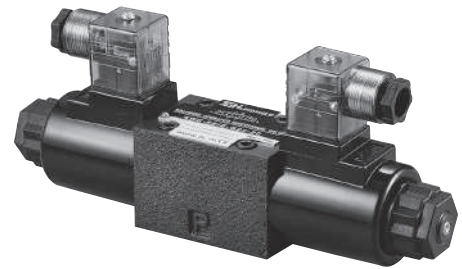


## Solenoid Operated Directional Valve

### 特點 CHARACTERISTICS

- 以直動式電磁鐵操作方向滑閥作為標準類型
  - 安裝面按DIN 24 340 A型，ISO 4401 和 CETOP-RP 121 H
  - 附可拆卸濕式交/直流線圈及電磁鐵
  - 電磁鐵可旋轉90度
  - 可不放油液更換線圈
  - 可選擇單個或集中連接
  - 可選的手動應急操作
- Direct operated, solenoid actuated directional spool valve high performance version.
  - Porting pattern to DIN 24 340 form A, ISO 4401 and CETOP-RP 121 H
  - Wet pin AC or DC solenoids with removable coil.
  - Solenoid coil can be rotated through 90°
  - Coils can be replaced without releasing any fluid.
  - Choice of either central or individual electrical connections.
  - Optional hand emergency.



### 型號說明 HOW TO ORDER

**4 WE - 6 D / O E - W220/50 - 20 - 40**

電磁閥型式 SOLENOID TYPE

接線方式 WIRING

10 : 帶燈的集中連接盒  
WITH LAMP CENTRAL CONNECTION  
20 : 插入式接頭帶密封套 PLUG-IN CONNECTION

線圈電壓 COIL VOLTAGE

G12 : 12V DC                      G24 : 24V DC  
W110 : 110/50/60Hz              W220 : 220/50/60Hz

E : 高性能電磁鐵 HIGH POWER SOLENOID

附可拆卸濕式線圈及電磁鐵  
WET PIN (OIL IMMERSED) WITH REMOVABLE COIL

無代號 : 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 BUT WITH DETENT

主軸型式，見C08-03頁

SPOOL TYPE (AS C08-03)

