Hengli®

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

2.13

Type WE 10...L3X

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

Contents

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

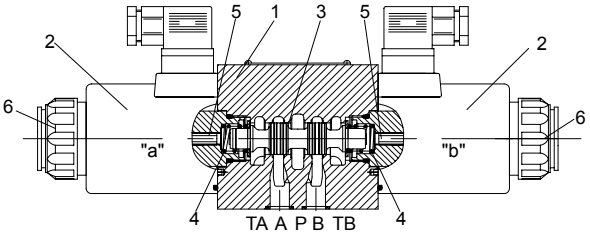
Type WE valves are solenoid operated directional spool valves. They control the start, stop and direction of flow.
The directional control valves consist of housing (1), one or two solenoids (2), the control spool (3), and one or two return springs (4).
In the de-energized condition the control spool (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.

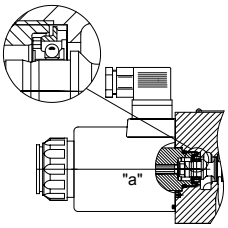
For application in high protective grade, waterproof plug should be used.

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..

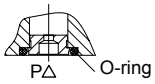
Type 4WE10.. L3X/OF...
(Impulse spool, only for symbols A, C and D)
This Type is a 2-position directional valve with 2 solenoids and detents. Hence, when the solenoids are de-energized, the spool is held in the detented position then the solenoids do not need to be continuously energised.

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.



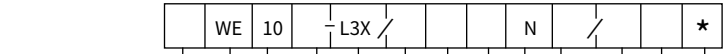


Type 4WE10.. L3X/OF...
(Impulse spool)



Throttle insert

Specification



3 ways = 3
(For spool A and B)
4 ways = 4

Directional valve with
wet pin solenoids

Nominal size 10 =10

Symbols e.g. C, E etc.

Series L30 to L39 =L3X
(L30 to L39: unchanged installation
and connection dimensions)

With spring return = No code
Without spring return = O
Without spring return, and with detent = OF

Standard solenoid =C
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
Other voltage see next page

With manual override button = N

Further details
in clear text

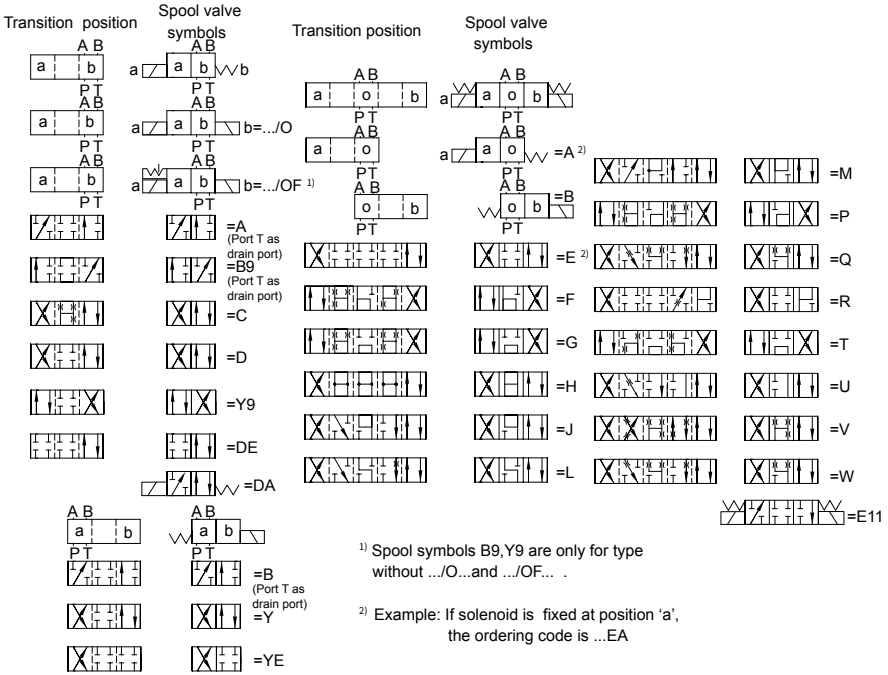
No code = NBR seals
V = FKM seals

No code = Without
throttle insert
B08 = Throttle Φ0.8 mm
B10 = Throttle Φ1.0 mm
B12 = Throttle Φ1.2 mm
B15 = Throttle Φ1.5 mm
B20 = Throttle Φ2.0 mm
B25 = Throttle Φ2.5 mm
B30 = Throttle Φ3.0 mm

