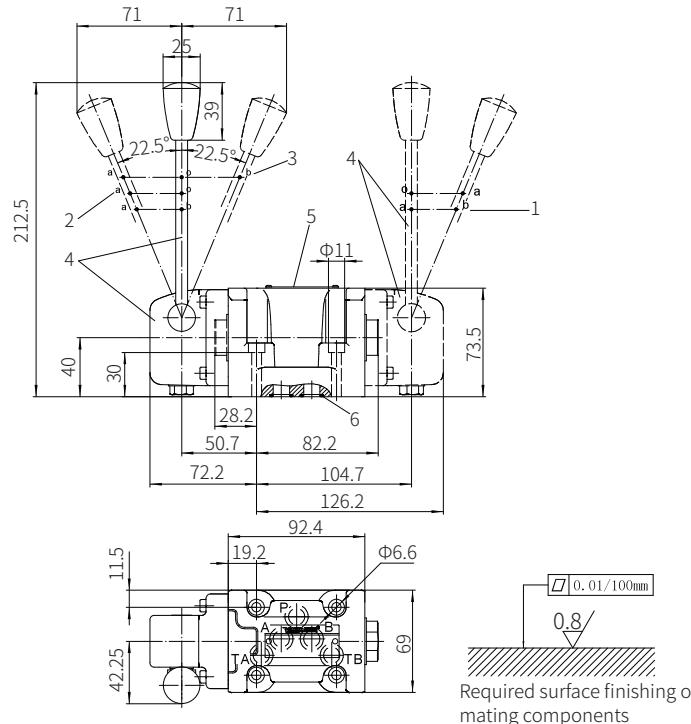


Component size

Size unit: mm

Model WMM10...-5XJ/...



1 Two-position valve, functional symbols B, Y, EB

2 Two-position valve, functional symbols A, C, EA

3 Three-position valve

4 End cover and handle

5 Name plate

6 O-ring (for oil port A, B, P, TA, TB)

Valve fixing screw

M5x50-10.9 grade GB/T70.1-2000

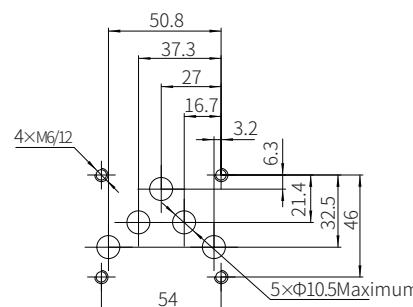
Tightening torque Ma=13.7Nm

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)



Manual Directional Valve

Model: WMM...



- ◆ Size 6, 10, 16, 25, 32
- ◆ Maximum working pressure 350 bar
- ◆ Maximum working flow 1100 L/min

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Features

- Direct operated directional spool valve with handle
- With reset spring or detent, optional
- Subplate mounting

Function description, sectional drawing

The WMM manual directional valve is a direct operated directional spool valve which switches the oil circuit by rotating the handle to move the spool axially. It has 3/2-way, 4/2-way, 4/3-way as well as various spool symbols, and it is subplate mounting with optional detent and spring reset.

Model WMM...

The valve is composed of valve body (1), handle (2), valve spool (3), one or two reset springs (4), and push rod (5).

The valve spool (3) is held in the middle or initial position by the reset springs (4) in no operation condition. When the handle (2) is pushed to the right or left, the handle pushes the push rod (5) via hinge and controls the valve spool (3) directly to force the spool to move to the required position to obtain the required flow cross-section. When the handle return to the zero position, the control valve spool returns to the normal position by reset spring (4). The switching position of this valve is operated by the handle.

