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液壓氣動泵浦
操作說明

SPAQ

中文
English
Ver.21

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。

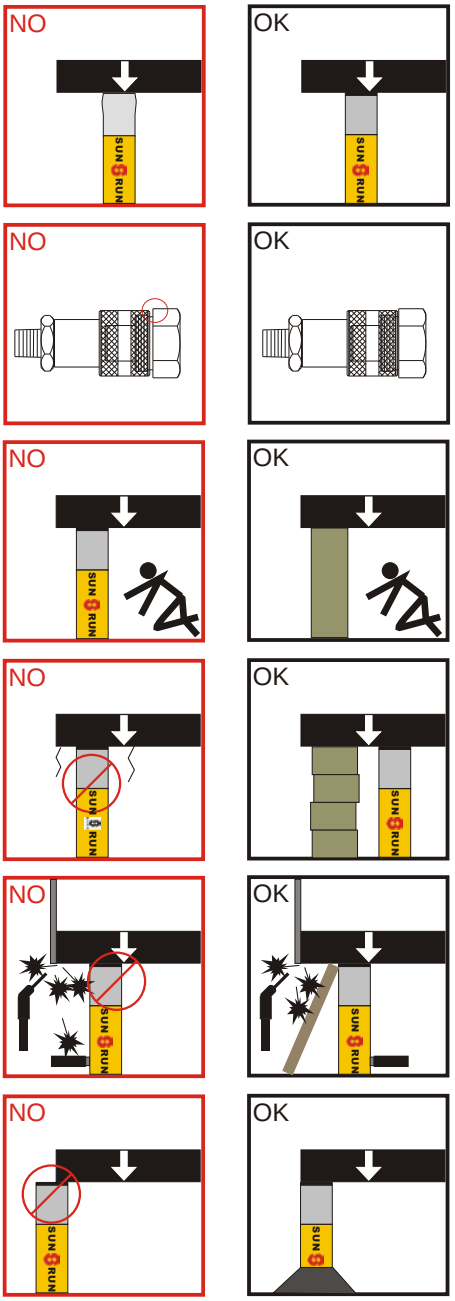
警告事項: 頂昇荷載前，請確保油壓裝置平穩
油壓缸必須放在平穩可支撐重物的基座上。若情況許可，可使用油壓缸基座來增加穩定性。千萬不可使用焊接或其他方法將油壓缸與所使用的基礎面(支撐座)連接一起。

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。

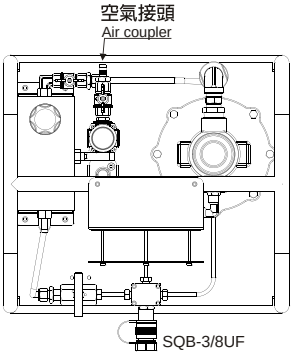
警告事項: 當零件出現裂痕或損壞時，應立即以**SUN RUN** 零件更換。正確標準的零件可防止人員或設備損傷。**SUN RUN**零件經特別設計可完全適用並適用產品標稱的額定荷載或壓力。

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

SPAQ 系列

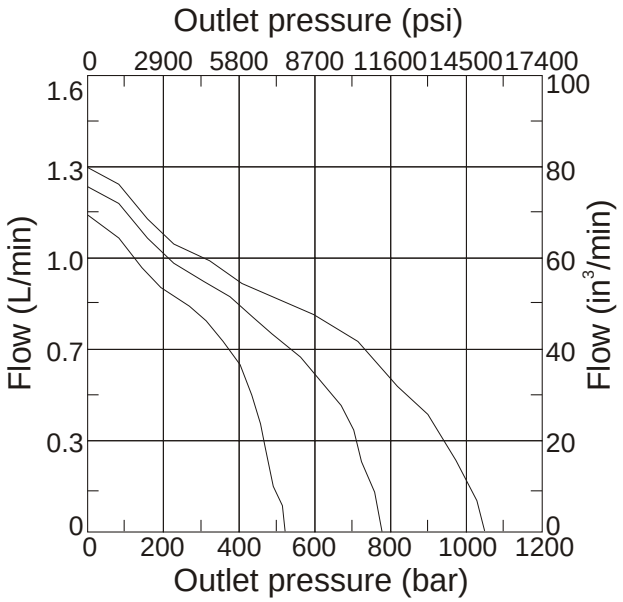


說 明 Description	型 號 Model Number	壓縮比 Compress Ratio	出油量 Output oil (cm³/per stroke)	工作壓力 Work press. (bar)	使用空壓 Air press. (kgf/cm²)	儲油量 Equipped reservoir (c.c)	重量 Weight (kg)	外型尺寸 Dimensions C	D	(mm)
不銹鋼框架 Steel Frame	**SPAQ-130-700F**	1:150	2.5	700	5~7	5600	25	1/2"PT	1/2"PT	400*400*420
不銹鋼框架 Steel Frame	**SPAQ-180-700F**	1:150	9.5	700	5~7	5600	28	1/2"PT	1/2"PT	500*500*520

