Subzero
The Tube Expander Company...

SWT SERIES

The SWT SERIES hydraulic flange spreaders is ideally suitable for spreading wedging and piercing operation in wide variety of industrial application. The compact low weight, spring assisted piston retract design offers the powerful 14 Tons spreading capacity. The low height jaw tips can easily fit within 6.0 mm gap and can provide total spreading distance of 84mm in 5 operations, using the step block provided with the tool.

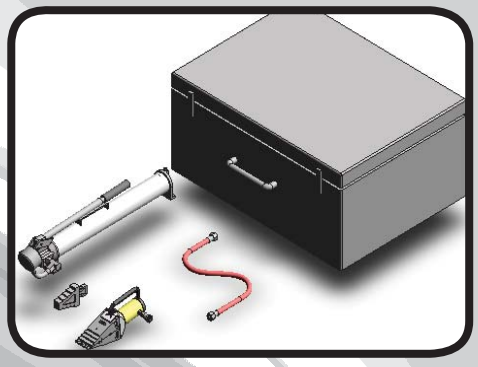
It is available in capacity of 14T with variance of STD KIT & MAXI KIT

SWT-HY14 / STD KIT

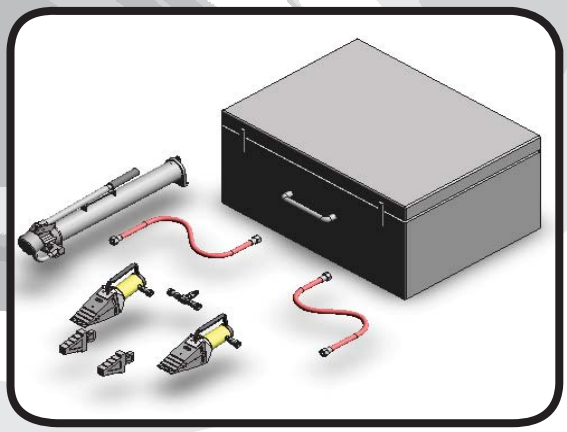
1 x Hydraulic Flange Spreader
1 x two stage hydraulic hand pump
1 x hydraulic hose 6 feet long
1 x safety block
1 x stepped block
1 x operation manual
1 x carrying case

SWT-HY14 / MAXI KIT

2 x Hydraulic Flange Spreader
1 x two stage hydraulic hand pump
2 x hydraulic hose 6 feet long
2 x safety block
2 x stepped block
1 x operation manual
1 x carrying case



STD KIT



MAXI KIT

MODEL	TYPE	CAPACITY (TONS)	STROKE (MM)	L x W x H (MM)	Weight (Kg)	SUITABLE PUMP
SWT-HY14	HYDRAULIC	14.0	39.0	290 x 116 x 135	7.0	SHP-1P4-2-1.8

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SVL SERIES

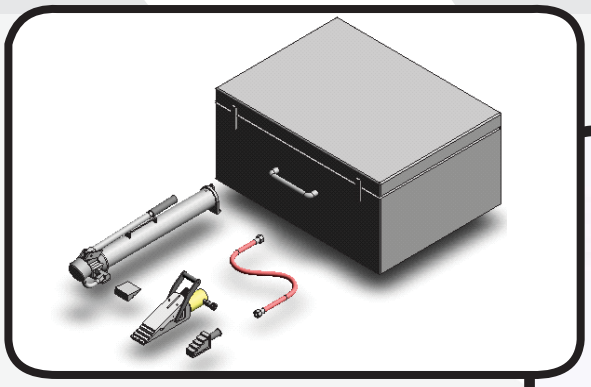
The SVL SERIES hydraulic flange spreaders are design for vertical lift application of heavy equipment. It will lift object vertically where minimum access gap of 9.5mm is available.

