

# Speed Exhaust Controller

## Series ASV

Size: M3, M5, 1/8, 1/4, 3/8

RoHS

### How to Order

**ASV 3 1 0 F - 01 - 06 S - - -**

**Speed exhaust controller**

**Body size**

|   |              |
|---|--------------|
| 1 | M3 standard  |
| 2 | M5 standard  |
| 3 | 1/8 standard |
| 4 | 1/4 standard |
| 5 | 3/8 standard |

**Type**

|   |           |
|---|-----------|
| 1 | Tee       |
| 2 | Elbow (1) |

Note 1) "Elbow": M3, M5 only

**Port size**

|        |           |
|--------|-----------|
| M3     | M3 x 0.5  |
| M5     | M5 x 0.8  |
| U10/32 | 10-32 UNF |
| 01     | 1/8       |
| 02     | 1/4       |
| 03     | 3/8       |
| 04     | 1/2       |

**Thread type**

|   |                  |
|---|------------------|
| - | M3, M5, U10/32 R |
| N | NPT              |

**Made to Order**

**X12** Lubricant: Vaseline

**Option**

|   |                    |
|---|--------------------|
| - | None               |
| C | With spatter cover |

\* Available only for ASV310F, 410F and 510F.

**Lock nut option**

|   |                  |
|---|------------------|
| - | Hexagon lock nut |
| J | Round lock nut   |

**Seal**

| Symbol | Seal      | Applicable model  |
|--------|-----------|-------------------|
| -      | None      | ASV120F/220F      |
| S      | With seal | ASV310F/410F/510F |

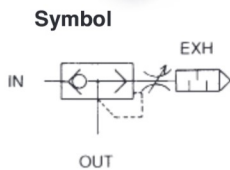
**Applicable tubing O.D.**

| Metric size | Inch size |
|-------------|-----------|
| 04          | ø4        |
| 06          | ø6        |
| 08          | ø8        |
| 10          | ø10       |
| 12          | ø12       |
| 03          | ø5/32"    |
| 07          | ø1/4"     |
| 09          | ø5/16"    |
| 11          | ø3/8"     |
| 13          | ø1/2"     |

**With One-touch fitting**

Integration of a quick exhaust valve and an exhaust restrictor permits high-speed cylinder operation.

- The flow rate is approximately twice. (In comparison with control by speed controller)  
Applicable model: ASV310F, ASV410F, ASV510F
- Silencer and One-touch fittings are installed.
- Flame resistant resin body as standard. (UL standard V-0)  
Applicable model: ASV310F, ASV410F, ASV510F
- Brass parts are all electroless nickel plated.



