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液壓氣動踏式泵浦
操作說明

SPA-6

SPA-6

SPA-6D

SPA-6D-8L

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。

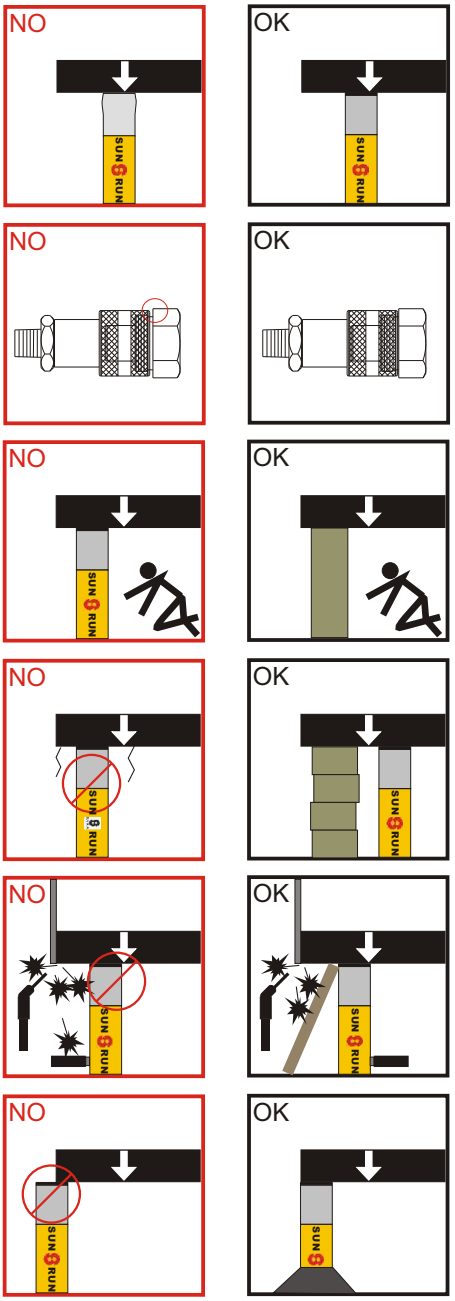
警告事項: 頂昇荷載前，請確保油壓裝置平穩
油壓缸必須放在平穩可支撐重物的基座上。若情況許可，可使用油壓缸基座來增加穩定性。千萬不可使用焊接或其他方法將油壓缸與所使用的基礎面(支撐座)連接一起。

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。



2. 規範

SPA-6 氣動泵浦設計適用於單動液(油)壓缸和工具。 泵浦踏板可用於腳踏或 手壓，使用更多樣化。
使泵浦在連接其他工作和操作上更加便利。

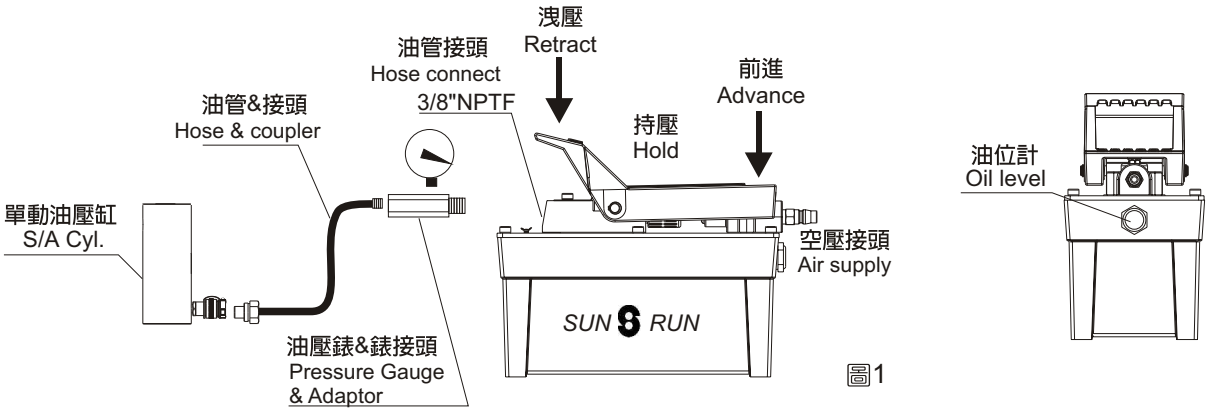


圖1

SPA-6D 氣動泵浦設計適用於雙動油壓缸和工具。本系統採用手動控制閥。
使泵浦在連接其他工作和操作上更加便利 (圖1-1)