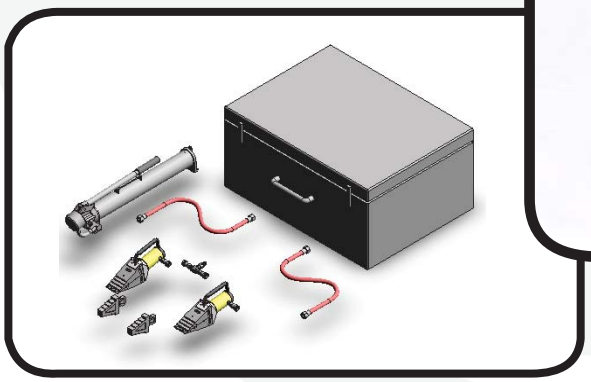
SVL-HY16 / STD KIT

1 x Hydraulic Flange Spreader
1 x two stage hydraulic hand pump
1 x hydraulic hose 6 feet long
1 x safety block
1 x stepped block
1 x operation manual
1 x carrying case

SVL-HY16 / MAXI KIT

2 x Hydraulic Flange Spreader
1 x two stage hydraulic hand pump
2 x hydraulic hose 6 feet long
2 x safety block
2 x stepped block
1 x operation manual
1 x carrying case





Technical Specification

MODEL	TYPE	CAPACITY @ 700 Bar	STROKE (MM)	L x W x H (MM)	Weight (Kg)	SUITABLE PUMP
SVL-HY16	HYDRAULIC	16.0	39.0	305 x 140 x	9.5	SHP-1P4-2-1.8

Flange Spreader

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SUBZERO Manufactures various types of flange spreader depending up on suitability of the application. Following three type of flange spreader are available to choose from

SPS SERIES

The SPS SERIES Flange Spreader provides up to 10,000 pounds of force to separate flange faces up to 3 inches and is available in hydraulic(SPS-HY10) or manual (SPS-MA10K) models.

A standard hand pump powers one Hydraulic flange spreader, or a pair of the Hydraulic flange spreaders, a load lowering valve is available for hydraulic pumps to control the design rate.

The Manual Flange Spreader uses a ratchet handle to transform 100 ft-lbs. of input to 10,000lbs. of spreading force to create the gap between flanges.

Use the SPS SERIES flange for a wide variety of task including : gasket maintenance, opening vessels, lifting, leveling and lowering, aligning turning blinds, bearing and impeller

MODEL	TYPE	CAPACITY (TONS)	STROKE (MM)	L x W x H (MM)	Weight (Kg)	SUITABLY PUMP
SPS-HY4.5	HYDRAULIC	4.5	76.0	310 x 120 x 100	6.4	SHP-1P4-2-1.8
SPS-MA4.5	MANUAL	4.5	76.0	280 x 120 x 100	6.2	

Flange Spreader

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SMG SERIES

The SMG SERIES hydraulic flange spreaders provide the ideal solution for safely opening of the pipe flanges in the marine, oil & gas industries.

Available in capacities from 5T & 10T. These models offers the users, capability of opening the flanges up to 2x5mm OR 2x92mm thick respectively.

SUBZERO flange spreader can be operated individually or as a pair when opening large flanges using a standard pumps and connecting hoses. With SUBZERO flange spreaders you are minutes away from safely opening the toughest flanges without the risk of sparks cause by hammer blows, chisel & flying wedges.

Technical Specification

MODEL	TYPE	CAPACITY (TONS)	STROKE (MM)	L x W x H (MM)	Weight (Kg)	SUITABLE PUMP
SMG-HY5	HYDRAULIC	5	38.0	210 x 76 x 280	9.0	SHP-1P4-2-1.8
SMG-HY10	HYDRAULIC	10	54.0	290 x 100 x 300	17.0	SHP-1P4-2-1.8

