

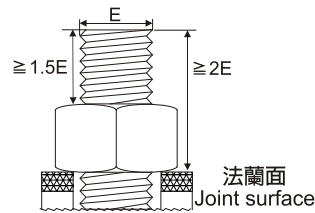
剖面圖示 sectional drawing

扭力順序

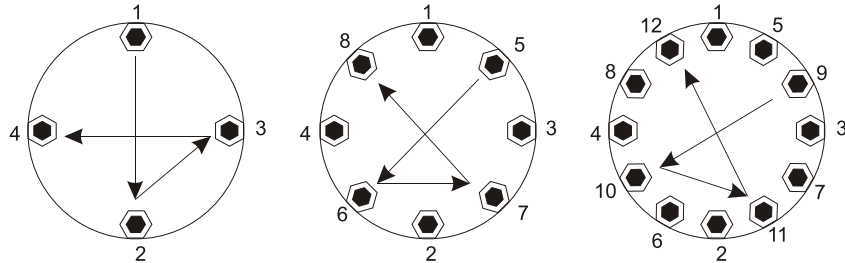
一般使用一個扳手鎖一個螺栓，這樣容易造成“單點負荷”和“荷載分散”。為避免這些情況發生建議依下列圖示使用：
Torque Procedure

When torque it is common to tighten only one bolt at a time, this can result in Point Loading and Load Scatter. To avoid this, torque is applied in stages following a prescribed pattern:

製造者所提供的使用壓力和扭力值範圍即最大安全限度。最佳的操作範圍即此數值的80%。
Manufacturer's rating of pressure and torque are maximum safe limits. Good practice encourages using only 80% of these ratings!



螺栓最少突出1.5個螺栓直徑高度
Min. protrusion 1.5 x Bolt Diameter



- 步驟1：用螺絲扳手將螺帽鎖緊至法蘭面並確認螺栓至少突出直徑1.5倍，以供螺栓和拉伸器咬合。
- 步驟2：如上圖所示依序鎖緊1/3的螺栓。
- 步驟3：再依圖示鎖緊剩下的2/3螺栓。
- 步驟4：最後如上圖最後鎖緊剩下所有的螺栓。
- 步驟5：所有螺栓運行方式皆以順時針方向來操作。

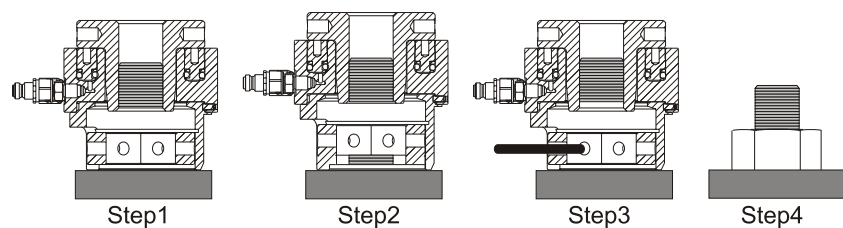
- Step1: Spanner tight the nut firmly seated against the joint surface and check minimum protruding length 1.5 bolt diameter extend above nut to engage the tensioner.
- Step2: Tighten each bolt to one-third of the final required torque following the pattern as shown above.
- Step3: Increase the torque to two-thirds following the pattern shown above.
- Step4: Increase the torque to full torque following the pattern shown above.
- Step5: Perform one final pass on each bolt working clockwise from bolt 1, at the full final torque.

拉伸操作

並聯的螺栓允許同步拉伸工具透過一個高壓油管和單泵系統依序連接。如此可確保每座拉伸器都是精準相同的荷載並提供相對的法蘭面均勻相同的夾持力。

Tension Operation

Tensioning permits the simultaneous tightening of multiple bolts; the tools are connected in sequence via a high-pressure hose assembly to a single pump unit. This ensure tool develops the exact same load and provides a uniform clamping force across the joint.



