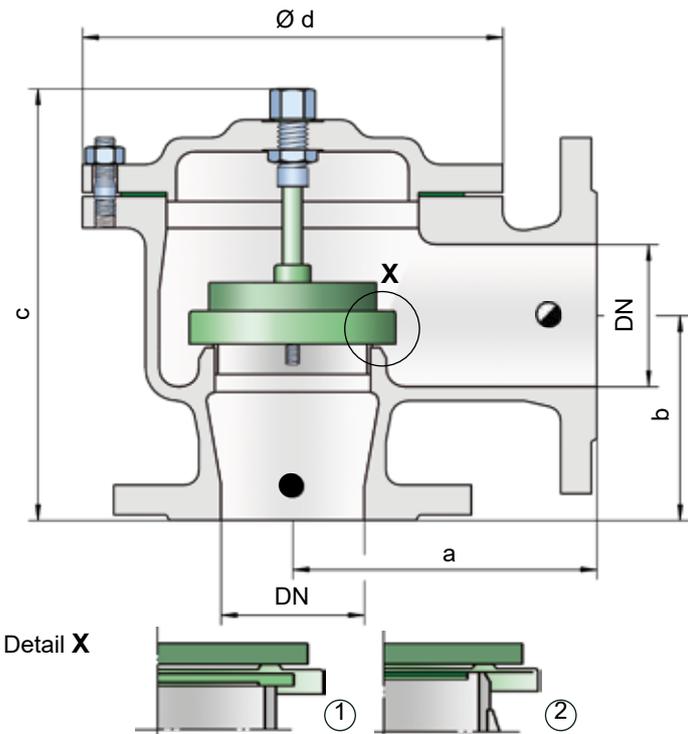


## Pressure or Vacuum Relief Valve, In-Line



**PROTEGO® DZ/E**



● = Tank connection for pressure relief function

◐ = Tank connection for vacuum relief function

Flow direction marked at the housing by →

### Pressure or vacuum settings:

DN 25 and 32	±3.5 mbar	up to ±60 mbar
DN 1" and 1¼"	±1.4 inch W.C.	up to ±24 inch W.C.
DN 40	up to 300 ±2.0 mbar	up to ±60 mbar
DN 1½" up to 12"	± 0.8 inch W.C.	up to ±24 inch W.C.

For higher set pressure or vacuum, refer to type DZ/E-F.

### Function and Description

The PROTEGO® in-line valve DZ/E is a state-of-the-art pressure or vacuum relief valve with a right angle design. Typically, the valve is installed in the in-breathing or out-breathing lines of tanks, vessels, and process equipment to protect against unallowable overpressure or underpressure. The valve prevents emission losses almost up to the set pressure and prevents unacceptable product entry.

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 the set pressure with a tightness that is far above the conventional standard. This feature is

ensured by valve seats made of high quality stainless steel and with individually lapped valve pallets (1), or with an air cushion seal (2), in conjunction with a high quality FEP diaphragm. The valve pallets are also available with a PTFE seal to prevent 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 work, resulting in 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
- based on 10% technology, set pressure is close to opening pressure for optimum pressure maintenance in the system as compared to conventional 40% or 100% technology
- high flow capacity reduces costs through the use of smaller valves
- can be used as pressure or vacuum relief valve
- compact, space-saving right-angle design
- can be used in explosion hazardous areas
- sturdy housing design (PN 10)
- maintenance-friendly design

### Designs and Specifications

The valve pallet is weight-loaded. **Higher set pressures for pressure and vacuum are achieved by using spring-loaded type DZ/E-F.**

Two different right angle designs are available:

In-line pressure or vacuum relief valve, standard design

**DZ/E - [ ]**

In-line pressure or vacuum relief valve with heating jacket

**DZ/E - [H]**

Additional special devices available upon request.

Within piping systems, the influence of backpressure has to be considered when deciding the set pressure and opening characteristics. For special design solutions (e.g., partial load operation), the valve can be supplied with standard valve pallets (with proportional opening function).



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), please use the flow capacity chart on the following page.

DN	25 / 1"	32 / 1 ¼"	40 / 1 ½"	50 / 2"	80 / 3"	100 / 4"	150 / 6"	200 / 8"	250 / 10"	300 / 12"
a	110 / 4.33	110 / 4.33	125 / 4.92	125 / 4.92	170 / 6.69	190 / 7.48	230 / 9.06	275 / 10.83	325 / 12.80	350 / 13.78
b	75 / 2.95	75 / 2.95	90 / 3.54	90 / 3.54	115 / 4.53	120 / 4.72	160 / 6.30	225 / 8.86	275 / 10.83	300 / 11.81
c	180 / 7.09	180 / 7.09	230 / 9.06	230 / 9.06	245 / 9.65	260 / 10.24	335 / 13.19	505 / 19.88	575 / 22.64	630 / 24.80
d	150 / 5.91	150 / 5.91	170 / 6.69	170 / 6.69	235 / 9.25	280 / 11.02	335 / 13.19	420 / 16.54	505 / 19.88	565 / 22.24

Dimensions for pressure or vacuum relief valve with heating jacket upon request.

