01

Solenoid Operated Directional Valve

Model: WE10...3XJ

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

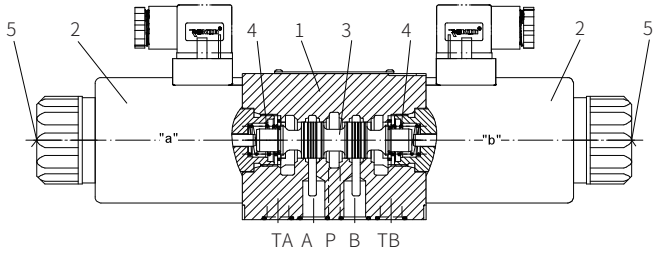
Contents

Features

- ● 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 emergency operation

Function description, sectional drawing

The WE10 directional valve is a directional spool valve operated by solenoids, It controls the opening, closing, and flow direction of the liquid flow.
The directional valve is mainly composed of valve body (1), one or two solenoids (2), control spool (3), and one or two reset springs (4). Without power on, the control spool (3) is under the action of the reset spring (4), it is in the middle or original position (except impulse type). The control spool (3) is operated by the wet-pin solenoid (2).
To ensure proper function, the pressure chamber of the solenoid must be filled with oil. The force of solenoid (2) acts on control spool (3) and push it from the stationary position to the terminal position. In this way, the pressure oil flows from P to A and B to T, or from P to B and A to T. After the solenoid (2) powered off, the reset spring (4) push the control spool (3) towards the middle position. As an optional "emergency manual operation" (5), it can change the position of control spool (3) without solenoids.



Model 4WE10...3XJ

Model WE10... 3XJ/OF... (impulse spool valve), with detent

(Only for symbols A, C and D)

This model is a two-position directional valve with two solenoids and detents,
In this way, the control spool can be held in any position and the solenoids do not need to be continuously energized.

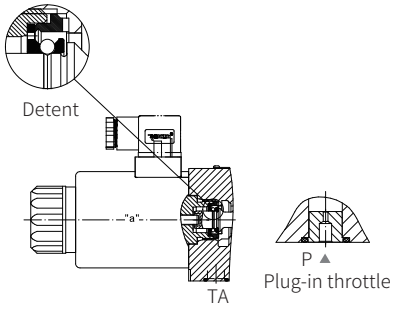
Plug-in throttle valve (model 4WE10.../.../B...)

If the flow exceeds the power limit of the valve during the direction changing process under the given working conditions, it is recommended to insert a plug-in throttle into port P.

Model WE10... 3XJ/O... type

(Only for symbols A, C and D)

This model is a directional vale with two solenoids, two-position switch but no detent.
Regardless of its position, one of the solenoids must be powered on, and there is no exact switching position when power is off.



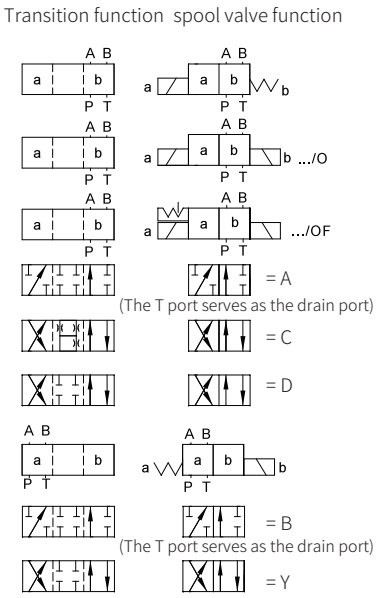
Model 4WE10...3XJ/OF... (Impulse spool valve)

