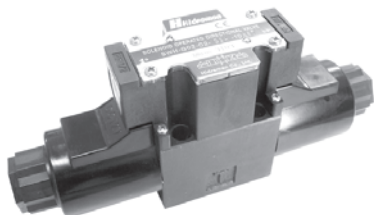


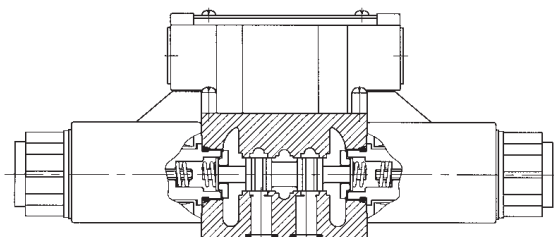
電磁作動方向控制閥
SOLENOID OPERATED DIRECTIONAL VALVE
 SWH-G02 系列 SERIES

KCL® world-best-pumps
 HYDRAULIC EQUIPMENTS



基本特性 FEATURES

- 31.5Mpa 最大使用壓力
- 63LPM 最大通過流量（視閥蕊而異）
- 低壓力降特性
- 濕式電磁作動結構
- 可提供減震功能選擇
- 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
- 63 LPM maximum flow, depending on spools
- Low pressure drop
- Wet armature solenoid operated
- Soft shift available
- Surge suppression
- Internal ground
- Indicating lights are standard
- Two 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

| SWH-G02 系列 SERIES | | | | | | |
|--------------------------------------|--|--|-----------------|-----------------|------------|------|
| 最高工作壓力 MAXIMUM OPERATING PRESSURE | P, A, B 迴路 Ports T 迴路 Port | 31.5Mpa (1Mpa=10kgf/cm ²) 16.0Mpa (1Mpa=10kgf/cm ²) | | | | |
| 最大流量 RATED FLOW CAPACITY | P, A, B, T 迴路 Ports | 63L/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 | 90-120 | 0.30 | 0.30 | 30 |
| | R220 | 50/60Hz | 180-242 | 0.16 | 0.16 | 30 |
| | D12 | 10.80-13.20 | | 2.50 | 2.50 | 30 |
| D24 | 21.60-26.40 | | 1.30 | 1.30 | 30 | |
| 反應時間 Response Time | AC | DC | | RF | | |
| mS | ON | 10-40 | 20-60 | | 20-60 | |
| | OFF | 20-40 | 20-40 | | 20-40 | |
| 溫度 Temperature | 0-50°C | | | | | |
| 絕緣 Insulation | H 級 Class H 電阻 100m Ω 以上 Resistance over 100m Ω | | | | | |
| 耐電壓 Withstand Voltage | 1,500V/sec | | | | | |
| 切換頻率 Operating Frequencies | 300CPM | | | | | |
| 液壓油品 FLUIDS | 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 | 1.7 Kgs (3.8 Lbs) | | | | |
| | 雙線圈 Double Solenoid | 2.2 Kgs (4.9 Lbs) | | | | |
| 配件 ACCESSORIES | 按裝螺絲 Mounting Bolt Kits | M5 × 45mm | | | | |
| | 旋緊扭力 Tightening Torque | 50-70kgf-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

SWH - G02 - C4 - D24 - 10 - LS

① ② ③ ④ ⑤ ⑥

① **產品系列 VALVE SERIES:**

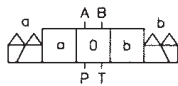
SWH= 電磁作動方向控制閥
SOLENOID OPERATED DIRECTIONAL VALVE

② **油路板按裝型式通稱 GASKET MOUNTING:**

NOMINAL=1/4" (6mm)
DIN=NG06
NFPA=D03
ISO=CETOP03

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

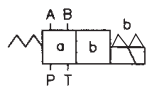
C5 C8S

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

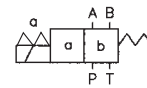
C3B C9B

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

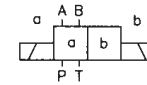
C3BS C8BS

C4BS C9BS

C40BS

無彈簧、無覆歸

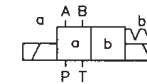
Without Spring, Without Centering



油壓符號 Code Symbol 油壓符號 Code Symbol

N2 N3

機械定位 Detent:



油壓符號 Code Symbol 油壓符號 Code Symbol

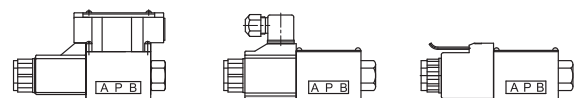
D2 D3

④ **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

⑤ **接線方式 WIRING:**

10 = 接線盒式 JOINT BOX 20 = 插頭式 DIN HIRSCHMANN 31 = 出線式 LEAD WIRE



⑥ **OPTIONS:**

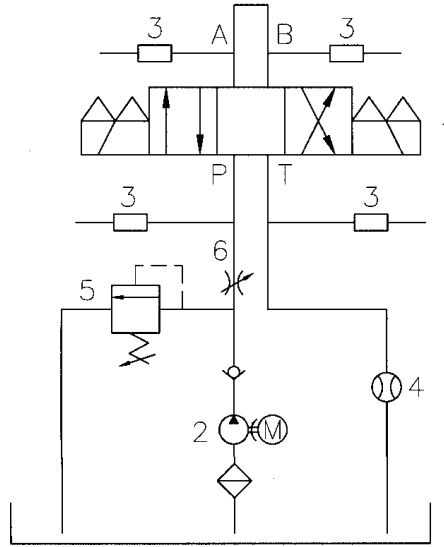
空白 NO CODE= 標準型 STANDARD
LS= 低脈衝電壓功能 SURGE SUPPRESSION
M= 減震型 SOFT SHIFT

壓力降特性 PRESSURE DROP VS FLOW

測試條件

壓力：7.0Mpa(1000PSI)
流量：63 L/min(16.8GPM)
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

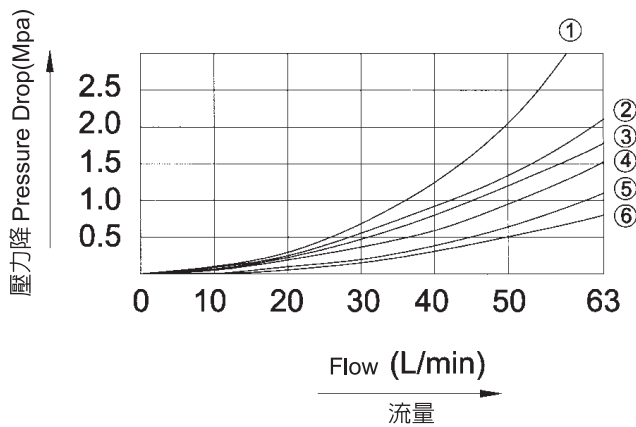


Test Conditions

Pressure : 7.0Mpa (1000 PSI)
Flow Rate : 63L/min (16.8 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 | 5 | 5 | 5 | - |
| C3 | 6 | 6 | 6 | 6 | 4 |
| C4 | 5 | 6 | 5 | 6 | - |
| C40 | 5 | 5 | 5 | 5 | - |
| C5 | 2 | 2 | 2 | 2 | 4 |
| C6 | 1 | 1 | 1 | 1 | 4 |
| C60 | 1 | 1 | 1 | 1 | 3 |
| C7 | 6 | 5 | 6 | 5 | - |
| C8 | 5 | 5 | 5 | 6 | - |
| C9 | 6 | 5 | 5 | 5 | - |
| D2 | 5 | 5 | 5 | 5 | - |
| D3 | 5 | 3 | 5 | 3 | - |
| B2 | 4 | 5 | 4 | 5 | - |
| B3 | 3 | 3 | 5 | 5 | - |
| B20 | 2 | - | 5 | - | - |
| B2S | 4 | 5 | 4 | 5 | - |
| B3S | 5 | 5 | 3 | 3 | - |
| B20S | 5 | - | 2 | - | - |

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 ($\Delta p'$) 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 | |
| | 5.0Mpa (735) | 10.0Mpa (1470) | 15.0Mpa (2200) | 21.0Mpa (3000) | 25.0Mpa (3675) | 31.5Mpa (4500) | 5.0Mpa (735) | 10.0Mpa (1470) |
| C2  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 40(10.7) | 40(10.7) |
| | | | | | | | 32(8.5) | 25(6.7) |
| C3  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) |
| C4  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 40(10.7) | 40(10.7) |
| | | | | | | | 32(8.5) | 25(6.7) |
| C40  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 40(10.7) | 40(10.7) |
| | | | | | | | 32(8.5) | 25(6.7) |
| C5  | 50(13.3) | 50(13.3) | 50(13.3) | 50(13.3) | 50(13.3) | - | 50(13.3) | 50(13.3) |
| C6  | 40(10.7) | 40(10.7) | 40(10.7) | 40(10.7) | 40(10.7) | - | 40(10.7) | 40(10.7) |
| C7  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 40(10.7) | 40(10.7) |
| | | | | | | | 32(8.5) | 25(6.7) |
| C8  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 40(10.7) | 40(10.7) |
| | | | | | | | 32(8.5) | 25(6.7) |
| C9  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 40(10.7) | 40(10.7) |
| | | | | | | | 32(8.5) | 25(6.7) |
| B2  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 20(5.3) | 20(5.3) |
| B3  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) |
| B20  | - | - | - | - | - | - | 35(9.3) | 32(8.5) |
| D2  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 40(10.7) | 30(8) |
| D3  | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 40(10.7) | 30(8) |

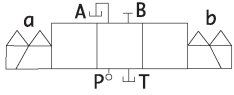

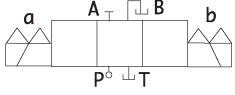
附記：1.表格中之數字表示在飽和溫度及 90% 電壓變化下壓力與流量之關係。
2.表之上半部表示當 DC 及 RF 電源輸入時其最大流量值，表之下半部表示當 AC 電源輸入時其最大流量值。

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)

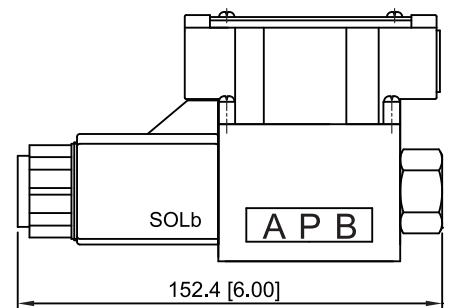
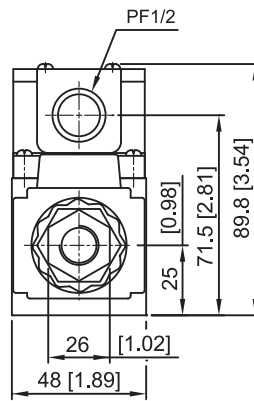
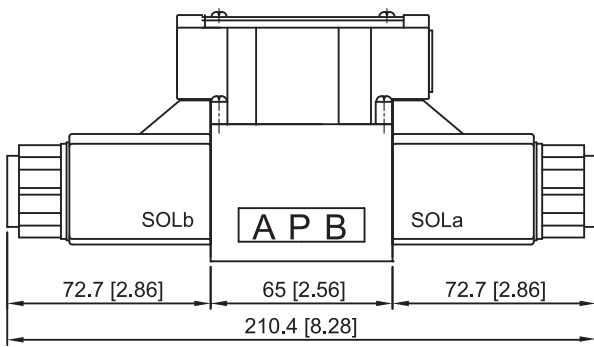
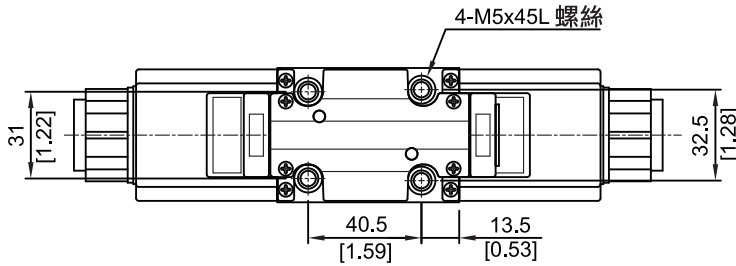
|  | | | |  | | | | | |  | | | |
|---|-------------------|-------------------|-------------------|---|-------------------|-------------------|-------------------|-------------------|-------------------|--|--|--|--|
| 15.0Mpa (2200) | 21.0Mpa (3000) | 25.0Mpa (3675) | 31.5Mpa (4500) | 5.0Mpa (735) | 10.0Mpa (1470) | 15.0Mpa (2200) | 21.0Mpa (3000) | 25.0Mpa (3675) | 31.5Mpa (4500) | | | | |
| 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | 40(10.7) | 40(10.7) | 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | | | | |
| 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | 32(8.5) | 25(6.7) | 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | | | | |
| 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | | | | |
| 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | 40(10.7) | 40(10.7) | 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | | | | |
| 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | 32(8.5) | 25(6.7) | 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | | | | |
| 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | 40(10.7) | 40(10.7) | 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | | | | |
| 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | 32(8.5) | 25(6.7) | 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | | | | |
| 50(13.3) | 50(13.3) | 50(13.3) | - | 50(13.3) | 50(13.3) | 50(13.3) | 50(13.3) | 50(13.3) | - | | | | |
| 40(10.7) | 40(10.7) | 40(10.7) | - | 40(10.7) | 40(10.7) | 40(10.7) | 40(10.7) | 40(10.7) | - | | | | |
| 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | 40(10.7) | 40(10.7) | 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | | | | |
| 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | 32(8.5) | 25(6.7) | 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | | | | |
| 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | 40(10.7) | 40(10.7) | 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | | | | |
| 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | 32(8.5) | 25(6.7) | 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | | | | |
| 18(4.8) | 10(2.7) | 10(2.7) | 10(2.7) | 40(10.7) | 40(10.7) | 18(4.8) | 14(3.7) | 10(2.7) | 10(2.7) | | | | |
| 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | 32(8.5) | 25(6.7) | 12(3.2) | 9(2.4) | 7(1.9) | 7(1.9) | | | | |
| 20(5.3) | 20(5.3) | 18(4.8) | 20(5.3) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | | | | |
| 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 63(16.8) | 45(12) | 37(9.9) | 30(8) | 28(7.5) | | | | |
| | | | | 45(12) | 45(12) | 45(12) | 45(12) | 45(12) | 45(12) | | | | |
| 25(6.7) | 20(5.3) | 18(4.8) | 18(4.8) | 63(16.8) | 50(13.3) | 28(7.5) | 40(10.7) | 32(8.5) | 25(6.7) | | | | |
| | | | | 45(12) | 30(8) | 25(6.7) | 25(6.7) | 22(5.9) | 18(4.8) | | | | |
| 25(6.7) | 21(5.6) | 16(4.3) | 16(4.3) | 40(10.7) | 30(8) | 25(6.7) | 21(5.6) | 16(4.3) | 13(3.5) | | | | |
| 25(6.7) | 21(5.6) | 16(4.3) | 16(4.3) | 40(10.7) | 30(8) | 25(6.7) | 21(5.6) | 16(4.3) | 13(3.5) | | | | |

