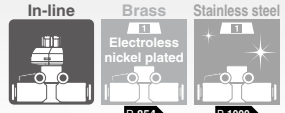


Speed Controller with Indicator

AS-FS Series

In-line Type



"Made to Order" section has been added.

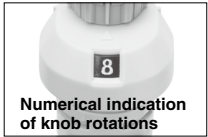
- Lubricant: Vaseline -X12
- Grease-free + Restrictor -X21
- Restrictor -X214
- Clean Series 10-

The numerical indication of flow rate knob rotations

reduces flow setting time and setting errors!

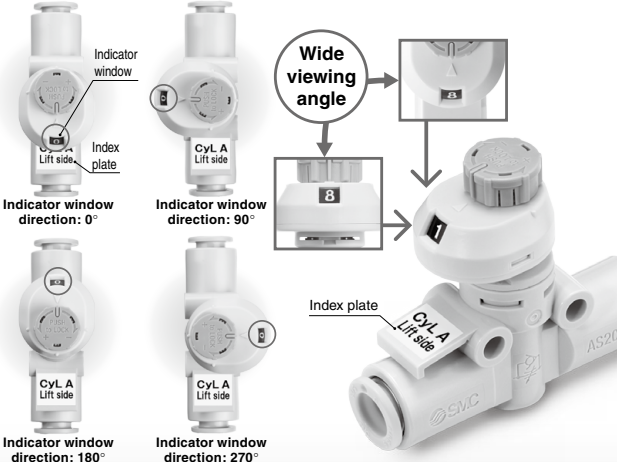


Flow rate can be controlled numerically with the **indicator window.**

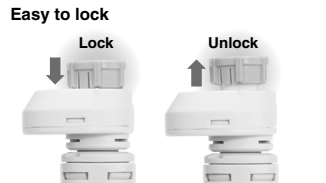


Body size 1		Body size 2 or larger	
Indicator window	Number of needle rotations	Indicator window	Number of needle rotations
1	1	1	1
2	2	2	2
⋮	⋮	⋮	⋮
8	8	10	10

4 indicator window directions available



Larger Push-lock type knob

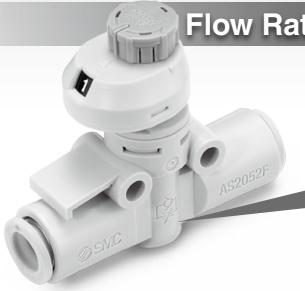


The larger knob and marking of every 90° mark allows for easier operation.

Body size	oD [mm]
1	9.4
2	12 (Port size 1/8) 13 (Port size 1/4)
3	16.6
4	18.8

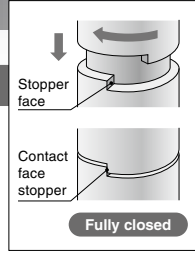


Flow Rate Reproducibility



Improved reproducibility of flow rate

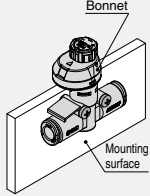
Stable knob position when fully closed (no flow rate) onto the contact face stopper (rotating stopper).
Minimal flow rate variations between knob rotations



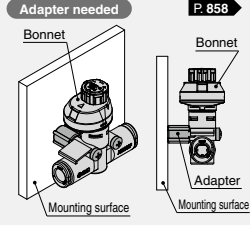
Mounting Variations

Direct mounting

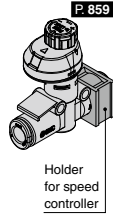
If the mounting surface does not interfere with the bonnet:



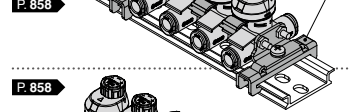
If the mounting surface interferes with the bonnet: Adapter needed



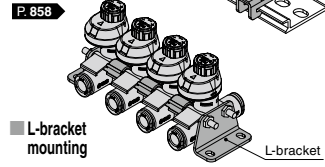
Holder mounting



DIN rail mounting



L-bracket mounting



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-FS P. 854	Light gray	Orange
AS-FSG P. 1000	White	White



Series Variations

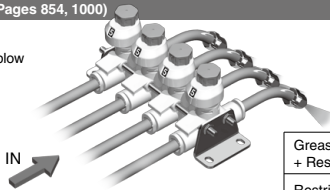
☉ The electroless nickel plating type is standardized. ☉ The stainless steel type is standardized.

