



In-line design  
DN 25

## Application

The vacuum reducers are designed for control of vacuum pressure of gases and to meet requirements in the chemical, pharmaceutical and biotechnology industries. The regulators are particularly corrosion resistant and reliable and used for blanketing application of tanks, centrifuges, batch reactors and vessels.

## Design

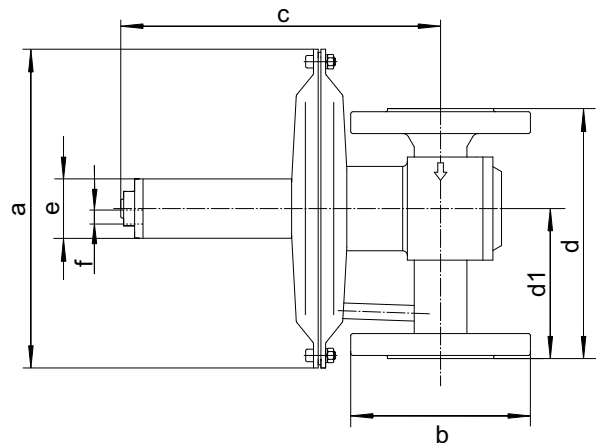
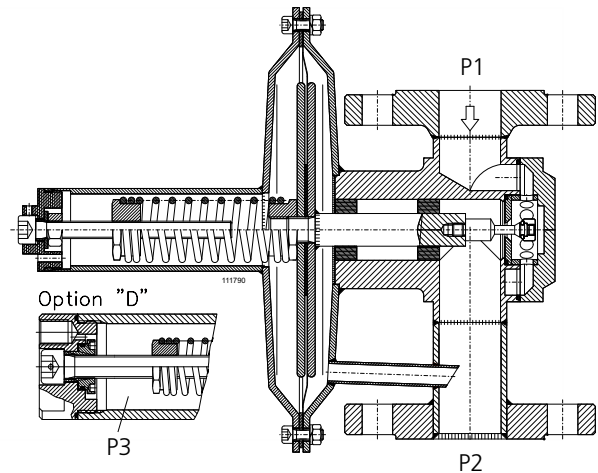
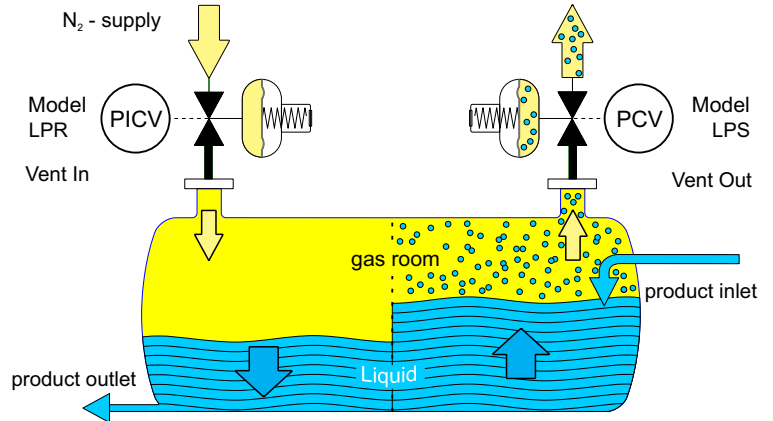
The large proportioned, spring-loaded diaphragm actuator with directly-controlled valve seat ensures precise control with low hysteresis. The regulator function without auxiliary power supply. High overpressure strength and safe regulator function is achieved by means of the supported diaphragm with long spindle guide. The regulator has a low degree of clearance volume and is self-draining, as far as is possible.

