MANNESMANN REXROTH

Pressure reducing valve, direct operated, Type ZDR 10 D, Series 5X

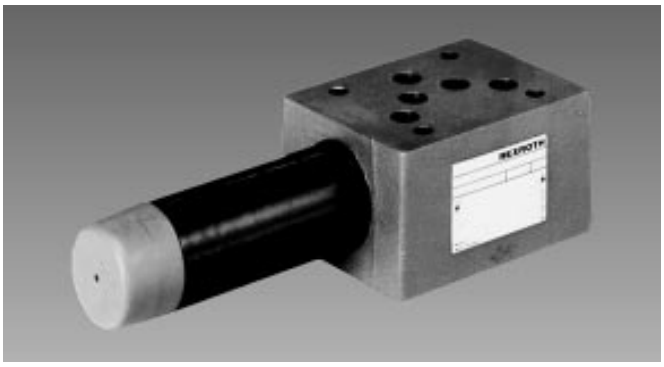
Size 10	up to 210 bar	up to 80 L/min

RE 26 585/09.96

Replaces: 11.93

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 4805

Type ZDR 10 DP 2–5X/..Y..

Functional description, section

The pressure reducing valve type ZDR 10 D.. is a 3-way direct operated valve of sandwich plate design with a pressure relief function on the secondary side. It is used to reduce the system pressure.

The pressure reducing valve basically consists of the housing (1), the control spool (2), a compression spring (3),and the adjustment (4) as well as 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 via control land (6) on the control spool (2) and housing (1) to tank (port TB). Sufficient fluid then flows to tank to prevent any further rise in pressure.

The spring chamber (7) is always drained to tank externally via port TA .

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.

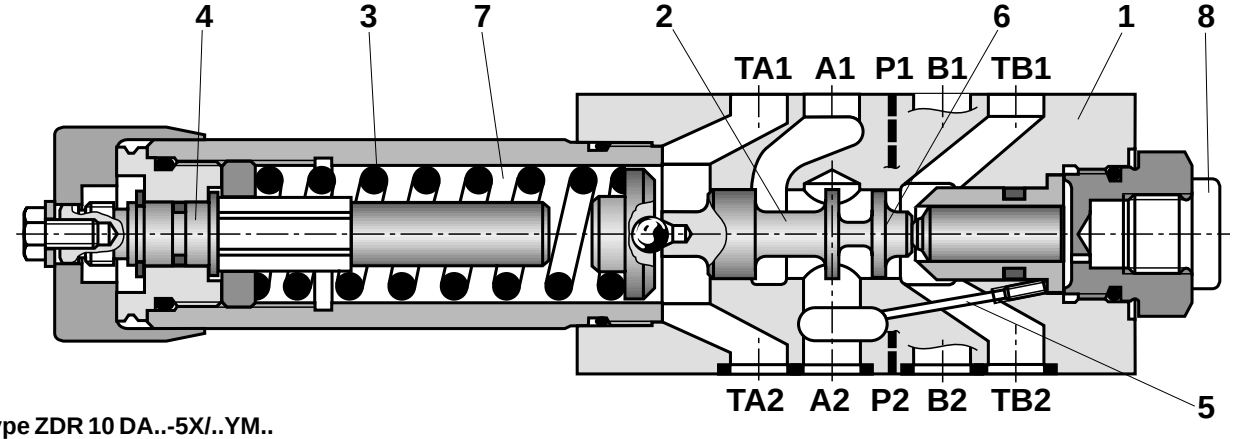
In model "DB", the pressure in port P1 is reduced, and the pilot oil taken from port B.

⚠ Attention!

When the directional valve is in the switched position P to A, pressure in port B must not exceed the set secondary pressure. Otherwise, pressure in port A will be reduced.

If used without a directional valve, TA and TB must be interconnected (e.g. in the cover plate).

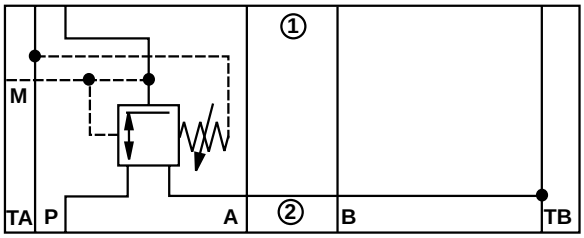
When mounting a directional poppet valve type SE 10… a sandwich plate type HSZ10A078-3X/M00 (537264) is to be used.



