



巨輪興有限公司

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推式架車機 操作說明

SPLA/ E -B



中文：C1~C16

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：不得使用油壓設備作為支撐重物使用。當液(油)壓缸作為負載頂昇設備時，僅可頂昇，不可用來支撐重物使用。當完成頂升作用後，需使用機械性工具來固定支撐。



警告事項：必須使用硬性物體來支撐重物。慎選能承受重物的鋼鐵或木塊來支撐荷載。不要在頂升或持壓使用中將液(油)壓缸當做墊塊使用。



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：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：千萬不可將溢流(安全)閥的壓力值設定高於泵浦的額定壓力。超載的壓力值可能引起設備損壞及人員損傷。尤其千萬不可拆除溢流(安全)閥。



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：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(例如:小型油壓缸、泵浦..等)。



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。

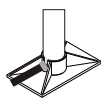


危險事項：不要用手對油管施加壓力(包括拉或舉高) 高壓下洩漏的液壓油會穿透皮膚造成嚴重傷害。當液壓油侵入皮膚請立即就診。

1. 安全預防措施



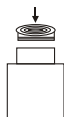
警告事項：液(油)壓缸只能在已連接好的液壓油路中使用；快速接頭尚未確實連接時禁止使用或加壓，否則高壓情況下接頭的油封及鋼珠會高速噴出造成人員傷亡。



警告事項：頂昇荷載前，請確保油壓裝置平穩。油壓缸必須放在平穩可支撐重物的基座上。若情況許可，可使用油壓缸基座來增加穩定性。千萬不可使用焊接或其他方法將油壓缸與所使用的基礎面(支撐座)連接一起。



避免荷載不直接作用在油壓缸的主軸中心上。偏心荷載易導致油壓缸和主軸受損。此外，重物亦可能因傾斜而滑落，引發潛在危險。



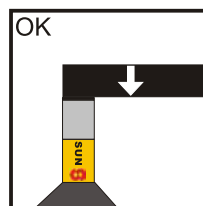
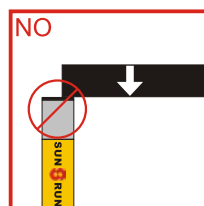
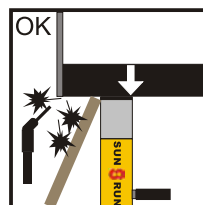
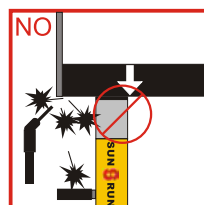
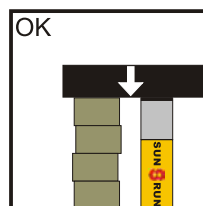
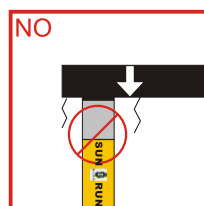
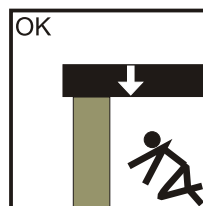
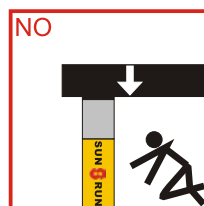
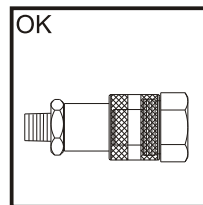
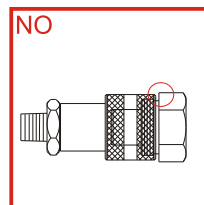
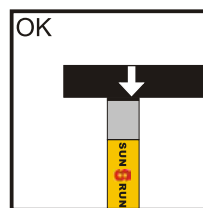
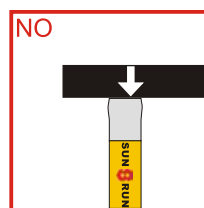
將荷載平均的分布在墊塊表面。傾斜墊塊可消除偏荷載。當無使用螺牙連接其他附件時，一定要使用墊塊以保護主軸。



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。



警告

請勿調整安全閥壓力！

適用於雙動千斤頂
RSR, RSRH, CSLRG 系列

大部份的雙動千斤頂安全閥壓力設定值為
10000psi(700bar)。

超出原廠設定值時，安全閥會噴出液壓油保護
千斤頂。

當安全閥發生漏油狀況時請先檢查
快速接頭連接狀況。

安全閥 快速接頭

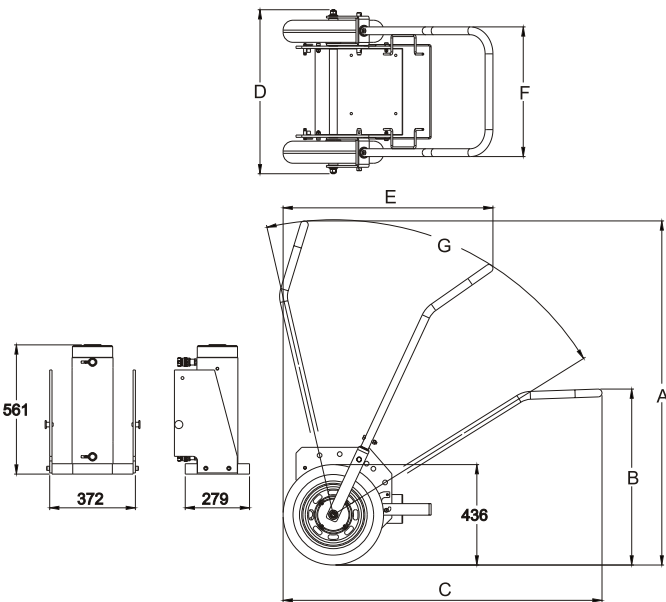
警告

適用於單動,高噸位千斤頂
CSLP, CSLL, CSLS 系列

到達揚程極限時，溢流孔流出
液壓油。藉此警告並保護主軸
超揚昇。

溢流孔 快速接頭

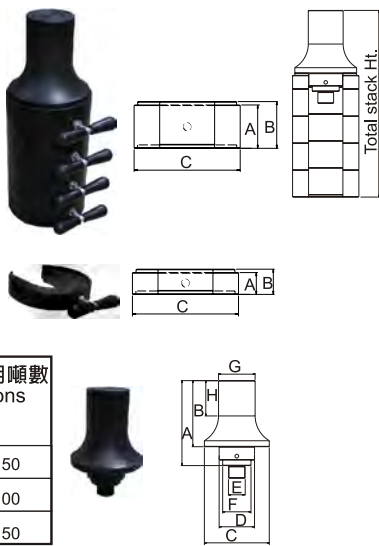
2. 規範



型號 Model No.	油缸型號 Cylinder	驅動單元 Power Unit	推車樣式 Trolley Type	閥樣式 Valve	外型尺寸 Dimensions (mm)						
					A	B	C	D	E	F	G
SPLE-5013	RSR-5013	SPE-554TQJ 1-1/8hp 230V 10.7A 50/60Hz Single Phase Max. Press 700 bar	無字-圓桶型 -Pail trolley	手動 四口三位 方向閥 Manual 4W3P valve	1538	850	1592	659	660	458	52
SPLE-5013B	Cap.: 498kN Stroke:334mm		B型-框架型 B-Frame trolley								
SPLE-10013	RSR-10013		無字-圓桶型 -Pail trolley								
SPLE-10013B	Cap.: 933kN Stroke:333mm		B型-框架型 B-Frame trolley								
SPLE-15013	RSR-15013		無字-圓桶型 -Pail trolley								
SPLE-15013B	Cap.: 1386kN Stroke:333mm		B型-框架型 B-Frame trolley								
SPLA-5013	RSR-5013	SPA-554TQJ 4hp Air press 3~8 bar Max. Press 700 bar	無字-圓桶型 -Pail trolley		1494	764	1384	712	911	583	71
SPLA-5013B	Cap.: 498kN Stroke:334mm		B型-框架型 B-Frame trolley								
SPLA-10013	RSR-10013		無字-圓桶型 -Pail trolley								
SPLA-10013B	Cap.: 933kN Stroke:333mm		B型-框架型 B-Frame trolley								
SPLA-15013	RSR-15013		無字-圓桶型 -Pail trolley								
SPLA-15013B	Cap.: 1386kN Stroke:333mm		B型-框架型 B-Frame trolley								

選配墊塊組
Optional Blocks and Extension

層疊墊塊型號 Cribbing Blocks Model No.	外型尺寸 Dimensions (mm)			適用噸數 tons	突形墊塊 Jack Module Ext.	整組總高 Total stack Ht.	重量 Wt.(kg)
	A	B	C				
XKSPLE5013-A01	38.5	44.5	139.7	50	173.0	515.9	16.3
XKSPLE5013-A02	76.5	82.5	139.7				
XKSPLE10013-A01	38.5	44.5	187.3	100	177.8	527.4	30.9
XKSPLE10013-A02	76.5	82.5	187.3				
XKSPLE15013-A01	38.5	44.5	222.2	150	168.3	511.2	38.6
XKSPLE15013-A02	76.5	82.5	222.2				
XKSPLE20013-A01	38.5	44.5	254.2	200	168.3	511.2	38.6
XKSPLE20013-A02	76.5	82.5	254.2				

