



巨輪興股份有限公司

高雄市岡山區岡山北路199號

**CHU LUN SING CO.,LTD**

No.199, Gangshan N. Rd., Gangshan Dist.,

Kaohsiung City 82059, Taiwan

<http://www.sunrun.com.tw>

E-mail:sun.run@msa.hinet.net

TEL:886-7-6210505

FAX:886-7-6217575

# 雙動六角中空液壓扳手 操作說明

## SRX



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中文 : C1~C10

中文  
English  
Ver. 16

## 1. 安全預防措施



不遵守以下的注意事項和警告將引起設備損失及人員傷害。



**重要事項：**未滿18歲人員不得擅自操作。操作SUN RUN油壓設備前請先仔細閱讀並了解相關操作手冊、安全事項和警告事項。操作人員負有油壓設備週邊之人員及環境之安全責任。



**警告事項：**為確保避免人員傷害和設備作業損失，請確認所有油壓設備及週邊配件，使用最大壓力為 700 bar(10,000psi)。



**警告事項：**操作人員於使用期間為避免傷害，需全程配戴安全防護措施。



**警告事項：**系統操作壓力絕不可超過最低壓力元件之值最低值。系統中應加裝壓力錶藉以監測系統中的壓力並了解使用狀態。



**警告事項：**只能在已連接好的液壓油路中使用；快速接頭尚未確實連接時禁止使用或加壓，否則高壓情況下接頭的油封及鋼珠會高速噴出造成人員傷亡。



**警告事項：**當零件出現裂痕或損壞時，應立即以**SUN RUN**零件更換。正確標準的零件可防止人員或設備損傷。**SUN RUN**零件經特別設計可完全適用並適用產品標稱的額定荷載或壓力。



**重要事項：**液壓設備必需由合格的液壓技工進行維修。需要修理時，請聯繫就近的**SUN RUN**服務據點並使用**SUN RUN**液壓油保固方為有效。



**警告事項：**避免損壞油壓管。捲收油管時，避免油管強烈彎曲或打結。使用彎曲或打結油管易引起背壓。強烈彎曲或打結的油管亦易引起內部損壞或提早油管老化。



**千萬不要重壓油管。**劇烈的撞擊會造成油管內鋼絲網損壞。使用受損的油管可能導致油管破裂。



**重要事項：**千萬不要利用油管來提攜其他油壓設備



**危險事項：**不要用手對油管施加壓力(包括拉或舉高) 高壓下洩漏的液壓油會穿透皮膚造成嚴重傷害。當液壓油侵入皮膚請立即就診。



**危險事項：**為避免人員及設備傷害，請不要任意移除扳手上的保護蓋。也請不要任意改裝扳手。千萬不可更改旋轉接頭內的釋放閥。



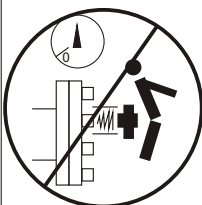
**注意事項：**不正確的系統安裝會造成錯誤訊息及危險。安裝前請確認旋轉接頭已完全清除雜物。使用完畢後，旋轉接頭請務必蓋上防塵蓋。



**注意事項：**千萬不要搭配不相符的套筒和驅動頭。



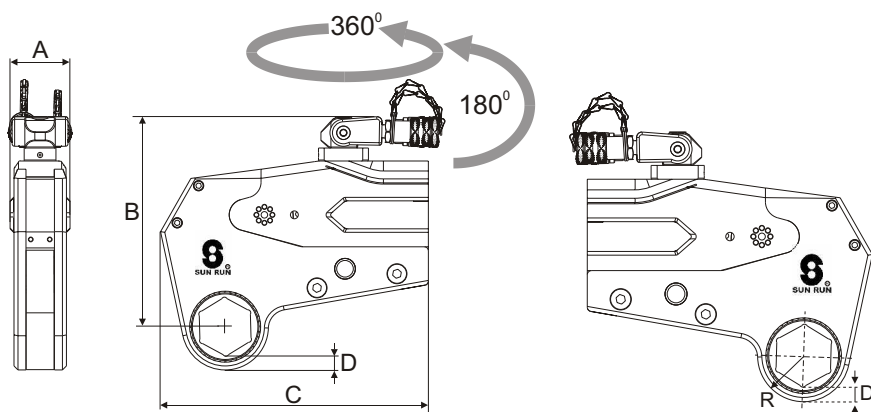
**注意事項：**使用時請配合套筒。



切勿在拉伸或拆卸過程中站立於螺栓同軸位置。如果螺栓出現問題、鬆脫或損壞的零件可能會射出，如此可能會導致嚴重的人員傷亡。非必要或壓力穩定情況下，才允許操作者到加壓拉伸器附近持續觀察壓力計。

## 2.規格

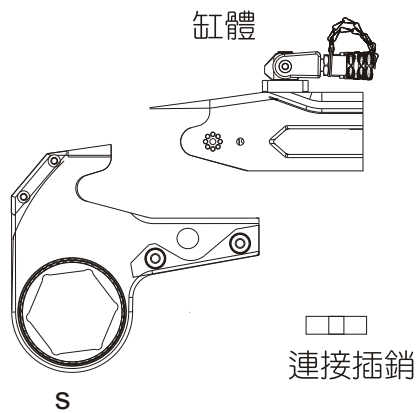
| 型號<br>Model<br>Number | 六角頭 Hex. Size |        | 最小扭力<br>Min.<br>Torque |       | 最大扭力<br>Max.<br>Torque |       | 重量 Weight (kg) |             | 外型尺寸 Dimensions(mm) |             |             |           |
|-----------------------|---------------|--------|------------------------|-------|------------------------|-------|----------------|-------------|---------------------|-------------|-------------|-----------|
|                       | (in)          | (mm)   | (lbf.ft)               | (N.m) | (lbf.ft)               | (N.m) | 缸體<br>Cylinder | 連接體<br>Link | A                   | B           | C           | D         |
| SRX-2                 | 1-1/4~2-3/8"  | 30~60  | 192                    | 260   | 2178                   | 2994  | 1.99           | 1.48~1.85   | 32.0                | 148.8~156.8 | 168.0~175.5 | 9.1~11.7  |
| SRX-4                 | 1-5/8~3-1/8"  | 41~80  | 395                    | 535   | 4732                   | 6504  | 3.35           | 3.05~3.95   | 41.4                | 172.9~189.2 | 204.4~220.8 | 12.7~13.7 |
| SRX-8                 | 1-7/8~4-1/8"  | 50~105 | 830                    | 1125  | 10689                  | 14692 | 6.64           | 6.25~8.60   | 52.5                | 210.4~235.4 | 268.1~283.9 | 13.7~19.5 |
| SRX-16                | 2-3/4~4-5/8"  | 70~115 | 1560                   | 2115  | 16854                  | 23165 | 8.50           | 11.98~14.16 | 64.0                | 245.7~258.3 | 326.7~344.7 | 19.5~23.0 |
| SRX-32                | 3-1/8~6-1/8"  | 80~155 | 3220                   | 4365  | 37566                  | 51632 | 16.1           | 25.10~30.36 | 82.5                | 287.6~313.1 | 422.5~442.5 | 23.0~26.0 |



| Bolt<br>Dia.<br>螺栓<br>直徑 | Across<br>flat<br>螺母<br>對邊 | Bolt<br>Dia.<br>(Imp.)<br>螺栓<br>直徑 | Across<br>flat<br>(Imp.)<br>螺母<br>對邊 | SRX-2               |           |           | SRX-4               |           |           | SRX-8               |           |           | SRX-16              |           |           | SRX-32              |           |           |
|--------------------------|----------------------------|------------------------------------|--------------------------------------|---------------------|-----------|-----------|---------------------|-----------|-----------|---------------------|-----------|-----------|---------------------|-----------|-----------|---------------------|-----------|-----------|
|                          |                            |                                    |                                      | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) |
| 20                       | 30                         | 3/4                                | 1-1/4                                | SRX-2L 30           | 26.6      | 9.1       |                     |           |           |                     |           |           |                     |           |           |                     |           |           |
| 22                       | 32                         |                                    |                                      | SRX-2L 32           | 26.6      | 9.1       |                     |           |           |                     |           |           |                     |           |           |                     |           |           |
| 24                       | 36                         | 7/8                                | 1-7/16                               | SRX-2L 36           | 33.5      | 10.4      |                     |           |           |                     |           |           |                     |           |           |                     |           |           |
| 27                       | 41                         | 1                                  | 1-5/8                                | SRX-2L 41           | 34.4      | 10.4      | SRX-4L 41           | 36.8      | 12.7      |                     |           |           |                     |           |           |                     |           |           |
| 30                       | 46                         | 1-1/8                              | 1-13/16                              | SRX-2L 46           | 37.2      | 10.4      | SRX-4L 46           | 39.5      | 12.7      |                     |           |           |                     |           |           |                     |           |           |
| 33                       | 50                         | 1-1/4                              | 2                                    | SRX-2L 50           | 40.6      | 11.7      | SRX-4L 50           | 42.3      | 12.7      | SRX-8L 50           | 43.3      | 13.7      |                     |           |           |                     |           |           |
| 36                       | 55                         | 1-3/8                              | 2-3/16                               | SRX-2L 55           | 43.7      | 11.7      | SRX-4L 55           | 45.2      | 12.7      | SRX-8L 55           | 45.9      | 13.7      |                     |           |           |                     |           |           |
| 39                       | 60                         | 1-1/2                              | 2-3/8                                | SRX-2L 60           | 46.6      | 11.7      | SRX-4L 60           | 47.9      | 12.7      | SRX-8L 60           | 48.9      | 13.7      |                     |           |           |                     |           |           |
| 42                       | 65                         | 1-5/8                              | 2-9/16                               |                     |           |           | SRX-4L 65           | 51.7      | 13.7      | SRX-8L 65           | 52.5      | 13.7      |                     |           |           |                     |           |           |
| 45                       | 70                         | 1-3/4                              | 2-3/4                                |                     |           |           | SRX-4L 70           | 54.8      | 13.7      | SRX-8L 70           | 54.5      | 13.7      | SRX-16L 70          | 60.3      | 19.5      |                     |           |           |
| 48                       | 75                         | 1-7/8                              | 2-15/16                              |                     |           |           | SRX-4L 75           | 57.3      | 13.7      | SRX-8L 75           | 57.2      | 13.7      | SRX-16L 75          | 63.1      | 19.5      |                     |           |           |
| 52                       | 80                         | 2                                  | 3-1/8                                |                     |           |           | SRX-4L 80           | 60.1      | 13.7      | SRX-8L 80           | 59.9      | 13.7      | SRX-16L 80          | 66.0      | 19.5      | SRX-32L 80          | 72.0      | 25.0      |
| 56                       | 85                         |                                    |                                      |                     |           |           |                     |           |           | SRX-8L 85           | 67.2      | 17.5      | SRX-16L 85          | 69.0      | 19.5      | SRX-32L 85          | 75.0      | 25.0      |
| 60                       | 90                         | 2-1/4                              | 3-1/2                                |                     |           |           |                     |           |           | SRX-8L 90           | 70.1      | 18.0      | SRX-16L 90          | 71.8      | 19.5      | SRX-32L 90          | 78.0      | 25.0      |
| 64                       | 95                         |                                    |                                      |                     |           |           |                     |           |           | SRX-8L 95           | 73.5      | 18.0      | SRX-16L 95          | 79.3      | 21.0      | SRX-32L 95          | 80.5      | 25.0      |
| 68                       | 100                        | 2-1/2                              | 3-7/8                                |                     |           |           |                     |           |           | SRX-8L 100          | 76.4      | 18.0      | SRX-16L 100         | 80.0      | 21.0      | SRX-32L 100         | 83.5      | 25.0      |
| 72                       | 105                        | 2-3/4                              | 4-1/8                                |                     |           |           |                     |           |           | SRX-8L 105          | 80.5      | 19.5      | SRX-16L 105         | 82.0      | 21.0      | SRX-32L 105         | 87.5      | 26.5      |
| 76                       | 110                        |                                    |                                      |                     |           |           |                     |           |           |                     |           |           | SRX-16L 110         | 85.0      | 21.0      | SRX-32L 110         | 91.3      | 26.5      |
| 80                       | 115                        |                                    |                                      |                     |           |           |                     |           |           |                     |           |           | SRX-16L 115         | 90.0      | 23.0      | SRX-32L 115         | 94.9      | 26.5      |
|                          | 117                        | 3                                  | 4-5/8                                |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 117         | 94.9      | 26.5      |
| 85                       | 120                        |                                    |                                      |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 120         | 96.5      | 26.5      |
|                          | 125                        | 3-1/4                              | 5                                    |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 125         | 100.5     | 26.5      |
| 90                       | 130                        |                                    |                                      |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 130         | 102.5     | 26.5      |
| 95                       | 135                        | 3-1/2                              | 5-3/8                                |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 135         | 108.0     | 28.5      |
|                          | 140                        |                                    |                                      |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 140         | 110.0     | 28.5      |
| 100                      | 145                        | 3-3/4                              | 5-3/4                                |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 145         | 113.0     | 28.5      |
| 105                      | 150                        |                                    |                                      |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 150         | 116.0     | 28.5      |
| 110                      | 155                        | 4                                  | 6-1/8                                |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 155         | 119.0     | 28.5      |

### 3.操作說明

圖1



- 1.將雙層油管確實與快速接頭鎖緊。  
需確定快速接頭與油管密切接合無縫隙。
- 2.相對應的泵浦與油管和快速接頭亦注意相同要求。  
需確定快速接頭與油管密切接合無縫隙。
- 3.將連接插銷插入驅動缸體孔。
- 4.選擇適合的連接體並搭配對應的缸體連結。(如圖1)
- 5.連接體二邊側板的孔需對應成一直線且與缸體上的插銷孔亦能對應成一直線使插銷順利自側板一邊穿至另一邊。