Stud Bolt Tensioner

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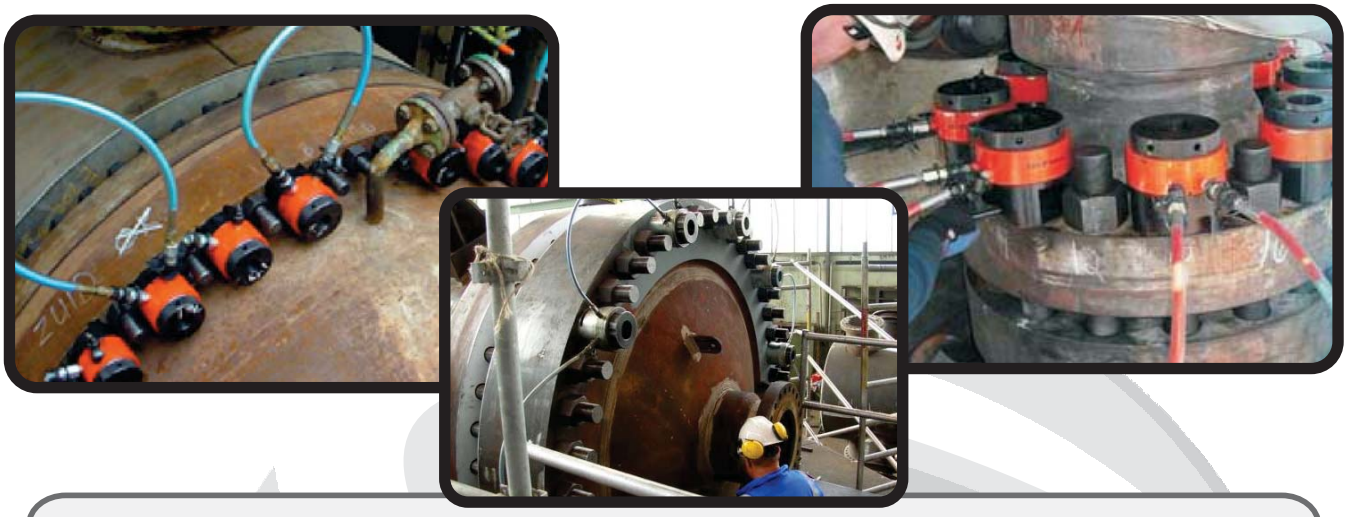


The SUBZERO bolt tensioners range are designed for topside operation in a wide variety of applications including pipeline flanges, heat exchangers, pressure vessels, compressor covers, boiler feed pumps, anchor bolts and many others. The range comprises of imperial size options ranging from ¾" to 4" and Metric thread size From M16 to M100 and all models are suitable for working pressures up to 1500 Bar. Each of the 6 models of hydraulic tensioning cylinder can be operated with a variety of threaded pullers and nut rotating sockets ensuring that the maximum possible range of bolt sizes can be accommodated using the minimum number of hydraulic cylinders. Threaded pullers, bridges and nut rotating sockets are available as individual components.

All SUBZERO hydraulic bolt tensioners are designed with self-energising high pressure seals, dual quick connect couplings for easy multiple tensioner connection and a user friendly operation and maintenance procedure. Suitable manual and air driven hydraulic pumps, high pressure hoses and couplings for use with SUBZERO bolt tensioners.

Why Tensioner?

Safe, reliable and repeatable, the use of hydraulic tensioners has many advantages over other less accurate tightening methods:

Direct: Tension is applied directly to stretch the bolt, so we don't need to fight against friction or losses.

Accurate: The applied load is controlled very accurately, because it is directly proportional to the pressure applied to the tensioner.

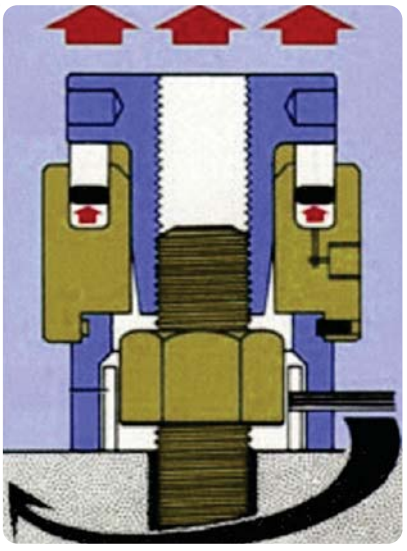
Calculated: The load transfer factor is calculable, helping to give the correct residual load.

Fast: Operation of tooling and improved accuracy reduces time required to retighten the load.

Versatile: Tensioning allows for loading multiple fasteners in a joint at the same time.

Reliable: Uniform bolt loading ensures a high level of accuracy by applying a consistant force.