**Made to Order**

**Made to Order**

**Lubricant: Vaseline**

**X12**

Ex.) ASV120F-M3-04-X12

Note) Only for ASV120F and ASV220F

### Model

| Model          | Port size | Applicable tubing O.D. (mm) |   |   |    |    |       |      |       |      |      | Sonic conductance<br>dm <sup>3</sup> /(s·bar) |         | Critical pressure ratio |         |
|----------------|-----------|-----------------------------|---|---|----|----|-------|------|-------|------|------|-----------------------------------------------|---------|-------------------------|---------|
|                |           | 4                           | 6 | 8 | 10 | 12 | 5/32" | 1/4" | 5/16" | 3/8" | 1/2" | IN→OUT                                        | OUT→EXH | IN→OUT                  | OUT→EXH |
| ASV120F-M3     | M3 x 0.5  | ●                           |   |   |    |    |       |      |       |      |      | 0.06                                          | 0.06    | 0.15                    | 0.15    |
| ASV220F-M5     | M5 x 0.8  | ●                           | ● |   |    |    |       |      |       |      |      | 0.26                                          | 0.26    |                         |         |
| ASV310F-01     | R 1/8     |                             | ● | ● |    |    |       |      |       |      |      | 1.4                                           | 1.6     |                         |         |
| ASV310F-02     | R 1/4     |                             | ● | ● |    |    |       |      |       |      |      | 1.4                                           | 1.6     |                         |         |
| ASV410F-01     | R 1/8     |                             |   | ● | ●  |    |       |      |       |      |      | 2.7                                           | 2.8     | 0.35                    | 0.35    |
| ASV410F-02     | R 1/4     |                             |   | ● | ●  |    |       |      |       |      |      | 2.7                                           | 2.8     |                         |         |
| ASV410F-03     | R 3/8     |                             |   | ● | ●  |    |       |      |       |      |      | 2.7                                           | 2.8     |                         |         |
| ASV510F-02     | R 1/4     |                             |   |   | ●  | ●  |       |      |       |      |      | 4.6                                           | 5.4     |                         |         |
| ASV510F-03     | R 3/8     |                             |   |   | ●  | ●  |       |      |       |      |      | 5.4                                           | 5.8     | 0.25                    | 0.15    |
| ASV510F-04     | R 1/2     |                             |   |   | ●  | ●  |       |      |       |      |      | 5.4                                           | 5.8     |                         |         |
| ASV220F-U10/32 | 10-32 UNF |                             |   |   |    | ●  | ●     |      |       |      |      | 0.26                                          | 0.26    |                         |         |
| ASV310F-N01    | NPT 1/8   |                             |   |   |    |    | ●     | ●    |       |      |      | 1.4                                           | 1.6     | 0.35                    | 0.35    |
| ASV310F-N02    | NPT 1/4   |                             |   |   |    |    | ●     | ●    |       |      |      | 1.4                                           | 1.6     |                         |         |
| ASV410F-N01    | NPT 1/8   |                             |   |   |    |    |       | ●    | ●     |      |      | 2.7                                           | 2.8     |                         |         |
| ASV410F-N02    | NPT 1/4   |                             |   |   |    |    |       | ●    | ●     |      |      | 2.7                                           | 2.8     |                         |         |
| ASV410F-N03    | NPT 3/8   |                             |   |   |    |    |       | ●    | ●     |      |      | 2.7                                           | 2.8     |                         |         |
| ASV510F-N02    | NPT 1/4   |                             |   |   |    |    |       |      | ●     | ●    |      | 4.6                                           | 5.4     |                         |         |
| ASV510F-N03    | NPT 3/8   |                             |   |   |    |    |       |      | ●     | ●    |      | 5.4                                           | 5.8     |                         |         |
| ASV510F-N04    | NPT 1/2   |                             |   |   |    |    |       |      | ●     | ●    |      | 5.4                                           | 5.8     |                         |         |

### Specifications

| Series                                      | ASV120F                         | ASV220F | ASV310F/410F                       | ASV510F |
|---------------------------------------------|---------------------------------|---------|------------------------------------|---------|
| Fluid                                       | Air                             |         |                                    |         |
| Proof pressure                              | 1.5 MPa                         |         |                                    |         |
| Max. operating pressure                     | 1 MPa                           |         |                                    |         |
| Min. operating pressure                     | 0.1 MPa                         |         |                                    |         |
| Ambient and fluid temperature               | -5 to 60°C (No freezing)        |         |                                    |         |
| Applicable tubing material <sup>Note)</sup> | Nylon, Soft nylon, Polyurethane |         |                                    |         |
| Option                                      | Round lock nut                  |         | With spatter cover, Round lock nut |         |

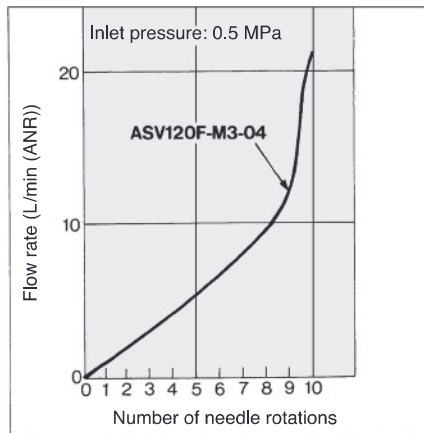
Note) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used.