#### 3.1 調整

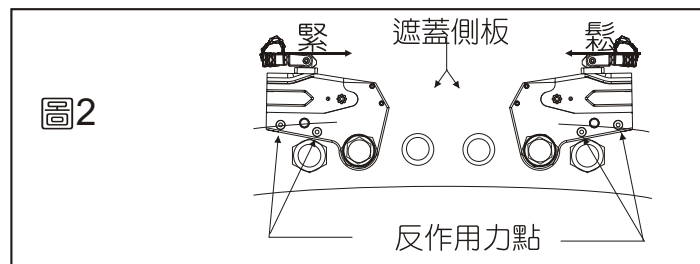
##### 3.1.1 扳手安裝

決定適合的扭力扳手後，選擇適合的配件、合尺寸的連接體、泵浦即可操作。配合後附的「扭力扳手換算表」依輸入的工作壓力確定使用扭力值。

- 1.使用前先將動力(電動泵浦或氣動泵浦)開關打開。
- 2.先利用遙控依壓力錶所示將壓力先歸零(降至原點)。
- 3.利用調壓閥(螺栓)調整所需壓力。

根據使用狀態"順緊逆鬆"原則；順時針調壓則壓力上升；逆時針則降壓。降壓時，一定要先將壓力調到低於所需值，再重新將壓力調高到所需值。

- 4.調整到適用壓力後重新鎖緊調壓螺帽並重新確認扳手是否符合壓力及扭力值。確認壓力是否設定正確。





### 3.操作說明

#### 3.1.2 扳手操作

圖2所示為相對應的二個螺栓利用液壓扭力扳手工作示意圖。依實際工作狀況其放鬆或鎖緊要求方向而有所不同。遮蓋側板的位置、距離亦因使用六角連接體尺寸會有所不同。

1. 將六角扳手確實套在六角螺帽上。再次確認所使用扳手尺寸和欲拆或裝的螺帽尺寸是否一致，套筒和欲工作的六角螺帽是否完全符合。
2. 拆卸或安裝螺帽時需注意表面是否有足夠空間供扳手反作用力活動並能完全容納油管、萬向轉接頭和快速接頭等整體作業空間。  
千萬不可以油管、萬向轉接頭或是快速接頭等配件為反作用力支點。
3. 泵浦開始啟動後，利用遙控器上的按鈕驅動扳手主軸(活塞)。當連接體已和油管連接，倘若主軸上的凹槽仍未與連接插銷和連接體咬合，在第一次前進的行程中凹槽會自動咬合。
4. 當連接體已和油管連接且扳手開始動作，扳手的反作用力面的各接觸點即開始轉動，螺帽即開始轉動。
5. 當螺帽不再轉動、泵浦上的壓力錶顯示已到達壓力預設值則放鬆遙控器的控制鈕，扳手回到回油位置，此時會聽到"卡啦"聲；當聲音停止時表示扳手已回復到原來的狀態。
6. 重覆安裝至另一螺帽，按下遙控鈕即為另一循環。
7. 扳手不使用時請回覆到原點(原來使用狀態)。
8. 快速接頭互相連結時，必須確保完全咬合並確認與泵浦端接頭相對應即H對H;L對L(或A對A;B對B),假如連接錯誤或有一端接頭未密合,則接頭端溢油孔(如右圖)會產生漏油等現象,扳手亦無法工作。



#### 3.2 潤滑

所有零件及連接件均應定期使用潤滑油(或黃油)潤滑。

頻率依使用者使用頻率及使用環境評估。

若工作環境條件惡劣,例如戶外或鬆軟泥(沙)地則需經常潤滑。

無論如何,請依下列指示進行潤滑動作：

1. 將缸體和連接體分開。
2. 先將舊的潤滑油清除再塗上新的潤滑油於主軸勾凹槽及塗一層薄油於弧墊片的二側。
3. 將連接體依維修指示分解後並將拆下的零組件在通風狀態良好的環境下清洗乾淨。
4. 將零組件風乾並塗上一層薄油。
5. 將側板二面覆蓋到驅動軸和卡爪的部份都塗上一層薄油。千萬不可在棘輪或卡爪齒部塗上潤滑油，以防咬合時打滑。
6. 再依維修指示將連接體重新組合。

## 4. 維修手冊

### 警告

請在維修動作前關閉動力系統並將缸體所連接的液壓油洩除(使連接的油管分離即可)。當操作或維修過程時請戴上護目鏡保護雙眼。

### 4.1 分解

#### 4.1.1 一般說明

1. 無法必需更進一步代替或修理損壞的部分時不可拆卸這個工具。
2. 要額外小心刮傷、刻痕或表面傷害，如此在壓力下會有遏制液壓油。
3. 無論何時用老虎鉗緊夾住工具，使用皮製或銅片覆蓋在老虎鉗爪以保護零件表面和防止變形。特別是扭轉像是牙類的線圈或管類。
4. 不可移除任何一個壓力零件或零組件，除非在維修或更換時必需先移除。
5. 不可任意分開液壓缸體組件，除非已獲得需要的油封和O型環零件可供替換。
6. 拆卸這些工具採用英制式尺寸零件。

#### 4.1.2 如何分解扭力扳手

1. 將連接插銷自缸體和連接體連接口推出。
2. 拿起缸體即可和連接體分開為二個獨立單位。

#### 4.1.3 如何分解SRX-2, SRX-4 和 SRX-8 缸體組

1. 用包覆皮製或銅片爪的老虎鉗緊夾住缸體最上方入口處並使用3/4"扳手鬆開二個萬向轉接頭和附接的快速接頭。
2. 將所夾持的缸體外蓋移開並用容器將溢出的油倒入，再將主軸前後移動數次至清洗乾淨為止。
3. 用包覆皮製或銅片爪的老虎鉗緊夾住缸體最上方入口處。
4. SRX-2和SRX-4 系列可使用六角扳手鬆開移除尾蓋墊和尾蓋螺栓。
5. 將尾蓋推進至1/2"並藉由在缸體轉動而離開溝槽來移除二個固定環。
6. 安裝「油封安裝工具」於缸體外蓋的入口處。

### 注意事項

以下安裝「油封安裝工具」目的在於保護塞底油封擴大至固定環溝槽中。假如不用「油封安裝工具」改以二平坦薄片置於開放面且相對應的中點，以控制油封擴大的影響。

7. 轉接頭入口一端的牙口或管牙附有T型端口插入尾蓋。使用轉接頭入口或T型端口拉出尾蓋和塞底油封。
8. 推出主軸到缸體底並使用六角扳手移除二個固定螺栓。
9. 使用勾工具穿過主軸墊片上的每個螺栓孔以此將墊片拉出缸體。
10. 拉出油封和主軸O型環。
11. 將主軸推出缸體底直到插銷露出缸體外殼。
12. 將插銷輕敲出插銷孔。
13. 將主軸完全推出缸體外。
14. 如果需要更換油封可利用勾子將油封完全拉出缸體外。

## 4. 維修手冊

### 4.1.4 如何分解SRX-16 和SRX-32 缸體組

1. 用包覆皮製或銅片爪的老虎鉗緊夾住缸體最上方入口處並使用3/4"扳手鬆開二個萬向轉接頭和附接的快速接頭。
2. 將所夾持的缸體外蓋移開並用容器將溢出的油倒入，再將主軸前後移動數次至清洗乾淨為止。
3. 用包覆皮製或銅片爪的老虎鉗緊夾住缸體最上方入口處。
4. 此時扳手底塞仍嵌在尾蓋上。利用扳手夾在扳手底塞的六角位置慢慢將底塞及尾蓋及油封取出。
5. 將主軸推出到看見主軸的頭為止。

### 注意事項

當拆解過程中或已拆除主軸之後，千萬不可緊抓住主軸上的任何可提抓的裝置，那會造成表面損傷。任何造成表面的刻(刮)痕將會造成缸體組合後漏油的危險。

6. 使用六角套筒套住主軸頭部並藉此鬆開主軸頂部和O型環。
7. 將主軸自缸體拉出。
8. 假如弧墊片需更換，則輕敲墊片插銷將插銷取出。
9. 若需更換主軸油封則使用勾子將油封拉出缸體即可。

### 4.1.5 如何分解連結的連接體

1. 將連接體左面朝下平放在工作台面上並使用六角扳手鬆開二個低墊塊螺栓。
2. 再用六角扳手鬆開二個高平面螺栓。
3. **SRX-16** 和 **SRX-32**系列需再將上方的墊塊插銷輕輕右側板推開。
4. 當姆指輕壓棘輪邊緣小心拿起連接體兩側側板。
5. 當維修內部零件時緊抓住棘輪和驅動板，將棘輪和驅動板與左側板分離。

### 注意事項

以下分解流程需注意，當棘輪自驅動板分離後，驅動墊塊和墊塊彈簧會自驅動板凹處掉落，需注意勿將驅動墊塊掉落在堅硬表面物體造成齒痕。

6. 將棘輪自驅動板推開並且將驅動墊塊和墊塊彈簧自驅動板凹處移除。
7. 假如驅動插銷和驅動插銷彈簧必需被更換，先使用轉棒將彈簧插銷自驅動板取出。一旦插銷和彈簧取出後驅動插銷即會掉落在凹縫底部，易於取出。
8. 拿起低平面墊塊取出墊塊插銷。假如插銷需被更換，則利用六角扳手自右側板取出二個低墊塊螺栓。自右側板洞內部表面拉出插銷。
9. **SRX-2, SRX-4** 和 **SRX-8**, 需自右側板鬆開二個墊塊螺栓和頂部墊塊。**SRX-16** 和 **SRX-32**需使用一個工具自右側板取出墊塊插銷。鬆開二個墊塊插銷並自右側板取出中墊塊和上墊塊。
10. 假如側板套筒必需被更換，則將套筒往側板內面壓出即可。

## 4. 維修手冊

### 4.2 組裝

#### 4.2.1 一般說明

1. 要額外小心刮傷、刻痕或表面傷害，如此在壓力下會有遏制液壓油。
2. 無論何時用老虎鉗緊夾住工具，使用皮製或銅片覆蓋在老虎鉗爪以保護零件表面和防止變形。特別是扭轉像是牙類的線圈或管類。
3. 最後組裝前可塗些潤滑油(液)在O型環上。

#### 4.2.2 如何組裝連接體

1. 假如側板套筒被取出壓入新的套筒，對準左右側板。正確的套筒會服貼環繞在側板一面並且和和凹槽相契合。
2. **SRX-2, SRX-4** 和 **SRX-8**, 系列的上墊塊靠著右側板內面 對準側板上的螺栓孔使上墊塊螺栓穿過側板鎖住側板和上墊塊。**SRX-16** 和 **SRX-32**系列則將墊塊插銷插入右側板並完全嵌入到表面沒有突出。再將上墊塊突出處插入中墊塊的凹縫內並對準孔位再將墊塊插銷插入孔中。將一切固定後再將上墊塊螺栓自側板至墊塊鎖緊。
3. 將二個低墊塊插銷插入右側板的右下方。並鎖上二個低平面墊塊螺栓。
4. 穿過二個墊塊插銷的墊塊會緊靠著側板。確定墊塊的方向是否正確，側板的邊緣是否有突出或有不適當的空間。
5. 插入驅動插銷於驅動板上溝槽上較小的孔。倒轉驅動板使插銷的一端能進入溝槽內較狹小的一端。
6. 驅動插銷彈簧位於驅動插銷溝槽較大的孔內。彈簧封閉的一端正對於插銷的一邊並對彈簧施加壓力使彈簧上的孔和驅動板上的孔一致使彈簧插銷能穿過。彈簧插銷需確實穿過彈簧並插入驅動板。

### 注意事項

以下分解流程需注意，過度的潤滑會阻礙齒溝間的咬合，易發生棘輪和驅動塊故障。

7. 驅動板內大片轉動的開放位 塗上一層薄油。
8. 將棘輪放在驅動板的中間開放位 。
9. 插入驅動塊並調整棘輪使之契合。務必使棘輪上的棘齒和驅動塊上的棘齒咬合。假如無法咬合可將棘輪倒過來組裝。
10. 滑動驅動塊的一邊使之能接觸到彈簧孔。當壓縮彈簧時會滑動驅動塊直到驅動板涵蓋驅動塊。
11. 驅動板和驅動塊都需塗上一層薄油。
12. 繼續組合未完成的側板零件，將棘輪中心(輪轂)插入側板套筒。
13. 將左側板套筒放在棘輪中心(輪轂)上並對準墊塊上的螺栓孔。
14. 對準螺栓牙後利用一隻六角扳手鎖上二個低墊塊螺栓並加以固定。

## 4. 維修手冊

### 4.2.3 如何安裝 SRX-16 和 SRX-32 缸體組

1. 利用套銅老虎鉗爪以水平方向將連接插銷自缸體拉出。
2. 假若主軸油封自缸體被取出，則塗上一層O型環潤滑油(液)在要裝入的油封上；裝入時確實將主軸油封服貼在主軸底部溝槽內。
3. 將圓棒插銷插入弧墊片內。弧墊片位於主軸二側；圓棒插銷自一邊弧墊片穿過主軸再穿過另一邊弧墊片。
4. 將O型環組裝在主軸頂部溝槽內。
5. 組裝主軸通到底，到達缸體較小頭的位置。軸棒上的溝槽應朝向球型活塞。
6. 插任主軸後，可利用套筒將主軸與主軸桿緊鎖住。
7. 將塞底油封組裝在尾蓋殼的溝槽上。
8. 用扳手底塞組裝上尾蓋和O型環，接在主軸和缸體的尾端並鎖緊。
9. 將萬向轉接的螺牙部份用Teflon tap(止洩帶)纏起來並將萬向轉接頭和公快速接頭裝入尾蓋中心，萬向轉接頭和母快速接頭部份則直接裝入缸體孔中位於尾蓋上方。



## 4. 維修手冊

### 4.2.4 如何安裝 SRX-2, SRX-4 和 SRX-8 缸體組

1. 利用套銅老虎鉗爪以水平方向將連接插銷自缸體拉出。
2. 假若主軸油封自缸體被取出，則塗上一層O型環潤滑油(液)在要裝入的油封上；裝入時確實將主軸油封服貼在主軸底部溝槽內。
3. 組裝主軸延著凹槽到底，到達缸體較小頭的位置。軸棒上的溝槽應朝向球型活塞。
4. 將主軸推向內推直到孔位和圓棒插及缸體上的孔能在同一直線上。
5. 弧墊片位於主軸二側；圓棒插銷需無阻礙的自缸體插入一邊弧墊片穿過主軸再順利穿過另一邊弧墊片。可利用 頭和錐子將插銷完全插入。
6. 將主軸O型環安裝在油封溝槽內。
7. 將上述O型環和油封環組安裝在主軸溝槽中。
8. 將油封板裝入缸體入口處並與皿頭螺栓孔成直線。

### 注意事項

下列的安裝步驟千萬不可使用類似止洩帶的物質在螺牙上。

9. 使用六角扳手將固定螺栓安裝並鎖緊。防止O型環及油封變形時擴大。
10. 將油封安裝工具放在缸體入口處的底端。
11. 將塞底油封安裝在尾蓋溝槽內。
12. 將尾蓋組零件裝入缸體並將O型環尾端及入口孔朝上。將蓋子往內推過固定環溝槽，大約缸體 1/2"位置。
13. 自缸體取出油封安裝工具。
14. 在缸體入口底端溝槽裝上固定環。安裝的二個半圓環其開口在缸體開口的中間接觸並將環的斜面向尾蓋。
15. 假如有可供利用的空氣管則將些許空氣灌進尾蓋開口牙部份，得以安裝固定環。倘若無可使用的空氣管可暫將以轉環組放進牙口處，將尾蓋推向固定環亦可安裝固定環。
16. SRX-2 和SRX-4 系列尾蓋位置近於缸體並鎖上尾蓋螺栓。
17. 將萬向轉接的螺牙部份用Teflon tap(止洩帶)纏起來並將萬向轉接頭和公快速接頭裝入尾蓋中心。
18. 在主軸和弧墊塊表面塗薄油。

### 4.2.5 如何安裝其他工具

1. 一手拿著缸體；一手拿連接體將主軸把手上勾子的溝槽放上驅動插銷並將二個組零件組合起來。
2. 將連接插銷插入側板的插銷孔中直到球型活塞接觸到連接插銷的環狀溝槽。