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"
 AS1002FS□	●	●	●				●	●	●				• Brass • Stainless steel	Nylon (T, TIA series) Soft nylon (TS, TISA series) Polyurethane (T, TIUB series) Fluoropolymer (TLM, TILM series) (TH, TIH series)
 AS2002FS□		●	●					●	●					
 AS2052FS□			●	●					●	●				
 AS3002FS□			●	●	●	●			●	●	●			
 AS4002FS□					●	●					●	●		

Made to Order (Pages 854, 1000)

Restrictor

- Flow control of air blow and air purge

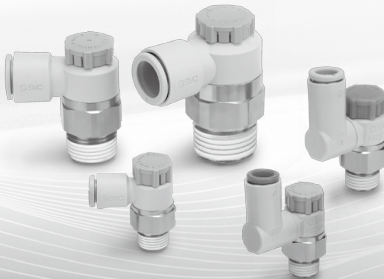


Grease-free (Seal: Fluorine-coated) + Restrictor (Without check valve)	-X21
Restrictor (Without check valve)	-X214

Push-Lock Series Variations

Speed Controller with One-touch Fitting AS Series

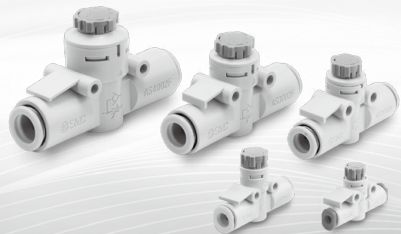
Body size	Port size	Applicable tubing O.D.	
		Metric size	Inch size
1 to 4	M5 to 1/2	ø2 to ø16	ø1/8" to ø1/2"



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

Speed Controller with One-touch Fittings In-line Type AS Series

Body size	Port size	Applicable tubing O.D.	
		Metric size	Inch size
1 to 4	M5 to 1/2	ø3.2 to ø12	ø1/8" to ø1/2"

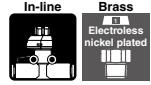


Refer to the **Web Catalog** for details.

Speed Controller with Indicator (In-line Type) **AS-FS Series**



RoHS



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□	●						●					
AS2002FS□		●	●					●	●			
AS2052FS□			●	●					●	●		
AS3002FS□				●	●	●			●	●	●	
AS4002FS□					●	●					●	●

Specifications

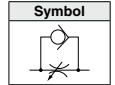
Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Applicable tubing material	Nylon, Soft nylon, Polyurethane ¹⁾ , FEP, PFA

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

Flow Rate and Sonic Conductance

Model	Metric size	AS1002FS□			AS2002FS□			AS2052FS□			AS3002FS□		AS4002FS□	
		ø3.2	ø4	ø6	ø4	ø6	ø6	ø8	ø6	ø8	ø10	ø12	ø10	ø12
C values: Sonic conductance dm ³ /(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												
b values: Critical pressure ratio	Free flow	0.3	0.2	0.3	0.1	0.2	0.2	0.3	0.1	0.2	0.2	0.3	0.3	0.2
	Controlled flow	0.2	0.3	0.4	0.2	0.2	0.3	0.1	0.2	0.2	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 1 - 06 - □

● 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 ●

With indicator ●

● Made to Order

● 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.

● Indicator window direction

Nil	0°	Indicator window	2	90°	Index plate
1	180°	Indicator window	3	270°	Index plate

Made to Order

Made to Order

Lubricant: Vaseline

-X12

Example AS2002FS-04-X12

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

-X21

Example AS2002FS-04-X21

* Not particle-free

Restrictor (Without check valve)

-X214

Example AS2002FS-04-X214

Clean Series

10-

Example 10-AS2002FS-04

*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 page 11 for safety instructions and pages 19 to 22 for flow control equipment precautions.

Options

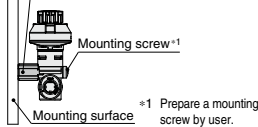
① Adapter for Direct Mounting

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

Part no.	Applicable model
AS-10A1	AS1002FS□
AS-20A1	AS2002FS□
AS-25A1	AS2052FS□
AS-30A1	AS3002FS□

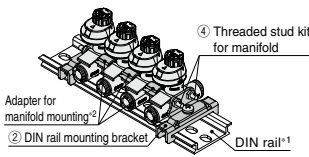
* The AS4002FS□ can be mounted without the adapter.

