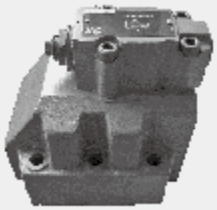
3.20

Pressure sequence valve pilot operated

Type DZ...L5X

Sizes 10 to 32
Up to 315bar
Up to 600 L/min



Contents

Features

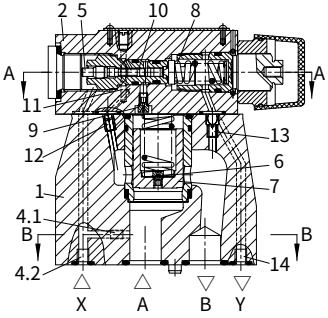
- Sub-plate mounting
- Conforms to DIN 24 340, form D, and ISO 5781
- Manifold plate mounting
- 4 pressure ratings
- 2 adjustment elements:
  • Rotary knob
  • Adjustable bolt with protective cap
- Check valve, optional

Function and configuration

Pressure valves type DZ are pilot operated pressure sequence valves. They are used for pressure dependent sequence switching of a secondary circuit.
The pressure sequence valves basically consist of main valve (1) with main spool insert (7), pilot valve (2) with pressure adjustment element and optional check valve (3).
The valve function is dependent on pilot oil drain configuration:

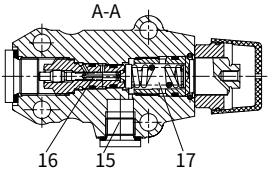
·Type DZ..-.-L5X/.....
(Control lines 4.1, 12 and 13 open;
control lines 4.2, 14 and 15 plugged)
The pressure in port A acts on the pilot spool (5) of the pilot valve (2) via the control line (4.1). At the same time it acts on the spring loaded side of the main spool (7) via orifice(6). When the pressure exceeds the setting value of spring (8), the pilot spool (5) is moved against the spring (8). The fluid on the spring loaded side of the main spool (7) flows to port B via orifice (9), control land (10) and control lines (11) and (12). There is now a pressure drop at main spool (7), the connection from port A to port B opens to maintain the pressure set by spring (8). The leakage oil at pilot spool (5) is led to port B internally via control line (13). An optional check valve (3) can be fitted for free flow from port B to A.

Version "..." "X" and "Y"



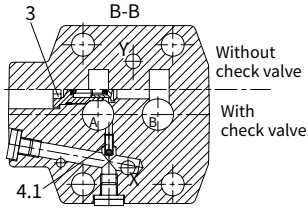
·Sequence valveType DZ..-.-L5X/...X..
(Control lines 4.2, 12 and 13 open;
control lines 4.1, 14 and 15 plugged)
The function of this valve is principally the same as valve DZ..-.-L5X/....However, on pressure sequence valve type DZ..-.-L5X/...X.. the signal is achieved externally by means of control line (4.2).

Version "...", "XY"



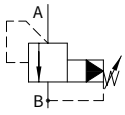
·Sequence valve Type DZ..-.-L5X/...Y..
(Control lines 4.1, 12 and 14 or 15 open;
control lines 4.2, and 13 plugged)
The function of this valve is principally the same as valve type DZ..-.-L5X/....However, for type DZ..-.-L5X/...Y.. leakage at pilot spool(5) must be drained to tank without pressure via line (14) or (15) . Pilot oil is fed to port B via line (12) .

·Bypass valve Type DZ..-.-L5X/...XY..
(Control lines 4.2 14 or 15 open;
control lines 4.1, 12 and 13 plugged)
Pressure in port X acts on the pilot spool (5) in the pilot valve (2) via control line (4.2). At the same time pressure in port A acts on the spring loaded side of the main spool (7) via orifice (6). When the pressure in port X exceeds the setting value of the spring (8), the pilot spool(5) is moved against the spring (8), fluid can flow from the spring loaded side of the main spool (7) into the spring chamber (17) of the pilot valve (2) via orifice (9) and line (16) and pressure decreases on the spring loaded side of the main spool (7).The fluid can, therefore, flow from port A to B with minimum pressure loss. The pilot oil in spring chamber (17) should be drained to tank without pressure via line (14) or (15). An optional check valve (3) can be fitted for free flow from port B to A.

