MANNESMANN REXROTH

# Pressure reducing valve, direct operated, Type ZDR 6 D, Series 4X

| Size 6 | up to 210 bar | up to 50 L/min |
|---|---|---|

**RE 26 570/09.96**
**Replaces: 04.92**

**Features:**

- Sandwich plate design
- Porting pattern to DIN 24 340 form A, ISO 4401 and CETOP–RP 121 H,
- 4 pressure ratings
- 4 adjustment elements:
  - Rotary knob
  - Sleeve with hexagon and protective cap
  - Lockable rotary knob with scale
  - Rotary knob with scale
- Pressure reduction in ports A, B or P
- Check valve, optional

K 4279/1
Type ZDR 6 DP2–4X/…YM…

## Functional description, section

Pressure reducing valves type ZDR 6 D.. are 3-way direct operated pressure reducing valves of sandwich plate design with a pressure relief function on the secondary side. It is used to reduce the system pressure. The pressure reducing basically consists of the housing (1), the control spool (2), a compression spring (3) and the adjusment element (4) as well as with an optional check valve.

The secondary pressure is set by the pressure adjustment element (4).

**Model "DA"**
At rest, the valve is normally open, and fluid can flow unhindered from port A1 to port A2. The pressure in port A2 is at the same time via the control line (5) present at the spool area opposite to the compression spring (3). When the pressure in port A2 exceeds the pressure level set at the compression spring (3) the control spool (2) moves into the control position against the compression spring (3) and holds the set pressure in port A2 constant.

The control pressure and pilot oil are taken from port A2 via control line (5).

If the pressure in port A2 rises still further due to external forces, the control spool (2) is moved still further towards the compression spring (3).

This causes a flow path to be opened at port A2 through control land (9) on the control spool (2) to tank. Sufficient fluid then flows to tank to prevent any further rise in pressure. The spring chamber (7) is always drained to tank externally via drilling (6) to port T (Y).

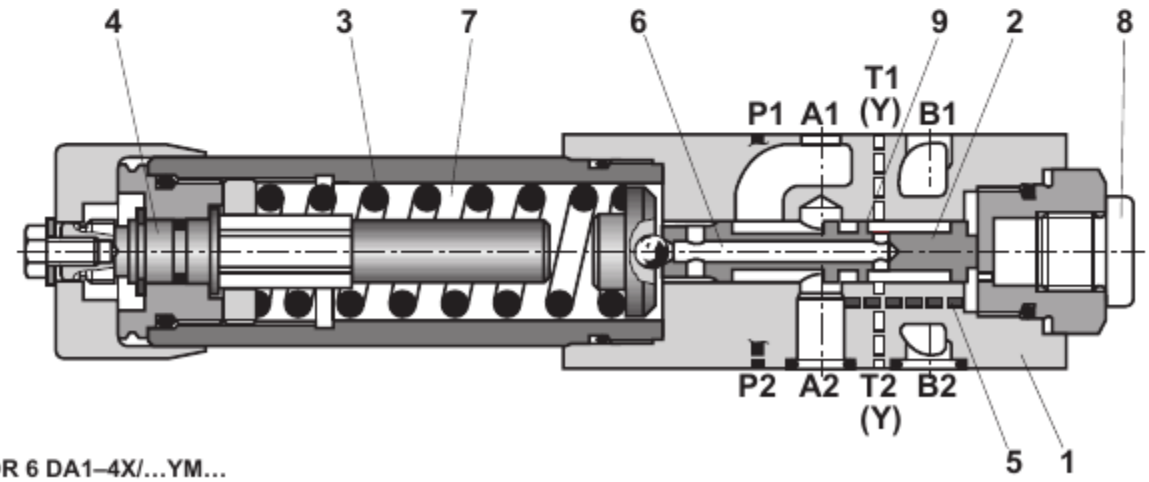
A pressure gauge connection (8) permitts the secondary pressure at the valve to be monitored.

It is only possible to fit a check valve for free flow in ports A2 to A1 in version "DA".