① Adapter for direct mounting



② DIN Rail Mounting Bracket

Part no.	Applicable model
AS-10D	AS1002FS□
AS-20D	AS2002FS□
AS-25D	AS2052FS□
AS-30D	AS3002FS□
AS-40D	AS4002FS□

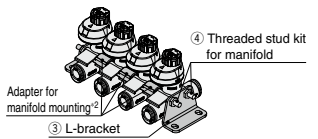


*1 Prepare DIN rail by user.

*2 It is included in the threaded stud kit for manifold (excluding the AS4002FS□). Refer to the following details of the kit.

③ L-Bracket

Part no.	Applicable model
AS-10L	AS1002FS□
AS-20L	AS2002FS□
AS-25L	AS2052FS□
AS-30L	AS3002FS□
AS-40L	AS4002FS□



④ Threaded Stud Kit for Manifold

Part number				Applicable model	
4 stations	6 stations	8 stations	10 stations	Metric size	Inch size
AS-1AB	AS-3AB	AS-5AB	AS-7AB	AS1002FS□-23	AS1002FS□-01
				AS1002FS□-04	AS1002FS□-03
	AS-2AB	AS-4AB	AS-6AB	AS-8AB AS-23AB	AS1002FS□-06
AS-9AB	AS-10AB	AS-11AB	AS-12AB	AS2002FS□-04	AS2002FS□-03
				AS2002FS□-06	AS2002FS□-07
				AS2052FS□-06	AS2052FS□-07
AS-13AB	AS-14AB	AS-15AB	AS-16AB	AS2052FS□-08	AS2052FS□-09
				AS3002FS□-06	AS3002FS□-07
				AS3002FS□-08	AS3002FS□-09
AS-17AB	AS-19AB	AS-20AB	AS-22AB	AS3002FS□-10	AS3002FS□-11
				AS3002FS□-11	AS3002FS□-12
				AS3002FS□-12	AS3002FS□-13
AS-24AB			AS-25AB	AS4002FS□-10	AS4002FS□-11
AS-43B	AS-45B	AS-47B	AS-48B	AS4002FS□-12	AS4002FS□-13
				AS4002FS□-13	AS4002FS□-14

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	
AS-1AB	AS-10A	3	72	2	M3	4	M3	4	
AS-2AB			90						
AS-3AB		5	104	2					
AS-4AB			114						
AS-5AB		7	135	2					
AS-6AB			143						
AS-7AB		9	167	2					
AS-8AB			170						
AS-23AB		AS-20A	3	90					2
AS-9AB				135					
AS-10AB	7		180	2					
AS-11AB			220						
AS-12AB	3		111	2					
AS-13AB			147						
AS-14AB	7		191	2					
AS-15AB			236						
AS-16AB	AS-30A		3	111	2	M4	4	M4	4
AS-17AB				119					
AS-24AB		3	119	2					
AS-19AB			179						
AS-20AB		5	179	2					
AS-21AB			236						
AS-22AB		9	277	2					
AS-25AB			293						
AS-43B		—	—	119	2				
AS-45B				179					
AS-47B	236								
AS-48B	277								

* AS4002FS□ type can be mounted with the threaded stud kit only (Adapter for manifold mounting is not required).

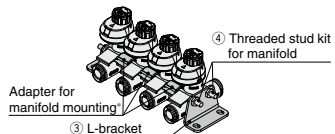
Ordering Example

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-06

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

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



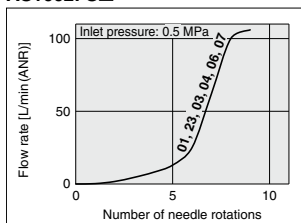
* It is included in the threaded stud kit for manifold (excluding the AS4002FS□). Refer to the details of the kit shown on the left.

AS-FS Series

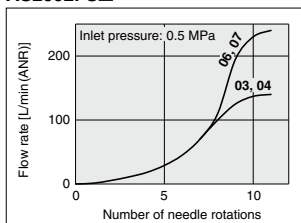
Needle Valve: Flow Rate Characteristics

* The flow rate characteristics are representative values.

