



巨輪興股份有限公司

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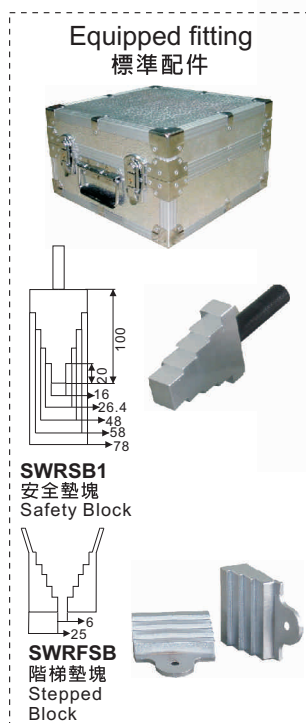
液(油)壓/機械式 法蘭撐開器 操作說明 **SWR**



SWR-40



SWR-401



SWRM-8

中文：C1~C6

中文
English
Ver.24

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。



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：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：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：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。



警告事項：請勿操作未潤滑的滑塊及**4**支滑動插銷。並使用較好的潤滑油。



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。



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。



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。



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。



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)



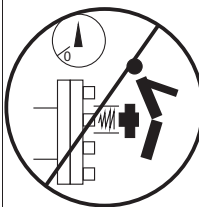
警告事項：除了墊塊，千萬不可以手指置於動作中的撐開器。



警告事項：撐開器的把手是用來當撐開器回縮時使使用者不直接握住撐開器。可使手指免於卡在二片夾片中。



危險事項：千萬不要使用榔頭或其他楔型斧撐開夾縫。



切勿在拉伸或拆卸過程中站立於螺栓同軸位置。如果螺栓出現問題、鬆脫或損壞的零件可能會射出，如此可能會導致嚴重的人員傷亡。非必要或壓力穩定情況下，才允許操作者到加壓拉伸器附近持續觀察壓力計。

2. 規範

SUN RUN SWR-40 為液(油)壓法蘭撐開器、SWRM-8為手動機械式法蘭撐開器而SWR-401為手動液(油)壓法蘭撐開器。採用一體成型概念設計。適用於撐出法蘭盤間隙可供清洗、維修法蘭面或更換墊片時使用。

SWR-40：由 SUN RUN RSC-102 單動液(油)壓缸為驅動體。需搭配使用 SUN RUN 手動泵浦。

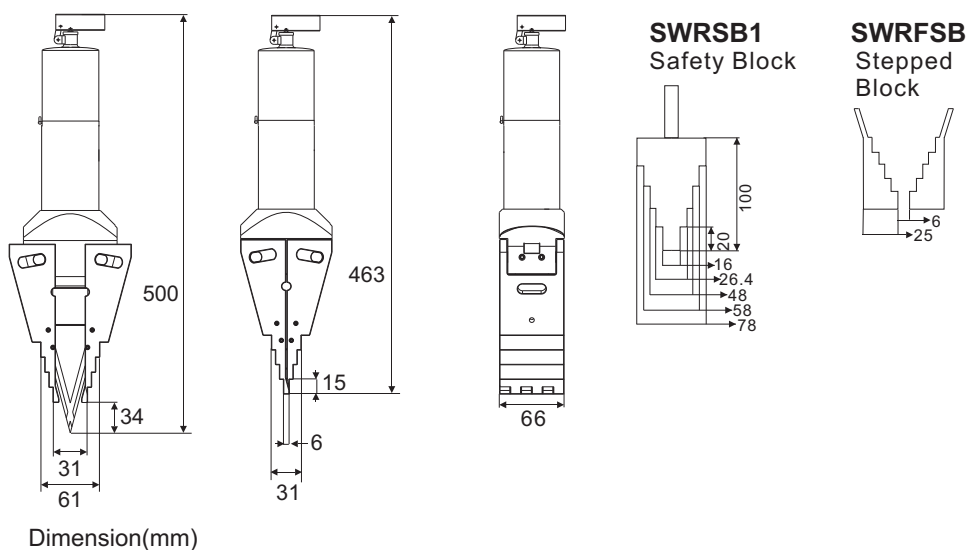
SWRM-8：需使用22mm棘輪扳手驅動。

SWR-401：內建油泵設計僅需手動操作。

適用範圍

法蘭撐開器適用於：管路及法蘭維修、清除彎管、接頭、更換油封及墊片及維修或更換閥門及控制設備。

Model No . 型號	Max.Spread Force 最大撐開力	Tip clearance 尖端空隙	Max.Spread 最大撐開	Oil Capacity 總油量	Weight 重量
SWR-401	15tons	6mm	81mm	152 cm ³	8.0kg

