



3.16

Pressure reducing valve direct operated

Type ZDR10D...L5X

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



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Features

- Sandwich plate structure
- Porting pattern to DIN 24 340, form A and ISO 4401
- 4 pressure ratings
- 2 adjustment elements:
 - Rotary knob
 - Adjustable bolt with protective cap
- Pressure reduction in ports A, B or P
- Check valve, optional

Function and configuration

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) 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".

Models "DP" and "DB"

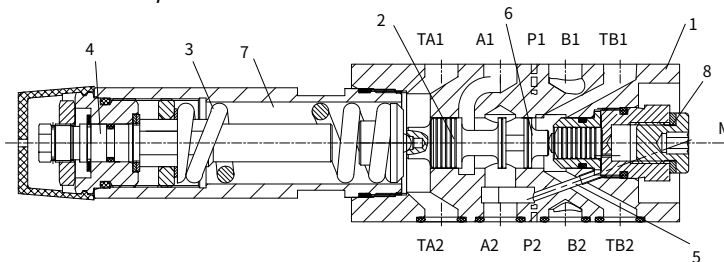
In model "DP", the pressure is reduced in port P1. The control pressure and the pilot oil is taken internally from port P1. In model "DB", the pressure in port P1 is reduced, and the pilot oil taken from port B.

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.

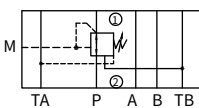
If used without a directional valve, TA and TB must be interconnected (e.g. in the cover plate).

Type ZDR10DA...-L5X/...YM...

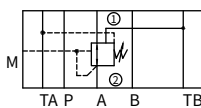


Symbols

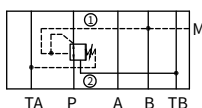
Type ZDR10DP-L5X/...YM



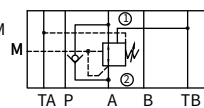
Type ZDR10DA-L5X/...YM



Type ZDR10DB-L5X/...YM



Type ZDR10DA-L5X/...Y



① = valve side ② = sub-plate side

Ordering code

	Z	DR	10	D			- L5X /	Y		*		Further details in clear text
Sandwich plate	= Z											No code = NBR seals V = FKM seals
Pressure reducing valve	= DR											No code = With check valve (not possible for pressure reduction in port P1) M = Without check valve
Nominal size 10	=10											Y= Pilot oil supply internal and drain external
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											
Rotary knob	=1											2.5 = Max. secondary pressure 25 bar
Adjustable bolt with protective cap	=2											7.5 = Max. secondary pressure 75 bar
Series L50 to L59	=L5X											15 = Max. secondary pressure 150 bar
												21 = Max. secondary pressure 210 bar

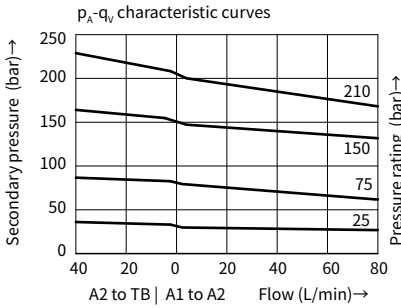
03

Technical data

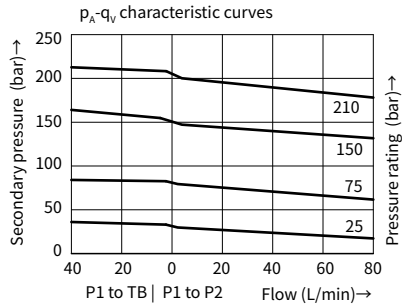
Fluid		Mineral oil suitable for NBR and FKM seal Phosphate ester for FKM seal
Fluid temperature range	°C	-30 to +80 (NBR seal) -20 to +80 (FKM seal)
Viscosity range	mm ² /s	10 to 800
Degree of contamination		Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406
Max. operating pressure (inlet)	bar	up to 315
Max. secondary pressure (output)	bar	up to 25; up to 75; up to 150; up to 210
Back pressure	bar	150
Max. flow-rate	L/min	80
Weight	Kg	Approx. 2.8

Characteristic curves (Measured at $\vartheta_{oil} = 40^{\circ}C \pm 5^{\circ}C$, using HLP46)

Type ZDR 10 DA...L5X/...



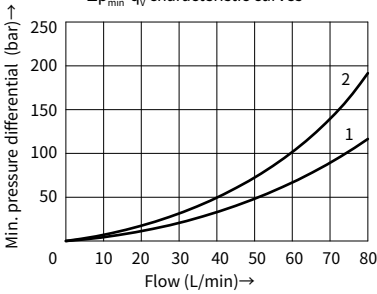
Type ZDR 10 DP...L5X/... and Type ZDR 10 DB...L5X/...



