### Flow Control Equipment

**Speed Controller (With One-touch Fittings, Standard Style)**

- Metering Valve with Silencer
- Quick Exhaust Valve
- Check Valve
- Safety Speed Control Valve

#### Speed Controller with One-touch Fittings

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size in cylinder side</th>
<th>Applicable tube O.D.</th>
<th>Applicable cylinder bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS121F</td>
<td>M3</td>
<td>ø2.5 to ø6</td>
<td></td>
</tr>
<tr>
<td>AS121F</td>
<td>M5</td>
<td>ø6 to ø20</td>
<td></td>
</tr>
<tr>
<td>AS221F</td>
<td>1/8, 1/4</td>
<td>ø20 to ø40</td>
<td></td>
</tr>
<tr>
<td>AS321F</td>
<td>1/8, 1/4</td>
<td>ø40 to ø63</td>
<td></td>
</tr>
<tr>
<td>AS421F</td>
<td>ø1/4</td>
<td>ø63 to ø100</td>
<td></td>
</tr>
<tr>
<td>AS131F</td>
<td>M3</td>
<td>ø2.5 to ø6</td>
<td></td>
</tr>
<tr>
<td>AS131F</td>
<td>M5</td>
<td>ø6 to ø20</td>
<td></td>
</tr>
<tr>
<td>AS231F</td>
<td>1/8, 1/4</td>
<td>ø20 to ø40</td>
<td></td>
</tr>
<tr>
<td>AS331F</td>
<td>1/8, 1/4</td>
<td>ø40 to ø63</td>
<td></td>
</tr>
<tr>
<td>AS431F</td>
<td>ø1/4</td>
<td>ø63 to ø100</td>
<td></td>
</tr>
<tr>
<td>AS132</td>
<td>M5</td>
<td>ø6 to ø20</td>
<td></td>
</tr>
<tr>
<td>AS232</td>
<td>1/8</td>
<td>ø20 to ø32</td>
<td></td>
</tr>
<tr>
<td>AS332</td>
<td>1/8</td>
<td>ø40 to ø63</td>
<td></td>
</tr>
<tr>
<td>AS432</td>
<td>ø1/4</td>
<td>ø63 to ø100</td>
<td></td>
</tr>
</tbody>
</table>

#### Universal Elbow (Metal Body)

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size in cylinder side</th>
<th>Applicable tube O.D.</th>
<th>Applicable cylinder bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS1001F</td>
<td>ø6</td>
<td>ø6 to ø20</td>
<td></td>
</tr>
<tr>
<td>AS2001F</td>
<td>ø10</td>
<td>ø20 to ø32</td>
<td></td>
</tr>
<tr>
<td>AS2051F</td>
<td>ø12</td>
<td>ø20 to ø40</td>
<td></td>
</tr>
<tr>
<td>AS3001F</td>
<td>ø16</td>
<td>ø40 to ø63</td>
<td></td>
</tr>
<tr>
<td>AS4001F</td>
<td>ø20</td>
<td>ø63 to ø100</td>
<td></td>
</tr>
</tbody>
</table>

#### Elbow

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size in cylinder side</th>
<th>Applicable tube O.D.</th>
<th>Applicable cylinder bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASD230F</td>
<td>M5</td>
<td>ø6 to ø20</td>
<td></td>
</tr>
<tr>
<td>ASD330F</td>
<td>1/8</td>
<td>ø20 to ø32</td>
<td></td>
</tr>
<tr>
<td>ASD430F</td>
<td>ø1/4</td>
<td>ø20 to ø40</td>
<td></td>
</tr>
<tr>
<td>ASD530F</td>
<td>ø1/4</td>
<td>ø40 to ø63</td>
<td></td>
</tr>
<tr>
<td>ASD630F</td>
<td>ø1/2</td>
<td>ø63 to ø100</td>
<td></td>
</tr>
</tbody>
</table>

#### Dual Speed Controller

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size in cylinder side</th>
<th>Applicable tube O.D.</th>
<th>Applicable cylinder bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS1200</td>
<td>M3/M5</td>
<td>ø2.5 to ø6</td>
<td></td>
</tr>
<tr>
<td>AS1400</td>
<td>M3</td>
<td>ø6 to ø20</td>
<td></td>
</tr>
<tr>
<td>AS2200</td>
<td>1/8, 1/4</td>
<td>ø20 to ø40</td>
<td></td>
</tr>
<tr>
<td>AS3200</td>
<td>1/8, 1/4</td>
<td>ø40 to ø63</td>
<td></td>
</tr>
<tr>
<td>AS4200</td>
<td>1/2</td>
<td>ø63 to ø100</td>
<td></td>
</tr>
<tr>
<td>AS1200</td>
<td>M3/M5</td>
<td>ø2.5 to ø25</td>
<td></td>
</tr>
<tr>
<td>AS2000</td>
<td>1/8, 1/4</td>
<td>ø20 to ø40</td>
<td></td>
</tr>
<tr>
<td>AS3000</td>
<td>1/8, 1/4</td>
<td>ø40 to ø63</td>
<td></td>
</tr>
<tr>
<td>AS3500</td>
<td>1/8, 1/4</td>
<td>ø63 to ø100</td>
<td></td>
</tr>
<tr>
<td>AS4000</td>
<td>1/8, 1/4</td>
<td>ø63 to ø125</td>
<td></td>
</tr>
<tr>
<td>AS5000</td>
<td>1/8, 1/4</td>
<td>ø140 to ø200</td>
<td></td>
</tr>
<tr>
<td>AS6000</td>
<td>1/4</td>
<td>ø160 to ø250</td>
<td></td>
</tr>
<tr>
<td>AS8000</td>
<td>1/4</td>
<td>ø300</td>
<td></td>
</tr>
<tr>
<td>AS9000</td>
<td>1/2</td>
<td>ø300</td>
<td></td>
</tr>
</tbody>
</table>

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4.0-1

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4.1-1

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4.1-7

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4.1-9

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4.1-13

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4.1-19

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4.1-23

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4.1-27
Precautions
Be sure to read before handling.
Refer to p.0-20 and 0-21 for Safety Instructions and common precautions on the products mentioned in this catalog.

