

# Speed Controller with One-touch Fitting

## Series AS

### Elbow Type/Universal Type

#### 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.

#### Application to inch size tubing

- **Metric size** (Release bushing: White color)  
ø3.2, ø4, ø6, ø8, ø10, ø12
- **Inch size** (Release bushing: 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

Hexagonal lock nut, Nickel plated option

#### Number of needle rotations has been increased (8 to 10 turns)

The increased number of needle rotations (8 to 10 turns) permits easy control at low speeds.

#### Model

| Elbow type     | Universal type | Port size | Applicable tubing O.D. |   |   |   |                  |    |           |       |       |      |       |      | Applicable cylinder bore size (mm) |                |
|----------------|----------------|-----------|------------------------|---|---|---|------------------|----|-----------|-------|-------|------|-------|------|------------------------------------|----------------|
|                |                |           | Metric size            |   |   |   |                  |    | Inch size |       |       |      |       |      |                                    |                |
|                |                |           | 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  | ●                      | ● |   |   |                  |    | ●         | ●     |       |      |       |      |                                    | 2.5, 4, 6      |
| AS12□1F-M5     | AS13□1F-M5     | M5 x 0.8  | ●                      | ● | ● |   |                  |    | ●         | ●     | ●     | ●    |       |      |                                    | 6, 10, 16, 20  |
| AS12□1F-U10/32 | AS13□1F-U10/32 | 10-32 UNF | ●                      | ● | ● |   |                  |    | ●         | ●     | ●     | ●    |       |      |                                    | 6, 10, 16, 20  |
| AS22□1F-01     | AS23□1F-01     | R 1/8     | ●                      | ● | ● | ● | ● <sup>(1)</sup> |    | ●         | ●     | ●     | ●    | ●     |      |                                    | 20, 25, 32     |
| AS22□1F-02     | AS23□1F-02     | R 1/4     |                        | ● | ● | ● | ●                |    |           | ●     | ●     | ●    | ●     | ●    |                                    | 20, 25, 32, 40 |
| AS32□1F-02     | AS33□1F-02     | R 1/4     |                        |   | ● | ● | ●                | ●  |           |       |       | ●    | ●     | ●    |                                    | 40, 50, 63     |
| AS32□1F-03     | AS33□1F-03     | R 3/8     |                        |   | ● | ● | ●                | ●  |           |       |       | ●    | ●     | ●    |                                    | 40, 50, 63     |
| AS42□1F-04     | AS43□1F-04     | R 1/2     |                        |   |   |   | ●                | ●  |           |       |       |      |       | ●    | ●                                  | 63, 80, 100    |

Note 1) \* Elbow type only

Note 2) Meter-out and meter-in types can be visually differentiated by the lock nut.

The lock nut on the meter-out type is electroless nickel plated, while the meter-in type is black zinc chromate plated.

Note 3) ● Marking is electroless nickel plated, provided as standard. (N specifications)

#### Specifications

|                                           |                                                                                       |
|-------------------------------------------|---------------------------------------------------------------------------------------|
| Fluid                                     | Air                                                                                   |
| Proof pressure                            | 1.5 MPa                                                                               |
| Max. operating pressure                   | 1 MPa                                                                                 |
| Mini. operating pressure                  | 0.1 MPa                                                                               |
| Ambient and fluid temperature             | -5 to 60°C (No freezing)                                                              |
| Number of needle rotations                | 10 turns (8 turns <sup>(1)</sup> )                                                    |
| Applicable tubing material <sup>(2)</sup> | Nylon, Soft nylon, Polyurethane                                                       |
| Option                                    | With seal, Hexagon lock nut <sup>(3)</sup> , Electroless nickel plated <sup>(4)</sup> |

Note 1) In the case of AS12□1F-M5, AS12□1F-U10/32, AS13□1F-M5, AS13□1F-U10/32

Note 2) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used. (Refer to pages 15-6-3 to 15-6-5 for details.)

