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液壓氣動踏式泵浦 操作說明

SPA-70F



中文 : C1~C7

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)。




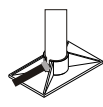
危險事項：液(油)壓設備應遠離火或熱源。高溫會軟化包裝和密封材料，導致液壓油洩漏；高溫同時也會造成油管材質與包裝變質。為確保最好狀態，不要將液(油)壓設備暴露於 65°C(150°F)高溫。在電焊場所時亦應注意防止電焊火花噴到油管。




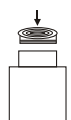
危險事項：不要用手對油管施加壓力(包括拉或舉高) 高壓下洩漏的液壓油會穿透皮膚造成嚴重傷害。當液壓油侵入皮膚請立即就診。


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。

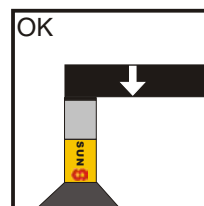
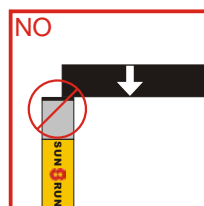
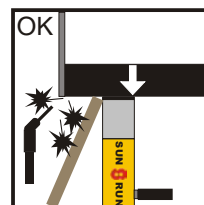
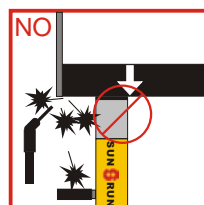
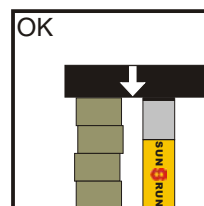
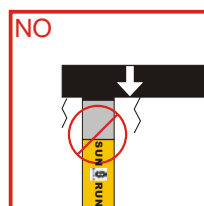
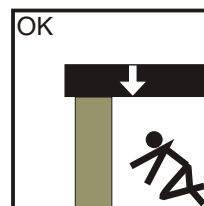
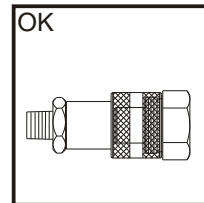
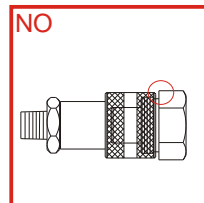
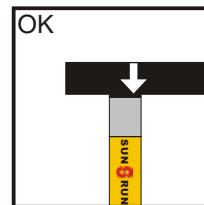
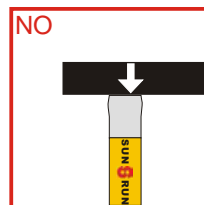
 **警告事項:** 頂昇荷載前，請確保油壓裝置平穩。油壓缸必須放在平穩可支撐重物的基座上。若情況許可，可使用油壓缸基座來增加穩定性。千萬不可使用焊接或其他方法將油壓缸與所使用的基礎面(支撐座)連接一起。

 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。



2. 規範

型 號	適 用 油壓缸	儲油量 (c.c.)	輸出壓力		使用空壓 (kgf/cm ²)	輸出油量 (無荷重) (c.c./mm)	外型尺寸 (mm)					壓縮比
			(kgf/cm ²)	(psi)			A	B	D	L	N	
SPA-70F	Single Speed	800	700	10,000	6-10	450	432	500	32	192	159	1:100
SPA-70FL		1200	700	10,000	6-10	450	542	610	32	192	159	1:100

本項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。旋轉式接頭，使泵浦在連接其他工作和操作上更加便利。



圖1

為預防人為操作危險及潛在危險，請先詳讀各項警告、危險及相關操作手冊。**SUN RUN** 對於相關產品不當使用、不當維修、保養，不負予相關產品責任及保固。對於產品使用上有任何安全疑問，請立即連絡 **SUN RUN**。