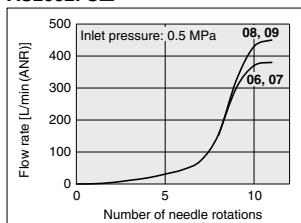
AS1002FS□



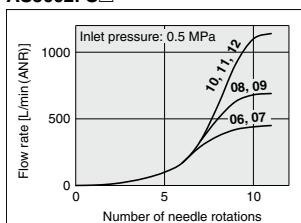
AS2002FS□



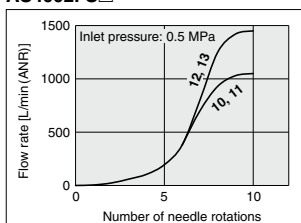
AS2052FS□



AS3002FS□

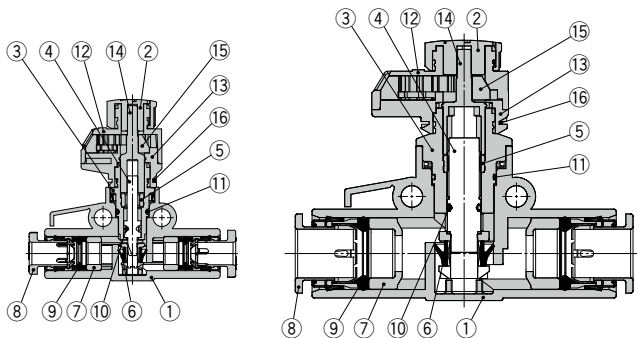


AS4002FS□



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

Construction

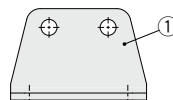


Component Parts

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	
12	Bonnet A	POM	
13	Bonnet B	POM	
14	Gear	PPS	
15	Indicator gear	POM	
16	Clip	Stainless steel	

*1 The AS3002FS□-11, AS4002FS□-11, AS4002FS□-13 are made of electroless nickel plated brass.

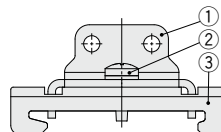
L-Bracket



Component Parts

No.	Description	Material
1	Bracket	Steel strip

DIN Rail Mounting Bracket

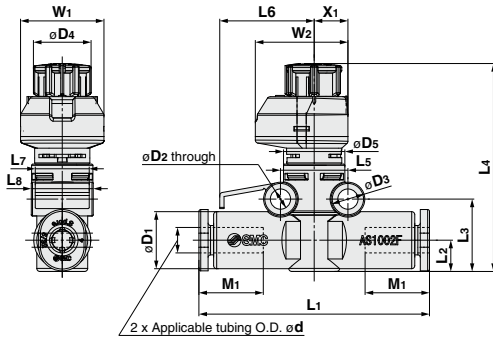


Component Parts

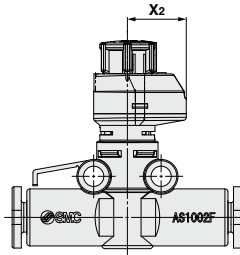
No.	Description	Material
1	Bracket	Steel strip
2	Cross recessed round head screw	Steel wire
3	Clasp	Steel strip

Dimensions

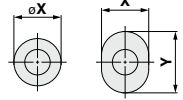
Indicator window direction: 0°



Indicator window direction: 180°



Release button dimensions



Applicable tubing
O.D.: ø3.2, ø4, ø6
ø1/8", ø5/32"

