

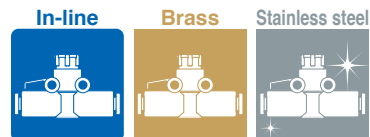


Speed Controller

with One-touch Fittings

RoHS

In-line Type

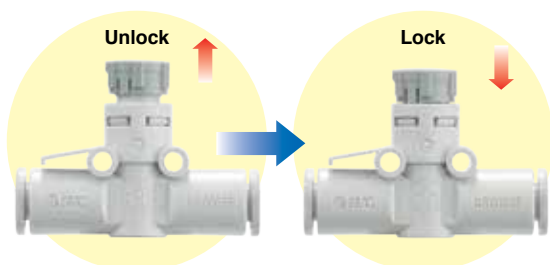


Reduces flow setting time!

Easy to use

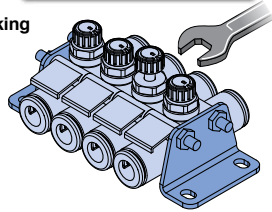
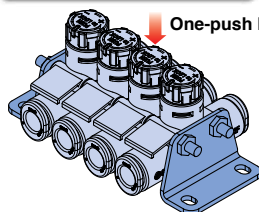
Push-lock type

- Easy to lock



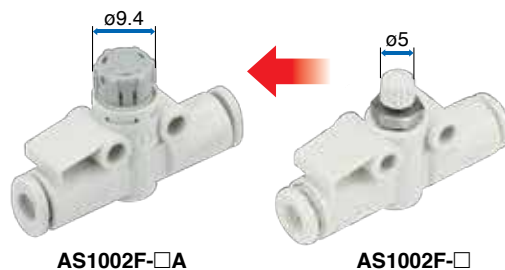
Push-lock type

Current type



Much easier to lock than the current type which requires a wrench

Knob O.D.: Almost doubled!



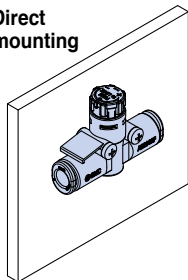
AS1002F-□A

AS1002F-□

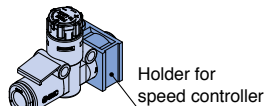


Mounting Variations

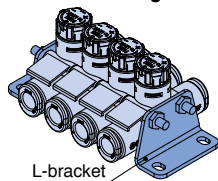
- Direct mounting



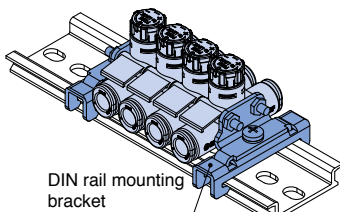
- Holder mounting [Page 10](#)



- L-bracket mounting [Page 4](#)



- DIN rail mounting [Page 4](#)



"Made to Order" section has been added! [Pages 3, 8](#)

- Lubricant: Vaseline -X12
- Grease-free + Restrictor -X21
- Restrictor -X214
- Clean Series 10-

AS Series

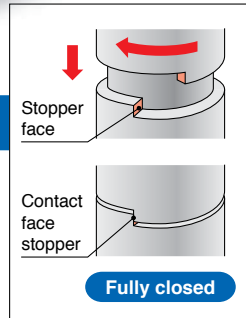
NC20-243B

Flow Rate Reproducibility



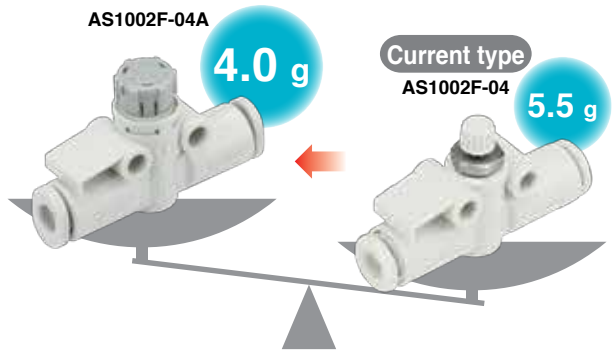
Improved reproducibility of flow rate

Stable knob position when fully closed (no flow rate) onto the contact face stopper (rotating stopper). Minimal flow rate variations between knob rotations

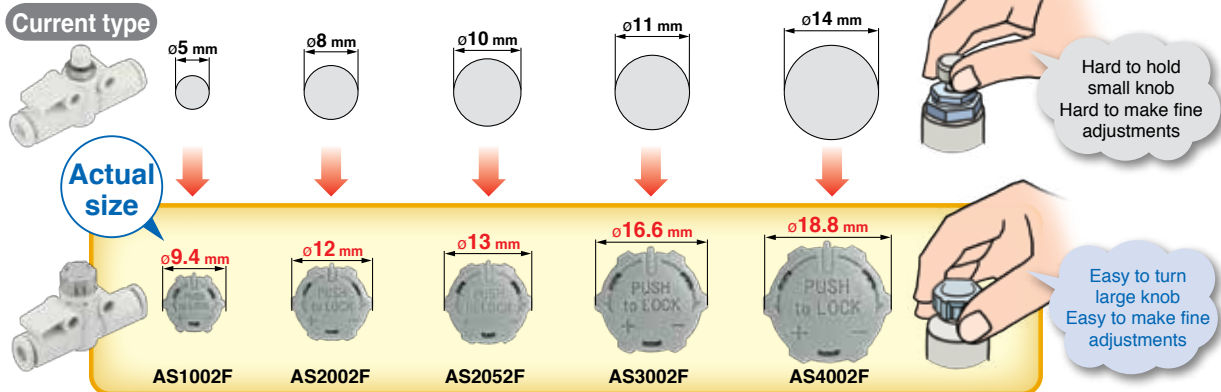


Lightweight

Weight: Approx. **27% lighter**



Larger Knob



Easy Identification of Product Type

By index plate

It is possible to identify the product when multiple controllers are mounted and identify the flow direction by attaching an identification label.




By color

| Model | Release button color | |
|--------|----------------------|--------|
| | Metric | Inch |
| AS□2F | Light gray | Orange |
| AS□2FG | White | White |

Series Variations

⊙ The electroless nickel plating type is standardized. ⊙ The stainless steel type is standardized.