## Description

The components coming in contact with the product are manufactured from CrNiMo steel 1.4435 / 1.4404. The diaphragm and seals are made of PTFE and the regulator seat is made of perfluoroelastomer (FFKM – Isolast®, Chemraz®, Kalrez®) as standard, or fluoroelastomer (FKM: Viton®). These materials guarantee high corrosion resistance and excellent sealing, even at zero flow. The design has a low degree of clearance volume and is self-draining (suitable for CIP). On request, we can supply regulators in Hastelloy, Tantal or plastic etc. with the appropriate certification. The surface finish for the stainless-steel version is better than Ra 1.6, for housing parts in contact with the medium, better than Ra 0.8 for internal functional parts and better than Ra 3.2 for the outer housing.

## Technical data

<b>Nominal diameter:</b>	DN 25 / 1"
<b>Regulating range P2:</b>	N.. to -850 mbar D (pressure difference) to 4 bar = P3
<b>Inlet pressure P1:</b>	max. 16 bar
<b>Vakuum proof</b>	
<b>Pressure connections:</b>	Flange / thread (Special version available on request)
<b>Weight:</b>	5,3 kg to 7,9 kg
<b>Temperature:</b>	-20 ° to +120 °C for EPDM (Dependent on pressure conditions) -20 ° to +130 °C for FKM -20 ° to +160 °C for PTFE
<b>Testing and inspection:</b>	According to IEC 60534-4
<b>Pressure tightness:</b>	Bubble tight sealing category VI



Model dimensions	pressure connection	a	b	c	d	d1	e	f Option "D"
LPRI-025...-N...-...	DIN DN25 PN16 ANSI 1" 150 lbs BSP 1" female thread NPTF 1" female thread	∅ 204	∅115 (DIN) ∅108 (ANSI)	207	160	96	∅38 (M36) ∅54 (M48)	G 1/4" female thread (dimension "e" is always ∅54 (M48) with Option "D")



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## MODEL CODE LPR® I

1		2			3		4			5		6		7	
Design		Nominal diameter DN/ pressure connection			Flow capacity		Regulating pressure range			Material		Options		Specials	
LP	R	I	-	025	.	-	..	-	N..	-	...	-	.	-	Xn

### 2 Nominal diameter DN/ Pressure connection

D	Flange:	DIN EN 1092-1, B1 DN 25 PN 16
A	Flange:	ANSI B 16.5, 1" 150 lbs
B	Thread:	1" BSP female thread
N	Thread:	1" NPTF female thread

### 3 Flow capacity

04 <sup>1</sup>	Seat	ø4 mm	kv = 0,4
07	Seat	ø7 mm	kv = 1,03
12	Seat	ø12 mm	kv = 3,2
16	Seat	ø16 mm	kv = 5,45

### 4 Regulating pressure range P2 (mbar)

N01	-10 bis +10	N20	-200 bis -30
N02	-20 bis -4	N50*	-500 bis -80
N05	-80 bis -10	N80*	-850 bis -90

\* (on request)

### 5 Material (only the same colours can be combined)

Housing/ internal components	Seat seal	Diaphragm/ Regulating range
S 1.4435 (1.4404)/ 1.4435 (1.4404)	K FFKM	P PTFE/ N..
G <sup>1</sup> 1.4435 (1.4404)/ HC 22 (2.4602)	V FKM	G PTFE-glass fibre reinforced / L..
H <sup>1</sup> HC 22 (2.4602)/ HC 22 (2.4602)	E EPDM	
	C FFKM con- forms to FDA	

<sup>1</sup> Seat 04 is not available in HC 22.

**Example:** Housing/internal components with material code "G" or "H" (red) are only combined with seat of type "K" or "C" and with diaphragm type "P" or "G".

Housing/internal components with material code "S" can be combined with all seat and diaphragm materials (yellow).

### 6 Options

D	Differential pressure connection
E*	Externe Impulsleitung (Standard 5/8"-20 UNS)
G	Pressure gauge connection G¼

\*Der angeschweißte Nippel ist zum Anschluss eines Rohres ø10 vorgesehen. Im Lieferumfang enthalten ist eine Swagelok Überwurfmutter sowie ein vorderer und hinterer Klemmring. (Sonderausführung auf Anfrage).

