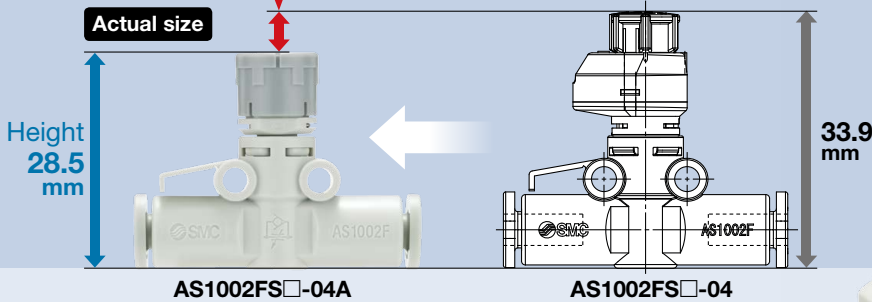
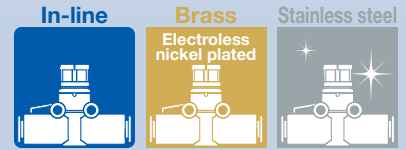


# Speed Controller with Compact Indicator

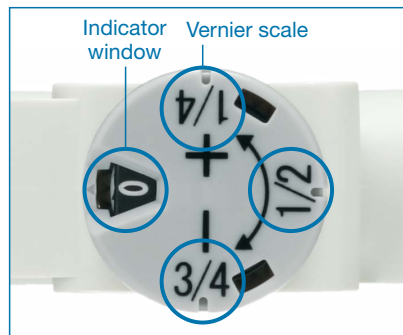


Height  
Max. **5.4 mm** shorter



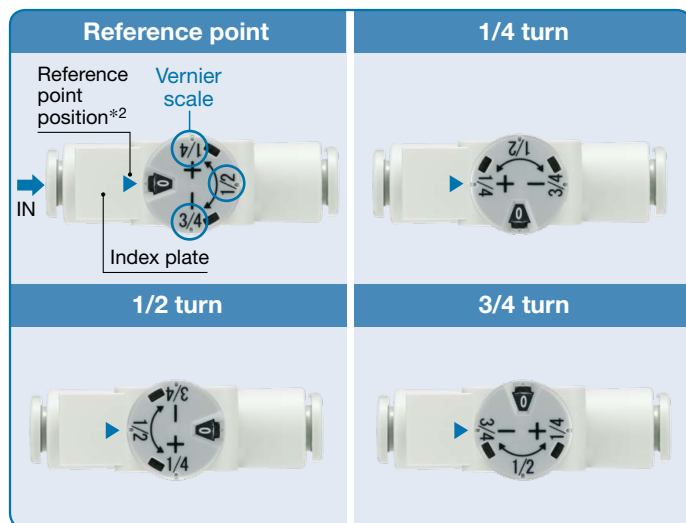
Flow rate can be controlled numerically with the indicator window.

- Due to the vernier indication, it is possible to configure fine settings in 1/4 increments.
  - 32 divisions (body size 100)
  - 40 divisions (body size 200)
- Reduces work-hours and setting mistakes



Indicator window	Vernier scale
0	1/4
	1/2
	3/4
⋮	⋮
10*1	1/4
	1/2
	3/4

\*1 Body size 100 makes 8 rotations.

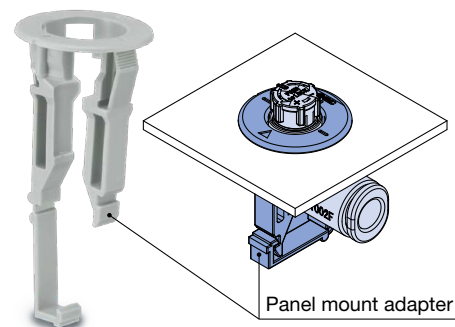


\*2 For AS2002FS size (The number of reference points differs depending on the size. For details, refer to the operation manual.)



**New A type with a panel mount adapter has been added.** [p. 4](#)

No tools required, Reduced installation work



CAT.ES20-281B

**AS-FSA Series**

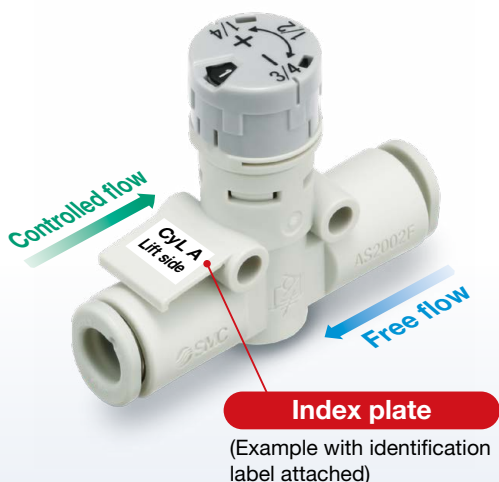
## Series Variations

	Model	Applicable tubing O.D.											Max. number of rotations	
		Metric size						Inch size						
		3.2	4	6	8	10	12	1/8"	5/32"	1/4"	5/16"	3/8"		1/2"
	AS1002FS□A	●	●	●				●	●	●				8
	AS2002FS□A		●	●					●	●				
	AS2052FS□A			●	●					●	●			
	AS3002FS□A			●	●	●	●			●	●	●		
	AS4002FS□A					●	●					●	●	
														10

## 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.



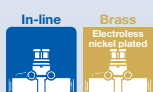
### By color

Model	Release button color	
	Metric	Inch
<b>p. 2</b>  AS-FSA Series	Light gray	Orange
<b>p. 8</b>  AS-FSGA Series	White	White



## CONTENTS

Speed Controller with Compact Indicator  
In-line Type  
AS-FSA Series



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Dimensions ..... p. 5

Speed Controller with Compact Indicator  
Stainless Steel Series In-line Type  
AS-FSGA Series



Model, Specifications, Flow Rate and Sonic Conductance, How to Order, Made to Order ..... p. 8

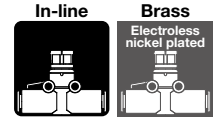
Options ..... p. 9

Needle Valve: Flow Rate Characteristics ..... p. 10

Dimensions ..... p. 11

Holder for Speed Controller TMH Series ..... p. 13

# Speed Controller with Compact Indicator In-line Type AS-FSA Series



## 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"	
AS1002FS-□A	●	●	●				●	●	●				
AS2002FS-□A		●	●					●	●				
AS2052FS-□A			●	●					●	●			
AS3002FS-□A			●	●	●	●			●	●	●		
AS4002FS-□A					●	●					●	●	

## Specifications

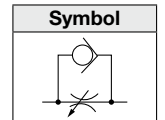
Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Applicable tubing material	Nylon, Soft nylon, Polyurethane*1, FEP, PFA

\*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	AS1002FS-□A AS2002FS-□A AS2052FS-□A AS3002FS-□A AS4002FS-□A													
	Metric size	ø3.2	ø4	ø6	ø4	ø6	ø6	ø8	ø6	ø8	ø10	ø12	ø10	ø12
Tubing O.D.	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 dm <sup>3</sup> /(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

Flow Direction Symbol on Body



\* 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-FSG series (stainless steel type).

## How to Order

AS **200** **2** FS - **06** A - **□** - **□**

- AS: Body size
- 200: Body size
- 2: With One-touch fittings
- FS: With indicator
- 06: Panel mount adapter
- A: With compact indicator
- : Made to Order
- : Made to Order

Panel mount adapter	
Nil	None
3	With panel mount adapter

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"

Body size	Thread	Index plate	Reference point position
100	M5 standard		
200	1/8 standard		
205	1/4 standard		
300	3/8 standard		
400	1/2 standard		

\*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) AS2002FS-04A-X12

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

Example) AS2002FS-04A-X21

\* Not particle-free

\* The parts in contact with fluid are grease-free.

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

Example) AS2002FS-04A-X214

Clean Series **10-**

Example) 10-AS2002FS-04A

\* Fluorine grease is used.

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

\* The panel mount adapter is packaged in a general environment.

## ⚠ 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.

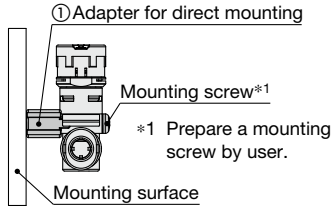
# AS-FSA Series

## Options

### ① Adapter for Direct Mounting

\* For use when the mounting surface interferes with the bonnet.

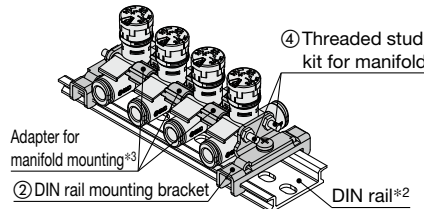
Part no.	Applicable model
<b>AS-10A1</b>	AS1002FS-□A
<b>AS-20A1</b>	AS2002FS-□A



\* The AS2052FS-□A, AS3002FS-□A, and AS4002FS-□A can be mounted without an adapter.