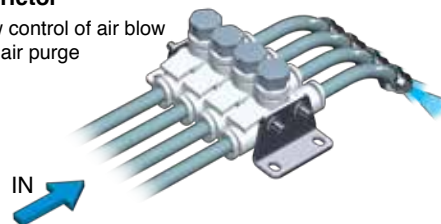
| | Model | Applicable tubing O.D. | | | | | | | | | | | Metal parts material | Applicable tubing material | |
|-----------------------------------------------------------------------------------|---------|------------------------|---|---|---|----|----|-----------|-------|------|-------|------|----------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Metric size | | | | | | Inch size | | | | | | | |
| | | 3.2 | 4 | 6 | 8 | 10 | 12 | 1/8" | 5/32" | 1/4" | 5/16" | 3/8" | | | 1/2" |
|  | AS1002F | ● | ● | ● | | | | ● | ● | ● | | | | · Brass · Stainless steel | Nylon (T, TIA series) Soft nylon (TS, TISA series) Polyurethane (T, TIUB series) Fluoropolymer (TLM, TILM series) (TH, TIH series) |
| | AS2002F | | ● | ● | | | | | ● | ● | | | | | |
| | AS2052F | | | ● | ● | | | | | ● | ● | | | | |
| | AS3002F | | | ● | ● | ● | ● | | | ● | ● | ● | | | |
| | AS4002F | | | | | ● | ● | | | | | ● | ● | | |



Made to Order (Pages 3, 8)

Restrictor

- Flow control of air blow and air purge



Grease-free (Seal: Fluorine-coated)
+ Restrictor (Without check valve)

-X21

Restrictor (Without check valve)

-X214

Push-Lock Series Variations

Speed Controller with One-touch Fitting AS Series

Push locking allows the needle to lock easily.

| Body size | Port size | Applicable tubing O.D. | |
|-----------|-----------|------------------------|----------------|
| | | Metric size | Inch size |
| 1 to 4 | M5 to 1/2 | ø2 to ø16 | ø1/8" to ø1/2" |

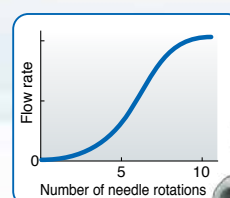


Refer to the **Web Catalog** for details.

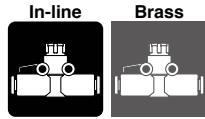
Speed Controller with Indicator AS-FS Series

The numerical indication of flow rate knob rotations reduces flow setting time and setting errors!

| Body size | Port size | Applicable tubing O.D. | |
|-----------|-----------|------------------------|----------------|
| | | Metric size | Inch size |
| 1 to 4 | M5 to 1/2 | ø2 to ø16 | ø1/8" to ø1/2" |



Refer to the **Web Catalog** for details.



Model

| Model | Applicable tubing O.D. | | | | | | | | | | | |
|---------|------------------------|---|---|---|----|----|-----------|-------|------|-------|------|------|
| | Metric size | | | | | | Inch size | | | | | |
| | 3.2 | 4 | 6 | 8 | 10 | 12 | 1/8" | 5/32" | 1/4" | 5/16" | 3/8" | 1/2" |
| AS1002F | ● | ● | ● | | | | ● | ● | ● | | | |
| AS2002F | | ● | ● | | | | ● | ● | | | | |
| AS2052F | | | ● | ● | | | | | ● | ● | | |
| AS3002F | | | ● | ● | ● | ● | | | ● | ● | ● | |
| AS4002F | | | | | ● | ● | | | | | ● | ● |

Specifications

| | |
|--------------------------------|---------------------------------------------|
| Fluid | Air |
| Proof pressure | 217.56 psi (1.5 MPa) |
| Max. operating pressure | 145.04 psi (1 MPa) |
| Min. operating pressure | 14.50 psi (0.1 MPa) |
| Ambient and fluid temperatures | 23 to 140°F (-5 to 60°C) No freezing |
| Applicable tubing material | Nylon, Soft nylon, Polyurethane*1, FEP, PFA |

*1 Use caution at the max. operating pressure when using soft nylon or polyurethane tubing. (Refer to the **Web Catalog** for details.)

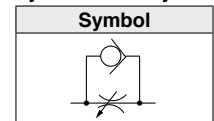
Flow Rate and Sonic Conductance

| Model | | AS1002F-□A | | | AS2002F-□A | | AS2052F-□A | | AS3002F-□A | | | | AS4002F-□A | |
|--------------------------------------------------|--------------------|------------|--------|-------|------------|-------|------------|--------|------------|--------|-------|-----|------------|-------|
| Tubing O.D. | Metric size | ø3.2 | ø4 | ø6 | ø4 | ø6 | ø6 | ø8 | ø6 | ø8 | ø10 | ø12 | ø10 | ø12 |
| | Inch size | ø1/8" | ø5/32" | ø1/4" | ø5/32" | ø1/4" | ø1/4" | ø5/16" | ø1/4" | ø5/16" | ø3/8" | — | ø3/8" | ø1/2" |
| C values: Sonic conductance dm³/(s·bar) | Free flow | 0.3 | 0.4 | 0.6 | 0.4 | 0.6 | 1.0 | 1.2 | 1.1 | 1.6 | 2.2 | 2.6 | 2.4 | 3.5 |
| | Controlled flow | 0.3 | | | 0.4 | 0.6 | 1.0 | 1.2 | 1.3 | 1.9 | 2.7 | 3.3 | 2.8 | 4.1 |
| b values: Critical pressure ratio | Free flow | 0.3 | 0.2 | | 0.3 | 0.1 | 0.2 | | 0.2 | | | | 0.3 | 0.2 |
| | Controlled flow | 0.2 | 0.3 | 0.4 | 0.2 | | 0.2 | 0.3 | 0.1 | | 0.2 | | 0.1 | 0.2 |

* C and b values are for controlled flow with the needle fully open and free flow with the needle fully closed.

* The same specifications also apply to the AS-FG series (stainless steel type).

