Pressure reducing valve, direct operated, Type ZDR 6 D

Nominal size 6
Series 4X
Maximum operating pressure 210 bar
Maximum flow 50 L/min

Type ZDR 6 DP2–4X/…YM…

Overview of contents

Features

- Sandwich plate design
- Porting pattern to DIN 24 340 Form A, **without** locating pin hole (standard)
- Porting pattern to ISO 4401 and CETOP–RP 121 H, **with** locating pin hole, (ordering code .../**60** at the end of the valve type code)
- 4 pressure stages
- 4 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				*

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)

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

Y = Internal pilot oil supply, external leakage oil drain

M = Without check valve

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

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 = Without locating pin hole
/60 [2)] = With locating pin hole

Further details in clear text

Preferred types (readily available)

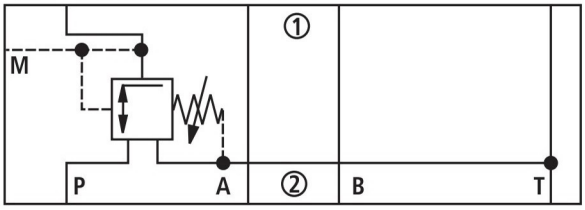
Type	
ZDR 6 DA2-4X/25Y	
ZDR 6 DA2-4X/75Y	
ZDR 6 DA2-4X/150Y	
ZDR 6 DA2-4X/210Y	
ZDR 6 DB2-4X/25YM	
ZDR 6 DB2-4X/75YM	
ZDR 6 DB2-4X/150YM	
ZDR 6 DB2-4X/210YM	

Type	Material number
ZDR 6 DP2-4X/25YM	
ZDR 6 DP2-4X/75YM	
ZDR 6 DP2-4X/150YM	
ZDR 6 DP2-4X/210YM	

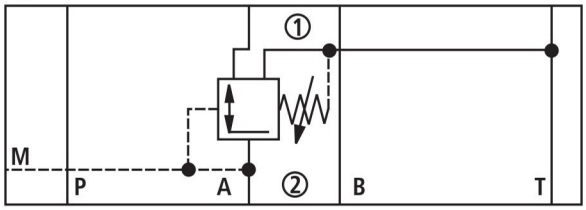
Further preferred types and standard units can be found in the EPS (Standard Price List).

Symbols (① = component side, ② = subplate side)

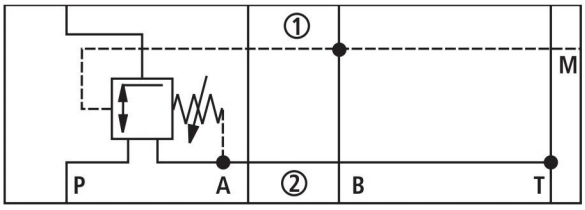
Type ZDR 6 DP..–4X/…YM…



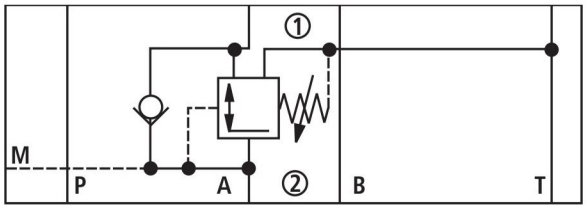
Type ZDR 6 DA..–4X/…YM…



Type ZDR 6 DB..–4X/…YM…



Type ZDR 6 DA..–4X/…Y…



Function, 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).

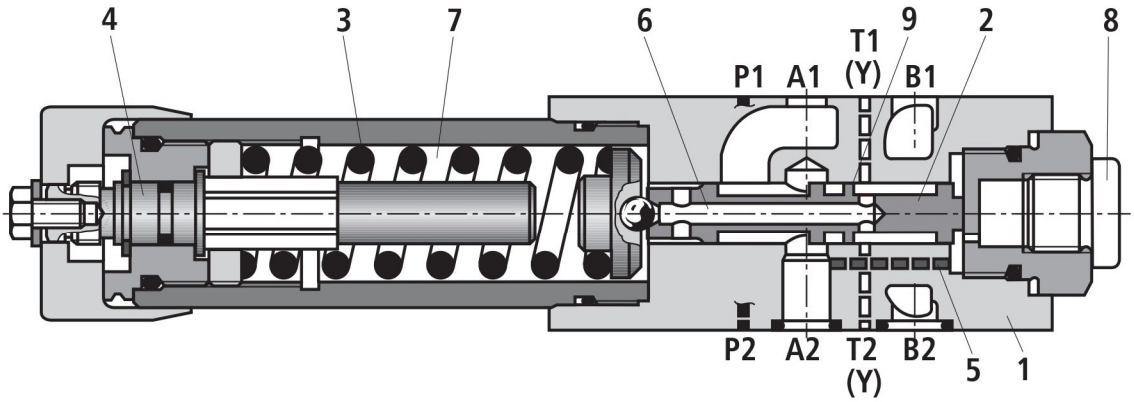
Version "DA"

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.

