

Speed Controller for Low Speed Operation with One-touch Fitting Elbow Type/Universal Type (Resin Body)

AS-FM Series

RoHS

Suitable for low speed control at 10 to 50 mm/sec

Since the sonic conductance of the controlled flow is approximately 1/10 that of the standard model, it is ideal for speed control of low speed cylinders at 10 to 50 mm/sec. The dual type is particularly suitable for low speed control of small bore cylinders.

Low speed operating stroke and high speed return stroke drive

Sonic conductance of free flow is the same as that of standard model.

Speed control is easy, and uniform speed control is possible.

Applicable tubing: Inch sizes standardized

Inch sizes are now available for all models.



Model

Elbow type	Universal type	Port size	Applicable tubing O.D.														
			Metric size					Inch size									
			3.2	4	6	8	10	1/8"	5/32"	3/16"	1/4"	5/16"	3/8"				
AS12□1FM-M5	AS13□1FM-M5	M5 x 0.8	●	●	●												
AS22□1FM-01	AS23□1FM-01	R 1/8	●	●	●	●											
AS22□1FM-02	AS23□1FM-02	R 1/4			●	●	●	●									
AS12□1FM-U10/32	AS13□1FM-U10/32	10-32 UNF								●	●	●	●				
AS22□1FM-N01	AS23□1FM-N01	NPT 1/8								●	●	●	●	●			
AS22□1FM-N02	AS23□1FM-N02	NPT 1/4									●	●	●	●	●		

Specifications

Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Mini. operating pressure	0.1 MPa
Ambient and fluid temperature	-5 to 60°C (No freezing)
Applicable tubing material ⁽¹⁾	Nylon, Soft nylon, Polyurethane
Option ⁽²⁾	With seal, Round lock nut

Note 1) Use caution regarding the max. operating pressure when soft nylon or polyurethane, or soft polyurethane tubing is used.

(Refer to pages 464 and 465 for details.)

Note 2) M5 and 10-32UNF type ports are not available with seal.

Note 3) Brass parts are all electroless nickel plated. The lock nut of the meter-out type is zinc chromate plated (the round lock nut is electroless nickel plated), then, the handle of the M5 type and the lock nut of the meter-in type are black zinc chromate plated.

Flow Rate and Sonic Conductance

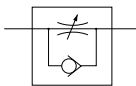
Model		AS12□1FM AS13□1FM	AS22□1FM-□01 AS23□1FM-□01	AS22□1FM-□02 AS23□1FM-□02			
Tubing O.D.	Metric size	ø3.2,ø4,ø6	ø3.2,ø4	ø6,ø8	ø4	ø6	ø8,ø10
	Inch size	ø1/8", ø5/32", ø3/16", ø1/4"	ø1/8", ø5/32"	ø3/16", ø1/4" ø5/16"	ø5/32"	ø3/16"	ø1/4", ø5/16" ø3/8"
Controlled flow	Air flow (L/min(ANR))	7	12	38			
	Sonic conductance dm ³ /(s·bar)	0.02	0.04	0.12			
	Critical pressure ratio	0.2	0.25	0.3			
Free flow	Flow rate (L/min(ANR))	100	180	230	260	390	460
	Sonic conductance dm ³ /(s·bar)	0.3	0.54	0.7	0.8	1.2	1.4
	Critical pressure ratio	0.4	0.2		0.3		

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

⚠ Caution

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 543 to 546 for Flow Control Equipment Precautions.