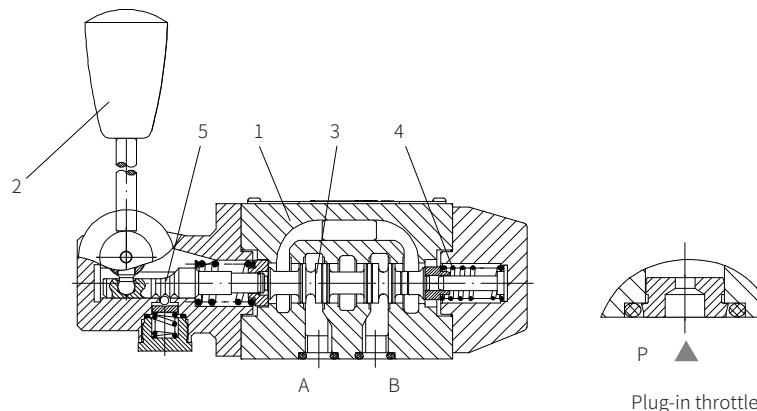
Model WMM.../F

The principle is basically the same with WMM.../. But this type valve is a control valve with two or three switching positions and one detent. Therefore, all the switching positions are fixed.

Plug-in throttle

Due to working conditions limitations, it may occur that the flow of the valve exceeds the specified flow rate on the valve performance curve during switching process, then the use of a throttle is required. It is installed in the P chamber of the valve or oil circuit.

This type valve has advantages such as small volume, large flow capacity, and good reliability compared with other series of valves. It can be used together with the modular valves in same size, and widely used in engineering machinery, coal mining machinery, chemical machinery, light industry machinery, locomotives and many other industries.



Models and specifications

		WMM		$\frac{1}{2}$	J		*		more information in text
3 ways	=3								sealing material
4 ways	=4								NBR seals
		manual directional valve							FKM seals
									(consult for other seals)
size 6			=6						No code= no plug-in throttle
size 10			=10						B08 ¹⁾ = throttle Ø.8mm
size 16			=16						B10 ¹⁾ = throttle Ø1.0mm
size 25			=25						B12 ¹⁾ = throttle Ø1.2mm
size 32			=32						
		symbols e.g.							No code= without detent, with reset spring
		C, D, J, E, etc							F= with detent
10 to 19 series (for size 10)				=1X					J= Rekith
(10 to 19 series installation and connection size unchanged)									
50 to 59 series (for size 6, 16, 25)			=5X						
(50 to 59 series installation and connection size unchanged)									
60 to 69 series (for size 32)			=6X						
(60 to 69 series installation and connection size unchanged)									

¹⁾ Only for size 6 and 10 when the flow > performance of the valve, effective in P chamber.

Functional symbols

Transition function	Spool valve function	Transition function	Spool valve function	Transition function	Spool valve function
Transition function	Spool valve function	Transition function	Spool valve function	Transition function	Spool valve function

Explanation:

(1) Symbol A and B only for size 6 and 10

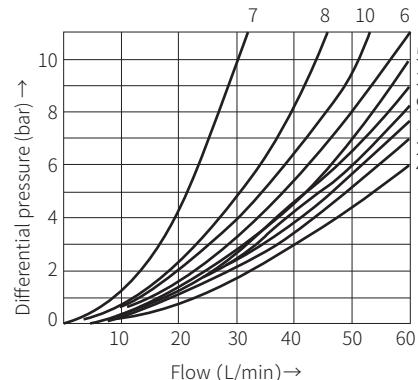
Technical parameters

Size	6	10	16	25	32
Working pressure	Oil port A, B, P (bar)	to 315		to 350	
	Oil port T (bar)	to 160	to 150	to 250	to 250
Flow	(L/min)	to 60	to 100	to 300	to 450
Flow cross-section	(middle position)	Q-type, 6% of nominal cross-section W-type, 3% of nominal cross-section	Q, V-type, 16% of nominal cross-section W-type, 3% of nominal cross-section		
Medium		Mineral oil(HL,HLP) in accordance with DIN 51524; fast living organisms Degraded oil according to VDMA 24568; HETG(Rapeseed oil); HEPG(Polyethylene glycol); HEES(synthetic ester);			
Oil temperature range	(°C)	-30 to +80			
Viscosity range	(mm²/s)	2.8 to +500			
Weight	(kg)	about 1.4	about 3.3	about 8	about 17
Operating force	(N)	Without return pressure about 20 With detent: about 16 to 23 Without return pressure about 30 (at 150 bar)	Without return pressure about 20 With detent: about 16 to 23 Without return pressure about 30 (at 150 bar)	about 75	about 120
					about 170

