ZIMMERLI
MESSTECHNIK AG
Since 1974

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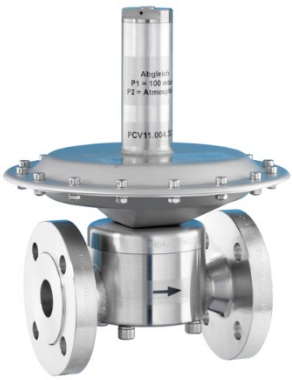
Operating manual
For low pressure relief valve
Type LPS… ZM-B… and ZM-B/R…

LPS25

LPSK25

ZM-B15
ZM-B25
ZM-B/R



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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 were 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). The degree of protection for the standard design is IP40 and IP54 with weather protection.

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

3.1 Intended use

Ambient temperature:	-20 °C up to +40 °C
Ambient pressure:	0.8 to 1.1 bar
Medium pressure:	Permissible PN, maximum p_1, maximum p_2 according to the data sheet
Medium temperature:	According to sealing material, see data sheet
Degree of protection:	IP40, with IP54 weather protection, ZM-B/R IP68

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

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 smaller 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.

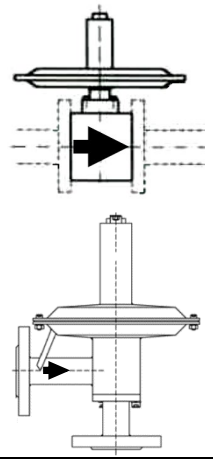
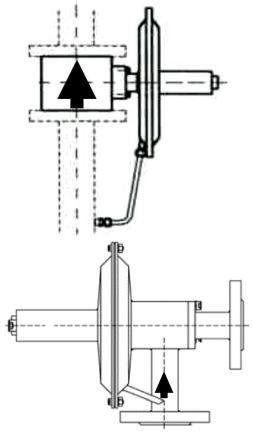
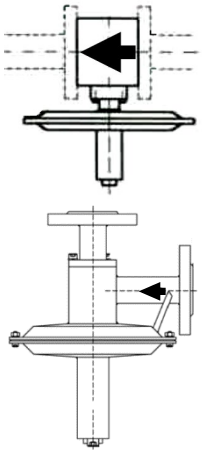
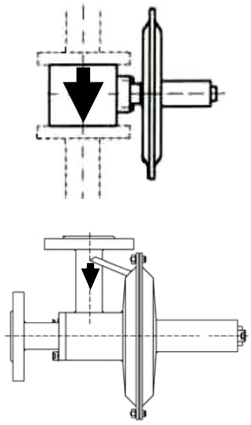
Be mindful of the flow direction! (Marked on the housing with an arrow). Otherwise, there is the risk of damaging the pressure regulator.

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-B15, 25: Horizontal diaphragm housing (vertical: alternatively permissible).
  Assembly with the spring dome facing down is permissible only upon consultation.
- ZM-B/R: Horizontal diaphragm housing, spring dome on top
- LPS25: Vertical diaphragm housing (horizontal: alternatively permissible).
  Assembly with the spring dome facing down is permissible only upon consultation.

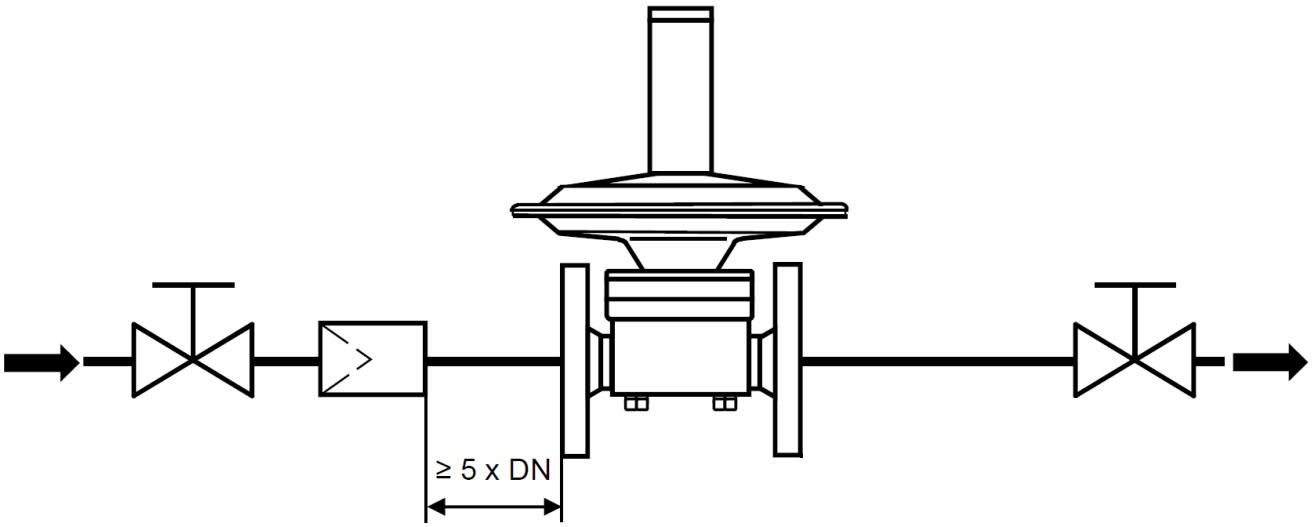
Mounting position (diaphragm)			
Horizontal		Vertical	
	Recommended mounting position		Recommended mounting position (ZM-B only with option /E, depending on the medium)
	Spring dome on bottom side, only on request / dry gases		Only dry gases

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 p_1, primary side, without turbulent flow. To that end a straight inlet piping of 5 x DN 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-B und LPS:
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^3/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 primary pressure p_1
Counterclockwise rotation = Increasing primary pressure p_1

Dome-loaded model ZM-B and LPS with option /De /Ds:
With an additional pilot controller, the dome pressure can be set to the desired value. Up to 1000 mbar and/or 2000 mbar of dome pressure is permissible depending on the device type. Precise adjustments can also be made via the setting screw on the spring dome.

