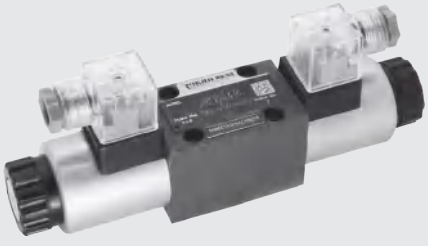
Solenoid Operated Directional Valve

Model: WE6...6XJ



- Size 6
- Maximum working pressure 350 bar
- Maximum working flow 80 L/min-DC
  60L/min-AC

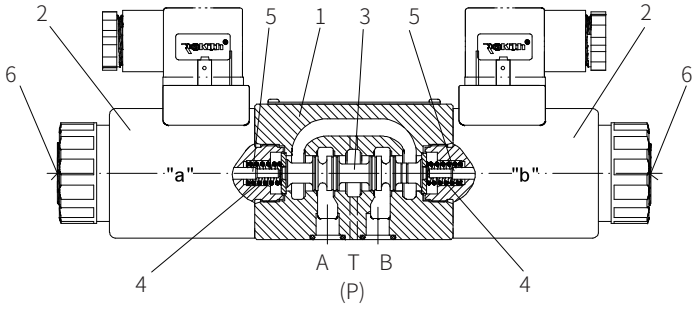
Contents

Features

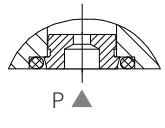
- With the direct type solenoid operated directional spool valve as the standard type
- Wet-pin DC or AC solenoids with detachable coil
- The solenoid coil can be rotated by 90°
- Replace the coil without releasing the oil
- Individual or central electrical connection, optional
- Optional manual emergency operation

Function description, sectional drawing

The WE6 directional valve is a directional spool valve operated by the solenoid. 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). The control spool (3) is held in the middle or original position by means of the reset spring (4) (except for impulse spools) in the de-energized condition.
The control spool (3) is operated by wet pin solenoids (2). The force of the solenoid (2) acts on the control spool (3) through the push rod (5) to push it from the stationary position to the terminal position. In this way, the hydraulic oil passes from P to A and from B to T, or from P to B and from A to T. After the solenoid (2) is de-energized, the reset spring (4) pushes the control spool (3) back to the middle position. As an optional emergency operation (6), it can change the position of the control spool (3) without solenoid (2).
Model WE6..6XJ/O (only for symbols A, C and D)
This model is a directional valve with two solenoids, two-position switch, without detent and no definite switching position in the power loss state. During power failure, there is no predetermined spool position.
Model WE6..6XJ/OF (impulse spool valve, only for symbols A, C and D)
This type refers to a two-position valve composed of two solenoids and a detent. The detent maintains the spool valve in its closest position and It is no require of continuous power supply.
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.
Attention!
If two or more valves share one return tube, the spool may work abnormally because of pressure peak especially for the valves with detent. It is recommended to use a separate return tube for each valve.



Model 4WE6...6XJ/



Plug-in throttle

Models and specifications

WE 6 [ ] –6X J [ ] C [ ] [ ] [ ] / [ ] [ ] [ ] *

3 working oil ports =3
4 working oil ports =4
symbols e.g. C, E, EA, EB etc.
60 to 69 series =6X
(60 to 69 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 AC50/60Hz =W220
120V or 110V AC50/60Hz =W110
110V or 220V with rectifier =W110R or W220R
with hidden manual emergency operation (standard) =N9
no manual emergency operation =No code

more information in text
sealing material
No code= NBR seals
V= FKM seals
(consult for other seals)
No code= without switching time increase
A12= with switching time increase
(only for DC valve, and version "N9" and symbol "73")
No code=no plug-in throttle port
plug-in throttle port (see table)

Oil port	Throttle port∅mm		
	0.8	1.0	1.2
P	=B08	=B10	=B12
A	=H08	=H10	=H12
B	=R08	=R10	=R12
A and B	=N08	=N10	=N12
T	=X08	=X10	=X12