尺寸圖 DIMENSIONS

SWH-G02-AC-10

按裝面

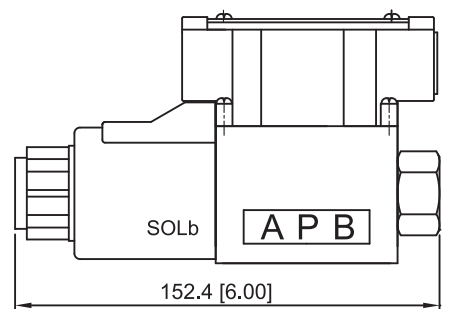
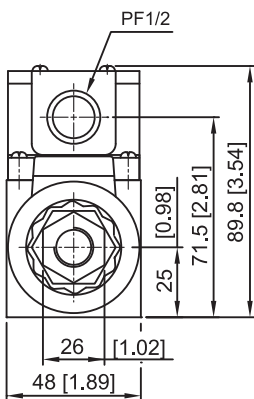
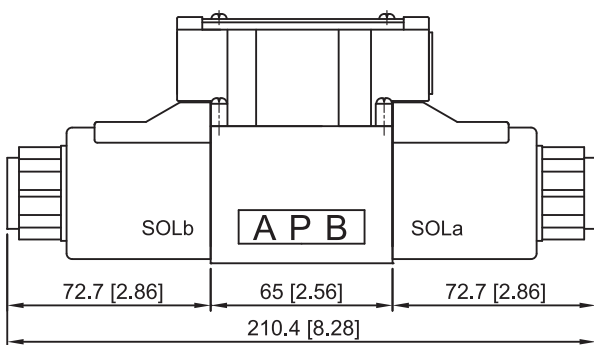
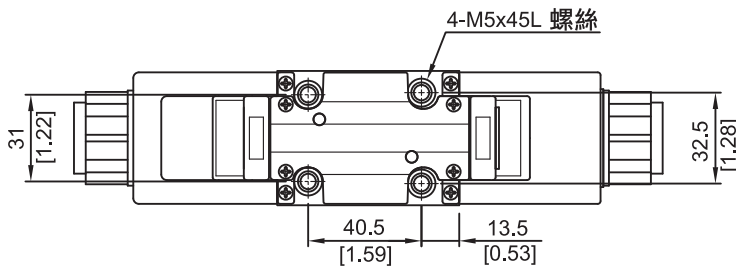
Mounting Interface :
 ISO 4401-AB-03-4-A



SWH-G02-DC/RF-10

按裝面

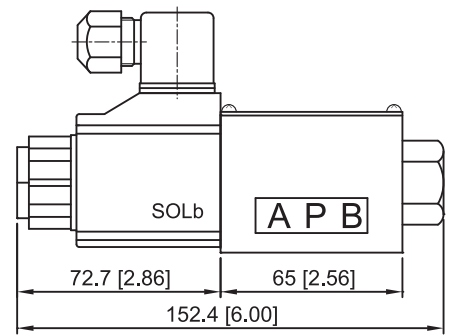
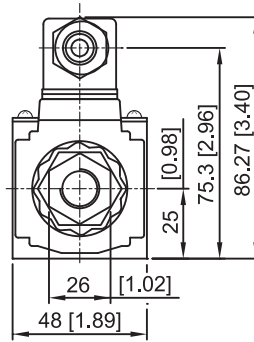
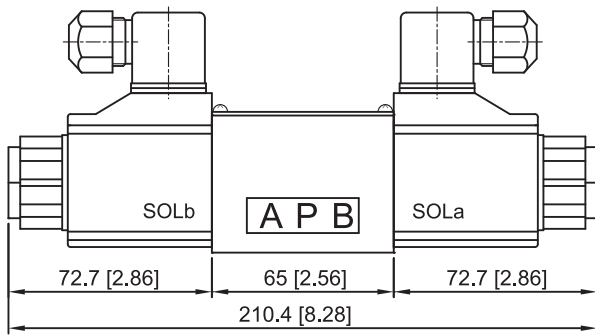
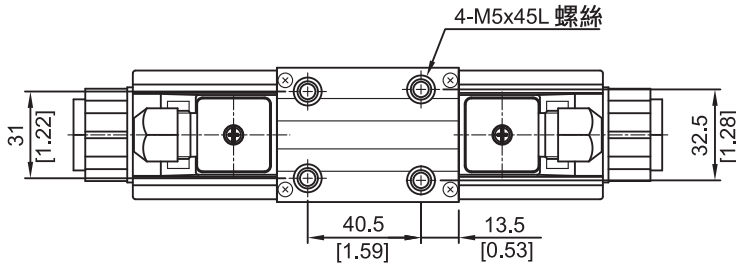
Mounting Interface :
 ISO 4401-AB-03-4-A



尺寸圖 DIMENSIONS

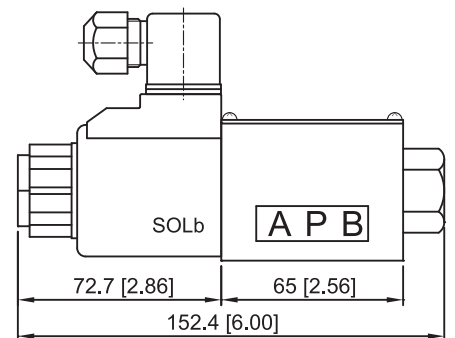
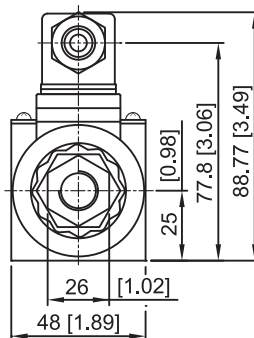
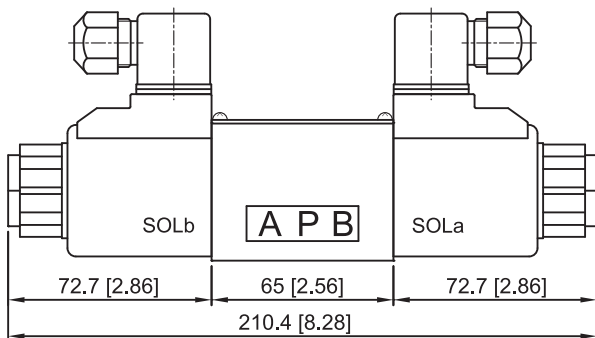
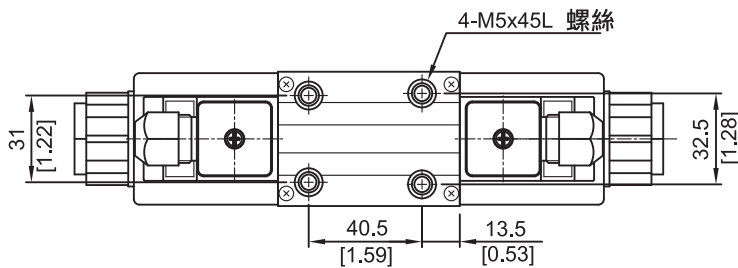
SWH-G02-AC-20

按裝面
Mounting Interface :
ISO 4401-AB-03-4-A



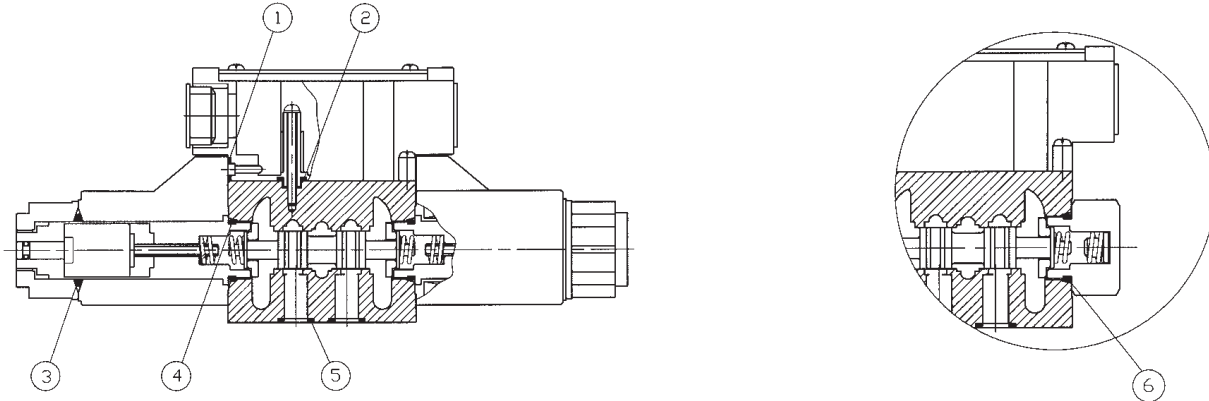
SWH-G02-DC/RF -20

按裝面
Mounting Interface :
ISO 4401-AB-03-4-A



密封件 SEALS KITS

彈簧復歸 (單線圈) Spring offset (Single Solenoid)



| No. | 種類 Description | 型號 Specification | 數量 Quantity | | 注意事項 Remarks |
|-----|-------------------|---------------------|------------------------|------------------------|-----------------|
| | | | 雙線圈 Double Solenoid | 單線圈 Single Solenoid | |
| 1 | O-ring | JIS B 2401-1A P4 | 4 | 2 | |
| 2 | O-ring | JIS B 2401-1A P6 | 1 | 1 | |
| 3 | O-ring | JIS B 2401-1A P20 | 2 | 1 | |
| 4 | O-ring | JIS B 2401-1A P18 | 2 | 1 | |
| 5 | O-ring | AS-568-012 HS90 | 4 | 4 | |
| 6 | O-ring | JIS B 2401-1A P18 | — | 1 | |

油路底板 SUBPLATE

M02 - O2 - B - 1

- ① ② ③ ④

① 閥座尺寸

MOUNTING SIZE:

NOMINAL=1/4"
DIN=NG06
NFPA=D03
ISO=CETOP03

② 配管尺寸

PORT SIZE:

O2 : 1/4"
O3 : 3/8"

③ 配管方位

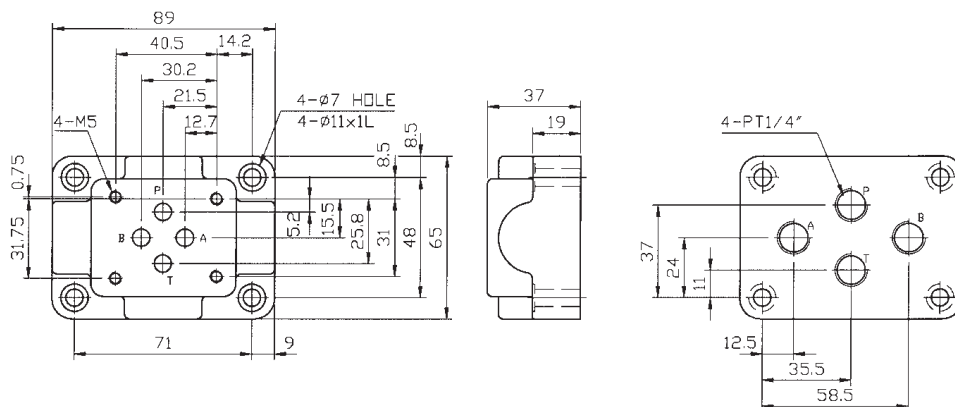
PORT LOCATION:

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

④ 牙口規格

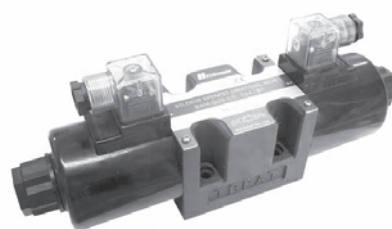
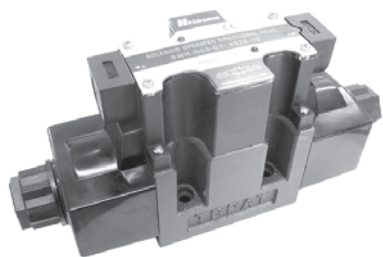
PIPING THREADS:

1 : PT
2 : NPT
3 : SAE



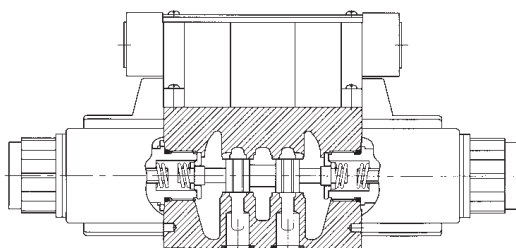
電磁作動方向控制閥
SOLENOID OPERATED DIRECTIONAL VALVE
SWH-G03 系列 SERIES

KCL® world-best-pumps
HYDRAULIC EQUIPMENTS



基本特性 FEATURES

- 31.5 Mpa 最大使用壓力
- 120 LPM 最大通過流量 (適閥蕊而異)
- 低壓力降特性
- 濕式電磁作動結構
- 可提供減震功能選擇
- 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
- 一般工具可安裝或維修
- 可選擇特殊密封件