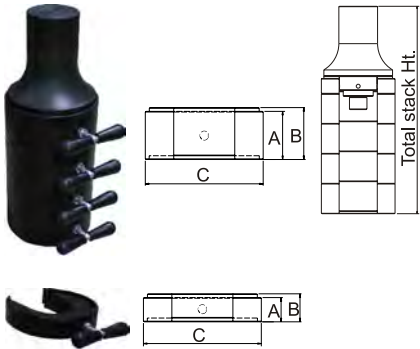


突形墊塊型號 Jack Module Ext. Model No.	外型尺寸 Dimensions (mm)								重量 Wt. (kg)	適用噸數 tons
	A	B	C	D	E	F	G	H		
XKSPLE5013-A03	223.8	173	127	72.5	1"-8UN	79.5	66.8	92.2	9.5	50
XKSPLE10013-A03	228.6	177.8	174.6	95.2	1-3/4"-12UN	76.2	98.4	95.0	18.2	100
XKSPLE15013-A03	219.2	168.4	203.2	114.3	3-3/8"-16UN	—	114.3	88.9	22.7	150

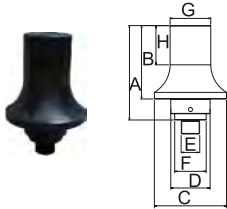
2. 規範

選配

Cribbing Blocks Model No. 層疊墊塊型號	Dimensions (mm) 外型尺寸			tons 適用噸數	Jack Module Ext. 突形墊塊	Total stack Ht. 整組總高	Wt.(kg) 重量
	A	B	C				
XKSPLE5013-A01	38.5	44.5	139.7	50	173.0	515.9	16.3
XKSPLE5013-A02	76.5	82.5	139.7				
XKSPLE10013-A01	38.5	44.5	187.3	100	177.8	527.4	30.9
XKSPLE10013-A02	76.5	82.5	187.3				
XKSPLE15013-A01	38.5	44.5	222.2	150	168.3	511.2	38.6
XKSPLE15013-A02	76.5	82.5	222.2				
XKSPLE20013-A01	38.5	44.5	254.2	200	168.3	511.2	38.6
XKSPLE20013-A02	76.5	82.5	254.2				



Jack Module Ext. Model No. 突形墊塊型號	外型尺寸 Dimensions (mm)								Wt. 重量 (kg)	tons 適用噸數
	A	B	C	D	E	F	G	H		
XKSPLE5013-A03	223.8	173	127	66.8	1"-8UN	63.5	66.8	92.2	9.5	500
XKSPLE10013-A03	228.6	177.8	174.6	95.2	1-3/4"-12UN	76.2	98.4	95.0	18.2	100
XKSPLE15013-A03	219.2	168.4	203.2	114.3	3-3/8"-16UN	111.3	114.3	88.9	22.7	150



3. 操作

3.1 移動車台
將推車把手前推 Fig 3.1.



Fig. 3.1

3. 操作

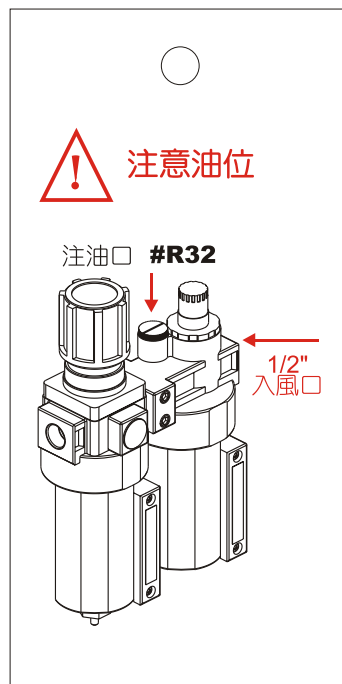
3.2 調整把手角度

3.2.1 取下插銷。

3.2.2 移動把手至對應的插銷孔，重新插回插銷。

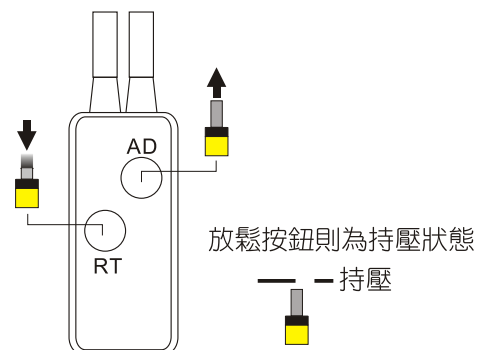


3.3 連接 1/2" 入風口及正確安插氣動遙控器。



3. 操作

3.4 持續按壓遙控器 "AD" 則油缸揚程。

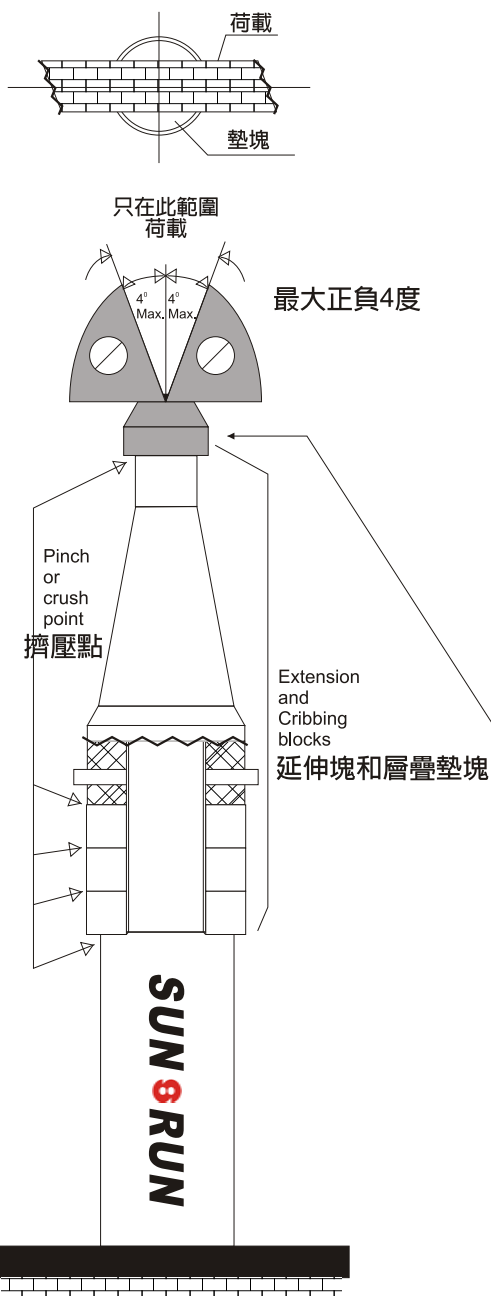


此結冰狀態為正常情形
並不會造成任何損害。
可蓋上厚布或其他遮避物以防止
直接噴出的強冷氣和水氣。

3.5 完成工作或需暫時將架車機直立停靠時，請將下踏板前推至直立狀態。



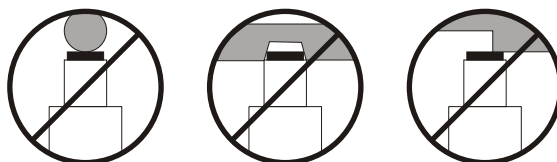
3. 操作



This guide cannot cover every situation, so always do the job with SAFETY FIRST.

