

Pressure reducing valve, direct operated

RA 26570/02.03
Replaces: 06.98

1/8

Model ZDR 6 D

Nominal size 6
Series 4X
Maximum operating pressure 210 bar (3050 PSI)
Maximum flow 50 L/min (13 GPM)



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Features

- Sandwich plate design
- Porting pattern to ISO 4401-3, NFPA T3.5.1M R1 and ANSI B93.7 **D 03**
- Four pressure stages
- Four 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 (only ZDR 6 DA...)

Ordering details

	Z	DR	6	D			- 4X /	Y			/	*
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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 elements

Rotary knob = 1

Sleeve with hexagon 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. R900008158 is included within the scope of supply.

²⁾ Locating pin 3 x 8 DIN EN ISO 8752, Material No. **R900005694** (separate order)

Further details in clear text

Gauge port connection

No code = BSP thread

12 = SAE thread

No code = Without locating pin hole

/60 ²⁾ = With locating pin hole

No code = NBR seals

V = FKM seals
(other seals on request)

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

No code = With check valve (only possible for pressure reduction in port A2)

M = Without check valve

Y = Internal pilot oil supply, external leakage oil drain

25 = Max. secondary pressure 25 bar (365 PSI)

75 = Max. secondary pressure 75 bar (1090 PSI)

150 = Max. secondary pressure 150 bar (2175 PSI)

210 = Max. secondary pressure 210 bar (3050 PSI)

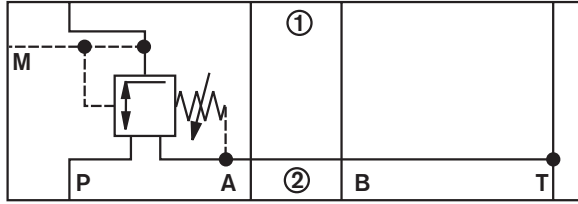
Standard types

Type	Material No.
ZDR 6 DA2-4X/25Y	R900410808
ZDR 6 DA2-4X/75Y	R900410813
ZDR 6 DA2-4X/150Y	R900410849
ZDR 6 DA2-4X/210Y	R900410855
ZDR 6 DB2-4X/25YM	R900449839
ZDR 6 DB2-4X/75YM	R900431771
ZDR 6 DB2-4X/150YM	R900431172
ZDR 6 DB2-4X/210YM	R900463269

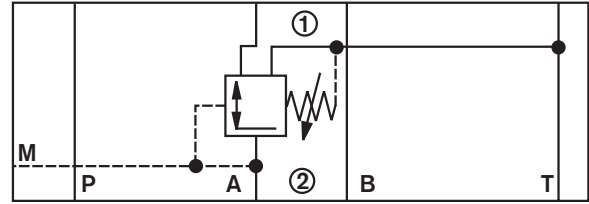
Type	Material No.
ZDR 6 DP2-4X/25YM	R900483785
ZDR 6 DP2-4X/75YM	R900483786
ZDR 6 DP2-4X/150YM	R900483787
ZDR 6 DP2-4X/210YM	R900483788

Ordering details, symbol ((1) = component side, (2) = subplate side)

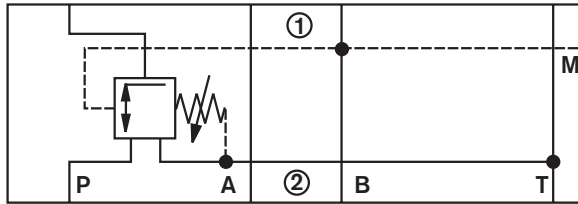
Type ZDR 6 DP..-4X/...YM...



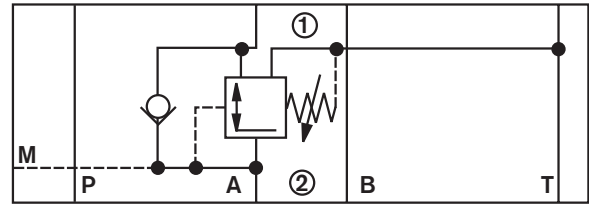
Type ZDR 6 DA..-4X/...YM...



