

**1** 號  
Type

**2** 鋁合金系列  
Aluminium Alloy Series

**3** 氣缸型態  
Cylinder Type

本體 Body	型式 Type
無記號	基本型 Basic Type
<b>D</b>	雙軸型 Double Piston Rod Type
<b>E</b>	雙軸可調型 Double Piston Rod Type (Adjustable)
<b>M</b>	多端點行程型 Dual Stroke Double Rod
<b>T</b>	串連倍力型 Dual Stroke Single Rod

**4** 氣缸內徑  
Bore Diameter

**5** 感應裝置(磁圈)  
Magnetic Sensing Device

M: 有加磁石  
N: 不

**6** 行程 (ST)  
Stroke

**7** 固定配件  
Mountings

<b>FA</b>	
<b>LA</b>	
<b>LB</b>	
<b>TA</b> <b>TB</b>	
<b>TC</b>	
<b>CA</b> <b>CB</b>	

**8** 軸端配件  
Accessories

<b>I</b>		<b>P</b>	
<b>Y</b>		<b>T</b>	

**9** 近接開關  
Switch

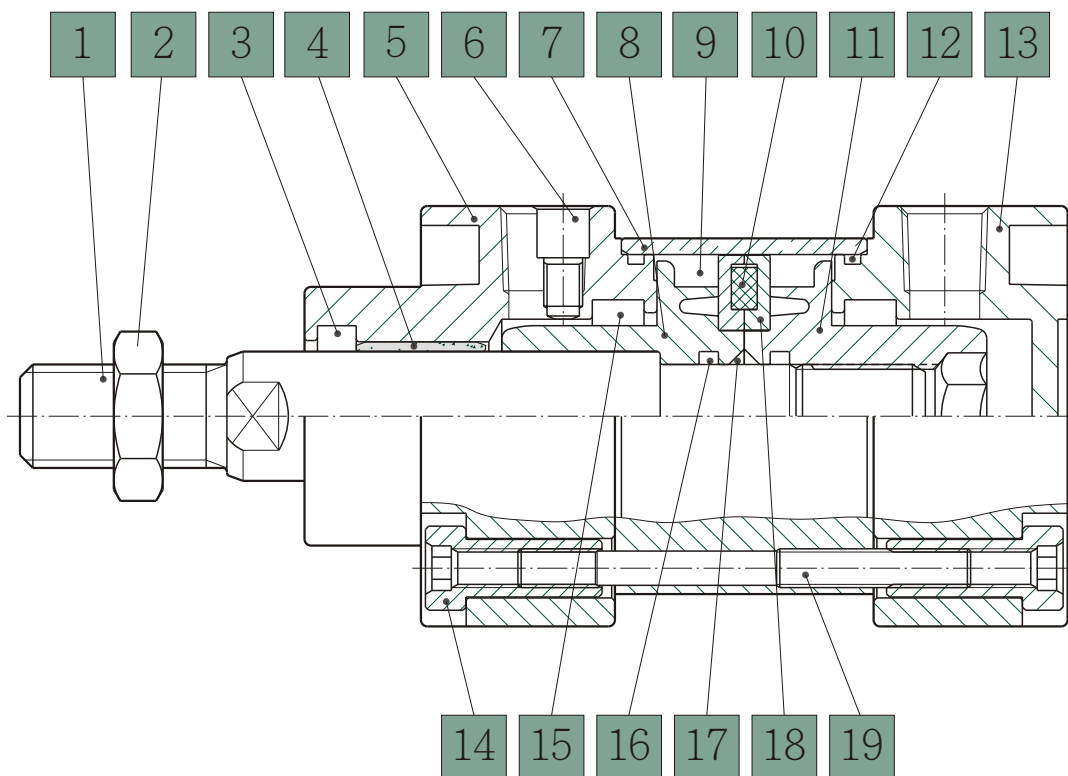
2R: 0~110V  
3R: 0~220V

**10** 近接開關數量  
Quantity of Switch

unit (m/m)

缸徑 Bore Dia.	標準行程 Standard Stroke											
	50	75	100	125	150	200	250	300	400	500	700	1000
φ40	○	○	○	○	○	○	○	○	—	—	—	—
φ50	○	○	○	○	○	○	○	○	○	—	—	—
φ63	○	○	○	○	○	○	○	○	○	○	—	—
φ80	○	○	○	○	○	○	○	○	○	○	○	—
φ100	○	○	○	○	○	○	○	○	○	○	○	○
φ125	○	○	○	○	○	○	○	○	○	○	○	○
φ150	○	○	○	○	○	○	○	○	○	○	○	○

(○)為標準行程 Standard Stroke (—)為非標準行程，可另訂 Non-Standard Stroke on Request ※以上行程均為複動氣缸。 About Stroke All Double Acting Cylinder



## 零件表 Part List

件號	名稱 Name	數量 Q'ty	件號	名稱 Name	數量 Q'ty
1	活塞桿 Piston Seal	1	11	後活塞體 Piston	2
2	六角螺帽 Nut	1	12	缸壁O型環 O-Ring	2
3	軸封環 Rod Seal	1	13	後蓋 Rear Cover	1
4	含油軸承 O-Ring	1	14	拉桿螺帽 Tie Rod Bolt	8
5	前蓋 Front Cover	1	15	緩衝環 Cushion Seal	2
6	節流針 Needle	1	16	O型環 O-Ring	2
7	缸管 Tube	1	17	O型環 O-Ring	1
8	前活塞體 Piston	1	18	耐磨環 Anti-Resistant Seal	2
9	活塞體 Piston	2	19	拉桿 Rod	4
10	磁圈 Magnet	1			

## 修理包規格

件號	名稱 Name	材料 Material	缸徑 Bore Dia.						
			φ40	φ50	φ63	φ80	φ100	φ125	φ150
3	軸封環 Rod Seal								
9	活塞環 Piston Seal								
12	缸壁O型環 O-Ring								
15	緩衝環 Cushion Seal								
17	O型環 O-Ring								

### 特性說明:

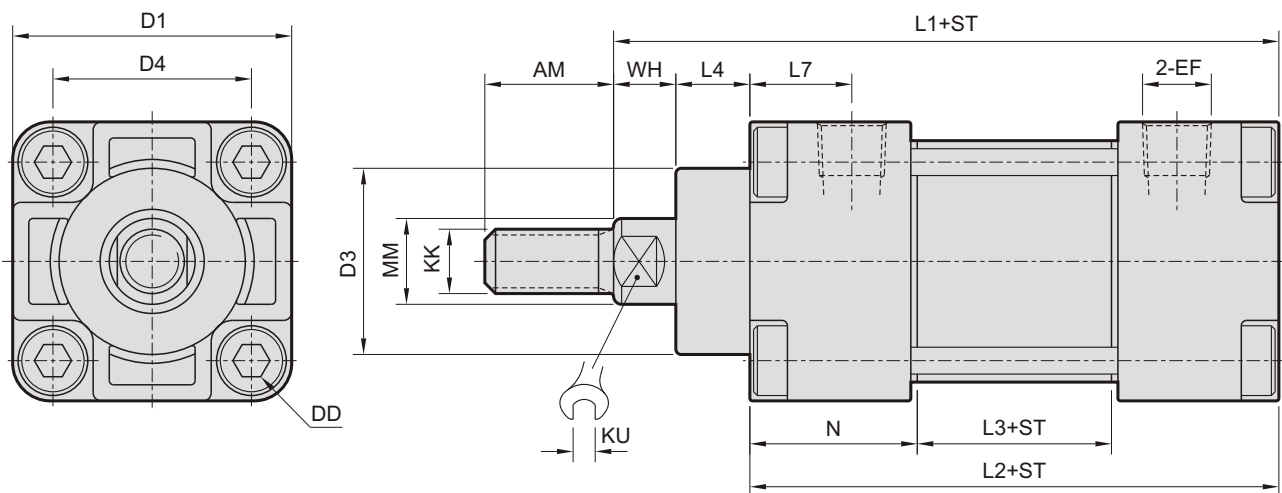
- 一. 此系列氣缸活塞裝置2條U型Packing 耐油，耐磨性均佳。
- 二. 具有可調式端點位置緩衝，吸收氣缸動能避免震動提高運作效率
- 三. 全系列均可裝置感應磁圈
- 四. 前蓋軸承採用含油軸承，摩擦係數低
- 五. 缸管採用進口鋁合金管

1. These series air cylinder applicable bore dia. from  $\phi 12$ ~ $\phi 25$ mm meets with international interchangeable ISO 6432.
2. With end position cushioning adjustable at both end to absorbs the impact during high-speed operation without vibration, increase operating efficiency.
3. With permanent magnetic ring (as a standard).
4. Cylinder cover cap are roller burnished onto the cylinder barrels so as to be pressure tight high concentricity good sealing and the cylinder provides longer life.
5. With stainless steel #304 barrel material looks light and beauty never corroded and good thermo dispersion.
6. All accessories available.



工作媒體 Fluid	過濾壓縮空氣及油壓作動油 Filtered Compress Air & Hydraulic Oil
許可最高工作壓力 Max. Operating Pressure	10kgf/cm <sup>2</sup>
使用溫度範圍 Ambient Temperature	0° ~60°
使用速度範圍 Operating Speed	500 mm/sec

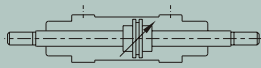
## DAL (基本型) Basic Type



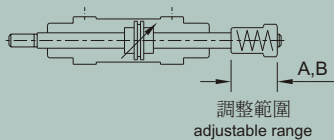
unit:m/m

記號 缸徑	AM	D1	D4	D3	DD	L1	L2	L3	L4	L7	KK	KU	N	MM	WH	EF
$\phi 40$	24	52	37	$\phi 35$	M6×1.0	122	98	36	14	19	M12×1.25	14	31	$\phi 16$	10	PT1/4
$\phi 50$	32	65	47	$\phi 40$	M6×1.0	129.5	100	38	18	19	M16×1.5	17	31	$\phi 20$	12	PT1/4
$\phi 63$	32	75	56	$\phi 40$	M8×1.25	132	102	40	18	18	M16×1.5	17	31	$\phi 20$	12	PT3/8
$\phi 80$	40	94	70	$\phi 45$	M10×1.5	153	120	50	20	22	M20×1.5	22	35	$\phi 25$	13	PT3/8
$\phi 100$	40	113	85	$\phi 50$	M10×1.5	157	124	54	20	22	M20×1.5	22	35	$\phi 25$	13	PT1/2
$\phi 125$	50	146	110	$\phi 60$	M14×1.5	181	134	52	32	26	M32×2	32	41	$\phi 35$	15	PT1/2
$\phi 150$	50	172	130	$\phi 60$	M14×1.5	192	144	54	33	28	M36×2	36	45	$\phi 40$	15	PT1/2

複動雙軸型氣壓缸  
 Double Acting Cylinder / Double Rod  
 型式 :DALD



複動雙軸可調式氣壓缸  
 Adjustable Stroke Cylinder / Double Rod  
 型式 :DALE



※調整型均付調整帽及防撞墊片。  
 All supplied with adjustable nut and dampering.

- A: 調整行程範圍 0~25m/m.  
Adjustable range 0~25m/m.
- B: 調整行程範圍 0~50m/m.  
Adjustable range 0~50m/m.