Note 3) M3, M5, and 10-32UNF type ports are not available with seal.

Note 4) Brass parts are all electroless nickel plated.

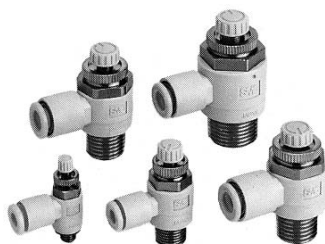
#### Flow Rate and Effective Area

| Model                             |                       | AS12□1F-M3<br>AS13□1F-M3 | AS12□1F-M5<br>AS13□1F-M5       | AS22□1F-01<br>AS23□1F-01 | AS22□1F-02<br>AS23□1F-02 |        |         | AS32□1F<br>AS33□1F     |       |          | AS42□1F<br>AS43□1F |                |      |
|-----------------------------------|-----------------------|--------------------------|--------------------------------|--------------------------|--------------------------|--------|---------|------------------------|-------|----------|--------------------|----------------|------|
| Tubing<br>O.D.                    | Metric size           | ø3.2, ø4                 | ø3.2, ø4, ø6                   | ø3.2, ø4<br>ø6, ø8, ø10  | ø4                       | ø6     | ø8, ø10 | ø6                     | ø8    | ø10, ø12 | ø10                | ø12            |      |
|                                   | Inch size             | ø1/8"<br>ø5/32"          | ø1/8", ø3/16"<br>ø1/4", ø5/32" | ø1/8"<br>ø5/32"          | ø3/16", ø1/4"<br>ø5/16"  | ø5/32" | ø3/16"  | ø1/4", ø5/16"<br>ø3/8" | ø1/4" | ø5/16"   | ø3/8"              | ø3/8"<br>ø1/2" |      |
| Controlled<br>flow<br>(Free flow) | Flow rate Q/min (ANR) | 20                       | 100                            | 180                      | 230                      | 260    | 390     | 460                    | 660   | 790      | 920                | 1580           | 1710 |
|                                   | Effective area (mm²)  | 0.3                      | 1.5                            | 2.7                      | 3.5                      | 4      | 6       | 7                      | 10    | 12       | 14                 | 24             | 26   |

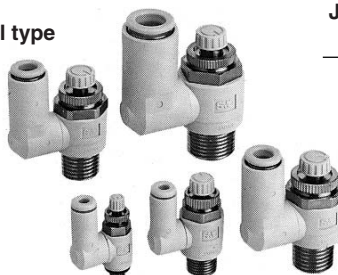
Note 1) Flow rate values are measured at 0.5 MPa and 20°C.

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

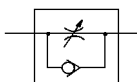
#### Elbow type



#### Universal type



#### JIS Symbol



#### Flow Direction Symbols on Body

|            | Meter-out type | Meter-in type |
|------------|----------------|---------------|
| Symbol     |                |               |
| JIS Symbol |                |               |

#### Caution

Be sure to read before handling. Refer to pages 15-18-3 to 15-18-4 for Safety Instructions and Common Precautions on the products mentioned in this catalog, and refer to pages 15-8-6 to 15-8-8 for Precautions on every series.



P. 15-11-3

### 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) |
|     | R                          |
| N   | NPT                        |

**Option**

|     |                           |
|-----|---------------------------|
| Nil | None                      |
| S   | With seal                 |
| K   | Hexagonal lock nut        |
| N   | Electroless nickel plated |

\* If more than one option is required, write option part numbers in the order of "S", "K", "N".

**Applicable tubing O.D.**

| Metric size | Inch size |
|-------------|-----------|
| 23          | 01        |
| 04          | 03        |
| 06          | 05        |
| 08          | 07        |
| 10          | 09        |
| 12          | 11        |
|             | 13        |

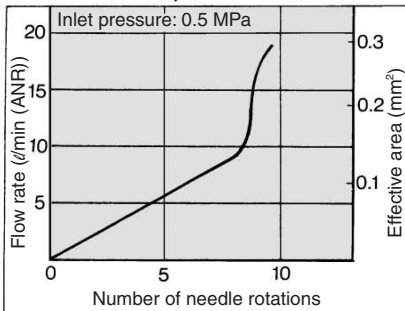
\*Use 01/8" tube.