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

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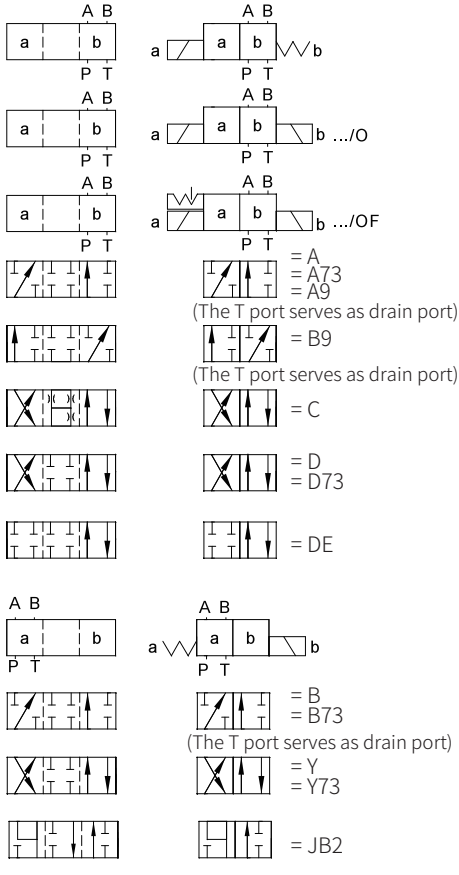
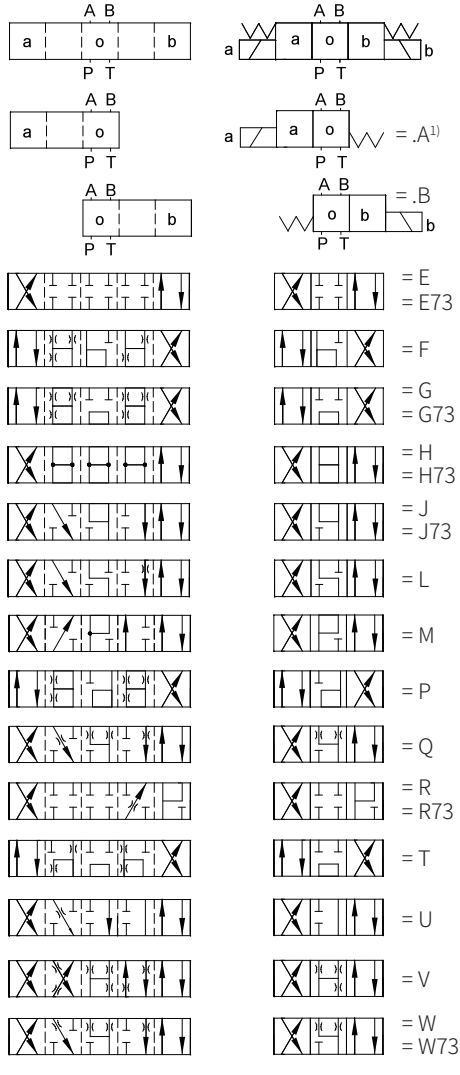
Functional symbols

Transition function Spool valve function



Transition function Spool valve function



1) For example: .
The function symbol EA means
the coil on side A
Note: Functions A9 and B9 are only used
as pilot valves

Technical parameters

Overview		
Installation position		Optional
Environment temperature range °C		-30 to + 50 (NBR seal) -20 to + 50 (FKM seal)
Weight	Valve with 1 solenoid kg	1.45
	Valve with 2 solenoids kg	1.95
Hydraulic		
Maximum working pressure	Oil port A, B, P bar	350
	Oil 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		80(DC); 60(AC)
Effective over-flow section (spool position) mm^2		About 6% cross-sections
		About 3% cross sections
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[3]		The maximum allowable pollution level of oil is ISO4406 Class 20/18/15

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.

Technical parameters

Electric				
Voltage type			DC	AC 50/60Hz
Voltage available[4]		V	12,24,42,60,96 110,180,205,220	42,110,120,230
Allowable voltage tolerance (voltage unit)		%	±10	±10
Power consumption		W	30	-
Holding power		VA	-	50
Impact power		VA	-	220
Power rate			100%	100%
Switching time to ISO6403	On	ms	25-45	10-20
	Off	ms	10-25	15-40
Maximum switching frequency		1/h	15000	7200
Insulation requirements			IP65	IP65

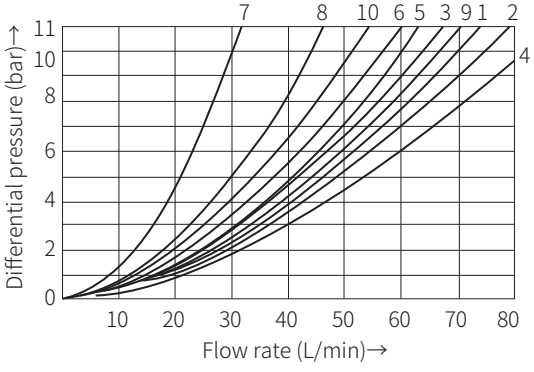
4) Other voltages are determined as required

Note:

There are 2-3 kinds of power supply options for AC voltage solenoids, such as W110; 110V-50Hz; 110V-60Hz; 120V-60Hz.