Characteristic curve

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

WMM6 pressure loss curve



Function symbol	Flow direction			
	P→A	P→B	A→T	B→T
A	3	3	-	-
B	3	3	-	-
C	1	1	3	1
D	5	5	3	3
E	3	3	1	1
F	1	3	1	1
G	6	6	9	9
H	2	4	2	2
J	1	1	2	1
L	3	3	4	9
M	2	4	3	3
P	3	1	1	1
Q	1	1	2	1
R	5	5	4	-
T	10	10	9	9
U	3	3	9	4
V	1	2	1	1
W	1	1	2	2
Y	5	5	3	3

7. Symbol "R" in control position A to B

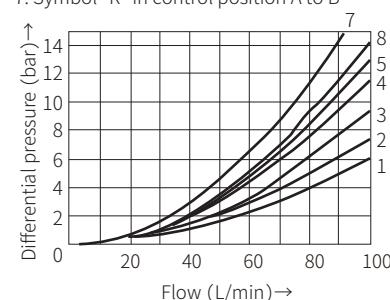
8. Symbols "G" and "T" in the middle position P to T

Characteristic curve

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

WMM10 pressure loss curve

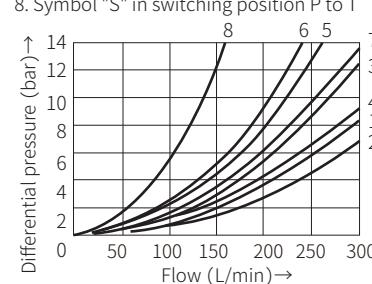
4. Symbols "G" and "T" in the middle position P to T
7. Symbol "R" in control position A to B



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

WMM16 pressure loss curve

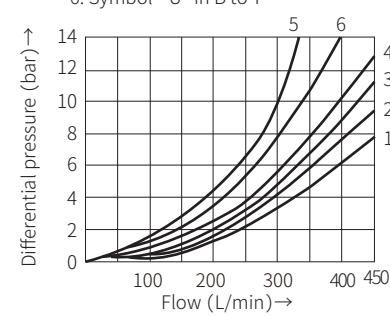
6. Symbols "G" and "T" in the middle position P to T
8. Symbol "S" in switching position P to T



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

WMM25 pressure loss curve

4. Symbol "L" in A to T
6. Symbol "U" in B to T

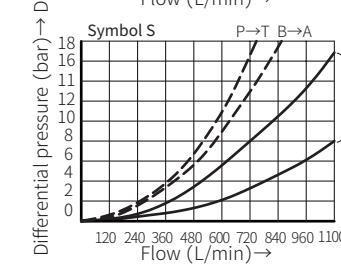
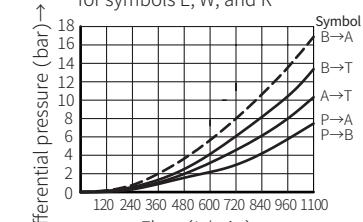
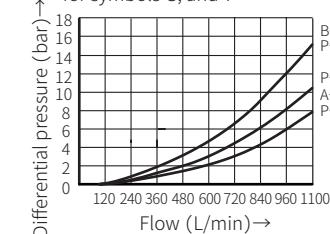


Function symbol	Flow direction			
	P→A	P→B	A→T	B→T
E	2	2	1	4
F	1	2	1	2
G	2	2	2	4
H	2	2	1	3
J	2	2	1	3
L	2	2	1	2
M	2	2	1	4
P	2	2	1	4
Q	2	2	1	4
R	1	2	1	-
T	2	2	2	4
U	2	2	1	4
V	2	2	1	4
W	2	2	1	3

Characteristic curve

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

WMM32 pressure loss curve

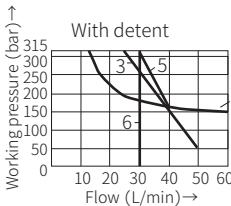
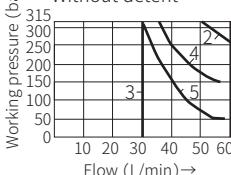
 $\Delta p-Q$ characteristic curve applicable for symbols E, W, and R $\Delta p-Q$ characteristic curve applicable for symbols G, and T

Characteristic curves of other symbols

Characteristic limit

Due to blockage, the switching function of the valve is related to filtration. In order to obtain the specified maximum flow, it is recommended to use a 20um full-flow filtration. The various forces acting on the valve also affect the flow characteristics.

