

## For High-Pressure Water

# C E UK RoHS

# **Pilot Operated 2-Port Solenoid Valve**

# Can be used at up to 10 MPa



## Orifice diameter [mmø]

**12** 

## Flow Rate Characteristics [Kv]

**1.7** (Port size 3/8)

**1.9** (Port size 1/2)

## **Power consumption**

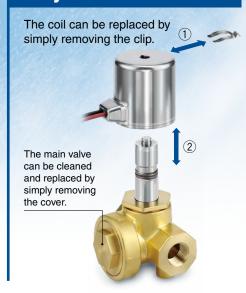
8 W

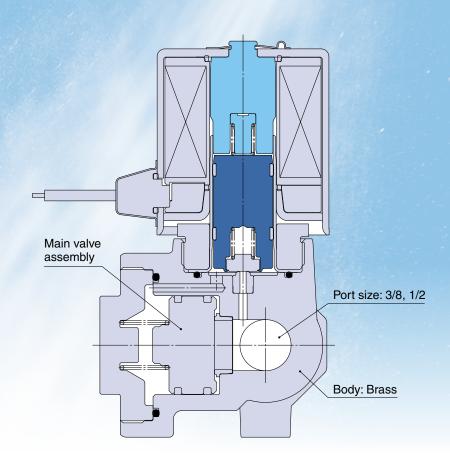
## Weight

**960** g (Port size: 3/8)

**920** g (Port size: 1/2)

## **Easy maintenance**





## **Electrical entry variations**



Conduit

## Improved environmental resistance

- · Dustproof/waterproof IP67 structure
- · With a stainless steel coil cover

Passed 1000 hours Accelerated weathering test ISO 4892-3 (JIS K 7350-3) compliant

Passed 1000 hours

Ozone-proof exposure test ISO 1431 (JIS K 6259) compliant

Passed 960 hours Combined cycle test ISO 14993 (JIS H 8502: 1999) compliant

Please contact your local sales representative for more details.

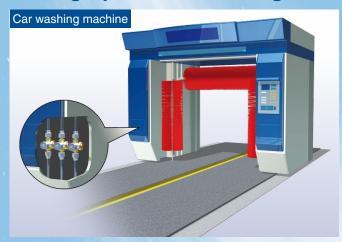




Grommet

#### **Application Examples**

## For high-pressure washing





## For water spraying



## For misting



## For misting





## For High-Pressure Water Pilot Operated

## 2-Port Solenoid Valve

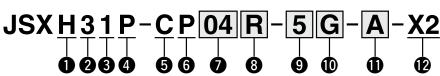
JSXH-X2

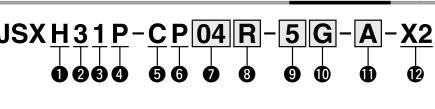


and electrical entry. For details, refer to table **1** below.

RoHS

#### **How to Order**





#### 1 Series

Symbol	Series
Н	High-pressure/ Pilot operated

#### 2 Size

Symbol	Size
3	30

#### 3 Valve type

	, .	
Symbol	Valve type	
1	N.C.	2(OUT) //

### 4 Main valve construction

Symbol	Main valve construction
Р	Piston

#### **5** Body material

Symbol	Body material
С	Brass*1

\*1 The orifice material is stainless steel.

#### 6 Seal material

Symbol	Seal material	
Symbol	Main valve	Pilot valve
Р	PPS	PPS

#### Port size and orifice diameter

Symbol	Port size	Orifice diameter [mmø]
03	3/8	12
04	1/2	12

#### 8 Thread type

Symbol		Thread type
R		Rc
	N	NPT
	F	G

#### 9 Rated voltage

AC			
Symbol	Rated voltage	Symbol	Rated voltage
1	100 VAC	4	220 VAC
2	200 VAC	7	240 VAC
3	120 (110) VAC	8	48 VAC
3	120 (110) VAC	В	24 VAC

