

4WE Solenoid Operated Directional Valve

Essentially the direction control valves consist of housing, one or two solenoids, the control spool, and one or two return springs. In the de-energised condition the control spool is held in neutral or initial position by means of return springs (except for impulse spool). The control spool is operated by wet pin solenoids. The force of the solenoid acts via the plunger on the control spool and pushes this from its neutral position to the required end position. This gives free flow from P to A or P to B and A to T. When solenoid is de-energised, the control spool is returned to its neutral position by means of return springs. To guarantee satisfactory operation care should be ensured that the solenoid pressure chamber is filled with oil. Solenoid operated direction valves are used to control the start, stop, and direction of flow. And they also can be used as pilot valves to operate other valves and so on.

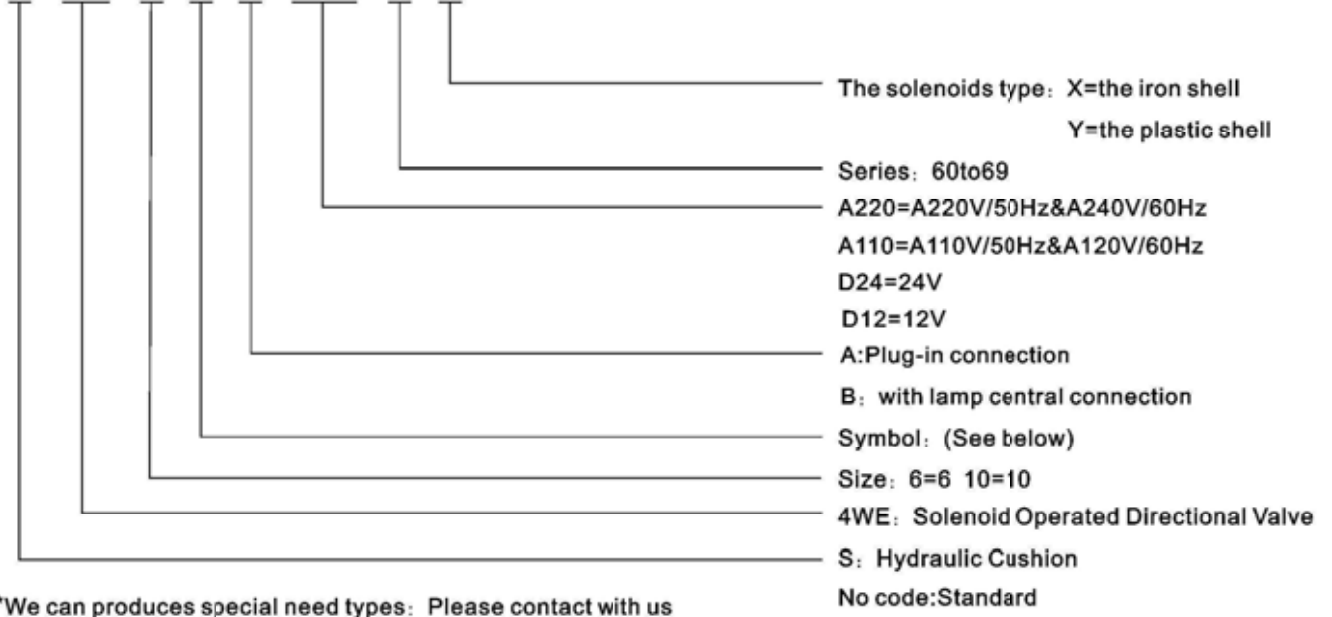
Characteristics:

1. Optional hand emergency;
2. Solenoid coil can be rotated through 90° ;
3. Coils can be replaced without releasing any fluid.



Model Code

S - 4WE - 6 - E - A - A220 - 6 - X



Symbols

	E		EA		EB
	H		HA		HB
	J		JA		JB
	F		FA		FB
	G		GA		GB
	U		UA		UB
	M		MA		MB
	L		LA		LB
	N		NA		NB
	P		PA		PB
	Q		QA		QB
	R		RA		RB
	V		VA		VB
	W		WA		WB
	A		A/O 1)		A/OF 1)
	C		C/O		C/OF
	D		D/O		D/OF
	B		Y		X
	LJ		LD		

