

電磁閥118系列

Series 118 Solenoid Valve

118系列電磁閥手冊



MANUAL OF 118 SERIES SOLENOID VALVE

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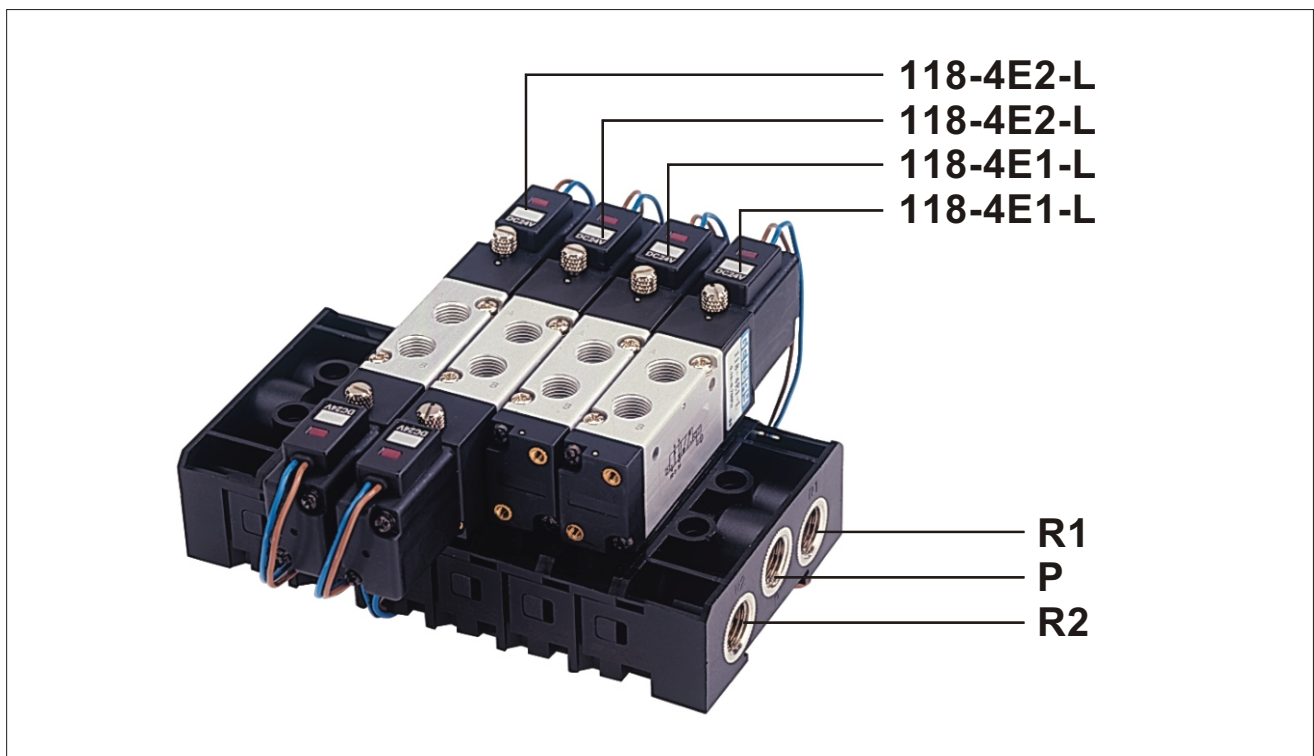
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I 基本型式和構成 (Fundamental Type and Structure)

1 單體 (Monomer): 5口-2位置 (5 ports-2 positions)

A	單線圈 (Single Coil)	B	雙線圈 (Double Coils)
	 <p style="text-align: center;">118-4E1-L</p>		 <p style="text-align: center;">118-4E2-L</p>

2 連座 (Combined Base) : F型〔P.R.〕 (F Type〔P.R.〕)



3 型式和機能 (Type and Function)

基本型式 (Fundamental Type)	直接配管F型連座 (Direct Piping F-Type Combined Base)	118-4E1-L 118-4E2-L
位置數 (No. of Position)		2 位置 (2 Positions)
□ 數 (No. of Port)		5 □ (5 Ports)
閥機能 (Valve Function)		單線圈及雙線圈 (Single Coil & Double Coils)

4 規格 (Specifications)