## 5. 疑難解答

| 問題            | 原因                                                                                                                                                         | 解決方法                                                                                                                                                                                              |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 主軸(活塞)不能前進或後退 | <ol style="list-style-type: none"> <li>1. 連接扳手或泵浦的接頭未完全連接</li> <li>2. 接頭有問題</li> <li>3. 遙控開關有問題</li> <li>4. 泵浦的方向控制閥內有污染物</li> </ol>                       | <ol style="list-style-type: none"> <li>1. 重新檢查連接接頭是否確實連接到底</li> <li>2. 更換有問題的接頭</li> <li>3. 更換有問題的開關或遙控器(視情況而定)</li> <li>4. 拆開泵浦,清理方向控制閥</li> </ol>                                               |
| 主軸(活塞)無法退出    | <ol style="list-style-type: none"> <li>1. 油管接頭裝反了</li> <li>2. 回油管未連接</li> <li>3. 回油插銷或彈簧斷裂</li> </ol>                                                      | <ol style="list-style-type: none"> <li>1. 確定泵浦的前進端及扳手前進端連接,扳手回油端和泵浦回油端確實連接。</li> <li>2. 將回油管連接牢固</li> <li>3. 更換回油插銷和/或彈簧</li> </ol>                                                               |
| 缸體不能加壓        | <ol style="list-style-type: none"> <li>1. 主軸油封和/或塞子漏油</li> <li>2. 固定螺栓被破壞</li> <li>3. 接頭有問題</li> </ol>                                                     | <ol style="list-style-type: none"> <li>1. 更換有問題的油封或塞子</li> <li>2. 更換有問題的螺栓</li> <li>3. 更換有問題的接頭</li> </ol>                                                                                        |
| 棘輪不能轉動        | <ol style="list-style-type: none"> <li>1. 棘輪齒或棘爪潤滑油或髒污太多</li> <li>2. 棘輪齒或棘爪有斷裂或損毀情形</li> </ol>                                                             | <ol style="list-style-type: none"> <li>1. 拆開棘輪,清理潤滑油或髒污情形</li> <li>2. 更換斷裂或損毀的棘輪齒或棘爪</li> </ol>                                                                                                   |
| 開啟後扳手立即鎖緊     | 油管接反了                                                                                                                                                      | 按下前進鈕先將扳手鬆開,關閉泵浦,將油管換過來                                                                                                                                                                           |
| 泵浦不能產生壓力      | <ol style="list-style-type: none"> <li>1. 洩壓閥有問題</li> <li>2. 供氣太低或空氣管太細</li> <li>3. 電壓太低</li> <li>4. 壓力錶有問題</li> <li>5. 油量太低</li> <li>6. 濾油器有阻塞</li> </ol> | <ol style="list-style-type: none"> <li>1. 檢查、調整或更換洩壓閥</li> <li>2. 確定供氣口和空氣管尺寸與泵浦要求一致</li> <li>3. 確定電壓、電流和延長線尺寸與泵浦要求一致</li> <li>4. 更換壓力錶</li> <li>5. 油箱油量填滿到警戒線</li> <li>6. 檢查、清理並更換濾油器</li> </ol> |
| 壓力顯示不穩定       | 壓力錶有問題                                                                                                                                                     | 更換壓力錶                                                                                                                                                                                             |



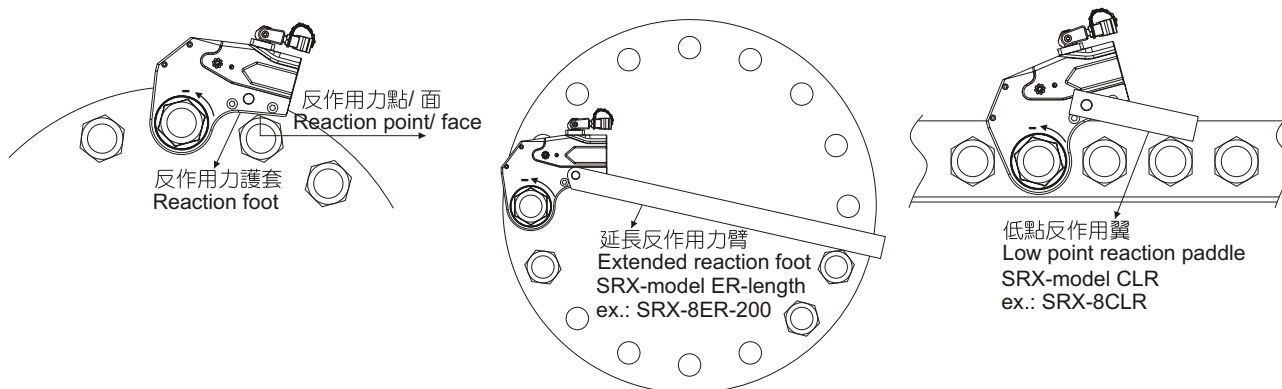
雙動六角中空液壓扳手  
操作說明

附表2

適用型號:SRX-2,SRX-4,SRX-8,SRX-16,SRX-32

英制螺栓扭力建議表 (實際螺栓扭力值以螺栓廠商提供技術為參考標準)

| SAE1<br>SAE2 |          | ASEM B7<br>Bolt |          | B7 A/F<br>Hex. Nut |          | ASEM 354<br>B8     |          | 力值    |        |
|--------------|----------|-----------------|----------|--------------------|----------|--------------------|----------|-------|--------|
| 210bar       | 30000psi | Metric          | Imperial | Metric             | Imperial | 420Nm <sup>2</sup> | 60000psi | N.m   | ft.lbs |
| 25.4         | 1        | 22.2            | 7/8      | 36                 | 1 7/16   | 22.2               | 7/8      | 400   | 300    |
| 28.6         | 1 1/8    | 25.4            | 1        | 41                 | 1 5/8    |                    |          | 570   | 425    |
|              |          |                 |          |                    |          | 25.4               | 1        | 670   | 500    |
| 31.8         | 1 1/4    |                 |          |                    |          |                    |          | 800   | 600    |
| 35           | 1 3/8    | 29              | 1 1/8    | 46                 | 1 13/16  | 28.6               | 1 1/8    | 950   | 700    |
|              |          | 32              | 1 1/4    | 50                 | 2        |                    |          | 1085  | 800    |
| 38           | 1 1/2    |                 |          |                    |          |                    |          | 1220  | 900    |
|              |          |                 |          |                    |          | 31.8               | 1 1/4    | 1355  | 1000   |
| 41.3         | 1 5/8    | 35              | 1 3/8    | 55                 | 2 3/16   |                    |          | 1695  | 1250   |
|              |          |                 |          |                    |          | 35                 | 1 3/8    | 1830  | 1350   |
|              |          | 38              | 1 1/2    | 60                 | 2 3/8    |                    |          | 2030  | 1500   |
| 44.5         | 1 3/4    |                 |          |                    |          |                    |          | 2160  | 1600   |
| 47.6         | 1 7/8    |                 |          |                    |          |                    |          | 2440  | 1800   |
|              |          | 41              | 1 5/8    | 65                 | 2 9/16   |                    |          | 2710  | 2000   |
| 50.8         | 2        |                 |          |                    |          | 41                 | 1 5/8    | 2980  | 2200   |
|              |          | 44              | 1 3/4    | 70                 | 2 3/4    |                    |          | 3525  | 2600   |
| 57           | 2 1/4    |                 |          |                    |          | 44                 | 1 3/4    | 4060  | 3000   |
|              |          | 47.6            | 1 7/8    | 75                 | 2 15/16  |                    |          | 5010  | 3700   |
| 63.5         | 2 1/2    | 50.8            | 2        | 80                 | 3 1/8    | 47.6               | 1 7/8    | 5420  | 4000   |
|              |          |                 |          |                    |          | 50.8               | 2        | 5960  | 4400   |
| 70           | 2 3/4    |                 |          |                    |          |                    |          | 6915  | 5100   |
|              |          | 57              | 2 1/4    | 90                 | 3 1/2    | 57                 | 2 1/4    | 8135  | 6000   |
| 76           | 3        |                 |          |                    |          |                    |          | 9490  | 7000   |
|              |          | 63.5            | 2 1/2    | 100                | 3 7/8    |                    |          | 10840 | 8000   |
| 82.5         | 3 1/4    |                 |          |                    |          | 63.5               | 2 1/2    | 12200 | 9000   |
| 89           | 3 1/2    | 70              | 2 3/4    | 110                | 4 1/4    |                    |          | 13550 | 10000  |
|              |          |                 |          |                    |          | 70                 | 2 3/4    | 15590 | 11500  |
| 95           | 3 3/4    | 76              | 3        | 120                | 4 5/8    |                    |          | 17625 | 13000  |
| 102          | 4        |                 |          |                    |          |                    |          | 19655 | 14500  |
|              |          |                 |          |                    |          | 76                 | 3        | 21015 | 15500  |
|              |          | 82.5            | 3 1/4    | 130                | 5        |                    |          | 22370 | 16500  |
| 108          | 4 1/4    |                 |          |                    |          | 82.5               | 3 1/4    | 26435 | 19500  |
|              |          | 89              | 3 1/2    | 135                | 5 3/8    |                    |          | 27790 | 20500  |
| 114          | 4 1/2    |                 |          |                    |          |                    |          | 29150 | 21500  |
|              |          |                 |          |                    |          | 89                 | 3 1/2    | 33215 | 24500  |
| 121          | 4 3/4    | 95              | 3 3/4    | 145                | 5 3/4    |                    |          | 34570 | 25500  |
| 165          | 6 1/2    | 108             | 4 1/4    |                    |          |                    |          | 39995 | 29500  |
| 127          | 5        | 102             | 4        | 156                | 6 1/8    | 95                 | 3 3/4    | 41350 | 30500  |
|              |          | 114             | 4 1/2    | 175                | 6 7/8    |                    |          | 48130 | 35500  |
|              |          |                 |          |                    |          | 102                | 4        | 50165 | 37000  |
|              |          | 121             | 4 3/4    | 184                | 7 1/4    |                    |          | 55585 | 41000  |
|              |          |                 |          |                    |          | 108                | 4 1/4    | 59655 | 44000  |
|              |          | 127             | 5        | 194                | 7 5/8    |                    |          | 64400 | 47500  |
|              |          |                 |          |                    |          | 114                | 4 1/2    | 70500 | 52000  |
|              |          |                 |          |                    |          | 121                | 4 3/4    | 82700 | 61000  |
|              |          |                 |          |                    |          | 127                | 5        | 96940 | 71500  |

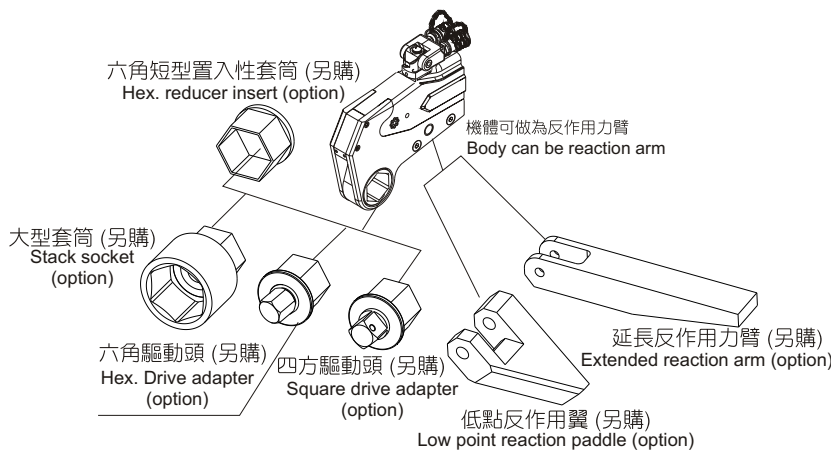


SRX 扭力扳手換算表 SRX Series Torque Conversion Chart

| 工作壓力<br>Work pressure |     | SRX-2                               |                                     |                                   |                                   | SRX-4                              |                                    |                                   |                                   | SRX-8                             |                                   |
|-----------------------|-----|-------------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|                       |     | 1-1/4" to<br>1-13/16"<br>30 to 46mm | 1-1/4" to<br>1-13/16"<br>30 to 46mm | 1-7/8" to<br>2-3/8"<br>47 to 60mm | 1-7/8" to<br>2-3/8"<br>47 to 60mm | 1-5/8" to<br>2-9/16"<br>41 to 65mm | 1-5/8" to<br>2-9/16"<br>41 to 65mm | 2-3/4" to<br>3-1/8"<br>70 to 80mm | 2-3/4" to<br>3-1/8"<br>70 to 80mm | 1-7/8" to<br>3-1/8"<br>50 to 80mm | 1-7/8" to<br>3-1/8"<br>50 to 80mm |
|                       |     | lbf.ft                              | N.m                                 | lbf.ft                            | N.m                               | lbf.ft                             | N.m                                | lbf.ft                            | N.m                               | lbf.ft                            | N.m                               |
| 1450                  | 100 | 284                                 | 384                                 | 315                               | 428                               | 581                                | 788                                | 685                               | 929                               | 1269                              | 1720                              |
| 1740                  | 120 | 340                                 | 461                                 | 379                               | 513                               | 697                                | 945                                | 822                               | 1115                              | 1523                              | 2064                              |
| 2031                  | 140 | 397                                 | 538                                 | 442                               | 599                               | 813                                | 1103                               | 959                               | 1301                              | 1776                              | 2409                              |
| 2321                  | 160 | 454                                 | 615                                 | 505                               | 684                               | 929                                | 1260                               | 1097                              | 1487                              | 2030                              | 2753                              |
| 2611                  | 180 | 510                                 | 692                                 | 568                               | 770                               | 1046                               | 1418                               | 1234                              | 1673                              | 2284                              | 3097                              |
| 2901                  | 200 | 567                                 | 769                                 | 631                               | 855                               | 1162                               | 1575                               | 1371                              | 1858                              | 2538                              | 3441                              |
| 3191                  | 220 | 624                                 | 846                                 | 694                               | 941                               | 1278                               | 1733                               | 1508                              | 2044                              | 2792                              | 3785                              |
| 3481                  | 240 | 680                                 | 923                                 | 757                               | 1026                              | 1394                               | 1890                               | 1645                              | 2230                              | 3045                              | 4129                              |
| 3771                  | 260 | 737                                 | 999                                 | 820                               | 1112                              | 1510                               | 2048                               | 1782                              | 2416                              | 3299                              | 4473                              |
| 4061                  | 280 | 794                                 | 1076                                | 883                               | 1198                              | 1626                               | 2205                               | 1919                              | 2602                              | 3553                              | 4817                              |
| 4351                  | 300 | 851                                 | 1153                                | 946                               | 1283                              | 1743                               | 2363                               | 2056                              | 2788                              | 3807                              | 5161                              |
| 4641                  | 320 | 907                                 | 1230                                | 1009                              | 1369                              | 1859                               | 2520                               | 2193                              | 2973                              | 4060                              | 5505                              |
| 4931                  | 340 | 964                                 | 1307                                | 1073                              | 1454                              | 1975                               | 2678                               | 2330                              | 3159                              | 4314                              | 5849                              |
| 5221                  | 360 | 1021                                | 1384                                | 1136                              | 1540                              | 2091                               | 2835                               | 2467                              | 3345                              | 4568                              | 6193                              |
| 5511                  | 380 | 1077                                | 1461                                | 1199                              | 1625                              | 2207                               | 2993                               | 2604                              | 3531                              | 4822                              | 6537                              |
| 5802                  | 400 | 1134                                | 1538                                | 1262                              | 1711                              | 2323                               | 3150                               | 2741                              | 3717                              | 5075                              | 6881                              |
| 6092                  | 420 | 1191                                | 1614                                | 1325                              | 1796                              | 2440                               | 3308                               | 2878                              | 3903                              | 5329                              | 7226                              |
| 6382                  | 440 | 1247                                | 1691                                | 1388                              | 1882                              | 2556                               | 3465                               | 3015                              | 4088                              | 5583                              | 7570                              |
| 6672                  | 460 | 1304                                | 1768                                | 1451                              | 1967                              | 2672                               | 3623                               | 3153                              | 4274                              | 5837                              | 7914                              |
| 6962                  | 480 | 1361                                | 1845                                | 1514                              | 2053                              | 2788                               | 3780                               | 3290                              | 4460                              | 6091                              | 8258                              |
| 7252                  | 500 | 1418                                | 1922                                | 1577                              | 2138                              | 2904                               | 3938                               | 3427                              | 4646                              | 6344                              | 8602                              |
| 7542                  | 520 | 1474                                | 1999                                | 1640                              | 2224                              | 3020                               | 4095                               | 3564                              | 4832                              | 6598                              | 8946                              |
| 7832                  | 540 | 1531                                | 2076                                | 1703                              | 2309                              | 3137                               | 4253                               | 3701                              | 5018                              | 6852                              | 9290                              |
| 8122                  | 560 | 1588                                | 2153                                | 1766                              | 2395                              | 3253                               | 4410                               | 3838                              | 5203                              | 7106                              | 9634                              |
| 8412                  | 580 | 1644                                | 2230                                | 1830                              | 2481                              | 3369                               | 4568                               | 3975                              | 5389                              | 7359                              | 9978                              |
| 8702                  | 600 | 1701                                | 2306                                | 1893                              | 2566                              | 3485                               | 4725                               | 4112                              | 5575                              | 7613                              | 10322                             |
| 8992                  | 620 | 1758                                | 2383                                | 1956                              | 2652                              | 3601                               | 4883                               | 4249                              | 5761                              | 7867                              | 10666                             |
| 9282                  | 640 | 1815                                | 2460                                | 2019                              | 2737                              | 3717                               | 5040                               | 4386                              | 5947                              | 8121                              | 11010                             |
| 9572                  | 660 | 1871                                | 2537                                | 2082                              | 2823                              | 3834                               | 5198                               | 4523                              | 6133                              | 8375                              | 11354                             |
| 9863                  | 680 | 1928                                | 2614                                | 2145                              | 2908                              | 3950                               | 5355                               | 4660                              | 6319                              | 8628                              | 11698                             |
| 10153                 | 700 | 1985                                | 2691                                | 2208                              | 2994                              | 4066                               | 5513                               | 4797                              | 6504                              | 8882                              | 12043                             |

