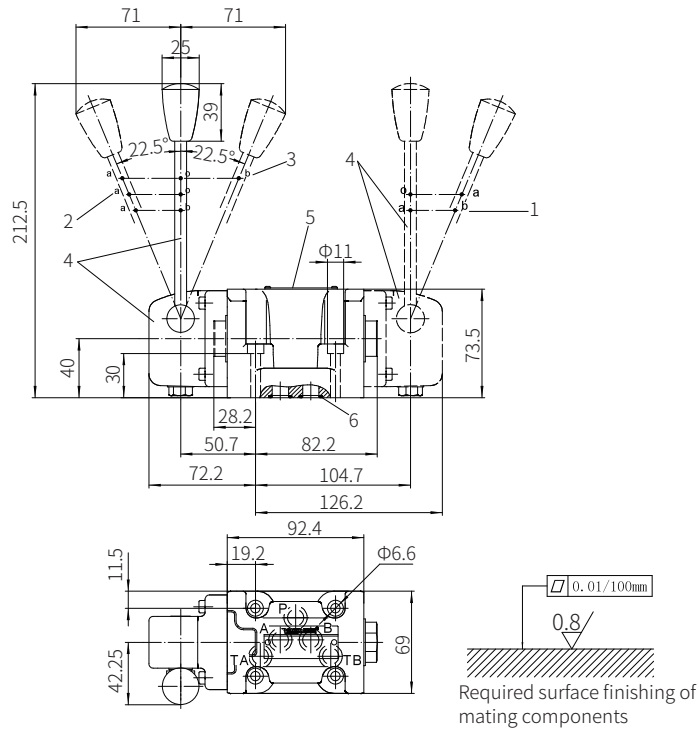


Component size

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

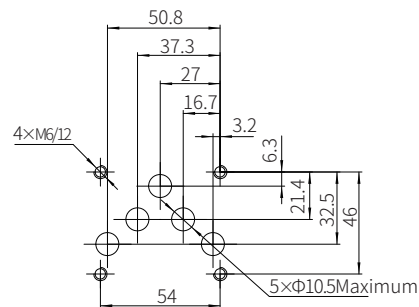
Tightening torque $M_A=13.7\text{Nm}$

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)



Manual Directional Valve

Model: WMM...



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

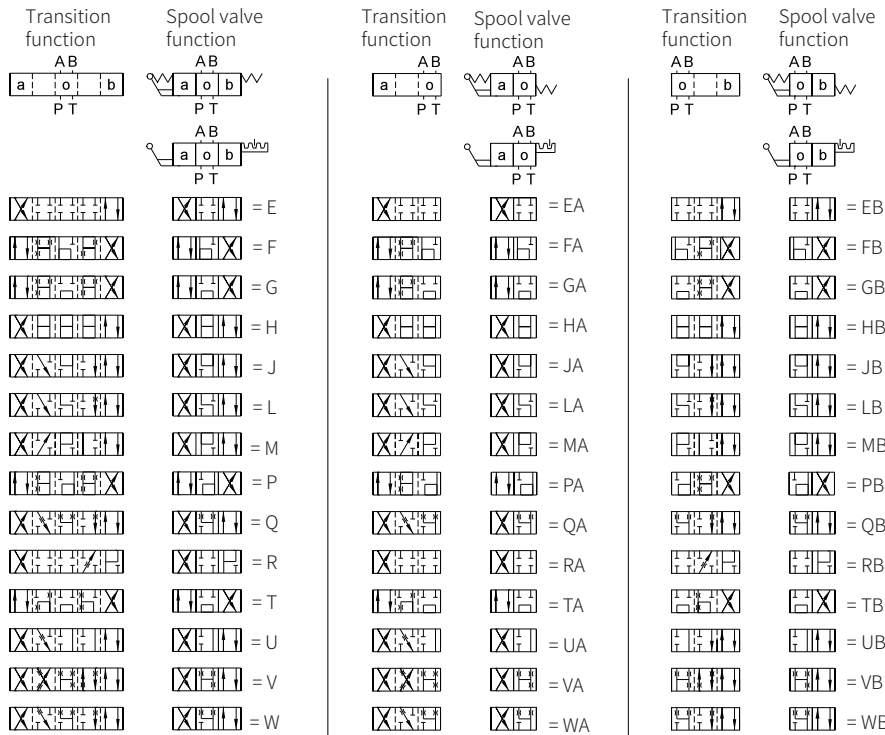
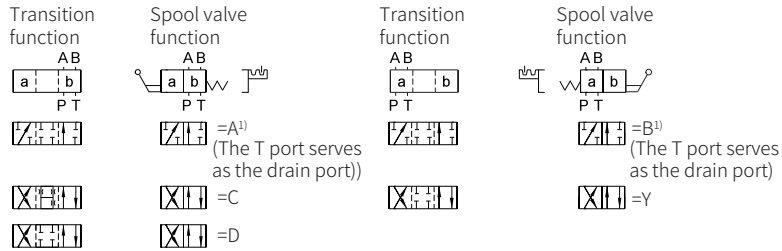
Contents

