

Speed Controller with One-touch Fitting Elbow Type/Universal Type

AS Series

RoHS

Minimizes installation time and cost

Reduces the mounting height and enables compact machinery design. Effective area is larger than the former model.

Tube swivels 360°

Universal type permits 360° piping swivel.

ø2 size added to applicable tubing sizes

- **Metric size** (Release button: White color)
ø2, ø3.2, ø4, ø6, ø8, ø10, ø12
- **Inch size** (Release button: Orange color)
ø1/8", ø5/32", ø3/16", ø1/4", ø5/16", ø3/8", ø1/2"

Maximum operating pressure 1 MPa max.

Applicable tubing materials

Nylon, soft nylon, and polyurethane tubing are applicable.

Retainer prevents accidental loss of needle.

Option

Nickel plated option

Model

| Elbow type | Universal type | Port size | Applicable tubing O.D. | | | | | | | | | | | | | | | |
|----------------|----------------|-----------|------------------------|-----|---|---|---|------------------|----|-----------|-------|-------|------------------|------------------|------|------------------|---|---|
| | | | Metric size | | | | | | | Inch size | | | | | | | | |
| | | | 2 | 3.2 | 4 | 6 | 8 | 10 | 12 | 1/8" | 5/32" | 3/16" | 1/4" | 5/16" | 3/8" | 1/2" | | |
| AS12□1F-M3 | AS13□1F-M3 | M3 x 0.5 | ● ⁽²⁾ | ● | ● | | | | | | | ● | ● | | | | | |
| AS12□1F-M5 | AS13□1F-M5 | M5 x 0.8 | ● ⁽²⁾ | ● | ● | ● | | | | | | ● | ● | ● | ● | | | |
| AS12□1F-U10/32 | AS13□1F-U10/32 | 10-32UNF | | ● | ● | ● | | | | | | ● | ● | ● | ● | | | |
| AS22□1F-01 | AS23□1F-01 | R1/8 | | ● | ● | ● | ● | ● ⁽²⁾ | | | | ● | ● | ● ⁽⁵⁾ | ● | ● | | |
| AS22□1F-02 | AS23□1F-02 | R1/4 | | | ● | ● | ● | ● | | | | ● | ● ⁽⁵⁾ | | ● | ● ⁽⁶⁾ | | |
| AS32□1F-02 | AS33□1F-02 | R1/4 | | | | ● | ● | ● | ● | | | | | | ● | ● ⁽⁶⁾ | | |
| AS32□1F-03 | AS33□1F-03 | R3/8 | | | | ● | ● | ● | ● | | | | | | ● | ● ⁽⁶⁾ | | |
| AS42□1F-04 | AS43□1F-04 | R1/2 | | | | | | ● | ● | | | | | | | | ● | ● |

Note 1) AS12□1F-M5-02 applicable cylinder bore sizes are 2.5, 4, 6.

Note 2) Elbow type only

Note 3) Meter-out and meter-in types can be visually differentiated by the lock nut. The lock nut on the meter-out type is zinc chromated (the round lock nut is electroless nickel plated), while the meter-in type is black zinc chromate plated.

Note 4) ●: Brass parts are electroless nickel plated, provided as standard. (N specifications)

Note 5) The elbow type is electroless nickel plated as standard. (N specifications)

Specifications

| Fluid | Air |
|---|--|
| Proof pressure | 1.5 MPa (1.05 MPa ⁽¹⁾) |
| Max. operating pressure | 1 MPa (0.7 MPa ⁽¹⁾) |
| Mini. operating pressure | 0.1 MPa |
| Ambient and fluid temperature | -5 to 60°C (No freezing) |
| Applicable tubing material ⁽²⁾ | Nylon, Soft nylon, Polyurethane ⁽³⁾ |
| Option | With seal ⁽⁴⁾ , Round lock nut ⁽⁵⁾ , Electroless nickel plated |

Note 1) In case of AS12□1F-M3-02, AS12□1F-M5-02

Note 2) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used. (Refer to pages 464 and 465 for details.)

Note 3) In case of AS12□1F-M3-02 and AS12□1F-M5-02, polyurethane only.

Note 4) M3, M5, 10-32UNF type ports are not available with seals.

Note 5) Brass parts are all electroless nickel plated.

Flow Rate and Sonic Conductance

| Model | AS12□1F-M3 AS13□1F-M3 AS12□1F-M5-02 | AS12□1F-M5 AS13□1F-M5 | AS22□1F-01 AS23□1F-01 | AS22□1F-02 AS23□1F-02 | AS32□1F AS33□1F | AS42□1F AS43□1F | | | | | |
|-------------------------|--|---|--|---|---|--|--------------------------|---------|---------|------|---------|
| | Tubing O.D. | Metric size ø2, ø3.2, ø4 Inch size ø1/8", ø5/32" | ø3.2, ø4, ø6 ø1/8", ø3/16", ø1/4", ø5/32" | ø3.2, ø4 ø6, ø8, ø10 ø1/8", ø3/16", ø1/4", ø5/32" | ø4, ø6 ø8, ø10 ø5/32", ø3/16", ø1/4", ø5/16", ø3/8" | ø6, ø8 ø10, ø12 ø1/4", ø5/16", ø3/8" | ø10, ø12 ø3/8", ø1/2" | | | | |
| Controlled flow | Flow rate L/min (ANR) | 20 | 100 | 180 | 230 | 260 390 | 460 | 660 790 | 920 | 1580 | 1710 |
| | Sonic conductance dm ³ /(s·bar) | 0.06 | 0.28 | 0.5 | 0.64 | 0.72 | 1.1 | 1.3 | 1.8 2.2 | 2.6 | 4.4 4.8 |
| Critical pressure ratio | Controlled flow | 0.2 | 0.2 | 0.25 | 0.3 | 0.25 | 0.25 | | | | |
| | Free flow | 0.4 | 0.4 | 0.2 | 0.3 | 0.2 | 0.3 | | | | |

Note 1) Flow rate values are measured at 0.5 MPa and 20°C.

Note 2) U10/32 has the same specification as M5.

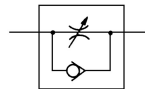
Elbow type
Applicable tubing O.D. ø2



Universal type



Symbol



Flow Direction Symbols on Body

| | Meter-out type | Meter-in type |
|-------------------|----------------|---------------|
| Indication symbol | | |
| Symbol | | |

Caution

Be sure to read this before handling the products.

