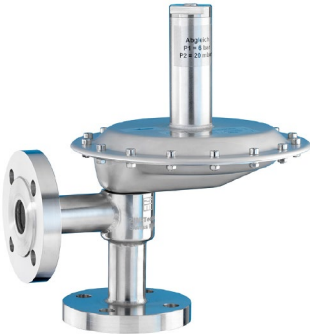




## Operating manual For low pressure reducing valve Type LPR... and ZM-R...

**LPR25**



**LPRK25**



**ZM-R15  
ZM-R25**



**ZM-R50**



### Contents

1	General information .....	2
2	Warranty provisions .....	2
3	Purpose .....	2
3.1	Intended use .....	2
3.2	Assembly work on the pressure regulator .....	2
4	Safety provisions .....	3
5	Material resistance .....	3
6	Startup .....	3
6.1	Before installation .....	3
6.2	Installation .....	3
6.3	Assembly position and installation .....	3
6.4	Configuring the setpoint .....	5
7	Impulse line (C-connection) .....	5
8	Maintenance and repairs .....	5
8.1	Inspection intervals .....	5
9	Model selection .....	6
10	Code: ZM-R15 .....	7
11	Code: ZM-R25 .....	8
12	Code: ZM-R50 .....	9
13	Code: LPRK25 .....	10
14	Code: LPR25 .....	11

## 1 General information

This operating manual is for handling pressure regulators. Operating errors can be prevented only with knowledge of this operating manual.

Operating personnel must be informed about the contents of this operating manual.

Improper use may result in hazard to life for the user or other third parties and/or damage to other material assets.

We reserve the right to make technical modifications for improvement purposes to the comparisons and information in this operating manual.

## 2 Warranty provisions

There shall be no liability, or the warranty shall be void under the following conditions:

- The information and instructions of the operating manual are not followed.
- The devices are improperly used.
- The devices are used for purposes other than their intended one.
- Any type of functional changes conducted without the written permission of ZIMMERLI MESSTECHNIK AG.
- Disregard of the applicable safety regulations when operating the device.
- Guards were not used or functionality was disabled.

Only approved, original spare parts must be used when replacing parts and/or for procuring spare parts.

## 3 Purpose

These type of pressure regulators are suitable for various tasks (e.g. inerting containers with inactive gases or pressure regulation of pure liquids).

The exact design is customized and must therefore be taken from the device's technical information.

### 3.1 Intended use

Ambient pressure:	0.8 to 1.1 bar
Inlet pressure:	ZM-R $\leq$ 16 bar LPR $\leq$ 10 bar LPRK: $\leq$ 6 bar
Max outlet pressure / counter pressure:	Depending on design, according to data sheet
Ambient temperature:	Within the temperature limits specified in the data sheet With option /Ex: -20 °C to +40 °C
Medium temperature:	According to sealing material, see data sheet PTFE with option /Ex: -20 bis 180 °C (T6...T4) Viton with option /Ex: -20 bis 130 °C (T6...T5)
Degree of protection:	Standard version IP40, with weather protection IP54, other versions according to the data sheet

Limitations of the medium: No combustible gases in an explosive concentration. Exception, ATEX-certified devices according to:

- II 2 G Ex h IIB T6 Gb
- II 3 G Ex h IIC T6 Gc
- II 2 D Ex h IIIC T6 Db
- II 3 D Ex h IIIC T6 Dc

Environmental influences (e.g. direct sunlight) that cause the housing temperature to rise to unacceptable levels must be avoided.

Other external radiation (electromagnetic, ionizing radiation, ultrasound): none (if such radiation is present in the area used, the hazard must be taken into account and assessed by the user.) Keep the devices free of dust (dust thickness less than 1 mm).

### 3.2 Assembly work on the pressure regulator

The user and operator must take measures for mounting, disassembly, and maintenance work of and on the pressure regulator in areas with explosive atmospheres to prevent these operations from creating sources of ignition.

## 4 Safety provisions

Any work on or with the device may be performed only by qualified personnel who are familiar with the applicable regulations on operating pressure regulators and/or pressure containers.

If disassembling safety equipment is required for installation, it must be assembled and inspected immediately once the work has concluded.

Do not exceed the operating pressure. It is specified on the nameplate of each device.

When using the device, the provisions regarding the filling material must be followed.

Natural regulations regarding usage and test intervals must be followed.

## 5 Material resistance

Since the operator chose the material, the supplier cannot provide any guarantees regarding material resistance. It is the operator's responsibility to ensure that the material of the devices, including seals and add-on components (e.g., pressure gauges, pilot regulator, etc.) are adequately resistant against the medium.

## 6 Startup

### 6.1 Before installation

Before installation, perform a visual inspection on the device to determine any transport damage. The device's performance data must be reviewed (max. inlet pressure, secondary pressure, etc.).