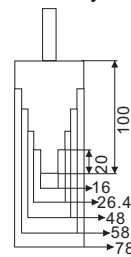


2. 規範

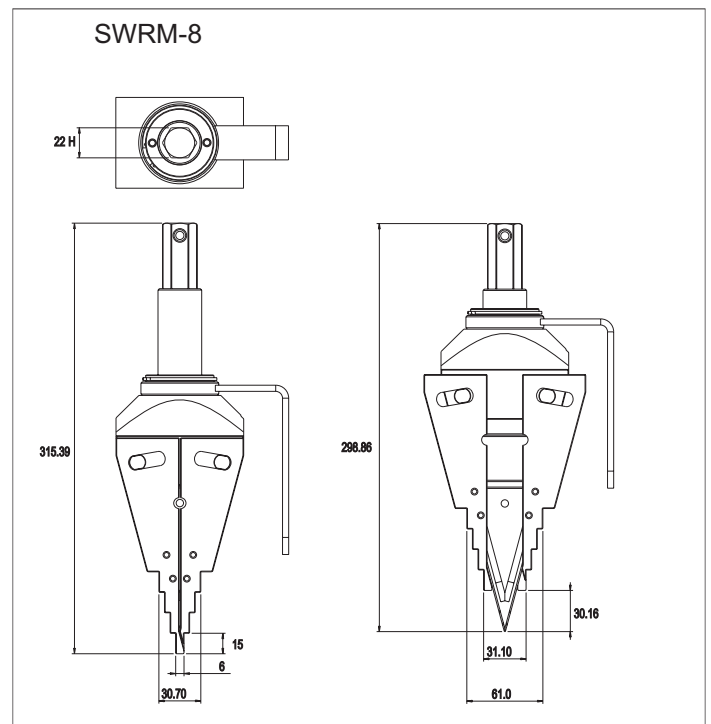
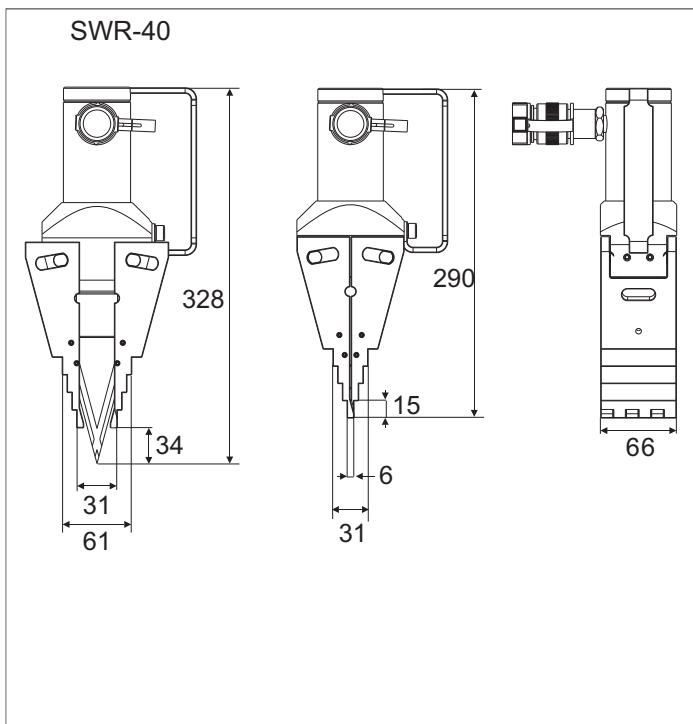
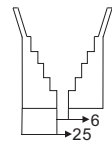
Model No . 型號	Max.Spread Force 最大撐開力	Tip clearance 尖端空隙	Max.Spread 最大撐開	Oil Capacity 總油量	Weight 重量
SWR-40	14ton(125kN)	6mm	81mm	78 cm ³	7.1kg
SWRM-8	8ton(72kN)	6mm	81mm	—	6.5kg

Dimension(mm)

