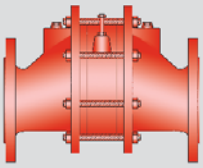
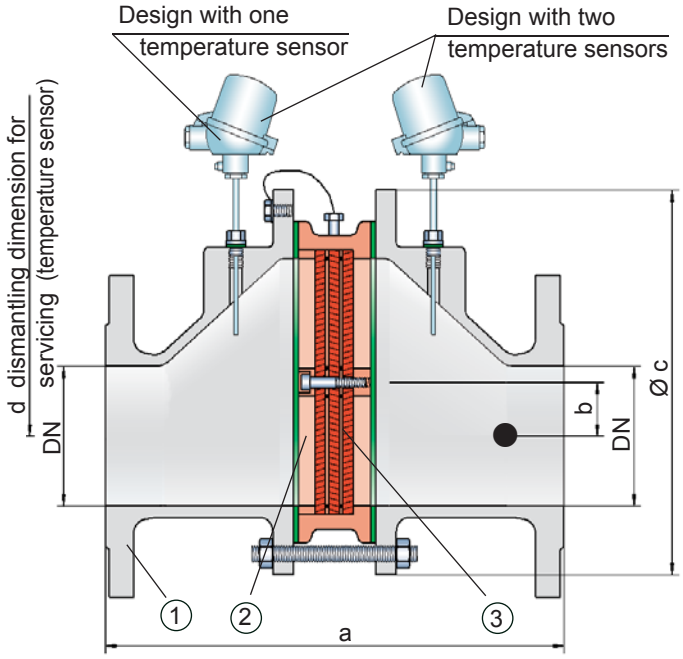


Eccentric In-Line Detonation Flame Arrester

for stable detonations and deflagrations in a straight through design, bidirectional

PROTEGO® DA-E



● Connection to the protected side (only for type DA-E-T-...)

Function and Description

The PROTEGO® DA-E series of detonation arresters is distinguished by its eccentric housing shape. When condensate accumulates within the PROTEGO® flame arrester unit, the design enables the liquid to drain without collecting large amounts in the housing. The eccentric design of the device has decisive advantages in comparison to the classic flame arresters when pipes are installed close to ground level.

The detonation arrester is symmetrical and offers bidirectional flame arresting. The arrester essentially consists of two housing parts (1) and the PROTEGO® flame arrester unit (2) in the center. The PROTEGO® flame arrester unit consists of several FLAMEFILTER® discs (3) and spacers firmly held in a FLAMEFILTER® cage. The number of FLAMEFILTER® discs and their gap size depends on the arrester's conditions of use. By indicating the operating parameters such as temperature, pressure and explosion group and the composition of the fluid, the optimum detonation arrester can be selected. The PROTEGO® DA-E series of flame arresters is available for explosion groups IIA to IIB3 (NEC Group D to C MESG ≥ 0.65 mm).

The standard design can be used up to an operating temperature of +60°C / 140°F and an absolute operating pressure acc. to table 3. Devices with special approval can be obtained for higher pressures and 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

- eccentric design prevents the collection of condensate
- the modular design enables each individual FLAMEFILTER® discs to be replaced
- easy maintenance with quick removal and installation of FLAMEFILTER® discs
- eccentric design allows installation in close to ground level
- bidirectional operation as well as any flow direction and installation position
- protects from deflagration and stable detonation
- installation of temperature sensors possible
- cost efficient spare parts

Design Types and Specifications

There are three different designs available:

Basic design of the detonation arrester	**DA-E-** –
In-line detonation flame arrester with integrated temperature sensor* as additional protection against short time burning of one side	**DA-E-** T
Detonation arrester with two integrated temperature sensors* as additional protection against short time burning from both sides	**DA-E-** TB

Additional special arresters upon request

*Resistance thermometer for device group II, category (1) 2 (GII cat. (1) 2)

Table 1: Dimensions

Dimensions in mm / inches

To select the nominal size (DN), please use the flow capacity charts on the following pages

Expl. Gr.		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"	300 12"
IIA	a		304/315* / 11.97/12.4*	304/315* / 11.97/12.4*	320/ 12.60	325/ 12.80	370/ 14.57	375/ 14.76	380/ 14.96	481/ 18.94	487/ 19.17	510/ 20.08	540/ 21.26	560/ 22.05
IIB3	a		304/ 11.97	304/ 11.97	357/ 14.06	361/ 14.21	408/ 16.06	412/ 16.22	428/ 16.85	493/ 19.41	499/ 19.65	522/ 20.55	552/ 21.73	572/ 22.52
	b		29/ 1.14	29/ 1.14	29/ 1.14	29/ 1.14	38/ 1.50	38/ 1.50	39/ 1.53	65/ 2.56	65/ 2.56	55/ 2.17	58/ 2.28	60/ 2.36
	c		185/ 7.28	185/ 7.28	210/ 8.27	210/ 8.27	250/ 9.84	250/ 9.84	275/ 10.83	385/ 15.16	385/ 15.16	450/ 17.72	500/ 19.69	575/ 22.64
	d		400/ 15.75	400/ 15.75	410/ 16.14	410/ 16.14	440/ 17.32	440/ 17.32	460/ 18.11	520/ 20.47	520/ 20.47	540/ 21.26	570/ 22.44	600/ 23.62

