

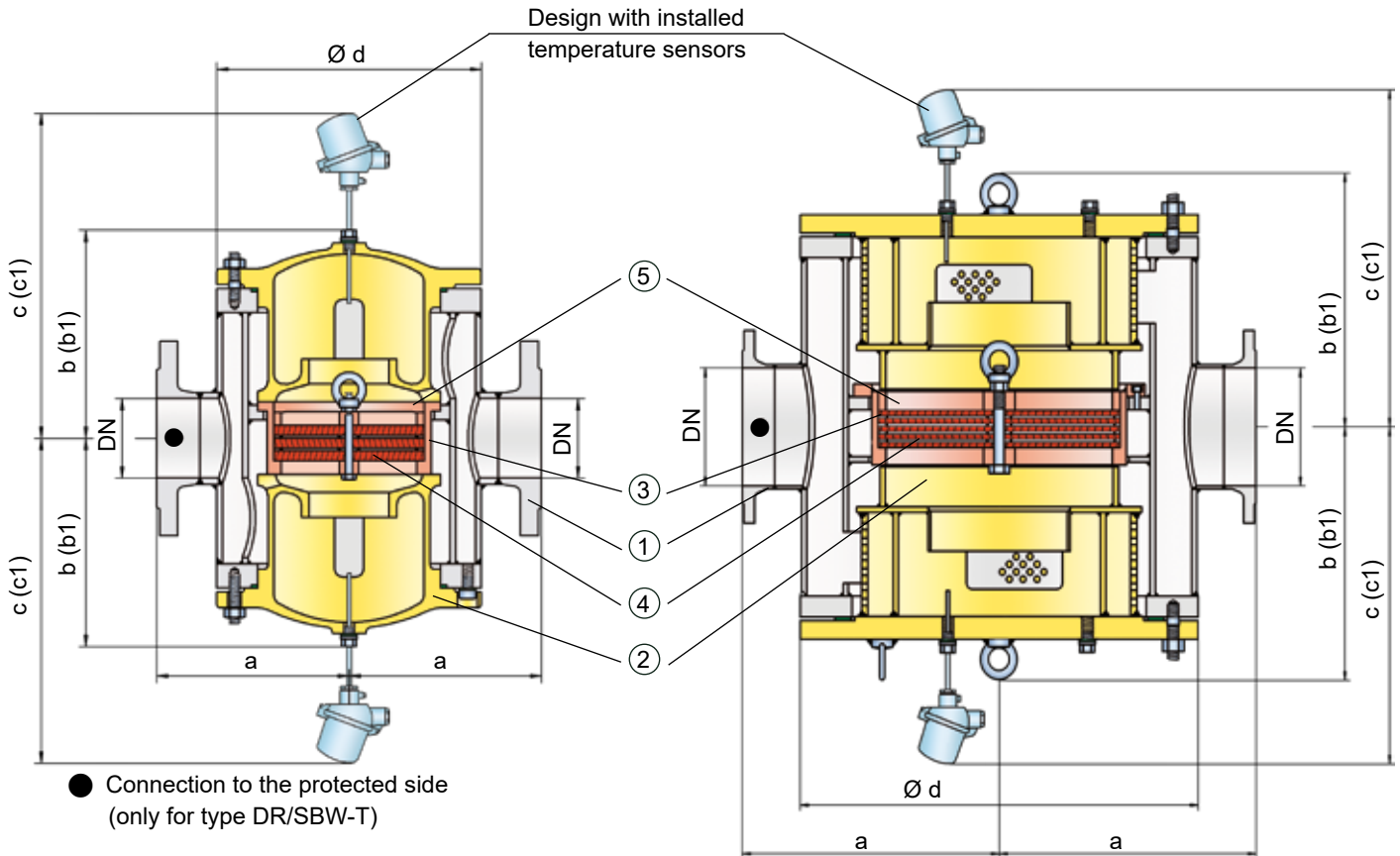
In-Line Detonation Flame Arrester

for stable detonations and deflagrations in a straight through design with shock absorber, bi-directional

PROTEGO® DR/SBW

DN 50/2" – DN 150/6"

DN 200/8" – DN 400/16"



Function and Description

In the development of the PROTEGO® DR/SBW in-line detonation flame arrester, special effort was made to ease future maintenance of the flame arresters. The PROTEGO® flame arrester unit (5) can be removed and cleaned within moments without having to disassemble the piping. The effective shock absorber of the device and elaborate housing geometry reduces the number of FLAMEFILTER® discs to a minimum.