此導引並非適用於任一情況，做任何工作前都是以安全為第一考量。

1. 偏移荷載易造成千斤頂的損壞、連接處的不足、承載無法延伸或人員的傷害。
2. 須荷載於千斤頂中心。
3. 校直千斤頂和承載處，此堆疊面成筆直狀態，且在承載範圍內，此在承載移動時不會造成不穩定。
4. 不可移動或推動荷載的千斤頂，任何移動需在荷載移除前動作完成。
5. 墊塊頂部須牢固且其舉升支撐點須完全被覆蓋。其承載中心應為非圓物體或不對稱面。



6. 如左圖所示有4度的推升平面。
7. 做堆疊延伸時，將最長的置於最底部，將最短延長塊置於最頂部。
8. 主軸頂端務必安裝突形墊塊(最長的延長塊)以保護突然發生脫件的意外。
9. 一次只使用一個最短墊塊，千萬不要堆疊多個短墊塊使用。
10. 層疊墊塊需完全的堆疊且均勻覆載。
11. 勿使用過多的層疊墊塊。也勿增加其餘零件。
12. 勿在層疊墊塊直接降低荷載。
13. 每組配件須使用於所屬的油壓缸，無法通用於所有油缸。
14. 請詳讀所有操作說明及警告事項。
15. 必須使用層疊墊塊時請對齊把手並且在第一短延伸連接塊套疊即需確認溝槽完全密合。
16. 依序使用層疊墊塊或其他墊塊舉升。
17. 須只用核准過的配件。
18. 須用噸數足夠的千斤頂荷載舉升。
19. 舉升或支撐用的千斤頂，其總荷載不可超出本身的一定噸數。
20. 千萬不可以油壓工具做為支撐使用。
21. 所有荷載需以機械式工作做為支撐。
22. 合理的支撐油壓缸及缸座。
23. 在油缸和荷載物間需鋪有防滑材料。
24. 請勿超載揚升。
25. 荷載揚程請清空週邊。
26. 請勿在不安全的荷載條件下工作或靠近，請勿允許人為或動態力量於不安全的荷載。
27. 請勿將千斤頂做危險維修或修改。

3. 操作

3.1 千斤頂操作方式

3.1.1 請詳讀並確實了解各項泵浦、油管及配件等基本安全操作及需求。

各項產品於出廠前均已完成組合測試。

3.1.2 請小心拆除各項包裝材料。

3.1.3 使用前請填滿 SUN RUN 認可之液壓油。

3.1.4 開始操作泵浦及千斤頂全揚程至少3次以上，直到油缸前進及回縮均能平順動作。

3.1.5 再次空車試驗在油缸全揚程時泵浦全壓力狀況。等泵浦停止後檢查各油管、配件及系統內各零件是否有漏油或其他問題。

3.2 排除空氣

本產品於出廠時均以完成空氣排除動作，但操作中油桶內的油位過低或產品經一段時間未使用亦可能累積多餘空氣需要排出，空氣會造成油缸回縮不順或緩慢，建議首次使用前仍依下列動作先排出空氣：

1. 油缸未荷載/空車狀態重複動作3次以上(需含全揚程及完全回縮)。
2. 確認液壓油油位？請參考泵浦使用手冊並配合添加適當的液壓油。

3.3 本產品限定單機使用。

請於額定荷載內舉升、拉伸。

3.4 油缸千萬不可超過中心線 $\pm 4^{\circ}$ 偏心荷載。

荷載回縮：

啟動元件並揚程至可移除層疊墊塊為止，切換閥開關至回縮及降低荷載狀態。

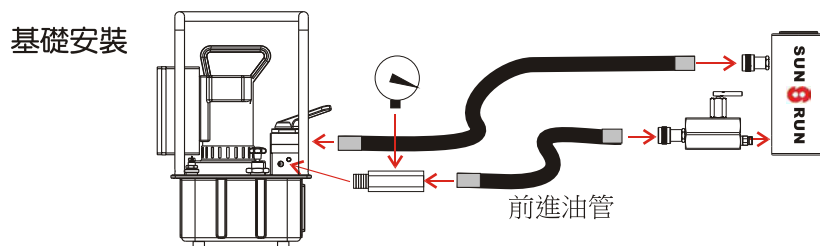
NOTE: 本產品配有低壓泵浦藉此操作荷載回縮？

NOTE: 單機重 $t=237\text{kg}$ 不含墊塊及層疊墊塊等配件？小心運送？

3. 操作

3.5 雙動油壓系統

基本雙動油壓包含一個泵浦 (可提供油壓動力), 一個雙動油缸(作為工作實體), 一組前進油管 (連接油缸前進/揚程孔)第二條油管(連接油缸回縮孔),及一組控制閥。



雙動油缸無論揚程或回縮均由油壓作動。

大部份的雙動油缸可視為 "不同的油缸", 因為油缸於揚升和回縮揚程時受不同尺寸的受壓面積所推動。由於這樣的不同所以在揚升時比回縮時更具力量。

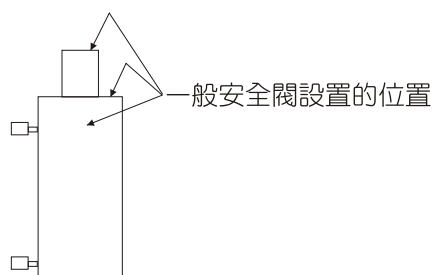
NOTE: 油壓系統的能力由油缸的受壓面積及系統壓力決定。

3.6 安全預防

3.6.1 雙動油缸的二端須完全緊密的連接二條油管及快速接頭。如果有一端鬆脫或未完全連接，產生的高壓會使油缸、油管或是快速接頭產生爆破及致命的危險。

3.6.2 當揚升雙動油缸時，回油孔必是限制的狀態。限制的回油孔須預防超壓情形以避免油缸爆破發生致命的危險。

3.6.3 千萬不要試圖調整雙動油缸上的安全閥。假如發現安全閥流出液壓油請立即停止油壓並連絡就近的專業油壓維修廠。假如不正確的調整會造成油缸異常的壓力而使油缸、油管甚至是快速接頭爆破而發生致命的危險。



3. 操作

3.6 安全預防

3.6.4 當油缸揚程或於荷載狀態下務必確認快速接頭或油孔的牙是安全無誤的。假如快速接頭在牙損情況連接可能在高壓情況下自油缸油孔脫離，瞬間無荷載，這些都可能造成致命的傷害。

3.6.5 避免偏心荷載! 偏心荷載會造成油缸損傷及無法荷載亦會造成致命的危險。

3.6.6 隨時注意並控制荷載情形，千萬不要突然降下荷載。

3.6.7 請安裝合壓的轉接頭或配件。

3.6.8 警告事項

3.6.8.1 油管及油路

- A) 避免在短迴路以直管連接，直管安裝方式無法適應油壓/油溫的熱脹冷縮。
- B) 消除管路內的壓力，長迴路安裝適用於支撐或夾持使用，管路穿過隔板必須配有隔板配件。配件可使支撐和移除管路更容易。
- C) 使用泵浦前務必鎖緊油管及配件，但不可鎖過頭，相互連結只需牢固的鎖緊無洩漏即可。鎖過頭會造成崩牙或造成的高壓破壞原有標稱荷載的壓力。
- D) 油管發生破裂或爆破無法再連結使用時需立即關閉泵浦及洩壓。千萬不要用手緊抓著洩壓的油管。洩壓產生的強大能量足以產生致死危險。
- E) 不要使油管置於潛在危險的環境中，像是有火源、表面有尖刺、高溫或強冷或是在表面重壓。不要使油管刀割、強力扭轉、重壓或過度彎曲，造成油管油路阻塞或油量減少，每間隔一段時間就必須檢查油管是否有磨損，因為油管上任何的損傷都可能造成人員的傷亡。
- F) 不要藉著油管來拖動連接的設備，可能因此拉傷油管並造成危險。
- G) 油管材質及快速接頭油封須完全適用油壓來使用，油管千萬不可以接觸含腐蝕性物質像是含有雜酚油的物件及漆類。油管會因為腐蝕性物質而毀壞並產生人為災害。如有需要請於油管塗料前協商製造廠。千萬不要在快速接頭上塗料。

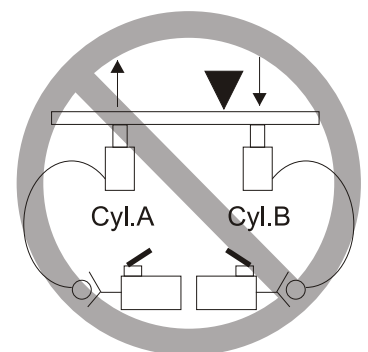
3. 操作

3.6 安全預防

3.6.8 警告事項

3.6.8.2 油缸

- A) 使用者須為合格的油壓操作者，知悉正確的操作方式、維修及使用油缸。任何對油壓無知的技能都可能造成人員傷亡。
- B) 詳讀並了解手冊內所有的安全須知及警告事項。
- C) 只使用合格的配件及液壓油及油管、油封及系統內的所有零件均需使用能符合油壓設備。
- D) 油缸千萬不要超載使用。超壓會造成人員損傷。
- E) 在每次變動或使用前均需檢查所有的油缸、配件、管線、油管、閥座和快速接頭以防止不安全的連接發生。
- F) 千萬不要使油缸裝配折損或有危險的快速接頭或有危險的螺孔。
- G) 在已知的狀況下，超揚升可能造成危險。
- H) 避免荷載時或零件造成的單點擠壓或夾持。
- I) 請避免金屬疲乏，假如油缸不是用於持續使用的狀況，荷載範圍亦應儘量在額定荷載的85%。
- J) 油缸在舉升時必需有穩定支撐底座。
- K) 避免人為災害荷載舉升時底部應鋪有木屑或防滑材料等，避免滑倒。
- L) 墊塊接觸表面須與基座支撐表面保持平行 4°。
- M) 揚程時，墊塊和底座至少可支撐 75% 荷載。
- N) 墊塊或荷載穩固件避免於舉升中發生滑動。
- O) 千萬不要偏心荷載。墊塊頂或油缸反衝會造成人員傷害。
- P) 墊塊荷載時請勿超過 4° 偏心線。
- Q) 假如系統是用於舉升或較低荷載請確認荷載全程都在操作範圍內且荷載時週圍淨空。
千萬不要突然掉落荷載物。
- R) 舉升時請使用墊塊和層疊墊塊支撐降落的荷重。
- S) 避免人為災害，放上墊塊前禁止工作人員工作或立於荷重底下。
洩載或下降前請勿必清空作業人員。
- T) 千萬不要使油缸置於過熱環境。金屬疲乏和老化的油封會造成不安全的洩漏。
- U) 不要對一支油缸產生不平衡的支點、水平或過載的狀況發生，這些會增強另一端下降的力量。
舉例來說，如圖在一個軸面上施力，當油缸A揚升並且產生了不對稱水平狀況而對油缸B產生了增強下降的壓力。對油缸B產生的壓力會造成更加的危險。