The values noted on the nameplate are the values measured in our functional test.

The resistance of the materials has to be checked (see the corresponding chapter of this operating manual).

Newly installed pipelines must be fully rinsed clean to eliminate mechanical residues. It must be ensured that the pressure regulator is connected at the local equipotential bonding, either through an adequate and permanent connection to metallic pipes or via a direct connection to local equipotential bonding.

### 6.2 Installation

Always install the low pressure regulator as close as possible to the process tank or consumer within non-turbulent flow.

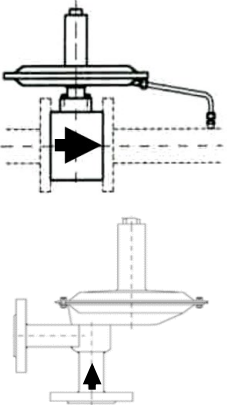
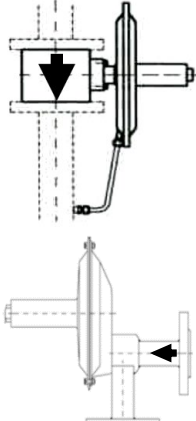
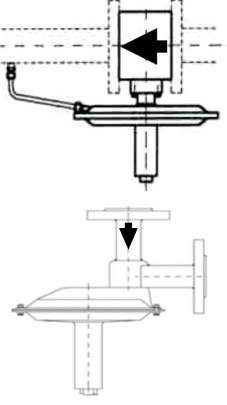
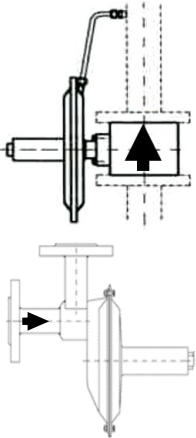
Be mindful of the flow direction! (Marked on the housing with an arrow). Otherwise, there is the risk of damaging the pressure regulator.

### 6.3 Assembly position and installation

Take note of the diaphragm installation position! (Horizontal diaphragm or vertical diaphragm). Sealed devices are set to the desired pressure according to the ordered position. If the devices are configured by the user, then this also must take place in the subsequent installation position.

The preferred mounting position and/or position of the diaphragm is as follows according to device type:

- ZM-R15, 25, 50: Horizontal diaphragm housing (vertical: alternatively permissible).  
Assembly with the spring dome facing down is permissible only upon consultation.
- LPR, LPRK: Vertical diaphragm housing (horizontal: alternatively permissible).  
Assembly with the spring dome facing down is permissible only upon consultation.

Horizontal		Mounting position (diaphragm)		Vertical	
	Recommended mounting position		Recommended mounting position		
	Spring dome on bottom side, only on request / dry gases		Only with option /E, (depending on the medium)		

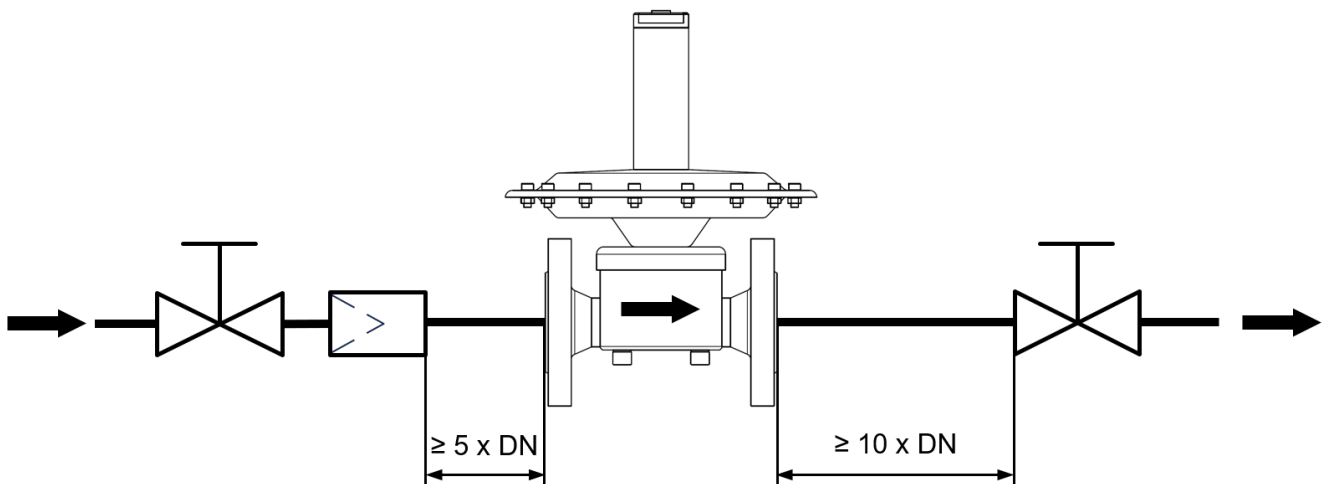
**Important:** The setpoint depends on the diaphragm position and must be adjusted according to the assembly position.

