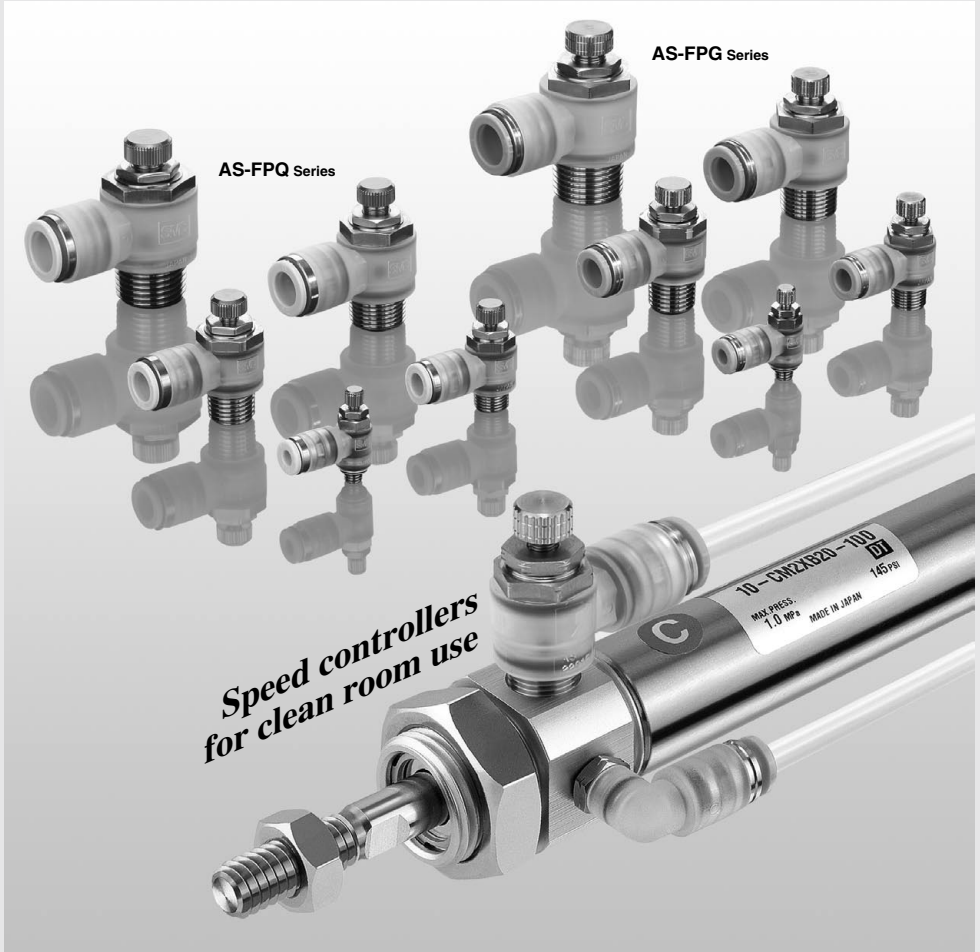


Clean Speed Controller with One-touch Fitting

AS-FPQ/AS-FPG Series

RoHS

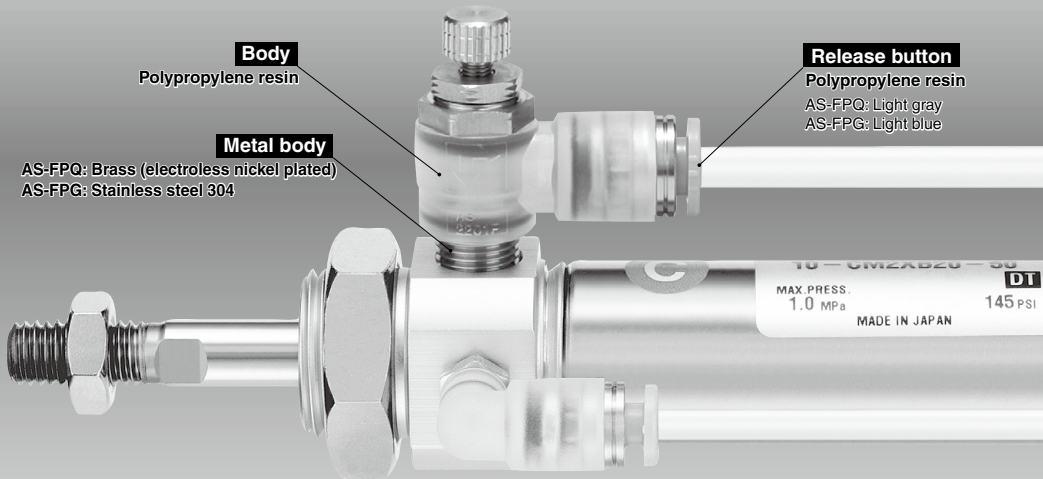


*Speed controllers
for clean room use*

**AS-FPQ: Brass (electroless nickel plated) and
AS-FPG: Stainless steel 304 are now available as a series.**

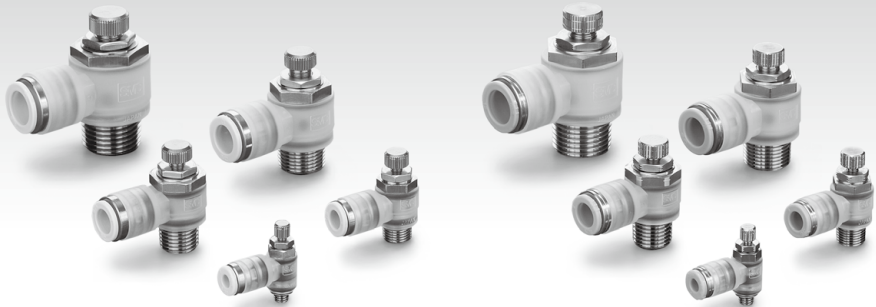
- AS-F
- TMH
- ASD
- AS
- AS-FE
- KE
- AS-FG
- AS-FP**
- AS-FM
- AS-D
- AS-T
- ASP
- ASN
- AQ
- ASV
- AK
- VCHC
- ASR
- ASQ

Low particulate generating speed controllers designed for use in clean rooms



Clean Speed Controller
with One-touch Fitting

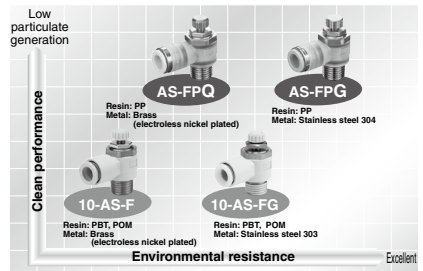
AS-FPQ/FPG Series



AS-FPQ Series
Brass (electroless nickel plated)

AS-FPG Series
Stainless steel 304

Elbow type	Port size	Applicable tube O.D. (mm)				
		4	6	8	10	12
AS12□1FP□-M5	M5 x 0.8	●	●	●	●	●
AS22□1FP□-01	R 1/8	●	●	●	●	●
AS22□1FP□-02	R 1/4	●	●	●	●	●
AS32□1FP□-03	R 3/8	●	●	●	●	●
AS42□1FP□-04	R 1/2	●	●	●	●	●



Clean Speed Controller with One-touch Fitting Elbow Type

RoHS

AS-FPQ/FPG Series

AS-FPQ/Brass (electroless nickel plated)