**Port size**

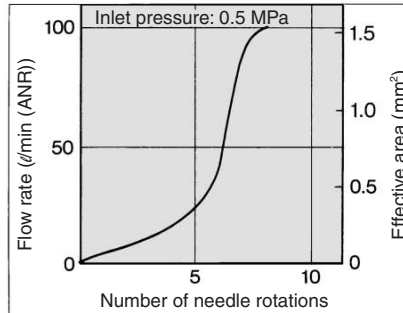
|        |           |
|--------|-----------|
| M3     | M3 x 0.5  |
| M5     | M5 x 0.8  |
| U10/32 | 10-32 UNF |
| 01     | 1/8       |
| 02     | 1/4       |
| 03     | 3/8       |
| 04     | 1/2       |

### Needle Valve/Flow Characteristics

**AS1201F-M3, AS1211F-M3  
AS1301F-M3, AS1311F-M3**

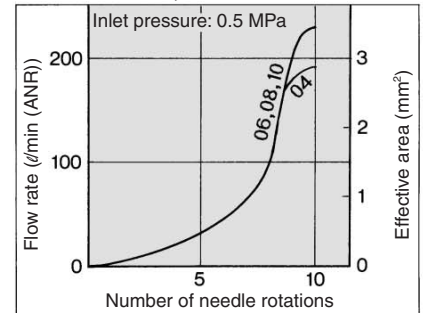


**AS1201F-M5, AS1211F-M5  
AS1301F-M5, AS1311F-M5**

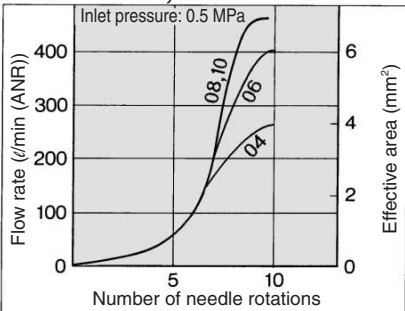


Note) "-U10/32" is the same as "M5".

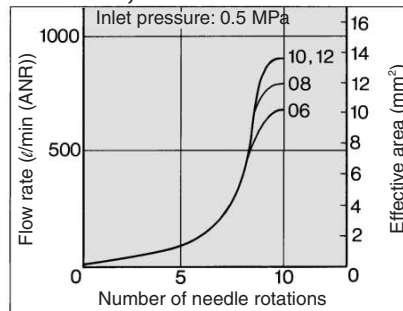
**AS2201F-01, AS2211F-01  
AS2301F-01, AS2311F-01**



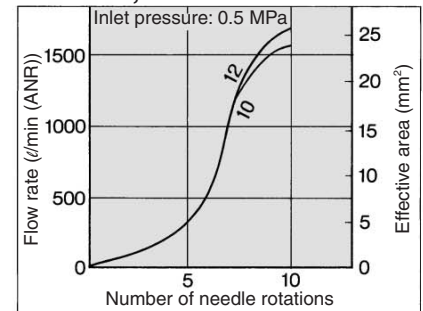
**AS2201F-02, AS2211F-02  
AS2301F-02, AS2311F-02**