Stress-free: Purely axial, tensile loading ensures no torsional stresses are introduced.



Stud Bolt Tensioner

Subzero
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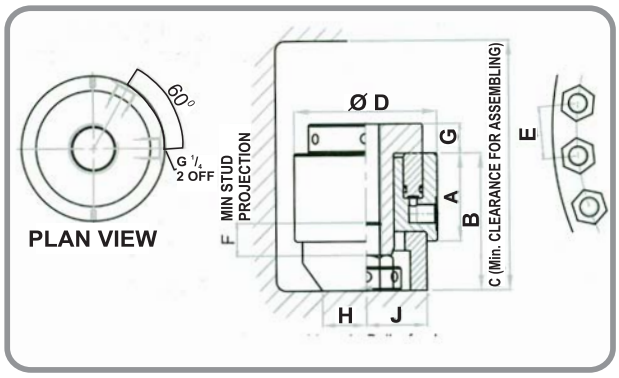
- Range M16 - M100 (3/4" - 4")
- Max. Working pressure 1500 bar

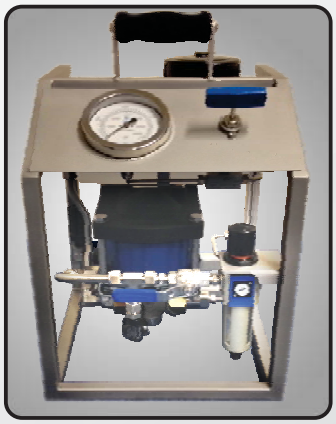


SBT Series

S Subzero B Bolt T Tensioner 15 Series 24 Capacity-ton 18 Thread size

Model (metric)	Bold / Stud Size		Model (imperial)	Cylinder Cap (ton)	Stroke (mm)	Effective area (cm^3)	Dimensions (mm)									Wt. (Approx.) (mm)
	(metric)	(inch)					A	B	C	D	E	F	G	H	J	
SBT 15-24-16	M16			23.5	10	15.7	62	90	168	75	49	28	16	30	32.5	2
SBT 15-24-18			SBT 15-24-075													
SBT 15-24-20	M20			23.5	10	15.7	62	90	168	75	51	28	16	30	32.5	2
SBT 15-24-22	M22	7/8"	SBT 15-24-087	23.5	10	15.7	62	90	168	75	51	28	16	30	32.5	2
SBT 15-24-24	M24	1"	SBT 15-24-100	23.5	10	15.7	62	90	168	75	60	28	16	30	32.5	2
SBT 15-50-27	M27	1 1/8"	SBT 15-24-112	50	15	33	60	106	187	102	60	44	22	36	47	4
SBT 15-50-30	M30			50	15	33	60	106	187	102	72	44	22	36	47	4
SBT 15-50-33	M33	1 1/4"	SBT 15-50-125	50	15	33	60	106	187	102	74	44	22	36	47	4
SBT 15-50-36	M36	1 3/8"	SBT 15-50-137	50	15	33	60	106	187	102	76	44	22	36	47	4
SBT 15-90-39	M39	1 1/2"	SBT 15-90-150	90	15	59.7	60	120	208	133	88	56	28	49	61	6
SBT 15-90-42	M42	1 5/8"	SBT 15-90-162	90	15	59.7	60	120	208	133	90	56	28	49	61	6
SBT 15-90-45	M45	1 7/8"	SBT 15-90-187	90	15	59.7	60	120	208	133	94	56	28	49	61	6
SBT 15-90-48	M48	1 7/8"	SBT 15-90-187	90	15	59.7	60	120	208	133	100	56	28	49	61	6
SBT 15-90-52	M52	2 "	SBT 15-90-200	90	15	59.7	60	120	208	133	104	56	28	49	61	6
SBT 15-125-48	M48	1 7/8"	SBT 15-125-187	125	15	83	62	135	231	163	110	68	34	59	73	10
SBT 15-125-52	M52	2 "	SBT 15-125-200	125	15	83	62	135	231	163	112	68	34	59	73	10
SBT 15-125-56	M56	2 1/2"	SBT 15-125-225	125	15	83	62	135	231	163	118	68	34	59	73	10
SBT 15-125-60	M60			125	15	83	62	135	231	163	126	68	34	59	73	10
SBT 15-125-64	M64	2 1/2"	SBT 15-125-250	125	15	83	62	135	231	163	126	68	34	59	73	10
SBT 15-185-64	M64	2 1/2"	SBT 15-185-250	185	15	123	62	150	254	193	136	80	42	66	86.5	15
SBT 15-185-68	M68			185	15	123	62	150	254	193	144	80	42	66	86.5	15
SBT 15-185-72	M72	2 3/4"	SBT 15-185-275	185	15	123	62	150	254	193	146	80	42	66	86.5	15
SBT 15-185-76	M76	3 "	SBT 15-185-300	185	15	123	62	150	254	193	154	80	42	66	86.5	15
SBT 15-265-76	M76	3 "	SBT 15-265-300	256	15	176	73	180	286	233	162	104	48	77	110	24.5
SBT 15-265-80	M80			256	15	176	73	180	286	233	162	104	48	77	110	24.5
SBT 15-265-85	M85	3 1/4"	SBT 15-265-325	256	15	176	73	180	286	233	174	104	48	77	110	24.5
SBT 15-265-90	M90	3 1/2"	SBT 15-265-350	256	15	176	73	180	286	233	185	104	48	77	110	24.5
SBT 15-265-95	M95	3 3/4"	SBT 15-265-375	256	15	176	73	180	286	233	200	104	48	77	110	24.5
SBT 15-265-100	M100	4 "	SBT 15-265-400	256	15	176	73	180	286	233	212	104	48	77	110	24.5

