



PTG 內張夾頭
PTG Expanding Mandrel
使用說明書
User Manual



 **重要 Important Notes**

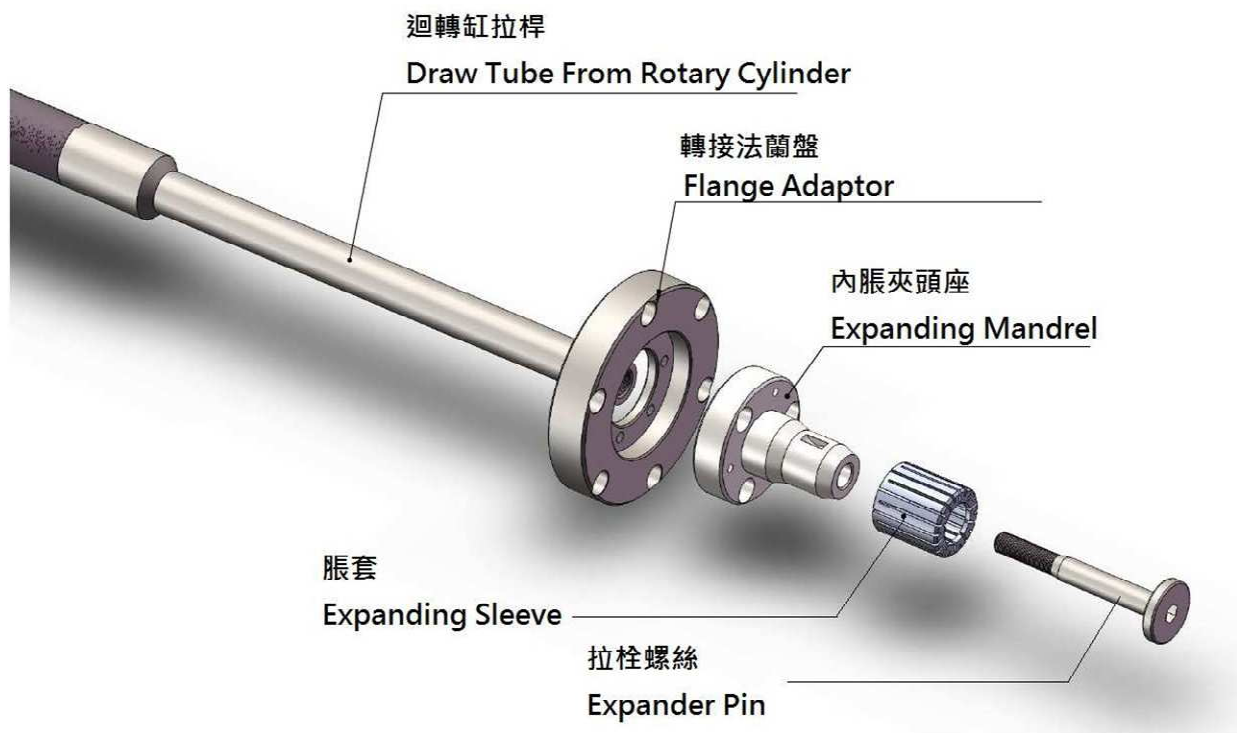
請仔細閱讀本說明書，充分瞭解之後再使用本產品。

Before you use the product. Please read this instruction carefully.

本說明書請妥善保管，製品使用者變更時，請將此說明書交給新的使用者。

Keep the instruction carefully. If the user of the product altered, Please hand the instruction to the new user.

一、安裝總成示意 Installation assembly



二、選購配件 Optional Assesorry

- 1.法蘭 - 請填寫附件一 [拉桿連接訂購表]

Flange-Please fill the sheet [spindle and draw tube info]