- 步驟1：先將拉伸器安裝在螺栓上。
- 步驟2：操作適當的油壓。
- 步驟3：將螺帽轉下接近法蘭節表面。
- 步驟4：洩壓並移除油壓工具。

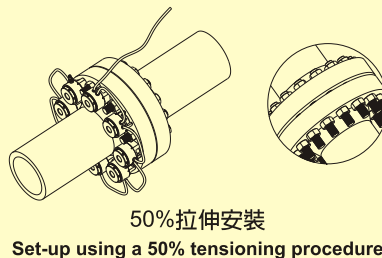
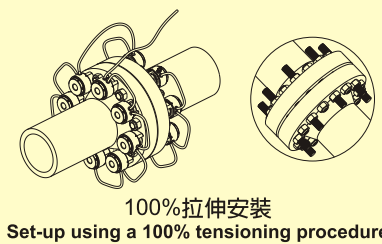
- Step1: The bolt Tensioner is fitted over the stud.
- Step2: Hydraulic pressure is applied to the tensioner which then stretches the stud.
- Step3: The stud's nut is wound down against the joint face.
- Step4: Pressure is released and the tool removed.

小於100%的拉伸

不是所有情況都適合使用同步方式連接；如此一來至少需使用兩階段壓力。當已拉伸的螺栓再次被鎖緊時，螺栓的荷載力會減少。

Less than 100% Tensioning

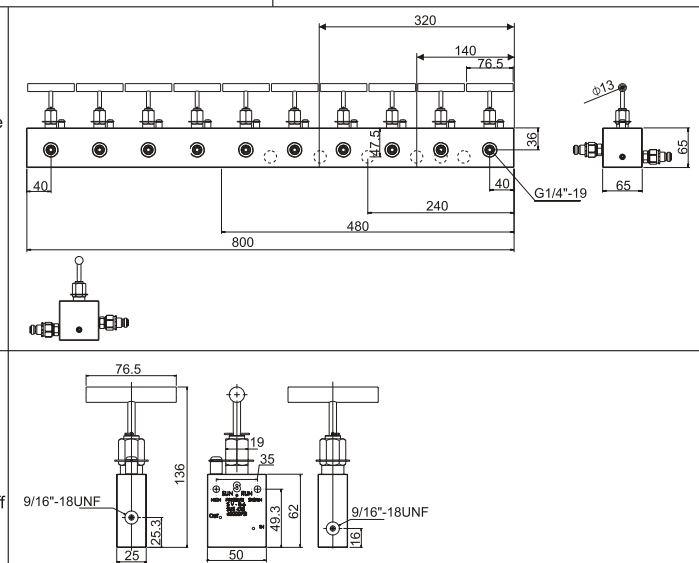
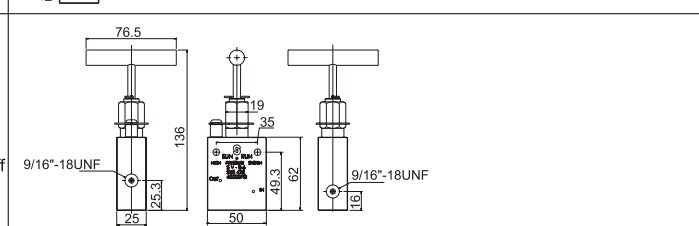
Not all applications allow for the simultaneous fit of a tensioning device on each bolt, in these cases at least two tensioning pressure are applied. This is to account for a load loss in those bolts already tensioned as the next sets are tightened.

