

# Pressure and vacuum relief valves For piping



# LT

DIN PN 10 - 16 — DN 25 - 150mm  
ANSI 125 - 150 — 1" - 6"

11, 12, 13, 17, 18  
19, 25U, 25D, 25T

### Application

LT series valves are predominantly installed in inert gas piping or dry air installations. They are appropriate for maintaining the pressure and/or vacuum inside tanks, piping and other equipment, according to the determined calibration.

### Main Characteristics

- supplied with 2 or 3 ways;
- wide calibration ranges;
- easy to install and maintain, due to the easy access to the valve internals.

### Construction

LT 11, LT 17, LT 25U; Lift type valve, straight pass and single seat for pressure or vacuum relief in piping.

LT 12, LT 18, LT 25D; Lift type valve, straight pass and double seat for pressure and vacuum relief in a sole piping.

LT 13, LT 19, LT 25T; Lift type valve, 3 ways and double seat for pressure and vacuum relief in different piping.

### Installation

The valves are provided for operation conditions, calibrated according to the request of the customer, installed in the vertical position, i.e. with the cover turned upward.

To avoid damages during shipping, the switches are blocked with cardboard, which shall be carefully removed before installing the valve.

**Ask for our  
sizing software**

N°	Description	Quantities			
		LT 11 LT 17 LT 25U	LT 12 LT 18 LT 25D	LT 13 LT 19 LT 25T	LT 13 LT 19 LT 25T
1	Body	1	1	1	1
2	Cover	1	1	1	1
3	Cover sealing	1*	1*	1*	1*
4.1	Upper or sole seat	1	1	1	1
4.2	Lower seat	—	1	1	1
5	Upper or sole switch	1	1	—	—
5.1	Disk	1	1	—	—
5.2	Sealing	1*	1*	1*	1*
5.3	Guide	1	1	1	1
5.4	Ballast	1	1	1	1
5.4	Pallet	—	1	1	1
6	Lower switch	—	—	—	—
6.1	Disc	—	1	1	1
6.2	Ballast	—	1*	1*	1*
6.3	Guide	—	1	1	1
6.4	Ballast	—	1	1	1
7	Hexagonal bolt	6	6	6	6
8	Hexagonal nut	6	6	6	6

\*Recommended spare parts

### Materials and Connections

Models	LT 11**	LT 12	LT 13	LT 17**	LT 18	LT 19	LT 25U**	LT 25D	LT 25T		
ND	pol mm	1.1/2" 40	2" 50	3" 80	4" 100	6" 150	1 1/2" 40	2" 50	3" 80	4" 100	6" 150
Body		ASTM A 395 nodular iron			ASTM 356 OF Aluminum		ASTM 351 CF 8M Stainless steel				
Cover		ASTM A 395 nodular iron			ASTM 356 OF Aluminum		ASTM 351 CF 8M Stainless steel				
Packing		Hydraulic paper									
Seat		AISI 304 Stainless steel					AISI 316 Stainless steel				
Switch	2.2 to 8 mbar over 8 mbar	Aluminum Stainless steel									
Ballast		Lead									
Sealing		Teflon*									
Connection		Flanges according to DIN 2532 PN 10/16 or ANSI 16.5 class 150									

\* Other materials under request \*\* Models with DN 1" (25 mm) also available

## Dimensions and Weights

Model		LT 11		LT 17		LT 25U			LT 12		LT 18		LT 25D		LT 13		LT 19		LT 25T	
ND	mm	1"	1 1/2"	2"	3"	4"	6"	1 1/2"	2"	3"	4"	6"	1 1/2"	2"	3"	4"	6"			
	pol	25	40	50	80	100	150	40	50	80	100	150	40	50	80	100	150			
Dimensions	mm																			
	A	220	250	250	340	380	460	280	280	340	390	520	280	280	340	390	520			
	B	120	145	145	190	220	280	235	235	290	325	410	235	235	290	325	410			
	C	150	170	170	235	280	335	210	210	280	310	390	210	210	280	310	390			
Approx. weight	kg																			
Aluminum		6	6	6	8	13	30	8	8	11	15	26	9	9	13	16	28			
Nodular iron		12	12	12	15	25	60	15	15	22	30	51	18	18	25	32	56			

\* Larger diameters under request

### Important

All the valves are delivered with the inscription "tank connection" on one flange. This flange shall be connected to the tank where the pressure or vacuum relief is desired.

