

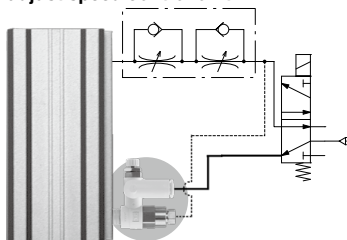
# Speed Controller with Pilot Check Valve with One-touch Fitting

# ASP Series

RoHS

Pilot check valve and speed controller are combined.

Realizes momentary intermediate stoppage of a cylinder and able to adjust speed control of it.



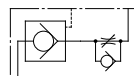
Work piece

Example of drop prevention circuit

Tubing mount direction is 360° free. Electroless nickel plated is provided as standard.



Symbol



Made to Order

Made to Order

Lubricant: Vaseline

X12

## Model

Model	Port size	Pilot port	Applicable tubing O.D.										
			Metric size				Inch size						
			ø6	ø8	ø10	ø12	ø1/4"	ø5/16"	ø3/8"	ø1/2"			
ASP330F-01	R 1/8	M5 x 0.8	●	●									
ASP430F-02	R 1/4	Rc 1/8	●	●									
ASP530F-03	R 3/8	Rc 1/8		●	●								
ASP630F-04	R 1/2	Rc 1/4			●	●							
ASP430F-F02	R 1/4	G 1/8	●	●									
ASP530F-F03	R 3/8	G 1/8		●	●								
ASP630F-F04	R 1/2	G 1/4			●	●							
ASP330F-N01	NPT 1/8	10-32 UNF						●	●				
ASP430F-N02	NPT 1/4	NPT 1/8						●	●				
ASP530F-N03	NPT 3/8	NPT 1/8							●	●			
ASP630F-N04	NPT 1/2	NPT 1/4								●	●		

Note) Brass parts are all electroless nickel plated.

## Specifications

Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Pilot check valve operating pressure	More than 50% the operating pressure (Over 0.1 MPa)
Ambient and fluid temperature	-5 to 60°C (No freezing)
Applicable tubing material	Nylon, Soft nylon, Polyurethane

Note) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used. (Refer to pages 464 and 465 for details.)

## Flow Rate and Sonic Conductance

Model	ASP330F	ASP430F		ASP530F		ASP630F		
	Metric size	ø6	ø8	ø8	ø10	ø10	ø12	
Tubing O.D.	Metric size	ø6, ø8	ø6	ø8	ø8	ø10	ø10	ø12
	Inch size	ø1/4" ø5/16"	—	ø1/4" ø5/16"	ø5/16"	ø3/8"	—	ø3/8" ø1/2"
Controlled flow Free flow	Flow rate (L/min(ANR))	180	330	350	600	750	1100	1190
	Sonic conductance dm <sup>3</sup> /(s·bar)	0.58	1.04	1.08	1.86	2.32	3.4	3.68
Critical pressure ratio	Controlled flow	0.15	0.15		0.15		0.15	
	Free flow	0.25	0.25		0.25		0.25	

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

AS-F

TMH

ASD

AS

AS-FE

KE

AS-FG

AS-FP

AS-FM

AS-D

AS-T

ASP

ASN

AQ

ASV

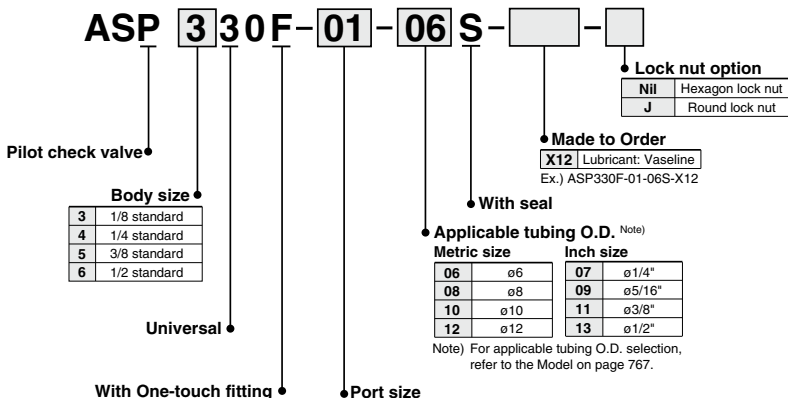
AK

VCHC

ASR

ASQ

## How to Order



(Note) For applicable tubing O.D. selection, refer to the Model on page 767.