The device is symmetrical and offers bidirectional flame arresting protecting from stable detonations and deflagrations. The flame arrester consists of a double-jacket housing (1) with two integrated shock absorbers (2) with the PROTEGO® flame arrester unit in the center. The PROTEGO® flame arrester unit consists of several FLAMEFILTER® discs (4) and spacers firmly held in a FLAMEFILTER® cage (3). The number of FLAMEFILTER® discs and their gap size depends on the arrester's conditions of use. By indicating the operating parameters such as the temperature, pressure and explosion group and the composition of the fluid, the optimum in-line detonation flame arrester can be selected. The PROTEGO® DR/SBW series of flame arresters is available for explosion groups IIA to IIB3 (NEC group D to C MESH ≥ 0.65 mm).

The standard design is approved at an operating temperature up to +60°C / 140°F and an absolute operating pressure acc. to table 3. Devices with special approvals can be obtained for higher pressures and higher temperatures upon request.

Type-approved according to ATEX Directive as well as other international standards.

Special Features and Advantages

- particularly service-friendly design
- minimum number of FLAMEFILTER® discs due to use of effective shock absorber
- the modular design enables each individual FLAMEFILTER® discs to be exchanged
- bidirectional operation as well as any flow direction and installation position
- expanded application range for higher operating temperatures and pressures
- installation of temperature sensors possible
- minimum pressure loss and hence low operating and lifecycle cost
- cost efficient spare parts

Design Types and Specifications

There are four different designs available:

Basic in-line detonation flame arrester

DR/SBW- -

In-line detonation flame arrester with integrated temperature sensor* as additional protection against short time burning from one side

DR/SBW- T -

In-line detonation flame arrester with two integrated temperature sensors* as additional protection against short time burning from both sides

DR/SBW- TB -

In-line detonation flame arrester with heating jacket

DR/SBW- H -

Additional special flame 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) and nominal width (NG), please use the flow capacity charts on the following pages.

DN	50 / 2"	80 / 3"	100 / 4"	150 / 6"	200 / 8"	250 / 10"	300 / 12"	350 / 14"	400 / 16"
NG	150 / 6"	150 / 6"	200 / 8"	300 / 12"	500 / 20"	500 / 20"	600 / 24"	700 / 28"	800 / 32"
a	225/8.86	225/8.86	275/10.83	350/13.78	550/21.65	550/21.65	725/28.54	800/31.50	825/32.48
b	210/8.27	210/8.27	220/8.66	290/11.42	525/20.67	525/20.67	590/23.23	655/25.78	725/28.54
b1 *	325/12.80	325/12.80	360/14.17	475/18.70	835/32.87	835/32.87	960/37.80	1075/42.32	1215/47.83
c	395/15.55	395/15.55	410/16.14	475/18.70	630/24.80	630/24.80	700/27.56	765/30.12	835/32.87
c1 *	450/17.72	450/17.72	465/18.31	530/20.87	730/28.74	730/28.74	800/31.50	865/34.06	935/36.81
d	275/10.83	275/10.83	325/12.80	460/18.11	840/33.07	840/33.07	1000/39.37	1150/45.28	1250/49.21

* b1 dismantling dimension for servicing

c1 dismantling dimension for servicing (temperature sensor)

Table 2: Selection of the explosion group

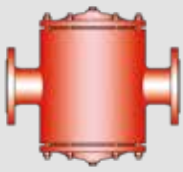
MESG	Expl. Gr. (IEC/CEN)	Gas Group (NEC)	Special approvals upon request.
> 0,90 mm	IIA	D	
≥ 0,65 mm	IIB3	C	

Table 3: Selection of max. operating pressure

Expl. Gr.	DN	50 / 2"	80 / 3"	100 / 4"	150 / 6"	200 / 8"	250 / 10"	300 / 12"	350 / 14"	400 / 16"
		NG	150 / 6"	150 / 6"	200 / 8"	300 / 12"	500 / 20"	500 / 20"	600 / 24"	700 / 28"
IIA	P _{max}	4 / 58	4 / 58	3 / 43.5	3 / 43.5	1.6 / 23.2	1.6 / 23.2	1.1 / 15.9	1.1 / 15.9	1.1 / 15.9
IIB3	P _{max}	1.7 / 24.6	1.7 / 24.6	1.7 / 24.6	1.7 / 24.6	1.2 / 17.4	1.2 / 17.4	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.





