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

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, ø4, ø6, ø8, ø10, ø12

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

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.

Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
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<tbody>
<tr>
<td>Proof pressure</td>
<td>1.5 MPa (1.05 MPa (1))</td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>1 MPa (0.7 MPa (1))</td>
</tr>
<tr>
<td>Min. operating pressure</td>
<td>0 minor</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>~30 to 60°C (No freezing)</td>
</tr>
<tr>
<td>Number of needle rotations</td>
<td>10 turns (8 turns (2))</td>
</tr>
<tr>
<td>Applicable tubing material (3)</td>
<td>Nylon, Soft nylon, Polyurethane (1)</td>
</tr>
</tbody>
</table>

Option
- With seal (4), Round lock nut (5), Electroless nickel plated

Flow Rate and Effective Area

<table>
<thead>
<tr>
<th>Model</th>
<th>AS12/1F-M3</th>
<th>AS13/1F-M3</th>
<th>AS12/1F-M5</th>
<th>AS13/1F-M5</th>
<th>AS22/1F-01</th>
<th>AS23/1F-01</th>
<th>AS22/1F-02</th>
<th>AS23/1F-02</th>
<th>AS33/1F-03</th>
<th>AS42/1F-04</th>
<th>AS43/1F-04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate (Free flow)</td>
<td>100</td>
<td>100</td>
<td>150</td>
<td>150</td>
<td>200</td>
<td>200</td>
<td>250</td>
<td>250</td>
<td>300</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td>Flow rate (Controlled)</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>20</td>
<td>20</td>
<td>25</td>
<td>25</td>
<td>30</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Effective area (mm²)</td>
<td>0.3</td>
<td>0.5</td>
<td>1.5</td>
<td>1.5</td>
<td>2.7</td>
<td>3.5</td>
<td>4.6</td>
<td>4.6</td>
<td>6.8</td>
<td>6.8</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Note 1: Flow rate values are measured at 0.5 MPa and 20°C.
Note 2: U10/32 has the same specification as M5.

Flow Direction Symbols on Body

Caution
Be sure to read before handling.
Refer to front matters 58 and 59 for Safety Instructions and pages 412 to 414 for Flow Control Equipment Precautions.
Speed Controller with One-touch Fitting
Elbow Type/Universal Type
**Series AS**

**How to Order**

**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

**Thread type**
- Nil: Metric thread (M3, M5)
- R: Unified thread (10-32 UNF)
- N: NPT

**Applicable tubing O.D.**
- Note: For applicable tubing O.D. selection, refer to the Model on page 416.
- Use ø1/8” tube.

**How to Order**

- **AS 2 2 0 1F-01-06 S**
  - Lock nut option
  - Made to Order (Refer to page 422 for details.)

**Needle Valve/Flow Characteristics**

**AS1201F-M3, AS1211F-M3**
- Inlet pressure: 0.5 MPa
- Number of needle rotations
- Flow rate (l/min (ANR))
- Effective area (mm²)

**AS1301F-M3, AS1311F-M3**
- Inlet pressure: 0.5 MPa
- Number of needle rotations
- Flow rate (l/min (ANR))
- Effective area (mm²)

**AS1201F-M5, AS1211F-M5**
- Inlet pressure: 0.5 MPa
- Number of needle rotations
- Flow rate (l/min (ANR))
- Effective area (mm²)

**AS1201F-M5-02, AS1211F-M5-02**
- Inlet pressure: 0.5 MPa
- Number of needle rotations
- Flow rate (l/min (ANR))
- Effective area (mm²)

**AS2201F-01, AS2211F-01, AS2301F-01, AS2311F-01**
- Inlet pressure: 0.5 MPa
- Number of needle rotations
- Flow rate (l/min (ANR))
- Effective area (mm²)

**AS2201F-02, AS2211F-02, AS2301F-02, AS2311F-02**
- Inlet pressure: 0.5 MPa
- Number of needle rotations
- Flow rate (l/min (ANR))
- Effective area (mm²)

**AS2201F, AS2211F, AS2301F, AS2311F**
- Inlet pressure: 0.5 MPa
- Number of needle rotations
- Flow rate (l/min (ANR))
- Effective area (mm²)

**AS3201F, AS3211F, AS3301F, AS3311F**
- Inlet pressure: 0.5 MPa
- Number of needle rotations
- Flow rate (l/min (ANR))
- Effective area (mm²)

**AS4201F, AS4211F, AS4301F, AS4311F**
- Inlet pressure: 0.5 MPa
- Number of needle rotations
- Flow rate (l/min (ANR))
- Effective area (mm²)

Note: "U10/32" is the same as "M5".

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*Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com*
Series AS

Construction

Elbow type
Meter-out type

Universal 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

M3 port
M5 port
U10/32 port
### Series AS

**Elbow Type**

#### Metric Size

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</tbody>
</table>

Note 1) T₁ are the dimensions of NPT thread.
Note 2) Reference dimensions after installation.
Note 3) Reference thread dimensions after installation.

---

**Note 2)** Reference thread dimensions after installation.

---

**Note 3)** Reference dimensions after installation.
### Metric Size

<table>
<thead>
<tr>
<th>Model</th>
<th>T</th>
<th>H</th>
<th>D1</th>
<th>D2</th>
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<th>D4</th>
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<th>L2</th>
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<th>L4</th>
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<th>A2</th>
<th>A3</th>
<th>M1</th>
<th>Max</th>
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Note 1) ( ) are the dimensions of NPT thread
Note 2) Reference thread dimensions after installation.
Note 3) Reference dimensions

### Inch Size

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<thead>
<tr>
<th>Model</th>
<th>T</th>
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<th>D3</th>
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</tbody>
</table>

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

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**Series AS**

**Universal Type**

M3 port
M5 port
U10/32 port

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**Note 2) Reference thread dimensions after installation.**
Series AS
Made to Order Specifications:
Please contact SMC for detailed dimensions, specifications, and delivery.

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

AS 2 2 0 1 F - 0 1 - 0 6 S - 1 - X 2 5 0

Body size
1 M3, M5 standard
2 1/8, 1/4 standard

Elbow
Control type
0 Meter-out
1 Meter-in

Option
Nil
S With seal

Port size
M3 M3 x 0.5
M5 M5 x 0.8
01 R 1/8
02 R 1/4

Applicable tubing O.D.
04 ø4
06 ø6

Fixed orifice

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.