For SEMI applications handling 200, 300 and 450 mm wafers
For load lock / process module isolation
Virtually particle and vibration-free
>5 million cycles between maintenance
Very easy maintenance thanks to self-adjusting plate

Body material
aluminum or stainless steel

Valve
Series 022
double acting pneumatic actuator with position indicator

<table>
<thead>
<tr>
<th>DN (D1 x D)</th>
<th>Ordering numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>inch</td>
</tr>
<tr>
<td>rear side &gt; seat side</td>
<td>rear side = seat side</td>
</tr>
<tr>
<td>with bonnet flange</td>
<td>with bonnet flange</td>
</tr>
<tr>
<td>mm</td>
<td>inch</td>
</tr>
<tr>
<td>32 x 222</td>
<td>1.26 x 8.74</td>
</tr>
<tr>
<td>46 x 236</td>
<td>1.81 x 9.29</td>
</tr>
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</tr>
<tr>
<td>56 x 496</td>
<td>2.20 x 19.53</td>
</tr>
</tbody>
</table>

with solenoid for impulse actuation: 022 . . . . 44 (specify control voltage)

Other opening sizes: see «Options»

Insert
Series 032
double acting pneumatic actuator with position indicator

<table>
<thead>
<tr>
<th>DN (D1 x D)</th>
<th>Ordering numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>inch</td>
</tr>
<tr>
<td>aluminum</td>
<td>stainless steel</td>
</tr>
<tr>
<td>mm</td>
<td>inch</td>
</tr>
<tr>
<td>32 x 222</td>
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</table>

with solenoid for impulse actuation: 032 . . . . 44 (specify control voltage)

Other opening sizes and insert types: see «Options»
Sealing materials
Gate: FKM (VITON, vulcanized)
Bonnet flange: FKM (VITON, O-ring)
Body flange (seat side): FKM (VITON, O-ring)

Feedthrough
Bellows feedthrough (welded bellows) inside, protected

Features
Compact design
Modular system, same actuator for different valve sizes
Maintenance-free actuator, self-adjusting gate without detached mounting parts

Types
Valve B
Opening on rear side larger than on seat side
With bonnet flange
Gate service through bonnet flange

Valve A
Same size of opening on seat side and rear side
With bonnet flange
Gate service through bonnet flange

Insert C
MONOVAT seat mounted inside of chamber
Insert installation from the top
Gate service through chamber

Easy gate exchange
1 Dismount actuator/gate
2, 3 Remove gate screws:
To do this, apply an Allen wrench and turn it about 200°
Technical data

Leak rate \(^1\) at body and at seat in mbar Is\(^-1\)

<table>
<thead>
<tr>
<th>sealing surface</th>
<th>FKM seal</th>
<th>FFKM seal</th>
<th>metal seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>metal blank (milled / ball polished)</td>
<td>&lt;1·10(^-9)</td>
<td>&lt;1·10(^-9)</td>
<td>&lt;1·10(^-7)</td>
</tr>
<tr>
<td>aluminum: hard anodized</td>
<td>&lt;1·10(^-8)</td>
<td>&lt;1·10(^-7)</td>
<td>&lt;1·10(^-4)</td>
</tr>
<tr>
<td>aluminum: nickel-plated</td>
<td>&lt;1·10(^-8)</td>
<td>&lt;1·10(^-7)</td>
<td>&lt;1·10(^-8)</td>
</tr>
</tbody>
</table>

Measuring conditions: Body: 30s, He conc. ≥ 20%
Seat: 15s, He conc. ≥ 30%
Automatic leak rate supervision dp = 1 bar

Pressure range
- Metal blank or nickel-plated 1 · 10\(^-9\) mbar to 1.2 bar (abs)
- Aluminum, hard anodized 1 · 10\(^-6\) mbar to 1.2 bar (abs)
- Metal seal 5 · 10\(^-10\) mbar to 1.2 bar (abs)

Differential pressure on the gate 1.2 bar in either direction
Differential pressure at opening ≤ 30 mbar in either direction
Cycles until first service ≥ 5 million

Temperature \(^2\)

<table>
<thead>
<tr>
<th>operating temperature of valve</th>
<th>valve configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>body</td>
</tr>
<tr>
<td>≤ 80°C</td>
<td>aluminum</td>
</tr>
<tr>
<td>≤150°C</td>
<td>aluminum</td>
</tr>
<tr>
<td>≤200°C</td>
<td>stainless steel</td>
</tr>
</tbody>
</table>

