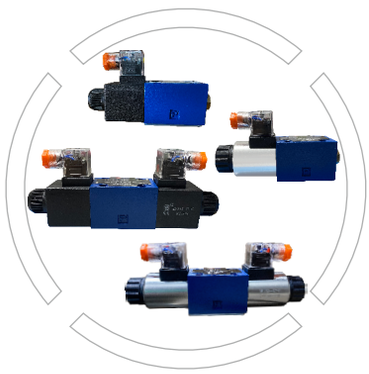
THM HYDRAULICS

4WE 6 or 10

4/3 and 4/2 directional valve
with wet pin DC and AC Solenoids
Max pressure up to 350 bar
Max. Flow up to 120 l/min



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Introduction

- The 4WE6 or 10 directional valves are solenoid operated directional spool valves.
- They control the start, stop and direction of flow.
- It is unnecessary to open the pressure tight chamber when changing the coil.
- Under urgent situation, the spool can be derived by hidden hand override.

Technical data

General			Size 6	Size 10
Weight	Valve with 1 solenoids	Kg	1.65	4.80
	Valve with 2 solenoids	Kg	2.25	6.15
Ambient temperature		°C	-30 to 50	
Installation			Optional	

Hydraulic			Size 6	Size 10
Flow Max.		l/min	up to 80(=); up to 60(~)	up to 120
Operating pressure max	Ports A, B, P	Bar	350	315
	Ports T	Bar	up to 210 (=); up to 160 (~) ③	
Pressure Fluid: ①Suitable for NBR and FKM seals; ②only suitable for FKM seals			Mineral oil (HL, HLP) to DIN 51524① fast bio-degradable pressure fluids to VDMA 24568; HETG (rape seed oil)① HEPG (Polyglycol); HEES (Synthetic ester); ② other fluids on request	
Pressure fluid temperature range	NBR Seals	°C	-30+80	
	FKM Seals	°C	-20+80	
Viscosity range			2.8 to 500	
Degree of fluid contamination			Maximum permissible degree of contamination of fluid is to NAS 1638 class 9 We therfore recommend a fither minimum retention rat of $\beta_{10} \geq 25$	

Electrical			Size 6		Size 10	
			DC	AC 50/60 Hz	DC	AC 50/60 Hz
Voltage available		V	12, 24, 48	110, 120, 220, 240	12, 24, 48	110, 120, 220, 240
Voltage tolerance (normal voltage)		%	±10	±10	±10	±10
Power consumption		W	32	-	<40	50
Holding current		A	-	-	-	0.9
In-rush current		A	-	<2	-	<2
Shifting time to ISO 6403	On	ms	25 to 45	10 to 20	40 to 60	15 to 25
	Off	ms	10 to 25	15 to 40	20 to 30	20 to 30
Shifting frequency		Sw/h	up to 15000	up to 7200	up to 15000	up to 7200
Insulation to DIN 40 050			IP65	IP65	IP65	IP65
Coil temperature		°C	up to +155	up to +180	up to +155	up to +180

Note:

③For with symbols A and B, Port T must be used as a drain port, if the operating pressure is above the permissible tank pressure is above the permissible tank pressure.

Ordering code

4WE														

4/3 and 4/2 Solenoid operated directional valve = 4WE

Nominal Sizes
NG6 = 6
NG10 = 10

Operated Directional Cushion
Standard = No code
Cushion operated directional impact is small = S

Symbols (See symbol list)

Series
For NG6 = 6X
For NG10 = 3X

Return mode
Spring return = No code
Without Spring return = O
With detent = Of

For NG6 high power Solenoid = E
For NG10 = C

Input Voltage
220V/50Hz, 240V/60Hz = W220
110V/50Hz, 120V/60Hz = W110
220V/50Hz, 240V/60Hz = RAC220
110V/50Hz, 120V/60Hz = RAC110
12V = G12
24V = G24
48V = G48

Hand Override
With protected hand override (standard) = N9
With hand override = N*

Electrical conditions
Individual connections with component plug ISO4400 without plug-in connector = K4
central connections terminal box with cable connector, with Indicator light = DL

Plug-in connector
Without plug-in connector = No code
With guadrate plug-in connector = Z4
Guadrate plug-in connector with indicator light = Z5L
With waterproof plug-in connector① = F6L

Throttle position
Without cartridge throttle = No code
Active in the P line = P
Active in the A line = A
Active in the B line = B

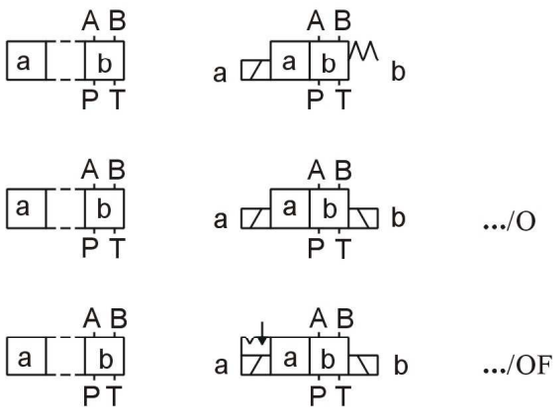
Throttle Diameter
Without cartridge throttle = No code
Throttle Ø0.8mm = 08
Throttle Ø1.0mm = 10
Throttle Ø1.2mm = 12

