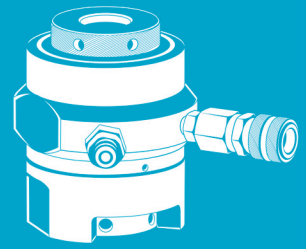
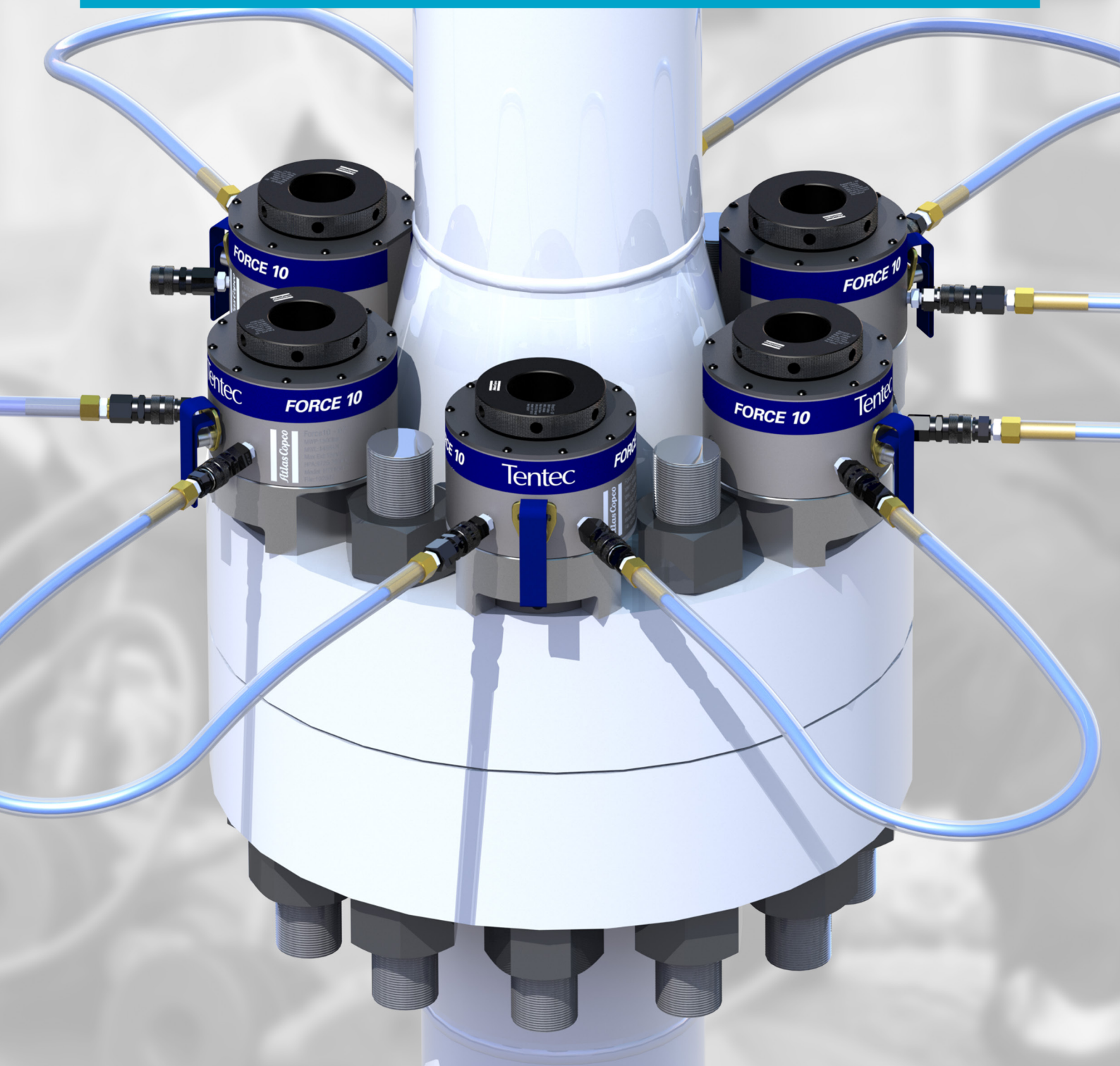


TENTEC FORCE10 SPRING RETURN BOLT TENSIONERS



The worldwide standard for general purpose spring return bolt tensioning tools.

