

全懋精機股份有限公司
CAMEL PRECISION CO., LTD



SINCE 1981

**Directional Control
Valves**
電磁換向閥



Directional Control Valves

電磁換向閥



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Size: 3/8" (cetop 05), 1/2" (cetop 07), 3/4" (cetop 08), 1-1/4" (cetop 10)



WH 系列

Solenoid Operated Directional Valves

電磁換向閥



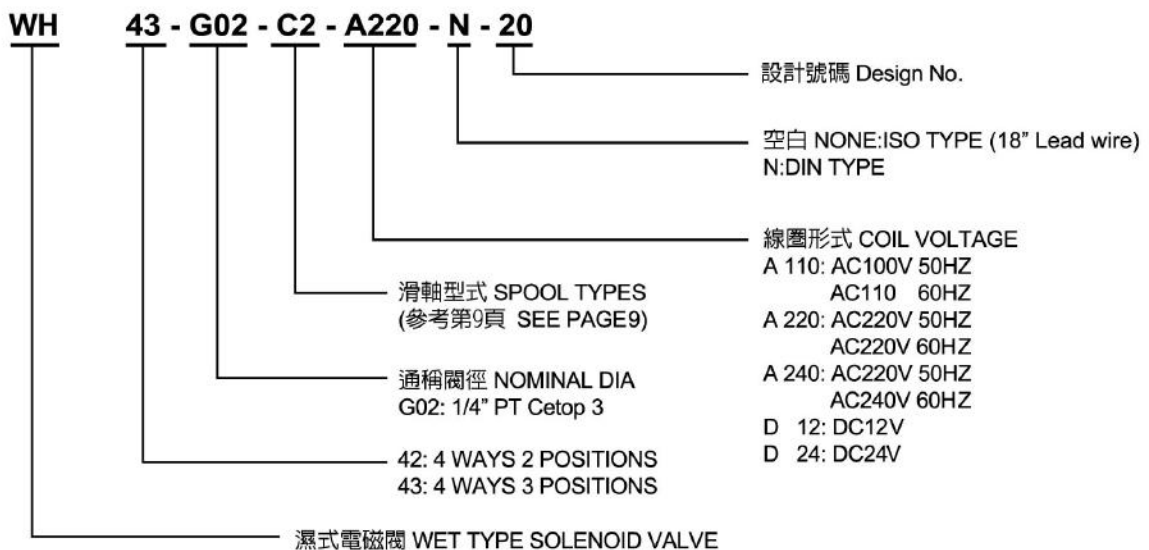
■ G02 系列



特性/FEATURE

- 高壓力、大流量、低噪音切換動作順暢。
High pressure, large volume, low noise. Smooth switch over movement
- 雙流道設計、阻抗小、效率佳。
Duo orifice designed, low resistance, high efficiency.
- 附防水、防塵的線圈及電氣安裝設計，具有高度的安全性。
Water & dust proof electric solenoid, high safety designed.
- ISO標準尺寸具互換性，安裝容易。
ISO standard measurements, high interchangeability, easy to install.
- 100%檢驗，具有穩定性的高品質。
100% inspected, high & stable quality.

型號說明/HOW TO ORDER



WH系列 Solenoid Operated Directional Valves 電磁換向閥



規格說明/SPECIFICATIONS

■ G02系列

最高使用壓力	(Maximum operating pressure)	315 kgf / cm ²
最大流量	(Rated flow capacity)	63 LPM
最大容許背壓	(Maximum tank line back pressure)	100 kgf / cm ²
最高操作頻率	(Maximum frequencies of operation)	240 C.P.M. (AC, DC)
濾油網精度	(Filtration recommended)	25 Micron or less
壓油 (Hydraulic fluids)	礦油使用溫度範圍 0 ~ 55°C	(Mineral oil, recommendation temperature 0 ~ 55°C)
	電磁閥最高使用溫度範圍 -25 ~ 90°C	(Max temperature range -25 ~ 90°C)
	容許使用油粘度範圍 10 ~ 400 CST	(Viscosity 10 ~ 400 cSt)

電磁線圈/SOLENOID RATINGS

電 源 ELECTRIC SOURCE	線圈型式 COIL TYPE	電 壓 (V) VOLTAGE			在定格電壓下之勵磁電流和功率 CURRENT & POWER AT RATED VOLTAGE			電磁閥重量 WEIGHT (kg)
		定格電壓 SOURCE RATED	頻率 HZ	使用範圍 RANGE	起動電流 IN-RUSH CURRENT(A)	保持電流 HOLDING CURRENT(A)	功率 WATTAGE (W)	
A.C	A 110	AC100V	50	90 - 110	1.6	0.46		單線圈 Single solenoid : 1.6 kg 雙線圈 Double solenoid : 2.2 kg
		AC110V	60	99 - 121	1.5	0.39		
	A 220	AC200V	50	180 - 220	0.8	0.23		
		AC220V	60	198 - 242	0.75	0.19		
	A 240	AC220V	50	198 - 242	0.67	0.19		
		AC240V	60	216 - 262	0.59	0.13		
D.C	D 12	DC 12V		10.8 - 13.2	2.2	2.2	26	
	D 24	DC 24V		21.6 - 26.4	1.1	1.1		

技術資料/TECHNICAL DATA

- 線圈容許的電壓變動範圍為定格電壓±10%
Solenoid can be used within -10% to +10% of the rated voltage of the coil.
- 耐電壓 1500 v/sec.
Withstand voltage 1500 v/sec.
- 絕緣電阻 100 M
Insulation resistance over 100 M

附屬品/ACCESSORIES

- M5x45L固定螺絲4支, 固定扭力為50 ~ 70 kgf / cm²
M5x45L 4 pieces mounting bolt kits, tightening torque 50 ~ 70 kgf / cm²