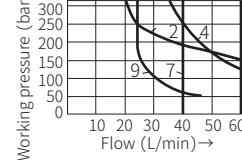
For a four-way valve, the specified flow data is valid for normal operation with two flow directions (i.e. from P to A and return flow from B to T at the same time)(see table). If only one direction of flow is needed, e.g. when the four-way valve with chamber A or B blocked is used as three-way valve, the maximum flow rate will greatly decrease in severe cases.

WMM6 characteristic limit
Without detent

Characteristic curve Spool valve symbol Characteristic curve Spool valve symbol

Without detent	1 2 3 4 5	E, E1, H, C, D, M, Q, U, W, G, J, L, R, Y, A, B, V, F, P, T	1 2 3 4 5 6 7 8 9	E1, M, H, C, D, Y, E, J, Q, L, U, W, A, B, G, T, F, V, P, R, T
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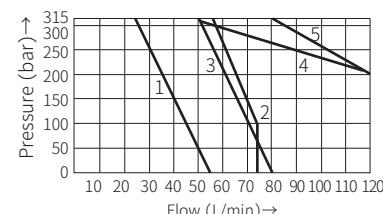
With detent



Characteristic limit

WMM10 characteristic limit

Characteristic curve	Spool valve symbol
1	A, B
2	H
3	F, G, P, R, T
4	J, L, Q, U, W
5	C, D, E, M, V, Y



WMM16 characteristic limit

Permitted flow qv L/min, 2-position valve					Permitted flow qv L/min, 3-position valve					
Function symbol	Working pressure P bar				Function symbol	Working pressure P bar				
	70	140	210	280		70	140	210	280	
Spring reset					Spring reset					
C	300	300	300	260	220	E, H, J, L, M, Q, R, U, W	300	300	300	300
D	300	300	210	190	160	F, P	300	300	210	190
K	300	300	200	150	130	G, S, T	300	300	220	210
Z	300	240	190	170	150	V	300	260	200	180
With detent					With detent					
C, D, K, Z	300	300	300	300	300	E, H, J, L, M, Q, R, U, W	300	300	300	300
						F, P	300	300	280	230
						G, S, T	300	300	230	230
						V	300	300	250	230

WMM25 characteristic limit

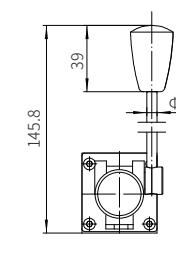
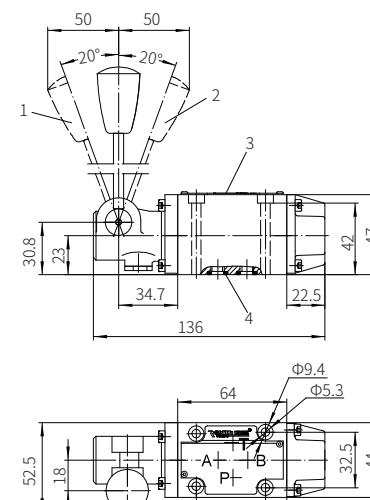
Permitted flow qv L/min, 2-position valve					Permitted flow qv L/min, 3-position valve					
Function symbol	Working pressure P bar				Function symbol	Working pressure P bar				
	70	140	210	280		70	140	210	280	
Spring reset					Spring reset					
C	450	300	250	200	180	E, J, L, M, Q, R, U, W	450	450	450	450
D	350	300	275	250	200	F	450	250	200	135
K	200	150	140	130	120	G, T	450	330	290	230
Z	300	270	240	220	200	H	450	450	400	400
						P	450	310	240	215
						V	450	310	280	270
With detent					With detent					
C, D, K, Z	450	450	450	450	450	E, F, G, H, J, L, M, P, Q, R, T, U, W	450	450	450	450
						V	450	450	400	350

