Springless Diaphragm Valves (1.125 in.)
For Modular Gas Systems

DE Series
- 1.125 in. C-seal and W-seal designs
- Available in two- and three-port configurations
- Compact pneumatic and manual actuators
- Fixed orientation of actuator to body for consistency of installation
- Corner chamfers on outlet side of body for visual indication of flow direction

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Features

Swagelok® DE series springless diaphragm valves are available with a variety of actuation options for ease of integration into your 1.125 in. C-seal or W-seal modular gas system.

Pneumatic Actuator
- Normally closed and normally open models.
- Formed aluminum housing (threadless design) for maximized efficiency.
- Permanently attached to body assembly providing maintenance-free operation.
- Fixed orientation of actuator to body for ease of installation—Swagelok logo is always on outlet port side of valve.
- Visual indication of valve state and pneumatic actuation with manual integral lockout override hybrid options are also available.

Manual Lockout Actuator
- One-quarter turn window handle for quick actuation.
- Standard integral lockout provides positive visual and mechanical lockout in the closed position.
- Handle shape and window provide open/closed indication.
- Handle orientation to body is fixed for ease of installation.
- Manual actuator with integral lockout positioned perpendicular to the handle is also available.

Seat
- Fully contained PFA seat design provides:
  - enhanced purity and improved thermal stability
  - excellent helium leak test performance
  - minimal particle generation
  - long cycle life.

Diaphragm
- Cobalt-based superalloy (UNS R30003) material for strength and corrosion resistance
- Optimal design for cycle life and flow
- High integrity seal
- Weld isolation ring for enhanced diaphragm cycle life (patent pending).

Body
- 316L VIM-VAR stainless steel body material for ultrahigh-purity applications
- Fully swept flow path:
  - minimizes entrapment area
  - facilitates purging
  - maximizes flow capacity.
- Corner chamfers on outlet port side of body
  - provide visual indication of flow direction (top view)
  - match actuator orientation for ease of installation—Swagelok logo is always on outlet port side of valve.
Materials of Construction

<table>
<thead>
<tr>
<th>Component</th>
<th>Grade / Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Button</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Weld isolation ring</td>
<td>S17400 SS</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>Cobalt-based superalloy (UNS R30003) / AMS 5876</td>
</tr>
<tr>
<td>Seat</td>
<td>Type II, high-purity grade PFA / ASTM D3307</td>
</tr>
<tr>
<td>Body</td>
<td>316L VIM-VAR SS / SEMI F20 Ultrahigh-Purity[^1]</td>
</tr>
<tr>
<td>Bolt retention ring</td>
<td>EPDM, blue</td>
</tr>
<tr>
<td>Lubricant</td>
<td>PTFE-based</td>
</tr>
</tbody>
</table>

[^1] 20% minimum elongation allowed.

Manual Lockout Actuator

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handle</td>
<td>Nylon</td>
</tr>
<tr>
<td>Cylinder</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Handle stem</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Handle pin</td>
<td>300 series SS</td>
</tr>
<tr>
<td>Cap screw</td>
<td>300 series SS</td>
</tr>
<tr>
<td>Lock lever</td>
<td>300 series SS</td>
</tr>
<tr>
<td>O-rings</td>
<td>Buna N</td>
</tr>
</tbody>
</table>

Pneumatic Actuator

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder, cap</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Pistons</td>
<td>Aluminum</td>
</tr>
<tr>
<td>O-rings</td>
<td>Buna N</td>
</tr>
<tr>
<td>Springs</td>
<td>S17700 SS</td>
</tr>
<tr>
<td>Indicator ball</td>
<td>Buna N</td>
</tr>
</tbody>
</table>

Wetted components listed in *italics*. Actuator component materials shown for standard manual and pneumatic actuators; contact your authorized Swagelok sales and service representative for optional actuator additional materials.

Technical Data

<table>
<thead>
<tr>
<th>Working Pressure</th>
<th>Temperature Rating</th>
<th>Flow Coefficient (Cv)^[^2]</th>
<th>Orifice in. (mm)</th>
<th>Internal Volume in.³ (cm³)</th>
<th>Pneumatic Actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td>psig (bar)</td>
<td>°F (ºC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>Burst</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacuum to 125 (8.6)</td>
<td>&gt;3200 (220)</td>
<td>14 to 150 (-10 to 65)</td>
<td>0.3</td>
<td>0.052 (0.85) (2-port)</td>
<td>normally closed 60 to 120 (4.1 to 8.2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.062 (1.02) (3-port)</td>
<td>normally open and normally closed with manual integral lockout override 60 to 90 (4.1 to 6.2)</td>
</tr>
</tbody>
</table>


Process Specifications

See Swagelok Ultrahigh-Purity Process Specification (SC-01) catalog, MS-06-61, and Swagelok Special Cleaning and Packaging (SC-11) catalog, MS-06-63, for details on processes, process controls, and process verification.
Performance Specifications

Refer to DE Series Springless Diaphragm Valves (1.125 in.) Technical Report, MS-06-113, for additional information on surface finish, helium leak testing, particle counting, moisture analysis, hydrocarbon analysis, ionic cleanliness, lab cycle testing, and hydrostatic burst pressure testing data.

