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# 液壓氣動泵浦 操作說明

## SPA-554TQJ



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中文 : C1~C6

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



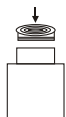
**警告事項：**液(油)壓缸只能在已連接好的液壓油路中使用；快速接頭尚未確實連接時禁止使用或加壓，否則高壓情況下接頭的油封及鋼珠會高速噴出造成人員傷亡。



**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。



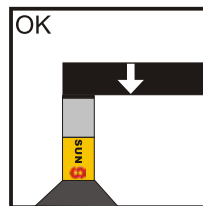
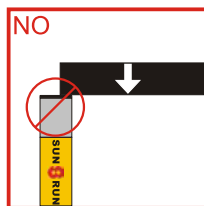
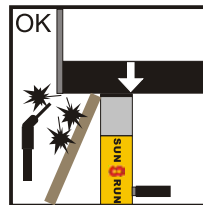
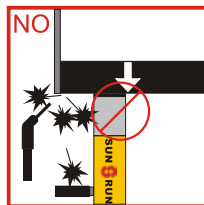
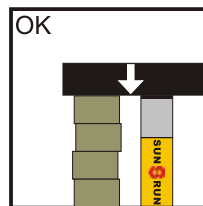
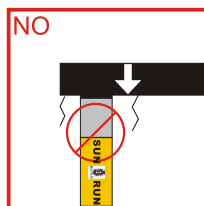
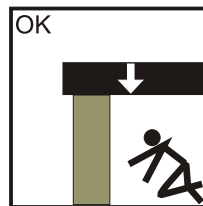
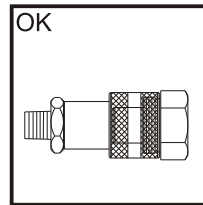
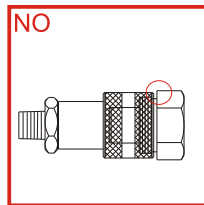
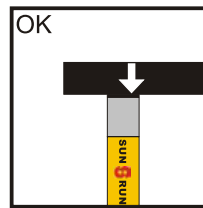
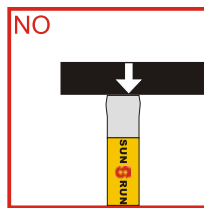
將荷載平均的分布在墊塊表面。傾斜墊塊可消除偏荷載。當無使用螺牙連接其他附件時，一定要使用墊塊以保護主軸。



**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。

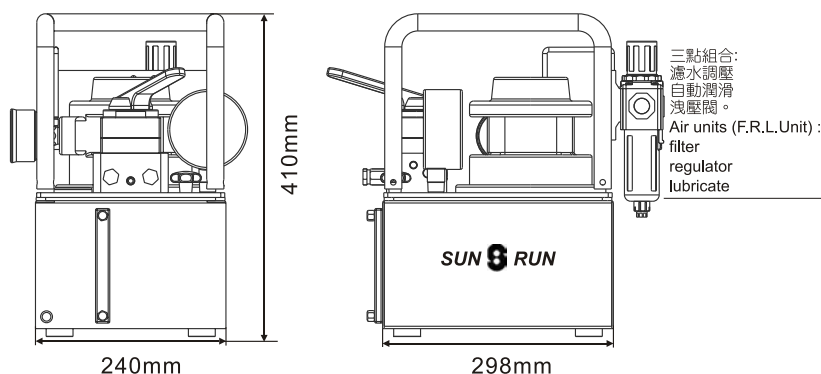


**重要事項：**液壓設備必需由合格的液壓技工進行維修。需要修理時，請聯繫就近的**SUN RUN**服務據點並使用**SUN RUN**液壓油保固方為有效。





## 2. 規範



Model Number 型 號	Pump Type 泵浦速度	dBA at Idle and 700bar 噪音值	Motor 馬達 kW (hp)	Used with cyl. 適 用 油壓缸	Flow rate @115VAC(L/min) 流量				Oil tank 油箱 (L)	Weight (with oil) 重量 (含油) (kg)
					0 (bar)	50 (bar)	350 (bar)	700 (bar)		
SPA-554TQJ	雙速 TWO-Speed	85/90	2.2 (4)	單動或雙動 Single- and Double Acting	12.0	7.1	2.0	0.9	8	27.5