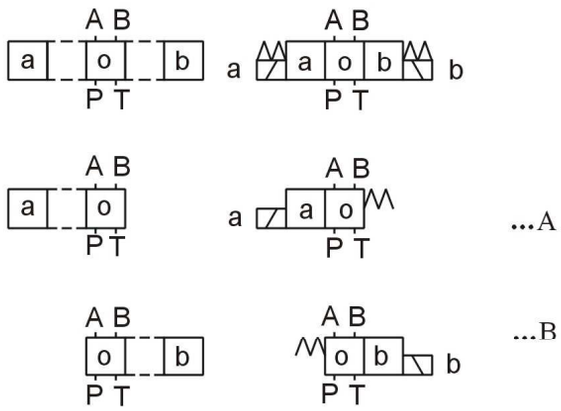
Seals
NBR seals = No code
FKM Seals = V

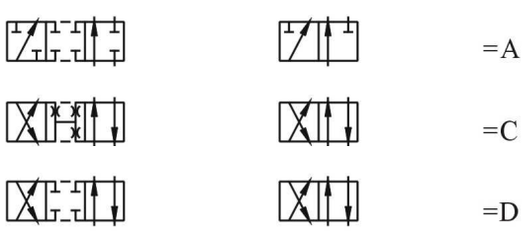
Further details in clear text

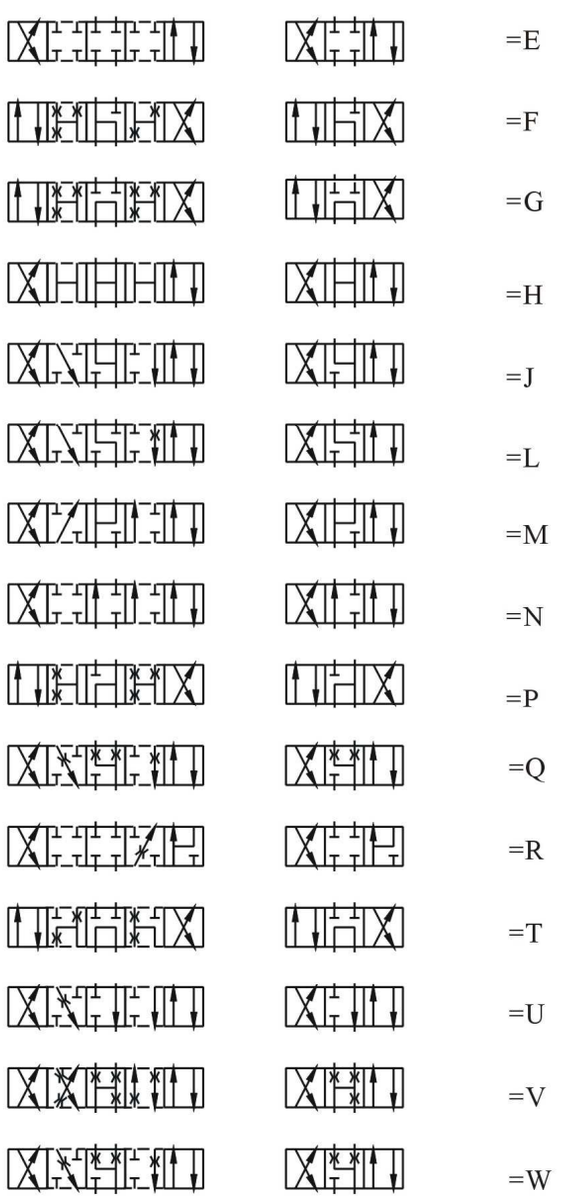
Note:
① Waterproof degree of plug-in connector is Ip65;
*Please consult us when you choose this applications.