Flow Direction
Symbol on Body



How to Order

AS 200 2 F - 06 A -

Body size

| | |
|-----|--------------|
| 100 | M5 standard |
| 200 | 1/8 standard |
| 205 | 1/4 standard |
| 300 | 3/8 standard |
| 400 | 1/2 standard |

Made to Order

Push-lock type

Applicable tubing O.D.*1

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

With One-touch fittings

*1 For selecting applicable tubing O.D., refer to the "Model" shown above.

*2 Use ø1/8" tubing.

Made to Order



Lubricant: Vaseline -X12

Example) AS2002F-04A-X12

Grease-free (Seal: Fluorine-coated) + Restrictor (Without check valve) -X21

Example) AS2002F-04A-X21

* Not particle-free

Restrictor (Without check valve) -X214

Example) AS2002F-04A-X214

Clean Series 10-

Example) 10-AS2002F-04A

*1 Fluorine grease is used.

*2 The cleanliness class (ISO class) is 5.

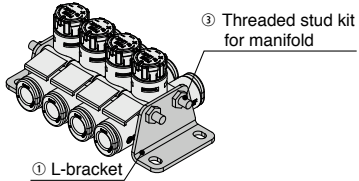
Caution

Be sure to read this before handling the products.
Refer to the back cover for safety instructions.
For flow control equipment precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website:
<http://www.smcworld.com>

Options

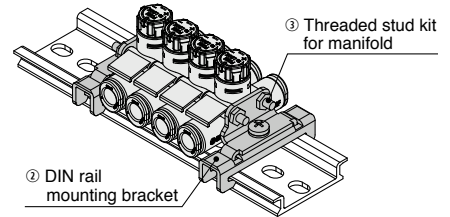
① L-Bracket

| Part no. | Applicable model |
|---------------|------------------|
| AS-10L | AS1002F□ |
| AS-20L | AS2002F□ |
| AS-25L | AS2052F□ |
| AS-30L | AS3002F□ |
| AS-40L | AS4002F□ |



② DIN Rail Mounting Bracket

| Part no. | Applicable model |
|---------------|------------------|
| AS-10D | AS1002F□ |
| AS-20D | AS2002F□ |
| AS-25D | AS2052F□ |
| AS-30D | AS3002F□ |
| AS-40D | AS4002F□ |



* Prepare DIN rail by user.

③ Threaded Stud Kit for Manifold: Metric Size

| Part number | | | | Applicable model |
|---------------|---------------|---------------|---------------|------------------|
| 4 stations | 6 stations | 8 stations | 10 stations | |
| AS-32B | AS-33B | AS-35B | AS-36B | AS1002F□-23A |
| | | | | AS1002F□-04A |
| | AS-34B | AS-36B | AS-37B | AS1002F□-06A |
| | | | AS-38B | — |
| AS-32B | AS-34B | AS-36B | AS-37B | AS2002F□-04A |
| | | | AS-38B | AS2002F□-06A |
| AS-41B | AS-42B | AS-44B | AS-45B | AS2052F□-06A |
| | | | | — |
| AS-42B | AS-44B | AS-45B | AS-47B | AS2052F□-08A |
| | | | | AS3002F□-06A |
| | | | | — |
| | | | | AS3002F□-08A |
| | | | | AS3002F□-10A |
| | | | | — |
| AS-43B | AS-45B | AS-47B | AS-48B | AS3002F□-12A |
| | | | | AS4002F□-10A |
| | | | | — |
| | | | | AS4002F□-12A |
| | | | | — |

③ Threaded Stud Kit for Manifold: Inch Size

| Part number | | | | Applicable model |
|---------------|---------------|---------------|---------------|------------------|
| 4 stations | 6 stations | 8 stations | 10 stations | |
| AS-32B | AS-33B | AS-35B | AS-36B | AS1002F□-01A |
| | | | | AS1002F□-03A |
| | AS-34B | AS-36B | AS-37B | — |
| | | | AS-38B | AS1002F□-07A |
| AS-32B | AS-34B | AS-36B | AS-37B | AS2002F□-03A |
| | | | AS-38B | — |
| AS-41B | AS-42B | AS-44B | AS-45B | AS2002F□-07A |
| | | | | AS2052F□-09A |
| AS-42B | AS-44B | AS-45B | AS-47B | — |
| | | | | AS3002F□-07A |
| | | | | AS3002F□-09A |
| | | | | — |
| | | | | AS3002F□-11A |
| | | | | — |
| AS-43B | AS-45B | AS-47B | AS-48B | AS4002F□-11A |
| | | | | — |
| | | | | AS4002F□-13A |

Details of Threaded Stud Kit for Manifold

| Threaded stud | | | Accessories | | | |
|---------------|--------|----------|-------------|----------|-------------|----------|
| Part no. | Length | Quantity | Hexagon nut | Quantity | Flat washer | Quantity |
| AS-32B | 62 | 2 | M3 | 4 | M3 | 4 |
| AS-33B | 72 | 2 | | | | |
| AS-34B | 90 | 2 | | | | |
| AS-35B | 104 | 2 | | | | |
| AS-36B | 114 | 2 | | | | |
| AS-37B | 135 | 2 | | | | |
| AS-38B | 140 | 2 | | | | |
| AS-41B | 78 | 2 | M4 | 4 | M4 | 4 |
| AS-42B | 111 | 2 | | | | |
| AS-43B | 119 | 2 | | | | |
| AS-44B | 147 | 2 | | | | |
| AS-45B | 179 | 2 | | | | |
| AS-46B | 191 | 2 | | | | |
| AS-47B | 236 | 2 | | | | |
| AS-48B | 277 | 2 | | | | |

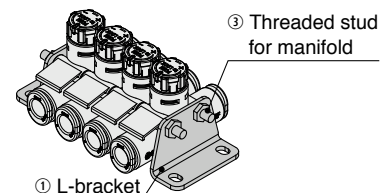
Ordering Example

Threaded studs for manifold are not included when L-bracket and DIN rail mounting bracket are ordered. Please order them according to the number of stations.

