

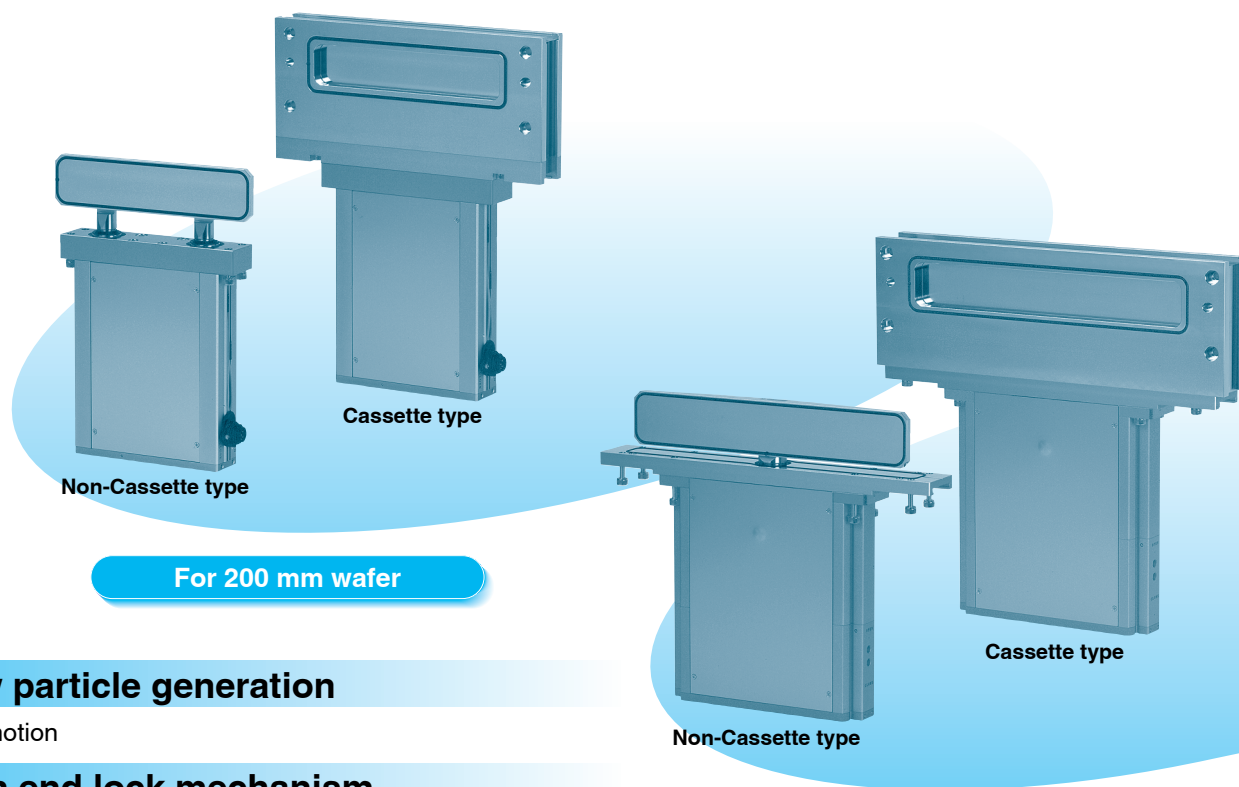
Slit Valve

XGT Series

SMC Corporation

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URL: <http://www.smcworld.com>
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'04-EU516-UK Issued: June, 2005
D-KS P-120(KS)