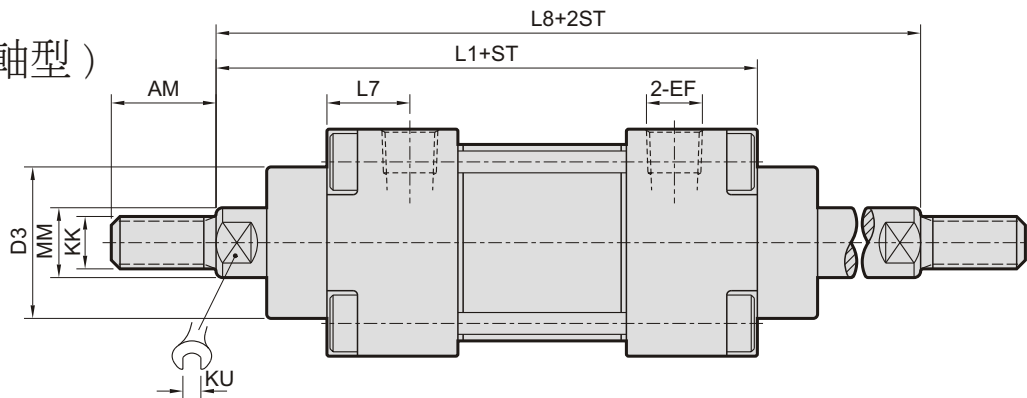
特性說明：

- (φ40~φ100) 整支軸桿不切斷，與活塞整體組合活  
塞永不鬆脫，同心度高，摩擦阻力低，圓周無死角。
- 全系列均可裝置感應磁圈附可調式端點緩衝。
- 調整型具有前伸行程，可調之功能，行程定位精確。

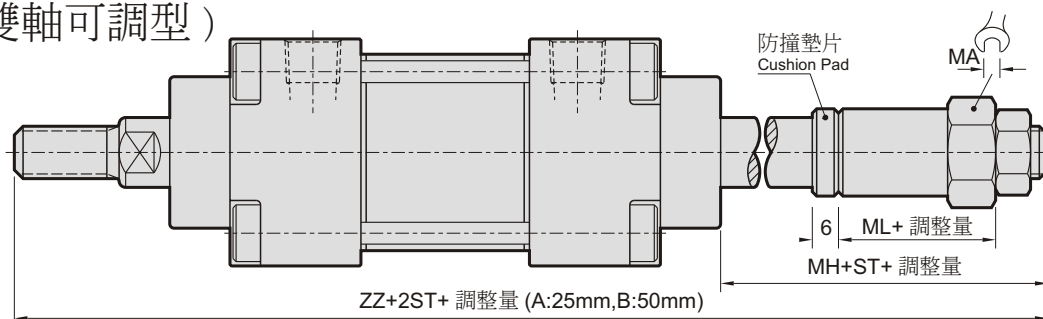
Characteristics:

1. (φ40~φ100) piston and piston rod are whole construction, never loose, high concentricity low friction.
2. With magnetic ring and end position cushioning adjustable at both end.
3. Adjustable type cylinder stroke can be variably adjusted on the outlet side, with accuracy stroke positioning.

DALD(雙軸型)



DALE(雙軸可調型)



unit:m/m

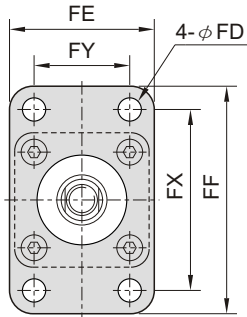
記號 缸徑	AM	D3	L1	L7	L8	KK	KU	MM	EF
φ40	24	φ35	122	19	146	M12×1.25	13	φ16	PT1/4
φ50	32	φ40	130	19	160	M16×1.5	17	φ20	PT1/4
φ63	32	φ40	132	28	162	M16×1.5	17	φ20	PT3/8
φ80	40	φ45	153	22	186	M20×1.5	22	φ25	PT3/8
φ100	40	φ50	157	22	190	M20×1.5	22	φ25	PT1/2
φ125	50	φ60	181	26	228	M32×2	32	φ35	PT1/2
φ150	50	φ60	193	28	240	M36×2	36	φ40	PT1/2

記號 缸徑	ZZ	MH	ML	MA
φ40	194	34	20	27
φ50	221	44	25	36
φ63	223	44	25	36
φ80	258	53	28	41
φ100	262	53	28	41
φ125	328	65	32	46
φ150	327	69	36	50

其他尺寸時參考基本型。  
 Other dimensions refer to basic type.

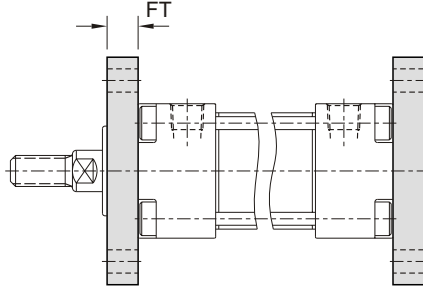
## FA,FB 型

### Flange Mounting



固定前端 (FA 型)  
Front Flange Mounting

固定後端 (FB 型)  
Rear Flange Mounting

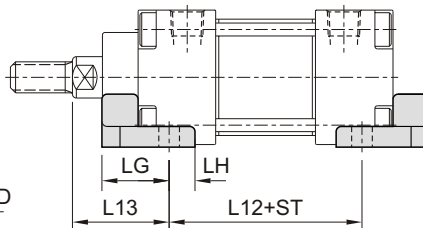
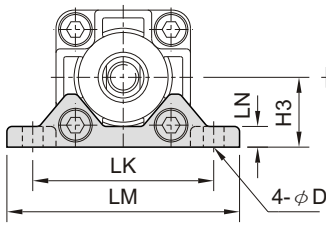


unit:m/m

記號 缸徑	FT	FX	FY	FE	FF	φFD
φ40	12	70	37	56	86	φ9
φ50	12	85	47	65	104	φ9
φ63	12	95	56	80	116	φ9
φ80	16	120	70	96	145	φ12
φ100	16	140	85	120	170	φ14
φ125	20	176	110	142	206	φ16
φ150	24	210	130	170	245	φ16

## LA 型

### 固定板 Foot Mounting

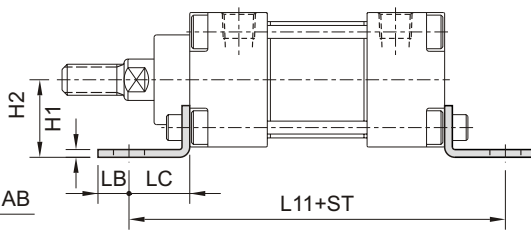
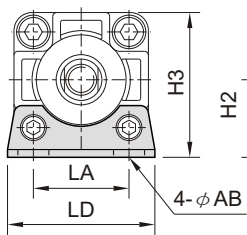


unit:m/m

記號 缸徑	LK	LM	LN	H3	LG	LH	L12	L13	φD
φ40	70	90	8	27	25	11	76	35	φ8
φ50	83	105	9	33	26	9	77	41	φ8
φ63	95	116	10	39	26	14	82	40	φ8
φ80	121	146	13	48	33	20	90	48	φ10
φ100	140	168	17	58	27	28	102	44	φ10

## LB 型

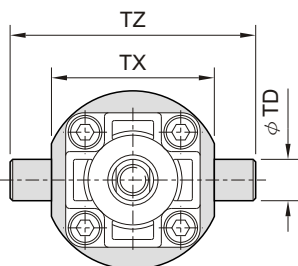
### 固定板 Foot Mounting



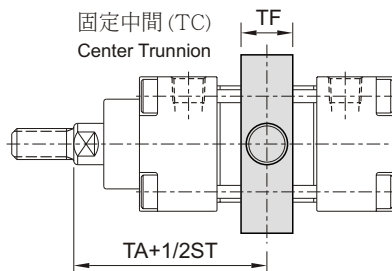
unit:m/m

記號 缸徑	L11	LB	LC	H1	H2	H3	LA	LD	φAB
φ40	145	12	23.5	3	30	56	37	57	φ9
φ50	156	12	28	3	36.5	69	47	68	φ12
φ63	164	13	31	3	41	78.5	56	80	φ12
φ80	180	16	30	4	49	96	70	97	φ14
φ100	184	16	30	4	57	113.5	85	112	φ14
φ125	194	15	30	5	77	150	110	140	φ15
φ150	216	15	35	5	92	176	130	170	φ15

## TA,TB,TC 型 擺動固定型 Trunnion Mounting



固定中間 (TC)  
Center Trunnion

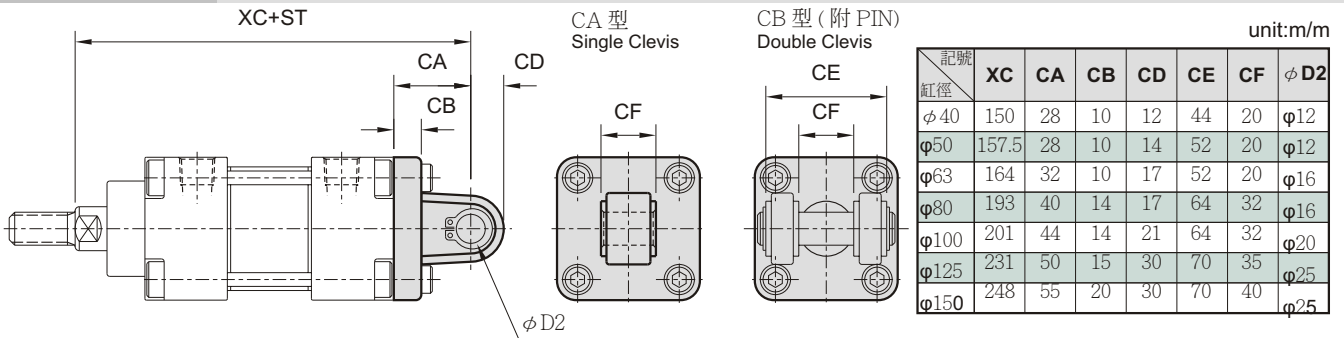


unit:m/m

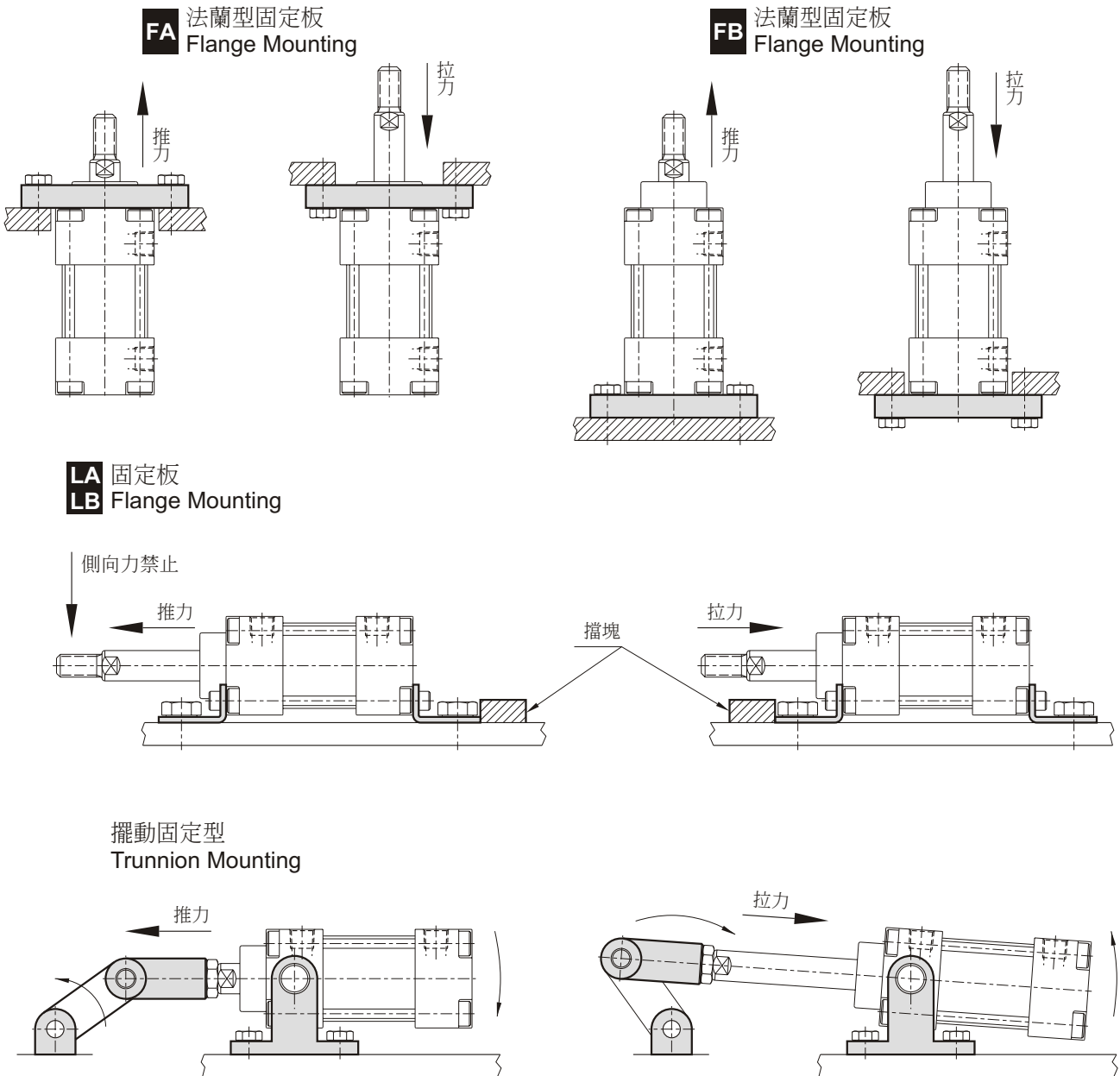
記號 缸徑	TX	TZ	TR	TS	φTD	TF	TA
φ40	63	95	44	105	φ16	20	73
φ50	75	107	48.5	112	φ16	25	79.5
φ63	90	130	49	115	φ20	25	81
φ80	110	150	55	131	φ20	35	93
φ100	132	182	55	135	φ25	40	95
φ125	170	240	—	—	φ35	48	114
φ150	202	292	—	—	φ45	60	120