## Needle Valve/Flow Characteristics

Note) The flow characteristics are representative values.

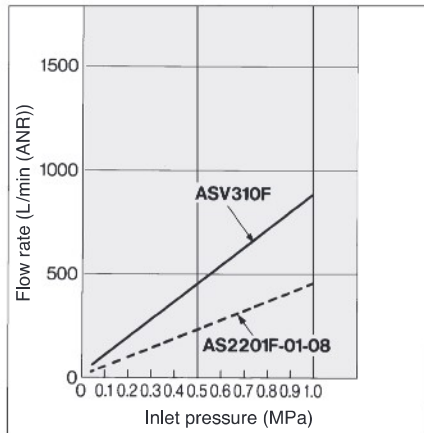
### ASV120F

#### OUT-Exhaust Flow

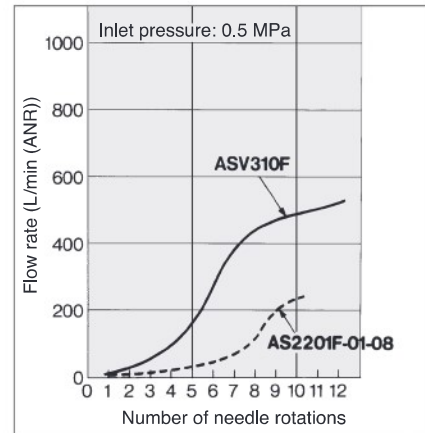


### ASV310F

#### IN-OUT Flow

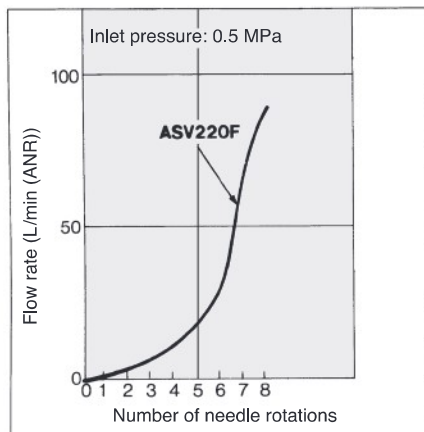


#### OUT-Exhaust Flow



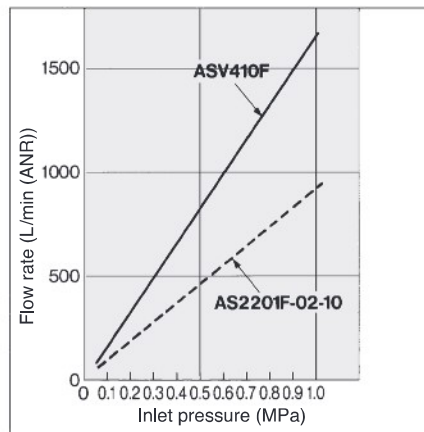
### ASV220F

#### OUT-Exhaust Flow

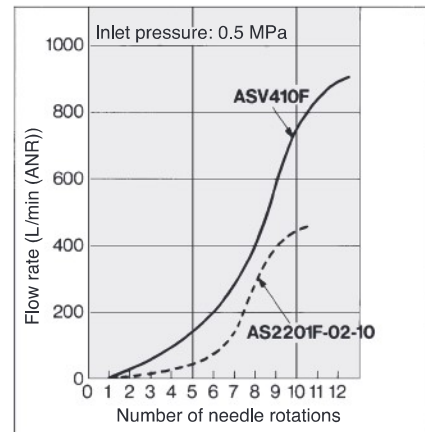


### ASV410F

#### IN-OUT Flow

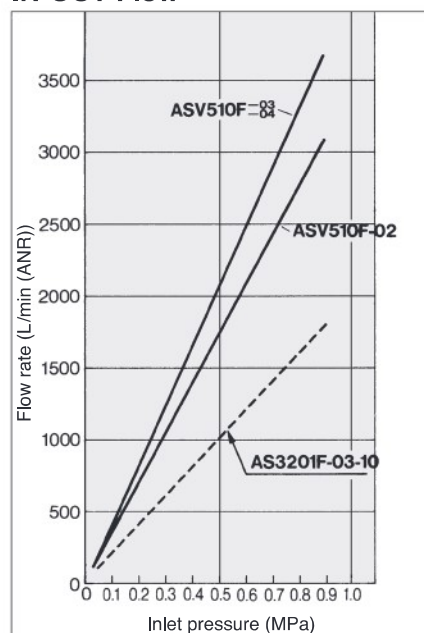


#### OUT-Exhaust Flow

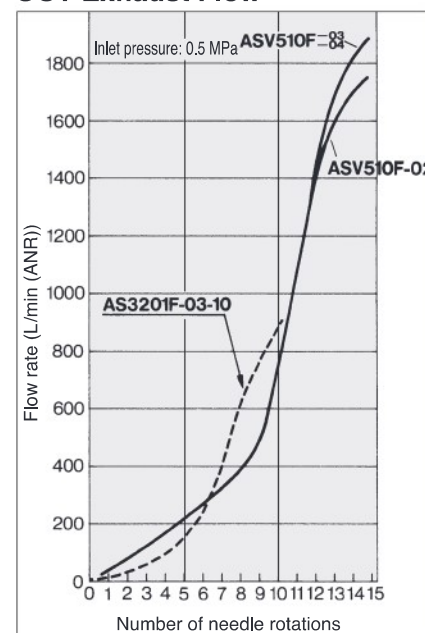


### ASV510F

#### IN-OUT Flow

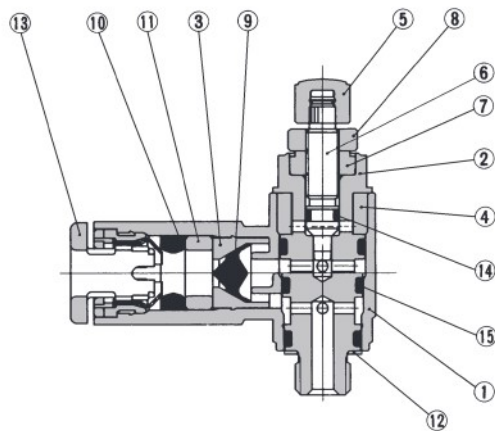


#### OUT-Exhaust Flow



## Construction

### ASV120F/220F



### Component Parts

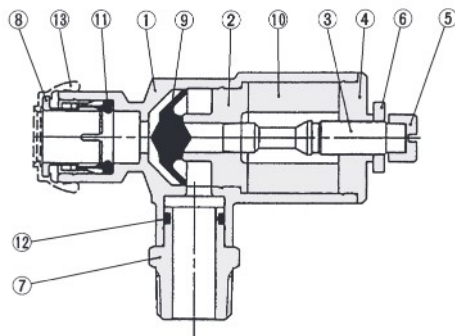
| No. | Description  | Material                 | Note                                     |
|-----|--------------|--------------------------|------------------------------------------|
| 1   | Body A       | PBT                      |                                          |
| 2   | Body B       | Brass <sup>(1)</sup>     | Electroless nickel plated                |
| 3   | Seat ring    | Brass                    | Electroless nickel plated                |
| 4   | Silencer     | PVA sponge               |                                          |
| 5   | Handle       | PBT                      | M3 type: Electroless nickel plated brass |
| 6   | Needle       | Brass                    | Electroless nickel plated                |
| 7   | Needle guide | Brass                    | Electroless nickel plated                |
| 8   | Lock nut     | Steel <sup>Note 3)</sup> | Zinc chromated <sup>Note 2)</sup>        |
| 9   | Valve        | HNBR                     |                                          |
| 10  | Seal         | NBR                      |                                          |
| 11  | Spacer       | POM                      |                                          |
| 12  | Gasket       | Stainless steel/NBR      | M3 port : PVC                            |
| 13  | Cassette     | —                        |                                          |
| 14  | O-ring       | NBR                      |                                          |
| 15  | O-ring       | NBR                      |                                          |

Note 1) M3 type is made of stainless steel.