- 2.轉接螺帽 - 連結主軸拉桿與拉栓螺絲

Adapte Nut-To cnnect between draw tube and expander pin

- 3.軸向定位單元

Axial Stopper

三、安裝前準備 Preapration for Install

1. 請參考 [PTG 尺寸列表] 準備配適螺絲

Prepare the bolts ,take data sheet as refference

2. 限制輸入壓力上限 = 拉桿拉力 / 迴轉缸活塞面積拉側

Limit to input force=Max draw force/Rotary cylinder piston area pull side

3. 確認迴轉缸拉桿前推到底

Make sure the draw tube push to the end

四、安裝步驟 Install Step by Step

1. 將法蘭掛上主軸

Mount flange onto spindle

2. 鎖上轉接螺帽

Screw in the adaptor nut

3. 法蘭校正同心和平面平行度至 0.002mm

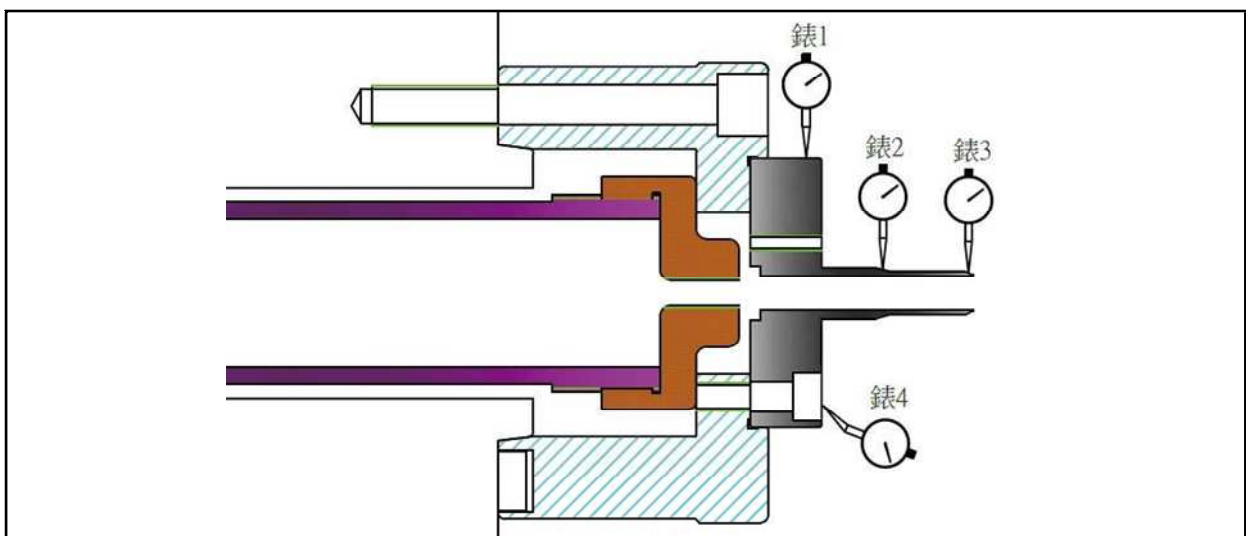
Accurate the flange's concentricity and parallelism to spindle within 0.002 mm