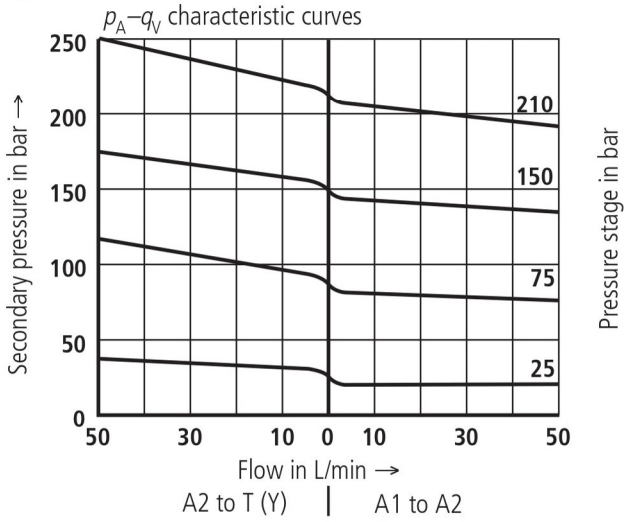
⚠ Attention!
In version DB, it must be ensured that the pressure in port B is not higher than the set pressure when the directional valve is in position P to A, otherwise pressure in port A will be reduced.



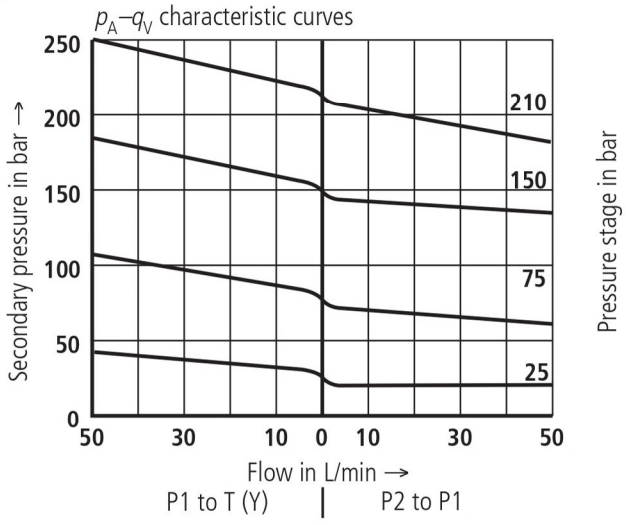
Type ZDR 6 DA1–4X/…YM…

Characteristic curves (measured with HLP46, ϑ_{oil} = 40 °C ± 5 °C)

