

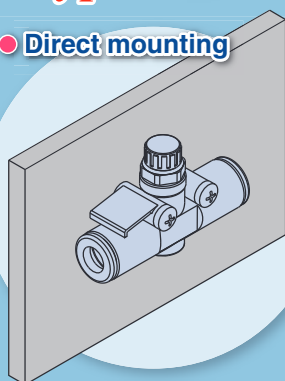
Speed Controller with One-touch Fittings In-line Type

New

RoHS

4 types of mounting variations

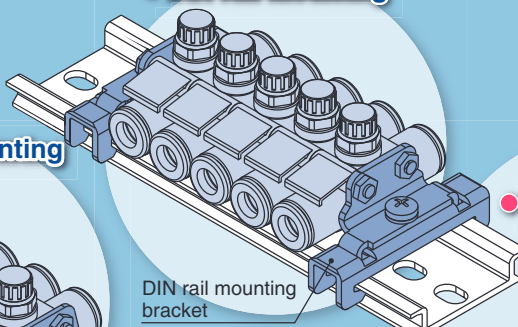
● Direct mounting



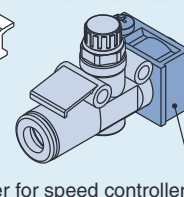
● L-bracket mounting



● DIN rail mounting

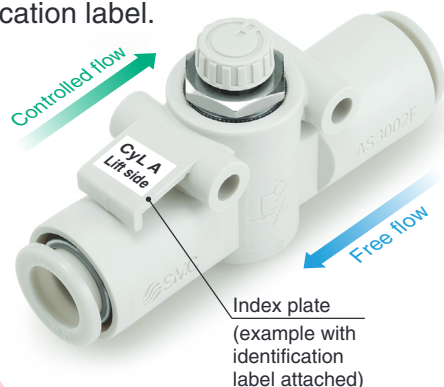


● Holder mounting



Index plate

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



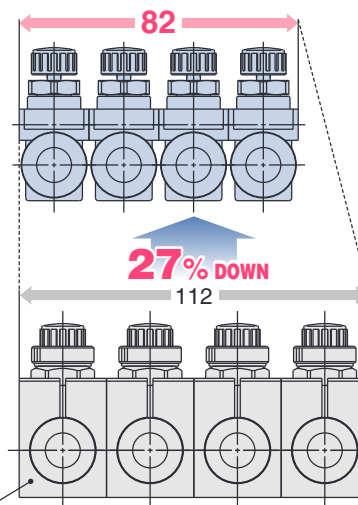
Lightweight

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

Compact

NEW

Four AS3002F-10 controllers connected



Conventional

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

Flow-rate characteristics are equivalent to the conventional product.

Series AS



CAT.EUS20-215A-UK

Series AS

Series

Series	Applicable tube O.D.												Applicable cylinder bore size (mm)	
	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	⊙	⊙	⊙	⊙				⊙	⊙	⊙				6, 10, 16, 20 (Note)
AS2002F			⊙	⊙					⊙	⊙				20, 25, 32
AS2052F				⊙	⊙					⊙	⊙			20, 25, 32, 40
AS3002F				⊙	⊙	⊙	⊙			⊙	⊙	⊙		40, 50, 63
AS4002F						⊙	⊙					⊙	⊙	63, 80, 100

Note) The applicable cylinder bore sizes (mm) for AS1002F-02 are 2.5, 4, 6.

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 tube material	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 European Best Pneumatics for more information)

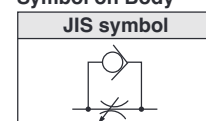
Note 3) Brass parts are all electroless nickel plated.

Flow Rate and Effective Area

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 (Free flow)	Flow rate (l/min (ANR))	20	100	130	230	290	460	390	660	920	920	1390
	Effective area (mm²)	0.3	1.5	2	3.5	4.5	7	6	10	14	14	21

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

With one-touch fittings

Applicable tube O.D.

Metric size	Inch size
02	ø2
23	ø3.2*
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

* Use ø1/8" tube.