4. 將內脹夾頭座鎖上法蘭

Mount the Mandrel onto flange

5. 校正內脹夾頭座同心與平面至 0.002mm 內，校正點見下圖。

Accurate the mandrel within 0.002mm, indicate points see drawing below



6. 若有，裝入軸向定位止檔塊Load

in axial stopper if needed

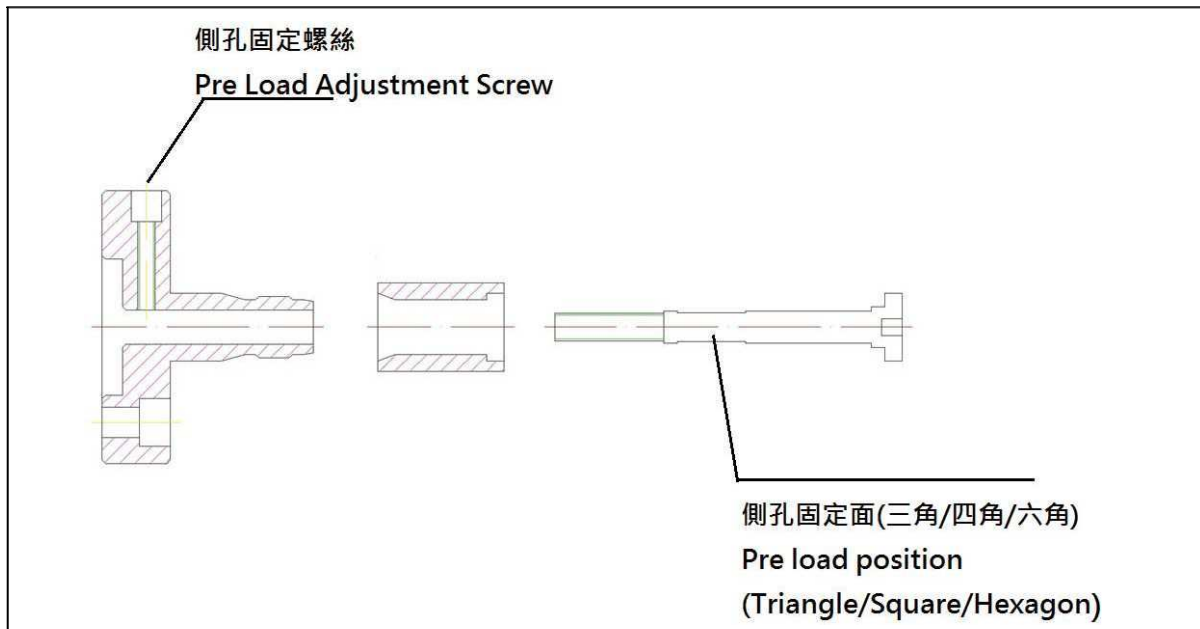
7. 裝入脹套，鎖入拉栓螺絲直到與脹套接觸（請勿鎖至讓脹套有撐開）

Load in the sleeve, then screw in the expander pin until contact with the sleeve (Ensure expander pin don't expand sleeve)

8. 裝入夾持工件，鎖入拉栓螺絲直到夾持到工件

Load in workpiece to position, screw in the expander pin until sleeve grip the work piece

9. 見下圖。逆時針退回拉栓螺絲，使側孔固定螺絲對到最近的側孔固定面。
- See drawing below. Retreat the expander pin unlockwise and find the first available pre load position can meet the pre load adjustment screw



10. 摘下工件，確認裝夾空間是否足夠。若不足請重複步驟 9 再退一格側孔固定面
Remove the workpiece and confirm the loading clearance. If not enough, repeat step 9 to find the next pre load position.
11. 鎖入側孔固定螺絲到底，確認拉銷栓螺絲仍可逕向移動，且不影響軸向滑動
Tighten pre load adjustment screw, ensure expander pin is still able to make radial and axial movement
12. 設定工作拉力，並限制最高輸入壓力。留意請勿空夾。
Set working pull force and limit maximum input pressure
Please notice do not expanding the sleeve without workpiece
13. 安裝完成，可以展開工作
Installation done, mandrel is ready to work

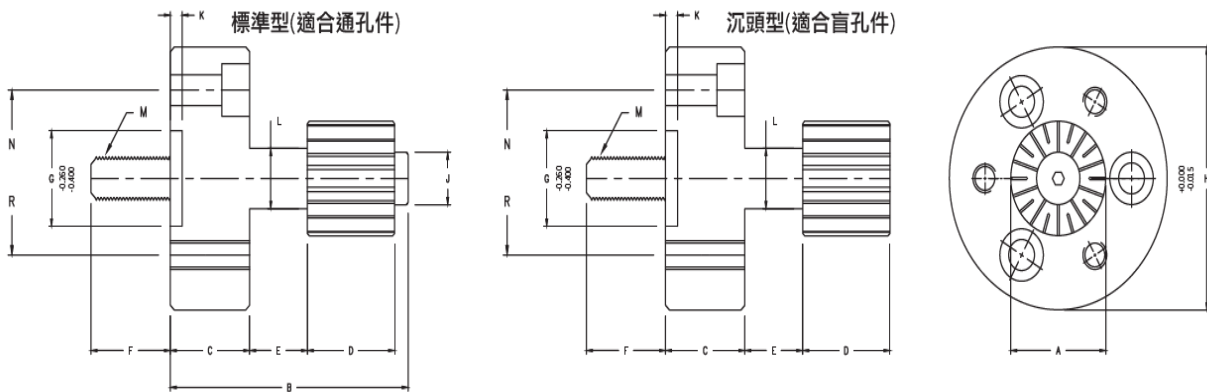
五、脹套修爪說明

脹套經久使用，在彈性壽命允許條件下，可經由修爪回復表面光潔。或是要修整成其他精度尺寸。

In the condition of sleeve still with workable flexibility, user can re-grind the sleeve as following steps.