Common Precautions

⚠️ Warning
1. Products mentioned in this catalog are not designed for the use as stop valve with zero air leakage.
   Products specification allows for a small amount of air leakage.

2. Confirm the degree of rotation of the needle valve.
   Products mentioned in this catalog are retainer type so that the needle is not removed completely. Over rotation will cause damage.

3. Confirm air flow direction.
   If mounted in the wrong direction, the speed adjustment needle may not function and may cause uncontrolled extension of the piston rod.

4. Adjust needle by opening the needle slowly after having closed it completely.
   Loose needle valves may cause unexpected sudden actuator extension. When needle valve is turned clockwise, it is closed and cylinder speed decreases. When needle valve is turned counter clockwise, it is open and cylinder speed increases.

⚠️ Warning
1. Check that the lock nut is tightened.
   A loose lock nut may cause actuator speed changes.

2. Confirm the degree of rotation of the needle valve.
   If mounted in the wrong direction, the speed adjustment needle may not function and may cause uncontrolled extension of the piston rod.

3. Check that the lock nut is tightened.
   A loose lock nut may cause actuator speed changes.

4. Confirm the degree of rotation of the needle valve.
   If mounted in the wrong direction, the speed adjustment needle may not function and may cause uncontrolled extension of the piston rod.

5. Adjust needle by opening the needle slowly after having closed it completely.
   Loose needle valves may cause unexpected sudden actuator extension. When needle valve is turned clockwise, it is closed and cylinder speed decreases. When needle valve is turned counter clockwise, it is open and cylinder speed increases.

Sizing

Series AS-F, FE, FG, FM

⚠️ Warning
1. Confirm adverse effect of PTFE
   PTFE powder (tetrafluoroethylene resin) is included in sealant. Confirm if the use of it may cause any adverse effect in the system.

Mounting

⚠️ Caution
1. To install/remove the Flow Control Equipment, tighten/loosen at wrench flat B as close to the thread as possible using the appropriate wrench.

   Do not apply torque at other points as the product may be damaged. Rotate Body A manually for positioning after installation.

2. Do not use universal type fittings for applications involving continuous rotation.
   It may cause failure of the fittings.

Screw Torque

⚠️ Caution
1. Suitable screw torque for tightening fittings is shown in the table below. For standard installation, turn 2 to 3 turns using tool after fastening by hand. Take care not to damage the product by over torque.

<table>
<thead>
<tr>
<th>Male thread</th>
<th>Suitable screw torque (Nm)</th>
<th>Hexagonal width (mm)</th>
<th>Adjustable spanner nominal (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>1/4</td>
<td>4.5</td>
<td>—</td>
</tr>
<tr>
<td>M5</td>
<td>1/8</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>1/8</td>
<td>2 to 9</td>
<td>14</td>
<td>150</td>
</tr>
<tr>
<td>1/4</td>
<td>12 to 14</td>
<td>17</td>
<td>200</td>
</tr>
<tr>
<td>3/8</td>
<td>22 to 24</td>
<td>21</td>
<td>200</td>
</tr>
<tr>
<td>1/2</td>
<td>28 to 30</td>
<td>24</td>
<td>200</td>
</tr>
</tbody>
</table>

1Nm=0.2kgf/cm

Tightening torque for lock nuts

⚠️ Caution
1. Suitable screw torque for a hexagon lock nut is shown in the table below. For standard installation, turn 15 to 30 using tool, after fastening by hand. Pay attention not to over torque the product.

<table>
<thead>
<tr>
<th>Body size</th>
<th>Suitable screw torque (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>0.07</td>
</tr>
<tr>
<td>M5</td>
<td>0.3</td>
</tr>
<tr>
<td>1/8</td>
<td>1</td>
</tr>
<tr>
<td>1/4</td>
<td>1.5</td>
</tr>
<tr>
<td>3/8</td>
<td>4</td>
</tr>
<tr>
<td>1/2</td>
<td>10</td>
</tr>
</tbody>
</table>

Products mentioned in this catalog are not designed for the use as stop valve with zero air leakage.

Products specification allows for a small amount of air leakage.

Check that the lock nut is tightened.
A loose lock nut may cause actuator speed changes.

4.0-3
Flow Control Equipment

<table>
<thead>
<tr>
<th>Handling on One-touch fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caution</strong></td>
</tr>
<tr>
<td>1. Refer to p.2.0-7 in Best Pneumatics NO.4 for One-touch Fitting.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Series ASD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caution</strong></td>
</tr>
<tr>
<td>1. Single acting cylinder</td>
</tr>
<tr>
<td>When single acting cylinder is controlled, cylinder retracted speed depends on operating condition. Confirm the maximum retracted speed mentioned in the table below.</td>
</tr>
</tbody>
</table>

### Speed Controller

<table>
<thead>
<tr>
<th>Cylinder</th>
<th>Solenoid valve</th>
<th>Tubing</th>
<th>Silencer</th>
<th>Max. retracted speed (mm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASD230F</td>
<td>CJ2 V,500</td>
<td>1m</td>
<td>AN110-01</td>
<td>100 200 300</td>
</tr>
<tr>
<td>ASD330F</td>
<td>CM2 V,250</td>
<td>1m</td>
<td>AN150-01</td>
<td>100 200 300</td>
</tr>
</tbody>
</table>

<Specification condition>
Cylinder extending speed: 100 mm/s
Needle fully open at meter-out side

### Warning

1. Inappropriate Circuits
(a) "Perfect Valve" (VF66/6C, VS7-6-FPG, VS7-8-FPG)
(b) Pilot check valve between Actuator and Valve

### Caution

1. Inappropriate Circuits
(a) "Perfect Valve" (VF66/6C, VS7-6-FPG, VS7-8-FPG)
(b) Pilot check valve between Actuator and Valve

### Mounting

1. If installing flow controls to valve ports, interference may occur with the fittings. Please consult the catalog before installing.

