

Solenoid Operated Directional Valve

Model: WE10...5XJ



01

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

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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

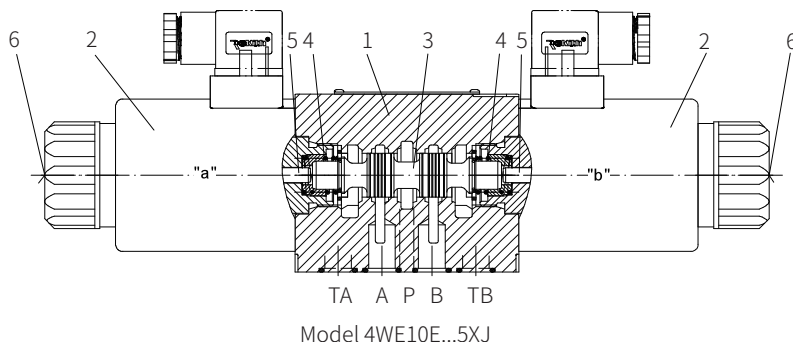
Function description, sectional drawing

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.

01



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.

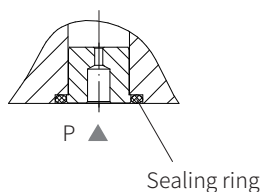
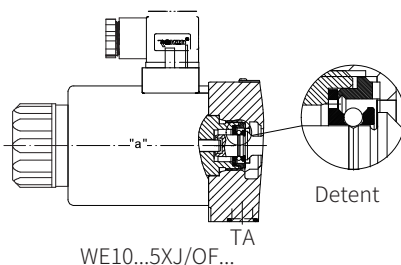
Version "73...A12" (smooth switching behavior)

By optimizing the structural design of the control spools and solenoids, the switching shocks occurring when the valve activated and closed has been significantly reduced.

The switching shocks (measured as acceleration values a) can be reduced by up to approx. 85% when compared to the standard valve depending on the design of the control spool.

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 an plug-in throttle into port P of the valve.



Models and specifications

	WE	10	-5X	J	C						*
3 way	=3										more information in text
4 way	=4										sealing material
size 10	=10										No code= NBR seals
symbols e.g. C, E, EA, EB etc.											V= FKM seals
50 to 59 series			=5X								(consult for other seals)
(50 to 59 series installation and connection size unchanged)											No code=without switching time increase
Rekith				=J							A12=with switching time increase (only for DC valve, and version "N9" and symbol "73")
no reset spring					=No code						No code=No plug-in throttle port
no reset spring, with detent					=O						B08= throttle 0.8mm
with reset spring					=OF						B10= throttle 1.0mm
wet pin solenoid with detachable coil					=C						B12= throttle 1.2mm
24V DC					=G24						single connection
28V DC					=G28						K4= no insert plug
AC 220V-50Hz/240V-60Hz					=W220						Z4= standard plug
solenoid with rectifier (AC voltage 220V)					=W220R						Z5= large right-angle plug
no manual emergency operation					=No code						Z5L= large right angle lamp plug
with manual emergency operation					=N						DL= centralized connection
with hidden manual emergency operation					=N9						box with lamp
											DKL= centralized connection with lights
											FS2= deutsch waterproof plug

Technical parameters

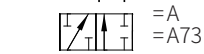
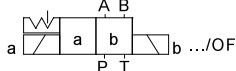
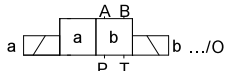
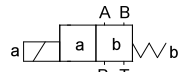
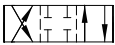
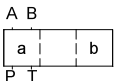
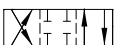
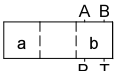
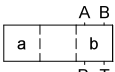
Work pressure port A, B, P	Mpa	to 315
port T	Mpa	to 210(DC), 160(AC)
Flow	L/min	120
Over-flow section middle position		6% of rated cross-sectional area for symbol Q, 3% of rated cross-sectional area for symbol W
Pressure medium		Mineral oil (HL, HLP) ¹⁾ in accordance with DIN 51524; Fast living organisms degraded oil according to VDMA 24568; HETG (Rapeseed oil) ¹⁾ ; HEPG(Polyethyleneglycol) ²⁾ ; HEES (Synthetic Fats) ²⁾
Working medium temperature range	°C	-30 to +80 (NBR seal) -20 to +80 (FKM seal)
Viscosity range	mm²/s	2.8 to 500
Weight	Single solenoid kg	5.1(DC); 4.3(AC)
	Double solenoids kg	6.7(DC); 5.1(AC)