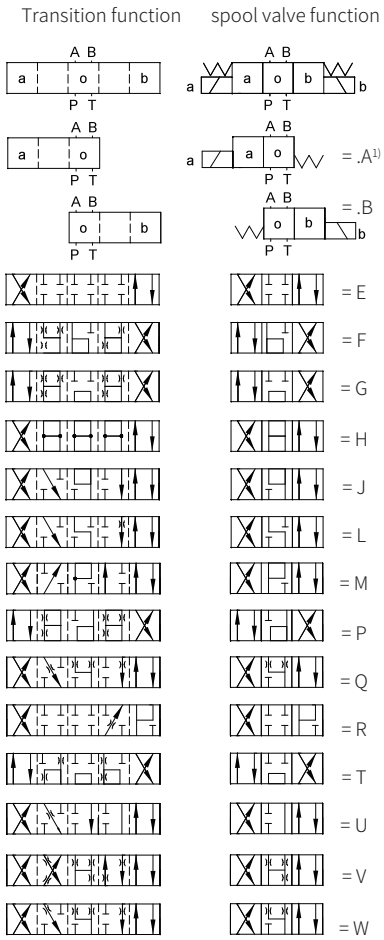
Models and specifications

WE 10 - 3X J / C / / *

- 3 way =3, 4 way =4
- size 10 =10
- function symbol
- 30 to 39 series =3X (30 to 39 series installation and connection size unchanged)
- Rekith =J
- with reset spring = No code
  no reset spring =O
  no reset spring, with detent = OF
- wet pin solenoid with detachable coil =C
- 12V DC =G12
  24V DC =G24
  28V DC =G28
  220V AC-50Hz/240V AC-60Hz =W220
  220V AC with rectifier =W220R
- with hidden manual emergency operation =N9 (standard)
  no manual emergency operation =No code
- sealing material
  No code= NBR seals
  V= FKM seals
  (consult for other seals)
- No code = no plug-in throttle port
  B08= throttle port diameter 0.8mm
  B10= throttle port diameter 1.0mm
  B12= throttle port diameter 1.2mm
- single connection
  K4= no insert plug
  Z4= standard plug
  Z5L= large right angle lamp plug
  FS2= deutsch waterproof plug
  centralized connection
  DL= connection box with lamp
- more information in text

Function symbols





1) For example:

the function symbol EA means the solenoid on side A.

Technical parameters

Overview				
Installation position			Optional	
Environment temperature range		°C	-30 to +50 (NBR seal)	
			-20 to +50 (FKM seal)	
Weight			Central connection	Individual connection
	Valve with one solenoid	kg	4.4 (DC); 3.6 (AC)	4.3 (DC); 3.5 (AC)
	Valve with two solenoids	kg	6.0 (DC); 4.4 (AC)	5.9 (DC); 4.3 (AC)
Hydraulic				
Maximum working pressure	port A、B、P	bar	315	
	port T	bar	210 (DC), 160 (AC) When the working pressure exceeds the allowable pressure, port T must be used as drain port for symbols A and B.	
Maximum flow		L/min	120	
Flow cross section (spool position O)	symbol V	mm^2	11 (A/B→T); 10.3 (P→A/B)	
	symbol W	mm^2	2.5 (A/B→T)	
	symbol Q	mm^2	5.5 (A/B→T)	
Oil fluid			Mineral oil (HL, HLP)[1] in accordance with DIN 51524; Fast living organisms Degraded oil according to VDMA 24568; HETG (Rapeseed oil)[1]; HEPG(Polyethyleneglycol)[2] ; HEES (Synthetic Fats) [2]	
Oil temperature range		°C	-30 to +80 (NBR seal)	
			-20 to +80 (FKM seal)	
Viscosity range		mm^2/s	2.8 to 500	
Cleanliness of oil			The maximum allowable pollution level of oil is ISO4406 Class 20 / 18 / 15	
Electrical				
Voltage type			DC	AC
Voltage available [4]		V	12, 24, 42, 60, 96, 110, 180, 205, 220	42, 110, 220, 230 50/60Hz
Allowable voltage tolerance		%	± 10	
Power consumption		W	35	-
Holding power		VA	-	90
Impact power		VA	-	550
Power rate			Continuous operation	
Switching time to ISO6403	On	ms	45 to 60	15 to 25
	Off	ms	20 to 30	20 to 30
Switching frequency		Times/h	to 15000	to 7200
Protection class to DIN 40050 [5]			IP 65	
Insulation grade VDE 0580			F	H
Maximum coil temperature [6]		°C	150	180

1) For NBR seal and FKM seal.