## 3. 安裝及操作

### 3.1 泵浦連接

先將油管接上泵浦出油口。使用一圈半的鐵弗龍帶(或其他螺紋密封材質)纏在油管接頭上。螺紋第一圈不可被密封帶遮住，避免密封帶脫落流入液壓系統引發危害，修剪鬆散的密封帶尾端。

### 警告

為確保正確操作泵浦，應避免過份彎折或鎖太緊的油管。倘若發現油管出現過份彎折或其他危害應立刻汰換。已損害的油管容易在高壓時破裂造成人員傷亡。

### 3.2 手動控制閥 (圖3.2)

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

- 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
- 操作泵浦至完成工作
- 視需要改變閥門位置

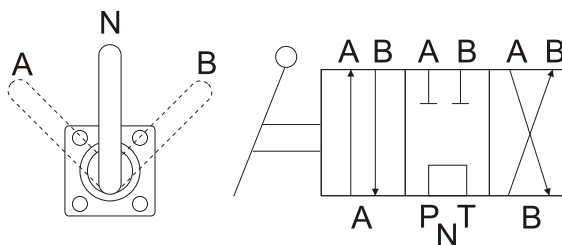


圖 3.2



### 3. 操作(續)

#### 3.3 操作-前進

1. 將油缸A孔油管接上泵浦手動方向閥A孔油孔；同時將手動方向閥轉向A方向。
2. SUN RUN 提供所有泵浦單元所需之調壓組件，使泵浦能產生最大工作效能(壓力)。  
將泵浦接上風源，慢慢打開開關閥，泵浦開始操作。剛開始無壓力產生是因為洩壓閥尚未關閉，液壓油只能透過系統後回到油箱循環動作。
3. 開始調壓前需將空氣調節器往上拉起，轉動球型調節鈕，使空氣壓力降至零；泵浦將慢慢動作至停止。
4. 藉由轉動球型調節器慢慢增壓，油壓壓力錶可看出處於高壓狀態。當油壓壓力錶顯示已達壓力極限700bar時停止空氣壓力調節器調整。

#### 3.3 操作-前進持壓

手動方向閥仍維持於A方向，勿更換任何方向及動作即可持壓。

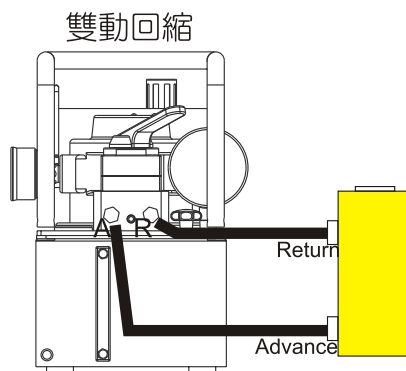
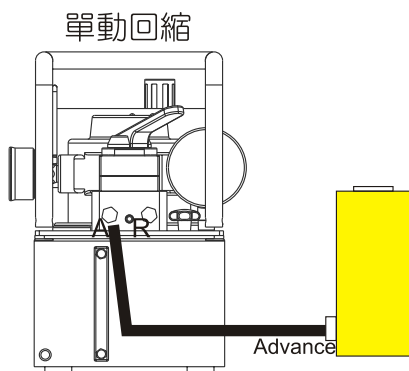
#### 3.4 操作-回縮及單動洩壓

##### 單動型油缸

1. 將手動方向閥扳向中立或R/B孔使液壓油回流至油桶。
2. 藉由轉動球型調節器慢慢減壓，油壓壓力錶可看出油壓歸零狀態即可移除連接油管及油壓工具。

##### 雙動型油缸

1. 將手動方向閥迅速扳向R/B孔使液壓油流向油缸R孔。
2. 當油缸主軸完全回縮至歸零狀態再藉由轉動球型調節器慢慢減壓，油壓壓力錶可看出油壓歸零狀態即可移除連接油管及油壓工具。





