Deflagration flame arrester

DIN PN 10 - 16 —— DN 25 - 300mm
ANSI 125 - 150 —— 1" - 12"

LE 16, 16F, 19, 25

Application

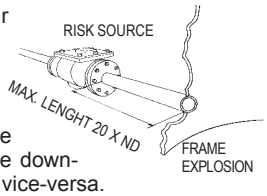
Piping and installations for production and transfer of flammable liquids and gases with risk of return of burner flames or explosion propagation.
Applicable to fluid of IIA risk group, according to DIN or class D, according to NEC-USA standards.

Installation Examples

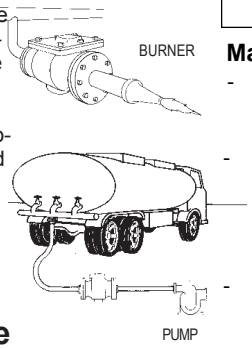
1. Inlet or outlet pipes of tanks or vessels:
In case of an explosion inside a tank, the protection avoids the propagation to the downstream pipe and vice-versa.

Installation Examples:

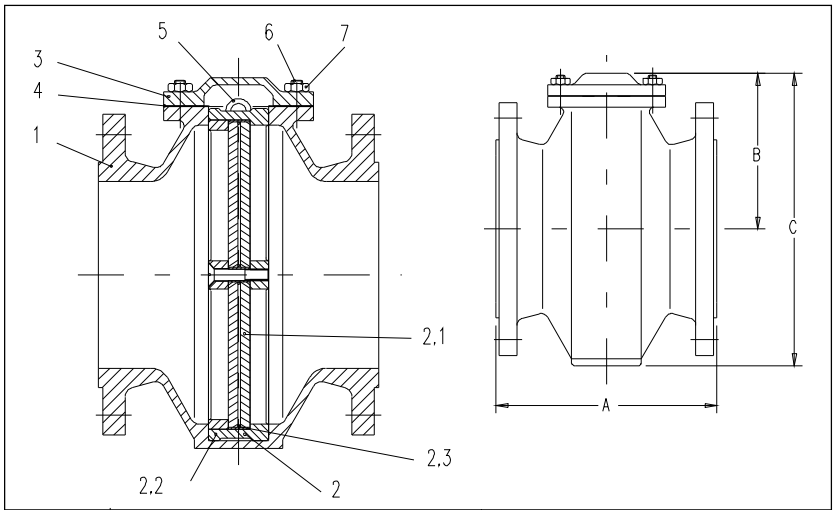
1. Inlet or outlet pipes of tanks or vessels:
In case of an explosion inside a tank, the protection avoids the propagation to the downstream pipe and vice-versa.



2. Gas burner:
The protection avoids the return of the flame the feeding and distribution piping.
3. Unloading of flammable products from tank trucks:
The protection avoids the propagation of the explosion from the unloading area to the pumps or tanks.
4. Over storage tanks:
Model LA, with incorporated LO pressure and vacuum valve, are suggested.



Ask for our sizing software



Nº	Description	Quantity LE 16, LE16F, LE 19, LE 25
1	Body	1
2*	Arrester set	1
2.1	Flame arrester element	2
2.2	Frame	1
2.3	Spacer	1
3	Cover	1
4*	Sealing	1
5	Hooks	2
6	Bolts	6
7	Nuts	6

Main Characteristics

- Safety against propagation of flames in piping, in cases of explosion;
- Low head loss, since the sum of the areas of the flame arrester element is considerably larger than the area of Nominal Diameter of the respective piping;
- Construction allowing easy maintenance: the frame set and the flame arrester element have a “gate” system for easy removal.

Construction

The protection against explosion to be installed in any position in the piping allows flow in both directions, is a closed unit, ready for operation.

Installation

After the installation between the flanges, check the perfect placing of the arrester inside the body and the cover sealing.

For this checking, loosen the cover fixation nuts. Under the cover there are 2 hooks attached to the frame, used to remove it. After this check if the flame arrester element surface is in perfect condition, free of dirt.

The protection against explosion shall be installed as close as possible to the risk source (explosion or flames) observing the rule of distance not over 20 times the Nominal Diameter of the piping.

For piping longer than 20 x ND, the propagation speed accelerates and the explosion could turn into a detonation demanding the installation of a protection against detonation, LD model.

Technical competence, materials and connections

Model		LE 16F		LE 16		LE 19			LE 25	
ND	mm	25	40	50	80	100	150	200	250	300
	inch	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
Body		ASTM A 126 B gray iron		ASTM A 395 nodular iron		ASTM A 216 WCB cast steel			ASTM 351 CF 8M stainless steel	
Cover		ASTM A 126 B gray iron		ASTM A 395 nodular iron		ASTM A 216 WCB cast steel			ASTM 351 CF 8M stainless steel	
Frame		ASTM A 126 B gray iron		ASTM A 395 nodular iron		ASTM A 216 WCB cast steel			ASTM 351 CF 8M stainless steel	
Frame arrester element		Stainless steel								
Sealing packing		Hydraulic paper								
Connections		Flanges according to DIN 2532 PN 10/16 or ANSI B16.1 class 125 FF or ANSI B16.5 class 150 RF								

Operation

The protection consists of body, flame arrester and cover.
The flame arrester consists of a flame arrester element separated by a spacer and the frame.
In case of inflammation, the flame arrester element avoids the flame propagation by heat exchange.
The protection against explosion does not provide protection against continuous combustion and is not appropriated to avoid a detonation.
In case of continuous combustion, special models are required. When there is a detonation danger, install the appropriate protection, LD model.

Important

For installations with risk of continuous combustion (e.g. flare), we recommend the use of temperature sensors incorporated to the protector, interconnected to safety systems. This equipment does not resist continuous combustion.