⚠ 警告

1. 操作液(油)壓設備時，請全程穿戴防護套裝(例:護目鏡、手套...).
2. 操作使用壓力請勿超過系統中配件最低使用壓力。
3. 確認系統內所有配件均已防護，避免可能危險發生。例如，高溫、火焰、已移除的零件、利刀和具腐蝕性化學藥劑。
4. 當泵浦不使用時，請勿接上風源。千萬不可在空氣持壓情況下移除空氣旋轉接頭
5. 本泵浦標準配有超荷安全閥，出廠時已預設最大壓力值。千萬不要企圖調整安全閥。如欲調整安全閥壓力請連絡就近**SUN RUN** 服務據點。自行調整恐造成功能故障、系統損壞或人員傷害。

3. 安裝

添加液壓油

1. 如圖2，打開加油塞並加入SUN RUN 液壓油約 1/2" (1cm)。任意添加非SUN RUN 所授予的液壓油恐造成產品危害，無法保固。

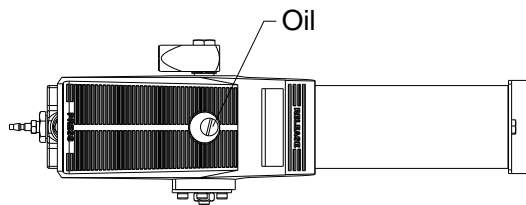


圖.2

警告

請勿添加過滿甚至溢出的液壓油；如此會造成油箱壓力。假如油箱持續壓力過高，會造成油箱破裂，傷及產品或造成人員傷害。

2. 更換加油塞請以手動方式
千萬不可使用扳手或其他工具。過緊會造成崩牙損壞。
3. 將泵浦傾斜狀態並檢查是否漏油。假如發生漏油情況，先打開加油塞，檢查加油塞墊片是否損壞。必要時，更換墊片。
4. 更換加油塞墊片後需確認墊片是否位塞子中心位置。假如漏油情況依舊，請倒出液壓油並將您的泵浦攜至就近SUN RUN 服務據點。

油管連接

1. 如圖3。將旋轉接頭上的3/8"NPTF塞頭取下，並安裝上相對應的3/8"NPTF公接頭配件。此配件可是高流量接頭、油管或壓力錶接頭。

注意：SUN RUN 建議您於油管線路中安裝適當的壓力錶，藉以得知系統壓力。

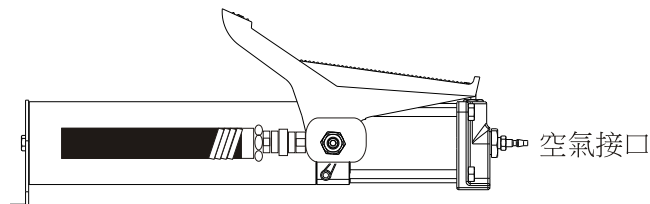
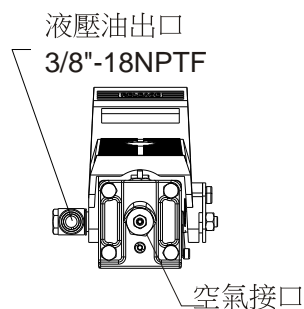


圖.3



2. 使用密封劑提高管件密封度。例如，鐵弗龍密封帶
注意：纏繞鐵弗龍帶約1-1/2 牙最前端保持裸露，預防液壓油流出時阻塞造成危險壓力(見圖.4)



圖.4

3. 鎖螺牙管件時，千萬不可鎖過頭，避免崩牙。

3. 安裝 (續頁)

安裝空氣接頭

建議空氣使用壓力為 85~142 psi (6~10 bar).

1. 見圖5。連接 9 CFM (15m³/h)(minimum) 空氣來源至 1/4" (0.5cm)NPTF 泵浦空氣入口接頭。
僅能使用 1/4" (0.5cm) 風管或接頭配件。不建議使用更大尺寸的连接配件，然後再使用更厚或更強力的密封材料來連接密合。
2. 確實鎖緊油管，但切勿鎖過頭過緊。
注意：為延長使用壽命，避免泵浦不當使用，請安裝SUN RUN空氣過濾調節器。