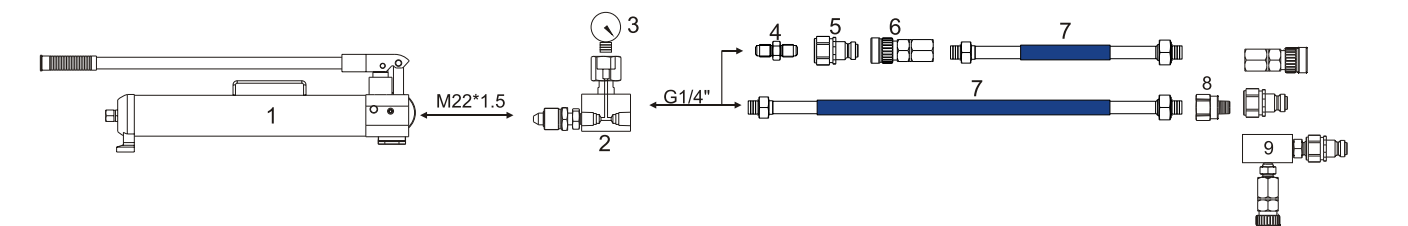


編號 Item	品名 Product	型號 Model	規範&尺寸 Description & Dimension (mm)				
			A Male	B Female	C	D	
1	手動泵浦 Hand Pump	請參閱頁109 (see page 109)	—	—	—	—	
2	錶接頭 Gauge Adapter	GSAH-M22A	M22*1.5	G1/4"	G1/2"	—	最大工作壓力：3000 bar Max. W.P. : 3000 bar
3	充油式壓力錶 Gauge	XHO4LM4G1B XHO4LM4G1.6B XHO4LM4G2.5B	G1/2"	—	100	30	範圍 Press. Range 1000bar 1600bar 2500bar
4	立布 Nipple 最大工作壓力: Max. W.P. : 3000bar	兩端尺寸 Dimension					
			End one		End two		
		SBTN-G146G146I		G1/4"外螺紋 60°內錐面		G1/4"外螺紋 60°內錐面 G1/4" male thread with 60° internal cone	
		SBTN-G146N14M		NPT 1/4"外螺紋		NPT 1/4"外螺紋 NPT 1/4" male thread	
		SBTN-G146R14M		R1/4"外螺紋		R1/4"外螺紋 R1/4" male thread	
		SBTN-G146N38M		NPT 3/8" 外螺紋		NPT 3/8" 外螺紋 NPT 3/8" male thread	
		SBTN-G146R38M		R 3/8" 外螺紋		R 3/8" 外螺紋 R 3/8" male thread	
		SBTN-G146G1412E		G1/4" 外螺紋 120°外錐面		G1/4" 外螺紋 120°外錐面 G1/4" male thread with 120° external cone	
		SBTN-G1469166E		9/16"-18UNF 外螺紋 60°外錐面		9/16"-18UNF 外螺紋 60°外錐面 9/16"-18UNF male thread with 60° external cone	
		SBTN-G146346E		3/4"-16UNF 外螺紋 60°外錐面		3/4"-16UNF 外螺紋 60°外錐面 3/4"-16UNF male thread with 60° external cone	
SBTN-G146M166E		M16*1.5 外螺紋 60°外錐面		M16*1.5 外螺紋 60°外錐面 M16*1.5 male thread with 60° external cone			
SBTN-G146M226E		G1/4" male thread with 60° internal cone		M22*1.5 外螺紋 60°外錐面 M22*1.5 male thread with 60° external cone			

