

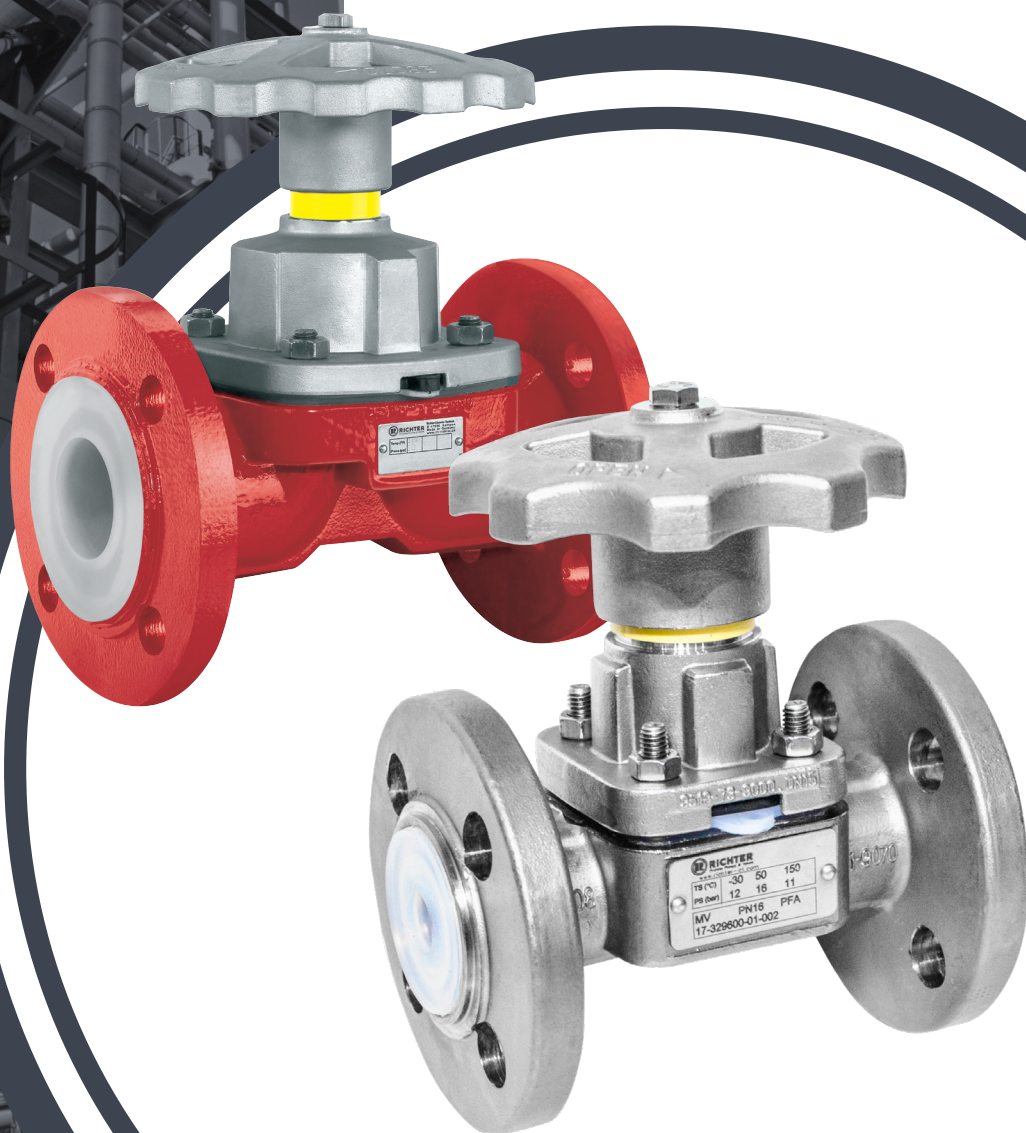


DIAPHRAGM VALVES

SHUT-OFF &
CONTROL VALVES

MV, MVM

- ✓ *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 -22 to 300 °F (-30 to 150 °C)
- Rated pressure: PN 16 (up to 2" or DN 50), PN 10 (3" or DN 80 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 (ANSI) Cl. 150, BS or JIS
 - Type MVM: to MSS SP-88, flanges to ASME (ANSI) B16.5 Cl. 150
- Anti-adhesive wetted PFA/PTFE surfaces
- Clean-room applications: stainless steel version with PFA lining for type MV ½", ¾", 1", 1½", 2", 3" (DN 15, 20, 25, 40, 50, 80)
- Top-entry design: maintenance possible without dismantling
- Identification of the valve to ASME (ANSI) B16.34, DIN EN 19

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



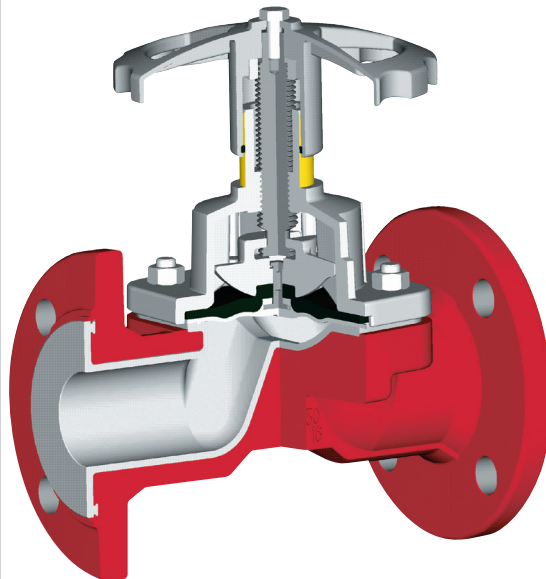
MVP with yoke-style actuator



MVP with compact actuator

① Thick-walled PFA lining of the valve body

