

4/3, 4/2 and 3/2 Directional Valve with Wet-pin AC or DC Solenoid

2.11

Type WE 10...L3X

Size 10
Up to 315 bar
Up to 120L/min



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Features

- Direct operated directional solenoid valve, standard version
- Porting pattern according to DIN 24 340 form A, ISO 4401 and CETOP-RP 121 H
- Wet pin DC or AC solenoids with detachable coil
- Pressure-tight chamber needs not to be opened for a coil change

Function and configuration

Type WE valves are solenoid operated directional spool valves. They control the start, stop and direction of flow.

The directional control valves consist of housing (1), one or two solenoids (2), the control spool (3), and one or two return springs (4).

In the de-energized condition the control spool (3) is held in the neutral or initial position by means of return springs (4) (except for pulse spools). The control spool (3) is actuated via wet pin solenoids (2).

To ensure proper operation, care must be taken that the pressure chamber of the solenoid is filled with oil.

The control spool(3) is moved to the expected position by solenoid(2) and pushing rod(5), and this gives free-flow from P to A and B to T or P to B and A to T.

When solenoid (2) is de-energized, the control spool (3) is returned to its neutral position by means of the return springs (4).

The solenoids may also control the control spool (3) by an optional override button(6) under the de-energized condition.

For application in voltage pulsation, solenoids with large scope voltage are recommended.

For application in high protective grade, waterproof plug should be used.

Type 4WE10.. L3X/O...

(Only for symbols A, C and D)

This Type is a 2-position directional valve with 2 solenoids without detents. The spool position, when the solenoids are de-energised, is not defined..

Type 4WE10.. L3X/OF...

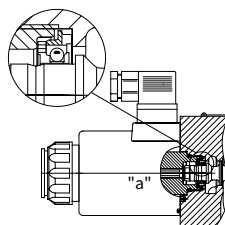
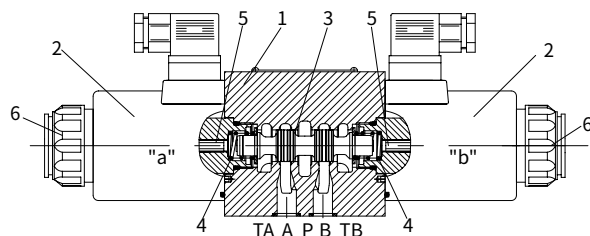
(Impulse spool, only for symbols A, C and D)

This Type is a 2-position directional valve with 2 solenoids and detents. Hence, when the solenoids are de-energized, the spool is held in the detented position then the solenoids do not need to be continuously energised.

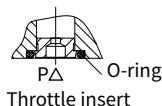
Throttle insert (type 4WE10...L3X/.../B..)

The use of a throttle insert is required if, due to the operating conditions, flows can occur during the switching process which are larger than the performance limits of the valve allow.

The orifice is to be inserted into the P channel of the directional valve.



Type 4WE10.. L3X/OF...
(Impulse spool)



Throttle insert

Ordering code

	WE	10	- L3X /			N	/		*
3 ways = 3 (For spool A and B)									Further details in clear text
4 ways = 4									
Directional valve with wet pin solenoids									No code = NBR seals V = FKM seals
Nominal size 10 =10									No code = Without throttle insert
Symbols e.g. C, E etc.									B08 = Throttle Ø0.8 mm B10 = Throttle Ø1.0 mm B12 = Throttle Ø1.2 mm B15 = Throttle Ø1.5 mm B20 = Throttle Ø2.0 mm B25 = Throttle Ø2.5 mm B30 = Throttle Ø3.0 mm
Series L30 to L39 =L3X (L30 to L39: unchanged installation and connection dimensions)									Z4 = square plugs (not applicable for the integer)
With spring return = No code									Z5L = square plugs with lamps
Without spring return = O									K4 = DIN4365 sockets without plugs
Without spring return, and with detent = OF									K7 = Deutsch connector assembly, without plugs ¹⁾
Standard solenoid =C									DL = Central connection with indicator lamp (M22×1.5 interface)
Large-range solenoid (Only for K4 24V DC) =N									
24V DC =G24									
220V AC 50/60 Hz =W220									
Plug rectification 220V =W220R									
110V AC 50/60 Hz =W110									
Plug rectification 110V =W110R									
Other voltage see next page									
With manual override button = N									

Note: 1) K7 Deutsch connector
assembly Only for 12V and 24V.

