Hengli®

4/3, 4/2 and 3/2 directional valve with wet-pin AC or DC solenoid

2.10

Type WE 6...L6X

Size (NG) 6
Up to 350 bar
Up to 80L/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 AC or DC solenoids with detachable coil
- Pressure-tight chamber needs not to be opened for a coil change
- Electrical connection as individual or central connection

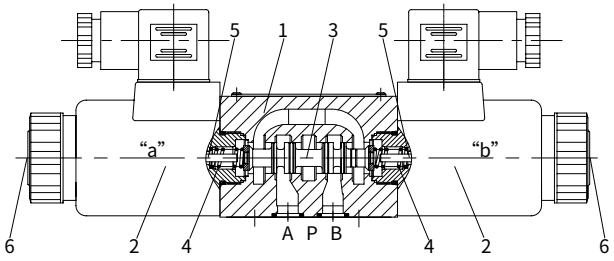
Function and configuration

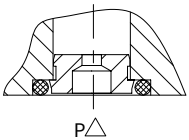
Type WE valves are solenoid operated directional spool valves. They control the start, stop and direction of flow.
The directional control valves consist of housing (1), one or two solenoids (2), the control spool (3), and one or two return springs (4).
In the de-energized condition the control spool (3) is held in the neutral or initial position by means of return springs (4) (except for impulse 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). 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 initial 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.

Type 4WE 6.. L6X/O...
(only for symbols A, C and D)
This version refers to directional valves with two spool positions and two solenoids without detent. In the de-energized condition, there is no defined spool position.

Type 4WE 6.. L6X/OF...
(impulse spool, only for symbols A, C and D)
This version refers to directional valves with two spool positions, two solenoids and a detent. Due to this, both spool positions are positively held, and a permanent energization of the solenoid is not required.

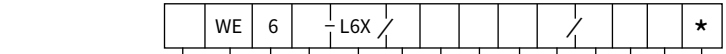
Throttle insert (type 4WE 6..L6X/.../B..)
The use of throttle inserts is required, due to prevailing operating conditions, flows can occur during switching processes that exceed the performance limit of the valve. They are inserted in the P-channel of the directional valve.





Throttle insert

Ordering code



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

Directional valve with
wet pin solenoids

Nominal size 6 =6

Symbols e.g. C, E etc.

Series L60 to L69 =L6X
(L60 to L69: unchanged installation
and connection dimensions)

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

Standard solenoid =E
Large-scope solenoid (Only for 12V and 24V) =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 technical data

With manual override button = N

Further details
in clear text

No code=Without locating hole
/60= With locating hole
/62=With locating pin hole
ISO 8752-3×8-St

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 Φ1.5mm
B20 = Throttle Φ2.0 mm
B25 = Throttle Φ2.5 mm
B30 = Throttle Φ3.0 mm

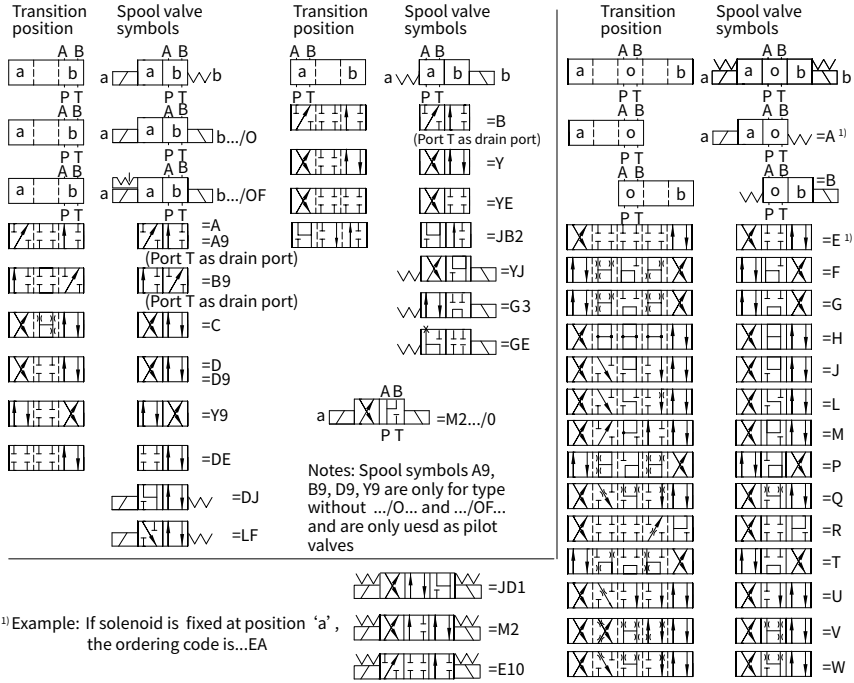
Z4 = square plugs
(not applicable for the integer)
Z5L = With light and protect the diodes
K4 = DIN4365 sockets without plugs
K7 = Deutsch connector assembly,
without plugs [1)]
DL = Central connection with LED lamp
(M22×1.5 interface)

