

Speed Controller with One-touch Fittings

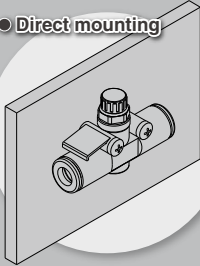
AS Series

In-line Type

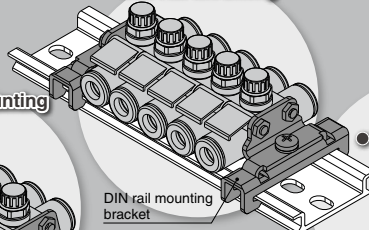
RoHS

4 types of mounting variations

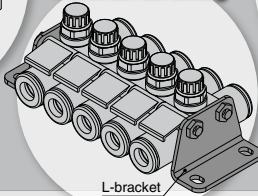
● Direct mounting



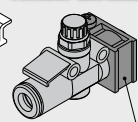
● DIN rail mounting



● L-bracket mounting

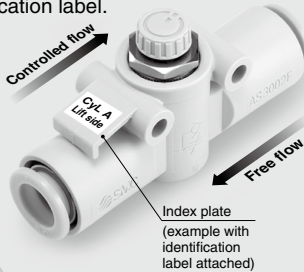


● Holder mounting



Index plate

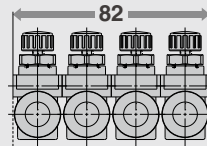
It is possible to identify the product when multiple controllers are mounted and identify the flow direction by attaching an identification label.



Compact

NEW

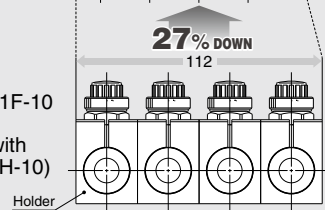
Four AS3002F-10 controllers connected



27% DOWN
112

Current

Four AS3001F-10 controllers connected with holders (TMH-10)



Lightweight

Reduced by **30%** compared with the current product (AS2002F-04)

Flow rate characteristics are equivalent to the current product.

AS Series

Series

| Series | Applicable tubing O.D. | | | | | | | | | | | | |
|---------|------------------------|-----|---|---|---|----|-----------|------|-------|------|-------|------|------|
| | Metric size | | | | | | Inch size | | | | | | |
| | 2 | 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 | 1.5 MPa (1.05 MPa ^{Note 1)}) |
| Max. operating pressure | 1 MPa (0.7 MPa ^{Note 1)}) |
| Min. operating pressure | 0.1 MPa |
| Ambient and fluid temperature | -5 to 60°C (No freezing) |
| Applicable tubing material ^{Note 2)} | Nylon, Soft nylon, Polyurethane |

Note 1) In case of AS1002F-02

Note 2) Use caution at the max. operating pressure when using soft nylon or polyurethane tubing. (Refer to pages 678 and 682 for details.)

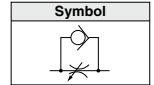
Note 3) Brass parts are all electroless nickel plated.

Flow Rate and Sonic conductance

| Series | | AS1002F | | AS2002F | | AS2052F | | AS3002F | | | AS4002F | |
|-------------------------|--|---------|------------------------|---------|-------|---------|-----------------|---------|--------|----------|---------|-------|
| Tube O.D. | Metric size | ø2 | 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" |
| Controlled flow | Flow rate (L/min (ANR)) | 20 | 100 | 130 | 230 | 290 | 460 | 390 | 660 | 920 | 920 | 1390 |
| | Sonic conductance (dm ³ /s.bar) | 0.06 | 0.28 | 0.36 | 0.64 | 0.81 | 1.3 | 1.1 | 1.8 | 2.6 | 2.6 | 3.9 |
| Critical pressure ratio | Controlled flow | 0.2 | | | | | | | | | | |
| | Free flow | 0.25 | | | | | | | | | | |

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

Flow Direction Symbol on Body



How to Order

RoHS

AS 400 2F - 12 - [] - []

Body size

| | |
|-----|-----------------|
| 100 | M3, M5 standard |
| 200 | 1/8 standard |
| 205 | 1/4 standard |
| 300 | 3/8 standard |
| 400 | 1/2 standard |

Made to Order

Applicable tubing O.D.