Ex.) AS2002F-04A

When connecting 4 pcs. and mounting L-brackets on both sides

- Speed controller
AS2002F-04A 4 pcs.
- L-bracket
AS-20L 2 pcs.
- Threaded stud kit for manifold
AS-32B 1 set

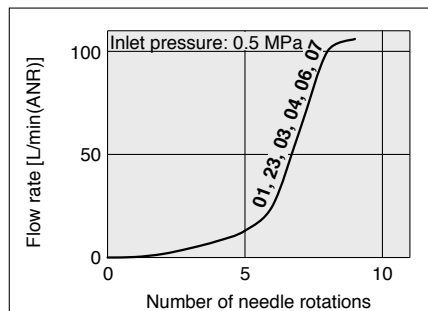


Needle Valve: Flow Rate Characteristics

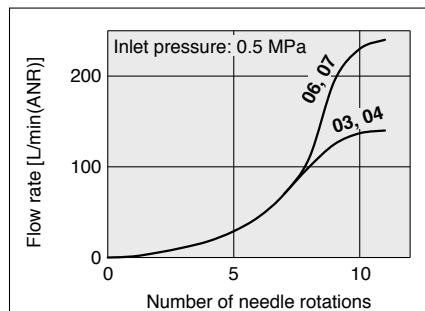
* The flow rate characteristics are representative values.

1 MPa = 145.038 psi

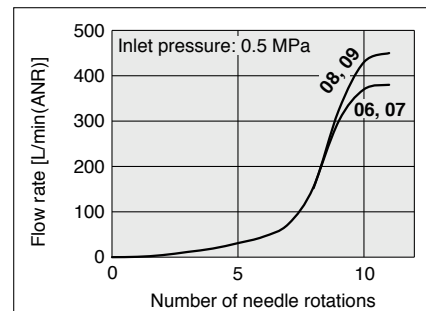
AS1002F-□A



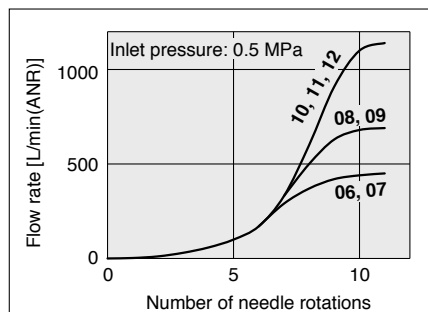
AS2002F-□A



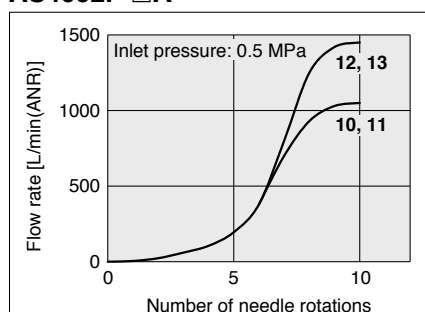
AS2052F-□A



AS3002F-□A

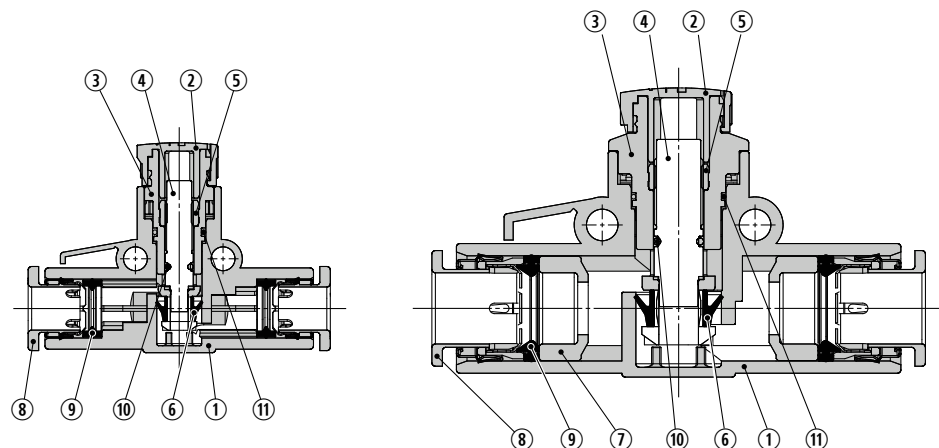


AS4002F-□A



* The numbers above the flow rate characteristic curves in the charts show the applicable tubing outside diameter as defined by the product number.

Construction

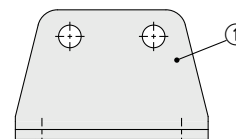


Component Parts

| No. | Description | Material | Note |
|-----|--------------|----------|----------------------------|
| 1 | Body A | PBT | |
| 2 | Knob | POM | |
| 3 | Body B | PBT | |
| 4 | Needle | PBT | |
| 5 | Needle guide | Brass | Electroless nickel plating |
| 6 | U-seal | HNBR | |
| 7 | Spacer | PBT*1 | |
| 8 | Cassette | — | |
| 9 | Seal | NBR | |
| 10 | O-ring | NBR | |
| 11 | O-ring | NBR | |

*1 The AS3002F-11A, AS4002F-11A, AS4002F-13A are made of electroless nickel plated brass.

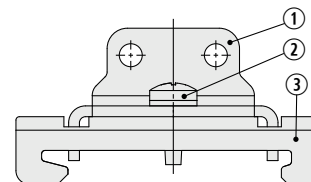
L-Bracket



Component Parts

| No. | Description | Material |
|-----|-------------|-------------|
| 1 | Bracket | Steel strip |

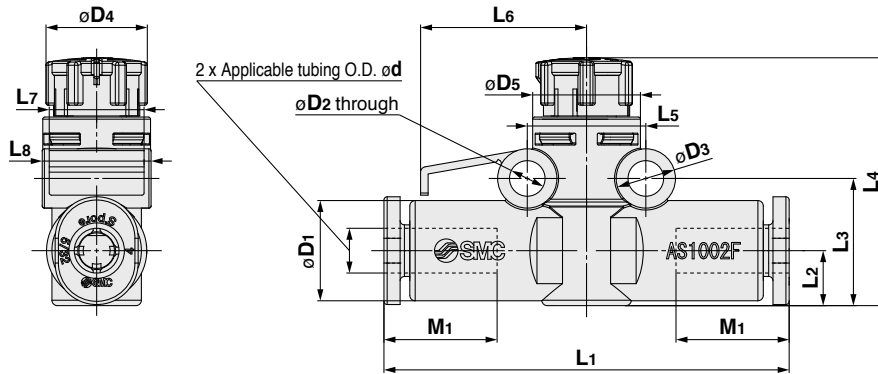
DIN Rail Mounting Bracket



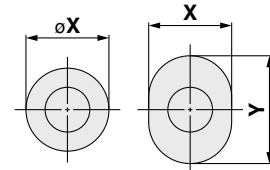
Component Parts

| No. | Description | Material |
|-----|---------------------------------|-------------|
| 1 | Bracket | Steel strip |
| 2 | Cross recessed round head screw | Steel wire |
| 3 | Clasp | Steel strip |

