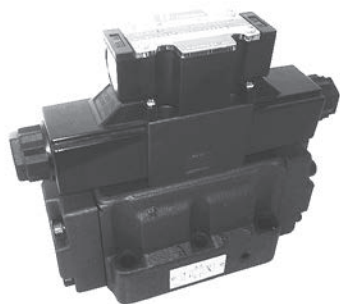


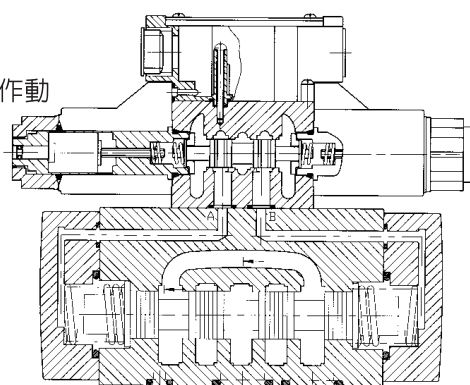
電磁控制導引作動方向控制閥
SOLENOID CONTROLLED PILOT OPERATED DIRECTIONAL VALVE
SW-G04 系列 SERIES

KCL® world-best-pumps
HYDRAULIC EQUIPMENTS



基本特性 FEATURES

- 31.5Mpa 最大使用壓力
- 300LPM 最大通過流量（視閥蕊而異）
- 具低壓力降特性
- 濕式電磁控制、油壓導引作動
- 具低震動特性
- 可簡易更改內 / 外部導引 / 泄油作動
- 低脈衝電壓功能選擇
- 具接地功能
- 內建作動指示燈
- 二種接線方式
- 磷酸鹽防鏽表面處理
- 一般工具可按裝或維修
- 可選擇特殊密封件



- 31.5 Mpa maximum pressure
- 300 LPM maximum flow, depending on spools
- Low pressure drop
- Wet armature solenoid controlled, pilot operated
- Low shock spools
- Plugging and unplugging to convert between internal or external pilot and drain
- Surge suppression
- Internal ground
- Indicating lights are standard
- Five electrical connection options
- Phosphate finished body
- No special tools required for maintenance
- Special seal kits are available for fire-resistance fluids .

基本規格 SPECIFICATIONS

SW-G04 系列 SERIES						
最高工作壓力 MAXIMUM OPERATING PRESSURE	P, A, B 迴路 Ports	31.5Mpa (1Mpa=10kgf/cm ²)				
	T 迴路 Port	7.0Mpa (1Mpa=10kgf/cm ²)				
最大流量 RATED FLOW CAPACITY	P, A, B, T 迴路 Ports	300L/min				
電磁線圈 SOLENOID RATINGS	線圈型號 Coil Type	使用範圍 Voltage Range(± 10%)		起動電流 In Rush(A)	保持電流 Holding(A)	功率 Wattage
	A110	50Hz	90-110	1.60	0.50	24.2
		60Hz	99-121	1.60	0.45	25.8
	A120	50Hz	99-121	1.60	0.45	23.4
		60Hz	108-132	1.60	0.40	24.6
	A220	50Hz	180-220	1.40	0.22	22.7
		60Hz	198-242	1.10	0.20	24.4
	A240	50Hz	198-242	0.80	0.23	24.6
		60Hz	216-264	0.80	0.21	25.9
	R110	50/60Hz	99-121	0.30	0.30	30
	R220	50/60Hz	198-242	0.16	0.16	30
	D12	10.80-13.20		2.5	2.5	30
	D24	21.60-26.40		1.3	1.3	30
	溫度 Temperature	0-50°C				
	絕緣 Insulation	H 級 Class H				
液壓油品 FLUIDS	耐電壓 Withstand Voltage	1,500V/sec				
	種類 Type	礦物性、耐磨性 Mineral,Anti-Wear				
	粘度 Viscosity	10-400 cSt				
	溫度 Temperature	-25°C-90°C				
	清潔度 Contamination Level	$\beta_{10} \geq 75$, NAS 12 級以內 Under NAS class 12, 25u				
重量 WEIGHT	單線圈 Single Solenoid	8.2 Kgs (18.1 Lbs)				
	雙線圈 Double Solenoid	8.7 Kgs (19.2 Lbs)				
配件 ACCESSORIES	按裝螺絲 Mounting Bolt Kits	2-M6X40mm 4-M10X45mm				
	旋緊扭力 Tightening Torque	120-150Kgf-cm 580-720Kgf-cm				
防鏽處理 CORROSION	閥體表面 Treatment	磷酸鹽皮膜處理 Zinc Phosphate Compound				

