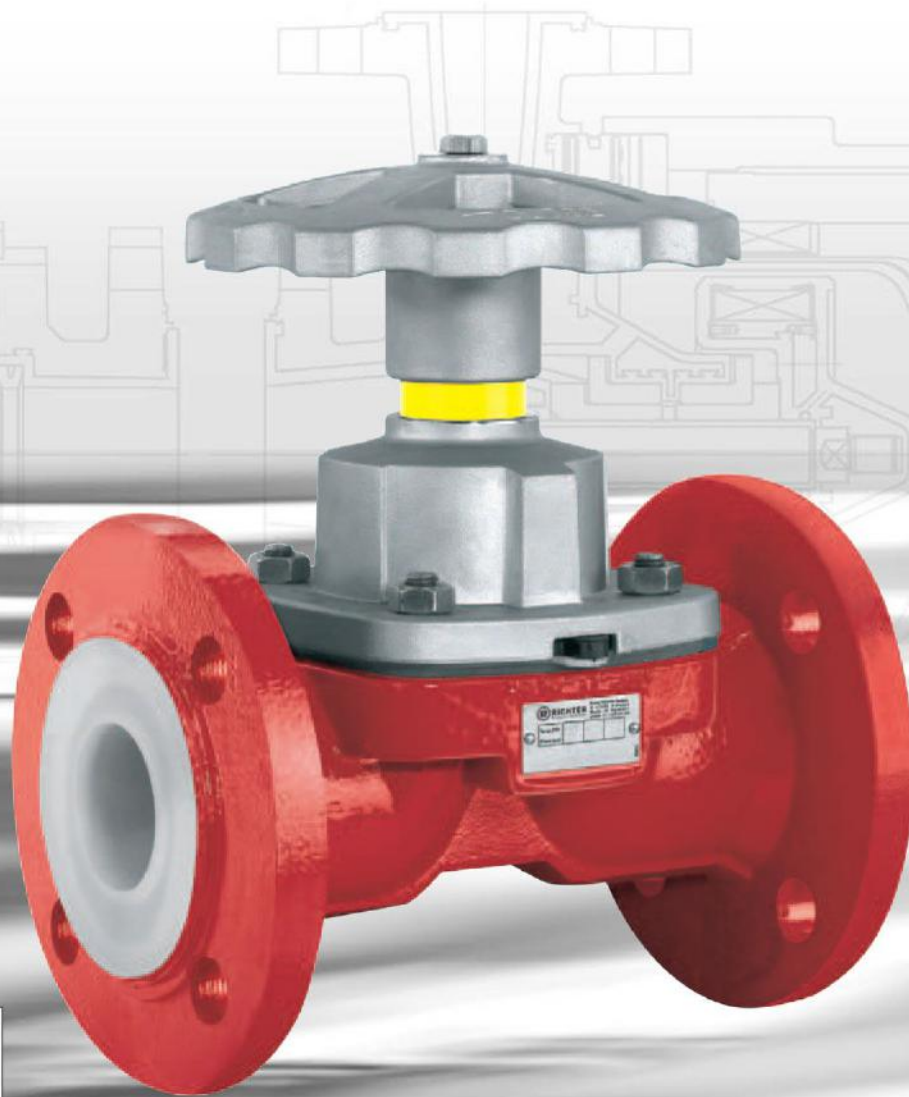


Richter Diaphragm Shut-Off and Control Valves



Lining PFA/PTFE,
optionally PFA-L antistatic

Hermetically tight

Long-life
modified PTFE diaphragm



RICHTER
Process Pumps & Valves

Diaphragm shut-off and control valves

Richter diaphragm valves are easy to use and reliable. They are reasonably priced and are therefore some of the most widely used shut-off, control and throttling valves.

- PFA/PTFE lined diaphragm valves are used for corrosive, pure and ultrapure liquids, gases and vapours in chemical, pharmaceutical, food and industrial processes.
- Hermetically tight
- FDA-compliant, wetted PFA and PTFE materials
- Soft-sealing, gas-tight
- Operating pressures from -30 to +150 °C
- Rated pressure: PN 16 (up to DN 50 or 2"), PN 10 (DN 80 or 3" and larger); for operating pressure and vacuum, see page 4.
- Solids-free or slightly solids-laden media.