3. 操作

3.6 安全預防

3.6.9 重要事項

- A) 油缸隨時保持整潔
- B) 當工作段落油缸不再使用時，請務必完全縮回主軸。
- C) 請使用合格、高規格的管牙密封劑於所有的油壓連接處。鐵弗龍帶只用於簡易單層纏繞並需小心使用(約退回二牙長度)防止鐵弗帶掉入管內。任何掉入的碎屑會在油路中造成危險的阻塞。
- D) 快速接頭不使用時請務必蓋上防塵蓋。
- E) 底座式油缸或使用主軸內牙、外牙時請務必完全鎖緊牙。

3.7 系統環境

油缸、油管、快速接頭及泵浦..等所有配件均需具相同的最大操作壓力，完全而確實的連接於各油路。任何不正確的連接系統即可造成嚴重的傷害。□ 果存有疑慮請連絡就近的SUNRUN服務據點。

3.7.1 排氣

SUN RUN 分離式千斤頂均於出廠前完成排氣動作，但為確保正常操作建議於停止一段時間後，再次操作前能再次執行2~3次的(全揚程的來回動作)排氣動作。

3.7.2 檢查

每次使用前請目視檢查下列事項：

- A) 是否為有裂痕或危險的油缸。
- B) 是否有過多的磨損、彎折、損傷或崩牙的組合情況。
- C) 有洩漏的液壓油。
- D) 主軸有刮傷。
- E) 頂蓋及頂部有不正常作動。
- F) 有鬆脫的螺栓。
- G) 配有不正確或危險的組合配件。
- H) 配有修改件、焊接零件或改裝零件。
- I) 有凹痕或危險的快速接頭或接口。

4. 維修

4.1 油缸維修

- A) 隨時保持整潔，必要時更換適用的液壓油。
- B) 任何外顯的螺牙(公牙或母牙)均需保持乾淨並定期潤滑及防護。
- C) 假如有油缸曝露於雨水、雪水、沙地、空氣含大量塵土或任何腐蝕環境，都必須在使用後立即清洗、潤滑後防護收納。

4.2 週期性清理

應建立週期性例行防污保養。所有不使用的快速接頭均蓋上防塵蓋。所有油管接頭需防塵及防污染。所有油缸配件均需保持清潔無污染。

警告事項：污染的液壓油會造成閥門機能故障而產生人為傷害。

如需更換液壓油請使用 SUN RUN 認可的液壓油油品 (液壓油使用時限請勿超過300小時)。

4.3 存放

雙動油缸型

油缸請存放於乾燥、防銹、防潮或少沙塵的無害環境，假如存放時間長達一年以上，使用前請務必再次檢查及排氣。

5.疑難排除

問題	原因	解決
不規則動作	1.系統內有空氣或泵浦有氣穴 2.油缸內漏 3.油缸或閥門間有阻塞或折阻 4.閥故障	1.加油、排氣並確認是否洩漏。 2.更換有問題的油封。確認是否有過度磨耗。必要時一同更換液壓油。 3.先檢查髒污或洩漏。確認是否有不當彎折、錯誤的零件或殘缺的油封。同時更換乾淨合用的液壓油。 4.請立即更換。
油缸不會動作	1.接頭沒鎖好 2.壞的接頭 3.不適當的閥 4.泵浦油桶油位太低 5.泵浦內有空氣 6.泵浦無法操作 7.荷載超出系統額定 8.液壓油從油缸或安全閥漏出 9. 沒有引導壓力 10.閥故障	1.請鎖緊快速接頭。 2.先確認接頭沒被鎖死。必要時更換新接頭。 3.關閉釋放閥或切換到新的位置。 4.請加至適當的油位 5.請參考各泵浦操作手冊。 6.請參考各泵浦操作手冊。 7.請使用正確的設備。 8.所有的接頭需完全密合。請連絡就近的 SUN RUN 鋤修中心 。 9.檢查所有連接處、泵浦操作閥的位置及壓力。 10.請立即更換。

5.疑難排除

問題	原因	解決
油缸僅揚升部分或一半	1. 泵浦油桶液壓油油位太低 2. 荷載超出系統額定 3. 油缸活塞被黏/吸	1. 請加至適當的油位 2. 請使用正確的設備。 3. 檢查是否有污染阻塞或洩漏。 檢查是否否彎折、不適合的零件或損壞的油封。
油缸不正常的或緩慢的移動	1. 連接或快速接頭鬆脫。 2. 油路或配件有所限制/阻塞。 3. 泵浦無正常工作。 4. 油缸油封洩漏。	1. 請鎖緊。 2. 請更換或清除。 3. 請詳閱泵浦操作手冊。 4. 請更換錯誤的油封。檢查是否有異常磨損。
油缸正常作動但無法持壓	1. 連接處洩漏。 2. 油缸油封洩漏。 3. 泵浦或閥故障。	1. 清除，然後重新在螺牙使用密封材料，鎖緊連接。 2. 更換不好的油封。檢查是否有異常磨損。如有必要亦更換已污染的液壓油。 3. 請詳閱泵浦或閥操作手冊。
油缸漏油	1. 錯誤或損壞的油封。 2. 連接鬆脫。 3. 主軸端的釋放閥活化(啟動)。	1. 更換不好的油封。檢查是否有異常磨損。如有必要亦更換已污染的液壓油。 2. 清除，然後重新在螺牙使用密封材料，鎖緊連接。 3. 先確認所有接頭均已完全密合。假如安全閥仍在漏油，不要嘗試調整這個部份。請連絡就近的 SUN RUN 服務據點。

5.疑難排除

問題	原因	解決
油缸無法回縮或回縮緩慢	1.泵浦洩壓閥關閉。 2.快速接頭鬆脫。 3.油路阻塞。 4.油缸內部損壞。 5.泵浦油箱油位過滿。 6.泵浦或閥故障。	1.打閥泵浦洩壓閥。 2.鎖緊快速接頭。 3.清洗或疏通。 4.請送往維修中心維修。 5.倒掉多餘的液壓油到正確的油位。 6.請詳閱泵浦或閥操作手冊。

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

高雄市岡山區岡山北路199號

TEL:886-7-6210505

FAX:886-7-6217575



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CHU LUN SING CO.,LTD

No.199, Gangshan N. Rd., Gangshan Dist.,
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TEL:886-7-6210505

FAX:886-7-6217575

OPERATING INSTRUCTIONS

Portable High Tonnage Jack

SPLA/ E -B



English : E1~E16

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 of the tool or workpiece.



WARNING: Stay clear of loads supported by hydraulics. A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be blocked mechanically.



WARNING: USE ONLY RIGID PIECES TO HOLD LOAD. Carefully select steel or wood blocks that are capable of supporting the load. Never use a hydraulic cylinder as a shim or spacer in any lifting or pressing application.



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



WARNING : Do not overload equipment. Overloading causes equipment failure and possible personal injury. The cylinders are designed for a max. Pressure of 700 bar (10,000psi).



DANGER: NEVER set the relief valve to a higher pressure than the maximum rated pressure of the pump. Higher settings may result in equipment damage and/or personal injury. Do not remove relief valve.



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.



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.





CAUTION : KEEP HYDRAULIC EQUIPMENT AWAY FROM FLAMES AND HEAT. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance do not expose equipment to temperatures of 65°C (150°F) or higher. Protect hoses and cylinders from weld spatter.




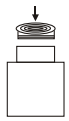
DANGER: Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin causing serious injury. If oil is injected under the skin, see a doctor immediately.