Reflux blocking valve ZM-B/R:
By turning the setting screw (6 mm hexagon socket), the differential pressure can be adjusted.
Warning! Observe the maximum values on the nameplate.
Clockwise rotation = Decreasing primary pressure p_1
Counterclockwise rotation = Increasing primary pressure p_1

7 Impulse line (C-connection)

An impulse line must be able to communicate with the p_1 side of the valve under any circumstances. Accordingly, no valves or other flow resistances may be present in the primary, non turbulent flow area between the device and impulse line pickup. Otherwise, the device is not functional and may even be destroyed.

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.

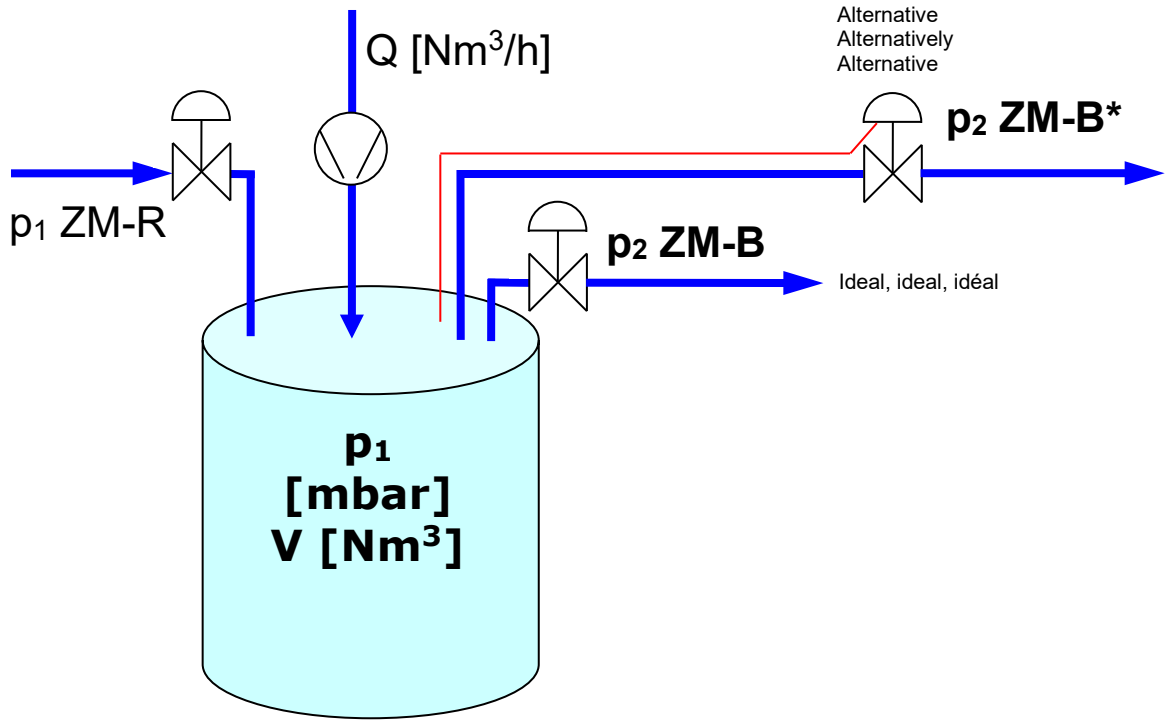
Device returns for repair or modification can be accepted only if they have been cleaned and have a completed RMA according to the applicable regulations. In the case of hazardous media, we recommend returning the device disassembled and cleaned.

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

Geräteauslegung **Model selection** **Sélection de l'appareil**



*Option: C-Anschluss mit Impulsleitung zur Kompensation des dynamischen Druckverlustes
*Option: C-Connection with pulse line for compensation of dynamic pressure drop
*Option: Raccord-C avec ligne d'impulsions pour la compensation de la perte de pression dynamique

Anwendungsdaten

Zur optimalen Auslegung eines Überström- oder Druckhalteventil ZM-B15 sind mindestens folgende Angaben wichtig:

Behälter Befüllungsgradient
Befüllungsgradient bzw.
Pumpenleistung wie folgt:
Q = Nm^3/h
V = Nm^3

Inertgas
Sekundär- oder Gegendruck p_2 ist üblicherweise der atmosphärische Druck.
p_1 = mbar g primär
p_2 = mbar g sekundär

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 Abluftleitung mit C-Anschluss* und separater Impulsleitung vom Prozess

Application data

For correct model selection of ZM-B15 back pressure relief valve, the following specifications are essential:

Tank filling rate
Tank filling rate or
Pump capacity as follows:
Q = Nm^3/h
V = Nm^3

Inert gas
Secondary pressure or counter pressure p_2 is normally atmospheric pressure.
p_1 = mbar g primary
p_2 = mbar g secondary

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 exhaust pipe with C-Connection* and pulse line from process

Données de l'application

Les renseignements suivants représentent un minimum nécessaire pour effectuer le dimensionnement optimal d'un ZM-B15.

Gradient de remplissage du réservoir
Gradient de remplissage, resp.
rendement de la pompe comme suit:
Q = Nm^3/h
V = Nm^3

Gaz inerte
La pression secondaire ou contre-pression p_2 est normalement atmosphérique.
p_1 = mbar g primaire
p_2 = mbar g secondaire

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, en vertical
☐ Direct sur cuve, en horizontal
☐ Locaux dans un bâtiment
☐ En extérieur avec protection
☐ Conduite avec raccord-C* et prise d'impulsion au niveau du procédé