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

* Use ø1/8" tube.

Lock nut option

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

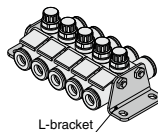


With One-touch fittings

Options

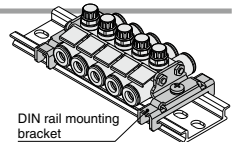
L-bracket

| Part no. | Applicable series |
|----------|-------------------|
| AS-12L | AS1002F-02 |
| AS-10L | AS1002F |
| AS-20L | AS2002F |
| AS-25L | AS2052F |
| AS-30L | AS3002F |
| AS-40L | AS4002F |



DIN rail mounting bracket

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



* Bracket for AS1002F-02 is not available.

* Prepare DIN rail by user.

Part no. list of threaded stud kit for manifold

| Model | | 4 stations | 6 stations | 8 stations | 10 stations |
|-------------|------------|------------|------------|------------|-------------|
| Metric size | Inch size | | | | |
| AS1002F-02 | — | AS-31B | AS-32B | AS-33B | AS-34B |
| AS1002F-23 | AS1002F-01 | AS-31B | AS-33B | AS-34B | AS-36B |
| AS1002F-04 | AS1002F-03 | AS-32B | AS-33B | AS-35B | AS-37B |
| AS1002F-06 | — | | AS-34B | AS-36B | AS-38B |
| — | AS1002F-07 | AS-32B | AS-32B | AS-35B | AS-37B |
| AS2002F-04 | AS2002F-03 | | AS-34B | AS-36B | AS-38B |
| AS2002F-06 | — | AS-32B | AS-34B | AS-36B | AS-38B |
| — | AS2002F-07 | | AS-36B | AS-38B | AS-40B |
| AS2052F-06 | — | AS-41B | AS-42B | AS-44B | AS-45B |
| — | AS2052F-07 | | AS-44B | AS-46B | AS-47B |
| AS2052F-08 | AS2052F-09 | AS-41B | AS-42B | AS-44B | AS-45B |
| AS3002F-06 | — | | AS-44B | AS-46B | AS-47B |
| — | AS3002F-07 | AS-42B | AS-44B | AS-45B | AS-47B |
| AS3002F-08 | AS3002F-09 | | AS-46B | AS-48B | AS-49B |
| AS3002F-10 | — | AS-42B | AS-44B | AS-45B | AS-47B |
| — | AS3002F-11 | | AS-46B | AS-48B | AS-49B |
| AS3002F-12 | — | AS-43B | AS-45B | AS-47B | AS-48B |
| AS4002F-10 | — | | AS-45B | AS-47B | AS-48B |
| — | AS4002F-11 | AS-43B | AS-45B | AS-47B | AS-48B |
| AS4002F-12 | — | | AS-45B | AS-47B | AS-48B |
| — | AS4002F-13 | AS-45B | AS-47B | AS-48B | AS-49B |

Details of threaded stud kit for manifold

| Part no. | Threaded stud | | Accessories | | | | | | | |
|----------|---------------|------|-------------|------|-------------|------|----|---|----|---|
| | Length | pcs. | Hexagon nut | pcs. | Flat washer | pcs. | | | | |
| AS-31B | 38 | 2 | M3 | 4 | M3 | 4 | | | | |
| AS-32B | 62 | 2 | | | | | | | | |
| 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 | | | | | | | | |

* Precautions when options are ordered

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.

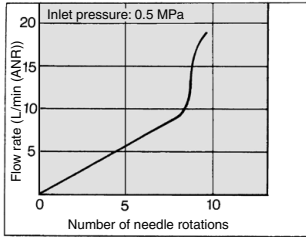
Ex.) AS2002F-04 When connecting 4 pcs. and mounting L-brackets on both sides

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

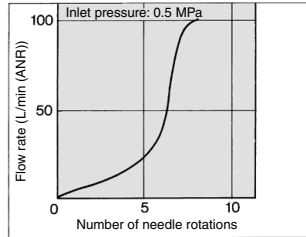
Needle Valve/Flow Rate Characteristics

Note) The flow rate characteristics are representative values.