Made to Order

Made to Order

Lubricant: Vaseline

-X12

Ex.) AS2002F-04-X12

Grease-free (Sealant: Fluoro coated) + Restrictor (Without Check Valve)

-X21

Ex.) AS2002F-04-X21

Note) Not particle-free

Restrictor (Without Check Valve)

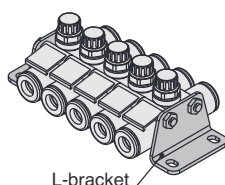
-X214

Ex.) AS2002F-04-X214

Options

L-bracket

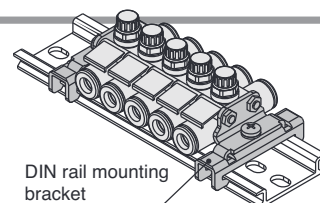
Part no.	Applicable series
AS-12L	AS1002F-02
AS-10L	AS1002F
AS-20L	AS2002F
AS-25L	AS2052F
AS-30L	AS3002F
AS-40L	AS4002F



L-bracket

DIN rail mounting bracket

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



DIN rail mounting bracket

* Bracket for AS1002F-02 is not available.

* Prepare DIN rail by user.

Part no. list of threaded stud kit for manifold

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

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	M4	4	M4	4
AS-41B	78	2				
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

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 1 pc.

Made to Order

Fixed Throttle (No needle function)

X250

How to Order

AS 200 2F - 06 - 1 - X250

Body size

100	M3, M5 standard
200	1/8 standard
205	1/4 standard

With One-touch fitting

Applicable tubing O.D.

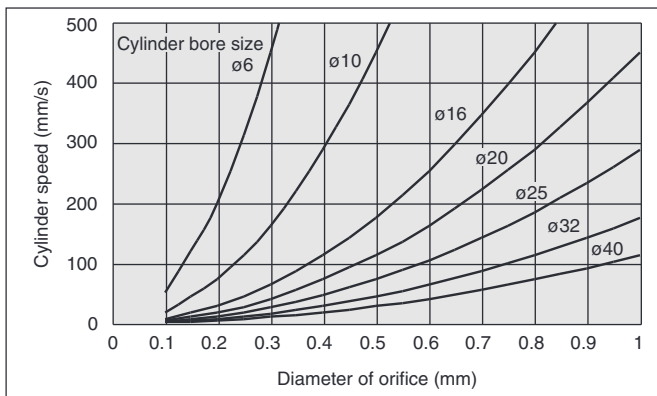
23	ø3.2*
04	ø4
06	ø6
08	ø8

* Use ø1/8 tube

Fixed orifice

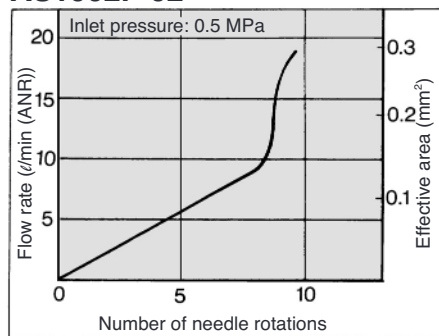
Symbol	Fixed orifice	Applicable model		
		AS1002F-23 AS1002F-04 AS1002F-06	AS2002F-04 AS2002F-06	AS2052F-06 AS2052F-08
1	ø0.1	●	●	●
15	ø0.15	●		
2	ø0.2	●	●	●
25	ø0.25	●		
3	ø0.3	●	●	●
4	ø0.4	●	●	●
5	ø0.5	●	●	●
6	ø0.6	●	●	●
7	ø0.7	●	●	●
8	ø0.8	●	●	●
9	ø0.9	●	●	●
10	ø1.0	●	●	●

The graph below shows the relationship between orifices for each cylinder bore and cylinder speed. Please refer to it during selection. The cylinder speeds on the graph are theoretical values. Actual values may differ depending on the piping conditions or sliding friction, so please use this graph as a guideline only.