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

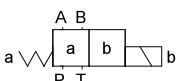
For symbols A and B, if the working pressure exceeds the allowable pressure of the T chamber, port T must be used as a drain port.

Functional symbols

Transition function Spool valve function



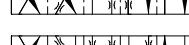
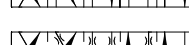
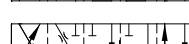
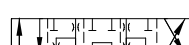
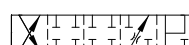
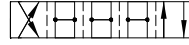
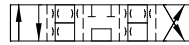
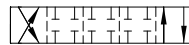
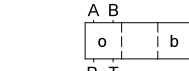
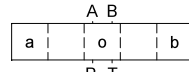
(The T port serves as the drain port)



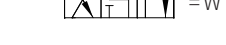
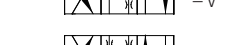
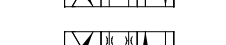
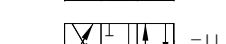
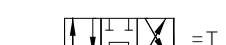
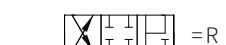
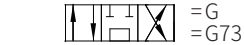
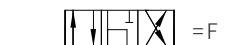
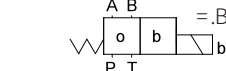
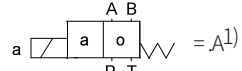
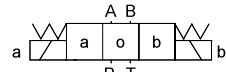
(The T port serves as the drain port)



Transition function



Spool valve function

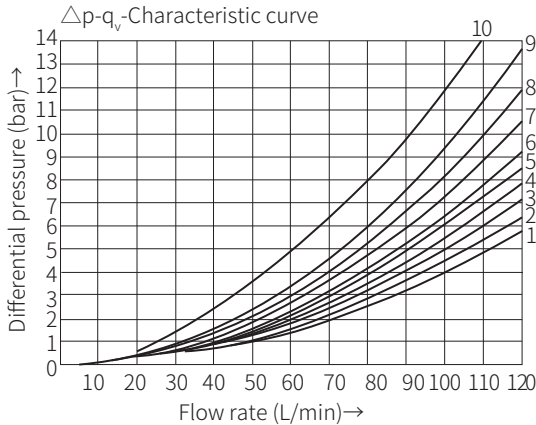


1) For example:

the function symbol F means
the solenoid on side A.

