

Speed Controller for Low Speed Operation

Series AS-FM

With One-touch Fitting (Resin Body)

RoHS

Models



Elbow type	Universal type	Port size	Applicable tube outside diameter											
			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	●	●	●									
AS22□1FM-01	AS23□1FM-01	R1/8	●	●	●	●								
AS22□1FM-02	AS23□1FM-02	R1/4		●	●	●	●							
AS12□1FM-U10/32	AS13□1FM-U10/32	10-32UNF						●	●	●	●			
AS22□1FM-N01	AS23□1FM-N01	NPT1/8						●	●	●	●	●		
AS22□1FM-N02	AS23□1FM-N02	NPT1/4							●	●	●	●	●	

Specifications

Proof pressure	1.5MPa
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.1MPa
Ambient and fluid temperature	-5 to 60°C (with no freezing)
Number of needle revolutions	10 revolutions (20 revolutions ^{Note 1)})
Applicable tubing material ^{Note 2)}	Nylon, Soft nylon, Polyurethane, Soft polyurethane
Option ^{Note 3)}	With seal, hexagon lock nut

Note 1) For types AS12□1FM and AS13□1FM.

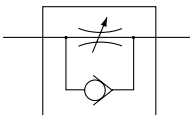
Note 2) Use caution regarding the maximum operating pressure with soft nylon, polyurethane and soft polyurethane.

Note 3) M5 and 10-32UNF type ports are not available with sealant.

Note 4) All brass parts are electroless nickel plated.

The lock nut of the meter-out type is zinc chromate plated, then, the handle of the M5 type and the lock nut of the meter-in type are black zinc chromate plate.

JIS symbol



Flow direction symbols on body

	Meter-out type	Meter-in type
Symbol		
JIS symbol		

Flow Rate and Effective Area

Models		AS12□1FM AS13□1FM	AS22□1FM-□01 AS23□1FM-□01	AS22□1FM-□02 AS23□1FM-□02				
Tube O.D.	Metric size	φ3.2, φ4, φ6	φ3.2, φ4	φ6, φ8		φ4	φ6	φ8, φ10
	Inch size	φ1/8", φ5/32", φ3/16" φ1/4"	φ1/8", φ5/32"	φ3/16", φ1/4" φ5/16"		φ5/32"	φ3/16"	φ1/4", φ5/16" φ3/8"
Controlled flow	Flow rate l/min (ANR)	7	12		38			
	Effective area mmX	0.1	0.2		0.6			
Free flow	Flow rate l/min (ANR)	100	180	230	260	390	460	
	Effective area mmX	1.5	2.7	3.5	4	6	7	

Note) The flow rate value is at a pressure of 0.5MPa and temperature of 20°C.