閥規格 VALVE SIZE

6 : 通徑6mm SIZE 6mm

閥類型 VALVE TYPE

WE : 方向閥 DIRECTIONAL VALVE

工作口數量 NUMBER OF MAIN PORTS

3 : 三個工作口 3 SERVICE PORTS

4 : 四個工作口 4 SERVICE PORTS

### 功能說明

### FUNCTIONAL DESCRIPTION

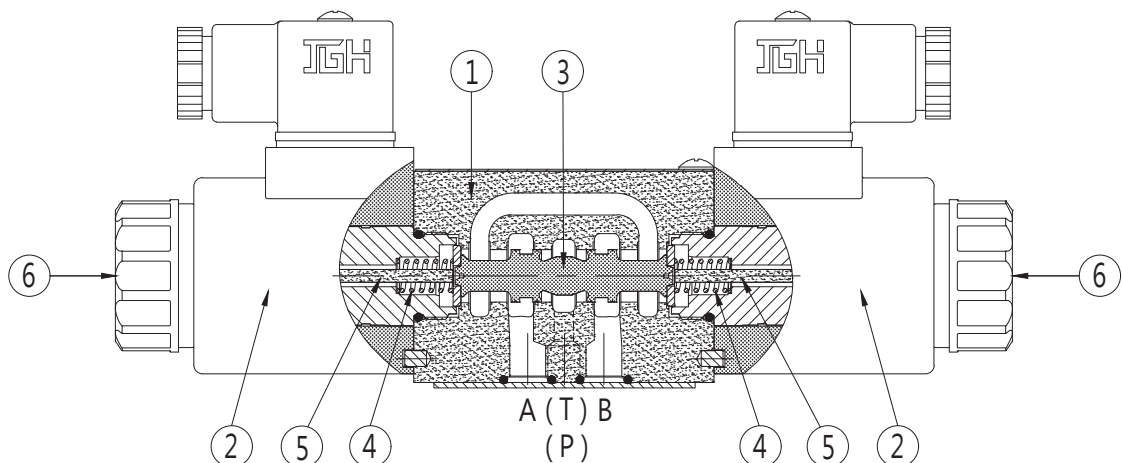
- WE型方向控制閥是電磁鐵操作的換向滑閥，用以控制油液的開啟、停止和方向。
  - 這種方向控制閥主要包括閥體(1)、一個或二個電磁鐵(2)、控制閥芯(3)和一個或二個復位彈簧(4)。
  - 在未通電的狀態下，控制閥芯(3)由復位彈簧(4)保持在中間或初始位置(脈沖閥除外)。控制閥芯(3)由濕式電磁鐵(2)操作。
  - 為了保證獲得滿意的操作，務必使電磁鐵的壓力腔充滿油液。
  - 電磁鐵(2)的力量經過推杆(5)作用在控制閥芯(3)上，將其由靜止推向所需位置。這就使油液從P至A，B至T，P至B或A至T自由流動。
  - 當電磁鐵(2)斷電時，控制閥芯(3)被復位彈簧(4)推向初始位置。
  - 可選的手動應急操作(6)在電磁鐵不通電的情況下可控制閥芯(3)運動。
  - 型號4WE 6../OF... (脈沖閥，僅限於符號D)。
  - 這一型號包括帶二個切換位置、二個電磁鐵和一個定位機構的方向控制閥。兩個切換位分別固定，因此沒有必要使電磁鐵一直通電。
- Type WE directional control valve are solenoid operated directional spool valve. They control the start, stop and direction of flow.
  - Essentially the directional control valve consist of housing (1), one or two solenoids (2), the control spool (3), and one or two return springs (4).
  - In the de-energised condition the control spool (3) is held in the neutral or initial position by means of return springs (4) (except for impulse spool). The control spool (3) is operated by wet pin solenoids (2).
  - To guarantee satisfactory operation care should be taken to ensure that the solenoid pressure chamber is filled with oil.
  - The force of the solenoid (2) acts via the plunger (5) on the control spool (3) and pushes this from its neutral position to the required end position. This gives free flow from P to A and B to T or P to B and A to T.
  - When solenoid (2) is de-energised, the control spool (3) is returned to its neutral position by means of return springs (4).
  - An optional hand emergency (6), allows movement of the control spool (3) without energising the solenoid.
  - Type 4WE 6../OF... (impulse spool, only for symbols D)  
This design incorporates directional control valve with 2 switching positions, 2 solenoids and a detent. Both switching positions are thus fixed alternately and there is no need to continually energise the solenoid.