Front view

Right side view

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	W1	W2	X1	X2	Weight [g]	
			øX(X)	Y								Max.	Min.											
AS1002FS□-23	3.2	8.4	6.7	9.5					36.6	5.1	11.8	36.4	33.9	11	15.4	8.8	10.1	13.5					5.2	
AS1002FS□-04	4	9.3	7.7	10	3.3	5.5	9.4	10	37.6			37.4						13	13.6	15.1	5.5	9.6	5.5	
AS1002FS□-06	6	11.6	9.7	12					40.1	6.1	12.8	37.4	34.9				12.3							6.6
AS2002FS□-04	4	9.3	7.7	10	3.3	5.5	12	12	41.3	6.3	13.4	44.5	43	12.6	17	10.5	12.3	13	20	21.5	6.5	15		9.5
AS2002FS□-06	6	11.6	9.7	12					43.1															10.4
AS2052FS□-06	6	12.8	11.5	—	4.3	7.8	13	16	54.2	7.6	17.2	49	47.6	17	22.5	12	16.1	17	19	21.5	24	7.8	16.2	16
AS2052FS□-08	8	15.2	13.5	—					57.2	8.5	18.1	49.9	48.5					19						18.4
AS3002FS□-06	6	13.2	11.5	—					60									17						23.8
AS3002FS□-08	8	15.2	13.5	—	4.5	8	16.6	20	65	9.8	21.7	55.7	54.3	21.8	25	12	20.5	19	21	24.5	28.5	9.3	19.2	26
AS3002FS□-10	10	18.5	16.5	—					70.4									21						30.6
AS3002FS□-12	12	20.9	18.5	—					76	10.9	22.8	56.8	55.4				22.1	22						34.2
AS4002FS□-10	10	18.5	16.5	—	4.3	8	18.8	26	76.9					28	33	14	26.2	21	22	26	29	10	19	42.5
AS4002FS□-12	12	21.7	18.5	—					81.3	11.3	23.7	64.3	62.7					22						47.9

*1 Reference dimensions

Inch Size

Model	Applicable tubing O.D. ød	D1	Release button		D2	D3	D4	D5	L1	L2	L3	L4*1		L5	L6	L7	L8	M1	W1	W2	X1	X2	Weight [g]	
			øX(X)	Y								Max.	Min.											
AS1002FS□-01	1/8"	8.4	6.7	9.5					36.6			36.4	33.9					13.5						5.2
AS1002FS□-03	5/32"	9.3	7.7	10	3.3	5.5	9.4	10	37.6	5.1	11.8	36.4	33.9	11	15.4	8.8	10.1	13	13.6	15.1	5.5	9.6		5.5
AS1002FS□-07	1/4"	12	10.9	—					40.1	6.2	12.9	37.5	35				12.8	13.5						6.7
AS2002FS□-03	5/32"	9.3	7.7	10	3.3	5.5	12	12	41.3	6.3	13.4	44.5	43	12.6	17	10.5	12.3	13	20	21.5	6.5	15		9.5
AS2002FS□-07	1/4"	12	10.9	—					43.2	6.5	13.6	44.7	43.2				12.8	13.5						10.6
AS2052FS□-07	1/4"	13.2	12	—	4.3	7.8	13	16	53.4	7.6	17.2	49	47.6	17	22.5	12	16.1	17	19	21.5	24	7.8	16.2	16.4
AS2052FS□-09	5/16"	15.2	13.5	—					57.2	8.5	18.1	49.9	48.5					19						18.4
AS3002FS□-07	1/4"	13.2	12	—					59									17						23.6
AS3002FS□-09	5/16"	15.2	13.5	—	4.5	8	16.6	20	65	9.8	21.7	55.7	54.3	21.8	25	12	20.5	19	21	24.5	28.5	9.3	19.2	26
AS3002FS□-11	3/8"	18.5	16	—					69.8									21						38.1
AS4002FS□-11	3/8"	18.5	16	—	4.3	8	18.8	26	76.9					28	33	14	26.2	21	22	26	29	10	19	50.2
AS4002FS□-13	1/2"	21.7	20	—					81.3	11.3	23.7	64.3	62.7					22						57.4