Refer to back page 50 for Safety Instructions and pages 543 to 546 for Flow Control Equipment Precautions.



Made to Order
(Refer to page 582 for details.)

How to Order

AS 2 2 0 1F - [] 01 - 06 S - [] - []

Body size

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

Type

| | |
|---|-----------|
| 2 | Elbow |
| 3 | Universal |

Control type

| | |
|---|-----------|
| 0 | Meter-out |
| 1 | Meter-in |

With One-touch fitting

Thread type

| | |
|-----|----------------------------|
| Nil | Metric thread (M3, M5) |
| | Unified thread (10-32 UNF) |
| N | R |
| | NPT |

Lock nut option

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

Made to Order
(Refer to page 582 for details.)

Option

| | |
|-----|---------------------------|
| Nil | None |
| S | With seal |
| N | Electroless nickel plated |

*1 If more than one option is required, write option part numbers in the order of "S", "N".
 *2 M3, M5, and U10/32 are not available with seals.

Applicable tubing O.D. (Note)

| Metric size | | Inch size | |
|-------------|-------|-----------|--------|
| 02 | ø2 | 01 | ø1/8" |
| 23 | ø3.2* | 03 | ø5/32" |
| 04 | ø4 | 05 | ø3/16" |
| 06 | ø6 | 07 | ø1/4" |
| 08 | ø8 | 09 | ø5/16" |
| 10 | ø10 | 11 | ø3/8" |
| 12 | ø12 | 13 | ø1/2" |

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 |

Note) For applicable tubing O.D. selection, refer to the Model on page 576.
 *Use ø1/8" tube.

Made to Order
(For details, refer to page 582.)

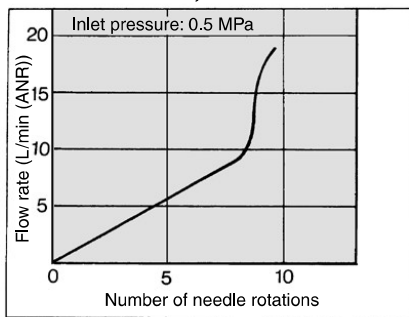
| Symbol | Specifications |
|--------|--|
| -X12 | Lubricant: Vaseline |
| -X21 | Grease-free (Seal: Fluorine-coated) + Throttle valve (Without check valve) |
| -X214 | Throttle valve (Without check valve) |
| -X250 | Fixed throttle (No needle function) |

- AS-F
- TMH
- ASD
- AS
- AS-FE
- KE
- AS-FG
- AS-FP
- AS-FM
- AS-D
- AS-T
- ASP
- ASN
- AQ
- ASV
- AK
- VCHC
- ASR
- ASQ

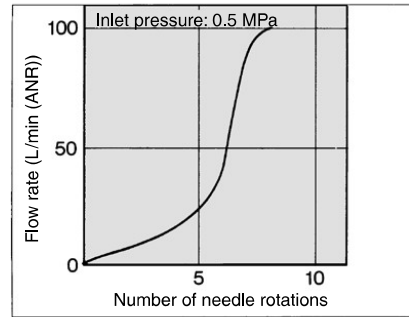
Needle Valve/Flow Rate Characteristics

Note) The flow rate characteristics are representative values.

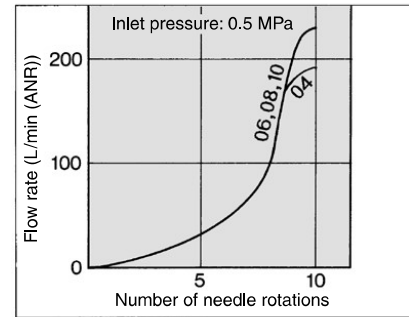
AS1201F-M3, AS1211F-M3
AS1301F-M3, AS1311F-M3
AS1201F-M5-02, AS1211F-M5-02



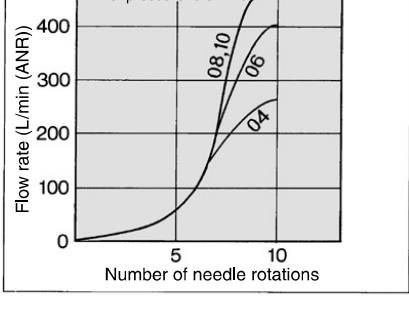
AS1201F-M5, AS1211F-M5
AS1301F-M5, AS1311F-M5



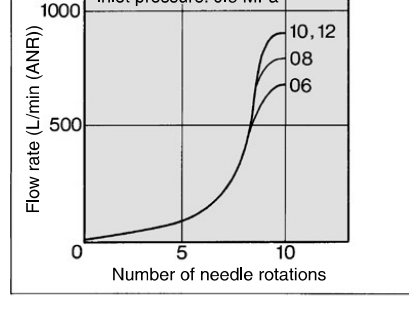
AS2201F-01, AS2211F-01
AS2301F-01, AS2311F-01



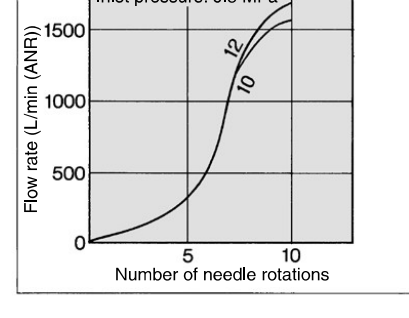
AS2201F-02, AS2211F-02
AS2301F-02, AS2311F-02