\*DAL . 125 . 150無TATB設計

## CA, CB 型 擺動固定型 Clevis Mounting



## 固定注意範例 Installation Example



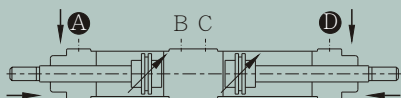
### 多端點行程氣壓缸

#### Dual Stroke Cylinder / Double Rod

型式 :DALM

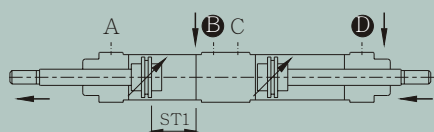
功能說明 :1. 如圖示 A D 端進氣，為最短期程

Function: 1. When air pressure is supplied to ports A and D both A and D strokes retract.



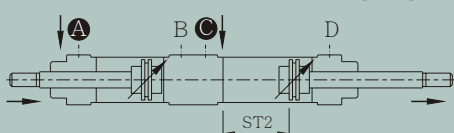
2. 如圖示 B D 端進氣，為第一段行程

2. When air pressure is supplied to ports B and D A out strokes.



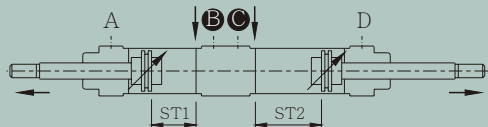
3. 如圖示 A C 端進氣，為第二段行程

3. When air pressure is supplied to ports A and C D out strokes.



4. 如圖示 B C 端進氣，為最大行程

4. When air pressure is supplied to ports B and C both strokes A and D out strokes.



● 訂購須確定第一段、第二段行程。

● When ordering please specify the strokes of ST1 and ST2.



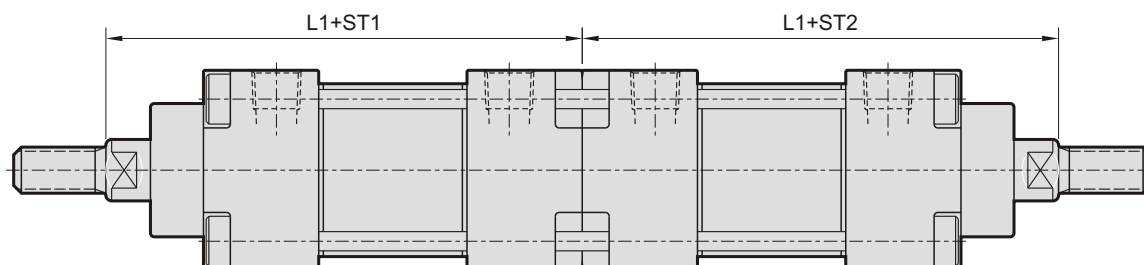
#### 特性說明：

- 一.多端點氣壓缸具有兩個雙動活塞及活塞桿。
- 二.具有四個端點位置，應用於定位、送料、定量充填、左右移位、流量控制等結構設計。
- 三.均可裝置感應磁圈附可調式端點緩衝。

#### Characteristics:

1. Two cylinders are constructed as one cylinder in a back-to-back configuration allowing the cylinder stroke to be controlled in three steps.
2. Applicable for positioning, transportation, quantitative filling, right and left displacement, flow control, etc. capable of accuracy and speedy purpose.
3. With magnetic ring and end position cushioning adjustable at both end.

## DALM(多端點行程型)



### 訂購規範

**DALM-40M20+40M50**

(1) (2)

(1)ST1 (2)ST2

unit:m/m

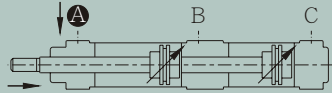
缸徑	記號	L1	缸徑	記號	L1
φ40		124	φ100		157
φ50		129.5	φ125		181
φ63		132	φ150		193
φ80		153			

其他尺寸參考基本型。  
Other dimensions refer to basic type.

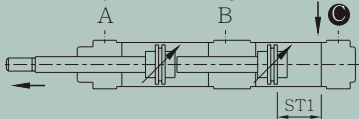
## 串連式倍力氣壓缸 Dual Stroke Cylinder / Single Rod

型式 : DALT

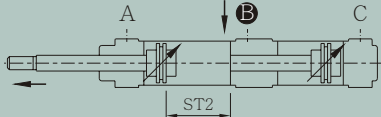
功能說明 : 1. 如圖示 ① 端進氣，為最短行程  
Function: 1. When air pressure is supplied to ports ① both A and C strokes retract.



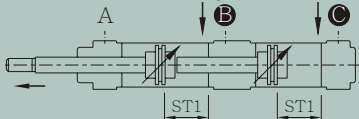
2. 如圖示 ③ 端進氣，為第一段行程  
2. When air pressure is supplied to ports ③ the rod out by the C stroke length.



3. 如圖示 ② 端進氣，為第二段行程  
3. When air pressure is supplied to ports ② the rod operates a further length equal to A-C stroke.



4. 如圖示 ②③ 端進氣，在第一段行程內出力軸為 2 倍力行程。  
4. When air pressure is supplied to both ports ② and ③ double output force is obtainable in the range of the C strokes length.



- 訂購須確定第一段，第二段行程。
- 第一段行程長度不可超過第二段行程長度
- When ordering please specify the strokes of ST1 and ST2.
- The stroke length ST1 never over ST2 stroke length.



### 特性說明：

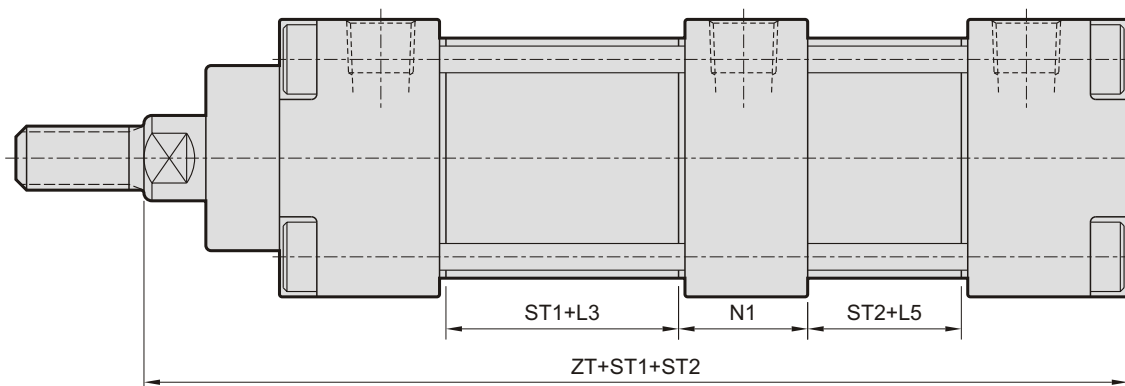
- 氣壓缸具有兩個雙動活塞及活塞桿
- 具有 個端點位置，應用於定位、送料 定量充填 左 右移位 流量控制等結構設計

均 附

### Characteristics:

1. Two cylinders are constructed as one cylinder in line allowing double the output force.
2. The cylinder stroke to be controlled in three steps, applicable for positioning, transportation, quantitative filling, flow control, right and left displacement etc.
3. Double output force is obtainable.
4. With magnetic ring and end position cushioning adjustable at both end.

DALT( ) Dual Stroke



### 訂購規範

DALT-40M20+40M50

(1) (2)

(1)ST1

(2)ST1=ST2或ST1<ST2(包含ST1)

unit:m/m

記號	L3	L5	N1	ZT
缸徑				
φ40	36	52	24	198
φ50	38	58	24	212
φ63	40	61.5	22.5	216
φ80	50	71	26	250
φ100	54	75	26	258

其他尺寸參考基本型。  
Other dimensions refer to basic type.



### 氣壓缸的選定：

- 1.現場供給壓力源(MPa)
- 2.作動形式：雙動、單動
- 3.固定形式
- 4.氣壓缸出力、缸徑、行程、速度
- 5.是否需要緩衝或感應
- 6.使用場所的環境狀態，  
如溫度、灰塵、腐蝕性、是否會震動
- 7.使用場所的空間限制
- 8.空氣消耗量，空氣流量
- 9.包裝方式，材質

### Technical Information:

1. Operating pressure offered
2. Operating type: Double or Single acting
3. Mounting type
4. Operating force, bore diameter, stroke, speed
5. Adjustable Cushion needed ? Sensor needed ?
6. Environmental condition: ex: temperature, dust, corrosiveness, vibration or not
7. Environmental limitation during operation
8. Air consumption, Air flow
9. Packing method, Packing material

### SI 單位換算表

#### SI Units Conversion Factors

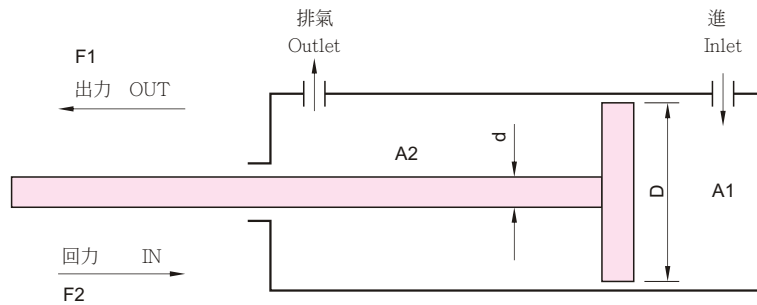
- 壓力 Pressure : 1MPa=10.2kgf/cm<sup>2</sup>
- 力、荷重 Force : 1N=0.1kgf
- 扭力 Torque : 1N.m=0.1kgf.m
- 真空壓力 Vacuum : -1kgf=-7.5mmHg
- 加速度 Acceleration : 1m/s<sup>2</sup>=0.1G