WMM32 characteristic limit

2-position and 3-position valves with spring reset					
Flow L/min		Under pressure of ... (bar)			
Function symbol	70	140	210	280	
E, J, L, M, Q, R, V, U, W	1100	1050	860	750	680
F, G, H, S, T, C, D, K, Z	650	450	370	320	280
2-position and 3-position valves with detent					
All symbols	1100	1050	860	750	680

Component size

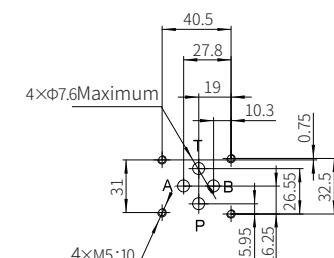
Model 4WMM6...5XJ/...



Required surface finishing of mating components
Valve fixing screw
M5x50-10.9 grade GB/T70.1-2000
Tightening torque $M_A = 7.8\text{Nm}$

It must be ordered separately if connection subplate is needed.
Subplate model:

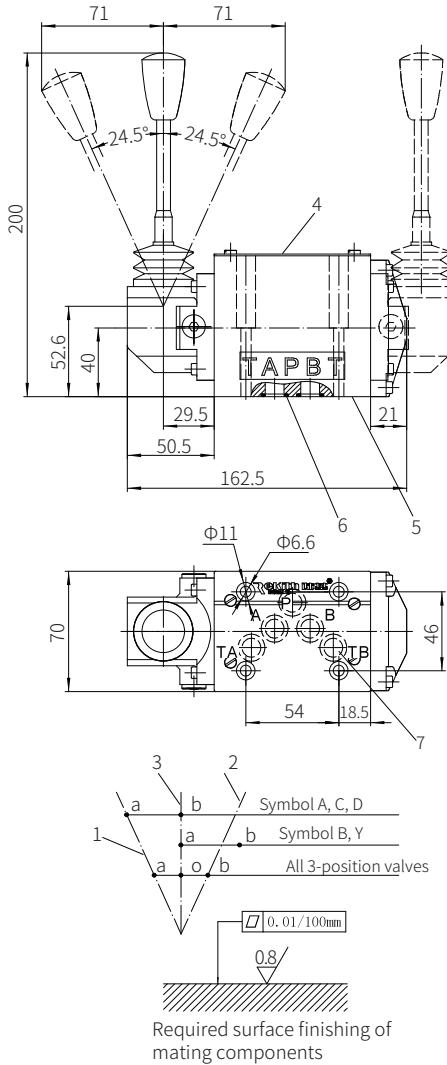
G341/01 (G1/4") ; G341/02 (M14x1.5)
G342/01 (G3/8") ; G342/02 (M18x1.5)
G502/01 (G1/2") ; G502/02 (M22x1.5)



- Switching position b→a and o→a
- Switching position a→b and o→b
- Name plate
- O-ring 9.25x1.78 (for oil port A, B, P, T)

Component size

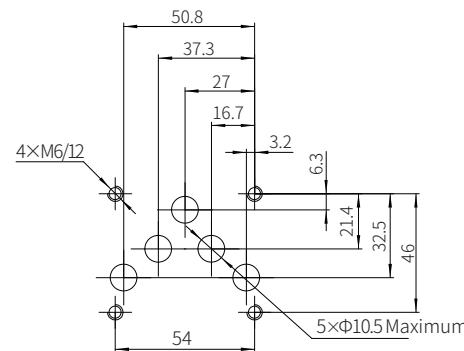
Model 4WMM10...1XJ/F...