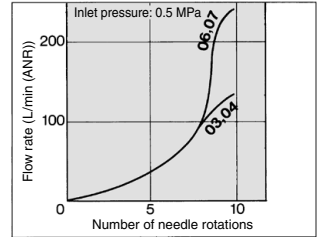
AS1002F-02



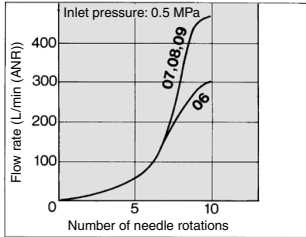
AS1002F



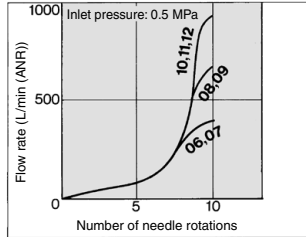
AS2002F



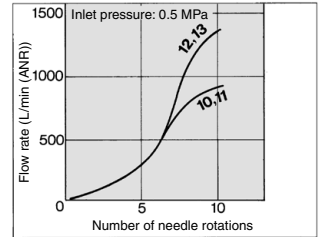
AS2052F



AS3002F

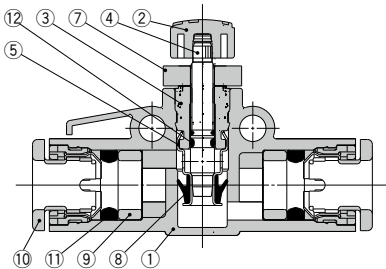


AS4002F



Construction

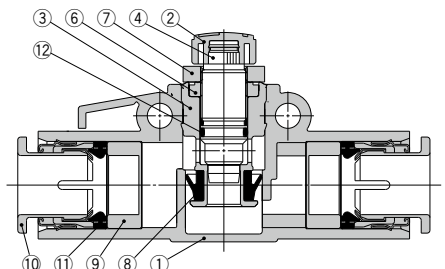
AS1002F, AS2002F, AS2052F



Component Parts

| No. | Description | Material | Note |
|-----|--------------|----------|---------------------------|
| 1 | Body A | PBT | |
| 2 | Handle | PBT | |
| 3 | Body B | Brass | Electroless nickel plated |
| 4 | Needle | Brass | Electroless nickel plated |
| 5 | Seat ring | Brass | Electroless nickel plated |
| 6 | Needle guide | Brass | Electroless nickel plated |

AS1002F-02, AS3002F, AS4002F

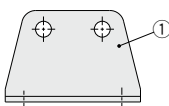


| No. | Description | Material | Note |
|-----|-------------|-------------------------------|-----------------------------------|
| 7 | Lock nut | Steel wire ^{Note 2)} | Zinc chromated ^{Note 2)} |
| 8 | U-seal | HNBR | |
| 9 | Spacer | POM ^{Note 1)} | |
| 10 | Cassette | — | |
| 11 | Seal | NBR | |
| 12 | O-ring | NBR | |

Note 1) AS2052F, AS3002F, AS4002F are made of PBT. AS3002F-11, AS4002F-11, AS4002F-13 are made of electroless nickel plated brass.

Note 2) For the material and surface treatment of the lock nut option-J (round type), only the AS1002F-02, AS3002F, and AS4002F types use brass and electroless nickel plated.

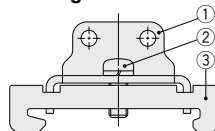
L-bracket



Component Part

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

DIN rail mounting bracket



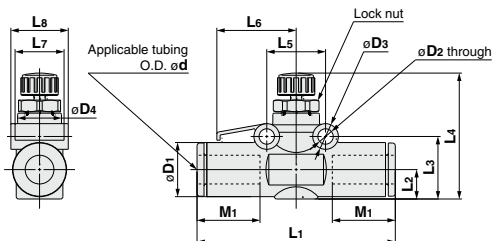
Component Parts

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

⚠ Caution

Be sure to read this before handling the products.
Refer to page 11 for safety instructions and pages 19 to 22 for flow control equipment precautions.