型號說明 HOW TO ORDER

SW - G04 - C2 - ET - A220 - 10 - AB

① ② ③ ④ ⑤ ⑥ ⑦

① **產品系列 VALVE SERIES:**

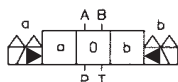
SW= 電磁控制導引作動方向控制閥
SOLENOID CONTROLLED PILOT OPERATED
DIRECTIONAL VALVE

② **油路板按裝型式通稱 GASKET MOUNTING:**

NOMINAL=1/2" (16mm)
DIN=NG16
NFPA=D07
ISO=CETOP07

③ **閥蕊型式 SPOOL TYPE**

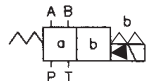
三位置 **THREE POSITION**
彈簧中立 **Spring Centered:**



油壓符號 Code Symbol 油壓符號 Code Symbol

C2		C7	
C3		C8	
C4		C9	
C40		C5S	
C5		C8S	
C6		C9S	
C60			

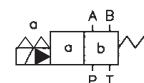
二位置 TWO POSITION
彈簧覆歸 **Spring Offset:**
(線圈 Solenoid B)



油壓符號 Code Symbol 油壓符號 Code Symbol

B2		C6B	
B20		C60B	
B3		C7B	
C2B		C8B	
C3B		C9B	
C4B		C5SB	
C40B		C8SB	
C5B		C9SB	

(線圈 Solenoid A)

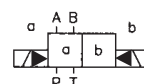


油壓符號 Code Symbol 油壓符號 Code Symbol

B2S		C5BS	
B20S		C6BS	
B3S		C60BS	
C2BS		C7BS	
C3BS		C8BS	
C4BS		C9BS	
C40BS			

無彈簧、無覆歸

Without Spring, Without Centering



油壓符號 Code Symbol 油壓符號 Code Symbol

N2		N3	
----	--	----	--

④ **E = 外部導引控制 EXTERNAL PILOT**

省略 = 內部導引控制

NO CODE = FOR STANDARD INTERNAL PILOT

T = 外部泄油控制 EXTERNAL DRAIN

省略 = 內部泄油控制

NO CODE = FOR STANDARD INTERNAL DRAIN

⑤ **線圈型號 COIL VOLTAGE:**

A110:AC110V-60Hz;AC100V-50Hz
A120:AC120V-60Hz;AC110V-50Hz
A220:AC220V-60Hz;AC200V-50Hz
A240:AC240V-60Hz;AC220V-50Hz
R110:AC110V-60/50Hz
R220:AC220V-60/50Hz
D12:DC12V
D24:DC24V