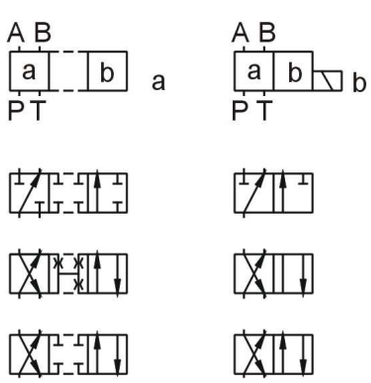
Symbols







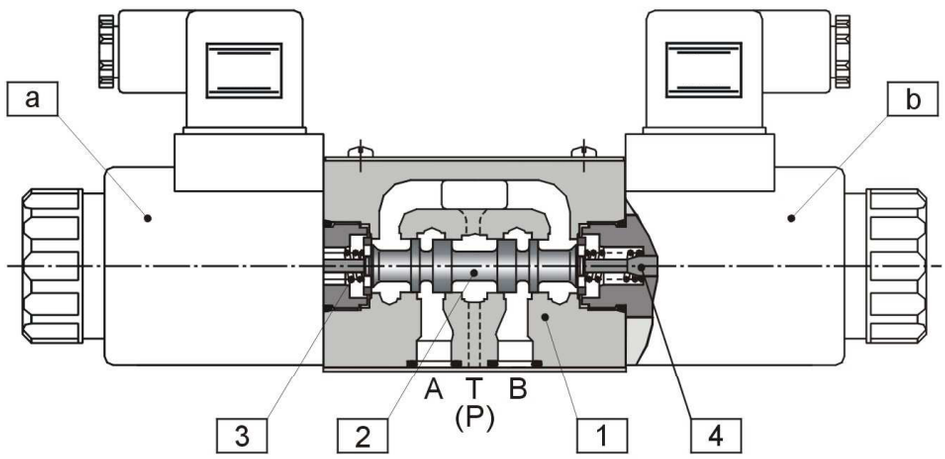




Remarks:

- Example: Spool E with switching position “a” ordering details..EA...
- The symbol tag is same for W and Q type spool. But the throttle area for W and Q type spool is 3% and 6% of J type spool’s
- There are special cushion spools for C, E, J, L, U codes. Please add S type if need.
- For special requirement, please contract with our company’s technical department. We can design special spool.

Function Section



Section photo 3 Type：4WE 6 .....6X/.....Z5LS

Function Description

On the section photo 3 the solenoid power which is brought after solenoid 'a' or solenoid 'b' gets through electricity can drive the control spool 2 to move right or left inside housing 1 pass plunger 4. So it can flow freely from P to B, A to T or P to A, B to T.

There are three kinds of return type for spool when de-energising solenoid. Spring return type: return spring 3 drive spool back to the initial position; Without spring return type: the spool position when solenoids are de-energisedis not defined; Detent or type: spool can keep any position when solenoid stoppes electricity

Spring Return type (4WE.../...)

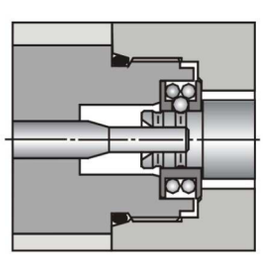
For this kind return type solenoid operated directional valve, solenoid power conquers spring power to drive spool when solenoid gets through electricity. The spool comes back and keeps at one end (two position valve) or middle position (three position valve) because of spring power after solenoid loses electricity.

Without Spring return type (4WE.../0...)

For this kind return type solenoid operated directional valve, solenoid power power drives spool to needed position directly when solenoid gets through electricity. There isn't fixed position after solenoid loses electricity.

Orientation Organ type (4WE.../OF...)

For this kind return type solenoid operated directional valve, solenoid power drives spool to needed position directly when solenoid gets through electricity. After that, when solenoids are de-energised, the spool is held in the detent position and thus the solenoids do not need to be continuously energised.

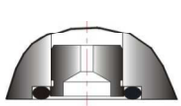


Section photo 4 : detent

Cartridge throttle (4WE...P08...)

In some fixed work condition hydraulic system, please insert right throttle into P.A.B oil port base on details situation when the flows exceed permitted power limit of the valve during operation (see section photo 5)

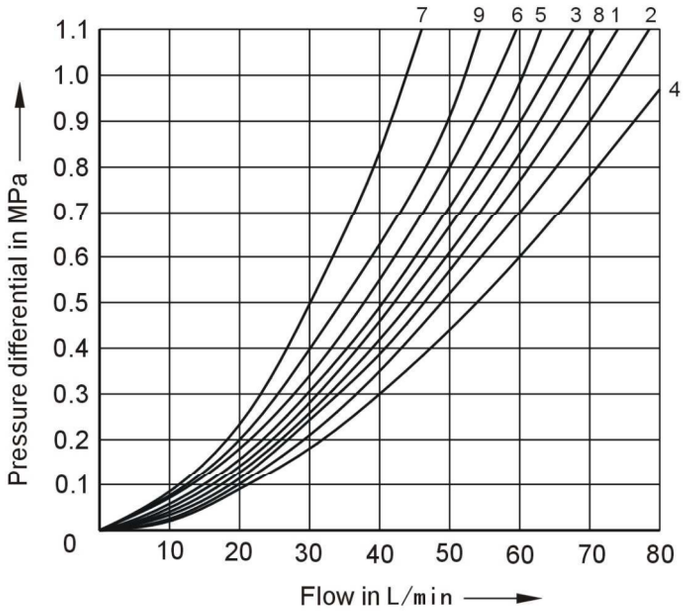
There are three dimensions for damper are 0.8, 1.0, 1.2 (mm)