雙動六角中空液壓扳手  
操作說明

適用型號:SRX-2,SRX-4,SRX-8,SRX-16,SRX-32

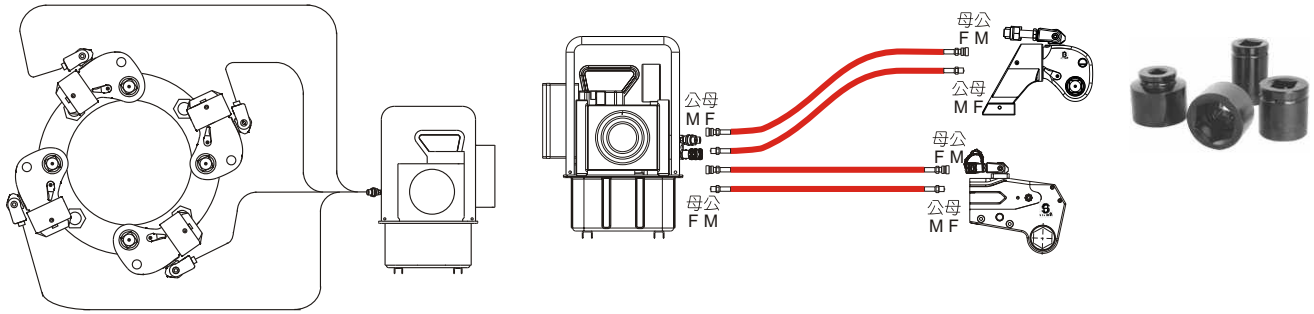


| 訂購型號                                        |                                                                                                   |
|---------------------------------------------|---------------------------------------------------------------------------------------------------|
| How to build Torque Wrench drive and socket |                                                                                                   |
|                                             | 連接體型號 - H 六角對邊尺寸<br>Link model - H Hex. Across size<br>Example: SRX-8L95-H85                      |
|                                             | 型號 HH 外六角驅動尺寸 - 內六角套筒尺寸<br>Model HH Hex. Drive size - Hex. Socket size<br>Example: SRX-8HH75-90   |
|                                             | 型號 HS 外六角驅動尺寸 - 外四角驅動尺寸<br>Model HS Hex. Drive size - Square drive size<br>Example: SRX-4HS46-1"  |
|                                             | 型號 HHM 外六角驅動尺寸 - 外六角驅動尺寸<br>Model HHM Hex. Drive size - Hex. Drive size<br>Example: SRX-4HHM41-27 |

SRX 扭力扳手換算表 SRX Series Torque Conversion Chart

| 工作壓力<br>Work pressure |     | SRX-8                           |                                 | SRX-16                            |                                   |                                  |                                  | SRX-32                          |                                 |                                    |                                    |
|-----------------------|-----|---------------------------------|---------------------------------|-----------------------------------|-----------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|------------------------------------|------------------------------------|
|                       |     | 3-3/8" to 4-1/8"<br>85 to 105mm | 3-3/8" to 4-1/8"<br>85 to 105mm | 2-3/4" to 3-15/16"<br>70 to 100mm | 2-3/4" to 3-15/16"<br>70 to 100mm | 4-1/8" to 4-5/8"<br>105 to 115mm | 4-1/8" to 4-5/8"<br>105 to 115mm | 3-1/8" to 4-1/2"<br>80 to 115mm | 3-1/8" to 4-1/2"<br>80 to 115mm | 4-11/16" to 6-1/8"<br>120 to 155mm | 4-11/16" to 6-1/8"<br>120 to 155mm |
|                       |     | lbf.ft                          | N.m                             | lbf.ft                            | N.m                               | lbf.ft                           | N.m                              | lbf.ft                          | N.m                             | lbf.ft                             | N.m                                |
| psi                   | bar |                                 |                                 |                                   |                                   |                                  |                                  |                                 |                                 |                                    |                                    |
| 1450                  | 100 | 1548                            | 2099                            | 2293                              | 3109                              | 2441                             | 3309                             | 4734                            | 6418                            | 5440                               | 7376                               |
| 1740                  | 120 | 1858                            | 2519                            | 2752                              | 3731                              | 2929                             | 3971                             | 5681                            | 7702                            | 6528                               | 8851                               |
| 2031                  | 140 | 2167                            | 2938                            | 3210                              | 4353                              | 3417                             | 4633                             | 6628                            | 8986                            | 7616                               | 10326                              |
| 2321                  | 160 | 2477                            | 3358                            | 3669                              | 4975                              | 3905                             | 5295                             | 7574                            | 10269                           | 8704                               | 11801                              |
| 2611                  | 180 | 2787                            | 3778                            | 4128                              | 5596                              | 4394                             | 5957                             | 8521                            | 11553                           | 9792                               | 13277                              |
| 2901                  | 200 | 3096                            | 4198                            | 4586                              | 6218                              | 4882                             | 6619                             | 9468                            | 12837                           | 10880                              | 14752                              |
| 3191                  | 220 | 3406                            | 4618                            | 5045                              | 6840                              | 5370                             | 7281                             | 10415                           | 14120                           | 11968                              | 16227                              |
| 3481                  | 240 | 3715                            | 5037                            | 5504                              | 7462                              | 5858                             | 7943                             | 11361                           | 15404                           | 13057                              | 17702                              |
| 3771                  | 260 | 4025                            | 5457                            | 5962                              | 8084                              | 6346                             | 8604                             | 12308                           | 16688                           | 14145                              | 19177                              |
| 4061                  | 280 | 4335                            | 5877                            | 6421                              | 8706                              | 6835                             | 9266                             | 13255                           | 17971                           | 15233                              | 20653                              |
| 4351                  | 300 | 4644                            | 6297                            | 6879                              | 9327                              | 7323                             | 9928                             | 14202                           | 19255                           | 16321                              | 22128                              |
| 4641                  | 320 | 4954                            | 6717                            | 7338                              | 9949                              | 7811                             | 10590                            | 15149                           | 20539                           | 17409                              | 23603                              |
| 4931                  | 340 | 5263                            | 7136                            | 7797                              | 10571                             | 8299                             | 11252                            | 16095                           | 21823                           | 18497                              | 25078                              |
| 5221                  | 360 | 5573                            | 7556                            | 8255                              | 11193                             | 8787                             | 11914                            | 17042                           | 23106                           | 19585                              | 26553                              |
| 5511                  | 380 | 5883                            | 7976                            | 8714                              | 11815                             | 9275                             | 12576                            | 17989                           | 24390                           | 20673                              | 28029                              |
| 5802                  | 400 | 6192                            | 8396                            | 9173                              | 12436                             | 9764                             | 13238                            | 18936                           | 25674                           | 21761                              | 29504                              |
| 6092                  | 420 | 6502                            | 8815                            | 9631                              | 13058                             | 10252                            | 13900                            | 19883                           | 26957                           | 22849                              | 30979                              |
| 6382                  | 440 | 6812                            | 9235                            | 10090                             | 13680                             | 10740                            | 14561                            | 20829                           | 28241                           | 23937                              | 32454                              |
| 6672                  | 460 | 7121                            | 9655                            | 10549                             | 14302                             | 11228                            | 15223                            | 21776                           | 29525                           | 25025                              | 33929                              |
| 6962                  | 480 | 7431                            | 10075                           | 11007                             | 14924                             | 11716                            | 15885                            | 22723                           | 30808                           | 26113                              | 35404                              |
| 7252                  | 500 | 7740                            | 10495                           | 11466                             | 15546                             | 12204                            | 16547                            | 23670                           | 32092                           | 27201                              | 36880                              |
| 7542                  | 520 | 8050                            | 10914                           | 11924                             | 16167                             | 12693                            | 17209                            | 24617                           | 33376                           | 28289                              | 38355                              |
| 7832                  | 540 | 8360                            | 11334                           | 12383                             | 16789                             | 13181                            | 17871                            | 25563                           | 34659                           | 29377                              | 39830                              |
| 8122                  | 560 | 8669                            | 11754                           | 12842                             | 17411                             | 13669                            | 18533                            | 26510                           | 35943                           | 30465                              | 41305                              |
| 8412                  | 580 | 8979                            | 12174                           | 13300                             | 18033                             | 14157                            | 19195                            | 27457                           | 37227                           | 31553                              | 42780                              |
| 8702                  | 600 | 9288                            | 12593                           | 13759                             | 18655                             | 14645                            | 19856                            | 28404                           | 38510                           | 32641                              | 44256                              |
| 8992                  | 620 | 9598                            | 13013                           | 14218                             | 19276                             | 15134                            | 20518                            | 29351                           | 39794                           | 33729                              | 45731                              |
| 9282                  | 640 | 9908                            | 13433                           | 14676                             | 19898                             | 15622                            | 21180                            | 30297                           | 41078                           | 34817                              | 47206                              |
| 9572                  | 660 | 10217                           | 13853                           | 15135                             | 20520                             | 16110                            | 21842                            | 31244                           | 42361                           | 35905                              | 48681                              |
| 9863                  | 680 | 10527                           | 14273                           | 15593                             | 21142                             | 16598                            | 22504                            | 32191                           | 43645                           | 36993                              | 50156                              |
| 10153                 | 700 | 10837                           | 14692                           | 16052                             | 21764                             | 17086                            | 23166                            | 33138                           | 44929                           | 38081                              | 51632                              |

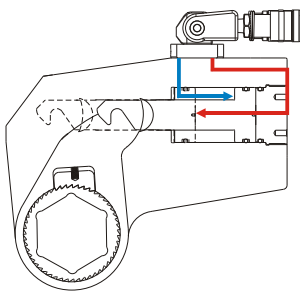




- 基礎安裝**
- 安裝A. 1台油壓扳手專用泵浦+1台四方驅動頭油壓扳手+套筒+2條油管  
 安裝B. 1台油壓扳手專用泵浦+1台中空型油壓扳手+2條油管  
 安裝C. 1台油壓扳手專用泵浦+1~4台四方驅動頭油壓扳手(+套筒)或  
 1~4台中空型油壓扳手  
 +2~8條油管

### Basic System Set-up

- A. 1 Hydraulic Torque Wrench using Electric Pump+1 Square Drive Wrench +Socket+2 hoses  
 B. 1 Hydraulic Torque Wrench using Electric Pump+1 Low Profile Wrench +2 hoses  
 C. 1 Hydraulic Torque Wrench using Electric Pump+1~4 Square Drive Wrench (+Socket) or  
 1~4Low Profile Wrench  
 +2~8 hoses



### 油路方式 Oil Path

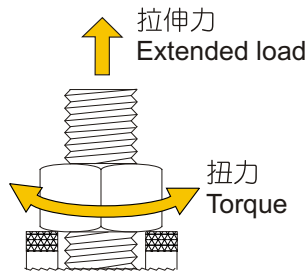
- ← 進油  
Advance
- 回油  
Return

### 扳手扭力計算公式 Wrench Torque Formula

$$T = F \times r$$

扭力 = 力量 × 力距  
 Torque=Force × Lever Arm Length

Ex. :  
 1000kN × 60mm=60000 N.m



### 螺栓拉伸力-扭力計算公式 Bolt Load- Torque Formula

$$T=K \times D \times N$$

T : 扭力

K : 摩擦係數

D : 螺栓直徑

N : 螺栓拉伸力=截面積×降伏強度×降伏比

T : Torque

K : Friction Factor

D : Bolt O.D

N : Bolt extended Load=Stress area × Yield strength × Percent of Yield

Ex. : M16

$$N=0.7854 \times (16-0.9382 \times 2)^2 \times 896 \times \frac{80\%}{1000}=112N$$

截面積  
Stress area  
mm<sup>2</sup>

降伏強度  
Yield strength  
N/mm<sup>2</sup>

降伏比  
Percent of Yield

$$T=0.14 \times 16 \times 112N = 252N.m$$

摩擦係數  
Friction Factor

螺栓直徑  
Bolt O.D  
mm

螺栓拉伸力  
Bolt Load



## CHU LUN SING CO.,LTD

No.199, Gangshan N. Rd., Gangshan Dist.,

Kaohsiung City 82059, Taiwan

<http://www.sunrun.com.tw>

E-mail:sun.run@msa.hinet.net

TEL:886-7-6210505

FAX:886-7-6217575

# OPERATING INSTRUCTIONS HYDRAULIC TORQUE WRENCH **SRX**



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English : E1~E10

中文  
English  
Ver.16

## 1. SAFETY PRECAUTIONS



Fail to comply with the following cautions and warnings could cause equipment damage and personal injury.



**IMPORTANT** :Minimum age of the operator must be 18 years The operator must have read and understood all instructions, safety issues, cautions and warnings before starting to operate the SUN RUN equipment. The operator is responsible for this activity towards other persons.