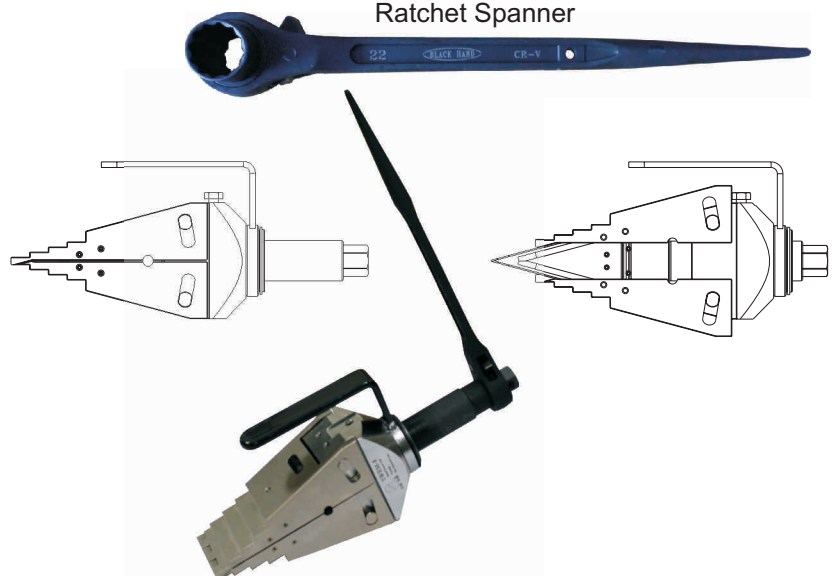
SWRSB1
Safety Block



SWRFSB
Stepped Block



SWRM8-C01
Ratchet Spanner



3. 操作

建議使用前後二個法蘭撐開器。如此撐開接縫力量較為平均。二個法蘭撐開器應以180度平均設置(如圖3-1)。

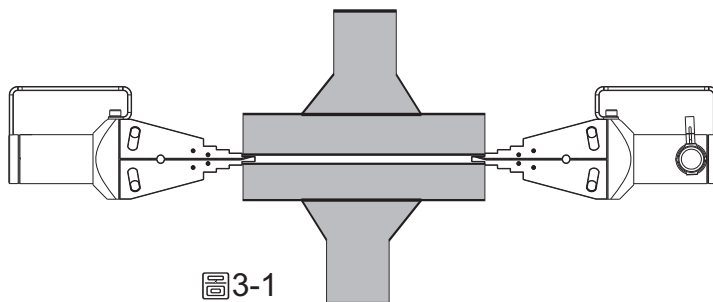


圖3-1

法蘭撐開器使用時應將第一階完全平整插入裂縫中，法蘭撐開時需完全緊貼於第二階下緣(如圖3-2)。

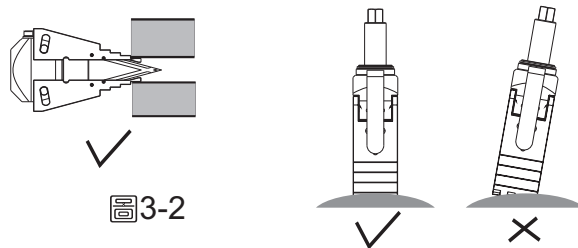


圖3-2

重要事項: 要確保被撐開物撐開時完全位於所在撐開器階面上 (如圖3-2 & 3-3). 所在位置至少 15mm.

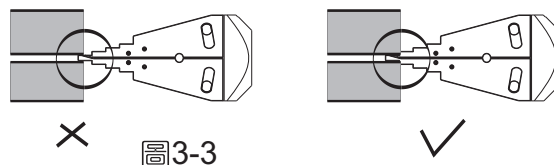


圖3-3

重要事項: 如需撐開更大空間時，不可使用第一階撐到最大，應插入安全墊塊 (圖3-4) 於縫隙內並於安全墊塊上釋放壓力。再重新插入撐開器利用第二、三階再度撐開更大距離。



圖3-4 安全墊塊

重要事項: 假如有需要更進一步撐開，可選擇另一新階面。

警告事項: 使用中的撐開器除了使用安全墊塊輔助支撐外，千萬不可用手指去代替墊塊。

警告事項: 撐開器的把手是用來當撐開器回縮時使用者不直接握住撐開器。可使手指免於卡在二片夾片中。

警告事項: 千萬不要使用榔頭或其他楔型斧撐開夾縫。

警告事項: 千萬不要使用無潤滑的撐開器和滑動插銷(編號4)。

4.階梯墊塊使用

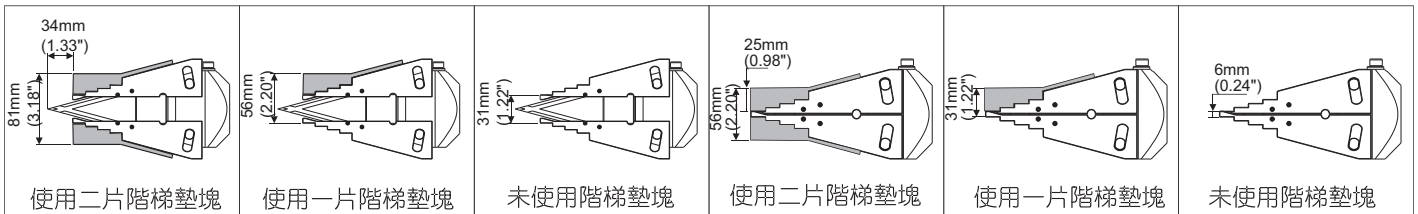
當撐開到最大時使用選配的階梯墊塊可增加61~81mm (如圖4-1 & 4-2).

使用階梯墊塊可有更多的間隙來符合工作所需。

使用階梯墊塊可減少撐開器前端穿刺破壞。



圖4-1 階梯墊塊



使用階梯墊塊一般最少15mm確保安全。

圖4-2

5.前後使用撐開器時

建議使用前後二組撐開器，以平均撐開力量。二組撐開器保持180度位置放置 (如圖3-1)。

當使用SUN RUN手動泵浦、一個多通閥及油管，二組撐開器可輕易地同時撐開。(如圖5-1).