Dimensions



Release button dimensions



Applicable tubing
O.D.: $\phi 3.2$, $\phi 4$, $\phi 6$
 $\phi 1/8$ ", $\phi 5/32$ "

Metric Size

| Model | Applicable tubing O.D. ϕd | ϕD_1 | Release button | | ϕD_2 | ϕD_3 | ϕD_4 | ϕD_5 | L1 | L2 | L3 | L4*1 | | L5 | L6 | L7 | L8 | M1 | Weight [g] |
|--------------|------------------------------------|------------|----------------|-----|------------|------------|------------|------------|------|------|------|------|------|------|------|------|------|------|---------------|
| | | | $\phi X(X)$ | Y | | | | | | | | Max. | Min. | | | | | | |
| AS1002F□-23A | 3.2 | 8.4 | 6.7 | 9.5 | 3.3 | 5.5 | 9.4 | 10 | 36.6 | 5.1 | 11.8 | 24.1 | 23 | 11 | 15.4 | 8.8 | 10.1 | 13.5 | 3.7 |
| AS1002F□-04A | 4 | 9.3 | 7.7 | 10 | | | | | 37.6 | | | 25.1 | 24 | | | | 12.3 | | 4 |
| AS1002F□-06A | 6 | 11.6 | 9.7 | 12 | | | | | 40.1 | | | 25.1 | 24 | | | | 12.3 | | 5 |
| AS2002F□-04A | 4 | 9.3 | 7.7 | 10 | 3.3 | 5.5 | 12 | 12 | 41.3 | 6.3 | 13.4 | 31.4 | 30 | 12.6 | 17 | 10.5 | 12.3 | 13.5 | 6.1 |
| AS2002F□-06A | 6 | 11.6 | 9.7 | 12 | | | | | 43.1 | | | | | | | | | | 6.9 |
| AS2052F□-06A | 6 | 12.8 | 11.5 | — | 4.3 | 7.8 | 13 | 16 | 52 | 7.6 | 17.2 | 36.2 | 34.6 | 17 | 22.5 | 12 | 16.1 | 17 | 11.8 |
| AS2052F□-08A | 8 | 15.2 | 13.5 | — | | | | | 56 | | | | | | | | | 19 | 13.8 |
| AS3002F□-06A | 6 | 13.2 | 11.5 | — | 4.5 | 8 | 16.6 | 20 | 57.8 | 9.8 | 21.7 | 42.9 | 41.3 | 21.8 | 25 | 12 | 20.5 | 17 | 18.1 |
| AS3002F□-08A | 8 | 15.2 | 13.5 | — | | | | | 63.8 | | | | | | | | | 19 | 20 |
| AS3002F□-10A | 10 | 18.5 | 16.5 | — | | | | | 68.6 | | | | | | | | | 21 | 24.8 |
| AS3002F□-12A | 12 | 20.9 | 18.5 | — | | | | | 73.8 | | | | | | | | | 22 | 29.1 |
| AS4002F□-10A | 10 | 18.5 | 16.5 | — | 4.3 | 8 | 18.8 | 26 | 74.7 | 11.3 | 23.7 | 51.3 | 49.7 | 28 | 33 | 14 | 26.2 | 21 | 36.3 |
| AS4002F□-12A | 12 | 21.7 | 18.5 | — | | | | | 79.1 | | | | | | | | | 22 | 42 |

*1 Reference dimensions

Inch Size

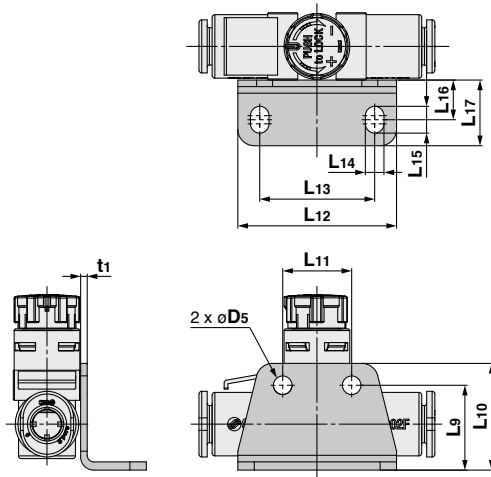
| Model | Applicable tubing O.D. ϕd | ϕD_1 | Release button | | ϕD_2 | ϕD_3 | ϕD_4 | ϕD_5 | L1 | L2 | L3 | L4*1 | | L5 | L6 | L7 | L8 | M1 | Weight [g] |
|--------------|------------------------------------|------------|----------------|-----|------------|------------|------------|------------|------|------|------|------|------|------|------|------|------|------|---------------|
| | | | $\phi X(X)$ | Y | | | | | | | | Max. | Min. | | | | | | |
| AS1002F□-01A | 1/8" | 8.4 | 6.7 | 9.5 | 3.3 | 5.5 | 9.4 | 10 | 36.6 | 5.1 | 11.8 | 24.1 | 23 | 11 | 15.4 | 8.8 | 10.1 | 13.5 | 3.7 |
| AS1002F□-03A | 5/32" | 9.3 | 7.7 | 10 | | | | | 37.6 | | | 25.2 | 24.1 | | | | 12.8 | | 4 |
| AS1002F□-07A | 1/4" | 12 | 10.9 | — | | | | | 40.1 | | | 25.2 | 24.1 | | | | 12.8 | | 5.2 |
| AS2002F□-03A | 5/32" | 9.3 | 7.7 | 10 | 3.3 | 5.5 | 12 | 12 | 41.3 | 6.3 | 13.4 | 31.4 | 30 | 12.6 | 17 | 10.5 | 12.3 | 13.5 | 6.1 |
| AS2002F□-07A | 1/4" | 12 | 10.9 | — | | | | | 43.2 | | | | | | | | 12.8 | | 7.1 |
| AS2052F□-07A | 1/4" | 13.2 | 12 | — | 4.3 | 7.8 | 13 | 16 | 52.2 | 7.6 | 17.2 | 36.2 | 34.6 | 17 | 22.5 | 12 | 16.1 | 17 | 12.1 |
| AS2052F□-09A | 5/16" | 15.2 | 13.5 | — | | | | | 56 | | | | | | | | | 19 | 13.8 |
| AS3002F□-07A | 1/4" | 13.2 | 12 | — | 4.5 | 8 | 16.6 | 20 | 57.8 | 9.8 | 21.7 | 42.9 | 41.3 | 21.8 | 25 | 12 | 20.5 | 17 | 17.9 |
| AS3002F□-09A | 5/16" | 15.2 | 13.5 | — | | | | | 63.8 | | | | | | | | | 19 | 20 |
| AS3002F□-11A | 3/8" | 18.5 | 16 | — | | | | | 67.6 | | | | | | | | | 21 | 25 |
| AS4002F□-11A | 3/8" | 18.5 | 16 | — | | | | | 74.7 | | | | | | | | | 21 | 36.7 |
| AS4002F□-13A | 1/2" | 21.7 | 20 | — | 4.3 | 8 | 18.8 | 26 | 79.1 | 11.3 | 23.7 | 51.3 | 49.7 | 28 | 33 | 14 | 26.2 | 22 | 40.4 |