Note 2) The round lock nut is electroless nickel plated.

Note 3) The round lock nut is made of brass.

### ASV310F/410F/510F



### Component Parts

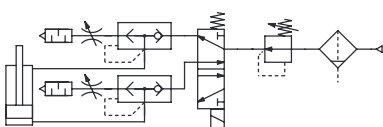
| No. | Description  | Material                 | Note                              |
|-----|--------------|--------------------------|-----------------------------------|
| 1   | Body A       | PBT                      | UL94V-0                           |
| 2   | Seat ring    | Aluminum alloy           | Chromate plated                   |
| 3   | Needle       | Aluminum alloy           | Electroless nickel plated         |
| 4   | Needle guide | Aluminum alloy           | Electroless nickel plated         |
| 5   | Handle       | Brass                    | Electroless nickel plated         |
| 6   | Lock nut     | Steel <sup>Note 2)</sup> | Zinc chromated <sup>Note 1)</sup> |
| 7   | Needle guide | Brass                    | Electroless nickel plated         |
| 8   | Cassette     | —                        |                                   |
| 9   | Valve        | Urethane rubber          |                                   |
| 10  | Silencer     | PVA sponge               |                                   |
| 11  | Seal         | NBR                      |                                   |
| 12  | O-ring       | NBR                      |                                   |
| 13  | Cover        | Flame proof CR           | UL94V-0                           |

Note 1) The round lock nut is electroless nickel plated.

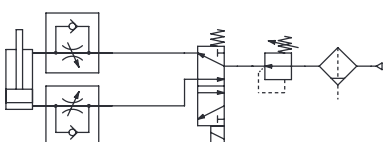
Note 2) The round lock nut is made of brass. However, note that only the ASV310F and ASV410F use steel.

## Circuit

### Circuit of speed exhaust controller



### Controlled by speed controller



## ⚠ Specific Product Precautions

Be sure to read before handling.

Refer to Safety Instructions and Flow Control Equipment Precautions.

### Design/Selection

## ⚠ Caution

1. In the following cases, insufficient exhaust or vibration may cause noise.

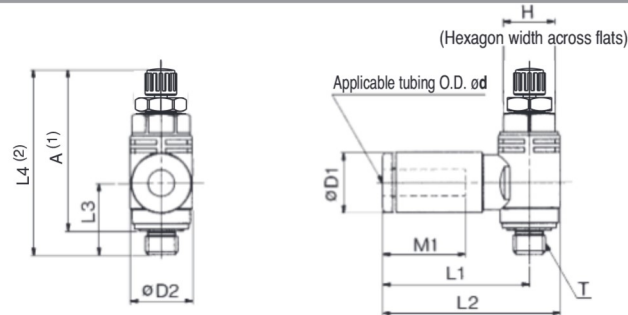
- (a) With residual pressure or back pressure on the IN side.
- (b) When the differential pressure between the IN and OUT sides is smaller than the minimum operating pressure.
- (c) When the effective area of the IN side piping of ASV, or the solenoid valve, is smaller than ASV.

2. As the speed exhaust valve ASV220F series has a sonic conductance that is smaller than that of the speed controller AS1201F series, the cylinder speed may not become fast depending on the piping conditions. So, carefully check this point when using the product.