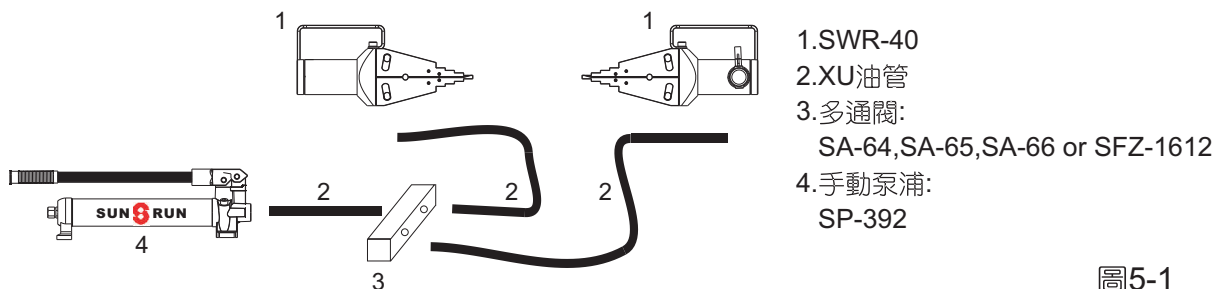


圖5-1

獨一無二的連結設計

獨特的齒狀設計，可提供更大的撐開力量，即使在6mm的最低高度也能輕易進入。

重要事項: 全程完全密合前一階與後一階的接合面。當撐開法蘭時，這樣才能保證使用安全。

警告事項: 千萬不可超荷使用。

警告事項: 不可使用其他輔助工具壓緊螺栓。

警告事項: SWRM-8 螺栓最大鎖緊力為203N.m (150 ft.lbs)。

只能使用SWRM-8配用的棘輪扳手。

6.潤滑 (圖6-1 & 8-1)

SWR-40, SWR-401 及 SWRM-8 當足夠潤滑時具耐久且可持續使用於高荷載狀態(請注意高壓油的使用)。需注意定期保養，爪部需經常性上油。

撐開器不使用時需呈閉合狀態。鴨嘴塊二邊螺栓孔需定期上油使撐開器使用時插銷滑動的靈活度。

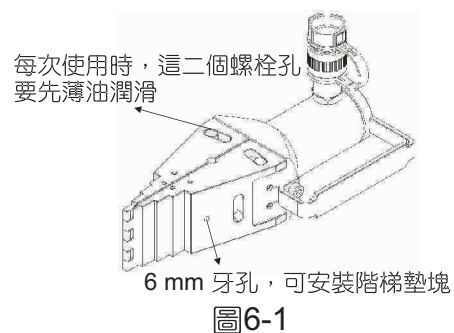
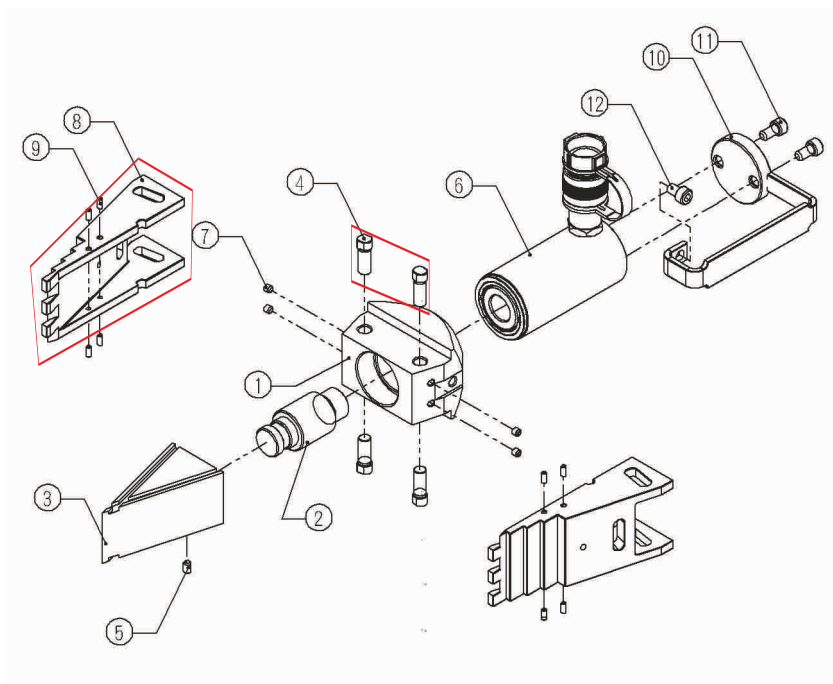


圖6-1



編號	品名	數量
1	本體(上螺帽)	1
2	油缸接頭	1
3	滑軌塊	1
4	插銷	4
5	SET螺栓	1
6	油壓缸	1
7	SET螺栓	4
8	鴨嘴塊	2
9	SET螺栓	8
10	把手	1
11	CAP螺栓	2
12	CAP螺栓	1