Atlas Copco



TENTEC FORCE10 SPRING RETURN BOLT TENSIONERS

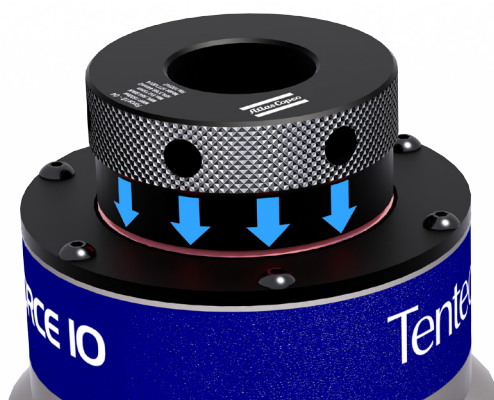
The FORCE10 range of topside bolt tensioning tools consist of 10 base tools covering bolt sizes from 3/4" to 4" (M20 to M100). This general purpose range of tools are designed to fit on to most ANSI B16.5, ANSI B16.47 Series 1, MSS-SP44, API-6A and API-17D standard flanges.

FORCE10 Tensioners have many new features and user requested enhancements and provide extra bolt load capacity without compromising on the tool size and ease of handling. The 10 tool range offers multiple tool variations per bolt size, only 5 tools are required to suit bolt sizes from 3/4" to 4" (M20 to M100). For added versatility each base tool can be converted for use on a different bolt size within the tool size range by the use of conversion kits.

We have presented world class bolt tensioning solutions for over 25 years and offer some of the most reliable, safe and durable tools on the market.

Spring Return

FORCE10 tensioners from models F10-04 to F10-10 feature heavy duty integrated springs that assist in resetting the tensioners in between pressure cycles. This greatly speeds up the tensioning operation and reduces the physical effort needed by the user.



Spring return ram fitted to models F10-04 to F10-10

Versatile

FORCE10 range of topside tensioners have been designed for use on the following flange classes. Starting from 3/4" bolt diameter.

ANSI B16.5 / ANSI B16.47 Series A	API 6A & API 17D
150 Lbs	2000 Lbs
300 Lbs	3000 Lbs
400 Lbs	5000 Lbs
600 Lbs	10000 Lbs
900 Lbs	15000 Lbs
1500 Lbs	20000 Lbs
2500 Lbs	

BOLT TIGHTENING SOLUTIONS

The compact nature and enhanced bolt load capacity of the FORCE10 tensioners means they are ideally suited to many non standard bolted joints. Contact us if you need advise to determine suitability on your non standard bolted joints.

Features & Benefits

Puller

Convert from one Bolt size to another size, within the tool range. Forms part of the Conversion Kit

Spring Return

Heavy duty integrated springs assist automatic ram reset. Reduces operation time between pressure cycles.

Seal Kit

Reliable, mature high pressure Seal technology

2 Hydraulic Connections

High Pressure Quick Connect Couplings are user configurable

Bridge

Machine profiled rotatable Bridge component. Convert tool from one bolt size to another size within the tool range. Forms part of the Conversion Kit

Nut Rotating Socket (NRS)