⑥ **接線盒式 WIRING:**

10 = 接線盒式 JOINT BOX

20 = 插頭式 DIN HIRSCHMANN

⑦ **STROKE ADJUSTMENT**

省略 NO CODE = 標準 STANDARD TYPE

AB = AB 迴路行程可調整

WITH STROKE ADJUSTMENT BOTH ENDS

A = A 迴路行程可調整

WITH STROKE ADJUSTMENT PORT "A" END

B = B 迴路行程可調整

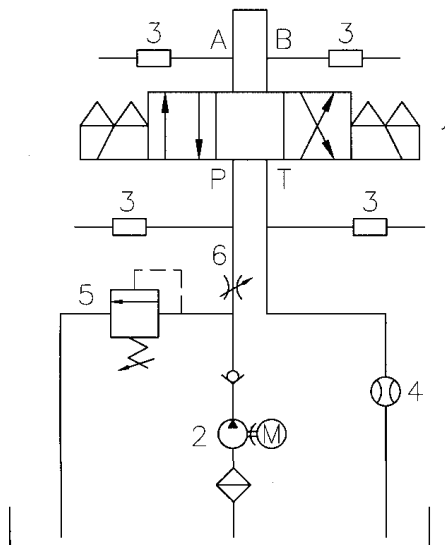
WITH STROKE ADJUSTMENT PORT "B" END

壓力降特性 PRESSURE DROP VS FLOW

測試條件

壓力：7.0Mpa(1000PSI)
流量：300 L/min(80GPM)
黏度：35CST

- 1.電磁方向閥
- 2.油壓泵浦
- 3.壓力感測器
- 4.流量感測器
- 5.調壓閥
- 6.流量閥

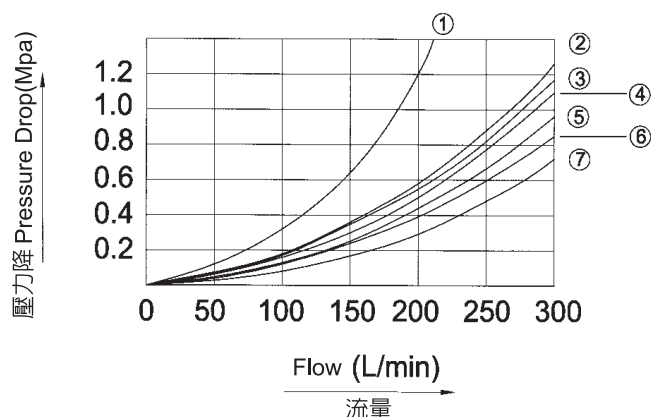


Test Conditions

Pressure : 7.0Mpa (1000 PSI)
Flow Rate : 300L/min (80 GPM)
Viscosity : 35cSt

1. Directional Control Valve
2. Hydraulic Pump
3. Pressure sensor
4. Flow sensor
5. Relief
6. Throttle

特性曲線 Performance Curves



閥蕊型式 Spool Type	壓力降曲線代碼 Pressure Drop Curve Number				
	P → A	B → T	P → B	A → T	P → T
C2	5	4	5	6	-
C3	5	3	5	5	7
C4	5	3	5	5	-
C40	5	4	5	6	-
C5	7	4	5	5	5
C6	5	3	5	6	1
C60	7	5	7	7	2
C7	5	4	5	6	-
C8	5	4	5	5	-
C9	6	4	5	6	-

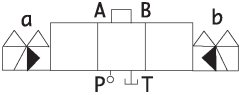
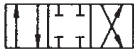
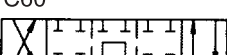
黏度變化 Viscosity Correction Factor

黏度 Viscosity	cSt	15	20	30	40	50
	SSU	77	98	141	186	232
系數 Factor(G')		0.81	0.87	0.96	1.03	1.09
黏度 Viscosity	cSt	60	70	80	90	100
	SSU	278	324	371	417	464
系數 Factor(G')		1.14	1.19	1.23	1.27	1.30

註：不同比重(G')時壓力降(Δ P')可以用 $\Delta p' = \Delta p (G'/0.85)$ 計算得之

The pressure drop (Δ p') can be obtained from the formula : $\Delta p' = \Delta p (G'/0.85)$ for other specific gravity (G').

性能表 PERFORMANCE

在各種壓力 Mpa(PSI)下容許通過最大流量 L/min(GPM) The Maximum Flow Rate L/min (GPM) Under Different Pressure Mpa (PSI)						
滑柱型式 Spool Type 正常位置 Normal Position	P → A, B → T P → B, A → T					
	5.0Mpa (710)	10.0Mpa (1420)	15.0Mpa (2130)	21.0Mpa (3000)	25.0Mpa (3550)	31.5Mpa (4500)
C2 	300(80.8)	300(80.8)	300(80.8)	260(69.3)	200(53.5)	140(37.3)
	300(80.8)	300(80.8)	260(69.3)	155(41.3)	120(32.0)	110(29.3)
C3 	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)	300(80.0)
C4 	300(80.8)	300(80.8)	300(80.8)	260(69.3)	245(65.3)	160(29.3)
	300(80.8)	300(80.8)	260(69.3)	185(49.3)	140(37.3)	110(38.7)
C40 	300(80.8)	300(80.8)	300(80.8)	260(69.3)	200(53.3)	145(38.7)
	300(80.8)	300(80.8)	260(69.3)	155(41.3)	120(32.0)	110(29.3)
C5 	260(69.3)	255(68.0)	250(66.6)	245(65.3)	240(64.0)	240(64.0)
C6 	300(80.8)	300(80.8)	265(80.0)	255(68.0)	245(65.3)	235(62.7)
C60 	300(80.8)	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)
	300(80.8)	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)
C7 	300(80.8)	300(80.8)	300(80.8)	290(80.0)	280(74.7)	255(68.0)
C8 	300(80.8)	300(80.8)	285(76.0)	230(61.3)	170(45.3)	135(36.0)
	300(80.8)	300(80.8)	255(68.0)	165(44.0)	120(32.0)	110(29.3)
C9 	300(80.8)	300(80.8)	270(72.0)	200(53.3)	160(42.7)	140(37.3)