**AS3201F, AS3211F  
AS3301F, AS3311F**



**AS4201F, AS4211F  
AS4301F, AS4311F**



AS

ASP

ASN

AQ

ASV

AK

ASS

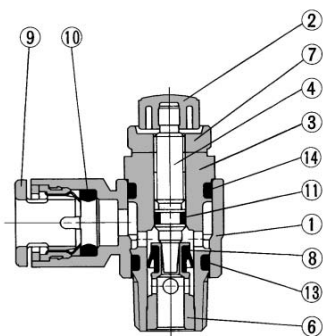
ASR

ASF

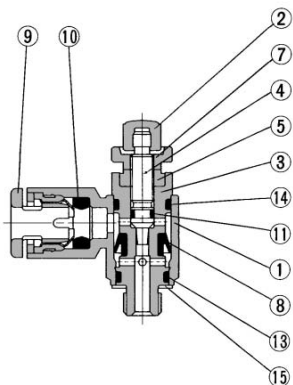
# Series AS

## Construction

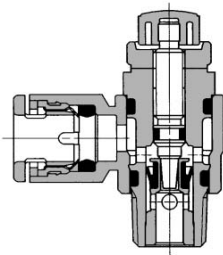
### Elbow type Meter-out type



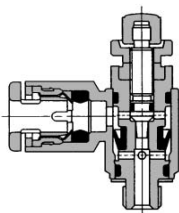
M3 port  
M5 port  
U10/32 port



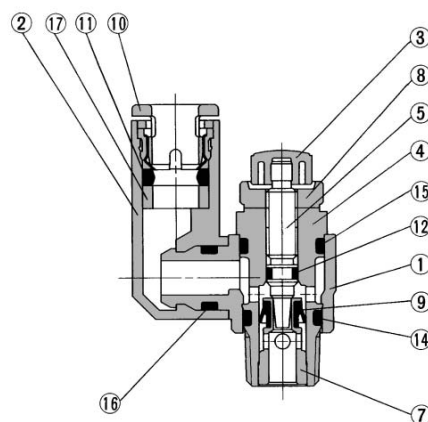
### Meter-in type



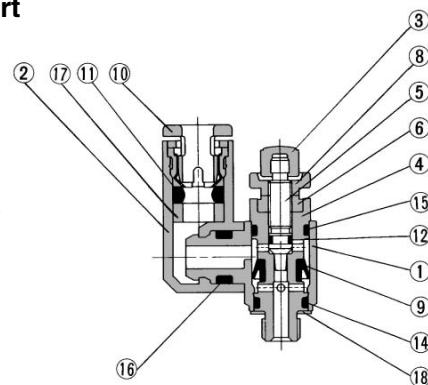
M3 port  
M5 port  
U10/32 port



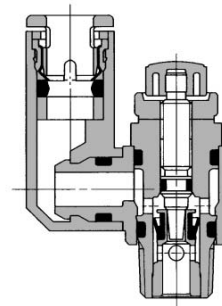
### Universal type Meter-out type



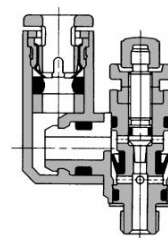
M3 port  
M5 port  
U10/32 port



### Meter-in type

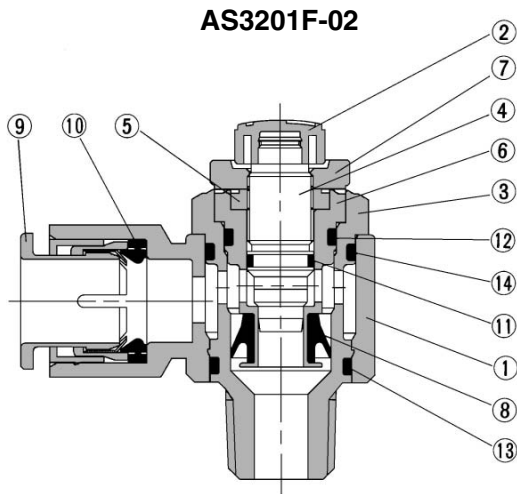


M3 port  
M5 port  
U10/32 port

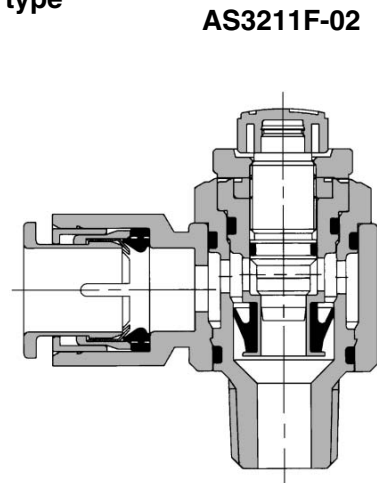


## Construction

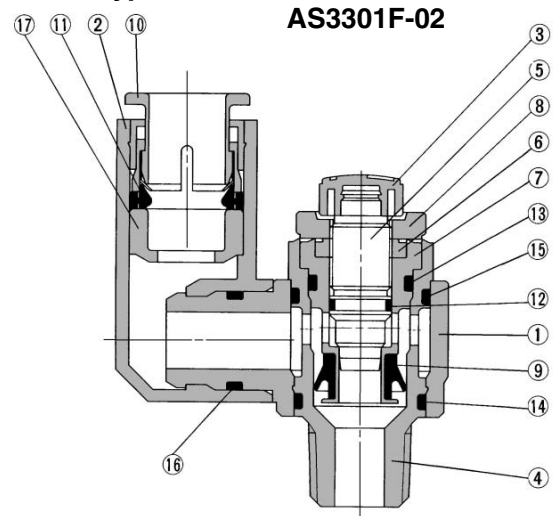
### Elbow type Meter-out type



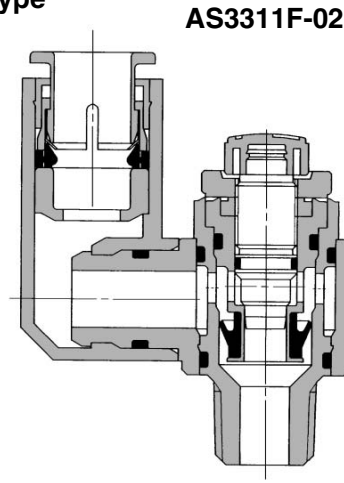
### Meter-in type



### Universal type Meter-out type



### Meter-in type



### Component Parts

| No. | Description  | Material             | Note                                     |
|-----|--------------|----------------------|------------------------------------------|
| ①   | Body A       | PBT                  |                                          |
| ②   | Handle       | PBT                  |                                          |
| ③   | Body B       | Brass <sup>(1)</sup> | Electroless nickel plated                |
| ④   | Needle       | Brass                | Electroless nickel plated                |
| ⑤   | Needle guide | Brass                | Electroless nickel plated                |
| ⑥   | Seat ring    | Brass                | <sup>(2)</sup>                           |
| ⑦   | Lock nut     | Brass <sup>(3)</sup> | Electroless nickel plated <sup>(4)</sup> |
| ⑧   | U-packing    | HNBR                 |                                          |
| ⑨   | Cassette     | POM                  |                                          |
| ⑩   | Seal         | NBR                  |                                          |