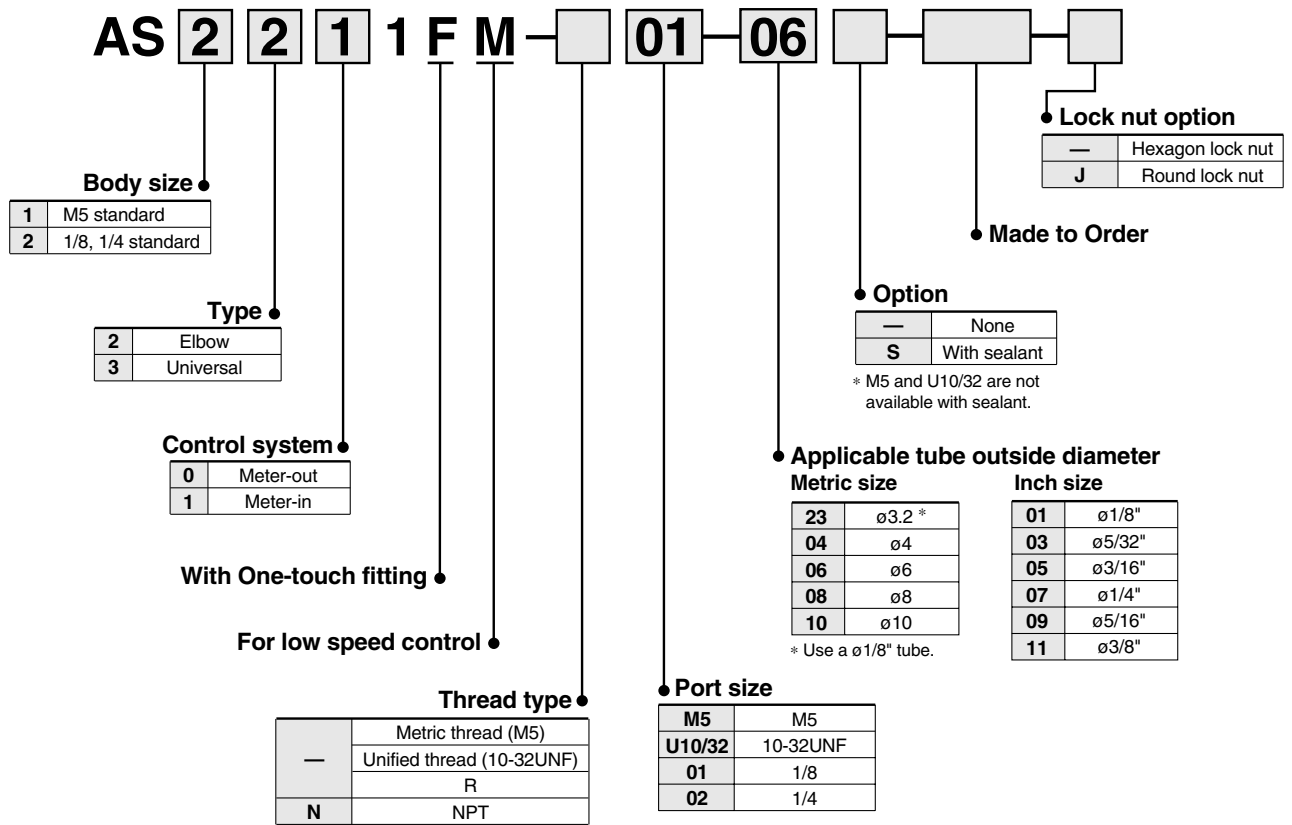
Series AS-FM



EMC-AS_2-3_1FM-01A-UK

Series AS-FM

How to Order



Made to Order

1 Lubricant: Vaseline **X12**

Ex.) AS1201FM-M5-23-X12

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

Ex.) AS1201FM-M5-23-X21

Note 1) Not particle-free

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

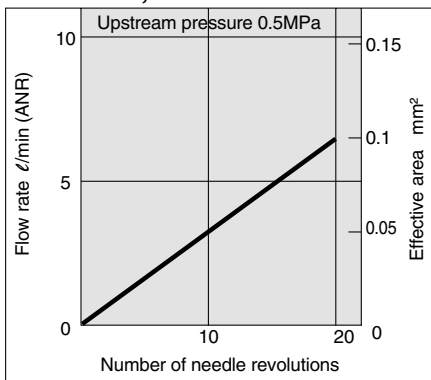
3 Throttle Valve (Without Check Valve) **X214**

Ex.) AS1201FM-M5-23-X214

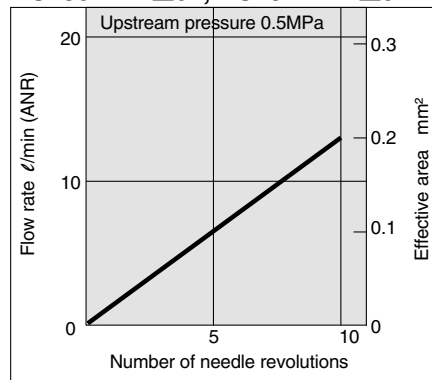
Note) Throttle valve is only compatible with the part no. of the meter-out type.