The configuration can be sealed using the lateral hole in the setting screw. Factory-sealed devices are set to the specified pressure.

Assembly must be performed on both sides ( $p_1$ , primary side and  $p_2$ , secondary side) within non-turbulent flow. To that end:

- Straight inlet piping of  $5 \times DN$  on the primary side and
- Straight outlet piping of  $10 \times DN$  on the secondary side is recommended

Furthermore, it is recommended that you install one shut-off valve each before and after the pressure regulator to simplify any maintenance work. Furthermore, a suitable filter must be installed before the pressure regulator in case of dirty gases or if there is a hazard of solid particles.



Avoid pressure shocks after assembly and always open shut-off valves slowly!

## 6.4 Configuring the setpoint

**Always open the valves in lines before or after the pressure regulator slowly and avoid pressure shocks!**

### **Spring-loaded model ZM-Rxx, LPR and LPRK**

Slowly open the valve or ball valve before or after the pressure regulator and set it to a small flow of approx. 1 to 2 Nm<sup>3</sup>/h.

Set the desired pressure by turning the setting screw (6 mm hexagon socket).

Warning! Observe the maximum values on the nameplate.

Clockwise rotation = Decreasing secondary pressure  $p_2$

Counterclockwise rotation = Increasing secondary pressure  $p_2$

### **Dome-loaded model (ZM-R/Dxx, LPR/D and LPRK/D):**

The dome pressure can be set to the required value using a pilot regulator. This requires an external and constant supply of gas, such as air for example, for the pilot regulator. Depending on the device type, a maximum dome pressure of up to 1000 mbar and / or 2000 mbar is permissible, in addition to the setting range of the spring. Fine adjustments can be made using the setting screw on the spring dome.

## 7 Impulse line (C-connection)

An impulse line must be able to communicate with the  $p_2$  side of the valve under any circumstances. Accordingly, no valves or other flow resistances may be present in the secondary, non-turbulent flow area between the device and impulse line pickup. Otherwise, the device is not functional and may even be destroyed.

If the impulse line is not connected, there is also a risk of damaging or destroying the devices, depending on the inlet pressure.

For **ZM-R15**, **ZM-R25** device types, an impulse line (G1/4 connection) is recommended if:

- $P_1 \geq 8$  bar at Kv 0.60
- $P_1 \geq 4$  bar at Kv 1.00
- Generally for Kv 1.40 and 2.00

Device type **ZM-R50** always have a mandatory external pulse line connection. The standard connection is a 10 mm Serto compression ferrule.

Connection  $\geq 300$  mm from the center of the device (or directly at the process for longer lines)  
An impulse line must not be tapped in a turbulent zone.

For **LPR**, the impulse line is optional and is not required for standard applications.

## 8 Maintenance and repairs

The previously mentioned pressure regulators work without auxiliary energy and are maintenance-free. Additional queries may be processed only by specifying the serial number.

The serial number must be specified for spare part orders.