AS3201F, AS3211F
AS3301F, AS3311F



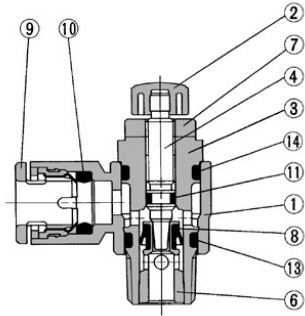
AS4201F, AS4211F
AS4301F, AS4311F



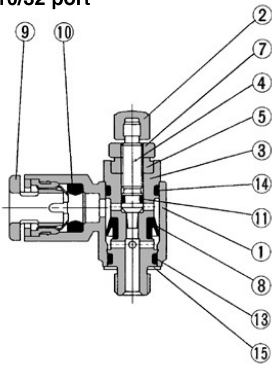
AS Series

Construction

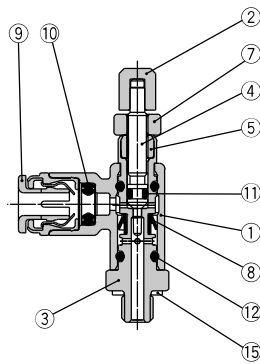
Elbow type Meter-out type



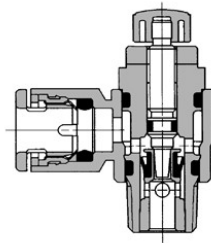
M3 port M5 port U10/32 port



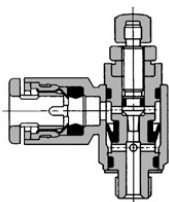
ø2 tubing type



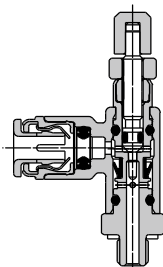
Meter-in type



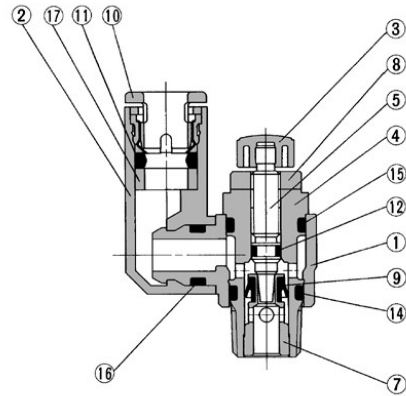
M3 port M5 port U10/32 port



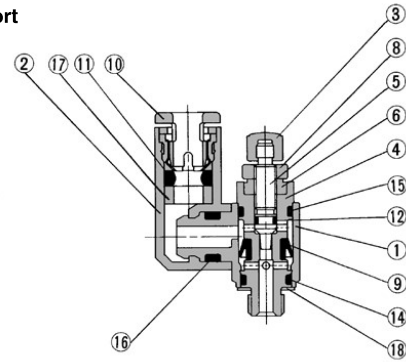
ø2 tubing type



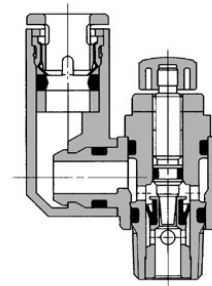
Universal type Meter-out type



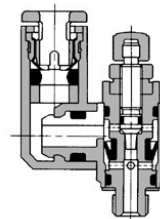
M3 port M5 port U10/32 port



Meter-in type



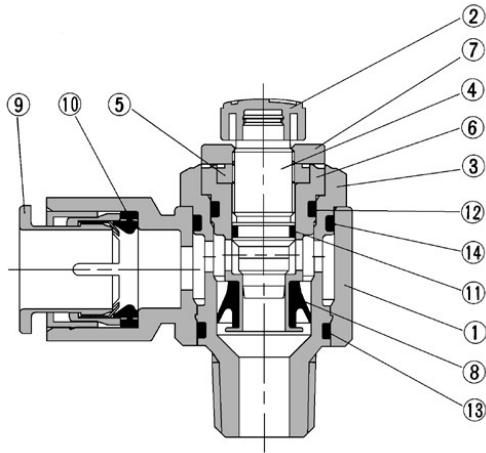
M3 port M5 port U10/32 port



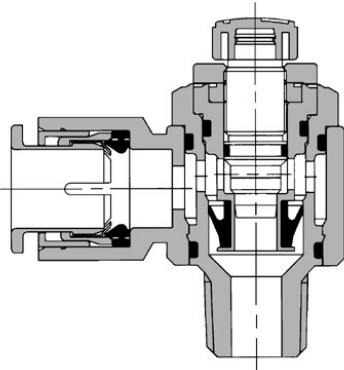
Construction

Elbow type

Meter-out type AS3201F-02

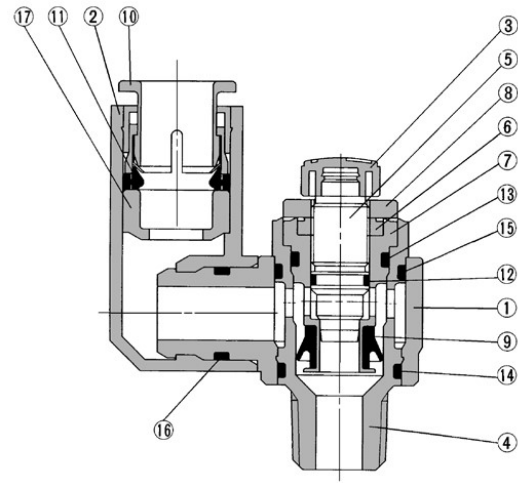


Meter-in type AS3211F-02

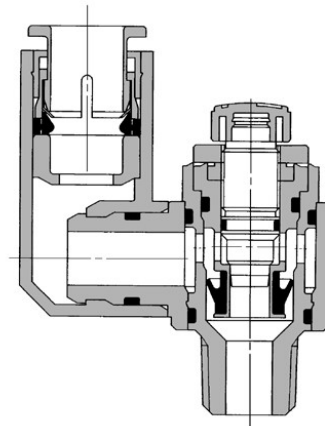


Universal type

Meter-out type AS3301F-02



Meter-in type AS3311F-02



Component Parts

| No. | Description | Material | Note |
|-----|--------------|----------------------|--|
| 1 | Body A | PBT | |
| 2 | Handle | PBT ⁽¹⁾ | |
| 3 | Body B | Brass ⁽²⁾ | Electroless nickel plated |
| 4 | Needle | Brass | Electroless nickel plated |
| 5 | Needle guide | Brass | Electroless nickel plated |
| 6 | Seat ring | Brass | ⁽³⁾ |
| 7 | Lock nut | Steel ⁽⁴⁾ | Meter-out Zinc chromate plated ^{Note 5)} Meter-in Black zinc chromate plated |
| 8 | U-packing | HNBR | |
| 9 | Cassette | — | |
| 10 | Seal | NBR | |
| 11 | O-ring | NBR | |
| 12 | O-ring | NBR | |
| 13 | O-ring | NBR | |
| 14 | O-ring | NBR | |
| 15 | Gasket | NBR, Stainless steel | |

Note 1) AS12□1F-M3 and AS12□1F-M5-02 are made of electroless nickel plated brass.

Note 2) AS12□1F-M3 is made of stainless steel.

Note 3) AS22□1F, AS32□1F: Electroless nickel plated.

* Excluding applicable tubing O.D. 3/8"

Note 4) The material of the lock nut option-J (round type) is brass. However, note that only the AS22□1F uses steel.

Note 5) The surface treatment of the lock nut option-J (round type) is electroless nickel plating.

