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液壓(缸)千斤頂
操作說明

CSLP

中文
English
Ver.16

1. 安全預防措失

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^{0}C(150^{0}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. 安全預防措失

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。

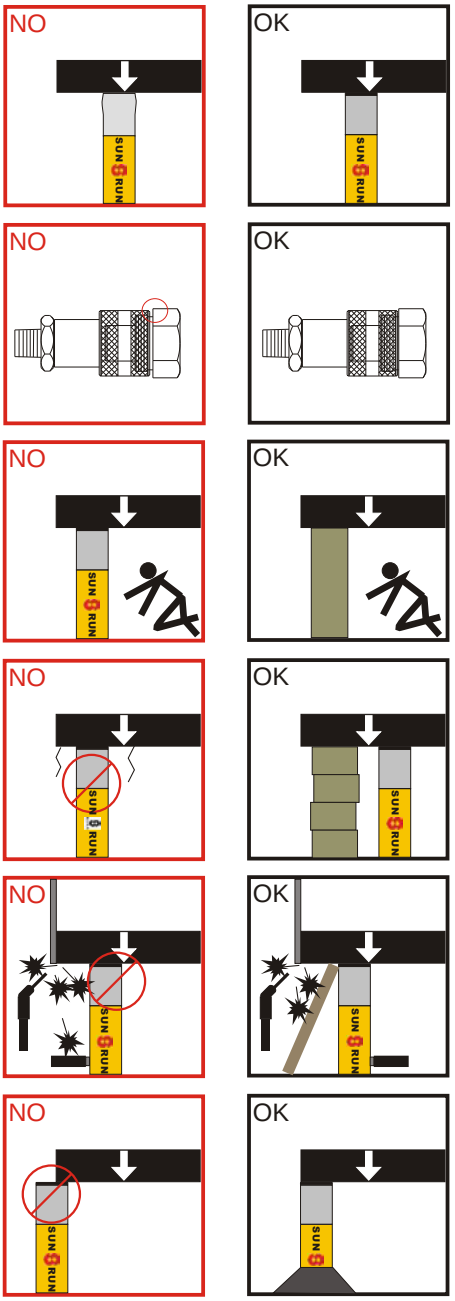
警告事項: 頂昇荷載前，請確保油壓裝置平穩
油壓缸必須放在平穩可支撐重物的基座上。若情況許可，可使用油壓缸基座來增加穩定性。千萬不可使用焊接或其他方法將油壓缸與所使用的基礎面(支撐座)連接一起。

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。當無使用縲牙連接其他附件時，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。

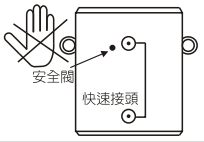


警　告

請勿調整安全閥壓力！

適用於雙動千斤頂
RSR, RSRH, CSLRG 系列

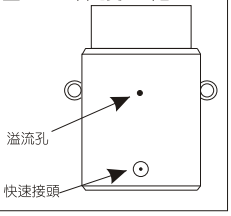
大部份的雙動千斤頂安全閥壓力設定值為10000psi(700bar)。
超出原廠設定值時，安全閥會噴出液壓油保護千斤頂。
當安全閥發生漏油狀況時請先檢查快速接頭連接狀況。



警　告

適用於單動,高噸位千斤頂
CSLP, CSLL, 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。



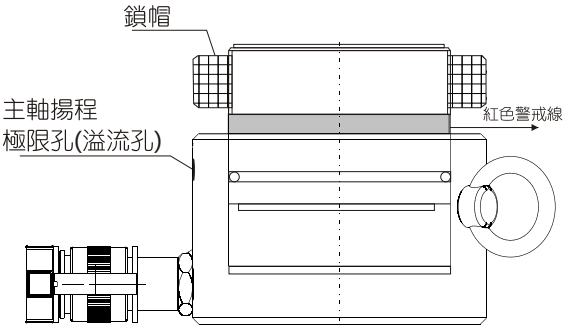
1. 安全預防措失

注意事項**:** 整個底部要由堅硬物支撐。
CSLP液(油)壓缸頂昇時需有一堅硬、平坦表面所支撐。在泥地、沙地或鬆軟的地面上使用恐造成危險。

警告事項: 注意全揚程使用
請使用大流量泵浦來操作CSLP油壓缸
自泵浦輸入油壓缸的油量可能高於溢流孔油量。溢流孔流出液壓油表示主軸已達最大揚程。**千萬不要**使CSLP油壓缸超出揚程最大範圍。

