

Speed Controller with One-touch Fittings

New
RoHS

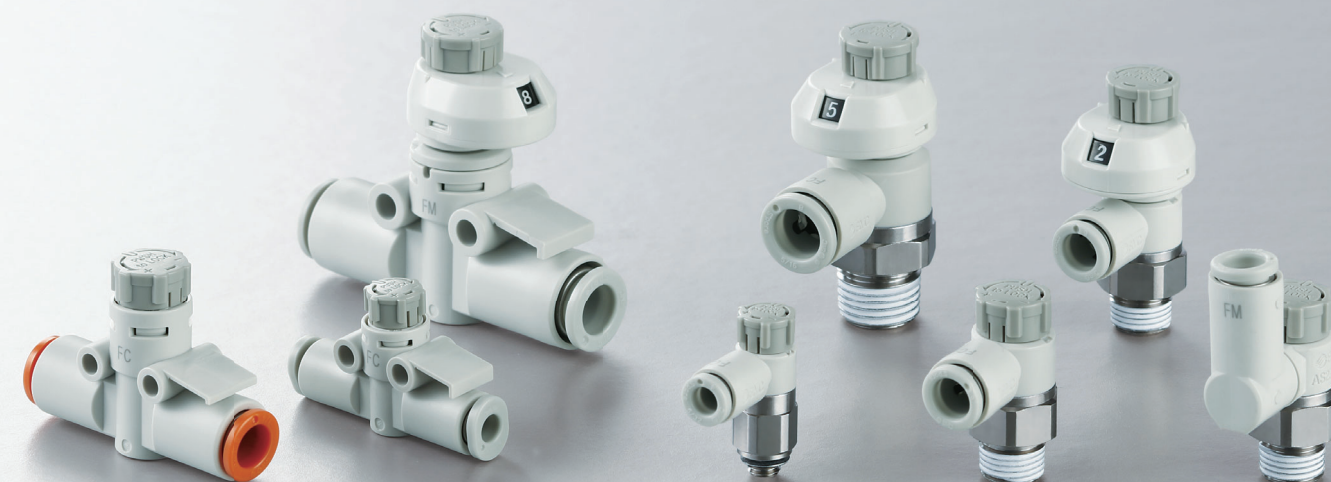
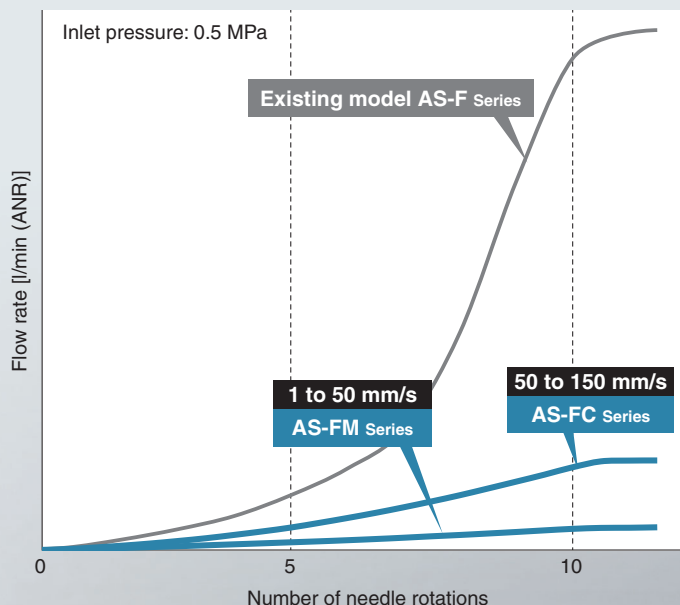
1 to 50 mm/s

AS-FM Series

50 to 150 mm/s

AS-FC Series

Finer adjustment and greater accuracy of actuator speed is available within specified control range.



Variations

	Push-lock type	With Indicator/Push-lock type	Port size	Applicable tubing O.D.	
				Metric	Inch
Elbow type Universal type	 1 to 50 mm/s AS-FM Series 50 to 150 mm/s AS-FC Series ▶ page 1	 1 to 50 mm/s AS-FSM Series 50 to 150 mm/s AS-FSC Series ▶ page 19	M5, 10-32UNF	Ø 2 to Ø 6	Ø 1/8" to Ø 1/4"
			1/8, 1/4	Ø 3.2 to Ø 10	Ø 1/8" to Ø 3/8"
In-line type	 1 to 50 mm/s AS-2-FM Series 50 to 150 mm/s AS-2-FC Series ▶ page 3	 1 to 50 mm/s AS-2-FSM Series 50 to 150 mm/s AS-2-FSC Series ▶ page 21	—	Ø 3.2 to Ø 8	Ø 1/8" to Ø 5/16"

AS-FM/FC Series AS-FSM/FSC Series



CAT.EUS20-267A-UK

Speed Controller with One-touch Fittings

Push-lock Type Elbow Type/Universal Type

1 to 50 mm/s

50 to 150 mm/s

RoHS

AS-FM/FC Series

Elbow Universal



Model

Model	Port size		Seal method	Applicable tubing O.D.										
				Metric size						Inch size				
				2*2	3.2	4	6	8	10	1/8"	5/32"	1/4"	5/16"	3/8"
AS1□□1FM/FC-M5□	M5 x 0.8		Gasket seal	●*3	●	●	●							
AS1□□1FM/FC-U10/32□	10-32UNF									●	●	●		
AS2□□1FM/FC-□01	R	1/8	Sealant (R)*1		●	●	●	●	●*3					
AS2□□1FM/FC-□02	G	1/4	Face seal (G)		●*3	●	●	●	●					
AS2□□1FM/FC-□01	NPT	1/8	Sealant*1							●	●	●	●	
AS2□□1FM/FC-□02		1/4								●*3	●	●	●	●

*1 "Without sealant" type can be selected as a standard option.

*2 Only polyurethane tubing is applicable for Ø 2.

*3 The universal type is not available.

1 to 50 mm/s

50 to 150 mm/s

Finer adjustment and greater accuracy of actuator speed is available within specified control range.

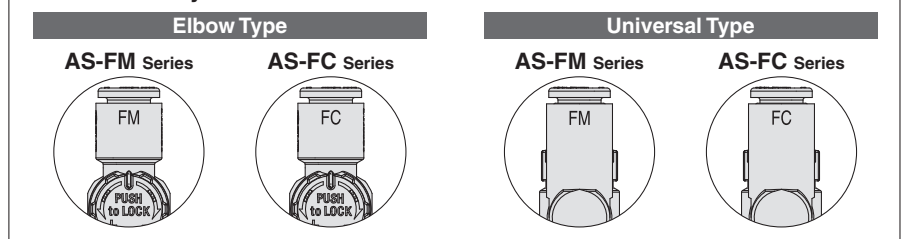
1 to 50 mm/s

AS-FM Series

50 to 150 mm/s

AS-FC Series

How to Identify



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 Catalogue** for details.)

Flow Rate and Sonic Conductance

Model		AS12□1FM-M5 AS13□1FM-M5		AS22□1FM-□01 AS23□1FM-□01			AS22□1FM-□02 AS23□1FM-□02				AS12□1FC-M5 AS13□1FC-M5		AS22□1FC-□01 AS23□1FC-□01			AS22□1FC-□02 AS23□1FC-□02			
Tubing O.D.	Metric size	Ø 2	Ø 3.2 Ø 4 Ø 6	Ø 3.2	Ø 4	Ø 6 Ø 8 Ø 10	Ø 3.2	Ø 4	Ø 6	Ø 8 Ø 10	Ø 2	Ø 3.2 Ø 4 Ø 6	Ø 3.2	Ø 4	Ø 6 Ø 8 Ø 10	Ø 3.2	Ø 4	Ø 6	Ø 8 Ø 10
	Inch size	—	Ø 1/8" Ø 5/32" Ø 1/4"	Ø 1/8"	5/32"	Ø 1/4" Ø 5/16"	Ø 1/8"	5/32"	—	Ø 1/4" Ø 5/16" Ø 3/8"	—	Ø 1/8" Ø 5/32" Ø 1/4"	Ø 1/8"	5/32"	Ø 1/4" Ø 5/16"	Ø 1/8"	5/32"	—	Ø 1/4" Ø 5/16" Ø 3/8"
C values: Sonic conductance dm ³ /(s·bar)	Free flow	0.2	0.3	0.4	0.6	0.6	0.7	1.0	1.3	1.5	0.2	0.3	0.4	0.6	0.6	0.7	1.0	1.3	1.5
	Controlled flow	0.01		0.03			0.1				0.05		0.1			0.3			
b values: Critical pressure ratio	Free flow	0.3	0.4	0.2		0.3	0.3		0.4		0.3	0.4	0.2		0.3	0.3		0.4	
	Controlled flow	0.3		0.3			0.3				0.2		0.3			0.3			
Q [l/min (ANR)] ^{†1}	Free flow	51	82	96	144	153	178	254	354	408	51	82	96	144	153	178	254	354	408
	Controlled flow	3		8			25				12		25			76			

* 10-32UNF has the same specification as M5.

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

*1 These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.



How to Order

Applicable tubing O.D.*1

Metric size		Inch size	
02	Ø 2	01	Ø 1/8"
23	Ø 3.2*2	03	Ø 5/32"
04	Ø 4	07	Ø 1/4"
06	Ø 6		

*1 For selecting applicable tubing O.D., refer to the "Model" on page 1.
Metric size and inch size types can be visually identified by colour of the release button.

Metric size: Light grey

Inch size: Orange

*2 Use Ø 1/8" tubing.

Width across flats (H)

E	8 mm
—	9 mm

Body size

1	M5 x 0.8 10-32UNF
---	----------------------

Port size

M5	M5 x 0.8
U10/32	10-32UNF

Body size 1

AS 1 2 0 1 FM - M5 E - 06 A -

Body size 2

AS 2 2 0 1 FM - 01 - 06 S A -

Body size

2	1/8, 1/4
---	----------

Type

2	Elbow
3	Universal

Control type*1

0	Meter-out
1	Meter-in

*1 Meter-out and meter-in types can be visually identified by colour of the knob.
Meter-out: Grey
Meter-in: Light blue

Control range

FM	1 to 50 mm/s
FC	50 to 150 mm/s

Thread type

—	R
N	NPT
G	G

Port size

01	1/8
02	1/4

Made to Order

Refer to page 17 for details.

Push-lock type

Seal method

—	Without sealant
S	With sealant

Applicable tubing O.D.*2

Metric size		Inch size	
23	Ø 3.2*3	01	Ø 1/8"
04	Ø 4	03	Ø 5/32"
06	Ø 6	07	Ø 1/4"
08	Ø 8	09	Ø 5/16"
10	Ø 10	11	Ø 3/8"

*2 For selecting applicable tubing O.D., refer to the "Model" on page 1.

*3 Use Ø 1/8" tubing.

Flow Direction Symbols on Body

	Meter-out	Meter-in
Symbol		



Made to Order
(For details, refer to page 17.)

Symbol	Specifications
-X12	Lubricant: Vaseline
-X21	Grease-free (Seal: Fluorine-coated) + Restrictor (Without check valve)
-X214	Restrictor (Without check valve)
10-	Clean series

Caution

Be sure to read this before handling the products. Refer to the back cover for Safety Instructions. For the Flow Control Equipment Precautions, please refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website. For the Specific Product Precautions, please refer to the Catalogues for the Push-lock Type Speed Controller with One-touch Fitting and the Speed Controller with Indicator on the website, <https://www.smc.eu>

Speed Controller with One-touch Fittings

Push-lock Type In-line Type

1 to 50 mm/s

50 to 150 mm/s

RoHS

AS-FM/FC Series

In-line



Model

Model	Applicable tubing O.D.							
	Metric size				Inch size			
	3.2	4	6	8	1/8"	5/32"	1/4"	5/16"
AS1002FM/FC	●	●	●		●	●	●	
AS2002FM/FC		●	●			●	●	
AS2052FM/FC			●	●			●	●

1 to 50 mm/s

50 to 150 mm/s

Finer adjustment and greater accuracy of actuator speed is available within specified control range.

1 to 50 mm/s

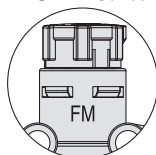
AS-FM Series

50 to 150 mm/s

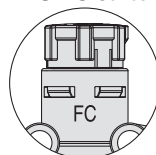
AS-FC Series

How to Identify

AS-FM Series



AS-FC Series



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

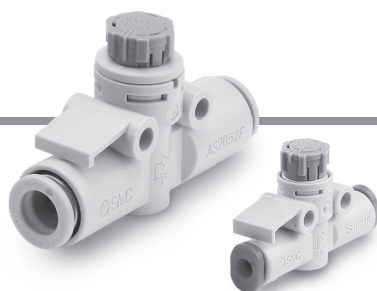
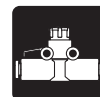
*1 Use caution at the max. operating pressure when using soft nylon or polyurethane tubing.
(Refer to the **Web Catalogue** for details.)

Flow Rate and Sonic Conductance

Model		AS1002FM-□A			AS2002FM-□A		AS2052FM-□A		AS1002FC-□A			AS2002FC-□A		AS2052FC-□A	
Tubing O.D.	Metric size	Ø 3.2	Ø 4	Ø 6	Ø 4	Ø 6	Ø 6	Ø 8	Ø 3.2	Ø 4	Ø 6	Ø 4	Ø 6	Ø 6	Ø 8
	Inch size	Ø 1/8"	5/32"	Ø 1/4"	5/32"	Ø 1/4"	Ø 1/4"	Ø 5/16"	Ø 1/8"	5/32"	Ø 1/4"	5/32"	Ø 1/4"	Ø 1/4"	Ø 5/16"
C values: Sonic conductance dm ³ /(s·bar)	Free flow	0.3	0.4	0.6	0.4	0.6	1.0	1.2	0.3	0.4	0.6	0.4	0.6	1.0	1.2
	Controlled flow	0.01			0.03		0.1		0.05			0.1		0.3	
b values: Critical pressure ratio	Free flow	0.3	0.2		0.3	0.1	0.2		0.3	0.2		0.3	0.1	0.2	
	Controlled flow	0.4			0.3		0.3		0.3			0.4		0.4	
Q [l/min (ANR)] ⁻¹	Free flow	76	96	144	96	136	240	287	76	87	144	102	136	240	287
	Controlled flow	3			8		25		13			27		82	

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

*1 These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.



How to Order

AS 200 2 FM - 06 A -

Body size

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

Control range

FM	1 to 50 mm/s
FC	50 to 150 mm/s

Made to Order

Push-lock type

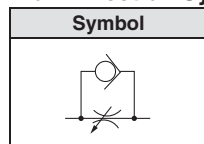
Applicable tubing O.D.*1

Metric size		Inch size	
23	Ø 3.2*2	01	Ø 1/8"
04	Ø 4	03	Ø 5/32"
06	Ø 6	07	Ø 1/4"
08	Ø 8	09	Ø 5/16"

*1 For selecting applicable tubing O.D., refer to the "Model" on page 3.

*2 Use Ø 1/8" tubing.

Flow Direction Symbols on Body



Made to Order (For details, refer to page 17.)