☐ Low particle generation

L motion

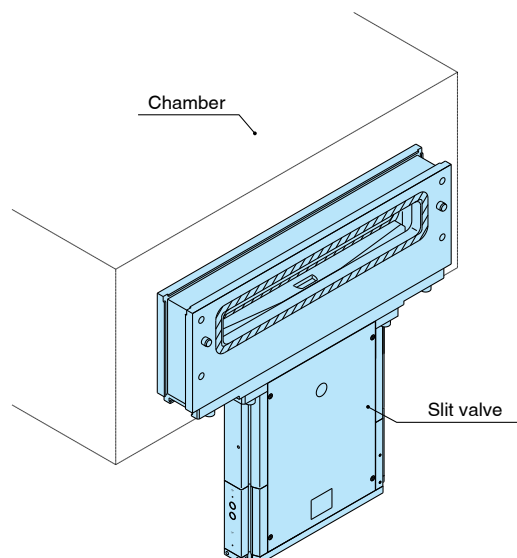
☐ With end lock mechanism

The gate can be hold opened/closed during on emergency stop.

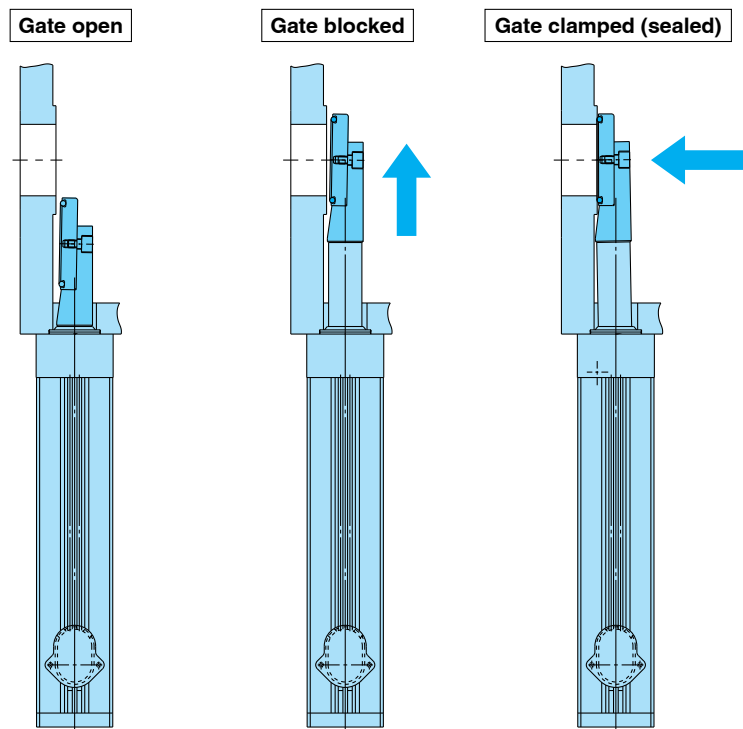
☐ Service life of two million cycles.

* With SMC's life conditions.

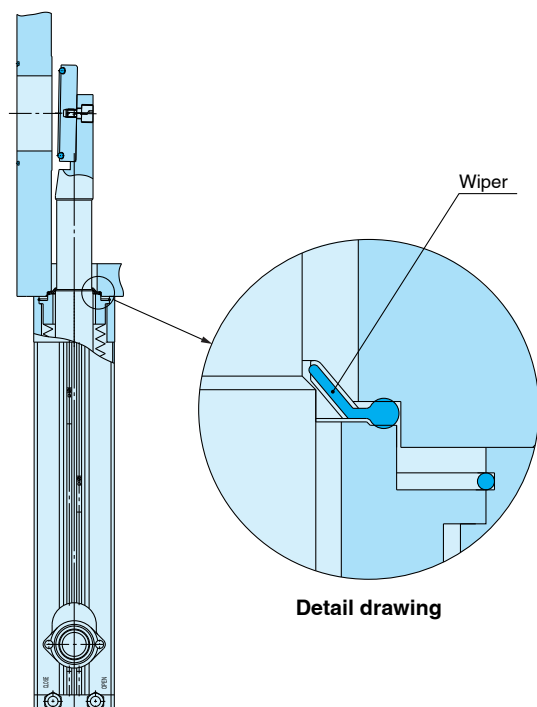
This product is suitable for the partition valve between the load lock chamber and the transfer chamber or between the transfer chamber and the process chamber in semiconductor equipment or other equipment.