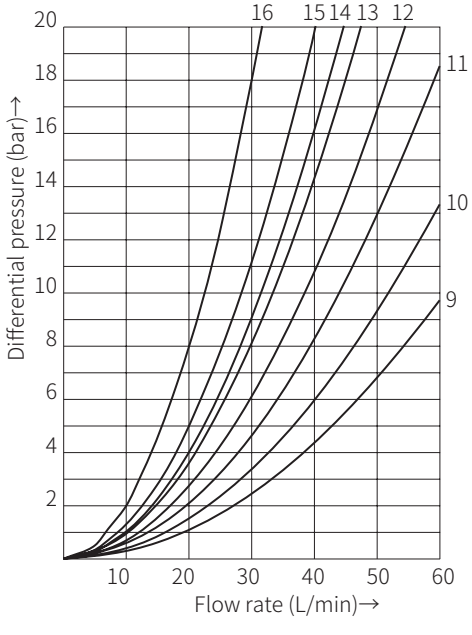
Characteristic curve

(Measured when using HLP46, ϑ_{oil}=40°C ± 5°C)



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

7 Symbol R in control position B→A
8 Symbols G and T in center position
9 Symbols H and T in center position P→T

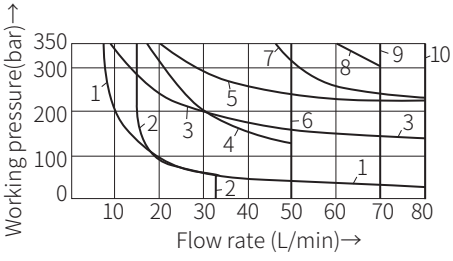


Functional symbol	Flow direction					
	P-A	P-B	A-T	B-T	P-T	B-A
E73	11	11	11	11	-	-
J73	13	13	9	9	-	-
H73	11	11	11	11	12	-
A73 B73	15	15	-	-	-	-
D73 Y73	14	14	14	14	-	-
G73	16	16	16	16	16	
R73	10	15	10	-	-	15
W73	10	10	10	10	-	-

Characteristic limit

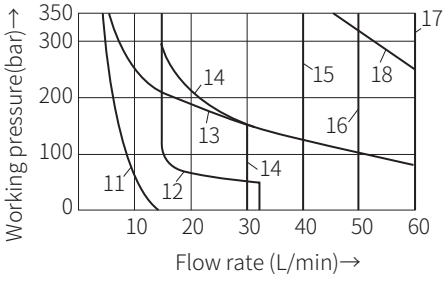
Attention!
The given working limit is suitable for the use of flow in both directions (e. g. from P to A and return from B to T at the same time).
Due to the power of the fluid in the valve, the power limit allowed for only one flow direction might be significantly reduced (e.g. from P to A, while B 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.

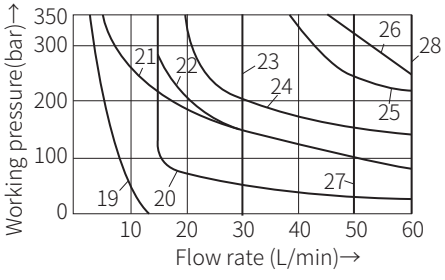


DC solenoid			
Characteristic curve	Function symbol	Characteristic curve	Function symbol
1	A; B[1)]	6	G; H; T
2	V	7	A/O; A/OF; L; U
3	A; B	8	C; D; Y
4	F; P	9	M
5	J	10	E; E1-[2)]; R[3)]; C/O; C/OF; D/O; D/OF; Q; W

Characteristic limit



AC solenoid—50Hz	
Characteristic curve	Function symbol
11	A; B[1)]
12	V
13	A; B
14	F; P
15	G; T
16	H
17	A/O; A/OF; C/O; C/OF; D/O; D/OF; E; E1-[2)]; J; L; M; Q; R[3)]; U; W
18	C; D; Y

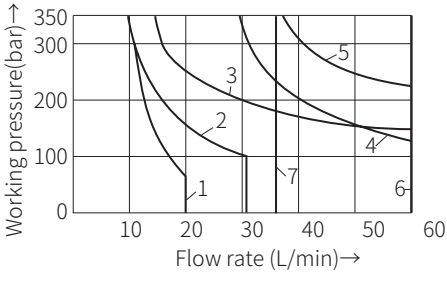


AC solenoid—60Hz	
Characteristic curve	Function symbol
19	A; B[1)]
20	V
21	A; B
22	F; P
23	G; T
24	J; L; U
25	A/O; A/OF; Q; W
26	C; D; Y
27	H
28	C/O; C/OF; D/O; D/OF; E; E1-[2)]; M; R[3)]

1) With manual emergency device

2) P- A/B pre-opening

3) Back from the actuator to the oil tank.