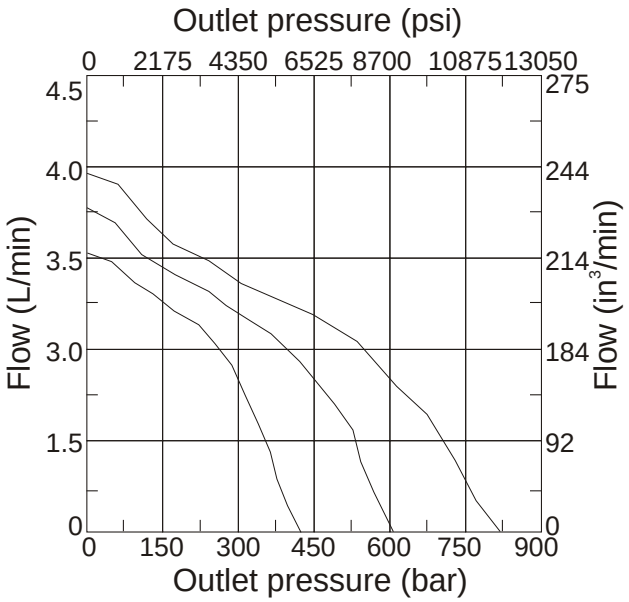
※油箱可以需求訂製　　※重量及外型尺寸依油箱改變
※Reservoir will be changed by user.　※Weight and dimension will be changed by reservoir alter.

型 號 Model Number	空氣活塞 Air piston (mm)	液壓活塞 Hydraulic piston (mm)	液壓活塞面積 Hydraulic piston area (cm²)	液壓活塞揚程 Hydraulic stroke (mm)	空壓對應油壓壓縮比 Approximate air pressure to hydraulic pressure ratio-static condition (bar) 1	2	3	4	5	6	7
SPAQ-130-700	130	10	0.79	31.8	21	86	193	343	535	771	1050
SPAQ-180-700	178	16	2.01	63.5	17	67	150	267	418	602	819

SPAQ-130-700 150:1 Ratio



SPAQ-180-700 117:1 Ratio



3. 操作

步驟1：
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。

步驟2：
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；泵浦將慢慢動作至於停止。

步驟3：
完全關閉洩壓閥後壓力開始產生，可藉由壓力錶得知泵浦壓力啟動。

步驟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停止空氣壓力調節器調整。

步驟5：
關閉開關閥泵浦即停止動作，並慢慢打開洩壓閥釋放壓力使壓力錶歸零。將球型調節器向下推回原點。

以上即完成泵浦操作程序

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OPERATING INSTRUCTIONS
HYDRAULIC AIR PUMP

SPAQ

English：E1~E4

中文
English
Ver.21

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.

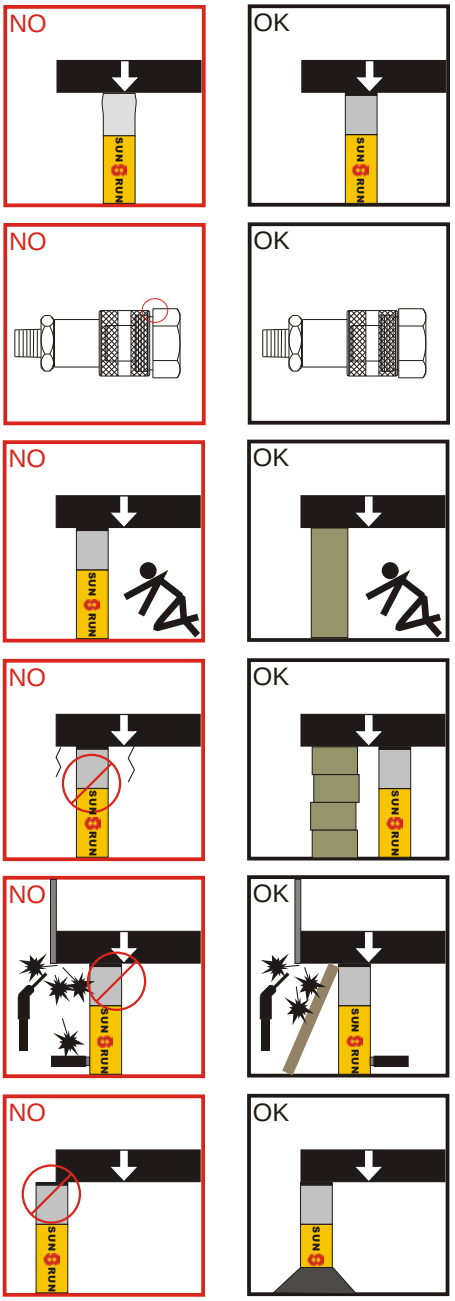
WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD. Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.