Component Parts

| No. | Description | Material | Note |
|-----|--------------|----------------------|--|
| 1 | Body A | PBT | |
| 2 | Elbow body | PBT | |
| 3 | Handle | PBT ⁽¹⁾ | |
| 4 | Body B | Brass ⁽²⁾ | Electroless nickel plated |
| 5 | Needle | Brass | Electroless nickel plated |
| 6 | Needle guide | Brass | Electroless nickel plated |
| 7 | Seat ring | Brass | ⁽³⁾ |
| 8 | Lock nut | Steel ⁽⁴⁾ | Meter-out Zinc chromate plated ^{Note 5)} Meter-in Black zinc chromate plated |
| 9 | U seal | HNBR | |
| 10 | Cassette | — | |
| 11 | Seal | NBR | |
| 12 | O-ring | NBR | |
| 13 | O-ring | NBR | |
| 14 | O-ring | NBR | |
| 15 | O-ring | NBR | |
| 16 | O-ring | NBR | |
| 17 | Spacer | — | |
| 18 | Gasket | NBR, Stainless steel | |

Note 1) AS13□1F-M3 is made of electroless nickel plated brass.

Note 2) AS13□1F-M3 is made of stainless steel.

Note 3) AS23□1F, AS33□1F: Electroless nickel plated.

* Excluding applicable tubing O.D. 3/8"

Note 4) The material of the lock nut option-J (round type) is brass. However, note that only the AS23□1F uses steel.

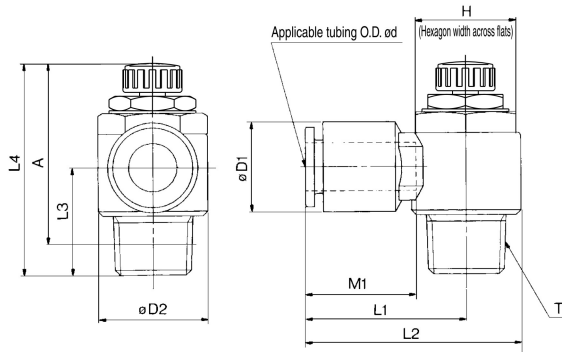
Note 5) The surface treatment of the lock nut option-J (round type) is electroless nickel plating.

AS-F
TMH
ASD
AS
AS-FE
KE
AS-FG
AS-FP
AS-FM
AS-D
AS-T
ASP
ASN
AQ
ASV
AK
VCHC
ASR
ASQ

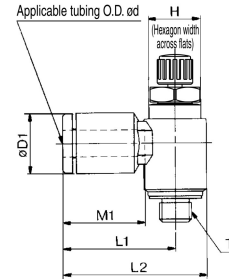
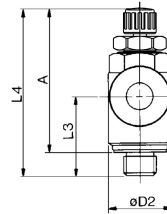
AS Series



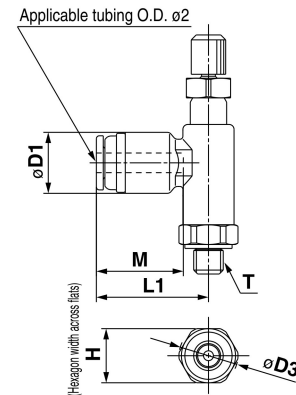
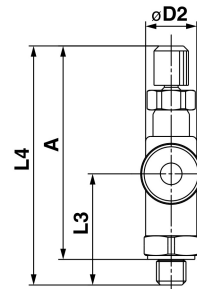
Elbow Type