Section photo 5 : throttle

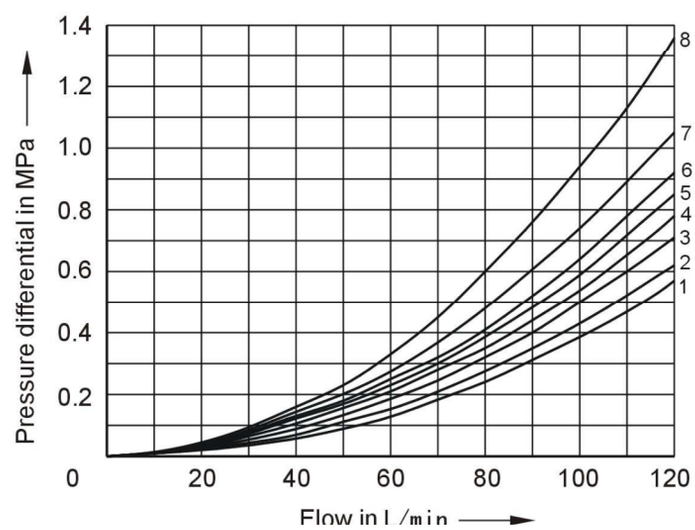
Characteristic curves (measured at v= 41mm²/s and t= 50°C)

- Nominal size 6



Symbol	Flow Direction				
	P-A	P-B	A-T	B-T	P-T
A, B	3	3	-	-	-
C, X	1	1	3	1	-
D, Y	5	5	3	3	-
E	3	3	1	1	-
F	1	3	1	1	-
G	6	6	8	8	7
H	2	4	2	2	-
J, Q	1	1	2	1	-
L	3	3	4	8	-
M	2	4	3	3	-
P	3	1	1	1	-
R	5	5	4	-	-
T	9	9	8	8	7
U	3	3	8	4	-
V	1	2	1	1	-
W	1	1	2	2	-

- Nominal size 10



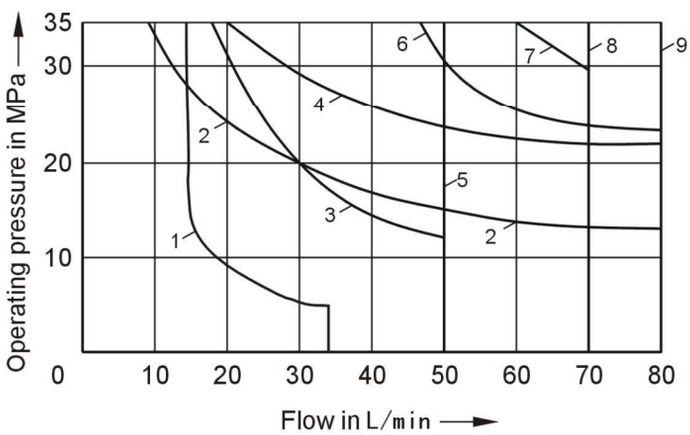
Symbol	Flow Direction				
	P-A	P-B	A-T	B-T	P-T
A, B	3	3	-	-	-
C, X	1	3	4	5	-
D, Y	5	5	6	6	-
E	1	1	4	4	-
F	2	3	7	4	8
G	3	3	6	7	9
H	1	1	6	7	3
J, Q	1	1	3	3	-
L	2	2	3	5	-
M	1	1	4	5	-
P	3	1	1	1	-
R	5	5	4	-	-
T	9	9	8	8	7
U	2	2	3	3	-
V	1	2	1	1	-
W	1	1	2	2	-

Shifting Power lifts

- Nominal size 6 DC Solenoid & AC Solenoid

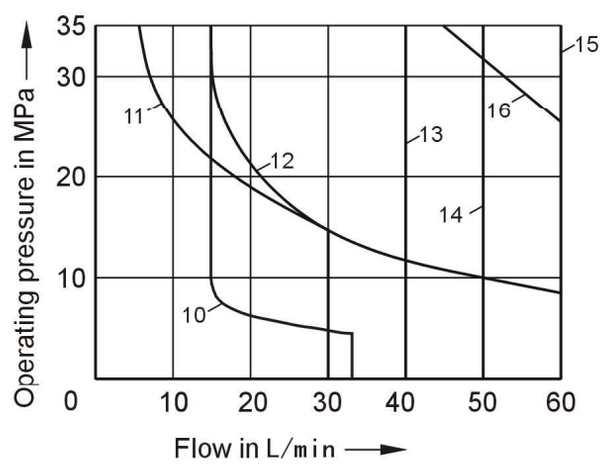
The given switching power limits are for applications with two flow directions and were measured with the solenoids at operating temperature, 10% under voltage and without tank back pressure.