#### DC

Symbol	Rated voltage
5	24 VDC
6	12 VDC

#### (I) Option

Symbol	Option
Nil	None
Α	Port facing the opposite direction

Symbol	Rated voltage
5	24 VDC
6	12 VDC

#### Pressure type

•	
Symbol	Specifications
X2	Operating pressure: 0.1 to 10 MPa Fluid: Water

#### Flectrical entry

Electrical entry						
Symbol	Electrical entry	CE/UKCA- compliant				
G	Grommet* <sup>2</sup>	•	24 VDC			
G	Groninet -		12 VDC			
GS	Grommet with PCB (With surge voltage suppressor)	100 VAC 24 VDC 12 VDC 48 VAC 24 VAC				
cs	Conduit (With surge voltage suppressor)	All voltages				
DS	DIN terminal (With surge voltage suppressor)		All voltages			
DZ	DIN terminal with light (With surge voltage suppressor)		All voltages			
DN	Without DIN connector (With surge voltage suppressor)		All voltages			
WN	M12 connector/Without connector cable (With surge voltage suppressor)*3		All voltages			

<sup>\*2</sup> DC voltage only

<sup>\*3</sup> A cable for the M12 connector is not included with the product.

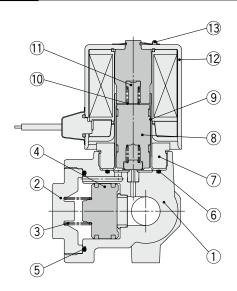
#### **Specifications**

	Size		3(	0		
	Valve construction	n	Internal pilot	~		
	Valve type		Normally closed (N.C.)			
	Fluid		Wa			
	Fluid temperature		1 to 60°C (N	lo freezina)		
	Ambient tempera		–20 to	0,		
	Max. operating pr	essure	10.0	MPa		
တ	Operating pressu	re differential	0.1 to 10	).0 MPa		
<u>6</u>	Withstand pressu	ire	15.0	MPa		
cat	Port size		3/8	1/2		
Valve specifications	Orifice diameter		12 m	nmø		
) a	Flow rate	Kv	1.7	1.9		
S	characteristics	Conversion Cv	2.0	2.2		
<u>ĕ</u>	Leakage*1	Valve leakage	30 cm <sup>3</sup> /m	in or less		
>	Leakaye	External leakage	0.1 cm <sup>3</sup> /m	in or less		
	Mounting oriental	tion	Unrestricted			
	Enclosure*2		IP67 (IP65 for the DIN terminal)			
	Body material		Brass, Stainless steel			
	Seal material		PPS, NBR			
	Weight*3	3/8, Grommet	960 g			
	Weight	1/2, Grommet	920 g			
	Rated voltage	AC	24 V, 48 V, 100 V, 110 V, 120 V, 200 V, 220 V, 230 V, 240 V			
l S	nateu voitage	DC*4	12 V, 24 V			
specifications	Allowable voltage		±10% of the r			
္မႏ	Allowable	AC	5% or less of th			
Si	leakage voltage	DC	2% or less of th	•		
sb	Apparent power*5, 6	AC	9.5			
3	Power consumption*5	DC	81			
ŭ	Temperature	AC	70°	-		
	rise*7	DC	65°C			
$\Box$				-		

- \*1 The value for water at a differential pressure of 0.1 MPa or higher and an ambient temperature of 20°C
- \*2 This product has an IP67 enclosure, but if water enters the product, it may result in malfunction or breakage.
  - Therefore, take appropriate measures to prevent water from entering the product when using in an environment where it is constantly exposed to water.
- \*3 Add 20 g for the grommet type with PCB, 70 g for the conduit type, 50 g for the DIN terminal type, and 15 g for the type without a DIN connector and the M12 connector type.
- \*4 Only DC is available for the grommet type.
- \*5 Power consumption/Apparent power: The value at an ambient temperature of 20°C and when the rated voltage is applied (Variation: ±10%)
- \*6 There is no difference in the frequency and the inrush and energized apparent power, since a rectifying circuit is used in the AC.
- \*7 Temperature rise: The value at an ambient temperature of 20°C and when the rated voltage is applied. Use this value as a reference as the actual value varies depending on the ambient environment.

Be sure to read the "Specific Product Precautions" before handling the product.