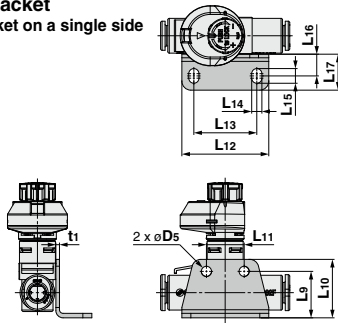
*1 Reference dimensions

AS-FS Series

Dimensions

L-Bracket

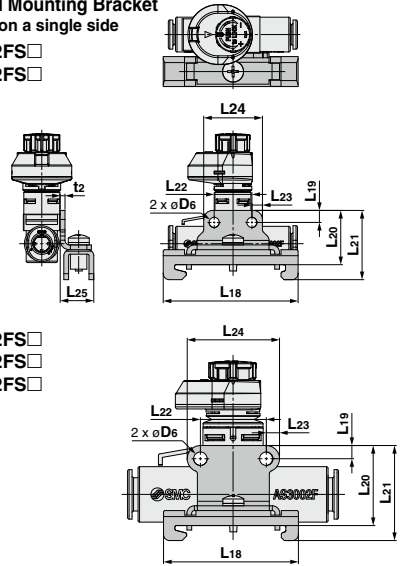
Bracket on a single side



DIN Rail Mounting Bracket

Bracket on a single side

AS1002FS□
AS2002FS□



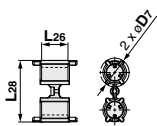
AS2052FS□
AS3002FS□
AS4002FS□

Part no.	Applicable model	D5	L9	L10	L11	L12	L13	L14	L15	L16	L17	t1
AS-10L	AS1002FS□	3.4	14.8	18.3	11	27.5	19.5					
AS-20L	AS2002FS□		15.6	19.6	12.6	29	21	3.4	4.9	7.3	12	1.2
AS-25L	AS2052FS□		19.6	24.6	17	38	28					
AS-30L	AS3002FS□	4.5	24.8	29.8	22	43	33	4.5	6.5	9.5	15.5	1.4
AS-40L	AS4002FS□		25.7	30.7	28	49	39					

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

Adapter for Manifold Mounting

Part no.: AS-□□A

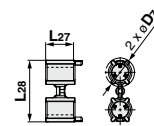


Part no.	Applicable model	D7	L26	L28
AS-10A	AS1002FS□	9.2	4	18.7
AS-20A	AS2002FS□	9.4	8.8	20.4
AS-25A	AS2052FS□	11.4	6.3	27
AS-30A	AS3002FS□	11.8	5.9	32.1

* The AS4002FS□ can be mounted without the adapter.

Adapter for Direct Mounting

Part no.: AS-□□A1

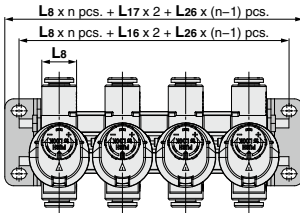


Part no.	Applicable model	D7	L27	L28
AS-10A1	AS1002FS□	9.2	4.5	18.7
AS-20A1	AS2002FS□	9.4	9.3	20.4
AS-25A1	AS2052FS□	11.4	7.1	27
AS-30A1	AS3002FS□	11.8	6.4	32.1

* The AS4002FS□ can be mounted without the adapter.

L-Bracket

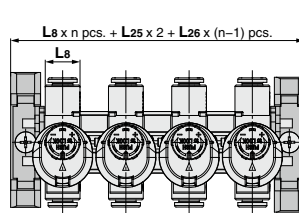
Brackets on both sides



- * Refer to page 857 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 855 for threaded stud kits for manifold.
- * Cannot connect the speed controller when the indicator window direction is 90° or 270°.

DIN Rail Mounting Bracket

Brackets on both sides

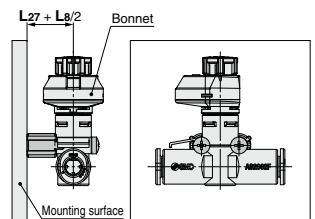


- * Refer to page 857 for L8.
- * The figure above shows the manifold with speed controllers connected using two DIN rail mounting brackets, adapters and a threaded stud kit for manifold. Refer to page 855 for threaded stud kits for manifold.
- * Cannot connect the speed controller when the indicator window direction is 90° or 270°.

Adapter

Direct mounting

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



- * Refer to page 857 for L8.
- * The AS4002FS□ can be mounted directly without the adapter.

Related Equipment

Holder for Speed Controller

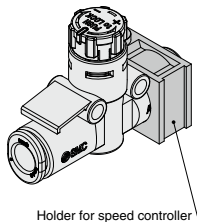
TMH Series

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

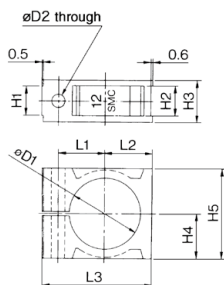
Tubing size	Applicable tubing					
	23	04	06	08	10	12
AS1002F□	ø3.2	ø4	ø6	ø8	ø10	ø12
AS2002F□	TMH-23J	TMH-04J	TMH-06J			
AS2052F□			TMH-06	TMH-08		
AS3002F□			TMH-07			
AS4002F□					TMH-10	TMH-12
						TMH-13

* 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	
AS4002F□						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	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