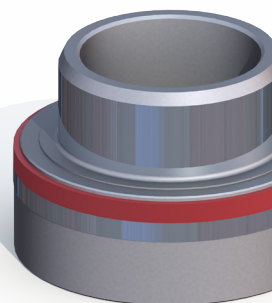
Forms part of the Conversion Kit

The 10 tool range offers multiple tool variations per bolt size

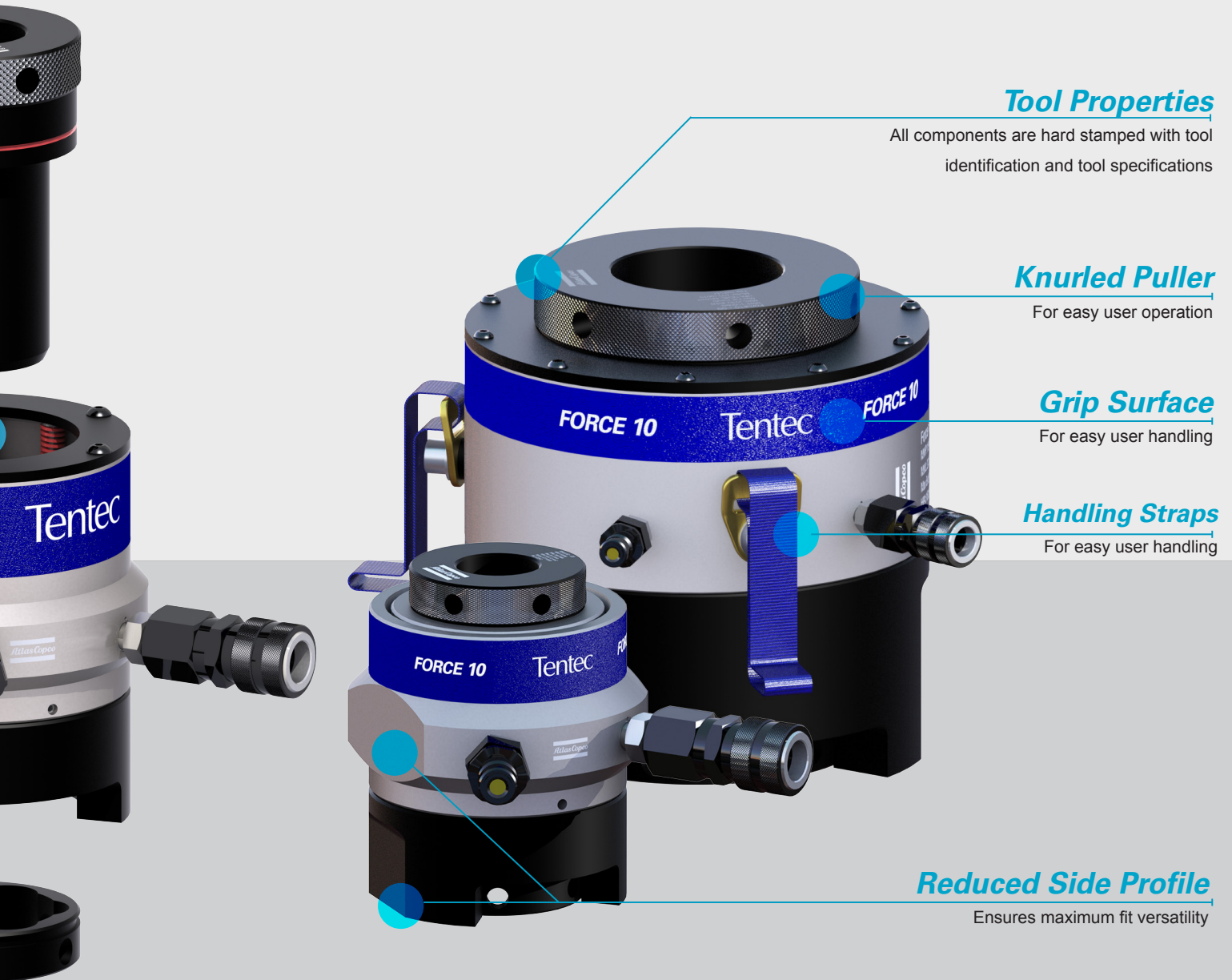


Seal Technology

Over the years we have developed a class leading high pressure seal technology. This mature seal technology is industry proven and offers many 1000's of reliable and safe pressure cycles.



A Range of 10 Bolt Tensioning Tools



...e, only 5 tools are required to suit bolt sizes from 3/4" to 4" (M20 to M100).



Safety & Reliability

Integrated into the design of each FORCE10 tensioners are multiple enhanced safety features including mechanisms to remove the hazard of over-stroking the tensioner rams. Models F10-01 to F10-03 feature a mechanism which directs oil flow away from the operator in the instance the ram is over-stroked and exhausts oil harmlessly into the internal section of the tensioner.

FORCE10 models F10-04 to F10-10 feature internal hydraulic check valves that can sense the position of the tensioners hydraulic ram and again safely releases oil flow internal to the tool. All FORCE10 Tensioners offer a maximum ram stroke of 15mm, in many cases this is sufficient to achieve a "One Pull" tensioning procedure.

Designed to Fit

During the engineering development of the FORCE10 tensioner range over 450 different configurations of standard pipe flanges were modelled using the latest 3D solid model CAD software.