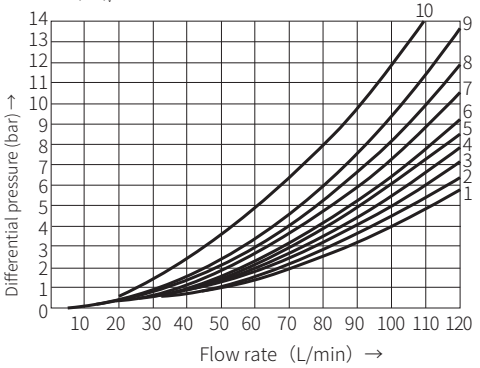
2) Only for FKM seal.

3) The oil must meet the cleanliness degree requested by the components in the hydraulic system. Effective oil filtration can prevent failure and increase the service life of the components.

Characteristic curve

(Measured when using HLP 46, ϑ_{oil}= 40°C ± 5°C)

△p-q_V-Characteristic curve



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

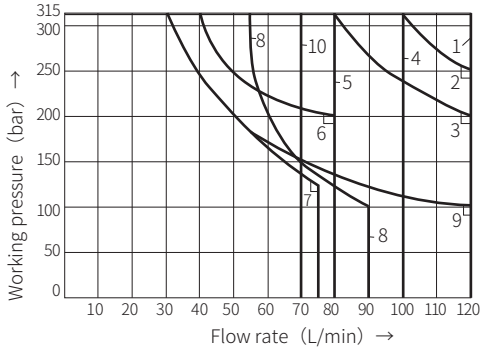
(Measured when using HLP 46, ϑ_{oil}= 40°C ± 5°C)

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.

Valve with DC solenoid



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[1]	R, L[2], U[2]
6	G
7	T
8	F, P
9	A, B
10	V

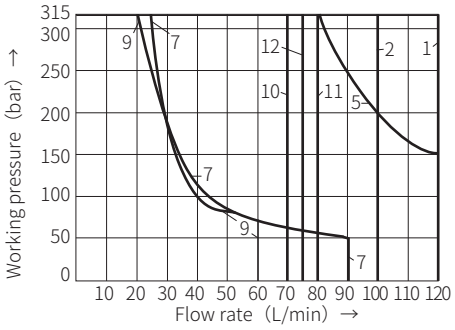
1) Return oil flow
(Independent from area ratio)

2) Applicable only in the middle position

Characteristic limit

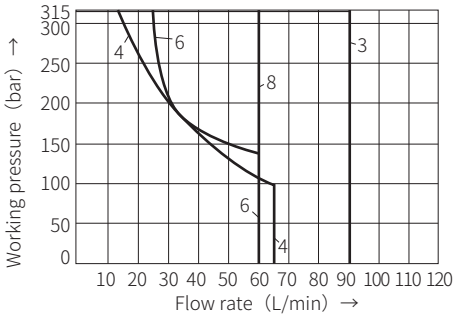
(Measured when using HLP 46, ϑ_{oil}= 40°C ± 5°C)

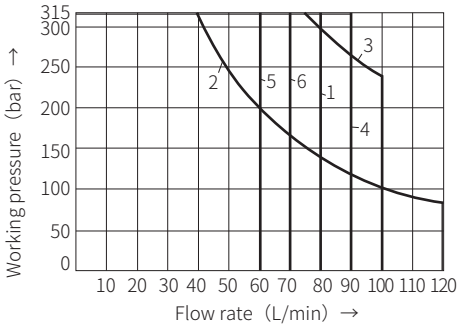
Valve with AC solenoid



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[1]	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