**Table 2: Material selection for housing**

Design	A	B	C
Housing	Steel	Stainless Steel	Hastelloy
Heating jacket (DZ/E-H-...)	Steel	Stainless Steel	Stainless Steel
Valve seat	Stainless Steel	Stainless Steel	Hastelloy
Gasket	PTFE	PTFE	PTFE
Valve pallet <b>DN 40 - 300 / 1 ½" - 12"</b>	A, C, E, F	A, C, E, F	B, D, G
Valve pallet <b>DN 25 - 32 / 1" - 1 ¼"</b>	H, I, J	H, I, J	-

The housings are also available with an ECTFE-coating.

Special materials upon request.

**Table 3: Material selection for valve pallet**

**DN 40 - 300 / 1 ½" - 12"**

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

**DN 25 - 32 / 1" - 1 ¼"**

Design	H	I	J
Pressure range (mbar) (inch W.C.)	±3,5 up to ±15 ±1.4 up to ±6.0	±15 up to ±60 ±6.0 up to ±24	±15 up to ±60 ±6.0 up to ±24
Valve pallet	PTFE	Stainless Steel	Stainless Steel
Sealing	PTFE	Metal to Metal	PTFE

Special materials upon request.

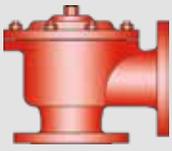
For higher set pressure or vacuum, refer to type DZ/E-F.

**Table 4: Flange connection type**

EN 1092-1; Form B1	Other types upon request.
ASME B16.5 CL 150 R.F.	



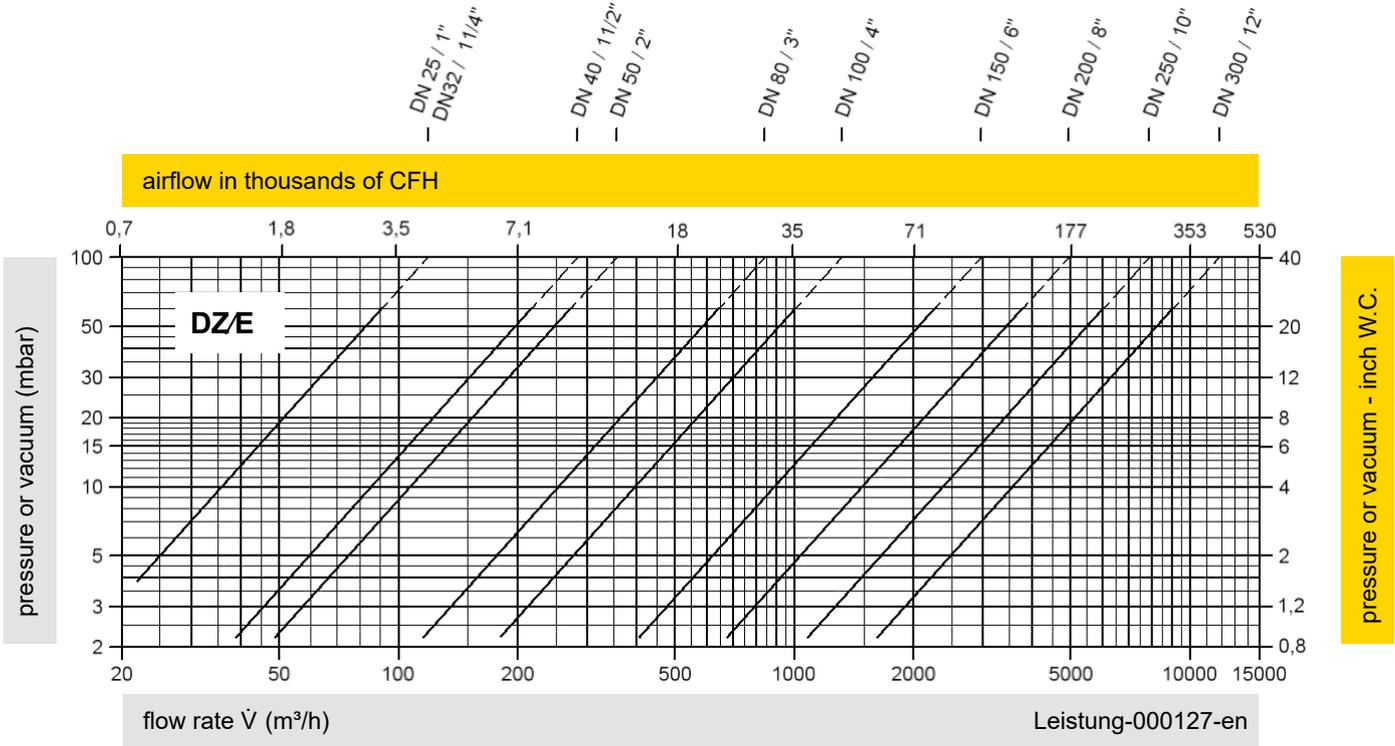
for safety and environment



# Pressure or Vacuum Relief Valve, In-Line

## Flow Capacity Chart

### PROTEGO® DZ/E



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."