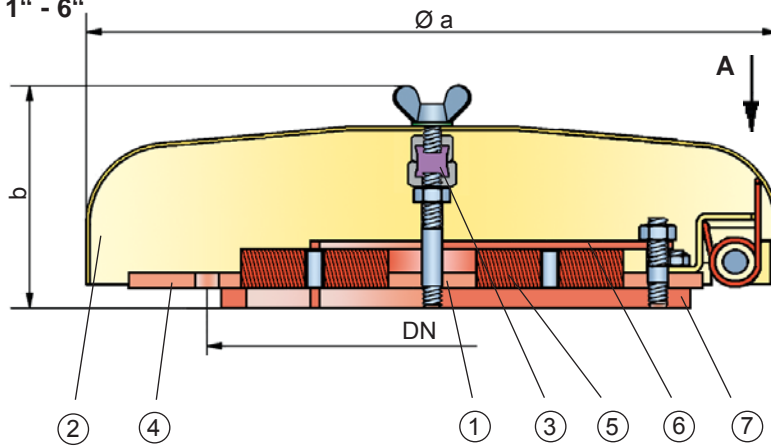




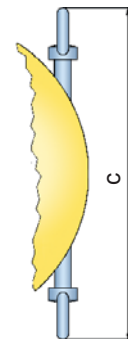
Deflagration Flame Arrester, endurance burning proof, End-of-Line

PROTEGO® EB-IIA and IIB

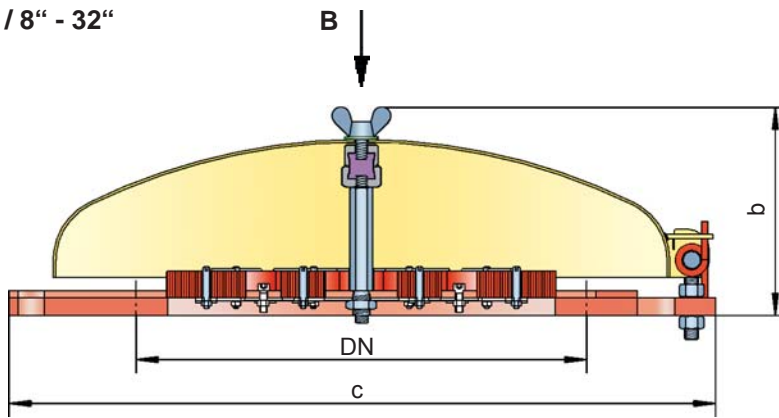
DN 25 - 150 / 1" - 6"



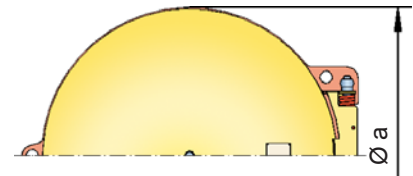
View A



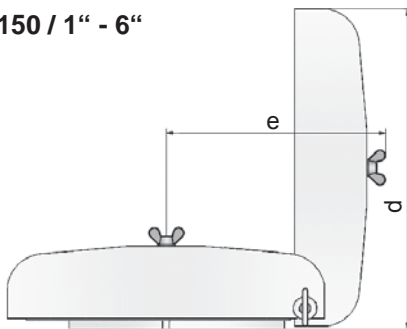
DN 200 - 800 / 8" - 32"



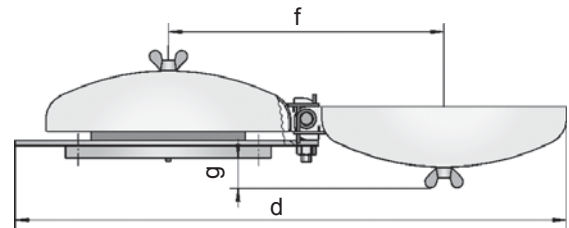
View B



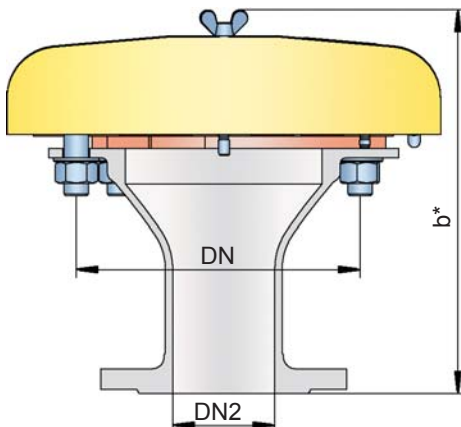
DN 25 - 150 / 1" - 6"