Dimensions



Metric Size

| Model | Applicable tubing O.D. ød | D1 | D2 | D3 | D4 | L1 | L2 | L3 | L4 (Note) | | L5 | L6 | L7 | L8 | M1 | Weight (g) |
|------------|---------------------------|------|-----|-----|------|------|------|------|-----------|------|------|------|------|------|------|------------|
| | | | | | | | | | MAX. | MIN. | | | | | | |
| AS1002F-02 | 2 | 6 | 3.2 | 5 | 6 | 25.4 | 3.4 | 7.9 | 20.9 | 18.4 | 11 | 9.8 | 5 | 6.7 | 8.8 | 3 |
| AS1002F-23 | 3.2 | 8.4 | | | | 36 | 4.4 | 11.1 | 23.8 | 21 | | | | 9.8 | 12.7 | 5 |
| AS1002F-04 | 4 | 9.3 | 3.3 | 5.5 | 9.1 | 37 | 5.1 | 11.8 | 24.5 | 21.7 | 11 | 15.4 | 8.8 | 10.1 | | 5.5 |
| AS1002F-06 | 6 | 11.6 | | | | 39.5 | 6.1 | 12.8 | 25.5 | 22.7 | | | | 12.3 | 13.5 | 6.5 |
| AS2002F-04 | 4 | 9.3 | | | | 40.7 | 5.2 | 12.3 | 28.9 | 25.4 | | | | 11.5 | 12.7 | 8.5 |
| AS2002F-06 | 6 | 11.6 | 3.3 | 5.5 | 10 | 42.5 | 6.3 | 13.4 | 30 | 26.5 | 12.6 | 17 | 10.5 | 12.3 | 13.5 | 9.5 |
| AS2052F-06 | 6 | 12.8 | | | | 53.2 | 6.7 | 16.3 | 34.5 | 29.5 | | | | 15.7 | 17 | 19 |
| AS2052F-08 | 8 | 15.2 | 4.3 | 7.8 | 14 | 57.2 | 8 | 17.6 | 35.8 | 30.8 | 17 | 22.8 | 12 | 16.1 | 18 | 22 |
| AS3002F-06 | 6 | 13.2 | | | | 59 | 7.4 | 19.3 | 38.6 | 33.6 | | | | 17 | 36 | |
| AS3002F-08 | 8 | 15.2 | | | | 65 | 8.2 | 20.1 | 39.4 | 34.4 | | | | 20.5 | 18 | 38 |
| AS3002F-10 | 10 | 18.5 | 4.3 | 8 | 19.3 | 70.8 | 9.8 | 21.7 | 41 | 36 | 22 | 25 | 12 | 21 | 42 | |
| AS3002F-12 | 12 | 20.9 | | | | 76 | 10.9 | 22.8 | 42.1 | 37.1 | | | | 22.1 | 22 | 44 |
| AS4002F-10 | 10 | 18.5 | | | | 76.9 | 10.3 | 22.7 | 51.6 | 44.1 | | | | 21 | 76 | |
| AS4002F-12 | 12 | 21.7 | 4.3 | 8 | 25 | 81.3 | 11.3 | 23.7 | 52.6 | 45.1 | 28 | 33 | 14 | 26.2 | 22 | 82 |