- 31.5 Mpa maximum pressure
- 120 LPM maximum flow, depending on spools
- Low pressure drop
- Wet armature solenoid operated
- Soft shift available
- Surge suppression
- Internal ground
- Indicating lights are standard
- Two 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

| SWH-G03 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 | | 16.0Mpa (1Mpa=10kgf/cm ²) | | | | |
| 最大流量 RATED FLOW CAPACITY | P, A, B, T 迴路 Ports | | 120L/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 W |
| | A110 | | 50Hz | 90-110 | 4.79 | 0.80 | 44.1 |
| | | | 60Hz | 99-126 | 4.60 | 0.76 | 48.4 |
| | A120 | | 50Hz | 99-121 | 4.68 | 0.70 | 38.8 |
| | | | 60Hz | 108-138 | 4.50 | 0.66 | 41.8 |
| | A220 | | 50Hz | 180-220 | 2.20 | 0.43 | 47.2 |
| | | | 60Hz | 198-242 | 2.18 | 0.41 | 52.2 |
| | A240 | | 50Hz | 198-242 | 2.45 | 0.39 | 47.4 |
| | | | 60Hz | 216-274 | 2.30 | 0.37 | 51.6 |
| | R110 | | 50/60Hz | 99-126 | 0.47 | 0.47 | 51.7 |
| | R220 | | 50/60Hz | 198-253 | 0.24 | 0.24 | 52.8 |
| | D12 | | 10.80-13.20 | | 3.20 | 3.20 | 38.0 |
| | D24 | | 21.60-26.40 | | 1.50 | 1.50 | 36.0 |
| | 反應時間 Response Time | | AC | | DC | | RF |
| mS | ON | 10-40 | | 20-60 | | 20-60 | |
| | OFF | 20-40 | | 20-40 | | 20-40 | |
| 溫度 Temperature | | 0-50°C | | | | | |
| 絕緣 Insulation | | H 級 Class H | | | | | |
| | | 電阻 100m Ω 以上 Resistance over 100m Ω | | | | | |
| 耐電壓 Withstand Voltage | | 1,500V/sec | | | | | |
| 切換頻率 Operating Frequencies | | 240CPM | | | | | |
| 液壓油品 FLUIDS | 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 | | β ₁₀ ≥ 75,NAS 12 級以內 Under NAS class 12, 25u | | | | |
| 重量 WEIGHT | 單線圈 Single Solenoid | | AC: 3.8 Kgs (8.4 Lbs) | | DC: 4.4 Kgs (9.7 Lbs) | | |
| | 雙線圈 Double Solenoid | | AC: 4.6 Kgs (10.1 Lbs) | | DC: 5.8 Kgs (12.8 Lbs) | | |
| 配件 ACCESSORIES | 安裝螺絲 Mounting Bolt Kits | | M6 × 35mm | | | | |
| | 旋緊扭力 Tightening Torque | | 120-150kgf-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

SWH - G03 - C2 - A220 - 10 - LS

① ② ③ ④ ⑤ ⑥

① **產品系列 VALVE SERIES:**

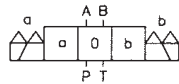
SWH= 電磁作動方向控制閥
SOLENOID OPERATED DIRECTIONAL VALVE

② **油路板按裝型式通稱 GASKET MOUNTING:**

NOMINAL=3/8" (10mm)
DIN=NG10
NFPA=D05
ISO=CETOP05

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

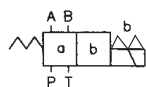
C40 C5S

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

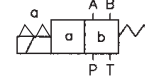
C3B C9B

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

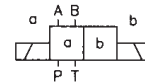
C3BS C8BS

C4BS C9BS

C40BS

無彈簧、無覆歸

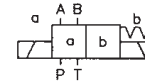
Without Spring, Without Centering



油壓符號 Code Symbol 油壓符號 Code Symbol

N2 N3

機械定位 Detent:



油壓符號 Code Symbol 油壓符號 Code Symbol

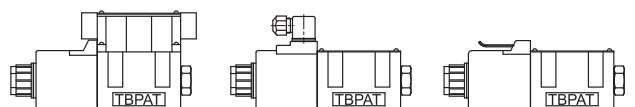
D2 D3

④ **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

⑤ **接線方式 WIRING:**

10= 接線盒式 20= 插頭式 31= 出線式
JOINT BOX DIN HIRSCHMANN LEAD WIRE



⑥ **OPTIONS:**

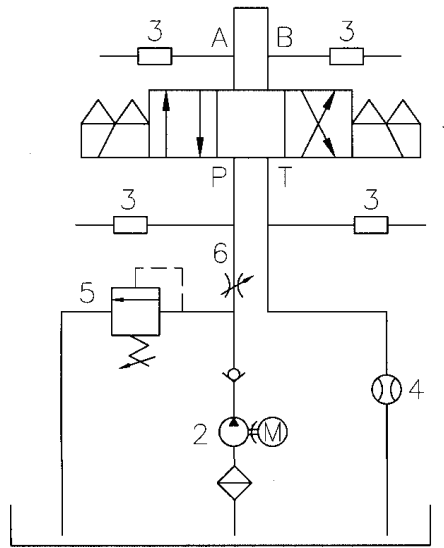
空白 NO CODE= 標準型 STANDARD
LS= 低脈衝電壓功能 SURGE SUPPRESSION
M= 減震型 SOFT SHIFT

壓力降特性 PRESSURE DROP VS FLOW

測試條件

壓力：7.0Mpa(1000PSI)
流量：100 L/min(26.4GPM)
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

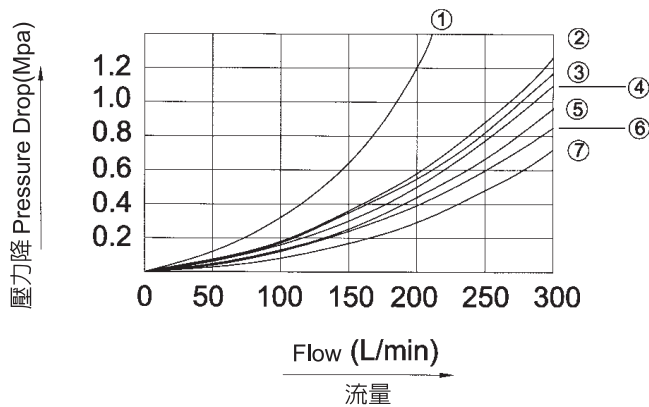


Test Conditions

Pressure : 7.0Mpa (1000 PSI)
Flow Rate : 100L/min (26.4 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 | 6 | 6 | 6 | 6 | - |
| C3 | 7 | 7 | 7 | 7 | 5 |
| C4 | 6 | 7 | 6 | 7 | - |
| C40 | 6 | 7 | 6 | 7 | - |
| C5 | 5 | 2 | 2 | 5 | 8 |
| C6 | 2 | 2 | 2 | 2 | 5 |
| C60 | 1 | 1 | 1 | 1 | 4 |
| C7 | 7 | 6 | 7 | 6 | - |
| C8 | 6 | 6 | 6 | 7 | - |
| C9 | 7 | 6 | 6 | 6 | - |
| B2 | 2 | 2 | 6 | 6 | - |
| B3 | 3 | 3 | 6 | 6 | - |
| B20 | 5 | - | 5 | - | - |
| B2S | 6 | 6 | 2 | 2 | - |
| B3S | 6 | 6 | 3 | 3 | - |
| B20S | 5 | - | 5 | - | - |

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


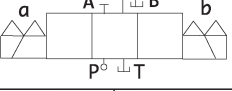
性能表 PERFORMANCE

| SWH-G03-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) SWH-G03-AC | | | | | | | | |
|--|--|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------|-----------------------|
| 滑柱型式 Spool Type 正常位置 Normal Position |  | | | | | | P → A | |
| | 5.0Mpa (735) | 10.0Mpa (1470) | 15.0Mpa (2200) | 21.0Mpa (3000) | 25.0Mpa (3675) | 31.5Mpa (4500) | 5.0Mpa (375) | 10.0Mpa (1470) |
| C2  | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 54(14.3) 38(10.0) |
| C3  | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) |
| C4  | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 54(14.3) 42(11.1) |
| C40  | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) 75(19.8) |
| C5  | 30(7.9) | 30(7.9) | 30(7.9) | 30(7.9) | 30(7.9) | 30(7.9) | 33(8.1) | 26(7.2) |
| C6  | 70(18.6) | 70(18.6) | 70(18.6) | 70(18.6) | 70(18.6) | - | 100(26.4) | 100(26.4) |
| C7  | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 63(16.6) | 63(16.6) |
| C8  | 100(26.4) | 100(26.4) | 100(26.4) | 44(11.6) 76(20.1) | 30(7.9) 28(7.4) | 19(5.0) 21(5.5) | 100(26.4) | 100(26.4) 53(14.0) |
| C9  | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 57(15.1) | 57(15.1) |
| B2  | 90(23.8) 72(19.0) | 90(23.8) 72(19.0) | 90(23.8) 72(19.0) | 90(23.8) 72(19.0) | 90(23.8) 72(19.0) | 90(23.8) 72(19.0) | 63(16.6) | 63(16.6) |
| B3  | 89(23.5) 81(21.4) | 89(23.5) 81(21.4) | 89(23.5) 81(21.4) | 89(23.5) 81(21.4) | 89(23.5) 81(21.4) | 89(23.5) 81(21.4) | 100(26.4) | 100(26.4) |
| B20  | - | - | - | - | - | - | 81(21.4) | 29(7.7) |
| D2  | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 60(15.9) | 40(10.6) |
| D3  | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 70(18.5) | 65(15.9) |

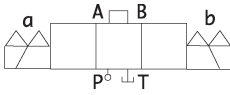









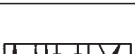
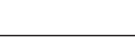
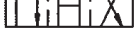
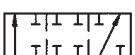

附記：表格中之數字表示在飽和溫度及 90% 電壓變化下壓力與流量之關係。

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

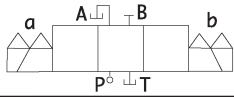
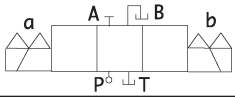
SWH-G03-AC 在各種壓力 Mpa(PSI)下容許通過最大流量 L/min(GPM)
The Maximum Flow Rate L/min (GPM) Under Different Pressure Mpa (PSI) SWH-G03-AC

|  | | | |  | | | | | |
|---|-------------------|-------------------|-------------------|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| 15.0Mpa (2200) | 21.0Mpa (3000) | 25.0Mpa (3675) | 31.5Mpa (4500) | 5.0Mpa (735) | 10.0Mpa (1470) | 15.0Mpa (2200) | 21.0Mpa (3000) | 25.0Mpa (3675) | 31.5Mpa (4500) |
| 40(10.6) | 28(7.4) | 25(6.6) | 14(3.7) | 100(26.4) | 54(14.3) | 40(10.6) | 28(7.4) | 100(26.4) | 20(5.3) |
| 27(7.1) | 17(4.5) | 13(3.4) | 8(2.1) | | 38(10.0) | 27(7.1) | 17(4.5) | 95(25.1) | 10(2.6) |
| 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) |
| 30(7.9) | 28(7.4) | 18(4.8) | 18(4.8) | 100(26.4) | 54(14.3) | 30(7.9) | 23(6.1) | 18(4.8) | 14(3.7) |
| 27(7.1) | 21(5.5) | 11(2.9) | 12(3.2) | | 42(11.1) | 27(7.1) | 16(4.2) | 11(2.9) | 8(2.1) |
| 33(8.7) | 23(6.1) | 22(5.8) | 20(5.3) | 100(26.4) | 100(26.4) | 33(8.7) | 28(7.4) | 22(5.8) | 18(4.8) |
| 23(6.1) | 16(4.2) | 15(4.0) | 10(2.6) | | 75(19.8) | 23(6.1) | 21(5.5) | 15(4.0) | 12(3.2) |
| 20(5.3) | 19(5.0) | 18(4.8) | 16(4.6) | 33(8.1) | 26(7.9) | 20(5.3) | 19(5.0) | 18(4.8) | 16(4.6) |
| 100(26.4) | 100(26.4) | 100(26.4) | - | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | - |
| 63(16.6) | 63(16.6) | 63(16.6) | 63(16.6) | 63(16.6) | 63(16.6) | 63(16.6) | 63(16.6) | 63(16.6) | 63(16.6) |
| 37(9.8) | 34(9.0) | 28(7.4) | 20(5.3) | 100(26.4) | 61(16.1) | 33(8.7) | 27(7.1) | 20(5.3) | 16(4.2) |
| 32(8.5) | 28(7.4) | 21(5.5) | 15(4.0) | | 48(12.7) | 27(7.1) | 21(5.5) | 15(4.0) | 9(2.4) |
| 57(15.1) | 57(15.1) | 57(15.1) | 57(15.1) | 100(26.4) | 53(14.0) | 47(12.4) | 45(11.9) | 40(10.6) | 34(9.0) |
| | | | | | 40(10.6) | 37(9.8) | 34(9.0) | 29(7.7) | 25(6.6) |
| 63(16.6) | 63(16.6) | 63(16.6) | 63(16.6) | 100(26.4) | 78(20.6) | 45(11.9) | 43(11.4) | 38(10.0) | 32(8.5) |
| | | | | | 74(19.6) | 38(10.0) | 36(9.5) | 31(8.2) | 27(7.1) |
| 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 95(25.1) | 82(21.7) | 75(19.8) | 65(17.2) |
| | | | | | 89(23.5) | 84(22.2) | 77(20.3) | 70(18.5) | 62(16.4) |
| 19(5.0) | 12(3.2) | 9(2.4) | 7(1.8) | 100(26.4) | 80(21.1) | 32(8.5) | 25(6.6) | 20(5.3) | 14(3.7) |
| | | | | | 42(11.1) | 28(7.4) | 22(5.8) | 17(4.5) | 12(3.2) |
| 40(10.6) | 40(10.6) | 30(7.9) | 28(7.4) | 60(15.9) | 40(10.6) | 40(10.6) | 40(10.6) | 30(7.9) | 28(7.4) |
| 60(15.9) | 60(15.9) | 42(11.1) | 36(9.5) | 70(18.5) | 60(15.9) | 60(15.9) | 60(15.9) | 42(11.1) | 36(9.5) |

性能表 PERFORMANCE

| SWH-G03-DC 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) SWH-G03-DC | | | | | | | | |
|--|--|-------------------|------------------------|----------------------|----------------------|----------------------|-----------------|------------------------|
| 滑柱型式 Spool Type 正常位置 Normal Position |  | | | | | | P → A | |
| | 5.0Mpa (735) | 10.0Mpa (1470) | 15.0Mpa (2200) | 21.0Mpa (3000) | 25.0Mpa (3675) | 31.5Mpa (4500) | 5.0Mpa (375) | 10.0Mpa (1470) |
| C2  | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) 100(26.4) |
| C3  | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) |
| C4  | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) 100(26.4) |
| C40  | 120(31.7) | 120(31.7) | 120(31.7) | 97(25.6) | 78(20.6) | 60(15.9) | 120(31.7) | 120(31.7) 115(30.4) |
| C5  | 50(13.2) | 50(13.2) | 50(13.2) | 50(13.2) | 50(13.2) | 50(13.2) | 40(10.5) | 34(8.9) |
| C6  | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) |
| C7  | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 65(17.2) | 65(17.2) |
| C8  | 120(31.7) | 120(31.7) | 120(31.7) 100(26.4) | 97(25.6) 85(22.5) | 78(20.6) 54(14.3) | 66(17.4) 41(10.8) | 120(31.7) | 120(31.7) |
| C9  | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 65(17.2) | 65(17.2) |
| B2  | 95 | 95 | 95 | 95 | 95 | 95 | 69(18.2) | 69(18.2) |
| B3  | 89(23.5) | 89(23.5) | 89(23.5) | 89(23.5) | 89(23.5) | 89(23.5) | 120(31.7) | 120(31.7) |
| B20  | - | - | - | - | - | - | 85(22.5) | 35(9.2) |
| D2  | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 60(15.9) | 40(10.6) |
| D3  | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 70(18.5) | 60(15.9) |

