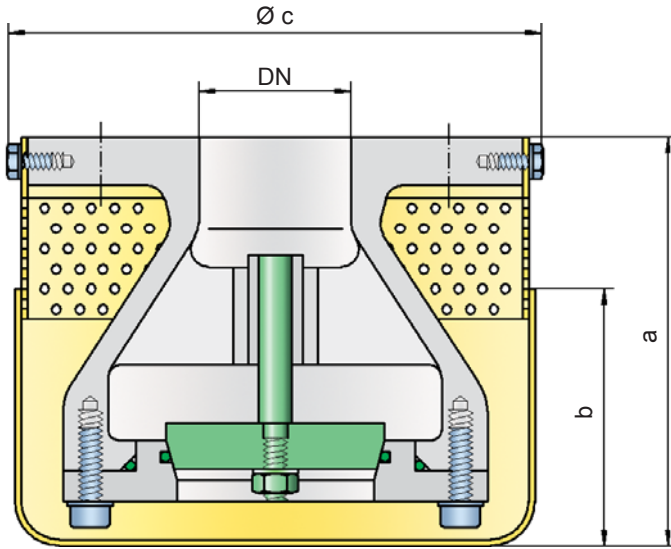


## Detonation Flame Arrester

Detonation-proof foot valve for suction lines

**PROTEGO® EF/V-IIB3**



Combustible mixtures can arise in filling and drain lines of storage containers that are not always filled with product. With the ignition of the explosive atmosphere, highly accelerated pipe deflagration or detonations can arise. The detonation-proof foot valve prevents the combustion from being transmitted into the tank and destroying it. The design of the foot valve ensures that the strainer is always filled with residual product. Together with the special valve design, this combination prevents flame flash back from the inside out.

The application limits for the device are a product vapour/air mixture temperature up to +60°C / 140°F and an absolute pressure up to 1.1 bar / 15.9 psi. This covers all of the possible operating conditions of empty lines for flammable liquids.

The device protects against nearly all flammable liquids, and is permitted for explosion group IIB3 (C MESG ≥ 0.65 mm).

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

### Function and Description

The PROTEGO® EF/V-IIB3 detonation-safe foot valve protects the suction line in a storage tank. The nearly service-free device is installed at the end of the emptying line within the tank. When a pump draws, the valve opens at an approximate underpressure of 30 mbar / 12 inch W.C. . When the pump is turned off, the device functions as a check valve and prevents the line from emptying. This is very helpful when the pump is restarted.

### Special Features and Advantages

- almost service-free
- the check valve makes it easier to start the pump
- provides protection from deflagrations and stable detonations
- applicable to nearly all flammable liquids
- meets TRbF\* 20 requirements
- the special strainer prevents solid particles from entering

\*TRbF = technical regulations for flammable liquids

**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"	65 2 ½"	80 3"	100 4"	125 5"	150 6"	200 8"	250 10"
a	125 / 4.92	125 / 4.92	135 / 5.31	135 / 5.31	160 / 6.29	160 / 6.29	200 / 7.87	235 / 9.25	260 / 10.24	400 / 15.75	450 / 17.72
b	85 / 3.35	85 / 3.35	85 / 3.35	85 / 3.35	95 / 3.74	95 / 3.74	125 / 4.92	130 / 5.12	135 / 5.31	175 / 6.89	200 / 7.81
c	155 / 6.10	155 / 6.10	180 / 7.09	180 / 7.09	210 / 8.27	210 / 8.27	250 / 9.84	310 / 12.20	365 / 14.37	480 / 18.90	565 / 22.24

**Table 2: Selection of the explosion group**

MESG	Expl. Gr. (IEC/CEN)	Gas Group (NEC)	Special approvals upon request
≥ 0,65 mm	IIB3	C	

**Table 3: Specification of max. operating temperature**

≤ 60°C / 140°F	T maximum allowable operating temperature in °C	higher operating temperatures upon request
-	Designation	