L motion structure A gate construction with a two-stage operation which consists of a direct up and down movement and a clamp operation to seal the gate.



Bellows protection structure The adoption of a wiper decreases the intrusion of foreign objects, resulting from wafer damage and or other sources.



Slit valve Series *XGT*

How to Order

XGT 22 2 46236 1 C

High vacuum slit valve

Valve size

Symbol	Number of axis	Applicable wafer size
22	Two axes bellows	200 mm
31	One axis bellows	300 mm

Auto switch and the connector (Refer to the table below)

Gate O-ring material

Symbol	Material
1	FKM
2	Kalrez® 4079 *1
F1	FKM*2
F2	Kalrez® 4079 *1*3*4

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

*2 Standard FKM equivalent specification: made by other manufactures.

Other o-ring exposes to vacuum will have the same specifications.

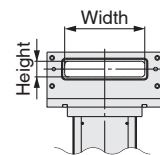
*3 Other o-ring exposes to vacuum other than gate o-rings will be changed to the same specifications as standard FKM.

*4 "XGT221-□□□□□-F2□" does not exist.

Opening window size

Symbol	Height x width (mm)	Applicable wafer size
32222 ^{Note)}	32 x 222	200 mm
46236	46 x 236	200 mm
50336	50 x 336	300 mm

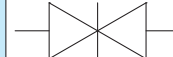
Note) Neither cassette type Half MESK nor cassette type Full MESK are set.



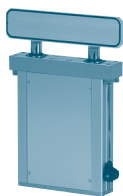
Valve type

Symbol	1	2	3	4
Valve type	Non-Cassette type	Cassette type standard	Cassette type Half MESK	Cassette type Full MESK
Applicable wafer size	200 mm	200 mm	200 mm	200 mm
	300 mm	300 mm	300 mm	—

Symbol



Non-Cassette type

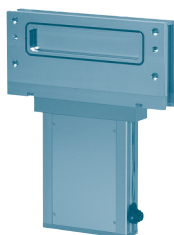


For 200 mm wafer



For 300 mm wafer

Cassette type



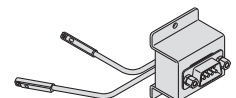
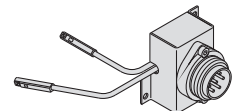
For 200 mm wafer



For 300 mm wafer

Auto switch and connector

Symbol	Auto switch	Connector
-	None	—
A		Lead wire: 0.5 m (without connector)
C	D-A93 (With 2 pcs. for opening and closing)	With multiple connector ^{Note 1)} (T3106 000: Made by AMP)
F		With D-sub connector ^{Note 2)} (CDE-9PF05: Made by HIROSE ELECTRIC CO., LTD.)



Note 1) T3105000 made by AMP is recommended for the connector (female type).