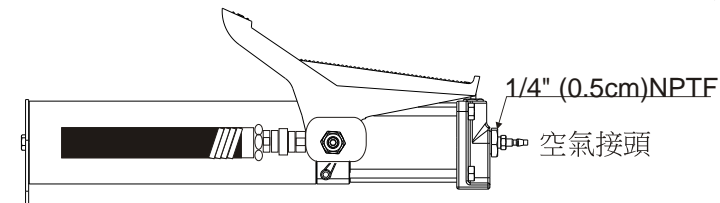
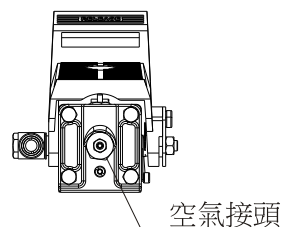


圖5



液(油)壓調整

液壓壓力輸出是藉由輸入的空壓所產生。增加輸入的空壓將相對增加輸出油壓壓力；同理減少輸入空壓則會相對減少輸出油壓。

警告

千萬不可於風管持壓時移除風管或接頭。移除壓力中的風管會導致人傷害或設備損壞。

壓力自動產生

1. 調整入口空壓即產生相對一致的液(油)壓。
2. 當空氣馬達持續空氣輸送，則泵浦即自動循環產生液(油)壓。

注意：此氣動泵浦不建議使用額外的循環設備。

注意事項

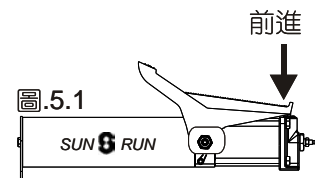
當需一定壓力來持續油量時，則踏板需持續加壓。
一般啟動/ 停止操作泵浦時不需加壓踏板。

4.操作

1. 確認泵浦油位是否足夠。必要時添加液壓油。
2. 操作前請確認所有空氣及液壓接頭是否連接正確且密合。

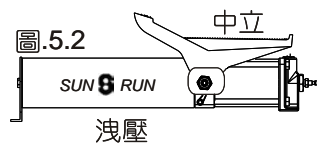
前進

如圖5.1下壓踏板前進端，則空氣馬達開始泵浦液壓油至系統。



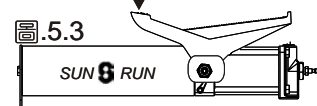
持壓

如圖.5.2當踏板呈中立回油狀態時，馬達停止並壓力維持。



洩壓

如圖5.3當踏板下壓洩壓端時，則壓力釋放。



5 泵浦起動狀態

假如泵浦無法順利操作,可能是啟動裝置問題。下列流程可解決泵浦的起動問題。

1. 添加SUN RUN所授予的液壓油，如有必要可參考前頁圖2.
2. 將泵浦水平朝正面放置
3. 調整空壓為 30~45 psi(2~3bar).
4. 將踏板壓至洩壓狀態
5. 快速的操作泵浦至洩壓位置數次，使液壓油可前進再流回油箱數次。
6. 可利用操作油壓缸以証明泵浦是否起動；假如油壓缸仍無法前進則重覆第5項動作。

假如泵浦仍無法輸送液壓油，請連絡您就近的SUN RUN 服務據點。

6.更換空氣過濾器

假如空氣馬達無法正常般運作，請確認是否空氣過濾器阻塞。

1. 關閉空氣壓力並將泵浦所有線路洩壓。

警告

當風管仍有壓力時，千萬不可卸除旋轉接頭連接。

2. 注意彈簧夾位置。一個細小的安全金屬夾。一手抓起風管並拉起固定夾。
3. 將旋轉接頭拉出。
4. 小心取出空氣過濾器。
5. 利用吹風管清理過濾器或更新。
6. 再裝回過濾器。
7. 塗薄油於旋轉接頭的O型環上。
8. 重新組回旋轉接頭及固定夾。確定固定夾位置。
9. 開啟空氣壓力前請再次確認旋轉接頭安裝是否正確牢固。