### Speed controller

<table>
<thead>
<tr>
<th>Cylinder size</th>
<th>Speed Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø16</td>
<td>100 mm/s</td>
</tr>
<tr>
<td>ø10</td>
<td>200 mm/s</td>
</tr>
<tr>
<td>ø6</td>
<td>300 mm/s</td>
</tr>
<tr>
<td>ø20</td>
<td>100 mm/s</td>
</tr>
<tr>
<td>ø25</td>
<td>200 mm/s</td>
</tr>
<tr>
<td>ø32</td>
<td>300 mm/s</td>
</tr>
</tbody>
</table>

<Note>
Use AS-F series as speed controller.
Flow Control Equipment

⚠️ Flow Control Equipment Precautions

<table>
<thead>
<tr>
<th>Series ASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection</td>
</tr>
</tbody>
</table>

**Caution**

1. **Use meter-out controlling type after confirming the initial speed to prevent sudden actuator extension.**
   - Due to its specifications, the extension preventing function does not have speed control capability so that adjustments are limited. Use the meter-in controlling type if desired speed is less than set speed.

2. **Circuit pressure remaining in cylinder is not usable.**
   - Extension prevention works when pressure has been exhausted in cylinder. Therefore, prevent the extension by meter-in control using a speed controller in such a case.

**Mounting**

**Caution**

1. **Install Actuator and SSC valve as close as possible.**
   - Extensions prevention in the initial operation and standard speed control may not function.

2. **Do not use for relatively small capacity actuators.**
   - i.e. short stroke cylinders (less than 100mm), rotary actuators, etc.
   - SSC valve may not properly operate.

3. **Use in load factor less than 50%.**
   - Speed control on normal operations may not function.
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 style permits 360° piping swivel.

Application to inch size tubing
- Metric size (Release bushing: White color) ø3.2, ø4, ø6, ø8, ø10, ø12

Operating pressure
1MPa max.

Accepts
Nylon, Soft nylon and Polyurethane tubing.

Retainer prevents accidental loss of needle
Optional:
- 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 easier control at lower speed.

Universal style
JIS Symbol
Indication of air flow direction on body

Caution
Be sure to read before handling.
Refer to p.0-20 and 0-21 for Safety Instructions and common precautions on the products mentioned in this catalog, and refer to p.4.0-3 to 4.0-5 for precautions on every series.
With One-touch Fittings: Elbow/Universal Style **Series AS**

**How to Order**

AS 2 2 1 1F - 01 06 S

**Body size**
1. M3, M5 standard
2. 1/8, 1/4 standard
3. 3/8 standard
4. 1/2 standard

**Style**
2. Elbow
3. Universal

**Control**
0. Meter out
1. Meter in

**Thread**
- Meter thread (M3, M5)
- R/PT
- Unified thread (10-32UNF)
- NPT
- M3 X 0.5
- M5 X 0.8
- M5 X 1/4
- M5 X 5/32
- M5 X 3/16
- M5 X 1/8

**Applicable tube O.D.**

<table>
<thead>
<tr>
<th>Millimeter</th>
<th>Inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>ø3.2&quot;</td>
</tr>
<tr>
<td>04</td>
<td>ø4</td>
</tr>
<tr>
<td>06</td>
<td>ø6</td>
</tr>
<tr>
<td>08</td>
<td>ø8</td>
</tr>
<tr>
<td>10</td>
<td>ø10</td>
</tr>
<tr>
<td>12</td>
<td>ø12</td>
</tr>
<tr>
<td>01</td>
<td>ø1/8&quot;</td>
</tr>
<tr>
<td>02</td>
<td>ø1/4&quot;</td>
</tr>
<tr>
<td>03</td>
<td>ø3/16&quot;</td>
</tr>
<tr>
<td>04</td>
<td>ø1/2&quot;</td>
</tr>
</tbody>
</table>

- ø1/8" tube should be used.
- "-U10/32" is the same as "M5".

**Option**
- None
- S With sealant
- K Hexagon lock nut
- N Electroless nickel plating

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

**Port size**
- M3 X 0.5
- M5 X 0.8
- M5 X 1/4
- M5 X 5/32
- M5 X 3/16
- M5 X 1/8

**With One-touch fittings**

**Needle Valve/Flow Characteristics**

**AS Series 2/16/99 4:56 PM  Page 2**
Speed controller with built-in One-touch fitting for metal body specifications

- Uses flame resistant resin as standard. (UL standard V-0)

**Specifications**

- **Proof pressure**: 1.5MPa
- **Max. operating pressure**: 1MPa
- **Min. operating pressure**: 0.1MPa
- **Ambient and fluid temperature**: -5 to 60°C
- **Number of needle rotations**: 10 turns (8 turns†)

**Applicable tubes**

- Nylon, Soft nylon, Polyurethane
- Electroless nickel plated

**Construction**

**Component Parts**

- **No.**
  - 1: Body A
  - 2: Body B
  - 3: Needle
  - 4: Needle guide
  - 5: Seat ring
  - 6: Lock nut
  - 7: Handle
  - 8: Bushing
  - 9: Cassette
  - 10: U packing
  - 11: Packing
  - 12: O ring
  - 13: Gasket

- **Material**
  - Zinc alloy
  - Electroless nickel plated

- **Notes**
  - Note 1: Steel
  - Note 2: Meter-in type: Black zinc chromated
  - Only M5 port

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**Model and Port size**

<table>
<thead>
<tr>
<th>Model</th>
<th>Port size</th>
<th>Applicable tube O.D</th>
<th>Applicable cylinder bore (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS1231-M5</td>
<td>M5 X 0.8</td>
<td>ø6, ø8</td>
<td>6, 10, 16, 20</td>
</tr>
<tr>
<td>AS2231-01</td>
<td>R(PT) 1/8</td>
<td>ø4, ø8</td>
<td>20, 25, 32, 40</td>
</tr>
<tr>
<td>AS2231-02</td>
<td>R(PT) 1/4</td>
<td>ø6, ø8</td>
<td>20, 25, 32, 40</td>
</tr>
<tr>
<td>AS3231-03</td>
<td>R(PT) 1/8</td>
<td>ø6, ø8</td>
<td>40, 50, 63</td>
</tr>
<tr>
<td>AS4231-04</td>
<td>R(PT) 1/4</td>
<td>ø6, ø8</td>
<td>63, 80, 100</td>
</tr>
</tbody>
</table>