附記：1.表格中之數字表示在飽和溫度及 90% 電壓變化下壓力與流量之關係。

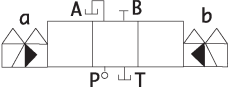
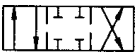
2.表之上半部表示當 DC 及 RF 電源輸入時其最大流量值，表之下半部表示當 AC 電源輸入時其最大流量值。

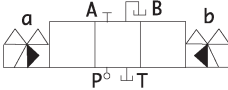
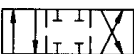
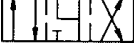
Note :

40(10.7)
32(8.5)

1.The figures in the square shows the parameter among pressure & flow under saturated temperature and 90% applied voltage

2.The upper side number in table describes the maximum flow under DC and RF. The lower side number in table describes the maximum flow under AC.

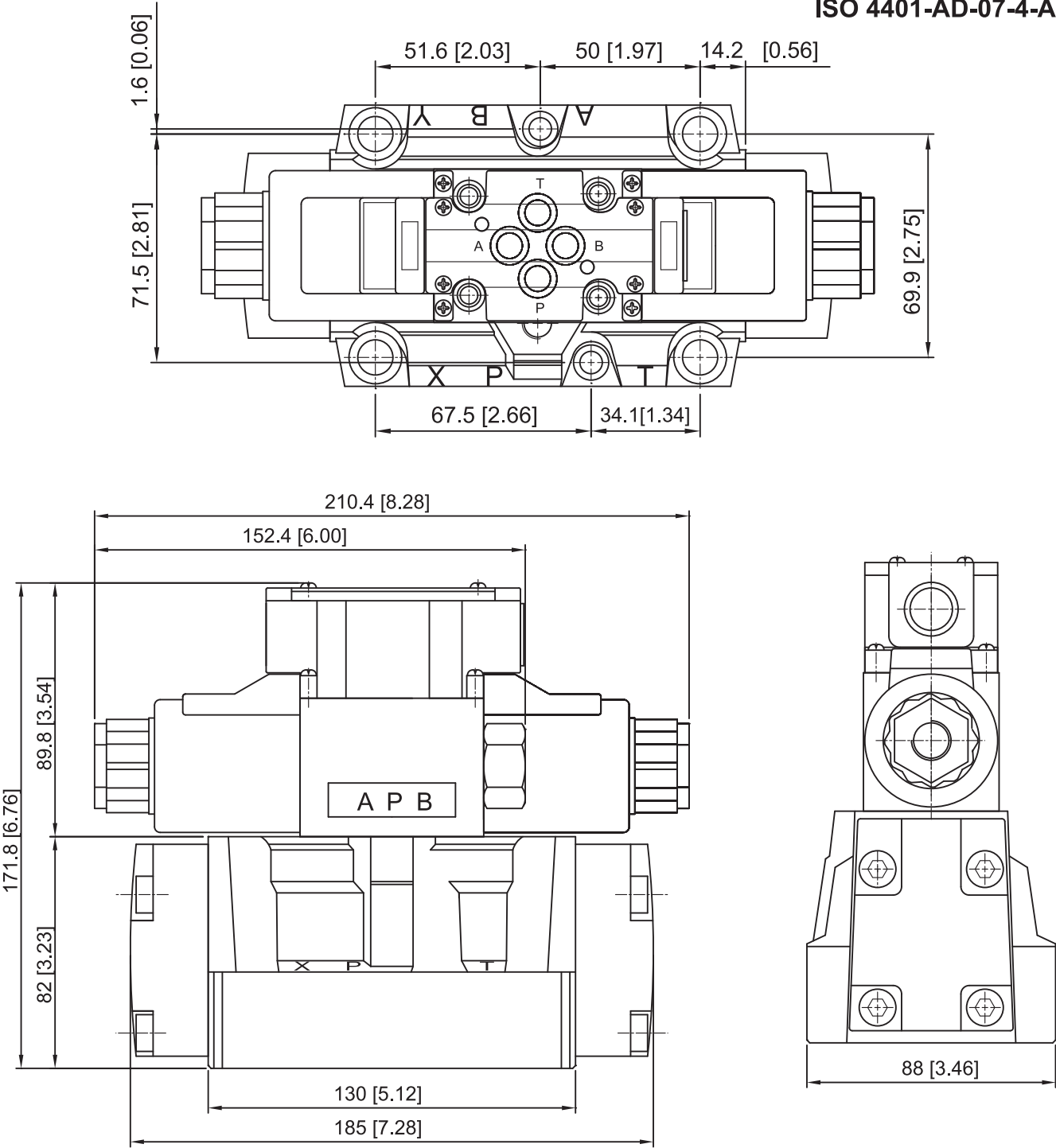
在各種壓力 Mpa(PSI)下容許通過最大流量 L/min(GPM) The Maximum Flow Rate L/min (GPM) Under Different Pressure Mpa (PSI)						
滑柱型式 Spool Type 正常位置 Normal Position	P → A, B → T P → B, A → T					
	5.0Mpa (710)	10.0Mpa (1420)	15.0Mpa (2130)	21.0Mpa (3000)	25.0Mpa (3550)	31.5Mpa (4500)
N2 	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)	300(80.0)
N3 	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)	300(80.0)
N4 	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)	300(80.0)
N40 	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)	300(80.0)