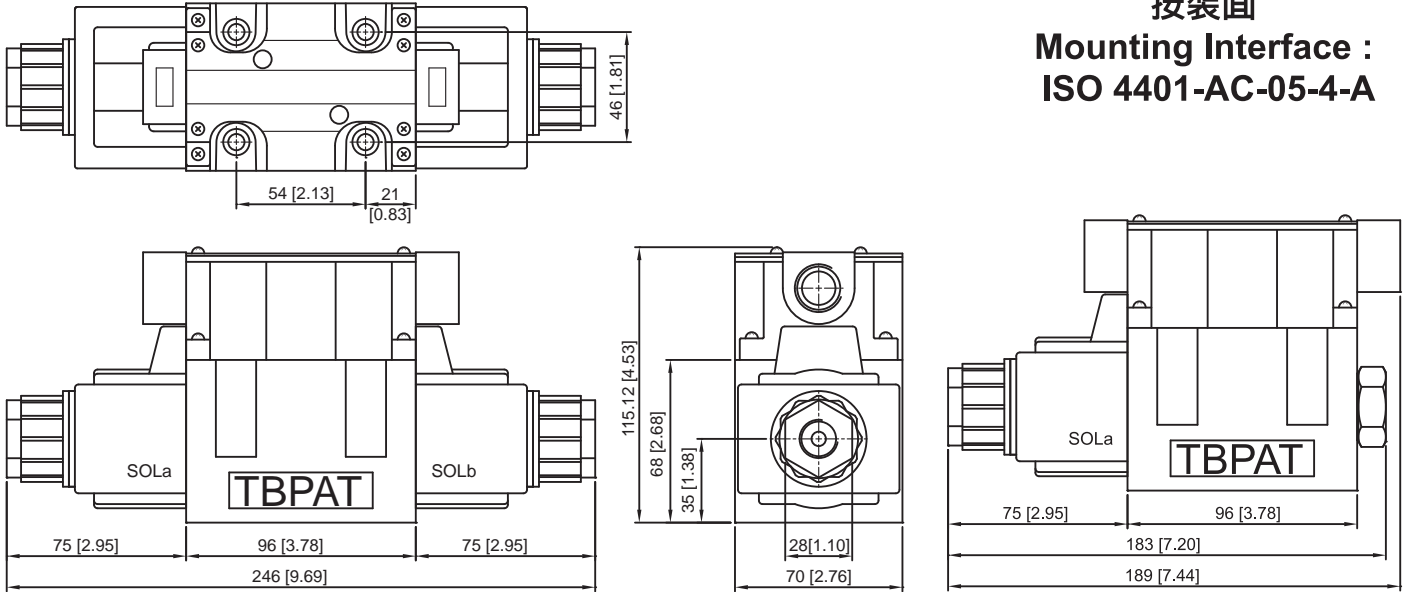
SWH-G03-DC 在各種壓力 Mpa(PSI)下容許通過最大流量 L/min(GPM)
The Maximum Flow Rate L/min (GPM) Under Different Pressure Mpa (PSI) SWH-G03-DC

|  | | | |  | | | | | |
|---|-------------------|-------------------|-------------------|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| 15.0Mpa (2200) | 21.0Mpa (3000) | 25.0Mpa (3675) | 31.5Mpa (4500) | 5.0Mpa (735) | 10.0Mpa (1470) | 15.0Mpa (2200) | 21.0Mpa (3000) | 25.0Mpa (3675) | 31.5Mpa (4500) |
| 73(19.3) | 63(16.6) | 54(14.3) | 37(9.8) | 120(31.7) | 120(31.7) | 73(19.3) | 63(16.6) | 54(14.3) | 37(9.8) |
| 55(14.5) | 48(12.7) | 38(10.0) | 29(7.7) | | 100(26.4) | 55(14.5) | 48(12.7) | 38(10.0) | 29(7.7) |
| 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) |
| 90(23.80) | 73(19.3) | 60(15.9) | 47(12.4) | 120(31.7) | 120(31.7) | 90(23.8) | 73(19.3) | 60(15.9) | 47(12.4) |
| 78(20.6) | 64(16.9) | 51(13.5) | 39(10.3) | | 100(26.4) | 78(20.6) | 64(16.9) | 51(13.5) | 39(10.3) |
| 75(19.8) | 54(14.3) | 42(11.1) | 37(9.8) | 120(31.7) | 120(31.7) | 75(19.8) | 54(14.3) | 42(11.1) | 37(9.8) |
| 50(13.2) | 39(10.3) | 30(7.9) | 21(5.5) | | 115(30.4) | 50(13.2) | 39(10.3) | 30(7.9) | 21(5.5) |
| 25(6.5) | 23(6.0) | 21(5.5) | 20(5.3) | 45(11.8) | 45(11.8) | 45(11.8) | 45(11.8) | 45(11.8) | 45(11.8) |
| 100(26.4) | 100(26.4) | 100(26.4) | - | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | 100(26.4) | - |
| 65(17.2) | 65(17.2) | 65(17.2) | 65(17.2) | 65(17.2) | 65(17.2) | 65(17.2) | 65(17.2) | 65(17.2) | 65(17.2) |
| 68(18.0) | 51(13.5) | 37(9.8) | 27(7.1) | 120(31.7) | 85(22.5) | 50(13.2) | 36(9.5) | 25(6.6) | 19(5.0) |
| 52(13.7) | 39(10.3) | 28(7.4) | 18(4.8) | | 65(17.2) | 40(10.6) | 28(7.4) | 05(4.0) | 12(3.2) |
| 65(17.2) | 65(17.2) | 65(17.2) | 65(17.2) | 120(31.7) | 100(26.4) | 94(24.8) | 85(22.5) | 76(20.1) | 70(18.5) |
| | | | | | 85(22.5) | 80(21.1) | 74(19.6) | 54(14.3) | 49(12.9) |
| 69(18.2) | 69(18.2) | 69(18.2) | 69(18.2) | 120(31.7) | 120(31.7) | 77(20.3) | 63(16.6) | 57(15.1) | 45(11.9) |
| | | | | | | 66(17.4) | 55(14.5) | 44(11.6) | 38(10.0) |
| 120(31.7) | 120(31.7) | 120(31.7) | 120(31.7) | 100(26.4) | 100(26.4) | 95(25.1) | 82(21.7) | 75(19.8) | 65(17.2) |
| | | | | | 89(23.5) | 84(22.2) | 77(20.3) | 70(18.5) | 62(16.4) |
| 28(7.4) | 19(5.0) | 15(4.0) | 10(2.6) | 120(31.7) | 120(31.7) | 95(25.1) | 74(19.6) | 61(16.1) | 43(11.4) |
| | | | | | 95(25.1) | 84(22.2) | 63(16.6) | 50(13.2) | 34(9.0) |
| 40(10.6) | 40(10.6) | 30(7.9) | 28(7.4) | 60(15.9) | 40(10.6) | 40(10.6) | 40(10.6) | 30(7.9) | 28(7.4) |
| 60(15.9) | 60(15.9) | 42(11.1) | 36(9.5) | 70(18.5) | 60(15.9) | 60(15.9) | 60(15.9) | 42(11.1) | 36(9.5) |

尺寸圖 DIMENSIONS

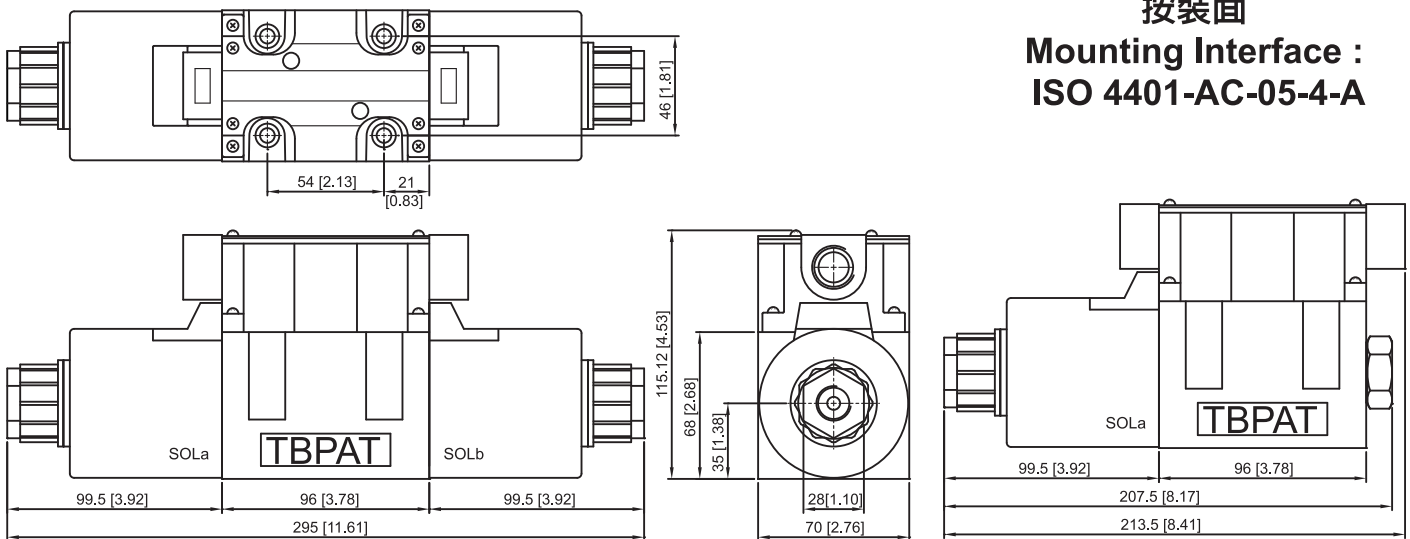
SWH-G03-AC-10

按裝面
Mounting Interface :
ISO 4401-AC-05-4-A

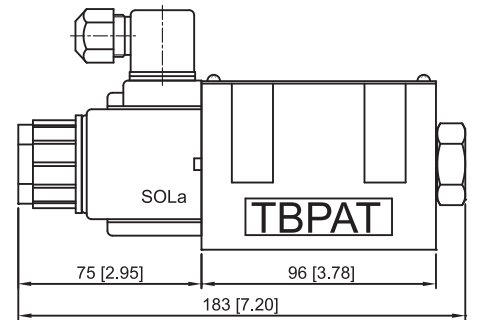
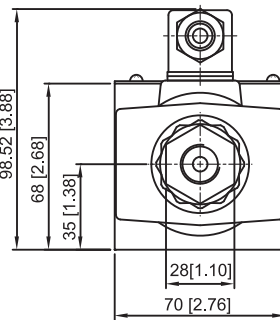
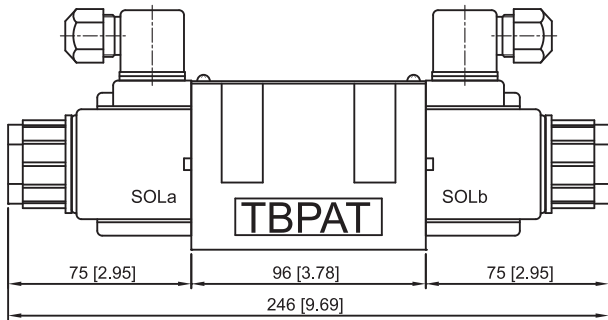
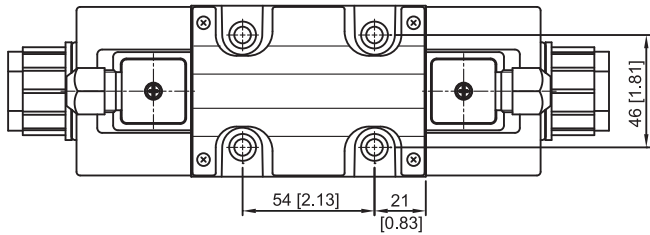


SWH-G03-DC/RF-10

按裝面
Mounting Interface :
ISO 4401-AC-05-4-A

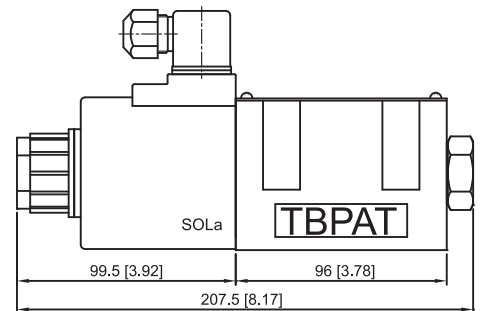
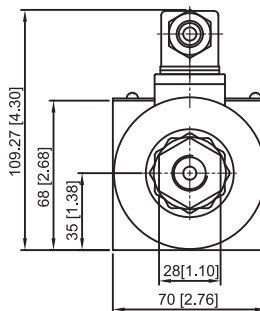
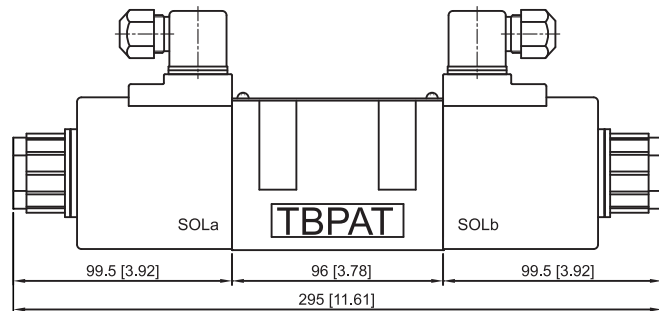
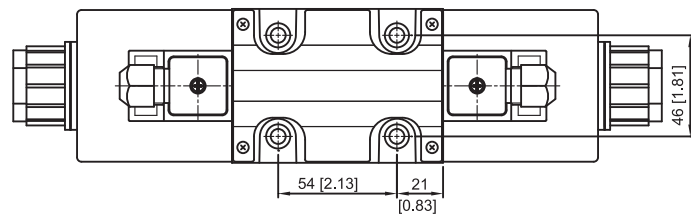


