

Breath caps external explosion proof and continuous combustion



LC

DIN PN 10 - 16 — DN 25 200 mm
ANSI 125 - 150 — 1" to 8"

LC 10, 15
LC 11, 11F, 17, 25
LC 12F, 18, 25

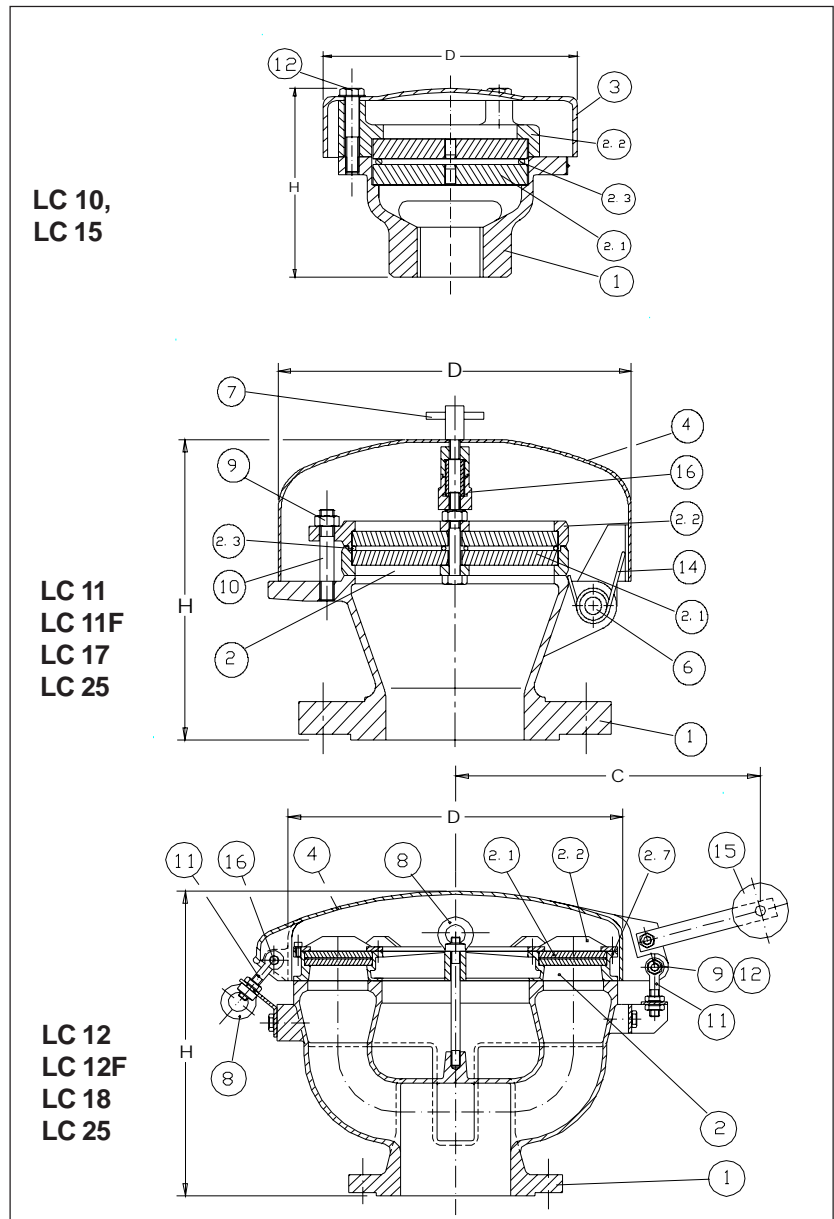
Application

In the breath pipes in despressurized tanks or with internal floating roof to protect them against flame irruption in case of atmospheric deflagration and continuous combustion.
Applicable to fluids of the risk groups IIA according to DIN 57165, or D class according to NEC-USA.

Main characteristics

- Absolute security against irruption of flames to inside the tanks in case of atmospheric deflagration and continuous combustion;
- Perfect heat dissipation in case of continuous combustion, allowing gas burning during 2 hours, without irruption flame inside the tank;
- Articulated cover that, in presence of flame, opens automatically by fuse element burning and action of the spring (or counterweight), alerting to the necessary provisions.;
- Reduced loss loading in the flame arrester element, because its effective area is larger than that area of the passage piping of same nominal diameter;
- Rain and water splatter proof construction;
- Flame arrester element sized according to the risk group of each product (MESS-Maximum experimental security spacement)