Maintenance

The maintenance of the protection consists mainly in arrester cleaning and shall be done periodically, at least every six months or even before, if required by the operation conditions.
Remove the cover to remove the flame arrester element frame, in case of LE 16, LE 16F and LE 19, 25 models.
The most convenient way to clean is to wash the flame arrester element with a solvent and then blow with compressed air. The dirt particles eventually deposited on the surface will be removed with a soft wire brush.
In order to restrict to a minimum the time when the installation will be without protection, it is recommended to maintain a complete arrester set as spare.
For safety, the flame arrester element shall be substituted in case of any type of combustion.
Handle the flame arrester element with great care, to avoid damaging it. When outside the frame the frame arrester element is fragile.

Flow Diagram

The LE protection shall have, at least, the same ND of the piping where it will be installed. Sizing consists in checking the head loss of the process. In some cases it may be necessary for the ND of the protector to be over the ND of the line. To determine the head loss, inform the flow in m^3/min and the ND of the piping.

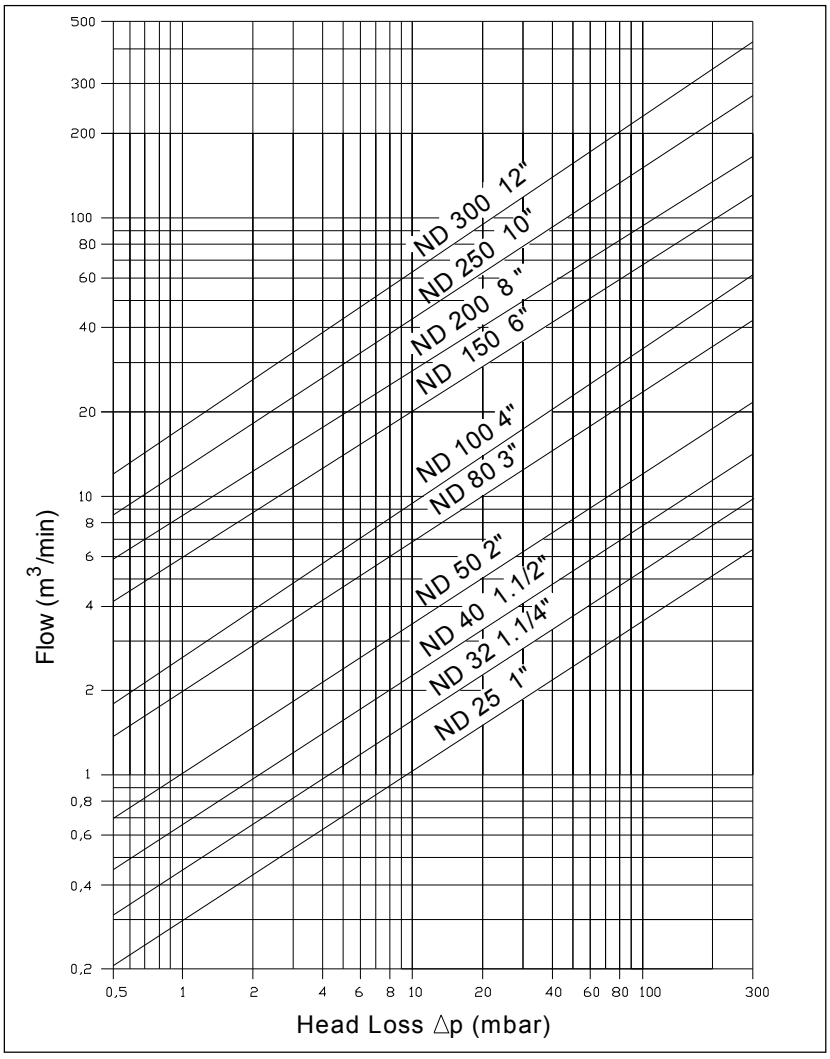
Example

Flow: 10 m^3/min
Piping: ND 6"
Head Loss: 3 mbar

The diagram is valid for gases with 1.3 kg/m^3 density (saturated mixture of air with benzyl steam).

Dimensions and weights

Model		LE 16		LE 16 F		LE 19		LE 25	
ND	mm	25	40	50	80	100	150	200	250	300
	inch	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
Dimensions	mm									
	A	160	215	215	240	265	290	300	320	350
	B	80	115	115	145	165	235	250	270	280
	C	130	186	186	221	257	350	400	486	570
Approx. weight.	kg	9	18	19	34	41	58	88	120	150



Use the following formula for the conversion:

$$Q_1 = Q\sqrt{\frac{y}{y_1}}$$

Where

Q = Equivalent flow in m^3/min with 1,3 kg/m^3 density
y = 1,3 kg/m^3
Q_1 = Real flow in m^3/min
y_1 = Real density in kg/m^3

Caution:
For cases where the protection is installed over tanks, calculate the thermal flows according to IT 1201.

Sizing Data

ASCA will provide the sizing calculation. For this please inform:
- Flow (m^3/min)
- Allowable head loss (mbar)
- Nominal Diameter (m)
- Distance between the protector and the risk source (m)
- Installation
- Fluid type and physical status

Standard Specification

Protection against explosion
LE model of ASCA
According to catalog PR-12.41.11-I
Data sheet .....
Flanged Connection .....
According to standard .....
Nominal Diameter .....

ASCA EQUIPAMENTOS INDUSTRIAIS LTDA.

R. Fernandes da Cunha, 202- Vigário Geral - Rio de Janeiro - RJ - Brazil
CEP 21241-300 - Tel.: (21) 2472-6900 - Fax (21) 3014-7622
e-mail: office@asca.com.br - homepage: http://www.asca.com.br