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Table 4: Specification of max. operating temperature

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

Table 5: Material selection for housing

Design	A	B	C
Housing	Steel	Stainless Steel	Hastelloy
Heating jacket (DR/SBW-H-(T)-...)	Steel	Stainless Steel	Stainless Steel
Cover with shock absorber	Steel	Stainless Steel	Hastelloy
Gasket	PTFE	PTFE	PTFE
Flame arrester unit	A	C, D	E

Special materials upon request.

Special device with unidirectional shock absorber DR/SW-... from DN 50 resp. NG 150 available.

Table 6: Material combinations of the flame arrester unit

Design	A	C	D	E
FLAMEFILTER® cage	Steel	Stainless Steel	Stainless Steel	Hastelloy
FLAMEFILTER® *	Stainless Steel	Stainless Steel	Hastelloy	Hastelloy
Spacer	Stainless Steel	Stainless Steel	Hastelloy	Hastelloy

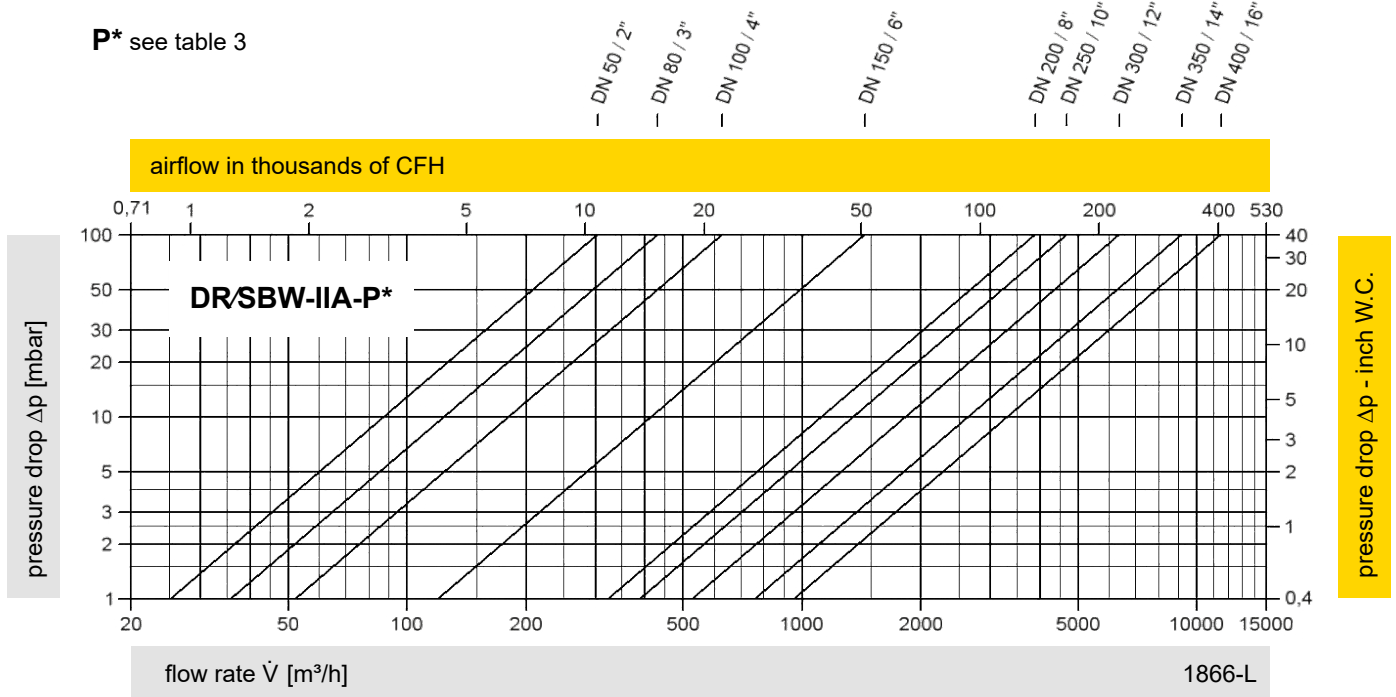
*The FLAMEFILTER® are also available in Tantalum, Inconel, Copper, etc., when the listed housing and casing materials are used.