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Features

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

Functional symbols



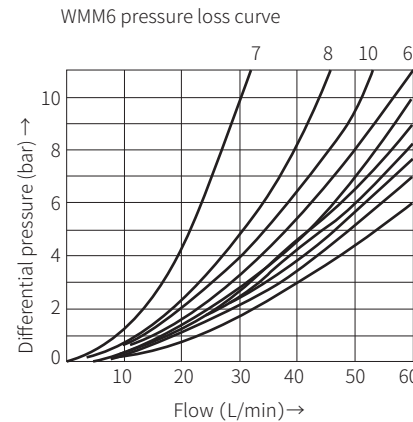
Explanation:
 (1) Symbol A and B only for size 6 and 10

Technical parameters

Size	6	10	16	25	32
Working pressure	to 315		to 350		
Oil port A, B, P (bar)					
Oil port T (bar)	to 160	to 150	to 250	to 250	to 250
Flow (L/min)	to 60	to 100	to 300	to 450	to 1100
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	about 45
Operating force (N)	Without return pressure about 20 Without return pressure about 30 (at 150 bar)	With detent: about 16 to 23 Without detent: about 20 to 27	about 75	about 120	about 170

Characteristic curve

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



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

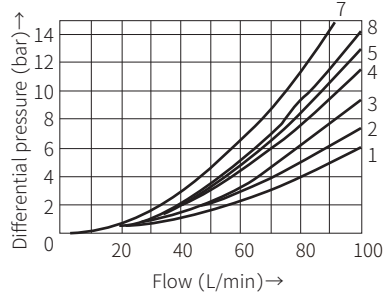
7. Symbol "R" in control position A to B
 8. Symbols "G" and "T" in the middle position P to T

Characteristic curve

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

WMM10 pressure loss curve

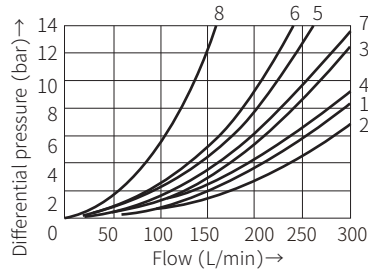
- 4. Symbols "G" and "T" in the middle position P to T
- 7. Symbol "R" in control position A to B



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

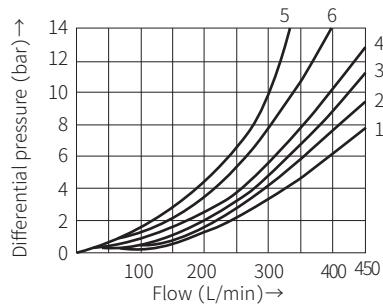
- 6. Symbols "G" and "T" in the middle position P to T
- 8. Symbol "S" in switching position P to T



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

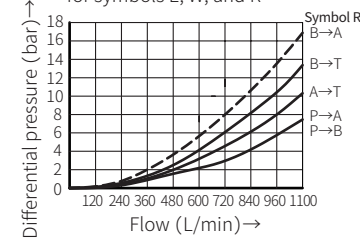


Function symbol	Flow direction			
	P→A	P→B	A→T	B→T
E	2	2	1	4
F	1	2	1	2
G	2	2	2	4
H	2	2	1	3
J	2	2	1	3
L	2	2	1	2
M	2	2	1	4
P	2	2	1	4
Q	2	2	1	4
R	1	2	1	-
T	2	2	2	4
U	2	2	1	4
V	2	2	1	4
W	2	2	1	3

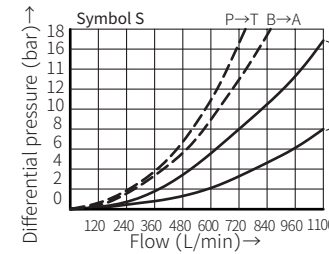
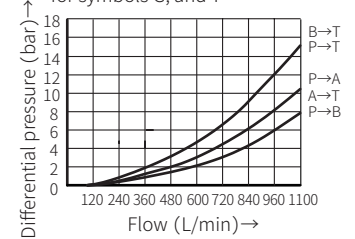
Characteristic curve