If the valve is inverted in the installation, there may be serious problems to the process such as tank implosion. Install the valves always in horizontal piping, according to the drawing.

### Caution

Before installing, remove the locks from the pressure and vacuum switches.

### Operation

Pressure and/or vacuum relief valves, LT series, are of the lift type, i.e. they open automatically as soon as the adjusting pressure/vacuum is reached, and close immediately below these values.

The reaction range is between the limits of approximately + 5% of adjusting pressure for opening, and - 20% for closing the valves.

The valve switches are calibrated with ballast, according to the determined opening pressure or vacuum and according to the allowable pressure of the equipment.

From the pre-established opening pressure (see table), the valves open proportionally to the pressure and vacuum increase until reaching total opening, thus maintaining the pressure and vacuum within the determined limits.

### Establishing Nominal Diameter

Calculate the aspiration and emission flows to establish the Nominal Diameter of the valve, as well as the maximum and opening pressures to obtain the overpressures SP (see Technical Information 1201).

### Initial opening pressure

Model	Standard*
LT 11, 17, 25U	pressure / vacuum from 2.2 to 100 mbar
LT 12, 13, 18, 19, 25D, 25T	pressure from 2.2 to 100 mbar vacuum from -2.2 to -25 mbar

\*Other pressure ranges according to request.

### Example

#### Valve LT 18

Maximum aspiration flow:  $V_p = 5 \text{ m}^3/\text{min}$   
Maximum emission flow:  $V_p = 4.3 \text{ m}^3/\text{min}$   
Maximum allowable pressure in the tank:

7 mbar

Opening pressure: 5 mbar

Maximum allowable vacuum in the tank: -

8 mbar

Opening vacuum: 5 mbar

Adopting, for example, the value of - 5 mbar for initial opening pressure and vacuum, we have:

For pressure:

$S_p = \text{maximum pressure} - \text{initial opening pressure}$

$S_p = 7 - 5 = 2 \text{ mbar}$

For vacuum:

$S_p = \text{maximum vacuum} - \text{initial opening vacuum}$

$S_p = - 8 + 5 = - 3 \text{ mbar}$

Select the valve for the most critical situation, that is, in this example:  $V_p = 4.3 \text{ m}^3/\text{min}$  with  $S_p$  of 2 mbar:

Selected valve: LT 18, ND 6".

### Inertization

At the installations inertized with nitrogen or other inert gas, the sealing of the valves is stricter. In these cases add the letter N at the end of the product code. The sealing standard is defined by the internal manufacture standard of ASCA. Any other sealing degree shall be previously informed for the manufacture.

## Flow Diagram

The diagram is valid for gases with 1.3 kg/m<sup>3</sup> density.

For the conversion use the formula:

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

Q = Equivalent flow in m<sup>3</sup>/min with 1,3 kg/m<sup>3</sup> density

y = 1,3 kg/m<sup>3</sup>

Q<sub>1</sub> = Real flow in m<sup>3</sup>/min

y<sub>1</sub> = Real density in kg/m<sup>3</sup>

## Sizing Data

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

- Maximum allowable vacuum and pressure (mbar)
- Initial opening pressure and vacuum (mbar)
- Effective flow through the valve (m<sup>3</sup>/h)
- Desired connection standard
- Fluid