尺寸圖 DIMENSIONS



SWH-G03-AC-20

按裝面
Mounting Interface :
ISO 4401-AC-05-4-A

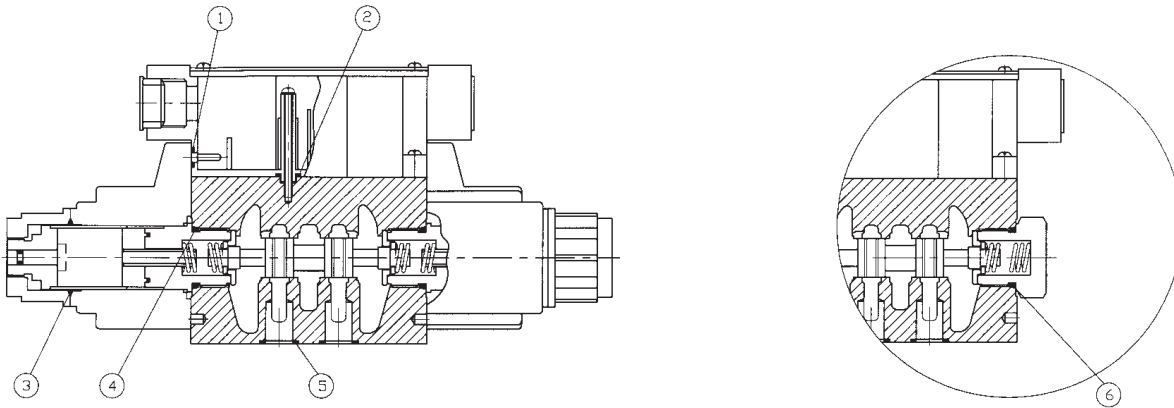


SWH-G03-DC/RF-20

按裝面
Mounting Interface :
ISO 4401-AC-05-4-A

密封件 SEALS KITS

彈簧復歸 (單線圈) Spring offset (Single Solenoid)



| No. | 種類 Description | 型號 Specification | 數量 Quantity | | 注意事項 Remarks |
|-----|-------------------|---------------------|------------------------|------------------------|-----------------|
| | | | 雙線圈 Double Solenoid | 單線圈 Single Solenoid | |
| 1 | O-ring | JIS B 2401-1A P4 | 4 | 2 | |
| 2 | O-ring | JIS B 2401-1A P6 | 1 | 1 | |
| 3 | O-ring | AS-568-120 HS70 | 2 | 1 | |
| 4 | O-ring | JIS B 2401-1A P21 | 2 | 1 | |
| 5 | O-ring | AS-568-14 HS90 | 5 | 5 | |
| 6 | O-ring | JIS B 2401-1A P21 | — | 1 | |

油路底板 SUBPLATE

M03 - O3 - B - 1

- ① ② ③ ④

① 閥座尺寸

MOUNTING SIZE:
NOMINAL=3/8"
DIN=NG10
NFPA=D05
ISO=CETOP05

② 配管尺寸

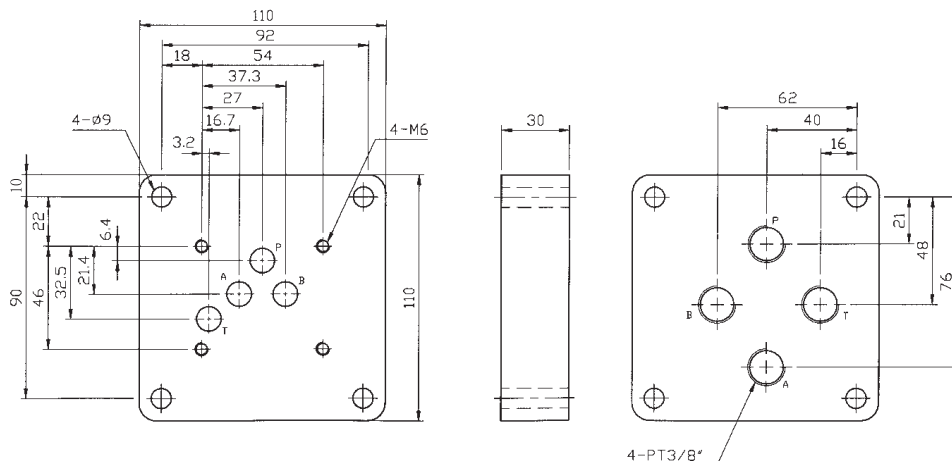
PORT SIZE:
O3: 3/8"
O4: 1/2"

③ 配管方位

PORT LOCATION:
B : 底部配管 BOTTOM
S : 側邊配管 SIDE
SB : 底部及側邊配管
SIDE & BOTTOM

④ 牙口規格

PIPING THREADS:
1 : PT
2 : NPT
3 : SAE





基本特性 FEATURES

- 31.5Mpa 最大使用壓力
 - 80 LPM 最大通過流量 (視閥蕊而異)
 - 低壓力降特性
 - 濕式電磁作動結構
 - 可提供減震功能選擇
 - 低脈衝電壓功能選擇
 - 具接地功能
 - 內建作動指示燈
 - 磷酸鹽防表面處理
 - 一般工具可按裝或維修
 - 可選擇特殊密封件
- 31.5 Mpa maximum pressure
 - 80 LPM maximum flow depending on spools
 - Low pressure drop
 - Wet armature solenoid operated
 - Soft shift available
 - Surge suppression
 - Internal ground
 - Indicating lights are standard
 - Phosphate finished body
 - No special tools required for maintenance
 - Special seal kits are available for fire-resistance fluids

基本規格 SPECIFICATIONS

| 4WE-6 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 Ports | 160Mpa (1Mpa=10kgf/cm ²) | | | |
| 最大流量 RATED FLOW CAPACITY | P,A,B,T 迴路 Ports | DC:80 L/min | | AC:60 L/min | |
| 電磁線圈 SOLENOID RATINGS | 線圈型號 Coil Type | 使用範圍 Volatage Range | | 功率 Wattage | |
| | W110 | 50 Hz | 90-110 | VAC | — |
| | | 60 Hz | 99-121 | VAC | — |
| | W120 | 50 Hz | 99-121 | VAC | — |
| | | 60 Hz | 108-132 | VAC | — |
| | W220 | 50 Hz | 180-220 | VAC | — |
| | | 60 Hz | 198-242 | VAC | — |
| | W240 | 50 Hz | 198-242 | VAC | — |
| | | 60 Hz | 216-264 | VAC | — |
| | G12 | 10.8-13.2 | VDC | | 30 W |
| | G24 | 21.6-26.4 | VDC | | 30 W |
| | 反應時間 Response Time | AC | | | DC |
| | mS | ON | 10-20 | | 25-45 |
| | | OFF | 15-40 | | 10-25 |
| 最高溫度 Maximum temperature | 180 °C | | | 150 °C | |
| 耐電壓 Withstand Voltage | 1,500 V/sec | | | | |
| 切換頻率 Switching Frequency | AC:7,200 cycle/h | | DC:15,000 cycle/h | | |
| 絕緣等級 Type of protection | IP 65 (DIN EN 60529) | | | | |
| 液壓油品 FLUIDS | 種類 Type | 礦物性 耐磨性 Mineral, Anti-Wear | | | |
| | 黏度 Viscosity | 10-400 cSt | | | |
| | 溫度 Temperature | -30-80 °C | | | |
| | 清潔度 Contamination Level | NAS 12 級以內 Under NAS class 12 | | | |
| 重量 WEIGHT | 單線圈 Single Solenoid | 1.6 Kgs (3.5 Lbs) | | | |
| | 雙線圈 Double Solenoid | 2.1 Kgs (4.6 Lbs) | | | |
| 配件 ACCESSORIES | 安裝螺絲 Mounting Bolt Kits | M5X50mm | | | |
| | 旋緊扭力 Tightening Torque | 50-70 kgf-cm | | | |
| 防處理 CORROSION | 閥體表面 Treatment | 磷酸鹽皮膜處理 Zinc Phosphate Compound | | | |

型號說明 HOW TO ORDER

4WE - 6 E / O E - G24 - K4 - LS

低脈衝電壓功能 Surge suppression
空白 = 標準型 No code= Standard
LS= 低脈衝電壓功能 LS= With Surge suppression

接線方式 Wiring
K4= 插入式接頭 DIN hirschmann

線圈型號 Coil voltage:
W110= AC 110V-60Hz; AC 100V-50Hz
W120= AC 120V-60Hz; AC 110V-50Hz
W220= AC 220V-60Hz; AC 200V-50Hz
W240= AC 240V-60Hz; AC 220V-50Hz
G12= DC 12V
G24= DC 24V

E= 高性能電磁鐵 High power solenoid
帶可拆卸線圈濕式電磁鐵 Wet pin with removable coil

空白 = 彈簧復位 No code= Spring return
O= 無彈簧復位 Without spring return
OF= 無彈簧復位, 帶定位機構
Without spring return with detent

閥芯型式 Spool type
閥芯符號 D,E,EA,EB 等設計, 詳見第 A-a22 頁
Spool symbols D,E,EA,EB, etc.
for possible versions, see page A-a22

油路板安裝型式通稱 Gasket mounting
NOMINAL=1/4"(6mm)
DIN=NG06
NFPA=D03
ISO=CETOP03

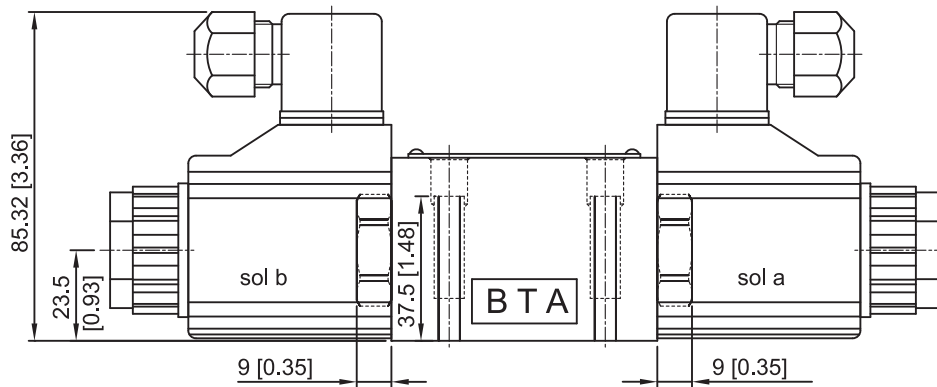
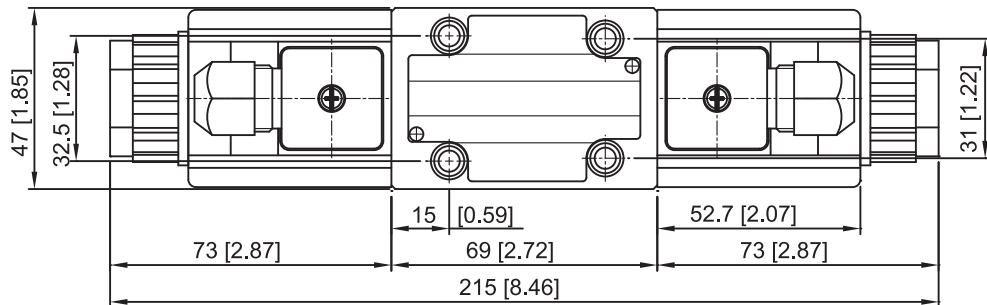
產品系列 Valve series
4WE= 四個工作口 4 Service ports

DIMENSIONS

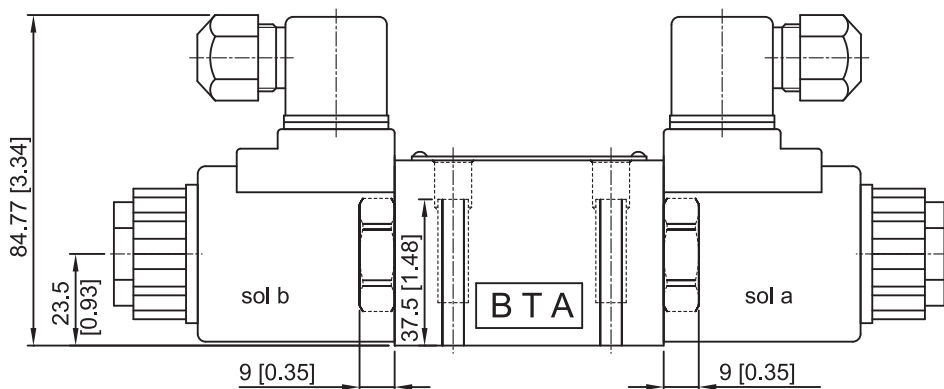
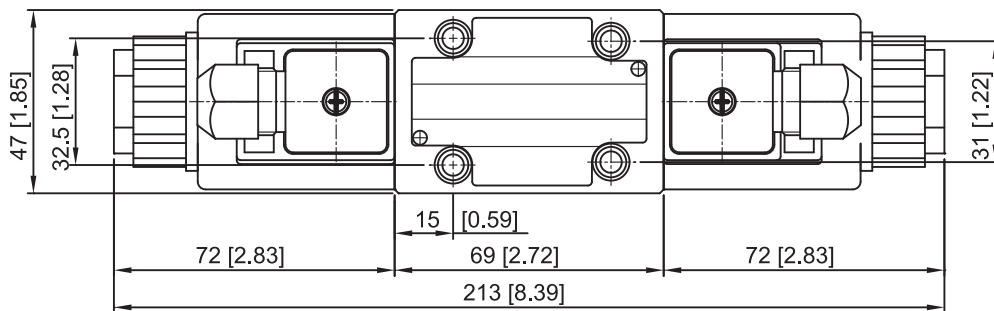
安裝面

