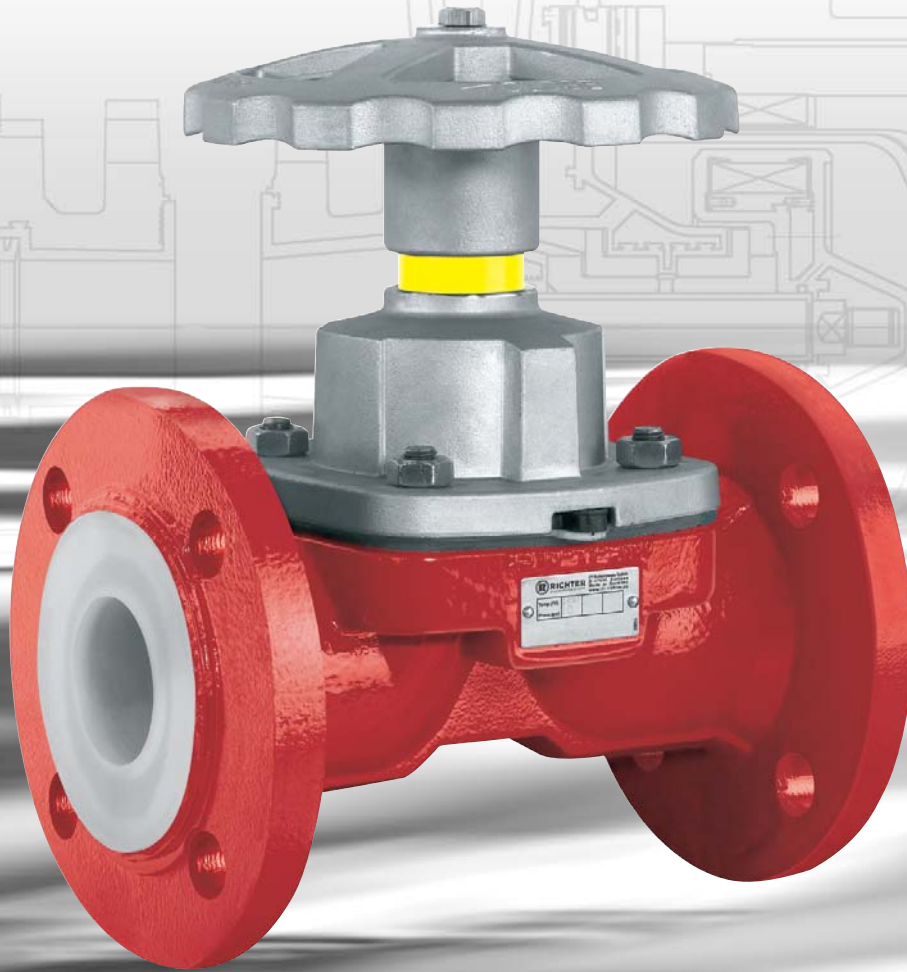


# Richter Diaphragm Shut-Off and Control Valves



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

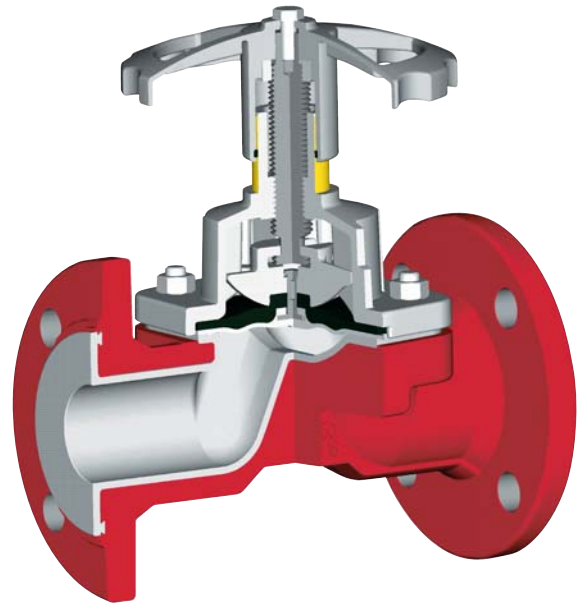
PFA	.../F
PFA-L antistatic	.../F-L
PFA-P highly permeation-resistant	.../F-P

### 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



- 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.