- Lining thickness 0.12"-0.14" (3-3.5 mm)
- High permeation resistance
- Vacuum-proof anchored
- Almost translucent, thus optimum quality assurance
- Optional antistatic PFA-L



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

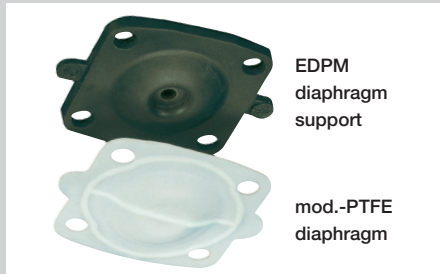
⑨ PTFE/graphite bearing minimizes friction between stem and compressor

⑩ Pressure-bearing body made of ductile cast iron ASTM A395 or EN-JS 1049, absorbs system and pipe forces.

Up to DN 80 also available in stainless steel.

② Diaphragm made of modified mod.-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 bon-net, 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

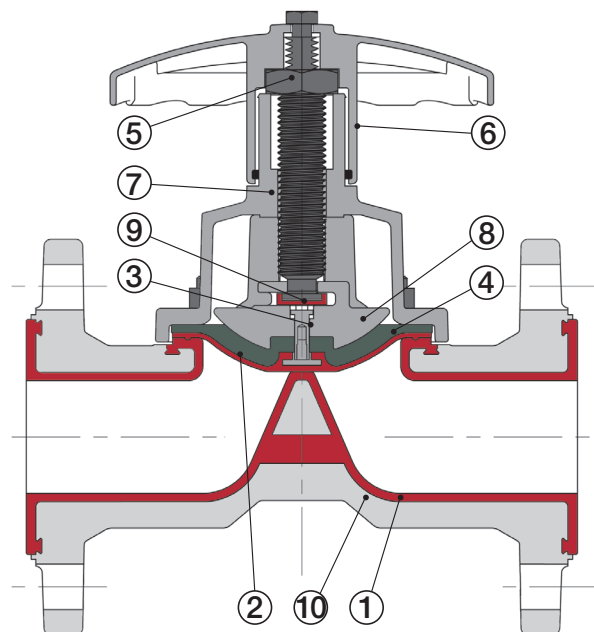
- ensures uniform distribution of the stem closing force and
- therefore prevents localised loading and the sintered diaphragm bolt from being pushed through