警告事項: CSLP 油壓缸不具有上螺帽。
使用這類型油壓缸只能垂直頂昇。

警告事項: 在鎖帽未在相對位置做好機械式荷重時，**千萬不可**任意洩壓。



主軸全揚程示意圖

警告事項: CSLP 液(油)壓缸不具上螺帽來保護主軸超揚昇。
需注意主軸是否超過全揚程。當出現**紅色警戒線**時, 表示主軸已達最大揚程。如上圖所示，超揚昇會造成主軸脫離油壓缸。

警告事項: 千萬不可任意移除溢流孔塞或使用一般管塞來代替溢流孔塞。

2. 說明

單動,重力回縮油壓缸於揚程極限時具溢流孔裝置。CSLP油壓缸具有可絕對維持額定荷重的全牙(螺紋)主軸及安全鎖帽。**CSLP油壓缸不具上螺帽。**需其他規範及尺寸說明請參考型錄。

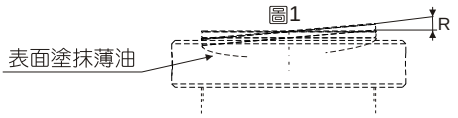
3.一般安全規範

不遵守下列安全和警告事項會引起設備損壞及人員傷害。

4.偏荷載

重要事項**:** 使用CSLP油壓缸可避免偏荷載力量發生。偏荷載發生情形如下：

1. 主軸偏心荷重。
2. 結構成水平荷重。
3. 結構和/或油壓缸無法呈直線狀態。
4. 無法同時頂昇。
5. 油壓缸底座無堅固物支撐。



油壓缸頂昇時請使用平坦、堅固物體表面。使用低磨擦力材質與油壓缸墊塊接觸。傾斜墊塊底部塗抹薄油(如圖1)。偏荷載最大荷重為油壓缸額定荷重3%。

5.操作

重要事項**:** 操作者使用前必需完全了解操作手冊內容、各項安全規章及安全警告標示。假如有任何安全疑慮請連絡就近SUN RUN服務據點。

5.1 油壓缸前進與回縮

請參閱泵浦操作手冊。

泵浦動力單元

變換泵浦上的閥門操作，泵浦前進則油壓缸即呈前進狀態。欲回縮油壓缸即變換泵浦閥門為回縮方向。CSLP油壓缸為重力回縮油壓缸。主軸完全回縮需相當大的回縮力量。

5.2 空氣排放

空載前進-回縮數次，空氣即可排除；主軸即可平順活動。

6.使用範圍

CSLP 油壓缸適用於做為近海的千斤頂、低重量單元、起落橇、頂昇、維持狀態、支撐、基座、建築業、造船業、維修業、系統轉換和一般工程。

7.維修與服務

需注意磨損及洩漏，立即維修。定期檢查所有配件，預防問題發生及定期維修。SUN RUN 提供即速維修、保養及更換零件。

7.1 定期檢查所有配件。檢查是否問題發生，定期維修。立即更換損壞零件。

7.2 油溫請勿超過 60°C(140°F)

7.3 保持所有液壓件清潔。

7.4 定期檢查液壓系統是否有鬆脫或洩漏清況。

7.5 確認所有液壓油是否同手冊建議使用。

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	1. 泵浦油箱低油位 2.洩壓閥開啟 3.油壓接頭鬆脫 4.系統內有空氣 5.主軸阻塞	1. 泵浦添加液壓油 2. 關閉泵浦洩壓閥 3.確認接頭完全密合鎖緊 4.排出空氣 (參考第5點) 5.檢查油壓缸 或請連絡就近 SUN RUN服務據點
油壓缸前進但無法持壓	1. 接合處漏油 2.油封漏油 3.泵浦內部洩漏	1. 檢查所有接頭鎖緊 2.找出漏油位置或連絡就近 SUN RUN服務據點 3. 請攜帶該泵浦至SUN RUN服務處
油壓缸無法回縮、回縮不完全或回縮較一般緩慢	1. 洩壓閥關閉 2. 泵浦油箱過滿 3. 接頭鬆脫 4. 系統內有空氣 5. 油壓缸油路阻塞 6. 油管內部過細 7. 油壓缸無重力壓回	1. 泵浦洩壓閥開啟 2. 倒出多餘液壓油 3. 確認所有接頭完全鎖緊 4. 排出空氣 (參考第5點) 5. 確認所有接頭是否完全且正確密合接頭功能是否正常 6. 使用管徑較大的油管 7. CSLP 屬重力回縮油壓缸需藉助外力使油缸完全回縮

