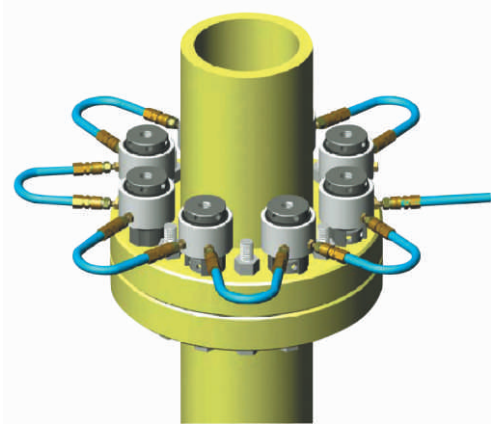


BOLT TENSIONERS



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).

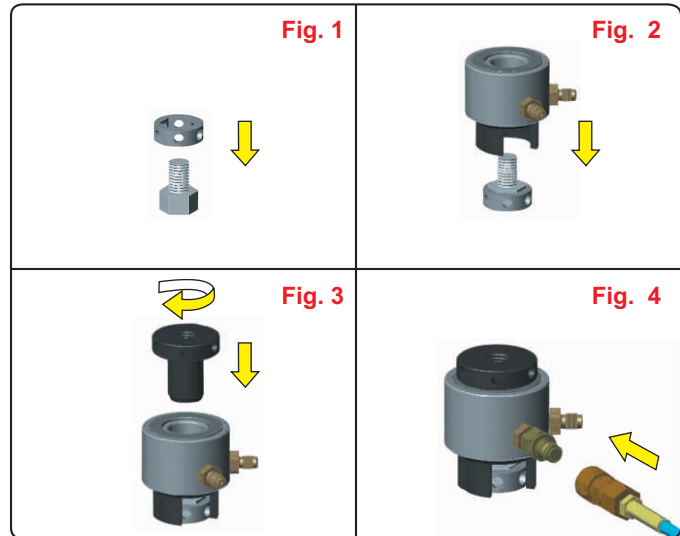
<p>THREADED PULLER</p>	<p>LOAD CELL</p>	<p>BRIDGE</p>	<p>NUT DRIVER / NUT ROTATING SOCKET</p>
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PST SERIES TOPSIDE BOLT TENSIONERS

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.

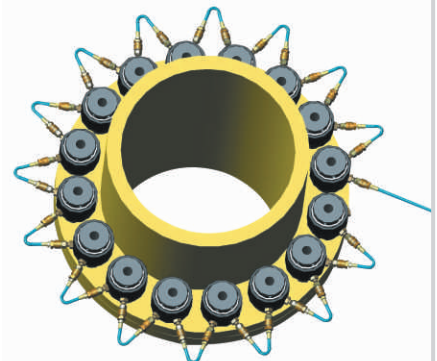
Desired hydraulic pressure is now applied to load cell, which stretches the bolt. (fig.4). The nut is turned down using the nut-driver and tommy bar. The Pressure is then released leaving the stud loaded to the desired value.



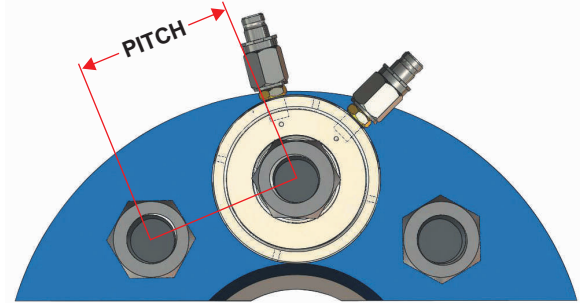
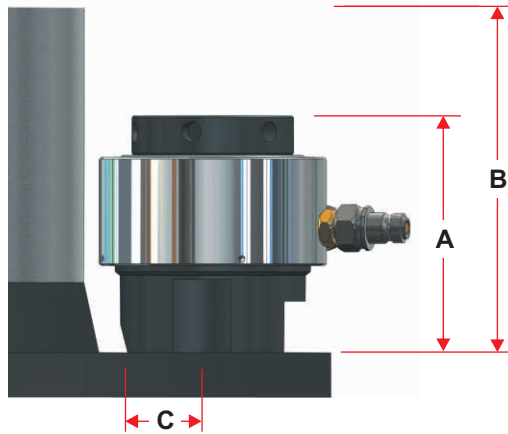
THE PST SERIES TOPSIDE BOLT TENSIONERS IS ONE OF THE MOST LIGHT, COMPACT AND VERSATILE LINE OF TENSIONERS AVAILABLE:

