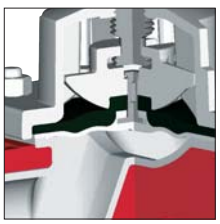
Richter Diaphragm Shut-Off and Control Valves

MV, MVA, MVM



Lining PFA/PTFE,
PFA-P highly permeation-resistant,
PFA-L antistatic

Hermetically tight

Long-life
TFM-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 (ANSI) Cl. 150, BS or JIS
  - Type MVA: to ASME (ANSI) B16.10 short, flanges ASME (ANSI) B16.5 Cl. 150
  - 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 DN 15+20
- Top-entry design: maintenance possible without dismantling
- Identification of the valve to DIN EN 19, ASME (ANSI) B16.34

Type codes

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

Lining

PFA	.../F
PFA-L antistatic	.../F-L
PFA-P highly permeation-resistant	.../F-P

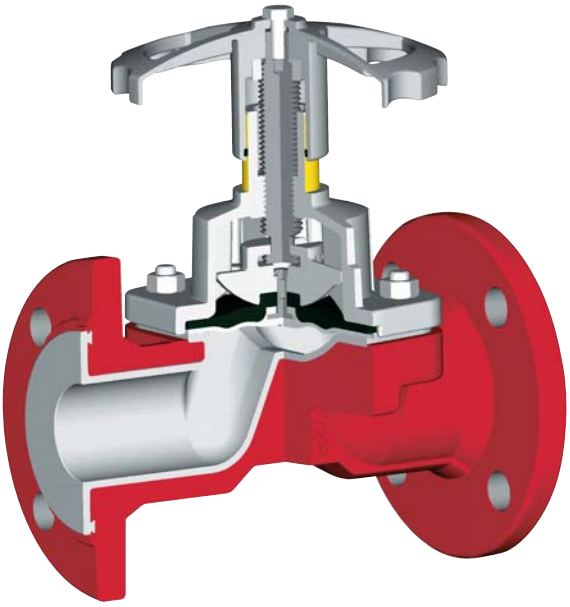
Remote actuation

- 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
- Optional antistatic and highly permeation-resistant lining



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.

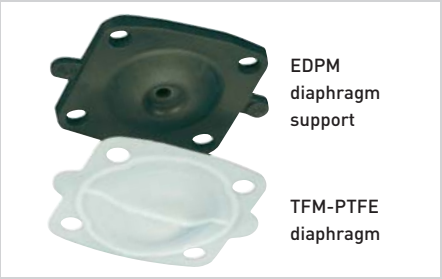
⑨ **Compressor with T-groove** Easy assembly of the internals

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 TFM-PTFE**

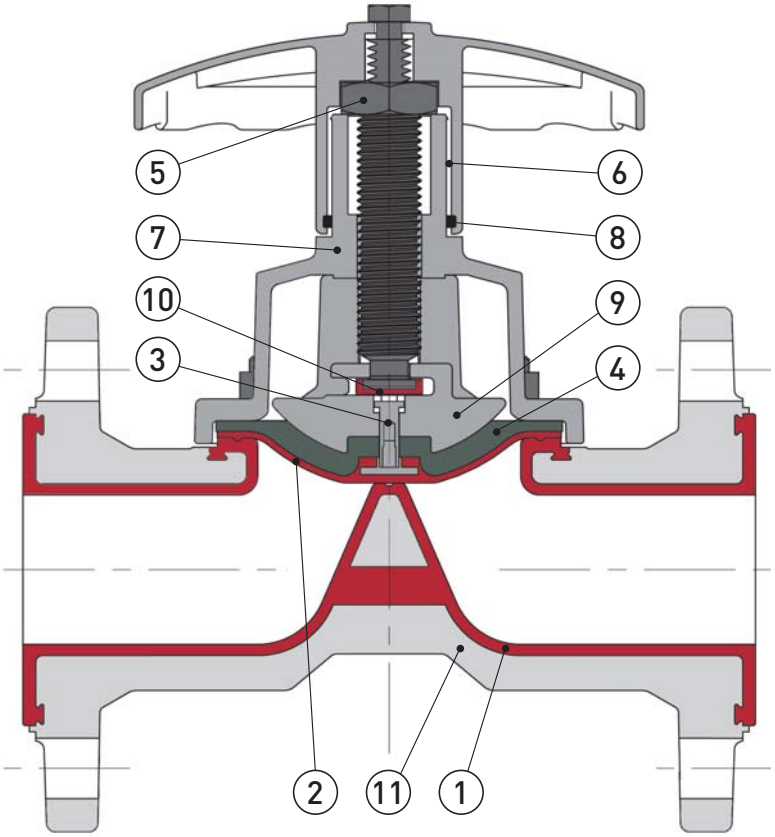
The quality and functionality of the diaphragm are crucial for the reliability and durability of the valve. Top priority is given to these aspects in Richter diaphragm valves.