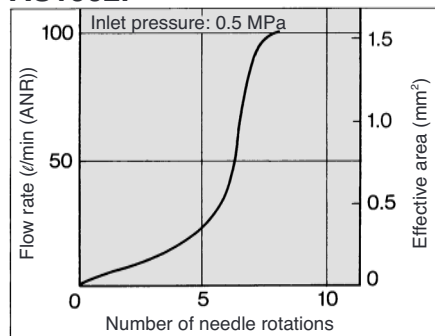


Needle Valve/Flow-rate Characteristics

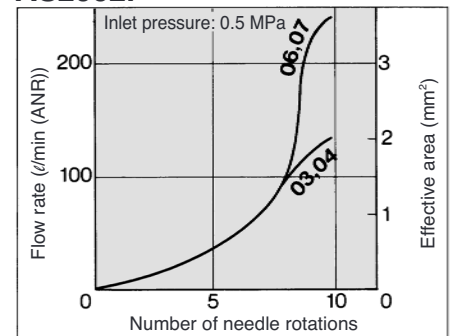
AS1002F-02



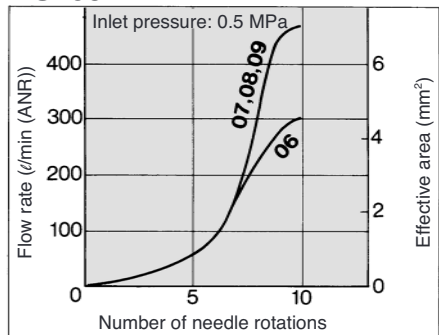
AS1002F



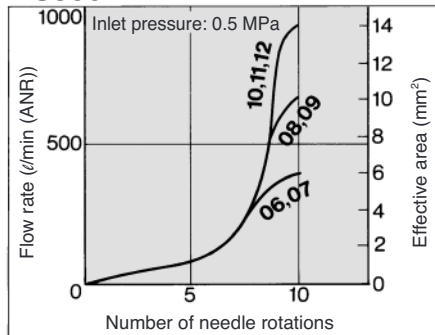
AS2002F



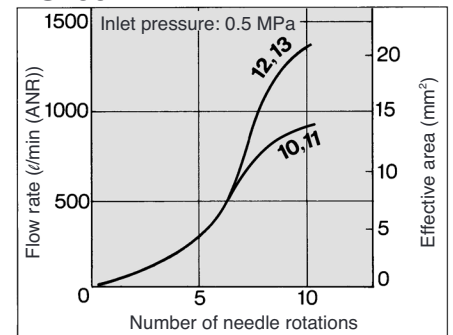
AS2052F



AS3002F

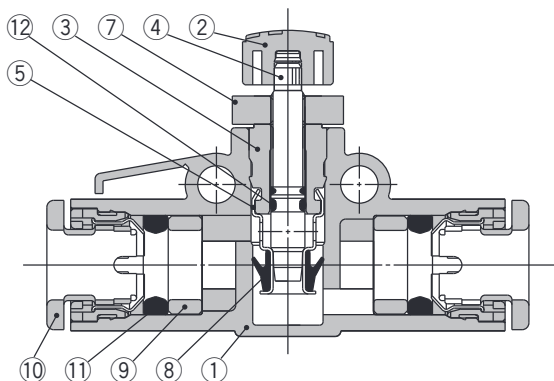


AS4002F



Construction

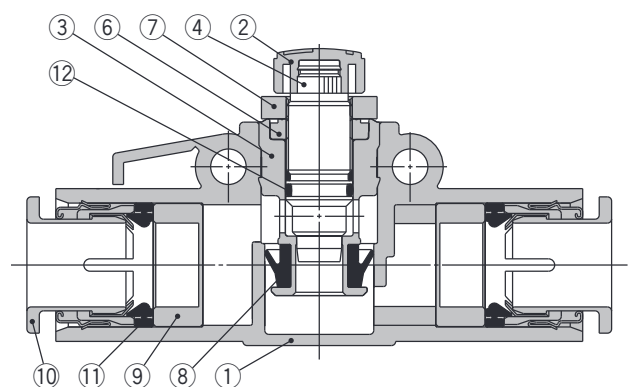
AS1002F, AS2002F, AS2052F



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

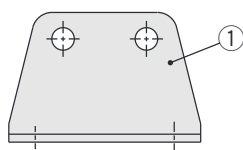
AS1002F-02, AS3002F, AS4002F



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

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

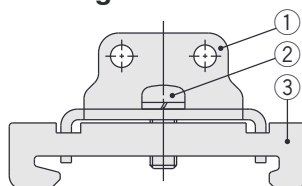
L-bracket



Component Part

No.	Description	Material
1	Bracket	Steel strip

DIN rail mounting bracket



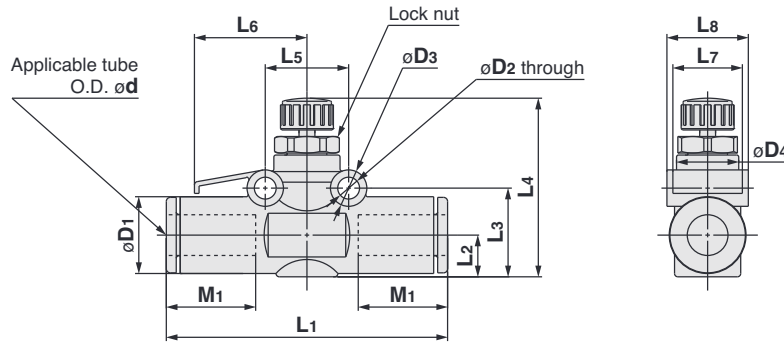
Component Parts

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

⚠ Caution

Be sure to read before handling.
Refer to back cover for Safety
Instructions and European Best
Pneumatics for Flow Control
Equipment Precautions.

Dimensions



Metric Size

Model	Applicable tube 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	3.3	5.5	9.1	36	4.4	11.1	23.8	21	11	15.4	8.8	9.8	12.7	5
AS1002F-04	4	9.3				37	5.1	11.8	24.5	21.7				10.1		5.5
AS1002F-06	6	11.6				39.5	6.1	12.8	25.5	22.7				12.3		6.5
AS2002F-04	4	9.3	3.3	5.5	10	40.7	5.2	12.3	28.9	25.4	12.6	17	10.5	11.5	12.7	8.5
