

For 300 mm wafer

# Parallel Seal Type Slit Valve

New

RoHS

Long service life

**3 million cycles**  
(at ordinary temperature)

Maintenance

**Replaceable bellows**  
**Top accessible** (Made to order)

Air saving

**Air consumption reduced by 22%**  
Low pressure operation possible during normal operation  
(when back pressure is absent.)

Operating environmental pressure

**Atmospheric pressure to  $1.0 \times 10^{-6}$  Pa (abs)**

Low particle generation

**Reduced by 1/5 or more**  
(compared with the current product)

Safety measures

**Mechanical end lock mechanism is adopted.**

Gate is held in opened or closed position in case of emergency stop.

Lightweight

**14 kg**  
(For cassette type)

Opening window size

**50 mm x 336 mm**



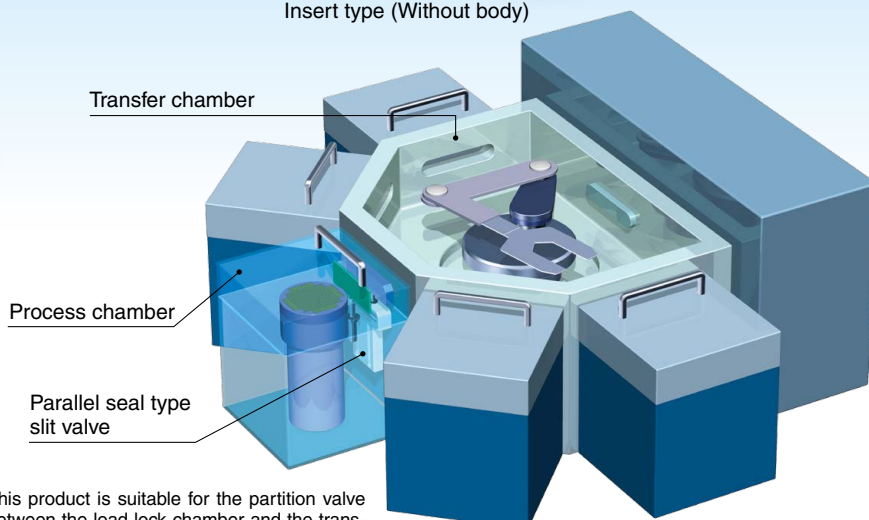
Cassette type (Standard)



Insert type (Without body)

Seal material:  
FKM/Kalrez® 4079

\* Kalrez® is a registered trademark of E. I. du Pont de Nemours and Company or its affiliates.



Interchangeable with the current XGT product

This product is suitable for the partition valve between the load lock chamber and the transfer chamber or between the transfer chamber and the process chamber in semiconductor equipment or other equipment.