1. SAFETY PRECAUTIONS


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

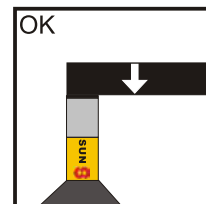
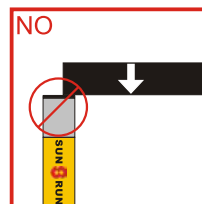
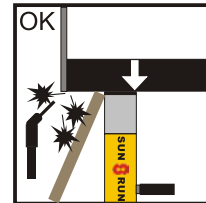
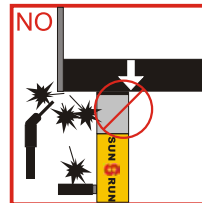
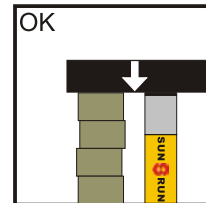
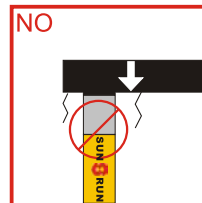
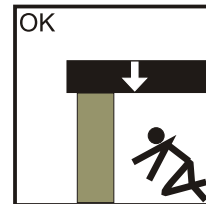
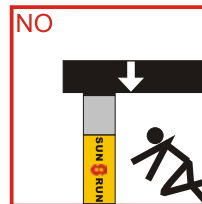
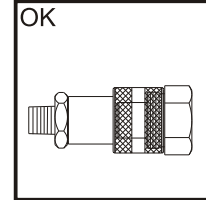
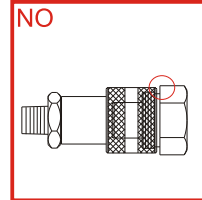
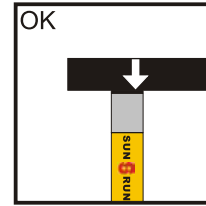
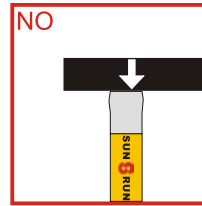
 **WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD.** Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.

 **Avoid** situations where loads are not directly centered on the cylinder plunger. Off-center loads produce considerable strain on cylinder and plungers. In addition, the load may slip or fall, causing potentially dangerous results.

 Distribute the load evenly across the entire saddle surface. Always use a saddle to protect the plunger.

 **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.

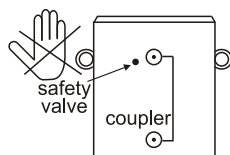


WARNING

Don't adjust safety valve pressure!

Apply to double-acting cylinder
RSR, RSRH, CSLRG series

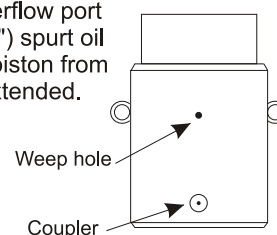
Most double-acting cylinder safety valve pressure setting 10000psi(700bar).
As surpasses the original factory hypothesis pressure safety valve will spurt oil to protect cylinder.
Leaking from safety valve, inspect connection of coupler at first.



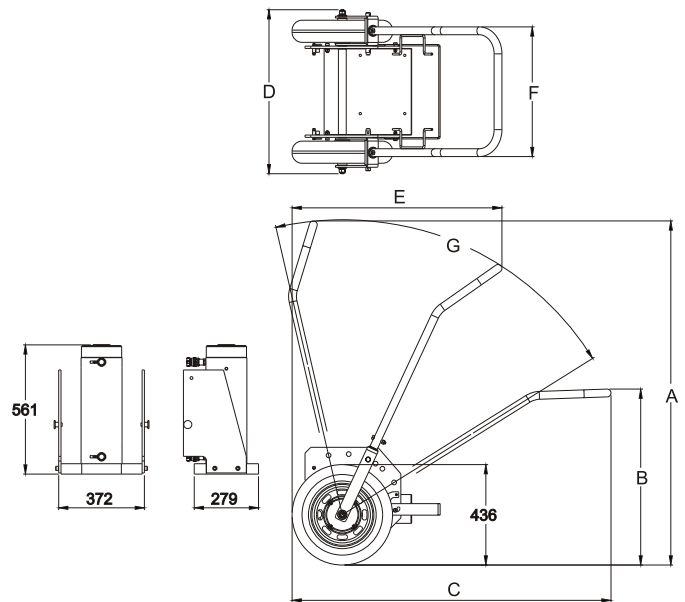
WARNING

Apply to
Single-acting, High tonnage cylinder
CSLP, CSLL and CSLS series

When stroke limit is reached; overflow port ("weep hole") spurt oil to prevents piston from being overextended.



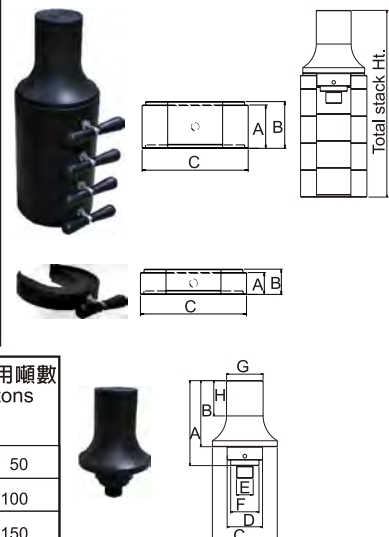
2.SPECIFICATION



型號 Model No.	油缸型號 Cylinder	驅動單元 Power Unit	推車樣式 Trolley Type	閥樣式 Valve	外型尺寸 Dimensions (mm)						
					A	B	C	D	E	F	G
SPLE-5013	RSR-5013	SPE-554TQJ 1-1/8hp 230V 10.7A 50/60Hz Single Phase Max. Press 700 bar	無字-圓桶型 -Pail trolley	手動 四口三位 方向閥 Manual 4W3P valve	1538	850	1592	659	660	458	52
SPLE-5013B	Cap.: 498kN Stroke:334mm		B型-框架型 B-Frame trolley								
SPLE-10013	RSR-10013		無字-圓桶型 -Pail trolley								
SPLE-10013B	Cap.: 933kN Stroke:333mm		B型-框架型 B-Frame trolley								
SPLE-15013	RSR-15013		無字-圓桶型 -Pail trolley								
SPLE-15013B	Cap.: 1386kN Stroke:333mm		B型-框架型 B-Frame trolley								
SPLA-5013	RSR-5013	SPA-554TQJ 4hp Air press 3~8 bar Max. Press 700 bar	無字-圓桶型 -Pail trolley	手動 四口三位 方向閥 Manual 4W3P valve	1494	764	1384	712	911	583	71
SPLA-5013B	Cap.: 498kN Stroke:334mm		B型-框架型 B-Frame trolley								
SPLA-10013	RSR-10013		無字-圓桶型 -Pail trolley								
SPLA-10013B	Cap.: 933kN Stroke:333mm		B型-框架型 B-Frame trolley								
SPLA-15013	RSR-15013		無字-圓桶型 -Pail trolley								
SPLA-15013B	Cap.: 1386kN Stroke:333mm		B型-框架型 B-Frame trolley								

選配墊塊組
Optional Blocks and Extension

層疊墊塊型號 Cribbing Blocks Model No.	外型尺寸 Dimensions (mm)			適用噸數 tons	突形墊塊 Jack Module Ext.	整組總高 Total stack Ht.	重量 Wt.(kg)
	A	B	C				
XKSPLE5013-A01	38.5	44.5	139.7	50	173.0	515.9	16.3
XKSPLE5013-A02	76.5	82.5	139.7				
XKSPLE10013-A01	38.5	44.5	187.3	100	177.8	527.4	30.9
XKSPLE10013-A02	76.5	82.5	187.3				
XKSPLE15013-A01	38.5	44.5	222.2	150	168.3	511.2	38.6
XKSPLE15013-A02	76.5	82.5	222.2				
XKSPLE20013-A01	38.5	44.5	254.2	200	168.3	511.2	38.6
XKSPLE20013-A02	76.5	82.5	254.2				

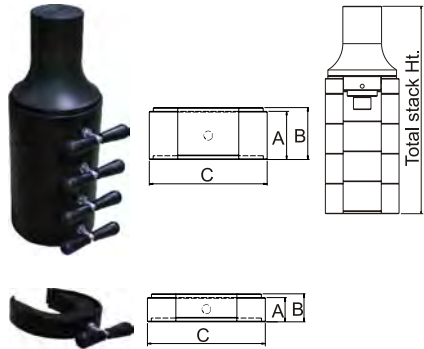


突形墊塊型號 Jack Module Ext. Model No.	外型尺寸 Dimensions (mm)								重量 Wt. (kg)	適用噸數 tons
	A	B	C	D	E	F	G	H		
XKSPLE5013-A03	223.8	173	127	72.5	1"-8UN	79.5	66.8	92.2	9.5	50
XKSPLE10013-A03	228.6	177.8	174.6	95.2	1-3/4"-12UN	76.2	98.4	95.0	18.2	100
XKSPLE15013-A03	219.2	168.4	203.2	114.3	3-3/8"-16UN	—	114.3	88.9	22.7	150