Symbols

Transition position

Spool valve symbols

Transition position

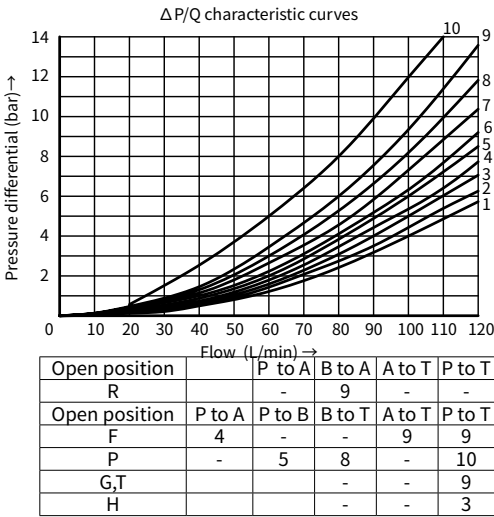
Spool valve symbols

¹⁾ Spool symbols B9,Y9 are only for type without .../O...and .../OF... .

²⁾ Example: If solenoid is fixed at position 'a', the ordering code is ...EA

Characteristic curves

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



Spool 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

Technical data

Fixing position			Optional	
Environment temperature range			-30 to +50 (NBR seal)	
			-20 to +50 (FKM seal)	
Weight			Independently wiring	central monitoring station
	Single solenoid	kg	4.3(DC), 3.5(AC)	4.4(DC), 3.6(AC)
	Double solenoids	kg	5.9(DC), 4.3(AC)	6.0 (DC), 4.4(AC)
Max.operating pressure	Port A,B,P	bar	315	
	Port T	bar	210 (DC),160 (AC), when the operating pressure exceeds the permission value, spool symbol A and B must make the port T for draining.	
Max. flow-rate			L/min	120
Flow cross section (switching neutral position)	Version V	mm ²	11(A/B to T), 10.3(PtoA/B)	
	Version W	mm ²	2.5(A/B to T)	
	Version Q	mm ²	5.5(A/B to T)	
Fluid			Mineral oil suitable for NBR and FKM seal	
			Phosphate ester for FKM seal	
Fluid temperature range			-30 to +80 (NBR seal)	
			-20 to +80 (FKM seal)	
Viscosity range			mm ² /s	2.8 to 500
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406	

Electric data

Type of voltage			DC	AC
Available voltage	V		12,24,28 ¹⁾ ,48,96,110,205,220	110,127,220
Voltage tolerance (nominal voltage)	%		Standard solenoid: +10~ -15 large-scope solenoid: +20~-30	
Power consumption	W		Standard solenoid: 35 large-scope solenoid: 42	
Holding power	VA		-	50
Making capacity	VA		-	550
Duty			Continuous working	
Switching time to ISO 6403	ON	ms	45 to 60	15 to 25
	OFF	ms	20 to 30	20 to 30
Switched frequency	times/h		to 15000	to 7200
Type of protection to DIN 40050			IP65(Z4,Z5L plug), IP67 (K7 Deutsch)	
Max. coils temperature	°C		+150	+180

Caution: When connecting wires, properly connect the PE conductor (PE $\frac{1}{2}$).

(For other type voltage please consult us.)

02

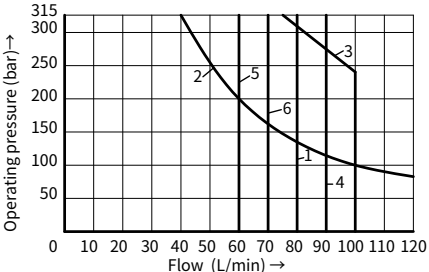
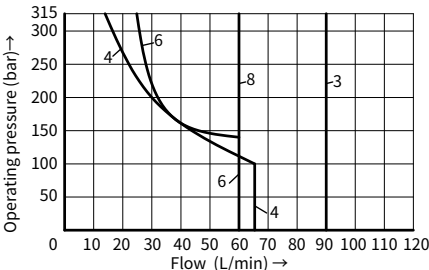
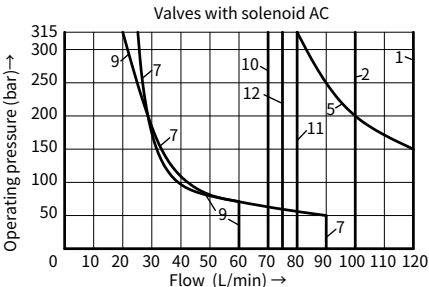
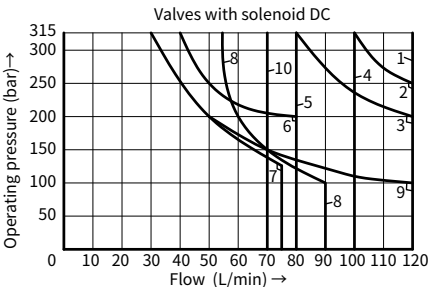
Performance limits

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

The performance limits shown are valid when the valve is used with two directions of flow (e.g. from P to A with simultaneous return flow from B to T).

Due to the flow forces occurring within the valves, the permissible switching performance limits can be significantly lower with only one direction of flow (e.g. from P to A and port B blocked)! (For these applications, please consult us.)