**How to Order**

- **Controlled method**
  - 0: Meter-out
  - 1: Meter-in

- **Body size**
  - 1: M5
  - 2: 01. 02
  - 3: 03
  - 4: 04

- **Elbow style**
  - 0: None
  - 1: Hexagonal lock nut
  - 2: Nickel plated

- **Thread size**
  - M5: R(PT) 1/8
  - 01: R(PT) 1/8
  - 02: R(PT) 3/8
  - 03: R(PT) 1/4
  - 04: R(PT) 1/2
Minimizes installation time and cost
Reduce the mounting height and enables compact machinery design. Effective area is larger than the former model.

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

Operating pressure 1MPa max.

Applicable tube material
Nylon, Soft nylon and Polyurethane tubing

Retainer prevents accidental loss of needle

Optional:
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 speed.

In-line style

### Specifications

<table>
<thead>
<tr>
<th>Proof pressure</th>
<th>Max. operating pressure</th>
<th>Min. operating pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5MPa</td>
<td>1MPa</td>
<td>0.1MPa</td>
</tr>
</tbody>
</table>

### Applicable tubes
- AS1001F
- AS2001F
- AS2051F
- AS3001F
- AS4001F

### In-line Style

### Air Flow/Effective Area

<table>
<thead>
<tr>
<th>Model</th>
<th>Air Flow</th>
<th>Effective Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS1001F</td>
<td>1.5</td>
<td>100</td>
</tr>
<tr>
<td>AS2001F</td>
<td>2</td>
<td>150</td>
</tr>
<tr>
<td>AS2051F</td>
<td>3.5</td>
<td>230</td>
</tr>
<tr>
<td>AS3001F</td>
<td>4.5</td>
<td>460</td>
</tr>
<tr>
<td>AS4001F</td>
<td>6.5</td>
<td>660</td>
</tr>
</tbody>
</table>

### How to Order

**AS 400 1F 12 K**

**Option**
- K: Hexagonal lock nut
- N: Electroless nickel plated

**Applicable tube O.D.**
- Metric size: ø3.2, ø4, ø6, ø8, ø10, ø12
### Specifications

**Ambient temperature**
-20 to 60°C

**Material**
Polypropylene

**Color**
White

**Accessory**
Round head Phillips screw for mounting (Black zinc chromated).

### Correspondence of In-line Speed Controller and Holder

<table>
<thead>
<tr>
<th>Metric</th>
<th>Size (nominal X height)</th>
<th>Piece</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMH-23J</td>
<td>TMH-01J</td>
<td>M3 X 15</td>
</tr>
<tr>
<td>TMH-04J</td>
<td>TMH-03J</td>
<td>M3 X 20</td>
</tr>
<tr>
<td>TMH-06J</td>
<td>TMH-05</td>
<td>M4 X 25</td>
</tr>
<tr>
<td>TMH-08</td>
<td>TMH-09</td>
<td>M4 X 35</td>
</tr>
<tr>
<td>TMH-10</td>
<td>TMH-11</td>
<td></td>
</tr>
<tr>
<td>TMH-12</td>
<td>TMH-13</td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions

- **Model**: TMH-23J, TMH-04J, TMH-06J, TMH-08, TMH-10, TMH-12, TMH-01J, TMH-03J, TMH-05, TMH-07, TMH-09, TMH-11, TMH-13

- **AS1001F**: ø3.2, ø4, ø6
- **AS2001F**: ø8, ø10, ø12
- **AS3001F**: ø1/8" ø5/32" ø3/16" ø1/4" ø5/16" ø3/8" ø1/2" Segment  
- **AS4001F**: AS1001F, AS2001F, AS3001F, AS4001F

Note 1: Mounting bracket is not available. This is an application example.
### Dual Speed Controller with One-touch Fittings Series ASD

#### How to Order

**ASD 330F 01 06 S K**

<table>
<thead>
<tr>
<th>Body size</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>K</td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

- **Body size**
  - 2: M5 standard
  - 3: 1/8 standard
  - 4: 1/4 standard
  - 5: 3/8 standard
  - 6: 1/2 standard

- **Style**
  - 3: Universal

- **Thread**
  - With sealant
  - Universal thread (M5)
  - Unified thread (10-32 UNF)
  - R(PT)
  - NPT

- **With-one-touch fittings**
  - M5
  - U10/32
  - 01
  - 06
  - 08
  - 10
  - 12

- **Applicable tubing O.D.**
  - Millimeter
    - ø4
    - ø6
    - ø8
    - ø10
    - ø12
  - Inch
    - ø1/8"
    - ø5/32"
    - ø3/16"
    - ø1/4"
    - ø3/8"

#### Needle Valve/Flow Characteristics

- **ASD230F**
  - Flow (l/min (ANR))
  - Effective area (mm²)
  - Needle rotation (Turns)

- **ASD330F**
  - Flow (l/min (ANR))
  - Effective area (mm²)
  - Needle rotation (Turns)

- **ASD430F**
  - Flow (l/min (ANR))
  - Effective area (mm²)
  - Needle rotation (Turns)

- **ASD530F**
  - Flow (l/min (ANR))
  - Effective area (mm²)
  - Needle rotation (Turns)

- **ASD630F**
  - Flow (l/min (ANR))
  - Effective area (mm²)
  - Needle rotation (Turns)
Speed Controller with Residual Pressure Release Valve

Series AS□□□□□FE
With One-touch Fittings

Residual pressure can be easily released with one push of button.

Eye-catching red color release button.

