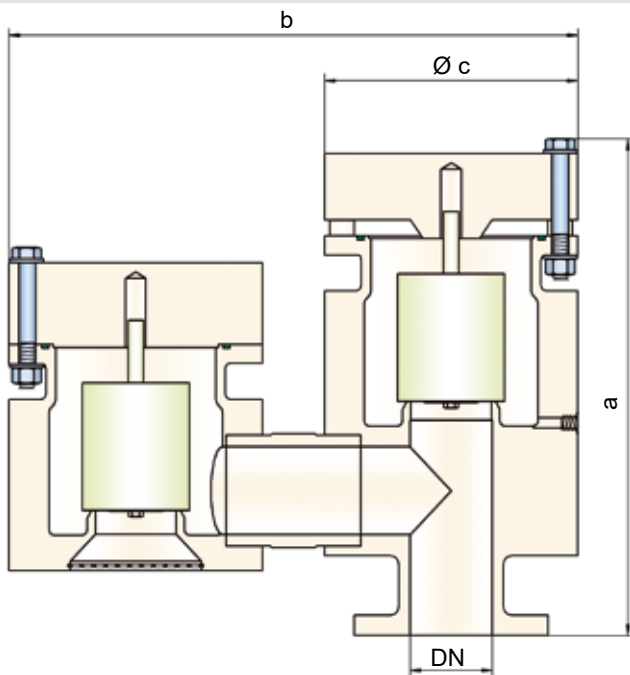


Pressure and Vacuum Relief Valve

made of plastic

PROTEGO® VD/KSM



Settings:

Pressure:

+6.0 mbar	up to	+100 mbar (DN 50/2")
+2.4 inch W.C.	up to	+40 inch W.C.
+4.0 mbar	up to	+100 mbar (DN 80/3")
+1.6 inch W.C.	up to	+40 inch W.C.
+4.5 mbar	up to	+100 mbar (DN 100/4" - DN 200/8")
+1.8 inch W.C.	up to	+40 inch W.C.

Vacuum:

-6.0 mbar	up to	-100 mbar (DN 50/2")
-2.4 inch W.C.	up to	-40 inch W.C.
-4.0 mbar	up to	-100 mbar (DN 80/3")
-1.6 inch W.C.	up to	-40 inch W.C.
-4.5 mbar	up to	-100 mbar (DN 100/4" - DN 200/8")
-1.8 inch W.C.	up to	-40 inch W.C.

Higher and lower settings upon request.

Function and Description

The PROTEGO® valve VD/KSM is a state-of-the-art pressure and vacuum relief valve with excellent flow performance made of high-grade synthetic material. Typically, the valve is installed in the in-breathing and out-breathing lines of tanks, vessels, and process apparatus to protect against unallowable overpressure or underpressure. The valve prevents emission losses almost up to the set pressure. The valve is a perfect solution for corrosive, polymerizing, or sticky substances.

The device will start to open as soon as the set pressure is reached and only requires 10% overpressure to full lift. Continuous investments in and a commitment to research and development have allowed PROTEGO® to develop a low pressure valve which has the same opening characteristic as a high pressure safety relief valve. This "full lift type" technology allows the valve to be set at just 10% below the maximum allowable working pressure and vacuum (MAWP and MAWV) of the tank and still safely vent the required mass flow. The opening characteristic for pressure and vacuum side is the same.

Due to our highly developed manufacturing technology, the tank pressure is maintained up to set pressure with a tightness that is far superior to the conventional standard. This feature is achieved by special valve seats made of high quality synthetic material or PTFE. After the excess pressure is released or vacuum is balanced, the valve re-seats and provides a tight seal. The optimized fluid dynamic design of the valve body and valve pallet is a result of many years of research, resulting in a stable operation of the valve pallet, optimized performance, and reduced product losses.

Special Features and Advantages

- 10% technology for minimum pressure increase up to full lift
- extreme tightness, resulting in lowest possible product losses and reduced environmental pollution
- set pressure close to opening pressure for optimum pressure maintenance in the system
- valve pallet is guided inside the housing to protect against harsh weather conditions
- non-corrosive
- especially suitable for aggressive, sticky, or polymerizing substances
- weight reduction in comparison to steel/stainless steel
- automatic condensate drain
- high surface quality
- different plastics can easily be combined
- maintenance-friendly design

Design Types and Specifications

The valve pallets are weight-loaded, and the highest pressure levels are only achieved with metal discs.

Pressure/vacuum valve in basic design

VD/KSM-

Additional special devices available upon request.



Vents for corrosive vapor service
(Flyer pdf)



Vents - 10% Technology
(Flyer pdf)



Leak Rate/10% Technology
(Flyer pdf)

Table 1: Dimensions

Dimensions in mm / inches

To select the nominal size (DN), use the flow capacity chart on the following page.