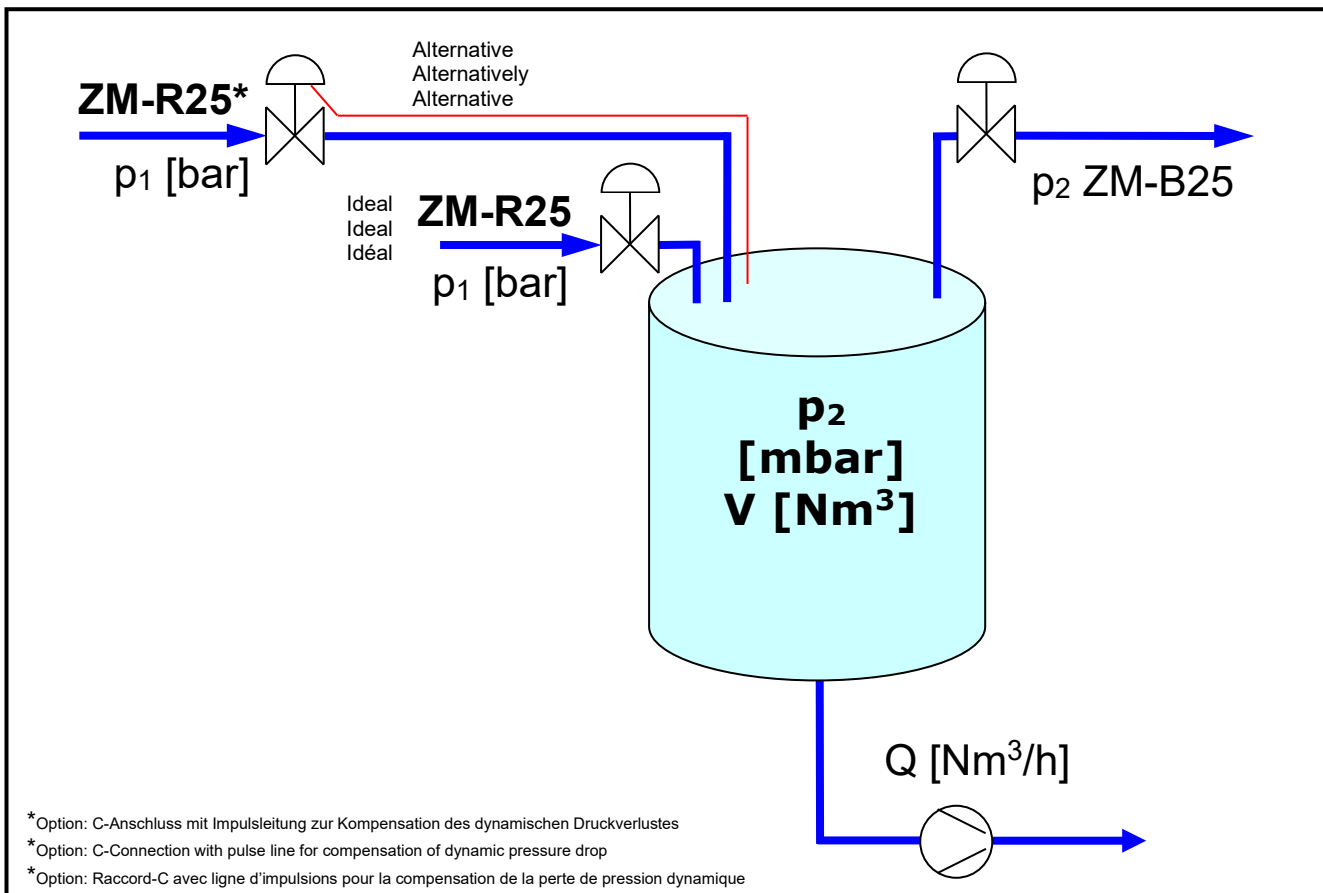
When the diaphragm is replaced by the customer, it is recommended to stretch it after reassembling the pressure regulator. To do this, a counter pressure of 800 to 1000 mbar is built up on the  $p_2$  side, over a period of ~2 seconds. The process is repeated two to three times. Otherwise, additional readjustments during normal operation might be necessary.

Device returns for repair or modification can be accepted only if they have been cleaned and have a completed RMA according to the applicable regulations. In the case of hazardous media, we recommend returning the device disassembled and cleaned.

### 8.1 Inspection intervals

An annual review of the function or maintenance is recommended depending on the characteristics of the medium and the respective operating states. Depending on these results, the testing/maintenance interval can be shortened or extended by the operator/user.

## 9 Model selection



### Anwendungsdaten

Zur optimalen Auslegung eines Niederdruck Reduzierventil ZM-R25 sind mindestens folgende Angaben wichtig:

#### Behälter Entleergradient

Entleerungsgradient, bzw. Pumpenleistung wie folgt:

$$Q = \quad \text{Nm}^3/\text{h}$$

$$V = \quad \text{Nm}^3$$

#### Inertgas

Der optimale Vordruck liegt bei 2 bar g (max. 10 bar g).

$$p_1 = \quad \text{bar g}$$

$$p_2 = \quad \text{mbar g}$$

#### Werkstoff

Welcher Werkstoff ist ausreichend chemisch beständig?

- Edelstahl  
 Hastelloy C  
 Kunststoff (auf Anfrage)

#### Betriebsart

- Standard / Überdruck  
 Negativdruck / Unterdruck  
 Domgesteuert

#### Montage\*

- Direkt auf Tank, vertikal  
 Direkt an Tank, horizontal  
 Innerhalb von Gebäuden  
 Im Freien mit Schutzhaube  
 In Rohrleitung mit C-Anschluss\* und separater Impulsleitung zum Prozess

### Application data

For correct model selection of ZM-R25 low pressure reducing valve, the following specifications are essential:

#### Tank empty rate

Tank empty rate or pump volume as follows:

$$Q = \quad \text{Nm}^3/\text{h}$$

$$V = \quad \text{Nm}^3$$

#### Inert gas

Ideal primary pressure is about 2 bar g (max. 10 bar g).

$$p_1 = \quad \text{bar g}$$

$$p_2 = \quad \text{mbar g}$$

#### Material of construction

What material of construction is durable enough?

