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# 液(油)壓 法蘭撐開器 操作說明

## SFS



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中文 : C1~C4

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。



**危險事項：**為避免人員傷害，請於操作過程中手、腳遠離液(油)油壓缸和液壓設備。



**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：**禁止超載使用。  
超載使用易造成設備損害及人員損傷。液(油)壓缸設計最大使用壓力為 700 bar (10,000psi)。



**危險事項：**液(油)壓設備應遠離火或熱源。高溫會軟化包裝和密封材料，導致液壓油洩漏；高溫同時也會造成油管材質與包裝變質。為確保最好狀態，不要將液(油)壓設備暴露於 65°C(150°F)高溫。在電焊場所時亦應注意防止電焊火花噴到油管。



**警告事項：**請勿操作未潤滑的滑塊及4支滑動插銷。並使用較好的潤滑油。



**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。



**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，請連繫就近的SUN RUN服務據點並使用SUN RUN 液壓油保固方為有效。



**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。



**警告事項：**液(油)壓缸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。



**重要事項：**千萬不要利用油管來提攜其他油壓設備(例如:小型油壓缸、泵浦..等)



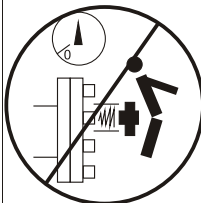
**警告事項：**除了墊塊，千萬不可以手指置於動作中的撐開器。



**警告事項：**撐開器的把手是用來當撐開器回縮時使使用者不直接握住撐開器。可使手指免於卡在二片夾片中。



**危險事項：**千萬不要使用榔頭或其他楔型斧撐開夾縫。



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. 規範

**SUN RUN SFS-系列**為液(油)壓法蘭撐開器  
採用一體成型概念設計。  
適用於撐出法蘭盤間隙可供清洗、維修法蘭面或更換墊片時使用。

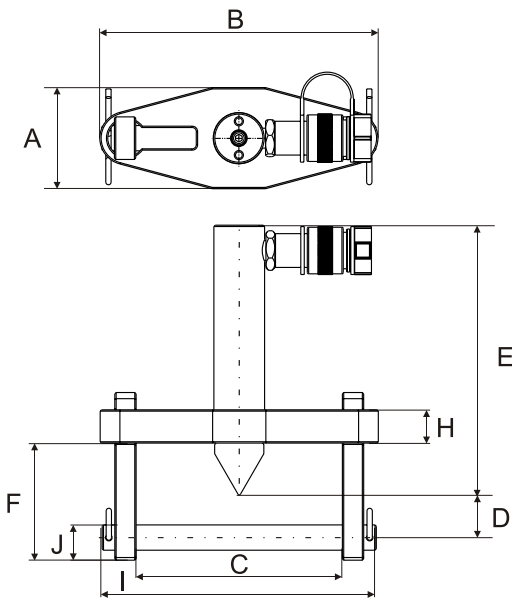
**SFS-56**：由 **SUN RUN RSC-53** 單動液(油)壓缸為驅動體。  
**SFS-109**：由 **SUN RUN RSC-102** 單動液(油)壓缸為驅動體。  
需搭配使用 **SUN RUN** 手動泵浦。

**適用範圍**  
法蘭撐開器適用於：管路及法蘭維修、清除彎管、接頭、更換油封及墊片及維修或更換閥門及控制設備。

Max. Flange Thickness 法蘭厚度 (mm)	Stud Size 螺栓尺寸 (mm)	Standard Wedge 撐開距 (mm)	Capa- city (mm)	Stroke 揚程 (mm)	Oil Cap. 總油量 (mm)	Model Number 型號	Dimensions (mm) 尺寸										Weight
							A	B	C		D	E	F	H	I	J	重量
									Min.	Max.							(kg)
2 x 57	19-28	3-28	5	38	24.6	SFS-56	76	209	70	155	32	196	88	25	206	19	11.5
2 x 92	31-41	3-28	10	54	78.7	SFS-109	108	279	104	216	50	152	114	38	273	31	18.1



圖一



## 2. 規範

- 2.1 在組裝前，認知法蘭撐開器SFS-Series所有組合零件，如圖一所示。
- 2.2 先把油壓缸前的螺牙保護套拆下，並鎖緊進橫桿中，須確認螺牙和橫桿的螺牙完全咬合。
- 2.3 將連接塊的螺牙端鎖緊進千斤頂主軸的螺牙，須確認完全咬合。
- 2.4 再將撐開楔和連接塊前端完全組裝密合。
- 2.5 將側板的前端放置入橫桿的溝槽內，並旋轉90度至卡住橫桿。  
重複此步驟將另一側板也放置入橫桿的另一端。以上完成即可放置法蘭結上開始工作。
- 2.6 將油壓缸的接頭接上油管，另一端也接上手動泵浦。  
注意:在鎖油管兩端的接頭時,接頭螺牙端需纏上止洩帶,並用扳手將接頭鎖緊。