M3 port M5 port U10/32 port



ø2 tubing type AS12□1F-M3-02 AS12□1F-M5-02



Metric Size

| Model | Applicable tubing O.D. ød | T | H (1) | D1 | D2 | D3 | L1 | L2 | L3 | L4 (3) | | A (2) | | M1 | Weight (g) |
|-------------------|---------------------------|----------|-----------|------|------|------|------|------|------|--------|------|-------|------|------|------------|
| | | | | | | | | | | Max. | Min. | Max. | Min. | | |
| AS12□1F-M3-02 | 2 | M3 x 0.5 | 5.5 | 6 | 5.2 | 6 | 11.4 | — | 11 | 26.8 | 24.3 | 24.3 | 21.8 | 8.8 | 2.4 |
| AS12□1F-M5-02 | 2 | M5 x 0.8 | 7 | 7.5 | 7.5 | 11.5 | 27.3 | 24.8 | — | — | — | — | — | 8.8 | 3 |
| AS12□1F-M3-23 | 3.2 | M3 x 0.5 | 5.5 | 8.4 | 7.2 | — | 16.1 | 19.7 | 10.5 | 26.6 | 24.1 | 24 | 21.5 | 12.7 | 4 |
| AS12□1F-M3-04 | 4 | M3 x 0.5 | 5.5 | 9.3 | — | — | — | — | 10 | — | — | — | — | — | — |
| AS12□1F-M5-23 | 3.2 | M5 x 0.8 | 8 | 8.4 | — | — | 17.3 | 22.1 | — | — | — | — | — | 12.7 | — |
| AS12□1F-M5-04 | 4 | M5 x 0.8 | 8 | 9.3 | 9.6 | — | 17.3 | 22.1 | — | 28.6 | 25.8 | 25 | 22.2 | — | 7 |
| AS12□1F-U10/32-04 | 4 | 10-32UNF | 8 | 9.3 | 9.6 | — | 17.3 | 22.1 | — | 28.6 | 25.8 | 25 | 22.2 | — | 7 |
| AS12□1F-M5-06 | 6 | M5 x 0.8 | 11.6 | — | — | — | 18.1 | 22.9 | 11.7 | — | — | — | — | 13.5 | — |
| AS12□1F-U10/32-06 | 6 | 10-32UNF | 11.6 | — | — | — | 18.1 | 22.9 | 11.7 | — | — | — | — | 13.5 | — |
| AS22□1F-01-23 | 3.2 | — | 12 | 9.3 | — | — | 20.4 | 27.5 | — | — | — | — | — | 12.7 | 16 |
| AS22□1F-01-04 | 4 | — | 12 | 9.3 | — | — | 20.4 | 27.5 | — | — | — | — | — | 12.7 | 17 |
| AS22□1F-01-06 | 6 | 1/8 | 12 (12.7) | 11.6 | 14.2 | — | 20.4 | 27.5 | 13.4 | 35.2 | 30.2 | 32.1 | 27.1 | 13.5 | 17 |
| AS22□1F-01-08 | 8 | — | 12 | 15.2 | — | — | 25.3 | 32.4 | — | — | — | — | — | 18.5 | 19 |
| AS22□1F-01-10 | 10 | — | 12 | 18.5 | — | — | 32.1 | 39.2 | 14.1 | — | — | — | — | 21 | 21 |
| AS22□1F-02-04 | 4 | — | 17 | 10.4 | — | — | 25.2 | 34.4 | — | — | — | — | — | 16 | 32 |
| AS22□1F-02-06 | 6 | — | 17 | 12.8 | — | — | 25.2 | 34.4 | 17.7 | 39.9 | 34.9 | 34.4 | 29.4 | 17 | 32 |
| AS22□1F-02-08 | 8 | — | 17 | 15.2 | 18.5 | — | 27.2 | 36.4 | — | — | — | — | — | 18.5 | 34 |
| AS22□1F-02-10 | 10 | 1/4 | 17 (17.5) | 18.5 | — | — | 35.3 | 44.5 | 18.3 | — | — | — | — | 21 | 36 |
| AS32□1F-02-06 | 6 | — | 19 | 12.8 | — | — | 27.8 | 39.3 | — | — | — | — | — | 17 | 60 |
| AS32□1F-02-08 | 8 | — | 19 | 15.2 | — | — | 29.5 | 41 | — | — | — | — | — | 18.5 | 63 |
| AS32□1F-02-10 | 10 | — | 19 | 18.5 | 23 | — | 31.8 | 43.3 | 21.3 | 48.3 | 43.3 | 42.8 | 37.8 | 21 | 67 |
| AS32□1F-02-12 | 12 | — | 19 | 20.9 | — | — | 32.8 | 44.3 | — | — | — | — | — | 22 | 69 |
| AS32□1F-03-06 | 6 | — | 19 | 12.8 | — | — | 27.8 | 39.3 | — | — | — | — | — | 17 | 55 |
| AS32□1F-03-08 | 8 | — | 19 | 15.2 | — | — | 29.5 | 41 | — | — | — | — | — | 18.5 | 57 |
| AS32□1F-03-10 | 10 | 3/8 | 19 | 18.5 | 23 | — | 31.8 | 43.3 | 19.8 | 45.4 | 40.4 | 40.2 | 35.2 | 21 | 59 |
| AS32□1F-03-12 | 12 | — | 19 | 20.9 | — | — | 32.8 | 44.3 | — | — | — | — | — | 22 | 61 |
| AS42□1F-04-10 | 10 | 1/2 | 24 (23.8) | 18.5 | 28.6 | — | 33.6 | 47.9 | 24.5 | 56.7 | 49.2 | 49.6 | 42.1 | 21 | 100 |
| AS42□1F-04-12 | 12 | — | 24 | 20.9 | — | — | 35.2 | 49.5 | — | — | — | — | — | 22 | 101 |

Note 1) () are the dimensions of NPT thread.

Note 2) Reference thread dimensions after installation.

Note 3) Reference dimensions

Inch Size

| Model | Applicable tubing O.D. ød | T | H (1) | D1 | D2 | L1 | L2 | L3 | L4 (3) | | A (2) | | M1 | Weight (g) | |
|-------------------|---------------------------|----------|-----------|------|------|------|------|------|--------|------|-------|------|------|------------|-----|
| | | | | | | | | | Max. | Min. | Max. | Min. | | | |
| AS12□1F-M3-01 | 1/8" | M3 x 0.5 | 5.5 | 8.4 | 7.2 | 16.1 | 19.7 | 10.5 | 26.6 | 24.1 | 24 | 21.5 | 12.7 | 4 | |
| AS12□1F-M3-03 | 5/32" | — | — | 9.3 | — | — | — | 10 | — | — | — | — | — | — | |
| AS12□1F-M5-01 | 1/8" | M5 x 0.8 | 8 | 8.4 | — | — | 17.3 | 22.1 | — | — | — | — | — | — | |
| AS12□1F-U10/32-01 | 1/8" | 10-32UNF | 8 | 9.6 | — | — | 17.3 | 22.1 | — | — | — | — | — | — | |
| AS12□1F-M5-03 | 5/32" | M5 x 0.8 | 8 | 9.3 | — | — | 17.3 | 22.1 | — | 28.6 | 25.8 | 25 | 22.2 | 12.7 | 7 |
| AS12□1F-U10/32-03 | 5/32" | 10-32UNF | 8 | 9.3 | — | — | 17.3 | 22.1 | — | 28.6 | 25.8 | 25 | 22.2 | 12.7 | 7 |
| AS12□1F-M5-05 | 3/16" | M5 x 0.8 | 8 | 11.4 | — | — | 21.3 | 26.1 | — | — | — | — | — | 16.5 | 7 |
| AS12□1F-U10/32-05 | 3/16" | 10-32UNF | 8 | 9.6 | — | — | 11.7 | 28.6 | 25.8 | 25 | 22.2 | — | — | 13.5 | 7 |
| AS12□1F-M5-07 | 1/4" | M5 x 0.8 | 8 | 12 | — | — | 18.3 | 23.1 | — | — | — | — | — | 13.5 | 7 |
| AS12□1F-U10/32-07 | 1/4" | 10-32UNF | 8 | 12 | — | — | 18.3 | 23.1 | — | — | — | — | — | 13.5 | 7 |
| AS22□1F-01-01 | 1/8" | — | 12 | 9.3 | — | — | 20.4 | 27.5 | — | — | — | — | — | 12.7 | 16 |
| AS22□1F-01-03 | 3/16" | — | 12 | 9.3 | — | — | 20.4 | 27.5 | — | — | — | — | — | 12.7 | 17 |
| AS22□1F-01-05 | 3/16" | 1/8 | 12 (12.7) | 11.4 | 14.2 | — | 23.1 | 30.2 | 13.4 | 35.2 | 30.2 | 32.1 | 27.1 | 16.5 | 17 |
| AS22□1F-01-07 | 1/4" | — | 12 | 13.2 | — | — | 23.9 | 31 | — | — | — | — | — | 18.5 | 19 |
| AS22□1F-01-09 | 5/16" | — | 12 | 15.2 | — | — | 25.3 | 32.4 | 14.1 | — | — | — | — | 21 | 21 |
| AS22□1F-02-03 | 5/32" | — | 17 | 10.4 | — | — | 25.2 | 34.4 | — | — | — | — | — | 16 | 32 |
| AS22□1F-02-05 | 3/16" | — | 17 | 11.4 | — | — | 24.9 | 34.2 | 17.7 | — | — | — | — | 17 | 32 |
| AS22□1F-02-07 | 1/4" | — | 17 | 13.2 | 18.5 | — | 25.2 | 34.5 | — | 39.9 | 34.9 | 34.4 | 29.4 | 18.5 | 34 |
| AS22□1F-02-09 | 5/16" | — | 17 | 15.2 | — | — | 27.2 | 36.4 | 18.2 | — | — | — | — | 21 | 36 |
| AS22□1F-02-11 | 3/8" | — | 17 | 18.5 | — | — | 35.3 | 44.5 | 18.8 | — | — | — | — | 21 | 36 |
| AS32□1F-02-07 | 1/4" | — | 19 | 13.2 | — | — | 27.8 | 39.3 | — | — | — | — | — | 17 | 60 |
| AS32□1F-02-09 | 5/16" | — | 19 | 15.2 | 23 | — | 29.5 | 41 | 21.3 | 48.3 | 43.3 | 42.8 | 37.8 | 18.5 | 63 |
| AS32□1F-02-11 | 3/8" | — | 19 | 17.9 | — | — | 31.8 | 43.3 | — | — | — | — | — | 21 | 67 |
| AS32□1F-03-07 | 1/4" | — | 19 | 13.2 | — | — | 27.8 | 39.3 | — | — | — | — | — | 17 | 55 |
| AS32□1F-03-09 | 5/16" | — | 19 | 15.2 | 23 | — | 29.5 | 41 | 19.8 | 45.4 | 40.4 | 40.2 | 35.2 | 18.5 | 57 |
| AS32□1F-03-11 | 3/8" | — | 19 | 17.9 | — | — | 31.8 | 43.3 | — | — | — | — | — | 21 | 59 |
| AS42□1F-04-11 | 3/8" | 1/2 | 24 | 17.9 | — | — | 33.6 | 47.9 | 24.5 | 56.7 | 49.2 | 49.6 | 42.1 | 21 | 100 |
| AS42□1F-04-13 | 1/2" | — | 24 | 21.7 | 28.6 | — | 35.2 | 49.5 | — | — | — | — | — | 22 | 101 |

