

Pressure reducing valve, pilot operated

RA 26861/02.03
Replaces: 06.98

1/6

Model ZDR 10 V

Nominal size 10
Series 3X
Maximum operating pressure 315 bar (4600 PSI)
Maximum flow 100 L/min (26.5 GPM)

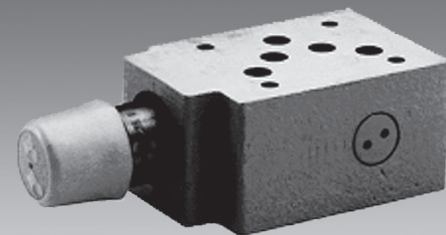


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2	– Four adjustment elements:
2	• Rotary knob
2	• Sleeve with hexagon and protective cap
3	• Lockable rotary knob with scale
3	• Rotary knob with scale
4	– Check valve, optional (VA, VB)
	– Pressure gauge connection, optional

Features

Ordering details

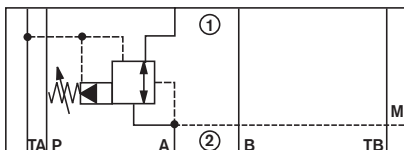
	Z	DR	10	V		- 3X /	Y			*
Sandwich plate valve	= Z									Further details in clear text
Pressure reducing valve	= DR									Gauge port connection
Nominal size 10		= 10								No code = BSP thread
Pilot operated			= V							12 = SAE thread
Reduced pressure in port A2				= A						No code = NBR seals
Reduced pressure in port B2				= B						V = FKM seals
Reduced pressure in port P1				= P						(other seals on request)
Adjustment elements										⚠ Attention!
Rotary knob				= 4						The compatibility of the seals and pressure fluid has to be taken into account!
Sleeve with hexagon and protective cap				= 5						No code = With check valve
Lockable rotary knob with scale				= 6 ¹⁾						(not possible for version VP)
Rotary knob with scale				= 7						M = Without check valve
Series 30 to 39					= 3X					Y = Internal pilot oil supply, external pilot oil drain
(30 to 39: changed installation and connection dimensions)										50 = Secondary pressure up to 50 bar (725 PSI)
¹⁾ H-key with Material No. R900008158 is included within the scope of supply										100 = Secondary pressure up to 100 bar (1450 PSI)
										200 = Secondary pressure up to 200 bar (2900 PSI)
										315 = Secondary pressure up to 315 bar (4600 PSI)

Standard types

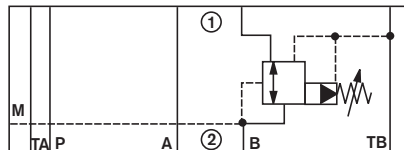
Type	Material No.
ZDR 10 VA5-3X/50Y	R900434583
ZDR 10 VA5-3X/100Y	R900436537
ZDR 10 VA5-3X/200Y	R900444003
ZDR 10 VB5-3X/100Y	R900457022
ZDR 10 VB5-3X/200Y	R900462912
ZDR 10 VP5-3X/100YM	R900411309
ZDR 10 VP5-3X/200YM	R900411311
ZDR 10 VP5-3X/315YM	R900438840

Ordering details, symbol (① = valve side, ② = plate side)

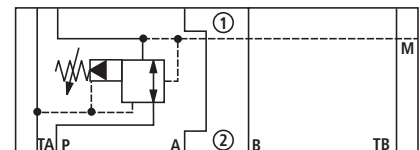
Type ZDR 10 VA...-3X/...YM...



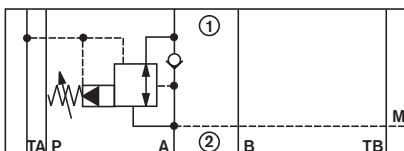
Type ZDR 10 VB...-3X/...YM...



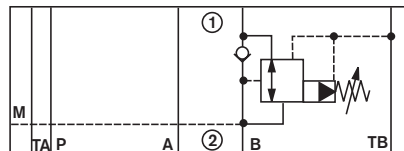
Type ZDR 10 VP...-3X/...YM...



Type ZDR 10 VA...-3X/...Y...



Type ZDR 10 VB...-3X/...Y...



Functional description, cross-section

Pressure valves type ZDR 10 V are pilot operated pressure valves of sandwich plate design.