Symbol	Specifications
-X12	Lubricant: Vaseline
-X21	Grease-free (Seal: Fluorine-coated) + Restrictor (Without check valve)
-X214	Restrictor (Without check valve)
10-	Clean series

Caution

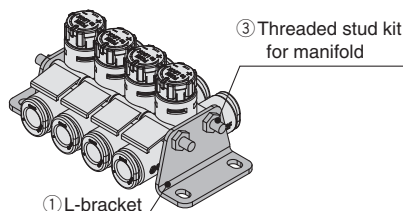
Be sure to read this before handling the products. Refer to the back cover for Safety Instructions. For the Flow Control Equipment Precautions, please refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website. For the Specific Product Precautions, please refer to the Catalogues for the Push-lock Type Speed Controller with One-touch Fitting and the Speed Controller with Indicator on the website, <https://www.smc.eu>



Options/ In-line Type

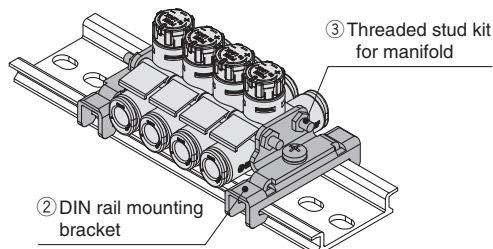
① L-Bracket

Part number	Applicable model
AS-10L	AS1002FM/FC
AS-20L	AS2002FM/FC
AS-25L	AS2052FM/FC



② DIN Rail Mounting Bracket

Part number	Applicable model
AS-10D	AS1002FM/FC
AS-20D	AS2002FM/FC
AS-25D	AS2052FM/FC



* Prepare a DIN rail by the customer.

③ Threaded Stud Kit for Manifold: Metric Size

Part number				Applicable model
4 stations	6 stations	8 stations	10 stations	
AS-32B	AS-33B	AS-35B	AS-36B	AS1002FM/FC-23A
				AS1002FM/FC-04A
	AS-34B	AS-36B	AS-37B	AS1002FM/FC-06A
			AS-38B	—
AS-32B	AS-34B	AS-36B	AS-37B	AS2002FM/FC-04A
			AS-38B	AS2002FM/FC-06A
AS-41B	AS-42B	AS-44B	AS-45B	AS2052FM/FC-06A
				—
				AS2052FM/FC-08A

Details of Threaded Stud Kit for Manifold

Threaded stud			Accessories			
Part number	Length	Quantity	Hexagon nut	Quantity	Flat washer	Quantity
AS-32B	62	2	M3	4	M3	4
AS-33B	72	2				
AS-34B	90	2				
AS-35B	104	2				
AS-36B	114	2				
AS-37B	135	2				
AS-38B	140	2	M4	4	M4	4
AS-41B	78	2				

③ Threaded Stud Kit for Manifold: Inch Size

Part number				Applicable model
4 stations	6 stations	8 stations	10 stations	
AS-32B	AS-33B	AS-35B	AS-36B	AS1002FM/FC-01A
				AS1002FM/FC-03A
	AS-34B	AS-36B	AS-37B	—
			AS-38B	AS1002FM/FC-07A
AS-32B	AS-34B	AS-36B	AS-37B	AS2002FM/FC-03A
			AS-38B	—
AS-41B	AS-42B	AS-44B	AS-45B	AS2002FM/FC-07A
				AS2052FM/FC-09A

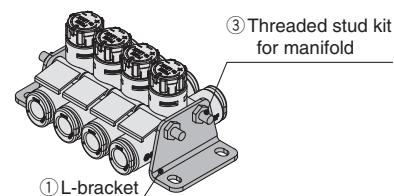
Ordering Example

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.) AS2002FM-04A

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

- Speed controller
AS2002FM-04A 4 pcs.
- L-bracket
AS-20L 2 pcs.
- Threaded stud kit for manifold
AS-32B 1 set

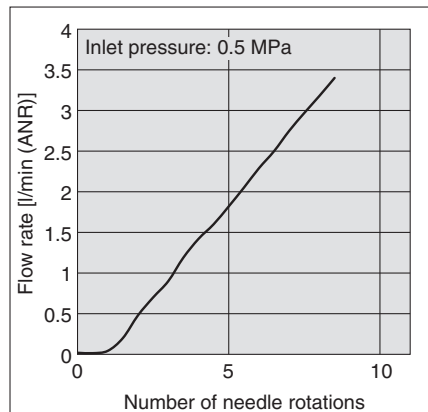




Needle Valve: Flow Rate Characteristics

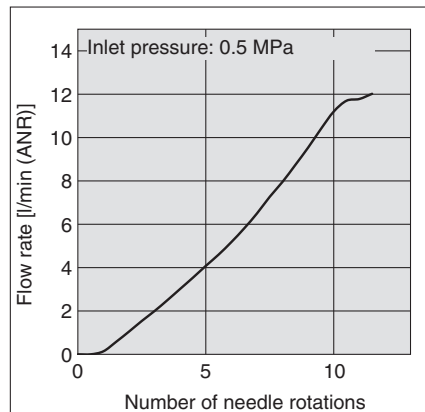
1 to 50 mm/s

AS1201FM-M5□, AS1211FM-M5□
AS1301FM-M5□, AS1311FM-M5□
AS1002FM-□A

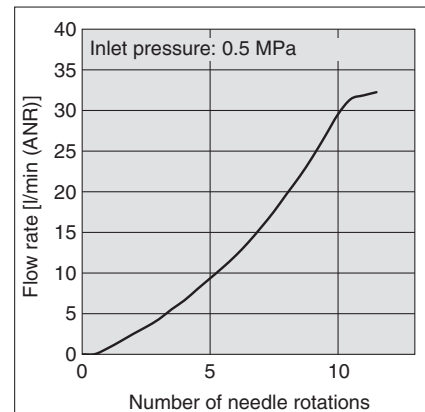


* -U10/32 has the same specification as M5.

AS2201FM-01, AS2211FM-01
AS2301FM-01, AS2311FM-01
AS2002FM-□A

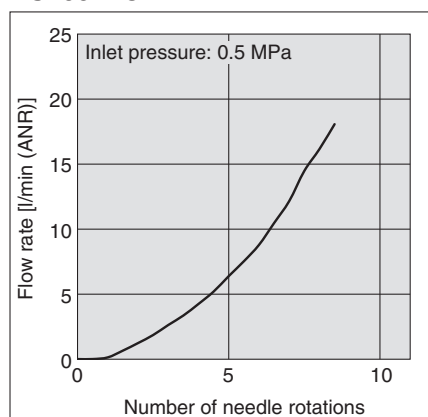


AS2201FM-02, AS2211FM-02
AS2301FM-02, AS2311FM-02
AS2052FM-□A

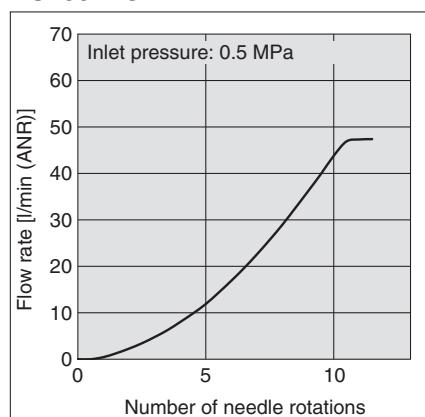


50 to 150 mm/s

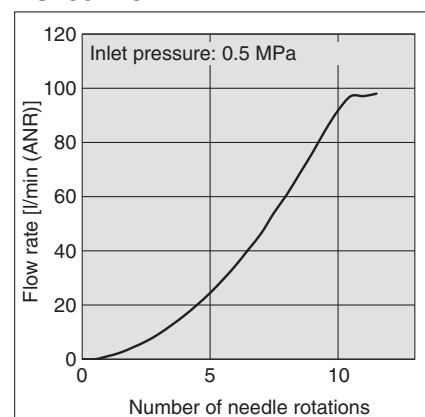
AS1201FC-M5□, AS1211FC-M5□
AS1301FC-M5□, AS1311FC-M5□
AS1002FC-□A

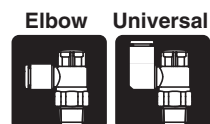


AS2201FC-01, AS2211FC-01
AS2301FC-01, AS2311FC-01
AS2002FC-□A



AS2201FC-02, AS2211FC-02
AS2301FC-02, AS2311FC-02
AS2052FC-□A

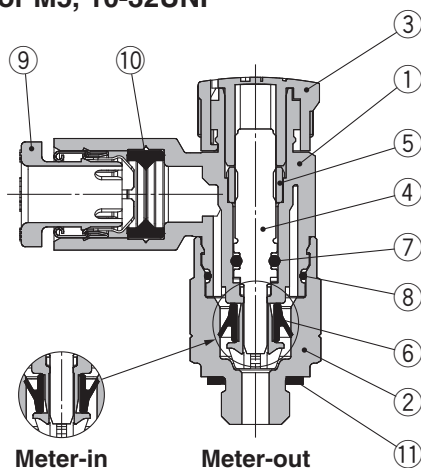




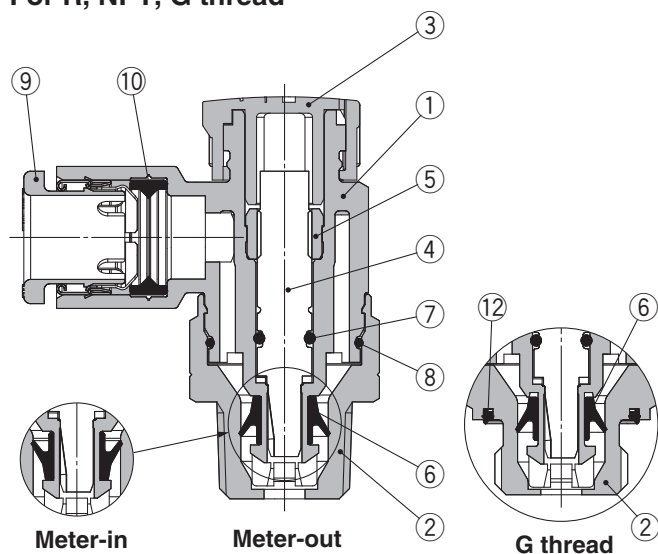
Construction

Elbow Type

Seal method: Gasket seal
 For M5, 10-32UNF



Seal method: Sealant, Face seal
 For R, NPT, G thread

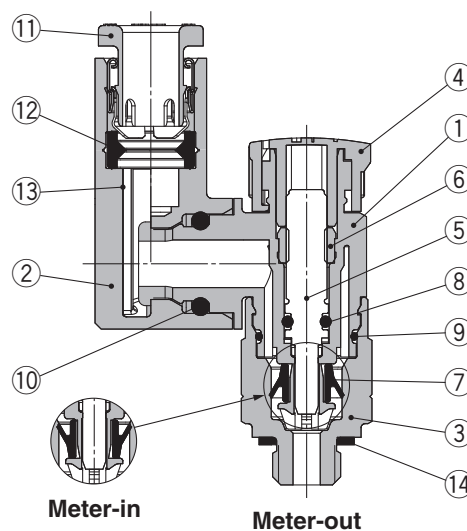


Component Parts

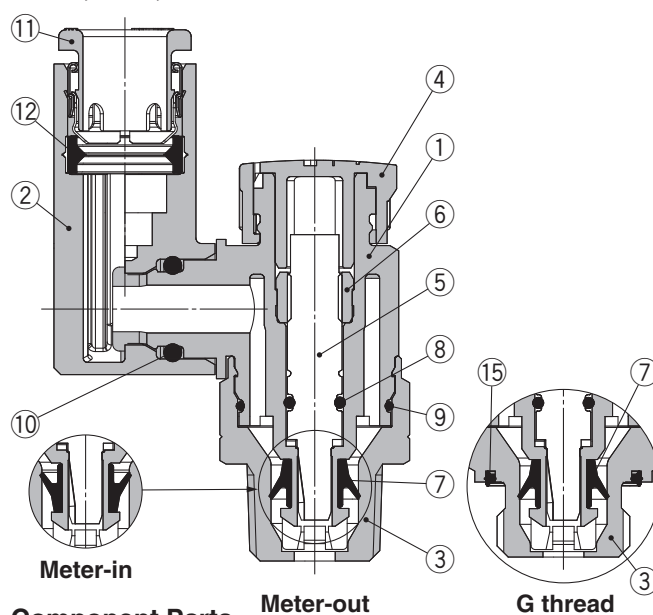
No.	Description	Material	Note
1	Body A	PBT	
2	Body B	Brass	Electroless nickel plating
3	Knob	POM	
4	Needle	PBT	
5	Needle guide	Brass	Electroless nickel plating
6	U-seal	HNBR	
7	O-ring	NBR	
8	O-ring	NBR	
9	Cassette	—	
10	Seal	NBR	
11	Gasket	NBR/Stainless steel	
12	Seal	NBR	

Universal Type

Seal method: Gasket seal
 For M5, 10-32UNF



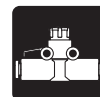
Seal method: Sealant, Face seal
 For R, NPT, G thread



Component Parts

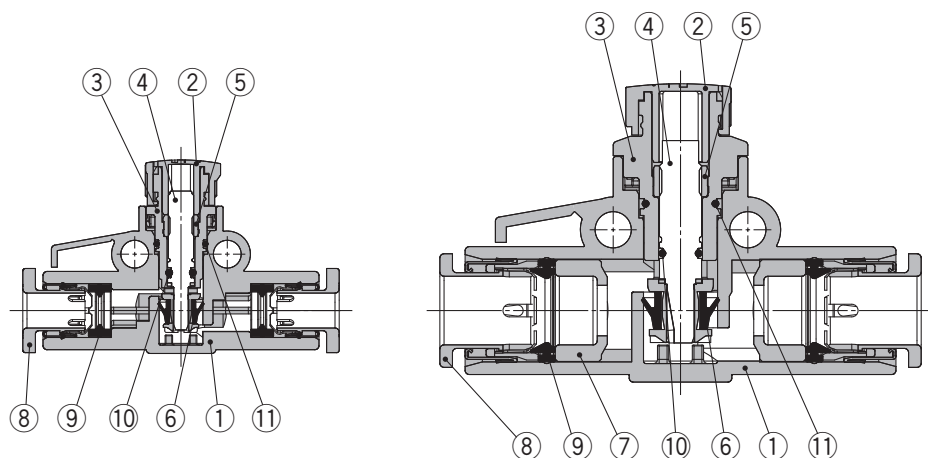
No.	Description	Material	Note
1	Body A	PBT	
2	Elbow body	PBT	
3	Body B	Brass	Electroless nickel plating
4	Knob	POM	
5	Needle	PBT	
6	Needle guide	Brass	Electroless nickel plating
7	U-seal	HNBR	
8	O-ring	NBR	
9	O-ring	NBR	
10	O-ring	NBR	
11	Cassette	—	
12	Seal	NBR	
13	Spacer	PBT*1	
14	Gasket	NBR/Stainless steel	
15	Seal	NBR	

*1 A spacer is included only for the applicable tubing O.D. Ø 3.2 and Ø 1/8".