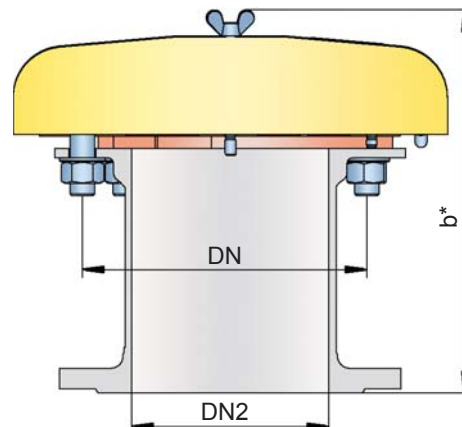
DN 200 - 800 / 8" - 32"



EB with cone (example)



EB with nozzle (example)



Function and Description

The PROTEGO® EB end-of-line deflagration flame arrester has been successfully used to protect vessels and plants which are not pressurized. The device provides protection against atmospheric deflagration and stabilized flames which can burn for very long time on the flame arrester element surface, so called endurance burning. Main application area is on suction and vent lines, with the goal to prevent flame transmission caused by endurance burning or atmospheric deflagration from propagating into the vessel or plant.

The PROTEGO® EB-IIA consists of the PROTEGO® flame arrester unit (1) and the metal weather hood (2). During normal operation the metal weather hood is in a closed position. If a stabilized flame burns on the flame arrester element surface, the fusible link (3), located in a center position, will melt and let the spring loaded weather hood move into the open position. The PROTEGO® flame arrester unit consists of one or more FLAMEFILTER® (5), which are installed in a FLAMEFILTER® cage (4), a intersecting ribs (6) and a spider ring (7). The FLAMEFILTER® gap size, the height and the quantity depend on the devices intended use.

The PROTEGO® EB series end-of-line deflagration flame arrester is available for substances from explosion group IIA and IIB (NEC group D and B).

The standard design can be used with operating temperature of up to +60°C / 140°F. Devices with special approval can be obtained for higher temperatures upon request.

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

Special Features and Advantages

- weather hood protects against environmental impact (i.e. weather, bird nests, etc.)
- weather hood will open and signal the impact of a flame
- protection against atmospheric deflagration and endurance burning of pure hydrocarbons
- fusible link is resistant against chemicals
- modular design allows replacement of single FLAMEFILTER®
- easy maintenance without disassembling of the FLAMEFILTER®
- modular design results in low spare part costs

Design Types and Specifications

End-of-line deflagration flame arrester, basic design	EB
End-of-line deflagration flame arrester, with cone	EB - DN/DN2
End-of-line deflagration flame arrester, with cone and heating jacket	EB - H - DN/DN2
Special designs available on request	

Table 1: Dimensions DN 25 - 150 / 1" - 6"
EB-IIA and EB-IIB

Dimensions in mm / inches

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

DN	25 / 1"	32 / 1¼"	40 / 1½"	50 / 2"	65 / 2½"	80 / 3"	100 / 4"	125 / 5"	150 / 6"
a	218 / 8.58	218 / 8.58	218 / 8.58	218 / 8.58	218 / 8.58	353 / 13.90	353 / 13.90	353 / 13.90	353 / 13.90
b	113 / 4.45	113 / 4.45	113 / 4.45	113 / 4.45	113 / 4.45	113 / 4.45	113 / 4.45	113 / 4.45	113 / 4.45
c	232 / 9.13	232 / 9.13	232 / 9.13	232 / 9.13	232 / 9.13	306 / 12.05	306 / 12.05	306 / 12.05	306 / 12.05
d	222 / 8.74	222 / 8.74	222 / 8.74	222 / 8.74	222 / 8.74	355 / 13.98	355 / 13.98	355 / 13.98	355 / 13.98
e	217 / 8.54	217 / 8.54	217 / 8.54	217 / 8.54	217 / 8.54	322 / 12.68	322 / 12.68	322 / 12.68	322 / 12.68

