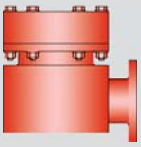
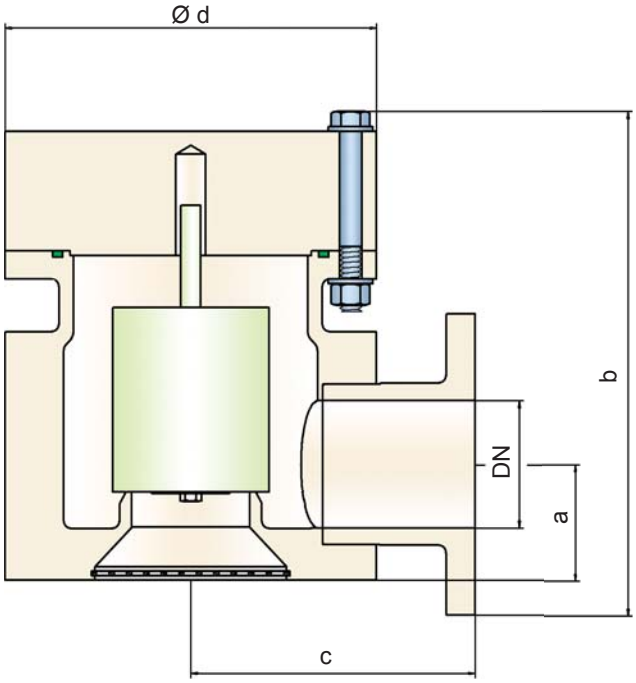


Vacuum Relief Valve

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 highgrade synthetic material. It is used as a safety device to relieve vacuum in tanks, containers, and process engineering equipment; it prevents the inbreathing of air until reaching the set vacuum. The valve is a perfect solution for corrosive, polymerizing or sticky media.
The device will start to open as soon as the set vacuum is reached and is fully open within 10% vacuum increase. Continuous investments into 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 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 vacuum, 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 compensated, the valve reseats 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 work, which allow a stable operation of the valve pallet and optimized performance resulting in reduction of product losses.

Special Features and Advantages

- “full lift type” technology valve utilizes only 10% overpressure to reach full lift
- extreme tightness and hence least possible product losses and reduced environmental pollution
- the set pressure is close to the opening pressure which results in best possible pressure management of the system
- the valve pallet is guided within the housing to protect against harsh weather conditions
- corrosion resistant valve
- perfect solution for corrosive, polymerizing and sticky media
- weight reduction in comparsion to steel/stainless steel
- smooth surface
- automatic condensate drain
- different plastics can be combined
- maintenance friendly design

Design Types and Specifications

The valve pallet is weight-loaded, and the highest pressure levels are only attained 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 brackets only for PVDF

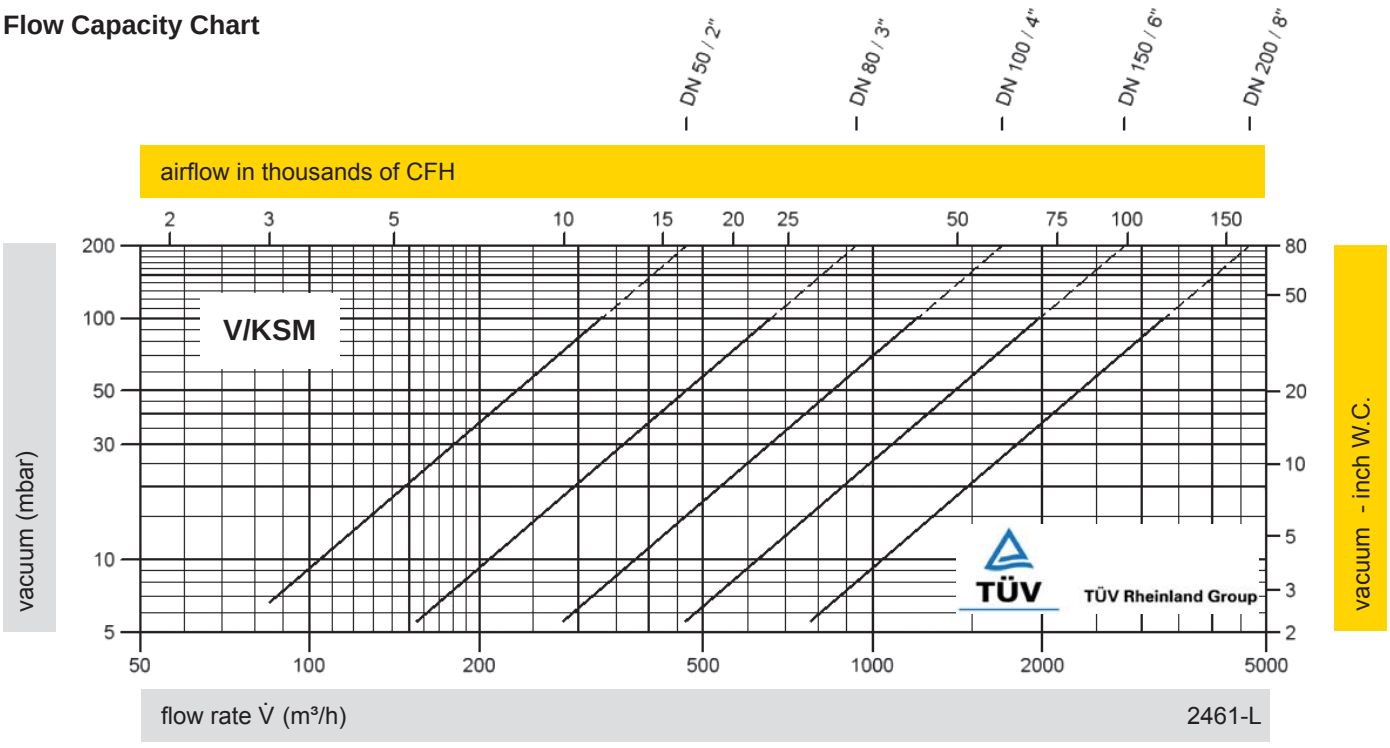
Table 2: Material selection for housing				
Design	A	B	C	Special Materials upon request
Housing	PE	PP	PVDF	
Valve seat	PE	PP	PVDF	
Sealing	FPM	FPM	FPM	
Valve pallet	A, C, D	B, C, D	C, D	

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	other types upon request
ASME B16.5; 150 lbs FFSF	

Flow Capacity Chart



The flow capacity chart has been determined with a calibrated and TÜV certified flow capacity test rig.

Volume flow V̇ in (m³/h) and CFH refer to the standard reference conditions of air ISO 6358 (20°C, 1bar).
Conversion to other densities and temperatures refer to Vol. 1: “Technical Fundamentals”.

PROTEGO
for safety and environment