Our design team then set about designing tensioners to perfectly fit not only the hub profile of standard pipe flanges but also the weld protrusion and the pipe diameter. Care was taken to design profile machined tensioners that also stay clear of the adjacent hexagon nuts. The resulting tools fit perfectly onto standard pipe flanges.

The enhanced bolt load offered by the FORCE10 Series bolt tensioning tools allows for time efficient 25% and 50% tool to bolt ratio usage on most standard pipeline flanges, using the industry standard A & B tensioning pressure procedure. Refer to the FORCE10 user manual for more specific information and flange exclusions.

FORCE10 Tensioners only require a minimum of 1 x bolt diameter of stud protrusion above the joint nut.



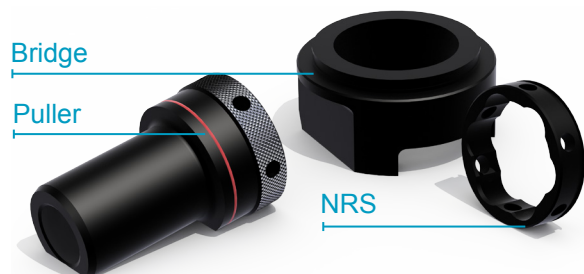
FORCE10 Tensioners are machine profiled to the rear and sides of the tool to ensure the best possible fit on the maximum number of bolted joints.

Conversion Kits

Conversion Kits offer a very economical way to expand your inventory of bolt tensioning tools.

Kits are available to convert a Force10 tensioner to suit an alternative bolt size within its size range.

Kits consist of a Puller, Bridge and Nut Rotating Socket. Get in touch with us and we can advise on suitable Conversion Kits part numbers.

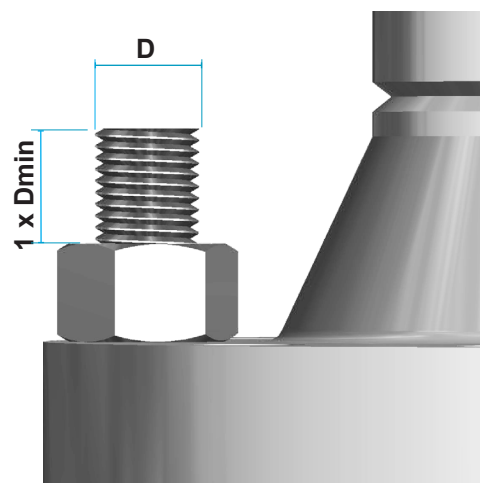


BOLT TIGHTENING SOLUTIONS

All FORCE10 tensioners have been designed without the use of small bonded seals. Bonded seals are used by most bolt tensioning manufacturers to seal the hydraulic connections to the tensioner. These tiny seals are prone to failure. Tentec have designed out the use of bonded seals.



FORCE10 Tensioners are carefully designed to fit on to most standard pipe flanges.