7.維修

1. 週期性地檢查所有液壓和空氣接頭是否鎖緊。鬆脫或洩漏的接頭可能造成不正常的操作。應立即更換損壞的零件。
2. 定期檢查油位。請參考前頁如何添加液壓油。
3. 使用超過100小時後，請更換液壓油。在較髒污或多灰塵的工作環境，有必要經常性更換乾淨液壓油。
倒出舊液壓油後注入由SUN RUN所授予的乾淨液壓油，約加至加油塞下方 1/2" (1cm) 位置。舊油處理方式視各地管理規定。

警告

泵浦標準配有超壓安全閥，出廠已預設最大使用壓力。千萬不要任意調整安全閥。如必須調整安全閥，請連絡就近SUN RUN服務據點。自行調整可能造成人員傷害或設備損壞。

存放

當必須放置30天以上時：

1. 整體保持清潔。
2. 將所有空壓及油壓管件移除，以保持操作安全。
3. 機體覆蓋。
4. 存放空間保持清潔、乾燥、通風良好。千萬不可置於高溫環境下。

8. 疑難排除

問題	原因	解決方法
泵浦無法輸送液壓油	低油量 空壓不足 泵浦起動問題	確認油位是否正確並添加液壓油 確認空氣過濾器,必要時請更換 確認空氣管線及過濾調節器是否需潤滑或有洩漏 確認是否空氣馬達損壞 請參考前頁泵浦起動操作
泵浦出現異聲	低油量 空壓不足 空氣馬達需要潤滑	確認油位是否正確並添加液壓油 確認空氣過濾器,必要時請更換 確認空氣管線及過濾調節器是否需潤滑或有洩漏 確認是否空氣馬達損壞 滴幾滴潤滑油在空氣入口位置並使馬達運轉數次使油液潤滑
漏油	零件損壞 接頭鬆脫 油箱漏油	請接洽就近SUN RUN維修中心 請確認所有接頭已完全鎖緊 請由專業液(油)壓技師更換油箱



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OPERATING INSTRUCTIONS

FOOT-OPERATED

AIR POWER HYDRAULIC PUMP

SPA-70F



English : E1~E7

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.

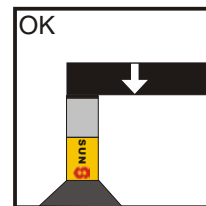
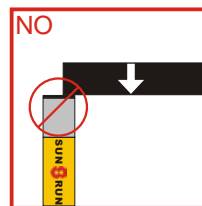
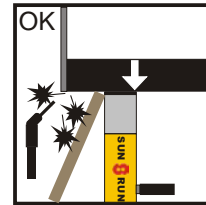
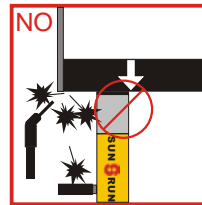
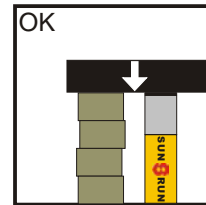
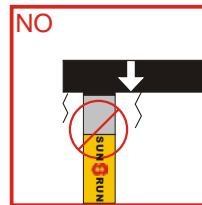
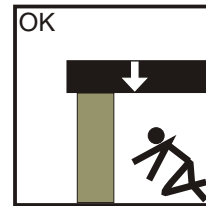
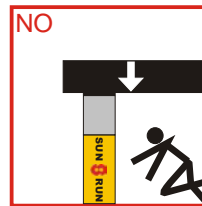
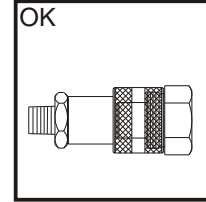
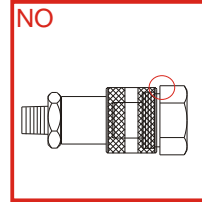
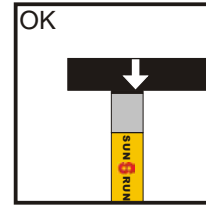
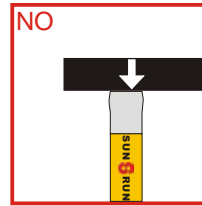
 **WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD.** Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.