#### Construction



#### **Component Parts**

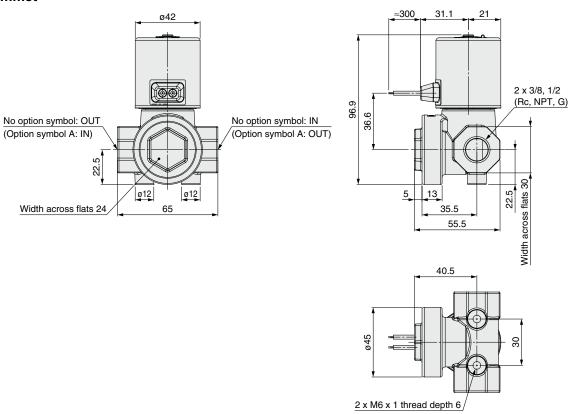
No.	Description	Material	Qty.	Note
1	Body	Brass, Stainless steel	1	
2	Bonnet	Brass	1	
3	Spring	Stainless steel 304	1	
4	Main valve assembly	PPS, POM, Stainless steel	1	
5	O-ring	NBR	1	
6	O-ring	NBR	1	
7	Set nut	Brass	1	
8	Armature assembly	Stainless steel, PPS, NBR	1	
9	Tube assembly	Stainless steel	1	High corrosion-resistant electromagnetic stainless steel + Stainless steel 305
10	Spring	Stainless steel 304	1	
11	Stopper	PPS	1	
12	Solenoid coil assembly	Stainless steel, Cu, Resin	1	High corrosion-resistant electromagnetic stainless steel
13	Clip	Stainless steel 304	1	



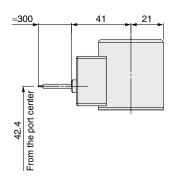
## JSXH-X2

#### **Dimensions**

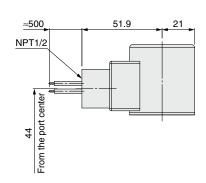
#### **G: Grommet**



**GS: Grommet with PCB** 

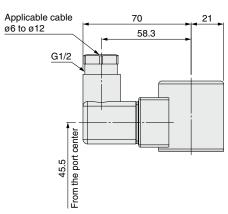


**CS: Conduit** 

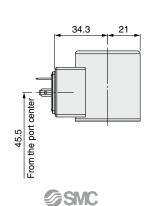


**DS: DIN terminal** 

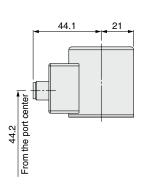
DZ: DIN terminal with light



**DN: Without DIN connector** 



**WN: M12 connector** 





# JSXH-X2 Specific Product Precautions

Be sure to read this before handling the products. For safety instructions and 2-port solenoid valve for fluid control precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

#### Design

## **Marning**

#### 1. Water hammer

When an impact, such as water hammer, etc., caused by rapid pressure fluctuation is applied, the valve may be damaged, so be sure to install a water hammer relief device such as an accumulator.

#### 2. Leakage when supplying fluid

Be aware that when the valve is closed, sudden pressure resulting from the startup of the fluid supply source may cause the valve to open momentarily and leakage to occur.

#### **Fluid**

## **Marning**

#### 1. Fluid selection

This product can only be used with water as the fluid. Do not use the product with the fluids shown below.

- 1) Fluids that are harmful to humans
- 2) Combustion-supporting or flammable fluids
- 3) Corrosive gases
- 4) Sea water, Saline solutions
- 5) Oils, Air



## For High-Pressure Water **Pilot Operated 2-Port Solenoid Valve** JSXH-X2



Safety Instructions Be sure to read the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.

## **SMC** Corporation

Akihabara UDX 15F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN Phone: 03-5207-8249 Fax: 03-5298-5362 https://www.smcworld.com

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# Pilot Operated 2-Port Solenoid Valve



Max. operating pressure differential

4.0 MPa

Fluid Compressed air, Nitrogen, Argon, Oxygen\*1



Low particle generation

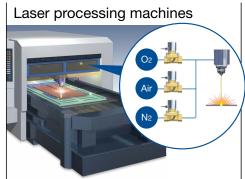
Oil-free

**IP67**\*2

\*2 The DIN terminal is IP65.

