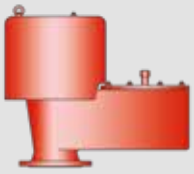
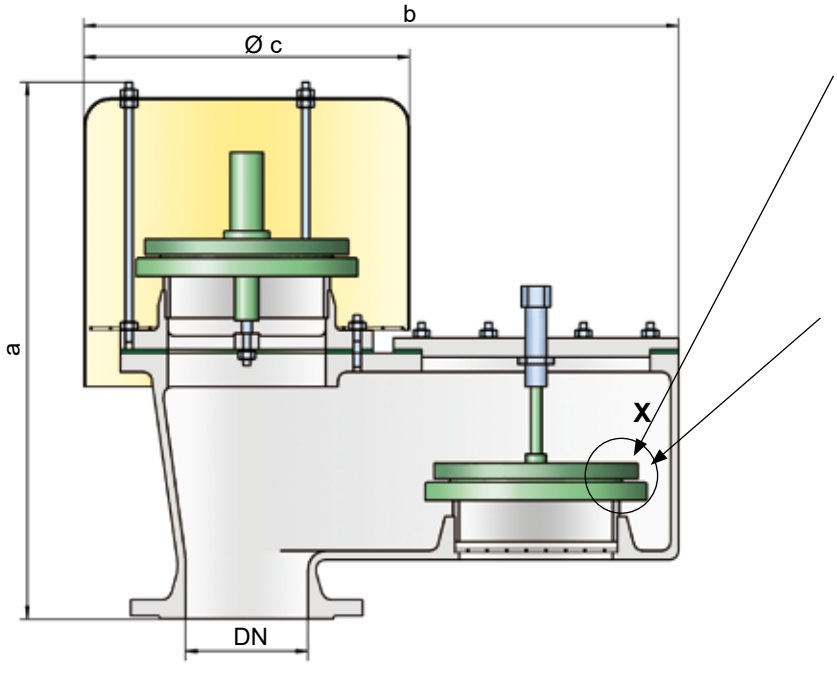
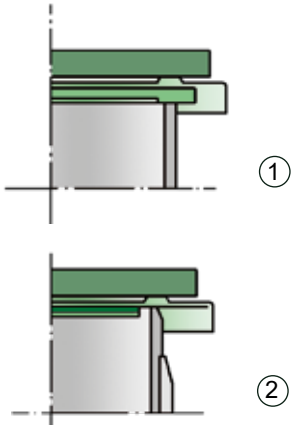


Pressure and Vacuum Relief Valve

PROTEGO® VD/SV





Settings:

Pressure: +2.0 mbar up to +60 mbar
+0.8 inch W.C. up to +24 inch W.C.

Vacuum: -2.0 mbar up to -60 mbar
-0.8 inch W.C. up to -24 inch W.C.

Higher or lower settings upon request.

Function and Description

The VD/SV type PROTEGO® valve is a highly developed pressure and vacuum relief valve with excellent flow performance. Typically, the valve is installed in the in-breathing and out-breathing lines of tanks, vessels, and process equipment to protect against unallowable overpressure and underpressure. The valve prevents emission losses almost up to the set pressure and prevents air intake almost up to the set vacuum.

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 or vacuum (MAWP or MAWV) of the tank and still safely vent the required mass flow. The opening characteristic is the same for pressure and vacuum relief.

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 valve seats made of high quality stainless steel and with precisely lapped valve pallets (1) or with an air cushion seal (2) in conjunction with high quality FEP diaphragm. The valve pallets are also available with a PTFE seal to prevent the them from sticking when sticky products are used and to enable the use of corrosive substances. After the overpressure is released or the 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
- very high flow capacity
- valve pallet is guided inside the housing to protect against harsh weather conditions
- can be used in explosion hazardous areas
- automatic condensate drain
- maintenance-friendly design
- best technology for API tanks

Design Types and Specifications

The valve pallets are weight-loaded. Higher pressures with a special spring-loaded design upon request.

There are two different designs:

Pressure/vacuum valve in basic design **VD/SV- –**

Pressure/vacuum relief valve with heating jacket **VD/SV- H**

Additional special devices available upon request.

Any combination of vacuum and pressure levels is possible. When the difference between the pressure and vacuum exceeds 150 mbar / 60.2 inch W.C., special valve pallets are used.

Vents - 10% Technology (Flyer pdf)

Leak Rate/10% Technology (Flyer pdf)

Coated Devices (Flyer pdf)

The optimized valve pallet (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	40 / 1 ½"	50 / 2"	80 / 3"	100 / 4"	150 / 6"	200 / 8"	250 / 10"	300 / 12"
a	396 / 15.59	396 / 15.59	497 / 19.57	519 / 20.43	654 / 25.75	757 / 29.80	802 / 31.57	802 / 31.57
b	355 / 13.98	355 / 13.98	448 / 17.64	548 / 21.57	788 / 31.02	900 / 35.43	1030 / 40.55	1030 / 40.55
c	200 / 7.87	200 / 7.87	295 / 11.61	295 / 11.61	465 / 18.31	550 / 21.65	650 / 25.59	650 / 25.59

Dimensions of pressure and vacuum relief valves with heating jacket upon request.