1. A/O without spring return

A/OF without spring return but with betent

Technical data

		4WE-6	4WE-10
Weight	Single solenoid valve	m kg	1.65
	Valve with 2 solenoids	m kg	2.25
Operating pressure	Port A, B, P	P MPa	35
	Port T	P MPa	31.5
		Up to 21 (=) ; Up to 16 (-) With symbols A and B, port T be used as a drain port, if the operating pressure is above the permitted tank pressure	
Flow, max	qv	L/min	Up to 80(=); Up to 60(-)
Flow cross section (switching position 0)		Up to 120	
		approx. 6% of nominal cross section	
For symbol Q A		mm ²	
For symbol W A		mm ²	
Ambient temperature, max		t °C	
		Up to 50	
Pressure fluid:		Mineral oil (HL, HLP) to DIN 51524	
1, suitable for NBR and FPM seals;		Fast bio-degradable pressure fluids to VDMA 24568;	
2, only suitable for FPM seals.		HETG (rape seed oil)	
		HEPG (Polyglycol); HEES (Synthetic ester);	
		Other fluids on request	
Pressure fluid temperature range		t °C	
		-30 to +80 (NBR seals)	
		-20 to +80 (FPN seals)	
Viscosity range		mm ² /S	
		2.8 to 500	
Degree of fluid contamination		Maximum permissible degree of contamination of fluid is to NAS 1638 class 9. We, therefore, recommend a minimum retention rate of 10.	

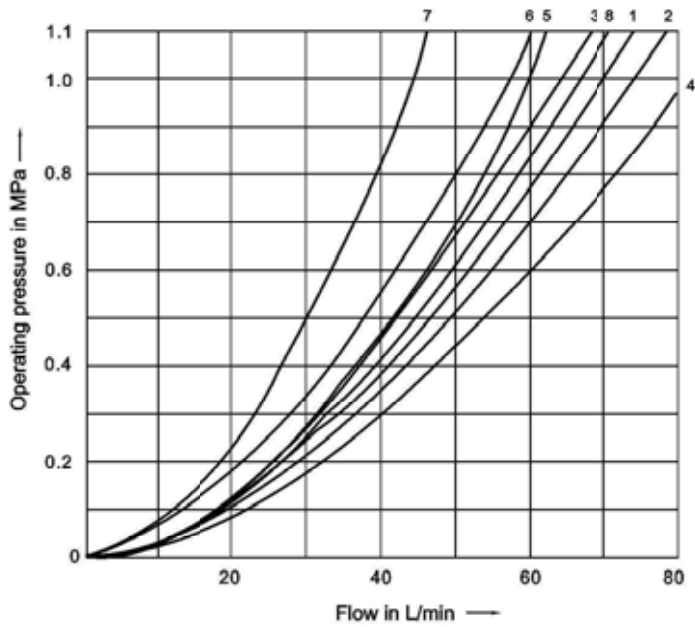
Electrical

Type of Voltage	DC Voltage		AC Voltage	
Type of Valve	4WE-6	4WE-10	4WE-6	4WE-10
Available voltage	U	V	12, 24, 42, 60, 96, 110, 180, 205, 220	42, 110, 120, 220 50/60Hz
Voltage tolerance	normal voltage		%	
	±10			
Power consumption	P	W	32	<40
Holding current	P	A	—	—
In-rush current	P	A	—	—
Switching time to ISO 6403	ON	T	ms	25 to 45
	CFF	T	ms	40 to 60
				10 to 20
				15 to 25
Switching frequency	Sw/h		up to 15000	up to 7200
Insulation to DIN 40 050			IP65	
Coil temperature	t °C		up to +155	up to +180

※With electrical connectins the earth(PE) must be correctly connected.

4WE-6 Charateristic Curves

(measured at $\nu = 41\text{mm}^2/\text{S}$ and $t=50^\circ\text{C}$)

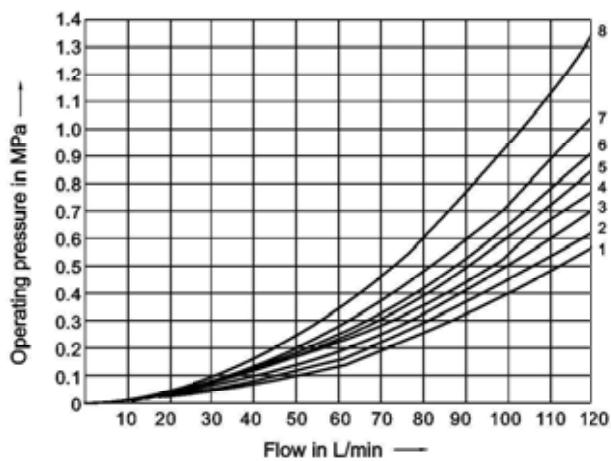


Symbol	Flow direction			
	P-A	P-B	A-T	B-T
A,B	3	3	-	-
C	1	1	3	1
D,Y	5	5	3	3
E	3	3	1	1
F	1	3	1	1
H	2	4	2	2
J	1	1	2	1
L	3	3	4	8
M	2	4	3	3
U	3	3	8	4
G	6	6	8	8