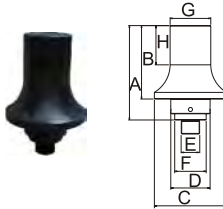
2.SPECIFICATION

Option

Cribbing Blocks Model No. 層疊墊塊型號	Dimensions (mm) 外型尺寸			tons 適用噸數	Jack Module Ext. 突形墊塊	Total stack Ht. 整組總高	Wt.(kg) 重量
	A	B	C				
XKSPLE5013-A01	38.5	44.5	139.7	50	173.0	515.9	16.3
XKSPLE5013-A02	76.5	82.5	139.7				
XKSPLE10013-A01	38.5	44.5	187.3	100	177.8	527.4	30.9
XKSPLE10013-A02	76.5	82.5	187.3				
XKSPLE15013-A01	38.5	44.5	222.2	150	168.3	511.2	38.6
XKSPLE15013-A02	76.5	82.5	222.2				
XKSPLE20013-A01	38.5	44.5	254.2	200	168.3	511.2	38.6
XKSPLE20013-A02	76.5	82.5	254.2				



Jack Module Ext. Model No. 突形墊塊型號	外型尺寸 Dimensions (mm)								Wt. 重量 (kg)	tons 適用噸數
	A	B	C	D	E	F	G	H		
XKSPLE5013-A03	223.8	173	127	66.8	1"-8UN	63.5	66.8	92.2	9.5	500
XKSPLE10013-A03	228.6	177.8	174.6	95.2	1-3/4"-12UN	76.2	98.4	95.0	18.2	100
XKSPLE15013-A03	219.2	168.4	203.2	114.3	3-3/8"-16UN	111.3	114.3	88.9	22.7	150



3.OPERATION

3.1 Moving the cart to work

Push the cart handle and hook the stop board as Fig 3.1.

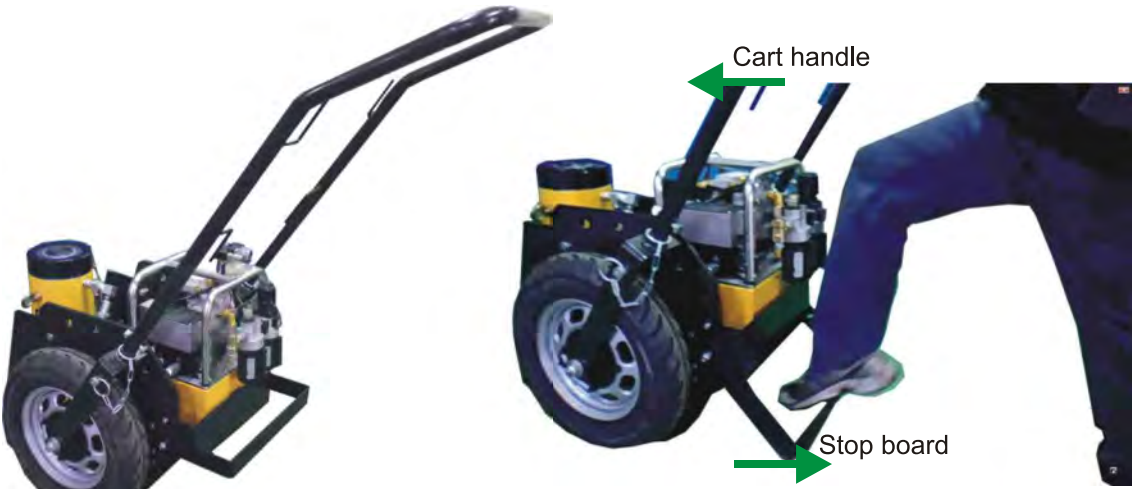


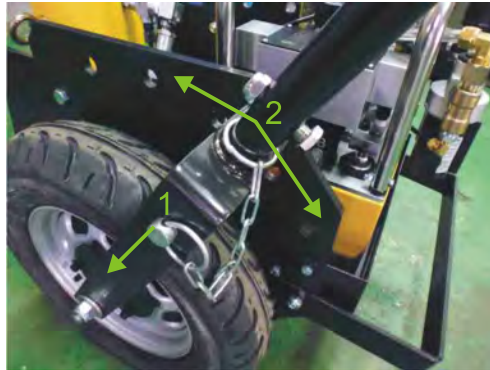
Fig. 3.1

3.OPERATION

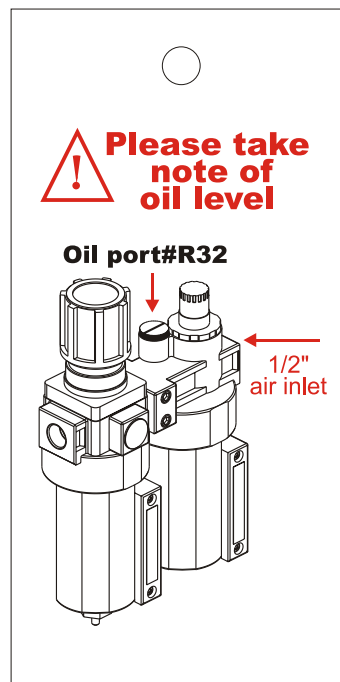
3.2 Adjust the handle angle.

3.2.1 Take off the plug.

3.2.2 Move the handle to reasonable hole then plugs it again.

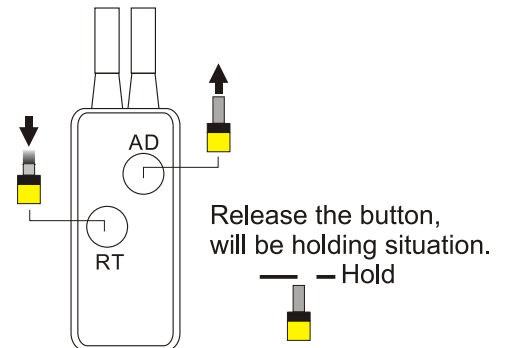


3.3 Connect 1/2" air inlet and air remote correctly.



3.OPERATION

3.4 Press air remote "AD" continually then cylinder advance.



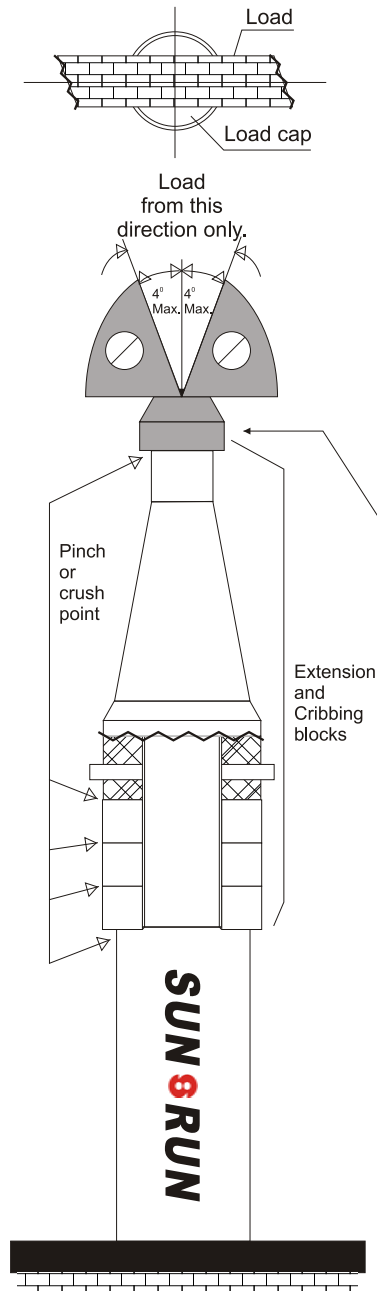
This freeze situation is normally that will not hurt anything.
You can cover a clean clothes to prevent the strong cooling air and coagulate liquid to spurt directly.

3.5 After working or sometime that need to be standing, please push the stop board to stand the cart.



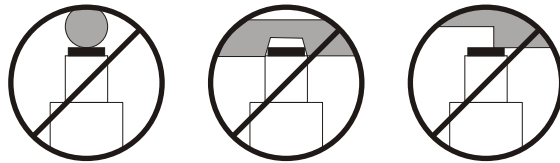
3.OPERATION

3.6 Operating option saddle



This guide cannot cover every situation,
so always do the job with SAFETY FIRST.

- 1.Side load damage the jack or cause failure of the joint connecting the base or extensions resulting in loss of the load and possible personal injury.
- 2.Center load on jack.
- 3.Align load and jack so that stack force is straight and in line with the load and so that the movement of the load does not cause instability.
- 4.Do not drive or push the load off the jack. Lower jack and remove before moving the load.
- 5.Completely cover the top of the load cap with a secure and properly supported load lifting point. Do not lift-off-center on a rounded or uneven surface.