## XGTP Series



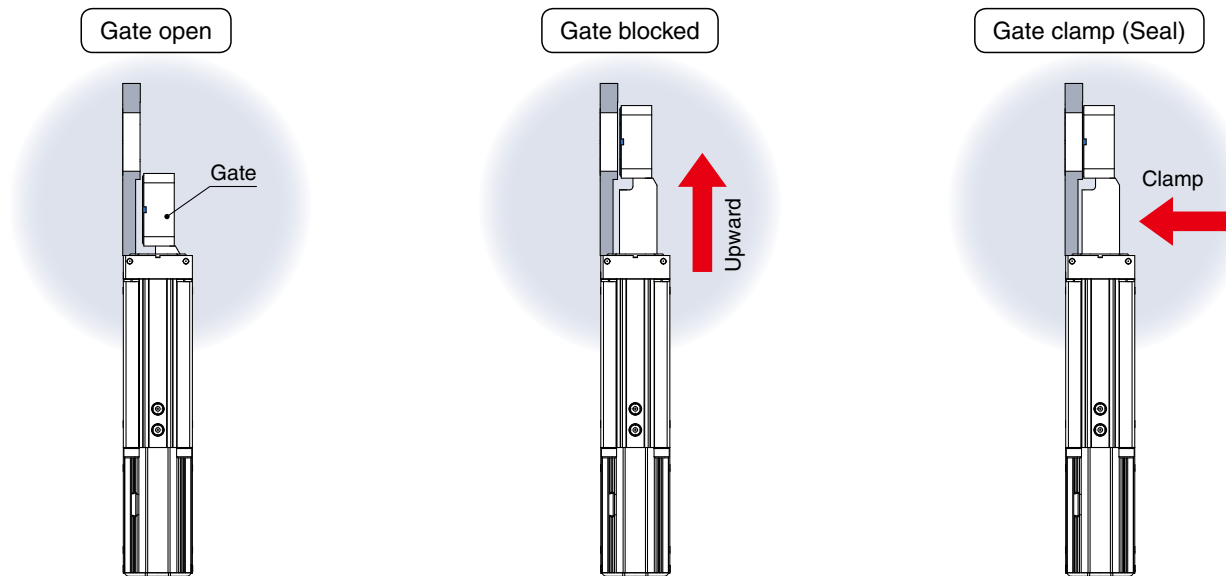
CAT.ES140-9A ©

Low particle generation

Longer service life

## Parallel sealing motion is used.

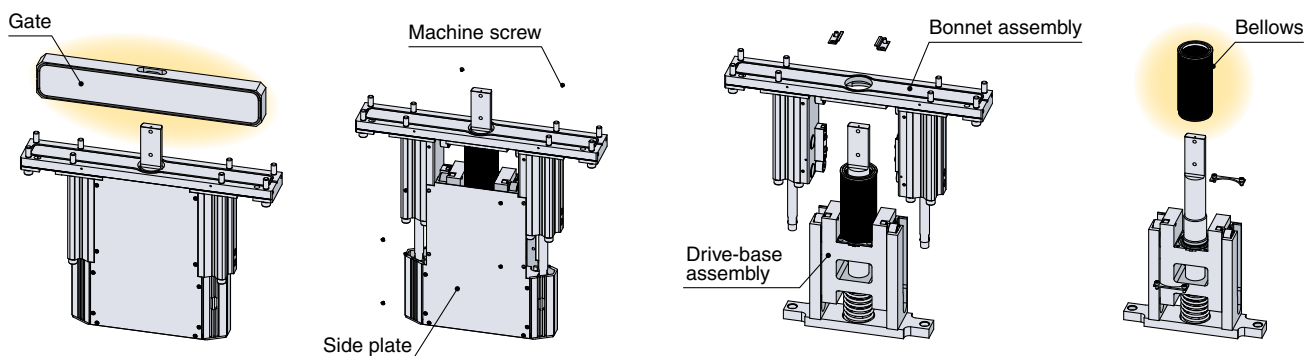
The gate moves vertically upward and downward, gate sealing/clamping is made with a parallel motion.



## Easier maintenance

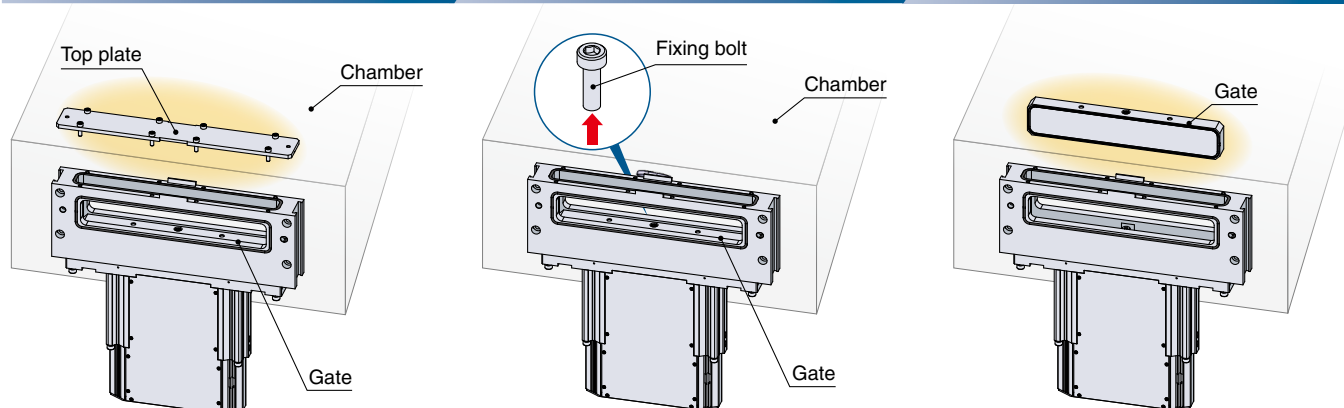
### Easy replacement of bellows

- 1 Remove the gate.
- 2 Remove the side plates.
- 3 Remove the bonnet assembly from the drive-base assembly.
- 4 Replace the bellows.