Needle Valve/Flow Rate Characteristics

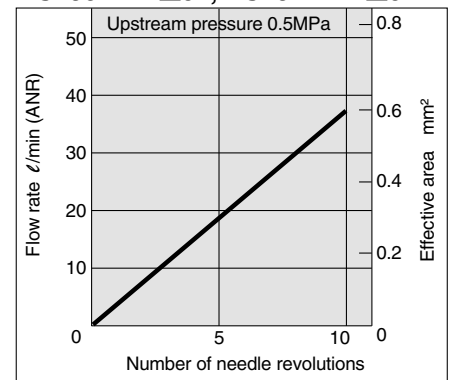
AS1201FM, AS1211FM
AS1301FM, AS1311FM



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



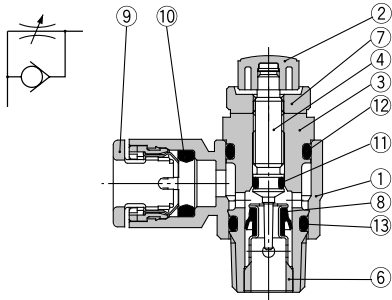
AS2201FM-□02, AS2211FM-□02
AS2301FM-□02, AS2311FM-□02



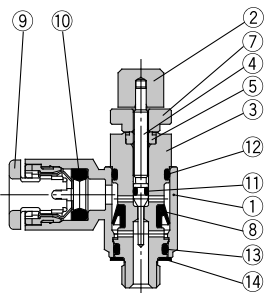
Construction/Elbow Type

Meter-out type

JIS symbol

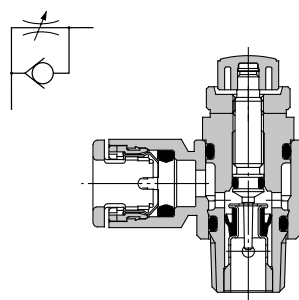


<M5 type>
<U10/32 type>

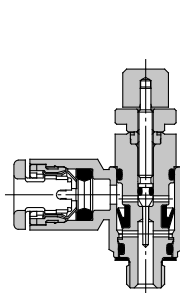


Meter-in type

JIS symbol



<M5 type>
<U10/32 type>



Parts list

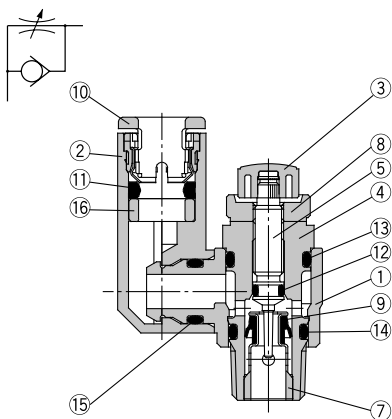
No.	Description	Material	Note
1	Body A	PBT	White
2	Knob	PBT	Black Note 1)
3	Body B	Brass	Electroless nickel plated
4	Needle	Brass	Electroless nickel plated
5	Needle guide	Brass	Electroless nickel plated, M5 type only
6	Seat ring	Brass	Electroless nickel plated
7	Lock nut	Steel	Zinc chromated Note 2)
8	U-seal	NBR	
9	Cassette	POM, Stainless steel	
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) The M5 and U10/32 types are black zinc chromated brass.
 Note 2) The AS22□□1FM type is steel.
 Note 3) The meter-in type is black zinc chromated.

