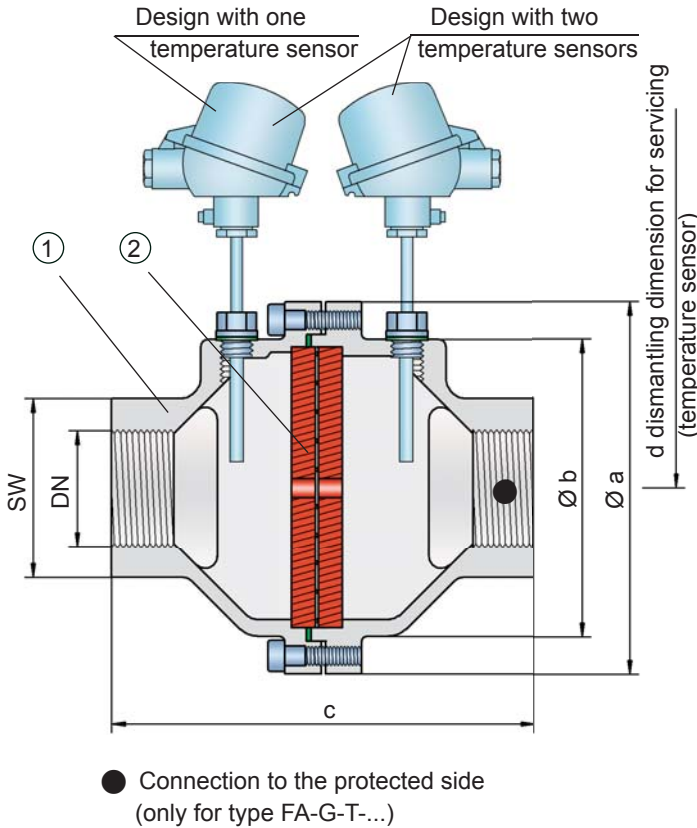


In-Line Deflagration Flame Arrester

for biogas, sewage gas and landfill gas, concentric design, bidirectional, endurance burning proof (under atmospheric conditions)

PROTEGO® FA-G-IIA1-P2.2



PROTEGO® FA-G devices for substances of explosion groups IIA, IIB3 and IIC (NEC groups D, C, and B) are shown on separate pages.

The standard design can be used up to an operating temperature of +60°C / 140°F and an absolute operating pressure up to 2.2 bar / 31.9 psi.

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

Special Features and Advantages

- state of the art design for bio-, sewage- and landfill gas applications
- modular design
- the individual FLAMEFILTER® can be quickly removed and installed
- threaded connection for direct mounting into pipeline
- bidirectional flame transmission proof design
- provides protection against deflagrations and endurance burning under atmospheric conditions for explosion group IIA1- methane
- cost efficient spare parts

Function and Description

The PROTEGO® FA-G-IIA1-P2.2 in-line deflagration flame arrester was specially developed for bio-, sewage- and landfill-gas applications. The compact design of the PROTEGO® FA-G makes it the state of the art technology for installation in pipes with diameters of ½" 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 group IIA1.

The in-line deflagration flame arrester is symmetrical and offers bidirectional flame transmission protection. The device consists of two housing parts (1) and two FLAMEFILTER® (2) in the center.

The PROTEGO® FA-G-IIA1-P2.2 flame arrester protects against deflagrations and endurance burning (under atmospheric condition) and short time burning for 1 min. for the maximum operating conditions of explosion group IIA1 - methane.

Design and Specifications

There are three different designs:

Basic in-line deflagration flame arrester (G ½ to 2) **FA-G-**

In-line deflagration flame arrester with integrated temperature sensor* for additional protection against short-time burning from one side (G 1½ to 2) **FA-G-**

In-line deflagration flame arrester with two integrated temperature sensors* for additional protection against short-time burning from both sides (G 1½ to 2) **FA-G-**

*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), 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 / 2.16	55 / 2.16	76 / 2.99	76 / 2.99	124 / 4.88	124 / 4.88
c	100 / 3.94	100 / 3.94	110 / 4.33	110 / 4.33	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)	Special approvals upon request
≥ 1.14 mm	IIA1	

Table 3: Selection of max. operating pressure (bar / psi)

