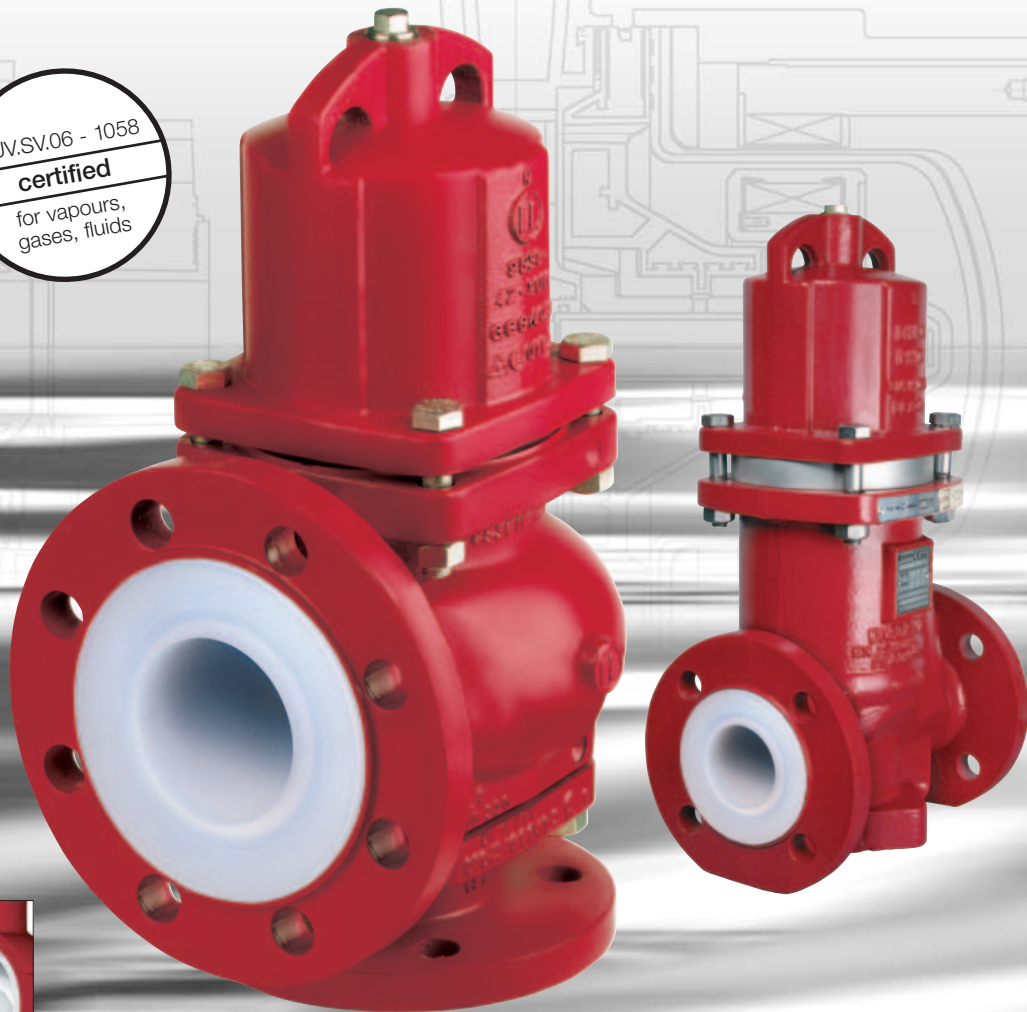
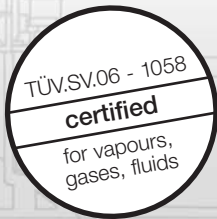


# Richter Low-Pressure Safety Valves

for gauge pressure and vacuum



Thick-walled PFA/PTFE lining  
Hermetically tight

Set pressures from  
-120 mbar to +120 mbar  
(-1.7 psi to +1.7 psi)  
-60 to +200 °C (-75 to +400 °F)



**RICHTER**  
Process Pumps & Valves



## Richter low-pressure safety valve

### Fields of application

The direct-acting overflow valve of the LPV series is designed for use with corrosive and pure liquids, gases and vapours. In process plants it is used

- in the range from -120 mbar (-1.7 psi) vacuum up to +120 mbar (+1.7 psi) gauge pressure at temperatures of up to 200 °C (400 °F)
- for venting during filling
- for respiration during emptying
- in the case of process or temperature-related volume variations
  - in reactor columns
  - in vessels with glass or plastic lining or made of Hastelloy®, titanium etc. or borosilicate glass
  - in vessels with protective gas layers

The LPV can be installed as an **angle valve** on a vessel or as an **inline valve** in a pipe.

