DIAPHRAGM VALVE
MV 309

Nominal size DN 15–32
Nominal size 1/2“–1 1/4”
Pressure PN 6–10 bar

Features
• pneumatic diaphragm valve DN 15–32
• compact piston drive
• medium pressure of up to 10 bar with EPDM and FPM diaphragms
• medium pressure of up to 6 bar with PTFE (EPDM) diaphragms
• visual position indicator NC, NO, DA
• NAMUR-compliant air connections
• resistant to contaminated medium
• market standard installation length

Additional options on demand
• silicone free

Accessories
• Limit switch unit
• pilot solenoid valve

Attention
Maximum control pressure (air) 6 bar

Pictogram Diaphragm valve MV 309

- **Connection**: G 1/4” Namur
- **Limit Switch Box**: Micro Switch NO
  Proximity Switch NAMUR NC
  Proximity Switch PNP NO
- **Pilot Valves**: VS2 - 24V I 230V
- **NC | NO | DA**

 pneumatic

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC-U</td>
<td>PP</td>
<td>PVDF</td>
</tr>
</tbody>
</table>

**Diaphragm / Connection-Sealing**

- EPDM* / EPDM
- FPM* / FPM
- PTFE (EPDM) / FPM

- EPDM* / -
- FPM* / -
- PTFE (EPDM) / -

* EPDM and FPM in Combination with PVC-U resp. PP-Valve.

**Connection Material** (process connection)

1. **PVC-U socket** DIN, ANSI, BS, JIS
   - female thread Rp 1.4571
   - male thread R PE100
   - spigot DIN (95mm)
2. **PP socket** DIN
   - female thread Rp
   - spigot (IR)
3. **PVDF socket** DIN
   - PVDF spigot (IR)
4. **PVC-U spigot fix**
   - PP/St. flange DIN, ANSI
   - GFK flange DIN
5. **PP spigot fix** *
   - PP/St. flange DIN, ANSI
   - GFK flange DIN
6. **PVDF spigot fix** *
   - PP/St. flange DIN, ANSI

* only for socket welding.

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Print-No. 300163
TR MA DE Rev002
Diaphragm valve MV 309

Use
- Chemical plant manufacture
- Industrial plants
- Water treatment
- Environmental technology

Application
- for shutting off pipelines and, to a limited extent, for control purposes in technical processing plants

Flow medium
- neutral and aggressive fluid or gaseous medium types, also with abrasive constituents, provided that the valve components coming into contact with the medium are resistant at the operating temperature in accordance with the Stübbe resistance guide.
- For medium types with a high diffusion tendency, e.g. nitric or sulphuric acid, please contact us and indicate the exact operating conditions

Flow direction
- As required

Stübbe resistance guide

Testing
- Requirements and testing according to DIN EN 16138 and ISO 9393.
- Leakage rate A tested according to DIN EN 12266

Nominal pressure (H₂O, 20 °C)
- PN 10 bar with EPDM and FPM diaphragms
- PN 6 bar with PTFE (EPDM) diaphragms

Medium temperature
- See graphics „Pressure/temperature diagram“

Operating pressure
- See graphics „Pressure/temperature diagram“

Material with medium contact
Valve body:
- PVC-U, PP, PVDF
Diaphragm:
- EPDM, FPM, PTFE (EPDM diaphragm, PTFE coating on the medium side)
Sealing element:
- FPM, EPDM

Material without medium contact
Bonnet:
- PP glass fiber reinforced
Screws:
- stainless steel (1.4301)

Size
- DN 15–32

Housing
- PVC-U, PP, PVDF

Actuation
- with pneumatic lift actuator

Device connection
- see pictograph „Diaphragm valve MV309“

Control function
- NC (normally closed)
- NO (normally open)
- DA (double acting)

Control pressure
- NC, NO: max. 6 bar
- DA: max. 4 bar

Mounting position
- as required, preferably bonnet at the top

Fastening
- via threaded inserts (metal inserts) in the valve body

Color
- Bonnet: orange, RAL 2004
- Valve body: PVC-U, gray, RAL 7011
- Valve body: PP, gray, RAL 7032
- Valve body: PVDF, opaque, yellowish-white

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The pressure/temperature limits of the materials are valid for the stated nominal pressures and a service life of 25 years. These values are guide values for flow medium types which do not negatively impact the physical and chemical characteristics of the valve material. It may be necessary to take diminution factors into consideration. The operating life of the wear parts depends on the conditions of use. Please note that, while PTFE has almost universal chemical resistance, the service life of PTFE-coated diaphragms may be reduced by concentrated medium types with a permeation tendency (e.g.: hydrofluoric acid, nitric acid, hydrochloric acid).

