

Pressure Control Valves

Pressure Reducing Valves DM 505

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 | 0.2 - 0.90 m ³ /h |
| Temperature | 130 °C |
| Medium | liquids, 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 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.

The spring module comprising spring cap, 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 rising adjusting screw).

Outlet pressures ≤ 1.1 bar DM 505 requires a sense line (to be installed on-site).

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 V optional IV:

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

Standard

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

Options

- » pressure gauge connection
- » pneumatic actuation
- » 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 connections: Aseptic, 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.



| K _{vs} -Values [m ³ /h] | | | |
|---|-----|-----|-----|
| for all body sizes, please select | 0.2 | 0.5 | 0.9 |

| Setting Ranges [bar] | | | | | | | |
|----------------------|-----------|---------|---------|---------|-----|------|-------|
| 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 |

| Permissible Reduction Ratio (max. p ₁ /p ₂) | | | |
|--|------------------------|------|-----|
| setting range bar | K _{vs} -value | | |
| | 0.2 | 0.5 | 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 |

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| Materials | |
|-----------------|---------------------------|
| Temperature | 130 °C |
| Body | CrNiMo-steel |
| Spring Cap | CrNiMo-steel |
| Internals | CrNiMo-steel |
| Adjusting Screw | CrNiMo-steel |
| Spring | CrNi-steel |
| Valve Seal | FPM optional EPDM or PTFE |
| Diaphragm | FPM or EPDM |
| Protection Foil | PTFE (Option) |

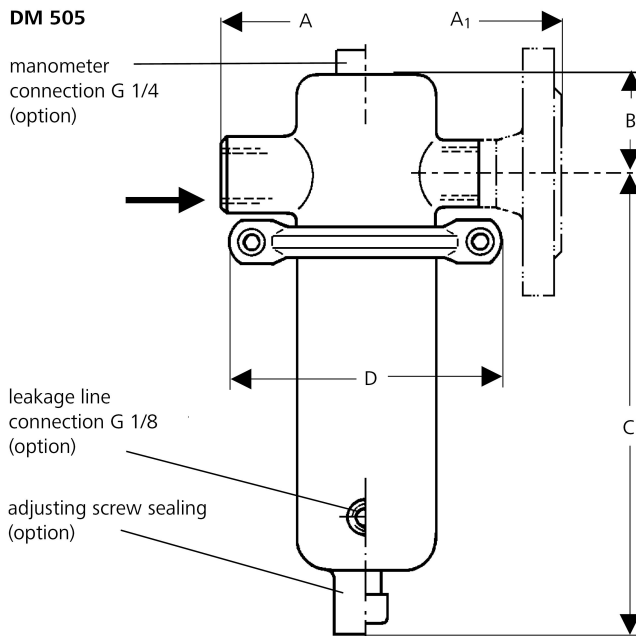
| Dimensions [mm] | | | | | |
|------------------------------|------------------|-------|-------------------------------|-------|-------|
| setting ranges bar | size | G 1/2 | flanges acc. to DIN EN 1092-1 | | |
| | | | DN 15 | DN 20 | DN 25 |
| 0,005 - 0,025 0,02 - 0,12 | A/A ₁ | 100 | 130 | 150 | 160 |
| | B | 39 | 39 | 39 | 39 |
| | C | 257 | 257 | 257 | 257 |
| | D | 360 | 360 | 360 | 360 |
| 0,1 - 0,5 | A/A ₁ | 100 | 130 | 150 | 160 |
| | B | 39 | 39 | 39 | 39 |
| | C | 257 | 257 | 257 | 257 |
| | D | 264 | 264 | 264 | 264 |
| 0,2 - 1,1 | A/A ₁ | 100 | 130 | 150 | 160 |
| | B | 39 | 39 | 39 | 39 |
| | C | 257 | 257 | 257 | 257 |
| | D | 200 | 200 | 200 | 200 |
| 0,8 - 2,5 | A/A ₁ | 100 | 180 | 180 | 180 |
| | B | 39 | 39 | 39 | 39 |
| | C | 196 | 196 | 196 | 196 |
| | D | 138 | 138 | 138 | 138 |
| 1 - 5 4 - 12 10 - 20 | A/A ₁ | 100 | 130 | 150 | 160 |
| | B | 39 | 39 | 39 | 39 |
| | C | 190 | 190 | 190 | 190 |
| | D | 114 | 114 | 114 | 114 |

| Weights [kg] | | | | |
|------------------------------|-------|-------------------------------|-------|-------|
| setting ranges bar | G 1/2 | flanges acc. to DIN EN 1092-1 | | |
| | | DN 15 | DN 20 | DN 25 |
| 0.005 - 0.025 0.02 - 0.12 | 6 | 7.5 | 7.5 | 8 |
| 0.1 - 0.5 | 5.5 | 7 | 7 | 7.5 |
| 0.2 - 1.1 | 4.5 | 6 | 6 | 6.5 |
| 0.8 - 2.5 | 2 | 3.5 | 3.5 | 4 |
| 1 - 20 | 1.5 | 3 | 3 | 3.5 |

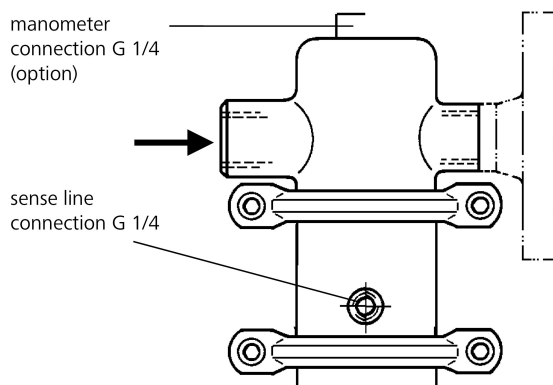
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Special designs on request.
The pressure has always been indicated as overpressure.
Mankenberg reserves the right to alter or improve the designs or specifications of the products described herein without notice.

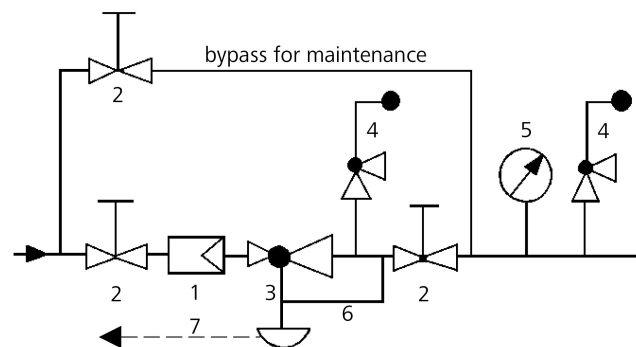
Dimensional Drawing



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
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