Table 2: Material selection for housing

Design	A	B	C
Housing Heating jacket (VD/SV-H-...)	Aluminum –	Steel Steel	Stainless Steel Stainless Steel
Valve seat	Stainless Steel	Stainless Steel	Stainless Steel
Sealing	PTFE	PTFE	PTFE
Weather hood	Stainless Steel	Stainless Steel	Stainless Steel

The housings are also available with an ECTFE-coating.

Special materials upon request.

Table 3: Material selection for pressure valve pallet

Design	A	B	C	D	E	F
Pressure range (mbar) (inch W.C.)	+2.0 up to +3.5 +0.8 up to +1.4	>+3.5 up to +14 >+1.4 up to +5.6	>+14 up to +35 >+5.6 up to +14	>+35 up to +60 >+14 up to +24	>+14 up to +35 >+5.6 up to +14	>+35 up to +60 >+14 up to +24
Valve pallet	Aluminum	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Sealing	FEP	FEP	Metal to Metal	Metal to Metal	PTFE	PTFE

Special material and higher set pressure upon request.

Table 4: Material selection for vacuum valve pallet

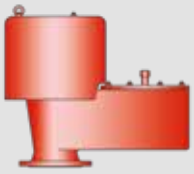
Design	A	B	C	D	E	F
Vacuum range (mbar) (inch W.C.)	-2.0 up to -3.5 -0.8 up to -1.4	<-3.5 up to -14 <-1.4 up to -5.6	<-14 up to -35 <-5.6 up to -14	<-14 up to -35 <-5.6 up to -14	<-35 up to -60 <-14 up to -24	<-35 up to -60 <-14 up to -24
Valve pallet	Aluminum	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Sealing	FEP	FEP	Metal to Metal	PTFE	Metal to Metal	PTFE

Special material and higher vacuum upon request.

Table 5: Flange connection type

EN 1092-1; Form B1
ASME B16.5 CL 150 R.F.

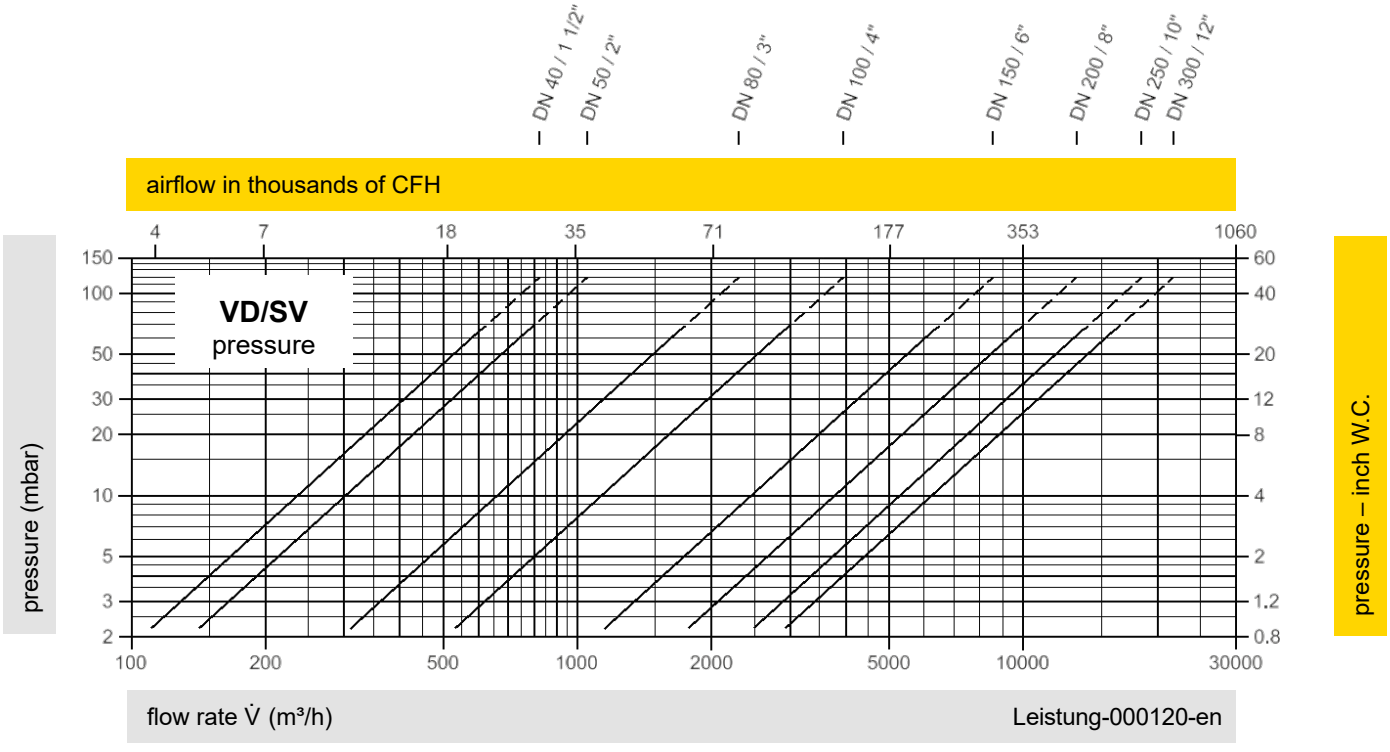
Other types upon request.