| ⑪   | O-ring       | NBR                  |                                          |
| ⑫   | O-ring       | NBR                  |                                          |
| ⑬   | O-ring       | NBR                  |                                          |
| ⑭   | O-ring       | NBR                  |                                          |
| ⑮   | Gasket       | NBR                  |                                          |

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

Note 2) AS22□1F, AS32□1F-02: Electroless nickel plated.

Note 3) AS2□□1F type is made of steel.

Note 4) Meter-in type is black zinc chromate plated.

### Component Parts

| No. | Description  | Material             | Note                                     |
|-----|--------------|----------------------|------------------------------------------|
| ①   | Body A       | PBT                  |                                          |
| ②   | Elbow body   | PBT                  |                                          |
| ③   | Handle       | PBT                  |                                          |
| ④   | Body B       | Brass <sup>(1)</sup> | Electroless nickel plated                |
| ⑤   | Needle       | Brass                | Electroless nickel plated                |
| ⑥   | Needle guide | Brass                | Electroless nickel plated                |
| ⑦   | Seat ring    | Brass                | <sup>(2)</sup>                           |
| ⑧   | Lock nut     | Brass <sup>(3)</sup> | Electroless nickel plated <sup>(4)</sup> |
| ⑨   | U seal       | HNBR                 |                                          |
| ⑩   | Cassette     | POM, Stainless steel |                                          |
| 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       | PBT <sup>(5)</sup>   |                                          |
| ⑱   | Gasket       | NBR, Stainless steel |                                          |

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

Note 2) AS23□1F, AS33□1F-02: Electroless nickel plated.

