

Pressure Control Valves

Pressure Reducing Valves DM 512, 513, 517

High Press. and Control Ranges lower than 2 bar



Technical Data

| | |
|------------------------|-----------------------------|
| Connection DN | 15 - 50 |
| Connection G | 3/8 - 2 |
| Nominal Pressure PN | 100 |
| Inlet Pressure | up to 100 bar |
| Outlet Pressure | 0.005 - 2 bar |
| K _{vs} -Value | 0.2 - 5.5 m ³ /h |
| Temperature | 130 °C |
| Medium | liquids and gases |

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 512, DM 513 and DM 517 pressure reducing valves are diaphragm-controlled spring-loaded proportional control valves for high inlet and low 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.

The valves requires a sense line (to be installed on-site).

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

- » 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 512/2.1.121.3

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| Materials | | |
|-----------------|--|-------------------------|
| Temperature | 80 °C | 130 °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 body sizes | |
| Spring Cap | steel welded optional CrNiMo-steel | |
| Internals | CrNiMo-steel | |
| Spring | CrNi-steel | CrNi-steel |
| Valve Seal | EU | FPM optional EPDM, PTFE |
| Metallic Seal | CrNiMo-steel | CrNiMo-steel |
| Diaphragm | EPDM | FPM optional EPDM |
| Protection Foil | PTFE (option) | PTFE (option) |

| Dimensions DM 512 [mm] | | | | |
|------------------------|------|--------------------|-----------|-----------|
| pressure range bar | size | nominal diameter G | | |
| | | G 3/8 - 1/2 | G 3/4 - 1 | 1 1/4 - 2 |
| all ranges | A | 140 | 170 | 250 |
| | B | 80 | 80 | 110 |
| | C | 470 | 470 | max. 720 |
| 0.005 - 0.07 | D | 500 | 500 | 850 |
| 0.02 - 0.1 | D | 360 | 360 | 500 |
| 0.05 - 0.4 | D | 270 | 270 | 360 |
| 0.1 - 0.8 | D | 220 | 220 | 270 |
| 0.3 - 2 | D | 175 | 175 | 220 |

| Dimensions DM 513 [mm] | | | | |
|------------------------|----------------|---------------------|----------|----------|
| pressure range bar | size | nominal diameter DN | | |
| | | DN 15 - 25 | DN 32-40 | DN 50 |
| all ranges | A ₁ | 220 | 280* | 300* |
| | B | 80 | 110 | 110 |
| | C | 470 | max. 720 | max. 720 |
| 0.005 - 0.07 | D | 500 | 850 | 850 |
| 0.02 - 0.1 | D | 360 | 500 | 500 |
| 0.05 - 0.4 | D | 270 | 360 | 360 |
| 0.1 - 0.8 | D | 220 | 270 | 270 |
| 0.3 - 2 | D | 175 | 220 | 220 |

| Dimensions DM 517 [mm] | | | | | |
|------------------------|------|--------------------|-----------------|----------|--|
| pressure range bar | size | nominal diameter G | | | |
| | | G 3/8 - 1 | G 1 1/4 - 1 1/2 | 2 | |
| all ranges | A | 220 | 270 | 300 | |
| | B | 80 | 110 | 110 | |
| | C | 470 | max. 720 | max. 720 | |
| 0.005 - 0.07 | D | 500 | 850 | 850 | |
| 0.02 - 0.1 | D | 360 | 500 | 500 | |
| 0.05 - 0.4 | D | 270 | 360 | 360 | |
| 0.1 - 0.8 | D | 220 | 270 | 270 | |
| 0.3 - 2 | D | 175 | 220 | 220 | |

| Weights DM 512, 517 [kg] | | | | | | | |
|--------------------------|--------------------|-------|-------|-----|---------|---------|-----|
| pressure range bar | nominal diameter G | | | | | | |
| | G 3/8 | G 1/2 | G 3/4 | G 1 | G 1 1/4 | G 1 1/2 | G 2 |
| 0.005 - 0.07 | 36 | 36 | 37 | 38 | 75 | 75 | 75 |
| 0.02 - 0.1 | 40 | 40 | 41 | 42 | 47 | 47 | 47 |
| 0.05 - 0.4 | 37 | 37 | 38 | 39 | 39 | 39 | 39 |
| 0.1 - 0.8 | 25 | 25 | 26 | 27 | 37 | 37 | 37 |
| 0.3 - 2 | 19 | 19 | 20 | 21 | 35 | 35 | 35 |

weights for DM 513 on request

Customs Tariff Number

84811019

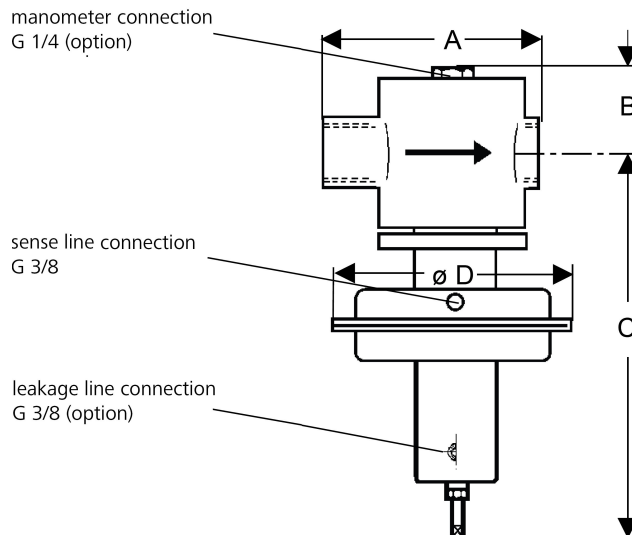
Special designs on request.