### 剖面圖

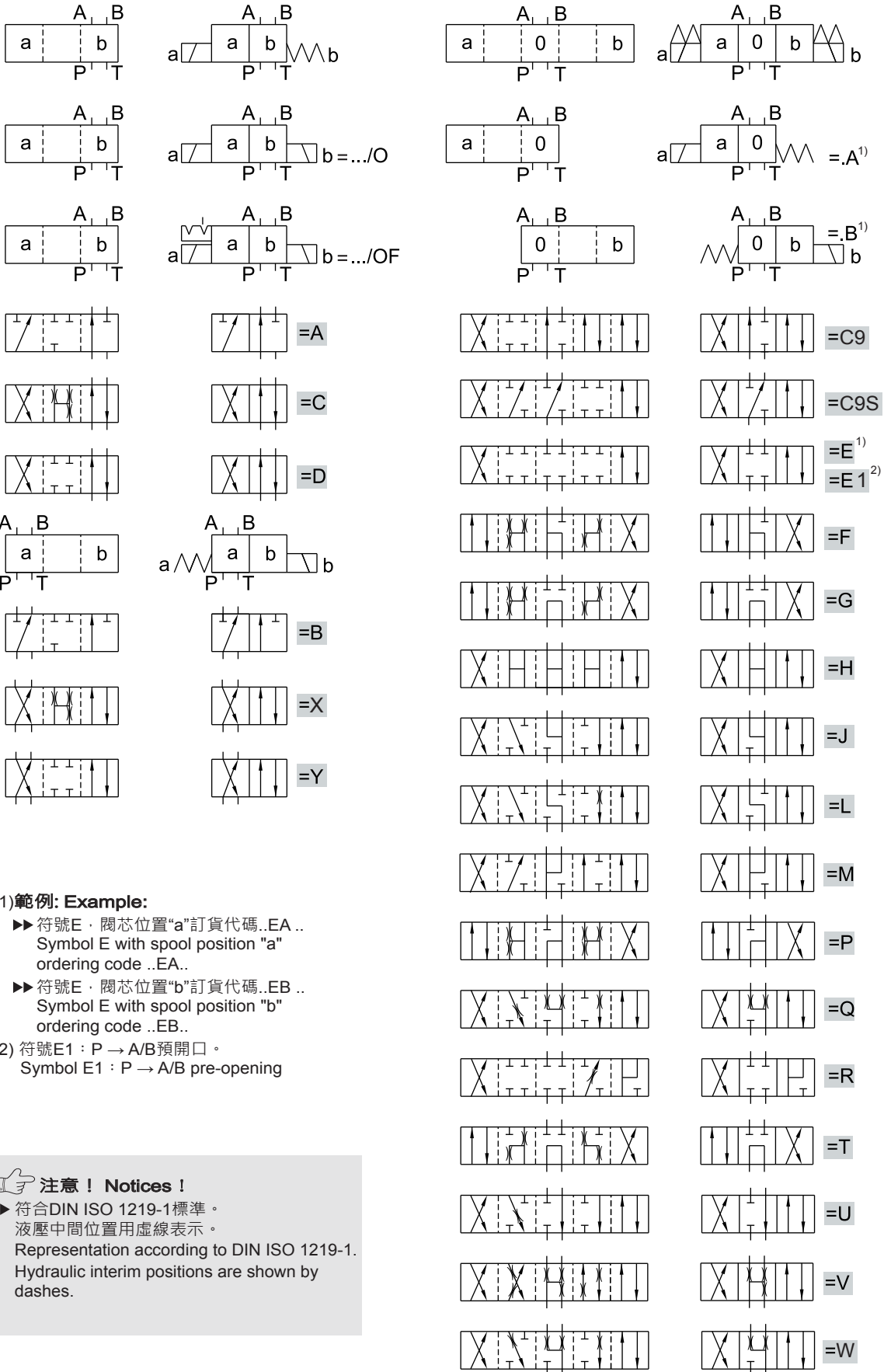
### SECTION

型號：4WE-6(DC)-40

TYPE:4WE-6(DC)-40



## 閥類型符號 STMBOL



### 1) 範例: Example:

- ▶▶ 符號E · 閥芯位置“a”訂貨代碼..EA..  
Symbol E with spool position "a"  
ordering code ..EA..
- ▶▶ 符號E · 閥芯位置“b”訂貨代碼..EB..  
Symbol E with spool position "b"  
ordering code ..EB..

- 2) 符號E1 : P → A/B預開口。  
Symbol E1 : P → A/B pre-opening

### 注意! Notices!

- ▶ 符合DIN ISO 1219-1標準。  
液壓中間位置用虛線表示。  
Representation according to DIN ISO 1219-1.  
Hydraulic interim positions are shown by dashes.



| 一般數據 General  |                               |                         |  |
|---|-------------------------------|-------------------------|--|
| 安裝位置 Installation Position  |                               | 可選擇 optional            |  |
| 最高周圍溫度範圍<br>Ambient temperature, max.   | $t$ °C                        | 50                      |  |
| 重量 Weight   |                               | AC                      |  |
|   | 帶1個電磁鐵閥<br>Single coil $m$ kg | 1.6                     |  |
|   | 帶2個電磁鐵閥<br>Two coils $m$ kg   | 2.1                     |  |
| 液壓數據 Hydraulic  |                               |                         |  |
| 最高工作壓力<br>Operating pressure  | 油口A, B, P<br>Port A, B, P     | $p$ kgf/cm <sup>2</sup> | 至350<br>350  |
|   | 油口T<br>Port T                 | $p$ kgf/cm <sup>2</sup> | 至160<br>如果工作壓力超過油箱允許壓力，對於閥芯A和B的閥門，油口T須用作泄油口。<br>up to 160<br>With symbols A and B, port T must be used as a drain port if the operating pressure is above the permitted tank pressure.   |
| 最大流量 Flow, max.   | $qv$                          | L/min                   | 至60<br>up to 60  |
| 液壓油<br>1) 適用於丁腈橡膠密封和氟橡膠密封<br>Suitable for NBR and FPM seals<br>2) 只用於氟橡膠密封<br>only suitable for FPM seals |                               |                         | 礦物油(HL, HLP)；按DIN 51 524；<br>快速生物解降油液按VDMA 24 568<br>HEPG (聚乙二醇)；HEES (合成脂)；其他油液<br>按要<br>Mineral oil (HL, HLP) to DIN 51 524; Fast bil-degradable pressure fluids to VDMA 24 568; HEPG (polyglycol); HEES (synthetic ester); other fluids on request. |
| 油液 Pressure fluid   | $t$                           | °C                      | -30至+80 (帶丁腈橡膠密封)<br>-30 to +80 (NBR seals)  |
| 溫度變化範圍 Temperature range  |                               |                         | -20至+80 (帶氟橡膠密封)<br>-20 to +80 (FPM seals)   |
| 粘度範圍 Viscosity range  | $v$                           | mm <sup>2</sup> /s      | 2.8至500<br>2.8 to 500  |
| 油液清潔度 Degree of fluid contamination   |                               |                         | 油液最高污染等級按NAS1638第9級。<br>因而我們推薦過濾器最小過濾精度 $\beta_{10} \geq 75$<br>Maximum permissible degree of contamination of the fluid is to NAS 1638 class 9. We, therefore, recommend a filter with a minmum retention rate of $\beta_{10} \geq 75$                |