(Measured when using HLP46, $t_{oil} = 40^{\circ}C \pm 5^{\circ}C$)
WMM32 pressure loss curve

Δp -Q characteristic curve applicable for symbols E, W, and R



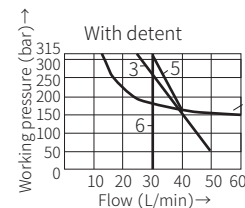
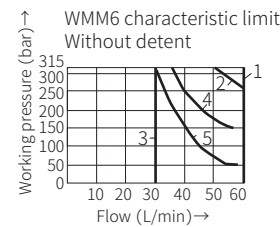
Δp -Q characteristic curve applicable for symbols G, and T



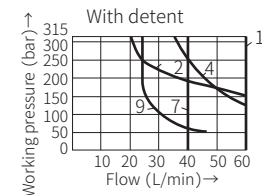
Characteristic curves of other symbols

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.



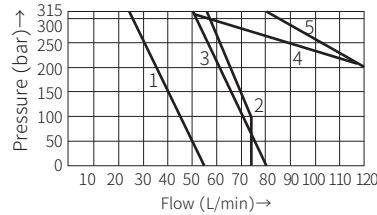
Characteristic curve	Spool valve symbol	Characteristic curve	Spool valve symbol
Without detent	1	With detent	E1, M, H
	2		C, D, Y
	3		E, J, Q
	4		L, U, W
	5		A, B
With detent	6	V	
	7	P	
	8	R	
	9	T	



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	315		70	140	210	280	315
Spring reset						Spring reset					
C	300	300	300	260	220	E, H, J, L, M, Q, R, U, W	300	300	300	300	300
D	300	300	210	190	160	F, P	300	300	210	190	170
K	300	300	200	150	130	G, S, T	300	300	220	210	180
Z	300	240	190	170	150	V	300	260	200	180	170
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	300
						F, P	300	300	280	230	230
						G, S, T	300	300	230	230	230
						V	300	300	250	230	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	315		70	140	210	280	315
Spring reset						Spring reset					
C	450	300	250	200	180	E, J, L, M, Q, R, U, W	450	450	450	450	450
D	350	300	275	250	200	F	450	250	200	135	110
K	200	150	140	130	120	G, T	450	330	290	230	180
Z	300	270	240	220	200	H	450	450	400	400	350
						P	450	310	240	215	150
						V	450	310	280	270	200
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	450
						V	450	450	400	350	300

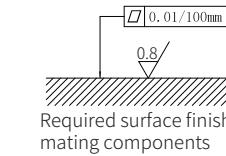
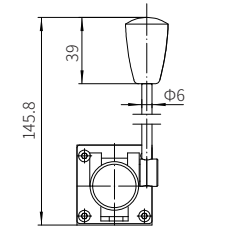
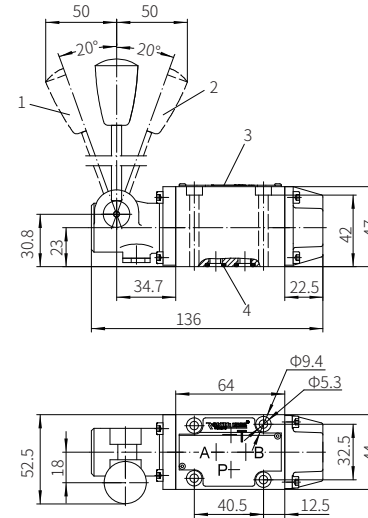
WMM32 characteristic limit

Flow L/min Function symbol	2-position and 3-position valves with spring reset				
	Under pressure of ... (bar)				
	70	140	210	280	315
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

Size unit: mm

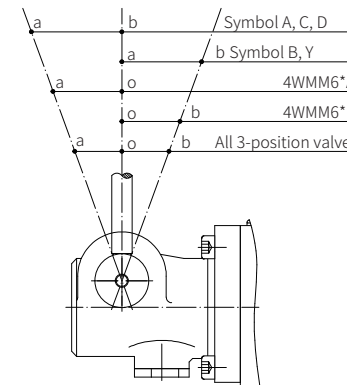
Model 4WMM6...5XJ/...