7 Symbol G in centre position P-T

4WE-10 Charateristic Curves

(measured at $\nu = 41\text{mm}^2/\text{S}$ and $t=50^\circ\text{C}$)

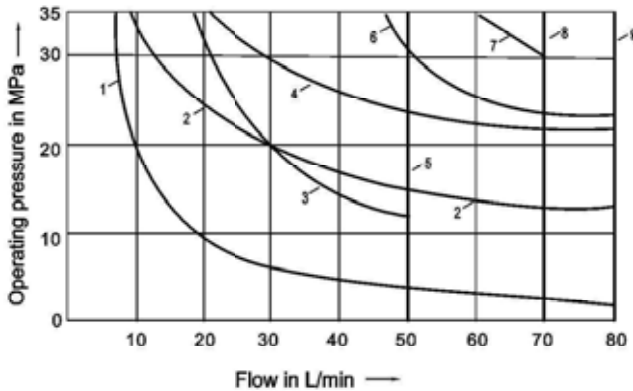


Symbol	Flow direction			
	P-A	P-B	A-T	B-T
A, B	3	3	-	-
C	1	3	4	5
D, Y	5	5	6	6
E	1	1	4	4
F	2	3	7	4
G	3	3	6	7
H	1	1	6	7
J	1	1	3	3
L	2	2	3	5
M	1	1	4	5
U	2	2	3	3

OP.POS.	P-A	P-B	B-T	A-T	P-T
F	4	-	-	8	8
G			-	-	9
H			-	-	3

4WE-6 Switching Power limits

(measured at $v=41\text{mm}^2/\text{S}$ and $t=50^\circ\text{C}$)

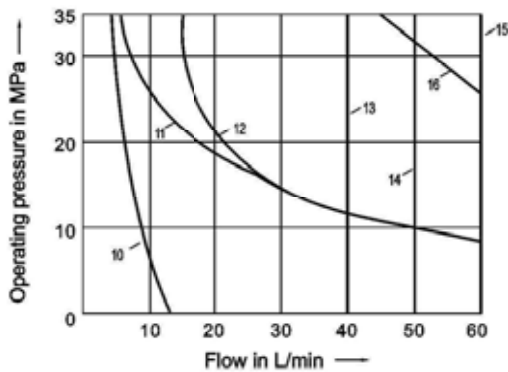


DC solenoid e.g:24V		AC solenoid e.g:230V/50Hz		AC solenoid e.g:230V/60Hz	
Symbol	Curve	Symbol	Curve	Symbol	Curve
A,B(1)	1	A,B(1)	10	A,B(1)	17
A,B	2	A,B	11	A,B	18
F	3	F	12	F	19
J	4	J	13	J	20
G,H	5	H	14	J,L,U	21
A/O, A/OF, L, U	6	A/O,A/OF,C/O, C/OF,D/O,D/OF, E,J,L,M,U	15	A/O,A/OF	22
C,D,Y	7			C,A,B	23
				H	24
M	8				
E,C/O,C/OF D/O,D/OF	9	C,D,Y	16	C/O,C/OF, D/O,D/OF, E, M	25

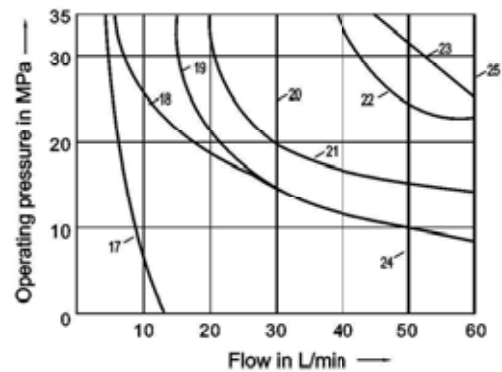
The switching power limits given are for featuring two flow directions (e.g. from P to A and simultaneous return flow from B to T). Due to the flow forces active within the valves the permitted power limit directional valves may be considerably less where there is only one direction of flow (e.g. from P to A and port B blocked)! The power limit for directional valves was determined using solenoids at their operating temperature, 10% under voltage and with no pre-loading of the tank. (1) With hand emergency.