*1 Reference dimensions

Dimensions

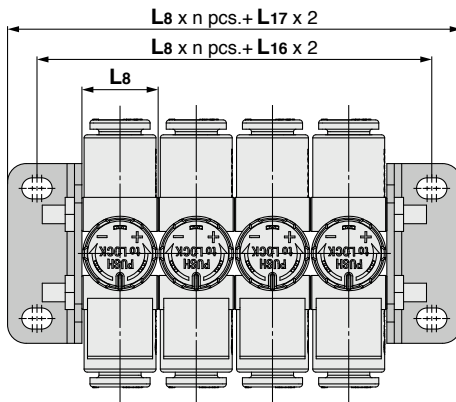
L-Bracket

Bracket on a single side



| Part no. | Applicable model | D5 | L9 | L10 | L11 | L12 | L13 | L14 | L15 | L16 | L17 | t1 |
|----------|------------------|-----|------|------|------|------|------|-----|-----|-----|------|-----|
| AS-10L | AS1002F□ | 3.4 | 14.8 | 18.3 | 11 | 27.5 | 19.5 | 3.4 | 4.9 | 7.3 | 12 | 1 |
| AS-20L | AS2002F□ | | 15.6 | 19.6 | 12.6 | 29 | 21 | | | | | 1.2 |
| AS-25L | AS2052F□ | | 19.6 | 24.6 | 17 | 38 | 28 | | | | | |
| AS-30L | AS3002F□ | 4.5 | 24.8 | 29.8 | 22 | 43 | 33 | 4.5 | 6.5 | 9.5 | 15.5 | 1.4 |
| AS-40L | AS4002F□ | | 25.7 | 30.7 | 28 | 49 | 39 | | | | | |

Brackets on both sides

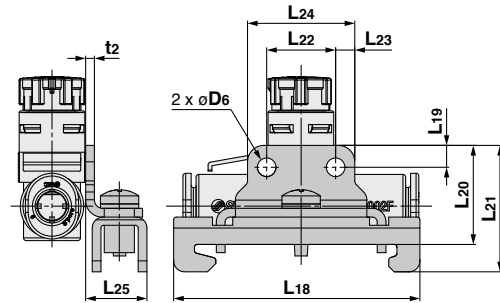
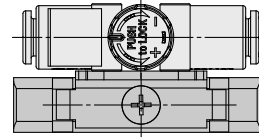


- * Refer to page 6 for L8.
- * The figure above shows the manifold with speed controllers connected using two L-brackets and a threaded stud kit for manifold. Refer to page 4 for threaded stud kits for manifold.

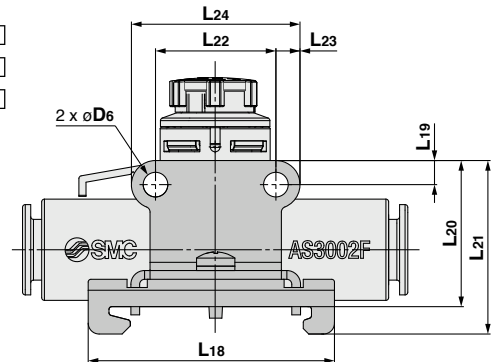
DIN Rail Mounting Bracket

Bracket on a single side

AS1002F□
AS2002F□

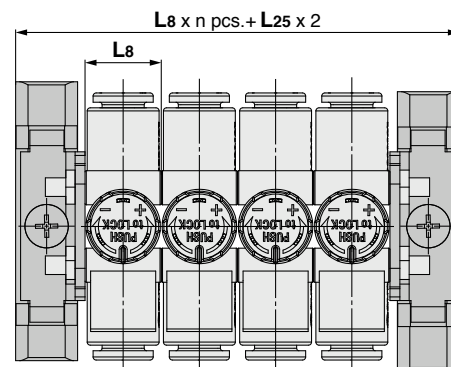


AS2052F□
AS3002F□
AS4002F□

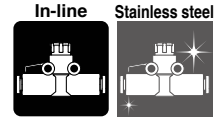


| Part no. | Applicable model | D6 | L18 | L19 | L20 | L21 | L22 | L23 | L24 | L25 | t2 |
|----------|------------------|-----|-----|-----|------|------|------|-----|------|------|-----|
| AS-10D | AS1002F□ | 3.4 | | 3.5 | 18.2 | 23.2 | 11 | | 18 | | |
| AS-20D | AS2002F□ | | | | 18.6 | 23.6 | 12.6 | 3.5 | 19.6 | | |
| AS-25D | AS2052F□ | | 45 | | 22 | 27 | 17 | | 25.8 | 11.3 | 1.6 |
| AS-30D | AS3002F□ | 4.5 | | 4.4 | 27.2 | 32.2 | 22 | 4.4 | 30.8 | | |
| AS-40D | AS4002F□ | | | | 28.1 | 33.1 | 28 | | 36.8 | | |

Brackets on both sides



- * Refer to page 6 for L8.
- * The figure above shows the manifold with speed controllers connected using two DIN rail mounting brackets and a threaded stud kit for manifold. Refer to page 4 for threaded stud kits for manifold.