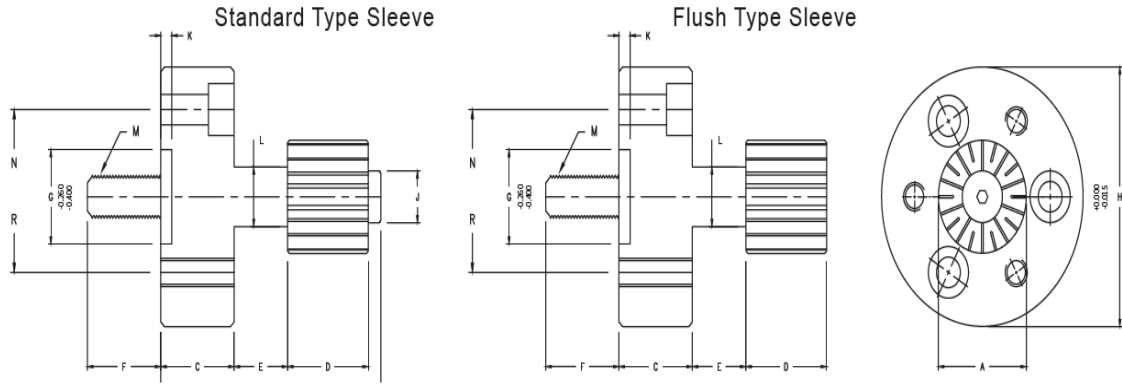
1. 請確認脹套本體上以及筒夾上的雙錐位置清潔無毛刺
Ensure mandrel and sleeve double angles are clean and without any burrs.
2. 使脹套張開至超過目標尺寸 0.1mm
Expanding sleeve over 0.1mm than the target diameter
3. 粗研磨外徑至目標尺寸大 0.025~0.05mm 間
Rough grind the sleeve to over target size by 0.025~0.05
4. 取下脹套，清潔脹套與整個本體後，撐開脹套復位至步驟 3 尺寸
Take off the sleeve ,clean throughly the sleeve and mandrel,expnd the sleeve to size as step3
5. 精研磨脹套至目標尺寸
Finish grinding the sleeve to target outer diameter.
6. 檢查尺寸與同心度
Check finish size and concentricity
7. 修爪完成
Done regrinding

六、尺寸列表



| 標準型型號 | 3A1 | 2C1 | 1C1 | 18C1 | 4C1 | 5C1 | 6C1 | 7C1 | 8C1 |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|----------------------|
| A(內張套徑) | 最小:12.5 最大:16.0 | 最小:16.0 最大:22.0 | 最小:22.0 最大:28.5 | 最小:28.5 最大:41.0 | 最小:41.0 最大:63.5 | 最小:63.5 最大:76.2 | 最小:76.2 最大:89.0 | 最小:89.0 最大:130.0 | 最小:130.0 最大:178.0 |
| B | 60 | 66 | 72 | 79 | 84 | 109 | 118 | 133 | 153 |
| C | 20 | 20 | 20 | 20 | 20 | 25 | 25 | 30 | 30 |
| D | 22.0 | 27.0 | 32.0 | 38.0 | 43.0 | 51.0 | 57.0 | 63.5 | 79.5 |
| E | 14.6 | 15.0 | 15.5 | 15.3 | 14.8 | 25.3 | 24.7 | 25.2 | 24.6 |
| F | 20 | 22 | 30 | 31 | 36 | 36 | 37 | 47 | 22 |
| G | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 100 | 100 |
| H | 75 | 75 | 75 | 75 | 75 | 120 | 120 | 180 | 180 |
| J | 11.0 | 15.0 | 20.0 | 26.5 | 37.5 | 55.0 | 74.5 | 86.5 | 124.0 |
| K | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| L | 12.6 | 14.1 | 20.7 | 26.3 | 37.0 | 57.3 | 71.1 | 84.1 | 123.0 |
| M(拉桿牙徑) | M4 | M8 | M8 | M10 | M12 | M20 | M20 | M24 | M36 |
| N(安裝螺絲) | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø94-M10 | Ø94-M10 | Ø150-M12 | Ø150-M12 |
| R(定位螺孔) | Ø28-M4 | Ø28-M4 | Ø58-M6 | Ø58-M6 | Ø58-M6 | Ø94-M8 | Ø94-M8 | Ø150-M10 | Ø150-M10 |
| 拉桿拉力(kgf) | 700 | 1000 | 1200 | 1800 | 2300 | 2800 | 3200 | 3700 | 5500 |