Release button color: Light gray

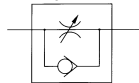


AS-FPG/Stainless steel 304

Release button color: Light blue



Symbol



Flow Direction Symbols on Body

	Meter-out type	Meter-in type
Indication symbol		
Symbol		

Model

Elbow type	Port size	Applicable tubing O.D. (mm)				
		4	6	8	10	12
AS12□1FP□-M5	M5 x 0.8	●	●			
AS22□1FP□-01	R 1/8	●	●	●		
AS22□1FP□-02	R 1/4	●	●	●	●	
AS32□1FP□-03	R 3/8		●	●	●	●
AS42□1FP□-04	R 1/2				●	●

Specifications

Fluid	Air
Cleanliness class (ISO class)	Class 3 (1)
Proof pressure (20°C)	1.5 MPa (2)
Maximum operating pressure (20°C)	1 MPa (3)
Minimum operating pressure	0.1 MPa
Ambient and fluid temperature	-5 to 60°C (No freezing)
Oil	Fluorine-based grease

Note 1) The maximum operating pressure is the value at 20°C. Refer to the operating pressure curve for other temperatures.

Note 2) Proof pressure is 1.5 times higher than maximum operating pressure.

Note 3) The value of the maximum operating pressure is at a temperature of 20°C. In other cases, refer to "Relationship between Operating Temperature and Max. Operating Pressure" below.