10 Code: ZM-B15, relief valve

ZM-B	P40 / IP54 (Option /Ws)		**Funktion**	Überdruck	Gauge Pressure	Pression relative	520 mbar
ZM-B/D	P68		Function	Domgesteuert	Dome loaded	Dôme	2000 mbar (2500 mbar)
ZM-B/Ds	P40		Fonction	Fremd/Pilot	Remote /Pilot	Pilotage/ indirect	2000 mbar (2500 mbar)
ZM-B/N	P40 / IP54 (Option /Ws)			Negativdruck	Negative pressure	Pression negative	-220 mbar
ZM-B/NDs	P40			Fremd/Pilot	Remote/Pilot	Pilotage/indirect	-1000 mbar
15	DN15, PN40, B1		**Grösse**	Einbaulänge	Lay length	Encombrement	150 mm / ~6.7 kg
15	DN15, PN40, D		Size	Einbaulänge	Lay length	Encombrement	150 mm / ~6.7 kg
15	½", 150 lbs		Dimension	Einbaulänge	Lay length	Encombrement	180 mm / ~6.4 kg
15	½", 300 lbs			Einbaulänge	Lay length	Encombrement	189 mm / ~7.7 kg
15	G½ (½" BSP)			Einbaulänge	Lay length	Encombrement	152 mm / ~5.5 kg
15	½" NPT-F			Einbaulänge	Lay length	Encombrement	152 mm / ~5.5 kg
15	TriClamp			Einbaulänge	Lay length	Encombrement	141 mm / ~5.6 kg
S			**Material**	Edelstahl	SST	INOX	1.4404
H			Material	Hastelloy C	Hastelloy C	Hastelloy C	C276
X			Matériaux	Sonder auf Anfrage	Special on request	Nous consulter	(PP, PVDF) [1]
-FD	DN15, PN40		**Anschluss/Typ**	Flansch	Flange	Brides	DIN / EN 1092-1, B1
-FDN	DN15, PN40		Connection/Type	Flansch / Nut	Flange / Groove	Brides / à gorge	DIN / EN 1092-1, D
-FA1	½", 150 lbs		Raccord/Type	Flansch	Flange	Brides	ANSI
-FA3	½" , 300 lbs			Flansch	Flange	Brides	ANSI
-GD1	G½ (½" BSP)			Gewinde	Thread	Fileté	DIN / EN
-GN1	½" NPT-F			Gewinde	Thread	Fileté	ANSI
-TCB	TriClamp			TriClamp	Ø 50.5 mm	DIN32676, B	DIN / EN
-XX				Sonder auf Anfrage	Special on request	Spécial nous consulter	
-P			**Membrane**	PTFE	-20/+180 °C	Ø 200 mm	
-V			Diaphragm	Viton®	-20/+130 °C	Ø 200 mm	
			Membrane				
		10	**Federbereich**	**Horizontal** [2]	**Vertical** [3]	**Typ, Type, Type**	**Dom, Dome, Dôme**
		20	p_1, primär	6 – 10 mbar	3 – 8 mbar	ZM-B, ZM-B/D/Ds	(max 2013 mbar)
		50		10 – 20 mbar	5 – 20 mbar	ZM-B, ZM-B/D/Ds	(max 2025 mbar)
		100		13– 50 mbar	8 – 50 mbar	ZM-B, ZM-B/D/Ds	(max 2055 mbar)
		200	Spring range	15 – 100 mbar	10 – 100 mbar	ZM-B, ZM-B/D/Ds	(max 2100 mbar)
		500	p_1, primary	20 – 200 mbar	15 – 200 mbar	ZM-B, ZM-B/D/Ds	(max 2200 mbar)
				25 – 500 mbar [2]	20 – 500 mbar [2]	ZM-B, ZM-B/D/Ds	(max 2500 mbar)
		0		N/A*	-5 – 0 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)
		10	Plage de réglage	-10 – -2 mbar	-15 – -3 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)
		50	p_1, primaire	-55 – -5 mbar	-60 – -10 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)
		100		-115 – -15 mbar	-120 – -20 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)
		200		-215 – -45 mbar	-220 – -50 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)
			Sitz				
		180	Seat	Kv = 6.5 / 18 mm			
			Siège				
			Optionen, Options, Options				
			/C	C (Impulsleitung)	C (pulse line)	C (ligne d'Impulsion)	G¼ (¼" BSP)
			/E	E (Drainage)	E (Drain)	E (Vidage)	G¼ (¼" BSP)
			/S1 [4]	Manometerstutzen	Gauge nozzle	Raccord manomètre	G¼ (¼" BSP, p_1)
			/S2 [4]	Manometerstutzen	Gauge nozzle	Raccord manomètre	G¼ (¼" BSP, p_2)
			/Sp	Eingestellt/plombiert	Adjusted and sealed	Ajusté et plombé	
			/Ws	Wetterschutz	Weather protection	Avec protection	IP54 PP / Polypropylen
			/C2.2	EN 10204-2.2	EN 10204-2.2	EN 10204-2.2	
			/C3.1	EN 10204-3.1	EN 10204-3.1	EN 10204-3.1	
			/Cp	Einstellprotokoll	Test protocol	Protocole de réglage	II 2 G Ex h IIB T6 Gb
			/Ex	ATEX Zulassung	ATEX approval	Certificat ATEX	II 3 G Ex h IIC T6 Gc
			/Ff	Öl- Fettfrei	Certificate degreasing	Sans Huile ni Graisse	II 2 D Ex h IIIC T6 Db
			/FDA	FDA-Bescheinigung	FDA approval	Certificat FDA	II 3 D Ex h IIIC T6 Dc
			/LT	Lecktest	Leakage test	Essai de fuite	
			/XPZ	Poliert mit Zertifikat	Polished w/certified	Poli, avec Certificat	

Öffnungsdruck [mbar] Opening pressure Pression de ouvre
≤ 4
≤ 8
~ 3…9
~ 5…15
~ 8…32
~ 10…80
≤ 2
≤ 4
~ 3…9
~ 5…15
~ 8…32

Beispiel, Example, Exemple

ZM-B	**15**	**S**	**-FD**	**-P**	**100**	**180**	**/Sp/C3.1/Cp/Ex**

Hinweise, Hints, Remarque

N/A*	nicht anwendbar	not applicable	non applicable
[1]	Siehe Typ: **LPSK…**	See Type: **LPSK…**	S.V.P. remarque aussi Type: **LPSK…**
[2]	Für Flüssigkeiten & Gase	For liquids and gas	Pour liquides et gaz
[3]	Nur für Gasanwendungen	Gas applications only	Pour les applications de gaz
[4]	Manometer optional verfügbar	Pressure gauge optionally available	Manomètre disponible en option