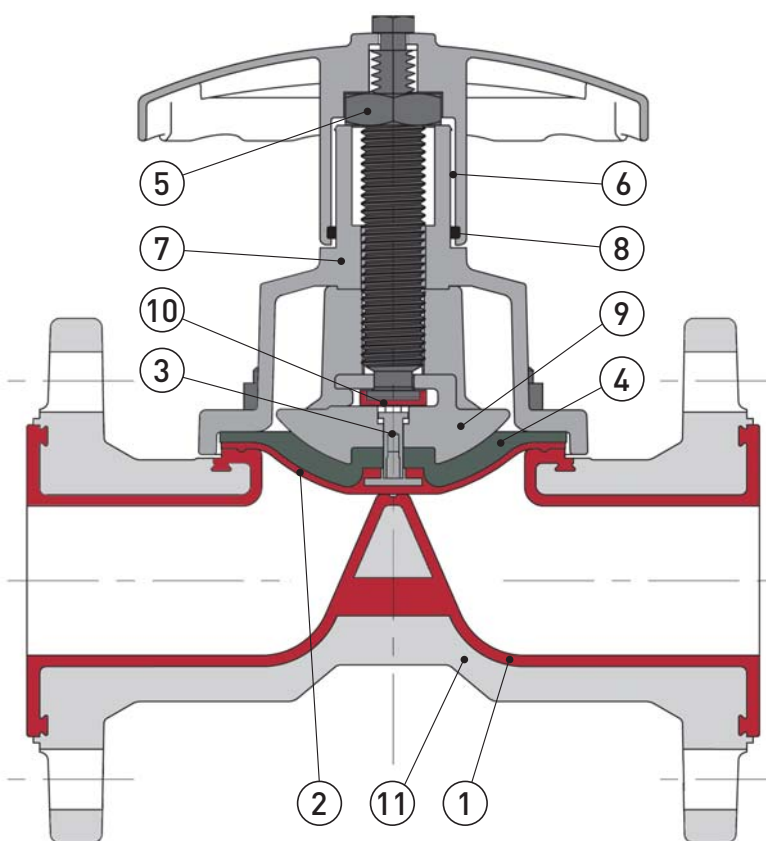
### ② Diaphragm made of modified TFM-PTFE

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



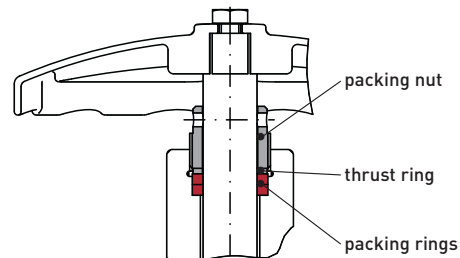
Required seating thrust in N for actuator sizing  
( $p_1$  is stated at  $p_2 = 0$  bar)

DN		bar (psi)																																
mm	inch	1	2	3	4	5	6	8	10	12	14	16	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	14.5	29	43.5	58	72.5	87	116	145	174	203	232											
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	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	1.598	1.863	2.133	2.398	2.663	2.931	3.463	3.997	4.529	5.073	5.616											
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	2.904	3.645	4.383	5.120	5.861	6.598	8.077	9.556	5.019	6.105	7.190	8.273	9.360	10.446	12.616	14.786						
50	2"	1.598	1.863	2.133	2.398	2.663	2.931	3.463	3.997	4.529	5.073	5.616	6.665	8.744	10.825	12.907	14.985	17.067	on request															
80	3"	2.904	3.645	4.383	5.120	5.861	6.598	8.077	9.556	on request																								
100	4"	5.019	6.105	7.190	8.273	9.360	10.446	12.616	14.786	on request																								
150	6"	6.665	8.744	10.825	12.907	14.985	17.067	on request																										
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.

