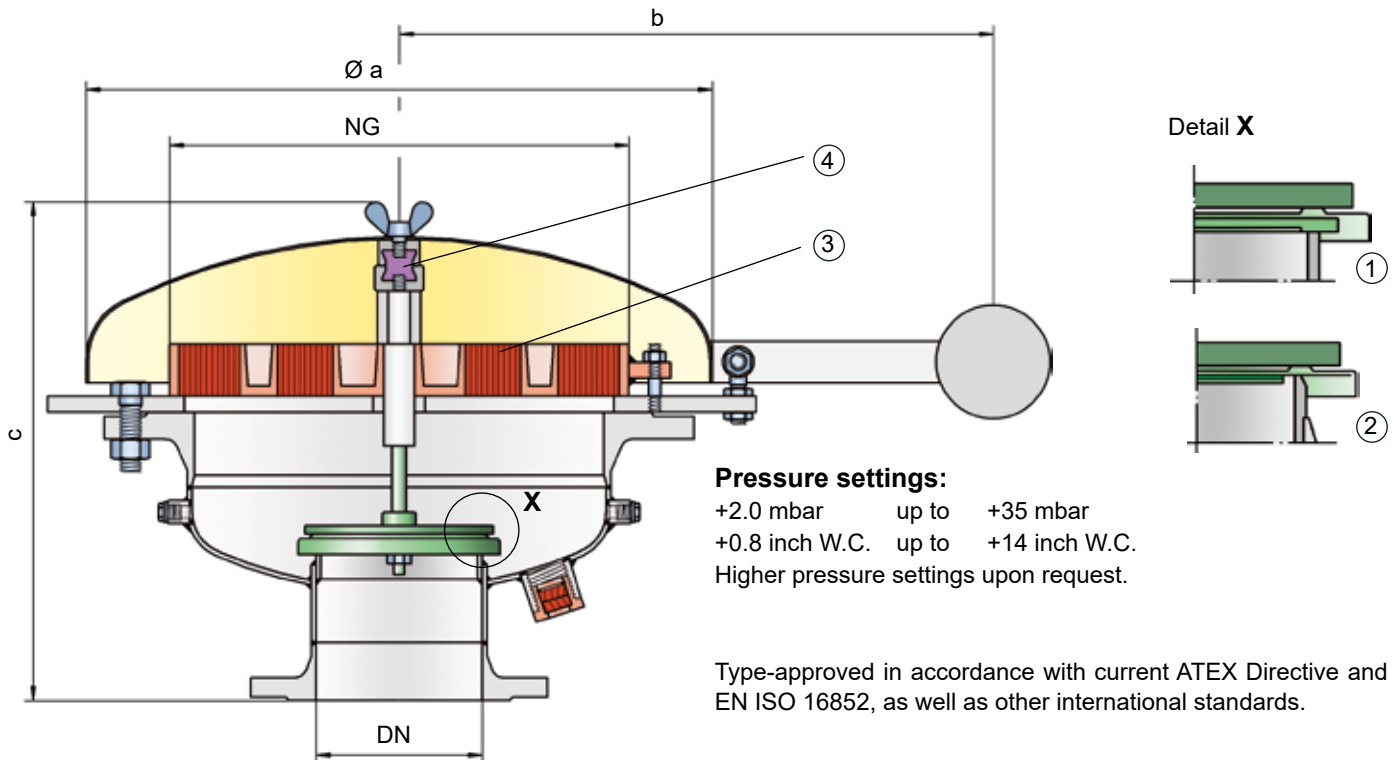


Pressure Relief Valve

Deflagration-proof and Endurance Burning-proof

PROTEGO® BE/HR-D



Pressure settings:

+2.0 mbar up to +35 mbar
 +0.8 inch W.C. up to +14 inch W.C.
 Higher pressure settings upon request.

Type-approved in accordance with current ATEX Directive and EN ISO 16852, as well as other international standards.

Function and Description

The deflagration-proof and endurance burning-proof BE/HR-D type PROTEGO® valve is a highly developed pressure relief valve with an integrated flame arrester unit. It is primarily used as a safety device for flame transmission-proof out-breathing on tanks, containers, and process equipment. The valve offers reliable protection against overpressure and prevents product losses almost up to the set pressure, while at the same time protecting against atmospheric deflagration and endurance burning if stabilized burning occurs. The PROTEGO® flame arrester unit is designed to achieve minimum pressure drop with maximum safety. The BE/HR-D valve is available for substances from explosion group IIA (NEC group D MESH > 0.9 mm).

When the set pressure is reached, the valve starts to open and reaches full lift within 40% overpressure. The tank pressure is maintained up to the set pressure with a tightness that is far above conventional standards due to our state-of-the-art manufacturing technology. This feature is ensured by the 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 high quality FEP diaphragm. After the overpressure is released, the valve re-seats and provides a tight seal.

If the set pressure is exceeded, explosive gas/product vapor/ air mixtures are released into the atmosphere. If this mixture ignites, the integrated PROTEGO® flame arrester unit (3) prevents flame transmission into the tank. If additional mixture continues to flow and stabilized burning occurs, the integrated flame arrester unit prevents flashback as a result of endurance burning. The valve is protected and also fulfils its function under these severe conditions. The spring-loaded weather hood opens as soon as the melting element (4) melts.

The valve can be used at an operating temperature of up to +60°C / 140°F and meets the requirements of European tank design standard EN 14015 (Appendix L) and ISO 28300 (API 2000).