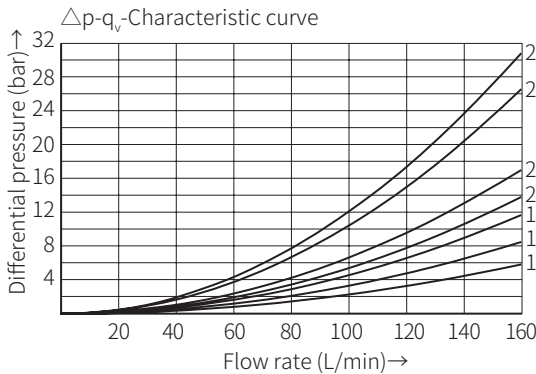
Characteristic curve

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

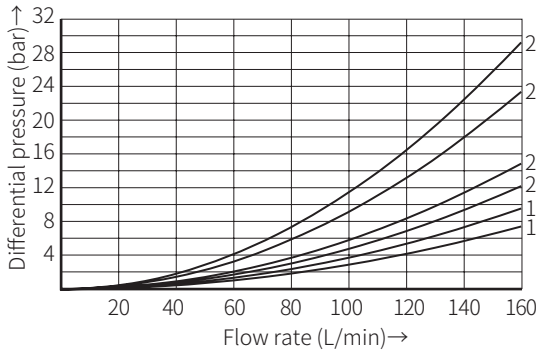


Open position		P—A	B—A	A—T	P—T
R		-	9	-	-
Open position	P—A	P—B	B—T	A—T	P—T
F	4	-	-	9	9
P	-	5	8	-	10
G, T			-	-	9
H			-	-	3

Function symbol	Flow direction			
	P—A	P—B	A—T	B—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



Function symbol	Flow direction			
	P—A	P—B	A—T	B—T
A73, B73	21	21	-	-
D73	24	25	25	16
E73	16	17	19	19
G73	17	17	23	23
H73	15	15	18	19
J73	20	19	15	23
L73	20	21	22	23
Y73	25	25	25	27



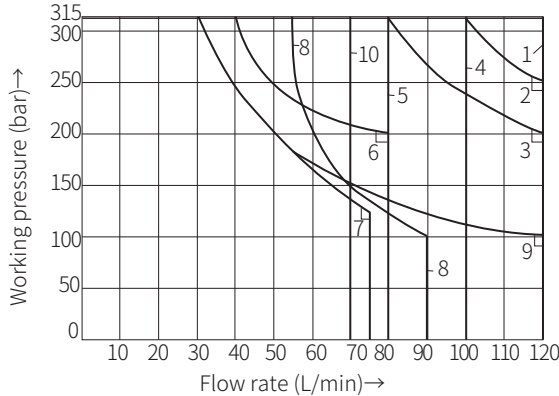
Characteristic limit

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



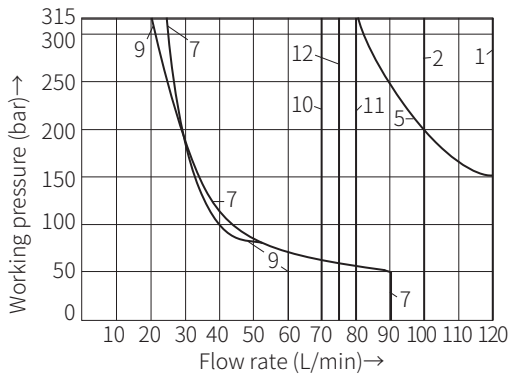
Characteristic curve	Function symbol
1	C, C/O, C/OF D, D/O, D/OF Y, M
2	E
3	A/O, A/OF L, U, J, Q, W
4	H
5 ¹⁾	R, L ²⁾ , U ²⁾
6	G
7	T
8	F, P
9	A, B
10	V

1) Return oil flow

(Independent from area ratio)

2) Applicable only in the middle position

Valve with AC solenoid



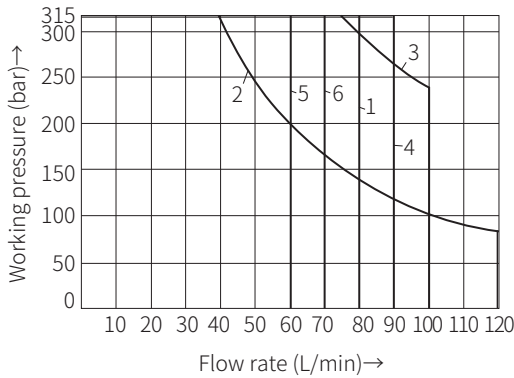
Characteristic curve	Function symbol
1	C, C/O, C/OF D, D/O, D/OF Y
2	E, L U, Q, W
3	M
4	A, B
5	A/O, A/OF, J
6	G
7	F, P
8	V
9	T
10	H
11	R
12 ¹⁾	L, U