Special materials upon request.

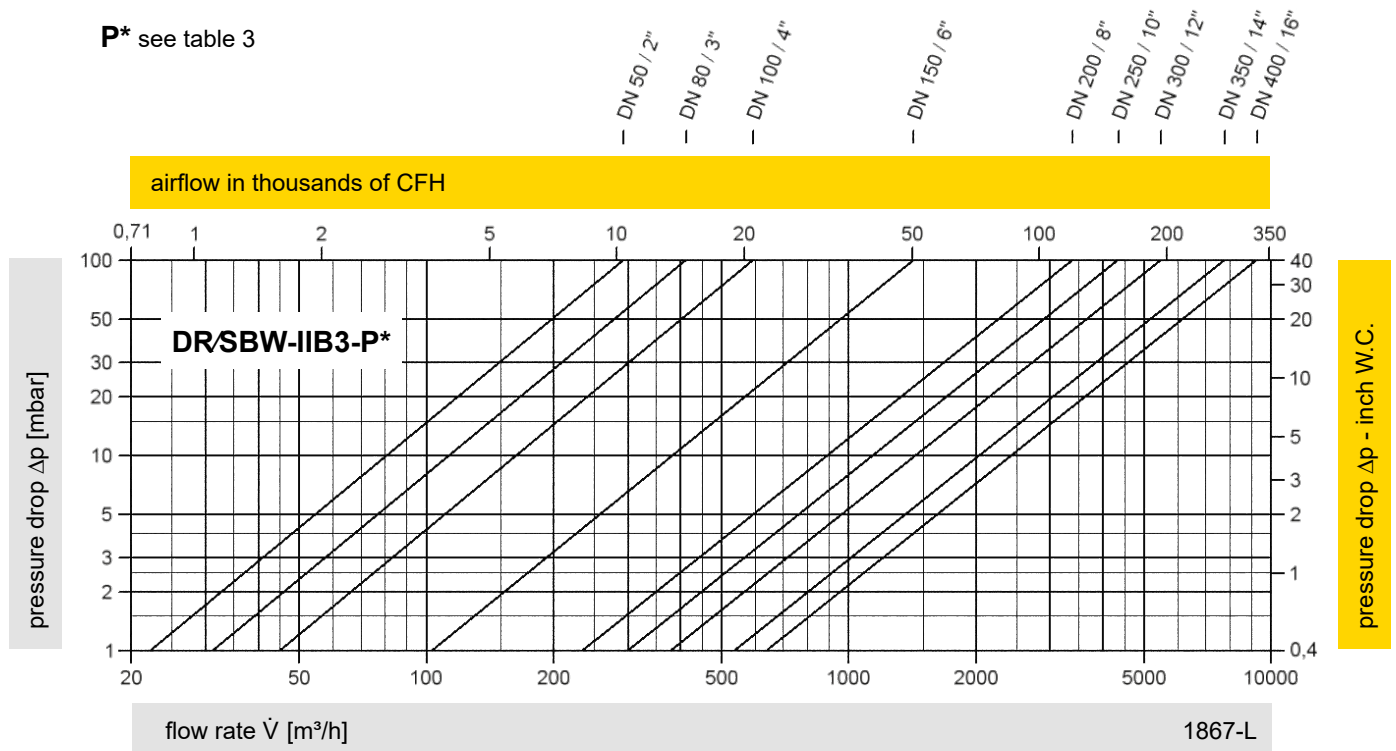
Table 7: Flange connection type

EN 1092-1; Form B1	Other types upon request.
ASME B16.5 CL 150 R.F.	

P* see table 3



P* see table 3



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 in ISO 6358 (20°C, 1bar). For conversion to other densities and temperatures, refer to Sec. 1: "Technical Fundamentals."