The performance limit was determined with the solenoids at their operating temperature, 15% under voltage and with no pre-loading of the tank.



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

Notes: 1) Return flow (independent of area ratio);
2) Only suitable for neutral position

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

Notes:
1)Only suitable for neutral position
48V 50Hz, 110V 50Hz, 127V 50Hz,
220V 50Hz, 230V 60Hz

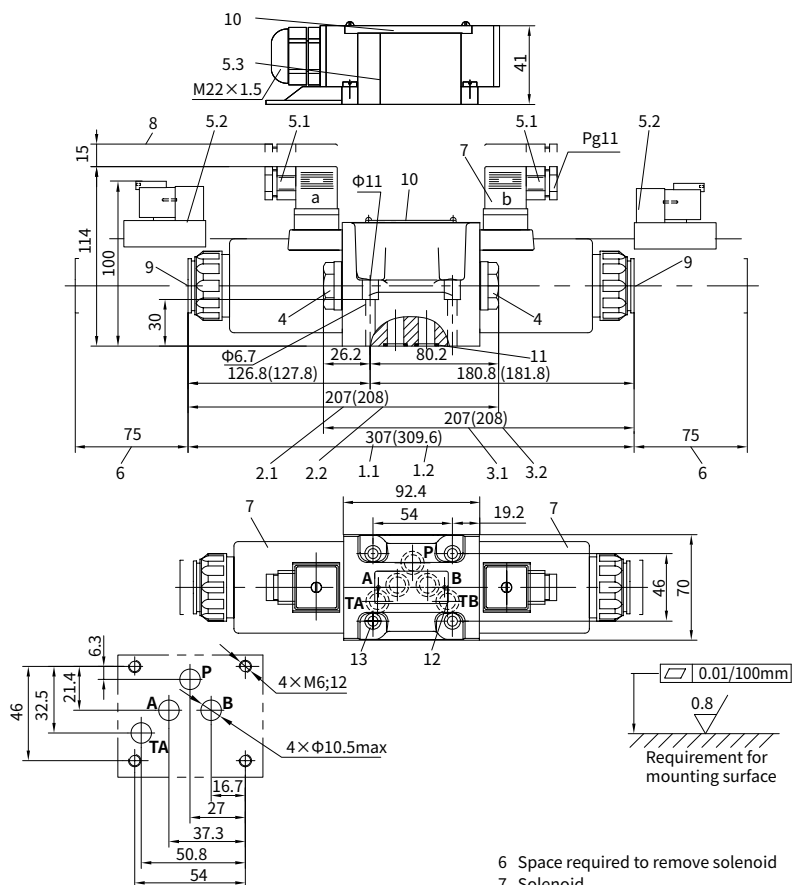
Curve	Spool symbol	Curve	Spool symbol
1	C, C/O, C/OF; D, D/O, D/OF; Y	3	E
		4	M
		5	V
2	A/O, A/OF	6	H

48V 60Hz, 110V 60Hz, 127V 60Hz, 220V 60Hz

Unit dimensions

(Dimensions in mm)

Valve with DC or rectification AC solenoid



- 1.1 Dimension of 3-position, standard version
- 1.2 Dimension of 3-position, large-scope
Type of voltage
- 2.1 Dimension of 2-position with solenoid at 'A',
standard version
- 2.2 Dimension of 2-position with solenoid at 'A',
large-scope Type of voltage
- 3.1 Dimension of 2-position with solenoid at 'B',
standard version
- 3.2 Dimension of 2-position with solenoid at 'B',
large-scope Type of voltage
- 4 Plug for valves with one solenoid
- 5.1 Plug-in connector to DIN 43 650 (rotatable 90 °)
- 5.2 Deutsch connector assembly
- 5.3 Junction box with lead and light, M22×1.5 interface

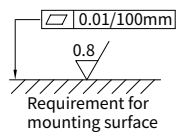
- 6 Space required to remove solenoid
- 7 Solenoid
- 8 Space required to remove Plug-in connector
- 9 Fault inspection override 'N' button
- 10 Nameplate
- 11 O-ring 12×2
- 12 Fix additional port TB on the manifold
when necessary
- 13 Valve fixing screws:
M6×40 GB/T 70.1-10.9, Tightening torque
M_A=15.5Nm, must be ordered separately.

**It must be ordered separately,
if connection plate is needed.**

Type:

G 66/01 (G 3/8), G 66/02(M18×1.5)
G 67/01 (G 1/2), G 67/02(M22×1.5)
G 534/01 (G 3/4), G 534/02(M27×2)

11 —



- 11 Nameplate
- 12 O-ring 12×2
- 13 Fix additional port TB on the manifold when necessary
- 14 Valve fixing screws:
M6×40 GB/T 70.1-10.9, Tightening torque $M_A=15.5\text{Nm}$, must be ordered separately.

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G 534/01 (G 3/4), G 534/02 (M27×2)