

## Solenoid Operated Directional Valve

Model: WE10...5X



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

### Contents

Function description, sectional drawing	02
Models and specifications	03
Technical parameters	03
Functional symbols	04
Characteristic curve	05
Characteristic limit	05-06
Component size	07-08

### Features

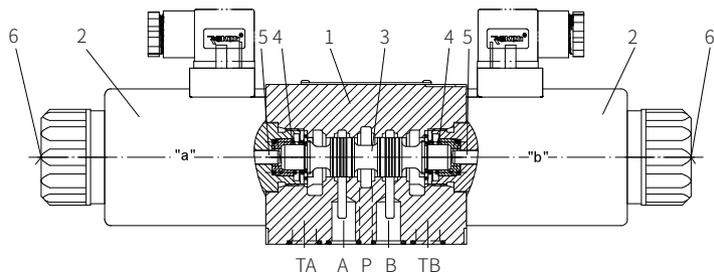
- Direct acting high-power solenoid operated directional spool valve
- Wet-pin DC or AC solenoids
- The solenoid coil can be rotated by 90°
- Replace the coil without releasing the oil
- Individual or central electrical connection, optional
- Optional manual operation

Function description, sectional drawing

The valve mainly consists of valve body (1), one or two solenoids (2), control spool (3), and one or two reset springs (4).

When the solenoid is not energized, the control spool (3) is held in the neutral or starting position by the reset springs (4) (except for impulse spools). The action of the control spool (3) is achieved by wet-pin solenoid (2). When the solenoid (2) is energized, the force of the solenoid acts on the control spool (3) through the push rod (5) to push it from its stationary position to the working position. In this way, the oil passes from P to A and B to T, or from P to B and A to T.

When the solenoid is powered off, the control spool (3) is pushed back to its original position by the reset springs (4). At this time, the manual button (6) can be pushed to move the control spool.



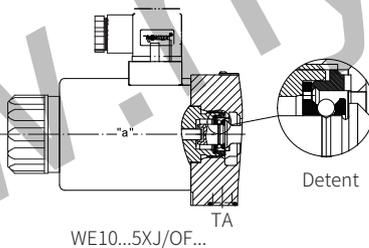
4WE10E 5X/J type structural diagram

Model WE10...5XJ/O...:

This type is a two-position valve operated by two solenoids, but without reset spring and detent, and is no definite switching position in the power loss state. Its working position can only be determined when powered on, and the solenoids need to be powered on for a long time.

Model WE10...5XJ/OF...:

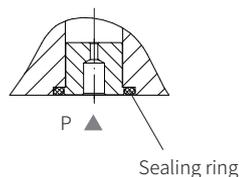
This type is also a two-position valve operated by two solenoids without reset spring but with detent, both working positions can be fixed. The spool is held in the fixed switching position without requirement of constant energization of the solenoids.



WE10...5XJ/OF...

Plug-in damper:

Due to working conditions limitations, it is possible that the flow exceeds the given value of the characteristics curve during the spool switching process. It is necessary to insert a plug-in throttle into port P of the valve.



Sealing ring

Models and specifications

WE	10	-	5X	/	C						*
----	----	---	----	---	---	--	--	--	--	--	---

3 working oil ports = 3  
4 working oil ports = 4

size 10 =10

symbols e.g. C, E, EA, EB etc.

50 to 59 series (50 to 59 series installation and connection size unchanged) =5X

no reset spring =0  
no reset spring, with detent =OF  
with reset spring =No code

wet pin solenoid with detachable coil =C

220V AC 50Hz/240V AC 60Hz =W220  
24V DC =G24  
28V DC =G28  
solenoid with rectifier (AC voltage 220V) =W220R

more information in text

sealing material  
No code = NBR seals  
V= FKM seals  
(consult for other seals)

No code= No plug-in throttle port  
B08= throttling diameter 0.8mm  
B10= throttling diameter 1.0mm  
B12= throttling diameter 1.2mm

single connection  
Z4= standard plug  
Z5L= large right angle lamp plug  
K4= no insert plug  
FS2= deutsch waterproof plug  
DL= centralized connection  
connection box with lamp

No code= no manual emergency operation  
N= with manual emergency operation  
N9= with hidden manual emergency operation