Product features

- Leakage rate in the seat: DIN EN 12266-1, leakage rate A: gas-tight, 0 bubbles
- Face-to-face optionally
 - Type MV: to ISO 5752-R.1 (DIN 3202 F1), flanges ISO 7005-2, on request drilled to ASME Cl. 150, BS or JIS
 - Type MVM: to MSS SP-88, flanges to ASME B16.5 Cl. 150
- Anti-adhesive wetted PFA/PTFE surfaces
- Clean-room applications: stainless steel version with PFA lining for type MV DN 15+20
- Top-entry design: maintenance possible without dismantling
- Identification of the valve to DIN EN 19, ASME B16.34

Type codes

- Manual actuation MV/..., MVM/...
- Remote actuation MVP/..., MVMP/...

Lining

- PFA .../F
- antistatic PFA-L .../F-L

Remote actuation

- With pneumatic actuators
 - of column/yoke-style design (e.g. Samson, Valtek, Fisher, Arca etc.) or
 - of compact design, details on request
- Electric actuators
- Accessories, e.g. positioners and limit switches



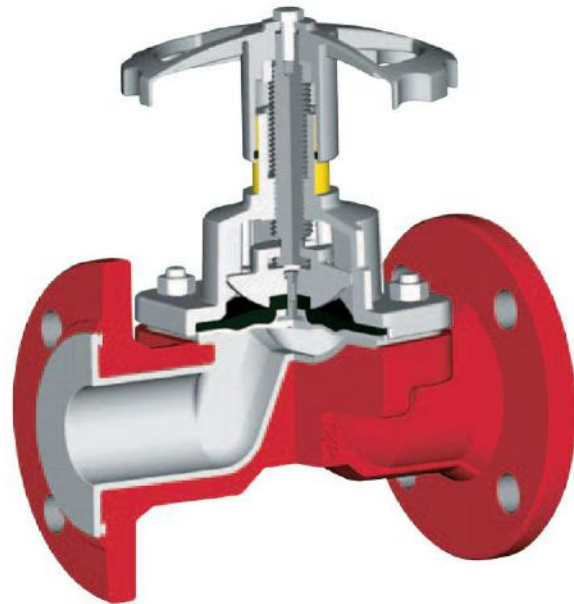
MVP with yoke-style actuator



MVP with compact actuator

① Thick-walled PFA lining of the valve body

- Lining thickness 3-3.5 mm
- High permeation resistance
- Vacuum-proof anchored
- Almost translucent, thus optimum quality assurance
- Antistatic PFA-L on request



④ Hermetic glandless sealing against the valve bonnet and the atmosphere

optionally with safety stuffing box, also with monitor connection, see page 3.

⑤ Adjustable travel stop

limits the seating thrust and thus prevents damage to the diaphragm

⑥ Yellow travel indicator

visible from distance

⑦ Bonnet, handwheel, valve stem and compressor made of stainless steel 1.4408 (CF8M)

⑧ Optional secondary O-ring sealing made of FKM (e.g. Viton®), protects interior against corrosive atmosphere, splash water, cleaning agents and dust.

⑨ Compressor with T-groove

Easy assembly of the internals

⑩ PTFE/graphite bearing

minimizes friction between stem and compressor

⑪ Pressure-bearing body made of ductile cast iron EN-JS 1049 or ASTM A395, absorbs system and pipe forces.

② Diaphragm made of modified PTFE

The quality and functionality of the diaphragm are crucial for the reliability and durability of the valve. Top priority is given to these aspects in Richter diaphragm valves.

