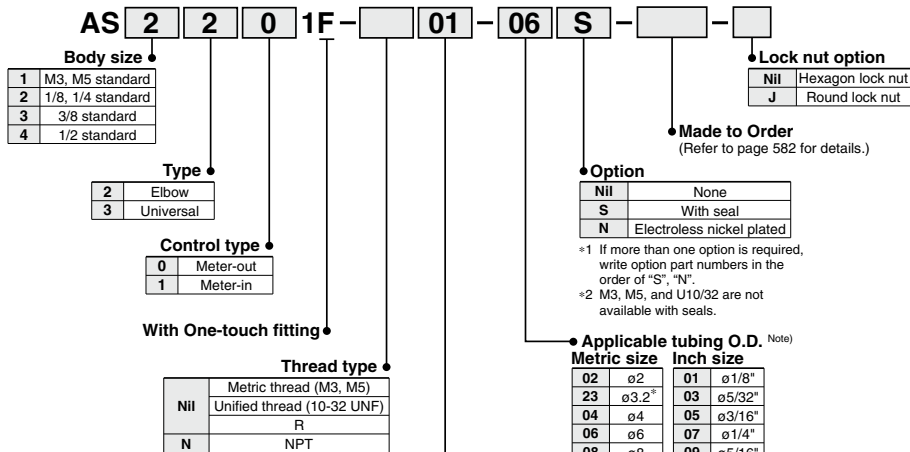




**How to Order**



**Made to Order**  
(For details, refer to page 582.)

Symbol	Specifications
-X12	Lubricant: Vaseline
-X21	Grease-free (Seal: Fluorine-coated) + Throttle valve (Without check valve)
-X214	Throttle valve (Without check valve)
-X250	Fixed throttle (No needle function)

**Port size**

M3	M3 x 0.5
M5	M5 x 0.8
U10/32	10-32 UNF
01	1/8
02	1/4
03	3/8
04	1/2

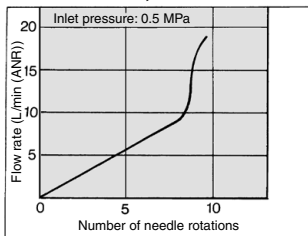
Note) For applicable tubing O.D. selection, refer to the Model on page 576.

\*Use ø1/8" tube.

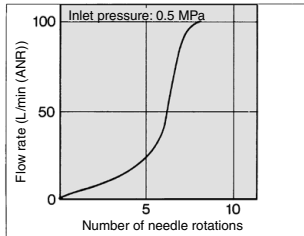
**Needle Valve/Flow Rate Characteristics**

Note) The flow rate characteristics are representative values.

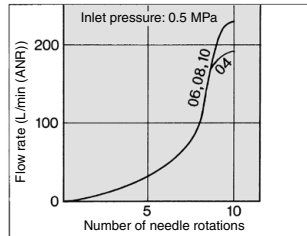
**AS1201F-M3, AS1211F-M3  
AS1301F-M3, AS1311F-M3  
AS1201F-M5-02, AS1211F-M5-02**



**AS1201F-M5, AS1211F-M5  
AS1301F-M5, AS1311F-M5**

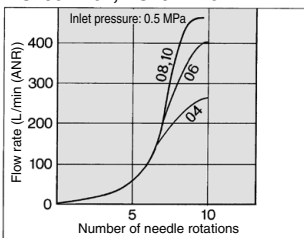


**AS2201F-01, AS2211F-01  
AS2301F-01, AS2311F-01**

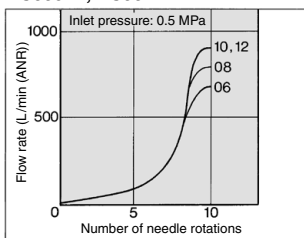


Note) \*U10/32" is the same as "M5".