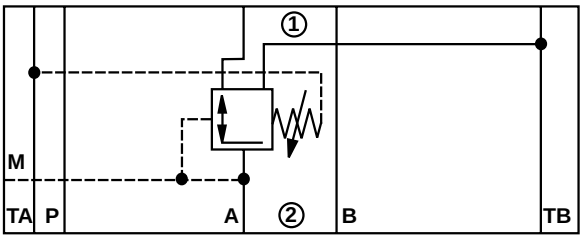
Type ZDR 10 DA..-5X/..YM..

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

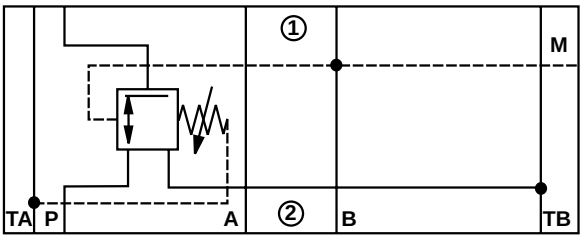
Type ZDR 10 DP..–5X/..YM..



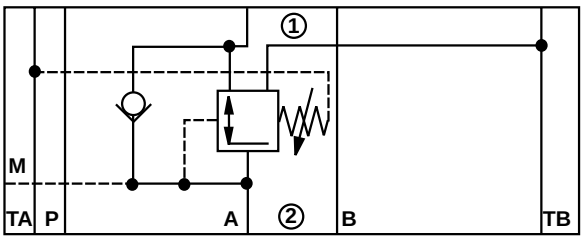
Type ZDR 10 DA..–5X/..YM..



Type ZDR 10 DB..–5X/..YM..



Type ZDR 10 DA..–5X/..Y



Ordering details

Z	DR	10	D		–5X/		Y			*

Sandwich plate = **Z**

Pressure reducing valve = **DR**

Nominal size 10 = **10**

Direct operated = **D**

Pressure reduction in port A2 = **A**

Pressure reduction in port P1 (Pilot oil from port B) = **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 50 to 59 = **5X**

(50 to 59: unchanged installation and connection dimensions)

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 P1)

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

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

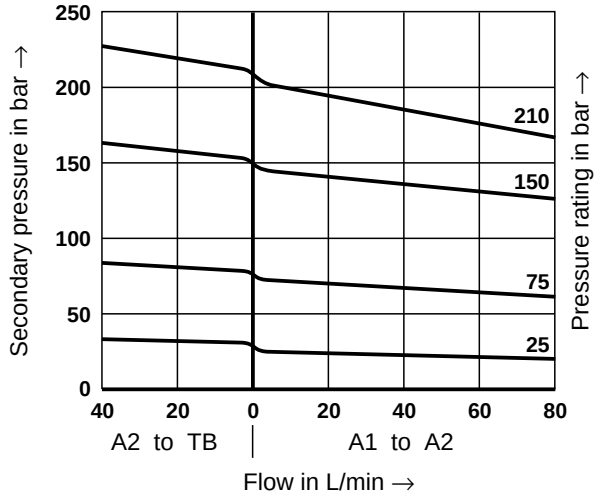
Technical data (for applications outside these parameters, please consult us!)

Weight, approx.	kg	2.8
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	bar	up to 160
Max. flow	L/min	80
Pressure fluid [2)] suitable for NBR **and** FPM seals [3)] **only** suitable for FPM seals		Mineral oil (HL, HLP) to DIN 51 524 [2)]; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil) [2)]; HEPG (polyglycol) [3)]; HEES (synthetic ester) [3)]; other fluids on request
Pressure fluid - temperature range	°C	–30 to +80 (NBR seals)
		–20 to +80 (FPM seals)
Viscosity range	mm^2/s	10 to 800
Degree of fluid 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 $\beta_{10} \geq 75$.