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

02

02

Symbols

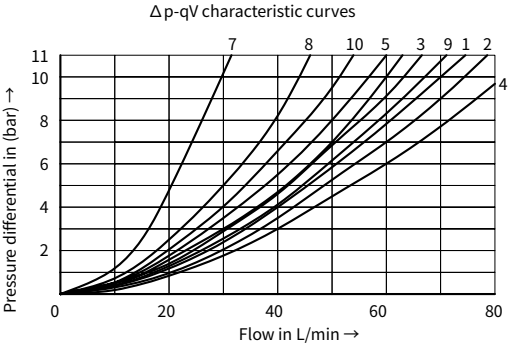


Notes: Spool symbols A9, B9, D9, Y9 are only for type without .../O... and .../OF... and are only uesd as pilot valves

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

Characteristic curves

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



7 Symbol "R" in switched positions B → A
8 Symbol "G" and "T" in neutral position P → T
9 Symbol "H" in neutral position P → T

Spool symbol	Flow direction			
	P to A	P to B	A to T	B to 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

Technical data

Fixing position			Optional
Environment temperature range		°C	-30 to +50 (NBR seal)
			-20 to +50 (FKM seal)
Weight	Single solenoid	kg	1.5
	Double solenoids	kg	2.0
Max.operating pressure	Port A,B,P	bar	350
	Port T	bar	210 (DC),160 (AC), when the operating pressure exceed the permission value, port T must be used as drain port for spool symbol A and B
Max. flow-rate		L/min	80 (DC), 60 (AC)
Flow cross section (switching neutral position)		mm^2	for symbol Q 6% of nominal cross section
		mm^2	for symbol W 3% of nominal cross section
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
Usable voltage		V	12,24,28[1],48,96,110,205,220	110, 127, 220
Permissible voltage (deviation)		%	Standard solenoid: +10 ~ -15 Large-scope solenoid: +20~-30	
Power consumption		W	Standard solenoid: 30 Large-scope solenoid: 32	
Holding power		VA	-	50
Making capacity		VA	-	220
Duty			Continuous working	
Switching time to ISO 6403	ON	ms	25 to 45	10 to 20
	OFF	ms	10 to 25	15 to 40
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 ⏚) .

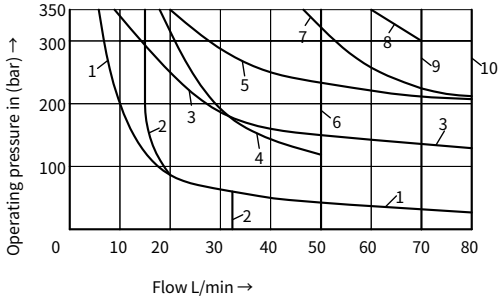
(For other type voltage please consult us.)

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

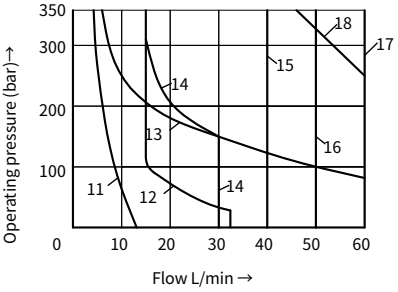
The specified switching performance limits are valid with two directions of flow (e.g. from P to A and simultaneous return flow from B to T).
Due to the flow forces acting within the valve, the permissible switching performance limit can be significantly lower with only one direction of flow (e.g. from P to A, with port B being closed)!
The switching performance limit was determined with the solenoid at operating temperature, at 15 % under-voltage and without tank pre-loading.

Solenoid DC		Solenoid AC-50Hz		Solenoid AC-60Hz	
Curve	Spool symbol	Curve	Spool symbol	Curve	Spool symbol
1	A, B[1)]	11	A, B[1)]	19	A, B[1)]
2	V	12	V	20	V
3	A, B	13	A, B	21	A, B
4	F, P	14	F, P	22	F, P
5	J	15	G, T	23	G, T
6	G, H, T	16	H	24	J, L, U
7	A/O, A/OF, L, U	17	A/O, A/OF, C/O,	25	A/O, A/OF, Q, W
8	C, D, Y		C/OF, D/O, D/OF	26	C, D, Y
9	M		E, J, L, M	27	H
10	E, R$_{2)}$, C/O, C/OF		Q, R$_{2)}$, U, W	28	C/O, C/OF, D/O
	D/O, D/OF, Q, W	18	C, D, Y		D/OF, M, R, E, R$_{2)}$

Notes: [1)] With manual override; [2)] Return flow from actuator to tank.