Construction

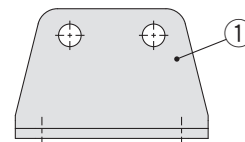
In-line Type



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	
8	Gasket	—	
9	Seal	NBR	
10	O-ring	NBR	
11	O-ring	NBR	

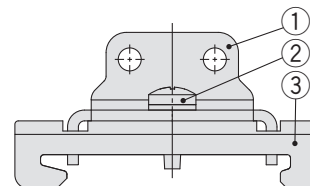
L-Bracket



Component Parts

No.	Description	Material
1	Bracket	Steel strip

DIN Rail Mounting Bracket

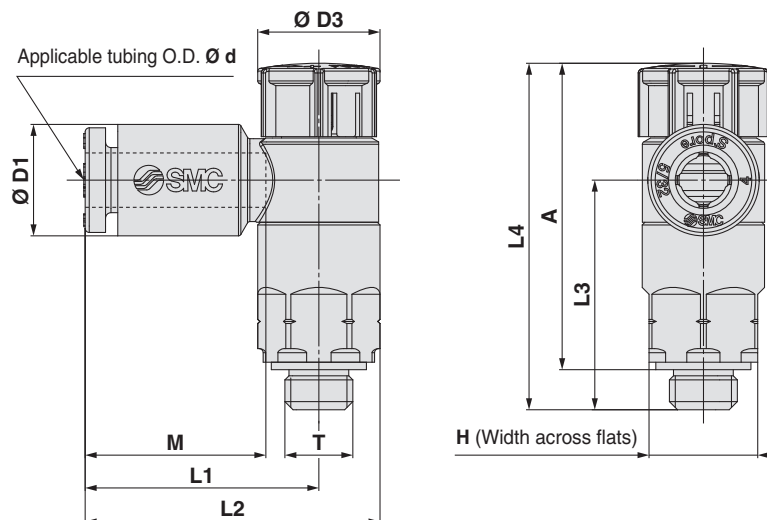


Component Parts

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

Dimensions/ Elbow Type

Seal method: Gasket seal
 For M5, 10-32UNF



Metric Size

Model	d	T	H*1	D1	D3	L1	L2	L3	L4*2		A*3		M	Weight [g]
									Unlocked	Locked	Unlocked	Locked		
AS12□1FM/FC-M5E-02A	2	M5 x 0.8	8 (9)	5.8	9.4	15.8	20.3	16.9	26.5	25.4	23.5	22.4	11.9	5
AS12□1FM/FC-M5E-23A	3.2			7.2		17.2	21.7						13.3	
AS12□1FM/FC-M5E-04A	4			8.2		18.6	23.1							
AS12□1FM/FC-M5E-06A	6			10.4										6

*1 The value in () indicates that the dimension for the width across flats is 9 mm.

*2 Reference dimensions

*3 Reference dimensions of threads after installation

Inch Size

Model	d	T	H*1	D1	D3	L1	L2	L3	L4*2		A*3		M	Weight [g]
									Unlocked	Locked	Unlocked	Locked		
AS12□1FM/FC-U10/32E-01A	1/8"	10/32UNF	8 (9)	7.2	9.4	17.2	21.7	16.9	26.5	25.4	23.5	22.4	13.3	5
AS12□1FM/FC-U10/32E-03A	5/32"			8.2		18.6	23.1							
AS12□1FM/FC-U10/32E-07A	1/4"			11.2										6

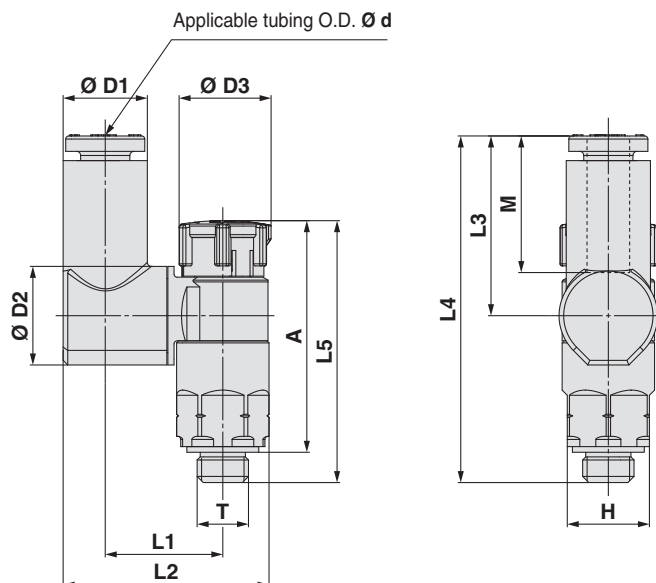
*1 The value in () indicates that the dimension for the width across flats is 9 mm.

*2 Reference dimensions

*3 Reference dimensions of threads after installation

Dimensions/ Universal Type

Seal method: Gasket seal
For M5, 10-32UNF



Metric Size

Model	d	T	H*1	D1	D2	D3	L1	L2	L3	L4	L5*2		A*3		M	Weight [g]
											Unlocked	Locked	Unlocked	Locked		
AS13□1FM/FC-M5E-23A	3.2	M5 x 0.8	8 (9)	7.2	9.6	9.4	11.6	19.4	17.5	33.8	26.5	25.4	23.5	22.4	13.3	6
AS13□1FM/FC-M5E-04A	4			8.2				19.8								
AS13□1FM/FC-M5E-06A	6			10.4				20.9								

*1 The value in () indicates that the dimension for the width across flats is 9 mm.

*2 Reference dimensions

*3 Reference dimensions of threads after installation

Inch Size

Model	d	T	H*1	D1	D2	D3	L1	L2	L3	L4	L5*2		A*3		M	Weight [g]
											Unlocked	Locked	Unlocked	Locked		
AS13□1FM/FC-U10/32E-01A	1/8"	10/32UNF	8 (9)	7.2	9.6	9.4	11.6	19.4	17.5	33.8	26.5	25.4	23.5	22.4	13.3	6
AS13□1FM/FC-U10/32E-03A	5/32"			8.2				19.8								
AS13□1FM/FC-U10/32E-07A	1/4"			11.2				21.3								

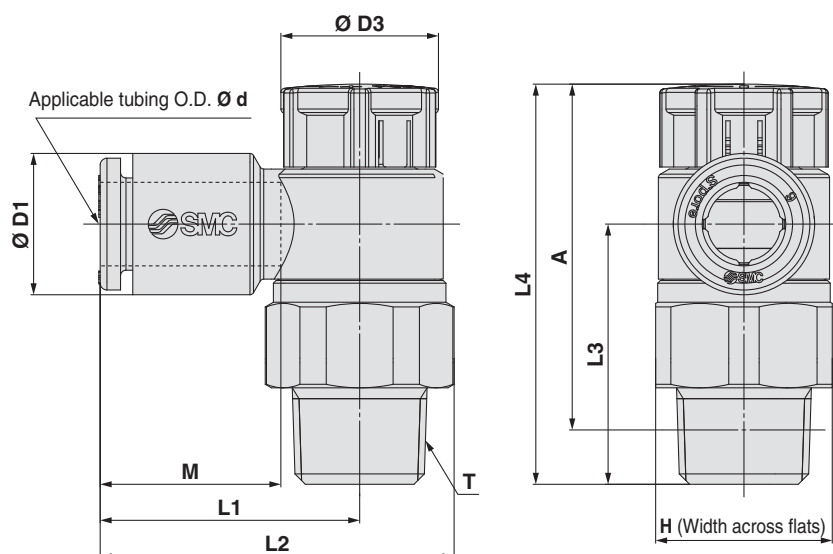
*1 The value in () indicates that the dimension for the width across flats is 9 mm.

*2 Reference dimensions

*3 Reference dimensions of threads after installation

Dimensions/ Elbow Type

Seal method: Sealant
 For R, NPT thread



Metric Size

Metric Size														[mm]	
Model	d	T	H	D1	D3	L1	L2	L3	L4*1		A*2		M	Weight [g]	
									Unlocked	Locked	Unlocked	Locked			
AS22□1FM/FC-01-23(S)A	3.2	1/8	13	7.2	12	19.1	26.2	19.1	30.6	29.2	27.5	26.1	13.3	9	
AS22□1FM/FC-01-04(S)A	4			8.2										10	
AS22□1FM/FC-01-06(S)A	6			10.4		22.4	29.5							14.2	11
AS22□1FM/FC-01-08(S)A	8			13.2									15.6		
AS22□1FM/FC-01-10(S)A	10			15.9		25.3	32.4								
AS22□1FM/FC-02-23(S)A	3.2	1/4	17	7.2	13	20.9	30.2	22.6	36.6	35	31.1	29.5	13.3	18	
AS22□1FM/FC-02-04(S)A	4			8.2										23.4	32.7
AS22□1FM/FC-02-06(S)A	6			10.4		23.9	33.2								
AS22□1FM/FC-02-08(S)A	8			13.2		26.9	36.2								
AS22□1FM/FC-02-10(S)A	10			15.9											

*1 Reference dimensions

*2 Reference dimensions of threads after installation

Inch Size

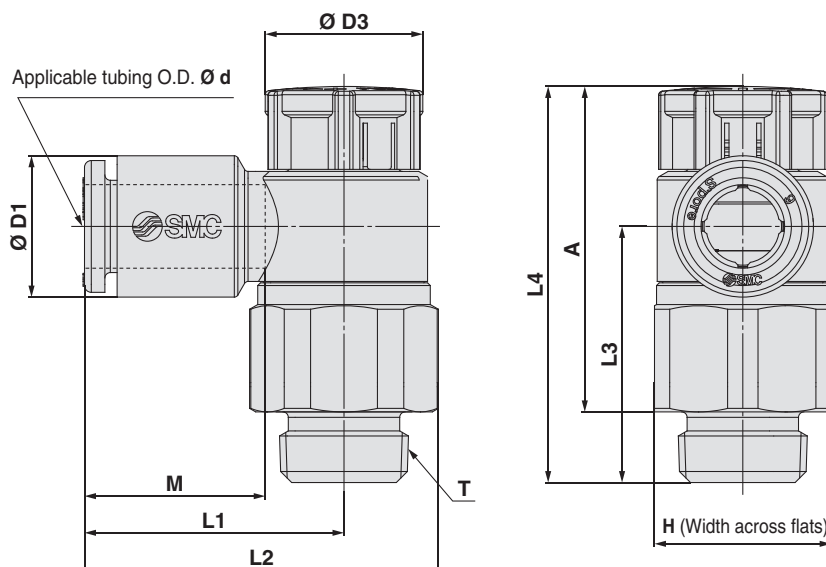
Model	d	T	H	D1	D3	L1	L2	L3	L4*1		A*2		M	Weight [g]
									Unlocked	Locked	Unlocked	Locked		
AS22□1FM/FC-N01-01(S)A	1/8"	1/8	12.7	7.2	12	19.1	26.2	19.1	30.6	29.2	27.5	26.1	13.3	9
AS22□1FM/FC-N01-03(S)A	5/32"			8.2										9
AS22□1FM/FC-N01-07(S)A	1/4"			11.2		20.8	27.9							10
AS22□1FM/FC-N01-09(S)A	5/16"			13.2		22.4	29.5							11
AS22□1FM/FC-N02-01(S)A	1/8"	1/4	17.5	7.2	13	20.9	30.3	22.6	36.6	35	31.1	29.5	13.3	19
AS22□1FM/FC-N02-03(S)A	5/32"			8.2										19
AS22□1FM/FC-N02-07(S)A	1/4"			11.2		23.4	32.8							20
AS22□1FM/FC-N02-09(S)A	5/16"			13.2		23.9	33.3							21
AS22□1FM/FC-N02-11(S)A	3/8"			15.5		26.4	35.8							22

*1 Reference dimensions

*2 Reference dimensions of threads after installation

Dimensions/ Elbow Type

Seal method: Face seal
For G thread

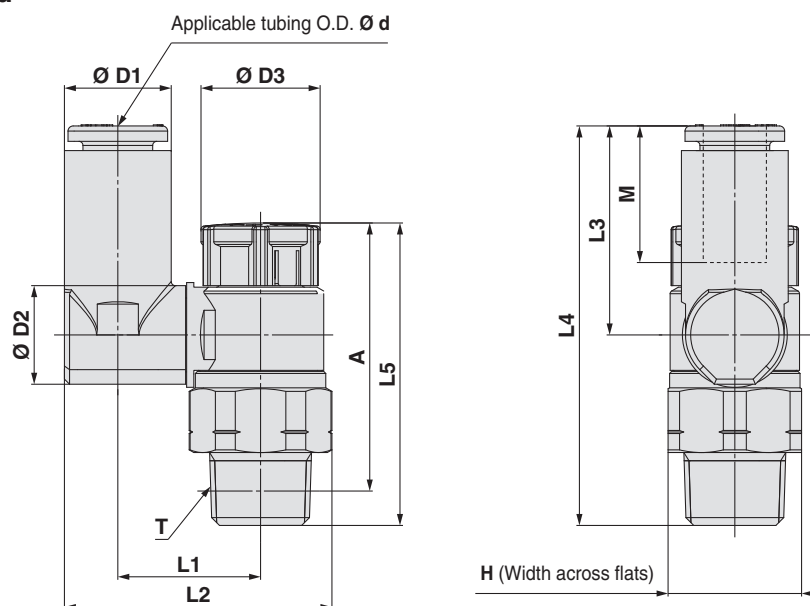


Metric Size

Metric Size														[mm]
Model	d	T	H	D1	D3	L1	L2	L3	L4		A		M	Weight [g]
									Unlocked	Locked	Unlocked	Locked		
AS22□1FM/FC-G01-23A	3.2	1/8	13	7.2	12	19.1	26.2	18.8	30.3	28.9	24.8	23.4	13.3	10
AS22□1FM/FC-G01-04A	4			8.2										
AS22□1FM/FC-G01-06A	6			10.4										
AS22□1FM/FC-G01-08A	8			13.2		22.4	29.5						14.2	11
AS22□1FM/FC-G01-10A	10			15.9		25.3	32.4						15.6	12
AS22□1FM/FC-G02-23A	3.2	1/4	17	7.2	13	20.9	30.2	22.6	36.6	35	30.1	28.5	13.3	21
AS22□1FM/FC-G02-04A	4			8.2										
AS22□1FM/FC-G02-06A	6			10.4										
AS22□1FM/FC-G02-08A	8			13.2		23.9	33.2						14.2	22
AS22□1FM/FC-G02-10A	10			15.9		26.9	36.2						15.6	23

Dimensions/ Universal Type

Seal method: Sealant
 For R, NPT thread



Metric Size

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5*1		A*2		M	Weight [g]
											Unlocked	Locked	Unlocked	Locked		
AS23□1FM/FC-01-23(S)A	3.2	1/8	13	7.2	9.6	12	13.3	24	17.5	36	30.6	29.2	27.5	26.1	13.3	10
AS23□1FM/FC-01-04(S)A	4			8.2			13.9	25.1								11
AS23□1FM/FC-01-06(S)A	6			10.4			16.4	30.1								
AS23□1FM/FC-01-08(S)A	8			13.2			19	34.9								
AS23□1FM/FC-02-04(S)A	4	1/4	17	8.2	12.9	13	16.5	29.9	17.5	40.1	36.6	35	31.1	29.5	13.3	19
AS23□1FM/FC-02-06(S)A	6			11.2			19	33.8								21
AS23□1FM/FC-02-08(S)A	8			13.2			20.9	34.9								
AS23□1FM/FC-02-10(S)A	10			15.9			20.9	38.1								23