4WE-6 Switching Power limits

(measured at $v=41\text{mm}^2/\text{S}$ and $t=50^\circ\text{C}$)



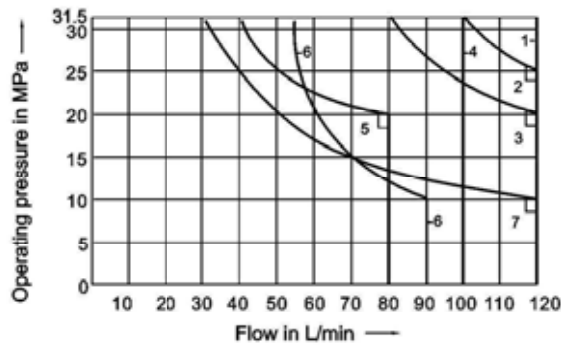
AC solenoid		
Curves	Solenoid Cross reference	
10 to 16	A110	110V,50Hz 120V,60Hz
	A220	220V,60Hz



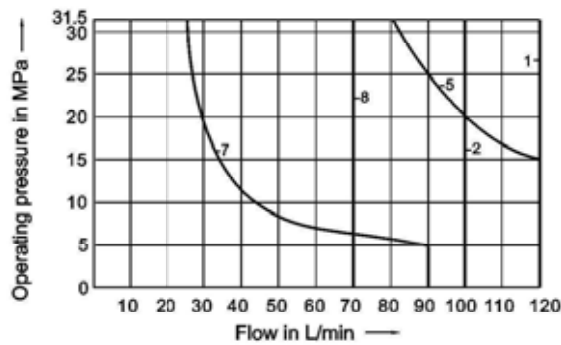
AC solenoid		
Curves	Solenoid Cross reference	
17 to 25	A110	110V,60Hz
	A220	220V,60Hz

4WE-10 Switching Power limits

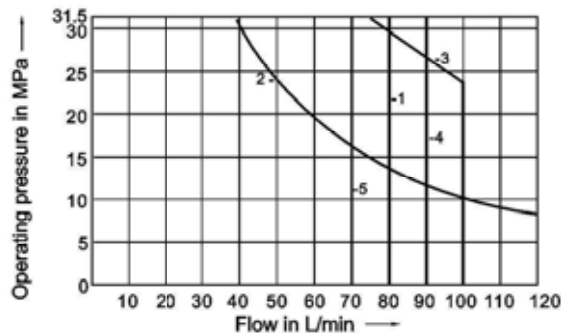
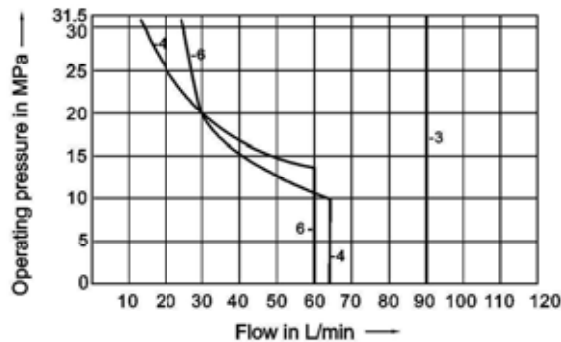
(measured at $v = 41\text{mm}^2/\text{S}$ and $t=50^\circ\text{C}$)



AC solenoid			
Symbol	Curve	Symbol	Curve
C,C/O,C/OF D,D/O, D/OF Y,M	1	H	4
		G	5
		F	6
E	2	A,B	7
A/O, A/OF L, U, J	3		



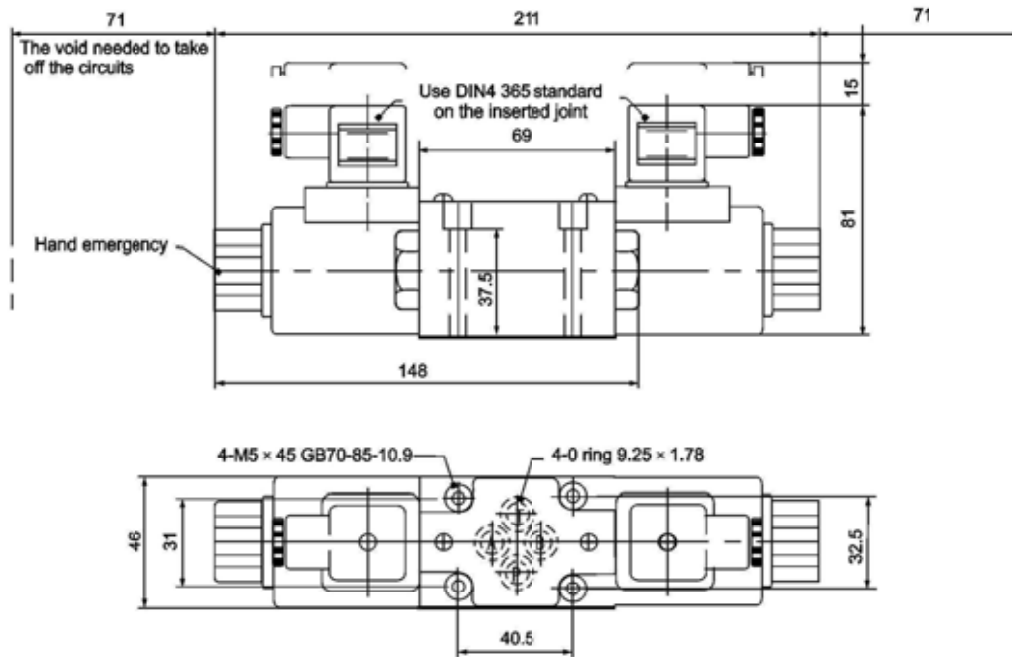
AC solenoid:110V/50Hz,120V/60Hz 220V/50Hz,240V/60Hz			
Symbol	Curve	Symbol	Curve
C,C/O,C/OF D,D/O, D/OF Y	1	A,B	4
		A/O,A/OF,J	5
		G	6
E,L	2	F	7
M	3	H	8