### Product features

The LPV series offers plant operators major advantages:

The **set pressure** can be **adapted to suit subsequent changes in operating parameters** by the addition/removal of weights.

The LPV is gas and liquid-tight to DIN EN 12266-1, bubble-tight.

**Compromise solutions**, e.g. ball check valves, **are no longer necessary**.

### Other features:

- direct-acting, weight-loaded
- proportional opening characteristic
- top-entry design, very easy maintenance
- wetted surfaces anti-adhesive thanks to PFA/PTFE
- Body PN 16, flanges ISO 7005-2 type B PN 16 (formerly DIN 2532/33), on request drilled to ANSI B16.5 Cl.150, BS, JIS
- Installation: valve bonnet vertical
- Identification to DIN EN 19, ANSI B16.34

### Type codes

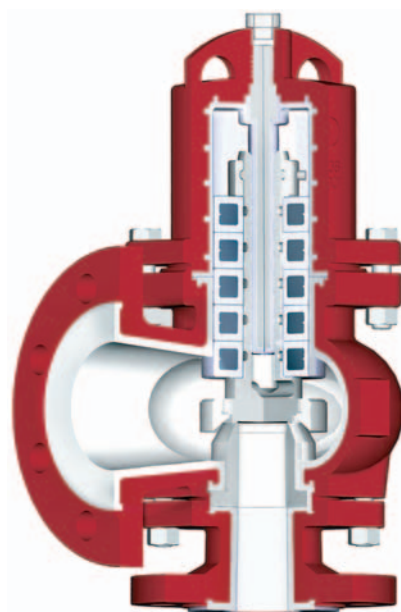
- Angle valve LPV-A/...
- Inline valve LPV-D/...

### Lining

- PFA and PTFE .../F
- Antistatic PFA-L/PTFE-L .../F-L
- Highly permeation-resistant PFA-P (only LPV/D) .../F-P