| 電器數據 Electrical   |                  |                                  |
|---|------------------|----------------------------------|
| 電壓類型 Type of voltage  | 直流 DC voltage    | 交流 AC voltage                    |
| 可用電壓<br>Type of voltage $t \quad ^\circ\text{C}$<br>(交流電磁鐵訂貨細節見下)<br>(For ordering details of AC/DC solenoid see below) | 12.24            | 110, 220V/50Hz<br>110, 220V/60Hz |
| 額定吸力<br>Rated force (N)   | 50               | 30                               |
| 額定行程<br>Rated stroke (mm)   | 3                | 3                                |
| 全行程<br>Total stroke (mm)  | 6.5              | $\cong 6.5$                      |
| 工作循環<br>Duty cycle (%)  | 100              | 100                              |
| 絕緣等級<br>Insulation class  | B                | H                                |
| 最高操作頻率<br>Max operation frequency (t/h)   | 12000            | 12000                            |
| 允許電壓波動範圍<br>Supply voltage tolerance (%)  | +10 ~ -15        | +10 ~ -15                        |
| 防護等級<br>Protection class  | IP65             | IP65                             |
| 工作壓力<br>Working Pressure (Mpa)  | 21               | 21                               |
| 流入電流<br>Inrush VA (VA)  | 32               | $\cong 66$                       |
| 消耗功率<br>Power consumption (W)   | 32               | $\cong 28$                       |
| 工作壽命<br>Working life (t)  | $10 \times 10^6$ | $10 \times 10^7$                 |

02 DC

...nom voltage 20°  
—85% voltage stab temp

02 AC

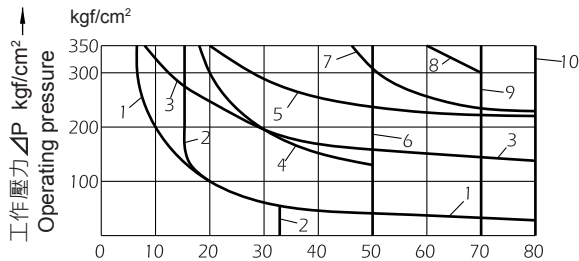
...nom voltage 20°  
—85% voltage stab temp

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

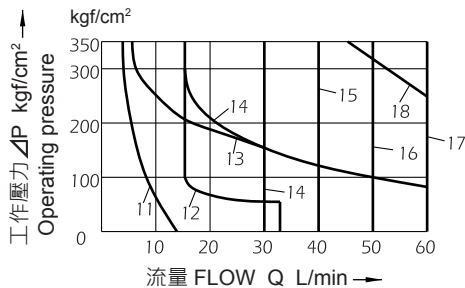
⚠ 注意！  
 所給的工作極限僅用於兩個方向流動的情況（如同時有B至T回流的P至A流向）。  
 在單向流動時（如從P至A，B口被堵塞），由於閥內的流動力量，允許的切換極限可能降低。

⚠ **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 valves 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.)