## Standard Specification

Pressure and vacuum relief valves for piping

Model LT .....of ASCA

According to catalog: PR-12.31.11-I

Opening pressure + ..... mbar

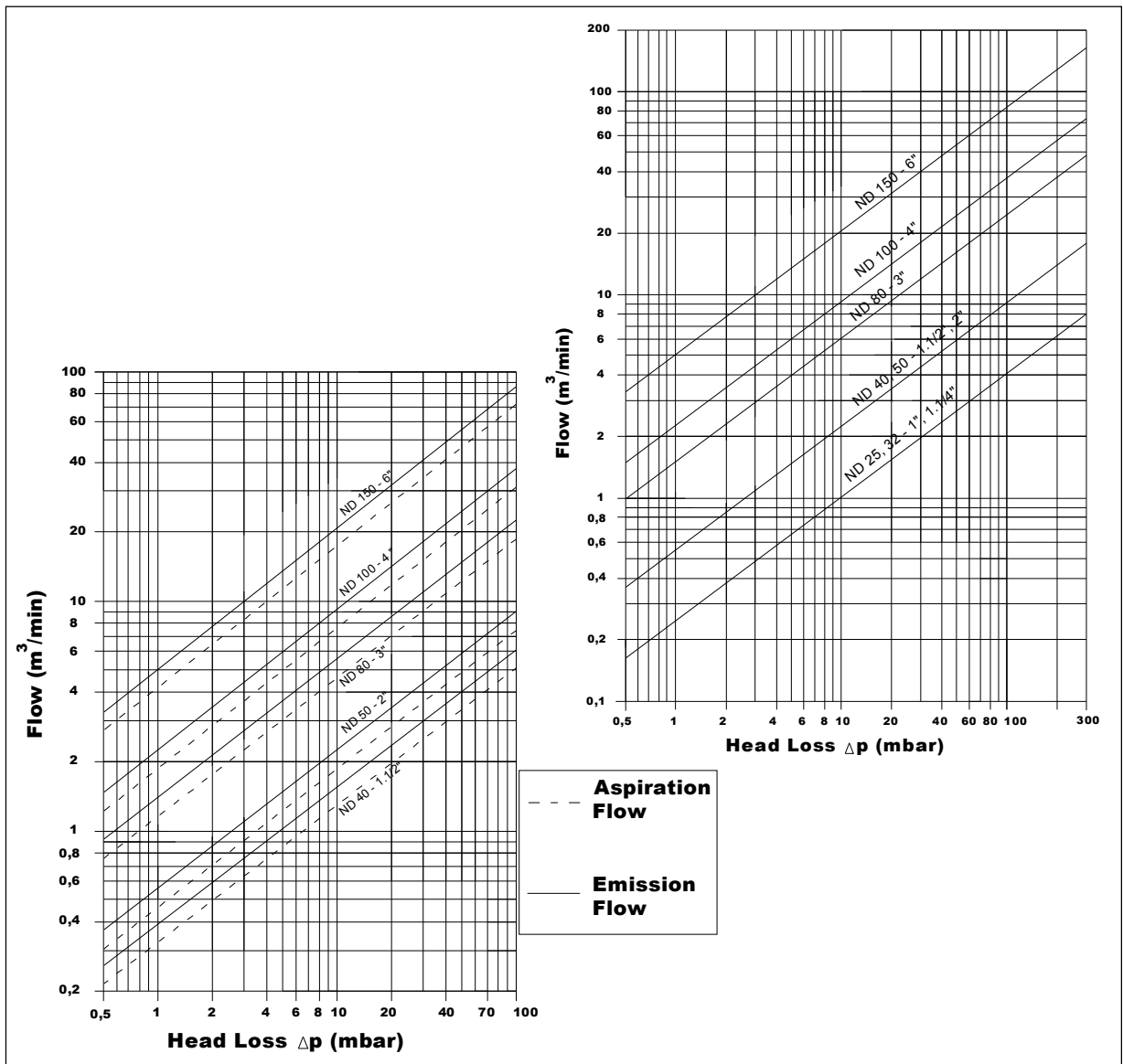
Opening vacuum - ..... mbar

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

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