Ordering Information and Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.

To order a valve with a manual actuator and a P process designator, select an ordering number.

<table>
<thead>
<tr>
<th>Seal Design</th>
<th>Ordering Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Port Manual</td>
<td></td>
</tr>
<tr>
<td>C-seal</td>
<td>6LVV-MSM-DE3-2-P</td>
</tr>
<tr>
<td>W-seal</td>
<td>6LVV-MSM-DE3-W2-P</td>
</tr>
<tr>
<td>3-Port Manual</td>
<td></td>
</tr>
<tr>
<td>C-seal</td>
<td>6LVV-MSM-DE3-3-P</td>
</tr>
<tr>
<td>W-seal</td>
<td>6LVV-MSM-DE3-W3-P</td>
</tr>
</tbody>
</table>

To order a valve with a P1 process designator, replace P with P1.

Example: 6LVV-MSM-DE3-2-P1

To order a manual valve with integral lockout perpendicular to the handle, add -M4 to the valve ordering number.

Example: 6LVV-MSM-DE3-2-P-M4

To order a valve with pneumatic actuation, add -C for a normally closed actuator or -O for a normally open actuator.

Example: 6LVV-MSM-DE3-2-P-C

To order a pneumatically actuated valve with visual indication add -PI to the ordering number.

Example: 6LVV-MSM-DE3-2-P-C-PI

To order a normally closed pneumatic valve with manual integral lockout override, remove -C and add -HYB-PI to the ordering number.

Example: 6LVV-MSM-DE3-2-P-HYB-PI

Caution: Do not mix or interchange parts with those of other manufacturers.
Introduction
Since 1947, Swagelok has designed, developed, and manufactured high-quality, general-purpose and specialty fluid system products to meet the evolving needs of global industries. Our focus is on understanding our customers' needs, finding timely solutions, and adding value with our products and services.

We are pleased to provide this global edition of the book-bound Swagelok Product Catalog, which compiles more than 100 separate product catalogs, technical bulletins, and reference documents into one convenient, easy-to-use volume. Each product catalog is up to date at the time of printing, with its revision number shown on the last page the individual catalog; for example, the Swagelok Gaugeable Tube Fittings and Tube Adapters catalog is MS-01-140, RevW. Subsequent revisions will supersede the printed version and will be posted on the Swagelok website and in the Swagelok electronic Desktop Technical Reference (eDTR) tool.

For more information, visit your Swagelok website or contact your authorized Swagelok sales and service representative.

Safe Product Selection
When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Caution: Do not mix or interchange parts with those of other manufacturers.

Warranty Information
Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.

Swagelok, Ferrule-Pak, Goop, Hinging-Collecting, IGC, Kenmac, Micro-Fit, Nupro, Snoop, Sno-Trk, SWAK, VCO, VCR, Ultra-Torr, Whitley—TM Swagelok Company
15-7 PH—TM AK Steel Corp.
AccuTrak, Beacon, Westlock—TM Tyco International Services
Afas—TM Asahi Glass Co., Ltd.
ASCO, El-O-Matic—TM Emerson
AutoCAD—TM Autodesk, Inc.
CSA—TM Canadian Standards Association
Craxin, DuPont, Kairez, Krytox, Teflon, Viton—TM E.I. duPont Nemours and Company
DeviceNet—TM ODVA
Dyno, Eglloy, TFE—TM Dyno
Eglloy—TM Eglloy Specialty Metals
FM—TM FM Global
Grafite—TM GrafTech International Holdings, Inc.
Honeywell, MICRO SWITCH—TM Honeywell
MAG—TM MAG Valves
Microsoft, Windows—TM Microsoft Corp.
NACE—TM NACE International
PH 15-7 Mrc, 17-7 PH—TM AK Steel Corp
picofast—Hans Turck KG
Pillar—TM Nippon Pillar Packing Company, Ltd.
Raychem—TM Tyco Electronics Corp.
Sandvik, SAF 2507—TM Sandvik AB
Simriz—TM Freudenberg-NOK
SolidWorks—TM SolidWorks Corporation
UL—Underwriters Laboratories Inc.
Xylan—TM Whitford Corporation
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