### ② DIN Rail Mounting Bracket

Part no.	Applicable model
<b>AS-10D</b>	AS1002FS-□A
<b>AS-20D</b>	AS2002FS-□A
<b>AS-25D</b>	AS2052FS-□A
<b>AS-30D</b>	AS3002FS-□A
<b>AS-40D</b>	AS4002FS-□A

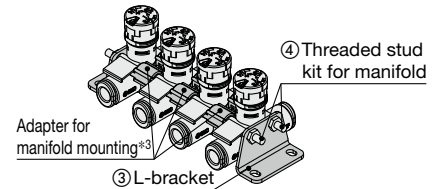


\*2 Prepare DIN rail by user.

\*3 It is included in the threaded stud kit for manifold. Refer to the following details of the kit.

### ③ L-Bracket

Part no.	Applicable model
<b>AS-10L</b>	AS1002FS-□A
<b>AS-20L</b>	AS2002FS-□A
<b>AS-25L</b>	AS2052FS-□A
<b>AS-30L</b>	AS3002FS-□A
<b>AS-40L</b>	AS4002FS-□A



### ④ Threaded Stud Kit for Manifold

Part number				Applicable model	
4 stations	6 stations	8 stations	10 stations	Metric size	Inch size
<b>AS-1AB</b>	<b>AS-3AB</b>	<b>AS-5AB</b>	<b>AS-7AB</b>	AS1002FS-23A	AS1002FS-01A
				AS1002FS-04A	AS1002FS-03A
<b>AS-2AB</b>	<b>AS-4AB</b>	<b>AS-6AB</b>	<b>AS-8AB</b> <b>AS-23AB</b>	AS1002FS-06A	—
				—	AS1002FS-07A
<b>AS-9AB</b>	<b>AS-10AB</b>	<b>AS-11AB</b>	<b>AS-12AB</b>	AS2002FS-04A	AS2002FS-03A
				AS2002FS-06A	—
<b>AS-41B</b>	<b>AS-42B</b>	<b>AS-44B</b>	<b>AS-45B</b>	—	AS2002FS-07A
				AS2052FS-06A	—
<b>AS-41B</b>	<b>AS-42B</b>	<b>AS-44B</b>	<b>AS-45B</b>	—	AS2052FS-07A
				AS2052FS-08A	AS2052FS-09A
<b>AS-42B</b>	<b>AS-44B</b>	<b>AS-45B</b>	<b>AS-47B</b>	AS3002FS-06A	—
				—	AS3002FS-07A
				AS3002FS-08A	AS3002FS-09A
				AS3002FS-10A	—
<b>AS-43B</b>	<b>AS-45B</b>	<b>AS-47B</b>	<b>AS-48B</b>	—	AS3002FS-11A
				AS3002FS-12A	—
				AS4002FS-10A	—
				—	AS4002FS-11A
<b>AS-43B</b>	<b>AS-45B</b>	<b>AS-47B</b>	<b>AS-48B</b>	AS4002FS-12A	—
				—	AS4002FS-13A

\* AS2052FS□A to AS4002FS□A sizes can be mounted with the threaded stud kit only.

### Details of Threaded Stud Kit for Manifold

Part no.	Adapter for manifold mounting		Threaded stud		Accessories			
	Part no.	Quantity	Length	Quantity	Hexagon nut	Quantity	Flat washer	Quantity
<b>AS-1AB</b>	AS-10A	3	72	2	M3	4	M3	4
<b>AS-2AB</b>			90	2				
<b>AS-3AB</b>			104	2				
<b>AS-4AB</b>		5	114	2				
<b>AS-5AB</b>			135	2				
<b>AS-6AB</b>			143	2				
<b>AS-7AB</b>			167	2				
<b>AS-8AB</b>		170	2					
<b>AS-23AB</b>		180	2					
<b>AS-9AB</b>		AS-20A	3	90				
<b>AS-10AB</b>	5			135	2			
<b>AS-11AB</b>	7		180	2				
<b>AS-12AB</b>	9		220	2				
<b>AS-41B</b>	—	—	78	2	M4	4	M4	4
<b>AS-42B</b>			111	2				
<b>AS-43B</b>			119	2				
<b>AS-44B</b>			147	2				
<b>AS-45B</b>			179	2				
<b>AS-46B</b>			191	2				
<b>AS-47B</b>			236	2				
<b>AS-48B</b>			277	2				

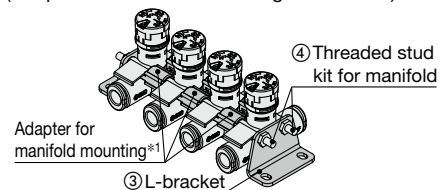
### Ordering Example

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.) AS2002FS-06A

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

- Speed controller **AS2002FS-06A** 4 pcs.
- L-bracket **AS-20L** ..... 2 pcs.
- Threaded stud kit for manifold **AS-9AB** ..... 1 set (Adapter for manifold mounting is included.)



\*1 It is included in the threaded stud kit for manifold. Refer to the details of the kit shown on the left.

## Options

### ④ Panel Mount Adapter

Panel mount adapter model: Refer to the tables below.  
Metric Size Table

Applicable series	Applicable tubing O.D.					
	23 ø3.2	04 ø4	06 ø6	08 ø8	10 ø10	12 ø12
AS1002FS-□A	PMA-1002-A	PMA-1002-B	—	—	—	—
AS2002FS-□A	—	PMA-2002		—	—	—
AS2052FS-□A	—	—	PMA-2052		—	—
AS3002FS-□A	—	—	PMA-3002			—
AS4002FS-□A	—	—	—	—	PMA-4002	

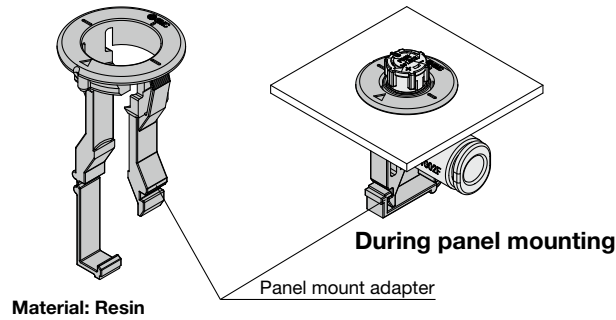
\* For the AS1002FS, the part number varies depending on the applicable tubing O.D.

### ④ Panel Mount Adapter

Panel mount adapter model: Refer to the tables below.  
Inch Size Table

Applicable series	Applicable tubing O.D.					
	01 ø1/8"	03 ø5/32"	07 ø1/4"	09 ø5/16"	11 ø3/8"	13 ø1/2"
AS1002FS-□A	PMA-1002-A	PMA-1002-B	—	—	—	—
AS2002FS-□A	—	PMA-2002		—	—	—
AS2052FS-□A	—	—	PMA-2052		—	—
AS3002FS-□A	—	—	PMA-3002			—
AS4002FS-□A	—	—	—	—	PMA-4002	

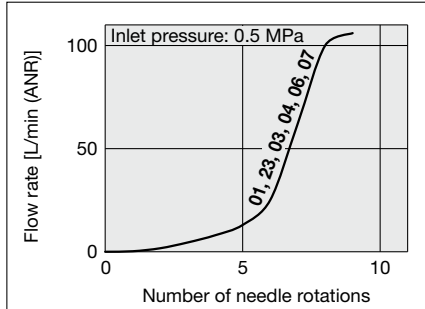
\* For the AS1002FS, the part number varies depending on the applicable tubing O.D.



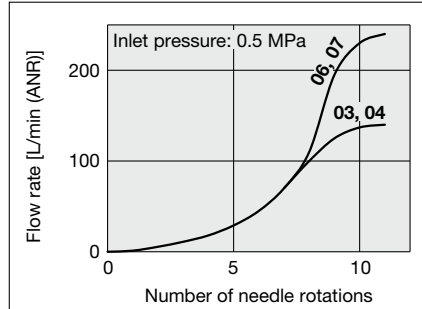
## Needle Valve: Flow Rate Characteristics

\* The flow rate characteristics are representative values.