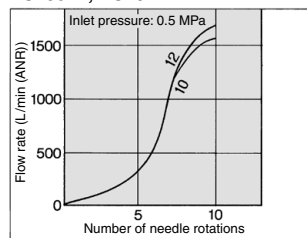
**AS2201F-02, AS2211F-02  
AS2301F-02, AS2311F-02**



**AS3201F, AS3211F  
AS3301F, AS3311F**



**AS4201F, AS4211F  
AS4301F, AS4311F**



AS-F

TMH

ASD

AS

AS-FE

KE

AS-FG

AS-FP

AS-FM

AS-D

AS-T

ASP

ASN

AQ

ASV

AK

VCHC

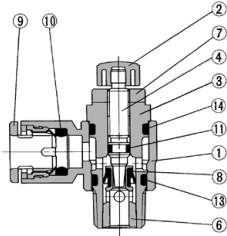
ASR

ASQ

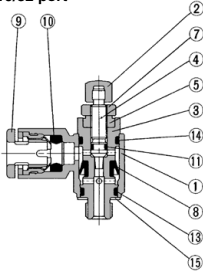
# AS Series

## Construction

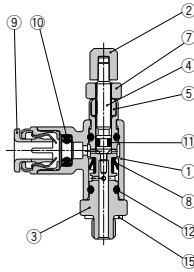
### Elbow type Meter-out type



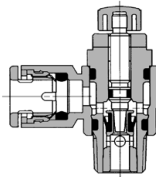
### M3 port M5 port U10/32 port



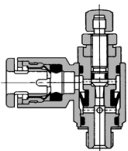
### ø2 tubing type



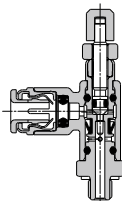
### Meter-in type



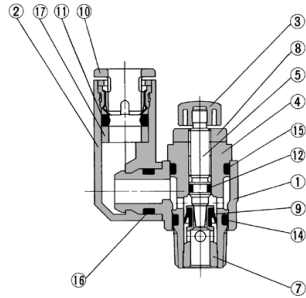
### M3 port M5 port U10/32 port



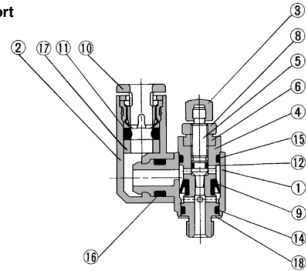
### ø2 tubing type



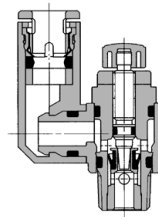
### Universal type Meter-out type



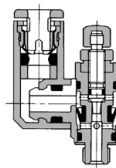
### M3 port M5 port U10/32 port



### Meter-in type



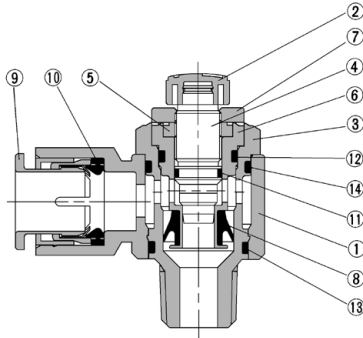
### M3 port M5 port U10/32 port



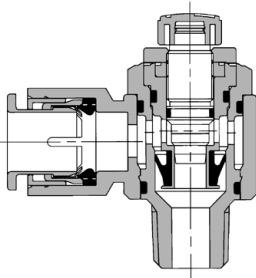
## Construction

### Elbow type

Meter-out type AS3201F-02

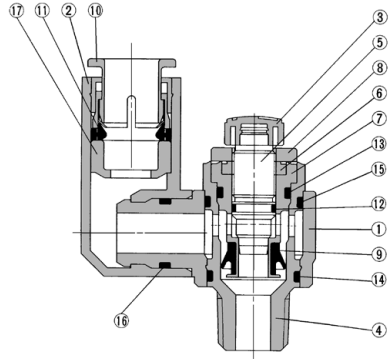


Meter-in type AS3211F-02

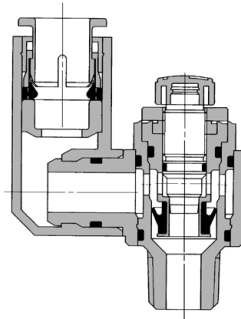


### Universal type

Meter-out type AS3301F-02



Meter-in type AS3311F-02



### Component Parts

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

Note 1) AS12□1F-M3 and AS12□1F-M5-02 are made of electroless nickel plated brass.