### ※ 氣壓缸理論出力 Theoretical Force

單位：N

Piston Dia 活塞直徑 (mm)	Rod Dia 活塞桿直徑 (mm)	工作壓力 (Operating Pressure MPa)									
		0.1		0.2		0.3		0.4		0.5	
		出力 Output force	回力 Return force	出力 Output force	回力 Return force	出力 Output force	回力 Return force	出力 Output force	回力 Return force	出力 Output force	回力 Return force
12	6	11.3	8.5	22.6	17.0	33.9	25.4	45.2	33.9	56.5	42.4
16	6	20.1	17.3	40.2	34.5	60.3	51.8	80.4	69.1	100.5	86.4
	8	20.1	15.1	40.2	30.1	60.3	45.2	80.4	60.3	100.5	75.4
20	8	31.4	26.4	62.8	52.8	94.2	79.1	125.6	105.5	157.0	131.9
	10	31.4	23.6	62.8	47.1	94.2	70.7	125.6	94.2	157.0	117.8
25	10	49.1	41.2	98.1	82.4	147.2	123.6	196.3	164.9	245.3	206.1
	12	49.1	37.8	98.1	75.5	147.2	113.3	196.3	151.0	245.3	188.8
32	12	80.4	69.1	160.8	138.2	241.2	207.2	321.5	276.3	401.9	345.4
	16	80.4	60.3	160.8	120.6	241.2	180.9	321.5	241.2	401.9	301.4
40	16	125.6	105.5	251.2	211.0	376.8	316.5	502.4	422.0	628.0	527.5
50	20	196.3	164.9	392.5	329.7	588.8	494.6	785.0	659.4	981.3	824.3
63	20	311.6	280.2	623.1	560.3	934.7	840.5	1246.3	1120.7	1557.8	1400.8
80	25	502.4	453.3	1004.8	906.7	1507.2	1360.0	2009.6	1813.4	2512.0	2266.7
100	25	785.0	735.9	1570.0	1471.9	2355.0	2207.8	3140.0	2943.8	3925.0	3679.7
125	35	1226.6	1130.4	2453.1	2260.8	3679.7	3391.2	4906.3	4521.6	6132.8	5652.0
150	40	1766.3	1640.7	3532.5	3281.3	5298.8	4922.0	7065.0	6562.6	8831.3	8203.3
160	35	2009.6	1913.4	4019.2	3826.9	6028.8	5740.3	8038.4	7653.8	10048.0	9567.2
200	40	3140.0	3014.4	6280.0	6028.8	9420.0	9043.2	12560.0	12057.6	15700.0	15072.0

Piston Dia 活塞直徑 (mm)	Rod Dia 活塞桿直徑 (mm)	壓力 (Operating Pressure MPa)									
		0.6		0.7		0.8		0.9		1	
		出力 Output force	回力 Return force	出力 Output force	回力 Return force	出力 Output force	回力 Return force	出力 Output force	回力 Return force	出力 Output force	回力 Return force
12	6	67.8	50.9	79.1	59.3	90.4	67.8	101.7	76.3	113.0	84.8
16	6	120.6	103.6	140.7	120.9	160.8	138.2	180.9	155.4	201.0	172.7
	8	120.6	90.4	140.7	105.5	160.8	120.6	180.9	135.6	201.0	150.7
20	8	188.4	158.3	219.8	184.6	251.2	211.0	282.6	237.4	314.0	263.8
	10	188.4	141.3	219.8	164.9	251.2	188.4	282.6	212.0	314.0	235.5
25	10	294.4	247.3	343.4	288.5	392.5	329.7	441.6	370.9	490.6	412.1
	12	294.4	226.6	343.4	264.3	392.5	302.1	441.6	339.8	490.6	377.6
32	12	482.3	414.5	562.7	483.6	643.1	552.6	723.5	621.7	803.8	690.8
	16	482.3	361.7	562.7	422.0	643.1	482.3	723.5	542.6	803.8	602.9
40	16	753.6	633.0	879.2	738.5	1004.8	844.0	1130.4	949.5	1256.0	1055.0
50	20	1177.5	989.1	1373.8	1154.0	1570.0	1318.8	1766.3	1483.7	1962.5	1648.5
63	20	1869.4	1681.0	2181.0	1961.2	2492.5	2241.3	2804.1	2521.5	3115.7	2801.7
80	25	3014.4	2720.0	3516.8	3173.4	4019.2	3626.7	4521.6	4080.0	5024.0	4533.4
100	25	4710.0	4415.6	5495.0	5151.6	6280.0	5887.5	7065.0	6623.4	7850.0	7359.4
125	35	7359.4	6782.4	8585.9	7912.8	9812.5	9043.2	11039.1	10173.6	12265.6	11304.0
150	40	10597.5	9843.9	12363.8	11484.6	14130.0	13125.2	15896.3	14765.9	17662.5	16406.5
160	35	12057.6	11480.6	14067.2	13394.1	16076.8	15307.5	18086.4	17220.9	20096.0	19134.4
200	40	18840.0	18086.4	21980.0	21100.8	25120.0	24115.2	28260.0	27129.6	31400.0	30144.0



- 以 量 小
- 慢速時約為理論出力80%。
- 50%
- 約 65%

### Actual Output/Return Efficiency:

- The output/return efficiency is closely related to the condition of pipe, control valve, status of the sliding surface and moving speed, which are difficult to measure, so always keep sufficient tolerance in design.
- It is about 80% at low speed.
- It is under 50% at high speed.
- It is about 65% for normal operation.

■ 理論力  
Theoretical force

$$F1=A1*P \quad F2=A2*P$$

$$A1= \frac{\pi D^2}{4}$$

$$A2= \frac{\pi}{4} (D^2 - d^2)$$

■ Actual out force

$$F1= \frac{\pi D^2}{4} \times P - R$$

■ 實際  
Actual in force

$$F2= \frac{\pi}{4} (D^2 - d^2) \times P - R$$

F: 理論力 N  
Theoretical Force (N)

A1: 加壓側截面積 (mm<sup>2</sup>)  
Cross-section area of the pressurized side (mm<sup>2</sup>)

A2: 排壓側截面積 (mm<sup>2</sup>)  
Cross-section area of the rod side (mm<sup>2</sup>)

D: 氣壓缸內徑 (mm)  
Bore Diameter (mm)

d: 活塞桿直徑 (mm)  
Diameter of piston rod (mm)

P: 工作壓力 MPa  
Operating Pressure

R: 摩擦阻力, 約F的10~40%, 視品質而異。  
(HINAKA氣壓缸, R約F的12%~18%)  
Friction force normally 10~40% of F, depending on quality.  
(For HINAKA cylinders, R is within 12% ~ 18%.)

Q

### Calculate of Air Consumption

$$Q=(A1+A2)*L* \frac{P+0.1013}{0.1013} *10^{-6}*N*K$$

2

### Calculate of Air Consumption

The air consumption Q is the air needed for the cylinder itself under ideal conditions, before installation, the users should consider the air loss in control valve, the pressure loss in pipelines and all possible variations to give sufficient tolerance. Normally the compressor capacity should be twice of the consumption Q.

### Calculation for Air Flow

$$Q1=60*A1*V* \frac{P+0.1013}{0.1013} *10^{-6}$$

$$Q2=60*A2*V* \frac{P+0.1013}{0.1013} *10^{-6}$$

Q: 在大氣下之空氣消耗量 ]l/min [(ANR)  
Air Consumption at the atmosphere  
[ l/min ] (ANR)

A1: 加壓側截面積 (mm<sup>2</sup>)  
A<sub>1</sub>: Cross-section area of the  
pressurized side (mm<sup>2</sup>)

A2: 排壓側截面積 (mm<sup>2</sup>)  
A<sub>2</sub>: Cross-section area of the rod side (mm<sup>2</sup>)

L: 行程 (mm)  
Stroke (mm)

P: 錶壓力 MPa  
Gauge Pressure

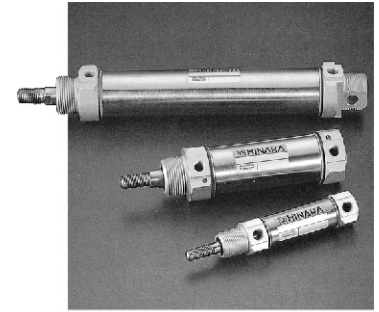
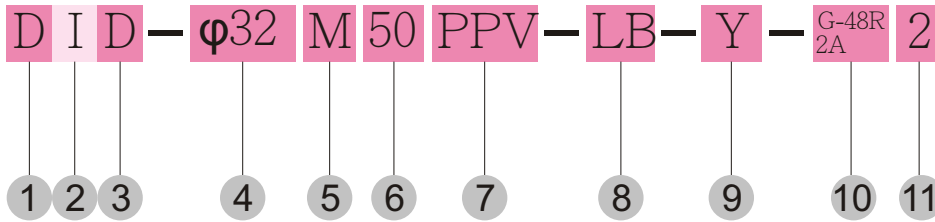
N: 每分鐘往返次數  
Number of strokes per minute

K: 安全係數 Safety factor=2

Q1: 加壓時所需空氣流量] l/min [(ANR)  
Air Flow required while pressure is added

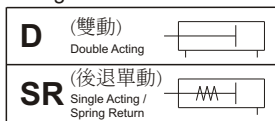
Q2: 排壓時所需空氣流量] l/min [(ANR)  
Air Flow required while pressure is exhausted

V: 最大作動速度 (mm/S)  
Max. Velocity (mm/S)



### 1 作動方式

Acting



- 2 ISO 6432國際標準:缸徑 φ 12~φ 25  
 圓形氣壓缸:缸徑 φ 32, φ 40  
 ISO 6432 Standard Cylinder: φ 12~φ 25  
 Round Cylinder: φ 32~φ 40

- 4 氣缸內徑  
 Bore Diameter

- 5 感應裝置  
 Magnetic Sensing Device

M: 有加磁石 M: with magnet  
 N: 不 N: without magnet

- 6 行程 (ST)  
 Stroke

- 7 φ 20~φ 40具有  
 可調式端點緩衝功能

Adjustable Cushions for φ20~φ40 cylinders  
 兩端PPV 前端FPPV 後端RPPV  
 both ends:PPV front end:FPPV rear end:RPPV

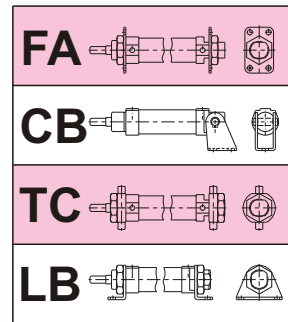
- 10 近接開關  
 Proximity Switch (sensor)  
 Proximity Switch : G-48R,2A

- 11 近接開關數量  
 Numbers of Proximity Switch (sensor)

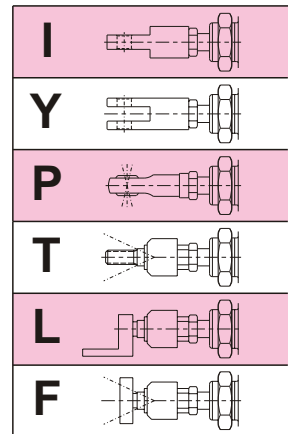
### 3 氣缸型態 Cylinder Types

	本體 Body	型式 Type
<b>A</b>		無尾基本型 Boss-Cut Standard Type
<b>C</b>		有尾基本型 Integrated Clevis Standard Type
<b>D</b>		雙軸型 Double Rod
<b>DE</b>		雙軸可調式 Adjustable Double Rod
<b>DO</b>		雙軸空心式 Hollow Double Rod
<b>M</b>		多端點行程型 Multi Stroke Positions / Double Rods
<b>TA</b>		無尾串連倍力型 Boss-Cut, Tandem, Double Forces Cylinder
<b>TC</b>		有尾串連倍力型 Integrated Clevis, Tandem, Double Forces Cylinder