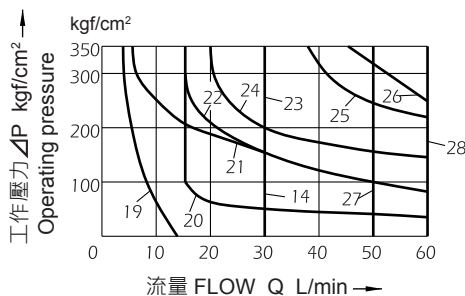
| 直流電磁鐵<br>示例：G24:24V<br>DC solenoid<br>e.g. G24:24v |                                    | 交流電磁鐵<br>示例：W240:240V, 60Hz (見以下)<br>AC solenoid<br>e.g. W240:240V,60Hz (see below) |                      | 交流電磁鐵<br>示例：W220:220V, 60Hz (見以下)<br>AC solenoid<br>e.g. W220:220V,60Hz (see below) |              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



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



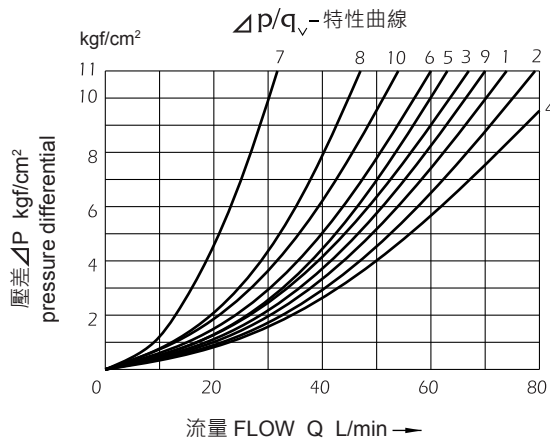
| 交流電磁鐵<br>AC solenoid |                                   |            |
|----------------------|-----------------------------------|------------|
| 曲線<br>Curve          | 電磁鐵對照<br>Solenoid Cross reference |            |
| 11 to 18             | <b>W110</b>                       | 110V, 50Hz |
|                      | <b>W240</b>                       | 220V, 50Hz |



| 交流電磁鐵<br>AC solenoid |                                   |            |
|----------------------|-----------------------------------|------------|
| 曲線<br>Curve          | 電磁鐵對照<br>Solenoid Cross reference |            |
| 19 to 28             | <b>W110</b>                       | 110V, 60Hz |
|                      | <b>W220</b>                       | 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  $t = 50^\circ\text{C}$ )



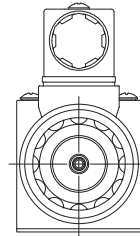
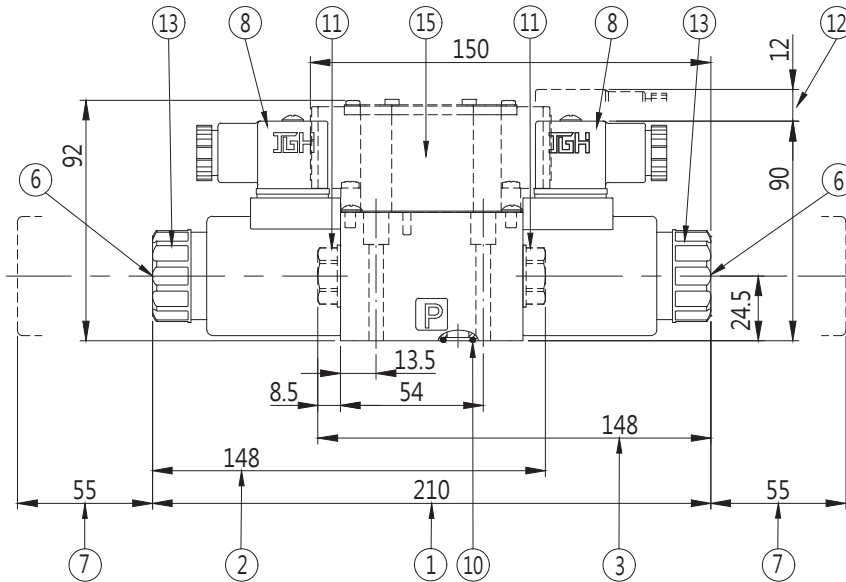
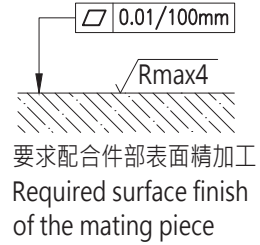
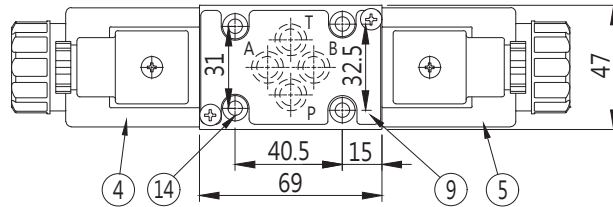
| 符號<br>Symbol | 流動方向 Flow direction |     |     |     |
|--------------|---------------------|-----|-----|-----|
|              | P→A                 | P→B | A→T | B→T |
| A, B         | 3                   | 3   | -   | -   |
| C, X         | 1                   | 1   | 3   | 1   |
| D, Y         | 5                   | 5   | 3   | 3   |
| E            | 3                   | 3   | 1   | 1   |
| F            | 1                   | 3   | 1   | 1   |
| 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   |