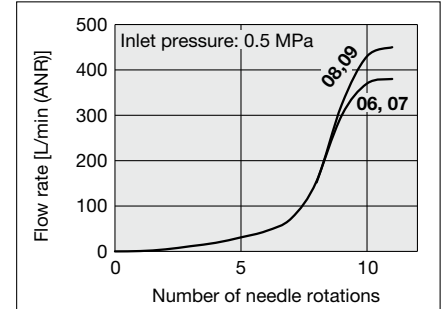
### AS1002FS-□A



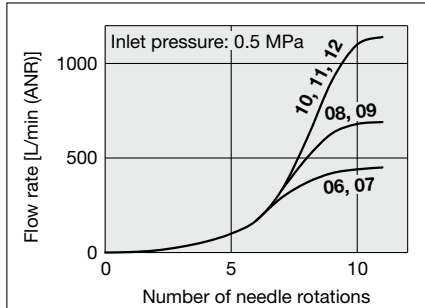
### AS2002FS-□A



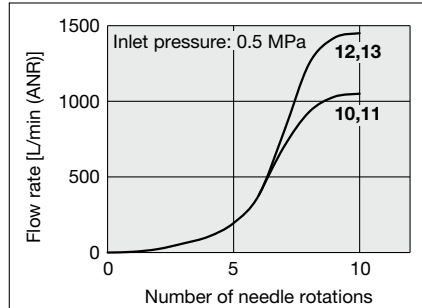
### AS2052FS-□A



### AS3002FS-□A



### AS4002FS-□A

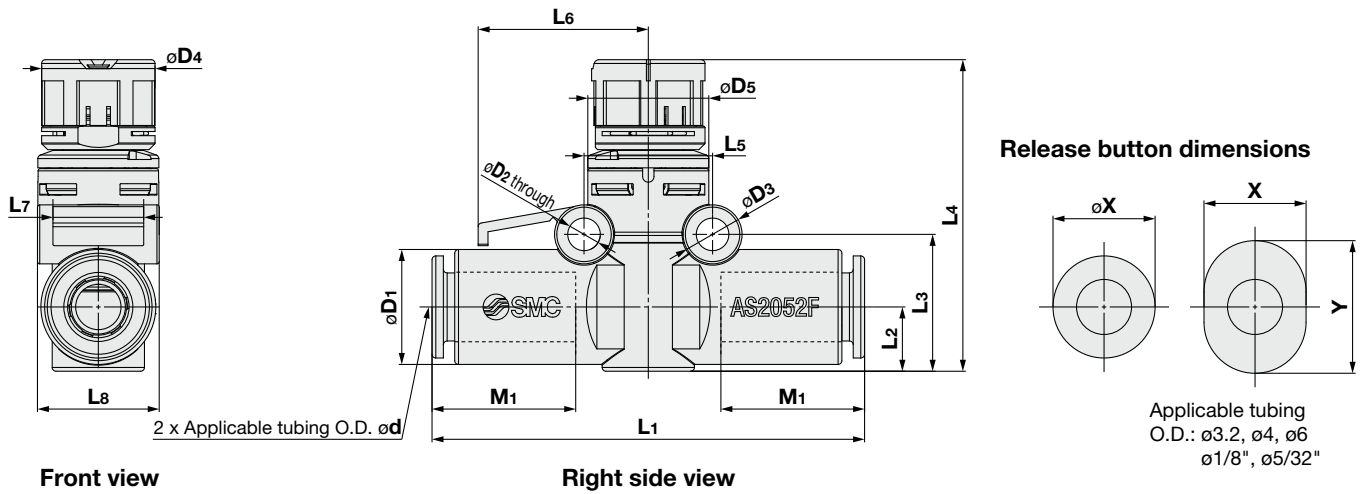


\* The numbers above the flow rate characteristic curves in the charts show the applicable tubing outside diameter as defined by the product number.

Refer to the operation manual for the construction.

# AS-FSA Series

## Dimensions



### Metric Size

Model	Applicable tubing O.D. ød	D1	Release button		D2	D3	D4	D5	L1	L2	L3	L4*1		L5	L6	L7	L8	M1	Weight [g]
			øX (X)	Y								Max.	Min.						
AS1002FS-04A	4	9.3	7.7	10	3.3	5.5	11	10	37.6	5.1	11.8	29.6	28.5	11	15.4	8.8	10.1	13	4.7
AS1002FS-06A	6	11.6	9.7	12	3.3	5.5	11	10	40.1	6.1	12.8	30.6	29.5	11	15.4	8.8	12.3	13	5.8
AS2002FS-04A	4	9.3	7.7	10	3.3	5.5	14	12	41.3	6.3	13.4	37.2	35.7	12.6	17	10.5	12.3	13	6.9
AS2002FS-06A	6	11.6	9.7	12	3.3	5.5	14	12	43.1	6.3	13.4	37.2	35.7	12.6	17	10.5	12.3	13	7.8
AS2052FS-06A	6	12.8	11.5	—	4.3	7.8	15	16	54.2	7.6	17.2	42.6	41.1	17	22.5	12	16.1	17	13.2
AS2052FS-08A	8	15.2	13.5	—	4.3	7.8	15	16	57.2	8.5	18.1	43.5	42	17	22.5	12	16.1	19	15.6
AS3002FS-06A	6	13.2	11.5	—	4.5	8	17.7	20	60	9.8	21.7	49.9	48.4	21.8	25	12	20.5	17	20.6
AS3002FS-08A	8	15.2	13.5	—	4.5	8	17.7	20	65	9.8	21.7	49.9	48.4	21.8	25	12	20.5	19	22.8
AS3002FS-10A	10	18.5	16.5	—	4.5	8	17.7	20	70.4	9.8	21.7	49.9	48.4	21.8	25	12	20.5	21	27.4
AS3002FS-12A	12	20.9	18.5	—	4.5	8	17.7	20	76	10.9	22.8	51	49.5	21.8	25	12	22.1	22	31
AS4002FS-10A	10	18.5	16.5	—	4.3	8	19.7	26	76.9	11.3	23.7	58.7	57.2	28	33	14	26.2	21	39.4
AS4002FS-12A	12	21.7	18.5	—	4.3	8	19.7	26	81.3	11.3	23.7	58.7	57.2	28	33	14	26.2	22	44.8

\*1 Reference dimensions

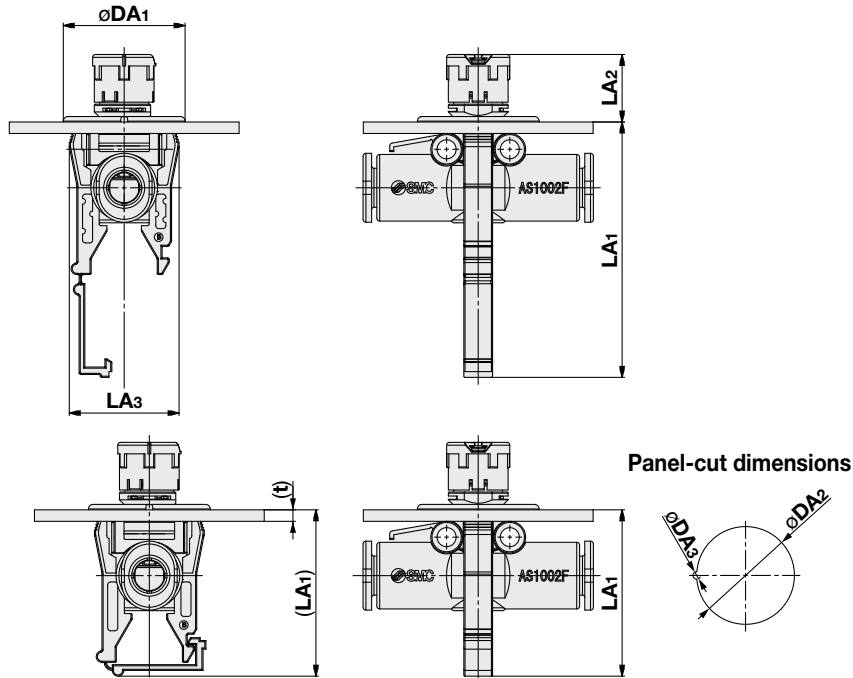
### Inch Size

Model	Applicable tubing O.D. ød	D1	Release button		D2	D3	D4	D5	L1	L2	L3	L4*2		L5	L6	L7	L8	M1	Weight [g]
			øX (X)	Y								Max.	Min.						
AS1002FS-03A	5/32"	9.3	7.7	10	3.3	5.5	11	10	37.6	5.1	11.8	29.6	28.5	11	15.4	8.8	10.1	13	4.56
AS1002FS-07A	1/4"	12	10.9	—	3.3	5.5	11	10	40.1	6.2	12.9	30.7	29.6	11	15.4	8.8	12.8	13.5	5.76
AS2002FS-03A	5/32"	9.3	7.7	10	3.3	5.5	14	12	41.3	6.3	13.4	37.2	35.7	12.6	17	10.5	12.3	13	7.05
AS2002FS-07A	1/4"	12	10.9	—	3.3	5.5	14	12	43.2	6.5	13.6	37.4	35.9	12.6	17	10.5	12.8	13.5	8.15
AS2052FS-07A	1/4"	13.2	12	—	4.3	7.8	15	16	53.4	7.6	17.2	42.6	41.1	17	22.5	12	16.1	17	13.6
AS2052FS-09A	5/16"	15.2	13.5	—	4.3	7.8	15	16	57.2	8.5	18.1	43.5	42	17	22.5	12	16.1	19	15.6
AS3002FS-07A	1/4"	13.2	12	—	4.5	8	17.7	20	59	9.8	21.7	49.9	48.4	21.8	25	12	20.5	17	20.4
AS3002FS-09A	5/16"	15.2	13.5	—	4.5	8	17.7	20	65	9.8	21.7	49.9	48.4	21.8	25	12	20.5	19	22.8
AS3002FS-11A	3/8"	18.5	16	—	4.5	8	17.7	20	69.8	9.8	21.7	49.9	48.4	21.8	25	12	20.5	21	34.9
AS4002FS-11A	3/8"	18.5	16	—	4.3	8	19.7	26	76.9	11.3	23.7	58.7	57.2	28	33	14	26.2	21	47.1
AS4002FS-13A	1/2"	21.7	20	—	4.3	8	19.7	26	81.3	11.3	23.7	58.7	57.2	28	33	14	26.2	22	54.3

\*2 Reference dimensions

**Dimensions: With Panel Mount Adapter**

Refer to the operation manual for panel mounting instructions.



