

Pressure Control Valves

Pressure Reducing Valves DM 510 - 518

High Pressure Valve for Medium Flow Rate



Technical Data

Connection DN	15 - 50
Connection G	3/8 - 2
Nominal Pressure PN	16 - 315
Inlet Pressure	up to 315 bar
Outlet Pressure	2 - 160 bar
K _{vs} -Value	0.2 - 5.5 m ³ /h
Temperature	400 °C
Medium	liquid, gases and steam

Description

Self-acting pressure reducers are simple control valves offering accurate control while being easy to install and maintain. They control the pressure downstream of the valve without requiring pneumatic or electrical control elements.

The DM 510, DM 511, DM 514, DM 515, DM 516 and DM 518 pressure reducing valves are diaphragm, piston or bellows-controlled spring-loaded proportional control valves for high inlet and outlet pressures. They can be supplied with three types of connections: sockets, flanges and welding spigots. Each size of valve may be fitted with three different seats. The valve cone may be fitted with a soft or metallic seal.

The outlet pressure to be controlled is balanced across the control unit by the force of the valve spring (set pressure). As the outlet pressure rises above the pressure set using the adjusting screw, the valve cone moves towards the seat and the volume of medium is reduced. As the outlet pressure drops, the valve control orifice increases; when the pipeline is depressurised, the valve is open. Rotating the adjusting screw clockwise increases the outlet pressure.

These valves are no shut-off elements ensuring a tight closing of the valve. In accordance with DIN EN 60534-4 and/or ANSI FCI 70-2 they may feature a leakage rate in closed position in compliance with the leakage classes III or V, optional IV:

Leakage class III (metal sealing cone) = 0.1 % K_{vs} value

Leakage class IV (PTFE seal cone) = 0.01 % K_{vs} value

Leakage class V (soft seal cone) = $1.8 \times 10^{-5} \times \Delta p \times D^*$ [l/h]

*D=seat diameter

Options

- » set pressure from 0,005 bar up to 2 bar (see sheet DM512/2.1....)
- » pressure gauge connection
- » hard-faced valve cone and seat
- » for toxic or hazardous media: sealed spring cap complete with leakage line connection (incl. sealed adjusting screw). Must be installed with a leakage line capable of draining leaking medium safely and without pressure
- » various diaphragm and seal materials suitable for your medium
- » special materials such as Duplex, Superduplex, Hastelloy® or titanium, others on request
- » special connections: ANSI or JIS flanges, NPT, welding spigots; other connections on request
- » special versions on request

Operating instructions, know how and safety instructions must be observed. All the pressure has always been indicated as overpressure. We reserve the right to alter technical specifications without notice.



Nominal Pressure, K_{vs}-Values, Setting Ranges and Permissible Reduction Ratio see sheet no. DM 510/2.1.....3

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Materials			
Temperature	80 °C	130 °C	400 °C
Body	G 3/8 - 1, DN 15 - 25 = C-steel G 1 1/4 - 2, DN 32 - 50 = steel welded optional CrNiMo-steel for all diameters		
Spring Cap	steel welded optional CrNiMo-steel		
Internals	CrNiMo-steel		
Spring	CrNi-steel		
Metallic Seal	CrNiMo-steel		
Soft Seal	EU	FPM optional EPDM or PTFE	-
Diaphragm	EPDM	FPM optional EPDM	-
Protection Foil	PTFE (option)		
O-ring for Piston	EPDM	FPM optional EPDM or PTFE	-
Bellow	-	-	CrNiMo-steel

Dimensions [mm] for DM 510 and DM 511					
type	size	nominal diameter			
		G 3/8 - 1/2 DN 15	G 3/4 - 1 DN 20 - 25	G 1 1/4-1 1/2 DN 32 - 40	G 2 DN 50
510	A	140	170	250	250
511	A ₁	220	220	280*	300*
516	A/A ₁	220	220	acc. to DIN 3202 - S14	
alle	B	80	80	110	110
alle	C	< 520	< 520	< 800	< 800

* with nominal pressure ≥ PN 63 on request

Dimensions [mm] for DM 514, DM 515, DM 516 and DM 518		
size	all nominal diameter	
A / A ₁	on request	
B		
C		

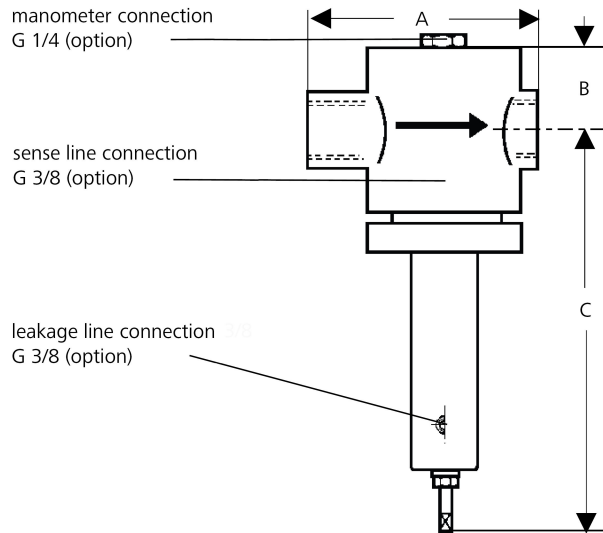
Weights [kg] for DM 510, others on request							
nominal diameter							
3/8	1/2	3/4	1	1 1/4	1 1/2	2	
13	13	14	15	21	21	21	