**WARNING** : To avoid personal injury and possible equipment damage, make sure all hydraulic components withstand the maximum pressure of 700 bar(10,000psi).



**WARNING:** Always wear safety glasses. The operator must take precaution against injury due to failure the tool or workpiece.



**WARNING** : The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor operating pressure. It is your window to what is happening in the system.



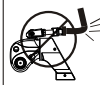
**WARNING:** Never pressurize uncoupled couplers. Only use hydraulic equipment in a coupled system.



**WARNING:** Immediately replace worn or damaged parts with genuine SUN RUN parts. SUN RUN parts are designed to fit properly and withstand rated loads.



**IMPORTANT:** Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the SUN RUN Service Center in your area. To protect your warranty, use only SUN RUN oil.



**CAUTION:** Avoid sharp bends and kinks that will cause severe back-up pressure in hoses. Bends and kinks lead to premature hose failure.



**DO NOT** drop heavy objects on hose. A sharp impact may cause internal damage to hose wire strands. Applying pressure to a damaged hose may cause it to rupture.



**IMPORTANT:** Do not lift hydraulic equipment by the hoses or couplers. Use the carrying handle or other means of safe transport.



**DANGER:** Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin causing serious injury. If oil is injected under the skin, see a doctor immediately.



**WARNING:** To avoid personal injuries and equipment damage, do not remove the shroud of the wrench. Do not modify any component of the wrench. Do not change the relief valve which is inside the swivel couplings.



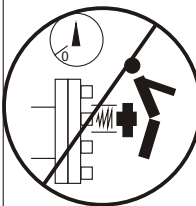
**CAUTION:** The incorrect system connection will cause failure and danger. Before connection, make sure the swivel couplings being clean. After application, the swivel couplings must be put on the dust caps.



**CAUTION:** Do not use worn socket and square drive.



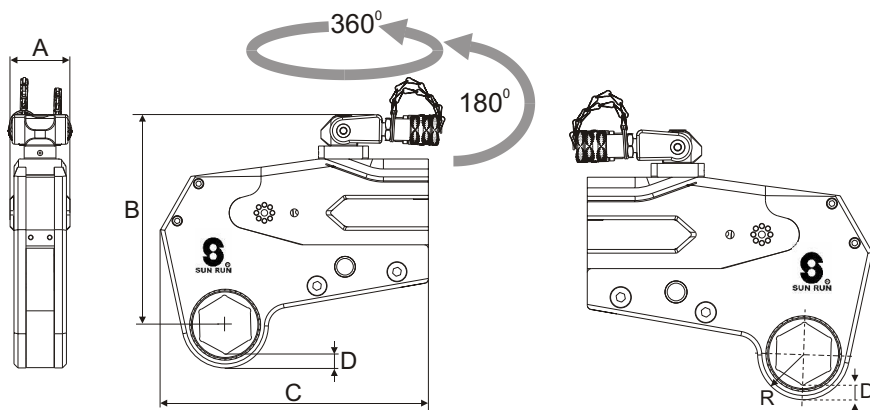
**CAUTION:** Please use the socket of good performance.



Never stand in-line with the bolt axis while tensioning or de-tensioning is in progress. If the bolt should fail, serious personal injury or death could result if loose or broken parts become projectiles. All personnel must be aware of this potential hazard at all times.

## 2.SPECIFICATIONS

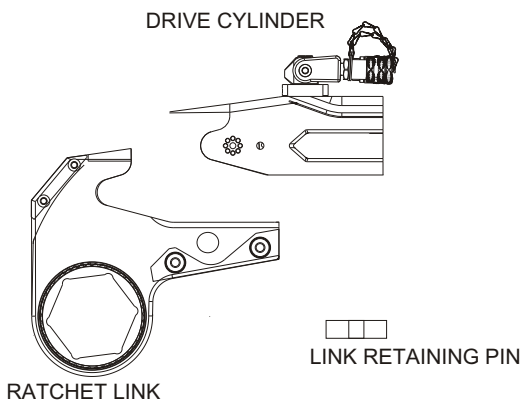
| 型號<br>Model<br>Number | 六角頭 Hex. Size |        | 最小扭力<br>Min.<br>Torque |       | 最大扭力<br>Max.<br>Torque |       | 重量 Weight (kg) |             | 外型尺寸 Dimensions(mm) |             |             |           |
|-----------------------|---------------|--------|------------------------|-------|------------------------|-------|----------------|-------------|---------------------|-------------|-------------|-----------|
|                       | (in)          | (mm)   | (lbf.ft)               | (N.m) | (lbf.ft)               | (N.m) | 缸體<br>Cylinder | 連接體<br>Link | A                   | B           | C           | D         |
| SRX-2                 | 1-1/4~2-3/8"  | 30~60  | 192                    | 260   | 2178                   | 2994  | 1.99           | 1.48~1.85   | 32.0                | 148.8~156.8 | 168.0~175.5 | 9.1~11.7  |
| SRX-4                 | 1-5/8~3-1/8"  | 41~80  | 395                    | 535   | 4732                   | 6504  | 3.35           | 3.05~3.95   | 41.4                | 172.9~189.2 | 204.4~220.8 | 12.7~13.7 |
| SRX-8                 | 1-7/8~4-1/8"  | 50~105 | 830                    | 1125  | 10689                  | 14692 | 6.64           | 6.25~8.60   | 52.5                | 210.4~235.4 | 268.1~283.9 | 13.7~19.5 |
| SRX-16                | 2-3/4~4-5/8"  | 70~115 | 1560                   | 2115  | 16854                  | 23165 | 8.50           | 11.98~14.16 | 64.0                | 245.7~258.3 | 326.7~344.7 | 19.5~23.0 |
| SRX-32                | 3-1/8~6-1/8"  | 80~155 | 3220                   | 4365  | 37566                  | 51632 | 16.1           | 25.10~30.36 | 82.5                | 287.6~313.1 | 422.5~442.5 | 23.0~26.0 |



| Bolt<br>Dia.<br>螺栓<br>直徑 | Across<br>flat<br>螺母<br>對邊 | Bolt<br>Dia.<br>(Imp.)<br>螺栓<br>直徑<br>(英制)<br>in | Across<br>flat<br>(Imp.)<br>螺母<br>對邊<br>(英制)<br>in | SRX-2               |           |           | SRX-4               |           |           | SRX-8               |           |           | SRX-16              |           |           | SRX-32              |           |           |
|--------------------------|----------------------------|--------------------------------------------------|----------------------------------------------------|---------------------|-----------|-----------|---------------------|-----------|-----------|---------------------|-----------|-----------|---------------------|-----------|-----------|---------------------|-----------|-----------|
|                          |                            |                                                  |                                                    | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) | Link model<br>連接體型號 | R<br>(mm) | D<br>(mm) |
| 20                       | 30                         | 3/4                                              | 1-1/4                                              | SRX-2L 30           | 26.6      | 9.1       |                     |           |           |                     |           |           |                     |           |           |                     |           |           |
| 22                       | 32                         |                                                  |                                                    | SRX-2L 32           | 26.6      | 9.1       |                     |           |           |                     |           |           |                     |           |           |                     |           |           |
| 24                       | 36                         | 7/8                                              | 1-7/16                                             | SRX-2L 36           | 33.5      | 10.4      |                     |           |           |                     |           |           |                     |           |           |                     |           |           |
| 27                       | 41                         | 1                                                | 1-5/8                                              | SRX-2L 41           | 34.4      | 10.4      | SRX-4L 41           | 36.8      | 12.7      |                     |           |           |                     |           |           |                     |           |           |
| 30                       | 46                         | 1-1/8                                            | 1-13/16                                            | SRX-2L 46           | 37.2      | 10.4      | SRX-4L 46           | 39.5      | 12.7      |                     |           |           |                     |           |           |                     |           |           |
| 33                       | 50                         | 1-1/4                                            | 2                                                  | SRX-2L 50           | 40.6      | 11.7      | SRX-4L 50           | 42.3      | 12.7      | SRX-8L 50           | 43.3      | 13.7      |                     |           |           |                     |           |           |
| 36                       | 55                         | 1-3/8                                            | 2-3/16                                             | SRX-2L 55           | 43.7      | 11.7      | SRX-4L 55           | 45.2      | 12.7      | SRX-8L 55           | 45.9      | 13.7      |                     |           |           |                     |           |           |
| 39                       | 60                         | 1-1/2                                            | 2-3/8                                              | SRX-2L 60           | 46.6      | 11.7      | SRX-4L 60           | 47.9      | 12.7      | SRX-8L 60           | 48.9      | 13.7      |                     |           |           |                     |           |           |
| 42                       | 65                         | 1-5/8                                            | 2-9/16                                             |                     |           |           | SRX-4L 65           | 51.7      | 13.7      | SRX-8L 65           | 52.5      | 13.7      |                     |           |           |                     |           |           |
| 45                       | 70                         | 1-3/4                                            | 2-3/4                                              |                     |           |           | SRX-4L 70           | 54.8      | 13.7      | SRX-8L 70           | 54.5      | 13.7      | SRX-16L 70          | 60.3      | 19.5      |                     |           |           |
| 48                       | 75                         | 1-7/8                                            | 2-15/16                                            |                     |           |           | SRX-4L 75           | 57.3      | 13.7      | SRX-8L 75           | 57.2      | 13.7      | SRX-16L 75          | 63.1      | 19.5      |                     |           |           |
| 52                       | 80                         | 2                                                | 3-1/8                                              |                     |           |           | SRX-4L 80           | 60.1      | 13.7      | SRX-8L 80           | 59.9      | 13.7      | SRX-16L 80          | 66.0      | 19.5      | SRX-32L 80          | 72.0      | 25.0      |
| 56                       | 85                         |                                                  |                                                    |                     |           |           |                     |           |           | SRX-8L 85           | 67.2      | 17.5      | SRX-16L 85          | 69.0      | 19.5      | SRX-32L 85          | 75.0      | 25.0      |
| 60                       | 90                         | 2-1/4                                            | 3-1/2                                              |                     |           |           |                     |           |           | SRX-8L 90           | 70.1      | 18.0      | SRX-16L 90          | 71.8      | 19.5      | SRX-32L 90          | 78.0      | 25.0      |
| 64                       | 95                         |                                                  |                                                    |                     |           |           |                     |           |           | SRX-8L 95           | 73.5      | 18.0      | SRX-16L 95          | 79.3      | 21.0      | SRX-32L 95          | 80.5      | 25.0      |
| 68                       | 100                        | 2-1/2                                            | 3-7/8                                              |                     |           |           |                     |           |           | SRX-8L 100          | 76.4      | 18.0      | SRX-16L 100         | 80.0      | 21.0      | SRX-32L 100         | 83.5      | 25.0      |
| 72                       | 105                        | 2-3/4                                            | 4-1/8                                              |                     |           |           |                     |           |           | SRX-8L 105          | 80.5      | 19.5      | SRX-16L 105         | 82.0      | 21.0      | SRX-32L 105         | 87.5      | 26.5      |
| 76                       | 110                        |                                                  |                                                    |                     |           |           |                     |           |           |                     |           |           | SRX-16L 110         | 85.0      | 21.0      | SRX-32L 110         | 91.3      | 26.5      |
| 80                       | 115                        |                                                  |                                                    |                     |           |           |                     |           |           |                     |           |           | SRX-16L 115         | 90.0      | 23.0      | SRX-32L 115         | 94.9      | 26.5      |
|                          | 117                        | 3                                                | 4-5/8                                              |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 117         | 94.9      | 26.5      |
| 85                       | 120                        |                                                  |                                                    |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 120         | 96.5      | 26.5      |
|                          | 125                        | 3-1/4                                            | 5                                                  |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 125         | 100.5     | 26.5      |
| 90                       | 130                        |                                                  |                                                    |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 130         | 102.5     | 26.5      |
| 95                       | 135                        | 3-1/2                                            | 5-3/8                                              |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 135         | 108.0     | 28.5      |
|                          | 140                        |                                                  |                                                    |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 140         | 110.0     | 28.5      |
| 100                      | 145                        | 3-3/4                                            | 5-3/4                                              |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 145         | 113.0     | 28.5      |
| 105                      | 150                        |                                                  |                                                    |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 150         | 116.0     | 28.5      |
| 110                      | 155                        | 4                                                | 6-1/8                                              |                     |           |           |                     |           |           |                     |           |           |                     |           |           | SRX-32L 155         | 119.0     | 28.5      |

### 3.PLACING THE TOOL IN SERVICE

Dwg.1



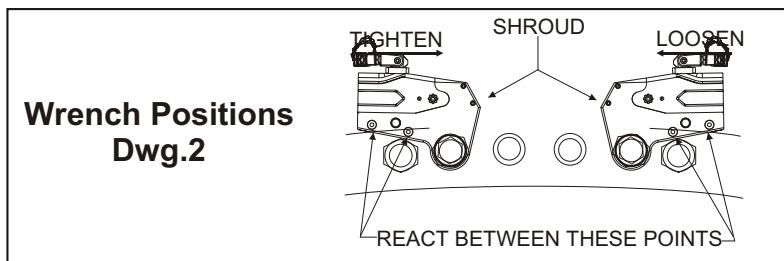
- 1.Attach the twin line hose to the swivel inlets of the Driver assembly using the spring-loaded quick connect ends.  
After making certain that they are fully engaged, thread the safety rings tightly against the spring-loaded retainer rings.
- 2.Connect the opposite ends of the hose to the pump in the same manner.
- 3.Push the Link Retaining pin out of the Drive Cylinder.
- 4.Mate the selected Ratchet Link to the Cylinder by inserting the end of the Cylinder opposite the swivel inlets between the side plates of the ratchet link. (Refer to Dwg.1)
- 5.Align the holes for the link retaining pin and insert the pin through the side plates and cylinder to keep the units joined together.

### 3.1 ADJUSTMENTS

#### 3.1.1 SETTING THE TORQUE

After determining the desired torque, use torque conversion charts on pages 4 and 5 to determine the pressure that is necessary to achieve that torque.

- 1.Connect the tool to the power supply and turn the pump on.
- 2.Depress the remote control button causing the pressure to be shown on the gauge.
- 3.Adjust the pressure by loosening the wing nut that locks the pressure adjustment thumbscrew.  
Rotate the thumbscrew clockwise to increase the pressure and counterclockwise to decreasing pressure, always lower the pressure below the desired point and then bring the gauge back up to the desired pressure.
- 4.When the desired pressure is reached, retighten the wing nut and cycle the tool again to confirm that the desired pressure setting has ben obtained.



### 3.PLACING THE TOOL IN SERVICE

#### 3.1.2 OPERATING THE WRENCH

The position of the tool relative to the nut determines whether the action will tighten or loosen the nut. (Refer to Dwg.2 for application examples). The power stroke of the piston assembly will always turn the Ratchet Hex toward the Shroud.

1. Place the Ratchet Hex on the nut.

Make certain it is the correct size for the nut and that it fully engages the nut.

2. Position the reaction surface against an adjacent nut, flange or solid system component. Make certain that there is clearance for the hoses, swivels, and inlets.

