Hengli®

2.9

4/3, 4/2 and 3/2 directional valve with fluidic actuation

Type WHD,WN,WP10...L3X

Size 10
Up to 315bar
Up to 120L/min

Contents

Features

- Direct operated directional spool valve
- Types of actuation:
  - Pneumatic (WP, WPZ)
  - Hydraulic (WH, WHZ)
- Sub-plate mounting
- Porting pattern to DIN 24 340 Form A, and ISO 4401

Function

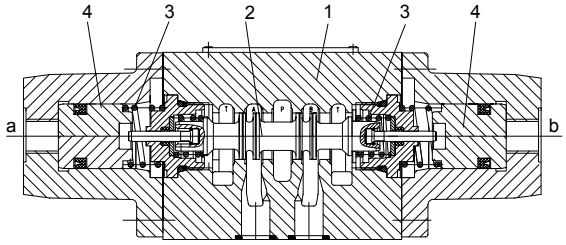
Valves of type WP and WH are directional spool valves with fluid logics actuation. They control the start, stop and direction of a flow.
The directional valves basically consist of housing (1), one or two actuation elements (2) (hydraulic, pneumatic actuation cylinder), one or two return springs (3) and control piston (4).

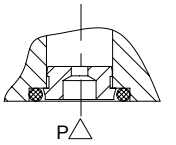
Type WHD.../
In the initial state, the main spool（2） remain in the intermediary civilian under the action of two return springs（3）, into the external model oil through the a port into the oil to promote the left of the piston（4） to the right, remove the signal Oil, the main spool（2） back to the middle position under the right spring force back to the middle position.If external oil from the b port, the oil push the right side of the piston (4) left, thus driving the main spool (2) left, remove the signal oil, the main spool (2) back to the middle position under the left spring force.

Without spring return, Type ..O/..
(Only for Spool Symbol A,C,D)
If using actuation elements without return springs and without detent, a defined spool position is not given in the de-energized condition.

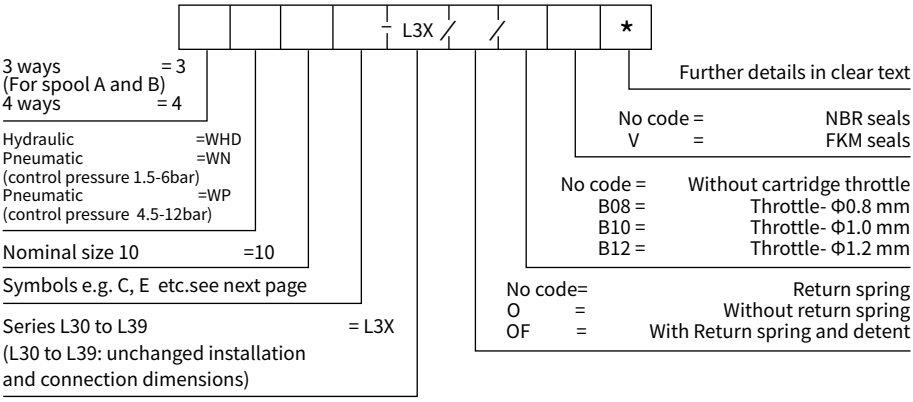
Without spring return with detent,
Type ..OF/.. (Only for Spool Symbol A,C,D)
Directional valves with hydraulic or pneumatic actuation are also available as 2-spool position valve with detent. If using actuation elements with detent, every spool position can be locked.

Cartridge throttle
The use of a throttle insert is required when due to prevailing operating conditions, flows can occur during the switching processes, which exceed the performance limit of the valve. It is inserted in channel P of the directional valve.

