

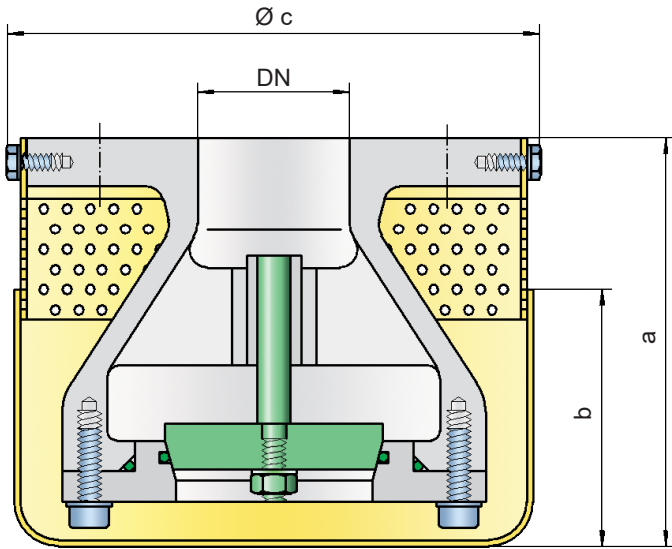
# Detonation Flame Arrester

Detonation-proof foot valve for suction lines

**PROTEGO® EF/V-IIB3**



EFV-IIB3



Combustible mixtures can form in filling and drain lines of storage containers that are not always filled with product. Ignition of explosive atmospheres can lead to highly accelerated pipe deflagration or detonations. 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 vapor/air mixture temperature of up to +60°C / 140°F and an absolute pressure up to 1.1 bar / 15.9 psi. This covers all 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 virtually maintenance-free device is installed at the end of the emptying line within the tank. During suction, the valve opens at an approximate under-pressure 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

- virtually maintenance-free
- check valve makes starting the pump easier
- provides protection against deflagrations and stable detonations
- useable for nearly all flammable liquids
- meets TRbF\* 20 requirements
- 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.
-	Classification	

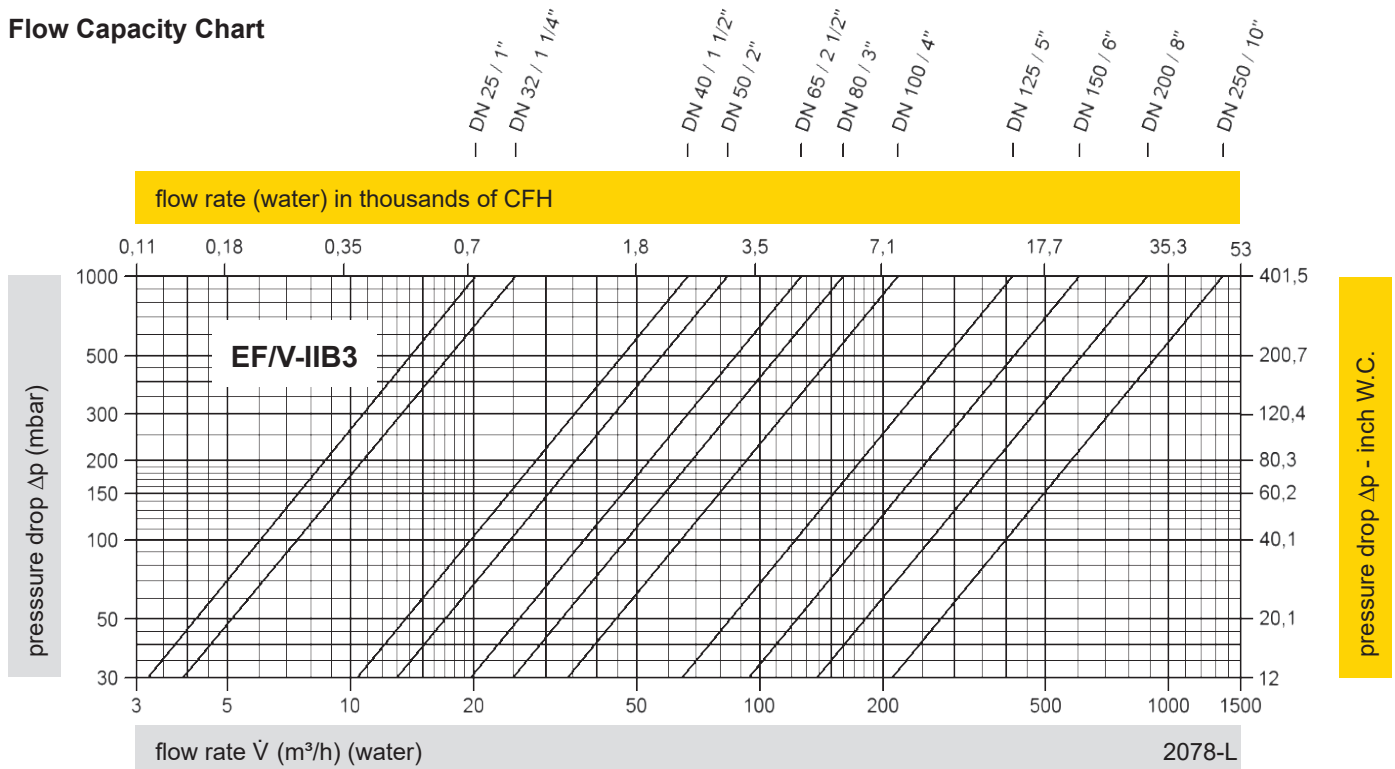
**Table 4: Material selection for housing**

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 CL 150 F.F.	

**Flow Capacity Chart**



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

The volume flow  $\dot{V}$  in m³/h was determined with water, in accordance with DIN EN 60534, at a temperature  $T_n = 15^\circ\text{C}$  and an atmospheric pressure  $p_n = 1,013$  bar, kinematic viscosity  $\nu = 10^{-6}$  m²/s.

To avoid electrostatic charge of flammable liquids, the maximum flow is limited (refer to TRGS 727, CENELEC-Report CLC/TR 60079-32-1).