WH系列

Solenoid Operated Directional Valves

電磁換向閥

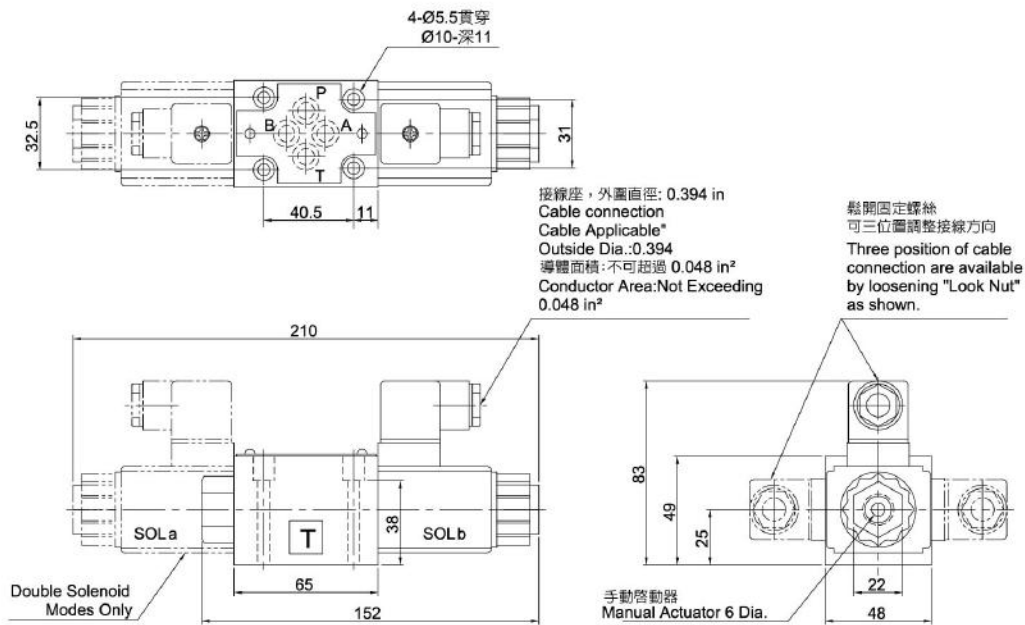


安裝尺寸/INSTALLATION DIMENSIONS

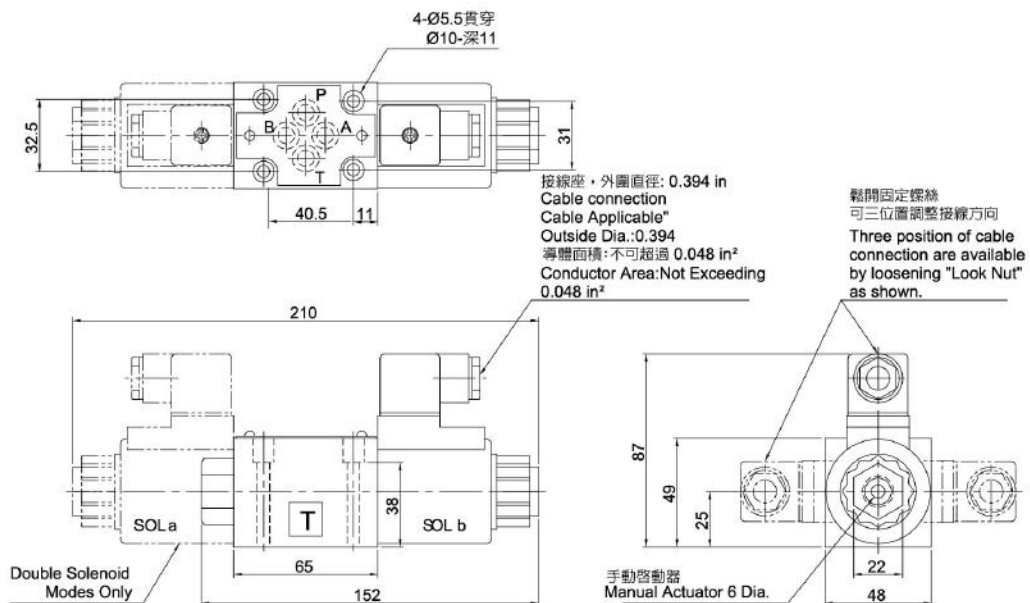
■ G02 系列

單位 UNIT : mm

■ WH4* - G02 - AC 110N / 220N / 240N



■ WH4* - G02 - DC 12N / 24N



WH系列

Solenoid Operated Directional Valves

電磁換向閥

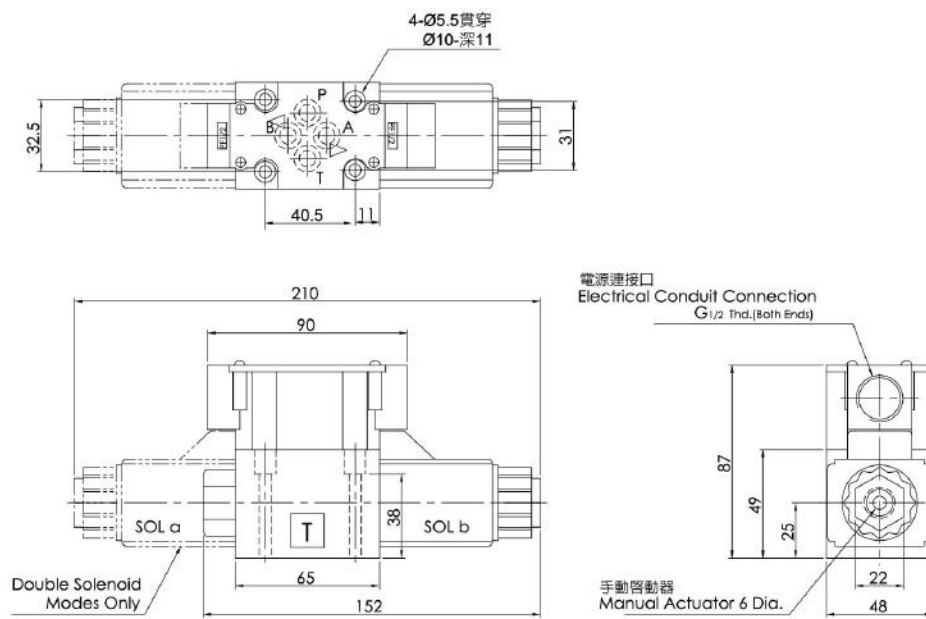


安裝尺寸/INSTALLATION DIMENSIONS

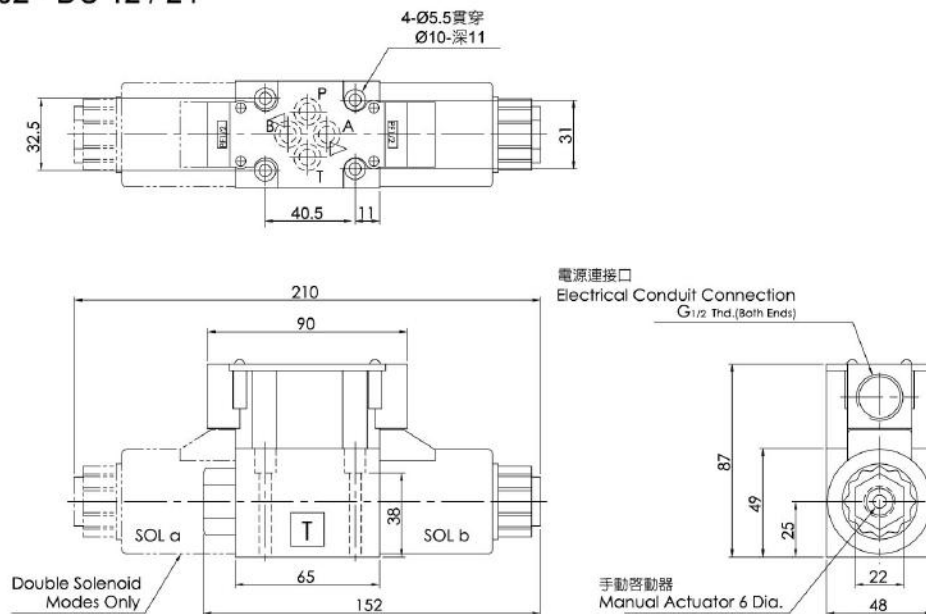
■ G02 系列

單位 UNIT : mm

■ WH4* - G02 - AC 110 / 220 / 240



■ WH4* - G02 - DC 12 / 24



WH系列 Solenoid Operated Directional Valves 電磁換向閥

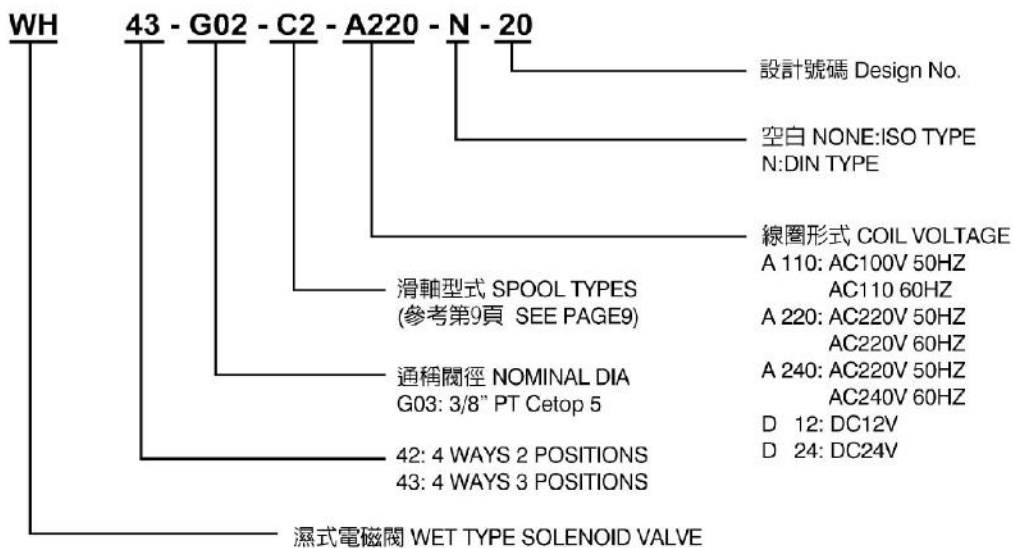


■ G03系列

特性/FEATUR

- 高壓力、大流量、低噪音切換動作順暢。
High pressure, large volume, low noise. Smooth switch over movement.
- 雙流道設計，阻抗小，效率佳。
Duo orifice designed, low resistance, high efficiency.
- 附防水、防塵的線圈及電氣安裝設計，具有高度的安全性。
Water & dust proof electric solenoid, high safety designed.
- ISO 標準尺寸具互換性，安裝容易。
ISO standard measurements, high interchangability, easy to install.
- 100%檢驗，具有穩定性的高品質。
100% inspected, high & stable quality.

型號說明/HOW TO ORDER



WH系列 Solenoid Operated Directional Valves 電磁換向閥



規格說明/SPECIFICATIONS

■ G03系列

最高使用壓力	(Maximum operating pressure)	315 kgf / cm ²
最大流量	(Rated flow capacity)	100 LPM
最大容許背壓	(Maximum tank line back pressure)	100 kgf / cm ²
最高操作頻率	(Maximum frequencies of operation)	240 C.P.M. (AC, DC)
濾油網精度	(Filtration recommended)	25 Micron or less
壓油 (Hydraulic fluids)	礦油使用溫度範圍0 ~ 55°C (Mineral oil, recommendation temperature 0 ~ 55°C)	
	電磁閥最高使用溫度範圍-25 ~ 90°C (Max. temperature range -25 ~ 90°C)	
	容許使用油粘度範圍10 ~ 400 cSt (Viscosity 10 ~ 400 cSt)	

電磁線圈/SOLENOID RATINGS

電 源 ELECTRIC SOURCE	線圈型式 COIL TYPE	電 壓 (V) VOLTAGE			在定格電壓下之勵磁電流和功率 CURRENT & POWER AT RATED VOLTAGE			電磁閥重量 WEIGHT (kg)
		定格電壓 SOURCE RATED	頻率 HZ	使用範圍 RANGE	起動電流 IN-RUSH CURRENT(A)	保持電流 HOLDING CURRENT(A)	功率 WATTAGE (W)	
A.C	A 110	AC100V	50	90 - 1	1.6	0.46	X	單 線 圈 Single solenoid : 3.3 kg
		AC110V	60	99 - 121	1.5	0.39		
	A 220	AC200V	50	180 - 220	0.8	0.23		雙 線 圈 Double solenoid : 3.9 kg
		AC220V	60	198 - 242	0.75	0.19		
	A 240	AC220V	50	198 - 242	0.67	0.19		
		AC240V	60	216 - 264	0.59	0.13		
D.C	D 12	DC 12V		10.8 - 13.2	2.2	2.2	26	Single solenoid : 3.9 kg
	D 24	DC 24V		21.6 - 26.4	1.1	1.1		Double solenoid : 5.2 kg

技術資料/TECHNICAL DATA

- 線圈容許的電壓變動範圍為定格電壓 ±10% 。
Solenoid can be used within -10% to +10% of the rated voltage of the coil.
- 耐電壓 1500 v/sec 。
Withstand voltage 1500 v/sec.
- 絕緣電阻 100 M 。
Insulation resistance over 100 M

附屬品/ACCESSORIES

- M6x35L固定螺絲4支，固定扭力為120~150 kgf/cm² 。
M6x35L 4 pieces mounting bolt kits, tightening torque 120 ~ 150 kgf / cm²