11 Code: ZM-B25, relief valve

ZM-B	IP40 / IP54 (Option /Ws)		**Funktion**	Überdruck	Gauge Pressure	Pression relative	520 mbar
ZM-B/D	IP68		Function	Domgesteuert	Dome loaded	Dôme	2000 mbar (2500 mbar)
ZM-B/Ds	IP40		Fonction	Fremd/Pilot	Remote/Pilot	Pilotage/indirect	2000 mbar (2500 mbar)
ZM-B/N	IP40 / IP54 (Option /Ws)			Negativdruck	Negative pressure	Pression negative	-220 mbar
ZM-B/NDs	IP40			Fremd/Pilot	Remote/Pilot	Pilotage/indirect	-1000 mbar
25	DN25, PN40, B1		**Grösse**	Einbaulänge	Lay length	Encombrement	160 mm / ~7.7 kg
25	DN25, PN40, D		Size	Einbaulänge	Lay length	Encombrement	160 mm / ~7.7 kg
25	1 ", 150 lbs		Dimension	Einbaulänge	Lay length	Encombrement	195 mm / ~7.3 kg
25	1", 300 lbs			Einbaulänge	Lay length	Encombrement	208 mm / ~8.2 kg
25	G¾ (¾" BSP)			Einbaulänge	Lay length	Encombrement	156 mm / ~5.7 kg
25	G1 (1" BSP)			Einbaulänge	Lay length	Encombrement	170 mm / ~5.9 kg
25	G1.5 (1½" BSP)			Einbaulänge	Lay length	Encombrement	156 mm / ~5.7 kg
25	¾" NPT-F			Einbaulänge	Lay length	Encombrement	156 mm / ~5.4 kg
25	1" NPT-F			Einbaulänge	Lay length	Encombrement	170 mm / ~5.7 kg
25	1.5" NPT-F			Einbaulänge	Lay length	Encombrement	180 mm / ~5.9 kg
25	TriClamp			Einbaulänge	Lay length	Encombrement	141 mm / ~5.9 kg
S			**Material**	Edelstahl	SST	INOX	1.4404
H			Material	Hastelloy C	Hastelloy C	Hastelloy C	C276
X			Matériaux	Sonder auf Anfrage	Special on request	Spécial nous consulter	(PP, PVDF) [1]
-FD	DN25, PN40		**Anschluss/Typ**	Flansch	Flange	Brides	DIN / EN 1092-1, B1
-FDN	DN25, PN40		Connection/Type	Flansch / Nut	Flange / Groove	Brides / à gorge	DIN / EN 1092-1, D
-FA1	1", 150 lbs		Raccord/Type	Flansch	Flange	Brides	ANSI
-FA3	1", 300 lbs			Flansch	Flange	Brides	ANSI
-GD2	G¾ (¾" BSP)			Gewinde	Thread	Fileté	DIN / EN
-GD3	G1 (1" BSP)			Gewinde	Thread	Fileté	DIN / EN
-GD4	G1.5 (1½" BSP)			Gewinde	Thread	Fileté	DIN / EN
-GN2	¾" NPT-F			Gewinde	Thread	Fileté	ANSI
-GN3	1" NPT-F			Gewinde	Thread	Fileté	ANSI
-GN4	1.5" NPT-F			Gewinde	Thread	Fileté	ANSI
-TCB	TriClamp			TriClamp	Ø 50.5 mm	DIN32676, B	DIN / EN
-XX				Sonder auf Anfrage	Special on request	Spécial nous consulter	
-P			**Membrane**	PTFE	-20/+180 °C	Ø 200 mm	
-V			Diaphragm	Viton®	-20/+130 °C	Ø 200 mm	
			Membrane				

Öffnungsdruck [mbar] Opening pressure Pression de ouvre		**Federbereich**	**Horizontal** [2]	**Vertical** [3]	**Typ, Type, Type**	**Dom, Dome, Dôme**
≤ 4	**10**	p_1, primär	8 – 13 mbar	3 – 8 mbar	ZM-B, ZM-B/D/Ds	(max 2013 mbar)
≤ 8	**20**		10 – 25 mbar	5 – 20 mbar	ZM-B, ZM-B/D/Ds	(max 2025 mbar)
~ 3…9	**50**		13– 55 mbar	8 – 50 mbar	ZM-B, ZM-B/D/Ds	(max 2055 mbar)
~ 5…15	**100**	Spring range	15 – 100 mbar	10 – 100 mbar	ZM-B, ZM-B/D/Ds	(max 2100 mbar)
~ 8…32	**200**	p_1, primary	20 – 200 mbar	15 – 200 mbar	ZM-B, ZM-B/D/Ds	(max 2200 mbar)
~ 10…80	**500**		25 – 500 mbar	20 – 500 mbar	ZM-B, ZM-B/D/Ds	(max 2500 mbar)
≤ 2	**0**		N/A*	-5 – 0 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)
≤ 4	**10**	Plage de réglage	-10 – -2 mbar	-15 – -3 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)
~ 3…9	**50**	p_1, primaire	-55 – -5 mbar	-60 – -10 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)
~ 5…15	**100**		-115 – -15 mbar	-120 – -20 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)
~ 8…32	**200**		-215 – -45 mbar	-220 – -50 mbar	ZM-B/N, ZM-B/NDs	(min -1000 mbar)