(Note) Reference dimensions

Inch Size

| Model | Applicable tubing O.D. ød | D1 | D2 | D3 | D4 | L1 | L2 | L3 | L4 (Note) | | L5 | L6 | L7 | L8 | M1 | Weight (g) |
|------------|---------------------------|------|-----|-----|------|------|------|------|-----------|------|------|------|------|------|------|------------|
| | | | | | | | | | MAX. | MIN. | | | | | | |
| AS1002F-01 | 1/8" | 8.4 | | | | 36 | 4.5 | 11.2 | 23.8 | 21 | | | | 9.8 | | 5 |
| AS1002F-03 | 5/32" | 9.3 | 3.3 | 5.5 | 9.1 | 37 | 5.2 | 11.9 | 24.5 | 21.7 | 11 | 15.4 | 8.8 | 10.1 | 12.7 | 5.5 |
| AS1002F-07 | 1/4" | 12 | | | | 39.5 | 6.1 | 12.8 | 25.5 | 22.7 | | | | 12.3 | 13.7 | 6.5 |
| AS2002F-03 | 5/32" | 9.3 | | | | 40.7 | 5.2 | 12.3 | 28.9 | 25.4 | | | | 11.5 | 12.7 | 8.5 |
| AS2002F-07 | 1/4" | 12 | 3.3 | 5.5 | 10 | 42.5 | 6.5 | 13.6 | 30.2 | 26.7 | 12.6 | 17 | 10.5 | 12.8 | 13.7 | 9.5 |
| AS2052F-07 | 1/4" | 13.2 | | | | 53.4 | 6.9 | 16.5 | 34.7 | 29.7 | | | | 15.7 | 17 | 19 |
| AS2052F-09 | 5/16" | 15.2 | 4.3 | 7.8 | 14 | 57.2 | 8 | 17.6 | 35.8 | 30.8 | 17 | 22.8 | 12 | 16.1 | 18 | 22 |
| AS3002F-07 | 1/4" | 13.2 | | | | 59 | 7.4 | 19.3 | 38.6 | 33.6 | | | | 17 | 35 | |
| AS3002F-09 | 5/16" | 15.2 | | | | 65 | 8.2 | 20.1 | 39.4 | 34.4 | | | | 20.5 | 18 | 38 |
| AS3002F-11 | 3/8" | 18.5 | 4.3 | 8 | 19.3 | 69.8 | 9.8 | 21.7 | 41 | 36 | 22 | 25 | 12 | 21 | 52 | |
| AS4002F-11 | 3/8" | 18.5 | | | | 76.9 | 10.3 | 22.7 | 51.6 | 44.1 | | | | 21 | 86 | |
| AS4002F-13 | 1/2" | 21.7 | 4.3 | 8 | 25 | 81.3 | 11.3 | 23.7 | 52.6 | 45.1 | 28 | 33 | 14 | 26.2 | 22 | 95 |

(Note) Reference dimensions

The hexagon lock nut can be fastened by hand. When stronger tightening is required, please retighten using a tool. The proper tightening torques for tools are shown in the table below. For standard installation, turn 15 to 30° using tool, after fastening by hand.

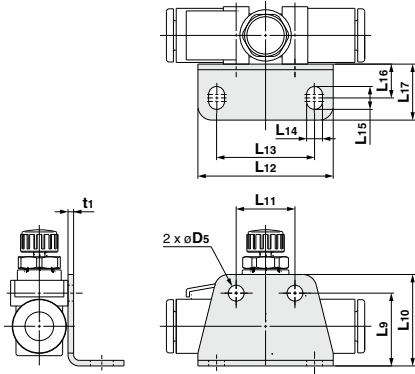
Pay attention not to over torque the product.

| Series | Proper tightening torque (N·m) |
|------------|--------------------------------|
| AS1002F-02 | 0.07 |
| AS1002F | 0.2 |
| AS2002F | 0.3 |
| AS2052F | 1 |
| AS3002F | 2 |
| AS4002F | 4 |

Dimensions

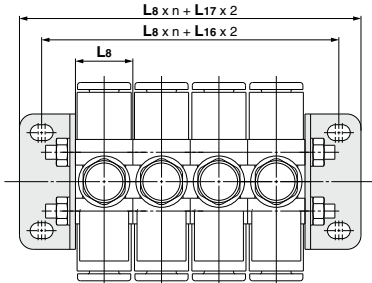
L-bracket

Bracket on a single side



| Part no. | Applicable series | D5 | L9 | L10 | L11 | L12 | L13 | L14 | L15 | L16 | L17 | t1 |
|----------|-------------------|-----|------|------|------|------|------|-----|-----|-----|------|-----|
| AS-12L | AS1002F-02 | | 9.9 | 13.4 | 11 | 27.5 | 19.5 | | | | | 1 |
| AS-10L | AS1002F | 3.4 | 14.8 | 18.3 | | | | 3.4 | 4.9 | 7.3 | 12 | 1.2 |
| AS-20L | AS2002F | | 15.6 | 19.6 | 12.6 | 29 | 21 | | | | | 1.4 |
| AS-25L | AS2052F | | 19.6 | 24.6 | 17 | 38 | 28 | | | | | 1.4 |
| 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 | | | | | 1.4 |

