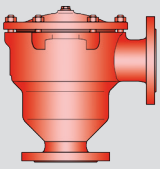
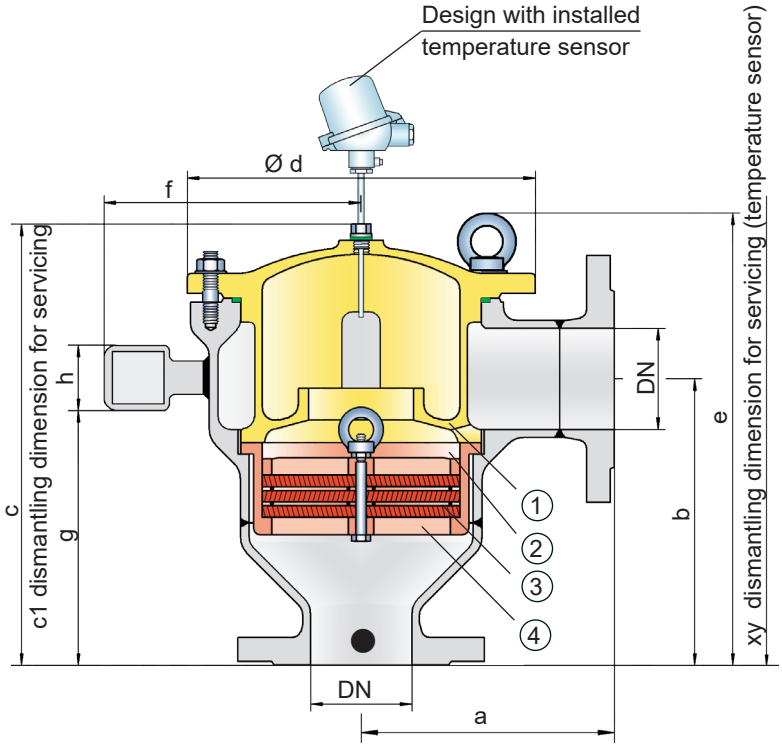


In-Line Detonation Flame Arrester

for stable detonations and deflagrations in right-angle design with shock absorber, uni-directional

PROTEGO® DR-UN



● Connection to the protected side

Function and Description

The PROTEGO® DR-UN in-line detonation flame arrester are used to secure potentially explosive plants against pipe deflagrations and stable detonations. In the right-angle design and with the PROTEGO® DR/U identical dimensions, the PROTEGO® DR-UN offers considerable maintenance and cost benefits.

Once a detonation enters the device, energy is absorbed from the detonation shock wave by the integrated shock absorber (1) before the flame is extinguished in the narrow gaps of the FLAMEFILTER® (3).

The PROTEGO® flame arrester unit (2) consists of several FLAMEFILTER® discs and spacers firmly held in the FLAMEFILTER® cage (4). The gap size and number of FLAMEFILTER® discs are determined by the operating conditions of the flowing mixture (explosion group, pressure, temperature). This device is approved for explosion groups from IIA to IIB3 (NEC group D to C MESG ≥ 0.65 mm).

The standard design is approved at an operating temperature of up to +60°C / 140°F and an absolute operating pressure acc. to table 3.
EU conformity according to the currently valid ATEX directive.

Special Features and Advantages

- same dimensions as the PROTEGO® DR/U, therefore replacement possible without converting the piping
- the suspended FLAMEFILTER® cage (4) enables quick removal and installation of the complete PROTEGO® flame arrester unit and then replacing the individual FLAMEFILTER®
- modular design and optimum availability of spare parts guarantee fast maintenance
- only three FLAMEFILTER® discs due to shock absorber technology
- low pressure loss results in low operating and lifecycle costs
- cost-effective spare parts

Design Types and Specifications

There are two different designs available:

Basic in-line detonation flame arrester	**DR-UN**
In-line detonation flame arrester with integrated temperature sensor* as additional protection against short-time burning	**DR-UN-T**

*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.

