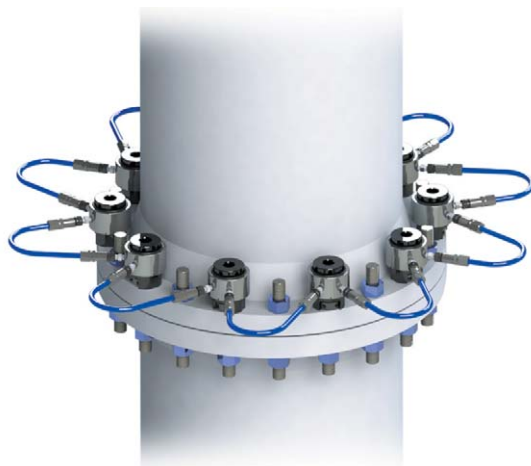


BOLT TENSIONERS



Bolt tensioning is now the preferred method of tightening bolts and studs on all critical applications. Bolt tensioners are designed for operation in a wide variety of applications including pipeline flanges, heat exchangers, pressure vessels, compressor covers, boiler feed pumps, windmills and many others. We provide a comprehensive range of bolt tensioners for optimum solutions to bolt tensioning requirements. Our Bolt tensioners and accessories are CE marked in accordance with Pressure Equipment and Machinery Directives, as applicable. In comparison to traditional tightening methods, tightening with bolt tensioners offers significant advantages:

- No torsional loading of fasteners.
- Direct loading - no damage to assembly.
- Easy and fast operation.
- Very high accuracy and repeatability.
- Automation feasible and can be used for critical applications.

PST SERIES TOPSIDE BOLT TENSIONERS



PST Series Bolt Tensioners are designed for operation in a wide variety of applications including pipeline flanges, heat exchangers, pressure vessels, compressor covers, boilers feed pumps, anchors bolts and many others.

The PST Bolt Tensioner is very simple to use and consists of four parts - Threaded Puller, Load Cell, Bridge and Nut Driver (Nut Rotating Socket).



THREADED PULLER



LOAD CELL



BRIDGE



NUT DRIVER /
NUT ROTATING SOCKET

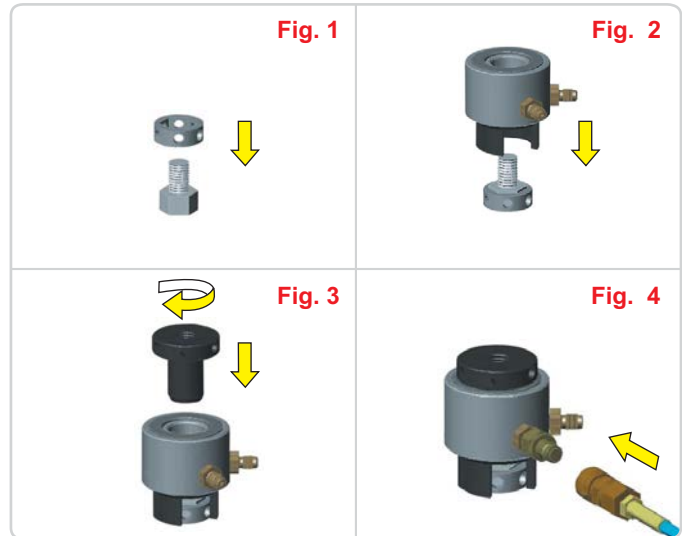
PST SERIES TOPSIDE BOLT TENSIONERS

Brief Operational Sequence

The nut-driver is placed over the nut (**fig.1**). The bridge and load cell is then placed over the bolt (**fig.2**).

The Puller is then screwed over the stud protruding above the nut face (**fig.3**) making sure that at least 1 x diameter of bolt is engaged with the Threaded Puller.

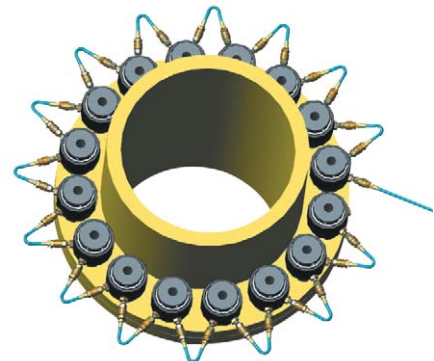
Desired hydraulic pressure is now applied to load cell, which stretches the bolt. (**fig.4**). The nut is turned down using the nut-driver and tommy bar. The Pressure is then released leaving the stud loaded to the desired value.