- 6.Lift by pushing against a flat surface parallel to the cylinder base within 4 degrees as shown.
- 7.Always place the tallest extension on the bottom and the shortest on the top when stacking extensions.
- 8.Always pin the first extension (the tallest one used) to the piston rod to prevent accidental disengagement of the connection.
- 9.Use only one of the shortest extensions (black in color and also referred to as load caps) at a time. Never stack them!
- 10.Cribbing blocks must be fully seated and evenly loaded.
- 11.Do not use more cribbing blocks than those provided with one complete set. Use only one set. Do not add components.
- 12.Do not lower the load directly onto the cribbing blocks.
- 13.Use each set only with the cylinder for which it was designed.
- 14.Read and understand all operating instructions and warnings.
- 15.If cribbing is used it must be installed properly. Align handles, seat fully into recessed diameters before lowering piston extension adaptor onto cribbing.
- 16.Follow lifted load with cribbing or blocks.
- 17.Use only approved accessories.
- 18.Use a jack with sufficient capacity to lift the load.
- 19.The total load, lifted or supported by a jack, must never exceed the rated capacity of the jack.
- 20.Never support a load hydraulically.
- 21.All loads must be supported mechanically.
- 22.Properly support the jack and jack bases.
- 23.Use a friction material under base and between jack and load.
- 24.Lift only dead weight loads.
- 25.Stay clear of lifted loads.
- 26.Do not work on or near unsecured loads. Do not allow personnel or dynamic forces on an unsecured load.
- 27.Do not use jack(s) if damaged, altered or in poor repair.

3.OPERATION

3.7 Instructions required to put portable jack into service

- 3.6.1 Carefully read and understand the safety precautions and operating instructions which describe general safety precautions and the method required to connect the pump, hoses, fittings, and jack. Since this unit has been completely assembled and tested at our factory, follow the succeeding steps to put the jack into service.
- 3.7.2 Carefully remove all packing materials from the assembled unit.
- 3.7.3 Fill pump reservoir to proper operating level using approved SUN RUN hydraulic oil.
- 3.7.4 Start pump and cycle jack to full extension, then to full retraction, three or more times until the jack advance and retracts smoothly throughout the cycle.
- 3.7.5 Allow the pump to build to full pressure with the jack first fully extended, and then fully retracted. Stop pump and check each hose, fitting, and other system components for any oil leakage. If any leakage is found, correct the problem and retest.

3.8 Bleeding air from the system

The portable jack has been bled at the factory, however, air can accumulate in the hydraulic system if the reservoir oil level is too low or if the unit has not been used for a prolonged period. This air cause the jack to respond in an unstable or slow manner. Before attempting to lift a load for the first time remove the air:

1. With no load on the jack, cycle the hydraulic system three or more times (fully extend and retract the jack).
2. Check the pump reservoir level. Refer to the pump operating instructions for the proper fill level and direction on how to add oil if necessary.

3.9 Only qualified individuals should operate this equipment.

Position the unit under the load to be lifted and select the extension or extensions required.

3.10 The cylinder must not exceed $\pm 4^\circ$ from centerline alignment at any time, with or without extensions.

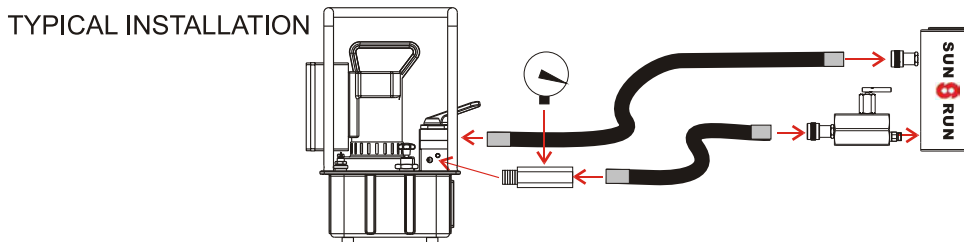
To lower to load:

Start the unit and raise the load just enough to remove the cribbing blocks. Switch the valve to retract and lower the load. **NOTE: This uit is equipped with a load lowering valve that requires pump pressure throughout the lowering operation.**

3.OPERATION

3.11 Double-acting Hydraulic System

A basic double-acting hydraulic system consists of a pump (which moves the hydraulic fluid), a double-acting cylinder or ram (to do the work), a hydraulic hose (which routes the fluid to the advance cylinder or ram port), a second hydraulic hose (which routes the fluid to the retract cylinder or ram port), and a control valve which can change the direction of the hydraulic fluid.



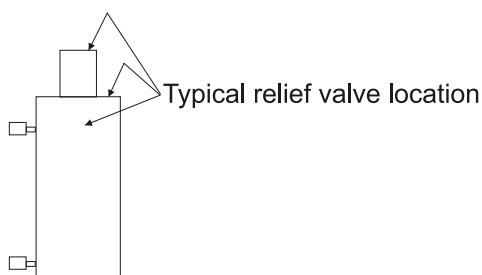
A double-acting cylinder or ram can be either extended or retracted hydraulically.

Most double-acting cylinders or rams are classed as "differential cylinders" because of the different sized areas that the hydraulic fluid pushes against during the extend and retract strokes. Because of this difference, the extend stroke can exert more force than the retract stroke.

NOTE: The capacity of a hydraulic system is determined by the effective area of the cylinder and the system pressure.

3.12 SAFETY PRECAUTIONS

- 3.12.1 A double-acting cylinder or ram must have both hoses and all couplers securely connected to both ports. If one of the two ports is restricted or becomes disconnected, pressure will build and the cylinder, hose or coupler can burst, possibly causing serious injury or death.
- 3.12.2 When extending double-acting cylinders or rams, the retract port must not be restricted. A restricted retract port will prevent pressure from being released and the cylinder can burst, possibly causing serious injury or death.
- 3.12.3 Do not attempt to adjust or service the rod end relief valve on a double-acting cylinder or ram. If oil leakage is detected from this relief valve, discontinue use of the cylinder or ram immediately and contact your nearest Authorized Hydraulic Service Center. If improperly adjusted, the cylinder or ram could develop excessive pressure and cause the cylinder, hose or couplers to burst which could cause serious injury or death.



3.OPERATION

3.12 SAFETY PRECAUTIONS

- 3.12.4 When extending a cylinder or ram under load, always insure that the couplers or port threads have not been damaged or do not come in contact with any rigid obstruction. If this condition does occur, the coupler's attaching threads may become stripped or pulled from the cylinder or ram resulting in the instantaneous release of high pressure hydraulic fluid, flying objects, and loss of the load. All of these possible results could cause serious injury or death.
- 3.12.5 Avoid off-center loads which could damage the cylinder or ram and/or cause loss of the load, possibly causing serious injury or death.
- 3.12.6 Control the load at all times. Do not drop the load.
- 3.12.7 Properly rated adapters be installed and used correctly for each application.

3.12.8 WARNING

3.12.8.1 Hydraulic Hose and Fluid Transmission Lines

- A) Avoid straight line tubing connections in short runs. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes.
- B) Eliminate stress in the tube lines. Long tubing runs should be supported by brackets or clips. Tubes through bulkheads must have bulkhead fittings. This makes easy removal possible and helps support the tubing.
- C) Before operating the pump, all hose connections must be tightened with the proper tools. Do not overtighten. Connections should only be tightened securely and leak-off. Overtightening can cause premature thread failure or high pressure fittings to split at pressure lower than their rated capacities.
- D) Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.
- E) Do not subject the hose to potential hazard such as fire, sharp surfaces, extreme heat or cold, or heavy impact. Do not allow the hose to kink, twist, curl, cut, or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these conditions can damage the hose and possibly result in personal injury.
- F) Do not use the hose to move attached equipment. Stress can damage the hose and possibly cause personal injury.
- G) Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Hose deterioration due to corrosive materials can result in personal injury. Consult the manufacture before painting a hose. Never paint a coupler.