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

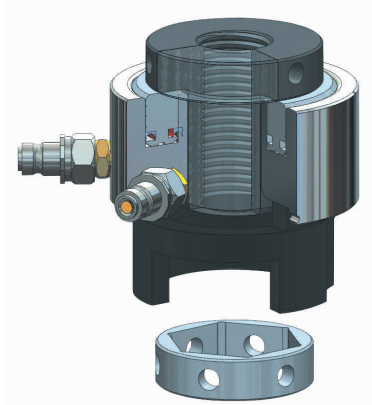


Technical Specifications

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	Ton	kN	in ²	mm ²	mm	mm	mm	mm	mm	kg.
PST-01	A1-0.12	3/4	20	38.1	339	3.50	2257	84	46	26	76	145	3.5*
	A1-M20								47	26	76	145	1.3
	A1-0.14	7/8	24						53	30	84	153	1.4
	A1-M24								54	30	84	153	1.4
	A1-1.00								55	30	84	153	1.4
PST-02	A2-M27	1.1/8	30	44.7	397	4.11	2649	98	56	29	88	157	4.5*
	A2-1.02								59	32	89	158	1.8
	A2-M30	1.1/4	33						62	32	89	162	1.9
	A2-1.04								67	35	91	167	2.0
	A2-M33								68	35	91	168	2.1
	A2-1.06								72	38	93	173	2.3
A2-M36	73	38	93	174	2.3								
PST-03	A3-1.04	1.1/4	33	71.8	639	6.60	4259	115	69	37	92	162	5.9*
	A3-M33								70	37	92	162	2.4
	A3-1.06	1.3/8	36						74	40	94	166	2.9
	A3-M36								75	40	94	167	2.9
	A3-1.08								80	43	98	175	3.0
	A3-M39								80	43	98	175	3.0
PST-04	A4-1.06	1.3/8	36	81.1	721	7.45	4808	128	75	41	94	167	7.7*
	A4-M36								76	41	94	167	3.4
	A4-1.08	1.1/2	39						81	43	98	172	3.6
	A4-M39								81	43	98	172	3.6
	A4-1.10								86	46	100	176	3.9
	A4-M42								86	46	100	177	3.9
	A4-1.12								91	49	101	181	4.0
PST-05	A5-1.10	1.5/8	42	105.9	942	9.73	6280	145	87	47	102	182	11.4*
	A5-M42								87	47	102	184	5.2
	A5-1.12	1.3/4	45						92	50	106	189	5.4
	A5-M45								93	50	106	190	5.4
	A5-1.14								98	53	109	196	5.6
	A5-M48	98	53						109	196	5.6		
	A5-2.00	2	52						104	56	109	201	6.3
A5-M52	105			56	109	201	5.9						
PST-06	A6-1.14	1.7/8	48	152.2	1354	13.99	9028	165	99	54	109	194	14.8*
	A6-M48								99	54	109	194	7.1
	A6-2.00	2	52						105	57	112	199	7.6
	A6-M52								106	57	112	199	7.6
	A6-M56								113	61	116	208	7.8
	A6-2.04								114	61	116	209	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	Ton	kN	in ²	mm ²	mm	mm	mm	mm	mm	kg.
PST-07	A7-M56	2.1/4	56	185.6	1651	17.06	11006	180	112	59	117	205	18.1*
	A7-2.04		60						112	59	117	207	9.3
	A7-M60		60						117	61	122	214	9.4
	A7-2.08	2.1/2	64						125	66	125	221	9.7
	A7-M64		64						125	66	125	221	9.7
	A7-M68	68	129						66	130	231	10.0	
	A7-2.12	2.3/4	68						136	72	133	237	11.5
PST-08	A8-2.08	2.1/2	64	222.4	1978	20.44	13188	198	129	70	127	226	23.4*
	A8-M64		64						129	70	127	226	12.1
	A8-M68	68	132						69	132	233	12.3	
	A8-2.12	2.3/4	72						139	75	132	235	12.5
	A8-M72		72						141	75	135	240	12.5
PST-09	A9-2.12	2.3/4	72	253.7	2257	23.30	16485	215	139	75	137	241	29.3*
	A9-M72		72						141	75	137	241	15.6
	A9-M76	76	150						80	141	249	17.2	
	A9-3.00	3	150						80	141	255	17.2	
PST-10	A10-M80	3.1/4	80	342.5	3047	31.48	20312	244	160	87	152	258	40.3*
	A10-3.04		85						162	87	152	261	24.0
	A10-M85	85	164						87	154	264	24.5	
	A10-3.08	3.1/2	90						174	93	158	268	22.6
	A10-M90		90						175	93	158	269	22.6
	A10-M95	95	179						93	164	280	22.8	
	A10-3.12	3.3/4	100						191	105	164	280	22.9
	A10-M100		100						195	105	171	293	22.1
A10-4.00	4	197	105	171	293	22.1							
PST-11	A11-3.12	3.3/4	100	423.5	3768	38.94	25120	280	192	106	167	282	52.7*
	A11-M100		100						196	106	174	289	31.4
	A11-4.00	4	198						106	174	291	31.4	
	A11-4.04	4.1/4	110						209	111	181	304	36.4
	A11-M110		110						210	111	181	305	36.4
	A11-4.08	4.1/2	120						222	118	186	316	39.7
	A11-M120		120						226	118	193	198	41.4
	A11-4.12	4.3/4	125						229	121	197	334	42.3
A11-M125	125		233	121	197	338	43.3						
PST-12	A12-M125	5	125	534.4	4754	49.13	31694	325	236	124	199	346	89.6*
	A12-5.00		130						243	129	199	351	60.3
	A12-M130	130	243						126	202	354	63.1	
	A12-5.04	5.1/4	140						254	135	205	357	63.1
	A12-5.08		140						266	141	212	372	70.4
	A12-M140	5.3/4	150						260	135	212	372	70.6
	A12-5.3/4		150						276	145	213	381	70.8
A12-M150	150	275	141	216	388	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.