圖6-2



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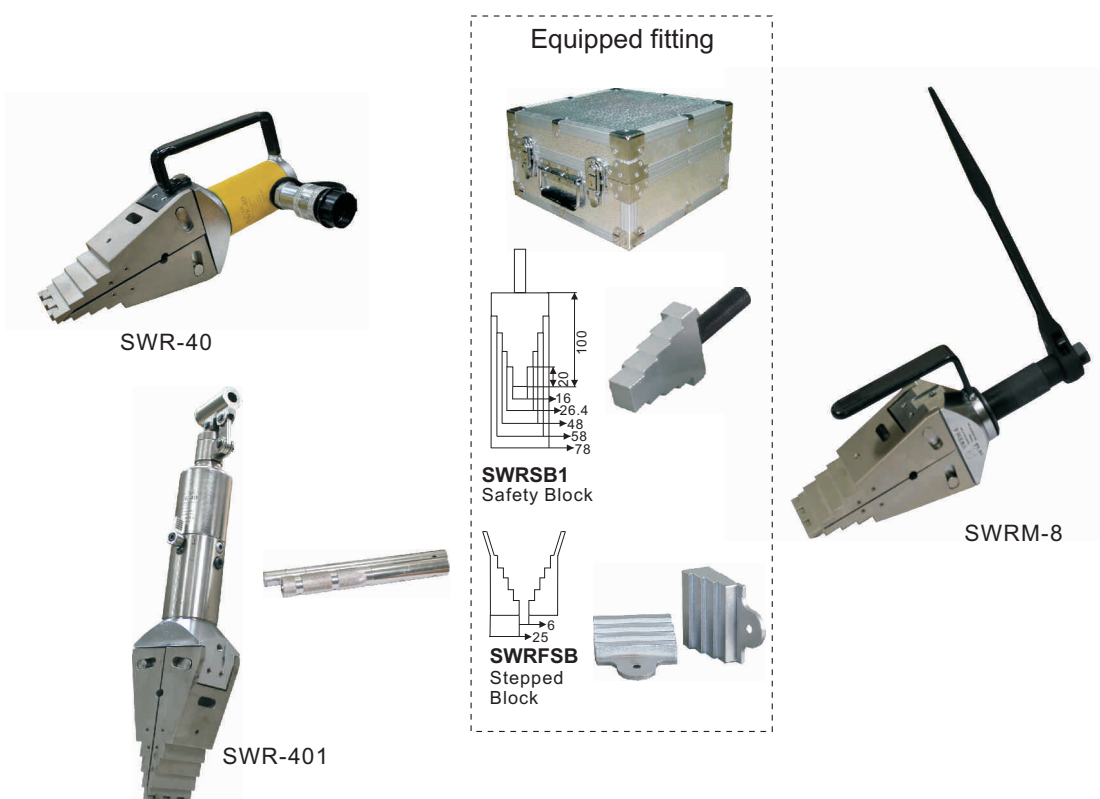
E-mail:sun.run@msa.hinet.net

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OPERATING INSTRUCTIONS HYDRAULIC/ MECHANICAL SPREADER

SWR



English : E1~E6

中文
English
Ver.24

1. SAFETY PRECAUTIONS



Failure 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.



WARNIGN : 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.



DANGER: To avoid personal injury keep hands and feet away from cylinder and workpiece during operation.



IMPORTANT : Minimize the risk of overloading. Use hydraulic gauges in each hydraulic system to indicate safe operating loads. It is your window to what is happening in the system.



WARNING : Do not overload equipment. Overloading cause equipment failure and possible personal injury.



CAUTION : 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.



CAUTION: Don't operate the equipment without lubricating the wedge and the 4 slide pins. Use high quality grease.



CAUTION: Avoid sharp bends and kinks that will cause severe back-up pressure in hoses. Bends and kinks lead to premature hose failure.



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



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.



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



IMPORTANT: Do not lift hydraulic equipment by the hoses or couplers. Use the carrying handle or other means of safe transport.



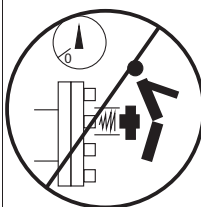
WARNING: Never place fingers in a joint held by activated wedge unless a safety block is located into the joint.



CAUTION: The handle of the wedge is there to stop operators holding spread plates as the wedge is retracted. This will stop fingers becoming jammed between plates.



CAUTION: Never hammer or force wedge to access gap.



Never stand in-line with the bolt axis while tensioning or de-tensioning is in progress. If the bolt should fail, serious personal injury or death could result if loose or broken parts become projectiles. All personnel must be aware of this potential hazard at all times.

2. PRODUCT DESCRIPTION

The SUN RUN wedge spreader SWR-40 is a hydraulic operated tool, SWRM-8 is a manual mechanical spreader and SWR-401 is a manual hydraulic spreader. It's wedge spreaders use integrated wedge concept. They are used to spread flanges in order to create space for cleaning and repairing flange surfaces and gasket replacement.

SWR-40: is actuated by an SUN RUN RSC-102 single acting cylinder.

SWR-40 must be powered by SUN RUN hand pump.

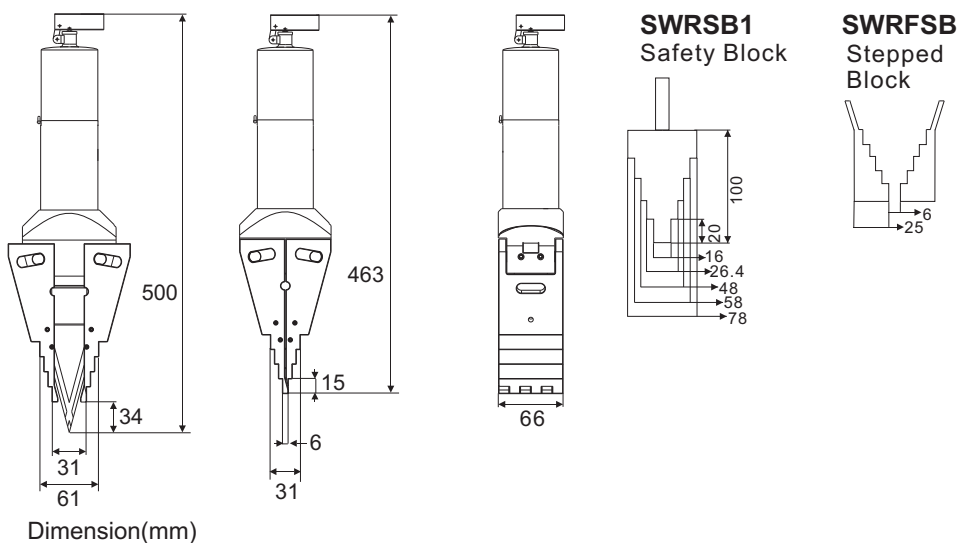
SWRM-8: need to be drive by a 22mm ratchet spanner.