Mounting Interface:
 ISO 4401-AB-03-4-A

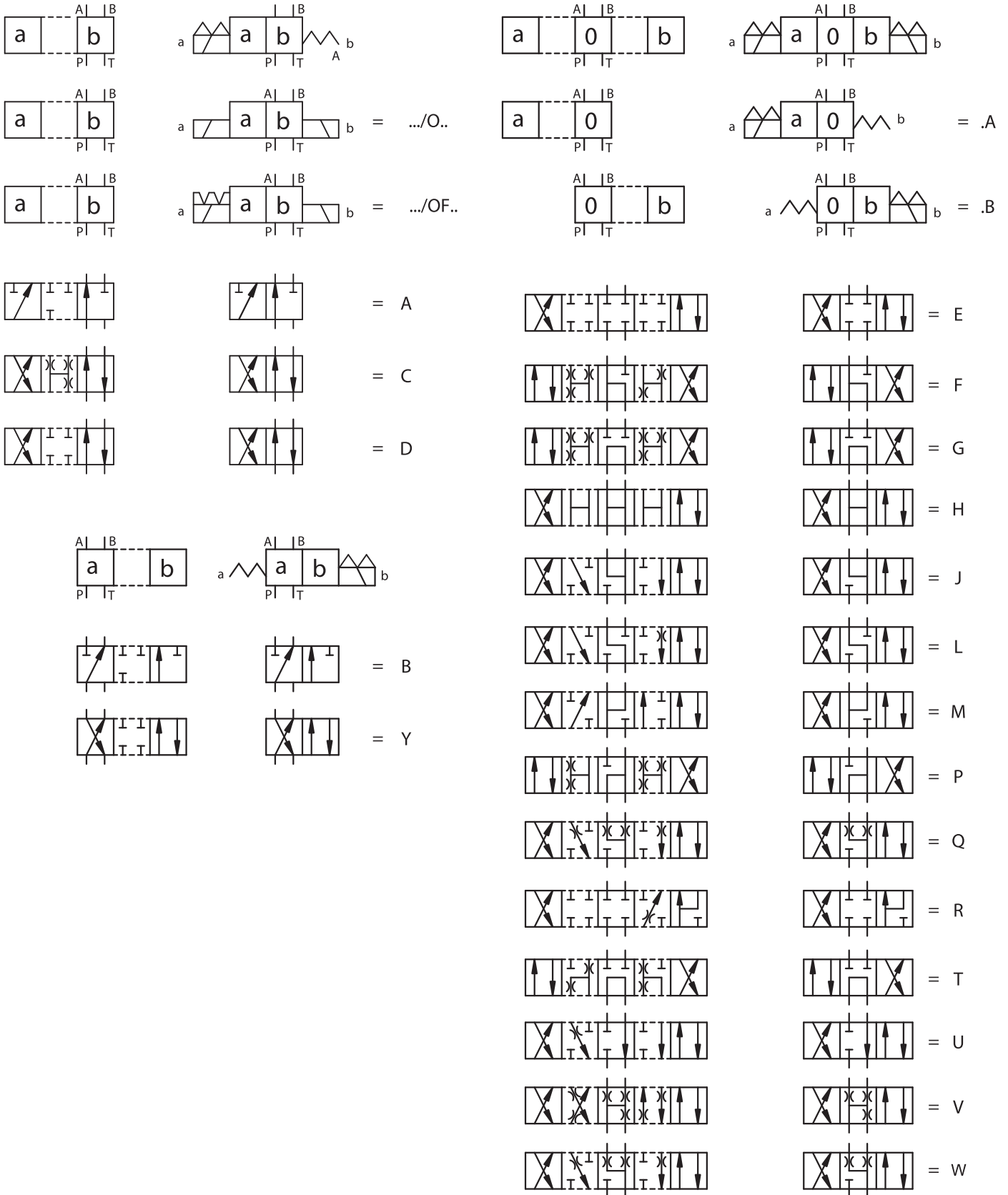
4WE-6*/*E-W***-K4



4WE-6*/*E-G***-K4



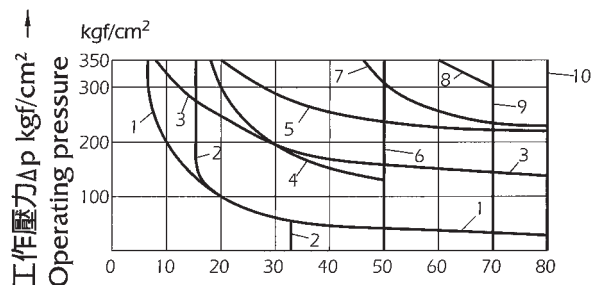
閥芯型式符號 Spool symbols



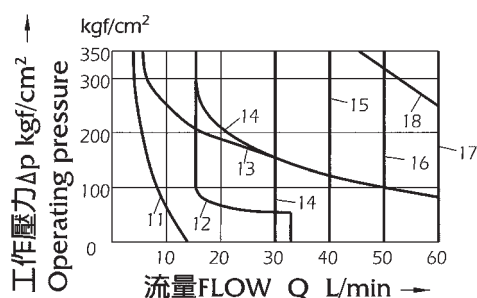
切換性能極限 (在 $v=41 \text{ mm}^2/\text{S}$ 及 $t=50^\circ\text{C}$ 時測得)
Switching power limits(measured at $v=41 \text{ mm}^2/\text{S}$ and $t=50^\circ\text{C}$)

△注意!
所給的工作極限僅用於兩個方向流動的情況(如同時有B至T回流的P至A流向)。
在單向流動時(如從P至A, B口被堵塞), 由於閥內的流動力量, 允許的切換極限可能降低。
△Attention
The switching power limits given are for applications 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 for directional vales may be considerably less where there is only one direction of flow (e.g. from P to A and port B blocked)! (Please consult us for applications of this kind.)

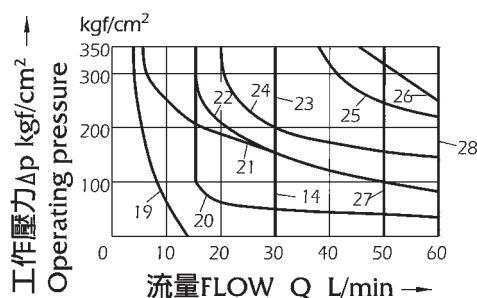
| 直流電磁鐵 示例: G24:24V DC solenoid e.g. G24:24V | | 交流電磁鐵 示例: W240:240V,60Hz (見以下) AC solenoid e.g. W240:240V,60Hz(see below) | | 交流電磁鐵 示例: W220:220V,60Hz (見以下) AC solenoid e.g. W220:220V,60Hz(see below) | |
|---|-------------------------------------|--|---|--|----------------------------------|
| 曲線 Curve | 符號 Symbol | 曲線 Curve | 符號 Symbol | 曲線 Curve | 符號 Symbol |
| 1 | A, B | 11 | A, B | 19 | A, B |
| 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, C/OF, D/O, D/OF, E, J, L | 25 | A/O, A/OF, Q, W |
| 8 | C, D, Y | | M, Q, R, U, W | 26 | C, D, Y |
| 9 | M | | C, D, Y | 27 | H |
| 10 | E, R, C/O, C/OF, D/O, D/OF, Q, W | 18 | | 28 | C/O, C/OF, D/O, D/OF, E, M, R |



直流電磁鐵
曲線1至10
DC solenoid
Curves 1 to 10



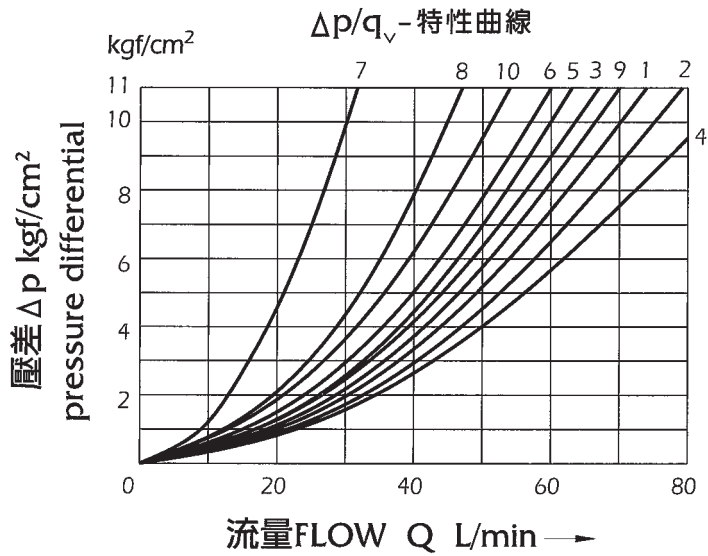
| 交流電磁鐵 AC Solenoid | | |
|----------------------|-----------------------------------|------------|
| 曲線 Curve | 電磁鐵對照 Solenoid Cross reference | |
| 11 to 18 | W120 | 120V, 60hz |
| | W240 | 240V, 60Hz |



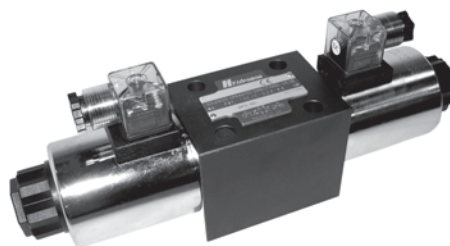
| 交流電磁鐵 AC Solenoid | | |
|----------------------|-----------------------------------|------------|
| 曲線 Curve | 電磁鐵對照 Solenoid Cross reference | |
| 19 to 28 | W110 | 110V, 60Hz |
| | W220 | 220V, 60Hz |

特性曲線 (在 $v=41 \text{ mm}^2/\text{s}$ 及 $t=50^\circ \text{C}$ 時測得)

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



| 符號 Symbol | 流動方向 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 |
| 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 |



基本特性 FEATURES

- 31.5Mpa 最大使用壓力
- 120 LPM 最大通過流量 (視閥蕊而異)
- 低壓力降特性
- 濕式電磁作動結構
- 可提供減震功能選擇
- 低脈衝電壓功能選擇
- 具接地功能
- 內建作動指示燈
- 磷酸鹽防表面處理
- 一般工具可按裝或維修
- 可選擇特殊密封件
- 31.5 Mpa maximum pressure
- 120 LPM maximum flow depending on spools
- Low pressure drop
- Wet armature solenoid operated
- Soft shift available
- Surge suppression
- Internal ground
- Indicating lights are standard
- Phosphate finished body
- No special tools required for maintenance
- Special seal kits are available for fire-resistance fluids

基本規格 SPECIFICATIONS

| 4WE-10 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 Ports | 160Mpa (1Mpa=10kgf/cm ²) | | |
| 最大流量 RATED FLOW CAPACITY | P,A,B,T 迴路 Ports | 120 L/min | | |
| 電磁線圈 SOLENOID RATINGS | 線圈型號 Coil Type | 使用範圍 Volatage Range | | 功率 Wattage |
| | W110 | 50 Hz | 90-110 VAC | — |
| | | 60 Hz | 99-121 VAC | — |
| | W120 | 50 Hz | 99-121 VAC | — |
| | | 60 Hz | 108-132 VAC | — |
| | W220 | 50 Hz | 180-220 VAC | — |
| | | 60 Hz | 198-242 VAC | — |
| | W240 | 50 Hz | 198-242 VAC | — |
| | | 60 Hz | 216-264 VAC | — |
| | G12 | 10.8-13.2 VDC | 36 W | |
| | G24 | 21.6-26.4 VDC | 36 W | |
| | 反應時間 Response Time | AC | | DC |
| | mS | ON | 15-25 | |
| | | OFF | 20-30 | |
| 最高溫度 Maximum temperature | 180° C | | 150° C | |
| 耐電壓 Withstand Voltage | 1,500 V/sec | | | |
| 切換頻率 Switching Frequency | AC:7,200 cycle/h | | DC:15,000 cycle/h | |
| 絕緣等級 Type of protection | IP 65 (DIN EN 60529) | | | |
| 液壓油品 FLUIDS | 種類 Type | 礦物性 耐磨性 Mineral,Anti-Wear | | |
| | 黏度 Viscosity | 10-400 cSt | | |
| | 溫度 Temperature | -30-80° C | | |
| | 清潔度 Contamination Level | NAS 12 級以內 Under NAS class 12 | | |
| 重量 WEIGHT | 單線圈 Single Solenoid | AC: 3.9 Kgs (8.6 Lbs) | DC: 4.5 Kgs (9.9 Lbs) | |
| | 雙線圈 Double Solenoid | AC: 4.7 Kgs (10.4 Lbs) | DC: 5.9 Kgs (13.0 Lbs) | |
| 配件 ACCESSORIES | 安裝螺絲 Mounting Bolt Kits | M6X40 mm | | |
| | 旋緊扭力 Tightening Torque | 120-150 kgf-cm | | |
| 防處理 CORROSION | 閥體表面 Treatment | 磷酸鹽皮膜處理 Zinc Phosphate Compound | | |

型號說明 HOW TO ORDER

4WE - 10 E / O E - G24 - K4 - LS

低脈衝電壓功能 Surge suppression
空白 = 標準型 No code= Standard
LS= 低脈衝電壓功能 LS= With Surge suppression

接線方式 Wiring
K4= 插入式接頭 DIN hirschmann

線圈型號 Coil voltage:
W110= AC 110V-60Hz; AC 100V-50Hz
W120= AC 120V-60Hz; AC 110V-50Hz
W220= AC 220V-60Hz; AC 200V-50Hz
W240= AC 240V-60Hz; AC 220V-50Hz
G12= DC 12V
G24= DC 24V

E= 高性能電磁鐵 High power solenoid
帶可拆卸線圈濕式電磁鐵 Wet pin with removable coil

空白 = 彈簧復位 No code= Spring return
O= 無彈簧復位 Without spring return
OF= 無彈簧復位, 帶定位機構
Without spring return with detent

閥芯型式 Spool type
閥芯符號 D,E,EA,EB 等設計, 詳見第 A-a28 頁
Spool symbols D,E,EA,EB, etc.
for possible versions, see page A-a28