Flow Rate and Sonic Conductance

Model	AS12□1FP□-M5	AS22□1FP□-01	AS22□1FP□-02			AS32□1FP□-03			AS42□1FP□-04			
			ø4	ø6	ø8	ø6	ø8	ø10	ø10	ø12		
Tubing O.D.	Metric sizes ø6	ø4 ø6	ø6 ø8	ø4 ø6 ø8	ø6 ø8 ø10	ø6 ø8 ø10	ø8 ø10 ø12	ø10 ø12	ø10 ø12			
Controlled flow	Flow rate L/min (ANR)	100	180	230	260	390	460	660	790	920	1580	1710
	Sonic conductance dm ³ /(s·bar)	0.28	0.5	0.64	0.72	1.1	1.3	1.8	2.2	2.6	4.4	4.8
Critical pressure ratio	Controlled flow	0.2	0.25		0.3			0.25			0.25	
	Free flow	0.4	0.2		0.3			0.2			0.3	

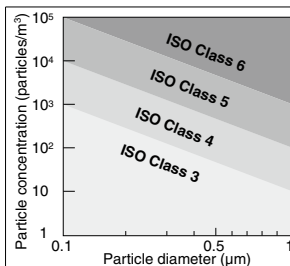
Note) Flow rate values are at a pressure of 0.5 MPa, and temperature of 20°C.

Recommended Applicable Tubing

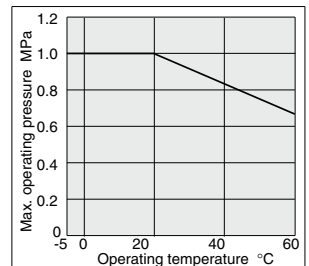
Tubing material	Clean series polyurethane tubing: 10 series
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Polyurethane tubing: TU series, Nylon tubing: T series and Soft nylon tubing: TS series can also be used. However, the degree of clean performance will decline.

Particle Generation Classification



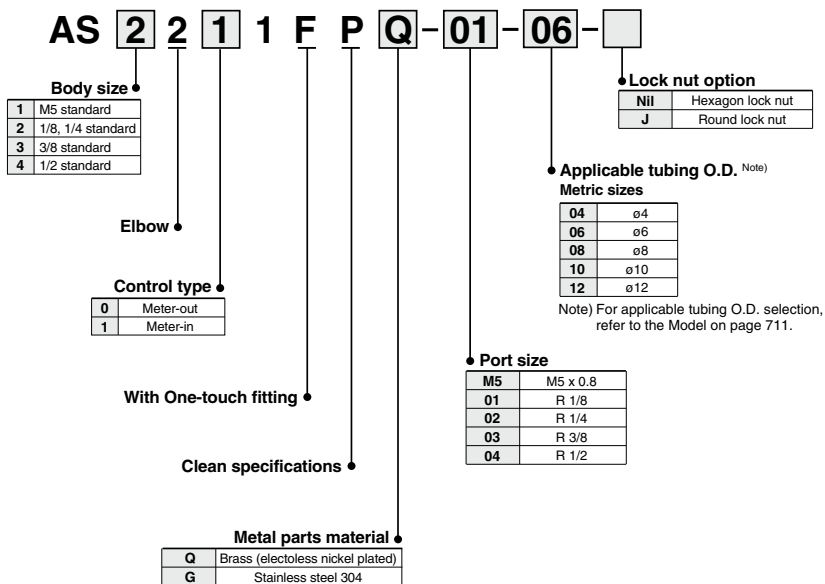
Relation between Operating Temp. and Max. Operating Pressure



Note) Refer to back page 8 for details.

AS-FPQ/FPG Series

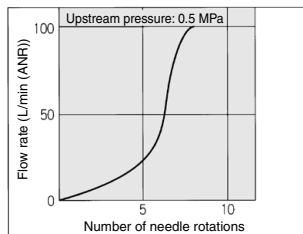
How to Order



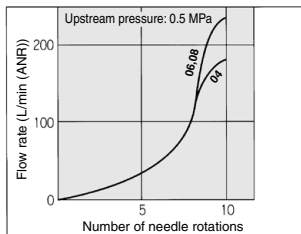
Needle Valve/Flow Rate Characteristics

(Note) The flow rate characteristics are representative values.