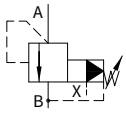


Symbols

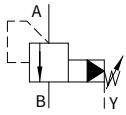
DZ...L5X/...M...
DZC...L5X/...M...



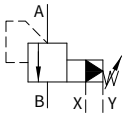
DZ...L5X/...XM...



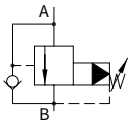
DZ...L5X/...YM...



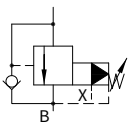
DZ...L5X/...XYM...
DZC...L5X/...XYM...



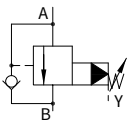
DZ...L5X/...



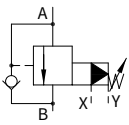
DZ...L5X/....X...



DZ...L5X/...Y...



DZ...L5X/...XY...



03

Ordering code

DZ | | – | – L5X / | | | | *

Pressure sequence valve,
pilot operated =No code
Pilot operated valve Without main spool
assembly(No mark for size) = C
Pilot operated valve With main spool
assembly(Marked with size 30) = C

Nominal size 10 =10
Nominal size 25 =20
Nominal size 32 =30

Rotary knob =1
Adjustable bolt with protective cap =2

Series L50 L59 =L5X
(L50 to L59 series: unchanged installation
and connection dimensions)

5 = Max. secondary pressure 50 bar
10 = Max. secondary pressure 100 bar
20 = Max. secondary pressure 200 bar
31.5 = Max. secondary pressure 315 bar

Pilot oil supply and drain :
No code= Pilot oil supply and drain internal
X= Pilot oil supply external and drain internal
Y= Pilot oil supply internal and drain external
XY= Pilot oil supply and drain external
(for bypass valve, B port back to tank
XY2= Pilot oil supply and drain external
(for sequence valve, B port connect system)

No code= With check valve
M = Without check valve

No code = NBR seals
V = FKM seals

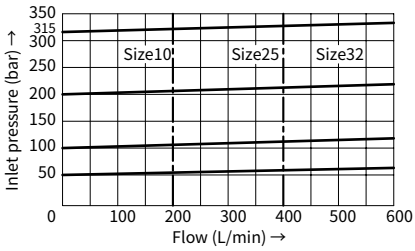
Further details
in clear text

Technical data

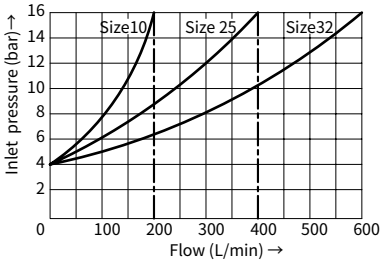
Fluid			Mineral oil suitable for NBR and FKM seal		
			Phosphate ester for FKM seal		
Fluid temperature range		℃	-30 to +80 (NBR seal)		
			-20 to +80 (FKM seal)		
Viscosity range		mm^2/s	10 to 800		
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406		
Max.operating pressure	Port A, B, X	bar	315		
	Port Y	bar	315		
Adjustable pressure	Max.	bar	50;100;200;315		
	Min.	bar	Interrelated to the flow (refer to the characteristic curve)		
Size			DZ10	DZ20	DZ30
Max. flow-rate		L/min	200	400	600
Fixing position			Optional		
Size			DZ10	DZ20	DZ30
Weight	sub-plate mounting DZ	kg	Approx.3.6	Approx.5.5	Approx.8.2
	DZC	kg	Approx.1.2		
	DZC30	kg	Approx.1.5		

Characteristic curves (Measured at ϑ_{oil} =40°C ±5°C , using HLP46)

Inlet pressure in relation to flow (A → B)

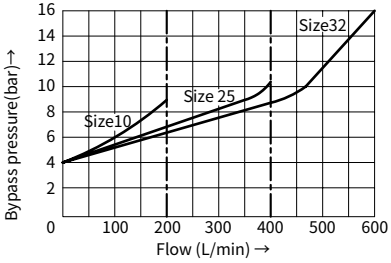


Minimum inlet pressure in relation to flow (A → B)
(= bypass pressure model "..X..")