單位 UNIT : mm

### 安裝尺寸 INSTALLATION DIMENSIONS

直流電磁閥 VALVE WITH DC SOLENOIDS

通用底板尺寸  
 APPLICATIVE SUB-PLATE DIMENSIONS  
**MC - 02 - 1**  
 (詳見 E01-09 Page E01-09)



- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1 3一位閥</li> <li>2 2一位閥,帶1個電磁鐵(A, C, D, EA...)</li> <li>3 2一位閥,帶1個電磁鐵 (B, X, Y, EB...)</li> <li>4 電磁鐵"a"</li> <li>5 電磁鐵"b"</li> <li>6 手動應急操作(標準)<br/>手動應急操作僅在油壓力約為50 kgf/cm<sup>2</sup>時才有可能<br/>不要對手動應急操作孔造成損害!</li> <li>7 取下電磁鐵所需空間</li> <li>8 插入式接頭按 DIN 43650</li> <li>9 鋁牌</li> <li>10 O-形圈 AS-568-012</li> <li>11 帶1個電磁鐵的閘塞頭</li> <li>12 取下插入式接頭所需空間</li> <li>13 固定螺母安裝扭矩 4 N·m</li> <li>14 安裝面按 DIN 24 340 A型<br/>ISO 4401 和 CETOP-RP 121 H<br/>閘固定螺釘M5x45L DIN 912-12.9<br/>安裝扭矩 8~9 N·m</li> <li>15 帶燈的集中連接盒</li> </ul> | <ul style="list-style-type: none"> <li>1 3-position</li> <li>2 2-position valve with 1 solenoid (A, C, D, EA...)</li> <li>3 2-position valve with 1 solenoid (B, X, Y, EB...)</li> <li>4 Solenoid "a"</li> <li>5 Solenoid "b"</li> <li>6 Hand emergency (Standard)<br/>-The hand emergency can only be operated up to a tank pressure of approx. 50 kgf/cm<sup>2</sup><br/>Avoid damage to hand emergency pin hole</li> <li>7 Space required to remove solenoid</li> <li>8 Plug-in connector DIN 43650</li> <li>9 Name plate</li> <li>10 O-ring AS-568-012</li> <li>11 Plug for valves with one solenoid</li> <li>12 Space required to remove plug-in connector</li> <li>13 Securing nut, Mounting torque 4 N·m</li> <li>14 Mounting face according to DIN 24 340 type A<br/>ISO 4401 and CETOP-RP 121H<br/>valve fixing screw M5x45L DIN 912-12.9<br/>Mounting torque 8~9 N·m</li> <li>15 With lamp central connection</li> </ul> |
|--|--|

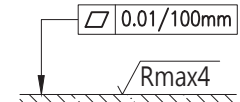
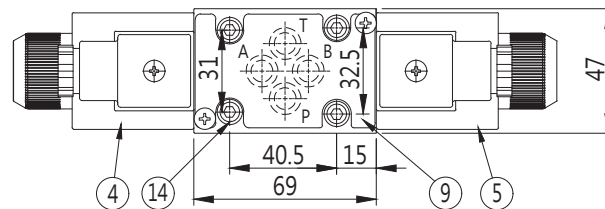