Symbol

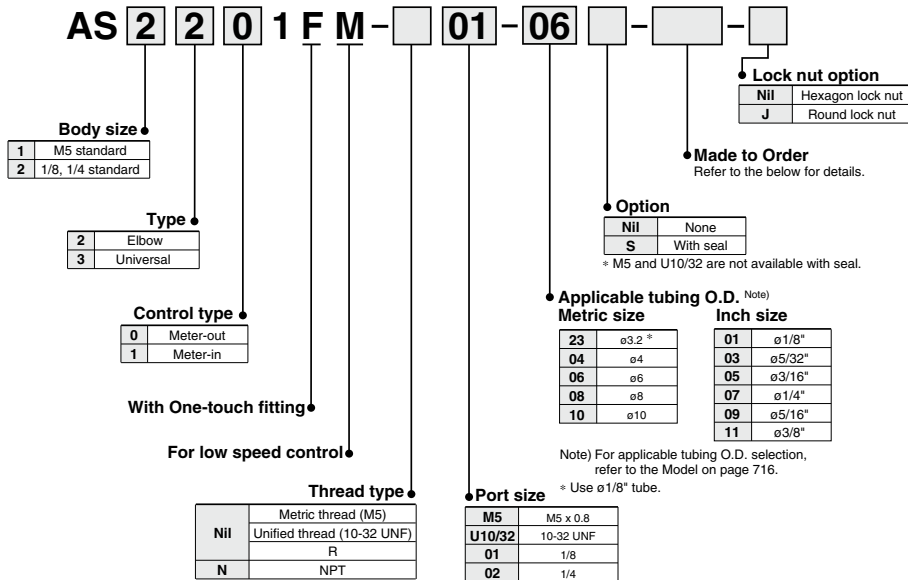


Flow Direction Symbols on Body

	Meter-out type	Meter-in type
Indication symbol		
Symbol		

Made to Order
Made to Order
(Refer to page 717 for details.)

How to Order



- AS-F
- TMH
- ASD
- AS
- AS-FE
- KE
- AS-FG
- AS-FP
- AS-FM
- AS-D
- AS-T
- ASP
- ASN
- AQ
- ASV
- AK
- VCHC
- ASR
- ASQ

Made to Order



Lubricant: Vaseline X12

Ex.) AS1201FM-M5-23-X12

Grease-free (Seal: Fluorine Coated) + Throttle Valve (Without Check Valve) X21

Ex.) AS1201FM-M5-23-X21

Note 1) Not particle-free
 Note 2) This product is a restrictor without a check valve (no control direction).
 Be aware that all part numbers are for a meter-out type; there is no part number for a meter-in type.

Throttle Valve (Without Check Valve) X214

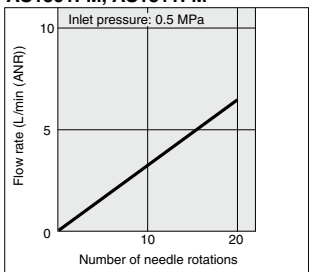
Ex.) AS1201FM-M5-23-X214

Note) This product is a restrictor without a check valve (no control direction). Be aware that all part numbers are for a meter-out type; there is no part number for a meter-in type.

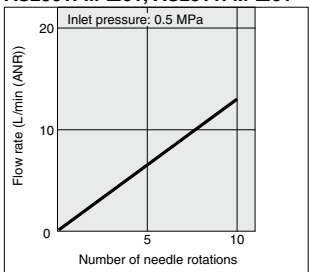
Needle Valve/Flow Rate Characteristics

Note) The flow rate characteristics are representative values.