Note 2) AS12□1F-M3 is made of stainless steel.

Note 3) AS22□1F, AS32□1F: Electroless nickel plated.

\* Excluding applicable tubing O.D. 3/8"

Note 4) The material of the lock nut option-J (round type) is brass.

However, note that only the AS22□1F uses steel.

Note 5) The surface treatment of the lock nut option-J (round type) is electroless nickel plating.

### Component Parts

No.	Description	Material	Note
1	Body A	PBT	
2	Elbow body	PBT	
3	Handle	PBT <sup>(1)</sup>	
4	Body B	Brass <sup>(2)</sup>	Electroless nickel plated
5	Needle	Brass	Electroless nickel plated
6	Needle guide	Brass	Electroless nickel plated
7	Seat ring	Brass	<sup>(3)</sup>
8	Lock nut	Steel <sup>(4)</sup>	Meter-out Zinc chromate plated <sup>Note 5)</sup> 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	O-ring	NBR	
17	Spacer	—	
18	Gasket	NBR, Stainless steel	

Note 1) AS13□1F-M3 is made of electroless nickel plated brass.

Note 2) AS13□1F-M3 is made of stainless steel.

Note 3) AS23□1F, AS33□1F: Electroless nickel plated.

\* Excluding applicable tubing O.D. 3/8"

Note 4) The material of the lock nut option-J (round type) is brass.

However, note that only the AS23□1F uses steel.

Note 5) The surface treatment of the lock nut option-J (round type) is electroless nickel plating.

AS-F

TMH

ASD

AS

AS-FE

KE

AS-FG

AS-FP

AS-FM

AS-D

AS-T

ASP

ASN

AQ

ASV

AK

VCHC

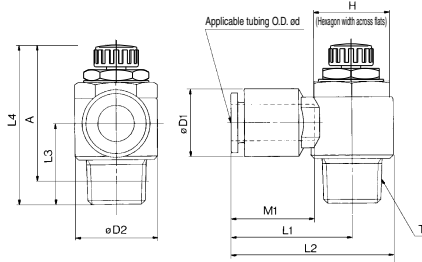
ASR

ASQ

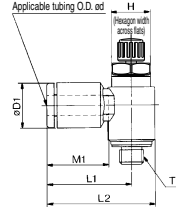
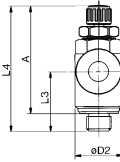
# AS Series



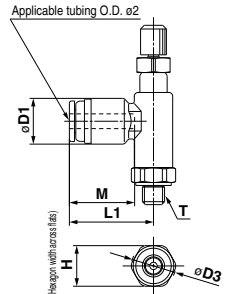
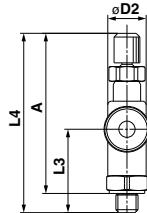
## Elbow Type