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

Specifications

Model		XGT22□-32222	XGT22□-46236	XGT31□-50336
Wafer size mm		200		300
Opening window size (Height x Width) mm		32 x 222	46 x 236	50 x 336
Number of axes		2		1
Operating environmental pressure ^{Note 1)} Pa (abs)		Atmospheric pressure to 10 ⁻⁶		
Operating pressure differential kPa		4 or less		
Operating pressure range MPa (G)		0.45 to 0.6		
Internal leak ^{Note 2)} Pa·m ³ /s	O-ring: FKM	6.5 x 10 ⁻¹⁰		
	O-ring: Kalrez®	6.5 x 10 ⁻⁹		
Internal leak ^{Note 2)} Pa·m ³ /s at reversed pressure [Reversed pressure: 0.1 MPa (abs) or less]	O-ring: FKM	6.5 x 10 ⁻⁸		
	O-ring: Kalrez®	6.5 x 10 ⁻⁷		
External leak ^{Note 2)} Pa·m ³ /s		6.5 x 10 ⁻¹¹		
Operation temperature ^{Note 3)} °C	Gate part	5 to 150		
	Actuator part	5 to 60		
Fluid		Inert gas		
Operating time ^{Note 4)} s		0.6 to 1		
Main material of vacuum part	Seal material	FKM, FFKM (Option)		
	Bellows	AM350		
	Gate	A6063		
	Body	A5052		
	Bonnet	A5052		
	Others	Stainless steel 304		
Exhaust direction		Free		
Mounting direction		Vertical		
Port size		M5	Rc 1/8	
End-lock mechanism		With lock mechanism at opening/closing position ^{Note 5)}		
Cylinder volume ℓ		0.12	0.2	
Weight kg	Non-Cassette type	8	14	
	Cassette type: Standard	12	20	
	Cassette type: Half MESK	—	12	20
	Cassette type: Full MESK	—	11	—

Note 1) Absolute pressure Note 2) Value at normal temperature: Not including gas permeation.

Note 3) If the temperature at the gate exceeds 60°C, the operating temperature at actuator may go beyond the range. In this case, cool the actuator part.

Note 4) This shows the time after the switching valve activates and causes the gate to open and close.

Note 5) The holding function of the seal is not guaranteed when the gate is clamped.

Auto switch specifications

Auto switch type	D-A93	
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.	

D-sub connector specifications

Description		Slit valve body side	Counter side
D-sub connector	Contacting division	Pin (male type)	Socket (female type)
	Shell size	E	
	Poles	9	

Prepare the socket contacting (female type) because the slit valve body is a pin contacting (male type).

Connector wiring diagram

C: Multiple connector (6P)

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

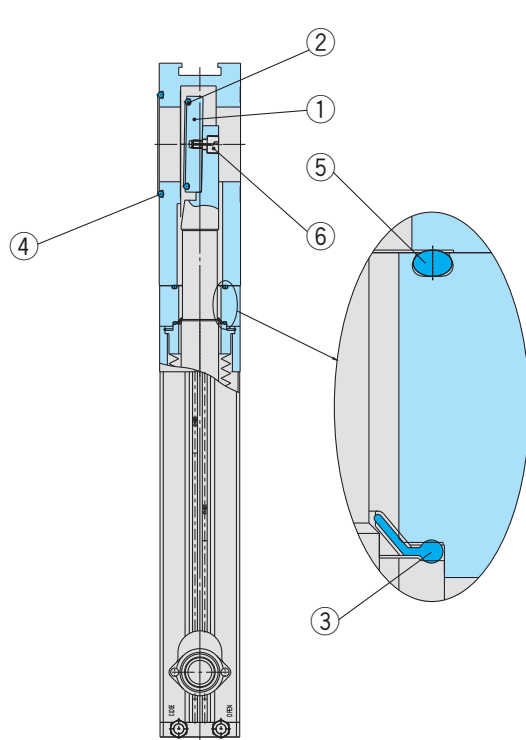
F: D-sub connector (9P)