Solicitare oru sizing program



Materials and connections

Model	LC 10	LC 15	LC 11F	LC 11	LC 17	LC 25	LC 12F	LC 12	LC 18	LC 25
Nominal (mm) diameter (pol)	25 1"	32 1.1/4"	50 2"	50 2"	80 3"	100 4"	150 6"	200 8"		
Body	Nodular iron ASTM A 395	St. steel ASTM A351 CF8M	Gray iron ASTMA 126 B	Nodular iron ASTM A 395	Aluminium ASTM B26 356 OF	St. steel ASTM A351 CF8M	Gray iron ASTM A 126 B	Nodular iron ASTM A 395	Aluminium ASTM B26 356 OF	St. steel ASTM A351 CF8M
Cover	Acrylic		Aluminium ASTM B26 356 OF			St. steel	Aluminium ASTM B26 356 OF			St. steel
Beehive	Stainless steel. AISI 316									
Flame arrester frame	Nodular iron ASTM A 395	Stainless steel	Gray iron ASTM A 126 B	Stainless steel. ASTM A351 CF8		Stainless steel	Gray iron ASTM A 126 B	Stainless steel ASTM A351 CF8		Stainless steel
Connections	Internal thread BSP or NPT		Flanges DIN - PN 10/16 or ANSI B 16.1 class 125 or ANSI B 16.5 class 150							

Presentation

The equipments are supplied in conditions to operate. They consist of three basic components: body, flame trap and cap, which, in models LC 11, 11F, 12, 12F, 17, 18 and 25 are articulated and in LC 10, 15 are fixed. The flame trap is subdivided into framework, spacer and double flame arrester element.

There are fuse elements and spring (ND 2", 3" and 4") or counterweight (ND 6" and 8") in the models with articulated cover.

Installation

The LC series caps are assembled in vertical position over the tank ventilation tubes. Once installed, it is important to confirm the perfect conditions of the flame arrester elements on the flame trap, spring and fuse element.

Important

It is indispensable to make sure that the only communication of the tank with the atmosphere is always and only provided through the vent protected with the cap.

Operation

In the caps LC 10, 11, 11F, 12, 12F, 15, 17, 18 and 25 the inflammable mixtures of gas flows from under the cover to the atmosphere.

If there is a sudden inflammation of the effluent gases (atmospheric deflagration), the arrester absorbs energy (heat exchange), forbidding the propagation of the flame to inside the tank. In the case of continuous combustion (Where the mixture keeps on flowing after the atmospheric deflagration, sustaining the flame over the flame arrester element on the cap), The heat melts the fuse element and the cover opens automatically, tensioned by the spring (LC 11, 11F, 17, 25) or by counterweight (LC 12, 12F, 18, 25). In the case of LC 10, 15, the acrylic fixed cover goes into combustion. Of this way, the surface of the flame trap is uncovered, allowing maximum heat dissipation during two hours, without risk of flame propagation and time for necessary provisions. Simultaneously, the cover signals, even at a distance, the occurrence of an irregularity in the installation. The natural cooling through the spaces around the channels and the central opening of the annular flame arrester element (LC 12, 12F, 18, 25) forbids excessive heating of the body. The LC series caps attend to the strictest international requirements of protection against continuous combustion, including the European standards.

Components

N°	Description	Quantities		
		LC 10, 15	LC 11,11F,17,25	LC 12,12F,18,25
1	Body	1	1	1
2	Arrester set	1	1	1
2.1*	flame arrester element	2	2	2
2.2	Flame arrester frame	1	1	1
2.3	Spacer	1	1	1
3*	Fixed cover	1	-	-
4	Articulated cover	-	1	1
6	Articulation pin	-	1	-
7	Fixing bolt	-	1	-
8	Eyelet nut	-	-	2
9	Nut	-	3	2
10	Bolt	-	3	-
11	Articulation bolt	-	-	2
12	Cover bolt	3	-	2
13	Spacing sleeve	-	-	-
14	Spring	-	1	-
15	Counterweight	-	-	1
16*	Fuse element	-	1	1

*Recommended spare times

Measures and weights

Model	LC 10, 15			LC 11, 11F, 17, 25			LC 12, 12F, 18, 25	
	25	32	50	50	80	100	150	200
Nominal diameter (mm) (pol)	1"	1.1/4"	2"	2"	3"	4"	6"	8"
Measures (mm)								
H	90	90	112	169	189	189	422	482
D	115	115	135	183	258	258	460	550
C	-	-	-	-	-	-	620	770
Approximated weight								
Aluminium* (kg)	-	-	-	(3,3)	(6)	(8)	(50)	(68)
lb	-	-	-	7,3	13,2	17,6	110	150
Nodular iron (kg)	(2)	(2)	(2,5)	(5)	(9)	(14)	(78)	(102)
or steel lb	4,4	4,4	5,5	11	19,8	30,8	172	224

