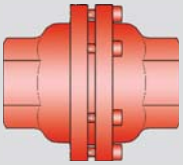
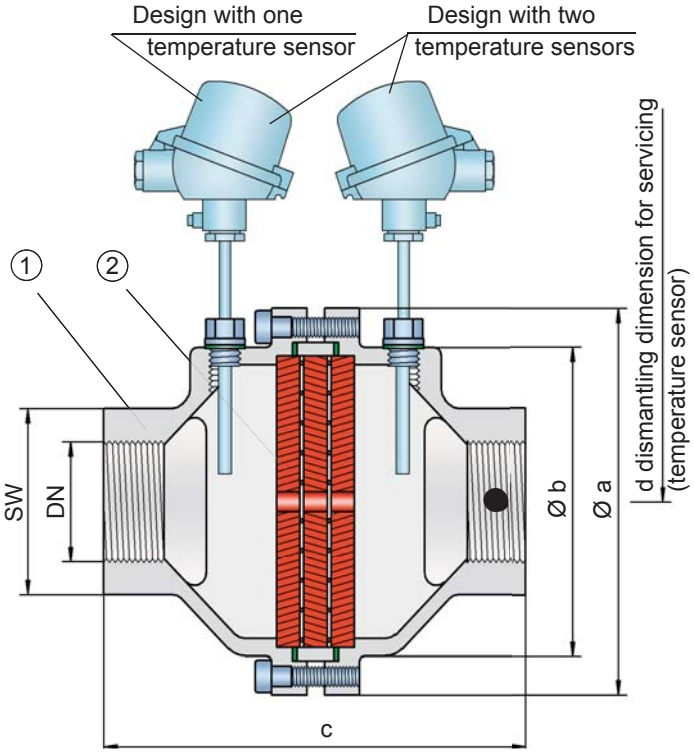


In-Line Deflagration Flame Arrester

concentric design,
bidirectional

PROTEGO® FA-G



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

Function and Description

The compact design of the PROTEGO® FA-G in-line deflagration flame arrester makes it the state of the art technology for installation in pipes with diameters of up to 2". The devices are installed with minimal distance to the burner to prevent flashback in to the fuel feed lines. When installing the deflagration flame arrester, make sure that the distance between potential ignition sources and the location of the installed device, does not exceed the L/D ratio (pipe length/pipe diameter), for which the device was approved. As per EN ISO 16852 the L/D ratio is limited to $(L/D)_{max} \leq 50$ for deflagration flame arresters of explosion groups IIA and IIB3 (NEC groups D and C (MESG ≥ 0.65 mm)) and to $(L/D)_{max} \leq 30$ for explosion group IIC (NEC group B).

The in-line deflagration flame arrester is symmetrical and offers bidirectional flame transmission protection. The device consists of two housing parts (1) and a PROTEGO® flame arrester unit or a FLAMEFILTER® (2) and spacers in the center. The number of FLAMEFILTER® discs and their gap size are determined by the operating data and parameters of the mixture flowing in the line (explosion group, pressure, temperature). The PROTEGO® FA-G series in-line deflagration flame arresters is available for explosion groups IIA, IIB3 and IIC (NEC groups 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 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

- different application possibilities
- modular design
- the individual FLAMEFILTER® can be quickly removed and installed
- threaded connection for direct mounting into pipeline
- bidirectional flame transmission proof design
- protects against deflagrations for all explosion groups
- use of temperature sensors for G 1½ and G 2 is possible
- cost efficient spare parts

Design and Specifications

There are three different designs:

Basic in-line deflagration flame arrester (size ½" to 2")	**FA-G-** [–]
In-line deflagration flame arrester with integrated temperature sensor* for additional protection against short-time burning from one side (size 1½" to 2")	**FA-G-** [T]
In-line deflagration flame arrester with two integrated temperature sensors* for additional protection against short-time burning from both sides (size 1½" to 2")	**FA-G-** [TB]