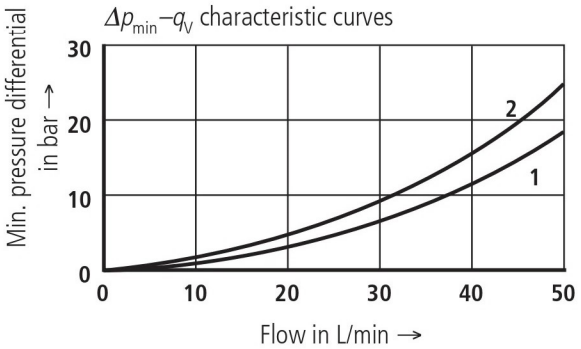
Type ZDR 6 DA



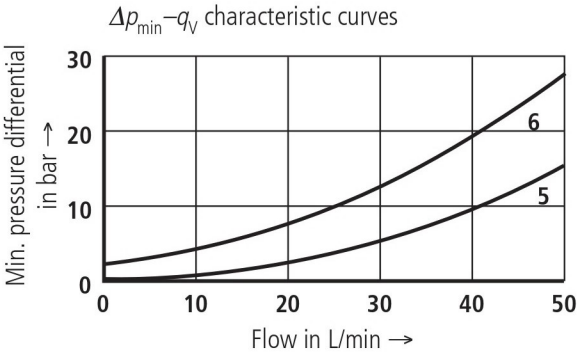
Typ ZDR 6 DP und ZDR 6 DB



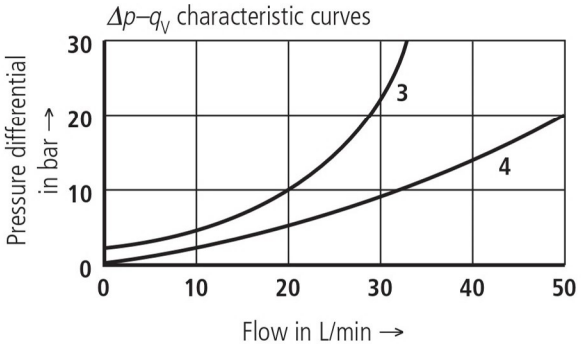
Note: The curve characteristics remain with, low set pressures, the same in relation to the pressure rating



1 A1 to A2
2 A2 to T (Y) (3. way)



5 P2 to P1
6 P1 to T (Y) (3. way)



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	– 30 to + 80 (NBR seals)
		– 20 to + 80 (FKM seals)
Weight	kg	Approx. 1.2

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	– 30 … + 80 (NBR seals)
		– 20 … + 80 (FKM seals)
Viscosity range	mm^2/s	10 … 800
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	315
Secondary pressure (output)	bar	25; 75; 150; 210
Back pressure port T(Y)	bar	160
Maximum flow	L/min	50

