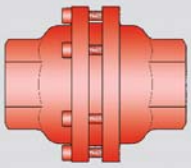
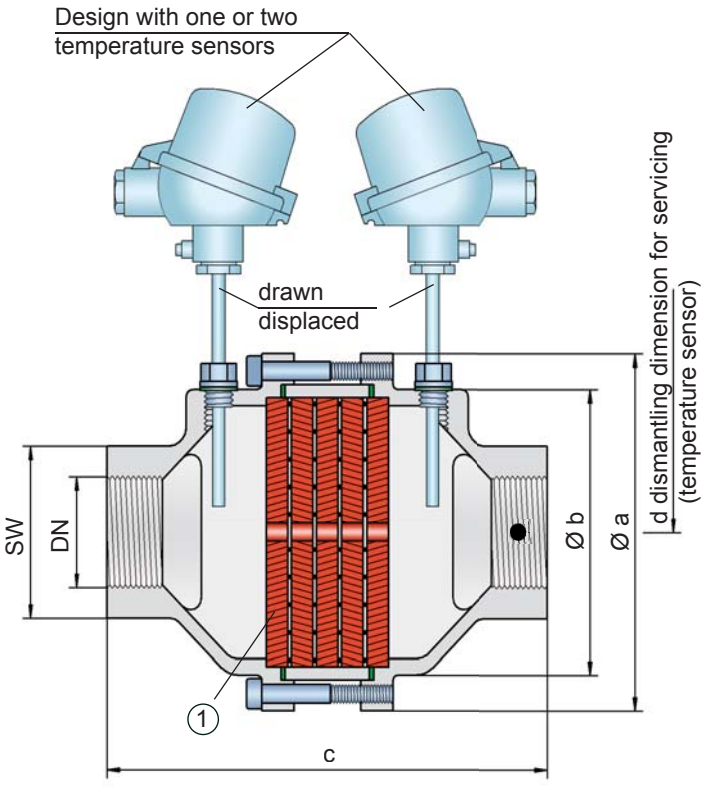


In-Line Detonation Flame Arrester

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

PROTEGO® DA-G



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

Function and Description

The PROTEGO® DA-G series is a compact in-line detonation flame arrester for installation in pipes with diameters up to 2“, and is used, for example, in industrial applications such as gas analyzing lines.

Once a detonation enters the flame arrester, energy is absorbed from the shock wave, and the flame is extinguished in the narrow gaps of the FLAMEFILTER® (1).

The PROTEGO® flame arrester unit consists of several FLAMEFILTER® discs firmly held in a housing. The gap size and number of FLAMEFILTER® discs are determined by the operating data and parameters of the mixture flowing in the line (explosion group, pressure, temperature).

To provide an optimum result between the housing size, number of FLAMEFILTER® discs and their gap size, a device was developed that can be used for all explosion groups, IIA, IIB3 and IIC (NEC Group D, C MESG ≥ 0.65 mm and B). The standard design can be used up to an operating temperature of +60°C / 140°F and an absolute operating pressure up to 1.1 bar / 15.9 psi. Devices with special approvals can be obtained for higher pressures (see table 4) and higher temperatures upon request.

The device is bidirectional and equipped with a threaded connection. The thread can be executed to international standards. The detonation arrester can be used at any location in the pipe, independently from the location of the ignition source.

Type-approved according to ATEX Directive 94/9/EC and EN ISO 16852 as well as other international standards.

Special Features and Advantages

- bidirectional
- modular design
- the individual FLAMEFILTER® discs can be quickly removed and installed
- the individual FLAMEFILTER® discs are easy to service and replace
- different application possibilities
- possible installation of temperature sensors
- cost efficient spare parts

Design Types and Specifications

There are three different designs available:

Basic design of the DA-G in-line detonation flame arrester, size ½“ to 2“	**DA-G-** –
In-line detonation flame arrester with integrated temperature sensor* as additional protection against short burning from one side, size 1½“ to 2“	**DA-G-** **T**
In-line detonation flame arrester with two integrated temperature sensors* as additional protection against short time burning from both sides, size 1½“ to 2“	**DA-G-** **TB**

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

Table 1: Dimensions Dimensions in mm / inches, SW = width across flats

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

DN	G ½"	G ¾"	G 1"	G 1 ¼"	G 1 ½"	G 2"
a	80 / 3.15	80 / 3.15	100 / 3.94	100 / 3.94	155 / 6.10	155 / 6.10
b	55 / 2.17	55 / 2.17	76 / 2.99	76 / 2.99	124 / 4.88	124 / 4.88
c (IIA)	112 / 4.41	112 / 4.41	122 / 4.80	122 / 4.80	205 / 8.07	205 / 8.07
c (IIB3 and IIC)	135 / 5.31	135 / 5.31	145 / 5.71	145 / 5.71	205 / 8.07	205 / 8.07
d	—	—	—	—	400 / 15.75	400 / 15.75
SW	32 / 1.26	32 / 1.26	50 / 1.97	50 / 1.97	75 / 2.95	75 / 2.95