Note 1) () are the dimensions of NPT thread.

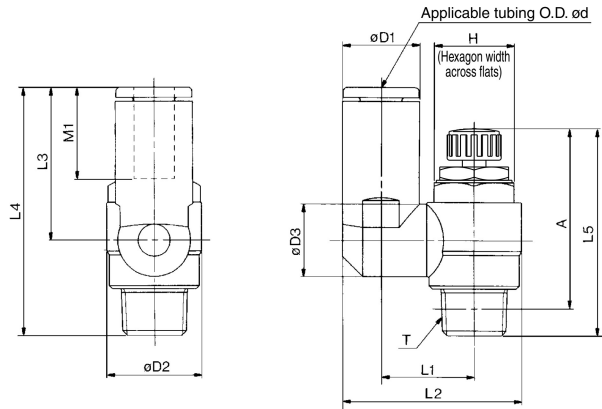
Note 2) Reference thread dimensions after installation.

Note 3) Reference dimensions

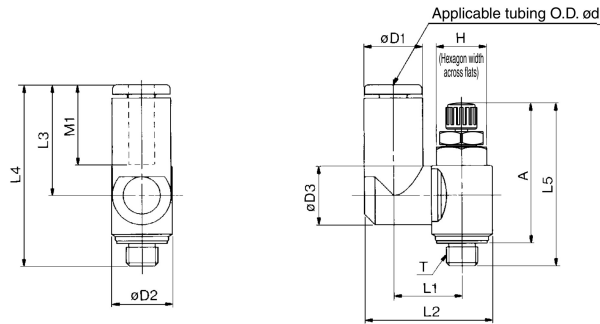
Speed Controller with One-touch Fitting Elbow Type/Universal Type **AS Series**