 **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.



2. SPECIFICATIONS

Model Number	Used with Cylinder	Usable Oil Capacity	Pressure Rating		Air Pressure Range	Output Flow Rate (noload)	Dimensions(mm)					Compression Ratio
							A	B	D	L	N	
SPA-70F	Single Speed	800	700	10,000	6-10	450	432	500	32	192	159	1:100
SPA-70FL		1200	700	10,000	6-10	450	542	610	32	192	159	1:100

These air -power 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. Swivel connection simplifies hydraulic connection and pump operation. (As fig.1)

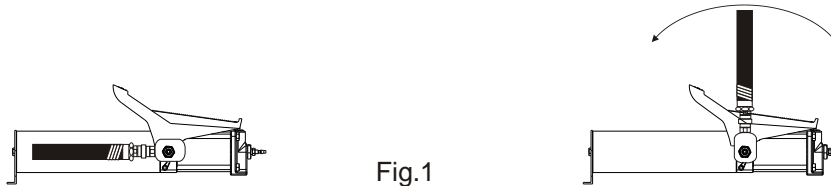


Fig.1

To avoid personal injury or property damage during system operation, read and follow all CAUTIONS, WARNINGS, and INSTRUCTIONS, included with or attached to each product. SUN RUN CANNOT BE RESPONSIBLE FOR DAMAGE OR INJURY RESULTING FROM UNSAFE USE OF PRODUCT, LACK OF MAINTENANCE, OR INCORRECT PRODUCT AND SYSTEM APPLICATION. Contact SUN RUN when in doubt as to safety precautions or applications.

WARNING

1. Always wear proper personal protective gear when operating hydraulic equipment (i.e. Safety glasses, gloves, etc.).
2. The system operating pressure must not exceed the pressure rating of the lowest rated component in the system.
3. Make sure that all system components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges, and corrosive chemicals.
4. Disconnect air supply when pump is not in use. NEVER remove swivel air connector while air line is pressurized.
5. The pump is equipped with an overload valve, preset for maximum operating pressure. DO NOT attempt to adjust the overload valve. If adjustment is required, contact an SUN RUN service center. Adjustment by other than qualified personnel may cause malfunction, damage to the system, and / or personal injury.

3. INSTALLATION

Adding Oil to th Reservoir

1. Remove fill plug (see fig.2) and fill SUN RUN hydraulic oil to 1/2" (1cm) below the fill opening. Use of fluids other than SUN RUN hydraulic oil may cause damage and will void your warranty.

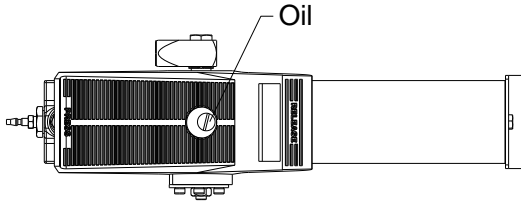


Fig.2

WARNING

Attempting to overfill the reservoir will cause the reservoir to become pressurized. If the reservoir is subjected to high pressure, the casing may rupture, causing personal injury and/ or equipment damage.

2. Replace the fill plug and finger tighten.

DO NOT use a wrench. Over-tightening will tear the reservoir bladder.

3. Tip the pump and check for leakage. If leakage occurs, remove the plug and check the plug seal for cuts or nicks. Replace the seal if necessary.
4. Replace the fill plug making sure the seal is centered properly on the plug. If leakage still occurs, remove oil and take pump to your nearest SUN RUN Service.

Connect Hydraulic Hose

1. See fig.3 Remove pipe plug from the female 3/8" NPTF hydraulic swivel connector, and install the male end of a 3/8" NPTF hydraulic fitting. The fitting can be a high flow coupler, hose, or gauge adaptor.

NOTE : SUN RUN recommends installing a gauge in line to monitor hydraulic system pressure.