### 7 Specials

X0	If you require, for example, ATEX, PED, special connections, external control, rain hood, a fixed setting for P2 ..., please enter an X in this field with the number of desired Specials. Each of the specials must be described in writing.
X1	
X2	
•	
•	
Xn	For special versions and certifications, please contact the manufacturer or the appropriate sales representative.

### Flow table [flow quantities in Nm³/h]

P1 [bar rel.]	0.16	0.25	0.40	0.65	1.0	1.6	2.5	4,0	6,0	Seat siz	
P2	-10	3,4	5,3	7	8	10,5	13,5	17	22	32	ø4 mm
		12	14	17	22	27	35	45	60	80	ø7 mm
		34	44	55	70	85	108	136	180	210	ø12 mm
		60	75	95	118	146	185	235	292	360	ø16 mm
-100	3,4	5,3	7	8	10,5	13,5	17	22	32	ø4 mm	
	12	14	17,5	22	27,5	34	44	55	68	ø7 mm	
	34	44	55	70	85	108	136	180	210	ø12 mm	
	60	75	95	118	146	185	235	292	360	ø16 mm	
-200	-	14	17	22	27	35	45	60	80	ø7 mm	

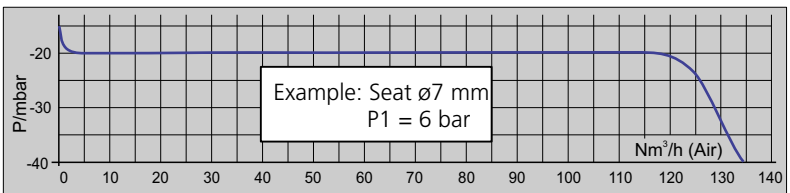
The flow capacity is the same in the supercritical operating range (guide value: P2 < 0.5 x P1). It is recommended to design for operation at a maximum of 70% of the flow values.

P1 = supply pressure P2 = regulating pressure P3 = pressure difference

### Dependency on inlet pressure (per +1 bar / -1 bar change in P1)

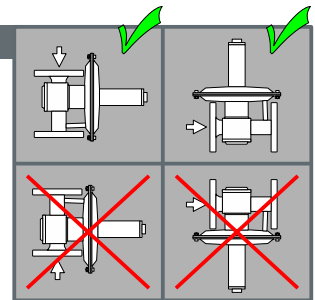
Seat ø4 mm	-1 mbar / +1 mbar	Seat ø12 mm	-8 mbar / +8 mbar
Seat ø7 mm	-3 mbar / +3 mbar	Seat ø16 mm	-13 mbar / +13 mbar

### Pressure / flow characteristic



### Installation

The preferred installation position is with vertical diaphragm housing and horizontal input. Pressure fixed unit is adjusted in this position. The output pressure increases by approximately 4 mbar for installation with horizontal diaphragm housing. The installation position must be specified.



### Mounting and start up

- Before connecting the pressure regulator please make sure
- LPRI adjust reduced pressure: (Relative pressure)
  - 1.1 to compare the plant data with the name plate
  - 1.2 the values marked on the name plate are the values measured during our functional inspection
  - 1.3 to check the corrosion resistance of the material
  - 1.4 to blow out impurities in the pipes
  - 1.5 to note the flow direction – it is marked with an arrow on the housing
  - 1.6 to open inlet pipes slowly.
- LPRI adjust reduced pressure: (Relative pressure)
  - 2.1 set a light flow (1Nm³/h). Set the pressure +/- as required using a hexagonal wrench
  - 2.2 the setting can be secured with a seal.
  - 2.3 Adjust the LPRI differential pressure (-D) with the servo-regulator
  - 2.4 if the D-connection is pressurised with the servo-pressure, the working pressure is added by the servo-pressure.