### 8 固定配件 Mountings



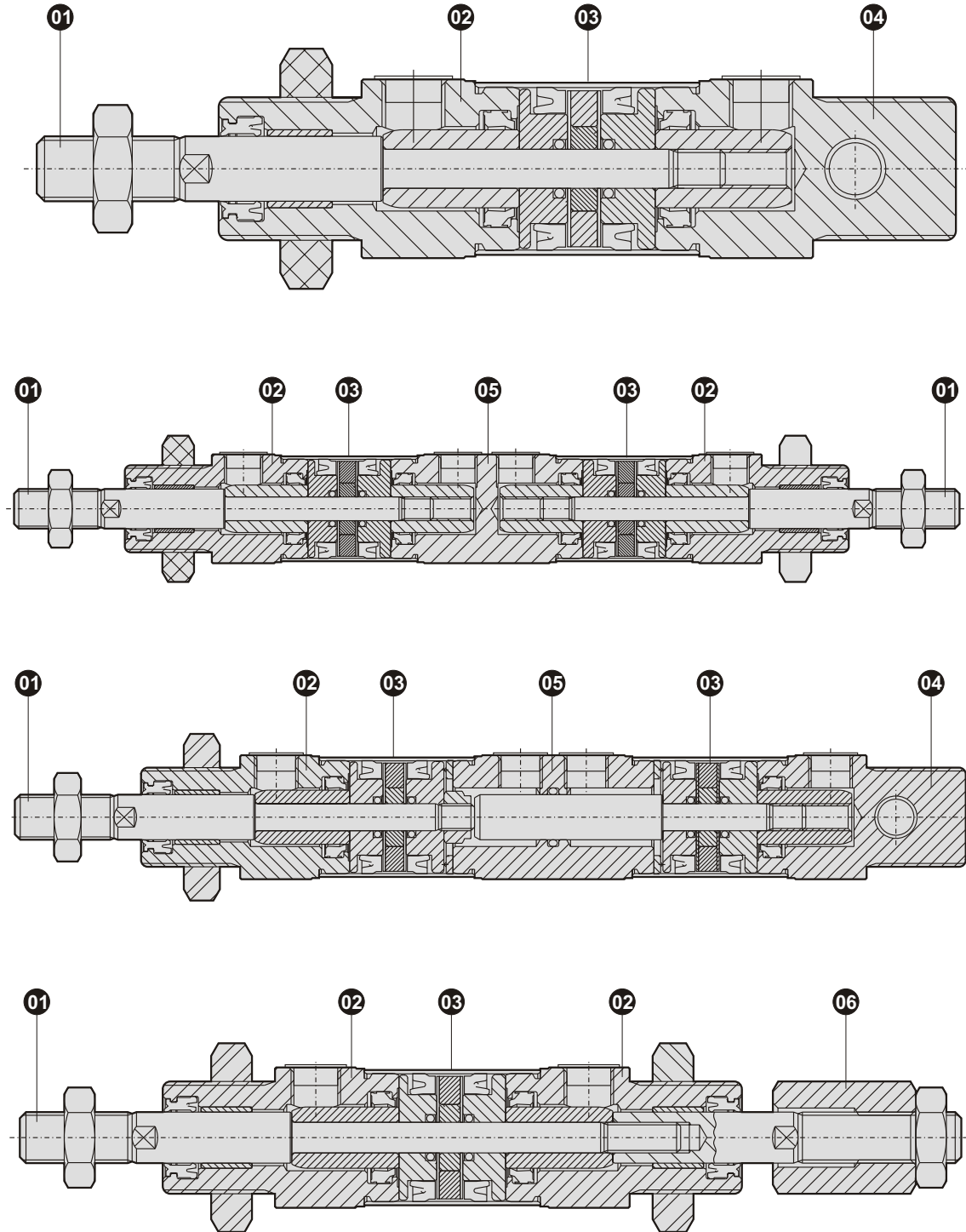
### 9 軸端配件 Rod Accessories



	符合ISO 6432國際標準 ISO 6432 Standard Cylinder				圓形氣壓缸 Round Cylinder	
	φ 12	φ 16	φ 20	φ 25	φ 32	φ 40
Acting	雙動 / 單動 Double Acting / Single Acting					
Working Fluid	清潔壓縮空氣 Filtered Compressed Air					
Proof Pressure	1MPa(10.2kgf/cm <sup>2</sup> )			1.3MPa(13.3kgf/cm <sup>2</sup> )		
Max. Operating Pressure	0.7MPa(7.1kgf/cm <sup>2</sup> )			1MPa(10.2kgf/cm <sup>2</sup> )		
Min. Operating Pressure	0.06MPa(0.6kgf/cm <sup>2</sup> )			0.1MPa(1kgf/cm <sup>2</sup> )		
Temperature range	0°C ~ 60°C					
Speed range	500mm/s					
Operation Oil	Not necessary					

# DI

## 材料剖面圖 Material Structure



DI 材料剖面圖 Material Structure

件號 NO.	零件名稱	Part Name	材 質	Material
01	活 塞 桿	Piston Rod	中 碳 鋼	S45C
02	前 蓋	Front Cover	鋁 合 金	AA6063
03	缸 管	Cylinder Tube (Bore)	不 鏽 鋼	SUS 304
04	後 蓋	Rear Cover	鋁 合 金	AA6063
05	中 間 蓋	Middle Cover	鋁 合 金	AA6063
06	可 調 螺 帽	Adjustable Nut	構 造 鋼	Ss400
	密 封 件	Seal	丁 腈 膠	NBR

# DI

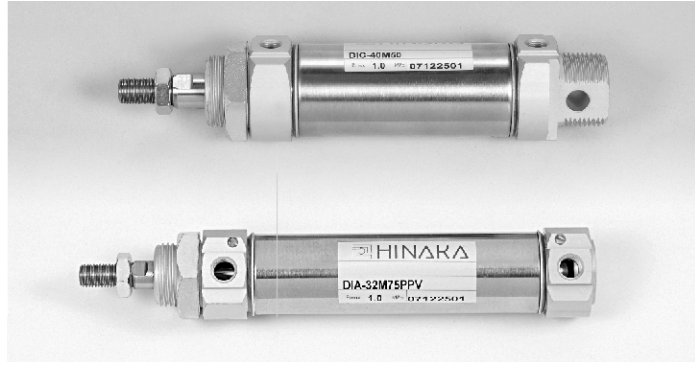
**A** 無尾基本型 Boss-Cut Standard Type  
**C** Integrated Clevis Standard Type

## 特性說明:

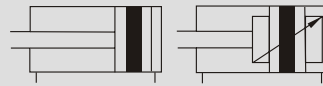
- 一. 此系列氣缸由  $\phi 12 \sim \phi 25$  之規格均符合 ISO6432 國際標準規格。
- 二. 具有可調式端點位置緩衝, 吸收氣缸動能 避免震動 提高運作效率
- 三. 全 列均可裝置感應磁圈為標準配備
- 四. 前後蓋壓延鉚合成形, 氣密性佳, 同心度高
- 五. 缸管採用 SUS304 材質, 外型美觀輕巧、散熱性佳, 永不生銹

## Features:

1. DI series with bore diameters within  $\phi 12 \sim \phi 25$  meet ISO 6432 standard .
2. Equipped with Adjustable cushions to absorb dynamic energy, eliminate vibration and improve operation efficiency.
3. Magnet ring is installed as a standard equipment.
4. The front and rear covers are riveted to give excellent air tightness and concentricity.
5. Cylinder tube (Bore) is made by SUS304 with elegant appearance and light weight. The cylinder has very good thermal dissipation capability and shall never have corrosion.
6. All kinds of mounting accessories are available, easy for installation.

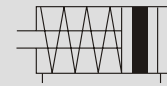


型號 Type : DIC, DIA  
 功能 Function :



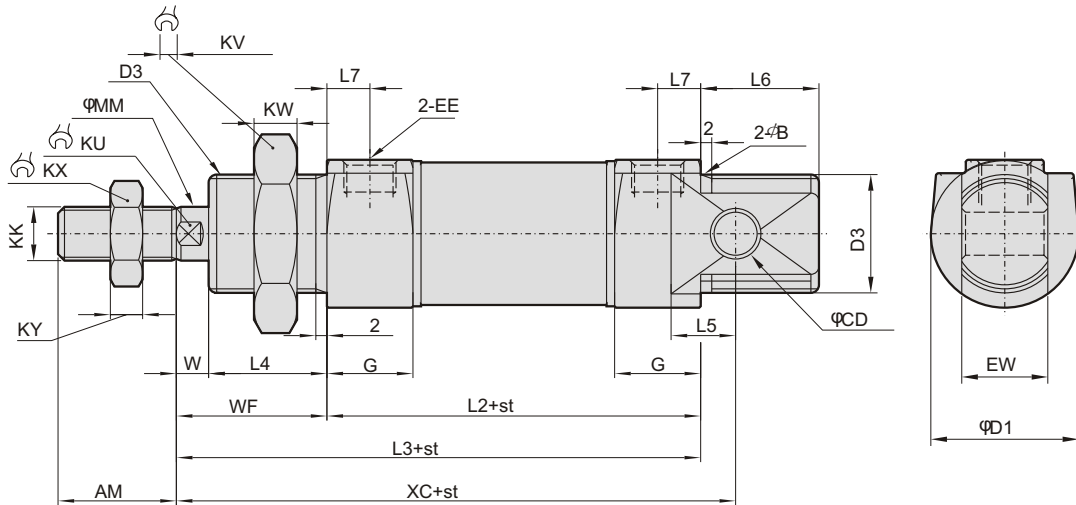
限制條件 Condition Limitation :  
 緩衝裝置缸徑  $\phi 20 \sim \phi 40$   
 Cushions for  $\phi 20 \sim \phi 40$

型號 Type : SRIC, SRIA  
 功能 Function :

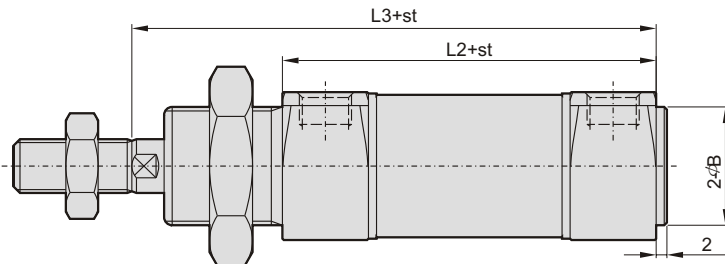


限制條件 Condition Limitation :  
 行程 10~50mm  
 Stroke 10~50mm

## DIC (有尾基本型) Integrated Clevis Standard Type



## DIA (無尾基本型) Boss-Cut Standard Type



有標示 \* 號規格 不是ISO規格 Mark "\*" means "not ISO Standard"

unit:m/m st=行程stroke

Marks 缸徑 Bore	AM	D1	$\phi$ CD H11	D3	WF	L2	L3	L4	L5	L6	L7	KK	KU	KV	KW	KX	KY	MM	W	EW	XC $\pm 1$	EE	G	$\phi$ B H9
$\phi 12$	16	20	$\phi 6$	M16 $\times$ 1.5	22	45	67	17	9	17	4.5	M6 $\times$ 1		24	8	10	5	$\phi 6$	5	12	75	M5 $\times$ 0.8	9	16
$\phi 16$	16	20	$\phi 6$	M16 $\times$ 1.5	22	51	73	17	9	17	5	M6 $\times$ 1		24	8	10	5	$\phi 6$	5	12	81	M5 $\times$ 0.8	10	16
$\phi 20$	20	27.5	$\phi 8$	M22 $\times$ 1.5	24	67.5	91.5	20	12	20	7.6	M8 $\times$ 1.25	7	32	8	13	6	$\phi 8$	4	16	95	G1/8	15.2	22
$\phi 25$	22	27.5	$\phi 8$	M22 $\times$ 1.5	28	69.5	97.5	22	12	22	8	M10 $\times$ 1.25	9	32	8	17	6	$\phi 10$	6	16	104	G1/8	16	22
* $\phi 32$	22	37	$\phi 10$	M27 $\times$ 2	28	83	111	20	13.5	22	9	M10 $\times$ 1.25	10	35	9	17	6	$\phi 12$	8	22	119.5	G1/8	18	27
* $\phi 40$	24	45	$\phi 10$	M33 $\times$ 2	31	85	116	20	13.5	22	9	M12 $\times$ 1.25	14	41	9.5	22	8	$\phi 16$	11	26	124.5	G1/8	18	33

# DI

**D** 雙軸型 Double Rod  
**DE** 雙軸可調型 Adjustable Double Rods

## 特性說明：

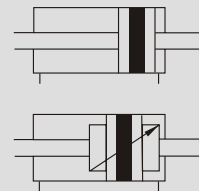
- 一. 活塞桿與活塞體鉚合成型，活塞永不鬆脫同心度高，摩擦阻力低，圓周無死角。
- 二. 可裝置感應磁圈及可調式端點緩衝。
- 三. 調整型具有前伸行程可調之功能，可做精確定位。

## Features:

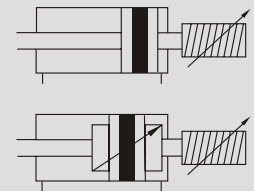
- 1. The piston rod and piston body are riveted together to give high concentricity and low friction.
- 2. Sensors and adjustable cushions are optional.
- 3. The forward stroke of the adjustable type can be adjusted for fixing position accurately.