## M3 port M5 port U10/32 port



## ø2 tubing type AS12□1F-M3-02 AS12□1F-M5-02



## Metric Size

Model	Applicable tubing O.D. ød	T	H (1)	D1	D2	L3	L1	L2	L4 (3)		A (2)		M1	Weight (g)
									Max.	Min.	Max.	Min.		
AS12□1F-M3-02	M3 x 0.5	5.5	6	5.2	6	—	—	—	11	26.8	24.3	24.3	8.8	2.4
AS12□1F-M5-02	M5 x 0.8	7	6	5.2	7.5	11.4	—	—	11.5	27.3	24.8	24.3	21.5	3
AS12□1F-M3-23	M3 x 0.5	3.2	—	—	—	16.1	19.7	10	10.5	26.6	24.1	24	21.5	4
AS12□1F-M3-04	M3 x 0.5	4	—	—	—	—	—	—	—	—	—	—	—	—
AS12□1F-M5-23	M5 x 0.8	3.2	—	—	—	17.3	22.1	12.3	—	—	—	—	—	—
AS12□1F-U10-32-23	10-32UNF	4	—	—	—	—	—	—	—	—	—	—	—	—
AS12□1F-M5-04	M5 x 0.8	4	—	—	—	17.3	22.1	12.3	28.6	25.8	25	22.2	—	—
AS12□1F-U10-32-04	10-32UNF	4	—	—	—	—	—	—	—	—	—	—	—	—
AS12□1F-M5-06	M5 x 0.8	6	—	—	—	18.1	22.9	11.7	—	—	—	—	13.5	—
AS12□1F-U10-32-06	10-32UNF	6	—	—	—	—	—	—	—	—	—	—	—	—
AS22□1F-01-23	3.2	—	9.3	—	—	20.4	27.5	—	—	—	—	—	12.7	16
AS22□1F-01-04	4	—	9.3	—	—	20.4	27.5	—	—	—	—	—	17	—
AS22□1F-01-06	6	1/8	12 (12.7)	11.6	14.2	—	—	33.4	35.2	30.2	32.1	27.1	13.5	—
AS22□1F-01-08	8	—	—	15.2	—	25.3	32.4	—	—	—	—	—	18.5	19
AS22□1F-01-10	10	—	—	18.5	—	32.1	39.2	14.1	—	—	—	—	21	21
AS22□1F-02-04	4	—	—	—	—	25.2	34.4	—	—	—	—	—	16	32
AS22□1F-02-06	6	—	17	12.8	18.5	28.2	34.4	17.7	39.9	34.9	34.4	29.4	17	—
AS22□1F-02-08	8	—	15.2	27.2	36.4	—	—	—	—	—	—	—	18.5	34
AS22□1F-02-10	10	—	—	35.3	44.5	18.3	—	—	—	—	—	—	21	36
AS22□1F-02-06	6	1/4	17 (17.5)	12.8	18.5	27.8	39.3	—	—	—	—	—	17	60
AS32□1F-02-08	8	—	15.2	23	—	29.5	41	21.3	48.3	43.3	42.8	37.8	18.5	63
AS32□1F-02-10	10	—	18.5	—	—	31.8	43.3	—	—	—	—	—	21	67
AS32□1F-02-12	12	—	20.9	—	—	32.8	44.3	—	—	—	—	—	22	69
AS32□1F-03-06	6	—	12.8	27.8	39.3	—	—	—	—	—	—	—	17	55
AS32□1F-03-08	8	—	15.2	29.5	41	—	—	—	—	—	—	—	18.5	57
AS32□1F-03-10	10	—	18.5	23	—	31.8	43.3	19.8	45.4	40.4	40.2	35.2	21	59
AS32□1F-03-12	12	—	20.9	—	—	32.8	44.3	—	—	—	—	—	22	61
AS42□1F-04-10	10	1/2	24 (23.8)	18.5	28.6	—	—	—	33.6	47.9	46.2	42.1	21	100
AS42□1F-04-12	12	—	—	—	—	35.2	49.5	24.5	56.7	49.2	48.6	42.1	22	101

Note 1) ( ) are the dimensions of NPT thread. Note 2) Reference thread dimensions after installation. Note 3) Reference dimensions