* for IIA-P2.0

Table 2: Selection of the explosion group

MESG	Expl. Gr. (IEC/CEN)	Gas Group (NEC)	
> 0,90 mm	IIA	D	Special approvals upon request
≥ 0,65 mm	IIB3	C	

Table 3: Selection of max. operating pressure

Expl. Gr.		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"	300 12"
IIA	P_{max}		2.0 / 29.0	2.0 / 29.0	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4
IIB3	P_{max}		1.1 / 15.9	1.1 / 15.9	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4	1.2 / 17.4

P_{max} = maximum allowable operating pressure in bar / psi (absolute), higher operating pressure upon request

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	B	C	D	
Housing	Steel	Stainless Steel	Hastelloy	The housing is also available in carbon steel with an ECTFE coating.
Gasket	PTFE	PTFE	PTFE	
Flame arrester unit	A, C	C	D	

Special materials upon request

Table 6: Material combinations of the flame arrester unit

Design	A	C	D	
FLAMEFILTER® cage	Steel	Stainless Steel	Hastelloy	*the FLAMEFILTER® are also available in the materials Tantalum, Inconel, Copper, etc. when the listed housing and cage materials are used.
FLAMEFILTER® *	Stainless Steel	Stainless Steel	Hastelloy	
Spacer	Stainless Steel	Stainless Steel	Hastelloy	

Special materials upon request

Table 7: Flange connection type

EN 1092-1; Form B1	other types upon request
ASME B16.5; 150 lbs RFSF	

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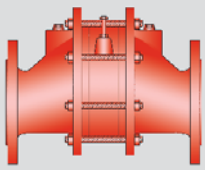
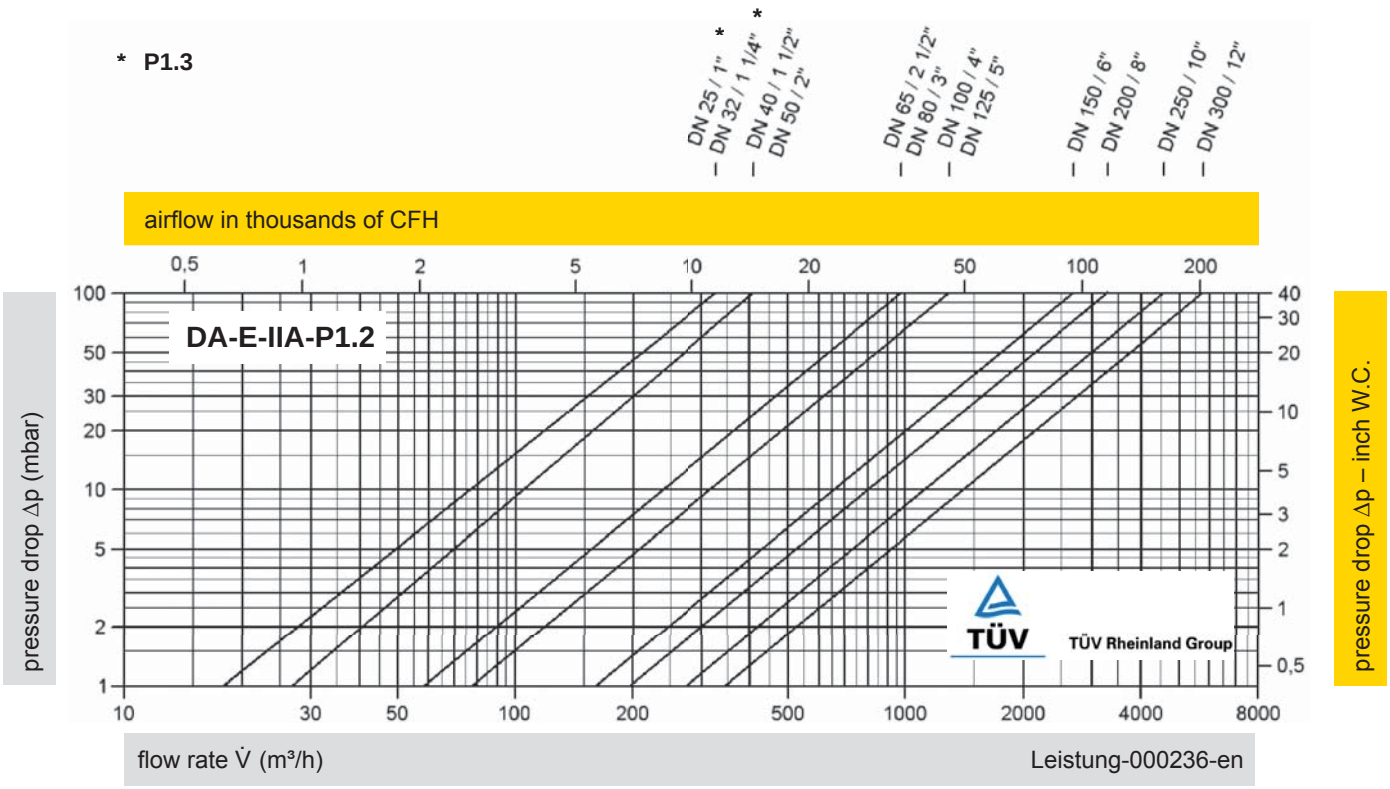