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	
< 0,50 mm	IIC	B	

Table 3: Selection of max. operating pressure

		DN	G ½"	G ¾"	G 1"	G 1 ¼"	G 1 ½"	G 2"	
Expl. Gr.	IIA	P_{max}	1.2/17.4	1.2/17.4	1.1/15.9	1.1/15.9	1.1/15.9	1.1/15.9	P_{max} = maximum allowable operating pressure in bar / psi (absolute), higher operating pressure upon request
	IIB3	P_{max}	1.1/15.9	1.1/15.9	1.1/15.9	1.1/15.9	1.4/20.3	1.4/20.3	
	IIC	P_{max}	1.1/15.9	1.1/15.9	1.1/15.9	1.1/15.9	1.6/23.2	1.6/23.2	

Table 4: Specification of max. operating temperature

≤ 60°C / 140°F	higher operating temperatures upon request
T60	Tmaximum allowable operating temperature in °C

Table 5: Material selection for housing

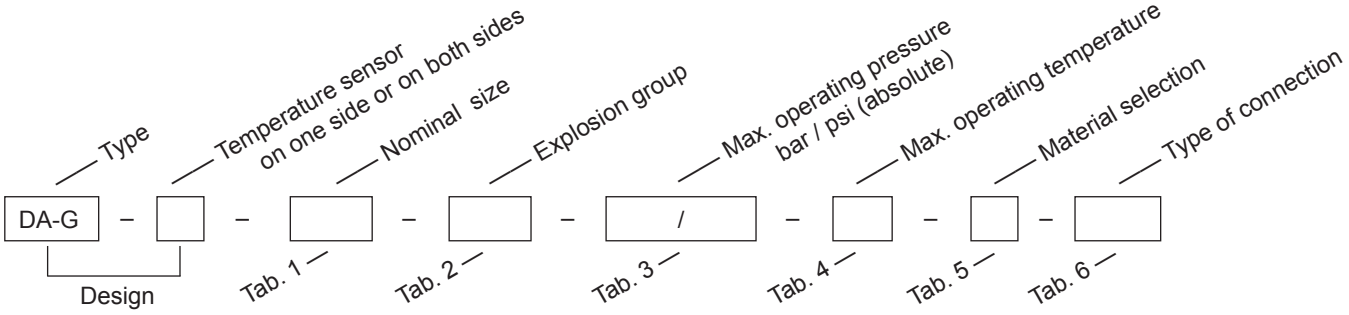
Design	A	B	C
Housing	Steel	Stainless Steel	Hastelloy
Gasket	WS 3822 *	PTFE	PTFE
FLAMEFILTER® **	Stainless Steel	Stainless Steel	Hastelloy

* for devices exposed to temperatures above 150°C / 302°F (T150), gaskets made of PTFE.
** the FLAMEFILTER® are also available in the materials Tantalum, Inconel, Copper, etc. when the listed housing materials are used.

Special materials upon request

Table 6: Type of connection

Pipe thread DIN ISO 228-1	DIN	other types of thread upon request

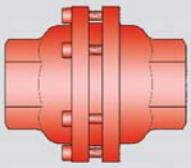


Order example

DA-G	–	TB	–	2"	–	IIB3	–	P1.4 / –	–	T60	–	A	–	DIN

Materials and chemical resistance: See Vol. 1 “Technical Fundamentals”