DN	25 / 1“	32 / 1 ¼“	40 / 1 ½“	50 / 2"	65 / 2 ½"	80 / 3"	100 / 4"	150 / 6“	200 / 8“
a	100/3.94	125/4.92	140/5.51	150/5.91	160/6.30	185/7.28	250/9.84	300/11.81	350/13.78
b	125/4.92	150/5.91	160/6.30	165/6.49	185/7.28	195/7.68	250/9.84	300/11.81	350/13.78
c	189/7.44	214/8.43	259/10.20	264/10.39	307/12.09	317/12.08	374/14.72	464/18.27	707/27.83
c1	280/11.02	310/12.2	370/14.57	375/14.76	485/19.09	495/19.49	585/23.03	705/27.75	1170/46.06
d	149/5.87	149/5.87	210/8.27	210/8.27	275/10.83	275/10.83	325/12.80	460/18.11	620/24.41
e	-	-	-	-	326/12.83	336/13.23	403/15.87	475/18.70	707/27.83
f	-	-	168/6.61	168/6.61	-	-	-	-	-
g	-	-	138/5.43	143/5.63	-	-	-	-	-
h	-	-	50/1.97	50/1.97	-	-	-	-	-
xy	475/18.70	500/19.69	570/22.44	580/22.83	690/27.17	700/27.56	770/30.31	905/35.63	1305/51.38

Table 2: Selection of the explosion group

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

Table 3: Selection of max. operating pressure

	DN	25 / 1“	32 / 1 ¼“	40 / 1 ½“	50 / 2"	65 / 2 ½"	80 / 3"	100 / 4"	150 / 6”	200 / 8“
Expl.Gr. IIA	P_{max}	-	-	-	2.0/29.0	2.0/29.0	2.0/29.0	2.0/29.0	1.2/17.4	1.6/23.2
IIB3	P_{max}	1.4/20.3	1.4/20.3	1.4/20.3	1.4/20.3	1.2/17.4	1.2/17.4	1.2/17.4	1.2/17.4	1.1/15.9

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

Table 4: Specification of max. operating temperature

≤ 60°C / 140°F	Tmaximum allowable operating temperature in °C

Table 5: Material selection for housing

Design	B	C
Housing	Steel	Stainless Steel
Cover with shock absorber	Steel	Stainless Steel
O-Ring	FPM	PTFE
Flame arrester unit	A	C, D

Special materials upon request.

Table 6: Material combinations of the flame arrester unit

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

* Other FLAMEFILTER® materials upon request

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.	

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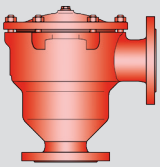
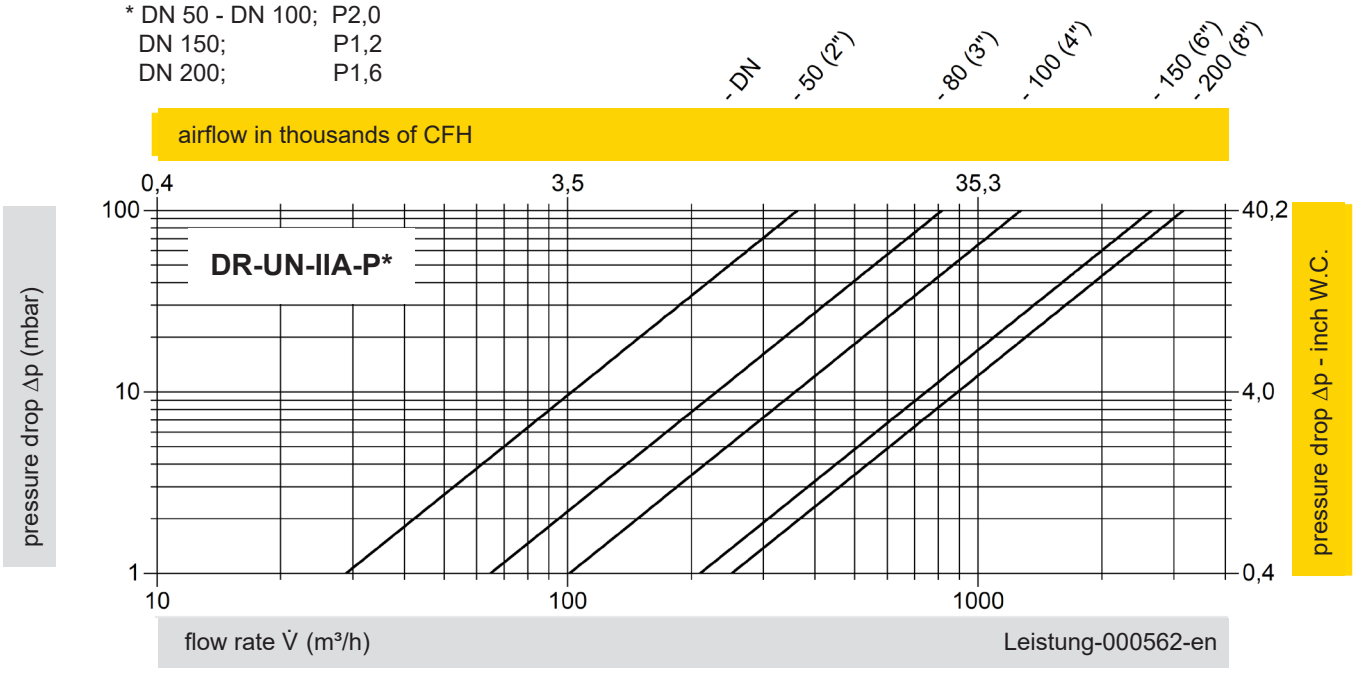
for safety and environment