Z4 = square plugs
(not applicable for the integer)
Z5L = square plugs with lamps
Z5L2=With light and protect the diodes
K4 = DIN4365sockets without plugs
K7 = Deutsch connector assembly,
without plugs [1)]
DL = Central connection with indicator
lamp (M22×1.5 interface)

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

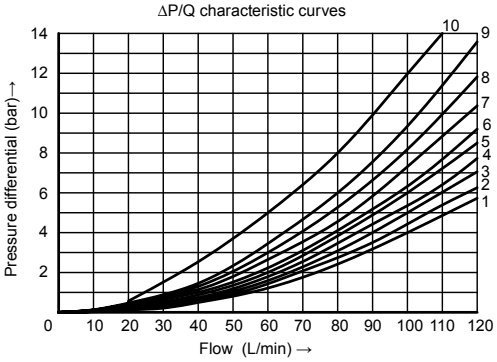
Symbols



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 t=40°C ±5°C , using HLP46)



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

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		°C	-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		°C	-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 50Hz
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

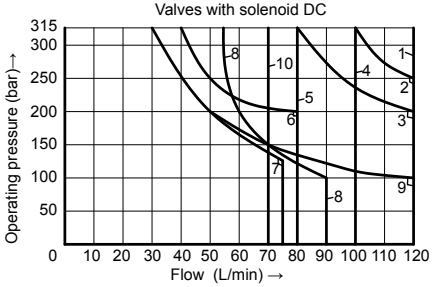
Caution: When connecting wires, properly connect the PE conductor (PE ⏚) .

(For other type voltage please consult us.)

Performance limits (Measured at t=40°C ±5°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 occuring within the valves, the permissbile 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.

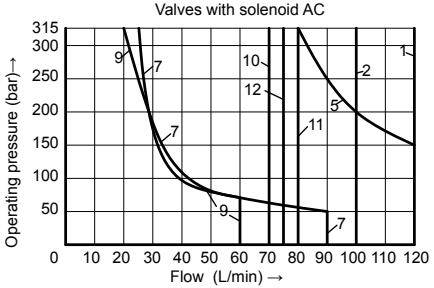
Valves with solenoid DC



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

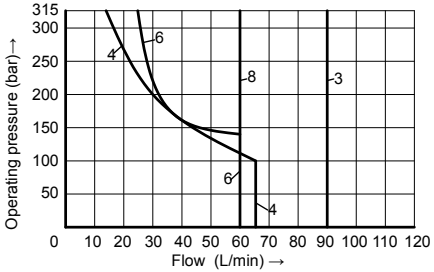
Notes: 1) Return flow (independent of area ratio);
2) Only suitable for neutral position

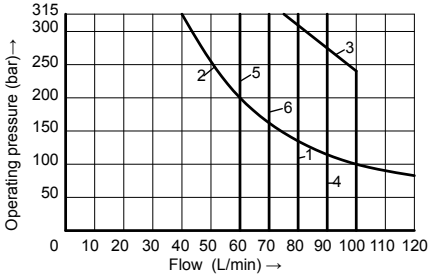
Valves with solenoid AC



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





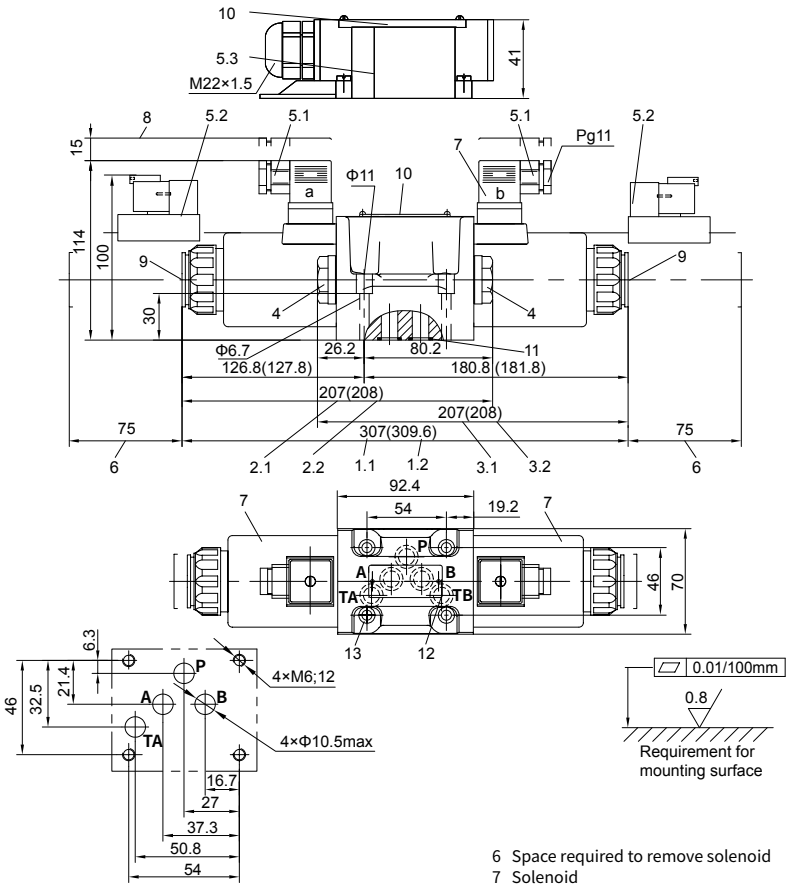
Curve	Spool symbol	Curve	Spool symbol
1	C, C/O, C/OF; D, D/O, D/OF; Y	3	E
		4	M
		5	V
2	A/O, A/OF	6	H