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OPERATING INSTRUCTIONS
HYDRAULIC CYLINDERS

CSLP

English：E1~E4

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: 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 cause 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^{0}C(150^{0}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.

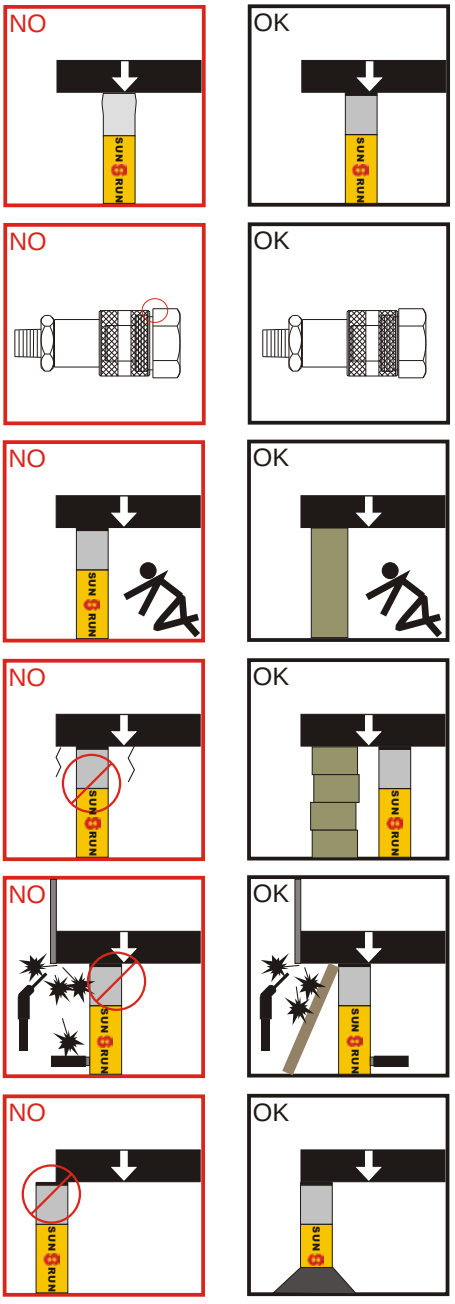
WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD. Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.

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.

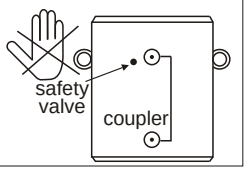


⚠ WARNING

Don't adjust safety valve pressure!

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

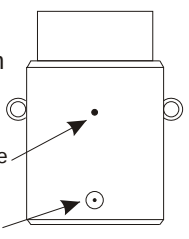
Most double-acting cylinder safety valve pressure setting 10000psi(700bar).
As surpasses the original factory hypothesis pressure safety valve will spurt oil to protect cylinder.
Leaking from safety valve, inspect connection of coupler at first.



⚠ 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.



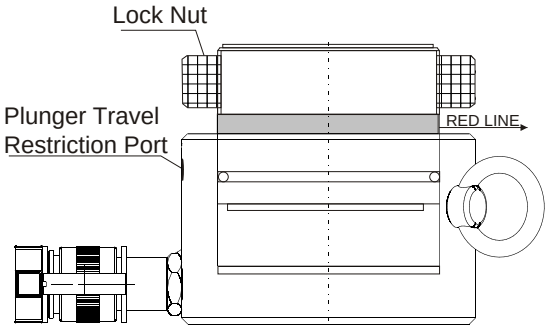
1. SAFETY PRECAUTIONS

CAUTION: Provide a solid support for the entire base area. All CSLP cylinders require a solid, flat lifting surface capable of supporting the load to be lifted. Use of CSLP cylinders on surfaces such as sand, mud or dirt may result in cylinder damage.