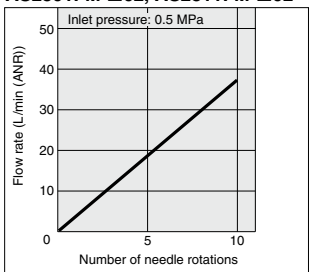
AS1201FM, AS1211FM
 AS1301FM, AS1311FM



AS2201FM-01, AS2211FM-01
 AS2301FM-01, AS2311FM-01



AS2201FM-02, AS2211FM-02
 AS2301FM-02, AS2311FM-02

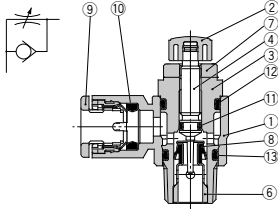


AS-FM Series

Construction: Elbow Type

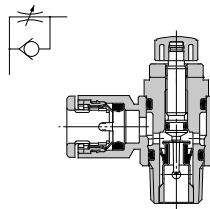
Meter-out type

Symbol

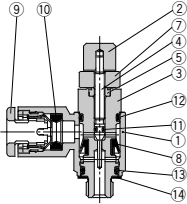


Meter-in type

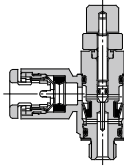
Symbol



M5 type U10/32 type



M5 type U10/32 type



Component Parts

No.	Description	Material	Note
1	Body A	PBT	White
2	Handle	PBT	Black ⁽¹⁾
3	Body B	Brass	Electroless nickel plated
4	Needle	Brass	Electroless nickel plated
5	Needle guide	Brass	Electroless nickel plated, M5 type only
6	Seat ring	Brass	Electroless nickel plated
7	Lock nut	Steel ⁽²⁾	Meter-out Zinc chromate plated ⁽³⁾ Meter-in Black zinc chromate plated
8	U seal	HNBR	
9	Cassette	—	
10	Seal	NBR	
11	O-ring	NBR	
12	O-ring	NBR	
13	O-ring	NBR	
14	Gasket	NBR, Stainless steel	M5 type only

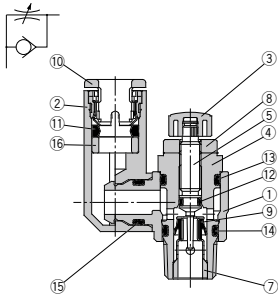
Note 1) M5 and U10/32 types are black zinc chromate plated.
Note 2) The material of the lock nut option-J (round type) is brass. However, note that only the AS2□1FM uses steel.

Note 3) The surface treatment of the lock nut option-J (round type) is electroless nickel plated.

Construction: Universal Type

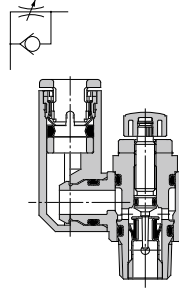
Meter-out type

Symbol

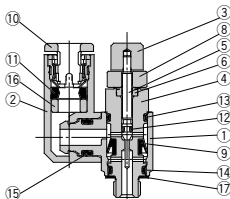


Meter-in type

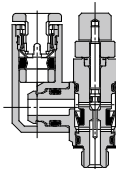
Symbol



M5 type U10/32 type



M5 type U10/32 type



Component Parts

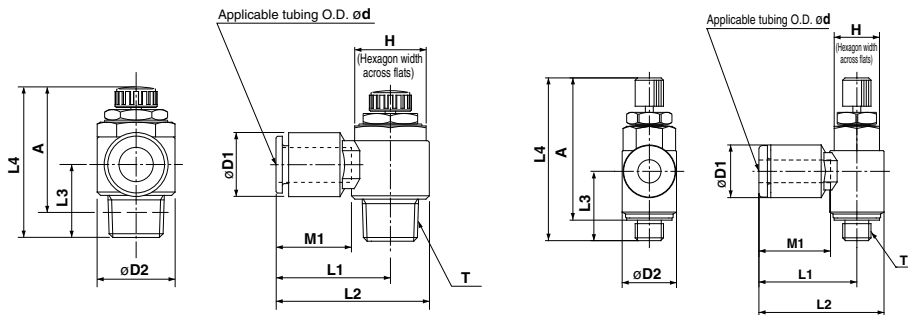
No.	Description	Material	Note
1	Body A	PBT	White
2	Elbow body	PBT	White
3	Handle	PBT	Black ⁽¹⁾
4	Body B	Brass	Electroless nickel plated
5	Needle	Brass	Electroless nickel plated
6	Needle guide	Brass	Electroless nickel plated, M5 type only
7	Seat ring	Brass	Electroless nickel plated
8	Lock nut	Steel ⁽²⁾	Meter-out Zinc chromate plated ⁽³⁾ Meter-in Black zinc chromate plated
9	U seal	HNBR	
10	Cassette	—	
11	Seal	NBR	
12	O-ring	NBR	
13	O-ring	NBR	
14	O-ring	NBR	
15	O-ring	NBR	
16	Spacer	—	
17	Gasket	NBR, Stainless steel	M5 type only

Note 1) M5 and U10/32 types are black zinc chromate plated.
Note 2) The material of the lock nut option-J (round type) is brass. However, note that only the AS2□1FM uses steel.

Note 3) The surface treatment of the lock nut option-J (round type) is electroless nickel plated.