**Metric Size**

[mm]

Model	Applicable tubing O.D. $\phi d$	LA1*1		LA2*1		LA3*2	$\phi DA1$	Panel-cut dimensions		Applicable panel thickness $t$	Weight [g]
		Max.	Min.	Max.	Min.			$\phi DA2^{*3}$ (+0.1/0)	$\phi DA3^{*3}$ (+0.1/0)		
AS1002FS(G)-23A-3	3.2	44.5	29.0	13.0	11.9	19.1	$\phi 21.2$	$\phi 17.5$	$\phi 2$	1 to 2	6
AS1002FS(G)-04A-3	4	44.5	29.0	13.0	11.9	19.1	$\phi 21.2$	$\phi 17.5$	$\phi 2$		6
AS1002FS(G)-06A-3	6	44.5	29.0	13.0	11.9	19.1	$\phi 21.2$	$\phi 17.5$	$\phi 2$		7
AS2002FS(G)-04A-3	4	53.3	35.2	14.4	12.9	22.1	$\phi 24.2$	$\phi 20.5$	$\phi 2$	1 to 3.5	9
AS2002FS(G)-06A-3	6	53.3	35.2	14.4	12.9	22.1	$\phi 24.2$	$\phi 20.5$	$\phi 2$		10
AS2052FS(G)-06A-3	6	59.2	39.6	16.5	15.0	24.1	$\phi 26.7$	$\phi 22.5$	$\phi 2.5$		16
AS2052FS(G)-08A-3	8	59.2	39.6	16.5	15.0	24.1	$\phi 26.7$	$\phi 22.5$	$\phi 2.5$		18
AS3002FS(G)-06A-3	6	67.0	44.2	18.3	16.8	28.1	$\phi 31.2$	$\phi 26$	$\phi 3$		25
AS3002FS(G)-08A-3	8	67.0	44.2	18.3	16.8	28.1	$\phi 31.2$	$\phi 26$	$\phi 3$		27
AS3002FS(G)-10A-3	10	67.0	44.2	18.3	16.8	28.1	$\phi 31.2$	$\phi 26$	$\phi 3$		31
AS3002FS(G)-12A-3	12	67.0	44.2	18.3	16.8	28.1	$\phi 31.2$	$\phi 26$	$\phi 3$		35
AS4002FS(G)-10A-3	10	74.1	48.5	20.4	18.9	34.1	$\phi 39.2$	$\phi 32.5$	$\phi 5$		46
AS4002FS(G)-12A-3	12	74.1	48.5	20.4	18.9	34.1	$\phi 39.2$	$\phi 32.5$	$\phi 5$		51

\*1 Reference dimensions

\*2 Max. dimension before panel mounting

\*3 Be sure to check the following dimensional tolerances or the "Specific Product Precautions" page before cutting the panel.  $\phi DA2$  [+0.1/0]  $\phi DA3$  [+0.1/0]  
In addition, the center position of  $\phi DA3$  is on the circumference of  $\phi DA2$ .

\* Refer to the speed controller dimensions on page 6 for the dimensions of speed controllers not listed in this table.

**Inch Size**

[mm]

Model	Applicable tubing O.D. $\phi d$	LA1*1		LA2*1		LA3*2	$\phi DA1$	Panel-cut dimensions		Applicable panel thickness $t$	Weight [g]
		Max.	Min.	Max.	Min.			$\phi DA2^{*3}$ (+0.1/0)	$\phi DA3^{*3}$ (+0.1/0)		
AS1002FS(G)-01A-3	1/8"	44.5	29.0	13.0	11.9	19.1	$\phi 21.2$	$\phi 17.5$	$\phi 2$	1 to 2	6
AS1002FS(G)-03A-3	5/32"	44.5	29.0	13.0	11.9	19.1	$\phi 21.2$	$\phi 17.5$	$\phi 2$		6
AS1002FS(G)-07A-3	1/4"	44.5	29.0	13.0	11.9	19.1	$\phi 21.2$	$\phi 17.5$	$\phi 2$		7
AS2002FS(G)-03A-3	5/32"	53.3	35.2	14.4	12.9	22.1	$\phi 24.2$	$\phi 20.5$	$\phi 2$	1 to 3.5	9
AS2002FS(G)-07A-3	1/4"	53.3	35.2	14.4	12.9	22.1	$\phi 24.2$	$\phi 20.5$	$\phi 2$		10
AS2052FS(G)-07A-3	1/4"	59.2	39.6	16.5	15.0	24.1	$\phi 26.7$	$\phi 22.5$	$\phi 2.5$		16
AS2052FS(G)-09A-3	5/16"	59.2	39.6	16.5	15.0	24.1	$\phi 26.7$	$\phi 22.5$	$\phi 2.5$		18
AS3002FS(G)-07A-3	1/4"	67.0	44.2	18.3	16.8	28.1	$\phi 31.2$	$\phi 26$	$\phi 3$		24
AS3002FS(G)-09A-3	5/16"	67.0	44.2	18.3	16.8	28.1	$\phi 31.2$	$\phi 26$	$\phi 3$		27
AS3002FS(G)-11A-3	3/8"	67.0	44.2	18.3	16.8	28.1	$\phi 31.2$	$\phi 26$	$\phi 3$		39
AS4002FS(G)-11A-3	3/8"	74.1	48.5	20.4	18.9	34.1	$\phi 39.2$	$\phi 32.5$	$\phi 5$		53
AS4002FS(G)-13A-3	1/2"	74.1	48.5	20.4	18.9	34.1	$\phi 39.2$	$\phi 32.5$	$\phi 5$		60

\*1 Reference dimensions

\*2 Max. dimension before panel mounting

\*3 Be sure to check the following dimensional tolerances or the "Specific Product Precautions" page before cutting the panel.  $\phi DA2$  [+0.1/0]  $\phi DA3$  [+0.1/0]  
In addition, the center position of  $\phi DA3$  is on the circumference of  $\phi DA2$ .

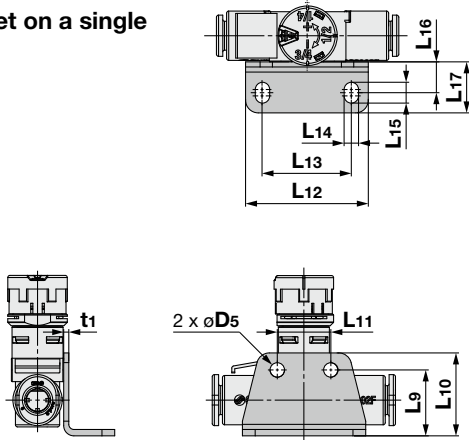
\* Refer to the speed controller dimensions on page 6 for the dimensions of speed controllers not listed in this table.