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

Flange connection available upon request

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

To select the nominal size (DN), 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 up to IIB3)	100 / 3.94	100 / 3.94	110 / 4.33	110 / 4.33	170 / 6.69	170 / 6.69
c (IIB and IIC)	112 / 4.41	112 / 4.41	122 / 4.80	122 / 4.80	170 / 6.69	170 / 6.69
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}	1.4/20.3	1.4/20.3	1.4/20.3	1.4/20.3	1.5/21.7	1.5/21.7	P_{max} = maximum allowable operating pressure in bar / psi absolute, higher operating pressure upon request
	IIB3	P_{max}	1.2/17.4	1.2/17.4	1.2/17.4	1.2/17.4	1.2/17.4	1.2/17.4	
	IIC	P_{max}	1.1/15.9	1.1/15.9	1.1/15.9	1.1/15.9	1.1/15.9	1.1/15.9	

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

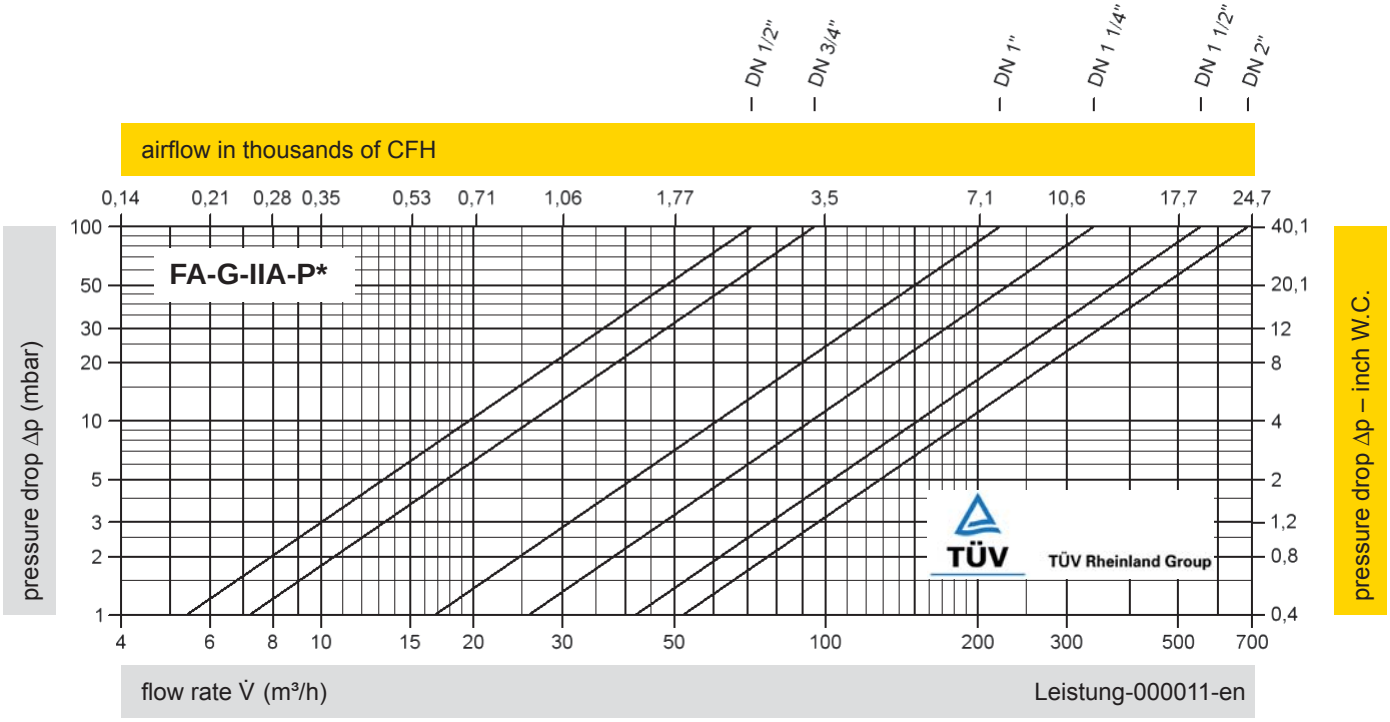
Design	B	C	
Housing	Stainless Steel	Hastelloy	* the FLAMEFILTER® is also available in the materials Tantalum, Inconel, Copper, etc. when the listed housing materials are used.
Gasket	PTFE	PTFE	
FLAMEFILTER®*	Stainless Steel	Hastelloy	