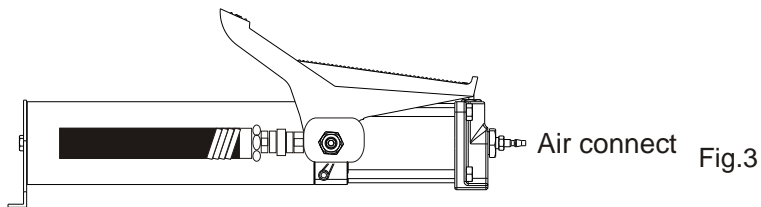
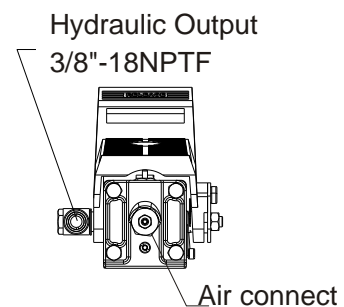


Fig.3



2. Seal connection with a high-grade pipe thread sealer, such as teflon tape.

NOTE : Use 1-1/2 wraps of teflon tape, leaving the first thread bare to prevent tape from shedding into the hydraulic system and causing damage. (See fig.4)



Fig.4

3. Tighten pipe connections securely, but DO Not over-tighten.

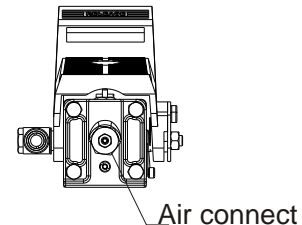
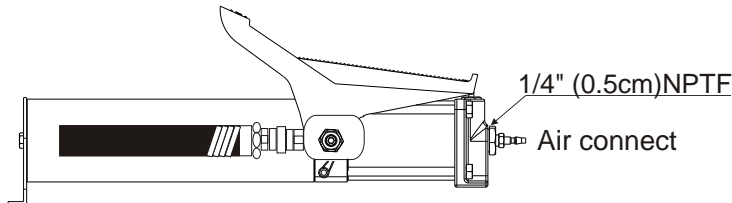
3. INSTALLATION (CONTINUE)

Connect the Air Supply

Recommended air inlet pressure is 85~142 psi (6~10 bar).

1. See fig.5 . Connect a 9 CFM (15m³/h)(minimum) air supply source to the 1/4" (0.5cm)NPTF pump air inlet connector. Use only 1/4" (0.5cm) hose or quick disconnect fittings. Larger, heavier fittings are not recommended. Use a high-grade pipe thread sealer to seal the connection.
2. Tighten pipe connections securely, but DO NOT OVER-TIGHTEN.

NOTE : To promote long, trouble free pump operation, install an SUN RUN air filter regulator in the air line.



Adjust Hydraulic Pressure

The hydraulic pressure output of your air pump is controlled by the air pressure into the pump. Increasing the air inlet pressure will increase hydraulic output pressure, and decreasing air inlet pressure will decrease the hydraulic output pressure.

WARNING

NEVER remove swivel air connector while air line is pressurized. Removing a pressurized air line may lead to personal injury or equipment damage.

Automatic Pressure Make-up

1. Adjust the air inlet pressure to the pump so that the hydraulic pressure output at stall corresponds to the desired circuit pressure.
2. With the air supply pressure continuously applied to the air motor, the pump will automatically cycle whenever circuit hydraulic pressure drops below the pump stall pressure.

NOTE : These pumps are not recommended for extended stall cycles.

CAUTION

The treadle should only be tied down when continuous oil flow is required to maintain constant pressure. DO NOT tie treadle for normal pump start/stop operations.

4. OPERATION

1. Check the oil level in the pump, and add oil if necessary.
2. Check to make sure all air and hydraulic connections are secure before operating pump.

To Activate the Pump

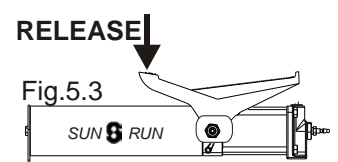
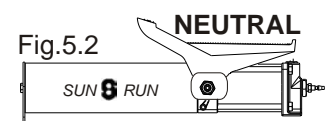
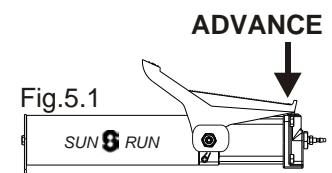
Depress the ADVANCE end of the treadle as shown in fig.5.1, and the air motor will be activated to pump hydraulic oil to the system.