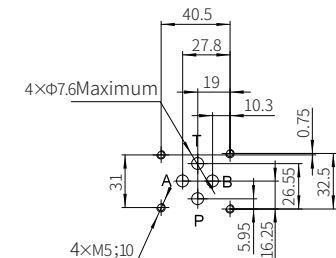
Required surface finishing of mating components

Valve fixing screw
M5x50-10.9 grade GB/T70.1-2000
Tightening torque $M_A=7.8N\cdot m$

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)



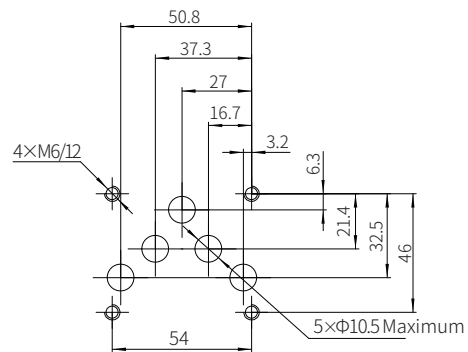
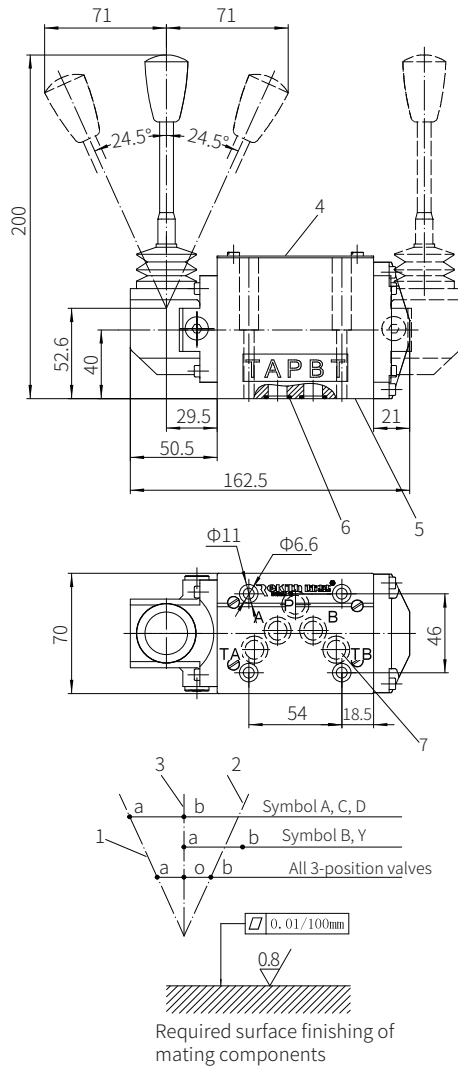
- 1 Switching position b→a and o→a
- 2 Switching position a→b and o→b
- 3 Name plate
- 4 O-ring 9.25x1.78 (for oil port A, B, P, T)



Component size

Size unit: mm

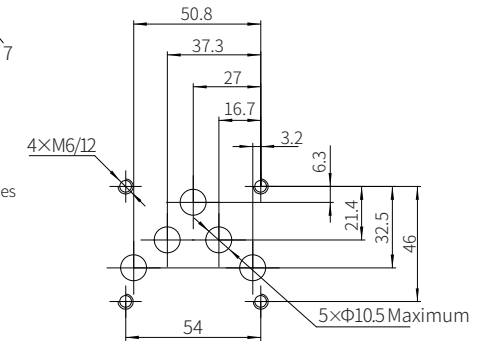
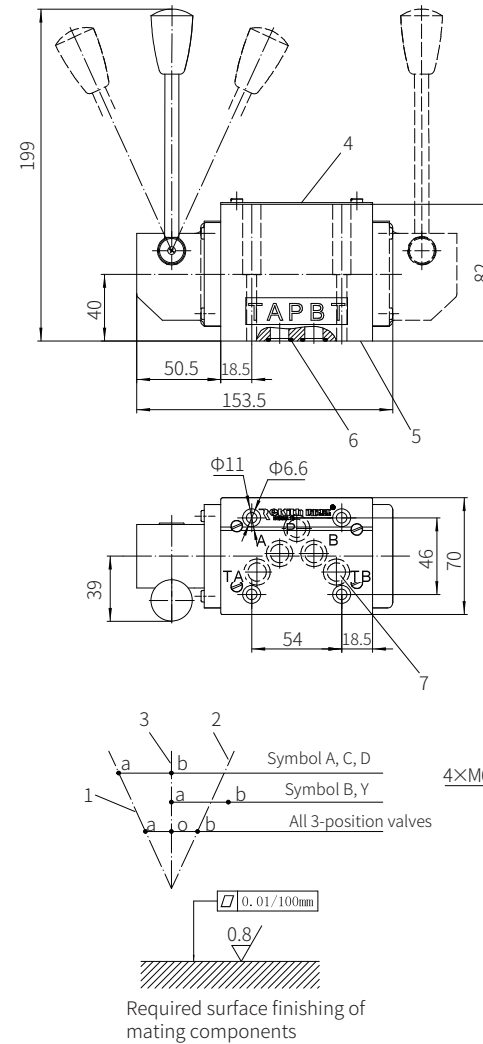
Model 4WMM10...1XJ/F...