*1 Reference dimensions

*2 Reference dimensions of threads after installation

Inch Size

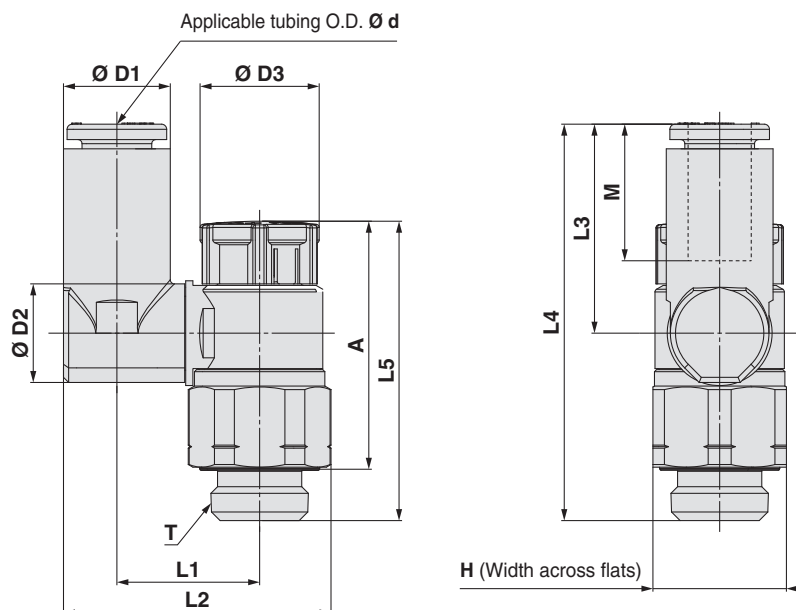
Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5*1		A*2		M	Weight [g]
											Unlocked	Locked	Unlocked	Locked		
AS23□1FM/FC-N01-01(S)A	1/8"	1/8	12.7	7.2	9.6	12	13.3	24	17.5	36	30.6	29.2	27.5	26.1	13.3	10
AS23□1FM/FC-N01-03(S)A	5/32"			8.2			13.9	25.1								10
AS23□1FM/FC-N01-07(S)A	1/4"			11.2			16.4	29.1								
AS23□1FM/FC-N01-09(S)A	5/16"			13.2			19	30.1								
AS23□1FM/FC-N02-03(S)A	5/32"	1/4	17.5	8.2	12.9	13	16.5	30	17.5	40.1	36.6	35	31.1	29.5	13.3	20
AS23□1FM/FC-N02-07(S)A	1/4"			11.2			19	33.9								22
AS23□1FM/FC-N02-09(S)A	5/16"			13.2			20.9	35								
AS23□1FM/FC-N02-11(S)A	3/8"			15.9			20.9	38.2								24

*1 Reference dimensions

*2 Reference dimensions of threads after installation

Dimensions/ Universal Type

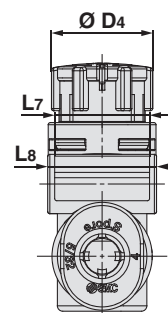
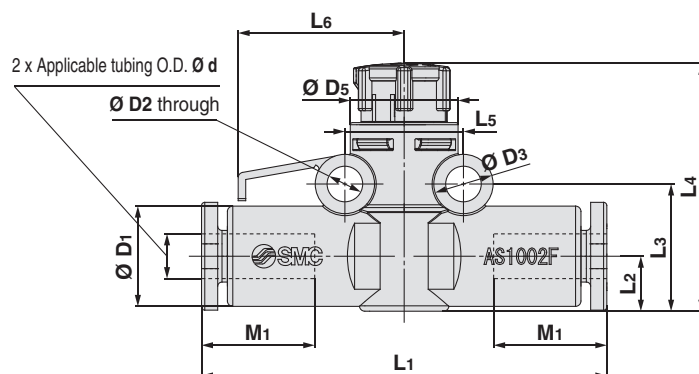
Seal method: Face seal
For G thread



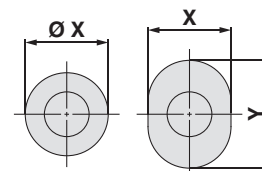
Metric Size

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5		A		M	Weight [g]
											Unlocked	Locked	Unlocked	Locked		
AS23□1FM/FC-G01-23A	3.2	1/8	13	7.2	9.6	12	13.3	24.0	17.5	35.7	30.3	28.9	24.8	23.4	13.3	10
AS23□1FM/FC-G01-04A	4			8.2			13.9	25.1								11
AS23□1FM/FC-G01-06A	6			10.4				26.2								11
AS23□1FM/FC-G01-08A	8			13.2			16.4	30.1								12
AS23□1FM/FC-G02-04A	4	1/4	17	8.2	12.9	13	16.5	29.9	17.5	40.1	36.6	35	30.1	28.5	13.3	22
AS23□1FM/FC-G02-06A	6			10.4			19	33.8								24
AS23□1FM/FC-G02-08A	8			13.2				34.9								25
AS23□1FM/FC-G02-10A	10			15.9			20.9	38.1							15.6	26

Dimensions/ In-line Type



Release button dimensions



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

Metric Size

Metric Size																			[mm]
Model	Applicable tubing O.D. Ø d	Ø D1	Release button		Ø D2	Ø D3	Ø D4	Ø D5	L1	L2	L3	L4*1		L5	L6	L7	L8	M1	Weight [g]
			Ø X(X)	Y								Max.	Min.						
AS1002FM/FC-23A	3.2	8.4	6.7	9.5	3.3	5.5	9.4	10	36.6	5.1	11.8	24.1	23	11	15.4	8.8	10.1	13.5	3.7
AS1002FM/FC-04A	4	9.3	7.7	10					37.6			25.1	24						4
AS1002FM/FC-06A	6	11.6	9.7	12					40.1			6.1	12.8						25.1
AS2002FM/FC-04A	4	9.3	7.7	10	3.3	5.5	12	12	41.3	6.3	13.4	31.4	30	12.6	17	10.5	12.3	13.5	6.1
AS2002FM/FC-06A	6	11.6	9.7	12					43.1										6.9
AS2052FM/FC-06A	6	12.8	11.5	—	4.3	7.8	13	16	52	7.6	17.2	36.2	34.6	17	22.5	12	16.1	17	11.8
AS2052FM/FC-08A	8	15.2	13.5	—					56			8.5	18.1					37.1	35.5

*1 Reference dimensions

Inch Size

Inch Size																			[mm]
Model	Applicable tubing O.D. Ø d	Ø D1	Release button		Ø D2	Ø D3	Ø D4	Ø D5	L1	L2	L3	L4*1		L5	L6	L7	L8	M1	Weight [g]
			Ø X(X)	Y								Max.	Min.						
AS1002FM/FC-01A	1/8"	8.4	6.7	9.5	3.3	5.5	9.4	10	36.6	5.1	11.8	24.1	23	11	15.4	8.8	10.1	13.5	3.7
AS1002FM/FC-03A	5/32"	9.3	7.7	10					37.6			25.2	24.1						4
AS1002FM/FC-07A	1/4"	12	10.9	—					40.1			31.4	30						5.2
AS2002FM/FC-03A	5/32"	9.3	7.7	10	3.3	5.5	12	12	41.3	6.3	13.4	31.4	30	12.6	17	10.5	12.3	13.5	6.1
AS2002FM/FC-07A	1/4"	12	10.9	—					43.2										7.1
AS2052FM/FC-07A	1/4"	13.2	12	—	4.3	7.8	13	16	52.2	7.6	17.2	36.2	34.6	17	22.5	12	16.1	17	12.1
AS2052FM/FC-09A	5/16"	15.2	13.5	—					56									19	13.8

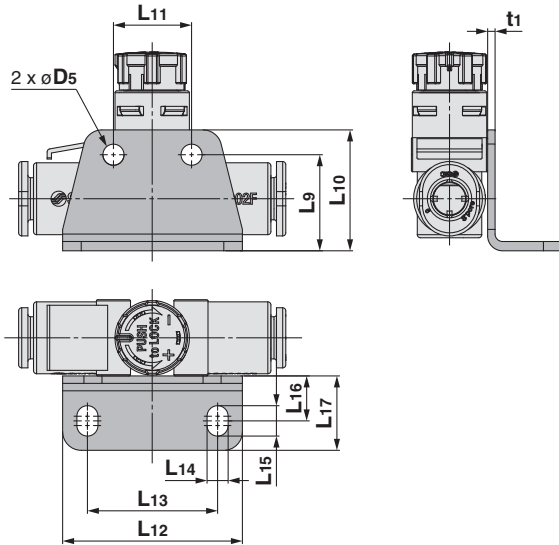
*1 Reference dimensions



Dimensions/ In-line Type

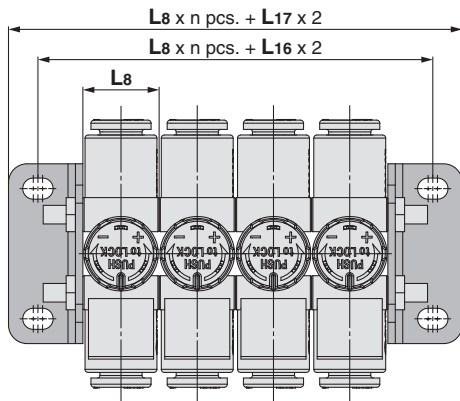
L-Bracket

Bracket on a single side



Part number	Applicable model	D5	L9	L10	L11	L12	L13	L14	L15	L16	L17	t1
AS-10L	AS1002FM/FC	3.4	14.8	18.3	11	27.5	19.5	3.4	4.9	7.3	12	1
AS-20L	AS2002FM/FC		15.6	19.6	12.6	29	21	3.4	4.9	7.3	12	1.2
AS-25L	AS2052FM/FC	4.5	19.6	24.6	17	38	28	4.5	6.5	9.5	15.5	1.2

Brackets on both sides

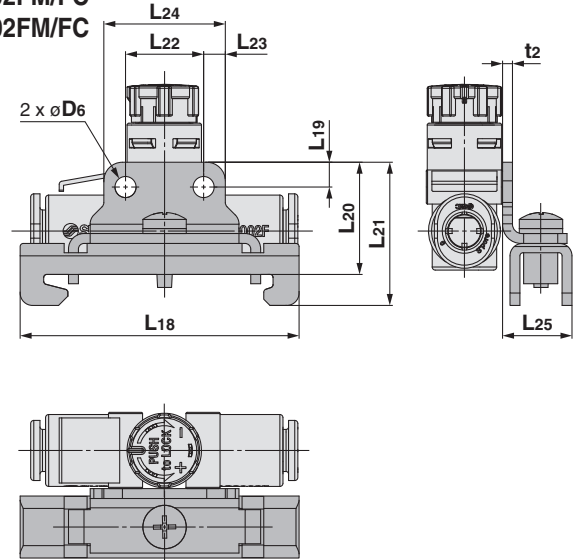


- * Refer to page 15 for L8.
- * The figure above shows the manifold with speed controllers connected using two L-brackets and a threaded stud kit for manifold. Refer to page 5 for threaded stud kits for manifold.

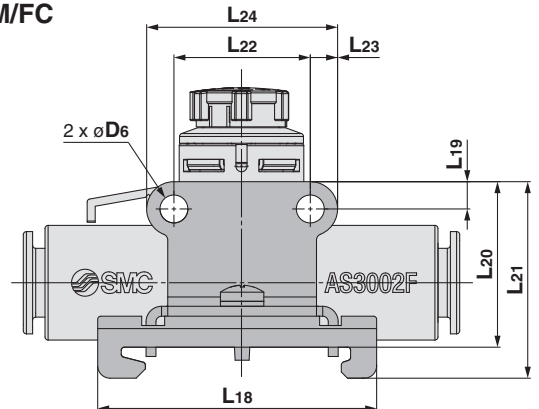
DIN Rail Mounting Bracket

Bracket on a single side

AS1002FM/FC
AS2002FM/FC

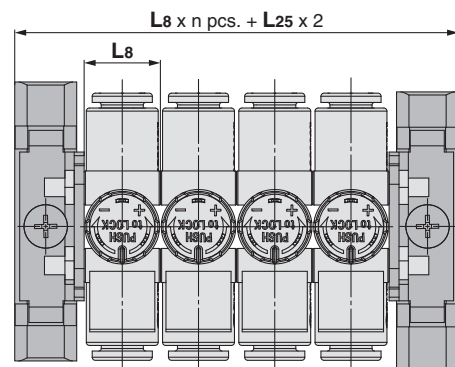


AS2052FM/FC



Part number	Applicable model	D6	L18	L19	L20	L21	L22	L23	L24	L25	t2
AS-10D	AS1002FM/FC	3.4	45	3.5	18.2	23.2	11	3.5	18		
AS-20D	AS2002FM/FC			3.5	18.6	23.6	12.6	3.5	19.6	11.3	1.6
AS-25D	AS2052FM/FC	4.5		4.4	22	27	17	4.4	25.8		

Brackets on both sides



- * Refer to page 15 for L8.
- * The figure above shows the manifold with speed controllers connected using two DIN rail mounting brackets and a threaded stud kit for manifold. Refer to page 5 for threaded stud kits for manifold.

AS-FM/FC
In-line
Elbow/Universal

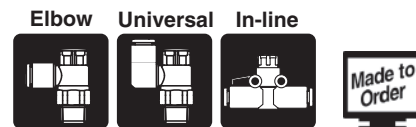
With Indicator AS-FSM/FC
In-line
Elbow/Universal

1 to 50 mm/s 50 to 150 mm/s

AS-FM/FC Series

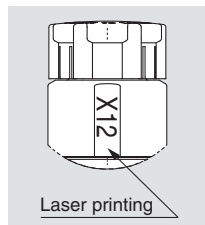
Made to Order

Please contact SMC for detailed dimensions, specifications and lead times.



1 Lubricant: Vaseline

-X12

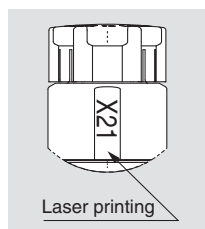


Example) AS2201FM/FC-01-04SA-X12

- **Standard model number**
(Elbow type/Universal type ⇨ page 2)
(In-line type ⇨ page 4)

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

-X21



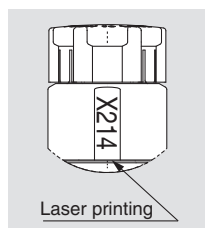
Example) AS2201FM/FC-01-04SA-X21

- **Standard model number**
(Elbow type/Universal type ⇨ page 2)
(In-line type ⇨ page 4)

- * Not particle-free
- * Direction is not specified as there is no check valve. Products are available by the product number for meter-out type. Product number for meter-in type is not available. (For the elbow/universal type)
- * Only the needle and O-ring are fluorine-coated.

3 Restrictor (Without check valve)

-X214



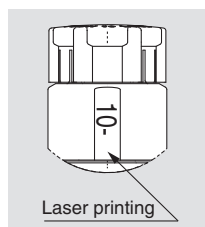
Example) AS2201FM/FC-01-04SA-X214

- **Standard model number**
(Elbow type/Universal type ⇨ page 2)
(In-line type ⇨ page 4)

- * Direction is not specified as there is no check valve. Products are available by the product number for meter-out type. Product number for meter-in type is not available. (For the elbow/universal type)

4 Clean series

10-



Example) 10-AS2201FM/FC-01-04SA

- **Standard model number**
(Elbow type/Universal type ⇨ page 2)
(In-line type ⇨ page 4)

- * Fluorine grease is used.
- * The cleanliness class (ISO class) is 5.
- * Excluding G thread type

Speed Controller with Indicator Elbow Type/Universal Type

RoHS

1 to 50 mm/s

50 to 150 mm/s

AS-FSM/FSC Series

Elbow

Universal



Model

Model	Port size		Seal method	Applicable tubing O.D.										*3 Max. number of rotations	
				Metric size						Inch size					
				2*2	3.2	4	6	8	10	1/8"	5/32"	1/4"	5/16"		3/8"
AS1□□1FSM/FSC□-M5□	M5 x 0.8		Gasket seal	●*4	●	●	●								8
AS1□□1FSM/FSC□-U10/32□	10-32UNF									●	●	●			
AS2□□1FSM/FSC□-□01	R	1/8	Sealant (R)*1		●	●	●	●	●*4						10
AS2□□1FSM/FSC□-□02	G	1/4	Face seal (G)		●*4	●	●	●	●						
AS2□□1FSM/FSC□-□01	NPT	1/8	Sealant*1							●	●	●	●		
AS2□□1FSM/FSC□-□02		1/4									●*4	●	●	●	

*1 "Without sealant" type can be selected as a standard option.

