.3 | 150 | |
| | 04 | | | | | | | ● | ● | ○ | ○ | | | 52 | 65 | 75 | — | 0.23 | 0.28 | 0.33 | 0.40 | 0.52 | 0.61 | 0.73 | 1.03 | 190 | 0.4 | 150 | |
| | 05 | | | | | | | ○ | ○ | | | | | 52 | 65 | 74 | — | 0.29 | 0.35 | 0.41 | 0.50 | 0.65 | 0.76 | 0.91 | 1.29 | 180 | 0.3 | 150 | |
| | 07 | | | | | | | ○ | ○ | | | | | 53 | 65 | 74 | — | 0.40 | 0.49 | 0.57 | 0.70 | 0.90 | 1.07 | 1.28 | 1.81 | 180 | 0.5 | 100 | |
| | 10 | | | | | | | ○ | ○ | | | | | 54 | 65 | 73 | 0.41 | 0.58 | 0.71 | 0.82 | 1.00 | 1.29 | 1.53 | 1.83 | 2.58 | 180 | 0.6 | 100 | |
| | 15 | | | | | | | | ○ | ○ | | | | 54 | 65 | 73 | 0.61 | 0.87 | 1.06 | 1.23 | 1.50 | 1.94 | 2.29 | 2.74 | 3.87 | 180 | 0.8 | 50 | |
| | 20 | ● | ● | | | | | ○ | ○ | | | | | 55 | 65 | 72 | 0.82 | 1.15 | 1.41 | 1.63 | 2.00 | 2.58 | 3.06 | 3.65 | 5.16 | 310 | 0.9 | 50 | |
| | 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 | 310 | 1.3 | — | |
| | 50 | | | | | | | | | | | | | 57 | 65 | 71 | 2.04 | 2.89 | 3.54 | 4.08 | 5.00 | 6.46 | 7.64 | 9.13 | 12.9 | 310 | 1.5 | — | |
| | 60 | | | | | | | | | | | | | 57 | 65 | 71 | 2.45 | 3.46 | 4.24 | 4.90 | 6.00 | 7.75 | 9.17 | 11.0 | 15.5 | 310 | 1.6 | — | |
| | 80 | ○ | ○ | | | | | | | | | | | 58 | 65 | 71 | 3.27 | 4.62 | 5.66 | 6.53 | 8.00 | 10.3 | 12.2 | 14.6 | 20.6 | 310 | 1.9 | — | |
| | 100 | ○ | ○ | | | | | | | | | | | 58 | 65 | 70 | 4.08 | 5.77 | 7.07 | 8.17 | 10.0 | 12.9 | 15.3 | 18.3 | 25.8 | 310 | 2.1 | — | |
| | 120 | ○ | ○ | | | | | | | | | | | 58 | 65 | 70 | 4.90 | 6.93 | 8.49 | 9.80 | 12.0 | 15.5 | 18.3 | 21.9 | 31.0 | 310 | 2.3 | — | |
| | 140 | | | | | | | | | | | | | 59 | 65 | 69 | 5.72 | 8.08 | 9.90 | 11.4 | 14.0 | 18.1 | 21.4 | 25.6 | 36.1 | 310 | 2.5 | — | |
| | 170 | | | | | | | | | | | | | 59 | 65 | 69 | 6.94 | 9.82 | 12.0 | 13.9 | 17.0 | 22.0 | 26.0 | 31.1 | 43.9 | 310 | 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 | — | |
| 300 | | | | | | | | | | | | | 60 | 65 | 69 | 12.2 | 17.3 | 21.2 | 24.5 | 30.0 | 38.7 | 45.8 | 54.8 | 77.5 | 650 | 3.9 | — | | |
| 400 | | | | | | | | | | | | | 60 | 65 | 68 | 16.3 | 23.1 | 28.3 | 32.7 | 40.0 | 51.6 | 61.1 | 73.0 | 103 | 650 | 4.7 | — | | |
| 500 | | | | | | | | | | | | | 61 | 65 | 67 | 20.4 | 28.9 | 35.4 | 40.8 | 50.0 | 64.6 | 76.4 | 91.3 | 129 | 650 | 5.3 | — | | |
| 600 | | | | | | | | | | | | | 61 | 65 | 67 | 24.5 | 34.6 | 42.4 | 49.0 | 60.0 | 77.5 | 91.7 | 110 | 155 | 650 | 5.7 | — | | |
