



DIN PN 10 - 16 — DN 50 - 300mm
 ANSI 125 - 150 — 2" - 12"

16, 16F, 19, 25

Application

Pressure and vacuum relief valves are installed in the vent pipes of atmospheric storage tanks. These valves are appropriate to maintain the pressure and vacuum inside the tank, according to the determined calibration pressure, reducing the product loss due to evaporation and/or environment contamination.

Main Characteristics

- Perfect control of pressure and vacuum inside the tank;
- Wide calibration ranges;
- Rain and water splatter proof construction;
- Allowing easy access to the valves;
- Reduce the emission of pollutants into the atmosphere;
- Reduce product losses due to evaporation.

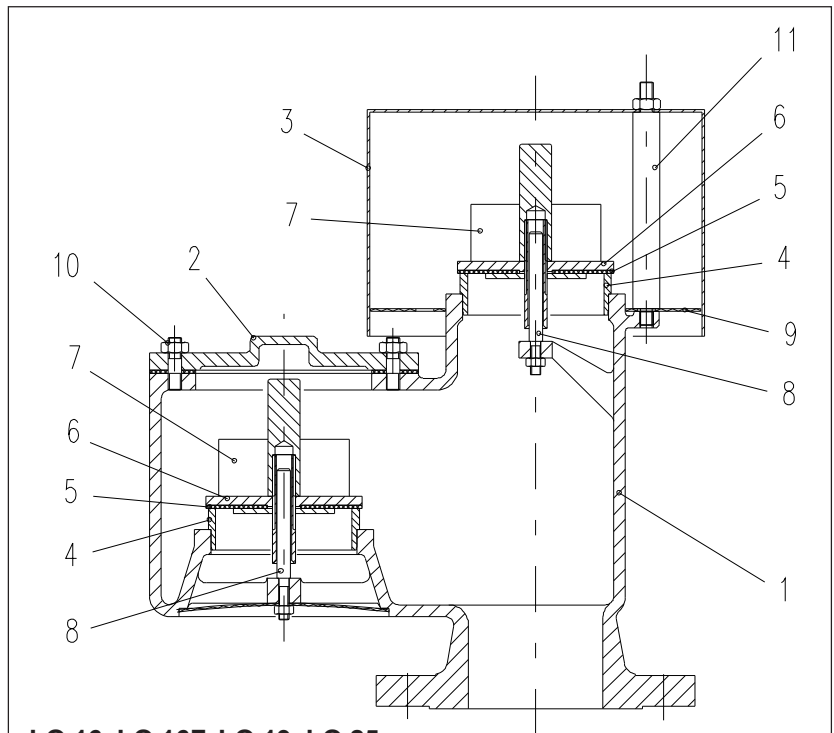
Construction

The equipment is provided with calibrated valves according to client request. Models LO16, 16F,19 and 25 are normally mounted over a flame arrester of LE 16 type for effect of protection against external explosion, see model LA, catalog PR 12.51.11-I.

Installation

Pressure and vacuum relief valves are installed in the vertical position over the vent pipes of the tank.

**Ask for our
sizing software**



**LO 16, LO 16F, LO 19, LO 25
in section**

No.	Description	Quantity
		LO 16, LO 16F, LO 19, LO 25
1	Body	1
2	Caccum lid	3
3	Cap	1
4*	Valve seat	2
5*	Sealing	1
6	Pallet	2
7	Balast	2
8	Guides	2
9	Pressure sieve	2
10	Case with nut	4
11	Cases	2

* Recommended spare parts

Technical competence, materials and connections

Model		LO 16	LO 16F	LO 19	LO 25			
ND	mm	50	80	100	150	200	250	300
	inch	2"	3"	4"	6"	8"	10"	12"
Body		ASTM A 395 nodular iron	ASTM 126 B gray iron	ASTM B26 356 OF aluminum	ASTM 351 CF8M stainless Steel			
Cap		ASTM A 167 GR 304 (AISI 304) Stainless Steel						
Valve seat		AISI 304					AISI 316	
Switch	2,2 a 8 mbar 8 a 60 mbar*	Aluminum Stainless Steel						
Sealing		Teflon**						
Guides		AISI 304					AISI 316	
Ballast		Lead						
Connections		Flanges according to DIN 2532 PN 10/16 or ANSI B16.1 class 125 FF or ANSI B16.5 class 150 RF						

Other values according to special request ** Other materials according to special request.

Important

It is indispensable to guarantee that the only communication of the tank with the atmosphere is done, always and only, by way of the vent protected with the valve.

Caution

The non removal of the locks may lead to the destruction of the tank where the valve is installed.

Operation

The valve switches are calibrated with ballast, according to the determined opening pressure and vacuum and according to the allowable pressure of the tank (see Technical Information 1201).

From the initial pre-established opening pressure or vacuum, the valves open proportionally to the pressure or vacuum increase until total opening, maintaining thus the pressure and vacuum of the tank within the allowable limits.