Measured at v=41mm²/s and t=50°C



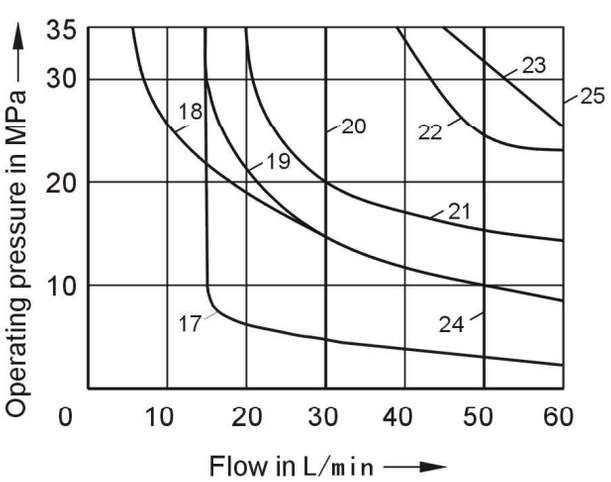
DC Solenoid

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



50 Hz AC Solenoid

Curve	Symbol	Curve	Symbol
10	V	15	A/O, A/OF, C/O, C/OF, D/O, D/OF, M, J, Q, R, W, E, L, U
11	A, B		
12	F, P		
13	G, T		
14	H	16	C, D, Y



60 Hz AC Solenoid

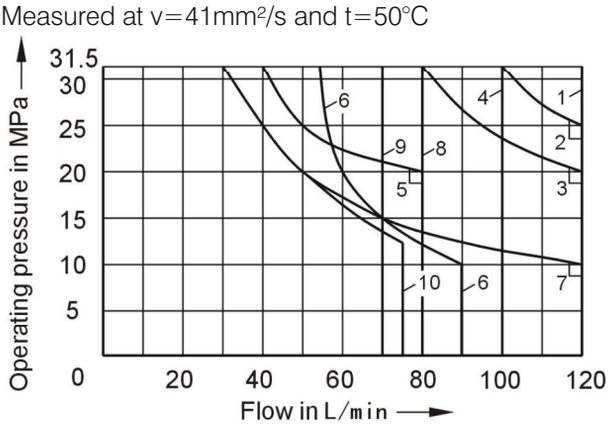
Curve	Symbol	Curve	Symbol
17	V	22	A/O, A/OF, Q, W
18	A, B	23	C, D, Y
19	F, P	24	H
20	G, T	25	C/O, C/OF, D/O D/OF, E, M, R
21	L, U, J		

Shifting Power lifts

- Nominal size 10 DC Solenoid & AC Solenoid

The given switching power limits are for applications with two flow directions and were measured with the solenoids at operating temperature, 10% under voltage and without tank back pressure.

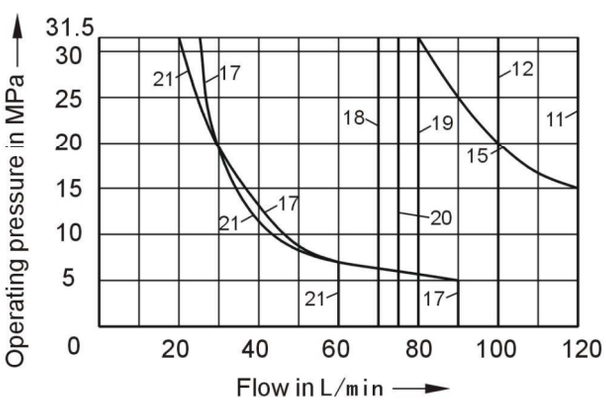
Measured at v=41mm²/s and t=50°C



DC Solenoid:24V

Curve	Symbol	Curve	Symbol
1	C, C/O, C/OF, D, D/O, D/OF, Y,M	5	G
		6	F, P
2	E	7	A, B
3	A/O, A/OF, L, U, J, Q, W	8	R, L①, U①
		9	V
4	H	10	T

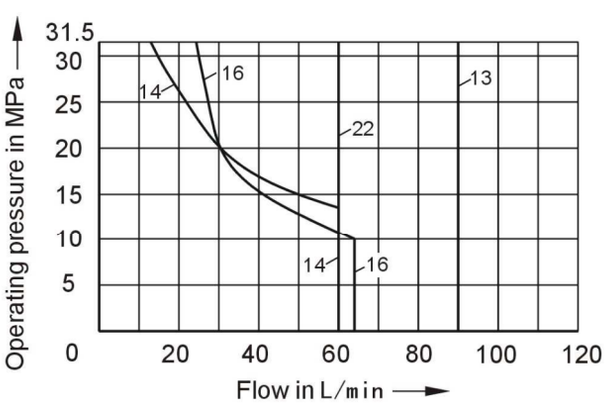
① Only fir for the situation at middle position.



AC Solenoid: 110 V/50Hz; 120V/60Hz;
220V/50Hz; 240V/60Hz.