基本型式 (Fundamental Type)	單位 (Unit)	118-4E1-L	118-4E2-L
使用流體 (Fluid used)	—	空氣 (Air)	
作動方式 (Type of Action)	—	內部引導型 (Internal Pilot Type)	
有效斷面積〔CV值〕 (Effective Cross Section〔CV Value〕)	mm ²	10.2〔0.57〕	
配管接連口徑 (Diameter of Piping Connection)	—	Rc 1/8	
給油 (Oil fed)	—	不要 (Nil)	
使用壓力範圍 (Applicable Pressure Range)	MPa〔kgf/cm ² 〕	0.15~0.7〔1.5~7.1〕	
保證耐壓力 (Pressure Endurance warranted)	MPa〔kgf/cm ² 〕	1.03〔10.5〕	
開關反應時間 (ON / OFF Reaction Time)	ms	15/25以下 (Below 15/25)	
最高動作頻率 (Frequency of Max. Action)	c/s	5	
使用溫度範圍 (Applicable Temperature Range)	C ^o	5~50	
耐衝擊 (Impact Resistance)	m/s ² 〔G〕	〔140.0〕 1373.0 軸方向 (Axis Direction)	〔30.0〕 294.2
質量 (Mass)	g.	105	157

5 線圈規格 (Specifications of Coil)

項目 (Item)	線圈額定值 (Rated Value)	單位 (Unit)	DC24V	AC100V		AC200V	
使用電壓範圍 (Range of Voltage used)		V	21.6~26.4 (24±10%)	90~132 (100±30%)		180~264 (200±30%)	
電流值 (Current Value): 標準 (Standard)	頻率 (Frequency)	Hz	—	50	60	50	60
	起動 (Start)	mA	—	36	32	18	16
	勵磁 (Stimulation)	mA	65	24	20	12	10
迴路漏電容許值 (Allowable Value of Loop Current Leakage)		mA	4	4		2	
絕緣電阻 (Insulation Resistance)		MΩ	100以上 (Above 100)				
結線方式引線長度 (Lead Length of Connection Method)	標準 (Standard)		護孔環式:300mm. (Grommet Type:300mm.)				
引線顏色 (Lead Color)	標準 (Standard)		茶色(+) (Brown(+))	黃色 (Yellow)		白色 (White)	
			青色(-) (Blue(-))				
指示燈 (Indicating Lamp)	標準 (Standard)		紅色 (Red)	黃色 (Yellow)		綠色 (Green)	
突波防止對策 (Surge Prevention Measures)	標準 (Standard)		高壓二極體 (High Voltage Diode)	突波接收器 (Surge Receiver)			

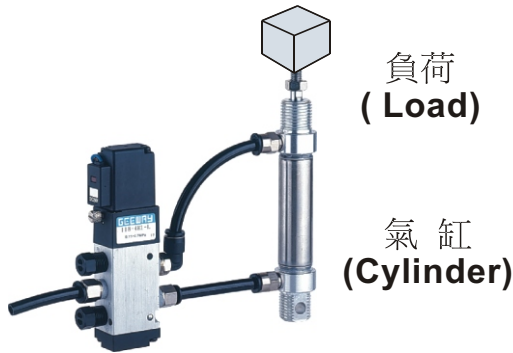
6 連座配管接連口徑 (Connecting Diameter of Combined Base Piping)

連座型式 (Type of Combined Base)	配管口 (Piping Port)	配管接連位置 (Connecting Position of Piping)	配管尺寸 (Piping Size)
118M□F	P	連座 (Combined Base)	Rc 1/4
	A, B	閥 (Valve)	Rc 1/8
	R	連座 (Combined Base)	Rc 1/4

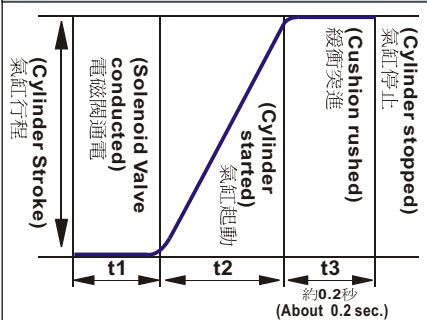
7 氣缸驅動速度 (Driving Speed of Cylinder):118-4E1-L 118-4E2-L

A	測定條件 (Testing Conditions)
a	●空氣壓力 (Air Pressure) : 0.5MPa [5.1kgf/cm ²]
b	●配管內徑和長度 (I.D. and Length of Piping) : Ø6x1000mm.
c	●接頭 (Joint) : 快速接頭 (Speedy Joint)
d	●負荷率 (Load Rate) : $\frac{\text{負荷(Load)}}{\text{氣缸理論推力}} (\%)$ (Theoretic Thrust of Cylinder)
e	●氣缸行程 (Cylinder Stroke) : 150mm.