Dimensions: Elbow Type

M5 type
 U10/32 type



Metric Size

Model	d	T	H	D1	D2	L1	L2	L3	L4 (1)(2)		A (1)(2)		M1	Weight (g)	
									Max.	Min.	Max.	Min.			
AS12□1FM-M5-23	3.2	M5 x 0.8	8	8.4	9.6	17.3	22.1	12.3	33.8	28.8	30.1	25.1	12.7	7	
AS12□1FM-M5-04	4			9.3		17.3	22.1								
AS12□1FM-M5-06	6			11.6		18.1	22.9								11.7
AS22□1FM-01-23	3.2	R 1/8	12	9.3	14.2	20.4	27.5	13.4	35.2	30.2	32.1	27.1	12.7	17	
AS22□1FM-01-04	4			9.3		20.4	27.5								
AS22□1FM-01-06	6			11.6		20.4	27.5								
AS22□1FM-01-08	8	R 1/4	17	15.2	18.5	25.3	32.4	17.7	39.9	34.9	34.4	29.4	17	19	
AS22□1FM-02-04	4			10.4		25.2	34.4								
AS22□1FM-02-06	6			12.8		25.2	34.4								
AS22□1FM-02-08	8	R 1/4	17	15.2	18.5	27.2	36.4	17.7	39.9	34.9	34.4	29.4	18.5	34	
AS22□1FM-02-10	10			18.5		35.3	44.5								18.3

Note 1) Reference dimensions

Note 2) Reference dimensions of M5 and R threads after installation.

Inch Size

Model	d	T	H	D1	D2	L1	L2	L3	L4 (1)		A (2)		M1	Weight (g)	
									Max.	Min.	Max.	Min.			
AS12□1FM-U10/32-01	1/8"	10-32 UNF	8	8.4	9.6	17.3	22.1	12.3	33.8	28.8	30.1	25.1	12.7	7	
AS12□1FM-U10/32-03	5/32"			9.3		17.3	22.1								
AS12□1FM-U10/32-05	3/16"			11.4		21.3	26.1								11.7
AS12□1FM-U10/32-07	1/4"	NPT 1/8	12.7	12	14.2	18.3	23.1	13.4	35.2	30.2	32.1	27.1	16.5	19	
AS22□1FM-N01-01	1/8"			9.3		20.4	27.5								
AS22□1FM-N01-03	5/32"			13.2		24	31.1								
AS22□1FM-N01-05	3/16"	NPT 1/4	17.5	13.2	18.5	23.9	31	17.7	39.9	34.9	34.4	29.4	17	34	
AS22□1FM-N01-07	1/4"			15.2		25.3	32.4								
AS22□1FM-N01-09	5/16"			15.2		27.2	36.4								17.7
AS22□1FM-N02-03	5/32"	NPT 1/4	17.5	10.4	18.5	25.2	34.4	17.7	39.9	34.9	34.4	29.4	16	32	
AS22□1FM-N02-05	3/16"			12.8		25.2	34.5								
AS22□1FM-N02-07	1/4"			13.2		25.2	34.5								
AS22□1FM-N02-09	5/16"	NPT 1/4	17.5	15.2	18.5	27.2	36.4	17.7	39.9	34.9	34.4	29.4	18.5	36	
AS22□1FM-N02-11	3/8"			18.5		35.3	44.5								18.3

Note 1) Reference dimensions

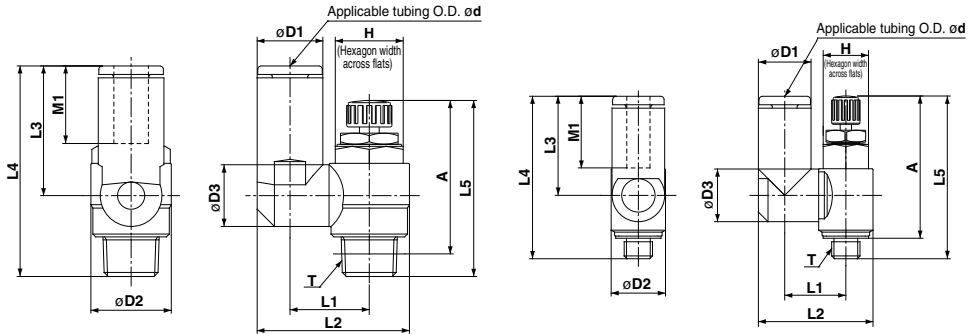
Note 2) Reference dimensions of 10-32 UNF and NPT threads after installation.

