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# 液壓(缸)千斤頂 操作說明

## CSLSG , CSLRG



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中文 : C1~C5

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)。




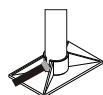
**危險事項：**液(油)壓設備應遠離火或熱源。高溫會軟化包裝和密封材料，導致液壓油洩漏；高溫同時也會造成油管材質與包裝變質。為確保最好狀態，不要將液(油)壓設備暴露於 65°C(150°F)高溫。在電焊場所時亦應注意防止電焊火花噴到油管。




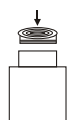
**危險事項：**不要用手對油管施加壓力(包括拉或舉高) 高壓下洩漏的液壓油會穿透皮膚造成嚴重傷害。當液壓油侵入皮膚請立即就診。


## 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。

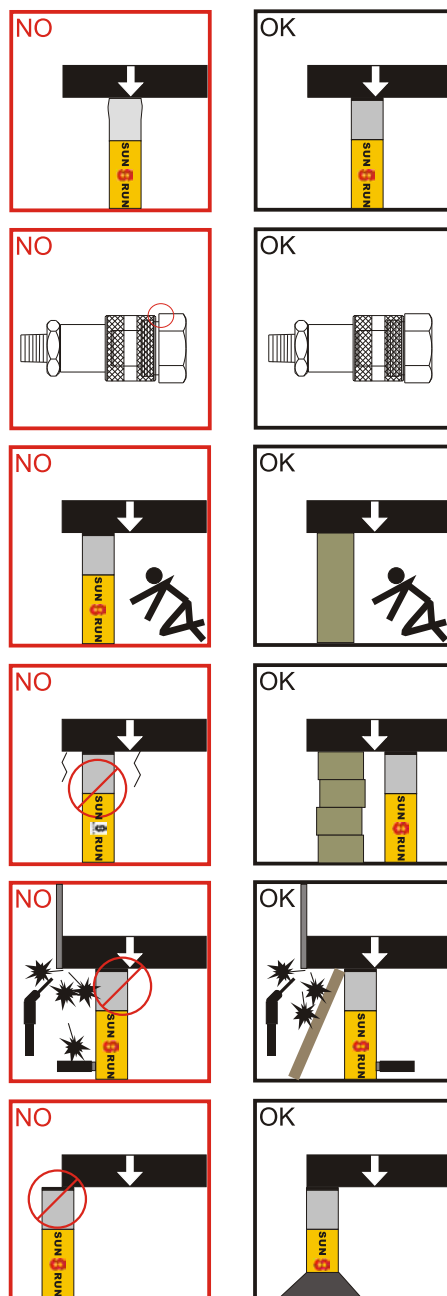
 **警告事項：**頂昇荷載前，請確保油壓裝置平穩。油壓缸必須放在平穩可支撐重物的基座上。若情況許可，可使用油壓缸基座來增加穩定性。千萬不可使用焊接或其他方法將油壓缸與所使用的基礎面(支撐座)連接一起。

 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。



**警告**

適用於單動、高噸位千斤頂  
CSLP, CSLL, CSLG 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。



## 2. 產品說明

### 2.1 CSLSG 油壓缸

單動,重力回縮油壓缸。底座公制螺紋孔。

### 2.2 CSLRG 油壓缸

雙動,液壓回縮油壓缸在回油路徑上附有安全閥  
藉以保護超壓意外發生。底座公制螺紋孔。

## 3. 側向荷載

### 重要事項：

當使用大噸數油壓缸時要消除所有現有的側向荷載力。側向荷載發生情形如下：

- 1.主軸(活塞)偏心荷載。
2. 結構呈水平荷載。
3. 結構 和/或油壓缸不是呈一直線狀態。
4. 沒有同步動作。
5. 油壓缸沒有堅固底座支撐。

全程利用一個平坦且堅硬的平面做為油壓缸支撐面。在墊塊(鞍座)的頂面使用低磨擦係數的材質來降低油壓缸的側向荷載力。為此,可選用XKCATG式傾斜墊塊。傾斜墊塊下保持油脂潤滑(如圖1)。