## **Application Examples**

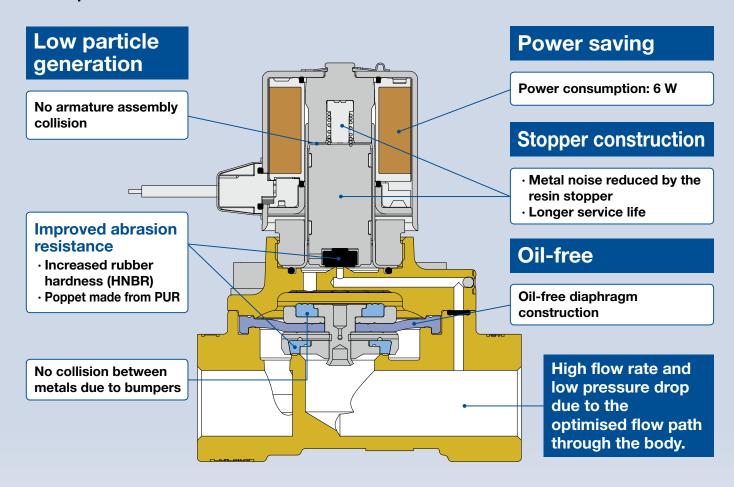




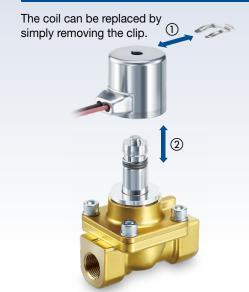


JSXH-X1





## **Easy maintenance**



## Improved environmental resistance

- · Dustproof/waterproof IP67 structure
- · With a stainless steel coil cover

Passed 1000 hours

Accelerated weathering test ISO 4892-3 (JIS K 7350-3) compliant

Passed 1000 hours Ozone-proof exposure test ISO 1431 (JIS K 6259) compliant

Passed 960 hours Combined cycle test ISO 14993 (JIS H 8502: 1999) compliant



\* Please contact your local sales representative for more details.

## **Electrical Entry Variations**

Grommet



Grommet with PCB



Conduit



DIN terminal



M12 connector



## **Specifications**

Model	Port size	C [dm³/(s · bar)]	Orifice diameter [mmø]	Fluid	Body material	Valve type	Seal material	Electrical entry	Standards
JSXH20 Series	3/8	15	16	Compressed air Nitrogen	Droop	NC	PUR (Main valve)	Grommet DIN terminal	C€
	1/2	17.7	7.7	Argon Oxygen <sup>*1</sup>	Brass	N.C.	HNBR (Pilot valve)	Conduit M12 connector	UK CA

<sup>\*1</sup> When using oxygen, please refer to "Fluid Supply" on page 4.

## Related Equipment

	Description	Max. operating pressure	Series				Port size	Э			Web
	Description	pressure [MPa]	Series	1/4	1/2	3/8	3/4	1	1 1/4	1 1/2	Catalog
to market	High pressure electro-pneumatic	5.0	ітvх			•					
0	regulator	3.0	ІТУН	•		•					
1111	Pilot operated 3-port solenoid valve	5.0	VCH410		•		•	•			
	Direct operated regulator (Relieving type)	Inlet pressure 6.0 Set pressure 0.5 to 5.0	VCHR30				•	•			
			VCHR40					•			
	Silencer	5.0 (Relief valve release	<b>VCHN3</b>				•	•			
	Silericer	pressure: 1.8 MPa)	VCHN4					•	•	•	
	Check valve	5.0	VCHC40				•	•			
000	Pressure switch	5.0 (ISE76G) 10.0 (ISE77G) 16.0 (ISE78G) 50.0 (ISE79S)	ISE70□G/79S	•							