油路板安裝型式通稱 Gasket mounting
NOMINAL=3/8"(10mm)
DIN=NG10
NFPA=D05
ISO=CETOP05

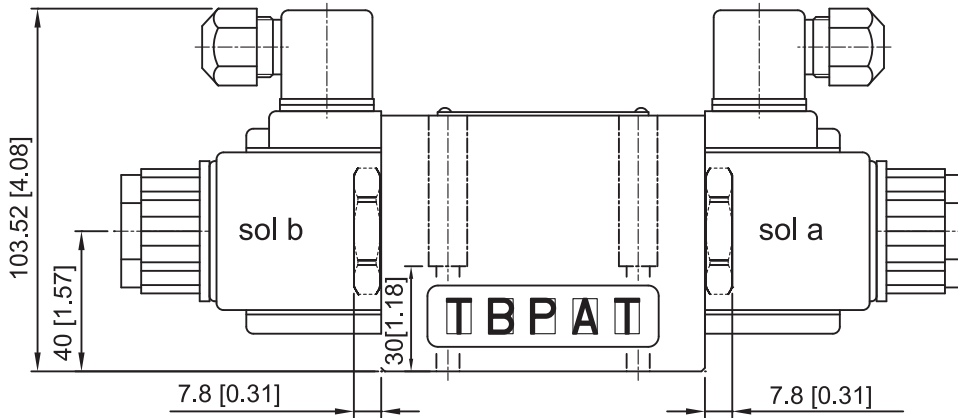
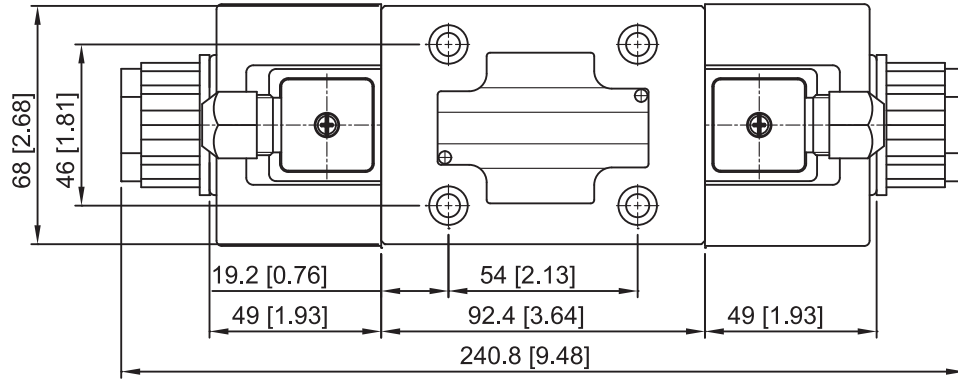
產品系列 Valve series
4WE= 四個工作口 4 Service ports

DIMENSIONS

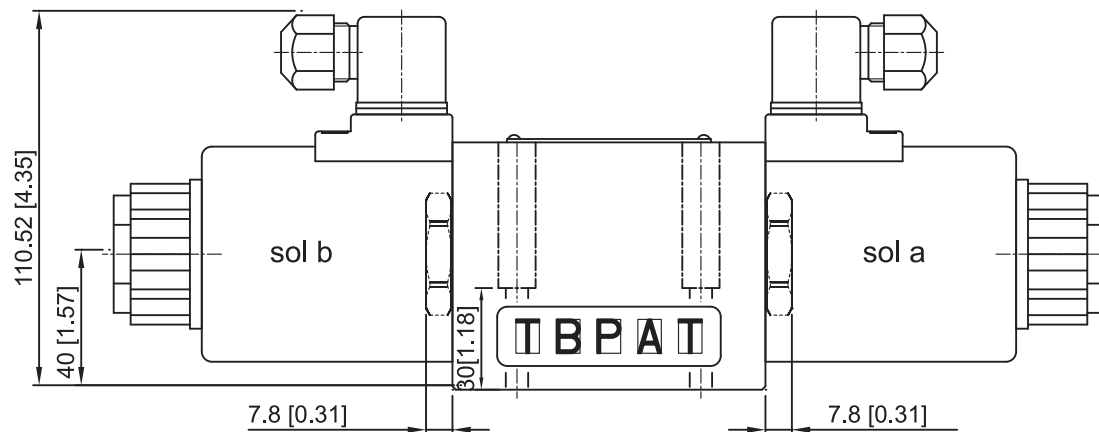
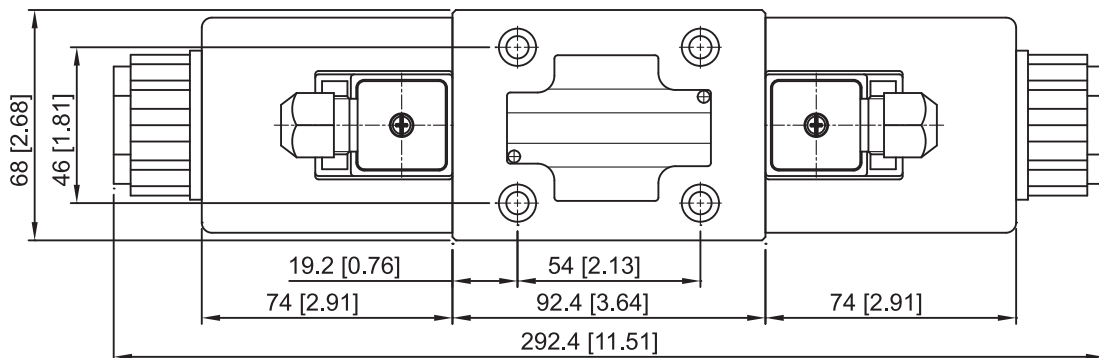
4WE-10*/*E-W***-K4

安裝面

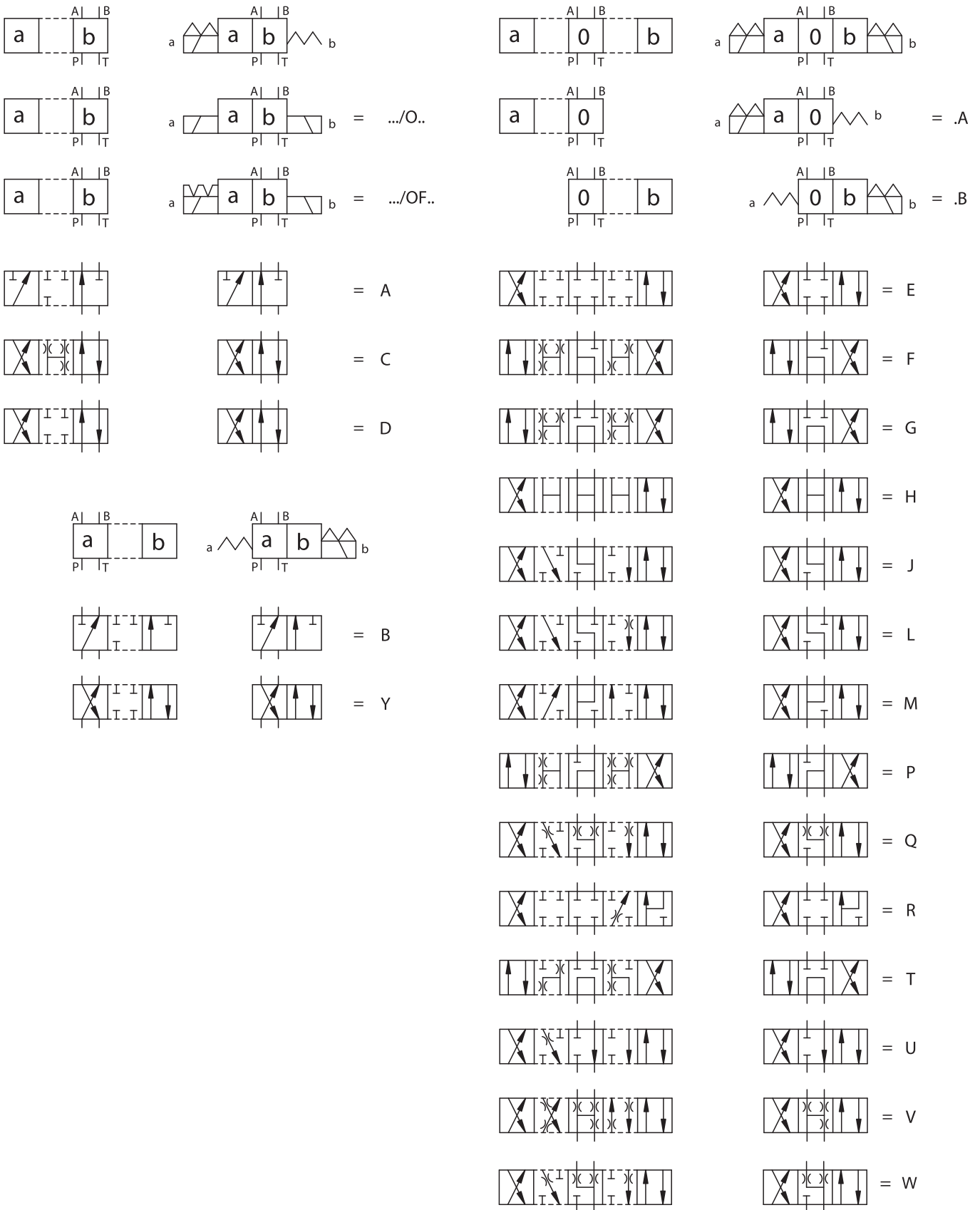
Mounting Interface:
 ISO 4401-AC-05-4-A



4WE-10*/*E-G***-K4

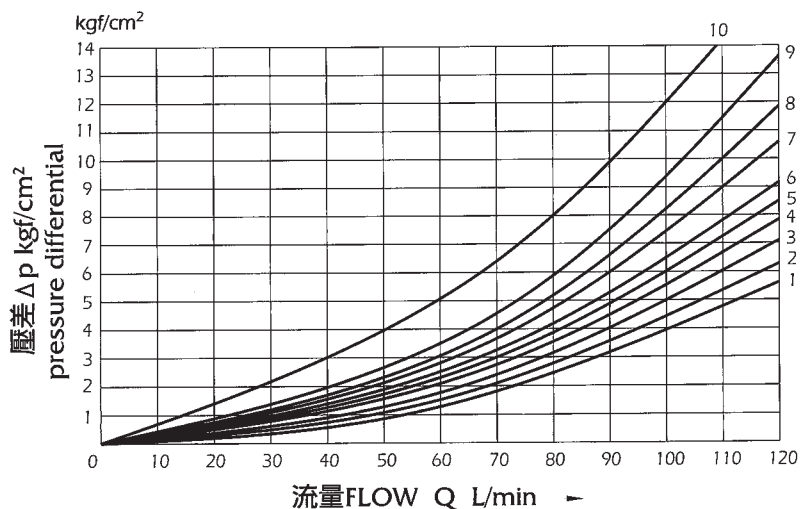


閥芯型式符號 Spool symbols



特性曲線 (在 $v=41 \text{ mm}^2/\text{s}$ 及 $t=50^\circ\text{C}$ 時測得)

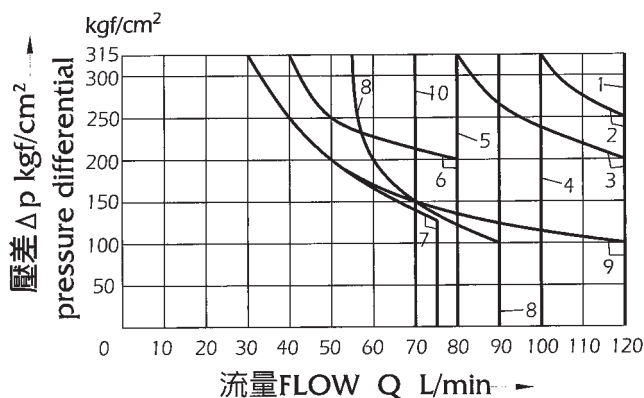
Characteristic Curves (measured at $v=41 \text{ mm}^2/\text{s}$ and $t=50^\circ\text{C}$)



| 符號 Symbol | 流動方向 Flow direction | | | | |
|----------------|---------------------|-----|-----|-----|-----|
| | P→A | P→B | A→T | P→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 | |
| 選擇位 Op.pos. | P→A | P→B | A→T | P→T | |
| R | - | 9 | - | - | |
| 中位 Mid.pos. | P→A | P→B | B→T | A→T | P→T |
| F | 4 | - | - | 9 | 9 |
| P | - | 5 | 8 | - | 10 |
| G, T | | | - | - | 9 |
| H | | | - | - | 3 |

性能極限 (在 $v=41 \text{ mm}^2/\text{s}$ 及 $t=50^\circ\text{C}$ 時測得)

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

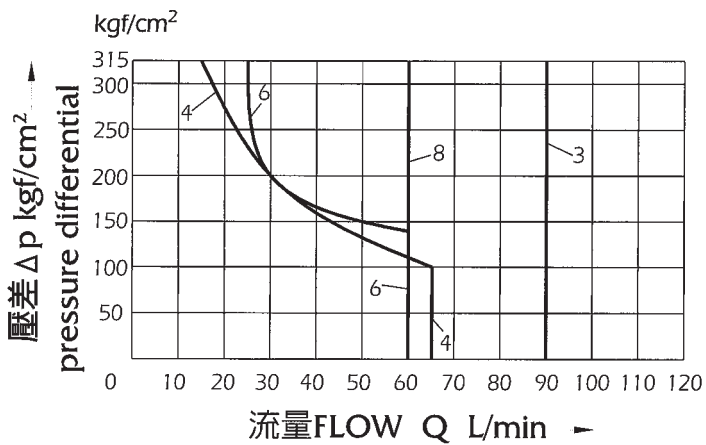
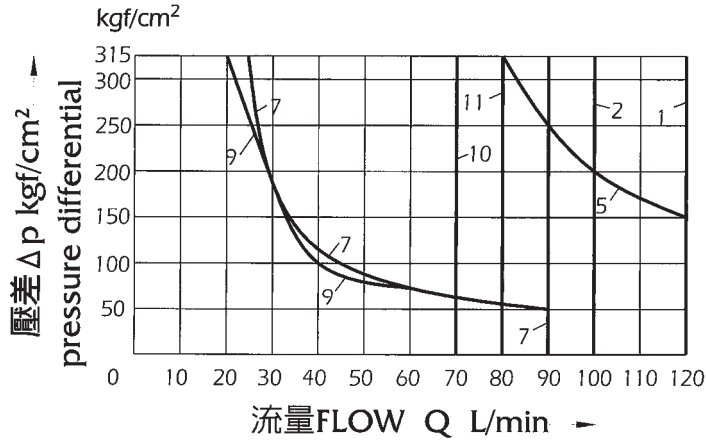


| 直流電磁鐵 DC Solenoid | |
|-------------------|--------------------------------------|
| G12 G24 | |
| 曲線 Curve | 符號 Symbol |
| 1 | C, C/O, C/OF D, D/O, D/OF Y, M |
| 2 | E |
| 3 | A/O, A/OF L, U, J, Q, W |
| 4 | H |
| 5 ¹⁾ | R |
| 6 | G |
| 7 | T |
| 8 | F, P |
| 9 | A, B |
| 10 | V |

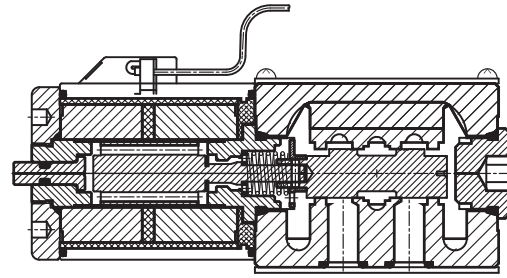
回油 (與面積比無關)
Return flow (independent of area ratio)