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.

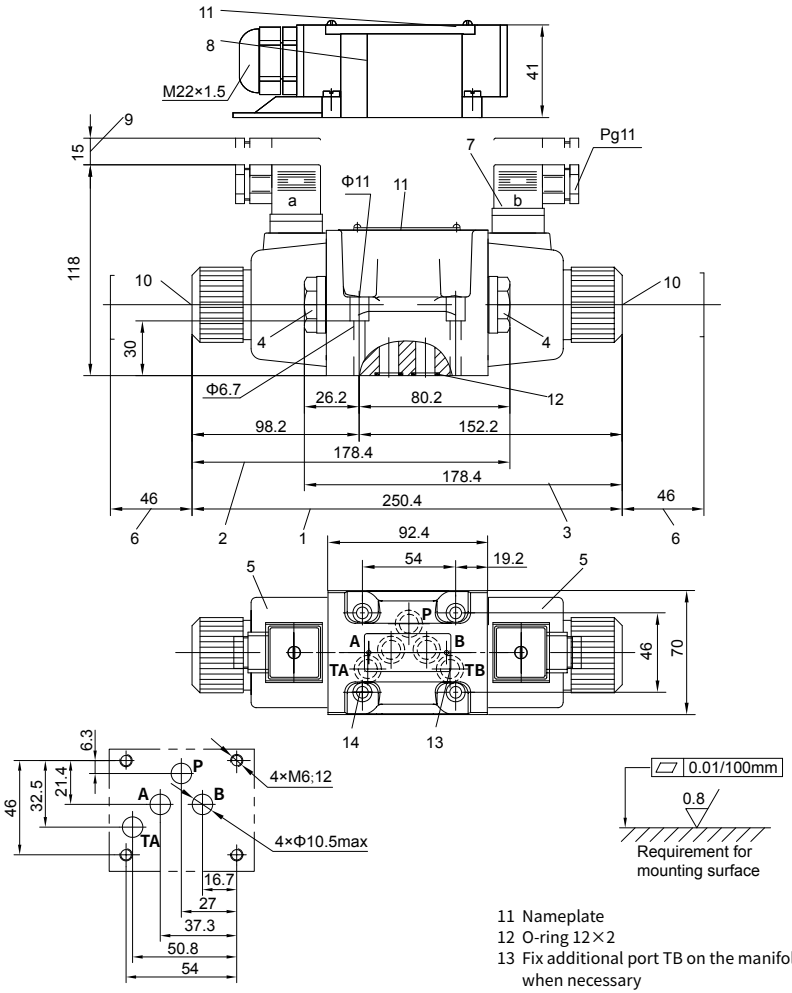
It must be ordered separately, if connection plate is needed.
Type:
G 66/01 (G 3/8), G 66/02(M18×1.5)
G 67/01 (G 1/2), G 67/02(M22×1.5)
G 534/01 (G 3/4), G 534/02(M27×2)

02

Unit dimensions

(Dimensions in mm)

Valve with AC solenoid



1 3-position valve
2 2-position valve with one solenoid(A,C,D,EA...)
3 2-position valve with one solenoid(B,Y,EB...)
4 Plug for valves with one solenoid
5 Solenoid
6 Space required to remove the solenoid
7 Plug-in connector to DIN 43 650 (Rotatable 90°)
8 Junction box with lead and light, M22×1.5 interface
9 Space required to remove Plug-in connector
10 Fault inspection override 'N' button
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 =15.5Nm, 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)