**Models "DP" and "DB"**
In model "DP", the pressure is reduced in port P1. The control pressure and the pilot oil is taken internally from port P1.

In model "DB", the pressure in port P1 is reduced, and the pilot oil taken from port B.

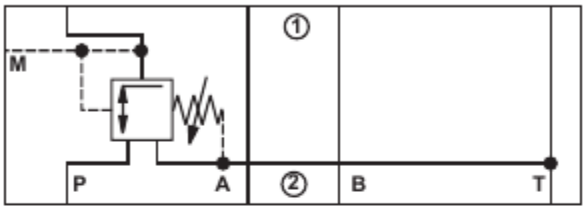
**⚠ Attention!**
In model DB, it must be ensured, that the pressure in port B is not higher than the set pressure when the directional valve is in position P to A. Otherwise, pressure in port A will be reduced.



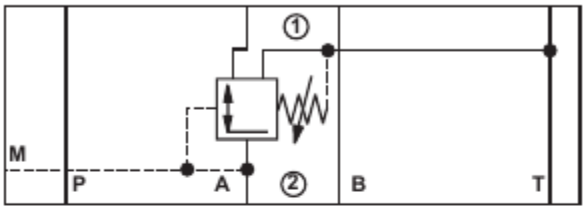

**Type ZDR 6 DA1–4X/…YM…**

## Symbols (① = valve side, ② = subplate side)

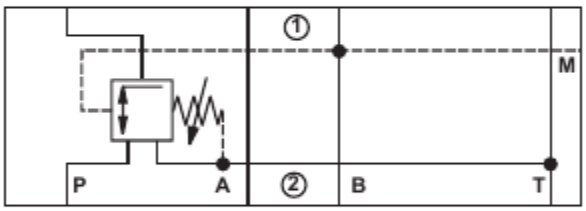
**Type ZDR 6 DP..–4X/..YM..**



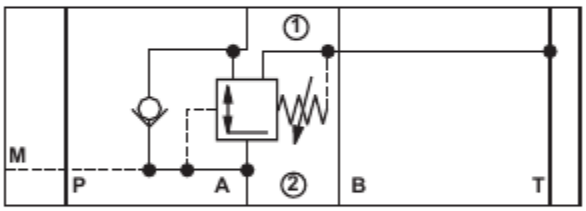

**Type ZDR 6 DA..–4X/..YM**




**Type ZDR 6 DB..–4X/..YM..**




**Type ZDR 6 DA..–4X/..Y.**




## Ordering details

**Valve types which are readily available** (material no. and type)**, see page 3.**

| Z | DR | 6 | D | | –4X/ | Y | | | * |
|---|---|---|---|---|---|---|---|---|---|

Sandwich plate = **Z**

Pressure reducing valve = **DR**

Nominal size 6 = **6**

Direct operated = **D**

Pressure reduction in port A2 = **A**
Pressure reduction in port B2 = **B**
Pressure reduction in port P1 = **P**

**Adjustment element**
Rotary knob = **1**
Sleeve with hexagon screw and protective cap = **2**
Lockable rotary knob with scale = **3** [1)]
Rotary knob with scale = **7**

Series 40 to 49 = **4X**
(40 to 49: unchanged installation and connection dimensions)

[1)] H-key with material no. 008158 is included within the scope of supply.

**25 =** Max. secondary pressure 25 bar
**75 =** Max. secondary pressure 75 bar
**150 =** Max. secondary pressure 150 bar
**210 =** Max. secondary pressure 210 bar