### Gate can be replaced from above. **Made to order**

- 1 Remove the top plate.
- 2 Remove the fixing bolt.
- 3 Remove the gate from the body for replacement.



**Related Products**

**N<sub>2</sub> Gas/Air Supply Line**

- Clean gas filter SF□
- Regulator for ultra high purity AP1000/AP1100/AP1500
- Digital pressure switch ISE20C(H)
- Smooth vent valve XVD
- High vacuum solenoid valve XSA



**Exhaust Line**

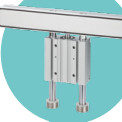
- High vacuum angle valve XL□
- Turbo-molecular pump
- High vacuum rubber seal angle valve XLF



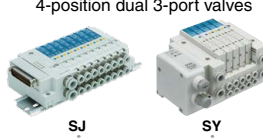
Free mount cylinder for vacuum ZCUK



Door valve/XGD  
Made to order



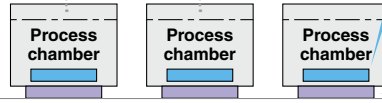
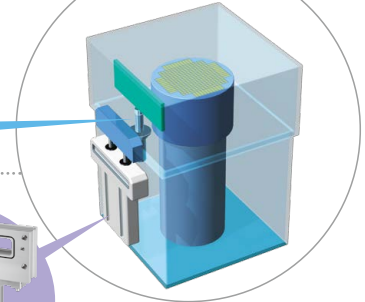
For driving air operated valves  
4-position dual 3-port valves



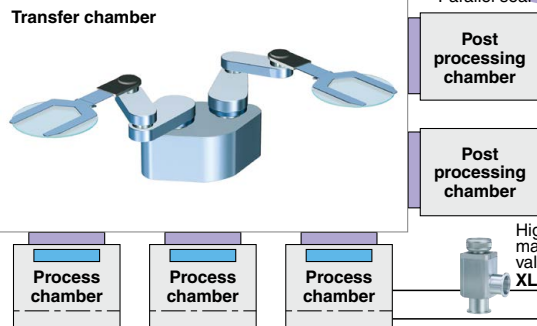
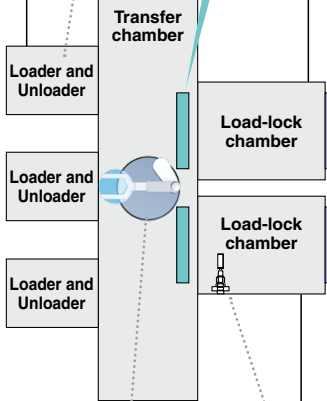
Bellows cylinder  
Made to order



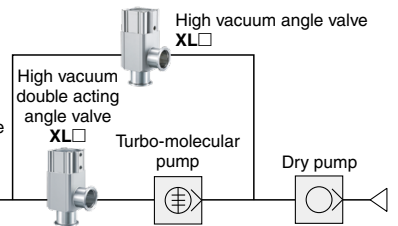
Process chamber



Parallel seal type slit valve/XGTP



**Exhaust Line**



**Cooling Water Line**

- Digital pressure switch ZSE20C(F)
- S Coupler KKA
- Filter for water FQ1
- Digital flow switch PF3W
- Digital pressure switch ISE20C(H)
- Clean regulator SR□
- Direct operated 2/3-port solenoid valve VDW/VX2



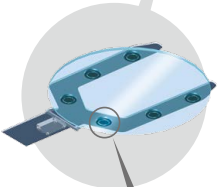
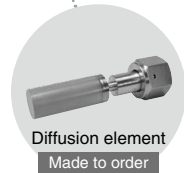
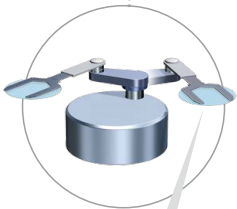
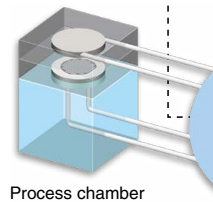
**Temperature Adjustment Line**

S Coupler KKA



Dual thermo-chiller  
High-performance inverter type  
HRZD

Thermo-chiller  
High-performance inverter type  
HRZ



Non-contact gripper  
XT661-X260

# Parallel Seal Type Slit Valve *XGTP Series*



Insert type (Without body)    Cassette type (Standard)