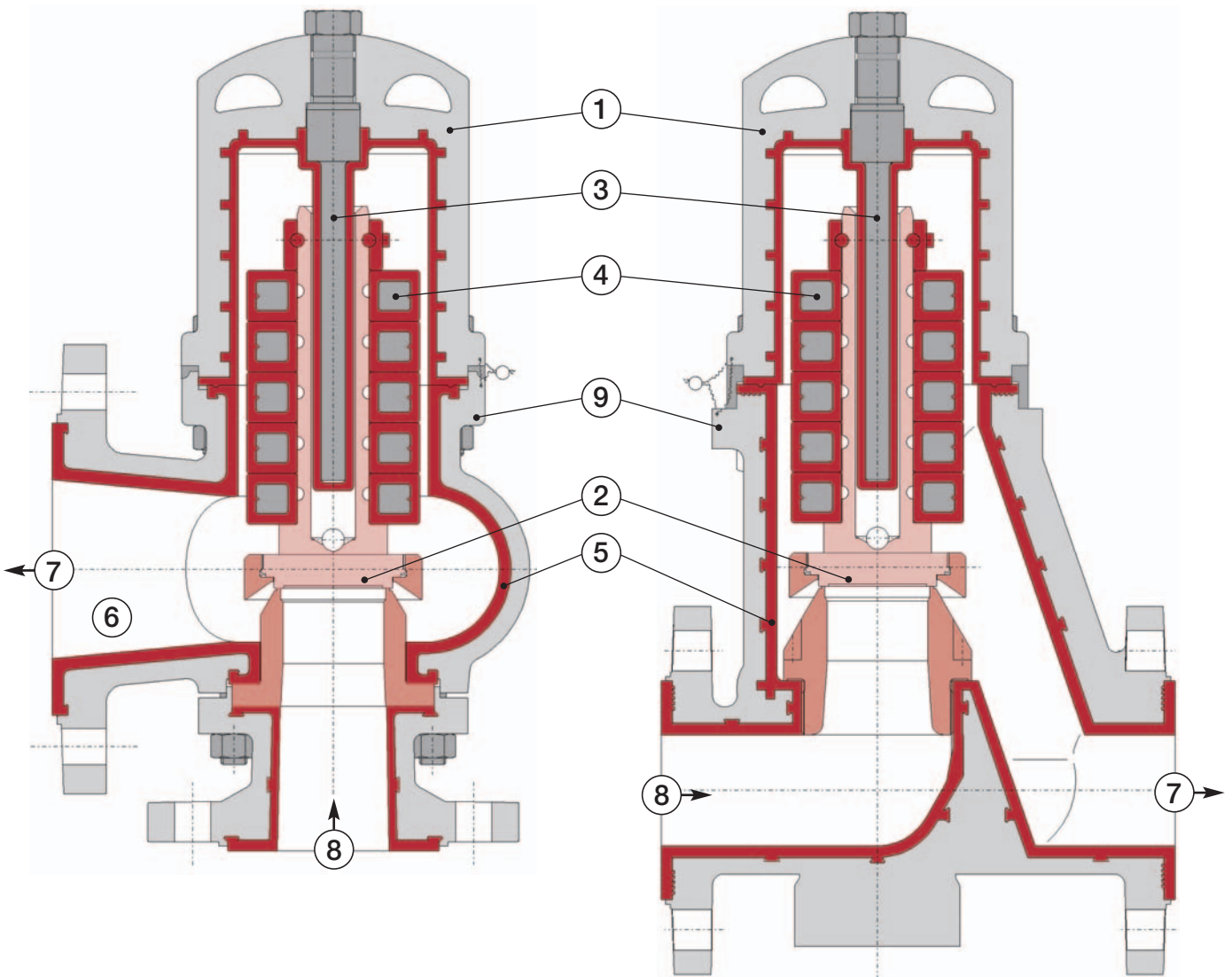
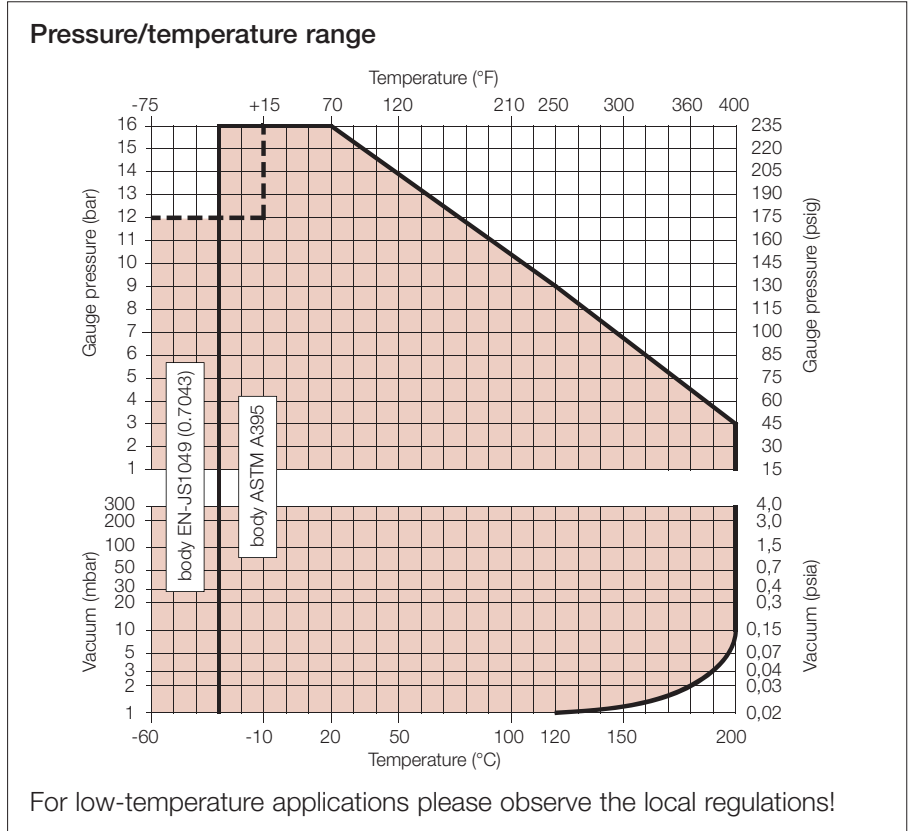
Richter: WZ Richter Chemie-Technik GmbH  
Hastelloy®: WZ Haynes

- ① **Body, inlet nozzle and bonnet made of ductile cast iron EN-JS 1049/ASTM A395**
  - absorb system and pipe forces
  - accurate centering through metallic fits
- ② **Maintenance-friendly: seat and plug can be replaced individually**  
The lifting aid promotes response characteristic, close function tolerances even at very low set pressures.
- ③ **Hermetically tight against the atmosphere:**  
Closed bonnet, seamless lining
- ④ **Simple, fast and accurate adjustment of the set pressure**
  - Vapours/gases/liquids: certified in the range of
    - set pressure  
**+20 mbar to +120 mbar (+0.3 psi to +1.7 psi)**
    - set vacuum  
**-20 mbar to -120 mbar (-0.3 psi to -1.7 psi)**
    - other pressures on request
    - Certification No. TÜV.SV.06-1058
 For more detailed information, see VdTÜV information sheet 1058
  - Weights can be varied in 5, 10 and 20 mbar (0.07, 0.15 and 0.30 psi) increments, also possible after installation and in the operator's workshop.
  - Stainless steel core in guide ensures **dimensional stability even at high temperatures**. Core of the guide optionally Hastelloy® C4 (2.4610)