**DO NOT** allow the tool to react against the hoses, swivels, or inlets.

3. After having turned the pump on and presetting the pressure for the correct torque, depress the remote control button to advance the piston assembly. If the notch in the piston rod did not engage the Retract Pin in the Ratchet Link when the link was joined to the Housing, it will engage the pin automatically during the first advance stroke.

4. When the link is connected to the Housing and the wrench is started, the reaction surface of the wrench will move against the contact point and the nut will begin to turn.

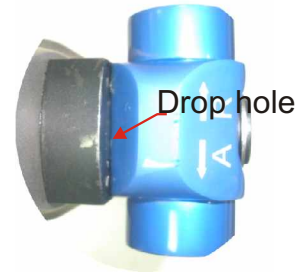
5. When the nut is no longer turning and the pump gauge reaches the preset pressure, release the remote control button.

The piston rod will retract when the button is released and under normal conditions, an audible "click" will be heard as the tool resets itself.

6. Continue to cycle the tool until it "stalls" and the preset psi/torque has been attained.

7. Once the nut stops rotating, cycle the tool one last time to achieve total torque.

8. As connect coupler of wrench and Pump, please care about position which must H to H (or A to A, B to B). If wrong connect or can't connect closely that will make "drop hole" leaking and wrench can't work.



#### 3.2 LUBRICATION

Lubrication frequency is dependent on factors known only to the user. The amount of contaminants in the work area is one factor. Tools used in a clean room environment will obviously require less service than a tool used out-doors and dropped in loose dirt or sand.

Whenever lubrication is required, lubricate as follows:

1. Separate the Cylinder from the Ratchet Link if they are joined.
2. After wiping of the old grease, apply a daub of new lubrication to the hooking notch in the piston rod and wipe a film of lubrication onto the sides and faces of the two Sliders.
3. Disassemble the Ratchet Link as instructed in the Maintenance Section and wash the components in a suitable cleaning solution in a well-ventilated area.
4. Dry the components, then wipe a film of lubrication onto the wear surface of both Side Plate Sleeves and the hubs of the Ratchet.
5. Spread a light film of lubrication onto the inner faces of both Side Plates covering the area where the Drive and Segment Pawl travel. **DO NOT** pack the teeth of the Segment Pawl or Ratchet with lube. It can prevent the teeth from engaging properly.
6. Reassemble the Ratchet Link as instructed in the Maintenance Section.



## 4.MAINTENANCE SECTION

### **WARNING**

Always turn off the power supply, bleed off hydraulic fluid from the hose connections on the cylinder assembly and disconnect the hoses before attempting to repair or perform maintenance on this tool.

Always wear eye protection when operating or performing maintenance on this tool.

### **4.1 DISASSEMBLY**

#### **4.1.1 General Instructions**

1. Do not disassemble the tool any further than necessary to replace or repair damaged parts.
2. Use extra care not to score, nick or damage surfaces that will contain hydraulic oil under pressure.
3. Whenever grasping a tool in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of the threaded members and housings.
4. Do not remove any part that is a press fit in or on an assembly unless the removal of that part is necessary for repairs or replacement.
5. Do not disassemble the hydraulic cylinder assembly unless you have a complete set of seals and o-ring for replacement.
6. Use only British Standard fractional size tools when disassembling these tools.

#### **4.1.2 Disassembly of the tool**

1. Push the Link Pin out of the Housing and Side Plates.
2. Lift the Housing from between the Side Plates and separate the two units.

#### **4.1.3 Disassembly of the SRX-2, SRX-4 and SRX-8 Cylinder Assemblies**

1. Grasp the Housing in copper-covered or leather-covered vise jaws with the inlet end upward and using a 3/4" wrench, unscrew and remove the two Swivel Inlets with their attached Couplers.
2. Remove the Housing Assembly from the vise jaws and over a container to catch the oil, move the Piston rod back and forth several times to purge the hydraulic oil from the Housing.
3. Grasp the Housing in copper-covered or leather-covered vise jaws with the inlet end upward.
4. SRX-2 and SRX-4 models, use a hex wrench to unscrew and remove the End Cover Screw and End Cover.
5. Push the End Cap inward approximately 1/2" and remove the two Retaining Rings by working them out of the groove in the Cylinder.
6. Install the Seal Insertion Tool on the inlet end of the Housing.

### **Notice**

The purpose of the Seal Insertion Tool in the following step is to prevent the End Plug Seal from expanding into the Retaining Ring groove. If the Tool is not used, place two thin pieces of flat stock at the midpoint of the opening against opposite walls to control the Seal expansion.

7. Thread one of the Swivel Inlets or a threaded pipe with a tee into the End Cap. Use the Inlet or tee as a handle to pull the End Cap and End Plug Seal out of the Housing through the Seal Insertion Tool.
8. Push the Piston Rod toward the inlet end of the Housing and using a hex wrench, unscrew and remove the two Retaining Screws.
9. Insert a hooked tool through each screw hole in the Piston Seal Plate and work the Plate upward out of the Housing.
10. Using an o-ring pack, pull the Seal Ring and Piston O-ring off of the Piston Rod.
11. Push the piston end of the Piston Rod forward in the Housing until the Slider Pin aligns with the cross holes in the Housing.
12. Using a small drift, tap the Slider Pin out of the Sliders and position shaft and remove the two Sliders.
13. Push the piston out of the Housing.
14. If the Rod Seal needs replacement, use a hooked tool to pull it out of the Housing.

## 4.MAINTENANCE SECTION

### **4.1.4 Disassembly of the SRX-16 and SRX-32 Cylinder Assemblies**

1. Grasp the Housing in copper-covered or leather-covered vise jaws with the inlet end upward and using a 3/4" wrench unscrew and remove the two Swivel Inlets with their attached Couplers.
2. Remove the housing assembly from the vise jaws and over a container to catch the oil, move the Piston Rod Assembly back and forth several times to purge the hydraulic oil from the Housing.
3. Grasp the Housing in copper-covered or leather-covered vise jaws with the inlet end upward.
4. Insert the pins of the End Plug Wrench into the holes of the End Cap. Using a wrench on the hex of the End Plug Wrench, unscrew and remove the End Cap with the End Plug Seal.
5. Push the Piston Rod far enough into the Housing to expose the hex on the piston head.

### **NOTICE**

During removal and after the piston shaft is removed; DO NOT grasp the round portion of the shaft with any holding device that will damage the surface. Any nicks or scratches to the surface will allow hydraulic oil to leak from the Cylinder when the tool is reassembled.

6. Using a socket on the hex of the piston head, unscrew and remove the piston head from the shaft with the Piston O-ring.
7. Pull the Piston shaft out of the Housing.
8. If the Sliders must be replaced, position the Slider Pin over a clearance opening in a soft block and use a small drift to tap the Pin out of the Sliders and shaft.
9. If the Rod Seal needs replacement, use a hooked tool to pull it out of the Housing.

### **4.1.5 Disassembly of the Ratchet Link**

1. Lay the Ratchet Link flat on a workbench with the Left Side Plate downward and using a hex wrench, unscrew and remove the two Lower Spacer Screws.
2. Using a hex wrench, unscrew and remove the two Upper Space Screws.
3. For Series SRX-16 and SRX-32, use a roll pin push to tap the Spacer Roll Pin out of the Right Side Plate.
4. While applying thumb pressure to the edge of the Ratchet, carefully lift the Side Plate off the Assembly.
5. Grasp the Ratchet and Drive Plate and, while maintaining their relationship, lift them both off the Left Side Plate.

### **NOTICE**

In the following step, when the Ratchet is removed from the Drive Plate, the Drive Segment and Segment Spring will be free to fall from the Drive Plate recess. DO NOT allow the Drive Segment to fall on a hard surface that might chip the teeth.

6. Push the Ratchet out of the Drive Plate and Remove the Drive Segment and the Segment Spring from the Drive Plate Recess.
7. If the Drive Pin or Drive Pin Spring must be replaced, use a roll pin punch to push the Drive Pin Spring Roll Pin out of the Drive Plate. Once the Pin Spring is removed, the Drive Pin will drop down to the large opening at the bottom of the slot for easy removal.
8. Lift the Lower Spacer off the Lower Spacer Pins. If the Pins must be replaced, use a hex wrench to remove the two Lower Spacer Screws from the Right Side Plate. Pull the Pins out of the holes on the inner face of the Right Side Plate.
9. For SRX-2, SRX-4 and SRX-8, unscrew the two Spacer Screws and remove the Upper Spacer from the Right Side Plate. For SRX-16 and SRX-32 use a roll pin punch to remove the Spacer Roll Pin from the Right Side Plate. Unscrew the two Spacer Screws and remove the Middle Spacer and Upper Spacer from the Right Side Plate.
10. If the Side Plate Sleeves must be replaced, press the Sleeves out toward the inner face of the Side Plate.

## 4.MAINTENANCE SECTION

### 4.2 ASSEMBLY

#### 4.2.1 General Instructions

1. Use extra care not to score, nick or damage surfaces that will contain hydraulic oil under pressure.
2. Whenever grasping a tool in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true if threaded members and housings.
3. Apply o-ring lubricant to all o-rings before final assembly.

#### 4.2.2 Assembly of the Ratchet Link

1. If the Side Plate Sleeves were removed, press new sleeves, shoulder end trailing, into the Right and Left Side Plates from the inner face of the side Plates. Make certain the Sleeves are square with the side plate faces and the shoulder of the Sleeves enters the recesses in the Side Plates and are pressed flush with the faces.
2. For SRX-2, SRX-4 and SRX-8, position the Upper Spacer against the inside face of the Right Side Plate Apply a non-permanent thread-locking compound to the threads of the two Upper Spacer Screws and secure the Spacer with the Screws through the Side Plate. For SRX-16 and SRX-32 press the Spacer Roll Pin into the Right Side Plate with one end of the Pin flush with the external face of the Side Plate. Insert the tab of the Upper Spacer into the slot in the Middle Spacer, and after aligning the holes in both pieces, install them on the Spacer Roll Pin. When they are correctly positioned, apply positioned, apply a non-permanent thread-locking compound to the threads of the two Upper Spacer Screws and secure the Spacers with the Screws through the side plate.
3. Insert the two Lower Spacer Pins into the holes in the lower edge of the Right Side Plate. Apply a non-permanent thread-locking compound to the threads of the Lower Space Screws and secure the Pins with the Screws through the Side Plate.
4. Place the Lower Spacer over the Pins against the Side Plate. Make certain it is correctly oriented so that no part of the Spacer extends beyond the edge of the Side Plate.
5. Insert the Drive Pin into the small cross-hole and slot in the Drive Plate. Invert the Plate causing the ends of the Pin to enter the slot and move the Pin to the narrow end.
6. Position the Drive Pin Spring in the drive plates slot with the twp non-connected ends between the Drive Pin and the large hole in the slot. Position the closed end of the Spring on the opposite side of the Pin and then apply pressure on the Spring to align the hole through it with the hole in the Drive Plate for the Drive Pin Spring Roll Pin. Insert the Spring Roll Pin into the Drive Plate, through the Spring and into the wall of the Drive Plate.

### **NOTICE**

In the following step, an excessive amount of grease will prevent proper tooth engagement between the Ratchet and the Drive Segment causing the tool to malfunction.

7. Wipe a thin film of Synthetic Grease onto the inner race of the large opening in the Drive Plate.
8. Position the Ratchet in the central opening of the Drive Plate.
9. Insert the Drive Segment into the opening adjacent to the Ratchet. Make certain the teeth of the Ratchet correctly engage the teeth of the Drive Segment. Reverse the Ratchet if they do not properly engage.
10. Slide the Drive Segment sideways to expose the spring hole. Install the Segment Spring into the hole. While compressing the Spring, slide the Drive Segment inward until the Drive Plate captures the Segment Spring.
11. Apply a light coat of Synthetic Grease to both sides of the Drive Plate and Drive Segment. Apply some of the Grease to the inner races of both Side Plate Sleeves.
12. While keeping the assembly together, insert the hub of the Ratchet into the Side Plate Sleeve of the assembled Side Plate.
13. Place the Left Side Plate Sleeve on the hub of the Ratchet and align the screw holes for the Spacers.
14. After applying a non-permanent thread-locking compound to the threads and using hex wrenches, install the two remaining Lower Spacer Screws.

#### 4.MAINTENANCE SECTION

##### 4.2.3 **Assembly of the SRX-16 and SRX-32 Cylinder Assemblies**

1. Grasp the link retaining pin lug in copper-covered, vise jaws with the Housing horizontal.
2. If the Rod Seal was removed from the Housing, apply a coat of o-ring lubricant to the Seal and install it, lip end trailing, in the recess at the bottom of the piston bore.
3. Press the Slider Pin into one of the Sliders flush with one side. Install the Pin through the hole in the piston shaft and press the remaining Slider onto the Pin.
4. Install the Piston O-ring in the groove of the piston head.
5. Insert the piston rod, threaded end leading, into the small central opening from the non-piston end of the Housing. The notch in the trailing end of the shaft should be toward the Ball Plunger.
6. Insert the piston, hex end trailing, into the bore of the Housing, and use socket to thread and tighten the piston onto the piston shaft.
7. Insert the End Plug Seal in the groove in the hub of the End Cap.
8. Using the End Plug Wrench, thread the assembled End Cap, o-ring end leading, into the piston end of the Housing and tighten it.
9. Wrap the threads of the Swivel Sets with Teflon tape and thread the swivel with the male hose Coupler into the center of the End Cap. Thread the Swivel with the female Coupler into the hole in the Housing directly above the End Cap.

#### 4.MAINTENANCE SECTION

##### 4.2.4 **Assembly of the SRX-2, SRX-4 and SRX-8 Cylinder Assemblies**

1. Grasp the link retaining pin lug in copper-covered vise jaws with the Housing horizontal.
2. If the Rod Seal was removed from the Housing, apply a coat of o-ring lubricant to the Seal and install it, lip end trailing, in the recess at the bottom of the piston bore.
3. Insert the piston rod, notched end leading, into the Rod Seal and the small central opening from the piston end of the Housing. The notch in the leading end of the shaft should be toward the Ball Plunger.
4. Push the Piston Rod inward until the hole for the Slider Pin aligns with the holes in the walls of the Housing.
5. Position one Slider on each side of the piston shaft and insert the Slider Pin through the hole in the Housing into both Sliders and the piston shaft. The fit between the Pin and Sliders is an interference fit. Use a brass hammer and drift to set the Slider Pin below the outer edge of both Sliders or deep enough to prevent the shaft ends from dragging on the Housing walls.
6. Install the Piston O-ring in the internal groove of the Seal Ring.
7. Install the assembled Seal Ring and Piston O-ring on the hub at the large end of the Piston Rod.
8. Install the Piston Seal Plate in the inlet end of the Housing with the side having the countersunk screw hole trailing.

#### **NOTICE**

In the following step, DO NOT use thread-locking compound on the screw threads.