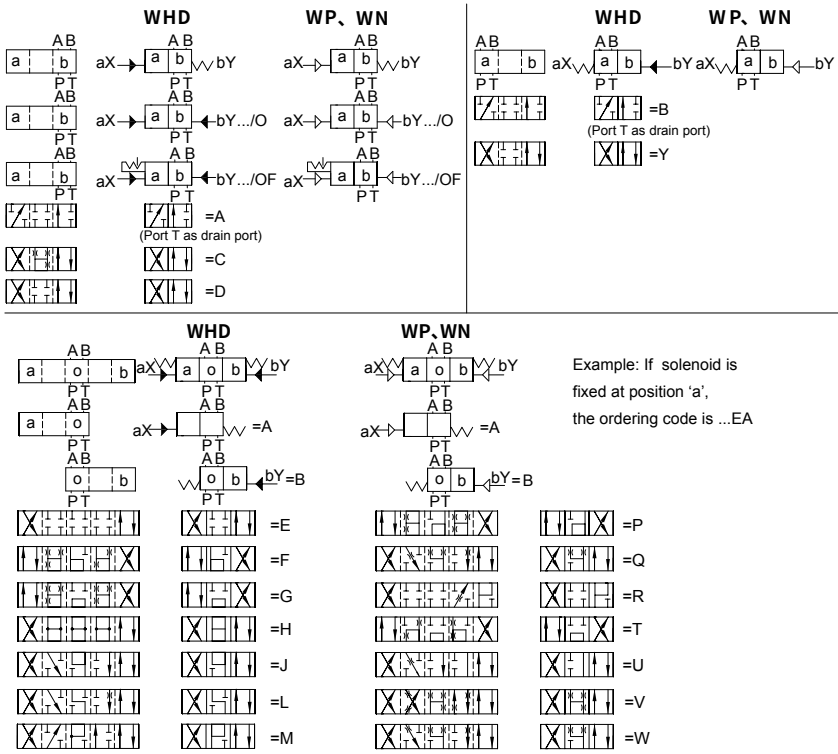




Ordering code



Symbols

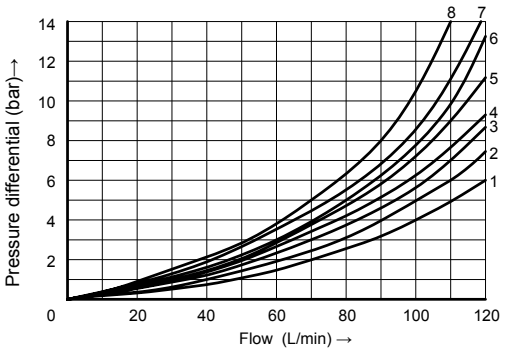


Technical data

Valve type			WN	WP	WHD
Weight 1 operating cylinder		kg	3.0	3.0	3.0
2 operating cylinder		kg	3.3	3.3	3.3
Fluid temperature range		℃	-30 to +80 (NBR seal)		
			-20 to +80 (FKM seal)		
Max.operating pressure	Port A,B,P	bar	315		
	Port T	bar	160		
Max. flow-rate		L/min	120		
Flow cross section (switching neutral position)	Type V	mm^2	For type V 11(A/B to T) 10.3(P to A/B)		
	Type W	mm^2	For type W 2.5(A/B to T)		
	Type Q	mm^2	For type Q 5.5(A/B to T)		
Control pressure		bar	1.5 ~ 6	4.5 ~ 12	5 ~ 160
Fluid			Mineral oil, Phosphate ester		
Viscosity range		mm^2/s	2.8 to 500		
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406		

Characteristic curves

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



8 Symbols "G" and "T" in neutral position (P → T)

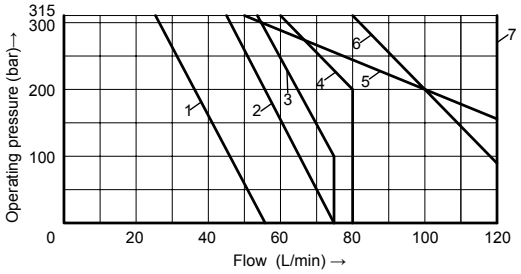
8 Symbol "R" in position b (A → B)

Spool symbol	Flow direction			
	P to A	P to B	A to T	B to 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

Operating limitation

Because of the adhesive effect, the switching function of the valves depends on the filtration. In order to achieve the specified admissible flow values, we recommend full flow filtration with 25 µm. The flow forces 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) (see table).

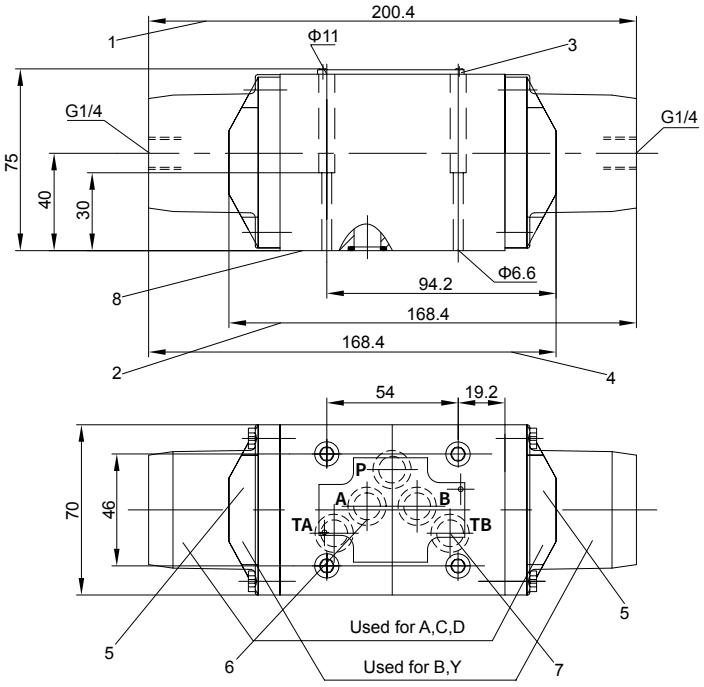
If only one flow direction is available, in critical cases, the admissible flow can be significantly smaller (e.g. when using a 4 way valve as 3 way valve, due to blocked connection A or B).



