



3.15

# Pressure Reducing Valve Direct Operated

Type ZDR6D...L4X

Size 6  
Up to 210 bar  
Up to 50L/min



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## Features

- Sandwich plate design
- Mounting face meeting requirements for DIN24340 A and ISO4401
- 4 pressure ranges
- 2 adjustment forms
- Rotary Knob
- Adjusting screw with protective cover
- Connector with pressure gauge
- Selectable one-way valve

## Function and configuration

Pressure reducing valves type ZDR6D.. are 3-way direct operated, sandwich plate design with a pressure reducing 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), two compression springs (3) and the adjustment element (4) as well as with an optional check valve.

### Model DA:

At static state, the valve is normally open, and fluid can flow freely from port P2 to port P1 (version "DP") or from port A1 to port A2 (version "DA"). Pressure in port P1 acts at the spool area via control line (5) and is balanced with the setting value of the compression spring (3).

When the pressure in port P1 exceeds the setting value of the spring (3), the control spool (2) moves further towards the compression spring (3), the

opening aperture at port P is getting smaller until fluid at port P1 flows back to the tank through the orifice (6) of the control spool (2) to prevent any further rise in pressure. The leakage oil in spring chamber (7) is always drained to tank through port T (Y).

A check valve can be fitted optionally in version "DA" for free flow from ports A2 to ports A1.

A pressure gauge connection (8) permits the secondary pressure to be monitored.

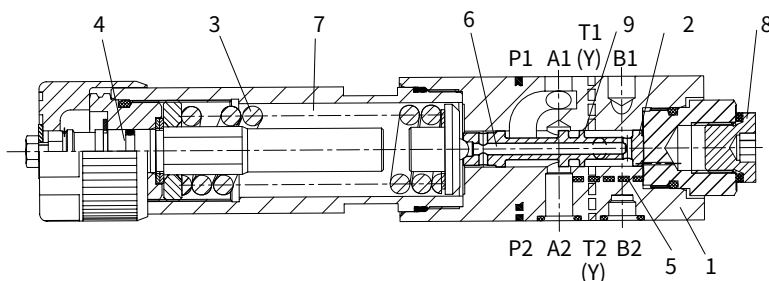
In model DA, one-way valve can only be mounted with the oil port from A2 to A1 to make the flow passage smooth.

### Model DP and DB:

In model DP, oil port P1 is pressure reduced; signal and control oil is provided from the inside of oil port P1.

In model DB, oil port P1 is pressure reduced; but control oil is from oil port B.

### Type: ZDR6DA1-L4X/...YM...



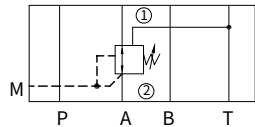
### Note:

1. In model DB, when directional valve is in position from P to A, please make sure the pressure of oil port B is no more than the set value, otherwise, the pressure of oil port A is reduced.

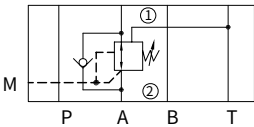
2. For internal leakage, superposition relief valve for in pair with superposition (hydraulic control) one-way valve shall be installed between the superposition (hydraulic control) one-way valve and the directional change valve.

Symbols

Type:ZDR6DA...L4X/..YM



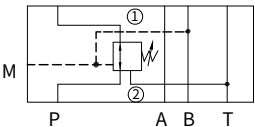
Type:ZDR6DA...L4X/..Y



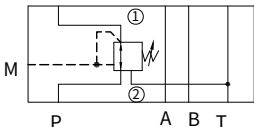
① =valve side;