允許最大側向荷載為油壓缸額定額重的5%。

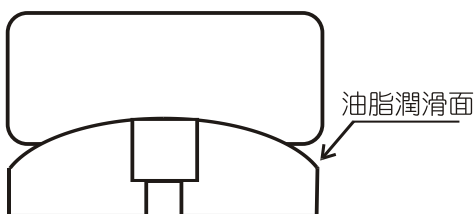


圖1-XKCATG 傾斜墊塊

## 4. 操作

重要事項: 開始操作任何高壓工具前,務必要求操作者一定要對說明書,安全條例,注意事項和警告事要完全了解。若有任何疑問,請連絡 SUN RUN。

### 4.1 油壓缸前進與回縮

請參考包括泵浦在內的所有操作說明書。

動力泵浦

變更閥門位置於前進狀態, 操作泵浦, 使油壓缸能前進動作。想回縮油壓缸則變換閥門位置於回縮狀態。

CALSG 屬於重力回縮油壓缸。主軸完全回縮需要相當的荷載力。欲回縮CSLRG油壓缸,需變換閥門位置到回縮狀態並啟動泵浦。

### 4.2 空氣排除

在無荷載情況下,油壓缸來回伸縮數次直到油壓缸能平順動作為止。

## 5. 應用範圍

CSLRG 及 CSLSG 油壓缸適用範圍包括近海石油平台的舉升及下降、重物稱重及重心的計算、頂升定位、支撐應用、基礎測試、建築、結構、造船、維修。輸送系統及土木工程適用。

## 6. 維修及服務

當發現磨損或漏油即需立即維修。定期檢查所有元件來發現任何需要維護及維修的問題。

SUN RUN 提供備用元件來維修和更換服務。如需服務請連絡SUN RUN。

重要事項: 液壓設備必需由專業液壓技術人員進行維修。如需維修服務請連絡就近SUN RUN服務據點。

\*定期檢查所有元件來發現任何需要維護和維修問題。

\*立即更換損壞零件。


\*請務超過攝氏 60°C(140°F)。

\*請保持所有液壓設備清潔。

\*定期確認液壓系統是否有任何鬆動或洩漏。

\*請依泵浦說明書建議更換液壓油。

## 7. 油壓缸吊舉

 警告事項: 使用吊環螺栓提起油壓缸。使用錯誤的吊環螺栓可能導致油壓缸墜落意外。提升繩索至少要有45度距離(如圖2)。

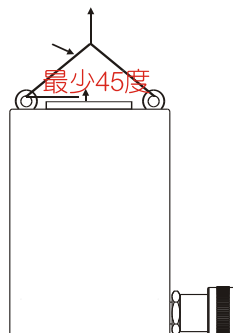


圖2.

## 8. 疑難解答

問題	原因	解決
油壓缸無法前進、前進緩慢或突然前進	<ol style="list-style-type: none"> <li>1. 泵浦油箱低油位</li> <li>2. 洩壓閥開啟</li> <li>3. 油壓接頭鬆脫</li> <li>4. 系統內有空氣</li> <li>5. 主軸阻塞</li> </ol>	<ol style="list-style-type: none"> <li>1. 泵浦添加液壓油</li> <li>2. 關閉泵浦洩壓閥</li> <li>3. 確認接頭完全密合鎖緊</li> <li>4. 排出空氣 (參考第5點)</li> <li>5. 檢查油壓缸</li> </ol> 或請連絡就近 SUN RUN服務據點
油壓缸前進但無法持壓	<ol style="list-style-type: none"> <li>1. 接合處漏油</li> <li>2. 油封漏油</li> <li>3. 泵浦內部洩漏</li> </ol>	<ol style="list-style-type: none"> <li>1. 檢查所有接頭鎖緊</li> <li>2. 找出漏油位置或連絡就近 SUN RUN服務據點</li> <li>3. 請攜帶該泵浦至SUN RUN服務處</li> </ol>
油壓缸無法回縮、回縮不完全或回縮較一般緩慢	<ol style="list-style-type: none"> <li>1. 洩壓閥關閉</li> <li>2. 泵浦油箱過滿</li> <li>3. 接頭鬆脫</li> <li>4. 系統內有空氣</li> <li>5. 油壓缸油路阻塞</li> <li>6. 油管內部過細</li> <li>7. 油壓缸無重力壓回</li> </ol>	<ol style="list-style-type: none"> <li>1. 泵浦洩壓閥開啟</li> <li>2. 倒出多餘液壓油</li> <li>3. 確認所有接頭完全鎖緊</li> <li>4. 排出空氣(參考第5點)</li> <li>5. 確認所有接頭是否完全且正確密合接頭功能是否正常</li> <li>6. 使用管徑較大的油管</li> <li>7. CSLP 屬重力回縮油壓缸需藉助外力使油缸完全回縮</li> </ol>

# 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 CYLINDERS

## **CSLSG , CSLRG**



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English : E1~E5

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.