Specifications

- **Proof pressure**: 1.5MPa
- **Max. operating pressure**: 1.0MPa
- **Min. operating pressure**: 0.1MPa
- **Ambient and fluid temperature**: -5 to 60°C (No freezing)
- **Number of needle rotations**: 10 turns
- **Effective area of residual pressure release valve**: 0.8mm²
- **Applicable tubing**: Nylon, Soft nylon, Polyurethane

Air Flow/Effective Area

<table>
<thead>
<tr>
<th>Model</th>
<th>Tube O.D.</th>
<th>Controlled (Free)flow</th>
<th>Effective area (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS22□□□□□FE-01</td>
<td>ø4</td>
<td>180</td>
<td>2.7</td>
</tr>
<tr>
<td>AS23□□□□□FE-01</td>
<td>ø6</td>
<td>230</td>
<td>3.5</td>
</tr>
<tr>
<td>AS23□□□□□FE-02</td>
<td>ø6</td>
<td>260</td>
<td>3.5</td>
</tr>
<tr>
<td>AS33□□□□□FE-01</td>
<td>ø8</td>
<td>390</td>
<td>4.0</td>
</tr>
<tr>
<td>AS33□□□□□FE-02</td>
<td>ø8</td>
<td>460</td>
<td>6.0</td>
</tr>
<tr>
<td>AS43□□□□□FE-01</td>
<td>ø10</td>
<td>660</td>
<td>7.0</td>
</tr>
<tr>
<td>AS43□□□□□FE-02</td>
<td>ø10</td>
<td>790</td>
<td>7.0</td>
</tr>
<tr>
<td>AS43□□□□□FE-03</td>
<td>ø10</td>
<td>920</td>
<td>10.0</td>
</tr>
<tr>
<td>AS43□□□□□FE-04</td>
<td>ø10</td>
<td>1580</td>
<td>12.0</td>
</tr>
</tbody>
</table>

Note: Supply pressure: 0.5MPa, Temperature: 20°C.

How to Order

**AS □□□□□FE □□□□□□**

- **Body size**: 2, 3, 4
- **Style**: 2 - Elbow, 3 - Universal
- **Controlled method**: 0 - Meter-out, 1 - Meter-in
- **Port size**: R(PT)1/8, R(PT)1/4, R(PT)3/8, R(PT)1/2
- **Applicable tube O.D.**: ø4, ø6, ø8, ø10, ø12
- **With One-touch fittings**
- **Hexagonal lock nut**
- **Sealant**
- **With residual pressure release valve**

Notes:
1. Only elbow type
2. Distinction between meter-out/meter-in types by appearance
3. They are distinguished by the lock nut. The meter-out types are electroless nickel plated, while the meter-in type is black zinc chromate plated.

Note: Supply pressure: 0.5MPa, Temperature: 20°C.
4.1-38

**Speed Controller with One-touch Fittings**

*Series AS FG*

**Stainless Series**

Uses SUS303 stainless steel for metal elements.
SUITED for CRT production lines where copper-free specifications are required, food processing machines which use water or saltwater during wash-down, clean room where contamination from discoloration and corrosion of copper material might occur.

**Bright color tone to match with modern equipment.**
Body and release button are made of white color resin.

**Thread portion is available with or without sealant. Both are standard.**

**High flow capacity with compact, lightweight design.**
Low profile height permits compact machine design.

**Max. operating pressure is 1.0 MPa.**

**Applicable tubing material**
Nylon, Soft nylon, Polyurethane

Retainer prevents accidental loss of needle
Increased number of needle rotations to 10 turns.

---

**Model**

<table>
<thead>
<tr>
<th>Elbow style</th>
<th>Port size</th>
<th>Applicable tube O.D. (mm)</th>
<th>Applicable cylinder bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS121FG-M5</td>
<td>M5 X 0.8</td>
<td>6, 10, 16, 20</td>
<td></td>
</tr>
<tr>
<td>AS221FG-01</td>
<td>R(PT) 1/8</td>
<td>20, 25, 32</td>
<td></td>
</tr>
<tr>
<td>AS221FG-02</td>
<td>R(PT) 1/4</td>
<td>20, 25, 32, 40</td>
<td></td>
</tr>
<tr>
<td>AS221FG-03</td>
<td>R(PT) 1/8</td>
<td>40, 50, 63</td>
<td></td>
</tr>
<tr>
<td>AS421FG-04</td>
<td>R(PT) 1/2</td>
<td>63, 80, 100</td>
<td></td>
</tr>
</tbody>
</table>

**Specifications**

- **Proof pressure**: 1.5MPa
- **Max. operating pressure**: 1.0MPa
- **Min. operating pressure**: 0.1MPa
- **Ambient and fluid temperature**: -5 to 60°C (No freezing)
- **Number of needle rotation**: 10 turns (8 turns (1))
- **Applicable tubes**: Nylon, Soft nylon, Polyurethane
- **Option**: Sealant (2)

**Note 1)** AS121FG
**Note 2)** Pay attention to the maximum operating pressure when soft nylon or polyurethane is used. (Refer to p. 2.4-2 and 2.4-3 “Best Pneumatics No.4” for further information.)
**Note 3)** Sealant option for port size M5 is not available.

**Air Flow/Effective Area**

<table>
<thead>
<tr>
<th>Model</th>
<th>AS121FG</th>
<th>AS221FG-01</th>
<th>AS221FG-02</th>
<th>AS321FG</th>
<th>AS421FG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tube O.D. (mm)</td>
<td>ø4, ø6</td>
<td>ø4, ø6, ø8, ø10</td>
<td>ø4, ø6, ø8, ø10</td>
<td>ø4, ø8, ø10, ø12</td>
<td>ø4, ø10, ø12</td>
</tr>
<tr>
<td>Controlled flow (liters/min)</td>
<td>100</td>
<td>180</td>
<td>230</td>
<td>260</td>
<td>390</td>
</tr>
<tr>
<td>Eff area (mm²)</td>
<td>1.5</td>
<td>2.7</td>
<td>3.5</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