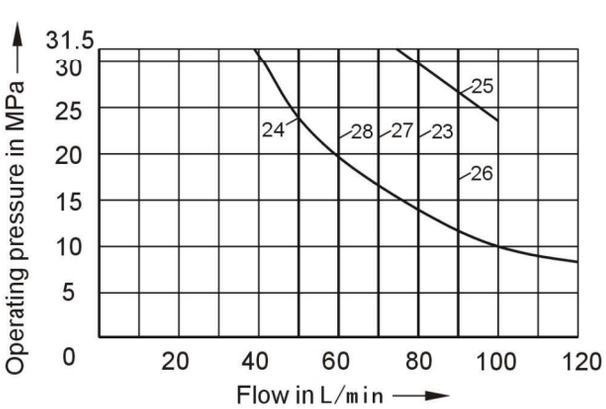
Curve	Symbol	Curve	Symbol
11	C, C/O, C/OF, D, D/O, D/OF, Y	16	G
		17	F, P
12	E, L, U, Q, W	18	H
		19	R
13	M	20①	L, U
14	A, B	21	T
15	A/O, A/OF, J	22	V

① Only fir for the situation at middle position.

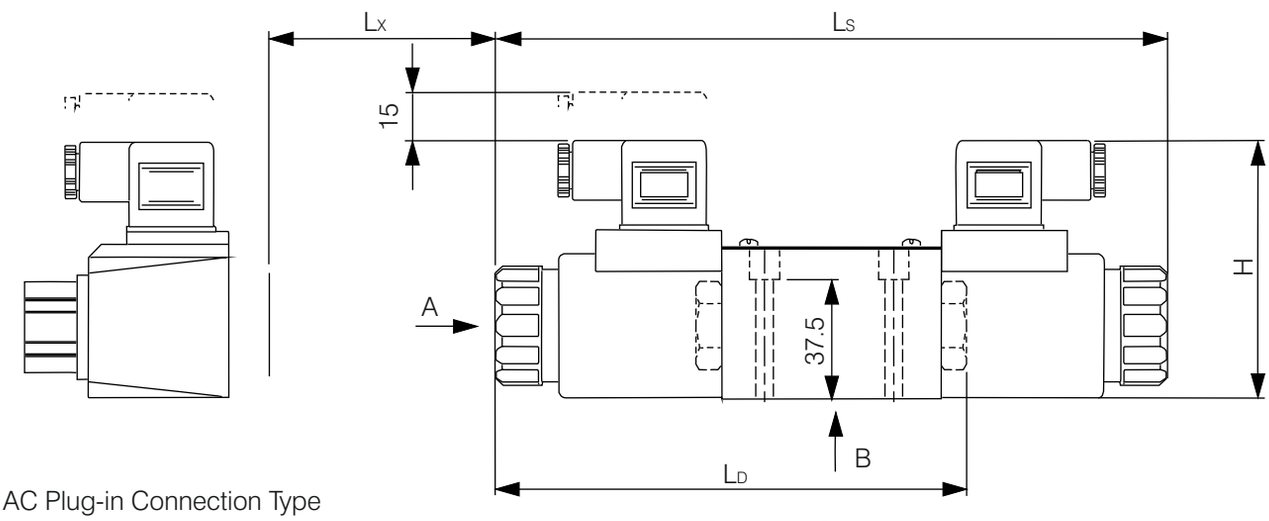


AC Solenoid: 110 V/60Hz; 220V/60Hz;

Curve	Symbol	Curve	Symbol
23	C, C/O, C/OF, D, D/O, D/OF, Y	26	M
24	A/O, A/OF	27	H
25	E	28	V

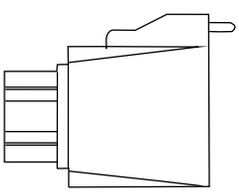


Installation Dimensions NG6 (Dimensions in mm)