Type ZDR 6 DB..-4X/...YM...



Type ZDR 6 DA..-4X/...Y...



Functional description, cross-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 a system pressure. The pressure reducing valve basically consists of the housing (1), the control spool (2), a compression spring (3) and the adjustment element (4) as well as with an optional check valve.

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

Version "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 then 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) moves still further towards the compression spring (3).

This causes a flow path to be opened at port A2 over the 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 port (8) permits 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".

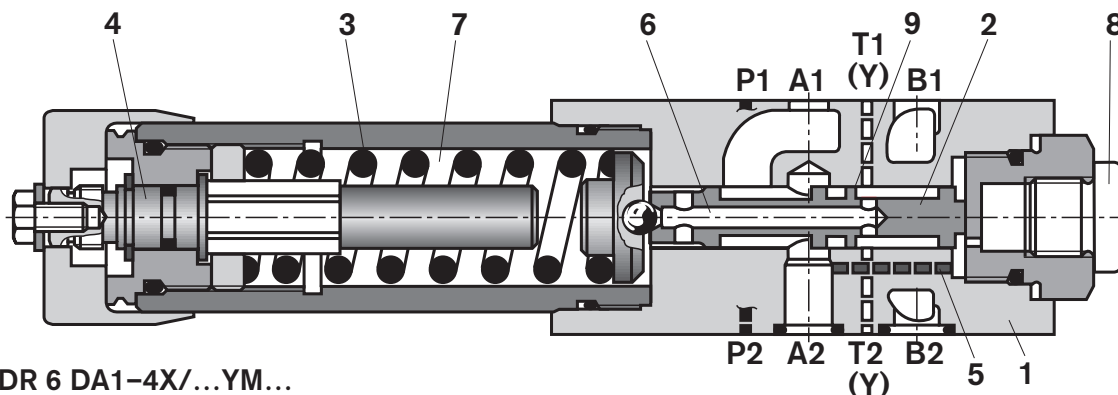
Versions "DP" and "DB"

In version DP, the pressure is reduced in port P1. The control pressure and the pilot oil is taken internally from port P1.

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

⚠ Attention!

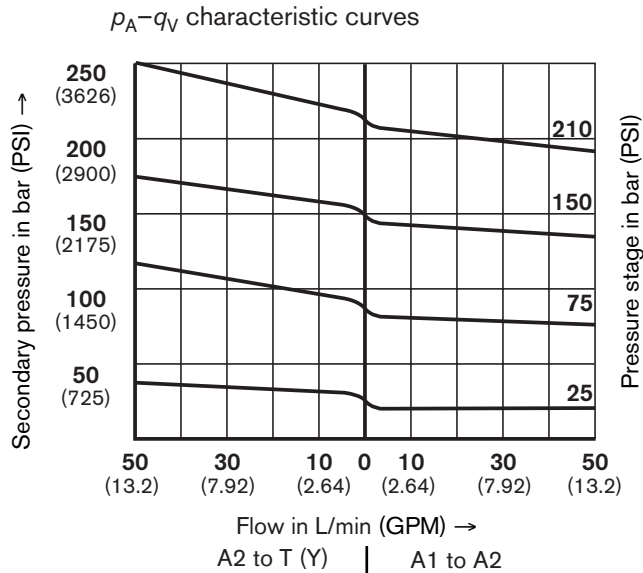
In version DB, it must be ensured that the pressure in port B is not higher than the set pressure when the directional valve is in position P to A, otherwise pressure in port A will be reduced.