**Note:** Supply pressure: 0.5MPa, Temperature: 20°C

---

**How to Order**

- **Body size**
  - 1: M4
  - 2: 1/8, 1/4
  - 3: 5/16
  - 4: 1/2

- **Style**
  - 2: Elbow

- **Controlled method**
  - 0: Meter-out
  - 1: Meter-in

- **Applicable tube O.D. (mm)**
  - 04: ø4
  - 06: ø6
  - 08: ø8
  - 10: ø10
  - 12: ø12

- **Port size**
  - M5: M5 X 0.8
  - 01: R(PT) 1/8
  - 02: R(PT) 1/4
  - 03: R(PT) 3/8
  - 04: R(PT) 1/2

---

- Stainless series (SUS 303)

**AS**

**ASN**

**AQ**

**ASV**

**AK**

**ASS**
Speed Controller for Low Speed Operation  
**Series AS-FM**  
With One-touch Fittings (Resin Body)

Suitable for low speed applications from 10 to 50 mm/sec.

**Easy control at low speeds**
Effective area of controlled flow is about one tenth of the standard series. Suitable for control of low speed cylinders at 10 to 50 mm/sec.

**Operating strokes at low speed and return strokes at high speed**
Effective area of free flow units are the same as standard.

**Increases the number of needle rotations to 10 turns (M5 type - 20 turns)**
The increase of number of needle rotations permits easy control and constant speeds.

### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Elbow style</th>
<th>Universal style</th>
<th>Port size</th>
<th>Applicable tube O.D. (mm)</th>
<th>Applicable cylinder bore size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS12:1FM-M5</td>
<td>AS13:1FM-M5</td>
<td>M5 X 0.8</td>
<td>6, 10, 16, 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS22:1FM-01</td>
<td>AS23:1FM-01</td>
<td>R(PT)1/8</td>
<td>20, 25, 32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS22:1FM-02</td>
<td>AS23:1FM-02</td>
<td>R(PT)1/4</td>
<td>20, 25, 32, 40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note) Distinction between meter-out/meter-in types by appearance  
They are distinguished by the lock nut.  
The meter-out type is electroless nickel plated, while the meter-in type is black zinc chromate plated.

### Proof pressure

- Max. operating pressure: 1.0 MPa
- Min. operating pressure: 0.1 MPa

### Ambient and fluid temperature

- Temperature: -5 to 60°C (No freezing)

### Number of needle rotations

- 10 turns (20 turns for AS22:1FM-02, AS23:1FM-02)

### Applicable tube material

- Nylon, Soft nylon, Polyurethane

### Option

- Sealant

Note 1) AS12:1FM, AS13:1FM type

Note 2) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used.  
(Refer to the catalog CAT. E501 on fitting and tubing for further information.)

Note 3) Sealant option for port size M5 is not available.

Note 4) Brass parts are all electroless nickel plated.

### Handle of M5 type or lock nut of meter-in type is black zinc chromated.

### Air Flow/Effective Area

<table>
<thead>
<tr>
<th>Model</th>
<th>AS12:1FM</th>
<th>AS22:1FM-01</th>
<th>AS22:1FM-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tube O.D. (mm)</td>
<td>ø3.2, ø4, ø6</td>
<td>ø3.2, ø4, ø6, ø8</td>
<td>ø4, ø6, ø8, ø10</td>
</tr>
<tr>
<td>Controlled flow Air flow (l/min (ANR))</td>
<td>180</td>
<td>230</td>
<td>260</td>
</tr>
<tr>
<td>Effective area (mm²)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.6</td>
</tr>
<tr>
<td>Free Flow Air flow (l/min (ANR))</td>
<td>100</td>
<td>230</td>
<td>390</td>
</tr>
<tr>
<td>Effective area (mm²)</td>
<td>1.5</td>
<td>3.5</td>
<td>5</td>
</tr>
</tbody>
</table>

Note) Supply pressure: 0.5 MPa  
Temperature: 20°C

### How to Order

- **AS**: 2 2 1 F M
- **M5**: 06
- **S**

<table>
<thead>
<tr>
<th>Options</th>
<th>None</th>
<th>Sealant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port size</td>
<td>M5 X 0.8</td>
<td>04, ø4</td>
</tr>
<tr>
<td></td>
<td>01 R(PT)1/8</td>
<td>ø6, ø6</td>
</tr>
<tr>
<td></td>
<td>02 R(PT)1/4</td>
<td>ø8, ø8</td>
</tr>
<tr>
<td></td>
<td>10 ø10</td>
<td>ø10</td>
</tr>
</tbody>
</table>

**Inch size**: ø1/8

**For low speed operation**

With One-touch fittings

### JIS Symbol

- **AS12:1FM-M5**  
- **AS13:1FM-M5**  
- **AS22:1FM-01**  
- **AS23:1FM-01**  
- **AS22:1FM-02**  
- **AS23:1FM-02**

### Indication of air flow direction on body

- **Meter-out**  
- **Meter-in**

### Suitable for low speed applications from 10 to 50 mm/sec.

- Easy control at low speeds
- Effective area of controlled flow is about one tenth of the standard series.
- Suitable for control of low speed cylinders at 10 to 50 mm/sec.

- Increasing the number of needle rotations to 10 turns (M5 type - 20 turns).
- The increase of number of needle rotations permits easy control and constant speeds.

- Operating strokes at low speed and return strokes at high speed.
- Effective area of free flow units are the same as standard.