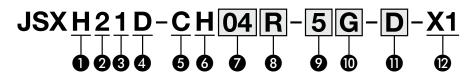
## Pilot Operated 2-Port Solenoid Valve







#### **How to Order**



#### Series

Symbol	Series
Н	High-pressure/ Pilot operated

#### 2 Size

Symbol	Size
2	20

#### 3 Valve type

Symbol	Valve type			
1	N.C.	2 (OUT) 1 (IN)		

#### 4 Main valve construction

Symbol	Main valve construction
D	Diaphragm

#### 6 Body material

Symbol	Body material
С	Brass

#### 6 Seal material

Symbol	Seal	material
Symbol	Main valve	Pilot valve
Н	PUR	HNBR

#### Port size and orifice diameter

Symbol	Port size	Orifice diameter [mmø]
03	3/8	16
04	1/2	10

#### 8 Thread type

Symbol	Thread type	
R	Rc	
N	NPT	
F	G	

#### Pated voltage

#### AC

Symbol	Rated voltage	Symbol	Rated voltage
1	100 VAC	7	240 VAC
2	200 VAC	8	48 VAC
3	120 (110) VAC	В	24 VAC
4	220 VAC	J	230 VAC

#### DC

Symbol	Rated voltage	
5	24 VDC	
6	12 VDC	

#### Option

Symbol	Option
Nil	None
D	Oil-free

## Pressure type

_	
Symbol	Specifications
	Operating pressure: 0.15 to 4.0 MPa

#### Electrical entry

	CE/UKCA-			
Symbol	Electrical entry		compliant	
G	Grommet*1	<b>©</b>	24 VDC	
G	Crommet		12 VDC	
			100 VAC 24 VDC	
GS	Grommet with PCB		12 VDC	
<b></b>	(With surge voltage suppressor)		48 VAC	
			24 VAC	
cs	Conduit (With surge voltage suppressor)		All voltages	
DS	DIN terminal (With surge voltage suppressor)		All voltages	
DZ	DIN terminal with light (With surge voltage suppressor)		All voltages	
DN	Without DIN connector (With surge voltage suppressor)		All voltages	
WN	M12 connector/Without connector cable (With surge voltage suppressor)*2		All voltages	

<sup>\*1</sup> DC voltage only

<sup>\*2</sup> A cable for the M12 connector is not included with the product.



#### **Specifications**



	Circ 20				
Size Valve construction		20			
			Pilot operated diaphragm  Normally closed (N.C.)		
	Valve type		·		
	Fluid		Compressed air, Nitro	0 . 0	
	Orifice diameter		16 mmø		
	Port size		3/8"	1/2"	
	Flow rate	C [dm <sup>3</sup> /(s·bar)]	15	17.7	
	characteristics*1	b	0.36	0.22	
		Cv	3.9	4.3	
"	Max. operating pre		4.0 MPa		
ű	Min. operating pre	ssure differential	0.15		
ati	Fluid temperature		–10 to		
Ę	Ambient temperat	mperature -10 to 50°C		50°C	
eC.	Leakage*1	Internal leakage	1 cm <sup>3</sup> /min or less		
Valve specifications		External leakage	1 0111 /1111		
Ş	Thread type		G, Rc	, NPT	
\se	Max. system pressure		4.0 MPa		
	Proof pressure		6.0 N	MРа	
	Body material		Brass		
	Degrees of protection		IP67 (IP65 for the DIN terminal)		
	Seal material	Main valve	PUR		
		Pilot valve	HNBR		
	Impact/Vibration resistance*2		150/30 m/s <sup>2</sup>		
	Mounting orientat	on	Unrestricted		
	Ma:b4*6	O	3/8"	1/2"	
	Weight*6	Grommet	713 g	671 g	
		40	24 V, 48 V, 100 V, 110 V, 120 V		
	Rated voltage	AC	200 V, 220 V, 230 V, 240 V		
"		DC	12 V, 24 V		
ĕ	Allowable voltage	fluctuation	±10% of the rated voltage		
aţi	Allowable leakage	AC	5% or less of th	e rated voltage	
Ęic	voltage	DC	2% or less of the rated voltage		
eci	Apparent power*3, *4	AC	8 \	/A	
sb	Allowable voltage fluctuation ±10% of the r Allowable leakage voltage DC 2% or less of the r Apparent power*3, *4 AC 8 V Power consumption*3 DC 6 V Temperature AC 70°		W		
ē	Temperature	AC	70°C		
ပ	rise*5	DC	65°C		
	Electrical entry	Grommet type, Conduit terminal DIN terminal, M12 connector		Conduit terminal	