Universal Type



M3 port
M5 port
U10/32 port



Metric Size

| Model | Applicable tubing O.D. ød | T | H ⁽¹⁾ | D1 | D2 | D3 | L1 | L2 | L3 | L4 | L5 ⁽³⁾ | | A ⁽²⁾ | | M1 | Weight (g) |
|-------------------|---------------------------|----------|------------------|----------|------|------|------|------|------|------|-------------------|------|------------------|------|------|------------|
| | | | | | | | | | | | Max. | Min. | Max. | Min. | | |
| AS13□1F-M3-23 | 3.2 | M3 x 0.5 | 5.5 | 8.4 | 7.2 | 7.2 | 10.1 | 17.9 | 17.6 | 28.3 | 26.6 | 24.1 | 24 | 21.5 | 12.7 | 4 |
| AS13□1F-M3-04 | 4 | | | 9.3 | | | | 18.3 | 17.9 | 28.6 | | | | | | |
| AS13□1F-M5-23 | 3.2 | M5 x 0.8 | 8 | 8.4 | 9.3 | 9.6 | 10.8 | 19.8 | 17.5 | 28.7 | 28.6 | 25.8 | 25 | 22.2 | 12.7 | 7 |
| AS13□1F-U10/32-23 | | | | 10-32UNF | | | | 20.3 | | | | | | | | |
| AS13□1F-M5-04 | 4 | M5 x 0.8 | 8 | 9.3 | 9.6 | 9.3 | 10.8 | 20.3 | 17.5 | 28.7 | 28.6 | 25.8 | 25 | 22.2 | 12.7 | 7 |
| AS13□1F-U10/32-04 | 10-32UNF | 21.4 | | 20.6 | | | | | | | | | | | | |
| AS13□1F-M5-06 | 6 | M5 x 0.8 | 8 | 11.6 | 9.6 | 9.3 | 10.8 | 20.3 | 17.5 | 28.7 | 28.6 | 25.8 | 25 | 22.2 | 12.7 | 7 |
| AS13□1F-U10/32-06 | | | | 10-32UNF | | | | | | | | | | | | |
| AS23□1F-01-23 | 3.2 | 1/8 | 12 (12.7) | 8.4 | 14.2 | 9.3 | 13.1 | 24.4 | 17.5 | 30.9 | 35.2 | 30.2 | 32.1 | 27.1 | 12.7 | 17 |
| AS23□1F-01-04 | 4 | | | 9.3 | | | | 24.9 | | | | | | | | |
| AS23□1F-01-06 | 6 | 1/8 | 12 (12.7) | 11.6 | 14.2 | 10.9 | 14 | 26.9 | 22.9 | 36.3 | 35.2 | 30.2 | 32.1 | 27.1 | 13.5 | 18 |
| AS23□1F-01-08 | 8 | | | 15.2 | | | | 22.9 | | | | | | | | |
| AS23□1F-02-04 | 4 | 1/4 | 17 (17.5) | 10.4 | 18.5 | 10.9 | 16.2 | 30.6 | 21.9 | 39.6 | 39.9 | 34.9 | 34.4 | 29.4 | 16 | 32 |
| AS23□1F-02-06 | 6 | | | 12.8 | | | | 18.4 | | | | | | | | |
| AS23□1F-02-08 | 8 | 1/4 | 17 (17.5) | 15.2 | 18.5 | 12.9 | 18.3 | 35.2 | 28.2 | 45.1 | 39.9 | 34.9 | 34.4 | 29.4 | 18.5 | 36 |
| AS23□1F-02-10 | 10 | | | 18.5 | | | | 31 | | | | | | | | |
| AS33□1F-02-06 | 6 | 3/8 | 19 | 12.8 | 23 | 12.9 | 20.6 | 38.5 | 25.2 | 46.5 | 48.3 | 43.3 | 42.8 | 37.8 | 17 | 60 |
| AS33□1F-02-08 | 8 | | | 15.2 | | | | 39.7 | | | | | | | | |
| AS33□1F-02-10 | 10 | 3/8 | 19 | 18.5 | 23 | 12.9 | 20.6 | 43.7 | 32.6 | 53.9 | 48.3 | 43.3 | 42.8 | 37.8 | 21 | 67 |
| AS33□1F-02-12 | 12 | | | 20.9 | | | | 34.4 | | | | | | | | |
| AS33□1F-03-06 | 6 | 3/8 | 19 | 12.8 | 23 | 12.9 | 20.6 | 38.5 | 25.2 | 45 | 48.3 | 43.3 | 42.8 | 37.8 | 17 | 56 |
| AS33□1F-03-08 | 8 | | | 15.2 | | | | 39.7 | | | | | | | | |
| AS33□1F-03-10 | 10 | 3/8 | 19 | 18.5 | 23 | 12.9 | 20.6 | 43.7 | 32.6 | 52.4 | 48.3 | 43.3 | 42.8 | 37.8 | 21 | 63 |
| AS33□1F-03-12 | 12 | | | 20.9 | | | | 34.4 | | | | | | | | |
| AS43□1F-04-10 | 10 | 1/2 | 24 (23.8) | 18.5 | 28.6 | 16.2 | 25.8 | 49.4 | 32.6 | 57.1 | 56.7 | 49.2 | 49.6 | 42.1 | 21 | 104 |
| AS43□1F-04-12 | 12 | | | 19.4 | | | | 26.8 | | | | | | | | |

Note 1) () are the dimensions of NPT thread
Note 2) Reference thread dimensions after installation.
Note 3) Reference dimensions

Inch Size

| Model | Applicable tubing O.D. ød | T | H ⁽¹⁾ | D1 | D2 | D3 | L1 | L2 | L3 | L4 | L5 ⁽³⁾ | | A ⁽²⁾ | | M1 | Weight (g) |
|-------------------|---------------------------|----------|------------------|----------|------|------|------|------|------|------|-------------------|------|------------------|------|------|------------|
| | | | | | | | | | | | Max. | Min. | Max. | Min. | | |
| AS13□1F-M3-01 | 1/8" | M3 x 0.5 | 5.5 | 8.4 | 7.2 | 7.2 | 10.1 | 17.9 | 17.6 | 28.3 | 26.6 | 24.1 | 24 | 21.5 | 12.7 | 4 |
| AS13□1F-M3-03 | 5/32" | | | 9.3 | | | | 18.3 | 17.9 | 28.6 | | | | | | |
| AS13□1F-M5-01 | 1/8" | M5 x 0.8 | 8 | 8.4 | 9.3 | 9.6 | 10.8 | 19.8 | 17.5 | 28.7 | 28.6 | 25.8 | 25 | 22.2 | 12.7 | 7 |
| AS13□1F-U10/32-01 | 1/8" | | | 10-32UNF | | | | 20.3 | | | | | | | | |
| AS13□1F-M5-03 | 5/32" | M5 x 0.8 | 8 | 9.3 | 9.6 | 9.3 | 10.8 | 20.3 | 17.5 | 28.7 | 28.6 | 25.8 | 25 | 22.2 | 12.7 | 7 |
| AS13□1F-U10/32-03 | 5/32" | | | 10-32UNF | | | | | | | | | | | | |
| AS13□1F-M5-05 | 3/16" | M5 x 0.8 | 8 | 11.4 | 12 | 9.6 | 9.3 | 21.3 | 23.3 | 34.5 | 28.6 | 25.8 | 25 | 22.2 | 16.5 | 8 |
| AS13□1F-U10/32-05 | 3/16" | | | 10-32UNF | | | | 21.3 | | | | | | | | |
| AS13□1F-M5-07 | 1/4" | M5 x 0.8 | 8 | 12 | 12 | 9.6 | 9.3 | 21.6 | 20.7 | 31.9 | 28.6 | 25.8 | 25 | 22.2 | 13.7 | 8 |
| AS13□1F-U10/32-07 | 1/4" | | | 10-32UNF | | | | 21.6 | | | | | | | | |
| AS23□1F-01-01 | 1/8" | 1/8 | 12 (12.7) | 8.4 | 14.2 | 9.3 | 13.1 | 24.4 | 17.5 | 30.9 | 35.2 | 30.2 | 32.1 | 27.1 | 12.7 | 17 |
| AS23□1F-01-03 | 5/32" | | | 9.3 | | | | 24.9 | | | | | | | | |
| AS23□1F-01-05 | 3/16" | 1/8 | 12 (12.7) | 11.6 | 14.2 | 10.9 | 14 | 26.8 | 23.9 | 37.3 | 35.2 | 30.2 | 32.1 | 27.1 | 16.5 | 18 |
| AS23□1F-01-07 | 1/4" | | | 12.9 | | | | 16.2 | | | | | | | | |
| AS23□1F-01-09 | 5/16" | 1/4 | 17 (17.5) | 15.2 | 18.5 | 12.9 | 16.2 | 30.9 | 28.2 | 40.8 | 39.9 | 34.9 | 34.4 | 29.4 | 18.5 | 31 |
| AS23□1F-01-11 | 3/8" | | | 10.4 | | | | 10.9 | | | | | | | | |
| AS23□1F-02-05 | 3/16" | 1/4 | 17 (17.5) | 11.8 | 23 | 12.9 | 16.2 | 31.1 | 23.9 | 42.1 | 48.3 | 43.3 | 42.8 | 37.8 | 16.5 | 33 |
| AS23□1F-02-07 | 1/4" | | | 13.2 | | | | 18.3 | | | | | | | | |
| AS23□1F-02-09 | 5/16" | 1/4 | 19 | 15.2 | 23 | 12.9 | 16.2 | 35.2 | 28.2 | 47.9 | 48.3 | 43.3 | 42.8 | 37.8 | 18.5 | 39 |
| AS23□1F-02-11 | 3/8" | | | 18.5 | | | | 18.3 | | | | | | | | |
| AS33□1F-02-07 | 1/4" | 3/8 | 19 | 13.2 | 23 | 12.9 | 16.2 | 38.7 | 25.6 | 46.9 | 48.3 | 43.3 | 42.8 | 37.8 | 17 | 60 |
| AS33□1F-02-09 | 5/16" | | | 15.2 | | | | 12.9 | | | | | | | | |
| AS33□1F-02-11 | 3/8" | 3/8 | 19 | 18.5 | 23 | 12.9 | 16.2 | 43.7 | 32.6 | 53.9 | 48.3 | 43.3 | 42.8 | 37.8 | 21 | 66 |
| AS33□1F-03-07 | 1/4" | | | 13.2 | | | | 12.9 | | | | | | | | |
| AS33□1F-03-09 | 5/16" | 1/2 | 24 (23.8) | 15.2 | 23 | 12.9 | 16.2 | 28.2 | 28.2 | 48 | 45.4 | 40.4 | 40.2 | 35.2 | 17.5 | 59 |
| AS33□1F-03-11 | 3/8" | | | 18.5 | | | | 16.2 | | | | | | | | |
| AS43□1F-04-11 | 3/8" | 1/2 | 24 (23.8) | 18.5 | 28.6 | 16.2 | 25.8 | 49.4 | 32.6 | 57.1 | 56.7 | 49.2 | 49.6 | 42.1 | 21 | 104 |
| AS43□1F-04-13 | 1/2" | | | 19.4 | | | | 26.8 | | | | | | | | |