## 4. 維修及保養

### 4.1 排出空氣

當油位太低時空氣可能累積在系統內；空氣會造成不穩定或是較慢的動作。  
所以當重新加滿油後需將系統或是扳手內的累積空氣排出。

排出液(油)壓缸內的空氣-如圖所示 (右圖)

**單動液(油)壓缸:**

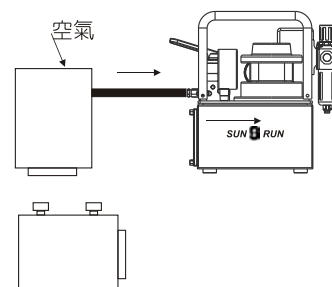
將液(油)壓缸主軸朝下倒置，且液(油)壓缸位置需比泵浦低。

將油壓缸完全頂昇/ 回縮 2~3次。

**雙動液(油)壓缸:**

將液(油)壓缸平放地面，接頭朝上(如右圖所示)

將油壓缸完全頂昇/ 回縮2~3次。

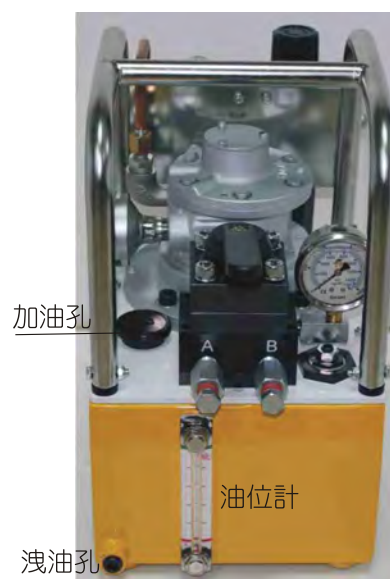


### 4.2 油位確認

**4.2.1** 每使用10小時後即需確認液壓油油位。

確認油位時油缸軸心需完全退回至未使用狀態，檢查油位是否維持在加油孔下約1/2" (15mm) 位置。

**4.2.2** 一般使用300小時的液壓油需完全排出後重新倒入乾淨且合乎使用的液壓油(AW32)。更新頻率視使用程度或是使用環境而定。



### 4.3 潤滑及調整氣壓

**4.3.1** 當泵浦滿載使用或高度循環使用下每100小時需注意並加入1-3滴潤滑油如右圖所視，順時針為滴入。轉圈愈多，滴點愈多。

**4.3.2** 氣壓調整亦同，順時針為增氣壓；逆時針為反。





## 5.疑難排除

問題	原因	解決方法
泵浦無法送油或是無法輸送完全	<ol style="list-style-type: none"> <li>1.油位太低。</li> <li>2.快速接頭鬆脫。</li> <li>3.系統內有空氣。</li> <li>4.風管漏氣。</li> <li>5.泵浦內或過濾器有異物。</li> <li>6.冷油或油質過於厚重。</li> <li>7.洩壓閥或低壓閥無法切換。</li> <li>8.油桶太小。</li> <li>9.方向閥錯誤。</li> <li>10.馬達運轉方向錯誤。</li> <li>11.油桶真空。</li> <li>12.低壓泵浦有問題。</li> </ol>	<ol style="list-style-type: none"> <li>1.將液壓油加滿至加油孔下約1/2"(15mm)滿。</li> <li>2.檢查快速接頭是否完全密合安裝。有時是因為接頭內鋼珠損壞或有異物卡住造成鋼珠無法正常運作。</li> <li>3.排出系統內空氣。</li> <li>4.檢查並確認風管線路。</li> <li>5.清理泵浦過濾器，如有必要亦需拆開泵浦全面清理。</li> <li>6.更換較薄稀的油品。</li> <li>7.調整至適當壓力。</li> <li>8.更換符合使用的油壓工具或是更換較大的油桶。</li> <li>9.仔細檢查所有零件，必要時更換。</li> <li>10.氣動馬達：空氣管路連接錯誤。</li> <li>11.檢查加油 / 通氣塞是否打開</li> <li>12.打開低壓泵齒輪尾蓋。清理泵浦並更換問題齒輪、轉軸、主體或尾蓋</li> </ol>