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.

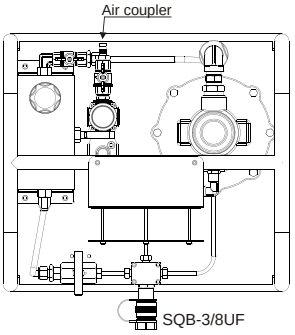
WARNING: Immediately replace worn or damaged parts with genuine SUN RUN parts. SUN RUN parts are designed to fit properly and withstand rated loads.

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.



2. Specification

SPAQ series

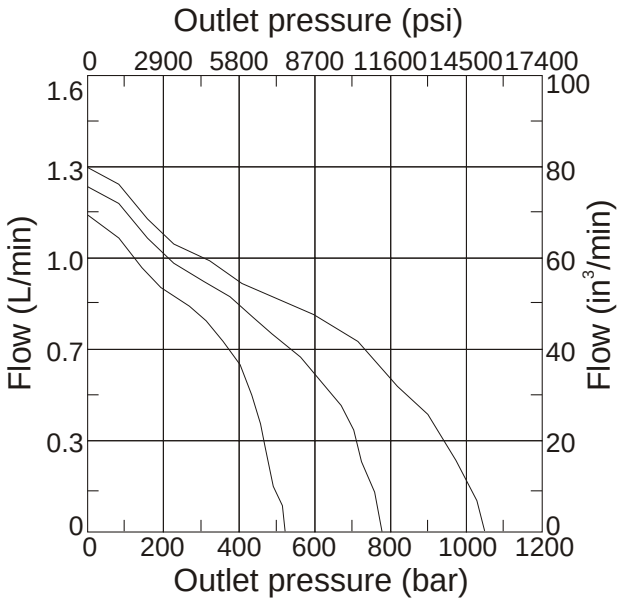


Description	Model Number	Compress Ratio	Output oil	Work press.	Air press.	Equipped reservoir	Weight	Dimensions		
			(cm^3/per stroke)	(bar)	(kgf/cm^2)	(c.c)	(kg)	C	D	(mm)
Steel Frame	**SPAQ-130-700**	1:150	2.5	700	5~7	5600	25	1/2"PT	1/2"PT	400*400*420
Steel Frame	**SPAQ-180-700**	1:150	9.5	700	5~7	5600	28	1/2"PT	1/2"PT	500*500*520

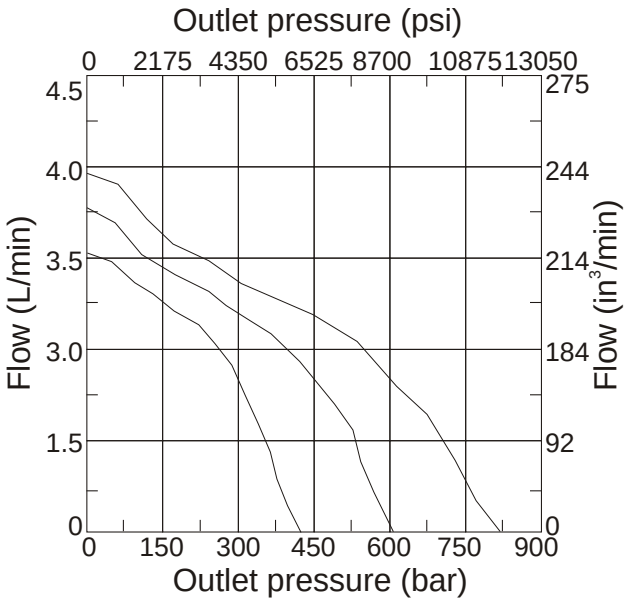
※Reservoir will be changed by user.
※Weight and dimension will be changed by reservoir alter.

Model Number	Air piston (mm)	Hydraulic piston (mm)	Hydraulic piston area (cm^2)	Hydraulic stroke (mm)	Approximate air pressure to hydraulic pressure ratio-static condition (bar)						
					1	2	3	4	5	6	7
SPAQ-130-700	130	10	0.79	31.8	21	86	193	343	535	771	1050
SPAQ-180-700	178	16	2.01	63.5	17	67	150	267	418	602	819

SPAQ-130-700 150:1 Ratio



SPAQ-180-700 117:1 Ratio



3.Operation

STEP1:
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.

STEP2:
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.

STEP3:
Fully close the pressure release valve, as this is done alight pressure will be generated on the pressure gauge and the pump will finally stall.

STEP4:
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.

STEP5:
Stop the pump by turning the off air input and open release valve slowly, the pump gauge will fall to zero.
Lock the air regulator by pushing down on to the "pressure adjust".

The pump unit is now ready for the tensioning operation.