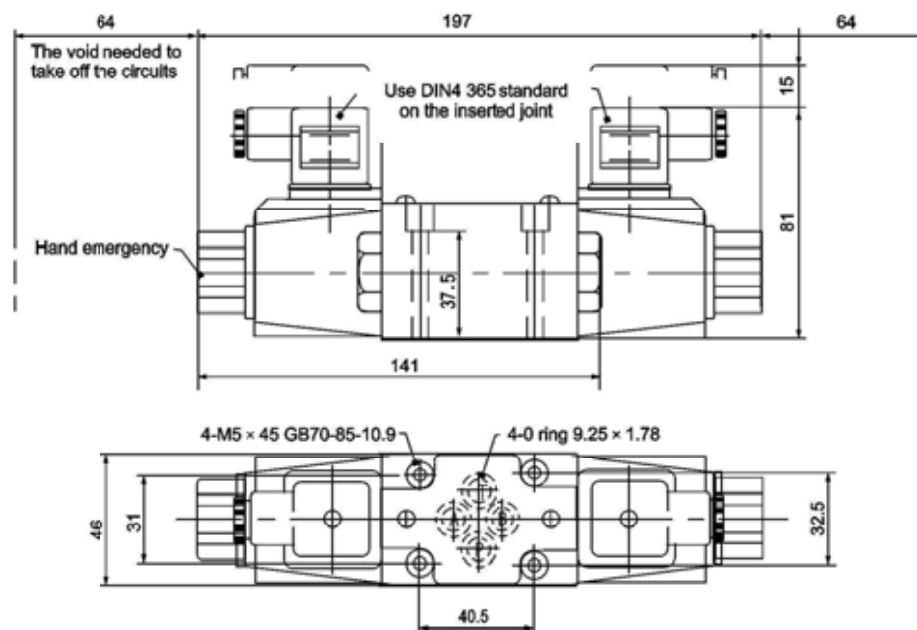
AC solenoid:110V/50Hz,120V/60Hz 220V/50Hz,240V/60Hz			
Symbol	Curve	Symbol	Curve
C,C/O,C/OF D,D/O, D/OF Y	1	E	3
		G	4
		H	5
A/O, A/OF	2		

Installation dimensions

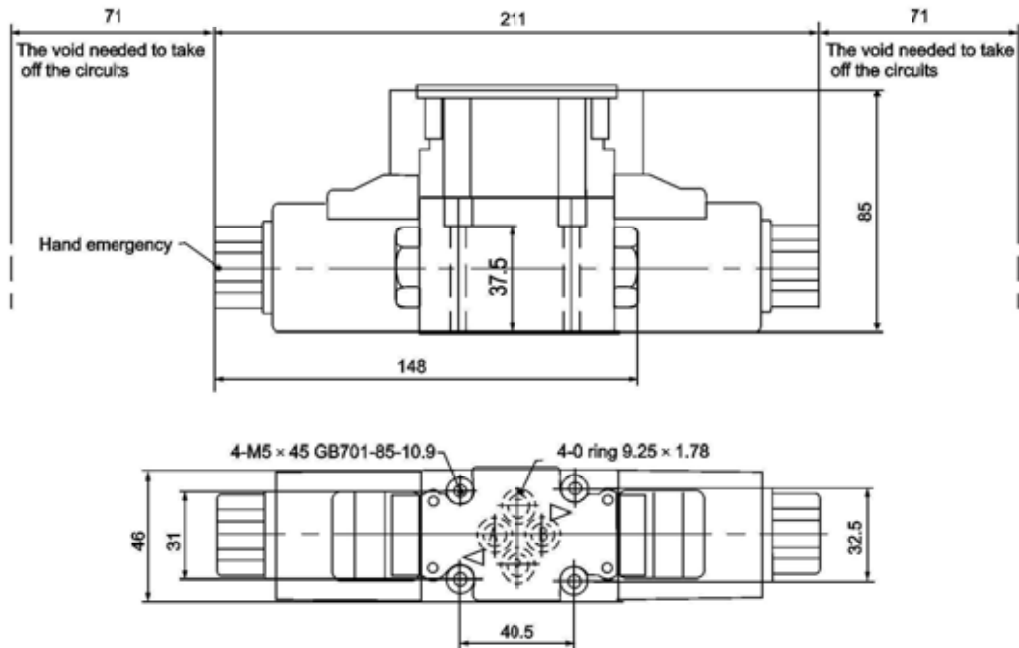
Valve with DC Solenoids of size 6(plug-in connection)