Pressure/temperature diagram

Pressure loss curve (standard values for H₂O, 20°C)

Pressure loss and kv value

The diagram shows the pressure loss Δp in relation to the flow Q.

Conversion formulas

\[ c_v = k_v \times 0.07 \]
\[ f_v = k_v \times 0.0585 \]

Units

\( k_v \) [l/min]
\( c_v \) [gal/min] US
\( f_v \) [gal/min] GB

Intervals for diaphragm inspections, guide values:

<table>
<thead>
<tr>
<th>Diaphragm material</th>
<th>max. number of actuations</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPDM</td>
<td>150,000</td>
</tr>
<tr>
<td>FPM</td>
<td>100,000</td>
</tr>
<tr>
<td>PTFE (EPDM)</td>
<td>100,000</td>
</tr>
</tbody>
</table>

These recommendations are based on extensive laboratory tests and long-term experience in the industry. They apply to use at a temperature of 20°C, with water and at nominal pressure. We recommend shorter inspection intervals for different operating conditions, in particular for higher temperatures, the use of chemicals or medium types containing solid particles and / or abrasive medium types.
Control pressure connection
NAMUR-compliant connection diagram

Control pressure open
Connection A | Connection B
--- | ---
Normally closed (NC) | »OPEN«
Normally open (NO) | »CLOSER«
Double-acting (DA) | »CLOSER« | »OPEN«

Maintenance note
Screw torque (Nm)

<table>
<thead>
<tr>
<th>d (mm)</th>
<th>20</th>
<th>25</th>
<th>32</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Md (Nm)</td>
<td>5</td>
<td>5</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Check the tightening torque of the housing screws at certain intervals in case of setting of the diaphragms and/or temperature fluctuations.

Control pressure volume (standard liters)

<table>
<thead>
<tr>
<th>d (mm)</th>
<th>20</th>
<th>25</th>
<th>32</th>
<th>40</th>
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<tbody>
<tr>
<td>NC</td>
<td>0.049</td>
<td>0.049</td>
<td>0.072</td>
<td>0.072</td>
</tr>
<tr>
<td>NO</td>
<td>0.087</td>
<td>0.087</td>
<td>0.176</td>
<td>0.176</td>
</tr>
<tr>
<td>DA (opening)</td>
<td>0.049</td>
<td>0.049</td>
<td>0.072</td>
<td>0.072</td>
</tr>
<tr>
<td>DA (closing)</td>
<td>0.087</td>
<td>0.087</td>
<td>0.176</td>
<td>0.176</td>
</tr>
</tbody>
</table>

Control
• 3/2-way solenoid valves for NC/NO actuators
• 5/2-way solenoid valves for DA actuators

Visual position indicator
• X1 valve is open
• X2 valve is closed

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<table>
<thead>
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<th>20</th>
<th>25</th>
<th>32</th>
<th>40</th>
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<tbody>
<tr>
<td>DN (mm)</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>DN (inch)</td>
<td>1/2</td>
<td>3/4</td>
<td>1</td>
<td>1 1/4</td>
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<table>
<thead>
<tr>
<th>Housing material</th>
<th>Insert variant</th>
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<tbody>
<tr>
<td>PP / PVC-U</td>
<td>GFK flange DIN</td>
</tr>
<tr>
<td>PP / PVC-U / PVDF</td>
<td>PP/s.l. flange ANSI</td>
</tr>
<tr>
<td>PVDF</td>
<td>PP/s.l. flange DIN</td>
</tr>
<tr>
<td></td>
<td>b 12 14 15 17</td>
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<tr>
<td></td>
<td>b 12 12 16 16</td>
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<td>b 13 14-5 15-5 17-5</td>
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<td></td>
<td>B 72 72 92 92</td>
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<tr>
<td></td>
<td>b1 47.5 47.5 55.5 55.5</td>
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<td></td>
<td>d2 14 14 14 18</td>
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<td>D 95 105 113 130</td>
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<td></td>
<td>K PP / PVC-U 65 75 85 100</td>
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<tr>
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<td>K PP / PVC-U / PVDF 60 70 80 89</td>
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<td>K PVDF PP/s.l. flange DIN 65 75 85 100</td>
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</tr>
<tr>
<td></td>
<td>w 26 26 26 45</td>
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<tr>
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<td>z 4 4 4 4</td>
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all dimensions in mm / * dimensions in inch
Components

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Designation</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>valve body</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Diaphragm</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Lift drive</td>
</tr>
<tr>
<td>3.3</td>
<td>1</td>
<td>Pressure piece</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Washer</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>Hexagon screw (housing screw)</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>Union nut</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Union end</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>O-ring</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Indicator pin</td>
</tr>
</tbody>
</table>

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