泵浦無法持壓	<ol style="list-style-type: none"> <li>1.先檢查是否有其他洩漏，如果不是外在漏油即內部問題。</li> <li>2.先測試是否是控制閥洩漏，將泵浦自油桶提出但仍將過濾組合放在液壓油中。移除排油管檢查閥是否漏油，假如閥並無漏油情況即可能是內部切換閥洩漏。</li> <li>3.壓力開關油封洩漏。</li> </ol>	<ol style="list-style-type: none"> <li>1.管路密封。</li> <li>2.清理並更換流量控制閥零件。假如為內部切換閥洩漏，必須拆開泵浦更換機座及其他零件。</li> <li>3.更換油封。</li> </ol>
泵浦無法到達壓力	<ol style="list-style-type: none"> <li>1.壓力錶問題。</li> <li>2.檢查是否有外漏。</li> <li>3.確認外部調壓。檢查釋放閥設定。</li> </ol>	<ol style="list-style-type: none"> <li>1.更換壓力錶。</li> <li>2.管路重新密封。</li> <li>3.將泵浦自油桶提出但過濾器仍在油內。當釋放閥打開注意壓力讀值。假如一切功能正常釋放閥壓力到達即應開始洩漏。</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 AIR PUMP

### SPA-554TQJ



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English : E1~E6

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.

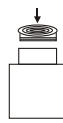



## 1. SAFETY PRECAUTIONS


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

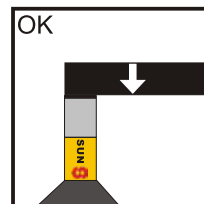
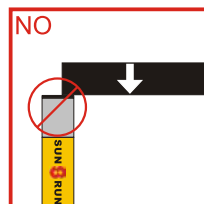
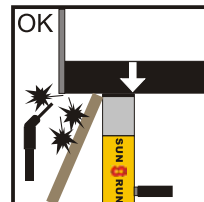
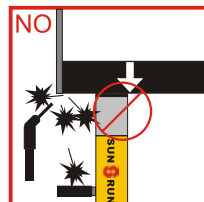
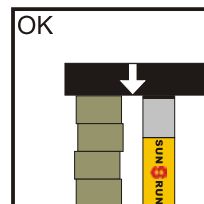
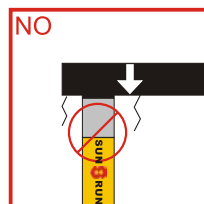
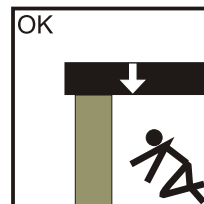
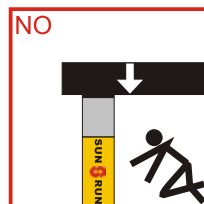
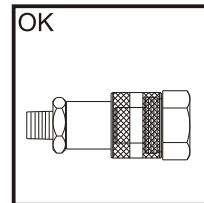
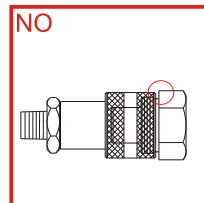
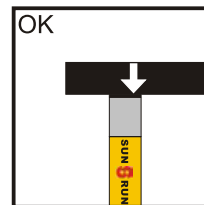
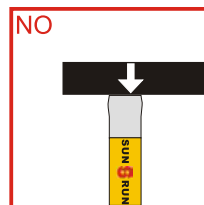
 **WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD.** Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.