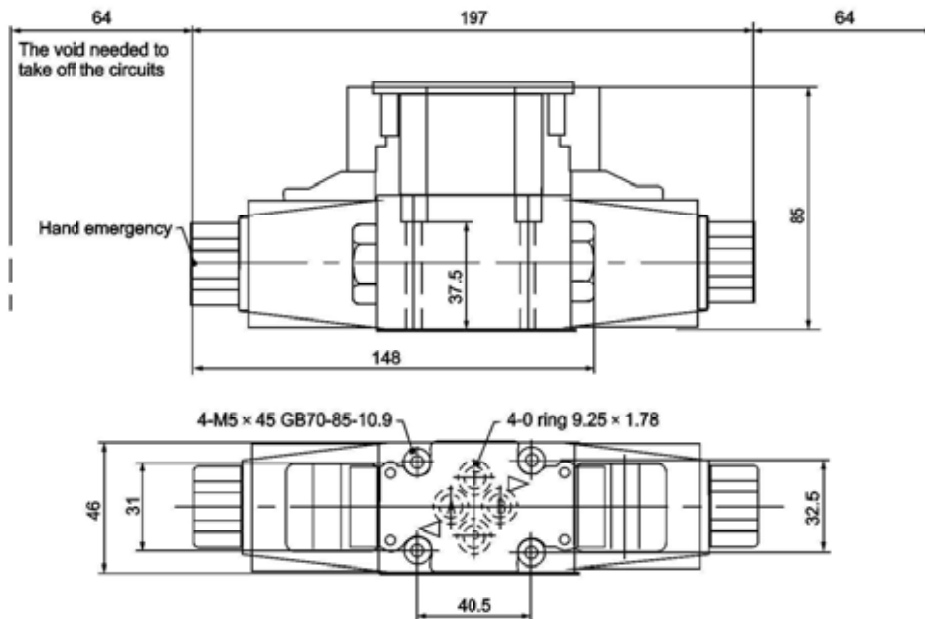
Valve with AC Solenoids of size 6(plug-in connection)



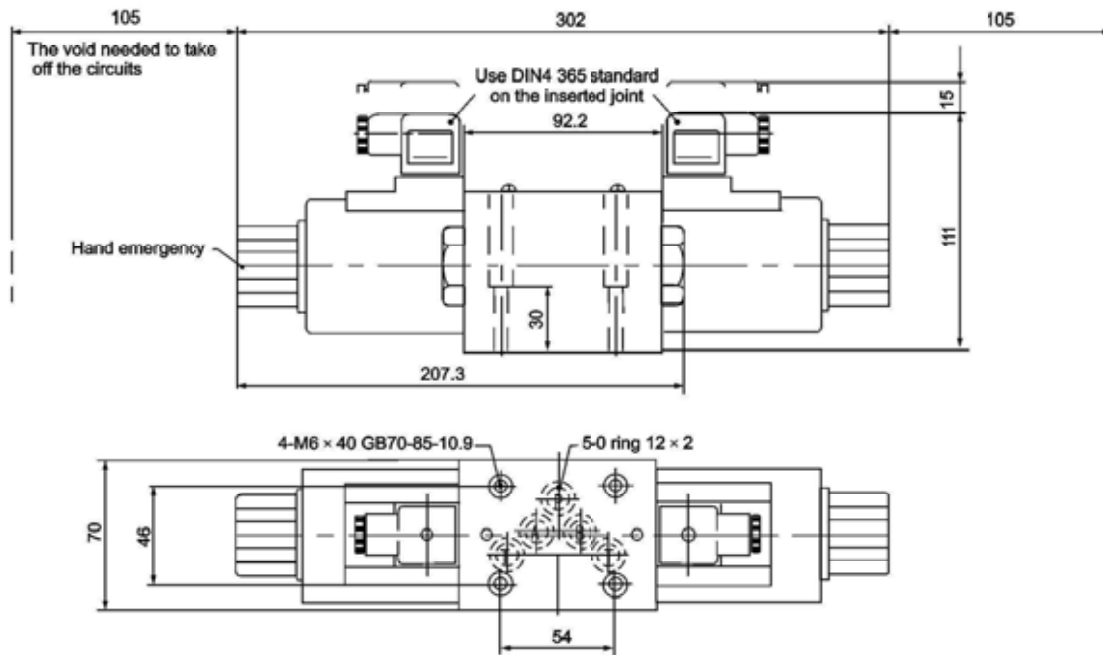
Valve with DC Solenoids of size 6(with lamp central connection)