Angle valve LPV-A

- ⑤ **Thick-walled lining made of virgin, pure PFA/PTFE**
  - high permeation resistance
  - vacuum-proof anchored
  - conductive or highly permeation-resistant lining optional
  - universal application for highly corrosive, pure, hot and highly permeating media, also in multi-purpose and pilot plants
- ⑥ Divergent outlet, therefore self-draining, almost **no medium residue in the valve body**
- ⑦ Vessel connection for vacuum application
- ⑧ Vessel connection for gauge pressure application
- ⑨ **External corrosion protection:** Epoxy coating, nuts and bolts made of stainless steel



Low pressure overflow valve LPV-A as angle valve

Low pressure overflow valve LPV-D as inline valve

# Materials, Dimensions, Weights

## Components and materials

Item	Designation	Material
100	Body	Ductile cast iron EN JS 1049/ASTM A395, lining* PFA resp. PTFE
112	Bonnet	Ductile cast iron EN JS 1049/ASTM A395, lining* PFA
122	Inlet nozzle	Ductile cast iron EN JS 1049/ASTM A395, lining* PFA
204	Plug	PTFE, optionally antistatic
205	Seat	PTFE, optionally antistatic
237	Lifting aid	PTFE, optionally antistatic
239	Weights	5 mbar (0.07 psi)
		10 mbar (0.15 psi)
		20 mbar (0.29 psi)
		solid PTFE
522	Round cord	PTFE
544	Support ring	PTFE
549	Centering ring	Stainless steel
801	Guide	PFA*, core stainless steel, optionally: core Hastelloy® C
937	Lead seal	Plastic
938	Hex. head screw plug	Stainless steel
w/o no.	Body screw	Stainless steel, other materials on request

\* antistatic resp. highly permeation-resistant lining on request

## Discharge coefficient

Nom. diameter	LPV-A				Nom. diameter	LPV-D			
	h/d <sub>0</sub> ≥ ...	Valve lift min (mm)	Discharge coefficient*	Flow-Ø mm <sup>2</sup>		h/d <sub>0</sub> ≥ ...	Valve lift min (mm)	Discharge coefficient*	Flow-Ø mm <sup>2</sup>
DN 50/80	0.32	14.4	0.5	1590	DN 50	0.2	9	0.3	1590
DN 80/100	0.32	19.2	0.5	2827	DN 80	0.2	12	0.3	2827
DN 100/150	0.32	28.8	0.5	6362	DN 100	0.2	18	0.3	6362

\* with an opening pressure difference of ≤ 15 %

## Discharge capacities for air at 20 °C and 1013 mbar (68 °F and 14.7 psi) and water 20 °C (68 °F) at 0 bar (0 psi) back pressure

Set pressure mbar (psi)	LPV-A						Set pressure mbar (psi)	LPV-D					
	DN 50/80 (2"/3")		DN 80/100 (3"/4")		DN 100/150 (4"/5")			DN 50 (2")		DN 80 (3")		DN 100 (4")	
	Air (m <sub>N</sub> <sup>3</sup> /h)	Water (kg/h)	Air (m <sub>N</sub> <sup>3</sup> /h)	Water (kg/h)	Air (m <sub>N</sub> <sup>3</sup> /h)	Water (kg/h)		Air (m <sub>N</sub> <sup>3</sup> /h)	Water (kg/h)	Air (m <sub>N</sub> <sup>3</sup> /h)	Water (kg/h)	Air (m <sub>N</sub> <sup>3</sup> /h)	Water (kg/h)
10 (0.145)	108	4047	192	7196	432	16195	10 (0.145)	64	2428	115	4318	259	9717
20 (0.290)	152	5724	271	10177	610	22904	20 (0.290)	91	3434	162	6106	366	13742
40 (0.580)	215	8095	383	14393	863	32391	40 (0.580)	129	4857	230	8636	517	19435
60 (0.870)	264	9914	469	17628	1056	39671	60 (0.870)	158	5948	281	10577	633	23802
80 (1.160)	304	11448	541	20355	1218	45808	80 (1.160)	182	6869	325	12213	731	27485
100 (1.145)	340	12800	605	22758	1361	51215	100 (1.145)	204	7679	363	13654	817	30729
120 (1.740)	372	14021	662	24930	1490	56104	120 (1.740)	223	8412	397	14958	894	33662

