



**RICHTER**  
Process Pumps & Valves

*MV, MVM*

# DIAPHRAGM VALVES

*SHUT-OFF &  
CONTROL VALVES*

- ✓ *THICK-WALLED CORROSION  
RESISTANT PFA LINING*
- ✓ *PERMEATION RESISTANT  
LONG-LIFE DIAPHRAGM*
- ✓ *FDA-COMPLIANT  
WETTED MATERIALS*
- ✓ *EASY TO USE & RELIABLE*



## 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, 25, 40, 50, 80 (½", ¾", 1", 1½", 2", 3")
- 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



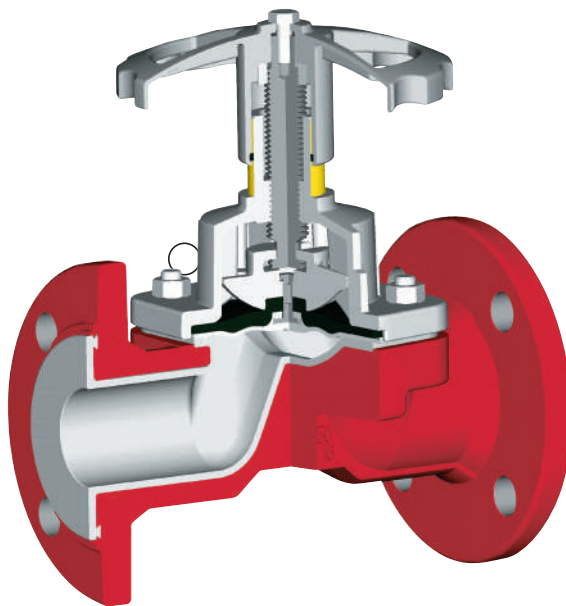
MVP with yoke-style actuator



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 Compressor with T-groove

Easy assembly of the internals

### ⑨ PTFE/graphite bearing

minimizes friction between stem and compressor

### ⑩ Pressure-bearing body made of ductile cast iron

EN-JS 1049 or ASTM A395, absorbs system and pipe forces. Up to DN 80 also available in stainless steel.



# MV, MVM

## 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.



EPDM diaphragm support

mod.-PTFE diaphragm

- **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

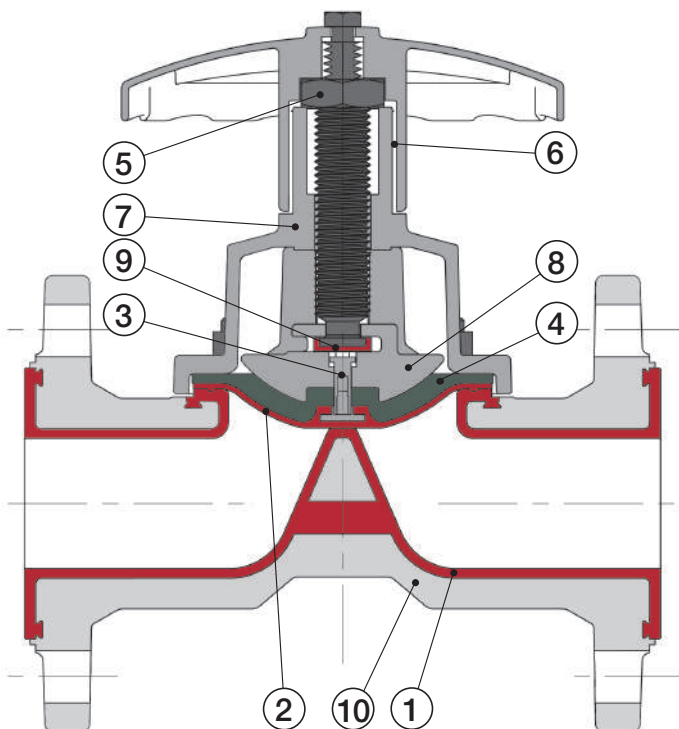
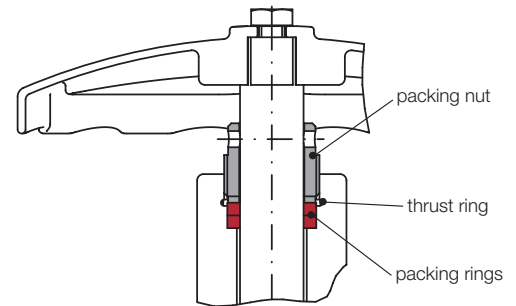
(p1 is stated at p2 = 0 bar)

DN		bar (psi)										
mm	Zoll	1	2	3	4	5	6	8	10	12	14	16
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										

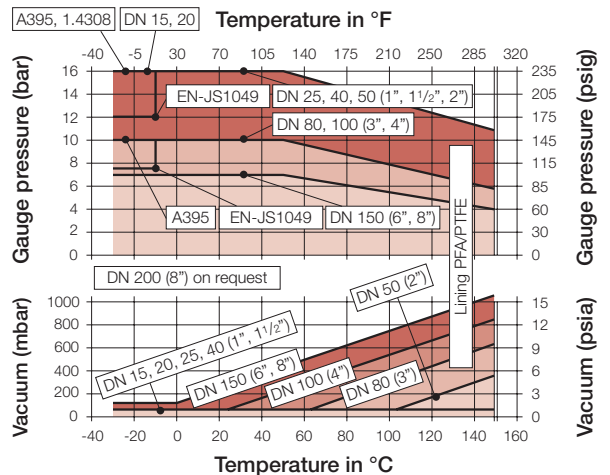
Other nominal sizes on request. Seating thrusts apply to PFA-lined body and modified PTFE diaphragm. Other materials may result in different thrusts.