Required seating thrust in lbs for actuator sizing

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

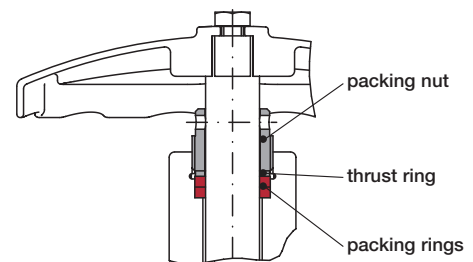
DN		psi (bar)										
		14.5	29	43.5	58	72.5	87	116	145	174	203	232
inch	mm	(1)	(2)	(3)	(4)	(5)	(6)	(8)	(10)	(12)	(14)	(16)
1/2"	15	220	234	249	266	280	295	324	356	385	414	444
3/4"	20	308	331	354	377	400	423	469	515	561	607	653
1"	25	308	331	354	377	400	423	469	515	561	607	653
1 1/2"	40	360	419	480	540	599	659	779	899	1019	1141	1264
2"	50	360	419	480	540	599	659	779	899	1019	1141	1264
3"	80	653	820	986	1152	1319	1485	1817	2150			
4"	100	1129	1374	1618	1861	2106	2350	2839	3327			
6"	150	1500	1967	2436	2904	3372	3840					
8"	200	on request										

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

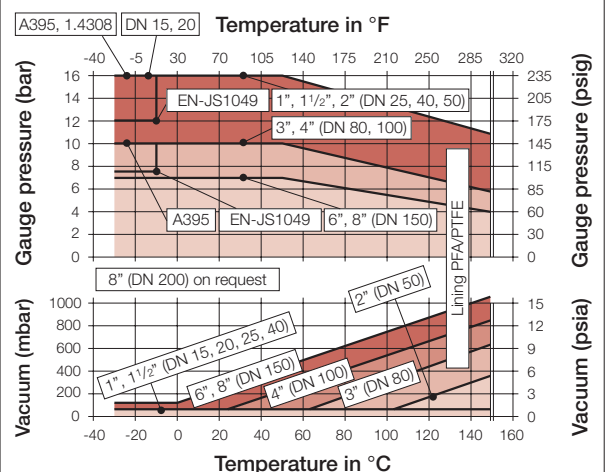


Safety stuffing box optional

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



Pressure/temperature range



Dimensions, weights, materials

Dimensions (inch) for face-to-face lengths ISO 5752-R 1, ASME (ANSI) B 16.10 short, MSS SP-88

DN		L			D			k			d ₄			nx d ₂			H ₁	H ₂	H	D ₁	Travel	Flow ¹⁾	Weight ²⁾
inch	mm	ISO	ASME	MSS	ISO	ASME	MSS	ISO	ASME	MSS	ISO	ASME	MSS	ISO	ASME	MSS						Cv (USgpm)	
1/2"	15	5.12	—	—	3.74	—	—	2.56	—	—	1.61	—	—	4x0.55	—	—	3.94	5.71	2.68	3.74	0.25	3.3	6.17
3/4"	20	5.91	—	—	4.13	—	—	2.95	—	—	2.13	—	—	4x0.55	—	—	4.92	7.09	2.72	3.74	0.47	9.3	8.82
1"	25	6.3	5	5.75	4.53	4.33	4.33	3.35	3.13	3.13	2.52	2.01	2.01	4x0.55	4x1/2"	4x0.63	5	7.2	3.62	3.74	0.47	10.5	9.7
1 1/2"	40	7.87	6.5	6.88	5.91	5	5	4.33	3.87	3.87	3.31	2.87	2.87	4x0.75	4x1/2"	4x0.63	6.69	9.02	4.94	6.3	0.71	25.6	18.3
2"	50	9.06	7.01	7.88	6.5	6.1	6.1	4.92	4.75	4.75	3.86	3.62	3.62	4x0.75	4x3/8"	4x0.75	6.97	9.09	5.12	6.3	1.06	41.9	24.92
3"	80	12.2	—	10.25	7.87	—	7.5	6.3	—	6	5.28	—	5	8x0.75	—	4x0.75	9.13	12.2	6.77	7.48	1.57	97.9	50.72
4"	100	13.78	—	12.88	8.66	—	6.13	7.09	—	7.5	6.06	—	6.18	8x0.75	—	8x0.75	10	12.68	7.6	9.06	1.57	182.9	70.56
6"	150	18.9	—	16.38	11.22	—	11	9.45	—	9.5	8.19	—	8.35	8x0.91	—	8x0.87	14.88	17.24	10.83	13.78	2.36	340.2	136.71