*3 There are differences in actual rate as by the indicator window over the maximum number of rotations depending on the individual product.

*2 Only polyurethane tubing is applicable for Ø 2.

*4 The universal type is not available.

1 to 50 mm/s

50 to 150 mm/s

Finer adjustment and greater accuracy of actuator speed is available within specified control range.

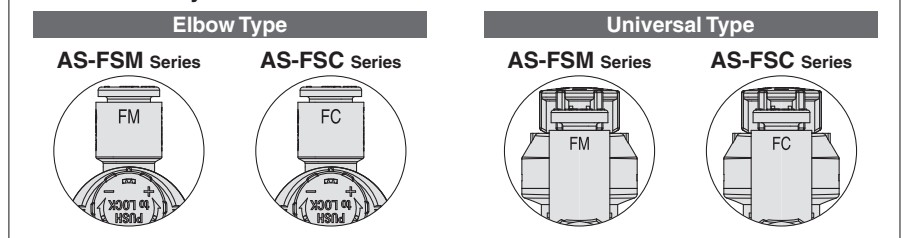
1 to 50 mm/s

AS-FSM Series

50 to 150 mm/s

AS-FSC Series

How to Identify



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 Catalogue** for details.)

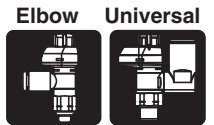
Flow Rate and Sonic Conductance

Model		AS12□1FSM-M5 AS13□1FSM-M5		AS22□1FSM-□01 AS23□1FSM-□01			AS22□1FSM-□02 AS23□1FSM-□02				AS12□1FSC-M5 AS13□1FSC-M5		AS22□1FSC-□01 AS23□1FSC-□01			AS22□1FSC-□02 AS23□1FSC-□02			
Tubing O.D.	Metric size	Ø 2	Ø 3.2 Ø 4 Ø 6	Ø 3.2	Ø 4	Ø 6 Ø 8 Ø 10	Ø 3.2	Ø 4	Ø 6	Ø 8 Ø 10	Ø 2	Ø 3.2 Ø 4 Ø 6	Ø 3.2	Ø 4	Ø 6 Ø 8 Ø 10	Ø 3.2	Ø 4	Ø 6	Ø 8 Ø 10
	Inch size	—	Ø 1/8" Ø 5/32" Ø 1/4"	Ø 1/8"	5/32"	Ø 1/4" Ø 5/16"	Ø 1/8"	5/32"	—	Ø 1/4" Ø 5/16" Ø 3/8"	—	Ø 1/8" Ø 5/32" Ø 1/4"	Ø 1/8"	5/32"	Ø 1/4" Ø 5/16"	Ø 1/8"	5/32"	—	Ø 1/4" Ø 5/16" Ø 3/8"
C values: Sonic conductance dm ³ /(s·bar)	Free flow	0.2	0.3	0.4	0.6	0.6	0.7	1.0	1.3	1.5	0.2	0.3	0.4	0.6	0.6	0.7	1.0	1.3	1.5
	Controlled flow	0.01		0.03			0.1				0.05		0.1			0.3			
b values: Critical pressure ratio	Free flow	0.3	0.4	0.2		0.3	0.3		0.4		0.3	0.4	0.2		0.3	0.3		0.4	
	Controlled flow	0.3		0.3			0.3				0.2		0.3			0.3			
Q [l/min (ANR)] ^{*1}	Free flow	51	82	96	144	153	178	254	354	408	51	82	96	144	153	178	254	354	408
	Controlled flow	3		8			25				12		25			76			

* 10-32UNF has the same specification as M5.

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

*1 These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.



How to Order



Applicable tubing O.D.*1

Metric size	Inch size
02	Ø 2
23	Ø 3.2*2
04	Ø 4
06	Ø 6
01	Ø 1/8"
03	Ø 5/32"
07	Ø 1/4"

*1 For selecting applicable tubing O.D., refer to the "Model" on page 19. Metric size and inch size types can be visually identified by colour of the release button.

Metric size: Light grey

Inch size: Orange

*2 Use Ø 1/8" tubing.

Width across flats (H)

E	8 mm
—	9 mm

Body size

1	M5 x 0.8 10-32UNF
---	----------------------

Port size

M5	M5 x 0.8
U10/32	10-32UNF

Body size 1

AS 1 2 0 1 FSM — M5 E — 06 —

Body size 2

AS 2 2 0 1 FSM — 01 — 06 S —

Body size

2	1/8, 1/4
---	----------

Type

2	Elbow
3	Universal

Control type*1

0	Meter-out
1	Meter-in

Control range

FSM	1 to 50 mm/s
FSC	50 to 150 mm/s

*1 Meter-out and meter-in types can be visually identified by colour of the knob.
Meter-out: Grey
Meter-in: Light blue

Indicator window direction

		Elbow	Universal
—	0° Indicator window	●	—
1	180° Indicator window	●	●
2	90° Indicator window	●	—
3	270° Indicator window	●	—

* Orientation of indicator direction is fixed when manufacturing, and cannot be changed by the user. In addition, the universal type is only available with 180° setting.

• Made to Order
Refer to page 35 for details.

Seal method

—	Without sealant
S	With sealant

* Face seal type is used for the G thread type. Select "—/Without sealant."

Example) AS2201FSM-G01-06

Applicable tubing O.D.*2

Metric size	Inch size*4
23	Ø 3.2*3
04	Ø 4
06	Ø 6
08	Ø 8
10	Ø 10
01	Ø 1/8"
03	Ø 5/32"
07	Ø 1/4"
09	Ø 5/16"
11	Ø 3/8"

*2 For selecting applicable tubing O.D., refer to the "Model" on page 19.

*3 Use Ø 1/8" tubing.

*4 Only the metric size is available for the G thread type.

Port size

01	1/8
02	1/4

Thread type

—	R
N	NPT
G	G

Flow Direction Symbols on Body

	Meter-out	Meter-in
Symbol		



Made to Order
(For details, refer to page 35.)

Symbol	Specifications
-X12	Lubricant: Vaseline
-X21	Grease-free (Seal: Fluorine-coated) + Restrictor (Without check valve)
-X214	Restrictor (Without check valve)
10-	Clean series

Caution

Be sure to read this before handling the products. Refer to the back cover for Safety Instructions. For the Flow Control Equipment Precautions, please refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website. For the Specific Product Precautions, please refer to the Catalogues for the Push-lock Type Speed Controller with One-touch Fitting and the Speed Controller with Indicator on the website, <https://www.smc.eu>

Speed Controller with Indicator In-line Type

1 to 50 mm/s

50 to 150 mm/s

RoHS

AS-FSM/FSC Series

In-line



Model

Model	Applicable tubing O.D.							
	Metric size				Inch size			
	3.2	4	6	8	1/8"	5/32"	1/4"	5/16"
AS1002FSM/FSC□	●	●	●		●	●	●	
AS2002FSM/FSC□		●	●			●	●	
AS2052FSM/FSC□			●	●			●	●

1 to 50 mm/s

50 to 150 mm/s

Finer adjustment and greater accuracy of actuator speed is available within specified control range.

1 to 50 mm/s

AS-FSM Series

50 to 150 mm/s

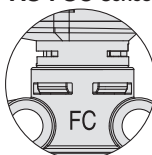
AS-FSC Series

How to Identify

AS-FSM Series



AS-FSC Series



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 Catalogue** for details.)

Flow Rate and Sonic Conductance

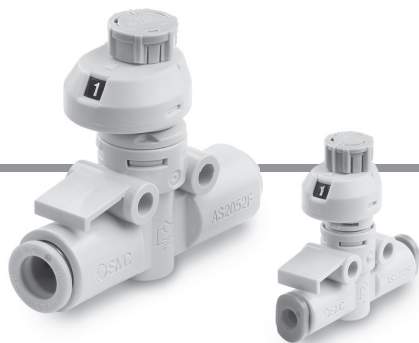
Model		AS1002FSM-□A			AS2002FSM-□A		AS2052FSM-□A		AS1002FSC-□A			AS2002FSC-□A		AS2052FSC-□A	
Tubing O.D.	Metric size	Ø 3.2	Ø 4	Ø 6	Ø 4	Ø 6	Ø 6	Ø 8	Ø 3.2	Ø 4	Ø 6	Ø 4	Ø 6	Ø 6	Ø 8
	Inch size	Ø 1/8"	5/32"	Ø 1/4"	5/32"	Ø 1/4"	Ø 1/4"	Ø 5/16"	Ø 1/8"	5/32"	Ø 1/4"	5/32"	Ø 1/4"	Ø 1/4"	Ø 5/16"
C values: Sonic conductance dm³/(s·bar)	Free flow	0.3	0.4	0.6	0.4	0.6	1.0	1.2	0.3	0.4	0.6	0.4	0.6	1.0	1.2
	Controlled flow	0.01			0.03		0.1		0.05			0.1		0.3	
b values: Critical pressure ratio	Free flow	0.3	0.2		0.3	0.1	0.2		0.3	0.2		0.3	0.1	0.2	
	Controlled flow	0.4			0.3		0.3		0.3			0.4		0.4	
Q [l/min (ANR)] ⁻¹	Free flow	76	96	144	96	136	240	287	76	87	144	102	136	240	287
	Controlled flow	3			8		25		13			27		82	

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

*1 These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.



How to Order



AS 200 2 FSM 1 - 06 -

Body size

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

Control range

FSM	1 to 50 mm/s
FSC	50 to 150 mm/s

Made to Order

Applicable tubing O.D.*1

Metric size		Inch size	
23	Ø 3.2*2	01	Ø 1/8"
04	Ø 4	03	Ø 5/32"
06	Ø 6	07	Ø 1/4"
08	Ø 8	09	Ø 5/16"

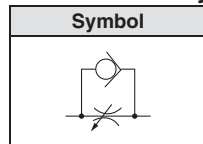
*1 For selecting applicable tubing O.D., refer to the "Model" on page 21.

*2 Use Ø 1/8" tubing.

Indicator window direction

—	0°	Indicator window In-line	2	90°	In-line
1	180°	Indicator window In-line	3	270°	Indicator window In-line

Flow Direction Symbols on Body



Made to Order
(For details, refer to page 35.)

Symbol	Specifications
-X12	Lubricant: Vaseline
-X21	Grease-free (Seal: Fluorine-coated) + Restrictor (Without check valve)
-X214	Restrictor (Without check valve)
10-	Clean series

Caution

Be sure to read this before handling the products. Refer to the back cover for Safety Instructions. For the Flow Control Equipment Precautions, please refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website. For the Specific Product Precautions, please refer to the Catalogues for the Push-lock Type Speed Controller with One-touch Fitting and the Speed Controller with Indicator on the website, <https://www.smc.eu>

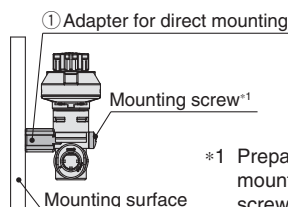


Options/ In-line Type

① Adapter for Direct Mounting

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

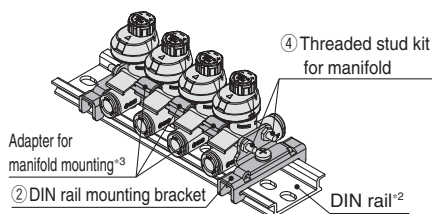
Part number	Applicable model
AS-10A1	AS1002FSM/FSC□
AS-20A1	AS2002FSM/FSC□
AS-25A1	AS2052FSM/FSC□



*1 Prepare a mounting screw by the customer.

② DIN Rail Mounting Bracket

Part number	Applicable model
AS-10D	AS1002FSM/FSC□
AS-20D	AS2002FSM/FSC□
AS-25D	AS2052FSM/FSC□

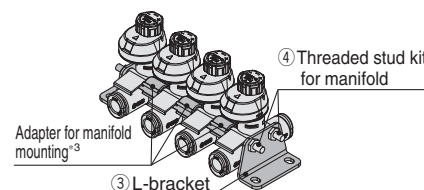


*2 Prepare a DIN rail by the customer.

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

③ L-Bracket

Part number	Applicable model
AS-10L	AS1002FSM/FSC□
AS-20L	AS2002FSM/FSC□
AS-25L	AS2052FSM/FSC□



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	AS1002FSM/FSC□-23	AS1002FSM/FSC□-01
				AS1002FSM/FSC□-04	AS1002FSM/FSC□-03
				AS1002FSM/FSC□-06	—
AS-2AB	AS-4AB	AS-6AB	AS-8AB AS-23AB	—	AS1002FSM/FSC□-07
				AS2002FSM/FSC□-04	AS2002FSM/FSC□-03
				AS2002FSM/FSC□-06	—
AS-9AB	AS-10AB	AS-11AB	AS-12AB	—	AS2002FSM/FSC□-07
				AS2052FSM/FSC□-06	—
				—	AS2052FSM/FSC□-07
AS-13AB	AS-14AB	AS-15AB	AS-16AB	—	AS2052FSM/FSC□-07
				AS2052FSM/FSC□-08	AS2052FSM/FSC□-09

Details of Threaded Stud Kit for Manifold

Part number	Adapter for manifold mounting		Threaded stud		Accessories		
	Part number	Quantity	Length	Quantity	Hexagon nut	Quantity	Flat washer
AS-1AB	AS-10A	3	72	2	M3	4	M3
AS-2AB			90	2			
AS-3AB		5	104	2			
AS-4AB			114	2			
AS-5AB		7	135	2			
AS-6AB			143	2			
AS-7AB		9	167	2			
AS-8AB			170	2			
AS-23AB			180	2			
AS-9AB	AS-20A	3	90	2	M4	4	M4
AS-10AB		5	135	2			
AS-11AB		7	180	2			
AS-12AB		9	220	2			
AS-13AB	AS-25A	3	111	2			
AS-14AB		5	147	2			
AS-15AB		7	191	2			
AS-16AB		9	236	2			

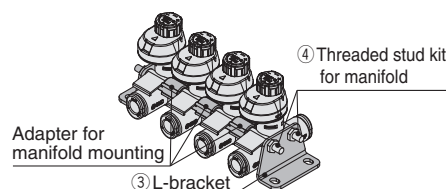
Ordering Example

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.) AS2002FSM-06

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

- Speed controller **AS2002FSM-06** 4 pcs.
- L-bracket **AS-20L** 2 pcs.
- Threaded stud kit for manifold **AS-9AB** 1 set
(Adapter for manifold mounting is included.)