180	**Sitz** Seat Siège	Kv = 6.5 / 18 mm

Optionen, Options, Options				
/C	C (Impulsleitung)	C (pulse line)	C (ligne d'Impulsion)	G¼ (¼" BSP)
/E	E (Drainage)	E (Drain)	E (Vidage)	G¼ (¼" BSP)
/S1 [4]	Manometerstutzen	Gauge nozzle	Raccord manomètre	G¼ (¼" BSP, p_1)
/S2 [4]	Manometerstutzen	Gauge nozzle	Raccord manomètre	G¼ (¼" BSP, p_2)
/Sp	Eingestellt/plombiert	Adjusted and sealed	Ajusté et plombé	
/Ws	Wetterschutz	Weather protection	Avec protection	IP54 PP/Polypropylen
/C2.2	EN 10204-2.2	EN 10204-2.2	EN 10204-2.2	
/C3.1	EN 10204-3.1	EN 10204-3.1	EN 10204-3.1	
/Cp	Einstellprotokoll	Test protocol	Protocole de réglage	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
/Ex	ATEX Zulassung	ATEX approval	Certificat ATEX	
/FDA	FDA-Bescheinigung	FDA approval	Certificat FDA	
/Ff	Öl- Fettfrei	Certificate degreasing	Sans Huile ni Graisse	
/LT	Lecktest	Leakage test	Essai de fuite	
/XPZ	Poliert mit Zertifikat	Polished w/certified	Poli, avec Certificat	

Beispiel, Example, Exemple

ZM-B 25 S -FD -P 100 180 /Sp/C3.1/Cp/Ex

Hinweise,

		Hints,	Remarque
N/A*	nicht anwendbar	not applicable	non applicable
[1]	Siehe Typ: **LPSK…**	See Type: **LPSK…**	S.V.P. remarque aussi Type: **LPSK…**
[2]	Für Flüssigkeiten & Gase	For liquids and gas	Pour liquides et gaz
[3]	Nur für Gasanwendungen	Gas applications only	Pour les applications de gaz
[4]	Manometer optional verfügbar	Pressure gauge optionally available	Manomètre disponible en option

12 Code: ZM-B/R15, non return valve

ZM-B/R	IP68						**Funktion** Function Fonction	Rückfluss-Sperrventil Reflux blocking valve Soupape anti-reflux	Druckverlust: Pressure drop: Perte de pression:	siehe Federbereich see spring range voir plage de réglage	
	15	DN15, PN40, B1					**Grösse** Size Dimension	Einbaulänge Einbaulänge Einbaulänge Einbaulänge Einbaulänge Einbaulänge Einbaulänge	Lay length Lay length Lay length Lay length Lay length Lay length Lay length	Encombrement Encombrement Encombrement Encombrement Encombrement Encombrement Encombrement	150 mm / ~6.9 kg 150 mm / ~6.9 kg 180 mm / ~6.6 kg 189 mm / ~7.9 kg 152 mm / ~5.7 kg 152 mm / ~5.7 kg 141 mm / ~5.8 kg
	15	DN15, PN40, D									
	15	½", 150 lbs									
	15	½", 300 lbs									
	15	G½ (½" BSP)									
	15	½" NPT-F									
	15	TriClamp									
		S					**Material** Material Matériaux	Edelstahl Sonder auf Anfrage	SST Special on request	INOX Spécial nous consulter	1.4404
		X									
			-FD	DN15, PN40			**Anschluss/Typ** Connection/Typ Raccord/Type	Flansch Flansch / Nut Flansch Flansch Gewinde Gewinde TriClamp Sonder auf Anfrage	Flange Flange / Groove Flange Flange Thread Thread Ø 50.5 mm Special on request	Brides Brides / à gorge Brides Brides Fileté Fileté DIN32676, B Spécial nous consulter	DIN / EN 1092-1, B1 DIN / EN 1092-1, D ANSI ANSI DIN / EN ANSI DIN / EN
			-FDN	DN15, PN40							
			-FA1	½", 150 lbs							
			-FA3	½", 300 lbs							
			-GD1	G½ (½" BSP)							
			-GN1	½" NPT-F							
			-TCB	TriClamp							
			-XX								
				-P			**Membrane** Diaphragm Membrane	PTFE Viton®	-20/+180 °C -20/+130 °C	Ø 200 mm Ø 200 mm	
				-V							
					10		**Federbereich** p_1, primär Spring range p_1, primary Plage de réglage p_1, primaire	**Horizontal** [1] 8 – 13 mbar 10 – 25 mbar 13 – 55 mbar 15 – 100 mbar 20 – 200 mbar 25 – 500 mbar 100 – 1050 mbar	**Vertical** [1] 3 – 8 mbar 5 – 20 mbar 8 – 50 mbar 10 – 100 mbar 15 – 200 mbar 20 – 500 mbar 96 – 1046 mbar	**Typ, Type, Type** ZM-B/R25 ZM-B/R25 ZM-B/R25 ZM-B/R25 ZM-B/R25 ZM-B/R25 ZM-B/R25	**p_1** (max), **p_2** (max) max. 2013 mbar max. 2025 mbar max. 2055 mbar max. 2100 mbar max. 2200 mbar max. 2500 mbar max. 2500 mbar
					20						
					50						
					100						
					200						
					500						
					1000						
						180	**Sitz** Seat Siège	Kv = 6.5 / 18 mm			
							Optionen, /Options, /Options				
							/S1 [2] **/S2** [2] **/Sp**	Manometerstutzen Manometerstutzen Eingestellt/plombiert	Gauge nozzle Gauge nozzle Adjusted and sealed	Raccord manomètre Raccord manomètre Ajusté et plombé	G¼ (¼" BSP, p_1) G¼ (¼" BSP, p_2)
							/C2.2 **/C3.1** **/Cp** **/Ex** **/Ff** **/FDA** **/LT** **/XPZ**	EN 10204-2.2 EN 10204-3.1 Einstellprotokoll ATEX Zulassung Öl- Fettfrei FDA-Bescheinigung Lecktest Poliert mit Zertifikat	EN 10204-2.2 EN 10204-3.1 Test protocol ATEX approval Certificate degreasing FDA approval Leakage test Polished w/certified	EN 10204-2.2 EN 10204-3.1 Protocole de réglage Certificat ATEX Sans Huile ni Graisse Certificat FDA Essai de fuite Poli, avec Certificat	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
Beispiel, Example, Exemple											
ZM-B/R	**15**	**S**	**-FD**	**-P**	**100**	**180**	**/Sp/C3.1/Cp/Ex**				