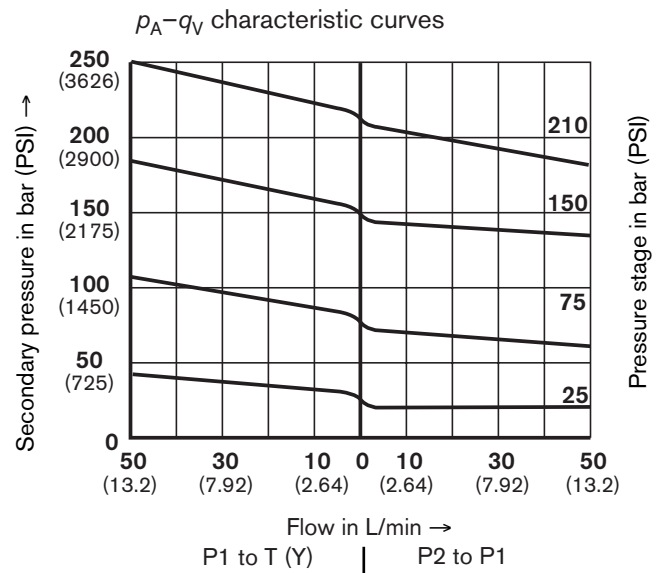
Type ZDR 6 DA1-4X/...YM...

Characteristic curves – measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$

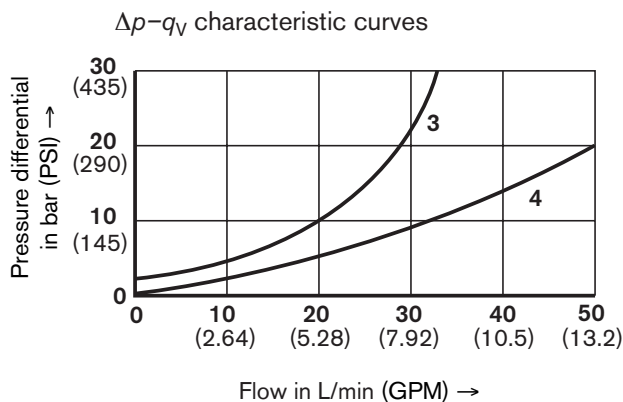
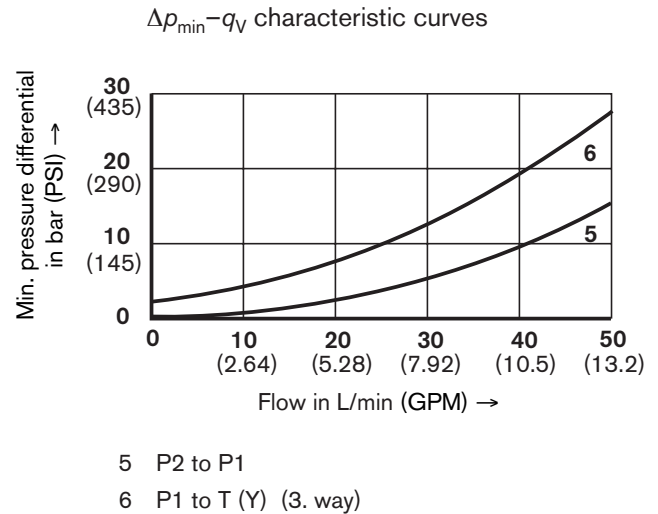
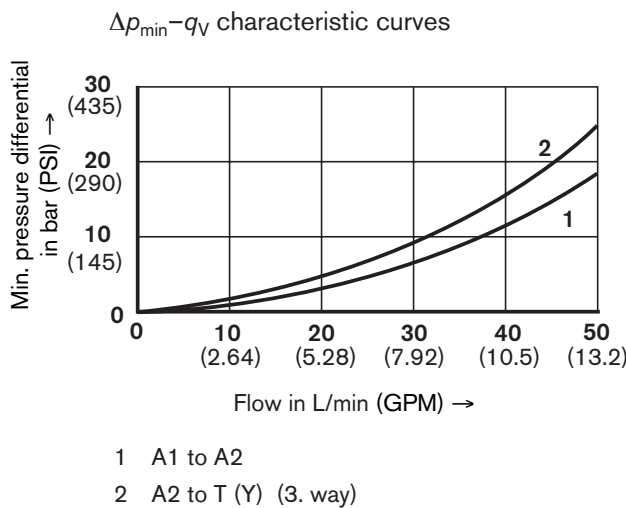
Type ZDR 6 DA



Type ZDR 6 DP und ZDR 6 DB



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



- 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!