## Inch Size

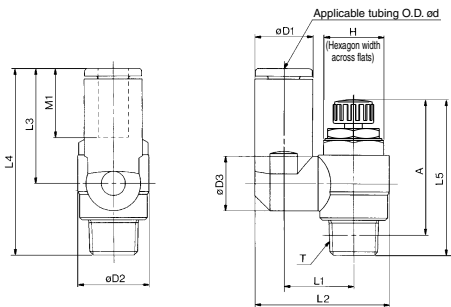
Model	Applicable tubing O.D. ød	T	H (1)	D1	D2	L3	L1	L2	L4 (3)		A (2)		M1	Weight (g)	
									Max.	Min.	Max.	Min.			
AS12□1F-M3-01	1/8"	M3 x 0.5	5.5	8.4	9.3	7.2	16.1	19.7	10.5	26.6	24.1	24	21.5	12.7	4
AS12□1F-M3-02	5/32"	M3 x 0.5	5.5	8.4	9.3	7.2	16.1	19.7	10.5	26.6	24.1	24	21.5	12.7	4
AS12□1F-M5-01	1/8"	M5 x 0.8	8	8.4	9.6	17.3	22.1	12.3	28.6	25.8	25	22.2	12.7	7	
AS12□1F-U10-32-01	1/8"	10-32UNF	8	8.4	9.6	17.3	22.1	12.3	28.6	25.8	25	22.2	12.7	7	
AS12□1F-M5-03	5/32"	M5 x 0.8	8	9.3	—	—	—	—	—	—	—	—	—	—	
AS12□1F-U10-32-03	5/32"	10-32UNF	8	9.3	—	—	—	—	—	—	—	—	—	—	
AS12□1F-M5-05	3/16"	M5 x 0.8	8	11.4	—	—	—	—	—	—	—	—	16.5	7	
AS12□1F-U10-32-05	3/16"	10-32UNF	8	11.4	—	—	—	—	—	—	—	—	—	—	
AS12□1F-M5-07	1/4"	M5 x 0.8	8	9.6	—	—	—	—	11.7	28.6	25.8	25	22.2	—	
AS12□1F-U10-32-07	1/4"	10-32UNF	8	9.6	—	—	—	—	11.7	28.6	25.8	25	22.2	—	
AS22□1F-01-01	1/8"	—	12 (12.7)	9.3	—	20.4	27.5	—	—	—	—	—	12.7	16	
AS22□1F-01-03	5/32"	—	—	9.3	—	20.4	27.5	—	—	—	—	—	17	—	
AS22□1F-01-05	3/16"	1/8	12 (12.7)	11.4	14.2	23.1	30.2	13.4	35.2	30.2	32.1	27.1	16.5	17	
AS22□1F-01-07	1/4"	—	—	13.2	—	23.9	31	—	—	—	—	—	18.5	19	
AS22□1F-01-09	5/16"	—	—	15.2	—	25.3	32.4	14.1	—	—	—	—	21	21	
AS22□1F-02-03	5/32"	—	—	10.4	—	25.2	34.4	—	—	—	—	—	16	32	
AS22□1F-02-05	3/16"	—	17 (17.5)	9.3	—	20.4	27.5	17.7	39.9	34.9	34.4	29.4	17	—	
AS22□1F-02-07	1/4"	—	—	13.2	18.5	25.2	34.5	—	—	—	—	—	18.5	34	
AS22□1F-02-09	5/16"	—	—	15.2	—	27.2	36.4	18.2	—	—	—	—	21	36	
AS22□1F-02-11	3/8"	1/4	—	18.5	—	35.3	44.5	18.8	—	—	—	—	21	36	
AS22□1F-02-13	1/2"	—	—	20.9	—	32.8	44.3	—	—	—	—	—	22	61	
AS32□1F-02-07	1/4"	—	—	13.2	23	27.8	39.3	—	—	—	—	—	17	60	
AS32□1F-02-09	5/16"	—	—	15.2	23	29.5	41	21.3	48.3	43.3	42.8	37.8	18.5	63	
AS32□1F-02-11	3/8"	—	—	17.9	—	31.8	43.3	—	—	—	—	—	21	67	
AS32□1F-03-07	1/4"	—	—	13.2	23	27.8	39.3	—	—	—	—	—	17	55	
AS32□1F-03-09	5/16"	3/8	—	15.2	23	29.5	41	19.8	45.4	40.4	40.2	35.2	18.5	57	
AS32□1F-03-11	3/8"	—	—	17.9	—	31.8	43.3	—	—	—	—	—	21	59	
AS42□1F-04-11	3/8"	1/2	24 (23.8)	17.9	28.6	33.6	47.9	24.5	56.7	49.2	48.6	42.1	21	100	
AS42□1F-04-13	1/2"	—	—	21.7	—	35.2	49.5	—	—	—	—	—	22	101	

