Hydraulic Control Directional Valve

Model: WHD10...3XJ

- ◆ Size 10
- ◆ Maximum working pressure 315 bar
- ◆ Maximum working flow 120 L/min

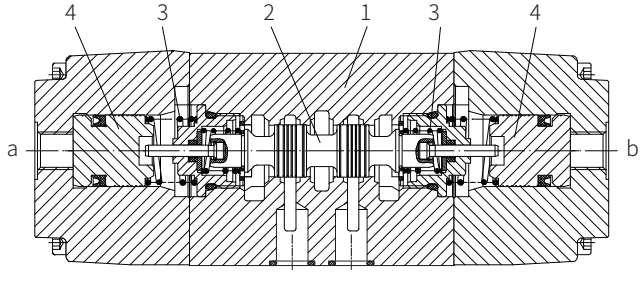
Contents

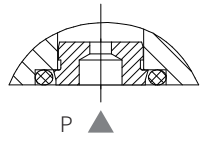
Features

- ● Direct operated directional spool valve
- ● Type of actuation:
  Hydraulic (WHD)
- ● Subplate mounting
- ● Porting pattern to DIN 2430 Form A, and ISO4401

Function description, sectional drawing

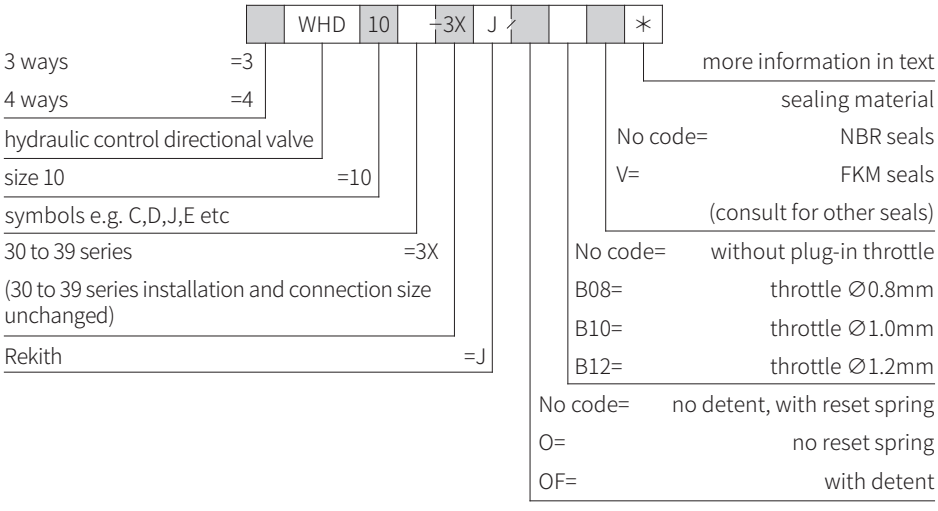
The WHD valve is directional spool valve with fluid logic actuation, it controls the opening, closing and direction of the flow.
The valve is composed of valve body (1), main spool (2), one or two reset spring (3), and one or two position (4).
Model WHD...
In the initial state, the main spool (2) remains in the middle position under the action of two reset springs (3). If external signal oil enters through port A, the oil pushes the left position (4) to the right, thus driving the main spool (2) to the right. Removing the control oil, the main spool (2) returns to the middle position under the right spring force.
If external signal oil enters through port B, the oil pushes the right position (4) to the left, thus driving the main spool (2) to the left. Removing the control oil, the main spool (2) returns to the middle position under the left spring force.
Model WHD.../O（Only for symbols A、C、D）
This model is a hydraulic operated direction valve. If using actuation elements without reset springs and without detent, there is no defined spool position in initial condition.
Model WHD.../OF（Only for symbols A、C、D
This model is a hydraulic operated direction valve. When actuation elements with detent, the spool position can be locked.）
Plug-in throttle
Due to the limitation of the working conditions, the flow may exceed the value of the performance curve during switching process, so it is necessary to install a plug-in throttle into channel P.



