

# Pressure Control Valves DM 505, 505Z



## Pressure Reducing Valves

Valve for Small Flow Rates

### Technical Data

Connection DN	15 - 25
Connection G	1/2
Nominal Pressure PN	250
Inlet Pressure	up to 250 bar
Outlet Pressure	0.005 - 20 bar
$K_{vs}$ -Value	0.15 - 0.90 m <sup>3</sup> /h
Temperature	200 °C
Medium	liquids, gases and steam

### Description

Medium-controlled 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 505 pressure reducing valve is a diaphragm-controlled spring-loaded proportional control valve for small volumes. This pressure reducer is manufactured from deep-drawn stainless steel featuring excellent corrosion resistance. The tubular inlet spigot of the valve body accommodates the seat aperture. The soft-sealing valve cone is guided in the seat assembly and connected with the control diaphragm by means of a stirrup which surrounds the seat assembly. DM 505 Z, recommended for temperatures up to 200 °C, is identical in its design apart from the metallic cone seal and water-cooled thermal protection between body and diaphragm.

The spring module comprising bonnet, spring, adjusting screw, diaphragm and internal components, is connected to the valve body only by means of a clamp ring and two bolts. Changing the diaphragm or the complete spring assembly for a different control pressure range is extremely simple and does not call for special tools. The same applies to servicing and maintenance.

Changing the control pressure setting does not affect the height of the valve (non increasing adjusting screw).

The outlet pressure to be controlled is balanced across the diaphragm 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.

DM 505Z requires a pilot line (to be installed on-site); for outlet pressures ≤ 1.1 bar DM 505 also requires a pilot line.

These valves are no shut-off elements ensuring a tight closing of the valve. In accordance with the VDI/VDE guideline 2174 a leakage rate of 0.05 percent of the constant volume flow is permitted for the valve in closed position.

### Standard

- » all stainless steel construction
- » non increasing adjusting screw
- » quick-release body clamp ring
- » pilot line connection (for DM 505 with outlet pressures ≤ 1,1 bar)

### Options

- » pressure gauge connection
- » for toxic or hazardous media: sealed bonnet 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 connections: Aseptic, ANSI or DIN flanges, 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.



### $K_{vs}$ -Values [m<sup>3</sup>/h]

for all body sizes, please select

0.15	0.4	0.9
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### Setting Ranges [bar] DM 505

0.005-0.025	0.02-0.12	0.1-0.5	0.2-1.1	0.8-2.5	1-5	4-12	10-20
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### Setting Ranges [bar] DM 505Z

0.005-0.025	0.02-0.12	0.1-0.5	0.2-1.1	0.8-2.5	1-5	4-12
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### Permissible Reduction Ratio (max. $p_1/p_2$ )

setting range bar  $K_{vs}$ -value

	0.15	0.4	0.9
0.005 - 0.12	1485	1000	750
0.1 - 0.5	405	280	210
0.2 - 1.1	185	125	100
0.8 - 2.5	105	70	50
1 - 20	39	27	20

# Pressure Control Valves DM 505, 505Z



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### Materials

Type	DM 505		DM 505Z
Temperature	80 °C	130 °C	200 °C
Body	CrNiMo-steel	CrNiMo-steel	CrNiMo-steel
Bonnet	CrNiMo-steel	CrNiMo-steel	CrNiMo-steel
Internals	CrNiMo-steel	CrNiMo-steel	CrNiMo-steel
Set Screw	CrNiMo-steel	CrNiMo-steel	CrNiMo-steel
Spring	CrNi-steel	CrNi-steel	CrNi-steel
Valve Seal	EU	FPM optional EPDM or PTFE	CrNiMo-steel
Diaphragm	CR	FPM or EPDM	EPDM
Protection Foil	PTFE (Option)	PTFE (Option)	PTFE (Option)