Characteristic curve	Function symbol
1	A73, B73
2	G73
3	D73, Y73
4	J73
5	R73
6	E73、W73、D73/0F
7	H73

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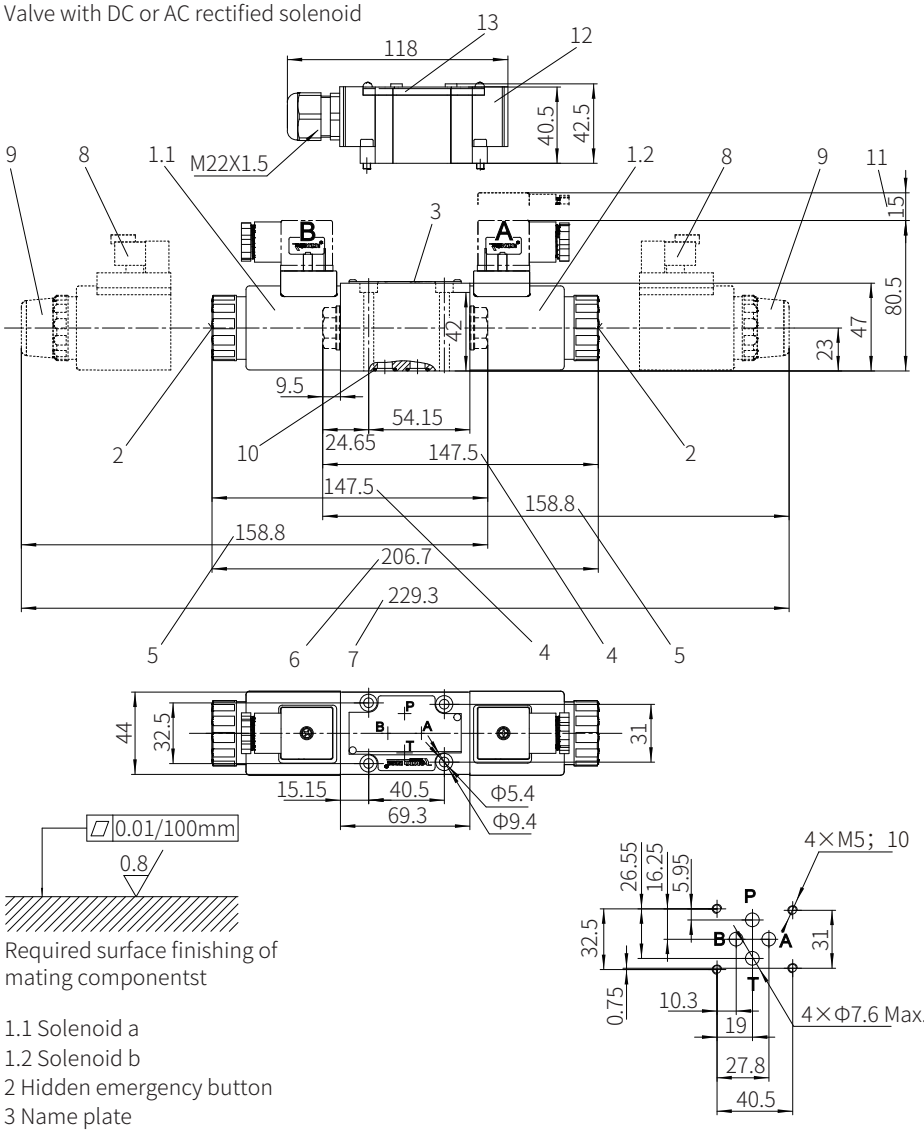
Component size