Pneumatic box (solenoid, non-return valve, pressure controller): <60°C

Material
- Valve body and gate: aluminum EN AW-6082 (3.2315)
- Valve body and gate: stainless steel AISI 316L (1.4404, 1.4435)
- Differential pressure tabs, stoppers PEEK (Polyetheretherketon)
- Bellows end pieces, rod AISI 316L (1.4404, 1.4435)
- Bellows AISI 633 (AM 350)
- Clamping piece AISI 301 (1.4310)

Seal: gate, bonnet FKM (VITON)

Air connection internal threads \(\frac{3}{8}\)" (ISO / NPT)

Recommended operating pressure \(^3\) 2 - 6 bar / 30 - 90 psi

Position indicator: contact rating
- Voltage ≤ 50 VAC / DC
- Current ≤ 0.1 A, > 5mA
- Connection 9 pin subminiature D

Mounting position any

---

1) At room temperature (25°C) and under clean environmental conditions.

2) Maximum values: depending on operating conditions and sealing materials

3) In order to maximize the life time of the gate, the operating pressure should be kept as low as possible, however high enough to ensure the required leak rate in the closed valve position. Depending on the length of the sealing line (size of gate), tolerances of the sealing lip, accuracy of the measurement and required leak rate, the operating pressure settings may be slightly beyond the specified pressure range.
Options

Valve body:
- Opening sizes:
  - 25 x 160 / 210 / 265 / 420 mm (designation 01 / 02 / 03 / 04)
  - 51 x 160 / 210 / 265 / 420 mm (designation 05 / 06 / 07 / 08)
  - Other opening sizes on request, max. 56 x 700 mm
- Body flange:
  - Sealing surface or groove with O-ring
  - Sealing materials (O-ring): FKM, FFKM
  - Metal seal (for stainless steel)
  - Other sealing materials on request
  - Bolt pattern outside or inside of the sealing line
  - Alignment pins, alignment holes
- Surface treatment:
  - Aluminum: hard anodized or nickel-plated
  - Aluminum / stainless steel: ball-polished
- UHV version:
  - Sealing surfaces for metal flange seal
  - Metal seal on bonnet flange
  - Bellows assembly welded to bonnet flange
- Temperature management:
  - Valve body prepared for: liquid cooling (stainless steel) / nitrogen purge / heating cartridges
  - Heating cartridges with or without thermocouple
  - PTC heating cartridges
  - Temperature sensors with/without overtemp. protection
- High speed closing for the connection valve body/bonnet flange (dismounting/mounting of actuator/gate unit)
- Port KF16 for bypass, venting or gauges
- Valve body prepared for customer-specific sensor systems (pressure, temperature, wafer detection)

Actuator, pneumatics:
- Pneumatic locking in closed and open position
- High speed venting valve for fast closing and opening times
- Pressure control for the closed valve position
- Bakeable to 150°C
- Manual mechanical locking
- Solenoid for impulse actuation
  12 / 24 VDC, 115 / 230 V 50/60 Hz

Feedthrough:
- Bellows feedthrough with optimized particle protection
- Bellows feedthrough with detachable convolutions and optimized particle protection

Insert:
- Types L, M, N:
  (Special requirements concerning stiffness and manufacturing tolerances of the chamber design must be considered. VAT recommends using the one-piece C-type.)
  - L: Seat mounted to chamber wall, with bonnet flange, gate service through bonnet flange
  - M: Seat mounted to chamber wall, without bonnet flange, gate service through chamber
  - N: Seat mounted through chamber wall, without bonnet flange, gate service through chamber
- Opening sizes:
  - 25 x 160 / 210 / 265 / 420 mm (designation 01 / 02 / 03 / 04)
  - 51 x 160 / 210 / 265 / 420 mm (designation 05 / 06 / 07 / 08)
  - Other opening sizes on request, max. 56 x 700 mm
- Sealing materials (O-ring):
  - FKM, FFKM
  - Other sealing materials on request
- Surface treatment: see paragraph «Valve body»
- Temperature management: see paragraph «Valve body»

Gate:
- Sealing materials for vulcanized seals:
  - FKM, FFKM
  - Other sealing materials on request
- Gate with groove
- Sealing material for gate O-ring:
  - FKM, FFKM
  - Other sealing materials on request
- Surface treatment:
  - Aluminum: hard anodized or nickel-plated
  - Aluminum / stainless steel: bead-blasted or ball-polished
  - Stainless steel: electro polished
- Protective shields against heat radiation / coating / plasma and process gases
- Temperature management:
  - Liquid cooling (stainless steel)
  - Gate with heating conductor