The pressure has always been indicated as overpressure.

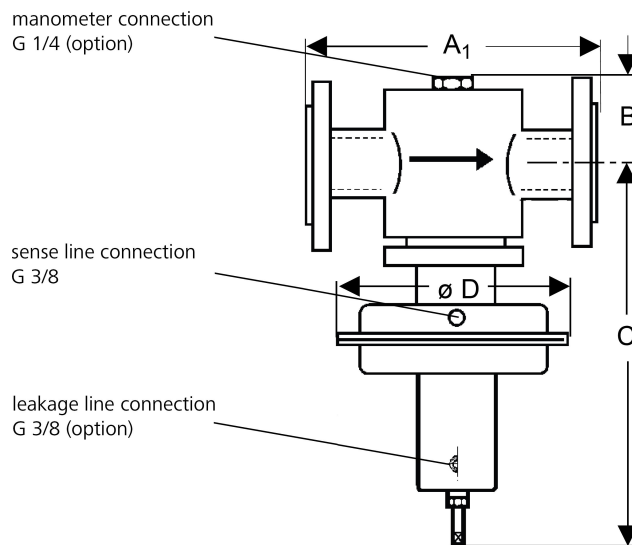
Mankenberg reserves the right to alter or improve the designs or specifications of the products described herein without notice.

Dimensional Drawing

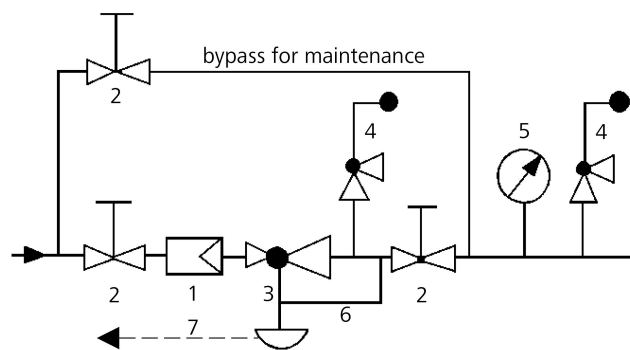
DM 512, DM 517



DM 513



Recommended Installation



- | | |
|--------------------|-------------------------------|
| 1 Strainer | 5 Pressure Gauge |
| 2 Shut-off Valves | 6 Sense Line G 3/8 |
| 3 Pressure Reducer | 7 Leakage Line G 3/8 (option) |
| 4 Safety Valves | |
- sense line connection 10 - 20 x DN behind the valve
use MANKENBERG-Products

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| K _{vs} -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 512, 513, 517 | | | |
|---|------------|------------|-----------|
| 0.005 - 0.07 | 0.02 - 0.1 | 0.05 - 0.4 | 0.1 - 0.4 |
| PN 100/1 | PN 100/1 | PN 100/1 | PN 100/1 |
| 0.4 - 0.8 | 0.3 - 1 | 1 - 2 | |
| PN 100/1.6 | PN 100/1.6 | PN 100/6 | |

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.

| Max. Permissible Reduction Ratio (p ₁ /p ₂) DM 512, 513, 517 | | | | |
|---|------|-------------------------|-------------------------------|--------------|
| 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 |
| 0.005 - 0.07 | I | 4000 | 6570 | 4865 |
| | II | 1500 | 2390 | 1490 |
| | III | 600 | 1200 | 1010 |
| 0.02 - 0.1 | I | 200 | 1950 | 1445 |
| | II | 800 | 710 | 440 |
| | III | 300 | 355 | 300 |
| 0.05 - 0.4 | I | 1000 | 1020 | 755 |
| | II | 400 | 370 | 230 |
| | III | 150 | 185 | 155 |
| 0.1 - 0.4 | I | 700 | 510 | 375 |
| | II | 200 | 185 | 115 |
| | III | 90 | 90 | 75 |
| 0.4 - 0.8 | I | 700 | 510 | 375 |
| | II | 200 | 185 | 115 |
| | III | 90 | 90 | 75 |
| 0.3 - 1 | I | 300 | 280 | 205 |
| | II | 100 | 100 | 60 |
| | III | 40 | 50 | 40 |
| 1 - 2 | I | 300 | 280 | 205 |
| | II | 100 | 100 | 60 |
| | III | 40 | 50 | 40 |