編號 Item	品名 Product	型號 Model	兩端尺寸 Dimension (mm)	
			End one	End two
4	立布 Nipple 新、舊品號變更表 Old model change to new model 舊 Old model SBT-14BSPMM SBT-14BSPMMT SBT-916-14BSPMM 新 New model SBTN-G1412G1412E SBTN-G14129166I SBTN-G14129166E	SBTN-G14129166I		G1/4" 外螺紋 120° 外錐面 9/16"-18UNF 外螺紋 60° 內錐面 9/16"-18UNF male thread with 60° internal cone
		SBTN-G1412G1412E		G1/4" 外螺紋 120° 外錐面 G1/4" male thread with 120° external cone
		SBTN-G1412346E		3/4"-16UNF 外螺紋 60° 外錐面 3/4"-16UNF male thread with 60° external cone
		SBTN-G1412M166E		M16*1.5 外螺紋 60° 外錐面 M16*1.5 male thread with 60° external cone
		SBTN-G1412M226E		M22*1.5 外螺紋 60° 外錐面 M22*1.5 male thread with 60° external cone
		SBTN-G14129166E		G1/4" male thread with 120° external cone 9/16"-18UNF 外螺紋 60° 外錐面 9/16"-18UNF male thread with 60° external cone
		SBTN-9166M166E		9/16"-18UNF 外螺紋 60° 外錐面 9/16"-18UNF male thread with 60° external cone M16*1.5 外螺紋 60° 外錐面 M16*1.5 male thread with 60° external cone
		SBTN-M16M166E		M16*1.5 外螺紋 60° 外錐面 M16*1.5 male thread with 60° external cone M16*1.5 外螺紋 60° 外錐面 M16*1.5 male thread with 60° external cone
		SBTN-9166IM166E		9/16"-18UNF 外螺紋 60° 內錐面 9/16"-18UNF male thread with 60° internal cone M16*1.5 外螺紋 60° 外錐面 M16*1.5 male thread with 60° external cone
		SBTN-G18M		G1/8" 外全牙 G1/8" male, fully thread
SBTN-G14M		G1/4" 外全牙 G1/4" male, fully thread		
SBTN-G1412		G1/4" 外螺紋 120° 外錐面 G1/4" male thread with 120° external cone		

編號 Item	品名 Product	型號 Model	規範&尺寸 Description & Dimension (mm)						
			Connect	Length	Diam.	Hexagon key handle	Wgt. (g)		Rec. Torque (N.m)
5	快速立布 Quick Nipple	SBT-CE116-M	G1/4"	38.0	25.4	22	60	40-50	材質：高強度、鍍鋅鋼 最大工作壓：150MPa 最小爆破壓：300MPa 流量(0.4Mpa壓力)：6.0L/min Material : Hardened, zinc chromate plated steel Max. W.P : 150MPa Min. B.P : 300MPa Flow at 0.4MPa pressure : 6.0L/min
		SBT-CE125-M	G1/4"	38.0	25.4	22	60	40-50	材質：高強度、鍍鋅鋼 最大工作壓：200MPa 最小爆破壓：400MPa 流量(0.4Mpa壓力)：5.8L/min Material : Hardened, zinc chromate plated steel Max. W.P : 200MPa Min. B.P : 400MPa Flow at 0.4MPa pressure : 5.8L/min
		SBT-CE135-M	M16*1.5	55.3	25.0	22	125	40-50	材質：高強鋼、染黑處理 最大工作壓：300MPa 最小爆破壓：600MPa 流量(0.4Mpa壓力)：4.6L/min Material : Hardened black finish stell Max. W.P : 300MPa Min. B.P : 600MPa Flow at 0.4MPa pressure : 4.6L/min
		SQB-4H	M22*1.5	75.0	39.0		400	40-50	材質：高強鋼、鍍鋅處理 最大工作壓：200MPa 最小爆破壓：400MPa 流量(0.4Mpa壓力)：5.8L/min Material : Hardened, nickel chromate plated steel Max. W.P : 200MPa Min. B.P : 400MPa Flow at 0.4MPa pressure : 5.8L/min
6	母接頭 Coupler	SBT-CE116-F	G1/4"	61.3	28.0	24	165	40-50	材質：高強度、鍍鋅鋼 最大工作壓：150MPa 最小爆破壓：300MPa 流量(0.4Mpa壓力)：6.0L/min Material : Hardened, zinc chromate plated steel Max. W.P : 150MPa Min. B.P : 300MPa Flow at 0.4MPa pressure : 6.0L/min
		SBT-CE125-F	G1/4"	64.3	30.0	24	210	40-50	材質：高強度、鍍鋅鋼 最大工作壓：200MPa 最小爆破壓：400MPa 流量(0.4Mpa壓力)：5.8L/min Material : Hardened, zinc chromate plated steel Max. W.P : 200MPa Min. B.P : 400MPa Flow at 0.4MPa pressure : 5.8L/min
		SBT-CE135-F	M16*1.5	64.0	30.0	22	210	40-50	材質：高強鋼、染黑處理 最大工作壓：300MPa 最小爆破壓：600MPa 流量(0.4Mpa壓力)：4.6L/min Material : Hardened black finish stell Max. W.P : 300MPa Min. B.P : 600MPa Flow at 0.4MPa pressure : 4.6L/min
		SQB-4R	M22*1.5	80.0	43.0	22	350	40-50	材質：高強度、鍍鋅處理 最大工作壓：200MPa 最小爆破壓：400MPa 流量(0.4Mpa壓力)：5.8L/min Material : Hardened, nickel chromate plated steel Max. W.P : 200MPa Min. B.P : 400MPa Flow at 0.4MPa pressure : 5.8L/min