9. Using a hex wrench and an alternating tightening procedure, install the Retaining Screws. Tighten each Screw a little at a time to obtain even compression and expansion of the Piston O-ring and Seal Ring.
10. Place the Seal Insertion Tool on the inlet end of the Housing.
11. Install the End Plug Seal in the groove of the End Cap.
12. Insert the assembled End Cap into the Housing through the Tool with the O-ring end leading and the threaded inlet hole upward. Push the Cap inward beyond the Retaining Ring groove and approximately 1/2" into the Cylinder.
13. Remove the Seal Insertion tool from the Housing.
14. Install the Retaining Rings in the housing grooves at the inlet end of the Housing. Install the Rings with the open ends of the both rings at the middle of the opening and the beveled side of the Rings toward the End Cap.
15. If an air hose is available, inject some air into the threaded opening of the End Cap to seat the Retaining Rings. If air is not available, temporarily thread one of the Swivel Sets into the threaded opening and pull the End Cap back against the Retaining Rings to seat them.
16. For SRX-2 and SRX-4 model position the End Cover against the Housing and after applying a non-permanent thread-locking compound to the threads, install the End Cover Screw.
17. Wrap the threads of the Swivel Sets with Teflon tape and thread the swivel with the male hole Coupler into the thread the hole in the End Cap.
18. Apply some Synthetic Grease to the notch in the Piston Rod and the face of the Sliders.

##### 4.2.5 **Assembly of the Tool**

1. With the Cylinder Assembly in one hand and the Ratchet Link in the other, hook the notch on the shaft of the Piston Rod onto the Drive Pin and bring the two assemblies together.
2. Insert the Link Pin into the hole in the Side Plate until the Ball Plunger snaps into the annular groove around the center of the Link Pin.

## 5TROUBLE-SHOOTING GUIDE

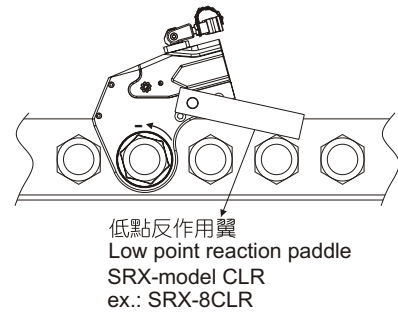
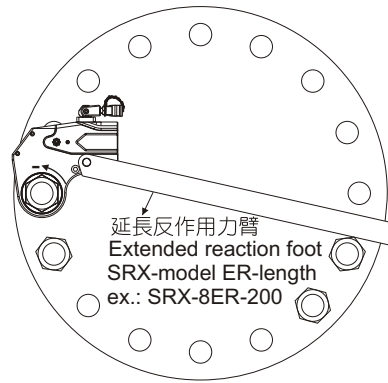
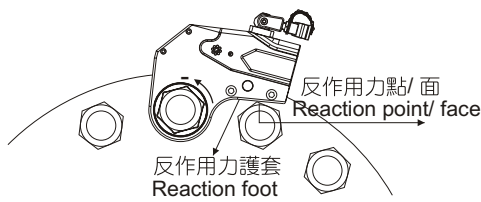
| PROBLEM                                  | CAUSE                                                                                                                                                                                                                                                          | SOLUTION                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Piston will not advance or retract       | <ol style="list-style-type: none"> <li>1. Couplers are not securely attached to the tool or pump</li> <li>2. Coupler is defective</li> <li>3. Defective remote control switch</li> <li>4. Dirt in the direction-control valve of the pump unit</li> </ol>      | <ol style="list-style-type: none"> <li>1. Check the Coupler connections and make certain that they are connected.</li> <li>2. Replace any defective coupler.</li> <li>3. Replace the switch and /or control pendent</li> <li>4. Disassemble the pump and clean the direction-control valve.</li> </ol>                                                                                                                                                        |
| Piston will not retract                  | <ol style="list-style-type: none"> <li>1. Hose connections recersed</li> <li>2. Retract hose not connected</li> <li>3. Retract pin and/or Spring broken</li> </ol>                                                                                             | <ol style="list-style-type: none"> <li>1. Make certain the advance on the pump is connected to the advance on the tool and retract on the pump is connected to the retract on the tool.</li> <li>2. Connect the retract hose securely</li> <li>3. Replace the broken pin and/or spring</li> </ol>                                                                                                                                                             |
| Cylinder will not build up pressure      | <ol style="list-style-type: none"> <li>1. Piston seal and/or End plug seal leaking</li> <li>2. Retaining screws sheared</li> <li>3. Coupler is defective</li> </ol>                                                                                            | <ol style="list-style-type: none"> <li>1. Replace any defective O-ring</li> <li>2. Replace any broken screws</li> <li>3. Replace any defective coupler</li> </ol>                                                                                                                                                                                                                                                                                             |
| Ratchet will not turn                    | <ol style="list-style-type: none"> <li>1. Grease or dirt build up in the teeth of the ratchet and segment pawl</li> <li>2. Worn or broken teeth on ratchet and/or segment pawl</li> </ol>                                                                      | <ol style="list-style-type: none"> <li>1. Disassemble the ratchet and clean the grease or dirt out of the teeth</li> <li>2. Replace any worn or damaged parts</li> </ol>                                                                                                                                                                                                                                                                                      |
| Tool tightens immediately when turned on | Hose connections are reversed                                                                                                                                                                                                                                  | Depress the advance button to release the tool; shut the pump off in the advance position and reverse the hose connection.                                                                                                                                                                                                                                                                                                                                    |
| Pump will not build up pressure          | <ol style="list-style-type: none"> <li>1. Defective relief valve</li> <li>2. Air supply too low or air hose too small</li> <li>3. Electric power source is too low</li> <li>4. Defective Gauge</li> <li>5. Low oil level</li> <li>6. Clogged filter</li> </ol> | <ol style="list-style-type: none"> <li>1. Inspect, adjust or replace the relief valve</li> <li>2. Make certain the air supply and hose size comply with the pump manual recommendations</li> <li>3. Make certain the amperage, voltage and any extension cord size comply with the pump manual requirements.</li> <li>4. Replace the gauge</li> <li>5. Check and fill the pump reservoir</li> <li>6. Inspect, clean and/or replace the pump filter</li> </ol> |
| Pressure reading erratic                 | Defective gauge                                                                                                                                                                                                                                                | Replace the gauge                                                                                                                                                                                                                                                                                                                                                                                                                                             |





Inched stud torque (Please compare with stud factory provide chart in reality working.)

| SAE1<br>SAE2 |          | ASEM B7<br>Bolt |          | B7 A/F<br>Hex. Nut |          | ASEM 354<br>B8     |          | Tightening moment<br>力值 |        |
|--------------|----------|-----------------|----------|--------------------|----------|--------------------|----------|-------------------------|--------|
| 210bar       | 30000psi | Metric          | Imperial | Metric             | Imperial | 420Nm <sup>2</sup> | 60000psi | N.m                     | Ft-lbs |
| 25.4         | 1        | 22.2            | 7/8      | 36                 | 1 7/16   | 22.2               | 7/8      | 400                     | 300    |
| 28.6         | 1 1/8    | 25.4            | 1        | 41                 | 1 5/8    |                    |          | 570                     | 425    |
|              |          |                 |          |                    |          | 25.4               | 1        | 670                     | 500    |
| 31.8         | 1 1/4    |                 |          |                    |          |                    |          | 800                     | 600    |
| 35           | 1 3/8    | 29              | 1 1/8    | 46                 | 1 13/16  | 28.6               | 1 1/8    | 950                     | 700    |
|              |          | 32              | 1 1/4    | 50                 | 2        |                    |          | 1085                    | 800    |
| 38           | 1 1/2    |                 |          |                    |          |                    |          | 1220                    | 900    |
|              |          |                 |          |                    |          | 31.8               | 1 1/4    | 1355                    | 1000   |
| 41.3         | 1 5/8    | 35              | 1 3/8    | 55                 | 2 3/16   |                    |          | 1695                    | 1250   |
|              |          |                 |          |                    |          | 35                 | 1 3/8    | 1830                    | 1350   |
|              |          | 38              | 1 1/2    | 60                 | 2 3/8    |                    |          | 2030                    | 1500   |
| 44.5         | 1 3/4    |                 |          |                    |          |                    |          | 2160                    | 1600   |
| 47.6         | 1 7/8    |                 |          |                    |          |                    |          | 2440                    | 1800   |
|              |          | 41              | 1 5/8    | 65                 | 2 9/16   |                    |          | 2710                    | 2000   |
| 50.8         | 2        |                 |          |                    |          | 41                 | 1 5/8    | 2980                    | 2200   |
|              |          | 44              | 1 3/4    | 70                 | 2 3/4    |                    |          | 3525                    | 2600   |
| 57           | 2 1/4    |                 |          |                    |          | 44                 | 1 3/4    | 4060                    | 3000   |
|              |          | 47.6            | 1 7/8    | 75                 | 2 15/16  |                    |          | 5010                    | 3700   |
| 63.5         | 2 1/2    | 50.8            | 2        | 80                 | 3 1/8    | 47.6               | 1 7/8    | 5420                    | 4000   |
|              |          |                 |          |                    |          | 50.8               | 2        | 5960                    | 4400   |
| 70           | 2 3/4    |                 |          |                    |          |                    |          | 6915                    | 5100   |
|              |          | 57              | 2 1/4    | 90                 | 3 1/2    | 57                 | 2 1/4    | 8135                    | 6000   |
| 76           | 3        |                 |          |                    |          |                    |          | 9490                    | 7000   |
|              |          | 63.5            | 2 1/2    | 100                | 3 7/8    |                    |          | 10840                   | 8000   |
| 82.5         | 3 1/4    |                 |          |                    |          | 63.5               | 2 1/2    | 12200                   | 9000   |
| 89           | 3 1/2    | 70              | 2 3/4    | 110                | 4 1/4    |                    |          | 13550                   | 10000  |
|              |          |                 |          |                    |          | 70                 | 2 3/4    | 15590                   | 11500  |
| 95           | 3 3/4    | 76              | 3        | 120                | 4 5/8    |                    |          | 17625                   | 13000  |
| 102          | 4        |                 |          |                    |          |                    |          | 19655                   | 14500  |
|              |          |                 |          |                    |          | 76                 | 3        | 21015                   | 15500  |
|              |          | 82.5            | 3 1/4    | 130                | 5        |                    |          | 22370                   | 16500  |
| 108          | 4 1/4    |                 |          |                    |          | 82.5               | 3 1/4    | 26435                   | 19500  |
|              |          | 89              | 3 1/2    | 135                | 5 3/8    |                    |          | 27790                   | 20500  |
| 114          | 4 1/2    |                 |          |                    |          |                    |          | 29150                   | 21500  |
|              |          |                 |          |                    |          | 89                 | 3 1/2    | 33215                   | 24500  |
| 121          | 4 3/4    | 95              | 3 3/4    | 145                | 5 3/4    |                    |          | 34570                   | 25500  |
| 165          | 6 1/2    | 108             | 4 1/4    |                    |          |                    |          | 39995                   | 29500  |
| 127          | 5        | 102             | 4        | 156                | 6 1/8    | 95                 | 3 3/4    | 41350                   | 30500  |
|              |          | 114             | 4 1/2    | 175                | 6 7/8    |                    |          | 48130                   | 35500  |
|              |          |                 |          |                    |          | 102                | 4        | 50165                   | 37000  |
|              |          | 121             | 4 3/4    | 184                | 7 1/4    |                    |          | 55585                   | 41000  |
|              |          |                 |          |                    |          | 108                | 4 1/4    | 59655                   | 44000  |
|              |          | 127             | 5        | 194                | 7 5/8    |                    |          | 64400                   | 47500  |
|              |          |                 |          |                    |          | 114                | 4 1/2    | 70500                   | 52000  |
|              |          |                 |          |                    |          | 121                | 4 3/4    | 82700                   | 61000  |
|              |          |                 |          |                    |          | 127                | 5        | 96940                   | 71500  |