Note 3) AS2□□1F type is made of steel.

Note 4) Meter-in type is black zinc chromate plated.

Note 5) ø3/16", ø3/8", ø1/2" are made of brass

AS13□1F (ø3.2, ø4, ø6, ø1/8", ø5/32, ø1/4),

AS23□1F-□01(ø3.2, ø4, ø6, ø1/8", ø5/32) are POM.

AS

ASP

ASN

AQ

ASV

AK

ASS

ASR

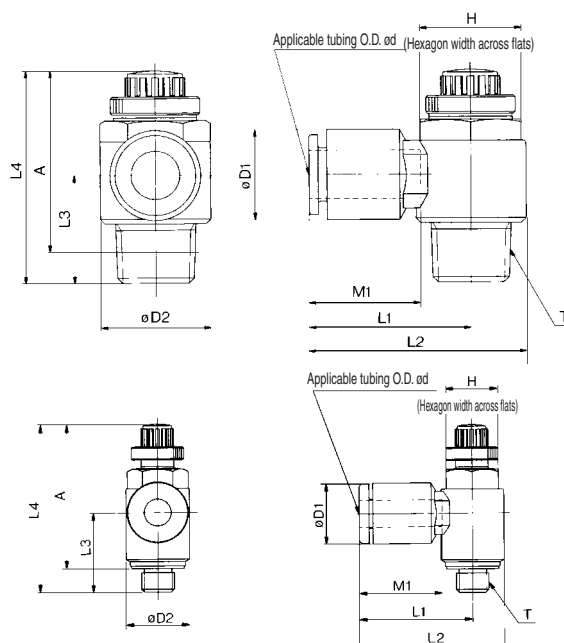
ASF

# Series AS



## Elbow Type

M3 port  
M5 port  
U10/32 port



### Metric Size

| Model             | Applicable tubing O.D. ød | T        | H <sup>(1)</sup> | D1   | D2   | L1   | L2   | L3   | L4   |      | A <sup>(2)</sup> |      | M1   | Weight (g) |
|-------------------|---------------------------|----------|------------------|------|------|------|------|------|------|------|------------------|------|------|------------|
|                   |                           |          |                  |      |      |      |      |      | Max. | Min. | Max.             | Min. |      |            |
| 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                         |          |                  | 9.3  |      |      |      | 10   |      |      |                  |      |      |            |
| AS12□1F-M5-23     | 3.2                       | M5 x 0.8 | 8                | 8.4  |      | 17.3 | 22.1 | 12.3 |      |      |                  |      | 12.7 | 7          |
| AS12□1F-U10/32-23 | 10-32UNF                  |          |                  |      |      |      |      |      |      |      |                  |      |      |            |
| 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 |      |            |
| AS12□1F-U10/32-04 | 10-32UNF                  |          |                  |      |      |      |      |      |      |      |                  |      |      |            |
| AS12□1F-M5-06     | 6                         | M5 x 0.8 | 11.6             |      |      | 18.1 | 22.9 | 11.7 |      |      |                  |      | 13.5 |            |
| AS12□1F-U10/32-06 | 10-32UNF                  |          |                  |      |      |      |      |      |      |      |                  |      |      |            |
| AS22□1F-01-23     | 3.2                       | 1/8      | 12 (12.7)        | 9.3  |      | 20.4 | 27.5 |      |      |      |                  |      | 16   |            |
| AS22□1F-01-04     | 4                         |          |                  | 9.3  |      | 20.4 | 27.5 | 14.3 |      |      |                  |      | 12.7 |            |
| AS22□1F-01-06     | 6                         | 1/8      | 12 (12.7)        | 11.6 | 14.2 | 20.4 | 27.5 |      | 36.1 | 31.1 | 32.1             | 27.1 | 13.5 | 17         |
| AS22□1F-01-08     | 8                         |          |                  | 15.2 |      | 25.3 | 32.4 |      |      |      |                  |      | 18.5 | 19         |