They are used to reduce a system pressure.

The valves consist of the cartridge (1) and a housing (2). The reduced pressure is set via the adjustment element (4).

Version "VP"

At rest, the valve is normally open, and fluid can flow unhindered from port P2 to port P1. Pressure in port P1 is simultaneously also present at the main spool (6), via orifice (5), and on the spring loaded inner side of the main spool (6). The pressure is also present via orifice (9) on the pilot poppet (8).

When the pressure in port P2 exceeds the pressure level set at the spring (7), then the pilot poppet (8) opens. Pressure fluid then flows from the spring loaded inner side of the main

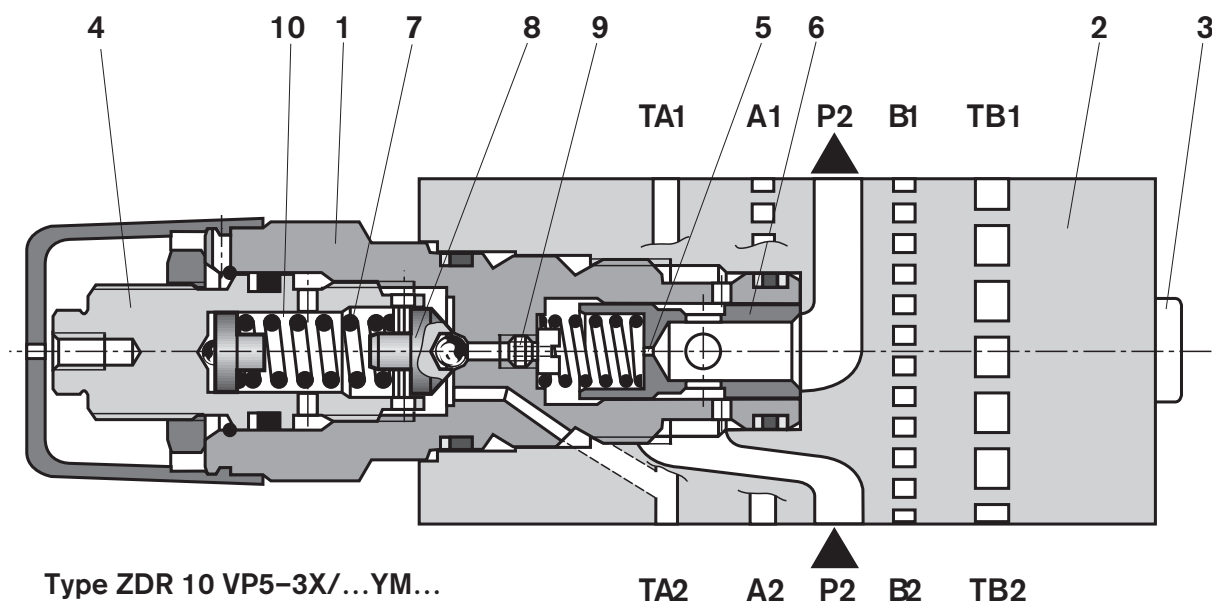
spool (6) via orifice (9), and the pilot poppet (8) into the spring chamber (10) to tank. The main spool (6) moves into the control position and holds the pressure set at spring (7) in port P1 constant. Pilot oil drain from spring chamber (10) is via port TA.

Versions "VA" and "VB"

For versions VA and VB, the pressure is reduced in ports A2 or B2.

In order to allow free reverse flow from port A2 to A1, or B2 to B1 an optional check valve may be included (this is not possible for version VP).

An optional pressure gauge connection (3) allow the secondary pressure to be monitored.