## How to Order

**XGTP 3 1 2 - 50336 - 1 C**

Parallel seal type slit valve

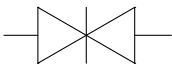
Applicable wafer size:  
For 300 mm wafer

Number of axes and seal type:  
One axis bellows

Valve type

Symbol	1	2	3
	Insert type (Without body)	Cassette type (Standard)	Cassette type (Half MESC)
Valve type			

Symbol



Opening window size:  
50 x 336 mm

Gate seal material

1	FKM
2	Kalrez® 4079*1
F1	FKM*2
F2	Kalrez® 4079*1, 3

\*1 Kalrez® 4079 is a registered trademark of E. I. du Pont de Nemours and Company or its affiliates.

\*2 Specifications equivalent to the standard FKM O-ring (From another manufacturer) The O-rings of vacuum parts which come in contact with gas have the same specifications.

\*3 Aside from the gate O-ring, the O-rings of vacuum parts which come in contact with gas have the same specifications as the standard FKM O-ring.

End lock

Symbol	End lock
Nil	OPEN/CLOSE end lock
N	None

Auto switch and the connector

Symbol	Auto switch	Connector	Note
Nil	—	—	—
A	D-A93	—	Lead wire: 0.5 m  Operating temperature range: 20°C to 60°C
C	D-A93	Multiple connector (AMP) *1	 Operating temperature range: 20°C to 60°C
F	D-A93	D-sub connector *2	 Operating temperature range: 20°C to 60°C

\*1 C016 30D006 made by AMP is recommended for the connector (female type).

\*2 CDE-9SF05 made by HIROSE ELECTRIC CO., LTD. is recommended for the connector (female type).



**Made to Order** For details, please contact SMC.

**1 With Built-in Heater (Up to 150°C)**

**2 Heat Resistant Specification (150°C)**

Heat resistant parts are used.

**3 New Materials of the Gas Contact Parts**

Oxalic acid anodized, Stainless steel, etc.

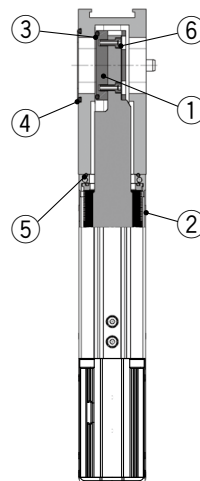
**4 Top-access gate**

Allows for removal of gate through top of cassette.

**5 Bonded seal gate**

Change the gate seal from O-ring to bonded style.

## Construction



### Component Parts

No.	Description	Material	Part number
1	Gate	A6063	XGTP300-2-1S
2	Bellows (Attached O-ring)	Equivalent to AM350 [FKM]	XGTP300-20AS
		Equivalent to AM350 [FKM (Equivalent to the standard FKM O-ring)]	XGTP300-20A-F1S
3	O-ring (Gate)	FKM	XGT300-9-9S
		FKM (Equivalent to the standard FKM O-ring)	XGT300-9-9-F1S
4	O-ring (Body opening side)	Kalrez® 4079	XGT300-9-11S*1
		FKM	XGT300-9-10S
5	O-ring (Bonnet assembly)	FKM (Equivalent to the standard FKM O-ring)	XGT300-9-10-F1S
		FKM	XGT300-9-7S
6	Holding bolt	Stainless steel 316	XGT300-2-5S (2 pcs.)

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For details on the specific product precautions, refer to the "Operation Manual" on the SMC website.