WH系列

Solenoid Operated Directional Valves

電磁換向閥

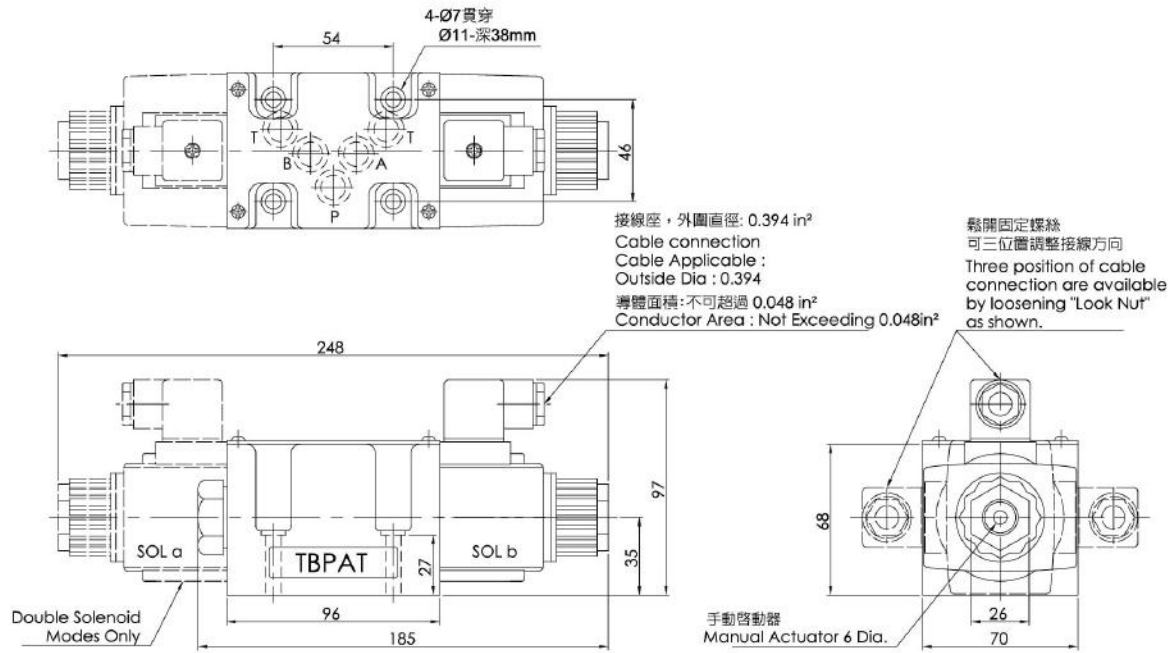


安裝尺寸/INSTALLATION DIMENSIONS

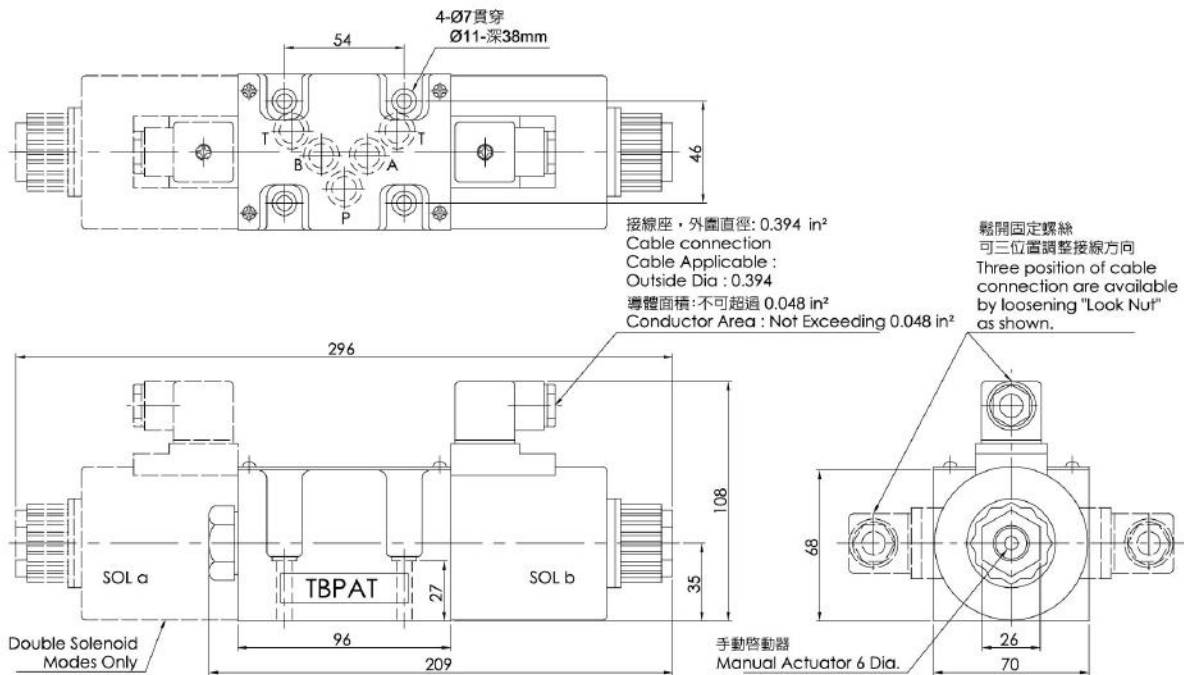
■ G03 系列

單位 UNIT : mm

■ WH4* - G03 - AC 110N / 220N / 240N



■ WH4* - G03 - DC 12N / 24N



WH系列

Solenoid Operated Directional Valves

電磁換向閥

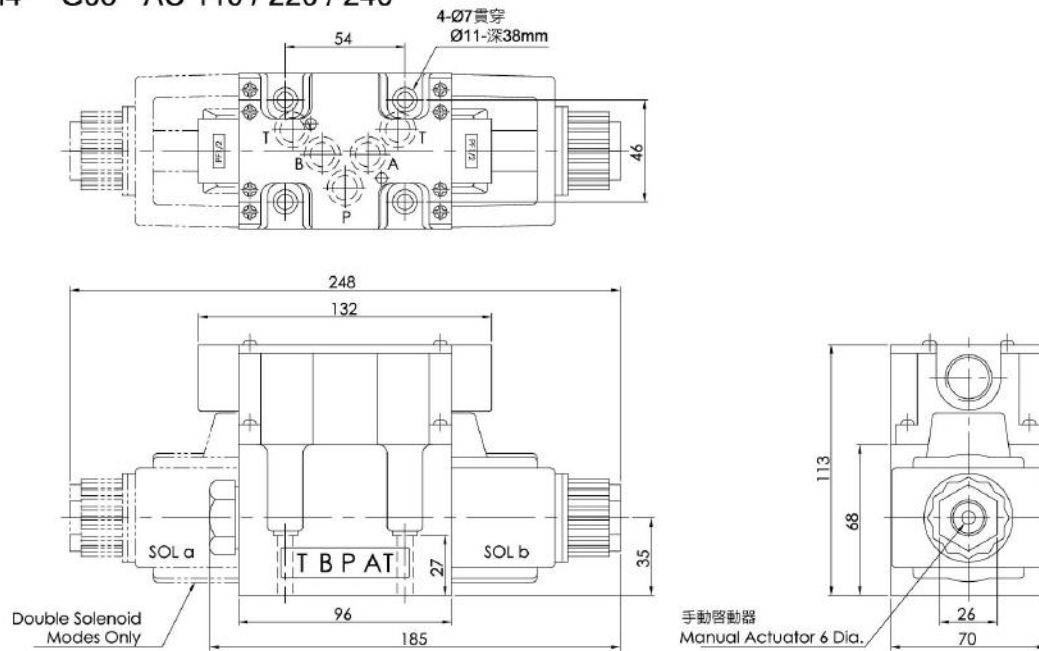


安裝尺寸/INSTALLATION DIMENSIONS

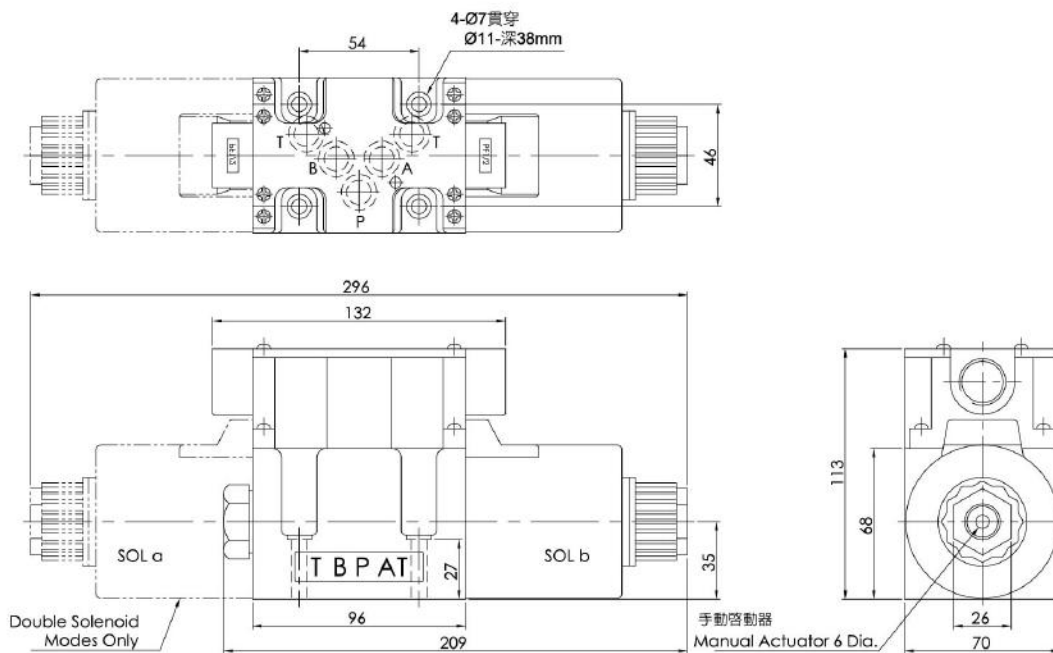
■ G03 系列

單位 UNIT : mm

■ WH4* - G03 - AC 110 / 220 / 240



■ WH4* - G03 - DC 12 / 24



WH系列

Solenoid Operated Directional Valves

電磁換向閥



滑軸種類/SPOOL TYPES

■ G02 & 03 系列

單位 UNIT : mm

■ 三 位 置 / SPRING CENTERED 3 POSITIONS :

WH43 - G02 (G03) - **					
C 2	C 3	C 4	C 40	C 5	C 60
C 7	C 8	C 9	C 10	C 11	C 12

■ 二 位 置 / 2 POSITIONS :

WH42 - G02 (G03) - **							
B2		B2S		D2		D7	
B3		B3S		D3		D8	
B8		B8S		X			
B2A		B2AS		B2B		B2BS	
B3A		B3AS		B3B		B3BS	
B4A		B4AS		B4B		B4BS	
B40A		B40AS		B40B		B40BS	
B5A		B5AS		B5B		B5BS	
B60A		B60AS		B60B		B60BS	
B7A		B7AS		B7B		B7BS	
B8A		B8AS		B8B		B8BS	
B9A		B9AS		B9B		B9BS	
B10A		B10AS		B10B		B10BS	
B11A		B11AS		B11B		B11BS	
B12A		B12AS		B12B		B12BS	

WH系列

Solenoid Operated Directional Valves

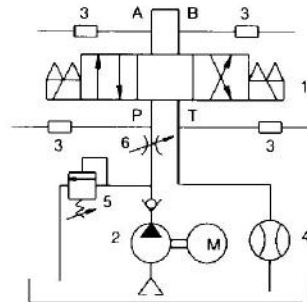
電磁方向控制閥



壓力降特性/FEATURES

■ 測試系統 / TEST SYSTEM

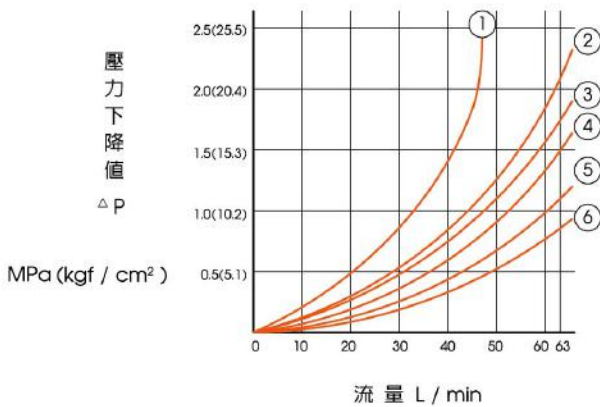
- 內齒輪泵浦(IG pump)
- 馬達(Motor)
- 變頻器(Inverter)
- 流量計(Flow meter)
- 壓力感知器(Pressure sensor)
- 調壓閥(Relief valve)
- 液壓油(Hydraulic oil)



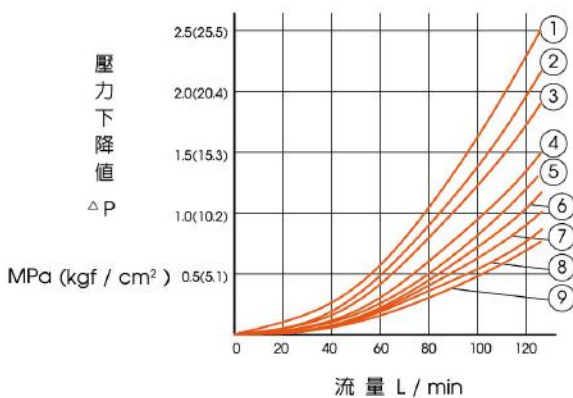
TEST CIRCUIT

■ G02 & 03 系列
單位 UNIT : mm

■ WH - G02



■ WH - G03



■ CONTRAST CHART BETWEEN FACTORS AND VISCOSITIES

VISCOSITY	cSt	15	20	30	40	50	60	70	80	90	100
	SSU		77	98	141	186	232	278	324	371	471
FACTOR(G)		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

The pressure drop(ΔP) can be obtained from the formula $\Delta P = \Delta p(G/0.85)$ for other specific gravity(G)

型 式	壓力降曲線代號				
	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	6	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	-	-