Flow Diagram

The maximum flow in m³/min and the maximum allowable pressure of the tank in mbar, as well as the initial opening pressure, shall be obtained to determine the Nominal Diameter of the valve. The maximum flow is chosen as the largest value among the aspiration (vacuum) and emission (pressure relief). The calculation of this flow shall consider not only the pump flow, but specially, the thermal flow (see Technical Information 1201). The diagram informs the flow as a function of the overpressure (difference between the maximum allowable pressure of the tank and the initial opening pressure).

Select the Nominal Diameter immediately above the intersection point, between the horizontal flow line and the vertical overpressure line. If the calculated flow is larger than the curve corresponding to the ND 200 mm (8"), select two or more valves, whose added flows shall comply with the operation conditions. The diagrams are valid for gases with 1.3 kg/m³ density.

For other fluids use the formula:

$$Q_1 = \sqrt{\frac{Q_y}{y_1}}$$

Q = Equivalent flow in 1,3 kg/m³ density
y = 1,3 kg/m³

Q₁ = Real flow in m³/min

y₁ = Real density in kg/m³

The diagram also includes the head loss of the pipe for attaching the valve over the tank

Example

Maximum aspiration flow: Vv = 12,00 m³/min

Maximum emission flow: Vp = 2,44 m³/min

Maximum allowable pressure in the tank:

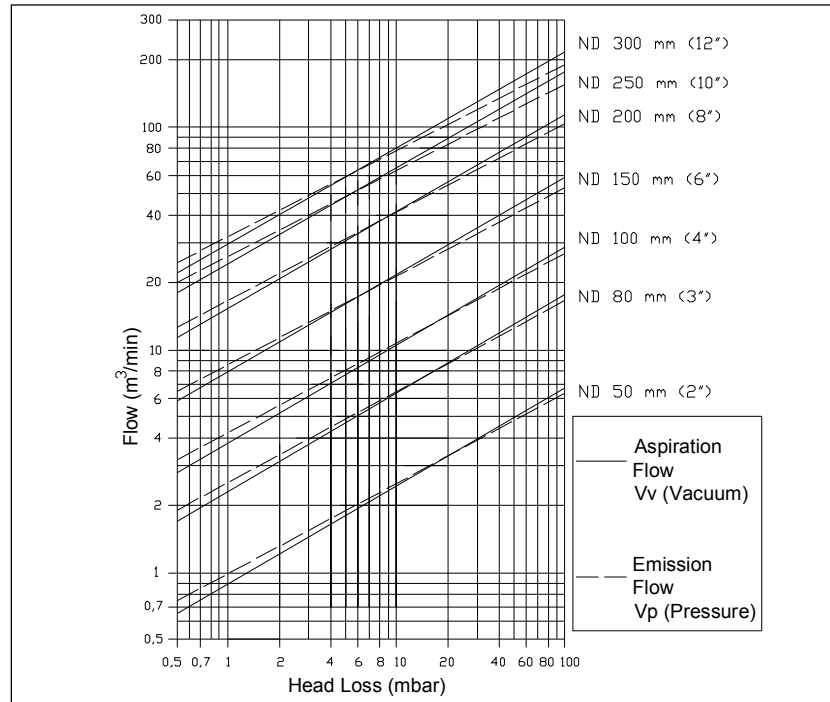
6 mbar

Maximum allowable vacuum in the tank:

- 6 mbar

Dimensions and Weights

Model		LO 16	LO 16F	LO 19	LO 25			
Nominal Diameter	mm	50	80	100	150	200	250	300
	pol	2"	3"	4"	6"	8"	10"	12"
Dimensions	mm							
	A	270	330	385	485	620	725	1010
	B	275	345	365	435	500	530	780
Approx. weight	kg							
Aluminum		10	12	16	25	34	56	80
Nodular iron		18	24	32	49	68	120	160



CASE 1

A 40% increase is forecasted between the initial opening pressure and the maximum allowable pressure in the tank (overpressure)

$$\frac{6 \text{ mbar}}{1,4} = 4,3 \text{ mbar}$$

6 mbar - 4,3 mbar = 1,7 mbar (SP)

Select from the diagram:

Flow:: 12 m³/min (vácuum);
2,44 m³/min (pressure)

Overpressure: 1,7 mbar

Nominal Diameter: 200 mm (8")

CASE 2

A 100% increase is forecasted between the initial opening pressure and the maximum allowable pressure in the tank (overpressure).

6 mbar - 3 mbar = 3 mbar (SP)

Selected from the diagram:

Flow: 12 m³/min (vacuum);
2,44 m³/min (pressure)

Overpressure: 3 mbar

Nominal Diameter: 150 mm (6")

Sizing Data

ASCA will gladly provide the sizing calculation. For this, please provide:

- Nominal diameter of the tank (m)
- Cylindrical height of the tank (m)
- Maximum allowable vacuum and pressure in the tank (mbar)
- Initial opening pressure and vacuum (mbar)
- Flow of loading and unloading pumps (m³/h)
- Desired connection standard
- ND of the existing vent pipes in case of tanks already in operation
- Stored product

Standard Specification

Pressure relief and vacuum breaker valve Model LO.....of ASCA According to catalog: PR-12.30.11-l Opening pressure+..... mbar Opening vacuum -..... mbar Data sheet Flanged connection According to standard Pressure class Nominal Diameter

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