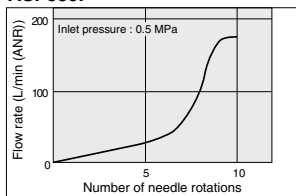
### Port size

Symbol	Cylinder side	Pilot port
01	R 1/8	M5 x 0.8
02	R 1/4	Rc 1/8
03	R 3/8	Rc 1/8
04	R 1/2	Rc 1/4
F02	R 1/4	G 1/8
F03	R 3/8	G 1/8
F04	R 1/2	G 1/4
N01	NPT 1/8	10-32 UNF
N02	NPT 1/4	NPT 1/8
N03	NPT 3/8	NPT 1/8
N04	NPT 1/2	NPT 1/4

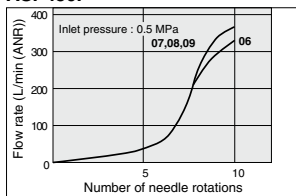
## Needle Valve/ Flow Rate Characteristics

(Note) The flow rate characteristics are representative values.

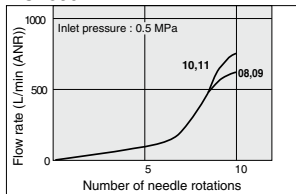
### ASP330F



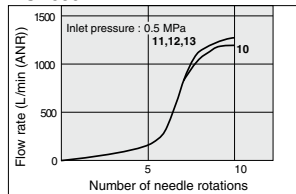
### ASP430F



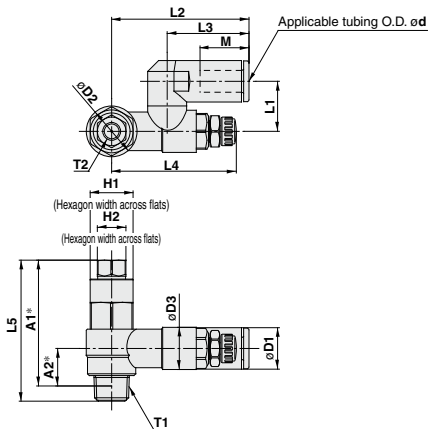
### ASP530F



### ASP630F



## Dimensions

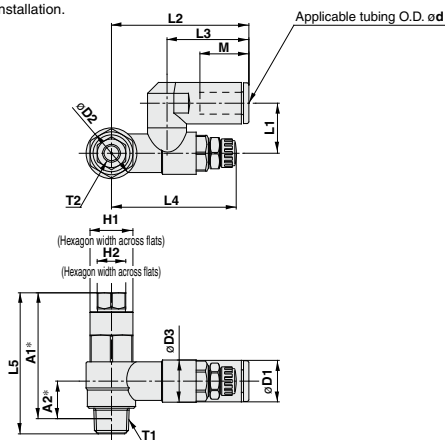


### Metric Size

Model	d	T1	T2	H1	H2	D1	D2	D3	L1	L2	L3	L4 (1)		L5	A1 (2)	A2 (2)	M	Weight (g)
												Max.	Min.					
ASP330F-01-06S	6	R 1/8	M5 x 0.8	12	8	11.6 15.2	14.2	11.8	14	38.4	22.9	39.6 34.6	38.6	35.2	10.5	13.7 18.7	32 35	
ASP330F-01-08S	8	R 1/4	1/8	17	12	12.8 15.2	18.5	15	18	43.4	25.2	41.7 36.7	48.2	42.4	10.9	16.8 18.7	65 68	
ASP430F-02-06S	6	R 1/4	1/8	17	12	12.8 15.2	18.5	15	18	43.4	25.2	41.7 36.7	48.2	42.4	10.9	16.8 18.7	65 68	
ASP430F-02-08S	8	R 3/8	1/8	19	12	15.2 18.5	23	19.8	20.3	51.3	28.2	46.9 41.9	55.1	50	14.4	18.7 20.8	107 110	
ASP530F-03-08S	8	R 3/8	1/8	19	12	15.2 18.5	23	19.8	20.3	51.3	28.2	46.9 41.9	55.1	50	14.4	18.7 20.8	107 110	
ASP530F-03-10S	10	R 1/2	1/4	24	17	18.5 20.9	28.6	26.5	25.9	64.2	32.6	64.8 57.3	69.4	61.8	18.3	20.8 21.8	212 215	
ASP630F-04-10S	10	R 1/2	1/4	24	17	18.5 20.9	28.6	26.5	25.9	64.2	32.6	64.8 57.3	69.4	61.8	18.3	20.8 21.8	212 215	
ASP630F-04-12S	12	R 1/2	1/4	24	17	18.5 20.9	28.6	26.5	25.9	64.2	32.6	64.8 57.3	69.4	61.8	18.3	20.8 21.8	212 215	

Note 1) Reference dimensions

Note 2) Reference dimensions of R thread after installation.