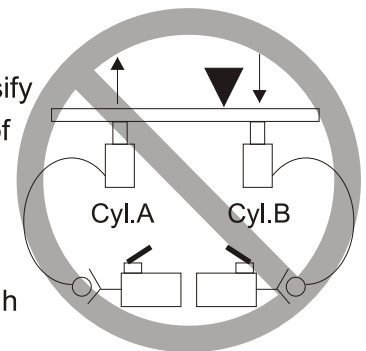
3.OPERATION

3.12 SAFETY PRECAUTIONS

3.12.8 WARNING

3.12.8.2 Cylinder

- A) The user must be a qualified operator familiar with the correct operation, maintenance, and use of the cylinders. Lack of knowledge in any of these areas can lead to personal injury.
- B) Read and understand all safety and warning decals and instructions.
- C) Use only approved accessories and approved hydraulic fluid. Hoses, seals and all components used in a system must be compatible with the hydraulic fluid used.
- D) Do not exceed the rated capacities of the cylinders. Excess pressure can result in personal injury.
- E) Inspect each cylinder, fitting, tube line, hose, valve and coupler before each shift or usage to prevent unsafe conditions from developing.
- F) Do not use cylinder with bent or damaged couplers or damaged port threads.
- G) Under certain conditions, the use of an extension with a hydraulic cylinder may not be advisable and could present a dangerous condition.
- H) Avoid pinch points or crush points that can be created by the load or parts of the cylinder.
- I) To help prevent material fatigue if the cylinder is not be used in a continuous application, the load should not exceed 85% of the rated capacity.
- J) Cylinder must be on a stable base which is able to support the load while pushing or lifting.
- K) To help prevent personal injury, use shims, friction material or constraints to prevent slippage of the base or load.
- L) Surfaces contacting the cap must be parallel to the base supporting surface within 4°.
- M) At least 75% of the load cap and base must be supported securely when pushing or lifting a load.
- N) Block or secure the load to prevent movement during lifting.
- O) Do not set poorly-balanced or off-center loads on a cylinder. The load can tip or the cylinder can "kick out" and cause personal injury.
- P) Do not exceed 4° misalignment of the load on the cap.
- Q) If this component is used to lift or lower loads, be certain that the load is under operator control at all times and that others are clear of the load. Do not drop the load.
- R) As the load is lifted, use blocking and cribbing to guard against a falling load.
- S) To help prevent personal injury, do not allow personnel to go under or work on a load before it is properly cribbed or blocked. All personnel must be clear of the load before lowering.
- T) Never use extreme heat to disassemble a hydraulic cylinder or ram, Metal fatigue and/or seal damage will result and can lead to unsafe operating conditions.
- U) Do not created an uneven fulcrum and lever condition or overload condition where force exerted by one cylinder on a lever will intensify downward force on a pressure-checked cylinder at the other end of the lever. For example: If straightening an axle as illustrated, when cylinder A extends, and uneven fulcrum and lever condition will intensify force downward on pressure-checked cylinder B. The pressure created in cylinder B will be increased to dangerously high levels.



3.OPERATION

3.12 SAFETY PRECAUTIONS

3.12.9 IMPORTANT

- A) Keep the cylinder clean at all time.
- B) While at a job site, when the cylinder is not in use, keep the piston rod fully retracted.
- C) Use an approved, high-grade pipe thread sealant to seal all hydraulic connections. Teflon tape can be used if only one layer of tape is used and it is applied carefully (two threads back) to prevent the tape from being pinched by the coupler and broken off inside the pipe end. Any loose pieces of tape could travel through the system and obstruct the flow of fluid or cause jamming of precision-fit parts.
- D) Always use protective covers on disconnected quick couplers.
- E) When mounting cylinders or rams using the internal piston rod threads, collar threads, threaded tie rods or base mounting holes, the threads must be fully engaged.

3.13 SYSTEM EVALUATION

Cylinder, hose(s), couplings and pump all must be rated for the same maximum operating pressure, correctly connected and compatible with the hydraulic fluid used. An improperly matched system can cause the system to fail and possibly cause serious injury. If you are in doubt, consult your nearest SUN RUN facility.

3.13.1 BLEEDING THE SYSTEM

The SUN RUN portable jack has been cycled at the factory, but to insure proper operation, each unit should be cycled (full extension and retraction) two or more times.

3.13.2 INSPECTION

Before each use, visually inspect for the following items:

- A) Cracked or damaged cylinder.
- B) Excessive wear, bending, damage, or insufficient thread engagement.
- C) Leaking hydraulic fluid
- D) Scored or damaged piston rod
- E) Improperly functioning or damaged heads and caps
- F) Loose bolts or cap screws
- G) Damaged or improperly assembled accessory equipment
- H) Modified, welded, or altered equipment
- I) Bent or damaged couplers or port threads

4. Maintain oil level

4.1 RAM AND CYLINDER MAINTENANCE

- A) Always use clean, approved hydraulic fluid and change as needed.
- B) Any exposed threads (male or female) must be cleaned and lubricated regularly, and protected from damage.
- C) If a cylinder or ram has been exposed to rain, snow, sand, grit-laded air, or any corrosive environment it must be cleaned, lubricated, and protected immediately after exposure.

4.2 PERIODIC CLEANING

A routine should be established to keep the hydraulic system as free from dirt as possible. All unused couplers must be sealed with dust covers. All hose connections must be free of dirt and grime. Any equipment attached to the cylinder must be kept clean.

WARNING: Contamination of the hydraulic fluid could cause the valve to malfunction. Loss of the load or personal injury could result.

Use only SUN RUN hydraulic fluid and change as recommended or sooner if the fluid becomes contaminated (never exceed 300 hours).



4.3 STORAGE

Double-acting cylinder

These units should be stored in a dry, well-protected area where they will not be exposed to corrosive vapors, dust or other harmful elements,

If a unit has been stored for a year or more, it must be thoroughly inspected before it is used.

5.TROUBLESHOOTING

Problem	Cause	Solution
Erratic action	<ol style="list-style-type: none"> 1.Air in system or pump cavitation 2.Internal leakage in cylinder 3.Cylinder or valve sticking or binding 4.Malfunctioning valve 	<ol style="list-style-type: none"> 1.Add fluid, bleed air and check for leaks. 2.Replace worn packings. Check for excessive contamination or wear. Replace contaminated fluid as necessary. 3.Check for dirt or leaks. Check for bent, misaligned, worn parts or defective packings. Replace contaminated hydraulic oil with clean, compatible hydraulic oil. 4.Replace. This valve is NOT serviceable.
Cylinder does not move.	<ol style="list-style-type: none"> 1.Loose couplers. 2.Faulty coupler. 3.Improper valve position. 4.Low or no hydraulic fluid in pump reservoir. 5.Air-locked pump. 6.Pump not operating. 7.Load is above the capacity of the system. 8.Fluid leaks out of rod end relief valve. 9.No pilot pressure. 10.Malfunctioning valve. 	<ol style="list-style-type: none"> 1.Tighten couplers. 2.Verify coupler is not locked up. Replace as needed. 3.Close release valve or shift to new position. 4.Fill and bleed the system. 5.Prime pump per pump operating instructions. 6.Check pump's operating instructions. 7.Use the correct equipment. 8.Make sure all couplers are fully coupled. Contact SUN RUN office nearest to you for advice technical assistance. 9.Check connections, pump valve position, and pressure. 10.Replace. This valve is <u>NOT</u> serviceable.

5.TROUBLESHOOTING

Problem	Cause	Solution
Cylinder extends only partially	<ol style="list-style-type: none"> 1.Pump reservoir is low on hydraulic fluid. 2.Load is above the capacity of the system. 3.Cylinder piston rod binding. 	<ol style="list-style-type: none"> 1.Fill and bleed the system. 2.Use the correct equipment. 3.Check for dirt or leaks. Check for bent, misaligned, worn parts or defective packings.
Cylinder moves slower than normal.	<ol style="list-style-type: none"> 1.Loose connection or coupler. 2.Restricted hydraulic line or fitting. 3.Pump not working correctly. 4.Cylinder seals leaking. 	<ol style="list-style-type: none"> 1.Tighten. 2.Clean and replace if damaged. 3.Check pump operating instructions. 4.Replace worn seals. Check for excessive contamination or wear.
Cylinder moves but does not maintain pressure.	<ol style="list-style-type: none"> 1.Leaky connection. 2.Cylinder seals leaking. 3.Pump or valve malfunctioning. 	<ol style="list-style-type: none"> 1.Clean, reseal with thread sealant and tighten connection. 2.Replace worn seals. Check for excessive contamination or wear. Replace contaminated fluid as necessary. 3.Check pump or valve operating instructions.
Cylinder leaks hydraulic fluid.	<ol style="list-style-type: none"> 1.Worn or damaged seals. 2.Loose connections. 3.Rod end relief valve has activated. 	<ol style="list-style-type: none"> 1.Replace worn seals. Check for excessive contamination or wear. Replace contaminated fluid as necessary. 2.Clean, reseal with thread sealant and tighten connection. 3.Make sure all couplers are fully coupled. <i>If relief valve is still leaking, do not attempt to service this component. Contact SUN RUN office nearest to you for advice technical assistance.</i>

5.TROUBLESHOOTING

Problem	Cause	Solution
Cylinder will not retract or retracts slower than normal	1.Pump release valve closed.	1.Open pump release valve.
	2.Loose couplers.	2.Tighten couplers.
	3.Blocked hydraulic lines.	3.Clean and flush.
	4.Cylinder damaged internally.	4.Send to service center for repair.
	5.Pump reservoir too full.	5.Drain hydraulic fluid to correct level.
	6.Pump or valve malfunctioning.	6.Check pump or valve operating instructions.