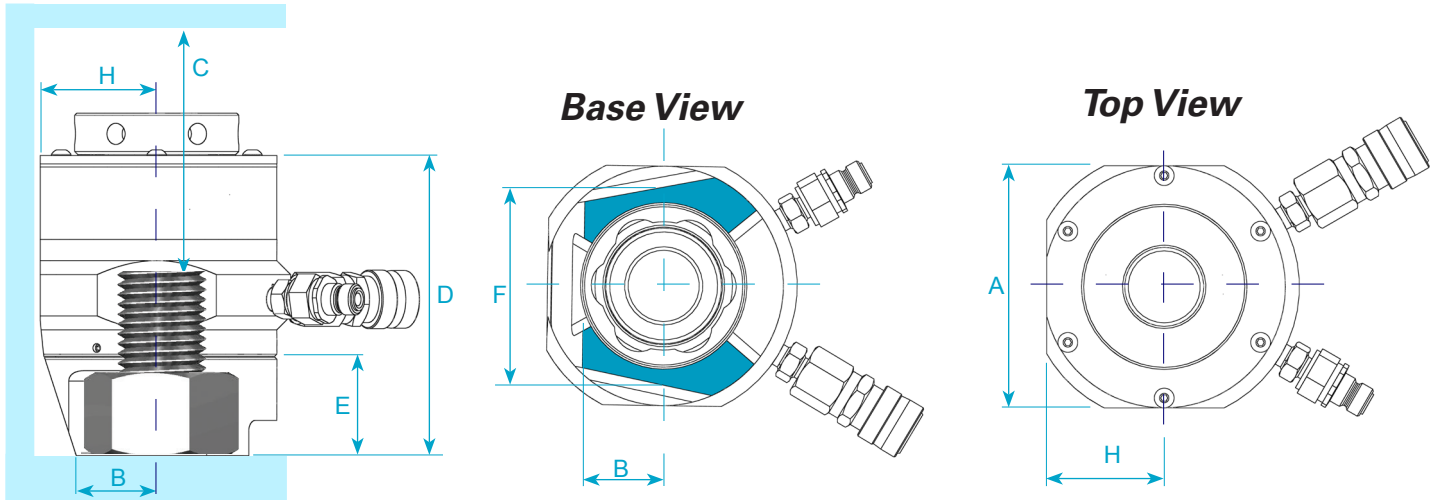


FORCE10 tensioners need a minimum of 1 x bolt diameter protruding above the hexagon or round nut.