# Series ASV

## Dimensions

### ASV120F/220F



#### Metric Size

| Model         | Applicable tubing<br>O.D. ød | T        | H   | D1   | D2  | L1   | L2   | L3   | L4   |      | A*   |      | M1   | Weight<br>(g) |
|---------------|------------------------------|----------|-----|------|-----|------|------|------|------|------|------|------|------|---------------|
|               |                              |          |     |      |     |      |      |      | Max. | Min. | Max. | Min. |      |               |
| ASV120F-M3-04 | 4                            | M3 x 0.5 | 5.5 | 9.3  | 7.2 | 21.4 | 25   | 9.8  | 28.6 | 26.1 | 25.8 | 23.3 | 12.7 | 5             |
| ASV220F-M5-04 | 4                            | M5 x 0.8 | 8   | 9.3  | 9.6 | 22.8 | 27.6 | 11.1 | 31.4 | 28.6 | 27.7 | 24.9 | 12.7 | 8             |
| ASV220F-M5-06 | 6                            | M5 x 0.8 | 8   | 11.6 | 9.6 | 23.6 | 28.4 | 11.1 | 31.4 | 28.6 | 27.7 | 24.9 | 13.5 | 9             |

Note 1) Reference dimensions of M thread after installation. Note 2) L4: Reference dimensions

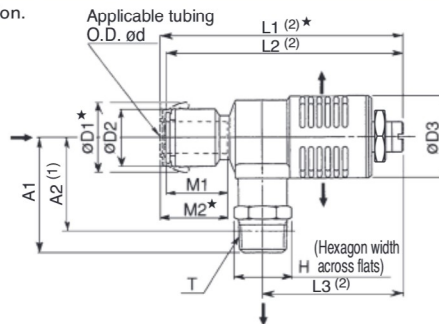
#### Inch Size

| Model             | Applicable tubing<br>O.D. ød | T        | H | D1  | D2  | L1   | L2   | L3   | L4   |      | A*   |      | M1   | Weight<br>(g) |
|-------------------|------------------------------|----------|---|-----|-----|------|------|------|------|------|------|------|------|---------------|
|                   |                              |          |   |     |     |      |      |      | Max. | Min. | Max. | Min. |      |               |
| ASV220F-U10/32-03 | 5/32"                        | 10-32UNF | 8 | 9.3 | 9.6 | 22.8 | 27.6 | 11.1 | 31.4 | 28.6 | 27.7 | 24.9 | 12.7 | 8             |
| ASV220F-U10/32-07 | 1/4"                         | 10-32UNF | 8 | 12  | 9.6 | 23.6 | 28.4 | 11.1 | 31.4 | 28.6 | 27.7 | 24.9 | 13.7 | 9             |

Note 1) Reference "U10/32" thread dimensions after installation.