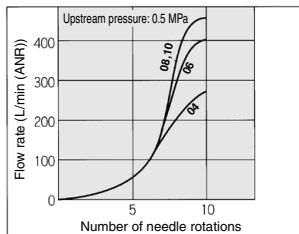
AS12□1FP□-M5



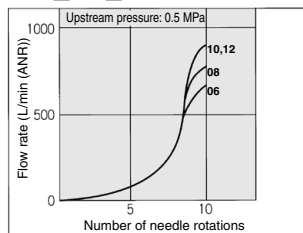
AS22□1FP□-01



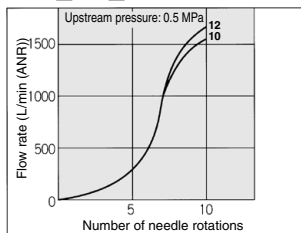
AS22□1FP□-02



AS32□1FP□-03

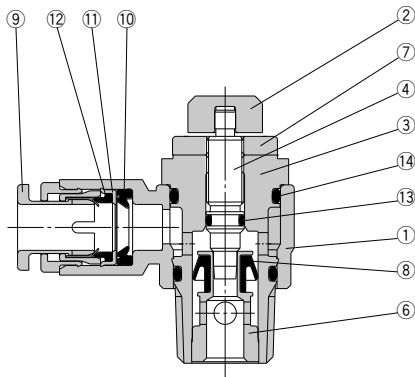
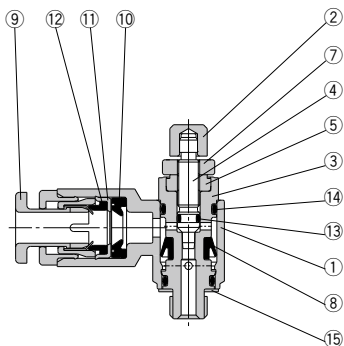


AS42□1FP□-04

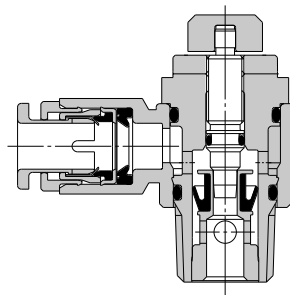
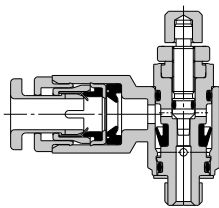