型 式	壓力降曲線代號				
	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	-	-

Solenoid Controlled Pilot Operated Directional Valve

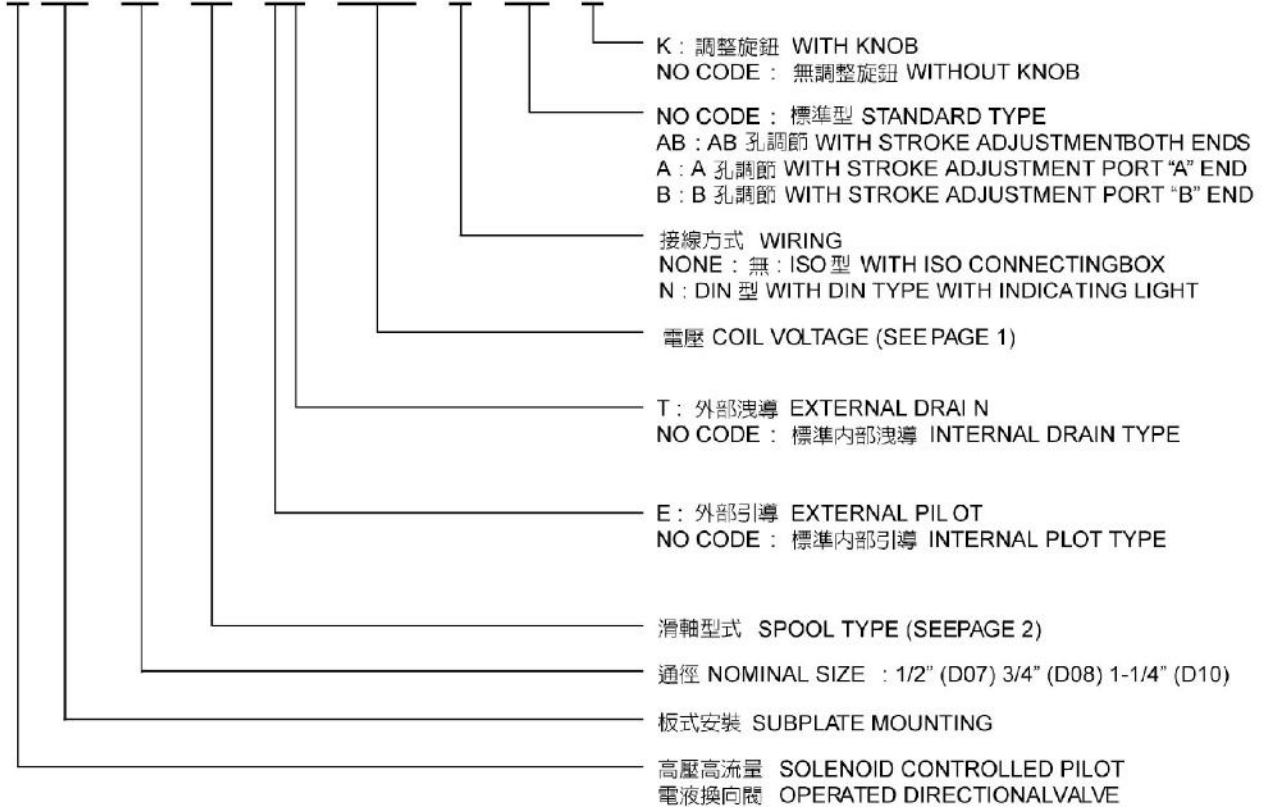


電液換向閥



型號說明/HOW TO ORDER

D HG - 04 - C2 - ET - A220 - N - AB - K



規格說明/SPECIFICATIONS

型式 MODEL	最大 流量 MAX. FLOW l/min	最高壓力 MAX. OPERATING kgf/cm ²	最高引 導壓 MAX. PILOT kgf/cm ²	最低引 導壓 MIN. PILOT kgf/cm ²	最大容許背壓 MAX. T-LINE BACK PRESSURE kgf/cm ²		最高切換速率 MAX. CHANGE OVER FREQUENCY Cycles/min			重量 WEIGHT kg
					外部洩流 EXT. DRAIN	內部洩流 INT. DRAIN	AC	DC	R	
DHG-04-C*-*	300	315	250	8	210	140	120	120	120	8.8
DHG-06-C*-*	500	315	250	8	210	140	120	120	120	12.7
DHG-10-C*-*	1100	315	250	8	210	140	120	120	120	45.3

Solenoid Controlled Pilot Operated Directional Valve

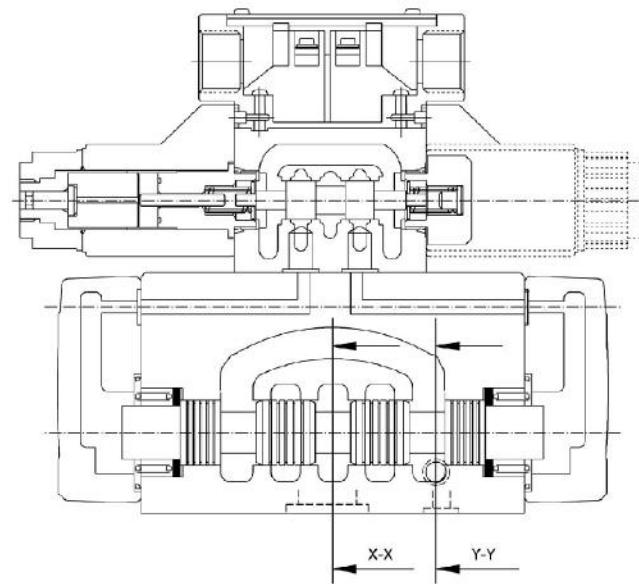


電液換向閥

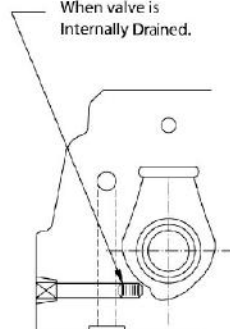
安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DHG-04

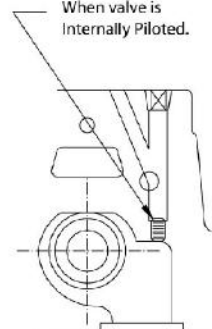


無螺塞是內部洩流
Without Plug
When valve is
Internally Drained.



剖面
Section X-X

無螺塞是內部引導
Without Plug
When valve is
Internally Piloted.



剖面
Section Y-Y

附件/ ATTACHMENT

型式 MODEL	內六腳沉頭螺絲 SOC HOL CAP SCREW
DHG-04	M6 × 40L.....2pcs
	M10 × 40L.....4pcs
DHG-06	M12 × 45L.....6pcs
DHG-10	M20 × 75L.....6pcs

Solenoid Controlled Pilot Operated Directional Valve



電液換向閥

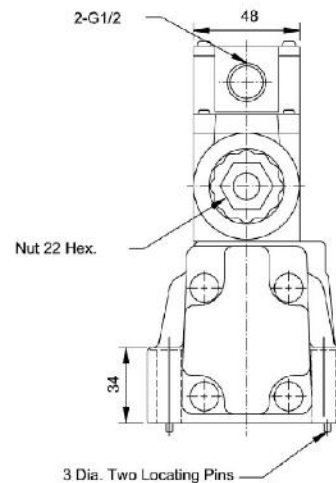
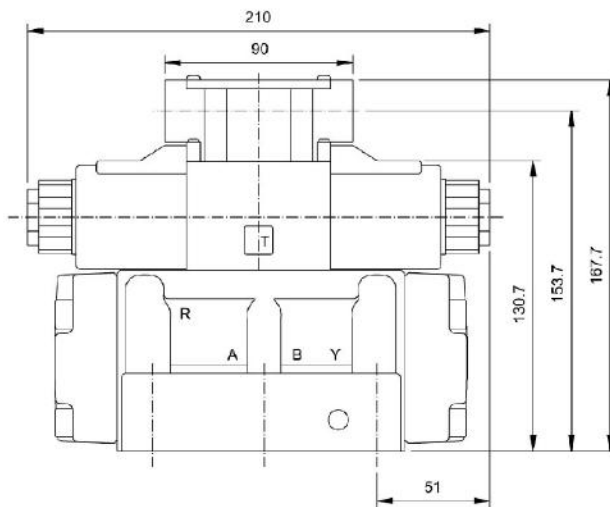
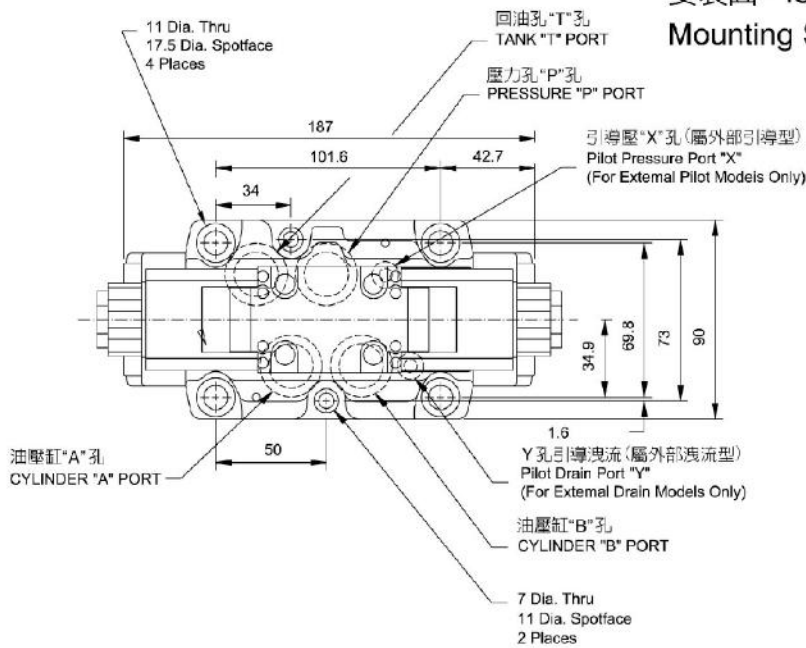
安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DHG-04 ※※※-※※-※※※※-10