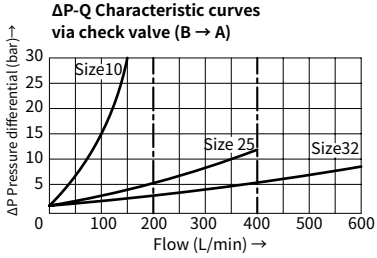
The curves are valid for outlet pressure PB=0 for the complete flow range

Bypass pressure in relation to flow (A → B)
(only for version "...XY...")



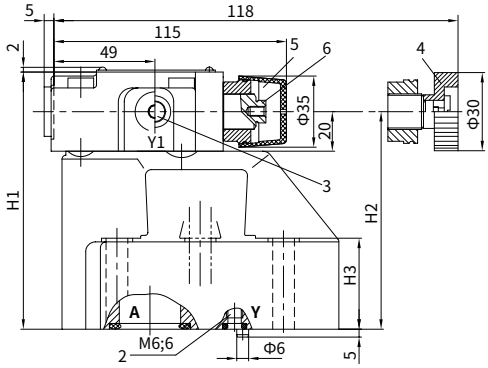
The curves are valid for outlet pressure PB=0 for the complete flow range

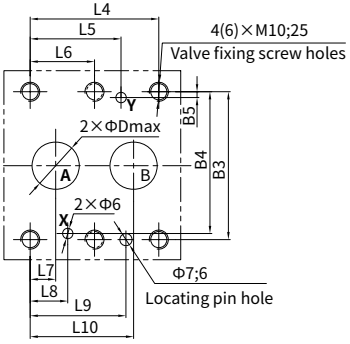
ΔP-Q Characteristic curves
via check valve (B → A)



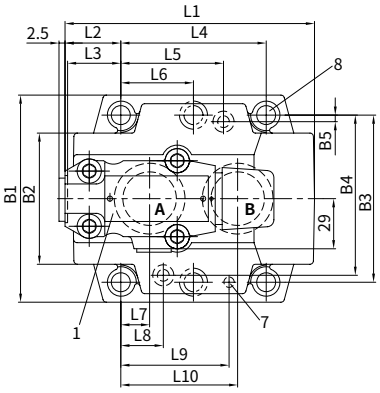
Unit dimensions

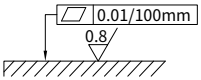
(Dimensions in mm)





Dimensions of mounting surface





Requirement for mounting surface

1 Nameplate
2 Port Y used for control oil drain external for use as bypass valve
3 Port Y1(G1/4;12) for control external drain when used as bypass valve, for unloading of spring chamber when used as sequence valve
4 Adjustment element "1"
5 Adjustment element "2"
6 Internal hexagon screw S=10
7 Locating pin
8 Valve fixing holes 4pcs (DZ10, DZ20); 6pcs(DZ30)

Valve fixing screws:
Internal hexagon screw
DZ10:GB/T 70.1-M10×50-10.9
DZ20:GB/T 70.1-M10×60-10.9
DZ30:GB/T 70.1-M10×70-10.9
Tightening torque M_A=75 Nm