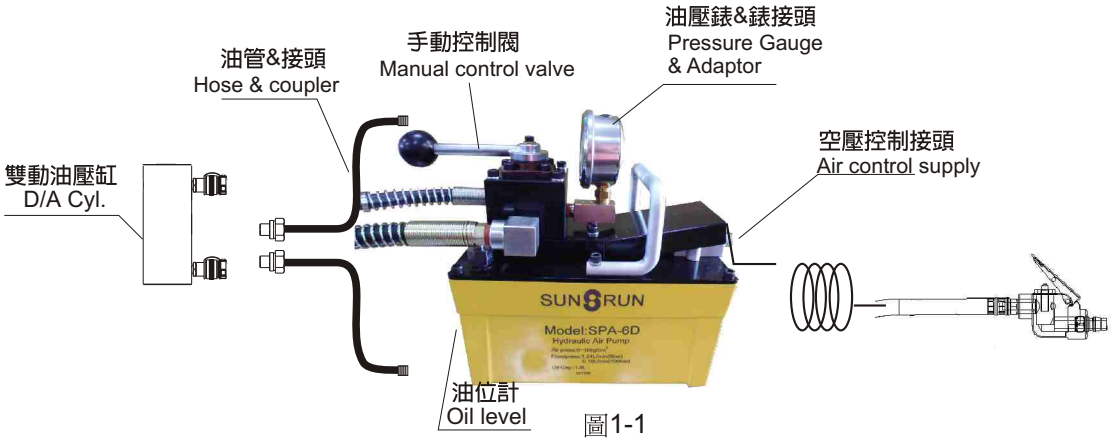


圖1-1

Model Number 型 號	Usable Oil Capacity 儲油量 (L)	Pressure Rating 輸出壓力 (bar)	(psi)	Air Pressure Range 使用空壓 (kgf/cm²)	Output Flow Rate (noload) 輸出油量 (L/min) 0 bar	700bar	外型尺寸 Dimensions(mm) A	B	C	D	E	F	G	W.t (Oil) 重量 (含油) (kg)
SPA-6	2	700	10,000	6-10	1.24	0.16	225	171	131	260	128	228	102	8.2
SPA-6D-4	4													
SPA-6D-8	8													

泵浦啟動

1.下壓踏板洩壓方位並以六角板手控制通風閥。通風閥位置
即在踏板下方如圖2。啟動後需將加油/通氣口打開
約1/2圈。
2.如此循環操作約15秒。
3.取出扳手再重新壓下踏板前進的位置。
4.假如油缸呈前進作動或產生壓力則泵浦即完成啟動動作。
假如泵浦沒有反應再重新緩慢穩定的操作1~2步驟。

圖2

3. 操作

3.1 SPA-6:

3.1壓下踏板 "前進"位置則油缸主軸揚程。.
3.2欲使油缸持壓於某個狀態則放開踏板"前進"位置，使踏板如圖3維持水平狀態即"持壓"。
3.3壓下踏板"洩壓"位置則油缸回縮。

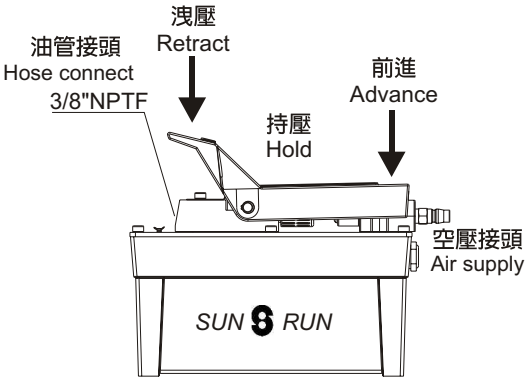
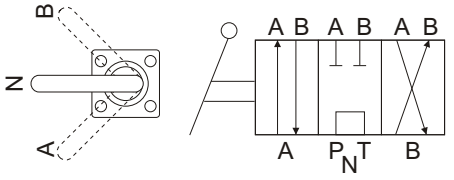