Component size

Size unit: mm

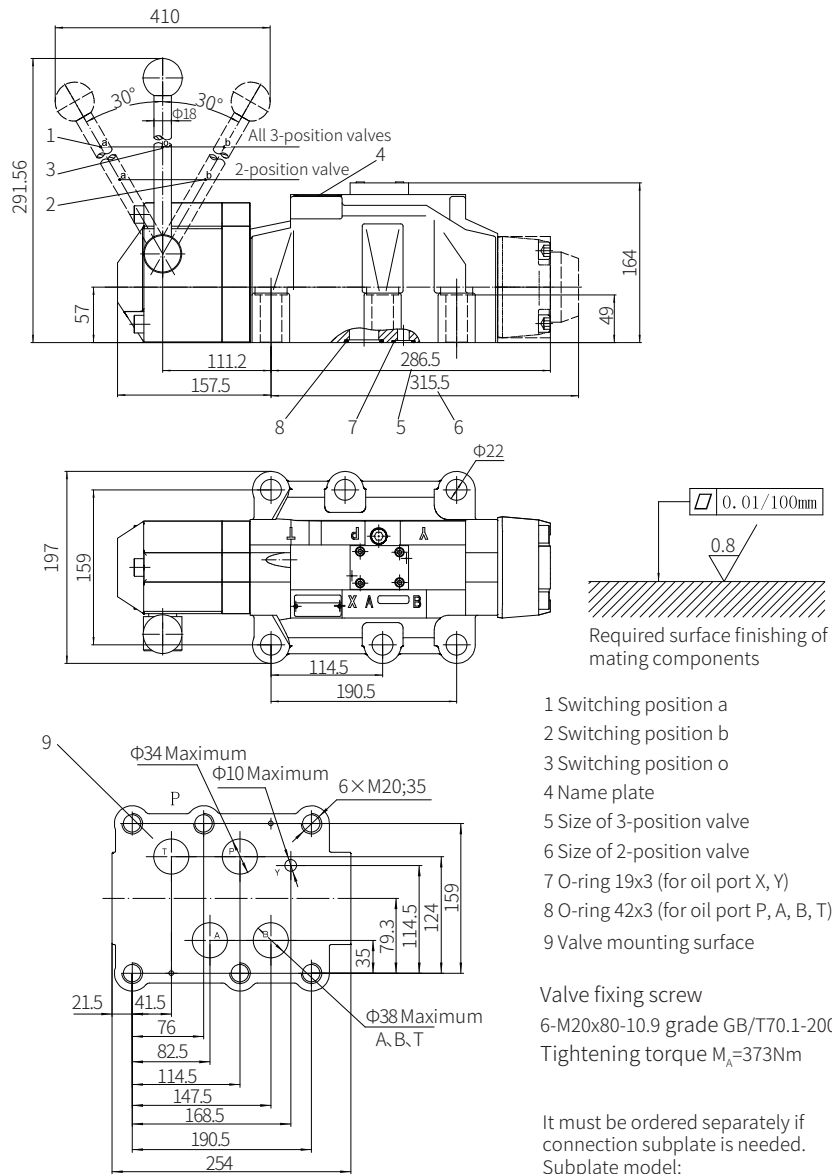
Model 4WMM10...1XJ/...



Component size

Size unit: mm

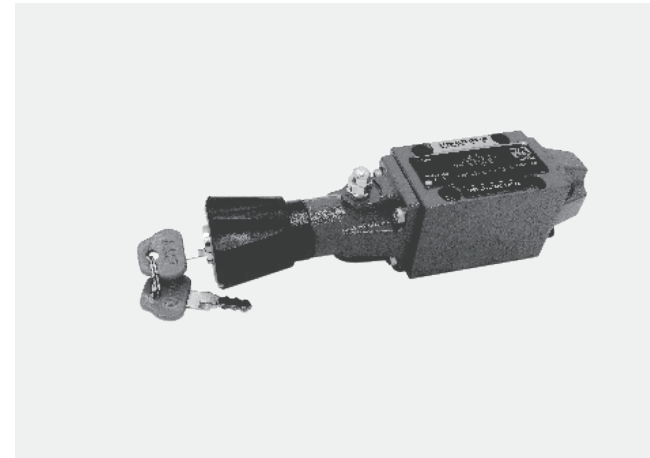
Model 4WMM32...6XJ/...



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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

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