Brackets on both sides

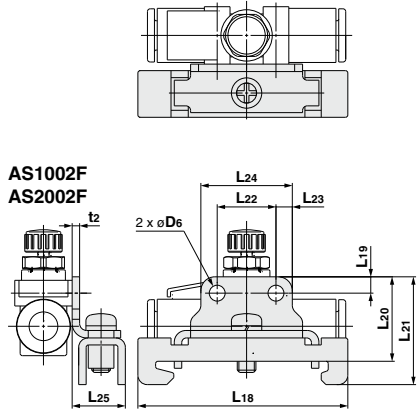


*1 Refer to page 864 for L8.

*2 The above figure shows the manifold with controllers connected using two L-brackets and a threaded stud kit for manifold.
Refer to page 862 for threaded stud kits for manifold.

DIN rail mounting bracket

Bracket on a single side

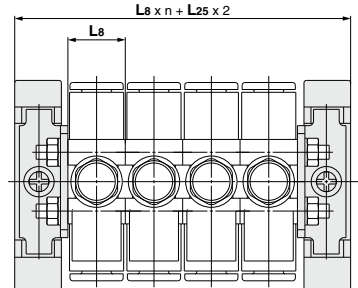


AS1002F
AS2002F

AS2052F
AS3002F
AS4002F

| Part no. | Applicable series | D6 | L18 | L19 | L20 | L21 | L22 | L23 | L24 | L25 | t2 |
|----------|-------------------|-----|-----|-----|------|------|------|-----|-----|------|------|
| AS-10D | AS1002F | 3.4 | | 3.5 | 18.2 | 23.2 | 11 | | 3.5 | 18 | |
| AS-20D | AS2002F | | | 45 | 18.6 | 23.6 | 12.6 | | | 19.6 | |
| AS-25D | AS2052F | | | | 22 | 27 | 17 | | | 25.8 | 11.2 |
| 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



*1 Refer to page 864 for L8.

*2 The above figure shows the manifold with controllers connected using two DIN rail mounting brackets and a threaded stud kit for manifold.
Refer to page 862 for threaded stud kits for manifold.

Related Equipment

Holder for Speed Controller

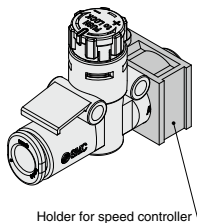
TMH Series

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 | -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 | | |
| TMH-06J | TMH-07J | M3 x 20 | |
| TMH-06 | TMH-07 | M4 x 25 | |
| TMH-08 | TMH-09 | | |
| TMH-10 | — | M4 x 35 | |
| TMH-12 | TMH-13 | | |

Series

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

Metric Size

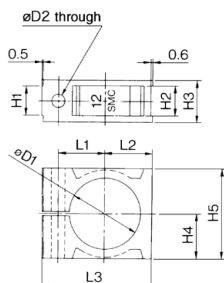
| Tubing size | Applicable tubing | | | | | |
|-------------|-------------------|---------|---------|--------|--------|--------|
| | 23 | 04 | 06 | 08 | 10 | 12 |
| AS1002F□ | ø3.2 | ø4 | ø6 | ø8 | ø10 | ø12 |
| AS2002F□ | TMH-23J | TMH-04J | TMH-06J | | | |
| AS2052F□ | | | TMH-06 | TMH-08 | | |
| AS3002F□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

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

Inch Size

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

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 | 4.3 | 7.1 | 7.2 | 11.1 | 10 | 20 | 11 | 10.6 | 26.5 | 6 |
| — | TMH-07 | 13.5 | | | | | | | | | | 1/4 |
| TMH-08 | TMH-09 | 15.5 | 4.3 | 9.5 | 9.6 | 13.5 | 14 | 28 | 14.2 | 14.6 | 34 | 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 |