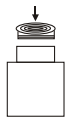
**DANGER:** Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin causing serious injury. If oil is injected under the skin, see a doctor immediately.


## 1. SAFETY PRECAUTIONS


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

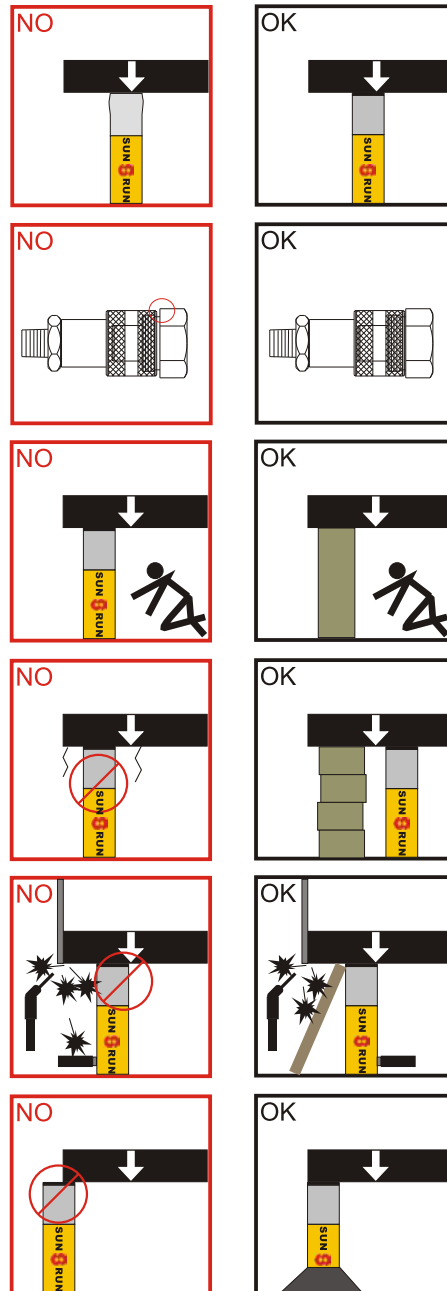
 **WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD.** Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.

 **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.

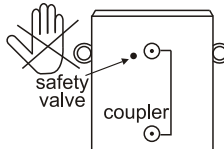
 **IMPORTANT:** Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the SUN RUN Service Center in your area. To protect your warranty, use only SUN RUN oil.



**⚠ WARNING**  
**Don't adjust safety valve pressure!**

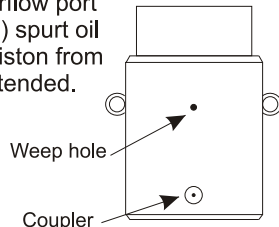
Apply to double-acting cylinder  
RSR, RSRH, CSLRG series

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. PRODUCT DESCRIPTION

### 2.1 CSLSG cylinder

Single-acting, load return cylinders. The mounting holes drilled in the cylinder bottom are metric.

### 2.2 CSLRG cylinder

Double-acting, hydraulic return cylinders with a safety valve in the retract side to prevent accidental overpressurization. The mounting holes drilled in the cylinder bottom are metric.

## 3. SIDELOAD

### IMPORTANT :

Eliminate the presence of side load forces when using high tonnag cylinders. Side load can occur through:

1. An eccentric load on the plunger.
2. A horizontal load on a structure.
3. A structure and/or cylinder misalignment.
4. Non synchronized lifting actions.
5. Non stable cylinder base support.

Always use a flat, hard surface as a cylinder support plate. Use a low friction material on top of the saddle. To reduce cylinder offset loading, optional XKCATG swivel saddles are available.

Always use grease underneath swivel saddles (see illustration 1). The maximum allowable side load at full cylinder stroke is 5% of the cylinder's rated capacity.