② =bottom plate side

Type:ZDR6DB...L4X/..YM



Type:ZDR6DP...L4X/..YM



Ordering code

|                                                                |    |   |   |  |     |   |   |  |  |                                                                |
|----------------------------------------------------------------|----|---|---|--|-----|---|---|--|--|----------------------------------------------------------------|
| Z                                                              | DR | 6 | D |  | L4X | / | Y |  |  | ★                                                              |
| Superposition structure =Z                                     |    |   |   |  |     |   |   |  |  | Further details in clear text                                  |
| Relief valve = DR                                              |    |   |   |  |     |   |   |  |  | No code = NBR seals                                            |
| Diameter 6 = 6                                                 |    |   |   |  |     |   |   |  |  | V = FKM seals                                                  |
| Direct-acting type = D                                         |    |   |   |  |     |   |   |  |  | Pressure tapping thread                                        |
| Oil port A2 pressure relieved = A                              |    |   |   |  |     |   |   |  |  | No code = Inch G1/4                                            |
| Oil port B2 pressure relieved = B                              |    |   |   |  |     |   |   |  |  | 2 = Metric M14×1.5                                             |
| Oil port P1 pressure relieved = P                              |    |   |   |  |     |   |   |  |  | No mark = With one-way valve (just for model DA)               |
| Knob =1                                                        |    |   |   |  |     |   |   |  |  | M = Without one-way valve                                      |
| Adjusting bolt with protective cover =2                        |    |   |   |  |     |   |   |  |  | Y= Control oil supplied from inside and drained to the outside |
| Series L40 to L49 =L4X                                         |    |   |   |  |     |   |   |  |  | 2.5= Max. secondary pressure 25bar                             |
| (L40 to L49: unchanged installation and connection dimensions) |    |   |   |  |     |   |   |  |  | 7.5= Max. secondary pressure 75bar                             |
|                                                                |    |   |   |  |     |   |   |  |  | 15= Max. secondary pressure 150bar                             |
|                                                                |    |   |   |  |     |   |   |  |  | 21= Max. secondary pressure 210bar                             |

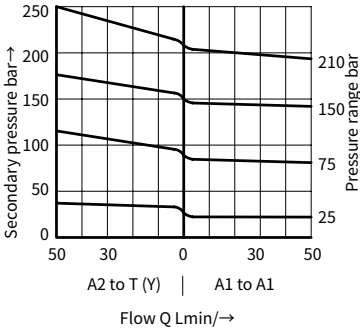
Technical data

|                                    |       |                                                                                           |
|------------------------------------|-------|-------------------------------------------------------------------------------------------|
| 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 <sup>2</sup> /s |       | 10 to 800                                                                                 |
| Degree of contamination            |       | Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406 |
| Max secondary pressure (inlet)     | bar   | 315                                                                                       |
| Max secondary pressure (outlet)    | bar   | 25; 75; 150; 210                                                                          |
| Backpressure oil port T (Y)        | bar   | 160                                                                                       |
| Max flow                           | L/min | 50                                                                                        |
| Weight                             | kg    | About 1.2                                                                                 |

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

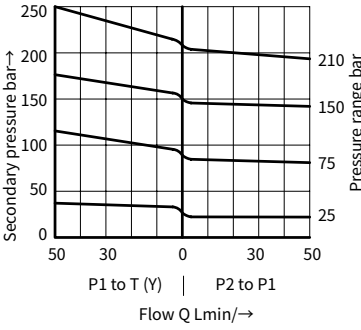
**Type ZDR6DA**

**$p_A$ - $q_v$  Characteristic curves**

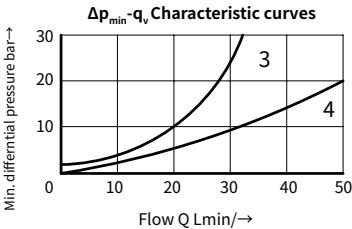
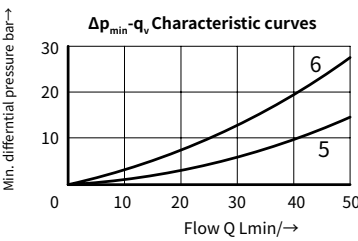
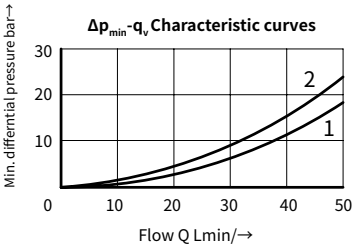


**Type ZDR6DP and ZDR6DB**

**$p_A$ - $q_v$  Characteristic curves**



**Note:** if the set pressure is low, the performance curve is within the corresponding pressure level range.



- 1 A1 to A2
- 2 A2 to T(Y) (the third flow route)
- 3 Flow from A2 to A1 just goes through one-way valve.
- 4 Flow from A2 to A1 just goes through one-way valve and fully-open main valve.
- 5 P2 to P1
- 6 P1 to T(Y) (the third flow route)

This work curve is effective to the relief function in case of outlet pressure = 0 within the overall range.



|                                   |                                    |
|-----------------------------------|------------------------------------|
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