Fig.3

3.1 SPA-6D:

四口手控閥用來設計操作雙動液壓缸，請參考圖3.2閥門位置

1.下列為四口手控閥的各位置功能：
(A) 流向孔 "A"; 則孔 "B" 為回油流向油箱
(N) 中立；孔"A" 和孔 "B" 均為封閉狀態
(B) 流向孔 "B" 則孔 "A" 為回油流向油箱
2.操作泵浦至完成工作
3.視需要改變閥門位置



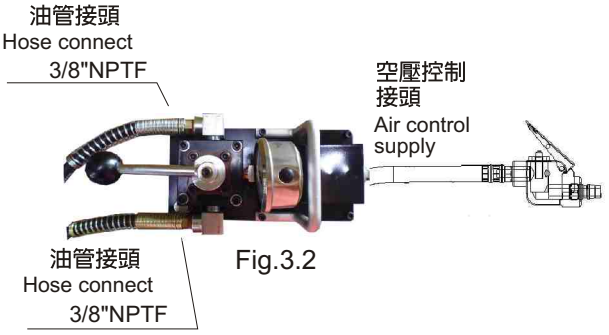


Fig.3.2

3.3 空氣調壓:

1) 打開空氣開關或接上空壓快速接頭。
注意: 正常情況下泵浦於操作前需啟動動作。啟動操作請參考前頁"泵浦啟動"說明。
2) 緩慢的順時針旋轉空壓調壓器來增加壓力；反之則減壓。
當空氣進入泵浦則液壓油開始流入系統。持續而緩慢的順時針旋轉空壓調壓器直到到達銘牌所示的油壓的最大值。油壓最大值應為空壓將近10 bar (145psi)。
3) 關掉和移除空氣來源藉此洩掉系統內所有壓力。在所有油壓系統均處於回縮狀態下檢查油位。確認無誤後泵浦即可操作。

4. 保養

4.1 假如泵浦用於高頻率揚伸建議於近泵浦端的入風口安裝自動潤滑油裝置。以每分鐘滴入一滴潤滑油速度做為潤滑。
建議使用潤滑油油品為SAE grade oil , 5W 30W。
4.2 使用每10小時即檢查油位狀態。操作每300小時後需排空舊液壓油並加入SUN RUN 提供之新液壓油。
4.3 液壓油油位須於油缸回縮後位於加油/ 通氣蓋下 0.5 inch (12.7mm) 位置。
4.4 於第一次操作或靜置長時間後使用，油壓系統內易存積空氣。空氣會使油缸回縮速度緩慢或不穩定狀況。
空車(將油缸在無負載狀態完全揚升及回縮)操作油壓系統數次，藉此排出空氣。油缸放置位置須低於泵浦位置。

5. 疑難排除

問題	原因	解決
泵浦正常往復作動,但無液壓油輸出 (油缸無法揚升)	1.油位過低 2.泵浦無啟動 3.入油過濾器污染	1.請參考"保養"說明並添加液壓油。 2.請參考"泵浦啟動"說明。 3.取下油桶並清洗入油過濾器。
低流量 (油缸揚升緩慢)	1.空壓不足狀態 A) 檢查輸入空壓狀況 B) 阻塞物, 檢查泵浦空氣端 (入風口栓塞) 2.油壓問題 A) 檢查入油過濾器是否阻塞 B) 油壓系統內空氣	1. A) 應有最少 20CFM (0.57M^3/min.) 空氣量。 B) 清除後重新安裝。 2. A) 取下油桶後清理入油過濾器並重新安裝。 B) 請參考"保養"說明排出系統內空氣。
泵浦不能產生最大壓力 (不明原因洩漏/隱秘洩漏)	1.檢查空壓 2.壓力調節器不當調整 (如配有調節器)	1. 10bar(145psi) 為最大空壓壓力。 2.請參考"操作"說明，調整壓力。
泵浦產生壓力但無法持壓	1.檢查油壓連結口及其他系統組合件是否洩漏，包含3way /4way閥(如有配置)	1. 必要時更換。
泵浦作動緩慢,即使已到達設定壓力	1.輸出壓力等於或高於洩壓閥設定 2.3 way/ 4way 閥損或其他配件產生洩漏	1. 請重新設定壓力 2. 請更換
消音器溢油	1.空氣潤滑油太過	1. 設定維持於每分鐘一滴潤滑油

出廠証明暨保固書

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,本產品自驗收合格後起保固一年,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：巨輪興股份有限公司
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OPERATING INSTRUCTIONS
FOOT-OPERATED
AIR POWER HYDRAULIC PUMP

SPA-6

SPA-6

SPA-6D

SPA-6D-8L

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 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 65^0C(150^0F) 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.