Applicable only in the middle position

42V, 50Hz; 110V, 50Hz; 120V, 60Hz;

127V, 50Hz; 220V, 50Hz; 240V, 60Hz;

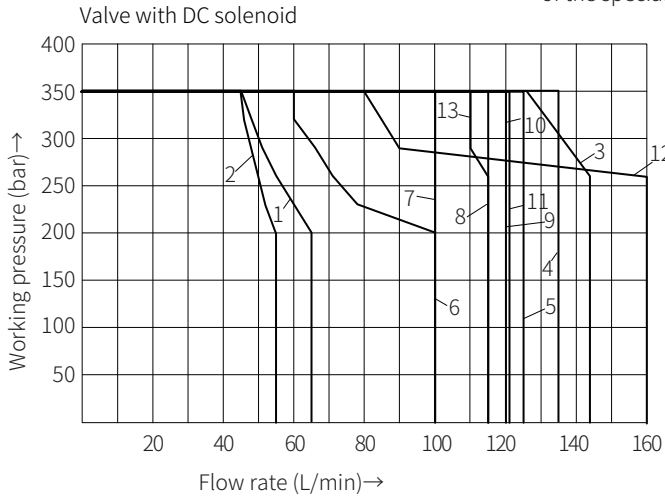
Characteristic limit



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!

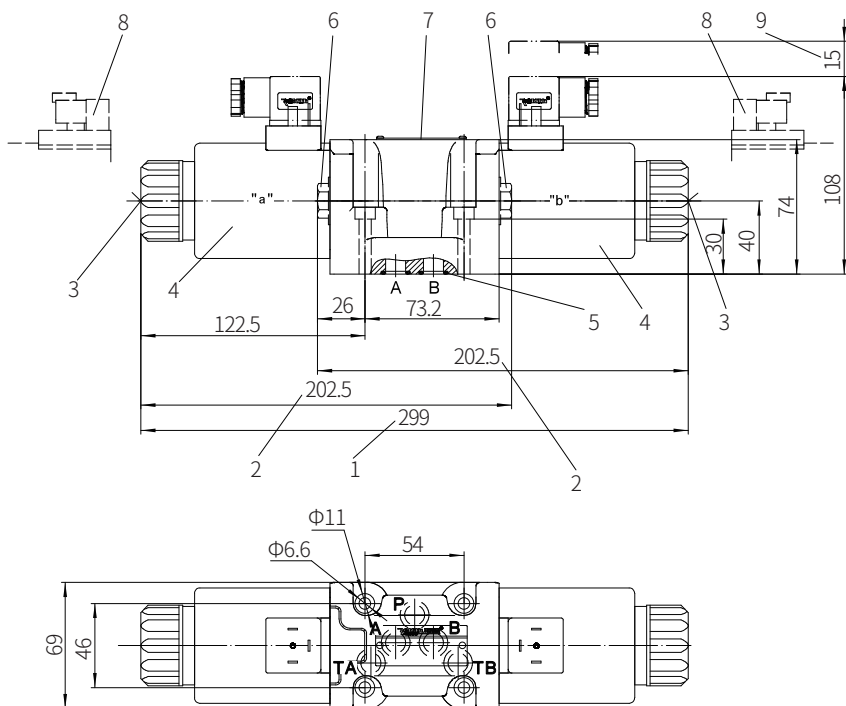


Characteristic curve	Function symbol
1	A73
2	B73
3	D73/OF
4	E73
5	H73...A12
6	G73
7	L73
8	E73...A12
9	Y73
10	D73
11	D73...A12
12	J73
13	J73...A12