單位 UNIT : mm

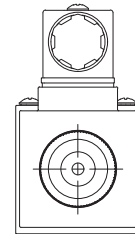
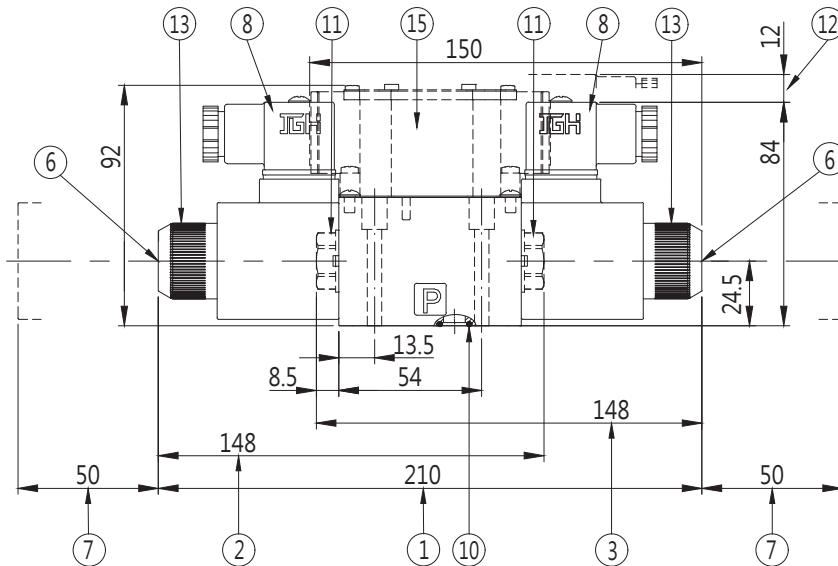
**安裝尺寸 INSTALLATION DIMENSIONS**

交流電磁閥 VALVE WITH AC SOLENOIDS

通用底板尺寸  
 APPLICATIVE SUB-PLATE DIMENSIONS  
**MC - 02 - 1**  
 (詳見 E01-09 Page E01-09)



要求配合件部表面精加工  
 Required surface finish  
 of the mating piece



- |  |   |
|--|---|
| 1 3-位閥   | 1 3-position  |
| 2 2-位閥,帶1個電磁鐵(A, C, D, EA...)  | 2 2-position valve with 1 solenoid (A, C, D, EA...)   |
| 3 2-位閥,帶1個電磁鐵 (B, X, Y, EB...)   | 3 2-position valve with 1 solenoid (B, X, Y, EB...)   |
| 4 電磁鐵"a"   | 4 Solenoid "a"  |
| 5 電磁鐵"b"   | 5 Solenoid "b"  |
| 6 手動應急操作(標準)<br>手動應急操作僅在油壓力約為50 kgf/cm <sup>2</sup><br>時才有可能<br>不要對手動應急操作孔造成損害!                | 6 Hand emergency (Standard)<br>-The hand emergency can only be operated up<br>to a tank pressure of approx. 50 kgf/cm <sup>2</sup><br>Avoid damage to hand emergency pin hole |
| 7 取下電磁鐵所需空間  | 7 Space required to remove solenoid   |
| 8 插入式接頭按 DIN 43650   | 8 Plug-in connector DIN 43650   |
| 9 銘牌   | 9 Name plate  |
| 10 O-形圈 AS-568-012   | 10 O-ring AS-568-012  |
| 11 帶1個電磁鐵的閥塞頭  | 11 Plug for valves with one solenoid  |
| 12 取下插入式接頭所需空間   | 12 Space required to remove plug-in connector   |
| 13 固定螺母安裝扭矩 4 N·m  | 13 Securing nut, Mounting torque 4 N·m  |
| 14 安裝面按 DIN 24 340 A型<br>ISO 4401 和 CETOP-RP 121 H<br>閥固定螺釘M5x45L DIN 912-12.9<br>安裝扭矩 8~9 N·m | 14 Mounting face according to DIN 24 340 type A<br>ISO 4401 and CETOP-RP 121H<br>valve fixing screw M5x45L DIN 912-12.9<br>Mounting torque 8~9 N·m                            |
| 15 帶燈的集中連接盒  | 15 With lamp central connection   |