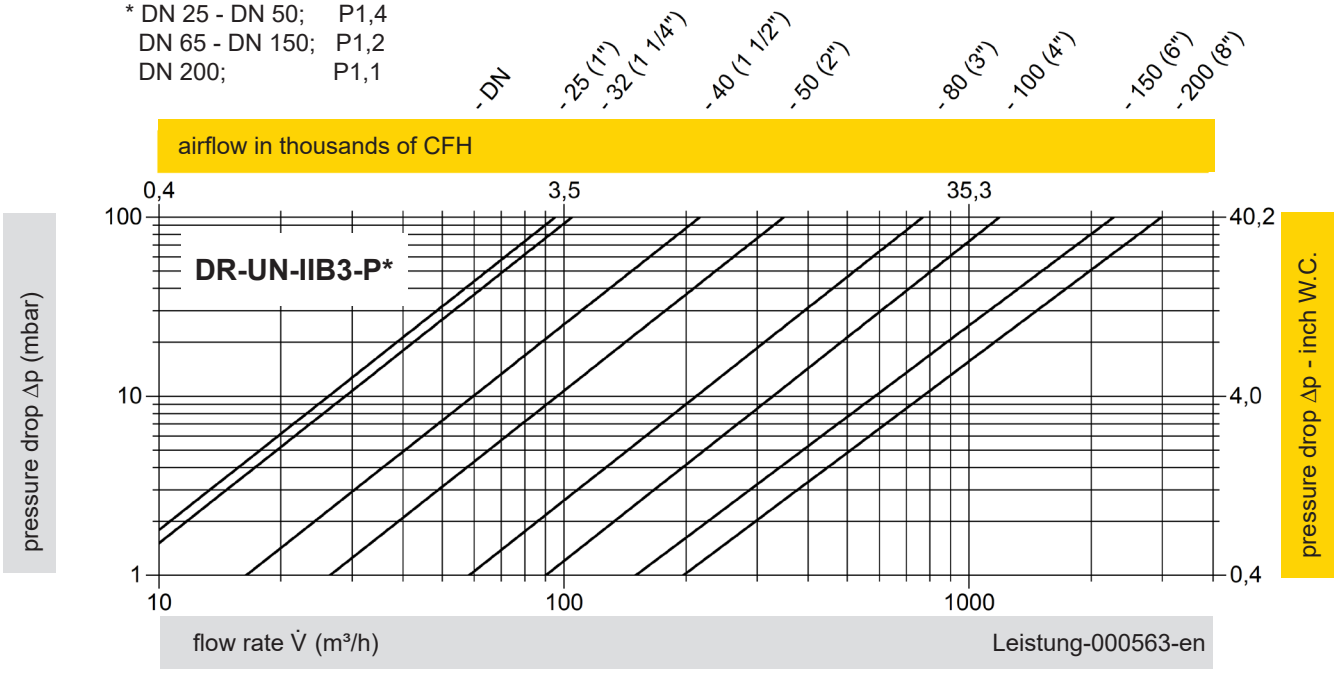


In-Line Detonation Flame Arrester

Flow Capacity Charts

PROTEGO® DR-UN





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