Construction

Meter-out type M5 type



Meter-in type M5 type



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

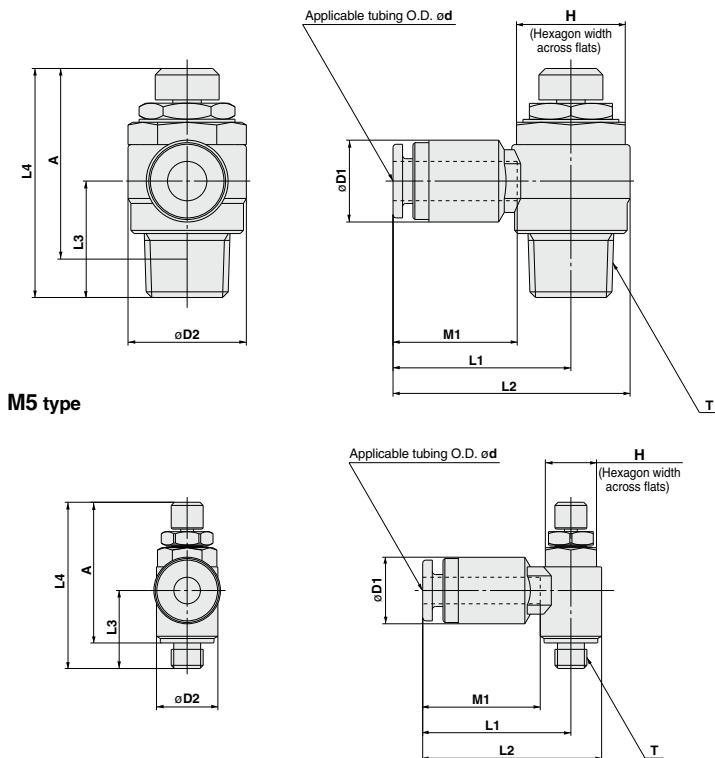
Component Parts

No.	Description	AS□□1FPQ		AS□□1FPG	
		Material	Note	Material	Note
1	Body A	Polypropylene resin		Polypropylene resin	
2	Knob	Brass	Electroless nickel plated	Stainless steel 304	
3	Body B	Brass	Electroless nickel plated	Stainless steel 304	
4	Needle	Brass	Electroless nickel plated	Stainless steel 304	
5	Needle guide	Brass	Electroless nickel plated	Stainless steel 304	
6	Seat ring	Brass	Electroless nickel plated	Stainless steel 304	
7	Lock nut	Steel ⁽¹⁾	Electroless nickel plated	Stainless steel 304	
8	U seal	HNBR		HNBR	
9	Cassette	Polypropylene resin Stainless steel 304, Brass	Brass parts are electroless nickel plated	Polypropylene resin Stainless steel 304	
10	Seal	NBR		NBR	
11	Stopper	Stainless steel 304		Stainless steel 304	
12	Cushion	NBR		NBR	
13	O-ring	NBR		NBR	
14	O-ring	NBR		NBR	
15	Gasket	NBR, Stainless steel 304		NBR, Stainless steel 304	

(Note) The material of the lock nut option-J (round type) is brass. However, note that only the AS2□1FPQ uses steel.

AS-FPQ/FPG Series

Dimensions



M5 type

Model	Tubing O.D. d	T	H	D1	D2	L1	L2	L3 (4)	L4 (1) (4)		A (2)		M1	Weight (g) (3)	
									Max.	Min.	Max.	Min.		1*	2*
AS12□1FP□-M5-04	4	M5 x 0.8	8	10.4	9.6	22.2	27	12.2	28.8	26	25.2	22.4	17	7	7
AS12□1FP□-M5-06	6			12.8		23.2	28						(12.2)	(28.8)	(26)
AS22□1FP□-01-04	4	R 1/8	12	10.4	14.2	24.3	31.4	13.4	35.5	30.5	32.4	27.4	17	17	17
AS22□1FP□-01-06	6			12.8		25.3	32.4						(14.3)	(36.4)	(31.4)
AS22□1FP□-01-08	8			15.2		27.5	34.6						20.5	20	20
AS22□1FP□-02-04	4	R 1/4	17	10.4	18.5	26.8	36	17.7	40.3	35.3	34.8	29.4	17	33	33
AS22□1FP□-02-06	6			12.8		26.8	36						(18.2)	(40.8)	(35.8)
AS22□1FP□-02-08	8			15.2		29.4	38.6						20.5	35	35
AS22□1FP□-02-10	10			18.5		37.3	46.5	18.3(18.8)					23	38	38
AS32□1FP□-03-06	6	R 3/8	19	12.8	23	29.4	40.9	19.8	45.8	40.8	40.6	35.6	18.5	59	55
AS32□1FP□-03-08	8			15.2		31.9	43.4						(20.9)	(46.9)	(41.9)
AS32□1FP□-03-10	10			18.5		33.6	45.1						23	63	59
AS32□1FP□-03-12	12			20.9		34.8	46.3						24	65	61
AS42□1FP□-04-10	10	R 1/2	24	18.5	28.6	35.6	49.9	24.5	57.2	49.7	49.9	42.4	23	107	100
AS42□1FP□-04-12	12			21.7		38.2	52.5						(25.4)	(58.1)	(50.6)

Note 1) Reference dimensions

Note 2) Reference dimension for threads after installation

Note 3) 1* is the weight for type AS□□1FPQ (brass + electroless nickel plated), 2* is the weight for type AS□□1FPG (Stainless steel 304).

Note 4) Dimensions of AS□□1FPQ, () : AS□□1FPG



AS-FPQ/FPG Series Specific Product Precautions

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.

Handling

Caution

1. Store away from direct sunlight at 40°C or less.
2. Open the inner package of the double packaging in a clean room or other clean environment.

Piping

Caution

1. Be sure to use sealant tape or liquid gasket at the taper thread part. Using without sealant tape or liquid gasket can cause air leakage.

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

Series (21-)AS-FPQ/FPG

Clean Speed Controller with One-touch Fittings (Elbow type)



How to Order

AS 2 2 1 1 F P G 01 06

21 - AS 2 2 1 1 F P Q 01 06

• Metal part material

Q	Brass (Electroless nickel plated)
G	Stainless steel (Stainless steel 304)

• Lock nut option

Nil	Hexagon lock nut
J	Round lock nut

• Applicable tubing O.D. (mm) ^(Note)

Metric size	
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

(Note) Refer to the following Model list for selection of applicable tubing O.D.