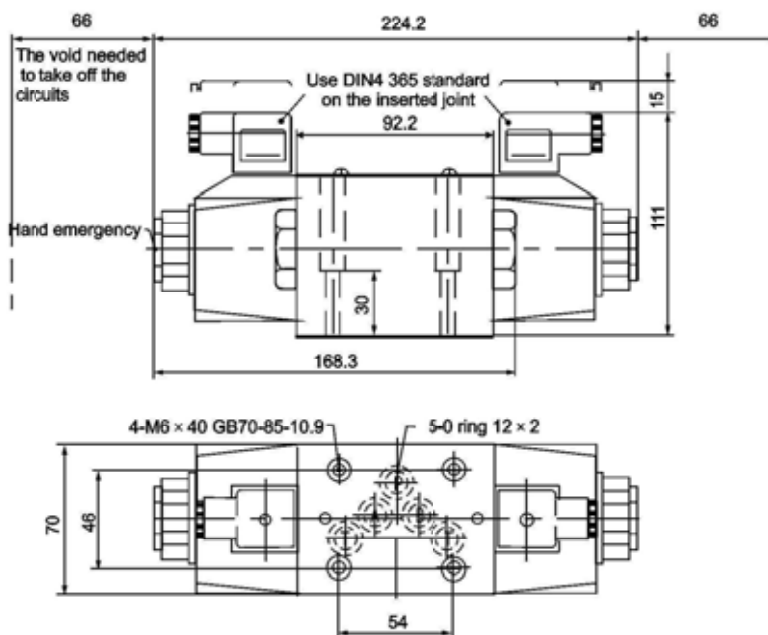
Valve with AC Solenoids of size 6(with lamp central connection)



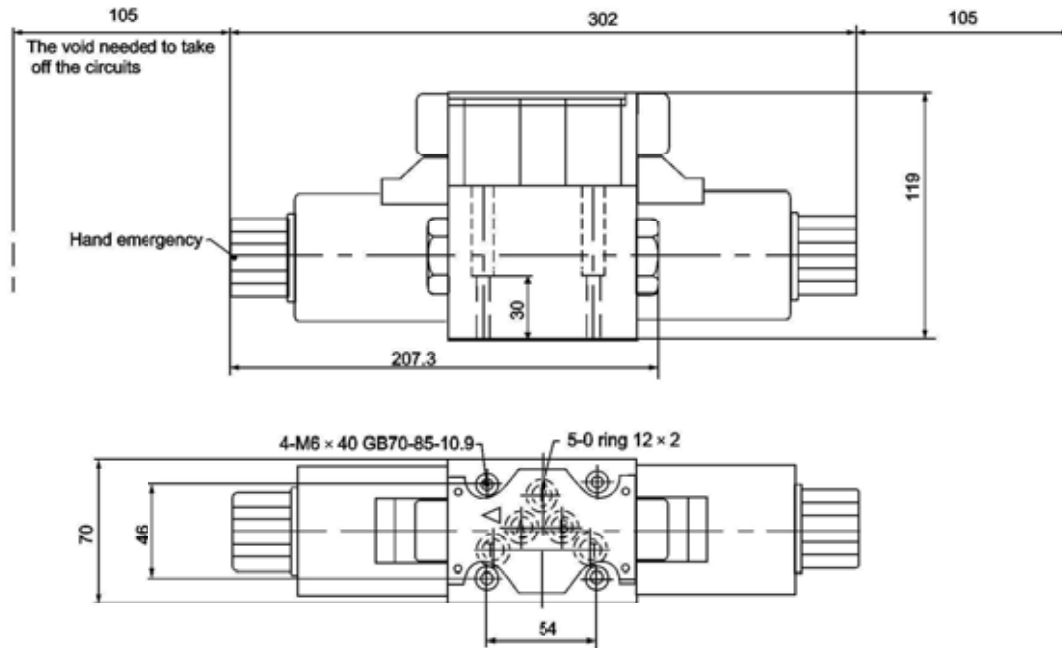
Valve with DC Solenoids of size 10(plug-in connection)