Characteristic curves (measured at ν = 41 mm²/s and t = 50 °C)

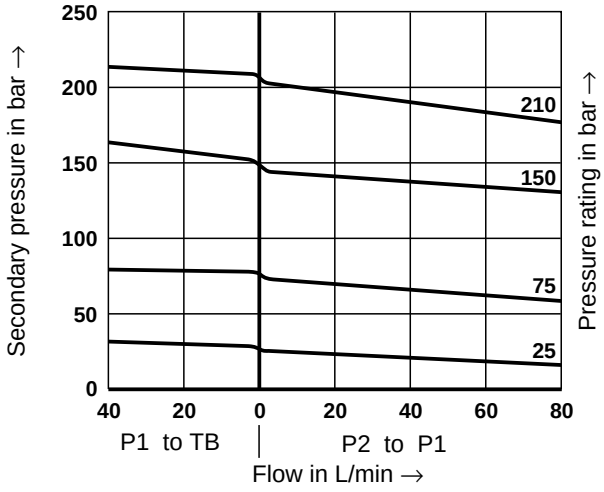
Type ZDR 10 DA..–5X/..

p_A-q_V characteristic curves



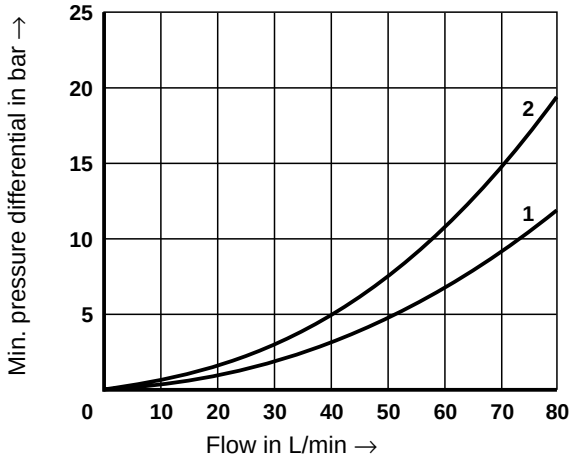
Type ZDR 10 DP..–5X/.. and Type ZDR 10 DB..-5X/..

p_A-q_V characteristic curves

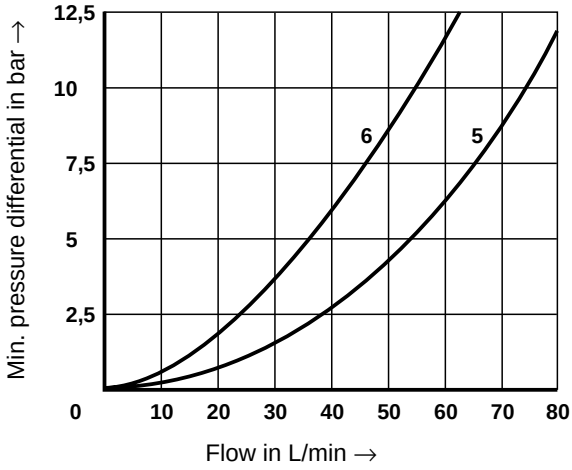


Note
The curve characteristics remain, with low set pressures, the same in relation to the pressure rating.