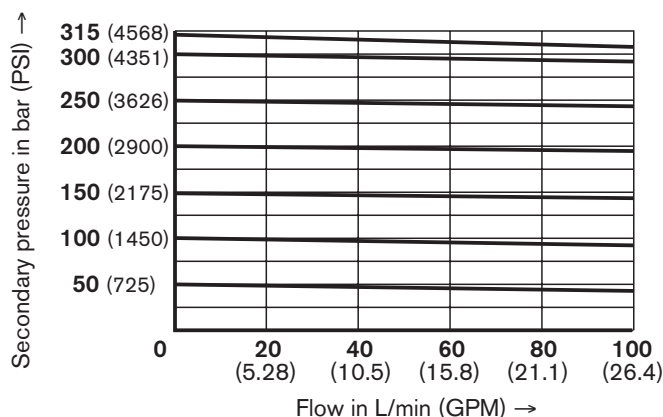
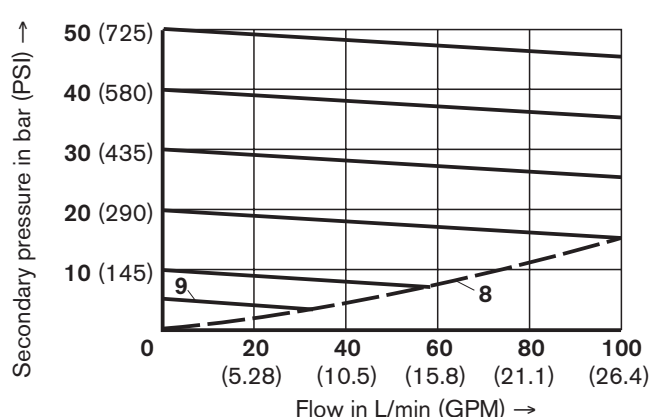
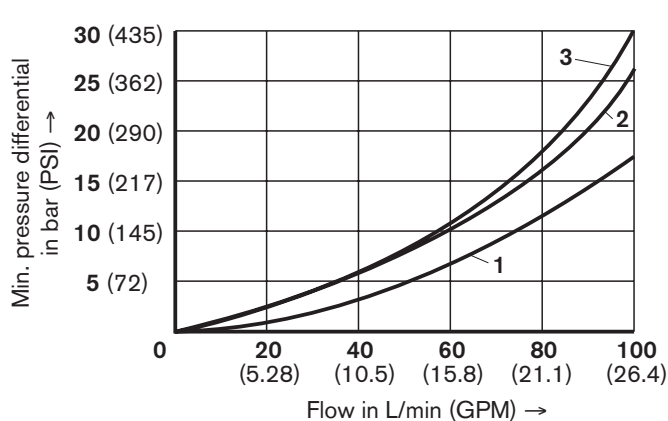
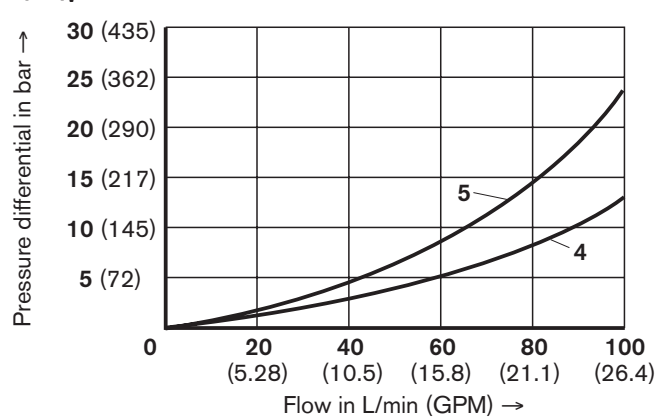
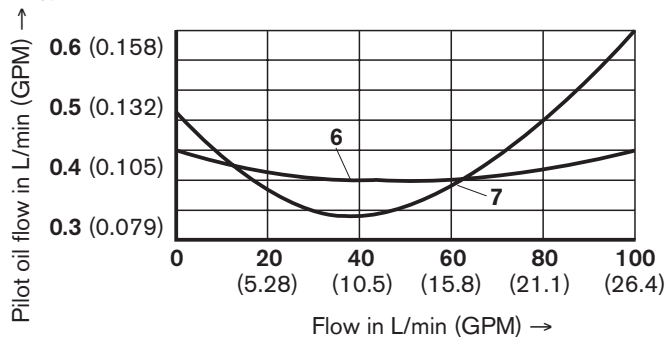


Technical data (for applications outside these parameters, please consult us!)