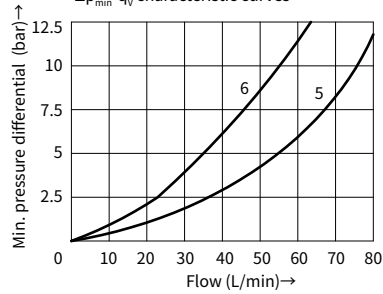
Note:

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

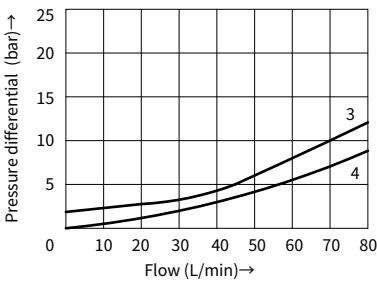
Δp_{min} - q_v characteristic curves



Δp_{min} - q_v characteristic curves



Δp - q_v characteristic curves

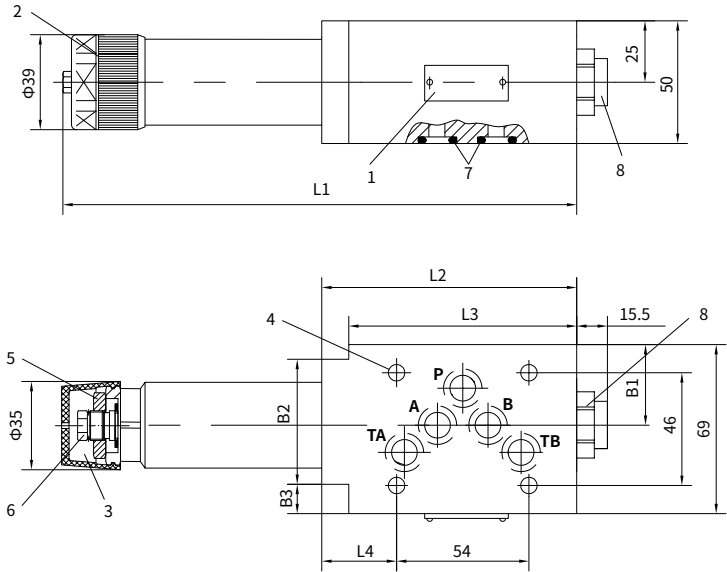


- 1 A1 to A2
- 2 A2 to TB (3rd. flow path)
- 3 A2 to A1 flow via check valve only
- 4 A2 to A1 flow via check valve and fully open control cross section
- 5 P2 to P1
- 6 P1 to TB (3rd. flow path)

The characteristic curves for the pressure relief function are valid for the outlet pressure = 0bar over the entire flow range!

Unit dimensions

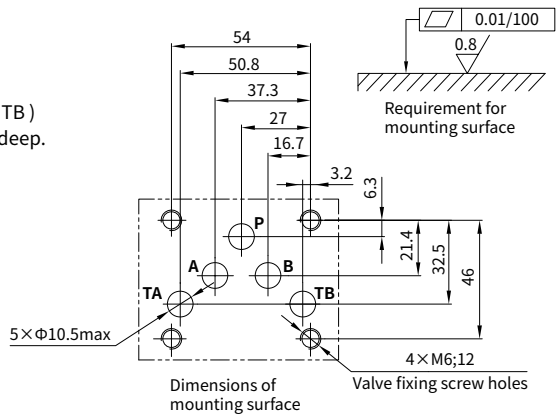
(Dimensions in mm)



- 1 Name plate
- 2 Adjustment element "1"
- 3 Adjustment element "2"
- 4 Valve mounting screw holes
- 5 Lock nut 24 A/F
- 6 Hexagon 10 A/F
- 7 O-rings 12×2 (Port A, B, P, TA, TB)
- 8 Pressure gauge port G 1/4; 12 deep.
internal hexagon 6 A/F

Valve mounting screws:

M6 internal hexagon bolt or
 LT 30.02 double-screw bolt
 with LT 30.03 nut
 GB/T 70.1-10.9, the length
 according to sandwich,
 tightening torque $M_A = 15.5 \text{ Nm}$
 must be ordered separately.



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	-	-

China

+86 400 101 8889

America

+01 630 995 3674

Germany

+49 172 3683463

Japan

+81 03 6809 1696



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