SWR-401: be designed with pump and manual operated by itself.

Applications

Wedge spreaders can be used for: pipe and flange repair, removing of elbows, couplers, gasket and metal seals replacement, maintenance/ replacement of valve and control equipment.

Model No .	Max.Spread Force	Tip clearance	Max.Spread	Oil Capacity	Weight
SWR-401	15tons	6mm	81mm	152 cm ³	8.0kg

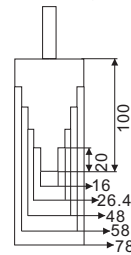


2. PRODUCT DESCRIPTION

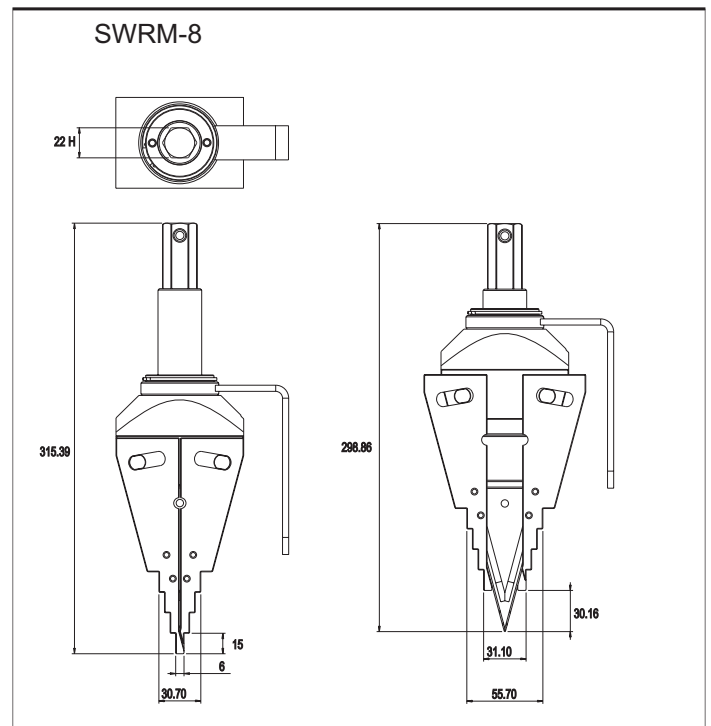
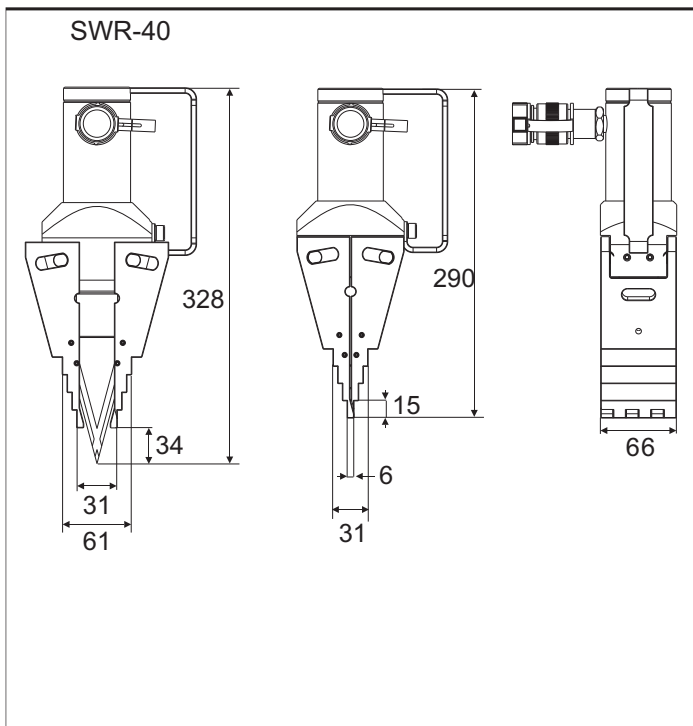
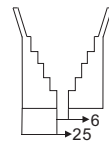
Model No .	Max.Spread Force	Tip clearance	Max.Spread	Oil Capacity	Weight
SWR-40	14ton(125kN)	6mm	81mm	78 cm ³	7.1kg
SWRM-8	8ton(72kN)	6mm	81mm	-	6.5kg

Dimension(mm)