Size unit: mm

Valve with DC or AC rectified solenoid



Required surface finishing of mating componentst

1.1 Solenoid a
1.2 Solenoid b
2 Hidden emergency button
3 Name plate
4 Size of 2-position valve (non-waterproof)
5 Size of 2-position valve (waterproof with waterproof cap)
6 Size of 3-position valve (non-waterproof)
7 Size of 3-position valve (waterproof with waterproof cap)
8 Waterproof deutsch plug
9 Waterproof rubber cap (optional)
10 O-ring 9.25x1.78 (for oil port P, A, B, T)
11 Space required to remove the plug
12 Connection box
13 Name plate of connection box

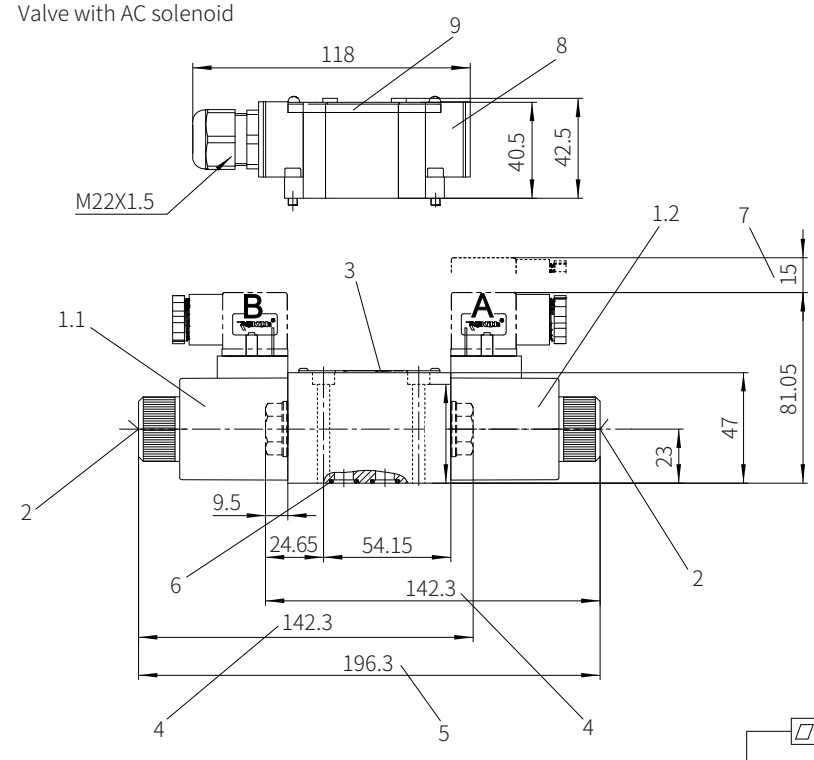
Valve fixing screw
M5×50-10.9 grade GB/T70.1-2000
Tightening torque M_A=8.9Nm

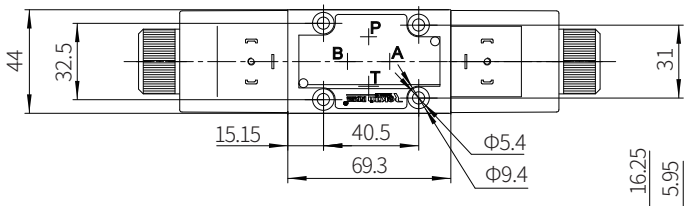
It must be ordered separately if connection subplate is needed.
Subplate model:
G341/01 (G1/4") : G341/02(M14×1.5)
G342/01 (G3/8") ; G342/02(M18×1.5)
G502/01 (G1/2") ; G502/02(M22×1.5)

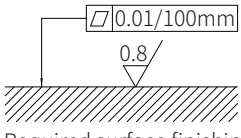
Component size

Size unit: mm

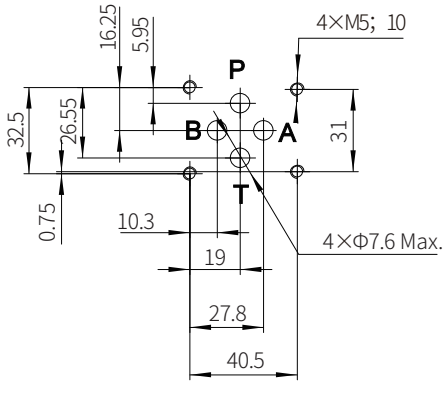
Valve with AC solenoid







Required surface finishing of mating componentst



1.1 Solenoid a
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2 Hidden emergency button
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6 O-ring 9.25x1.78 (for oil port P, A, B, T)
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Valve fixing screw
M5×50-10.9 grade GB/T70.1-2000
Tightening torque M_A=8.9Nm

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