- \*1 The value for air at a differential pressure of 0.15 MPa or higher and an ambient temperature of 20°C
- \*2 Impact resistance: No malfunction occurred when tested with a drop tester in the axial direction and at a right angle to the main valve and armature in both an energized and a deenergized state, once in each condition. (Value in the initial state)
  - Vibration resistance: No malfunction occurred in a one-sweep test between 5 and 2000 Hz. The test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Value in the initial state)
- \*3 Power consumption/Apparent power: The value at an ambient temperature of 20°C and when the rated voltage is applied (Variation: ±10%)
- \*4 There is no difference in the frequency and the inrush and energized apparent power, since a rectifying circuit is used in the AC.
- \*5 Temperature rise: The value at an ambient temperature of 20°C and when the rated voltage is applied. Use this value as a reference as the actual value varies depending on the ambient environment
- \*6 The values are for the grommet type. Add 20 g for the grommet type with PCB, 70 g for the conduit type, 50 g for the DIN terminal type, and 15 g for the type without a DIN connector and the M12 connector type.

#### Fluid Supply

## **⚠** Warning

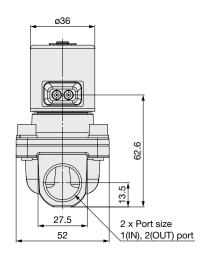
- 1. Compressed air, nitrogen, argon or oxygen can be used as a fluid.
- Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt, or corrosive gases, etc., as this can cause damage or malfunction.
- 3. If oxygen is used as the fluid, it can lead to serious and unforeseen risks. However, it is possible to manage and control the risk of hazards and economic loss. In order to use the product safely, it should only be handled by personnel with appropriate knowledge, with support from a suitably qualified specialist.
- 4. Oxygen gas increases the susceptibility of substances to burning; Oxygen gas can be ignited by frictional heat and static electricity. If oxygen is ignited, the metal and seal materials burn. Therefore, flush the piping thoroughly and mount a suitable filter to prevent foreign matter such as metal powder and dust from entering the product.
- Take safety measures by installing safety devices (e.g. a circuit that stops the supply of oxygen gas) to prevent fire and explosion in the event of failure, taking flameproof safety standards into consideration.

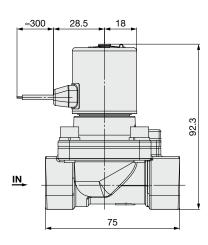


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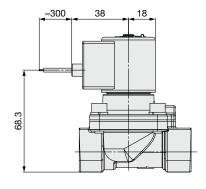
#### **Dimensions**

#### **G: Grommet**

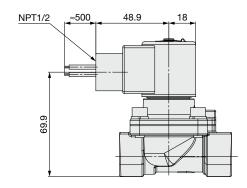




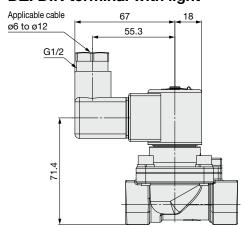
**GS: Grommet with PCB** 



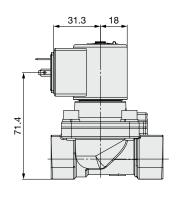
**CS: Conduit** 



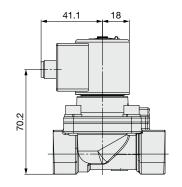
DS: DIN terminal DZ: DIN terminal with light



**DN: Without DIN connector** 



WN: M12 connector/
Without connector cable



## **⚠** 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.

⚠ Danger: Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

⚠ Warning: Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Caution: Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

\*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1:Robots

#### **⚠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 catalog 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. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.
  - 1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
  - 2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
  - 3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

#### **⚠** Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in

#### 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 catalog 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.

↑ Safety Instructions Be sure to read the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.

## **SMC** Corporation

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