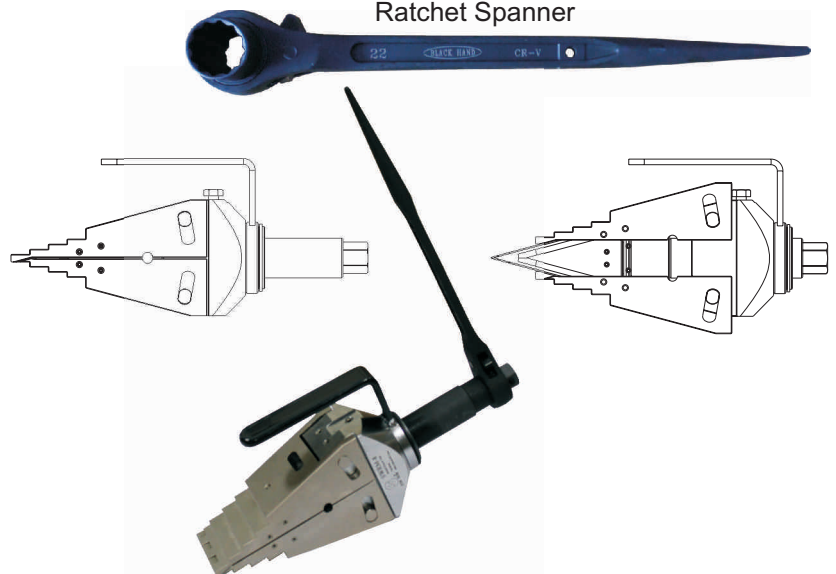
SWRSB1
Safety Block



SWRFSB
Stepped Block



SWRM8-C01
Ratchet Spanner



3. OPERATING INSTRUCTIONS

It is recommended that two wedges be used In tandem. This will give an even spread to the joint. The wedges should be set at 180° apart (see fig3-1).

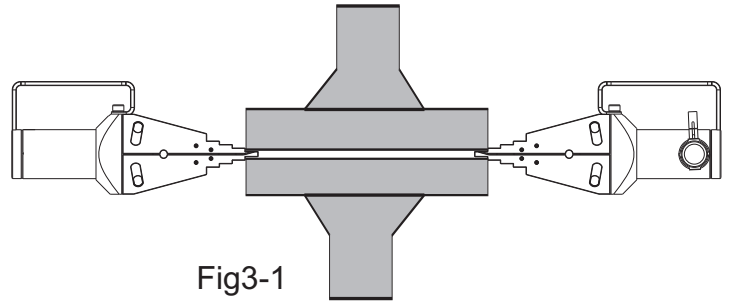


Fig3-1

The wedge should be used only if the full step area is located into the gap, and the object requiring spreading is in contact with the heel of the next step (see fig3-2).

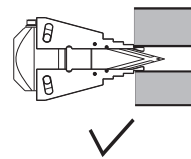
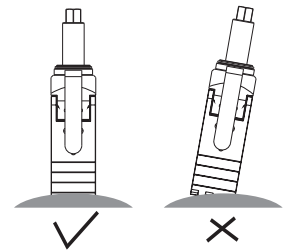


Fig3-2



IMPORTANT: Ensure wedge is fully located on the step selected to spread (see fig3-2 & 3-3). Minimum hold should be 15mm.

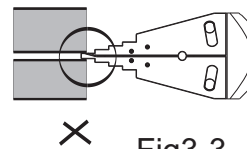
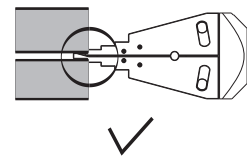


Fig3-3



IMPORTANT: The safety block (see fig3-4) may be inserted into the joint and the pressure released onto the block.



IMPORTANT: A fresh hold on a new step can then be chosen to open the joint further if required.

IMPORTANT: The operator must ensure that the wedge and the 4 slide pins are lubricated each and every time the equipment is used. This will give maximum efficiency and prolong the working life of the wedge.

Warning: Never place fingers in a joint held by activated wedge unless a safety block is located into the joint.

CAUTION: The handle of the wedge is there to stop operators holding spread plates as the wedge is retracted. This will stop fingers becoming jammed between plates.

CAUTION: Never hammer or force wedge to access gap.

CAUTION: Don't operate the equipment without lubricating the wedge and the 4 slide pins.

4. USE OF STEPPED BLOCKS

The maximum opening of the wedge spreaders can be increased from 61 to 81 mm when used in combination with the optional stepped blocks (see fig4-1 and 4-2).

The stepped blocks give more access to replace ring joints, metal seals and cleaning of flange surfaces. The use of stepped blocks reduce the amount of penetration of the wedge point into the joint.