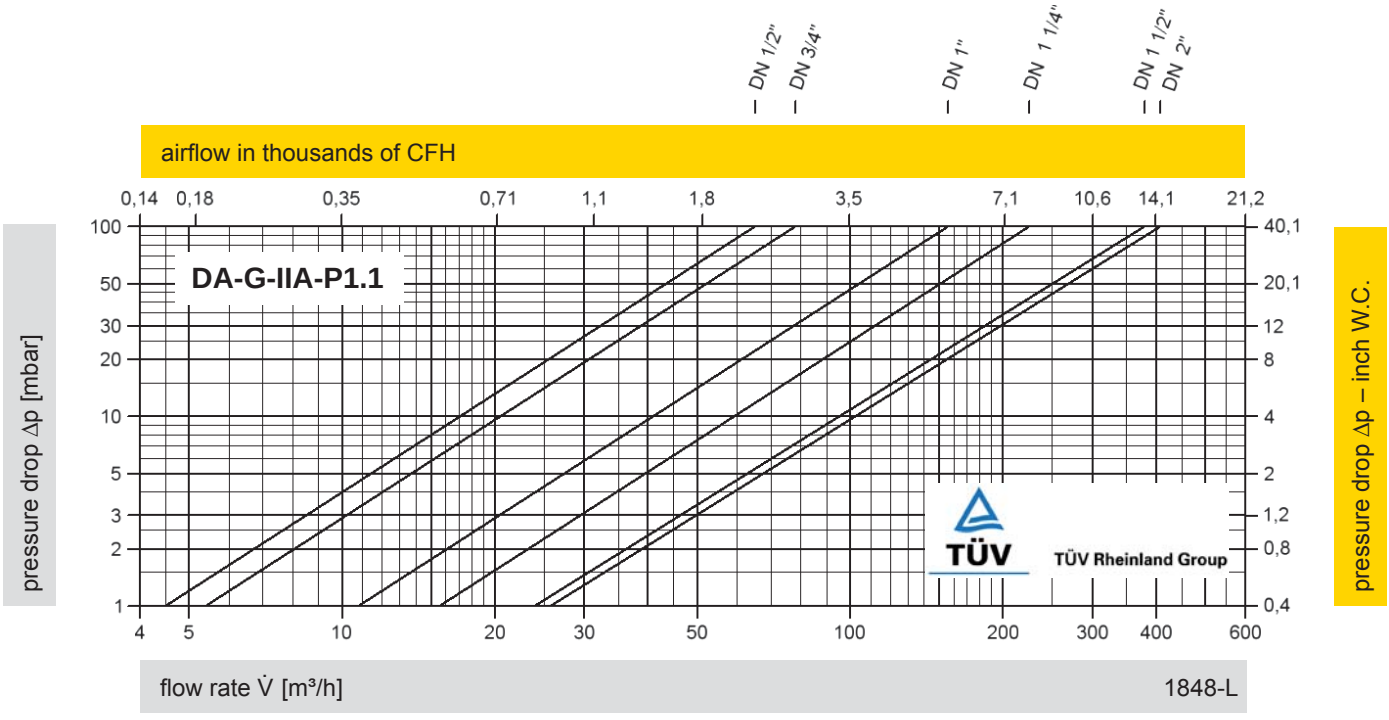
PROTEGO
for safety and environment



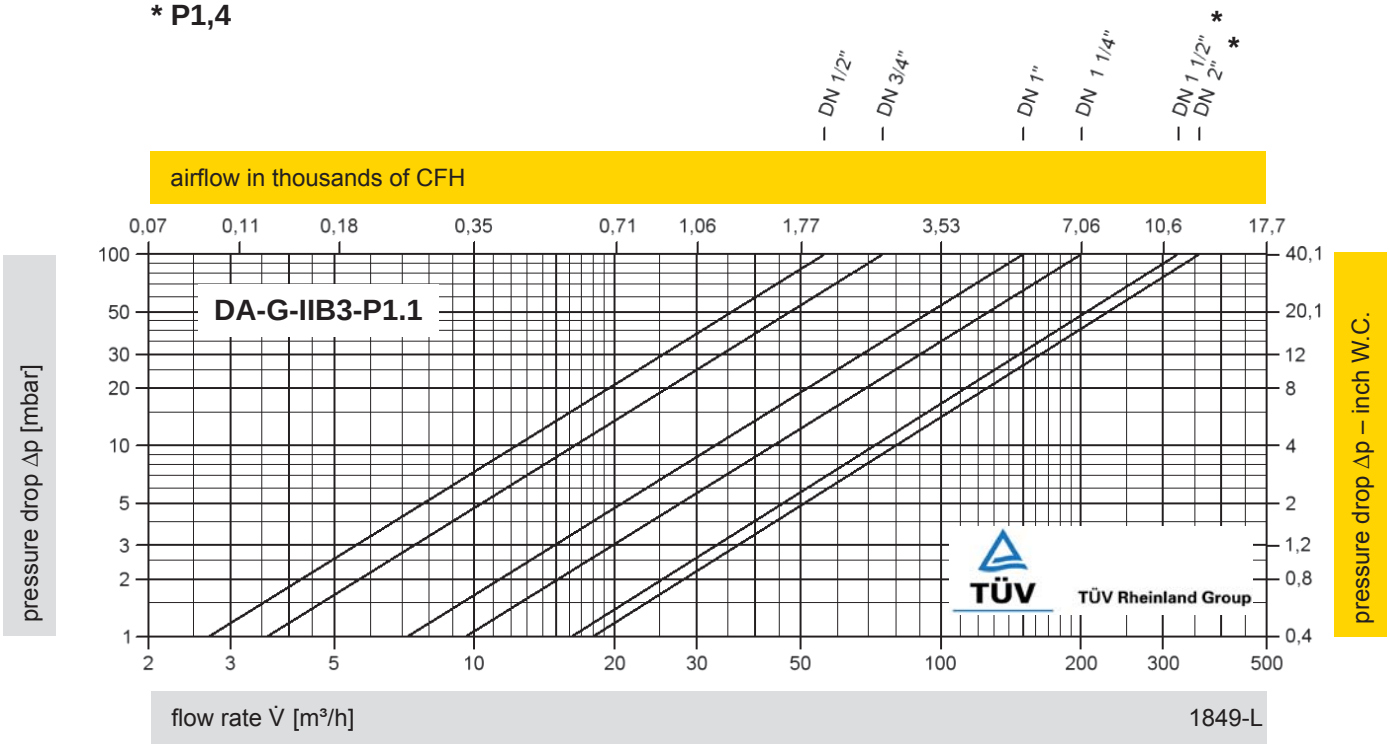
In-Line Detonation Flame Arrester

Flow Capacity Charts

PROTEGO® DA-G

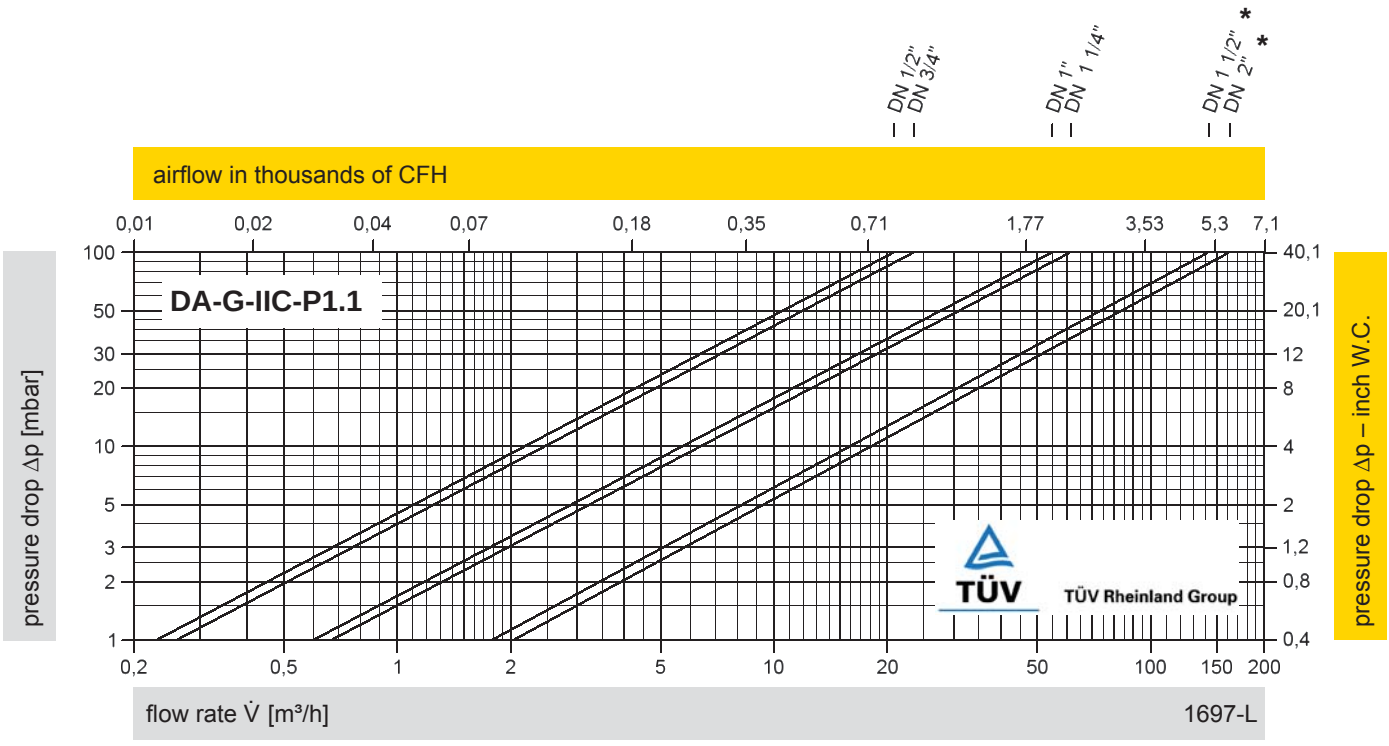


*** P1,4**



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”.

*** P1,6**


DN 1/2"
DN 3/4"
DN 1"
DN 1 1/4"
DN 1 1/2" *
DN 2" *
airflow in thousands of CFH
0,01 0,02 0,04 0,07 0,18 0,35 0,71 1,77 3,53 5,3 7,1
DA-G-IIC-P1.1
100 50 30 20 10 5 3 2 1
40,1 20,1 12 8 4 2 1,2 0,8 0,4
0,2 0,5 1 2 5 10 20 50 100 150 200
TÜV
TÜV Rheinland Group
pressure drop Δp [mbar]
pressure drop Δp – inch W.C.
flow rate V̇ [m³/h]
1697-L