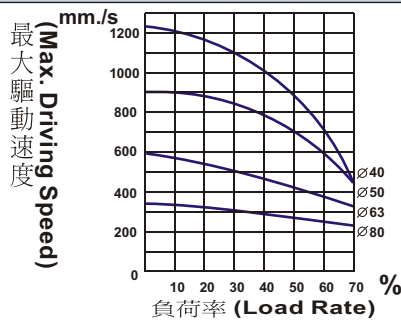
118-4E1L
118-4E2L
0.5MPa



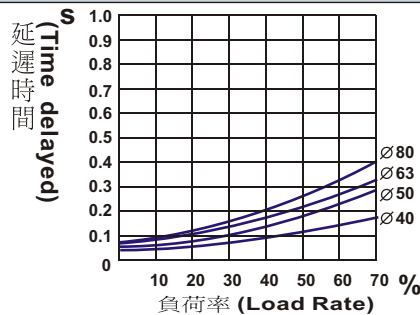
速度要求方法
(The Method of Speed Requirement)



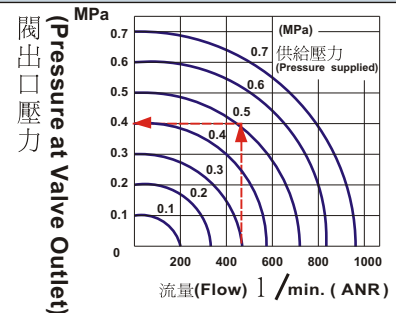
最大驅動速度
(Max. Driving Speed)



延遲時間
(Time delayed)



流量
(Flow)



圖表看法一

當供給壓力為 0.5 MPa 而空氣流量為 460 l /min.(ANR) 時，閥出口壓力變成 0.4MPa。

The Reading of the Charts—




The valve outlet pressure changes to 0.4MPa while the pressure supplied is 0.5MPa with the air flow of 460 l /min.(ANR).

8 連座質量 (Mass of Combined Base)

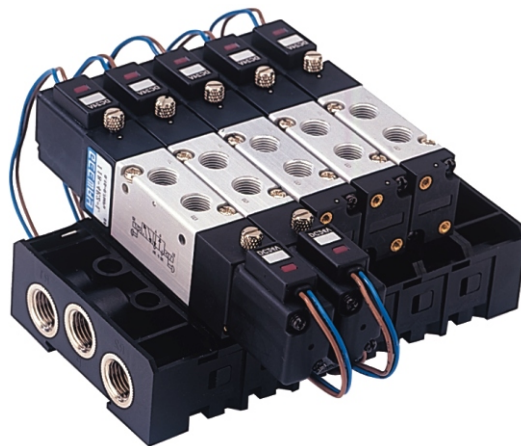
型式 (Type)	每個連座之質量計算式 (Mass Equation of Each Combined Base)
118M□F	(25g.Xn)+112g. (n=連數值)(n=Connected Number)

II 電磁閥 (Solenoid Valve)

1 直接配管訂購記號 (Ordering Marks for Direct Piping)

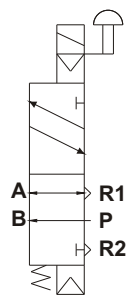
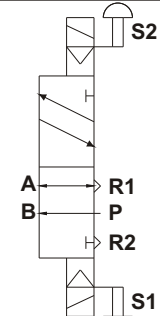
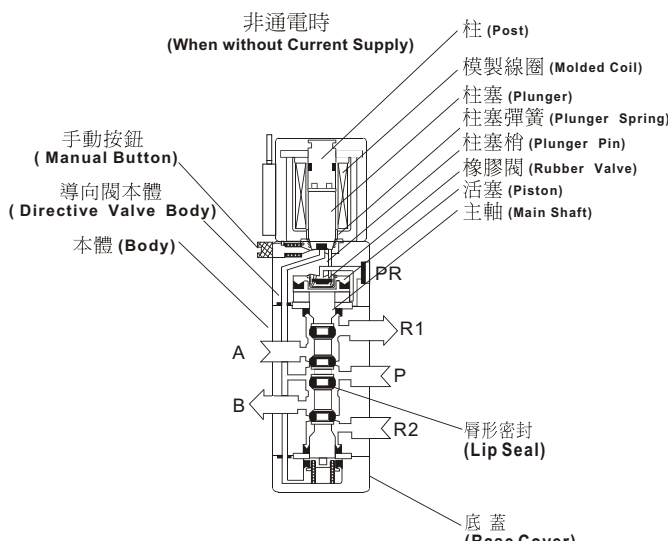
A 手動按鈕 (Manual Button)		B 線圈 (Coil)		
鎖住型 (Locking Type)		鎖住凸出型 (Locking Protrusion Type)		護孔環式(Grommet Type) 附LED 指示燈 (with LED Indicator)
				