• Connection port size

M5	M5 x 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

• Metal part material

Q	Brass (Electroless nickel plated)
---	-----------------------------------

Body size

1	M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow
---	-------

Control type

0	Meter-out
1	Meter-in

• Copper, fluorine and silicone-free + Low particle generation

• AS-FPQ / Brass (Electroless nickel plated)
Release button color: Light gray

• AS-FPG / Stainless steel (Stainless steel 304)
Release button color: Light blue

• With One-touch fittings

• Clean specification

Model

Elbow type	Connection port size	Applicable tubing O.D. (mm)				
		4	6	8	10	12
(21-) AS12□1FP□-M5	M5 x 0.8	●	●			
(21-) AS22□1FP□-01	R1/8	●	●	●		
(21-) AS22□1FP□-02	R1/4	●	●	●	●	
(21-) AS32□1FP□-03	R3/8		●	●	●	●
(21-) AS42□1FP□-04	R1/2				●	●



Specifications

Proof pressure (20°C)	1.5 MPa
Max. operating pressure (20°C)	1 MPa ^(Note 1)
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	-5 to 60°C (No freezing)
Grease	Fluorine grease 21-: Lithium soap based grease
Cleanliness class (ISO class)	Class 3

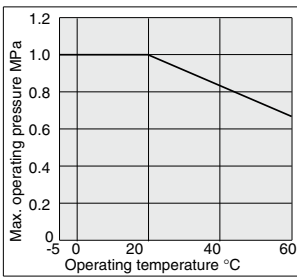
Note 1) The maximum operating pressure is the value at 20°C. Refer to operating pressure curve for values at other temperatures.

Flow Rate and Sonic Conduction

Model		(21-)AS12□1FP□-M5	(21-)AS22□1FP□-01		(21-)AS22□1FP□-02			(21-)AS32□1FP□-03			(21-)AS42□1FP□-04	
Tubing O.D.	Metric size	ø4	ø4	ø6	ø4	ø6	ø8	ø6	ø8	ø10	ø10	ø12
Controlled flow	Flow rate L/min (ANR)	100	180	230	260	390	460	660	790	920	1580	1710
	Sonic conduction $\frac{dm^3}{(s \cdot bar)}$	0.28	0.5	0.64	0.72	1.1	1.3	1.8	2.2	2.6	4.4	4.8
Critical pressure ratio	Controlled flow	0.2	0.25		0.3			0.25			0.25	
	Free flow	0.4	0.2		0.3			0.2			0.3	

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

Relationship Between Operating Temperature and Maximum Operating Pressure



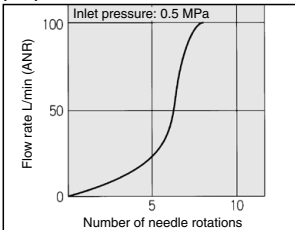
Recommended Applicable Tubing

Tubing material	Clean series polyurethane tubing: 10-series
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

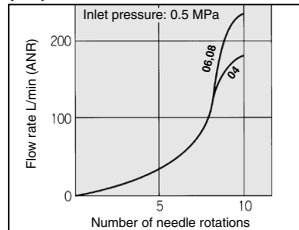
Polyurethane tubing: TU series, Nylon tubing: T series
Soft nylon tubing TS series can also be used. However, the degree of cleanliness will decline.