EB-IIA und IIB with cone/nozzle**

DN				50 / 2"		80 / 3"	100 / 4"		150 / 6"
DN2				≤ 50 / 2"		≤ 80 / 3"	≤ 100 / 4"		≤ 150 / 6"
b*				238 / 9.37		263 / 10.35	383 / 15.08		313 / 12.32

Dimensions DN 200 - 800 / 8" - 32"

EB-IIA

DN	200 / 8"	300 / 12"	400 / 16"	500 / 20"	600 / 24"	800 / 32"
a	405 / 15.94	555 / 21.85	705 / 27.75	855 / 33.66	1005 / 39.57	1210 / 47.64
b	177 / 6.97	206 / 8.11	235 / 9.25	265 / 10.43	294 / 11.57	330 / 12.99
c	496 / 19.53	650 / 25.59	802 / 31.57	987 / 38.86	1137 / 44.76	1336 / 52.60
d	900 / 35.43	1200 / 47.24	1500 / 59.06	1820 / 71.65	2120 / 83.46	2525 / 99.41
f	450 / 17.72	600 / 23.62	750 / 29.53	920 / 36.22	1070 / 42.13	1270 / 50.00
g	51 / 2.01	80 / 3.15	109 / 4.29	138 / 5.43	167 / 6.57	204 / 8.03

EB-IIA with cone/nozzle**

DN	200 / 8"	300 / 12"	400 / 16"	500 / 20"	600 / 24"	800 / 32"
DN2	≤ 200 / 8"	≤ 300 / 12"	≤ 400 / 16"	≤ 500 / 20"	≤ 600 / 24"	≤ 800 / 32"
b*	401 / 15.94	456 / 17.95	535 / 21.06	614 / 24.17	693 / 27.28	830 / 32.68

** combinations (DN/DN2) please use the table on the following page





Deflagration Flame Arrester, endurance burning proof, End-of-Line

PROTEGO® EB-IIA and IIB

Table 2: Combination (DN/DN2) for EB with cone

Remarks: Flow capacity charts for EB-DN/DN2-IIA/IIB with cone upon request

DN	50/2"	80/3"	100/4"	150/6"	200/8"	300/12"	400/16"	500/20"	600/24"	800/32"
DN2										
20/¾"	IIA/IIB	IIA/IIB	IIA/IIB	IIA/IIB						
25/1"	IIA/IIB	IIA/IIB	IIA/IIB	IIA/IIB						
32/1¼"	IIA/IIB	IIA/IIB	IIA/IIB	IIA/IIB						
40/1½"	IIA/IIB	IIA/IIB	IIA/IIB	IIA/IIB						
50/2"	IIA/IIB	IIA/IIB	IIA/IIB	IIA/IIB	IIA					
65/2½"		IIA/IIB	IIA/IIB	IIA/IIB						
80/3"		IIA/ IIB	IIA/ IIB	IIA/ IIB	IIA	IIA				
100/4"			IIA/ IIB	IIA/ IIB	IIA	IIA				
125/5"				IIA/ IIB	IIA					
150/6"				IIA/ IIB	IIA	IIA	IIA			
200/8"					IIA	IIA	IIA	IIA	IIA	
250/10"						IIA	IIA	IIA		
300/12"							IIA	IIA	IIA	
350/14"								IIA	IIA	
400/16"								IIA	IIA	IIA
450/18"								IIA	IIA	IIA
500/20"									IIA	IIA
600/24"										IIA
700/28"										IIA