| AS22□1F-01-10     | 10                        | 1/8      | 12 (12.7)        | 18.5 |      | 33.1 | 40.2 | 15   |      |      |                  |      | 21   | 21         |
| AS22□1F-02-04     | 4                         |          |                  | 10.4 |      | 25.2 | 34.4 |      |      |      |                  |      | 16   |            |
| AS22□1F-02-06     | 6                         | 1/4      | 17 (17.5)        | 12.8 |      | 25.2 | 34.4 | 18.2 |      |      |                  |      | 17   | 32         |
| AS22□1F-02-08     | 8                         |          |                  | 15.2 | 18.5 | 27.2 | 36.4 |      | 40.4 | 35.4 | 34.4             | 29.4 | 18.5 | 34         |
| AS22□1F-02-10     | 10                        | 1/4      | 17 (17.5)        | 18.5 |      | 33.9 | 43.2 | 20   |      |      |                  |      | 21   | 36         |
| AS32□1F-02-06     | 6                         |          |                  | 12.8 |      | 27.8 | 39.3 |      |      |      |                  |      | 17   | 60         |
| AS32□1F-02-08     | 8                         | 3/8      | 19               | 15.2 | 23   | 29.5 | 41   | 21.8 | 48.8 | 43.8 | 42.8             | 37.8 | 18.5 | 63         |
| AS32□1F-02-10     | 10                        |          |                  | 18.5 |      | 31.8 | 43.3 |      |      |      |                  |      | 21   | 67         |
| AS32□1F-02-12     | 12                        | 3/8      | 19               | 20.9 |      | 32.8 | 44.3 |      |      |      |                  |      | 22   | 69         |
| AS32□1F-03-06     | 6                         |          |                  | 12.8 |      | 27.8 | 39.3 |      |      |      |                  |      | 17   | 55         |
| AS32□1F-03-08     | 8                         | 3/8      | 19               | 15.2 | 23   | 29.5 | 41   | 20.9 | 46.5 | 41.5 | 40.2             | 35.2 | 18.5 | 57         |
| AS32□1F-03-10     | 10                        |          |                  | 18.5 |      | 31.8 | 43.3 |      |      |      |                  |      | 21   | 59         |
| AS32□1F-03-12     | 12                        | 3/8      | 19               | 20.9 |      | 32.8 | 44.3 |      |      |      |                  |      | 22   | 61         |
| AS42□1F-04-10     | 10                        |          |                  | 18.5 |      | 33.6 | 47.9 |      |      |      |                  |      | 21   | 100        |
| AS42□1F-04-12     | 12                        | 1/2      | 24 (23.8)        | 20.9 | 28.6 | 34.6 | 48.9 | 25.4 | 57.6 | 50.1 | 49.6             | 42.1 | 22   | 101        |

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

Note 2) Reference thread dimensions after installation.