在各種壓力 Mpa(PSI)下容許通過最大流量 L/min(GPM) The Maximum Flow Rate L/min (GPM) Under Different Pressure Mpa (PSI)						
滑柱型式 Spool Type 正常位置 Normal Position	P → A, B → T P → B, A → T					
	5.0Mpa (710)	10.0Mpa (1420)	15.0Mpa (2130)	21.0Mpa (3000)	25.0Mpa (3550)	31.5Mpa (4500)
B2 	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)	300(80.0)
B3 	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)	300(80.0)
B4 	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)	300(80.0)
B40 	300(80.8)	300(80.8)	300(80.8)	300(80.0)	300(80.0)	300(80.0)

尺寸圖 DIMENSIONS

SW-G04-10

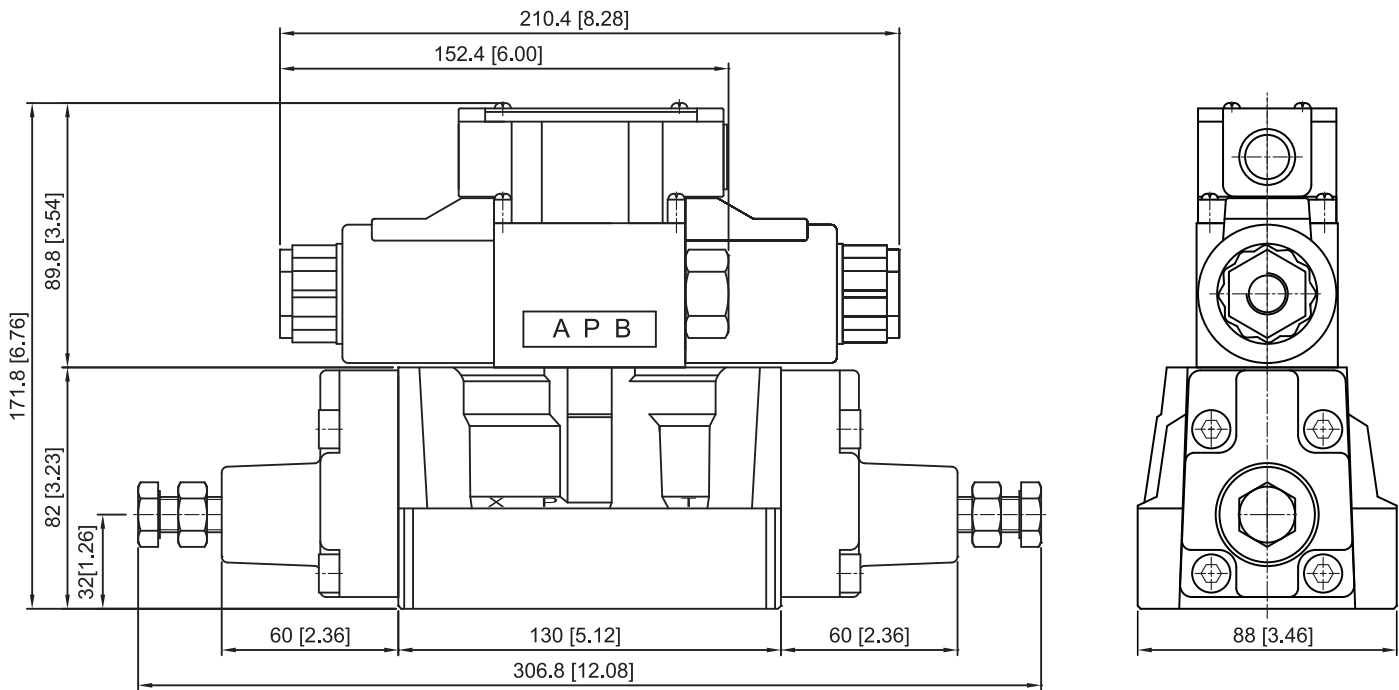
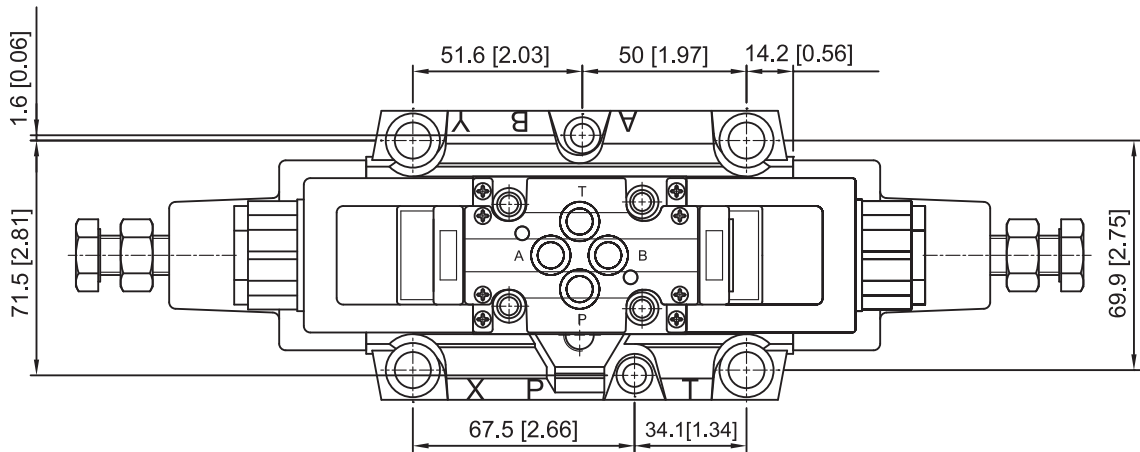
按裝面
Mounting Interface :
ISO 4401-AD-07-4-A



尺寸圖 DIMENSIONS

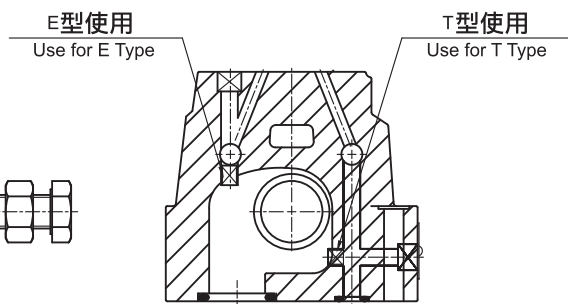
SW-G04-10-AB

按裝面
Mounting Interface :
ISO 4401-AD-07-4-A



Technical drawing of a 3/2-way valve assembly. The drawing shows a cross-section of the valve body with internal components. Numbered callouts indicate the following parts:

- 1: Valve body (hatched)
- 2: Valve seat (hatched)
- 3: Valve core (hatched)
- 4: Valve core seal (hatched)
- 5: Valve core seal (hatched)



NO.	種類 Description	型號 Specification	數量 Qty
1	O 型環 O-ring	P-22A HS70°	4
2	O 型環 O-ring	P-9 HS70°	4
3	O 型環 O-ring	P-34 HS70°	2
4	O 型環 O-ring	P-10A HS70°	2
5	背托環 Backup Ring	P-10A T1.25	2

M04 - O4 - B - 1



04= 通稱 NOMINAL1/2”
ISO CETOP07
DIN NG16
NFPA D07

B = 底部配管 BOTTOM
S = 側邊配管 SIDE
SB = 底部及側邊配管 SIDE & BOTTOM

04= 1/2"
06= 3/4"

1 = PT
2 = NPT
3 = SAE