Note 1) ( ) are the dimensions of NPT thread. Note 2) Reference thread dimensions after installation. Note 3) Reference dimensions

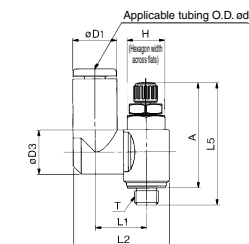
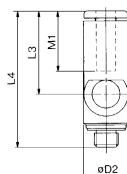
# Speed Controller with One-touch Fitting Elbow Type/Universal Type **AS Series**



**Universal Type**



M3 port  
M5 port  
U10/32 port



## Metric Size

Model	Applicable tubing O.D. (mm)	T	H <sup>(1)</sup>	D1	D2	D3	L1	L2	L3	L4	L5 <sup>(2)</sup>		A <sup>(2)</sup>		M1	Weight (g)
											Max.	Min.	Max.	Min.		
AS13□1F-M3-23	3.2	M3 x 0.5	5.5	8.4	7.2	7.2	10.1	17.9	17.6	28.3	26.6	24.1	24	21.5	12.7	4
AS13□1F-M3-04	4	M3 x 0.5		9.3	7.2		10.1	18.3	17.9	28.6						5
AS13□1F-M5-23	3.2	M5 x 0.8		8.4				19.8							12.7	
AS13□1F-U1032-23	3.2	10-32UNF		8.4				19.8							12.7	
AS13□1F-M5-04	4	M5 x 0.8		9.3	9.6	9.3	10.8	20.3			28.6	25.8	25	22.2		7
AS13□1F-U1032-04	4	10-32UNF		9.3	9.6	9.3	10.8	20.3			28.6	25.8	25	22.2		7
AS13□1F-M5-06	6	M5 x 0.8		11.6				21.4	20.6	31.8					13.5	
AS13□1F-U1032-06	6	10-32UNF		11.6				21.4	20.6	31.8					13.5	
AS23□1F-01-23	3.2			8.4				13.1	14.4		35.2	30.2	32.1	27.1	12.7	17
AS23□1F-01-04	4			9.3				14.2	15.5		35.2	30.2	32.1	27.1	12.7	18
AS23□1F-01-06	6	1/8	12 (12.7)	11.6				14.2	15.5		35.2	30.2	32.1	27.1	12.7	18
AS23□1F-01-08	8			12.8				14.2	15.5		35.2	30.2	32.1	27.1	12.7	18
AS23□1F-02-04	4			10.4				12.9	16.2	30.6	21.9	39.6			16	32
AS23□1F-02-06	6			12.8				12.9	18.4	34	25.2	42.1			17	33
AS23□1F-02-08	8		17 (17.5)	15.2				12.9	18.3	35.2	28.2	45.1			18.5	36
AS23□1F-02-10	10			18.5				12.9	20.2	38.7	31	47.9			21	40
AS23□1F-02-16	16		1/4	22.9				12.9	20.6	39.5	25.2	46.5			17	60
AS33□1F-02-06	6			15.2				12.9	20.6	39.5	28.2	49.5	48.3	43.3	18.5	63
AS33□1F-02-08	8			18.5				12.9	20.6	39.5	28.2	49.5	48.3	43.3	18.5	63
AS33□1F-02-10	10			20.9				12.9	20.6	39.5	28.2	49.5	48.3	43.3	18.5	63
AS33□1F-02-12	12			23				12.9	20.6	39.5	28.2	49.5	48.3	43.3	18.5	63
AS33□1F-03-06	6			18.5				12.9	20.6	39.5	25.2	45	45.4	40.4	17	56
AS33□1F-03-08	8			20.9				12.9	20.6	39.5	25.2	45	45.4	40.4	17	56
AS33□1F-03-10	10			23				12.9	20.6	39.5	25.2	45	45.4	40.4	17	56
AS33□1F-03-12	12			25.8				12.9	20.6	39.5	25.2	45	45.4	40.4	17	56
AS43□1F-04-10	10	1/2	24 (23.8)	18.5				18.2	25.8	49.4	32.6	57.1	56.7	49.2	21	104
AS43□1F-04-12	12		27.1	21.7				19.4	26.8	52	36.3	60.8	60.7	49.2	22	106