## Specifications

Model		<b>XGTP31□-50336</b>	
Wafer size [mm]		300	
Opening window size (Height x Width) [mm]		50 x 336	
Number of axes		1	
Operating environmental pressure*1 [Pa] (abs)		Atmospheric pressure to $1.0 \times 10^{-6}$	
Operating pressure differential [kPa]		4 or less	
Operating pressure range [MPa] (G)		0.45 to 0.6	
Internal leak*2 [Pa·m <sup>3</sup> /s]	O-ring: FKM	$6.5 \times 10^{-10}$	
	O-ring: Kalrez®	$6.5 \times 10^{-9}$	
Internal leak at reversed pressure*2 [Pa·m <sup>3</sup> /s] [Reversed pressure: 0.1 MPa (abs) or less]	O-ring: FKM	$6.5 \times 10^{-8}$	
	O-ring: Kalrez®	$6.5 \times 10^{-7}$	
External leak*2 [Pa·m <sup>3</sup> /s]		$6.5 \times 10^{-11}$	
Operating temperature*3 [°C]	Gate part	20 to 120/up to 150 (During bake-out)	
	Actuator part	20 to 90 (Except auto switch)	
Fluid		Inert gas	
Operating time*4 [s]		0.6 to 1	
Main material of vacuum part	Seal material	FKM, Kalrez® 4079 (Option)*5	
	Bellows	Equivalent to AM350	
	Gate	A6063	
	Body	A5052	
	Bonnet	A6061	
	Others	Stainless steel 304	
Exhaust direction		Free	
Mounting direction		Vertical	
Port size		Rc1/8	
End lock mechanism		With lock mechanism in opened or closed position	
Cylinder volume [L]		0.2	
Weight [kg]	Insert type (Without body)	10	
	Cassette type (Standard)	14	
	Cassette type (Half MESC)	14	

\*1 Absolute pressure

\*2 Value at normal temperature: Not including gas permeation

\*3 If the temperature at the gate exceeds 90°C, the operating temperature at actuator may go beyond the range. In this case, cool the actuator part.

\*4 This shows the time after the switching valve activates and causes the gate to open and close. (This may vary depending on the operating condition.)

\*5 Kalrez® 4079 is a registered trademark of E. I. du Pont de Nemours and Company or its affiliates.

## Auto Switch Specifications

Auto switch model	<b>D-A93</b>	
Applicable load	Relay, PLC	
Load voltage	24 VDC	100 VAC
Load current range and maximum load current	5 to 40 mA	5 to 20 mA
Contact protection circuit	None	
Internal voltage drop	2.4 V or less (to 20 mA)/3 V or less (40 mA)	
Indicator light	Red light emitting diode (LED) lights up when ON.	

\* When the temperature exceeds 60°C, please use the heat resistant specification (made to order).

## D-sub Connector Specifications

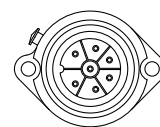
Description		XGTP (on side of actuating body)	Application control circuit side
D-sub connector	Connection type	Plug (male)	Socket (female)
	Shell size	E	
	Poles	9	

XGTP has Male Plug connection on the side of the actuating body, so for connection to the application control circuit side, please prepare a female socket.

⚠ The product should be operated after thoroughly reading the operation manual and understanding its contents.

## Connector Wiring Diagram

### C: Multiple connector (6P)



Terminal no.	Lead wire color	Auto switch
1	Blue	OPEN (-)
2	Brown	OPEN (+)
3	—	—
4	—	—
5	Brown	CLOSE (+)
6	Blue	CLOSE (-)

### F: D-sub connector (9P)

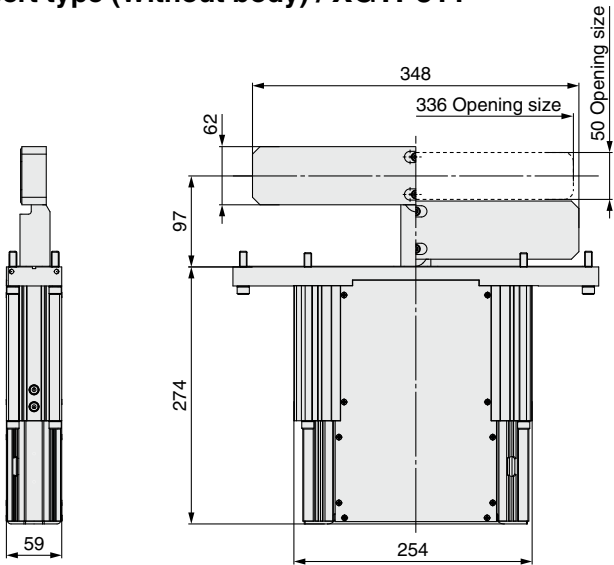


Terminal no.	Lead wire color	Auto switch
1	Brown	OPEN (+)
2	Brown	CLOSE (+)
3	—	—
4	—	—
5	—	—
6	—	—
7	Blue	OPEN (-)
8	Blue	CLOSE (-)
9	—	—