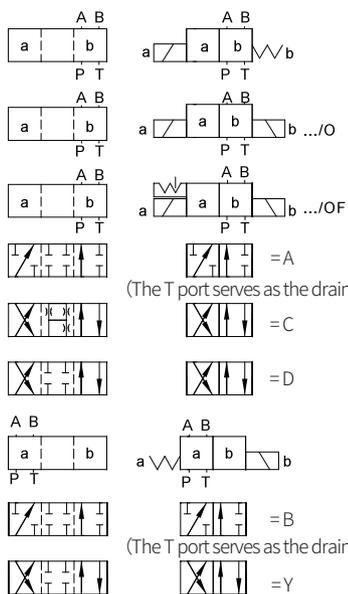
Technical Parameter

work pressure (MPa)	Oil port A, B, P Oil port T	to 315 to 210(DC), 160(AC)
Flow	L/min	120
Over-flow section	middle position	6% of rated cross-sectional area for symbol Q, 3% of rated cross-sectional area for symbol W
Pressure medium		Mineral oil (HL, HLP) <sup>1)</sup> in accordance with DIN 51524; Fast living organisms degraded oil according to VDMA 24568; HETG (Rapeseed oil) <sup>1)</sup> HEPG(Polyethylene glycol) <sup>2)</sup> HEES (synthetic ester) <sup>2)</sup>
Working medium temperature range	°C	-30 to +80 (NBR seal) -20 to +80 (FKM seal)
Viscosity range	mm <sup>2</sup> /s	2.8 to 500
Weight (kg)	Single solenoid	5.1 DC; 4.3 AC
	Double solenoids	6.7 DC; 5.1 AC

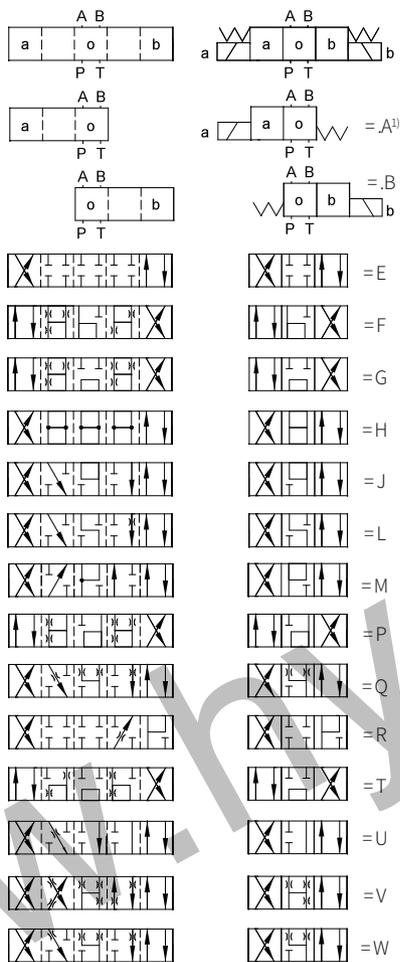
1) For NBR seal and FKM seal. 2) Only for FKM seal.

Note: For symbols A and B, if the working pressure exceeds the allowable pressure of the T chamber, port T must be used as a drain port.

Transition function Spool valve function

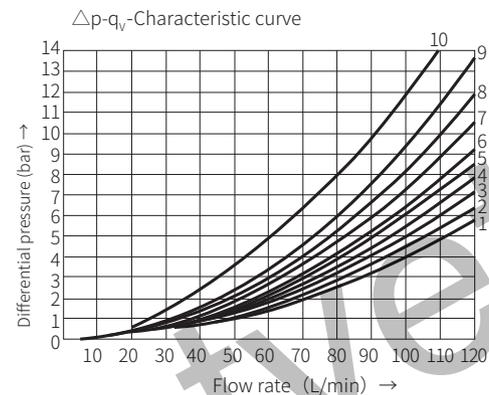


Transition function Spool valve function



1) For example:  
the function symbol EA means the solenoid on side A.

(Measured when using HLP 46,  $\vartheta_{oil} = 40^\circ\text{C} \pm 5^\circ\text{C}$ )



Open position	P to A	B to A	A to T	P to T	
R	-	9	-	-	
Open position	P to A	P to B	B to T	A to T	P to T
F	4	-	-	9	9
P	-	5	8	-	10
G, T	-	-	-	-	9
H	-	-	-	-	3

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

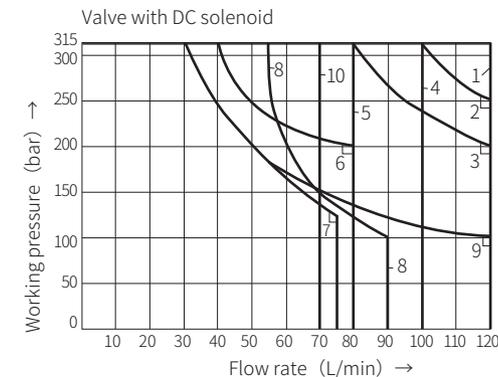
Characteristic limit

(Measured when using HLP 46,  $\vartheta_{oil} = 40^\circ\text{C} \pm 5^\circ\text{C}$ )

The indicated limit applies to two flow directions (e.g. from P to A and simultaneous return oil flow from B to T).