注意事項：若非使用**SUN RUN**的手動泵浦，請注意其手動泵的輸出壓力和有效油量。  
以免造成人員和工具的傷害。

## 3. 操作

重要事項：找到欲將校正的法蘭，並將其中一個螺栓拆下，使法蘭撐開器的橫桿可以穿過。  
當在校正法蘭時，將螺栓留下**1**或**2**個在法蘭盤上，會有助於校正。  
在操作法蘭校正時，需讓專業的人員操作。

### 3. 操作

- 3.1 將法蘭撐開器組安裝置法蘭盤上。  
將兩側板的孔洞對準法蘭盤上的孔洞，將橫桿對準插入。  
圖A所示為法蘭管尺寸。  
再將R插銷插入橫桿左右上。  
之後保持兩邊側板、橫桿和固定板對準中心。
- 3.2 將撐開楔順時針旋轉，使圓錐側端可以對準法蘭面中心。若不行完全順時針旋轉對準，則將其逆時針旋轉，轉夠至可以對準法蘭面即可。



**警告事項：** 保持讓側板和法蘭面的間距不要超過 1/4 inch，避免在加壓過程中，造成人員傷害或工具損壞。

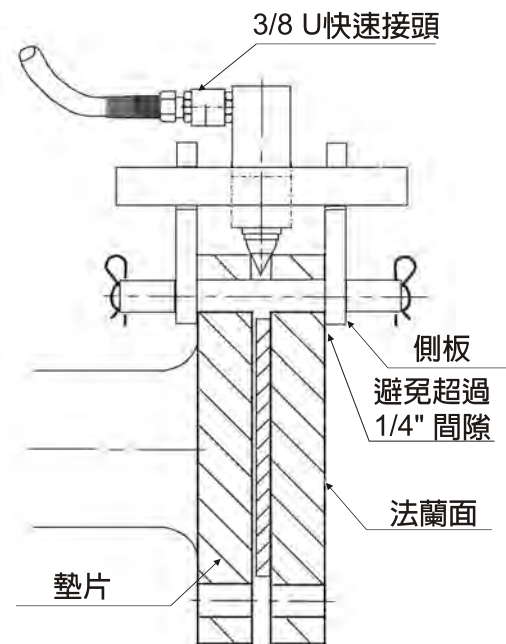


Figure 2.

- 3.3 將油管端的快速接頭連結油壓缸端的接頭，並鎖緊。
- 3.4 先利用手動泵施加一點壓力，確認所有連接處都緊密。  
確認後，可進行法蘭撐開工作。  
若過程中無法撐開，則另檢察是否有校正。

**注意事項：** 在撐開楔圓錐端塗上些潤滑油，可使撐開楔在工作時於法蘭面較易施力。



**注意事項：** 不要強迫讓法蘭面的撐開距大於撐開楔的圓錐端最大寬度或使其結合一起。

Figure A.

法蘭撐開對照表

Flange Spreader Matching Chart

ASA Rating (bar)	Pipe Size (mm) 管尺寸 (mm)	
	SFS-56	SFS-109
10	127-508	558-1066
20	63-355	406-711
27	63-304	355-609
35	63-254	304-508
62	12-152	203-406
103	12-88	101-203
172	12-63	76-101

ASA Rating (psi)	Pipe Size (inches) 管尺寸 (inches)	
	SFS-56	SFS-109
150	5-20	22 - 42
300	2 1/2 - 14	16 - 28
400	2 1/2 - 12	14 - 24
500	2 1/2 - 10	12 - 20
900	1/2 - 6	8 - 16
1500	1/2 - 3 1/2	4 - 8
2500	1/2 - 2 1/2	3 - 4

- 3.5 若兩支法蘭工具同時操作，擺放的位置需互呈180度放置。
- 3.6 若要將撐開楔拆下，要將手動泵的洩壓閥打開讓其洩壓。  
如果撐開楔太緊拆不下，讓主軸做回縮動作，有助於讓撐開器有間隙，較容易拆下。

# 出廠證明暨保固書

產品名稱：

型 號：

序 號：

出廠日期：        /        /

保固期間：        /        /        ~        /        /

該產品經公司嚴格品質管制,並測試合格出廠,本產品自驗收合格日起保固一年,如非人為使用不當或天然不可抗拒之災害,本公司免費維修,如非以上之原因本公司將酌收材料成本負責維修。

公司：巨輪興有限公司

負責人：蘇明益

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# OPERATING INSTRUCTIONS

## HYDRAULIC SPREADER

### SFS



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English : E1~E4

中文  
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Ver.16



## 1. SAFETY PRECAUTIONS



Failure 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.