# AS-FSA Series

## Dimensions

### L-Bracket

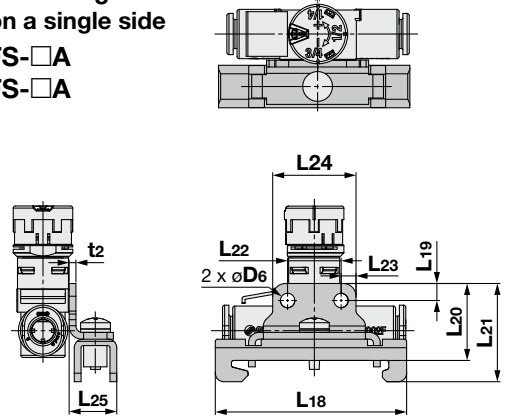
Bracket on a single side



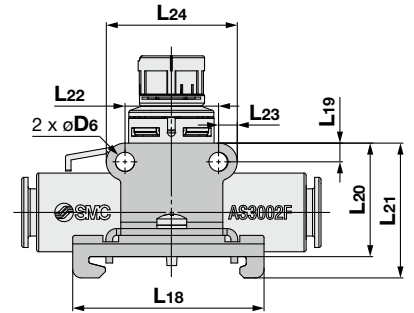
### DIN Rail Mounting Bracket

Bracket on a single side

AS1002FS-□A  
AS2002FS-□A



AS2052FS-□A  
AS3002FS-□A  
AS4002FS-□A

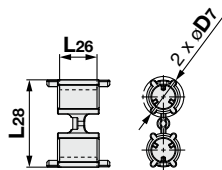


Part no.	Applicable model	D5	L9	L10	L11	L12	L13	L14	L15	L16	L17	t1
AS-10L	AS1002FS-□A	3.4	14.8	18.3	11	27.5	19.5	3.4	4.9	7.3	12	1
AS-20L	AS2002FS-□A		15.6	19.6	12.6	29	21					
AS-25L	AS2052FS-□A	4.5	19.6	24.6	17	38	28	4.5	6.5	9.5	15.5	1.4
AS-30L	AS3002FS-□A		24.8	29.8	22	43	33					
AS-40L	AS4002FS-□A		25.7	30.7	28	49	39					

Part no.	Applicable model	D6	L18	L19	L20	L21	L22	L23	L24	L25	t2
AS-10D	AS1002FS-□A	3.4		3.5	18.2	23.2	11	3.5	18		
AS-20D	AS2002FS-□A				18.6	23.6	12.6		19.6		
AS-25D	AS2052FS-□A	4.5		4.4	22	27	17	4.4	25.8	11.3	1.6
AS-30D	AS3002FS-□A				27.2	32.2	22		30.8		
AS-40D	AS4002FS-□A				28.1	33.1	28		36.8		

### Adapter for Manifold Mounting

Part no.: AS-□□A

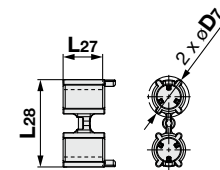


Part no.	Applicable model	D7	L26	L28
AS-10A	AS1002FS-□A	9.2	4	18.7
AS-20A	AS2002FS-□A	9.4	8.8	20.4

\* The AS2052FS-□A, AS3002FS-□A, and AS4002FS-□A can be mounted without an adapter.

### Adapter for Direct Mounting

Part no.: AS-□□A1

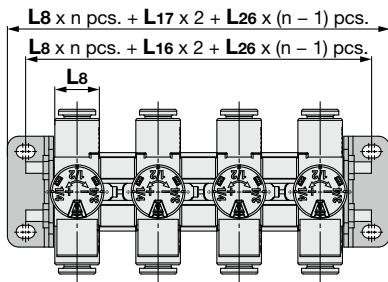


Part no.	Applicable model	D7	L27	L28
AS-10A1	AS1002FS-□A	9.2	4.5	18.7
AS-20A1	AS2002FS-□A	9.4	9.3	20.4

\* The AS2052FS-□A, AS3002FS-□A, and AS4002FS-□A can be mounted without an adapter.

### L-Bracket

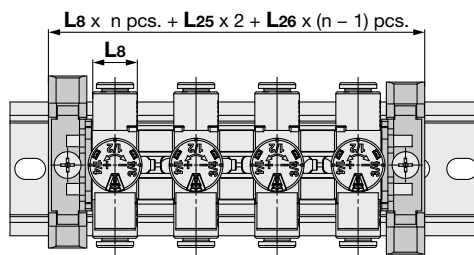
Brackets on both sides



\* Refer to page 5 for Ls.  
\* The figure above shows the manifold with speed controllers connected using two L-brackets, adapters and a threaded stud kit for manifold. Refer to page 3 for threaded stud kits for manifold.

### DIN Rail Mounting Bracket

Brackets on both sides

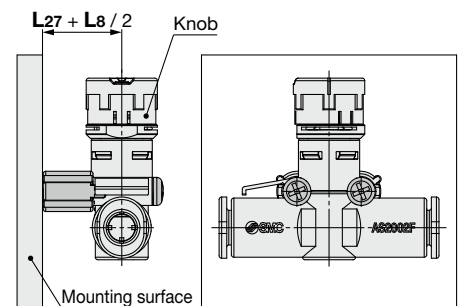


\* Refer to page 5 for Ls.  
\* The figure above shows the manifold with speed controllers connected using two DIN rail mounting brackets, adapters and a threaded stud kit for manifold. Refer to page 3 for threaded stud kits for manifold.

### Adapter

Direct mounting

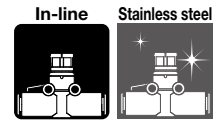
\* For use when the mounting surface interferes with the knob.



\* Refer to page 5 for Ls.  
\* The AS2052FS-□A, AS3002FS-□A, and AS4002FS-□A can be mounted without an adapter.



# Speed Controller with Compact Indicator Stainless Steel Series In-line Type AS-FSGA Series



## 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"	
AS1002FSG-□A	●	●	●				●	●	●				
AS2002FSG-□A		●	●					●	●				
AS2052FSG-□A			●	●					●	●			
AS3002FSG-□A			●	●	●	●			●	●	●		
AS4002FSG-□A					●	●					●	●	

## Specifications

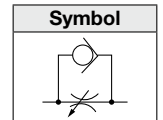
Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Applicable tubing material	Nylon, Soft nylon, Polyurethane*1, FEP, PFA

\*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	AS1002FSG-□A	AS2002FSG-□A	AS2052FSG-□A	AS3002FSG-□A	AS4002FSG-□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 dm <sup>3</sup> /(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

Flow Direction Symbol on Body



\* 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-FSG series (stainless steel type).

## How to Order

AS **200** **2** **F** **S** **G** - **06** **A** - **□**

- Body size
- Made to Order
- With compact indicator
- Applicable tubing O.D.\*1

Body size	Standard
100	M5 standard
200	1/8 standard
205	1/4 standard
300	3/8 standard
400	1/2 standard

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.

With One-touch fittings

With indicator

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.

## Made to Order



Lubricant: Vaseline **-X12**

Example) AS2002FSG-04A-X12

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

Example) AS2002FSG-04A-X21

\* Not particle-free

\* The parts in contact with fluid are grease-free.

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

Example) AS2002FSG-04A-X214

Clean Series **10-**

Example) 10-AS2002FSG-04A

\* Fluorine grease is used.

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

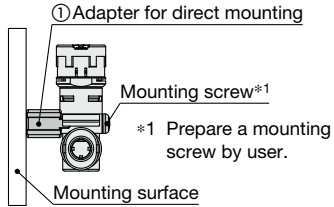
# AS-FSGA Series

## Options

### ① Adapter for Direct Mounting

\* For use when the mounting surface interferes with the bonnet.

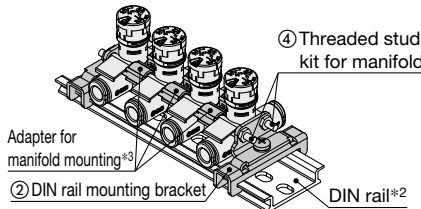
Part no.	Applicable model
<b>AS-10A1</b>	AS1002FSG-□A
<b>AS-20A1</b>	AS2002FSG-□A



\* The AS2052FSG-□A, AS3002FSG-□A, and AS4002FSG-□A can be mounted without an adapter.

### ② DIN Rail Mounting Bracket

Part no.	Applicable model
<b>AS-10D</b>	AS1002FSG-□A
<b>AS-20D</b>	AS2002FSG-□A
<b>AS-25D</b>	AS2052FSG-□A
<b>AS-30D</b>	AS3002FSG-□A
<b>AS-40D</b>	AS4002FSG-□A

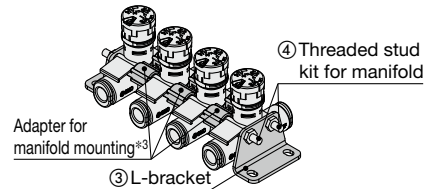


\*2 Prepare DIN rail by user.

\*3 It is included in the threaded stud kit for manifold. Refer to the following details of the kit.