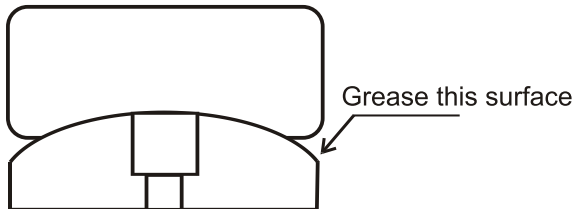


Illustration 1-XKCATG Saddle

## 4. OPERATIOB

**IMPORTANT:** It is mandatory that the operator has a full understanding of all instructions, safety regulations, cautions and warnings, before staring to operate any of this high fore tool equipment. In case of doubt, contact SUN RUN.

### 4.1 Advancing and retracting the cylinder

For complete operating instructions refer to the instruction sheet included with each pump.

#### Power pumps

Shift the valve on the pump to the advance position and run the pump to advance the cylinder. To retract the cylinder, shift the valve to the retract position.

CALSG cylinders are load return. Considerable load force is required to completely retract the plunger. To retract the CSLRG cylinder, shift the valve to the retract position and run the pump.

### 4.2 Air removal

Advance and retract the cylinder several times avoiding pressure build-up. Air removal is complete when the cylinder motion is smooth.

## 5. APPLICATIONS

CSLRG and CSLSG cylinders can be used in applications such as offshore jacking and lowering, module weighing, skidding, lifting, positioning, supporting, foundation, construction, shipbuilding, repair, transfer systems and civil engineering.


## 6. MAINTENANCE AND SERVICE

Maintenance is required when wear or leakage is noticed. Periodically inspect all components to detect any problem required service and maintenance. SUN RUN offers ready-to-use spare parts kits for repair and/or replacements. Contact SUN RUN.

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

- ※Periodically inspect all components to detect any problem requiring maintenance and service.
- ※Replace damaged parts immediately.
- ※Do not exceed oil temperature above 60°C(140°F)
- ※Keep all hydraulic components clean.
- ※Periodically check the hydraulic system for loose connections and leaks.
- ※Change hydraulic oil in your system as recommended in the pump instruction sheet.

## 7. HOISTING CYLINDER

 **WARNING:** always use all of the eye bolts when hoisting cylinder. Failure to use all of the eyebolts could cause the cylinder to drop unexpectedly. Lifting straps must be at a 45 degree or greater angle from horizontal. See illustration 2.

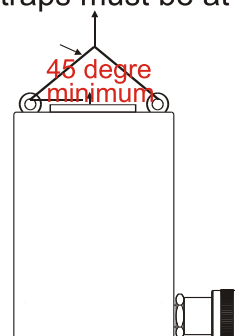


Illustration 2.

## 8.TROUBLE-SHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Cylinder does not advance, advance slowly or in spurts.	<ol style="list-style-type: none"> <li>1. Low oil level in pump reservoir</li> <li>2.Release valve open</li> <li>3.Loose hydraulic coupler</li> <li>4.Air trapped in system</li> <li>5.Cylinder plunger binding</li> </ol>	<ol style="list-style-type: none"> <li>1. Add oil tp pump</li> <li>2.Close pump release valve</li> <li>3.Check that all couplers are fully tightened</li> <li>4.Remove air (see paragraph 5)</li> <li>5.Check for damage to cylinder. Have cylinder serviced by SUN RUN service</li> </ol>
Cylinder advance, but does not hold pressure	<ol style="list-style-type: none"> <li>1. Leaking oil connection</li> <li>2.Leaking seals</li> <li>3.Internal leakage in pump</li> </ol>	<ol style="list-style-type: none"> <li>1. Check that all connections are tightened.</li> <li>2.Locate leak(s) and have equipment serviced by an SUN RUN service</li> <li>3. Have pump serviced by SUN RUN service</li> </ol>
Cylinder does not retract, retracts part way or retracts more slowly than normal.	<ol style="list-style-type: none"> <li>1. Release valve closed</li> <li>2. Pump reservoir overfilled</li> <li>3. Loose hydraulic coupler</li> <li>4. Air trapped in system</li> <li>5. Oil flow to cylinder blocked</li> <li>6. Hose internal diameter to narrow</li> <li>7. No load on a load return cylinder</li> </ol>	<ol style="list-style-type: none"> <li>1. Open pump release valve</li> <li>2. Drain oil level to full mark</li> <li>3. Check that coupler(s) are fully tightened</li> <li>4. Remove air (see paragraph 5)</li> <li>5. Check that couplers(s) are correctly connected and fully tightened and that valving is functioning properly</li> <li>6. Use a larger diameter hose</li> <li>7. CSLP cylinders are load return. Apply load to completely retract the cylinder</li> </ol>