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

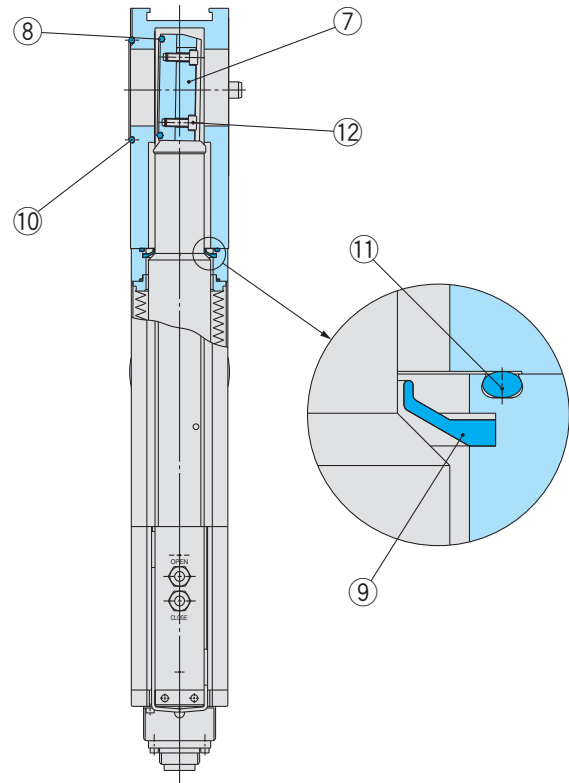


The product should be operated after thoroughly reading the manual and understanding its contents.

Construction



XGT22□
For 200 mm wafer



XGT31□
For 300 mm wafer

Component Parts

XGT22□ (200 mm wafer type)

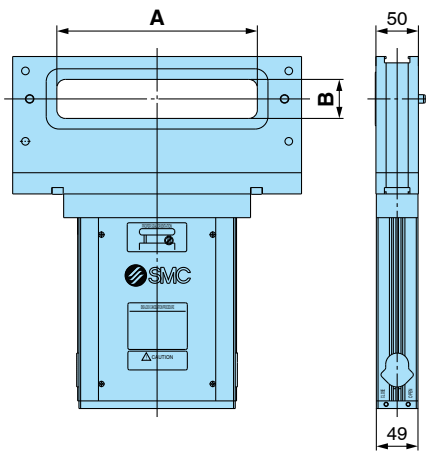
No.	Description	Material	Part number	Corresponding model
1	Gate	A6063	XGT0101-2-1S	XGT22□-32222-□□
			XGT0402-2-1S	XGT22□-46236-□□
2	O-ring (Gate)	FKM	XGT200-9-13S	XGT22□-32222-□□
		FKM (standard FKM equivalent)	XGT300-9-13-F1S	
		Kalrez® 4079	XGT200-9-14S	
		FKM	XGT200-9-7S	XGT22□-46236-□□
		FKM (standard FKM equivalent)	XGT300-9-9-F1S	
3	Gasket	FKM	XGT200-9-9S	XGT22□-□□-□□
			XGT200-4-9S	
4	O-ring (Body opening side)	FKM	XGT200-9-12S	XGT222-32222-□□
		FKM (standard FKM equivalent)	XGT300-9-12-F1S	XGT222-46236-□□
5	O-ring (Bonnet assembly)	FKM	XGT200-9-11S	XGT223-46236-□□
		FKM (standard FKM equivalent)	XGT300-9-11-F1S	XGT224-46236-□□
6	Holding bolt	SUS304	XGT200-2-5S	XGT22□-□□-□□

XGT31□ (300 mm wafer type)

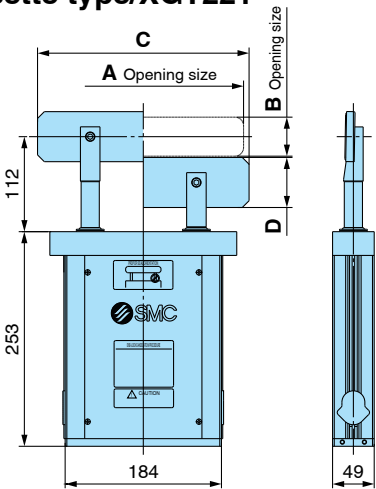
No.	Description	Material	Part number	Corresponding model
7	Gate	A6063	XGT300-2-1S	XGT31□-50336-□□
8	O-ring (Gate)	FKM	XGT300-9-9S	
		FKM (standard FKM equivalent)	XGT300-9-9-F1S	
		Kalrez® 4079	XGT300-9-11S	
9	Wiper	FKM	XGT300-4-9S	
10	O-ring (body opening side)	FKM	XGT300-9-10S	
		FKM (standard FKM equivalent)	XGT300-9-10-F1S	
11	O-ring (Bonnet assembly)	FKM	XGT300-9-7S	
		FKM (standard FKM equivalent)	XGT300-9-7-F1S	
12	Holding bolt	SUS316	XGT300-2-5S	