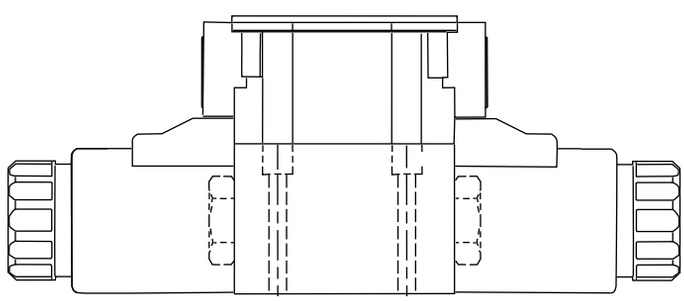


AC Plug-in Connection Type

DC Plug-in Connection Type

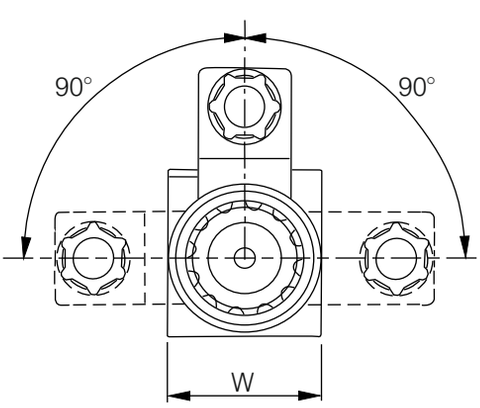


AC With Lamp Central Connection Type

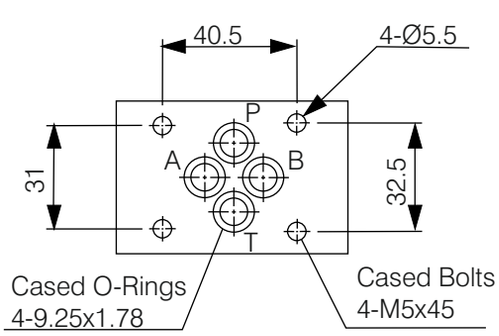


DC With Lamp Central Connection Type

A Direction

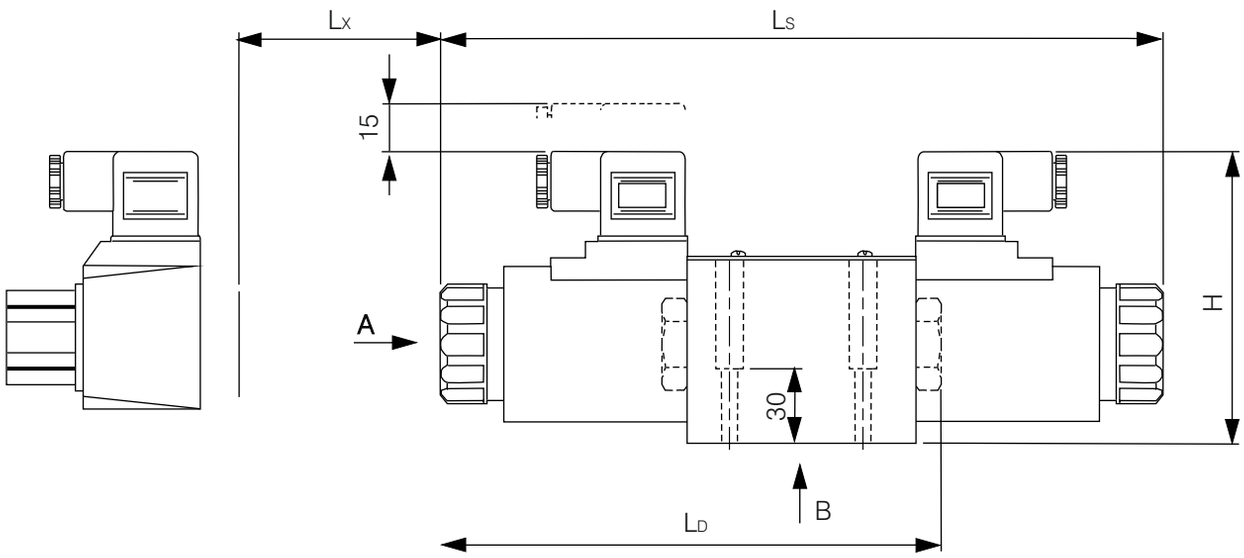


B Direction



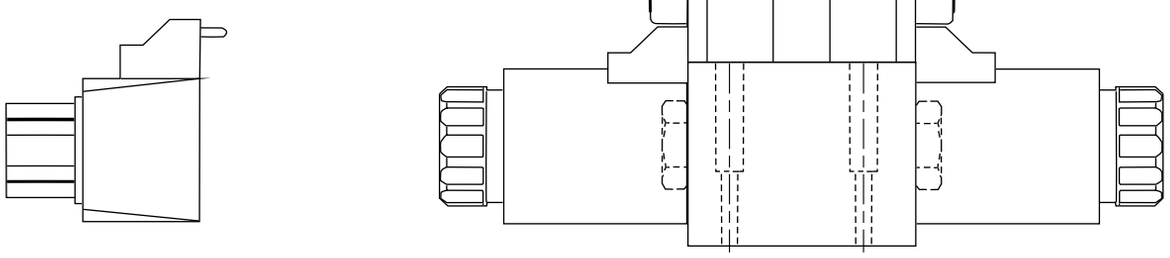
Valve type	Total length		Total width (W)	Total high (H)	Take out coil (Lx)
	L_D	L_S			
DC Plug-in connection type	148	211	46	81	71
DC with Lamp central connectopm type	148	211	46	85	71
AC Plug-in Connection type	141	197	46	81	64
AC with Lamp central connection type	141	197	46	85	64

Installation Dimensions NG10 (Dimensions in mm)



