

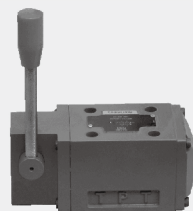


4/3, 4/2 and 3/2 directional valve with mechanical, manual operation

2.4

Type WMM10...L4X

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



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Features

- Direct operating directional spool valves with mechanical, manual operation
- For sub-plates mounting
- Hand lever
- Porting pattern conforms to DIN 24 340 form A, and ISO 4401

Function and configurations

Directional Valves with Mechanical and Manual Operation type WMM10...L4X, are the second generation of our series 10 valves, and are direct operated spool valves which switch the flow fluid by rotating the handle to move the spool axially. They have 2-position, 3-position as well as various spool symbols, optional detent device and return spring. And they are sub-plate mounting.

Type WMM.../

These valves consist of a housing (1), hand lever (2), the control spool (3), one or two return springs (4), and a push rod (5).

In the unoperated condition the control spool (3) is held in the neutral or starting position by the return springs (4). When the hand lever (2) is pushed to right or left, the hand lever (2) acts at the push rod (5) by hinge and direct controls the spool (3), at that time, the spool (3) moves to an expected position. When the handle returns to Zero position, spool returns to normal position by return spring. The switched position is operated by the handle.

Type WMM.../F

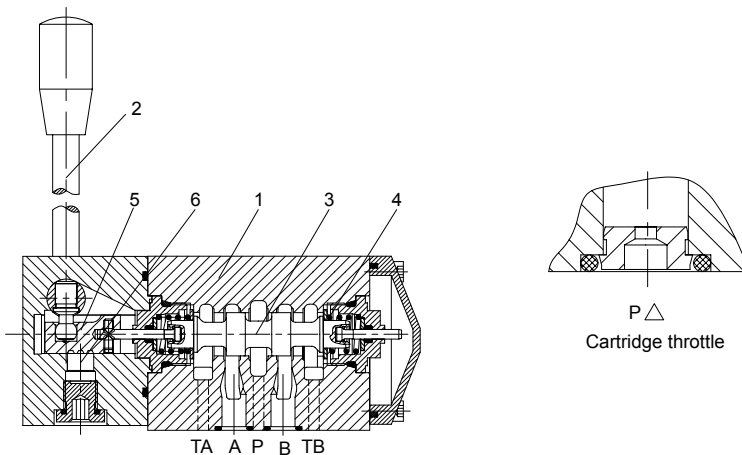
Their operating principle is the same as the type WMM.../, and they are fitted with 2 or 3 switched positions and a detent (6), so all the switched position is fixed.

Cartridge throttle

The use of a throttle insert is required, when, operating, flows can occur during the switching processes that exceed the performance limit of the valve.

These throttles are to be inserted into the P-channel of the directional valve.

Directional valves type WMM10...L4X have two handles options with different pulling direction, the detail refer to the 'Ordering code' and 'Unit dimensions'.



Ordering code

	WMM	10	/	L4X			★
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3 ways
(version A and B) =3

4 ways =4

Handle operation

Nominal size 10 =10

Symbols e.g. C, E, EA, EB etc. see below

Series L40 to L49 =L4X
(L40 to L49: unchanged installation and connection dimensions)

Further details in clear text

Handle pulling direction- spool moving direction options:

No code = Pulling direction is contrary to spool (standard version, same as the series 10)

K=uniform direction (contrary to the series 10)

No code = NBR seals
V = FKM seals

No code = Without cartridge throttle
B08 = Throttle - Φ0.8 mm
B10 = Throttle - Φ1.0 mm
B12 = Throttle - Φ1.2 mm

No code = Return spring
F = With detent

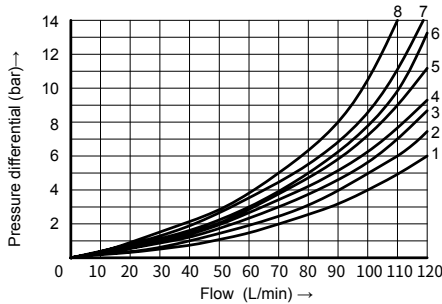
Symbols

<p>Transition position</p>	<p>Spool valve symbols</p>	<p>Transition position</p>	<p>Spool valve symbols</p>		
	<p>=A (Port T as drain port)</p> <p>=C</p> <p>=D</p>		<p>=B (Port T as drain port)</p> <p>=Y</p>		
<p>Transition position</p>	<p>Spool valve symbols</p>	<p>Transition position</p>	<p>Spool valve symbols</p>		
	<p>=E</p> <p>=F</p> <p>=G</p> <p>=H</p> <p>=J</p> <p>=L</p> <p>=M</p> <p>=P</p> <p>=Q</p> <p>=R</p> <p>=T</p> <p>=U</p> <p>=V</p> <p>=W</p>		<p>=EA</p> <p>=FA</p> <p>=GA</p> <p>=HA</p> <p>=JA</p> <p>=LA</p> <p>=MA</p> <p>=PA</p> <p>=QA</p> <p>=RA</p> <p>=TA</p> <p>=UA</p> <p>=VA</p> <p>=WA</p>		<p>=EB</p> <p>=FB</p> <p>=GB</p> <p>=HB</p> <p>=JB</p> <p>=LB</p> <p>=MB</p> <p>=PB</p> <p>=QB</p> <p>=RB</p> <p>=TB</p> <p>=UB</p> <p>=VB</p> <p>=WB</p>