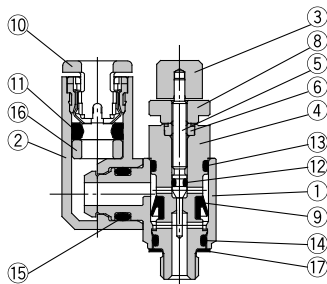
Construction/Universal Type

Meter-out type

JIS symbol

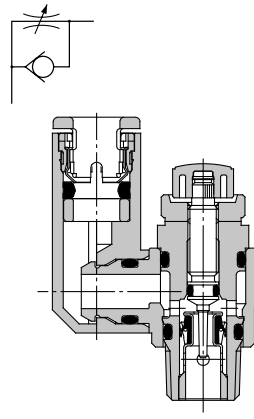


<M5 type>
<U10/32 type>

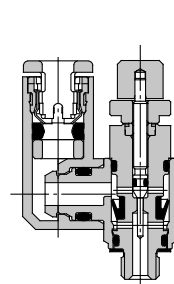


Meter-in type

JIS symbol



<M5 type>
<U10/32 type>



Parts list

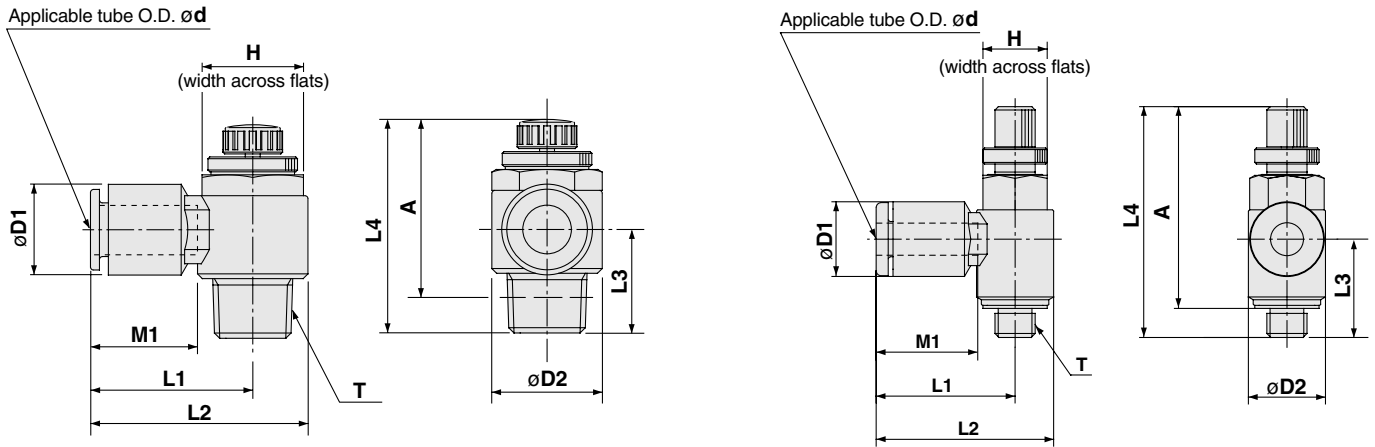
No.	Description	Material	Note
1	Body A	PBT	White
2	Elbow body	PBT	White
3	Knob	PBT	Black Note 1)
4	Body B	Brass	Electroless nickel plated
5	Needle	Brass	Electroless nickel plated
6	Needle guide	Brass	Electroless nickel plated, M5 type only
7	Seat ring	Brass	Electroless nickel plated
8	Lock nut	Steel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

Note 1) The M5 and U10/32 types are black zinc chromated brass.
 Note 2) The AS23□□1FM type is steel.
 Note 3) The meter-in type is black zinc chromated.

Series AS-FM

Dimensions/Elbow Type

M5 type U10/32 type



Metric sizes

Model	d	T	H	D1	D2	L1	L2	L3	L4		A *		M1	Weight g
									Max.	Min.	Max.	Min.		
AS12□1FM-M5-23	3.2	M5	8	8.4	9.6	17.3	22.1	12.3	28.6	25.8	25	22.2	12.7	7
AS12□1FM-M5-04	4			9.3		22.1								
AS12□1FM-M5-06	6			11.6		22.9								
AS22□1FM-01-23	3.2	R1/8	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		27.5								
AS22□1FM-01-06	6			11.6		27.5								
AS22□1FM-01-08	8			15.2		32.4								
AS22□1FM-02-04	4	R1/4	17	10.4	18.5	25.2	34.4	17.7	39.9	34.9	34.4	29.4	16	32
AS22□1FM-02-06	6			12.8		34.4								
AS22□1FM-02-08	8			15.2		36.4								
AS22□1FM-02-10	10			18.5		43.2								