TENTEC FORCE10 SPRING RETURN BOLT TENSIONERS

TECHNICAL SPECIFICATIONS



Maximum Working Pressure = 1500bar : 21750 psi

Tool Ident	Part No Imperial	Thread Size Inch	mm	Part No Metric	Bolt Load Kn	Ton	Ram Area In ²	mm ²	Stroke mm	Weight kg	A	B	C	D	E	F	G	H
F10-01	HTT.10001.034	3/4" 10UNC	M20 x 2.5	HTT.10001.020	180.25	18.09	1.86	1201.93	15	2.62	72	21.5	90	99.5	68.5	61.75	49	36
	HTT.10001.078	7/8" 9UNC	M22 x 2.5	HTT.10001.022						2.68		24.75	89.25	100.75		72	57.5	
F10-02	HTT.10002.034	3/4" 10UNC	M20 x 2.5	HTT.10002.020	236.06	23.69	2.44	1573.55	15	3.24	80.5	21	90	99.5	68.5	59.75	49	38.8
	HTT.10002.078	7/8" 9UNC	M22 x 2.5	HTT.10002.022						3.32		25	89.25	100.75		70	56.5	
	HTT.10002.100	1" 8UN	M24 x 3	HTT.10002.024						3.41		28	90	104		80.5	64.25	
F10-03	HTT.10003.078	7/8" 9UNC	M22 x 2.5	HTT.10003.022	380.38	38.18	3.93	2536.12	15	5.21	99	24.75	93	104.5	71.5	76	59.5	47.9
	HTT.10003.100	1" 8UN	M24 x 3	HTT.10003.024						5.25		27.5	93	107		80.5	64.25	
	HTT.10003.118	1.1/8" 8UN	M27 x 3	HTT.10003.027						5.53		28	96	113.5		90.75	72	
	HTT.10003.114	1.1/4" 8UN	M30 x 3.5	HTT.10003.030						5.54		35	94	114		85	69	
F10-04	HTT.10014.118	1.1/8" 8UN	M27 x 3	HTT.10014.027	564.95	56.70	5.84	408.00	15	8.76	116.5	33	118.5	135.5	97	90.75	75	56.5
			M30 x 3.5	HTT.10014.030						8.71		35	121	136		85	72	
	HTT.10014.114	1.1/4" 8UN	M33 x 3.5	HTT.10014.033						9.02		35	122	140		89.88	77	
	HTT.10014.138	1.3/8" 8UN	M36 x 4	HTT.10014.036						9.08		42	121	142		95.14	83	
	HTT.10014.112	1.1/2" 8UN	M39 x 4	HTT.10014.039						9.08		39	121	145		93.41	85	
F10-05	HTT.10015.138	1.3/8" 8UN	M36 x 4	HTT.10015.036	763.94	76.67	7.89	5092.89	15	12.71	134.75	42	131.5	152.5	107.5	95.14	83	65.38
	HTT.10015.112	1.1/2" 8UN	M39 x 4	HTT.10015.039						12.98		45	131.5	155.5		100.53	88	
	HTT.10015.158	1.5/8" 8UN	M42 x 4.5	HTT.10015.042						13.09		45	136	159		111.54	96	
	HTT.10015.134	1.3/4" 8UN	M45 x 4.5	HTT.10015.045						13.42		46	136	162		119.72	103	
F10-06	HTT.10016.158	1.5/8" 8UN	M42 x 4.5	HTT.10016.042	951.41	95.49	9.83	6342.57	15	15.67	149.25	48	135.75	158.75	107.5	111.54	96	72.53
	HTT.10016.134	1.3/4" 8UN	M45 x 4.5	HTT.10016.045						16.07		48	136	162		119.72	103	
	HTT.10016.178	1.7/8" 8UN	M48 x 5	HTT.10016.048						16.01		46.5	137.5	166.5		113.52	103	
	HTT.10016.200	2" 8UN	M52 x 5	HTT.10016.052						16		53.5	135	168.5		120.47	110	
F10-07	HTT.10017.178	1.7/8" 8UN	M48 x 5	HTT.10017.048	1458.89	146.42	15.08	9725.79	15	24.3	179.5	55	141.25	170.25	109.5	121.45	107	87.5
	HTT.10017.200	2" 8UN	M52 x 5	HTT.10017.052						24.85		55	142.5	176		128.42	114	
	HTT.10017.214	2.1/4" 8UN	M56 x 5.5	HTT.10017.056						24.89		59	148.25	180.75		132.61	119	
			M60 x 5.5	HTT.10017.060						24.26		60	145.5	182		144.8	127	
F10-08	HTT.10017.212	2.1/2" 8UN	M64 x 6	HTT.10017.064						24.81		67	141.5	182		144.8	130	
	HTT.10018.214	2.1/4" 8UN	M56 x 5.5	HTT.10018.056	1989.25	199.64	20.56	13261.91	15	33.68	206.75	65	151.25	184.75	110.5	134.6	119	103.4
			M60 x 5.5	HTT.10018.060						34.6		60	145.5	183		170	137	
	HTT.10018.212	2.1/2" 8UN	M64 x 6	HTT.10018.064						34.64		66	152.5	194		144.8	130	
			M68 x 6	HTT.10018.068						32.83		70	151	196.5		160	141	
F10-09	HTT.10018.234	2.3/4" 8UN	M72 x 6	HTT.10018.072						35.08		76	147.75	197.25		158.23	146	
	HTT.10018.300	3" 8UN	M76 x 6	HTT.10018.076						34.73		80.5	146.75	198.75		169.93	151	
	HTT.10019.234	2.3/4" 8UN	M72 x 6	HTT.10019.072	2753.32	276.33	28.45	18355.45	15	48.6	239	80	154.75	204.25	112.5	170.18	149	119.5
	HTT.10019.300	3" 8UN	M76 x 6	HTT.10019.076						48.86		81	160.75	211.75		169.93	151	
			M80 x 6	HTT.10019.080						47.7		78	158.5	213.5		190	164	
F10-10	HTT.10019.314	3.1/4" 8UN	M85 x 6	HTT.10019.085						50.82		88	159	219		181.37	160	
	HTT.10019.312	3.1/2" 8UN	M90 x 6	HTT.10019.090						51.08		94	158.5	223.5		187.38	172	
	HTT.10020.314	3.1/4" 8UN	M85 x 6	HTT.10020.085	3109.94	312.12	32.14	20732.86	15	59.28	257.5	87	165	223	112.5	181.37	163	128.8
	HTT.10020.312	3.1/2" 8UN	M90 x 6	HTT.10020.090						60.07		95.5	166.5	229.5		187.38	171	
F10-10	HTT.10020.334	3.3/4" 8UN	M95 x 6	HTT.10020.095						58.69		100	157.75	225.75		209.44	185	
	HTT.10020.400	4" 8UN	M100 x 6	HTT.10020.100						56.9		105	152	223.5		215.64	194	

Designs and specifications are subject to change without notice or obligation. Read all safety instructions in the manual before usage.

TENTEC BTS-BOLT TIGHTENING SOFTWARE

Tentec software allows users to manage and rapidly calculate bolt tensioner pressures. Tentec Bolt Load Software has been designed with the philosophy of minimal input, maximum output.

Documentation for multiple bolted joint projects can be created very quickly with minimal operator input. The software package contains data for all standard flanges along with the correct tensioner pressures to apply.



TENTEC BOLT TIGHTENING SOLUTIONS



ISO 14001



BS OHSAS 18001



ISO 9001



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COMMITTED TO SUSTAINABLE PRODUCTIVITY

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