安裝面 : ISO 4401-AD-07-4A

Mounting Surface : ISO 4401-AD-07-4A



Solenoid Controlled Pilot Operated Directional Valve

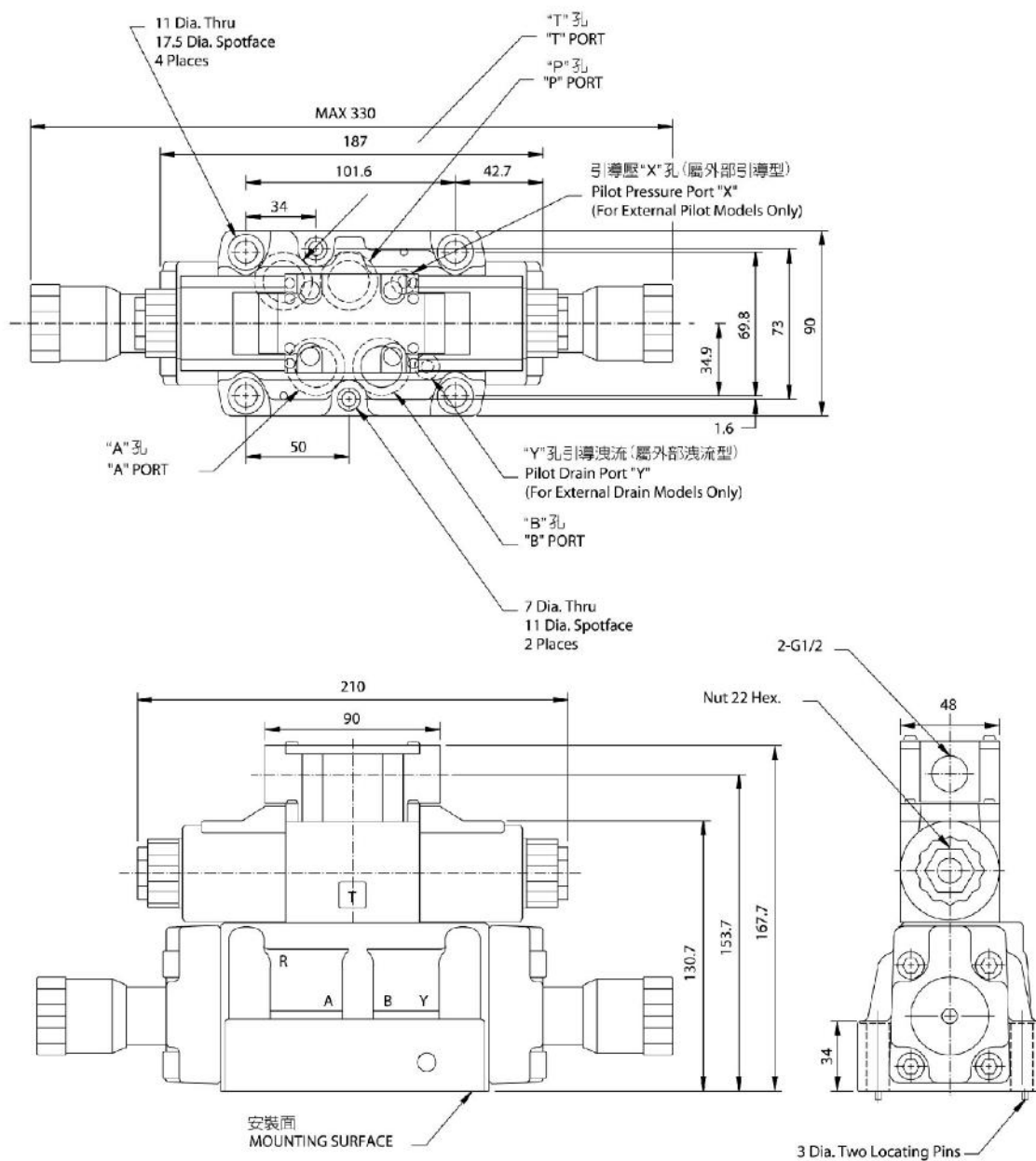


電液換向閥

安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DHG-04 ※※※-※※※-※※※※-10-AB-K



Solenoid Controlled Pilot Operated Directional Valve

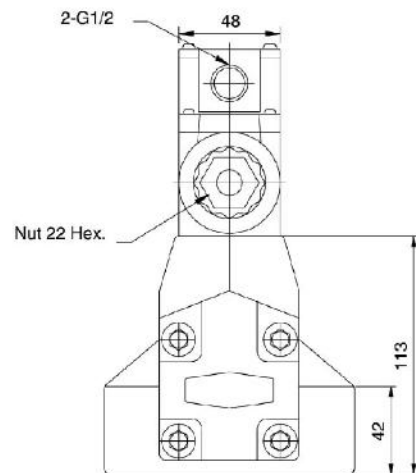
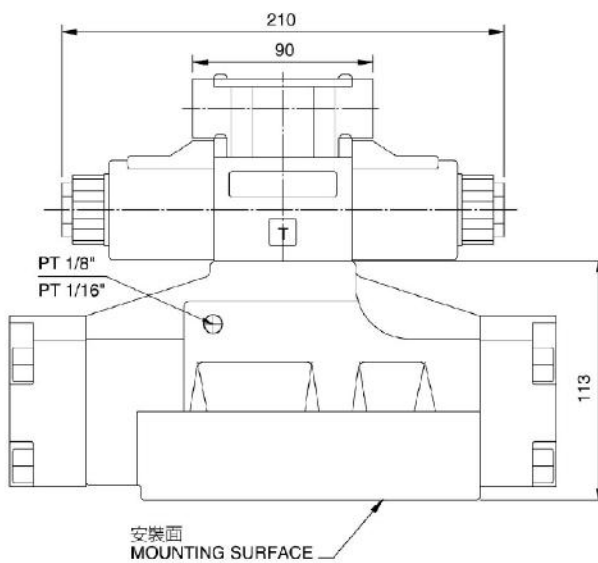
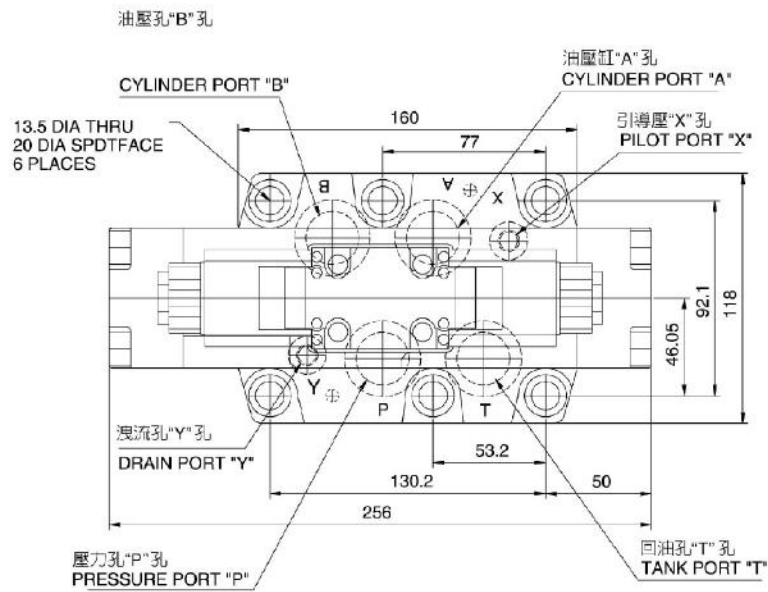


電液換向閥

安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DHG-06



Solenoid Controlled Pilot Operated Directional Valve

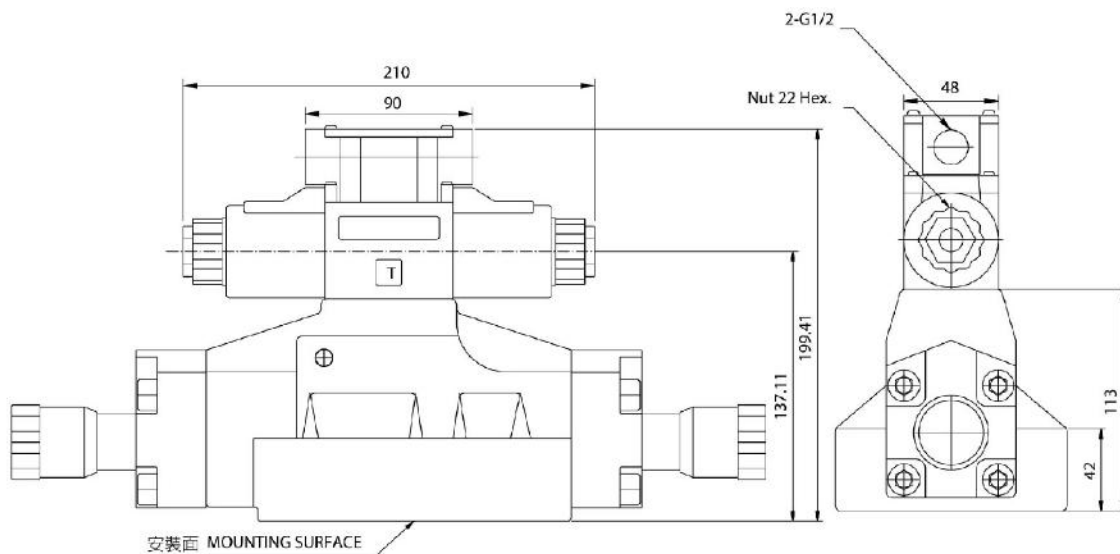
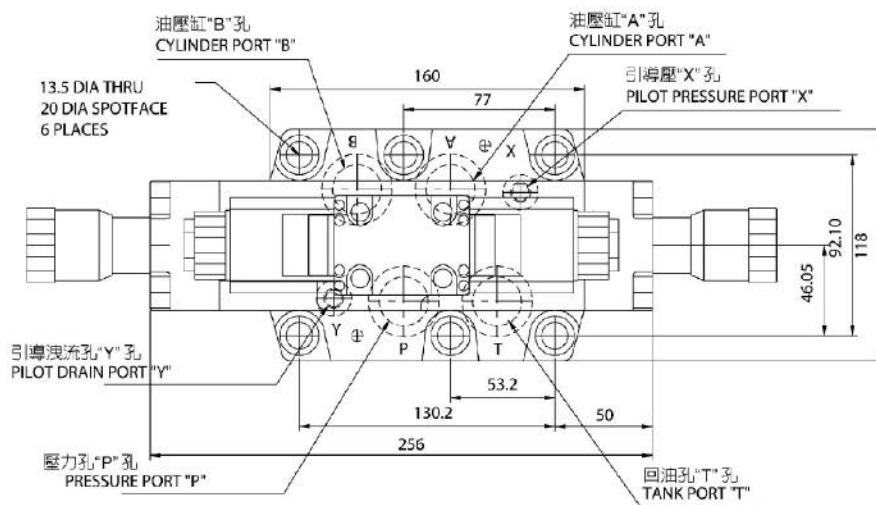


電液換向閥

安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DHG-06ABK



Solenoid Controlled Pilot Operated Directional Valve

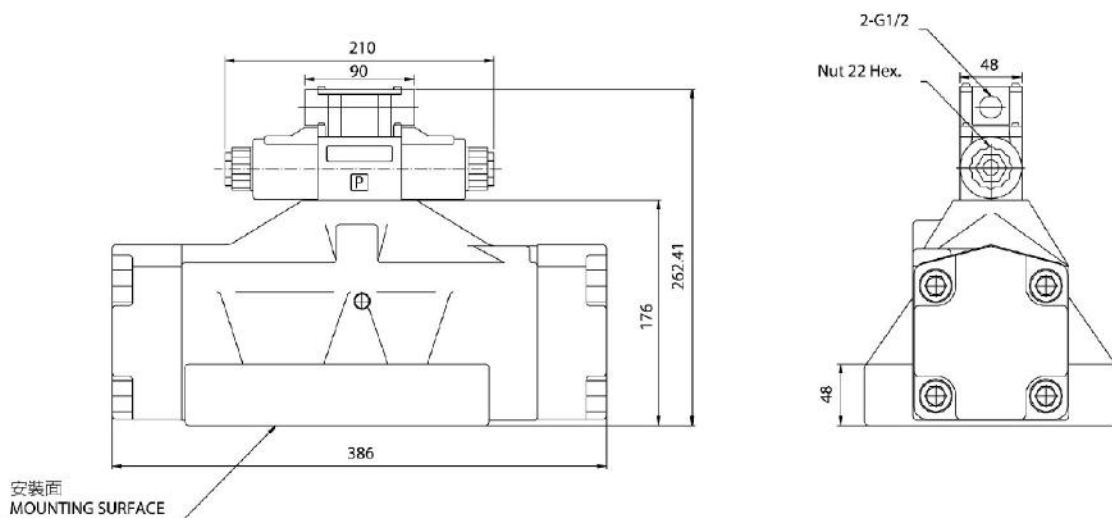
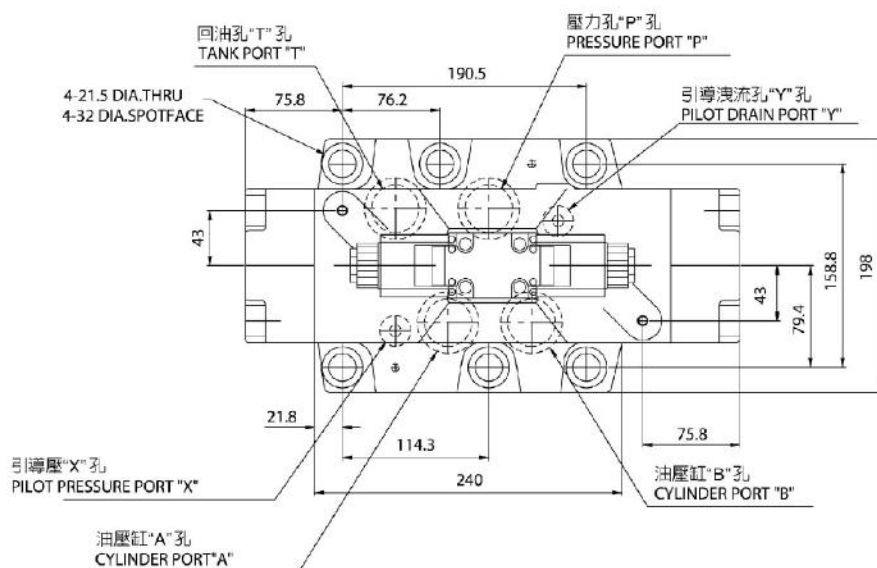