編號 Item	品名 Product	型號 Model	規範&尺寸 Description & Dimension (mm)		
7	油管 Hose	HSBT-5/4	兩端尺寸 End one End two		
			G1/4" Male 公	G1/4" Male 公	
			4層高張力金屬網 內徑:5.0mm, 外徑:11.2mm 工作壓力:1800bar, 爆破壓力:4500bar 最小彎曲半徑:150mm 重量:0.26 kg/m 4layers of high-tensile steel wire ID:5.0mm, OD:11.2mm W.P.:1800bar, B.P.:4500bar Min. Bend: 150mm Wgt.:0.26 kg/m		
HSBT-5/6	G1/4" Male 公	G1/4" Male 公	6層高張力金屬網 內徑:4.8mm, 外徑:13.2mm 工作壓力:2500bar, 爆破壓力:6250bar 最小彎曲半徑:200mm 重量:0.45 kg/m 6layers of high-tensile steel wire ID:4.8mm, OD:13.2mm W.P.:2500bar, B.P.:6250bar Min. Bend: 200mm Wgt.:0.45 kg/m		
HSBT-4/8	G1/4" Male 公	G1/4" Male 公	8層高張力金屬網 內徑:4.0mm, 外徑:12.8mm 工作壓力:3200bar, 爆破壓力:8000bar 最小彎曲半徑:175mm 重量:0.54 kg/m 8layers of high-tensile steel wire ID:4.0mm, OD:12.8mm W.P.:3200bar, B.P.:8000bar Min. Bend: 175mm Wgt.:0.54 kg/m		
8	轉接頭 Adapter	SBTA-M16G14	公端 Male Thread	母端 Female Connect	
			M16*1.5	G1/4"	
9	T型墊塊/十字墊塊 Tee Block / Cross Block	SBT-14BSP3W	3孔G1/4"三通閥 3-G1/4"-Female port	尺寸Dimension (mm) 50 X 38 (L X W)	最大工作壓力 : 3000 bar Max. W.P: 3000bar
		SBT-14BSP4W	4孔G1/4"四通閥 4-G1/4"-Female port	尺寸Dimension (mm) 50 X 50 (L X W)	最大工作壓力 : 3000 bar Max. W.P: 3000bar
10	華司 Washer	SBT-XW14	外徑 : 20.57mm 內徑 : 13.74mm 厚度 : 2mm(以黑色尼龍為準) O.D : 20.57mm, I.D : 13.74mm Depth : 2mm(measure by black nylon)	最大工作壓力 : 3000 bar Max. W.P : 3000 bar 材質 : 內圈尼龍, 外圈S45C鋼表面鍍鋅 Material : Nylon inside, Outer zinc plated S45C steel.	
		SBT-XW38	外徑 : 23.8mm 內徑 : 17.28mm 厚度 : 2mm(以黑色尼龍為準) O.D : 23.8mm, I.D : 17.28mm Depth : 2mm(measure by black nylon)		
		SBT-XWM12	外徑 : 28.58mm 內徑 : 21.54mm 厚度 : 2.5mm(以黑色尼龍為準) O.D : 28.58mm, I.D : 21.54mm Depth : 2.5mm(measure by black nylon)		
11	手控分流閥 Premounted Manifold	SBT-V82	其功能為分流閥, 可同步控制2-6個單動油壓缸, 所有通孔堵塞為 G1/4"-19 最大工作壓力 : 2500 bar		
		SBT-V83	手控雙分流閥 3 control bars		
		SBT-V84	手控雙分流閥 4 control bars		
		SBT-V86	手控雙分流閥 6 control bars		
		SBT-V810	手控雙分流閥 10 control bars		
12	針閥 Needle Valve	SV-86	9/16"-18UNF母接頭 可控制油壓, 亦可當作暫時維持的關閉閥 最大工作壓力 : 60000psi/ 4135 bar 9/16"-18UNF female ports. To control hydraulic speed and also be used as shut-off valve for temporary holding. Max. W.P: 60000psi/ 4135bar		