 **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.

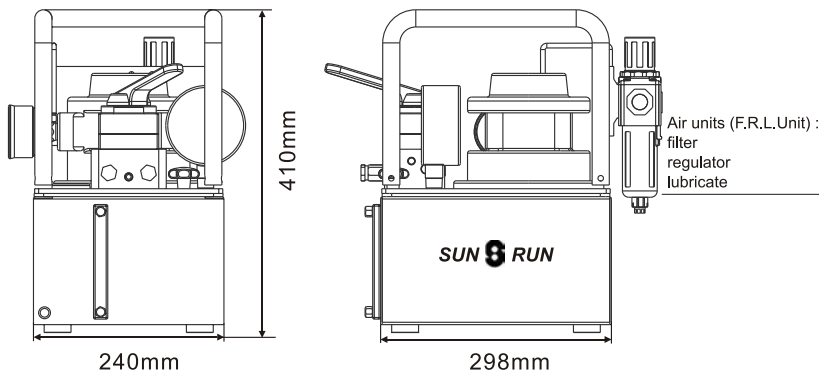
 **WARNING:** Immediately replace worn or damaged parts with genuine SUN RUN parts. SUN RUN parts are designed to fit properly and withstand rated loads.

 **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.SPECIFICATION



Model Number	Pump Type	dBA at Idle and 700bar	Motor kW (hp)	Used with cyl.	Flow rate @115VAC(L/min)				Oil tank (L)	Weight (with oil) (kg)
					0 (bar)	50 (bar)	350 (bar)	700 (bar)		
SPA-554TQJ	雙速 TWO-Speed	85/90	2.2 (4)	Single- and Double Acting	12.0	7.1	2.0	0.9	8	27.5

3.OPERATION

3.1 Hydraulic Connect

Use 1-1/2 wraps of teflon tape (or suitable thread sealant) on all threads, leaving the first complete thread free of tape to ensure that the tape does not shed into the hydraulic system, causing damage. Trim loose end.

**WARNING**

To ensure proper operation, avoid kinking or tightly bending hose. If a hose becomes kinked or otherwise damaged, it must be replaced. Damaged hoses may rupture at high pressure, causing personal injury.

3.2 Manual Control Valve (Fig.3.2)

Pumps with 4-way control valves are designed to operate double-acting cylinders. See Figure 2 for valve positions. Before using manual control valve, user need to push the Start / Stop shaft to "Remote" position.

"OFF" mean: motor stop running.

- 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.

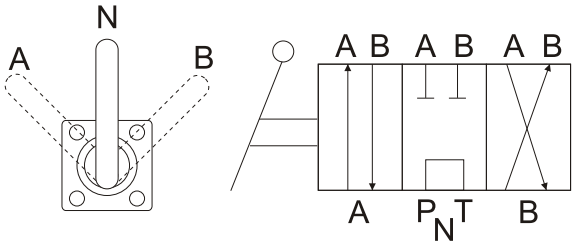


Fig. 3.2



### 3.OPERATION

#### 3.3 Operation- Advance

1. Connect cylinder Advance port to pump valve A/Advance port then push the handle to "A" position.
2. SUN RUN supply all pump units with the air pressure regulator set to stall the pump at its maximum working pressure.

Connect the main air supply to the pump unit.

Slowly open air input, the pump will begin to operate, no pressure can be generated because the pressure release valve is open the oil is simply circulated though the system back to the tank.

3. Before adjusting the pressure on the air filter/regulator it is necessary for the "pressure adjust" to be in the up position.

By turning the adjustment knob on the regulator, reduce the air pressure to zero psi, the pump will slow down considerably and may even stop.

4. Slowly increase the air supply pressure by turning the adjustment knob, the oil pressure gauge will indicate a higher pressure as more and more air is allowed into the pump unit. Stop the air adjustment when the oil pressure gauge indicates the desired tensioning pressure 700bar.

#### 3.3 Operation-Advance hold pressure

Manual valve keep "A" position. DO NOT change to other position or adjust anything.