		基本型式 (Fundamental Type)	凸出型 (Protrusion Type)	電壓 (Voltage)
直接配管 (Direct Piping)	5 □ 單線圈 (5 Port Single Coil)	118- 4E1-L	P	DC24V AC100V AC200V
	5 □ 雙線圈 (5 Port Double Coils)	118- 4E2-L		
註 (Remark) : 附突波防止對策 (with Surge Prevention Measures)				

2 連座訂購記號 (Ordering Marks for Combined Base)

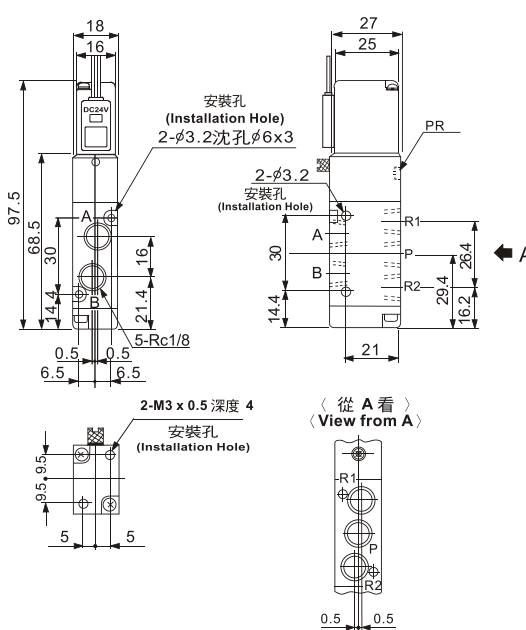
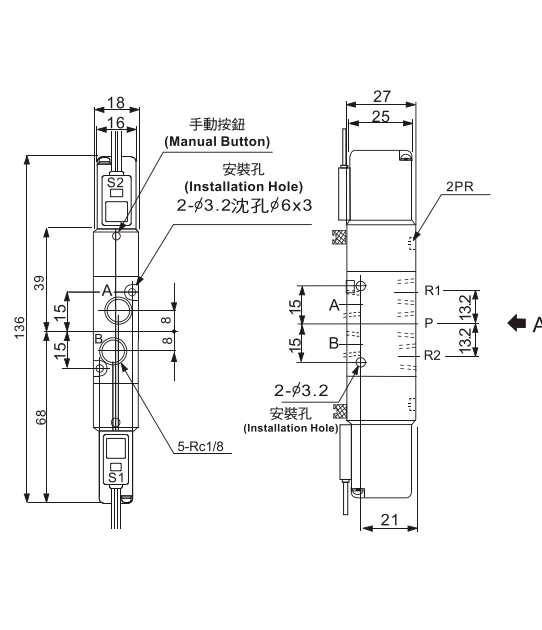


連座型式連數 (Number of Combined Stations)		座數 (No. of Base)	基本型式 (Fundamental Type)	凸出型 (Protrusion Type)	電壓 (Voltage)
118M	2 ⋮ 20	F	stn. □ ⋮ stn. □	P	DC24V AC100V AC200V
			118- 4E2-L		

3 動作原理和表示記號 (Principle of Action and Indication Marks)

A 單線圈 (Single Coil)	B 雙線圈 (Double Coils)
 <p style="text-align: center;">118-4E1-L</p>	 <p style="text-align: center;">118-4E2-L</p>
 <p>非通電時 (When without Current Supply)</p> <p>柱 (Post) 模製線圈 (Molded Coil) 柱塞 (Plunger) 柱塞彈簧 (Plunger Spring) 柱塞梢 (Plunger Pin) 橡膠閥 (Rubber Valve) 活塞 (Piston) 主軸 (Main Shaft) 唇形密封 (Lip Seal) 底蓋 (Base Cover)</p> <p>手動按鈕 (Manual Button) 導向閥本體 (Directive Valve Body) 本體 (Body)</p>	