Hinweise,
[1] Nur für Gasanwendungen
[2] Manometer optional verfügbar

Hints,
Gas applications only
Pressure gauge optionally available

Remarque
Pour les applications de gaz
Manomètre disponible en option

13 Code: ZM-B/R25, non return valve

ZM-B/R	IP68				**Funktion** Function Fonction	Rückfluss-Sperrventil Reflux blocking valve Soupape anti-reflux	Druckverlust: Pressure drop: Perte de pression:	siehe Federbereich see spring range voir plage de réglage
	25	DN25, PN40, B1			**Grösse** Size Dimension	Einbaulänge	Lay length	Encombrement 160 mm / ~7.7 kg
	25	DN25, PN40, D				Einbaulänge	Lay length	Encombrement 160 mm / ~7.7 kg
	25	1", 150 lbs				Einbaulänge	Lay length	Encombrement 195 mm / ~7.3 kg
	25	1", 300 lbs				Einbaulänge	Lay length	Encombrement 208 mm / ~8.2 kg
	25	G¾ (¾" BSP)				Einbaulänge	Lay length	Encombrement 156 mm / ~5.7 kg
	25	G1 (1" BSP)				Einbaulänge	Lay length	Encombrement 170 mm / ~5.9 kg
	25	G1.5 (1½" BSP)				Einbaulänge	Lay length	Encombrement 156 mm / ~5.7 kg
	25	¾" NPT-F				Einbaulänge	Lay length	Encombrement 156 mm / ~5.4 kg
	25	1" NPT-F				Einbaulänge	Lay length	Encombrement 170 mm / ~5.7 kg
	25	1.5" NPT-F				Einbaulänge	Lay length	Encombrement 180 mm / ~5.9 kg
	25	TriClamp				Einbaulänge	Lay length	Encombrement 141 mm / ~5.9 kg
		S			**Material** Material Matériaux	Edelstahl	SST	INOX 1.4404
		X				Sonder auf Anfrage	Special on request	Spécial nous consulter
			-FD	DN25, PN40	**Anschluss/Typ** Connection/Typ Raccord/Type	Flansch	Flange	Brides DIN / EN 1092-1, B1
			-FDN	DN25, PN40		Flansch / Nut	Flange / Groove	Brides / à gorge DIN / EN 1092-1, D
			-FA1	1", 150 lbs		Flansch	Flange	Brides ANSI
			-FA3	1", 300 lbs		Flansch	Flange	Brides ANSI
			-GD2	G¾ (¾" BSP)		Gewinde	Thread	Fileté DIN / EN
			-GD3	G1 (1" BSP)		Gewinde	Thread	Fileté DIN / EN
			-GD4	G1.5 (1½" BSP)		Gewinde	Thread	Fileté DIN / EN
			-GN2	¾" NPT-F		Gewinde	Thread	Fileté ANSI
			-GN3	1" NPT-F		Gewinde	Thread	Fileté ANSI
			-GN4	1.5" NPT-F		Gewinde	Thread	Fileté ANSI
			-TCB	TriClamp		TriClamp	Ø 50.5 mm DIN32676, B	DIN / EN
			-XX			Sonder auf Anfrage	Special on request	Spécial nous consulter
				-P	**Membrane** Diaphragm Membrane	PTFE	-20/+180 °C	Ø 200 mm
				-V		Viton®	-20/+130 °C	Ø 200 mm

				10	**Federbereich** p_1, primär Spring range p_1, primary Plage de réglage p_1, primaire	**Horizontal** [1] 8 – 13 mbar	**Vertical** [1] 3 – 8 mbar	**Typ, Type, Type** ZM-B/R25	**p_1** (max), **p_2** (max) max. 2013 mbar
				20		10 – 25 mbar	5 – 20 mbar	ZM-B/R25	max. 2025 mbar
				50		13 – 55 mbar	8 – 50 mbar	ZM-B/R25	max. 2055 mbar
				100		15 – 100 mbar	10 – 100 mbar	ZM-B/R25	max. 2100 mbar
				200		20 – 200 mbar	15 – 200 mbar	ZM-B/R25	max. 2200 mbar
				500		25 – 500 mbar	20 – 500 mbar	ZM-B/R25	max. 2500 mbar
				1000		100 – 1050 mbar	96 – 1046 mbar	ZM-B/R25	max. 2500 mbar
					180	**Sitz** Seat Siège	Kv = 6.5 / 18 mm		
						Optionen, /Options, /Options			
						/S1 [2]	Manometerstutzen	Gauge nozzle	Raccord manomètre G¼ (¼" BSP, p_1)
						/S2 [2]	Manometerstutzen	Gauge nozzle	Raccord manomètre G¼ (¼" BSP, p_2)
						/Sp	Eingestellt/plombiert	Adjusted and sealed	Ajusté et plombé
						/C2.2	EN 10204-2.2	EN 10204-2.2	EN 10204-2.2
						/C3.1	EN 10204-3.1	EN 10204-3.1	EN 10204-3.1
						/Cp	Einstellprotokoll	Test protocol	Protocole de réglage
						/Ex	ATEX Zulassung	ATEX approval	Certificat ATEX
						/FDA	FDA-Bescheinigung	FDA approval	Certificat FDA
						/Ff	Öl- Fettfrei	Certificate degreasing	Sans Huile ni Graisse
						/LT	Lecktest	Leakage test	Essai de fuite
						/XPZ	Poliert mit Zertifikat	Polished w/certified	Poli, avec Certificat