Note 2) L4: Reference dimensions

### ASV310F/410F/510F



#### Metric Size

| Model          | Applicable tubing<br>O.D. ød | T    | H  | D1   | D2   | D3   | L1 * |      | L2   |      | L3   |      | A1 (2) | A2   | M1 | M2 * | Weight<br>(g) |
|----------------|------------------------------|------|----|------|------|------|------|------|------|------|------|------|--------|------|----|------|---------------|
|                |                              |      |    |      |      |      | Max. | Min. | Max. | Min. | Max. | Min. |        |      |    |      |               |
| ASV310F-01-06S | 6                            | R1/8 | 10 | 16.8 | 12.8 | 17.6 | 71.9 | 65.9 | 69.9 | 63.9 | 45.8 | 39.8 | 26.5   | 23.4 | 17 | 19   | 22            |
| ASV310F-01-08S | 8                            |      |    | 19.3 | 15.2 |      | 73.8 | 67.8 | 71.8 | 65.8 |      |      |        |      | 19 | 21   | 23            |
| ASV310F-02-06S | 6                            | R1/4 | 14 | 16.8 | 12.8 | 17.6 | 71.9 | 65.9 | 69.9 | 63.9 | 45.8 | 39.8 | 30.9   | 25.4 | 17 | 19   | 30            |
| ASV310F-02-08S | 8                            |      |    | 19.3 | 15.2 |      | 73.8 | 67.8 | 71.8 | 65.8 |      |      |        |      | 19 | 21   | 31            |
| ASV410F-01-08S | 8                            | R1/8 | 12 | 19.3 | 15.2 | 24   | 83.1 | 75.6 | 81.1 | 73.6 | 52.8 | 45.3 | 29.8   | 26.7 | 19 | 21   | 39            |
| ASV410F-01-10S | 10                           |      |    | 23.3 | 18.5 |      | 85.2 | 77.7 | 83.2 | 75.7 |      |      |        |      | 21 | 23   | 41            |
| ASV410F-02-08S | 8                            | R1/4 | 14 | 19.3 | 15.2 | 24   | 83.1 | 75.6 | 81.1 | 73.6 | 52.8 | 45.3 | 34.2   | 28.7 | 19 | 21   | 47            |
| ASV410F-02-10S | 10                           |      |    | 23.3 | 18.5 |      | 85.2 | 77.7 | 83.2 | 75.7 |      |      |        |      | 21 | 23   | 49            |
| ASV410F-03-08S | 8                            | R3/8 | 17 | 19.3 | 15.2 | 24   | 83.1 | 75.6 | 81.1 | 73.6 | 52.8 | 45.3 | 35.6   | 30.4 | 19 | 21   | 61            |
| ASV410F-03-10S | 10                           |      |    | 23.3 | 18.5 |      | 85.2 | 77.7 | 83.2 | 75.7 |      |      |        |      | 21 | 23   | 63            |
| ASV510F-02-10S | 10                           | R1/4 | 17 | 23.3 | 18.5 | 30   | 88.2 | 82.2 | 86.2 | 80.2 | 53.6 | 47.6 | 39.3   | 33.8 | 21 | 23   | 69            |
| ASV510F-02-12S | 12                           |      |    | 25.7 | 20.9 |      | 89.8 | 83.8 | 87.8 | 81.8 |      |      |        |      | 22 | 24   | 74            |
| ASV510F-03-10S | 10                           | R3/8 | 17 | 23.3 | 18.5 | 30   | 88.2 | 82.2 | 86.2 | 80.2 | 53.6 | 47.6 | 40.7   | 35.5 | 21 | 23   | 73            |
| ASV510F-03-12S | 12                           |      |    | 25.7 | 20.9 |      | 89.8 | 83.8 | 87.8 | 81.8 |      |      |        |      | 22 | 24   | 78            |
| ASV510F-04-10S | 10                           | R1/2 | 22 | 23.3 | 18.5 | 30   | 88.2 | 82.2 | 86.2 | 80.2 | 53.6 | 47.6 | 44.9   | 37.6 | 21 | 23   | 95            |
| ASV510F-04-12S | 12                           |      |    | 25.7 | 20.9 |      | 89.8 | 83.8 | 87.8 | 81.8 |      |      |        |      | 22 | 24   | 100           |

\* Dimension with cover Note 1) Reference dimension of "R" thread after installation. Note 2) L1, L2, L3: Reference dimensions