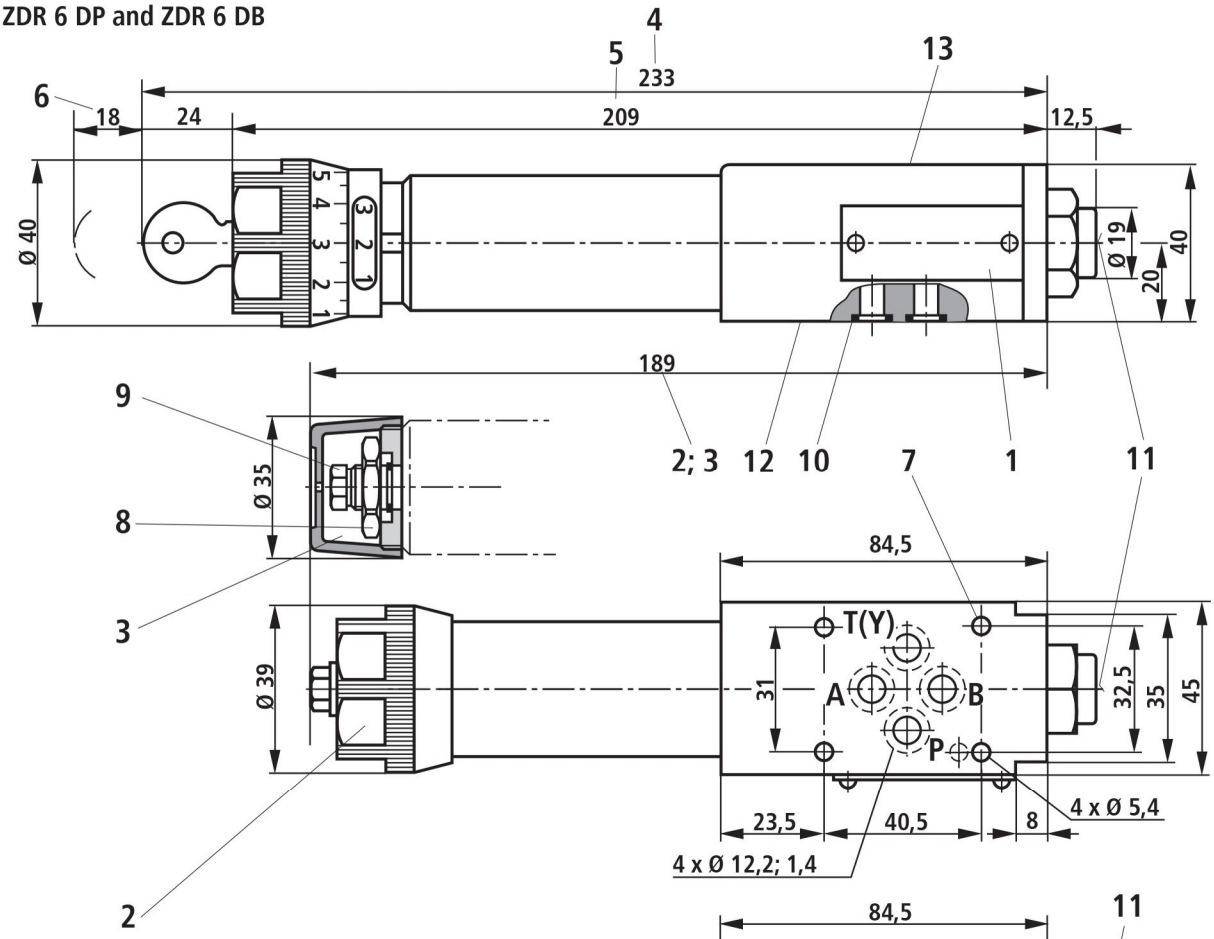
[1] Suitable for NBR **and** FKM seals

[2] **Only** suitable for FKM seals

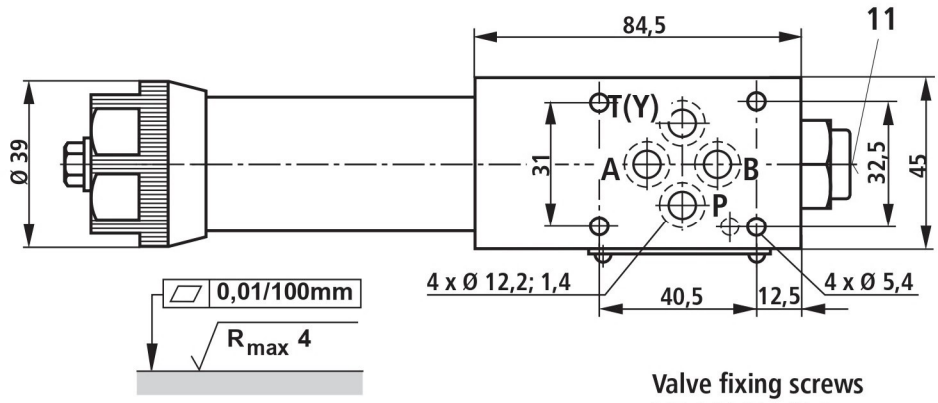
[3] The cleanliness class stated for the components must be adhered too in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increase the component service life.
For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

Unit dimensions (dimensions in mm)

Types ZDR 6 DP and ZDR 6 DB



Type ZDR 6 DA



Required surface finish of the mating piece

Valve fixing screws
M5 DIN 912-10.9,
Tightening torque M_A = 8.9 Nm,
must be ordered separately

1 Name plate
2 Adjustment element "1"
3 Adjustment element "2"
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)

11 Pressure gauge port G 1/4; 12 deep, internal hexagon 6A/F

12 Porting pattern to ISO 4401 and CETOP–RP 121 H, **with** locating pin hole, Ø3 x 5 mm deep for locating pin Ø3 x 8 mm DIN EN ISO 8752,

13 Porting pattern to ISO 4401 and CETOP–RP 121 H, **with** locating pin hole, Ø4 x 4 mm deep

Dexter	Pressure reducing valve, type ZDR6DP0...40B/40YM			RE 26700/12.2004
	Size 6	up to 4.0 MPa	up to 7L/min	

Features:

- Sandwich plate design

Functional description,section

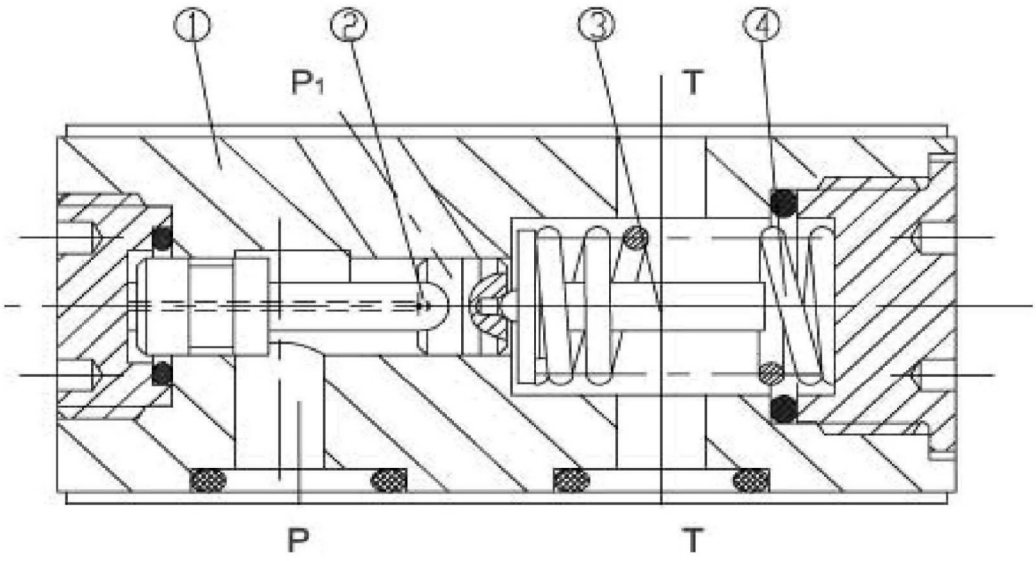
Pressure reducing valves type ZDR 6 DP0...40B/40YM are pressure reducing valves of sandwich plate design. It is used to reduce the system pressure.