* Models LC 17, 18

Flow Chart

To determine nominal diameter of the cap, must be verified the maximum flow (in m³/min) and maximum admissible pressure and vacuum in the tank (in bar). For the maximum flow is chosen the largest value between the aspiration (vacuum breaker) and the emission (pressure relief). The calculation of this flow shall consider not only the pumps flow, but mainly, the thermal flow (see technical information 1201). Select the nominal diameter corresponding to the curve located immediately above the intersection point between the horizontal flow line and the vertical pressure and vacuum line. If the calculated flow is larger than the curve corresponding to the larger diameter (ND 200 mm - 8"), Select two or more caps, whose

added flows, attend to service conditions.

Over The ND 200 mm (8") is not possible to guarantee the perfect heat dissipation in case of continuous combustion, as required by the DIN standards.

The chart is valid for gases with specific weight of 1,3 kg/m³.

For gases with specific different weight use the formula:

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

Q = Equivalent flow em m³/min with specific weight of 1,3 kg/m³

Q₁ = Real flow em m³/min

y = 1,3 kg/m³

y₁ = Real specific weight in kg/m³

Example

Maximum aspiration flow..... 14,30 m³/min
 Maximum emission flow 2,44 m³/min
 Max. admiss. pressure in the tank.....8 mbar
 Max. admiss. vacuum in the tank.....-8 mbar

Chosen by flow chart:

Flow.....10 m³/min
 Overpressure.....8 mbar

Nominal diamater 150 mm (6")

Data for sizing

ASCA will make pleasure the sizing. For this purpose must be supplied:

- Nominal Diameter of the tank (m)
- Cylindrical height of the tank (m)
- Maximum admissible pressure and vacuum in the tank (mbar)
- Flow of the inflow and outflow pumps (m³/h)
- Desired connection standard
- ND of the existing vent pipes in case of tanks already in operation
- Stored product

Standard specification

External explosion and continuous combustion proof vent cap

Model LCfrom ASCA

As per prospect PR-12.10.11-P

Data sheet

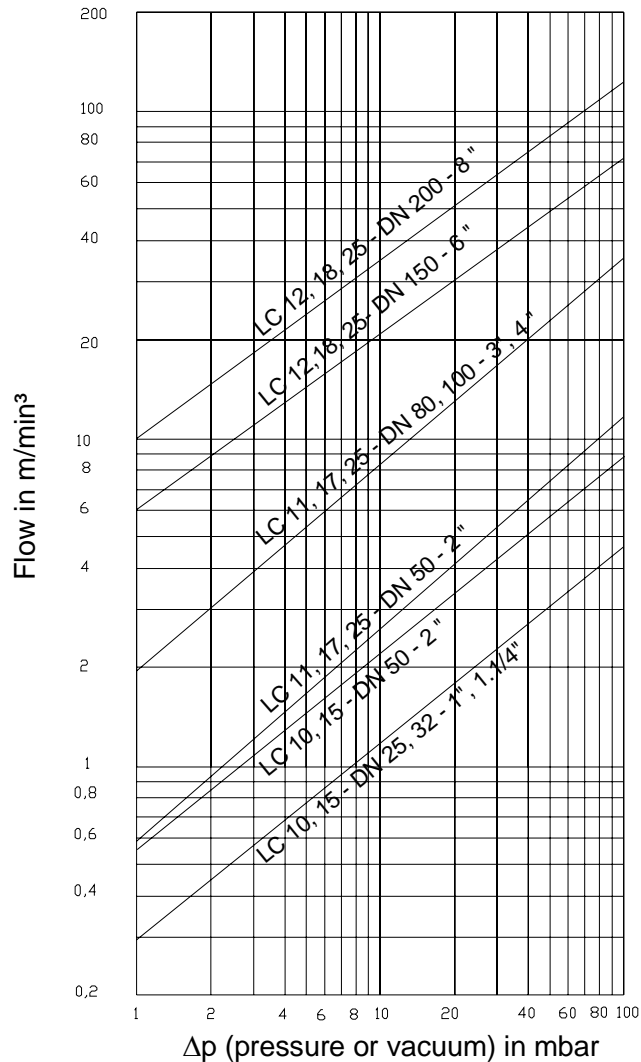
Connection

As per norm

Pressure class

Nominal diameter

Flow chart



This chart includes loss loas provoked by connection of the cap to the tank (flanged pipe socket).

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