## 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		L		D		k		d <sub>4</sub>		n x d <sub>2</sub>						K <sub>v100</sub>	Weight	
mm	inch	ISO	MSS	ISO	MSS	ISO	MSS	ISO	MSS	ISO	MSS	H1	H2	H	D1	Hub	m <sup>3</sup> /h <sup>1)</sup>	kg <sup>2)</sup>
15	1/2"	130	-	95	-	65	-	41	-	4x14	-	100	145	68	95	6,4	2,8	2,8
20	3/4"	150	-	105	-	75	-	54	-	4x14	-	125	180	69	95	12	8	4
25	1"	160	147,5	115	110	85	79,4	64	51	4x14	4x15,9 13UNC	127	183	92	95	12	9	4,4
32	1 1/4"	Details on request																
40	1 1/2"	200	175	150	127	110	98,4	84	73	4x19	4x15,9	170	229	125,5	160 13UNC	18	22	8,3
50	2"	230	200	165	155	125	120,6	98	92	4x19	4x19	177	231	130 11UNC	160	27	36	11,3
65	2 1/2"	Details on request																
80	3"	310	260	200	190,5	160	152,4	134	127	8x19	4x19	232	310	172	190	40	85	23
100	4"	350	327	220	155,7	180	190,5	154	157	8x19	8x19	254	322	193	230	40	157	32
125	5"	Details on request																
150	6"	480	416	285	279,4	240	241,3	208	212	8x23	8x22	378	438	275	350	60	292	62
200	8"	Details on request																

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

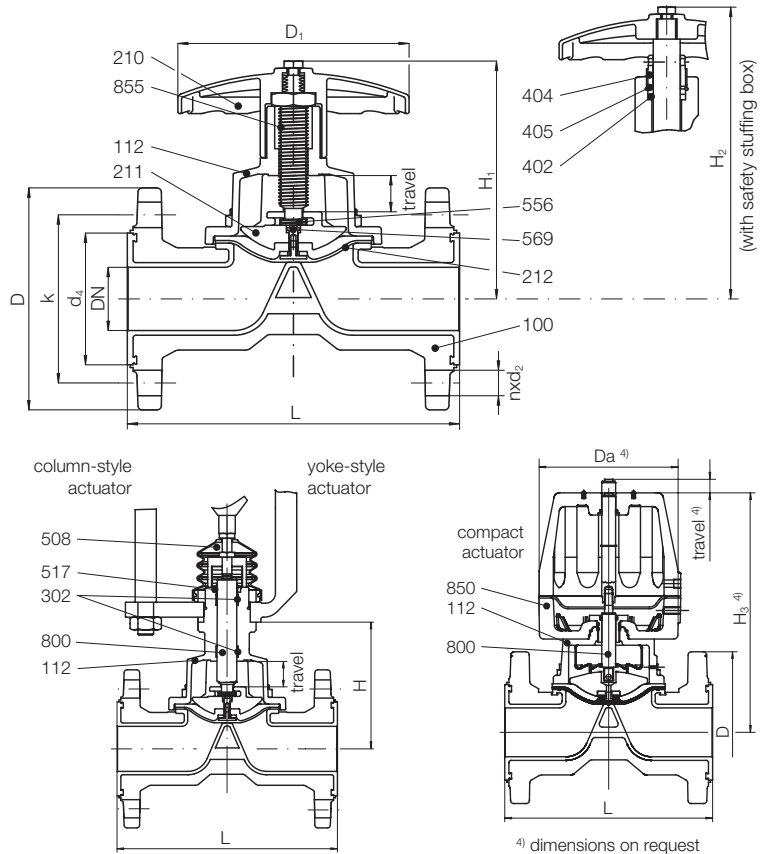
2) manually actuated, value from ISO face-to-face

### Components and materials

Item	Designation	Material
100	Body	Lining
		PFA, PFA-L antistatic on request
	Shell	Ductile cast iron
	MV (ISO)	ENJS 1049/ASTM A395 (DN 25-150) ASTM A395 (DN 25-100) <sup>3)</sup> stainless steel 1.4408/CF8 (DN 15-80)
	Shell	Ductile cast iron
	MVM (MSS)	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 <sup>2)</sup>	PTFE/carbon
402	Packing ring <sup>1)</sup>	PTFE
404	Packing nut <sup>1)</sup>	Stainless steel
405	Thrust ring <sup>1)</sup>	Stainless steel
508	Travel stop <sup>2)</sup>	Stainless steel
517	Scraper ring <sup>2)</sup>	FKM (e.g. Viton®)
556	Bearing	PTFE/graphite
569	Tube nut	Stainless steel
800	Valve stem <sup>2)</sup>	Stainless steel
850	yoke or column style actuator	acc. to specification
	compact actuator	plastic housing, acc. to specification
855	Stem	Stainless steel
o. Nr.	Screws, nuts	Stainless steel

<sup>1)</sup> with optional safety stuffing box

<sup>2)</sup> remotely actuated version <sup>3)</sup> without CE-tag



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