AIR OPERATED TENSIONER HYDRAULIC PUMP PU-AH-1500



The PU-AH-1500 air operated pumps are designed and manufactured in collaboration with Maximator GmbH, Germany and meet the highest technical and safety requirements of high pressure equipment.

Pump		
Pressure Ratio		1:350
Displacement Volume	Cm^3	1,3
Operating Pressure, Max. (at 5.1 bar Pre Limited (PL) Air Pressure)	bar	1.800
Compressed air supply (air drive)		
System Operating Air Pressure	bar	5.1
Safety Valve Set Pressure bar	bar	5.5
Stainless Steel Tank Capacity		
Oil Tank capacity	litre	5

Other Models with higher maximum operating pressures, digital pressure gauges and larger hydraulic reservoir capacities are available as per customer requirements.

Technical Features :

Calibrated Pressure Gauge: Calibrated 150mm (6”), liquid filled, 2500 bar rating pressure gauge with dual reading of bar & psi.

Complete Air System: System includes FRL Unit, air pressure gauge and control knob for safe air control and supply.

Higher Operating Pressure: Pump has max working pressure of 1500 bar to cover all bolt tensioning applications.

Light Weight: Unit weighs only 18 Kg and measures 450mm x 340mm x 480mm.

Lower Input air Pressure: Higher pressure ratio of 1 : 350 ensures less input air pressure for operation.

Quick Connect Outlet: Pump comes fitted with quick connect outlet for easy connection of hydraulic hose.

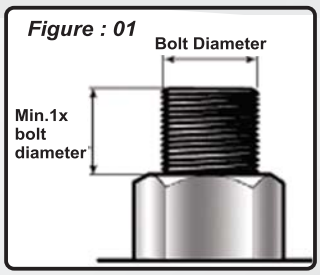
HAND PUMP PU-HP-1500

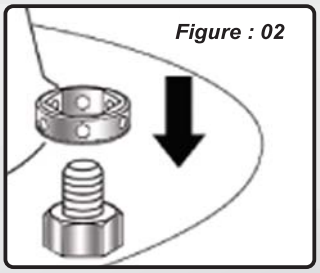
Hand Pump

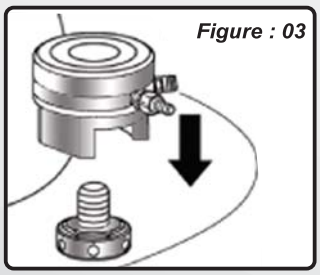
This hand pump is specialy designed for bolt tensioner applications. The pump is compact and light in weight with longer handle needing very little effort to generate max working load.
All pumps are supplied with suitable fittings and stainless steel 4” dia pressure gauge.