- **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

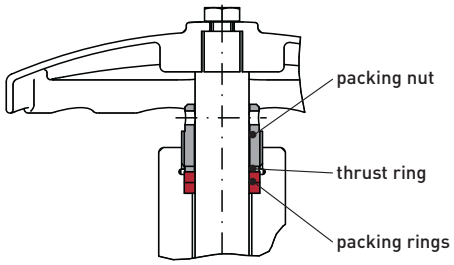
③ **Floating tube nut diaphragm attachment with stainless steel compressor**

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



Safety stuffing box optional

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



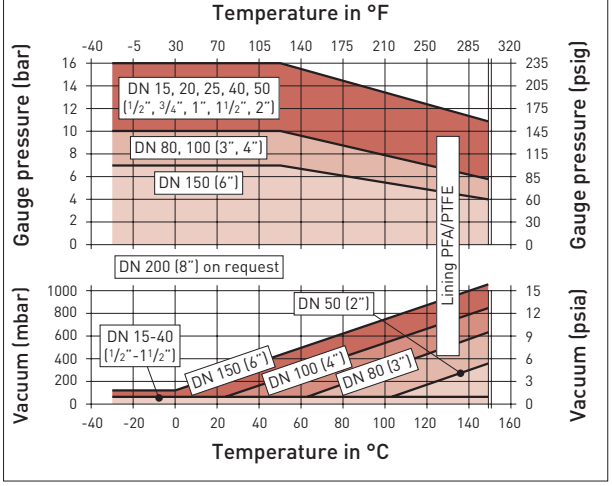
- **External corrosion resistance:** Body epoxy coated (stainless steel body on request), bonnet, nuts and bolts stainless steel

Required seating thrust in N for actuator sizing
(p_1 is stated at p_2 = 0 bar)

DN		bar (psi)										
mm	inch	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	½"	976	1.040	1.105	1.181	1.246	1.311	1.441	1.582	1.712	1.842	1.972
20	¾"	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	1½"	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 TFM-PTFE diaphragm. Other materials may result in different thrusts.

Pressure/temperature range

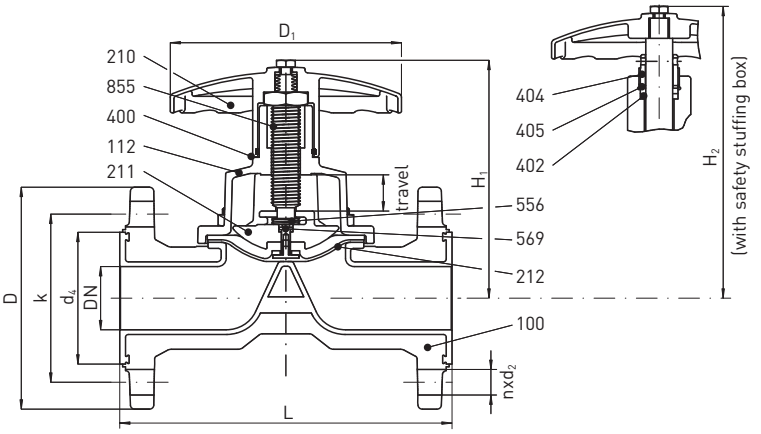


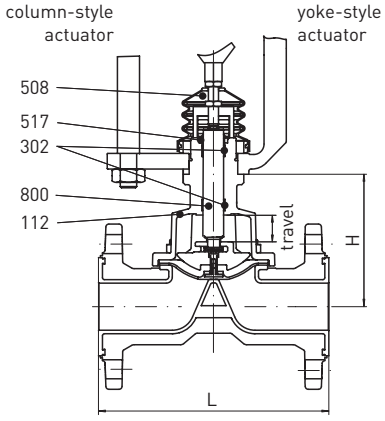
Dimensions, weights, materials

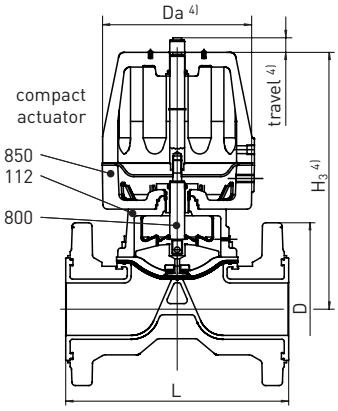
Dimensions (mm) for face-to-face lengths ISO 5752-R 1, ASME (ANSI) B 16.10 short, MSS SP-88

DN		L			D			k			d_4			n x d_2			H_1	H_2	H	D_1	Travel	Flow [1] k_{v100} m^3/h	Weight [2]
mm	inch	ISO	ASME	MSS	ISO	ASME	MSS	ISO	ASME	MSS	ISO	ASME	MSS	ISO	ASME	MSS							
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	127	147.5	115	110	110	85	79.4	79.4	64	51	51	4x14	4x1/2" 13UNC	4x15.9	127	183	92	95	12	10	4.4
32	1 1/4"	Details on request																					
40	1 1/2"	200	165	175	150	127	127	110	98.4	98.4	84	73	73	4x19	4x1/2" 13UNC	4x15.9	170	229	125.5	160	18	30	8.3
50	2"	230	178	200	165	155	155	125	120.6	120.6	98	92	92	4x19 11UNC	4x5/8"	4x19	177	231	130	160	27	52	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	128	23
100	4"	350	–	327	220	–	155.7	180	–	190.5	154	–	157	8x19	–	8x19	254	322	193	230	40	312	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	632	62
200	8"	Details on request																					

[1] Conversion to Cv = k_v x 1.165 (USgpm) or Cv = k_v x 0.971 (IMPgpm)
[2] kg, manually actuated, mean value from ISO/ASME (ANSI)/MSS face-to-face, depending on face-to-face standard approx. +/- 5 % deviation







4) dimensions on request

Components and materials

Item	Designation		Material
100	Body	Lining	PFA, PFA-P highly permeation-resistant, PFA-L antistatic
		Shell MV (ISO)	Ductile cast iron EN-JS 1049/ASTM A395 (DN 25-150) stainless steel 1.4308/CF8 (DN 15-20)
		Shell MVA (ASME/ANSI)	Ductile cast iron EN-JS 1049/ASTM A395 (DN 1"- 2")
		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		TFM-PTFE (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 [1] [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

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