- 1 Switching position a
 - 2 Switching position b
 - 3 Switching position o, a and b
 - 4 Name plate
 - 5 Valve connection surface
 - 6 O-ring 12x2 (for oil port A, B, P, T)
 - 7 When using control block,
port TB serve as assistant return port

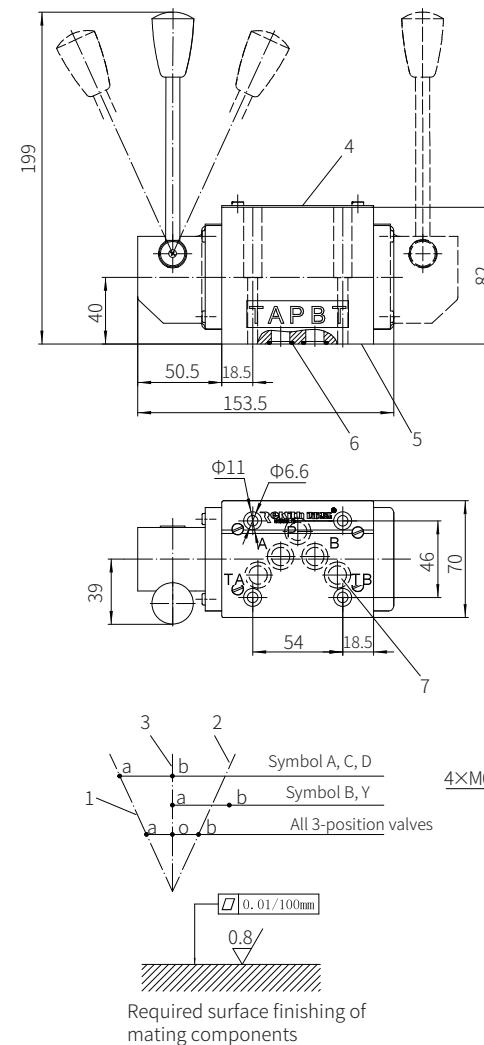
Valve fixing screw
M6x40-10.9 grade GB/T70.1-2000
Tightening torque $M_A=13.7\text{Nm}$

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)



Component size

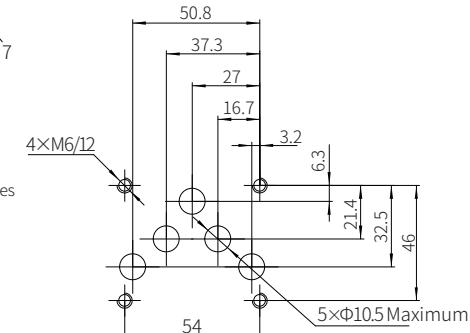
Model 4WMM10...1XJ/...



- 1 Switching position a
 - 2 Switching position b
 - 3 Switching position o, a and b
 - 4 Name plate
 - 5 Valve connection surface
 - 6 O-ring 12x2 (for oil port A, B, P, T)
 - 7 When using control block,
port TB serve as assistant return port