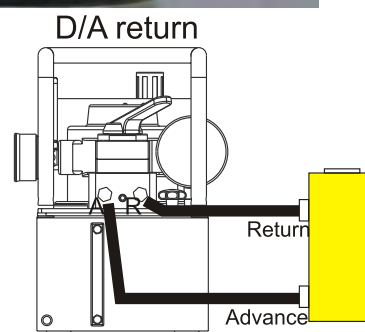
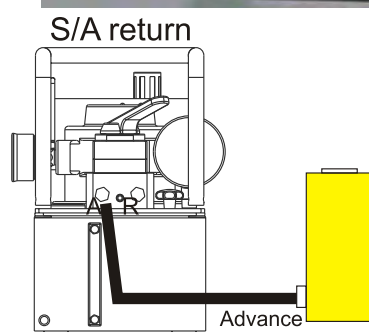
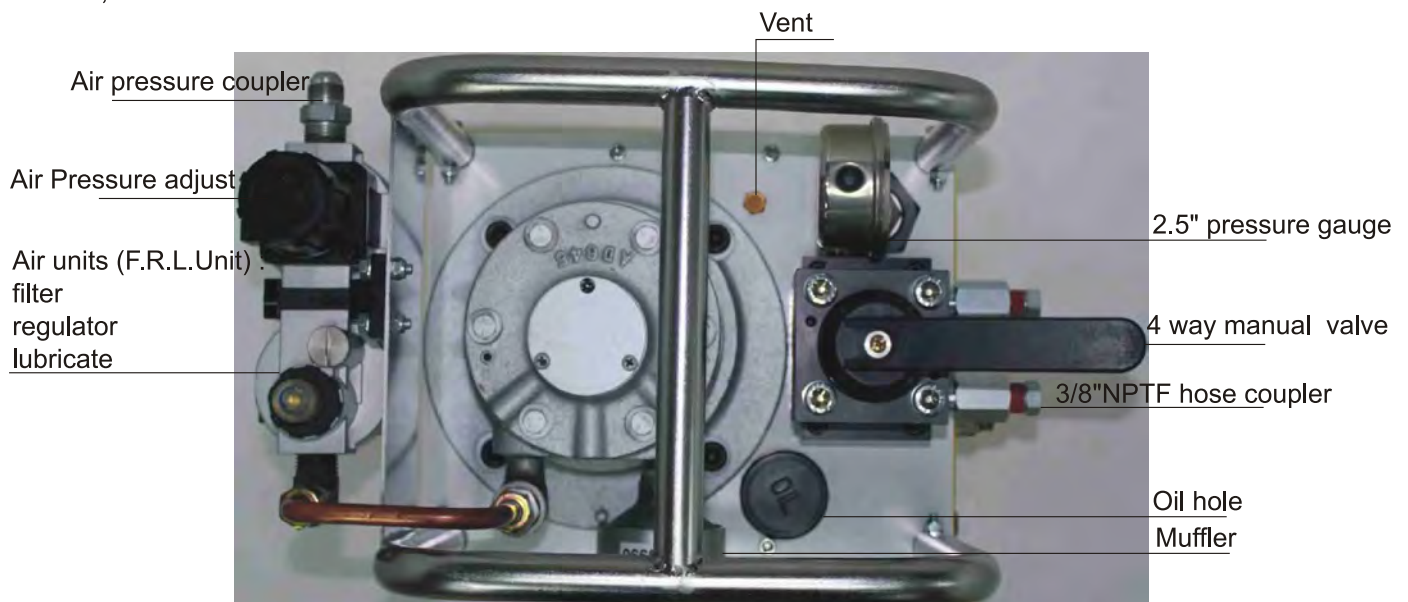
#### 3.4 Operation- Return or S/A release

S/A Cyl.

1. Turn the manual valve handle to center or "R/B" position which oil return.
2. Turn the pressure adjust to reduce pressure to zero. Then remove the hose and tools.

D/A Cyl.

1. Turn the manual valve to R/B position quickly.
2. After plunger return to zero situation then turn the pressure adjust to reduce pressure. As zero pressure, which can remove the hose and tools.





## 4. Maintain oil level

### 4.1 Bleeding Air From The System

Air can accumulate in the hydraulic system if the reservoir level is too low. This air cause the hydraulic cylinder in an unstable or slow manner. Just put cylinder on the smooth ground that is no load condition and operates it in full stroke for several times that will bleed air from torque wrench system.