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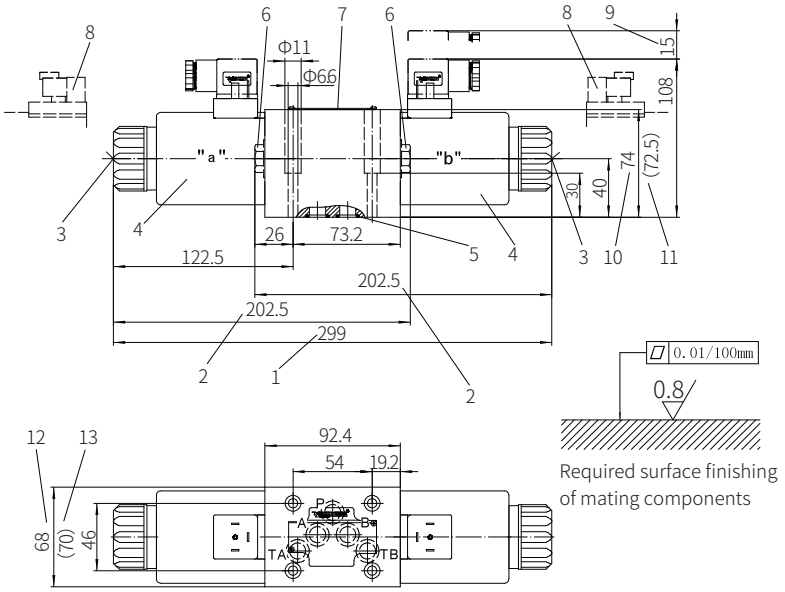
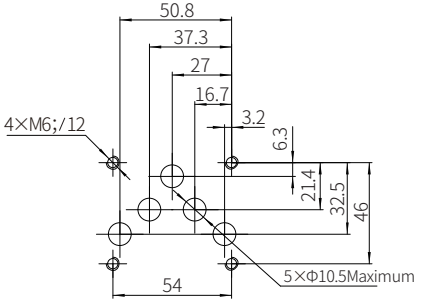
Valve with DC or AC rectified solenoid



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 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
10, 12 Size when three sides not machined
11, 13 Size when surface milling

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)

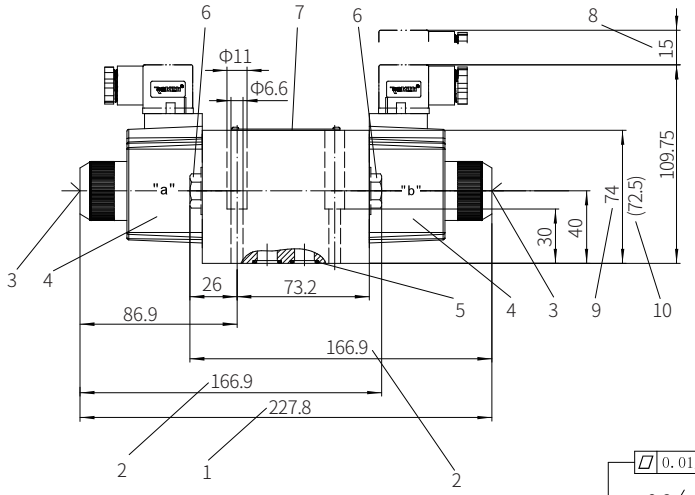
Valve fixing screw
M6x40-10.9 grade GB/T70.1-2000
Tightening torque M_A=13.7Nm

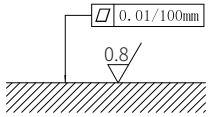
Component size

Size unit: mm

01

Valve with AC solenoid





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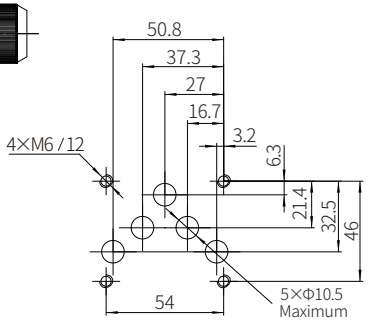

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