DN	50 / 2"	80 / 3"	100 / 4"	150 / 6"	200 / 8"
a	376 / 14.80	521 / 20.51	563 / 22.17 (542 / 21.34)*	670 / 26.38 (681 / 26.81)*	917 / 36.10 (952 / 37.48)*
b	430 / 16.93	575 / 22.64	700 / 27.56 (675 / 26.57)*	825 / 32.48 (880 / 34.65)*	1190 / 46.85 (1100 / 43.31)*
c	180 / 7.09	250 / 9.84	300 / 11.81	350 / 13.78 (405 / 15.94)*	560 / 22.05 (500 / 19.68)*

* Dimensions in parentheses are for devices made of PVDF.

Table 2: Material selection for the housing

Design	A	B	C
Housing	PE	PP	PVDF
Valve seat	PE	PP	PVDF
Sealing	FPM	FPM	FPM
Pressure valve pallet	A, C, D	B, C, D	C, D
Vacuum valve pallet	A, C, D	B, C, D	C, D

Special materials upon request.

Table 3: Material selection for pressure valve pallet

Design	A	B	C	D
Pressure range (mbar) (inch W.C.)	+6.0 up to +16 +2.4 up to +6.4	+5.5 up to +16 +2.2 up to +6.4	+9.5 up to +30 +3.8 up to +12	+30 up to +100 +12 up to +40
Valve pallet	PE	PP	PVDF	Hastelloy
Sealing	PTFE	PTFE	PTFE	PTFE
Spindle guide	PE	PP	PVDF	Hastelloy
Weight	PE	PP	PVDF	Hastelloy

Special materials and other pressure settings are available upon request.

Table 4: Material selection for vacuum valve pallet

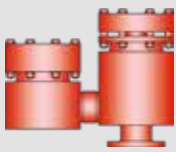
Design	A	B	C	D
Vacuum range (mbar) (inch W.C.)	-6.0 up to -16 -2.4 up to -6.4	-5.5 up to -16 -2.2 up to -6.4	-9.5 up to -30 -3.8 up to -12	-30 up to -100 -12 up to -40
Valve pallet	PE	PP	PVDF	Hastelloy
Sealing	PTFE	PTFE	PTFE	PTFE
Spindle guide	PE	PP	PVDF	Hastelloy
Weight	PE	PP	PVDF	Hastelloy

Special materials and other vacuum settings are available upon request.

Table 5: Flange connection type

EN 1092-1; Form A	Other types upon request.
ASME B16.5 CL 150 F.F.	