- SST  
 Hastelloy C  
 plastic (on request)

#### Mode

- Gauge Pressure Blanketing, Standard  
 Negative pressure service  
 Dome loaded service

#### Installation\*

- Top mounted on tank, vertical  
 Side mounted at tank, horizontal  
 In door  
 Out door with weather protection  
 In pipe with C-Connection\* and pulse line to process

### Données de l'application

Les renseignements suivants représentent un minimum nécessaire pour effectuer le dimensionnement optimal d'un ZM-R25.

#### Gradient de vidange du réservoir

Gradient de vidange, resp. puissance de la pompe comme suit:

$$Q = \quad \text{Nm}^3/\text{h}$$

$$V = \quad \text{Nm}^3$$

#### Gaz inerte

La pression primaire se situe à 2 bar g (max. 10 bar g).

$$p_1 = \quad \text{bar g}$$

$$p_2 = \quad \text{mbar g}$$

#### Matériaux de construction

Quel matériaux est suffisamment chimico-résistant ?

- Acier inoxydable  
 Hastelloy C  
 Matière plastique (nous consulter)

#### Mode de fonctionnement

- Pression relative, Standard  
 Conditions en dépression  
 Piloté par le dôme

#### Montage\*

- Direct sur cuve, vertical  
 Direct sur cuve, horizontal  
 Locaux dans un bâtiment  
 En extérieur avec protection  
 Conduite avec raccord-C\* et prise d'impulsion par rapport au procédé