1 1/4", 2 1/2", 5" and 8" (DN 32, 65, 125 and 200) Details on request

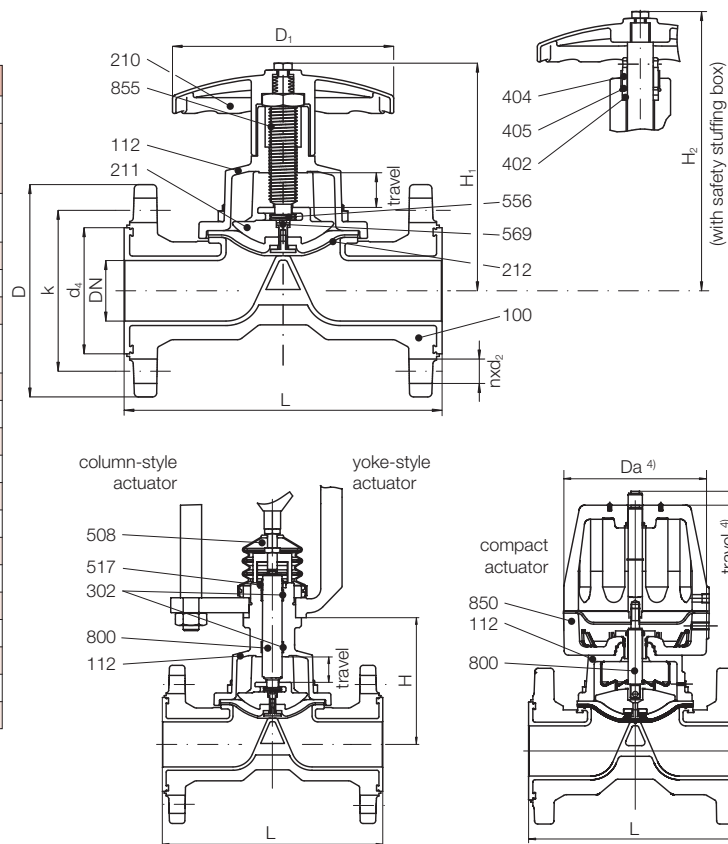
¹⁾ Conversion to k_v (m³/h) = Cv x 0.858 or Cv (IMPgpm) = Cv x 1.196


²⁾ lbs, manually actuated, mean value from ASME (ANSI)/ISO/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
	Shell MV (ISO)	Ductile cast iron ASTM A395/EN-JS 1049 (1" - 6"/DN 25-150) stainless steel 1.4408/CF8 (DN 15-80)
	Shell MVM (MSS)	Ductile cast iron ASTM A395/EN-JS 1049 (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 ²⁾	PTFE/carbon
402	Packing ring ¹⁾	PTFE
404	Packing nut ¹⁾	Stainless steel
405	Thrust ring ¹⁾	Stainless steel
508	Travel stop ²⁾	Stainless steel
517	Scraper ring ²⁾	FKM (e.g. Viton®)
556	Bearing	PTFE/graphite
569	Tube nut	Stainless steel
800	Valve stem ²⁾	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⁾ with optional safety stuffing box ²⁾ remotely actuated version



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