| 800 | | | | | | | | | | | | | 62 | 65 | 67 | 32.7 | 46.2 | 56.5 | 65.3 | 80.0 | 103 | 122 | 146 | 206 | 650 | 6.5 | — | | |
| 1000 | | | | | | | | | | | | | 62 | 65 | 66 | 40.8 | 57.7 | 70.7 | 81.7 | 100 | 129 | 153 | 183 | 258 | 650 | 7.3 | — | | |
| 1500 | | | | | | | | | | | | | 62 | 65 | 66 | 61.2 | 86.6 | 106 | 122 | 150 | 194 | 229 | 274 | 387 | 1,000 | 9.0 | — | | |
| 50 | 03 | | | | | | | ● | ● | ○ | ○ | | | 37 | 50 | 60 | — | 0.17 | 0.21 | 0.24 | 0.30 | 0.39 | 0.46 | 0.55 | 0.77 | 180 | 0.3 | 150 | |
| | 04 | | | | | | | ● | ● | ○ | ○ | | | 37 | 50 | 60 | — | 0.23 | 0.28 | 0.33 | 0.40 | 0.52 | 0.61 | 0.73 | 1.03 | 180 | 0.4 | 150 | |
| | 05 | ● | ● | | | | | | ○ | ○ | | | | 38 | 50 | 59 | — | 0.29 | 0.35 | 0.41 | 0.50 | 0.65 | 0.76 | 0.91 | 1.29 | 210 | 0.4 | 150 | |
| | 07 | ● | ● | | | | | | ○ | ○ | | | | 38 | 50 | 58 | — | 0.40 | 0.49 | 0.57 | 0.70 | 0.90 | 1.07 | 1.28 | 1.81 | 210 | 0.5 | 100 | |
| | 10 | ● | ● | | | | | | ○ | ○ | | | | 40 | 50 | 58 | 0.41 | 0.58 | 0.71 | 0.82 | 1.00 | 1.29 | 1.53 | 1.83 | 2.58 | 210 | 0.6 | 100 | |
| | 15 | | | | | | | | ○ | ○ | | | | 40 | 50 | 57 | 0.61 | 0.87 | 1.06 | 1.23 | 1.50 | 1.94 | 2.29 | 2.74 | 3.87 | 210 | 0.8 | 50 | |
| | 20 | ○ | ○ | | | | | | | ○ | ○ | | | 41 | 50 | 57 | 0.82 | 1.15 | 1.41 | 1.63 | 2.00 | 2.58 | 3.06 | 3.65 | 5.16 | 210 | 1.0 | — | |
| | 30 | ○ | ○ | | | | | | | | ○ | ○ | | 42 | 50 | 56 | 1.23 | 1.73 | 2.12 | 2.45 | 3.00 | 3.88 | 4.58 | 5.48 | 7.75 | 340 | 1.2 | — | |
| | 40 | ○ | ○ | | | | | | | | | ○ | ○ | 42 | 50 | 56 | 1.63 | 2.31 | 2.83 | 3.27 | 4.00 | 5.16 | 6.11 | 7.30 | 10.3 | 340 | 1.4 | — | |
| | 50 | | | | | | | | | | | | | 43 | 50 | 55 | 2.04 | 2.89 | 3.54 | 4.08 | 5.00 | 6.46 | 7.64 | 9.13 | 12.9 | 340 | 1.6 | — | |
| | 60 | | | | | | | | | | | | | 43 | 50 | 55 | 2.45 | 3.46 | 4.24 | 4.90 | 6.00 | 7.75 | 9.17 | 11.0 | 15.5 | 340 | 1.7 | — | |
| | 80 | ○ | ○ | | | | | | | | | | | 43 | 50 | 55 | 3.27 | 4.62 | 5.66 | 6.53 | 8.00 | 10.3 | 12.2 | 14.6 | 20.6 | 340 | 2.0 | — | |
| | 120 | ○ | ○ | | | | | | | | | | | 44 | 50 | 54 | 4.90 | 6.93 | 8.49 | 9.80 | 12.0 | 15.5 | 18.3 | 21.9 | 31.0 | 550 | 2.5 | — | |
| | 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 | — | |
| | 300 | | | | | | | | | | | | | 45 | 50 | 53 | 12.2 | 17.3 | | | | | | | | | | | |