{ 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 }

Beispiel, Example, Exemple

ZM-B/R	**25**	**S**	**-FD**	**-P**	**100**	**180**	**/Sp/C3.1/Cp/Ex**

Hinweise,
[1] Nur für Gasanwendungen
[2] Manometer optional verfügbar

Hints,
Gas applications only
Pressure gauge optionally available

Remarque
Uniquement pour les applications gaz
Manomètre disponible en option

14 Code: LPSK25, relief valve

LPSK	IP40 / IP54[2]	**Funktion**	Überdruck	Gauge Pressure	Pression relative	500 mbar	
LPSK/D	IP68	Function	Domgesteuert	Dome loaded	Piloté par le dôme	1000 mbar (1500 mbar)[2,3]	
LPSK/Ds	IP40 / IP68	Fonction	Fremd/Pilot	Remote/Pilot	Pilotage/indirect	1000 mbar (1500 mbar)[2,3]	
LPSK/N	IP40 / IP54[2]		Negativdruck	Negative pressure	Pression negative	-120 mbar	
LPSK/NDs	IP40		Neg. Fremd/Pilot	Neg. Integral/Pilot	Neg.Pilotage/indirect	1000 mbar[4]	
25	DN 25, PN16	**Grösse**	Einbaulänge	Lay length	Encombrement	140 x 100 mm	
25	1", 150 lbs	Size	Sonder auf Anfrage	Special on request	Spécial nous consulter		
		Dimension					
PP		**Material[6]**	PP	PP	PP	-20/ +80°C	~3.0 kg
PV		Material[6]	PVDF	PVDF	PVDF	-20/+140°C	~4.5 kg
		Matériaux[6]					
-FD		**Anschluss / Typ**	Flansch	Flange	Brides	DIN / EN	
-FA1		Connection / Type	Flansch	Flange	Brides	ANSI	
		Raccord / Type	Sonder auf Anfrage	Special on request	Spécial nous consulter		
-P		**Membrane**	PTFE	Ø 200 mm p_1: -120 … max. + 200 mbar g			
		Diaphragm	PTFE	Ø 200 mm p_1: -1000 … max. + 500 mbar g[2,3]			
		Membrane	PTFE	Ø 200 mm p_1: -1000 … max. +1.500 mbar g[2,3]			
20		**Federbereich[1]**	**Horizontal[4]**	**Vertical[5]**	**Typ, Type, Type**	**Dom, Dome, Dôme**	
50		p_1, primär	5 – 20 mbar	5 – 20 mbar	LPSK, LPSK/D/Ds	(max 1000 mbar)	
100			8 – 50 mbar	8 – 50 mbar	LPSK, LPSK/D/Ds	(max 1000 mbar)	
200		Spring range[1]	10 – 100 mbar	10 – 100 mbar	LPSK, LPSK/D/Ds	(max 1000 mbar)	
500		p_1, primary	15 – 200 mbar	15 – 200 mbar	LPSK, LPSK/D/Ds	(max 1000 mbar)	
			20 – 500 mbar[2,4]	20 – 500 mbar[2,4]	LPSK, LPSK/D/Ds	(max 1000 mbar)	
10		Plage de réglage[1]	-15 – -3 mbar	-15 – -3 mbar	LPSK/N/NDs	(min -1000 mbar)	
50		p_1, primaire	-60 – -10 mbar	-60 – -10 mbar	LPSK/N/NDs	(min -1000 mbar)	
100			-120 – -20 mbar	-120 – -20 mbar	LPSK/N/NDs	(min -1000 mbar)	
180		**Sitz**	18 mm, Kv = 6.5				
		Seat					
		Siège					
		Optionen, Options, Options					
		/Sp	Eingestellt/plombiert	Adjusted and sealed	Ajusté et plombé		
		/VA	V4A-Federdom	SST spring dome	Avec dôme en INOX		
		/Ws	Wetterschutz	Weather protection	Avec protection contre les intempéries		
		/C2.2	EN 10204-2.2	EN 10204-2.2	EN 10204-2.2		
		/Cp	Einstellprotokoll	Test protocol	Protocole de réglage		

Öffnungsdruck [mbar]
Opening pressure
Pression de ouvre

≤ 8
~ 3 … 9
~5 … 15
~ 8 … 32
~ 10 … 80
≤ 2
≤ 4
~ 3 … 9

Beispiel, Example, Exemple

LPSK	**25**	**PV**	**-FD**	**-P**	**50**	**180**	**/Sp/C2.2**

Hinweise,

		Hints,	Remarque
1)	Vordruckabhängigkeit	Primary pressure effect	Dépendance de la pression primaire
2)	Nur mit V4A-Federdom	With SST spring dome	Uniquement avec dome INOX
3)	Nur mit Feder 500	With spring 500 only	Uniquement avec ressort de 500
4)	Für Flüssigkeiten und Gase	For liquids and gas	Pour liquides et gaz
5)	Für Gasanwendungen	For gas applications	Pour les applications de gaz
6)	Nur für benetzte Teile	Wetted parts only	Uniquement pour pieces en contact