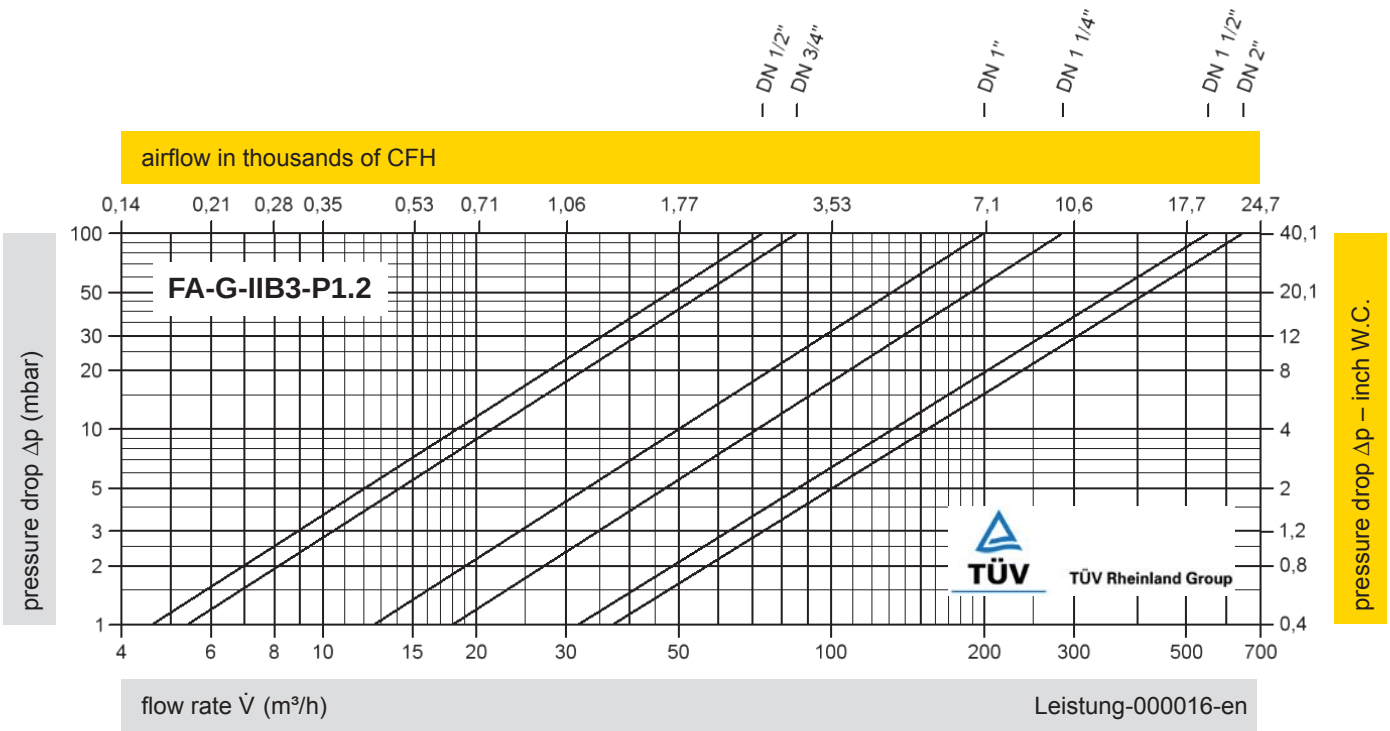
Special materials upon request.

