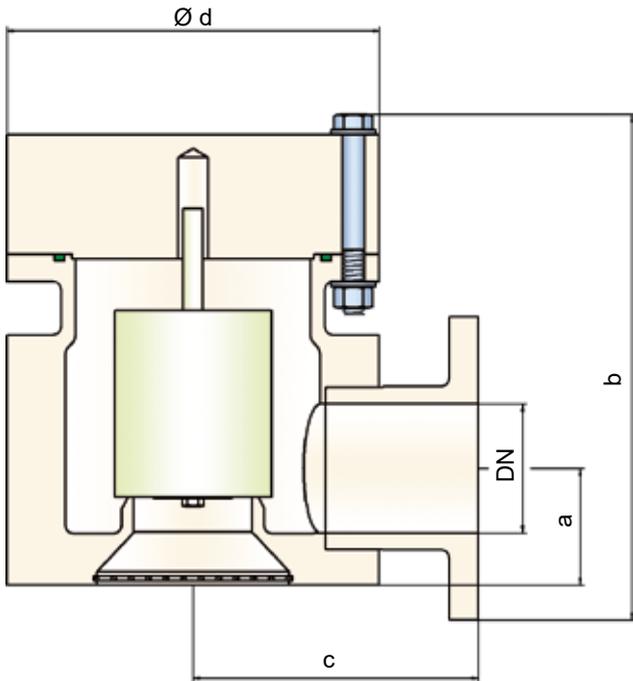


# Vacuum Relief Valve

made of plastic

**PROTEGO® V/KSM**



### Vacuum settings:

- 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 pressure settings upon request.

### Function and Description

The PROTEGO® valve V/KSM is a state-of-the-art vacuum relief valve with excellent flow performance made of high-grade synthetic material. It is used as a safety device to relieve vacuum in tanks, containers, and process engineering equipment. It prevents the in-breathing of air until reaching 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 is fully open within 10% pressure increase. 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 vacuum (MAWV) of the tank and still safely vent the required mass flow.

Due to our highly developed manufacturing technology, the tank pressure is maintained up to the set pressure with a seal that is far superior to the conventional standard. This feature is achieved by valve seats made of high-performance plastics and a high grade PTFE seal. After the vacuum is released, 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
- high surface quality
- automatic condensate drain
- different plastics can easily be combined
- maintenance-friendly design

### Design Types and Specifications

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

Vacuum valve in basic design **V/KSM-**

Additional special devices available upon request.

**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	57 / 2.24	77 / 3.03	87 / 3.43 (115 / 4.53)*	126 / 4.96 (146 / 5.75)*	180 / 7.09 (175 / 6.89)*
b	259 / 10.20	376 / 14.80	373 / 14.69 (338 / 13.31)*	460 / 18.11 (427 / 16.81)*	469 / 18.46 (437 / 17.20)*
c	150 / 5.91	200 / 7.87	225 / 8.86	280 / 11.02	350 / 13.78
d	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.



Vents for corrosive vapor service  
(Flyer pdf)



Vents - 10% Technology  
(Flyer pdf)



Leak Rate/10% Technology  
(Flyer pdf)

**Table 2: Material selection for housing**

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

Special materials upon request.

**Table 3: 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

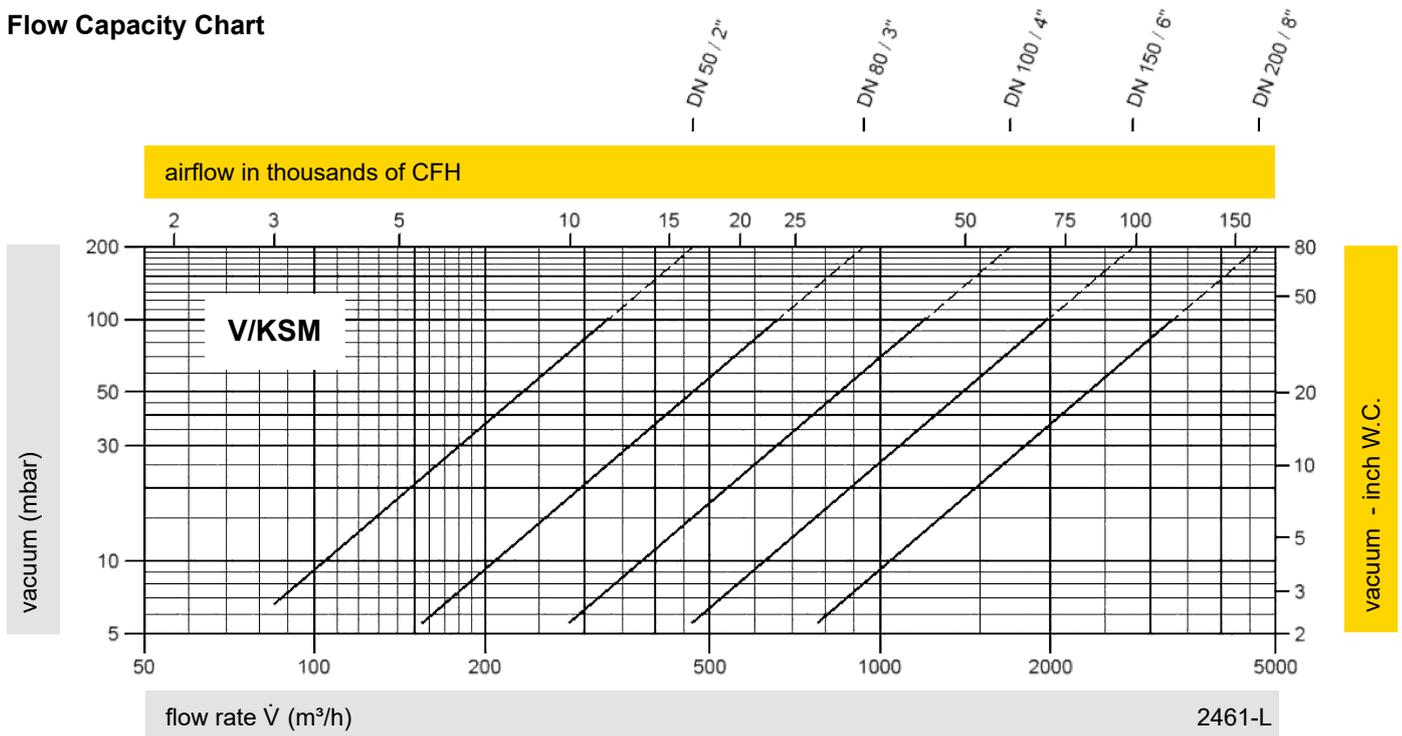
Special materials and other vacuum settings are available upon request.

**Table 4: Flange connection type**

EN 1092-1; Form A  
ASME B16.5 CL 150 F.F.

Other types upon request.

## Flow Capacity Chart



The flow capacity charts have been determined with a calibrated and TÜV certified flow capacity test rig. Volume flow  $\dot{V}$  in (m<sup>3</sup>/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."



**PROTEGO**  
for safety and environment