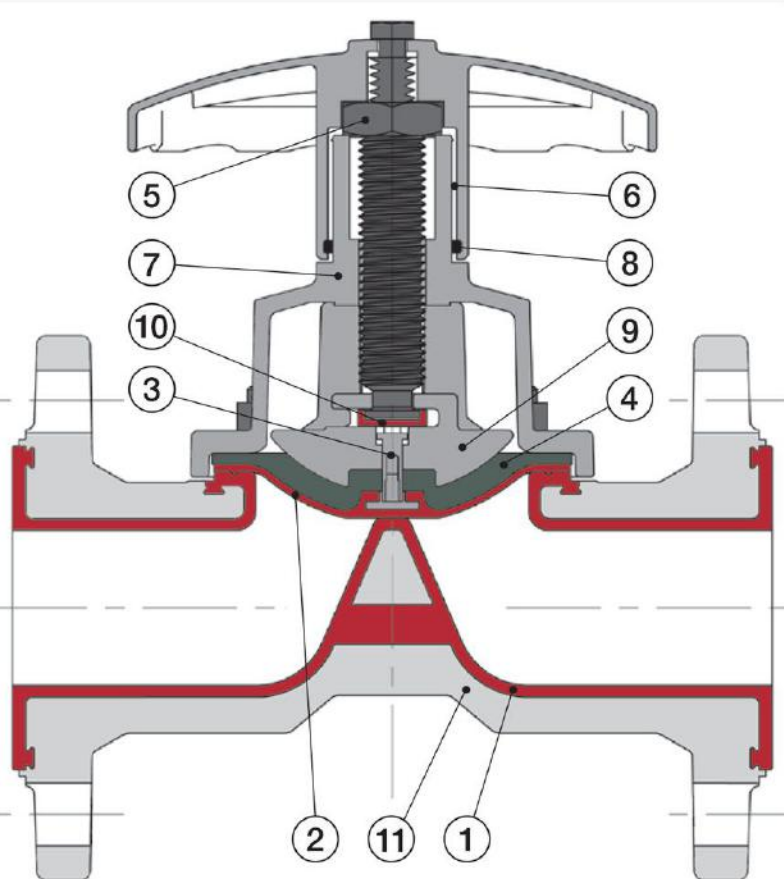


- **Greater fatigue strength under reversed bending stresses and dimensional stability** even after many switching cycles and at fluctuating temperatures
- Higher density and **lower permeability**
- **All-round sealing bead** limits the medium chamber exactly and thus prevents residues in sealing gaps which are difficult to flush
- **Thick-walled, more permeation-resistant** than diaphragms made of laminated PTFE

- Enclosed all-round by valve bonnet, prevents the flow of PTFE
- **Optionally three layers** with PVDF intermediate diaphragm for highly permeating media

③ Floating tube nut diaphragm attachment with stainless steel compressor

- ensures uniform distribution of the stem closing force and
- therefore prevents localised loading and the sintered diaphragm bolt from being pushed through



Required seating thrust in N for actuator sizing

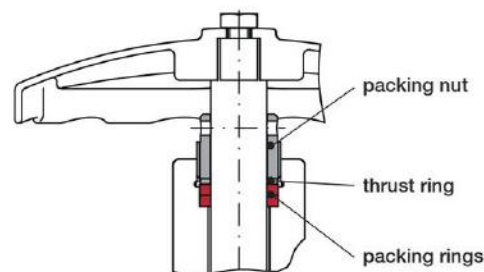
(p_1 is stated at $p_2 = 0$ bar)

| DN | | bar (psi) | | | | | | | | | | | | | | | |
|-----|--------|------------|--------|----------|--------|----------|--------|---------|----------|----------|----------|----------|--|--|--|--|--|
| mm | Zoll | 1 (14.5) | 2 (29) | 3 (43.5) | 4 (58) | 5 (72.5) | 6 (87) | 8 (116) | 10 (145) | 12 (174) | 14 (203) | 16 (232) | | | | | |
| 15 | 1/2" | 976 | 1.040 | 1.105 | 1.181 | 1.246 | 1.311 | 1.441 | 1.582 | 1.712 | 1.842 | 1.972 | | | | | |
| 20 | 3/4" | 1.370 | 1.473 | 1.572 | 1.676 | 1.779 | 1.880 | 2.085 | 2.287 | 2.494 | 2.697 | 2.904 | | | | | |
| 25 | 1" | 1.370 | 1.473 | 1.572 | 1.676 | 1.779 | 1.880 | 2.085 | 2.287 | 2.494 | 2.697 | 2.904 | | | | | |
| 40 | 1 1/2" | 1.598 | 1.863 | 2.133 | 2.398 | 2.663 | 2.931 | 3.463 | 3.997 | 4.529 | 5.073 | 5.616 | | | | | |
| 50 | 2" | 1.598 | 1.863 | 2.133 | 2.398 | 2.663 | 2.931 | 3.463 | 3.997 | 4.529 | 5.073 | 5.616 | | | | | |
| 80 | 3" | 2.904 | 3.645 | 4.383 | 5.120 | 5.861 | 6.598 | 8.077 | 9.556 | | | | | | | | |
| 100 | 4" | 5.019 | 6.105 | 7.190 | 8.273 | 9.360 | 10.446 | 12.616 | 14.786 | | | | | | | | |
| 150 | 6" | 6.665 | 8.744 | 10.825 | 12.907 | 14.985 | 17.067 | | | | | | | | | | |
| 200 | 8" | on request | | | | | | | | | | | | | | | |