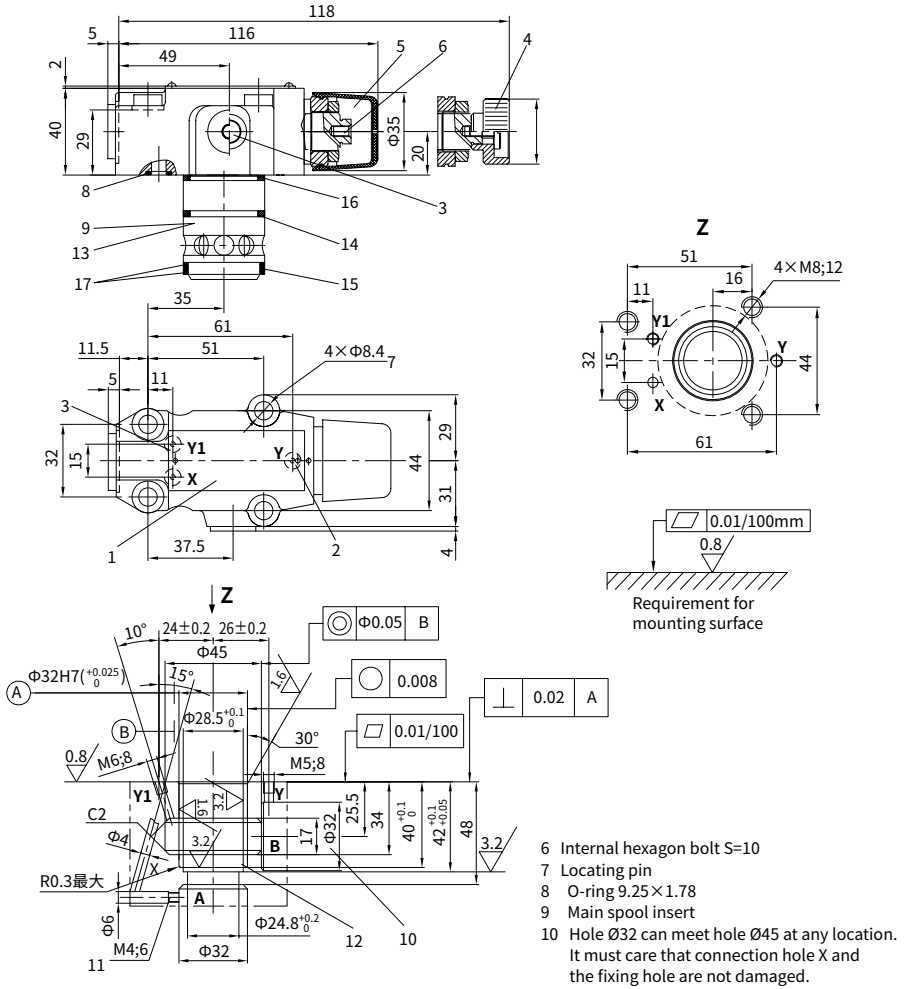
It must be ordered separately, if connection plate is needed. Type:
DZ10: G 460/01(G3/8) G 460/02(M18×1.5)
G 461/01(G1/2) G 461/02(M22×1.5)
DZ20: G 412/01(G3/4) G 412/02 (M27×2)
G 413/01(G1) G 413/02 (M33×2)
DZ30: G 414/01(G1 1/4) G 414/02 (M42×2)
G 415/01(G1 1/2) G 415/02 (M48×2)

Type	B1	B2	B3	B4	B5	O-ring(PortA,B)				O-ring(PortX,Y)			D
DZ10	85	50	66.7	58.8	7.9	17.12×2.62				9.25×1.78			13
DZ20	102	59.5	79.4	73	6.4	28.17×3.53				9.25×1.78			22
DZ30	120	76	96.8	92.8	3.8	34.52×3.53				9.25×1.78			30
Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	H1	H2	H3
DZ10	96	35.5	33	42.9	21.5	-	7.2	21.5	31.8	35.8	112	92	28
DZ20	116	37.5	35.4	60.3	39.7	-	11.1	20.6	44.5	49.2	122	102	38
DZ30	145	33	29.8	84.2	59.5	42.1	16.7	24.6	62.7	67.5	130	110	46

Unit dimensions

(Dimensions in mm)

With (DZC 30) or without (DZC) main spool insert



1 Nameplate
2 Port Y for control oil external drain when used as bypass valve, for unloading of spring chamber when used as sequence valve
3 Port Y1 (G1/4; 12) used for control oil drain external when used as pressure control or sequence valve
4 Adjustment element"1"
5 Adjustment element"2"
6 Internal hexagon bolt S=10
7 Locating pin
8 O-ring 9.25×1.78
9 Main spool insert
10 Hole Ø32 can meet hole Ø45 at any location. It must care that connection hole X and the fixing hole are not damaged.
11 This drilling is not required when used as bypass valve
12 Back-up ring and O-ring to be inserted into this hole before fitting the main spool
13 Cartridge assembly includes main spool insert with throttle
14 O-ring 28×1.8
15 O-ring 27.3×2.4
16 O-ring 28×2.65
17 Back-up ring 28.4×32×0.8