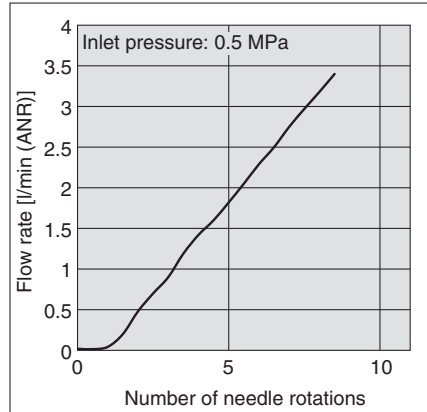




Needle Valve: Flow Rate Characteristics

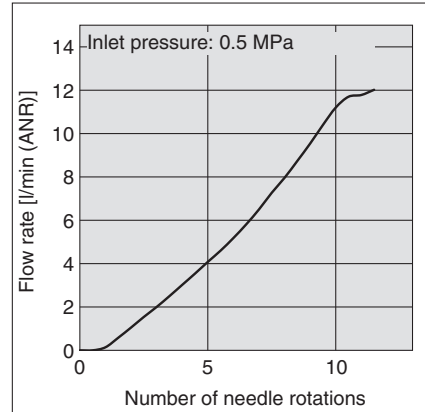
1 to 50 mm/s

AS1201FSM-M5□, AS1211FSM-M5□
AS1301FSM-M5□, AS1311FSM-M5□
AS1002FSM□-□A

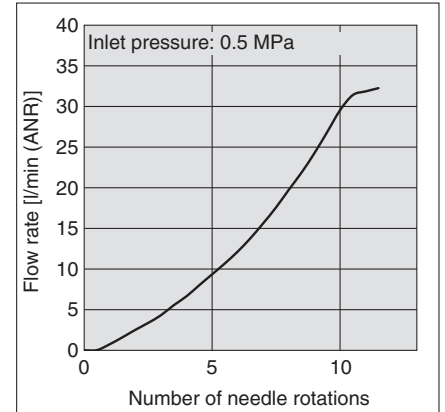


* -U10/32 has the same specification as M5.

AS2201FSM-01, AS2211FSM-01
AS2301FSM-01, AS2311FSM-01
AS2002FSM□-□A

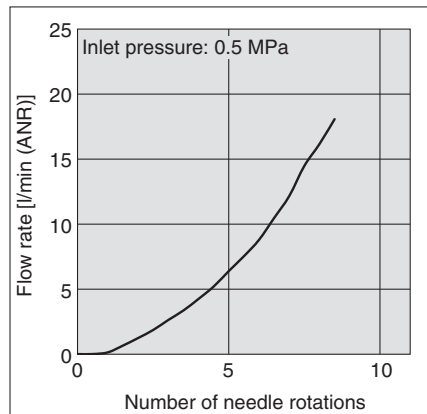


AS2201FSM-02, AS2211FSM-02
AS2301FSM-02, AS2311FSM-02
AS2052FSM□-□A

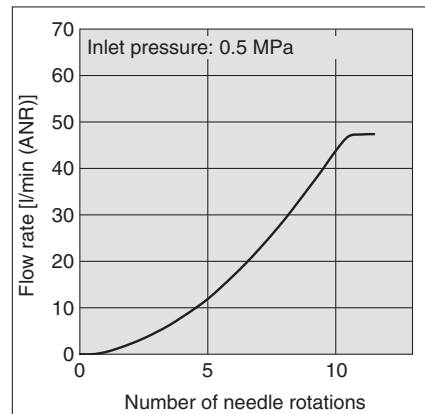


50 to 150 mm/s

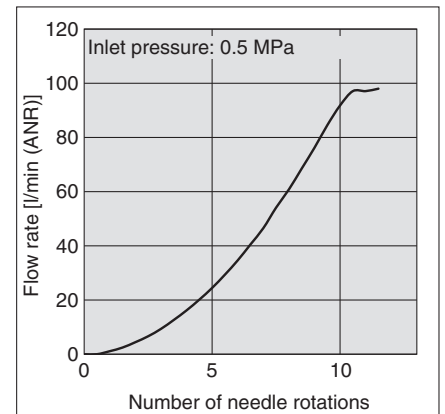
AS1201FSC-M5□, AS1211FSC-M5□
AS1301FSC-M5□, AS1311FSC-M5□
AS1002FSC□-□A

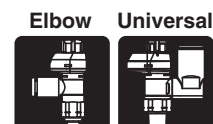


AS2201FSC-01, AS2211FSC-01
AS2301FSC-01, AS2311FSC-01
AS2002FSC□-□A



AS2201FSC-02, AS2211FSC-02
AS2301FSC-02, AS2311FSC-02
AS2052FSC□-□A

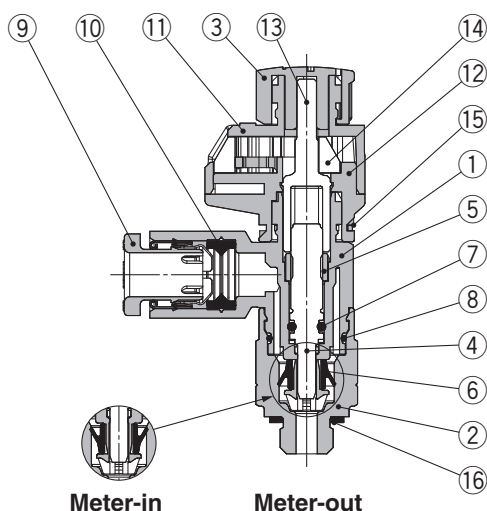




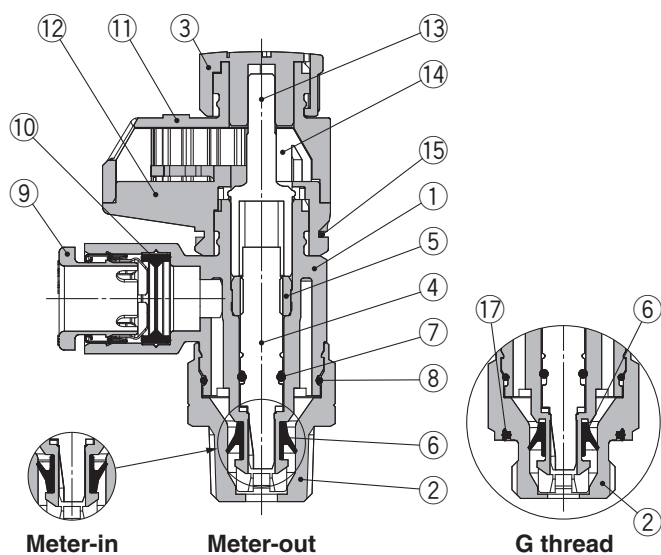
Construction

Elbow Type

Seal method: Gasket seal
 For M5, 10-32UNF



Seal method: Sealant, Face seal
 For R, NPT, G thread

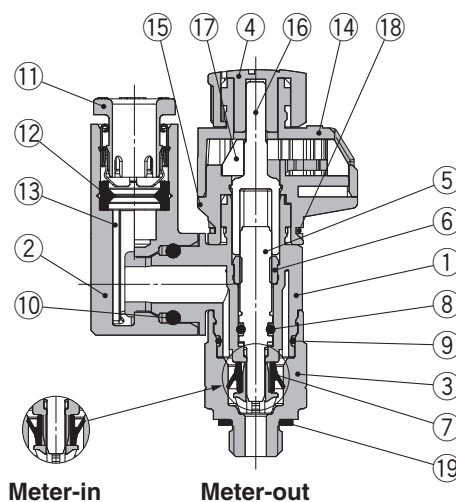


Component Parts

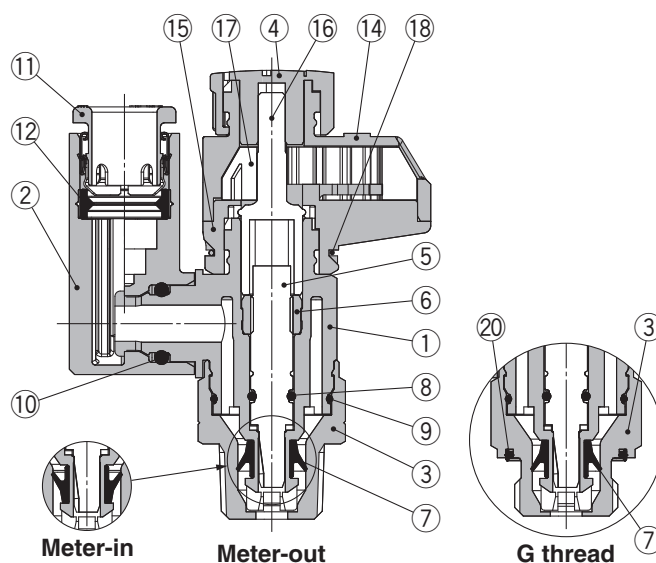
No.	Description	Material	Note
1	Body A	PBT	
2	Body B	Brass	Electroless nickel plating
3	Knob	POM	
4	Needle	PBT	
5	Needle guide	Brass	Electroless nickel plating
6	U-seal	HNBR	
7	O-ring	NBR	
8	O-ring	NBR	
9	Cassette	—	
10	Seal	NBR	
11	Bonnet A	POM	
12	Bonnet B	POM	
13	Gear	POM	
14	Indicator gear	POM	
15	Clip	Stainless steel	
16	Gasket	NBR/Stainless steel	
17	Seal	NBR	

Universal Type

Seal method: Gasket seal
 For M5, 10-32UNF



Seal method: Sealant, Face seal
 For R, NPT, G thread



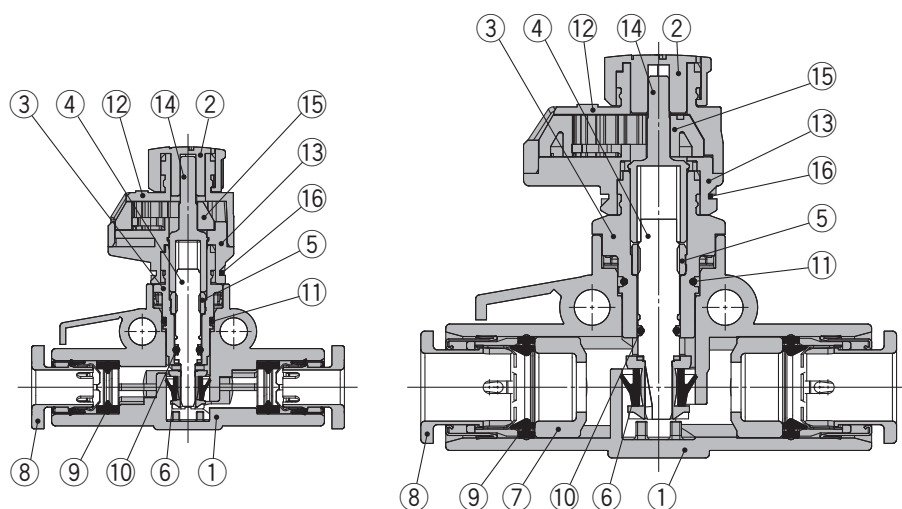
Component Parts

No.	Description	Material	Note
1	Body A	PBT	
2	Elbow body	PBT	
3	Body B	Brass	Electroless nickel plating
4	Knob	POM	
5	Needle	PBT	
6	Needle guide	Brass	Electroless nickel plating
7	U-seal	HNBR	
8	O-ring	NBR	
9	O-ring	NBR	
10	O-ring	NBR	
11	Cassette	—	
12	Seal	NBR	
13	Spacer	PBT	Ø 3.2 and Ø 1/8" only
14	Bonnet A	POM	
15	Bonnet B	POM	
16	Gear	POM	
17	Indicator gear	POM	
18	Clip	Stainless steel	
19	Gasket	NBR/Stainless steel	
20	Seal	NBR	



Construction

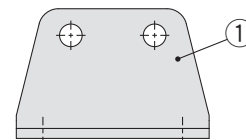
In-line Type



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	
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	

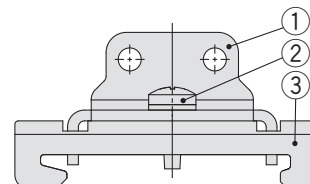
L-Bracket



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

1 to 50 mm/s 50 to 150 mm/s
AS-FSM/FSC Series

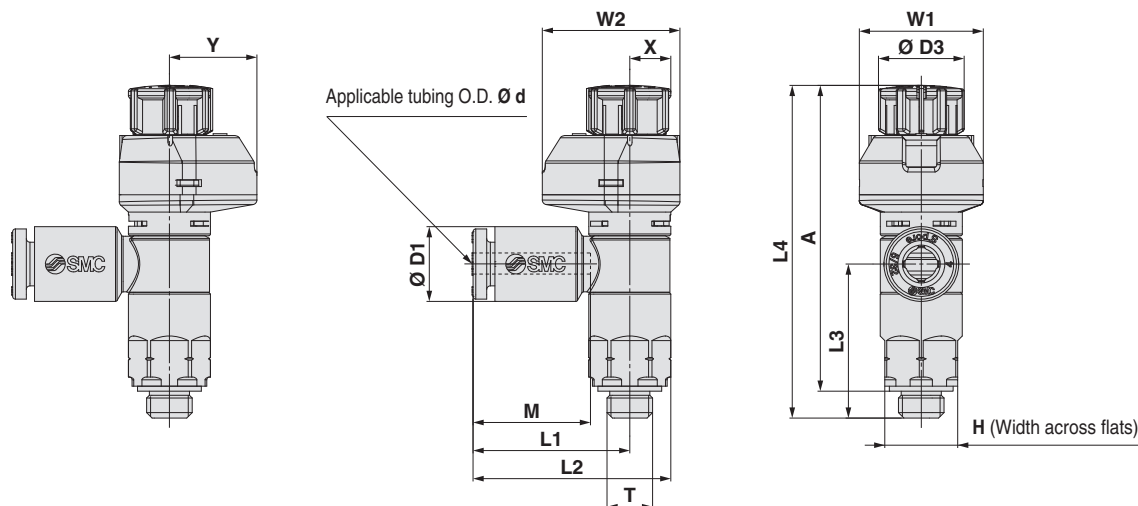
Dimensions/ Elbow Type

Seal method: Gasket seal
 For M5, 10-32UNF



Indicator window direction: 0°

Indicator window direction: 180°



Metric Size

Metric Size																	[mm]	
Model	d	T	H*1	D1	D3	L1	L2	L3	L4*2		A*3		M	W1	W2	X	Y	Weight [g]
									Unlocked	Locked	Unlocked	Locked						
AS12□1FSM/FSC□-M5E-02	2	M5 x 0.8	8 (9)	5.8	9.4	15.8	20.3	16.9	39	36.5	35	33.5	11.9	13.6	15.1	5.5	9.6	7
AS12□1FSM/FSC□-M5E-23	3.2			7.2		17.2	21.7						13.3					
AS12□1FSM/FSC□-M5E-04	4			8.2		18.6	23.1											
AS12□1FSM/FSC□-M5E-06	6			10.4														

*1 The value in () indicates that the dimension for the width across flats is 9 mm.