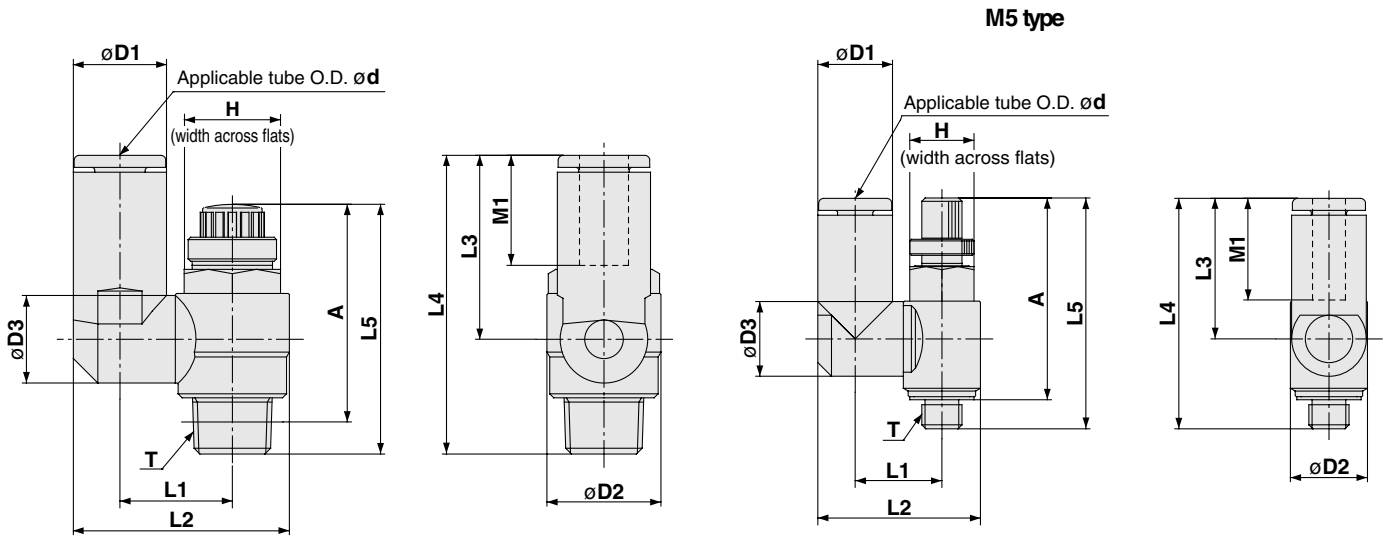
* Reference dimensions for M5 and R threads after installation.

Inch sizes

Model	d	T	H	D1	D2	L1	L2	L3	L4		A *		M1	Weight g
									Max.	Min.	Max.	Min.		
AS12□1FM-U10/32-01	1/8"	10-32UNF	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		26.1								
AS12□1FM-U10/32-05	3/16"			11.4		23.1								
AS12□1FM-U10/32-07	1/4"		12	18.3	23.1	11.7							13.5	
AS22□1FM-N01-01	1/8"	NPT1/8	12.7	9.3	14.2	20.4	27.5	13.4	35.2	30.2	32.1	27.1	12.7	16
AS22□1FM-N01-03	5/32"			11.4		30.2								
AS22□1FM-N01-05	3/16"			13.2		31								
AS22□1FM-N01-07	1/4"			15.2		32.4								
AS22□1FM-N01-09	5/16"			13.4									21	21
AS22□1FM-N02-03	5/32"	NPT1/4	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"			11.4		34.2								
AS22□1FM-N02-07	1/4"			13.2		34.5								
AS22□1FM-N02-09	5/16"			15.2		36.4								
AS22□1FM-N02-11	3/8"			17.9		33.9	43.2	19.5					21	36

* Reference dimensions for 10-32UNF and NPT threads after installation.