Model

| Model | Applicable tubing O.D. | | | | | | | | | | | | | |
|----------|------------------------|---|---|---|----|----|------|-----------|------|-------|------|------|--|--|
| | Metric size | | | | | | | Inch size | | | | | | |
| | 3.2 | 4 | 6 | 8 | 10 | 12 | 1/8" | 5/32" | 1/4" | 5/16" | 3/8" | 1/2" | | |
| AS1002FG | ● | ● | ● | | | | ● | ● | ● | | | | | |
| AS2002FG | | ● | ● | | | | | ● | ● | | | | | |
| AS2052FG | | | ● | ● | | | | | ● | ● | | | | |
| AS3002FG | | | ● | ● | ● | ● | | | ● | ● | ● | | | |
| AS4002FG | | | | | ● | ● | | | | | ● | ● | | |

Specifications

| | |
|--------------------------------|---------------------------------------------|
| Fluid | Air |
| Proof pressure | 217.56 psi (1.5 MPa) |
| Max. operating pressure | 145.04 psi (1 MPa) |
| Min. operating pressure | 14.50 psi (0.1 MPa) |
| Ambient and fluid temperatures | 23 to 140°F (-5 to 60°C) No freezing |
| Applicable tubing material | Nylon, Soft nylon, Polyurethane*1, FEP, PFA |

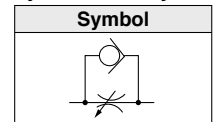
*1 Use caution at the max. operating pressure when using soft nylon or polyurethane tubing. (Refer to the **Web Catalog** for details.)

Flow Rate and Sonic Conductance

| Model | | AS1002FG-□A | | | AS2002FG-□A | | AS2052FG-□A | | AS3002FG-□A | | | | AS4002FG-□A | |
|--------------------------------------------------|--------------------|-------------|--------|-------|-------------|-------|-------------|--------|-------------|--------|-------|-----|-------------|-------|
| Tubing O.D. | Metric size | ø3.2 | ø4 | ø6 | ø4 | ø6 | ø6 | ø8 | ø6 | ø8 | ø10 | ø12 | ø10 | ø12 |
| | Inch size | ø1/8" | ø5/32" | ø1/4" | ø5/32" | ø1/4" | ø1/4" | ø5/16" | ø1/4" | ø5/16" | ø3/8" | — | ø3/8" | ø1/2" |
| C values: Sonic conductance dm³/(s·bar) | Free flow | 0.3 | 0.4 | 0.6 | 0.4 | 0.6 | 1.0 | 1.2 | 1.1 | 1.6 | 2.2 | 2.6 | 2.4 | 3.5 |
| | Controlled flow | 0.3 | | | 0.4 | 0.6 | 1.0 | 1.2 | 1.3 | 1.9 | 2.7 | 3.3 | 2.8 | 4.1 |
| b values: Critical pressure ratio | Free flow | 0.3 | 0.2 | | 0.3 | 0.1 | 0.2 | | 0.2 | | | | 0.3 | 0.2 |
| | Controlled flow | 0.2 | 0.3 | 0.4 | 0.2 | | 0.2 | 0.3 | 0.1 | | 0.2 | | 0.1 | 0.2 |

* C and b values are for controlled flow with the needle fully open and free flow with the needle fully closed.

Flow Direction
Symbol on Body



How to Order

AS 200 2 FG - 06 A -

Body size

| | |
|-----|--------------|
| 100 | M5 standard |
| 200 | 1/8 standard |
| 205 | 1/4 standard |
| 300 | 3/8 standard |
| 400 | 1/2 standard |

With One-touch fittings

Stainless steel type
(Stainless steel 303)

* The material can be visually identified by color of the release button.

Stainless steel type: White

* White is also used for inch size.

Push-lock type

Applicable tubing O.D.*1

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

*1 For selecting applicable tubing O.D., refer to the "Model" shown above.

*2 Use ø1/8" tubing.

Made to Order



Lubricant: Vaseline **-X12**

Example) AS2002FG-06A-X12

Grease-free (Seal: Fluorine-coated) + Restrictor (Without check valve) **-X21**

Example) AS2002FG-06A-X21

* Not particle-free

Restrictor (Without check valve) **-X214**

Example) AS2002FG-06A-X214

Clean Series **10-**

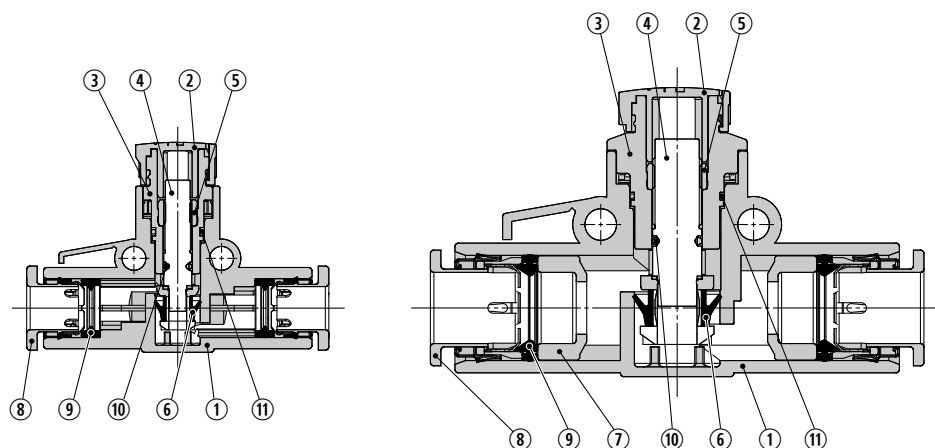
Example) 10-AS2002FG-06A

*1 Fluorine grease is used.