SULF 超高壓液壓單動, 超薄型油壓缸

- 扁平設計適用於窄小空間作業需求。
- 重力回縮。
- 主軸頂部具可傾斜3度傾斜墊塊。
- 揚程超載時, 具洩油警告裝置。

High Pressure Single-Acting, Low Height, Flat Cylinder

- ※ Compact and flat design for use where in a narrow space.
- ※ Single-Acting, load return.
- ※ The piston can be used up to 3 deg of the inclination.
- ※ When the piston is protruded over stroke, the oil leaks.

SULF Series



Capacity:
100-300 ton

Stroke:
10-20mm

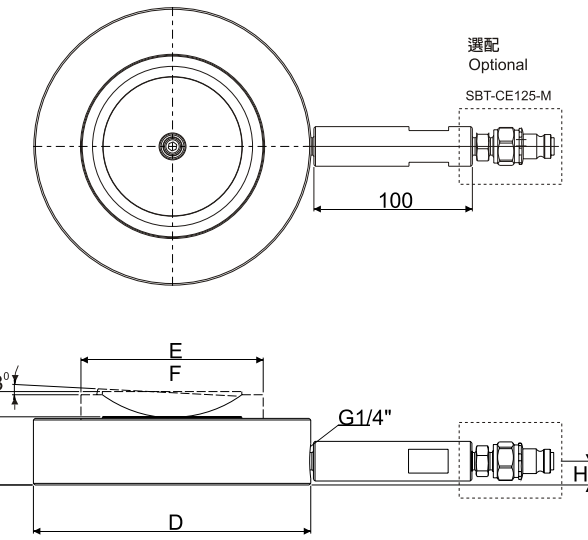
Maximum Operating Pressure:
2000 bar



SULF100-10



SULF150-15



型號 Model Number	能力 Cylinder Capacity (kN)	揚程 Stroke (mm)	受壓面積 Eff. Area (cm ²)	總油量 Oil capacity (cm ³)	本身高 Collapsed Height A(mm)	伸長總高 Extended Height B (mm)	外徑 O.D D(mm)	內徑 Cylinder Bore Diam. E (mm)	主軸直徑 Plunger Diam. F(mm)	底部油孔位置 Base to Adv. Port H(mm)	重量 Weight (kg)
SULF100-10	1000	10	50.2	50	41	51	120	80	80	17	3.5
SULF100-15		15	50.2	75	46	61	120	80	80	17	3.9
SULF150-10	1500	10	78.5	79	41	51	150	100	100	17	5.7
SULF150-15		15	78.5	118	46	61	150	100	100	17	6.1
SULF200-10	2000	10	103.8	104	43	53	175	115	115	19	8.1
SULF200-15		15	103.8	156	48	63	175	115	115	19	8.5
SULF200-20		20	103.8	208	53	73	175	115	115	19	9.0
SULF300-10	3000	10	153.9	154	47	57	210	140	140	23	12.8
SULF300-15		15	153.9	231	52	67	210	140	140	23	13.2