型號 Type : DID  
 功能 Function :

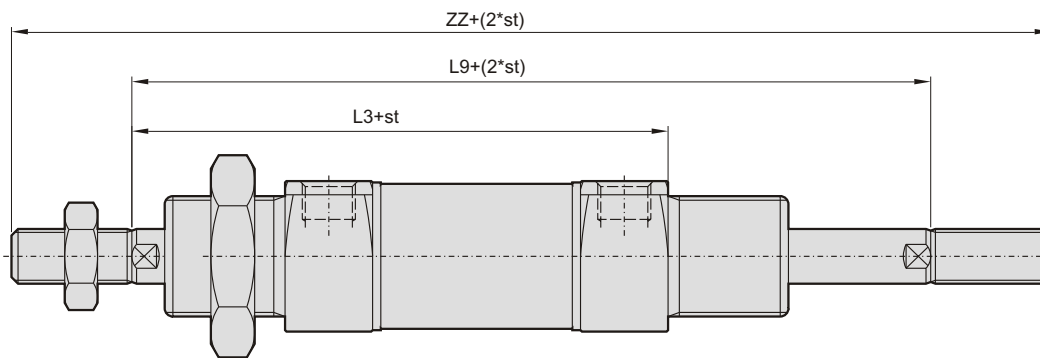


型號 Type : DIDE  
 功能 Function :

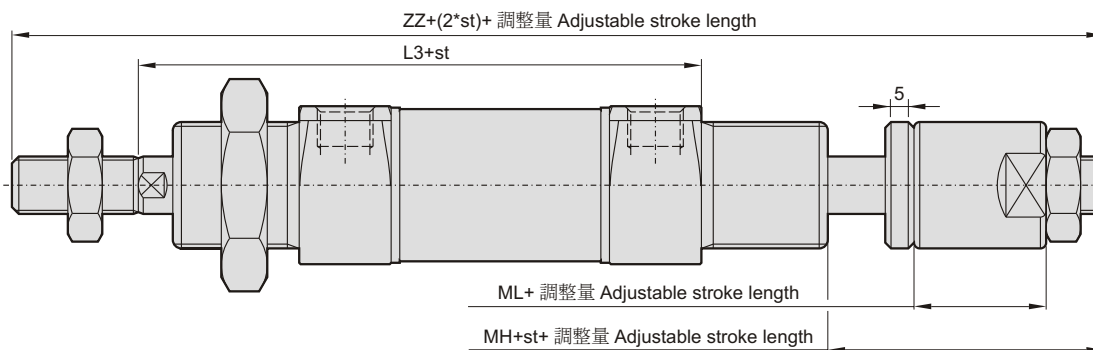


限制條件：緩衝裝置缸徑  $\phi 20 \sim \phi 40$   
 Condition Limitation Cushions for  $\phi 20 \sim \phi 40$

## DID(雙軸型) Double Rods



## DIDE(雙軸可調型) Adjustable Double Rods



Marks 記號 Bore 缸徑	L3	L9	ZZ	MH	ML
$\phi 16$	74	96	128	21	10
$\phi 20$	91.5	115.5	155.5	24	14
$\phi 25$	97.5	125.5	169.5	28	16
* $\phi 32$	111	139	183	30	16
* $\phi 40$	116	147	195	35	21

unit:m/m st=行程stroke

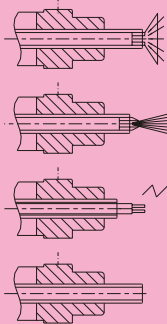
有標示 \* 號規格 不是ISO規格  
 Mark "\*" means "not ISO Standard"

其他尺寸參考基本型。  
 Refer to Standard Type for other dimensions.

# DIDO

## DO 雙軸空心式 Hollow Double Rods

型式 Type : DIDO  
 使用例 Applications :



- 接真空吸盤之真空管路  
vacuum pad
- 以壓縮空氣噴流 退件 清潔  
Air Spray Nozzle
- 液體之供應—膠合、沖洗 充填 冷卻  
Fluid Spray Nozzle
- 電線內藏  
Electric wires
- 安裝自己設計之特殊工具—  
夾爪 / 附件 / 治具 / 其他設計  
Connect special designed tool

### 特性說明：

- 一.可接裝真空裝置及其它配件，方便設計。
- 二.吸盤及配件直接裝於軸端，可避免管路安裝之顧慮。
- 三.可裝置感應磁圈。

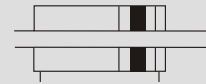
### Features:

1. Can be used with vacuum pad or other devices.
2. Vacuum pad or other devices can be installed directly on the rod end, which avoids the installation problem of cable or pipe.



型號 Type : DIDO

功能 Function :

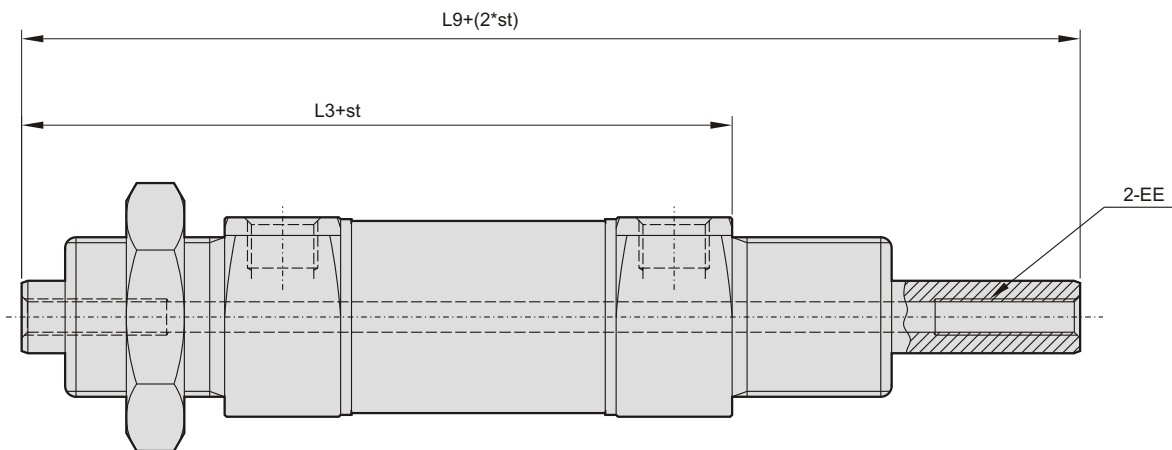


- 限制條件：1. 行程 30~ 100mm  
 2. 無緩衝裝置，內裝緩衝墊，減少衝擊

Condition Limitation:

1. Stroke 30-100mm
2. Without adjustable cushions but equipped with the built-in buffer-ring to absorb shock

## DIDO(雙軸空心式) Hollow Double Rods



st=行程stroke

unit:m/m

Marks Bore 記號 直徑	L3	L9	EE
φ25	97.5	125.5	M5×0.8×20深
* φ32	111	139	PT 1/8
* φ40	116	147	PT 1/8

有標示\*號規格 不是ISO規格  
 Mark "\*" means "not ISO Standard"

其他尺寸時參考基本型。  
 Refer to Standard Type for other dimensions.

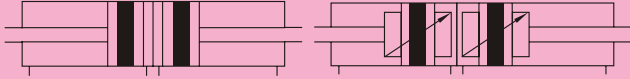
# DI

## DM 多端點行程型

Multi Stroke Positions / Double Rods

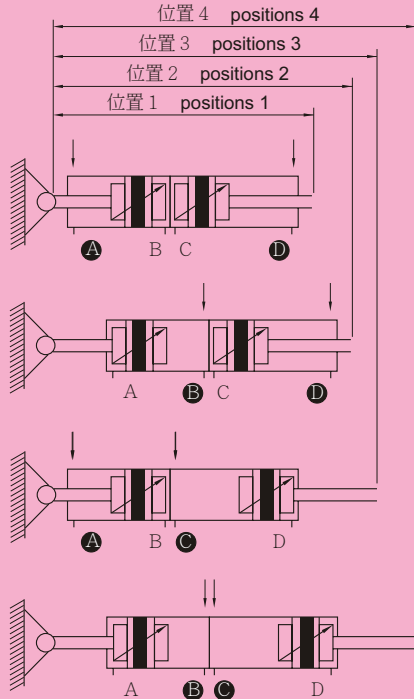
型號 Type : DIDM

功能 Function :



### 四個位置作動說明

4-positions operating instruction:



限制條件:

1. 四個位置兩段行程須不一樣長
2. 三個位置

Condition Limitation

1. For 4-positions use, two strokes (ST1, ST2) have to be different.
2. For 3-positions use, two strokes (ST1, ST2) have to be same.



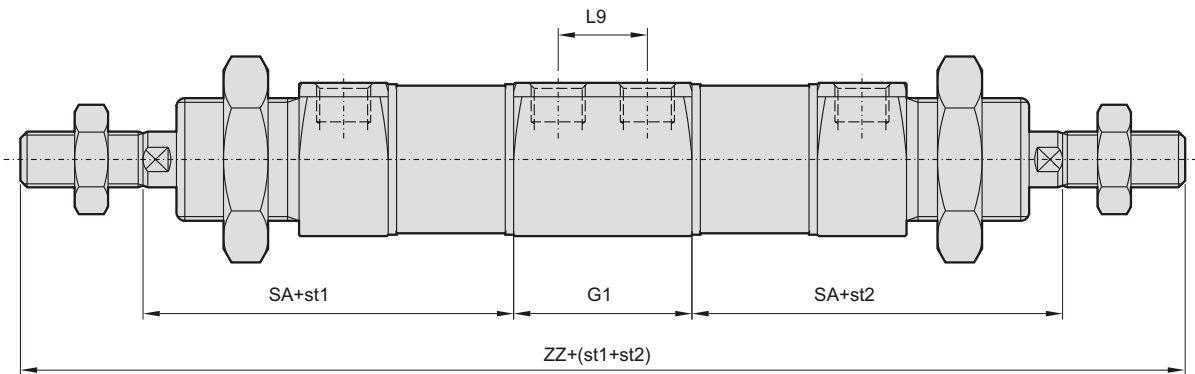
### 特性說明:

- 一. DIDM由兩個獨立活塞體及活塞桿組裝而成，透過控制，使塞
- 二. 因氣壓缸只固定活塞桿其中一端，作動時缸體會隨著作動，所以接氣管時請採用軟性材質。
- 三. 應用於定位，送料，定量充填，左右移位，流量控制，等結構設計。

### Features:

1. DIDM is the multi stroke positions cylinder which mainly consists of two individual pistons and two piston rods.
2. Only one side of the piston rod is fixed so the cylinder will follow to move while operating. Due to this reason, please use flexible air pipe.
3. 4-positions can be used for such as fixing position, feeding, moving, flow controlling...etc..

## DIDM(多端點行程型) Multi Stroke Positions/Double Rods



### 訂購規範

DIDM-25M20+25M50

(1) (2)

(1)ST1

(2)ST2

unit:m/m

st=行程 stroke

Marks 缸徑	SA	G1	L9	ZZ
φ20	76.2	30.5	15.3	223
φ25	81.5	32	14.6	239
* φ32	93	36	20	266
* φ40	98	36	18	280

有標示 \* 號規格 不是ISO規格

Mark "\*" means "not ISO Standard"

其他尺寸參考基本型。

Refer to Standard Type for other dimensions.