### Specifications

- **Proof pressure**
  - Max. operating pressure: 1.0 MPa
  - Min. operating pressure: 0.1 MPa
- **Ambient and fluid temperature**
  - Temperature: -5 to 60°C (No freezing)
- **Number of needle rotations**
  - 10 turns (20 turns for AS22:1FM-02, AS23:1FM-02)
- **Applicable tube material**
  - Nylon, Soft nylon, Polyurethane
- **Option**
  - Sealant
- **Hanlde of M5 type or lock nut of meter-in type is black zinc chromated.**

### Air Flow/Effective Area

- **Controlled flow**
  - Air flow (l/min (ANR))
  - Effective area (mm²)
- **Free Flow**
  - Air flow (l/min (ANR))
  - Effective area (mm²)

Note) Supply pressure: 0.5 MPa  
Temperature: 20°C

### How to Order

- **AS**: 2 2 1 F M
- **M5**: 06
- **S**

<table>
<thead>
<tr>
<th>Options</th>
<th>None</th>
<th>Sealant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port size</td>
<td>M5 X 0.8</td>
<td>04, ø4</td>
</tr>
<tr>
<td></td>
<td>01 R(PT)1/8</td>
<td>ø6, ø6</td>
</tr>
<tr>
<td></td>
<td>02 R(PT)1/4</td>
<td>ø8, ø8</td>
</tr>
<tr>
<td></td>
<td>10 ø10</td>
<td>ø10</td>
</tr>
</tbody>
</table>

**Inch size**: ø1/8

**For low speed operation**

With One-touch fittings
Speed Controller for Low Speed Operation
Series AS-M
Standard (Metal Body)

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Model</th>
<th>AS12:0M-M5</th>
<th>AS22:0M-01</th>
<th>AS22:0M-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port size</td>
<td>Cylinder</td>
<td>M5 X 0.8</td>
<td>R(PT)1/8</td>
<td>R(PT)1/4</td>
</tr>
<tr>
<td></td>
<td>Tube</td>
<td></td>
<td>Rc(PT)1/8</td>
<td>Rc(PT)1/4</td>
</tr>
<tr>
<td>Applicable cylinder tube bore size (mm)</td>
<td>6, 10, 15, 20, 25</td>
<td>20, 25, 32, 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proof pressure</td>
<td></td>
<td>1.5MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td></td>
<td>1.0MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. operating pressure</td>
<td></td>
<td>0.1MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td></td>
<td>–5 to 60°C (No freezing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of needle rotation</td>
<td></td>
<td>20 turns</td>
<td>10 turns</td>
<td></td>
</tr>
<tr>
<td>Option</td>
<td>Sealant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (g)</td>
<td></td>
<td>11.5</td>
<td>36</td>
<td>74</td>
</tr>
<tr>
<td>Free flow</td>
<td></td>
<td>Air flow (l/min)</td>
<td>Effective area (mm²)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>105</td>
<td>1.6</td>
<td>420</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air flow (l/min)</td>
<td>Effective area (mm²)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>0.1</td>
<td>38</td>
</tr>
</tbody>
</table>

(Note 1) Supply pressure: 0.5MPa, Temperature: 20°C.
(Note 2) Distinction between meter-out/meter-in types by appearance.
They are distinguished by the lock nut.
They meter-out types are electroless nickel plated, while the meter-in type is black zinc chromate plated.
(Note 3) Brass parts are all electroless nickel plated.
Handle or lock nut of meter-in type is black zinc chromated.

How to Order

AS 2 2 0 0 M S

Options

Body size

1 M5
2 1/8, A1/4

Style

2 Cylinder direct connected elbow style

Controlled method

0 Meter-out
1 Meter-in

Needle Valve/Flow Characteristics

AS12:0M-M5

Supply pressure 0.5MPa

AS22:0M-01

Supply pressure 0.5MPa

AS22:0M-02

Supply pressure 0.5MPa

4.1-45
Superior sound reducing performance
Over 20dB at Max. flow rate

Cylinder speed easily set
Shape of needle as the same as that
of speed controller
Retainer prevents accidental
loss of needle

How to Order

ASN2—[ ]—[ ]

Options
— None
S Sealant

Thread
—
M5 M5 X 0.8
U10/32 10-32UNF
01 1/8
02 1/4
03 3/8
04 1/2

Needle Valve/Flow Characteristics

Specifications

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Proof pressure</td>
<td>1.5MPa</td>
</tr>
<tr>
<td>Operating pressure range</td>
<td>0 to 1MPa</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>– 5 to 60°C (No freezing)</td>
</tr>
<tr>
<td>Number of needle rotation</td>
<td>10 turns (8 turns(11)</td>
</tr>
</tbody>
</table>

Note 1): (1) : ASN2-M5, ASN2-U10/32

ASN Series 3/4/99 2:16 PM  Page 1
Built-in One-touch Fittings
Quick Exhaust Valve
Series AQ240F/340F

Space saving
Rectilinear IN-OUT tubing connections
● Built-in One-touch fittings and Silencer
● Light weight (Resin body)

Specifications

<table>
<thead>
<tr>
<th></th>
<th>1.5MPa</th>
<th>1MPa</th>
<th>0.1MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proof pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. operating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. operating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid</td>
<td>–5 to 60°C (No freezing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>temperature</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable tubes(1)</td>
<td>nylon, Soft nylon, Polyurethane</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How to Order

<table>
<thead>
<tr>
<th>Model</th>
<th>Applicable tube O.D</th>
<th>Effective area (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IN→OUT</td>
<td>OUT→EXH.</td>
</tr>
<tr>
<td>AQ240F-04</td>
<td>ø4</td>
<td>1.7</td>
</tr>
<tr>
<td>AQ240F-06</td>
<td>ø6</td>
<td>2.4</td>
</tr>
<tr>
<td>AQ340F-06</td>
<td>ø4</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Note 1) Pay attention to the max. supply pressure for Soft nylon and Polyurethane.

A Q 2 4 0 F – 06 06
Quick exhaust valve
Exhaust port
Body size
2 M5
3 1.8
In-line style
IN, OUT port applicable tube O.D.
04 ø4
06 ø6
Built-in One-touch fittings

Built-in One-touch Fittings and Silencer
Light weight (Resin body)

Caution
Be sure to read before handling. Refer to p.0-20 and 0-21 concerning Safety Instructions and common precautions on the products mentioned in this catalog, and refer to p.4.0-3 to 4.0-5 for common precautions on every series.
Speed Exhaust Controller
Series ASV
Body Size: M3, M5, 1/8, 1/4, 3/8

Integration of a quick exhaust valve and an exhaust restrictor permits high-speed cylinder operation.
- The effective area is two times larger than that of 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.