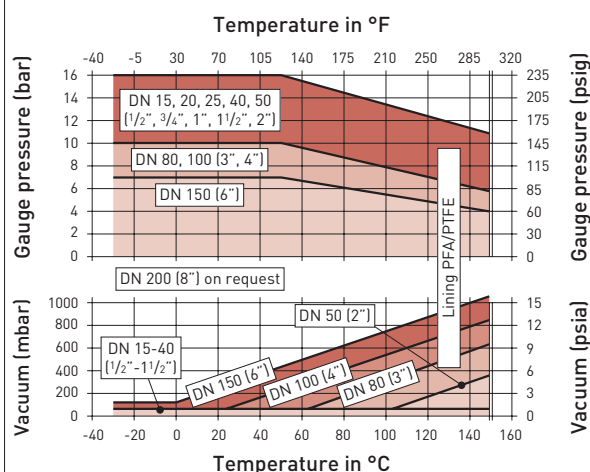
### Safety stuffing box optional

- 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

### Pressure/temperature range



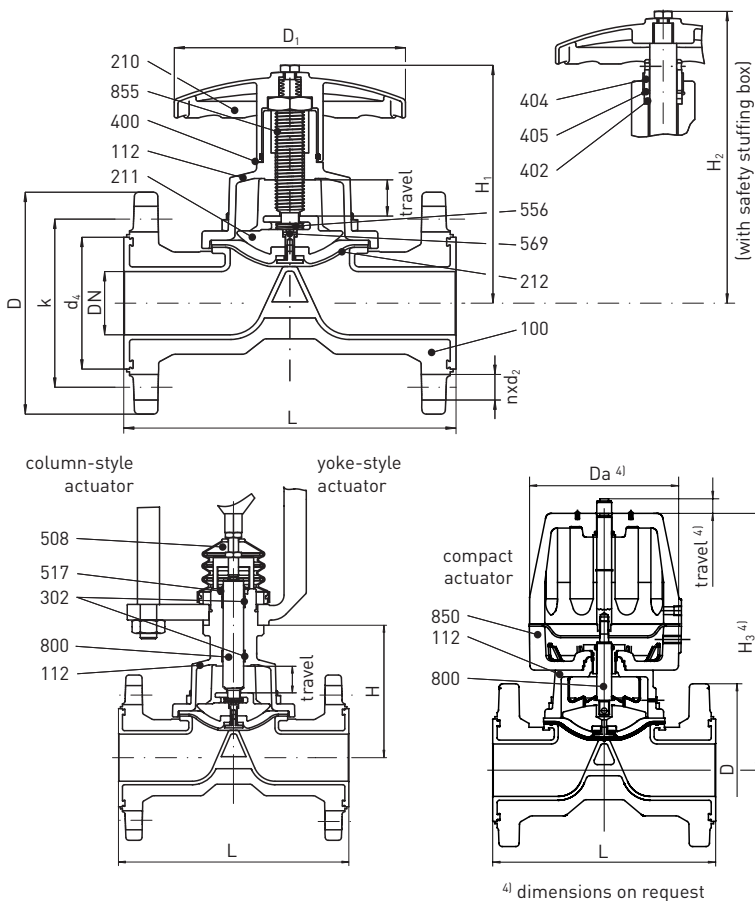
## Dimensions, weights, materials

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

DN mm   inch	L			D			k			d <sub>4</sub>			n x d <sub>2</sub>			H <sub>1</sub>	H <sub>2</sub>	H	D <sub>1</sub>	Travel	Flow <sup>1)</sup> k <sub>v100</sub> m <sup>3</sup> /h	Weight <sup>2)</sup>
	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 1/2" 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 1/2" 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	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																					

<sup>1)</sup> Conversion to Cv = k<sub>v</sub> x 1.165 (USgpm) or Cv = k<sub>v</sub> x 0.971 (IMPgpm)

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



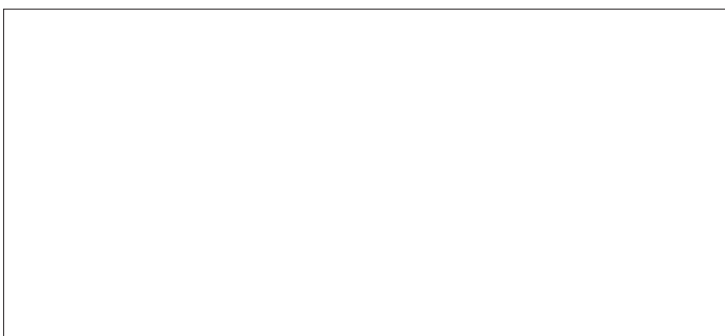
### Components and materials

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 <sup>3)</sup>	PTFE/carbon	
400	O-ring <sup>1)</sup>	FKM (e.g. Viton®)	
402	Packing ring <sup>2)</sup>	PTFE	
404	Packing nut <sup>2)</sup>	Stainless steel	
405	Thrust ring <sup>2)</sup>	Stainless steel	
508	Travel stop <sup>1) 3)</sup>	Stainless steel	
517	Scraper ring <sup>3)</sup>	FKM (e.g. Viton®)	
556	Bearing	PTFE/graphite	
569	Tube nut	Stainless steel	
800	Valve stem <sup>3)</sup>	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	

<sup>1)</sup> optional <sup>2)</sup> with optional safety stuffing box

<sup>3)</sup> remotely actuated version

Presented by:



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