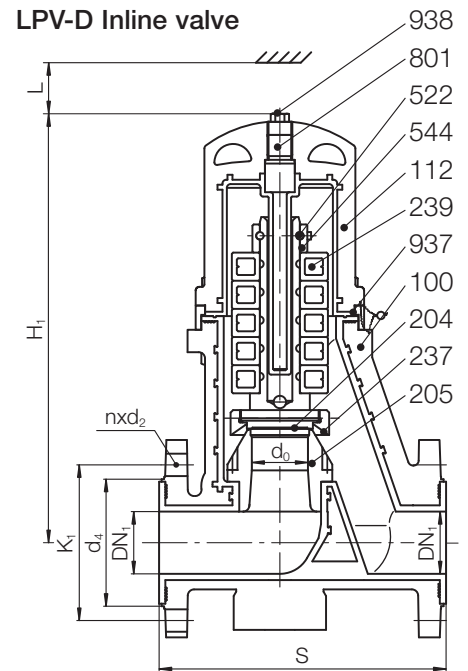
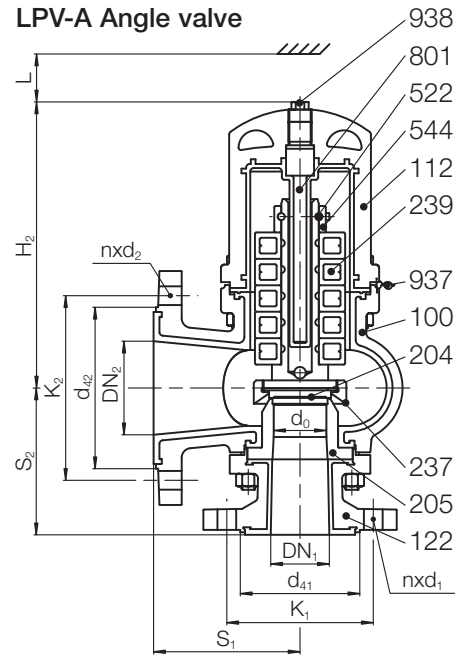
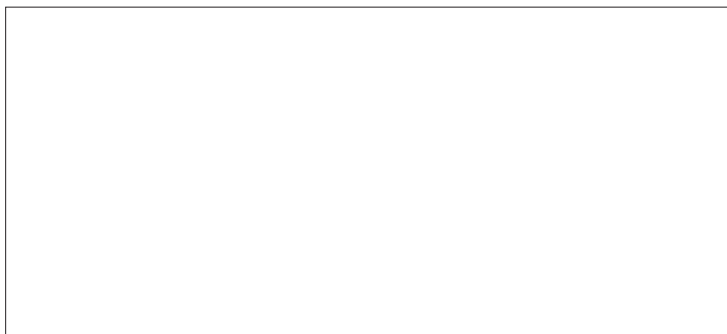
set pressure = opening pressure - back pressure

m<sub>N</sub><sup>3</sup>/h = standard cubic metre at 20 °C, 1013 mbar (68 °F and 14.7 psi)

## Connecting and installation dimensions, weights

DN <sub>1</sub>	DN <sub>2</sub>	L	H <sub>1</sub>	H <sub>2</sub>	d <sub>0</sub>	d <sub>4</sub>	d <sub>41</sub>	d <sub>42</sub>	S	S <sub>1</sub>	S <sub>2</sub>	flange bore ISO 7005-R.1 PN 16				flange bore ANSI B16.5 Cl.150				LPV-A kg	LPV-D kg
												K <sub>1</sub>	K <sub>2</sub>	nxd <sub>1</sub>	nxd <sub>2</sub>	K <sub>1</sub>	K <sub>2</sub>	nxd <sub>1</sub>	nxd <sub>2</sub>		
50 (2")	80 (3")	127	338	238	45	102	102	138	230	125	125	125	160	4x18	8x18	120.6	152.4	4x19	4x19	26	23
80 (3")	100 (4")	147	478	267	60	138	140	158	310	155	155	160	180	8x18	8x18	152.4	190.5	4x19	8x19	39	60
100 (4")	150 (5")	187	488	335	90	158	157	214	350	200	220	180	240	8x18	8x22	190.5	241.3	8x19	8x22.2	72	59

Presented by:



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