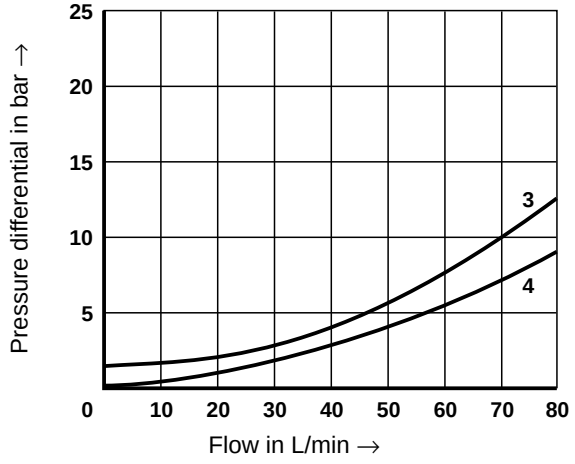
Δp_{min}-q_V characteristic curves



Δp_{min}-q_V characteristic curves



Δp-q_V characteristic curves



1 A1 to A2

2 A2 to TB (3rd. flow path)

3 A2 to A1 flow via check valve only

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

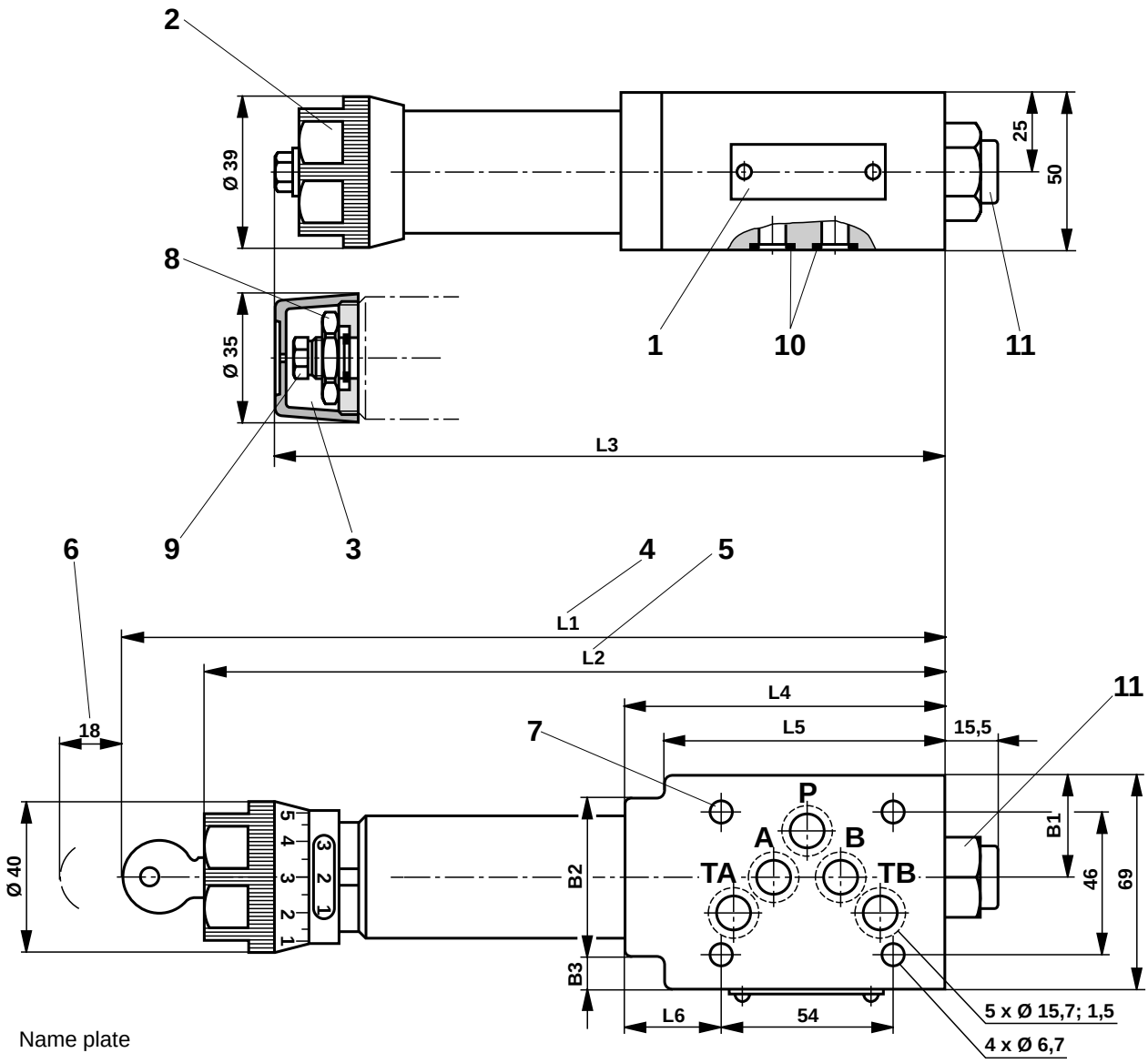
5 P2 to P1

6 P1 to TB (3rd. flow path)

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

Unit dimensions

(Dimensions in mm)



1 Name plate

2 Adjustment element "1"

3 Adjustment element "2"

4 Adjustment element "3"

5 Adjustment element "7"

6 Space required to remove key

7 Valve fixing screw holes

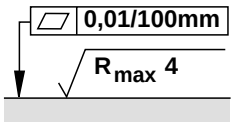
8 Lock nut 24 A/F

9 Hexagon 10 A/F

10 R-ring 13.0 x 1.6 x 2.0

11 Pressure gauge port G 1/4; 12 deep internal hexagon 6 A/F

Note:
For X and Y ports (e.g. for size 10 pilot operated directional valves) the special design code is **SO30!**



Required surface finish of mating piece

Model	L1	L2	L3	L4	L5	L6	B1	B2	B3
"DA"	254	230	210	104	93	31.5	32.9	51	12
"DB" and "DP"	242	218	198	91	–	18.5	35	–	–

Valve fixing screws
M6 DIN 912 - 10.9,
tightening torque M_A = 15.5 Nm,
must be ordered separately.

Pipe threads "G" to ISO 228/1

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