### Inch Size

Model	d	T1	T2	H1	H2	D1	D2	D3	L1	L2	L3	L4 (1)		L5	A1 (2)	A2 (2)	M	Weight (g)
												Max.	Min.					
ASP330F-N01-07S	1/4"	NPT 1/8	10-32 UNF	1/2"	8	13.2 15.2	14.2	11.8	15.8	42.2	25.6	38.9 33.9	38.6	35.1	10.5	17 18.7	35	
ASP330F-N01-09S	5/16"	NPT 1/8	10-32 UNF	1/2"	8	13.2 15.2	14.2	11.8	15.8	42.2	25.6	38.9 33.9	38.6	35.1	10.5	17 18.7	35	
ASP430F-N02-07S	1/4"	NPT 1/4	NPT 1/8	11/16"	1/2"	13.2 15.2	18.5	15	18	43.9	25.6	41.7 36.7	48.2	42.6	10.9	17 18.7	68	
ASP430F-N02-09S	5/16"	NPT 1/4	NPT 1/8	11/16"	1/2"	13.2 15.2	18.5	15	18	43.9	25.6	41.7 36.7	48.2	42.6	10.9	17 18.7	68	
ASP530F-N03-09S	5/16"	NPT 3/8	NPT 1/8	19	1/2"	15.2 18.5	23	19.8	20.3	51.3	28.2	46.9 41.9	55.1	50.3	14.4	18.7 20.8	107 116	
ASP530F-N03-11S	3/8"	NPT 3/8	NPT 1/8	19	1/2"	15.2 18.5	23	19.8	20.3	51.3	28.2	46.9 41.9	55.1	50.3	14.4	18.7 20.8	107 116	
ASP630F-N04-11S	3/8"	NPT 1/2	NPT 1/4	15/16"	11/16"	18.5 21.7	28.6	26.5	25.9	64.2	32.6	64.8 57.3	69.4	61.8	18.3	20.8 21.8	220 230	
ASP630F-N04-13S	1/2"	NPT 1/2	NPT 1/4	15/16"	11/16"	18.5 21.7	28.6	26.5	25.9	64.2	32.6	64.8 57.3	69.4	61.8	18.3	20.8 21.8	220 230	

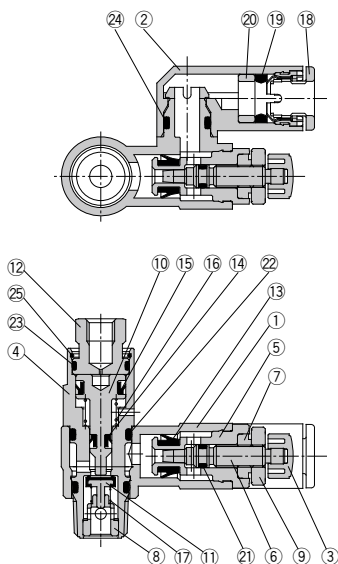
Note 1) Reference dimensions

Note 2) Reference dimensions of NPT thread 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

# ASP Series

## Construction



### Component Parts

No.	Description	Material	Note
1	<b>Body A</b>	PBT	
2	<b>Elbow body</b>	PBT	
3	<b>Handle</b>	PBT	
4	<b>Pilot body</b>	Brass	Electroless nickel plated
5	<b>Body B</b>	Brass	Electroless nickel plated
6	<b>Needle</b>	Brass	Electroless nickel plated
7	<b>Needle guide</b>	Brass	Electroless nickel plated
8	<b>Guide</b>	Brass	Electroless nickel plated
9	<b>Lock nut</b>	Steel <sup>(2)</sup>	Zinc chromated <sup>(1)</sup>
10	<b>Piston</b>	Brass	Electroless nickel plated
11	<b>Valve</b>	Stainless steel, NBR	
12	<b>Cover</b>	Brass	Electroless nickel plated
13	<b>U seal</b>	HNBR	

Note 1) The round lock nut is electroless nickel plated.

Note 2) The round lock nut is made of brass. However, note that only the ASP330F and ASP430F use steel.