4 電磁閥尺寸 (Size Diagram of Solenoid Valve) 5 □ - 2 位置 (5 Ports - 2 Positions)

A 118-4E1-L	B 118-4E2-L
 <p>安裝孔 (Installation Hole) 2-ϕ3.2 沈孔 ϕ6x3</p> <p>安裝孔 (Installation Hole) 2-ϕ3.2</p> <p>安裝孔 (Installation Hole) 2-M3 x 0.5 深度 4</p> <p>從 A 看 (View from A)</p>	 <p>手動按鈕 (Manual Button)</p> <p>安裝孔 (Installation Hole) 2-ϕ3.2 沈孔 ϕ6x3</p> <p>安裝孔 (Installation Hole) 2-ϕ3.2</p>

5 連座尺寸圖 (Size Diagram of Combined Base)

A 118M □ F 縮尺 (Scale) 1/3 單位 (Unit): mm.	B 連座別尺寸 (Size of Combined Number)		
<p>手動按鈕 (Manual Button)</p> <p>17, L, P, 17, 68, 39, 29.5, 10, 10, 19, 23, Rc1/8, 16, 18, 19, 4-ϕ4.2 安裝孔 (Installation Hole), 6, 25, 6-Rc1/4 附盲塞3個 (with 3 Blind Plugs), R1, R2, 20, 20, 27, 30, 63, 118-4E1-L, 118-4E2-L, 止漏板 (Leak Proof Plate): [-BP], stn.1 stn.2 stn.3 stn.4 stn.5</p>	型式 (Type)	L	P
	118M2F	84	50
	3F	103	69
	4F	122	88
	5F	141	107
	6F	160	126
	7F	179	145
	8F	198	164
	9F	217	183
	10F	236	202
	11F	255	221
	12F	274	240
	13F	293	259
	14F	312	278
	15F	331	297
	16F	350	316
	17F	369	335
	18F	388	354
	19F	407	373
	20F	426	392

6 選擇性附件〔另計費〕 (Optional Accessories〔Extra〕)

A 鎖住凸出型手動按鈕 (Locking Protrusion Type of Manual Button) : [-P]	B 安裝基座 (Installation Base): [-21]
<p>6.5, ϕ6</p>	<p>到閥頂端為止 (To the Top of the Valve)</p> <p>102.5, 5, 1.6, 26, 16.5, 16.5, 45, 2-ϕ4.5 安裝孔 (Installation Hole)</p>

7 操作要領和注意事項 (Handling Points and Attentions)

A 線圈 (Coil) 內部迴路 (Internal Loop)	
DC24V	AC100V AC200V
<p>高壓二極體 (High Voltage Diode) LED 指示燈 (Indicator) 茶色引線 (+) (Brown Lead) 青色引線 (-) (Blue Lead) 線圈 (Coil)</p>	<p>附突波接收器 (with Surge Receiver) LED 指示燈 (Indicator) AC100V 黃色引線 (Yellow Lead) AC200V 白色引線 (White Lead) 線圈 (Coil)</p>
<ul style="list-style-type: none"> ● 請勿對引線作兆歐姆測試。 ● 在雙線圈型式的場合，請不要對兩個線圈同時通電；因為，電磁閥有時為中性狀態。 ● 當迴路內有漏電時，有時電磁閥可能不恢復其動作；因此，必須在迴路漏電容許值以下使用。若超過迴路漏電容許值時，請和本公司聯絡洽詢。 ● 請勿用力拉引線，否則引線可能發生接觸不良和斷線等原因。 ● 鎖住凸出型按鈕時，請使用精密起子或用手按手動按鈕直到底部為止。以“⊖”的位置為基準，朝順時針方向旋轉90°至“Ⓜ”的位置，則變成和通電時一樣的狀態而被鎖住。 ● 當要解除鎖住的狀態時，請轉回到“⊖”的位置。手動按鈕被彈簧作用而回到原來的位置，於是解除鎖住的狀態。若對手動按鈕轉的太過份時，請注意，有時會導致損壞。 ● 當“P孔”不供氣時，此118系列是一引導型的電磁閥。即使其手動按鈕處於操作下，其主閥仍不會切換。 ● 請鎖住凸出型手動按鈕。在平常開始運轉時，必須先解除其鎖住狀態。 	<ul style="list-style-type: none"> ● Please do not perform the trillion ohm test to the leads. ● In case of Double Coil Type, please do not conduct current to the two coils at the same time; because, the valve is sometimes in neutral condition. ● Sometimes, the solenoid valve may fail to return to its operation in case of the current leakage inside the loop. Therefore, it should be used below the allowable value of loop current leakage. Please contact us for inquiry if the loop current leakage exceeds its allowable value. ● Please do not pull the leads by force; otherwise, it may be the cause of their poor contact, disconnection, etc. ● Please use a precise screw driver or press by hand to the end of the manual button. From its position of "⊖" as a base, turn it clockwise for 90° to that of "Ⓜ", then it becomes similar to the current conducted condition and being locked. ● To release its locking condition, please turn back to its original position "⊖". By the spring action of the manual button, it will release its locking condition. If the manual button is turned too much, please be aware that it may sometimes result in damage. ● The 118 Series is a pilot type of solenoid valve when no air is supplied to its "P Hole". Its main valve will not be switchable, even if its manual button is under operation. ● Please lock this locking protrusion type of manual button. Normally when starting its operation, its locking condition must be first released.