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

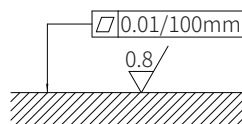
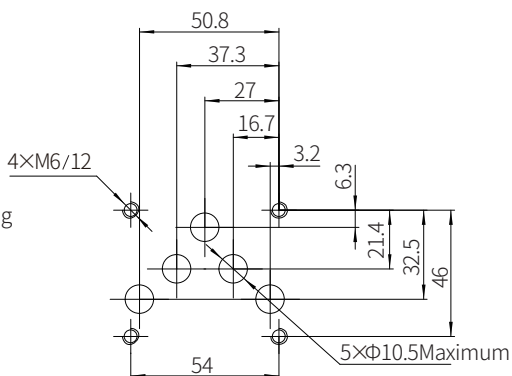
It must be ordered separately if connection subplate is needed.
Subplate model:

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

M6×40-10.9 grade GB/T70.1-2000

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

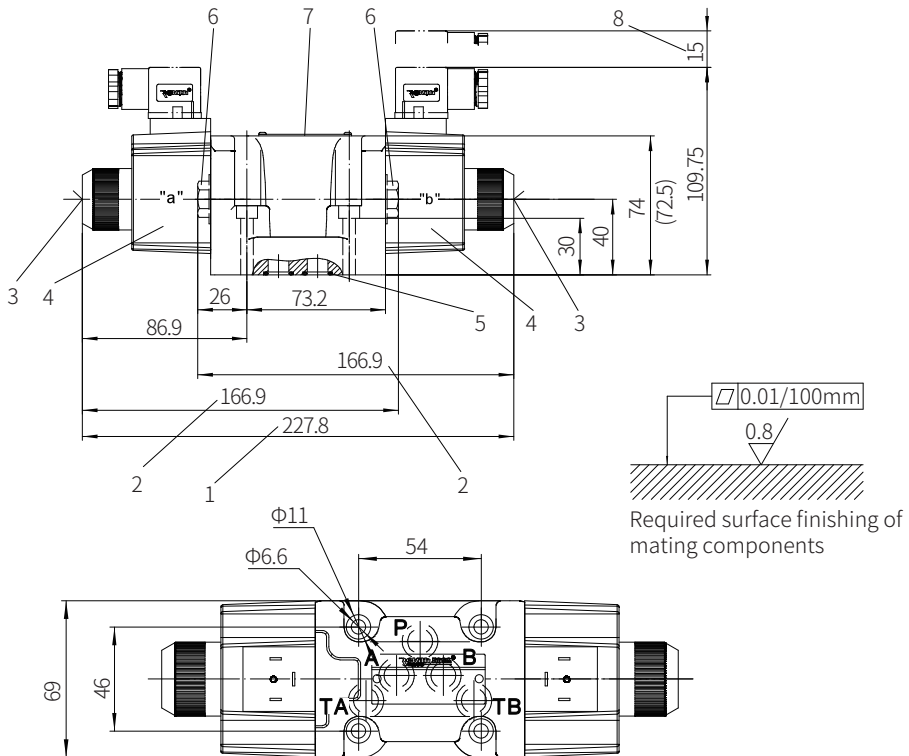


Required surface finishing of mating components

Component size

Size unit: mm

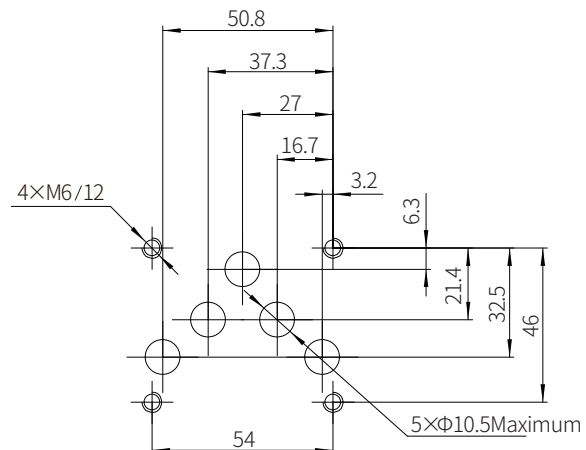
Valve with AC solenoid



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



Valve fixing screw

M6×40-10.9 grade GB/T70.1-2000

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