The pressure reducing basically valve consists of the housing (1), the control spool (2), a compression spring seating (3) and a compression spring (4).

At rest, the valve is normally open, and fluid can flow unhindered from port P to port P1. The pressure in port P1 is at the same time present at the spool area opposite to the compression spring (4). When the pressure in port P1 exceeds the pressure level set at the compression spring (4) the control spool (2) moves into the control position against the compression spring (4) and holds the set pressure in port P1 constant.

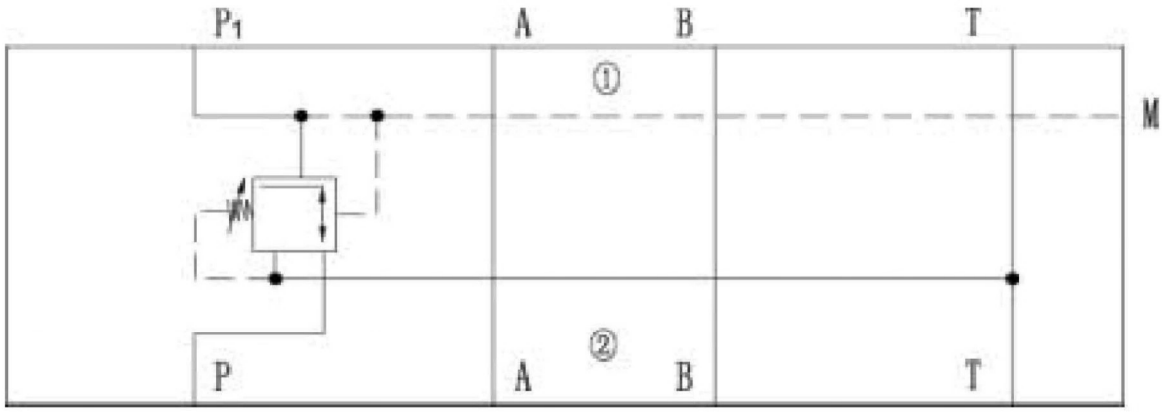
If the pressure in port P1 rises still further due to external forces, the control spool (2) is moved still further towards the compression spring (4).

Sufficient fluid then flows to tank to prevent any further rise in pressure. The spring chamber is always drained to tank externally via drilling to port T (Y).



Symbols (① =valve side, ② =subplate side)

ZDR6DPO...-40B/...YM...



Ordering details

Z	DR	6	D	P	O	-40	B/	40	Y	M		*

- Sandwich plate design = Z
- Pressure redcing valve = DR
- Nominal Size 6 = 6
- Direct operated = D
- Pressure reduction in port P1 = P
- Outlet pressure fixed = O
- Series 40 to 49 = 40
  (40 to 49 = unchanged installation and connection dimensions)
- 40 = max. secondary pressure 4 MPa
- Y = Pilot oil feed internal,drain external
- M = without check valve
- No code. = mineral oils
  V = phosphate ester
- Further details in clear text

Technical data (For applications outside these paramters,plese consult us!)

Pressure fluid		Mineral oil (for NBR seal)or phosphate ester(for FPM seal)
Pressure fluid - temperature range	(°C)	-30 to +80
Viscosity range	(mm^2/s)	10 to 800
Degree of fluid contamination		recommend a filter with a minimum retention rate of $\beta_{10} \geqslant 75$
Max. operating pressure Port P	(MPa)	up to 30
Secondary pressure(output)	(MPa)	up to 4
Back pressure Ports T (Y)	(MPa)	up to 16
Max. flow	(L/min)	up to 7

Unit dimensions **(Dimensions in mm)**