8 安全上注意事項 (Attentions for Safety)

<ul style="list-style-type: none"> ● 本產品是為一般工業用途之組件而設計製成。 ● 為了安全使用本產品，其安全注意事項依其在操作中可能發生的潛在危險程度加以分為“危險”、“警告”、“小心”和“注意”四種標示如下： 	<ul style="list-style-type: none"> ● This product is designed and manufactured as a component for general use in industry. ● To use this product safely, its safety attentions are classified into the following four labels: "DANGER", "WARNING", "CAUTION" and "ATTENTION" according to the potential level of the danger which may happen in its operation.
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(A) 危險：

表示有明顯的可能危險如死亡、重傷或損害；若不避開所標示之範圍，可能導致此類危險。

(B) 警告：

表示無立即之危險。但若不避開所標示之範圍，可能在有些情況下導致死亡、重傷或損害。

(C) 小心：

表示無立即之危險。但若不避開所標示之範圍，在有些情況下可能導致輕微或中度傷害或損害。

(D) 注意：

表示無立即之危險。但為了正確地使用本產品，請遵守本手冊之操作指示。

【註】：對上列四種危險標示之說明。

(A) 危險：

(a) 請勿使用於下列用途上：

- *治療或救生用之醫療器材或設備。
- *運送人員之機械設備。
- *維修機械設備之重要組件。
- *本產品並非為了高度安全性所設計而可能引起傷害。

(b) 在本產品運作當中請勿將身手接近。若不小心開動其驅動器，可能引起傷害。

(c) 在按裝本產品時，請確實固定之（包括所用工件）。若使其脫落、倒塌或運作不當，可能引起傷害。

(d) 請絕對禁止任意修改本產品，因而可能導致其異常運作並引起傷害、觸電或火災。

(e) 請勿任意拆開或組裝本產品以避免影響其基本架構或性能，因而可能引起傷害、觸電或火災的意外事故。

(f) 請勿用水沖洗或在水中使用本產品，因而可能引起傷害、觸電或火災的意外事故。

(g) 使用節律器或類似器材的人員禁止靠近本產品一公尺內，因其具有強大的磁性而可能導致此種器材的不規律運作。

(A) DANGER:

Indicates that the obvious possible danger such as death, serious injury or damage. If the area indicated by this label is not avoided, it may result in this kind of danger.

(B) WARNING:

Indicates that there is no immediate danger. But if the area indicated by this label is not avoided, it may result in death, serious injury or damage under some situations.

(C) CAUTION:

Indicates that there is no immediate danger. But if the area indicated by this label is not avoided, it may result in a slight or moderate injury or damage under some situations.

(D) ATTENTION:

Indicates that there is no immediate danger. But please observe the operational instructions in this manual in order to use this product correctly.

【Remarks】:The explanations for the above four danger labels.

(A)DANGER:

(a) Please do not use for the following purposes:

- * The medical machines or equipment for injury or lifesaving.
- * Mechanical equipment for transporting personnel.
- * The key components for maintenance of mechanical equipment.
- * This product is not designed for high safety use and may cause injury.

(b) Please keep hands and body off from this product in its operation. If its drive is carelessly turned on, it may cause injury.