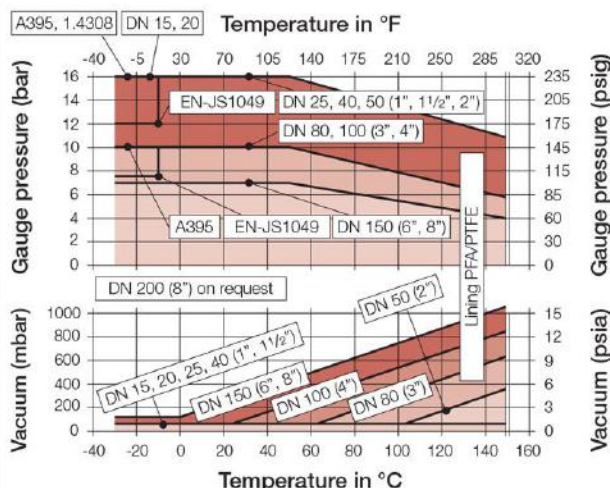
Other nominal sizes on request. Seating thrusts apply to PFA-lined body and modified PTFE diaphragm. Other materials may result in different thrusts.

Safety stuffing box optional

- for hazardous or environmentally critical media
- can be adjusted from outside by hand
- acts independently
- on request with monitor connection



Pressure/temperature range



For low-temperature applications please observe the local regulations!