WARNING: USE EXTREME CAUTION when using high oil flow pumps with CSLP cylinders.
Oil flow from pump into cylinder may be higher than the oil flow at the plunger travel restriction port. Oil flow at the plunger travel restriction port indicates that maximum plunger travel has been reached. DO NOT exceed maximum plunger extension with CSLP cylinders.

WARNING: CSLP cylinders do not have a stopring. Use these cylinders only in vertical position with the plunger pointing upwards.

WARNING: NEVER release hydraulic pressure before the load is mechanically blocked with lock nut well positioned against cylinder base.



Plunger show at maximum extension

WARNING: CSLP cylinders are not equipped with a stop ring to retain the plunger.
To prevent plunger over-extension, a port is provided to vent the oil out of the cylinder as the plunger reaches the maximum stroke. When the RED LINE around the plunger becomes visible, the plunger is at maximum extension. Further extension could result in the plunger forced out of the cylinder. See upper section.

WARNING: NEVER remove the plug or substitute a conventional pipe plug from the plunger travel restriction port.

2. DESCRIPTION

Single-acting, load return cylinders with an overflow oilport for stroke restriction. CSLP cylinders are provide with a fully threaded plunger and a safety lock nut for positive loadholding operations. CSLP cylinders **do not** have a stopring. See section drawing. For specifications and dimensions see catalog.

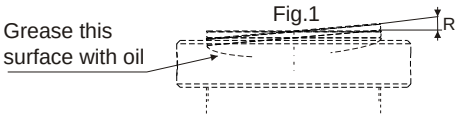
3.GENERAL SAFETY ISSUES

Failure to comply with following cautions and warnings could cause equipment damage or personal injury.

4.SIDELOAD

IMPORTANT: Eliminate the presence of sideload forces when using CSLP cylinders. Sideload 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 flat, hard surface as a cylinder support plate. Use a low friction material on top of the saddle. Always use grease underneath swivel saddles (see fig.1). The maximum allowable sideload is 3% of the cylinder's rated capacity.

5.OPERATION

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

5.1 Advancing and retracting the cylinder

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

Power Pump

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. CSLP cylinders are load return. Considerable load force is required to completely retract the plunger.

5.2 Air removal

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

6.APPLICATIONS

CSLP 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.

7.MAINTENANCE AND SERVICE

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

7.1 Periodically inspect all components to detect any problem requiring maintenance and service. Replace damaged parts immediately.

7.2 Do not exceed oil temperature above 60^0C(140^0F)

7.3 Keep all hydraulic components clean.

7.4 Periodically check the hydraulic system for loose connections and leaks.

7.5 Change hydraulic oil in your system as recommended in the pump instruction sheet.

8.TROUBLE-SHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Cylinder does not advance, advance slowly or in spurts.	1. Low oil level in pump reservoir 2.Release valve open 3.Loose hydraulic coupler 4.Air trapped in system 5.Cylinder plunger binding	1. Add oil tp pump 2.Close pump release valve 3.Check that all couplers are fully tightened 4.Remove air (see paragraph 5) 5.Check for damage to cylinder. Have cylinder serviced by SUN RUN service
Cylinder advance, but does not hold pressure	1. Leaking oil connection 2.Leaking seals 3.Internal leakage in pump	1. Check that all connections are tightened. 2.Locate leak(s) and have equipment serviced by an SUN RUN service 3. Have pump serviced by SUN RUN service
Cylinder does not retract, retracts part way or retracts more slowly than normal.	1. Release valve closed 2. Pump reservoir overfilled 3. Loose hydraulic coupler 4. Air trapped in system 5. Oil flow to cylinder blocked 6. Hose internal diameter to narrow 7. No load on a load return cylinder	1. Open pump release valve 2. Drain oil level to full mark 3. Check that coupler(s) are fully tightened 4. Remove air (see paragraph 5) 5. Check that couplers(s) are correctly connected and fully tightened and that valving is functioning properly 6. Use a larger diameter hose 7. CSLP cylinders are load return. Apply load to completely retract the cylinder