Dimensions

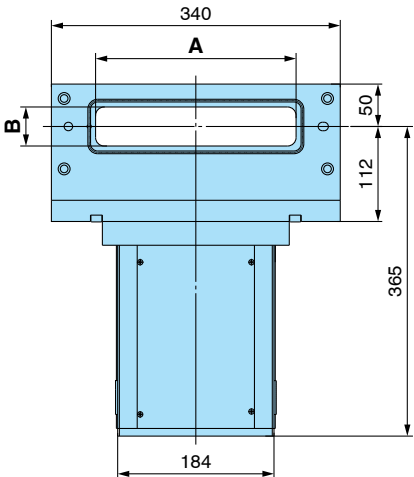
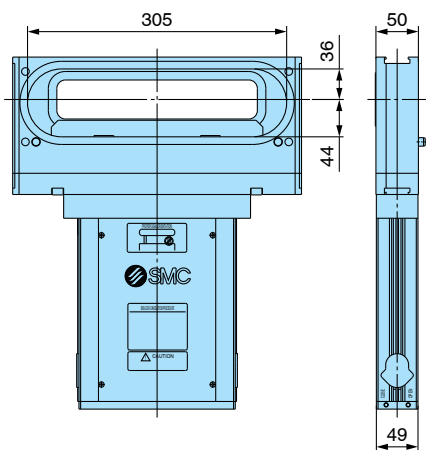
Cassette type Standard/XGT222



Non-Cassette type/XGT221

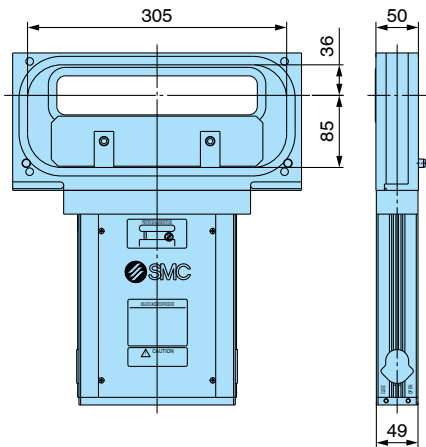


Cassette type Half MESK/XGT223



Valve seat side (XGT222, 223, and 224 commons)