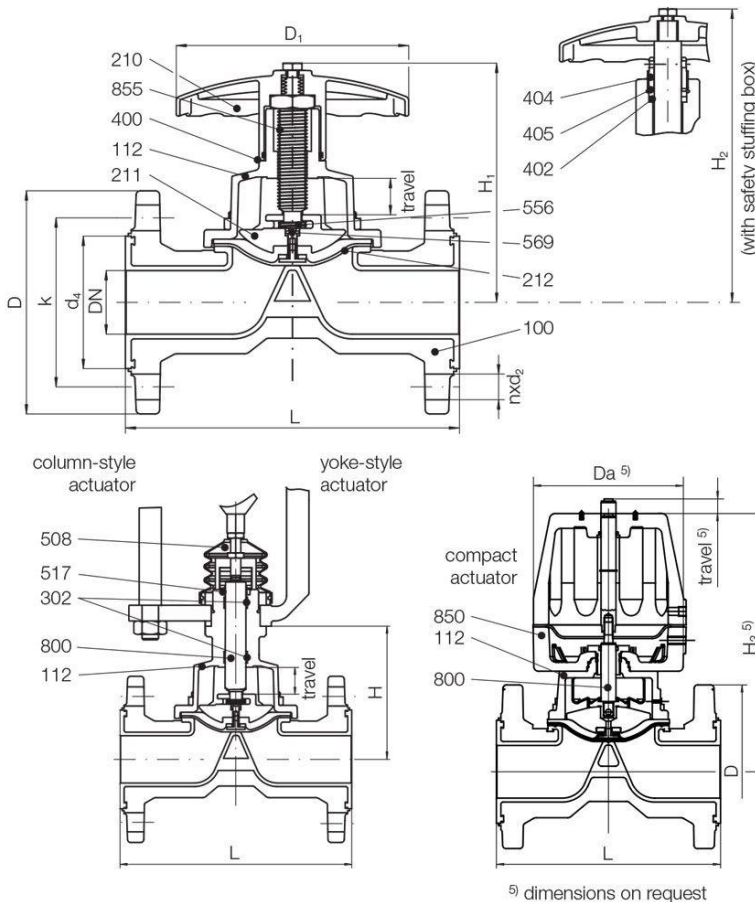
Dimensions, weights, materials

Dimensions (mm) for face-to-face lengths ISO 5752-R 1, MSS SP-88

| DN | mm | inch | L | | D | | k | | d ₄ | | n x d ₂ | | H1 | H2 | H | D1 | Travel | k _{v100} m ³ /h ¹⁾ | Weight ²⁾ kg |
|-----|-----|--------|--------------------|-------|-----|-------|-----|-------|----------------|-----|--------------------|-----------------|-----|-----|--------------|--------------|--------|--|----------------------------|
| | | | ISO | MSS | ISO | MSS | ISO | MSS | ISO | MSS | ISO | MSS | | | | | | | |
| 15 | 15 | 1/2" | 130 | - | 95 | - | 65 | - | 41 | - | 4x14 | - | 100 | 145 | 68 | 95 | 6.4 | 2.8 | 2.8 |
| 20 | 20 | 3/4" | 150 | - | 105 | - | 75 | - | 54 | - | 4x14 | - | 125 | 180 | 69 | 95 | 12 | 8 | 4 |
| 25 | 25 | 1" | 160 | 147.5 | 115 | 110 | 85 | 79.4 | 64 | 51 | 4x14 | 4x15.9 13UNC | 127 | 183 | 92 | 95 | 12 | 10 | 4.4 |
| 32 | 32 | 1 1/4" | Details on request | | | | | | | | | | | | | | | | |
| 40 | 40 | 1 1/2" | 200 | 175 | 150 | 127 | 110 | 98.4 | 84 | 73 | 4x19 | 4x15.9 | 170 | 229 | 125.5 | 160 13UNC | 18 | 30 | 8.3 |
| 50 | 50 | 2" | 230 | 200 | 165 | 155 | 125 | 120.6 | 98 | 92 | 4x19 | 4x19 | 177 | 231 | 130 11UNC | 160 | 27 | 52 | 11.3 |
| 65 | 65 | 2 1/2" | Details on request | | | | | | | | | | | | | | | | |
| 80 | 80 | 3" | 310 | 260 | 200 | 190.5 | 160 | 152.4 | 134 | 127 | 8x19 | 4x19 | 232 | 310 | 172 | 190 | 40 | 128 | 23 |
| 100 | 100 | 4" | 350 | 327 | 220 | 155.7 | 180 | 190.5 | 154 | 157 | 8x19 | 8x19 | 254 | 322 | 193 | 230 | 40 | 312 | 32 |
| 125 | 125 | 5" | Details on request | | | | | | | | | | | | | | | | |
| 150 | 150 | 6" | 480 | 416 | 285 | 279.4 | 240 | 241.3 | 208 | 212 | 8x23 | 8x22 | 378 | 438 | 275 | 350 | 60 | 632 | 62 |
| 200 | 200 | 8" | Details on request | | | | | | | | | | | | | | | | |

1) Conversion to Cv = k_v x 1.165 (USgpm) or Cv = k_v x 0.971 (IMPgpm)

2) manually actuated, mean value from ISO/ASME/MSS face-to-face, depending on face-to-face standard approx. +/- 5% deviation

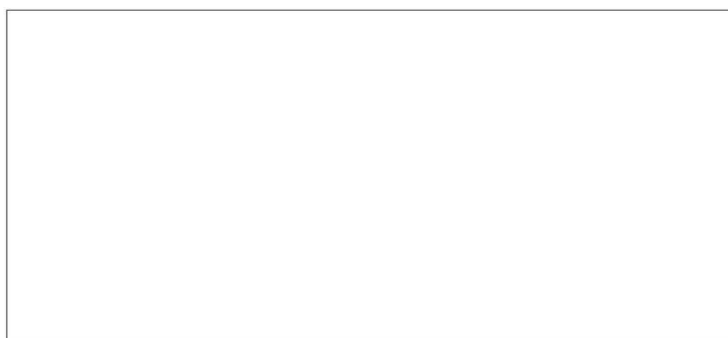


Components and materials

| Item | Designation | Material |
|---------|-------------------------------|---|
| 100 | Body | Lining: PFA, PFA-L antistatic on request |
| | Shell MV (ISO) | Ductile cast iron EN-JS 1049/ASTM A395 (DN 25-150) ASTM A395 (DN 25-100) ⁴⁾ stainless steel 1.4308/CF8 (DN 15-20) |
| | Shell MVM (MSS) | Ductile cast iron EN-JS 1049/ASTM A395 (DN 1" - 6") |
| 112 | Bonnet | Stainless steel 1.4408/CF8M |
| 210 | Hand wheel | Stainless steel 1.4408/CF8M |
| 211 | Compressor | Stainless steel |
| 212 | Diaphragm | modified PTFE, diaphragm support EPDM |
| 302 | Guide ring ³⁾ | PTFE/carbon |
| 400 | O-ring ¹⁾ | FKM (e.g. Viton®) |
| 402 | Packing ring ²⁾ | PTFE |
| 404 | Packing nut ²⁾ | Stainless steel |
| 405 | Thrust ring ²⁾ | Stainless steel |
| 508 | Travel stop ³⁾ | Stainless steel |
| 517 | Scraper ring ³⁾ | FKM (e.g. Viton®) |
| 556 | Bearing | PTFE/graphite |
| 569 | Tube nut | Stainless steel |
| 800 | Valve stem ³⁾ | Stainless steel |
| 850 | yoke or column style actuator | acc. to specification |
| | compact actuator | plastic housing, acc. to specification |
| 855 | Stem | Stainless steel |
| w/o No. | Screws, nuts | Stainless steel |

¹⁾ optional ²⁾ with optional safety stuffing box
³⁾ remotely actuated version ⁴⁾ without CE-tag

Presented by:



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