AS2002F-06	6	11.6				42.5	6.3	13.4	30	26.5				12.3		9.5
AS2052F-06	6	12.8				53.2	6.7	16.3	33.2	28.2	17	22.8	12	15.7	17	19
AS2052F-08	8	15.2	4.3	7.8	14	57.2	8	17.6	34.5	29.5				16.1		22
AS3002F-06	6	13.2				59	7.4	19.3	38.6	33.6	22	25	12	20.5	18	36
AS3002F-08	8	15.2				65	8.2	20.1	39.4	34.4						38
AS3002F-10	10	18.5				70.8	9.8	21.7	41	36						42
AS3002F-12	12	20.9				76	10.9	22.8	42.1	37.1						44
AS4002F-10	10	18.5	4.3	8	25	76.9	10.3	22.7	51.6	44.1	28	33	14	26.2	21	76
AS4002F-12	12	21.7				81.3	11.3	23.7	52.6	45.1						82

Note) Reference dimensions

Inch Size

Model	Applicable tube 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	3.3	5.5	9.1	36	4.5	11.2	23.8	21	11	15.4	8.8	9.8	12.7	5
AS1002F-03	5/32"	9.3				37	5.2	11.9	24.5	21.7				10.1		5.5
AS1002F-07	1/4"	12				39.5	6.1	12.8	25.5	22.7				12.8		6.5
AS2002F-03	5/32"	9.3	3.3	5.5	10	40.7	5.2	12.3	28.9	25.4	12.6	17	10.5	11.5	12.7	8.5
AS2002F-07	1/4"	12				42.6	6.5	13.6	30.2	26.7				12.8		9.5
AS2052F-07	1/4"	13.2				53.4	6.9	16.5	33.4	28.4	17	22.8	12	15.7	17	19
AS2052F-09	5/16"	15.2	4.3	7.8	14	57.2	8	17.6	34.5	29.5				16.1		22
AS3002F-07	1/4"	13.2				59	7.4	19.3	38.6	33.6	22	25	12	20.5	17	35
AS3002F-09	5/16"	15.2				65	8.2	20.1	39.4	34.4						38
AS3002F-11	3/8"	18.5	4.3	8	25	69.8	9.8	21.7	41	36						52
AS4002F-11	3/8"	18.5				76.9	10.3	22.7	51.6	44.1	28	33	14	26.2	21	86
AS4002F-13	1/2"	21.7				81.3	11.3	23.7	52.6	45.1						95

Note) Reference dimensions

Proper tightening torque for a lock nut is shown in the below table.