### Dimensions [mm]

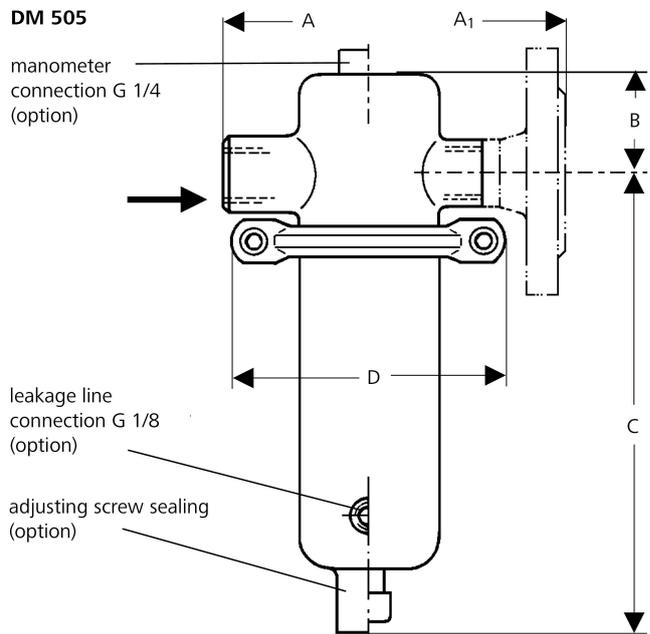
setting range bar	size	type	G 1/2	flanges acc. to DIN 2635		
				DN 15	DN 20	DN 25
all ranges	A/A <sub>1</sub>	505 + 505Z	100	130	150	160
	B	505 + 505Z	53	53	53	53
0.005 - 0.025 0.02 - 0.12	C	505	257	257	257	267
	C	505Z	387	387	387	297
	D	505 + 505Z	360	360	360	360
0.1 - 0.5	C	505	257	257	257	267
	C	505Z	387	387	387	297
	D	505 + 505Z	264	264	264	264
0.2 - 1.1	C	505	257	257	257	257
	C	505Z	387	387	387	387
	D	505 + 505Z	200	200	200	200
0.8 - 2.5	A/A <sub>1</sub>	505	100	180	180	180
	A/A <sub>1</sub>	505Z	100	130	150	160
	C	505	196	196	196	196
	C	505Z	325	325	325	325
	D	505 + 505Z	138	138	138	138
1 - 5	C	505	190	190	190	190
4 - 12	C	505Z	325	325	325	325
10 - 20	D	505 + 505Z	114	114	114	114

### Weights [kg]

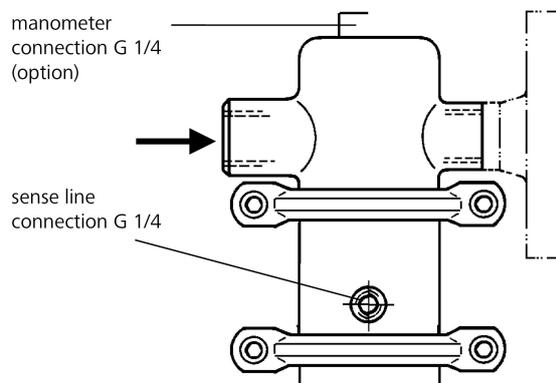
setting ranges bar	type	G 1/2	flanges acc. to DIN 2635		
			DN 15	DN 20	DN 25
0.005 - 0.025	505	6	7.5	7.5	8
0.002 - 0.12	505Z	6.5	8	8	8.5
0.1 - 0.5	505	5.5	7	7	7.5
	505Z	6	7.5	7.5	8
0.2 - 1.1	505	4.5	6	6	6.5
	505Z	5	6.5	6.5	7
0.8 - 2.5	505	2	3.5	3.5	4
	505Z	2.5	4	4	4.5
1 - 20	505	1.5	3	3	3.5
	505Z	2	3.5	3.5	4

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.

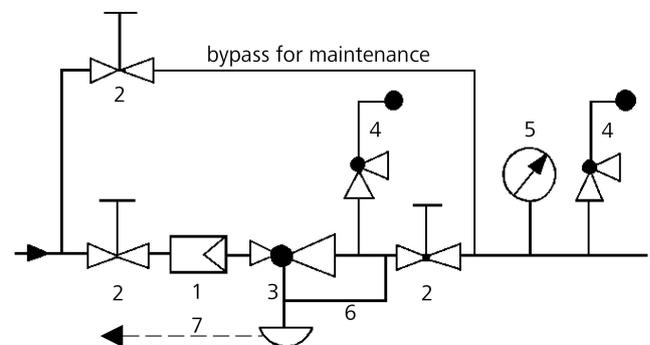
### Dimensional Drawing



### DM 505Z (dimensions see DM 505)



### Recommended Installation



- 1 Strainer
- 2 Shut-off Valves
- 3 Pressure Reducer
- 4 Safety Valves
- 5 Pressure Gauge
- 6 Sense Line G 1/4 (DM 505Z)
- 7 Leakage Line G 1/8 (option)

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