**Y =** Pilot oil supply internal, leakage oil drain external

**M =** Without check valve

**No code =** With check valve (not possible for pressure reduction in port A2)

**No code =** NBR seals
**V =** FPM seals (other seals on request)

**⚠ Attention!** The compatability of the seals and pressure fluid has to be taken into account!

Further details in clear text

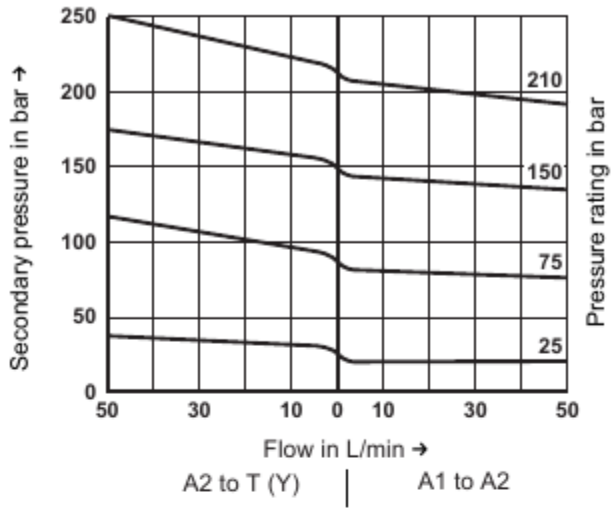
## Technical data (for applications outside these parameters, please consult us!)

| | | |
|---|---|---|
| Pressure fluid<br>[2)] suitable for NBR **and** FPM seals<br>[3)] **only** suitable for FPM seals | | Mineral oil (HL, HLP) to DIN 51 524 [2)];<br>Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221);<br>HETG (rape seed oil) [2)]; HEPG (polyglycol) [3)]; HEES (synthetic ester) [3)];<br>other fluids on request |
| Pressure fluid - temperature range | °C | –30 to +80 (with NBR seals) |
| | | –20 to +80 (with FPM seals) |
| Viscosity range | mm²/s | 10 to 800 |
| Degree of contamination | | Maximum permissible degree of contamination of the fluid is to NAS 1638 class 9. We, therefore, recommend a filter with a minimum retention rate of $ß_{10} \geq 75$. |
| Max. operating pressure (inlet) | bar | up to 315 |
| Secondary pressure (output) | bar | up to 25; up to 75; up to 150; up to 210 |
| Back pressure port T(Y) | bar | up to 160 |
| Max. flow | L/min | up to 50 |
| Weight | kg | approx. 1.2 |