Table 3: Selection of explosion group

MESG	Expl. Gr. (IEC/CEN)	Gas Group (NEC)	
> 0,90 mm	IIA	D	Special approvals upon request
≥ 0,50 mm	IIB	B	

Table 4: Specification of max. operating temperature

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

Table 5: Material selection for housing

Design	A	B	
flange ring	Steel	Stainless Steel	Special materials upon request
Weather hood	Steel	Stainless Steel	
cone/nozzle	Steel	Stainless Steel	
Flame arrester unit	A, B, C	B, C	

Table 6: Material combinations of flame arrester unit

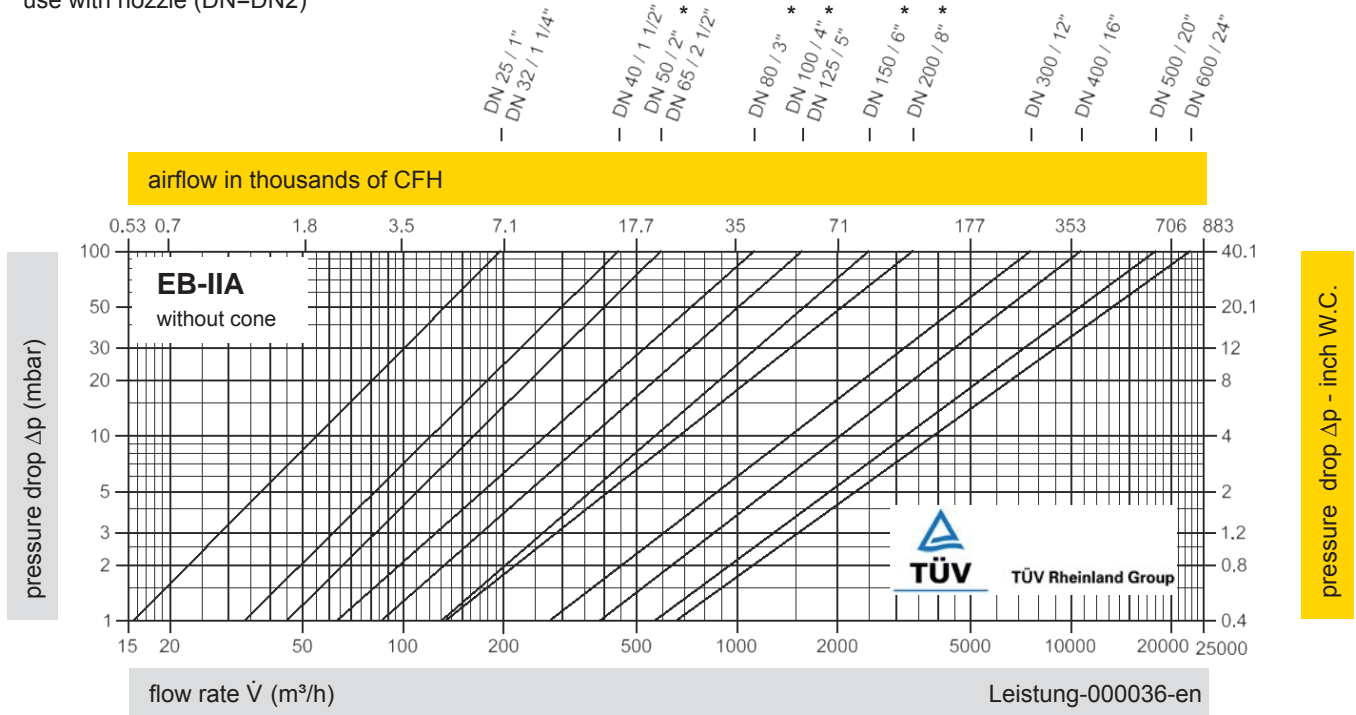
Design	A	B	C	
FLAMEFILTER® cage	Steel	Stainless Steel	Stainless Steel/Hastelloy	Special materials upon request
FLAMEFILTER®	Stainless Steel	Stainless Steel	Hastelloy	
Spider ring/safety bar	Stainless Steel	Stainless Steel	Stainless Steel/Hastelloy	