*2 The cleanliness class (ISO class) is 5.

Dimensions, flow rate characteristics and options are the same as standard product (brass needle guide).

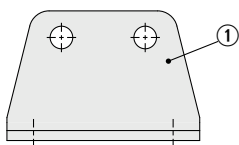
Construction



Component Parts

| No. | Description | Material | Note |
|-----|---------------------|---------------------|------|
| 1 | Body A | PBT | |
| 2 | Knob | POM | |
| 3 | Body B | PBT | |
| 4 | Needle | PBT | |
| 5 | Needle guide | Stainless steel 303 | |
| 6 | U-seal | HNBR | |
| 7 | Spacer | PBT | |
| 8 | Cassette | — | |
| 9 | Seal | NBR | |
| 10 | O-ring | NBR | |
| 11 | O-ring | NBR | |

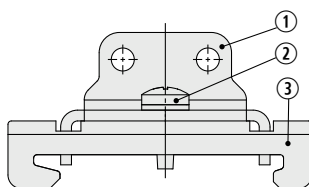
L-Bracket



Component Parts

| No. | Description | Material |
|-----|----------------|-------------|
| 1 | Bracket | Steel strip |

DIN Rail Mounting Bracket



Component Parts

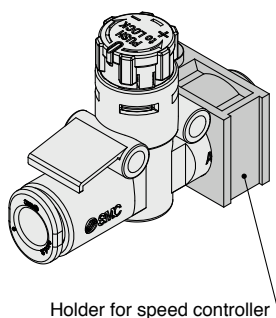
| No. | Description | Material |
|-----|----------------------------------------|-------------|
| 1 | Bracket | Steel strip |
| 2 | Cross recessed round head screw | Steel wire |
| 3 | Clasp | Steel strip |

A holder for securing a speed controller with One-touch fittings (In-line type)

Possible to hold a single controller



Holder mounting



Specifications

| | |
|---------------------|---------------------------|
| Ambient temperature | -4 to 140°F (-20 to 60°C) |
| Material | Polypropylene |
| Color | White |

Accessory: Cross Recessed Round Head Screw for Mounting (Zinc chromated)

| Part no. | | Size (Nominal x Length) | Quantity |
|-------------|-----------|----------------------------|----------|
| Metric size | Inch size | | |
| TMH-23J | TMH-01J | M3 x 15 | 1 |
| TMH-04J | TMH-03J | M3 x 20 | |
| TMH-06J | TMH-07J | M4 x 25 | |
| TMH-06 | TMH-07 | M4 x 25 | |
| TMH-08 | TMH-09 | M4 x 25 | |
| TMH-10 | — | M4 x 35 | |
| TMH-12 | TMH-13 | M4 x 35 | |

Series

Select the applicable holder/TMH for each speed controller from the table below.

Metric Size

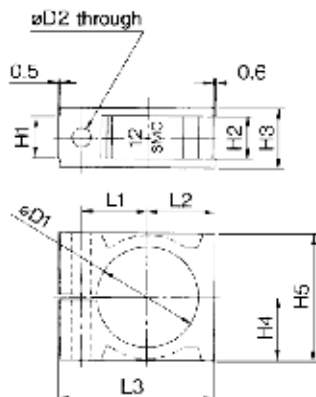
| Applicable model | Tubing size | | Applicable tubing | | | | | |
|------------------|-------------|----------|-------------------|----------|-----------|------------------|--|--|
| | 23 ø3.2 | 04 ø4 | 06 ø6 | 08 ø8 | 10 ø10 | 12 ø12 | | |
| AS1002F□ | TMH-23J | | TMH-04J | TMH-06J | | | | |
| AS2002F□ | | | | | | | | |
| AS2052F□ | | | TMH-06 | TMH-08 | | | | |
| AS3002F□ | | | TMH-07 | | | | | |
| AS4002F□ | | | | | TMH-10 | TMH-12 TMH-13 | | |

* The applicable TMH for the AS1002F□-02 is not available.

Inch Size

| Applicable model | Tubing size | | Applicable tubing | | | | | |
|------------------|-------------|--------------|-------------------|--------------|-------------|-------------|--|--|
| | 01 ø1/8" | 03 ø5/32" | 07 ø1/4" | 09 ø5/16" | 11 ø3/8" | 13 ø1/2" | | |
| AS1002F□ | TMH-01J | | TMH-03J | TMH-07J | | | | |
| AS2002F□ | | | | | | | | |
| AS2052F□ | | | | | | | | |
| AS3002F□ | | | TMH-07 | TMH-09 | | | | |
| AS4002F□ | | | | | TMH-10 | TMH-13 | | |

Dimensions



| Part no. | | øD1 | øD2 | H1 | H2 | H3 | H4 | H5 | L1 | L2 | L3 | Symbol |
|-------------|-----------|------|-----|-----|-----|------|-----|------|------|------|------|---------|
| Metric size | Inch size | | | | | | | | | | | |
| TMH-23J | TMH-01J | 8.5 | 3.3 | 4.5 | 4.6 | 7.5 | 6 | 12 | 7.2 | 6.6 | 18 | 1/8J |
| TMH-04J | TMH-03J | 9.4 | | | | | | | | | | 4 5/32J |
| TMH-06J | — | 11.7 | 3.3 | 6.3 | 6.4 | 9.3 | 7.7 | 15.4 | 8.5 | 8.3 | 21 | 6J |
| — | TMH-07J | 12.1 | | | | | | | | | | 1/4J |
| TMH-06 | — | 13.1 | | | | | | | | | | 6 |
| — | TMH-07 | 13.5 | 4.3 | 7.1 | 7.2 | 11.1 | 10 | 20 | 11 | 10.6 | 26.5 | 1/4 |
| TMH-08 | TMH-09 | 15.5 | | | | | | | | | | 8 5/16 |
| TMH-10 | — | 18.8 | | | | | | | | | | 10 |
| TMH-12 | — | 21.2 | 4.3 | 9.5 | 9.6 | 13.5 | 14 | 28 | 14.2 | 14.6 | 34 | 12 |
| — | TMH-13 | 22 | | | | | | | | | | 1/2 |



These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Cautions**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Danger: **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots – Safety.
etc.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.



Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.

XP-RRD-5M