(c) When installing this product, please ensure that it is properly supported firm (including the fixtures used). It may cause injury if it falls off, collapses or works improperly.

(d) Arbitrary modifications of this product are absolutely prohibited, as it will result in its abnormal operation and cause injury, electric shock or fire.

(e) Please do not arbitrarily dismantle or assemble this product in order to avoid affecting its basic structure or function, as it may cause the accidents of injury, electric shock or fire.

(f) Please do not clean this product with water or use it in water, as it may cause the accidents of injury, electric shock or fire.

(g) The persons using pacemakers or the similar apparatus are prohibited to approach within one meter of this product, as it has a strong magnetic field and may result in their mal-function.

(B)警告：

- (a) 對本產品供氣壓或電力之前，請務必確認其運作範圍之安全性。若任意供給氣壓或電力，可能導致觸電或與其動作零件接觸而引起傷害。
- (b) 當對本產品供電時，請勿觸摸其端子或任何開關，因而可能導致觸電或其不規律運作。
- (c) 請勿損傷本產品的電源線或其各種導線。損傷、拉伸、扭曲、捲繞或以重物壓住其任何各種導線可能導致漏電、導電不良、觸電或火災。
- (d) 請避免掉落或傾倒本產品以防其可能導致不當或差錯運作。
- (e) 請不要坐在本產品上當作腳踏板或放置其他物品。
- (f) 當對本產品作任何維修或更換零件之前，請務必停供氣壓，並特別確認其中或所接連配管內的空氣壓縮機或氣壓槽內的空氣歸零。因為殘留於空氣壓縮機或氣槽內的任何空氣會引起其驅動器的急轉而導致意外傷害事故。
- (g) 請勿將本產品放進火中，因而可能導致其破裂或產生有毒氣體。

(C) 小心：

- (a) 當搬運本產品或附加重物於本產品時，請使用機械升降機，支撐工具或充分人力並加特別小心以確保人身安全。
- (b) 請勿容許磁碟片或磁性導體接近本產品一公尺範圍，因其強大的電磁範圍內可能破壞磁碟片或導體上之任何資料。
- (c) 請勿將本產品使用在產生高電流或高磁性的範圍以避免其可能的不規律運作。

(B) WARNING:

- (a) Before supplying air pressure or power to this product, please do ensure that its operational area is safe. If arbitrarily supplying air pressure or power, it may result in electric shock or its contact with the moving parts and cause injury.
- (b) When supplying power to this product, please do not touch its terminals or any switches, as it may result in electric shock or its mal-function.
- (c) Please do not damage the power cords or the various wires of this product. Damaging, stretching, twisting, coiling or placing heavy objects on any of its various wires may result in its leakage, improper flow of electricity, electric shock or fire.
- (d) Please avoid to fall off or collapse this product in order to prevent the damage which may result in its incorrect or erratic operation.
- (e) Please do not sit, use as a foot-plate or put other things on this product.
- (f) Before attempting any of the maintenance, repair or changing parts of this product, please do stop air pressure to it, and make sure especially that the air pressure in it or its connected tubes is at zero. Because, any air remaining in the air compressor or in the air tank will cause the accidents of injury due to the rapid revolution of its drive.
- (g) Please do not place this product into fire, as it may result in its crack or produce poisonous gass.

(C) CAUTION:

- (a) Please use mechanical lifters, supporters or enough man power and pay a particular attention when transporting this product or attaching heavy items on it in order to ensure personnel safety.
- (b) Please do not allow floppy disks or magnetic conductors to get near within one meter of this product; as in its strong magnetic field, it may destroy any data on them.
- (c) Please do not use this product in the area where it produces high electric current or high magnetism in order to avoid its possible mal-function.

(D) 注意：

(a) 當使用本產品於本手冊無加以說明的情形或環境下要求安全性的產品或可預知使用本產品會受影響的產品如航空設備、火爐、和有關於人命或財物的娛樂及安全機器時，請先與本公司洽詢。

(b) 請勿使用配管將氣壓槽所排出之排氣系統氣體與間接電磁閥所排出之氣體匯集在一起。

(c) 請將本產品避開太陽光(紫外線)直照，並勿在含有塵埃或含鐵質、鹽分之粉末，有亞硫酸、氯氣與酸類的環境下操作；因為，它們會導致其暫時性的不規律運作，突然降低其效率和縮短其使用壽命。