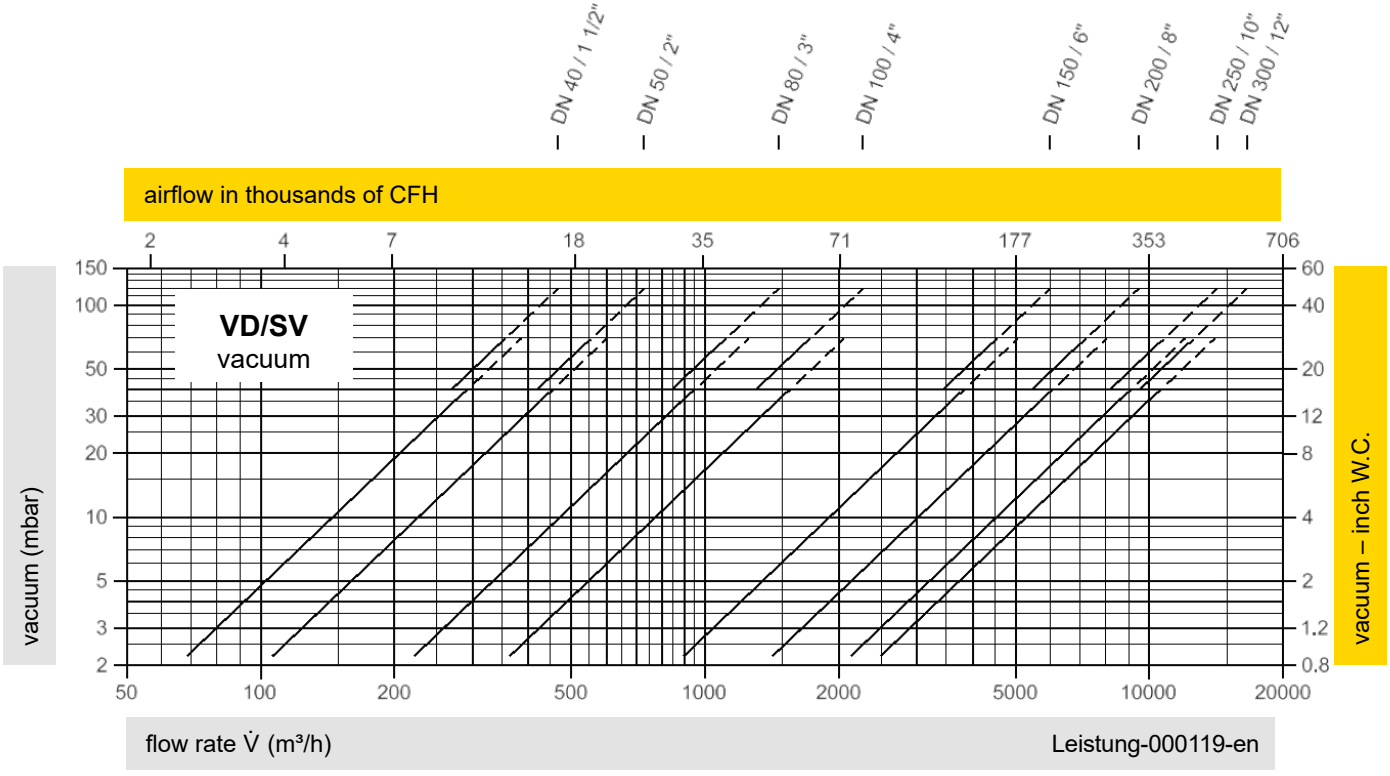


Pressure and Vacuum Relief Valve

Flow Capacity Charts

PROTEGO® VD/SV





The flow capacity charts have 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 in ISO 6358 (20°C, 1bar).
For conversion to other densities and temperatures, refer to Sec. 1: “Technical Fundamentals.”