# DITA

串連式倍力缸(多端點行程) Boss-Cut, Tandem, Double Forces Cylinder

有串連式倍力缸(多端點行程) Integrated Clevis, Tandem, Double Forces Cylinder

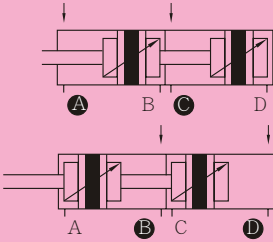
型號 Type : DITC DITA

功能 Function :



## 倍力作動說明

Double Forces operating instruction:



限制條件 :

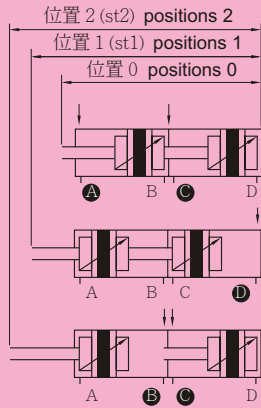
1. 兩段行程須一樣長
2. 出力倍力，回復單力

Condition Limitation

1. Two strokes (ST1, ST2) have to be same.
2. Double output forces, then back to Single output force.

## 三個位置作動說明

3-positions operating instruction:



限制條件 :

訂購時請依下列方式填寫

Condition Limitation

Please show the item number per the following way.

範例 ex :

DITC-32M25+32M50  
 st1=25, st2=50



## 特性說明 :

- 一. DIT由兩個活塞體及活塞桿串聯而成，透過控制，使前段活塞桿產生3個位置的變化。
- 二. 具有三個端點位置，應用於定位、送料、定量充填、左右移位、流量控制等結構設計。
- 三. 另具有增加一倍出力之特性，可彌補出力不足之設計。
- 四. 可裝置感應磁圈及可調式端點緩衝。

## Features:

1. DIT is Tandem connection with two pistons and one piston rod. Through the valve control, the front piston rod will allow 3-positions.
2. With 3-positions, the cylinder can be used in the mechanism for fixing position, feeding, moving, flow controlling ...etc.
3. The output force is double.
4. To be equipped with magnetic ring or adjustable cushions is optional.

## DITA 型 DITA Type

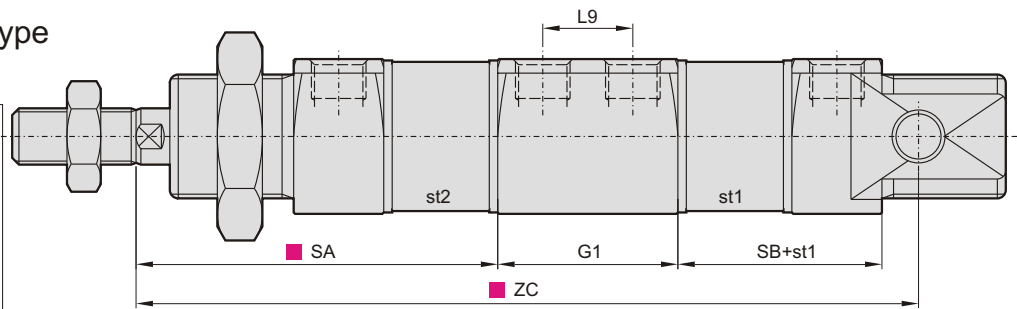
訂購規範

DITC-32M20+32M50  
 TA (1) (2)

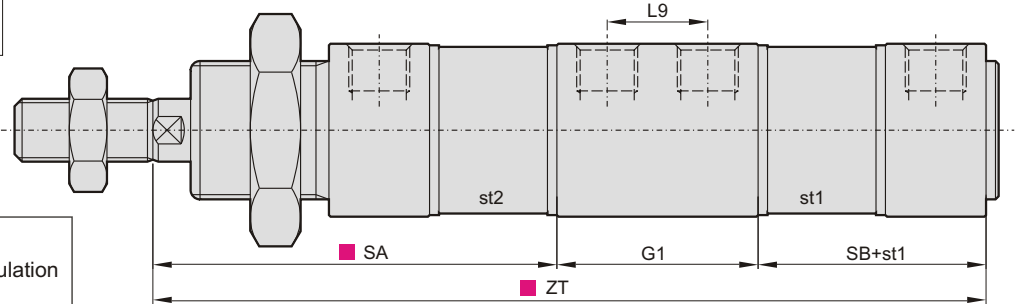
(1)ST1

(2)多端點行程ST2  
 (包含ST1)

倍力行程 ST2=ST1



## DITC 型 DITA Type



■ 倍力行程計算方式

Double Forces Strokes calculation

- [1]: SA+ st2
- [2]: ZC+ st1 + st2
- [3]: ZT+ st1 + st2

■ 多端點行程計算方式

Multi Positions Strokes calculation

- [1]: SA+ st1 + st2
- [2]: ZC+ st2 + (2\*st1)
- [3]: ZT+ st2 + (2\*st1)

unit:m/m

Marks 記號 Bore 缸徑	SA	SB	G1	L9	ZC	ZT
φ20	76.2	52.2	30.5	15.3	162.5	159
φ25	81.5	53.5	32	14.6	173.5	167
* φ32	93	65	36	20	202.5	194
* φ40	98	67	36	18	209.5	201

有標示 \* 號規格 不是ISO規格

Mark "\*" means "not ISO Standard"

其他尺寸參考基本型。

Refer to Standard Type for other dimensions.

# DI

**A-C** 無尾  
**C-C** 有尾

型 Boss-Cut with Extended Cushions  
型 Integrated Clevis with Extended Cushions

## 特性說明:

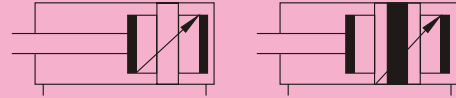
緩衝加長型系將前後兩端點之緩衝區域加長至60mm設計，適用於較高速度之機構可取代外加式油壓緩衝器。

## Features:

This version has extended cushions up to 60mm at both ends, this is suitable for high speed mechanism, can be used in place of external hydraulic buffer.

型式 Type : DIC-C DIA-C

功能 Function :

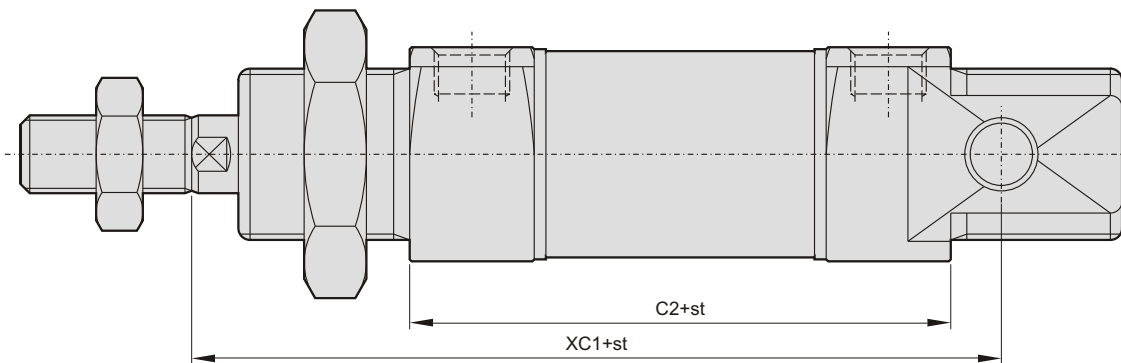


限制條件：緩衝裝置缸徑  $\phi 20\sim\phi 40$ ，建議行程超過150mm使用

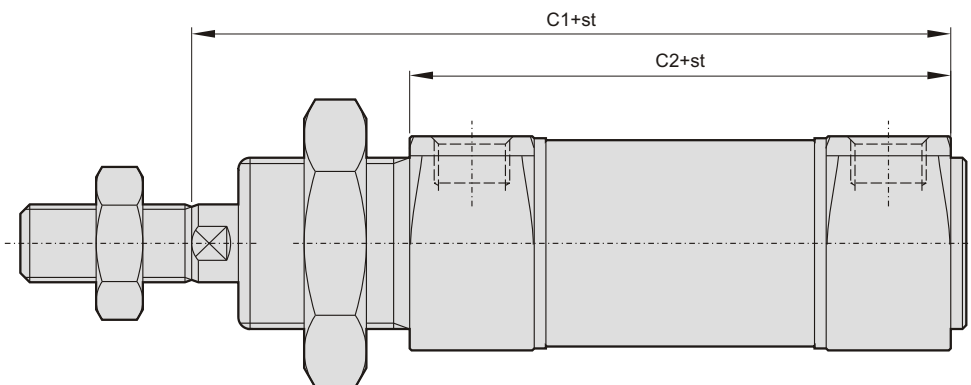
Condition Limitation Cushions for  $\phi 20\sim\phi 40$ .

Suitable for the stroke over 150mm

## DIC-C(有尾緩衝加長型) Integrated Clevis with Extended Cushions Type



## DIA-C(無尾緩衝加長型) Boss-Cut with Extended Cushions Type



PPV-前後端緩衝加長尺寸  
PPV- Dimensions of extended cushions at both ends

Marks 記號 Bore 缸徑	C1	C2	XC1
$\phi 20$	174.5	150.5	178
$\phi 25$	175.5	147.5	182
* $\phi 32$	192	159	195.5
* $\phi 40$	188	157	196.5

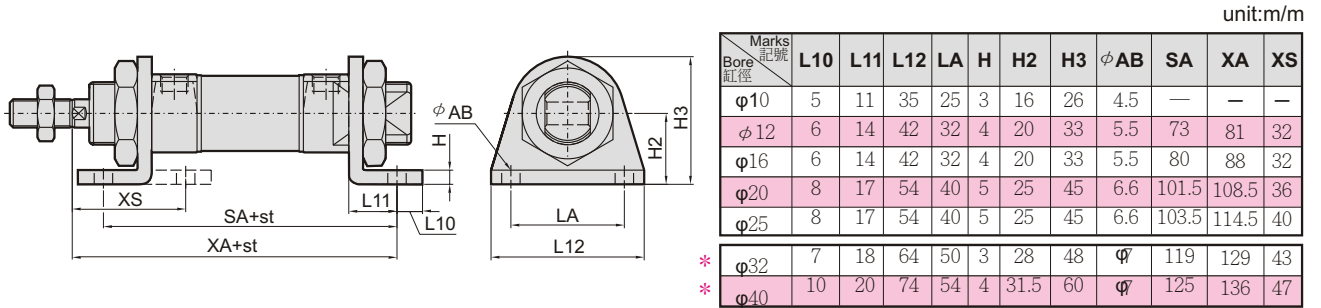
— 緩衝加長尺寸  
Dimensions of extended cushions at front or rear end

Marks 記號 Bore 缸徑	C1	C2	XC1
$\phi 20$	133	109	136.5
$\phi 25$	136.5	108.5	143
* $\phi 32$	154	121	157
* $\phi 40$	152	121	160.5

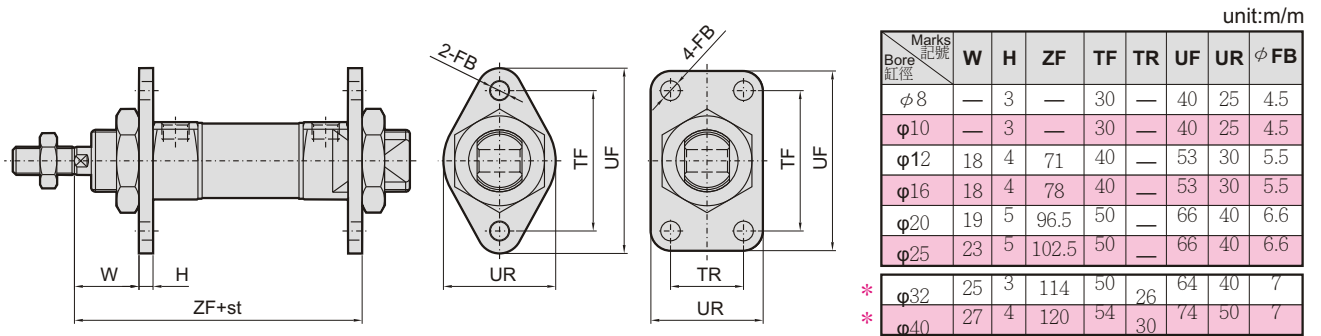
unit:m/m  
st=行程stroke

有標示 \* 號規格 不是ISO規格 Mark "\*" means "not ISO Standard"