Note 1 ( ) are the dimensions of NPT thread  
Note 2) Reference thread dimensions after installation.  
Note 3) Reference dimensions

## Inch Size

Model	Applicable tubing O.D. (mm)	T	H <sup>(1)</sup>	D1	D2	D3	L1	L2	L3	L4	L5 <sup>(2)</sup>		A <sup>(2)</sup>		M1	Weight (g)
											Max.	Min.	Max.	Min.		
AS13□1F-M3-01	1/8"	M3 x 0.5	5.5	8.4	7.2	7.2	10.1	17.9	17.6	28.3	26.6	24.1	24	21.5	12.7	4
AS13□1F-M3-03	3/32"	M3 x 0.5		9.3	7.2		10.1	18.3	17.9	28.6						5
AS13□1F-M5-01	1/8"	M5 x 0.8		8.4				19.8							12.7	
AS13□1F-U1032-01	1/8"	10-32UNF		8.4				19.8							12.7	
AS13□1F-M5-03	3/32"	M5 x 0.8		9.3	9.6	9.3	10.8	20.3			28.6	25.8	25	22.2		7
AS13□1F-U1032-03	3/32"	10-32UNF		9.3	9.6	9.3	10.8	20.3			28.6	25.8	25	22.2		7
AS13□1F-M5-05	3/16"	M5 x 0.8		11.4				21.3	23.3	34.5					16.5	
AS13□1F-U1032-05	3/16"	M5 x 0.8		11.4				21.3	23.3	34.5					16.5	
AS13□1F-M5-07	7/32"	M5 x 0.8		12				21.6	20.7	31.9					13.7	
AS13□1F-U1032-07	7/32"	10-32UNF		12				21.6	20.7	31.9					13.7	
AS23□1F-01-01	1/8"			8.4				9.3	9.3	13.1	14.4	17.5	3			

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



## 1 Lubricant: Vaseline X12

Ex.) AS2201F-01-04S-X12

## 2 Grease-free (Seal: Fluorine Coating) + Throttle Valve (Without Check Valve) X21

Ex.) AS2201F-01-04S-X21

Note 1) Not particle-free

Note 2) Throttle valve is only compatible with the part no. of the meter-out type.

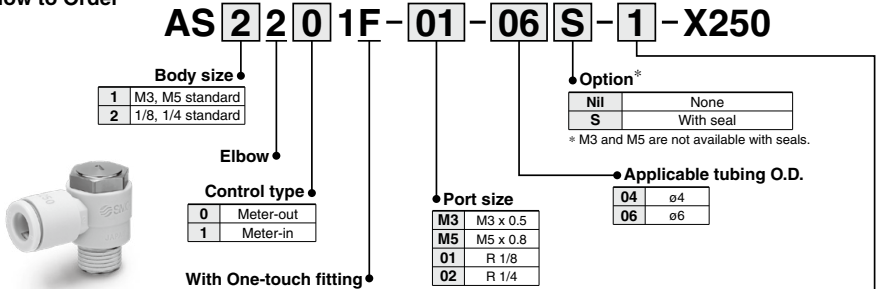
## 3 Throttle Valve (Without Check Valve) X214

Ex.) AS2201F-01-04S-X214

Note) Throttle valve is only compatible with the part no. of the meter-out type.

## 4 Fixed Throttle (No needle function) X250

### How to Order



Symbol	Fixed orifice	Applicable model			
		AS12□1F-M3-04	AS12□1F-M5-04 AS12□1F-M5-06	AS22□1F-01-04 AS22□1F-01-06	AS22□1F-02-06
1	ø0.1	●	●	●	●
2	ø0.2	●	●	●	●
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.