| 標準型型號 | 3A2 | 2C2 | 1C2 | 18C2 | 4C2 | 5C2 | 6C2 | 7C2 | 8C2 |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|----------------------|----------------------|
| A(內張套徑) | 最小:16.5 最大:22.0 | 最小:22.0 最大:28.5 | 最小:28.5 最大:40.0 | 最小:40.0 最大:51.0 | 最小:51.0 最大:73.0 | 最小:73.0 最大:89.0 | 最小:89.0 最大:102.0 | 最小:101.0 最大:143.0 | 最小:143.0 最大:178.0 |
| C | 20 | 20 | 20 | 20 | 20 | 25 | 25 | 30 | 30 |
| D | 26.0 | 32.0 | 38.0 | 45.0 | 50.0 | 60.0 | 69.0 | 78.5 | 99.5 |
| E | 14.6 | 15.0 | 15.5 | 15.3 | 14.8 | 25.3 | 24.7 | 25.2 | 24.6 |
| F | 20 | 22 | 30 | 31 | 36 | 36 | 37 | 47 | 22 |
| G | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 100 | 100 |
| H | 75 | 75 | 75 | 75 | 75 | 120 | 120 | 180 | 180 |
| J | 11.0 | 15.0 | 20.0 | 26.5 | 37.5 | 55.0 | 74.5 | 86.5 | 124.0 |
| K | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| L | 12.6 | 14.1 | 20.7 | 26.3 | 37.0 | 57.3 | 71.1 | 84.1 | 123.0 |
| M(拉桿牙徑) | M4 | M8 | M8 | M10 | M12 | M20 | M20 | M24 | M36 |
| N(安裝螺絲) | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø94-M10 | Ø94-M10 | Ø150-M12 | Ø150-M12 |
| R(定位螺孔) | Ø28-M4 | Ø28-M4 | Ø58-M6 | Ø58-M6 | Ø58-M6 | Ø94-M8 | Ø94-M8 | Ø150-M10 | Ø150-M10 |
| 拉桿拉力(kgf) | 700 | 1000 | 1200 | 1800 | 2300 | 2800 | 3200 | 3700 | 5500 |



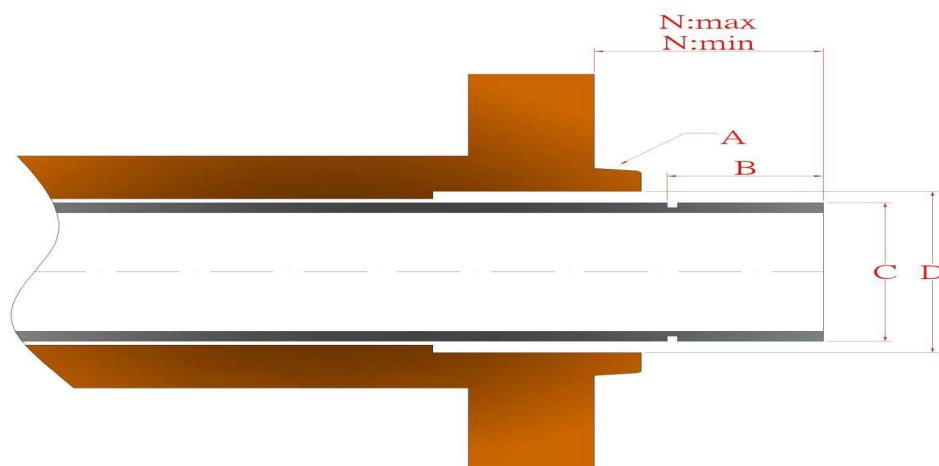
| Standard Type | 3A1 | 2C1 | 1C1 | 18C1 | 4C1 | 5C1 | 6C1 | 7C1 | 8C1 |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|
| A (Dia.) | Min:12.5 Max:16.0 | Min:16.0 Max:22.0 | Min:22.0 Max:28.5 | Min:28.5 Max:41.0 | Min:41.0 Max:63.5 | Min:63.5 Max:76.2 | Min:76.2 Max:89.0 | Min:89.0 Max:130.0 | Min:130.0 Max:178.0 |
| B | 60 | 66 | 72 | 79 | 84 | 109 | 118 | 133 | 153 |
| C | 20 | 20 | 20 | 20 | 20 | 25 | 25 | 30 | 30 |
| D | 22.0 | 27.0 | 32.0 | 38.0 | 43.0 | 51.0 | 57.0 | 63.5 | 79.5 |
| E | 14.6 | 15.0 | 15.5 | 15.3 | 14.8 | 25.3 | 24.7 | 25.2 | 24.6 |
| F | 20 | 22 | 30 | 31 | 36 | 36 | 37 | 47 | 22 |
| G | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 100 | 100 |
| H | 75 | 75 | 75 | 75 | 75 | 120 | 120 | 180 | 180 |
| J | 11.0 | 15.0 | 20.0 | 26.5 | 37.5 | 55.0 | 74.5 | 86.5 | 124.0 |
| K | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| L | 12.6 | 14.1 | 20.7 | 26.3 | 37.0 | 57.3 | 71.1 | 84.1 | 123.0 |
| M (Pull Thread) | M4 | M8 | M8 | M10 | M12 | M20 | M20 | M24 | M36 |
| N(Bolts) | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø94-M10 | Ø94-M10 | Ø150-M12 | Ø150-M12 |
| R | Ø28-M4 | Ø28-M4 | Ø58-M6 | Ø58-M6 | Ø58-M6 | Ø94-M8 | Ø94-M8 | Ø150-M10 | Ø150-M10 |
| Max. Pull Force(kgf) | 700 | 1000 | 1200 | 1800 | 2300 | 2800 | 3200 | 3700 | 5500 |