Note 1) () are the dimensions of NPT thread
Note 2) Reference thread dimensions after installation.
Note 3) Reference dimensions

- AS-F
- TMH
- ASD
- AS
- AS-FE
- KE
- AS-FG
- AS-FP
- AS-FM
- AS-D
- AS-T
- ASP
- ASN
- AQ
- ASV
- AK
- VCHC
- ASR
- ASQ



Please contact SMC for detailed dimensions, specifications and lead times.

1 Lubricant: Vaseline **X12**

Ex.) AS2201F-01-04S-X12

2 Grease-free (Seal: Fluorine Coating) + Throttle Valve (Without Check Valve) **X21**

Ex.) AS2201F-01-04S-X21

Note 1) Not particle-free

Note 2) Throttle valve is only compatible with the part no. of the meter-out type.

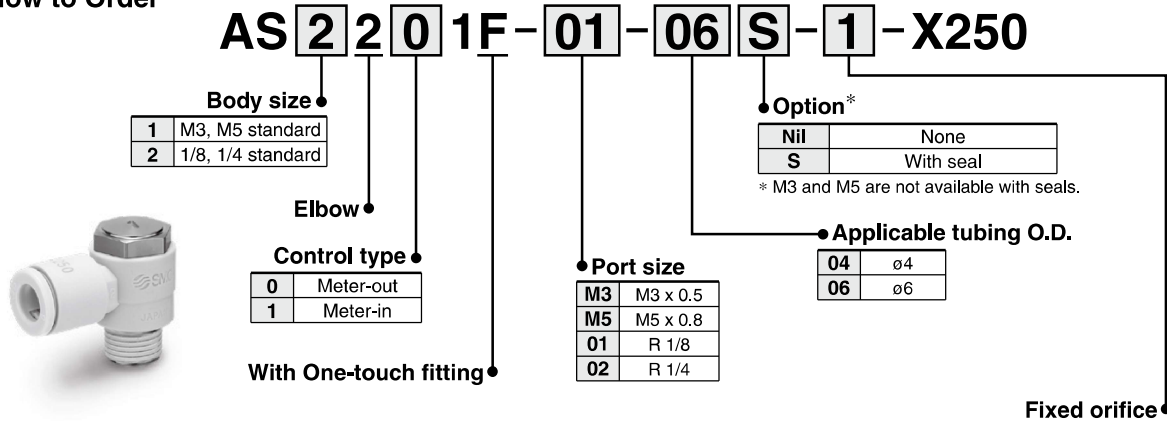
3 Throttle Valve (Without Check Valve) **X214**

Ex.) AS2201F-01-04S-X214

Note) Throttle valve is only compatible with the part no. of the meter-out type.

4 Fixed Throttle (No needle function) **X250**

How to Order



| Symbol | Fixed orifice | Applicable model | | | |
|--------|---------------|------------------|--------------------------------|--------------------------------|---------------|
| | | AS12□1F-M3-04 | AS12□1F-M5-04 AS12□1F-M5-06 | AS22□1F-01-04 AS22□1F-01-06 | AS22□1F-02-06 |
| 1 | ø0.1 | ○ | ○ | ○ | ○ |
| 2 | ø0.2 | ○ | ○ | ○ | ○ |
| 3 | ø0.3 | ○ | ○ | ○ | ○ |
| 4 | ø0.4 | ○ | ○ | ○ | ○ |
| 5 | ø0.5 | ○ | ○ | ○ | ○ |
| 6 | ø0.6 | ○ | ○ | ○ | ○ |
| 7 | ø0.7 | ○ | ○ | ○ | ○ |
| 8 | ø0.8 | ○ | ○ | ○ | ○ |
| 9 | ø0.9 | ○ | ○ | ○ | ○ |
| 10 | ø1.0 | ○ | ○ | ○ | ○ |

The graph below shows the relationship between orifices for each cylinder bore and cylinder speed. Please refer to it during selection. The cylinder speeds on the graph are theoretical values. Actual values may differ depending on the piping conditions or sliding friction, so please use this graph as a guideline only.