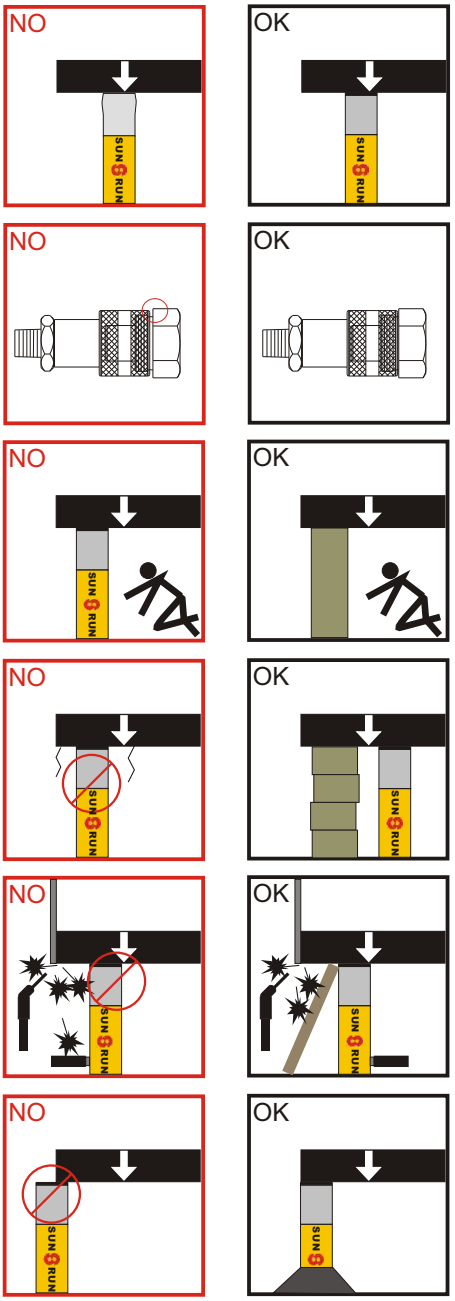
WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD. Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.

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.



2. DESCRIPTION

SPA-6 hydraulic pumps are designed for use with single-acting cylinders and tools. The pump treadle may be operated by hand or foot for greater versatility. Simplifies hydraulic connection and pump operation. (As fig.1)

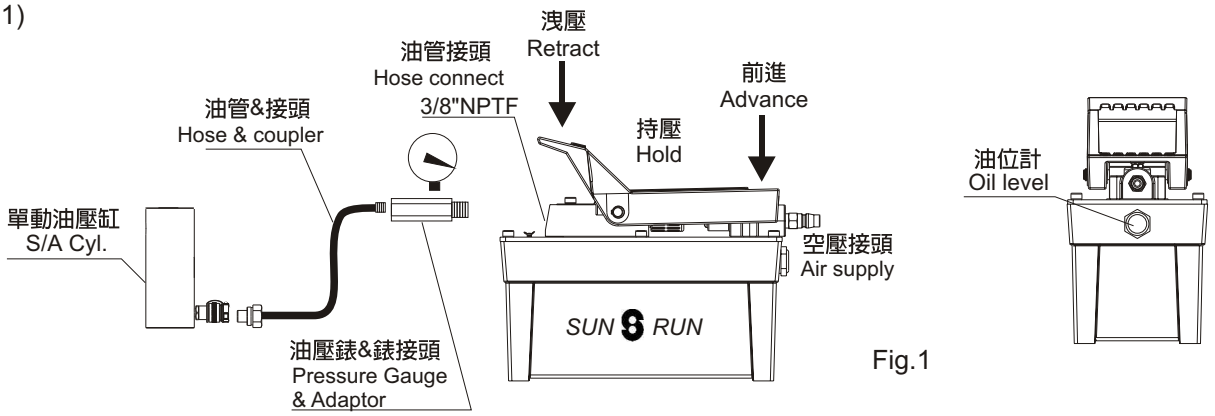


Fig.1

SPA-6D hydraulic pumps are designed for use with double-acting cylinders and tools. Operated by manual control valve. Simplifies hydraulic connection and pump operation. (As fig.1-1)