### ③ L-Bracket

Part no.	Applicable model
<b>AS-10L</b>	AS1002FSG-□A
<b>AS-20L</b>	AS2002FSG-□A
<b>AS-25L</b>	AS2052FSG-□A
<b>AS-30L</b>	AS3002FSG-□A
<b>AS-40L</b>	AS4002FSG-□A



### ④ Threaded Stud Kit for Manifold

Part number				Applicable model	
4 stations	6 stations	8 stations	10 stations	Metric size	Inch size
<b>AS-1AB</b>	<b>AS-3AB</b>	<b>AS-5AB</b>	<b>AS-7AB</b>	AS1002FSG-23A	AS1002FSG-01A
				AS1002FSG-04A	AS1002FSG-03A
<b>AS-2AB</b>	<b>AS-4AB</b>	<b>AS-6AB</b>	<b>AS-8AB</b> <b>AS-23AB</b>	AS1002FSG-06A	—
				—	AS1002FSG-07A
<b>AS-9AB</b>	<b>AS-10AB</b>	<b>AS-11AB</b>	<b>AS-12AB</b>	AS2002FSG-04A	AS2002FSG-03A
				AS2002FSG-06A	—
<b>AS-41B</b>	<b>AS-42B</b>	<b>AS-44B</b>	<b>AS-45B</b>	—	AS2002FSG-07A
				AS2052FSG-06A	—
<b>AS-41B</b>	<b>AS-42B</b>	<b>AS-44B</b>	<b>AS-45B</b>	—	AS2052FSG-07A
				AS2052FSG-08A	AS2052FSG-09A
<b>AS-42B</b>	<b>AS-44B</b>	<b>AS-45B</b>	<b>AS-47B</b>	AS3002FSG-06A	—
				—	AS3002FSG-07A
				AS3002FSG-08A	AS3002FSG-09A
				AS3002FSG-10A	—
<b>AS-43B</b>	<b>AS-45B</b>	<b>AS-47B</b>	<b>AS-48B</b>	—	AS3002FSG-11A
				AS3002FSG-12A	—
				AS4002FSG-10A	—
				—	AS4002FSG-11A
<b>AS-43B</b>	<b>AS-45B</b>	<b>AS-47B</b>	<b>AS-48B</b>	—	AS4002FSG-11A
				AS4002FSG-12A	—
—	—	—	—	—	AS4002FSG-13A

\* AS2052FSG-□A to AS4002FSG-□A sizes can be mounted with the threaded stud kit only.

### Details of Threaded Stud Kit for Manifold

Part no.	Adapter for manifold mounting		Threaded stud		Accessories			
	Part no.	Quantity	Length	Quantity	Hexagon nut	Quantity	Flat washer	Quantity
<b>AS-1AB</b>	AS-10A	3	72	2	M3	4	M3	4
<b>AS-2AB</b>			90	2				
<b>AS-3AB</b>			104	2				
<b>AS-4AB</b>		5	114	2				
<b>AS-5AB</b>			135	2				
<b>AS-6AB</b>			143	2				
<b>AS-7AB</b>			167	2				
<b>AS-8AB</b>		170	2					
<b>AS-23AB</b>		180	2					
<b>AS-9AB</b>		AS-20A	3	90				
<b>AS-10AB</b>	5			135	2			
<b>AS-11AB</b>	7		180	2				
<b>AS-12AB</b>	9		220	2				
<b>AS-41B</b>	—	—	78	2	M4	4	M4	4
<b>AS-42B</b>			111	2				
<b>AS-43B</b>			119	2				
<b>AS-44B</b>			147	2				
<b>AS-45B</b>			179	2				
<b>AS-46B</b>			191	2				
<b>AS-47B</b>			236	2				
<b>AS-48B</b>			277	2				

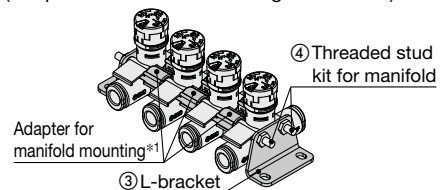
### Ordering Example

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.) AS2002FSG-06A

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

- Speed controller **AS2002FSG-06A** ... 4 pcs.
- L-bracket **AS-20L** ..... 2 pcs.
- Threaded stud kit for manifold **AS-9AB** ..... 1 set (Adapter for manifold mounting is included.)



\*1 It is included in the threaded stud kit for manifold. Refer to the details of the kit shown on the left.

**Options**

④ **Panel Mount Adapter**

Panel mount adapter model: Refer to the tables below.  
**Metric Size Table**

Applicable series	Applicable tubing O.D.					
	23 ø3.2	04 ø4	06 ø6	08 ø8	10 ø10	12 ø12
AS1002FSG-□A	PMA-1002-A	PMA-1002-B	—	—	—	—
AS2002FSG-□A	—	PMA-2002		—	—	—
AS2052FSG-□A	—	—	PMA-2052		—	—
AS3002FSG-□A	—	—	PMA-3002			—
AS4002FSG-□A	—	—	—	—	PMA-4002	

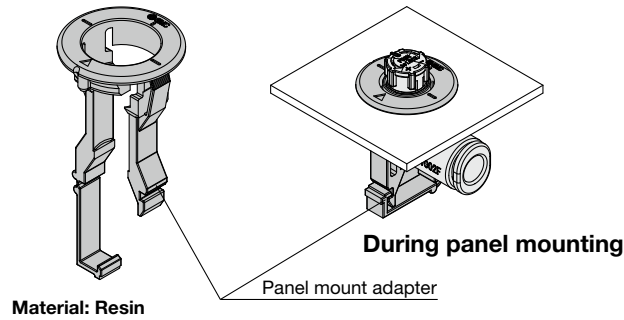
\* For the AS1002FSG, the part number varies depending on the applicable tubing O.D.

④ **Panel Mount Adapter**

Panel mount adapter model: Refer to the tables below.  
**Inch Size Table**

Applicable series	Applicable tubing O.D.					
	01 ø1/8"	03 ø5/32"	07 ø1/4"	09 ø5/16"	11 ø3/8"	13 ø1/2"
AS1002FSG-□A	PMA-1002-A	PMA-1002-B	—	—	—	—
AS2002FSG-□A	—	PMA-2002		—	—	—
AS2052FSG-□A	—	—	PMA-2052		—	—
AS3002FSG-□A	—	—	PMA-3002			—
AS4002FSG-□A	—	—	—	—	PMA-4002	

\* For the AS1002FSG, the part number varies depending on the applicable tubing O.D.

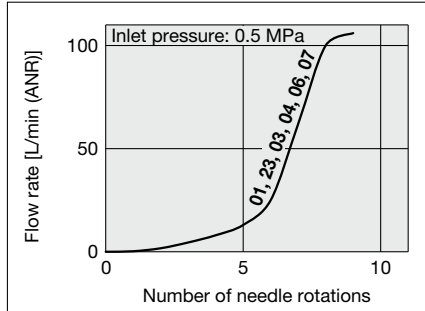


The dimensions when the panel mount adapter is mounted to the speed controller are the same as those of the standard AS□□□□2FS-□A-3 (brass type). Refer to page 6.

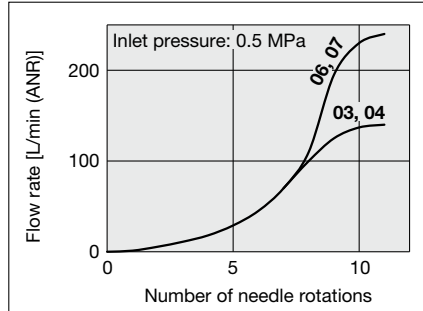
**Needle Valve: Flow Rate Characteristics**

\* The flow rate characteristics are representative values.