Expl.Gr.	DN	G ½	G ¾	G 1	G 1 ¼	G 1 ½	G 2
IIA1	P _{max}	2.2 / 31.9	2.2 / 31.9	2.2 / 31.9	2.2 / 31.9	2.2 / 31.9	2.2 / 31.9

Table 4: Specification of max. operating temperature

≤ 60°C / 140°F	T _{maximum allowable operating temperature in °C}	higher operating temperatures upon request
-	Designation	

Table 5: Material selection

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

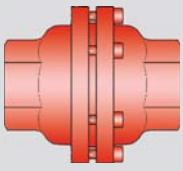
Special materials upon request.

Table 6: Type of connection

Pipe thread DIN ISO 228-1	DIN	other types of thread upon request
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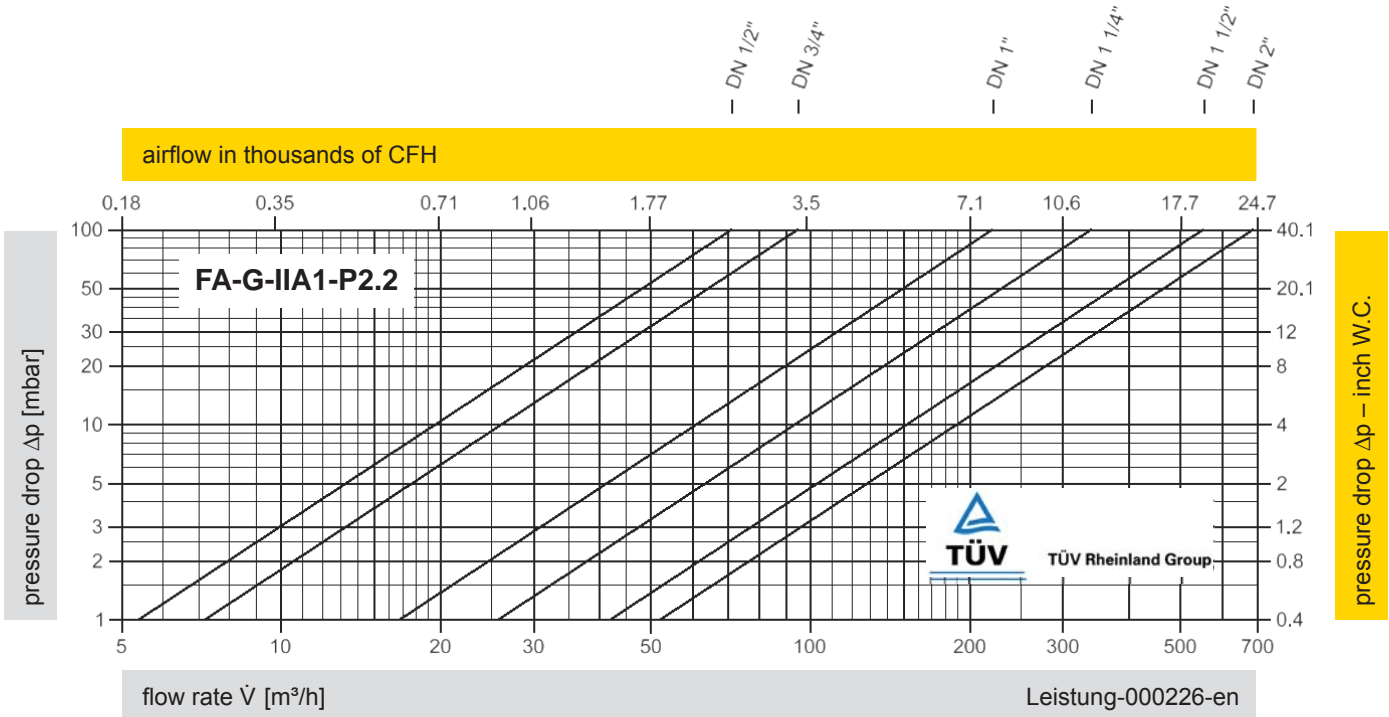
for safety and environment



In-Line Deflagration Flame Arrester

Flow Capacity Chart

PROTEGO® FA-G-IIA1-P2.2



The flow capacity charts have 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".