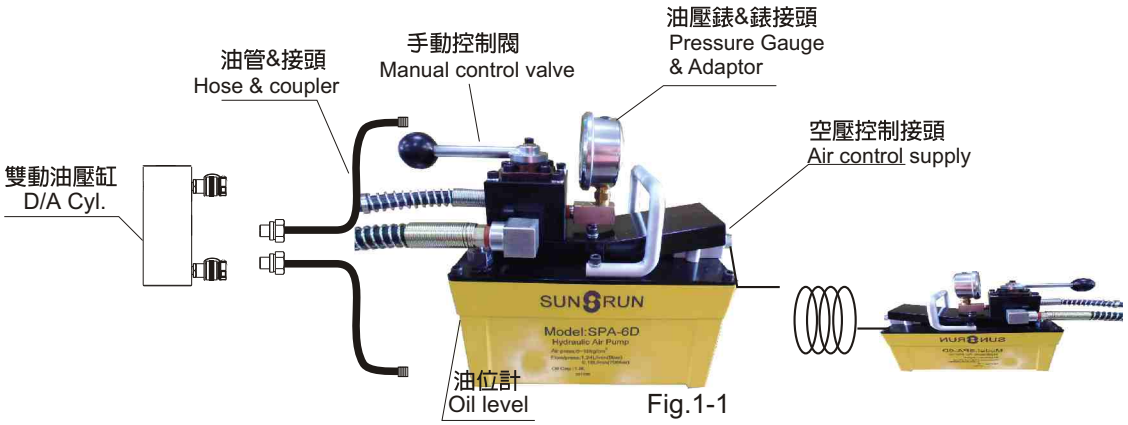


Fig.1-1

Model Number 型 號	Usable Oil Capacity 儲油量 (L)	Pressure Rating 輸出壓力 (bar)	(psi)	Air Pressure Range 使用空壓 (kgf/cm²)	Output Flow Rate (noload) 輸出油量 (L/min) 0 bar	700bar	外型尺寸 Dimensions(mm) A	B	C	D	E	F	G	W.t (Oil) 重量 (含油) (kg)
SPA-6	2	700	10,000	6-10	1.24	0.16	225	171	131	260	128	228	102	8.2
SPA-6D-4	4													
SPA-6D-8	8													

Priming the pump unit

1. Press the retract end of the pedal while holding down the air intake valve with hex. Wrench. The air intake valve is located directly under the pedal. After open the pump, also open the Oil/vent screw 1/2 circle.
2. Allow the pump to cycle approximately 15 seconds.
3. Remove the wrench, and press the advance end of pedal once more.
4. If the cylinder extends or pressure builds, the pump has been successfully primed. If the pump does not respond, repeat the procedure, jogging the air intake valve while holding the pedal in the retract position.

Fig.2

3. OPERATION

3.1 SPA-6:

3.1.1 To extend the cylinder, depress the pedal on the end "Advance".

3.1.2 To hold the cylinder in position, release the end of pedal "Advance" to let pedal for level situation.(see fig. 3)

3.1.3To retract the cylinder, press the pedal on the end "Retract".

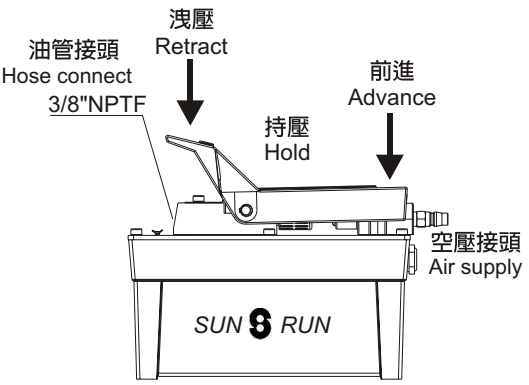


Fig.3.1

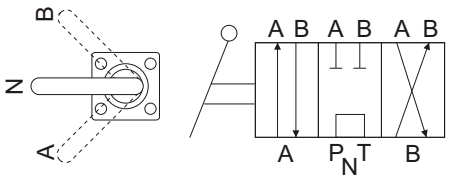
3.2 SPA-6D:

Pumps with 4-way control valves are designed to operate double-acting cylinders. See Figure 3.2 for valve positions.