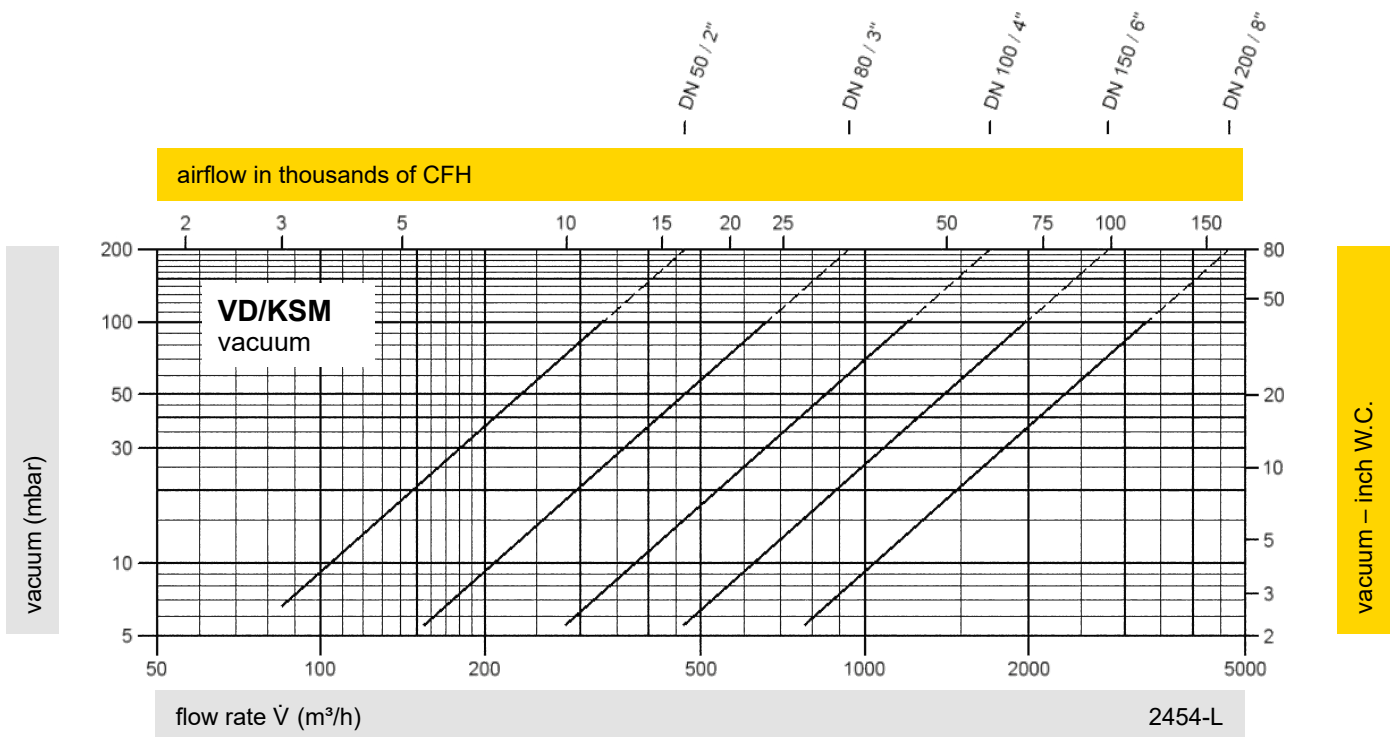
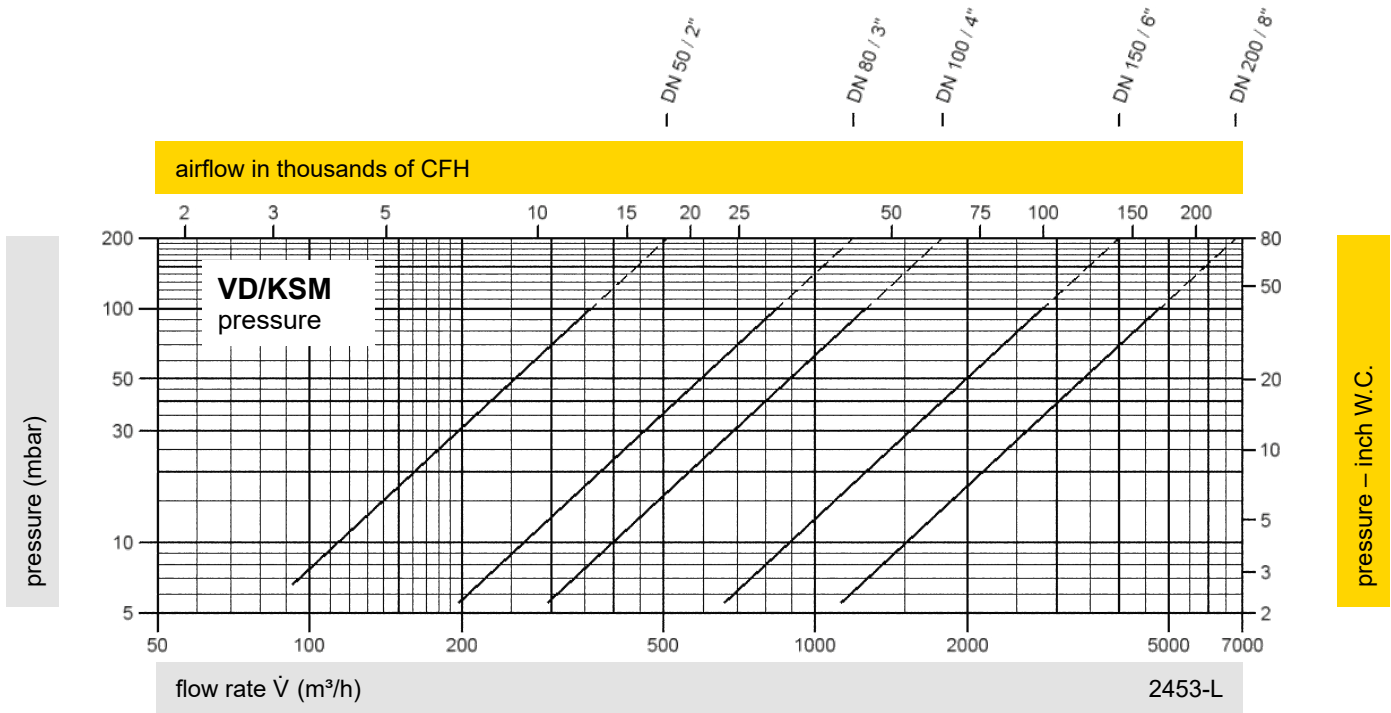




Pressure and Vacuum Relief Valve

Flow Capacity Charts

PROTEGO® VD/KSM



The flow capacity charts have been determined with a calibrated and TÜV certified flow capacity test rig. Volume flow \dot{V} in (m³/h) and CFH refer to the standard reference conditions of air in ISO 6358 (20°C, 1bar). For conversion to other densities and temperatures, refer to Sec. 1: "Technical Fundamentals."