For standard installation, turn 15 to 30 using tool, after fastening by hand.

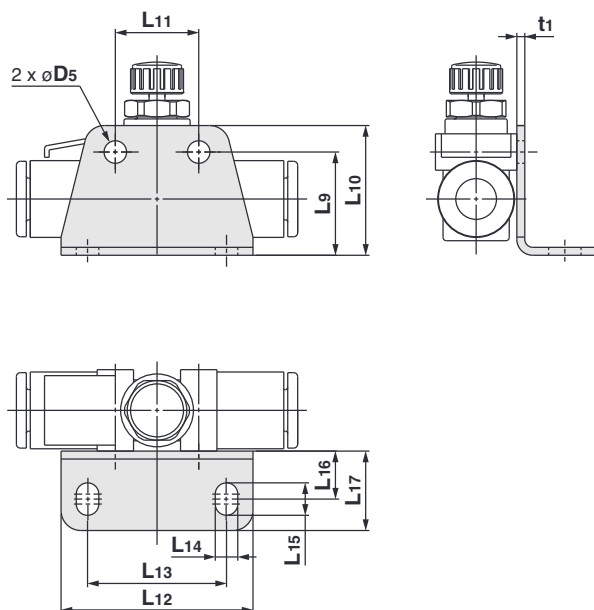
Pay attention not to over torque the product.

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

Series AS

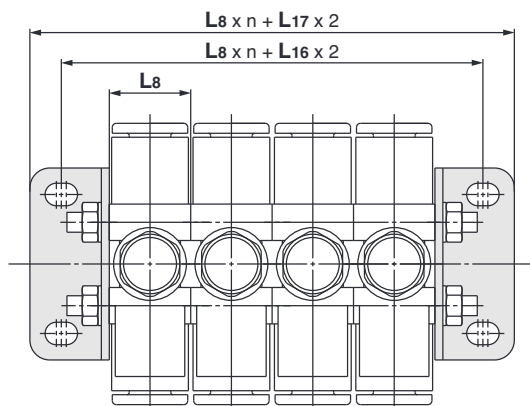
L-bracket

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	
AS-20L	AS2002F		15.6	19.6	12.6	29	21					1.2
AS-25L	AS2052F		19.6	24.6	17	38	28					
AS-30L	AS3002F	4.5	24.8	29.8	22	43	33	4.5	6.5	9.5	15.5	1.4
AS-40L	AS4002F		25.7	30.7	28	49	39					

Brackets on both sides



Note 1) Refer to page 4 for L8.

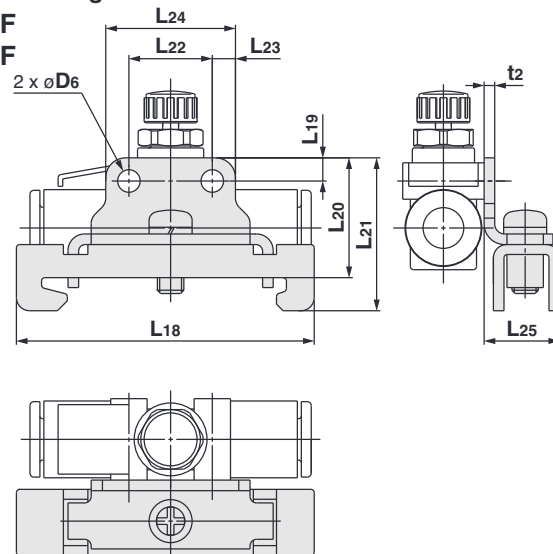
Note 2) The above figure shows the manifold with controllers connected using two L-brackets and a threaded stud kit for manifold.
Refer to page 1 for threaded stud kits for manifold.