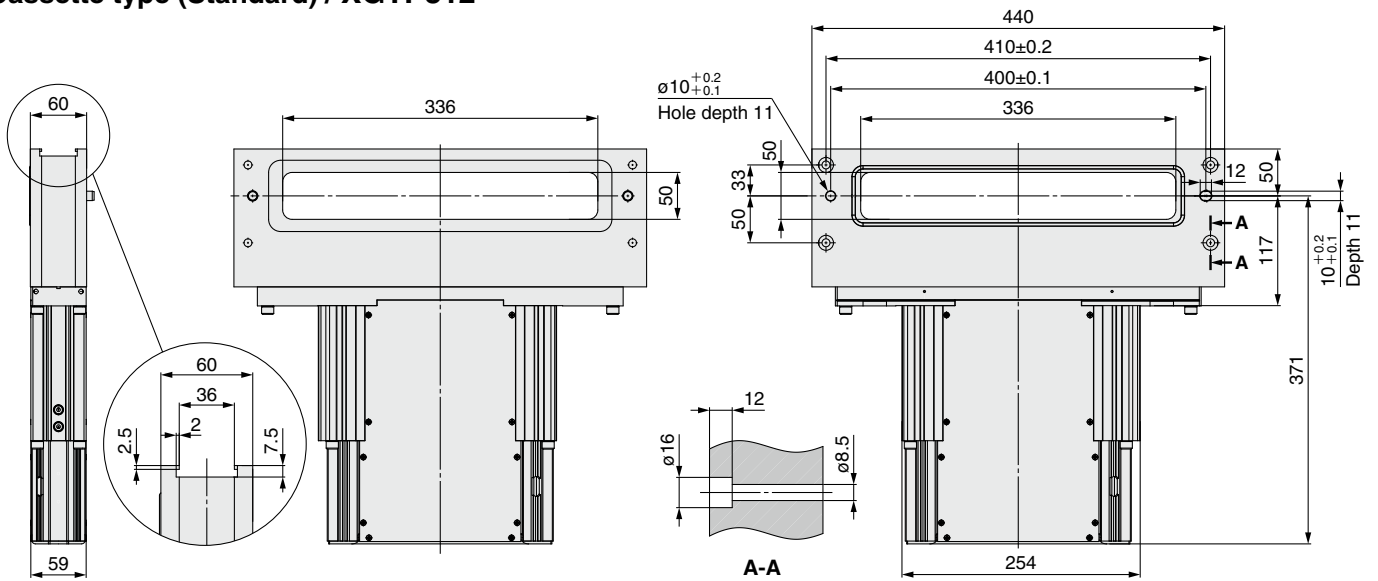
# XGTP Series

## Dimensions

### Insert type (Without body) / XGTP311

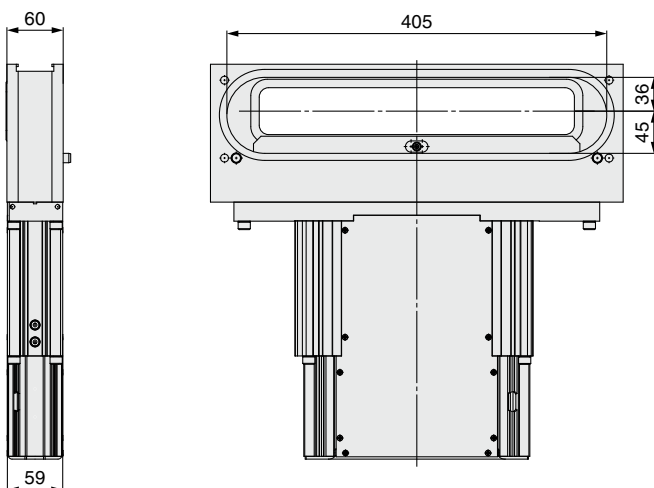


### Cassette type (Standard) / XGTP312



Valve seat side  
(XGTP312, 313 common)

### Cassette type (Half MESC) / XGTP313



# **Return of Product**

## **Warning**


If the product being returned is contaminated or possibly contaminated with substances that are harmful to humans then please contact SMC in the first instance and get the product decontaminated and made safe by a specialist cleaning company. After the decontamination prescribed in the sentence before, submit Product Return Request Sheet or Detoxification/Decontamination certificate to SMC and await return contact from SMC before returning the item to SMC.


Please refer to International Chemical Safety Cards (ICSC) for a list of the harmful substances.


If you have any questions, please contact your SMC sales representative.

## 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 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. 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 catalog.
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 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.

### 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 the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.