#### Inch Size

| Model          | Applicable tubing<br>O.D. ød | T      | H    | D1 * | D2   | D3   | L1 * |      | L2   |      | L3   |      | A1 (2) | A1 (1) | M1   | M2 * | Weight<br>(g) |
|----------------|------------------------------|--------|------|------|------|------|------|------|------|------|------|------|--------|--------|------|------|---------------|
|                |                              |        |      |      |      |      | Max. | Min. | Max. | Min. | Max. | Min. |        |        |      |      |               |
| ASV310F-N01-07 | 1/4"                         | NPT1/8 | 12.7 | 17.2 | 13.2 | 17.6 | 73   | 67   | 71   | 65   | 45.8 | 39.8 | 26.5   | 23.4   | 16.8 | 18.8 | 22            |
| ASV310F-N01-09 | 5/16"                        |        |      | 19.3 | 15.2 |      | 73.8 | 67.8 | 71.8 | 65.8 |      |      |        |        | 19   | 21   | 23            |
| ASV310F-N02-07 | 1/4"                         | NPT1/4 | 14.3 | 17.2 | 13.2 | 17.6 | 73   | 67   | 71   | 65   | 45.8 | 39.8 | 30.9   | 25.4   | 16.8 | 18.8 | 30            |
| ASV310F-N02-09 | 5/16"                        |        |      | 19.3 | 15.2 |      | 73.8 | 67.8 | 71.8 | 65.8 |      |      |        |        | 19   | 21   | 31            |
| ASV410F-N01-09 | 5/16"                        | NPT1/8 | 12.7 | 19.3 | 15.2 | 24.4 | 83.1 | 75.6 | 81.1 | 73.6 | 52.8 | 45.3 | 29.8   | 26.7   | 19   | 21   | 39            |
| ASV410F-N02-09 | 5/16"                        |        |      | 23.3 | 18.5 |      | 85.2 | 77.7 | 83.2 | 75.7 |      |      |        |        | 21   | 23   | 41            |
| ASV410F-N02-11 | 3/16"                        | NPT1/4 | 14.3 | 19.3 | 15.2 | 24.4 | 83.1 | 75.6 | 81.1 | 73.6 | 52.8 | 45.3 | 34.2   | 28.7   | 19   | 21   | 47            |
| ASV410F-N03-09 | 5/16"                        |        |      | 23.3 | 18.5 |      | 85.2 | 77.7 | 83.2 | 75.7 |      |      |        |        | 21   | 23   | 49            |
| ASV410F-N03-11 | 3/16"                        | NPT3/8 | 17.5 | 19.3 | 15.2 | 24.4 | 83.1 | 75.6 | 81.1 | 73.6 | 52.8 | 45.3 | 35.6   | 30.4   | 19   | 21   | 61            |
| ASV410F-N03-13 | 3/16"                        |        |      | 23.3 | 18.5 |      | 85.2 | 77.7 | 83.2 | 75.7 |      |      |        |        | 21   | 23   | 63            |
| ASV510F-N02-11 | 3/16"                        | NPT1/4 | 17.5 | 23.3 | 18.5 | 30   | 88.2 | 82.2 | 86.2 | 80.2 | 53.6 | 47.6 | 39.3   | 33.8   | 21   | 23   | 69            |
| ASV510F-N02-13 | 1/2"                         |        |      | 26.5 | 21.7 |      | 89.8 | 83.8 | 87.8 | 81.8 |      |      |        |        | 21.8 | 23.8 | 74            |
| ASV510F-N03-11 | 3/16"                        | NPT3/8 | 17.5 | 23.3 | 18.5 | 30   | 88.2 | 82.2 | 86.2 | 80.2 | 53.6 | 47.6 | 40.7   | 35.5   | 21   | 23   | 73            |
| ASV510F-N03-13 | 1/2"                         |        |      | 26.5 | 21.7 |      | 89.8 | 83.8 | 87.8 | 81.8 |      |      |        |        | 21.8 | 23.8 | 78            |
| ASV510F-N04-11 | 3/16"                        | NPT1/2 | 22.2 | 23.3 | 18.5 | 30   | 88.2 | 82.2 | 86.2 | 80.2 | 53.6 | 47.6 | 44.9   | 37.6   | 21   | 23   | 95            |
| ASV510F-N04-13 | 1/2"                         |        |      | 26.5 | 21.7 |      | 89.8 | 83.8 | 87.8 | 81.8 |      |      |        |        | 21.8 | 23.8 | 100           |

\* Dimension with cover Note 1) Reference dimension of "NPT" thread after installation. Note 2) L1, L2, L3: Reference dimensions