Table 7: Flange connection type

EN 1092-1 (without cone); EN 1092-1; Form B1 (with cone/nozzle)	other types upon request
ASME B16.5 (without cone); ASME B16.5; 150 lbs RFSF (with cone/nozzle)	

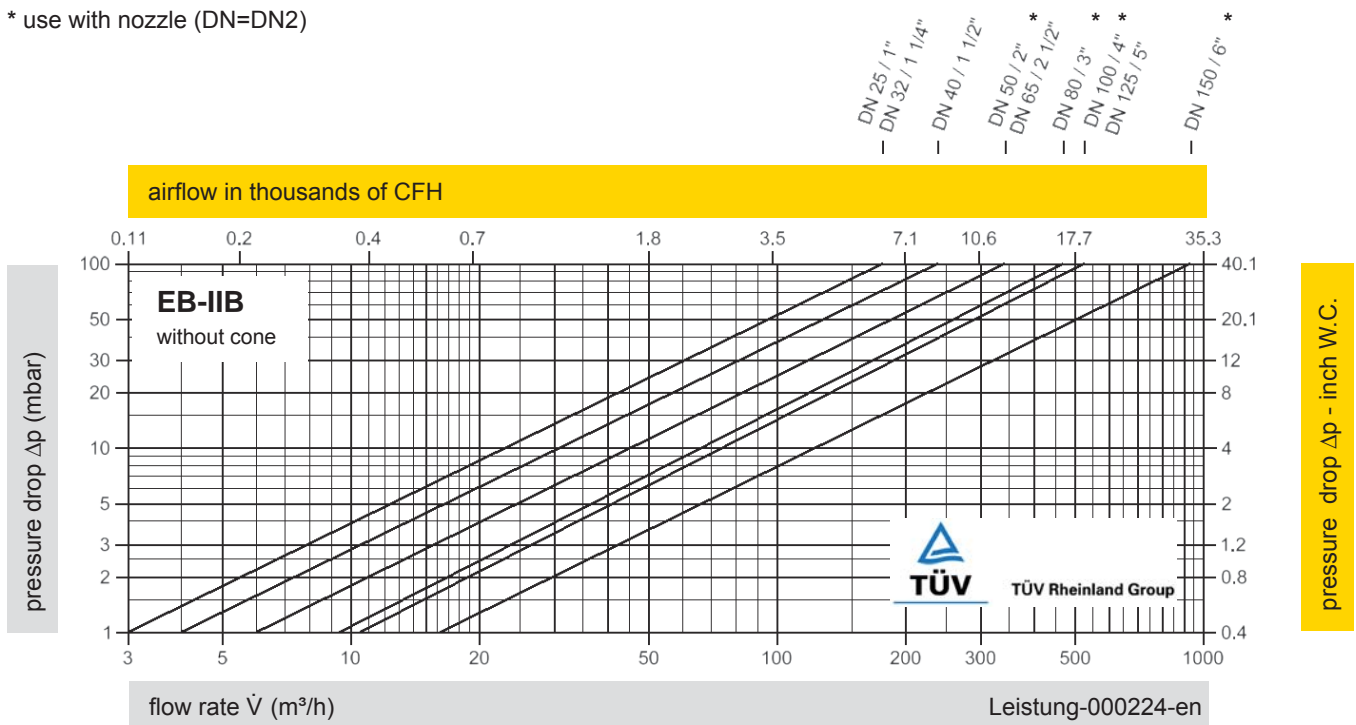
PROTEGO® EB-IIA and IIB
without cone

* use with nozzle (DN=DN2)



Remark: Flow capacity charts for EB-DN/DN2-IIA/IIB with cone upon request

* use with nozzle (DN=DN2)



The flow capacity chart has 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 ISO 6358 (20°C, 1bar).
Conversion to other densities and temperatures refer to Vol. 1: "Technical Fundamentals".