Customs Tariff Number
84811019

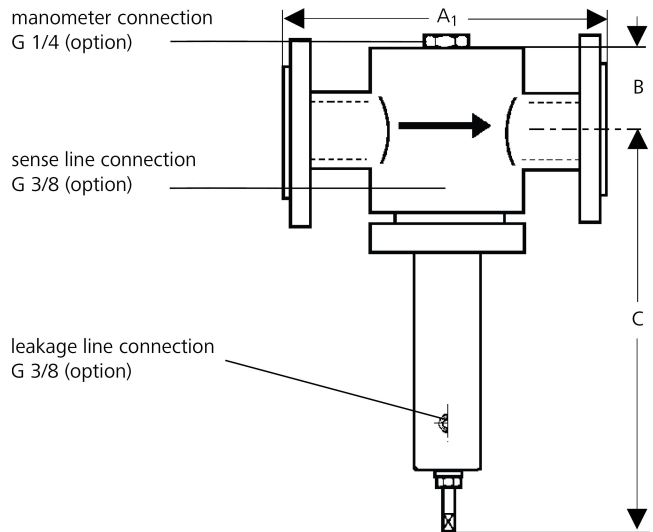
Special designs on request.
The pressure has always been indicated as overpressure.
Mankenberg reserves the right to alter or improve the designs or specifications of the products described herein without notice.

Dimensional Drawing

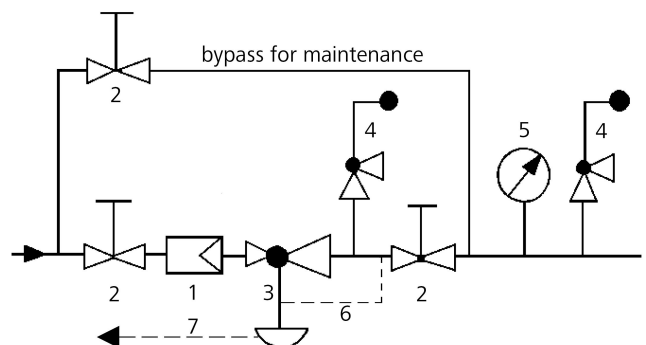
DM 510, DM 514, DM 516, DM 518



DM 511, DM 515



Recommended Installation



- 1 Strainer
- 2 Shut-off Valves
- 3 Pressure Reducer
- 4 Safety Valves
- 5 Pressure Gauge
- 6 Sense Line G 3/8 (option)
- 7 Leakage Line G 3/8 (option)

sense line connection 10 - 20 x DN behind the valve
use MANKENBERG-Products

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Kvs-Values [m ³ /h]								
nominal diameter								
G	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
DN	-	15	20	25	32	40	50	
seat	I	0.2	0.2	0.25	0.25	0.4	0.4	1
	II	0.9	0.9	0.9	0.9	2.5	2.5	3.5
	III	1.7	1.8	2	2.2	3.9	3.9	5.5

Setting Ranges [bar], Nominal Pressure DM 510, 511, 516				
2 - 4	4 - 7	7 - 10	5 - 16	10 - 20
PN 315/6	PN 315/16	PN 315/16	PN 315/25	PN 315/25
10 - 25	20 - 35	35 - 50	45 - 63	60 - 100
PN 315/40	PN 315/40	PN 315/63	PN 315/100	PN 315/100

Setting Ranges [bar], Nominal Pressure DM 514, 515, 518	
40 - 100	80 - 160
PN 315/100	PN 315/160

Special designs on request.

The pressure has always been indicated as overpressure.

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Permissible Reduction Ratio (max. p ₁ /p ₂) DM 510, 511, 516				
setting range bar	seat	nominal diameter		
		G 3/8 - 1 DN 15 - 25	G 1 1/4 - 1 1/2 DN 32 - 40	G 2 DN 50
2 - 4	I	100	80	60
	II	30	29	18
	III	15	15	12
4 - 7	I	80	52	39
	II	30	19	12
	III	15	10	8
7 - 10	I	80	38	28
	II	30	14	8
	III	15	7	6
5 - 16	I	32	45	33
	II	21	16	10
	III	9	8	7
10 - 20	I	32	38	28
	II	21	14	8
	III	9	7	6
10 - 25	I	20	25	18
	II	17	9	6
	III	7	4.5	4
20 - 35	I	16	20	15
	II	13	7	4.5
	III	4	3.5	3
35 - 50	I	9	15	11
	II	9	5.5	3
	III	4	3	2.5
45 - 63	I	7	11	8
	II	7	4	2.5
	III	3	2	1.5
60 - 100	I	6	8	5.5
	II	6	2.5	1.5
	III	2.5	1.5	1.2

Permissible Reduction Ratio (p ₁ /p ₂) DM 514, 515, 518			
setting range bar	seat	G 3/8 - 2	DN 15 - 50
all ranges	I	4	
	II		
	III		