## Parallel Seal Type Slit Valve

### For 300 mm wafer

#### Long service life

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

#### Low particle generation

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

#### Maintenance

Replaceable bellows
Top accessible (Made to order)

#### Air saving

Made to order

Air consumption reduced by **22%**

Low pressure operation possible during normal operation (when back pressure is absent.)

#### Operating environmental pressure

Atmospheric pressure to **10^{-6} Pa**

#### 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**

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**Cassette type (Standard)**

**Insert type (Without body)**

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**XGTP Series**

Interchangeable with the current XGT product

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**Seal material:**

FKM/Kalrez® 4079

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**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.**

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RoHS
Parallel Seal Type Slit Valve  \textit{XGTP} Series

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.  \textit{Made to order}

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

Low particle generation
Longer service life
**XGTP Series**

**Parallel Seal Type Slit Valve**

<table>
<thead>
<tr>
<th>Valve type</th>
<th>Symbol</th>
<th>End lock</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3</td>
<td>50336</td>
<td>1C</td>
</tr>
</tbody>
</table>

- **Applicable wafer size:** For 300 mm wafer
- **Number of axes and seal type:** One axis bellows
- **Gate seal material:**
  - FKM
  - Kalrez® 4079

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Auto switch</th>
<th>Connector</th>
<th>Note</th>
</tr>
</thead>
</table>
| 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 |

- **Auto switch and the connector**
- **End lock**
  - Symbol: Nil, OPEN/CLOSE end lock, N (None)

**Made to Order**

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. **Special O-ring (Low particle generation)**
   - FKM only (The leakage rate is different from the standard product.)
5. **Variable Sealing Force**
   - Sealing force in normal operation and maintenance can be varied via a suitable pneumatic control circuit (End lock mechanism is not available with this option).

**Component Parts**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gate</td>
<td>A6063</td>
<td>XGT300-2-15S</td>
</tr>
<tr>
<td>2</td>
<td>Bellows</td>
<td>AM550</td>
<td>XGT300-20AS</td>
</tr>
<tr>
<td>3</td>
<td>O-ring (Gate)</td>
<td>FKM</td>
<td>XGT300-9-9S</td>
</tr>
<tr>
<td>4</td>
<td>O-ring (Body opening side)</td>
<td>Kalrez® 4079</td>
<td>XGT300-9-11S</td>
</tr>
<tr>
<td>5</td>
<td>O-ring (Bonnet assembly)</td>
<td>FKM</td>
<td>XGT300-9-10S</td>
</tr>
<tr>
<td>6</td>
<td>Fixing bolt</td>
<td>Stainless steel 316</td>
<td>XGT300-2-5S (2 pcs.)</td>
</tr>
</tbody>
</table>

**Construction**

- For 300 mm wafer
- Opening window size: 50 x 336 mm

**Component Parts**

- T3105000 made by AMP is recommended for the connector (female type).
- CDE-9SF05 made by HIROSE ELECTRIC CO., LTD. is recommended for the connector (female type).
## Specifications

### Parallel Seal Type Slit Valve XGTP Series

#### Auto Switch Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>XGTP31-50336</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wafer size [mm]</td>
<td>300</td>
</tr>
<tr>
<td>Opening window size (Height x Width) [mm]</td>
<td>50 x 336</td>
</tr>
<tr>
<td>Number of axes</td>
<td>1</td>
</tr>
<tr>
<td>Operating environmental pressure^1 [Pa] (abs)</td>
<td>Atmospheric pressure to 10^{-6}</td>
</tr>
<tr>
<td>Operating pressure differential [kPa]</td>
<td>4 or less</td>
</tr>
<tr>
<td>Operating pressure range [MPa] (G)</td>
<td>0.45 to 0.6</td>
</tr>
<tr>
<td>Internal leak^2 [Pa·m^3/s]</td>
<td>O-ring: FKM 6.5 x 10^{-10}</td>
</tr>
<tr>
<td></td>
<td>O-ring: Kalrez® 6.5 x 10^{-9}</td>
</tr>
<tr>
<td>Internal leak at reversed pressure^2 [Pa·m^3/s]</td>
<td>O-ring: FKM 6.5 x 10^{-8}</td>
</tr>
<tr>
<td>(Reversed pressure: 0.1 MPa (abs) or less)</td>
<td>O-ring: Kalrez® 6.5 x 10^{-7}</td>
</tr>
<tr>
<td>External leak^2 [Pa·m^3/s]</td>
<td>6.5 x 10^{-11}</td>
</tr>
<tr>
<td>Operating temperature^3 [°C]</td>
<td>Gate part 20 to 120/ up to 150 (During bake-out)</td>
</tr>
<tr>
<td></td>
<td>Actuator part 20 to 90 (Except auto switch)</td>
</tr>
<tr>
<td>Fluid</td>
<td>Inert gas</td>
</tr>
<tr>
<td>Operating time^4 [s]</td>
<td>0.6 to 1</td>
</tr>
</tbody>
</table>

#### Main material of vacuum part

| Seal material | FKM, Kalrez® 4079 (Option) |
| Bellows | AM350 |
| Gate | A6063 |
| Body | A5052 |
| Bonnet | A6061 |
| Others | Stainless steel 304 |

#### Exhaust direction

Free

#### Mounting direction

Vertical

#### Port size

Rc1/8

#### Cylinder volume [L]

0.2

#### Weight [kg]

Insert type (Without body) 10
Cassette type (Standard) 14
Cassette type (Half MESK) 14

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*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.

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### Connector Wiring Diagram

#### C: Multiple connector (6P)

- Terminal no. 1: Blue, Auto switch: OPEN (-)
- Terminal no. 2: Brown, Auto switch: OPEN (+)
- Terminal no. 3: ---
- Terminal no. 4: ---
- Terminal no. 5: Brown, Auto switch: CLOSE (+)
- Terminal no. 6: Blue, Auto switch: CLOSE (-)

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

- Terminal no. 1: Brown, Auto switch: OPEN (+)
- Terminal no. 2: Brown, Auto switch: CLOSE (+)
- Terminal no. 3: ---
- Terminal no. 4: ---
- Terminal no. 5: ---
- Terminal no. 6: ---
- Terminal no. 7: Blue, Auto switch: OPEN (-)
- Terminal no. 8: Blue, Auto switch: CLOSE (-)
- Terminal no. 9: ---

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### D-sub Connector Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>XGTP (on side of actuating body)</th>
<th>Application control circuit side</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-sub connector</td>
<td>Plug (male)</td>
<td>Socket (female)</td>
</tr>
<tr>
<td>Connection type</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>Shell size</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

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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.
XGTP Series

Dimensions

Insert type (Without body) / XGTP311

Cassette type (Standard) / XGTP312

Valve seat side
(XGTP312, 313 common)

Cassette type (Half MESK) / XGTP313

(XGTP312, 313 common)
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.

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## Safety Instructions

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.

## 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.

   - Vacuum pads are excluded from this 1 year warranty.
   - Also, 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.

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¹ ISO 4414: Pneumatic fluid power – General rules relating to systems.
² ISO 4413: Hydraulic fluid power – General rules relating to systems.
³ IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
4 ISO 10218-1: Manipulating industrial robots – Safety.

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Safety Instructions

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