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

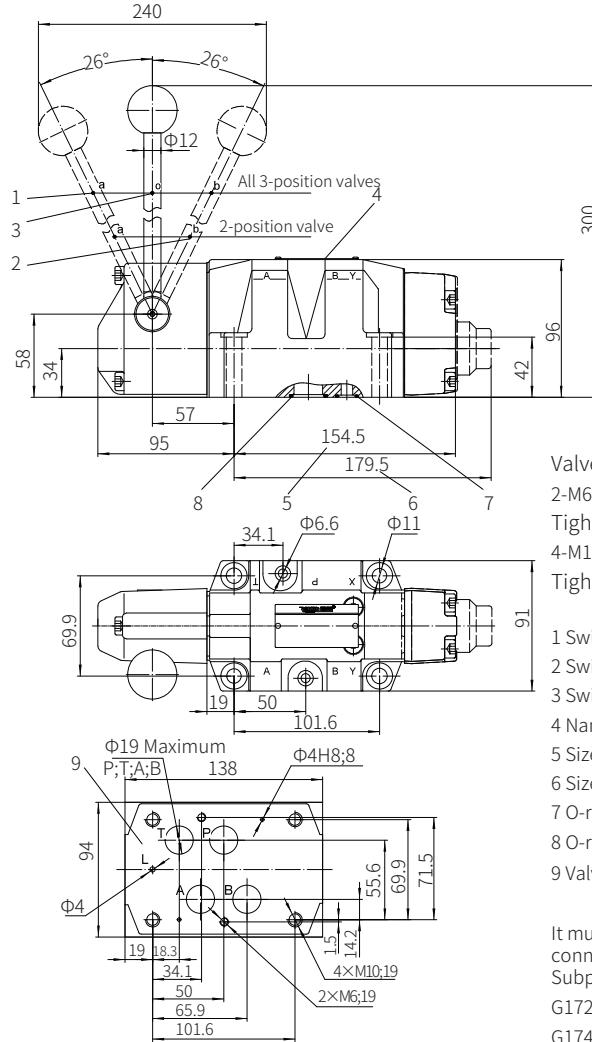
It must be ordered separately if connection subplate is needed.
Subplate model:
G66/01 (G3/8"); G66/02 (M18x1.5)
G67/01 (G1/2"); G67/02 (M22x1.5)
G534/01 (G3/4"); G534/02 (M27x2)