| Standard Type | 3A2 | 2C2 | 1C2 | 18C2 | 4C2 | 5C2 | 6C2 | 7C2 | 8C2 |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|------------------------|------------------------|
| A(Dia.) | Min:16.5 Max:22.0 | Min:22.0 Max:28.5 | Min:28.5 Max:40.0 | Min:40.0 Max:51.0 | Min:51.0 Max:73.0 | Min:73.0 Max:89.0 | Min:89.0 Max:102.0 | Min:101.0 Max:143.0 | Min:143.0 Max:178.0 |
| C | 20 | 20 | 20 | 20 | 20 | 25 | 25 | 30 | 30 |
| D | 26.0 | 32.0 | 38.0 | 45.0 | 50.0 | 60.0 | 69.0 | 78.5 | 99.5 |
| E | 14.6 | 15.0 | 15.5 | 15.3 | 14.8 | 25.3 | 24.7 | 25.2 | 24.6 |
| F | 20 | 22 | 30 | 31 | 36 | 36 | 37 | 47 | 22 |
| G | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 100 | 100 |
| H | 75 | 75 | 75 | 75 | 75 | 120 | 120 | 180 | 180 |
| J | 11.0 | 15.0 | 20.0 | 26.5 | 37.5 | 55.0 | 74.5 | 86.5 | 124.0 |
| K | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| L | 12.6 | 14.1 | 20.7 | 26.3 | 37.0 | 57.3 | 71.1 | 84.1 | 123.0 |
| M (Pull Thread) | M4 | M8 | M8 | M10 | M12 | M20 | M20 | M24 | M36 |
| N(Bolts) | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø58-M8 | Ø94-M10 | Ø94-M10 | Ø150-M12 | Ø150-M12 |
| R | Ø28-M4 | Ø28-M4 | Ø58-M6 | Ø58-M6 | Ø58-M6 | Ø94-M8 | Ø94-M8 | Ø150-M10 | Ø150-M10 |
| Max. Pull Force(kgf) | 700 | 1000 | 1200 | 1800 | 2300 | 2800 | 3200 | 3700 | 5500 |

附件、一

拉桿連接訂購表

Draw Tube and Spindle Info



請填寫下列資料Please fill in information as following

A:主軸鼻端Spindle Nose A2-4 A2-5 A2-6 A2-8 A2-11

B:螺牙長度Thread length_____mm

C: 正牙(LT) 逆牙(RT) 外牙(Outer T) 內牙(Inner T)

拉桿牙尺寸Tread Size_____

D:主軸通孔徑Spindle Through Hole: Φ _____mm

N:拉桿行程Piston max:_____mm min:_____mm

*迴轉缸廠牌Brand Name of Rotary Cylinder : _____

*迴轉缸型號Model Name of Rotary Cylinder : _____

公司名稱Company Name : _____

聯絡人Contact : _____

聯絡電話Tel : _____

信箱Email : _____

朝銓實業有限公司 Jato Precision





朝銓實業有限公司

JATO Precision CO.,Ltd

台中市潭子區中山路三段493巷23弄32-12號
NO.32-1, Aly. 23, Ln. 493, Sec. 3, Zhongshan Rd.,
Tanzi Dist., Taichung City 42754, Tawian

TEL : +886-4-25311712 FAX : +886-4-25311776

EMAIL : OA@jato-precision.com/luke@jato-precision.com

中國直播台中 : +86- 21-51827680轉6018

昆山 服務處 : +86-512-36839041

www.jato-precision.com