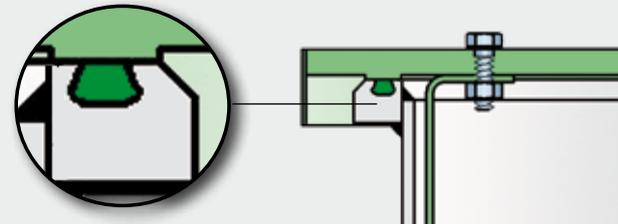


Self Closing Emergency Pressure Relief Valve



Start to cut costs and losses and help to protect the environment!

- **10% Full Lift Type Technology**
- **Leake Rate**



Applications

Pressure relief valves PROTEGO® ER/V are generally used as so-called Emergency Relief Valves for tanks in compliance with Annex L of the European Standard EN 14015 or the American Standard API 2000 for fire condition. To meet the goal of emission reduction, PROTEGO® full lift vents utilize 10% overpressure technology. An additional design advantage to the “full lift type” technology is the higher flexibility in setting the vent closer to the design pressure of the tank. Setting the emergency relief valve higher also allows the increase of the set pressure of the 10% full lift type conservation vent. Using both technologies in combination results in maximum vapor saving potential.

Benefits

- excellent tightness is made possible by valve seats made of stainless steel with a precisely lapped valve disc and an inserted o-ring seal, resulting in the lowest possible product losses and reduced environmental impact
- 10% technology for minimum pressure increase up to full lift
- sturdy housing design
- set pressure close to opening pressure for optimum pressure maintenance in the system
- self closing safely secured valve pallet
- high flow capacity (DN200/8" up to DN700/28")
- Pressure Settings
DN 200/8" to DN 350/14": +5 mbar up to +40 mbar
DN 400/16" to DN 700/28": +5 mbar up to +25 mbar
- higher set pressures are achieved with types ER/V and ER/VH (up to 60 mbar, lever-operated) valves or type ER/V-F (up to 500 mbar, spring-loaded) valves.



ER/V-F without weather hood





The Quality and the Know-how of PROTEGO® Are Worth It!

Example for tank design according to EN 14015 / API 650

PROTEGO® 10% full lift type technology

For the PROTEGO® emergency relief valve (ER/V), a tank design pressure of 20 mbarg results in a set pressure of 18 mbarg due to the 10% technology.

By comparison, a common emergency pressure relief valve already opens at 10 mbarg.

The 10% technology for an ER/V is an advantage as the set pressure of the breather valve can also be increased. So, vapor losses are reduced to an absolute minimum.

PROTEGO® standard for measuring leakage rates

The leakage rates depend on the size of the device (table 1).

Depending on the set pressure, the leakage rates are measured at a test pressure of 75% and 90% of the set pressure (table 2).

According to standard ISO 28300 and API 2000, 7th Edition, the measured leak rate shall be less than the value specified in table 3 at 75% of the adjusted set pressure.

Nominal Size	Leak Rate A	Time
DN	cm ³ /min (bubbles per min)	in min
200 / 8"	37.5 (125)	2
250 / 10"	47.1 (157)	2
300 / 12"	56.4 (188)	2
350 / 14"	66.0 (220)	2
400 / 16"	75.6 (252)	2
450 / 18"	94.2 (314)	2
500 / 20"	94.2 (314)	2
600 / 24"	112.8 (376)	2
700 / 28"	132.4 (440)	2

Table 1: Admissible leak rates according to the normal PROTEGO® standard



Figure 3: PROTEGO® vent valve testing

Example for leakage rates according to the PROTEGO® standard and API 2000, 7th Edition

According to the PROTEGO® standard for a PROTEGO® ER/V size DN 500/20" and a set pressure of 18 mbarg, a leakage rate of 0.005652 m³/h (94.2 cm³/min) at 75% of the set pressure (15.3 mbarg) is achieved.

By comparison, according to API 2000, 7th Edition, 0.5663 m³/h (9438.3 cm³/min) at a design pressure of 75% (13.5 mbarg) are allowed.

At a higher design pressure, the leakage rate of PROTEGO® is far below the API Standard and complies with the toughest environmental requirements.

Type	Test Pressure as % of the Set Pressure
ER-V-LP	75
ER/V	75
ER/VH	75
ER/V-F	90

Table 2: Test pressure is a function of the adjusted set pressures according to the normal PROTEGO® standard

Vent Size	Maximum allowable Leak Rate
[mm/inches]	[m ³ /h] (CFH)
≤ 150/6	0.0142 (0.5)
200/8 to 400/16	0.1416 (5.0)
> 400/16	0.5663 (20.0)

Table 3: Maximum allowable leak rate according API 2000, 7th Edition

Additional information about ER-V-LP can be found in a separate flyer.

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