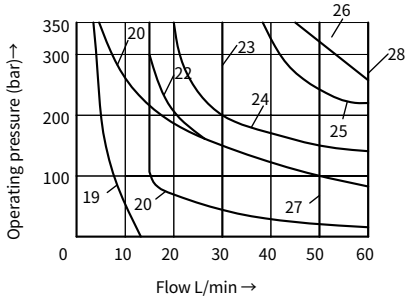


Solenoid DC	
Curve	Solenoid voltage(V)
1 to 10	12, 24, 48, 96, 205

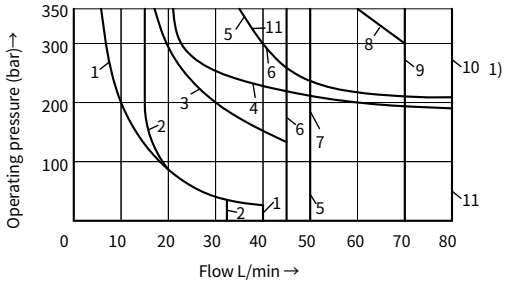


Solenoid AC		
Curve	Solenoid voltage	
11 to 18	W110	110V, 50Hz
	W127	127V, 50Hz
	W230	230V, 50Hz

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

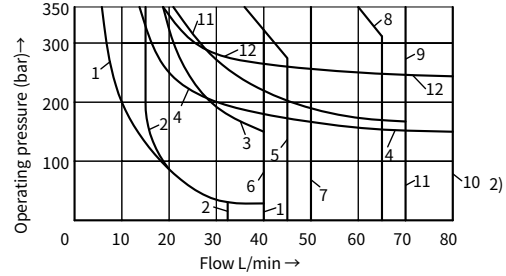


Solenoid AC		
Curve	Solenoid voltage	
19 to 28	W110	110V, 60Hz
	W230	230V, 60Hz



Solenoid DC	
Curve	Solenoid voltage
1 to 10 $_{1)}$	110, 180

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

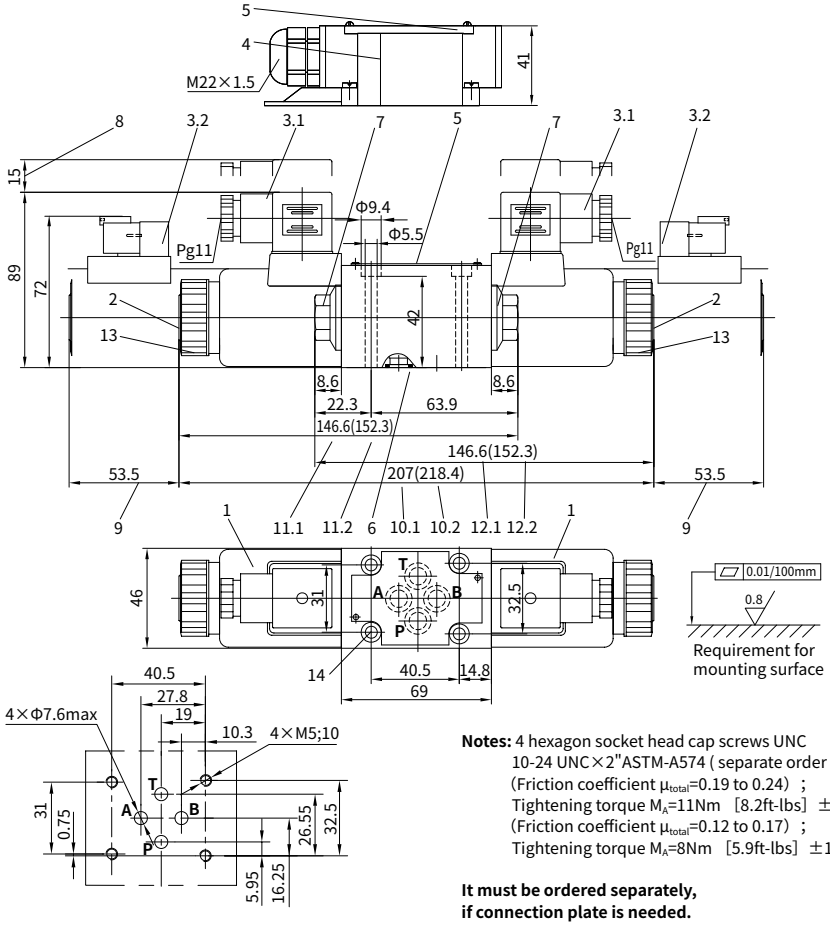


Solenoid AC	
Curve	Solenoid voltage
1 to 12, see$10_{2)}$	220

Unit dimensions

(Dimensions in mm)