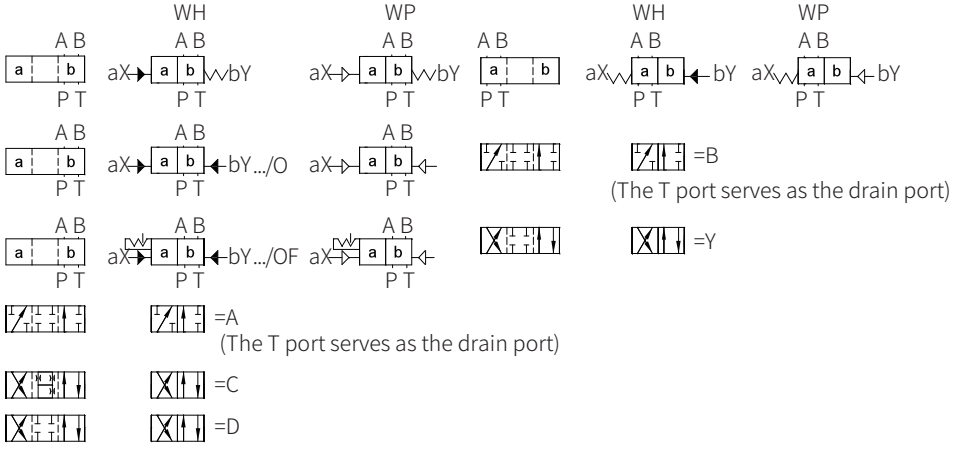


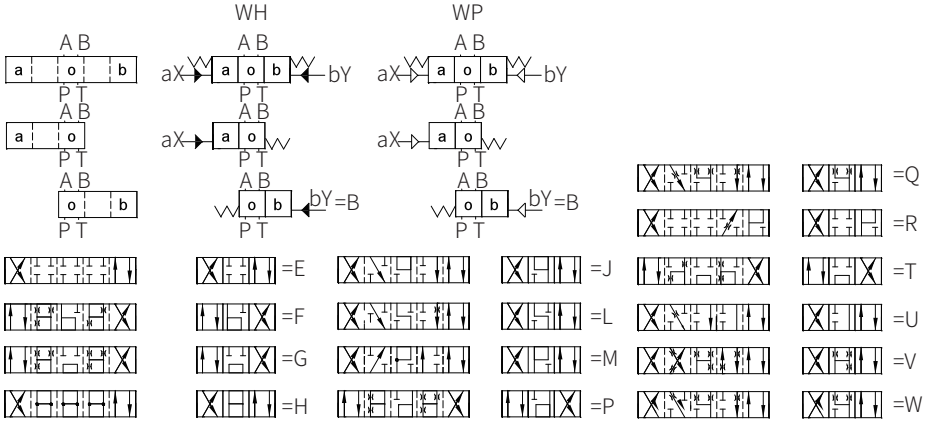
Plug-in throttle

Models and specifications



Functional symbols





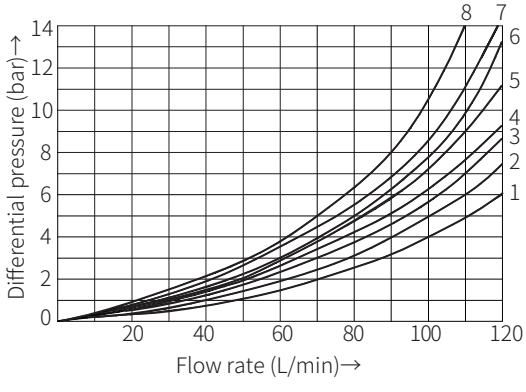
Example:
If solenoid is fixed at position "a",
the model is ...EA

Technical parameters

Overview			
Weight	1 operating cylinder	kg	3.0
	2 operating cylinder	kg	3.3
Oil temperature range		°C	-30 to +80 (NBR seal) -20 to +80 (FKM seal)
Hydraulic			
Max. working pressure	oil port A, B, P	bar	315
	oil port T	bar	160
Max. flow		L/min	120
Effective over-flow section (neutral position)	Type V	mm^2	11(A/B→T); 10.3(P→A/B)
	Type W	mm^2	2.5(A/B→T)
	Type Q	mm^2	5.5(A/B→T)
Control pressure		bar	5~160
Working medium			Mineral oil, Phosphate ester
Viscosity range		mm^2/s	2.8 to 500
Cleanliness of oil			The maximum allowable pollution level of oil is ISO4406 Class 20/18/15

Characteristic curve

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



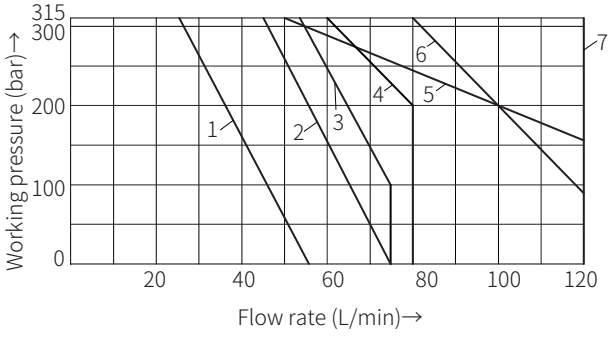
8 Symbols "G" and "T" in neutral position P→T
8 Symbol "R" in switching position A→B