## Characteristic curves (measured at $\nu = 41$ mm²/s and $t = 50$ °C)

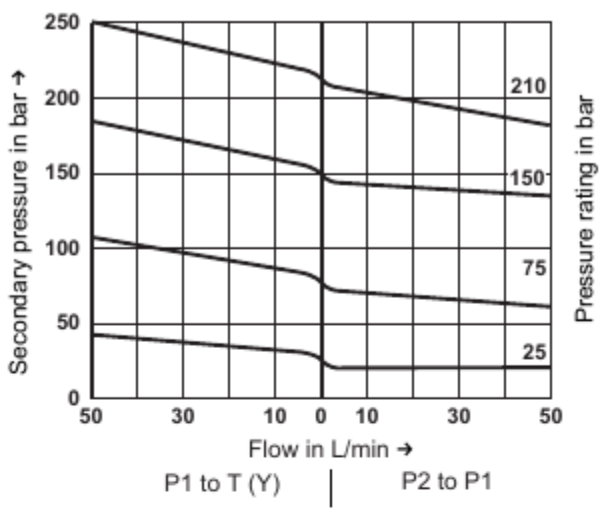
**Type ZDR 6 DA**

$p_A$–$q_V$ characteristic curves



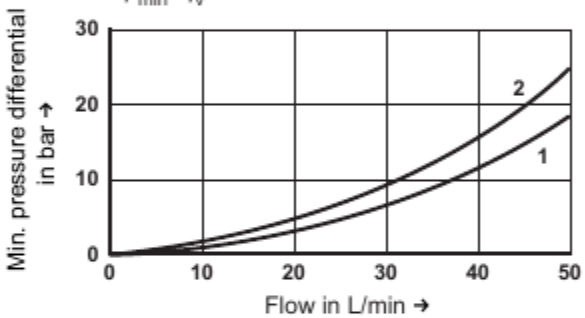

**Types ZDR 6 DP and ZDR 6 DB**

$p_A$–$q_V$ characteristic curves



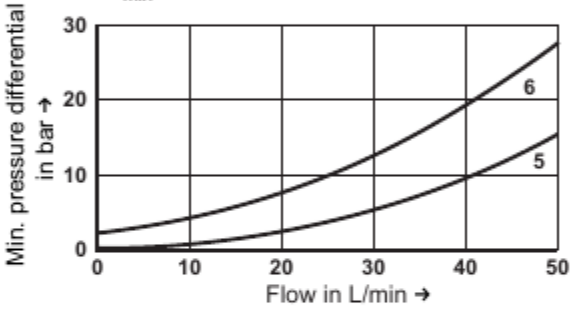

**Note:**
The curve characteristics remain, with low set pressures, the same in relation to the pressure rating

$p_{min}$–$q_V$ characteristic curves



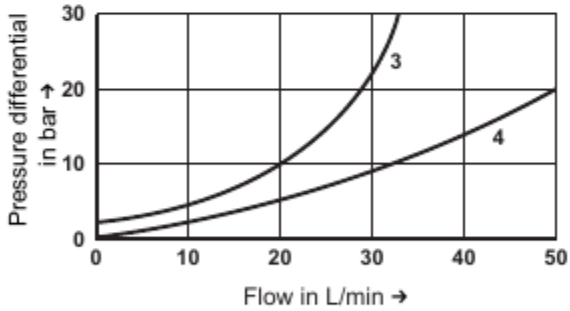

**1** A1 to A2
**2** A2 to T (Y) (3rd. flow path)

$p_{min}$–$q_V$ characteristic curves




**5** P2 to P1
**6** P1 to T (Y) (3rd. flow path)

$p$–$q_V$ characteristic curves




**3** A2 to A1 flow via check valve only
**4** A2 to A1 flow via check valve and fully open control cross section

**The characteristic curves for the pressure relief function are valid for the outlet pressure = zero over the entire flow range!**

## Preferred types (readily available)

| Material no. | Type |
|---|---|
| 409981 | ZDR 6 **DA1**-4X/150Y |
| 481125 | ZDR 6 **DA1**-4X/25Y |
| 409966 | ZDR 6 **DA1**-4X/75Y |
| 410849 | ZDR 6 **DA2**-4X/150Y |
| 410855 | ZDR 6 **DA2**-4X/210Y |
| 410808 | ZDR 6 **DA2**-4X/25Y |
| 410813 | ZDR 6 **DA2**-4X/75Y |
| 448490 | ZDR 6 **DA3**-4X/25Y |
| 410864 | ZDR 6 **DA3**-4X/75Y |
| 424621 | ZDR 6 **DA7**-4X/150Y |
| 478553 | ZDR 6 **DA7**-4X/75Y |

| Material no. | Type |
|---|---|
| 431172 | ZDR 6 **DB2**-4X/150YM |
| 463269 | ZDR 6 **DB2**-4X/210YM |
| 449839 | ZDR 6 **DB2**-4X/25YM |
| 431771 | ZDR 6 **DB2**-4X/75YM |
| 432119 | ZDR 6 **DB3**-4X/75YM |
| 410806 | ZDR 6 **DP1**-4X/150YM |
| 476381 | ZDR 6 **DP1**-4X/210YM |
| 409965 | ZDR 6 **DP1**-4X/25YM |
| 409967 | ZDR 6 **DP1**-4X/75YM |

| Material no. | Type |
|---|---|
| 483787 | ZDR 6 **DP2**-4X/150YM |
| 483788 | ZDR 6 **DP2**-4X/210YM |
| 483785 | ZDR 6 **DP2**-4X/25YM |
| 483786 | ZDR 6 **DP2**-4X/75YM |
| 473199 | ZDR 6 **DP3**-4X/150YM |
| 481115 | ZDR 6 **DP3**-4X/210YM |
| 476274 | ZDR 6 **DP3**-4X/25YM |
| 410865 | ZDR 6 **DP3**-4X/75YM |
| 410874 | ZDR 6 **DP7**-4X/75YM |