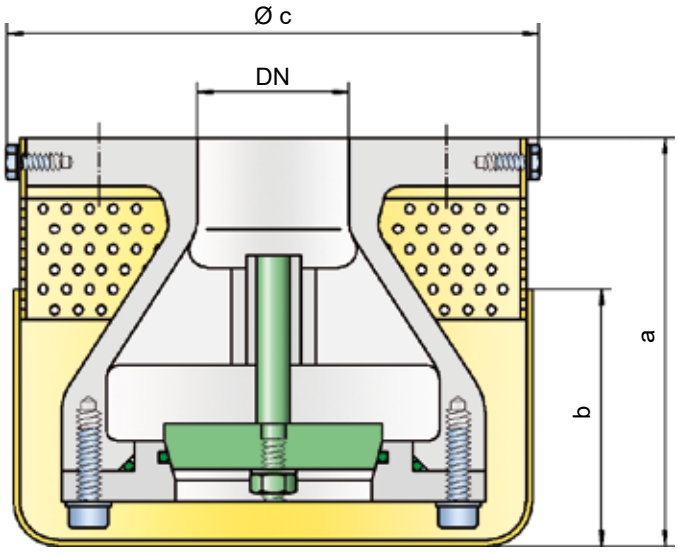
Detonation Flame Arrester

Detonation-proof foot valve for suction lines

PROTEGO® EF/V-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).

EU conformity according to the currently valid ATEX directive. Approvals according to other national/international regulations on request.

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 TRGS* requirements
- special strainer prevents solid particles from entering

* TRGS = technical regulations for hazardous substances

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)	
≥ 0,65 mm	IIB3	C	Special approvals upon request.

Table 3: Specification of max. operating temperature

≤ 60°C / 140°F	Tmaximum allowable operating temperature in °C
-	Classification

Higher operating temperatures upon request.

Table 4: Material selection for housing

Design	A	B	C	D
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

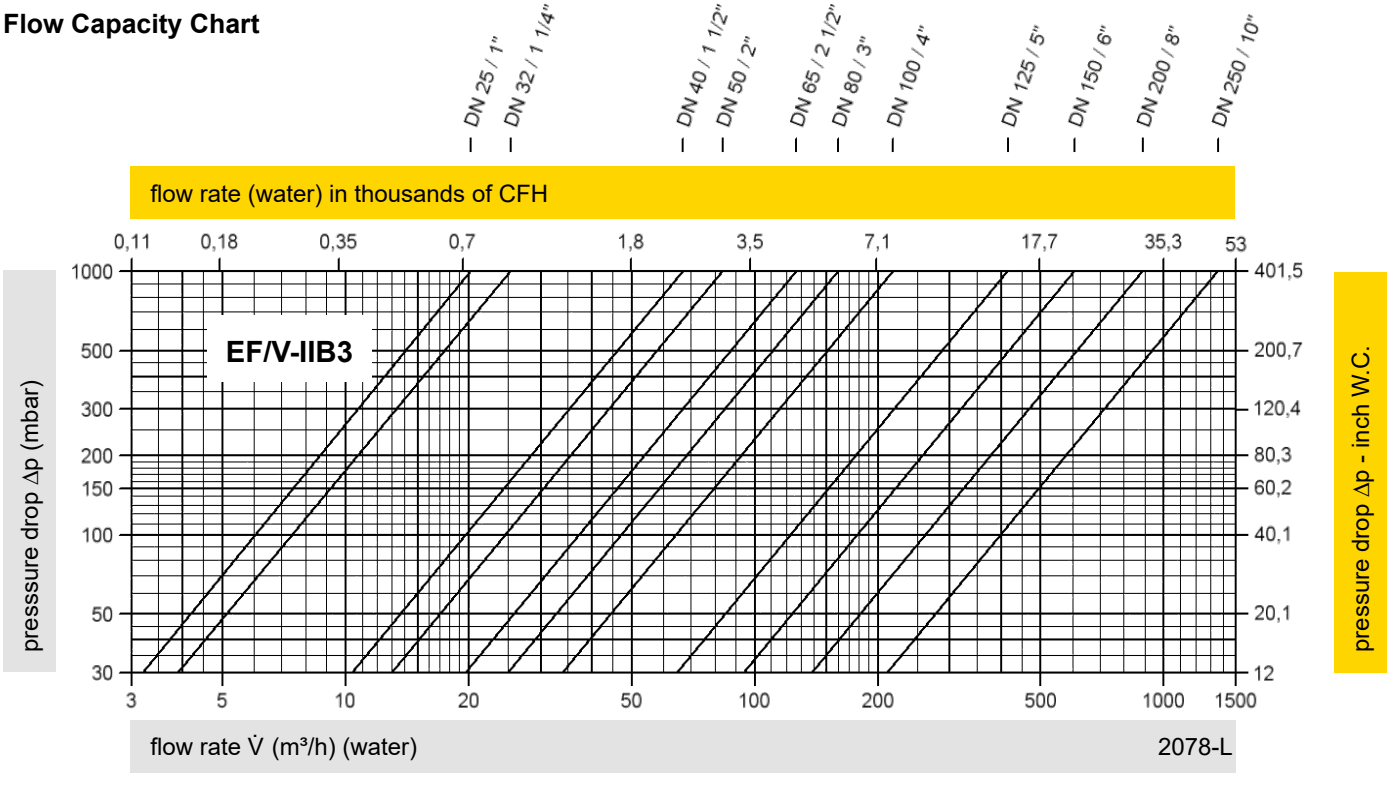
Special materials upon request.

Table 5: Flange connection type

EN 1092-1; Form A
ASME B16.5 CL 150 F.F.

Other types upon request.

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 V̇ in m³/h was determined with water, in accordance with DIN EN 60534, at a temperature T_n = 20°C and an atmospheric pressure p_n = 1,013 bar, kinematic viscosity v = 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).

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