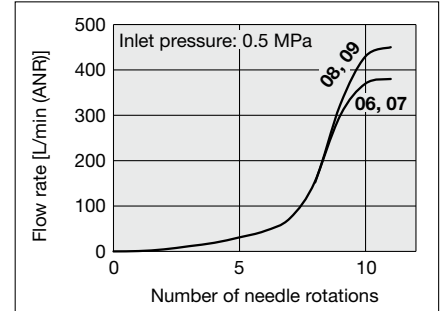
**AS1002FSG-□A**



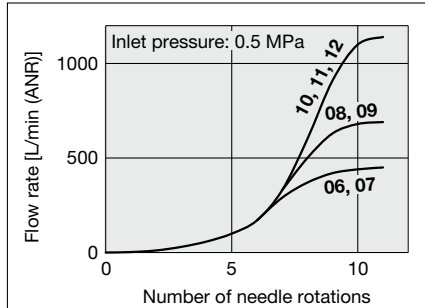
**AS2002FSG-□A**



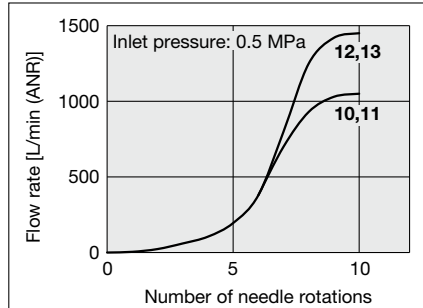
**AS2052FSG-□A**



**AS3002FSG-□A**



**AS4002FSG-□A**

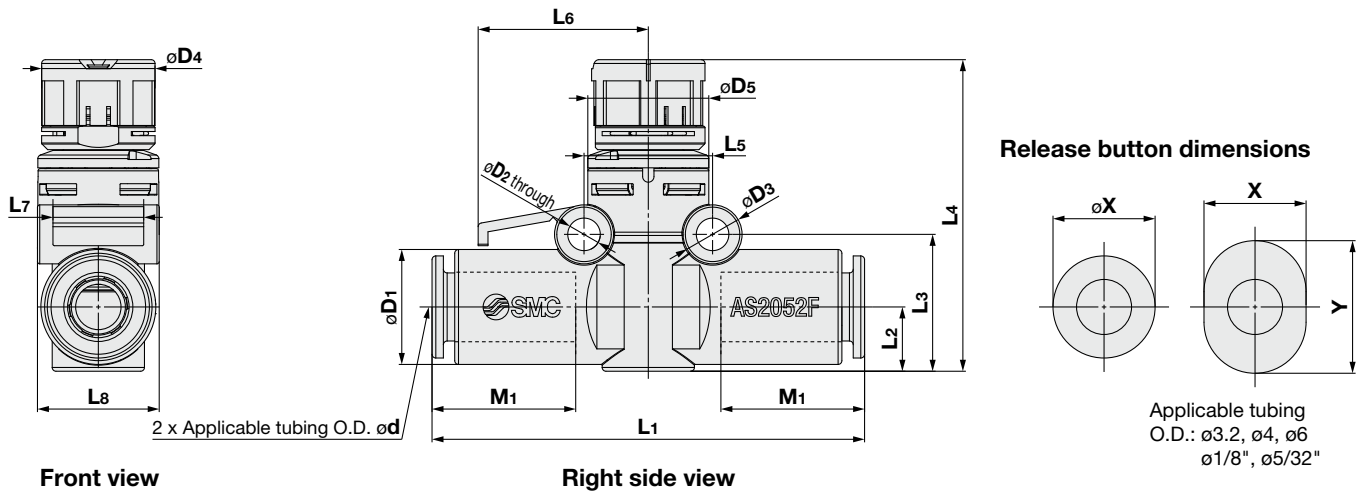


\* The numbers above the flow rate characteristic curves in the charts show the applicable tubing outside diameter as defined by the product number.

Refer to the operation manual for the construction.

# AS-FSGA Series

## Dimensions



### Metric Size

Model	Applicable tubing O.D. ød	D1	Release button		D2	D3	D4	D5	L1	L2	L3	L4*1		L5	L6	L7	L8	M1	Weight [g]
			øX (X)	Y								Max.	Min.						
AS1002FSG-23A	3.2	8.4	6.7	9.5	3.3	5.5	11	10	36.6	5.1	11.8	29.6	28.5	11	15.4	8.8	10.1	13.5	4.4
AS1002FSG-04A	4	9.3	7.7	10	3.3	5.5	11	10	37.6	5.1	11.8	29.6	28.5	11	15.4	8.8	10.1	13	4.7
AS1002FSG-06A	6	11.6	9.7	12	3.3	5.5	11	10	40.1	6.1	12.8	30.6	29.5	11	15.4	8.8	12.3	13	5.8
AS2002FSG-04A	4	9.3	7.7	10	3.3	5.5	14	12	41.3	6.3	13.4	37.2	35.7	12.6	17	10.5	12.3	13	6.9
AS2002FSG-06A	6	11.6	9.7	12	3.3	5.5	14	12	43.1	6.3	13.4	37.2	35.7	12.6	17	10.5	12.3	13	7.8
AS2052FSG-06A	6	12.8	11.5	—	4.3	7.8	15	16	54.2	7.6	17.2	42.6	41.1	17	22.5	12	16.1	17	13.2
AS2052FSG-08A	8	15.2	13.5	—	4.3	7.8	15	16	57.2	8.5	18.1	43.5	42	17	22.5	12	16.1	19	15.6
AS3002FSG-06A	6	13.2	11.5	—	4.5	8	17.7	20	60	9.8	21.7	49.9	48.4	21.8	25	12	20.5	17	20.6
AS3002FSG-08A	8	15.2	13.5	—	4.5	8	17.7	20	65	9.8	21.7	49.9	48.4	21.8	25	12	20.5	19	22.8
AS3002FSG-10A	10	18.5	16.5	—	4.5	8	17.7	20	70.4	9.8	21.7	49.9	48.4	21.8	25	12	20.5	21	27.4
AS3002FSG-12A	12	20.9	18.5	—	4.5	8	17.7	20	76	10.9	22.8	51	49.5	21.8	25	12	22.1	22	31
AS4002FSG-10A	10	18.5	16.5	—	4.3	8	19.7	26	76.9	11.3	23.7	58.7	57.2	28	33	14	26.2	21	39.4
AS4002FSG-12A	12	21.7	18.5	—	4.3	8	19.7	26	81.3	11.3	23.7	58.7	57.2	28	33	14	26.2	22	44.8

\*1 Reference dimensions

### Inch Size

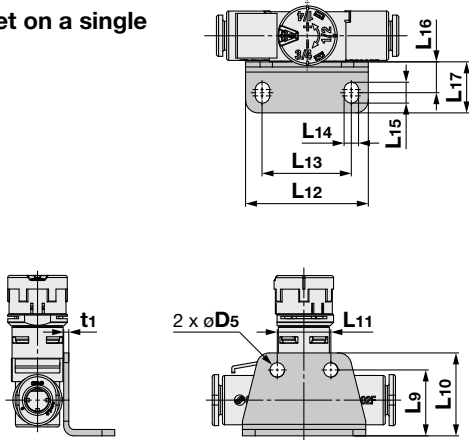
Model	Applicable tubing O.D. ød	D1	Release button		D2	D3	D4	D5	L1	L2	L3	L4*2		L5	L6	L7	L8	M1	Weight [g]
			øX (X)	Y								Max.	Min.						
AS1002FSG-01A	1/8"	8.4	6.7	9.5	3.3	5.5	11	10	36.6	5.1	11.8	29.6	28.5	11	15.4	8.8	10.1	13.5	4.26
AS1002FSG-03A	5/32"	9.3	7.7	10	3.3	5.5	11	10	37.6	5.1	11.8	29.6	28.5	11	15.4	8.8	10.1	13	4.56
AS1002FSG-07A	1/4"	12	10.9	—	3.3	5.5	11	10	40.1	6.2	12.9	30.7	29.6	11	15.4	8.8	12.8	13.5	5.76
AS2002FSG-03A	5/32"	9.3	7.7	10	3.3	5.5	14	12	41.3	6.3	13.4	37.2	35.7	12.6	17	10.5	12.3	13	7.05
AS2002FSG-07A	1/4"	12	10.9	—	3.3	5.5	14	12	43.2	6.5	13.6	37.4	35.9	12.6	17	10.5	12.8	13.5	8.15
AS2052FSG-07A	1/4"	13.2	12	—	4.3	7.8	15	16	53.4	7.6	17.2	42.6	41.1	17	22.5	12	16.1	17	13.6
AS2052FSG-09A	5/16"	15.2	13.5	—	4.3	7.8	15	16	57.2	8.5	18.1	43.5	42	17	22.5	12	16.1	19	15.6
AS3002FSG-07A	1/4"	13.2	12	—	4.5	8	17.7	20	59	9.8	21.7	49.9	48.4	21.8	25	12	20.5	17	20.4
AS3002FSG-09A	5/16"	15.2	13.5	—	4.5	8	17.7	20	65	9.8	21.7	49.9	48.4	21.8	25	12	20.5	19	22.8
AS3002FSG-11A	3/8"	18.5	16	—	4.5	8	17.7	20	69.8	9.8	21.7	49.9	48.4	21.8	25	12	20.5	21	34.9
AS4002FSG-11A	3/8"	18.5	16	—	4.3	8	19.7	26	76.9	11.3	23.7	58.7	57.2	28	33	14	26.2	21	47.1
AS4002FSG-13A	1/2"	21.7	20	—	4.3	8	19.7	26	81.3	11.3	23.7	58.7	57.2	28	33	14	26.2	22	54.3

\*2 Reference dimensions

## Dimensions

### L-Bracket

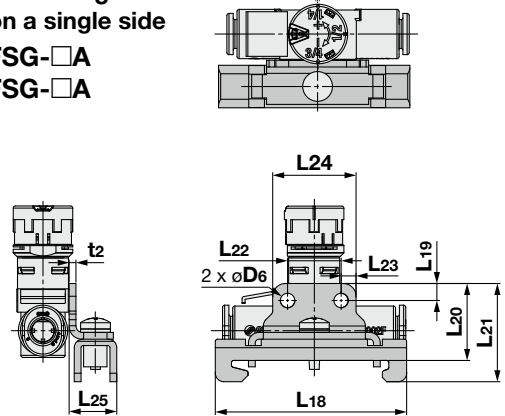
Bracket on a single side



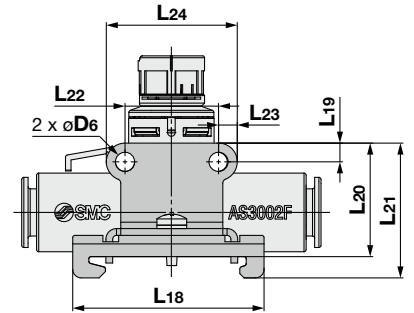
### DIN Rail Mounting Bracket

Bracket on a single side

AS1002FSG-□A  
AS2002FSG-□A



AS2052FSG-□A  
AS3002FSG-□A  
AS4002FSG-□A

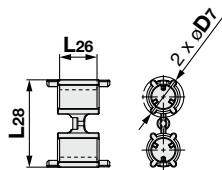


Part no.	Applicable model	D5	L9	L10	L11	L12	L13	L14	L15	L16	L17	t1
AS-10L	AS1002FSG-□A	3.4	14.8	18.3	11	27.5	19.5	3.4	4.9	7.3	12	1
AS-20L	AS2002FSG-□A		15.6	19.6	12.6	29	21					
AS-25L	AS2052FSG-□A	4.5	19.6	24.6	17	38	28	4.5	6.5	9.5	15.5	1.4
AS-30L	AS3002FSG-□A		24.8	29.8	22	43	33					
AS-40L	AS4002FSG-□A	25.7	30.7	28	49	39						