性能極限 (在 $v=41 \text{ mm}^2/\text{s}$ 及 $t=50^\circ\text{C}$ 時測得)

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



| 交流電磁鐵 AC Solenoid | |
|---|-----------------------------------|
| 110V, 60Hz; 120V, 60Hz; 220V, 60Hz; 240V, 60Hz | |
| 曲線 Curve | 符號 Symbol |
| 1 | C, C/O, C/OF D, D/O, D/OF Y |
| 2 | E, L U, Q, W |
| 3 | M |
| 4 | A, B |
| 5 | A/O A/OF, J |
| 6 | G |
| 7 | F, P |
| 8 | V |
| 9 | T |
| 10 | H |
| 11 | R |



基本特性 FEATURES

1. SWF-G02系列電磁閥,適用於變速器的推拉電磁閥,廣泛應用於建設機械,礦山作業機械和工程車輛等
The SWF-G02 series push-pull type solenoid operated directional valve which is suitable for box, widely use for construction machinery, mine machinery, engineering vehicles, ect.
2. 安裝尺寸為ISO-4401-AB-03-4-A(DIN NG06)
3. 若選擇帶二極體型式時,〔+〕〔-〕極請正確的接線,〔+〕〔-〕極反接時電磁閥無法使用
When selecting diodes, please wire correctly according to the label (+) and (-)

基本規格 SPECIFICATIONS

| SWF-G02 系列 SERIES | | |
|--------------------------------------|-----------------------------------|--|
| 最高工作壓力 Maximum Operating Pressure | bar | Port P,A,B: 140 bar Port T: 70 bar |
| 最大流量 Rated Flow Capacity | L/min | 12 L/min At The Operated Pressure 140 bar |
| 電源 Voltage | V | D12: DC12V / D24: DC24V |
| 消耗功率 Wattage | W | 26W |
| 工作電流 Current | A | 2.4A(12VDC) 1.2A(24VDC) |
| 允許電壓變動範圍 Alteration Range | 通電率100% Power Supply RATE 100% | -10%~+10% (額定電流 Rated Current) |
| | 通電率75% Power Supply RATE 75% | -11%~+20% (連續通電 5 分鐘以內 Continuons Power Supply 5 Minutes) |
| | 通電率50% Power Supply RATE 50% | -21%~+30% (連續通電 3 分鐘以內 Continuons Power Supply 3 Minutes) |
| 絕緣類型 Insulation Type | | H 級 Class H |
| 工作油及工作溫度 Fluids And Temperature | | 礦物基液壓油 Mineral-Base Hydraulic Oil: -25~+90°C 磷酸酯基液壓油 Phosphate-Base Hydraulic Oil: -30~+100°C |
| | | AFT: -30~+130°C |
| 清潔度 Contamination Level | | NAS 12 級以內 Under NAS Class 12 |
| 耐震性能 Shock-Proof Performance | | JIS D 1601 |
| 耐水性能 Water-Proof Performance | | JIS D 0203 S2 |
| 切換頻率 Operating Frequencies | CPM | 250 CPM |
| 切換時間 Response Time | ms | Open Within 50ms, Close Within 100ms |
| 重量 Weight | Kgs | 1.5 Kgs (3.3 Lbs) |
| 安裝螺絲 Mounting Bolt Kits | M5x45L,4pcs | 安裝扭力 Tightening Torque 70~80Kg-cm |
| 表面處理 Treatment | | 磷酸鹽皮膜處理 Zinc Phosphate Compound |

型號說明 HOW TO ORDER

SWF - G02 - C4 - D12 - 31 - A - 1 - D

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① 閥系列 Valve series

SWF = 推拉式電磁作動方向控制閥
 Push-pull type solenoid operated directional valve

② 油路板安裝式通稱 Gasket mounting

Nominal 1/4" (6mm)
 ISO= CETOP3
 DIN= NG6
 NFPA= DO3

④ 線圈電壓 Coil voltage

D12 = 12 VDC
 D24 = 24 VDC

⑤ 接線方式 Wiring

31 = 出線式 Lead wire

⑥ 電磁鐵組安裝方向 Coil side

A = 電磁鐵組安裝於本體A側
 Coil at port A
 B = 電磁鐵組安裝於本體B側
 Coil at port B

⑦ 手推桿 Push bar

1 = 線圈側有手推桿
 Push bar at coil side
 2 = 兩側有手推桿
 Push bar on both side

⑧ 二極體 Diodes

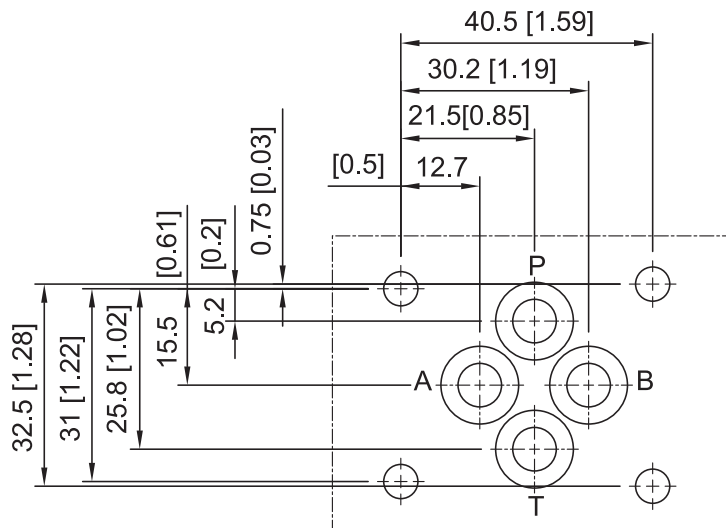
空白 = 標準不帶二極體
 Omit = Standard without diodes
 D = 帶二極體
 With diodes

③ 閥蕊型式 Spool type

| | 電磁鐵組安裝於本體B側 Coil at port B | 電磁鐵組安裝於本體A側 Coil at port A |
|----|-------------------------------|-------------------------------|
| C2 | | |
| C4 | | |
| C6 | | |

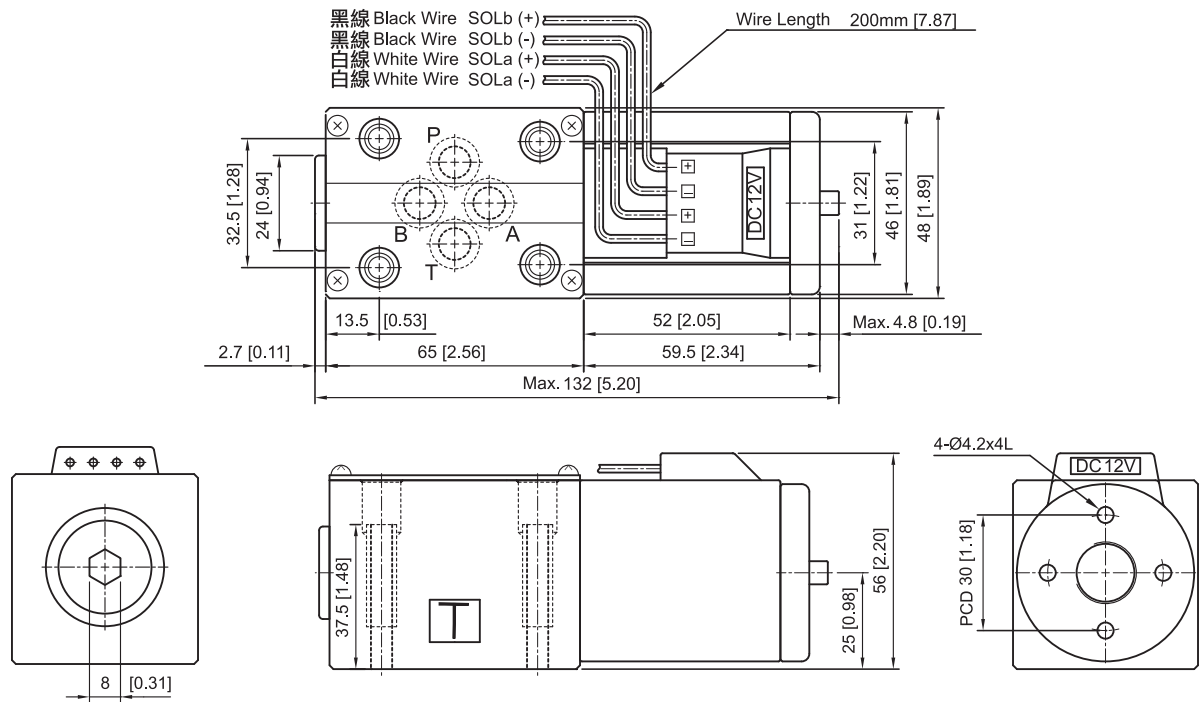
安裝面 MOUNTING INTERFACE

ISO 4401-AB-03-4-A

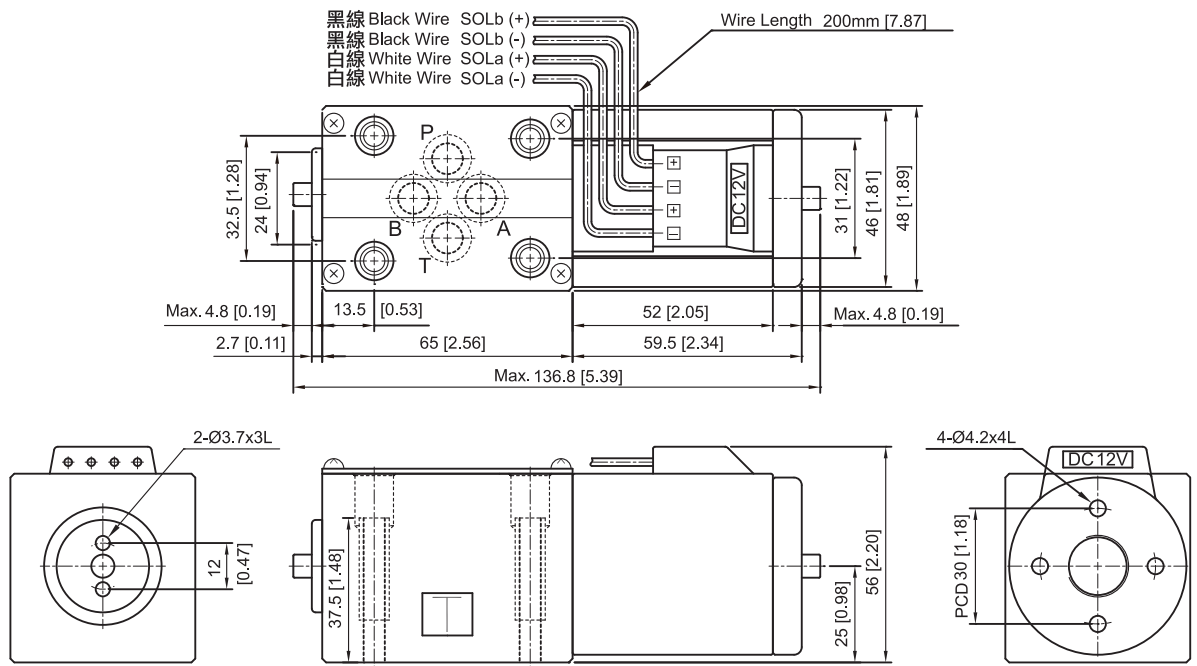


外型尺寸 DIMENSIONS

SWF-G02-C*-D-31-A-1**

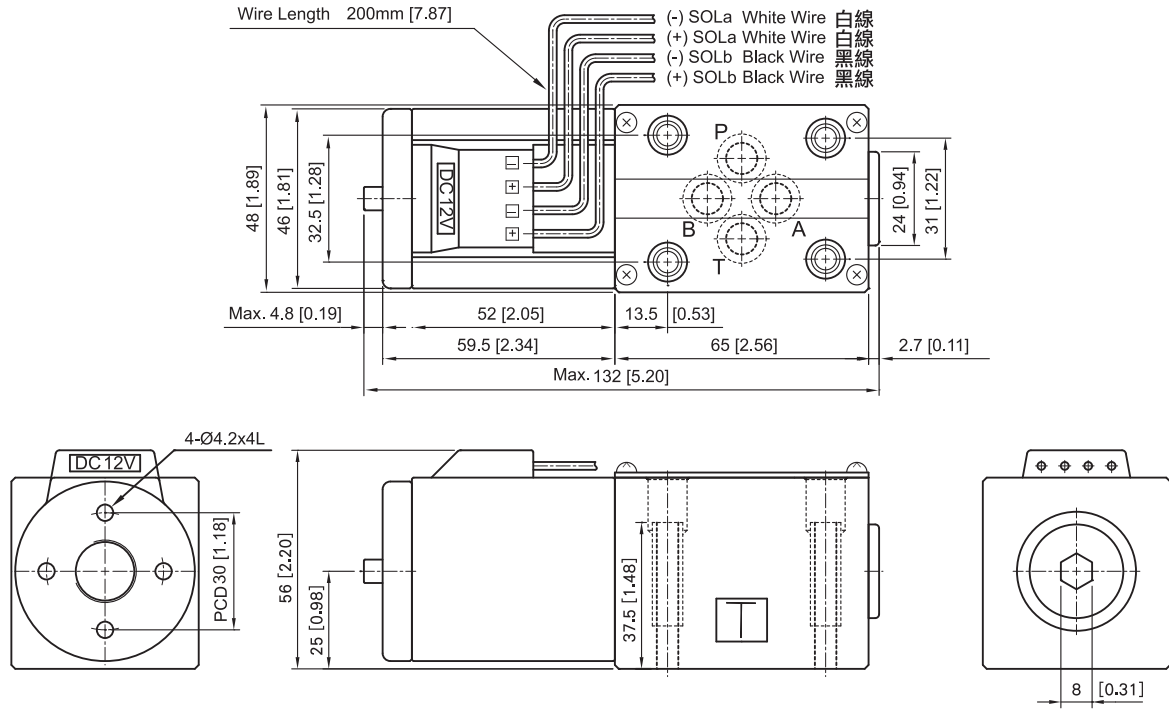


SWF-G02-C*-D-31-A-2**



外型尺寸 DIMENSIONS

SWF-G02-C*-D-31-B-1**



SWF-G02-C*-D-31-B-2**