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

Installation	Optional
Ambient temperature range	°C (°F)
	– 30 to + 80 (–22 to 176) (NBR seals)
	– 20 to + 80 (–4 to 176) (FKM seals)
Weight	kg (lbs)
	Approx. 1.2 (2.6)

Hydraulic

Pressure fluid	Mineral oil (HL, HLP) to DIN 51 524 ¹⁾ ; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil) ¹⁾ ; HEPG (polyglycols) ²⁾ ; HEES (synthetic ester) ²⁾ ; Other pressure fluids on request
Pressure fluid temperature range	°C (°F)
	–30 ... +80 (–22 to 176) (NBR seals)
	–20 ... +80 (–4 to 176) (FKM seals)
Viscosity range	mm ² /s (SUS)
	10 ... 800 (60 to 3710)
Cleanliness class to ISO code	Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (C) class 20/18/15 ³⁾
Maximum operating pressure (inlet)	bar (PSI)
	315 (4600)
Secondary pressure (output)	bar (PSI)
	25; 75; 150; 210 (365; 1090; 2175; 3050)
Back pressure port T(Y)	bar (PSI)
	160 (2320)
Maximum flow	L/min (GPM)
	50 (13.2)

¹⁾ Suitable for NBR **and** FKM seals

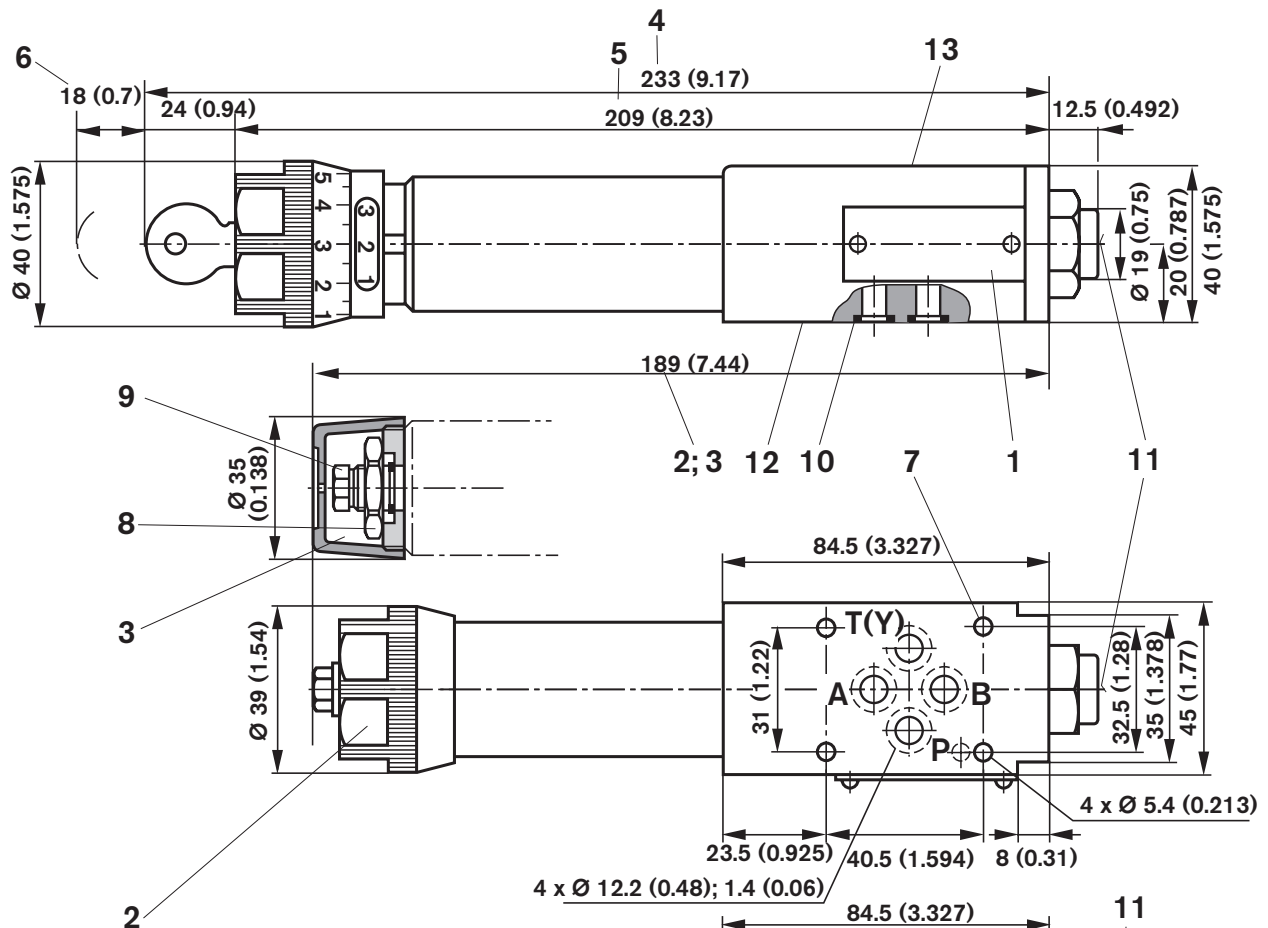
²⁾ **Only** suitable for FKM seals

³⁾ The cleanliness class stated for the components must be adhered too in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increase the component service life.