Settable pressure	bar (PSI)	Up to 50; up to 100; up to 200, up to 315 (725; 1450; 2900; 4600)
Inlet pressure (ports A1, B1 or P2)	bar (PSI)	Up to 315 (4600)
Secondary pressure (ports A2, B2 or P1)	bar (PSI)	Up to 315 (4600)
Back pressure (ports TA, TB)	bar (PSI)	Up to 160 (4600)
Flow, max.	L/min (GPM)	Up to 100 (26.4)
Pressure fluid		Mineral oil (HL, HLP) to DIN 51 524 ¹⁾ ; Fast bio-degradable pressure fluid is 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 to +80 (-22 to 176) (NBR seals) -20 to +80 (-4 to 176) (FKM seals)
Viscosity range	mm ² /s (SUS)	10 to 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⁾
Ambient and storage temperature range	°C (°F)	-30 to +80 (-22 to 176) (NBR seals) -20 to +80 (-4 to 176) (FKM seals)
Weight	kg (lbs)	Approx. 2.3 (5.1) (versions VA and VP); approx. 2.7 (6) (version VB)

¹⁾ Suitable for NBR and FKM seals ³⁾ The cleanliness class stated for the components must be adhered to in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life. For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

²⁾ Only suitable for FKM seals

Characteristic curves – measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$ (104 °F $\pm$ 41 °F)
 p_A - q_V -characteristic curves

 p_A - q_V -characteristic curves for ranges up to 50 bar (725 PSI)

 Δp_{min} - q_V -characteristic curves

 Δp - q_V -characteristic curves

 q_{Vst} - q_V -characteristic curves for Δp ($p_E - p_A$)


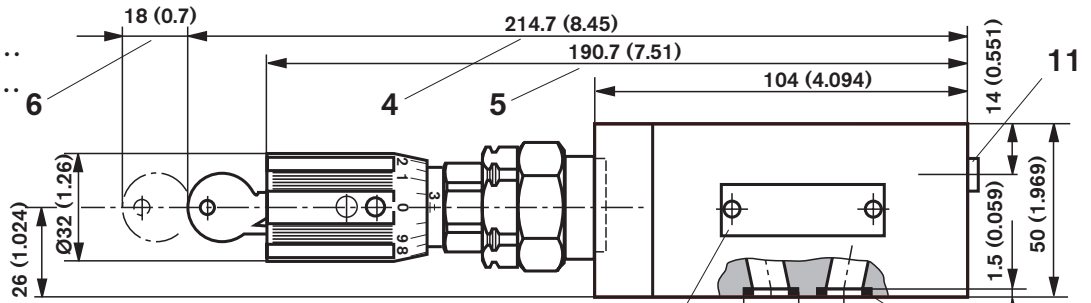
- 1 P2 to P1 (version VP)
- 2 A1 to A2 (version VA)
- 3 B1 to B2 (version VB)
- 4 A2 to A1 (version VA)
- 5 B2 to B1 (version VB)
- 6 $\Delta p = 50\text{ bar}$ (725 PSI)
- 7 $\Delta p = 250\text{ bar}$ (3626)
- 8 Actuator resistance is system dependent
- 9 Lowest settable secondary pressure p_A for all pressure stages

Unit dimensions – dimensions in mm (inches)

Types

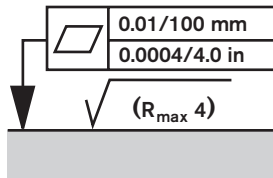
ZDR 10 VA...

ZDR 10 VP...

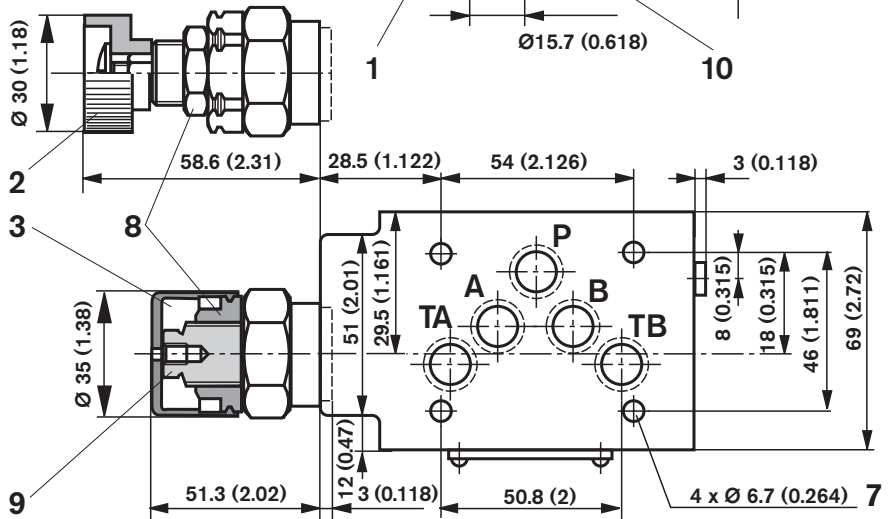


Note:

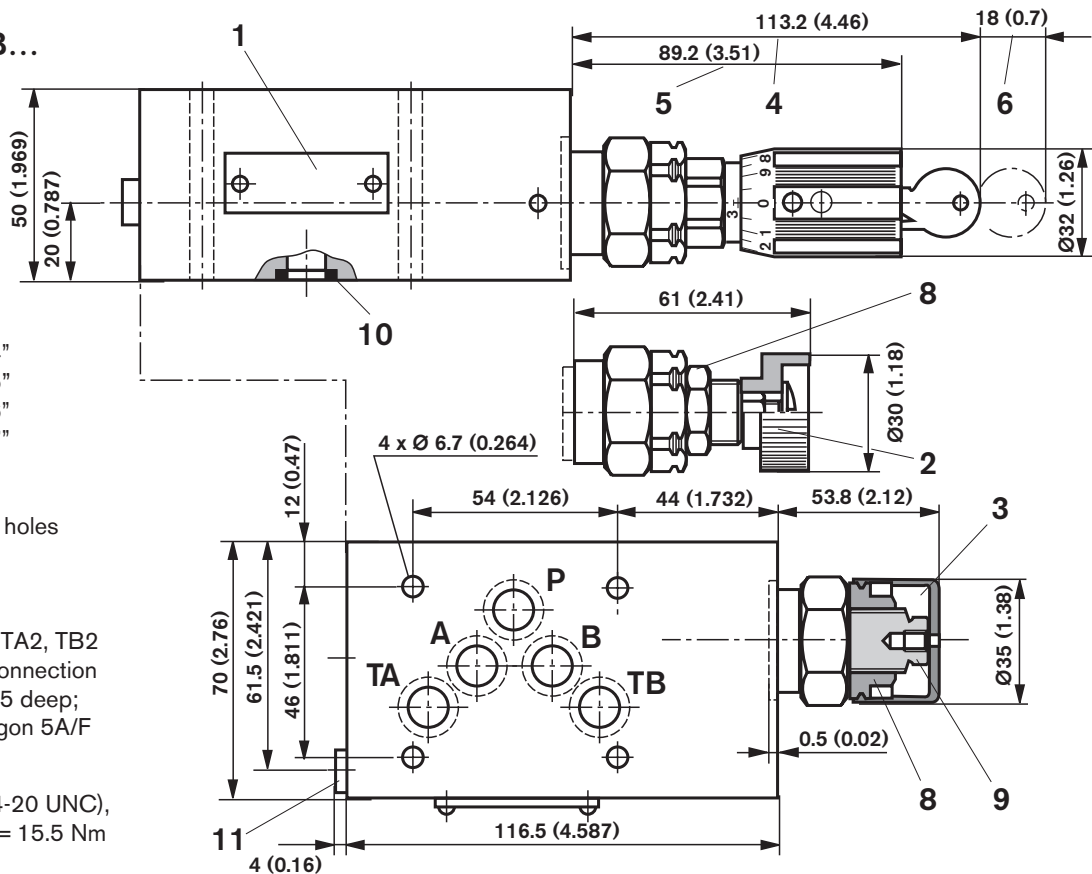
For X and Y ports as drillings (e.g. for pilot operated directional valve NS 10) use version **SO30!**



Required surface finish of the mating piece



Type ZDR 10 VB...



- 1 Name plate
- 2 Adjustm. element "4"
- 3 Adjustm. element "5"
- 4 Adjustm. element "6"
- 5 Adjustm. element "7"
- 6 Space required to remove the key
- 7 Valve fixing screw holes
- 8 Locknut 24A/F
- 9 Hexagon 10A/F
- 10 Identical seals for ports A2, B2, P2, TA2, TB2
- 11 Pressure gauge connection G 1/8 (SAE-2); 8.5 deep; Internal hexagon 5A/F

Valve fixing screws

M6 DIN 912-10.9 (1/4-20 UNC), Tightening torque $M_A = 15.5 \text{ Nm}$ (11.43 lb-ft), must be ordered separately.

Notes

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