# 12 Code: ZM-R50

<b>ZM-R</b>	IP40 / IP54 (Option /Ws)	<b>Funktion</b>	Überdruck	Gauge Pressure	Pression relative	1020 mbar
<b>ZM-R/D</b>	IP68	Function	Domgesteuert	Dome loaded	Dôme	2000 mbar (2524 mbar)
<b>ZM-R/De</b>	IP40	Fonction	Eigen/Pilot	Integral/Pilot	Pilotage/direct	2000 mbar (2524 mbar)
<b>ZM-R/Ds</b>	IP40		Fremd/Pilot	Remote/Pilot	Pilotage/indirect	2000 mbar (2524 mbar)
<b>ZM-R/N</b>	IP40 / IP54 (Option /Ws)		Negativdruck	Negative pressure	Pression négative	-80 mbar
<b>ZM-R/NDs</b>	IP40		Negativ/Dom	Negative/Dome	Négative/ Dôme	-1000 mbar
	<b>50</b> DN50, PN40, Ø 360 <b>50</b> 2", 150 lbs, Ø 360 <b>50</b> TriClamp, Ø 360	<b>Grösse</b> Size Dimension	Einbaulänge Einbaulänge Einbaulänge	Lay length Lay length Lay length	Encombrement Encombrement Encombrement	150 mm / ~19 kg, B1/D 150 mm / ~19 kg 193 mm / ~17.5 kg
	<b>50</b> DN50, PN40, Ø 200 <b>50</b> 2", 150 lbs, Ø 200 <b>50</b> TriClamp, Ø 200		Einbaulänge Einbaulänge Einbaulänge	Lay length Lay length Lay length	Encombrement Encombrement Encombrement	150 mm / ~13 kg, B1/D 150 mm / ~13 kg 193 mm / ~11.5 kg
	<b>S</b> <b>H</b> <b>X</b>	<b>Material</b> Material Matériaux	Edelstahl Hastelloy C Sonder auf Anfrage	SST Hastelloy C Special on request	INOX Hastelloy C Nous consulter	1.4404 C276 (PP, PVDF) <sup>2)</sup>
	<b>-FD</b> <b>-FDN</b> <b>-FA1</b> <b>-TCB</b> <b>-XX</b>	DN50, PN40 DN50, PN40 2", 150 lbs TriClamp	<b>Anschluss/Typ</b> Connection/Typ Raccord/Type	Flansch Flansch / Nut Flansch TriClamp Sonder auf Anfrage	Flange Flange / Groove Flange Ø 77.5 mm Special on request	Brides Brides / à gorge Brides DIN32676, B Spécial nous consulter
	<b>-P</b> <b>-P</b> <b>-V</b> <b>-V</b>		<b>Membrane</b> Diaphragm Membrane	PTFE PTFE Viton® Viton® Impulsleitung	-20 / +180 °C -20 / +180 °C -20 / +130 °C -20 / +130 °C Pulse line	Ø 200 mm <b>Ø 360 mm</b> Ø 200 mm <b>Ø 360 mm</b> Ligne d'impulsions Serto Ø 10 mm
	<b>10</b> <sup>5)</sup> <b>20</b> <b>50</b> <b>100</b> <b>200</b>	<b>Federbereich</b> <sup>1)</sup> <b>p<sub>2</sub>, sekundär</b> <b>p<sub>2</sub> = f (p<sub>1</sub>+K<sub>v</sub>)</b>  <b>Spring range</b> <sup>1)</sup> <b>p<sub>2</sub>, secondary</b> <b>p<sub>2</sub> = f (p<sub>1</sub>+K<sub>v</sub>)</b>  <b>Plage de réglage</b> <sup>1)</sup> <b>p<sub>2</sub>, pression aval</b> <b>p<sub>2</sub> = f (p<sub>1</sub>+K<sub>v</sub>)</b>	<b>Horizontal</b> @p <sub>1</sub> =2 bar <sup>1,3)</sup> 3 – 9 mbar 8 – 13 mbar 9 – 25 mbar 11 – 45 mbar 13 – 80 mbar	<b>Vertical</b> @p <sub>1</sub> =2 bar <sup>1,4)</sup> 1 – 5 mbar 3 – 8 mbar 4 – 20 mbar 6 – 40 mbar 8 – 75 mbar	<b>Typ, Type, Type</b> <b>Dom, Dome, Dôme</b>	ZM-R, ZM-R/D, <b>Ø 360</b> (max 1013 mbar) ZM-R, ZM-R/D, <b>Ø 360</b> (max 1013 mbar) ZM-R, ZM-R/D, <b>Ø 360</b> (max 1025 mbar) ZM-R, ZM-R/D, <b>Ø 360</b> (max 1045 mbar) ZM-R, ZM-R/D, <b>Ø 360</b> (max 1080 mbar)  ZM-R, ZM-R/D, Ø 200 (max 2055 mbar) ZM-R, ZM-R/D, Ø 200 (max 2100 mbar) ZM-R, ZM-R/D, Ø 200 (max 2200 mbar) ZM-R, ZM-R/D, Ø 200 (max 2500 mbar) ZM-R, ZM-R/D, Ø 200 (max 2500 mbar)  ZM-R /N/NDs, <b>Ø 360</b> (min -1000 mbar) ZM-R /N/NDs, <b>Ø 360</b> (min -1000 mbar) ZM-R /N/NDs, <b>Ø 360</b> (min -1000 mbar)
