ZDR10...type Modular Reducing Valve

ZDR10D...5XJ...type

Size 10
Max. Working Pressure: 210 bar
Max. Flow: 80 L/min

Contents

Features

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

Function and configuration

ZDR10 type valve is a direct operated pressure reducing valve in sandwich plate design with a pressure limitation of the secondary circuit. It is used to reduce the system pressure. The valve consists of the valve housing (1), the control spool (2), a compression spring (3), the adjustment (4) and the 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".
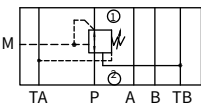
Models "DP" and "DB"

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.
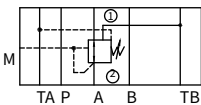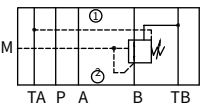
Type ZDR10DA...-5XJ/...YM...
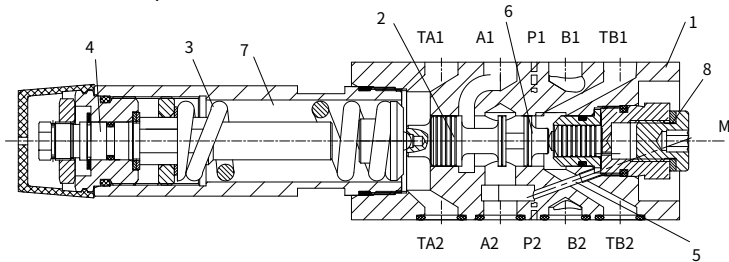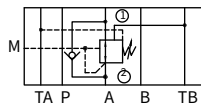

Symbols

Type ZDR10DP-5XJ/...YM   Type ZDR10DA-5XJ/...YM   Type ZDR10DB-5XJ/...YM   Type ZDR10DA-5XJ/...Y

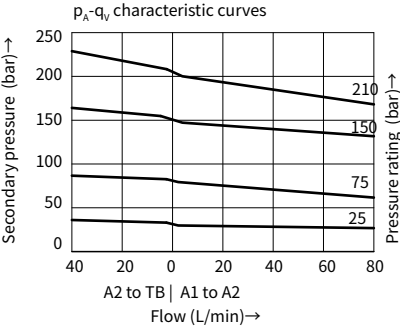① =valve side   ② = sub-plate side

2

Specification

| Z | DR | 10 | D | | — 5XJ | / | Y | | ★ |

Z — Sandwich plate = Z
DR — Pressure reducing valve = DR
10 — Size 10 = 10
D — Direct operated = D

Pressure reduction in port A2 = A
Pressure reduction in port P1 = B
(Pilot oil from port B)
Pressure reduction in port P1 = P

Rotary knob = 1
Adjustable bolt with protective cap = 2
Lockable rotary knob = 3
Rotary knob with scale = 7

Series 50J to 59J = 5XJ

Further details in clear text

No code = NBR seals
V = FKM seals

No code = With check valve
(not possible for pressure reduction in port P1)
M = Without check valve

Y = Pilot oil supply internal and drain external

25 = Max. secondary pressure 25 bar
75 = Max. secondary pressure 75 bar
150 = Max. secondary pressure 150 bar
210 = Max. secondary pressure 210 bar
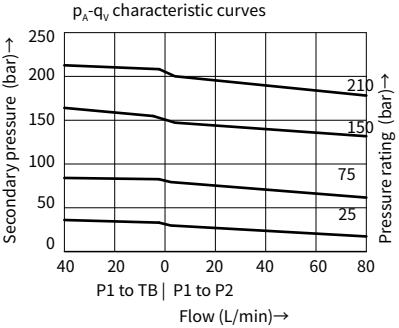
Technical data

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 t=40°C ±5°C , using HLP46)

Type ZDR 10 DA..–5XJ/...

p_A-q_V characteristic curves

Secondary pressure (bar)→ | Pressure rating (bar)→

210
150
75
25

40 20 0 20 40 60 80

A2 to TB │ A1 to A2

Flow (L/min)→

**Type ZDR 10 DP..–5XJ/... and
Type ZDR 10 DB..–5XJ/...**

p_A-q_V characteristic curves

Secondary pressure (bar)→ | Pressure rating (bar)→

210
150
75
25

40 20 0 20 40 60 80

P1 to TB │ P1 to P2

Flow (L/min)→

Δp_{min}-q_V characteristic curves

Min. pressure differential (bar)→

2
1

0 10 20 30 40 50 60 70 80

Flow (L/min)→

Δp_{min}-q_V characteristic curves

Min. pressure differential (bar)→

6
5

0 10 20 30 40 50 60 70 80

Flow (L/min)→
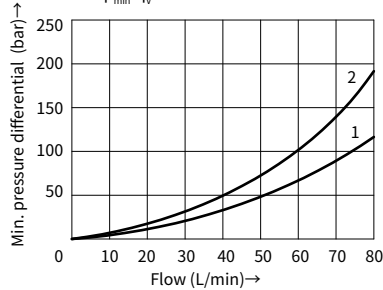
Δp-q_V characteristic curves