1.Position lever on 4 way valve to select function as follows:
(A) Flow to port "A"; port "B" returns flow to the reservoir
(N) Neutral ; port "A" and "B" are blocked
(B) Flow to port "B" port "A" returns flow to the reservoir

2.Operate pump to perform work.

3.Change valve positions as needed.



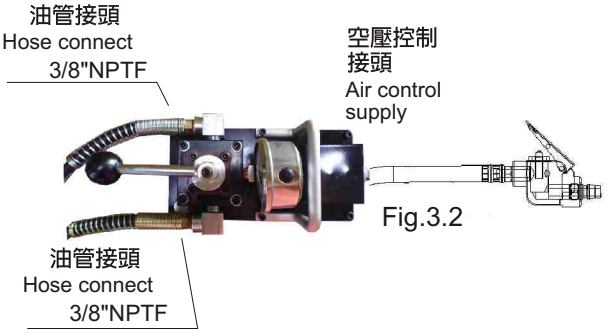


Fig.3.2

3.3 For Pump with Air Regulator:

1) Open the air shut-off valve or connect the air quick coupler.
NOTE: under certain circumstances the pump may need to be primed before operation. Refer to the method described in the section entitled
"Priming the pump unit / Remove air"

2) Slowly turn the air regulator control on unit clockwise to increase pressure, counterclockwise to decrease pressure. As air is admitted to the pump unit, it will begin to deliver fluid to the system.
Continue to slowly turn the air regulator control clockwise unit gauge reads the maximum hydraulic pressure rating as stated on the pumps data plate. A maximum hydraulic pressure reading should be obtained if air pressure is approximately 10 bar (145psi).

3) Shut off and disconnect air supply to the pump to release all system pressure. Check fluid level with hydraulic system retracted. The pump is now ready for operation.

4. MAINTENANCE

4.1 If the pump is operated on a continuous duty cycle for extended periods, the manufacturer recommends installing an automatic air line oiler in the air inlet line as close to the pumping unit as possible. Set the unit to feed approximately one drop of oil per minute into the system. Use SAE grade oil , 5W 30W.

4.2 Check the fluid level in the reservoir after every 10 hours of use. Drain and replenish the reservoir with SUN RUN hydraulic oil after every 300 hours of use approximately.

4.3 The oil level should be 0.5 inch (12.7mm) from the oil/ vent cap with all cylinder retracted.

4.4 During the first moments of operation or after prolonged use, a significant amount of air may accumulate within the hydraulic system. This entrapped air may cause the cylinder to respond slowly or behave in an unstable manner. To remove the air, run the system through several cycles (extending and retracting the cylinder) free of any load. The cylinder must be at lower level than the pump to allow air to be released through the pump reservoir.

5. TROUBLESHOOTING

The following information is intended as an aid in determining if a problem exists. DO NOT disassemble the pump. For repair service, contact the Authorized SUN RUN Service Center in your area.

Problem	PossibleCause	Solution
Pump reciprocates but no fluid delivery (cylinder will not extend)	1.Low fluid level. 2.Pump not primed. 3.Fluid intake filter contaminated.	1.Add fluid as instructed in MAINTENANCE section. 2.Prime pump as instructed in. 3.Remove reservoir and clean intake filter and reinstall.
Low fluid delivery (cylinder extends slowly)	1.Inadequate air supply A) Check air input supply. B) Contamination, check air side of pump (plugged air inlet screen). 2.Hydraulic failure A) Check the fluid inlet filter for contamination. B) Air in hydraulic system.	1. A) Should be 20CFM (0.57M^3/min.) Minimum. B) Clean and reassemble. 2. A) Remove reservoir and clean intake filter and reinstall. B) Bleed the system as described in the Maintenance section.
Pump will not build to maximum pressure(no visible leakage)	1.Check the air supply. 2.Pressure regulator improperly adjusted(if so equipped)	1. 10bar(145psi) is required to obtain maximum pressure. 2.Adjust according to instructions in Operation section.
Pump builds pressure but will not hold system pressure	1.Check the hydraulic connections and other system components for leakage, including 3 way/4 way valve(if so equipped)	1. Refit or repair as needed.
Pump will continue to run slowly even after desired pressure is reached	1.Output pressure equal to or higher than relief valve setting. 2.Defective 3 way/ 4way valve or other components leaking.	1. Normal operation. 2. Repair or replace.
Excess oil spray from muffler	1.Air lubricator is set too rich.	1. Set at one drop per minute.