	<b>9</b> 7 5 <b>9</b> 7 5 <b>9</b> 7 5 <b>9</b> 7 5 <b>9</b> 7 5  <b>28</b> 21 16 <b>28</b> 21 16 <b>28</b> 21 16 <b>28</b> 21 16 <b>80</b> 80 80  <b>9</b> 7 5 <b>9</b> 7 5 <b>9</b> 7 5	<b>140</b> <b>180</b> <b>260</b>	<b>Sitz</b> Seat Siège	K <sub>v</sub> = 5.3 / 14 mm K <sub>v</sub> = 9.3 / 18 mm K <sub>v</sub> = 13.1 / 26 mm	<b>[p<sub>2</sub> = f (p<sub>1</sub> + K<sub>v</sub>)] <sup>1)</sup></b> <b>Ø 360</b> Ø 200 <b>Ø 360</b> Ø 200 <b>Ø 360</b> Ø 200	[p <sub>2</sub> =+0mbar+(0.6mbar/1bar für, for, pour: 2 bar<p <sub>1</sub> <16bar)] [p <sub>2</sub> =+0mbar+(3.0mbar/1bar für, for, pour: 2 bar<p <sub>1</sub> <16bar)] [p <sub>2</sub> =+2mbar+(0.8mbar/1bar für, for, pour: 2 bar<p <sub>1</sub> <16bar)] [p <sub>2</sub> =+2mbar+(5.0mbar/1bar für, for, pour: 2 bar<p <sub>1</sub> <16bar)] [p <sub>2</sub> =+4mbar+(1.2mbar/1bar für, for, pour: 2 bar<p <sub>1</sub> <16bar)] [p <sub>2</sub> =+4mbar+(7.0mbar/1bar für, for, pour: 2 bar<p <sub>1</sub> <16bar)]
			<b>Optionen</b> , Options, Options			
	<b>/E</b>	Drainage	Drain	Vidage	G¼ (¼" BSP, p <sub>1</sub> )	
	<b>/DT</b>	Dom-T-Stück /De / Ds	Dome T-piece /De / Ds	Raccord Dome-T /De / Ds	6 mm Serto	
	<b>/Hr</b>	Handrad / Kunststoff	Plastic hand knob	Molette de réglage		
	<b>MG1</b>	Membrandurchmesser	Diaphragm diameter	Diamètre de la membrane	200 mm	
	<b>MG2</b>	Membrandurchmesser	Diaphragm diameter	Diamètre de la membrane	360 mm	
	<b>/S1</b> <sup>6)</sup>	Manometerstutzen	Gauge nozzle	Raccord manomètre	G¼ (¼" BSP, p <sub>1</sub> )	
	<b>/S2</b> <sup>6)</sup>	Manometerstutzen	Gauge nozzle	Raccord manomètre	G¼ (¼" BSP, p <sub>2</sub> )	
	<b>/Sp</b>	Eingestellt/plombiert	Adjusted and sealed	Ajusté et plombé		
	<b>/Ws</b>	Wetterschutz	Weather protection	Avec protection	IP54 PP / Polypropylen	
	<b>/XPZ</b>	Poliert mit Zertifikat	Polished w/certified	Poli, avec Certificat		
	<b>/C2.2</b>	EN 10204-2.2	EN 10204-2.2	EN 10204-2.2		
	<b>/C3.1</b>	EN 10204-3.1	EN 10204-3.1	EN 10204-3.1		
	<b>/Cp</b>	Einstellprotokoll	Test protocol	Protocole de réglage		
	<b>/Ex</b>	ATEX Zulassung	ATEX approval	Certificat ATEX		II 2 G Ex h IIB T6 Gb II 3 G Ex h IIC T6 Gc II 2 D Ex h IIIC T6 Db II 3 D Ex h IIIC T6 Dc
	<b>/FDA</b>	FDA-Bescheinigung	FDA approval	Certificat FDA		
	<b>/Ff</b>	Öl- Fettfrei	Certificate degreasing	Sans Huile ni Graisse		
	<b>/HT</b>	Hydrotest	Hydro test	Hydro test		
	<b>/LT</b>	Lecktest	Leakage test	Essai de fuite		
<b>Beispiel</b> , Example, Exemple	<b>ZM-R/D 50 S -FD -P 100 260 /Sp/C3.1/Cp/Ex</b>					