電液換向閥

安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DHG-10



Solenoid Controlled Pilot Operated Directional Valve

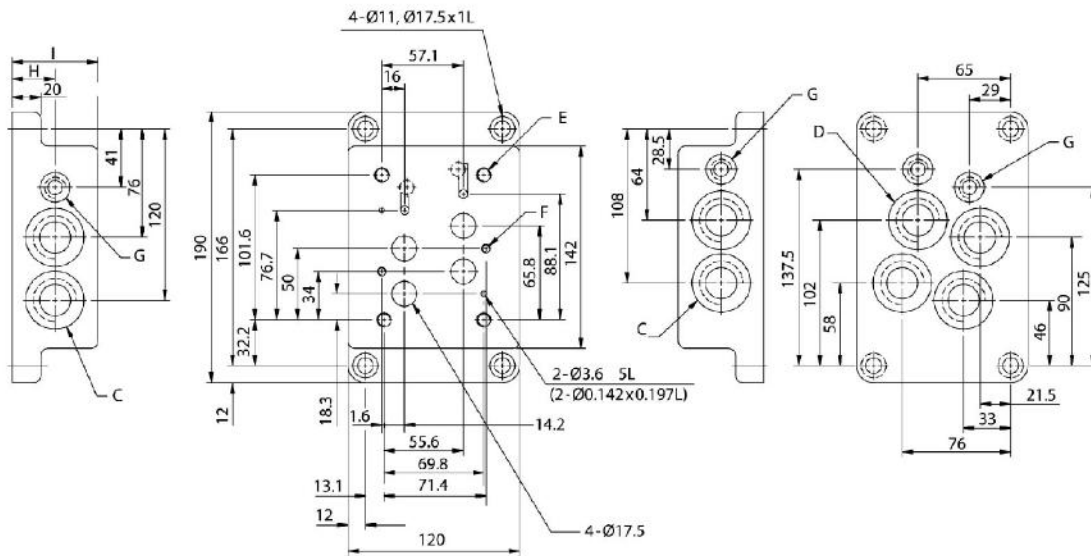


電液換向閥

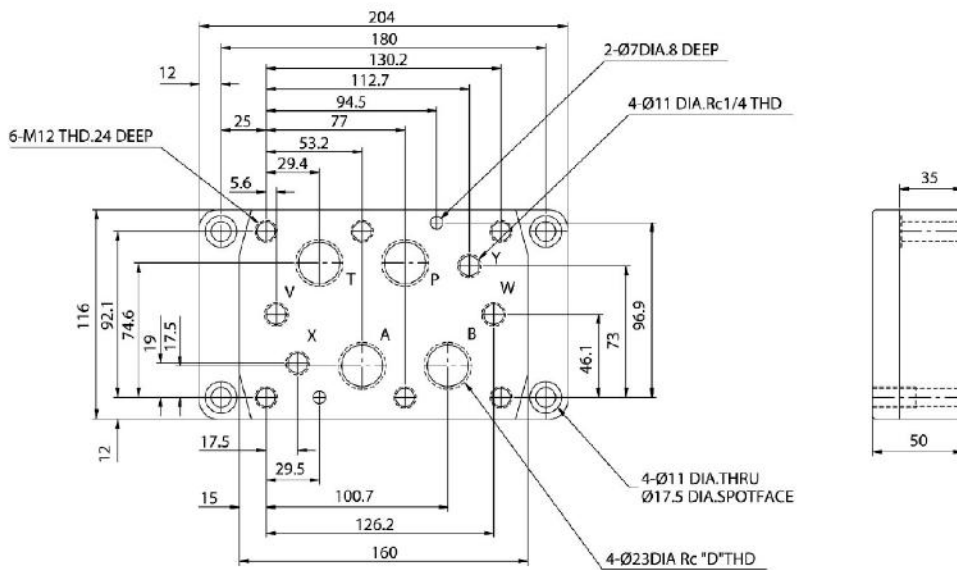
安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DHGM-04 底板 DHGM-04



■ DHGM-06 底板 DHGM-06



Solenoid Controlled Pilot Operated Directional Valve

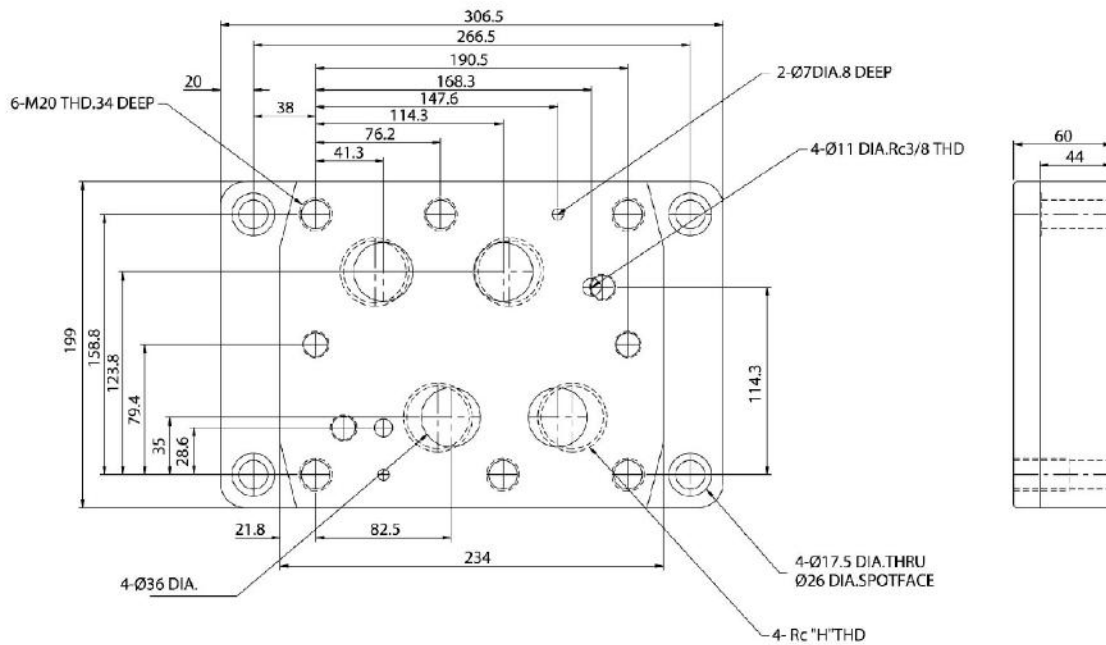


電液換向閥

安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

- DHGM-10 底板
DHGM-10



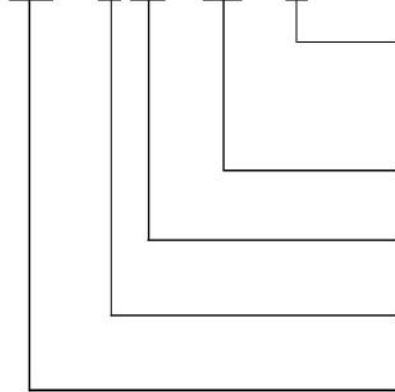
Cam Operated Directional Valves

凸輪式換向閥



型號說明/HOW TO ORDER

DC - G 02 - B2 - R



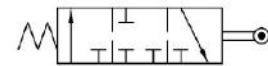
壓輪方向 ROLLER POSITION
標準型 S —
R —
Y —

滑軸型式 SPOOL TYPE (SEE PAGE 2)

通徑 PORT SIZE
02 : 1/4"

安裝型式 MOUNTING
板式型式 G : SUBPLATE MOUNTED

系列編號 : Series Number



規格說明/SPECIFICATIONS

型式 MODEL	最大壓力 MAX. PRESSURE kgf/cm ²	最大容許背壓 MAX. BACK PRESSURE kgf/cm ²	最大流量 MAX FLOW LPM	重量 WEIGHT kg
DC-G02-B2-10	210	70	30	1.3

凸輪位置與流量方向說明/SPECIFICATIONS

型式 MODEL	符號 SYMBOL	滾輪位置和流量 ROLLER POSITION VS. FLOW (mm)
DC-G02-2B-10		

附件/ATTACHMENT

型式 MODEL	安裝螺絲 SOC HOL CAP SCREW	鎖緊扭力 TIGHTENING TORQUE
DC-G02	M5 × 45L.....4pcs	50-70 kgf/cm ²