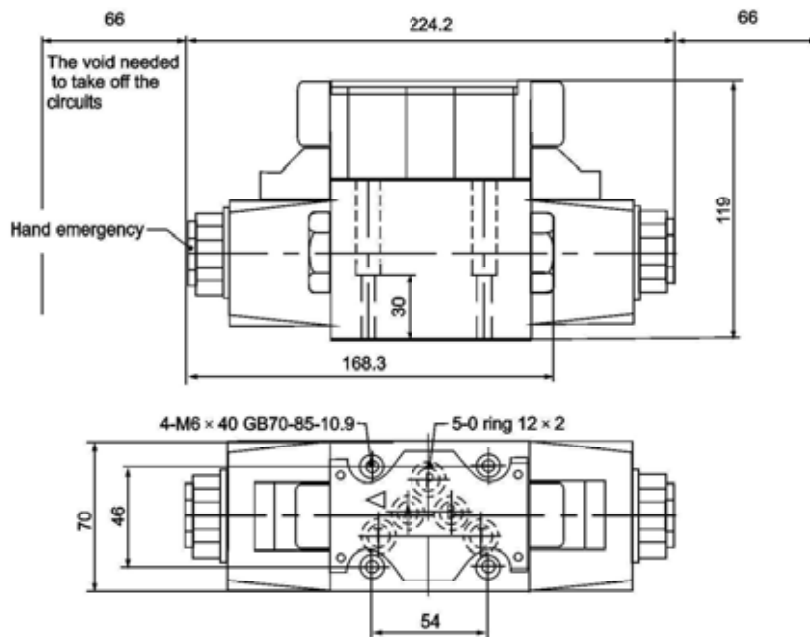
Valve with AC Solenoids of size 10(plug-in connection)



Valve with DC Solenoids of size 10(with lamp central connection)

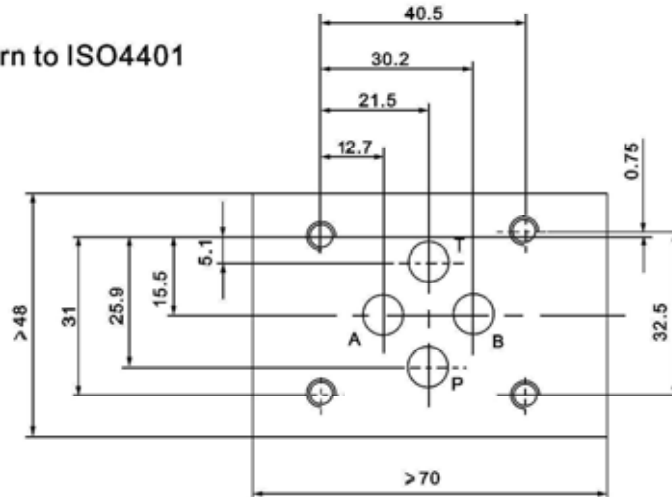


Valve with AC Solenoids of size 10(with lamp central connection)

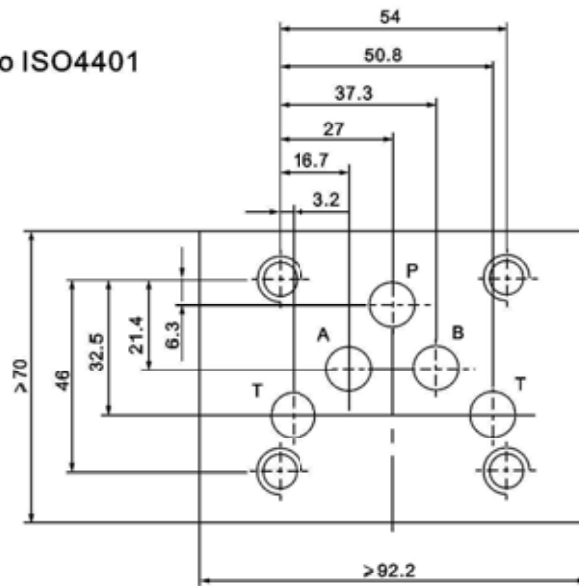


Subplate installation dimensions

- 4WE-6
Porting pattern to ISO4401



- 4WE-10
Porting pattern to ISO4401



- Required surface finish of mating piece