Special Features and Advantages

- requires only 40% overpressure to reach full lift
- due to 40% technology, higher set pressures can be used, resulting in reduced product loss, as compared to conventional 100% technology (compare API 2000)
- extreme tightness, resulting in lowest possible product losses and reduced environmental pollution
- valve pallet is guided inside the housing to protect against harsh weather conditions
- can be used as a protective system in areas with potentially explosive atmospheres in accordance with ATEX
- high flow capacity due to large FLAMEFILTER® cross section
- PROTEGO® flame arrester unit provides protection against atmospheric deflagrations and endurance burning
- integrated PROTEGO® flame arrester unit saves space and weight and reduces costs
- PROTEGO® flame arrester unit is protected from clogging and sticky substances caused by product vapors
- minimum pressure loss of the PROTEGO® flame arrester unit
- flameproof condensate drain
- maintenance-friendly design

Design and Specifications

The valve pallet is weight-loaded.

Pressure relief valve, basic design

BE/HR-D-400/...

Additional special devices available upon request.



Table 1: Dimensions

Dimensions in mm / inches

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

DN	150 / 6"	200 / 8"	NG = Nominal size.
NG	400 / 16"	400 / 16"	
a	600 / 23.62	600 / 23.62	
b	545 / 21.46	545 / 21.46	
c	485 / 19.09	485 / 19.09	

Table 2: Selection of explosion group

MESG	Expl. Gr. (IEC/CEN)	Gas Group (NEC)	Special approvals upon request.
> 0,90 mm	IIA	D	

Table 3: Material selection for housing

Design	A	B	Special materials upon request.
Housing	Steel	Stainless Steel	
Valve seat	Stainless Steel	Stainless Steel	
Weather hood	Steel	Stainless Steel	
Flame arrester unit	A	B	

Table 4: Material combinations of flame arrester unit

Design	A	B	Special materials upon request.
FLAMEFILTER® casing	Steel	Stainless Steel	
FLAMEFILTER®	Stainless Steel	Stainless Steel	

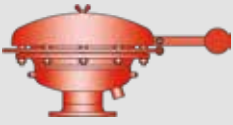
Table 5: Material selection for valve pallet

Design	A	B	C	Special materials and higher pressure settings upon request.
Pressure range (mbar) (inch W.C.)	+2.0 up to +3.5	>+3.5 up to +14	>+14 up to +35	
	+0.8 up to +1.4	>+1.4 up to +5.6	>+5.6 up to +14	
Valve pallet	Aluminum	Stainless Steel	Stainless Steel	
Sealing	FEP	FEP	Metal to Metal	

Table 6: Flange connection type

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



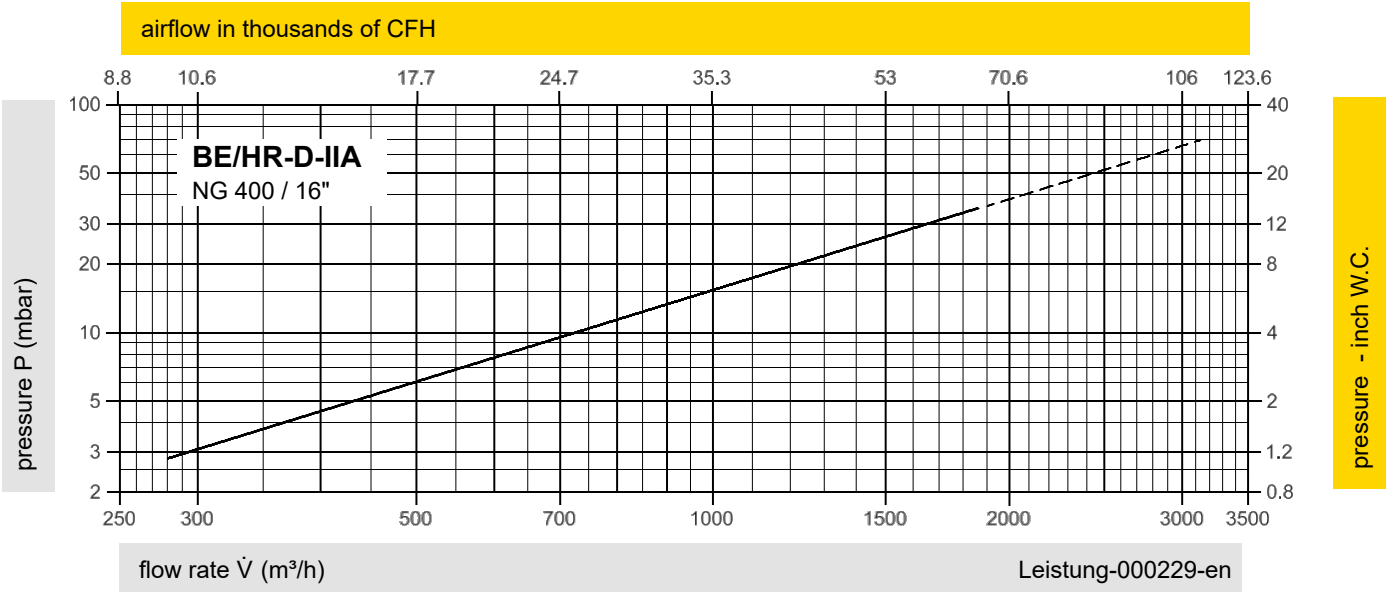


Pressure Relief Valve

Flow Capacity Chart

PROTEGO® BE/HR-D

DN 150 / 6"
DN 200 / 8"



Remark

$$\text{set pressure} = \frac{\text{opening pressure resp. tank design pressure}}{1,4}$$

Set pressure = the valve starts to open

Opening pressure = set pressure plus overpressure

Overpressure = pressure increase over the set pressure

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."