Component size

Size unit: mm

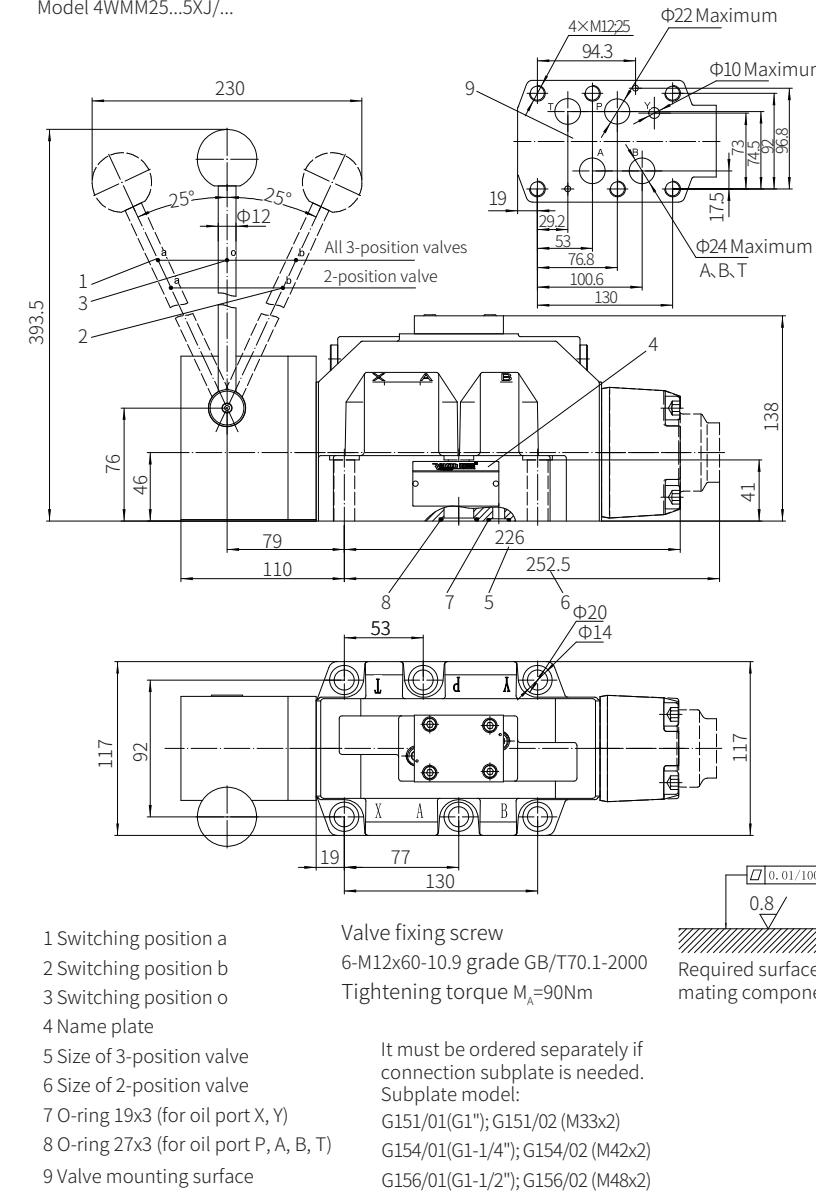
Model 4WMM16...5XJ/F



Component size

Size unit: mm

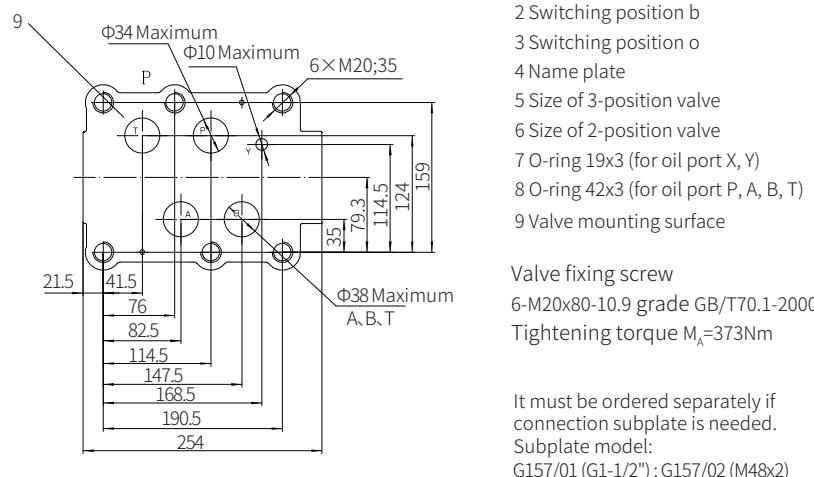
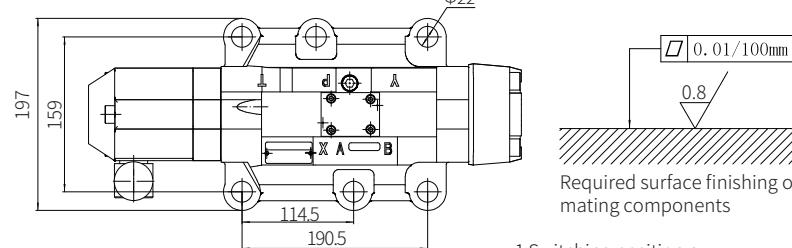
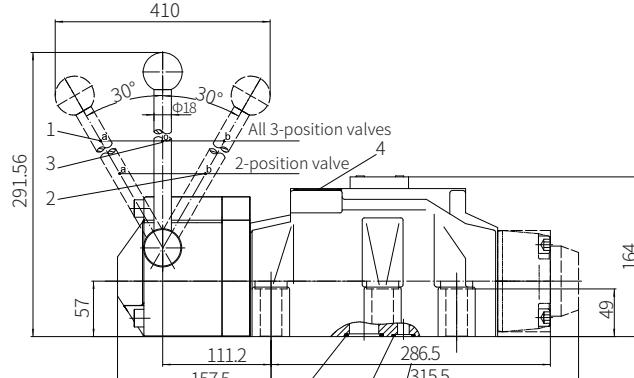
Model 4WMM25...5XJ/...



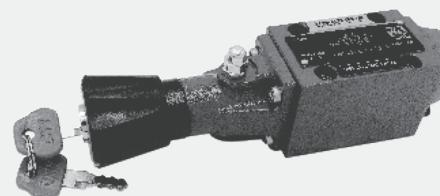
Component size

Size unit: mm

Model 4WMM32...6XJ/...

**Rotary Directional Valve**

Model: WMD6/10...



- ◆ Size 6 and 10
- ◆ Maximum working pressure 315 bar
- ◆ Maximum working flow 120 L/min

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Features

- Direct operated directional spool valve with rotary knob
- Subplate mounting