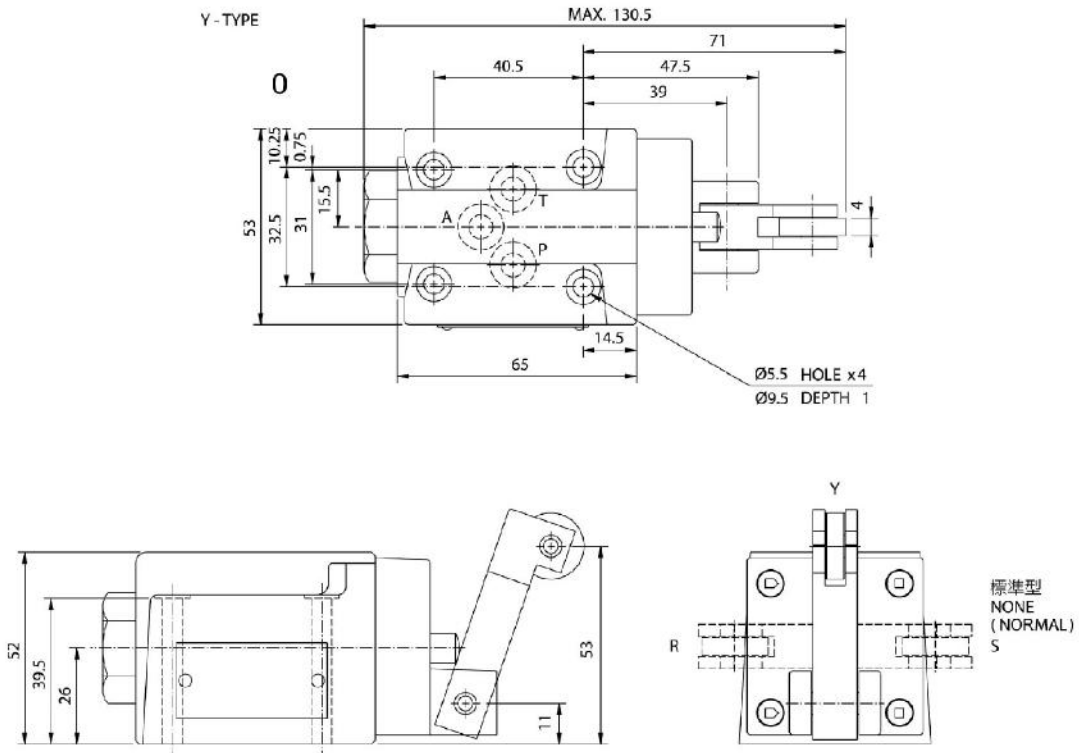
Cam Operated Directional Valves

凸輪式換向閥



安裝尺寸/INSTALLATION DIMENSIONS

■ DC-G02-2B-1

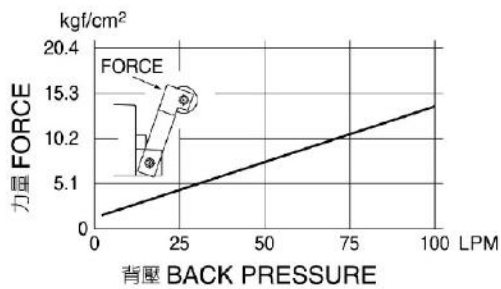


測試條件/PERFORMANCE CURVES

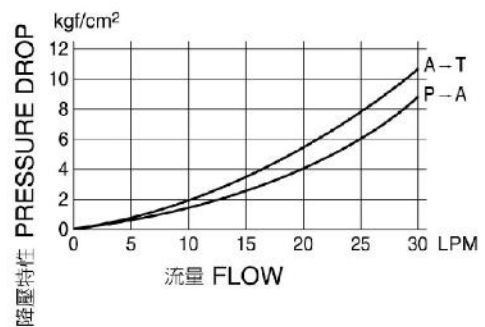
測試油黏度：TEST FLUID VISCOSITY：35 cSt

測試油溫度：TEST TEMPERATURE：50°C

■ DC-G02-2B-10



■ DC-G02-2B-10



Manually Operated Directional Valves



手動換向閥



型號說明/HOW TO ORDER

DM - T - 03 - C2

滑軸型式 SPOOL TYPE (SEEPAGE 2)

通徑 PORT SIZE

02 : 1/4"

03 : 3/8"

04 : 1/2"

06 : 3/4"

10 : 1-1/4"

安裝方式 MOUNTING

板式安裝 G: SUB-PLATE MOUNTING

管式安裝 T: THREADED CONNECTIONS

系列編號 : Series Number

規格說明/SPECIFICATIONS

型式 MODEL	最大壓力 MAX. PRESSURE kgf/cm ²		容許背壓 BACK PRESSURE kgf/cm ²		最大流量 MAX FLOW LPM		最大流量 (C60滑軸) MAX FLOW (C60 spool)l/min		重量 WEIGHT kg	
DMG-02-*	315		140		60		40		1.6	
DMG-03-*	315	250	140	100	100	80	50	50	4.0	4.8
DMT-03-*										
DMT-04-*	250		100		140		80		7.3	
DMG-06-*	315	250	140	100	350	250	250	150	15.0	12.4
DMT-06-*										
DMT-10-*	210		100		500		280		22.0	

Manually Operated Directional Valves

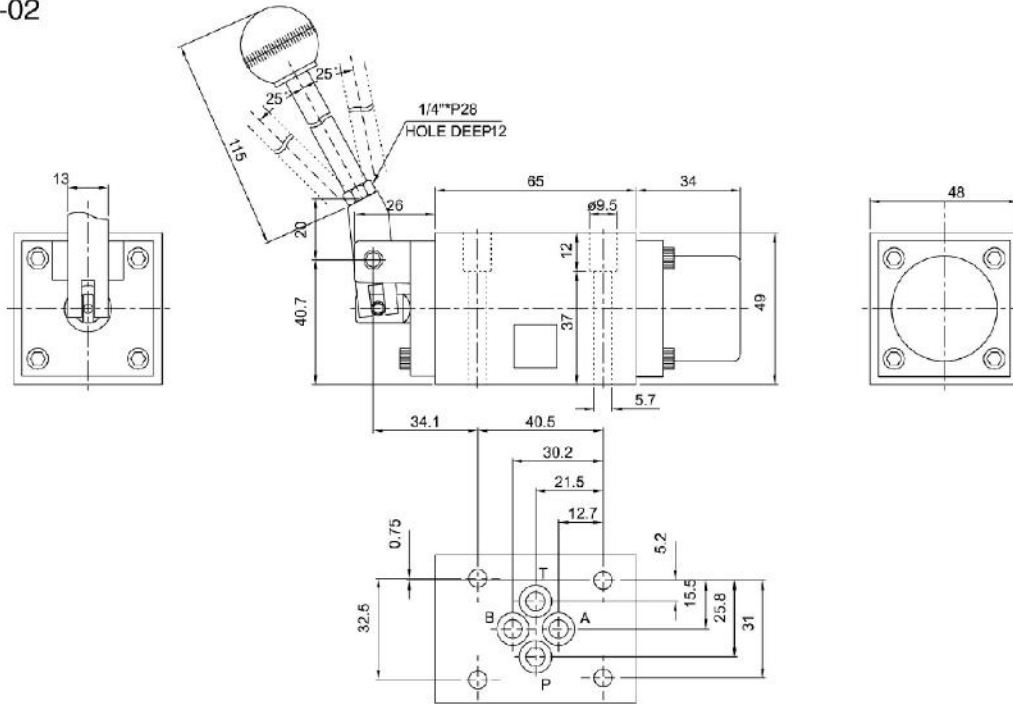


手動換向閥

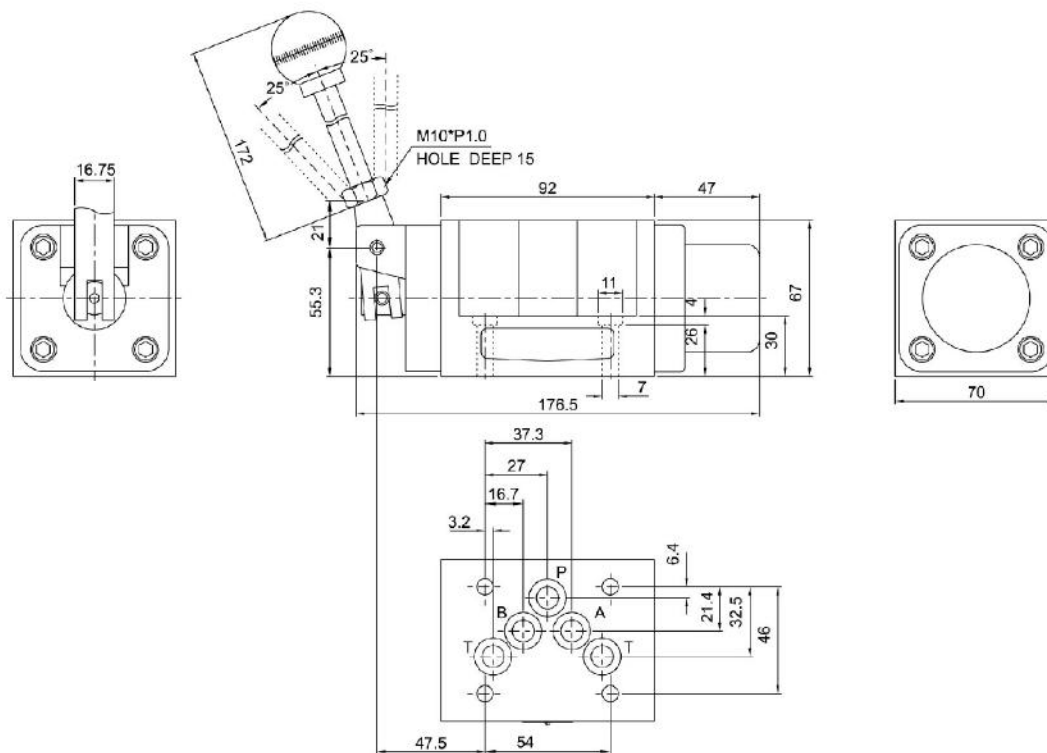
安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DMG-02