Function symbol	Flow direction			
	P - A	P - B	A - T	B - T
A	4	3	-	-
B	3	4	-	-
C	3	3	4	4
D	3	3	5	5
E	2	2	4	4
F	1	2	3	4
G,T	4	4	7	7
H	1	1	5	5
J	2	2	3	3
L	3	3	2	4
M	1	1	4	4
P	3	1	5	5
Q	2	2	2	2
R	3	4	3	-
U	3	3	5	2
V	2	2	3	3
W	3	3	3	3
Y	4	4	6	6

Characteristic limit

Because of adhesive effect, the switching function of the valves depends on the filtration. In order to achieve the specified admissible flow values, we suggest full flow filtration with 25um. The flow force acting within the valves also affect the flow performance. With 4 way valves the specified flow data thus apply to normal operation with 2 volume flow directions(e.g. from P to A and at the same time return flow from B to T)

If only one flow direction is available, when 4-way valve is used as a 3-way valve by blocking port A or B, the flow can be significantly smaller in critical cases.

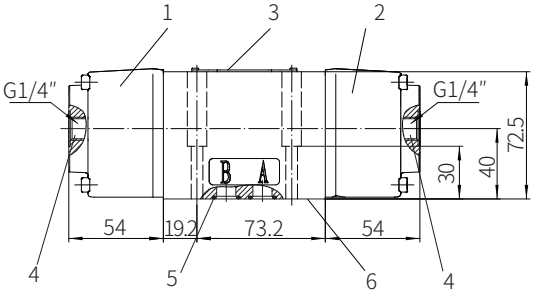


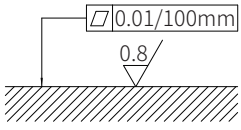
Curve	Function symbol
1	A, B
2	A/O
3	H
4	F, G, P, R, T
5	J, L, Q, U, W
6	C, D, E, M, V, Y
7	C/O, C/OF D/O, D/OF

Component size

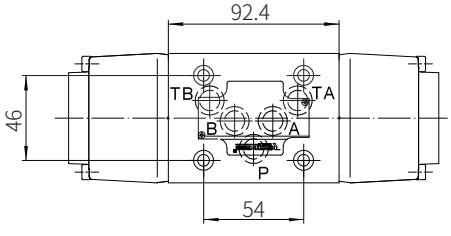
Size unit: mm

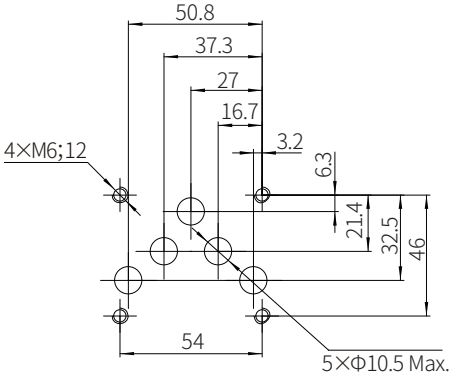
Model WHD10...3XJ/...

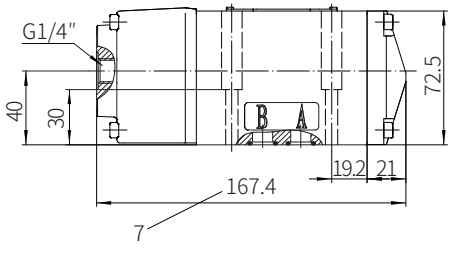




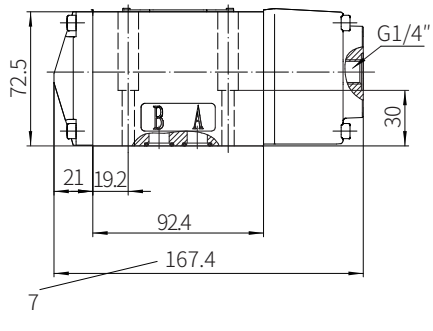
Required surface finishing of mating components







1 Actuation cylinder "b"
2 Actuation cylinder "a"
3 Name plate
4 Control port thread G1/4"
5 O-ring 12x2 (for oil ports P, A, B, TA, TB)
6 Connection surfaces
7 Size of 2-position valve



Valve fixing screw
M6x40-10.9 grade GB/T70.1-2000
Tightening torque M_A=13.7Nm

It must be ordered separately if connection subplate is needed.
Subplate model:
G66/01 (G3/8"); G66/02(M18x1.5)
G67/01 (G1/2"); G67/02 (M22x1.5)
G534/01 (G3/4"); G534/02(M27x2)