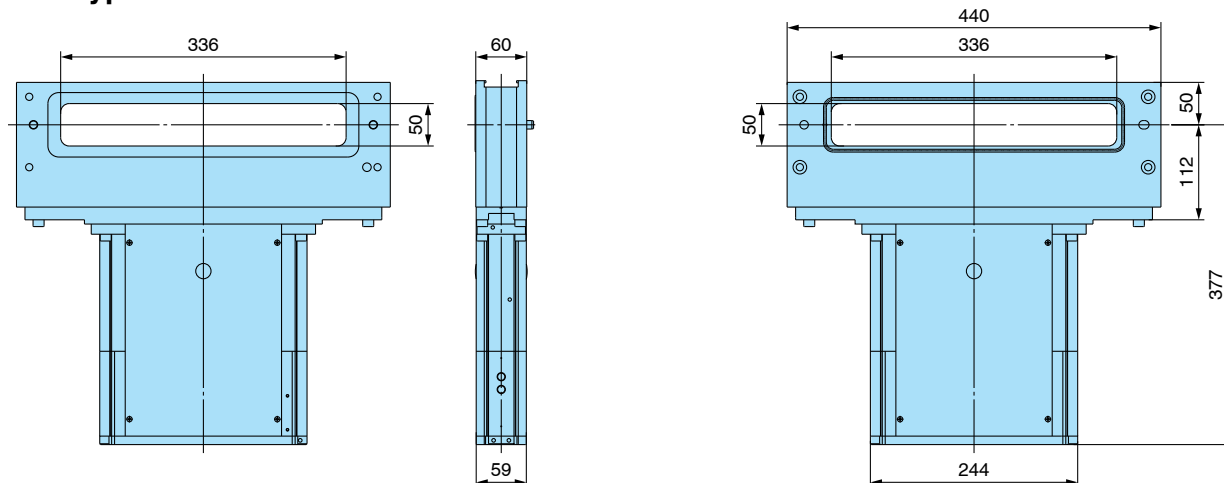
Cassette type Full MESK/XGT224



(mm)					
Model	Valve type	A	B	C	D
XGT221-32222	Non-Cassette type	222	32	235	45
XGT221-46236		236	46	249	59
XGT222-32222	Cassette type standard	222	32	—	—
XGT222-46236		236	46	—	—
XGT223-46236	Cassette type Half MESK	236	46	—	—
XGT224-46236	Cassette type Full MESK	236	46	—	—

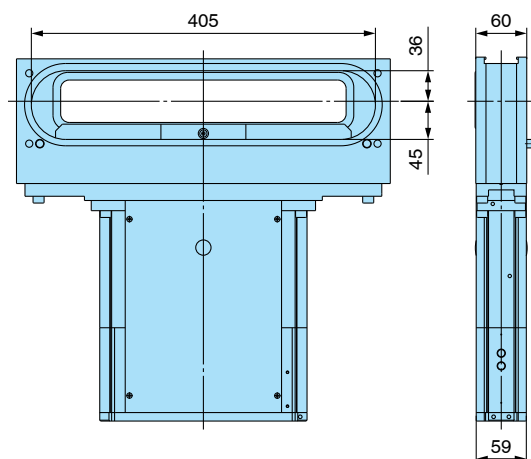
Dimensions

Cassette type Standard/XGT312

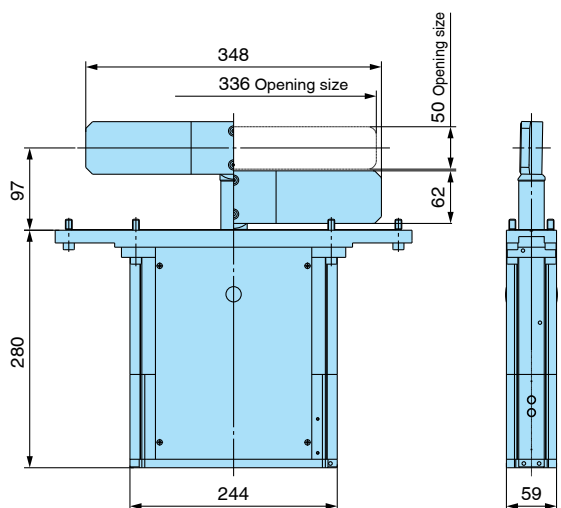


Valve seat side (XGT312, 313, and 311 commons)

Cassette type Half MESK/XGT313



Non-Cassette type/XGT311



Series XGT Made to Order

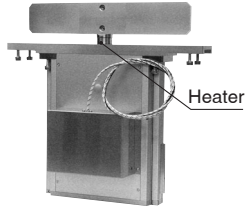
Contact SMC for further detail.



With Built-in Heater (Up to 150°C) * 120°C for the actuator portion



With heater on cassette



With heater on shaft

Anodized parts

The parts which come in contact with gas (oxalic acid aluminum alloy, stainless steel etc.) are changed.

Replaceable bellows

Customer can replace the bellows.

High temperature type (150°C) 120°C for the actuator portion

O-ring, guide etc. which is the part of actuator are changed to heat resistance.

Holding function of the seal (when operating pressure is stopped)

Sealing is maintained when operating pressure is stopped.

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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