Due to the effect of hydraulic power inside the valve, the allowable power will be significantly reduced when there is only one flow direction (e.g. from P to A, and the B oil port is closed).

The power limit is measured when the solenoid is at the operating temperature, at 10% below the standard voltage and without tank preloading.



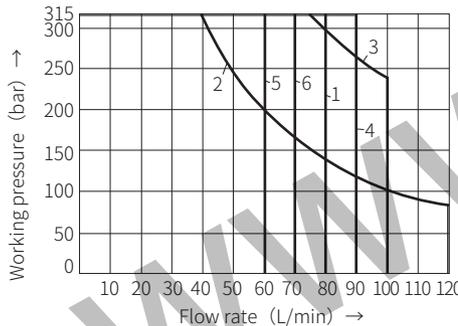
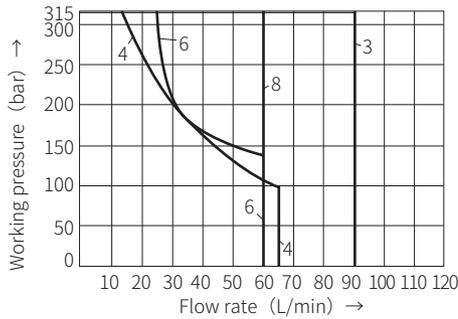
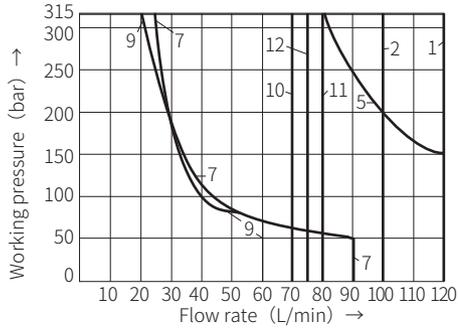
Characteristic curve	Function symbol
1	C, C/O, C/OF D, D/O, D/OF Y, M
2	E
3	A/O, A/OF L, U, J, Q, W
4	H
5 <sup>1)</sup>	R, L <sup>2)</sup> , U <sup>2)</sup>
6	G
7	T
8	F, P
9	A, B
10	V

- 1) Return oil flow (Independent from area ratio)
- 2) Applicable only in the middle position

Characteristic limit

(Measured when using HLP 46,  $v_{oil} = 40^{\circ}C \pm 5^{\circ}C$ )

Valve with AC solenoid



Characteristic curve	Function symbol
1	C, C/O, C/OF D, D/O, D/OF Y
2	E, L U, Q, W
3	M
4	A, B
5	A/O, A/OF, J
6	G
7	F, P
8	V
9	T
10	H
11	R
12 <sup>1)</sup>	L, U

Applicable only in the middle position  
42V, 50Hz; 110V, 50Hz; 120V, 60Hz;  
127V, 50Hz; 220V, 50Hz; 240V, 60Hz;

Characteristic curve	Function symbol
1	C, C/O, C/OF D, D/O, D/OF Y
2	A/O, A/OF
3	E
4	M
5	V
6	H

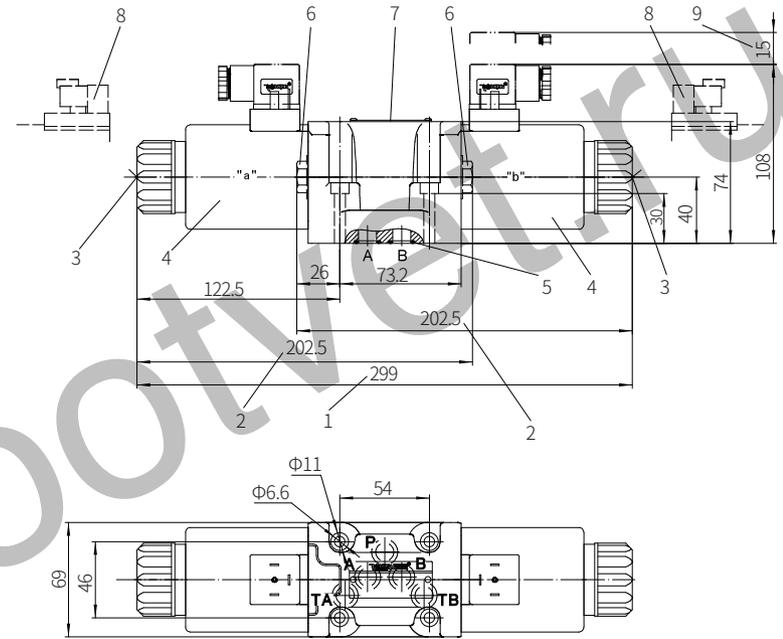
42V, 60Hz; 110V, 60Hz;  
127V, 60Hz; 220V, 60Hz;

Please consult us for the power limit  
of the special valve spools!