To Hold Load Pump

The air motor will stop and hold load pressure when the treadle is in the free NEUTRAL position. See fig.5.2.

To Release Load Pump

To release load pressure or retract a cylinder, depress the RELEASE end of the treadle as shown in fig.5.3.



5. PRIMING THE PUMP

If pump does not operate properly, it may have lost its prime. Follow the procedure below to prime your pump, if necessary.

1. Fill pump with SUN RUN hydraulic oil, if necessary. See filling instructions on page2.
2. Place pump on horizontal surface.
3. Set air supply pressure to 30~45 psi(2~3bar).
4. Move pump treadle to RELEASE position.
5. Depress the button under the treadle to activate pump. Operate pump in RELEASE position momentarily several times to allow oil to flow back into pump and fill passage ways.
6. To verify that pump is primed, operate as normal with cylinder attached. If cylinder does not advance, repeat step 5.

If pump still does not deliver oil, contact your Authorized SUN RUN Service Center.

6. AIR FILTER REPLACEMENT

If the air motor does not perform as normal, check for a clogged air filter.

1. Shut off air pressure to the pump and release pressure in the line to the pump.

WARNING

NEVER remove swivel air connector while air line is pressurized.

2. Note the position of the retaining clip. It can only be secured by the smallest tang of the metal retainer. Grasp air line with one hand and pull the retaining clip with pliers.
3. Pull the swivel air connector out.
4. Carefully remove air filter.
5. Clean air filter with an air hose or replace with a new air filter.
6. Re-insert the air filter.
7. Put a thin film of grease on the o-ring of the swivel air connector.
8. Reassemble the swivel air connector and retaining clip. Be sure that clip is secured on the smallest tang of the metal retainer.
9. Check to make sure the swivel air connector is securely attached before turning the air pressure back on.

7. MAINTENANCE

1. Periodically check all hydraulic and air connections to be sure they are tight. Loose or leaking connections may cause erratic and/ or total loss of operation. Replace or repair all defective parts promptly.
2. Periodically check the hydraulic oil level in your system. See filling instructions on page2.
3. Change hydraulic oil after every 100 hours of operation. In dusty or dirty areas, it may be necessary to change the oil more frequently. To change the oil, drain used oil through the fill opening and fill reservoir to 1/2" (1cm) below the fill opening with clean SUN RUN hydraulic oil. Dispose of used oil in accordance with local regulations.

WARNING

The pump is equipped with an overload valve, preset for maximum operating pressure. DO NOT attempt to adjust the overload valve. If adjustment is required, contact an SUN RUN Service Center. Adjustment by other than qualified personnel may cause malfunction, damage to the system, and/or personal injury.

Storage

When the unit will be stored for 30 days or more:

1. Wipe the entire unit clean.
2. Disconnect all air pressure and hydraulic lines to prevent accidental operation.
3. Cover the unit.
4. Store in a clean, dry environment. DO NOT expose equipment to extreme temperatures.

8. 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 fails to deliver oil.	Low fluid level.	Check the oil level and add oil according to instructions on page2.
	Lack of air pressure.	Check air filter and replace if necessary (see page4) Check air line and filter-regulator for obstructions or leaks. Check for damage to air motor.
	Pump has lost its prime.	Prime the pump according to the instructions on page3
Pump noise.	Low fluid level.	Check the oil level and add oil according to instructions on page2.
	Lack of air pressure.	Check air filter and replace if necessary (see page4) Check air line and filter-regulator for obstructions or leaks. Check for damage to air motor.
	Air motor section requires lubrication.	Place a few drops of oil in the air inlet port and cycle the motor several times to distribute the oil.
Oil leakage.	Worn or damaged parts.	Contact your local Authorized SUN RUN Service Center for repairs.
	Loose connections.	Check that all connections are tight.
	Reservoir bladder torn	Have reservoir bladder replaced by a qualified hydraulic technician.