**WARNIGN :** 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.



**DANGER:** To avoid personal injury keep hands and feet away from cylinder and workpiece during operation.



**IMPORTANT :** Minimize the risk of overloading. Use hydraulic gauges in each hydraulic system to indicate safe operating loads. It is your window to what is happening in the system.



**WARNING :** Do not overload equipment. Overloading cause equipment failure and possible personal injury.



**CAUTION :** Make sure that all system components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges and corrosive chemicals.



**CAUTION:** Don't operate the equipment without lubricating the wedge and the 4 slide pins. Use high quality grease.



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



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



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



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



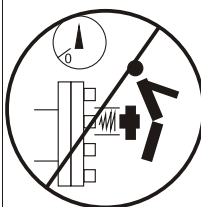
**WARNING:** Never place fingers in a joint held by activated wedge unless a safety block is located into the joint.



**CAUTION:** The handle of the wedge is there to stop operators holding spread plates as the wedge is retracted. This will stop fingers becoming jammed between plates.



**CAUTION:** Never hammer or force wedge to access gap.



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. PRODUCT DESCRIPTION

The SUN RUN wedge spreader SFS-Series is a hydraulic operated tool. It's wedge spreaders use integrated wedge concept. They are used to spread flanges in order to create space for cleaning and repairing flange surfaces and gasket replacement.

SFS-56: is actuated by an SUN RUN RSC-53 single acting cylinder.

SFS-109: is actuated by an SUN RUN RSC-102 single acting cylinder.

SFS-56, SFS-109 must be powered by SUN RUN hand pump.

### Applications

Wedge spreaders can be used for: pipe and flange repair, removing of elbows, couplers, gasket and metal seals replacement, maintenance/ replacement of valve and control equipment.

Max. Flange Thickness 法蘭厚度 (mm)	Stud Size 螺栓 尺寸 (mm)	Standard Wedge 撐開距 (mm)	Capa- city 能力 (mm)	Stroke 揚程 (mm)	Oil Cap. 總油量 (mm)	Model Number 型號	Dimensions (mm) 尺寸										Weight 重量 (kg)
							A	B	C		D	E	F	H	I	J	
									Min.	Max.							
2 x 57	19-28	3-28	5	38	24.6	SFS-56	76	209	70	155	32	196	88	25	206	19	11.5
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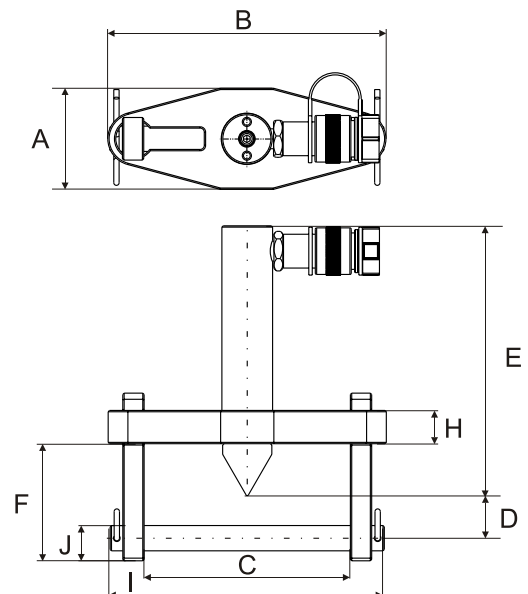
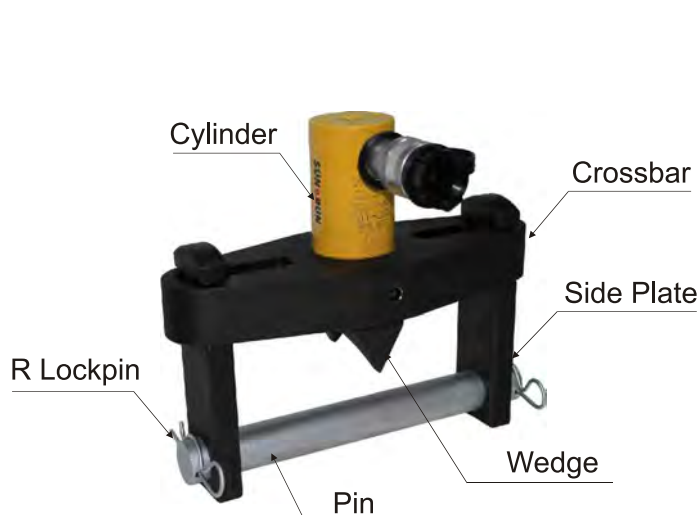


Figure 1.