Position indicator:
- Bakeable to 150°C
- Double position indicators in both end positions
- Mechanical and electronic magnetic field sensors with LED
- Cycle counter

Accessories
- VATSEAL metal seal for flanges
- Claw (M8) for valves with clamp edges: Ord. No. 32009-QAPR

Service kit
- Seal kit, consisting of valve gate and bonnet flange seal. Ordering number on request.
### Dimensions: Valve Series 022

#### Valve seat side

<table>
<thead>
<tr>
<th>D x D</th>
<th>A (mm)</th>
<th>G (inch)</th>
<th>H (inch)</th>
<th>L (inch)</th>
<th>N (inch)</th>
<th>O (inch)</th>
<th>Q (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 x 222</td>
<td>50 (1.97)</td>
<td>203.5 (8.01)</td>
<td>43 (1.69)</td>
<td>251.5 (9.9)</td>
<td>112 (4.41)</td>
<td>340 (13.39)</td>
<td>75 (3.13)</td>
</tr>
<tr>
<td>46 x 236</td>
<td>50 (1.97)</td>
<td>251.5 (9.9)</td>
<td>49 (1.93)</td>
<td>322.5 (12.7)</td>
<td>119 (4.69)</td>
<td>340 (13.39)</td>
<td>90 (3.54)</td>
</tr>
<tr>
<td>50 x 336</td>
<td>60 (2.36)</td>
<td>251.5 (9.9)</td>
<td>49 (1.93)</td>
<td>322.5 (12.7)</td>
<td>119 (4.69)</td>
<td>440 (17.32)</td>
<td>90 (3.54)</td>
</tr>
</tbody>
</table>

#### Rear side: type B

<table>
<thead>
<tr>
<th>D2 (mm)</th>
<th>D (mm)</th>
<th>D1 (mm)</th>
<th>D2 (inch)</th>
<th>D (inch)</th>
<th>D1 (inch)</th>
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<tbody>
<tr>
<td>275</td>
<td>222</td>
<td>32</td>
<td>10.83</td>
<td>8.74</td>
<td>1.26</td>
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<tr>
<td>305</td>
<td>236</td>
<td>46</td>
<td>12.01</td>
<td>9.29</td>
<td>1.81</td>
</tr>
<tr>
<td>405</td>
<td>336</td>
<td>50</td>
<td>15.94</td>
<td>13.23</td>
<td>1.97</td>
</tr>
</tbody>
</table>

#### Rear side: type A

- ▼ valve seat side
- • required for dismantling
- ◎ electrical connection
- ○ position indicator
Dimensions: Insert Series 032

<table>
<thead>
<tr>
<th>D1 x D mm</th>
<th>32 x 222</th>
<th>46 x 236</th>
<th>50 x 336</th>
</tr>
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<tbody>
<tr>
<td>mm</td>
<td>inch</td>
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<td>inch</td>
</tr>
<tr>
<td>D</td>
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<td>236</td>
<td>336</td>
</tr>
<tr>
<td>mm</td>
<td>8.74</td>
<td>9.29</td>
<td>13.23</td>
</tr>
<tr>
<td>inch</td>
<td>1.26</td>
<td>1.81</td>
<td>1.97</td>
</tr>
<tr>
<td>D1</td>
<td>32</td>
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<td></td>
</tr>
<tr>
<td>mm</td>
<td>1.26</td>
<td>1.81</td>
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<tr>
<td>G</td>
<td>203.5</td>
<td>251.5</td>
<td>251.5</td>
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<td>inch</td>
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<tr>
<td>H</td>
<td>43</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>mm</td>
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<td>1.93</td>
<td></td>
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<td>L</td>
<td>251.5</td>
<td>322.5</td>
<td>322.5</td>
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<tr>
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<td>M</td>
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<tr>
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<td>7.09</td>
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<tr>
<td>inch</td>
<td>5.12</td>
<td>5.12</td>
<td>5.12</td>
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<tr>
<td>N</td>
<td>100</td>
<td>130</td>
<td>130</td>
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<tr>
<td>mm</td>
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<td>5.12</td>
<td>5.12</td>
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<tr>
<td>inch</td>
<td>11.42</td>
<td>12.6</td>
<td>12.6</td>
</tr>
<tr>
<td>O</td>
<td>290</td>
<td>320</td>
<td>440</td>
</tr>
<tr>
<td>mm</td>
<td>11.42</td>
<td>12.6</td>
<td>17.32</td>
</tr>
<tr>
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<td>12.6</td>
<td>17.32</td>
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</tbody>
</table>

© electrical connection
© position indicator