DIN rail mounting bracket

Bracket on a single side

AS1002F

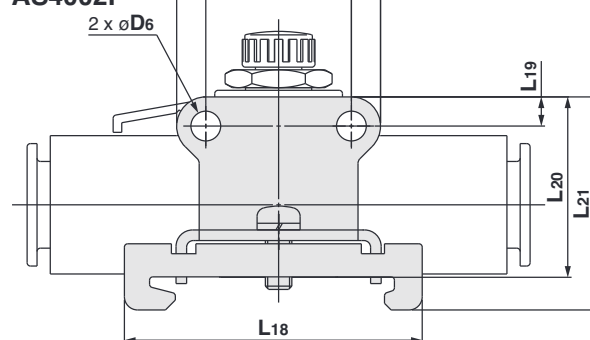
AS2002F



AS2052F

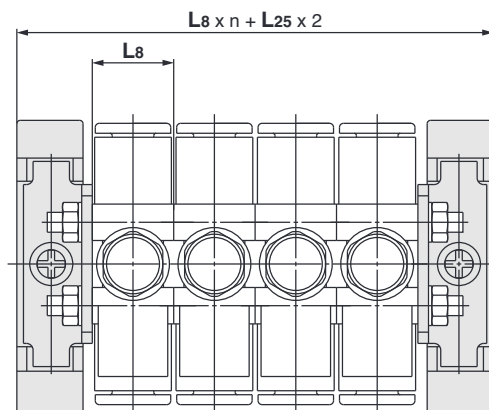
AS3002F

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		18		
AS-20D	AS2002F				18.6	23.6	12.6	3.5	19.6		
AS-25D	AS2052F		45		22	27	17		25.8	11.2	1.6
AS-30D	AS3002F	4.5		4.4	27.2	32.2	22	4.4	30.8		
AS-40D	AS4002F				28.1	33.1	28		36.8		

Brackets on both sides



Note 1) Refer to page 4 for L8.

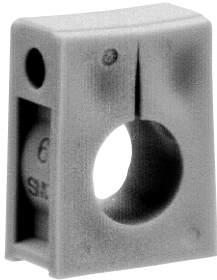
Note 2) The above figure shows the manifold with controllers connected using two DIN rail mounting brackets and a threaded stud kit for manifold.
Refer to page 1 for threaded stud kits for manifold.

Holder for Speed Controller

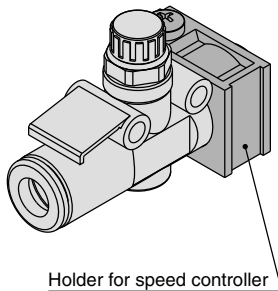
Series *TMH*

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
Colour	White

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

Model		Size (Nominal x Length)	Piece
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		
TMH-08	TMH-09	M4 x 25	
TMH-10	—		
TMH-12	TMH-13	M4 x 35	

Series

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

Metric Size

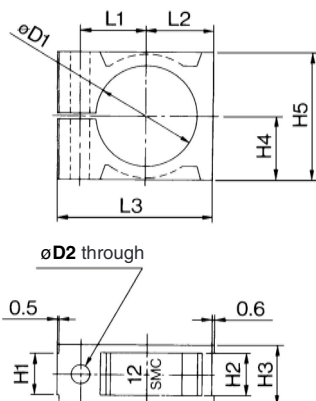
Applicable series	Tube size	Applicable tube					
		23	04	06	08	10	12
		ø3.2	ø4	ø6	ø8	ø10	ø12
AS1002F	TMH-23J		TMH-04J	TMH-06J			
AS2002F							
AS2052F				TMH-06	TMH-08		
AS3002F				TMH-07		TMH-10	TMH-12
AS4002F							TMH-13

Note) The applicable TMH for AS1002F-02 is not available.

Inch Size

Applicable series	Tube size	Applicable tube					
		01	03	07	09	11	13
		ø1/8"	ø5/32"	ø1/4"	ø5/16"	ø3/8"	ø1/2"
AS1002F	TMH-01J		TMH-03J	TMH-07J			
AS2002F							
AS2052F				TMH-07	TMH-09		
AS3002F						TMH-10	
AS4002F							TMH-13

Dimensions



Model		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									6
—	TMH-07	13.5		7.1	7.2	11.1	10	20	11	10.6	26.5	1/4
TMH-08	TMH-09	15.5	4.3									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

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.

-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

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

Warning

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

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

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

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

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

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

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

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

Caution

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

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

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. ²⁾
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.
- 2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

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

Caution

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

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

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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