Pressure differential (bar)→

3
4

0 10 20 30 40 50 60 70 80

Flow (L/min)→
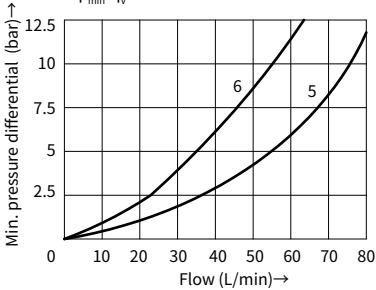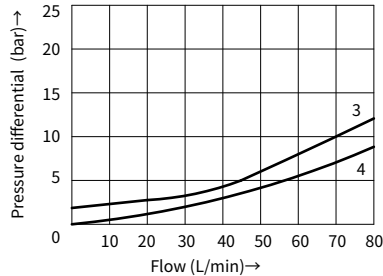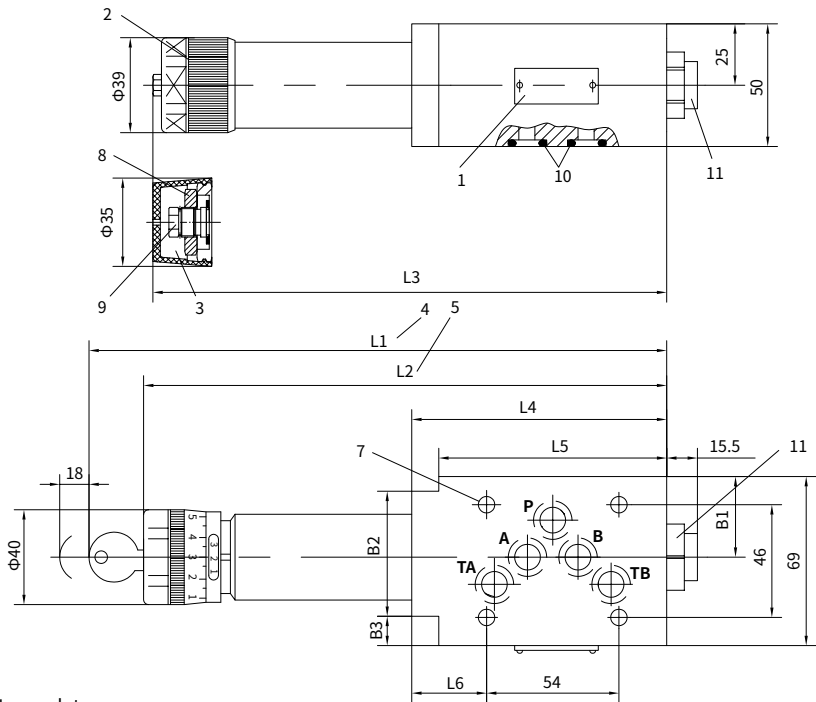
1 A1 to A2
2 A2 to TB (3rd. flow path)
3 A2 to A1 flow via check valve only
4 A2 to A1 flow via check valveand fully
 open controlcross section
5 P2 to P1
6 P1 to TB (3rd. flow path)
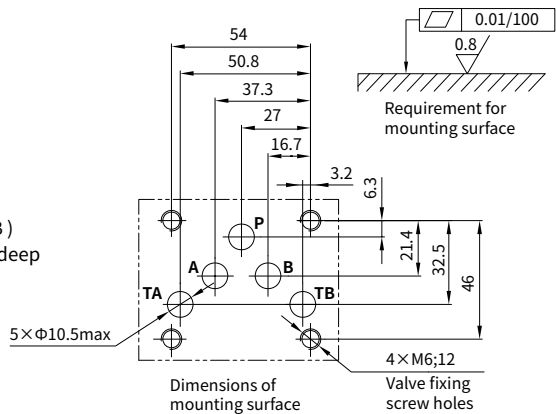
The characteristic curves for the pressure relief function are valid for the outlet pressure = zero over the entireflow range!

Unit dimensions

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 mounting screw holes
8 Lock nut 24 A/F
9 Hexagon 10 A/F
10 O-rings 12×2 (Port A,B,P,TA,TB)
11 Pressure gauge port G 1/4; 12 deep
    internal hexagon 6 A/F

Requirement for
mounting surface

Dimensions of
mounting surface

5×Φ10.5max

4×M6;12
Valve fixing
screw holes

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	-	-