Curve	Spool 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

Unit dimensions (WHD)

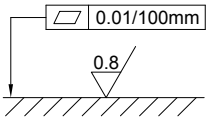
(Dimensions in mm)



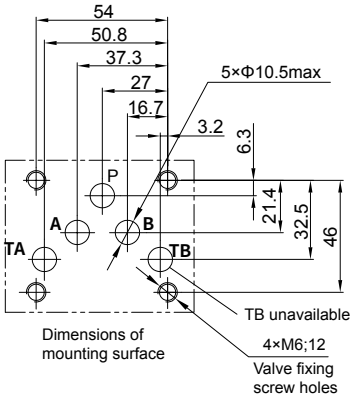
1 Used for 3-postition valve or, 2-postition *O, *OF
2 Used for 2-postition valve B, Y, EB...
3 Name plate
4 2-postition valve A, C, D, EA...
5 Valve with a actuator (2-position valve)
6 O-ring 12×2 , with ports A, B, P, T
7 Port TB used for special manifold

Valve mounting screws:
Internal hexagon screw
M6×40 GB/T 70.1-10.9,
Tightening torque M_A =15.5Nm

It must be ordered separately if connection plate is needed.
Type :
G 66/01 (G 3/8), G 66/02(M18×1.5)
G 67/01 (G 1/2), G 67/02(M22×1.5)
G 534/01 (G 3/4), G 534/02(M27×2)



Requirement for mounting surface

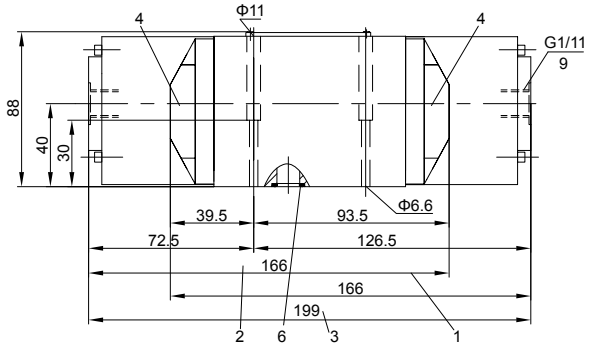


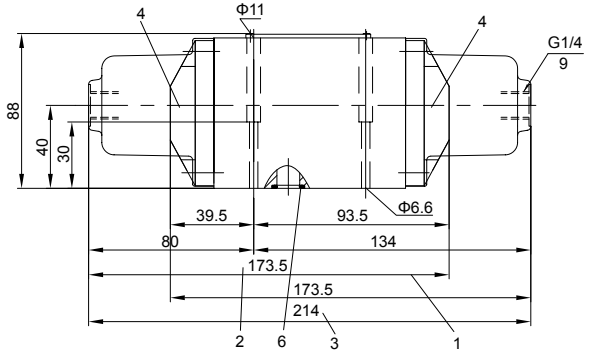
Dimensions of mounting surface

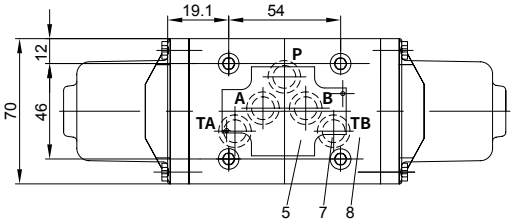
Valve fixing screw holes

Unit dimensions (WN, WP)

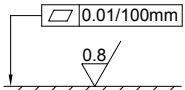
(Dimensions in mm)







1 2-position valves
symbols B, Y, EB...
2 2-position valves
symbols A, C, D, EA...
3 3-position valves
4 Cover for valves with one operating element (2-position valve)
5 Name plate
6 O-ring 12×2
7 The additional T connection (TB) can also be optionally used in special manifold blocks.
8 Porting pattern
9 Pilot port



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