Eccentric In-Line Detonation Flame Arrester

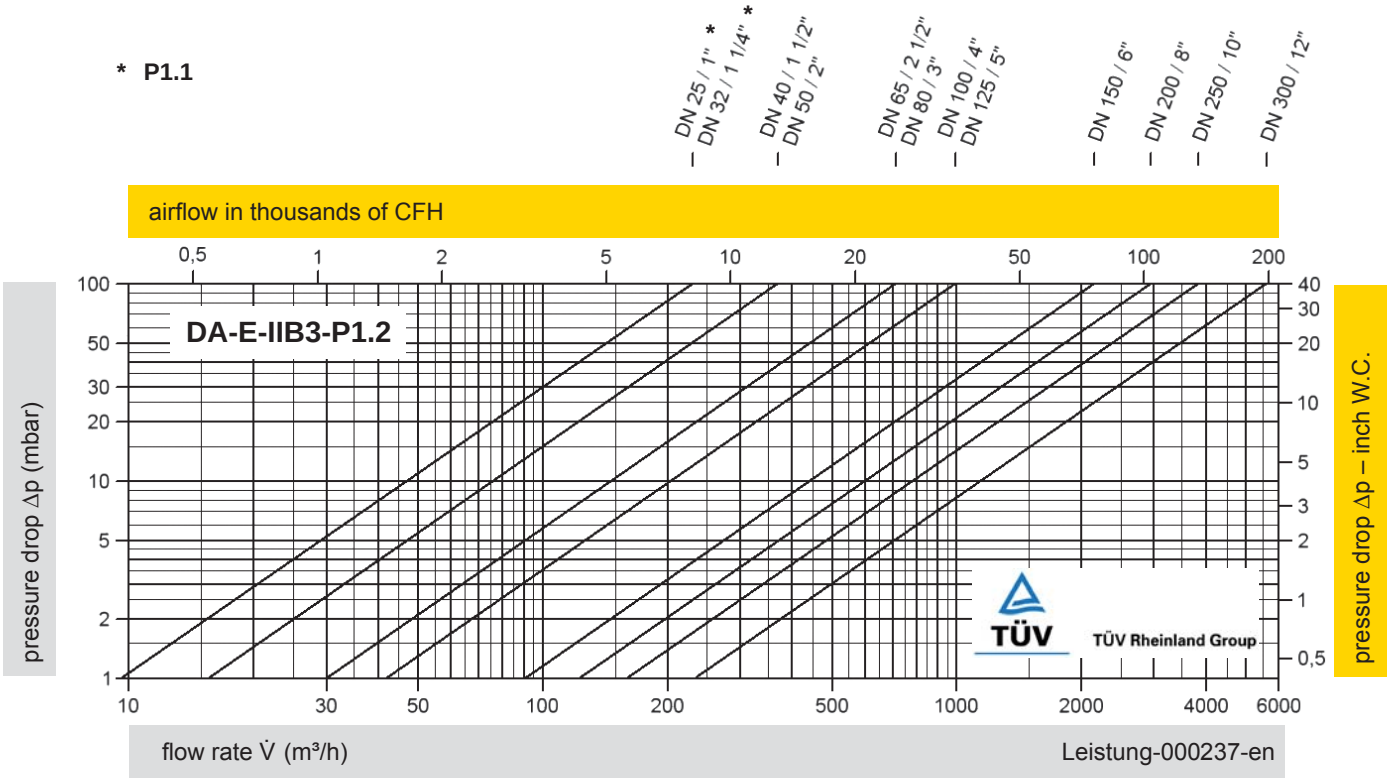
Flow Capacity Charts

PROTEGO® DA-E

* P1.3



* P1.1



The flow capacity charts have been determined with a calibrated and TÜV certified flow capacity test rig.

Volume flow V̇ 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”.