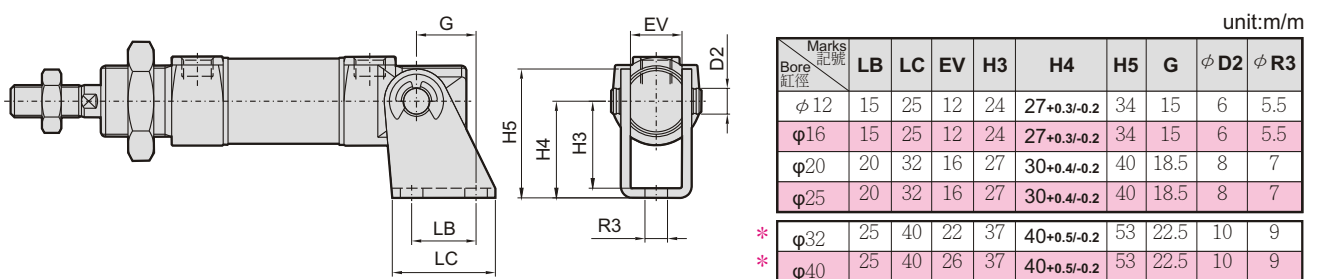
## LB 型 LB Type Foot mounting



## FA 型 FA Type Flange Mounting

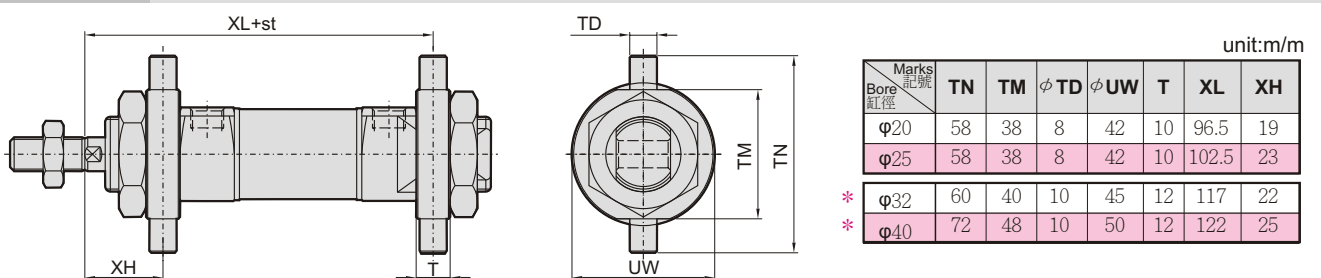


## CB 型 CB Type Clevis foot mounting



## TC 型 TC Type Trunnion Mounting

Front Trunnion (TA)  
Rear Trunnion (TC)



有標示 \* 號規格 不是ISO規格 Mark "\*" means "not ISO Standard"

# DI 軸端接頭 Rod Accessories

### Y 接頭型 Y Type Rod Clevis

Marks 記號	H6	H7	H9	$\phi$ D2	EY	E	KK	B2	$\phi$ D1
$\phi 8, \phi 10$	16	5	8	4	4B13	8	M4	11	8
$\phi 12, \phi 16$	24	7	12	6	6B13	12	M6	16	10
$\phi 20$	32	10	16	8	8B13	16	M8	21.5	14
$\phi 25$	40	12	20	10	10B13	20	M10*1.25	26	18
$\phi 32$	40	12	20	10	10B13	20	M10*1.25	26	18
$\phi 40$	48	14	24	12	12+0.7/+0.15	24	M12*1.25	31	20

unit:m/m

### P 型 P Type Rod eye

Marks 記號	$\phi$ d	H7	S	$\phi$ D	B	B1	L1	L2	W	$\phi$ D3	I	Z°
PHS 6	6	M6*1.0	9	6.8	9	30	12	11	13	5	13	
PHS 8	8	M8*1.25	11	9	12	36	16	14	16	5	13	
PHS 10	10	M10*1.25	13	10.5	14	43	20	17	19	6.5	13	
PHS 12	12	M12*1.25	15	12	16	50	22	19	22	6.5	13	

unit:m/m

### T 型浮動 T Type Foot Type Floating Joint

Marks 記號	M	A	B	C	E	N	$\phi$ D	G	H
KG-1006T	M6*1.0	38	15	18	3	7	18	5	11
KG-1008T	M8*1.25	50	18	20	4	8	24	7	13
KG-1010T	M10*1.25	58	20	22	5	9	26	8	17
KG-1012T	M12*1.25	58	20	22	5	9	28	8	17

unit:m/m

### L 型 托板型 L Type Flange Type Floating Joint

Marks 記號	M	A	L	B	E	$\phi$ J	C	K	T	R
KG-1008L	M8*1.25	19	29	44	26	9	15	51	4	9
KG-1010L	M10*1.25	24	35	44	26	9	19	62	5	10
KG-1012L	M12*1.25	24	35	44	26	9	19	62	5	10

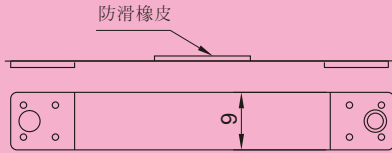
其他尺寸參考T型  
Refer to Standard Type for other dimensions.

### F 型 F Type Floating Flange

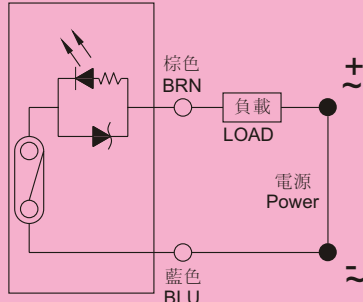
Marks 記號	M	A	T	B	$\phi$ J	C	L
KG-1008F	M8*1.25	32	6	25	7	40	52
KG-1010F	M10*1.25	38	9	32	7	44	56
KG-1012F	M12*1.25	38	9	32	7	44	56

其他尺寸參考T型  
Refer to Standard Type for other dimensions.

固定鋼帶尺寸圖 Mounting Clamps

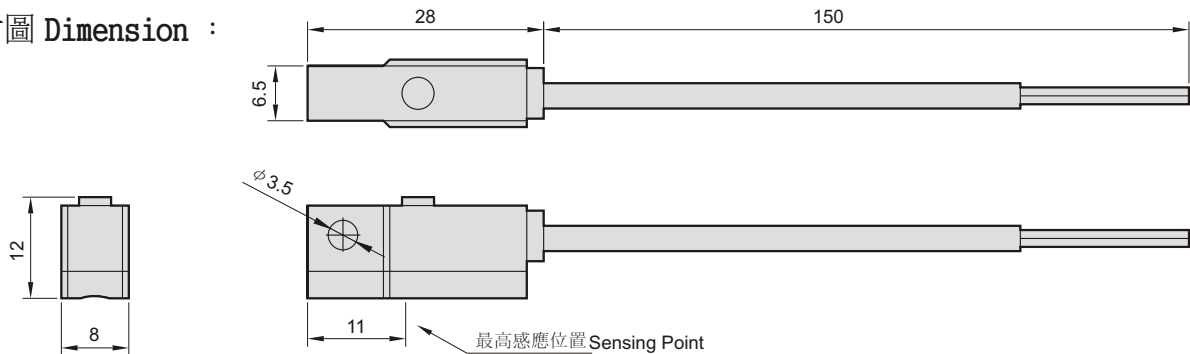


接線圖  
Schematic



G-48R		G-48R Specification
配線方式	Wiring Method	兩線式 2-Wire Type
開關邏輯	Switching Logic	SPST常開型 SPST Normally Open
輸出接點型式	Sensor Type	有接點 Reed Switch
使用電壓範圍	Operating Voltage	5-240V DC/AC
最大開關電流	Switching Current	100 mA max.
接點容量	Contact Rating	10W max.
內部電壓降	Voltage Drop	2.5V max.
指示燈顏色	Indicator	紅色 Red LED
電線	Cable	3Φ, 2C, PU (灰色)
最大切換工作頻率	Operating Frequency	200 Hz
感應磁場強度	Magnet Requirement	75高斯 Gauss Parallel (測量使用之標準磁石: φ15.5* φ8* φ5t 異方性橡膠磁石)
使用溫度範圍	Temperature Range	-10° ~70°
耐衝擊	Shock	30G (正弦波 / X.Y.Z3 軸向 / 每一軸向3回 / 每一回時間11ms)
耐振動	Vibration	9G (復振幅 1.5mm / 10HZ-55HZ-10HZ 掃頻, 持續1分鐘 / 每一次 X.Y.Z3 軸向操作一小時)
保護構造等級	Enclosure Classification	IEC 529 IP 67
保護回路	Protection Circuit	無 None

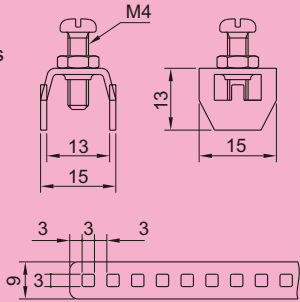
尺寸圖 Dimension :



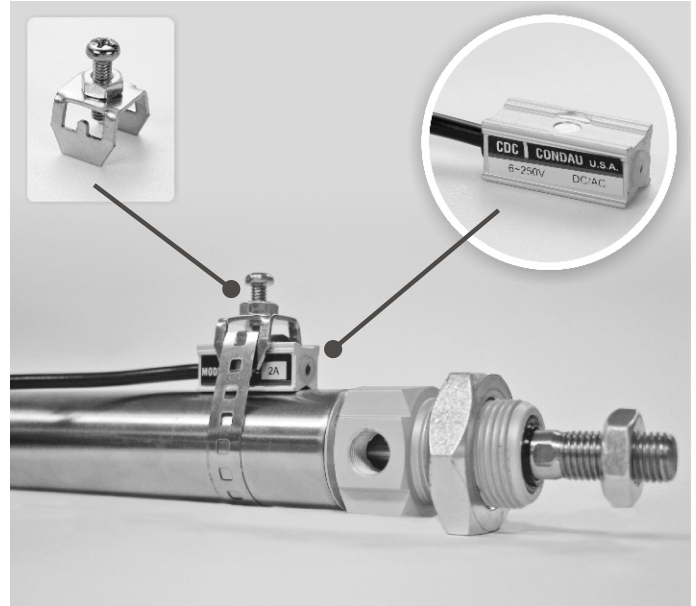
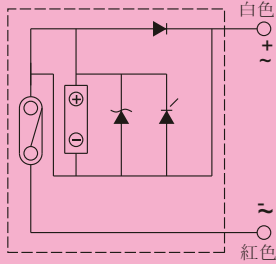
# DI

## 感應器 Magnetic Sensor

固定件尺寸圖  
Mounting Clamps



接線圖  
Schematic



2A		2A Specification
配線方式	Wiring Method	兩線式 2-Wire Type
開關邏輯	Switching Logic	SPST常開型 SPST Normally Open
輸出接點型式	Sensor Type	有接點 Reed Switch
使用電壓範圍	Operating Voltage	5-250V DC/AC
最大開關電流	Switching Current	500 mA max.
接點容量	Contact Rating	10W max.
內部電壓降	Voltage Drop	2.4V max.
指示燈顏色	Indicator	紅色 Red LED
電線	Cable	3.5Φ, 2C, PU (灰色)
最大切換工作頻率	Operating Frequency	500 Hz
感應磁場強度	Magnet Requirement	60~100高斯
使用溫度範圍	Temperature Range	-10° ~70°
耐衝擊	Shock	30G (正弦波 / X.Y.Z3 軸向 / 每一軸向3回 / 每一回時間11ms)
耐振動	Vibration	9G (復振幅 1.5mm / 10HZ-55HZ-10HZ 掃頻, 持續1分鐘 / 每一次 X.Y.Z3 軸向操作一小時)
保護構造等級	Enclosure Classification	IEC 529 IP 67
保護回路	Protection Circuit	無 None

尺寸圖 Dimension :