■ DMG-03



Manually Operated Directional Valves

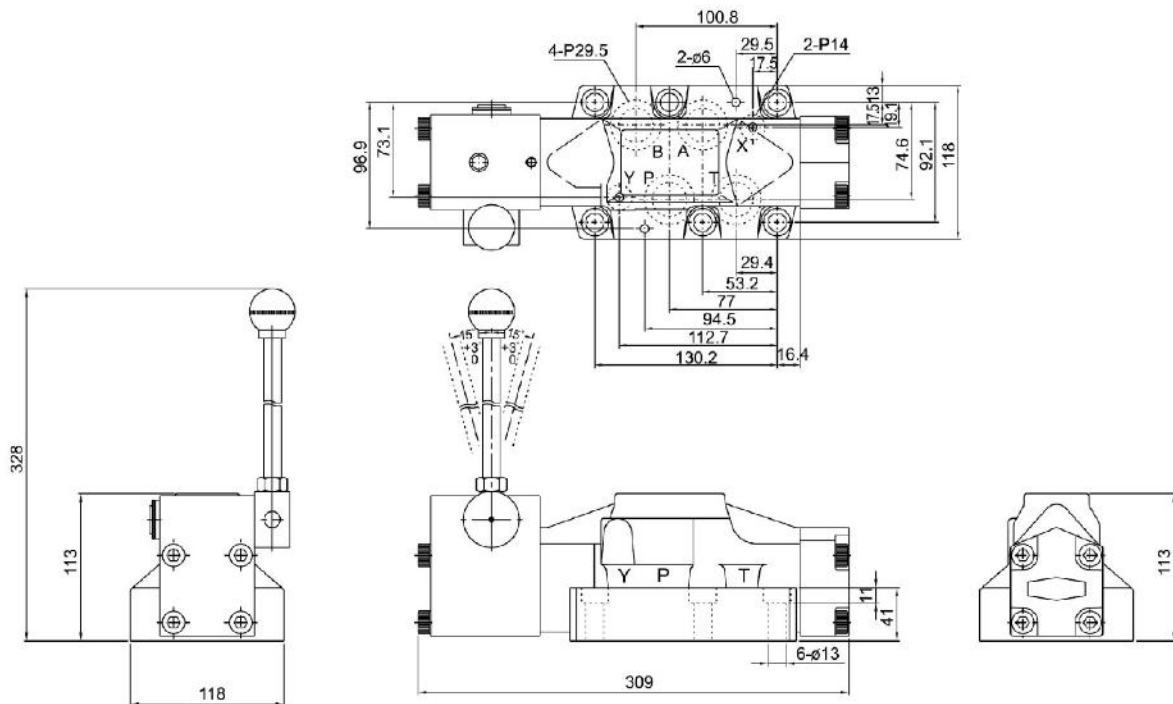
手動換向閥



安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DMG-06



Manually Operated Directional Valves

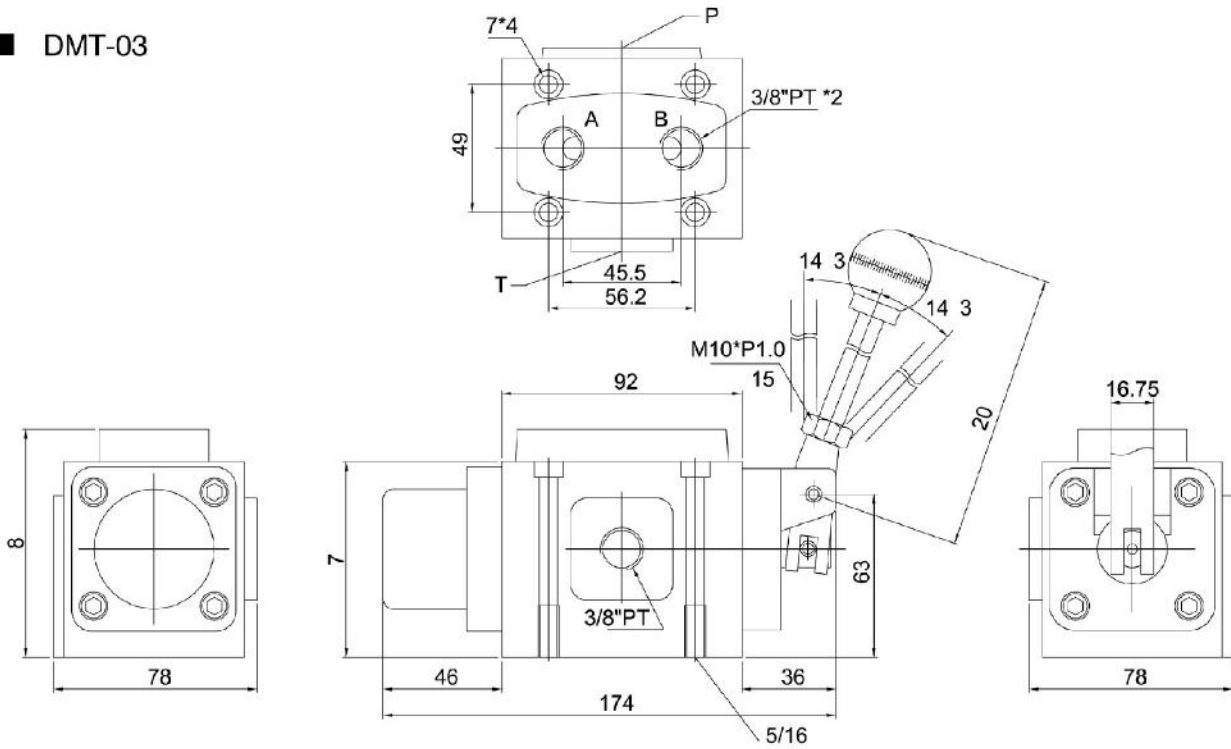


手動換向閥

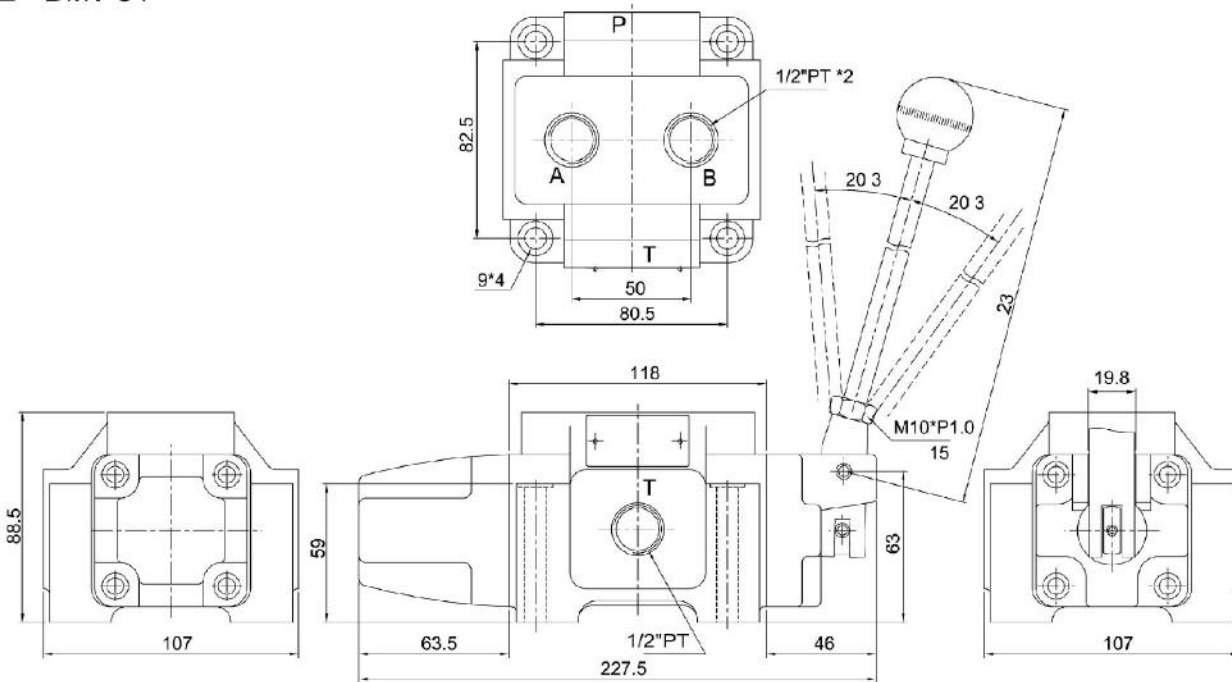
安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DMT-03



■ DMT-04



Manually Operated Directional Valves

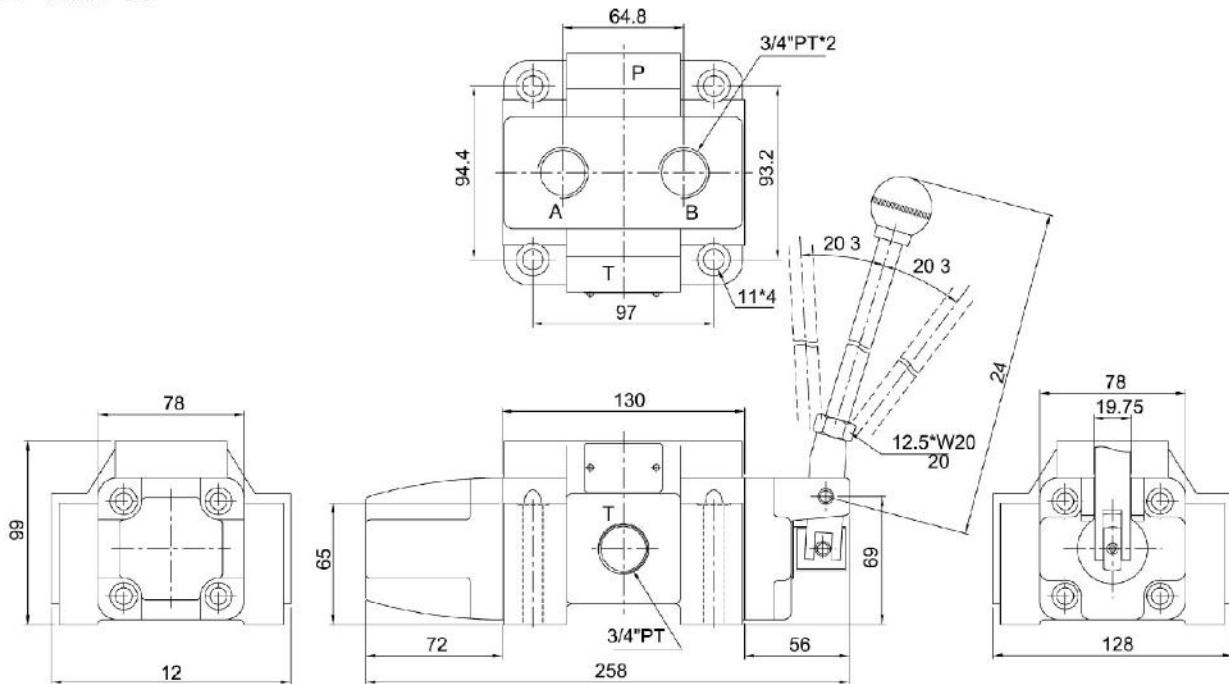


手動換向閥

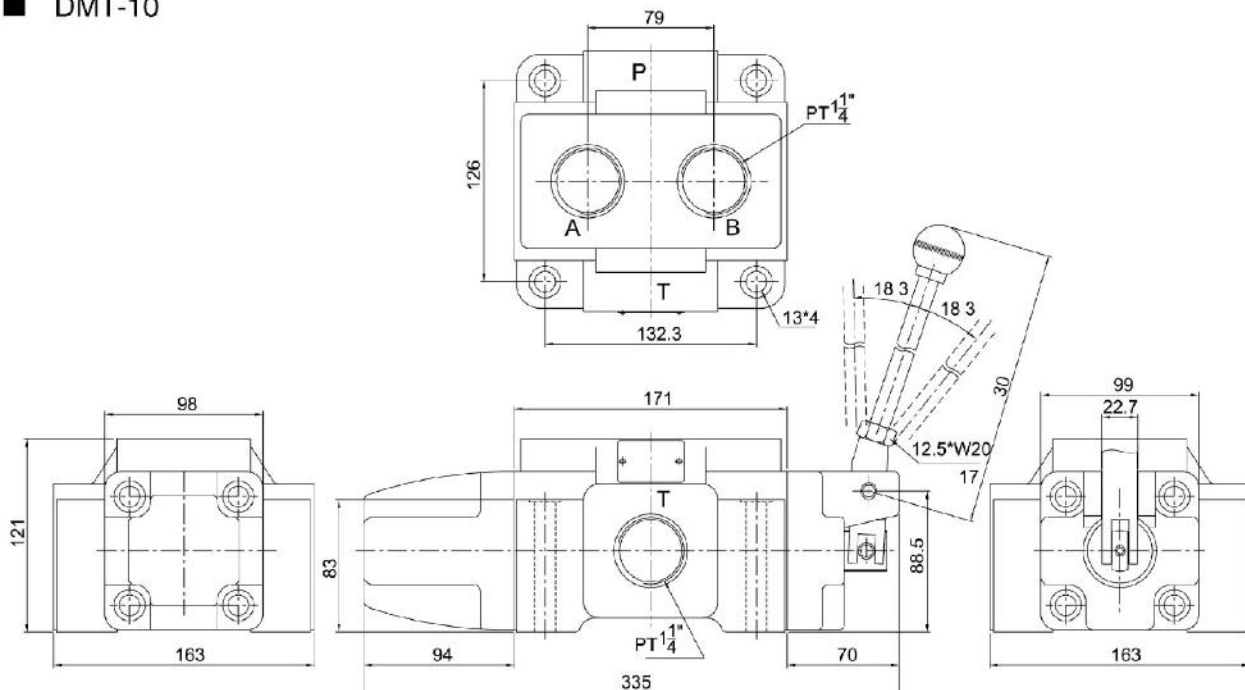
安裝尺寸/INSTALLATION DIMENSIONS

單位 UNIT : mm

■ DMT-06



■ DMT-10





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