Needle Valve / Flow Rate Characteristics

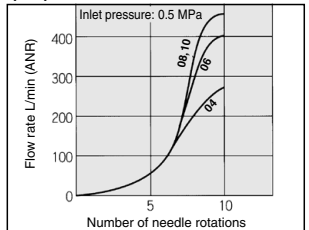
(21-)AS12□1FP□-M5



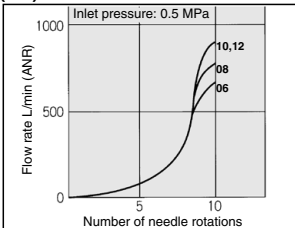
(21-)AS22□1FP□-01



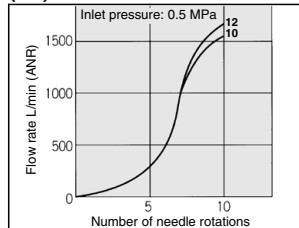
(21-)AS22□1FP□-02



(21-)AS32□1FP□-03

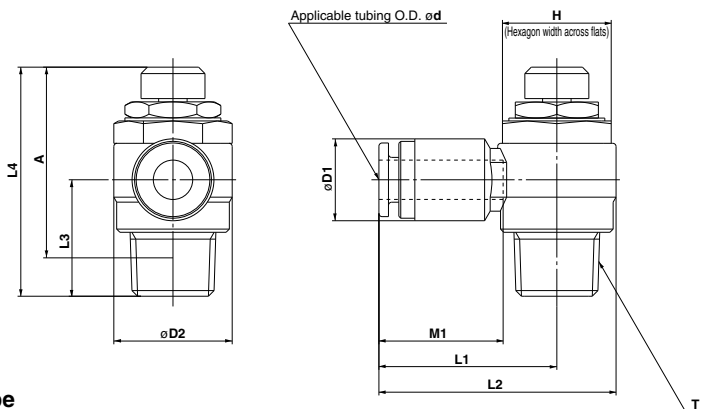


(21-)AS42□1FP□-04

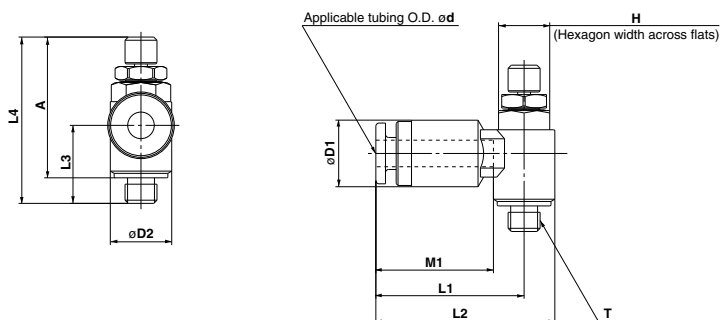


Directional Control Valves
 Air Cylinders
 Rotary Actuators
 Air Grippers
 Air Preparation Equipment
 Modular F. R.
 Pressure Control Equipment
 Fittings & Tubing
 Flow Control Equipment
 Pressure Switches/ Pressure Sensors

Dimensions



M5 type



Model	Tubing O.D. d	T	H	D1	D2	L1	L2	L3	L4		A ^{Note 1)}		M1	Weight (g) ^{Note 2)}	
									MAX.	MIN.	MAX.	MIN.		* 1	* 2
(21-) AS12□1FP□-M5-04	4	M5 x 0.8	8	10.4	9.6	23.2	28	12.2	28.3	25.5	25	22.2	18.4	7	7
(21-) AS12□1FP□-M5-06	6			24.2		29	19.4						8	8	
(21-) AS22□1FP□-01-04	4	R1/8	12	10.4	14.2	25.3	32.4	14.3	36.4	31.4	32.4	27.4	18.4	17	17
(21-) AS22□1FP□-01-06	6			26.3		33.4	19.4						18	18	
(21-) AS22□1FP□-01-08	8			15.2		28.5	35.6						21.9	20	20
(21-) AS22□1FP□-02-04	4	R1/4	17	10.4	18.5	27.8	37	18.2	40.8	35.8	34.8	29.8	18.4	33	33
(21-) AS22□1FP□-02-06	6			12.8											
(21-) AS22□1FP□-02-08	8			15.2		30.4	39.6								
(21-) AS22□1FP□-02-10	10			18.5		38.3	47.5	20							
(21-) AS32□1FP□-03-06	6	R3/8	19	12.8	23	30.4	41.9	20.9	46.9	41.9	40.6	35.6	19.4	59	55
(21-) AS32□1FP□-03-08	8			15.2		32.9	44.4								
(21-) AS32□1FP□-03-10	10			18.5		34.6	46.1								
(21-) AS32□1FP□-03-12	12			20.9		35.8	47.3								
(21-) AS42□1FP□-04-10	10	R1/2	24	18.5	28.6	36.6	50.9	25.4	55.6	50.6	47.4	42.4	23.8	107	100
(21-) AS42□1FP□-04-12	12			21.7		38.2	52.5						25		

Note 1) Reference dimensions of threads after installation.

Note 2) * 1 is the weight of type (21-)AS□2□1FPQ (Brass + Electroless nickel plated). * 2 is the weight of type AS□2□1FPG (SUS304).