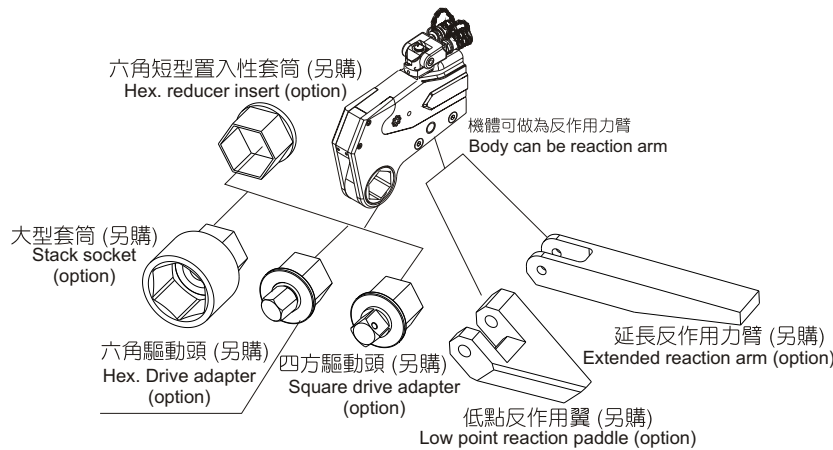


SRX 扭力扳手換算表 SRX Series Torque Conversion Chart

| 工作壓力<br>Work pressure |     | SRX-2                               |                                     |                                   |                                   | SRX-4                              |                                    |                                   |                                   | SRX-8                             |                                   |
|-----------------------|-----|-------------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|                       |     | 1-1/4" to<br>1-13/16"<br>30 to 46mm | 1-1/4" to<br>1-13/16"<br>30 to 46mm | 1-7/8" to<br>2-3/8"<br>47 to 60mm | 1-7/8" to<br>2-3/8"<br>47 to 60mm | 1-5/8" to<br>2-9/16"<br>41 to 65mm | 1-5/8" to<br>2-9/16"<br>41 to 65mm | 2-3/4" to<br>3-1/8"<br>70 to 80mm | 2-3/4" to<br>3-1/8"<br>70 to 80mm | 1-7/8" to<br>3-1/8"<br>50 to 80mm | 1-7/8" to<br>3-1/8"<br>50 to 80mm |
|                       |     | lbf.ft                              | N.m                                 | lbf.ft                            | N.m                               | lbf.ft                             | N.m                                | lbf.ft                            | N.m                               | lbf.ft                            | N.m                               |
| 1450                  | 100 | 284                                 | 384                                 | 315                               | 428                               | 581                                | 788                                | 685                               | 929                               | 1269                              | 1720                              |
| 1740                  | 120 | 340                                 | 461                                 | 379                               | 513                               | 697                                | 945                                | 822                               | 1115                              | 1523                              | 2064                              |
| 2031                  | 140 | 397                                 | 538                                 | 442                               | 599                               | 813                                | 1103                               | 959                               | 1301                              | 1776                              | 2409                              |
| 2321                  | 160 | 454                                 | 615                                 | 505                               | 684                               | 929                                | 1260                               | 1097                              | 1487                              | 2030                              | 2753                              |
| 2611                  | 180 | 510                                 | 692                                 | 568                               | 770                               | 1046                               | 1418                               | 1234                              | 1673                              | 2284                              | 3097                              |
| 2901                  | 200 | 567                                 | 769                                 | 631                               | 855                               | 1162                               | 1575                               | 1371                              | 1858                              | 2538                              | 3441                              |
| 3191                  | 220 | 624                                 | 846                                 | 694                               | 941                               | 1278                               | 1733                               | 1508                              | 2044                              | 2792                              | 3785                              |
| 3481                  | 240 | 680                                 | 923                                 | 757                               | 1026                              | 1394                               | 1890                               | 1645                              | 2230                              | 3045                              | 4129                              |
| 3771                  | 260 | 737                                 | 999                                 | 820                               | 1112                              | 1510                               | 2048                               | 1782                              | 2416                              | 3299                              | 4473                              |
| 4061                  | 280 | 794                                 | 1076                                | 883                               | 1198                              | 1626                               | 2205                               | 1919                              | 2602                              | 3553                              | 4817                              |
| 4351                  | 300 | 851                                 | 1153                                | 946                               | 1283                              | 1743                               | 2363                               | 2056                              | 2788                              | 3807                              | 5161                              |
| 4641                  | 320 | 907                                 | 1230                                | 1009                              | 1369                              | 1859                               | 2520                               | 2193                              | 2973                              | 4060                              | 5505                              |
| 4931                  | 340 | 964                                 | 1307                                | 1073                              | 1454                              | 1975                               | 2678                               | 2330                              | 3159                              | 4314                              | 5849                              |
| 5221                  | 360 | 1021                                | 1384                                | 1136                              | 1540                              | 2091                               | 2835                               | 2467                              | 3345                              | 4568                              | 6193                              |
| 5511                  | 380 | 1077                                | 1461                                | 1199                              | 1625                              | 2207                               | 2993                               | 2604                              | 3531                              | 4822                              | 6537                              |
| 5802                  | 400 | 1134                                | 1538                                | 1262                              | 1711                              | 2323                               | 3150                               | 2741                              | 3717                              | 5075                              | 6881                              |
| 6092                  | 420 | 1191                                | 1614                                | 1325                              | 1796                              | 2440                               | 3308                               | 2878                              | 3903                              | 5329                              | 7226                              |
| 6382                  | 440 | 1247                                | 1691                                | 1388                              | 1882                              | 2556                               | 3465                               | 3015                              | 4088                              | 5583                              | 7570                              |
| 6672                  | 460 | 1304                                | 1768                                | 1451                              | 1967                              | 2672                               | 3623                               | 3153                              | 4274                              | 5837                              | 7914                              |
| 6962                  | 480 | 1361                                | 1845                                | 1514                              | 2053                              | 2788                               | 3780                               | 3290                              | 4460                              | 6091                              | 8258                              |
| 7252                  | 500 | 1418                                | 1922                                | 1577                              | 2138                              | 2904                               | 3938                               | 3427                              | 4646                              | 6344                              | 8602                              |
| 7542                  | 520 | 1474                                | 1999                                | 1640                              | 2224                              | 3020                               | 4095                               | 3564                              | 4832                              | 6598                              | 8946                              |
| 7832                  | 540 | 1531                                | 2076                                | 1703                              | 2309                              | 3137                               | 4253                               | 3701                              | 5018                              | 6852                              | 9290                              |
| 8122                  | 560 | 1588                                | 2153                                | 1766                              | 2395                              | 3253                               | 4410                               | 3838                              | 5203                              | 7106                              | 9634                              |
| 8412                  | 580 | 1644                                | 2230                                | 1830                              | 2481                              | 3369                               | 4568                               | 3975                              | 5389                              | 7359                              | 9978                              |
| 8702                  | 600 | 1701                                | 2306                                | 1893                              | 2566                              | 3485                               | 4725                               | 4112                              | 5575                              | 7613                              | 10322                             |
| 8992                  | 620 | 1758                                | 2383                                | 1956                              | 2652                              | 3601                               | 4883                               | 4249                              | 5761                              | 7867                              | 10666                             |
| 9282                  | 640 | 1815                                | 2460                                | 2019                              | 2737                              | 3717                               | 5040                               | 4386                              | 5947                              | 8121                              | 11010                             |
| 9572                  | 660 | 1871                                | 2537                                | 2082                              | 2823                              | 3834                               | 5198                               | 4523                              | 6133                              | 8375                              | 11354                             |
| 9863                  | 680 | 1928                                | 2614                                | 2145                              | 2908                              | 3950                               | 5355                               | 4660                              | 6319                              | 8628                              | 11698                             |
| 10153                 | 700 | 1985                                | 2691                                | 2208                              | 2994                              | 4066                               | 5513                               | 4797                              | 6504                              | 8882                              | 12043                             |

Instructions for:  
Double-Acting,  
Hexgon Cassette Torque Wrench

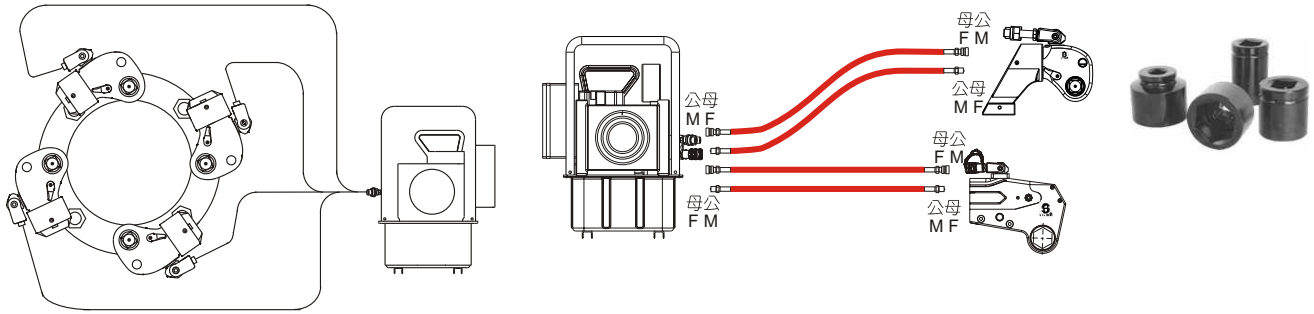
Models:SRX-2,SRX-4,SRX-8,SRX-16,SRX-32



| 訂購型號                                        |                                                                                                       |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------|
| How to build Torque Wrench drive and socket |                                                                                                       |
|                                             | 連接體型號 - H 六角對邊尺寸<br>Link model - H Hex. Across size<br>Example: SRX-8L95-H85                          |
|                                             | 型號 - HH 外六角驅動尺寸 - 內六角套筒尺寸<br>Model - HH Hex. Drive size - Hex. Socket size<br>Example: SRX-8HH75-90   |
|                                             | 型號 - HS 外六角驅動尺寸 - 外四角驅動尺寸<br>Model - HS Hex. Drive size - Square drive size<br>Example: SRX-4HS46-1"  |
|                                             | 型號 - HHM 外六角驅動尺寸 - 外六角驅動尺寸<br>Model - HHM Hex. Drive size - Hex. Drive size<br>Example: SRX-4HHM41-27 |

SRX 扭力扳手換算表 SRX Series Torque Conversion Chart

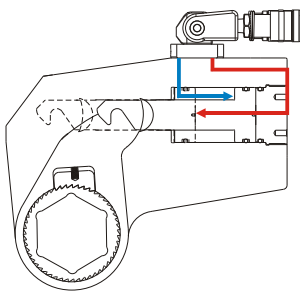
| 工作壓力<br>Work pressure |     | SRX-8            |                  | SRX-16             |                    |                  |                  | SRX-32           |                  |                    |                    |
|-----------------------|-----|------------------|------------------|--------------------|--------------------|------------------|------------------|------------------|------------------|--------------------|--------------------|
|                       |     | 3-3/8" to 4-1/8" | 3-3/8" to 4-1/8" | 2-3/4" to 3-15/16" | 2-3/4" to 3-15/16" | 4-1/8" to 4-5/8" | 4-1/8" to 4-5/8" | 3-1/8" to 4-1/2" | 3-1/8" to 4-1/2" | 4-11/16" to 6-1/8" | 4-11/16" to 6-1/8" |
|                       |     | 85 to 105mm      | 85 to 105mm      | 70 to 100mm        | 70 to 100mm        | 105 to 115mm     | 105 to 115mm     | 80 to 115mm      | 80 to 115mm      | 120 to 155mm       | 120 to 155mm       |
| psi                   | bar | lbf.ft           | N.m              | lbf.ft             | N.m                | lbf.ft           | N.m              | lbf.ft           | N.m              | lbf.ft             | N.m                |
| 1450                  | 100 | 1548             | 2099             | 2293               | 3109               | 2441             | 3309             | 4734             | 6418             | 5440               | 7376               |
| 1740                  | 120 | 1858             | 2519             | 2752               | 3731               | 2929             | 3971             | 5681             | 7702             | 6528               | 8851               |
| 2031                  | 140 | 2167             | 2938             | 3210               | 4353               | 3417             | 4633             | 6628             | 8986             | 7616               | 10326              |
| 2321                  | 160 | 2477             | 3358             | 3669               | 4975               | 3905             | 5295             | 7574             | 10269            | 8704               | 11801              |
| 2611                  | 180 | 2787             | 3778             | 4128               | 5596               | 4394             | 5957             | 8521             | 11553            | 9792               | 13277              |
| 2901                  | 200 | 3096             | 4198             | 4586               | 6218               | 4882             | 6619             | 9468             | 12837            | 10880              | 14752              |
| 3191                  | 220 | 3406             | 4618             | 5045               | 6840               | 5370             | 7281             | 10415            | 14120            | 11968              | 16227              |
| 3481                  | 240 | 3715             | 5037             | 5504               | 7462               | 5858             | 7943             | 11361            | 15404            | 13057              | 17702              |
| 3771                  | 260 | 4025             | 5457             | 5962               | 8084               | 6346             | 8604             | 12308            | 16688            | 14145              | 19177              |
| 4061                  | 280 | 4335             | 5877             | 6421               | 8706               | 6835             | 9266             | 13255            | 17971            | 15233              | 20653              |
| 4351                  | 300 | 4644             | 6297             | 6879               | 9327               | 7323             | 9928             | 14202            | 19255            | 16321              | 22128              |
| 4641                  | 320 | 4954             | 6717             | 7338               | 9949               | 7811             | 10590            | 15149            | 20539            | 17409              | 23603              |
| 4931                  | 340 | 5263             | 7136             | 7797               | 10571              | 8299             | 11252            | 16095            | 21823            | 18497              | 25078              |
| 5221                  | 360 | 5573             | 7556             | 8255               | 11193              | 8787             | 11914            | 17042            | 23106            | 19585              | 26553              |
| 5511                  | 380 | 5883             | 7976             | 8714               | 11815              | 9275             | 12576            | 17989            | 24390            | 20673              | 28029              |
| 5802                  | 400 | 6192             | 8396             | 9173               | 12436              | 9764             | 13238            | 18936            | 25674            | 21761              | 29504              |
| 6092                  | 420 | 6502             | 8815             | 9631               | 13058              | 10252            | 13900            | 19883            | 26957            | 22849              | 30979              |
| 6382                  | 440 | 6812             | 9235             | 10090              | 13680              | 10740            | 14561            | 20829            | 28241            | 23937              | 32454              |
| 6672                  | 460 | 7121             | 9655             | 10549              | 14302              | 11228            | 15223            | 21776            | 29525            | 25025              | 33929              |
| 6962                  | 480 | 7431             | 10075            | 11007              | 14924              | 11716            | 15885            | 22723            | 30808            | 26113              | 35404              |
| 7252                  | 500 | 7740             | 10495            | 11466              | 15546              | 12204            | 16547            | 23670            | 32092            | 27201              | 36880              |
| 7542                  | 520 | 8050             | 10914            | 11924              | 16167              | 12693            | 17209            | 24617            | 33376            | 28289              | 38355              |
| 7832                  | 540 | 8360             | 11334            | 12383              | 16789              | 13181            | 17871            | 25563            | 34659            | 29377              | 39830              |
| 8122                  | 560 | 8669             | 11754            | 12842              | 17411              | 13669            | 18533            | 26510            | 35943            | 30465              | 41305              |
| 8412                  | 580 | 8979             | 12174            | 13300              | 18033              | 14157            | 19195            | 27457            | 37227            | 31553              | 42780              |
| 8702                  | 600 | 9288             | 12593            | 13759              | 18655              | 14645            | 19856            | 28404            | 38510            | 32641              | 44256              |
| 8992                  | 620 | 9598             | 13013            | 14218              | 19276              | 15134            | 20518            | 29351            | 39794            | 33729              | 45731              |
| 9282                  | 640 | 9908             | 13433            | 14676              | 19898              | 15622            | 21180            | 30297            | 41078            | 34817              | 47206              |
| 9572                  | 660 | 10217            | 13853            | 15135              | 20520              | 16110            | 21842            | 31244            | 42361            | 35905              | 48681              |
| 9863                  | 680 | 10527            | 14273            | 15593              | 21142              | 16598            | 22504            | 32191            | 43645            | 36993              | 50156              |
| 10153                 | 700 | 10837            | 14692            | 16052              | 21764              | 17086            | 23166            | 33138            | 44929            | 38081              | 51632              |



- 基礎安裝**
- 安裝A. 1台油壓扳手專用泵浦+1台四方驅動頭油壓扳手+套筒+2條油管  
 安裝B. 1台油壓扳手專用泵浦+1台中空型油壓扳手+2條油管  
 安裝C. 1台油壓扳手專用泵浦+1~4台四方驅動頭油壓扳手(+套筒)或  
 1~4台中空型油壓扳手  
 +2~8條油管

### Basic System Set-up

- A. 1 Hydraulic Torque Wrench using Electric Pump+1 Square Drive Wrench +Socket+2 hoses  
 B. 1 Hydraulic Torque Wrench using Electric Pump+1 Low Profile Wrench +2 hoses  
 C. 1 Hydraulic Torque Wrench using Electric Pump+1~4 Square Drive Wrench (+Socket) or  
 1~4Low Profile Wrench  
 +2~8 hoses



### 油路方式 Oil Path

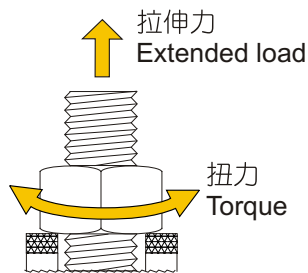
- ← 進油  
Advance  
→ 回油  
Return

### 扳手扭力計算公式 Wrench Torque Formula

$$T = F \times r$$

扭力 = 力量 × 力距  
 Torque = Force × Lever Arm Length

Ex. :  
 1000kN × 60mm = 60000 N.m



### 螺栓拉伸力-扭力計算公式 Bolt Load- Torque Formula

$$T = K \times D \times N$$

T : 扭力

K : 摩擦係數

D : 螺栓直徑

N : 螺栓拉伸力 = 截面積 × 降伏強度 × 降伏比

T : Torque

K : Friction Factor

D : Bolt O.D

N : Bolt extended Load = Stress area × Yield strength × Percent of Yield

Ex. : M16

$$N = 0.7854 \times (16 - 0.9382 \times 2)^2 \times 896 \times \frac{80\%}{1000} = 112N$$

|                                       |                                             |                         |
|---------------------------------------|---------------------------------------------|-------------------------|
| 截面積<br>Stress area<br>mm <sup>2</sup> | 降伏強度<br>Yield strength<br>N/mm <sup>2</sup> | 降伏比<br>Percent of Yield |
| 16 ×                                  | 112N                                        |                         |

$$T = 0.14 \times 16 \times 112N = 252N.m$$

|                         |                        |                    |
|-------------------------|------------------------|--------------------|
| 摩擦係數<br>Friction Factor | 螺栓直徑<br>Bolt O.D<br>mm | 螺栓拉伸力<br>Bolt Load |
| 0.14                    | 16                     | 112N               |