15 Code: LPS25, relief valve

LPS	IP40 / IP54 (Option /Ws)	**Funktion**	Überdruck	Gauge Pressure	Pression relative	520 mbar
LPS/D	IP68	Function	Domgesteuert	Dome loaded	Dôme	2000 mbar (2500 mbar)
LPS/Ds	IP40	Fonction	Eigen/Pilot	Integral/Pilot	Pilotage/direct	2000 mbar (2500 mbar)
LPS/N	IP40 / IP54 (Option /Ws)		Fremd/Pilot	Remote/Pilot	Pilotage/indirect	-220 mbar
LPS/NDs	IP40		Negativdruck	Negative pressure	Pression negative	-1000mbar
25	DN25, PN40	**Grösse**	Einbaulänge	Lay length	Encombrement	100x120mm, ~6.0 kg
25	1", 150 lbs	Size	Einbaulänge	Lay length	Encombrement	100x120mm, ~6.0 kg
25	1", 300 lbs	Dimension	Einbaulänge	Lay length	Encombrement	~7.3 kg
25	G¾ (¾" BSP)		Einbaulänge	Lay length	Encombrement	~4.7 kg
25	G1 (1" BSP)		Einbaulänge	Lay length	Encombrement	78x120 mm. ~4.5 kg
25	G1.5 (1½" BSP)		Einbaulänge	Lay length	Encombrement	~4.5 kg
25	¾" NPT-F		Einbaulänge	Lay length	Encombrement	~4.7 kg
25	1" NPT-F		Einbaulänge	Lay length	Encombrement	78x120 mm, ~5.1 kg
25	1.5" NPT-F		Einbaulänge	Lay length	Encombrement	~5.4 kg
25	TriClamp		Einbaulänge	Lay length	Encombrement	62x120mm, ~4.9 kg
S		**Material**	Edelstahl	SST	INOX	1.4404
H		Material	Hastelloy C	Hastelloy C	Hastelloy C	C276
X		Matériaux	Sonder auf Anfrage	Special on request	Spécial nous consulter	(PP, PVDF) [1]
-FD	DN25, PN40	**Anschluss/Typ**	Flansch	Flange	Brides	DIN EN 1092-1, B1
-FA1	1", 150 lbs	Connection/Type	Flansch	Flange	Brides	ANSI
-FA3	1", 300 lbs	Raccord/Type	Flansch	Flange	Brides	ANSI
-GD2	G¾ (¾" BSP)		Gewinde	Thread	Fileté	DIN / EN
-GD3	G1 (1" BSP)		Gewinde	Thread	Fileté	DIN / EN
-GD4	G1.5 (1½" BSP)		Gewinde	Thread	Fileté	DIN / EN
-GN2	¾" NPT-F		Gewinde	Thread	Fileté	ANSI
-GN3	1" NPT-F		Gewinde	Thread	Fileté	ANSI
-GN4	1.5" NPT-F		Gewinde	Thread	Fileté	ANSI
-TCB	TriClamp		TriClamp	Ø 50.5 mm	DIN32676, B	DIN / EN
-XX			Sonder auf Anfrage	Special on request	Spécial nous consulter	
-P		**Membrane**	PTFE	-20/+180 °C	Ø 200 mm	
-V		Diaphragm	Viton®	-20/+130 °C	Ø 200 mm	
		Membrane				

Öffnungsdruck [mbar] Opening pressure Pression de ouvre		**Federbereich**	**Horizontal** [2]	**Vertical** [3]	**Typ, Type, Type**	**Dom, Dome, Dôme**
≤ 4	**10**	p_1, primär	8 – 13 mbar	3 – 8 mbar	LPS, LPS/D/Ds	(max 2013 mbar)
≤ 8	**20**		10 – 25 mbar	5 – 20 mbar	LPS, LPS/D/Ds	(max 2025 mbar)
~ 3…9	**50**		13– 55 mbar	8 – 50 mbar	LPS, LPS/D/Ds	(max 2055 mbar)
~ 5…15	**100**	Spring range	15 – 100 mbar	10 – 100 mbar	LPS, LPS/D/Ds	(max 2100 mbar)
~ 8…32	**200**	p_1, primary	20 – 200 mbar	15 – 200 mbar	LPS, LPS/D/Ds	(max 2200 mbar)
~ 10…80	**500**		25 – 500 mbar	20 – 500 mbar	LPS, LPS/D/Ds	(max 2500 mbar)
≤ 2	**0**		N/A*	-5 – 0 mbar	LPS/N, LPS/NDs	(min -850 mbar)
≤ 4	**10**	Plage de réglage	-10 – -2 mbar	-15 – -3 mbar	LPS/N, LPS/NDs	(min -850 mbar)
~ 3…9	**50**	p_1, primaire	-55 – -5 mbar	-60 – -10 mbar	LPS/N, LPS/NDs	(min -850 mbar)
~ 5…15	**100**		-115 – -15 mbar	-120 – -20 mbar	LPS/N, LPS/NDs	(min -850 mbar)
~ 8…32	**200**		-215 – -45 mbar	-220 – -50 mbar	LPS/N, LPS/NDs	(min -850 mbar)

180	**Sitz** Seat Siège	Kv = 6.5 / 18 mm	
	Optionen, Options, Options		
/C	C (Impulsleitung)	C (pulse line)	C (ligne d'Impulsion) G¼ (¼" BSP)
/E	E (Drainage)	E (Drain)	E (Vidage) G¼ (¼" BSP)
/S1 [4]	Manometerstutzen	Gauge nozzle	Raccord manomètre G¼ (¼" BSP, p_1)
/S2 [4]	Manometerstutzen	Gauge nozzle	Raccord manomètre G¼ (¼" BSP, p_2)
/Sp	Eingestellt/plombiert	Adjusted and sealed	Ajusté et plombé
/Ws	Wetterschutz	Weather protection	Avec protection IP54 PP / Polypropylen
/C2.2	EN 10204-2.2	EN 10204-2.2	EN 10204-2.2
/C3.1	EN 10204-3.1	EN 10204-3.1	EN 10204-3.1
/Cp	Einstellprotokoll	Test protocol	Protocole de réglage
/Ex)	ATEX Zulassung	ATEX approval	Certificat ATEX
/FDA	FDA-Bescheinigung	FDA approval	Certificat FDA
/Ff	Öl- Fettfrei	Certificate degreasing	Sans Huile ni Graisse
/LT	Lecktest	Leakage test	Essai de fuite
/XPZ	Poliert mit Zertifikat	Polished w/certified	Poli, avec Certificat

{ 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 }

Beispiel, Example, Exemple

LPS	**25**	**S**	**-FD**	**-P**	**100**	**180**	**/Sp/C3.1/Cp/Ex**

Hinweise,

		Hints,	Remarque
N/A*	nicht anwendbar	not applicable	non applicable
[1]	Siehe Typ: **LPSK…**	See Type: **LPSK…**	S.V.P. remarque aussi Type: **LPSK…**
[2]	Für Flüssigkeiten & Gase	For liquids and gas	Pour liquides et gaz
[3]	Nur für Gasanwendungen	Gas applications only	Pour les applications de gaz
[4]	Manometer optional verfügbar	Pressure gauge optionally available	Manomètre disponible en option

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