Valve with DC or rectification AC solenoid



Notes: 4 hexagon socket head cap screws UNC 10-24 UNC×2"ASTM-A574 (separate order)
(Friction coefficient μ_{total}=0.19 to 0.24) ;
Tightening torque M_A=11Nm [8.2ft-lbs] ±15%
(Friction coefficient μ_{total}=0.12 to 0.17) ;
Tightening torque M_A=8Nm [5.9ft-lbs] ±10%

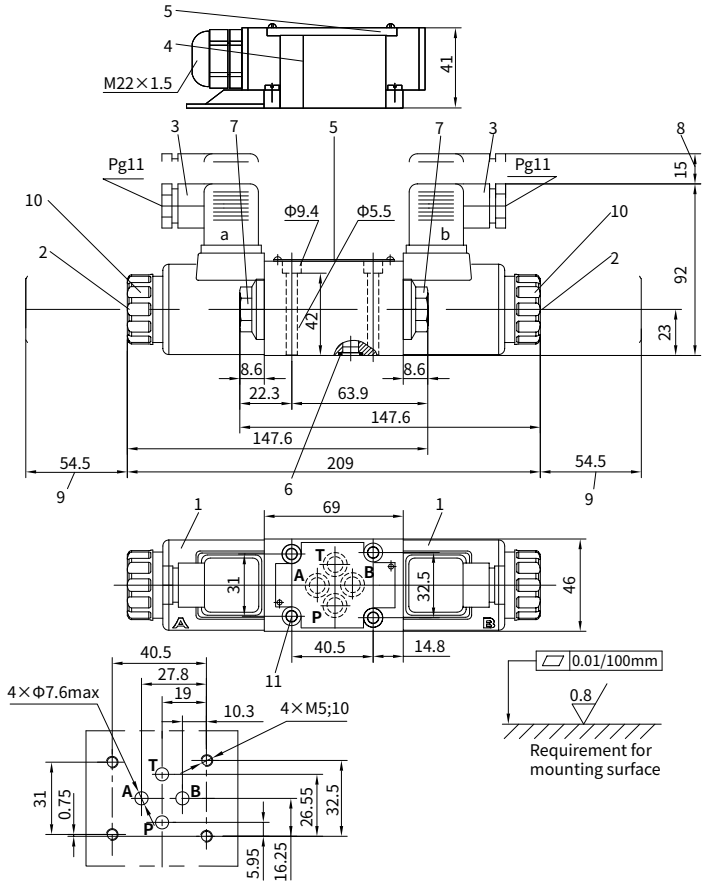
It must be ordered separately, if connection plate is needed.
Type: G341/01(G1/4), G341/02 (M14×1.5)
G342/01(G3/8), G342/02 (M18×1.5)
G502/01(G1/2), G502/02 (M22×1.5)

1 Solenoid
2 Manual override button
3.1 Plug-in connector to DIN 43 650
3.2 Deutsch connector assembly
4 Junction box with lead and light, M22×1.5 interface
5 Nameplate
6 O-ring: 9.25×1.78
7 Plug screw for valves with one solenoid
8 Space required to remove connector
9 Space required to remove coil
10.1 Dimension of 3-position valves, standard version
10.2 Dimension of 3-position valves, large-scope Type of voltage
11.1 Dimension of 2-position valves with solenoid at 'A', standard version
11.2 Dimension of 2-position valves with solenoid at 'A', large-scope Type of voltage
12.1 Dimension of 2-position valves with solenoid at 'B', standard version
12.2 Dimension of 2-position valves with solenoid at 'B', large-scope Type of voltage
13 Securing nut, tightening torque M_A=4Nm
14 Valve fixing screws. Hexagon socket head cap screw M5×50 GB/T 70.1-10.9, Tightening torque M_A=8.9Nm

Unit dimensions

(Dimensions in mm)

Valve with AC solenoid



1 Solenoid
2 Manual override button
3 Plug-in connector to DIN 43 650 (rotatable 90°)
4 Junction box with lead and light, M22×1.5 interface
5 Nameplate
6 Seal rings 9.25×1.78
7 Plug screw for valves with one solenoid
8 Space required to remove connector
9 Space required to remove coil
10 Securing nut, tightening torque, M_A = 4 Nm
11 Valve fixing screws. Hexagon socket head cap screw M5×50 GB/T 70.1-10.9,
Tightening torque M_A =8.9Nm

Notes: 4 hexagon socket head cap screws UNC 10-24 UNC×2"ASTM-A574 (separate order)
(Friction coefficient μ_{total}=0.19 to 0.24) ;
Tightening torque M_A=11Nm [8.2ft-lbs] ±15%
(Friction coefficient μ_{total}=0.12 to 0.17) ;
Tightening torque M_A=8Nm [5.9ft-lbs] ±10%

It must be ordered separately, if connection plate is needed.
Type:
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)

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