AC Plug-in Connection type

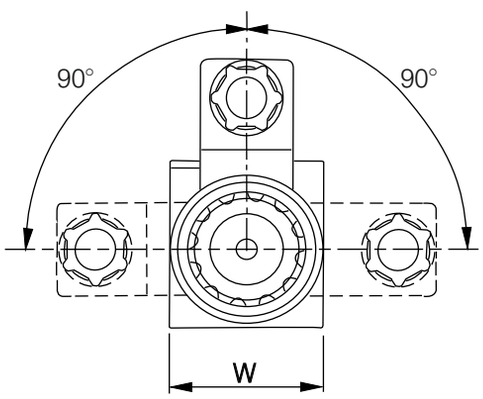
DC Plug-in Connection type



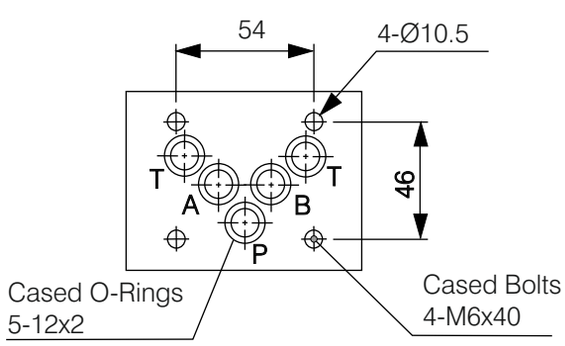
AC with Lamp Central Connection type

DC with Lamp Central Connection type

A Direction



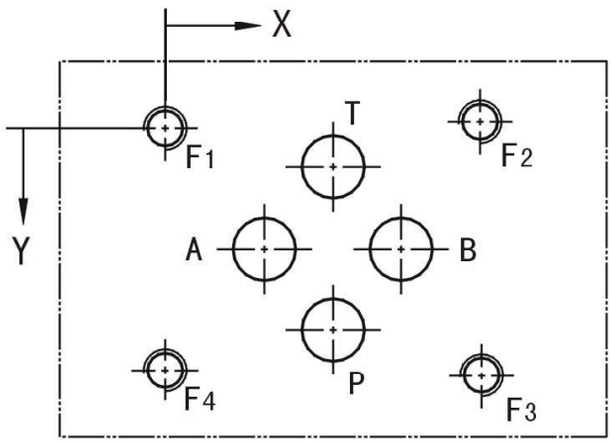
B Direction

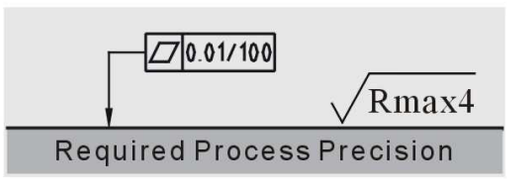


Valve type	Total length		Total width (W)	Total high (H)	Take out coil (Lx)
	LD	Ls			
DC Plug-in connection type	207.3	302	70	111	105
DC with Lamp central connectopm type	207.3	302	70	119	105
AC Plug-in Connection type	168.3	224.2	70	111	66
AC with Lamp central connection type	168.3	224.2	70	119	66

Sub-plate Installation Dimensions (Porting pattern to ISO 4401)

- Nominal size 6

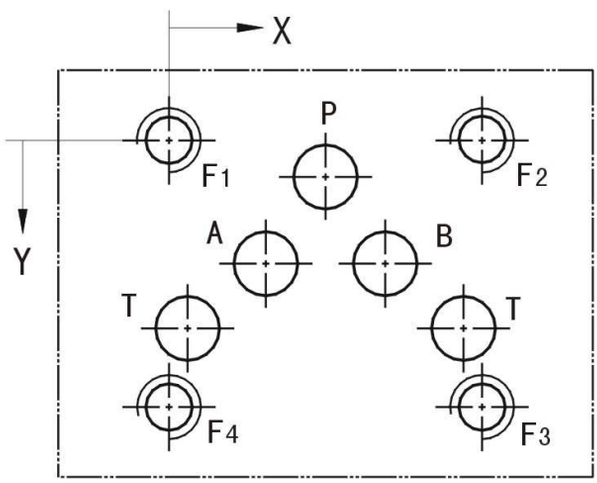


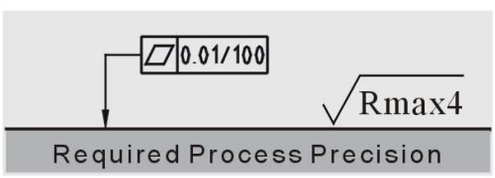


	4-M5 Deep 10				4-Ø7.6max			
X	0	40.5	40.5	0	12.7	21.5	30.2	21.5
Y	0	-0.75	31.75	31	15.5	5.1	15.5	25.9
Code	F1	F2	F3	F4	A	T	B	P

Note: The tolereance for each hole dimension is ±0.1

- Nominal size 10





	4-M6 Deep 12				5-Ø10.5max				
X	0	54	54	0	16.7	3.2	50.8	37.3	27
Y	0	0	46	48	21.4	32.5		21.4	6.3
Code	F1	F2	F3	F4	A	T		B	P

Note: The tolereance for each hole dimension is ±0.1

The specified data is for product description purposes only and may not be deemed to be guaranteed unless expressly confirmed in the contract.

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