How to Order

<table>
<thead>
<tr>
<th>Speed exhaust controller</th>
<th>Body size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>M3</td>
</tr>
<tr>
<td></td>
<td>M5</td>
</tr>
<tr>
<td></td>
<td>1/8</td>
</tr>
<tr>
<td></td>
<td>1/4</td>
</tr>
<tr>
<td></td>
<td>3/8</td>
</tr>
</tbody>
</table>

Built-in One-touch fittings

<table>
<thead>
<tr>
<th>Applicable tube O.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>12</td>
</tr>
</tbody>
</table>

Specifications

- Model: ASV120F, ASV220F, ASV310F, ASV410F, ASV510F
- Effective area (mm²)
- IN:OUT OUT:EXH
- Min. operating pressure: 0.1MPa
- Ambient and fluid temperature: −5 to 60°C (No freezing)
- Number of thread rotations: 10 turns: 12 turns, 15 turns
- Applicable tubes: Nylon, Soft nylon, Polyurethane
- Option: With hexagonal lock nut, With spatter cover, Hexagonal lock nut
Safety Speed Control Valve (SSC Valve)

**Series ASS**

**Meter-out control style:**
A control valve with cylinder speed control function, fixed throttle, and rapid air supply function

**Meter-in-control style:**
A control valve with cylinder speed control function and rapid air supply function

### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. operating pressure</td>
<td>0.7MPa</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–5 to 60°C (No freezing)</td>
</tr>
<tr>
<td>Setting pressure</td>
<td>0.1 to 0.5MPa</td>
</tr>
</tbody>
</table>

### How to Order

**ASS 3 00 02 B**

- **Body size**
  - 1: 1/8
  - 3: 1/4
  - 5: 1/2
  - 6: 1

- **Accessory**
  - Without bracket
  - B With bracket

- **Style**
  - 00: Meter-out control
  - 02: Meter-in control

- **Port size**
  - 01: 1/8
  - 02: 1/4: ASS300, 310
  - 03: 1/2: ASS300, 310
  - 04: 3/4: ASS600
  - 06: 1: ASS500, 600

- **Thread**
  - N (NPT)
  - F (G/FF)

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**Caution**

Be sure to read before handling.

Refer to p.0-20 and 0-21 for Safety Instructions and common precautions on the products mentioned in this catalog, and p.4.0-3 to 4.0-5 for precautions on every series.
Prevents accidents caused by the cylinder rod sudden extensions

If pressure is applied only to one side of the cylinder, the rod could get out of control, leading to accidents that could involve injury to humans or damage to the product or jigs. The meter-out type SSC valve prevents the sudden extensions by effecting meter-in control when there is no pressure, and resumes the ordinary meter-out control after the cylinder has been pressurized. With the meter-in type, there is no risk of sudden extensions because the cylinder speed is constantly under meter-in control.

System circuit

During the operating stroke at initial actuation, the cylinder moves at a slow speed from \( A \) to \( B \) due to the fixed throttle of the SSC valve. When it reaches \( B \), the head pressure \( (P_h) \) rises quickly as indicated by the line from \( C \) to \( D \). Therefore, there is no time loss associated with the pressure transmission lag indicated by the line from \( C \) to \( E \), as in the case of meter-in control that is effected through the use of a speed controller. During normal operation after the cylinder has been pressurized, the cylinder's speed control is effected by the ordinary meter-out control.

Due to meter-in control, the cylinder moves from \( A \) to \( B \) regardless of whether it is an initial operation or a normal operation. When it reaches \( B \), the head pressure \( (P_h) \) rises quickly as indicated by the line from \( C \) to \( D \). Therefore, there is no time loss associated with the pressure transmission lag indicated by the line from \( C \) to \( E \), as in the case of meter-in control that is effected through the use of a speed controller. During normal operation after the cylinder has been pressurized, the cylinder's speed control is effected also by the ordinary meter-in control.
**Series ASS**

**Meter-out Control/Operation Principles**

**During primary operation**

(Piston rod extension prevention)

- Fig. A
  - Piston valve
  - Switching valve
  - Check valve

- Setting pressure for piston valve
- Pressure in the cylinder

- Stroke end

**During normal operation**

- Switching valve to cylinder
- Cylinder to switching valve

**Fig. C**

Because the pressure in the cylinder is higher than the set pressure, the air from the switching valve causes the piston valve to open fully and feeds rapidly into the cylinder by opening the check valve. Therefore, meter-out control of the cylinder speed is effected by the speed control valve in the exhaust conduit, regardless of the state of the SSC valve.

**Fig. D**

Because the check valve closes due to the internal pressure of the cylinder, the air in the cylinder passes through the valve and discharges through the switching valve. Thus, meter-out control of the cylinder speed is effected by the opening of the valve, which is adjusted by the set needle.

---

**Meter-in Control/Operation Principles**

**During primary operation**

(Piston rod extension prevention)

- Fig. A
  - Piston valve
  - Switching valve
  - Check valve

- Setting pressure for piston valve
- Pressure in the cylinder

- Stroke end

**During normal operation**

- Switching valve to cylinder
- Cylinder to switching valve

**Fig. C**

The air that has been supplied by the switching valve closes the check valve. Also, because the cylinder’s internal pressure is lower than the set pressure, the piston valve closes fully, causing the air to be supplied gradually via the throttle of the set needle. Therefore, meter-out control of the cylinder speed is effected by the speed control valve in the exhaust conduit of the cylinder (Fig. C). Also, as the piston moves and reaches the end of its stroke, the internal pressure in the cylinder raises, causing the piston valve to open fully, and the air feeds rapidly into the cylinder (Fig. B).

**Fig. D**

The air in the cylinder initially opens the piston valve and the check valve and discharges rapidly through the switching valve. The fully opened piston valve closes as shown in Fig. D when the pressure in the cylinder is lower than the set pressure. Then the air passes through the check valve and becomes discharged (Fig. D). Thus, meter-in control of the cylinder speed is effected by the speed control valve of the supply conduit.