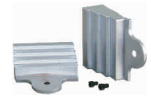


Fig4-1 Stepped Block

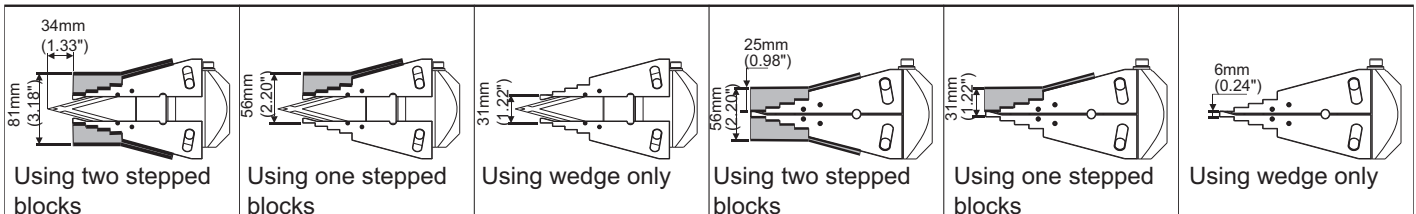


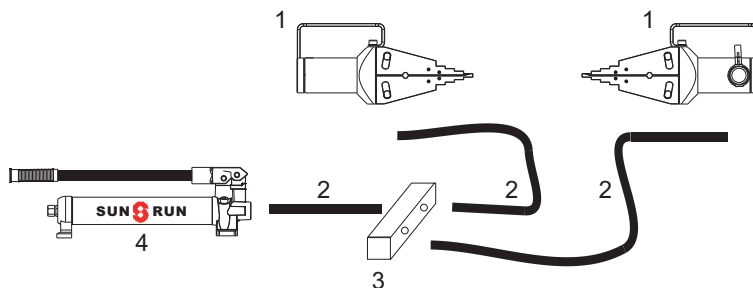
Fig4-2

When using stepped blocks ensure a hold of 15mm minimum is obtained prior to spreading.

5. WEDGE USED IN TANDEM

It is recommended that two wedge be used in tandem. This will give an even spread to the joint. The wedge should be set at 180° apart (see Fig3-1).

Two hydraulic wedge spreaders can easily be used simultaneously when used in combination with SUN RUN hand pump, a split-flow manifold and hydraulic hose (see fig5-1).



- 1.SWR-40
- 2.XU series Hose
- 3.Manifolds:
SA-64,SA-65,SA-66 or SFZ-1612
- 4.Hand pump:
SP-392

Fig5-1

Unique interlockDesign

The unique shape and design of the teeth of the wedge accommodates high separating force, even at low-height of 6 mm for easy access.

IMPORTANT: Always engage fully to the heel of the step on the wedges. This ensures full grip when separating flanges.

WARNING: Do not exceed maximum force rating.

CAUTION: Do not use impact tool on screw bolt.

CAUTION: Maximum force on screw bolt of SWRM-8 is 203N.m (150 ft.lbs).

Use only ratchet spanner supplied with SWRM-8.

6.LUBRICATION (see fig6-1 & 6-2)

The SWR-40, SWR-401 and SWRM-8 will stand up to continuous use and high loading as long as it is lubricated each time it is used. (Please note that any high pressure grease can be used) To properly maintain the tool it is important to grease the jaw regularly.

The Wedge must be in the closed position. Grease should also be smeared into the Slots positioned at the side of each jaw to allow the pins to slide freely as a load is applied to the Wedge.

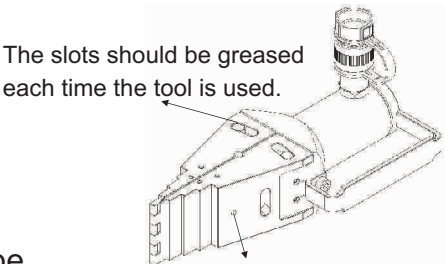
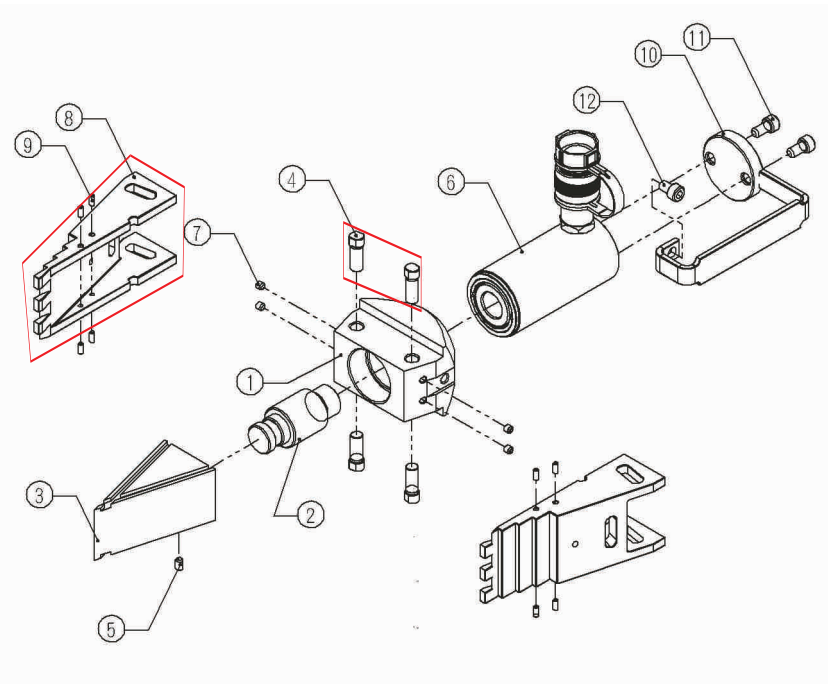


Fig6-1



Item	Product	Q'ty
1	Body	1
2	connector	1
3	wedge	1
4	pins	4
5	Grub screw	1
6	Cylinder	1
7	Grub screw	4
8	Jaw	2
9	Split pin	8
10	Handle	1
11	Base screw	2
12	hand screw	1

Fig6-2