Dimensions/Universal type



Metric sizes

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5		A*		M1	Weight g				
											Max.	Min.	Max.	Min.						
AS13□1FM-M5-23	3.2	M5	8	8.4	9.6	9.3	10.8	19.8	17.5	28.7	28.6	25.8	25	22.2	12.7	8				
AS13□1FM-M5-04	4			20.3																
AS13□1FM-M5-06	6			21.4				20.6									31.8			
AS23□1FM-01-23	3.2	R1/8	14.2	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			24.9																
AS23□1FM-01-06	6			11.6				10.9									14	26.9	22.9	36.3
AS23□1FM-01-08	8			15.2				12.9									16.2	30.9	28.2	40.8
AS23□1FM-02-04	4	R1/4	18.5	10.4	18.5	12.9	18.4	30.6	21.9	39.6	39.9	34.9	34.4	29.4	16	33				
AS23□1FM-02-06	6			34				25.2									42.1			
AS23□1FM-02-08	8			15.2				12.9									18.3	35.2	28.2	45.1
AS23□1FM-02-10	10			18.5				20.2									38.7	31	47.9	

* Reference dimensions for M5 and R threads after installation.




Inch sizes

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4	L5		A*		M1	Weight g		
											Max.	Min.	Max.	Min.				
AS13□1FM-U10/32-01	1/8"	10-32UNF	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"			20.3														
AS13□1FM-U10/32-05	3/16"			11.4				21.3									23.3	34.5
AS13□1FM-U10/32-07	1/4"	NPT1/8	12.7	12	14.2	10.9	14	24.4	17.5	30.9	35.2	30.2	32.1	27.1	12.7	17		
AS23□1FM-N01-01S	1/8"			9.3				24.9										
AS23□1FM-N01-03S	5/32"			9.3				24.9										
AS23□1FM-N01-05S	3/16"			11.4				26.8									23.9	37.3
AS23□1FM-N01-07S	1/4"	NPT1/4	17.5	13.2	18.5	12.9	16.2	29.9	25.6	38.2	39.9	34.9	34.4	29.4	16.5	19		
AS23□1FM-N01-09S	5/16"			15.2				30.9									28.2	40.8
AS23□1FM-N02-03S	5/32"			10.4				30.6									21.9	39.6
AS23□1FM-N02-05S	3/16"			11.4				31.1									23.9	41.6
AS23□1FM-N02-07S	1/4"	NPT1/4	17.5	13.2	18.5	12.9	18.3	34.2	25.6	42.5	39.9	34.9	34.4	29.4	18.5	36		
AS23□1FM-N02-09S	5/16"			15.2				35.2									28.2	45.1
AS23□1FM-N02-11S	3/8"			17.9				20.2									38.7	31

* Reference dimensions for 10-32UNF and NPT threads after installation.

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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Croatia	+385 (0)13707288	www.smc.hr	office@smc.hr
Czech Republic	+420 541424611	www.smc.cz	office@smc.cz
Denmark	+45 70252900	www.smc.dk.com	smc@smcdk.com
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Netherlands	+31 (0)205318888	www.smc.nl	info@smc.nl
Norway	+47 67129020	www.smc-norge.no	post@smc-norge.no
Poland	+48 222119600	www.smc.pl	office@smc.pl
Portugal	+351 214724500	www.smc.eu	apoioclientept@smc.smces.es
Romania	+40 213205111	www.smcromania.ro	smcromania@smcromania.ro
Russia	+7 (812)3036600	www.smc.eu	sales@smcru.com
Slovakia	+421 (0)413213212	www.smc.sk	office@smc.sk
Slovenia	+386 (0)73885412	www.smc.si	office@smc.si
Spain	+34 945184100	www.smc.eu	post@smc.smces.es
Sweden	+46 (0)86031240	www.smc.nu	smc@smc.nu
Switzerland	+41 (0)523963131	www.smc.ch	info@smc.ch
Turkey	+90 212 489 0 440	www.smcturkey.com.tr	satis@smcturkey.com.tr
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