### Hinweise,

- Vordruckabhängigkeit
- Siehe Typ: **LPRK...**
- Für Flüssigkeiten & Gase
- Nur für Gasanwendungen
- Zugfeder
- Manometer optional verfügbar

### Hints,

- Primary pressure effect
- See Type: **LPRK...**
- For liquids and gas
- Gas applications only
- Tension spring
- Pressure gauge optionally available

### Remarque

- Dépendance de la pression primaire
- S.V.P. remarque aussi Type: **LPRK...**
- Pour liquides et gaz
- Pour les applications de gaz
- Ressort de traction
- Manomètre disponible en option

# 13 Code: LPRK25

<b>LPRK</b>	IP40 / IP54 <sup>2)</sup>	<b>Funktion</b>	Überdruck	Gauge Pressure	Pression relative	500 mbar																		
<b>LPRK/D</b>	IP68	Function	Domgesteuert	Dome loaded	Piloté par le dôme	1000 mbar (1500 mbar) <sup>2,3)</sup>																		
<b>LPRK/Ds</b>	IP40 / IP68	Fonction	Fremd/Pilot	Remote/Pilot	Pilotage/indirect	1000 mbar (1500 mbar) <sup>2,3)</sup>																		
<b>LPRK/N</b>	IP40 / IP54 <sup>2)</sup>		Negativdruck	Negative pressure	Pression negative	-120 mbar																		
<b>LPRK/NDs</b>	IP40		Neg. Fremd/Pilot	Neg. Integral/Pilot	Neg. Pilotage/indirect	1000 mbar <sup>2)</sup>																		
	<b>25</b> DN 25, PN16 <b>25</b> 1", 150 lbs	<b>Grösse</b> Size Dimension	Einbaulänge Sonder auf Anfrage	Lay length Special on request	Encombrement Spécial nous consulter	140 x 100 mm																		
	<b>PP</b> <b>PV</b>	<b>Material<sup>6)</sup></b> Material <sup>6)</sup> Matériaux <sup>6)</sup>	PP PVDF	PP PVDF	PP PVDF	-20/ +80°C ~3.0 kg -20/+140°C ~4.5 kg																		
	<b>-FD</b> <b>-FA1</b>	<b>Anschluss / Typ</b> Connection / Type Raccord / Type	Flansch Flansch Sonder auf Anfrage	Flange Flange Special on request	Brides Brides Spécial nous consulter	DIN / EN ANSI																		
	<b>-P</b>	<b>Membrane</b> Diaphragm Membrane	PTFE PTFE PTFE	Ø 200 mm p <sub>1</sub> : -120 ... max. + 200 mbar g Ø 200 mm p <sub>1</sub> : -1000 ... max. + 500 mbar g <sup>2,3)</sup> Ø 200 mm p <sub>1</sub> : -1000 ... max. +1.500 mbar g <sup>2,3)</sup>																				
<table border="1"> <tr> <td colspan="2"><b>Ventilschließdruck [mbar]</b> Valve locking pressure Pression de fermeture</td> </tr> <tr> <td>~10</td> <td>~4</td> </tr> <tr> <td>~10</td> <td>~4</td> </tr> <tr> <td>~15</td> <td>~4</td> </tr> <tr> <td>~20</td> <td>~5</td> </tr> <tr> <td>~20 ... 50</td> <td>~9</td> </tr> <tr> <td>~10</td> <td>~4</td> </tr> <tr> <td>~10</td> <td>~4</td> </tr> <tr> <td>~10</td> <td>~4</td> </tr> </table>	<b>Ventilschließdruck [mbar]</b> Valve locking pressure Pression de fermeture		~10	~4	~10	~4	~15	~4	~20	~5	~20 ... 50	~9	~10	~4	~10	~4	~10	~4		<b>Federbereich<sup>1)</sup></b> p <sub>2</sub> , sekundär	<b>Horizontal<sup>4)</sup></b> 8 – 24 mbar 12 – 54 mbar 24 – 104 mbar 34 – 200 mbar 34 – 500 mbar <sup>2,3)</sup>	<b>Vertical<sup>5)</sup></b> 4 – 20 mbar 8 – 50 mbar 16 – 100 mbar 30 – 200 mbar 30 – 500 mbar <sup>2,3)</sup>	<b>Typ, Type, Type</b> LPRK, LPRK/D/Ds LPRK, LPRK/D/Ds LPRK, LPRK/D/Ds LPRK, LPRK/D/Ds LPRK, LPRK/D/Ds	<b>Dom, Dome, Dôme</b> (max 1000 mbar) (max 1000 mbar) (max 1000 mbar) (max 1000 mbar) (max 1000 mbar)
	<b>Ventilschließdruck [mbar]</b> Valve locking pressure Pression de fermeture																							
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~10	~4																							
	<b>20</b> <b>50</b> <b>100</b> <b>200</b> <b>500</b>	<b>Spring range<sup>1)</sup></b> p <sub>2</sub> , secondary																						
	<b>10</b> <b>50</b> <b>100</b>	<b>Plage de réglage<sup>1)</sup></b> p <sub>2</sub> , pression aval	-11 – 0 mbar -56 – -6 mbar -116 – -16 mbar	-15 – -3 mbar -60 – -10 mbar -120 – -20 mbar	LPRK/N/NDs LPRK/N/NDs LPRK/N/NDs	(min -1000 mbar) (min -1000 mbar) (min -1000 mbar)																		
	<b>70</b> <b>120</b>	<b>Sitz</b> Seat Siège	Kv= 0.95 / 7.0 mm Kv= 1.60 / 12.0 mm	[p <sub>2</sub> = f (p <sub>1</sub> + Kv)] <sup>1)</sup> [p <sub>2</sub> = minus(1.8 mbar/1bar für, for, pour: 2 bar<p <sub>1</sub> <6bar)] [p <sub>2</sub> = minus(9.0 mbar/1bar für, for, pour: 2 bar<p <sub>1</sub> <6bar)]																				
		<b>Optionen, Options, Options</b>																						
	<b>/Sp</b> <b>/Hr<sup>2)</sup></b> <b>/VA</b> <b>/Ws</b>	Eingestellt/plombiert Handrad / Kunststoff V4A-Federdom Wetterschutz	Adjusted and sealed Plastic hand knob SST spring dome Weather protection	Ajusté et plombé Molette de réglage Avec dôme en INOX Avec protection contre les intempéries																				
	<b>/C2.2</b> <b>/Cp</b>	EN 10204-2.2 Einstellprotokoll	EN 10204-2.2 Test protocol	EN 10204-2.2 Protocole de réglage																				
<b>Beispiel, Example, Exemple</b>																								
<b>LPRK</b>	<b>25</b>	<b>PV</b>	<b>-FD</b>	<b>-P</b>	<b>50</b>	<b>180</b> /Sp/C2.2																		

## Hinweise,

- <sup>1)</sup> Vordruckabhängigkeit
- <sup>2)</sup> Nur mit V4A-Federdom
- <sup>3)</sup> Nur mit Feder 500
- <sup>4)</sup> Für Flüssigkeiten und Gase
- <sup>5)</sup> Für Gasanwendungen
- <sup>6)</sup> Nur für benetzte Teile

## Hints,

- <sup>1)</sup> Primary pressure effect
- <sup>2)</sup> With SST spring dome
- <sup>3)</sup> With spring 500 only
- <sup>4)</sup> For liquids and gas
- <sup>5)</sup> For gas applications
- <sup>6)</sup> Wetted parts only

## Remarque

- <sup>1)</sup> Dépendance de la pression primaire
- <sup>2)</sup> Uniquement avec dôme INOX
- <sup>3)</sup> Uniquement avec ressort de 500
- <sup>4)</sup> Pour liquides et gaz
- <sup>5)</sup> Pour les applications de gaz
- <sup>6)</sup> Uniquement pour pièces en contact