*2 Reference dimensions

*3 Reference dimensions of threads after installation

Inch Size

Inch Size																		[mm]
Model	d	T	H*1	D1	D3	L1	L2	L3	L4*2		A*3		M	W1	W2	X	Y	Weight [g]
									Unlocked	Locked	Unlocked	Locked						
AS12□1FSM/FSC□-U10/32E-01	1/8"	10/32UNF	8 (9)	7.2	9.4	17.2	21.7	16.9	39	36.5	35	33.5	13.3	13.6	15.1	5.5	9.6	7
AS12□1FSM/FSC□-U10/32E-03	5/32"			8.2		18.6	23.1	8										
AS12□1FSM/FSC□-U10/32E-07	1/4"			11.2														

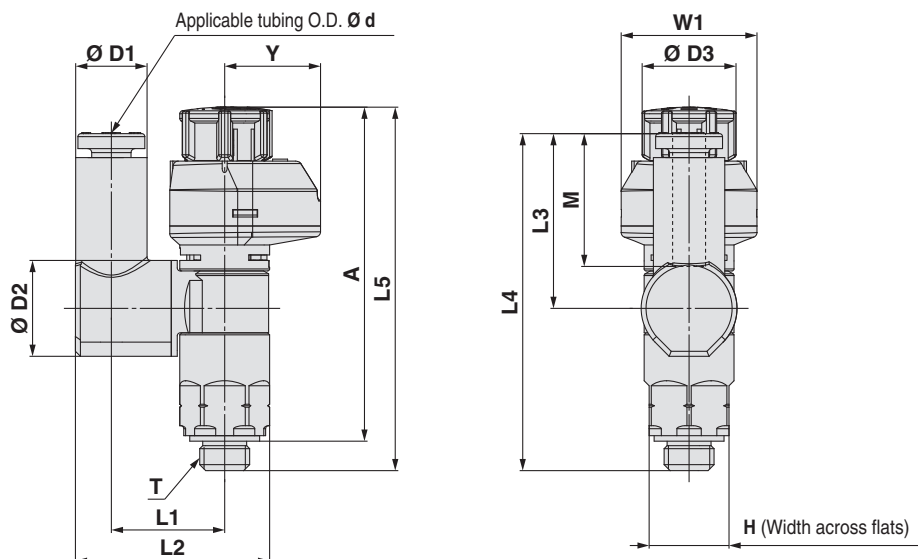
*1 The value in () indicates that the dimension for the width across flats is 9 mm.

*2 Reference dimensions

*3 Reference dimensions of threads after installation

Dimensions/ Universal Type

Seal method: Gasket seal
For M5, 10-32UNF



Metric Size

Model	d	T	H*1	D1	D2	D3	L1	L2	L3	L4	L5*2		A*3		M	W1	Y	Weight [g]
											Unlocked	Locked	Unlocked	Locked				
AS13□1FSM/FSC1-M5E-23	3.2	M5 x 0.8	8 (9)	7.2	9.6	9.4	11.6	19.4	17.5	33.8	39	36.5	35	33.5	13.3	13.6	9.6	7
AS13□1FSM/FSC1-M5E-04	4			8.2			11.5	19.8										8
AS13□1FSM/FSC1-M5E-06	6			10.4				20.9	20.4	36.6								

*1 The value in () indicates that the dimension for the width across flats is 9 mm.

*2 Reference dimensions

*3 Reference dimensions of threads after installation

Inch Size

Model	d	T	H*1	D1	D2	D3	L1	L2	L3	L4	L5*2		A*3		M	W1	Y	Weight [g]
											Unlocked	Locked	Unlocked	Locked				
AS13□1FSM/FSC1-U10/32-01	1/8	10/32UNF	8 (9)	7.2	9.4	9	17.2	19.8	17.5	33.8	39	36.5	35	33.5	13.3	13.6	9.6	7
AS13□1FSM/FSC1-U10/32-03	5/32			8.2			18.6	20.9										8
AS13□1FSM/FSC1-U10/32-07	1/4			11.2														

*1 The value in () indicates that the dimension for the width across flats is 9 mm.

*2 Reference dimensions

*3 Reference dimensions of threads after installation

1 to 50 mm/s 50 to 150 mm/s
AS-FSM/FSC Series

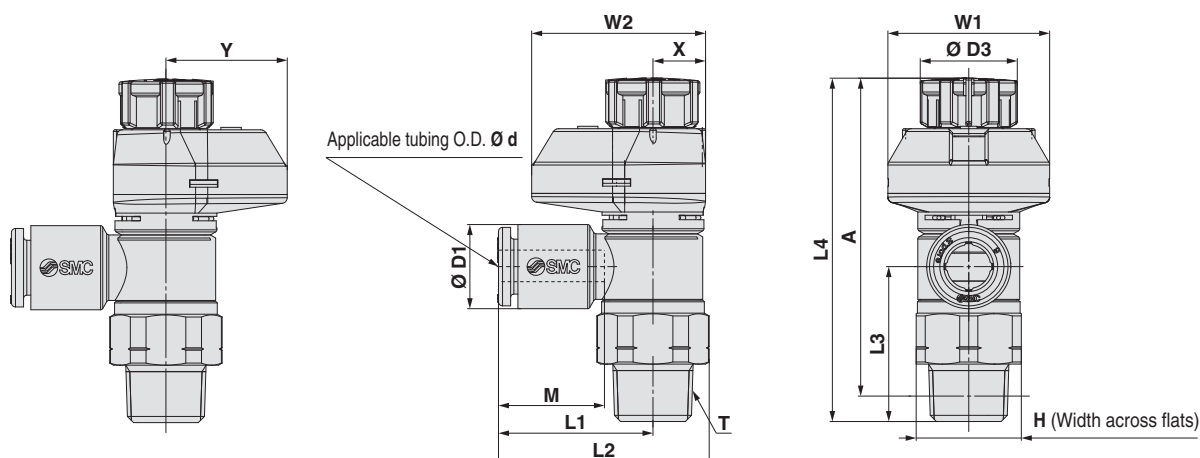
Dimensions/ Elbow Type

Seal method: Sealant
 For R, NPT thread



Indicator window direction: 0°

Indicator window direction: 180°



Metric Size

Model	d	T	H	D1	D3	L1	L2	L3	L4*1		A*2		M	W1	W2	X	Y	Weight [g]
									Unlocked	Locked	Unlocked	Locked						
AS22□1FSM/FSC□-01-23(S)	3.2	1/8	13	7.2	12	19.1	26.2	19.1	43.9	42.4	40.8	39.3	13.3	20	21.5	6.5	15	13
AS22□1FSM/FSC□-01-04(S)	4			8.2														14
AS22□1FSM/FSC□-01-06(S)	6			10.4														15
AS22□1FSM/FSC□-01-08(S)	8			13.2														16
AS22□1FSM/FSC□-01-10(S)	10			15.9														
AS22□1FSM/FSC□-02-23(S)	3.2	1/4	17	7.2	13	20.9	30.2	22.6	49.7	48.3	44.2	42.8	13.3	21.5	24	7.8	16.2	23
AS22□1FSM/FSC□-02-04(S)	4			8.2														24
AS22□1FSM/FSC□-02-06(S)	6			10.4														25
AS22□1FSM/FSC□-02-08(S)	8			13.2														
AS22□1FSM/FSC□-02-10(S)	10			15.9														

*1 Reference dimensions

*2 Reference dimensions of threads after installation

Inch Size

Model	d	T	H	D1	D3	L1	L2	L3	L4*1		A*2		M	W1	W2	X	Y	Weight [g]
									Unlocked	Locked	Unlocked	Locked						
AS22□1FSM/FSC□-N01-01(S)	1/8"	1/8	12.7	7.2	12	19.1	26.2	19.1	43.9	42.4	40.8	39.3	13.3	20	21.5	6.5	15	13
AS22□1FSM/FSC□-N01-03(S)	5/32"			8.2														13
AS22□1FSM/FSC□-N01-07(S)	1/4"			11.2														14
AS22□1FSM/FSC□-N01-09(S)	5/16"			13.2														
AS22□1FSM/FSC□-N02-01(S)	1/8"	1/4	17.5	7.2	13	20.9	30.3	22.6	49.7	48.3	44.2	42.8	13.3	21.5	24	7.8	16.2	24
AS22□1FSM/FSC□-N02-03(S)	5/32"			8.2														25
AS22□1FSM/FSC□-N02-07(S)	1/4"			11.2														26
AS22□1FSM/FSC□-N02-09(S)	5/16"			13.2														
AS22□1FSM/FSC□-N02-11(S)	3/8"			15.5														

*1 Reference dimensions

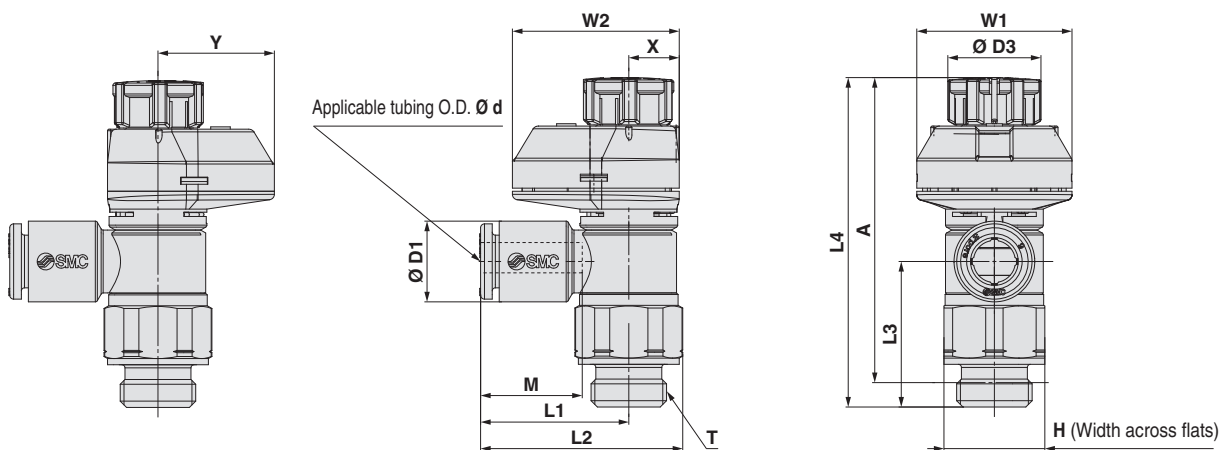
*2 Reference dimensions of threads after installation

Dimensions/ Elbow Type

Seal method: Face seal
For G thread

Indicator window direction: 0°

Indicator window direction: 180°



Metric Size

Model	d	T	H	D1	D3	L1	L2	L3	L4*1		A*2		M	W1	W2	X	Y	Weight [g]
									Unlocked	Locked	Unlocked	Locked						
AS22□1FSM/FSC□-G01-23	3.2	1/8	13	7.2	12	19.1	26.2	18.8	43.8	42.4	38.3	36.9	13.3	20	21.5	6.5	15	14
AS22□1FSM/FSC□-G01-04	4			8.2														
AS22□1FSM/FSC□-G01-06	6			10.4														
AS22□1FSM/FSC□-G01-08	8			13.2														
AS22□1FSM/FSC□-G01-10	10	1/4	17	15.9	13	22.4	29.5	22.6	49.7	48.3	43.2	41.8	14.2	21.5	24	7.8	16.2	15
AS22□1FSM/FSC□-G02-23	3.2			7.2		20.9	30.2						13.3					14
AS22□1FSM/FSC□-G02-04	4			8.2		23.4	32.7						14.2					15
AS22□1FSM/FSC□-G02-06	6			10.4		23.9	33.2						15.6					16
AS22□1FSM/FSC□-G02-08	8			13.2		26.9	36.2						15.6					16
AS22□1FSM/FSC□-G02-10	10			15.9		26.9	36.2						15.6					16

*1 Reference dimensions

*2 Reference dimensions of threads after installation

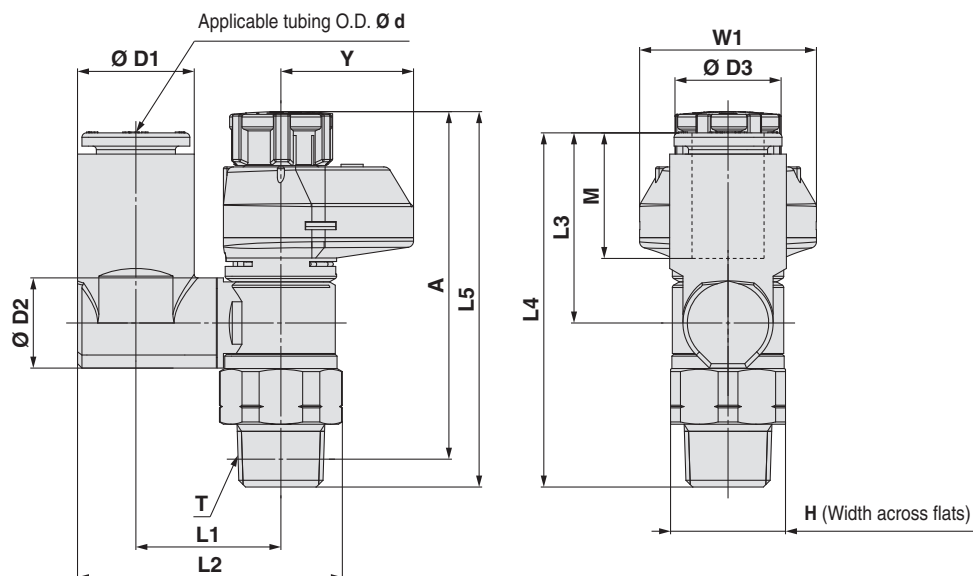
AS-FSM/FSC Series

1 to 50 mm/s

50 to 150 mm/s

Dimensions/ Universal Type

Seal method: Sealant
For R, NPT thread



Metric Size

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5*1		A*2		M	W1	Y	Weight [g]
											Unlocked	Locked	Unlocked	Locked				
AS23□1FSM/FSC1-01-23(S)	3.2	1/8	13	7.2	9.6	12	13.3	24	17.5	36	43.9	42.4	40.8	39.3	13.3	20	15	14
AS23□1FSM/FSC1-01-04(S)	4			8.2			13.9	25.1										15
AS23□1FSM/FSC1-01-06(S)	6			10.4			16.4	26.2										16
AS23□1FSM/FSC1-01-08(S)	8			13.2			16.4	30.1										16
AS23□1FSM/FSC1-02-04(S)	4	1/4	17	8.2	12.9	13	16.5	29.9	17.5	40.1	49.7	48.3	44.2	42.8	13.3	21.5	16.2	24
AS23□1FSM/FSC1-02-06(S)	6			11.2			19	33.8							14.2			26
AS23□1FSM/FSC1-02-08(S)	8			13.2			20.9	34.9							15.6			27
AS23□1FSM/FSC1-02-10(S)	10			15.9			20.9	38.1							17			28

*1 Reference dimensions

*2 Reference dimensions of threads after installation

Inch Size

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5*1		A*2		M	W1	Y	Weight [g]
											Unlocked	Locked	Unlocked	Locked				
AS23□1FSM/FSC1-N01-01(S)	1/8	1/8	12.7	7.2	9.6	12	13.3	24	17.5	36	43.9	42.4	40.8	39.3	13.3	20	15	14
AS23□1FSM/FSC1-N01-03(S)	5/32			8.2			13.9	25.1										15
AS23□1FSM/FSC1-N01-07(S)	1/4			11.2			16.4	29.1										16
AS23□1FSM/FSC1-N01-09(S)	5/16			13.2			16.4	30.1										16
AS23□1FSM/FSC1-N02-03(S)	5/32	1/4	17.5	8.2	12.9	13	16.5	29.9	17.5	40.1	49.7	48.3	44.2	42.8	13.3	21.5	16.2	24
AS23□1FSM/FSC1-N02-07(S)	1/4			11.2			19	33.8							14.2			26
AS23□1FSM/FSC1-N02-09(S)	5/16			13.2			20.9	34.9							15.6			27
AS23□1FSM/FSC1-N02-11(S)	3/8			15.9			20.9	38.1							17			28