### Inch Size

| Model             | Applicable tubing O.D. ød | T        | H <sup>(1)</sup> | D1   | D2   | L1   | L2   | L3   | L4   |      | A <sup>(2)</sup> |      | 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"                      |          |                  |      |      |      |      |      |      |      |                  |      |      |            |
| AS12□1F-M5-03     | 5/32"                     | M5 x 0.8 | 8                | 9.6  |      | 17.3 | 22.1 | 12.3 | 28.6 | 25.8 | 25               | 22.2 | 12.7 | 7          |
| AS12□1F-U10/32-03 | 5/32"                     |          |                  |      |      |      |      |      |      |      |                  |      |      |            |
| 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"                     |          |                  |      |      |      |      |      |      |      |                  |      |      |            |
| AS12□1F-M5-07     | 1/4"                      | M5 x 0.8 | 12               | 9.6  |      | 18.3 | 23.1 | 11.7 | 28.6 | 25.8 | 25               | 22.2 |      |            |
| AS12□1F-U10/32-07 | 1/4"                      |          |                  |      |      |      |      |      |      |      |                  |      | 13.5 | 7          |
| AS22□1F-01-01     | 1/8"                      | 1/8      | 12 (12.7)        | 9.3  |      | 20.4 | 27.5 |      |      |      |                  |      | 12.7 | 16         |
| AS22□1F-01-03     | 5/32"                     |          |                  | 9.3  |      | 20.4 | 27.5 |      |      |      |                  |      | 17   | 17         |
| AS22□1F-01-05     | 3/16"                     | 1/8      | 12 (12.7)        | 11.4 | 14.2 | 23.1 | 30.2 | 14.3 | 36.1 | 31.1 | 32.1             | 27.1 | 16.5 | 17         |
| AS22□1F-01-07     | 1/4"                      |          |                  | 13.2 |      | 23.9 | 31   |      |      |      |                  |      | 18.5 | 19         |
| AS22□1F-01-09     | 5/16"                     | 1/4      | 17 (17.5)        | 15.2 |      | 25.3 | 32.4 | 15   |      |      |                  |      | 21   | 21         |
| AS22□1F-02-03     | 5/32"                     |          |                  | 10.4 |      | 25.2 | 34.4 |      |      |      |                  |      | 16   |            |
| AS22□1F-02-05     | 3/16"                     | 1/4      | 17 (17.5)        | 11.4 |      | 24.9 | 34.2 | 18.2 |      |      |                  |      | 17   | 32         |
| AS22□1F-02-07     | 1/4"                      |          |                  | 13.2 | 18.5 | 25.2 | 34.5 |      | 40.4 | 35.4 | 34.4             | 29.4 | 18.5 | 34         |
| AS22□1F-02-09     | 5/16"                     | 1/4      | 17 (17.5)        | 15.2 |      | 27.2 | 36.4 | 20   |      |      |                  |      | 21   | 36         |
| AS22□1F-02-11     | 3/8"                      |          |                  | 17.9 |      | 33.9 | 43.2 | 20   |      |      |                  |      | 21   | 36         |
| AS32□1F-02-07     | 1/4"                      | 3/8      | 19               | 13.2 |      | 27.8 | 39.3 |      |      |      |                  |      | 17   | 60         |
| AS32□1F-02-09     | 5/16"                     |          |                  | 15.2 | 23   | 29.5 | 41   | 21.8 | 48.8 | 43.8 | 42.8             | 37.8 | 18.5 | 63         |
| AS32□1F-02-11     | 3/8"                      | 3/8      | 19               | 17.9 |      | 31.8 | 43.3 |      |      |      |                  |      | 21   | 67         |
| AS32□1F-03-07     | 1/4"                      |          |                  | 13.2 |      | 27.8 | 39.3 |      |      |      |                  |      | 17   | 55         |
| AS32□1F-03-09     | 5/16"                     | 3/8      | 19               | 15.2 | 23   | 29.5 | 41   | 20.9 | 46.5 | 41.5 | 40.2             | 35.2 | 18.5 | 57         |
| AS32□1F-03-11     | 3/8"                      |          |                  | 17.9 |      | 31.8 | 43.3 |      |      |      |                  |      | 21   | 59         |
| AS42□1F-04-11     | 3/8"                      | 1/2      | 24 (23.8)        | 17.9 |      | 33.6 | 47.9 |      |      |      |                  |      | 21   | 100        |
| AS42□1F-04-13     | 1/2"                      |          |                  | 21.7 | 28.6 | 35.2 | 49.5 | 25.4 | 57.6 | 50.1 | 49.6             | 42.1 | 22   | 101        |

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

Note 2) Reference thread dimensions after installation.