Table 6: Type of connection

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

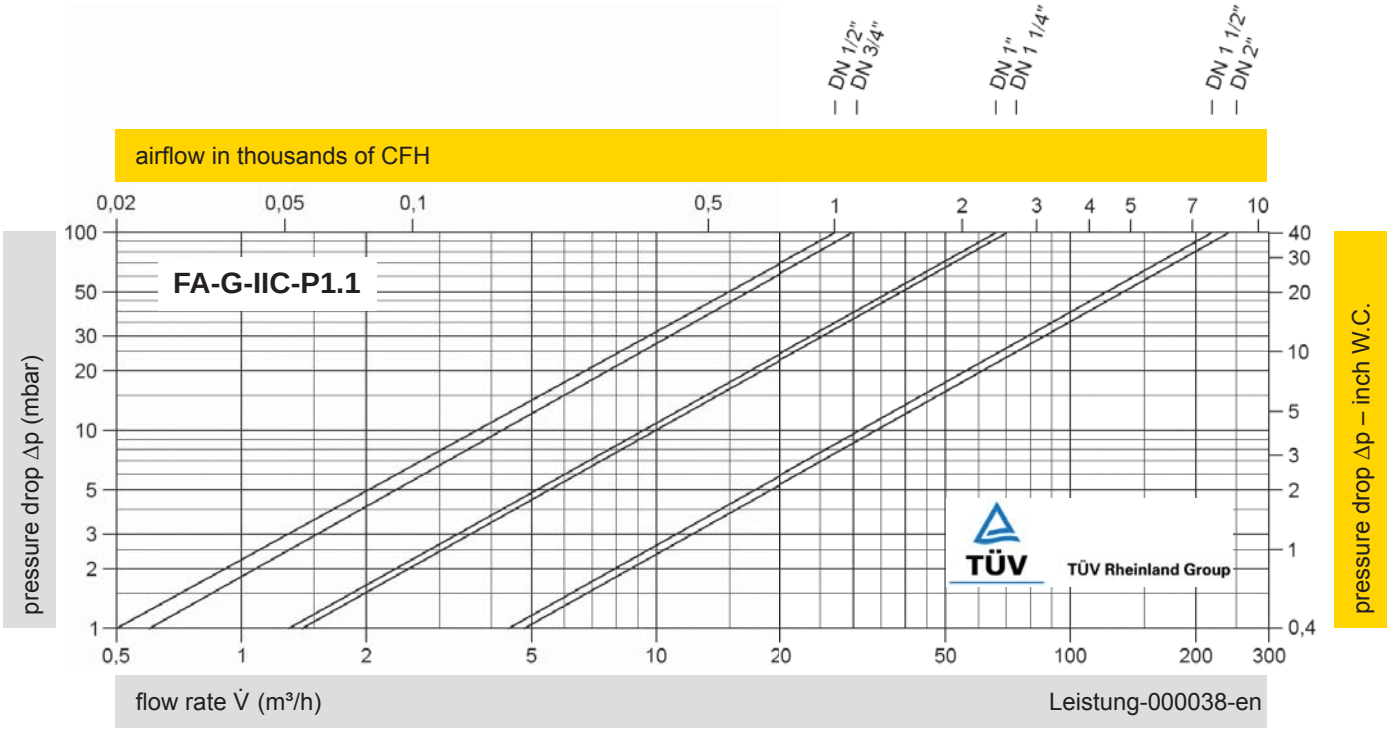
P* see table 3





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”.


DN 1/2"
DN 3/4"
DN 1"
DN 1 1/4"
DN 1 1/2"
DN 2"
airflow in thousands of CFH
FA-G-IIC-P1.1
TÜV
TÜV Rheinland Group
pressure drop Δp (mbar)
pressure drop Δp – inch W.C.
flow rate V̇ (m³/h)
Leistung-000038-en