## 2. PRODUCT DESCRIPTION

- 2.1. Before assembly, identify all component parts included with the set.  
Refer to the Flange Spreader Selection Chart for identification of the component parts and to Figure 1. to aid in the assembly.
- 2.2 Hand tighten the hydraulic cylinder into the crossbar making sure the cylinder collar threads are fully engaged. ( For cylinder RSC-102 , first remove thread protector.)
- 2.3 Thread the adaptor into the end of the cylinder plunger until fully engaged, hand tighten only.
- 2.4 Thread the wedge provided into the adaptor until fully engaged, hand tighten only.
- 2.5 Insert the small head of one of the side plates through the slot in one end of the crossbar and rotate 90°. Repeat this procedure for the other side plate into the slot at the opposite end of the crossbar. The spreader is now ready to be slipped onto the flange.
- 2.6 Connect the hose assembly to the proper port on your pump. Use Teflon tape on the pipe threads and tighten with a wrench.

**IMPORTANT NOTE :** Teflon tape is an excellent thread sealer. However, if the tape is not properly applied, pieces may enter the hydraulic system causing malfunctions and component damage. Use 1-1/2 wraps of tape on each connection, leaving the starting thread free of tape. Cut off all loose tape ends.



**WARNING:** *If an SUN RUN pump is not used, be sure your pump does not exceed the rated capacity of the flange spreader. Failure to do so could result in personal injury or property damage.*

## 3. OPERATING INSTRUCTIONS

**IMPORTANT NOTE :** *Prepare the flange by loosening all the bolts and removing one bolt for the insertion of the flange spreader pin. Removal of the remaining bolts may be necessary depending on your flange maintenance application. In some cases, leaving one or two loosened bolts in the flange may be helpful for realignment of the flange halves. Qualified personnel should determine the proper method of preparation.*

### 3. OPERATING INSTRUCTIONS

- 3.1. Slip the assembled spreader onto the flange.  
Align the holes in the side plates with the flange bolt and insert the pin through the side plates and bolt holes as shown in Figure A.  
Insert the lockpins. Keep the side plates, pin and crossbar centered on the flange.
- 3.2. Rotate the wedge clockwise allowing the tapered sides to be forced between the flange faces. If the wedge cannot be rotated sufficiently in a clockwise direction for proper alignment, then rotate it counter-clockwise just enough to align it with the flange. See Figure 2.



**WARNING:** Keep side plates close to flange face while applying pressure. Exceeding 1/4 inch distance between side plate and flange face could result in personal injury or property damage.

- 3.3. Connect the quick coupler on the hose to the quick coupler on the cylinder and hand tighten.
- 3.4. Apply light pressure with the hand pump and check that all connections fit securely. If so, proceed with the flange spreading operation. If not, make needed adjustments before proceeding.

**NOTE :** A light coating of grease on the wedge tapers will make it easier for the wedge to be forced between the flange face.

**CAUTION :** Do not force the wedge between the flange faces beyond the maximum width of the tapered side of the wedge or binding may occur.

- 3.5. If two flange spreaders are to be used to perform the task, they should be positioned 180° apart.
- 3.6. To remove the wedge, open the release valve of the hand pump. If the wedge binds, work the cylinder back and forth to help walk the wedge out of the gap.

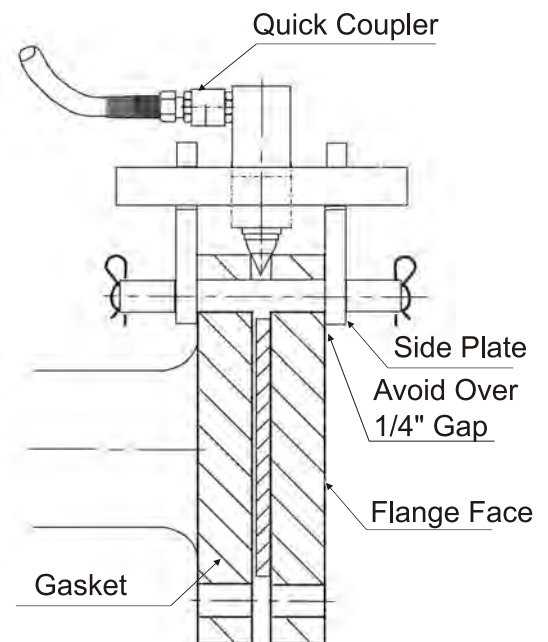


Figure 2.

Figure A.

### 法蘭撐開對照表

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