Remove air from the cylinder as show below.

#### **Single-acting cylinders:**

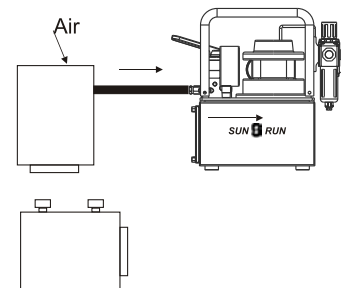
Position the cylinder so that the plunger is pointed down and the cylinder lower than the pump.

Fully extend and retract the cylinder 2 or 3 times.

#### **Double-acting cylinder:**

Lay the cylinder on its side and have the couplers facing up.

Fully extend and retract the cylinder 2 or 3 times.



### 4.2 Hydraulic Fluid Level

4.2.1 Check the oil level in the reservoir after each 10 hours of use.

Proper oil level is 1/2" (15mm) from the top of the fill hole when all wrench plungers are retracted.

4.2.2 Drain, flush, and refill the reservoir with an approved, high-grade hydraulic oil (Aw32) after approximately every 300 hours of use.

The frequency of oil changes will depend upon the general working conditions, severity of use, and overall cleanliness and care given the pump.



### 4.3 Lubrication and Air pressure adjust

4.3.1 If the pump is operated on a continuous duty cycle, 100 hours or a maximum speeds for extended periods, an automatic air line oiler should be installed in the air inlet line as close to the pumping unit as possible. Set the unit to feed 1-3 drops of oil per minute. Turn clockwise is addition, counterclockwise is reduction.



4.3.2 Air pressure adjust operation is also clockwise to addition and counterclockwise is reduction.



## 5.TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Pump is not delivering oil or delivers only enough oil to advance torque wrench(s) partially or erratically (continued)	1.Oil level too low. 2.Loose-fitting coupler to cylinder. 3.Air in system. 4.Air leak in suction line. 5.Dirt in pump or filter plugged. 6.Cold oil or oil too heavy. 7.Relief valve or low pressure unloading calve out of adjustment. 8.Reservoir capacity is too small. 9.Defective directional valve. 10.Motor rotating in wrong direction. 11.Vacuum in reservoir. 12.Low pressure pump wrong.	1.Fill reservoir to 1/2"(15mm) from top of filler hole with all wrench plungers retracted. 2.Check quick-disconnectcouplings to wrenches. Inspect couplers to ensure that they are completely coupled. Occasionally couplers have to be replaced because the ball check doesn't stay open due to wear. 3.Bleed the system. 4.Check and tighten suction line. 5.Pump filter should be cleaned and, if necessary, pump should be dismantled and all parts inspected and cleaned. 6.Change to lighter oil. 7.Adjust as needed. 8.Use smaller object or larger reservoir. 9.Inspect all parts carefully and replace if necessary. 10.Air motor : Air line connected into wrong port. 11.Check for plugged vent in filler plug. 12.Remove end cap from low pressure gear pump. Clean pump, and replace worn gears, shifting spool, body or end cap.
Pump can't build full pressure. (Continued)	1.Check to see if there are any external leaks. If no oil leakage is visible, the problem is internal. 2.To test for a leaking control valve, lift the pump from the reservoir but keep the filter in the oil. Remove the drain line to see if the oil is leaking from the valve. If the valve is not leaking, the internal check valve could be leaking. Refer to the note concerning checking for oil leaks at the beginning of this troubleshooting Guide. 3.Leaking pressure switch seal.	1.Seal leaking pipe fittings with pipe sealant. 2.Clean, reseal or replace flow control valve parts. If the intenal check valve(s) are leaking, the pump must be dismantled and the seat areas repaired, poppets replaced, etc. 3.repair or replace seal.
Pump will not build full pressure	1.Faulty pressure gauge. 2.Check for external leakage.	1.Calibrate gauge. 2.Seal faulty pipe fitting with pipe sealant.