Part no.	Applicable model	D6	L18	L19	L20	L21	L22	L23	L24	L25	t2
AS-10D	AS1002FSG-□A	3.4		3.5	18.2	23.2	11	3.5	18		
AS-20D	AS2002FSG-□A				18.6	23.6	12.6				
AS-25D	AS2052FSG-□A	4.5		4.4	22	27	17	4.4	25.8	11.3	1.6
AS-30D	AS3002FSG-□A				27.2	32.2	22				
AS-40D	AS4002FSG-□A				28.1	33.1	28		36.8		

### Adapter for Manifold Mounting

Part no.: AS-□□A

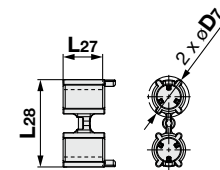


Part no.	Applicable model	D7	L26	L28
AS-10A	AS1002FSG-□A	9.2	4	18.7
AS-20A	AS2002FSG-□A	9.4	8.8	20.4

\* The AS2052FSG-□A, AS3002FSG-□A, and AS4002FSG-□A can be mounted without an adapter.

### Adapter for Direct Mounting

Part no.: AS-□□A1

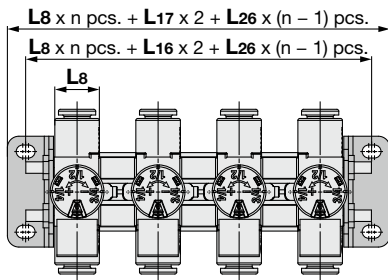


Part no.	Applicable model	D7	L27	L28
AS-10A1	AS1002FSG-□A	9.2	4.5	18.7
AS-20A1	AS2002FSG-□A	9.4	9.3	20.4

\* The AS2052FSG-□A, AS3002FSG-□A, and AS4002FSG-□A can be mounted without an adapter.

### L-Bracket

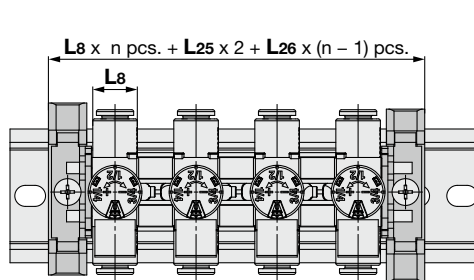
Brackets on both sides



\* Refer to page 11 for L8.  
\* The figure above shows the manifold with speed controllers connected using two L-brackets, adapters and a threaded stud kit for manifold. Refer to page 9 for threaded stud kits for manifold.

### DIN Rail Mounting Bracket

Brackets on both sides

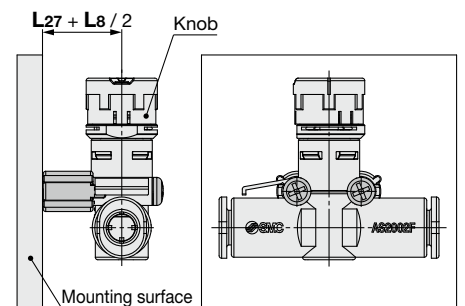


\* Refer to page 11 for L8.  
\* The figure above shows the manifold with speed controllers connected using two DIN rail mounting brackets, adapters and a threaded stud kit for manifold. Refer to page 3 for threaded stud kits for manifold.

### Adapter

Direct mounting

\* For use when the mounting surface interferes with the knob.

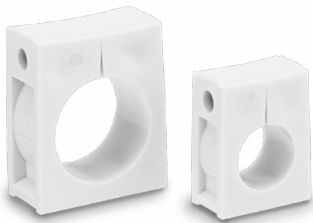


\* Refer to page 11 for L8.  
\* The AS2052FSG-□A, AS3002FSG-□A, and AS4002FSG-□A can be mounted without an adapter.

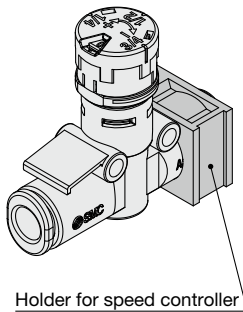
# Holder for Speed Controller TMH Series

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

Possible to hold a single controller.



## ● Holder mounting



Holder for speed controller

## Specifications

Ambient temperature	-20 to 60°C
Material	Polypropylene
Color	White

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

Model		Size (Nominal x Length)	Piece
Metric size	Inch size	M3 x 15	1
<b>TMH-23J</b>	<b>TMH-01J</b>		
<b>TMH-04J</b>	<b>TMH-03J</b>		
<b>TMH-06J</b>	<b>TMH-07J</b>	M3 x 20	
<b>TMH-06</b>	<b>TMH-07</b>	M4 x 25	
<b>TMH-08</b>	<b>TMH-09</b>		
<b>TMH-10</b>	—	M4 x 35	
<b>TMH-12</b>	<b>TMH-13</b>		

## Series

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

### Metric Size

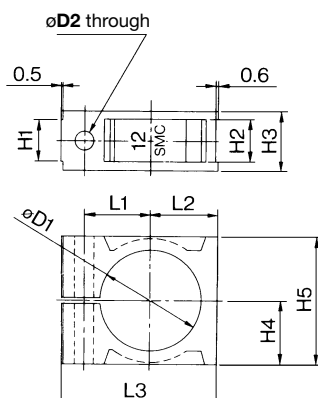
Applicable series	Tubing size	Applicable tubing					
		23 ø3.2	04 ø4	06 ø6	08 ø8	10 ø10	12 ø12
AS1002FS(G)-□A	<b>TMH-23J</b>		<b>TMH-04J</b>	<b>TMH-06J</b>			
AS2002FS(G)-□A							
AS2052FS(G)-□A				<b>TMH-06</b>	<b>TMH-08</b>		
AS3002FS(G)-□A				<b>TMH-07</b>			
AS4002FS(G)-□A						<b>TMH-10</b>	<b>TMH-12</b> <b>TMH-13</b>

\* The applicable TMH for AS1002FS(G)-02 is not available.

### Inch Size

Applicable series	Tubing size	Applicable tubing					
		01 ø1/8"	03 ø5/32"	07 ø1/4"	09 ø5/16"	11 ø3/8"	13 ø1/2"
AS1002FS(G)-□A	<b>TMH-01J</b>		<b>TMH-03J</b>	<b>TMH-07J</b>			
AS2002FS(G)-□A							
AS2052FS(G)-□A				<b>TMH-07</b>	<b>TMH-09</b>		
AS3002FS(G)-□A							<b>TMH-10</b>
AS4002FS(G)-□A							<b>TMH-13</b>


## Dimensions





Model		øD1	øD2	H1	H2	H3	H4	H5	L1	L2	L3	Symbol
Metric size	Inch size											
<b>TMH-23J</b>	<b>TMH-01J</b>	8.5	3.3	4.5	4.6	7.5	6	12	7.2	6.6	18	1/8J
<b>TMH-04J</b>	<b>TMH-03J</b>	9.4										4 5/32J
<b>TMH-06J</b>	—	11.7	3.3	6.3	6.4	9.3	7.7	15.4	8.5	8.3	21	6J
—	<b>TMH-07J</b>	12.1										1/4J
<b>TMH-06</b>	—	13.1	4.3	7.1	7.2	11.1	10	20	11	10.6	26.5	6
—	<b>TMH-07</b>	13.5										1/4
<b>TMH-08</b>	<b>TMH-09</b>	15.5	4.3	9.5	9.6	13.5	14	28	14.2	14.6	34	8 5/16
<b>TMH-10</b>	—	18.8										10
<b>TMH-12</b>	—	21.2	4.3	9.5	9.6	13.5	14	28	14.2	14.6	34	12
—	<b>TMH-13</b>	22										1/2

## Safety Instructions

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 “**Caution**,” “**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.

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

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

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

\*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components  
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components  
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements  
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots 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. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

### Caution

**We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.**

**Use in non-manufacturing industries is not covered.**

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

### 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.

#### Revision History

**Edition B** \* A type with a panel mount adapter has been added.

\* The number of pages has been increased from 12 to 16.

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

**SMC Corporation**