- AS-F
- TMH
- ASD
- AS
- AS-FE
- KE
- AS-FG
- AS-FP
- AS-FM
- AS-D
- AS-T
- ASP
- ASN
- AQ
- ASV
- AK
- VCHC
- ASR
- ASQ

AS-FM Series

Dimensions: Universal Type

M5 type



Metric Size

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5 (1)		A (2)		M1	Weight (g)				
											Max.	Min.	Max.	Min.						
AS13□1FM-M5-23	3.2	M5 x 0.8	8	8.4	9.6	9.3	10.8	19.8	17.5	28.7	33.8	28.8	30.1	25.1	12.7	8				
AS13□1FM-M5-04	4			9.3				20.3	20.3											
AS13□1FM-M5-06	6			11.6				21.4	20.6	31.8										
AS23□1FM-01-23	3.2	R 1/8	12	8.4	14.2	9.3	13.1	24.4	17.5	30.9	35.2	30.2	32.1	27.1	12.7	17				
AS23□1FM-01-04	4			9.3				24.9	24.9											
AS23□1FM-01-06	6			11.6				10.9	14	26.9					22.9		36.3	13.5	18	
AS23□1FM-01-08	8			15.2				12.9	16.2	30.9					28.2		40.8	18.5		21
AS23□1FM-02-04	4			10.4				10.9	16.2	30.6					21.9		39.6	16		
AS23□1FM-02-06	6	12.8	12.9	18.4	34	25.2	42.1	17	33											
AS23□1FM-02-08	8	15.2	12.9	18.3	35.2	28.2	45.1	18.5		36										
AS23□1FM-02-10	10	18.5	20.2	38.7	31	47.9	21	40												

Note 1) Reference dimensions

Note 2) Reference dimensions of M5 and R threads after installation.

Inch Size

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5 (1)		A (2)		M1	Weight (g)				
											Max.	Min.	Max.	Min.						
AS13□1FM-U10/32-01	1/8"	10-32 UNF	8	8.4	9.6	9.3	10.8	19.8	17.5	28.7	33.8	28.8	30.1	25.1	12.7	7				
AS13□1FM-U10/32-03	5/32"			9.3				20.3	20.3											
AS13□1FM-U10/32-05	3/16"			11.4				21.3	23.3	34.5					16.5		8			
AS13□1FM-U10/32-07	1/4"			12				21.6	20.7	31.9					13.7					
AS23□1FM-N01-01S	1/8"	NPT 1/8	127	8.4	14.2	9.3	13.1	24.4	17.5	30.9	35.2	30.2	32.1	27.1	12.7	17				
AS23□1FM-N01-05S	5/32"			9.3				24.9	24.9											
AS23□1FM-N01-07S	3/16"			11.4				10.9	14	26.8					23.9		37.3	16.5	18	
AS23□1FM-N01-07S	1/4"			13.2				12.9	16.2	29.9					25.6		38.2	17		19
AS23□1FM-N01-09S	5/16"			15.2				30.9	28.2	40.8					18.5		21			
AS23□1FM-N02-03S	5/32"	NPT 1/4	175	10.4	18.5	10.9	16.2	30.6	21.9	39.6	39.9	34.9	34.4	29.4	16	32				
AS23□1FM-N02-05S	3/16"			11.4				31.1	23.9	41.6					16.5		33			
AS23□1FM-N02-07S	1/4"			13.2				34.2	25.6	42.5					17			36		
AS23□1FM-N02-09S	5/16"			15.2				12.9	16.2	35.2					28.2		45.1		18.5	39
AS23□1FM-N02-11S	3/8"			17.9				20.2	38.7	31					47.9		21	40		

Note 1) Reference dimensions

Note 2) Reference dimensions of 10-32 UNF and NPT threads after installation.