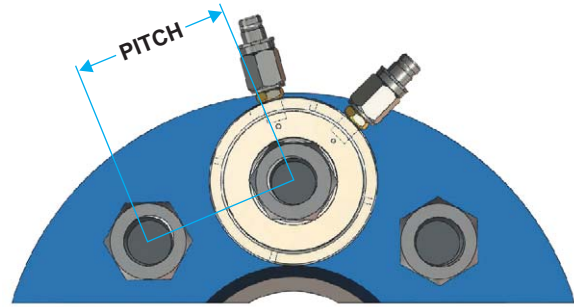
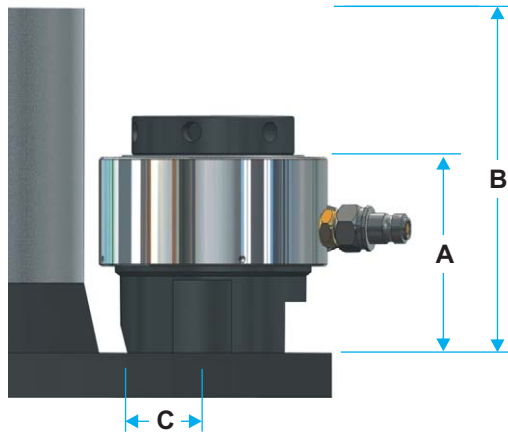
THE PST SERIES TOPSIDE BOLT TENSIONERS IS ONE OF THE MOST LIGHT, COMPACT AND VERSATILE LINE OF TENSIONERS AVAILABLE:

Features :

- Versatile Design:** The PST Series standard variable tensioners are designed to provide a wide range of flexibility, covering stud sizes from 3/4" to 5.3/4" (M-16 to M-150). Different stud sizes are accommodated by the same load cell by simply changing the adaptor kit consisting of Threaded Puller, Bridge and Nut Driver.
- High Strength Aircraft Quality Alloy Steel:** The PST Series tensioners operate at a maximum pressure of 1500 Bar and are manufactured from high strength AISI 4340 alloy steel parts for long lasting trouble free performance.
- Stroke Indicator:** The PST Series tensioners have and an exceptional stroke of 15 mm. The Integral Stroke Indicator allows the piston stroke to be viewed while tensioning is in progress. A Red line on piston indicates an over stroke ensuring safe operation.
- Safe Design in event of Piston 'Over Stroke':** The PST series tensioners are designed so that in event of over- stroke the high pressure fluid will be released from the inner side of the load cell, thus saving the operator from any potential exposure.
- Multi Tensioning:** The PST Series load cell is provisioned with two connections and this acts as a manifold for multi tensioning applications. By using high pressure link hoses, any number of bolt tensioners can be connected and used simultaneously. This ensures equal tightening of all bolts on the flange and reduces work time.
- Anti Roll, Composite Material Seals:** All PST Tensioners are fitted with Anti Roll, Composite Material seals for longer life and high reliability. The seals used have a low coefficient of friction so that the piston can be returned to a closed position with minimal effort. PST Series tensioners can be provided with machined PU (poly urethane) seals if requested by the customer.
- Floating Piston:** The unique piston design allows 2° tilt without any loss of load, preventing piston seizure or damage to piston bore.



PST SERIES TOPSIDE BOLT TENSIONERS

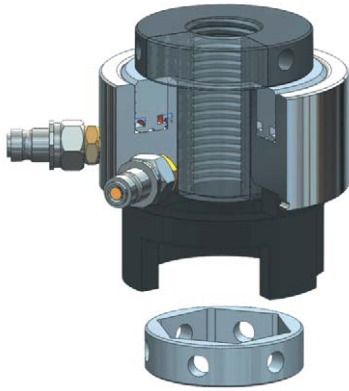


Technical Details:

Model No.		Bolt Size		Max Load		Hyd Area		O.D.	Min Pitch	Relief C	Height A	Clearance B	Weight
Load Cell	Adaptor Kit	inch	mm	M Ton	kN	in ²	mm ²	mm	mm	mm	mm	mm	kg.
PST-01	A1-0.12	3/4	20	34.5	339	3.50	2257	84	46	30	86	160	3.5*
	A1-M20								47	30	86	160	1.3
	A1-0.14	7/8	53						32	94	168	1.4	
	A1-M24		54						32	94	168	1.4	
	A1-1.00	1	55						32	94	168	1.4	
PST-02	A2-M27		27	40.6	397	4.11	2649	98	56	34	96	170	4.5*
	A2-1.02	1.1/8	59						37	98	172	1.8	
	A2-M30		62						37	97	173	1.9	
	A2-1.04	1.1/4	67						40	99	180	2.0	
	A2-M33		68						40	99	181	2.1	
	A2-1.06	1.3/8	72						43	101	186	2.3	
PST-03	A3-1.04	1.1/4	33	65.2	639	6.60	4259	115	69	40	99	185	5.9*
	A3-M33								70	40	99	174	2.4
	A3-1.06	1.3/8	74						43	101	177	2.9	
	A3-M36		75						43	101	178	2.9	
	A3-1.08	1.1/2	80						45	105	187	3.0	
	A3-M39		80						43	105	186	3.0	
PST-04	A4-1.06	1.3/8	36	73.6	721	7.45	4808	128	75	43	101	183	7.7*
	A4-M36								76	43	101	183	3.4
	A4-1.08	1.1/2	81						45	105	183	3.6	
	A4-M39		81						45	105	183	3.6	
	A4-1.10	1.5/8	86						48	107	187	3.9	
	A4-M42		86						48	107	188	3.9	
PST-05	A5-1.10	1.5/8	42	96.1	942	9.73	6280	145	87	48	113	198	11.4*
	A5-M42								87	48	113	200	5.2
	A5-1.12	1.3/4	92						51	117	205	5.4	
	A5-M45		93						51	117	206	5.4	
	A5-1.14	1.7/8	98						54	120	212	5.6	
	A5-M48		98						54	120	212	5.6	
	A5-2.00	2	104						57	120	217	6.3	
A5-M52		105	57	120	217	5.9							
PST-06	A6-1.14	1.7/8	48	138.2	1354	13.99	9028	165	99	54	120	209	14.8*
	A6-M48								99	54	120	210	7.1
	A6-2.00	2	105						57	123	215	7.6	
	A6-M52		106						57	123	215	7.6	
	A6-M56		113						62	126	223	7.8	
	A6-2.04	2.1/4	114						62	126	224	7.8	

* Indicates weight of Load Cell +Adaptor Kit of particular size.

PST SERIES TOPSIDE BOLT TENSIONERS



Model No.		Bolt Size		Max Load		Hyd Area		O.D.	Min Pitch	Relief C	Height A	Clearance B	Weight
Load Cell	Adaptor Kit	inch	mm	M Ton	kN	in ²	mm ²	mm	mm	mm	mm	mm	kg.
PST-07	A7-M56	2.1/4	56	168.5	1651	17.06	11006	180	112	62	129	222	18.1*
	A7-2.04		60						112	62	129	224	9.3
	A7-M60	2.1/2	60						117	62	132	229	9.4
	A7-2.08		64						125	68	135	236	9.7
	A7-M64		68						125	68	135	236	9.7
A7-M68	68	129	68	140	238	10.0							
PST-08	A8-2.08	2.1/2	64	201.8	1978	20.44	13188	198	129	70	137	242	23.4*
	A8-M64		68						129	70	138	242	12.1
	A8-M68	2.3/4	72						132	69	143	249	12.3
	A8-2.12		72						139	75	146	254	12.5
	A8-M72		72						141	75	146	256	12.5
PST-09	A9-2.12	2.3/4	72	230.3	2257	23.30	15045	215	139	75	146	261	29.3*
	A9-M72		76						141	75	146	261	15.6
	A9-M76	3	76						150	80	150	263	17.2
	A9-3.00		3						150	80	151	264	17.2
PST-10	A10-M80	3.1/4	80	310.9	3047	31.48	20312	244	160	87	158	275	40.3*
	A10-3.04		85						162	87	158	278	24.0
	A10-M85	3.1/2	85						164	87	160	275	24.5
	A10-3.08		90						174	93	164	280	22.6
	A10-M90		95						175	93	164	279	22.6
	A10-M95	3.3/4	95						179	93	170	281	22.8
	A10-3.12		100						191	105	170	281	22.9
	A10-M100	100	195						105	177	304	22.1	
A10-4.00	4	197	105	177	304	22.1							
PST-11	A11-3.12	3.3/4	100	384.5	3768	38.94	25120	280	192	106	172	299	52.7*
	A11-M100		110						196	106	179	306	31.4
	A11-4.00	4.1/4	110						198	106	179	299	31.4
	A11-4.04		110						209	111	186	312	36.4
	A11-M110		110						210	111	186	313	36.4
	A11-4.08	4.1/2	120						222	118	191	324	39.7
	A11-M120		120						226	118	198	330	41.4
	A11-4.12	4.3/4	125						229	121	202	342	42.3
A11-M125	125		233	121	202	348	43.3						
PST-12	A12-M125	5	125	485.1	4754	49.13	31694	325	236	124	204	354	89.6*
	A12-5.00		130						243	129	204	359	60.3
	A12-M130	5.1/4	130						243	126	207	361	63.1
	A12-5.04		140						254	135	210	367	63.1
	A12-5.08		140						266	141	217	380	70.4
	A12-M140	5.3/4	140						260	135	217	380	70.6
	A12-5.3/4		150						276	145	218	389	70.8
A12-M150	150	275	141	221	396	73.3							

* Weight of Load Cell + Adaptor Kit of particular size.

Please refer to catalog sheet - 'Basics of Tensioning' for Bolt Tensioners application and tool pressure calculation.