(d) 在裝配本產品配管之前，請參照本手冊。

(e) 當操作本產品時，請使用必要的保護用具包括保護手套、護目鏡、安全鞋等。

(f) 若本產品已不能再使用而應予報廢，則必須和其他一般廢棄物相同的方法處理。

(g) 爲了減低本產品的噪音可在其排氣口上附加減音器。

附註：

請遵守下列附註，若被忽略則本公司不負一概責任。

* 當本產品與空氣壓縮系統並用時，請使用本公司純正品牌之零件或由本公司所推荐者。

* 當維修本產品時，請依照本公司所規定的正確程序。

(D)ATTENTIONS:

(a) Please consult first with us when to use this product for the items which require safety in the conditions or environments not explained in this manual or for the items such as aeronautic equipment, furnaces, recreational and safety machines concerning human life or properties, which are foreseen to be affected by the use of this product.

(b) Please do not use the tubing to converge the air discharged from the air pressure tank of the air discharge system together with the air discharged from the indirect electromagnetic valve.

(c) Please keep this product away from the direct sunlight (ultraviolet), and do not operate it in the environment containing dust or ferro-saline powder, sulfurous acid, chlorine gas and acids; because, they can result in its temporary mal-function, lower suddenly its efficiency and shorten its use life.

(d) Please refer to this manual before installing the piping of this product.

(e) Please use necessary protective gears including protective gloves, eyewears, safety shoes, etc. when operating this product.

(f) If this product has become unusable and is to be discarded, it should be disposed of in the manner similar to the other general industrial wastes.

(g) In order to decrease the noise volume of this product, a baffle (muffler) may be attached to its exhaust opening.

Remarks:

Please observe the following remarks. We shall not be held responsible at all if they are neglected.

* Please use our genuine brand of parts or those recommended by us when to use an air compressor system together with this product.

* Please follow our prescribed correct procedures when to do the maintenance of this product.

9 保證範圍 (Scope of Warranty)

本公司慎重地提供下列保證予本產品用戶使用吾方非常嚴格的品質管制下所產製而應無缺失的本產品。

(A) 保證期間:

從交貨(出廠)本產品日期起180天之內。

(B) 本公司的責任:

在本保證期間內，依照其保證範圍，本公司免費以新品更換在正常操作間被發現並經本公司判定有任何缺點或品質不良的產品。

(a) 若要求以其他方式代替更換新品之保證者，將僅限於付還本產品交貨時之原先價款。而本公司將不接受任何非償還原價款之其他方式。

(b) 本公司將不負因不當使用或錯誤操作本產品所引起的任何傷害或損害。

(c) 本公司不負因交貨運送中超過正常運輸時間而對本產品之任何損害。

(d) 若對本產品必要的任何安全設計加以任意修改以致使其不能正確運作者，本保證則不再生效。

(e) 若對本產品超過其所算性能勉強使用；或對其純正零件改用非本公司所推荐者，或未與本公司事先洽詢而任意加以修改者，本保證則失效。

(f) 本產品內所使用的其他廠商製造之零件將分別由他們各自保證。

(g) 爲了改進本產品品質及性能，本公司可能視其必要性隨時可加以變更或修改其設計或零件而並不予以通告。

We prudently give the following warranties to the users of this product which is manufactured by us under our very strict quality control and should have no defects at all.

(A) Period of Warranty:

Within 180 days from the date on which this product is delivered (ex works).

(B) Our Responsibilities:

We will replace, free of charge, this product which has been found and judged by us to have any defects and/or inferiorities during its normal operation under this scope of warranty within its warranted period.

(a) If any other way instead of this warranty is requested for the replacement of our defective products, it shall be limited only for the refund of its original price of the product(s) delivered. And we will not accept any way other than the refund.

(b) We shall not be held responsible for any injury or damage caused by the improper uses or incorrect operations of this product.

(c) We shall not be held responsible for any damage to this product due to the delay beyond the normal time in transit of its delivery.

(d) This warranty shall be no longer valid if any required safety design of this product is arbitrarily modified so that it does not work properly.

(e) This warranty shall be void if this product is forced to work beyond its calculated capacity or used improperly; and/or its genuine parts have been changed to the ones not recommended by us or modified arbitrarily without consulting with us in advance.

(f) The parts which are manufactured by other companies and are applied in this product shall be warranted individually by them respectively.

(g) In order to improve the quality and capacity of this product, we may change or modify its design and/or parts whenever as an occasion demands without notice.