Technical data

Fluid temperature range		°C	-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 symbol V 11(A/B to T) 10.3(P to A/B)
	Type W	mm ²	For symbol W 2.5(A/B to T)
	Type Q	mm ²	For symbol Q 5.5(A/B to T)
Fluid			Mineral oil suitable for NBR and FKM seal Phosphate ester for FKM seal
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
Weight		kg	4.4

Characteristic curves (Measured at $\vartheta_{oil}=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$, using HLP46)



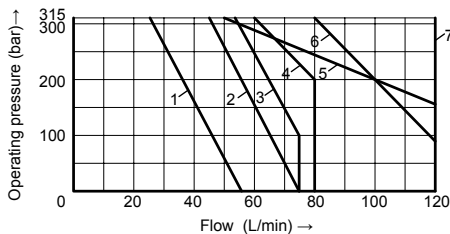
Spool symbol	Flow direction				Spool symbol	Flow direction			
	P to A	P to B	A to T	B to T		P to A	P to B	A to T	B to T
A	4	3	-	-	L	3	3	2	4
B	3	4	-	-	M	1	1	4	4
C	3	3	4	4	P	3	1	5	5
D	3	3	5	5	Q	2	2	2	2
E	2	2	4	4	R	3	4	3	-
F	1	2	3	4	U	3	3	5	2
G,T	4	4	7	7	V	2	2	3	3
H	1	1	5	5	W	3	3	3	3
J	2	2	3	3	Y	4	4	6	6

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

Operating limitations

The switching performance of the valves depends on the filtration. To achieve the specified 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 certain 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).

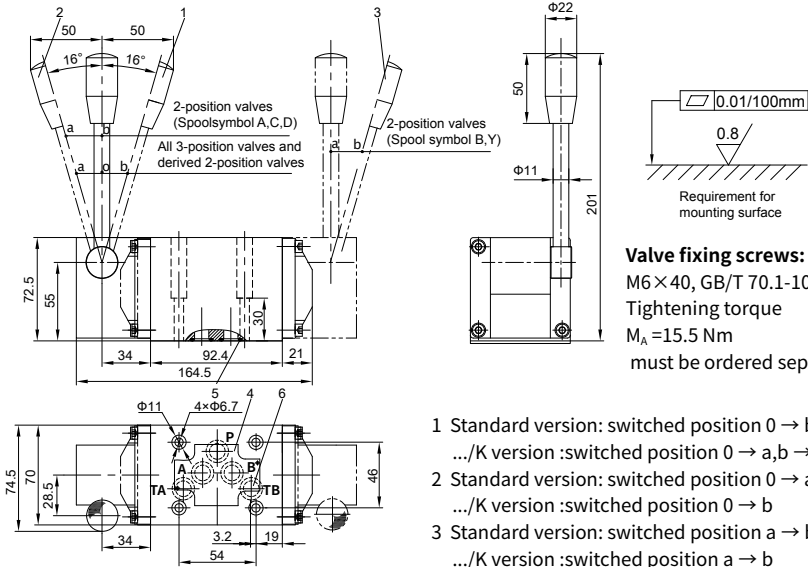


Curve	Spool symbol
1	A,B
2	A/O
3	H
4	F,G,P,R,T
5	J,L,Q,U,W
6	C,D,E,M,V,Y
7	C/O,C/OF,D/O,D/OF

Unit dimensions

(Dimensions in mm)

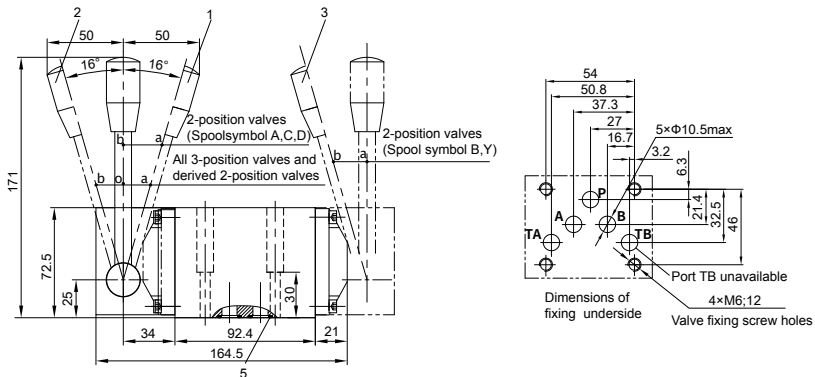
WMM10...-L4X...(Standard version)



Valve fixing screws:
 M6×40, GB/T 70.1-10.9,
 Tightening torque
 M_A=15.5 Nm
 must be ordered separately

- 1 Standard version: switched position 0 → b
 .../K version :switched position 0 → a,b → a
- 2 Standard version: switched position 0 → a,b → a
 .../K version :switched position 0 → b
- 3 Standard version: switched position a → b
 .../K version :switched position a → b
- 4 Nameplate
- 5 O-ring 12×2, for ports A, B, P,TA and TB
- 6 Additional return port when using control block

WMM10...-L4X... K (K version)



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)

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