Component size

Size unit: mm

Valve with DC or AC rectified solenoid



1. Size of 3-position valve
2. Size of 2-position valve
3. Hidden emergency button
4. Solenoids
5. O-ring 12x2 (for oil port P, A, B, T)
6. Plug for valve with one solenoid
7. Name plate
8. Deutsch plug
9. Space required to remove the plug

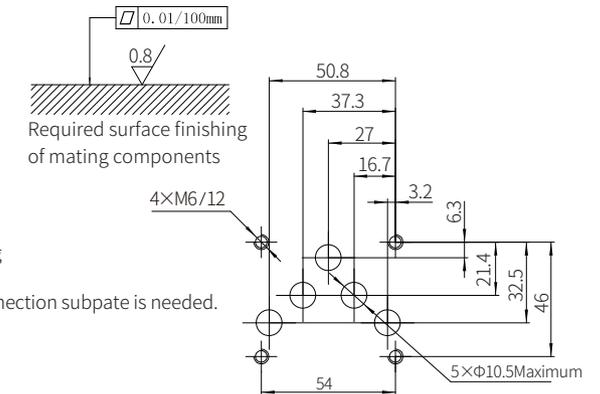
It must be ordered separately if connection subplate is needed.

Subplate model:

G66/01 (G3/8"); G66/02(M18x1.5)

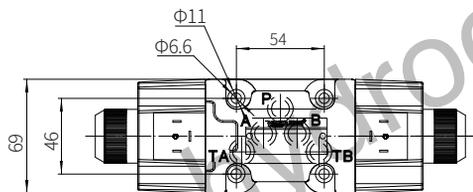
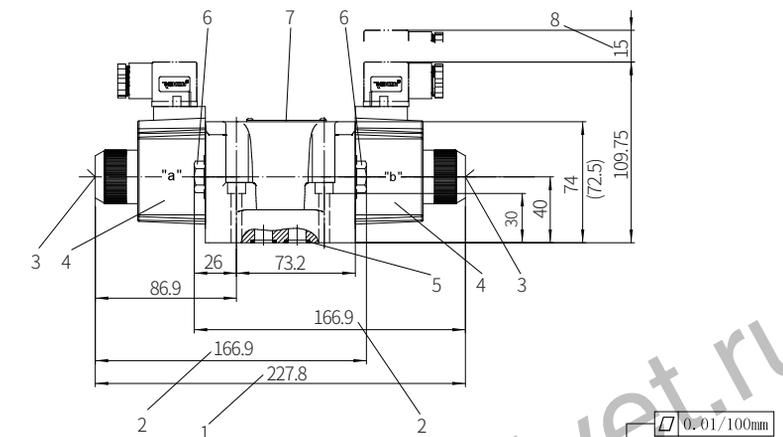
G67/01 (G1/2"); G67/02(M22x1.5)

G534/01 (G3/4"); G534/02(M27x2)

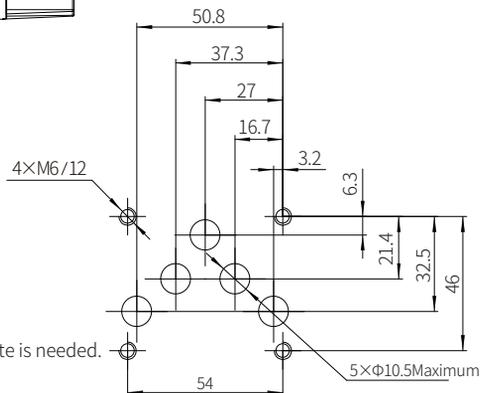


Valve fixing screw  
M6x40-10.9 grade GB/T70.1-2000  
Tightening torque  $M_k=13.7Nm$

Valve with AC solenoid



0.01/100mm  
0.8  
Required surface finishing of mating components



- 1. Size of 3-position valve
- 2. Size of 2-position valve
- 3. Hidden emergency button
- 4. Solenoids
- 5. O-ring 12x2 (for oil port P, A, B, T)
- 6. Plug for valve with one solenoid
- 7. Name plate
- 8. Space required to remove the plug

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)

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