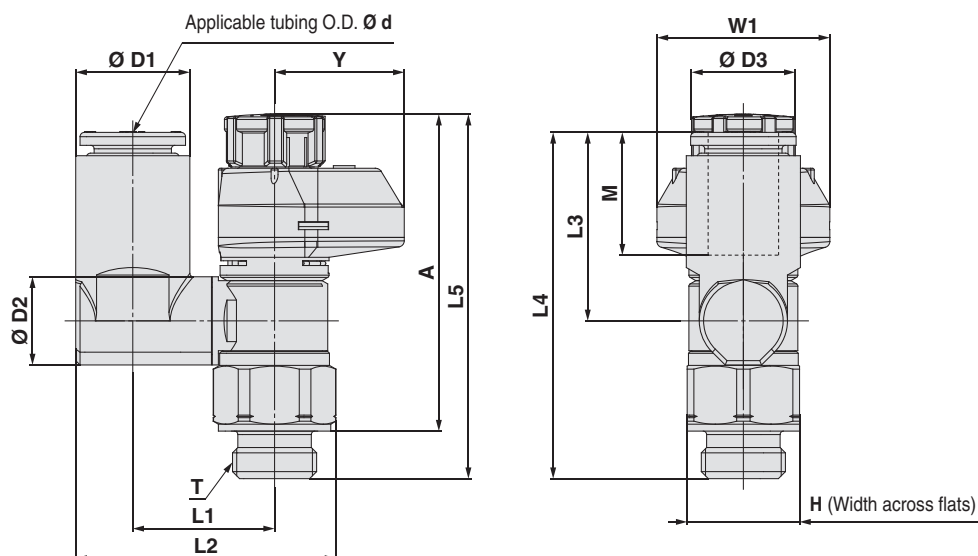
*1 Reference dimensions

*2 Reference dimensions of threads after installation



Dimensions/ Universal Type

Seal method: Face seal
For G thread



Metric Size

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5*1		A*2		M	W1	Y	Weight [g]
											Unlocked	Locked	Unlocked	Locked				
AS23□1FSM/FSC1-G01-23	3.2	1/8	13	7.2	9.6	12	13.2	24	17.5	35.7	43.8	42.4	38.3	36.9	13.3	20	15	14
AS23□1FSM/FSC1-G01-04	4			8.2			13.9	25.1										15
AS23□1FSM/FSC1-G01-06	6			10.4			16.4	26.2										15
AS23□1FSM/FSC1-G01-08	8			13.2			19	27.5										16
AS23□1FSM/FSC1-G02-04	4	1/4	17	8.2	12.9	13	16.5	29.9	17.5	40.1	49.7	48.3	43.2	41.8	13.3	21.5	16.2	26
AS23□1FSM/FSC1-G02-06	6			10.4			19	33.8										28
AS23□1FSM/FSC1-G02-08	8			13.2			20.9	34.9										29
AS23□1FSM/FSC1-G02-10	10			15.9			24.7	38.1										32

*1 Reference dimensions

*2 Reference dimensions of threads after installation

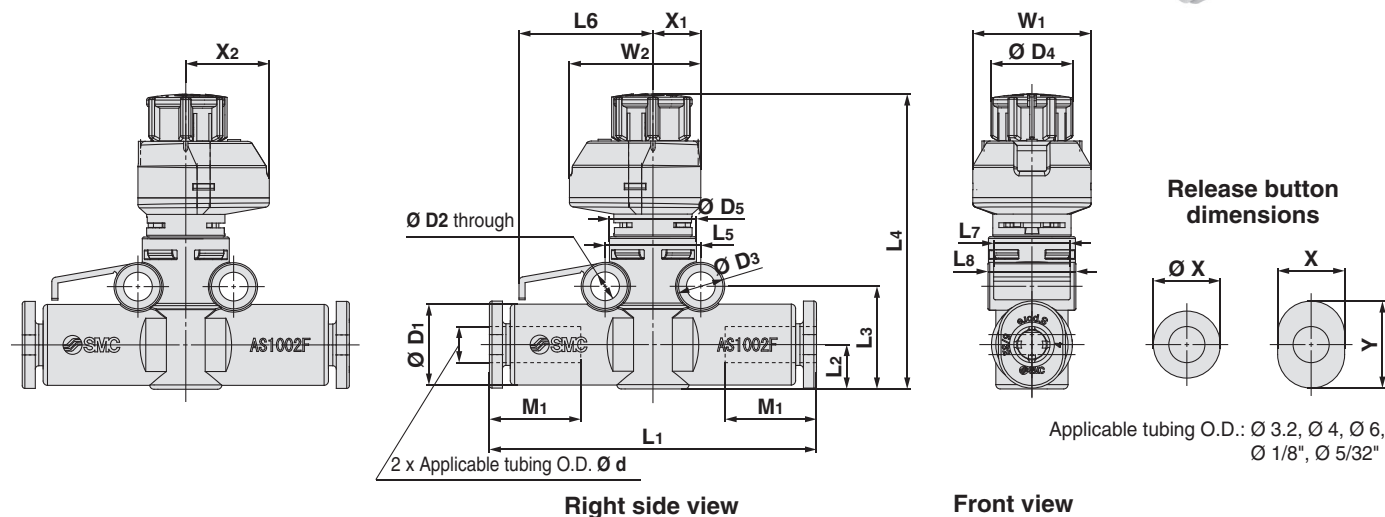
1 to 50 mm/s 50 to 150 mm/s
AS-FSM/FSC Series

Dimensions/ In-line Type



Indicator window direction: 0°

Indicator window direction: 180°



Metric Size

Model	Applicable tubing O.D. Ø d	D1	Release button		D2	D3	D4	D5	L1	L2	L3	L4*1		L5	L6	L7	L8	M1	W1	W2	X1	X2	Weight [g]									
			Ø X(X)	Y								Max.	Min.																			
AS1002FSM/FSC□-23	3.2	8.4	6.7	9.5	3.3	5.5	9.4	10	36.6	5.1	11.8	36.4	33.9	11	15.4	8.8	10.1	13.5	13.6	15.1	5.5	9.6	5.2									
AS1002FSM/FSC□-04	4	9.3	7.7	10					37.6			37.4	34.9				5.5															
AS1002FSM/FSC□-06	6	11.6	9.7	12					40.1			6.1	12.8				37.4						34.9	6.6								
AS2002FSM/FSC□-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	13.5	20	21.5	6.5	15	9.5									
AS2002FSM/FSC□-06	6	11.6	9.7	12					43.1			49.0	47.6				10.4															
AS2052FSM/FSC□-06	6	12.8	11.5	—					54.2			7.6	17.2				49.0						47.6	16								
AS2052FSM/FSC□-08	8	15.2	13.5	—	4.3	7.8	13	16	57.2	8.5	18.1	49.9	48.5	17	22.5	12	16.1	17	21.5	24	7.8	16.2	18.4									
																												19				

*1 Reference dimensions

Inch Size

Model	Applicable tubing O.D. Ø d	D1	Release button		D2	D3	D4	D5	L1	L2	L3	L4*1		L5	L6	L7	L8	M1	W1	W2	X1	X2	Weight [g]	
			Ø X(X)	Y								Max.	Min.											
AS1002FSM/FSC□-01	1/8"	8.4	6.7	9.5	3.3	5.5	9.4	10	36.6	5.1	11.8	36.4	33.9	11	15.4	8.8	10.1	13.5	13.6	15.1	5.5	9.6	5.2	
AS1002FSM/FSC□-03	5/32"	9.3	7.7	10					37.6			37.5	35				5.5							
AS1002FSM/FSC□-07	1/4"	12	10.9	—					40.1			6.2	12.9				37.5						35	6.7
AS2002FSM/FSC□-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	13.5	20	21.5	6.5	15	9.5	
AS2002FSM/FSC□-07	1/4"	12	10.9	—					43.2			6.5	13.6				44.7						43.2	10.6
AS2052FSM/FSC□-07	1/4"	13.2	12	—					53.4			7.6	17.2				49						47.6	16.4
AS2052FSM/FSC□-09	5/16"	15.2	13.5	—	4.3	7.8	13	16	57.2	8.5	18.1	49.9	48.5	17	22.5	12	16.1	17	21.5	24	7.8	16.2	18.4	

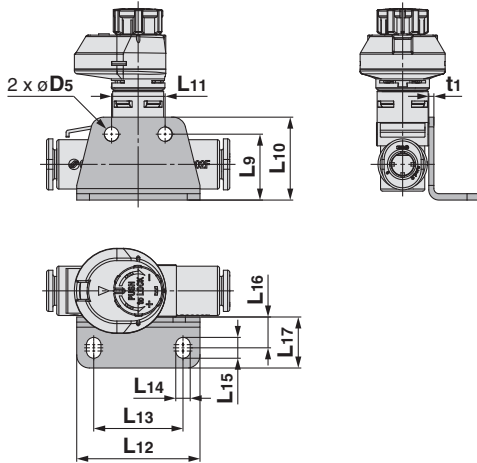
*1 Reference dimensions



Dimensions/ In-line Type

L-Bracket

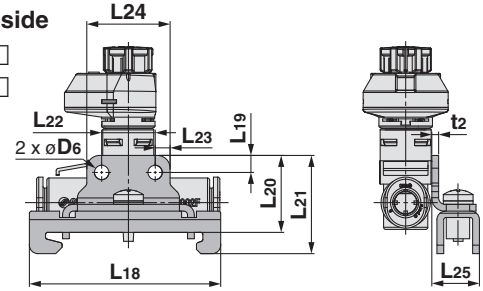
Bracket on a single side



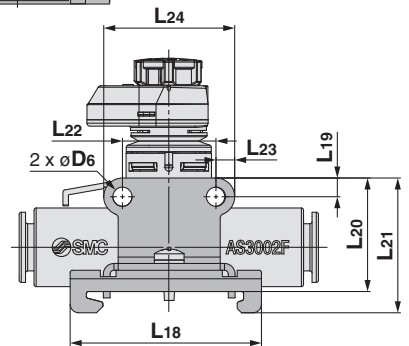
DIN Rail Mounting Bracket

Bracket on a single side

AS1002FSM/FSC□
AS2002FSM/FSC□



AS2052FSM/FSC□

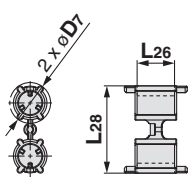


Part number	Applicable model	D5	L9	L10	L11	L12	L13	L14	L15	L16	L17	t1
AS-10L	AS1002FSM/FSC□	3.4	14.8	18.3	11	27.5	19.5	3.4	4.9	7.3	12	1
AS-20L	AS2002FSM/FSC□		15.6	19.6	12.6	29	21					1.2
AS-25L	AS2052FSM/FSC□	4.5	19.6	24.6	17	38	28	4.5	6.5	9.5	15.5	

Part number	Applicable model	D6	L18	L19	L20	L21	L22	L23	L24	L25	t2
AS-10D	AS1002FSM/FSC□	3.4		3.5	18.2	23.2	11		18		
AS-20D	AS2002FSM/FSC□		45		18.6	23.6	12.6		19.6	11.3	1.6
AS-25D	AS2052FSM/FSC□	4.5		4.4	22	27	17	4.4	25.8		

Adapter for Manifold Mounting

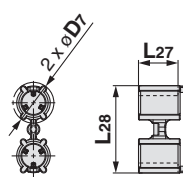
Part number: AS-□□A



Part number	Applicable model	D7	L26	L28
AS-10A	AS1002FSM/FSC□	9.2	4	18.7
AS-20A	AS2002FSM/FSC□	9.4	8.8	20.4
AS-25A	AS2052FSM/FSC□	11.4	6.3	27

Adapter for Direct Mounting

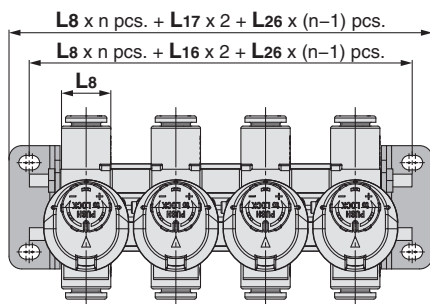
Part number: AS-□□A1



Part number	Applicable model	D7	L27	L28
AS-10A1	AS1002FSM/FSC□	9.2	4.5	18.7
AS-20A1	AS2002FSM/FSC□	9.4	9.3	20.4
AS-25A1	AS2052FSM/FSC□	11.4	7.1	27

L-Bracket

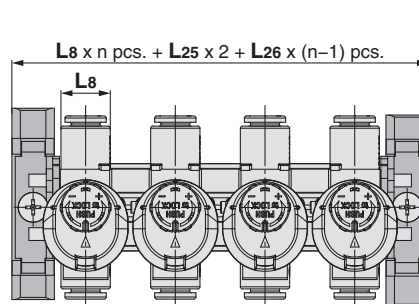
Brackets on both sides



- * Refer to page 33 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 23 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

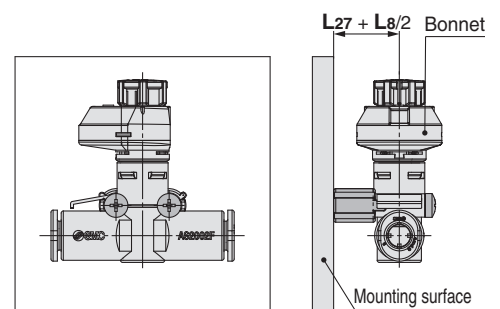


- * Refer to page 33 for L8.
- * The figure above shows the manifold with speed controllers connected using two DIN rail mounting brackets, adapters and a threaded stud kit for manifold. Refer to page 23 for threaded stud kits for manifold.
- * Cannot connect the speed controller when the indicator window direction is 90° or 270°.

Adapter

Direct mounting

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



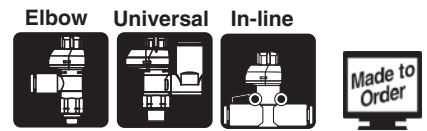
- * Refer to page 33 for L8.

1 to 50 mm/s 50 to 150 mm/s

AS-FSM/FSC Series

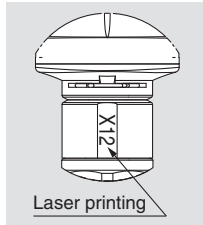
Made to Order

Please contact SMC for detailed dimensions, specifications and lead times.



1 Lubricant: Vaseline

-X12

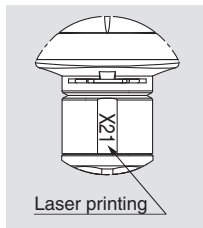


Example) AS2201FSM/FSC-01-04S-X12

- **Standard model number**
(Elbow type/Universal type ⇨ page 20)
(In-line type ⇨ page 22)

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

-X21



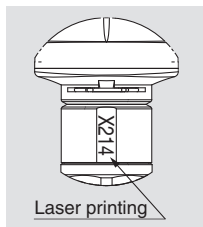
Example) AS2201FSM/FSC-01-04S-X21

- **Standard model number**
(Elbow type/Universal type ⇨ page 20)
(In-line type ⇨ page 22)

- * Not particle-free
- * Direction is not specified as there is no check valve. Products are available by the product number for meter-out type. Product number for meter-in type is not available. (For the elbow/universal type)
- * Only the needle and O-ring are fluorine-coated.

3 Restrictor (Without check valve)

-X214



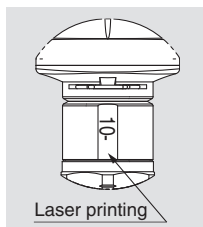
Example) AS2201FSM/FSC-01-04S-X214

- **Standard model number**
(Elbow type/Universal type ⇨ page 20)
(In-line type ⇨ page 22)

- * Direction is not specified as there is no check valve. Products are available by the product number for meter-out type. Product number for meter-in type is not available. (For the elbow/universal type)

4 Clean series

10-



Example) 10-AS2201FSM/FSC-01-04S

- **Standard model number**
(Elbow type/Universal type ⇨ page 20)
(In-line type ⇨ page 22)

- * Fluorine grease is used.
- * The cleanliness class (ISO class) is 5.

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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