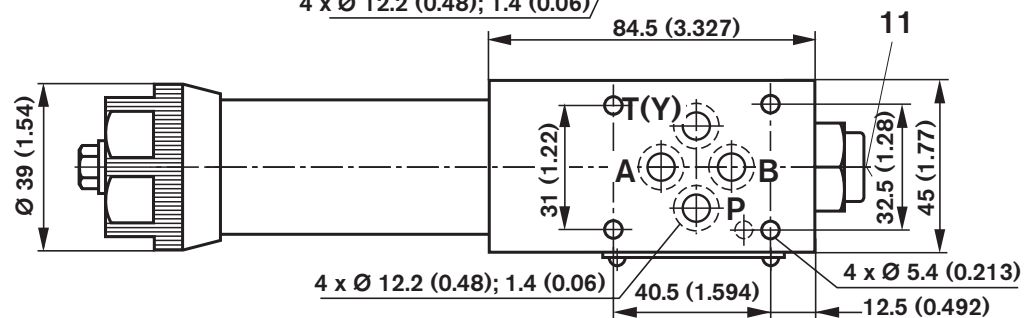
For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

Unit dimensions – dimensions in millimeters (inches)

Types ZDR 6 DP and ZDR 6 DB



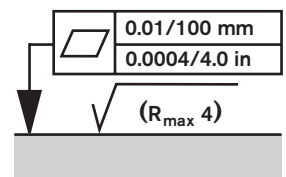
Type ZDR 6 DA



Valve fixing screws

M5 (10-24 UNC) DIN 912-10.9,
Tightening torque $M_A = 8.9 \text{ Nm}$ (6.56 lb-ft.),
must be ordered separately

- | | |
|--|---|
| 1 Name plate | 11 Pressure gauge port G 1/4; 12 (SAE-4; 7/16-20; 0.47) deep, internal hexagon 6A/F |
| 2 Adjustment element "1" | 12 Porting pattern to ISO 4401 and CETOP-RP 121 H, with locating pin hole, Ø3 x 5 mm (0.118 x 0.196 in) deep for locating pin Ø3 x 8 mm DIN EN ISO 8752, Material No. R900005694 (separate order) |
| 3 Adjustment element "2" | 13 Porting pattern to ISO 4401 and CETOP-RP 121 H, with locating pin hole, Ø4 x 4 mm (0.157 x 0.157) deep |
| 4 Adjustment element "3" | |
| 5 Adjustment element "7" | |
| 6 Space required to remove the key | |
| 7 Valve fixing holes | |
| 8 Lock nut 24A/F | |
| 9 Hexagon 10A/F | |
| 10 Identical seal rings for ports A2, B2, P2, T2 (Y) | |



Required surface finish
of the mating piece

Notes

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