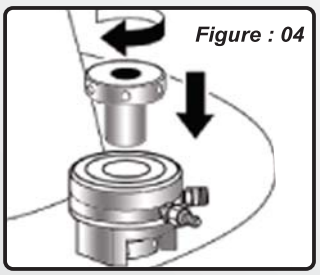
Model No.	Working Pressure (Bar)		Vol . Stroke Cm_3		Volume of Reservoir (Litre)	Useable Oi l (Litre)	Overall dimension in mm				
	Ist Stage	2nd Stage	Ist Stage	2nd Stage			A	B	C	Out adaptor	Approx. Weight (Kg)
HP216040	20	1600	32	1.6	4.8	4	577	162	175	1/4"	12.8

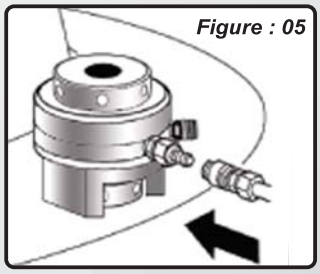
TIGHTENING SEQUENCE BOLTING PRODCEDURE FOR FLANGE BOLTS

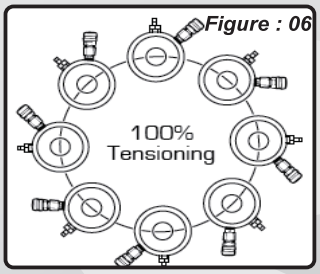


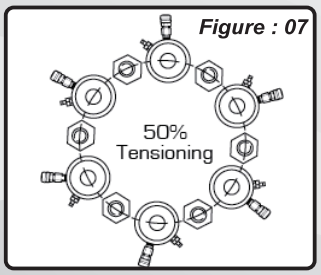


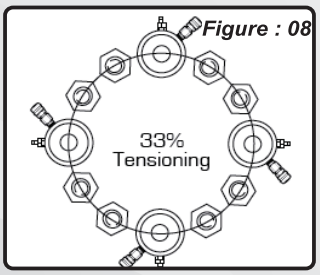


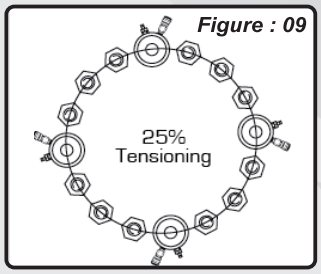












SUBZERO hydraulic stud bolt tensioners offer the quickest, safest and most accurate means of applying a specific residual load to stud bolts. Stud bolt tensioners can be used to easily achieve an accurate and pre-determined bolt loading in a single, simultaneous operation, providing the uniform gasket compression, essential for the integrity of critical bolted connections. Ideally all bolts in the joint should be tensioned simultaneously, however 50% or 33% or even 25% simultaneous tensioning can be carried out, which then requires the operator to make two, three or four tensioning operations by moving around the bolts in diametrically opposed fashion. Whilst partial tensioning will take longer to complete the task, it enables the user to optimise between the cost of the equipment and the available time.

SUBZERO hydraulic stud bolt tensioners are designed to directly stretch the bolt by applying a known load to the fastener using a hydraulic cylinder and threaded puller. The securing nut is then rotated using a short tommy bar, whilst the thread is being stretched, until it is firmly tightened against the joint face.Immediately the hydraulic pressure (load) is released the bolt tension (residual load) is retained, within the clamp length of the stud bolt, because it is prevented from returning to its original length by the tightened nut.

To operate hydraulic stud bolt tensioners, on bolted connections safely, an extra length of threaded stud, above the nut, of at least one x bolt diameter, is required to facilitate easy fitment of the equipment (see figure 1). Assembly of the tensioners to the stud bolt is quick and easy, provided of course that the stud bolts and nuts are clean, lubricated and in good condition see figures 2 -5).

SUBZERO has considerable experience in providing precise calculations of the correct bolt load to be applied to ensure an accurate residual load is imparted into the bolts.