### Component Parts

No.	Description	Material	Note
14	<b>DY seal</b>	NBR	
15	<b>DY seal</b>	NBR	
16	<b>Spring</b>	Stainless steel	
17	<b>Spring</b>	Stainless steel	
18	<b>Cassette</b>	—	
19	<b>Seal</b>	NBR	
20	<b>Spacer</b>	—	
21	<b>O-ring</b>	NBR	
22	<b>O-ring</b>	NBR	
23	<b>O-ring</b>	NBR	
24	<b>O-ring</b>	NBR	
25	<b>Ring</b>	Stainless steel	



# ASP 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.

## Design/Selection

### Warning

1. This product cannot be used for accurate and precise intermediate stops of the actuator.

Due to the compressibility of air as a fluid, the actuator will continue to move until it reaches a position of pressure balance, even though the pilot check valve closes with an intermediate stop signal.

2. This product cannot be used to hold a stop position for an extended period of time.

Pilot check valves and actuators are not guaranteed for zero air leakage. Therefore, it is sometimes not possible to hold a stop position for an extended period of time. In the event that holding for an extended time is necessary, a mechanical means for holding should be devised.

3. Consider the release of residual pressure.

Actuators may move suddenly due to residual pressure, which can be dangerous during maintenance procedures.

4. When used in a balance control circuit, there are instances in which the check valve cannot release, even though the pilot pressure is 50% of the operating pressure. In these cases, the pilot pressure should be the same as the operating pressure.

5. For reference, SMC has conducted endurance tests in which ON, OFF operation of the check valve was performed at the maximum operating pressure, with a confirmed endurance of 10 million operations.

Since the tests were performed under limited conditions, use caution in evaluating the results.

6. The check valve has a construction, in which it is closed by the differential pressure generated when the inlet pressure (IN side) or outlet pressure (OUT side) solenoid valve is switched. Be aware that the check valve does not close completely and the outlet pressure (OUT side) may drop when the inlet pressure (IN side) drops gently and the differential pressure becomes smaller than the minimum operating pressure or cracking pressure.

7. When free flow is selected for the ASP, chattering may occur if it is operated under conditions where there is low differential pressure on either side of the ASP. Chattering may be reduced by increasing the diameter of the piping or selecting an ASP with a smaller body size; however, if no improvement is seen, we recommend using a perfect spacer in place of the ASP.

## Installation

### Warning

1. When mounting, please firmly align the tool with the hexagon width across flats of the pilot body. If the hexagon width across flats is damaged as a result of failure to properly align the tool, the pilot body will be deformed, and poor pilot operation may result.

2. Do not apply excessive force or shock to the cover (pilot port portion), fittings, or other parts of the product with tools. Also, do not apply any moment, twisting, pulling, or other external force when connecting a fitting to the cover (pilot port portion) or after mounting. Doing so may result in damage or air leakage.

When connecting piping, use a tube of sufficient length, in accordance with the recommended piping conditions described in Fig. 1. When binding the piping together with a tying band, etc., be sure that external force is not being applied to the piping. (Refer to Fig. 2.)

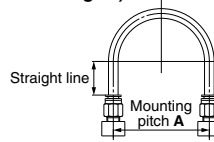


Fig. 1 Recommended piping

Unit: [mm]

Tubing size	Mounting pitch A			Straight line length
	Nylon tubing	Soft nylon tubing	Polyurethane tubing	
ø2	—	—	13 or more	10 or more
ø3.2, 1/8"	44 or more	35 or more	25 or more	16 or more
ø4, 5/32"	56 or more	44 or more	26 or more	20 or more
ø3/16"	67 or more	52 or more	38 or more	24 or more
ø6	84 or more	66 or more	39 or more	30 or more
ø1/4"	89 or more	70 or more	57 or more	32 or more
ø8, 5/16"	112 or more	88 or more	52 or more	40 or more
ø10	140 or more	110 or more	69 or more	50 or more
ø3/8"	134 or more	105 or more	69 or more	48 or more
ø12	168 or more	132 or more	88 or more	60 or more
ø1/2"	178 or more	140 or more	93 or more	64 or more
ø16	224 or more	176 or more	114 or more	80 or more

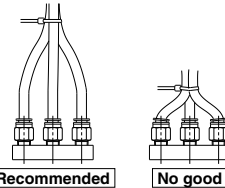


Fig. 2 When using a tying band to bind the piping together

## Air source

### Warning

1. If moisture enters the inside of the connecting piping, the cover may corrode, and it may lead to a pilot operation malfunction.