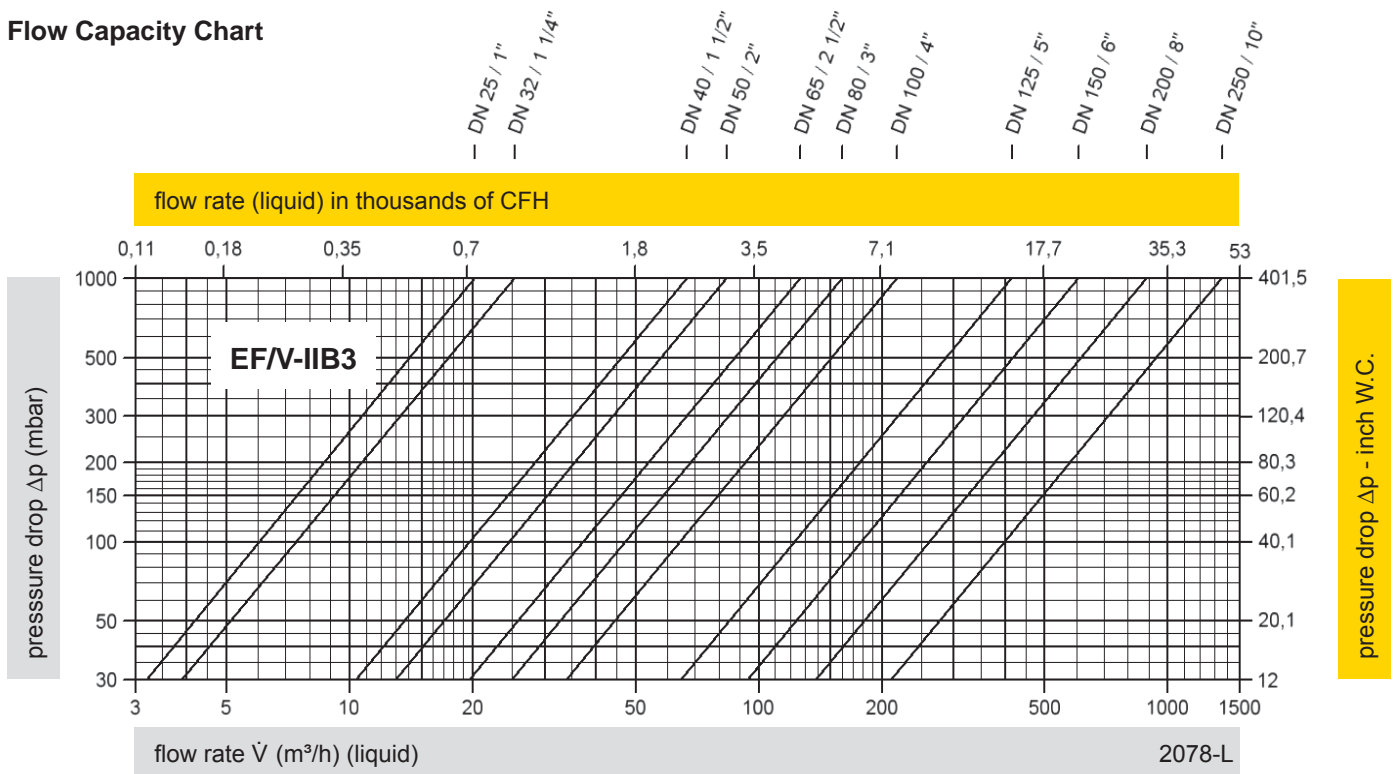
**Table 4: Material selection for housing**

Design	A	B	C	D	Special materials upon request
Housing	Steel	Stainless Steel	Steel	Stainless Steel	
Valve	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	
Gasket (Valve)	PTFE	PTFE	PTFE	PTFE	
Gasket (Housing)	FPM	FPM	PTFE	PTFE	
Strainer	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	

**Table 5: Flange connection type**

EN 1092-1; Form A	other types upon request
ASME B16.5; 150 lbs FFSS	

**Flow Capacity Chart**



$$\text{Conversion: } \dot{V}_{\text{liquid}} = \dot{V}_{\text{water}} * \sqrt{\frac{\rho_{\text{water}}}{\rho_{\text{liquid}}}}$$

The volume flow  $\dot{V}$  in  $\text{m}^3/\text{h}$  was determined with water according to DIN EN 60534 at a temperature  $T_n = 15^\circ\text{C}$  and an atmospheric pressure  $p_n = 1,013 \text{ bar}$ , kinematic viscosity  $\nu = 10^{-6} \text{ m}^2/\text{s}$ .  
To avoid electrostatic charge of flammable liquids the maximum flow is limited (refer to BG-Regulation 132, CENELEC-Report CLC/TR 50404).

